RADIOLOGICAL WORK PLAN FOR THE TONAWANDA COKE SITE

OPERABLE UNIT 3 (SITE 108)
3800 RIVER ROAD
TOWN OF TONAWANDA, NEW YORK

NYSDEC SITE #915055

Prepared for:

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MJW Job No. 25.1007.4

ACRONYMS

ALARA – As Low As Reasonably Achievable
ASTs – aboveground storage tanks
BCP – Brownfield Cleanup Program
CAMP – Community Air Monitoring Program
COC – chain of custody
CPM – counts per minute
DPM – disintegrations per minute
ECDIA – Erie Country Industrial Development Agency
FE – Feasibility Study
HASP – Health and Safety Plan
HAZWOPER – Hazardous Waste Operations and Emergency Response
IRM(s) – Interim Remedial Measures
NORM – Naturally Occurring Radioactive Material
NRC – Nuclear Regulatory Commission
NYS – New York State
NYSDEC – New York State Department of Environmental Conservation
NYSDOH – New York State Department of Health
ORNL – Oak Ridge National Laboratory
OSC – On-site coordinator
pCi/g – picocuries per gram
PPE – Personal Protective Equipment
RAWP – Remedial Action Work Plan
RCS – Radiological Control Supervisor
RCT –Radiological Control Technicians
RIR – Remedial Investigation Report
RITC – Riverview Innovation and Technology Campus
RIWP – Remedial Investigation Work Plan
RSO – Radiation Safety Officer
RWP – Radiological Work Plan
TCC – Tonawanda Coke Corporation
TENORM – Technologically Enhanced Naturally Occurring Radioactive Material

1.0 Introduction

1.1 General

This Radiological Work Plan (RWP) has been prepared to determine the presence of potential Technically Enhanced Naturally Occurring Radioactive Material (TENORM). Slag-like material was encountered during work activities at the 3800 River Road (Site 108) portion of the Tonawanda Coke State Superfund Site (#915055, OU3) Town of Tonawanda, New York. While analytical results from selected test pits documented radionuclide concentrations, no systematic sitewide survey was conducted.

In accordance with the approved Radiological Work Plans (RWP) for the nearby BCP sites, onsite slag material was screened by MJW and submitted for radiological analysis. The results of the analyses conducted by MJW were submitted to the New York State Department of Environmental Conservation (NYSDEC), for comment and approval to assist in defining the procedure required for the development of site plans. Remediation of TENORM is not a requirement of the Superfund, a component of the alternatives analysis process, or a criterion for selection of the remedial actions at the Site. The management of potential TENORM is a Remedial Action Work Plan (RAWP) and Site Management Plan (SMP) criterion.

The subject of this RWP is OU3 (Site 108) of the New York State Superfund Site #915055 (the Site). The Superfund Site owner is RITC. The Site is divided into three Operable Units (OU's):

- Operable Unit 1 (OU1) corresponds with Site 110. It is located in the northeast corner of the 3875 River Road parcel, separate from the Riverview BCP Site and continues off the parcel boundary to the east. Materials such as coal tar sludge, wood shavings impregnated with iron oxide, fly ash, and cinders were reportedly disposed of in this area. The site is bound by but does not include former rail bed materials. The easternmost portion of Site 110 is currently owned by the Niagara Mohawk Power Corp. Site 110 will not be subject to this work plan.
- Operable Unit 2 (OU2) corresponds with the Site 109 disposal area. It is located adjacent to River Road on the western side of the 3875 River Road parcel and north of the 3821 River Road BCP Site. Site 109 has been investigated and a Decision Document has been issued. Site 109 will not be subject to this work plan.
- Operable Unit 3 (OU3) corresponds with Site 108, located west of Site 109 and River Road and extending to the Niagara River to the west. It was purchased from the adjacent steel mill and comprises the 3800 River Road property and a portion of the National Grid property along River Road. It was used for transferring coal and other materials between the Niagara River dock area and the main plant via a conveyor system and pipes. In 1973, Allied Chemical was granted permission by the Erie County Health Department to establish a disposal area. The area was subsequently filled with refuse, wood, scrap polyethylene, and ceramic saddle packing. The disposal of coke/coal, fly ash cinders, and coal tar sludge in this area has also been documented.

In November 2020, MJW conducted work activities for a preliminary evaluation of TENORM material onsite (Site 108). No other direct onsite radiological surveys have taken place, the nearby and adjacent sites described below have had radiological investigations and documented TENORM material. The

TENORM material on the BCP Sites has prompted a comment on the Draft Feasibility Study[1] from the New York Department of Environmental Conservation (NYSDEC) and therefore a request by Inventum Engineering, PC (Inventum) for the evaluation of TENORM material on OU3 of the Superfund Site as part of the Feasibility Study.

Figure 1 (see page 5) shows the location of the Site with respect to the 3875 River Road (RITC) and 3821 River Road BCP Sites, the other OU's (Site 109 and Site 110, not included in this RWP), and River Road. The 3821 River Road BCP Site (#C915003) is the tax parcel adjacent to the RITC BCP Site (#C915353) and also known as the "Plastics" site. The Niagara River is located further west of River Road. In addition to the work described herein, MJW has conducted work for other properties around the Site. For clarity, the following site names are used by MJW:

- 3821 River Road BCP Site – The 3821 River Road property or "Plastics" which is entered into the BCP. The site number is #C915003. MJW performed radiological site survey and sampling work under an approved RWP.
- 4111 River Road Site – Property previously owned by the Erie County Industrial Development Agency (ECIDA) is now owned by the Town of Tonawanda. The 4111 Site is north of the Site, separated by a railroad right of way. MJW performed scoping surveys for ECIDA.
- 3875 River Road BCP Site (#C915353) – The adjacent former Tonawanda Coke Facility (a former production, coal handling, and coke handling area) which is now the Riverview Innovation & Technology Campus (RITC) and is under investigation and remediation through the BCP program. MJW performed radiological site survey and sampling work under an approved RWP and prepared a draft TENORM Management Plan for the RITC BCP Site.

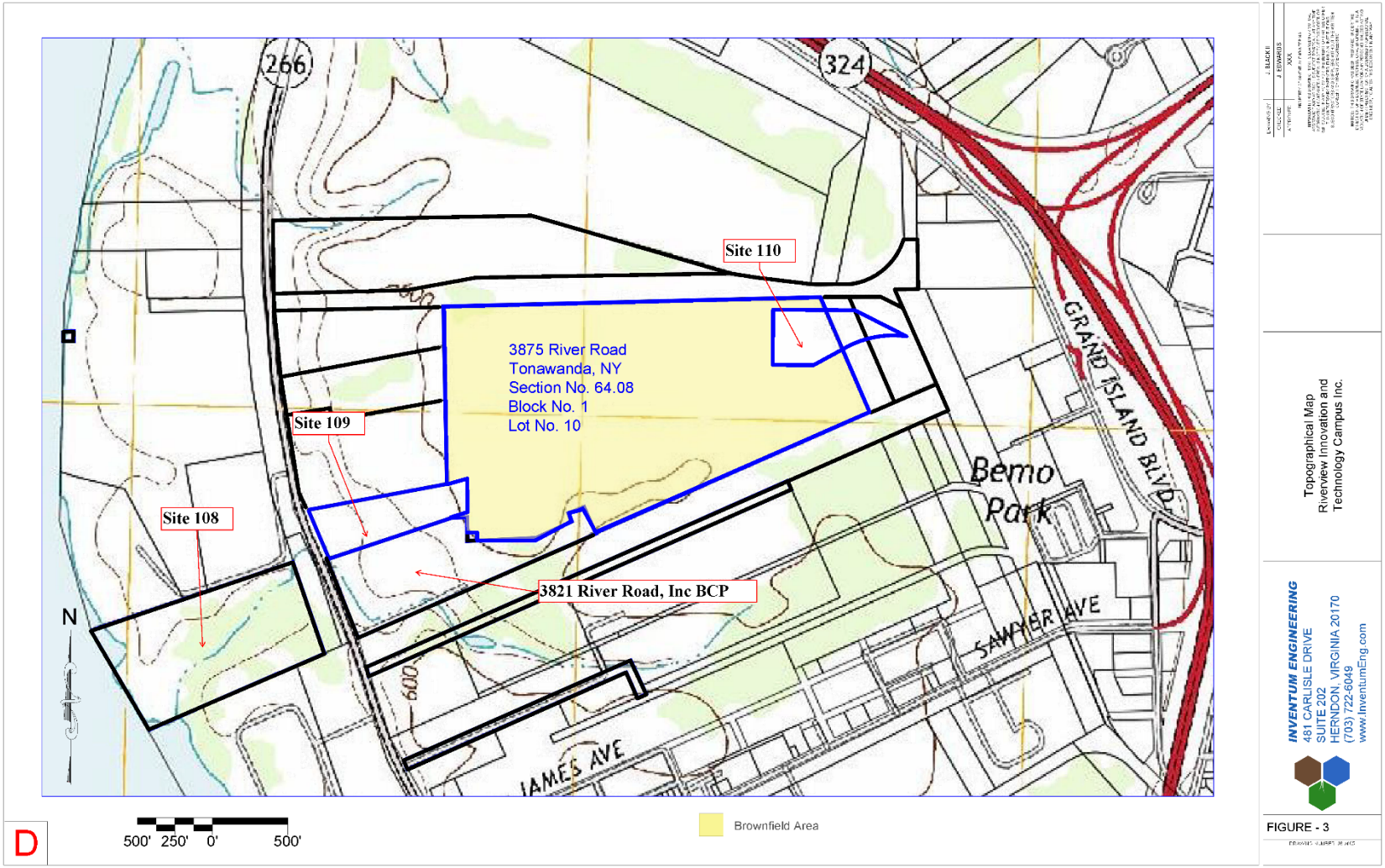
This Work Plan provides specific work details, the aerial and vertical extent of the Site that is being investigated to determine if TENORM is present on the Site and provides all existing data available from the project area for development of radiological work precautions. Previous site documentation is available on the NYSDEC Infolocator: (https://extapps.dec.ny.gov/data/DecDocs/915055/)

This investigation work plan, as with the plans submitted for the RITC and Plastics sites, includes the components of the 2023 policy document DMM-5 issued by NYSDEC regarding management of TENORM (Attachment 8). Guidance is provided for how to appropriately handle TENORM encountered during construction or earthwork projects, such as clearing, grading, excavation, filling, demolition, or stockpiling.

The MJW Corporation has performed radiological work in Western New York, New York State and several other sites in the US since 1991. MJW has been involved in the characterization and remediation of sites with potential radiological issues across a wide spectrum of nuclides and quantities. Consequently, MJW has developed radiological procedures to perform all of the tasks necessary to characterize the potential for TENORM on the Site and also to provide the expert radiological management and trained technicians to ensure work done on the Site is done safely when TENORM or radioactive source management is required.

[1] It is unusual that this comment came during the Feasibility Study review rather than during the review of the Remedial Investigation Report. Characterization is more typically an RI action.

Figure 1.


266
324
Site 110
3875 River Road
Tonawanda, NY
Section No. 64.08
Block No. 1
Lot No. 10
Site 109
Site 108
3821 River Road, Inc BCP
GRAND ISLAND BLVD
Bemo Park
SAWYER AVE
JAMES AVE
600
N
500' 250' 0' 500'
Brownfield Area
D
Topographical Map
Riverview Innovation and Technology Campus Inc.
INVENTUM ENGINEERING
481 CARLISLE DRIVE
SUITE 202
HERNDON, VIRGINIA 20170
(703) 722-6049
www.InventumEng.com
FIGURE - 3

1.2 Previous Site Investigative Work

In November 2020, MJW personnel oversaw the excavation of test pits at the Site 108 disposal area. No radiological material above area background levels was detected during field observations. As noted in the report letter (Attachment 1), no material was documented as having a count rate that met or exceeded 30% of the area background levels. Due to the presence of fly-ash on site, ten (10) grab samples were collected by MJW and sent to GEL Laboratories, LLC for analysis.

All ten samples were analyzed via EPA 901.1m Gamma Spectroscopy with a 21-day ingrowth for Ra-226 and confirmatory Alpha Spectroscopy for Thorium and Uranium isotopes. No sample results showed Ra-226 concentrations above 5.0 pCi/g and the material was determined to be NORM, as all samples are in secular equilibrium. A summary of the radiological analytical results is shown in Table 1 below, and in Attachment 1a. The average Ra-226 concentration for the soil samples shown in Table 1 is 1.83 pCi/g.

Table 1. Tonawanda Coke Property Samples 3800 River Road – Site 108

Sample ID	Ra-226 pCi/g	UNC.*	Ra-228	UNC.	Th-232	UNC.	U-238	UNC.
1_TP-27-2020	0.758	0.12	0.612	0.222	0.471	0.338	0.441	0.294
1_TP-27-2020_DUP	0.701	0.144	0.79	0.247	0.674	0.335	0.728	0.52
2_TP-27-2020-W	3.62	0.257	1.18	0.264	1.22	0.731	2.61	0.987
3_TP-25-2020-S	1.58	0.158	0.76	0.239	0.99	0.55	1.8	0.45
4_TP-25-2020-S	3.57	0.262	1.8	0.336	2.061	0.881	3.56	0.606
5_TP-25-2020-G	0.537	0.116	0.426	0.198	0.547	0.406	0.317	0.211
6_TP-19-2020-E	0.544	0.125	0.818	0.207	0.771	0.574	0.825	0.399
7_TP-19-2020-N	0.715	0.16	0.76	0.237	0.785	0.581	0.854	0.391
8_TP-26-2020	2.96	0.205	0.758	0.253	1.2	0.652	3.66	0.632
9_TP-29-2020-N	3.35	0.251	0.926	0.338	0.827	0.529	2.9	0.626

*UNC = Uncertainty (1.96-sigma)

1.2.1 Previous Investigations of Adjacent Sites

During the RITC BCP Remedial Investigation, Inventum Engineering, P.C. and the NYSDEC observed potential TENORM slag. Samples were collected for screening and subsequently submitted for radiological analysis. MJW performed a GPS-enhanced overland gamma survey in response to comments on the draft RIR and to provide data for the preparation of the RITC site work plan.

Samples collected on the nearby RITC site are included in the report *Analytical Data Quality Assurance Review for Six Soil Samples Collected During a Site Investigation of The Tonawanda Coke River Road Facility in Tonawanda, NY* dated February 10, 2021 (Attachment 2) and the summary report for the 2024 survey and sampling efforts (Attachment 2a). The samples described in the 2021 report were collected between October 30, 2020, and November 18, 2020. The samples were submitted to Eurofins

TestAmerica in St. Louis, MO with gamma spectroscopy and alpha spectroscopy analyses performed for U-238 and Th-232. A summary of the radiological analytical results is shown in Table 2 below.

The gamma spectroscopy analyses for Ra-226 and gamma and alpha spectroscopy analysis for U-238 show that all samples analyzed are in secular equilibrium and thus were classified as NORM, similarly to the samples from Site 108. Th-232 results show an average of about 1.12 pCi/g which is very near normal Th-232 background concentrations of 1 pCi/g. The sample locations are shown in Attachment 2.

Although policy DMM-5 does not address NORM specifically, it should be pointed out that the Table 1 and 2 reported low level concentrations of NORM have no radiological consequences, especially for an industrial/commercial site. This is due to the fact that there are no possible pathways for exposure, i.e., no drinking water wells, no crops being grown in the soil, no potential for inhalation exposures and no possibility for direct radiation exposures above background. Even the most rudimentary risk assessment would demonstrate this to be true.

Table 2. RITC Site (3875 River Road) Test Pit Soil Analysis (Samples Collected 10/30 to 11/18/2020)

Method→	901.1, Gamma Spec	901.1, Gamma Spec	Alpha Spec	901.1, Gamma Spec	Alpha Spec
Sample Number	**[Ra-226], pCi/g**	**[U-238], pCi/g**	**[U-238], pCi/g**	**[Th-232], pCi/g**	**[Th-232], pCi/g**
TP-BCP-34-A	4.46±0.785	5.04±2.24	3.12±0.419	0.858±1.07	1.36±0.253
TP-BCP-34-B	3.7±0.841	2.73±1.38	4.06±0.499	0.561±0.957	0.737±0.182
TP-BCP-32-W45	0.515±0.178	0.851±0.591	0.474±0.131	0.735±0.237	1.58±0.270
TP-BCP-44A	2.99±0.467	2.42±0.947	2.31±0.344	1.07±0.355	0.322±0.107
TP-BCP-44B	3.26±0.575	3.5±1.16	4.35±0.534	1.22±0.536	0.783±0.177
TP-BCP-47	3.79±0.495	1.59±0.915	3.29±0.451	2.58±0.440	1.95±0.319
Averages:	**3.12**±0.598	**2.67**±1.31	**2.93**±0418	**1.17**±0.67	**1.12**±0.229

The development of the 3821 River Road BCP Site by Allied Chemical in the 1950's may have included slag obtained from the same 1917 source as found on the adjacent RITC site. This potential shared slag source and the identification of possible TENORM slag on adjacent properties led to MJW conducting GPS-enhanced overland gamma surveys and sampling activities.

The GPS-enhanced overland gamma surveys for both the RITC and Plastics sites identified areas of potentially elevated material; areas in which gamma count rates were greater than 1.5x the local area background average that required further investigation through sampling and additional field screening. The results of the RITC site investigations describe small pockets of potential TENORM fill (Ra-226 > 5.0 pCi/g) and radiologically elevated material existing on the Western section of the RITC site. Potentially elevated material on the RITC site was identifiable by in-field count rates greater than 2x the local area background, with the high variability in NORM isotopes (K-40 specifically) creating the potential for false positive identifications of TENORM material when relying on count-rate data alone.

The results of the Plastics site investigations did not note any material meeting criteria for TENORM. A few select areas of the Plastics site returned in field count rates above 1.5x the local area background, and the maximum concentration of Ra-226 in sampled material was 2.67 pCi/g. The NYSDEC approval letter dated July 15th, 2025, confirmed that there was no material on the Plastics site.

Reports detailing the full extent of the investigations conducted for both the RITC and Plastics site are included in Attachments 2a and 2b, respectively

1.3 Discussion of Tonawanda Regional Radiological Background in Soils

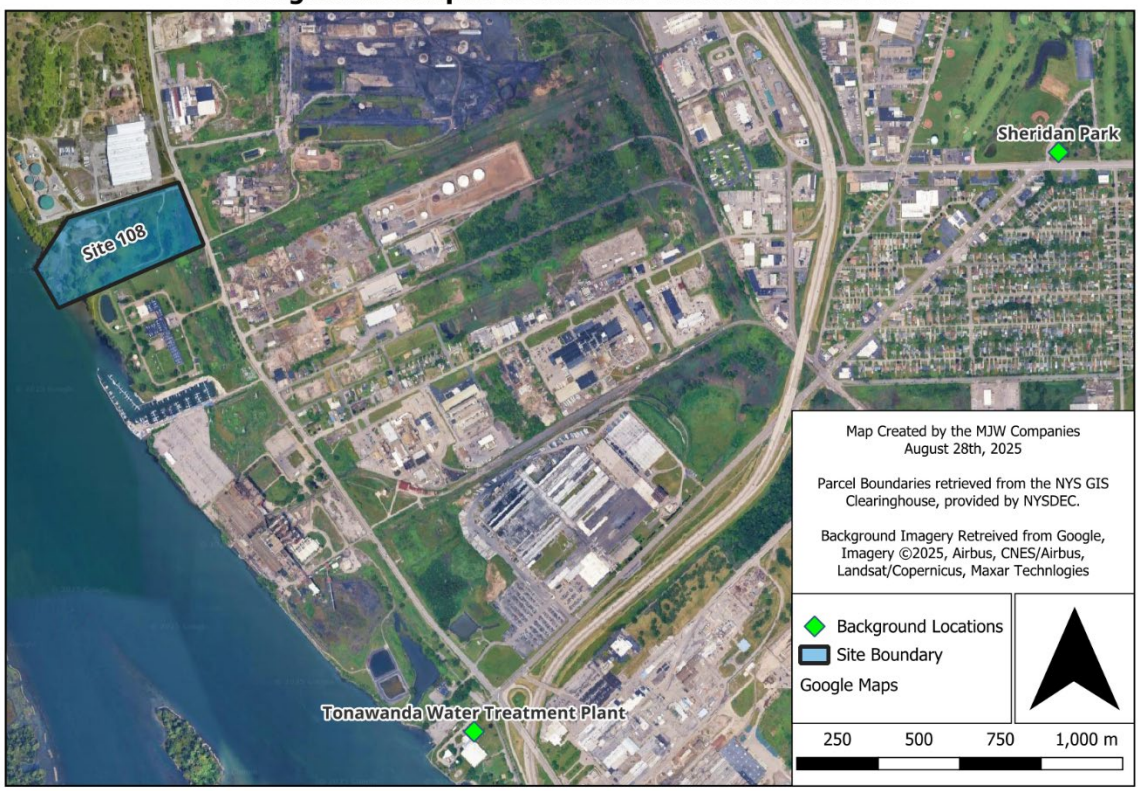
Given the proximity of the RITC and 3821 River Road sites, the same local area background used for those sites is used here. Two background samples were collected from the local area, one from the Tonawanda Treatment Plant property near Aqua Lane (GPS coordinates 42°57'54.6"N 78°55'22.3"W) and one in Sheridan Park just north of Sheridan Drive (GPS coordinates 42°58'54.2"N 78°54'04.0"W). The sample data are shown in Table 3 below and sample locations in relation to the Site are shown on Figure 2 below.

Table 3. Results of Background Sampling for the 3821 and 3875 Sites (Samples Collected 12/24/2023)

EPA Method→	901.1, Gamma Spec	901.1, Gamma Spec	901.1, Gamma Spec
Sample Number	**[Ra-226], pCi/g**	**[U-238], pCi/g**	**[Ra-228], pCi/g**
01122024-TWT1	0.822±0.151	1.02±0.518	0.986±0.276
01122024-SB1	0.734±0.135	1.48±0.938	0±0.409
01122024-TWT1(DUP)	0.673±0.178	0±3.14	1.25±0.34
Average (Non-Zero Results)	**0.743**±0**.155**	**1.25**±0.618	**1.11**±0.25

The sample collected at the Tonawanda Water Treatment Plant (TWT1) is located 1.1 miles south of the Site 108 Parcel. The Sheridan Park sample (SB1) is located 1.1 miles east of Site 110 Parcel. The location history of the TWT1 and SB1 background samples have a low potential for historic radiological impacts.

Figure 2.
Background Sample Locations in Relation to Site 108



It should be noted that in Oak Ridge National Laboratory (ORNL) report number ORNL/TM-7343 (11/1981) titled "State Background Radiation Levels: Results of Measurements Taken During 1975-1979", six surface soil samples were collected in New York State, three collected in the Tonawanda area as follows:

- *NY-1 City of Tonawanda at the city limit on River Rd. across from Consolidated Freightways Terminal (about 1.5 miles north of the 3821 River Road BCP Site). Measured soil nuclide concentrations were: Ra-226, 0.97±0.08 pCi/g; Th-232, 0.65±0.06 pCi/g, and U-238, 0.99 pCi/g.*

- *NY-3 West side of River Rd. across from the Allied Chemical Corp.*
  (5 miles north of the 3821 River Road BCP site). Measured soil nuclide concentrations were: Ra-226, 1.2±0.04 pCi/g; Th-232, 0.88±0.06 pCi/g, and U-238, 1.2 pCi/g.

- *NY-4 Intersection of Tonawanda Creek Rd. and Niagara Falls Blvd. in North Tonawanda (5.8 mi northeast of the 3821 River Road BCP Site). Measured soil nuclide concentrations were: Ra-226, 0.69±0.04 pCi/g; Th-232, 0.40±0.12 pCi/g, and U-238, 0.76 pCi/g.*

The three other New York sites that were sampled were all in Lockport, NY (approximately 18 miles directly northeast of the Site) and reported similar background values to those above. The three U-238 values were: NY-2, 0.97; NY-5, 0.85, and NY-6, 0.96 pCi/g. The average of all reported U-238 soil samples analyzed is 0.96 pCi/g, for Ra-226 the average is 0.85 pCi/g and for Th-232 the average is 0.71 pCi/g. All reported counting errors were ± 2 Sigma.

SITE DESCRIPTION

2.0 Site History

Prior to the TCC bankruptcy, the RITC Site was an operating coke making and by-products facility for more than 100 years. The facility was owned and operated circa 1917 through 1947 by Semet Solvay Company, a subsidiary of Allied Chemical and Dye Corporation. In 1947, Semet Solvay Company merged into Allied Chemical Corporation, which owned and operated the facility until 1978, when it sold the facility to TCC. TCC owned and operated the facility from 1978 through October 2018. TCC filed for bankruptcy in 2018 and all manufacturing on the property which is now the RITC BCP Site was permanently idled. Between October 2018 and March 2020, the U.S. Environmental Protection Agency (USEPA) conducted emergency response activities to remove gases from pipes and tanks and treat wastewater. The USEPA continued to manage stormwater through May 2020. On September 23, 2019, the sale of the remaining TCC properties to RITC was approved by the U.S. Bankruptcy Court. The purchase of the properties was completed October 10, 2019. Management of the properties was transitioned from the USEPA to RITC between September 2019 and June 2020.

Since 1917, manufacturing processes used at the plant included: by-products coking; light oil distillation; ammonia recovery; and benzene, toluene, and xylene extraction. Prior to TCC's acquisition of the property in 1978, a few areas of the site were historically used for the disposal of various waste.

2.1 Site 108

Site 108 was originally a portion of the adjacent Wickwire Spencer Steel Manufacturing Complex. Some areas of the current Site 108 were filled by the steel mill prior to the property being sold to Semet Solvay. Initially the property was used as the site of a river water intake, cooling water outfall, and logistics for transferring coal from Great Lakes shipping. In 1973, the Semet-Solvay Division was granted permission by the Erie County Health Department to establish a new refuse disposal area located at 3800 River Road, Tonawanda, New York (now known as Site 108). This Site was operated as a landfill for refuse, wood, scrap polyethylene, and ceramic saddle packing.

There are no occupied buildings on Site 108. A former TCC operated pump house is present near the Niagara River which supported electrical equipment and pumps for TCC facility operations at 3875 River Road. The pump house has not been operated by RITC and will be renovated and repowered prior to development.

In 2019, a former tank farm consisting of three large above ground storage tanks, each 40-feet to 50-feet in diameter were removed under the oversight of the USEPA.

3.0 Work Plan Roles and Responsibilities

The project team for the implementation of this radiological work plan include:

Project Manager – The project manager overseeing this work plan is the president of MJW, David A. Dooley, Ph.D., CHP. Dr. Dooley brings 40 years of experience to this work.

Radiation Safety Officer – Alex Bartels is MJW's Radiation Safety Officer (RSO) for our NYSDOH radioactive materials license and he oversees all of the radiation protection technicians we employee.

Radiation Protection Technicians – MJW's radiation protection technicians are trained according to MJW's Radiological Control Manual and all of the associated implementing procedures. They are also required to have current Hazardous Waste Operations and Emergency Response (HAZWOPER) training.

MJW is not managing other site-specific work or remediation on the property and will comply with the relevant (On-Site Coordinator) OSC site-specific Health and Safety Plans (HASPs). MJW will coordinate all onsite activities with the specified OSC contacts.

4.0 Overland GPS Gamma Survey Protocols

As described, MJW will perform gamma walkover survey(s) beginning just west of River Road that defines the border of the Site.

Predesigned transects will be generated using QGIS at ten (10) meter intervals. Transects will run both in a north/south and an east/west direction. MJW technicians will advance the surveys in a crosshatch pattern. No previously identified elevated areas on adjacent sites were smaller than ten (10) meters in a single direction. In the event of count rates being detected above the 1.5x Area Background (ABKG) mean, MJW technicians will attempt to delineate the area of elevated counts by using a smaller crosshatch five (5) meter grid and subsequently a crosshatch one (1) meter grid.

The smaller crosshatch five (5) meter grid will be utilized for additional investigation of the previously identified elevated areas in Attachment 1 (2016 DEC Preliminary Investigation).

To ensure a consistent site survey, MJW technicians will use a Bluetooth enabled Ludlum 3000 (or equivalent) with a Ludlum 44-10 "2x2" NaI detector. The instrument and sub-meter GPS unit will be paired to a mobile data collection device to enable in-field viewing and confirmation of results.

All GPS-enhanced overland gamma property surveys shall be performed in accordance with MJW Radiological Control Procedure No. 40., Performing a GPS Enhanced Radiation Survey and Data Assessment, Rev.4, dated October 29, 2021. MJWRCP 40 is attached to this work plan as Attachment 3.

5.0 Soil Sample Collection and Analysis

Following the walkover survey, MJW technical staff will collect no less than three (3) biased surface and subsurface soil samples and (2) unbiased surface and subsurface samples from Site 108 if areas of gamma counts greater than 1.5x ABKG are documented. One (1) unbiased sample will be collected with no regard for walkover data results. Biased surface and subsurface samples will be collected from the six (6) locations identified in Attachment 1b (2016 DEC Preliminary Investigation). The sample locations will be marked in the field with pin flags noting the associated sample numbers. OSC will document the location and elevation using the onsite GPS equipment.

Prior to sample collection, a review of gamma walkover data will be conducted by a Certified Health Physicist (CHP). Final determination of the number of samples, and the EML locations will be done by the CHP and communicated to the assigned NYSDEC ERS. The CHP will review all data associated with

the biased Attachment 1b samples. Biased samples not sent for analysis will be stored at the MJW Facilities for potential future analysis.

All soil sample collection will be performed in accordance with MJWRCP-66 Soil Sampling Protocols Rev. 0 dated December 4, 2020. This procedure is shown in Attachment 4. Attachment 5 is the Soil Sample Data Sheet which catalogs all of the field data used for the selection of the location including sample type, radiation readings at various distances, analyses requested, etc.

6.0 Laboratory Analysis of Samples

Collected samples will be placed in appropriate containers and shipped to an accredited laboratory for radiological analysis. MJW routinely uses GEL Labs located in Charleston, SC and that is the laboratory proposed for the sampling of this work plan. All samples will be analyzed via EPA 901.1m Gamma Spectroscopy with a 21-day ingrowth for Ra-226

For more information about GEL's radiochemistry services see the following link: https://www.gel.com/laboratories/services/radiochemistry-analysis. GEL's chain of custody (COC) form is shown in Attachment 6.

7.0 Disposition of On-Site Background-Comparable Material

TENORM, at any level, cannot be disposed of in a NYS landfill per 6 NYCRR Part 363-7.1 (o)(7) and must be disposed of at an authorized facility. The Department's Environmental Radiation Specialist (ERS) must be notified prior to any interment or disposal of potentially elevated radioactive material and/or TENORM. Planned test-pitting activities will be communicated to the ERS for express permission of the below reinterment.

During the investigation, MJW will strive to return material from the test pits to the excavation area. In accordance with DMM-5 policy Section B: "TENORM (Background-comparable) (below 5 pCi/g of radium-226) – the Department may either grant a variance to allow the excavated TENORM (Background-comparable) to be returned to the excavation/AOC, or the assigned ERS determines, and approves, that the proposed use and handling in the AOC is acceptable. The Department will also require that appropriate and approved institutional control(s) be put in place (e.g., deed restriction, environmental easement) for each AOC." Test pits that have re-interred material will be visually marked in the field (cones, flags, fence posts). The location of all test-pits will be communicated to Site administrators for administrative control (postings, worker notifications, etc.,). Visual markings and administrative controls will be in use until final NYSDEC determination of material characteristics and accepted final usage/disposal plans. The range of sample data concentrations collected to date will not significantly increase radiological risk to anyone working on or near the site if it is re-interred.

The long-term plan for Site 108 is commercial and multi-family residential use. In accordance with local zoning for the intended commercial development, Site 108 will include river-related activities (marina, boat maintenance and storage, restaurants) and the multi-family housing will take advantage of the riverfront viewscape. Ony 65-percent of the site will be developed, providing 35-percent of the property as greenscape. Material determined to be TENORM will be managed according to a NYSDEC-approved TENORM Management Plan.

8.0 Radiological Controls and Workplace Safety

Radiation Protection Technicians/radiological control technicians (RCT) and radiological control supervisory personnel (RCS) will provide radiological coverage to ensure the radiological safety of MJW, OSC and Inventum Engineering workers during work activities required for any surface and subsurface survey and sampling work.

8.1 Radiological Monitoring Documentation

The RCT and/or RCS will complete daily field notes to identify work activities performed, site conditions, notable events, and radiological findings. The notes will include a site work area map and locations of samples collected. MJW Corporation "*Survey Data Form*" (Attachment 7) will be completed for all walk-over or investigative surveys performed in response to significantly elevated instrument readings or off-normal events (i.e., instrument count rates > 2 times area background or personnel contamination. A COC form (Attachment 6) will be initiated in the field for all samples collected.

9.0 Personal Protective Equipment (PPE) and Radiological Hygiene

Workers will follow all requirements for PPE and hygiene actions based on radiological, chemical, and physical hazards as established by MJW safety manuals and procedures and the OSC Health and Safety Plan for the Site. The minimum requirements based upon anticipated radiological and physical conditions will include:

9.1 Required PPE

The required PPE will be worn at all times on the site outside the parking lot or office building.

- Safety glasses or shield
- Hard hat
- Ear plugs
- Hard-toe work boots
- Work gloves
- Safety (high visibility) vest or similar

More stringent controls may be required if higher levels of radioactivity are encountered.

9.2 Hygiene and Contamination Monitoring

The following precautions shall be observed to promote work-place safety in accordance with the Site HASP (RITC HASP, 2025):

- No eating, drinking, smoking, or chewing within any active work area.
- Hand washing required upon exit from any active work area.
- Hand and foot radiological survey meter "frisk" when exiting areas where elevated radioactivity has been detected. Personnel frisks will be performed using the Ludlum 44-9 GM probe and/or the Ludlum 44-89, alpha/beta probe or equivalent instrument combinations.
- Excavator buckets and tires/tracks to be frisked before release to non-restricted use.

When release surveys using field instruments exceed 2 times the instrument area background count rate, the RCT and RCS will take measures to confirm results using longer count times or by moving more slowly over the area. If an elevated count rate is confirmed, the RCT may wipe or wash the area, remove debris or soil material and resurvey the area until readings indicate ALARA. Materials or personnel exceeding 3 times instrument backgrounds should not be released without further decontamination efforts and count rates indicate ALARA. This information will be documented on forms such as those similar to Attachment 7 MJWRCP-04. Rad Contamination Survey Map and Data Sheet.

Materials and equipment released for unrestricted use will not exceed New York State (NYS) and Nuclear Regulatory Commission (NRC) limits as stated in NYSDOH Radiation Guide 10.10, Table 1 (Attachment 9). It is the responsibility of the RCS to evaluate field instrument counts per minute (CPM) against Table 1 release limits in disintegrations per minute (DPM) using instrument calibration factors for the radionuclides of interest.

9.3 Community Air Monitoring Program (CAMP)

MJW supported by OSC will take reasonable steps to suppress potentially contaminated fugitive dusts such as by misting with water or curtailing intrusive activities. Dust monitoring shall be conducted in accordance with the RITC Site CAMP by Inventum. In addition to the perimeter monitoring conducted for the CAMP, a potable air monitoring station will be located no more than 50-feet downwind of the subsurface sample locations that involve the use of heavy construction equipment.

10.0 Reports

MJW will prepare a report detailing the activities and the results of the GPS overland gamma survey performed and the activities and analytical results for all surface and subsurface soils collected. The report and data will be in a form that will allow Inventum Engineering to incorporate the requirements into the RAWP and the Site Management plans for the Site.

11.0 Attachments

1. Previous Site Investigations
2. Adjacent Site Investigations
3. MJWRCP 40
4. MJWRCP 66
5. Soil Sample Data Sheet
6. GEL COC
7. Survey Data Sheet
8. NYSDEC DMM-5 Policy
9. NYSDOH Radiation Guide 10.10

Attachment 1 - Previous Site Investigations

MJW TECHNICAL SERVICES, INC.

March 14, 2022

George Moreau, Senior Project Manager
Parsons Corporation
301 Plainfield Rd. Ste350
Syracuse, NY 13212

Re: November 2020 Test Pitting Radiological Monitoring at Tonawanda Coke

Dear Mr. Moreau:

MJW Technical Services (MJWTS) was present during the Tonawanda Coke Remedial Investigation in early November 2020. MJWTS performed radiological monitoring during test pitting to identify material that is determined through visual and instrumental methods to be TENORM, or NORM material. All material excavated showed no elevated readings on instrumentation, however, some material consisted of fly-ash substance that MJW sent to GEL Laboratories for analyses.

MJWTS Radiological Control Technicians (RCT) used Ludlum 2241's paired with a 44-10 (2"x2") sodium iodide detectors. Measurements were performed and levels were compared to an appropriate (localized) background level. The detectors were placed at contact with the suspect material in an orthogonal orientation within a low background area.

The Count Rate Criteria was a combination of count rate criteria and visual clues based upon professional experience. Using the implemented Count Rate (CPM) Criteria, MJWTS RCT'S saw no elevated instrument readings that would suggest the presence of TENORM or NORM. All measurements were net of appropriate background during the workday's activity. Specifically, no sample measurements met or exceeded 30% of background levels or contained any suspect TENORM materials.

MJWTS collected ten grab samples at Site 108 in support of the Tonawanda Coke Remedial Investigation project. The samples were sent to GEL Laboratories, LLC for radiological analysis via alpha and gamma spectroscopy. The data set has been reviewed for quality assurance (QA) and the results have been analyzed:

> **QA:** Aside from a few spurious unidentified or unexpected peaks, there were no QA exceptions. The laboratory control sample (LCS) recovery and duplicate sample relative percent differences were within limits unless results were less than five times the minimal detectable activity (MDA), in which case they showed it was within +/- the reporting limit (RL).
>
> **Results:** The data indicates the Uranium and Thorium parent isotopes are both in equilibrium and the material is naturally occurring (NORM). In both cases (U-238 and Th-232), the parent isotopes are slightly less than the in-growth progeny and the remaining progeny are all very close.

MJW TECHNICAL SERVICES, INC.

Summary: There are no QA exceptions. Technologically enhanced naturally occurring radioactive material (TENORM) was not identified in the analyzed samples.

Please refer to the attached map for sampling locations and attached GEL Laboratories report and spreadsheet for further information.

Please let me know if I can be of any further assistance.

Best regards,

Alexander J Bartels

Alexander Bartels
Radiological Control Supervisor
MJW Technical Services

MJW Technical Services. Document Number 22.201

Locations Sampled by MJW Between 11/02 and 11/12 2020

Sampling Locations

Google Earth

0 50 100 ft

1:1,500

Prepared for Parsons
By MJW Companies
March 2022

MJWTS

MJW TECHNICAL SERVICES, INC.

Attachment 1A. Tonawanda Coke Property Samples 3800 River Road								
			Nuclide Concentrations as pCi/g					
Sample ID	Ra-226	Uncert.	Ra-228	Uncert.	Th-232	Uncert.	U-238	Uncert.
1_TP-27-2020	0.758	0.120	0.612	0.222	0.471	0.338	0.441	0.294
1_TP-27-2020 DUP	0.701	0.144	0.790	0.247	0.674	0.335	0.728	0.520
2_TP-27-2020-W	3.620	0.257	1.180	0.264	1.220	0.731	2.610	0.987
3_TP-25-2020-S	1.580	0.158	0.760	0.239	0.990	0.550	1.800	0.450
4_TP-25-2020-S	3.570	0.262	1.800	0.336	2.061	0.881	3.560	0.606
5_TP-25-2020-G	0.537	0.116	0.426	0.198	0.547	0.406	0.317	0.211
6_TP-19-2020-E	0.544	0.125	0.818	0.207	0.771	0.574	0.825	0.399
7_TP-19-2020-N	0.715	0.160	0.760	0.237	0.785	0.581	0.854	0.391
8_TP-26-2020	2.960	0.205	0.758	0.253	1.200	0.652	3.660	0.632
9_TP-29-2020-N	3.350	0.251	0.926	0.338	0.827	0.529	2.900	0.626

Attachment 2 - Adjacent Site Site Investigations

Department of Environmental Conservation

KATHY HOCHUL
Governor

AMANDA LEFTON
Commissioner

July 14, 2025

James Edwards
Inventum Engineering, PC
441 Carlisle Drive
Herndon, Virginia 20170

Dear James Edwards:

Gamma Walkover Survey and Associated Sampling Report– 3821 River Road, Tonawanda, #C915003

The NYS Department of Environmental Conservation (Department) has received and reviewed the Gamma Walkover Survey And Associated Sampling Report for the 3821 River Road site located in Tonawanda, NY. After reviewing the Gamma Walkover Survey And Associated Sampling Report, dated May 29, 2025, the Radioactive Materials Management Section (RMMS) accepts this report and agrees with the findings and data provided in the report mentioned above.

The Gamma Walkover Survey And Associated Sampling Report provides the results of a gamma walkover survey and associated radiological sampling that was completed at the site. The report explains that only a few select areas measured above 1.5x local background readings and that all of the samples analyzed were below 5 pCi/g of Ra-226, with the highest concentration being 2.67 pCi/g of Ra-226.

The Department has concluded that the data from the report shows that the excavated material is not technologically enhanced naturally occurring radioactive material (TENORM); this conclusion is based on the lack of provenance related to the source(s) of the material, as well comparison to background data. Please note, however, that the material is considered a solid waste and must be properly handled and/or disposed of, in compliance with appropriate regulations.

Please feel free to contact me with any comments or questions that you may have at (716)-851-7278 or via email at derick.dietrich@dec.ny.gov

Sincerely,

Derick Dietrich

Derick Dietrich
Environmental Radiation Specialist 1
Division of Materials Management, Region 9

DD: ef

ec: Patrick Concannon, NYSDEC
Thomas Papura, NYSDEC
Stan Radon, NYSDEC
Benjamin McPherson, NYSDEC
Gregory Scholand, Esq., NYSDEC
Sara Bogardus, NYSDOH
Angela Martin, NYSDOH
John Yensan, 3821 River Road
John Black, Inventum
Robert Knoer Esq.,.noer Group

Analytical Data Quality Assurance Review for Six Soil Samples Collected During a Site Investigation of The Tonawanda Coke River Road Facility in Tonawanda, NY

Memorandum

February 10, 2021

To: Mr. James Edwards
Inventum Engineering, PC
481 Carlisle Dr. Suite 202
Herndon, Virginia 20170

From: Martin Willett
Director of Health Physics and Remediation Services
MJW Corporation

Subject: Analytical Data Quality Assurance Review for Six Soil Samples Collected During a Site Investigation of The Tonawanda Coke River Road Facility in Tonawanda, NY

Introduction

A quality assurance and quality control (QA/QC) review of the Laboratory Analytical Data received from Eurofins TestAmerica, St. Louis, Laboratory Job ID: 160-40621-1 and released on 1/11/2021 was performed for Inventum Engineering LLC by MJW Corporation. The laboratory data report contained results for six (6) soil samples collected during a Tonawanda Coke facility investigation conducted between October and November 2020.

Summary of Laboratory Sample Receipt Condition:

- Standard analytical laboratory protocols were followed during the analysis of the samples and no problems were encountered or anomalies observed, laboratory quality control samples were within established control limits.
- Analytical methods and test results met NELAP requirements for parameters for which accreditation is required or available.
- Samples were received on 11/30/2020 in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 9.4 C.

Laboratory Notes Related to Analytical Methods and Results:

Radium-226 By Gamma Spec (21 Day Ingrowth)

- Samples were analyzed for Radium-226 by gamma spec after a 21-day ingrowth period in accordance with EPA method 901.1. The samples were dried on 12/04/2020, prepared on 12/10/2020 and analyzed on 12/31/2020. As a result, samples met the 21day ingrowth requirement prior to analysis for Ra-226.

- Samples results for *Pb-210 by gamma spec (method 901.1) were estimated*.

- *Insufficient sample was provided for a sample to fill the geometry calibrated for Ra-226 analysis by gamma spectroscopy*. The samples contained large pieces of rock.

- Results for several requested isotopes have no or low abundance gamma peaks. *Quantification of the analyte was inferred under the assumption of equilibrium with decay chain progeny or parent isotopes. This assumption was added by the laboratory and was not based on process knowledge*.

Gross Alpha and Gross Beta Radioactivity

- Sample analysis was performed on 12/23/.2020 following method SW-846 Method 9310. No analytical or quality issues were noted.

Isotopic Thorium and Uranium (Alpha Spectrometry)

- Sample analysis was performed on 01/04/2021 and 01/07/21 following method DOE A01R_Th and U. For Thorium analysis, *a correction to data results to account for interference observed in the blank sample was applied.*
- Quality issues were not observed for U isotopic analysis.

Sample Analytical Results

Samples Analyzed

Lab ID	Client Sample ID	Collected Date / Time	Received
160-40621-1	TP-BCP-34-A	10/30/20 11:15	11/30/20 13:47
160-40621-2	TP-BCP-34-B	10/30/20 11:15	11/30/20 13:47
160-40621-3	TP-BCP-32-W45	11/09/20 01:00	11/30/20 13:47
160-40621-4	TP-BCP-44-A	11/13/20 11:50	11/30/20 13:47
160-40621-5	TP-BCP-44-B	11/13/20 11:50	11/30/20 13:47
160-40621-6	TP-BCP-47	11/18/20 09:20	11/30/20 13:47

Table 1: Laboratory Sample Results

Lab ID	Analyte	Method	Result (pCi/g)	Lab Qualifier[1]	Error (pCi/g)	MDA (pCi/g)
160-40621-3	TH-232	Alpha Spec A-01-R	1.58		0.270	0.0487
160-40621-3	U-238	Alpha Spec A-01-R	0.474		0.131	0.0598
160-40621-3	AC- 228	Gamma 901.1	0.735		0.237	0.258
160-40621-3	BI-214	Gamma 901.1	0.515		0.178	0.168
160-40621-3	RA-226	Gamma 901.1	0.515		0.178	0.168
160-40621-3	TH -232	Gamma 901.1	0.735		0.237	0.258
160-40621-3	U-238	Gamma 901.1	0.851		0.591	0.810
160-40621-1	TH-232	Alpha Spec A-01-R	1.36		0.253	0.0521
160-40621-1	U-238	Alpha Spec A-01-R	3.12		0.419	0.0527
160-40621-1	AC- 228	Gamma 901.1	0.858	U	1.07	1.51
160-40621-1	BI-214	Gamma 901.1	4.46		0.785	0.415
160-40621-1	RA-226	Gamma 901.1	4.46		0.785	0.415
160-40621-1	TH -232	Gamma 901.1	0.858	U	1.07	1.51
160-40621-1	U-238	Gamma 901.1	5.04		2.24	2.92
160-40621-2	TH-232	Alpha Spec A-01-R	0.737		0.182	0.0554
160-40621-2	U-238	Alpha Spec A-01-R	4.06		0.499	0.0612
160-40621-2	AC- 228	Gamma 901.1	0.561	U	0.957	1.10
160-40621-2	BI-214	Gamma 901.1	3.70		0.841	0.597
160-40621-2	RA-226	Gamma 901.1	3.70		0.841	0.597
160-40621-2	TH -232	Gamma 901.1	0.561	U	0.957	1.10
160-40621-2	U-238	Gamma 901.1	2.73		1.38	2.53
160-40621-4	TH-232	Alpha Spec A-01-R	0.322		0.107	0.0402
160-40621-4	U-238	Alpha Spec A-01-R	2.31		0.344	0.0490
160-40621-4	AC- 228	Gamma 901.1	1.07		0.355	0.312
160-40621-4	BI-214	Gamma 901.1	2.99		0.467	0.205
160-40621-4	RA-226	Gamma 901.1	2.99		0.467	0.205

Lab ID	Analyte	Method	Result (pCi/g)	Lab Qualifier[1]	Error (pCi/g)	MDA (pCi/g)
160-40621-4	TH -232	Gamma 901.1	1.07		0.355	0.312
160-40621-4	U-238	Gamma 901.1	2.42		0.947	1.45
160-40621-5	TH-232	Alpha Spec A-01-R	0.783		0.177	0.0258
160-40621-5	U-238	Alpha Spec A-01-R	4.35		0.534	0.0583
160-40621-5	AC- 228	Gamma 901.1	1.22		0.536	0.681
160-40621-5	BI-214	Gamma 901.1	3.26		0.575	0.380
160-40621-5	RA-226	Gamma 901.1	3.26		0.575	0.380
160-40621-5	TH -232	Gamma 901.1	1.22		0.536	0.681
160-40621-5	U-238	Gamma 901.1	3.50		1.16	1.59
160-40621-6	TH-232	Alpha Spec A-01-R	1.95		0.319	0.0464
160-40621-6	U-238	Alpha Spec A-01-R	3.29		0.451	0.0539
160-40621-6	AC- 228	Gamma 901.1	2.58		0.440	0.294
160-40621-6	BI-214	Gamma 901.1	3.79		0.495	0.214
160-40621-6	RA-226	Gamma 901.1	3.79		0.495	0.214
160-40621-6	TH -232	Gamma 901.1	2.58		0.440	0.294
160-40621-6	U-238	Gamma 901.1	1.59		0.915	1.43

1. U Result is less than the sample detection limit.

QA/QC Summary:

There were no laboratory quality assurance sample result exceptions noted. Results for LCS, Blanks and Duplicate samples were within acceptance criteria and all duplicate Relative Error Ration (RER) results were in RER limit of 1. Based on QC sample results, the data are determined usable and no upward or down bias in sample results is evidenced.

The laboratory narrative identified a deficiency in sample volume for one sample however, the sample was not identified and analytical results for all samples were reported without exceptions noted.

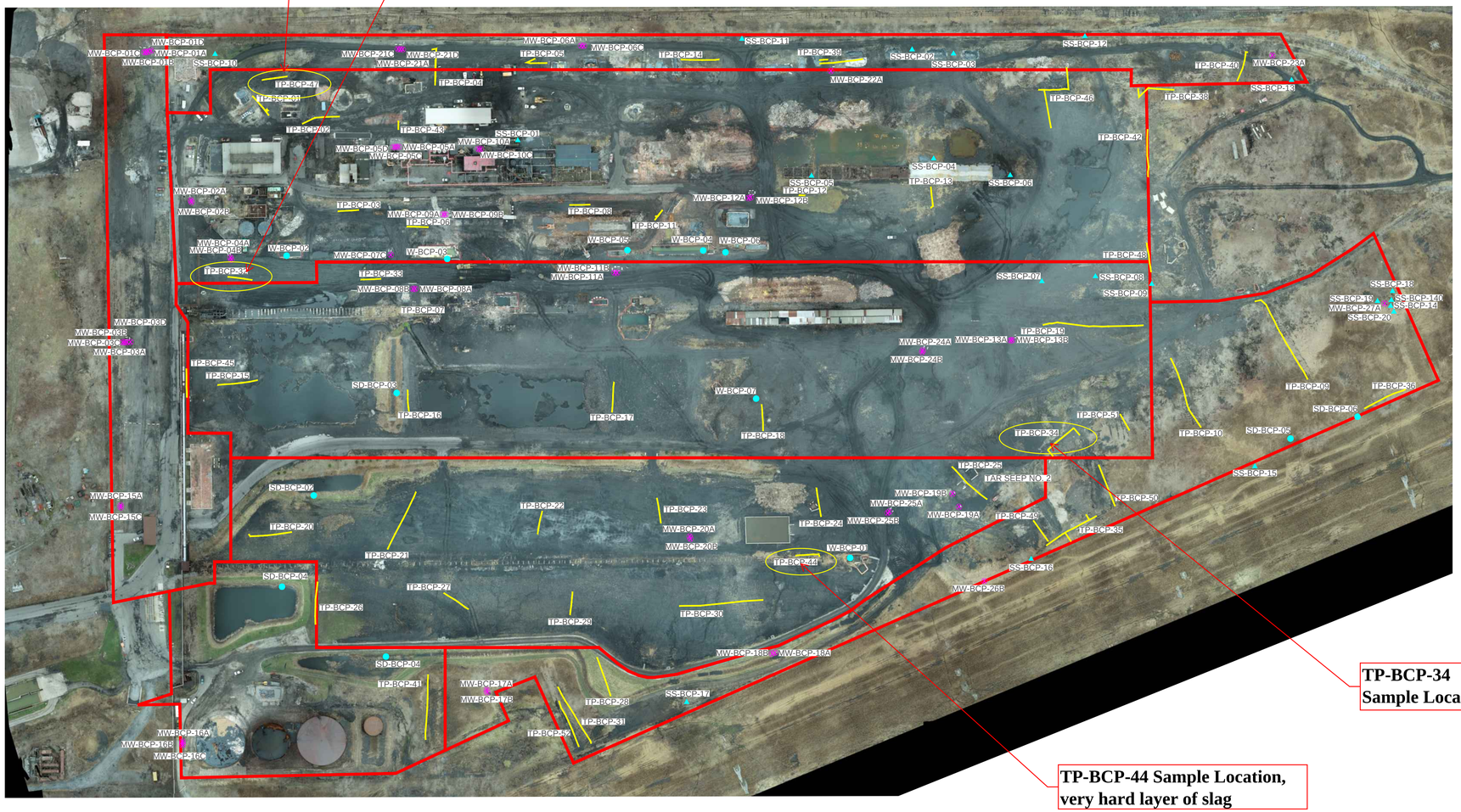
In general, the sample results for U-238 and Th-232 are slightly above the range of concentrations that are inferred for average background soils (.5 to 1.5 pCi/g) but not outside the range of concentrations that can be encountered. Based on the gamma spectroscopy result for U-238, Ra-226 and Th-232 progeny nuclides appear to be in equilibrium with parents and alpha spectroscopy results generally confirm the gamma spec results. The samples do not appear to indicate any enhancement of one isotope or the other and concentration ranges are likely due to soil types from the area.

Figure 1. November 2020 Test Pitting Locations Radiological Monitoring at RITC Site

Shoreline Trail, built along Former Steel Mill and Over the Back-filled Erie Canal.

TP-BCP-47 NORM Sample

TP-BCP-32-W45 Sample Location



Note: Test Pit Rad Soil Analysis (Samples Collected 10/30 to 11/18/2020) are circled in yellow.

150 0 75 150 300 600

1 INCH =150 FEET (22X34)

D

N

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SAMPLE LOCATIONS
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Figure 1

DRAWING NUMBER

SAMPLE LOCATIONS

THE MJW COMPANIES

Radiological Consulting Professionals and Expert Technical Services

Gamma Walkover Survey And Associated Sampling Report

For

RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS, INC.
3875 RIVER ROAD
TONAWANDA, NEW YORK 14150
BCP SITE No. C915353

Prepared for:

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By:

MJW CORPORATION
RADIATION CONSULTING PROFESSIONALS

15 Hazelwood Dr., Suite 112
Amherst, NY, 14228

September 17, 2024
Revised: March 31, 2025

MJW Project No. 24.1007.3

1.0 Introduction

Following the New York State Department of Environmental Conservation (NYSDEC) approval of the Radiological Work Plan (RWP) on April 30, 2024 (Attachment A) MJW was contracted to perform additional investigation activities in accordance with the approve RWP at the Riverview Innovation and Technology Campus, henceforth referred to as the Site. The Brownfield Cleanup Program (BCP) Site is located at 3875 River Road, Tonawanda, New York 14150 and was a storage location and railroad junction for the former Tonawanda Coke Company during the majority of the twentieth century. MJW mobilized to the site in June 2024 and conducted a GPS-enabled Gamma Walkover Survey, followed by associated sampling events. In accordance with the April 30, 2024, approval letter, NYSDEC was notified 5-days in advance of the start of field activities and attended portions of the sampling effort.

The Site consists largely of various types of fill with little to no native soil being left within two (2) feet of the surface. In addition to the fill there was a variety of slag documented on the Site. The type of fill and slag was not uniform or patterned as determined from visual observations in-field. Much of the Site has become overgrown and vegetation dominates large areas including the former coal and coke yards.

The presence of documented slag was observed to have been used on-site as base and ballast materials predominately under the former railroad tracks on the BCP site.

Under the directive of Inventum Engineering and in compliance with the NYSDEC approved RWP, MJW was instructed to provide a GPS-based gamma scan "walkover" of the Site to assess surface and near-surface radiological conditions. MJW performed these activities over two days, on June 18 and June 19, 2024. Immediately following the tabulation of walkover results, sampling activities were conducted on June 26, 2024.

This laboratory analysis was performed in addition to previous site investigation work, documented in the RWP.

2.0 Methodology

Instrumentation utilized for the survey consisted of a Bluetooth enabled Ludlum 2221r and a Ludlum 44-10 that was coupled with a sub-meter GPS unit to allow for the collection of data points. MJW mounted the equipment to a specially modified cart to enable consist geometry of the detector. The detector was mounted at exactly ten (10) centimeters from the ground with the GPS unit directly overhead.

A transect plan was created to provide guidance in-field for optimal survey coverage. Transects were spaced five (5) meters apart to provide in-depth data supporting the preliminary walkover which contained 12 (twelve) meter transects. The Site covers approximately 86.5 acres and there are active remediation and demolition activities taking place. The GPS walkover covered only the western portion of the Site, beginning west of the Thaw Shed and moving North-South. This is in comparison to the preliminary walkover which traversed The Site in a West-East direction and covered the entire site. The activities taking place along with the inability to access sections of the site due to pits, overgrown vegetation, fencing, flooding, and other factors prevented the exact following of transects. Transects were walked wherever possible, but in-field adjustments were made as necessary due to obstructions, surface accumulations of water, and piles of concrete.

Extreme heat warnings were issued in western New York on the days this survey was performed, so to protect the health and safety of MJW radiological control technicians, other field operatives, and meet project requirements, transects were skipped at regular intervals if no counts above background had been documented on the prior transect. In areas where elevated readings were found or had the potential to be found, these skipped transects were scanned to fully delineate the elevated area. Extended surveying of previously documented and newly discovered potentially elevated measurement locations (EMLs) took place, irrespective of other conditions.

Background gamma count data was collected at the nearby Erie County Water Authority located at 3750 River Road, Tonawanda, NY 14150. Data was collected over impervious and pervious surfaces. The background data had been previously collected for the preliminary walkover and was utilized for consistency and standardization of data.

Twenty (20) biased and twelve (12) unbiased soil samples (Figure 3) were collected utilizing the data from the gamma walkover. EMLs were identified according to the outer bounds of elevated data points, and with respect to each area size, a proportion of biased and unbiased samples were assigned. Two (2) biased samples were reserved for areas that had been previously inaccessible for sampling by flooding. The flooded areas were still partially inaccessible for gamma surveying, and an excavator was used to pull surficial and sub-surface material out for sampling activities. Two (2) additional unbiased samples were collected as MJW field operatives traversed the site and were totally random.

Samples were collected from test pits. Prior to ground-breaking, the area would be scanned with a 1-minute scaler count using a Ludlum 44-10 paired with a Ludlum 2241-2. Following the scan, the test pit would be excavated from between 1-4 feet, depending on subsurface conditions. Following the removal of soil and subsurface materials, a 500-gram sample was pulled and placed within a sample jar. The sample jar was then scanned by placing the Ludlum 44-10 on top of the jar, no cover, and a scaler 1-minute count was recorded. All of this information is recorded in Attachment 1, Field Sample Log Sheets. The sheets record the sample ID (pre-determined), time at which the sample was placed in the jar, the relevant sample information for consistency with Attachment 5 (the lab Chain-of-Custody), the gross surface reading (1-min on ground scaler count) and then the notes section provides a more in-depth description of the sample material and the on-jar scaler count.

All 37 collected samples were analyzed with gamma-spectroscopy (DOE HASL 300, 4.5.2.3/Ga-01-R) 10% of samples were collected with sufficient volume to analyze field duplicates. Three (3) field duplicates were collected; three (3) lab duplicates were also analyzed. Fifteen (15) samples were analyzed by alpha-spectroscopy for isotopic Uranium and Thorium (DOE EML HASL-300, U-02-RC Modified, DOE EML HASL-300, Th-01-RC Modified). This additional analysis provides confirmatory results for the broader gamma-spectroscopy performed on all samples. All samples were sent to GEL Labs facilities in Charleston, North Carolina, under a valid Chain of Custody (COC).

3.0 Data Analysis

3.1 Gamma Walkover

Background data was statistically analyzed using Visual Sample Plan (VSP). 614 data points were analyzed with a mean of 8,392.9 counts per minute (cpm).

A total of 20,164 data points were collected at the Site over the two days. Statistical analysis was performed using QGIS. There were no outliers in the upper and lower 5% of the data. Compared to the 2023 Walkover, there were fewer data points (numerically and percentage-wise) that exceeded the area background value, and 1.5x, 2x and 2.5x the area background value (Table 1).

Table 1.

Comparison of 2023 vs 2024 Gamma Walkover Data (8392 cpm Area Background)								
	Total Data Points	# > ABKG*	# > 1.5x ABKG	#> 2x ABKG	#>2.5x ABKG	% > 1.5x ABKG	%> 2x ABKG	%>2.5x ABKG
2024 Walkover	20164	4293	512	158	24	2.54%	0.78%	0.12%
2023 Walkover	28884	8679	2048	809	222	7.09%	2.80%	0.77%
*Area Background								

3.2 Samples:

Thirty-seven (37) collected samples were sent to GEL Labs for analysis. One (1) target sample and one (1) QA/QC sample were recounted due to peak shift. There are no other recounts. In total, 1,895 sample results were reported, of which 325 did not have an attached U (not detected above MDA) or UI (Considered a false positive) qualifier. All of the collected samples returned at least three (3) non-qualified values, with the maximum being fifteen (15); reported for samples S3.B3 and S3.U1, respectively.

4.0 Results

4.1 Gamma Walkover Results

The data as depicted in Figure 2 along the < Area Background, Area Background to 1.5x Area Background, 1.5-2x Area Background and >2.5 times Area Background. >2x and >2.5 times Area Background indicates the clear presence of radiological impacts in the surface and near-surface soils. There was no visual identification of discrepancies in soil status in elevated areas.

The areas where counts exceeded twice background are consistent with previously identified EMLs: in the middle of the Site (east-west) and the upper northwest and southwest corners. Other radiological impacts were not identified.

4.2 Sample Results

Table 2 below summarizes relevant information from the sample results. The average concentrations for Ra-226 in all samples is below the 5.0 pCi/g limit identified within DMM-5 for TENORM (Background-comparable) material. Twelve (12) samples exceeded or have the potential to exceed the 5.0 pCi/g DMM-5 limit for TENORM Background-Comparable; five (5) from Area 1, four (4) from Area 2, two (2) from Area 3, and one (1) from Area 4. This is consistent with the EML sizes, with Area 1 being the largest and Area 4 being the smallest. The maximum reported Ra-226 concentration is 12.6 pCi/g, no samples met the criteria within DMM-5 for TENORM Waste (greater than 15.0 pCi/g of Ra-226).

Table 2.

Nuclide Information Table										
↓Sample ID[1]							GS[3]		AS[3]	
Sample Concentration (pCi/g) →	[Ac-228]	UNC[2]	[K-40]	UNC	[Ra-226]	UNC	[U-238]	UNC	[U-238]	UNC
S2.B1	0.465	0.298	U	U	3.51	0.33	3.26	2.97	N/A	N/A
S2.B2	U	U	2.62	1.36	4.93	0.42	U	U	N/A	N/A
S2.B3	U	U	4.74	1.36	6.32	0.408	U	U	N/A	N/A
S2.B4	0	0.338	7.27	1.47	3.42	0.341	U	U	N/A	N/A
S2.B5	U	U	11	1.7	3.79	0.373	U	U	N/A	N/A
S2.B6	U	U	9.61	1.25	0.326	0.14	U	U	U	U
S2.U1	U	U	1.61	0.708	0.875	0.193	U	U	N/A	N/A
S2.U2	0.246	0.241	2.04	1.02	0.32	0.11	U	U	N/A	N/A
S2.U3	1.16	0.34	4.03	1.16	11	0.525	U	U	N/A	N/A
S2.U4	1.29	0.519	1.86	1.94	10.2	0.57	8.11	5.51	5.39	1.05
S2.U2.D	0.335	0.222	5.09	0.995	0.51	0.17	1.56	1.53	U	U
S3.B1	0.663	0.466	17.1	2.17	1.21	0.234	U	U	0.426	0.366
S3.B2	U	U	4.64	1.08	9.17	0.472	7.48	5.04	7.84	1.38
S3.B3	U	U	U	U	0.529	0.155	U	U	N/A	N/A
S3.B4	0.304	0.314	2.65	0.958	0.598	0.193	U	U	N/A	N/A
S3.U1	U	U	4.68	1.57	10.7	0.474	8.53	2.04	6.33	1.14
S3.U2	U	U	1.66	1.34	2.23	0.284	U	U	N/A	N/A
S3.U3	U	U	1.23	0.541	0.552	0.146	1.97	1.28	N/A	N/A
S3.B4.D	0.214	0.16	1.38	0.984	0.348	0.137	U	U	0.351	0.302
S4.B1	1.19	0.378	8.43	1.48	1.56	0.297	U	U	U	U
S4.B2	0.887	0.342	2.73	0.981	5.77	0.377	U	U	N/A	N/A
S4.U1	0.982	0.379	7.22	1.5	1.24	0.258	U	U	0.581	0.449
S1.B1	0.908	0.463	21.3	2.4	1.12	0.302	U	U	N/A	N/A
S1.B2	1.73	0.555	4.42	1.64	10.6	0.62	10.4	8.19	N/A	N/A
S1.B3	0.94	0.409	18.2	2.3	1.56	0.228	U	U	N/A	N/A
S1.B4	U	U	8.56	2.03	12.6	0.595	5.74	5.9	N/A	N/A
S1.B5	0	0.447	6.58	1.43	8.49	0.516	U	U	5.46	1.02
S1.B6	U	U	17.8	2.25	1.94	0.279	U	U	N/A	N/A
S1.U1	0	0.294	20.4	2.09	0.667	0.275	U	U	N/A	N/A
S1.U2	U	U	13.8	1.94	4.73	0.364	4.74	3.37	3.18	0.835
S1.U3	0	0.264	13.4	1.44	1.94	0.219	3.59	3.72	0.803	0.42
S1.U4	1.32	0.425	10.9	1.78	10.5	0.529	8.21	4.32	N/A	N/A
S1.B1.D	1.44	0.331	18.9	1.85	1.25	0.197	U	U	U	U
F1	U	U	6.6	1.6	0.762	0.163	U	U	0.457	0.346
F2	0.343	0.182	2.16	0.732	0.637	0.189	U	U	N/A	N/A
Control 1	U	U	2.92	0.904	0.41	0.177	U	U	N/A	N/A
Control 2	U	U	2.64	0.957	0.503	0.17	U	U	0.571	0.359
S2.B1(674299001DUP)	U	U	1.94	1.07	3.7	0.35	U	U	N/A	N/A
S4.B2(674299021DUP)	0.873	0.412	3.68	1.13	6.1	0.406	4.2	3.91	N/A	N/A
S2.U2.D(674299011DUP)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.443	0.366
S2.B6(674299006DUP)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	U	U
Average Concentrations	**0.695**	**0.368**	**7.454**	**1.513**	**3.759**	**0.343**	**5.649**	**4.414**	**2.653**	**0.765**

1. Sample ID - S(Sample Area Number)#.U/B (Unbiased or Biased)#.D(Field Duplicate)
2. UNC - Counting Uncertainty
3. GS - γ Spec, AS - α Spec
4. U - Unidentified
5. N/A - Not Analyzed

4.3 Sample and Gamma Count Association

All samples that returned values with the potential for excess of 5.0 pCi/g of Ra-226 were associated with locations producing elevated counts. One sample (S4.B2) was associated with GPS counts that did not exceed 2x background levels but that exceeded 1.5x background levels.

Seven of the "elevated" samples were directly (within 5 meters) associated with counts in excess of 2x background; six (6) of which had the highest Ra-226 concentration of any other onsite samples.

Sampling results, when associated with Gamma Count readings, indicate that 2x Background is a confident indication of elevated activity. Sampling results also indicated that NORM isotopes (K-40) have high variability across the site and include the potential for false positive identification of TENORM with field screening.

Historical site conditions and previous radiological investigations support the results of these surveys and sampling events; there exist small pockets of potential TENORM and radiologically impacted material on western areas of the site. These pockets exist due to the historical usage of slag on site and can be clearly delineated utilizing field instrumentation.

5.0 Material Disposition and Future Use

Radiologically unimpacted material has no restrictions on future use. Four (4) locations are associated with elevated activity:

- Northwest Corner – Parking Lot AOI 1 – Last property purchased from Wickwire Spencer Steel Company. An area of approximately 20 by 35 meters with an estimated volume of 960 cubic meters (estimated 2,300 tons). See Table 2 samples S1.B2, S1.B4, S1.B5 and S1U4.
- Coke Yard AOI 2 south of former coke wharf, northeast of former shower building, estimated volume: 310 cubic meters (estimated 740 tons). See Table 2 samples S3.B2 and S3.U1.
- Coke Yard AOI 3 south of former coke wharf, south of former coal breaker building, estimated volume: 420 cubic meters (estimated 980 tons). See Table 2 samples S2.B3 and S2.U4.
- Water Treatment AOI 4 - North side of stormwater retention basin, estimated volume: 160 cubic meters (estimated 380 tons). See Table 2 sample S4.B2 (DUP).

The estimated volume for these four areas with elevated activities assumed an excavation depth below ground surface of approximately 54-inches which is consistent with native clay soil layer across the site. This material with elevated concentration that must be disturbed will be managed under the Remedial Action Work Plan and an approved TENORM Management Plan.

EMLs are not generally determined by nuclide concentrations alone. They also must include the presence of gamma counts in excess of 1.5 times to 2 times area background. When combined with soil sample results above the DEC (DMM-5) concentration of 5.0 pCi/g above background for Ra-226 is proposed as a determination of an EML for purposes of the TENORM Management Plan.

Management of material in excess of the approved EMLs that must be disturbed to implement the Remedial Action Work Plan (RAWP) shall be governed by a DEC-approved TENORM Management Plan. For material identified as TENORM Fill (5.0-15 pCi/g) above area background to remain on-site, a variance application will be submitted in conjunction with the TENORM Management Plan. Overall disposition and usage of material is subject to NYSDEC approval.

6.0 List of Attachments

Attachment 1. Field Sample Log Sheets
Attachment 2. Instrument Calibration Sheets
Attachment 3. MJWRCP-40 Performing a GPS Enhanced Gamma Radiation Survey, Rev. 4
Attachment 4. MJWRCP-66 Soil Sampling Protocols, Rev 0
Attachment 5. GEL Chain of Custody Form
Attachment 6. GEL Lab Report SDG674299

Figures

Figure 1:

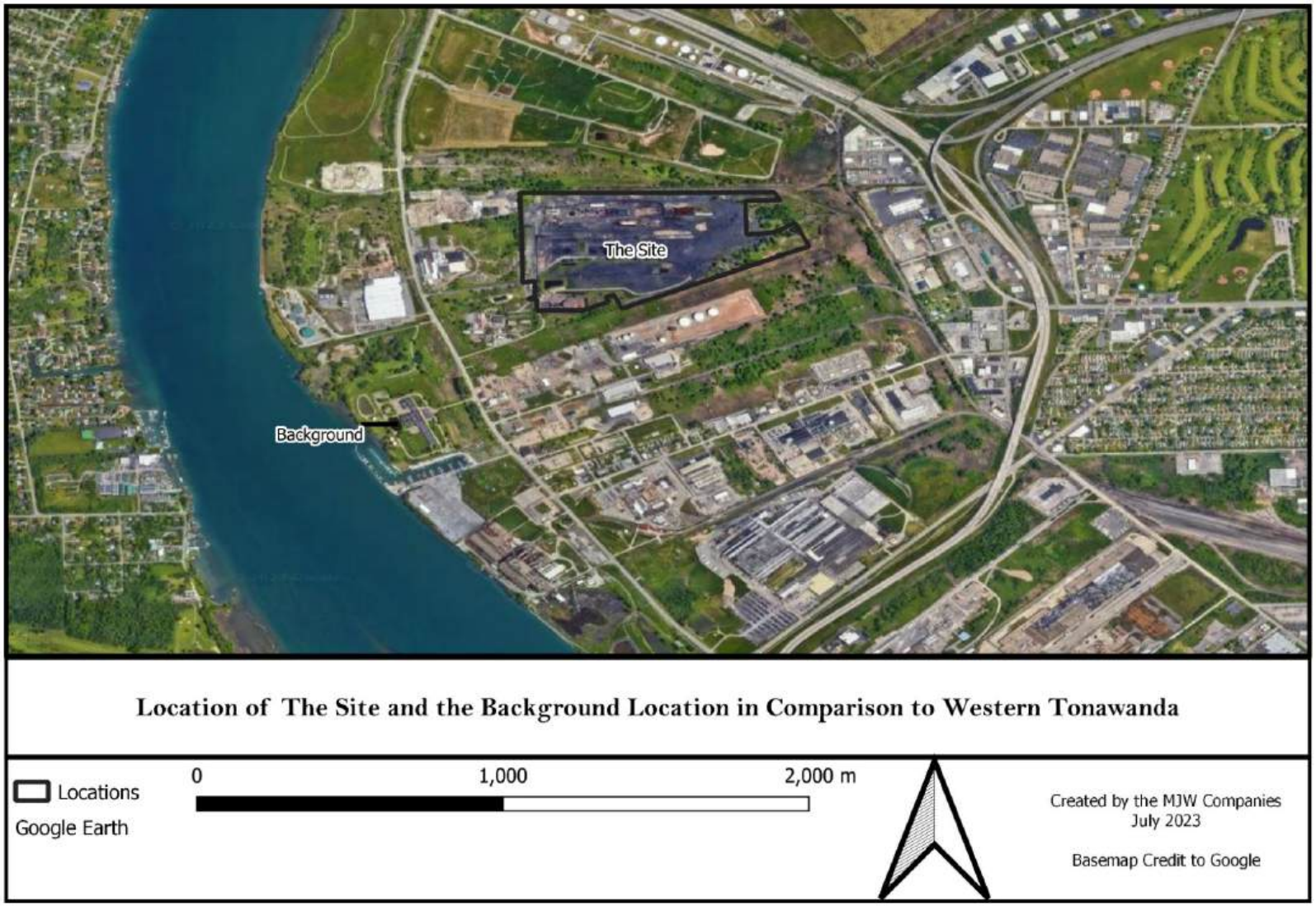
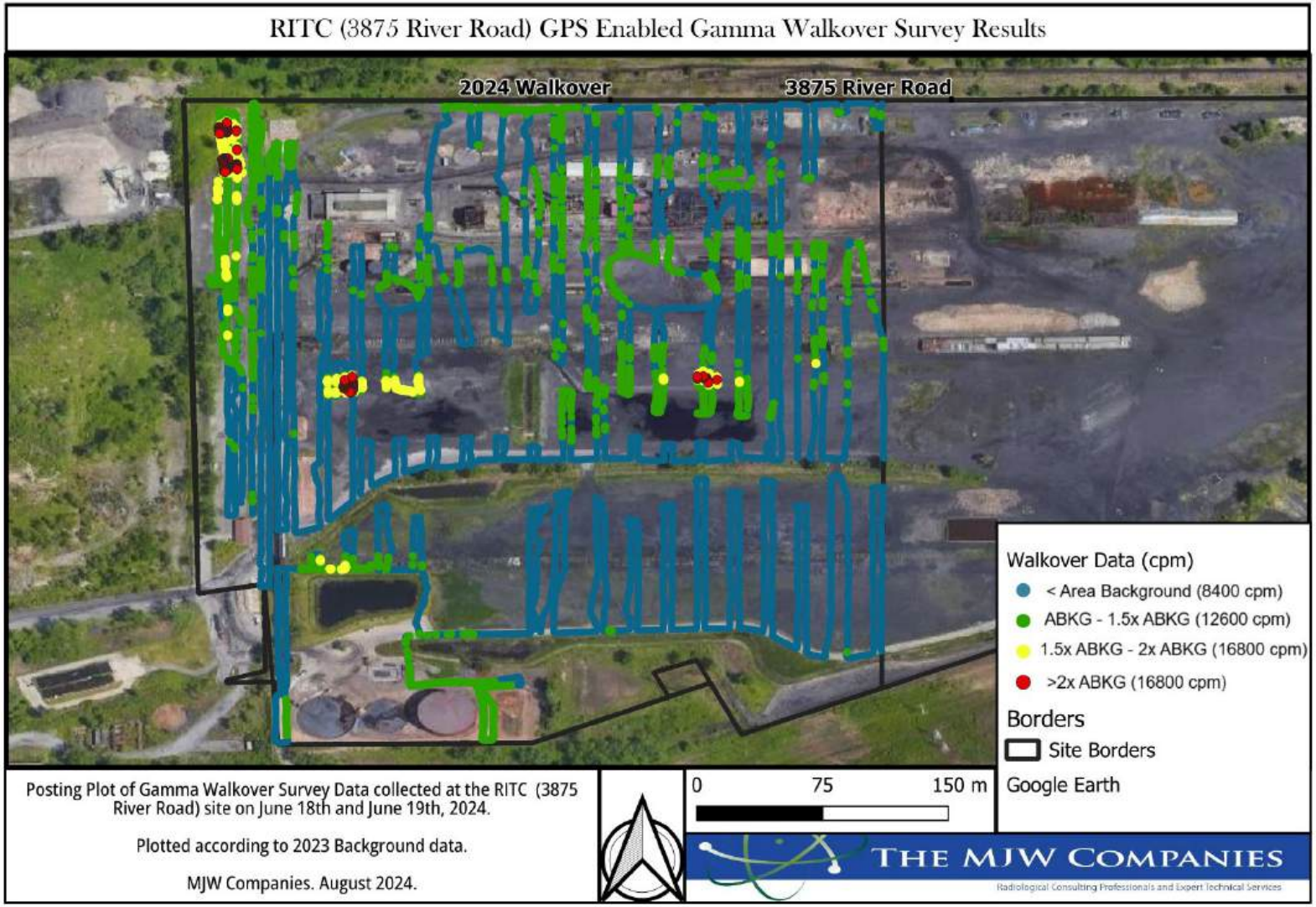
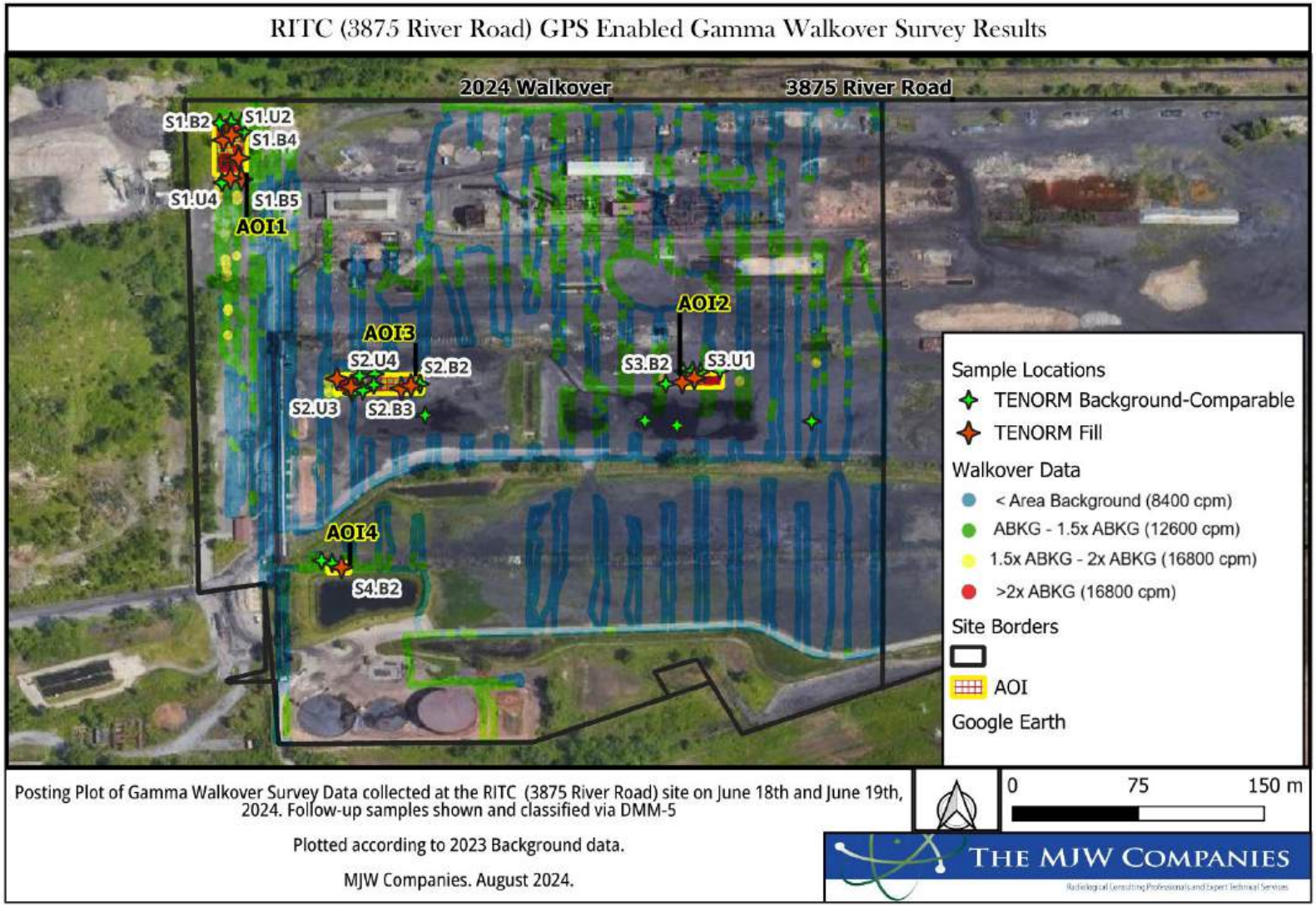

The Site
Background
Location of The Site and the Background Location in Comparison to Western Tonawanda
Locations
Google Earth
0
1,000
2,000 m
Created by the MJW Companies
July 2023
Basemap Credit to Google

Figure 2:



(Dark blue areas on satellite imagery represent water retention ponds and areas of regular flooding)

Figure 3.



Posting Plot of Gamma Walkover Survey Data collected at the RITC (3875 River Road) site on June 18th and June 19th, 2024. Follow-up samples shown and classified via DMM-5

Plotted according to 2023 Background data.

MJW Companies. August 2024.

(Dark blue areas on satellite imagery represent water retention ponds and areas of regular flooding)

Attachment 1. Field Sample Log Sheets

Sample Log

Sample location/description: RITC Sampling						Location Coords: OSC logged				
Survey Date: 6/26/24			Weather Conditions: Sunny			Surveyed By: HH & JY				Page: 1 of 3
Inst./Detector Model #			**Inst./Detector Serial #**			**Background**	**Units/Type**	**% Eff.**	**Nuclide**	**Cal. Due Date**
2241-2/44-10			222150/PR249955			9000	cpm γ	-	-	7/13/2024
N/A	N/A	N/A	N/A	N/A	N/A	N/A	µRem / hr γ	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	cpm α	N/A	N/A	N/A
Sample ID		**Time**	**Depth (feet)**		**Voume (grams)**	**Sample Media (Soil/Sediment)**		**Sample Type (Comp/Grab)**		**2"x2" NaI Reading (gross cpm)**
S2.B1		09:03	2		500	Soil		Grab		15000
Visual Characteristics and Notes: 2686 cpm on Jar. Coke material.										COC #:
S2.B2		09:06	2		500	Soil		Grab		15000
Visual Characteristics and Notes: 2564 cpm on Jar. Coke material.										COC #:
S2.B3		09:08	1.5		500	Soil		Grab		15000
Visual Characteristics and Notes: 2535 cpm on Jar. Coke material.										COC #:
S2.B4		09:11	1		500	Soil		Grab		16000
Visual Characteristics and Notes: 2301 cpm on Jar. Coke material.										COC #:
S2.B5		09:15	3		500	Soil		Grab		15000
Visual Characteristics and Notes: 2570 cpm on Jar. Coke material.										COC #:
S2.B6		09:17	2		500	Soil		Grab		13000
Visual Characteristics and Notes: 1821 cpm on Jar. Coke material.										COC #:
S2.U1		09:28	1.5		500	Soil		Grab		9000
Visual Characteristics and Notes: 1993 cpm on Jar. Coke material.										COC #:
S2.U2		09:25	2		500	Soil		Grab		8000
Visual Characteristics and Notes: 1819 cpm on Jar. Coke material.										COC #:
S2.U3		09:20	3		500	Soil		Grab		10000
Visual Characteristics and Notes: 2705 cpm on Jar. Coke material.										COC #:
S2.U4		09:23	1.5		500	Soil		Grab		10000
Visual Characteristics and Notes: 2615 cpm on Jar. Coke material.										COC #:
S2.U2.D		09:25	2		500	Soil		Grab		8000
Visual Characteristics and Notes: 1939 cpm on Jar. Coke material.										COC #:
S3.B1		09:50	2		500	Soil		Grab		21000
Visual Characteristics and Notes: 2037 cpm on Jar. Clay/Brick material.										COC #:
S3.B2		09:55	2		500	Soil		Grab		16000
Visual Characteristics and Notes: 2758 cpm on Jar. Slag material.										COC #:
S3.B3		10:00	2		500	Soil		Grab		14000
Visual Characteristics and Notes: 1868 cpm on Jar. Coke/Gravel material.										COC #:

Reviewed By: ___FS Forest Shotak Date:___08/19/24____

Sample Log

Sample location/description: RITC Sampling						Location Coords: OSC logged				
Survey Date: 6/26/24			Weather Conditions: Sunny			Surveyed By: HH & JY				Page: 2 of 3
Inst./Detector Model #			**Inst./Detector Serial #**			**Background**	**Units/Typ**	**% Eff.**	**Nuclide**	**Cal. Due Date**
2241-2/44-10			222150/PR249955			9000	cpm γ	-	-	7/13/2024
N/A	N/A	N/A	N/A	N/A	N/A	N/A	µRem / hr γ	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	cpm α	N/A	N/A	N/A
Sample ID		**Time**	**Depth (feet)**		**Voume (grams)**	**Sample Media (Soil/Sediment)**		**Sample Type (Comp/Grab)**		**2"x2" NaI Reading (gross cpm)**
S3.B4		10:05	2		500	Soil		Grab		14000
Visual Characteristics and Notes: 2017 cpm on Jar. Coke Breeze/Gravel material.										COC #:
S3.U1		10:10	1.5		500	Soil		Grab		8000
Visual Characteristics and Notes: 2758 cpm on Jar. Slag material.										COC #:
S3.U2		10:15	1.5		500	Soil		Grab		7000
Visual Characteristics and Notes: 2292 cpm on Jar. Coke Breeze material.										COC #:
S3.U3		10:20	2		500	Soil		Grab		9000
Visual Characteristics and Notes: 1800 cpm on Jar. Gravel material.										COC #:
S3.B4.D		10:07	2		500	Soil		Grab		14000
Visual Characteristics and Notes: 1846 cpm on Jar. Coke Breeze/Gravel material.										COC #:
S4.B1		10:45	1.5		500	Soil		Grab		13000
Visual Characteristics and Notes: 2099 cpm on Jar.										COC #:
S4.B2		10:50	2		500	Soil		Grab		14000
Visual Characteristics and Notes: 2398 cpm on Jar. Slag material.										COC #:
S4.U1		10:55	2.25		500	Soil		Grab		14000
Visual Characteristics and Notes: 2130 cpm on Jar.										COC #:
S1.B1		11:15	2.5		500	Soil		Grab		16000
Visual Characteristics and Notes: 2276 cpm on Jar.										COC #:
S1.B2		11:20	2		500	Soil		Grab		16000
Visual Characteristics and Notes: 2654 cpm on Jar.										COC #:
S1.B3		11:25	2		500	Soil		Grab		15000
Visual Characteristics and Notes: 2295 cpm on Jar.										COC #:
S1.B4		11:30	1.5		500	Soil		Grab		15000
Visual Characteristics and Notes: 3032 cpm on Jar.										COC #:
S1.B5		11:35	2		500	Soil		Grab		16000
Visual Characteristics and Notes: 2792 cpm on Jar.										COC #:
S1.B6		11:45	2		500	Soil		Grab		14000
Visual Characteristics and Notes: 2217 cpm on Jar.										COC #:

Reviewed By: ___FS Forest Shotak Date:___08/19/24____

Sample Log

Sample location/description: RITC Sampling						Location Coords: OSC logged				
Survey Date: 6/26/24			Weather Conditions: Sunny			Surveyed By: HH & JY				Page: 3 of 3
Inst./Detector Model #			**Inst./Detector Serial #**			**Background**	**Units/Type**	**% Eff.**	**Nuclide**	**Cal. Due Date**
2241-2/44-10			222150/PR249955			9000	cpm γ	-	-	7/13/2024
N/A	N/A	N/A	N/A	N/A	N/A	N/A	µRem / hr γ	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	cpm α	N/A	N/A	N/A
Sample ID		**Time**	**Depth (feet)**		**Voume (grams)**	**Sample Media (Soil/Sediment)**		**Sample Type (Comp/Grab)**		**2"x2" NaI Reading (gross cpm)**
S1.U1		11:45	2		500	Soil		Grab		6000
Visual Characteristics and Notes: 2305 cpm on Jar										COC #:
S1.U2		11:50	3		500	Soil		Grab		7000
Visual Characteristics and Notes: 2394 cpm on Jar										COC #:
S1.U3		11:55	3		500	Soil		Grab		7000
Visual Characteristics and Notes: 2377 cpm on Jar										COC #:
S1.U4		12:00	3		500	Soil		Grab		7000
Visual Characteristics and Notes: 2781 cpm on Jar										COC #:
S1.B1.D		12:05	2.25		500	Soil		Grab		12000
Visual Characteristics and Notes: 2286 cpm on Jar										COC #:
F1		12:15	3		500	Soil		Grab		12000
Visual Characteristics and Notes: 2081 cpm on Jar										COC #:
F2		12:20	3		500	Soil		Grab		7000
Visual Characteristics and Notes: 2049 cpm on Jar										COC #:
Control 1		12:25	Surface		500	Soil		Grab		5000
Visual Characteristics and Notes: 2026 cpm on Jar.										COC #:
Control 2		12:30	Surface		500	Soil		Grab		6000
Visual Characteristics and Notes: 2175 cpm on Jar.										COC #:
Visual Characteristics and Notes:										COC #:
Visual Characteristics and Notes:										COC #:
Visual Characteristics and Notes:										COC #:
Visual Characteristics and Notes:										COC #:
Visual Characteristics and Notes:										COC #:
Visual Characteristics and Notes:										COC #:
Reviewed By: ___FS_____ Date:___08/19/24____										

Attachment 2. Instrument Calibration Sheets

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ilac-MRA ACCREDITED CERT # 4084.01

Customer MJW TECHNICAL SERVICES ORDER NO. 20448905/542257

Mfg. Ludlum Measurements, Inc. Model 2241-2 Serial No. 222150

Mfg. Ludlum Measurements, Inc. Model 44-10 Serial No. PR249955

Cal. Date 13-Jul-23 Cal Due Date 13-Jul-24 Cal. Interval 1 Year Meterface DIGITAL

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 42 % Alt 704.0 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation
☑ Audio ck. ☑ Alarm Setting ck. ☑ Batt. ck.
☑ Calibrated in accordance with LMI SOP 14.8 ☐ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set Comments V Input Sens. Comment mV Det. Oper. Comments V at Comment mV Threshold Dial Ratio = mV

COMMENTS:

	Det1(44-10,Red)	Det2(44-10,Yellow)
Deadtime:	0 µSec	0 µSec
Cal Constant:	100e-2	100e-2
Ratemeter Alarm:	0500 kcpm	0500 kcpm
Ratemeter Alert:	0300 kcpm	0300 kcpm
High Voltage:	1250V	1250V
Sensitivity:	10 mV	10 mV

Firmware: P-0917
Calibrated using 39" C-cable.
Overload checked but not set.
Pulser calibration "RATEMETER READOUT" performed without deadtime.
*See Attachment for efficiencies.

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
Digital			
Digital			

Range(s) Calibrated Electronically

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Ratemeter Readout	800K cpm	796 kcpm	796 kcpm
	200K cpm	199	199
	80K cpm	79.6	79.6
	20K cpm	19.9	19.9
	8K cpm	7.96	7.96
	2K cpm	1.99	1.99
	800 cpm	800 cpm	800 cpm
	200 cpm	200	200
	80 cpm	80	80
	20 cpm	20	20

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Scaler Readout	800K cpm	79591 (0)	79591 (0)
	200K cpm	19928 (0)	19928 (0)
	80K cpm	7959 (0)	7959 (0)
	20K cpm	1993 (0)	1993 (0)
	8K cpm	796 (0)	796 (0)
	2K cpm	199 (0)	199 (0)
	800 cpm	80 (0)	80 (0)
	200 cpm	20 (0)	20 (0)
	80 cpm	8 (0)	8 (0)
	20 cpm	2 (0)	2 (0)

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521 ☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☐ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982 ☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N ☐ Beta S/N ☐ Other

☑ m 500 S/N 247891 ☐ Oscilloscope S/N ☑ Multimeter S/N 17500076

Calibrator Scot VanAllen Title Calibrator Date 13 JULY 23

QC'd By Title Final QC Date 15 JUL 23

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www.ludlums.com

Designer and Manufacturer
of
Scientific and Industrial
Instruments

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

Bench Test Data For Detector

Detector 44-10 Serial No. PR249955

Customer MJW TECHNICAL SERVICES ORDER NO. 20424964/525752

Counter 2241-2 Serial No. 222150 Counter Input Sensitivity 10 mV

Count Time 6 SECOND Distance Source to Detector SURFACE

Other

High Voltage	Background	Isotope AM 241 Size ≈0.79 μC;	Isotope Size	Isotope Size	Isotope Size
1000	468	12571			
1050	478	13150			
1100	429	13483			
1150	456	13577			
1200	510	13747			
1250	495	13361			
1300	547	13708			
→ 1350	504	13806			
1400	730	13594			
1450	2596	15856			

Signature Scot VanAllen Scot VanAllen Date 16 JUNE 22

Environmental Restoration Group, Inc.
8809 Washington NE, Suite #150
Albuquerque, NM 87113

office: (505) 298-4224
fax: (505) 797-1404
web: www.ERGOffice.com

EQUIPMENT PACKING SLIP

Company Name: MJW Corporation

Order Number: 5760

Contact Name:

P.O. or Reference Number: REF# - 24.1004.2

Contact Telephone: 716-631-8291

Date Ordered: 6/13/2024

Shipping Method: n/a

Date Shipped: 6/16/2024

Shipping Number: 1373-0585-2

Date of Delivery: 6/17/2024

Ship To Information:

MJW Corporation
15 Hazelwood Dr
Suite 112
Amherst, NY 14228

716-790-0119

Billing Address:

MJW Corporation
accountspayable@mjwcorp.com
15 Hazelwood Dr
Ste 112
Amherst, NY 14228

Equipment Enclosed:

Instrument	***Serial Number***	***Tested***
Ludlum 3000	25024311	☐
Ludlum 44-10	PR408226	☐
Juniper Geode	364389	☐
Juniper Mesa3	341411	☐

Special Instructions:

None

Note:
(a) By accepting and using ERG rental equipment, the Renter indemnifies and holds harmless ERG against any and all claims, actions, proceedings, costs, expenses, damages, and liabilities (including attorney's fees and costs) arising out of Renter's use of equipment.

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

Customer: ENVIRONMENTAL RESTORATION GROUP — ORDER NO. 20468670/555833

Mfg. Ludlum Measurements, Inc. Model 3000 Serial No. 25024311

Mfg. Ludlum Measurements, Inc. Model 44-10 Serial No. PR408226

Cal. Date 23-Apr-24 Cal Due Date 23-Apr-25 Cal. Interval 1 Year Meterface 44-10 Ra

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 74 °F RH 37 % Alt 703.3 mm Hg

☐ New Instrument Instrument Received ☐ Within Toler. +-10% ☑ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☐ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☐ Geotropism
☑ Audio ck. ☑ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 4.4 VDC
☑ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 900 V Input Sens. 10 mV Det. Oper. 900 V at 10 mV Threshold Dial Ratio = mV

☑ HV Readout (2 points) Ref./Inst. 500 / 495 V Ref./Inst. 1500 / 1507 V

COMMENTS:

```
        Deadtime: 8.1 µSec  Firmware: 5LC-N42.4904
Calibration Constant: 573 e+8  Overload checked but not set.
      Primary Units: cpm      Pulser calibration performed without deadtime.
    Secondary Units: R/hr     Pulser calibration SCALER READOUT reflects 6 second count.
                              Alarms disabled.
                              Calibrated using 5' cable.
```

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING	RANGE MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Digital	4 mR/hr	4.13 mR/hr	4.00 mR/hr				
Digital	1 mR/hr	1.15	1.09				
	800 µR/hr	866 µR/hr	837 µR/hr				
	200 µR/hr	203	194				

Range(s) Calibrated Electronically

Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING		REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Digital Readout	800K cpm	799 kcpm	799 kcpm	Scaler	800K cpm	79.9K	79.9K
	200K cpm	200	200		200K cpm	20.0K	20.0K
	80K cpm	79.9	79.9		80K cpm	7.99K	7.99K
	20K cpm	20.0	20.0		20K cpm	2.00K	2.00K
	8K cpm	7.99	7.99		8K cpm	800	800
	2K cpm	2.00	2.00		2K cpm	200	200
	800 cpm	801 cpm	801 cpm		800 cpm	80	80
	200 cpm	199	199		200 cpm	20	20

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521 ☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☐ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☑ Y982 ☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N ☐ Beta S/N ☑ Other Am241(~0.66µCi)

☑ m 500 S/N 251106 ☐ Oscilloscope S/N ☑ Multimeter S/N 15060230

Calibrator James McBeth — Title Calibrator — Date 23APR24

QC'd By — Title Final QC — Date 23APR24

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

Order #: 20468670/555833

Customer: ENVIRONMENTAL RESTORATION GROUP

Detector: 44-10 **Serial No.:** PR408226

Instrument: Model 3000 **Serial No.:** 25024311

BKG Time: 6

Distance: Surface

Selected HV: 900

Date: Tuesday, April 23, 2024

Notes: Performed using 5' cable.

Signature: James Mc[illegible]

Channel(s)

Name	Threshold
Channel 1	10 mV

Source(s)

Name	ID	Activity	Time	Type
Am241		0.66 µCi	6	γ

High Voltage	Background	Am241
	Reading	Reading
650	316	10,456
700	344	12,131
750	320	12,431
800	329	12,312
850	311	12,262
- 900	353	12,343
950	374	12,235
1,000	376	12,436
1,050	532	13,103
1,100	672	13,977
1,150	1,537	16,892

 Ludlum Device Parameters Model: Model 3000 Serial Number: 25024311 Date: 4/23/2024 11:22:00 AM

Dev

SN	25024311
Mdl	Model 3000
Aud Lvl	Single
Sleep	0
Setup Prtct	Normal
Rate Reset Btn	Off
Temp	64
LB	0
Conv R To Sv	0.0106
Fw	5LC-N42.4904
V Bat	5.842

RTC

Day	23
Mo	4
Hr	11
Mins	21
Sec	40
Yr	2024

Ext 1

Meas

Cur	20.9407

Cnt

Audio Mode	Off
Display Mode	Timer

Btn

Handle

Cnt Map 1	Take Log
Cnt Map 2	Do Nothing
Cnt Map 3	Do Nothing
Rate Map 1	Take Log
Rate Map 2	Do Nothing
Rate Map 3	Do Nothing

BklThr

Sensitivity	Low

High

Light Turn Off	0
Light Turn On	0

Low

Light Turn Off	0
Light Turn On	0

AuxCom

Crypto En	Off
Enable	On
Mode	LMI Direct
Write Prtct	Off

AutoMode

Interval	1

Pwr

Auto Off Tm	0
Mode	On At Boot

DetMem 1

Mdl	44-10
SN	PR408226
Aud Sigma	Off
Count Tm	60
HV	900
Op Mode	Rate/Max/Count
Over Cur	500

Ch 1

CPS Offset	0
DTC 1	8.1E-06
DTC 2	0
Eff	15
LO Cnt Tm	60
R Cal Const	5.73E+10
Thr	0.01

Response

Rate	Fast
Time	4

Unit 1

Count

Alrm 1	0
Alrm 2	0
Min Exp	000E0
Unit	counts

Rate

Alrm 1	0
Alrm 2	0
Max Val	999000
Min Exp	000E-2
Unit	cpm

Unit 2

Count

Alrm 1	0
Alrm 2	0
Min Exp	000E0
Unit	counts

Rate

Alrm 1	0
Alrm 2	0
Max Val	0.007
Min Exp	000E-8
Unit	R/h

LOG

MODE
NOTES
USER
ENABLE

AUTO

TM

NUM

MAX
REC

Attachment 3. MJWRCP-40 Performing a GPS Enhanced Gamma Radiation Survey, Rev. 4

THE MJW COMPANIES Radiological Consulting Professionals and Expert Technical Services		MJWRCP RCP-40 Rev. 4
Performing a GPS Enhanced Gamma Radiation Survey and Data Assessment		**FIELD PROCEDURE**
Effective Date: 10/29/21	Approved By: *M.J. Willett*	

1.0 PURPOSE/DISSCUSSION

The purpose of this procedure is to establish protocols and data collection requirements necessary to perform reproducible low-level radiation overland gamma surveys.

Overland gamma radiation surveys are often enhanced with the coupling of radiation and satellite geographical location measurements collected from global positioning and radiation instrumentation and software. The use of both instruments simultaneously allows rapidly recorded radiation readings to be precisely located across varied terrain and large areas. MJW uses the ERG 105G handheld GPS surveying system and accompanying software.

The 105G is a simple to use GPS mapping system for performing outdoor gamma radiological scans. It consists of an interface tablet containing all necessary software to acquire position correlated radiological scan data from a gamma detector and export the data for processing using a variety of applications, such as Microsoft Excel, or ESRI ArcGIS. The handheld logger comes installed with two applications necessary for collecting data and exporting to a removable disk drive. The ERG RadScout is used to collect gamma data and couple it to a GPS position. The RadSync software is also included on the handheld computer and is used to export all field data to a single removable disk. Using the ERG RadScene software, the data can be managed, analyzed, and merged from a single processing computer.

The 105G uses off-the-shelf Ludlum equipment for radiological detection. The system uses the Ludlum model 2221 meter. An optional setup uses a 2221 with Bluetooth radio incorporated to allow a completely wireless interface between the data logger, 2221, and sub-meter GPS receiver. If the survey is performed in a location where projection information is not available, then the user will be required to apply the spatial correction during data evaluation and download.

2.0 SCOPE

This procedure is applicable for general or discrete radiation surveys intended to measure direct radiation and/or contamination levels of areas expected to be at or near background levels. It is also applicable for sites where radiological contamination may be extensive.

Gamma or alpha/beta survey procedures, including grid layout, coverage and instrument use and data DQOs will be detailed in job specific work plans. Standard or typical survey methodology is described in MJW Corporation instrument and survey procedures.

3.0 RESPONSIBILITIES

3.1 All survey instruments used to determine direct radiation levels or contamination levels shall have been calibrated within twelve months prior to performing the survey.

3.2 Surveys shall be performed in accordance with all applicable standards as listed in Section 8.0 (references).

3.3 Persons performing the survey shall be responsible for proper instrument checks and operation, properly recorded measurements, and map per Section 4.0 of this procedure.

4.0 PROCEDURE

4.1 Equipment List

- Surveying and staking materials (subcontract to licensed surveyor)
- Bicron microRem LE (or equivalent)
- Ludlum Model 2241 survey meter (or equivalent) with Ludlum 44-10 2”x2” NaI detector (or equivalent)
- Area maps as appropriate (topographic, street, quadrangle, etc.)
- Mason’s line marked at designated intervals (for detailed area surveys)
- Ludlum 44-10 Lead Collimator (Optional)
- Ludlum 1000/2200 with 43-10 and 44-40 smear counters
- Miscellaneous marking and recording equipment
- 100-foot tape measure
- Protective clothing as appropriate
- Smears (1 box)

4.2 MEASUREMENT PROTOCOLS

4.2.1 Perform a battery check, source check and calibration data check prior to use of survey instrument per the requirements of Section 3.1.

4.2.2 At a minimum of three (3) separate locations known to be free of contamination, make several background measurements, recording data, time, survey instrument serial number, surveyor and general survey area location noting any significant landmarks. Record data on Form RCP 40-1.

4.2.3 In consultation with a licensed surveyor establish the primary reference point for the survey and any second reference points required to adequately describe the site and allow for creation and recreation of the survey grid. The reference point shall be designated as point 0, 0 or equivalent with magnetic north indicated clearly in reference to point 0,0. Compass points shall be used such as ON, OE, OS, OW, etc. depending upon the reference point location.

4.2.4 From the primary and any secondary reference points, establish area survey points using stakes, flags and/or marked string lines at the predetermined survey interval. All other grid locations will be designed in alphanumeric sequence from the reference point (i.e., 5 feet due east of reference point ON, OE would be designated as ON, 5E; 5 feet north and 5 feet east as 5N, 5E etc.). Use Form RCP 40-2 to show survey grid, detailing the primary reference point, any secondary points, landmarks and grid spacing. Use accurate area maps or any available CAD drawing to lay out grids.

NOTE: Grid pattern spacing should be no more than ten (10) meters apart for complete coverage for sites with a known or suspected radiological history. Grid spacing may be increased up to 100 meters for large sites where no radiological involvement is expected.

Minimum detectable activity will be dependent upon background levels and instrument efficiencies. Decreasing the grid spacing will give higher detection probability for low activity or diffuse sources.

For a uniformly distributed Co-60 source the predicted exposure rate at one meter above the surface is 5.79 E-04 Sv/yr per Bg/cm^2 (NUJREG/CR-1918). This translates to ~ 43 microR/hr per uCi/m^2.

4.2.5 Measure the gamma radiation level at the reference location at a distance of one meter (approximately waist height) and at ten centimeters from the ground surface.

CAUTION: Survey instruments must not come into contact with any potentially contaminated surfaces. Precautions must be taken such as bagging the instrument should such potential exist.

4.2.6 Record measurements from designated survey locations on Forms RCP 40-3 and 3A, including alphanumeric survey locations, gamma radiation readings at 1 meter and 10 cm and any remarks for the location. Complete the top of each form with the following data: job number, date, surveyor and relevant instrument data (model, serial number, etc.) as discussed in section 4.2.4.

4.2.7 Proceed at a slow pace (approximately 0.5 m per second) to the next survey point, continually checking the instrument readout for any strong fluctuations.

4.2.8 Once four grid points forming a square have been measured perform an intragrid survey of the square with the meter at a distance of 10cm from the surface. Begin in one corner of the grid and using a zig-zag or cross-crossing pattern at 1m (~ 3') intervals survey the grid on the diagonal at a slow pace ~ 0.5 m per second.

4.2.9 If during the intragrid survey a significant survey meter response is encountered, take readings from a distance of one centimeter to define the area of the increased activity. Use spray paint, flags, string or another method to mark the area(s) of elevated activity. Also mark the location of this/these intragrid area(s) on Form RCP 40-2. The point of the most elevated reading as well as the apparent boundaries of any area(s) of elevated activity should be thoroughly marked and described.

4.2.10 After all initial survey points have been recorded, return to any areas of elevated readings. Perform a detailed survey to define the areas and note the upper limits of the measurements using one of the following methods: (document all results on Forms RCP 40-4 and 4A).

- Using concentric circles, define the center and then the radius of contamination and record this on the survey form, or

- Using a small-spaced grid pattern of 1 meter or less, find the center and general outline of the area of contamination and record this information on the survey form, RCP 40-4 or 4A as appropriate.

NOTE: Per step 4.2.8 use spray paint, string or other suitable medium to define the physical limits of the contamination/radiation. Use standard precautions to avoid personal or equipment contamination during the survey.

4.2.11 Check the survey map for complete coverage. Notify the appropriate client personnel if immediate posting or cleanup actions may be required.

4.2.12 Remove all nonpermanent markers and stakes only after all data has been checked and verified. Grid markers should be maintained if further action is required or if additional surveys are to be performed by regulatory agencies, etc. Monitor all personnel and materials for potential radioactive contamination before they leave any areas of suspected or confirmed contamination.

4.3 INSTRUMENT CALIBATION

4.3.1 All instruments shall be calibrated annually and shall have a valid calibration sticker at the time of sue. Survey instruments used for overland gamma surveys shall be calibrated within six months of the actual survey date.

4.3.2 Instruments will be tagged "out of service" for:

- Failure to properly respond to check sources, or
- Instrument damage, or
- Suspect operation of the instrument

Any instrument tagged "out of service" shall be repaired or replaced and shall be calibrated before use.

4.3.3 All instruments will be operationally checked in the field at the beginning of each workday and each time the meter is turned on.

5.0 PRE-SURVEY PREPARATION

5.1 Instruments and Equipment

5.1.1 GPS instrument case –ERG Model 105G, serial cables, external antenna cable, USB cable.
5.1.2 Wheeled cart and/or backpack mounting equipment and measuring tape. (Carts are stored on shelves in storage garage)
5.1.3 GPS antenna and cable
5.1.4 Stakes, flagging, markers, field notebooks, etc.

5.2 Check List Items

5.2.1 Check to be sure GPS and radiation instruments, check source, log book, cables, carrier equipment, antenna, tremble software and batteries are available, charged and in good condition and calibrated (green light on battery charger indicates batteries are fully charged) . ***Note: Batteries take 24 hours to fully charge***.

5.2.2 Determine Survey sensitivity and geological coordinate system requirements (i.e.. WGS83, State Plane, NAD83, etc.)

5.2.3 Review terrain conditions from proposal, client contact or via Google Earth or maps to identify accessibility and survey method (cart vs walking/backpack mount)

5.2.4 Identify survey grid coverage and spacing.

5.2.5 Prepare grid marking or line-of sight aids (e.g. cones, paint, rope, etc.) to facilitate walkover coverage and maintain speed.

5.2.6 Prepare map of survey area.

5.3 Preparing the Instruments to Begin GPS Enhanced Gamma Survey

5.3.1 Setting up the Field Equipment

5.3.1.1 Power on the Rad Scout by pressing the power button once, located on the bottom right-hand corner of the front of the device. To unlock the device and reveal the homes screen, slide a finger upwards on the display. Open the Rad Scout program by tapping on its icon on the desktop.

5.3.1.2 The typical radiological instruments used with the system are the Ludlum Model 2221 Counter with a gamma detector (44-10).

5.3.1.3 Source check the instrument and record background and source check count rate data in the daily source check logbook located in the instrument case. Evaluate the source count rate to ensure instrument sensitivity is within the required range (dpm/cpm =+/- 20% of source calibration dpm count rate).

5.3.2 Connecting the Meter to Tablet

5.3.2.1 When using the wireless 2221 option, the meter incorporates a Bluetooth device that syncs with the RadScout. To connect to a specific meter, ensure the meter you wish to connect to is turned on and that the Bluetooth modem has a flashing blue light. In the RadScout software tap the Program Settings option from the File menu, and select the button next to the METER SOURCE drop down box as shown in Figure 1. Note that for this option to be available, the meter must be disconnected. Connect and disconnect the meter from the Settings menu in the main form. The window, as shown in Figure 2 will appear with all discovered Bluetooth devices. Click on the serial name that matches the Bluetooth device of the 2221 you want to connect to and click SELECT. If the pairing is successful, the device name will show up in the drop down box. Save the project settings and connect to the meter through the settings menu in the main form by clicking on , METER – OPEN. If the meter is opened successfully, the values will be displayed next to the trifoil symbol in the bottom left-hand corner of the screen. A red error icon indicates there is no connection.

5.3.2.2 Once the Bluetooth device is paired and selected in the drop down box, the device will be connected on every startup of the software.

5.3.3 Connecting to Goede GPS

5.3.3.1 The internal GPS is adequate for most surveying needs, but if sub-meter accuracy is desired, the external Geode sub-meter receiver may be used as the GPS source. To connect the Geode receiver,

press the power button on the receiver to turn the unit on. From the File menu, tap Program Settings and select Geode from menu labeled GPS SOURCE as shown in Figure 3. Note that this option is only available when the GPS is disconnected. The GPS may be connected and disconnected through the settings menu . If the Geode being used is different than the one in the drop down menu, the new Geode must be paired by clicking on the button to the right of the drop down box and selecting the proper device. The Geode serial number may be found on the bottom of the receiver as a six-digit number. Once selected, click on the Settings menu, and tap GPS, then CONNECT to connect the new device. The internal tablet GPS may also be used as the primary GPS source to reduce hardware. To select the internal GPS open the Program Settings window and select the Internal Mesa GPS in the drop down menu. Note that the GPS must be disconnected for this option to be available.

5.3.3.1.1.1 Note that once a successful connection is established, the software will reconnect the last device used upon starting the software.

5.3.4 Refer to ERG User Guide for further reference

6.0 PERFORMING A SURVEY

6.1 The Rad Scout software is used to view, collect, and analyze spatially correlated radiological data with superior accuracy and data quality. Using the position of the GPS receiver, or internal tablet GPS, collected radiological data are viewed in real-time. In addition, the program provides the ability to apply a legend to background and survey data to provide real-time mapping of the gamma levels.

6.2 *Defining a Coordinate System*

6.2.1 By default, the software will use the WGS84 longitude latitude geographical system for all mapping and log file collection. There are times, however, where it is necessary or practical to define a projected coordinate system. For instance, when adding a geotagged world image file, it is necessary to set the coordinate system to the same system as defined in the image. The coordinate system will also be beneficial when collecting point features, which will be discussed in more detail below.

6.2.2 To define a coordinate system, click on FILE, then COORDINATE SYSTEM. Select the desired System and Zone, then click Save to set the project coordinate system. Once set, the saved coordinate system will be applied every time the software is opened.

6.3 *Defining a Legend*

6.3.1 The legend can be used to define specific colors to ranges of count rate data. Although the 2221 records both ratemeter and one-second scalar data, only the ratemeter will be evaluated and displayed using the legend. To apply a legend, tap Legend in the Settings menu. To add a new legend break, tap the Add button. Enter the new threshold, desired point size, and the color, then tap Save. The threshold is defined as the count rate at which the data will be colored if it is equal to, or exceeds.

6.3.2 To edit an existing break, tap on the break you wish to edit, and tap the edit button , or simply double tap on the break to bring up the legend properties. Make the necessary changes to the threshold, point size, or color and tap the Save button to apply changes. Note that the default map point will be defined by the ≥ 0 cpm break. The color and size of the point may be modified, but the threshold must be zero, and the break may not be deleted. Up to 10 breaks may be added to the legend. Once the legend is defined, tap the Save button to apply changes.

6.3.3 The legend will be applied to both the background layers and the real time data. When adding background layers, the legend breaks will be ordered from smallest to largest values when being drawn on the map. This allows the larger, and typically more important values, to be more visible when viewing the data that are on top of each other spatially.

6.3.4 If multiple legends are being used, use the menu in the legend editor to save and recall legends.

6.4 *Creating a Survey File and Collecting Data*

6.4.1 Prior to collecting survey data, a file must be created that will store all the records. To create a file, tap on the Create File tool from the File menu. The filename will be automatically created using the date, time, and the system ID of the Rad Scout. The system ID is provided as an integer to distinguish files easily when multiple data loggers are used for a single survey. The system ID for each data logger is predefined and may not be modified. If desired, add additional information to the beginning of the filename string, however it is highly recommended that the numerical fields are not modified. If necessary, enter additional information in the following textboxes, such as the survey unit, the technician, and any additional comments. Tap the Create button to create the file. Once a survey file has been created, survey data may be collected. Tap the Collect tool to start collecting data. Logged data will appear on the map in real time as individual points and the tablet will produce an audible beep when a new data point has been logged. Volume can be adjusted using the P1 and P2 hardware buttons on the front of the tablet. The total number of records logged to the file is also shown in the status bar. To pause the data collection, press the Stop tool. When surveying is complete, close the file by tapping the Close tool in the File menu. Once a file is closed, it may not be reopened to append data, however all collected filles may be opened as background layers.

6.5 *Data Features*

6.5.1 The Data Feature function is useful for displaying points that are used for navigational or informational purposes. For instance, it might be necessary to navigate to previously defined sample locations as a shapefile. To open a feature file, select Data Feature from the file menu, then tap Open Feature File. A list of available shape files will appear. To add custom shapefiles to the menu, the file must be copied into the RadScout folder in the My Documents directory. Select a file, then tap Open. The points will be displayed on the map as shown in Figure 10. Unlike the background files, the data features allow user interaction through the map interface.

6.5.2 Click on the feature to bring up the sample window. From the menu,

select one of the three options as described

6.5.2.1 The Edit tool may be used to edit information about a previously added data feature point.

6.5.2.1.1 Thise option only available for points added manually.

6.5.2.2 The Select tool may be used to select a specific data feature. Once selected, the data feature can be navigated to by clicking FILE, DATA FEATURE, NAVIGATE TO.

6.5.2.3 The Visibility tool may be used to turn individual samples on and off. This feature is useful to determine when tasks at specific locations have been completed.

7.0 DOWNLOADING, ANALYZING AND EDITING THE SURVEY DATA

Following the collection of data, it is often necessary to transfer all field data to a central computer used for processing and reporting. This section discusses the process for transferring field data from multiple field tablets to a single removable disk.

7.1 Synchronizing Data

7.2 The Mesa tablet includes the ERG RadSync software which greatly simplifies the data exporting process and ensures no data are overwritten or deleted.

7.3 To export field data, place a removable disk in the USB slot on the bottom of the Mesa tablet and open the RadSync application. The application will display the gsf survey files and data feature shapefiles that will be transferred to the removable drive. The application will only display and attempt to transfer files that do not already exist on the removable drive. If the data feature shapefiles on the tablet are determined to be larger than the files on the disk (for instance, if features were added since the last transfer) then the shapefiles will be replaced with the newer file. All original files will always be maintained on the field tablet.

7.4 The application also provides an easy method of getting data onto the field computer to be used as background files or data files. To synchronize import data, place the desired files (.gsf, .jpg, .tif, or .shp) on the removable drive in the directory "<Drive>:\RadScout\". The software will copy these files to the field computer if they do not already exist.

7.4.1 Note that when this approach is used for synchronizing world image files, only the name will be used to determine if the file already exists

7.5 Editing and Reviewing the Data

7.5.1 Projects

7.5.1.1 The Radscene software utilizes projects which will keep files organized and retain project settings, such as coordinate systems.

7.5.2 Creating a New Project

7.5.2.1 To create a new project, click File, Project, Create. A New Project window will be displayed. Choose the project name and a directory and click the Create button. The software will create a folder in the directory matching the project folder along with all sub folders used to store data.

7.5.3 Opening and Modifying Existing Projects

7.5.3.1 To open or delete an existing project, click File, Project, Open/Modify to show the Open Project window. The drop-down box will contain all projects created on the computer. To open an existing project, select the desired project and click the Open button. To delete an existing project, select the project in the front down box and click the Delete button. Note that when a project is deleted the project is removed from the project list, but all folders and survey data are retained in the original file path. If a project has been deleted but it becomes necessary to reopen the project, open the Create New Project window and enter the old project name in the Project Name textbox. The software will ask if you would like to associate the file data to the project. Click yes to reopen the project

7.5.4 Defining a Coordinate System

7.5.4.1 To define a coordinate system, click the Setting tool and select the SYSTEM AND Zone. The coordinate system will be saved with the project and is primarily used for exporting data to a specific system.

7.6 Importing Data

7.6.1 Once a project is defined, field data may be imported. Insert the removable drive used to store field data from the RadExport software and click the Import Data tool to load the Import Data window as. If data is discovered on the drive, the computer names of all data loggers used to export data will be shown in the window. Click the Import button to copy all survey files and feature data from the USB drive to the project directory. The application will only copy files that do not already exist in the project directory. If the Data Features on the USB drive are determined to contain more data than the data feature files currently in the project folder, a message box will be displayed asking whether to replace the existing file or not.

7.6.1.1 Note that if you choose to replace the existing file, the file in the project directory will be overwritten.

7.7 Data Analysis

7.7.1 Once data has been imported, it will become available to be added to the map. Click the Add or Filter Add tool to add survey data to the map. Refer to the RadScene Interface section for information on viewing survey file details, tables, and defining legends.

7.7.2 Click the Analysis tool to bring a histogram and statistics of all data displayed in the map window as. Note that the Scalar data tab will only be available if a scaler enabled 2221 was used to collect data. Click and hold

on the blue cursor to drag in either direction. The corresponding cursor location value will be displayed in the blue text above the cursor.

7.8 Exporting Data

7.8.1 Click the Export Data tool to export all survey files currently loaded into the map. The Files to Export text box will display all files that are being exported. Click whether to use the project coordinate system or the WGS system (longitude/latitude). Also choose the time zone that the survey was performed in to correctly offset the time of each file record. The Use UTC time check box can also be used if it is preferable to keep data in UTC GPS time. Finally, choose the output file type as either a comma separated file (.csv) or ESRI shapefile (.shp) and select the directory. By default, the exported file will be named using a date string. When all parameters have been selected, click the Export button to export all survey files.

7.8.2 Unlike the survey files, which are collected in binary format, the data feature files are already created as shapefiles and therefore do not require exporting. After importing the survey data, the feature data files will exist as shapefiles in the [project directory]/[project name]/Features folder.

7.8.2.1 Note that if any manipulation is performed on the feature data shapefiles, it is recommended that the files be copied to a new directory. This will prevent the import process from overwriting data which is recognized as different than the USB data.

7.9 Data Tools

7.9.1 Merging and exporting gsfm files

7.9.1.1 Commonly, it is necessary to display the survey progress on a data logger to prevent resurveying an area that is already complete. This is particularly important when there are multiple surveyors for a single area. Review ERGModel 105G procedures for further information.

7.9.2 Repairing a Corrupt File

7.9.2.1 In very rare scenarios, a log file (.gsf) may become corrupt, preventing it from being able to be exported as a shapefile. This most commonly occurs if the data logger shuts down unexpectedly or freezes while a record is being written to the file. To repair a corrupted file, click the Tools – Repair GSF File. Select the file from the open file dialog. If errors are detected, the repair form will be displayed. Click the Repair button to repair the file. The tool will create a backup of the original file, which will have the suffix ‘backup’, and will be copied to the same folder location as the original

8.0 REFERENCES

8.1 National Council on Radiation Protection and Measurements, NCRP Report No. 50, “Environmental Radiation Measurements”, December 1976.

8.2 National Council on Radiation Protection and Measurements, NCRP Report No. 58, “A Handbook of Radioactivity Measurements Procedures”, 2nd Ed., 1985.

8.3 Kocher, D.C., 19;79, “Dose-Rate Conversion Factors for External Exposure to Photons and Electrons”, NUREG/CR-1918.

9.0 ATTACHMENTS

Attachment 1 – ERG Setup and Operation of the ERG Model 105G

Attachment 4. MJWRCP-66 Soil Sampling Protocols, Rev 0

THE MJW COMPANIES Radiological Consulting Professionals and Expert Technical Services		MJWRCP-66 Rev. 0
PROCEDURE FOR SOIL SAMPLING FOR RADIOACTIVE MATERIAL		**FIELD PROCEDURE**
Effective Date: 12/16/20	Approved By: *M.J. Willett*	

1.0 PURPOSE

This procedure describes the general and specific procedures, methods and considerations to be used and observed when collecting soil samples for field screening and/or laboratory analysis.

2.0 SCOPE

The procedures described in this document are to be used by qualified field personnel when collecting and handling soil samples in the field. If MJW field personnel determine if any of the procedural steps may be inappropriate, they will contact their field supervisor immediately to discuss and resolve the issue. Any and all such issues will be recorded in the field logbook.

3.0 SAFETY PRECAUTIONS

Proper safety precautions must be observed when collecting soil samples. Field personnel must refer to the RECON Project Health & Safety Plan Rev 1 for guidelines on safety precautions to be followed for this type of field work.

4.0 PROCEDURAL PRECAUTIONS

Special care must be taken not to contaminate collected samples. This includes but it not limited to storing samples in a secure location to preclude conditions which could alter the properties of the sample. Samples shall be custody sealed during long-term storage or shipment. Collected samples are in the custody of the sampler or sample custodian until the samples are relinquished to another party. If samples are transported by the sampler, they will remain under his/her custody or be secured until they are relinquished.

5.0 FIELD OPERATIONS

5.1 General

These sampling methods are used primarily to collect surface and shallow subsurface soil samples. Surface soils are generally classified as soils between the ground surface and 6 to 12 inches below ground surface (BGS). The most common interval is 0 to 6

inches BGS, however, the data quality objectives of the investigation may dictate another interval, i.e., 0-3 inches BGS, for risk assessment purposes. The shallow subsurface interval may be considered to extend from approximately 12 inches BGS to a site-specific depth at which sample collection using manual collection methods becomes impractical.

5.2 Soil Collection Using Spoons

Stainless steel spoons may be used for surface soil sampling to depths of approximately 6 inches BGS where conditions are generally soft and non-indurated and there is no problematic vegetative layer to penetrate. If the soil being sampled is cohesive and crumbles when removed from the ground surface, consider using a hand auger to collect the sample.

When compositing a sample, make sure each composite location consists of equal volumes, i.e., same number of equal spoonfuls. If a thick matted root zone is present at or near the surface, it should be removed before the sample is collected.

5.3 Soil Collection Using Hand Augers

Hand augers may be used to advance boreholes and collect soil samples in the surface and shallow subsurface intervals. Typically, 4-inch stainless steel auger buckets with cutting heads are used. The bucket is advanced by simultaneously pushing and turning using an attached handle. Auger buckets may be used with a handle alone or with a handle and extensions. The bucket is advanced to the appropriate depth and the contents are transferred to the homogenization container for processing.

The practical depth of investigation using a hand auger depends on the soil properties and depth of investigation. For example, sandy soil may flow out or collapse at depth. Conversely, tight clays and cemented sands may offer too much resistance to sampling and powered equipment may need to be used.

Because of the tendency for the auger bucket to scrap material from the sides of the auger hole while being extracted, the top several inches of soil in the auger bucket should be discarded prior to placing the bucket contents in the homogenization container for processing. The hand auger assembly must be decontaminated between each borehole that is advanced per Section 5.5.

5.4 Sample Collection, Identification and Documentation

A nominal 500-gram (1.1 lb) sample will be collected and placed into a double-lined plastic bag or sealable laboratory containers. When necessary, additional borings will be placed adjacent to the original location to obtain adequate sample volume for laboratory testing. When multiple borings and core samples are required to obtain adequate sample volume, a composite sample from similar materials and at approximately equal depths of the cores used, will be collected for analysis.

All samples will be labeled to include:

- Location ID
- Depth
- Date/time
- Sampler
- Sample number
- Radiation readings (Gross CPM)
- Analyses required

Sample bags or containers will be transported in totes, coolers, or similar to the radiological storage area pending completion of GEL laboratories Chain-of-Custody (COC) forms (Attachment 1), and shipment for analysis. COC forms will be completed as required and will reflect laboratory analysis for gamma spectroscopy using method 901.1 (HASL 300) and/or alpha spectroscopy for U and Th isotopic. All samples will be submitted via contract carrier.

Sample IDs will consist of an alpha-numeric code including the location, boring ID, sample matrix, sample type, sample depth, and an identifier for composite sample.

- Location: This will be site coordinate and map location
- Sample ID: A sample designation starting with SU1 or BRA (survey unit designation) followed by dash and a two-digit number separated by dash for sample ID, followed by depth designation (A =0-6, B=6-12, C=0-12, D=12-18, as appropriate)
- Sample Matrix: So (soil), Con (concrete) or other.
- If the sample is a composite sample, the sample ID will have the letter C at the end.

Example #1: SU1-2-1ASoC. A soil sample (So) collected at soil sampling location (2-1), from 0.0 to 6 inches bgs (A), composite (C).

Samples will be analyzed by a ELAP certified laboratory. Sample custody will be documented, and analysis requirements communicated using laboratory provided Chain of Custody Forms

5.5 Step for Sampling Equipment Decontamination

Decontamination efforts will follow a four-step approach for hand tools and equipment used to collect samples. The four-step approach for sampling equipment decontamination is as follows:

- A detergent and water wash to remove all visible particulate matter and residual oils and grease.

- Tap water rinse.
- Distilled and deionized water rinse (for samples requiring chemical analyses)
- Scan equipment between each use using on-site surface radiation equipment.

Attachment 1. GEL Laboratories Chain of Custody Form

Page: _____ of _____
Project #:
GEL Quote #: _____
COC Number (1): _____
PO Number:

GEL Chain of Custody and Analytical Request
See www.gel.com for GEL's Sample Acceptance SOP
GEL Work Order Number:

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: | Phone #:
Project/Site Name: | Fax #:
Address:
Collected by: | Send Results To:

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID * For composites - indicate start and stop date/time	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive	TSCA Regulated	Number of											<-- Preservative Type (6)
																			Comments Note: extra sample is required for sample specific QC

TAT Requested: Normal: _____ Rush: _____ Specify: _____ (Subject to Surcharge) | Fax Results: Yes / No | Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Sample Collection Time Zone
Eastern Pacific
Central Other _____
Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1			1		
2			2		
3			3		

Sample Shipping and Delivery Details
GEL PM:
Method of Shipment: | Date Shipped:
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.
4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=
5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B/7470A - 1).
6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfite. If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact?
YES *NO*
Cooler Temp:
_____ C

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

Attachment 5. GEL Chain of Custody Form

Page: _____ of _____
Project # _____
GEL Quote #: _____
COC Number (1): _____
PO Number:

GEL Laboratories LLC
gel.com
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

Chain of Custody and Analytical Request

GEL Work Order Number: ***GEL Project Manager:***

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: Phone #
Project/Site Name: Fax #
Address:
Collected By: Send Results To:

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID ** For composites - indicate start and stop date/time*	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive (If yes, please supply isotopic info.)	(7) Known or possible Hazards	Total number of containers											<-- Preservative Type (6) **Comments** Note: extra sample is required for sample specific QC

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1			1		
2			2		
3			3		

TAT Requested: Normal: _____ Rush: _____ Specify: _____ (Subject to Surcharge)

Fax Results: [ ] Yes [ ] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [ ] Level 4

Additional Remarks:

For Lab Receiving Use Only: *Custody Seal Intact?* [ ] *Yes* [ ] *No* ***Cooler Temp:*** _____ *°C*

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

***Sample Collection Time Zone*:** [X] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other:

1.) Chain of Custody Number = Client Determined

2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite

3.) Field Filtered: For liquid matrices, indicate with a - **Y** - for yes the sample was field filtered or - **N** - for sample was not field filtered.

4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, SS=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* - **3**, *6010B/7470A* - **1**).

6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

7.) **KNOWN OR POSSIBLE HAZARDS**

RCRA Metals
As = Arsenic **Hg**= Mercury
Ba = Barium **Se**= Selenium
Cd = Cadmium **Ag**= Silver
Cr = Chromium **MR**= Misc. RCRA metals
Pb = Lead

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

TSCA Regulated
PCB = Polychlorinated biphenyls

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

Please provide any additional details below regarding handling and/or disposal concerns. *(i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)*

Attachment 6. GEL Lab Report SDG674299

GEL Laboratories LLC
a member of The GEL Group INC

2040 Savage Road | Charleston, SC 29407
843.556.8171
gel.com

August 01, 2024

Alex Bartels
MJW Technical Services
15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Re: Inventum
Work Order: 674299

Dear Alex Bartels:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 05, 2024. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4422.

Sincerely,

A. Melendrez

Adrian Melendrez for
Jacob Crook
Project Manager

Purchase Order: Inventum
Enclosures

MJW Technical Services
Inventum
SDG: 674299

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Runlogs.....1431

Case Narrative

Case Narrative
for
MJW Technical Services
SDG: 674299

August 01, 2024

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample Receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on July 05, 2024 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

Laboratory ID	Client ID
674299001	S2.B1
674299002	S2.B2
674299003	S2.B3
674299004	S2.B4
674299005	S2.B5
674299006	S2.B6
674299007	S2.U1
674299008	S2.U2
674299009	S2.U3
674299010	S2.U4
674299011	S2.U2.D
674299012	S3.B1
674299013	S3.B2
674299014	S3.B3
674299015	S3.B4
674299016	S3.U1
674299017	S3.U2
674299018	S3.U3
674299019	S3.B4.D
674299020	S4.B1
674299021	S4.B2
674299022	S4.U1
674299023	S1.B1
674299024	S1.B2
674299025	S1.B3
674299026	S1.B4
674299027	S1.B5
674299028	S1.B6
674299029	S1.U1
674299030	S1.U2
674299031	S1.U3

674299032	S1.U4
674299033	S1.B1.D
674299034	F1
674299035	F2
674299036	Control 1
674299037	Control 2

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Radiochemistry.

A. Melendrez

Adrian Melendrez for
Jacob Crook
Project Manager

List of current GEL Certifications as of 01 August 2024

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-00651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	KY90129
Kentucky Wastewater	KY90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2023019
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122024-08
New Hampshire NELAP	205424
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2023-152
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235
Utah NELAP	SC000122024-41
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Chain of Custody and Supporting Documentation

674299

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Project # RITC 3875
GEL Quote #:
COC Number (1):
PO Number Inventum

GEL Laboratories LLC
gel.com
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

Chain of Custody and Analytical Request

GEL Work Order Number:
GEL Project Manager:

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone (843) 556-8171
Fax: (843) 766-1178

Client Name: MJW Corporation
Phone # (716) 631-8291
Project/Site Name: 3875 River Road
Fax #
Address: 15 Hazelwood Dr. Suite 112 Amherst, NY 14228
Collected By: A. Bartels
Send Results To: abartels@mjwcorp.com

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date/time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive (Please supply isotopic info.)	(7) Known or possible hazards	Total number of containers	Gamma Spec	Alpha Spec U	Alpha Spec Th								<-- Preservative Type (6) Comments Note: extra sample is required for sample specific QC
S2.B1	06-26-24	0903	N	N	SO	N		1	X										21-day IG
S2.B2	06-26-24	0906	N	N	SO	N		1	X										
S2.B3	06-26-24	0908	N	N	SO	N		1	X										
S2.B4	06-26-24	0911	N	N	SO	N		1	X										
S2.B5	06-26-24	0915	N	N	SO	N		1	X										
S2.B6	06-26-24	0917	N	N	SO	N		1	X	X	X								
S2.U1	06-26-24	0920	N	N	SO	N		1	X										
S2.U2	06-26-24	0925	N	N	SO	N		1	X										
S2.U3	06-26-24	0928	N	N	SO	N		1	X										
S2.U4	06-26-24	0930	N	N	SO	N		1	X	X	X								

TAT Requested: Normal: X Rush: ____ Specify: ____ (Subject to Surcharge)

Fax Results: [ ] Yes [ ] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [X] Level 4

Additional Remarks:

For Lab Receiving Use Only: Custody Seal Intact? [ ] Yes [ ] No Cooler Temp: 20 °C

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 [signature]	7/1/24	1600	1 [signature]	7/5/24	0900
2			2		
3			3		

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

Sample Collection Time Zone: [ ] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other: ____

1) Chain of Custody Number = Client Determined

2) QC Codes N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

3) Field Filtered For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered

4) Matrix Codes DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal

5) Sample Analysis Requested Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B 7470A - 1)

6) Preservative Type HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

7) Are there any known or possible hazards associated with these samples?

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

RCRA Metals
As = Arsenic Hg= Mercury
Ba = Barium Se= Selenium
Cd = Cadmium Ag= Silver
Cr = Chromium MR= Miscellaneous RCRA metals
Pb = Lead

TSCA Regulated
PCB = Polychlorinated biphenyls

Please provide any additional details below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)

Page 2 of 4
Project # RITC 3875
GEL Quote #:
COC Number (1)
PO Number: Inventum

GEL Laboratories LLC
gel.com
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

Chain of Custody and Analytical Request

GEL Work Order Number:
GEL Project Manager:

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: MJW Corporation
Phone # (716) 631-8291
Project/Site Name: 3875 River Road
Fax #
Address: 15 Hazelwood Dr. Suite 112 Amherst, NY 14228
Collected By: A. Bartels
Send Results To: abartels@mjwcorp.com

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date/time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Radioactive (Please supply isotopic info.)	(7) Known or possible hazards	Total number of containers	Gamma Spec	Alpha Spec U	Alpha Spec Th								<-- Preservative Type (6) Comments Note: extra sample is required for sample specific QC
S2.U2.D	06-26-24	0935	FD	N	SO	N		1	X	X	X								all-day IG
S3.B1	06-26-24	0950	N	N	SO	N		1	X	X	X								
S3.B2	06-26-24	0955	N	N	SO	N		1	X	X	X								
S3.B3	06-26-24	1000	N	N	SO	N		1	X										
S3.B4	06-26-24	1005	N	N	SO	N		1	X										
S3.U1	06-26-24	1010	N	N	SO	N		1	X	X	X								
S3.U2	06-26-24	1015	N	N	SO	N		1	X										
S3.U3	06-26-24	1030	N	N	SO	N		1	X										
S3.B4.D	06-26-24	1067	FD	N	SO	N		1	X	X	X								
S4.B1	06-26-24	1045	N	N	SO	N		1	X	X	X								

Should this sample be considered: Radioactive (Please supply isotopic info.); (7) Known or possible hazards

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 [signature]	7/2/24	1600	1 [signature]	7/5/24	900
2			2		
3			3		

TAT Requested: Normal: X Rush: ____ Specify: ____ (Subject to Surcharge)
Fax Results: [ ] Yes [ ] No
Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [X] Level 4
Additional Remarks:
For Lab Receiving Use Only: Custody Seal Intact? [ ] Yes [ ] No Cooler Temp: 22°C

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

Sample Collection Time Zone: [ ] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other: ____

1) Chain of Custody Number = Client Determined
2) QC Codes N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
3) Field Filtered For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.
4) Matrix Codes DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
5) Sample Analysis Requested Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B 7470A - 1)
6) Preservative Type HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

7) Are there any known or possible hazards associated with these samples?

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

RCRA Metals
As = Arsenic
Ba = Barium
Cd = Cadmium
Cr = Chromium
Pb = Lead
Hg= Mercury
Se= Selenium
Ag= Silver
MR= Miscellaneous RCRA metals

TSCA Regulated
PCB = Polychlorinated biphenyls

Please provide any additional details below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)

Page: 3 of 4
Project # RITC 3875
GEL Quote #
COC Number (1)
PO Number: Inventum

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Chain of Custody and Analytical Request

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Client Name: MJW Corporation Phone # (716) 631-8291
Project/Site Name 3875 River Road Fax #
Address: 15 Hazelwood Dr. Suite 112 Amherst, NY 14228
Collected By: A. Bartels Send Results To: abartels@mjwcorp.com

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date/time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive (Please supply isotopic info.)	(7) Known or possible hazards	Total number of containers	Gamma Spec	Alpha Spec U	Alpha Spec Th								<-- Preservative Type (6) Comments Note: extra sample is required for sample specific QC
S4.B2	06-26-24	1050	N	N	SO	N		1	X										21-day EG
S4.U1	06-26-24	1055	N	N	SO	N		1	X	X	X								
S1.B1	06-26-24	1115	N	N	SO	N		1	X										
S1.B2	06-26-24	1120	N	N	SO	N		1	X										
S1.B3	06-26-24	1125	N	N	SO	N		1	X										
S1.B4	06-26-24	1130	N	N	SO	N		1	X										
S1.B5	06-26-24	1135	N	N	SO	N		1	X	X	X								
S1.B6	06-26-24	1140	N	N	SO	N		1	X										
S1.U1	06-26-24	1145	N	N	SO	N		1	X										
S1.U2	06-26-24	1150	N	N	SO	N		1	X	X	X								

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 [signature]	7/2/24	1600	1 [signature]	7/5/24	1100
2			2		
3			3		

TAT Requested: Normal: X Rush: ____ Specify: _____ (Subject to Surcharge)

Fax Results: [ ] Yes [ ] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [X] Level 4

Additional Remarks:

For Lab Receiving Use Only: *Custody Seal Intact?* [ ] *Yes* [ ] *No* ***Cooler Temp:*** 22 °C

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

Sample Collection Time Zone: [ ] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other: _____

1) Chain of Custody Number = Client Determined

2) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite

3) Field Filtered: For liquid matrices, indicate with a - **Y** - for yes the sample was field filtered or - **N** - for sample was not field filtered.

4) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal

5) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B - 3, 6010B/7470A - 1*)

6) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

7) *Are there any known or possible hazards associated with these samples?*

RCRA Metals
As = Arsenic **Hg**= Mercury
Ba = Barium **Se**= Selenium
Cd = Cadmium **Ag**= Silver
Cr = Chromium **MR**= Miscellaneous RCRA metals
Pb = Lead

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

TSCA Regulated
PCB = Polychlorinated biphenyls

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

Please provide any additional details below regarding handling and/or disposal concerns. *(i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)*

Page 4 of 4
Project # RITC 3875
GEL Quote #
COC Number (1)
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S1.U3	06-26-24	1155	N	N	SO	N		1	X	X	X									21-day IG
S1.U4	06-26-24	1200	N	N	SO	N		1	X											
S1.B1.D	06-26-24	1205	FD	N	SO	N		1	X	X	X									
F1	06-26-24	1215	N	N	SO	N		1	X	X	X									
F2	06-26-24	1220	N	N	SO	N		1	X											
Control 1	06-26-24	1225	N	N	SO	N		1	X											
Control 2	06-26-24	1230	N	N	SO	N		1	X	X	X									

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 [signature]	7/2/24	1600	[signature]	7/5/24	0900
2			2		
3			3		

TAT Requested: Normal: X Rush: ____ Specify: ____ (Subject to Surcharge)
Fax Results [ ] Yes [ ] No
Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [X] Level 4
Additional Remarks:
For Lab Receiving Use Only: Custody Seal Intact? [ ] Yes [ ] No Cooler Temp: 23 °C

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

Sample Collection Time Zone: [ ] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other:

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7) *Are there any known or possible hazards associated with these samples?*

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FL = Flammable/Ignitable
CO = Corrosive
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Listed Waste
LW = Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
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(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

RCRA Metals
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Ba = Barium
Cd = Cadmium
Cr = Chromium
Pb = Lead
Hg = Mercury
Se = Selenium
Ag = Silver
MR = Miscellaneous RCRA metals

TSCA Regulated
PCB = Polychlorinated biphenyls

Please provide any additional details below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)

JC

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: MJWC	SDG/AR/COC/Work Order: 674299
Received By: CLM	Date Received: 7/5/24
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 7771809 71898 (22) 7771809 71913 (23) 7771809 71902 (23)

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#: If UN2910, Is the Radioactive Shipment Survey Compliant? Yes___ No___
B) Did the client designate the samples are to be received as radioactive?		✓	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM/mR/Hr **Classified as: Rad 1 Rad 2 Rad 3**
D) Did the client designate samples are hazardous?		✓	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		✓	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*			✓	Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: See above with tracking
4	Daily check performed and passed on IR temperature gun?	✓			**Temperature Device Serial #:** IR7-23 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?			✓	Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			✓	If Yes, are Encores or Soil Kits present for solids? Yes___ No___ NA___(If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes___ No___ NA___(If unknown, select No) Are liquid VOA vials free of headspace? Yes___ No___ NA___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			ID's and containers affected:
10	Date & time on COC match date & time on bottles?			✓	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	✓			Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided by use of GEL labels?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials AM Date 7/8/24 Page 1 of 1

GL-CHL-SR-001 Rev 7

Data Review Qualifier Definitions

Data Review Qualifier Definitions

Qualifier	Explanation
*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.
P	Organics-The concentrations between the primary and confirmation columns/detectors is >40% difference.

For HPLC, the difference is >70%.

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
MJW Technical Services
SDG #: 674299

Product: **Alphaspec U, Solid**
Analytical Method: DOE EML HASL-300, U-02-RC Modified
Analytical Procedure: GL-RAD-A-011 REV# 29
Analytical Batch: 2640430

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batches: 2636363 and 2636364

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
674299011	S2.U2.D
674299012	S3.B1
674299013	S3.B2
674299016	S3.U1
674299019	S3.B4.D
674299020	S4.B1
674299022	S4.U1
674299027	S1.B5
674299030	S1.U2
674299031	S1.U3
674299033	S1.B1.D
674299034	F1
674299037	Control 2
1205789020	Method Blank (MB)
1205789021	674299011(S2.U2.D) Sample Duplicate (DUP)
1205789022	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Alphaspec Th, Solid**
Analytical Method: DOE EML HASL-300, Th-01-RC Modified
Analytical Procedure: GL-RAD-A-038 REV# 19
Analytical Batch: 2640431

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25

Preparation Batches: 2636363 and 2636364

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
674299011	S2.U2.D
674299012	S3.B1
674299013	S3.B2
674299016	S3.U1
674299019	S3.B4.D
674299020	S4.B1
674299022	S4.U1
674299027	S1.B5
674299030	S1.U2
674299031	S1.U3
674299033	S1.B1.D
674299034	F1
674299037	Control 2
1205789023	Method Blank (MB)
1205789024	674299011(S2.U2.D) Sample Duplicate (DUP)
1205789025	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Alphaspec U, Solid**
Analytical Method: DOE EML HASL-300, U-02-RC Modified
Analytical Procedure: GL-RAD-A-011 REV# 29
Analytical Batch: 2641120

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2636363

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
674299006	S2.B6
674299010	S2.U4
1205790381	Method Blank (MB)
1205790382	674299006(S2.B6) Sample Duplicate (DUP)
1205790383	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Alphaspec Th, Solid**
Analytical Method: DOE EML HASL-300, Th-01-RC Modified
Analytical Procedure: GL-RAD-A-038 REV# 19
Analytical Batch: 2641153

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2636363

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
674299006	S2.B6
674299010	S2.U4
1205790430	Method Blank (MB)
1205790431	674299006(S2.B6) Sample Duplicate (DUP)
1205790432	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Dry Weight**
Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2636363

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
674299001	S2.B1
674299002	S2.B2
674299003	S2.B3
674299004	S2.B4
674299005	S2.B5
674299006	S2.B6
674299007	S2.U1
674299008	S2.U2

674299009	S2.U3
674299010	S2.U4
674299011	S2.U2.D
674299012	S3.B1
674299013	S3.B2
674299014	S3.B3
674299015	S3.B4
674299016	S3.U1
674299017	S3.U2
674299018	S3.U3
674299019	S3.B4.D
674299020	S4.B1

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Dry Weight**
Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2636364

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
674299021	S4.B2
674299022	S4.U1
674299023	S1.B1
674299024	S1.B2
674299025	S1.B3
674299026	S1.B4
674299027	S1.B5
674299028	S1.B6
674299029	S1.U1
674299030	S1.U2
674299031	S1.U3
674299032	S1.U4
674299033	S1.B1.D
674299034	F1
674299035	F2
674299036	Control 1
674299037	Control 2

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing

calibration, instrument controls and process controls where applicable.

Product: **Gammaspec, Gamma, Solid (Standard List)**
Analytical Method: DOE HASL 300, 4.5.2.3/Ga-01-R
Analytical Procedure: GL-RAD-A-013 REV# 29
Analytical Batch: 2636542

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2636363

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
674299001	S2.B1
674299002	S2.B2
674299003	S2.B3
674299004	S2.B4
674299005	S2.B5
674299006	S2.B6
674299007	S2.U1
674299008	S2.U2
674299009	S2.U3
674299010	S2.U4
674299011	S2.U2.D
674299012	S3.B1
674299013	S3.B2
674299014	S3.B3
674299015	S3.B4
674299016	S3.U1
674299017	S3.U2
674299018	S3.U3
674299019	S3.B4.D
674299020	S4.B1
1205781343	Method Blank (MB)
1205781344	674299001(S2.B1) Sample Duplicate (DUP)
1205781345	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
UI	Results are considered a false positive due to high peak-width.	Potassium-40	674299001	S2.B1
		Uranium-235	674299009	S2.U3
UI	Results are considered a false positive due to interference.	Europium-155	674299001	S2.B1
UI	Results are considered a false positive due to low abundance.	Actinium-228	674299003	S2.B3
		Actinium-228	674299004	S2.B4
		Barium-133	674299010	S2.U4
		Barium-140	674299009	S2.U3
		Bismuth-214	674299008	S2.U2
		Cerium-141	674299010	S2.U4
		Cesium-134	674299009	S2.U3
		Cesium-134	674299012	S3.B1
		Lead-212	674299015	S3.B4
		Niobium-95	674299009	S2.U3
		Promethium-144	674299006	S2.B6
		Radium-228	674299003	S2.B3
		Radium-228	674299004	S2.B4
UI	Results are considered a false positive due to no valid peak.	Cesium-137	674299015	S3.B4
		Lead-210	674299007	S2.U1
		Thorium-234	674299009	S2.U3
		Thorium-234	1205781344	S2.B1(674299001DUP)
		Uranium-235	1205781344	S2.B1(674299001DUP)
		Uranium-238	674299009	S2.U3
		Uranium-238	1205781344	S2.B1(674299001DUP)

Product: **Gammaspec, Gamma, Solid (Standard List)**
Analytical Method: DOE HASL 300, 4.5.2.3/Ga-01-R
Analytical Procedure: GL-RAD-A-013 REV# 29
Analytical Batch: 2636543

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2636364

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
674299021	S4.B2
674299022	S4.U1
674299023	S1.B1
674299024	S1.B2
674299025	S1.B3
674299026	S1.B4
674299027	S1.B5
674299028	S1.B6
674299029	S1.U1
674299030	S1.U2
674299031	S1.U3
674299032	S1.U4
674299033	S1.B1.D
674299034	F1
674299035	F2
674299036	Control 1
674299037	Control 2
1205781346	Method Blank (MB)
1205781347	674299021(S4.B2) Sample Duplicate (DUP)
1205781348	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
Samples 1205781348 (LCS) and 674299025 (S1.B3) were recounted due to a peak shift.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
UI	Results are considered a false positive due to high peak-width.	Bismuth-212	674299021	S4.B2
		Bismuth-212	674299026	S1.B4
		Bismuth-212	674299028	S1.B6
		Bismuth-212	674299033	S1.B1.D
		Cobalt-58	674299030	S1.U2
UI	Results are considered a false positive due to low abundance.	Actinium-228	674299027	S1.B5

Actinium-228	674299029	S1.U1
Actinium-228	674299031	S1.U3
Bismuth-214	674299036	Control 1
Lead-212	674299035	F2
Niobium-95	674299026	S1.B4
Radium-228	674299027	S1.B5
Radium-228	674299029	S1.U1
Radium-228	674299031	S1.U3

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Moisture LogBook

Batch: 2636363
Analyst: LC2
Date/Time: 08-JUL-2024
Procedure Code:___PREPD
Procedure Description: Dry Soil Prep GL-RAD-A-021
Lab Sop: GL-RAD-A-021

Sample St	Sample Id	Rpd(%)

Sample Id	Sample Type	Original Hsn	Balance	Run Time	Container Wt	Initial Wt	Final Wt (g)	Net Initial Wt (g)	Net Final Wt (g)	Moisture (%)
674299001	SAMPLE		SP-C234673837	20:10	12.79	596.49	516.07	583.7	503.28	13.777
674299002	SAMPLE		SP-C234673837	20:10	12.84	561.7	468.09	548.86	455.25	17.055
674299003	SAMPLE		SP-C234673837	20:10	12.79	570.44	461.03	557.65	448.24	19.619
674299004	SAMPLE		SP-C234673837	20:10	12.75	523.72	428.79	510.97	416.04	18.578
674299005	SAMPLE		SP-C234673837	20:10	12.83	538.81	449.56	525.98	436.73	16.968
674299006	SAMPLE		SP-C234673837	20:10	12.83	658.71	545.49	645.88	532.66	17.529
674299007	SAMPLE		SP-C234673837	20:10	12.83	430.18	331.12	417.35	318.29	23.735
674299008	SAMPLE		SP-C234673837	20:10	12.89	410.01	379.12	397.12	366.23	7.778
674299009	SAMPLE		SP-C234673837	20:10	12.82	497.07	405.33	484.25	392.51	18.944
674299010	SAMPLE		SP-C234673837	20:10	12.83	523.97	402.69	511.14	389.86	23.727
674299011	SAMPLE		SP-C234673837	20:10	12.91	443.03	374	430.12	361.09	16.049
674299012	SAMPLE		SP-C234673837	20:10	12.79	568.57	489.48	555.78	476.69	14.23
674299013	SAMPLE		SP-C234673837	20:10	12.88	544.51	503.99	531.63	491.11	7.621
674299014	SAMPLE		SP-C234673837	20:10	12.87	420	379.16	407.13	366.29	10.031
674299015	SAMPLE		SP-C234673837	20:10	12.9	410.93	361.7	398.03	348.8	12.368
674299016	SAMPLE		SP-C234673837	20:10	12.95	619.19	559.59	606.24	546.64	9.831
674299017	SAMPLE		SP-C234673837	20:10	12.84	566.17	502.54	553.33	489.7	11.499
674299018	SAMPLE		SP-C234673837	20:10	12.85	394.86	345.56	382.01	332.71	12.905
674299019	SAMPLE		SP-C234673837	20:10	12.93	417.1	368.78	404.17	355.85	11.955

Sample Id	Sample Type	Original Hsn	Balance	Run Time	Container Wt	Initial Wt	Final Wt (g)	Net Initial Wt (g)	Net Final Wt (g)	Moisture (%)
674299020	SAMPLE		SP-C234673837	20:10	12.9	474.77	419.4	461.87	406.5	11.988

Comments:

A) Result = (Net Initial - Net Final) /Net Initial * 100

Note: Aliquot is used for the determination of the effective MDL and PQL in LIMS

Evaporative Loss LogBook

GEL Laboratories LLC

Moisture LogBook

Batch: 2636364
Analyst: LC2
Date/Time: 08-JUL-2024
Procedure Code:___PREPD
Procedure Description: Dry Soil Prep GL-RAD-A-021
Lab Sop: GL-RAD-A-021

Sample St	Sample Id	Rpd(%)

Sample Id	Sample Type	Original Hsn	Balance	Run Time	Container Wt	Initial Wt	Final Wt (g)	Net Initial Wt (g)	Net Final Wt (g)	Moisture (%)
674299021	SAMPLE		SP-C234673837	20:04	12.92	547.98	516.6	535.06	503.68	5.864
674299022	SAMPLE		SP-C234673837	20:04	12.82	516.76	457.5	503.94	444.68	11.759
674299023	SAMPLE		SP-C234673837	20:04	12.85	529.1	427.77	516.25	414.92	19.628
674299024	SAMPLE		SP-C234673837	20:04	12.87	498.32	402.98	485.45	390.11	19.639
674299025	SAMPLE		SP-C234673837	20:04	12.86	592.36	512.42	579.5	499.56	13.794
674299026	SAMPLE		SP-C234673837	20:04	12.9	608.91	525.12	596.01	512.22	14.058
674299027	SAMPLE		SP-C234673837	20:04	12.87	542.97	485.18	530.1	472.31	10.901
674299028	SAMPLE		SP-C234673837	20:04	12.89	488.19	401.87	475.3	388.98	18.161
674299029	SAMPLE		SP-C234673837	20:04	12.87	604.31	517.58	591.44	504.71	14.664
674299030	SAMPLE		SP-C234673837	20:04	12.84	488.97	359.19	476.13	346.35	27.257
674299031	SAMPLE		SP-C234673837	20:04	12.92	669.56	588.99	656.64	576.07	12.27
674299032	SAMPLE		SP-C234673837	20:04	12.99	587.75	483.69	574.76	470.7	18.104
674299033	SAMPLE		SP-C234673837	20:04	12.91	573.53	467.02	560.62	454.11	18.998
674299034	SAMPLE		SP-C234673837	20:04	12.89	504.21	381.74	491.32	368.85	24.926
674299035	SAMPLE		SP-C234673837	20:04	13.01	440.08	322.24	427.07	309.23	27.592
674299036	SAMPLE		SP-C234673837	20:04	12.98	417.77	397.25	404.79	384.27	5.069
674299037	SAMPLE		SP-C234673837	20:04	12.95	445.07	350.47	432.12	337.52	21.892

Comments:

A) Result = (Net Initial - Net Final) /Net Initial * 100

Evaporative Loss LogBook

Note: Aliquot is used for the determination of the effective MDL and PQL in LIMS

GEL Laboratories LLC

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

MJWC001 MJW Technical Services

Client SDG: 674299 GEL Work Order: 674299

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a Tracer compound
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI Gamma Spectroscopy--Uncertain identification

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: **Name: Kate Gellatly**

Date: 02 AUG 2024 **Title: Analyst 1 PT**

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B1
Sample ID: 674299001
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 13.8%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.465	+/-0.298	0.303	+/-0.303		pCi/g			RXF2	07/30/24	1113	2636542	1
Americium-241	U	0.0858	+/-0.190	0.343	+/-0.194		pCi/g							
Antimony-124	U	0.0824	+/-0.102	0.272	+/-0.109		pCi/g							
Antimony-125	U	0.0294	+/-0.0961	0.191	+/-0.0971		pCi/g							
Barium-133	U	0.00685	+/-0.0562	0.0974	+/-0.0563		pCi/g							
Barium-140	U	0.293	+/-0.790	1.58	+/-0.801		pCi/g							
Beryllium-7	U	-0.124	+/-0.471	0.863	+/-0.474		pCi/g							
Bismuth-212	U	0.929	+/-0.883	1.04	+/-0.887		pCi/g							
Bismuth-214		3.06	+/-0.296	0.125	+/-0.390		pCi/g							
Cerium-139	U	0.0205	+/-0.0374	0.0696	+/-0.0388		pCi/g							
Cerium-141	U	0.134	+/-0.183	0.205	+/-0.193		pCi/g							
Cerium-144	U	0.287	+/-0.237	0.464	+/-0.271		pCi/g							
Cesium-134	U	0.0444	+/-0.0444	0.0898	+/-0.0489		pCi/g							
Cesium-136	U	-0.124	+/-0.356	0.574	+/-0.361		pCi/g							
Cesium-137	U	0.0428	+/-0.0339	0.0438	+/-0.0340	0.100	pCi/g							
Chromium-51	U	0.219	+/-0.626	1.25	+/-0.634		pCi/g							
Cobalt-56	U	-0.0203	+/-0.0509	0.0884	+/-0.0518		pCi/g							
Cobalt-57	U	-0.0111	+/-0.0284	0.0500	+/-0.0289		pCi/g							
Cobalt-58	U	-0.0518	+/-0.0547	0.0839	+/-0.0598		pCi/g							
Cobalt-60	U	-0.0184	+/-0.0465	0.0873	+/-0.0473		pCi/g							
Europium-152	U	-0.0560	+/-0.112	0.204	+/-0.115		pCi/g							
Europium-154	U	0.138	+/-0.124	0.299	+/-0.140		pCi/g							
Europium-155	UI	0.000	+/-0.194	0.179	+/-0.195		pCi/g							
Iridium-192	U	-0.0384	+/-0.0435	0.0765	+/-0.0469		pCi/g							
Iron-59	U	-0.0323	+/-0.110	0.212	+/-0.111		pCi/g							
Lead-210	U	-0.148	+/-4.74	9.14	+/-4.74		pCi/g							
Lead-212		0.511	+/-0.136	0.131	+/-0.144		pCi/g							
Lead-214		3.51	+/-0.330	0.183	+/-0.450		pCi/g							
Manganese-54	U	-0.0147	+/-0.0464	0.0812	+/-0.0469		pCi/g							
Mercury-203	U	0.00474	+/-0.0554	0.107	+/-0.0555		pCi/g							
Neodymium-147	U	0.284	+/-2.08	4.01	+/-2.09		pCi/g							
Neptunium-239	U	0.199	+/-0.283	0.543	+/-0.297		pCi/g							
Niobium-94	U	0.0203	+/-0.0339	0.0657	+/-0.0351		pCi/g							
Niobium-95	U	0.0396	+/-0.0516	0.103	+/-0.0547		pCi/g							
Potassium-40	UI	0.000	+/-1.07	0.909	+/-1.14		pCi/g							
Promethium-144	U	0.0566	+/-0.0580	0.0802	+/-0.0635		pCi/g							
Promethium-146	U	0.0275	+/-0.0453	0.0926	+/-0.0471		pCi/g							
Radium-226		3.51	+/-0.330	0.183	+/-0.450		pCi/g							

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B1
Sample ID: 674299001

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Radium-228		0.465	+/-0.298	0.303	+/-0.303		pCi/g							
Ruthenium-106	U	-0.0725	+/-0.373	0.682	+/-0.375		pCi/g							
Silver-110m	U	0.0164	+/-0.0469	0.102	+/-0.0475		pCi/g							
Sodium-22	U	0.0493	+/-0.0442	0.107	+/-0.0498		pCi/g							
Thallium-208		0.175	+/-0.0949	0.0771	+/-0.0960		pCi/g							
Thorium-234		3.26	+/-2.97	2.63	+/-3.07		pCi/g							
Tin-113	U	0.0527	+/-0.0813	0.101	+/-0.0814		pCi/g							
Uranium-235	U	0.286	+/-0.389	0.410	+/-0.390		pCi/g							
Uranium-238		3.26	+/-2.97	2.63	+/-3.07		pCi/g							
Yttrium-88	U	-0.0379	+/-0.0355	0.0561	+/-0.0395		pCi/g							
Zinc-65	U	0.00630	+/-0.119	0.208	+/-0.119		pCi/g							
Zirconium-95	U	-0.0334	+/-0.0981	0.173	+/-0.0993		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B2
Sample ID: 674299002
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 17.1%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.585	+/-0.292	0.409	+/-0.297		pCi/g			RXF2	07/30/24	1113	2636542	1
Americium-241	U	-0.161	+/-0.355	0.563	+/-0.363		pCi/g							
Antimony-124	U	0.0276	+/-0.167	0.357	+/-0.167		pCi/g							
Antimony-125	U	-0.00278	+/-0.211	0.269	+/-0.211		pCi/g							
Barium-133	U	-0.0176	+/-0.0721	0.114	+/-0.0725		pCi/g							
Barium-140	U	0.610	+/-0.957	1.81	+/-0.997		pCi/g							
Beryllium-7	U	0.122	+/-0.711	1.18	+/-0.713		pCi/g							
Bismuth-212	U	0.978	+/-0.705	1.58	+/-0.836		pCi/g							
Bismuth-214		3.85	+/-0.396	0.191	+/-0.518		pCi/g							
Cerium-139	U	-0.0248	+/-0.0472	0.0858	+/-0.0488		pCi/g							
Cerium-141	U	0.184	+/-0.241	0.290	+/-0.255		pCi/g							
Cerium-144	U	0.0881	+/-0.330	0.577	+/-0.332		pCi/g							
Cesium-134	U	0.0253	+/-0.0613	0.124	+/-0.0624		pCi/g							
Cesium-136	U	0.404	+/-0.401	0.892	+/-0.443		pCi/g							
Cesium-137	U	-0.0300	+/-0.0534	0.0961	+/-0.0551	0.100	pCi/g							
Chromium-51	U	-0.292	+/-0.889	1.59	+/-0.900		pCi/g							
Cobalt-56	U	-0.00601	+/-0.0602	0.116	+/-0.0603		pCi/g							
Cobalt-57	U	0.00615	+/-0.0428	0.0746	+/-0.0429		pCi/g							
Cobalt-58	U	-0.0544	+/-0.0680	0.116	+/-0.0724		pCi/g							
Cobalt-60	U	0.0306	+/-0.0590	0.125	+/-0.0607		pCi/g							
Europium-152	U	0.0225	+/-0.156	0.289	+/-0.156		pCi/g							
Europium-154	U	0.0487	+/-0.124	0.255	+/-0.126		pCi/g							
Europium-155	U	0.207	+/-0.163	0.309	+/-0.189		pCi/g							
Iridium-192	U	-0.0676	+/-0.0596	0.0975	+/-0.0673		pCi/g							
Iron-59	U	-0.0779	+/-0.162	0.284	+/-0.166		pCi/g							
Lead-210	U	-6.13	+/-10.1	17.4	+/-10.5		pCi/g							
Lead-212		0.643	+/-0.172	0.168	+/-0.184		pCi/g							
Lead-214		4.93	+/-0.420	0.217	+/-0.635		pCi/g							
Manganese-54	U	-0.0126	+/-0.0625	0.101	+/-0.0628		pCi/g							
Mercury-203	U	-0.0110	+/-0.0778	0.142	+/-0.0780		pCi/g							
Neodymium-147	U	0.389	+/-3.16	5.22	+/-3.17		pCi/g							
Neptunium-239	U	-0.0306	+/-0.421	0.724	+/-0.422		pCi/g							
Niobium-94	U	0.0374	+/-0.0538	0.110	+/-0.0564		pCi/g							
Niobium-95	U	0.0555	+/-0.0858	0.159	+/-0.0895		pCi/g							
Potassium-40		2.62	+/-1.36	1.30	+/-1.38		pCi/g							
Promethium-144	U	0.00302	+/-0.0423	0.0840	+/-0.0423		pCi/g							
Promethium-146	U	0.0415	+/-0.0677	0.131	+/-0.0704		pCi/g							
Radium-226		4.93	+/-0.420	0.217	+/-0.635		pCi/g							
Radium-228		0.585	+/-0.292	0.409	+/-0.297		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B2
Sample ID: 674299002

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.147	+/-0.417	0.855	+/-0.423		pCi/g							
Silver-110m	U	0.0270	+/-0.0869	0.171	+/-0.0878		pCi/g							
Sodium-22	U	0.0186	+/-0.0445	0.0921	+/-0.0453		pCi/g							
Thallium-208		0.163	+/-0.113	0.112	+/-0.114		pCi/g							
Thorium-234	U	3.36	+/-4.71	4.57	+/-4.78		pCi/g							
Tin-113	U	-0.0197	+/-0.0839	0.149	+/-0.0844		pCi/g							
Uranium-235	U	0.391	+/-0.512	0.578	+/-0.513		pCi/g							
Uranium-238	U	3.36	+/-4.71	4.57	+/-4.78		pCi/g							
Yttrium-88	U	-0.0405	+/-0.0626	0.108	+/-0.0653		pCi/g							
Zinc-65	U	0.0858	+/-0.129	0.252	+/-0.135		pCi/g							
Zirconium-95	U	0.0166	+/-0.127	0.225	+/-0.127		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B3
Sample ID: 674299003
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 19.6%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	UI	0.000	+/-0.412	0.657	+/-0.583		pCi/g			RXF2	07/30/24	1114	2636542	1
Americium-241	U	-0.115	+/-0.500	0.868	+/-0.503		pCi/g							
Antimony-124	U	-0.00387	+/-0.116	0.238	+/-0.116		pCi/g							
Antimony-125	U	0.0377	+/-0.141	0.264	+/-0.142		pCi/g							
Barium-133	U	-0.0174	+/-0.0604	0.0968	+/-0.0609		pCi/g							
Barium-140	U	-1.14	+/-1.04	1.65	+/-1.16		pCi/g							
Beryllium-7	U	-0.446	+/-0.511	0.847	+/-0.551		pCi/g							
Bismuth-212	U	1.12	+/-0.856	1.23	+/-0.863		pCi/g							
Bismuth-214		5.12	+/-0.389	0.164	+/-0.578		pCi/g							
Cerium-139	U	0.0232	+/-0.0487	0.0934	+/-0.0500		pCi/g							
Cerium-141	U	0.0163	+/-0.148	0.278	+/-0.149		pCi/g							
Cerium-144	U	0.156	+/-0.355	0.622	+/-0.363		pCi/g							
Cesium-134	U	0.00368	+/-0.0606	0.110	+/-0.0606		pCi/g							
Cesium-136	U	0.0646	+/-0.368	0.738	+/-0.369		pCi/g							
Cesium-137	U	-0.0521	+/-0.0483	0.0746	+/-0.0539	0.100	pCi/g							
Chromium-51	U	0.432	+/-0.988	1.70	+/-1.01		pCi/g							
Cobalt-56	U	-0.0423	+/-0.0583	0.103	+/-0.0615		pCi/g							
Cobalt-57	U	-0.0358	+/-0.0431	0.0696	+/-0.0462		pCi/g							
Cobalt-58	U	-0.0272	+/-0.0604	0.103	+/-0.0618		pCi/g							
Cobalt-60	U	-0.0106	+/-0.0528	0.100	+/-0.0530		pCi/g							
Europium-152	U	0.0493	+/-0.145	0.274	+/-0.147		pCi/g							
Europium-154	U	-0.0327	+/-0.180	0.295	+/-0.181		pCi/g							
Europium-155	U	-0.0155	+/-0.191	0.327	+/-0.191		pCi/g							
Iridium-192	U	-0.0620	+/-0.0604	0.102	+/-0.0669		pCi/g							
Iron-59	U	-0.0708	+/-0.147	0.267	+/-0.151		pCi/g							
Lead-210	U	5.89	+/-24.1	43.6	+/-24.3		pCi/g							
Lead-212		0.851	+/-0.179	0.163	+/-0.197		pCi/g							
Lead-214		6.32	+/-0.408	0.174	+/-0.710		pCi/g							
Manganese-54	U	-0.0156	+/-0.0500	0.0945	+/-0.0505		pCi/g							
Mercury-203	U	-0.0374	+/-0.0746	0.133	+/-0.0766		pCi/g							
Neodymium-147	U	-1.46	+/-2.41	4.11	+/-2.50		pCi/g							
Neptunium-239	U	0.108	+/-0.425	0.744	+/-0.428		pCi/g							
Niobium-94	U	0.0428	+/-0.0506	0.0997	+/-0.0542		pCi/g							
Niobium-95	U	-0.00772	+/-0.0823	0.130	+/-0.0824		pCi/g							
Potassium-40		4.74	+/-1.36	1.20	+/-1.49		pCi/g							
Promethium-144	U	-0.0286	+/-0.0549	0.0925	+/-0.0565		pCi/g							
Promethium-146	U	0.0755	+/-0.0605	0.113	+/-0.0698		pCi/g							
Radium-226		6.32	+/-0.408	0.174	+/-0.710		pCi/g							
Radium-228	UI	0.000	+/-0.412	0.657	+/-0.583		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B3
Sample ID: 674299003

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.286	+/-0.434	0.725	+/-0.453		pCi/g							
Silver-110m	U	-0.0246	+/-0.0722	0.135	+/-0.0731		pCi/g							
Sodium-22	U	-0.00939	+/-0.0645	0.107	+/-0.0647		pCi/g							
Thallium-208		0.195	+/-0.0870	0.103	+/-0.0885		pCi/g							
Thorium-234	U	2.55	+/-3.84	6.99	+/-4.05		pCi/g							
Tin-113	U	0.0269	+/-0.0745	0.141	+/-0.0755		pCi/g							
Uranium-235	U	0.209	+/-0.322	0.618	+/-0.336		pCi/g							
Uranium-238	U	2.55	+/-3.84	6.99	+/-4.05		pCi/g							
Yttrium-88	U	-0.0250	+/-0.0623	0.113	+/-0.0634		pCi/g							
Zinc-65	U	0.0786	+/-0.120	0.235	+/-0.125		pCi/g							
Zirconium-95	U	-0.00631	+/-0.109	0.199	+/-0.109		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B4
Sample ID: 674299004
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 18.6%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	UI	0.000	+/-0.338	0.666	+/-0.504		pCi/g			RXF2	07/30/24	1114	2636542	1
Americium-241	U	0.357	+/-0.491	0.794	+/-0.518		pCi/g							
Antimony-124	U	0.0934	+/-0.112	0.304	+/-0.120		pCi/g							
Antimony-125	U	0.00238	+/-0.145	0.266	+/-0.145		pCi/g							
Barium-133	U	-0.0307	+/-0.0788	0.120	+/-0.0800		pCi/g							
Barium-140	U	-0.264	+/-1.27	2.27	+/-1.28		pCi/g							
Beryllium-7	U	0.0578	+/-0.635	1.18	+/-0.635		pCi/g							
Bismuth-212	U	0.733	+/-0.844	1.70	+/-0.910		pCi/g							
Bismuth-214		3.24	+/-0.314	0.191	+/-0.468		pCi/g							
Cerium-139	U	0.00874	+/-0.0535	0.0984	+/-0.0537		pCi/g							
Cerium-141	U	0.193	+/-0.169	0.325	+/-0.191		pCi/g							
Cerium-144	U	0.223	+/-0.360	0.678	+/-0.374		pCi/g							
Cesium-134	U	0.0701	+/-0.0682	0.138	+/-0.0755		pCi/g							
Cesium-136	U	-0.0553	+/-0.362	0.703	+/-0.363		pCi/g							
Cesium-137	U	-0.0186	+/-0.0671	0.102	+/-0.0677	0.100	pCi/g							
Chromium-51	U	-0.257	+/-0.886	1.58	+/-0.894		pCi/g							
Cobalt-56	U	0.00449	+/-0.0634	0.120	+/-0.0635		pCi/g							
Cobalt-57	U	0.00690	+/-0.0453	0.0836	+/-0.0454		pCi/g							
Cobalt-58	U	-0.000551	+/-0.0710	0.131	+/-0.0710		pCi/g							
Cobalt-60	U	0.0257	+/-0.0564	0.120	+/-0.0576		pCi/g							
Europium-152	U	-0.0828	+/-0.157	0.262	+/-0.162		pCi/g							
Europium-154	U	0.000120	+/-0.172	0.337	+/-0.172		pCi/g							
Europium-155	U	-0.00333	+/-0.211	0.359	+/-0.211		pCi/g							
Iridium-192	U	-0.000417	+/-0.0669	0.122	+/-0.0669		pCi/g							
Iron-59	U	0.279	+/-0.253	0.327	+/-0.284		pCi/g							
Lead-210	U	-7.93	+/-12.9	21.4	+/-13.4		pCi/g							
Lead-212		0.905	+/-0.191	0.156	+/-0.204		pCi/g							
Lead-214		3.42	+/-0.341	0.230	+/-0.443		pCi/g							
Manganese-54	U	-0.0306	+/-0.0511	0.0855	+/-0.0530		pCi/g							
Mercury-203	U	-0.0460	+/-0.0873	0.152	+/-0.0898		pCi/g							
Neodymium-147	U	-0.747	+/-2.68	4.80	+/-2.71		pCi/g							
Neptunium-239	U	0.0125	+/-0.530	0.859	+/-0.530		pCi/g							
Niobium-94	U	0.0289	+/-0.0544	0.106	+/-0.0560		pCi/g							
Niobium-95	U	0.0885	+/-0.0874	0.177	+/-0.0964		pCi/g							
Potassium-40		7.27	+/-1.47	0.977	+/-1.59		pCi/g							
Promethium-144	U	-0.00353	+/-0.0632	0.114	+/-0.0633		pCi/g							
Promethium-146	U	0.0663	+/-0.0702	0.140	+/-0.0767		pCi/g							
Radium-226		3.42	+/-0.341	0.230	+/-0.443		pCi/g							
Radium-228	UI	0.000	+/-0.338	0.666	+/-0.504		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B4
Sample ID: 674299004

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.265	+/-0.463	0.854	+/-0.479		pCi/g							
Silver-110m	U	-0.0198	+/-0.107	0.164	+/-0.107		pCi/g							
Sodium-22	U	-0.00119	+/-0.0610	0.119	+/-0.0610		pCi/g							
Thallium-208		0.240	+/-0.116	0.0964	+/-0.118		pCi/g							
Thorium-234	U	3.71	+/-5.55	6.19	+/-5.61		pCi/g							
Tin-113	U	-0.0239	+/-0.0767	0.136	+/-0.0774		pCi/g							
Uranium-235	U	0.338	+/-0.362	0.686	+/-0.393		pCi/g							
Uranium-238	U	3.71	+/-5.55	6.19	+/-5.61		pCi/g							
Yttrium-88	U	-0.0209	+/-0.0562	0.107	+/-0.0570		pCi/g							
Zinc-65	U	0.101	+/-0.130	0.260	+/-0.138		pCi/g							
Zirconium-95	U	-0.0416	+/-0.131	0.230	+/-0.132		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B5
Sample ID: 674299005
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 17%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.22	+/-0.488	0.394	+/-0.503		pCi/g			RXF2	07/30/24	1114	2636542	1
Americium-241	U	0.163	+/-0.218	0.425	+/-0.231		pCi/g							
Antimony-124	U	-0.0808	+/-0.143	0.255	+/-0.147		pCi/g							
Antimony-125	U	-0.0259	+/-0.133	0.240	+/-0.134		pCi/g							
Barium-133	U	-0.0336	+/-0.0728	0.114	+/-0.0744		pCi/g							
Barium-140	U	0.0215	+/-0.990	1.82	+/-0.990		pCi/g							
Beryllium-7	U	0.227	+/-0.616	1.17	+/-0.625		pCi/g							
Bismuth-212	U	0.540	+/-0.753	1.41	+/-0.794		pCi/g							
Bismuth-214		3.39	+/-0.344	0.208	+/-0.478		pCi/g							
Cerium-139	U	0.00698	+/-0.0480	0.0844	+/-0.0481		pCi/g							
Cerium-141	U	0.152	+/-0.211	0.231	+/-0.222		pCi/g							
Cerium-144	U	0.193	+/-0.278	0.516	+/-0.291		pCi/g							
Cesium-134	U	0.0371	+/-0.0576	0.118	+/-0.0600		pCi/g							
Cesium-136	U	-0.227	+/-0.363	0.623	+/-0.378		pCi/g							
Cesium-137	U	0.0386	+/-0.0502	0.0922	+/-0.0503	0.100	pCi/g							
Chromium-51	U	0.514	+/-0.816	1.59	+/-0.850		pCi/g							
Cobalt-56	U	-0.00713	+/-0.0568	0.109	+/-0.0569		pCi/g							
Cobalt-57	U	-0.0192	+/-0.0358	0.0615	+/-0.0368		pCi/g							
Cobalt-58	U	-0.0270	+/-0.0658	0.120	+/-0.0670		pCi/g							
Cobalt-60	U	0.0133	+/-0.0552	0.110	+/-0.0555		pCi/g							
Europium-152	U	0.143	+/-0.139	0.270	+/-0.154		pCi/g							
Europium-154	U	0.191	+/-0.174	0.363	+/-0.195		pCi/g							
Europium-155	U	0.0425	+/-0.135	0.248	+/-0.136		pCi/g							
Iridium-192	U	0.0198	+/-0.0581	0.102	+/-0.0588		pCi/g							
Iron-59	U	0.0132	+/-0.163	0.312	+/-0.163		pCi/g							
Lead-210	U	-2.83	+/-6.03	11.1	+/-6.17		pCi/g							
Lead-212		1.08	+/-0.150	0.132	+/-0.177		pCi/g							
Lead-214		3.79	+/-0.373	0.200	+/-0.488		pCi/g							
Manganese-54	U	0.0439	+/-0.0980	0.107	+/-0.0981		pCi/g							
Mercury-203	U	-0.00385	+/-0.0751	0.125	+/-0.0751		pCi/g							
Neodymium-147	U	-2.15	+/-2.50	4.07	+/-2.69		pCi/g							
Neptunium-239	U	-0.0467	+/-0.322	0.573	+/-0.323		pCi/g							
Niobium-94	U	0.0823	+/-0.0562	0.0890	+/-0.0678		pCi/g							
Niobium-95	U	0.0504	+/-0.0778	0.145	+/-0.0812		pCi/g							
Potassium-40		11.0	+/-1.70	0.929	+/-1.97		pCi/g							
Promethium-144	U	-0.0439	+/-0.0649	0.0902	+/-0.0680		pCi/g							
Promethium-146	U	-0.0120	+/-0.0603	0.108	+/-0.0605		pCi/g							
Radium-226		3.79	+/-0.373	0.200	+/-0.488		pCi/g							
Radium-228		1.22	+/-0.488	0.394	+/-0.503		pCi/g							

GEL LABORATORIES LLC

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B5
Sample ID: 674299005

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.123	+/-0.450	0.847	+/-0.454		pCi/g							
Silver-110m	U	-0.0326	+/-0.0700	0.126	+/-0.0716		pCi/g							
Sodium-22	U	0.0645	+/-0.0615	0.128	+/-0.0682		pCi/g							
Thallium-208		0.319	+/-0.109	0.0779	+/-0.113		pCi/g							
Thorium-234	U	2.39	+/-3.38	3.22	+/-3.43		pCi/g							
Tin-113	U	-0.0441	+/-0.0745	0.130	+/-0.0772		pCi/g							
Uranium-235	U	0.323	+/-0.449	0.432	+/-0.450		pCi/g							
Uranium-238	U	2.39	+/-3.38	3.22	+/-3.43		pCi/g							
Yttrium-88	U	0.0257	+/-0.0528	0.125	+/-0.0541		pCi/g							
Zinc-65	U	-0.0400	+/-0.126	0.194	+/-0.127		pCi/g							
Zirconium-95	U	-0.0636	+/-0.126	0.195	+/-0.129		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B6
Sample ID: 674299006
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 17.5%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232	U	-0.102	+/-0.151	0.496	+/-0.151	1.00	pCi/g			AG2	07/19/24	1008	2641153	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.0966	+/-0.222	0.352	+/-0.222	1.00	pCi/g			RM3	07/19/24	0821	2641120	2
Uranium-238	U	0.220	+/-0.252	0.314	+/-0.253	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.234	+/-0.197	0.349	+/-0.225		pCi/g			RXF2	07/30/24	1115	2636542	3
Americium-241	U	0.0865	+/-0.0839	0.187	+/-0.0930		pCi/g							
Antimony-124	U	0.0288	+/-0.0707	0.177	+/-0.0720		pCi/g							
Antimony-125	U	-0.0354	+/-0.0606	0.113	+/-0.0627		pCi/g							
Barium-133	U	-0.0142	+/-0.0300	0.0508	+/-0.0307		pCi/g							
Barium-140	U	-0.103	+/-0.493	0.963	+/-0.495		pCi/g							
Beryllium-7	U	0.147	+/-0.294	0.627	+/-0.301		pCi/g							
Bismuth-212	U	0.348	+/-0.438	0.683	+/-0.440		pCi/g							
Bismuth-214		0.319	+/-0.121	0.0896	+/-0.124		pCi/g							
Cerium-139	U	0.00610	+/-0.0203	0.0400	+/-0.0206		pCi/g							
Cerium-141	U	-0.0203	+/-0.0627	0.115	+/-0.0634		pCi/g							
Cerium-144	U	-0.0199	+/-0.140	0.245	+/-0.141		pCi/g							
Cesium-134	U	0.0393	+/-0.0312	0.0717	+/-0.0360		pCi/g							
Cesium-136	U	0.174	+/-0.209	0.476	+/-0.224		pCi/g							
Cesium-137	U	0.0376	+/-0.0344	0.0474	+/-0.0346	0.100	pCi/g							
Chromium-51	U	-0.140	+/-0.416	0.814	+/-0.421		pCi/g							
Cobalt-56	U	-0.0149	+/-0.0463	0.0733	+/-0.0468		pCi/g							
Cobalt-57	U	-0.00303	+/-0.0168	0.0319	+/-0.0168		pCi/g							
Cobalt-58	U	-0.0277	+/-0.0355	0.0590	+/-0.0377		pCi/g							
Cobalt-60	U	-0.00873	+/-0.0254	0.0500	+/-0.0257		pCi/g							
Europium-152	U	-0.00194	+/-0.0664	0.134	+/-0.0664		pCi/g							
Europium-154	U	0.00398	+/-0.0651	0.144	+/-0.0651		pCi/g							
Europium-155	U	9.61E-05	+/-0.0659	0.129	+/-0.0659		pCi/g							
Iridium-192	U	-0.0304	+/-0.0300	0.0462	+/-0.0331		pCi/g							
Iron-59	U	0.00162	+/-0.0844	0.176	+/-0.0844		pCi/g							
Lead-210	U	-0.386	+/-2.02	4.02	+/-2.02		pCi/g							
Lead-212		0.316	+/-0.0852	0.0701	+/-0.0898		pCi/g							
Lead-214		0.326	+/-0.140	0.0959	+/-0.142		pCi/g							
Manganese-54	U	-0.0258	+/-0.0321	0.0530	+/-0.0342		pCi/g							
Mercury-203	U	0.0329	+/-0.0378	0.0769	+/-0.0407		pCi/g							
Neodymium-147	U	0.777	+/-1.37	2.93	+/-1.41		pCi/g							
Neptunium-239	U	0.0250	+/-0.164	0.324	+/-0.165		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B6
Sample ID: 674299006

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	-0.0142	+/-0.0255	0.0389	+/-0.0263		pCi/g							
Niobium-95	U	-0.0256	+/-0.0375	0.0644	+/-0.0394		pCi/g							
Potassium-40		9.61	+/-1.25	0.518	+/-1.52		pCi/g							
Promethium-144	UI	0.000	+/-0.0589	0.0515	+/-0.0726		pCi/g							
Promethium-146	U	0.0213	+/-0.0335	0.0713	+/-0.0350		pCi/g							
Radium-226		0.326	+/-0.140	0.0959	+/-0.142		pCi/g							
Radium-228	U	0.234	+/-0.197	0.349	+/-0.225		pCi/g							
Ruthenium-106	U	0.131	+/-0.210	0.466	+/-0.219		pCi/g							
Silver-110m	U	0.000891	+/-0.0263	0.0527	+/-0.0263		pCi/g							
Sodium-22	U	0.00142	+/-0.0232	0.0514	+/-0.0232		pCi/g							
Thallium-208		0.0866	+/-0.0573	0.0439	+/-0.0578		pCi/g							
Thorium-234	U	0.0965	+/-0.817	1.67	+/-0.818		pCi/g							
Tin-113	U	-0.0253	+/-0.0372	0.0686	+/-0.0389		pCi/g							
Uranium-235	U	0.00983	+/-0.131	0.251	+/-0.131		pCi/g							
Uranium-238	U	0.0965	+/-0.817	1.67	+/-0.818		pCi/g							
Yttrium-88	U	-0.000280	+/-0.0176	0.0458	+/-0.0176		pCi/g							
Zinc-65	U	-0.0258	+/-0.0596	0.0976	+/-0.0607		pCi/g							
Zirconium-95	U	-0.0298	+/-0.0578	0.104	+/-0.0594		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2641153	87.7	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2641120	103	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.B6
Sample ID: 674299006

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
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Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U1
Sample ID: 674299007
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 23.7%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.403	+/-0.226	0.444	+/-0.294		pCi/g			RXF2	07/30/24	1116	2636542	1
Americium-241	U	0.0183	+/-0.0956	0.177	+/-0.0960		pCi/g							
Antimony-124	U	-0.0470	+/-0.104	0.190	+/-0.107		pCi/g							
Antimony-125	U	-0.0541	+/-0.0900	0.156	+/-0.0933		pCi/g							
Barium-133	U	0.0372	+/-0.0428	0.0826	+/-0.0460		pCi/g							
Barium-140	U	0.367	+/-0.624	1.32	+/-0.646		pCi/g							
Beryllium-7	U	0.0994	+/-0.364	0.725	+/-0.367		pCi/g							
Bismuth-212	U	0.492	+/-0.377	0.741	+/-0.380		pCi/g							
Bismuth-214		0.843	+/-0.153	0.137	+/-0.170		pCi/g							
Cerium-139	U	0.0225	+/-0.0318	0.0593	+/-0.0338		pCi/g							
Cerium-141	U	-0.0368	+/-0.0797	0.133	+/-0.0815		pCi/g							
Cerium-144	U	0.00669	+/-0.177	0.313	+/-0.177		pCi/g							
Cesium-134	U	0.0429	+/-0.0343	0.0819	+/-0.0396		pCi/g							
Cesium-136	U	-0.0537	+/-0.217	0.431	+/-0.219		pCi/g							
Cesium-137	U	0.0300	+/-0.0498	0.0666	+/-0.0499	0.100	pCi/g							
Chromium-51	U	-0.0228	+/-0.554	1.05	+/-0.554		pCi/g							
Cobalt-56	U	-0.0219	+/-0.0399	0.0734	+/-0.0411		pCi/g							
Cobalt-57	U	0.0114	+/-0.0211	0.0399	+/-0.0217		pCi/g							
Cobalt-58	U	0.0114	+/-0.0255	0.0587	+/-0.0261		pCi/g							
Cobalt-60	U	0.00284	+/-0.0355	0.0752	+/-0.0355		pCi/g							
Europium-152	U	-0.0530	+/-0.0783	0.137	+/-0.0820		pCi/g							
Europium-154	U	0.0799	+/-0.116	0.265	+/-0.122		pCi/g							
Europium-155	U	-0.0364	+/-0.0859	0.146	+/-0.0875		pCi/g							
Iridium-192	U	-0.0225	+/-0.0341	0.0601	+/-0.0357		pCi/g							
Iron-59	U	-0.0152	+/-0.0863	0.175	+/-0.0866		pCi/g							
Lead-210	UI	0.000	+/-3.94	2.94	+/-3.95		pCi/g							
Lead-212		0.317	+/-0.0983	0.0917	+/-0.102		pCi/g							
Lead-214		0.875	+/-0.193	0.123	+/-0.206		pCi/g							
Manganese-54	U	-0.0209	+/-0.0318	0.0571	+/-0.0332		pCi/g							
Mercury-203	U	-0.0161	+/-0.0465	0.0852	+/-0.0471		pCi/g							
Neodymium-147	U	0.611	+/-1.42	2.99	+/-1.44		pCi/g							
Neptunium-239	U	0.226	+/-0.147	0.382	+/-0.181		pCi/g							
Niobium-94	U	0.00672	+/-0.0276	0.0555	+/-0.0278		pCi/g							
Niobium-95	U	0.00368	+/-0.0574	0.107	+/-0.0575		pCi/g							
Potassium-40		1.61	+/-0.708	0.600	+/-0.726		pCi/g							
Promethium-144	U	0.00362	+/-0.0332	0.0638	+/-0.0332		pCi/g							
Promethium-146	U	0.00318	+/-0.0361	0.0643	+/-0.0362		pCi/g							
Radium-226		0.875	+/-0.193	0.123	+/-0.206		pCi/g							
Radium-228	U	0.403	+/-0.226	0.444	+/-0.294		pCi/g							

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Certificate of Analysis

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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U1
Sample ID: 674299007

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.126	+/-0.259	0.550	+/-0.265		pCi/g							
Silver-110m	U	0.0401	+/-0.0463	0.108	+/-0.0499		pCi/g							
Sodium-22	U	0.0296	+/-0.0416	0.0951	+/-0.0438		pCi/g							
Thallium-208		0.0779	+/-0.0538	0.0441	+/-0.0542		pCi/g							
Thorium-234	U	1.19	+/-1.48	1.58	+/-1.50		pCi/g							
Tin-113	U	0.00338	+/-0.0383	0.0754	+/-0.0383		pCi/g							
Uranium-235	U	0.0984	+/-0.184	0.340	+/-0.189		pCi/g							
Uranium-238	U	1.19	+/-1.48	1.58	+/-1.50		pCi/g							
Yttrium-88	U	0.0150	+/-0.0431	0.102	+/-0.0436		pCi/g							
Zinc-65	U	0.0366	+/-0.0871	0.174	+/-0.0887		pCi/g							
Zirconium-95	U	0.00581	+/-0.0537	0.105	+/-0.0537		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U2
Sample ID: 674299008
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 7.78%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.246	+/-0.241	0.476	+/-0.267		pCi/g			RXF2	07/30/24	1116	2636542	1
Americium-241	U	-0.0198	+/-0.0419	0.0695	+/-0.0429		pCi/g							
Antimony-124	U	0.0322	+/-0.0630	0.234	+/-0.0647		pCi/g							
Antimony-125	U	0.0167	+/-0.0673	0.141	+/-0.0677		pCi/g							
Barium-133	U	0.0145	+/-0.0264	0.0554	+/-0.0272		pCi/g							
Barium-140	U	-0.119	+/-0.663	1.26	+/-0.666		pCi/g							
Beryllium-7	U	-0.289	+/-0.379	0.630	+/-0.402		pCi/g							
Bismuth-212		1.07	+/-0.640	0.562	+/-0.653		pCi/g							
Bismuth-214	UI	0.000	+/-0.131	0.264	+/-0.194		pCi/g							
Cerium-139	U	-0.00578	+/-0.0208	0.0364	+/-0.0210		pCi/g							
Cerium-141	U	-0.0446	+/-0.0540	0.0877	+/-0.0580		pCi/g							
Cerium-144	U	0.00630	+/-0.122	0.225	+/-0.122		pCi/g							
Cesium-134	U	0.0425	+/-0.0423	0.102	+/-0.0468		pCi/g							
Cesium-136	U	-0.191	+/-0.297	0.510	+/-0.310		pCi/g							
Cesium-137	U	-0.0119	+/-0.0271	0.0483	+/-0.0277	0.100	pCi/g							
Chromium-51	U	-0.283	+/-0.476	0.742	+/-0.494		pCi/g							
Cobalt-56	U	-0.0374	+/-0.0355	0.0501	+/-0.0396		pCi/g							
Cobalt-57	U	0.00405	+/-0.0147	0.0281	+/-0.0148		pCi/g							
Cobalt-58	U	-0.0195	+/-0.0439	0.0831	+/-0.0448		pCi/g							
Cobalt-60	U	-0.0161	+/-0.0360	0.0660	+/-0.0367		pCi/g							
Europium-152	U	-0.0268	+/-0.0708	0.116	+/-0.0719		pCi/g							
Europium-154	U	0.0416	+/-0.111	0.267	+/-0.112		pCi/g							
Europium-155	U	-0.0500	+/-0.0513	0.0811	+/-0.0564		pCi/g							
Iridium-192	U	0.0612	+/-0.0455	0.0657	+/-0.0535		pCi/g							
Iron-59	U	0.0625	+/-0.0897	0.242	+/-0.0943		pCi/g							
Lead-210		0.629	+/-0.476	0.439	+/-0.480		pCi/g							
Lead-212		0.246	+/-0.0818	0.0748	+/-0.0882		pCi/g							
Lead-214		0.320	+/-0.110	0.102	+/-0.113		pCi/g							
Manganese-54	U	-0.00956	+/-0.0341	0.0675	+/-0.0344		pCi/g							
Mercury-203	U	0.0597	+/-0.0604	0.0744	+/-0.0607		pCi/g							
Neodymium-147	U	1.06	+/-1.76	3.79	+/-1.82		pCi/g							
Neptunium-239	U	0.0240	+/-0.120	0.234	+/-0.121		pCi/g							
Niobium-94	U	-0.00787	+/-0.0317	0.0580	+/-0.0319		pCi/g							
Niobium-95	U	-0.00406	+/-0.0517	0.104	+/-0.0518		pCi/g							
Potassium-40		2.04	+/-1.02	0.896	+/-1.04		pCi/g							
Promethium-144	U	-0.0198	+/-0.0407	0.0688	+/-0.0417		pCi/g							
Promethium-146	U	-0.0240	+/-0.0408	0.0707	+/-0.0423		pCi/g							
Radium-226		0.320	+/-0.110	0.102	+/-0.113		pCi/g							
Radium-228	U	0.246	+/-0.241	0.476	+/-0.267		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U2
Sample ID: 674299008

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.00209	+/-0.325	0.629	+/-0.325		pCi/g							
Silver-110m	U	-0.0193	+/-0.0586	0.112	+/-0.0593		pCi/g							
Sodium-22	U	0.0148	+/-0.0395	0.0951	+/-0.0400		pCi/g							
Thallium-208		0.0674	+/-0.0488	0.0337	+/-0.0493		pCi/g							
Thorium-234	U	0.704	+/-0.544	1.05	+/-0.650		pCi/g							
Tin-113	U	-0.0139	+/-0.0366	0.0678	+/-0.0372		pCi/g							
Uranium-235	U	0.119	+/-0.112	0.233	+/-0.125		pCi/g							
Uranium-238	U	0.704	+/-0.544	1.05	+/-0.650		pCi/g							
Yttrium-88	U	0.0281	+/-0.0670	0.166	+/-0.0682		pCi/g							
Zinc-65	U	-0.0907	+/-0.111	0.177	+/-0.118		pCi/g							
Zirconium-95	U	0.0899	+/-0.0827	0.207	+/-0.0928		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U3
Sample ID: 674299009
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 18.9%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.16	+/-0.340	0.334	+/-0.367		pCi/g			RXF2	07/30/24	1117	2636542	1
Americium-241	U	-0.312	+/-0.623	0.976	+/-0.639		pCi/g							
Antimony-124	U	0.0772	+/-0.139	0.285	+/-0.143		pCi/g							
Antimony-125	U	-0.0274	+/-0.159	0.284	+/-0.159		pCi/g							
Barium-133	U	-0.0195	+/-0.0788	0.124	+/-0.0793		pCi/g							
Barium-140	UI	0.000	+/-1.79	1.96	+/-2.02		pCi/g							
Beryllium-7	U	-0.303	+/-0.658	1.15	+/-0.673		pCi/g							
Bismuth-212		1.26	+/-1.29	1.18	+/-1.30		pCi/g							
Bismuth-214		8.86	+/-0.411	0.196	+/-0.982		pCi/g							
Cerium-139	U	-0.0682	+/-0.0701	0.117	+/-0.0782		pCi/g							
Cerium-141	U	0.165	+/-0.224	0.358	+/-0.236		pCi/g							
Cerium-144	U	-0.0765	+/-0.440	0.762	+/-0.441		pCi/g							
Cesium-134	UI	0.000	+/-0.0855	0.121	+/-0.118		pCi/g							
Cesium-136	U	-0.262	+/-0.383	0.670	+/-0.402		pCi/g							
Cesium-137	U	-0.00928	+/-0.0583	0.0900	+/-0.0584	0.100	pCi/g							
Chromium-51	U	-0.629	+/-1.03	1.81	+/-1.07		pCi/g							
Cobalt-56	U	-0.0605	+/-0.0756	0.105	+/-0.0807		pCi/g							
Cobalt-57	U	-0.0169	+/-0.0551	0.0954	+/-0.0557		pCi/g							
Cobalt-58	U	-0.0213	+/-0.0767	0.115	+/-0.0774		pCi/g							
Cobalt-60	U	-0.0164	+/-0.0565	0.101	+/-0.0570		pCi/g							
Europium-152	U	-0.101	+/-0.278	0.310	+/-0.282		pCi/g							
Europium-154	U	0.0854	+/-0.146	0.263	+/-0.151		pCi/g							
Europium-155	U	-0.0763	+/-0.213	0.370	+/-0.216		pCi/g							
Iridium-192	U	-0.00533	+/-0.0708	0.129	+/-0.0708		pCi/g							
Iron-59	U	0.130	+/-0.136	0.281	+/-0.149		pCi/g							
Lead-210	U	-5.01	+/-27.2	48.4	+/-27.3		pCi/g							
Lead-212		1.55	+/-0.228	0.186	+/-0.290		pCi/g							
Lead-214		11.0	+/-0.525	0.225	+/-1.15		pCi/g							
Manganese-54	U	0.0298	+/-0.0824	0.108	+/-0.0825		pCi/g							
Mercury-203	U	-0.0660	+/-0.109	0.179	+/-0.113		pCi/g							
Neodymium-147	U	-2.89	+/-3.41	4.95	+/-3.66		pCi/g							
Neptunium-239	U	0.284	+/-0.540	0.966	+/-0.556		pCi/g							
Niobium-94	U	0.0733	+/-0.0972	0.0939	+/-0.103		pCi/g							
Niobium-95	UI	0.000	+/-0.0958	0.180	+/-0.145		pCi/g							
Potassium-40		4.03	+/-1.16	0.961	+/-1.23		pCi/g							
Promethium-144	U	0.0313	+/-0.0522	0.0879	+/-0.0542		pCi/g							
Promethium-146	U	0.0914	+/-0.0932	0.127	+/-0.102		pCi/g							
Radium-226		11.0	+/-0.525	0.225	+/-1.15		pCi/g							
Radium-228		1.16	+/-0.340	0.334	+/-0.367		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U3
Sample ID: 674299009

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.332	+/-0.594	0.859	+/-0.614		pCi/g							
Silver-110m	U	0.0289	+/-0.0929	0.148	+/-0.0939		pCi/g							
Sodium-22	U	0.0469	+/-0.0736	0.0796	+/-0.0737		pCi/g							
Thallium-208		0.318	+/-0.111	0.0990	+/-0.116		pCi/g							
Thorium-234	UI	0.000	+/-7.18	7.22	+/-7.59		pCi/g							
Tin-113	U	-0.0463	+/-0.0815	0.143	+/-0.0843		pCi/g							
Uranium-235	UI	0.000	+/-0.700	0.738	+/-0.706		pCi/g							
Uranium-238	UI	0.000	+/-7.18	7.22	+/-7.59		pCi/g							
Yttrium-88	U	0.0486	+/-0.0596	0.125	+/-0.0636		pCi/g							
Zinc-65	U	-0.0343	+/-0.114	0.179	+/-0.115		pCi/g							
Zirconium-95	U	-0.0205	+/-0.129	0.227	+/-0.130		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U4
Sample ID: 674299010
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 23.7%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		1.16	+/-0.776	0.691	+/-0.799	1.00	pCi/g			AG2	07/19/24	1043	2641153	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.0985	+/-0.226	0.359	+/-0.227	1.00	pCi/g			RM3	07/19/24	0821	2641120	2
Uranium-238		5.39	+/-1.05	0.368	+/-1.27	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.29	+/-0.519	0.490	+/-0.533		pCi/g			RXF2	07/30/24	1117	2636542	3
Americium-241	U	0.0953	+/-0.300	0.549	+/-0.303		pCi/g							
Antimony-124	U	0.0208	+/-0.203	0.411	+/-0.203		pCi/g							
Antimony-125	U	0.145	+/-0.180	0.348	+/-0.192		pCi/g							
Barium-133	UI	0.000	+/-0.124	0.147	+/-0.144		pCi/g							
Barium-140	U	-0.192	+/-1.30	2.33	+/-1.31		pCi/g							
Beryllium-7	U	0.0710	+/-0.736	1.35	+/-0.737		pCi/g							
Bismuth-212		3.30	+/-1.28	1.51	+/-1.32		pCi/g							
Bismuth-214		8.35	+/-0.528	0.178	+/-0.912		pCi/g							
Cerium-139	U	0.00275	+/-0.0582	0.103	+/-0.0582		pCi/g							
Cerium-141	UI	0.000	+/-0.275	0.301	+/-0.330		pCi/g							
Cerium-144	U	-0.236	+/-0.356	0.614	+/-0.372		pCi/g							
Cesium-134	U	-0.000525	+/-0.0796	0.149	+/-0.0796		pCi/g							
Cesium-136	U	0.293	+/-0.544	1.08	+/-0.561		pCi/g							
Cesium-137	U	-0.0195	+/-0.0787	0.119	+/-0.0792	0.100	pCi/g							
Chromium-51	U	0.203	+/-1.08	2.03	+/-1.08		pCi/g							
Cobalt-56	U	0.0142	+/-0.0779	0.139	+/-0.0782		pCi/g							
Cobalt-57	U	-0.0125	+/-0.0428	0.0763	+/-0.0432		pCi/g							
Cobalt-58	U	0.0871	+/-0.0955	0.156	+/-0.104		pCi/g							
Cobalt-60	U	-0.0172	+/-0.0736	0.139	+/-0.0740		pCi/g							
Europium-152	U	-0.0733	+/-0.190	0.326	+/-0.193		pCi/g							
Europium-154	U	-0.131	+/-0.245	0.392	+/-0.253		pCi/g							
Europium-155	U	-0.0666	+/-0.169	0.303	+/-0.171		pCi/g							
Iridium-192	U	-0.00224	+/-0.0718	0.134	+/-0.0718		pCi/g							
Iron-59	U	-0.0137	+/-0.222	0.406	+/-0.222		pCi/g							
Lead-210	U	5.49	+/-11.5	19.5	+/-11.8		pCi/g							
Lead-212		1.28	+/-0.232	0.197	+/-0.260		pCi/g							
Lead-214		10.2	+/-0.570	0.257	+/-0.990		pCi/g							
Manganese-54	U	-0.00981	+/-0.0745	0.121	+/-0.0747		pCi/g							
Mercury-203	U	-0.0501	+/-0.0936	0.151	+/-0.0964		pCi/g							
Neodymium-147	U	-2.22	+/-3.27	5.47	+/-3.42		pCi/g							
Neptunium-239	U	-0.219	+/-0.433	0.764	+/-0.444		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U4
Sample ID: 674299010

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.00923	+/-0.0612	0.117	+/-0.0614		pCi/g							
Niobium-95	U	0.158	+/-0.119	0.225	+/-0.140		pCi/g							
Potassium-40		1.86	+/-1.94	1.71	+/-1.95		pCi/g							
Promethium-144	U	-0.0241	+/-0.0547	0.100	+/-0.0558		pCi/g							
Promethium-146	U	0.0647	+/-0.0846	0.163	+/-0.0897		pCi/g							
Radium-226		10.2	+/-0.570	0.257	+/-0.990		pCi/g							
Radium-228		1.29	+/-0.519	0.490	+/-0.533		pCi/g							
Ruthenium-106	U	0.353	+/-0.564	1.09	+/-0.587		pCi/g							
Silver-110m	U	0.0511	+/-0.109	0.212	+/-0.111		pCi/g							
Sodium-22	U	-0.0507	+/-0.0868	0.137	+/-0.0899		pCi/g							
Thallium-208		0.490	+/-0.153	0.120	+/-0.159		pCi/g							
Thorium-234		8.11	+/-5.51	4.43	+/-5.86		pCi/g							
Tin-113	U	-0.0615	+/-0.0932	0.162	+/-0.0974		pCi/g							
Uranium-235		0.848	+/-0.586	0.566	+/-0.591		pCi/g							
Uranium-238		8.11	+/-5.51	4.43	+/-5.86		pCi/g							
Yttrium-88	U	-0.0377	+/-0.0780	0.147	+/-0.0798		pCi/g							
Zinc-65	U	0.0894	+/-0.143	0.272	+/-0.149		pCi/g							
Zirconium-95	U	-0.0218	+/-0.163	0.303	+/-0.163		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2641153	63.1	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2641120	88.8	(15%-125%)

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U4
Sample ID: 674299010

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U2.D
Sample ID: 674299011
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 16%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		0.460	+/-0.397	0.449	+/-0.402	1.00	pCi/g			CM4	07/18/24	1028	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.0801	+/-0.184	0.292	+/-0.184	1.00	pCi/g			CM4	07/18/24	0840	2640430	2
Uranium-238	U	0.160	+/-0.189	0.205	+/-0.190	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.335	+/-0.222	0.254	+/-0.226		pCi/g			RXF2	07/30/24	1118	2636542	3
Americium-241	U	-0.0619	+/-0.0739	0.116	+/-0.0792		pCi/g							
Antimony-124	U	0.00144	+/-0.0972	0.215	+/-0.0972		pCi/g							
Antimony-125	U	-0.0541	+/-0.0642	0.107	+/-0.0689		pCi/g							
Barium-133	U	-0.0136	+/-0.0360	0.0581	+/-0.0365		pCi/g							
Barium-140	U	-0.0703	+/-0.606	1.14	+/-0.607		pCi/g							
Beryllium-7	U	0.179	+/-0.324	0.674	+/-0.335		pCi/g							
Bismuth-212	U	0.389	+/-0.807	0.847	+/-0.808		pCi/g							
Bismuth-214		0.458	+/-0.129	0.108	+/-0.134		pCi/g							
Cerium-139	U	0.0182	+/-0.0376	0.0425	+/-0.0378		pCi/g							
Cerium-141	U	-0.00980	+/-0.0721	0.127	+/-0.0722		pCi/g							
Cerium-144	U	-0.0371	+/-0.155	0.272	+/-0.156		pCi/g							
Cesium-134	U	0.0336	+/-0.0358	0.0809	+/-0.0390		pCi/g							
Cesium-136	U	-0.0361	+/-0.190	0.380	+/-0.190		pCi/g							
Cesium-137	U	0.00802	+/-0.0295	0.0590	+/-0.0297	0.100	pCi/g							
Chromium-51	U	0.0338	+/-0.501	0.967	+/-0.501		pCi/g							
Cobalt-56	U	0.00814	+/-0.0380	0.0796	+/-0.0382		pCi/g							
Cobalt-57	U	-0.00203	+/-0.0196	0.0351	+/-0.0196		pCi/g							
Cobalt-58	U	-0.0258	+/-0.0364	0.0643	+/-0.0383		pCi/g							
Cobalt-60	U	0.0270	+/-0.0307	0.0770	+/-0.0332		pCi/g							
Europium-152	U	-0.00999	+/-0.0737	0.140	+/-0.0738		pCi/g							
Europium-154	U	0.0231	+/-0.103	0.216	+/-0.103		pCi/g							
Europium-155	U	0.0282	+/-0.0770	0.145	+/-0.0781		pCi/g							
Iridium-192	U	0.00798	+/-0.0314	0.0627	+/-0.0316		pCi/g							
Iron-59	U	-0.0492	+/-0.0917	0.164	+/-0.0946		pCi/g							
Lead-210	U	0.382	+/-1.29	2.51	+/-1.30		pCi/g							
Lead-212		0.390	+/-0.0951	0.0877	+/-0.103		pCi/g							
Lead-214		0.510	+/-0.170	0.108	+/-0.177		pCi/g							
Manganese-54	U	0.00826	+/-0.0437	0.0780	+/-0.0439		pCi/g							
Mercury-203	U	0.0172	+/-0.0377	0.0768	+/-0.0386		pCi/g							
Neodymium-147	U	-0.180	+/-1.50	2.82	+/-1.51		pCi/g							
Neptunium-239	U	0.0512	+/-0.185	0.347	+/-0.186		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U2.D
Sample ID: 674299011

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.00815	+/-0.0282	0.0558	+/-0.0285		pCi/g							
Niobium-95	U	0.0335	+/-0.0447	0.0918	+/-0.0473		pCi/g							
Potassium-40		5.09	+/-0.995	0.479	+/-1.16		pCi/g							
Promethium-144	U	0.0174	+/-0.0275	0.0584	+/-0.0286		pCi/g							
Promethium-146	U	-0.00188	+/-0.0285	0.0553	+/-0.0285		pCi/g							
Radium-226		0.510	+/-0.170	0.108	+/-0.177		pCi/g							
Radium-228		0.335	+/-0.222	0.254	+/-0.226		pCi/g							
Ruthenium-106	U	-0.0555	+/-0.278	0.450	+/-0.279		pCi/g							
Silver-110m	U	-0.0248	+/-0.0361	0.0635	+/-0.0380		pCi/g							
Sodium-22	U	0.00822	+/-0.0366	0.0769	+/-0.0368		pCi/g							
Thallium-208		0.152	+/-0.0523	0.0606	+/-0.0538		pCi/g							
Thorium-234		1.56	+/-1.53	1.11	+/-1.57		pCi/g							
Tin-113	U	0.0157	+/-0.0369	0.0758	+/-0.0376		pCi/g							
Uranium-235	U	-0.101	+/-0.160	0.264	+/-0.167		pCi/g							
Uranium-238		1.56	+/-1.53	1.11	+/-1.57		pCi/g							
Yttrium-88	U	0.000486	+/-0.0363	0.0822	+/-0.0363		pCi/g							
Zinc-65	U	0.0478	+/-0.0757	0.159	+/-0.0788		pCi/g							
Zirconium-95	U	0.0471	+/-0.0732	0.152	+/-0.0763		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	92.4	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	103	(15%-125%)

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S2.U2.D
Sample ID: 674299011

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B1
Sample ID: 674299012
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 14.2%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		0.426	+/-0.394	0.385	+/-0.399	1.00	pCi/g			CM4	07/18/24	1028	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.165	+/-0.328	0.532	+/-0.329	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		0.426	+/-0.366	0.362	+/-0.371	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.663	+/-0.466	0.331	+/-0.474		pCi/g			RXF2	07/30/24	1119	2636542	3
Americium-241	U	-0.166	+/-0.140	0.210	+/-0.161		pCi/g							
Antimony-124	U	-0.0429	+/-0.0825	0.148	+/-0.0848		pCi/g							
Antimony-125	U	-0.0404	+/-0.0896	0.143	+/-0.0915		pCi/g							
Barium-133	U	0.0398	+/-0.0402	0.0806	+/-0.0442		pCi/g							
Barium-140	U	0.112	+/-0.740	1.44	+/-0.742		pCi/g							
Beryllium-7	U	-0.115	+/-0.461	0.831	+/-0.464		pCi/g							
Bismuth-212		0.927	+/-0.627	0.784	+/-0.633		pCi/g							
Bismuth-214		0.909	+/-0.215	0.151	+/-0.228		pCi/g							
Cerium-139	U	0.0144	+/-0.0330	0.0608	+/-0.0337		pCi/g							
Cerium-141	U	-0.0901	+/-0.0960	0.154	+/-0.105		pCi/g							
Cerium-144	U	-0.00757	+/-0.220	0.390	+/-0.220		pCi/g							
Cesium-134	UI	0.000	+/-0.0553	0.0989	+/-0.112		pCi/g							
Cesium-136	U	-0.115	+/-0.278	0.521	+/-0.283		pCi/g							
Cesium-137	U	-0.0255	+/-0.0428	0.0729	+/-0.0444	0.100	pCi/g							
Chromium-51	U	-0.383	+/-0.494	0.872	+/-0.525		pCi/g							
Cobalt-56	U	0.0136	+/-0.0609	0.115	+/-0.0612		pCi/g							
Cobalt-57	U	0.000536	+/-0.0256	0.0461	+/-0.0256		pCi/g							
Cobalt-58	U	0.0374	+/-0.0558	0.114	+/-0.0584		pCi/g							
Cobalt-60	U	0.0181	+/-0.0443	0.0959	+/-0.0451		pCi/g							
Europium-152	U	-0.0377	+/-0.104	0.190	+/-0.105		pCi/g							
Europium-154	U	0.0239	+/-0.136	0.253	+/-0.136		pCi/g							
Europium-155	U	0.0799	+/-0.0949	0.184	+/-0.102		pCi/g							
Iridium-192	U	-0.000133	+/-0.0406	0.0780	+/-0.0406		pCi/g							
Iron-59	U	-0.0668	+/-0.130	0.234	+/-0.133		pCi/g							
Lead-210	U	2.20	+/-7.14	6.04	+/-7.15		pCi/g							
Lead-212		1.07	+/-0.136	0.0954	+/-0.172		pCi/g							
Lead-214		1.21	+/-0.234	0.141	+/-0.260		pCi/g							
Manganese-54	U	-0.00252	+/-0.0395	0.0749	+/-0.0395		pCi/g							
Mercury-203	U	-0.0258	+/-0.0625	0.102	+/-0.0636		pCi/g							
Neodymium-147	U	-0.551	+/-1.80	3.28	+/-1.82		pCi/g							
Neptunium-239	U	-0.0689	+/-0.246	0.432	+/-0.248		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B1
Sample ID: 674299012

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.0237	+/-0.0372	0.0753	+/-0.0388		pCi/g							
Niobium-95	U	0.0366	+/-0.0591	0.118	+/-0.0614		pCi/g							
Potassium-40		17.1	+/-2.17	0.871	+/-3.01		pCi/g							
Promethium-144	U	-0.0111	+/-0.0392	0.0723	+/-0.0395		pCi/g							
Promethium-146	U	0.0110	+/-0.0447	0.0872	+/-0.0450		pCi/g							
Radium-226		1.21	+/-0.234	0.141	+/-0.260		pCi/g							
Radium-228		0.663	+/-0.466	0.331	+/-0.474		pCi/g							
Ruthenium-106	U	0.0913	+/-0.339	0.665	+/-0.342		pCi/g							
Silver-110m	U	0.00325	+/-0.0545	0.104	+/-0.0545		pCi/g							
Sodium-22	U	0.00678	+/-0.0480	0.0887	+/-0.0481		pCi/g							
Thallium-208		0.359	+/-0.0926	0.0668	+/-0.0974		pCi/g							
Thorium-234	U	0.360	+/-2.37	2.22	+/-2.37		pCi/g							
Tin-113	U	-0.00914	+/-0.0533	0.0992	+/-0.0534		pCi/g							
Uranium-235	U	0.0379	+/-0.207	0.379	+/-0.208		pCi/g							
Uranium-238	U	0.360	+/-2.37	2.22	+/-2.37		pCi/g							
Yttrium-88	U	0.0147	+/-0.0481	0.109	+/-0.0486		pCi/g							
Zinc-65	U	-0.0686	+/-0.114	0.169	+/-0.118		pCi/g							
Zirconium-95	U	-0.0287	+/-0.0880	0.157	+/-0.0890		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	92.5	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	86.4	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B1
Sample ID: 674299012

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B2
Sample ID: 674299013
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 7.62%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		0.715	+/-0.534	0.363	+/-0.544	1.00	pCi/g			CM4	07/18/24	1028	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236		0.456	+/-0.396	0.228	+/-0.401	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		7.84	+/-1.38	0.477	+/-1.74	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.34	+/-0.352	0.316	+/-0.376		pCi/g			RXF2	07/30/24	1119	2636542	3
Americium-241	U	-0.00877	+/-0.240	0.423	+/-0.240		pCi/g							
Antimony-124	U	-0.0591	+/-0.115	0.203	+/-0.118		pCi/g							
Antimony-125	U	0.0637	+/-0.132	0.256	+/-0.135		pCi/g							
Barium-133	U	0.0139	+/-0.0619	0.109	+/-0.0623		pCi/g							
Barium-140	U	0.0587	+/-0.970	1.83	+/-0.970		pCi/g							
Beryllium-7	U	-0.306	+/-0.521	0.930	+/-0.539		pCi/g							
Bismuth-212		1.39	+/-0.968	0.968	+/-0.977		pCi/g							
Bismuth-214		7.26	+/-0.426	0.158	+/-0.794		pCi/g							
Cerium-139	U	-0.0575	+/-0.0510	0.0850	+/-0.0585		pCi/g							
Cerium-141	U	0.113	+/-0.243	0.243	+/-0.248		pCi/g							
Cerium-144	U	0.0194	+/-0.308	0.559	+/-0.308		pCi/g							
Cesium-134	U	-2.75E-05	+/-0.0515	0.0948	+/-0.0515		pCi/g							
Cesium-136	U	0.147	+/-0.403	0.731	+/-0.409		pCi/g							
Cesium-137	U	0.00389	+/-0.0470	0.0798	+/-0.0470	0.100	pCi/g							
Chromium-51	U	-0.00574	+/-0.773	1.48	+/-0.773		pCi/g							
Cobalt-56	U	0.0358	+/-0.0594	0.117	+/-0.0616		pCi/g							
Cobalt-57	U	-0.00563	+/-0.0397	0.0716	+/-0.0398		pCi/g							
Cobalt-58	U	0.00175	+/-0.0648	0.107	+/-0.0649		pCi/g							
Cobalt-60	U	-0.0123	+/-0.0516	0.0929	+/-0.0519		pCi/g							
Europium-152	U	-0.0986	+/-0.140	0.255	+/-0.148		pCi/g							
Europium-154	U	0.0737	+/-0.154	0.298	+/-0.158		pCi/g							
Europium-155	U	0.0389	+/-0.146	0.272	+/-0.147		pCi/g							
Iridium-192	U	-0.0174	+/-0.0549	0.103	+/-0.0555		pCi/g							
Iron-59	U	-0.139	+/-0.132	0.220	+/-0.147		pCi/g							
Lead-210	U	4.99	+/-6.12	11.7	+/-6.54		pCi/g							
Lead-212		0.906	+/-0.173	0.160	+/-0.193		pCi/g							
Lead-214		9.17	+/-0.472	0.197	+/-0.891		pCi/g							
Manganese-54	U	0.00420	+/-0.0563	0.0926	+/-0.0564		pCi/g							
Mercury-203	U	-0.0127	+/-0.0788	0.135	+/-0.0790		pCi/g							
Neodymium-147	U	0.896	+/-2.06	4.10	+/-2.10		pCi/g							
Neptunium-239	U	-0.111	+/-0.369	0.664	+/-0.373		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B2
Sample ID: 674299013

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.0170	+/-0.0435	0.0842	+/-0.0442		pCi/g							
Niobium-95	U	0.174	+/-0.0871	0.181	+/-0.119		pCi/g							
Potassium-40		4.64	+/-1.08	0.845	+/-1.16		pCi/g							
Promethium-144	U	-0.0162	+/-0.0449	0.0795	+/-0.0455		pCi/g							
Promethium-146	U	0.0581	+/-0.0816	0.117	+/-0.0859		pCi/g							
Radium-226		9.17	+/-0.472	0.197	+/-0.891		pCi/g							
Radium-228		1.34	+/-0.352	0.316	+/-0.376		pCi/g							
Ruthenium-106	U	0.123	+/-0.379	0.738	+/-0.383		pCi/g							
Silver-110m	U	0.0110	+/-0.0681	0.127	+/-0.0683		pCi/g							
Sodium-22	U	0.0263	+/-0.0550	0.106	+/-0.0563		pCi/g							
Thallium-208		0.264	+/-0.109	0.0854	+/-0.112		pCi/g							
Thorium-234		7.48	+/-5.04	3.59	+/-5.34		pCi/g							
Tin-113	U	-0.0163	+/-0.0695	0.129	+/-0.0699		pCi/g							
Uranium-235	U	0.240	+/-0.517	0.545	+/-0.518		pCi/g							
Uranium-238		7.48	+/-5.04	3.59	+/-5.34		pCi/g							
Yttrium-88	U	0.0414	+/-0.0585	0.130	+/-0.0615		pCi/g							
Zinc-65	U	0.0220	+/-0.115	0.203	+/-0.115		pCi/g							
Zirconium-95	U	-0.0411	+/-0.114	0.201	+/-0.116		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	76.7	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	87.1	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B2
Sample ID: 674299013

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B3
Sample ID: 674299014
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 10%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.216	+/-0.208	0.479	+/-0.232		pCi/g			RXF2	07/30/24	1120	2636542	1
Americium-241	U	0.0772	+/-0.158	0.279	+/-0.162		pCi/g							
Antimony-124	U	-0.0299	+/-0.0585	0.0738	+/-0.0601		pCi/g							
Antimony-125	U	0.0118	+/-0.110	0.196	+/-0.110		pCi/g							
Barium-133	U	0.00978	+/-0.0557	0.0932	+/-0.0558		pCi/g							
Barium-140	U	0.00607	+/-0.791	1.49	+/-0.791		pCi/g							
Beryllium-7	U	-0.207	+/-0.332	0.541	+/-0.345		pCi/g							
Bismuth-212	U	0.0510	+/-0.622	1.23	+/-0.622		pCi/g							
Bismuth-214	U	0.269	+/-0.170	0.285	+/-0.210		pCi/g							
Cerium-139	U	-0.0177	+/-0.0340	0.0578	+/-0.0351		pCi/g							
Cerium-141	U	-0.129	+/-0.102	0.159	+/-0.118		pCi/g							
Cerium-144	U	-0.108	+/-0.224	0.384	+/-0.229		pCi/g							
Cesium-134	U	0.0135	+/-0.0365	0.0819	+/-0.0371		pCi/g							
Cesium-136	U	0.0274	+/-0.306	0.639	+/-0.306		pCi/g							
Cesium-137	U	0.0360	+/-0.0373	0.0887	+/-0.0374	0.100	pCi/g							
Chromium-51	U	0.156	+/-0.637	1.21	+/-0.641		pCi/g							
Cobalt-56	U	-0.0130	+/-0.0457	0.0882	+/-0.0461		pCi/g							
Cobalt-57	U	-0.0191	+/-0.0253	0.0421	+/-0.0267		pCi/g							
Cobalt-58	U	0.00157	+/-0.0388	0.0834	+/-0.0388		pCi/g							
Cobalt-60	U	-0.0236	+/-0.0449	0.0797	+/-0.0462		pCi/g							
Europium-152	U	0.115	+/-0.0895	0.186	+/-0.104		pCi/g							
Europium-154	U	-0.0835	+/-0.0998	0.149	+/-0.107		pCi/g							
Europium-155	U	0.0881	+/-0.102	0.201	+/-0.110		pCi/g							
Iridium-192	U	-0.0281	+/-0.0532	0.0849	+/-0.0547		pCi/g							
Iron-59	U	0.0299	+/-0.113	0.251	+/-0.113		pCi/g							
Lead-210	U	-1.86	+/-4.51	7.83	+/-4.59		pCi/g							
Lead-212		0.186	+/-0.115	0.118	+/-0.116		pCi/g							
Lead-214		0.529	+/-0.155	0.152	+/-0.161		pCi/g							
Manganese-54	U	0.00303	+/-0.0415	0.0845	+/-0.0415		pCi/g							
Mercury-203	U	0.00329	+/-0.0545	0.100	+/-0.0545		pCi/g							
Neodymium-147	U	0.144	+/-1.76	3.43	+/-1.77		pCi/g							
Neptunium-239	U	0.0858	+/-0.300	0.554	+/-0.303		pCi/g							
Niobium-94	U	0.00818	+/-0.0301	0.0650	+/-0.0304		pCi/g							
Niobium-95	U	-0.0278	+/-0.0613	0.111	+/-0.0626		pCi/g							
Potassium-40	U	0.560	+/-0.699	1.62	+/-0.745		pCi/g							
Promethium-144	U	0.00457	+/-0.0412	0.0817	+/-0.0413		pCi/g							
Promethium-146	U	-0.00646	+/-0.0528	0.0943	+/-0.0529		pCi/g							
Radium-226		0.529	+/-0.155	0.152	+/-0.161		pCi/g							
Radium-228	U	0.216	+/-0.208	0.479	+/-0.232		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B3
Sample ID: 674299014

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.299	+/-0.430	0.875	+/-0.451		pCi/g							
Silver-110m	U	-0.0103	+/-0.0418	0.0844	+/-0.0421		pCi/g							
Sodium-22	U	-0.0298	+/-0.0356	0.0531	+/-0.0381		pCi/g							
Thallium-208	U	0.0315	+/-0.0550	0.0839	+/-0.0550		pCi/g							
Thorium-234	U	0.829	+/-1.65	2.03	+/-1.66		pCi/g							
Tin-113	U	-0.0161	+/-0.0586	0.102	+/-0.0591		pCi/g							
Uranium-235	U	0.149	+/-0.224	0.431	+/-0.235		pCi/g							
Uranium-238	U	0.829	+/-1.65	2.03	+/-1.66		pCi/g							
Yttrium-88	U	-0.00239	+/-0.0480	0.107	+/-0.0481		pCi/g							
Zinc-65	U	-0.0236	+/-0.0932	0.180	+/-0.0939		pCi/g							
Zirconium-95	U	-0.0169	+/-0.0915	0.179	+/-0.0918		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B4
Sample ID: 674299015
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 12.4%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.304	+/-0.314	0.590	+/-0.344		pCi/g			RXF2	07/30/24	1120	2636542	1
Americium-241	U	0.114	+/-0.235	0.468	+/-0.241		pCi/g							
Antimony-124	U	0.0133	+/-0.0940	0.248	+/-0.0942		pCi/g							
Antimony-125	U	0.0771	+/-0.108	0.231	+/-0.114		pCi/g							
Barium-133	U	0.0185	+/-0.0420	0.0829	+/-0.0428		pCi/g							
Barium-140	U	0.662	+/-0.790	1.79	+/-0.846		pCi/g							
Beryllium-7	U	-0.152	+/-0.504	0.932	+/-0.509		pCi/g							
Bismuth-212	U	0.514	+/-0.579	1.31	+/-0.626		pCi/g							
Bismuth-214		0.564	+/-0.153	0.129	+/-0.160		pCi/g							
Cerium-139	U	-0.00998	+/-0.0372	0.0642	+/-0.0376		pCi/g							
Cerium-141	U	0.0397	+/-0.0964	0.182	+/-0.0981		pCi/g							
Cerium-144	U	-0.0118	+/-0.229	0.410	+/-0.229		pCi/g							
Cesium-134	U	0.0342	+/-0.0417	0.0987	+/-0.0445		pCi/g							
Cesium-136	U	0.101	+/-0.284	0.623	+/-0.288		pCi/g							
Cesium-137	UI	0.000	+/-0.0435	0.0536	+/-0.0438	0.100	pCi/g							
Chromium-51	U	-0.0977	+/-0.642	1.23	+/-0.644		pCi/g							
Cobalt-56	U	0.00474	+/-0.0524	0.0973	+/-0.0525		pCi/g							
Cobalt-57	U	0.000179	+/-0.0297	0.0538	+/-0.0297		pCi/g							
Cobalt-58	U	0.00462	+/-0.0485	0.0997	+/-0.0485		pCi/g							
Cobalt-60	U	0.00245	+/-0.0432	0.0975	+/-0.0433		pCi/g							
Europium-152	U	-0.0464	+/-0.115	0.212	+/-0.117		pCi/g							
Europium-154	U	-0.0484	+/-0.116	0.223	+/-0.118		pCi/g							
Europium-155	U	0.0117	+/-0.108	0.201	+/-0.108		pCi/g							
Iridium-192	U	0.0191	+/-0.0427	0.0891	+/-0.0436		pCi/g							
Iron-59	U	-0.0604	+/-0.130	0.246	+/-0.133		pCi/g							
Lead-210	U	1.75	+/-9.90	19.1	+/-9.93		pCi/g							
Lead-212	UI	0.000	+/-0.122	0.238	+/-0.174		pCi/g							
Lead-214		0.598	+/-0.193	0.148	+/-0.200		pCi/g							
Manganese-54	U	0.00400	+/-0.0305	0.0667	+/-0.0305		pCi/g							
Mercury-203	U	0.0320	+/-0.0657	0.123	+/-0.0673		pCi/g							
Neodymium-147	U	0.191	+/-1.71	3.56	+/-1.72		pCi/g							
Neptunium-239	U	-0.269	+/-0.280	0.448	+/-0.307		pCi/g							
Niobium-94	U	0.000500	+/-0.0316	0.0639	+/-0.0316		pCi/g							
Niobium-95	U	-0.0397	+/-0.0662	0.0979	+/-0.0687		pCi/g							
Potassium-40		2.65	+/-0.958	0.589	+/-0.990		pCi/g							
Promethium-144	U	-0.00596	+/-0.0439	0.0825	+/-0.0440		pCi/g							
Promethium-146	U	0.00302	+/-0.0485	0.0957	+/-0.0485		pCi/g							
Radium-226		0.598	+/-0.193	0.148	+/-0.200		pCi/g							
Radium-228	U	0.304	+/-0.314	0.590	+/-0.344		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B4
Sample ID: 674299015

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.0246	+/-0.294	0.564	+/-0.294		pCi/g							
Silver-110m	U	-0.0859	+/-0.0648	0.0761	+/-0.0759		pCi/g							
Sodium-22	U	-0.0188	+/-0.0406	0.0770	+/-0.0415		pCi/g							
Thallium-208	U	0.0634	+/-0.0665	0.138	+/-0.0726		pCi/g							
Thorium-234	U	0.667	+/-2.57	3.84	+/-2.58		pCi/g							
Tin-113	U	-0.0347	+/-0.0579	0.0893	+/-0.0601		pCi/g							
Uranium-235	U	0.0743	+/-0.216	0.392	+/-0.219		pCi/g							
Uranium-238	U	0.667	+/-2.57	3.84	+/-2.58		pCi/g							
Yttrium-88	U	0.00885	+/-0.0561	0.132	+/-0.0562		pCi/g							
Zinc-65	U	0.0446	+/-0.0504	0.158	+/-0.0544		pCi/g							
Zirconium-95	U	0.0372	+/-0.132	0.240	+/-0.133		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.U1
Sample ID: 674299016
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 9.83%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		0.903	+/-0.513	0.439	+/-0.527	1.00	pCi/g			CM4	07/18/24	1028	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236		0.394	+/-0.342	0.197	+/-0.346	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		6.33	+/-1.14	0.160	+/-1.42	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.34	+/-0.415	0.331	+/-0.439		pCi/g			RXF2	07/30/24	1121	2636542	3
Americium-241	U	0.0143	+/-0.0848	0.143	+/-0.0850		pCi/g							
Antimony-124	U	0.102	+/-0.139	0.314	+/-0.147		pCi/g							
Antimony-125	U	-0.0888	+/-0.131	0.231	+/-0.137		pCi/g							
Barium-133	U	0.0217	+/-0.0567	0.0993	+/-0.0576		pCi/g							
Barium-140	U	1.27	+/-1.70	1.68	+/-1.70		pCi/g							
Beryllium-7	U	-0.937	+/-0.590	0.942	+/-0.731		pCi/g							
Bismuth-212		1.52	+/-1.81	1.25	+/-1.82		pCi/g							
Bismuth-214		8.72	+/-0.440	0.174	+/-1.07		pCi/g							
Cerium-139	U	0.0554	+/-0.0565	0.0805	+/-0.0579		pCi/g							
Cerium-141	U	0.210	+/-0.288	0.268	+/-0.304		pCi/g							
Cerium-144	U	0.207	+/-0.293	0.531	+/-0.309		pCi/g							
Cesium-134	U	0.0237	+/-0.0605	0.113	+/-0.0615		pCi/g							
Cesium-136	U	-0.405	+/-0.370	0.623	+/-0.415		pCi/g							
Cesium-137	U	-0.00608	+/-0.0565	0.0909	+/-0.0565	0.100	pCi/g							
Chromium-51	U	-0.453	+/-0.825	1.49	+/-0.850		pCi/g							
Cobalt-56	U	0.00465	+/-0.0727	0.119	+/-0.0727		pCi/g							
Cobalt-57	U	0.0198	+/-0.0496	0.0626	+/-0.0497		pCi/g							
Cobalt-58	U	0.00428	+/-0.0851	0.137	+/-0.0852		pCi/g							
Cobalt-60	U	-0.0263	+/-0.0621	0.0965	+/-0.0632		pCi/g							
Europium-152	U	-0.0234	+/-0.131	0.242	+/-0.132		pCi/g							
Europium-154	U	-0.00456	+/-0.153	0.275	+/-0.153		pCi/g							
Europium-155	U	0.0940	+/-0.134	0.245	+/-0.141		pCi/g							
Iridium-192	U	-0.00598	+/-0.0554	0.103	+/-0.0554		pCi/g							
Iron-59	U	0.122	+/-0.207	0.273	+/-0.214		pCi/g							
Lead-210		4.98	+/-1.45	1.13	+/-1.53		pCi/g							
Lead-212		1.15	+/-0.157	0.153	+/-0.196		pCi/g							
Lead-214		10.7	+/-0.474	0.178	+/-0.978		pCi/g							
Manganese-54	U	-0.0253	+/-0.0545	0.0931	+/-0.0557		pCi/g							
Mercury-203	U	-0.0599	+/-0.0724	0.130	+/-0.0774		pCi/g							
Neodymium-147	U	-1.18	+/-2.80	4.40	+/-2.86		pCi/g							
Neptunium-239	U	-0.191	+/-0.357	0.611	+/-0.368		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.U1
Sample ID: 674299016

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.0576	+/-0.0783	0.0786	+/-0.0786		pCi/g							
Niobium-95	U	0.0354	+/-0.0839	0.142	+/-0.0855		pCi/g							
Potassium-40		4.68	+/-1.57	1.21	+/-1.62		pCi/g							
Promethium-144	U	0.0350	+/-0.0475	0.0931	+/-0.0502		pCi/g							
Promethium-146	U	0.0441	+/-0.0603	0.117	+/-0.0636		pCi/g							
Radium-226		10.7	+/-0.474	0.178	+/-0.978		pCi/g							
Radium-228		1.34	+/-0.415	0.331	+/-0.439		pCi/g							
Ruthenium-106	U	0.228	+/-0.424	0.823	+/-0.437		pCi/g							
Silver-110m	U	-0.0132	+/-0.0816	0.144	+/-0.0819		pCi/g							
Sodium-22	U	-0.00249	+/-0.0545	0.0975	+/-0.0545		pCi/g							
Thallium-208		0.222	+/-0.130	0.105	+/-0.132		pCi/g							
Thorium-234		8.53	+/-2.04	1.46	+/-2.81		pCi/g							
Tin-113	U	-0.0255	+/-0.0738	0.134	+/-0.0748		pCi/g							
Uranium-235	U	0.447	+/-0.613	0.528	+/-0.616		pCi/g							
Uranium-238		8.53	+/-2.04	1.46	+/-2.81		pCi/g							
Yttrium-88	U	-0.0235	+/-0.0329	0.0245	+/-0.0346		pCi/g							
Zinc-65	U	0.0443	+/-0.126	0.226	+/-0.127		pCi/g							
Zirconium-95	U	-0.00761	+/-0.127	0.206	+/-0.127		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	96.8	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	89.3	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.U1
Sample ID: 674299016

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.U2
Sample ID: 674299017
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 11.5%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.426	+/-0.426	0.664	+/-0.471		pCi/g			RXF2	07/30/24	1122	2636542	1
Americium-241	U	-0.0579	+/-0.540	0.873	+/-0.541		pCi/g							
Antimony-124	U	-0.0653	+/-0.192	0.369	+/-0.195		pCi/g							
Antimony-125	U	0.0868	+/-0.131	0.267	+/-0.137		pCi/g							
Barium-133	U	0.0303	+/-0.0701	0.119	+/-0.0715		pCi/g							
Barium-140	U	1.13	+/-1.84	1.99	+/-1.92		pCi/g							
Beryllium-7	U	-0.417	+/-0.630	0.920	+/-0.658		pCi/g							
Bismuth-212	U	0.461	+/-0.780	1.57	+/-0.808		pCi/g							
Bismuth-214		1.71	+/-0.304	0.208	+/-0.338		pCi/g							
Cerium-139	U	0.00867	+/-0.0436	0.0814	+/-0.0438		pCi/g							
Cerium-141	U	0.0433	+/-0.178	0.243	+/-0.178		pCi/g							
Cerium-144	U	0.0152	+/-0.288	0.488	+/-0.288		pCi/g							
Cesium-134	U	-0.00979	+/-0.0627	0.114	+/-0.0629		pCi/g							
Cesium-136	U	0.231	+/-0.413	0.900	+/-0.427		pCi/g							
Cesium-137	U	0.0218	+/-0.0555	0.101	+/-0.0564	0.100	pCi/g							
Chromium-51	U	-0.304	+/-0.962	1.64	+/-0.972		pCi/g							
Cobalt-56	U	-0.0526	+/-0.0799	0.130	+/-0.0835		pCi/g							
Cobalt-57	U	0.0239	+/-0.0379	0.0685	+/-0.0394		pCi/g							
Cobalt-58	U	-0.0622	+/-0.0787	0.125	+/-0.0838		pCi/g							
Cobalt-60	U	-0.0202	+/-0.0630	0.121	+/-0.0637		pCi/g							
Europium-152	U	-0.144	+/-0.169	0.228	+/-0.182		pCi/g							
Europium-154	U	-0.00868	+/-0.176	0.345	+/-0.176		pCi/g							
Europium-155	U	0.0426	+/-0.146	0.259	+/-0.147		pCi/g							
Iridium-192	U	-0.00176	+/-0.0699	0.123	+/-0.0699		pCi/g							
Iron-59	U	-0.0370	+/-0.142	0.273	+/-0.143		pCi/g							
Lead-210	U	16.3	+/-29.6	55.5	+/-30.6		pCi/g							
Lead-212		0.527	+/-0.147	0.147	+/-0.155		pCi/g							
Lead-214		2.23	+/-0.284	0.200	+/-0.350		pCi/g							
Manganese-54	U	0.0436	+/-0.0482	0.108	+/-0.0523		pCi/g							
Mercury-203	U	0.0252	+/-0.0723	0.134	+/-0.0732		pCi/g							
Neodymium-147	U	-2.88	+/-2.99	3.96	+/-3.27		pCi/g							
Neptunium-239	U	0.180	+/-0.386	0.687	+/-0.395		pCi/g							
Niobium-94	U	0.0648	+/-0.0569	0.119	+/-0.0642		pCi/g							
Niobium-95	U	0.107	+/-0.0784	0.166	+/-0.0926		pCi/g							
Potassium-40		1.66	+/-1.34	1.16	+/-1.35		pCi/g							
Promethium-144	U	-0.0210	+/-0.0507	0.0884	+/-0.0516		pCi/g							
Promethium-146	U	0.00525	+/-0.0600	0.115	+/-0.0600		pCi/g							
Radium-226		2.23	+/-0.284	0.200	+/-0.350		pCi/g							
Radium-228	U	0.426	+/-0.426	0.664	+/-0.471		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.U2
Sample ID: 674299017

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.0220	+/-0.418	0.806	+/-0.418		pCi/g							
Silver-110m	U	0.0527	+/-0.0558	0.135	+/-0.0610		pCi/g							
Sodium-22	U	-0.00309	+/-0.0626	0.123	+/-0.0626		pCi/g							
Thallium-208		0.179	+/-0.112	0.102	+/-0.114		pCi/g							
Thorium-234	U	4.93	+/-5.61	6.08	+/-5.74		pCi/g							
Tin-113	U	-0.00448	+/-0.0750	0.132	+/-0.0750		pCi/g							
Uranium-235	U	0.296	+/-0.362	0.546	+/-0.363		pCi/g							
Uranium-238	U	4.93	+/-5.61	6.08	+/-5.74		pCi/g							
Yttrium-88	U	0.0257	+/-0.0736	0.171	+/-0.0745		pCi/g							
Zinc-65	U	0.163	+/-0.160	0.333	+/-0.177		pCi/g							
Zirconium-95	U	0.0265	+/-0.114	0.227	+/-0.115		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.U3
Sample ID: 674299018
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 12.9%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.140	+/-0.213	0.394	+/-0.222		pCi/g			RXF2	07/30/24	1122	2636542	1
Americium-241	U	0.0307	+/-0.0915	0.166	+/-0.0925		pCi/g							
Antimony-124	U	-0.000118	+/-0.0970	0.227	+/-0.0970		pCi/g							
Antimony-125	U	0.0185	+/-0.0628	0.136	+/-0.0634		pCi/g							
Barium-133	U	0.0151	+/-0.0340	0.0670	+/-0.0347		pCi/g							
Barium-140	U	0.0200	+/-0.658	1.31	+/-0.658		pCi/g							
Beryllium-7	U	0.595	+/-0.431	0.651	+/-0.434		pCi/g							
Bismuth-212	U	0.649	+/-0.461	1.13	+/-0.550		pCi/g							
Bismuth-214		0.499	+/-0.149	0.114	+/-0.157		pCi/g							
Cerium-139	U	-0.00748	+/-0.0241	0.0419	+/-0.0243		pCi/g							
Cerium-141	U	-0.0192	+/-0.0624	0.110	+/-0.0631		pCi/g							
Cerium-144	U	-0.0374	+/-0.164	0.290	+/-0.165		pCi/g							
Cesium-134	U	-0.00712	+/-0.0353	0.0675	+/-0.0355		pCi/g							
Cesium-136	U	-0.0670	+/-0.219	0.411	+/-0.221		pCi/g							
Cesium-137	U	0.0213	+/-0.0287	0.0671	+/-0.0303	0.100	pCi/g							
Chromium-51	U	0.529	+/-0.506	1.07	+/-0.561		pCi/g							
Cobalt-56	U	-0.0209	+/-0.0429	0.0752	+/-0.0439		pCi/g							
Cobalt-57	U	-0.00103	+/-0.0186	0.0340	+/-0.0186		pCi/g							
Cobalt-58	U	0.00427	+/-0.0451	0.0910	+/-0.0452		pCi/g							
Cobalt-60	U	0.00614	+/-0.0325	0.0763	+/-0.0326		pCi/g							
Europium-152	U	0.0185	+/-0.0743	0.154	+/-0.0747		pCi/g							
Europium-154	U	0.0351	+/-0.0825	0.210	+/-0.0840		pCi/g							
Europium-155	U	-0.0150	+/-0.0684	0.124	+/-0.0687		pCi/g							
Iridium-192	U	-0.00526	+/-0.0299	0.0488	+/-0.0300		pCi/g							
Iron-59	U	0.0165	+/-0.0791	0.182	+/-0.0794		pCi/g							
Lead-210	U	0.140	+/-1.70	3.25	+/-1.70		pCi/g							
Lead-212		0.274	+/-0.0966	0.0825	+/-0.0991		pCi/g							
Lead-214		0.552	+/-0.146	0.101	+/-0.152		pCi/g							
Manganese-54	U	-0.0311	+/-0.0322	0.0470	+/-0.0353		pCi/g							
Mercury-203	U	0.0110	+/-0.0411	0.0774	+/-0.0414		pCi/g							
Neodymium-147	U	0.798	+/-1.41	3.17	+/-1.46		pCi/g							
Neptunium-239	U	0.0249	+/-0.175	0.331	+/-0.176		pCi/g							
Niobium-94	U	-0.0111	+/-0.0295	0.0538	+/-0.0299		pCi/g							
Niobium-95	U	-0.0123	+/-0.0532	0.0981	+/-0.0535		pCi/g							
Potassium-40		1.23	+/-0.541	0.831	+/-0.552		pCi/g							
Promethium-144	U	0.0186	+/-0.0271	0.0629	+/-0.0284		pCi/g							
Promethium-146	U	-0.00389	+/-0.0348	0.0682	+/-0.0348		pCi/g							
Radium-226		0.552	+/-0.146	0.101	+/-0.152		pCi/g							
Radium-228	U	0.140	+/-0.213	0.394	+/-0.222		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.U3
Sample ID: 674299018

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.103	+/-0.223	0.511	+/-0.228		pCi/g							
Silver-110m	U	0.0186	+/-0.0408	0.0940	+/-0.0417		pCi/g							
Sodium-22	U	0.0112	+/-0.0288	0.0731	+/-0.0293		pCi/g							
Thallium-208		0.0729	+/-0.0692	0.0658	+/-0.0696		pCi/g							
Thorium-234		1.97	+/-1.28	1.28	+/-1.36		pCi/g							
Tin-113	U	0.00843	+/-0.0315	0.0682	+/-0.0317		pCi/g							
Uranium-235	U	0.0589	+/-0.151	0.286	+/-0.153		pCi/g							
Uranium-238		1.97	+/-1.28	1.28	+/-1.36		pCi/g							
Yttrium-88	U	0.0181	+/-0.0404	0.109	+/-0.0412		pCi/g							
Zinc-65	U	0.0160	+/-0.0798	0.163	+/-0.0802		pCi/g							
Zirconium-95	U	-0.00161	+/-0.0965	0.185	+/-0.0965		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B4.D
Sample ID: 674299019
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 12%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232	U	0.265	+/-0.360	0.366	+/-0.362	1.00	pCi/g			CM4	07/18/24	1028	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.0506	+/-0.190	0.319	+/-0.190	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		0.351	+/-0.302	0.298	+/-0.305	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.214	+/-0.160	0.456	+/-0.188		pCi/g			RXF2	07/30/24	1337	2636542	3
Americium-241	U	-0.0105	+/-0.0385	0.0703	+/-0.0388		pCi/g							
Antimony-124	U	0.0368	+/-0.115	0.290	+/-0.117		pCi/g							
Antimony-125	U	-0.000738	+/-0.0792	0.156	+/-0.0792		pCi/g							
Barium-133	U	-0.0254	+/-0.0462	0.0777	+/-0.0476		pCi/g							
Barium-140	U	0.197	+/-0.783	1.58	+/-0.789		pCi/g							
Beryllium-7	U	-0.148	+/-0.426	0.773	+/-0.431		pCi/g							
Bismuth-212	U	-0.463	+/-0.567	0.949	+/-0.607		pCi/g							
Bismuth-214		0.189	+/-0.134	0.163	+/-0.135		pCi/g							
Cerium-139	U	0.00369	+/-0.0259	0.0478	+/-0.0259		pCi/g							
Cerium-141	U	-0.0682	+/-0.0764	0.122	+/-0.0828		pCi/g							
Cerium-144	U	-0.0231	+/-0.168	0.300	+/-0.169		pCi/g							
Cesium-134	U	0.00494	+/-0.0539	0.102	+/-0.0540		pCi/g							
Cesium-136	U	-0.0286	+/-0.339	0.671	+/-0.339		pCi/g							
Cesium-137	U	0.0425	+/-0.0380	0.0885	+/-0.0429	0.100	pCi/g							
Chromium-51	U	0.365	+/-0.786	0.911	+/-0.787		pCi/g							
Cobalt-56	U	0.0486	+/-0.0585	0.111	+/-0.0627		pCi/g							
Cobalt-57	U	-0.00763	+/-0.0208	0.0352	+/-0.0211		pCi/g							
Cobalt-58	U	0.0302	+/-0.0483	0.107	+/-0.0503		pCi/g							
Cobalt-60	U	-0.0182	+/-0.0528	0.0970	+/-0.0535		pCi/g							
Europium-152	U	-0.00738	+/-0.0875	0.169	+/-0.0876		pCi/g							
Europium-154	U	-0.00875	+/-0.107	0.222	+/-0.107		pCi/g							
Europium-155	U	0.00831	+/-0.0725	0.135	+/-0.0726		pCi/g							
Iridium-192	U	0.00620	+/-0.0392	0.0716	+/-0.0394		pCi/g							
Iron-59	U	-0.0216	+/-0.101	0.205	+/-0.102		pCi/g							
Lead-210	U	0.515	+/-0.538	0.603	+/-0.540		pCi/g							
Lead-212		0.273	+/-0.0990	0.103	+/-0.103		pCi/g							
Lead-214		0.348	+/-0.137	0.138	+/-0.140		pCi/g							
Manganese-54	U	-0.00673	+/-0.0432	0.0791	+/-0.0433		pCi/g							
Mercury-203	U	-0.00734	+/-0.0452	0.0782	+/-0.0454		pCi/g							
Neodymium-147	U	1.03	+/-1.59	3.57	+/-1.66		pCi/g							
Neptunium-239	U	0.0164	+/-0.208	0.381	+/-0.208		pCi/g							

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Certificate of Analysis

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B4.D
Sample ID: 674299019

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	-0.00258	+/-0.0430	0.0792	+/-0.0431		pCi/g							
Niobium-95	U	-0.00156	+/-0.0426	0.0841	+/-0.0426		pCi/g							
Potassium-40		1.38	+/-0.984	0.866	+/-0.992		pCi/g							
Promethium-144	U	0.0625	+/-0.0485	0.106	+/-0.0565		pCi/g							
Promethium-146	U	0.0160	+/-0.0462	0.0929	+/-0.0468		pCi/g							
Radium-226		0.348	+/-0.137	0.138	+/-0.140		pCi/g							
Radium-228	U	0.214	+/-0.160	0.456	+/-0.188		pCi/g							
Ruthenium-106	U	-0.189	+/-0.410	0.731	+/-0.419		pCi/g							
Silver-110m	U	0.0270	+/-0.0509	0.117	+/-0.0524		pCi/g							
Sodium-22	U	-0.00173	+/-0.0385	0.0807	+/-0.0385		pCi/g							
Thallium-208		0.0744	+/-0.0560	0.0731	+/-0.0566		pCi/g							
Thorium-234	U	0.237	+/-0.561	0.719	+/-0.564		pCi/g							
Tin-113	U	-0.0284	+/-0.0423	0.0737	+/-0.0443		pCi/g							
Uranium-235	U	0.0603	+/-0.161	0.304	+/-0.162		pCi/g							
Uranium-238	U	0.237	+/-0.561	0.719	+/-0.564		pCi/g							
Yttrium-88	U	0.0352	+/-0.0499	0.137	+/-0.0524		pCi/g							
Zinc-65	U	0.0545	+/-0.102	0.225	+/-0.105		pCi/g							
Zirconium-95	U	0.0148	+/-0.0892	0.180	+/-0.0894		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	78.3	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	100	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S3.B4.D
Sample ID: 674299019

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S4.B1
Sample ID: 674299020
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 12%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232	U	0.280	+/-0.340	0.391	+/-0.343	1.00	pCi/g			CM4	07/18/24	1028	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.0697	+/-0.196	0.209	+/-0.196	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238	U	0.399	+/-0.358	0.455	+/-0.362	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.19	+/-0.378	0.292	+/-0.395		pCi/g			RXF2	07/30/24	1338	2636542	3
Americium-241	U	-0.0438	+/-0.181	0.345	+/-0.182		pCi/g							
Antimony-124	U	0.0655	+/-0.0942	0.260	+/-0.0988		pCi/g							
Antimony-125	U	-0.0803	+/-0.102	0.175	+/-0.108		pCi/g							
Barium-133	U	-0.00634	+/-0.0523	0.0889	+/-0.0524		pCi/g							
Barium-140	U	-0.0768	+/-0.875	1.47	+/-0.876		pCi/g							
Beryllium-7	U	-0.213	+/-0.538	0.964	+/-0.547		pCi/g							
Bismuth-212	U	0.985	+/-1.12	1.18	+/-1.12		pCi/g							
Bismuth-214		1.23	+/-0.212	0.156	+/-0.238		pCi/g							
Cerium-139	U	-0.0144	+/-0.0350	0.0611	+/-0.0358		pCi/g							
Cerium-141	U	-0.0592	+/-0.100	0.173	+/-0.104		pCi/g							
Cerium-144	U	-0.0392	+/-0.210	0.352	+/-0.211		pCi/g							
Cesium-134	U	0.0236	+/-0.0549	0.113	+/-0.0560		pCi/g							
Cesium-136	U	-0.104	+/-0.329	0.613	+/-0.332		pCi/g							
Cesium-137	U	0.0212	+/-0.0402	0.0825	+/-0.0414	0.100	pCi/g							
Chromium-51	U	0.823	+/-0.716	1.29	+/-0.809		pCi/g							
Cobalt-56	U	-0.00358	+/-0.0534	0.105	+/-0.0534		pCi/g							
Cobalt-57	U	-0.00247	+/-0.0268	0.0494	+/-0.0268		pCi/g							
Cobalt-58	U	0.000724	+/-0.0498	0.101	+/-0.0498		pCi/g							
Cobalt-60	U	0.000843	+/-0.0427	0.0865	+/-0.0427		pCi/g							
Europium-152	U	-0.0251	+/-0.109	0.205	+/-0.109		pCi/g							
Europium-154	U	-0.0128	+/-0.121	0.237	+/-0.121		pCi/g							
Europium-155	U	0.144	+/-0.199	0.202	+/-0.199		pCi/g							
Iridium-192	U	0.0749	+/-0.0891	0.102	+/-0.0954		pCi/g							
Iron-59	U	0.0286	+/-0.136	0.277	+/-0.136		pCi/g							
Lead-210	U	-0.980	+/-4.74	9.23	+/-4.76		pCi/g							
Lead-212		1.58	+/-0.164	0.122	+/-0.209		pCi/g							
Lead-214		1.56	+/-0.297	0.140	+/-0.322		pCi/g							
Manganese-54	U	-0.0134	+/-0.0423	0.0802	+/-0.0428		pCi/g							
Mercury-203	U	-0.0198	+/-0.0567	0.107	+/-0.0574		pCi/g							
Neodymium-147	U	-0.138	+/-2.18	3.69	+/-2.18		pCi/g							
Neptunium-239	U	-0.00290	+/-0.274	0.508	+/-0.274		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S4.B1
Sample ID: 674299020

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.0248	+/-0.0401	0.0812	+/-0.0416		pCi/g							
Niobium-95	U	0.0324	+/-0.0633	0.121	+/-0.0650		pCi/g							
Potassium-40		8.43	+/-1.48	0.662	+/-1.68		pCi/g							
Promethium-144	U	0.0212	+/-0.0430	0.0856	+/-0.0441		pCi/g							
Promethium-146	U	-0.00541	+/-0.0448	0.0848	+/-0.0448		pCi/g							
Radium-226		1.56	+/-0.297	0.140	+/-0.322		pCi/g							
Radium-228		1.19	+/-0.378	0.292	+/-0.395		pCi/g							
Ruthenium-106	U	0.0773	+/-0.337	0.669	+/-0.339		pCi/g							
Silver-110m	U	0.0386	+/-0.0515	0.118	+/-0.0545		pCi/g							
Sodium-22	U	-0.00684	+/-0.0424	0.0823	+/-0.0425		pCi/g							
Thallium-208		0.384	+/-0.116	0.0817	+/-0.120		pCi/g							
Thorium-234	U	2.65	+/-2.53	2.74	+/-2.60		pCi/g							
Tin-113	U	-0.0249	+/-0.0562	0.102	+/-0.0573		pCi/g							
Uranium-235	U	0.154	+/-0.208	0.399	+/-0.208		pCi/g							
Uranium-238	U	2.65	+/-2.53	2.74	+/-2.60		pCi/g							
Yttrium-88	U	-0.0268	+/-0.0473	0.0853	+/-0.0488		pCi/g							
Zinc-65	U	0.0847	+/-0.0854	0.197	+/-0.0938		pCi/g							
Zirconium-95	U	0.104	+/-0.132	0.201	+/-0.140		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2010	2636363

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	90.4	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	100	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S4.B1
Sample ID: 674299020

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S4.B2
Sample ID: 674299021
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 5.86%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.887	+/-0.342	0.303	+/-0.358		pCi/g			MXR1	07/31/24	1430	2636543	1
Americium-241	U	0.124	+/-0.624	0.804	+/-0.627		pCi/g							
Antimony-124	U	-0.0356	+/-0.117	0.215	+/-0.118		pCi/g							
Antimony-125	U	-0.126	+/-0.136	0.231	+/-0.148		pCi/g							
Barium-133	U	-0.0869	+/-0.0671	0.0949	+/-0.0781		pCi/g							
Barium-140	U	1.30	+/-1.41	1.86	+/-1.53		pCi/g							
Beryllium-7	U	-0.714	+/-0.589	0.968	+/-0.674		pCi/g							
Bismuth-212	UI	0.000	+/-1.43	0.955	+/-1.43		pCi/g							
Bismuth-214		4.34	+/-0.308	0.153	+/-0.535		pCi/g							
Cerium-139	U	-0.0287	+/-0.0561	0.0945	+/-0.0580		pCi/g							
Cerium-141	U	0.237	+/-0.195	0.270	+/-0.223		pCi/g							
Cerium-144	U	0.315	+/-0.344	0.627	+/-0.374		pCi/g							
Cesium-134	U	0.0635	+/-0.0497	0.101	+/-0.0578		pCi/g							
Cesium-136	U	0.170	+/-0.355	0.704	+/-0.364		pCi/g							
Cesium-137	U	0.00345	+/-0.0475	0.0767	+/-0.0475	0.100	pCi/g							
Chromium-51	U	0.0279	+/-0.949	1.73	+/-0.949		pCi/g							
Cobalt-56	U	0.0771	+/-0.0574	0.118	+/-0.0676		pCi/g							
Cobalt-57	U	-0.00109	+/-0.0460	0.0802	+/-0.0460		pCi/g							
Cobalt-58	U	-0.0139	+/-0.0626	0.110	+/-0.0629		pCi/g							
Cobalt-60	U	-0.0159	+/-0.0490	0.0885	+/-0.0495		pCi/g							
Europium-152	U	-0.0856	+/-0.161	0.248	+/-0.166		pCi/g							
Europium-154	U	0.0372	+/-0.129	0.253	+/-0.130		pCi/g							
Europium-155	U	0.120	+/-0.174	0.317	+/-0.183		pCi/g							
Iridium-192	U	-0.0371	+/-0.0659	0.107	+/-0.0680		pCi/g							
Iron-59	U	0.0198	+/-0.130	0.252	+/-0.131		pCi/g							
Lead-210	U	-12.6	+/-24.6	42.9	+/-25.3		pCi/g							
Lead-212		1.09	+/-0.167	0.160	+/-0.210		pCi/g							
Lead-214		5.77	+/-0.377	0.187	+/-0.654		pCi/g							
Manganese-54	U	0.000935	+/-0.0515	0.0919	+/-0.0515		pCi/g							
Mercury-203	U	-0.0300	+/-0.0845	0.141	+/-0.0856		pCi/g							
Neodymium-147	U	2.16	+/-3.37	4.54	+/-3.52		pCi/g							
Neptunium-239	U	-0.271	+/-0.438	0.745	+/-0.456		pCi/g							
Niobium-94	U	0.0109	+/-0.0455	0.0830	+/-0.0458		pCi/g							
Niobium-95	U	0.144	+/-0.0810	0.151	+/-0.105		pCi/g							
Potassium-40		2.73	+/-0.981	0.860	+/-1.02		pCi/g							
Promethium-144	U	-0.0509	+/-0.0429	0.0678	+/-0.0489		pCi/g							
Promethium-146	U	0.0190	+/-0.0561	0.105	+/-0.0568		pCi/g							
Radium-226		5.77	+/-0.377	0.187	+/-0.654		pCi/g							
Radium-228		0.887	+/-0.342	0.303	+/-0.358		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S4.B2
Sample ID: 674299021

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.0589	+/-0.380	0.703	+/-0.381		pCi/g							
Silver-110m	U	-0.0189	+/-0.0717	0.124	+/-0.0722		pCi/g							
Sodium-22	U	0.0140	+/-0.0460	0.0906	+/-0.0464		pCi/g							
Thallium-208		0.188	+/-0.109	0.0836	+/-0.111		pCi/g							
Thorium-234	U	3.69	+/-5.76	5.89	+/-5.83		pCi/g							
Tin-113	U	0.0138	+/-0.0703	0.130	+/-0.0706		pCi/g							
Uranium-235	U	0.492	+/-0.406	0.571	+/-0.409		pCi/g							
Uranium-238	U	3.69	+/-5.76	5.89	+/-5.83		pCi/g							
Yttrium-88	U	0.00143	+/-0.0503	0.0980	+/-0.0503		pCi/g							
Zinc-65	U	0.105	+/-0.117	0.202	+/-0.126		pCi/g							
Zirconium-95	U	0.0300	+/-0.101	0.190	+/-0.102		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S4.U1
Sample ID: 674299022
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 11.8%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232	U	0.275	+/-0.424	0.667	+/-0.426	1.00	pCi/g			CM4	07/18/24	1028	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	-0.0168	+/-0.252	0.589	+/-0.252	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		0.581	+/-0.449	0.502	+/-0.457	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.982	+/-0.379	0.214	+/-0.393		pCi/g			MXR1	07/31/24	1504	2636543	3
Americium-241	U	-0.0648	+/-0.267	0.406	+/-0.268		pCi/g							
Antimony-124	U	-0.00487	+/-0.166	0.348	+/-0.166		pCi/g							
Antimony-125	U	0.0360	+/-0.138	0.261	+/-0.139		pCi/g							
Barium-133	U	-0.0214	+/-0.0499	0.0771	+/-0.0508		pCi/g							
Barium-140	U	0.735	+/-1.01	2.11	+/-1.06		pCi/g							
Beryllium-7	U	0.266	+/-0.559	1.11	+/-0.572		pCi/g							
Bismuth-212	U	0.773	+/-1.42	1.37	+/-1.43		pCi/g							
Bismuth-214		1.39	+/-0.267	0.172	+/-0.295		pCi/g							
Cerium-139	U	-0.00157	+/-0.0420	0.0772	+/-0.0420		pCi/g							
Cerium-141	U	0.0270	+/-0.212	0.211	+/-0.212		pCi/g							
Cerium-144	U	-0.202	+/-0.264	0.460	+/-0.280		pCi/g							
Cesium-134	U	0.0442	+/-0.0647	0.132	+/-0.0679		pCi/g							
Cesium-136	U	0.0457	+/-0.328	0.706	+/-0.328		pCi/g							
Cesium-137	U	0.0402	+/-0.0687	0.0824	+/-0.0688	0.100	pCi/g							
Chromium-51	U	0.218	+/-0.826	1.57	+/-0.832		pCi/g							
Cobalt-56	U	-0.0233	+/-0.0615	0.100	+/-0.0624		pCi/g							
Cobalt-57	U	0.0183	+/-0.0345	0.0666	+/-0.0355		pCi/g							
Cobalt-58	U	0.0275	+/-0.0715	0.132	+/-0.0726		pCi/g							
Cobalt-60	U	0.00593	+/-0.0443	0.0978	+/-0.0444		pCi/g							
Europium-152	U	-0.0337	+/-0.152	0.241	+/-0.153		pCi/g							
Europium-154	U	0.0444	+/-0.155	0.310	+/-0.156		pCi/g							
Europium-155	U	-0.0347	+/-0.139	0.252	+/-0.140		pCi/g							
Iridium-192	U	-0.0315	+/-0.0569	0.0983	+/-0.0587		pCi/g							
Iron-59	U	-0.146	+/-0.146	0.229	+/-0.161		pCi/g							
Lead-210	U	8.24	+/-6.95	13.1	+/-7.92		pCi/g							
Lead-212		0.815	+/-0.143	0.130	+/-0.157		pCi/g							
Lead-214		1.24	+/-0.258	0.171	+/-0.276		pCi/g							
Manganese-54	U	-0.00753	+/-0.0433	0.0859	+/-0.0435		pCi/g							
Mercury-203	U	0.0523	+/-0.0692	0.136	+/-0.0732		pCi/g							
Neodymium-147	U	1.89	+/-2.02	4.59	+/-2.20		pCi/g							
Neptunium-239	U	0.139	+/-0.356	0.677	+/-0.361		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S4.U1
Sample ID: 674299022

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.0208	+/-0.0537	0.104	+/-0.0546		pCi/g							
Niobium-95	U	-0.0682	+/-0.0690	0.102	+/-0.0758		pCi/g							
Potassium-40		7.22	+/-1.50	1.22	+/-1.63		pCi/g							
Promethium-144	U	-0.00896	+/-0.0503	0.0902	+/-0.0504		pCi/g							
Promethium-146	U	-0.00222	+/-0.0593	0.109	+/-0.0593		pCi/g							
Radium-226		1.24	+/-0.258	0.171	+/-0.276		pCi/g							
Radium-228		0.982	+/-0.379	0.214	+/-0.393		pCi/g							
Ruthenium-106	U	0.248	+/-0.437	0.894	+/-0.452		pCi/g							
Silver-110m	U	0.0540	+/-0.0603	0.109	+/-0.0653		pCi/g							
Sodium-22	U	0.0387	+/-0.0419	0.0950	+/-0.0420		pCi/g							
Thallium-208		0.292	+/-0.0950	0.0794	+/-0.0986		pCi/g							
Thorium-234	U	1.37	+/-2.89	3.47	+/-2.90		pCi/g							
Tin-113	U	0.00533	+/-0.0654	0.123	+/-0.0655		pCi/g							
Uranium-235	U	0.205	+/-0.432	0.514	+/-0.432		pCi/g							
Uranium-238	U	1.37	+/-2.89	3.47	+/-2.90		pCi/g							
Yttrium-88	U	-0.0149	+/-0.0568	0.115	+/-0.0573		pCi/g							
Zinc-65	U	-0.00605	+/-0.100	0.199	+/-0.100		pCi/g							
Zirconium-95	U	0.0163	+/-0.123	0.235	+/-0.123		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	70.2	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	79.9	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S4.U1
Sample ID: 674299022

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B1
Sample ID: 674299023
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 19.6%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.908	+/-0.463	0.354	+/-0.474		pCi/g			MXR1	07/31/24	1504	2636543	1
Americium-241	U	0.00528	+/-0.261	0.451	+/-0.261		pCi/g							
Antimony-124	U	0.0146	+/-0.119	0.276	+/-0.119		pCi/g							
Antimony-125	U	0.0355	+/-0.126	0.244	+/-0.127		pCi/g							
Barium-133	U	0.0537	+/-0.0593	0.114	+/-0.0642		pCi/g							
Barium-140	U	0.746	+/-1.01	2.09	+/-1.06		pCi/g							
Beryllium-7	U	-0.597	+/-0.596	0.945	+/-0.656		pCi/g							
Bismuth-212		1.45	+/-1.27	1.43	+/-1.28		pCi/g							
Bismuth-214		1.21	+/-0.238	0.159	+/-0.259		pCi/g							
Cerium-139	U	-0.0169	+/-0.0442	0.0747	+/-0.0450		pCi/g							
Cerium-141	U	0.170	+/-0.243	0.215	+/-0.244		pCi/g							
Cerium-144	U	-0.00996	+/-0.270	0.478	+/-0.270		pCi/g							
Cesium-134	U	0.0286	+/-0.0697	0.139	+/-0.0710		pCi/g							
Cesium-136	U	-0.376	+/-0.411	0.664	+/-0.446		pCi/g							
Cesium-137	U	-0.0354	+/-0.0576	0.0974	+/-0.0599	0.100	pCi/g							
Chromium-51	U	-0.381	+/-0.836	1.51	+/-0.854		pCi/g							
Cobalt-56	U	-0.0367	+/-0.0693	0.124	+/-0.0713		pCi/g							
Cobalt-57	U	-0.00665	+/-0.0356	0.0624	+/-0.0357		pCi/g							
Cobalt-58	U	-0.0278	+/-0.0695	0.128	+/-0.0707		pCi/g							
Cobalt-60	U	-0.00903	+/-0.0673	0.110	+/-0.0674		pCi/g							
Europium-152	U	0.0916	+/-0.133	0.267	+/-0.139		pCi/g							
Europium-154	U	-0.00680	+/-0.127	0.254	+/-0.127		pCi/g							
Europium-155	U	0.0792	+/-0.144	0.270	+/-0.149		pCi/g							
Iridium-192	U	0.0392	+/-0.0598	0.119	+/-0.0624		pCi/g							
Iron-59	U	-0.0541	+/-0.179	0.327	+/-0.181		pCi/g							
Lead-210	U	-1.64	+/-8.25	15.1	+/-8.29		pCi/g							
Lead-212		1.52	+/-0.176	0.136	+/-0.217		pCi/g							
Lead-214		1.12	+/-0.302	0.189	+/-0.315		pCi/g							
Manganese-54	U	0.0113	+/-0.0621	0.110	+/-0.0623		pCi/g							
Mercury-203	U	-0.0304	+/-0.0750	0.136	+/-0.0763		pCi/g							
Neodymium-147	U	0.984	+/-2.80	5.02	+/-2.83		pCi/g							
Neptunium-239	U	-0.0815	+/-0.342	0.599	+/-0.344		pCi/g							
Niobium-94	U	-0.0121	+/-0.0501	0.0877	+/-0.0504		pCi/g							
Niobium-95	U	0.0216	+/-0.0886	0.157	+/-0.0892		pCi/g							
Potassium-40		21.3	+/-2.40	1.03	+/-3.38		pCi/g							
Promethium-144	U	-0.0209	+/-0.0521	0.0890	+/-0.0529		pCi/g							
Promethium-146	U	0.0623	+/-0.0650	0.133	+/-0.0711		pCi/g							
Radium-226		1.12	+/-0.302	0.189	+/-0.315		pCi/g							
Radium-228		0.908	+/-0.463	0.354	+/-0.474		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B1
Sample ID: 674299023

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.0956	+/-0.475	0.848	+/-0.477		pCi/g							
Silver-110m	U	-0.0241	+/-0.0829	0.134	+/-0.0836		pCi/g							
Sodium-22	U	-0.00243	+/-0.0453	0.0907	+/-0.0453		pCi/g							
Thallium-208		0.357	+/-0.131	0.0905	+/-0.135		pCi/g							
Thorium-234	U	2.81	+/-3.72	3.57	+/-3.79		pCi/g							
Tin-113	U	0.000	+/-0.0741	0.138	+/-0.000		pCi/g							
Uranium-235	U	0.424	+/-0.491	0.534	+/-0.492		pCi/g							
Uranium-238	U	2.81	+/-3.72	3.57	+/-3.79		pCi/g							
Yttrium-88	U	-0.00209	+/-0.0475	0.106	+/-0.0475		pCi/g							
Zinc-65	U	0.00871	+/-0.172	0.287	+/-0.172		pCi/g							
Zirconium-95	U	0.232	+/-0.112	0.241	+/-0.155		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B2
Sample ID: 674299024
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 19.6%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.73	+/-0.555	0.540	+/-0.585		pCi/g			MXR1	07/31/24	1609	2636543	1
Americium-241	U	0.488	+/-0.536	0.993	+/-0.586		pCi/g							
Antimony-124	U	-0.129	+/-0.182	0.300	+/-0.191		pCi/g							
Antimony-125	U	0.179	+/-0.181	0.366	+/-0.199		pCi/g							
Barium-133	U	-0.0110	+/-0.0857	0.145	+/-0.0859		pCi/g							
Barium-140	U	-0.0774	+/-1.41	2.63	+/-1.41		pCi/g							
Beryllium-7	U	0.711	+/-1.02	1.58	+/-1.02		pCi/g							
Bismuth-212		2.05	+/-1.16	1.35	+/-1.18		pCi/g							
Bismuth-214		7.91	+/-0.516	0.254	+/-0.834		pCi/g							
Cerium-139	U	0.0340	+/-0.0702	0.128	+/-0.0723		pCi/g							
Cerium-141	U	0.157	+/-0.387	0.357	+/-0.394		pCi/g							
Cerium-144	U	-0.122	+/-0.400	0.706	+/-0.404		pCi/g							
Cesium-134	U	0.0381	+/-0.0693	0.138	+/-0.0715		pCi/g							
Cesium-136	U	0.216	+/-0.579	1.17	+/-0.587		pCi/g							
Cesium-137		0.201	+/-0.107	0.111	+/-0.108	0.100	pCi/g							
Chromium-51	U	0.284	+/-1.25	2.19	+/-1.25		pCi/g							
Cobalt-56	U	0.0781	+/-0.0805	0.169	+/-0.0882		pCi/g							
Cobalt-57	U	0.0111	+/-0.0523	0.0957	+/-0.0526		pCi/g							
Cobalt-58	U	-0.0113	+/-0.0786	0.128	+/-0.0788		pCi/g							
Cobalt-60	U	0.0411	+/-0.0667	0.145	+/-0.0694		pCi/g							
Europium-152	U	0.0875	+/-0.198	0.384	+/-0.202		pCi/g							
Europium-154	U	-0.106	+/-0.195	0.348	+/-0.201		pCi/g							
Europium-155	U	0.0701	+/-0.203	0.376	+/-0.205		pCi/g							
Iridium-192	U	0.00419	+/-0.0805	0.140	+/-0.0805		pCi/g							
Iron-59	U	-0.0405	+/-0.171	0.330	+/-0.172		pCi/g							
Lead-210	U	5.62	+/-25.1	48.3	+/-25.3		pCi/g							
Lead-212		1.27	+/-0.211	0.211	+/-0.249		pCi/g							
Lead-214		10.6	+/-0.620	0.250	+/-1.07		pCi/g							
Manganese-54	U	-0.0630	+/-0.0919	0.131	+/-0.0964		pCi/g							
Mercury-203	U	-0.0382	+/-0.119	0.182	+/-0.120		pCi/g							
Neodymium-147	U	-1.16	+/-3.66	6.63	+/-3.70		pCi/g							
Neptunium-239	U	0.148	+/-0.492	0.908	+/-0.496		pCi/g							
Niobium-94	U	0.0607	+/-0.0664	0.124	+/-0.0720		pCi/g							
Niobium-95	U	0.0500	+/-0.0951	0.171	+/-0.0979		pCi/g							
Potassium-40		4.42	+/-1.64	1.29	+/-1.71		pCi/g							
Promethium-144	U	-0.0117	+/-0.0563	0.102	+/-0.0566		pCi/g							
Promethium-146	U	0.0229	+/-0.0832	0.159	+/-0.0839		pCi/g							
Radium-226		10.6	+/-0.620	0.250	+/-1.07		pCi/g							
Radium-228		1.73	+/-0.555	0.540	+/-0.585		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B2
Sample ID: 674299024

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.802	+/-0.510	0.740	+/-0.629		pCi/g							
Silver-110m	U	0.0162	+/-0.105	0.194	+/-0.105		pCi/g							
Sodium-22	U	-0.0271	+/-0.0689	0.127	+/-0.0701		pCi/g							
Thallium-208		0.342	+/-0.137	0.121	+/-0.140		pCi/g							
Thorium-234		10.4	+/-8.19	6.91	+/-8.67		pCi/g							
Tin-113	U	-0.0969	+/-0.0923	0.159	+/-0.102		pCi/g							
Uranium-235	U	0.327	+/-0.805	0.705	+/-0.806		pCi/g							
Uranium-238		10.4	+/-8.19	6.91	+/-8.67		pCi/g							
Yttrium-88	U	-0.0345	+/-0.0766	0.137	+/-0.0782		pCi/g							
Zinc-65	U	-0.00673	+/-0.185	0.314	+/-0.185		pCi/g							
Zirconium-95	U	0.132	+/-0.163	0.330	+/-0.174		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B3
Sample ID: 674299025
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 13.8%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.940	+/-0.409	0.345	+/-0.419		pCi/g			MXR1	08/01/24	1004	2636543	1
Americium-241	U	-0.0227	+/-0.193	0.343	+/-0.193		pCi/g							
Antimony-124	U	0.0492	+/-0.0929	0.257	+/-0.0956		pCi/g							
Antimony-125	U	-0.0524	+/-0.106	0.189	+/-0.109		pCi/g							
Barium-133	U	0.0139	+/-0.0526	0.0943	+/-0.0529		pCi/g							
Barium-140	U	0.163	+/-0.835	1.67	+/-0.838		pCi/g							
Beryllium-7	U	-0.388	+/-0.543	0.926	+/-0.571		pCi/g							
Bismuth-212		1.27	+/-0.950	1.16	+/-0.957		pCi/g							
Bismuth-214		0.997	+/-0.244	0.159	+/-0.259		pCi/g							
Cerium-139	U	0.00933	+/-0.0374	0.0687	+/-0.0377		pCi/g							
Cerium-141	U	0.0365	+/-0.110	0.204	+/-0.111		pCi/g							
Cerium-144	U	-0.162	+/-0.217	0.368	+/-0.229		pCi/g							
Cesium-134	U	0.0617	+/-0.0535	0.120	+/-0.0606		pCi/g							
Cesium-136	U	0.174	+/-0.400	0.841	+/-0.408		pCi/g							
Cesium-137	U	0.0180	+/-0.0457	0.0905	+/-0.0464	0.100	pCi/g							
Chromium-51	U	0.317	+/-0.790	1.44	+/-0.803		pCi/g							
Cobalt-56	U	0.0530	+/-0.0616	0.135	+/-0.0662		pCi/g							
Cobalt-57	U	-0.00822	+/-0.0290	0.0519	+/-0.0293		pCi/g							
Cobalt-58	U	-0.0315	+/-0.0520	0.0941	+/-0.0540		pCi/g							
Cobalt-60	U	0.0703	+/-0.0615	0.115	+/-0.0695		pCi/g							
Europium-152	U	0.0163	+/-0.115	0.223	+/-0.115		pCi/g							
Europium-154	U	-0.0404	+/-0.213	0.337	+/-0.214		pCi/g							
Europium-155	U	0.0609	+/-0.119	0.229	+/-0.123		pCi/g							
Iridium-192	U	0.00812	+/-0.0468	0.0921	+/-0.0470		pCi/g							
Iron-59	U	0.0148	+/-0.190	0.365	+/-0.190		pCi/g							
Lead-210	U	-0.404	+/-5.36	10.4	+/-5.37		pCi/g							
Lead-212		0.960	+/-0.144	0.117	+/-0.164		pCi/g							
Lead-214		1.56	+/-0.228	0.152	+/-0.259		pCi/g							
Manganese-54	U	0.0454	+/-0.0497	0.109	+/-0.0539		pCi/g							
Mercury-203	U	0.00318	+/-0.0581	0.113	+/-0.0582		pCi/g							
Neodymium-147	U	1.25	+/-2.54	5.13	+/-2.61		pCi/g							
Neptunium-239	U	-0.101	+/-0.268	0.479	+/-0.272		pCi/g							
Niobium-94	U	0.00495	+/-0.0424	0.0799	+/-0.0425		pCi/g							
Niobium-95	U	0.0151	+/-0.0777	0.138	+/-0.0780		pCi/g							
Potassium-40		18.2	+/-2.30	0.996	+/-2.86		pCi/g							
Promethium-144	U	-0.00716	+/-0.0460	0.0829	+/-0.0462		pCi/g							
Promethium-146	U	0.0179	+/-0.0568	0.111	+/-0.0574		pCi/g							
Radium-226		1.56	+/-0.228	0.152	+/-0.259		pCi/g							
Radium-228		0.940	+/-0.409	0.345	+/-0.419		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B3
Sample ID: 674299025

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.0402	+/-0.445	0.758	+/-0.445		pCi/g							
Silver-110m	U	0.161	+/-0.0925	0.166	+/-0.119		pCi/g							
Sodium-22	U	-0.0181	+/-0.0753	0.118	+/-0.0758		pCi/g							
Thallium-208		0.337	+/-0.110	0.0837	+/-0.114		pCi/g							
Thorium-234	U	1.12	+/-1.56	3.12	+/-1.66		pCi/g							
Tin-113	U	0.0351	+/-0.0604	0.122	+/-0.0625		pCi/g							
Uranium-235	U	-0.00850	+/-0.232	0.412	+/-0.232		pCi/g							
Uranium-238	U	1.12	+/-1.56	3.12	+/-1.66		pCi/g							
Yttrium-88	U	0.00472	+/-0.0496	0.113	+/-0.0496		pCi/g							
Zinc-65	U	-0.123	+/-0.160	0.220	+/-0.170		pCi/g							
Zirconium-95	U	-0.0219	+/-0.101	0.196	+/-0.102		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B4
Sample ID: 674299026
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 14.1%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.64	+/-0.643	0.414	+/-0.663		pCi/g			MXR1	07/31/24	1609	2636543	1
Americium-241	U	-0.201	+/-0.315	0.551	+/-0.328		pCi/g							
Antimony-124	U	0.169	+/-0.252	0.339	+/-0.252		pCi/g							
Antimony-125	U	0.102	+/-0.161	0.313	+/-0.168		pCi/g							
Barium-133	U	0.0828	+/-0.109	0.132	+/-0.116		pCi/g							
Barium-140	U	-0.912	+/-1.29	2.22	+/-1.36		pCi/g							
Beryllium-7	U	-0.0141	+/-0.676	1.13	+/-0.676		pCi/g							
Bismuth-212	UI	0.000	+/-1.33	1.33	+/-1.34		pCi/g							
Bismuth-214		10.2	+/-0.498	0.183	+/-1.03		pCi/g							
Cerium-139	U	0.0105	+/-0.0601	0.109	+/-0.0604		pCi/g							
Cerium-141	U	0.244	+/-0.344	0.325	+/-0.361		pCi/g							
Cerium-144	U	0.0672	+/-0.361	0.664	+/-0.362		pCi/g							
Cesium-134	U	0.0527	+/-0.0711	0.143	+/-0.0752		pCi/g							
Cesium-136	U	-0.0945	+/-0.531	0.855	+/-0.533		pCi/g							
Cesium-137		0.125	+/-0.0928	0.101	+/-0.0934	0.100	pCi/g							
Chromium-51	U	1.08	+/-1.08	2.15	+/-1.19		pCi/g							
Cobalt-56	U	0.0185	+/-0.0861	0.166	+/-0.0866		pCi/g							
Cobalt-57	U	-0.0215	+/-0.0473	0.0851	+/-0.0483		pCi/g							
Cobalt-58	U	0.0369	+/-0.0836	0.150	+/-0.0853		pCi/g							
Cobalt-60	U	-0.0235	+/-0.0617	0.109	+/-0.0627		pCi/g							
Europium-152	U	-0.0521	+/-0.180	0.332	+/-0.181		pCi/g							
Europium-154	U	0.0296	+/-0.238	0.391	+/-0.238		pCi/g							
Europium-155	U	-0.0204	+/-0.181	0.335	+/-0.181		pCi/g							
Iridium-192	U	-0.0680	+/-0.0717	0.128	+/-0.0781		pCi/g							
Iron-59	U	-0.0911	+/-0.171	0.301	+/-0.176		pCi/g							
Lead-210	U	4.03	+/-8.73	17.5	+/-8.93		pCi/g							
Lead-212		1.30	+/-0.199	0.203	+/-0.225		pCi/g							
Lead-214		12.6	+/-0.595	0.229	+/-1.17		pCi/g							
Manganese-54	U	-0.0292	+/-0.0702	0.111	+/-0.0715		pCi/g							
Mercury-203	U	-0.0483	+/-0.0911	0.169	+/-0.0937		pCi/g							
Neodymium-147	U	-0.487	+/-3.36	6.10	+/-3.37		pCi/g							
Neptunium-239	U	0.0779	+/-0.442	0.822	+/-0.443		pCi/g							
Niobium-94	U	0.0787	+/-0.106	0.112	+/-0.112		pCi/g							
Niobium-95	UI	0.000	+/-0.102	0.208	+/-0.145		pCi/g							
Potassium-40		8.56	+/-2.03	1.18	+/-2.18		pCi/g							
Promethium-144	U	0.0217	+/-0.0542	0.102	+/-0.0551		pCi/g							
Promethium-146	U	0.0398	+/-0.0764	0.146	+/-0.0786		pCi/g							
Radium-226		12.6	+/-0.595	0.229	+/-1.17		pCi/g							
Radium-228		1.64	+/-0.643	0.414	+/-0.663		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B4
Sample ID: 674299026

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.0578	+/-0.472	0.854	+/-0.472		pCi/g							
Silver-110m	U	0.0253	+/-0.0928	0.180	+/-0.0935		pCi/g							
Sodium-22	U	0.00956	+/-0.0846	0.139	+/-0.0847		pCi/g							
Thallium-208		0.377	+/-0.133	0.111	+/-0.137		pCi/g							
Thorium-234		5.74	+/-5.90	4.53	+/-6.05		pCi/g							
Tin-113	U	-0.0461	+/-0.0870	0.157	+/-0.0895		pCi/g							
Uranium-235	U	0.508	+/-0.715	0.641	+/-0.716		pCi/g							
Uranium-238		5.74	+/-5.90	4.53	+/-6.05		pCi/g							
Yttrium-88	U	0.0198	+/-0.0536	0.119	+/-0.0544		pCi/g							
Zinc-65	U	0.0861	+/-0.147	0.267	+/-0.152		pCi/g							
Zirconium-95	U	-0.123	+/-0.134	0.236	+/-0.146		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B5
Sample ID: 674299027
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 10.9%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		0.933	+/-0.532	0.296	+/-0.547	1.00	pCi/g			CM4	07/18/24	1237	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236		0.468	+/-0.357	0.289	+/-0.362	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		5.46	+/-1.02	0.234	+/-1.23	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	UI	0.000	+/-0.447	0.760	+/-0.693		pCi/g			MXR1	07/31/24	1610	2636543	3
Americium-241	U	-0.205	+/-0.382	0.622	+/-0.394		pCi/g							
Antimony-124	U	0.0241	+/-0.153	0.324	+/-0.154		pCi/g							
Antimony-125	U	-0.0219	+/-0.163	0.292	+/-0.163		pCi/g							
Barium-133	U	-0.0584	+/-0.0842	0.128	+/-0.0884		pCi/g							
Barium-140	U	-0.498	+/-1.27	2.19	+/-1.29		pCi/g							
Beryllium-7	U	-0.589	+/-0.822	1.20	+/-0.866		pCi/g							
Bismuth-212	U	1.45	+/-1.21	1.58	+/-1.22		pCi/g							
Bismuth-214		6.58	+/-0.474	0.216	+/-0.741		pCi/g							
Cerium-139	U	-0.0130	+/-0.0612	0.115	+/-0.0615		pCi/g							
Cerium-141	U	-0.144	+/-0.201	0.333	+/-0.212		pCi/g							
Cerium-144	U	0.137	+/-0.380	0.674	+/-0.385		pCi/g							
Cesium-134	U	0.0389	+/-0.0676	0.135	+/-0.0699		pCi/g							
Cesium-136	U	-0.368	+/-0.491	0.825	+/-0.520		pCi/g							
Cesium-137		0.119	+/-0.0921	0.108	+/-0.0926	0.100	pCi/g							
Chromium-51	U	-0.195	+/-1.07	1.94	+/-1.07		pCi/g							
Cobalt-56	U	-0.0505	+/-0.0784	0.137	+/-0.0818		pCi/g							
Cobalt-57	U	-0.00962	+/-0.0487	0.0841	+/-0.0489		pCi/g							
Cobalt-58	U	-0.00565	+/-0.0734	0.138	+/-0.0734		pCi/g							
Cobalt-60	U	0.0106	+/-0.0596	0.116	+/-0.0598		pCi/g							
Europium-152	U	-0.0135	+/-0.181	0.328	+/-0.181		pCi/g							
Europium-154	U	0.0348	+/-0.179	0.311	+/-0.179		pCi/g							
Europium-155	U	-0.0143	+/-0.177	0.313	+/-0.178		pCi/g							
Iridium-192	U	0.00287	+/-0.0718	0.133	+/-0.0718		pCi/g							
Iron-59	U	-0.242	+/-0.190	0.288	+/-0.221		pCi/g							
Lead-210		23.6	+/-21.9	20.9	+/-22.1		pCi/g							
Lead-212		1.27	+/-0.197	0.193	+/-0.237		pCi/g							
Lead-214		8.49	+/-0.516	0.237	+/-0.969		pCi/g							
Manganese-54	U	-0.0225	+/-0.0662	0.120	+/-0.0670		pCi/g							
Mercury-203	U	-0.0203	+/-0.0932	0.170	+/-0.0937		pCi/g							
Neodymium-147	U	-1.80	+/-3.61	6.16	+/-3.71		pCi/g							
Neptunium-239	U	0.108	+/-0.471	0.837	+/-0.473		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B5
Sample ID: 674299027

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.0780	+/-0.0650	0.108	+/-0.0742		pCi/g							
Niobium-95	U	0.176	+/-0.0821	0.178	+/-0.115		pCi/g							
Potassium-40		6.58	+/-1.43	1.04	+/-1.56		pCi/g							
Promethium-144	U	0.0414	+/-0.0500	0.104	+/-0.0535		pCi/g							
Promethium-146	U	0.0144	+/-0.0749	0.138	+/-0.0752		pCi/g							
Radium-226		8.49	+/-0.516	0.237	+/-0.969		pCi/g							
Radium-228	UI	0.000	+/-0.447	0.760	+/-0.693		pCi/g							
Ruthenium-106	U	-0.0609	+/-0.462	0.883	+/-0.463		pCi/g							
Silver-110m	U	0.0194	+/-0.0870	0.151	+/-0.0875		pCi/g							
Sodium-22	U	0.0124	+/-0.0637	0.111	+/-0.0640		pCi/g							
Thallium-208		0.365	+/-0.151	0.108	+/-0.154		pCi/g							
Thorium-234	U	4.81	+/-7.44	5.12	+/-7.53		pCi/g							
Tin-113	U	-0.0267	+/-0.0891	0.141	+/-0.0900		pCi/g							
Uranium-235	U	0.557	+/-0.413	0.758	+/-0.416		pCi/g							
Uranium-238	U	4.81	+/-7.44	5.12	+/-7.53		pCi/g							
Yttrium-88	U	0.00510	+/-0.0433	0.0987	+/-0.0433		pCi/g							
Zinc-65	U	0.00513	+/-0.154	0.254	+/-0.154		pCi/g							
Zirconium-95	U	-0.0638	+/-0.139	0.251	+/-0.142		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	91.9	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	94.3	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B5
Sample ID: 674299027

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B6
Sample ID: 674299028
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 18.2%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.98	+/-0.408	0.332	+/-0.489		pCi/g			MXR1	07/31/24	1610	2636543	1
Americium-241	U	-8.11E-05	+/-0.440	0.718	+/-0.440		pCi/g							
Antimony-124	U	-0.0756	+/-0.137	0.240	+/-0.142		pCi/g							
Antimony-125	U	0.0448	+/-0.105	0.207	+/-0.107		pCi/g							
Barium-133	U	0.0158	+/-0.0588	0.0847	+/-0.0592		pCi/g							
Barium-140	U	-0.309	+/-0.940	1.67	+/-0.951		pCi/g							
Beryllium-7	U	-0.0266	+/-0.596	0.979	+/-0.596		pCi/g							
Bismuth-212	UI	0.000	+/-1.62	1.15	+/-1.64		pCi/g							
Bismuth-214		1.25	+/-0.205	0.159	+/-0.230		pCi/g							
Cerium-139	U	0.0180	+/-0.0415	0.0801	+/-0.0424		pCi/g							
Cerium-141	U	0.0586	+/-0.126	0.241	+/-0.129		pCi/g							
Cerium-144	U	-0.145	+/-0.323	0.484	+/-0.330		pCi/g							
Cesium-134	U	-0.0161	+/-0.0639	0.111	+/-0.0643		pCi/g							
Cesium-136	U	-0.391	+/-0.435	0.731	+/-0.472		pCi/g							
Cesium-137	U	-0.00649	+/-0.0457	0.0828	+/-0.0458	0.100	pCi/g							
Chromium-51	U	0.0592	+/-0.761	1.43	+/-0.761		pCi/g							
Cobalt-56	U	0.00281	+/-0.0596	0.118	+/-0.0596		pCi/g							
Cobalt-57	U	0.0315	+/-0.0375	0.0688	+/-0.0402		pCi/g							
Cobalt-58	U	0.0219	+/-0.0659	0.127	+/-0.0667		pCi/g							
Cobalt-60	U	0.0120	+/-0.0408	0.0901	+/-0.0412		pCi/g							
Europium-152	U	-0.0901	+/-0.113	0.193	+/-0.120		pCi/g							
Europium-154	U	-0.0451	+/-0.160	0.298	+/-0.161		pCi/g							
Europium-155	U	0.176	+/-0.167	0.309	+/-0.186		pCi/g							
Iridium-192	U	-0.0396	+/-0.0509	0.0876	+/-0.0540		pCi/g							
Iron-59	U	0.0604	+/-0.152	0.317	+/-0.154		pCi/g							
Lead-210	U	-7.80	+/-21.6	37.3	+/-21.9		pCi/g							
Lead-212		1.70	+/-0.174	0.128	+/-0.238		pCi/g							
Lead-214		1.94	+/-0.279	0.165	+/-0.331		pCi/g							
Manganese-54	U	0.0552	+/-0.0537	0.111	+/-0.0595		pCi/g							
Mercury-203	U	0.0238	+/-0.0708	0.123	+/-0.0716		pCi/g							
Neodymium-147	U	-0.278	+/-2.48	4.54	+/-2.49		pCi/g							
Neptunium-239	U	0.192	+/-0.361	0.651	+/-0.372		pCi/g							
Niobium-94	U	0.00919	+/-0.0366	0.0712	+/-0.0369		pCi/g							
Niobium-95	U	0.00325	+/-0.0659	0.121	+/-0.0659		pCi/g							
Potassium-40		17.8	+/-2.25	0.963	+/-3.18		pCi/g							
Promethium-144	U	-0.0279	+/-0.0366	0.0590	+/-0.0388		pCi/g							
Promethium-146	U	0.00704	+/-0.0491	0.0935	+/-0.0492		pCi/g							
Radium-226		1.94	+/-0.279	0.165	+/-0.331		pCi/g							
Radium-228		1.98	+/-0.408	0.332	+/-0.489		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B6
Sample ID: 674299028

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.0174	+/-0.352	0.658	+/-0.352		pCi/g							
Silver-110m	U	-0.00310	+/-0.0609	0.121	+/-0.0610		pCi/g							
Sodium-22	U	-0.0161	+/-0.0570	0.106	+/-0.0575		pCi/g							
Thallium-208		0.534	+/-0.128	0.0824	+/-0.136		pCi/g							
Thorium-234	U	1.01	+/-5.13	5.29	+/-5.13		pCi/g							
Tin-113	U	-0.0417	+/-0.0663	0.115	+/-0.0690		pCi/g							
Uranium-235	U	0.142	+/-0.265	0.508	+/-0.265		pCi/g							
Uranium-238	U	1.01	+/-5.13	5.29	+/-5.13		pCi/g							
Yttrium-88	U	0.00685	+/-0.0501	0.111	+/-0.0502		pCi/g							
Zinc-65	U	-0.00428	+/-0.145	0.245	+/-0.145		pCi/g							
Zirconium-95	U	-0.0341	+/-0.104	0.183	+/-0.105		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U1
Sample ID: 674299029
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 14.7%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	UI	0.000	+/-0.294	0.646	+/-0.454		pCi/g			MXR1	07/31/24	1611	2636543	1
Americium-241	U	-0.115	+/-0.336	0.582	+/-0.340		pCi/g							
Antimony-124	U	-0.125	+/-0.141	0.223	+/-0.152		pCi/g							
Antimony-125	U	0.0886	+/-0.117	0.236	+/-0.124		pCi/g							
Barium-133	U	0.0522	+/-0.0645	0.116	+/-0.0688		pCi/g							
Barium-140	U	-0.323	+/-1.04	1.87	+/-1.05		pCi/g							
Beryllium-7	U	0.00193	+/-0.612	1.13	+/-0.612		pCi/g							
Bismuth-212	U	1.22	+/-0.838	1.75	+/-1.01		pCi/g							
Bismuth-214		0.930	+/-0.209	0.181	+/-0.232		pCi/g							
Cerium-139	U	0.000937	+/-0.0413	0.0773	+/-0.0413		pCi/g							
Cerium-141	U	-0.0299	+/-0.135	0.247	+/-0.135		pCi/g							
Cerium-144	U	0.0415	+/-0.278	0.526	+/-0.279		pCi/g							
Cesium-134	U	0.0147	+/-0.0546	0.103	+/-0.0550		pCi/g							
Cesium-136	U	-0.184	+/-0.384	0.701	+/-0.393		pCi/g							
Cesium-137	U	0.0397	+/-0.0505	0.103	+/-0.0537	0.100	pCi/g							
Chromium-51	U	-0.385	+/-0.801	1.42	+/-0.820		pCi/g							
Cobalt-56	U	0.000250	+/-0.0671	0.110	+/-0.0671		pCi/g							
Cobalt-57	U	-0.00624	+/-0.0343	0.0640	+/-0.0345		pCi/g							
Cobalt-58	U	-0.0681	+/-0.0722	0.115	+/-0.0787		pCi/g							
Cobalt-60	U	0.0710	+/-0.0590	0.134	+/-0.0674		pCi/g							
Europium-152	U	0.250	+/-0.199	0.252	+/-0.230		pCi/g							
Europium-154	U	0.0708	+/-0.174	0.355	+/-0.177		pCi/g							
Europium-155	U	0.0291	+/-0.171	0.302	+/-0.171		pCi/g							
Iridium-192	U	-0.00220	+/-0.0567	0.105	+/-0.0567		pCi/g							
Iron-59	U	-0.0903	+/-0.181	0.325	+/-0.185		pCi/g							
Lead-210	U	-0.451	+/-10.6	16.8	+/-10.6		pCi/g							
Lead-212		1.17	+/-0.175	0.138	+/-0.198		pCi/g							
Lead-214		0.667	+/-0.275	0.184	+/-0.281		pCi/g							
Manganese-54	U	0.000280	+/-0.0563	0.103	+/-0.0563		pCi/g							
Mercury-203	U	0.0440	+/-0.0703	0.136	+/-0.0731		pCi/g							
Neodymium-147	U	0.991	+/-2.68	5.08	+/-2.72		pCi/g							
Neptunium-239	U	-0.0170	+/-0.374	0.701	+/-0.374		pCi/g							
Niobium-94	U	0.0141	+/-0.0412	0.0808	+/-0.0417		pCi/g							
Niobium-95	U	-0.0322	+/-0.0811	0.140	+/-0.0824		pCi/g							
Potassium-40		20.4	+/-2.09	0.985	+/-2.71		pCi/g							
Promethium-144	U	0.0191	+/-0.0456	0.0897	+/-0.0464		pCi/g							
Promethium-146	U	-0.0486	+/-0.0542	0.0903	+/-0.0587		pCi/g							
Radium-226		0.667	+/-0.275	0.184	+/-0.281		pCi/g							
Radium-228	UI	0.000	+/-0.294	0.646	+/-0.454		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U1
Sample ID: 674299029

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.00324	+/-0.462	0.856	+/-0.462		pCi/g							
Silver-110m	U	0.0382	+/-0.0705	0.142	+/-0.0726		pCi/g							
Sodium-22	U	0.0274	+/-0.0623	0.128	+/-0.0636		pCi/g							
Thallium-208		0.246	+/-0.104	0.0917	+/-0.107		pCi/g							
Thorium-234	U	-0.582	+/-2.91	5.03	+/-2.92		pCi/g							
Tin-113	U	-0.00472	+/-0.0646	0.120	+/-0.0646		pCi/g							
Uranium-235	U	0.00686	+/-0.281	0.522	+/-0.281		pCi/g							
Uranium-238	U	-0.582	+/-2.91	5.03	+/-2.92		pCi/g							
Yttrium-88	U	0.0368	+/-0.0354	0.107	+/-0.0392		pCi/g							
Zinc-65	U	0.0372	+/-0.105	0.200	+/-0.107		pCi/g							
Zirconium-95	U	0.0678	+/-0.131	0.258	+/-0.135		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U2
Sample ID: 674299030
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 27.3%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		0.850	+/-0.516	0.440	+/-0.529	1.00	pCi/g			CM4	07/18/24	1237	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.0705	+/-0.241	0.447	+/-0.241	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		3.18	+/-0.835	0.361	+/-0.933	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.06	+/-0.423	0.377	+/-0.436		pCi/g			MXR1	07/31/24	1611	2636543	3
Americium-241	U	0.0657	+/-0.208	0.403	+/-0.210		pCi/g							
Antimony-124	U	0.0512	+/-0.140	0.306	+/-0.142		pCi/g							
Antimony-125	U	0.0408	+/-0.133	0.252	+/-0.134		pCi/g							
Barium-133	U	0.0799	+/-0.0527	0.105	+/-0.0642		pCi/g							
Barium-140	U	0.960	+/-1.18	2.32	+/-1.26		pCi/g							
Beryllium-7	U	0.158	+/-0.588	1.11	+/-0.593		pCi/g							
Bismuth-212		1.19	+/-1.06	1.16	+/-1.07		pCi/g							
Bismuth-214		3.83	+/-0.364	0.174	+/-0.522		pCi/g							
Cerium-139	U	0.0189	+/-0.0473	0.0856	+/-0.0483		pCi/g							
Cerium-141	U	-0.0214	+/-0.138	0.242	+/-0.138		pCi/g							
Cerium-144	U	-0.251	+/-0.282	0.478	+/-0.305		pCi/g							
Cesium-134	U	0.0436	+/-0.0564	0.116	+/-0.0599		pCi/g							
Cesium-136	U	-0.336	+/-0.360	0.583	+/-0.392		pCi/g							
Cesium-137	U	-0.0311	+/-0.0539	0.0899	+/-0.0558	0.100	pCi/g							
Chromium-51	U	-0.0654	+/-0.823	1.53	+/-0.824		pCi/g							
Cobalt-56	U	-0.0122	+/-0.0572	0.107	+/-0.0574		pCi/g							
Cobalt-57	U	0.0178	+/-0.0326	0.0614	+/-0.0336		pCi/g							
Cobalt-58	UI	0.000	+/-0.141	0.108	+/-0.142		pCi/g							
Cobalt-60	U	-0.0157	+/-0.0520	0.0931	+/-0.0525		pCi/g							
Europium-152	U	-0.00751	+/-0.128	0.238	+/-0.128		pCi/g							
Europium-154	U	0.0824	+/-0.181	0.325	+/-0.185		pCi/g							
Europium-155	U	0.0259	+/-0.138	0.256	+/-0.139		pCi/g							
Iridium-192	U	-0.0751	+/-0.0559	0.0943	+/-0.0657		pCi/g							
Iron-59	U	0.0123	+/-0.170	0.321	+/-0.170		pCi/g							
Lead-210	U	5.15	+/-6.20	12.5	+/-6.64		pCi/g							
Lead-212		1.37	+/-0.172	0.136	+/-0.209		pCi/g							
Lead-214		4.73	+/-0.364	0.196	+/-0.537		pCi/g							
Manganese-54	U	0.00394	+/-0.0508	0.0977	+/-0.0509		pCi/g							
Mercury-203	U	0.0873	+/-0.103	0.129	+/-0.103		pCi/g							
Neodymium-147	U	-1.03	+/-2.82	4.94	+/-2.86		pCi/g							
Neptunium-239	U	-0.00712	+/-0.344	0.625	+/-0.344		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U2
Sample ID: 674299030

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.0596	+/-0.133	0.0862	+/-0.136		pCi/g							
Niobium-95	U	-0.000891	+/-0.0830	0.139	+/-0.0830		pCi/g							
Potassium-40		13.8	+/-1.94	0.813	+/-2.30		pCi/g							
Promethium-144	U	0.000242	+/-0.0517	0.0829	+/-0.0517		pCi/g							
Promethium-146	U	0.0562	+/-0.0807	0.123	+/-0.0848		pCi/g							
Radium-226		4.73	+/-0.364	0.196	+/-0.537		pCi/g							
Radium-228		1.06	+/-0.423	0.377	+/-0.436		pCi/g							
Ruthenium-106	U	-0.374	+/-0.431	0.694	+/-0.464		pCi/g							
Silver-110m	U	-0.0205	+/-0.0816	0.149	+/-0.0821		pCi/g							
Sodium-22	U	0.0274	+/-0.0643	0.115	+/-0.0655		pCi/g							
Thallium-208		0.391	+/-0.127	0.0939	+/-0.133		pCi/g							
Thorium-234		4.74	+/-3.37	3.32	+/-3.56		pCi/g							
Tin-113	U	-0.0551	+/-0.0728	0.126	+/-0.0771		pCi/g							
Uranium-235	U	0.000826	+/-0.289	0.514	+/-0.289		pCi/g							
Uranium-238		4.74	+/-3.37	3.32	+/-3.56		pCi/g							
Yttrium-88	U	-0.000239	+/-0.0540	0.111	+/-0.0540		pCi/g							
Zinc-65	U	0.00923	+/-0.135	0.224	+/-0.135		pCi/g							
Zirconium-95	U	0.00452	+/-0.109	0.211	+/-0.109		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	91.8	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	97	(15%-125%)

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Certificate of Analysis

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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U2
Sample ID: 674299030

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U3
Sample ID: 674299031
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 12.3%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232	U	0.217	+/-0.357	0.511	+/-0.359	1.00	pCi/g			CM4	07/18/24	1237	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.000	+/-0.129	0.192	+/-0.129	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		0.803	+/-0.420	0.287	+/-0.433	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	UI	0.000	+/-0.264	0.520	+/-0.519		pCi/g			MXR1	07/31/24	1612	2636543	3
Americium-241	U	0.166	+/-0.206	0.384	+/-0.220		pCi/g							
Antimony-124	U	-0.0740	+/-0.110	0.184	+/-0.115		pCi/g							
Antimony-125	U	0.00192	+/-0.0877	0.165	+/-0.0877		pCi/g							
Barium-133	U	-0.000125	+/-0.0479	0.0751	+/-0.0479		pCi/g							
Barium-140	U	0.220	+/-0.670	1.30	+/-0.677		pCi/g							
Beryllium-7	U	-0.256	+/-0.363	0.628	+/-0.381		pCi/g							
Bismuth-212		1.11	+/-0.764	1.04	+/-0.771		pCi/g							
Bismuth-214		1.42	+/-0.211	0.126	+/-0.242		pCi/g							
Cerium-139	U	0.0522	+/-0.0364	0.0558	+/-0.0380		pCi/g							
Cerium-141	U	-0.0210	+/-0.109	0.181	+/-0.109		pCi/g							
Cerium-144	U	0.0220	+/-0.208	0.362	+/-0.208		pCi/g							
Cesium-134	U	0.0581	+/-0.0567	0.0899	+/-0.0627		pCi/g							
Cesium-136	U	-0.0133	+/-0.333	0.610	+/-0.333		pCi/g							
Cesium-137	U	0.00973	+/-0.0372	0.0694	+/-0.0375	0.100	pCi/g							
Chromium-51	U	-0.241	+/-0.589	1.01	+/-0.600		pCi/g							
Cobalt-56	U	-0.00951	+/-0.0460	0.0847	+/-0.0462		pCi/g							
Cobalt-57	U	-0.00122	+/-0.0269	0.0467	+/-0.0270		pCi/g							
Cobalt-58	U	-0.0256	+/-0.0420	0.0740	+/-0.0437		pCi/g							
Cobalt-60	U	0.0206	+/-0.0436	0.0843	+/-0.0446		pCi/g							
Europium-152	U	-0.0591	+/-0.0907	0.150	+/-0.0947		pCi/g							
Europium-154	U	0.127	+/-0.141	0.280	+/-0.153		pCi/g							
Europium-155	U	0.0320	+/-0.109	0.196	+/-0.110		pCi/g							
Iridium-192	U	0.0107	+/-0.0421	0.0768	+/-0.0424		pCi/g							
Iron-59	U	-0.00863	+/-0.127	0.232	+/-0.127		pCi/g							
Lead-210	U	-12.0	+/-9.37	15.3	+/-10.9		pCi/g							
Lead-212		0.934	+/-0.122	0.108	+/-0.147		pCi/g							
Lead-214		1.94	+/-0.219	0.109	+/-0.276		pCi/g							
Manganese-54	U	-0.00314	+/-0.0403	0.0747	+/-0.0403		pCi/g							
Mercury-203	U	0.0125	+/-0.103	0.0972	+/-0.103		pCi/g							
Neodymium-147	U	-0.102	+/-1.85	3.41	+/-1.85		pCi/g							
Neptunium-239	U	-0.0857	+/-0.283	0.480	+/-0.286		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U3
Sample ID: 674299031

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	0.0145	+/-0.0345	0.0647	+/-0.0351		pCi/g							
Niobium-95	U	0.0893	+/-0.0984	0.0995	+/-0.0988		pCi/g							
Potassium-40		13.4	+/-1.44	0.673	+/-1.94		pCi/g							
Promethium-144	U	0.0187	+/-0.0342	0.0656	+/-0.0352		pCi/g							
Promethium-146	U	-0.0187	+/-0.0406	0.0725	+/-0.0415		pCi/g							
Radium-226		1.94	+/-0.219	0.109	+/-0.276		pCi/g							
Radium-228	UI	0.000	+/-0.264	0.520	+/-0.519		pCi/g							
Ruthenium-106	U	0.121	+/-0.318	0.604	+/-0.323		pCi/g							
Silver-110m	U	-0.0310	+/-0.0510	0.0887	+/-0.0530		pCi/g							
Sodium-22	U	0.0248	+/-0.0528	0.0986	+/-0.0540		pCi/g							
Thallium-208		0.202	+/-0.0841	0.0591	+/-0.0858		pCi/g							
Thorium-234		3.59	+/-3.72	3.17	+/-3.82		pCi/g							
Tin-113	U	0.0139	+/-0.0478	0.0923	+/-0.0483		pCi/g							
Uranium-235	U	0.178	+/-0.217	0.394	+/-0.232		pCi/g							
Uranium-238		3.59	+/-3.72	3.17	+/-3.82		pCi/g							
Yttrium-88	U	-0.0277	+/-0.0476	0.0847	+/-0.0492		pCi/g							
Zinc-65	U	0.114	+/-0.114	0.210	+/-0.126		pCi/g							
Zirconium-95	U	0.00582	+/-0.0872	0.166	+/-0.0872		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	73.2	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	99.6	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U3
Sample ID: 674299031

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U4
Sample ID: 674299032
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 18.1%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.32	+/-0.425	0.412	+/-0.444		pCi/g			MXR1	07/31/24	1612	2636543	1
Americium-241	U	0.171	+/-0.275	0.482	+/-0.286		pCi/g							
Antimony-124	U	-0.0661	+/-0.208	0.326	+/-0.211		pCi/g							
Antimony-125	U	-0.112	+/-0.157	0.275	+/-0.165		pCi/g							
Barium-133	U	0.00617	+/-0.0707	0.120	+/-0.0708		pCi/g							
Barium-140	U	-0.546	+/-1.26	2.24	+/-1.29		pCi/g							
Beryllium-7	U	0.111	+/-0.639	1.21	+/-0.641		pCi/g							
Bismuth-212		1.82	+/-1.01	1.33	+/-1.02		pCi/g							
Bismuth-214		8.83	+/-0.489	0.201	+/-0.958		pCi/g							
Cerium-139	U	0.00545	+/-0.0607	0.106	+/-0.0608		pCi/g							
Cerium-141	U	0.0446	+/-0.179	0.293	+/-0.180		pCi/g							
Cerium-144	U	0.538	+/-0.484	0.617	+/-0.486		pCi/g							
Cesium-134	U	0.0434	+/-0.0666	0.129	+/-0.0695		pCi/g							
Cesium-136	U	-0.190	+/-0.518	0.880	+/-0.526		pCi/g							
Cesium-137		0.234	+/-0.113	0.0909	+/-0.115	0.100	pCi/g							
Chromium-51	U	-0.0752	+/-0.963	1.80	+/-0.963		pCi/g							
Cobalt-56	U	0.0339	+/-0.0696	0.135	+/-0.0713		pCi/g							
Cobalt-57	U	-0.0149	+/-0.0464	0.0807	+/-0.0469		pCi/g							
Cobalt-58	U	0.0115	+/-0.0810	0.135	+/-0.0812		pCi/g							
Cobalt-60	U	-0.0130	+/-0.0521	0.0984	+/-0.0524		pCi/g							
Europium-152	U	0.0668	+/-0.167	0.319	+/-0.170		pCi/g							
Europium-154	U	0.0452	+/-0.175	0.316	+/-0.176		pCi/g							
Europium-155	U	0.195	+/-0.183	0.322	+/-0.204		pCi/g							
Iridium-192	U	-0.0311	+/-0.0692	0.126	+/-0.0707		pCi/g							
Iron-59	U	-0.0722	+/-0.148	0.272	+/-0.152		pCi/g							
Lead-210	U	5.78	+/-6.26	12.0	+/-6.80		pCi/g							
Lead-212		1.22	+/-0.185	0.187	+/-0.215		pCi/g							
Lead-214		10.5	+/-0.529	0.207	+/-1.01		pCi/g							
Manganese-54	U	-0.0204	+/-0.0685	0.119	+/-0.0691		pCi/g							
Mercury-203	U	0.00233	+/-0.0990	0.168	+/-0.0990		pCi/g							
Neodymium-147	U	-2.60	+/-3.48	5.99	+/-3.68		pCi/g							
Neptunium-239	U	-0.143	+/-0.446	0.778	+/-0.450		pCi/g							
Niobium-94	U	0.0533	+/-0.0535	0.107	+/-0.0589		pCi/g							
Niobium-95	U	0.0385	+/-0.0876	0.151	+/-0.0894		pCi/g							
Potassium-40		10.9	+/-1.78	1.10	+/-2.03		pCi/g							
Promethium-144	U	-0.0356	+/-0.0554	0.0942	+/-0.0578		pCi/g							
Promethium-146	U	0.0578	+/-0.119	0.137	+/-0.122		pCi/g							
Radium-226		10.5	+/-0.529	0.207	+/-1.01		pCi/g							
Radium-228		1.32	+/-0.425	0.412	+/-0.444		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.U4
Sample ID: 674299032

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.232	+/-0.491	0.947	+/-0.502		pCi/g							
Silver-110m	U	0.00664	+/-0.0909	0.163	+/-0.0909		pCi/g							
Sodium-22	U	0.0171	+/-0.0625	0.113	+/-0.0629		pCi/g							
Thallium-208		0.348	+/-0.157	0.106	+/-0.160		pCi/g							
Thorium-234		8.21	+/-4.32	3.99	+/-4.73		pCi/g							
Tin-113	U	-0.0910	+/-0.0835	0.143	+/-0.0933		pCi/g							
Uranium-235		0.852	+/-0.712	0.600	+/-0.716		pCi/g							
Uranium-238		8.21	+/-4.32	3.99	+/-4.73		pCi/g							
Yttrium-88	U	-0.0226	+/-0.0600	0.110	+/-0.0609		pCi/g							
Zinc-65	U	0.0253	+/-0.133	0.236	+/-0.134		pCi/g							
Zirconium-95	U	0.135	+/-0.135	0.274	+/-0.149		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B1.D
Sample ID: 674299033
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 19%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		0.460	+/-0.425	0.412	+/-0.430	1.00	pCi/g			CM4	07/18/24	1237	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.0363	+/-0.202	0.387	+/-0.202	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238	U	0.156	+/-0.225	0.271	+/-0.226	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.44	+/-0.331	0.268	+/-0.368		pCi/g			MXR1	07/31/24	1612	2636543	3
Americium-241	U	0.00147	+/-0.116	0.200	+/-0.116		pCi/g							
Antimony-124	U	-0.0223	+/-0.0890	0.175	+/-0.0896		pCi/g							
Antimony-125	U	0.0637	+/-0.0909	0.184	+/-0.0954		pCi/g							
Barium-133	U	-0.0129	+/-0.0398	0.0654	+/-0.0403		pCi/g							
Barium-140	U	-0.163	+/-0.741	1.36	+/-0.745		pCi/g							
Beryllium-7	U	0.225	+/-0.383	0.723	+/-0.397		pCi/g							
Bismuth-212	UI	0.000	+/-0.833	0.800	+/-0.846		pCi/g							
Bismuth-214		0.962	+/-0.178	0.113	+/-0.197		pCi/g							
Cerium-139	U	-0.00540	+/-0.0299	0.0521	+/-0.0300		pCi/g							
Cerium-141	U	0.0252	+/-0.0911	0.155	+/-0.0919		pCi/g							
Cerium-144	U	0.0916	+/-0.183	0.343	+/-0.188		pCi/g							
Cesium-134	U	0.0689	+/-0.0434	0.0965	+/-0.0538		pCi/g							
Cesium-136	U	-0.0947	+/-0.286	0.536	+/-0.289		pCi/g							
Cesium-137	U	0.0151	+/-0.0305	0.0625	+/-0.0313	0.100	pCi/g							
Chromium-51	U	-0.0680	+/-0.570	1.08	+/-0.571		pCi/g							
Cobalt-56	U	-0.00226	+/-0.0439	0.0867	+/-0.0439		pCi/g							
Cobalt-57	U	-0.000625	+/-0.0240	0.0432	+/-0.0240		pCi/g							
Cobalt-58	U	-0.00482	+/-0.0428	0.0788	+/-0.0429		pCi/g							
Cobalt-60	U	0.0285	+/-0.0428	0.0924	+/-0.0447		pCi/g							
Europium-152	U	0.0750	+/-0.0917	0.187	+/-0.0980		pCi/g							
Europium-154	U	-0.125	+/-0.118	0.185	+/-0.132		pCi/g							
Europium-155	U	0.112	+/-0.0939	0.186	+/-0.107		pCi/g							
Iridium-192	U	0.00282	+/-0.0378	0.0729	+/-0.0378		pCi/g							
Iron-59	U	-0.0617	+/-0.127	0.228	+/-0.130		pCi/g							
Lead-210	U	0.989	+/-3.03	3.42	+/-3.03		pCi/g							
Lead-212		1.26	+/-0.135	0.0930	+/-0.174		pCi/g							
Lead-214		1.25	+/-0.197	0.132	+/-0.222		pCi/g							
Manganese-54	U	-0.000500	+/-0.0383	0.0752	+/-0.0383		pCi/g							
Mercury-203	U	-0.0273	+/-0.0438	0.0797	+/-0.0456		pCi/g							
Neodymium-147	U	-0.143	+/-1.81	3.40	+/-1.82		pCi/g							
Neptunium-239	U	-0.238	+/-0.236	0.389	+/-0.260		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B1.D
Sample ID: 674299033

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	-0.000528	+/-0.0317	0.0588	+/-0.0317		pCi/g							
Niobium-95	U	0.0145	+/-0.0556	0.0960	+/-0.0560		pCi/g							
Potassium-40		18.9	+/-1.85	0.741	+/-2.64		pCi/g							
Promethium-144	U	0.0123	+/-0.0395	0.0751	+/-0.0400		pCi/g							
Promethium-146	U	0.0134	+/-0.0388	0.0766	+/-0.0393		pCi/g							
Radium-226		1.25	+/-0.197	0.132	+/-0.222		pCi/g							
Radium-228		1.44	+/-0.331	0.268	+/-0.368		pCi/g							
Ruthenium-106	U	0.0532	+/-0.315	0.603	+/-0.316		pCi/g							
Silver-110m	U	0.00348	+/-0.0467	0.0944	+/-0.0467		pCi/g							
Sodium-22	U	-0.0429	+/-0.0425	0.0675	+/-0.0469		pCi/g							
Thallium-208		0.259	+/-0.0846	0.0701	+/-0.0876		pCi/g							
Thorium-234	U	1.59	+/-2.23	1.75	+/-2.26		pCi/g							
Tin-113	U	-0.0350	+/-0.0480	0.0840	+/-0.0506		pCi/g							
Uranium-235	U	0.226	+/-0.335	0.311	+/-0.336		pCi/g							
Uranium-238	U	1.59	+/-2.23	1.75	+/-2.26		pCi/g							
Yttrium-88	U	-0.00337	+/-0.0404	0.0820	+/-0.0404		pCi/g							
Zinc-65	U	0.0258	+/-0.0870	0.162	+/-0.0878		pCi/g							
Zirconium-95	U	-0.0262	+/-0.0913	0.161	+/-0.0921		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	78.5	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	89.7	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: S1.B1.D
Sample ID: 674299033

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: F1
Sample ID: 674299034
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 24.9%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232		0.456	+/-0.384	0.353	+/-0.388	1.00	pCi/g			CM4	07/18/24	1237	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.172	+/-0.273	0.378	+/-0.274	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		0.457	+/-0.346	0.337	+/-0.351	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.519	+/-0.383	0.301	+/-0.389		pCi/g			MXR1	07/31/24	1613	2636543	3
Americium-241	U	-0.0251	+/-0.0341	0.0613	+/-0.0360		pCi/g							
Antimony-124	U	-0.0525	+/-0.133	0.261	+/-0.135		pCi/g							
Antimony-125	U	-0.0177	+/-0.0936	0.156	+/-0.0939		pCi/g							
Barium-133	U	0.0310	+/-0.0320	0.0672	+/-0.0351		pCi/g							
Barium-140	U	-0.207	+/-0.665	1.22	+/-0.671		pCi/g							
Beryllium-7	U	-0.286	+/-0.410	0.698	+/-0.431		pCi/g							
Bismuth-212	U	0.393	+/-0.599	1.24	+/-0.626		pCi/g							
Bismuth-214		0.780	+/-0.168	0.132	+/-0.188		pCi/g							
Cerium-139	U	-0.0166	+/-0.0224	0.0371	+/-0.0240		pCi/g							
Cerium-141	U	-0.0257	+/-0.0661	0.116	+/-0.0673		pCi/g							
Cerium-144	U	-0.00765	+/-0.131	0.240	+/-0.132		pCi/g							
Cesium-134	U	0.00950	+/-0.0514	0.104	+/-0.0516		pCi/g							
Cesium-136	U	0.0876	+/-0.407	0.828	+/-0.409		pCi/g							
Cesium-137	U	0.0202	+/-0.0410	0.0784	+/-0.0420	0.100	pCi/g							
Chromium-51	U	-0.0797	+/-0.513	0.975	+/-0.514		pCi/g							
Cobalt-56	U	-0.0142	+/-0.0517	0.0992	+/-0.0521		pCi/g							
Cobalt-57	U	0.000307	+/-0.0139	0.0262	+/-0.0139		pCi/g							
Cobalt-58	U	-0.0151	+/-0.0500	0.0961	+/-0.0505		pCi/g							
Cobalt-60	U	0.0190	+/-0.0487	0.108	+/-0.0494		pCi/g							
Europium-152	U	-0.0490	+/-0.0804	0.144	+/-0.0835		pCi/g							
Europium-154	U	-0.0856	+/-0.163	0.282	+/-0.168		pCi/g							
Europium-155	U	0.0247	+/-0.0642	0.121	+/-0.0652		pCi/g							
Iridium-192	U	-0.0104	+/-0.0367	0.0685	+/-0.0370		pCi/g							
Iron-59	U	0.133	+/-0.148	0.341	+/-0.160		pCi/g							
Lead-210	U	0.685	+/-0.318	0.695	+/-0.448		pCi/g							
Lead-212		0.573	+/-0.107	0.101	+/-0.132		pCi/g							
Lead-214		0.762	+/-0.163	0.122	+/-0.176		pCi/g							
Manganese-54	U	0.00231	+/-0.0392	0.0804	+/-0.0392		pCi/g							
Mercury-203	U	-0.0167	+/-0.0504	0.0837	+/-0.0510		pCi/g							
Neodymium-147	U	-1.75	+/-2.10	3.43	+/-2.25		pCi/g							
Neptunium-239	U	-0.109	+/-0.161	0.277	+/-0.169		pCi/g							

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Certificate of Analysis

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: F1
Sample ID: 674299034

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	-0.0139	+/-0.0407	0.0709	+/-0.0412		pCi/g							
Niobium-95	U	-0.0289	+/-0.0552	0.101	+/-0.0568		pCi/g							
Potassium-40		6.60	+/-1.60	0.756	+/-1.73		pCi/g							
Promethium-144	U	-0.00417	+/-0.0364	0.0675	+/-0.0364		pCi/g							
Promethium-146	U	-0.0141	+/-0.0427	0.0775	+/-0.0432		pCi/g							
Radium-226		0.762	+/-0.163	0.122	+/-0.176		pCi/g							
Radium-228		0.519	+/-0.383	0.301	+/-0.389		pCi/g							
Ruthenium-106	U	-0.0574	+/-0.307	0.571	+/-0.308		pCi/g							
Silver-110m	U	0.0528	+/-0.0615	0.127	+/-0.0664		pCi/g							
Sodium-22	U	-0.0263	+/-0.0591	0.104	+/-0.0604		pCi/g							
Thallium-208		0.159	+/-0.0779	0.0692	+/-0.0797		pCi/g							
Thorium-234	U	0.462	+/-0.611	0.631	+/-0.620		pCi/g							
Tin-113	U	-0.0504	+/-0.0456	0.0741	+/-0.0511		pCi/g							
Uranium-235	U	0.109	+/-0.140	0.273	+/-0.141		pCi/g							
Uranium-238	U	0.462	+/-0.611	0.631	+/-0.620		pCi/g							
Yttrium-88	U	-0.0489	+/-0.0588	0.0897	+/-0.0629		pCi/g							
Zinc-65	U	0.154	+/-0.115	0.268	+/-0.135		pCi/g							
Zirconium-95	U	0.0378	+/-0.104	0.218	+/-0.105		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	102	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	107	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: F1
Sample ID: 674299034

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: F2
Sample ID: 674299035
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 27.6%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.343	+/-0.182	0.387	+/-0.242		pCi/g			MXR1	07/31/24	1613	2636543	1
Americium-241	U	0.00382	+/-0.363	0.641	+/-0.363		pCi/g							
Antimony-124	U	0.0315	+/-0.112	0.239	+/-0.113		pCi/g							
Antimony-125	U	-0.00538	+/-0.0942	0.174	+/-0.0943		pCi/g							
Barium-133	U	-0.00695	+/-0.0450	0.0728	+/-0.0452		pCi/g							
Barium-140	U	0.0152	+/-0.827	1.54	+/-0.827		pCi/g							
Beryllium-7	U	0.558	+/-0.415	0.884	+/-0.488		pCi/g							
Bismuth-212		0.917	+/-0.769	0.823	+/-0.776		pCi/g							
Bismuth-214		0.450	+/-0.163	0.122	+/-0.169		pCi/g							
Cerium-139	U	0.0483	+/-0.0842	0.0628	+/-0.0850		pCi/g							
Cerium-141	U	0.0231	+/-0.106	0.189	+/-0.107		pCi/g							
Cerium-144	U	0.0258	+/-0.244	0.431	+/-0.244		pCi/g							
Cesium-134	U	0.0255	+/-0.0393	0.0795	+/-0.0410		pCi/g							
Cesium-136	U	0.0713	+/-0.253	0.524	+/-0.255		pCi/g							
Cesium-137		0.0679	+/-0.0515	0.0598	+/-0.0520	0.100	pCi/g							
Chromium-51	U	-0.0354	+/-0.660	1.22	+/-0.660		pCi/g							
Cobalt-56	U	0.0330	+/-0.0512	0.0940	+/-0.0535		pCi/g							
Cobalt-57	U	0.0144	+/-0.0300	0.0550	+/-0.0308		pCi/g							
Cobalt-58	U	0.0162	+/-0.0402	0.0809	+/-0.0409		pCi/g							
Cobalt-60	U	-0.00852	+/-0.0333	0.0635	+/-0.0335		pCi/g							
Europium-152	U	0.0117	+/-0.118	0.196	+/-0.118		pCi/g							
Europium-154	U	0.0411	+/-0.0855	0.190	+/-0.0876		pCi/g							
Europium-155	U	-0.0385	+/-0.126	0.218	+/-0.128		pCi/g							
Iridium-192	U	-0.00407	+/-0.0437	0.0808	+/-0.0438		pCi/g							
Iron-59	U	-0.0249	+/-0.0948	0.181	+/-0.0955		pCi/g							
Lead-210	U	7.47	+/-23.2	40.9	+/-23.4		pCi/g							
Lead-212	UI	0.000	+/-0.120	0.207	+/-0.214		pCi/g							
Lead-214		0.637	+/-0.189	0.134	+/-0.198		pCi/g							
Manganese-54	U	-0.0359	+/-0.0323	0.0480	+/-0.0364		pCi/g							
Mercury-203	U	-0.0268	+/-0.0588	0.0970	+/-0.0601		pCi/g							
Neodymium-147	U	1.80	+/-2.13	4.30	+/-2.29		pCi/g							
Neptunium-239	U	0.158	+/-0.300	0.506	+/-0.308		pCi/g							
Niobium-94	U	0.0131	+/-0.0328	0.0637	+/-0.0334		pCi/g							
Niobium-95	U	0.0159	+/-0.0523	0.0903	+/-0.0528		pCi/g							
Potassium-40		2.16	+/-0.732	0.569	+/-0.763		pCi/g							
Promethium-144	U	0.000518	+/-0.0361	0.0666	+/-0.0361		pCi/g							
Promethium-146	U	-0.0104	+/-0.0480	0.0865	+/-0.0482		pCi/g							
Radium-226		0.637	+/-0.189	0.134	+/-0.198		pCi/g							
Radium-228	U	0.343	+/-0.182	0.387	+/-0.242		pCi/g							

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Certificate of Analysis

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: F2
Sample ID: 674299035

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.0298	+/-0.316	0.581	+/-0.316		pCi/g							
Silver-110m	U	-0.0314	+/-0.0448	0.0733	+/-0.0471		pCi/g							
Sodium-22	U	0.0163	+/-0.0309	0.0690	+/-0.0318		pCi/g							
Thallium-208		0.0770	+/-0.0696	0.0632	+/-0.0700		pCi/g							
Thorium-234	U	-0.309	+/-2.70	4.68	+/-2.71		pCi/g							
Tin-113	U	0.0220	+/-0.0486	0.0952	+/-0.0496		pCi/g							
Uranium-235	U	-0.0816	+/-0.239	0.400	+/-0.242		pCi/g							
Uranium-238	U	-0.309	+/-2.70	4.68	+/-2.71		pCi/g							
Yttrium-88	U	0.0224	+/-0.0343	0.0851	+/-0.0358		pCi/g							
Zinc-65	U	0.0490	+/-0.115	0.161	+/-0.117		pCi/g							
Zirconium-95	U	-0.0356	+/-0.0880	0.153	+/-0.0895		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: Control 1
Sample ID: 674299036
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 5.07%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.383	+/-0.181	0.329	+/-0.185		pCi/g			MXR1	07/31/24	1614	2636543	1
Americium-241	U	0.0258	+/-0.162	0.324	+/-0.162		pCi/g							
Antimony-124	U	0.0287	+/-0.0999	0.269	+/-0.101		pCi/g							
Antimony-125	U	-0.0306	+/-0.0980	0.180	+/-0.0990		pCi/g							
Barium-133	U	-0.00553	+/-0.0483	0.0827	+/-0.0484		pCi/g							
Barium-140	U	0.324	+/-0.652	1.47	+/-0.668		pCi/g							
Beryllium-7	U	-0.0475	+/-0.450	0.855	+/-0.451		pCi/g							
Bismuth-212	U	0.117	+/-0.637	1.30	+/-0.639		pCi/g							
Bismuth-214	UI	0.000	+/-0.163	0.354	+/-0.315		pCi/g							
Cerium-139	U	-0.00339	+/-0.0279	0.0508	+/-0.0280		pCi/g							
Cerium-141	U	-0.0380	+/-0.0846	0.148	+/-0.0864		pCi/g							
Cerium-144	U	-0.157	+/-0.167	0.272	+/-0.182		pCi/g							
Cesium-134	U	0.0522	+/-0.0550	0.124	+/-0.0600		pCi/g							
Cesium-136	U	-0.229	+/-0.370	0.629	+/-0.385		pCi/g							
Cesium-137	U	-0.0253	+/-0.0389	0.0628	+/-0.0406	0.100	pCi/g							
Chromium-51	U	0.439	+/-0.592	1.28	+/-0.625		pCi/g							
Cobalt-56	U	-0.0522	+/-0.0530	0.0852	+/-0.0581		pCi/g							
Cobalt-57	U	0.0338	+/-0.0332	0.0402	+/-0.0333		pCi/g							
Cobalt-58	U	-0.00204	+/-0.0603	0.120	+/-0.0603		pCi/g							
Cobalt-60	U	0.0103	+/-0.0445	0.102	+/-0.0448		pCi/g							
Europium-152	U	0.00332	+/-0.127	0.211	+/-0.127		pCi/g							
Europium-154	U	-0.0713	+/-0.124	0.228	+/-0.128		pCi/g							
Europium-155	U	-0.0181	+/-0.0922	0.171	+/-0.0926		pCi/g							
Iridium-192	U	0.0212	+/-0.0422	0.0880	+/-0.0433		pCi/g							
Iron-59	U	-0.0443	+/-0.129	0.240	+/-0.131		pCi/g							
Lead-210	U	-0.0612	+/-6.43	10.8	+/-6.43		pCi/g							
Lead-212		0.290	+/-0.125	0.131	+/-0.128		pCi/g							
Lead-214		0.410	+/-0.177	0.144	+/-0.180		pCi/g							
Manganese-54	U	0.00385	+/-0.0393	0.0823	+/-0.0394		pCi/g							
Mercury-203	U	-0.0111	+/-0.0564	0.0965	+/-0.0566		pCi/g							
Neodymium-147	U	1.21	+/-1.87	4.18	+/-1.95		pCi/g							
Neptunium-239	U	-0.149	+/-0.230	0.399	+/-0.240		pCi/g							
Niobium-94	U	-0.00829	+/-0.0481	0.0807	+/-0.0482		pCi/g							
Niobium-95	U	-0.00137	+/-0.0618	0.110	+/-0.0619		pCi/g							
Potassium-40		2.92	+/-0.904	1.00	+/-0.940		pCi/g							
Promethium-144	U	0.00629	+/-0.0348	0.0682	+/-0.0349		pCi/g							
Promethium-146	U	-0.0290	+/-0.0406	0.0683	+/-0.0427		pCi/g							
Radium-226		0.410	+/-0.177	0.144	+/-0.180		pCi/g							
Radium-228		0.383	+/-0.181	0.329	+/-0.185		pCi/g							

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Certificate of Analysis

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: Control 1
Sample ID: 674299036

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.264	+/-0.392	0.834	+/-0.411		pCi/g							
Silver-110m	U	-0.0276	+/-0.0661	0.121	+/-0.0673		pCi/g							
Sodium-22	U	-0.0254	+/-0.0442	0.0814	+/-0.0458		pCi/g							
Thallium-208		0.131	+/-0.0631	0.0836	+/-0.0641		pCi/g							
Thorium-234	U	-0.0474	+/-1.36	2.69	+/-1.36		pCi/g							
Tin-113	U	-0.0119	+/-0.0442	0.0839	+/-0.0446		pCi/g							
Uranium-235	U	0.101	+/-0.176	0.347	+/-0.176		pCi/g							
Uranium-238	U	-0.0474	+/-1.36	2.69	+/-1.36		pCi/g							
Yttrium-88	U	-0.0290	+/-0.0633	0.131	+/-0.0647		pCi/g							
Zinc-65	U	0.0529	+/-0.0905	0.212	+/-0.0937		pCi/g							
Zirconium-95	U	0.0646	+/-0.0960	0.219	+/-0.101		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: Control 2
Sample ID: 674299037
Matrix: Soil
Collect Date: 26-JUN-24
Receive Date: 05-JUL-24
Collector: Client
Moisture: 21.9%

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-232	U	0.332	+/-0.367	0.435	+/-0.370	1.00	pCi/g			CM4	07/18/24	1237	2640431	1
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	-0.0287	+/-0.127	0.331	+/-0.127	1.00	pCi/g			CM4	07/18/24	1328	2640430	2
Uranium-238		0.571	+/-0.359	0.340	+/-0.367	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	U	0.360	+/-0.255	0.450	+/-0.306		pCi/g			MXR1	07/31/24	1614	2636543	3
Americium-241	U	0.0380	+/-0.0796	0.153	+/-0.0815		pCi/g							
Antimony-124	U	0.0603	+/-0.103	0.262	+/-0.106		pCi/g							
Antimony-125	U	0.0168	+/-0.0861	0.167	+/-0.0864		pCi/g							
Barium-133	U	0.000314	+/-0.0442	0.0750	+/-0.0442		pCi/g							
Barium-140	U	0.402	+/-0.662	1.39	+/-0.687		pCi/g							
Beryllium-7	U	0.541	+/-0.428	0.924	+/-0.495		pCi/g							
Bismuth-212	U	0.433	+/-0.569	0.642	+/-0.570		pCi/g							
Bismuth-214		0.587	+/-0.148	0.0906	+/-0.156		pCi/g							
Cerium-139	U	-0.0327	+/-0.0280	0.0420	+/-0.0324		pCi/g							
Cerium-141	U	-0.0855	+/-0.0855	0.134	+/-0.0941		pCi/g							
Cerium-144	U	0.0178	+/-0.168	0.302	+/-0.168		pCi/g							
Cesium-134	U	0.0115	+/-0.0416	0.0781	+/-0.0420		pCi/g							
Cesium-136	U	-0.135	+/-0.213	0.371	+/-0.222		pCi/g							
Cesium-137	U	0.0250	+/-0.0340	0.0719	+/-0.0359	0.100	pCi/g							
Chromium-51	U	-0.445	+/-0.496	0.838	+/-0.537		pCi/g							
Cobalt-56	U	0.0297	+/-0.0394	0.0860	+/-0.0417		pCi/g							
Cobalt-57	U	0.0153	+/-0.0202	0.0393	+/-0.0213		pCi/g							
Cobalt-58	U	0.0143	+/-0.0393	0.0791	+/-0.0398		pCi/g							
Cobalt-60	U	-0.0156	+/-0.0349	0.0628	+/-0.0357		pCi/g							
Europium-152	U	0.0295	+/-0.0937	0.183	+/-0.0947		pCi/g							
Europium-154	U	-0.0372	+/-0.122	0.224	+/-0.123		pCi/g							
Europium-155	U	0.129	+/-0.105	0.162	+/-0.121		pCi/g							
Iridium-192	U	0.00527	+/-0.0343	0.0672	+/-0.0344		pCi/g							
Iron-59	U	-0.0345	+/-0.0930	0.175	+/-0.0943		pCi/g							
Lead-210	U	0.298	+/-1.48	2.79	+/-1.49		pCi/g							
Lead-212		0.381	+/-0.0925	0.0823	+/-0.101		pCi/g							
Lead-214		0.503	+/-0.170	0.112	+/-0.177		pCi/g							
Manganese-54	U	0.0165	+/-0.0319	0.0700	+/-0.0328		pCi/g							
Mercury-203	U	-0.0125	+/-0.0463	0.0855	+/-0.0466		pCi/g							
Neodymium-147	U	0.417	+/-2.12	4.03	+/-2.12		pCi/g							
Neptunium-239	U	0.151	+/-0.180	0.359	+/-0.193		pCi/g							

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: Control 2
Sample ID: 674299037

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Niobium-94	U	-0.0109	+/-0.0329	0.0572	+/-0.0332		pCi/g							
Niobium-95	U	0.0250	+/-0.0500	0.105	+/-0.0513		pCi/g							
Potassium-40		2.64	+/-0.957	0.822	+/-1.01		pCi/g							
Promethium-144	U	0.00305	+/-0.0361	0.0675	+/-0.0361		pCi/g							
Promethium-146	U	0.0177	+/-0.0300	0.0646	+/-0.0311		pCi/g							
Radium-226		0.503	+/-0.170	0.112	+/-0.177		pCi/g							
Radium-228	U	0.360	+/-0.255	0.450	+/-0.306		pCi/g							
Ruthenium-106	U	-0.164	+/-0.344	0.586	+/-0.352		pCi/g							
Silver-110m	U	-0.0322	+/-0.0438	0.0756	+/-0.0463		pCi/g							
Sodium-22	U	-0.0133	+/-0.0434	0.0799	+/-0.0438		pCi/g							
Thallium-208		0.101	+/-0.0635	0.0676	+/-0.0640		pCi/g							
Thorium-234	U	0.950	+/-1.05	1.23	+/-1.07		pCi/g							
Tin-113	U	0.0669	+/-0.0455	0.0712	+/-0.0458		pCi/g							
Uranium-235	U	-0.0435	+/-0.181	0.308	+/-0.182		pCi/g							
Uranium-238	U	0.950	+/-1.05	1.23	+/-1.07		pCi/g							
Yttrium-88	U	0.0178	+/-0.0407	0.102	+/-0.0415		pCi/g							
Zinc-65	U	0.0513	+/-0.0926	0.185	+/-0.0955		pCi/g							
Zirconium-95	U	-0.0344	+/-0.0942	0.175	+/-0.0956		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LC2	07/08/24	2004	2636364

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2640431	92.3	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2640430	95.3	(15%-125%)

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Report Date: August 2, 2024

Contact: Alex Bartels
Project: Inventum

Client Sample ID: Control 2
Sample ID: 674299037

Project: MJWC01524
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

Quality Control Data

QC Summary

Report Date: August 2, 2024

Client : **MJW Technical Services**
15 Hazelwood Drive
Suite 112
Amherst, New York

Contact: **Alex Bartels**

Workorder: **674299**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 2640430										
QC1205789021 674299011 DUP										
Uranium-235/236	U	0.0801	U	0.123	pCi/g	0		N/A	CM4	07/18/2413:27
	Uncert:	+/-0.184		+/-0.283						
	TPU:	+/-0.184		+/-0.283						
Uranium-238	U	0.160		0.443	pCi/g	73.7		(0% - 100%)		
	Uncert:	+/-0.189		+/-0.366						
	TPU:	+/-0.190		+/-0.371						
QC1205789022 LCS										
Uranium-235/236				0.957	pCi/g				CM4	07/18/2413:28
	Uncert:			+/-0.564						
	TPU:			+/-0.580						
Uranium-238	22.9			21.6	pCi/g		94.4	(75%-125%)		
	Uncert:			+/-2.28						
	TPU:			+/-3.79						
QC1205789020 MB										
Uranium-235/236			U	0.0568	pCi/g				CM4	07/18/2413:27
	Uncert:			+/-0.213						
	TPU:			+/-0.213						
Uranium-238			U	0.0604	pCi/g					
	Uncert:			+/-0.170						
	TPU:			+/-0.170						
Batch 2640431										
QC1205789024 674299011 DUP										
Thorium-232		0.460	U	0.286	pCi/g	14.3		(0% - 100%)	CM4	07/18/2412:37
	Uncert:	+/-0.397		+/-0.347						
	TPU:	+/-0.402		+/-0.349						
QC1205789025 LCS										
Thorium-232	16.7			15.6	pCi/g		93.2	(75%-125%)	CM4	07/18/2412:37
	Uncert:			+/-2.19						
	TPU:			+/-3.16						
QC1205789023 MB										
Thorium-232			U	-0.00734	pCi/g				CM4	07/18/2412:37
	Uncert:			+/-0.168						
	TPU:			+/-0.168						
Batch 2641120										
QC1205790382 674299006 DUP										
Uranium-235/236	U	0.0966	U	0.0436	pCi/g	0		N/A	RM3	07/19/2408:21
	Uncert:	+/-0.222		+/-0.242						
	TPU:	+/-0.222		+/-0.242						
Uranium-238	U	0.220	U	0.0217	pCi/g	0		N/A		
	Uncert:	+/-0.252		+/-0.247						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 2641120										
	TPU:	+/-0.253		+/-0.247						
QC1205790383 LCS										
Uranium-235/236				2.09	pCi/g				RM3	07/19/2408:21
	Uncert:			+/-1.16						
	TPU:			+/-1.22						
Uranium-238	22.5			19.2	pCi/g		85	(75%-125%)		
	Uncert:			+/-3.02						
	TPU:			+/-4.67						
QC1205790381 MB										
Uranium-235/236			U	-0.0201	pCi/g				RM3	07/19/2408:21
	Uncert:			+/-0.173						
	TPU:			+/-0.174						
Uranium-238			U	0.106	pCi/g					
	Uncert:			+/-0.278						
	TPU:			+/-0.279						
Batch 2641153										
QC1205790431 674299006 DUP										
Thorium-232	U	-0.102	U	0.235	pCi/g	0		N/A	AG2	07/19/2410:43
	Uncert:	+/-0.151		+/-0.360						
	TPU:	+/-0.151		+/-0.362						
QC1205790432 LCS										
Thorium-232	14.0			15.0	pCi/g		107	(75%-125%)	AG2	07/19/2410:43
	Uncert:			+/-2.35						
	TPU:			+/-3.46						
QC1205790430 MB										
Thorium-232			U	0.0579	pCi/g				AG2	07/19/2410:43
	Uncert:			+/-0.218						
	TPU:			+/-0.218						
Rad Gamma Spec										
Batch 2636542										
QC1205781344 674299001 DUP										
Actinium-228		0.465		0.811	pCi/g	54.3		(0% - 100%)	RXF2	07/30/2413:39
	Uncert:	+/-0.298		+/-0.364						
	TPU:	+/-0.303		+/-0.372						
Americium-241	U	0.0858	U	-0.0335	pCi/g	0		N/A		
	Uncert:	+/-0.190		+/-0.309						
	TPU:	+/-0.194		+/-0.309						
Antimony-124	U	0.0824	U	0.0270	pCi/g	0		N/A		
	Uncert:	+/-0.102		+/-0.171						
	TPU:	+/-0.109		+/-0.172						
Antimony-125	U	0.0294	U	-0.0184	pCi/g	0		N/A		
	Uncert:	+/-0.0961		+/-0.138						
	TPU:	+/-0.0971		+/-0.138						
Barium-133	U	0.00685	U	-0.00494	pCi/g	0		N/A		
	Uncert:	+/-0.0562		+/-0.0555						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
	TPU:	+/-0.0563		+/-0.0555						
Barium-140	U	0.293	U	0.910	pCi/g	0			N/A	
	Uncert:	+/-0.790		+/-0.987						
	TPU:	+/-0.801		+/-1.07						
Beryllium-7	U	-0.124	U	0.553	pCi/g	0			N/A	
	Uncert:	+/-0.471		+/-0.619						
	TPU:	+/-0.474		+/-0.669						
Bismuth-212	U	0.929	U	0.473	pCi/g	0			N/A	
	Uncert:	+/-0.883		+/-0.662						
	TPU:	+/-0.887		+/-0.697						
Bismuth-214		3.06		3.09	pCi/g	1.07		(0%-20%)		
	Uncert:	+/-0.296		+/-0.306						
	TPU:	+/-0.390		+/-0.406						
Cerium-139	U	0.0205	U	-0.0336	pCi/g	0			N/A	
	Uncert:	+/-0.0374		+/-0.0461						
	TPU:	+/-0.0388		+/-0.0491						
Cerium-141	U	0.134	U	0.0953	pCi/g	0			N/A	
	Uncert:	+/-0.183		+/-0.262						
	TPU:	+/-0.193		+/-0.263						
Cerium-144	U	0.287	U	-0.0316	pCi/g	0			N/A	
	Uncert:	+/-0.237		+/-0.286						
	TPU:	+/-0.271		+/-0.286						
Cesium-134	U	0.0444	U	-0.00364	pCi/g	0			N/A	
	Uncert:	+/-0.0444		+/-0.0541						
	TPU:	+/-0.0489		+/-0.0542						
Cesium-136	U	-0.124	U	-0.172	pCi/g	0			N/A	
	Uncert:	+/-0.356		+/-0.385						
	TPU:	+/-0.361		+/-0.393						
Cesium-137	U	0.0428	U	0.00705	pCi/g	0			N/A	
	Uncert:	+/-0.0339		+/-0.0421						
	TPU:	+/-0.0340		+/-0.0422						
Chromium-51	U	0.219	U	0.181	pCi/g	0			N/A	
	Uncert:	+/-0.626		+/-0.817						
	TPU:	+/-0.634		+/-0.821						
Cobalt-56	U	-0.0203	U	-0.0301	pCi/g	0			N/A	
	Uncert:	+/-0.0509		+/-0.0730						
	TPU:	+/-0.0518		+/-0.0743						
Cobalt-57	U	-0.0111	U	0.0504	pCi/g	0			N/A	
	Uncert:	+/-0.0284		+/-0.0366						
	TPU:	+/-0.0289		+/-0.0432						
Cobalt-58	U	-0.0518	U	0.0119	pCi/g	0			N/A	
	Uncert:	+/-0.0547		+/-0.0541						
	TPU:	+/-0.0598		+/-0.0543						
Cobalt-60	U	-0.0184	U	0.0397	pCi/g	0			N/A	
	Uncert:	+/-0.0465		+/-0.0522						
	TPU:	+/-0.0473		+/-0.0553						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
Europium-152	U	-0.0560	U	-0.0383	pCi/g	0			N/A	
	Uncert:	+/-0.112		+/-0.161						
	TPU:	+/-0.115		+/-0.162						
Europium-154	U	0.138	U	0.0718	pCi/g	0			N/A	
	Uncert:	+/-0.124		+/-0.133						
	TPU:	+/-0.140		+/-0.137						
Europium-155	UI	0.000	U	0.0362	pCi/g	0			N/A	
	Uncert:	+/-0.194		+/-0.147						
	TPU:	+/-0.195		+/-0.148						
Iridium-192	U	-0.0384	U	0.0443	pCi/g	0			N/A	
	Uncert:	+/-0.0435		+/-0.0562						
	TPU:	+/-0.0469		+/-0.0598						
Iron-59	U	-0.0323	U	0.0211	pCi/g	0			N/A	
	Uncert:	+/-0.110		+/-0.116						
	TPU:	+/-0.111		+/-0.117						
Lead-210	U	-0.148	U	6.31	pCi/g	0			N/A	
	Uncert:	+/-4.74		+/-14.0						
	TPU:	+/-4.74		+/-14.0						
Lead-212		0.511		0.555	pCi/g	8.29		(0% - 100%)		
	Uncert:	+/-0.136		+/-0.152						
	TPU:	+/-0.144		+/-0.163						
Lead-214		3.51		3.70	pCi/g	5.44		(0%-20%)		
	Uncert:	+/-0.330		+/-0.350						
	TPU:	+/-0.450		+/-0.501						
Manganese-54	U	-0.0147	U	0.00847	pCi/g	0			N/A	
	Uncert:	+/-0.0464		+/-0.0496						
	TPU:	+/-0.0469		+/-0.0498						
Mercury-203	U	0.00474	U	-0.0463	pCi/g	0			N/A	
	Uncert:	+/-0.0554		+/-0.0705						
	TPU:	+/-0.0555		+/-0.0737						
Neodymium-147	U	0.284	U	2.16	pCi/g	0			N/A	
	Uncert:	+/-2.08		+/-2.44						
	TPU:	+/-2.09		+/-2.63						
Neptunium-239	U	0.199	U	-0.100	pCi/g	0			N/A	
	Uncert:	+/-0.283		+/-0.388						
	TPU:	+/-0.297		+/-0.391						
Niobium-94	U	0.0203	U	0.0131	pCi/g	0			N/A	
	Uncert:	+/-0.0339		+/-0.0504						
	TPU:	+/-0.0351		+/-0.0508						
Niobium-95	U	0.0396	U	0.0114	pCi/g	0			N/A	
	Uncert:	+/-0.0516		+/-0.0766						
	TPU:	+/-0.0547		+/-0.0768						
Potassium-40	UI	0.000		1.94	pCi/g	72.6		(0% - 100%)		
	Uncert:	+/-1.07		+/-1.07						
	TPU:	+/-1.14		+/-1.08						
Promethium-144	U	0.0566	U	-0.00335	pCi/g	0			N/A	

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
	Uncert:	+/-0.0580		+/-0.0515						
	TPU:	+/-0.0635		+/-0.0515						
Promethium-146	U	0.0275	U	0.00139	pCi/g	0		N/A		
	Uncert:	+/-0.0453		+/-0.0623						
	TPU:	+/-0.0471		+/-0.0623						
Radium-226		3.51		3.70	pCi/g	5.44		(0%-20%)		
	Uncert:	+/-0.330		+/-0.350						
	TPU:	+/-0.450		+/-0.501						
Radium-228		0.465		0.811	pCi/g	54.3		(0% - 100%)		
	Uncert:	+/-0.298		+/-0.364						
	TPU:	+/-0.303		+/-0.372						
Ruthenium-106	U	-0.0725	U	0.0107	pCi/g	0		N/A		
	Uncert:	+/-0.373		+/-0.414						
	TPU:	+/-0.375		+/-0.414						
Silver-110m	U	0.0164	U	-0.0456	pCi/g	0		N/A		
	Uncert:	+/-0.0469		+/-0.0716						
	TPU:	+/-0.0475		+/-0.0746						
Sodium-22	U	0.0493	U	0.0219	pCi/g	0		N/A		
	Uncert:	+/-0.0442		+/-0.0465						
	TPU:	+/-0.0498		+/-0.0476						
Thallium-208		0.175		0.205	pCi/g	15.9		(0% - 100%)		
	Uncert:	+/-0.0949		+/-0.117						
	TPU:	+/-0.0960		+/-0.118						
Thorium-234		3.26	UI	0.000	pCi/g	20.3		(0% - 100%)		
	Uncert:	+/-2.97		+/-5.82						
	TPU:	+/-3.07		+/-5.97						
Tin-113	U	0.0527	U	-0.0465	pCi/g	0		N/A		
	Uncert:	+/-0.0813		+/-0.0654						
	TPU:	+/-0.0814		+/-0.0688						
Uranium-235	U	0.286	UI	0.000	pCi/g	0		N/A		
	Uncert:	+/-0.389		+/-0.540						
	TPU:	+/-0.390		+/-0.543						
Uranium-238		3.26	UI	0.000	pCi/g	20.3		(0% - 100%)		
	Uncert:	+/-2.97		+/-5.82						
	TPU:	+/-3.07		+/-5.97						
Yttrium-88	U	-0.0379	U	0.000102	pCi/g	0		N/A		
	Uncert:	+/-0.0355		+/-0.0656						
	TPU:	+/-0.0395		+/-0.0656						
Zinc-65	U	0.00630	U	0.0229	pCi/g	0		N/A		
	Uncert:	+/-0.119		+/-0.112						
	TPU:	+/-0.119		+/-0.112						
Zirconium-95	U	-0.0334	U	0.0451	pCi/g	0		N/A		
	Uncert:	+/-0.0981		+/-0.103						
	TPU:	+/-0.0993		+/-0.105						
QC1205781345 LCS										
Actinium-228			U	-0.0390	pCi/g				RXF2	07/30/2413:39

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
	Uncert:			+/-1.69						
	TPU:			+/-1.69						
Americium-241	483			589	pCi/g		122	(75%-125%)		
	Uncert:			+/-16.7						
	TPU:			+/-78.0						
Antimony-124			U	-0.330	pCi/g					
	Uncert:			+/-0.481						
	TPU:			+/-0.505						
Antimony-125			U	-0.480	pCi/g					
	Uncert:			+/-1.43						
	TPU:			+/-1.45						
Barium-133			U	-0.276	pCi/g					
	Uncert:			+/-0.538						
	TPU:			+/-0.553						
Barium-140			U	1.36	pCi/g					
	Uncert:			+/-4.61						
	TPU:			+/-4.66						
Beryllium-7			U	0.0242	pCi/g					
	Uncert:			+/-5.46						
	TPU:			+/-5.46						
Bismuth-212			U	-2.58	pCi/g					
	Uncert:			+/-4.91						
	TPU:			+/-5.05						
Bismuth-214			U	0.0351	pCi/g					
	Uncert:			+/-0.751						
	TPU:			+/-0.751						
Cerium-139			U	-0.177	pCi/g					
	Uncert:			+/-0.297						
	TPU:			+/-0.309						
Cerium-141			U	0.166	pCi/g					
	Uncert:			+/-0.670						
	TPU:			+/-0.674						
Cerium-144			U	-0.948	pCi/g					
	Uncert:			+/-2.23						
	TPU:			+/-2.27						
Cesium-134			U	-0.280	pCi/g					
	Uncert:			+/-0.425						
	TPU:			+/-0.444						
Cesium-136			U	-0.492	pCi/g					
	Uncert:			+/-1.79						
	TPU:			+/-1.81						
Cesium-137	150			145	pCi/g		96.4	(75%-125%)		
	Uncert:			+/-2.93						
	TPU:			+/-12.2						
Chromium-51			U	2.08	pCi/g					
	Uncert:			+/-5.14						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
	TPU:			+/-5.23						
Cobalt-56			U	0.104	pCi/g					
	Uncert:			+/-0.454						
	TPU:			+/-0.457						
Cobalt-57			U	-0.0324	pCi/g					
	Uncert:			+/-0.289						
	TPU:			+/-0.289						
Cobalt-58			U	0.192	pCi/g					
	Uncert:			+/-0.496						
	TPU:			+/-0.504						
Cobalt-60	57.8			58.0	pCi/g		100	(75%-125%)		
	Uncert:			+/-2.30						
	TPU:			+/-7.81						
Europium-152			U	-1.02	pCi/g					
	Uncert:			+/-1.20						
	TPU:			+/-1.29						
Europium-154			U	-0.638	pCi/g					
	Uncert:			+/-0.658						
	TPU:			+/-0.722						
Europium-155			U	-1.39	pCi/g					
	Uncert:			+/-1.21						
	TPU:			+/-1.37						
Iridium-192			U	-0.142	pCi/g					
	Uncert:			+/-0.436						
	TPU:			+/-0.441						
Iron-59			U	0.0251	pCi/g					
	Uncert:			+/-1.21						
	TPU:			+/-1.21						
Lead-210				4210	pCi/g					
	Uncert:			+/-522						
	TPU:			+/-831						
Lead-212			U	-0.543	pCi/g					
	Uncert:			+/-0.605						
	TPU:			+/-0.655						
Lead-214			U	0.379	pCi/g					
	Uncert:			+/-0.898						
	TPU:			+/-0.914						
Manganese-54			U	0.0698	pCi/g					
	Uncert:			+/-0.396						
	TPU:			+/-0.397						
Mercury-203			U	-0.00150	pCi/g					
	Uncert:			+/-0.482						
	TPU:			+/-0.482						
Neodymium-147			U	-10.8	pCi/g					
	Uncert:			+/-10.2						
	TPU:			+/-11.3						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
Neptunium-239			U	-1.59	pCi/g					
	Uncert:			+/-3.09						
	TPU:			+/-3.18						
Niobium-94			U	-0.0759	pCi/g					
	Uncert:			+/-0.304						
	TPU:			+/-0.306						
Niobium-95			U	0.0207	pCi/g					
	Uncert:			+/-0.425						
	TPU:			+/-0.425						
Potassium-40			U	0.511	pCi/g					
	Uncert:			+/-1.40						
	TPU:			+/-1.42						
Promethium-144			U	-0.122	pCi/g					
	Uncert:			+/-0.301						
	TPU:			+/-0.306						
Promethium-146			U	-0.0817	pCi/g					
	Uncert:			+/-0.693						
	TPU:			+/-0.694						
Radium-226			U	0.379	pCi/g					
	Uncert:			+/-0.898						
	TPU:			+/-0.914						
Radium-228			U	-0.0390	pCi/g					
	Uncert:			+/-1.69						
	TPU:			+/-1.69						
Ruthenium-106			U	0.525	pCi/g					
	Uncert:			+/-3.69						
	TPU:			+/-3.70						
Silver-110m			U	-0.322	pCi/g					
	Uncert:			+/-0.624						
	TPU:			+/-0.642						
Sodium-22			U	-0.240	pCi/g					
	Uncert:			+/-0.230						
	TPU:			+/-0.256						
Thallium-208			U	-0.255	pCi/g					
	Uncert:			+/-0.390						
	TPU:			+/-0.408						
Thorium-234			U	4.66	pCi/g					
	Uncert:			+/-25.0						
	TPU:			+/-25.1						
Tin-113			U	0.523	pCi/g					
	Uncert:			+/-0.618						
	TPU:			+/-0.663						
Uranium-235			U	-0.766	pCi/g					
	Uncert:			+/-1.95						
	TPU:			+/-1.98						
Uranium-238			U	4.66	pCi/g					

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
	Uncert:			+/-25.0						
	TPU:			+/-25.1						
Yttrium-88			U	0.0168	pCi/g					
	Uncert:			+/-0.176						
	TPU:			+/-0.176						
Zinc-65			U	-0.221	pCi/g					
	Uncert:			+/-1.05						
	TPU:			+/-1.05						
Zirconium-95			U	-0.150	pCi/g					
	Uncert:			+/-0.772						
	TPU:			+/-0.775						
QC1205781343 MB										
Actinium-228			U	0.0120	pCi/g				RXF2	07/30/2413:38
	Uncert:			+/-0.0924						
	TPU:			+/-0.0926						
Americium-241			U	0.000595	pCi/g					
	Uncert:			+/-0.0574						
	TPU:			+/-0.0574						
Antimony-124			U	-0.0157	pCi/g					
	Uncert:			+/-0.0515						
	TPU:			+/-0.0520						
Antimony-125			U	0.0370	pCi/g					
	Uncert:			+/-0.0374						
	TPU:			+/-0.0411						
Barium-133			U	0.00447	pCi/g					
	Uncert:			+/-0.0218						
	TPU:			+/-0.0219						
Barium-140			U	0.134	pCi/g					
	Uncert:			+/-0.186						
	TPU:			+/-0.196						
Beryllium-7			U	0.0904	pCi/g					
	Uncert:			+/-0.179						
	TPU:			+/-0.184						
Bismuth-212			U	-0.105	pCi/g					
	Uncert:			+/-0.331						
	TPU:			+/-0.334						
Bismuth-214			U	-0.0618	pCi/g					
	Uncert:			+/-0.0434						
	TPU:			+/-0.0518						
Cerium-139			U	-0.00773	pCi/g					
	Uncert:			+/-0.0123						
	TPU:			+/-0.0129						
Cerium-141			U	-0.0201	pCi/g					
	Uncert:			+/-0.0244						
	TPU:			+/-0.0261						
Cerium-144			U	-0.0101	pCi/g					

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
	Uncert:			+/-0.0719						
	TPU:			+/-0.0720						
Cesium-134			U	0.00727	pCi/g					
	Uncert:			+/-0.0217						
	TPU:			+/-0.0219						
Cesium-136			U	-0.0106	pCi/g					
	Uncert:			+/-0.0873						
	TPU:			+/-0.0874						
Cesium-137			U	-0.00469	pCi/g					
	Uncert:			+/-0.0223						
	TPU:			+/-0.0224						
Chromium-51			U	-0.0939	pCi/g					
	Uncert:			+/-0.227						
	TPU:			+/-0.231						
Cobalt-56			U	0.00883	pCi/g					
	Uncert:			+/-0.0213						
	TPU:			+/-0.0217						
Cobalt-57			U	-0.00440	pCi/g					
	Uncert:			+/-0.0103						
	TPU:			+/-0.0105						
Cobalt-58			U	-0.00283	pCi/g					
	Uncert:			+/-0.0222						
	TPU:			+/-0.0223						
Cobalt-60			U	-0.0124	pCi/g					
	Uncert:			+/-0.0247						
	TPU:			+/-0.0253						
Europium-152			U	0.0361	pCi/g					
	Uncert:			+/-0.0456						
	TPU:			+/-0.0486						
Europium-154			U	0.0322	pCi/g					
	Uncert:			+/-0.0513						
	TPU:			+/-0.0534						
Europium-155			U	0.00650	pCi/g					
	Uncert:			+/-0.0330						
	TPU:			+/-0.0331						
Iridium-192			U	-0.00364	pCi/g					
	Uncert:			+/-0.0207						
	TPU:			+/-0.0207						
Iron-59			U	-0.00234	pCi/g					
	Uncert:			+/-0.0404						
	TPU:			+/-0.0404						
Lead-210			U	-1.52	pCi/g					
	Uncert:			+/-2.01						
	TPU:			+/-2.13						
Lead-212			U	0.0741	pCi/g					
	Uncert:			+/-0.0803						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
	TPU:			+/-0.0872						
Lead-214			U	0.0325	pCi/g					
	Uncert:			+/-0.0523						
	TPU:			+/-0.0544						
Manganese-54			U	0.0177	pCi/g					
	Uncert:			+/-0.0191						
	TPU:			+/-0.0208						
Mercury-203			U	-0.000730	pCi/g					
	Uncert:			+/-0.0197						
	TPU:			+/-0.0197						
Neodymium-147			U	0.201	pCi/g					
	Uncert:			+/-0.385						
	TPU:			+/-0.396						
Neptunium-239			U	0.0830	pCi/g					
	Uncert:			+/-0.0984						
	TPU:			+/-0.106						
Niobium-94			U	0.00718	pCi/g					
	Uncert:			+/-0.0205						
	TPU:			+/-0.0207						
Niobium-95			U	-0.00626	pCi/g					
	Uncert:			+/-0.0223						
	TPU:			+/-0.0225						
Potassium-40			U	-0.0958	pCi/g					
	Uncert:			+/-0.222						
	TPU:			+/-0.226						
Promethium-144			U	-0.00171	pCi/g					
	Uncert:			+/-0.0228						
	TPU:			+/-0.0228						
Promethium-146			U	0.00464	pCi/g					
	Uncert:			+/-0.0208						
	TPU:			+/-0.0209						
Radium-226			U	0.0325	pCi/g					
	Uncert:			+/-0.0523						
	TPU:			+/-0.0544						
Radium-228			U	0.0120	pCi/g					
	Uncert:			+/-0.0924						
	TPU:			+/-0.0926						
Ruthenium-106			U	-0.0523	pCi/g					
	Uncert:			+/-0.144						
	TPU:			+/-0.146						
Silver-110m			U	0.0181	pCi/g					
	Uncert:			+/-0.0257						
	TPU:			+/-0.0270						
Sodium-22			U	0.00966	pCi/g					
	Uncert:			+/-0.0174						
	TPU:			+/-0.0179						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636542										
Thallium-208			U	-0.00102	pCi/g					
	Uncert:			+/-0.0218						
	TPU:			+/-0.0218						
Thorium-234			U	-0.260	pCi/g					
	Uncert:			+/-0.585						
	TPU:			+/-0.600						
Tin-113			U	-0.00412	pCi/g					
	Uncert:			+/-0.0227						
	TPU:			+/-0.0228						
Uranium-235			U	-0.0451	pCi/g					
	Uncert:			+/-0.0889						
	TPU:			+/-0.0912						
Uranium-238			U	-0.260	pCi/g					
	Uncert:			+/-0.585						
	TPU:			+/-0.600						
Yttrium-88			U	-0.0145	pCi/g					
	Uncert:			+/-0.0137						
	TPU:			+/-0.0152						
Zinc-65			U	-0.00858	pCi/g					
	Uncert:			+/-0.0385						
	TPU:			+/-0.0387						
Zirconium-95			U	-0.00331	pCi/g					
	Uncert:			+/-0.0494						
	TPU:			+/-0.0494						
Batch 2636543										
QC1205781347 674299021 DUP										
Actinium-228		0.887		0.873	pCi/g	1.63		(0% - 100%)	MXR1	07/31/2416:15
	Uncert:	+/-0.342		+/-0.412						
	TPU:	+/-0.358		+/-0.421						
Americium-241	U	0.124	U	-0.145	pCi/g	0		N/A		
	Uncert:	+/-0.624		+/-0.239						
	TPU:	+/-0.627		+/-0.248						
Antimony-124	U	-0.0356	U	-0.00967	pCi/g	0		N/A		
	Uncert:	+/-0.117		+/-0.0957						
	TPU:	+/-0.118		+/-0.0958						
Antimony-125	U	-0.126	U	-0.0313	pCi/g	0		N/A		
	Uncert:	+/-0.136		+/-0.124						
	TPU:	+/-0.148		+/-0.125						
Barium-133	U	-0.0869	U	0.0232	pCi/g	0		N/A		
	Uncert:	+/-0.0671		+/-0.0558						
	TPU:	+/-0.0781		+/-0.0568						
Barium-140	U	1.30	U	-0.421	pCi/g	0		N/A		
	Uncert:	+/-1.41		+/-1.05						
	TPU:	+/-1.53		+/-1.07						
Beryllium-7	U	-0.714	U	-0.191	pCi/g	0		N/A		
	Uncert:	+/-0.589		+/-0.607						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
	TPU:	+/-0.674		+/-0.613						
Bismuth-212	UI	0.000	U	0.555	pCi/g	0			N/A	
	Uncert:	+/-1.43		+/-0.699						
	TPU:	+/-1.43		+/-0.744						
Bismuth-214		4.34		4.61	pCi/g	5.97		(0%-20%)		
	Uncert:	+/-0.308		+/-0.387						
	TPU:	+/-0.535		+/-0.575						
Cerium-139	U	-0.0287	U	-0.0359	pCi/g	0			N/A	
	Uncert:	+/-0.0561		+/-0.0487						
	TPU:	+/-0.0580		+/-0.0519						
Cerium-141	U	0.237	U	0.0627	pCi/g	0			N/A	
	Uncert:	+/-0.195		+/-0.140						
	TPU:	+/-0.223		+/-0.143						
Cerium-144	U	0.315	U	-0.0201	pCi/g	0			N/A	
	Uncert:	+/-0.344		+/-0.284						
	TPU:	+/-0.374		+/-0.284						
Cesium-134	U	0.0635	U	0.0875	pCi/g	0			N/A	
	Uncert:	+/-0.0497		+/-0.0511						
	TPU:	+/-0.0578		+/-0.0651						
Cesium-136	U	0.170	U	0.113	pCi/g	0			N/A	
	Uncert:	+/-0.355		+/-0.405						
	TPU:	+/-0.364		+/-0.408						
Cesium-137	U	0.00345	U	-0.00748	pCi/g	0			N/A	
	Uncert:	+/-0.0475		+/-0.0499						
	TPU:	+/-0.0475		+/-0.0500						
Chromium-51	U	0.0279	U	-0.262	pCi/g	0			N/A	
	Uncert:	+/-0.949		+/-0.862						
	TPU:	+/-0.949		+/-0.871						
Cobalt-56	U	0.0771	U	-0.0253	pCi/g	0			N/A	
	Uncert:	+/-0.0574		+/-0.0713						
	TPU:	+/-0.0676		+/-0.0722						
Cobalt-57	U	-0.00109	U	-0.0207	pCi/g	0			N/A	
	Uncert:	+/-0.0460		+/-0.0362						
	TPU:	+/-0.0460		+/-0.0374						
Cobalt-58	U	-0.0139	U	-0.0283	pCi/g	0			N/A	
	Uncert:	+/-0.0626		+/-0.0634						
	TPU:	+/-0.0629		+/-0.0647						
Cobalt-60	U	-0.0159	U	-0.00392	pCi/g	0			N/A	
	Uncert:	+/-0.0490		+/-0.0537						
	TPU:	+/-0.0495		+/-0.0538						
Europium-152	U	-0.0856	U	-0.0684	pCi/g	0			N/A	
	Uncert:	+/-0.161		+/-0.138						
	TPU:	+/-0.166		+/-0.142						
Europium-154	U	0.0372	U	0.0600	pCi/g	0			N/A	
	Uncert:	+/-0.129		+/-0.161						
	TPU:	+/-0.130		+/-0.163						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
Europium-155	U	0.120	U	0.0686	pCi/g	0			N/A	
	Uncert:	+/-0.174		+/-0.139						
	TPU:	+/-0.183		+/-0.143						
Iridium-192	U	-0.0371	U	0.0457	pCi/g	0			N/A	
	Uncert:	+/-0.0659		+/-0.0553						
	TPU:	+/-0.0680		+/-0.0591						
Iron-59	U	0.0198	U	0.0278	pCi/g	0			N/A	
	Uncert:	+/-0.130		+/-0.125						
	TPU:	+/-0.131		+/-0.125						
Lead-210	U	-12.6	U	-3.24	pCi/g	0			N/A	
	Uncert:	+/-24.6		+/-6.08						
	TPU:	+/-25.3		+/-6.26						
Lead-212		1.09		0.929	pCi/g	15.9		(0%-20%)		
	Uncert:	+/-0.167		+/-0.154						
	TPU:	+/-0.210		+/-0.177						
Lead-214		5.77		6.10	pCi/g	5.52		(0%-20%)		
	Uncert:	+/-0.377		+/-0.406						
	TPU:	+/-0.654		+/-0.646						
Manganese-54	U	0.000935	U	-0.0101	pCi/g	0			N/A	
	Uncert:	+/-0.0515		+/-0.0529						
	TPU:	+/-0.0515		+/-0.0531						
Mercury-203	U	-0.0300	U	-0.0137	pCi/g	0			N/A	
	Uncert:	+/-0.0845		+/-0.0750						
	TPU:	+/-0.0856		+/-0.0752						
Neodymium-147	U	2.16	U	-0.0990	pCi/g	0			N/A	
	Uncert:	+/-3.37		+/-2.79						
	TPU:	+/-3.52		+/-2.79						
Neptunium-239	U	-0.271	U	0.0903	pCi/g	0			N/A	
	Uncert:	+/-0.438		+/-0.362						
	TPU:	+/-0.456		+/-0.365						
Niobium-94	U	0.0109	U	0.0928	pCi/g	0			N/A	
	Uncert:	+/-0.0455		+/-0.0504						
	TPU:	+/-0.0458		+/-0.0660						
Niobium-95	U	0.144	U	0.0910	pCi/g	0			N/A	
	Uncert:	+/-0.0810		+/-0.0868						
	TPU:	+/-0.105		+/-0.0964						
Potassium-40		2.73		3.68	pCi/g	29.7		(0% - 100%)		
	Uncert:	+/-0.981		+/-1.13						
	TPU:	+/-1.02		+/-1.18						
Promethium-144	U	-0.0509	U	-0.00347	pCi/g	0			N/A	
	Uncert:	+/-0.0429		+/-0.0410						
	TPU:	+/-0.0489		+/-0.0410						
Promethium-146	U	0.0190	U	-0.00544	pCi/g	0			N/A	
	Uncert:	+/-0.0561		+/-0.0572						
	TPU:	+/-0.0568		+/-0.0572						
Radium-226		5.77		6.10	pCi/g	5.52		(0%-20%)		

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
	Uncert:	+/-0.377		+/-0.406						
	TPU:	+/-0.654		+/-0.646						
Radium-228		0.887		0.873	pCi/g	1.63		(0% - 100%)		
	Uncert:	+/-0.342		+/-0.412						
	TPU:	+/-0.358		+/-0.421						
Ruthenium-106	U	0.0589	U	-0.139	pCi/g	0		N/A		
	Uncert:	+/-0.380		+/-0.397						
	TPU:	+/-0.381		+/-0.403						
Silver-110m	U	-0.0189	U	0.00900	pCi/g	0		N/A		
	Uncert:	+/-0.0717		+/-0.0684						
	TPU:	+/-0.0722		+/-0.0685						
Sodium-22	U	0.0140	U	0.0225	pCi/g	0		N/A		
	Uncert:	+/-0.0460		+/-0.0576						
	TPU:	+/-0.0464		+/-0.0585						
Thallium-208		0.188		0.305	pCi/g	47.3		(0% - 100%)		
	Uncert:	+/-0.109		+/-0.111						
	TPU:	+/-0.111		+/-0.114						
Thorium-234	U	3.69		4.20	pCi/g	33.6		(0% - 100%)		
	Uncert:	+/-5.76		+/-3.91						
	TPU:	+/-5.83		+/-4.03						
Tin-113	U	0.0138	U	0.0107	pCi/g	0		N/A		
	Uncert:	+/-0.0703		+/-0.0649						
	TPU:	+/-0.0706		+/-0.0651						
Uranium-235	U	0.492		0.598	pCi/g	4.69		(0% - 100%)		
	Uncert:	+/-0.406		+/-0.411						
	TPU:	+/-0.409		+/-0.415						
Uranium-238	U	3.69		4.20	pCi/g	33.6		(0% - 100%)		
	Uncert:	+/-5.76		+/-3.91						
	TPU:	+/-5.83		+/-4.03						
Yttrium-88	U	0.00143	U	0.0297	pCi/g	0		N/A		
	Uncert:	+/-0.0503		+/-0.0397						
	TPU:	+/-0.0503		+/-0.0419						
Zinc-65	U	0.105	U	0.0375	pCi/g	0		N/A		
	Uncert:	+/-0.117		+/-0.129						
	TPU:	+/-0.126		+/-0.130						
Zirconium-95	U	0.0300	U	0.0337	pCi/g	0		N/A		
	Uncert:	+/-0.101		+/-0.112						
	TPU:	+/-0.102		+/-0.114						
QC1205781348 LCS										
Actinium-228			U	0.619	pCi/g				MXR1	08/01/2410:05
	Uncert:			+/-1.25						
	TPU:			+/-1.28						
Americium-241	483			510	pCi/g		106	(75%-125%)		
	Uncert:			+/-6.23						
	TPU:			+/-61.0						
Antimony-124			U	0.0940	pCi/g					

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
	Uncert:			+/-0.300						
	TPU:			+/-0.303						
Antimony-125			U	0.0127	pCi/g					
	Uncert:			+/-0.890						
	TPU:			+/-0.890						
Barium-133			U	0.109	pCi/g					
	Uncert:			+/-0.338						
	TPU:			+/-0.342						
Barium-140			U	-2.50	pCi/g					
	Uncert:			+/-3.26						
	TPU:			+/-3.46						
Beryllium-7			U	-0.617	pCi/g					
	Uncert:			+/-3.71						
	TPU:			+/-3.72						
Bismuth-212			U	0.300	pCi/g					
	Uncert:			+/-3.26						
	TPU:			+/-3.27						
Bismuth-214			U	0.123	pCi/g					
	Uncert:			+/-0.490						
	TPU:			+/-0.493						
Cerium-139			U	-0.0966	pCi/g					
	Uncert:			+/-0.192						
	TPU:			+/-0.198						
Cerium-141			U	0.235	pCi/g					
	Uncert:			+/-0.467						
	TPU:			+/-0.479						
Cerium-144			U	0.771	pCi/g					
	Uncert:			+/-1.25						
	TPU:			+/-1.29						
Cesium-134			U	-0.125	pCi/g					
	Uncert:			+/-0.286						
	TPU:			+/-0.292						
Cesium-136			U	-0.385	pCi/g					
	Uncert:			+/-1.40						
	TPU:			+/-1.41						
Cesium-137	150			142	pCi/g		94.9	(75%-125%)		
	Uncert:			+/-2.02						
	TPU:			+/-11.7						
Chromium-51			U	2.95	pCi/g					
	Uncert:			+/-5.32						
	TPU:			+/-5.32						
Cobalt-56			U	-0.137	pCi/g					
	Uncert:			+/-0.405						
	TPU:			+/-0.410						
Cobalt-57			U	-0.0167	pCi/g					
	Uncert:			+/-0.160						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
	TPU:			+/-0.160						
Cobalt-58			U	0.142	pCi/g					
	Uncert:			+/-0.320						
	TPU:			+/-0.327						
Cobalt-60	57.8			58.0	pCi/g		100	(75%-125%)		
	Uncert:			+/-1.60						
	TPU:			+/-7.00						
Europium-152			U	0.0427	pCi/g					
	Uncert:			+/-0.771						
	TPU:			+/-0.772						
Europium-154			U	-0.0312	pCi/g					
	Uncert:			+/-0.460						
	TPU:			+/-0.460						
Europium-155			U	-0.388	pCi/g					
	Uncert:			+/-0.631						
	TPU:			+/-0.656						
Iridium-192			U	0.0778	pCi/g					
	Uncert:			+/-0.286						
	TPU:			+/-0.288						
Iron-59			U	0.302	pCi/g					
	Uncert:			+/-0.924						
	TPU:			+/-0.935						
Lead-210				4830	pCi/g					
	Uncert:			+/-162						
	TPU:			+/-542						
Lead-212			U	-0.00326	pCi/g					
	Uncert:			+/-0.431						
	TPU:			+/-0.431						
Lead-214			U	0.0417	pCi/g					
	Uncert:			+/-0.586						
	TPU:			+/-0.587						
Manganese-54			U	-0.0763	pCi/g					
	Uncert:			+/-0.298						
	TPU:			+/-0.300						
Mercury-203			U	-0.0562	pCi/g					
	Uncert:			+/-0.314						
	TPU:			+/-0.315						
Neodymium-147			U	-4.71	pCi/g					
	Uncert:			+/-7.50						
	TPU:			+/-7.80						
Neptunium-239			U	-0.135	pCi/g					
	Uncert:			+/-1.69						
	TPU:			+/-1.70						
Niobium-94			U	0.113	pCi/g					
	Uncert:			+/-0.209						
	TPU:			+/-0.215						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
Niobium-95			U	-0.0554	pCi/g					
	Uncert:			+/-0.311						
	TPU:			+/-0.312						
Potassium-40			U	0.114	pCi/g					
	Uncert:			+/-1.10						
	TPU:			+/-1.10						
Promethium-144			U	0.103	pCi/g					
	Uncert:			+/-0.220						
	TPU:			+/-0.225						
Promethium-146			U	-0.264	pCi/g					
	Uncert:			+/-0.432						
	TPU:			+/-0.449						
Radium-226			U	0.0417	pCi/g					
	Uncert:			+/-0.586						
	TPU:			+/-0.587						
Radium-228			U	0.619	pCi/g					
	Uncert:			+/-1.25						
	TPU:			+/-1.28						
Ruthenium-106			U	0.889	pCi/g					
	Uncert:			+/-2.23						
	TPU:			+/-2.27						
Silver-110m			U	-0.0652	pCi/g					
	Uncert:			+/-0.439						
	TPU:			+/-0.440						
Sodium-22			U	-0.0111	pCi/g					
	Uncert:			+/-0.163						
	TPU:			+/-0.163						
Thallium-208			U	0.145	pCi/g					
	Uncert:			+/-0.255						
	TPU:			+/-0.264						
Thorium-234			U	-0.122	pCi/g					
	Uncert:			+/-8.26						
	TPU:			+/-8.26						
Tin-113			U	-0.350	pCi/g					
	Uncert:			+/-0.416						
	TPU:			+/-0.446						
Uranium-235			U	0.448	pCi/g					
	Uncert:			+/-1.24						
	TPU:			+/-1.26						
Uranium-238			U	-0.122	pCi/g					
	Uncert:			+/-8.26						
	TPU:			+/-8.26						
Yttrium-88			U	-0.0702	pCi/g					
	Uncert:			+/-0.150						
	TPU:			+/-0.153						
Zinc-65			U	0.497	pCi/g					

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
	Uncert:			+/-0.730						
	TPU:			+/-0.765						
Zirconium-95			U	0.264	pCi/g					
	Uncert:			+/-0.533						
	TPU:			+/-0.547						
QC1205781346 MB										
Actinium-228			U	0.0623	pCi/g				MXR1	07/31/2416:15
	Uncert:			+/-0.104						
	TPU:			+/-0.108						
Americium-241			U	0.0148	pCi/g					
	Uncert:			+/-0.0645						
	TPU:			+/-0.0649						
Antimony-124			U	-0.0138	pCi/g					
	Uncert:			+/-0.0453						
	TPU:			+/-0.0458						
Antimony-125			U	-0.0178	pCi/g					
	Uncert:			+/-0.0432						
	TPU:			+/-0.0439						
Barium-133			U	-0.0119	pCi/g					
	Uncert:			+/-0.0208						
	TPU:			+/-0.0215						
Barium-140			U	0.0580	pCi/g					
	Uncert:			+/-0.166						
	TPU:			+/-0.168						
Beryllium-7			U	-0.0812	pCi/g					
	Uncert:			+/-0.180						
	TPU:			+/-0.184						
Bismuth-212			U	0.0476	pCi/g					
	Uncert:			+/-0.235						
	TPU:			+/-0.236						
Bismuth-214			U	-0.0257	pCi/g					
	Uncert:			+/-0.0512						
	TPU:			+/-0.0526						
Cerium-139			U	-0.0125	pCi/g					
	Uncert:			+/-0.0144						
	TPU:			+/-0.0157						
Cerium-141			U	-0.00939	pCi/g					
	Uncert:			+/-0.0353						
	TPU:			+/-0.0356						
Cerium-144			U	-0.0324	pCi/g					
	Uncert:			+/-0.0858						
	TPU:			+/-0.0871						
Cesium-134			U	0.00135	pCi/g					
	Uncert:			+/-0.0176						
	TPU:			+/-0.0177						
Cesium-136			U	0.00408	pCi/g					

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
	Uncert:			+/-0.0896						
	TPU:			+/-0.0896						
Cesium-137			U	-0.00232	pCi/g					
	Uncert:			+/-0.0201						
	TPU:			+/-0.0202						
Chromium-51			U	0.00650	pCi/g					
	Uncert:			+/-0.207						
	TPU:			+/-0.207						
Cobalt-56			U	-0.000158	pCi/g					
	Uncert:			+/-0.0259						
	TPU:			+/-0.0259						
Cobalt-57			U	0.00605	pCi/g					
	Uncert:			+/-0.0120						
	TPU:			+/-0.0123						
Cobalt-58			U	0.000454	pCi/g					
	Uncert:			+/-0.0246						
	TPU:			+/-0.0246						
Cobalt-60			U	0.00701	pCi/g					
	Uncert:			+/-0.0185						
	TPU:			+/-0.0188						
Europium-152			U	-0.000536	pCi/g					
	Uncert:			+/-0.0477						
	TPU:			+/-0.0477						
Europium-154			U	-0.00864	pCi/g					
	Uncert:			+/-0.0629						
	TPU:			+/-0.0630						
Europium-155			U	0.0394	pCi/g					
	Uncert:			+/-0.0417						
	TPU:			+/-0.0455						
Iridium-192			U	-0.00982	pCi/g					
	Uncert:			+/-0.0156						
	TPU:			+/-0.0163						
Iron-59			U	0.0283	pCi/g					
	Uncert:			+/-0.0573						
	TPU:			+/-0.0588						
Lead-210			U	1.42	pCi/g					
	Uncert:			+/-4.32						
	TPU:			+/-4.32						
Lead-212			U	0.0175	pCi/g					
	Uncert:			+/-0.0813						
	TPU:			+/-0.0817						
Lead-214			U	-0.00769	pCi/g					
	Uncert:			+/-0.0370						
	TPU:			+/-0.0372						
Manganese-54			U	-0.00228	pCi/g					
	Uncert:			+/-0.0181						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
	TPU:			+/-0.0181						
Mercury-203			U	-0.00100	pCi/g					
	Uncert:			+/-0.0204						
	TPU:			+/-0.0204						
Neodymium-147			U	0.0184	pCi/g					
	Uncert:			+/-0.359						
	TPU:			+/-0.359						
Neptunium-239			U	0.0203	pCi/g					
	Uncert:			+/-0.112						
	TPU:			+/-0.113						
Niobium-94			U	-0.000237	pCi/g					
	Uncert:			+/-0.0187						
	TPU:			+/-0.0187						
Niobium-95			U	0.00130	pCi/g					
	Uncert:			+/-0.0237						
	TPU:			+/-0.0237						
Potassium-40			U	0.226	pCi/g					
	Uncert:			+/-0.318						
	TPU:			+/-0.335						
Promethium-144			U	0.00164	pCi/g					
	Uncert:			+/-0.0209						
	TPU:			+/-0.0209						
Promethium-146			U	0.00431	pCi/g					
	Uncert:			+/-0.0198						
	TPU:			+/-0.0199						
Radium-226			U	-0.00769	pCi/g					
	Uncert:			+/-0.0370						
	TPU:			+/-0.0372						
Radium-228			U	0.0623	pCi/g					
	Uncert:			+/-0.104						
	TPU:			+/-0.108						
Ruthenium-106			U	0.0904	pCi/g					
	Uncert:			+/-0.192						
	TPU:			+/-0.197						
Silver-110m			U	-0.0143	pCi/g					
	Uncert:			+/-0.0254						
	TPU:			+/-0.0263						
Sodium-22			U	0.000653	pCi/g					
	Uncert:			+/-0.0211						
	TPU:			+/-0.0211						
Thallium-208			U	-0.00121	pCi/g					
	Uncert:			+/-0.0231						
	TPU:			+/-0.0231						
Thorium-234			U	-0.485	pCi/g					
	Uncert:			+/-0.609						
	TPU:			+/-0.659						

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2636543										
Tin-113			U	-0.00341	pCi/g					
	Uncert:			+/-0.0234						
	TPU:			+/-0.0234						
Uranium-235			U	-0.0622	pCi/g					
	Uncert:			+/-0.0921						
	TPU:			+/-0.0964						
Uranium-238			U	-0.485	pCi/g					
	Uncert:			+/-0.609						
	TPU:			+/-0.659						
Yttrium-88			U	0.00731	pCi/g					
	Uncert:			+/-0.0209						
	TPU:			+/-0.0212						
Zinc-65			U	0.00764	pCi/g					
	Uncert:			+/-0.0395						
	TPU:			+/-0.0397						
Zirconium-95			U	-0.0169	pCi/g					
	Uncert:			+/-0.0441						
	TPU:			+/-0.0448						

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

U	Analyte was analyzed for, but not detected above the Lc.
J	Value is estimated
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
H	Analytical holding time was exceeded
<	Result is less than value reported
>	Result is greater than value reported
UI	Gamma Spectroscopy--Uncertain identification
BD	Results are either below the MDC or tracer recovery is low
h	Preparation or preservation holding time was exceeded
R	Sample results are rejected
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
N/A	RPD or %Recovery limits do not apply.
ND	Analyte concentration is not detected above the detection limit
M	M if above MDC and less than LLD
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
FA	Failed analysis.
M	REMP Result > MDC/CL and < RDL
UJ	Gamma Spectroscopy--Uncertain identification
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

QC Summary

Workorder: 674299

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time

L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N1	See case narrative
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
**	Analyte is a Tracer compound
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
** Indicates analyte is a surrogate/tracer compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Alpha Spectroscopy
Raw Data

Batch 2640430 Check-list

This check-list was completed on 19-JUL-24 by Melanie Aycock

This batch was reviewed by Melanie Aycock on 19-JUL-24 and Jessica Davis on 23-JUL-24.

Batch ID: 2640430 **Product:** ASP__UUS **Description:** Alpha Spec Uranium GL-RAD-A-011

#	Criteria	Yes	No	Comments
Preparation Information				
1	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
2	Are instrument source checks within limits?	Yes		
3	Have samples been blank corrected?		No	
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were all tracer/carrier recoveries within the required acceptance limits?	Yes		
10	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Were manual integrations performed on any sample or QC data files in this batch?		No	
14	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Uranium

Batch ID: **2640430**
Analyst: Chandler Metts (CM4)
Prep: Ryan Monroe (RM3)
Method: DOE EML HASL-300, U-02-RC Modified
Lab SOP: GL-RAD-A-011 REV# 29
Instrument: BAL-C409669499

Due Dates for Lab: 31-JUL-2024 **Package: 01-AUG-2024** **SDG: 02-AUG-2024**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1205789022	Uranium-238 AS SPIKE	1600-R	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)
1	674299011	16-JUL-2024	1	Dry to Dry	0.113	0.113
2	674299012	16-JUL-2024	1	Dry to Dry	0.106	0.106
3	674299013	16-JUL-2024	1	Dry to Dry	0.105	0.105
4	674299016	16-JUL-2024	1	Dry to Dry	0.116	0.116
5	674299019	16-JUL-2024	1	Dry to Dry	0.104	0.104
6	674299020	16-JUL-2024	1	Dry to Dry	0.106	0.106
7	674299022	16-JUL-2024	1	Dry to Dry	0.113	0.113
8	674299027	16-JUL-2024	1	Dry to Dry	0.113	0.113
9	674299030	16-JUL-2024	1	Dry to Dry	0.103	0.103
10	674299031	16-JUL-2024	1	Dry to Dry	0.105	0.105
11	674299033	16-JUL-2024	1	Dry to Dry	0.108	0.108
12	674299034	16-JUL-2024	1	Dry to Dry	0.106	0.106
13	674299037	16-JUL-2024	1	Dry to Dry	0.117	0.117
14	1205789020 MB	16-JUL-2024	1	Dry to Wet		0.117
15	1205789021 DUP (674299011)	16-JUL-2024	1	Dry to Dry	0.117	0.117
16	1205789022 LCS	16-JUL-2024	1	Dry to Wet		0.117

Reagent/Solvent Lot ID	Description	Amount
WORK 1564-JJ	Uranium-232 AS TRACER	.1 ml
REGNT 4355090	Acetone	1 mL
REGNT 4351215.2	Hydrogen Peroxide 30% ACS Reagent	.1 mL
REGNT 4363409	0.1M HCl	15 mL
REGNT 4316586	5% Saturated Boric Acid	1 mL
REGNT 4372159	6M Hydrochloric Acid/0.52M Hydrofluoric Acid	15 mL
REGNT 4224853	RASP-6M Hydrochloric Acid	5 mL
REGNT 4356267.1	Anion Exchange Resin 1x8 100-200 Mesh Resin	3 mL
REGNT 4375816	RASP- Ethyl Alcohol (80%)	5 mL
REGNT 4208162	Iron Carrier	2 mL
REGNT 4323560	Neodymium 500 MG/L in 4% HNO3	.1 mL
REGNT 4373285	RASP-Neodymium Substrate	5 mL
REGNT 3943828.12	RASP-Titanium Chloride	.5 mL
REGNT 4374162	9M Hydrochloric Acid	30 mL
REGNT 4364508.4	RASP-Ammonium Hydroxide	10 mL
REGNT 4371728.10	RASP-Hydrochloric Acid	20 mL
REGNT 4324094.3	RASP-Hydrofluoric Acid	30 mL

Comments:

Pipet Id: RAD-ASP-184002Z
Pu-236 Tracer Used: No
Analyzed With: N/A
Data Entry Date2: 16-JUL-2024 00:00

Prep Logbook

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)

Reagent/Solvent Lot ID	Description	Amount
REGNT 4364420.14	Nitric Acid	20 mL

Comments:

GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 160	LIB FILE : UU
SAMPLE ID : S0674299011_UU	DETECTOR S/N : 155815	BKG FILE : B160.CNF;1922
SAMPLE QTY : 0.113 G +/-0.885 %	AVERAGE %EFFICIENCY : 37.8896	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.7301	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 08:40:30	EFF FILE : W160.CNF;137
% YIELD : 103 +/-5.857 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 16-Jul-2024

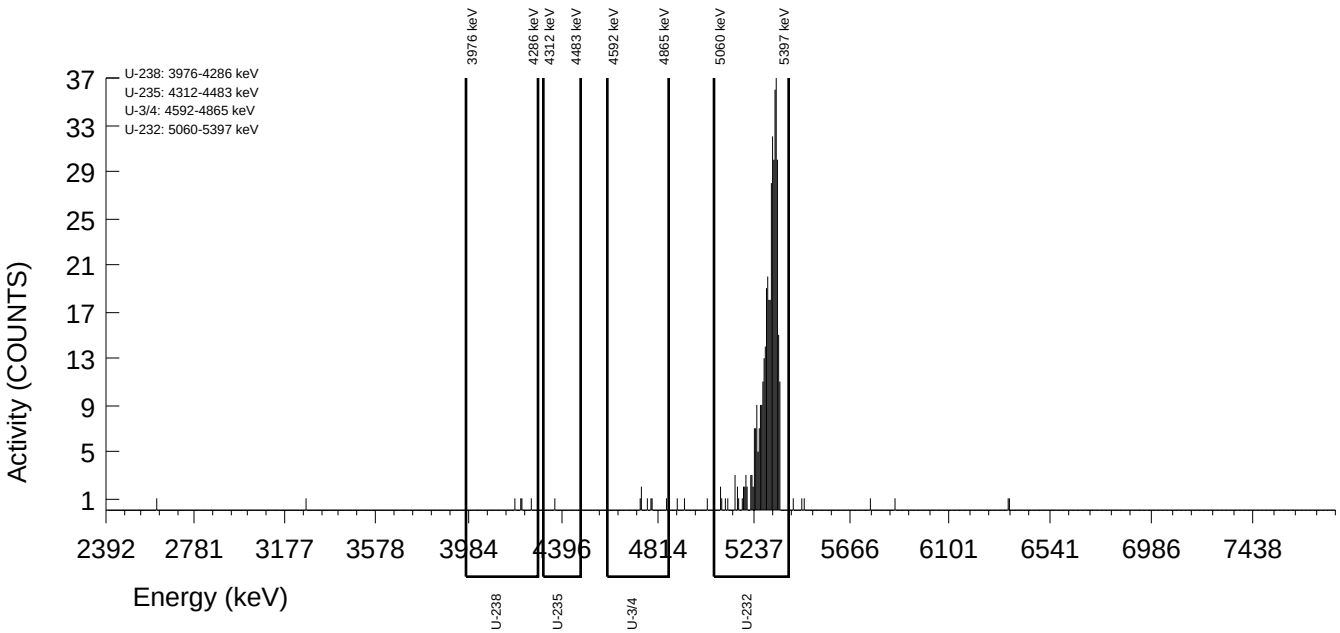
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.5317E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5303.99	47.722	414.000	411.840	2.160	1.4697	100.000	1.76E+01	2.74E+00	3.58E-01	1.15E-01	1.71E+00
U-3/4	4763.02	4777.40	7.255	7.000	4.154	1.440	1.2000	100.000	1.77E-01	2.44E-01	3.79E-01	1.25E-01	2.42E-01
U-235	4391.00	4422.42	111.244	2.000	1.520	0.480	0.6928	80.900	8.01E-02	1.84E-01	2.92E-01	6.69E-02	1.84E-01
U-238	4184.73	4221.93	72.550	4.000	3.760	0.240	0.4899	100.000	1.60E-01	1.90E-01	2.05E-01	3.83E-02	1.89E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.406 +/-0.042)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 007	LIB FILE : UU
SAMPLE ID : S0674299012_UU	DETECTOR S/N : 149004	BKG FILE : B007.CNF;2679
SAMPLE QTY : 0.106 G +/-0.943 %	AVERAGE %EFFICIENCY : 31.3640	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6069	BKG LIVE TIME(SEC) : 59999.99
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:01	EFF FILE : W007.CNF;724
% YIELD : 86.4 +/-6.812 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 02-Jul-2024

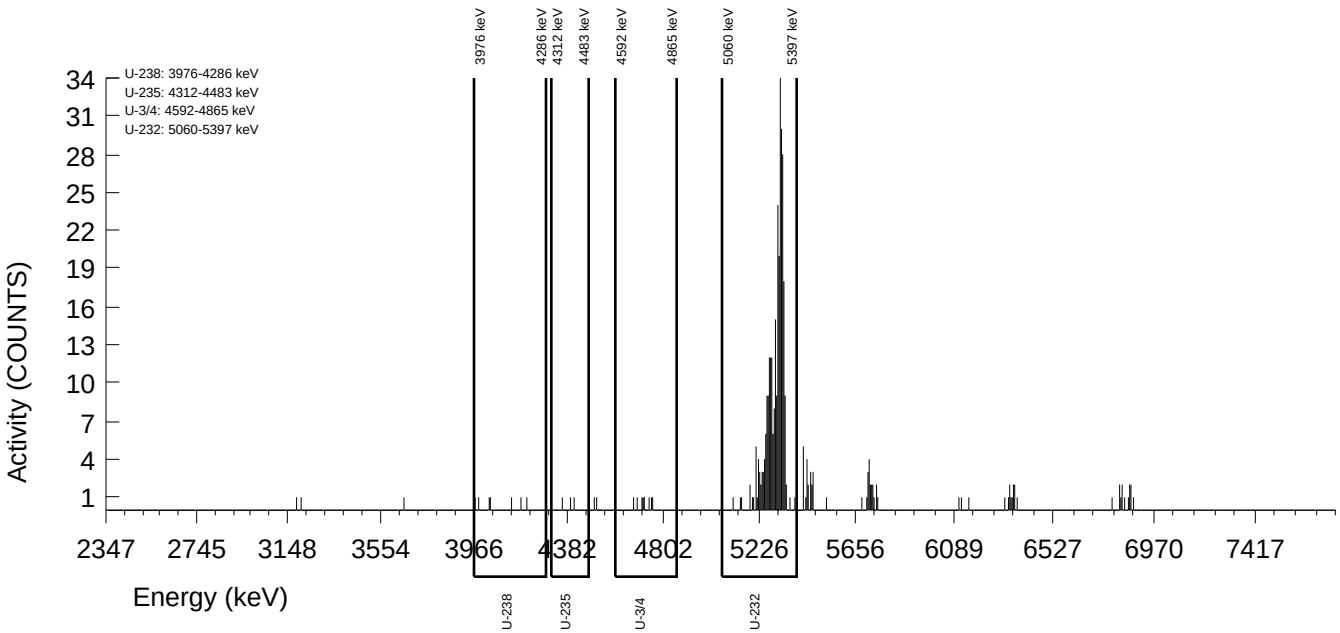
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 3.8109E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5301.28	27.586	297.000	286.680	10.320	3.2125	100.000	1.87E+01	3.44E+00	9.65E-01	3.85E-01	2.22E+00
U-3/4	4763.02	4721.96	84.076	8.000	5.101	1.920	1.3856	100.000	3.33E-01	3.99E-01	5.90E-01	1.97E-01	3.95E-01
U-235	4391.00	4390.22	54.402	3.000	2.040	0.960	0.9798	80.900	1.65E-01	3.29E-01	5.32E-01	1.45E-01	3.28E-01
U-238	4184.73	4081.10	0.000	7.000	6.520	0.480	0.6928	100.000	4.26E-01	3.71E-01	3.62E-01	8.29E-02	3.66E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.979 +/-0.029)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 008	LIB FILE : UU
SAMPLE ID : S0674299013_UU	DETECTOR S/N : 148044	BKG FILE : B008.CNF;2690
SAMPLE QTY : 0.105 G +/-0.952 %	AVERAGE %EFFICIENCY : 33.3652	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6446	BKG LIVE TIME(SEC) : 59999.99
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:01	EFF FILE : W008.CNF;716
% YIELD : 87.1 +/-6.566 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 02-Jul-2024

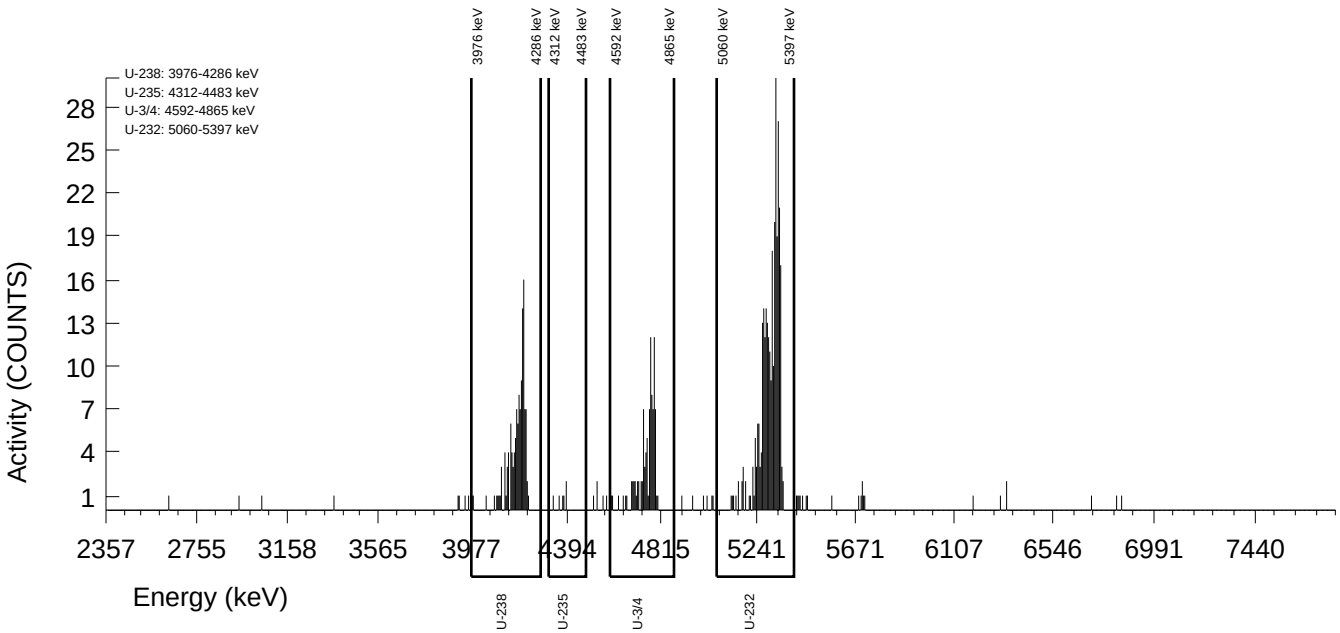
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 3.8387E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5294.33	36.990	312.000	307.200	4.800	2.1909	100.000	1.89E+01	3.34E+00	6.79E-01	2.47E-01	2.14E+00
U-3/4	4763.02	4748.22	51.291	98.000	95.031	1.920	1.3856	100.000	5.85E+00	1.45E+00	5.60E-01	1.87E-01	1.20E+00
U-235	4391.00	4374.58	4.948	6.000	6.000	0.000	1.0000	80.900	4.56E-01	4.01E-01	2.28E-01	1.39E-01	3.96E-01
U-238	4184.73	4173.97	16.767	129.000	127.320	1.680	1.2961	100.000	7.84E+00	1.74E+00	4.77E-01	1.46E-01	1.38E+00

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.049 +/-0.031)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 009	LIB FILE : UU
SAMPLE ID : S0674299016_UU	DETECTOR S/N : 149015	BKG FILE : B009.CNF;2672
SAMPLE QTY : 0.116 G +/-0.862 %	AVERAGE %EFFICIENCY : 34.0679	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6579	BKG LIVE TIME(SEC) : 59999.99
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:01	EFF FILE : W009.CNF;713
% YIELD : 89.3 +/-6.461 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 02-Jul-2024

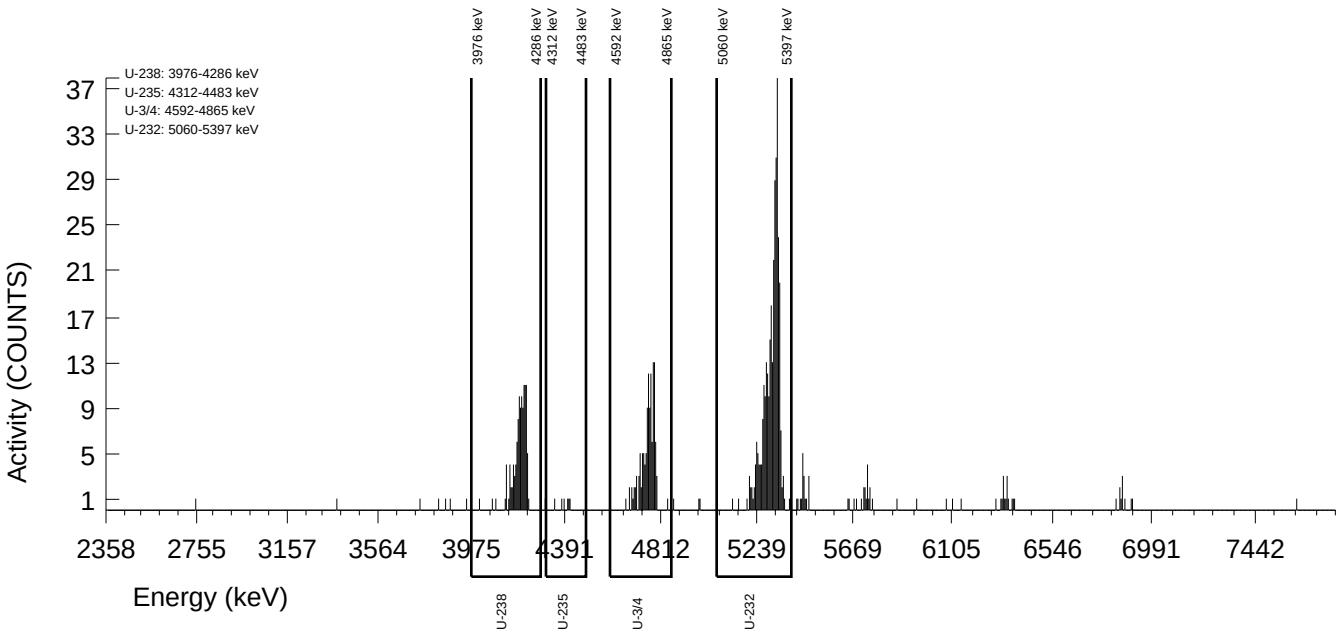
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 3.9377E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5303.67	26.669	328.000	321.760	6.240	2.4980	100.000	1.71E+01	2.97E+00	6.47E-01	2.44E-01	1.90E+00
U-3/4	4763.02	4755.17	37.234	127.000	124.462	1.440	1.2000	100.000	6.62E+00	1.48E+00	4.57E-01	1.49E-01	1.18E+00
U-235	4391.00	4387.82	69.010	6.000	6.000	0.000	1.0000	80.900	3.94E-01	3.46E-01	1.97E-01	1.20E-01	3.42E-01
U-238	4184.73	4187.74	45.185	119.000	119.000	0.000	1.0000	100.000	6.33E+00	1.42E+00	1.60E-01	9.74E-02	1.14E+00

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.098 +/-0.033)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 010	LIB FILE : UU
SAMPLE ID : S0674299019_UU	DETECTOR S/N : 149014	BKG FILE : B010.CNF;2721
SAMPLE QTY : 0.104 G +/-0.962 %	AVERAGE %EFFICIENCY : 33.3985	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6453	BKG LIVE TIME(SEC) : 59999.99
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:01	EFF FILE : W010.CNF;722
% YIELD : 100 +/-6.225 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 02-Jul-2024

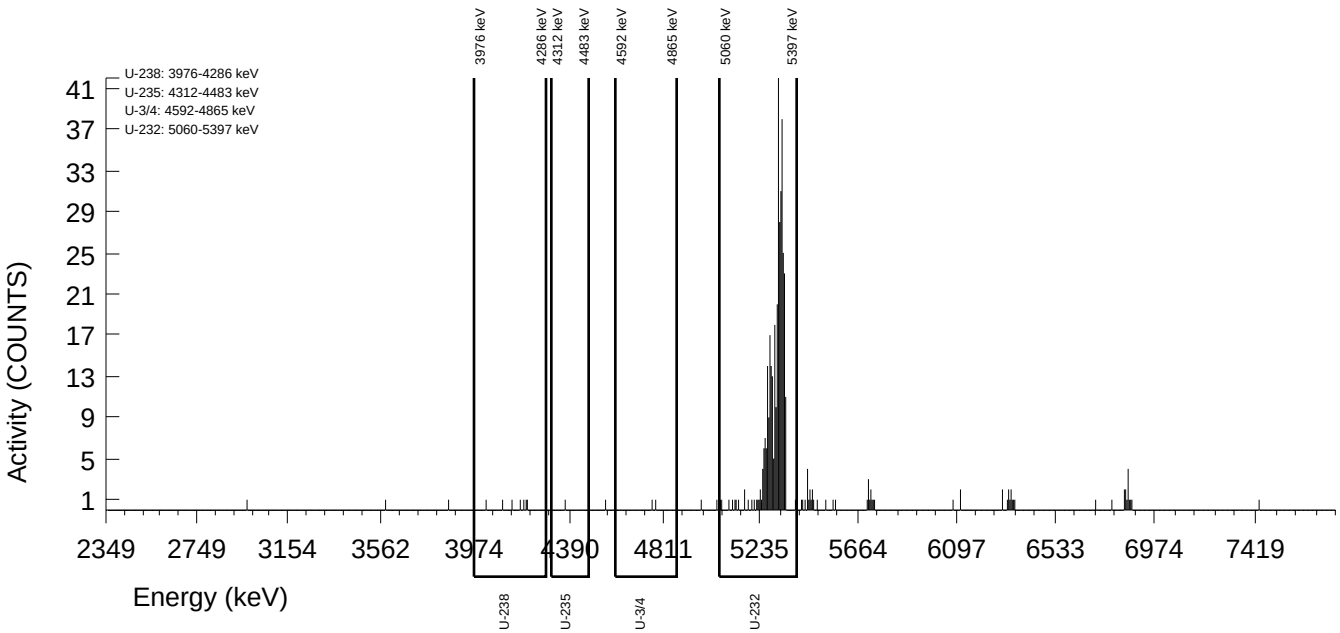
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.4256E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5303.24	30.450	361.000	354.520	6.480	2.5456	100.000	1.91E+01	3.18E+00	6.64E-01	2.51E-01	2.01E+00
U-3/4	4763.02	4766.00	19.898	2.000	-0.890	1.680	1.2961	100.000	-4.79E-02	1.96E-01	4.83E-01	1.61E-01	1.96E-01
U-235	4391.00	4374.75	4.974	1.000	0.760	0.240	0.4899	80.900	5.06E-02	1.90E-01	3.19E-01	5.97E-02	1.90E-01
U-238	4184.73	4149.05	179.080	7.000	6.520	0.480	0.6928	100.000	3.51E-01	3.05E-01	2.98E-01	6.83E-02	3.02E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.210 +/-0.036)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 011	LIB FILE : UU
SAMPLE ID : S0674299020_UU	DETECTOR S/N : 72531	BKG FILE : B011.CNF;2694
SAMPLE QTY : 0.106 G +/-0.943 %	AVERAGE %EFFICIENCY : 31.3295	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6062	BKG LIVE TIME(SEC) : 59999.99
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:01	EFF FILE : W011.CNF;728
% YIELD : 100 +/-6.430 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 02-Jul-2024

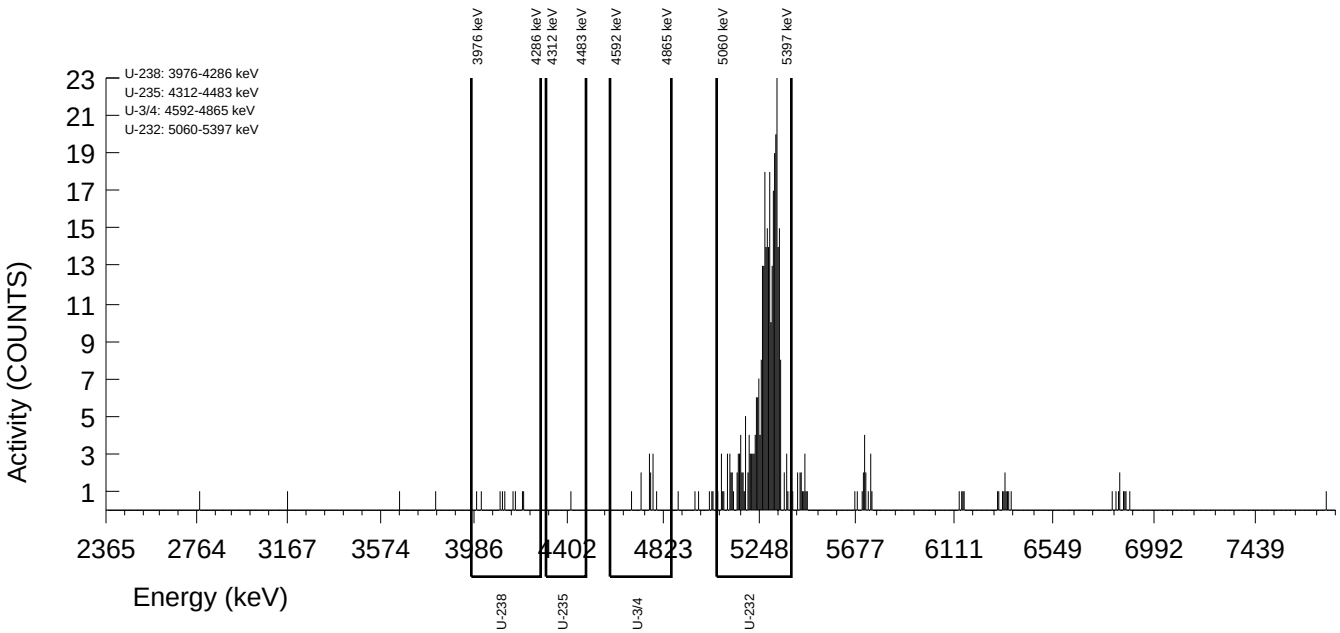
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.4214E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5277.36	73.366	344.000	332.240	11.760	3.4293	100.000	1.87E+01	3.23E+00	8.78E-01	3.54E-01	2.06E+00
U-3/4	4763.02	4759.70	53.290	12.000	9.426	1.440	1.2000	100.000	5.31E-01	4.12E-01	4.86E-01	1.58E-01	4.04E-01
U-235	4391.00	4418.14	4.957	1.000	1.000	0.000	1.0000	80.900	6.97E-02	1.96E-01	2.09E-01	1.28E-01	1.96E-01
U-238	4184.73	4124.44	203.244	9.000	7.080	1.920	1.3856	100.000	3.99E-01	3.62E-01	4.55E-01	1.43E-01	3.58E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.134 +/-0.034)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 012	LIB FILE : UU
SAMPLE ID : S0674299022_UU	DETECTOR S/N : 158176	BKG FILE : B012.CNF;2693
SAMPLE QTY : 0.113 G +/-0.885 %	AVERAGE %EFFICIENCY : 30.6286	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5930	BKG LIVE TIME(SEC) : 59999.99
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:01	EFF FILE : W012.CNF;700
% YIELD : 79.9 +/-7.057 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 02-Jul-2024

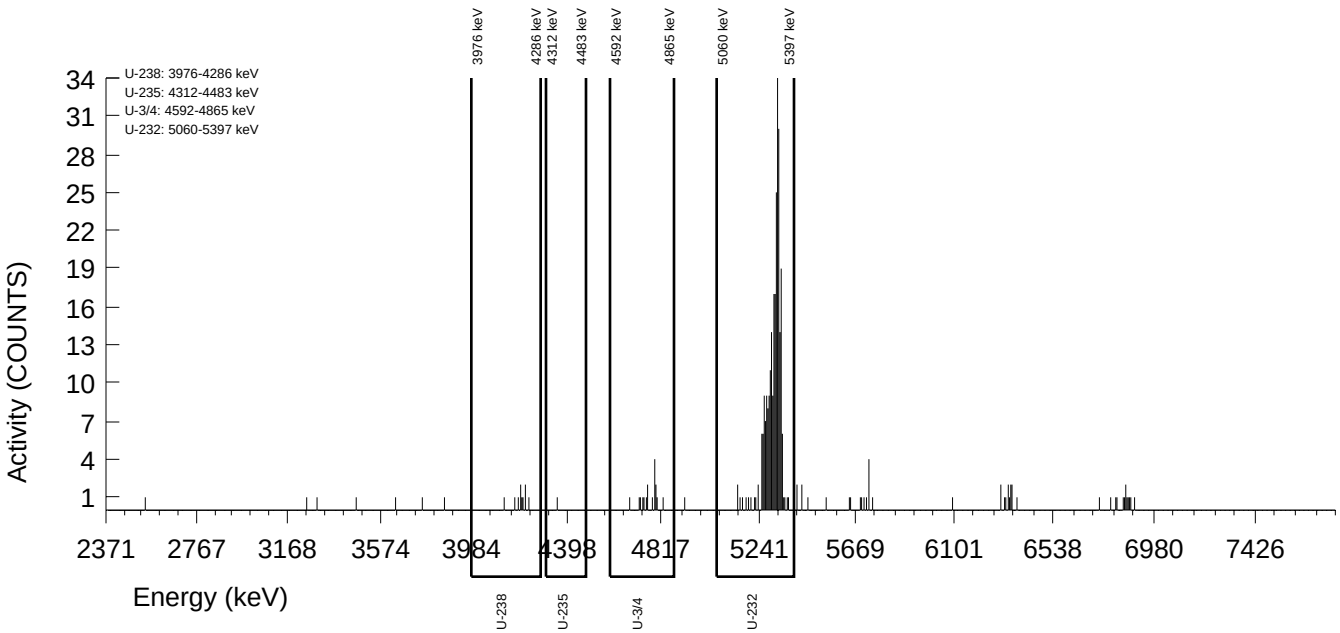
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 3.5223E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5307.59	25.387	265.000	258.760	6.240	2.4980	100.000	1.76E+01	3.35E+00	8.25E-01	3.11E-01	2.18E+00
U-3/4	4763.02	4762.35	7.389	17.000	13.477	2.640	1.6248	100.000	9.15E-01	5.92E-01	6.59E-01	2.28E-01	5.75E-01
U-235	4391.00	4356.50	4.926	1.000	-0.200	1.200	1.0954	80.900	-1.68E-02	2.52E-01	5.89E-01	1.68E-01	2.52E-01
U-238	4184.73	4193.98	24.630	10.000	8.560	1.440	1.2000	100.000	5.81E-01	4.57E-01	5.02E-01	1.49E-01	4.49E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.883 +/-0.027)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 013	LIB FILE : UU
SAMPLE ID : S0674299027_UU	DETECTOR S/N : 148040	BKG FILE : B013.CNF;2657
SAMPLE QTY : 0.113 G +/-0.885 %	AVERAGE %EFFICIENCY : 36.0908	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6961	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:04	EFF FILE : W013.CNF;715
% YIELD : 94.3 +/-6.163 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 02-Jul-2024

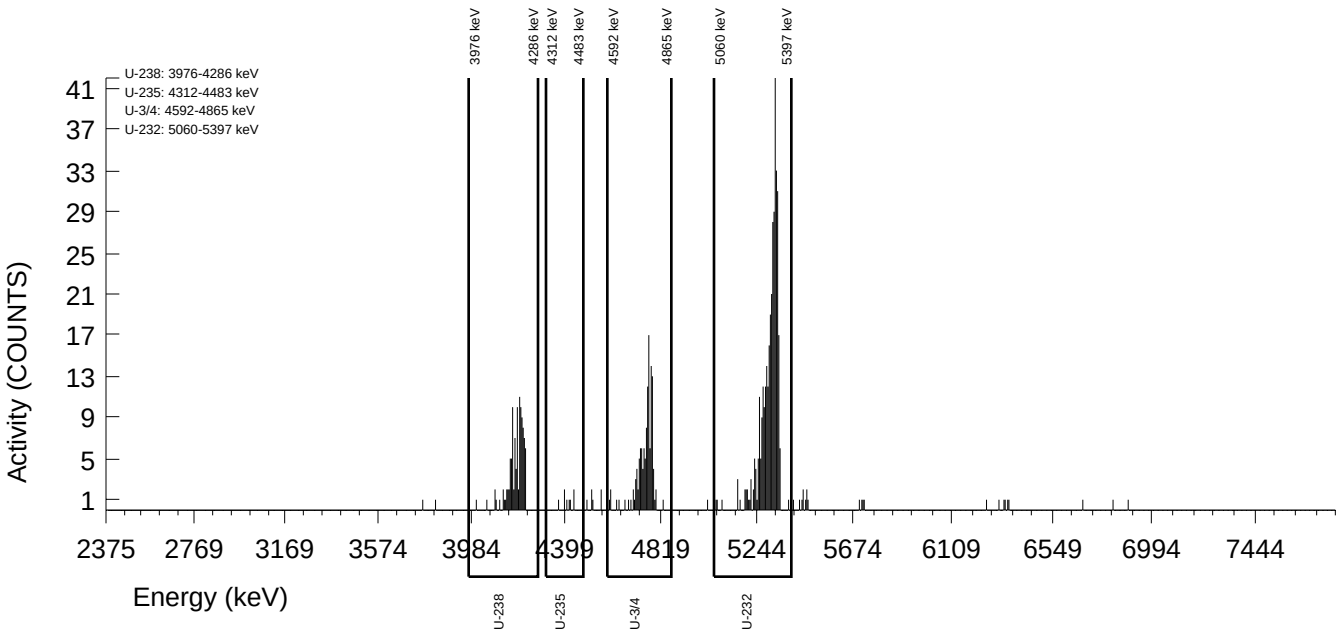
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.1574E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5304.59	28.017	363.000	359.880	3.120	1.7664	100.000	1.76E+01	2.90E+00	4.63E-01	1.58E-01	1.83E+00
U-3/4	4763.02	4754.45	26.353	130.000	127.811	0.960	0.9798	100.000	6.24E+00	1.36E+00	3.96E-01	1.25E-01	1.10E+00
U-235	4391.00	4413.29	44.126	8.000	7.760	0.240	0.4899	80.900	4.68E-01	3.62E-01	2.89E-01	5.41E-02	3.57E-01
U-238	4184.73	4184.84	58.754	112.000	111.760	0.240	0.4899	100.000	5.46E+00	1.23E+00	2.34E-01	4.38E-02	1.02E+00

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.229 +/-0.037)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 014	LIB FILE : UU
SAMPLE ID : S0674299030_UU	DETECTOR S/N : 83289	BKG FILE : B014.CNF;2649
SAMPLE QTY : 0.103 G +/-0.971 %	AVERAGE %EFFICIENCY : 34.2512	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6614	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:04	EFF FILE : W014.CNF;727
% YIELD : 97.0 +/-6.304 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 02-Jul-2024

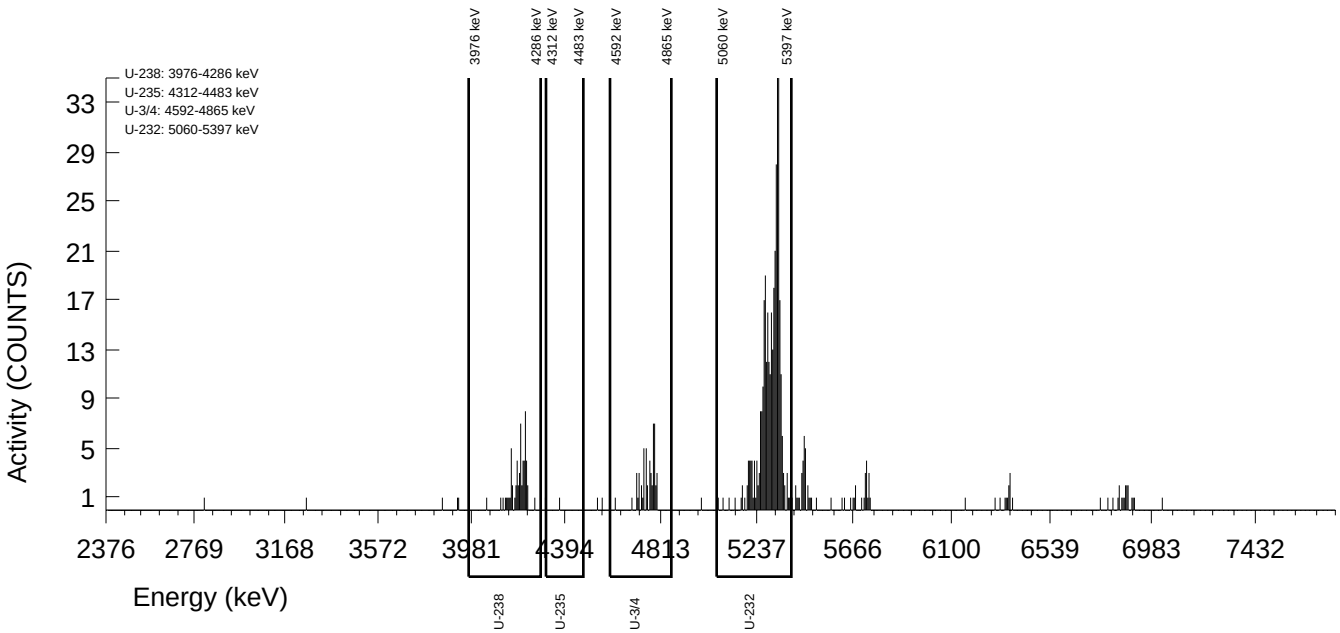
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.2765E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5302.52	62.194	365.000	351.320	13.680	3.6986	100.000	1.93E+01	3.26E+00	9.08E-01	3.72E-01	2.07E+00
U-3/4	4763.02	4761.63	49.253	52.000	48.641	2.160	1.4697	100.000	2.67E+00	8.64E-01	5.20E-01	1.78E-01	7.87E-01
U-235	4391.00	4342.37	0.000	2.000	1.040	0.960	0.9798	80.900	7.05E-02	2.41E-01	4.47E-01	1.22E-01	2.41E-01
U-238	4184.73	4193.22	64.774	59.000	58.040	0.960	0.9798	100.000	3.18E+00	9.33E-01	3.61E-01	9.85E-02	8.35E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.199 +/-0.036)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 015	LIB FILE : UU
SAMPLE ID : S0674299031_UU	DETECTOR S/N : 80055	BKG FILE : B015.CNF;2689
SAMPLE QTY : 0.105 G +/-0.952 %	AVERAGE %EFFICIENCY : 34.6746	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6694	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:04	EFF FILE : W015.CNF;766
% YIELD : 99.6 +/-6.149 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 02-Jul-2024

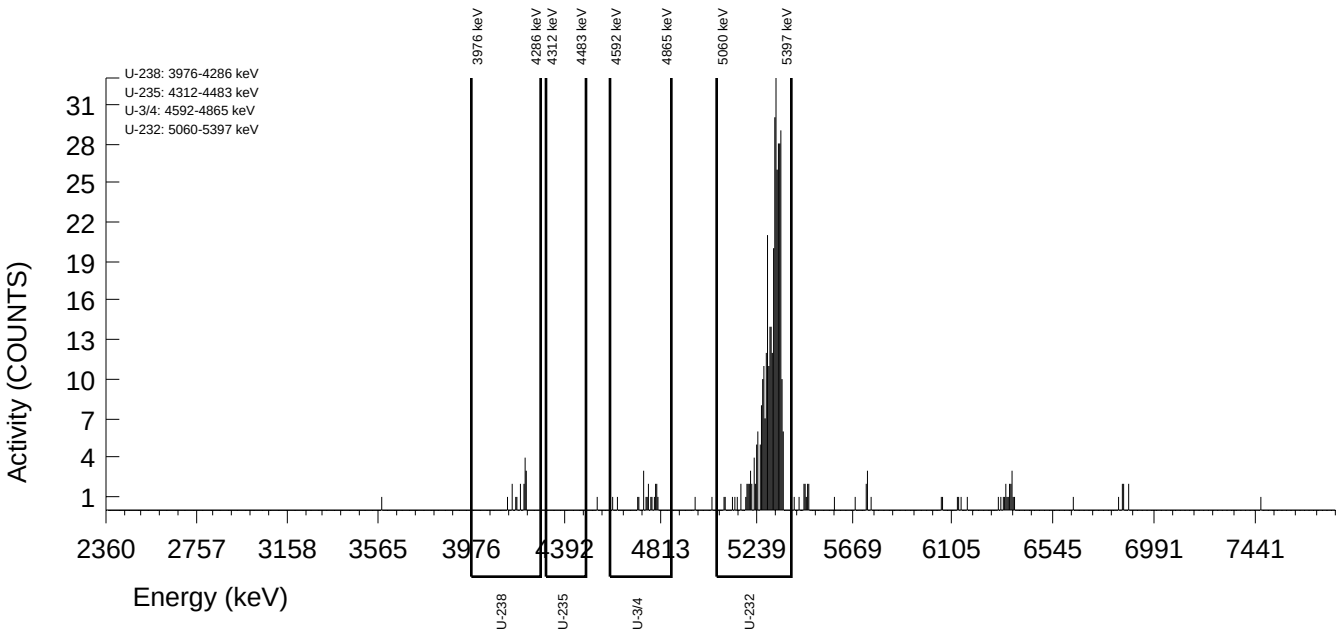
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.3916E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5304.03	59.873	371.000	365.240	5.760	2.4000	100.000	1.89E+01	3.11E+00	6.11E-01	2.28E-01	1.96E+00
U-3/4	4763.02	4747.61	59.096	19.000	17.513	0.240	0.4899	100.000	9.06E-01	4.72E-01	3.67E-01	1.06E-01	4.55E-01
U-235	4391.00	4397.17	0.000	0.000	0.000	0.000	1.0000	80.900	0.00E+00	1.29E-01	1.92E-01	1.17E-01	1.29E-01
U-238	4184.73	4195.17	11.491	16.000	15.520	0.480	0.6928	100.000	8.03E-01	4.33E-01	2.87E-01	6.57E-02	4.20E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.247 +/-0.037)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 016	LIB FILE : UU
SAMPLE ID : S0674299033_UU	DETECTOR S/N : 78774	BKG FILE : B016.CNF;2672
SAMPLE QTY : 0.108 G +/-0.926 %	AVERAGE %EFFICIENCY : 34.3049	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6624	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:04	EFF FILE : W016.CNF;708
% YIELD : 89.7 +/-6.472 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 02-Jul-2024

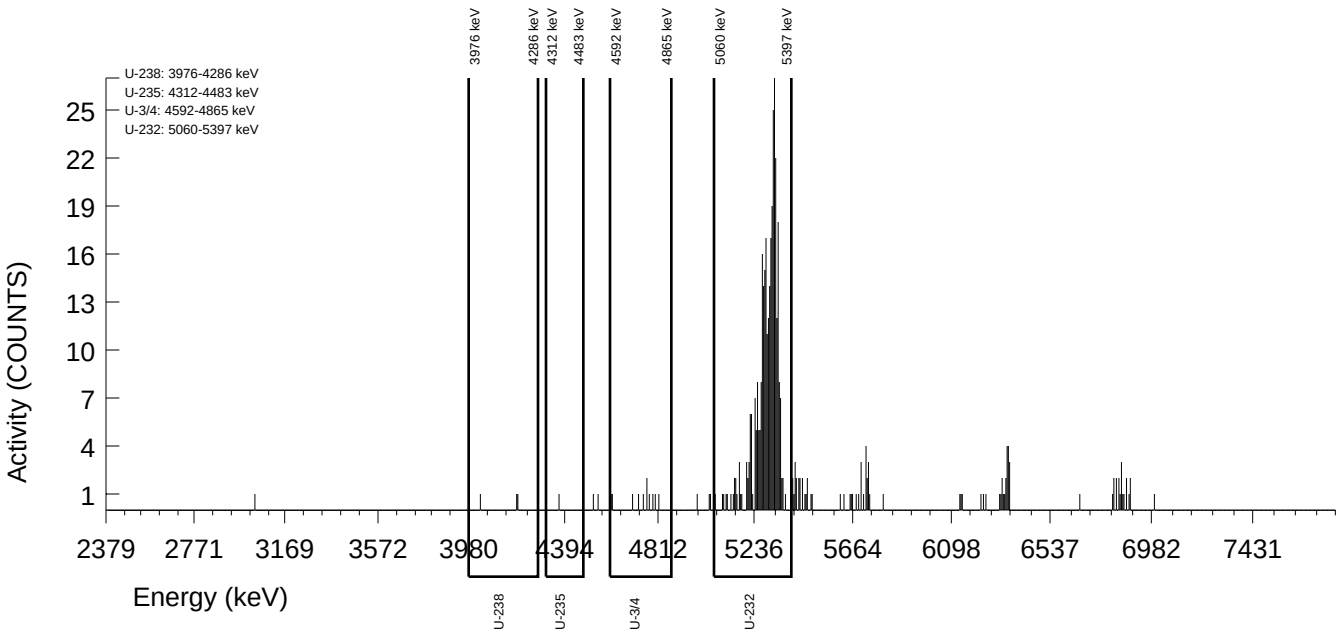
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 3.9553E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5287.07	67.095	336.000	325.440	10.560	3.2496	100.000	1.84E+01	3.19E+00	8.42E-01	3.36E-01	2.04E+00
U-3/4	4763.02	4732.18	4.875	11.000	8.209	1.680	1.2961	100.000	4.64E-01	3.97E-01	5.02E-01	1.66E-01	3.91E-01
U-235	4391.00	4372.75	4.875	1.000	0.520	0.480	0.6928	80.900	3.63E-02	2.02E-01	3.87E-01	8.86E-02	2.02E-01
U-238	4184.73	4134.62	160.882	3.000	2.760	0.240	0.4899	100.000	1.56E-01	2.26E-01	2.71E-01	5.07E-02	2.25E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.111 +/-0.033)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 017	LIB FILE : UU
SAMPLE ID : S0674299034_UU	DETECTOR S/N : 158179	BKG FILE : B017.CNF;3502
SAMPLE QTY : 0.106 G +/-0.943 %	AVERAGE %EFFICIENCY : 29.9048	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5794	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:04	EFF FILE : W017.CNF;1652
% YIELD : 107 +/-6.316 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 02-Jul-2024

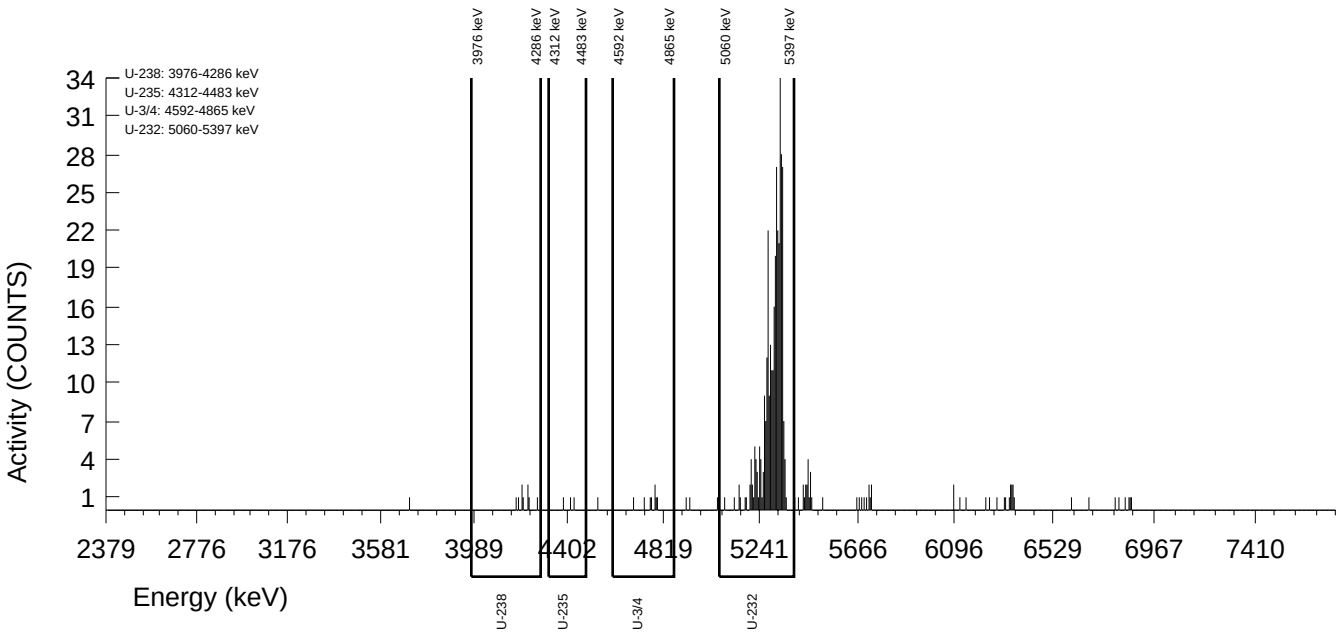
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.7324E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5300.32	64.047	344.000	339.440	4.560	2.1354	100.000	1.87E+01	3.17E+00	5.97E-01	2.16E-01	2.01E+00
U-3/4	4763.02	4762.46	7.390	8.000	4.921	1.920	1.3856	100.000	2.71E-01	3.36E-01	5.07E-01	1.71E-01	3.34E-01
U-235	4391.00	4407.49	49.267	3.000	2.520	0.480	0.6928	80.900	1.72E-01	2.74E-01	3.78E-01	8.65E-02	2.73E-01
U-238	4184.73	4213.09	32.023	9.000	8.280	0.720	0.8485	100.000	4.57E-01	3.51E-01	3.37E-01	8.58E-02	3.46E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.159 +/-0.035)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 018	LIB FILE : UU
SAMPLE ID : S0674299037_UU	DETECTOR S/N : 80015	BKG FILE : B018.CNF;2651
SAMPLE QTY : 0.117 G +/-0.855 %	AVERAGE %EFFICIENCY : 34.7718	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6712	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:04	EFF FILE : W018.CNF;752
% YIELD : 95.3 +/-6.229 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 02-Jul-2024

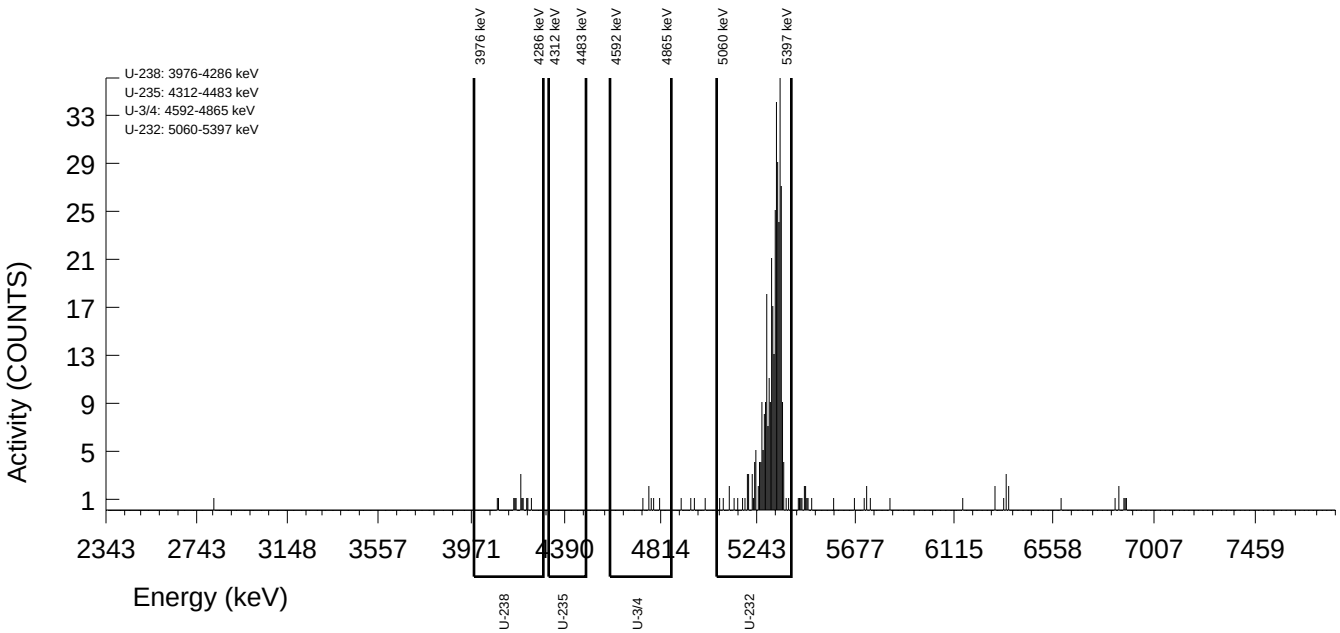
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.2014E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5310.60	43.462	354.000	350.400	3.600	1.8974	100.000	1.70E+01	2.83E+00	4.82E-01	1.68E-01	1.79E+00
U-3/4	4763.02	4770.00	4.967	6.000	2.644	2.160	1.4697	100.000	1.28E-01	2.62E-01	4.59E-01	1.57E-01	2.61E-01
U-235	4391.00	4397.17	0.000	0.000	-0.480	0.480	0.6928	80.900	-2.87E-02	1.27E-01	3.31E-01	7.60E-02	1.27E-01
U-238	4184.73	4178.25	6.209	13.000	11.800	1.200	1.0954	100.000	5.71E-01	3.67E-01	3.40E-01	9.72E-02	3.59E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.196 +/-0.036)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 125	LIB FILE : UU
SAMPLE ID : S1205789020_UU	DETECTOR S/N : 84060	BKG FILE : B125.CNF;2000
SAMPLE QTY : 0.117 G +/-0.855 %	AVERAGE %EFFICIENCY : 26.1623	BKG DATE : 12-Jul-2024
SAMPLE DATE : 16-Jul-2024 00:00:00	AVERAGE %EFF ERROR : 0.5087	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:27:56	EFF FILE : W125.CNF;550
% YIELD : 101 +/-6.779 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 13-Jul-2024

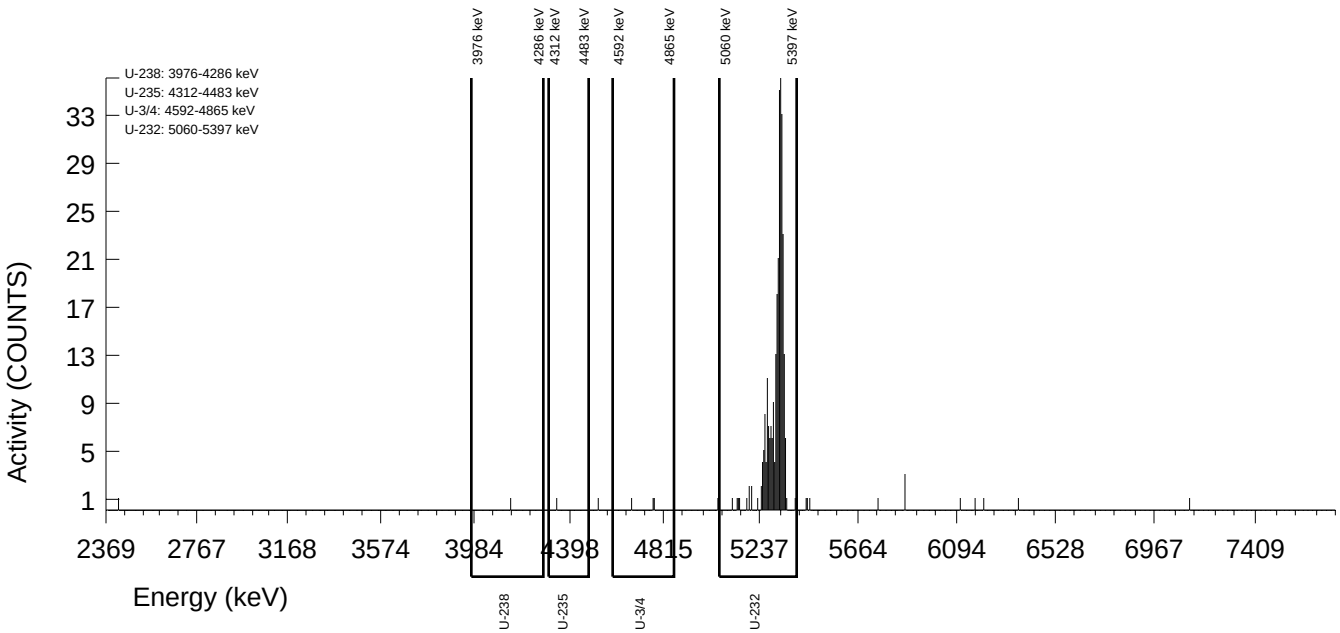
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4071E+00 dpm
RESULTS : 4.4730E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5308.03	27.178	283.000	280.840	2.160	1.4697	100.000	1.70E+01	3.09E+00	5.07E-01	1.63E-01	2.00E+00
U-3/4	4763.02	4738.53	98.827	3.000	0.121	1.920	1.3856	100.000	7.32E-03	2.52E-01	5.44E-01	1.82E-01	2.52E-01
U-235	4391.00	4345.59	4.941	1.000	0.760	0.240	0.4899	80.900	5.68E-02	2.13E-01	3.58E-01	6.70E-02	2.13E-01
U-238	4184.73	4143.60	4.941	1.000	1.000	0.000	1.0000	100.000	6.04E-02	1.70E-01	1.81E-01	1.11E-01	1.70E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.959 +/-0.029)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 126	LIB FILE : UU
SAMPLE ID : S1205789021_UU	DETECTOR S/N : 126133	BKG FILE : B126.CNF;1990
SAMPLE QTY : 0.117 G +/-0.855 %	AVERAGE %EFFICIENCY : 25.5465	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.4972	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:27:57	EFF FILE : W126.CNF;123
% YIELD : 95.8 +/-6.993 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 13-Jul-2024

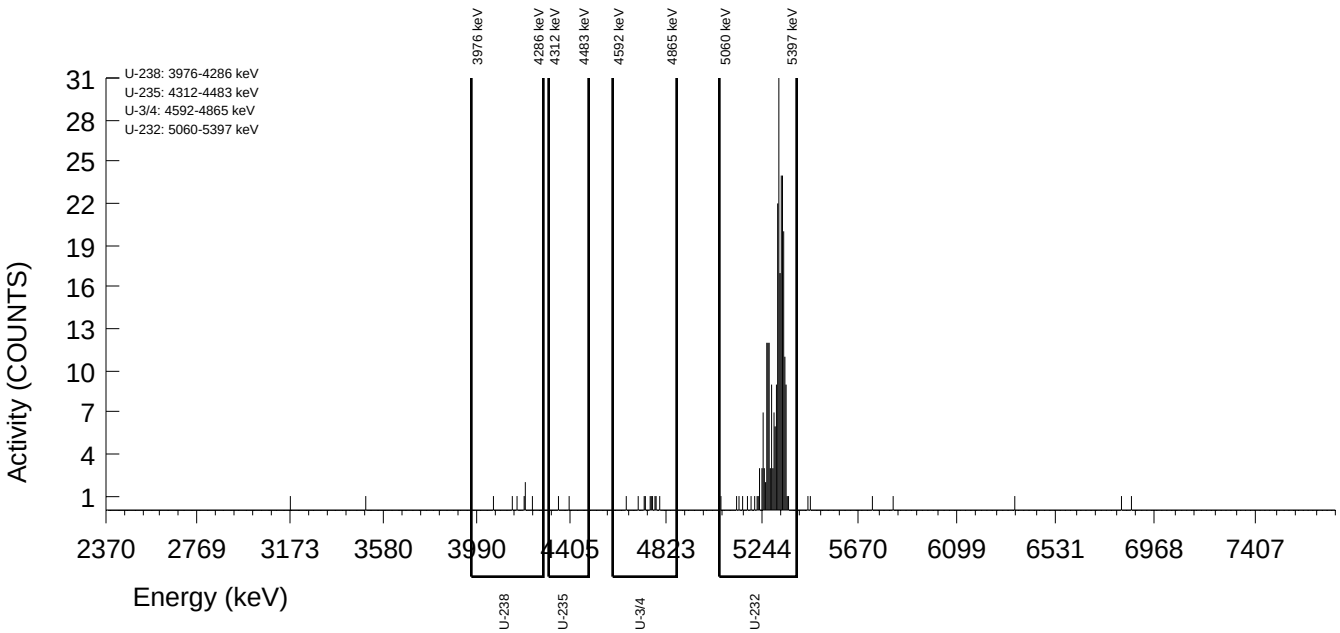
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.2237E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5305.29	29.834	260.000	258.800	1.200	1.0954	100.000	1.70E+01	3.20E+00	4.60E-01	1.32E-01	2.08E+00
U-3/4	4763.02	4744.57	144.198	10.000	7.916	1.200	1.0954	100.000	5.19E-01	4.41E-01	5.29E-01	1.66E-01	4.33E-01
U-235	4391.00	4376.12	49.723	2.000	1.520	0.480	0.6928	80.900	1.23E-01	2.83E-01	4.49E-01	1.03E-01	2.83E-01
U-238	4184.73	4177.87	7.459	7.000	6.760	0.240	0.4899	100.000	4.43E-01	3.71E-01	3.14E-01	5.88E-02	3.66E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.884 +/-0.027)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2640430	CHAMBER : 135	LIB FILE : UU
SAMPLE ID : S1205789022_UU	DETECTOR S/N : 80005	BKG FILE : B135.CNF;1990
SAMPLE QTY : 0.117 G +/-0.855 %	AVERAGE %EFFICIENCY : 25.8243	BKG DATE : 12-Jul-2024
SAMPLE DATE : 16-Jul-2024 00:00:00	AVERAGE %EFF ERROR : 0.5023	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 13:28:01	EFF FILE : W135.CNF;541
% YIELD : 100 +/-6.826 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 13-Jul-2024

TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4071E+00 dpm
RESULTS : 4.4257E+00 dpm

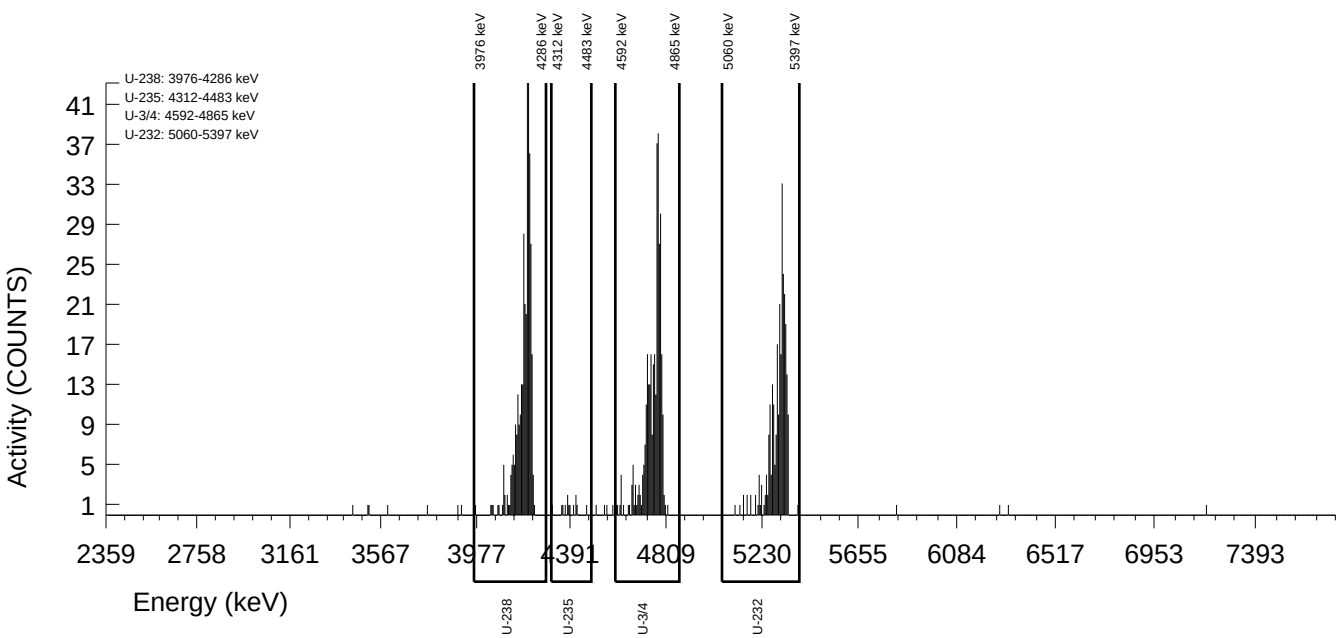
LCS
ID 1600-R
NUCLIDE U-238
NOMINAL (pCi/G) 2.2927E+01
% RECOVERY 94.374

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5301.60	37.501	275.000	274.280	0.720	0.8485	100.000	1.70E+01	3.12E+00	3.78E-01	9.62E-02	2.02E+00
U-3/4	4763.02	4754.54	22.364	329.000	325.184	2.880	1.6971	100.000	2.01E+01	3.58E+00	6.18E-01	2.16E-01	2.20E+00
U-235	4391.00	4389.63	42.189	13.000	12.520	0.480	0.6928	80.900	9.57E-01	5.80E-01	4.23E-01	9.70E-02	5.64E-01
U-238	4184.73	4189.56	34.413	351.000	349.800	1.200	1.0954	100.000	2.16E+01	3.79E+00	4.34E-01	1.24E-01	2.28E+00

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.936 +/-0.028)



Batch 2641120 Check-list

This check-list was completed on 19-JUL-24 by Melanie Aycock

This batch was reviewed by Melanie Aycock on 19-JUL-24 and Jessica Davis on 23-JUL-24.

Batch ID: 2641120 **Product:** ASP__UUS **Description:** Alpha Spec Uranium GL-RAD-A-011

#	Criteria	Yes	No	Comments
Preparation Information				
1	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
2	Are instrument source checks within limits?	Yes		
3	Have samples been blank corrected?		No	
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were all tracer/carrier recoveries within the required acceptance limits?	Yes		
10	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Were manual integrations performed on any sample or QC data files in this batch?		No	
14	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Uranium

Batch ID: **2641120**
Analyst: Ryan Monroe (RM3)
Prep: Alexander Gauger (AG2)
Method: DOE EML HASL-300, U-02-RC Modified
Lab SOP: GL-RAD-A-011 REV# 29
Instrument: BAL-C326419771

Due Dates for Lab: 31-JUL-2024 Package: 01-AUG-2024 SDG: 02-AUG-2024

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1205790383	Uranium-238 AS SPIKE	1600-R	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)
1	674299006	17-JUL-2024	1	Dry to Dry	0.119	0.119
2	674299010	17-JUL-2024	1	Dry to Dry	0.116	0.116
3	1205790381 MB	17-JUL-2024	1	Dry to Wet		0.119
4	1205790382 DUP (674299006)	17-JUL-2024	1	Dry to Dry	0.112	0.112
5	1205790383 LCS	17-JUL-2024	1	Dry to Wet		0.119

Reagent/Solvent Lot ID	Description	Amount
WORK 1564-JJ	Uranium-232 AS TRACER	.1 ml
REGNT 4355090	Acetone	1 mL
REGNT 4351215.2	Hydrogen Peroxide 30% ACS Reagent	.1 mL
REGNT 4363409	0.1M HCl	15 mL
REGNT 4316586	5% Saturated Boric Acid	1 mL
REGNT 4372159	6M Hydrochloric Acid/0.52M Hydrofluoric Acid	15 mL
REGNT 4224853	RASP-6M Hydrochloric Acid	5 mL
REGNT 4356267.1	Anion Exchange Resin 1x8 100-200 Mesh Resin	3 mL
REGNT 4375816	RASP- Ethyl Alcohol (80%)	5 mL
REGNT 4208162	Iron Carrier	2 mL
REGNT 4323560	Neodymium 500 MG/L in 4% HNO3	.1 mL
REGNT 4373285	RASP-Neodymium Substrate	5 mL
REGNT 3943828.12	RASP-Titanium Chloride	.5 mL
REGNT 4376362	9M Hydrochloric Acid	30 mL
REGNT 4364508.4	RASP-Ammonium Hydroxide	10 mL
REGNT 4371728.10	RASP-Hydrochloric Acid	20 mL
REGNT 4324094.3	RASP-Hydrofluoric Acid	30 mL
REGNT 4364420.14	Nitric Acid	20 mL

Comments:

Pipet Id: R2-428724
Pu-236 Tracer Used: No
Analyzed With: N/A
Data Entry Date2: 17-JUL-2024 00:00

GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2641120	CHAMBER : 017	LIB FILE : UU
SAMPLE ID : S0674299006_UU	DETECTOR S/N : 158179	BKG FILE : B017.CNF;3502
SAMPLE QTY : 0.119 G +/-0.840 %	AVERAGE %EFFICIENCY : 29.9048	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5794	BKG LIVE TIME(SEC) : 60000.00
ANALYST : RM3	COUNT DATE : 19-Jul-2024 08:21:26	EFF FILE : W017.CNF;1652
% YIELD : 103 +/-6.427 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 02-Jul-2024

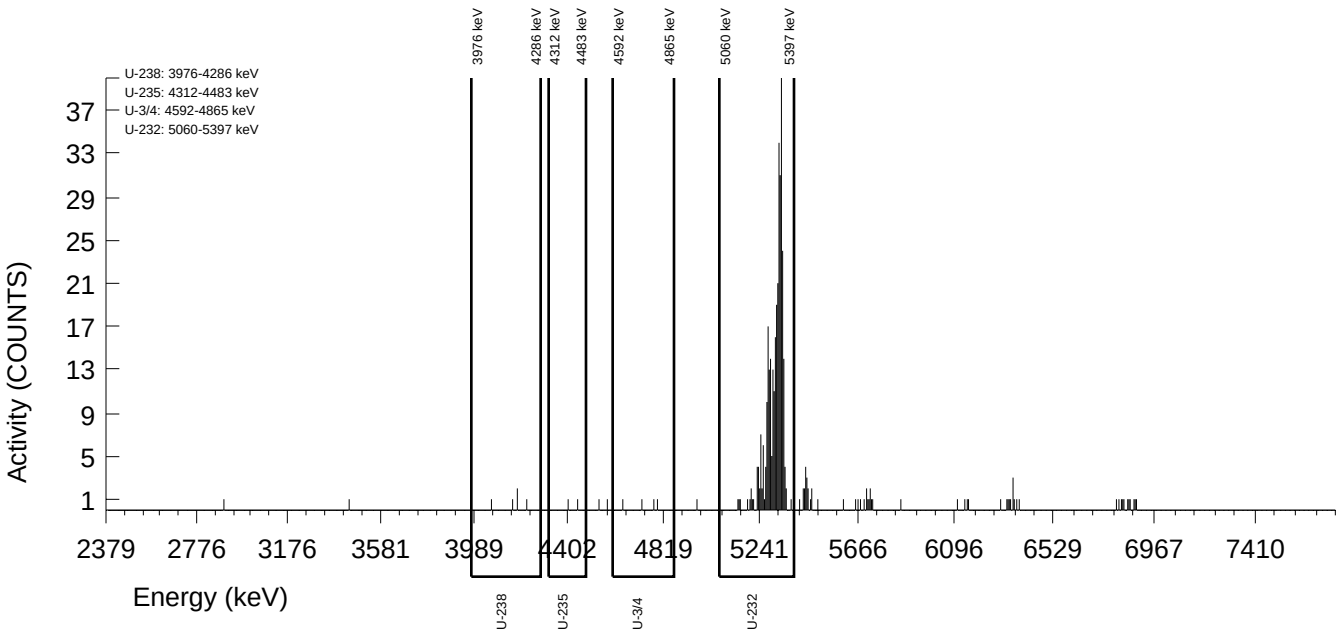
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.5234E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5307.94	24.141	329.000	324.440	4.560	2.1354	100.000	1.67E+01	2.87E+00	5.57E-01	2.01E-01	1.83E+00
U-3/4	4763.02	4734.34	147.801	4.000	0.972	1.920	1.3856	100.000	5.00E-02	2.37E-01	4.70E-01	1.58E-01	2.37E-01
U-235	4391.00	4423.06	44.340	2.000	1.520	0.480	0.6928	80.900	9.66E-02	2.22E-01	3.52E-01	8.07E-02	2.22E-01
U-238	4184.73	4161.26	4.927	5.000	4.280	0.720	0.8485	100.000	2.20E-01	2.53E-01	3.14E-01	7.99E-02	2.52E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.108 +/-0.033)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2641120	CHAMBER : 018	LIB FILE : UU
SAMPLE ID : S0674299010_UU	DETECTOR S/N : 80015	BKG FILE : B018.CNF;2651
SAMPLE QTY : 0.116 G +/-0.862 %	AVERAGE %EFFICIENCY : 34.7718	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6712	BKG LIVE TIME(SEC) : 60000.00
ANALYST : RM3	COUNT DATE : 19-Jul-2024 08:21:26	EFF FILE : W018.CNF;752
% YIELD : 88.8 +/-6.401 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 02-Jul-2024

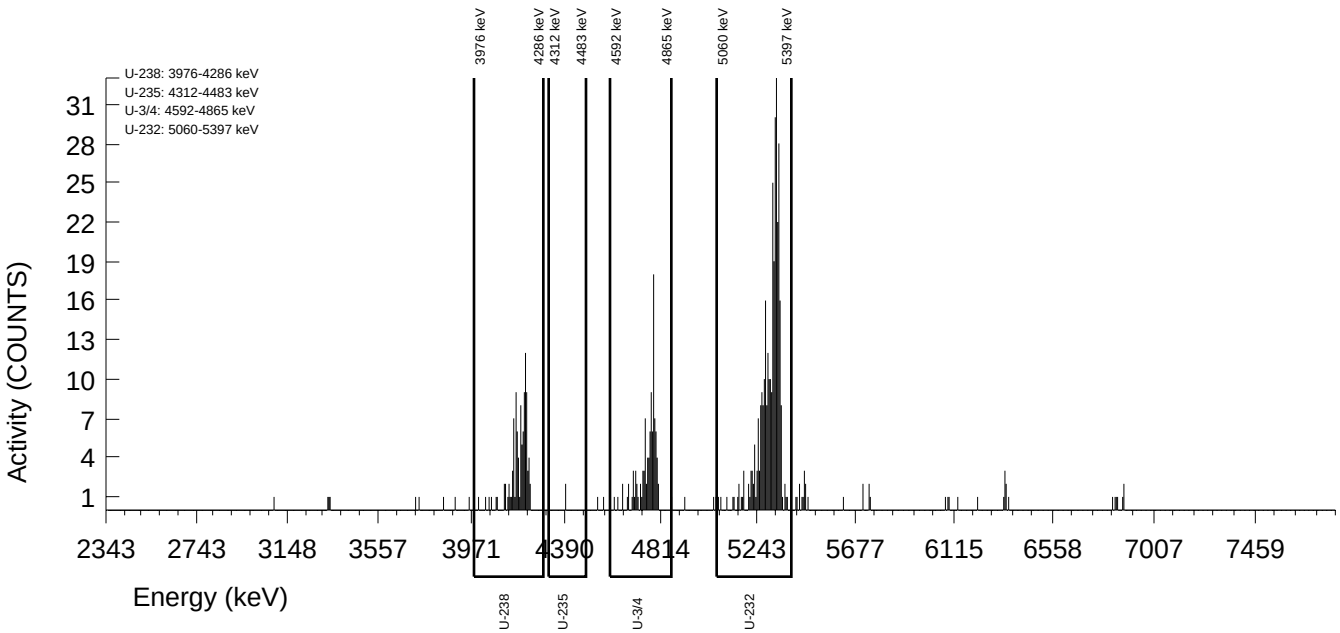
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 3.9137E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5299.95	32.234	330.000	326.400	3.600	1.8974	100.000	1.71E+01	2.94E+00	5.22E-01	1.82E-01	1.87E+00
U-3/4	4763.02	4755.65	7.789	103.000	99.726	2.160	1.4697	100.000	5.23E+00	1.26E+00	4.93E-01	1.68E-01	1.05E+00
U-235	4391.00	4390.43	4.967	2.000	1.520	0.480	0.6928	80.900	9.85E-02	2.27E-01	3.59E-01	8.22E-02	2.26E-01
U-238	4184.73	4181.02	58.363	104.000	102.800	1.200	1.0954	100.000	5.39E+00	1.27E+00	3.68E-01	1.05E-01	1.05E+00

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.114 +/-0.033)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2641120	CHAMBER : 113	LIB FILE : UU
SAMPLE ID : S1205790381_UU	DETECTOR S/N : 67598	BKG FILE : B113.CNF;1997
SAMPLE QTY : 0.119 G +/-0.840 %	AVERAGE %EFFICIENCY : 25.7066	BKG DATE : 12-Jul-2024
SAMPLE DATE : 17-Jul-2024 00:00:00	AVERAGE %EFF ERROR : 0.5001	BKG LIVE TIME(SEC) : 60000.00
ANALYST : RM3	COUNT DATE : 19-Jul-2024 08:21:10	EFF FILE : W113.CNF;527
% YIELD : 90.6 +/-7.167 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 13-Jul-2024

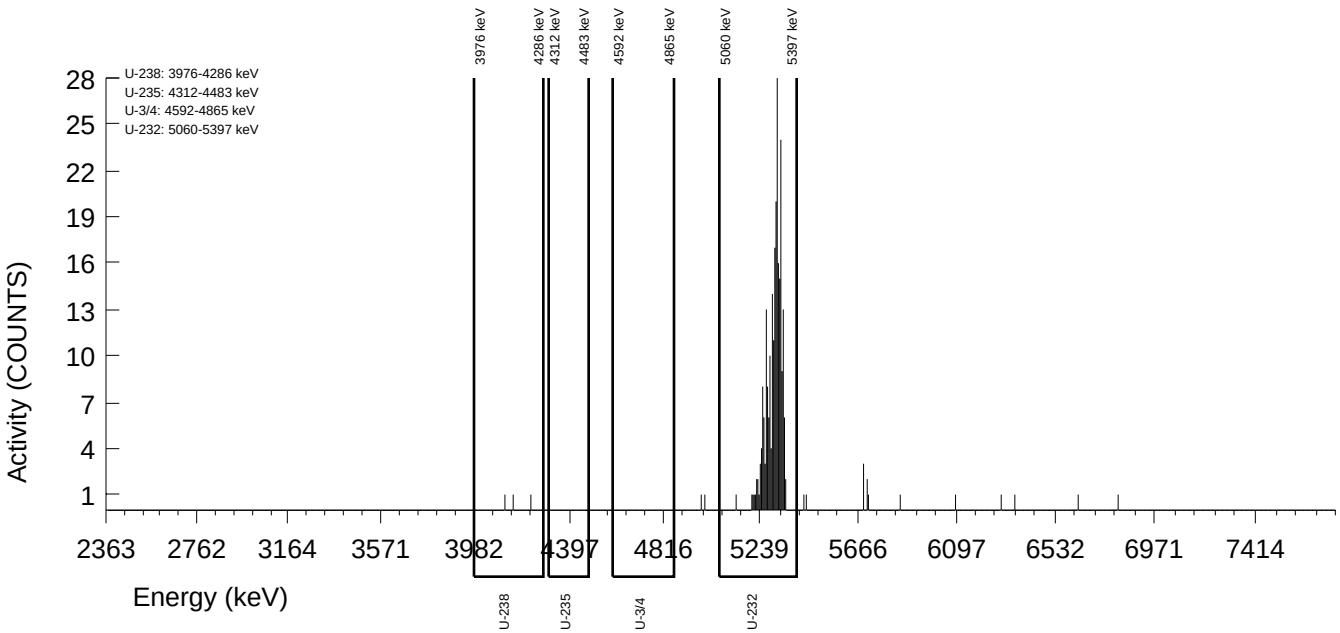
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4069E+00 dpm
RESULTS : 3.9941E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5299.14	30.563	250.000	246.400	3.600	1.8974	100.000	1.67E+01	3.23E+00	6.74E-01	2.35E-01	2.11E+00
U-3/4	4763.02	4728.36	0.000	0.000	-2.041	1.200	1.0954	100.000	-1.38E-01	1.54E-01	5.43E-01	1.70E-01	1.54E-01
U-235	4391.00	4397.19	0.000	0.000	-0.240	0.240	0.4899	80.900	-2.01E-02	1.74E-01	4.01E-01	7.51E-02	1.73E-01
U-238	4184.73	4166.41	113.993	3.000	1.560	1.440	1.2000	100.000	1.06E-01	2.79E-01	5.01E-01	1.49E-01	2.78E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.841 +/-0.025)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2641120	CHAMBER : 117	LIB FILE : UU
SAMPLE ID : S1205790382_UU	DETECTOR S/N : 80003	BKG FILE : B117.CNF;1993
SAMPLE QTY : 0.112 G +/-0.893 %	AVERAGE %EFFICIENCY : 26.2255	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5100	BKG LIVE TIME(SEC) : 60000.00
ANALYST : RM3	COUNT DATE : 19-Jul-2024 08:21:12	EFF FILE : W117.CNF;520
% YIELD : 94.3 +/-6.966 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 13-Jul-2024

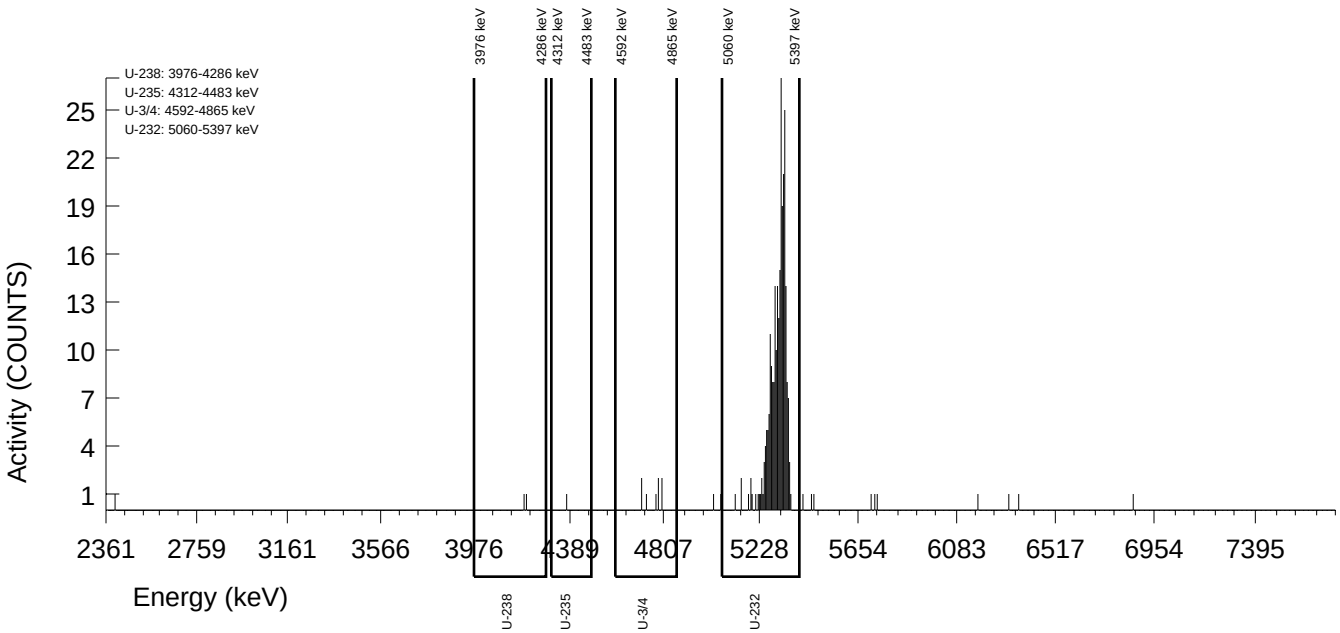
TRACER
ID : 1564-JJ
NUCLIDE : U-232
NOMINAL : 4.4095E+00 dpm
RESULTS : 4.1583E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5303.14	45.339	263.000	261.560	1.440	1.2000	100.000	1.77E+01	3.33E+00	5.01E-01	1.49E-01	2.16E+00
U-3/4	4763.02	4758.39	89.030	8.000	6.147	0.960	0.9798	100.000	4.17E-01	4.10E-01	5.25E-01	1.61E-01	4.05E-01
U-235	4391.00	4378.95	4.946	1.000	0.520	0.480	0.6928	80.900	4.36E-02	2.42E-01	4.64E-01	1.06E-01	2.42E-01
U-238	4184.73	4197.57	14.838	2.000	0.320	1.680	1.2961	100.000	2.17E-02	2.47E-01	5.25E-01	1.61E-01	2.47E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.893 +/-0.027)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER	: 2641120	CHAMBER	: 125	LIB FILE	: UU
SAMPLE ID	: S1205790383_UU	DETECTOR S/N	: 84060	BKG FILE	: B125.CNF;2000
SAMPLE QTY	: 0.119 G +/-0.840 %	AVERAGE %EFFICIENCY	: 26.1623	BKG DATE	: 12-Jul-2024
SAMPLE DATE	: 17-Jul-2024 00:00:00	AVERAGE %EFF ERROR	: 0.5087	BKG LIVE TIME(SEC)	: 60000.00
ANALYST	: RM3	COUNT DATE	: 19-Jul-2024 08:21:15	EFF FILE	: W125.CNF;550
% YIELD	: 49.1 +/-9.247 %	ELAPSED LIVE TIME(SEC)	: 14400.00	CAL DATE	: 13-Jul-2024

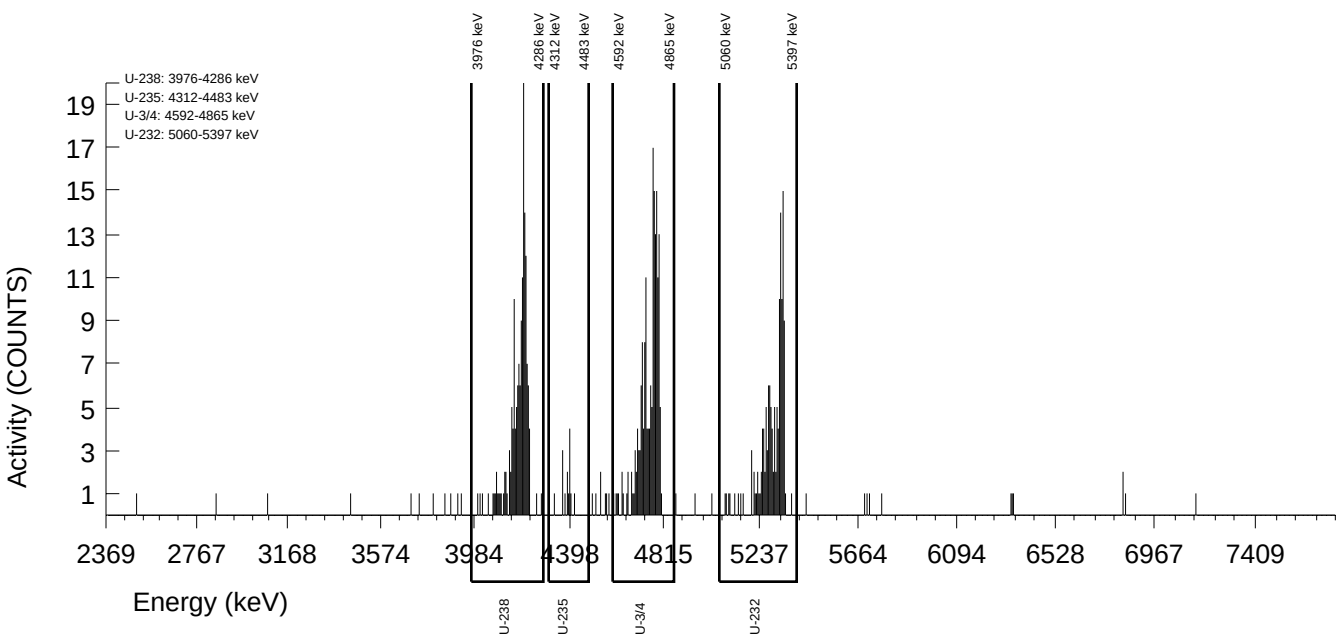
TRACER		LCS	
ID	: 1564-JJ	ID	1600-R
NUCLIDE	: U-232	NUCLIDE	U-238
NOMINAL	: 4.4069E+00 dpm	NOMINAL (pCi/G)	2.2542E+01
RESULTS	: 2.1636E+00 dpm	% RECOVERY	84.979

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5289.59	22.751	138.000	135.840	2.160	1.4697	100.000	1.67E+01	4.21E+00	1.03E+00	3.31E-01	2.84E+00
U-3/4	4763.02	4749.32	61.252	179.000	176.616	1.920	1.3856	100.000	2.17E+01	5.18E+00	1.05E+00	3.41E-01	3.23E+00
U-235	4391.00	4389.75	34.590	14.000	13.760	0.240	0.4899	80.900	2.09E+00	1.22E+00	7.28E-01	1.36E-01	1.16E+00
U-238	4184.73	4177.43	19.271	156.000	156.000	0.000	1.0000	100.000	1.92E+01	4.67E+00	3.68E-01	2.25E-01	3.02E+00

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.464 +/-0.014)



Batch 2641153 Check-list

This check-list was completed on 19-JUL-24 by Melanie Aycock

This batch was reviewed by Melanie Aycock on 19-JUL-24 and Jessica Davis on 23-JUL-24.

Batch ID: 2641153 **Product:** ASP__THS **Description:** Alpha Spec Thorium GL-RAD-A-038

#	Criteria	Yes	No	Comments
Preparation Information				
1	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
2	Are instrument source checks within limits?	Yes		
3	Have samples been blank corrected?		No	
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were all tracer/carrier recoveries within the required acceptance limits?	Yes		
10	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Were manual integrations performed on any sample or QC data files in this batch?		No	
14	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Thorium

Batch ID: **2641153**
Analyst: Alexander Gauger (AG2)
Method: DOE EML HASL-300, Th-01-RC Modified
Lab SOP: GL-RAD-A-038 REV# 19
Instrument: BAL-C326419771

Due Dates for Lab: 31-JUL-2024 **Package: 01-AUG-2024** **SDG: 02-AUG-2024**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1205790432	Thorium-232 AS SPIKE	1513-J	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)
1	674299006	17-JUL-2024	1	Dry to Dry	0.142	0.142
2	674299010	17-JUL-2024	1	Dry to Dry	0.111	0.111
3	1205790430 MB	17-JUL-2024	1	Dry to Wet		0.142
4	1205790431 DUP (674299006)	17-JUL-2024	1	Dry to Dry	0.14	0.14
5	1205790432 LCS	17-JUL-2024	1	Dry to Wet		0.142

Reagent/Solvent Lot ID	Description	Amount
WORK 1845-J	Thorium-229 AS TRACER, RASP	.1 mL
REGNT 4355090	Acetone	1 mL
REGNT 4351215.2	Hydrogen Peroxide 30% ACS Reagent	3 mL
REGNT 4363411	RASP-2M Hydrochloric Acid	4 mL
REGNT 4316586	5% Saturated Boric Acid	1 mL
REGNT 4356267.1	Anion Exchange Resin 1x8 100-200 Mesh Resin	3 mL
REGNT 4375816	RASP- Ethyl Alcohol (80%)	5 mL
REGNT 4208162	Iron Carrier	2 mL
REGNT 4323560	Neodymium 500 MG/L in 4% HNO3	.1 mL
REGNT 4373285	RASP-Neodymium Substrate	5 mL
REGNT 4373865	8M Nitric Acid	30 mL
REGNT 4376362	9M Hydrochloric Acid	20 mL
REGNT 4364508.4	RASP-Ammonium Hydroxide	10 mL
REGNT 4371728.10	RASP-Hydrochloric Acid	20 mL
REGNT 4324094.3	RASP-Hydrofluoric Acid	30 mL
REGNT 4364420.14	Nitric Acid	20 mL

Comments:

Pipet ID: RAD-ASP-184002Z
Data Entry Date2: 17-JUL-2024 00:00

GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER	: 2641153	CHAMBER	: 207	LIB FILE	: TH
SAMPLE ID	: S0674299006_TH	DETECTOR S/N	: 158102	BKG FILE	: B207.CNF;1646
SAMPLE QTY	: 0.142 G +/-0.704 %	AVERAGE %EFFICIENCY	: 26.4171	BKG DATE	: 12-Jul-2024
SAMPLE DATE	: 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR	: 0.5136	BKG LIVE TIME(SEC)	: 60000.00
ANALYST	: AG2	COUNT DATE	: 19-Jul-2024 10:08:56	EFF FILE	: W207.CNF;412
% YIELD	: 87.7 +/-7.096 %	ELAPSED LIVE TIME(SEC)	: 12338.54	CAL DATE	: 21-Jun-2024

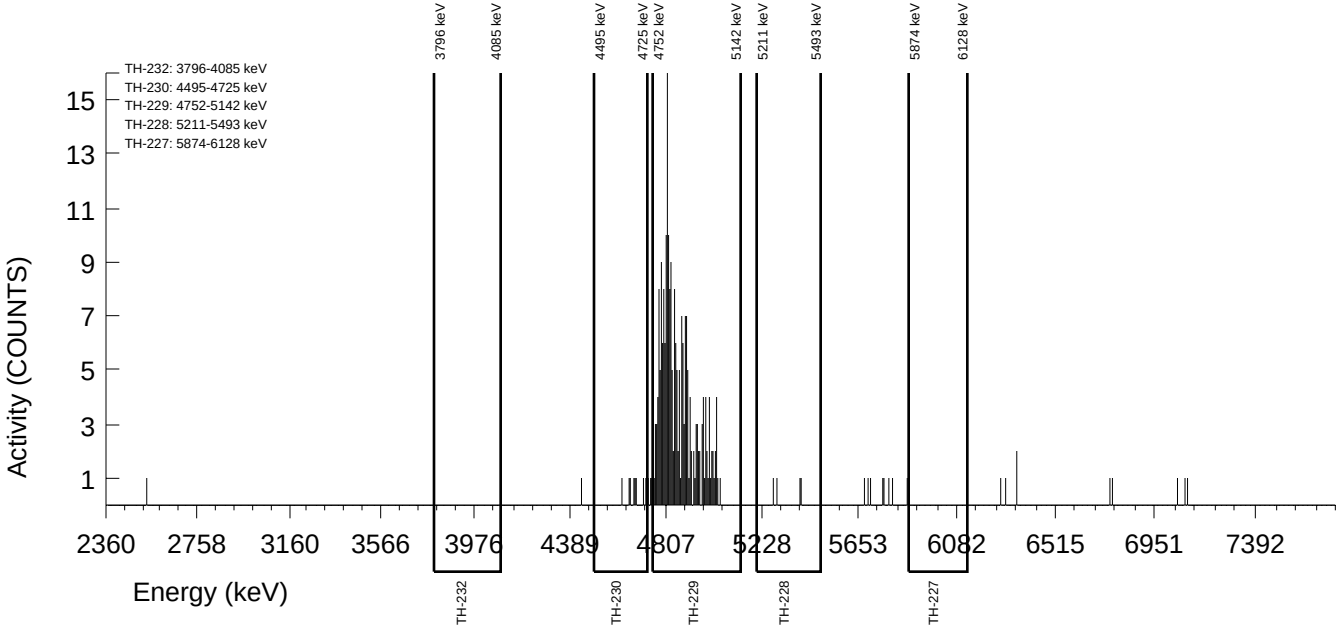
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.2461E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6000.76	0.000	0.000	-1.439	1.439	1.1998	57.440	-3.99E-01	6.29E-01	2.03E+00	6.00E-01	6.28E-01
TH-228	5363.00	5344.56	118.898	4.000	2.965	1.028	1.0140	99.940	2.02E-01	3.08E-01	4.55E-01	1.25E-01	3.06E-01
TH-229	4900.00	4864.39	42.110	231.000	229.561	1.439	1.1998	99.520	1.54E+01	2.99E+00	4.91E-01	1.45E-01	2.00E+00
TH-230	4671.39	4673.31	0.000	8.000	5.590	1.028	1.0140	99.700	3.73E-01	4.04E-01	5.56E-01	1.78E-01	3.98E-01
TH-232	3972.00	3940.45	0.000	0.000	-1.532	1.439	1.1998	100.000	-1.02E-01	1.51E-01	4.96E-01	1.48E-01	1.51E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.381 +/-0.021)
TH-232 (0.092 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2641153	CHAMBER : 031	LIB FILE : TH
SAMPLE ID : S0674299010_TH	DETECTOR S/N : 155850	BKG FILE : B031.CNF;2678
SAMPLE QTY : 0.111 G +/-0.901 %	AVERAGE %EFFICIENCY : 32.8524	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6350	BKG LIVE TIME(SEC) : 59999.99
ANALYST : AG2	COUNT DATE : 19-Jul-2024 10:43:02	EFF FILE : W031.CNF;738
% YIELD : 63.1 +/-8.089 %	ELAPSED LIVE TIME(SEC) : 10346.03	CAL DATE : 03-Jul-2024

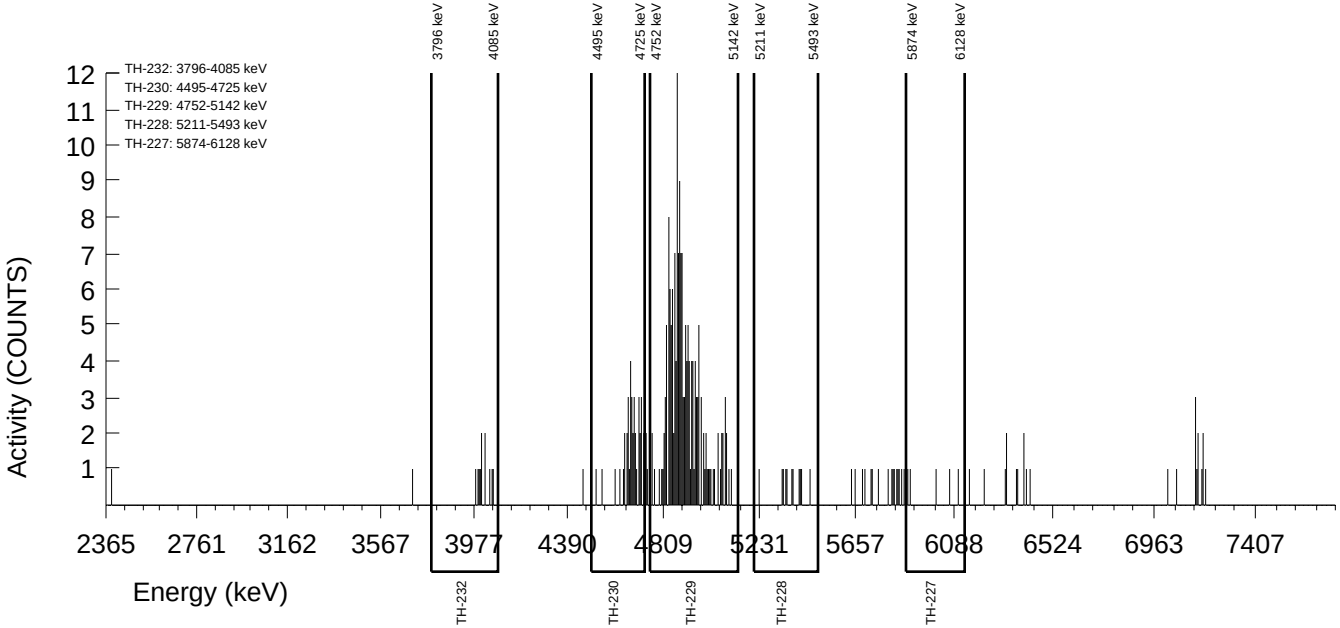
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 3.0528E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5991.03	207.025	5.000	0.172	4.828	2.1973	57.440	8.12E-02	2.43E+00	5.12E+00	1.85E+00	2.43E+00
TH-228	5363.00	5367.56	211.954	11.000	10.478	0.517	0.7192	99.940	1.22E+00	8.19E-01	6.48E-01	1.50E-01	7.94E-01
TH-229	4900.00	4905.86	56.685	174.000	172.103	1.897	1.3772	99.520	1.96E+01	4.38E+00	9.02E-01	2.80E-01	2.96E+00
TH-230	4671.39	4668.47	60.793	38.000	36.102	0.862	0.9285	99.700	4.11E+00	1.56E+00	8.78E-01	2.68E-01	1.40E+00
TH-232	3972.00	4022.63	22.181	11.000	10.241	0.690	0.8305	100.000	1.16E+00	7.99E-01	6.91E-01	1.75E-01	7.76E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.005 +/-0.000)
TH-230 (1.036 +/-0.016)
TH-232 (0.069 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2641153	CHAMBER : 032	LIB FILE : TH
SAMPLE ID : S1205790430_TH	DETECTOR S/N : 155849	BKG FILE : B032.CNF;2675
SAMPLE QTY : 0.142 G +/-0.704 %	AVERAGE %EFFICIENCY : 31.1135	BKG DATE : 12-Jul-2024
SAMPLE DATE : 17-Jul-2024 00:00:00	AVERAGE %EFF ERROR : 0.6022	BKG LIVE TIME(SEC) : 59999.99
ANALYST : AG2	COUNT DATE : 19-Jul-2024 10:43:02	EFF FILE : W032.CNF;729
% YIELD : 76.3 +/-7.575 %	ELAPSED LIVE TIME(SEC) : 10357.69	CAL DATE : 03-Jul-2024

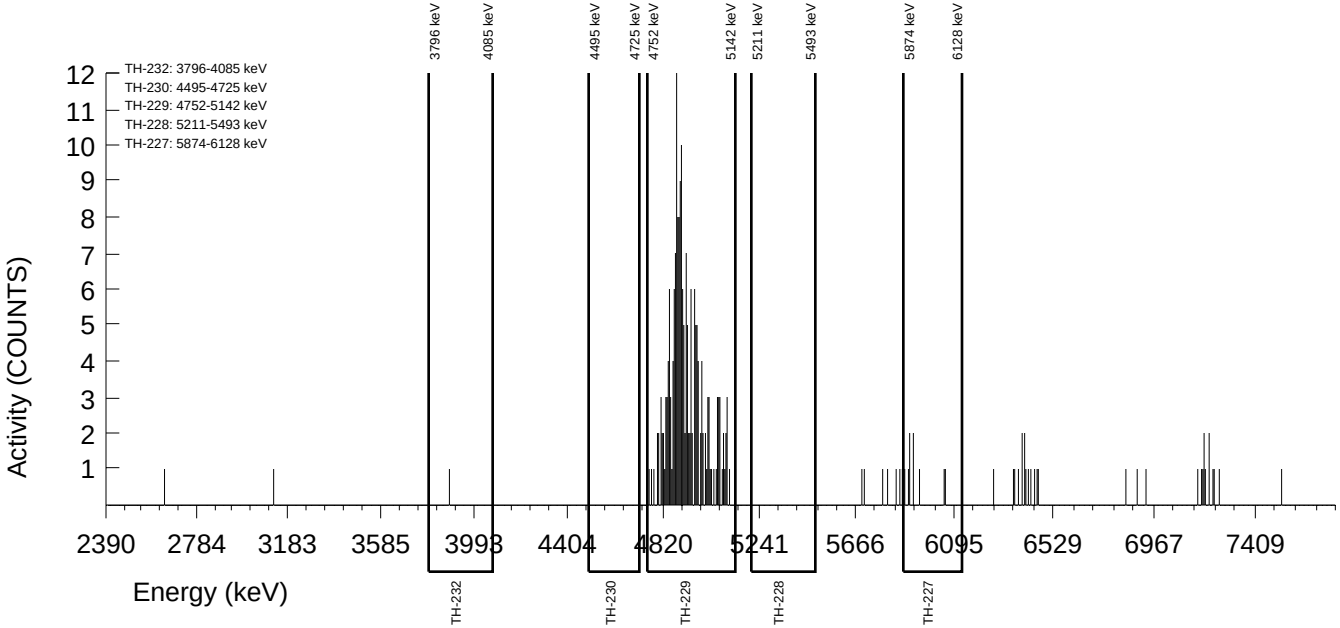
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 3.6913E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5934.06	22.036	10.000	2.059	7.941	2.8180	57.440	3.05E-01	1.02E+00	1.93E+00	7.43E-01	1.02E+00
TH-228	5363.00	5351.76	0.000	0.000	-1.214	1.208	1.0993	99.940	-9.43E-02	1.70E-01	5.38E-01	1.52E-01	1.69E-01
TH-229	4900.00	4925.90	51.417	198.000	197.309	0.691	0.8310	99.520	1.54E+01	3.20E+00	4.64E-01	1.15E-01	2.15E+00
TH-230	4671.39	4609.90	0.000	0.000	-1.878	0.691	0.8310	99.700	-1.46E-01	1.64E-01	5.94E-01	1.81E-01	1.63E-01
TH-232	3972.00	3890.39	4.897	1.000	0.748	0.173	0.4155	100.000	5.79E-02	2.18E-01	3.68E-01	6.76E-02	2.18E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.006 +/-0.000)
TH-230 (1.187 +/-0.018)
TH-232 (0.079 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2641153	CHAMBER : 034	LIB FILE : TH
SAMPLE ID : S1205790431_TH	DETECTOR S/N : 147828	BKG FILE : B034.CNF;2666
SAMPLE QTY : 0.140 G +/-0.714 %	AVERAGE %EFFICIENCY : 34.5383	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.6668	BKG LIVE TIME(SEC) : 59999.99
ANALYST : AG2	COUNT DATE : 19-Jul-2024 10:43:02	EFF FILE : W034.CNF;705
% YIELD : 59.4 +/-8.100 %	ELAPSED LIVE TIME(SEC) : 10367.57	CAL DATE : 03-Jul-2024

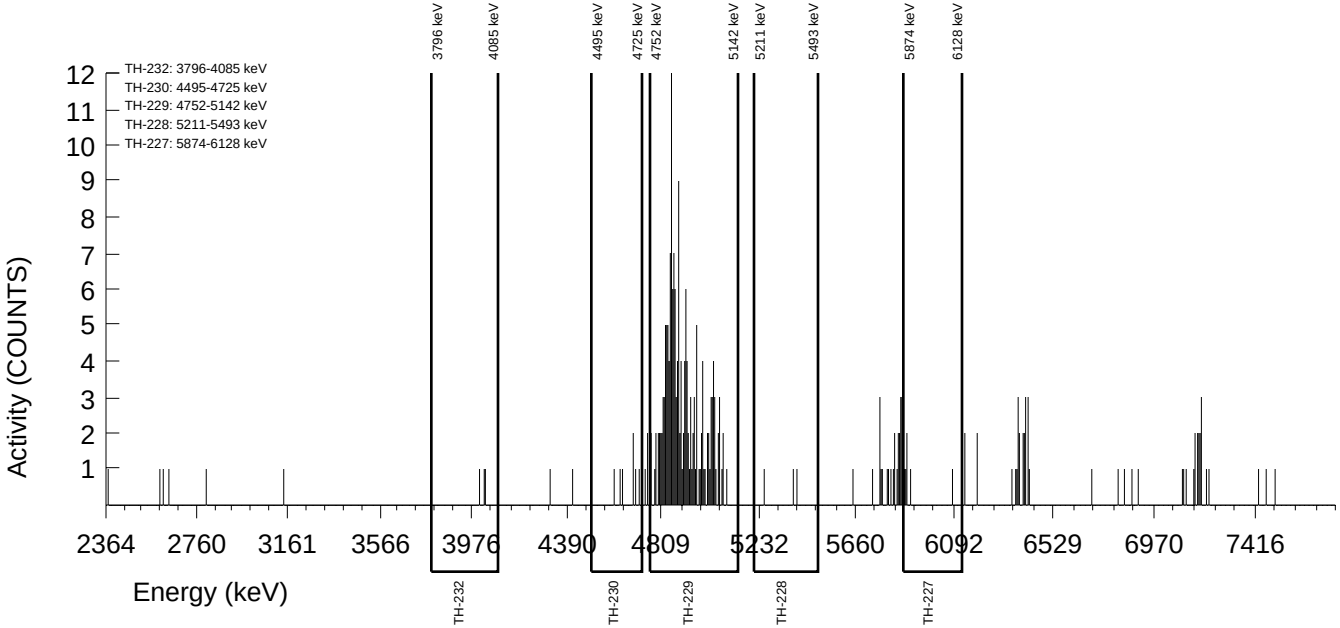
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 2.8756E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5919.35	7.386	6.000	-0.048	6.048	2.4592	57.440	-1.80E-02	2.10E+00	4.44E+00	1.65E+00	2.10E+00
TH-228	5363.00	5349.10	137.881	3.000	1.613	1.382	1.1757	99.940	1.50E-01	3.77E-01	6.69E-01	1.95E-01	3.76E-01
TH-229	4900.00	4902.26	38.222	172.000	170.790	1.210	1.0998	99.520	1.56E+01	3.47E+00	6.31E-01	1.79E-01	2.35E+00
TH-230	4671.39	4660.87	4.924	7.000	5.108	0.864	0.9295	99.700	4.65E-01	5.18E-01	7.01E-01	2.14E-01	5.10E-01
TH-232	3972.00	4022.09	29.546	3.000	2.586	0.346	0.5879	100.000	2.35E-01	3.62E-01	4.78E-01	1.03E-01	3.60E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.005 +/-0.000)
TH-230 (1.028 +/-0.016)
TH-232 (0.069 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER	: 2641153	CHAMBER	: 035	LIB FILE	: TH
SAMPLE ID	: S1205790432_TH	DETECTOR S/N	: 147877	BKG FILE	: B035.CNF;2654
SAMPLE QTY	: 0.142 G +/-0.704 %	AVERAGE %EFFICIENCY	: 29.2613	BKG DATE	: 12-Jul-2024
SAMPLE DATE	: 17-Jul-2024 00:00:00	AVERAGE %EFF ERROR	: 0.5673	BKG LIVE TIME(SEC)	: 59999.99
ANALYST	: AG2	COUNT DATE	: 19-Jul-2024 10:43:02	EFF FILE	: W035.CNF;759
% YIELD	: 66.2 +/-8.390 %	ELAPSED LIVE TIME(SEC)	: 10371.29	CAL DATE	: 03-Jul-2024

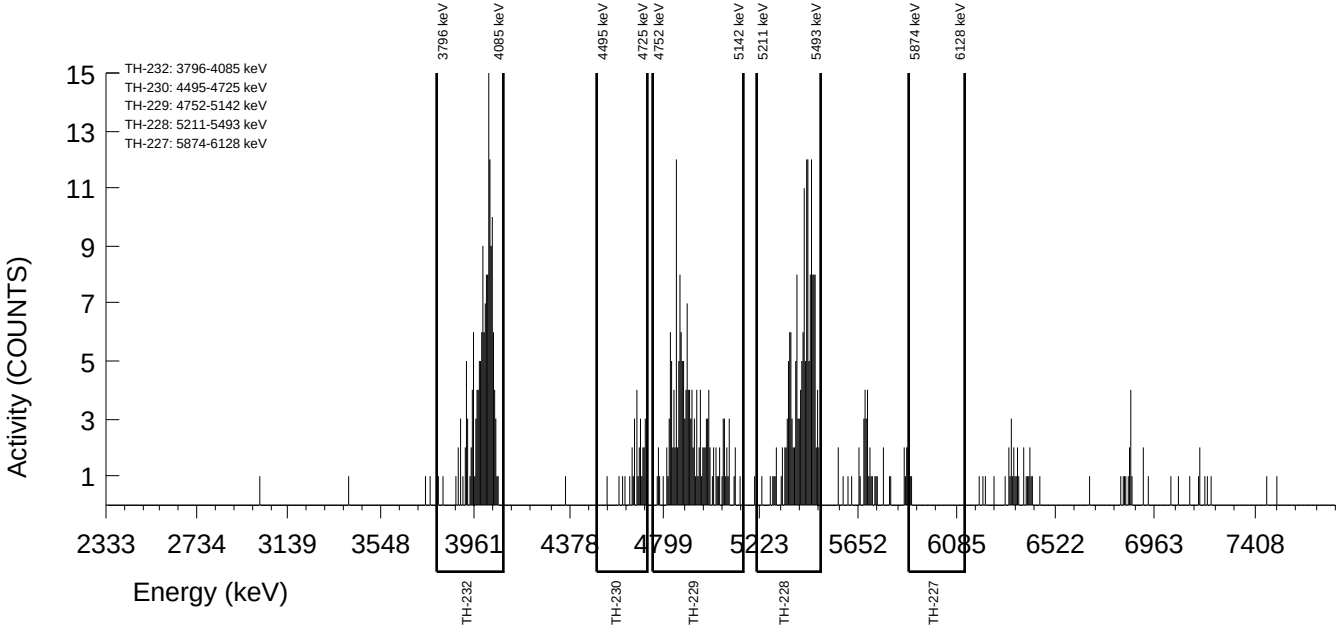
TRACER		LCS	
ID	: 1845-J	ID	1513-J
NUCLIDE	: TH-229	NUCLIDE	TH-232
NOMINAL	: 4.8402E+00 dpm	NOMINAL (pCi/G)	1.3993E+01
RESULTS	: 3.2024E+00 dpm	% RECOVERY	107.313

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5880.41	0.000	4.000	-1.013	5.013	2.2389	57.440	-1.83E-01	8.62E-01	1.99E+00	7.22E-01	8.62E-01
TH-228	5363.00	5407.49	79.765	172.000	170.958	1.037	1.0184	99.940	1.63E+01	3.69E+00	6.31E-01	1.73E-01	2.45E+00
TH-229	4900.00	4917.80	49.521	165.000	161.197	3.803	1.9501	99.520	1.54E+01	3.55E+00	9.48E-01	3.31E-01	2.41E+00
TH-230	4671.39	4674.35	49.853	30.000	27.647	1.383	1.1759	99.700	2.63E+00	1.14E+00	7.89E-01	2.52E-01	1.04E+00
TH-232	3972.00	3995.88	45.491	159.000	158.417	0.519	0.7201	100.000	1.50E+01	3.46E+00	5.40E-01	1.28E-01	2.35E+00

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.005 +/-0.000)
TH-230 (0.970 +/-0.015)
TH-232 (0.065 +/-0.001)



Batch 2640431 Check-list

This check-list was completed on 19-JUL-24 by Melanie Aycock

This batch was reviewed by Melanie Aycock on 19-JUL-24 and Jessica Davis on 23-JUL-24.

Batch ID: 2640431 **Product:** ASP__THS **Description:** Alpha Spec Thorium GL-RAD-A-038

#	Criteria	Yes	No	Comments
Preparation Information				
1	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
2	Are instrument source checks within limits?	Yes		
3	Have samples been blank corrected?		No	
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were all tracer/carrier recoveries within the required acceptance limits?	Yes		
10	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Were manual integrations performed on any sample or QC data files in this batch?		No	
14	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Thorium

Batch ID: **2640431**
Analyst: Chandler Metts (CM4)
Prep: Ryan Monroe (RM3)
Method: DOE EML HASL-300, Th-01-RC Modified
Lab SOP: GL-RAD-A-038 REV# 19
Instrument: BAL-C409669499

Due Dates for Lab: 31-JUL-2024 Package: 01-AUG-2024 SDG: 02-AUG-2024

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1205789025	Thorium-232 AS SPIKE	1513-J	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)
1	674299011	16-JUL-2024	1	Dry to Dry	0.115	0.115
2	674299012	16-JUL-2024	1	Dry to Dry	0.102	0.102
3	674299013	16-JUL-2024	1	Dry to Dry	0.103	0.103
4	674299016	16-JUL-2024	1	Dry to Dry	0.114	0.114
5	674299019	16-JUL-2024	1	Dry to Dry	0.101	0.101
6	674299020	16-JUL-2024	1	Dry to Dry	0.106	0.106
7	674299022	16-JUL-2024	1	Dry to Dry	0.119	0.119
8	674299027	16-JUL-2024	1	Dry to Dry	0.111	0.111
9	674299030	16-JUL-2024	1	Dry to Dry	0.114	0.114
10	674299031	16-JUL-2024	1	Dry to Dry	0.107	0.107
11	674299033	16-JUL-2024	1	Dry to Dry	0.112	0.112
12	674299034	16-JUL-2024	1	Dry to Dry	0.102	0.102
13	674299037	16-JUL-2024	1	Dry to Dry	0.103	0.103
14	1205789023 MB	16-JUL-2024	1	Dry to Wet		0.119
15	1205789024 DUP (674299011)	16-JUL-2024	1	Dry to Dry	0.104	0.104
16	1205789025 LCS	16-JUL-2024	1	Dry to Wet		0.119

Reagent/Solvent Lot ID	Description	Amount
WORK 1845-J	Thorium-229 AS TRACER, RASP	.1 mL
REGNT 4355090	Acetone	1 mL
REGNT 4351215.2	Hydrogen Peroxide 30% ACS Reagent	3 mL
REGNT 4363411	RASP-2M Hydrochloric Acid	4 mL
REGNT 4316586	5% Saturated Boric Acid	1 mL
REGNT 4356267.1	Anion Exchange Resin 1x8 100-200 Mesh Resin	3 mL
REGNT 4375816	RASP- Ethyl Alcohol (80%)	5 mL
REGNT 4208162	Iron Carrier	2 mL
REGNT 4323560	Neodymium 500 MG/L in 4% HNO3	.1 mL
REGNT 4373285	RASP-Neodymium Substrate	5 mL
REGNT 4373865	8M Nitric Acid	30 mL
REGNT 4374162	9M Hydrochloric Acid	20 mL
REGNT 4364508.4	RASP-Ammonium Hydroxide	10 mL
REGNT 4371728.10	RASP-Hydrochloric Acid	20 mL
REGNT 4324094.3	RASP-Hydrofluoric Acid	30 mL
REGNT 4364420.14	Nitric Acid	20 mL

Comments:

Pipet ID: RAD-ASP-184002Z
Data Entry Date2: 16-JUL-2024 00:00

GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 197	LIB FILE : TH
SAMPLE ID : S0674299011_TH	DETECTOR S/N : 140621	BKG FILE : B197.CNF;1636
SAMPLE QTY : 0.115 G +/-0.870 %	AVERAGE %EFFICIENCY : 26.5832	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5167	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 10:28:36	EFF FILE : W197.CNF;135
% YIELD : 92.4 +/-6.461 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 21-Jun-2024

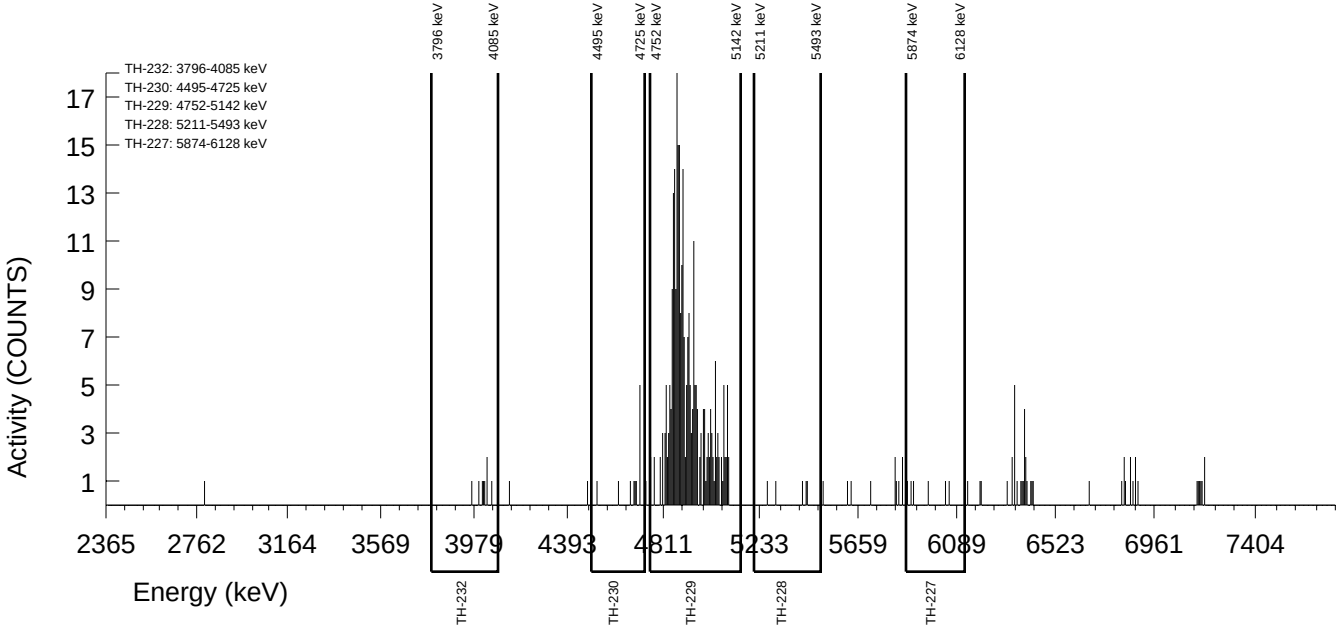
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.4736E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5947.15	0.000	7.000	3.640	3.360	1.8330	57.440	9.70E-01	1.56E+00	2.59E+00	8.95E-01	1.56E+00
TH-228	5363.00	5371.88	168.073	5.000	2.832	2.160	1.4697	99.940	1.92E-01	3.43E-01	5.70E-01	1.83E-01	3.42E-01
TH-229	4900.00	4914.52	90.627	285.000	284.040	0.960	0.9798	99.520	1.90E+01	3.36E+00	4.40E-01	1.20E-01	2.21E+00
TH-230	4671.39	4675.46	4.943	12.000	8.611	1.680	1.2961	99.700	5.74E-01	4.88E-01	6.27E-01	2.13E-01	4.79E-01
TH-232	3972.00	4019.70	4.943	8.000	6.926	0.960	0.9798	100.000	4.60E-01	4.02E-01	4.49E-01	1.25E-01	3.97E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (1.709 +/-0.026)
TH-232 (0.114 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 199	LIB FILE : TH
SAMPLE ID : S0674299012_TH	DETECTOR S/N : 140623	BKG FILE : B199.CNF;1633
SAMPLE QTY : 0.102 G +/-0.980 %	AVERAGE %EFFICIENCY : 26.3791	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5128	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 10:28:37	EFF FILE : W199.CNF;134
% YIELD : 92.5 +/-6.492 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 21-Jun-2024

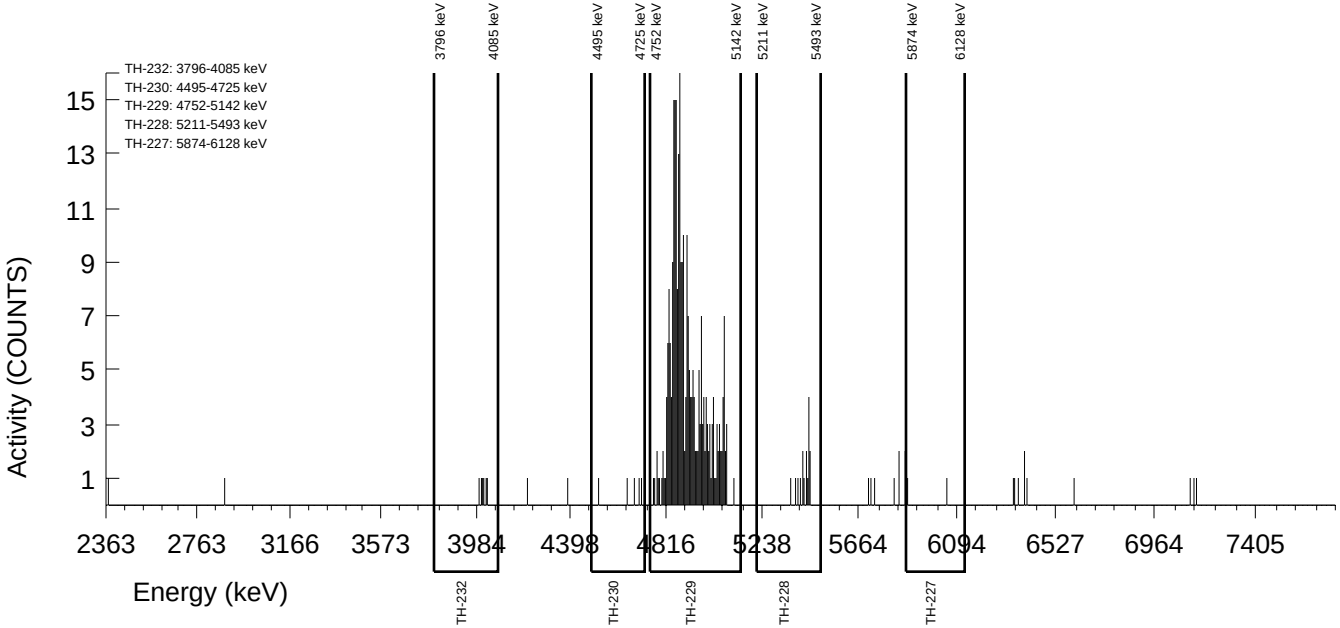
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.4771E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5964.30	163.969	2.000	1.520	0.480	0.6928	57.440	4.60E-01	1.06E+00	1.68E+00	3.84E-01	1.06E+00
TH-228	5363.00	5413.48	8.281	17.000	15.072	1.920	1.3856	99.940	1.16E+00	6.69E-01	6.24E-01	1.96E-01	6.51E-01
TH-229	4900.00	4913.24	63.931	284.000	282.080	1.920	1.3856	99.520	2.14E+01	3.81E+00	6.12E-01	1.92E-01	2.51E+00
TH-230	4671.39	4652.80	183.844	5.000	2.823	0.480	0.6928	99.700	2.14E-01	3.71E-01	6.04E-01	1.88E-01	3.68E-01
TH-232	3972.00	4018.07	39.750	6.000	5.646	0.240	0.4899	100.000	4.26E-01	3.99E-01	3.85E-01	7.95E-02	3.94E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (1.697 +/-0.026)
TH-232 (0.114 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 200	LIB FILE : TH
SAMPLE ID : S0674299013_TH	DETECTOR S/N : 101464	BKG FILE : B200.CNF;1647
SAMPLE QTY : 0.103 G +/-0.971 %	AVERAGE %EFFICIENCY : 26.2508	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5104	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 10:28:41	EFF FILE : W200.CNF;456
% YIELD : 76.7 +/-7.064 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 21-Jun-2024

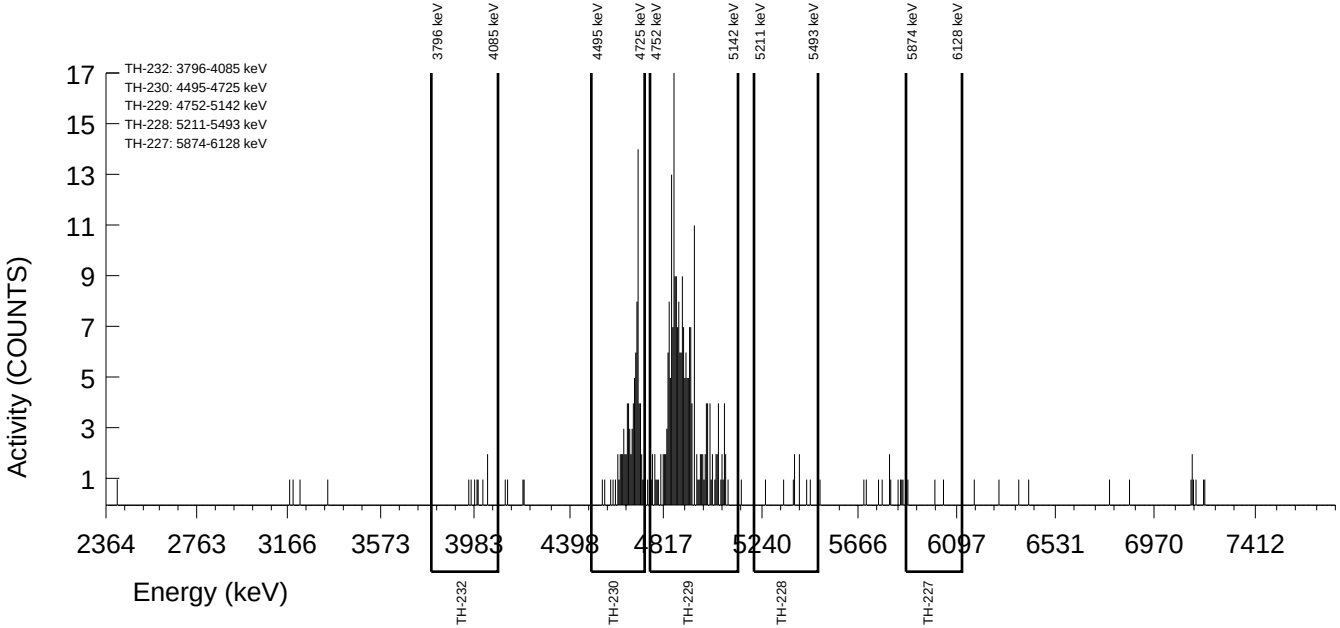
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 3.7136E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5978.03	148.853	3.000	1.560	1.440	1.2000	57.440	5.66E-01	1.50E+00	2.68E+00	7.98E-01	1.49E+00
TH-228	5363.00	5386.68	27.290	9.000	7.793	1.200	1.0954	99.940	7.21E-01	5.93E-01	6.50E-01	1.86E-01	5.84E-01
TH-229	4900.00	4905.71	98.192	235.000	232.840	2.160	1.4697	99.520	2.12E+01	4.11E+00	7.62E-01	2.45E-01	2.74E+00
TH-230	4671.39	4672.48	10.916	86.000	84.119	0.480	0.6928	99.700	7.63E+00	2.01E+00	6.94E-01	2.11E-01	1.66E+00
TH-232	3972.00	4000.11	4.962	8.000	7.906	0.000	1.0000	100.000	7.15E-01	5.44E-01	3.63E-01	1.72E-01	5.34E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.401 +/-0.022)
TH-232 (0.094 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 203	LIB FILE : TH
SAMPLE ID : S0674299016_TH	DETECTOR S/N : 140626	BKG FILE : B203.CNF;533
SAMPLE QTY : 0.114 G +/-0.877 %	AVERAGE %EFFICIENCY : 26.2079	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5095	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 10:28:42	EFF FILE : W203.CNF;134
% YIELD : 96.8 +/-6.382 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 21-Jun-2024

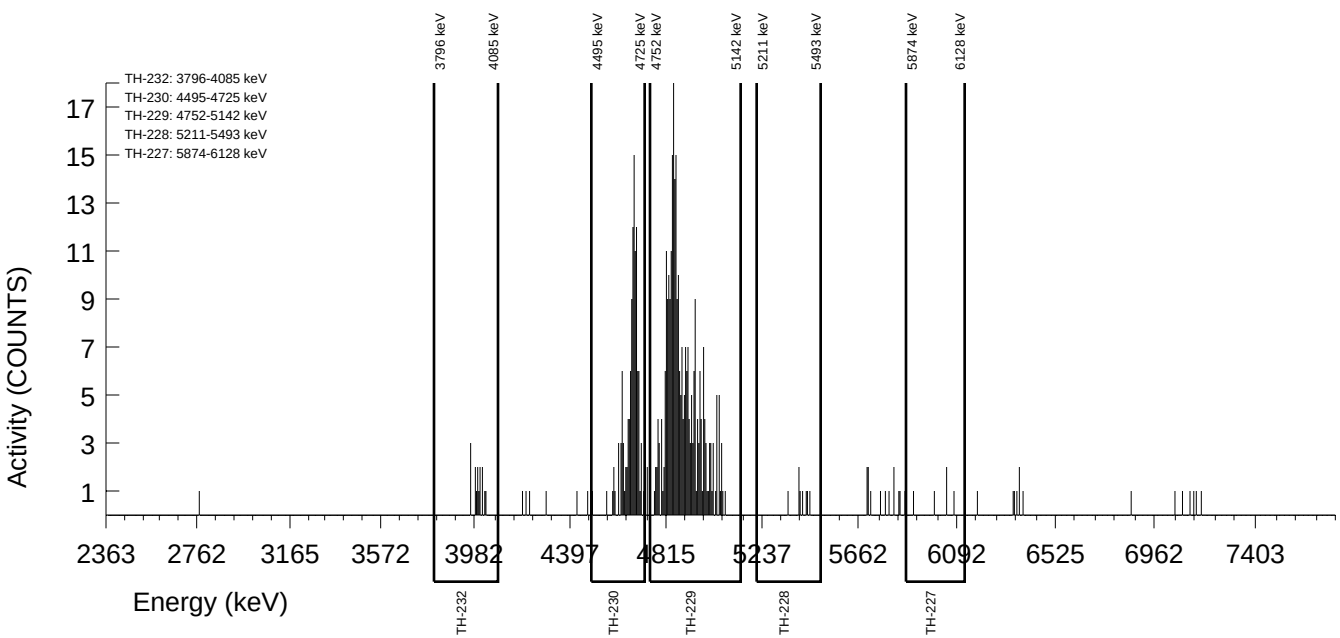
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.6859E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6015.37	4.967	5.000	4.760	0.240	0.4899	57.440	1.24E+00	1.27E+00	1.25E+00	2.34E-01	1.26E+00
TH-228	5363.00	5412.57	7.450	8.000	5.831	2.160	1.4697	99.940	3.87E-01	4.06E-01	5.57E-01	1.79E-01	4.03E-01
TH-229	4900.00	4892.69	52.895	295.000	293.320	1.680	1.2961	99.520	1.91E+01	3.35E+00	5.05E-01	1.55E-01	2.20E+00
TH-230	4671.39	4665.28	26.075	116.000	113.515	0.720	0.8485	99.700	7.39E+00	1.70E+00	5.44E-01	1.75E-01	1.38E+00
TH-232	3972.00	3993.77	53.392	15.000	13.922	0.960	0.9798	100.000	9.03E-01	5.27E-01	4.39E-01	1.22E-01	5.13E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.009 +/-0.000)
TH-230 (1.765 +/-0.027)
TH-232 (0.118 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER	: 2640431	CHAMBER	: 205	LIB FILE	: TH
SAMPLE ID	: S0674299019_TH	DETECTOR S/N	: 140628	BKG FILE	: B205.CNF;1637
SAMPLE QTY	: 0.101 G +/-0.990 %	AVERAGE %EFFICIENCY	: 26.0349	BKG DATE	: 12-Jul-2024
SAMPLE DATE	: 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR	: 0.5063	BKG LIVE TIME(SEC)	: 60000.00
ANALYST	: CM4	COUNT DATE	: 18-Jul-2024 10:28:45	EFF FILE	: W205.CNF;420
% YIELD	: 78.3 +/-7.010 %	ELAPSED LIVE TIME(SEC)	: 14400.00	CAL DATE	: 21-Jun-2024

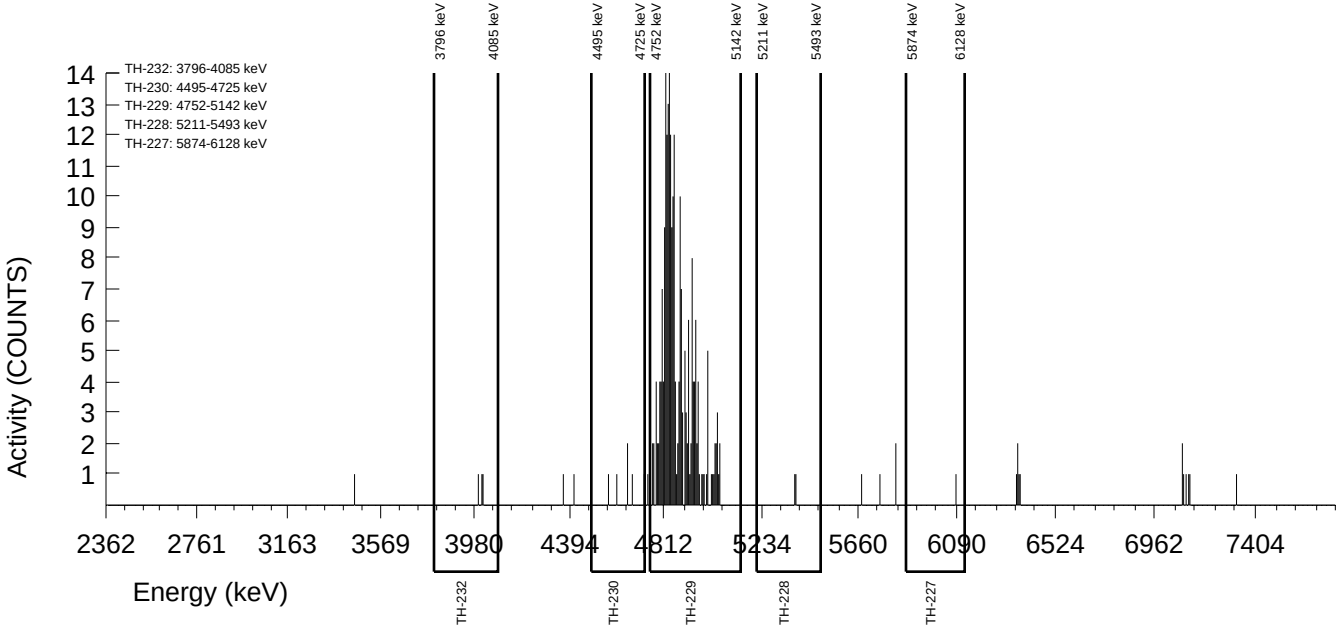
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 3.7920E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6090.19	4.955	1.000	0.520	0.480	0.6928	57.440	1.90E-01	1.06E+00	2.02E+00	4.64E-01	1.06E+00
TH-228	5363.00	5385.49	9.911	2.000	0.313	1.680	1.2961	99.940	2.92E-02	3.40E-01	7.23E-01	2.22E-01	3.40E-01
TH-229	4900.00	4870.41	117.197	237.000	235.800	1.200	1.0954	99.520	2.16E+01	4.16E+00	6.42E-01	1.84E-01	2.77E+00
TH-230	4671.39	4643.46	4.955	6.000	4.101	0.480	0.6928	99.700	3.75E-01	4.85E-01	7.01E-01	2.13E-01	4.80E-01
TH-232	3972.00	4007.19	24.777	3.000	2.905	0.000	1.0000	100.000	2.65E-01	3.62E-01	3.66E-01	1.73E-01	3.60E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.419 +/-0.022)
TH-232 (0.095 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER	: 2640431	CHAMBER	: 206	LIB FILE	: TH
SAMPLE ID	: S0674299020_TH	DETECTOR S/N	: 140629	BKG FILE	: B206.CNF;1643
SAMPLE QTY	: 0.106 G +/-0.943 %	AVERAGE %EFFICIENCY	: 25.4965	BKG DATE	: 12-Jul-2024
SAMPLE DATE	: 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR	: 0.4962	BKG LIVE TIME(SEC)	: 60000.00
ANALYST	: CM4	COUNT DATE	: 18-Jul-2024 10:28:47	EFF FILE	: W206.CNF;414
% YIELD	: 90.4 +/-6.660 %	ELAPSED LIVE TIME(SEC)	: 14400.00	CAL DATE	: 21-Jun-2024

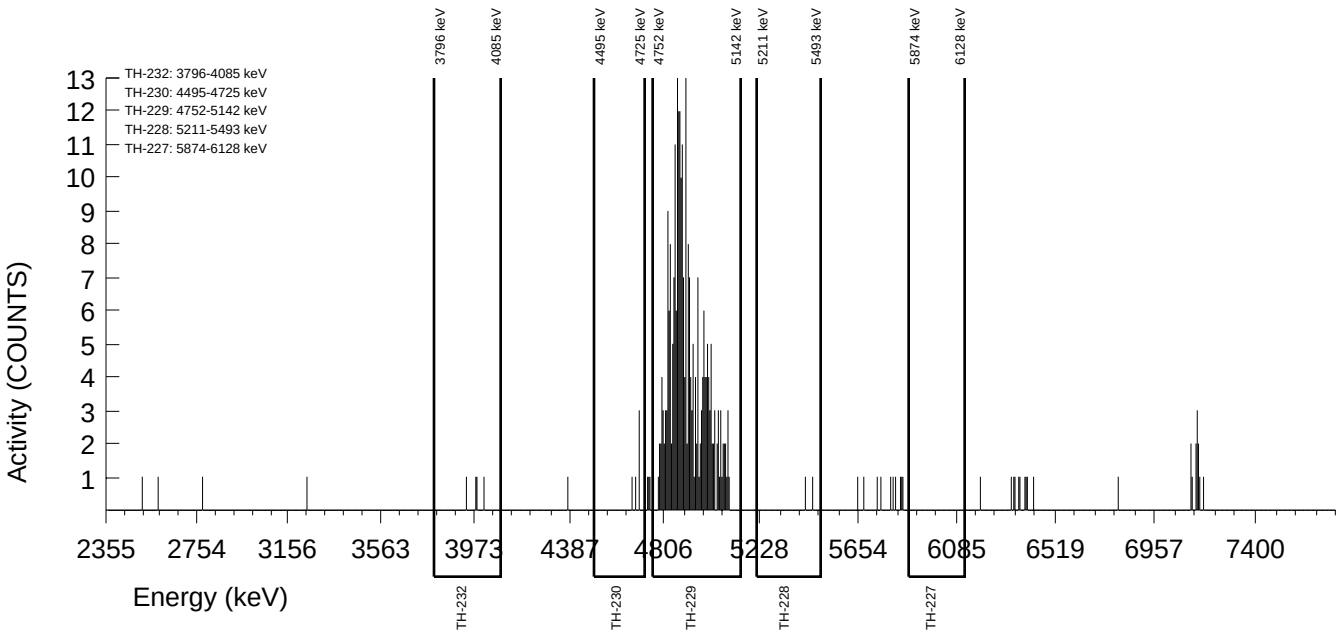
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.3779E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6000.76	0.000	0.000	-1.440	1.440	1.2000	57.440	-4.44E-01	7.16E-01	2.28E+00	6.77E-01	7.15E-01
TH-228	5363.00	5440.80	34.683	2.000	0.792	1.200	1.0954	99.940	6.22E-02	2.82E-01	5.52E-01	1.58E-01	2.82E-01
TH-229	4900.00	4907.80	126.344	269.000	266.600	2.400	1.5492	99.520	2.06E+01	3.76E+00	6.69E-01	2.19E-01	2.49E+00
TH-230	4671.39	4654.51	4.955	6.000	3.916	0.480	0.6928	99.700	3.02E-01	4.08E-01	6.07E-01	1.88E-01	4.04E-01
TH-232	3972.00	3978.15	79.275	4.000	3.653	0.240	0.4899	100.000	2.80E-01	3.43E-01	3.91E-01	8.04E-02	3.40E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (1.604 +/-0.025)
TH-232 (0.107 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER	: 2640431	CHAMBER	: 207	LIB FILE	: TH
SAMPLE ID	: S0674299022_TH	DETECTOR S/N	: 158102	BKG FILE	: B207.CNF;1646
SAMPLE QTY	: 0.119 G +/-0.840 %	AVERAGE %EFFICIENCY	: 26.4171	BKG DATE	: 12-Jul-2024
SAMPLE DATE	: 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR	: 0.5136	BKG LIVE TIME(SEC)	: 60000.00
ANALYST	: CM4	COUNT DATE	: 18-Jul-2024 10:28:49	EFF FILE	: W207.CNF;412
% YIELD	: 70.2 +/-7.322 %	ELAPSED LIVE TIME(SEC)	: 14400.00	CAL DATE	: 21-Jun-2024

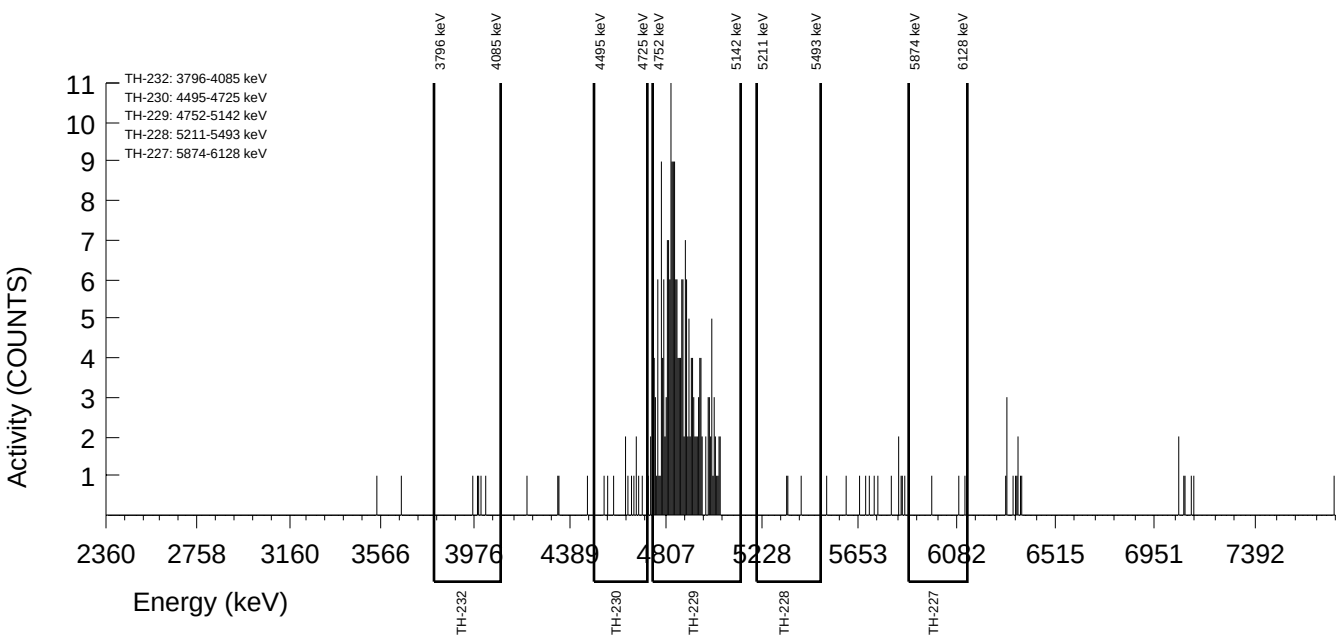
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 3.3967E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6062.30	138.715	3.000	1.320	1.680	1.2961	57.440	4.51E-01	1.41E+00	2.64E+00	8.10E-01	1.41E+00
TH-228	5363.00	5362.24	64.403	3.000	1.794	1.200	1.0954	99.940	1.56E-01	3.56E-01	6.11E-01	1.75E-01	3.56E-01
TH-229	4900.00	4876.68	120.013	216.000	214.320	1.680	1.2961	99.520	1.83E+01	3.69E+00	6.62E-01	2.03E-01	2.47E+00
TH-230	4671.39	4640.22	49.541	12.000	9.510	1.200	1.0954	99.700	8.12E-01	6.26E-01	7.24E-01	2.34E-01	6.11E-01
TH-232	3972.00	3993.25	59.449	5.000	3.234	1.680	1.2961	100.000	2.75E-01	4.26E-01	6.67E-01	2.06E-01	4.24E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.006 +/-0.000)
TH-230 (1.290 +/-0.020)
TH-232 (0.086 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 166	LIB FILE : TH
SAMPLE ID : S0674299027_TH	DETECTOR S/N : 155809	BKG FILE : B166.CNF;1729
SAMPLE QTY : 0.111 G +/-0.901 %	AVERAGE %EFFICIENCY : 25.4198	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.4947	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:08	EFF FILE : W166.CNF;493
% YIELD : 91.9 +/-6.604 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 18-Jul-2024

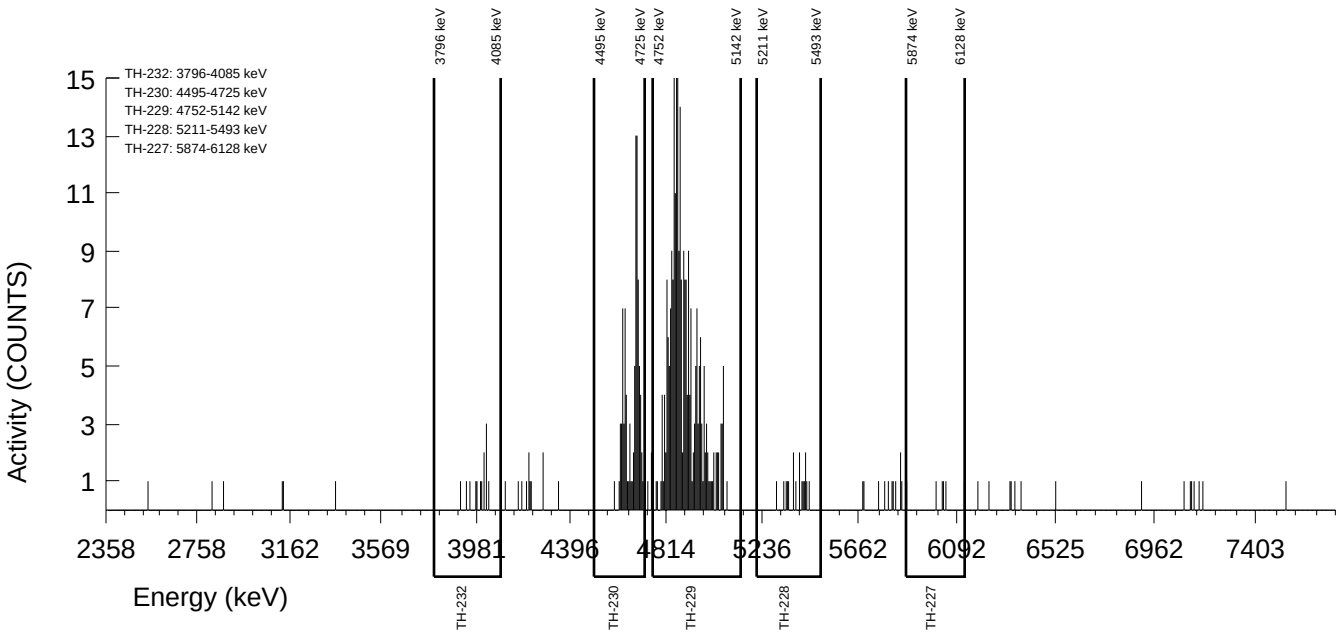
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.4477E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6045.52	119.507	5.000	1.640	3.360	1.8330	57.440	4.78E-01	1.50E+00	2.83E+00	9.78E-01	1.50E+00
TH-228	5363.00	5387.86	57.264	17.000	14.832	2.160	1.4697	99.940	1.10E+00	6.43E-01	6.22E-01	2.00E-01	6.26E-01
TH-229	4900.00	4896.40	91.539	271.000	270.040	0.960	0.9798	99.520	1.96E+01	3.56E+00	4.79E-01	1.31E-01	2.35E+00
TH-230	4671.39	4667.29	67.845	90.000	87.655	0.720	0.8485	99.700	6.36E+00	1.62E+00	5.97E-01	1.90E-01	1.36E+00
TH-232	3972.00	3994.96	13.694	13.000	12.891	0.000	1.0000	100.000	9.33E-01	5.47E-01	2.96E-01	1.38E-01	5.32E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (1.625 +/-0.025)
TH-232 (0.109 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 176	LIB FILE : TH
SAMPLE ID : S0674299030_TH	DETECTOR S/N : 92558	BKG FILE : B176.CNF;1696
SAMPLE QTY : 0.114 G +/-0.877 %	AVERAGE %EFFICIENCY : 25.6845	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.4998	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:10	EFF FILE : W176.CNF;407
% YIELD : 91.8 +/-6.572 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 18-Jul-2024

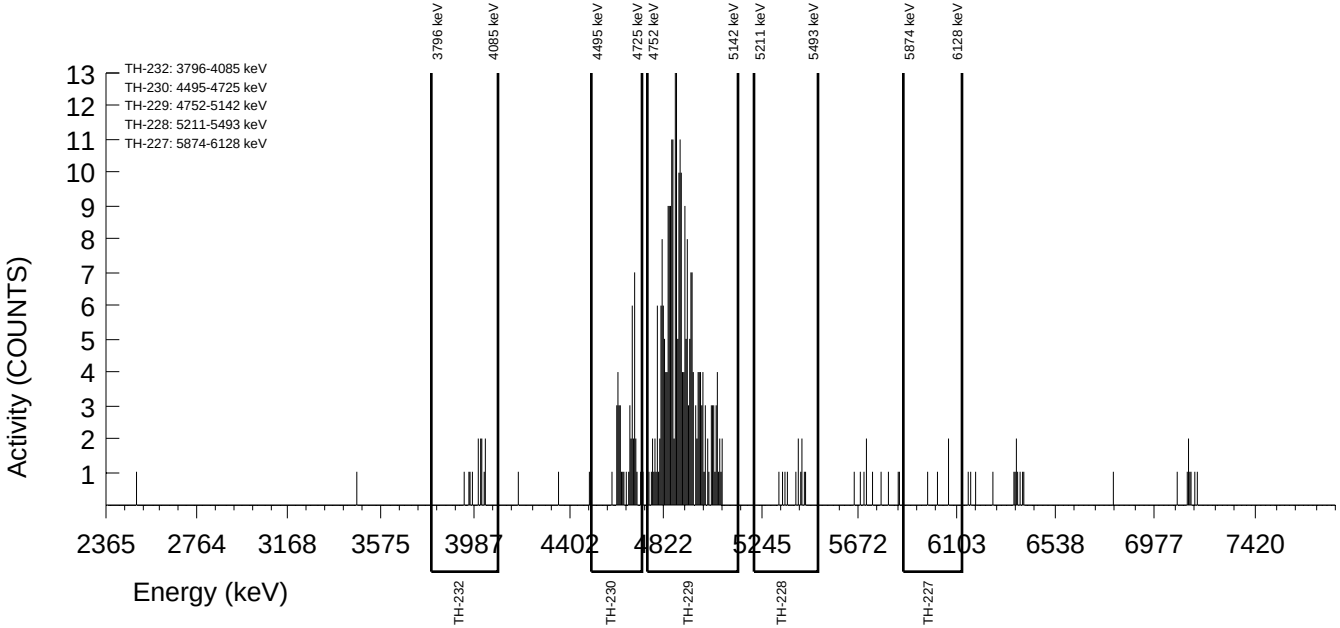
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.4423E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6035.55	4.970	4.000	0.880	3.120	1.7664	57.440	2.47E-01	1.33E+00	2.66E+00	9.10E-01	1.33E+00
TH-228	5363.00	5395.71	19.880	12.000	8.872	3.120	1.7664	99.940	6.34E-01	5.28E-01	6.77E-01	2.31E-01	5.20E-01
TH-229	4900.00	4895.86	128.806	273.000	272.520	0.480	0.6928	99.520	1.91E+01	3.45E+00	3.89E-01	8.91E-02	2.28E+00
TH-230	4671.39	4659.98	75.544	44.000	42.120	0.240	0.4899	99.700	2.95E+00	1.01E+00	5.31E-01	1.60E-01	9.22E-01
TH-232	3972.00	4000.45	34.790	13.000	12.170	0.720	0.8485	100.000	8.50E-01	5.29E-01	4.40E-01	1.15E-01	5.16E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (1.640 +/-0.025)
TH-232 (0.110 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 177	LIB FILE : TH
SAMPLE ID : S0674299031_TH	DETECTOR S/N : 92559	BKG FILE : B177.CNF;1710
SAMPLE QTY : 0.107 G +/-0.935 %	AVERAGE %EFFICIENCY : 26.8491	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5217	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:12	EFF FILE : W177.CNF;446
% YIELD : 73.2 +/-7.132 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 18-Jul-2024

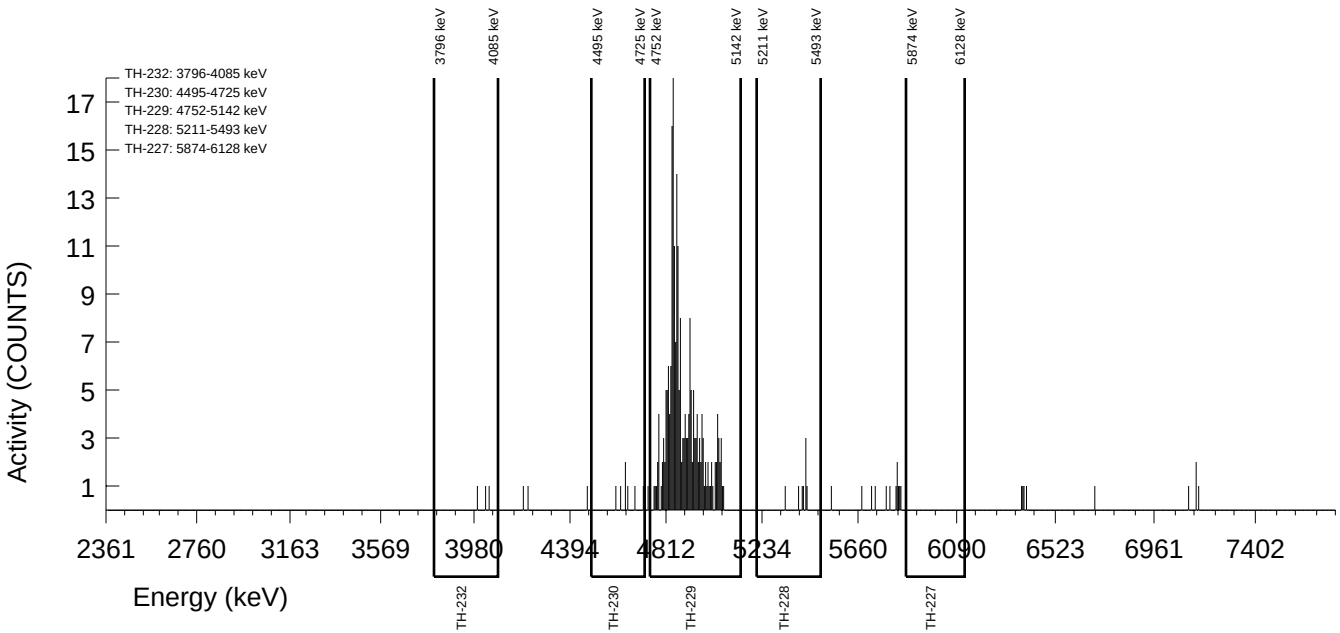
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 3.5448E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6000.76	0.000	0.000	-1.200	1.200	1.0954	57.440	-4.31E-01	8.18E-01	2.52E+00	7.21E-01	8.16E-01
TH-228	5363.00	5412.68	6.200	8.000	6.793	1.200	1.0954	99.940	6.20E-01	5.54E-01	6.41E-01	1.84E-01	5.47E-01
TH-229	4900.00	4894.59	29.927	229.000	227.320	1.680	1.2961	99.520	2.04E+01	4.00E+00	6.95E-01	2.13E-01	2.67E+00
TH-230	4671.39	4648.86	4.960	7.000	4.912	0.720	0.8485	99.700	4.40E-01	5.10E-01	7.11E-01	2.21E-01	5.03E-01
TH-232	3972.00	4019.18	54.564	3.000	2.429	0.480	0.6928	100.000	2.17E-01	3.59E-01	5.11E-01	1.22E-01	3.57E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.368 +/-0.021)
TH-232 (0.091 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 178	LIB FILE : TH
SAMPLE ID : S0674299033_TH	DETECTOR S/N : 92562	BKG FILE : B178.CNF;1716
SAMPLE QTY : 0.112 G +/-0.893 %	AVERAGE %EFFICIENCY : 26.2471	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5103	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:15	EFF FILE : W178.CNF;448
% YIELD : 78.5 +/-6.984 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 18-Jul-2024

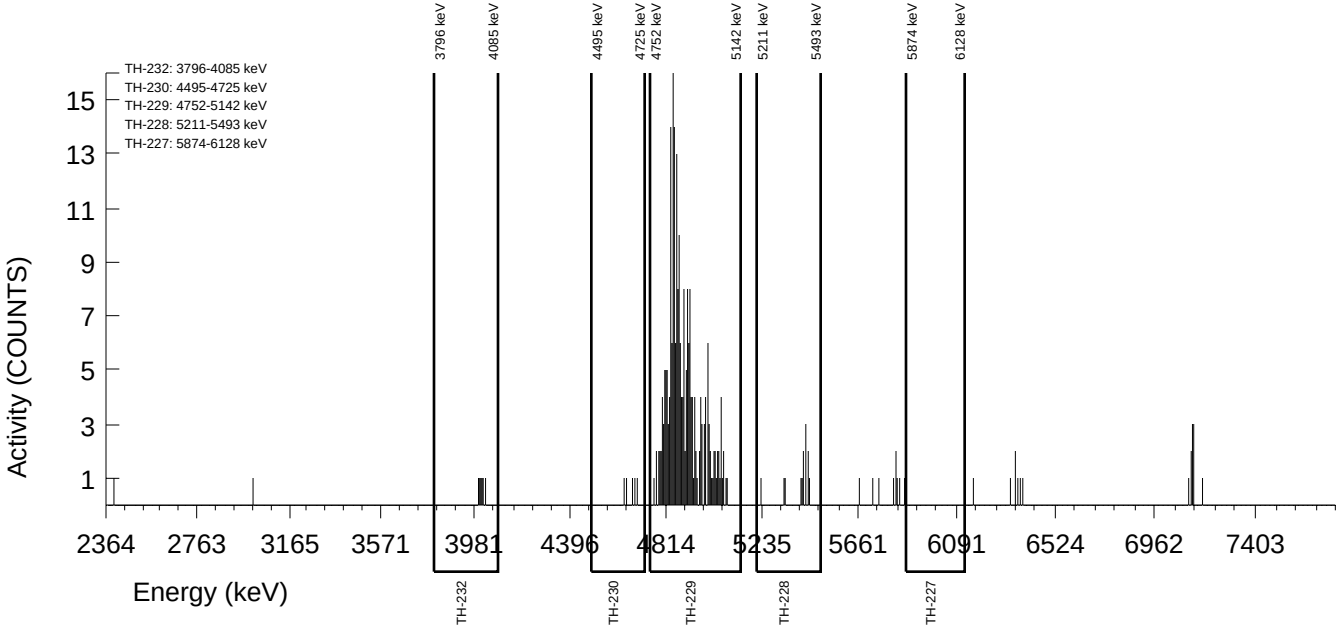
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 3.8015E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6000.76	0.000	0.000	-3.600	3.600	1.8974	57.440	-1.18E+00	8.90E-01	3.26E+00	1.14E+00	8.89E-01
TH-228	5363.00	5400.69	24.782	13.000	11.313	1.680	1.2961	99.940	9.41E-01	6.34E-01	6.45E-01	1.98E-01	6.20E-01
TH-229	4900.00	4897.37	40.146	240.000	238.320	1.680	1.2961	99.520	1.95E+01	3.74E+00	6.33E-01	1.94E-01	2.49E+00
TH-230	4671.39	4665.74	59.476	5.000	3.326	0.240	0.4899	99.700	2.71E-01	3.99E-01	5.98E-01	1.76E-01	3.95E-01
TH-232	3972.00	4010.68	34.694	6.000	5.664	0.240	0.4899	100.000	4.60E-01	4.30E-01	4.12E-01	8.39E-02	4.25E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.434 +/-0.022)
TH-232 (0.096 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 179	LIB FILE : TH
SAMPLE ID : S0674299034_TH	DETECTOR S/N : 92563	BKG FILE : B179.CNF;1714
SAMPLE QTY : 0.102 G +/-0.980 %	AVERAGE %EFFICIENCY : 26.2993	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5113	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:17	EFF FILE : W179.CNF;458
% YIELD : 102 +/-6.234 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 18-Jul-2024

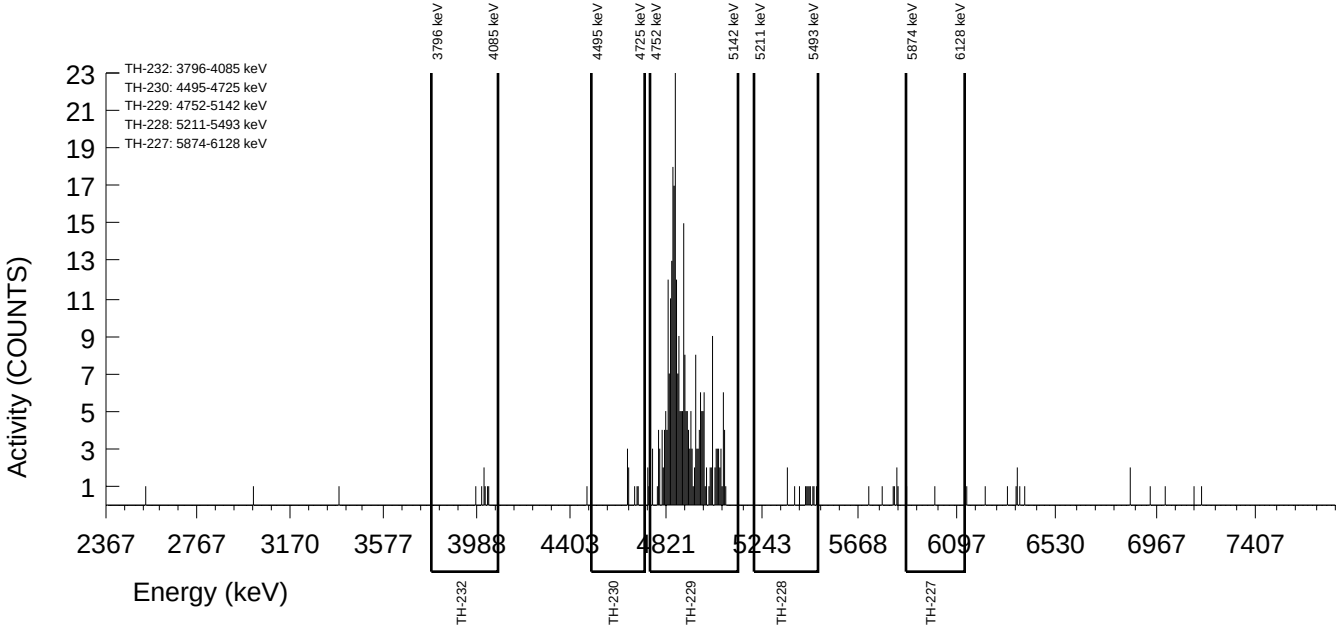
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.9281E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5938.52	119.392	2.000	1.280	0.720	0.8485	57.440	3.54E-01	9.76E-01	1.69E+00	4.30E-01	9.74E-01
TH-228	5363.00	5432.75	4.975	13.000	9.151	3.840	1.9596	99.940	6.43E-01	5.40E-01	7.16E-01	2.53E-01	5.33E-01
TH-229	4900.00	4903.39	67.469	311.000	309.560	1.440	1.2000	99.520	2.14E+01	3.66E+00	5.11E-01	1.52E-01	2.39E+00
TH-230	4671.39	4669.36	8.706	8.000	5.657	0.480	0.6928	99.700	3.90E-01	4.15E-01	5.62E-01	1.78E-01	4.09E-01
TH-232	3972.00	4023.43	7.462	7.000	6.635	0.240	0.4899	100.000	4.56E-01	3.88E-01	3.53E-01	7.34E-02	3.84E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.009 +/-0.000)
TH-230 (1.863 +/-0.029)
TH-232 (0.125 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 180	LIB FILE : TH
SAMPLE ID : S0674299037_TH	DETECTOR S/N : 158175	BKG FILE : B180.CNF;1711
SAMPLE QTY : 0.103 G +/-0.971 %	AVERAGE %EFFICIENCY : 26.1872	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5092	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:20	EFF FILE : W180.CNF;116
% YIELD : 92.3 +/-6.517 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 18-Jul-2024

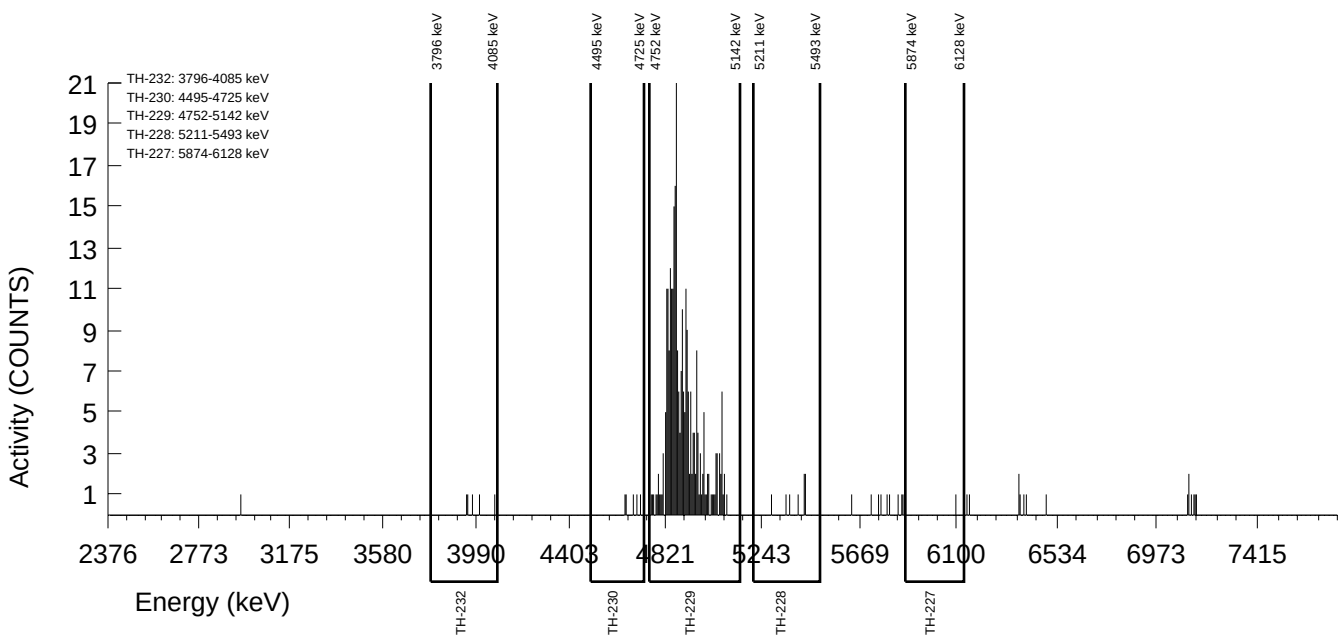
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.4657E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6094.19	4.938	1.000	-0.680	1.680	1.2961	57.440	-2.06E-01	9.34E-01	2.35E+00	7.21E-01	9.33E-01
TH-228	5363.00	5391.21	9.876	8.000	5.832	2.160	1.4697	99.940	4.50E-01	4.72E-01	6.48E-01	2.08E-01	4.68E-01
TH-229	4900.00	4897.64	80.650	281.000	279.320	1.680	1.2961	99.520	2.12E+01	3.79E+00	5.87E-01	1.80E-01	2.50E+00
TH-230	4671.39	4684.10	0.000	6.000	3.599	0.720	0.8485	99.700	2.72E-01	4.02E-01	6.26E-01	2.00E-01	3.99E-01
TH-232	3972.00	3990.71	123.444	5.000	4.408	0.480	0.6928	100.000	3.32E-01	3.70E-01	4.35E-01	1.04E-01	3.67E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (1.681 +/-0.026)
TH-232 (0.112 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 181	LIB FILE : TH
SAMPLE ID : S1205789023_TH	DETECTOR S/N : 92565	BKG FILE : B181.CNF;1150
SAMPLE QTY : 0.119 G +/-0.840 %	AVERAGE %EFFICIENCY : 25.9668	BKG DATE : 12-Jul-2024
SAMPLE DATE : 16-Jul-2024 00:00:00	AVERAGE %EFF ERROR : 0.5051	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:22	EFF FILE : W181.CNF;306
% YIELD : 73.0 +/-7.255 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 18-Jul-2024

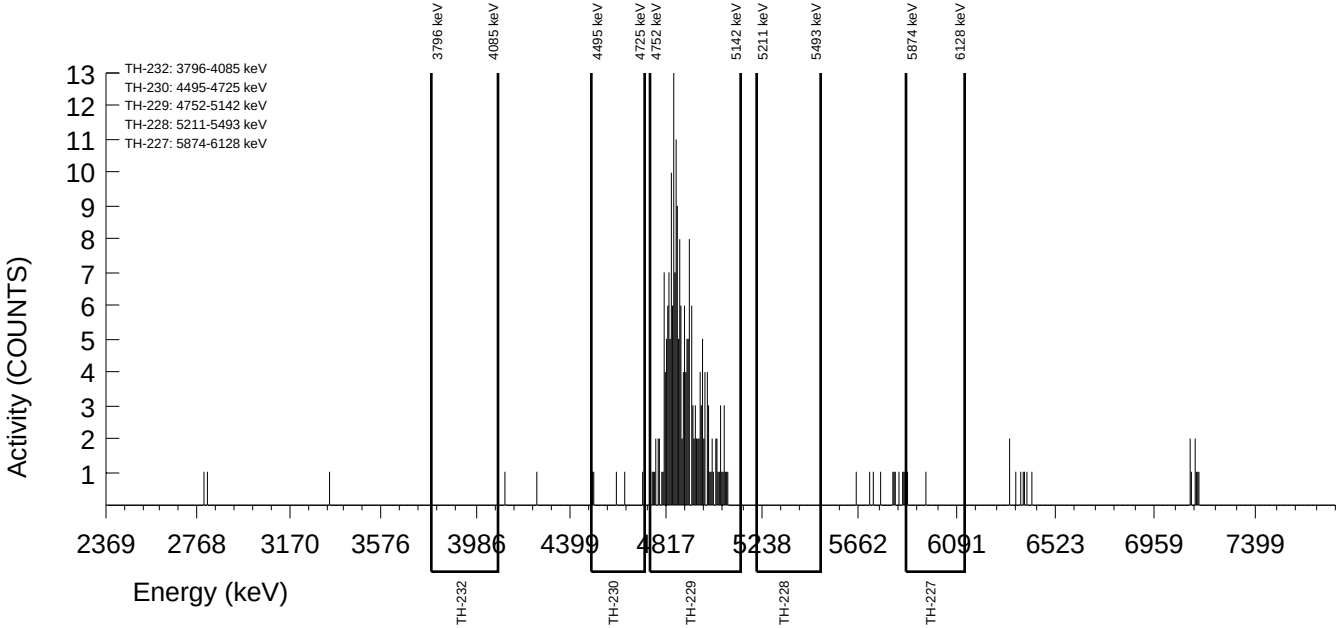
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 3.5324E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5986.99	0.000	3.000	2.280	0.720	0.8485	57.440	3.64E-01	6.46E-01	9.75E-01	2.48E-01	6.43E-01
TH-228	5363.00	5351.79	0.000	0.000	-1.687	1.680	1.2961	99.940	-1.41E-01	1.98E-01	6.48E-01	1.99E-01	1.98E-01
TH-229	4900.00	4899.62	105.440	221.000	219.080	1.920	1.3856	99.520	1.83E+01	3.65E+00	6.75E-01	2.12E-01	2.45E+00
TH-230	4671.39	4591.77	213.153	5.000	2.962	0.720	0.8485	99.700	2.47E-01	4.12E-01	6.59E-01	2.04E-01	4.08E-01
TH-232	3972.00	3940.45	0.000	0.000	-0.088	0.000	1.0000	100.000	-7.34E-03	1.68E-01	3.31E-01	1.58E-01	1.68E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.318 +/-0.020)
TH-232 (0.088 +/-0.001)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 182	LIB FILE : TH
SAMPLE ID : S1205789024_TH	DETECTOR S/N : 148048	BKG FILE : B182.CNF;1159
SAMPLE QTY : 0.104 G +/-0.962 %	AVERAGE %EFFICIENCY : 25.6988	BKG DATE : 12-Jul-2024
SAMPLE DATE : 26-Jun-2024 00:00:00	AVERAGE %EFF ERROR : 0.5000	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:24	EFF FILE : W182.CNF;309
% YIELD : 89.7 +/-6.659 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 18-Jul-2024

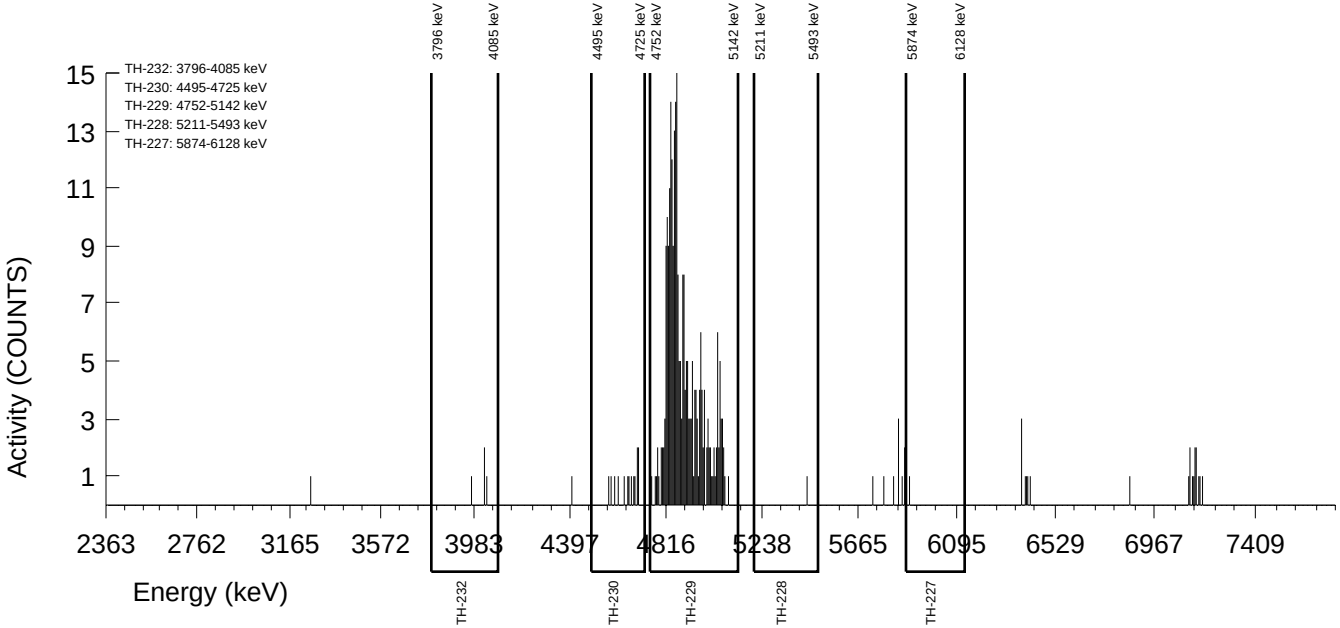
TRACER
ID : 1845-J
NUCLIDE : TH-229
NOMINAL : 4.8402E+00 dpm
RESULTS : 4.3434E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5889.97	4.964	1.000	-1.160	2.160	1.4697	57.440	-3.65E-01	9.92E-01	2.64E+00	8.48E-01	9.91E-01
TH-228	5363.00	5440.35	4.964	1.000	-0.208	1.200	1.0954	99.940	-1.67E-02	2.41E-01	5.62E-01	1.61E-01	2.40E-01
TH-229	4900.00	4900.42	76.314	269.000	266.600	2.400	1.5492	99.520	2.10E+01	3.84E+00	6.82E-01	2.23E-01	2.54E+00
TH-230	4671.39	4652.23	9.927	14.000	11.436	0.960	0.9798	99.700	8.98E-01	6.18E-01	6.67E-01	2.16E-01	6.02E-01
TH-232	3972.00	4012.54	4.964	4.000	3.653	0.240	0.4899	100.000	2.86E-01	3.49E-01	3.99E-01	8.19E-02	3.47E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (1.604 +/-0.025)
TH-232 (0.107 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2640431	CHAMBER : 195	LIB FILE : TH
SAMPLE ID : S1205789025_TH	DETECTOR S/N : 140619	BKG FILE : B195.CNF;1717
SAMPLE QTY : 0.119 G +/-0.840 %	AVERAGE %EFFICIENCY : 26.7439	BKG DATE : 12-Jul-2024
SAMPLE DATE : 16-Jul-2024 00:00:00	AVERAGE %EFF ERROR : 0.5197	BKG LIVE TIME(SEC) : 60000.00
ANALYST : CM4	COUNT DATE : 18-Jul-2024 12:37:26	EFF FILE : W195.CNF;471
% YIELD : 74.1 +/-7.142 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 21-Jun-2024

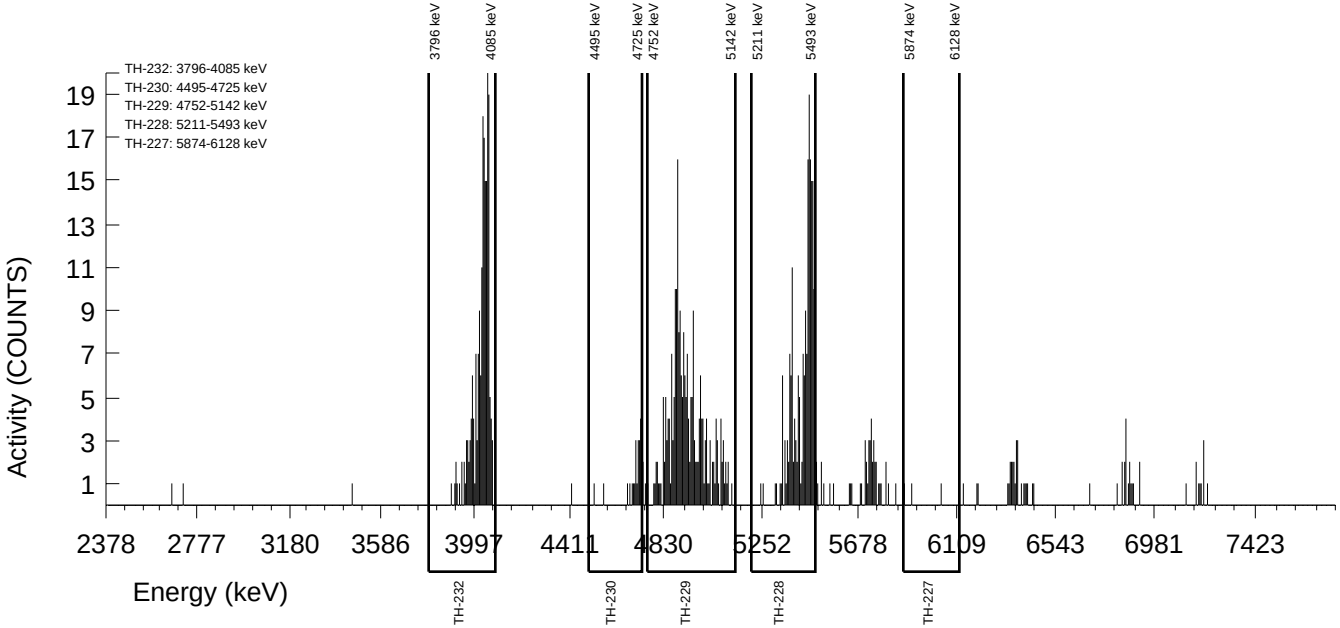
TRACER		LCS	
ID	1845-J	ID	1513-J
NUCLIDE	TH-229	NUCLIDE	TH-232
NOMINAL	4.8402E+00 dpm	NOMINAL (pCi/G)	1.6698E+01
RESULTS	3.5875E+00 dpm	% RECOVERY	93.238

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5946.90	153.695	3.000	1.320	1.680	1.2961	57.440	2.01E-01	6.32E-01	1.18E+00	3.62E-01	6.32E-01
TH-228	5363.00	5435.89	91.084	193.000	191.793	1.200	1.0954	99.940	1.53E+01	3.12E+00	5.61E-01	1.61E-01	2.18E+00
TH-229	4900.00	4929.54	77.178	233.000	229.160	3.840	1.9596	99.520	1.83E+01	3.60E+00	8.14E-01	2.87E-01	2.40E+00
TH-230	4671.39	4691.72	0.000	21.000	18.181	1.440	1.2000	99.700	1.45E+00	7.75E-01	7.06E-01	2.34E-01	7.40E-01
TH-232	3972.00	4025.47	33.926	196.000	195.668	0.240	0.4899	100.000	1.56E+01	3.16E+00	4.02E-01	8.17E-02	2.19E+00

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.379 +/-0.021)
TH-232 (0.092 +/-0.001)



Continuing Calibration Data

Review of Alpha Spectrometer QA results (Daily checks) 18-JUL-2024 23:00:00.61

Bank 1 through bank 29 (detectors 1 through 256)

DETECTORS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

	Detector	Parameter	Flag
18-JUL-2024	19	PSFWHM-5000	Above
18-JUL-2024	19	PSCTSS-5000	Below
28-AUG-2023	115	PSCTSS-5000	Below
28-AUG-2023	116	PSCTSS-5000	Below
18-JUL-2024	118	PSENERGY-5000	Above
18-JUL-2024	154	PSENERGY-5000	Below
18-JUL-2024	169	PSFWHM-5000	Above
18-JUL-2024	171	PSFWHM-5000	Below
18-JUL-2024	171	PSCTSS-5000	Below
28-NOV-2020	198	PSFWHM-5000	Below
28-NOV-2020	198	PSCTSS-5000	Below
5-JUL-2024	201	PSCTSS-5000	Below
5-JUL-2024	202	PSCTSS-5000	Below
18-JUL-2024	216	PSENERGY-5000	Above
8-SEP-2023	221	PSFWHM-5000	Above
8-SEP-2023	221	PSCTSS-5000	Below
8-SEP-2023	222	PSENERGY-5000	Above
8-SEP-2023	222	PSCTSS-5000	Below
7-JUN-2024	227	PSFWHM-5000	Below
7-JUN-2024	227	PSCTSS-5000	Below
7-JUN-2024	228	PSENERGY-5000	Above
7-JUN-2024	228	PSCENTRD-5000	Above
18-JUL-2024	232	PSFWHM-5000	Below
18-JUL-2024	232	PSCENTRD-5000	Below
18-JUL-2024	232	PSCTSS-5000	Below
18-JUL-2024	252	PSFWHM-5000	Below
18-JUL-2024	252	PSCTSS-5000	Below

The following detectors that may not have properly transfered to the QA file

115 may not have run since 18-JUL-2024

116 may not have run since 18-JUL-2024
119 may not have run since 18-JUL-2024
120 may not have run since 18-JUL-2024
121 may not have run since 18-JUL-2024
122 may not have run since 18-JUL-2024
127 may not have run since 18-JUL-2024
128 may not have run since 18-JUL-2024
183 may not have run since 18-JUL-2024
184 may not have run since 18-JUL-2024
187 may not have run since 18-JUL-2024
188 may not have run since 18-JUL-2024
198 may not have run since 18-JUL-2024
201 may not have run since 18-JUL-2024
202 may not have run since 18-JUL-2024
211 may not have run since 18-JUL-2024
212 may not have run since 18-JUL-2024
221 may not have run since 18-JUL-2024
222 may not have run since 18-JUL-2024
227 may not have run since 18-JUL-2024
228 may not have run since 18-JUL-2024
229 may not have run since 18-JUL-2024
230 may not have run since 18-JUL-2024
241 may not have run since 18-JUL-2024
242 may not have run since 18-JUL-2024

APPROVAL DATE: 7/18/24 APPROVAL TIME: 23:10

APPROVED BY: PROCEDURE # GL-RAD-I-009

Report completed at 18-JUL-2024 23:02:58.31

Review of Alpha Spectrometer QA results (Daily checks) 19-JUL-2024 13:04:46.61

Bank 1 through bank 29 (detectors 1 through 256)

DETECTORS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

	Detector	Parameter	Flag
28-AUG-2023	115	PSCTSS-5000	Below
28-AUG-2023	116	PSCTSS-5000	Below
19-JUL-2024	118	PSENERGY-5000	Above
19-JUL-2024	154	PSENERGY-5000	Below
19-JUL-2024	169	PSFWHM-5000	Above
28-NOV-2020	198	PSFWHM-5000	Below
28-NOV-2020	198	PSCTSS-5000	Below
5-JUL-2024	201	PSCTSS-5000	Below
5-JUL-2024	202	PSCTSS-5000	Below
19-JUL-2024	216	PSENERGY-5000	Above
8-SEP-2023	221	PSFWHM-5000	Above
8-SEP-2023	221	PSCTSS-5000	Below
8-SEP-2023	222	PSENERGY-5000	Above
8-SEP-2023	222	PSCTSS-5000	Below
7-JUN-2024	227	PSFWHM-5000	Below
7-JUN-2024	227	PSCTSS-5000	Below
7-JUN-2024	228	PSENERGY-5000	Above
7-JUN-2024	228	PSCENTRD-5000	Above
19-JUL-2024	232	PSFWHM-5000	Below
19-JUL-2024	232	PSCENTRD-5000	Below
19-JUL-2024	232	PSCTSS-5000	Below
19-JUL-2024	252	PSFWHM-5000	Below
19-JUL-2024	252	PSCTSS-5000	Below

The following detectors that may not have properly transfered to the QA file

115 may not have run since 19-JUL-2024
116 may not have run since 19-JUL-2024
119 may not have run since 19-JUL-2024
120 may not have run since 19-JUL-2024
121 may not have run since 19-JUL-2024
122 may not have run since 19-JUL-2024
127 may not have run since 19-JUL-2024

128 may not have run since 19-JUL-2024
183 may not have run since 19-JUL-2024
184 may not have run since 19-JUL-2024
198 may not have run since 19-JUL-2024
201 may not have run since 19-JUL-2024
202 may not have run since 19-JUL-2024
211 may not have run since 19-JUL-2024
212 may not have run since 19-JUL-2024
221 may not have run since 19-JUL-2024
222 may not have run since 19-JUL-2024
227 may not have run since 19-JUL-2024
228 may not have run since 19-JUL-2024
229 may not have run since 19-JUL-2024
230 may not have run since 19-JUL-2024
241 may not have run since 19-JUL-2024
242 may not have run since 19-JUL-2024

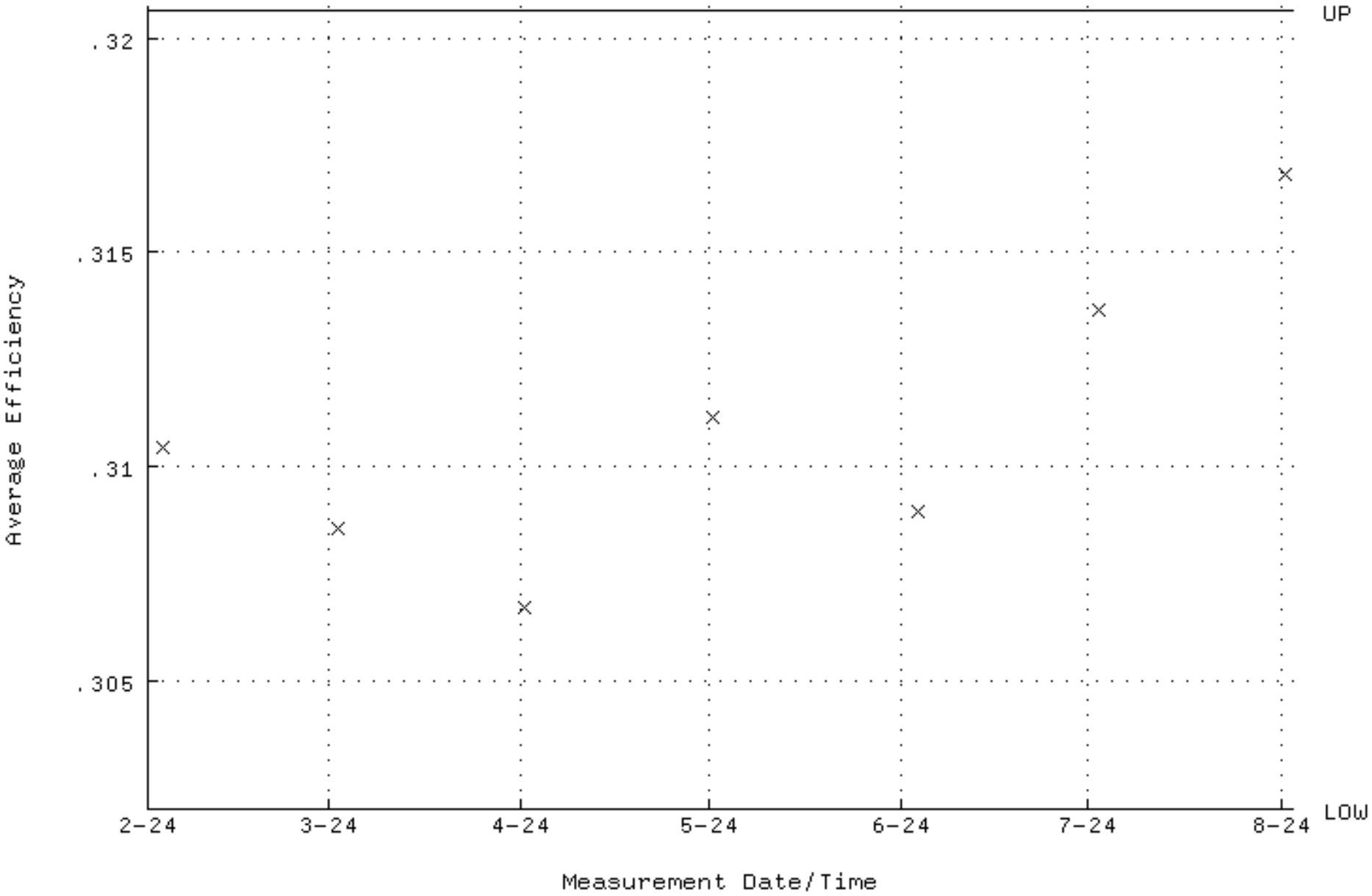
APPROVAL DATE: 7/19/24 APPROVAL TIME: 1309

APPROVED BY: PROCEDURE # GL-RAD-I-009

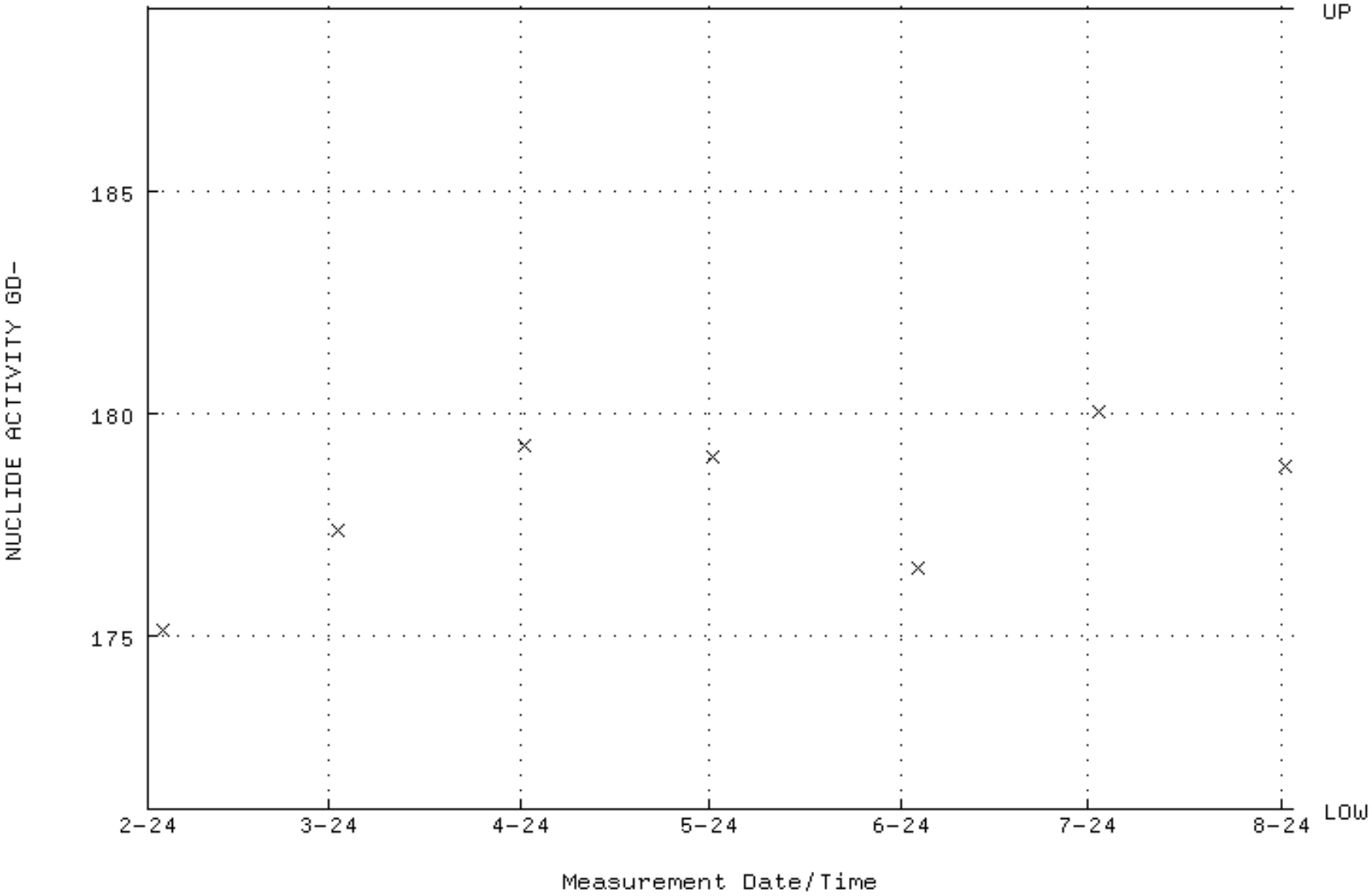
Report completed at 19-JUL-2024 13:08:47.14

Background and Efficiency Data

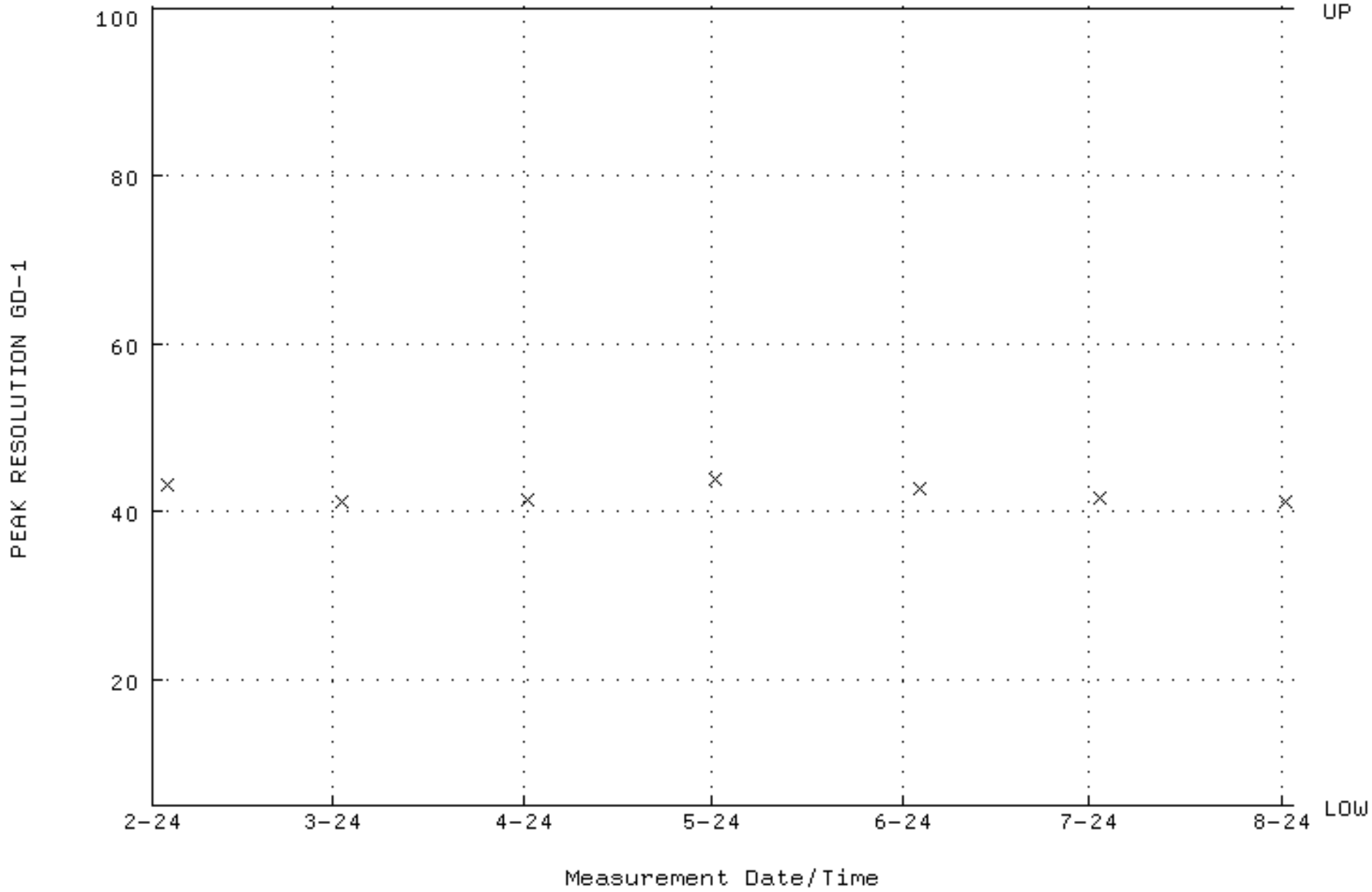
QA filename : DKA100:[ENV_ALPHA.QA.W]W007.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.302010 through 0.320690



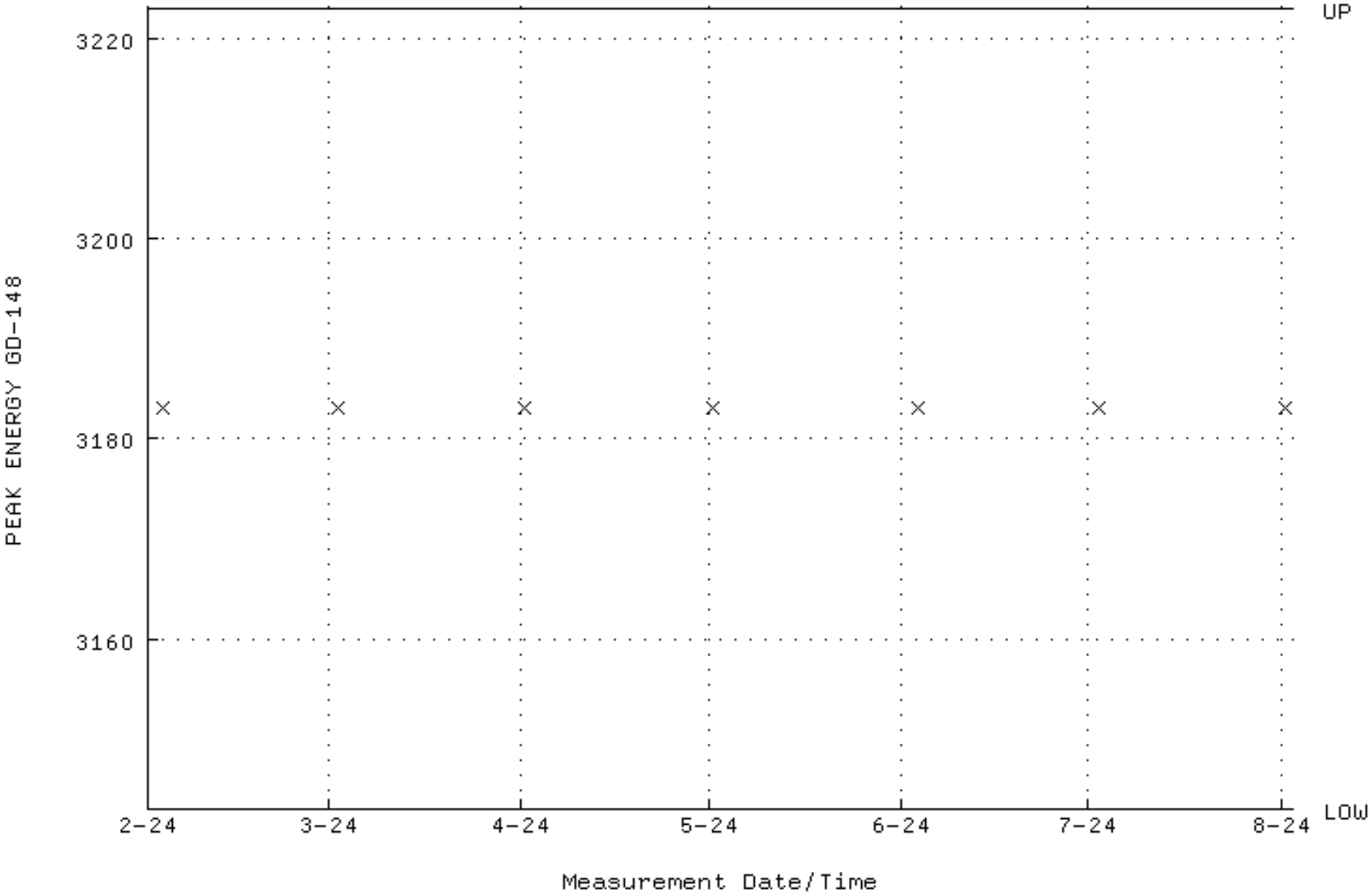
QA filename : DKA100:[ENV_ALPHA.QA.W]W007.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



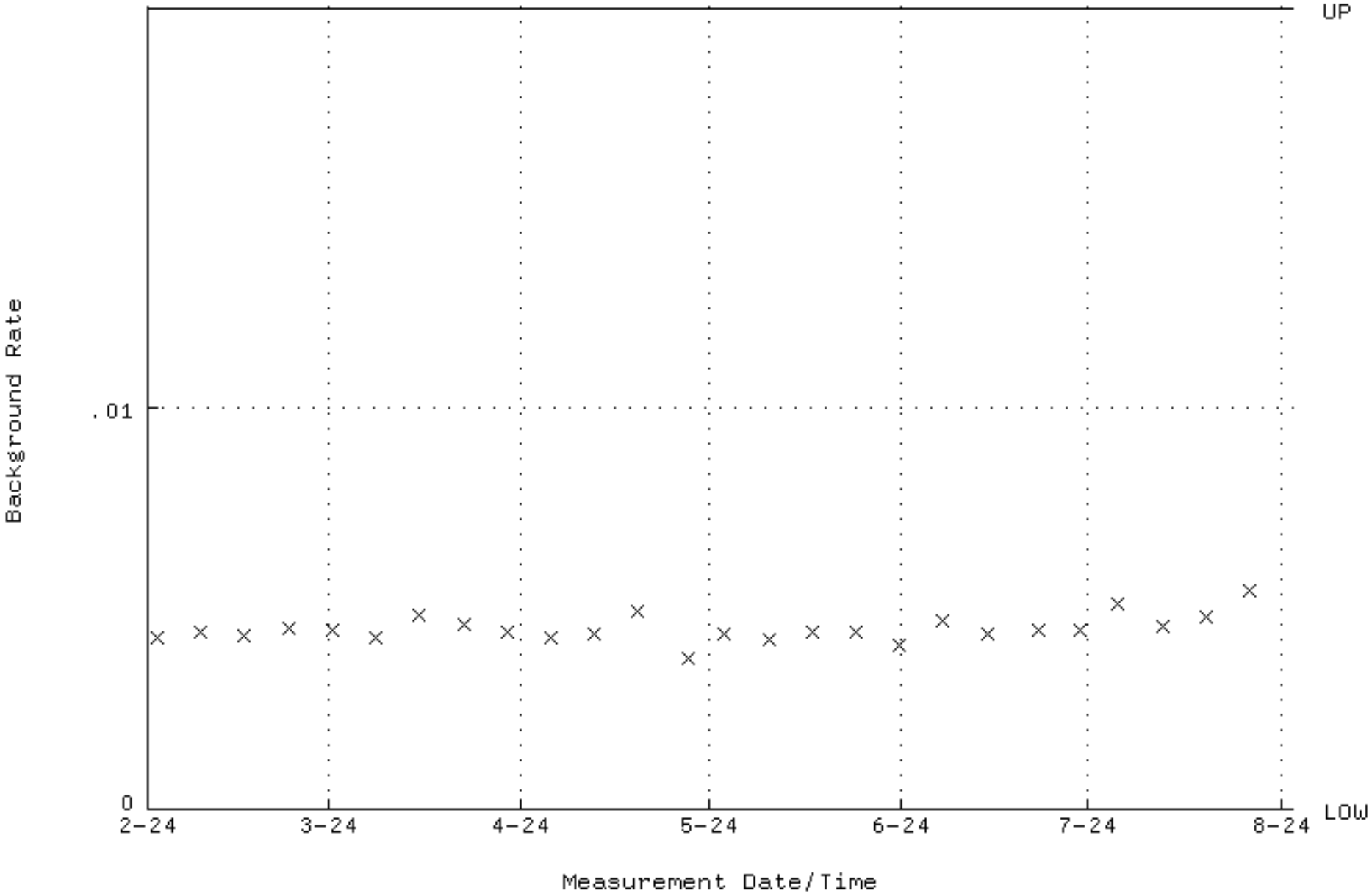
QA filename : DKA100:[ENV_ALPHA.QA.W]W007.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



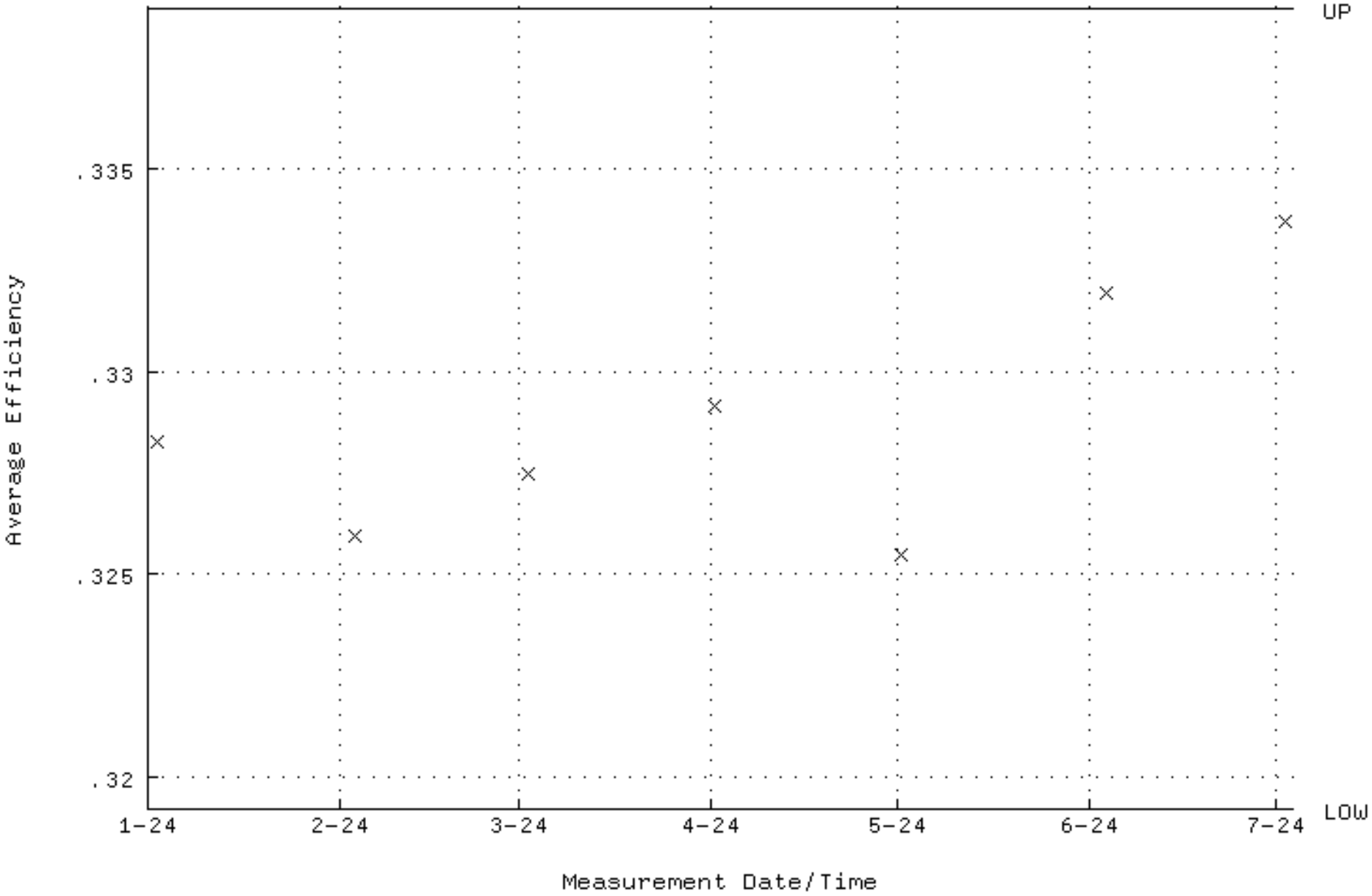
QA filename : DKA100:[ENV_ALPHA.QA.W]W007.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



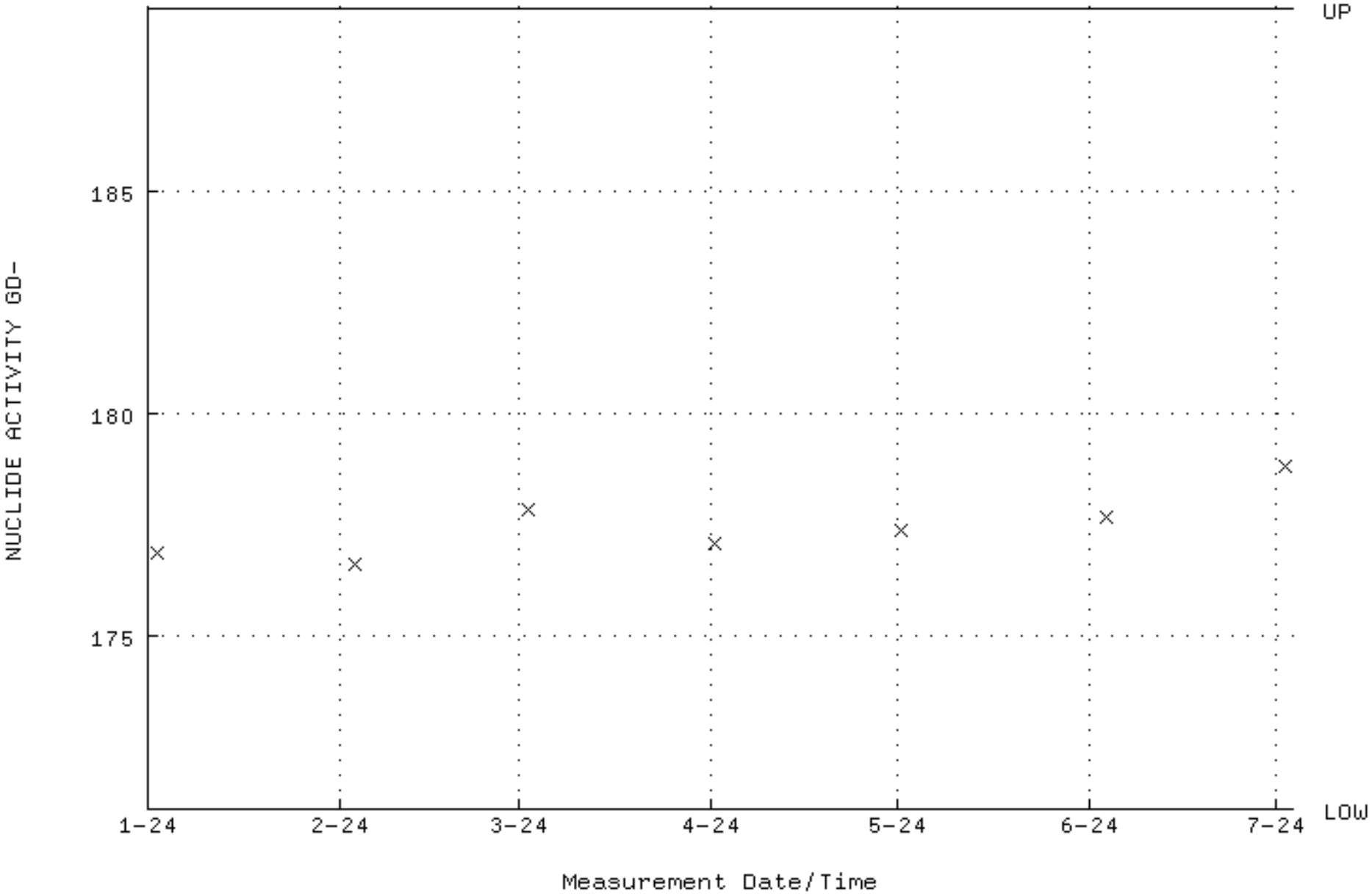
QA filename : DKA100:[ENV_ALPHA.QA.B]B007.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:19 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



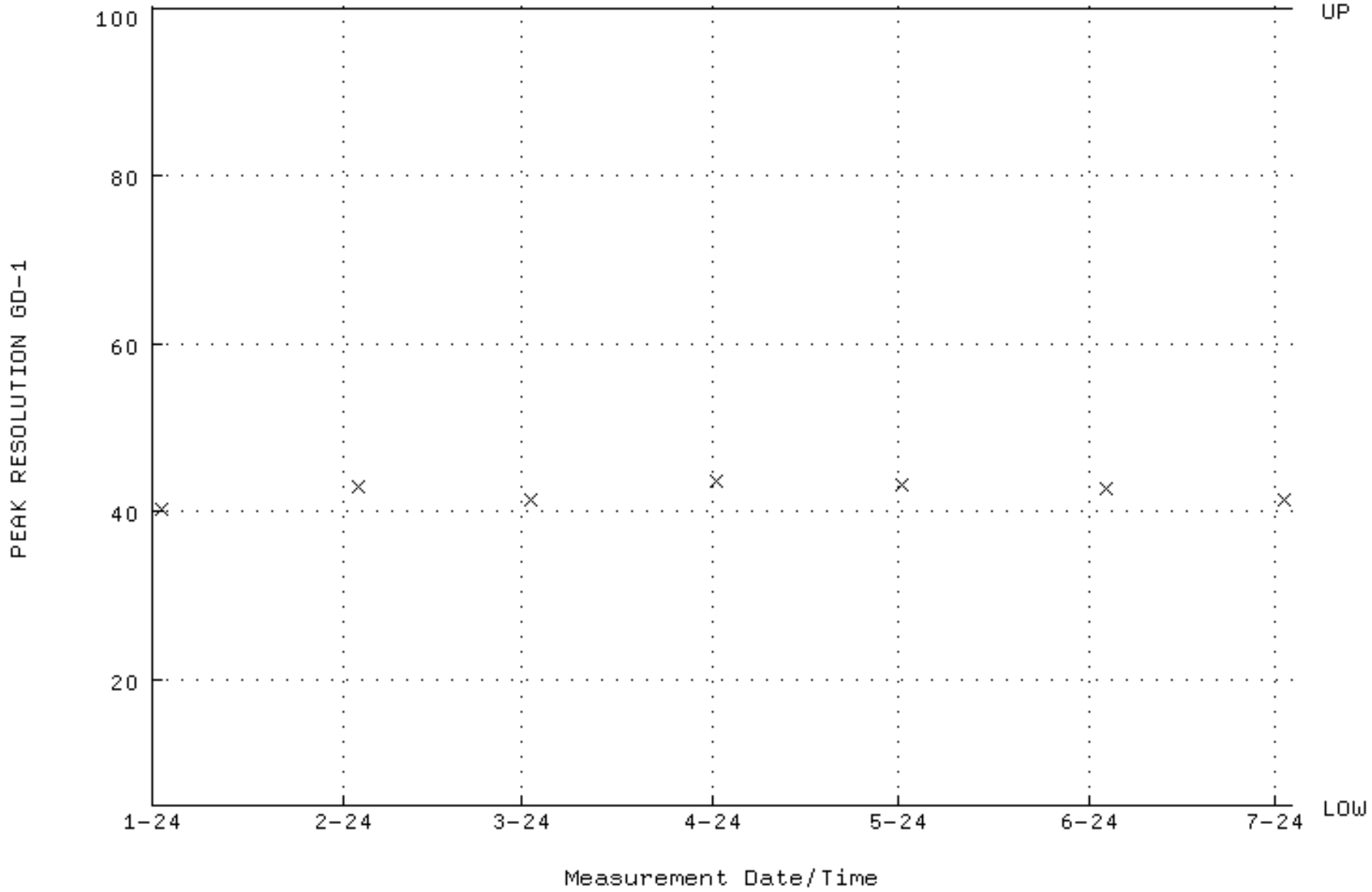
QA filename : DKA100:[ENV_ALPHA.QA.W]W008.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 2-JAN-2024 11:48:23 through 3-JUL-2024 12:00:00
Lower/Upper Lmts: 0.319210 through 0.338950



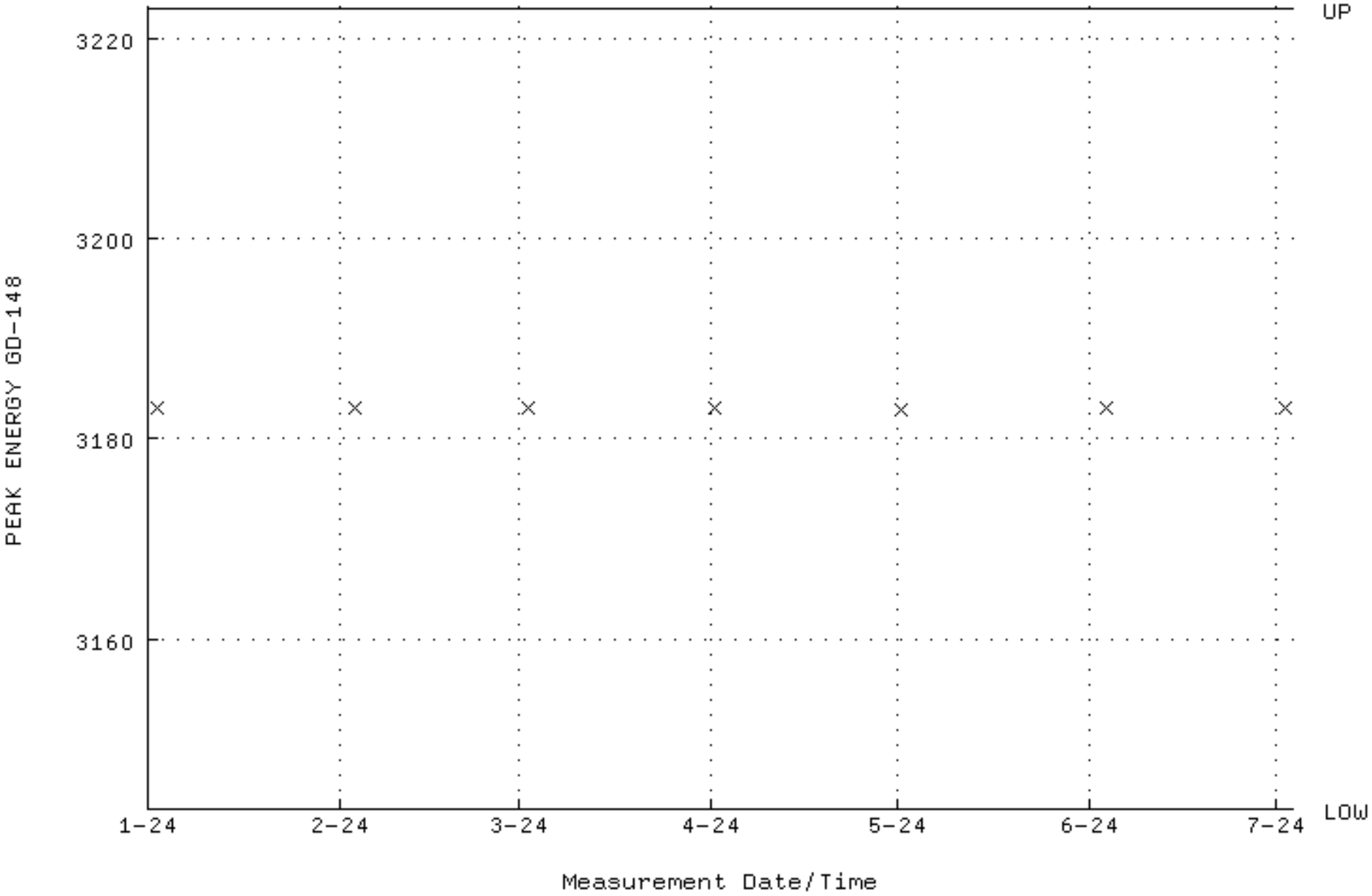
QA filename : DKA100:[ENV_ALPHA.QA.W]W008.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 2-JAN-2024 11:48:23 through 3-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



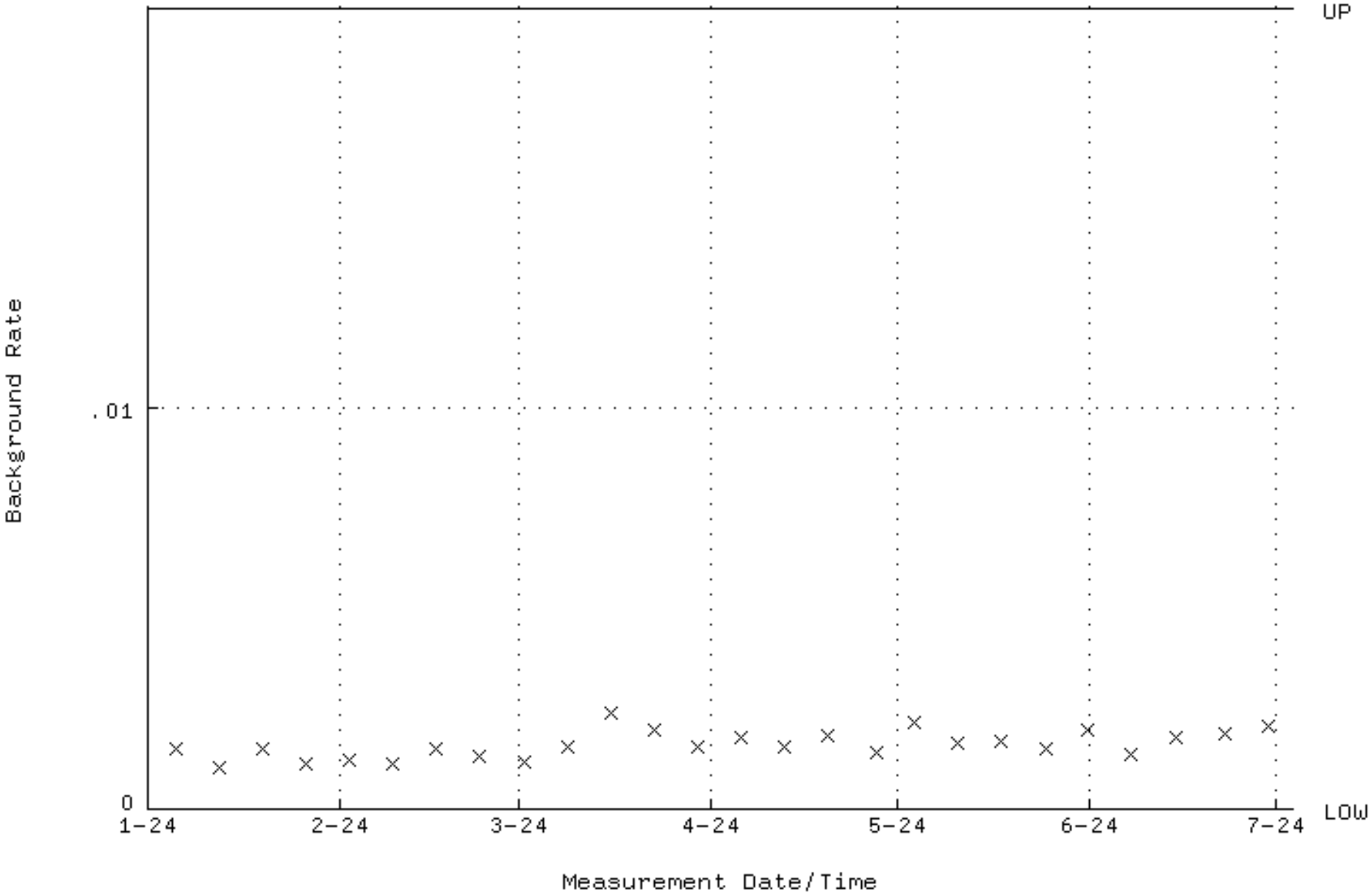
QA filename : DKA100:[ENV_ALPHA.QA.W]W008.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 2-JAN-2024 11:48:23 through 3-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



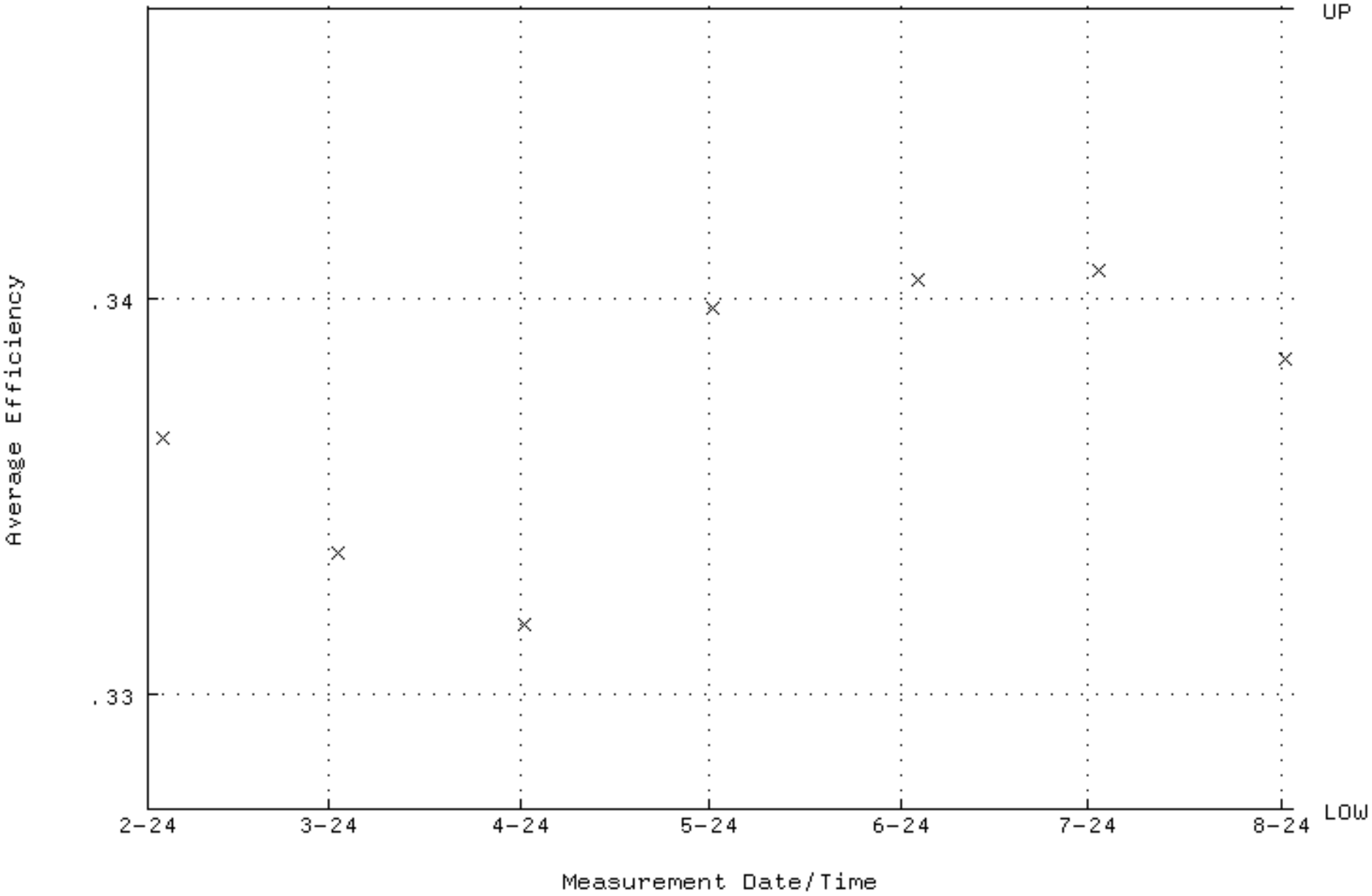
QA filename : DKA100:[ENV_ALPHA.QA.W]W008.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 2-JAN-2024 11:48:23 through 3-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



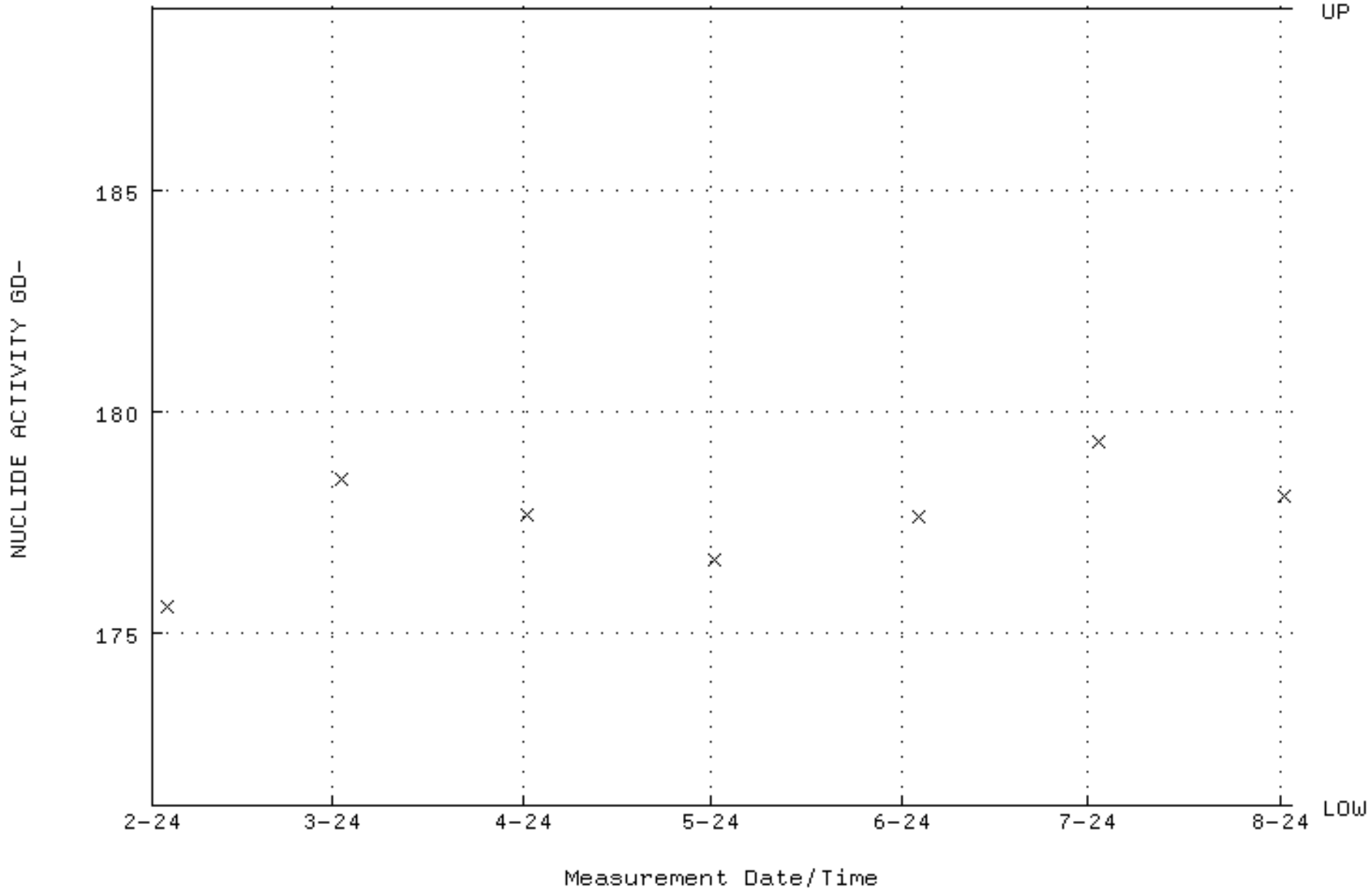
QA filename : DKA100:[ENV_ALPHA.QA.B]B008.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:12:12 through 3-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



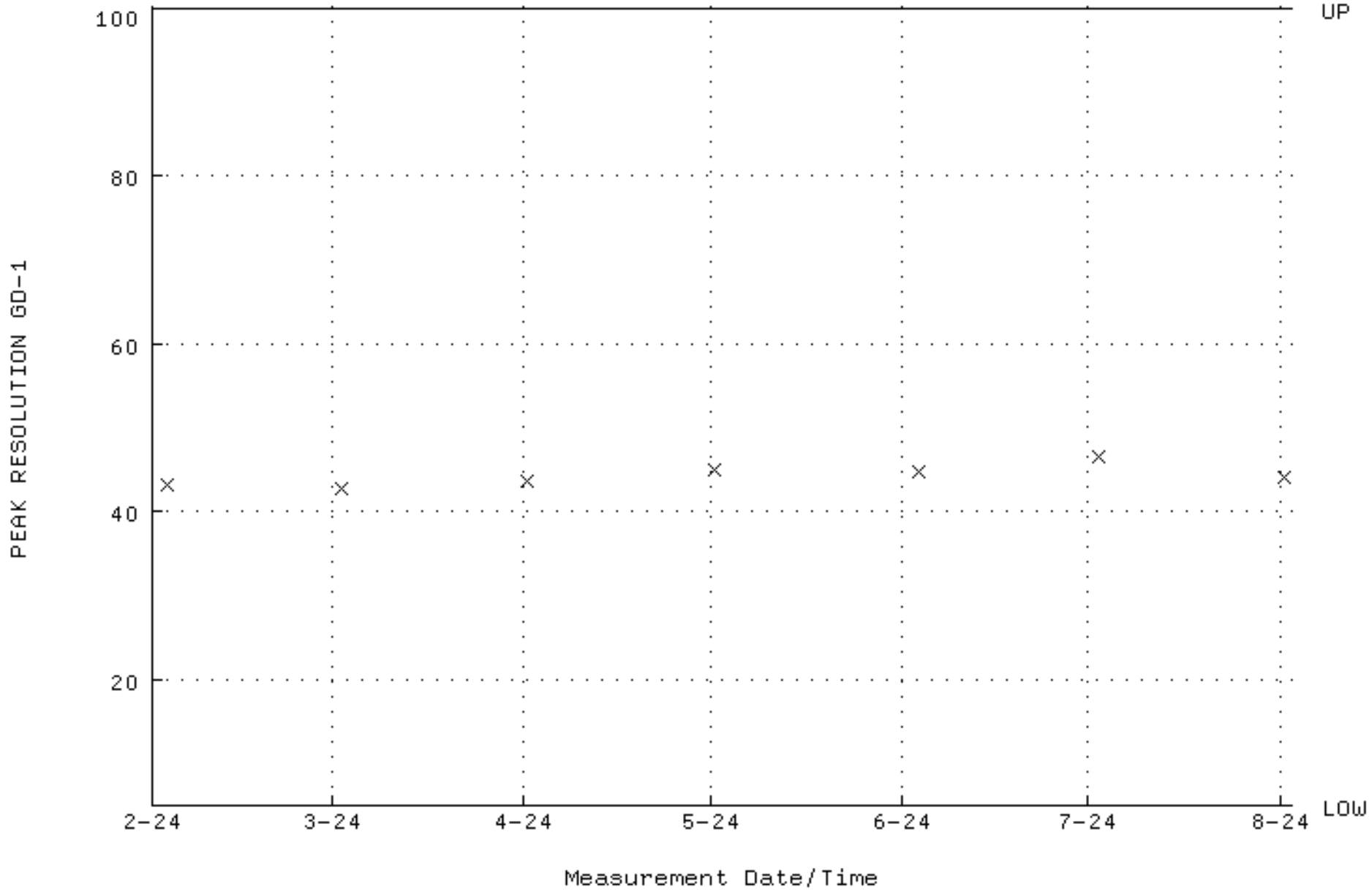
QA filename : DKA100:[ENV_ALPHA.QA.W]W009.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.327088 through 0.347320



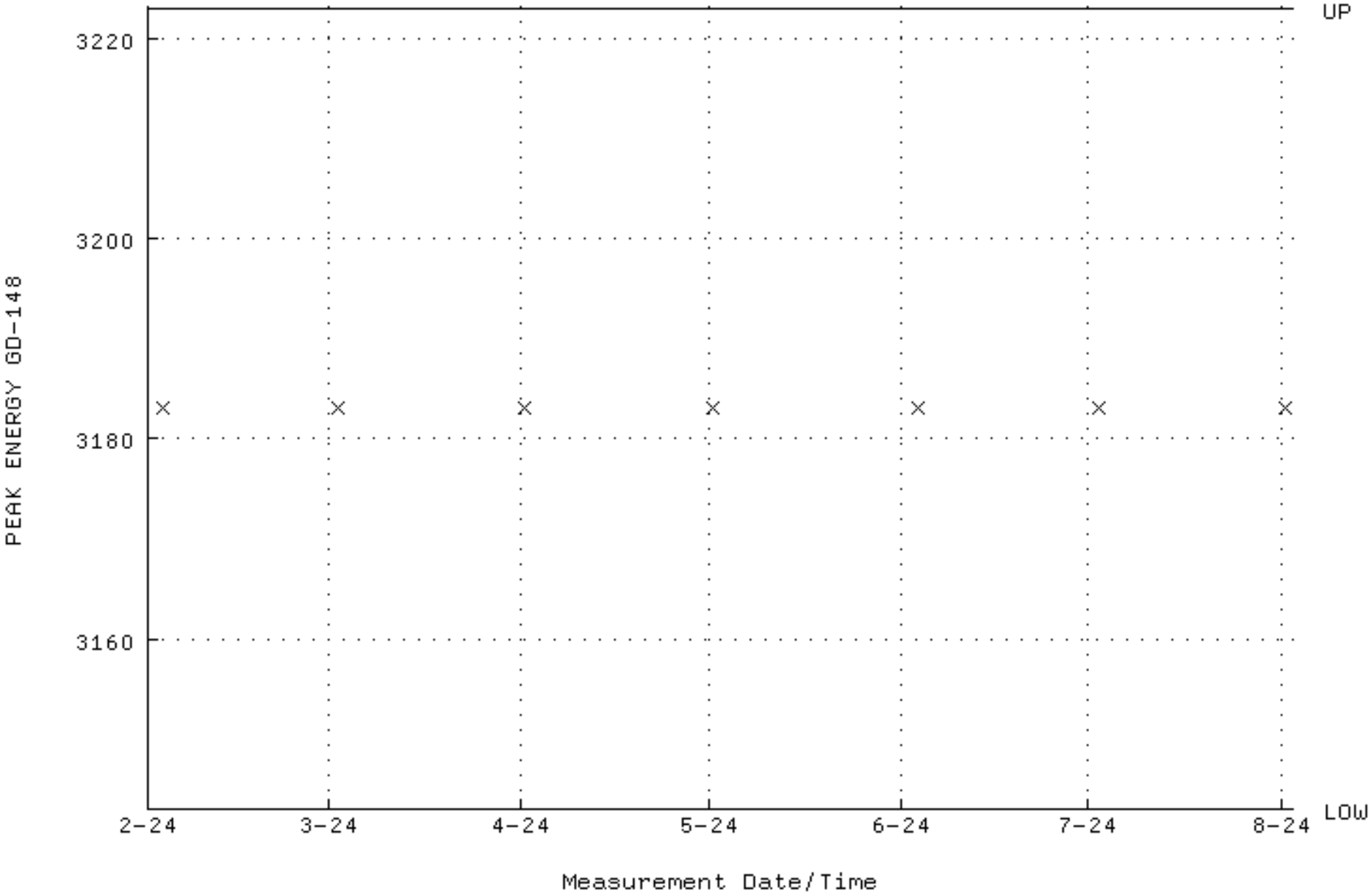
QA filename : DKA100:[ENV_ALPHA.QA.W]W009.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



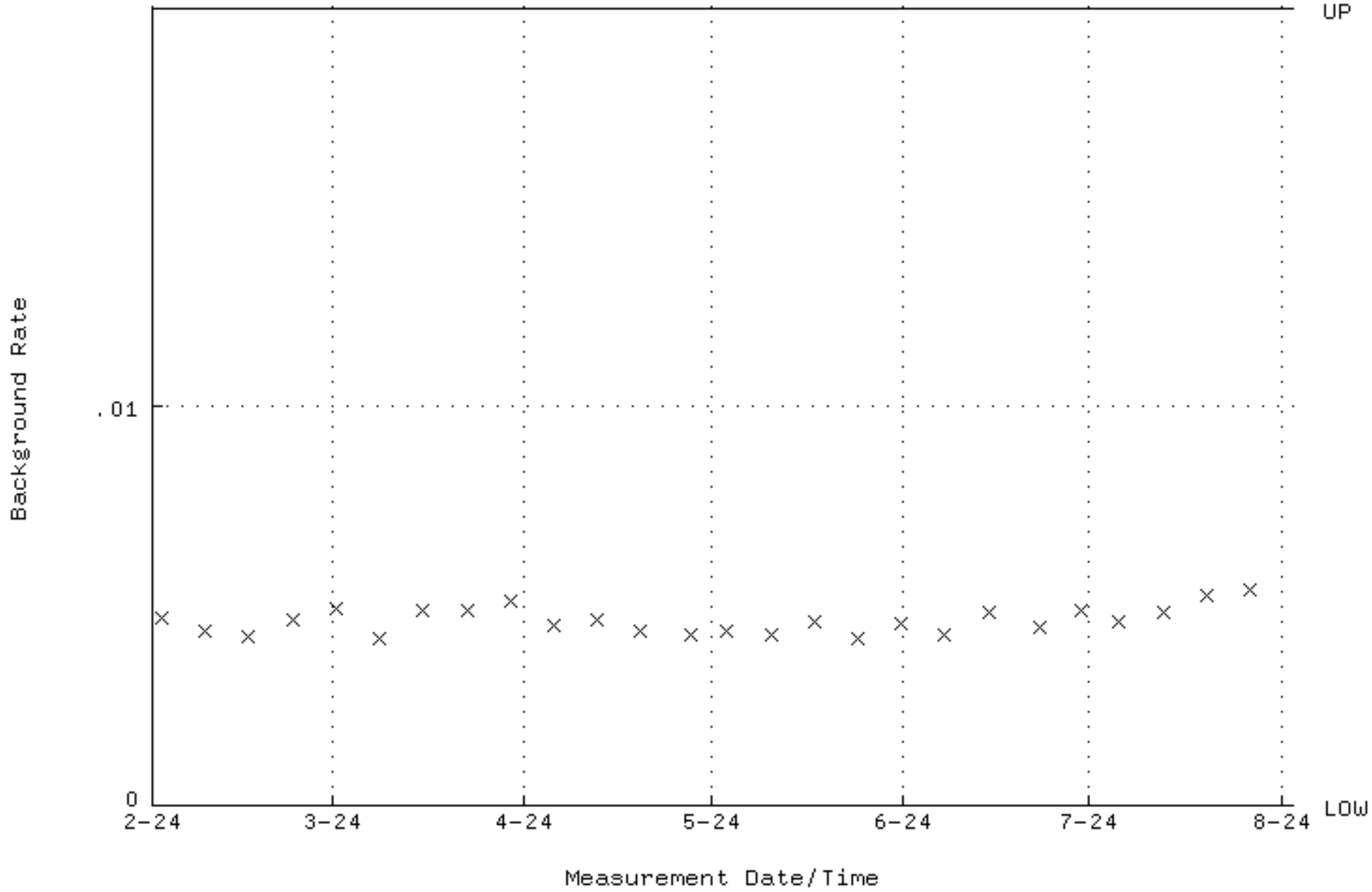
QA filename : DKA100:[ENV_ALPHA.QA.W]W009.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



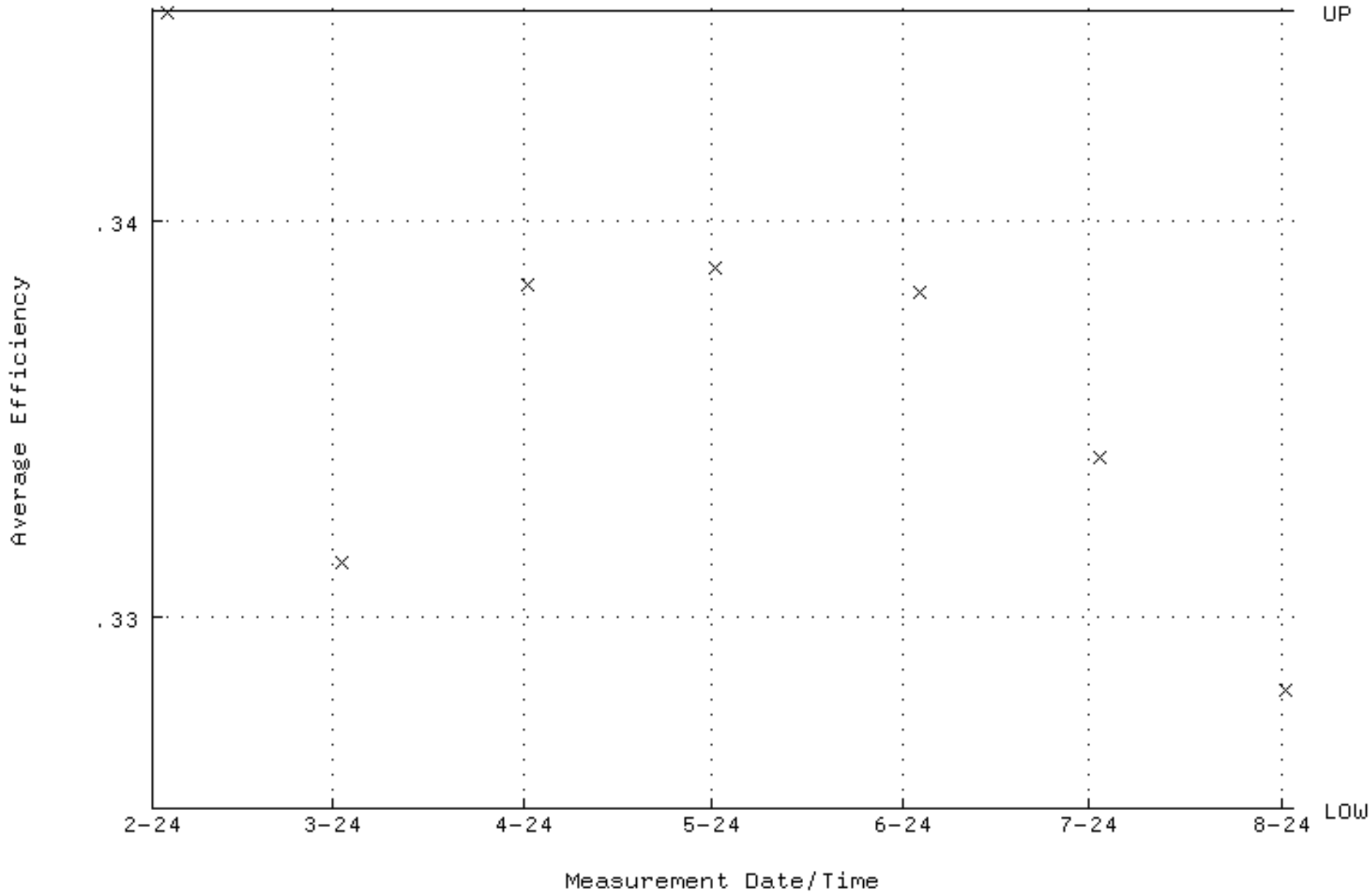
QA filename : DKA100:[ENV_ALPHA.QA.W]W009.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



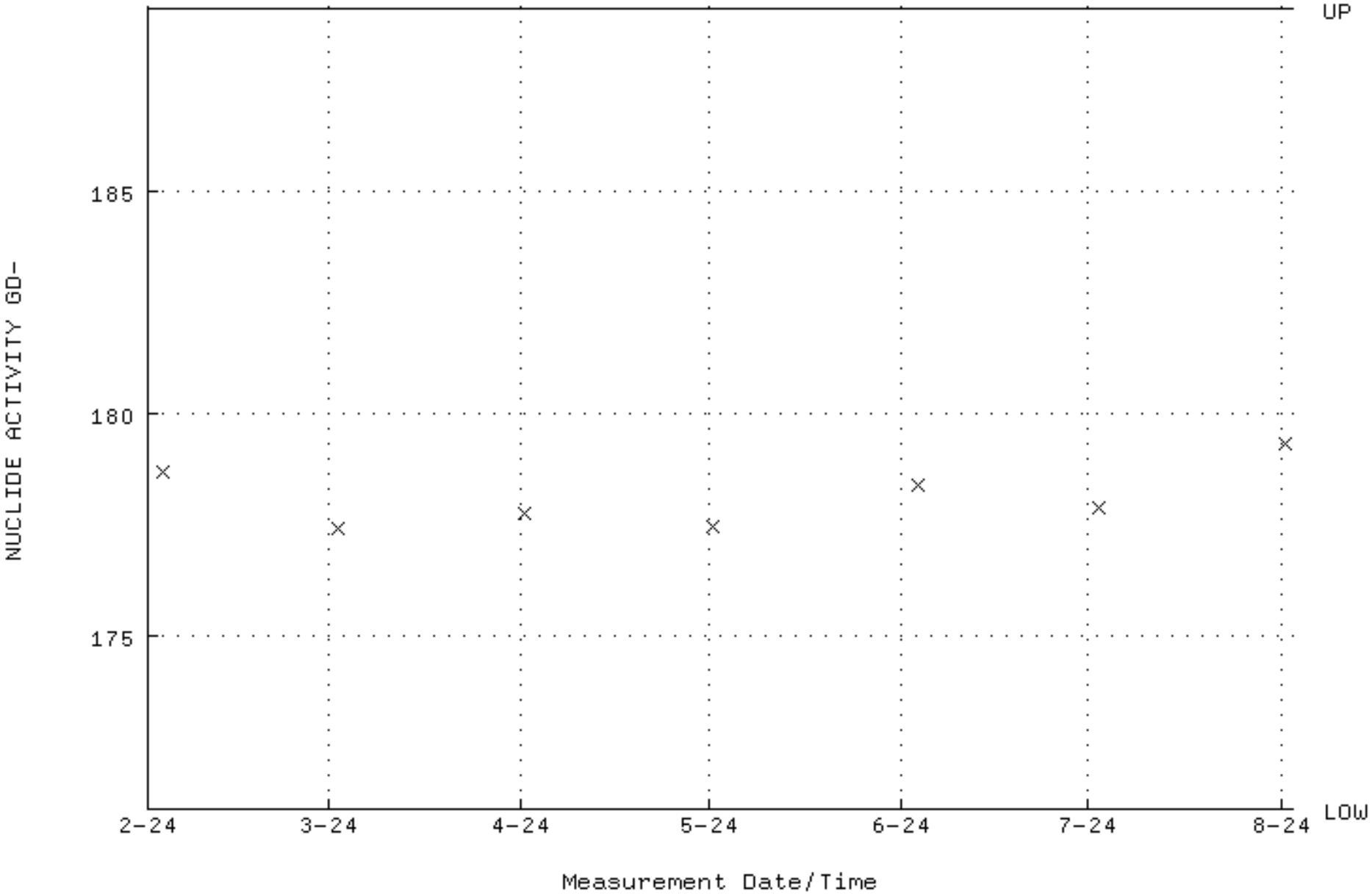
QA filename : DKA100:[ENV_ALPHA.QA.B]B009.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:19 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



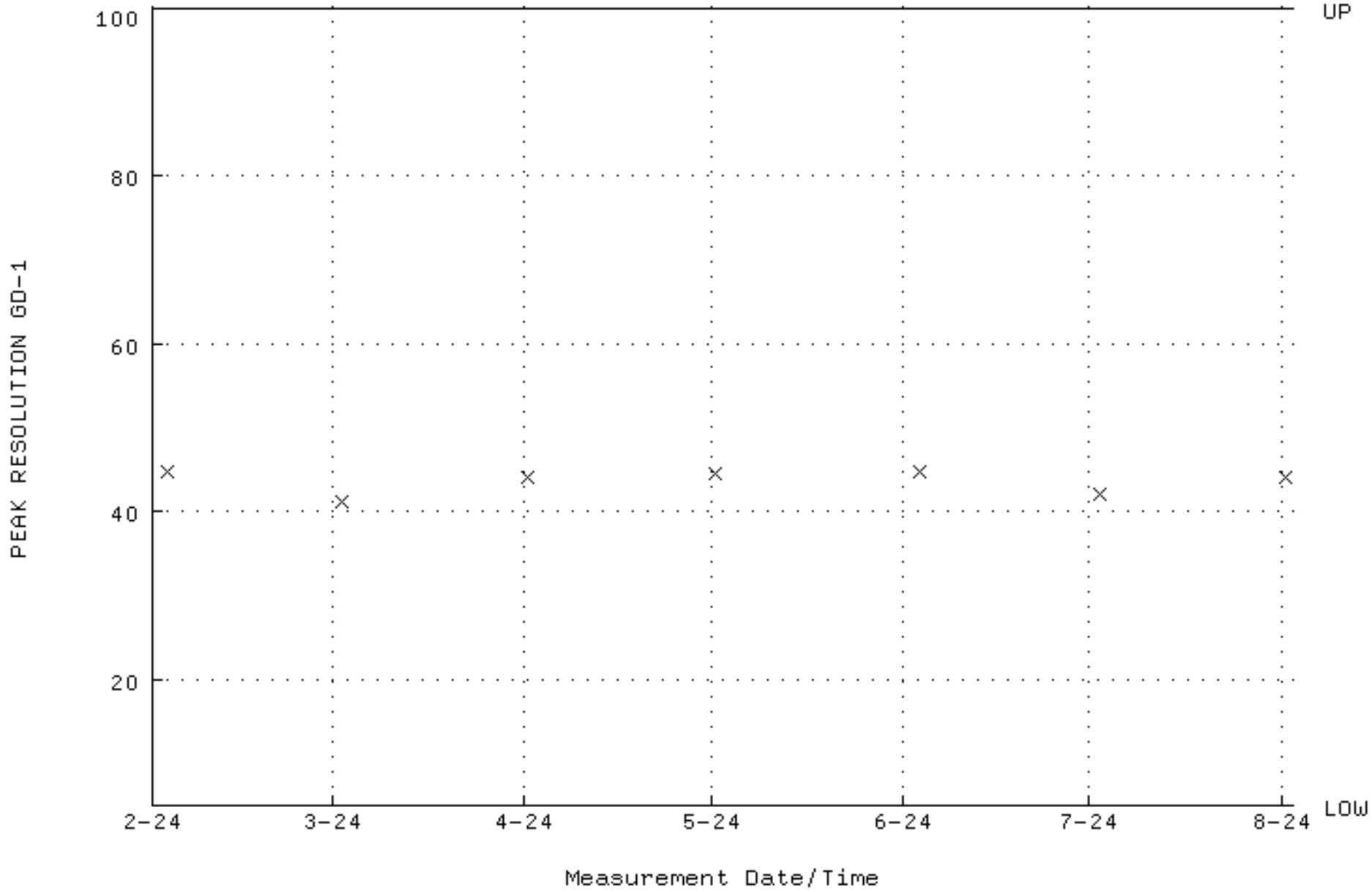
QA filename : DKA100:[ENV_ALPHA.QA.W]W010.QAF;8
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.325170 through 0.345290



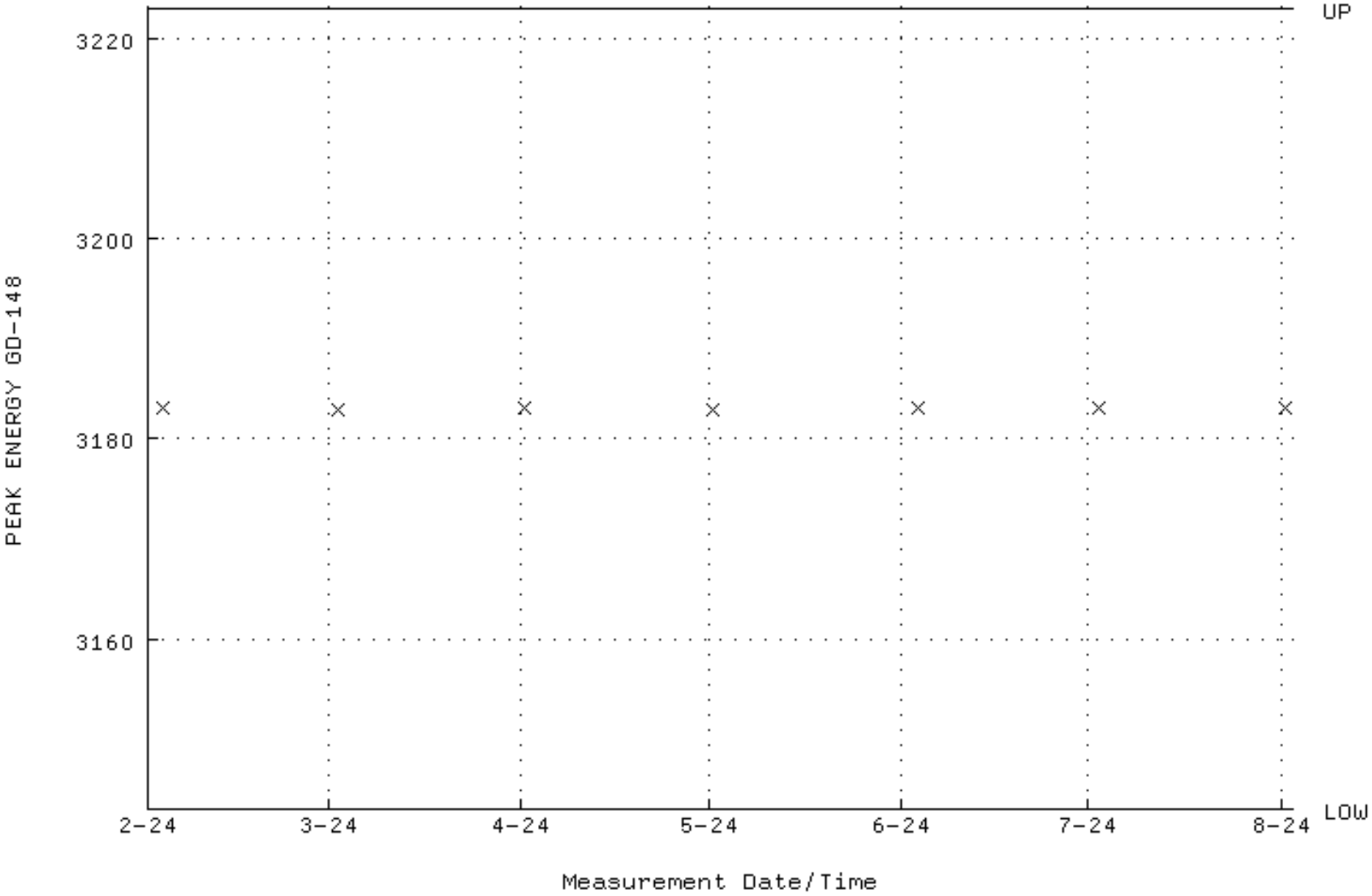
QA filename : DKA100:[ENV_ALPHA.QA.W]W010.QAF;8
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



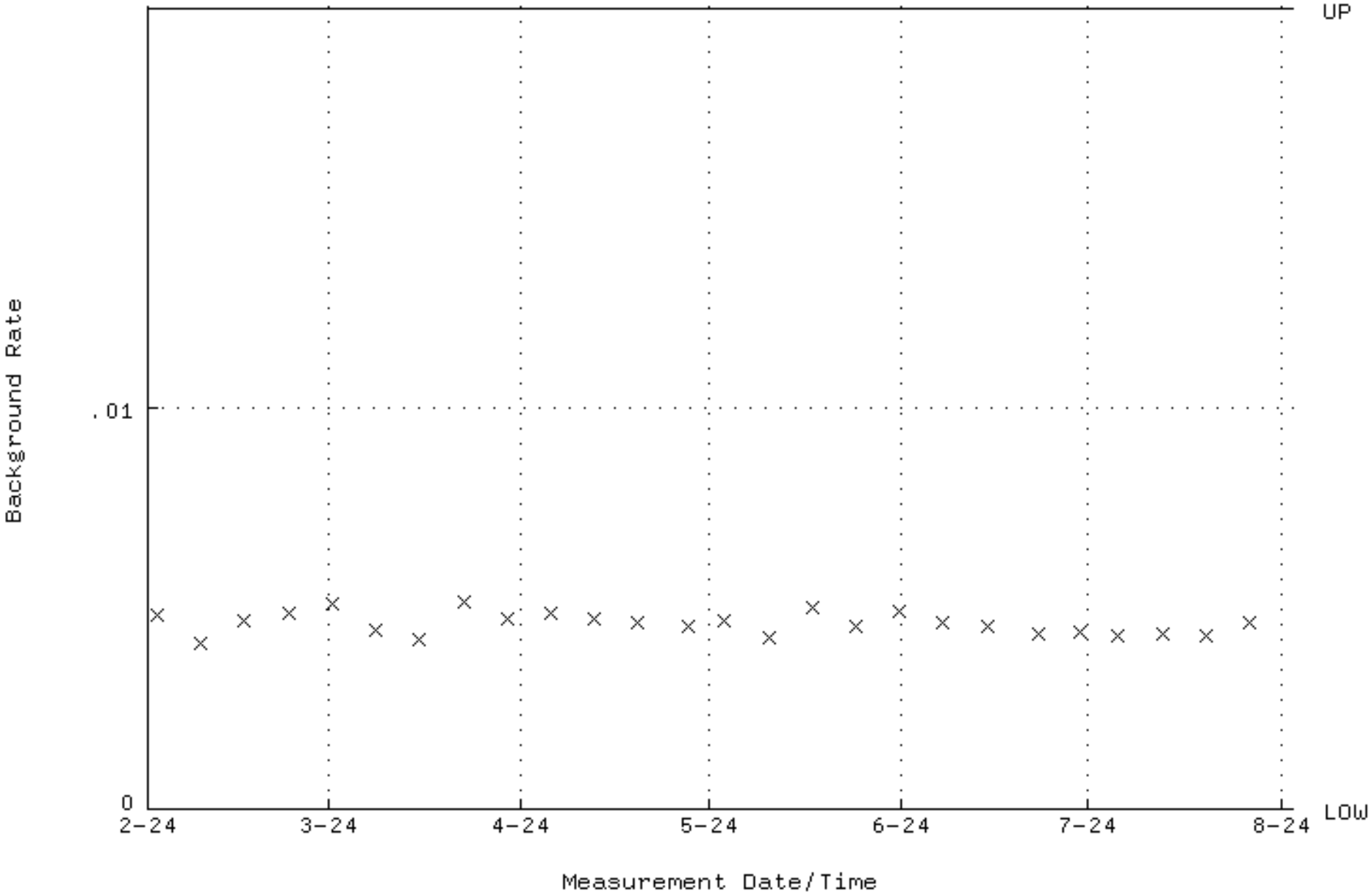
QA filename : DKA100:[ENV_ALPHA.QA.W]W010.QAF;8
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



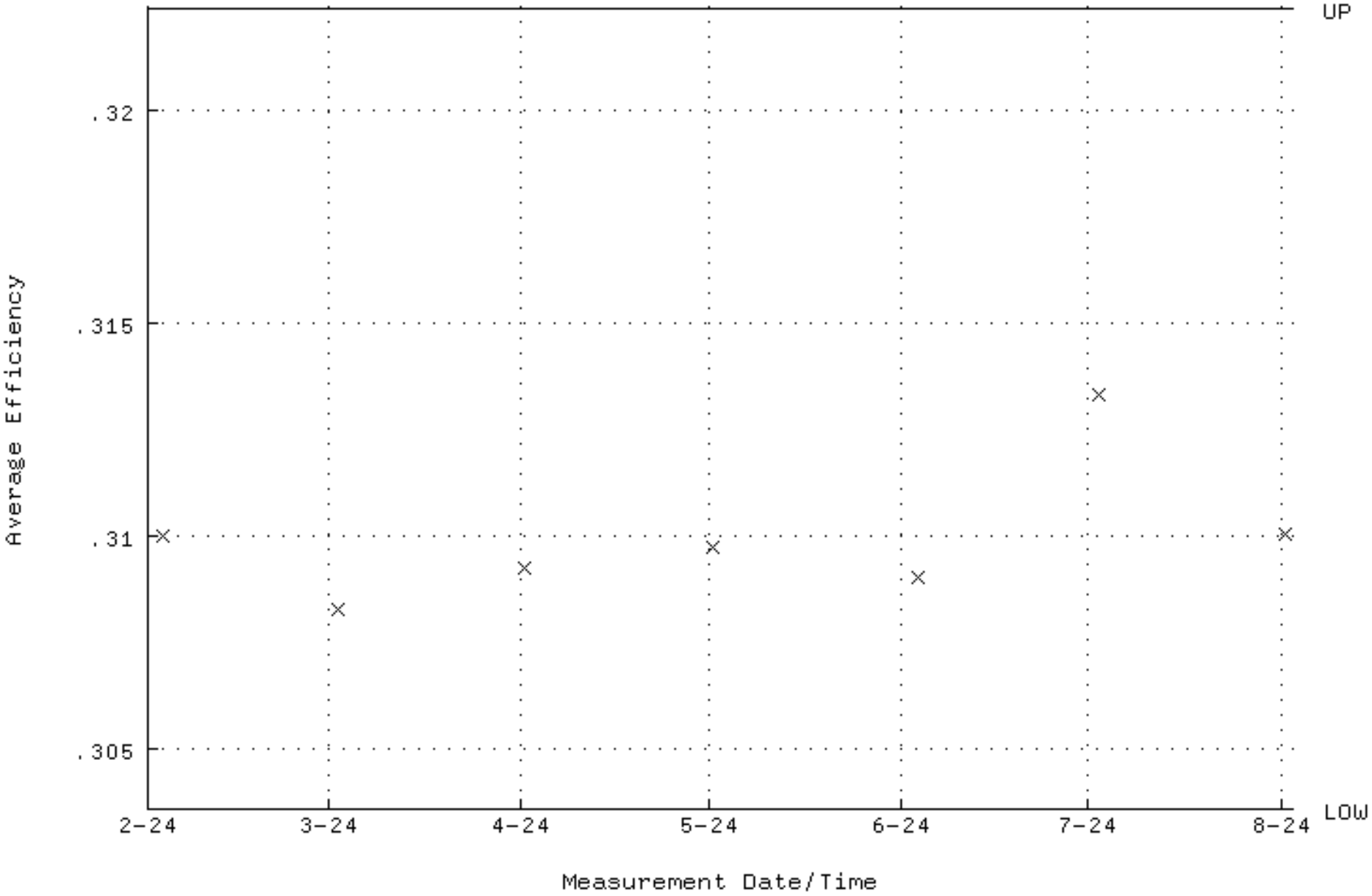
QA filename : DKA100:[ENV_ALPHA.QA.W]W010.QAF;8
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



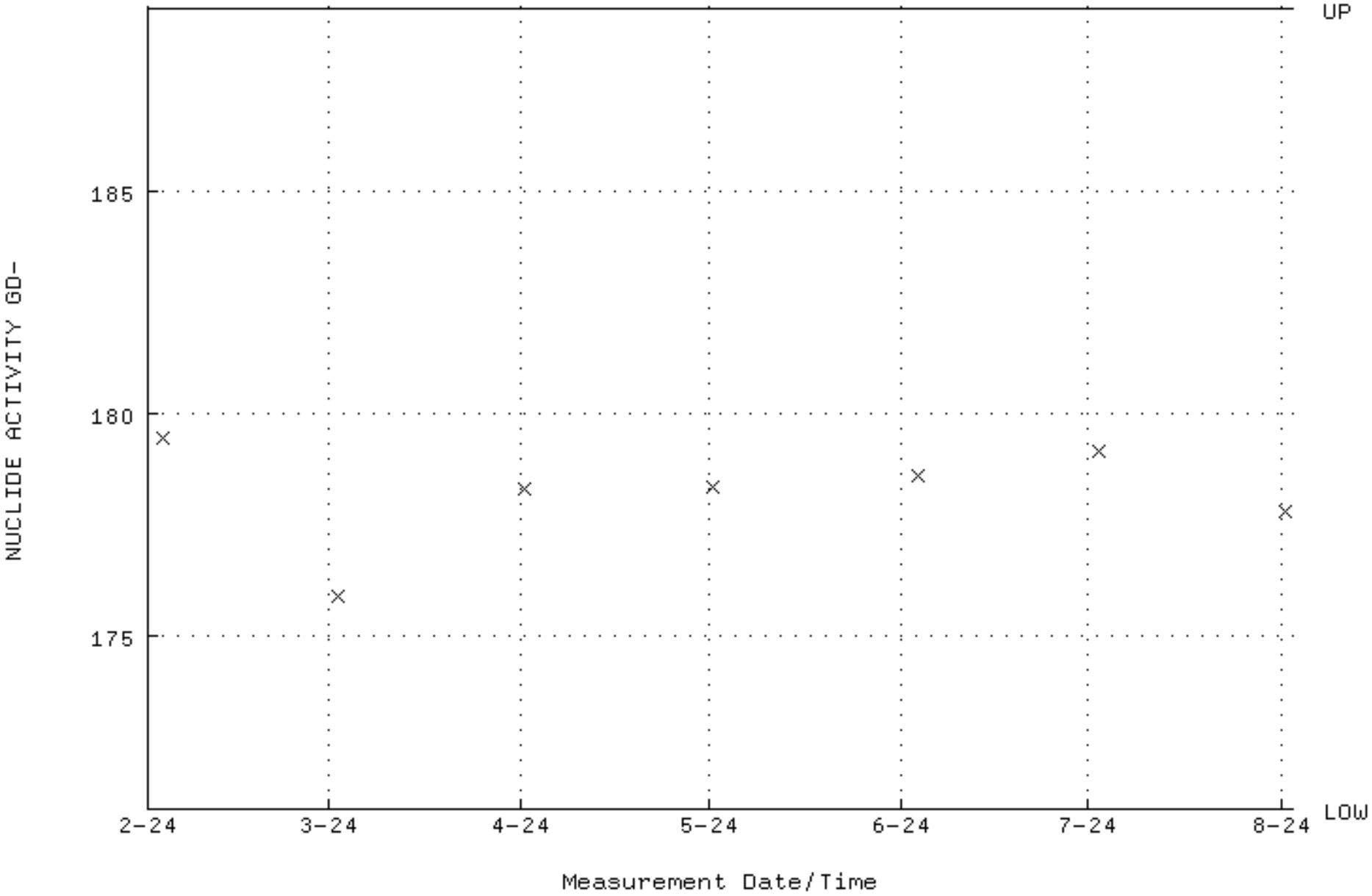
QA filename : DKA100:[ENV_ALPHA.QA.B]B010.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:19 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



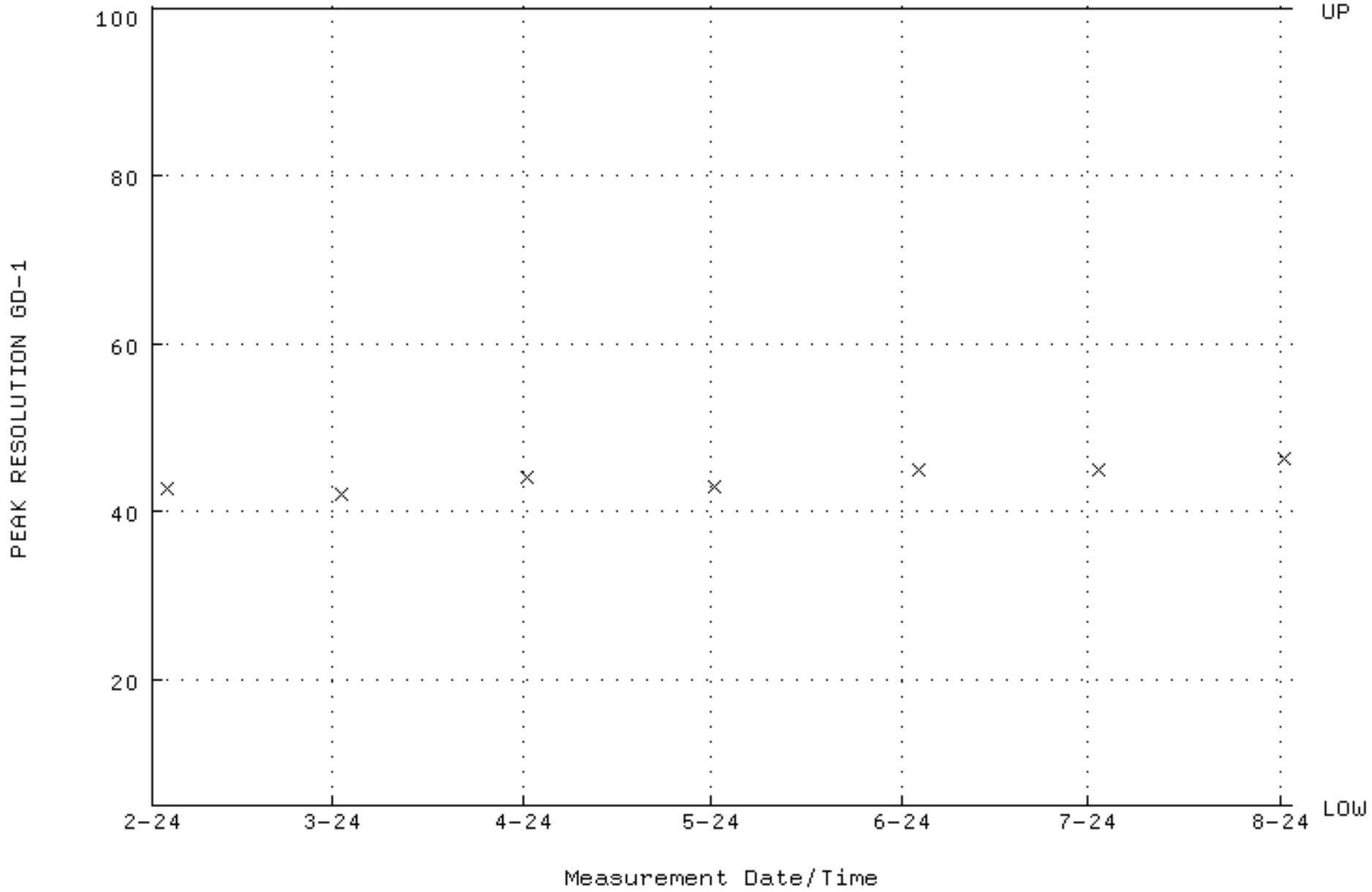
QA filename : DKA100:[ENV_ALPHA.QA.W]W011.QAF;8
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.303590 through 0.322370



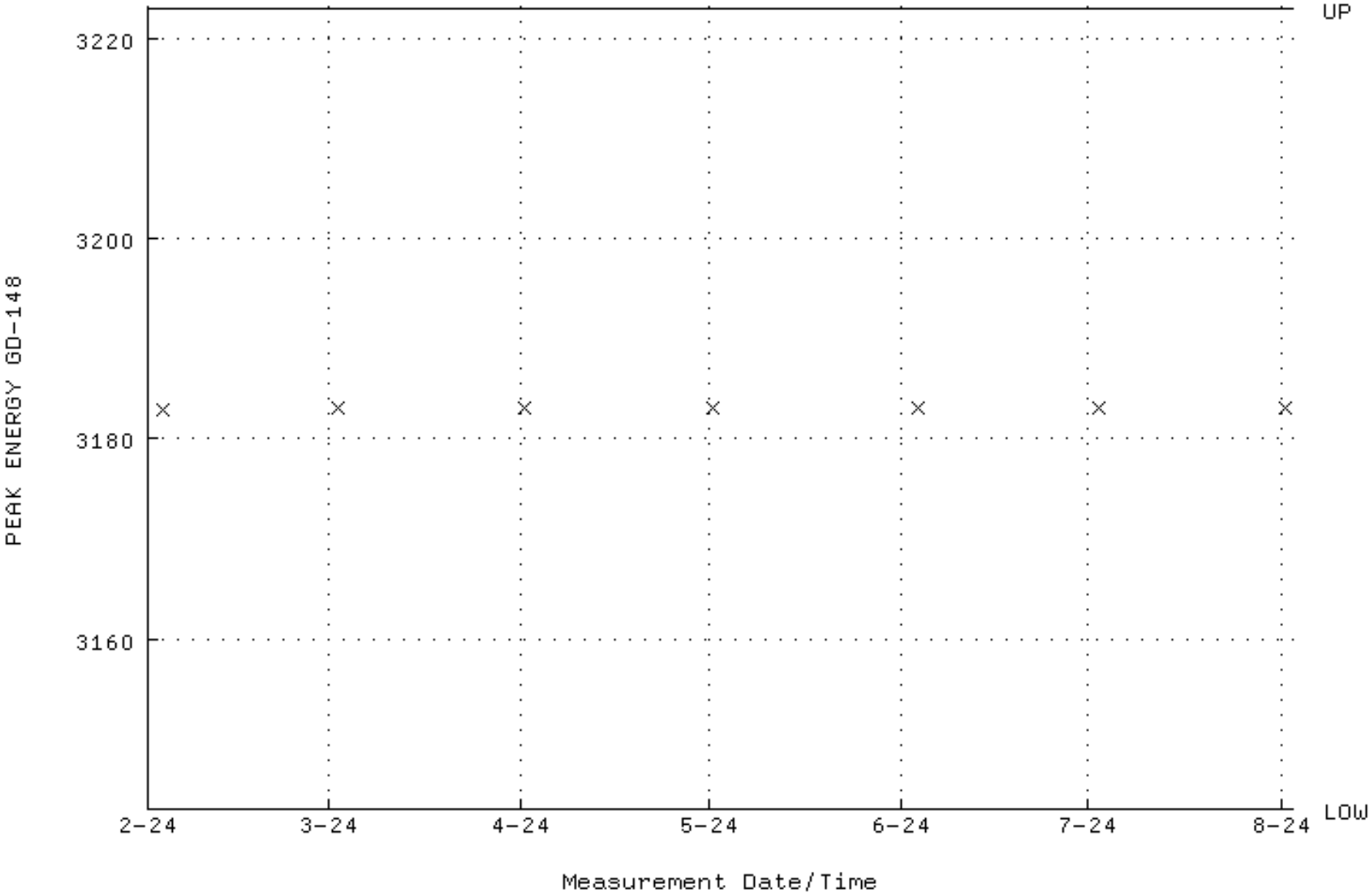
QA filename : DKA100:[ENV_ALPHA.QA.W]W011.QAF;8
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



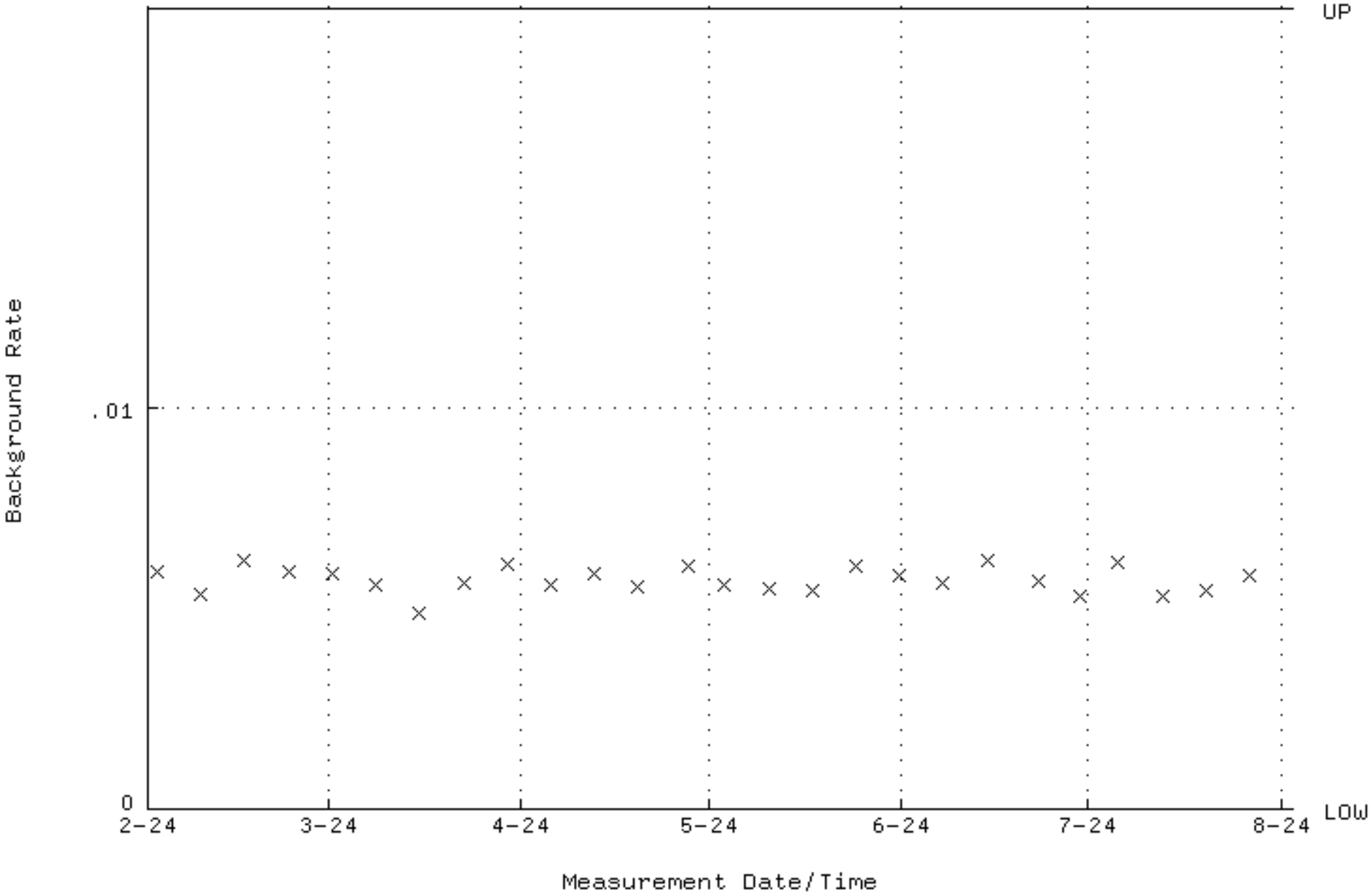
QA filename : DKA100:[ENV_ALPHA.QA.W]W011.QAF;8
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



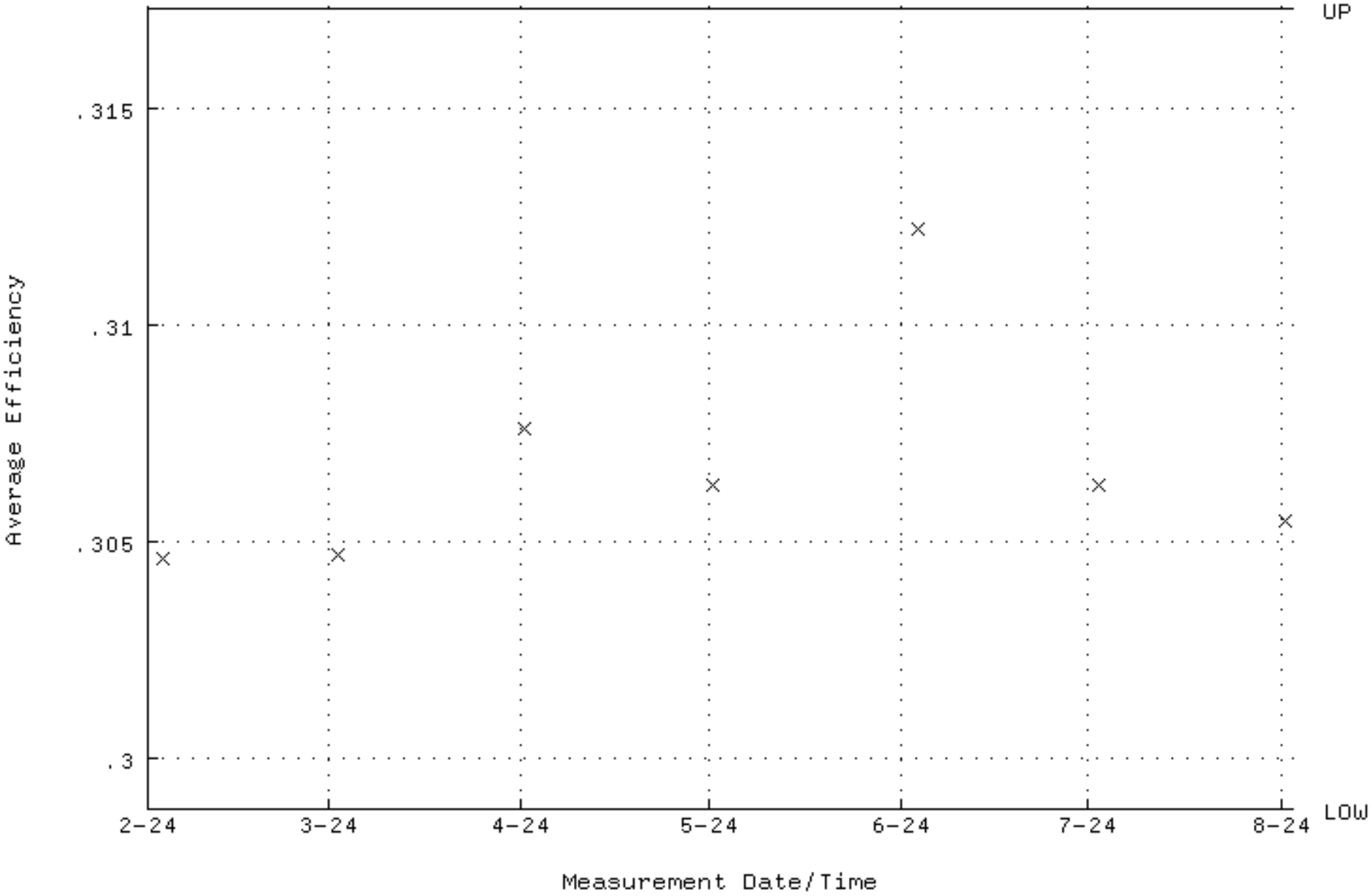
QA filename : DKA100:[ENV_ALPHA.QA.W]W011.QAF;8
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



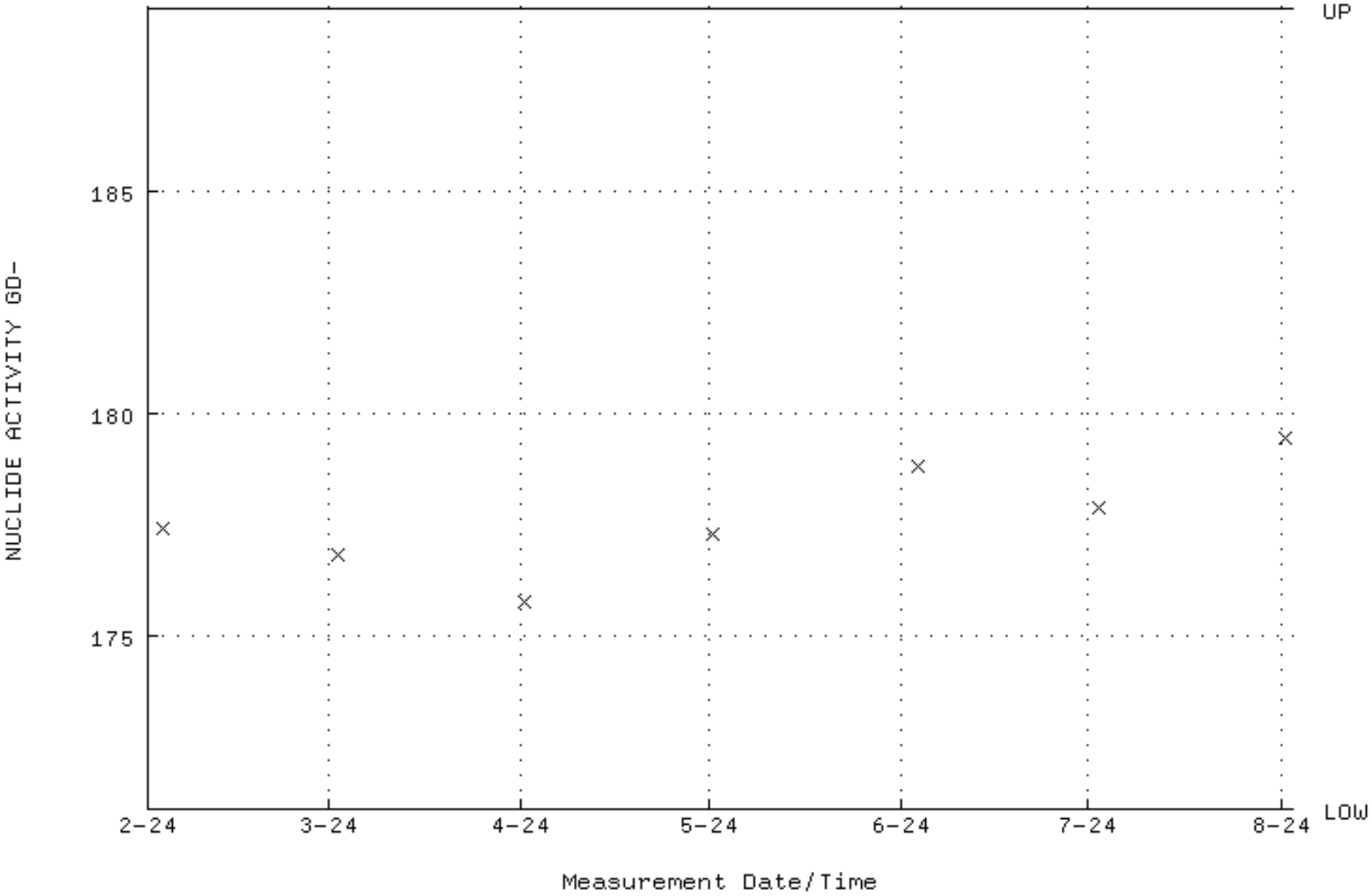
QA filename : DKA100:[ENV_ALPHA.QA.B]B011.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:19 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



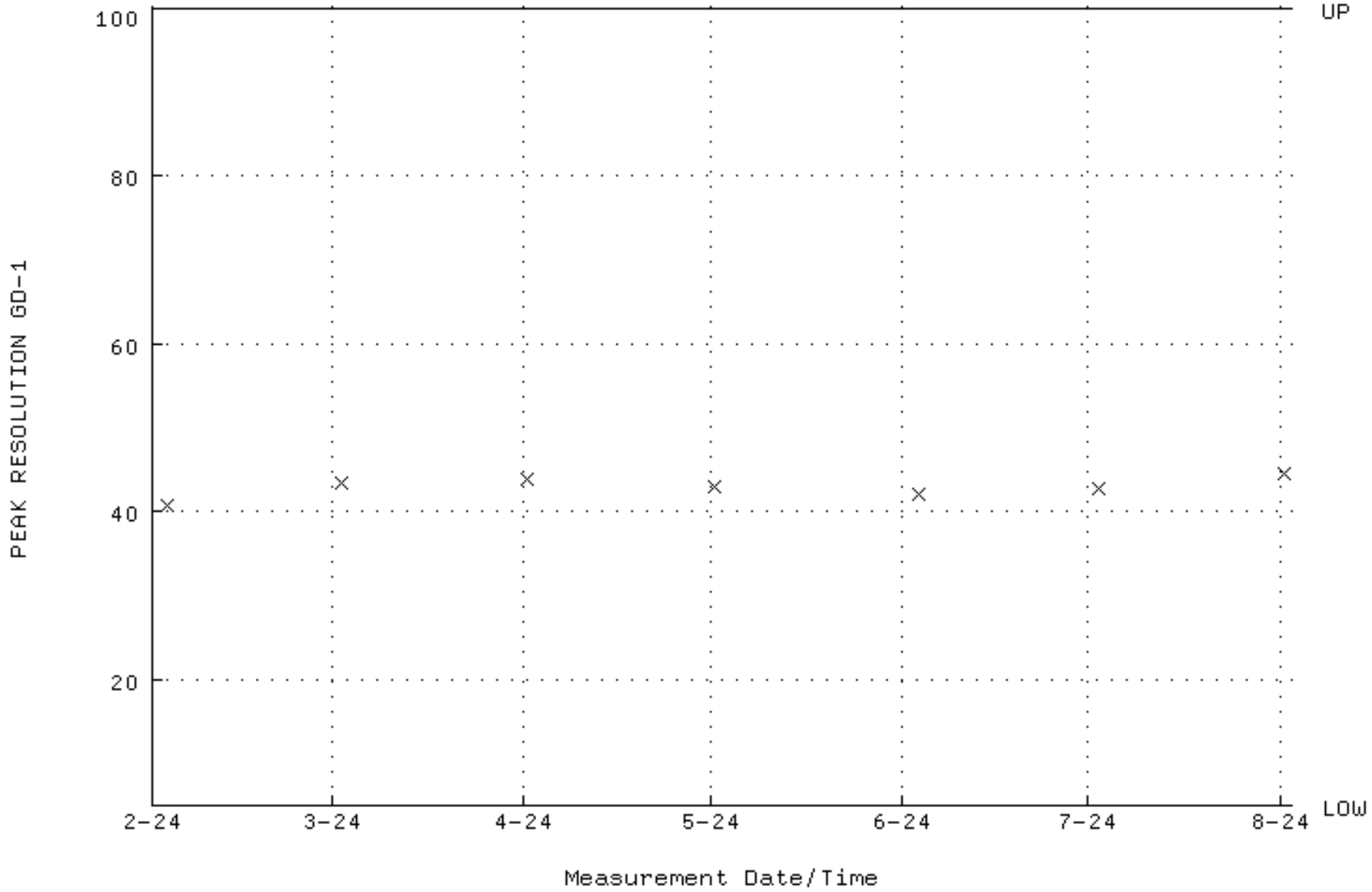
QA filename : DKA100:[ENV_ALPHA.QA.W]W012.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.298821 through 0.317305



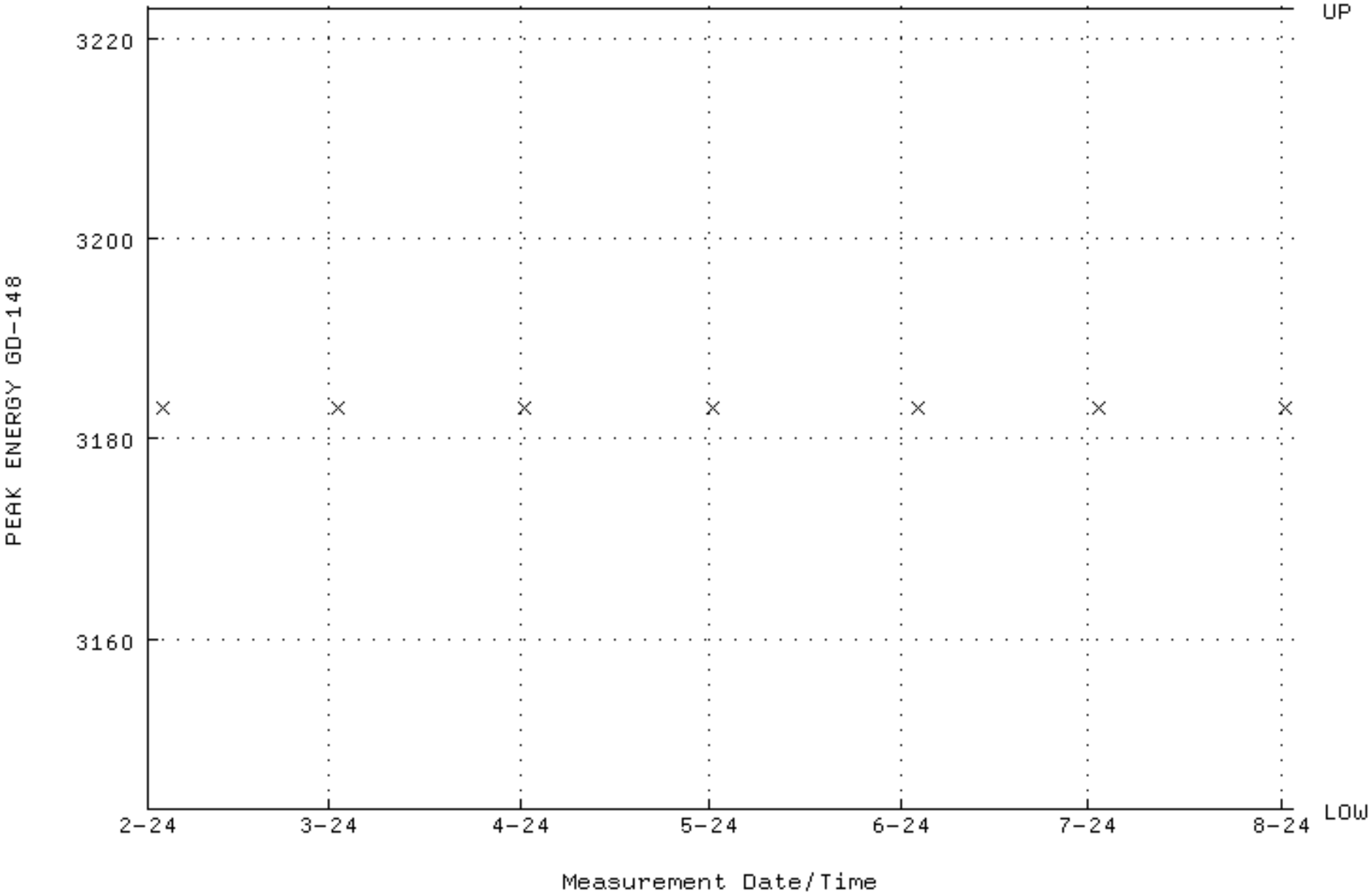
QA filename : DKA100:[ENV_ALPHA.QA.W]W012.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



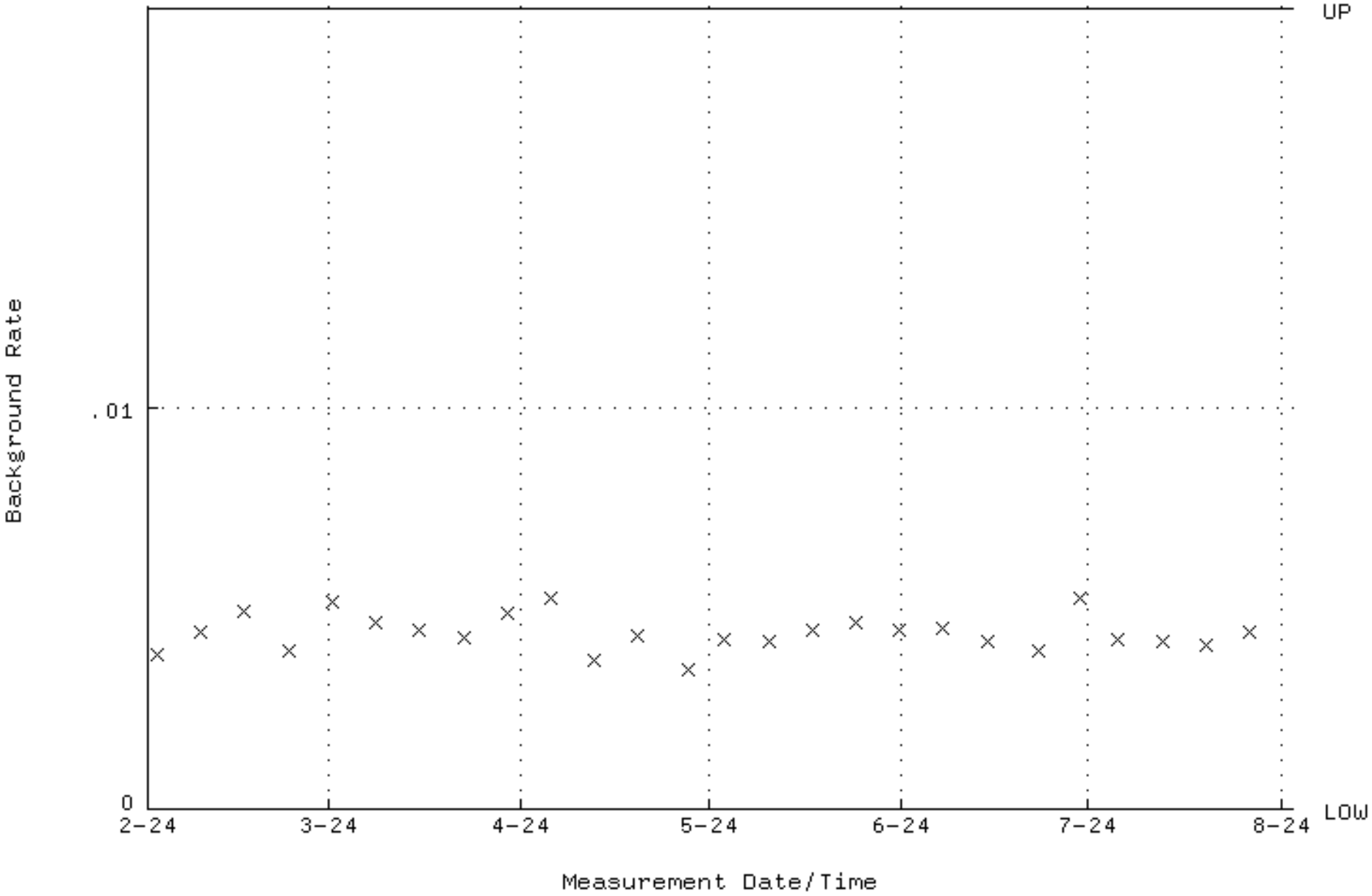
QA filename : DKA100:[ENV_ALPHA.QA.W]W012.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



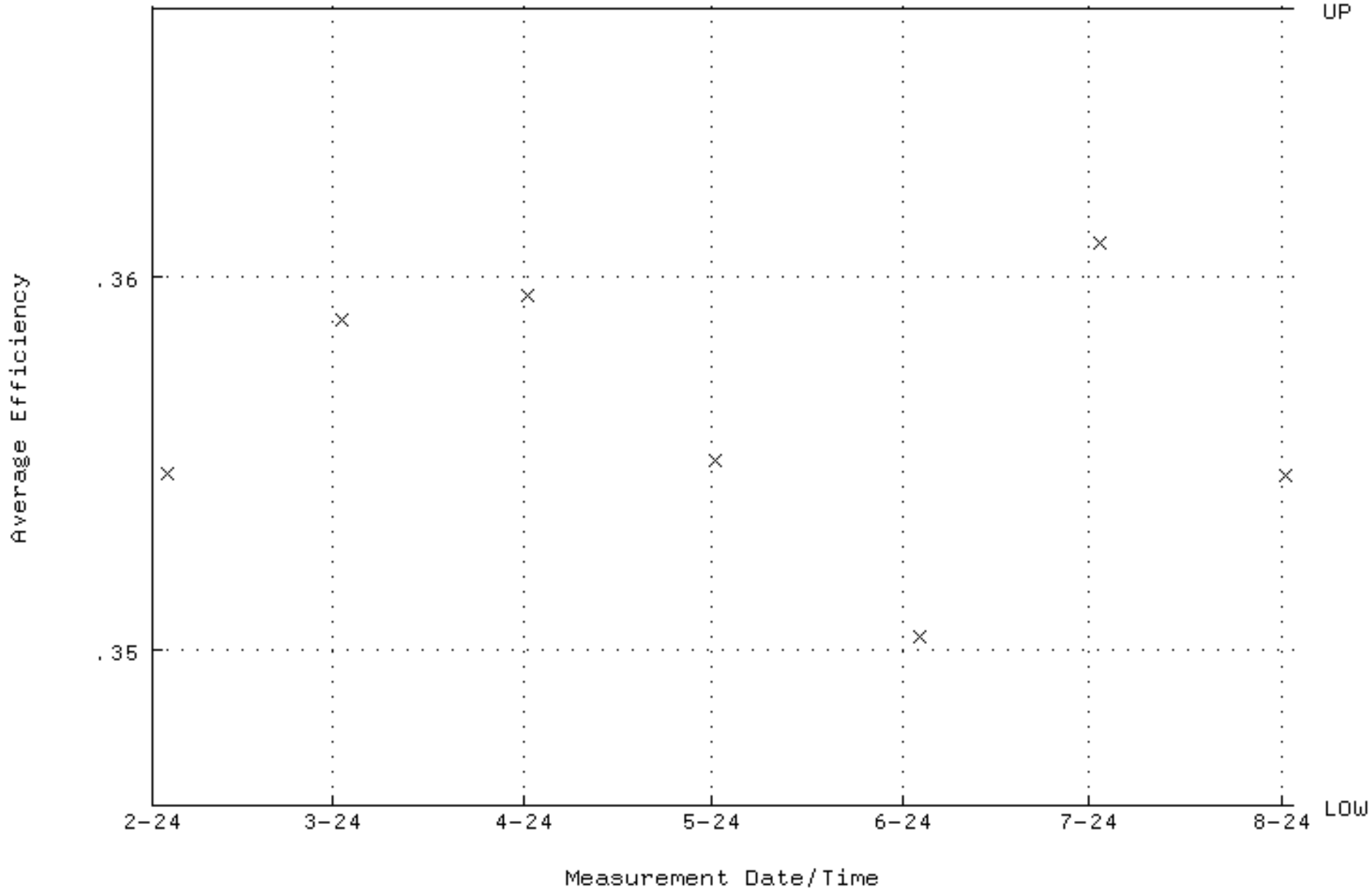
QA filename : DKA100:[ENV_ALPHA.QA.W]W012.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:07:34 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



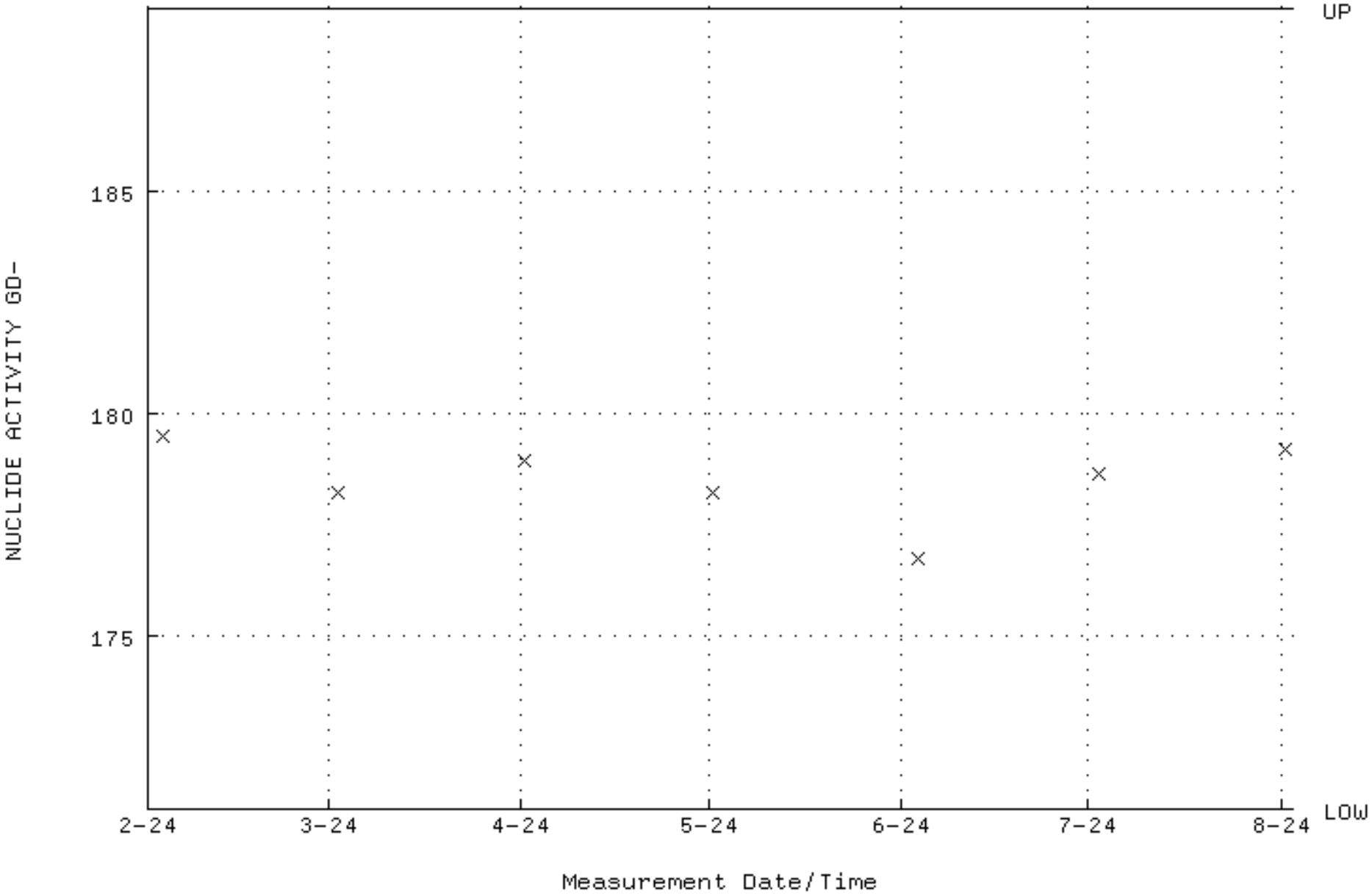
QA filename : DKA100:[ENV_ALPHA.QA.B]B012.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:19 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



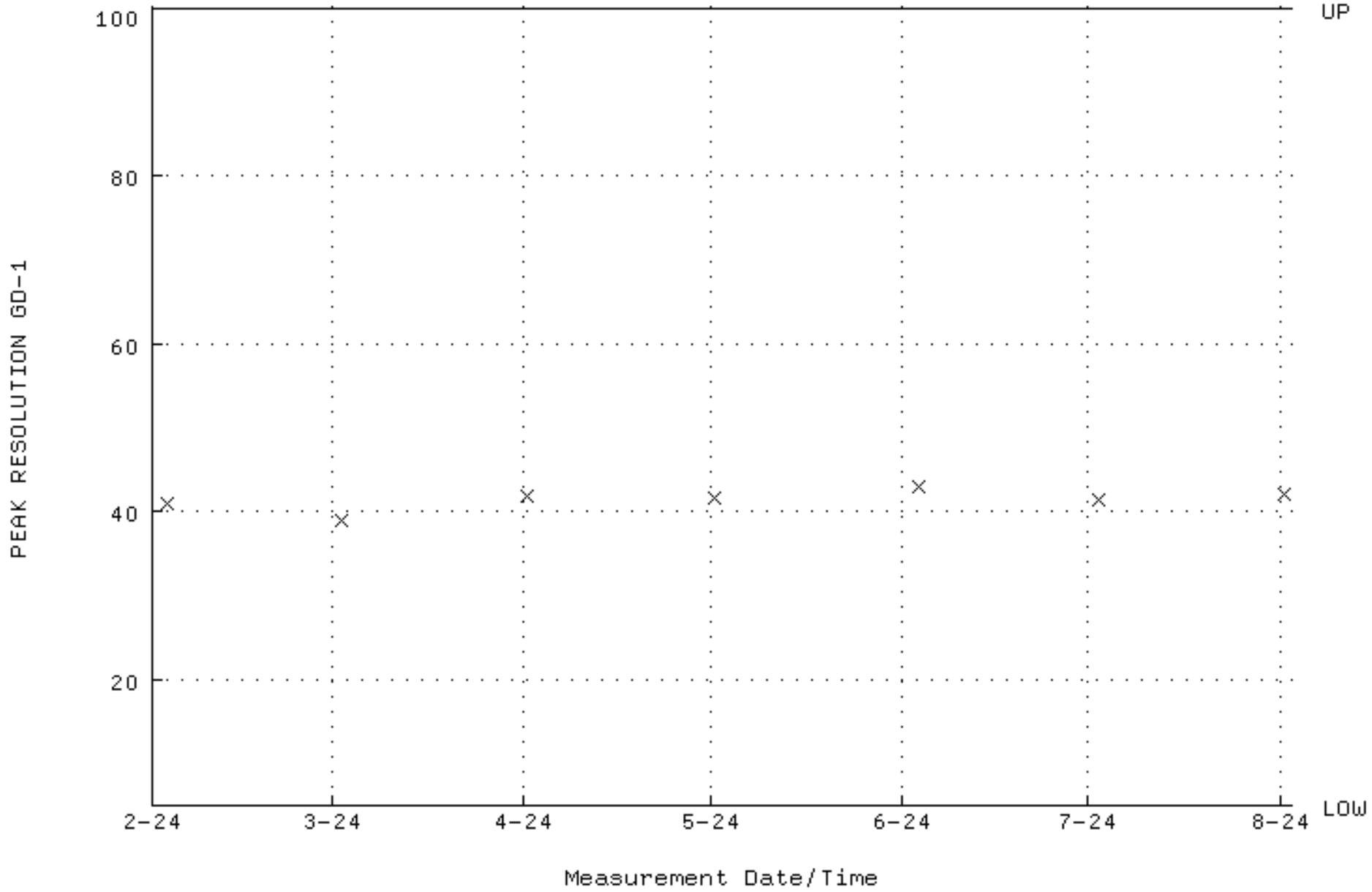
QA filename : DKA100:[ENV_ALPHA.QA.W]W013.QAF;4
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.345830 through 0.367220



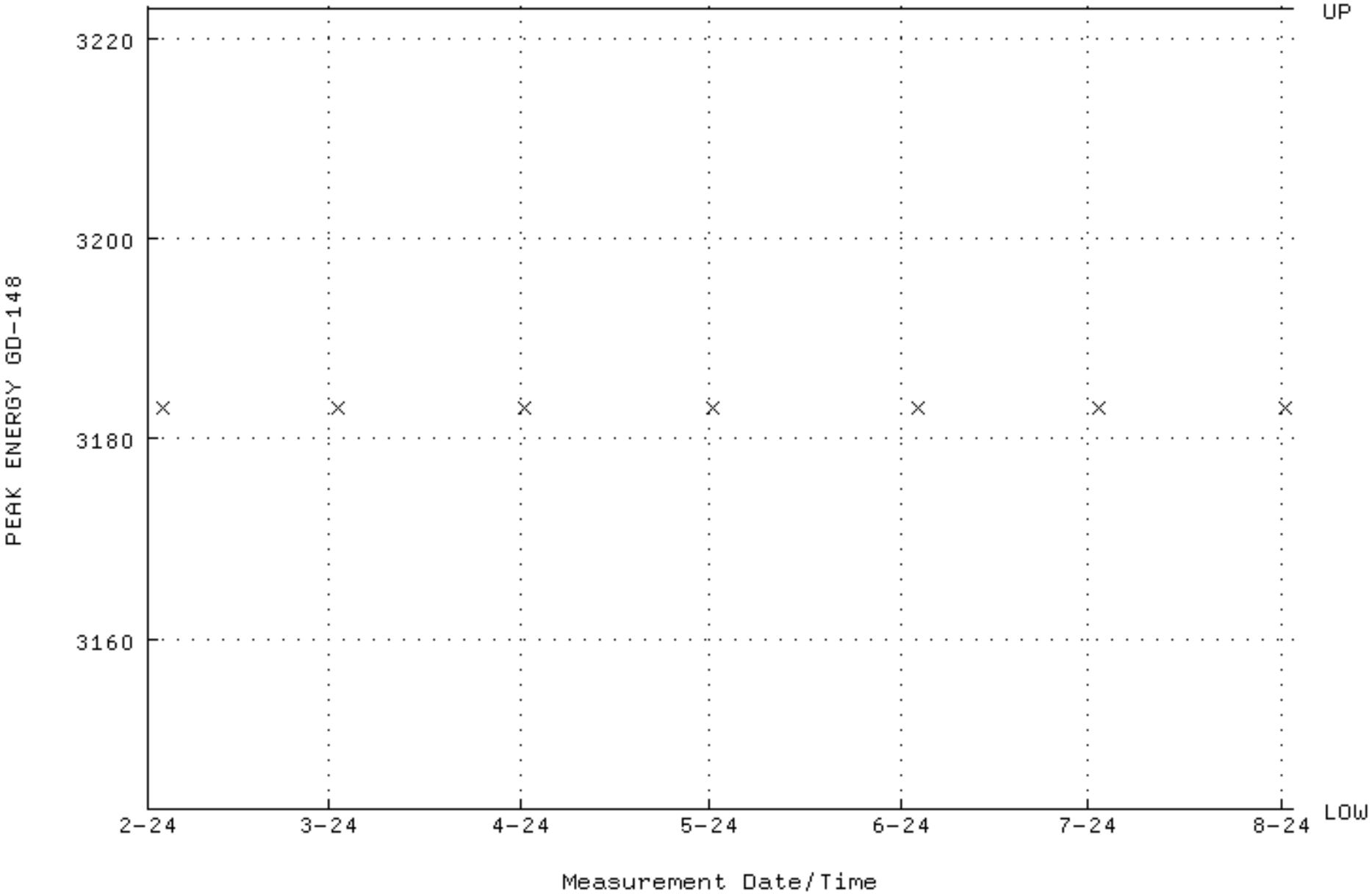
QA filename : DKA100:[ENV_ALPHA.QA.W]W013.QAF;4
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



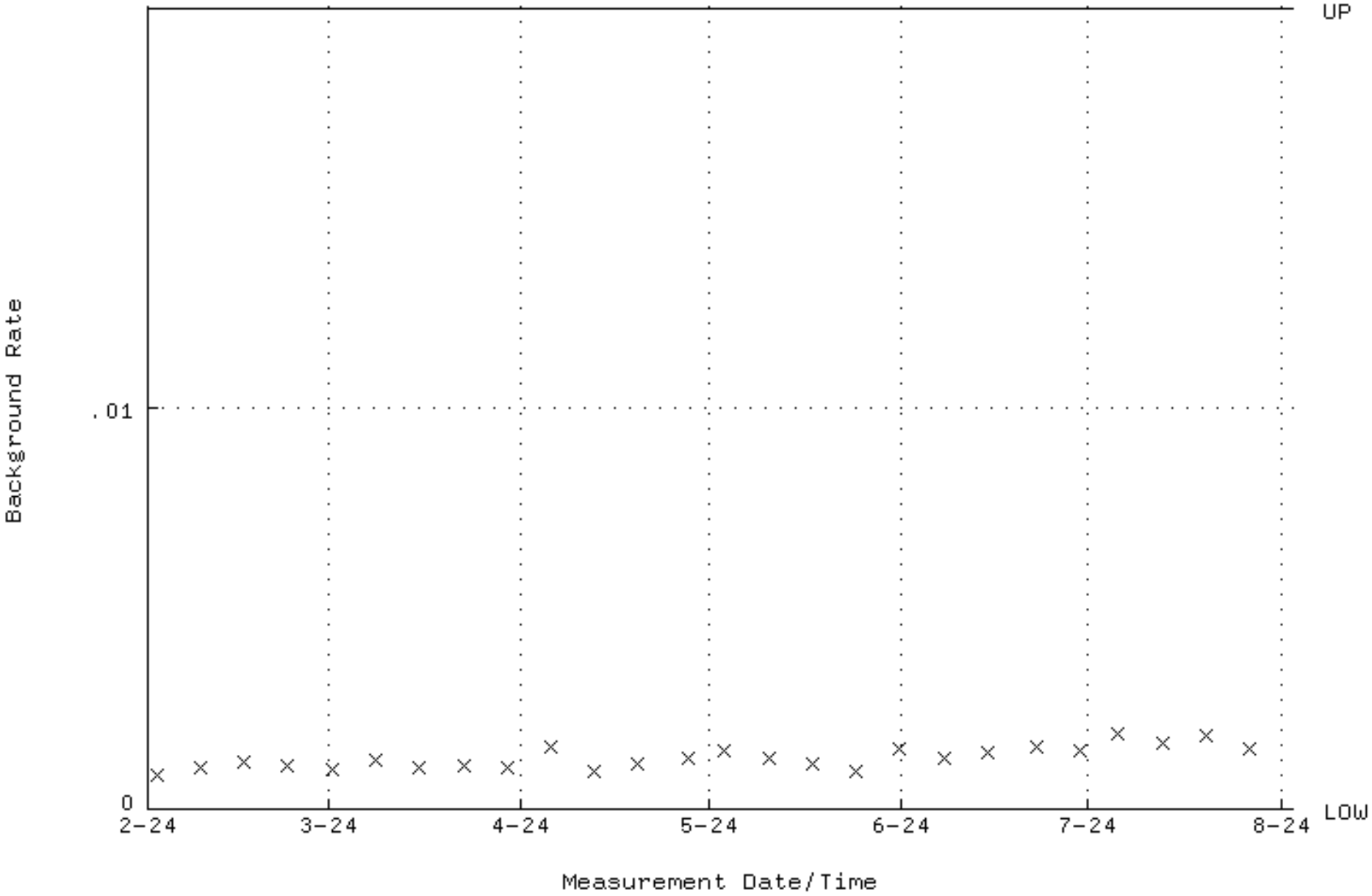
QA filename : DKA100:[ENV_ALPHA.QA.W]W013.QAF;4
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



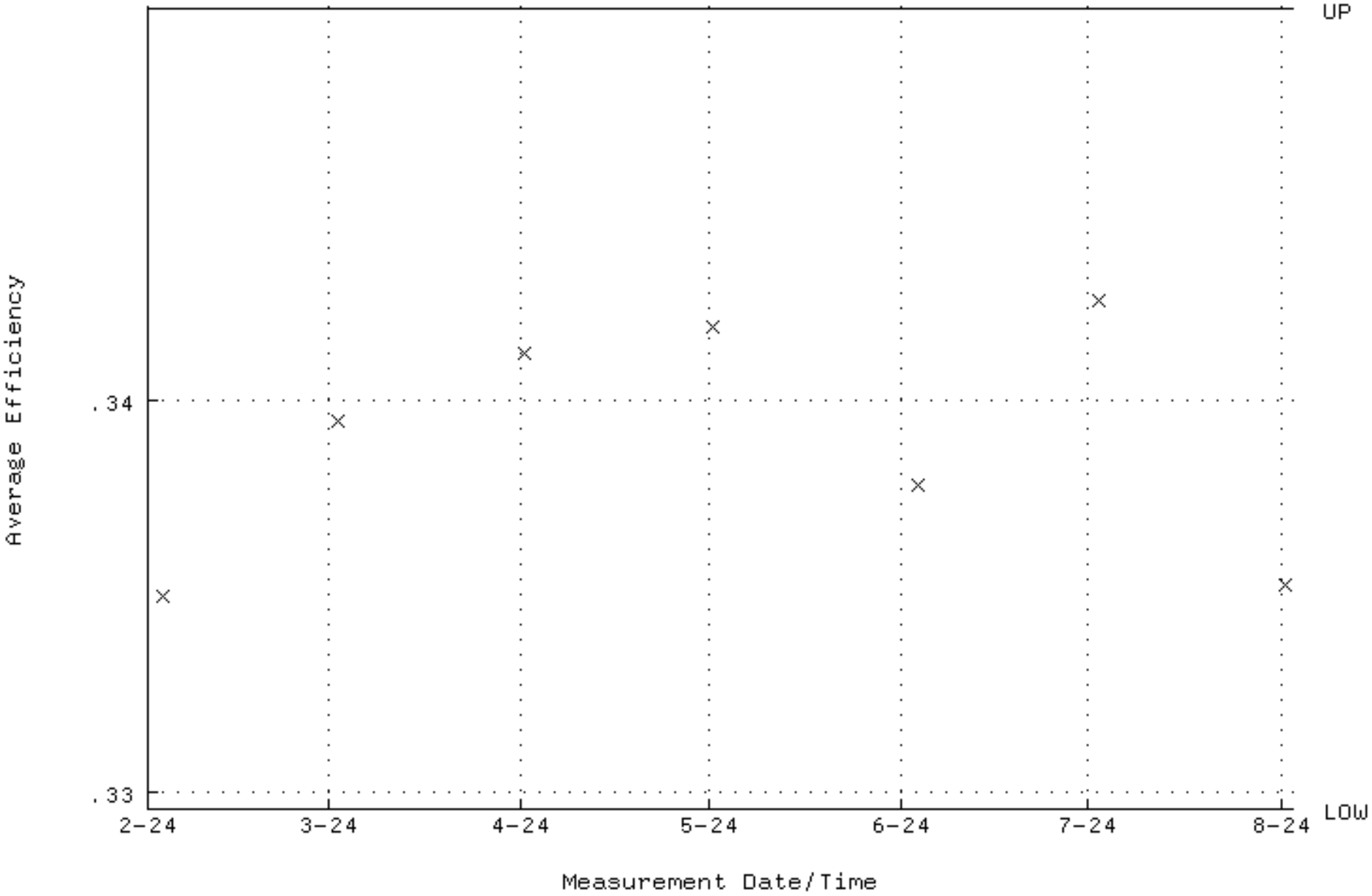
QA filename : DKA100:[ENV_ALPHA.QA.W]W013.QAF;4
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



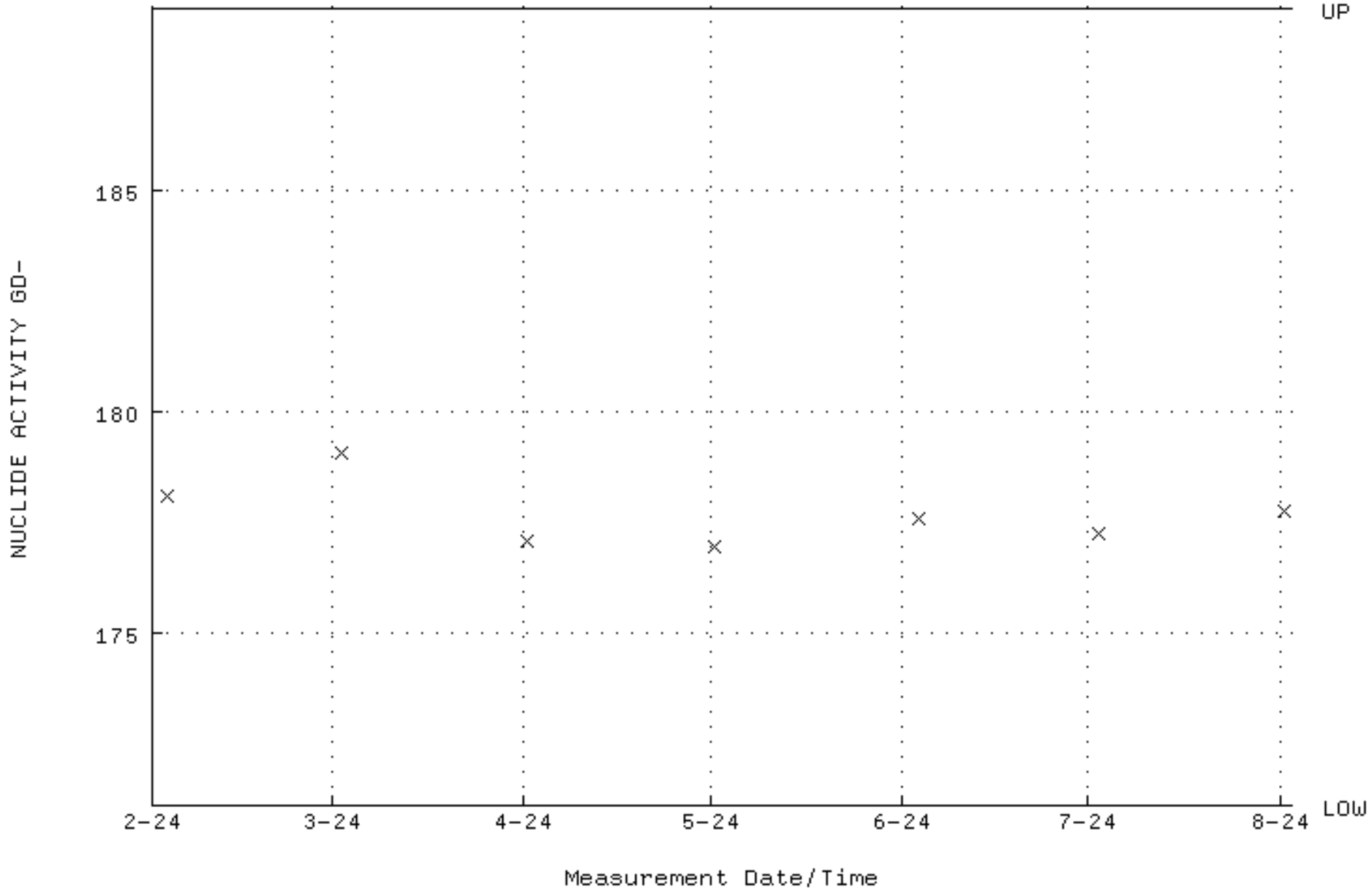
QA filename : DKA100:[ENV_ALPHA.QA.B]B013.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:20 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



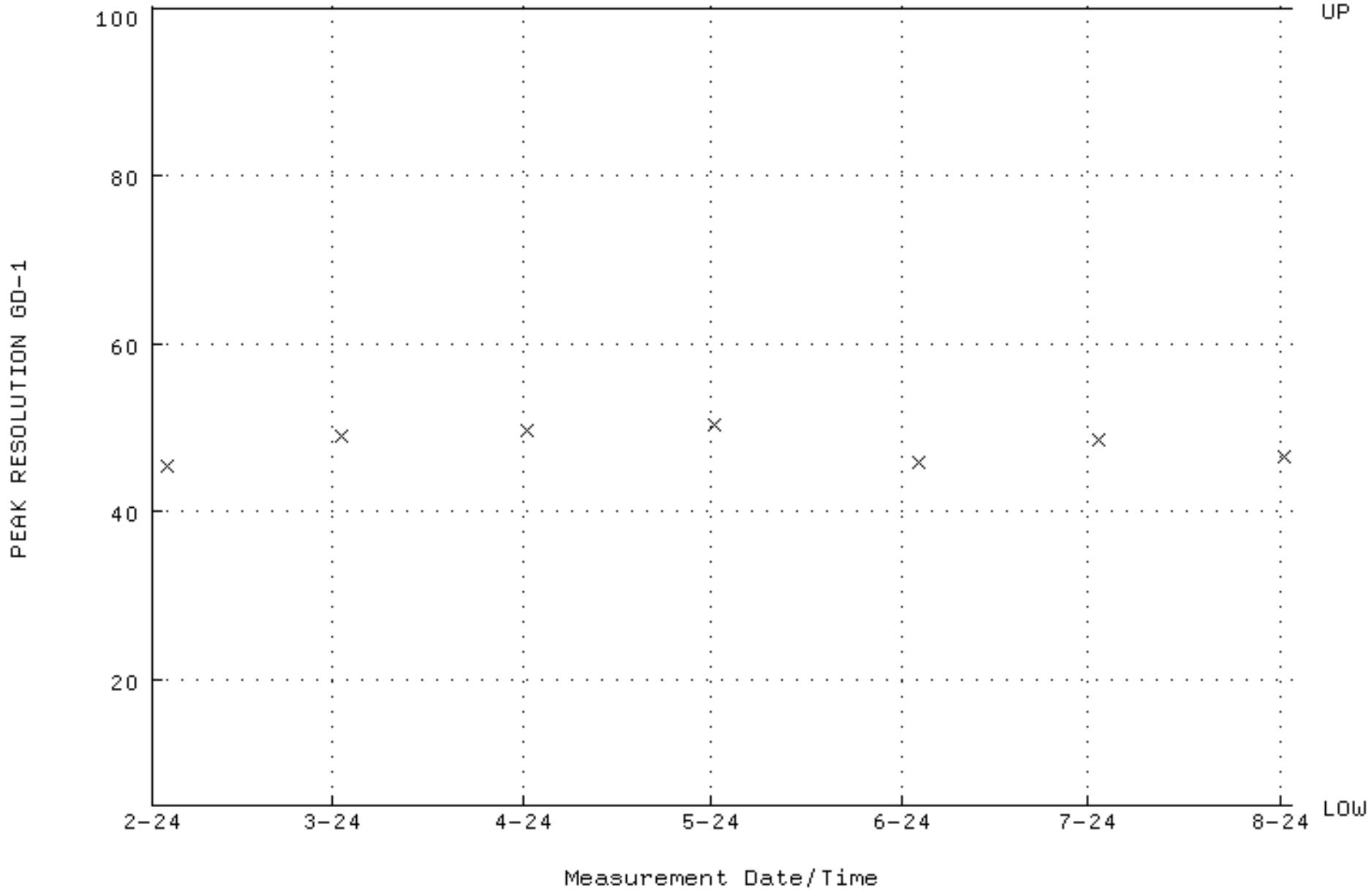
QA filename : DKA100:[ENV_ALPHA.QA.W]W014.QAF;8
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.329580 through 0.349960



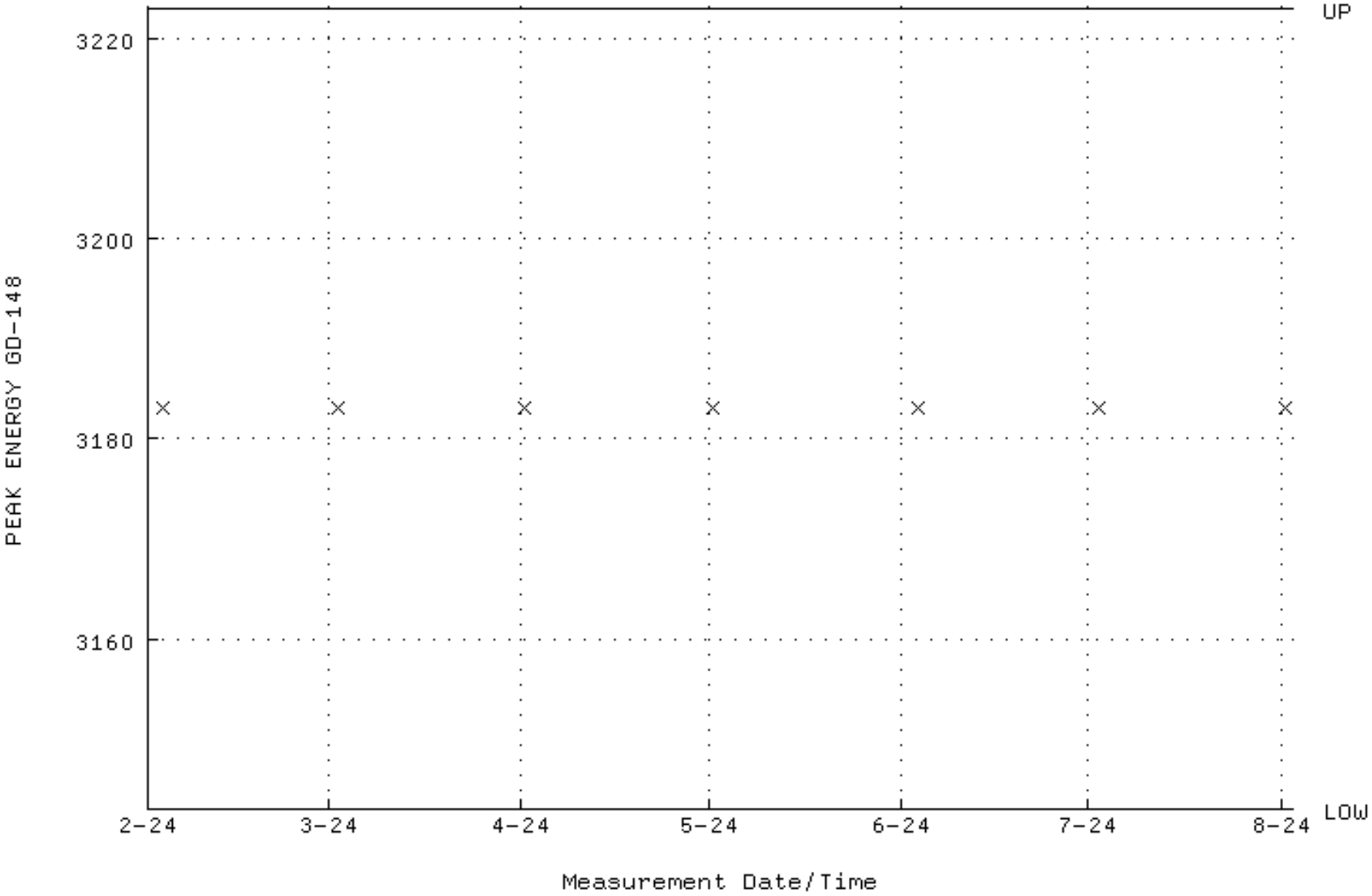
QA filename : DKA100:[ENV_ALPHA.QA.W]W014.QAF;8
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



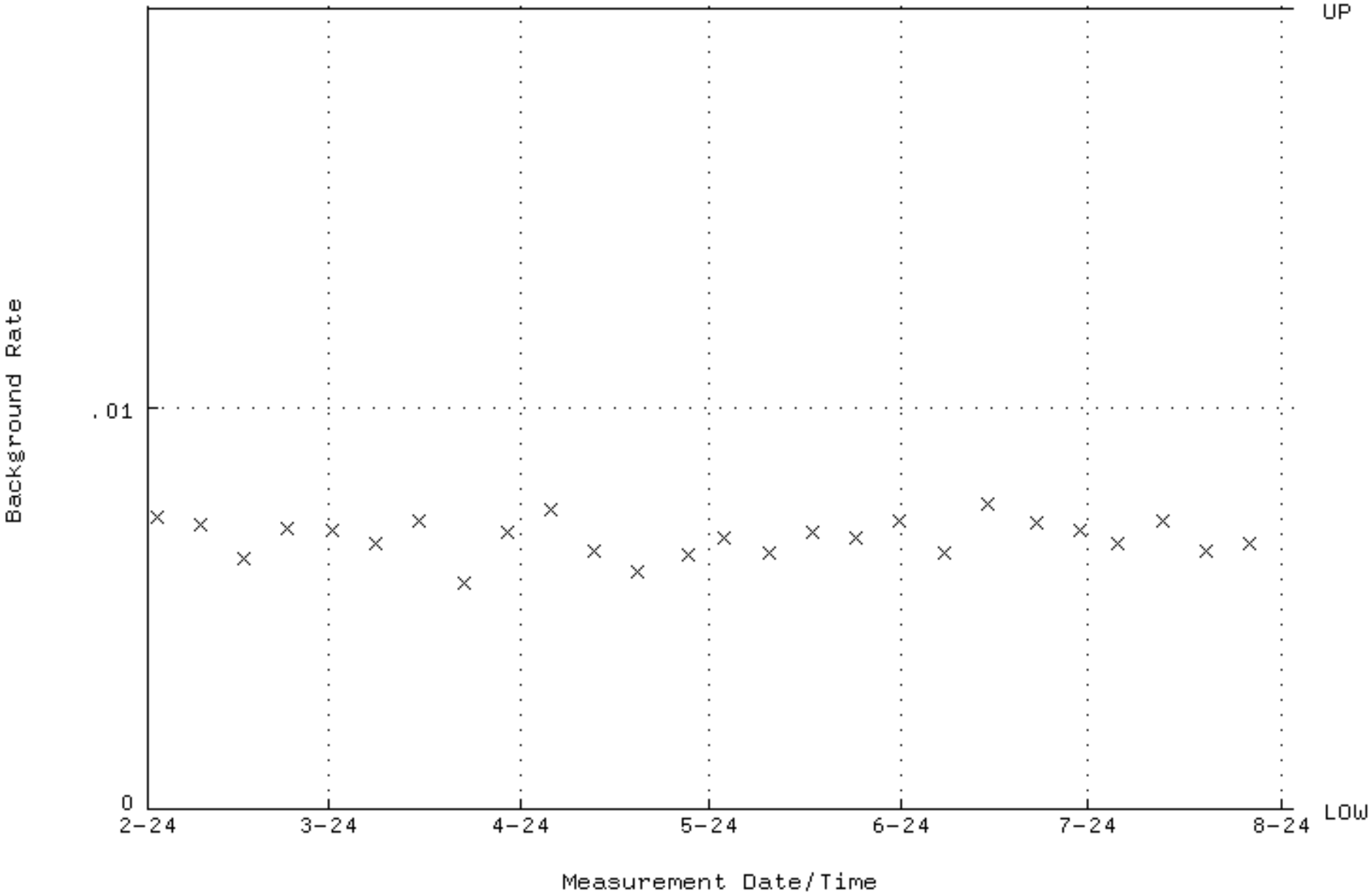
QA filename : DKA100:[ENV_ALPHA.QA.W]W014.QAF;8
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



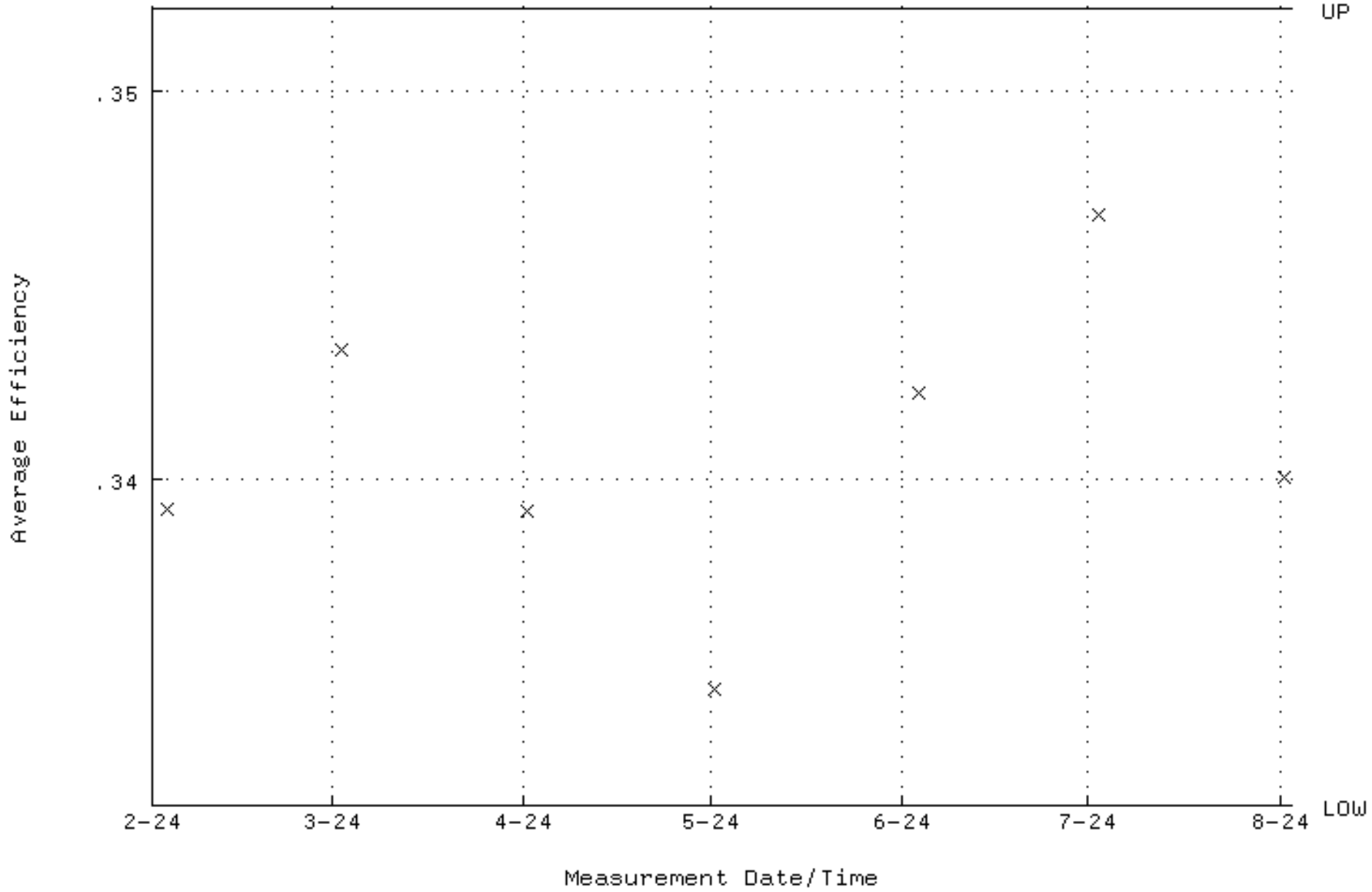
QA filename : DKA100:[ENV_ALPHA.QA.W]W014.QAF;8
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



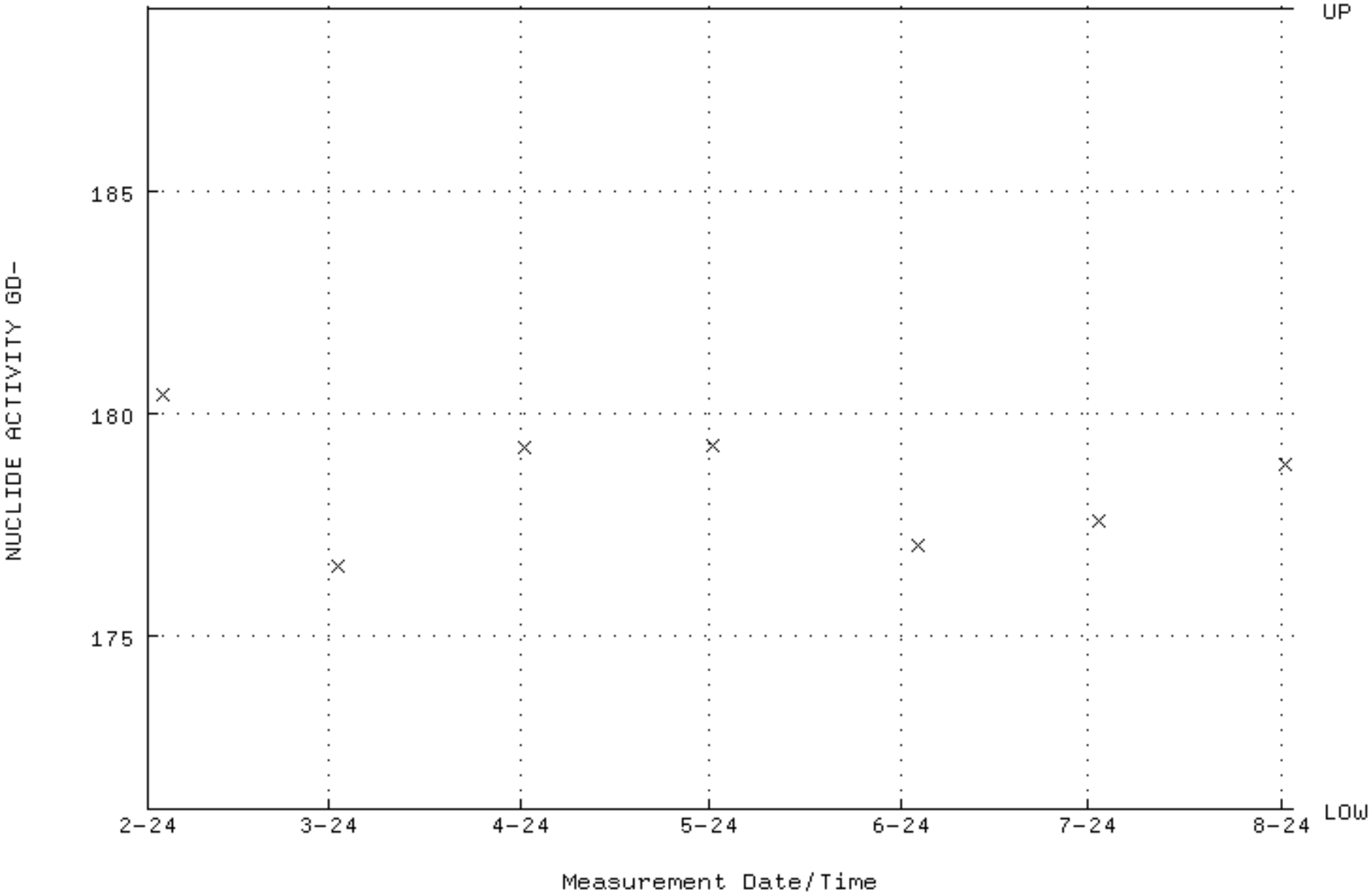
QA filename : DKA100:[ENV_ALPHA.QA.B]B014.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:20 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



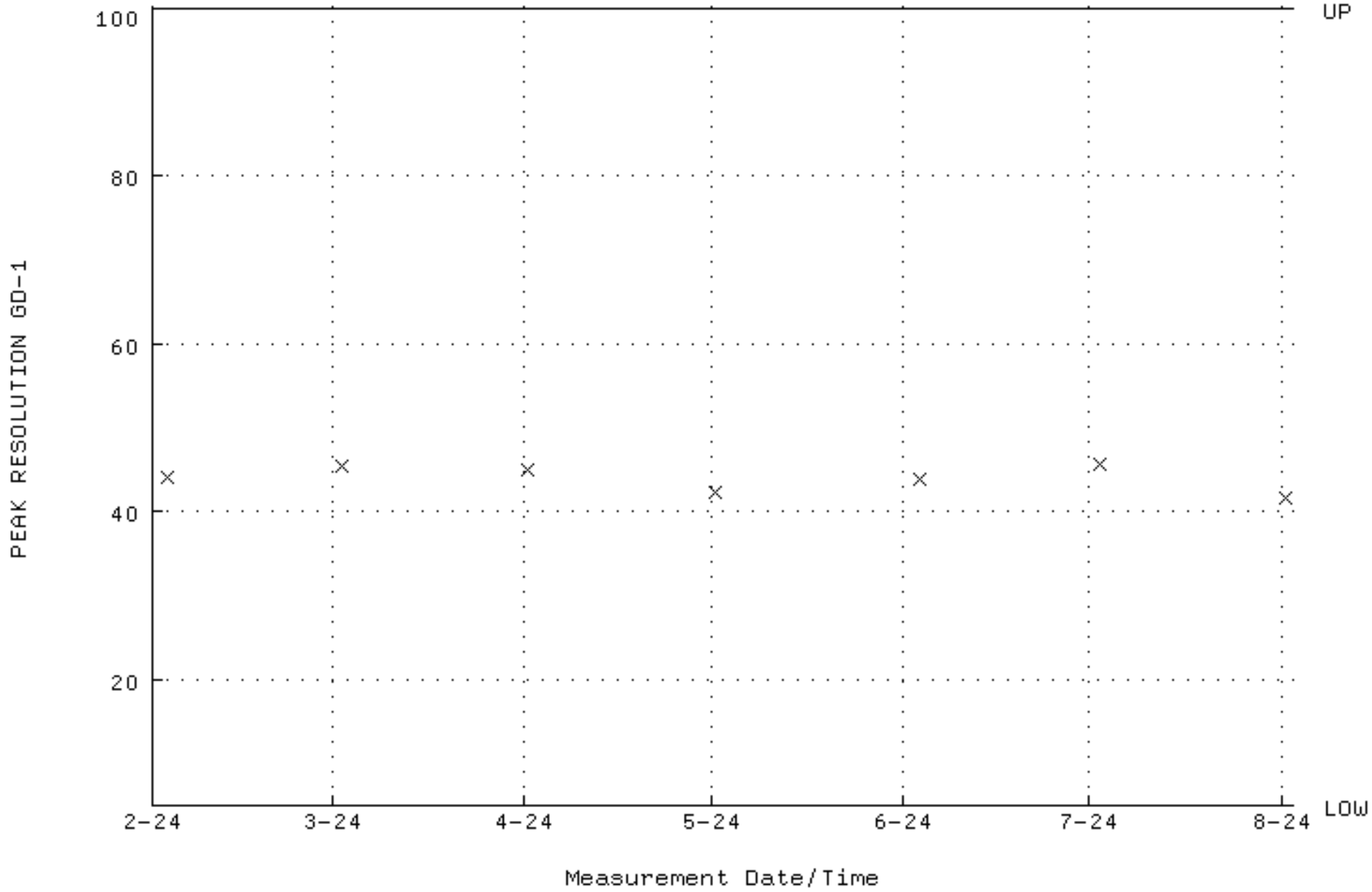
QA filename : DKA100:[ENV_ALPHA.QA.W]W015.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.331590 through 0.352103



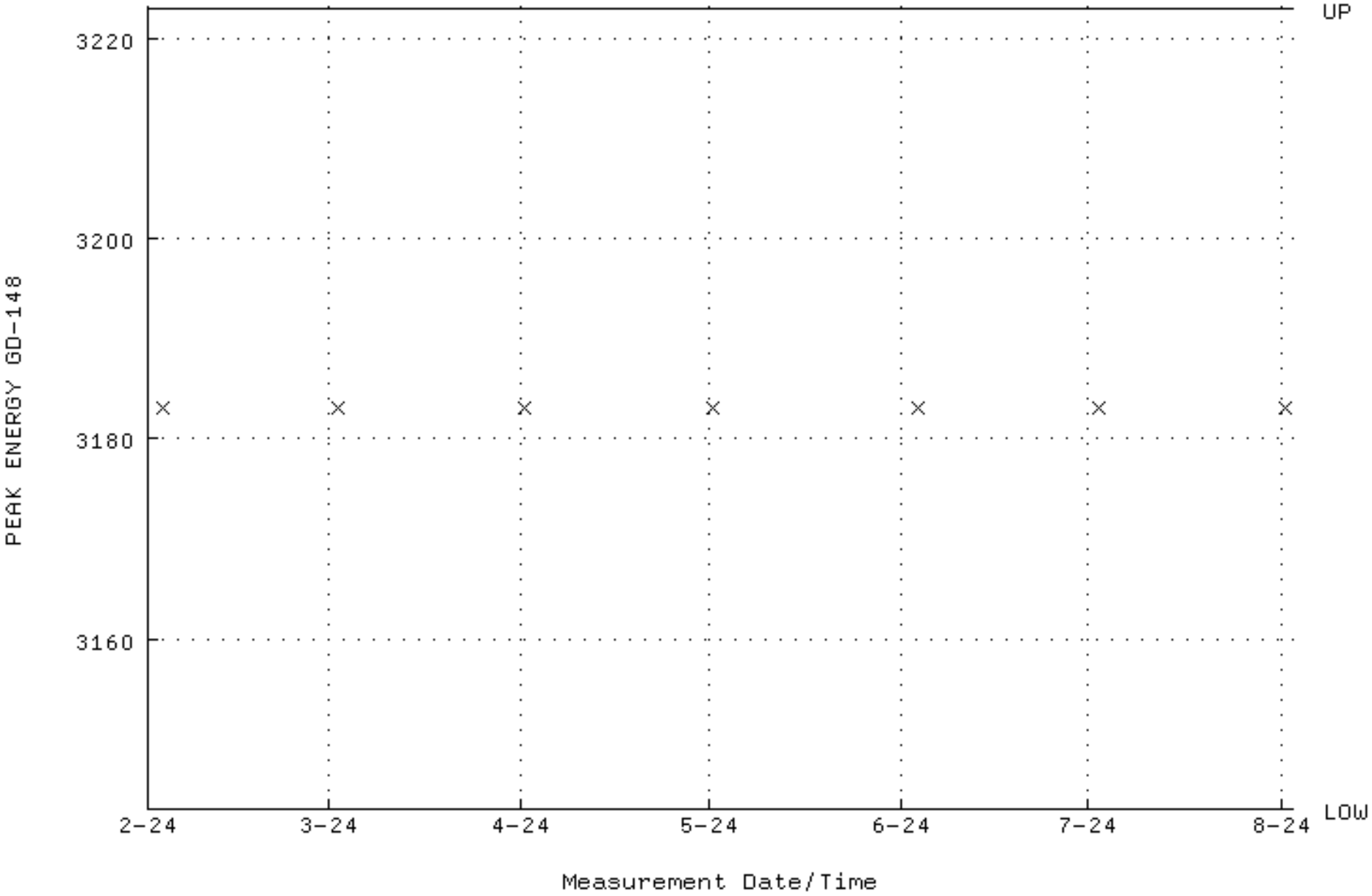
QA filename : DKA100:[ENV_ALPHA.QA.W]W015.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



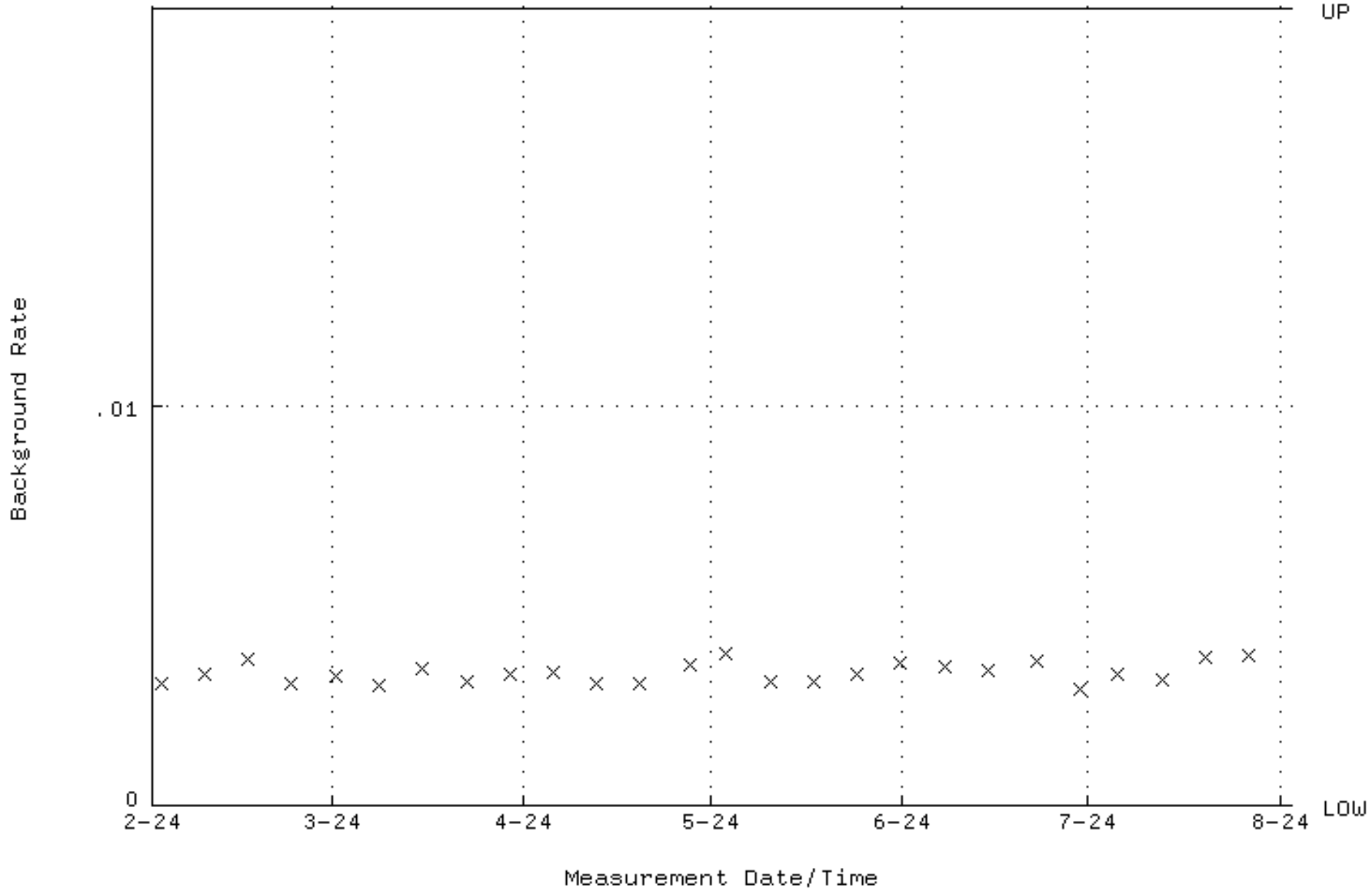
QA filename : DKA100:[ENV_ALPHA.QA.W]W015.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



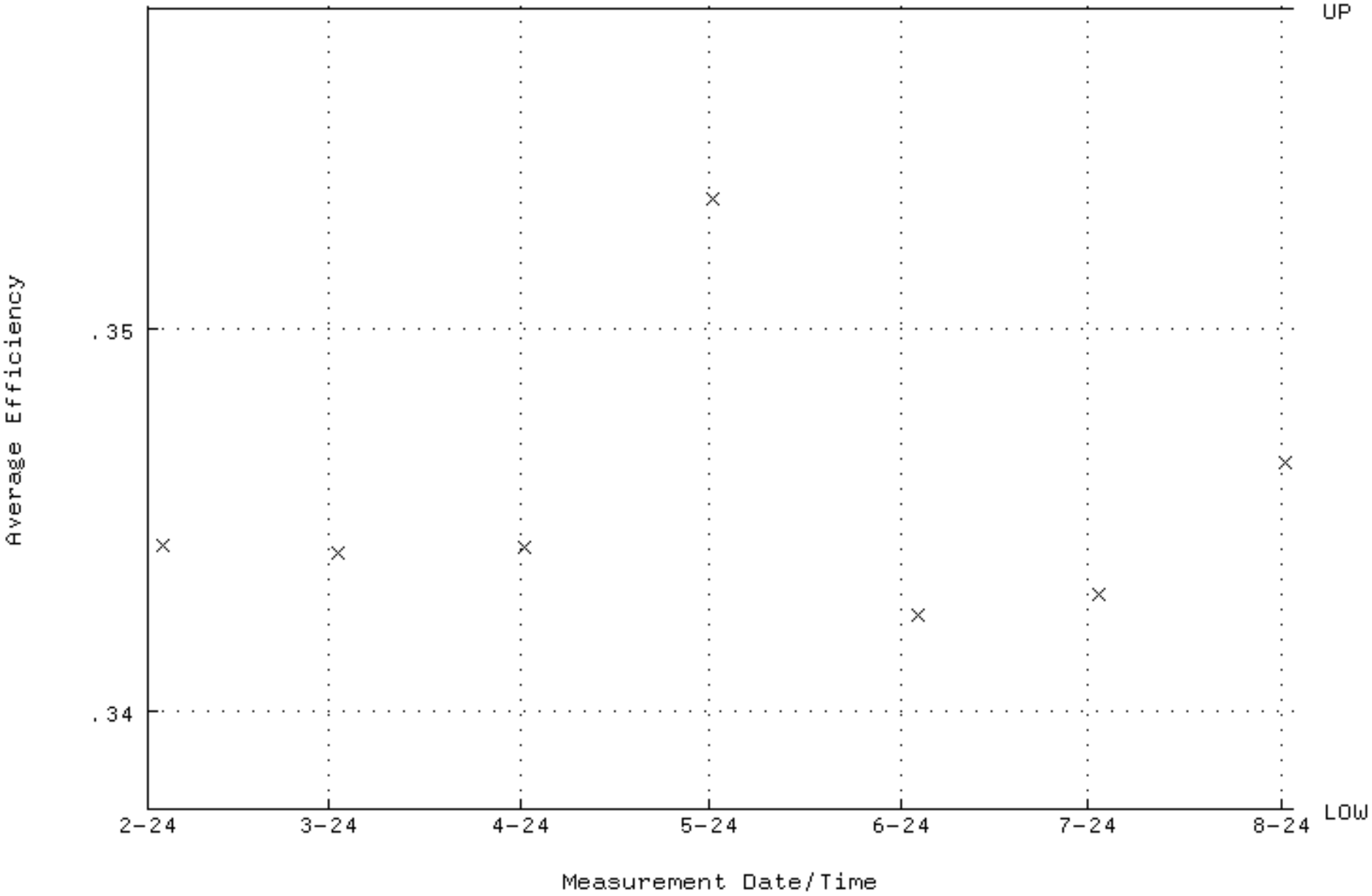
QA filename : DKA100:[ENV_ALPHA.QA.W]W015.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



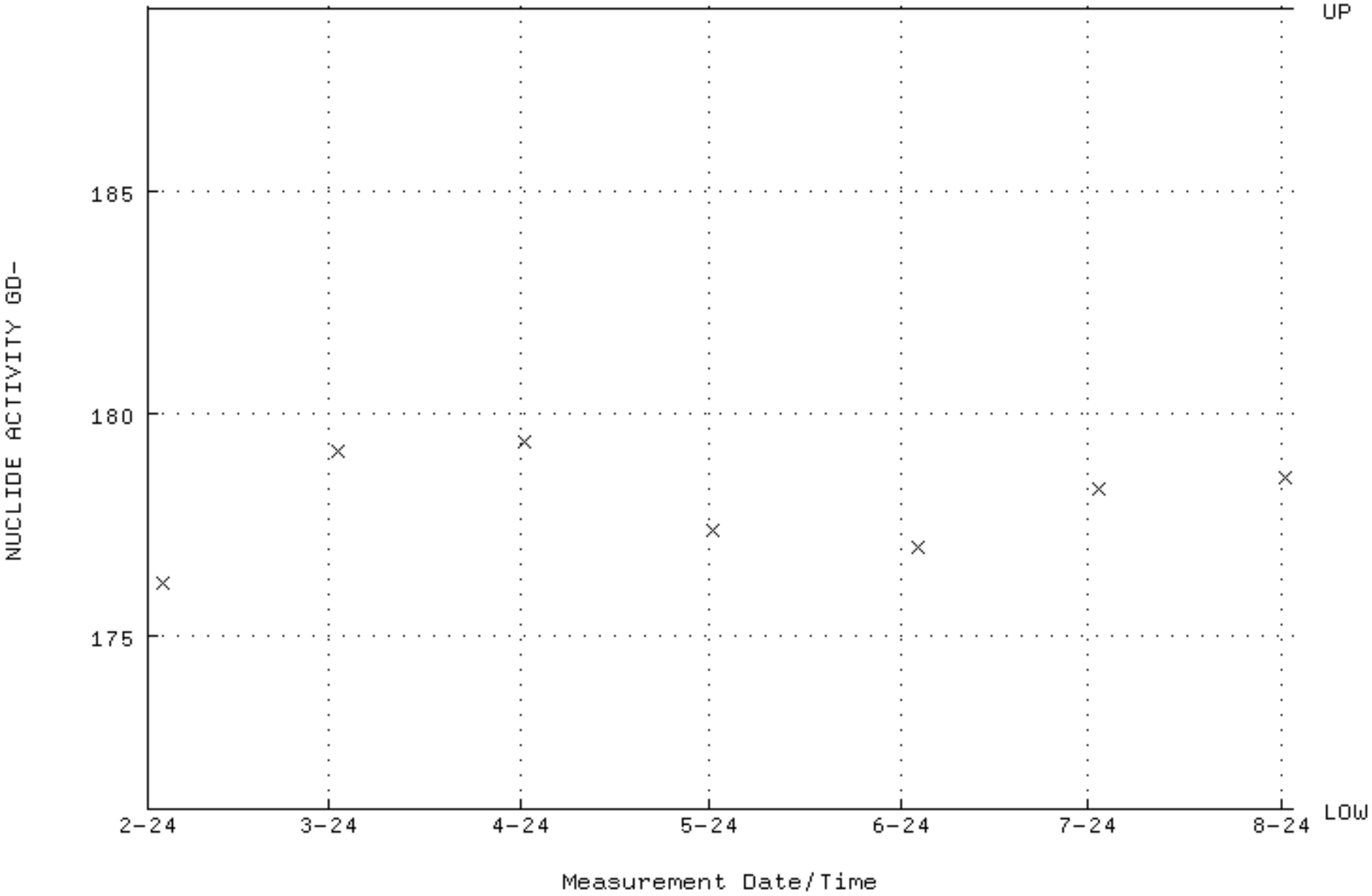
QA filename : DKA100:[ENV_ALPHA.QA.B]B015.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:20 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



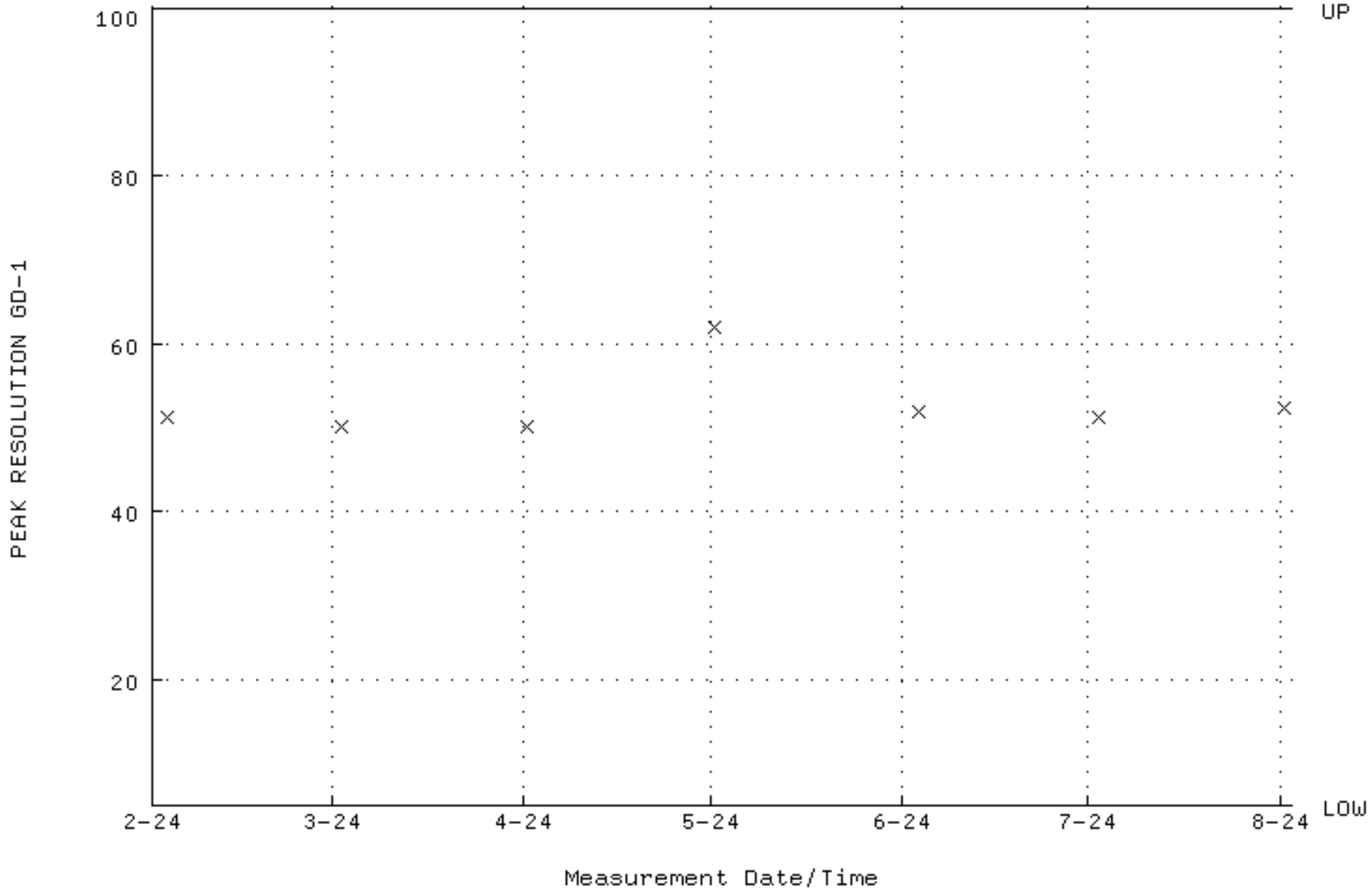
QA filename : DKA100:[ENV_ALPHA.QA.W]W016.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.337470 through 0.358340



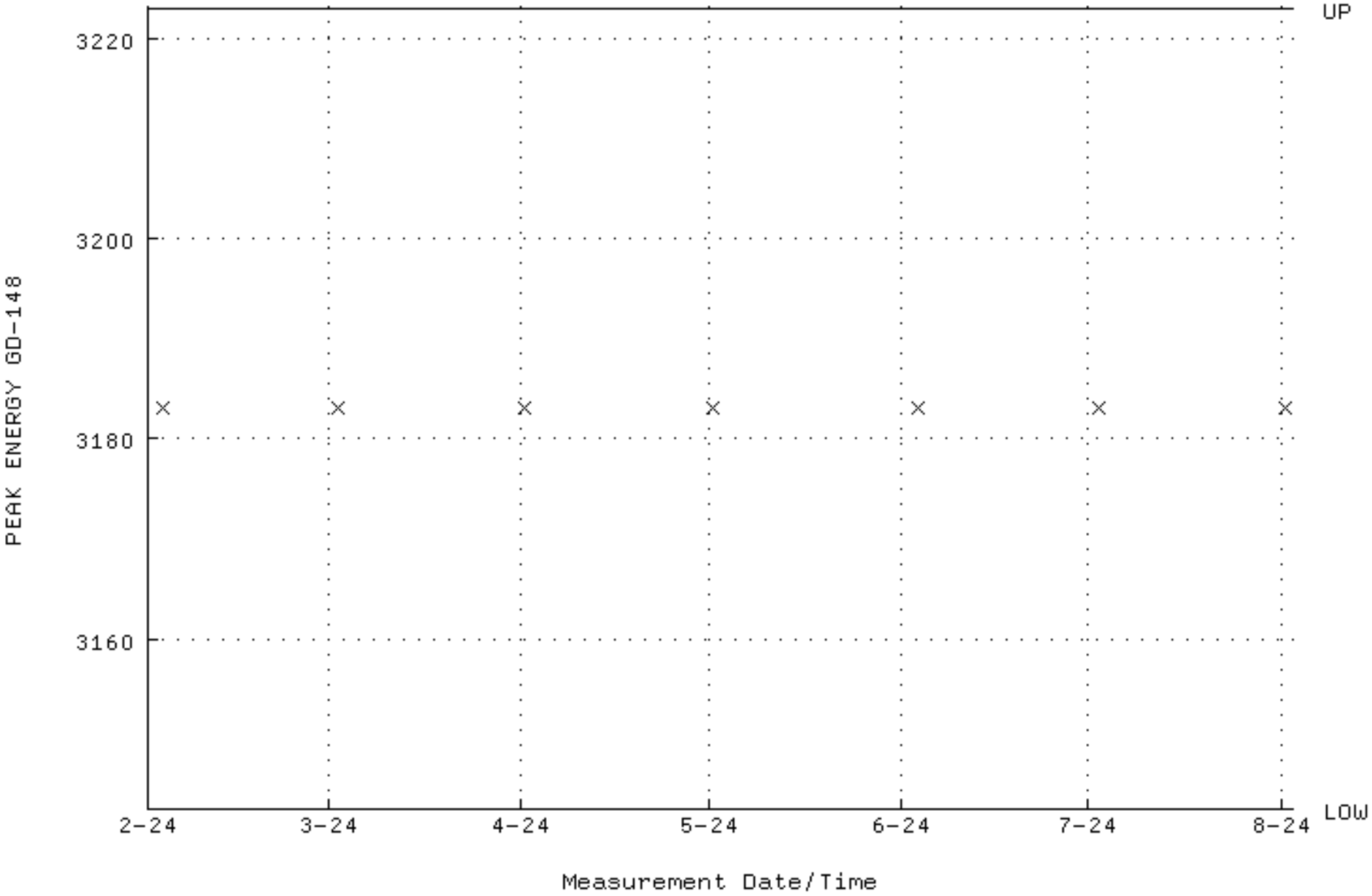
QA filename : DKA100:[ENV_ALPHA.QA.W]W016.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



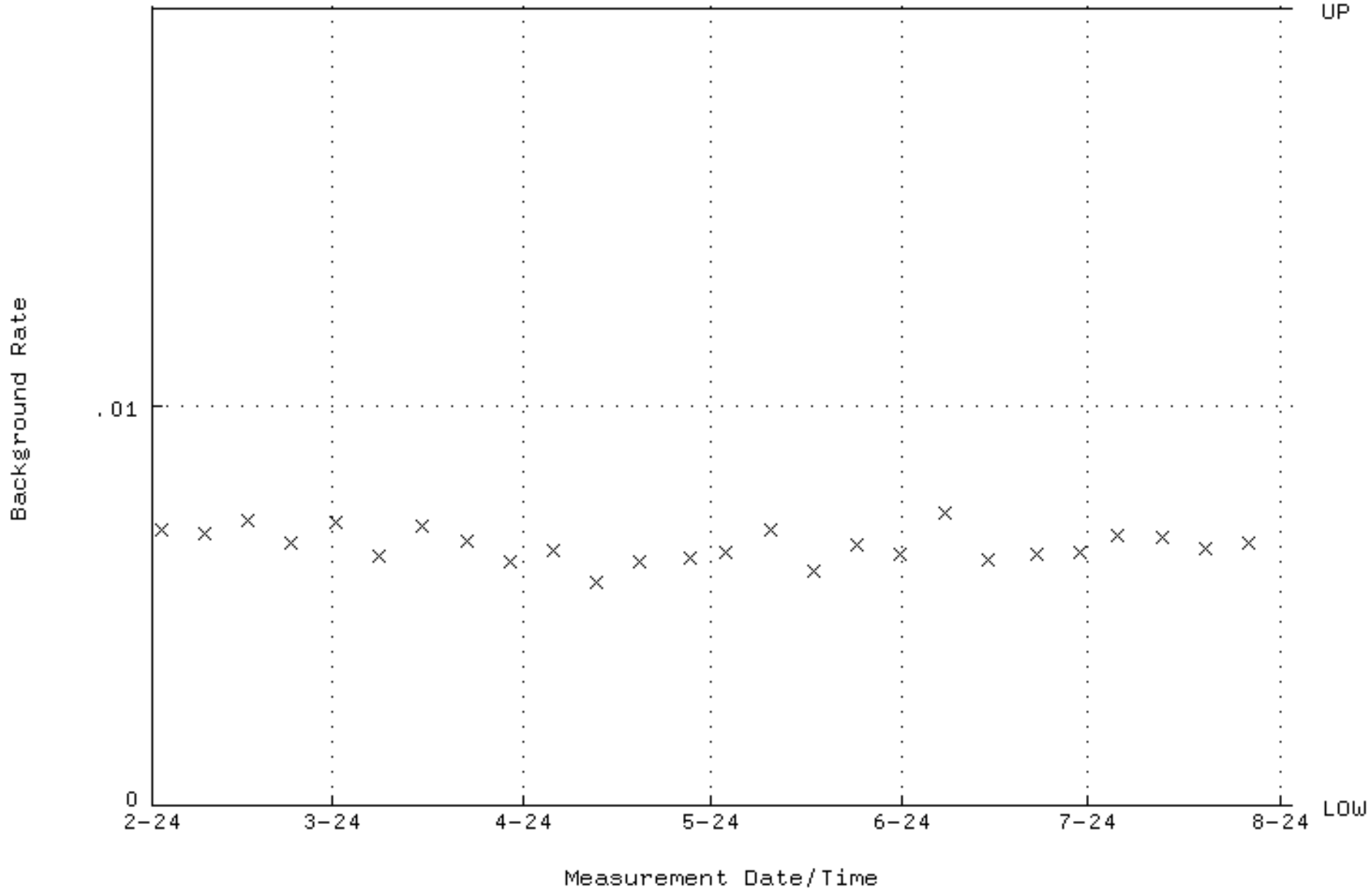
QA filename : DKA100:[ENV_ALPHA.QA.W]W016.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



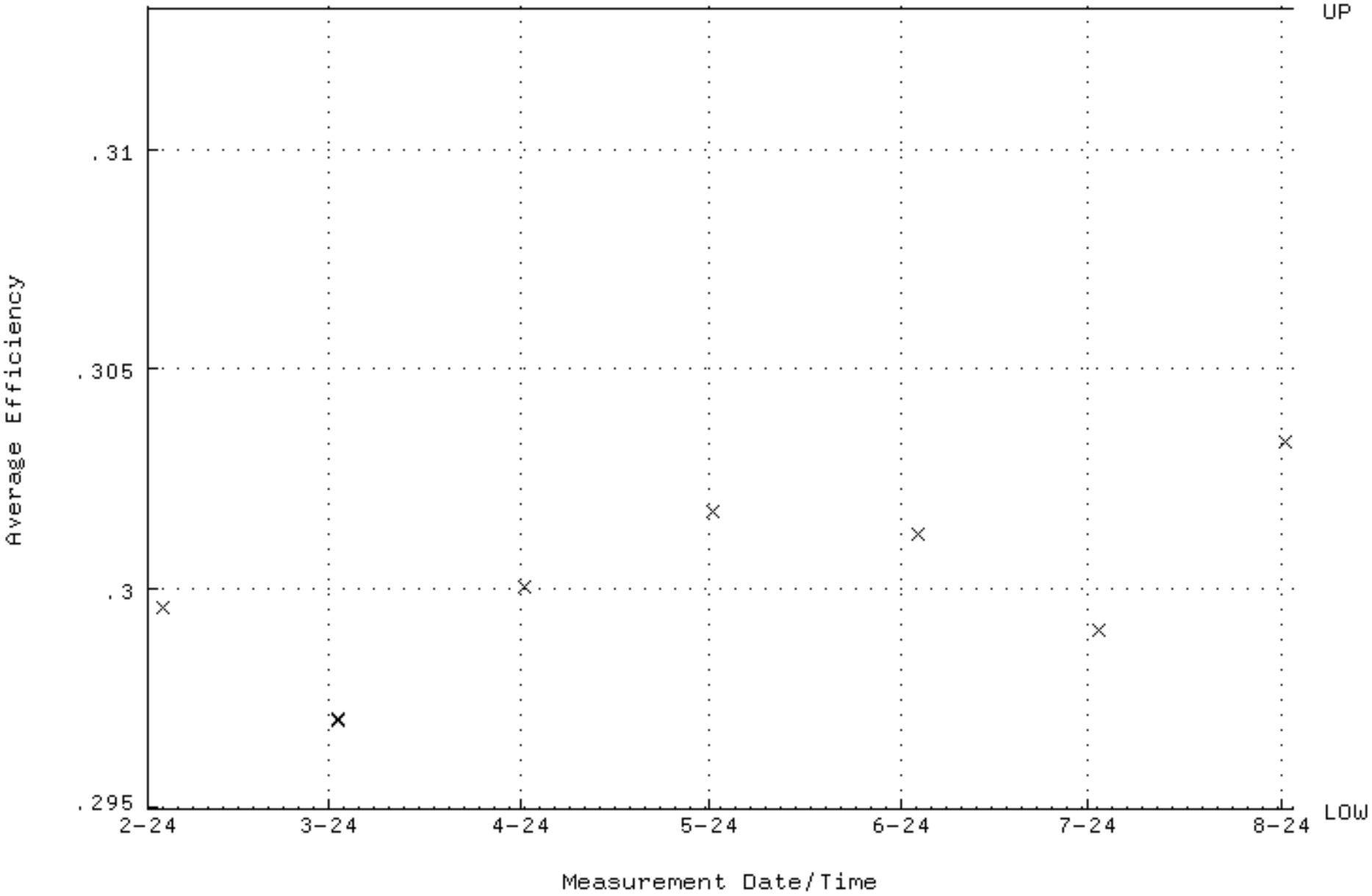
QA filename : DKA100:[ENV_ALPHA.QA.W]W016.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



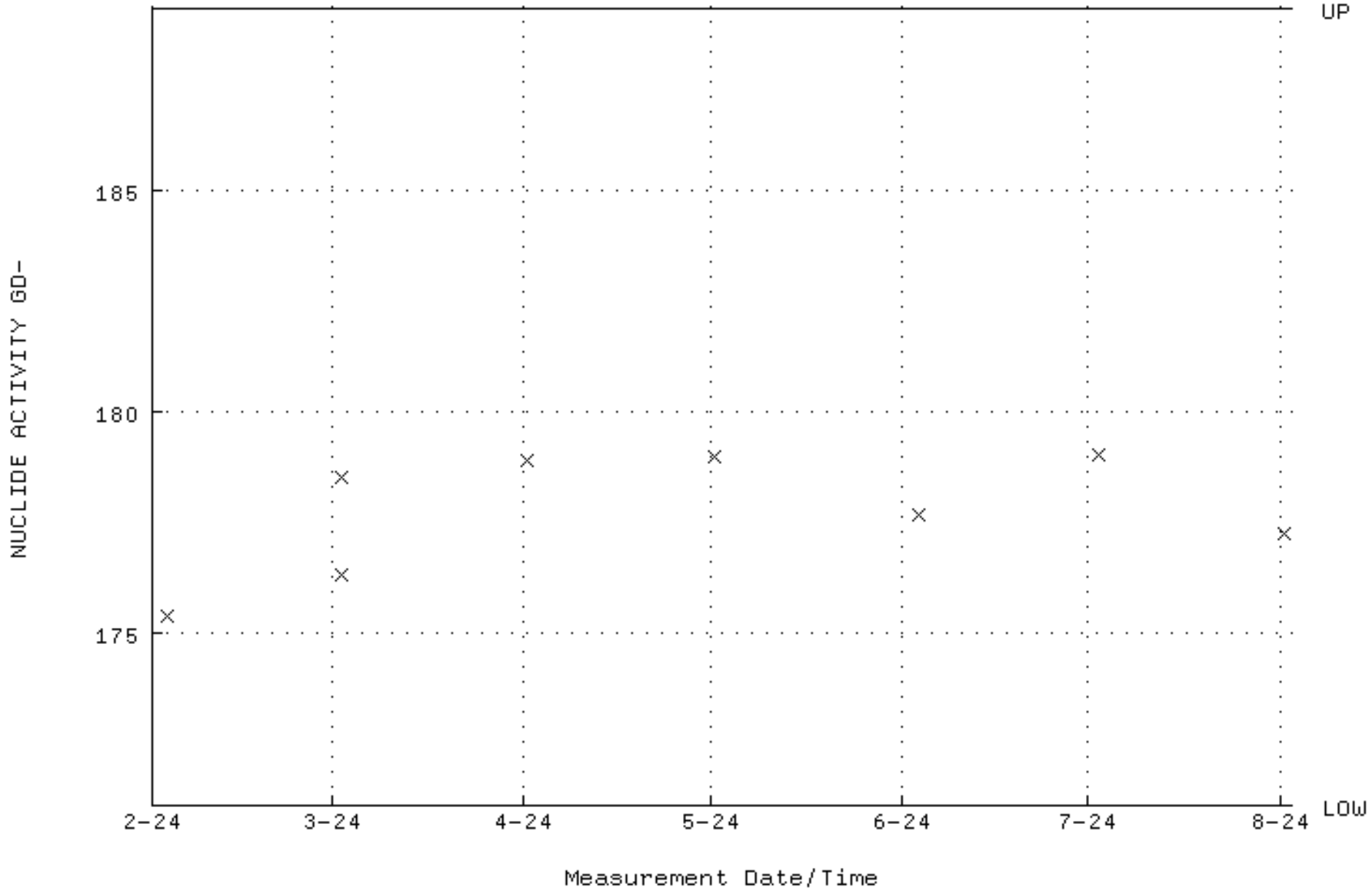
QA filename : DKA100:[ENV_ALPHA.QA.B]B016.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:20 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



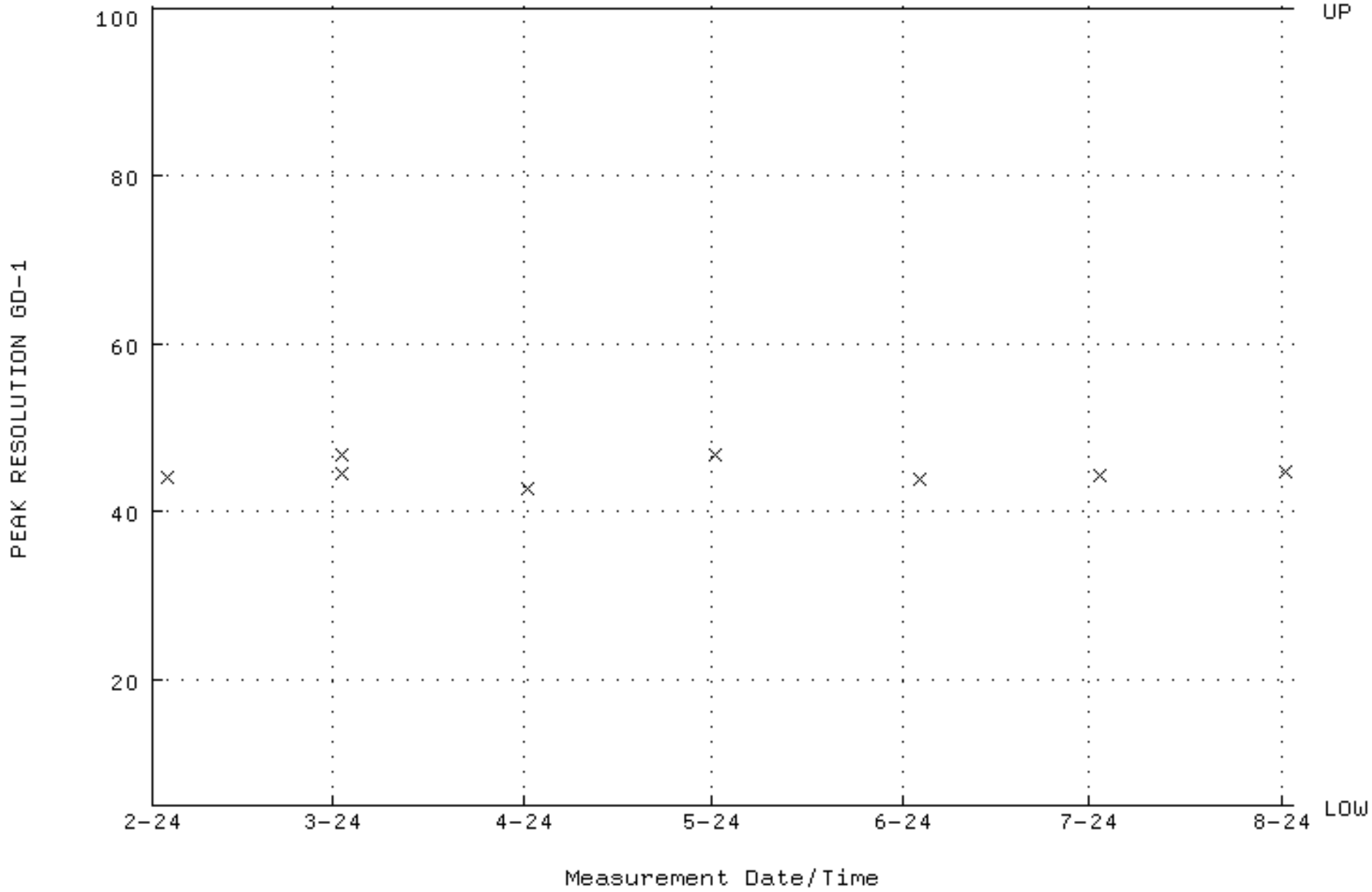
QA filename : DKA100:[ENV_ALPHA.QA.W]W017.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.294960 through 0.313204



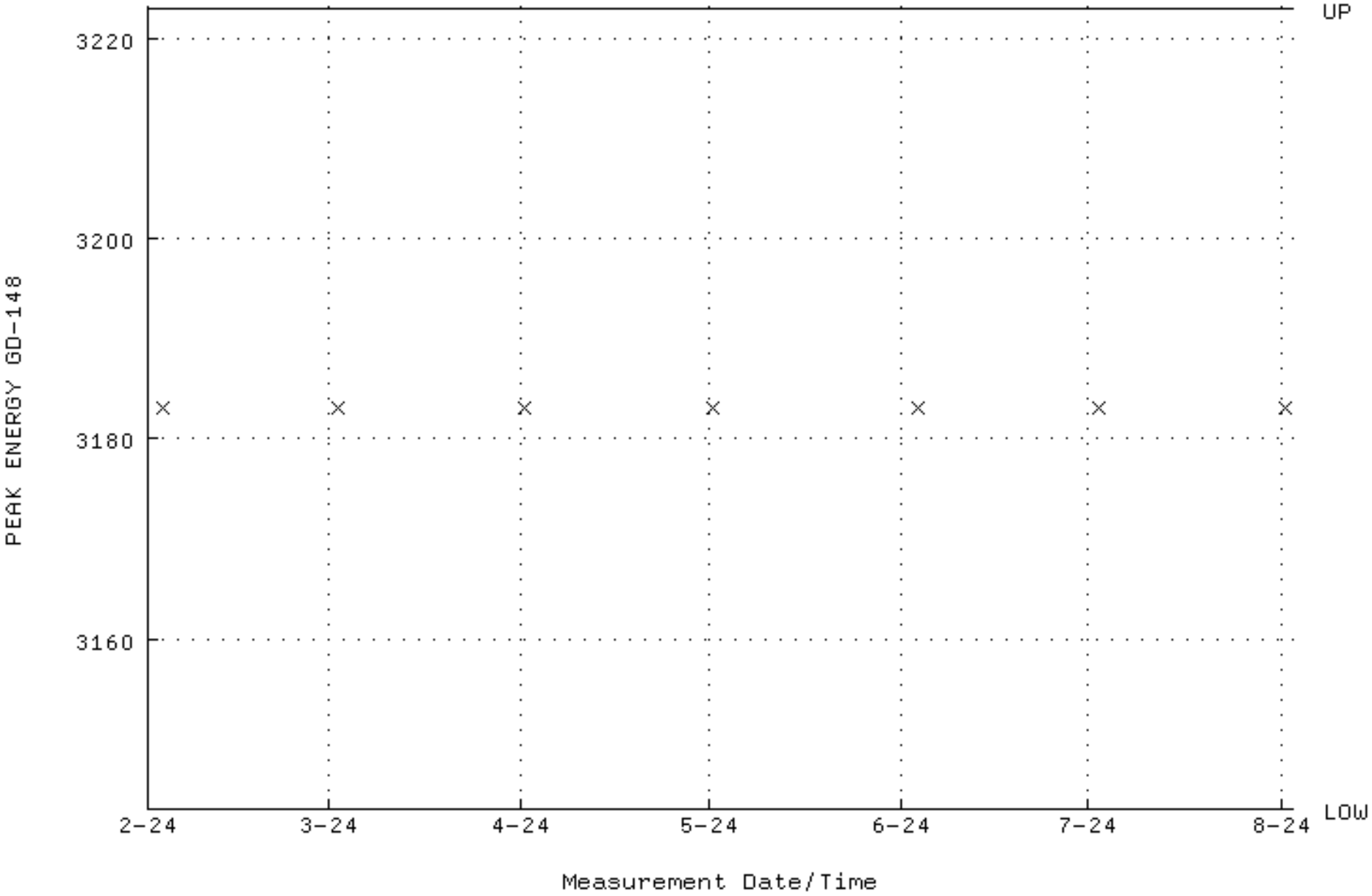
QA filename : DKA100:[ENV_ALPHA.QA.W]W017.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



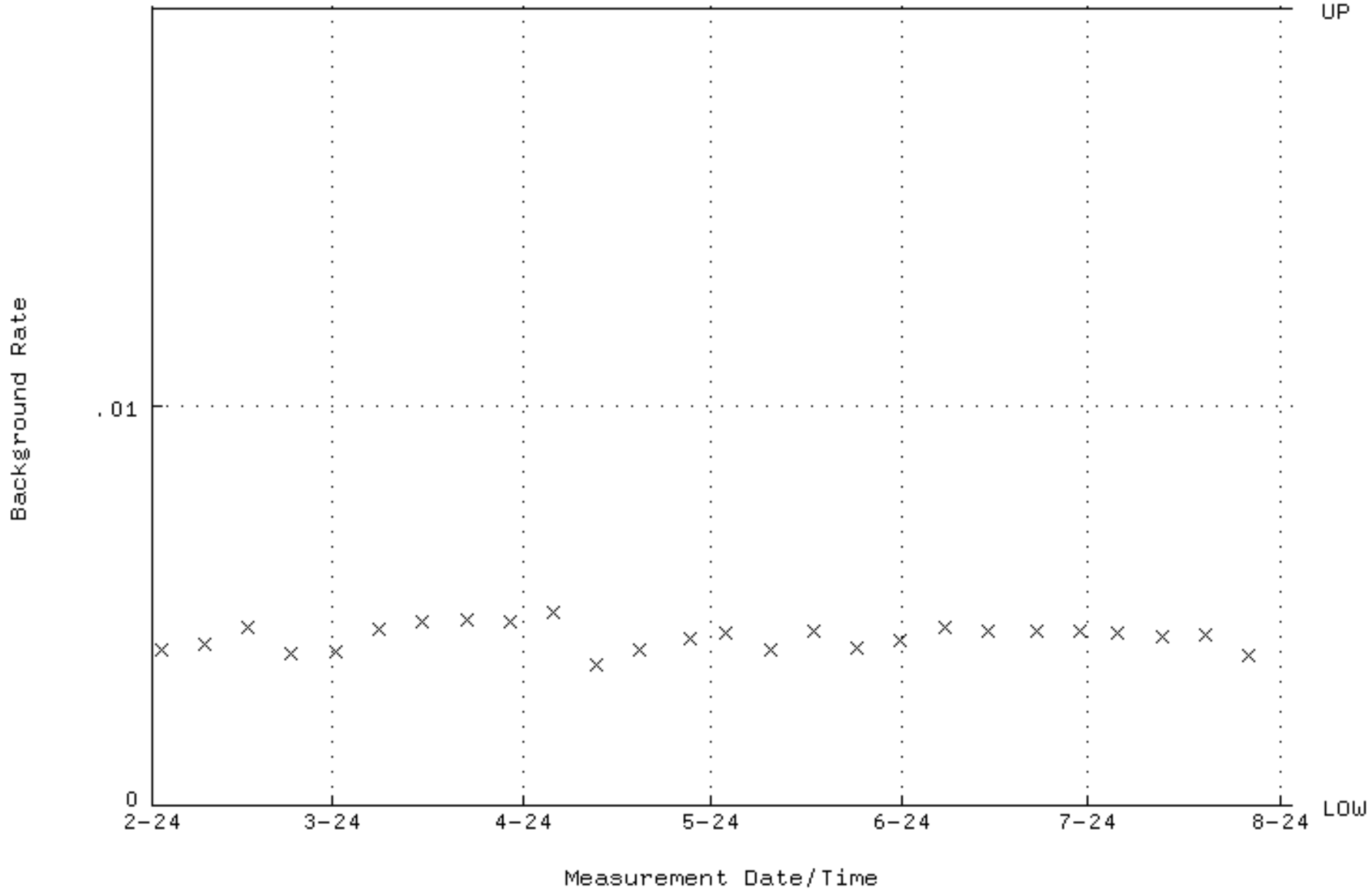
QA filename : DKA100:[ENV_ALPHA.QA.W]W017.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



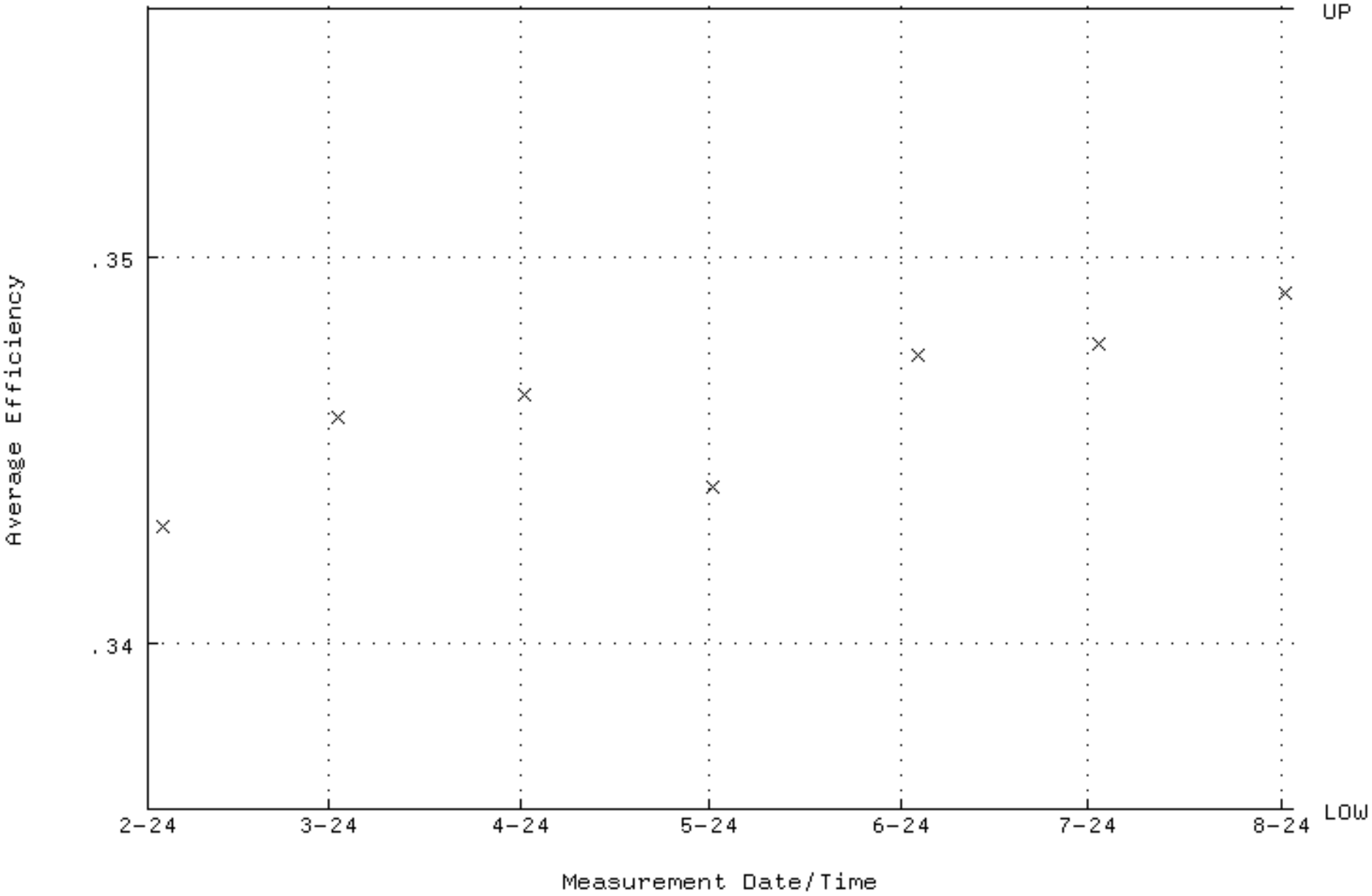
QA filename : DKA100:[ENV_ALPHA.QA.W]W017.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



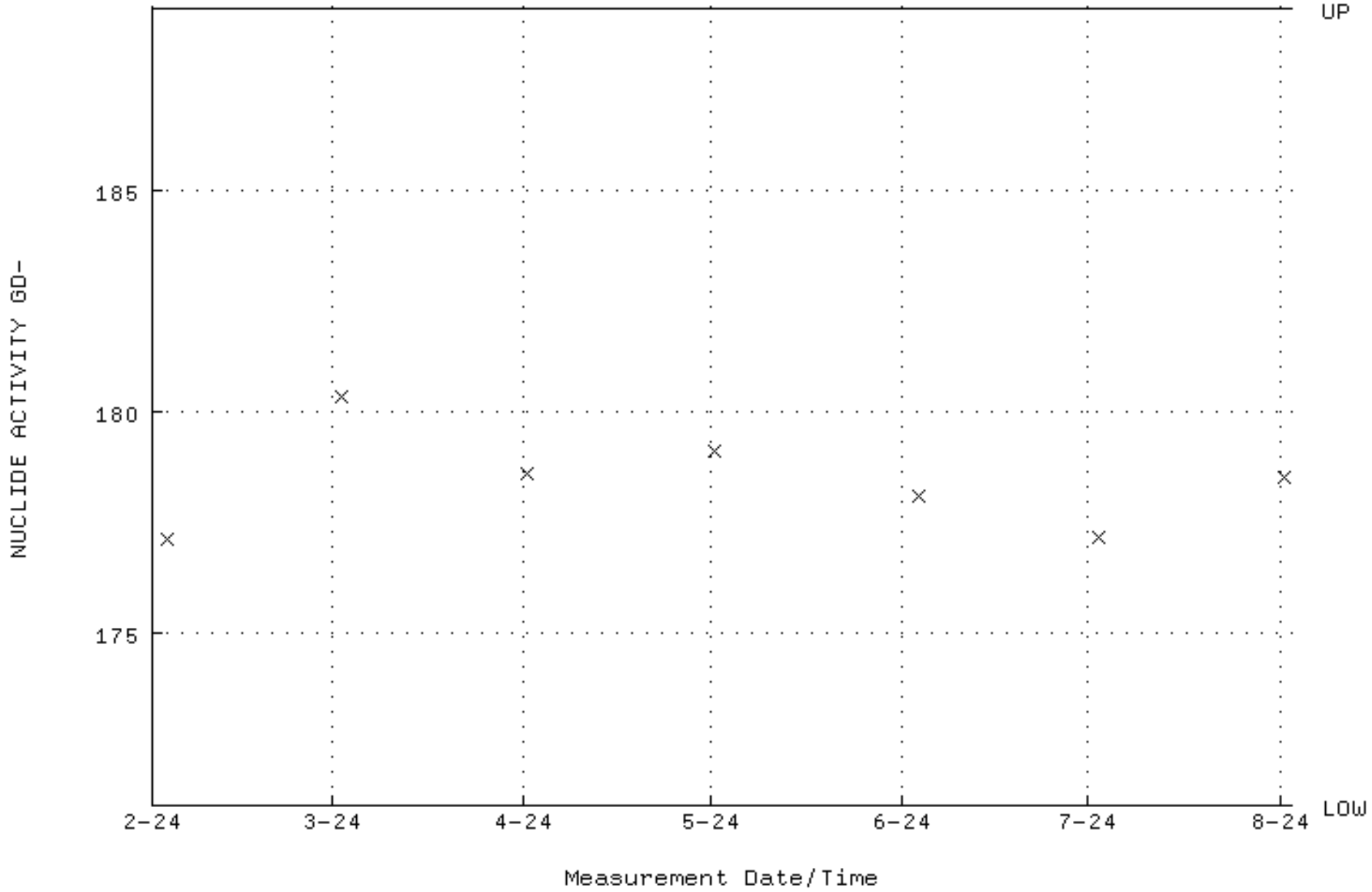
QA filename : DKA100:[ENV_ALPHA.QA.B]B017.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:20 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



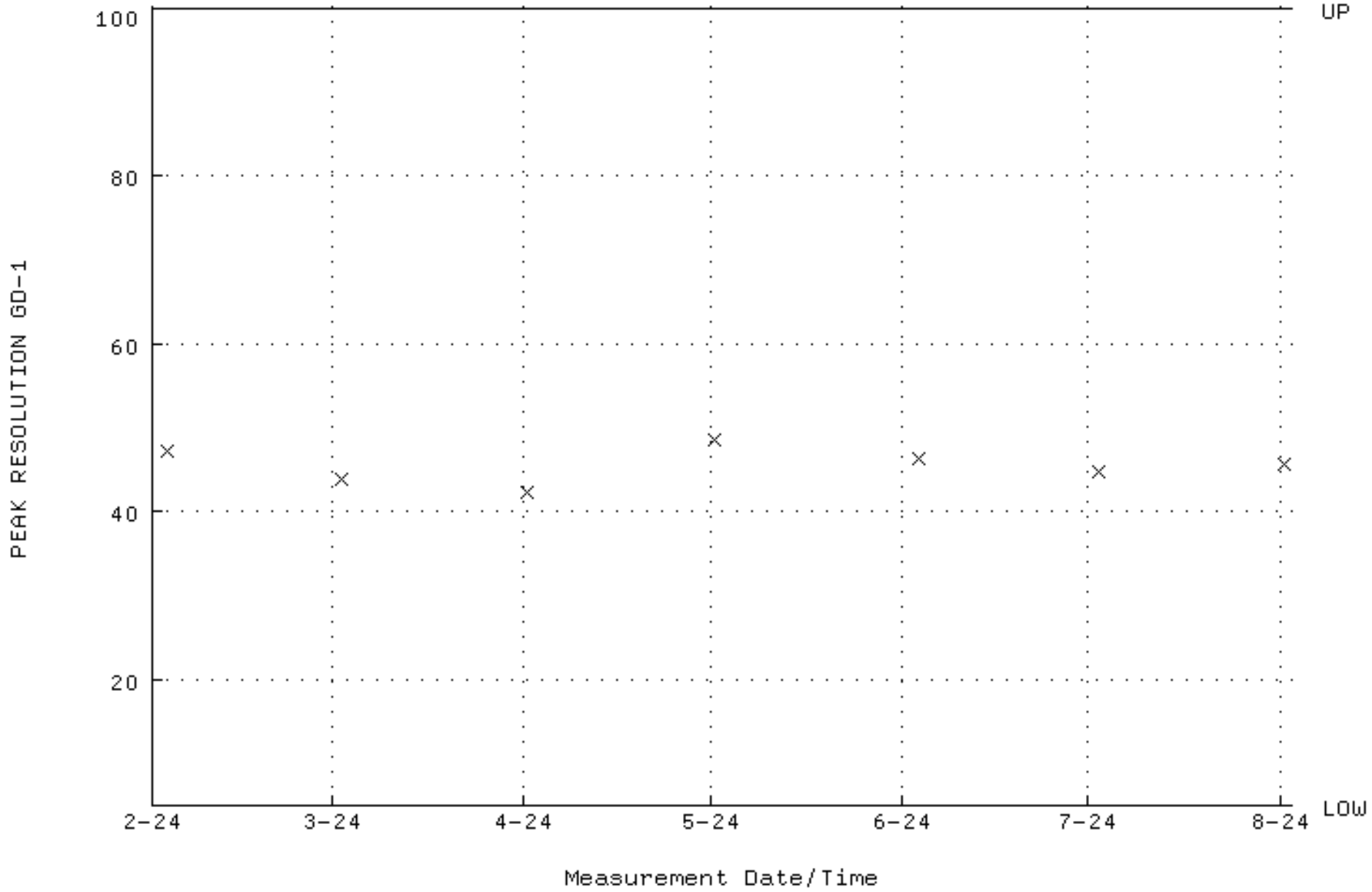
QA filename : DKA100:[ENV_ALPHA.QA.W]W018.QAF;5
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.335696 through 0.356460



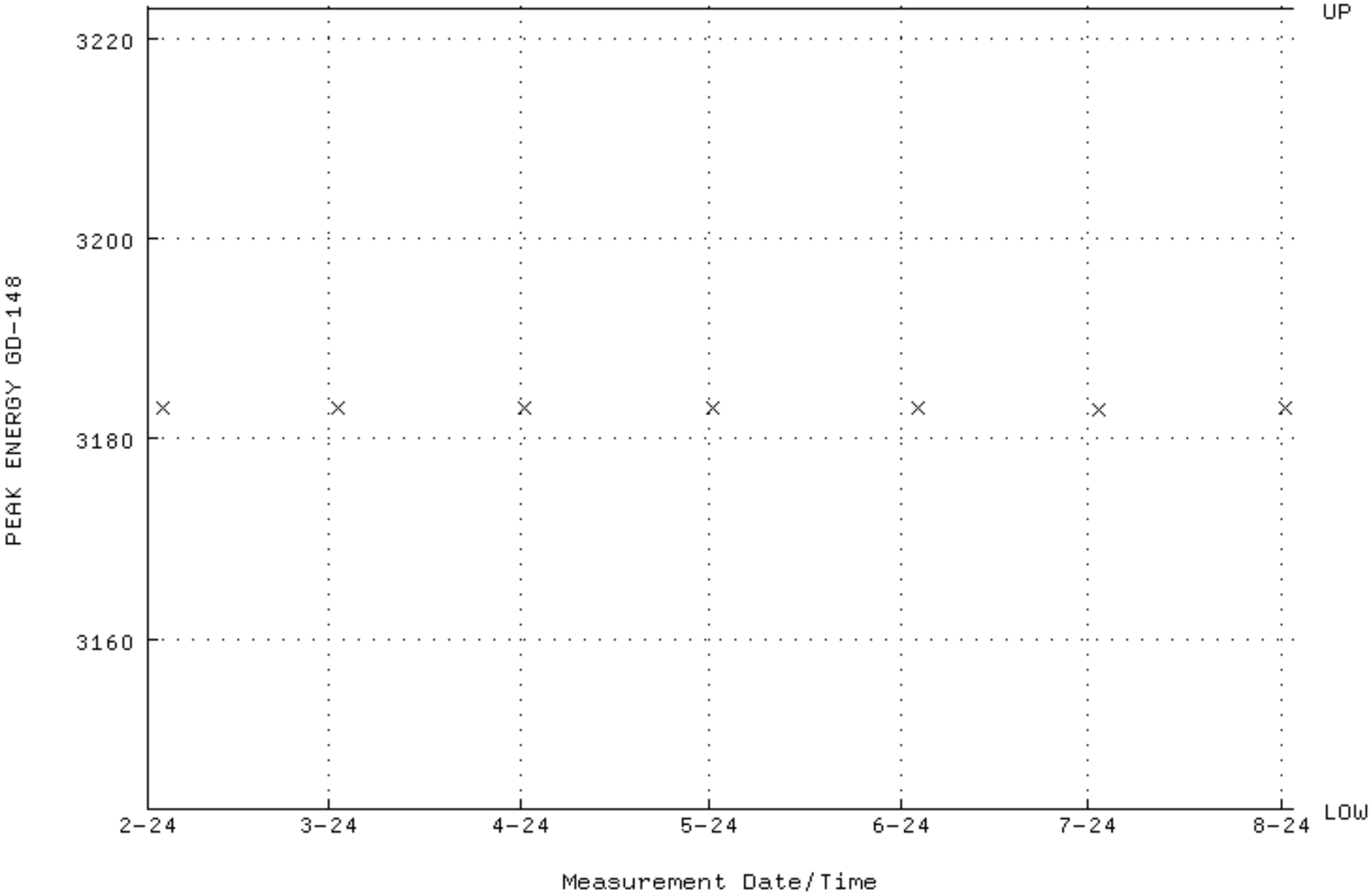
QA filename : DKA100:[ENV_ALPHA.QA.W]W018.QAF;5
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



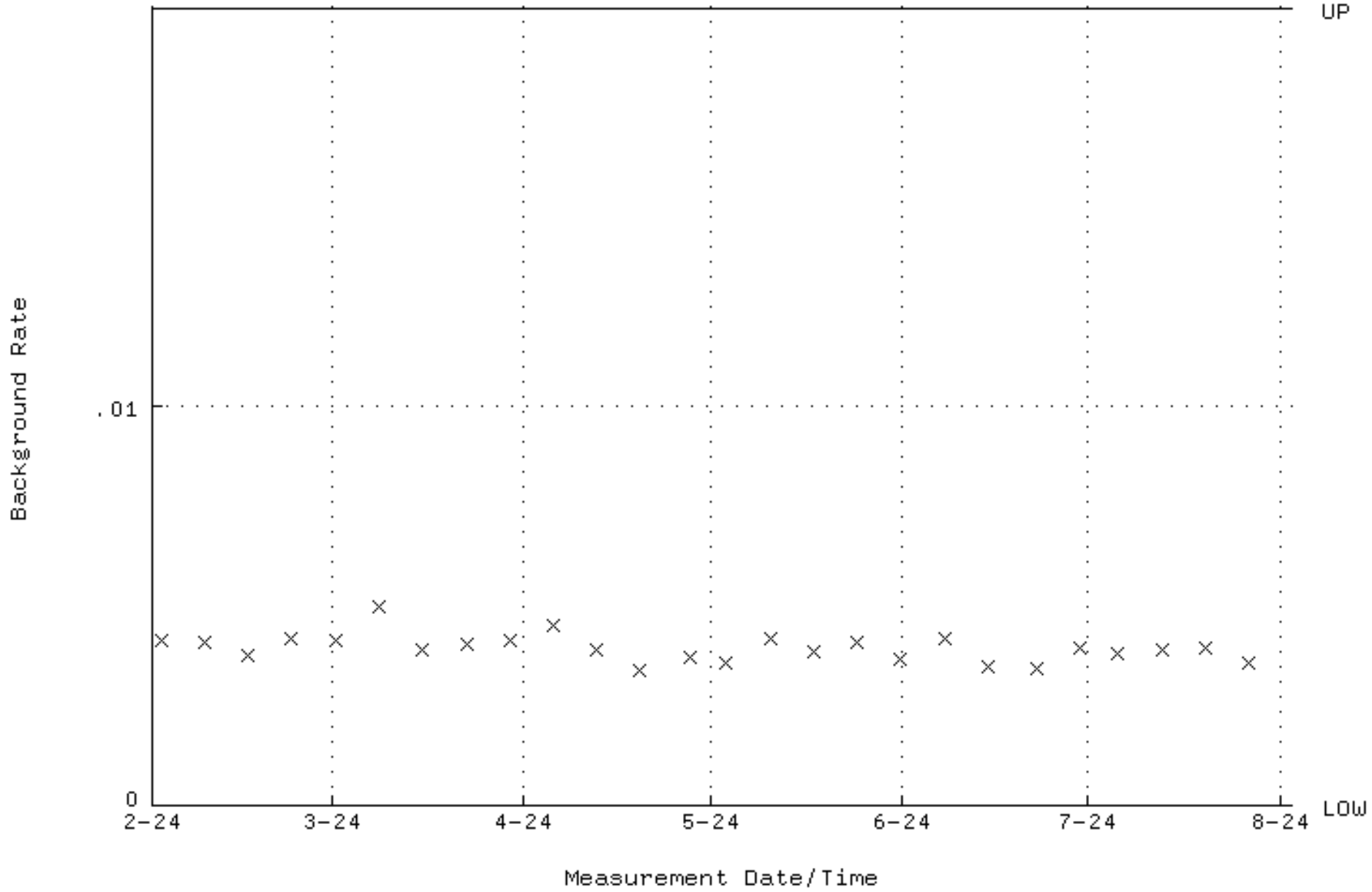
QA filename : DKA100:[ENV_ALPHA.QA.W]W018.QAF;5
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



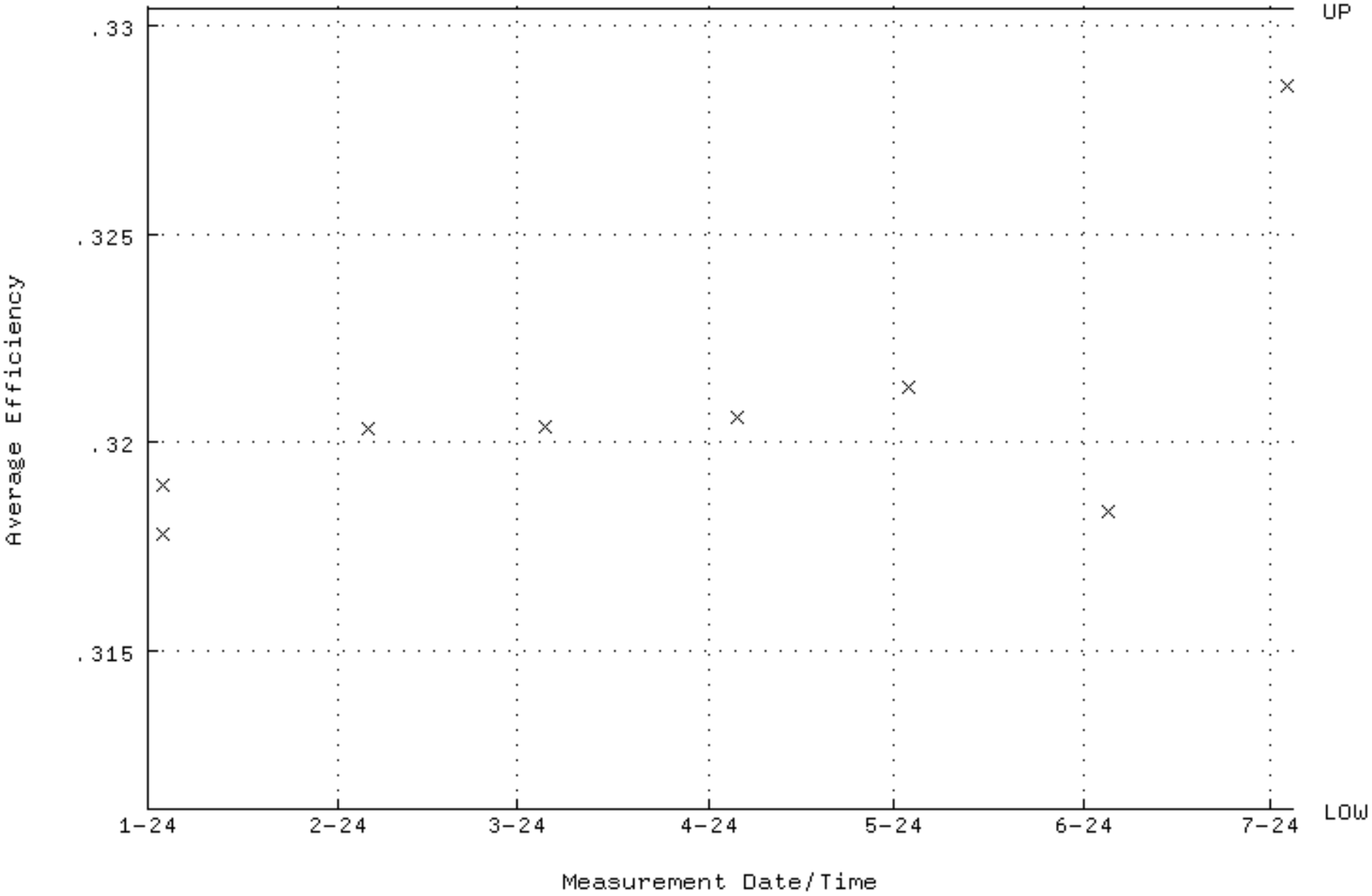
QA filename : DKA100:[ENV_ALPHA.QA.W]W018.QAF;5
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-FEB-2024 10:53:04 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



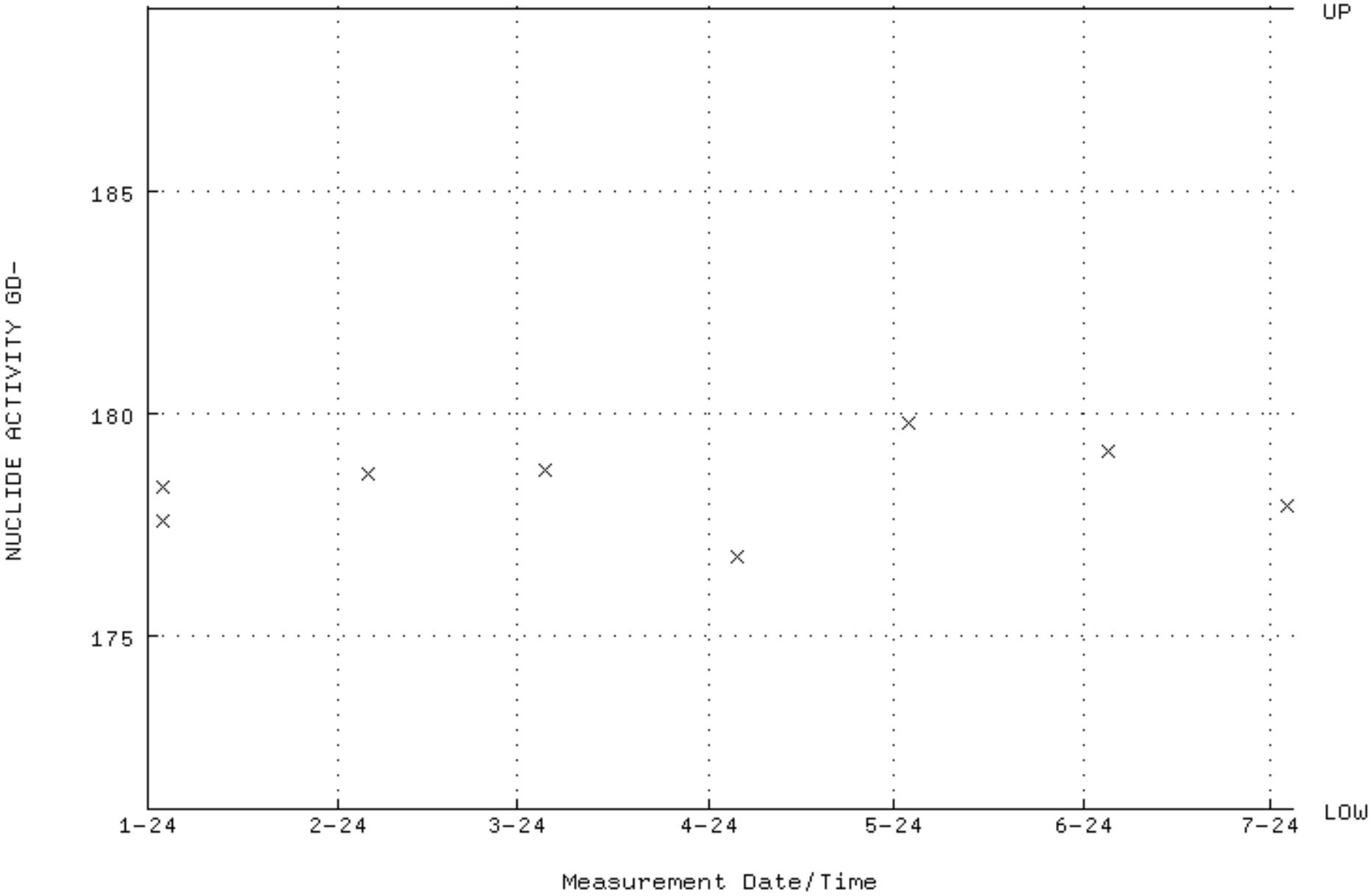
QA filename : DKA100:[ENV_ALPHA.QA.B]B018.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 2-FEB-2024 12:51:20 through 2-AUG-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



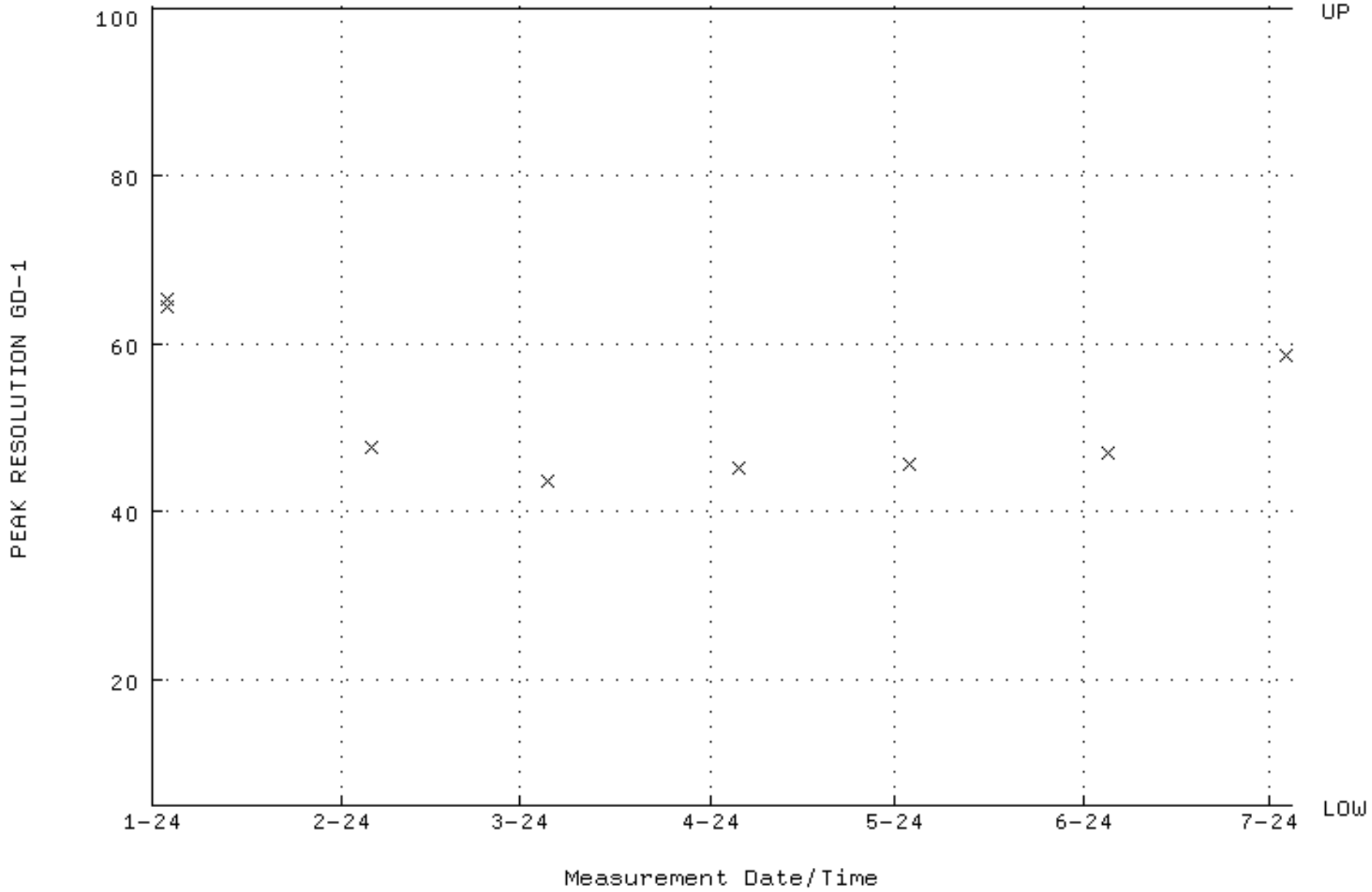
QA filename : DKA100:[ENV_ALPHA.QA.W]W031.QAF;8
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 0.311180 through 0.330420



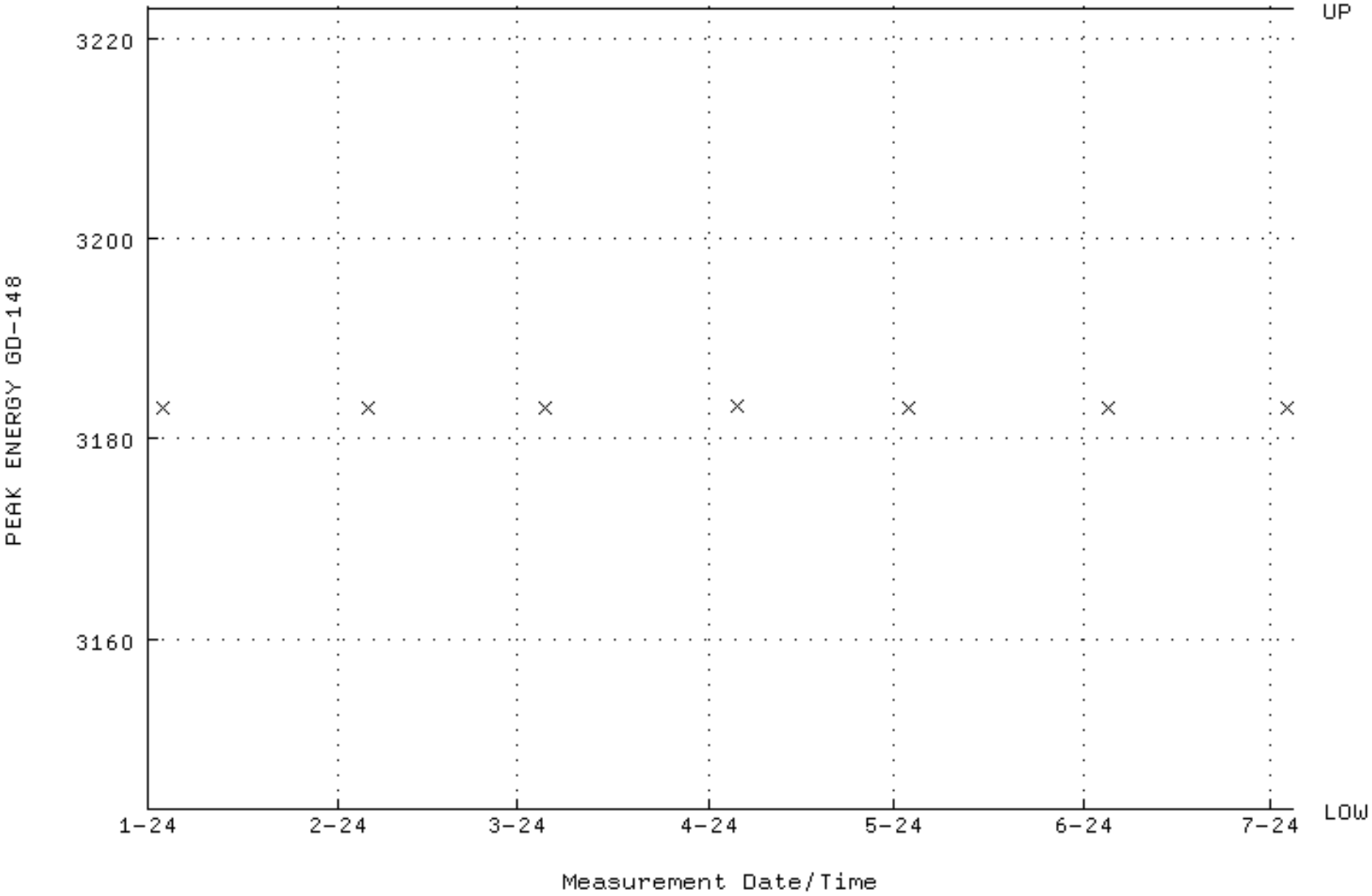
QA filename : DKA100:[ENV_ALPHA.QA.W]W031.QAF;8
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



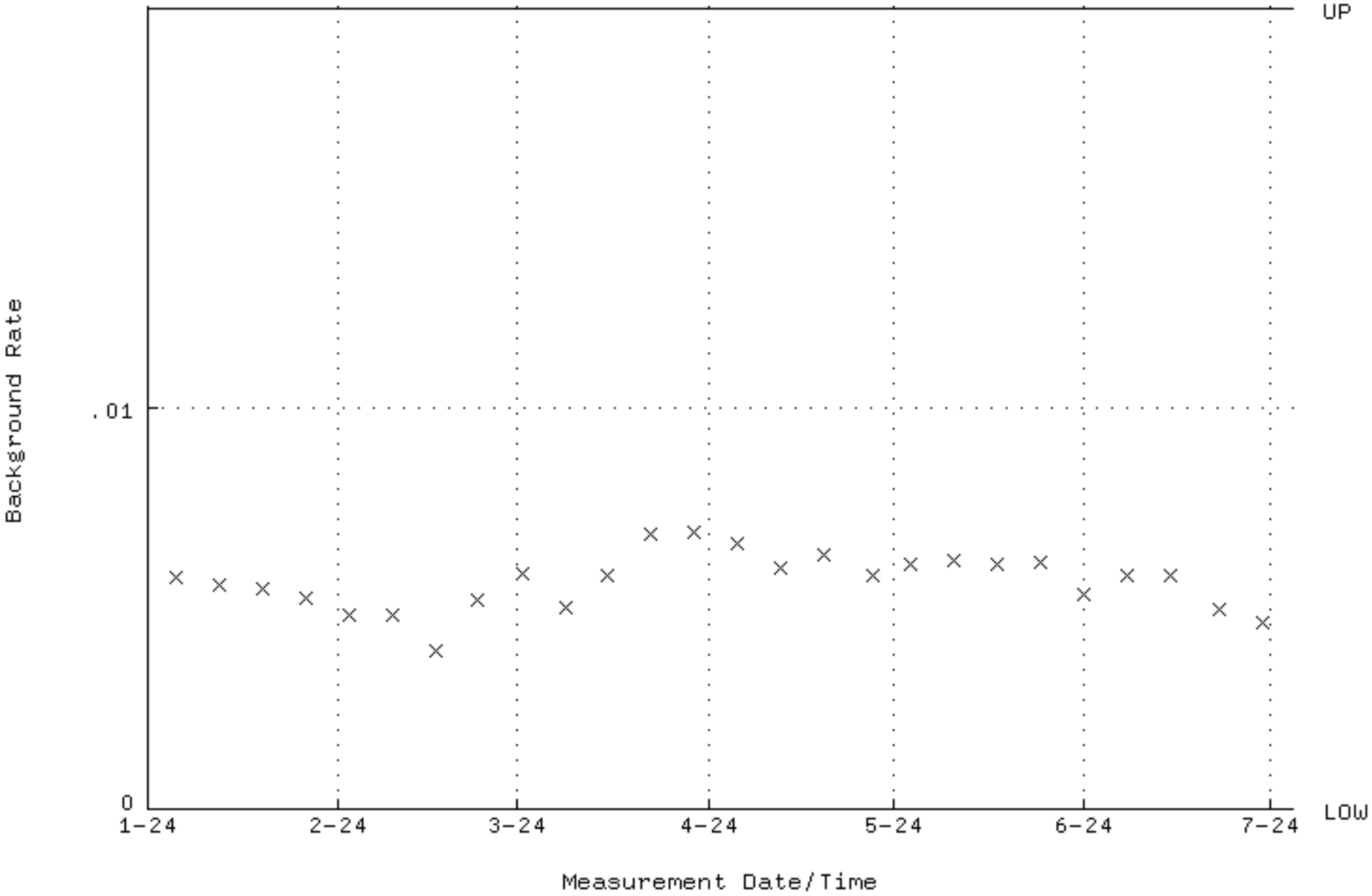
QA filename : DKA100:[ENV_ALPHA.QA.W]W031.QAF;8
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



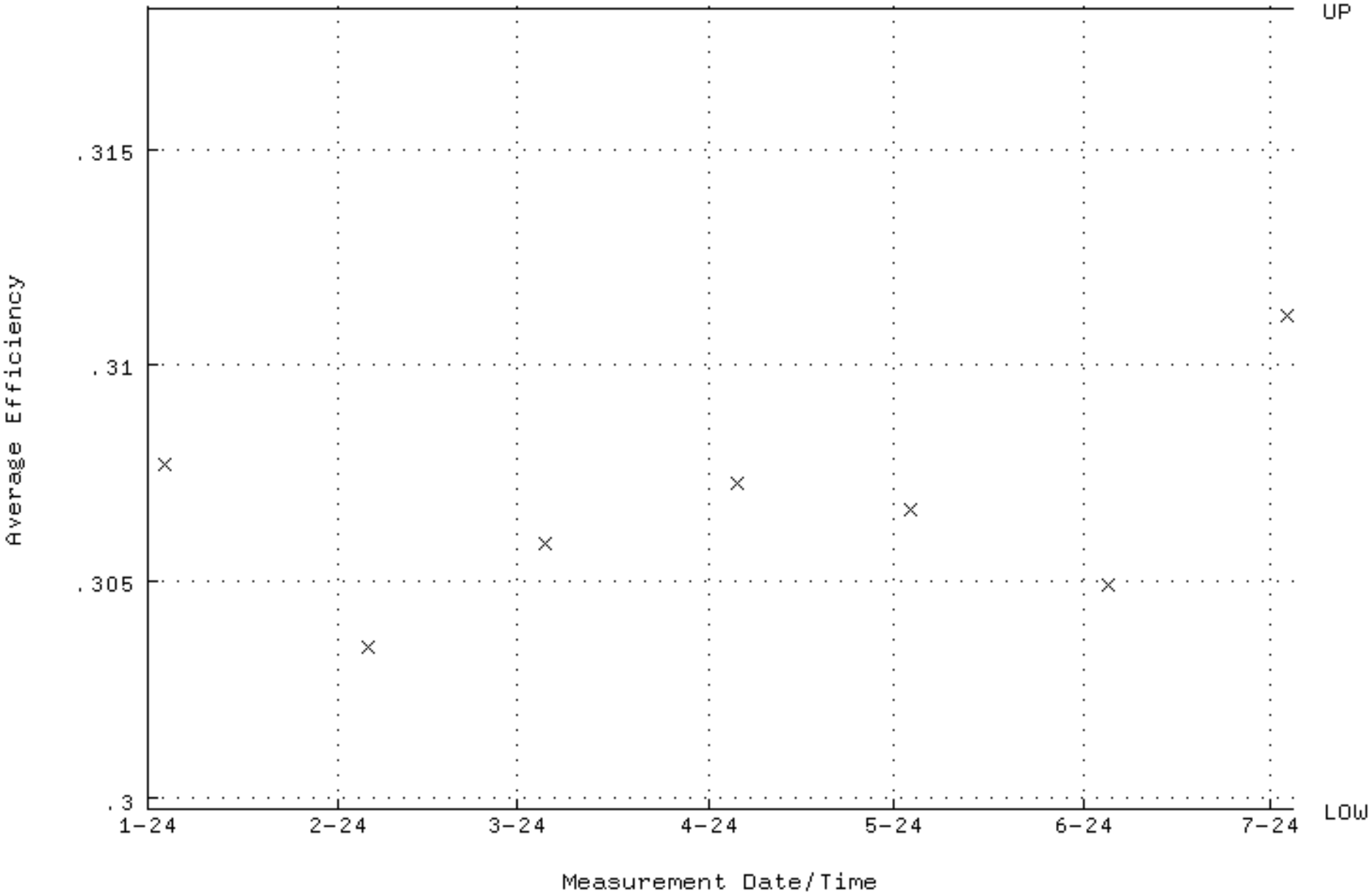
QA filename : DKA100:[ENV_ALPHA.QA.W]W031.QAF;8
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



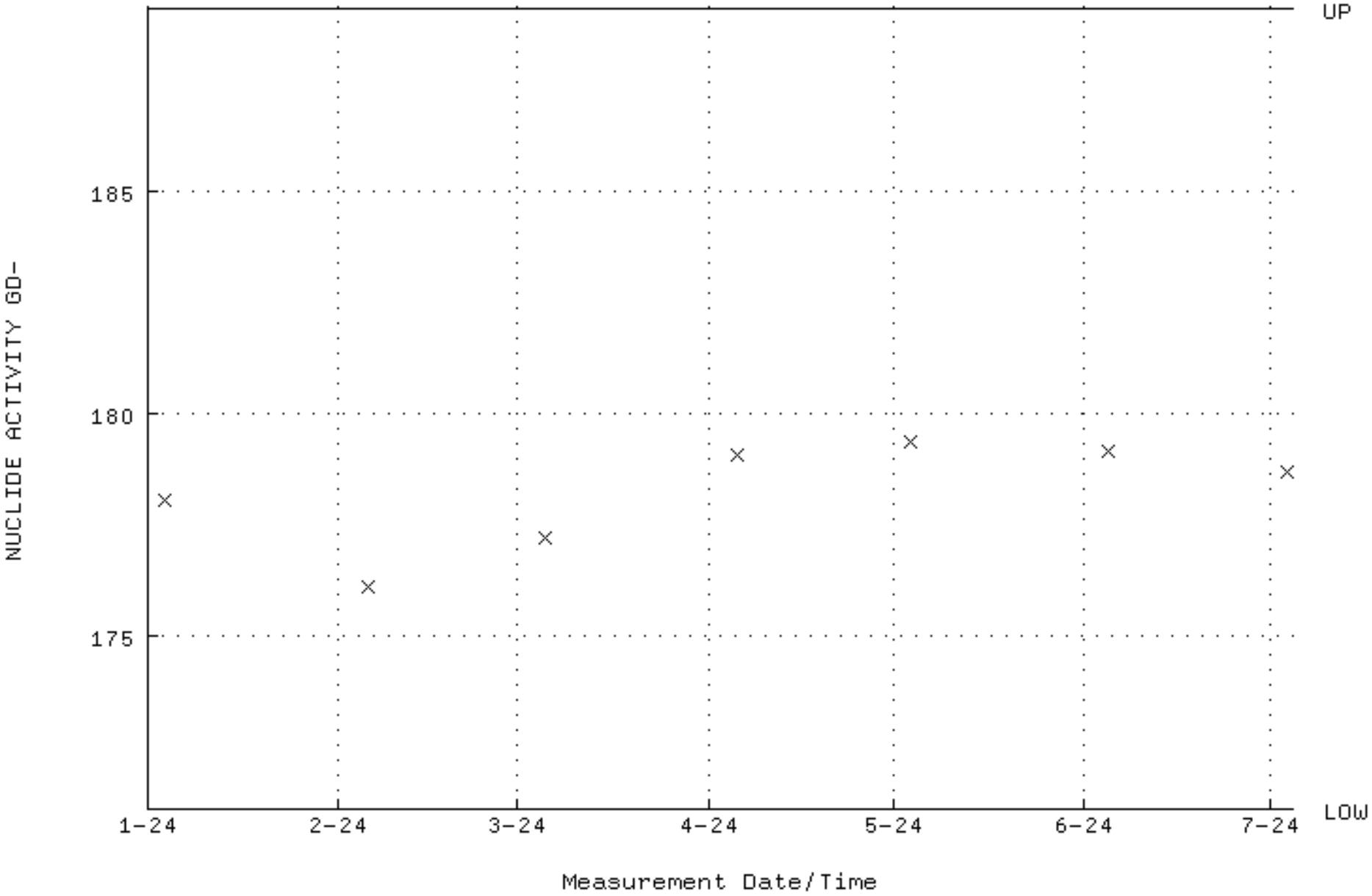
QA filename : DKA100:[ENV_ALPHA.QA.B]B031.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:36:09 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



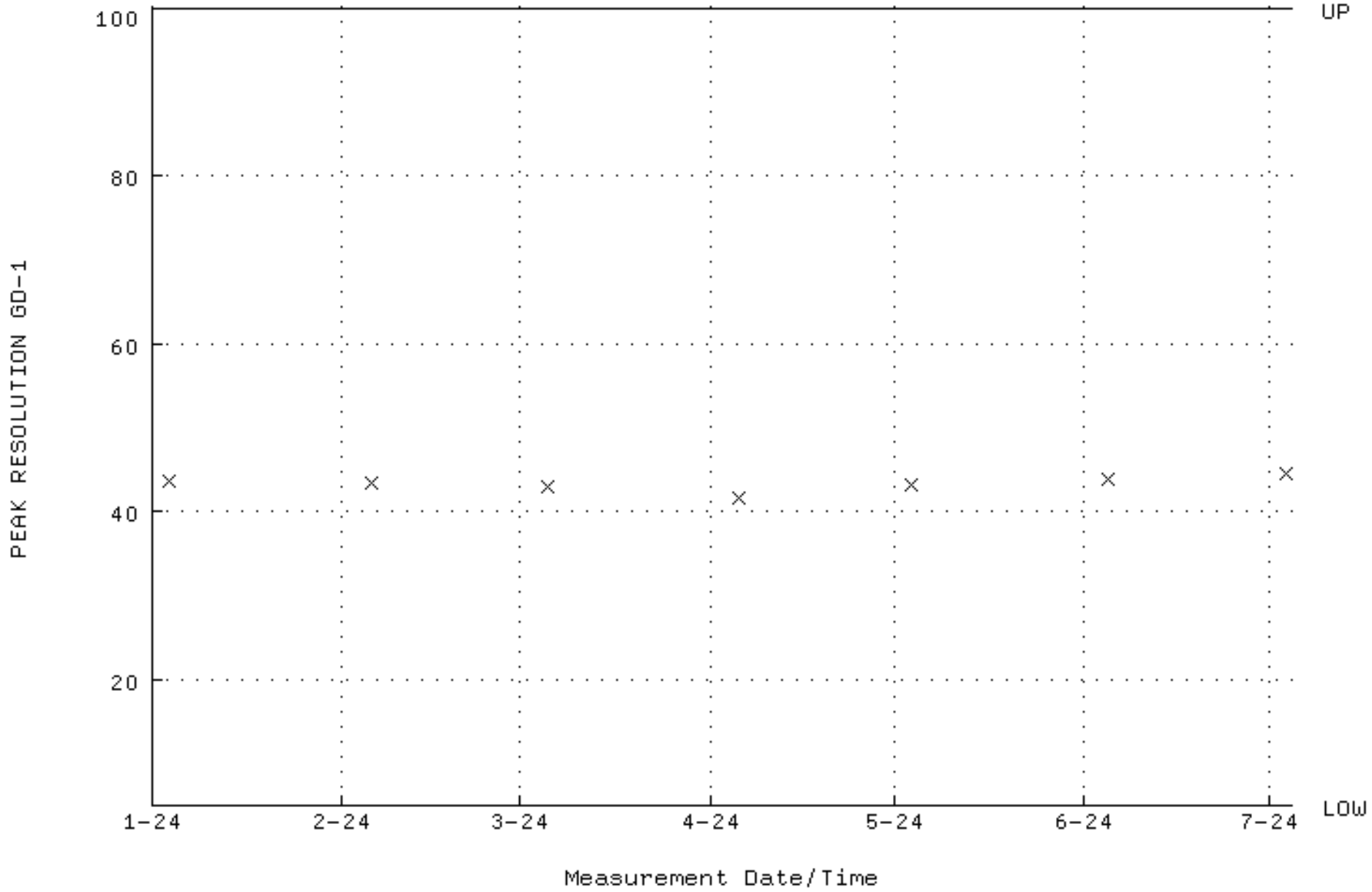
QA filename : DKA100:[ENV_ALPHA.QA.W]W032.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-JAN-2024 14:57:01 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 0.299720 through 0.318260



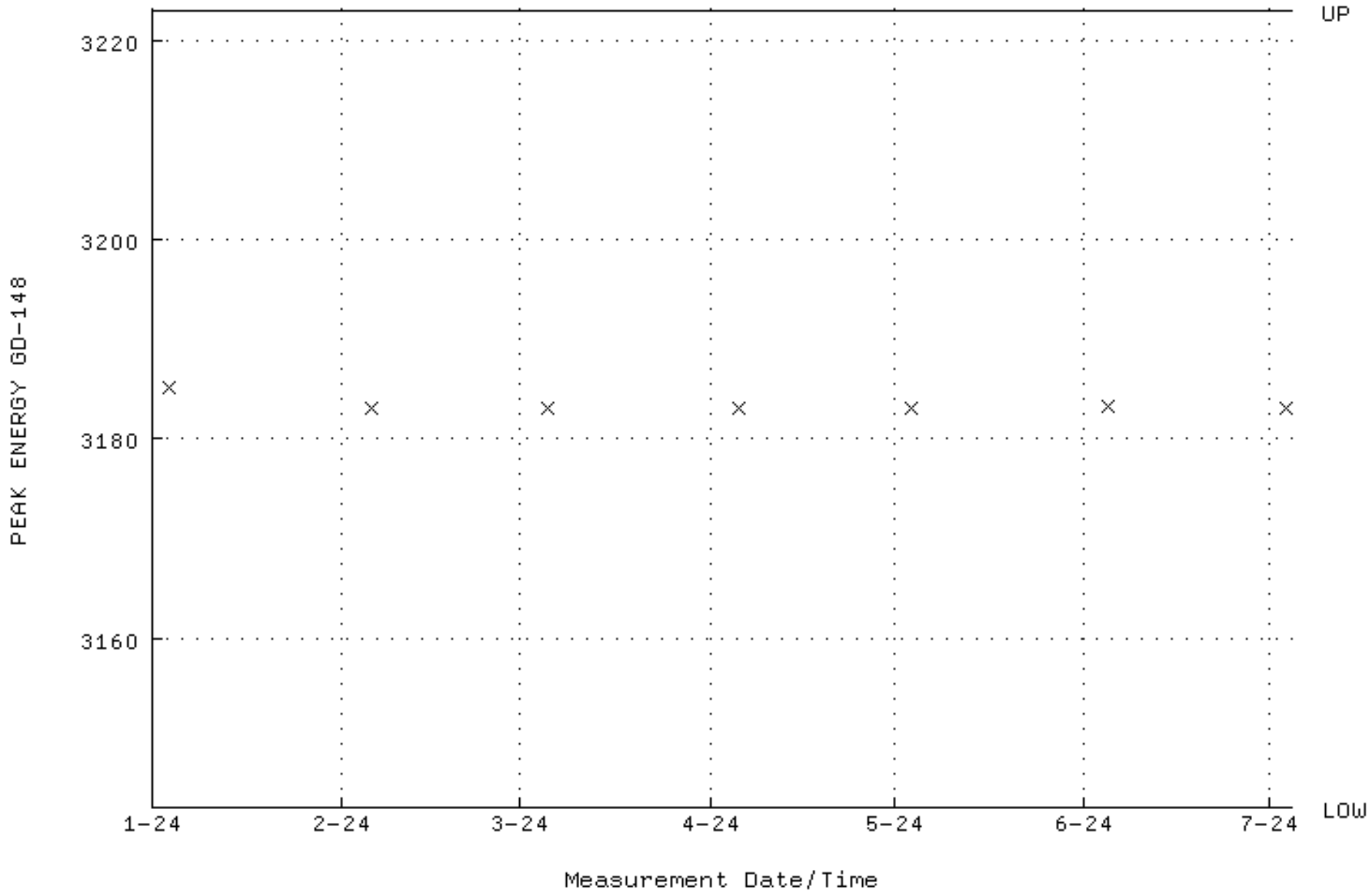
QA filename : DKA100:[ENV_ALPHA.QA.W]W032.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-JAN-2024 14:57:01 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



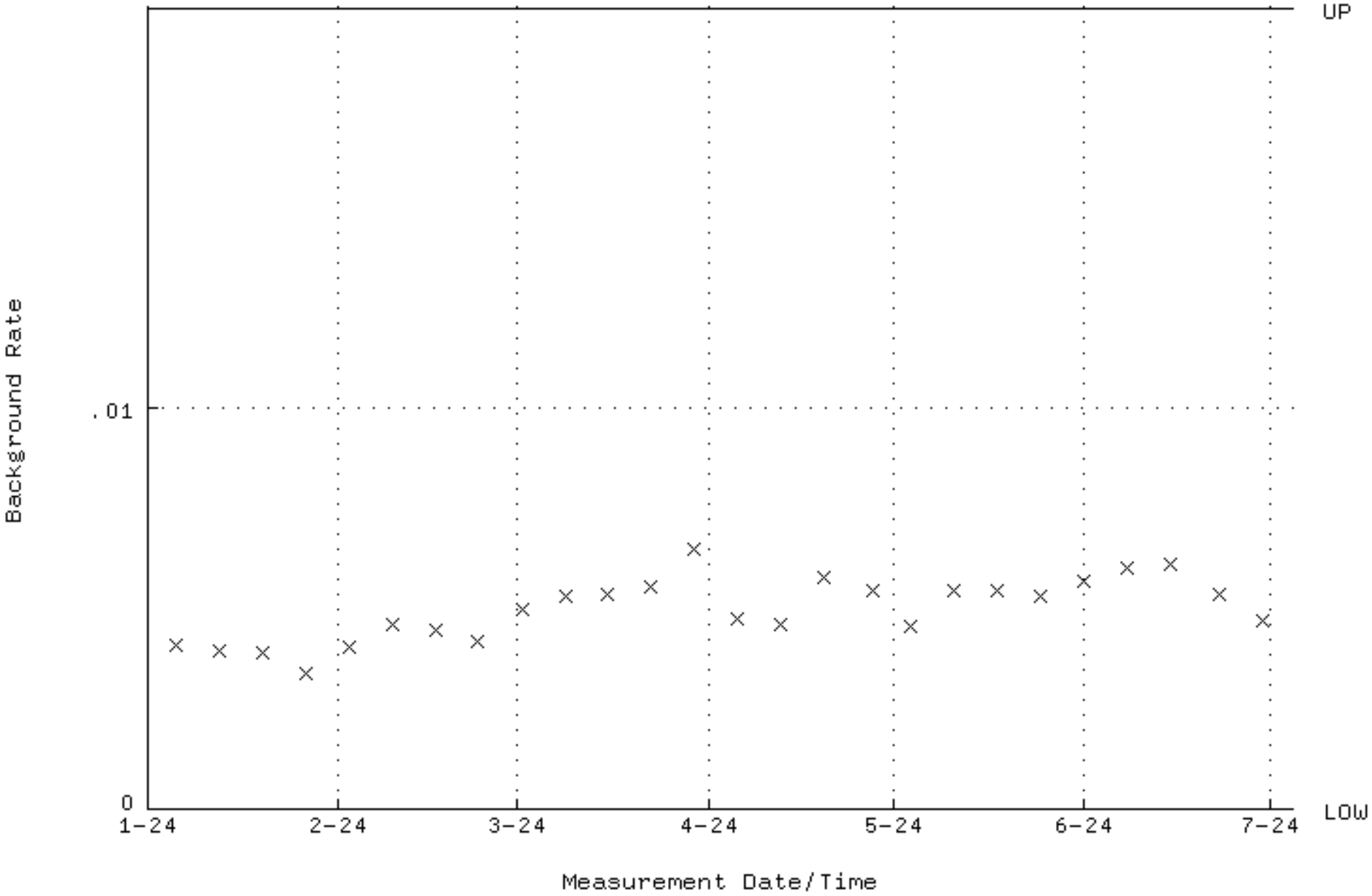
QA filename : DKA100:[ENV_ALPHA.QA.W]W032.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-JAN-2024 14:57:01 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



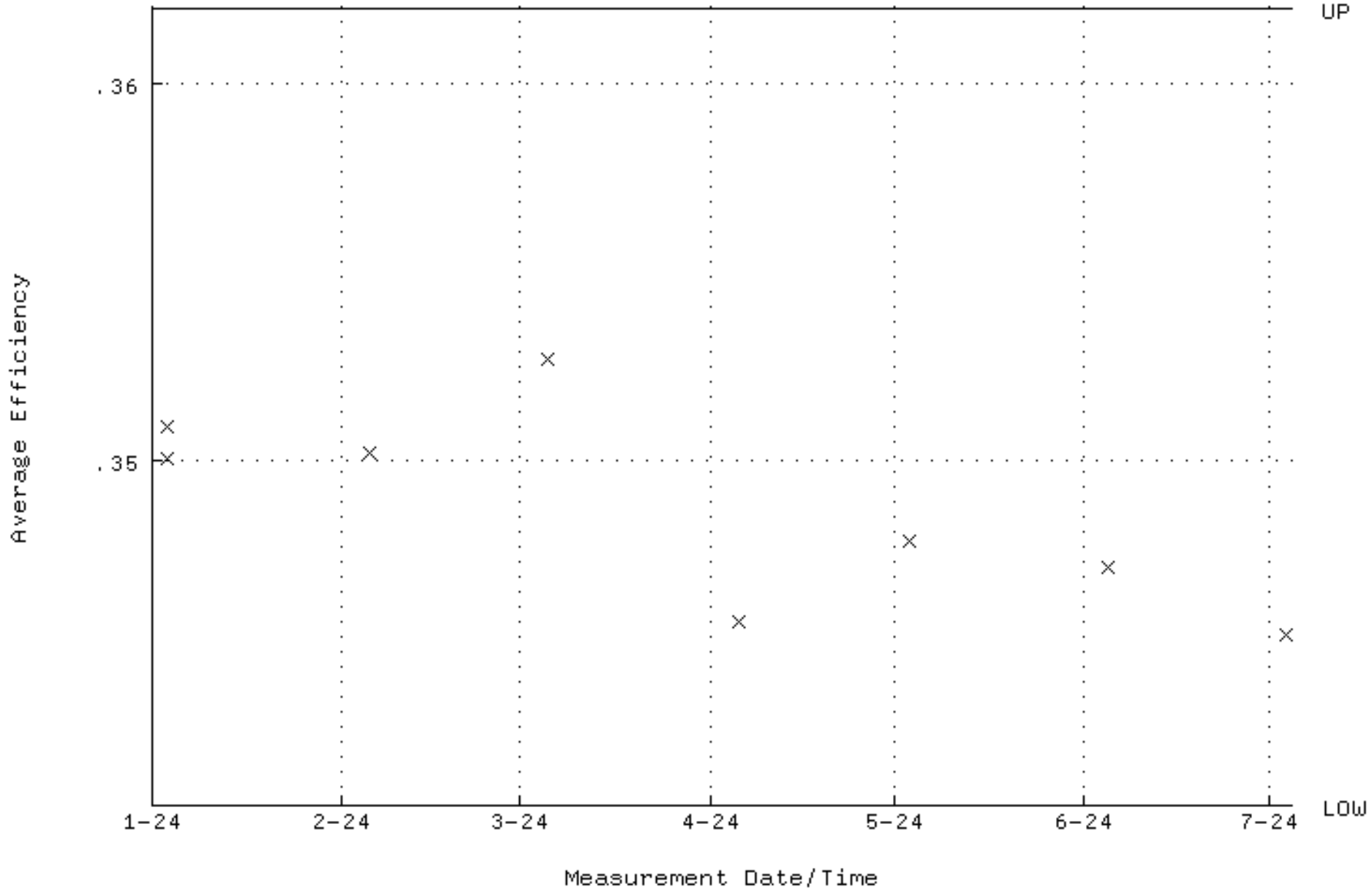
QA filename : DKA100:[ENV_ALPHA.QA.W]W032.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-JAN-2024 14:57:01 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



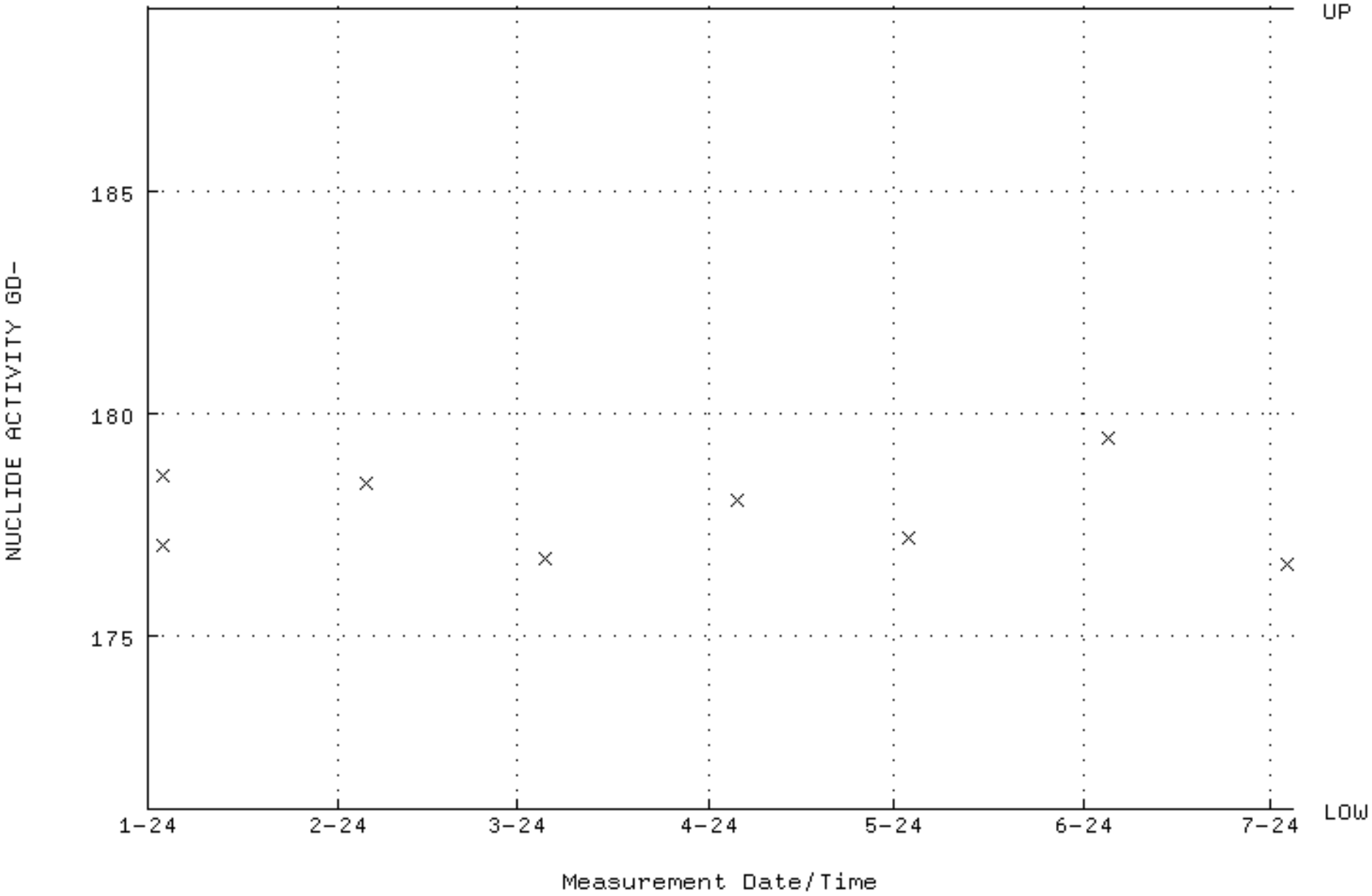
QA filename : DKA100:[ENV_ALPHA.QA.B]B032.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:36:09 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



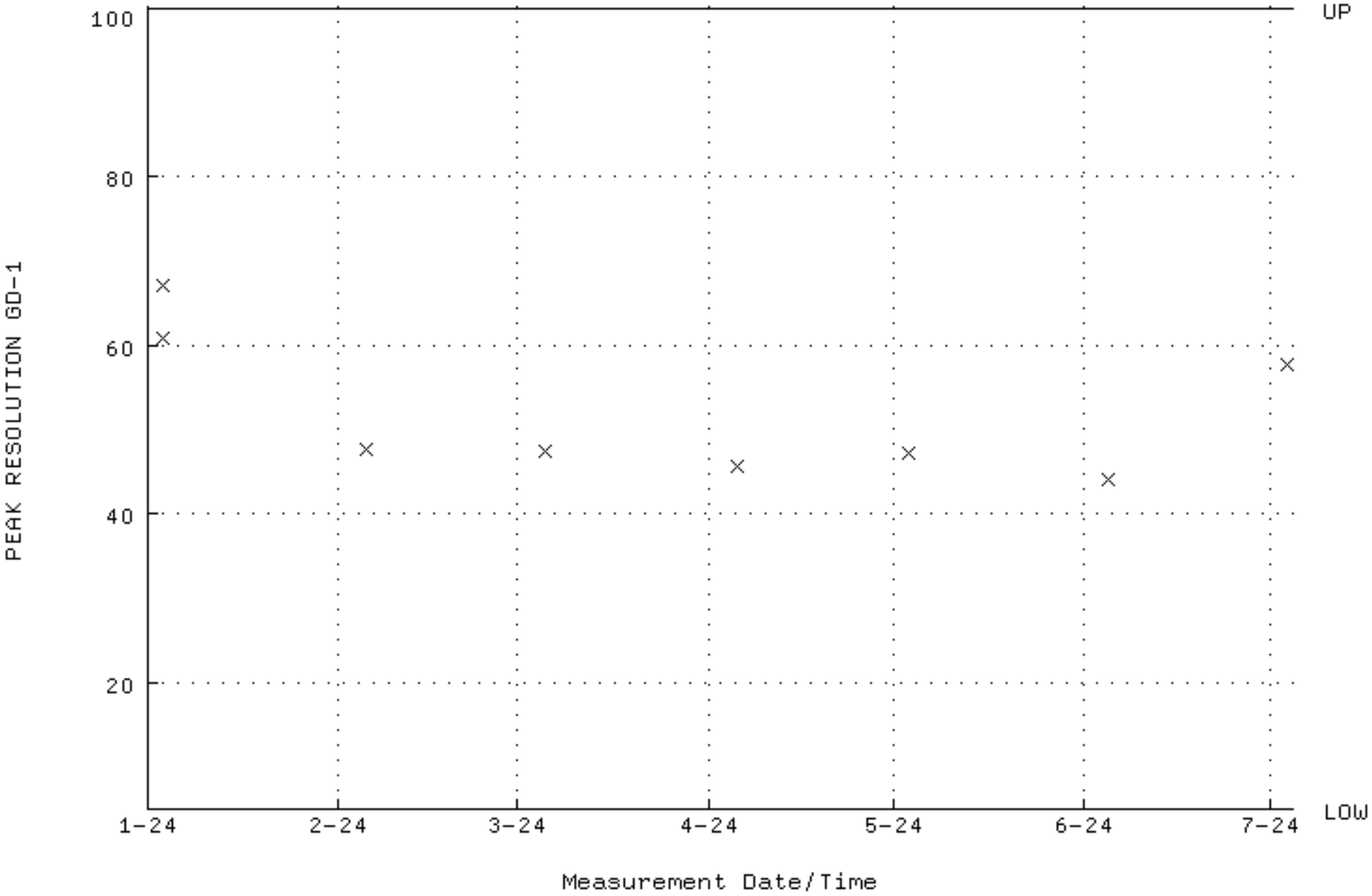
QA filename : DKA100:[ENV_ALPHA.QA.W]W034.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 0.340880 through 0.361960



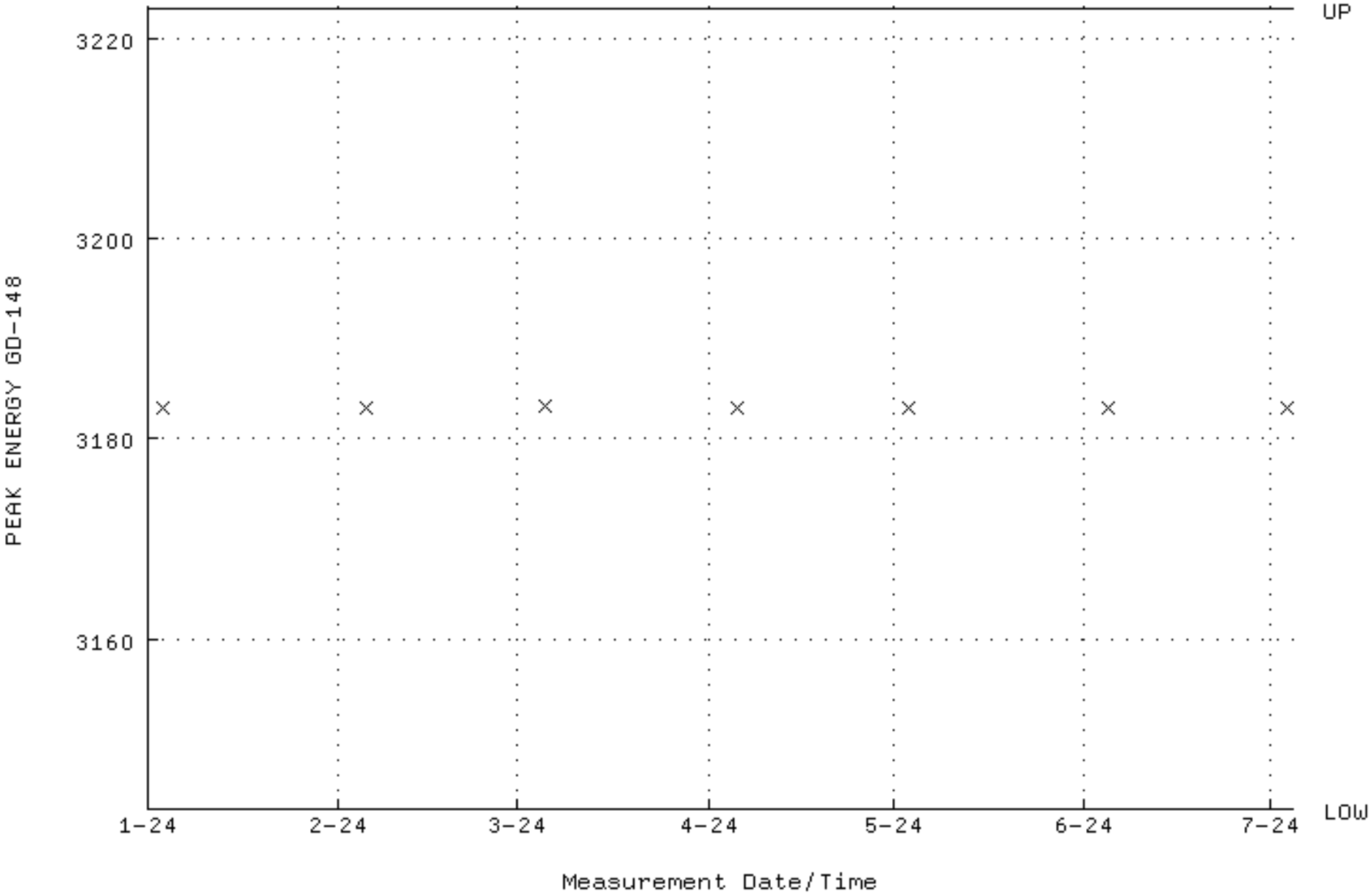
QA filename : DKA100:[ENV_ALPHA.QA.W]W034.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



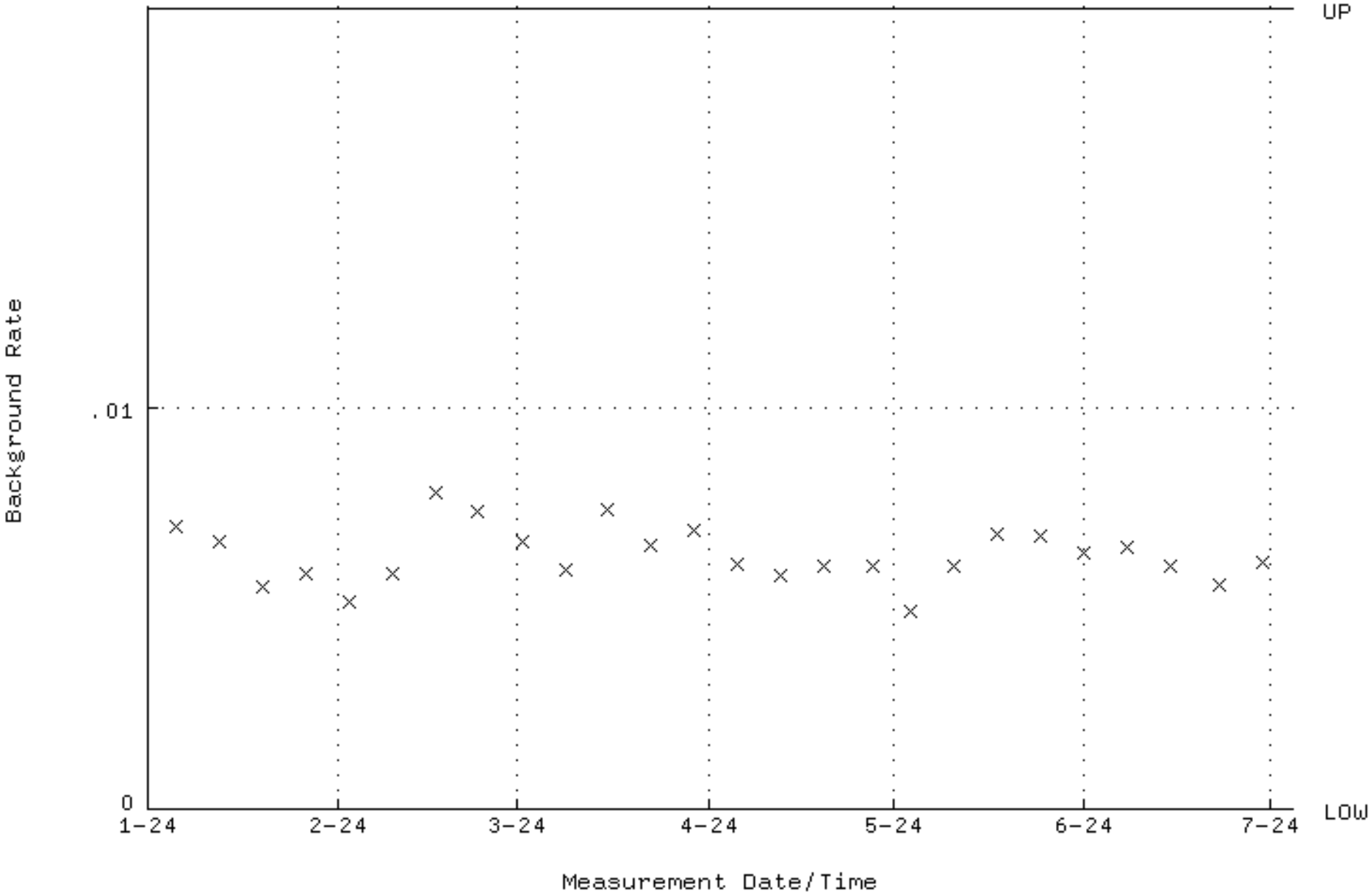
QA filename : DKA100:[ENV_ALPHA.QA.W]W034.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



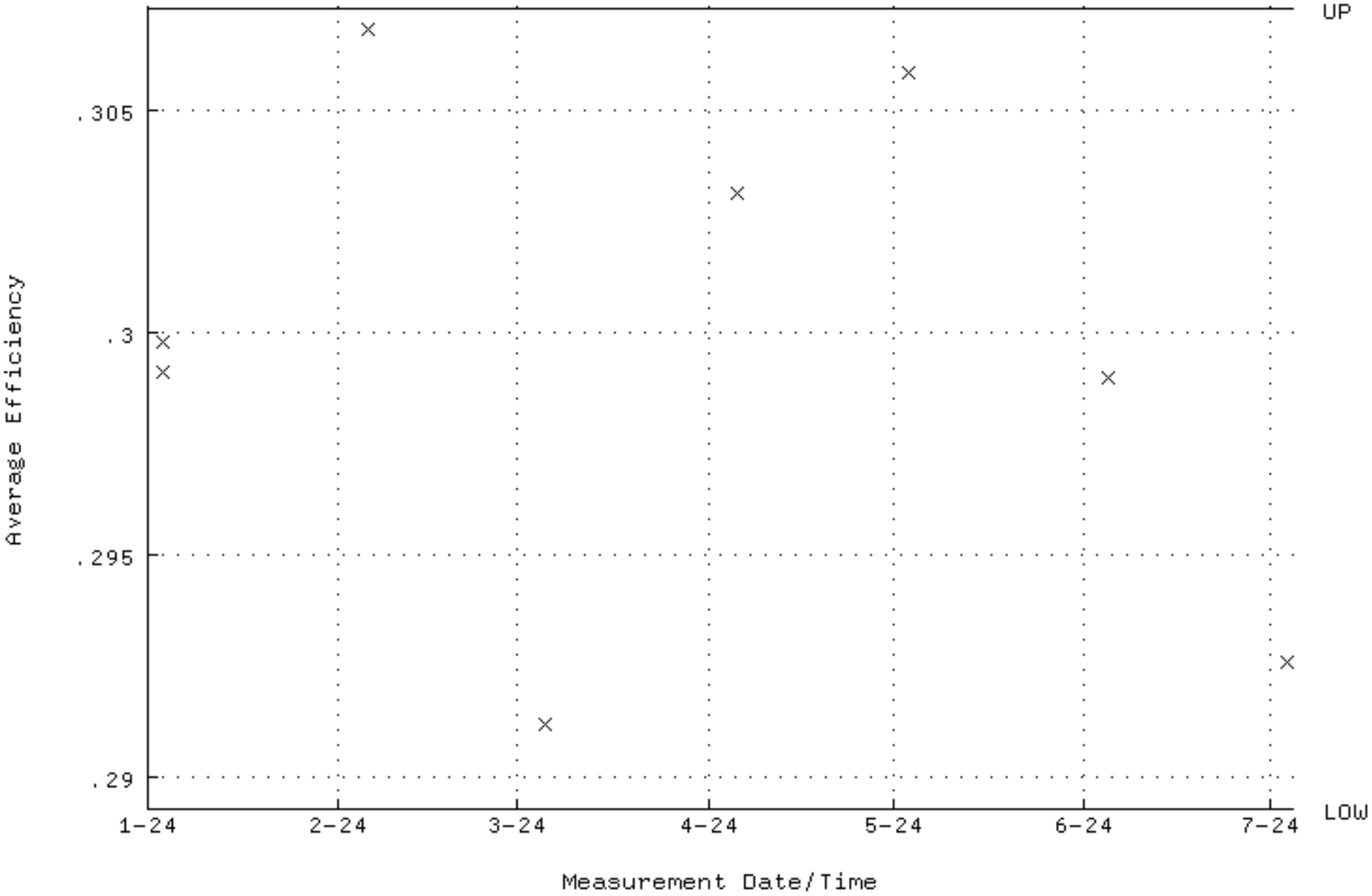
QA filename : DKA100:[ENV_ALPHA.QA.W]W034.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



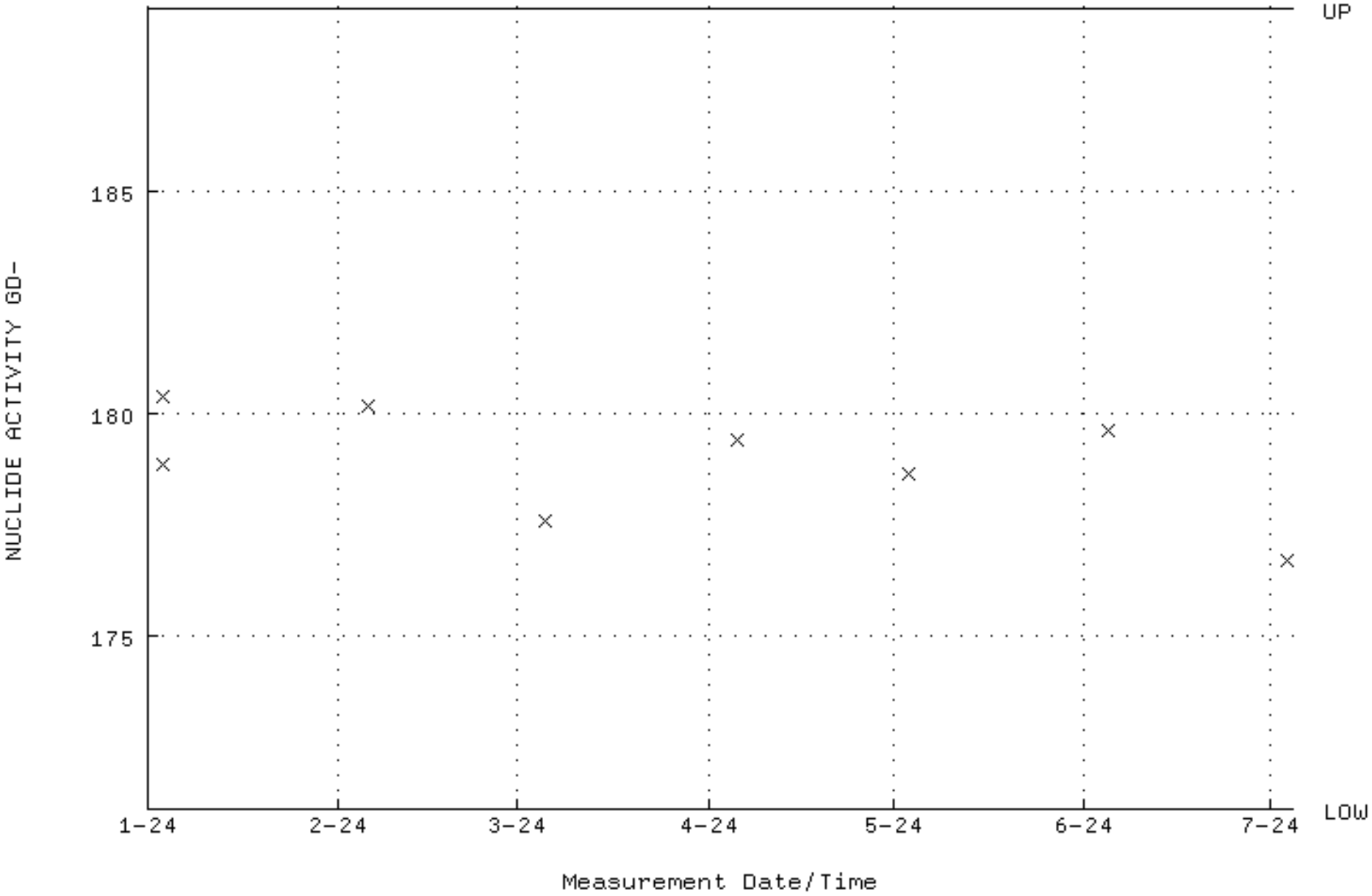
QA filename : DKA100:[ENV_ALPHA.QA.B]B034.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:36:09 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



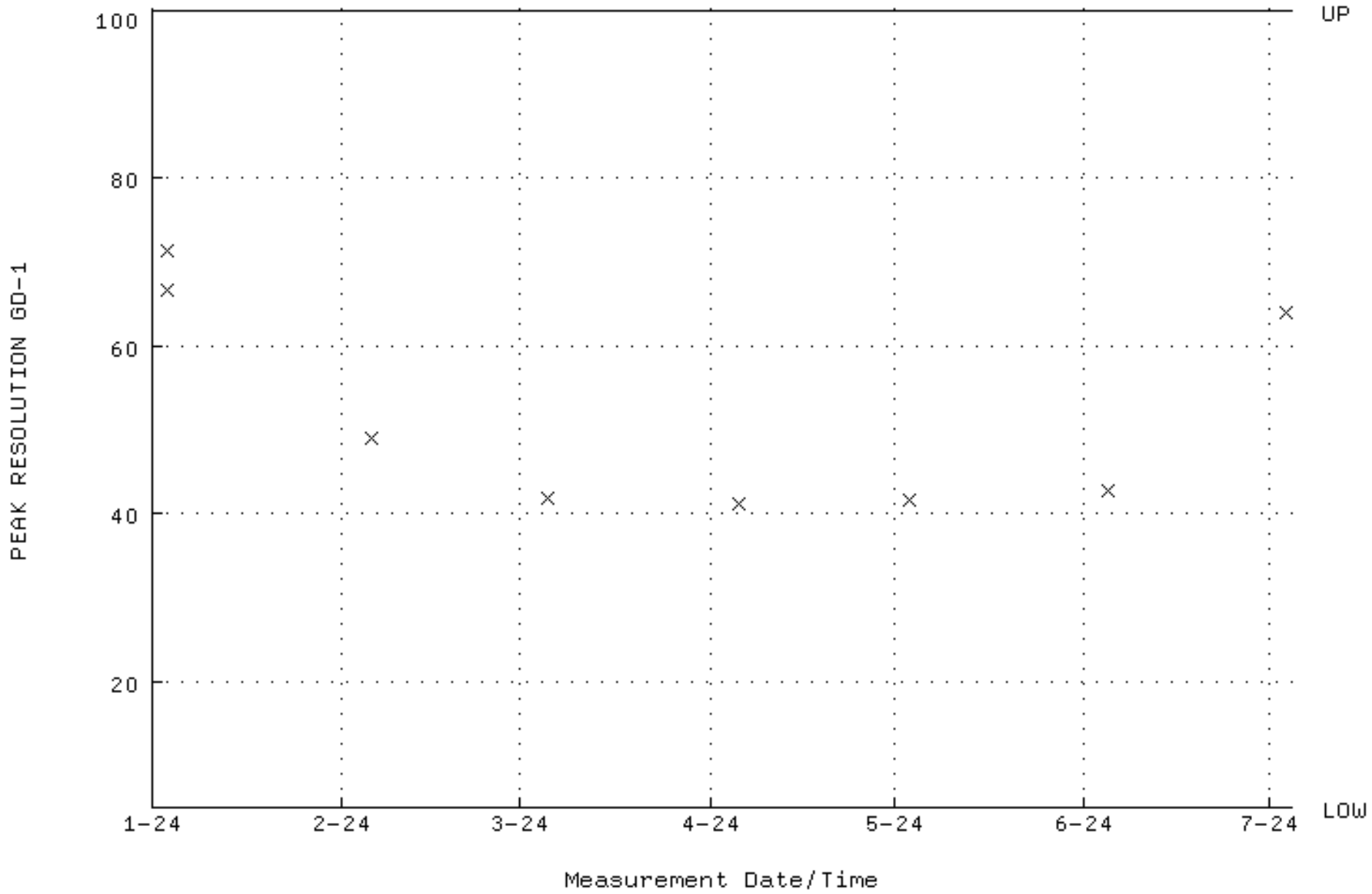
QA filename : DKA100:[ENV_ALPHA.QA.W]W035.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 0.289300 through 0.307300



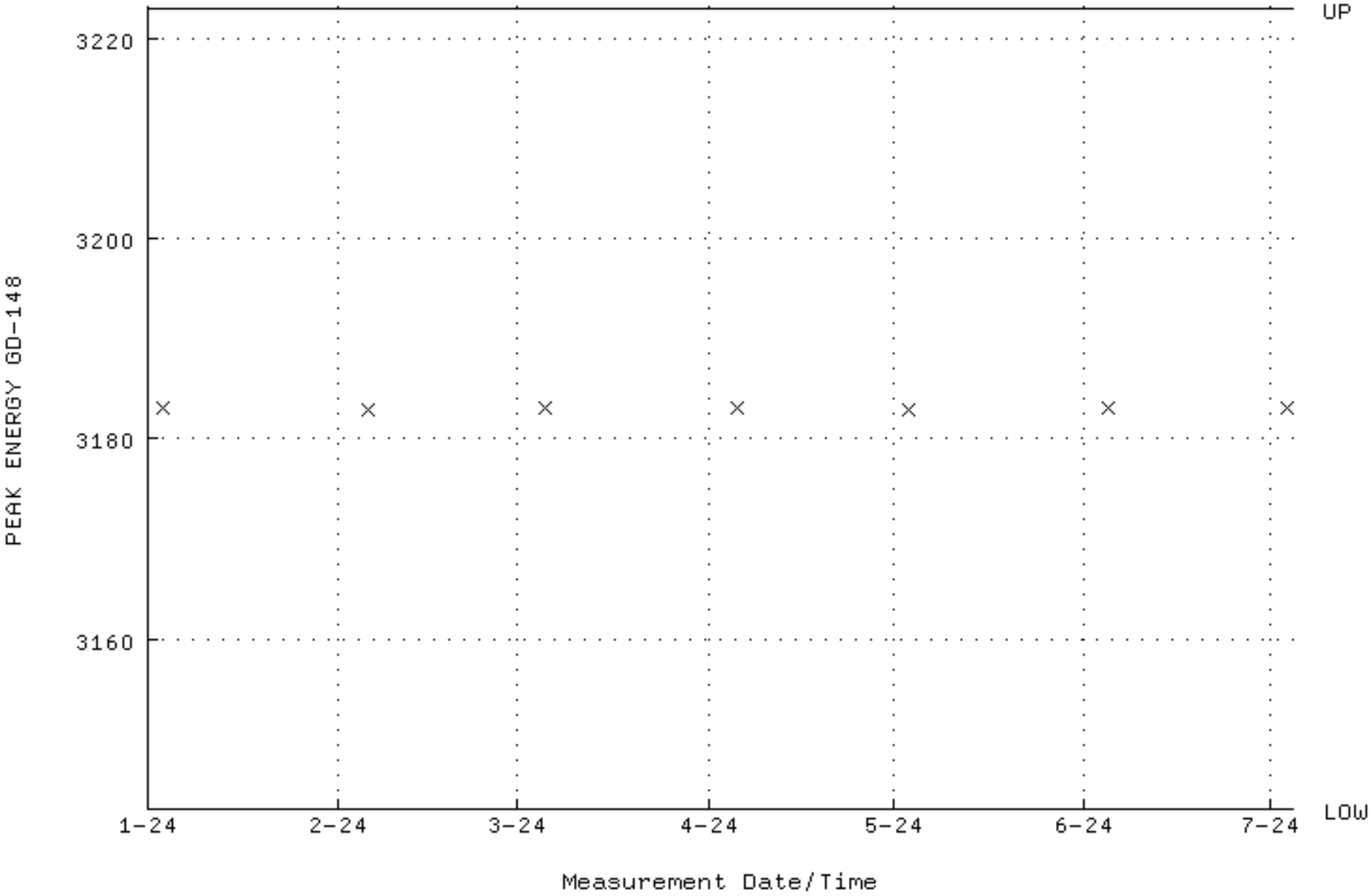
QA filename : DKA100:[ENV_ALPHA.QA.W]W035.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



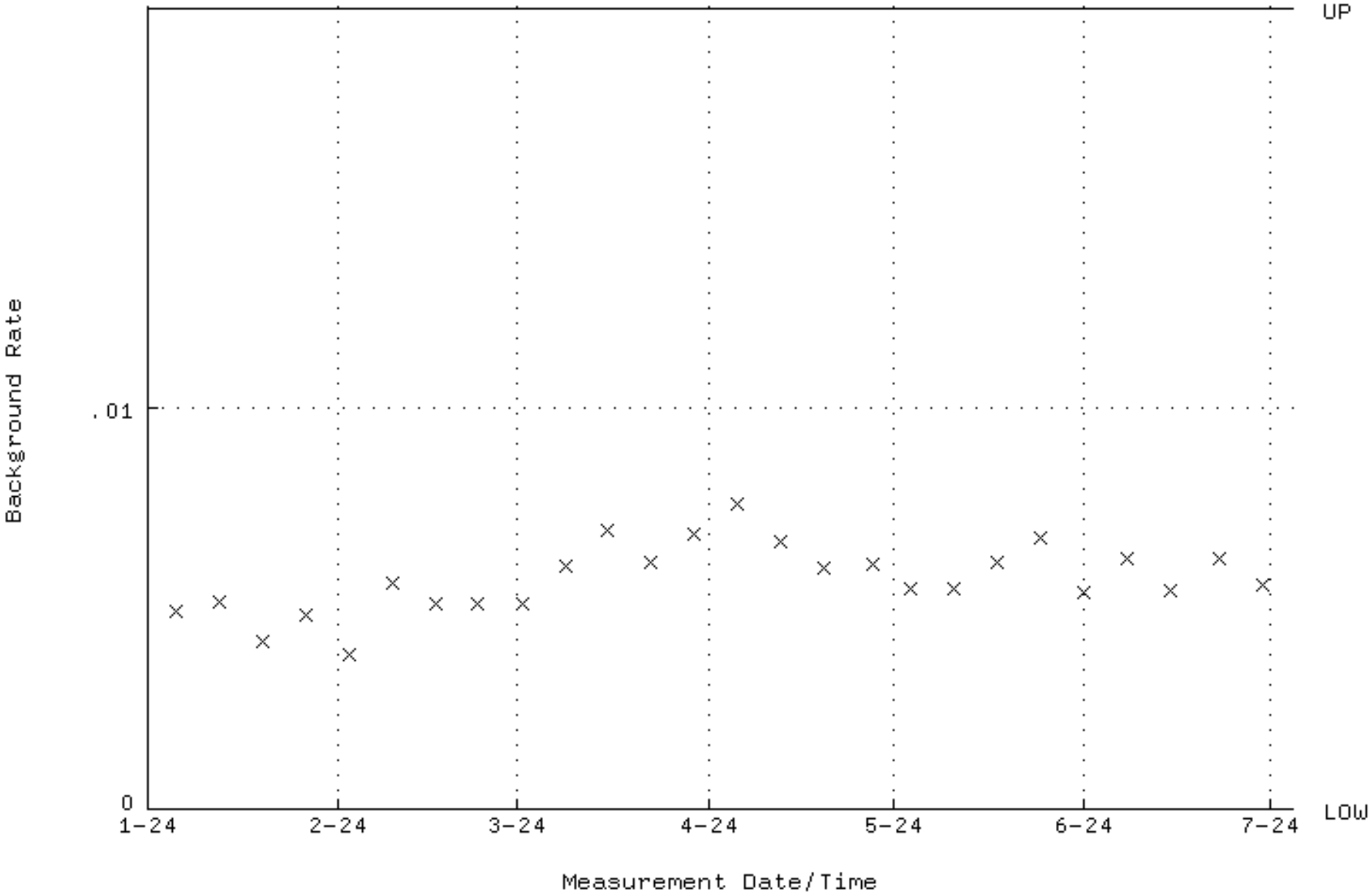
QA filename : DKA100:[ENV_ALPHA.QA.W]W035.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



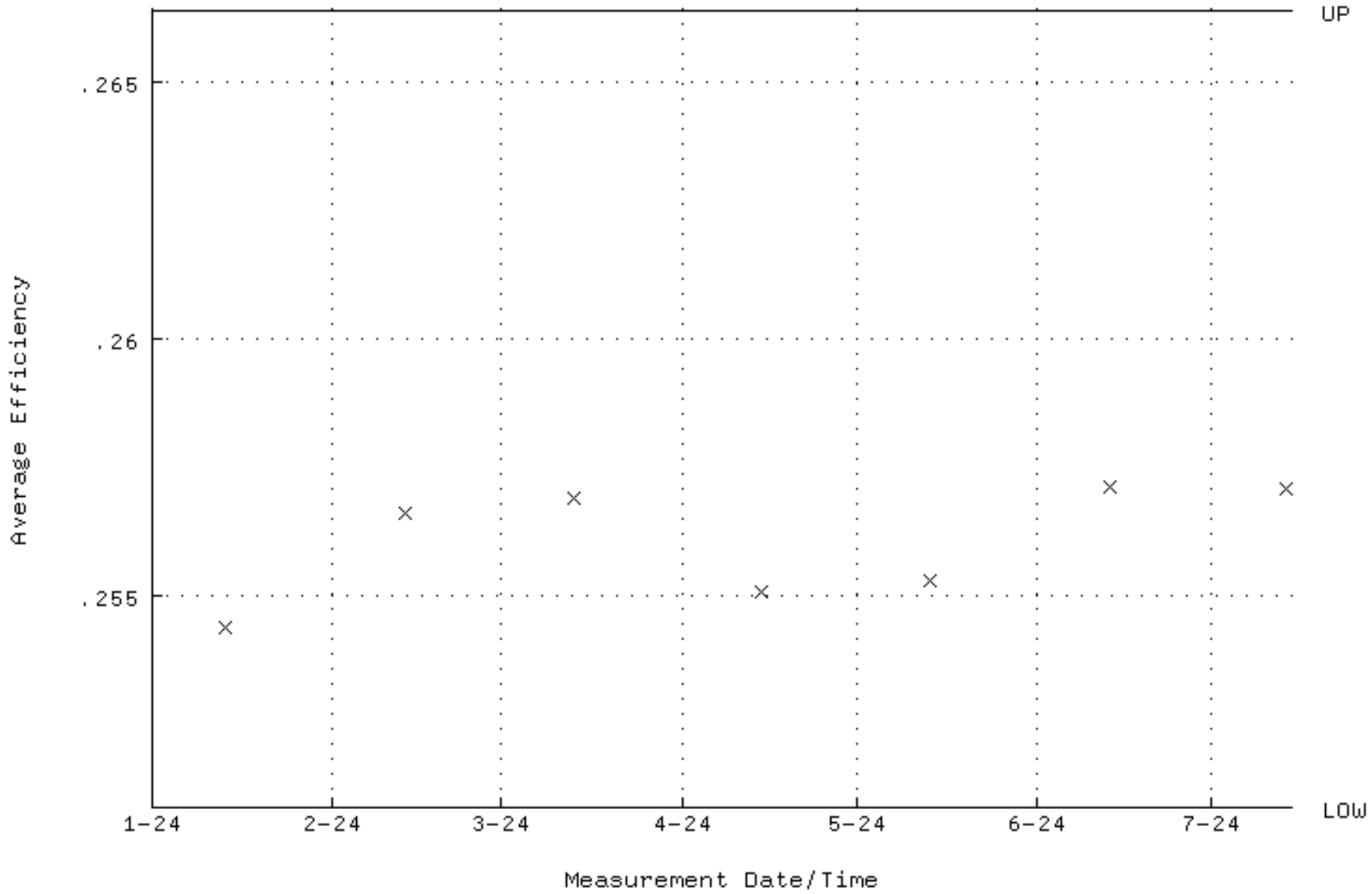
QA filename : DKA100:[ENV_ALPHA.QA.W]W035.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 3-JAN-2024 10:10:05 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



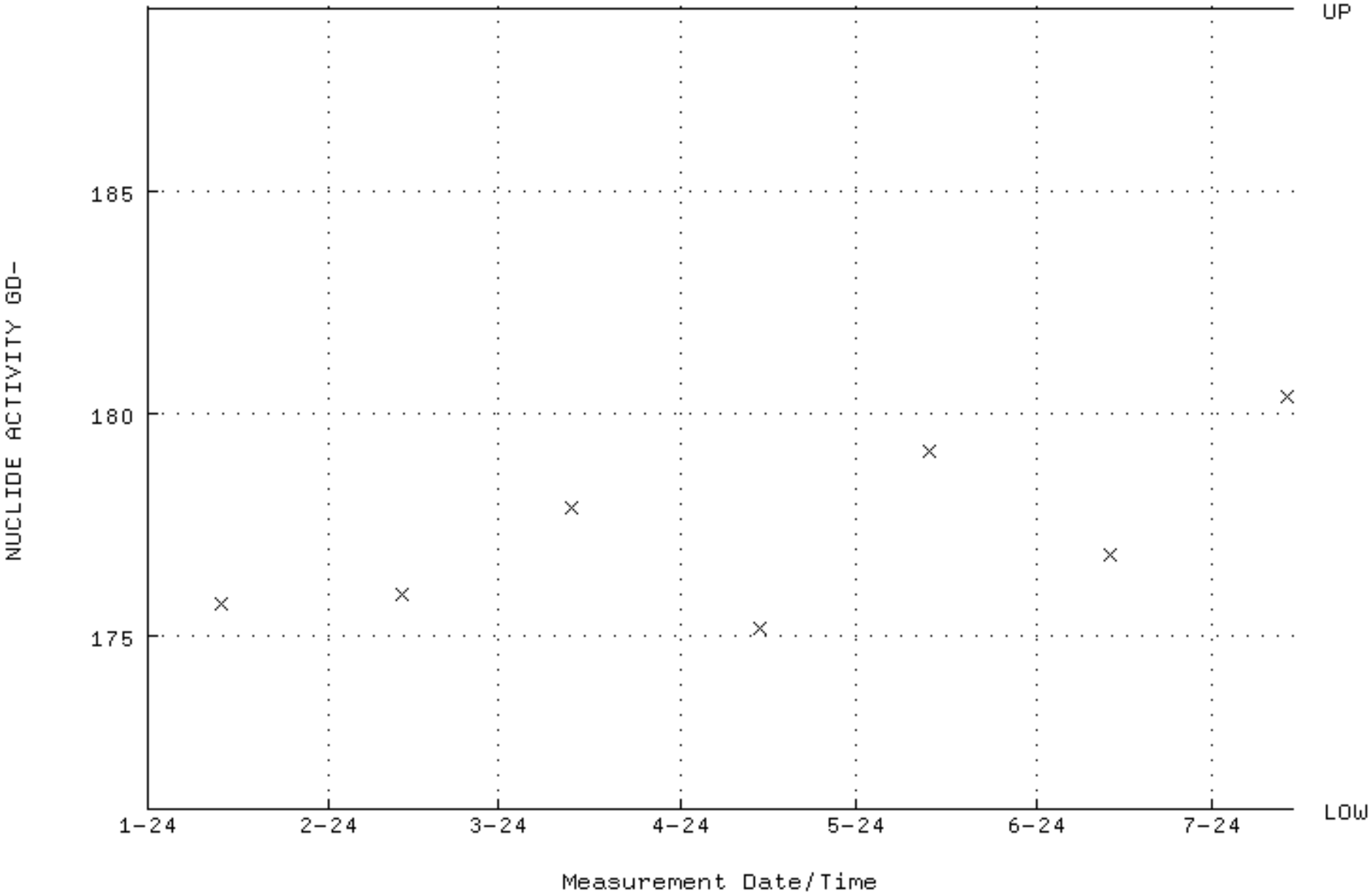
QA filename : DKA100:[ENV_ALPHA.QA.B]B035.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:36:09 through 4-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



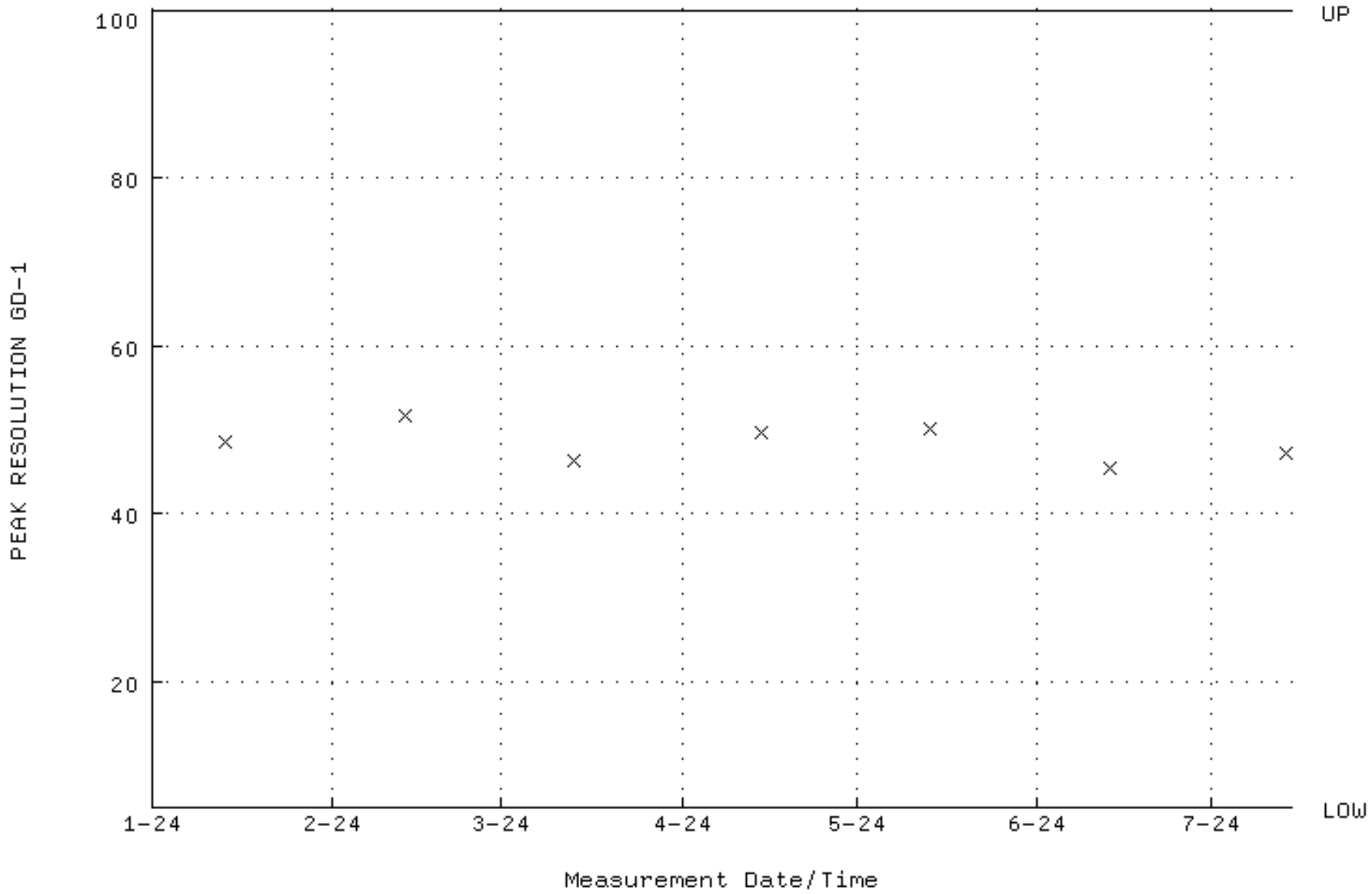
QA filename : DKA100:[ENV_ALPHA.QA.W]W113.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 13-JAN-2024 13:15:13 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.250880 through 0.266390



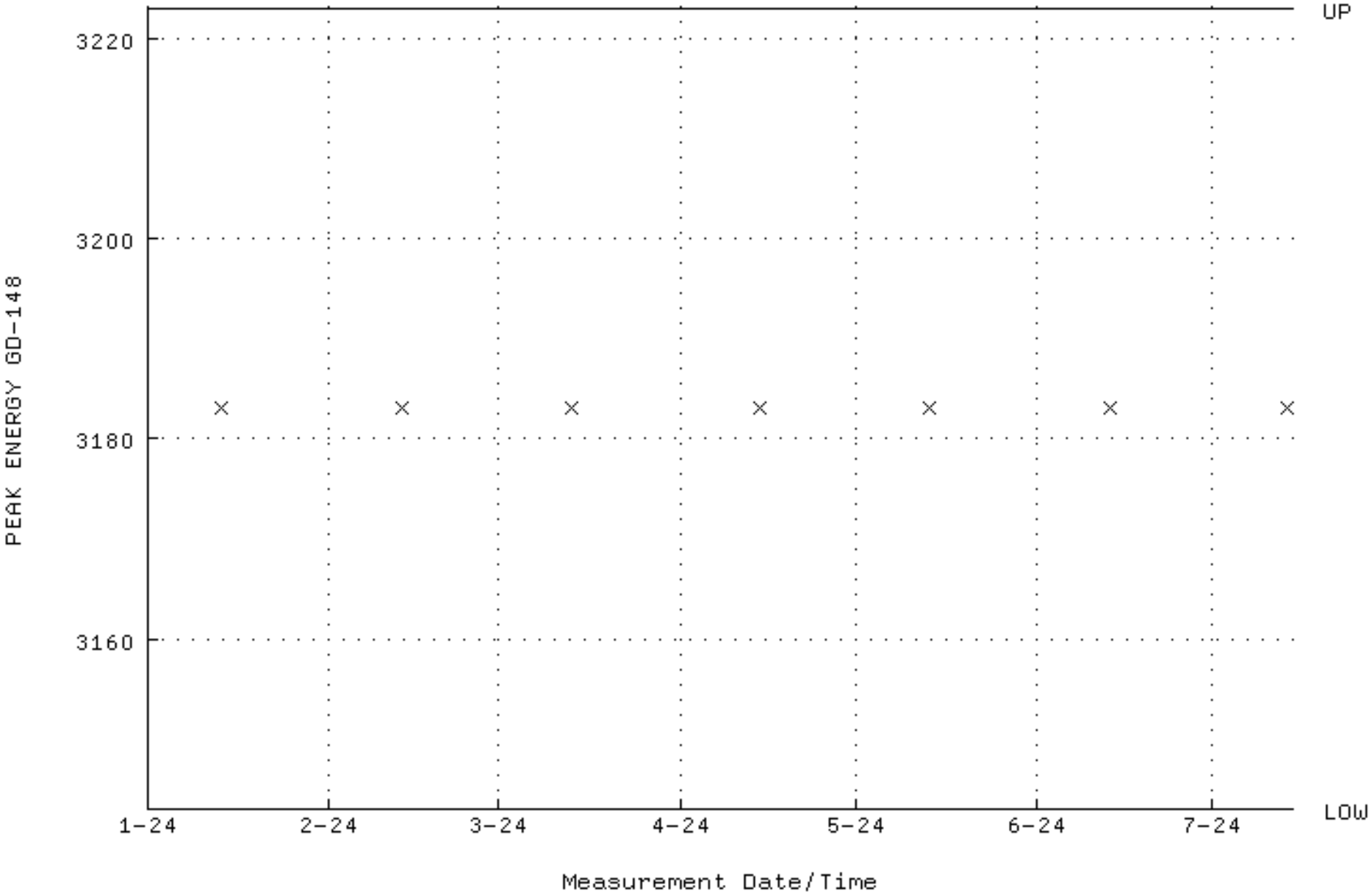
QA filename : DKA100:[ENV_ALPHA.QA.W]W113.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 13-JAN-2024 13:15:13 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



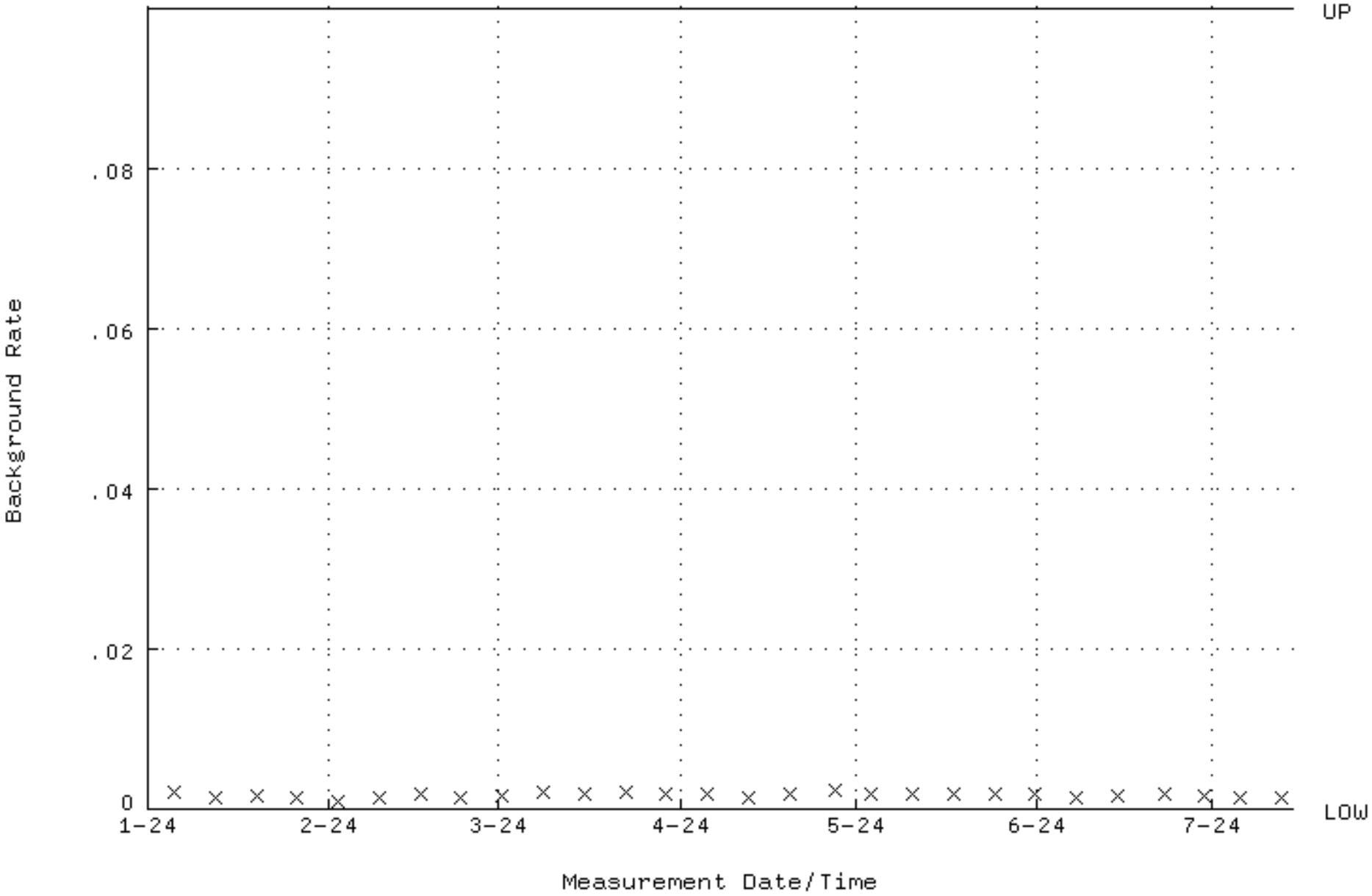
QA filename : DKA100:[ENV_ALPHA.QA.W]W113.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 13-JAN-2024 13:15:13 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



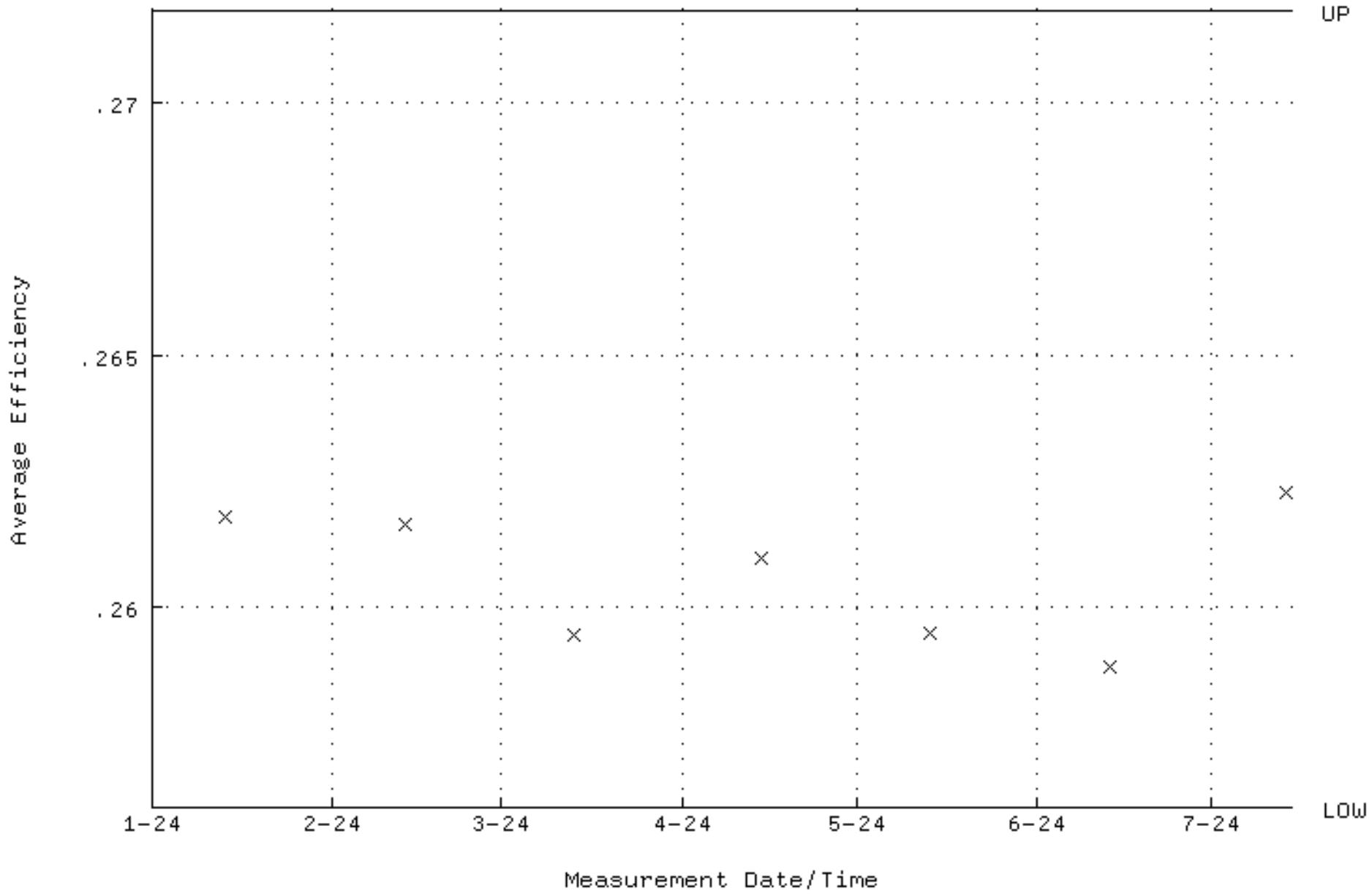
QA filename : DKA100:[ENV_ALPHA.QA.W]W113.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 13-JAN-2024 13:15:13 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



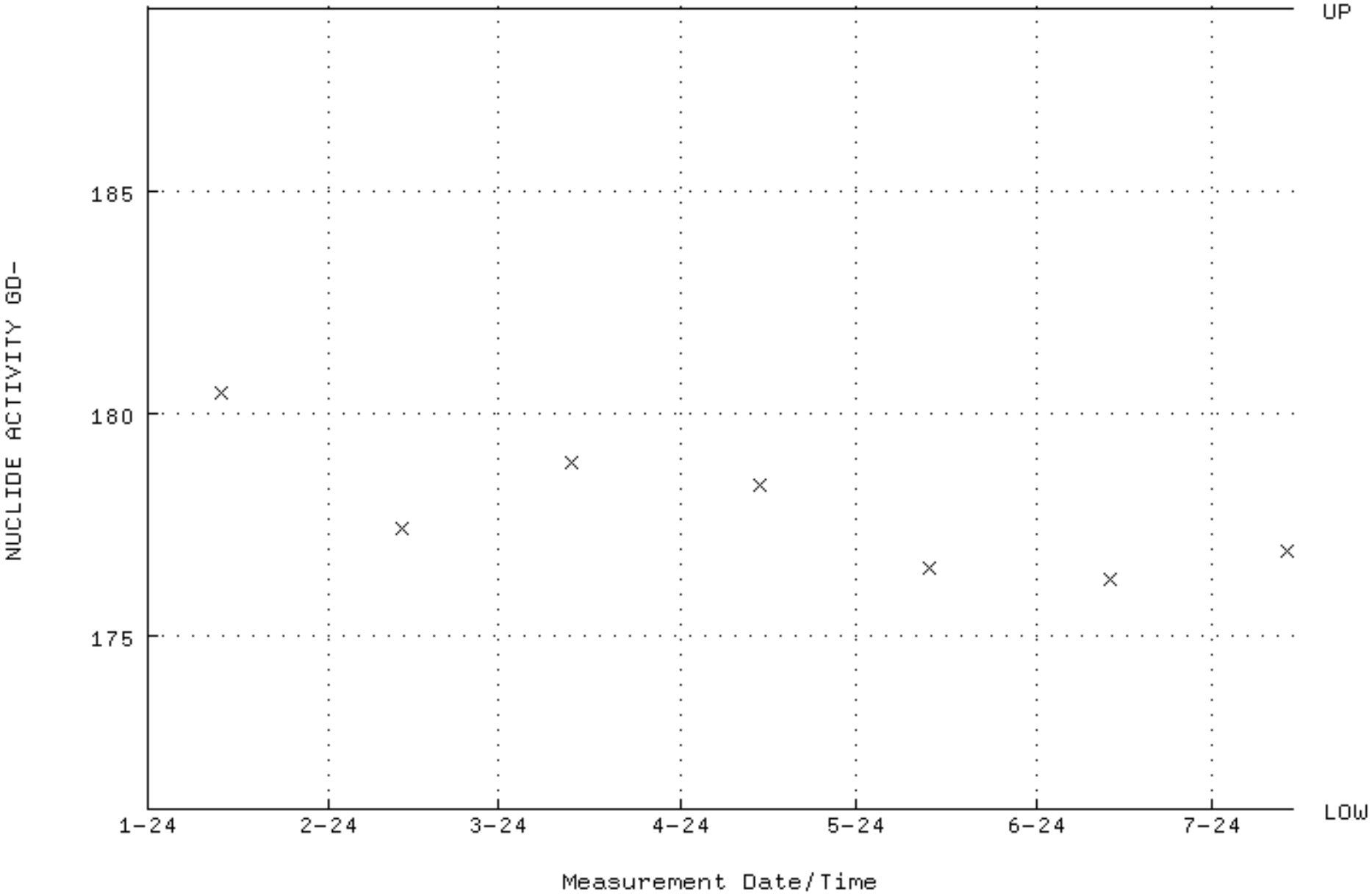
QA filename : DKA100:[ENV_ALPHA.QA.B]B113.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:41:17 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



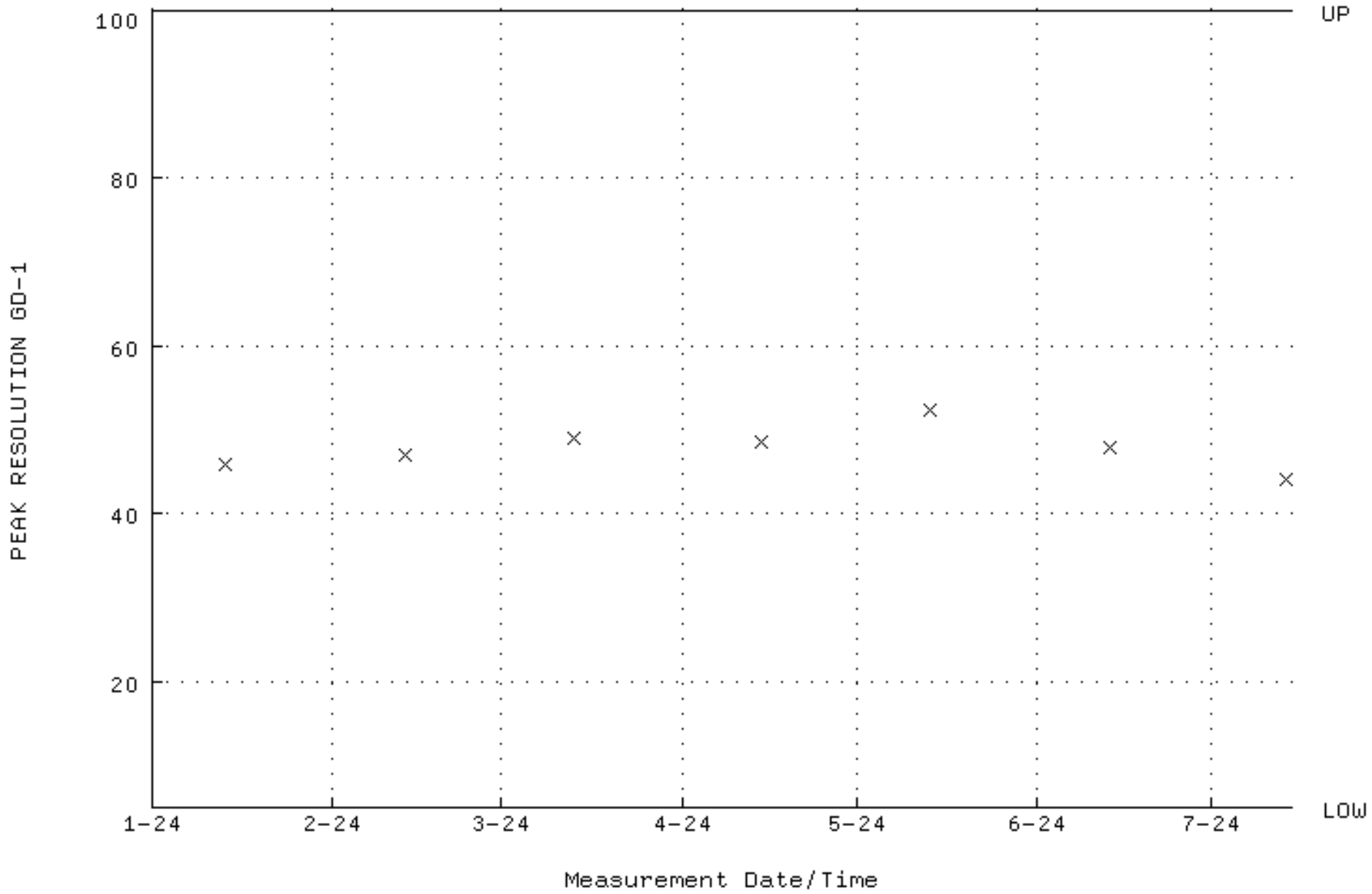
QA filename : DKA100:[ENV_ALPHA.QA.W]W117.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 13-JAN-2024 13:15:17 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.256000 through 0.271840



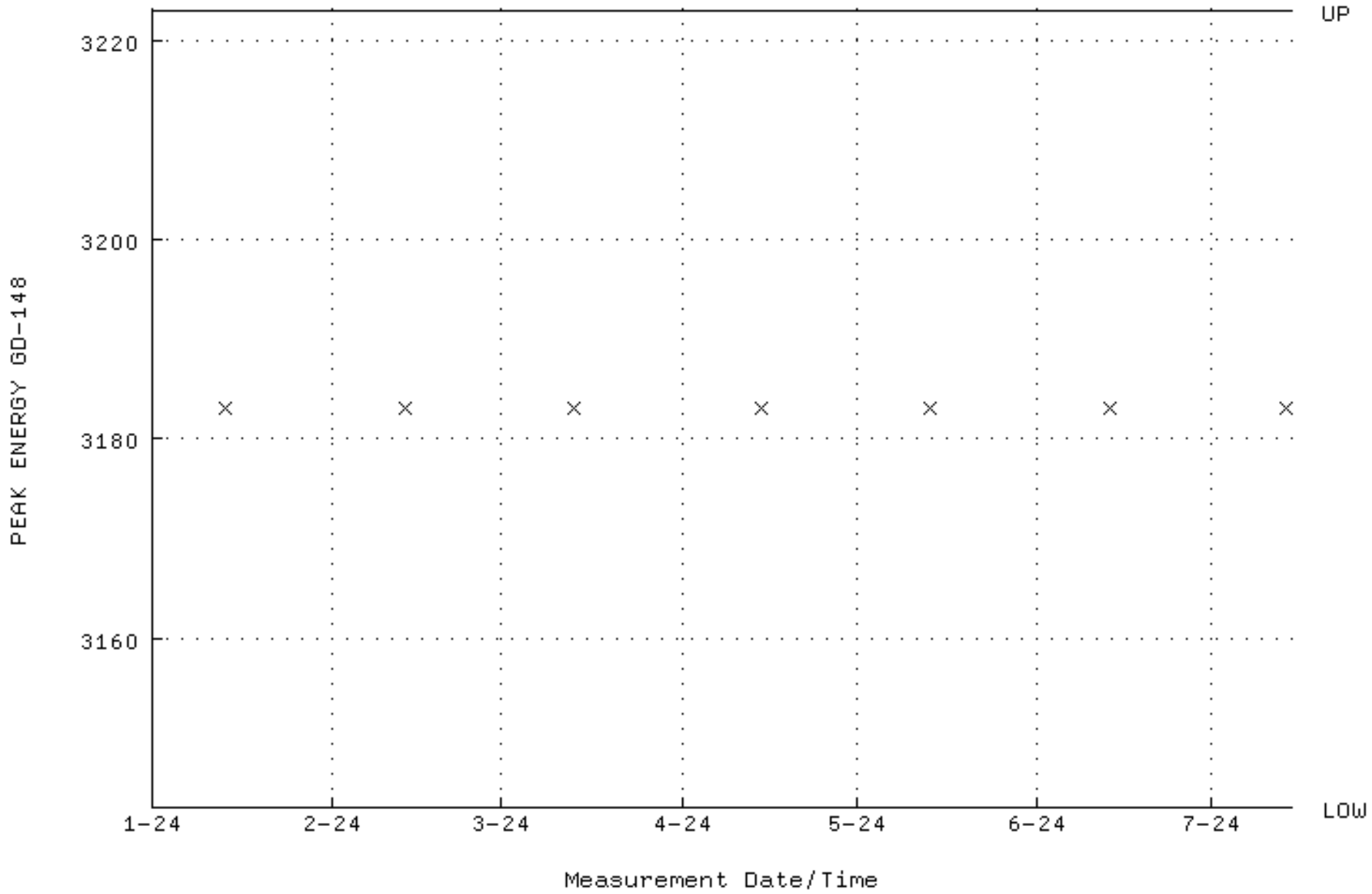
QA filename : DKA100:[ENV_ALPHA.QA.W]W117.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 13-JAN-2024 13:15:17 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



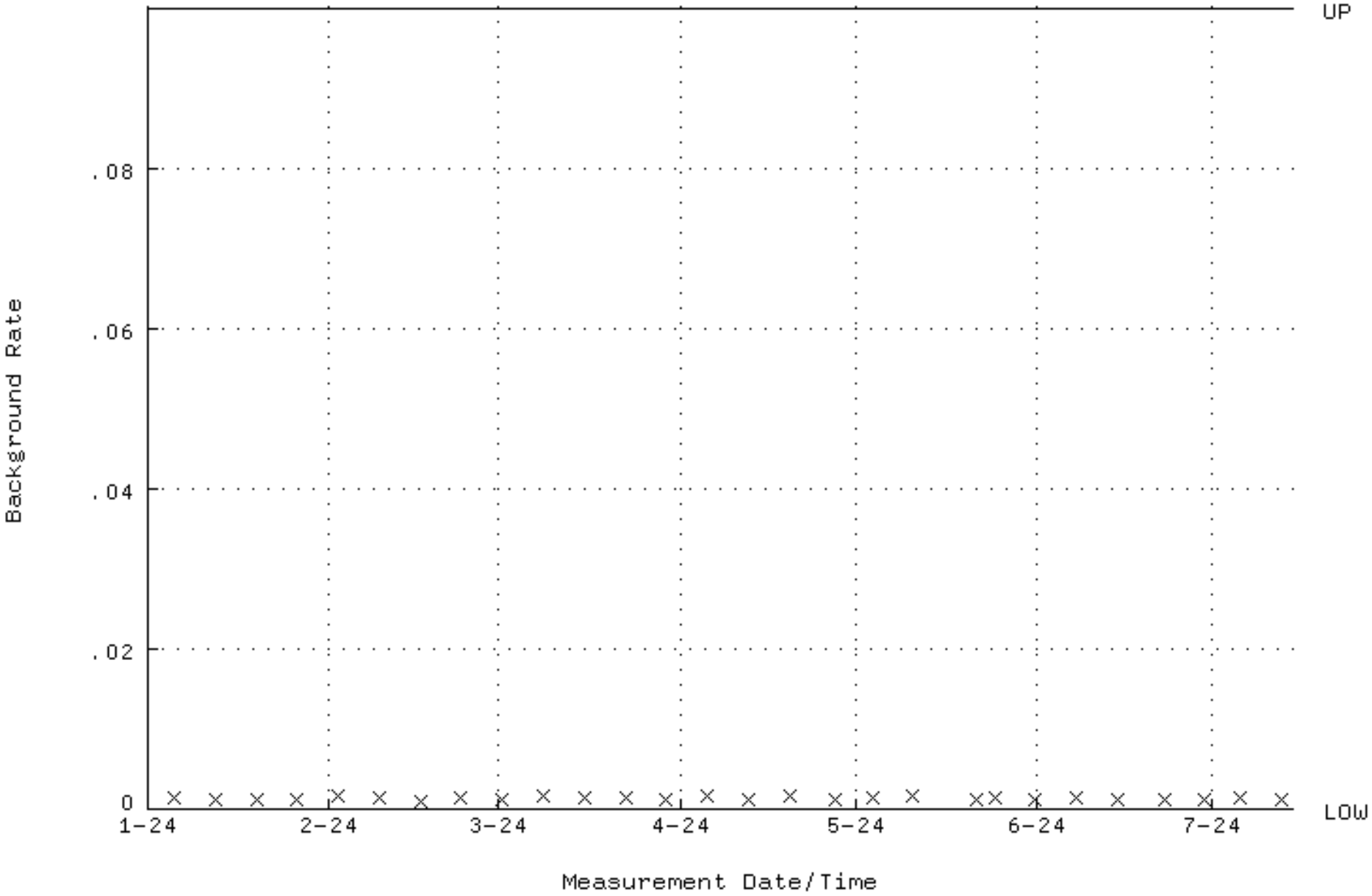
QA filename : DKA100:[ENV_ALPHA.QA.W]W117.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 13-JAN-2024 13:15:17 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



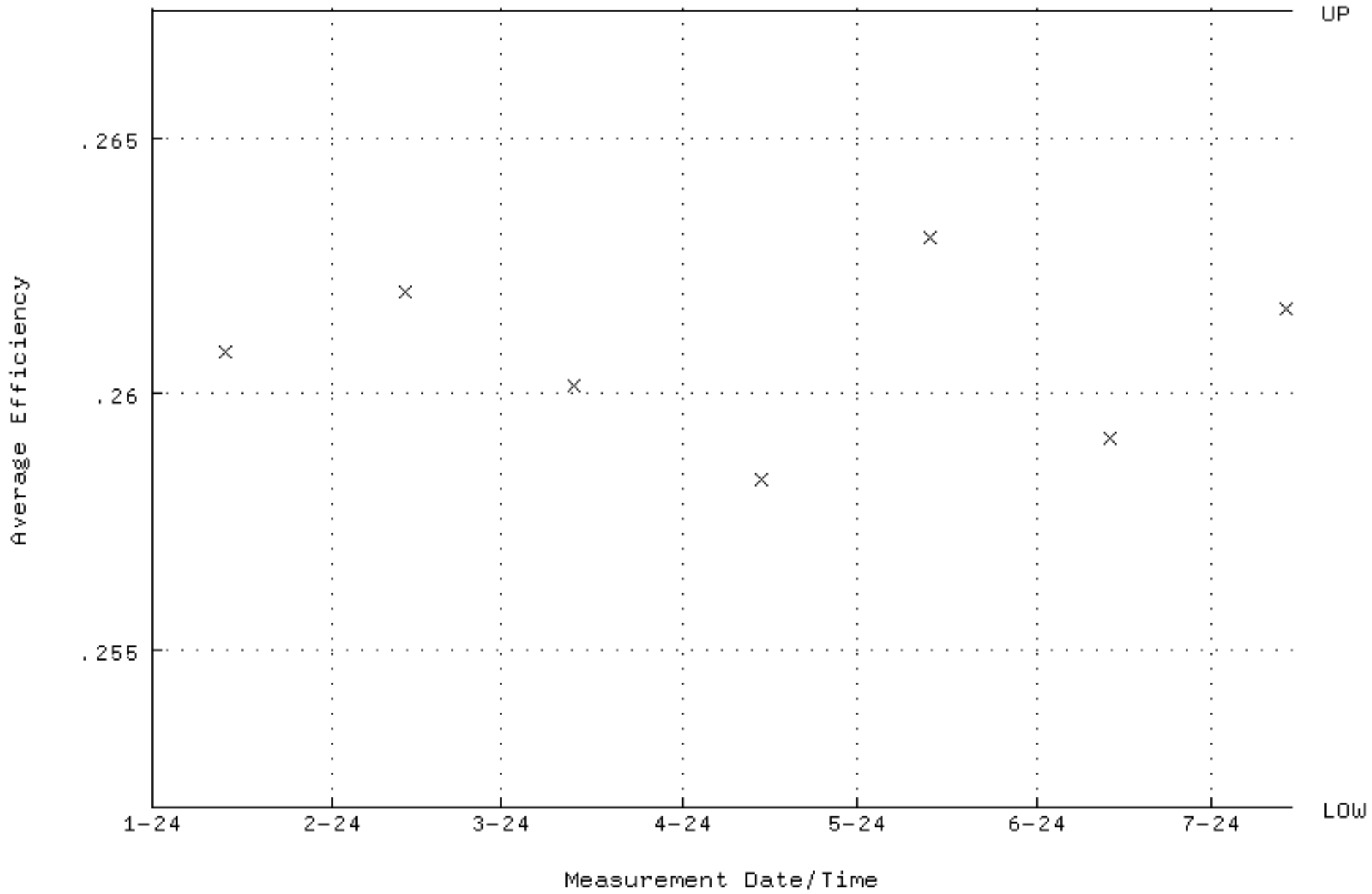
QA filename : DKA100:[ENV_ALPHA.QA.W]W117.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 13-JAN-2024 13:15:17 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



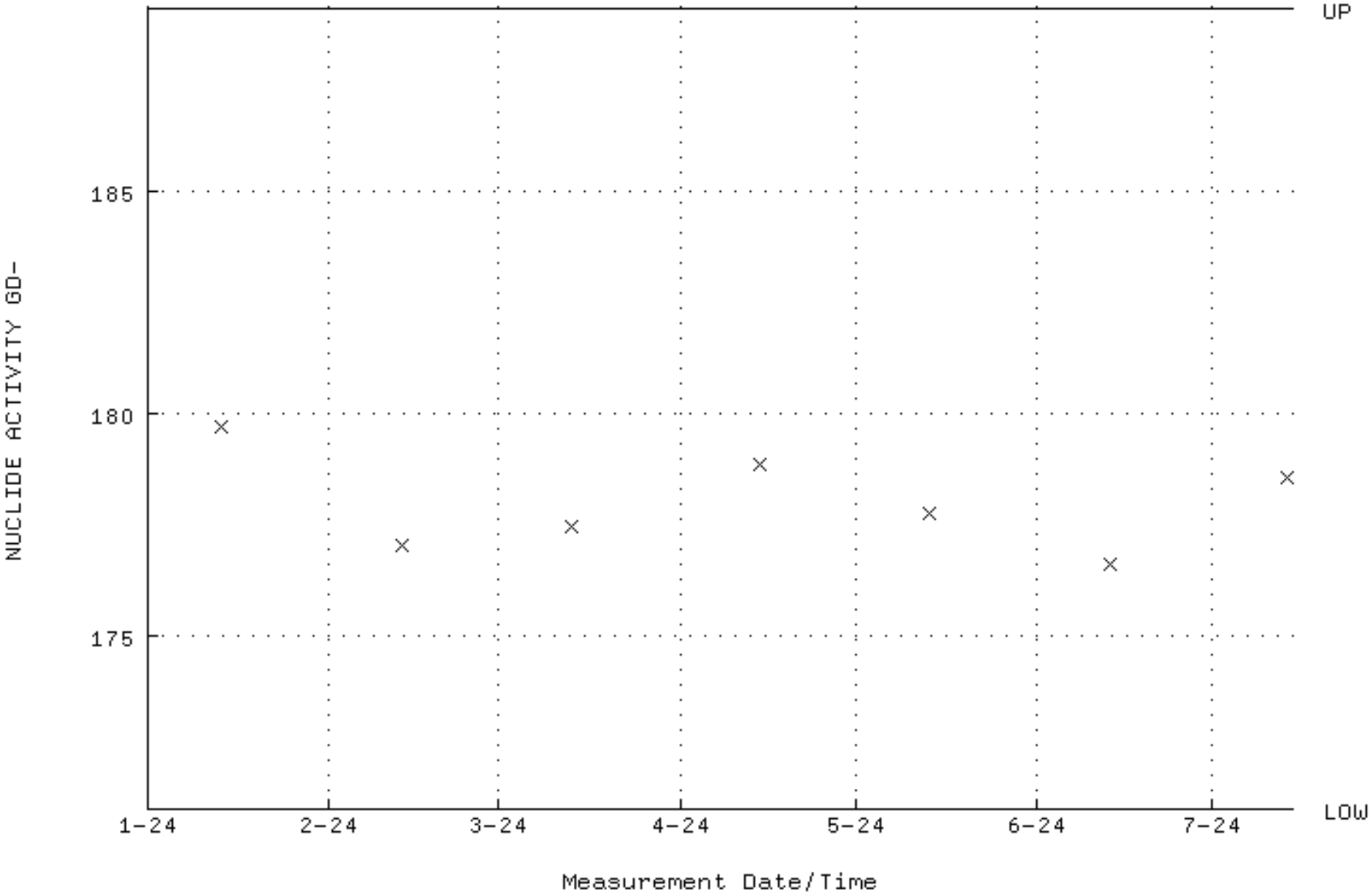
QA filename : DKA100:[ENV_ALPHA.QA.B]B117.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:41:26 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



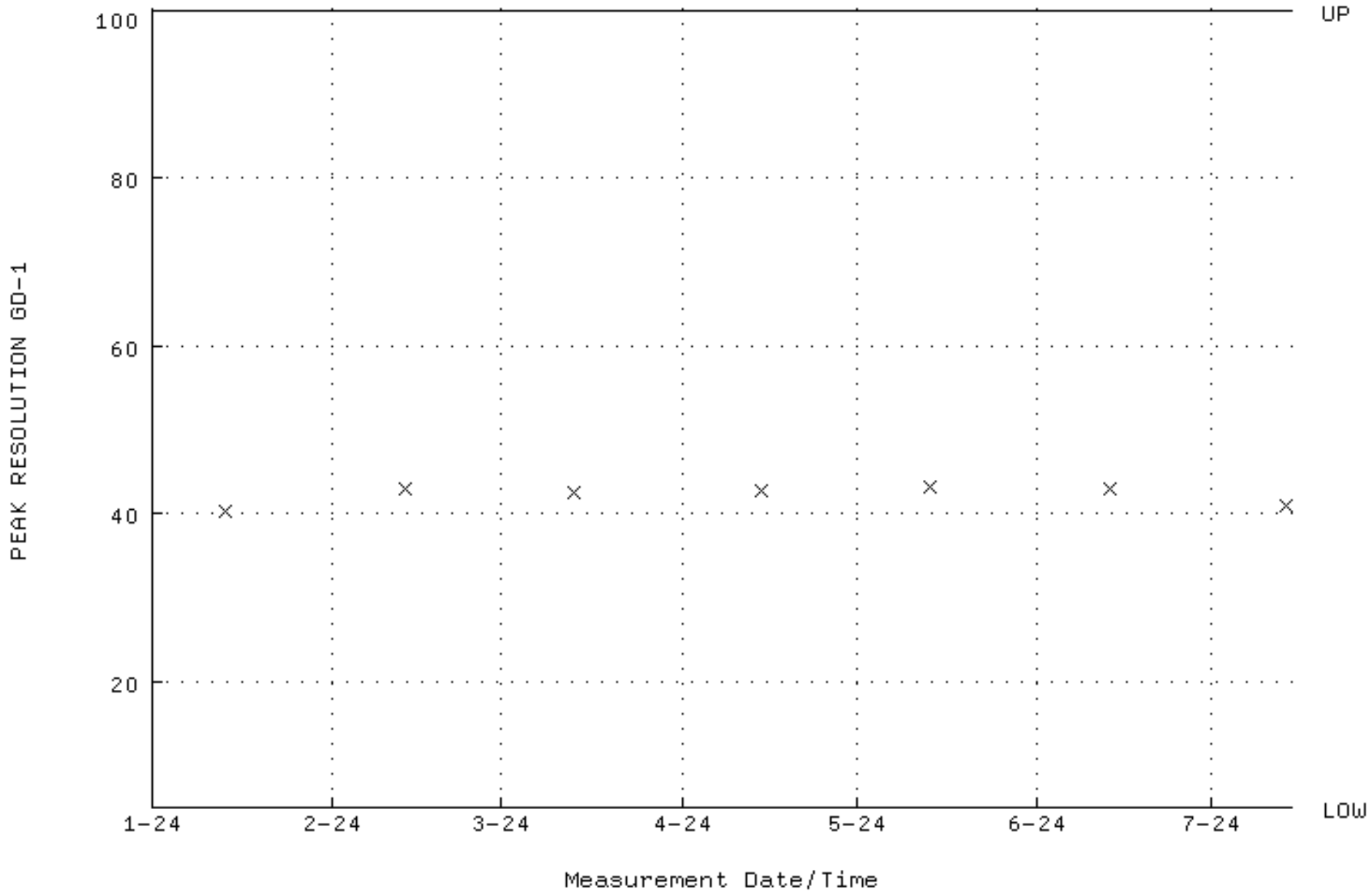
QA filename : DKA100:[ENV_ALPHA.QA.W]W125.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 13-JAN-2024 13:17:22 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.251904 through 0.267486



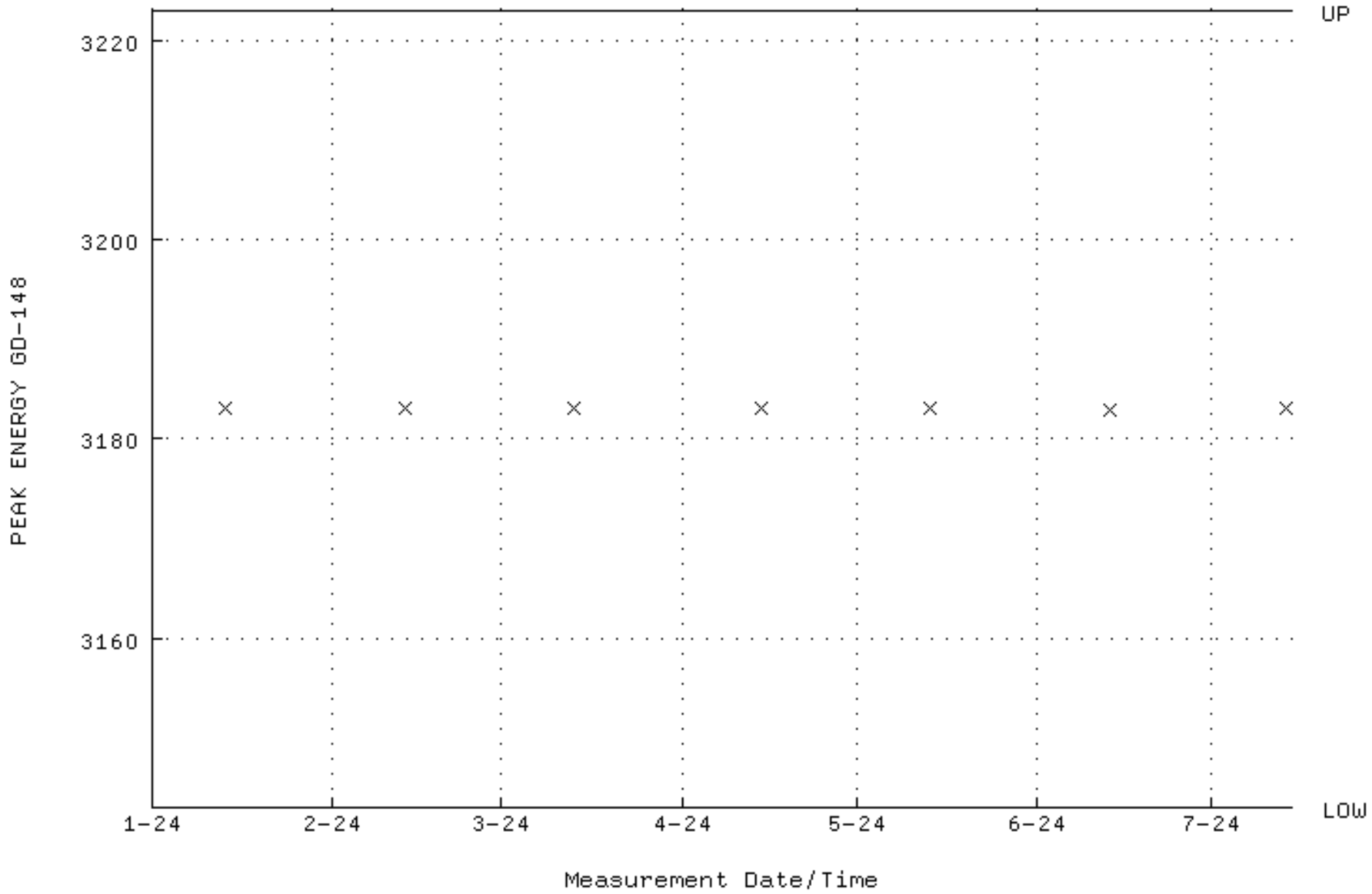
QA filename : DKA100:[ENV_ALPHA.QA.W]W125.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 13-JAN-2024 13:17:22 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



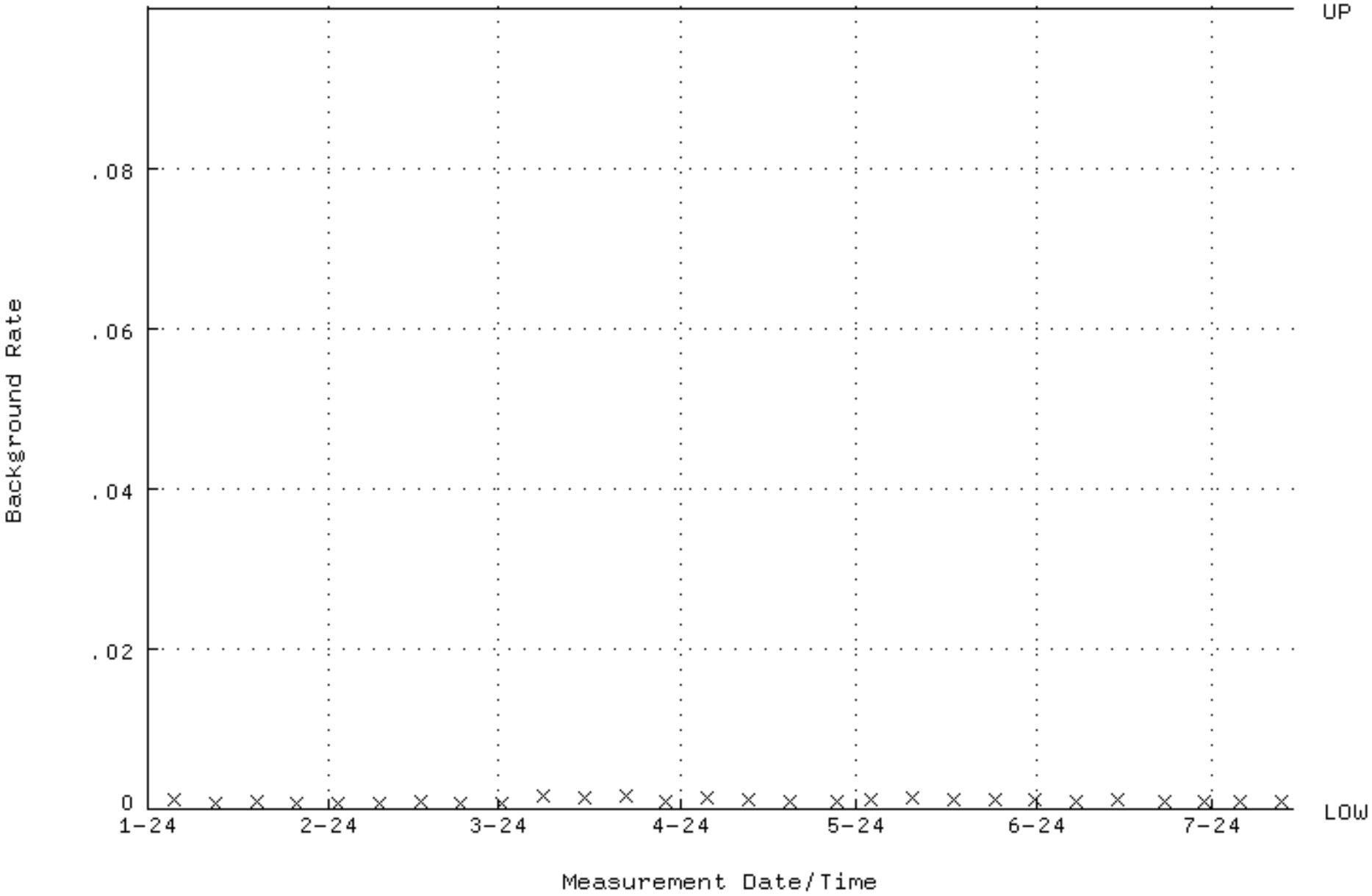
QA filename : DKA100:[ENV_ALPHA.QA.W]W125.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 13-JAN-2024 13:17:22 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



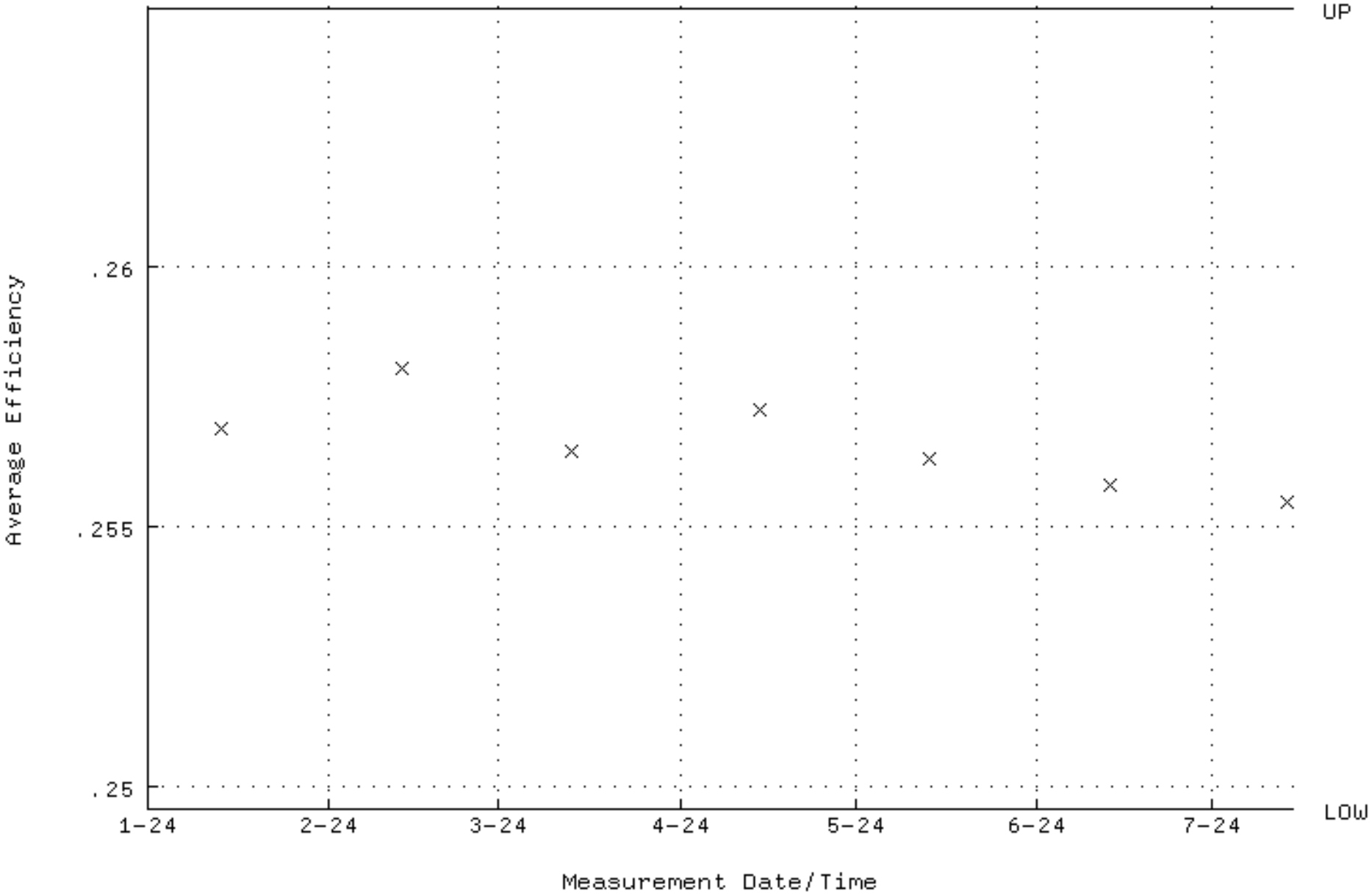
QA filename : DKA100:[ENV_ALPHA.QA.W]W125.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 13-JAN-2024 13:17:22 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



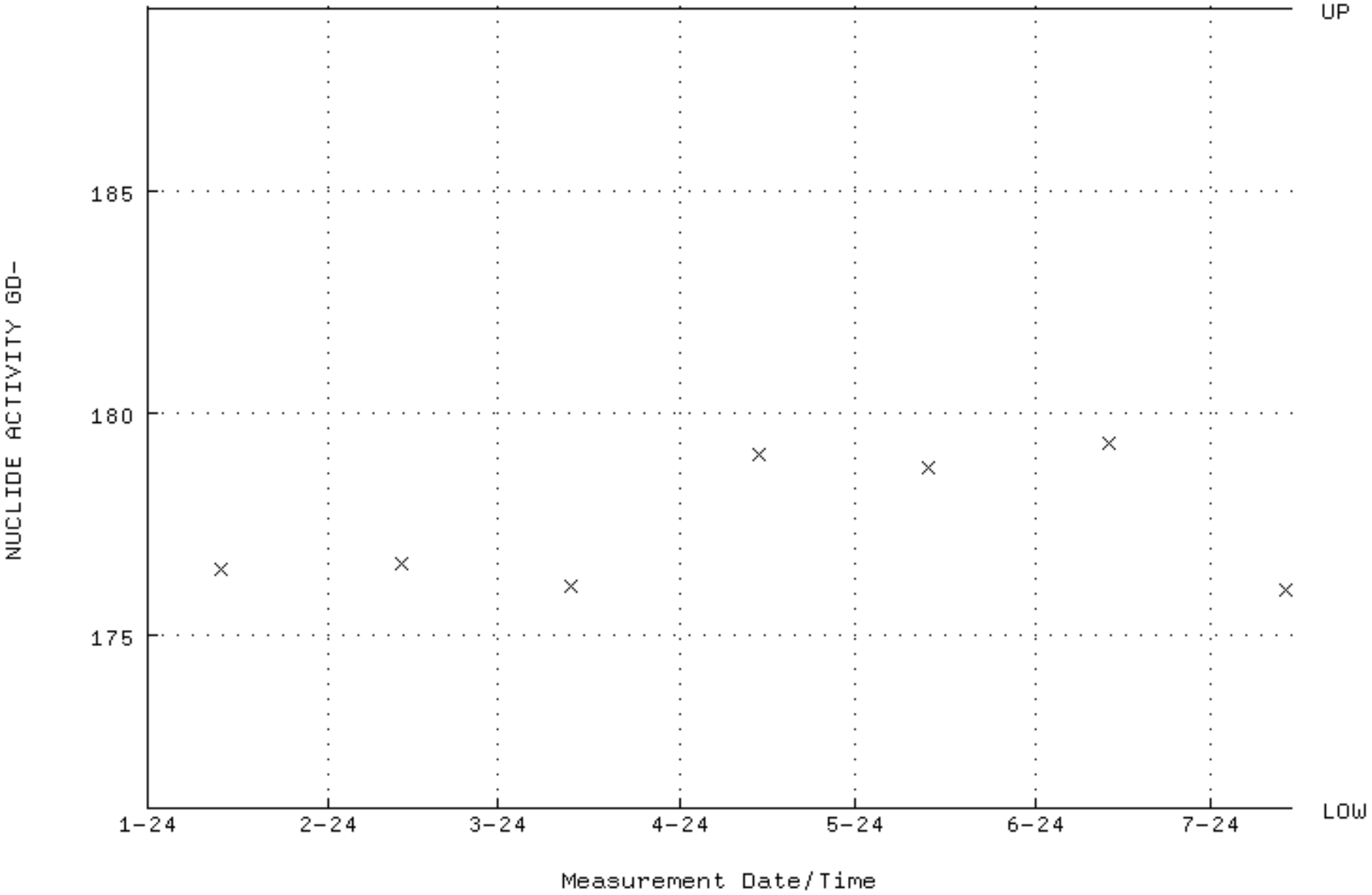
QA filename : DKA100:[ENV_ALPHA.QA.B]B125.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:41:41 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



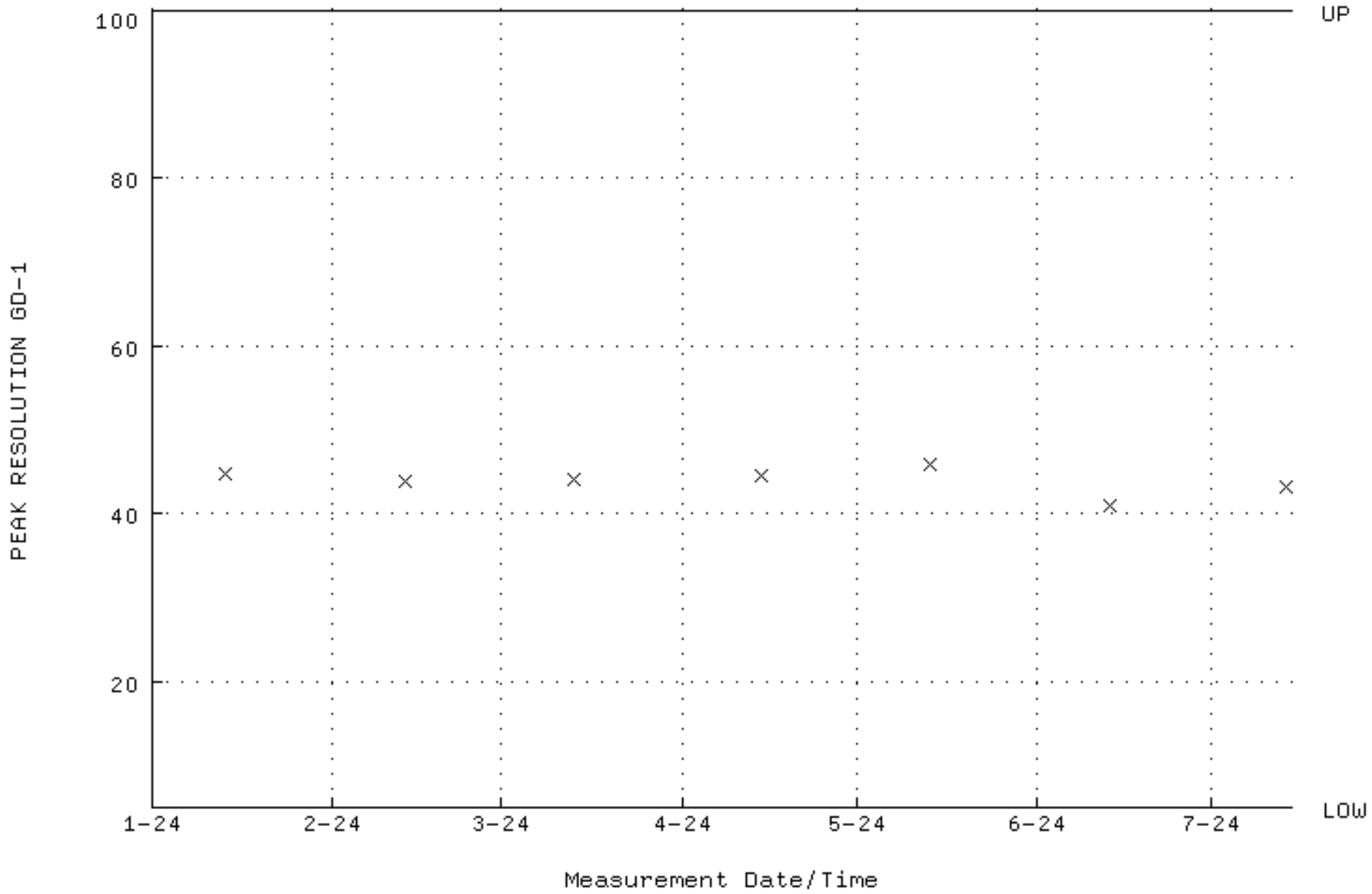
QA filename : DKA100:[ENV_ALPHA.QA.W]W126.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 13-JAN-2024 13:17:26 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.249550 through 0.264985



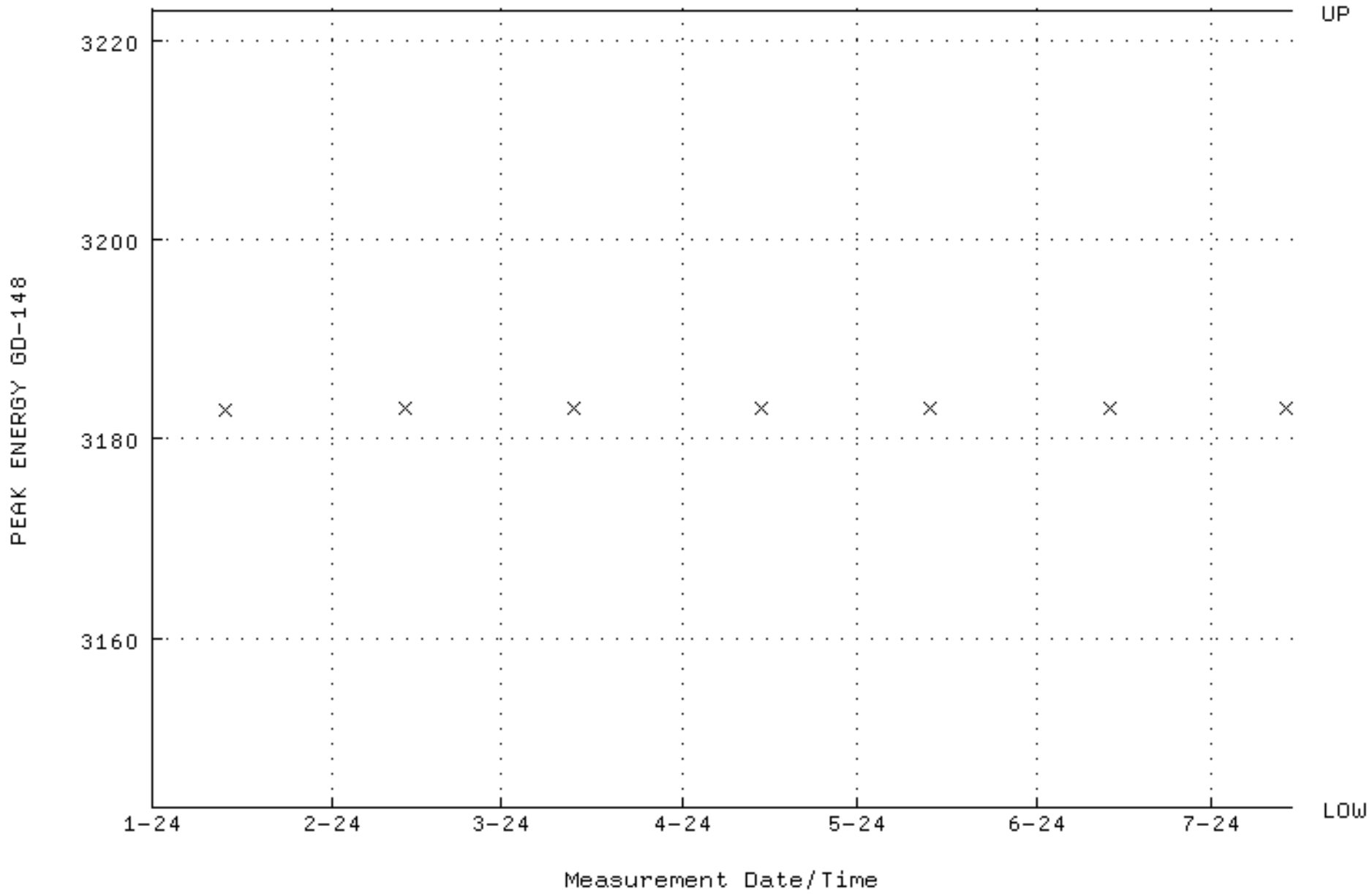
QA filename : DKA100:[ENV_ALPHA.QA.W]W126.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 13-JAN-2024 13:17:26 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



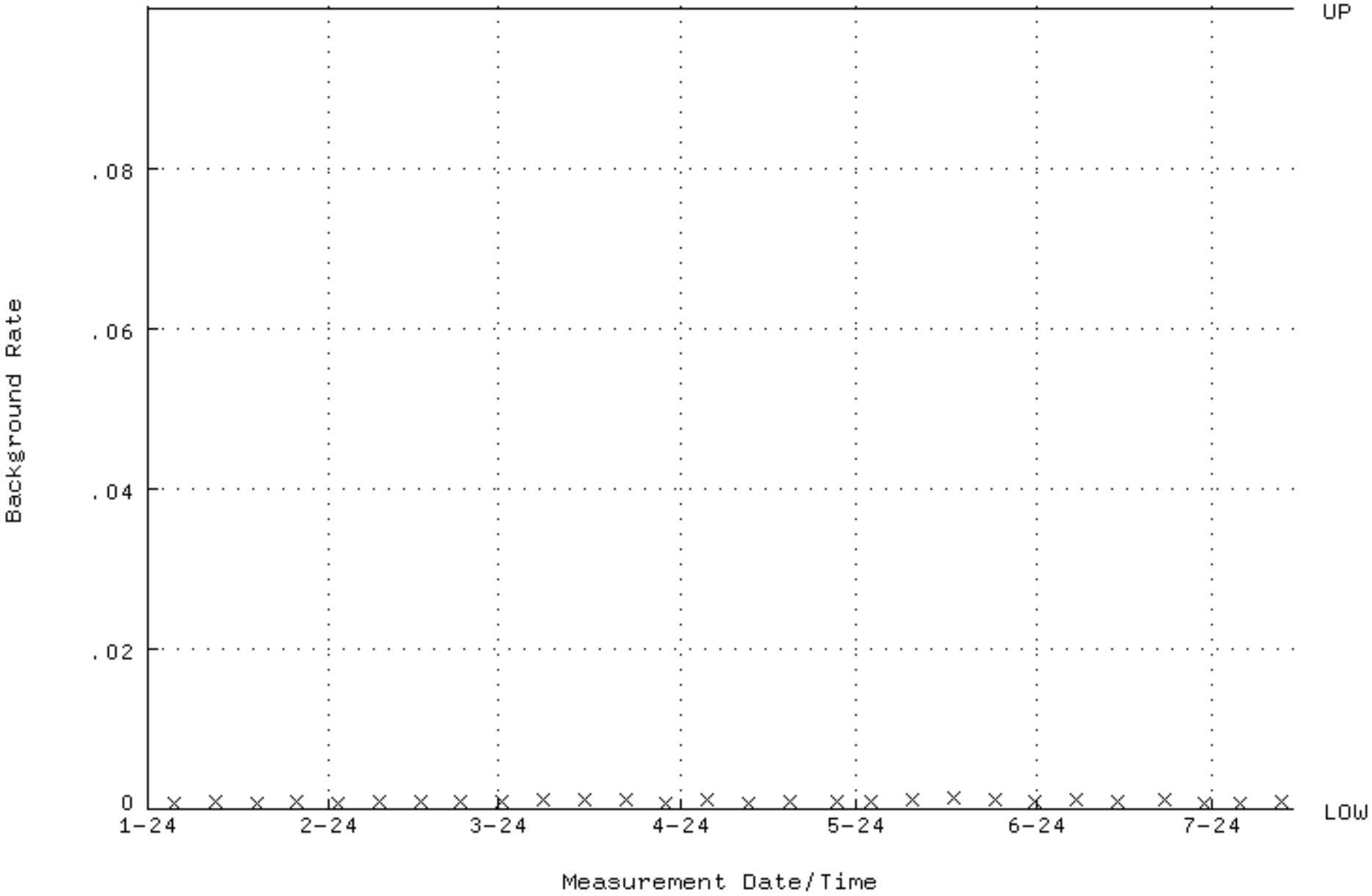
QA filename : DKA100:[ENV_ALPHA.QA.W]W126.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 13-JAN-2024 13:17:26 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



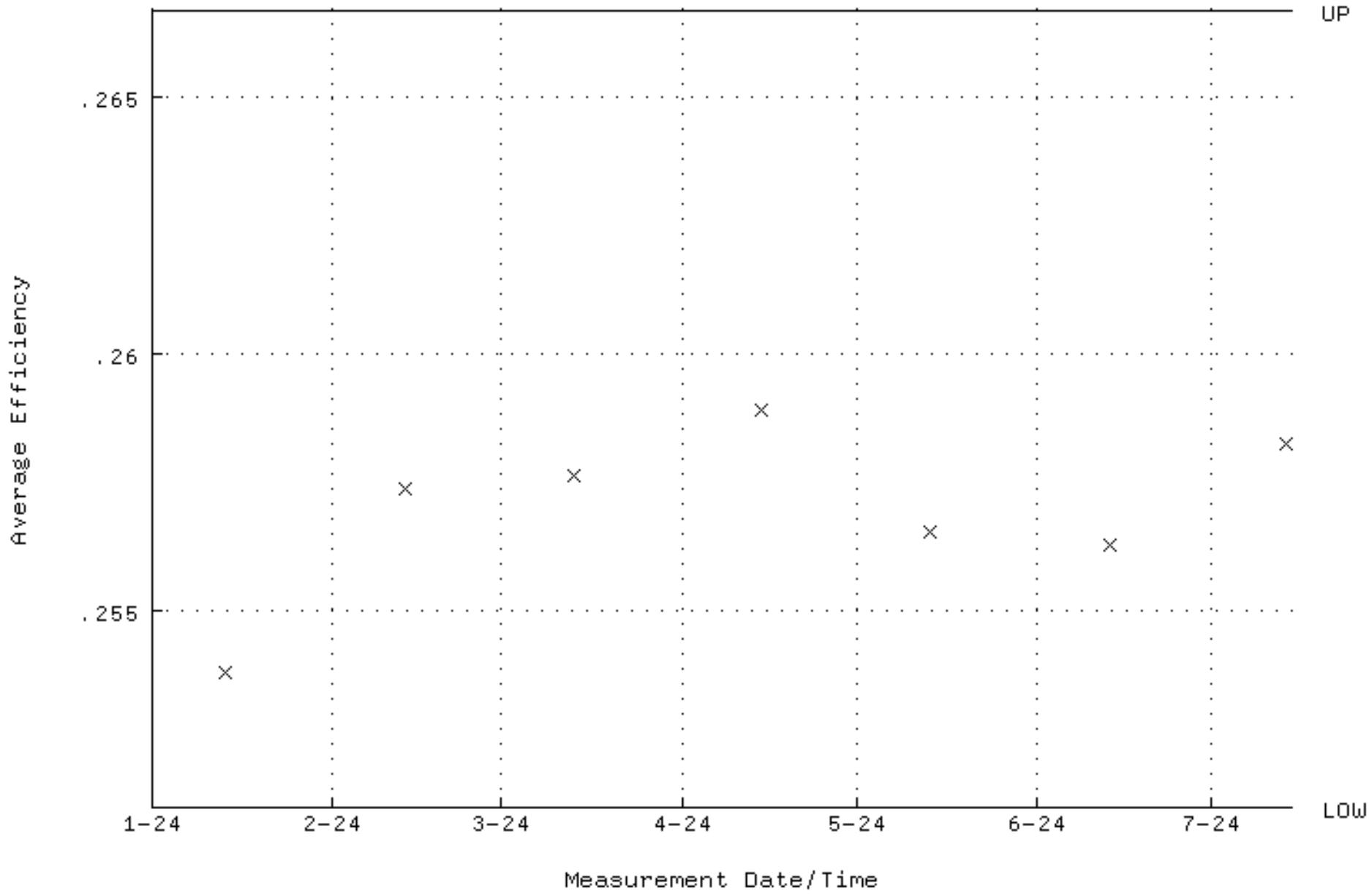
QA filename : DKA100:[ENV_ALPHA.QA.W]W126.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 13-JAN-2024 13:17:26 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



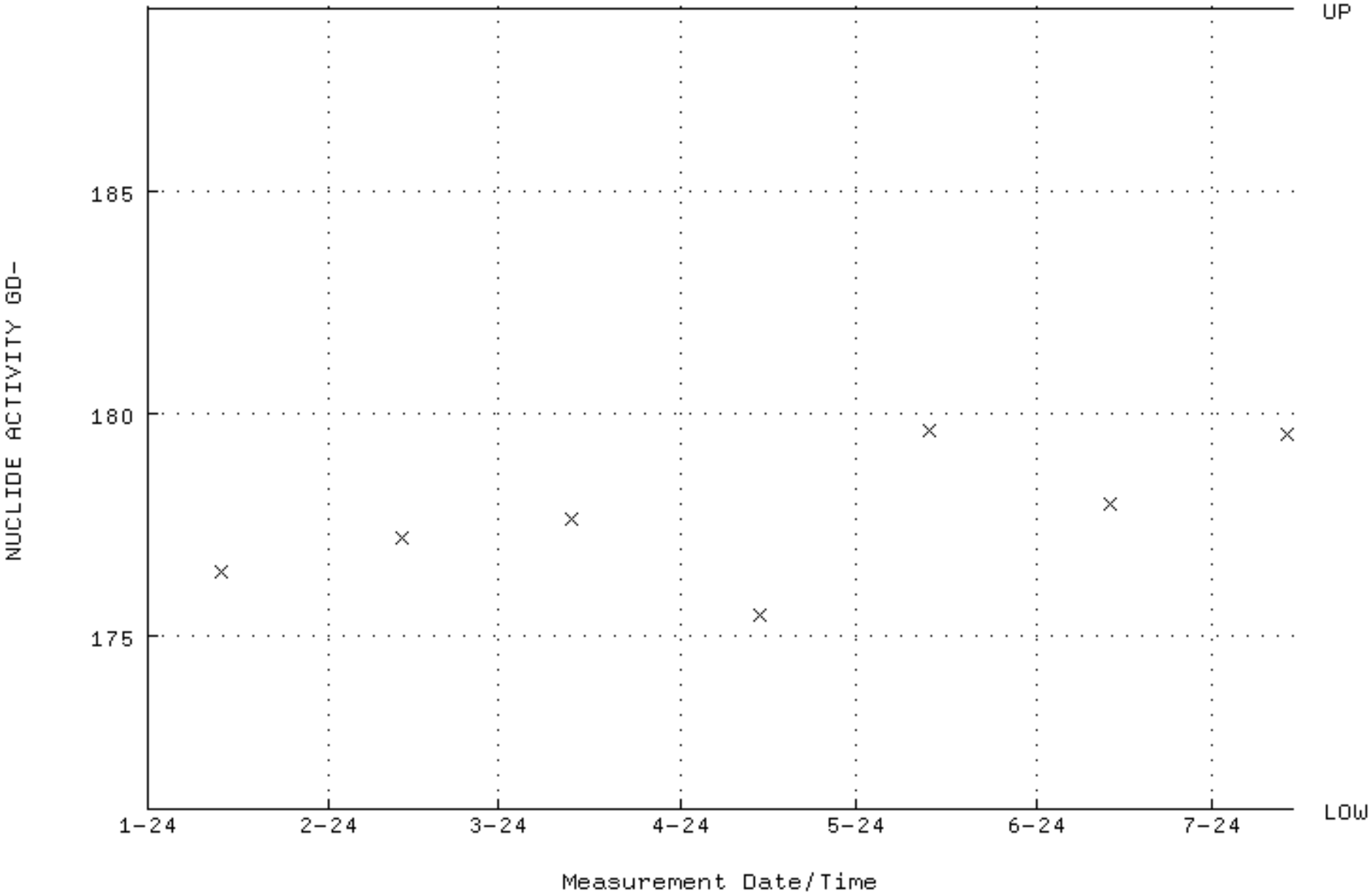
QA filename : DKA100:[ENV_ALPHA.QA.B]B126.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:41:45 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



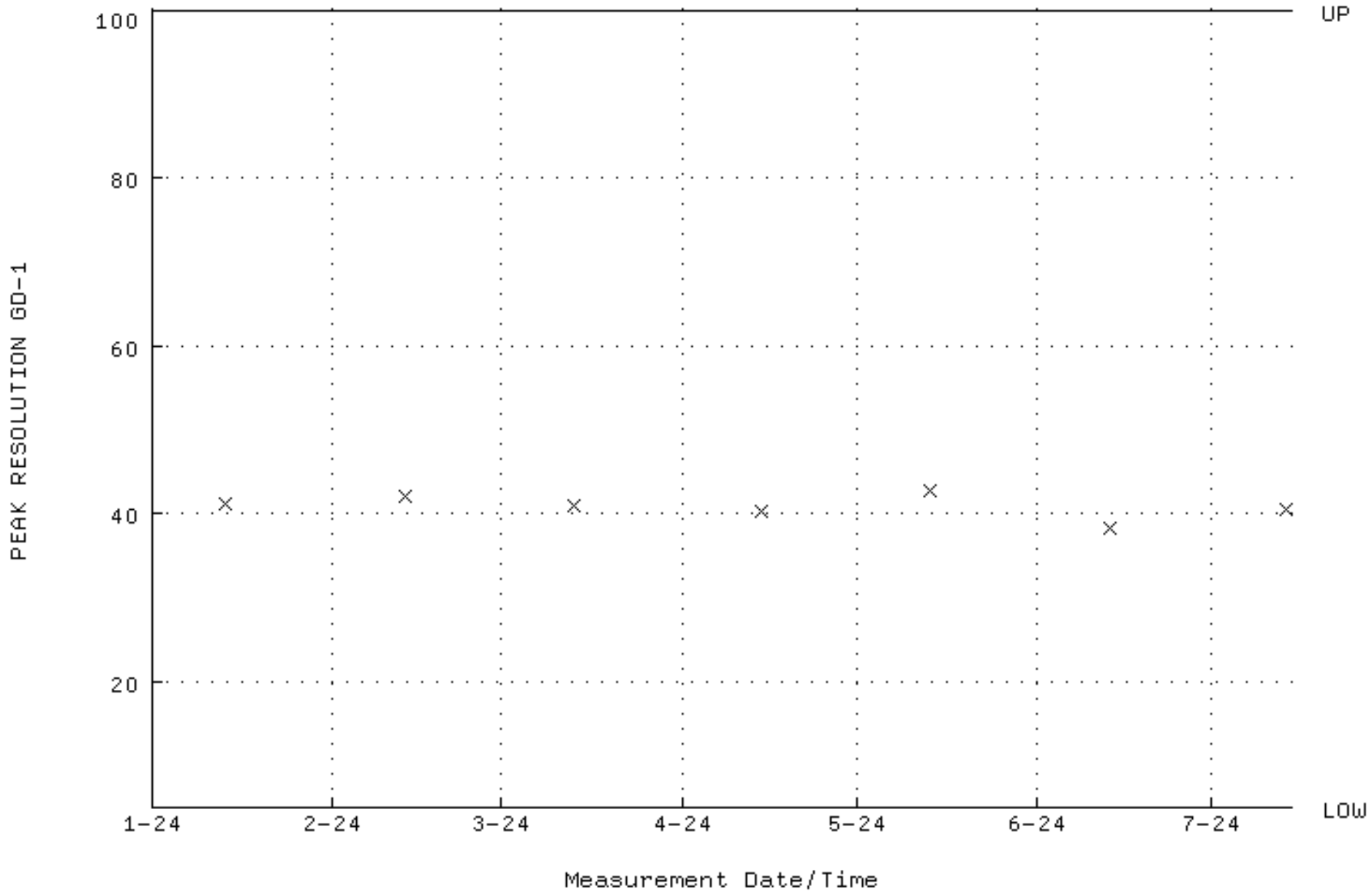
QA filename : DKA100:[ENV_ALPHA.QA.W]W135.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 13-JAN-2024 13:25:07 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.251160 through 0.266690



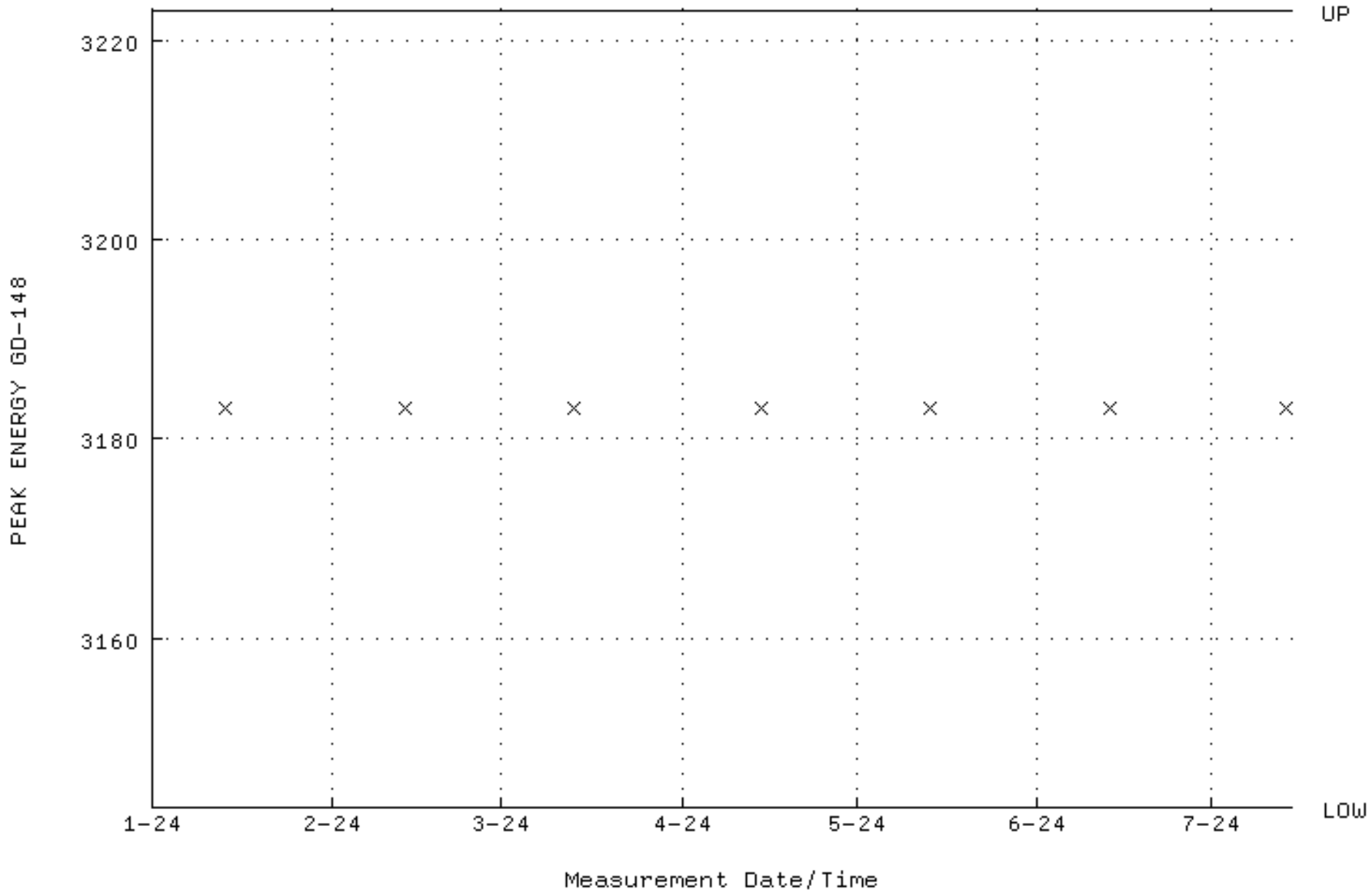
QA filename : DKA100:[ENV_ALPHA.QA.W]W135.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 13-JAN-2024 13:25:07 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



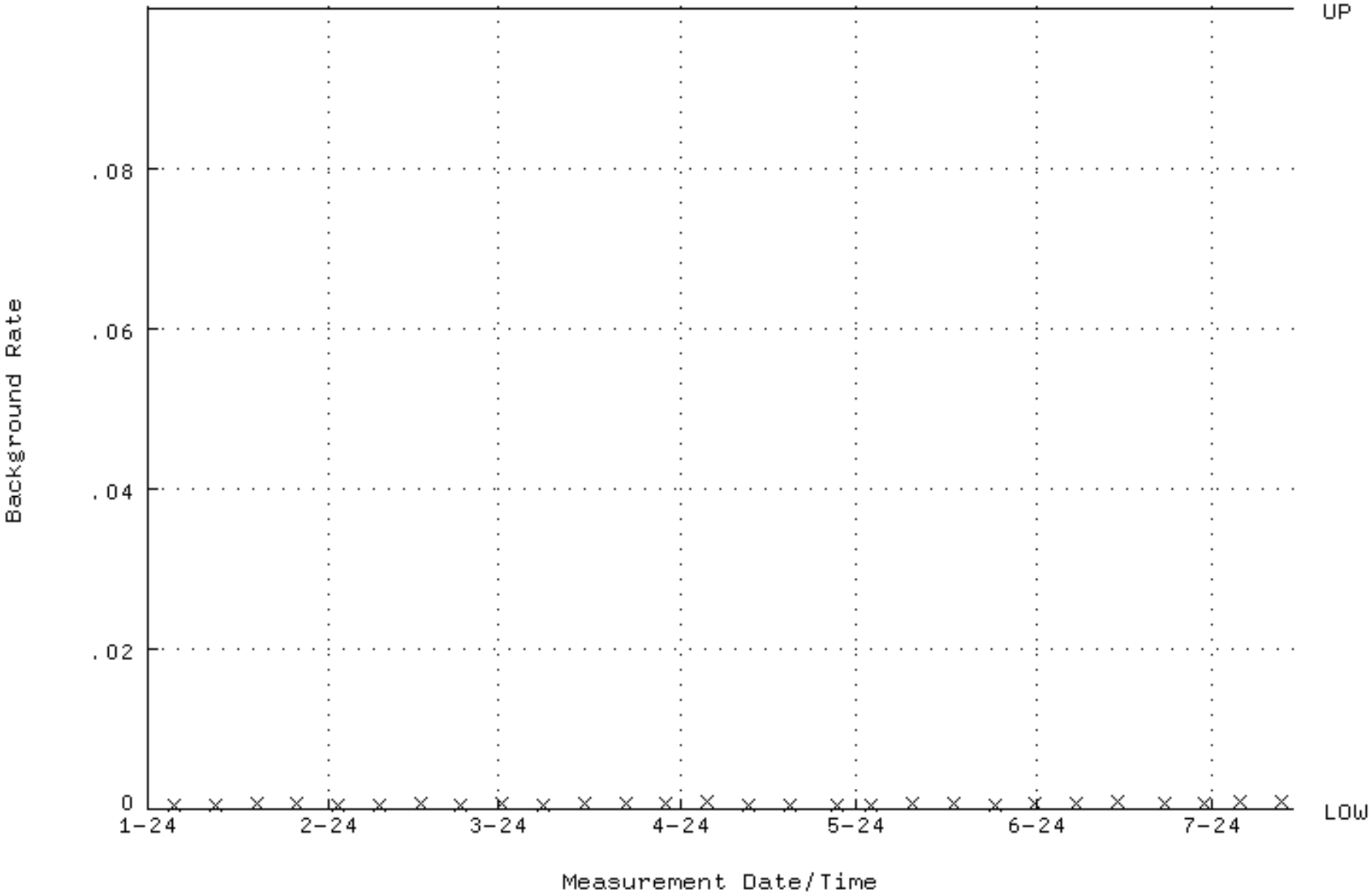
QA filename : DKA100:[ENV_ALPHA.QA.W]W135.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 13-JAN-2024 13:25:07 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



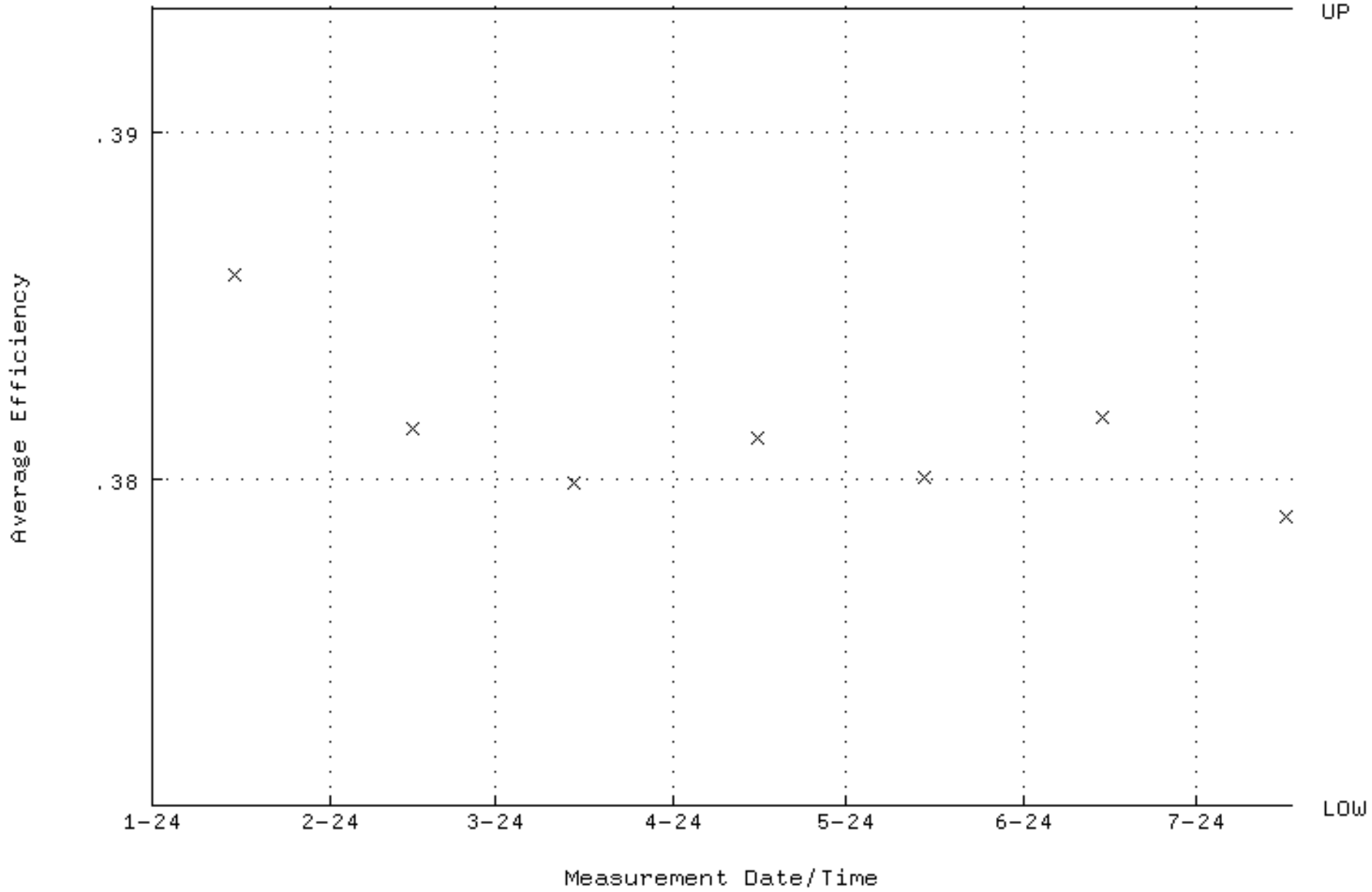
QA filename : DKA100:[ENV_ALPHA.QA.W]W135.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 13-JAN-2024 13:25:07 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



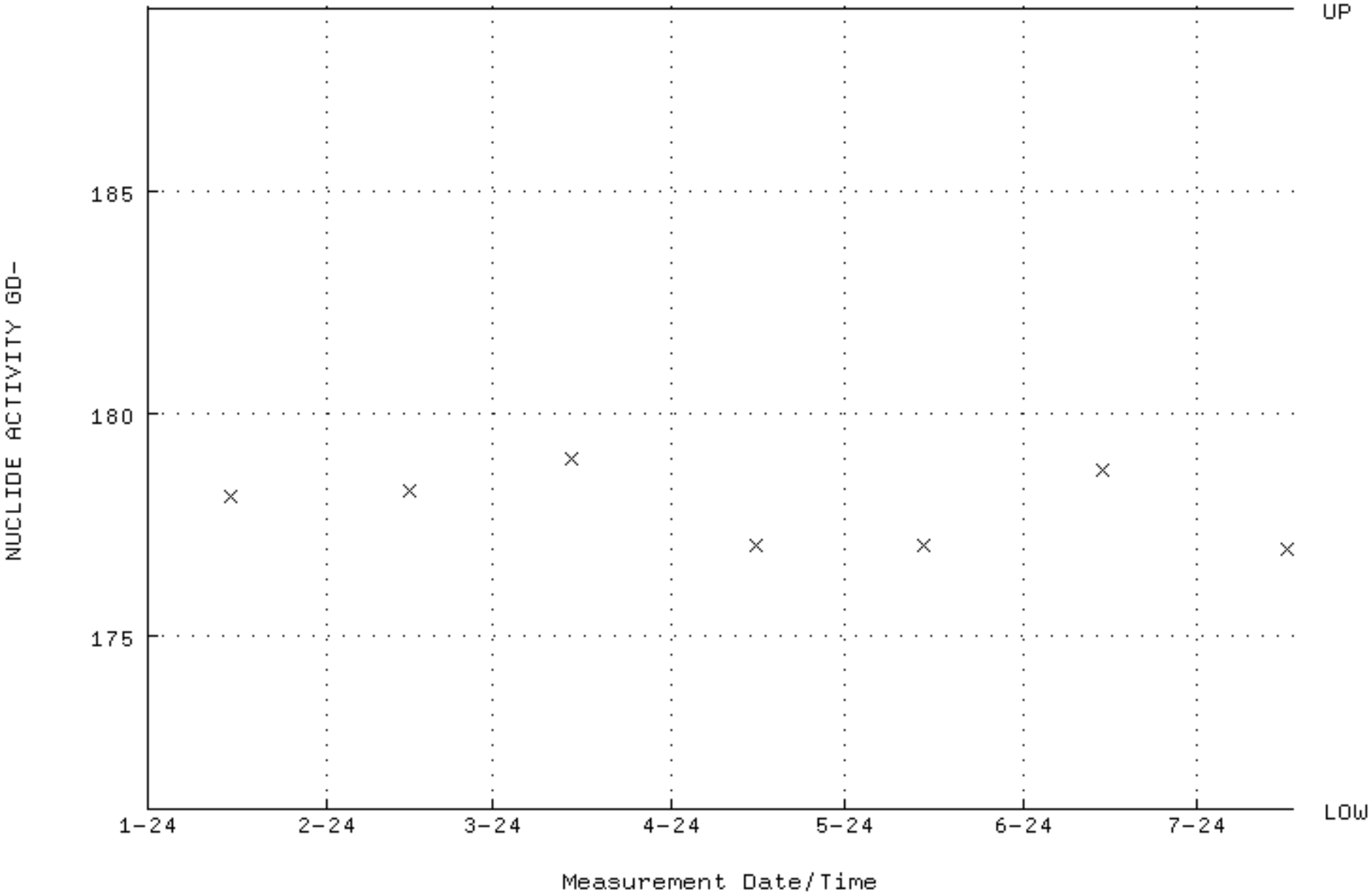
QA filename : DKA100:[ENV_ALPHA.QA.B]B135.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:42:21 through 14-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



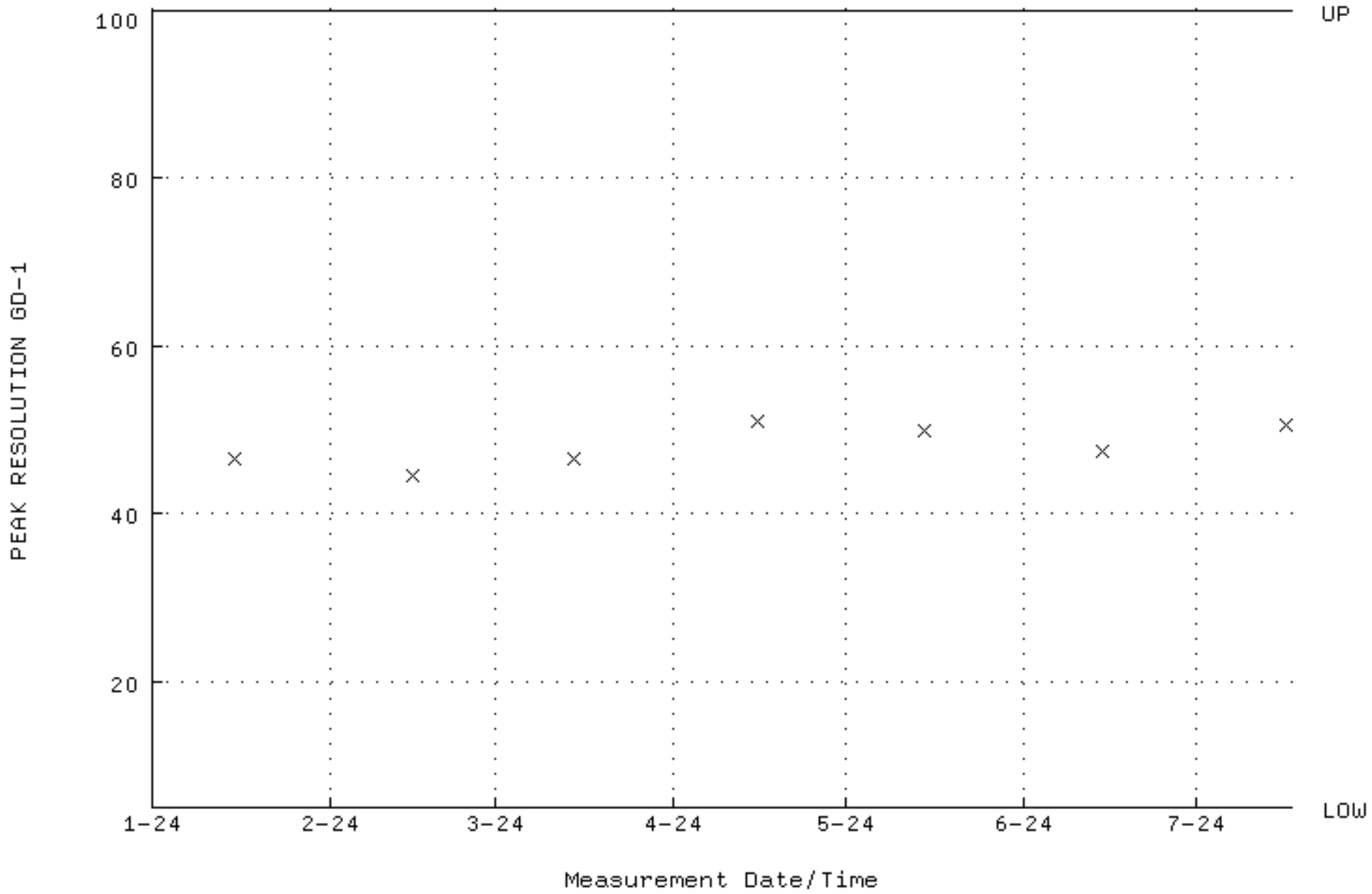
QA filename : DKA100:[ENV_ALPHA.QA.W]W160.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 15-JAN-2024 08:03:51 through 17-JUL-2024 12:00:00
Lower/Upper Lmts: 0.370620 through 0.393540



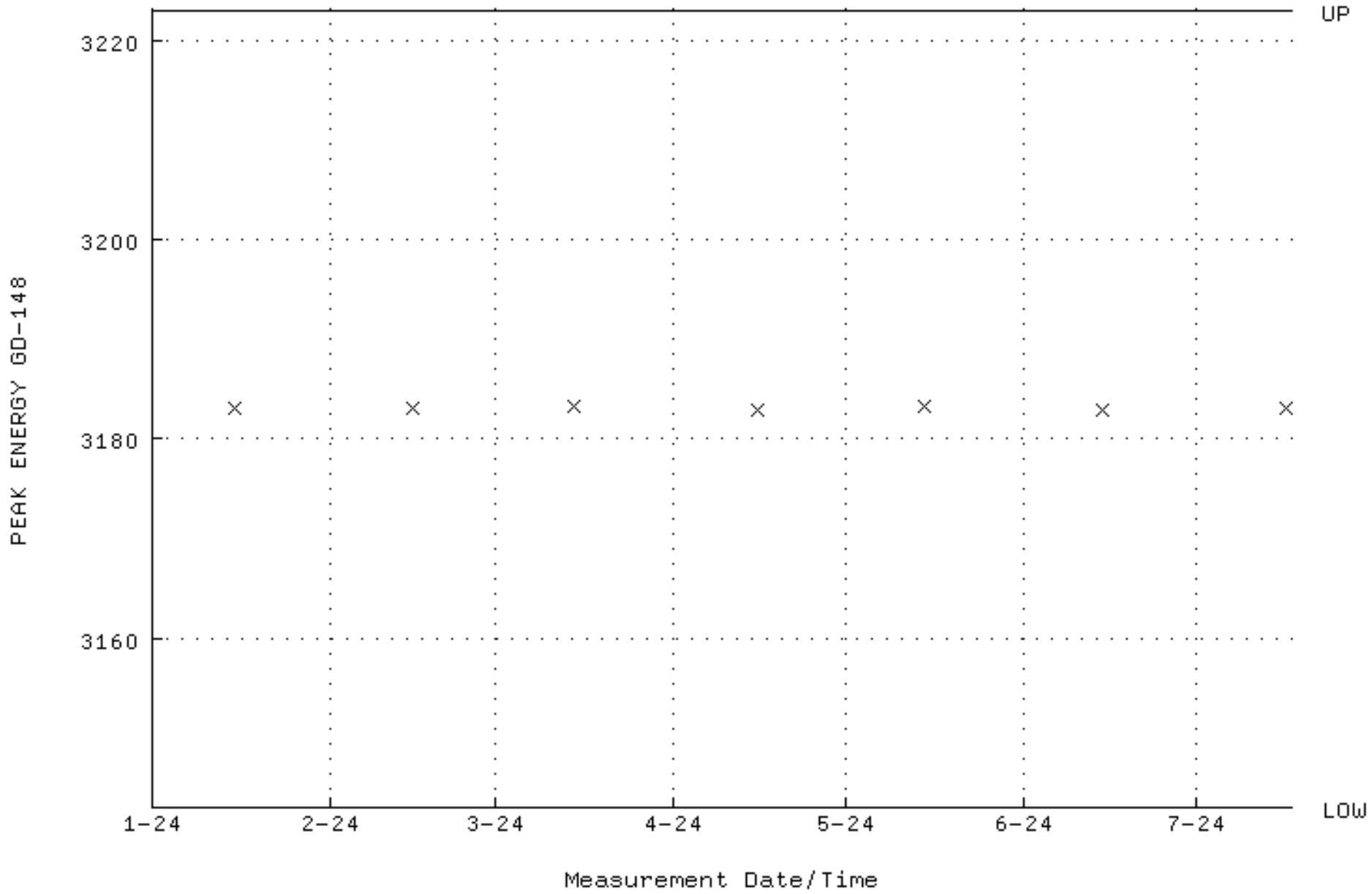
QA filename : DKA100:[ENV_ALPHA.QA.W]W160.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 15-JAN-2024 08:03:51 through 17-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



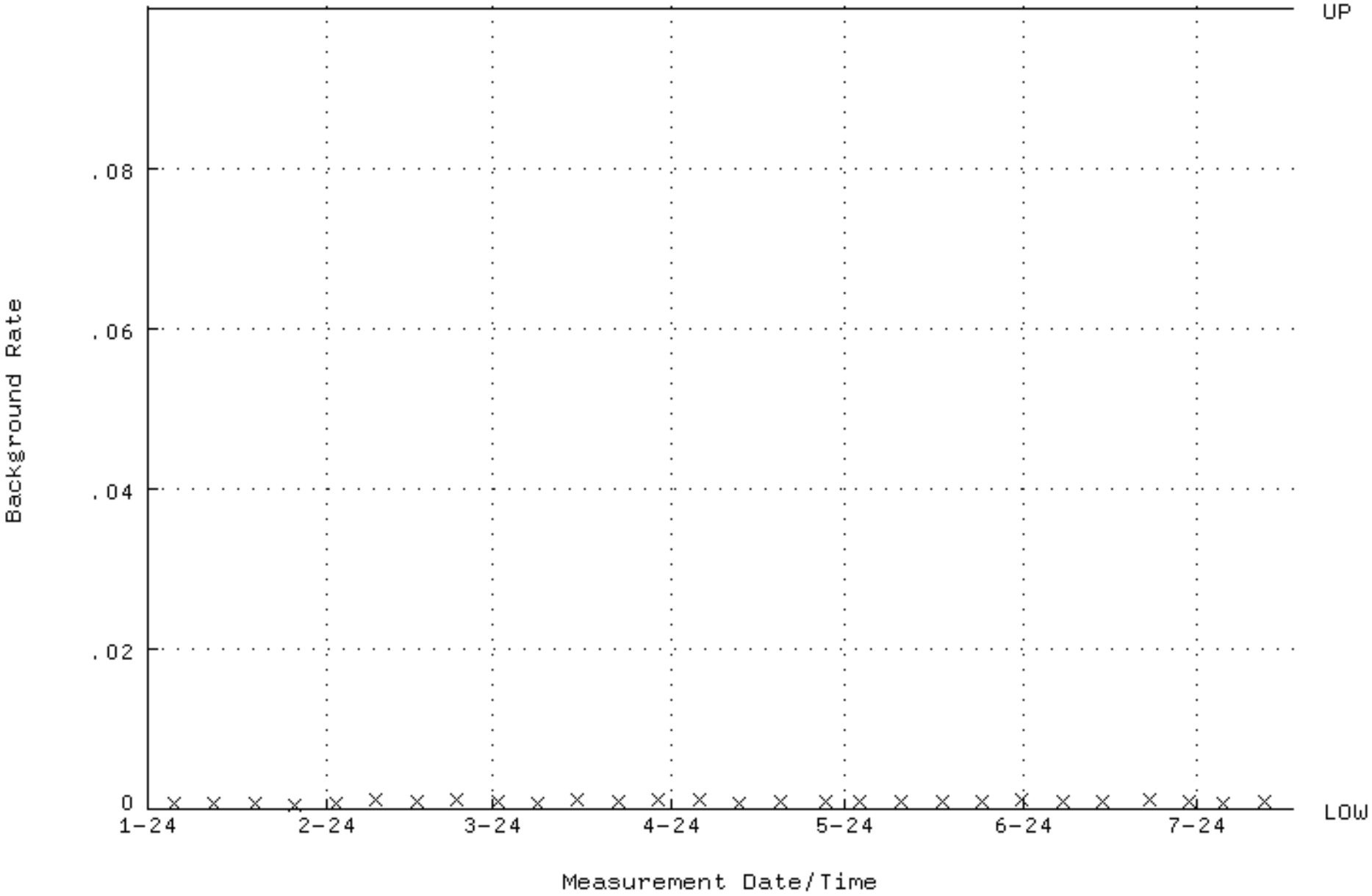
QA filename : DKA100:[ENV_ALPHA.QA.W]W160.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 15-JAN-2024 08:03:51 through 17-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



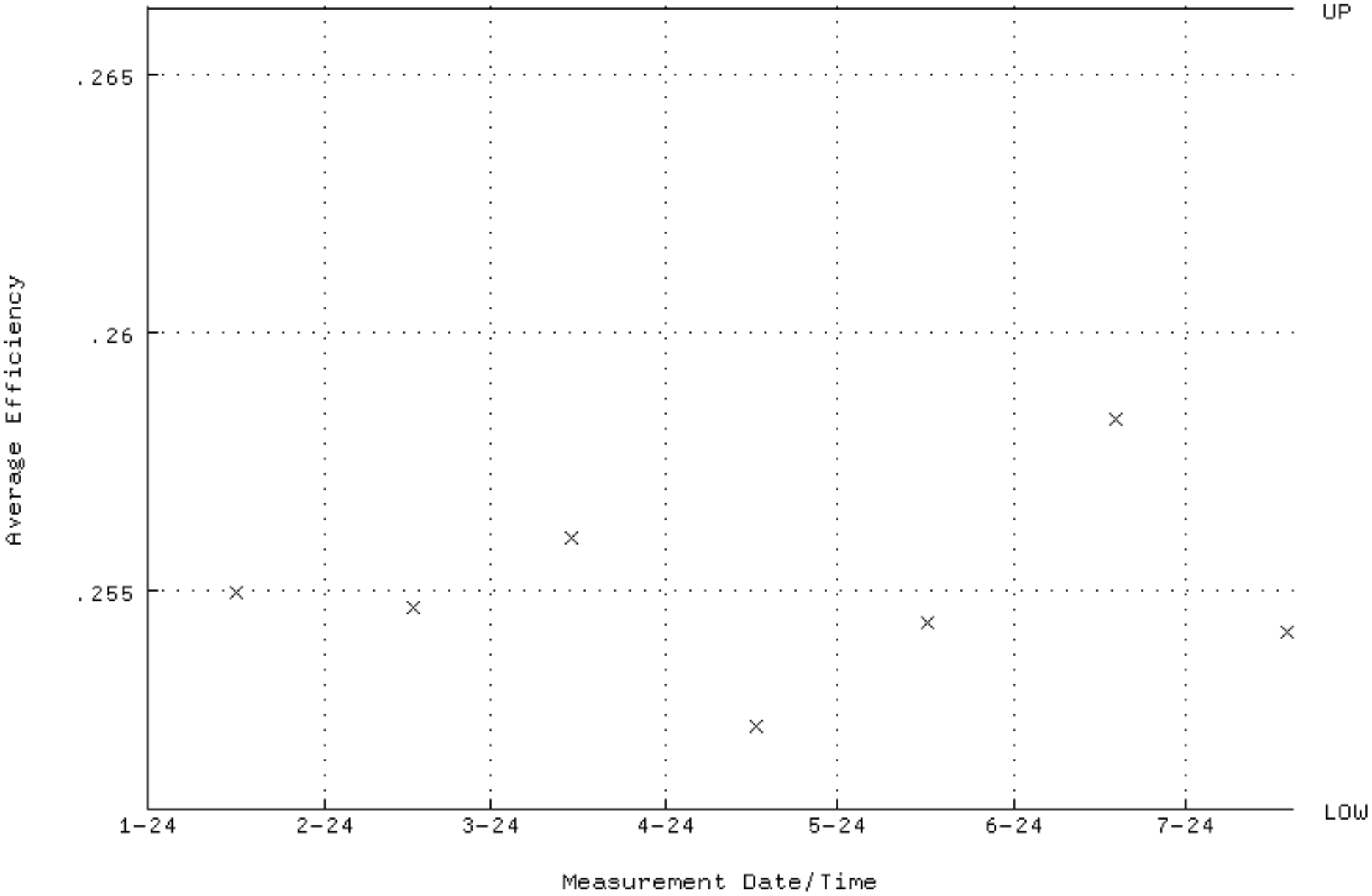
QA filename : DKA100:[ENV_ALPHA.QA.W]W160.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 15-JAN-2024 08:03:51 through 17-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



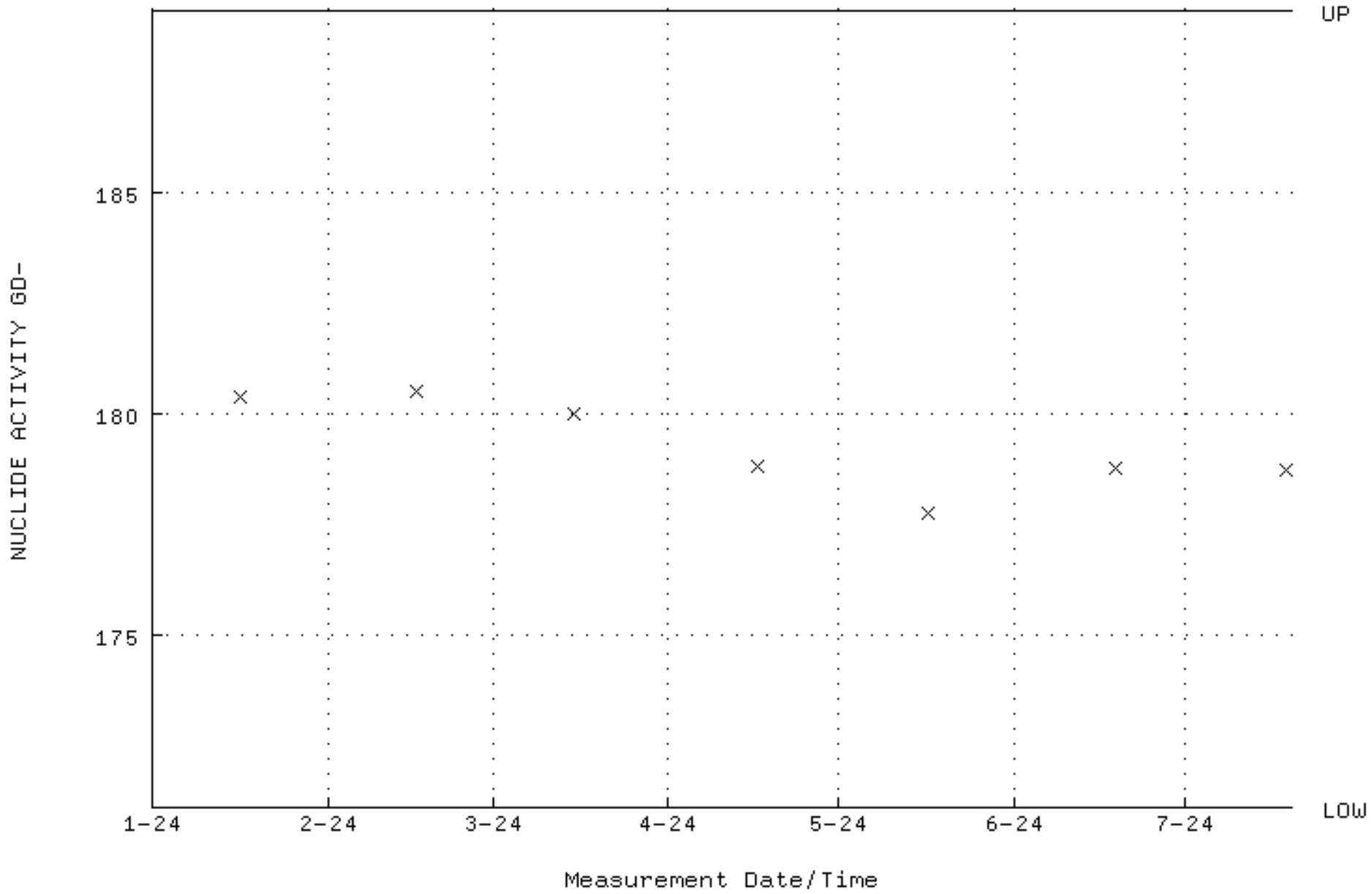
QA filename : DKA100:[ENV_ALPHA.QA.B]B160.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:45:17 through 17-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



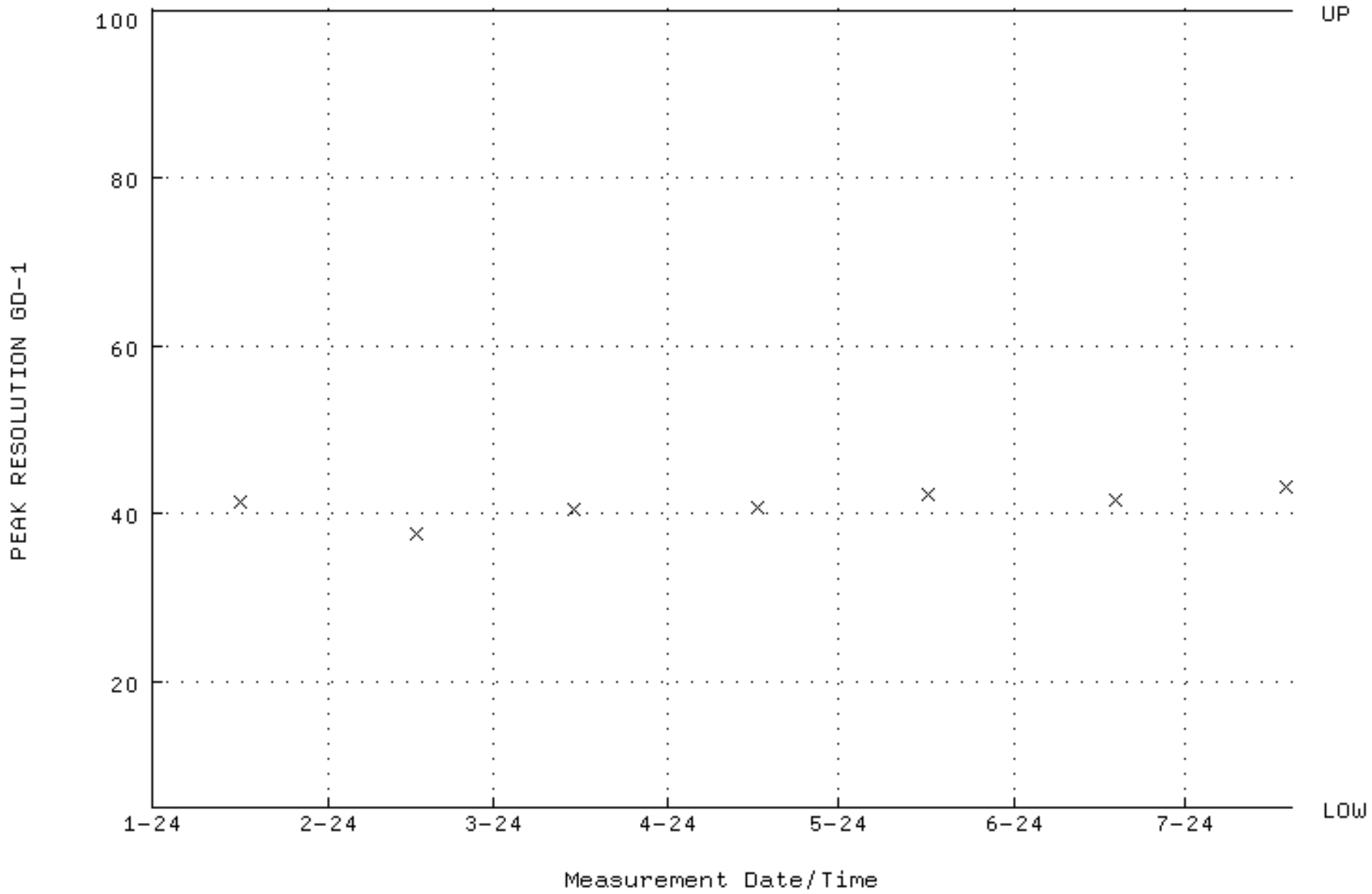
QA filename : DKA100:[ENV_ALPHA.QA.W]W166.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 16-JAN-2024 09:13:55 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.250770 through 0.266280



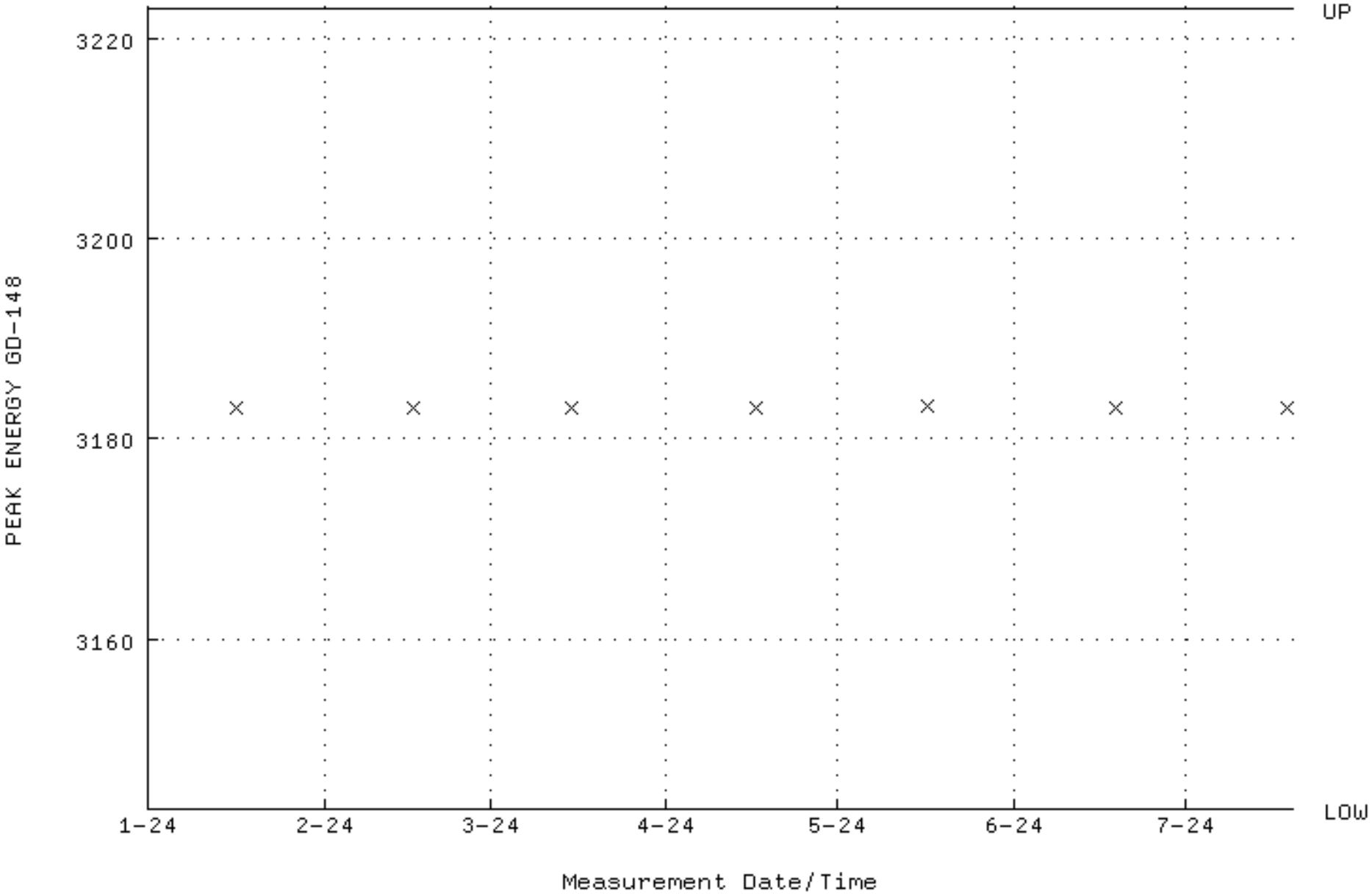
QA filename : DKA100:[ENV_ALPHA.QA.W]W166.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 16-JAN-2024 09:13:55 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



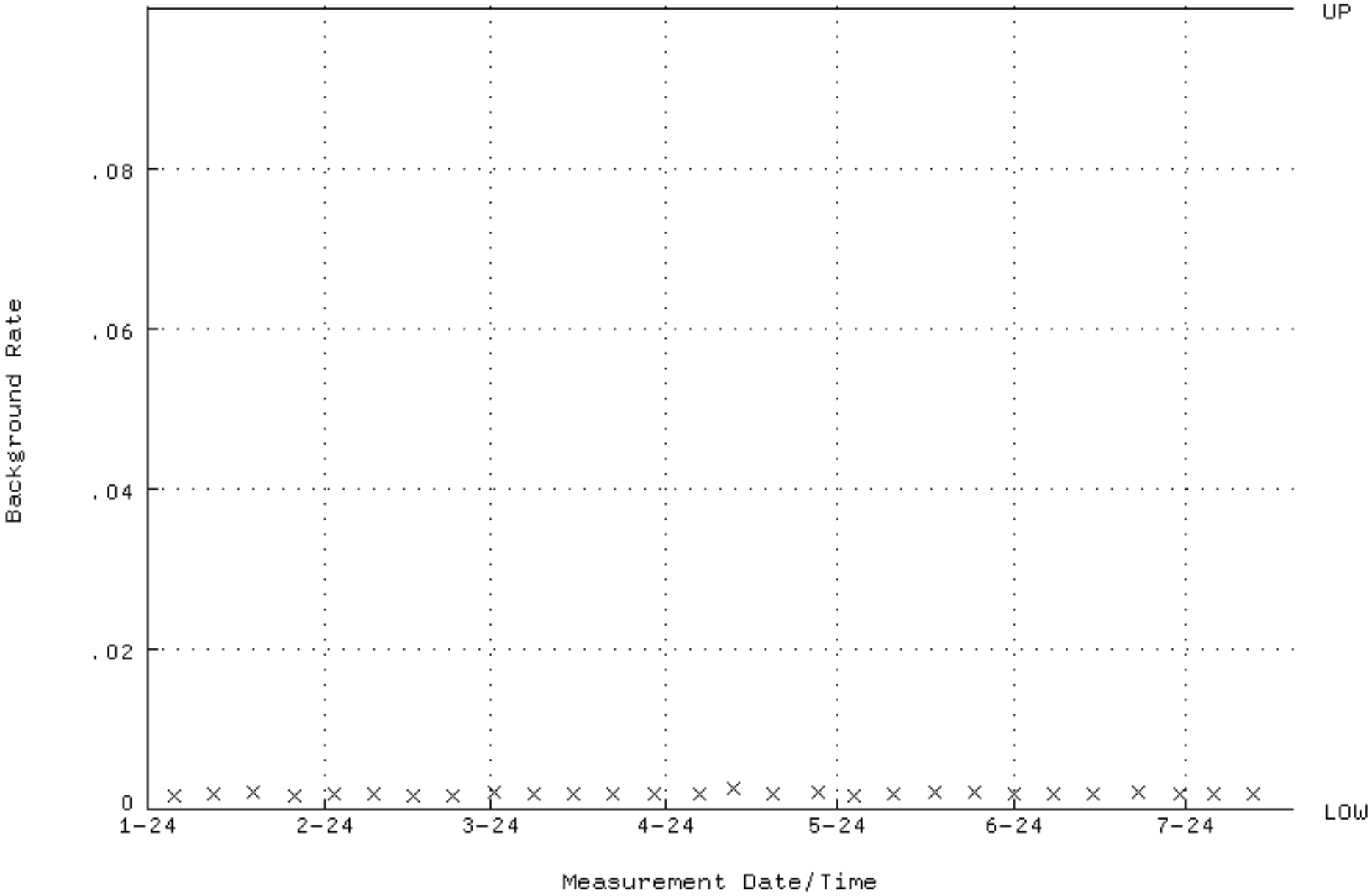
QA filename : DKA100:[ENV_ALPHA.QA.W]W166.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 16-JAN-2024 09:13:55 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



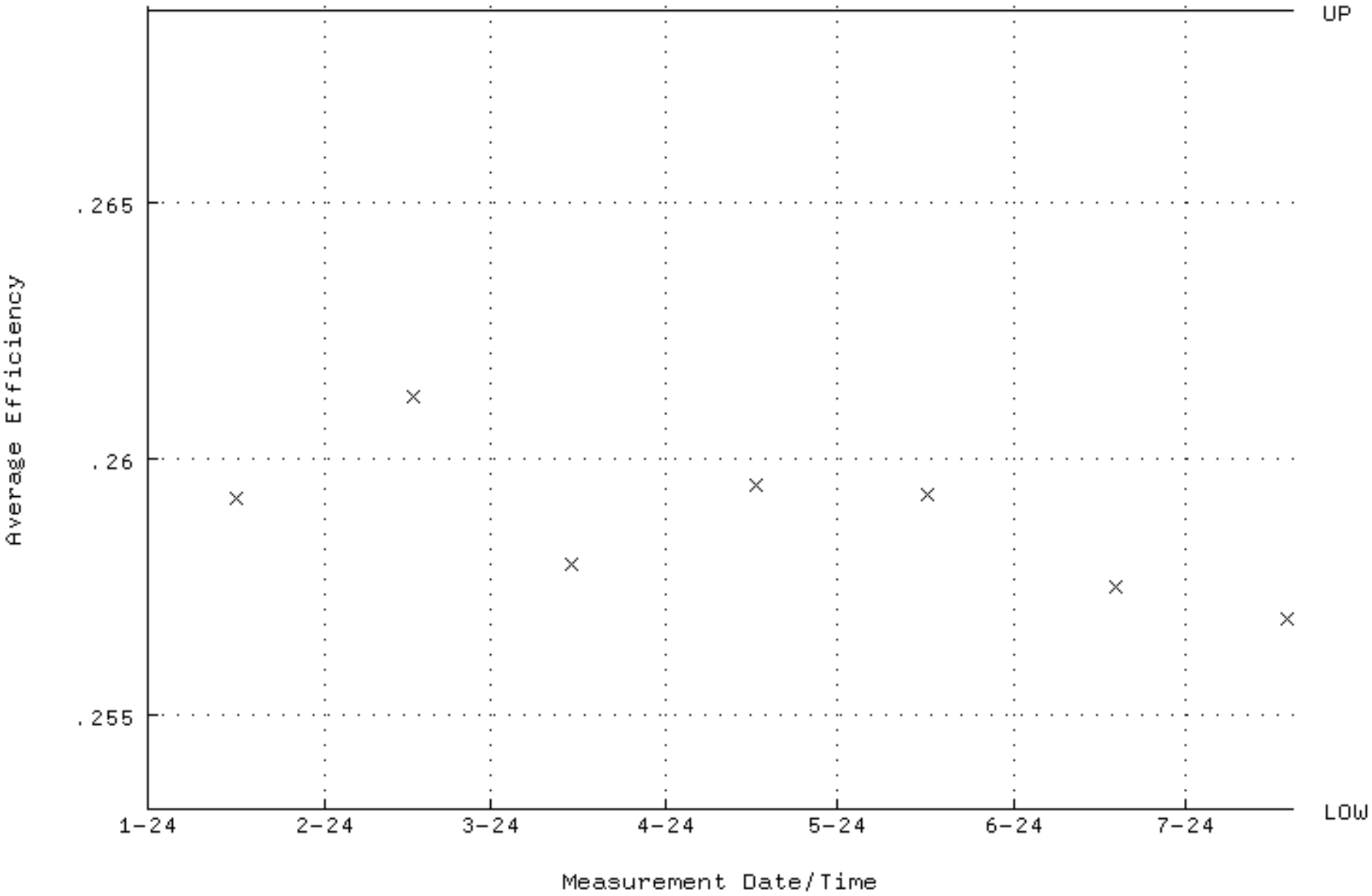
QA filename : DKA100:[ENV_ALPHA.QA.W]W166.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 16-JAN-2024 09:13:55 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



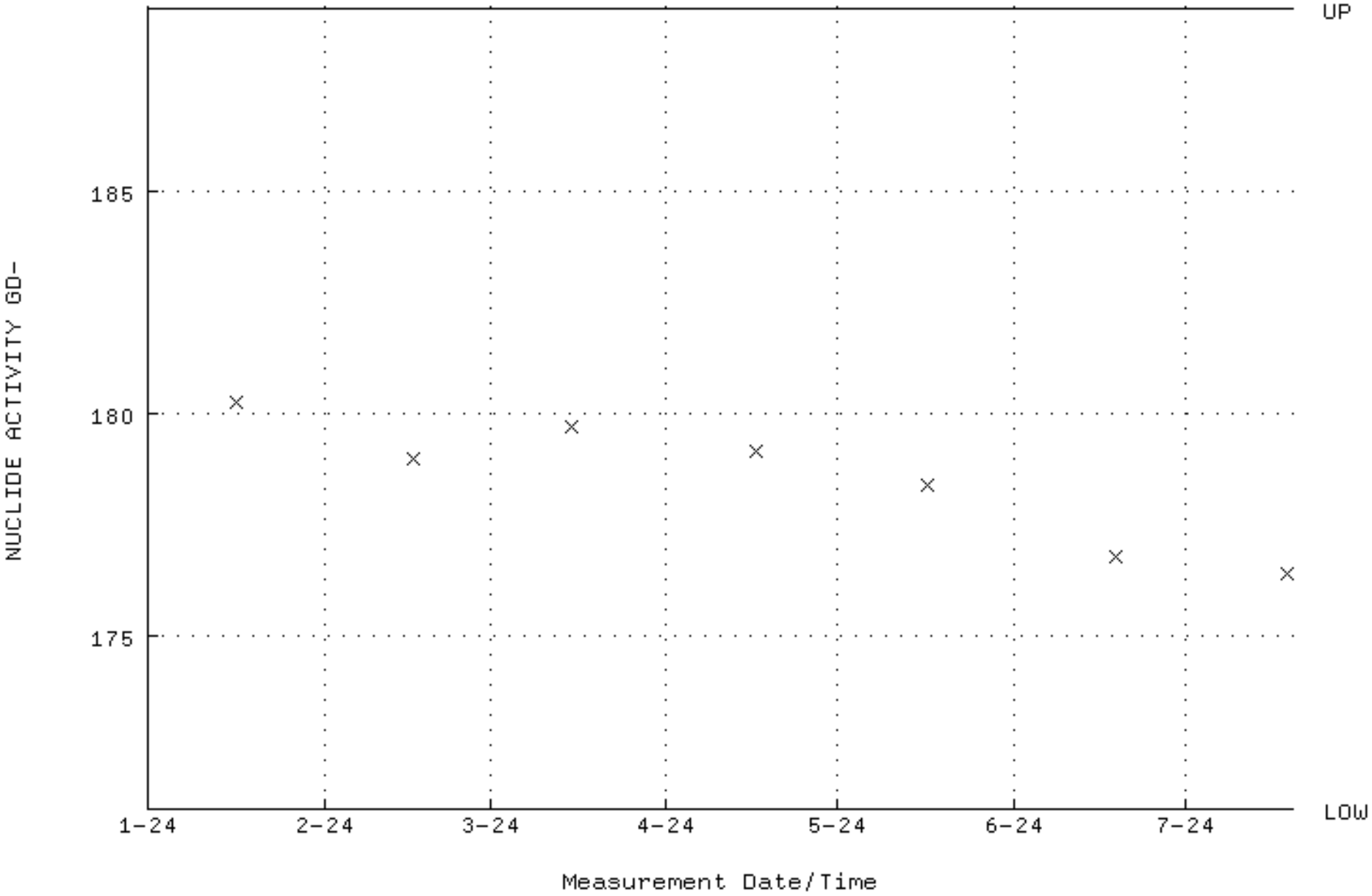
QA filename : DKA100:[ENV_ALPHA.QA.B]B166.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:46:05 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



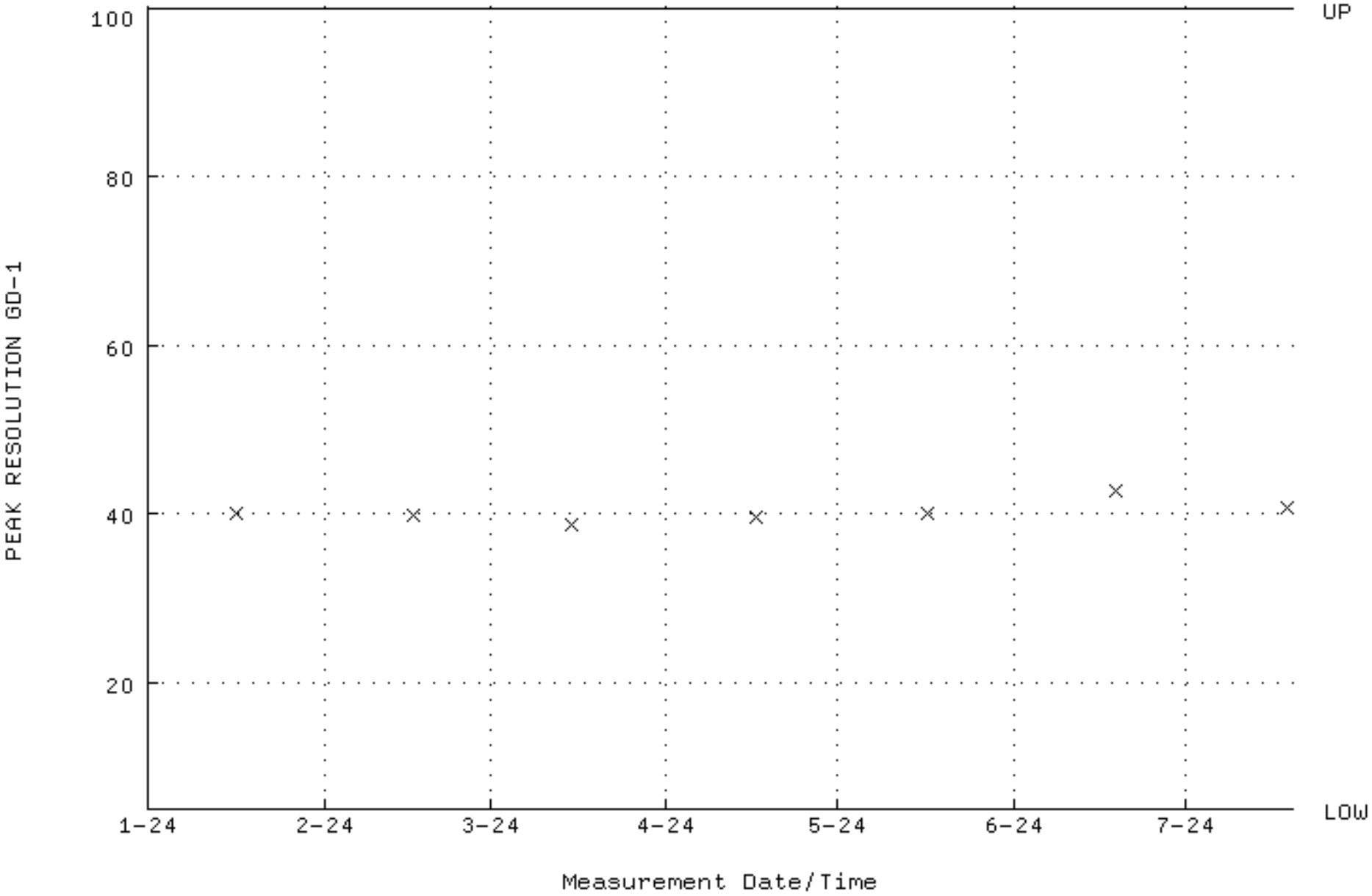
QA filename : DKA100:[ENV_ALPHA.QA.W]W176.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 16-JAN-2024 10:32:10 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.253140 through 0.268800



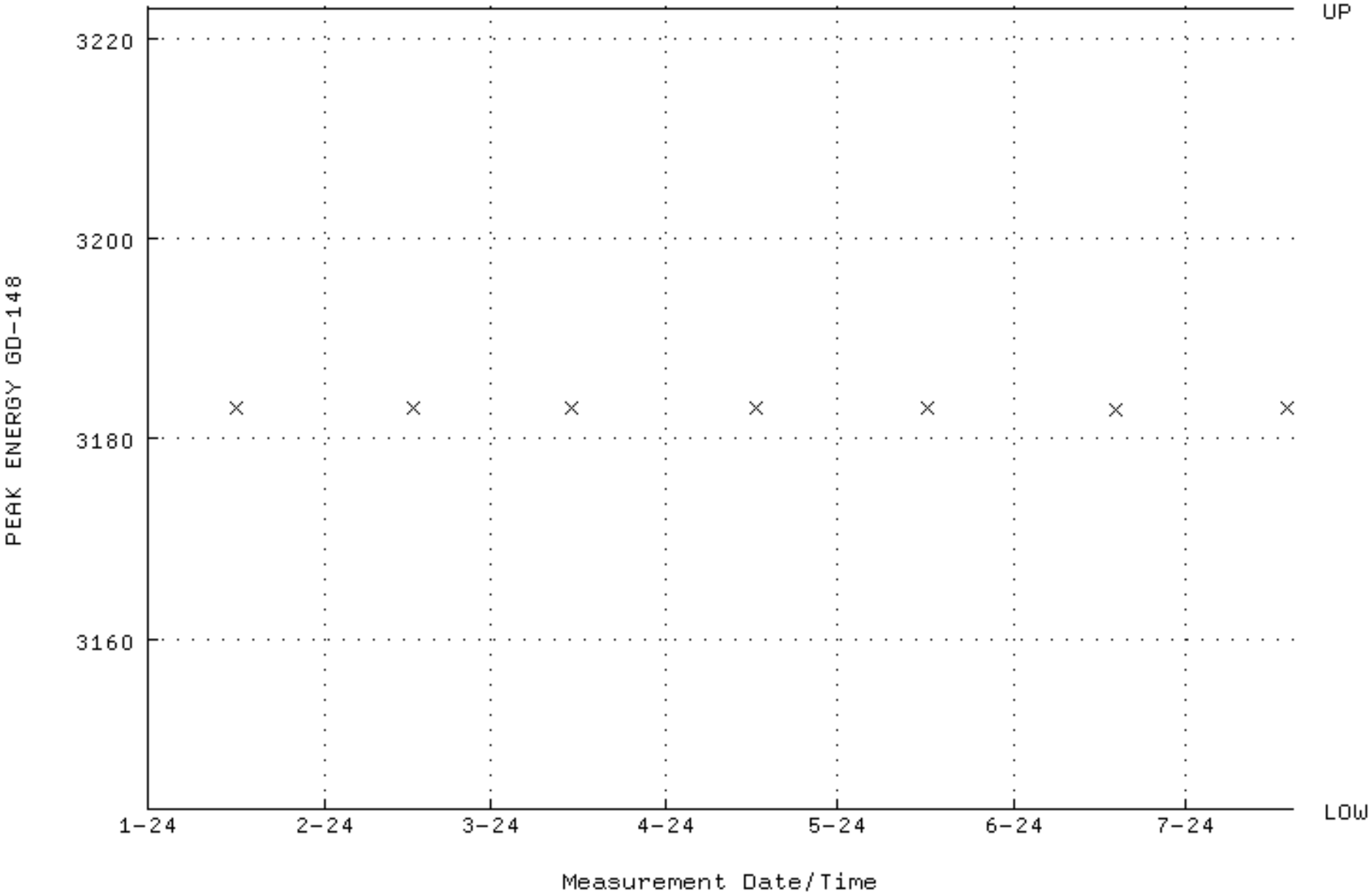
QA filename : DKA100:[ENV_ALPHA.QA.W]W176.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 16-JAN-2024 10:32:10 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



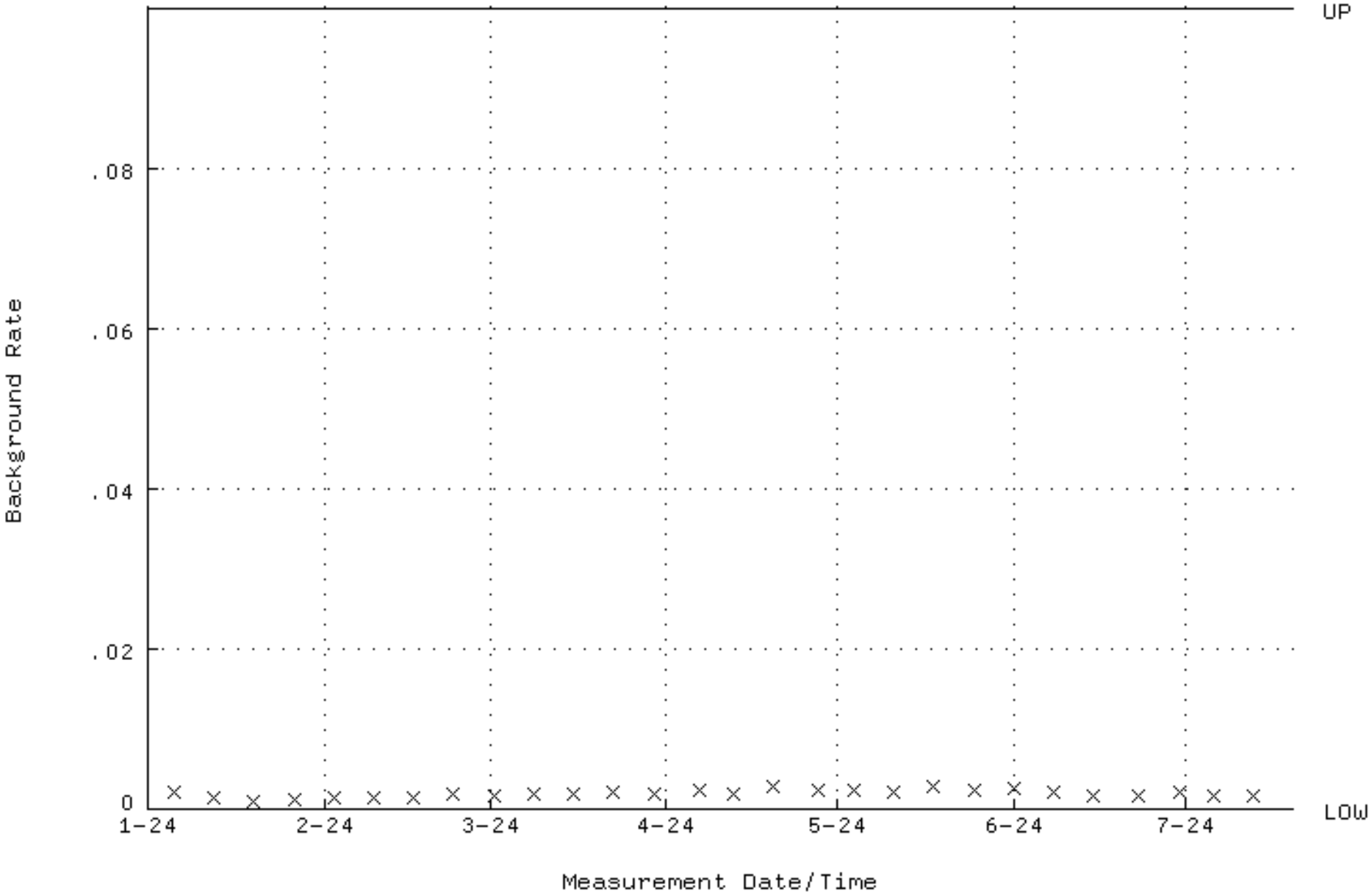
QA filename : DKA100:[ENV_ALPHA.QA.W]W176.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 16-JAN-2024 10:32:10 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



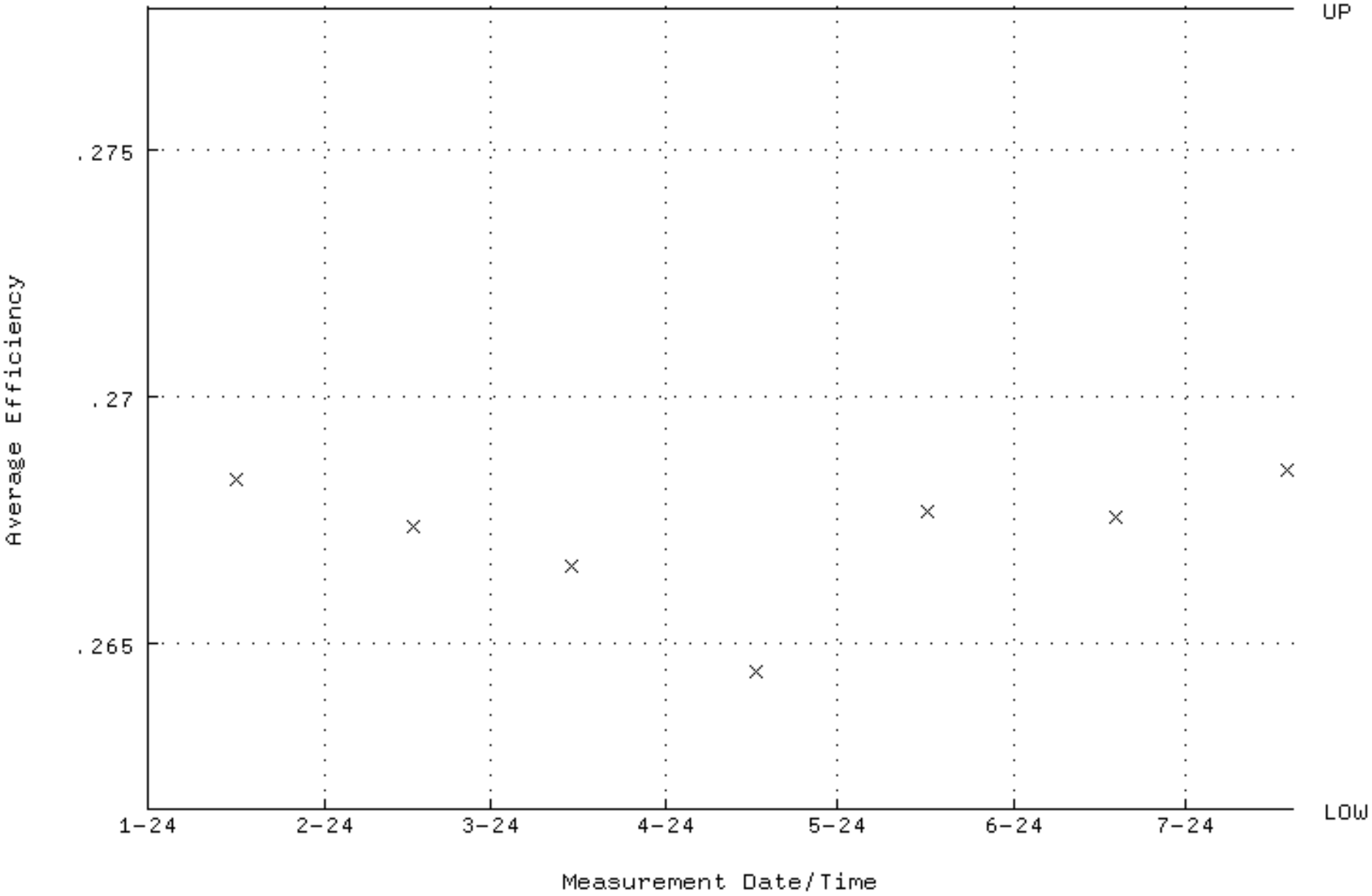
QA filename : DKA100:[ENV_ALPHA.QA.W]W176.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 16-JAN-2024 10:32:10 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



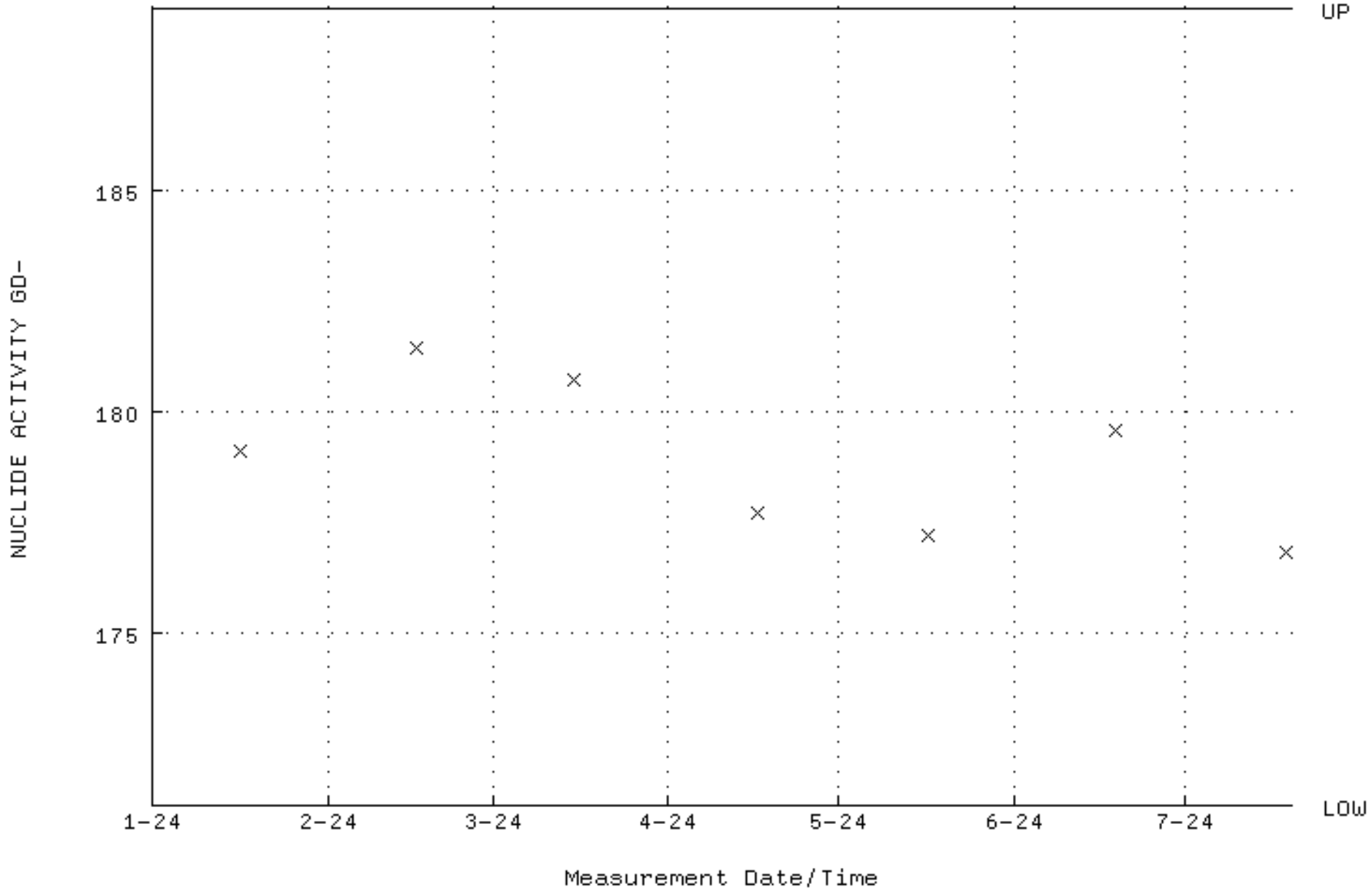
QA filename : DKA100:[ENV_ALPHA.QA.B]B176.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:46:44 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



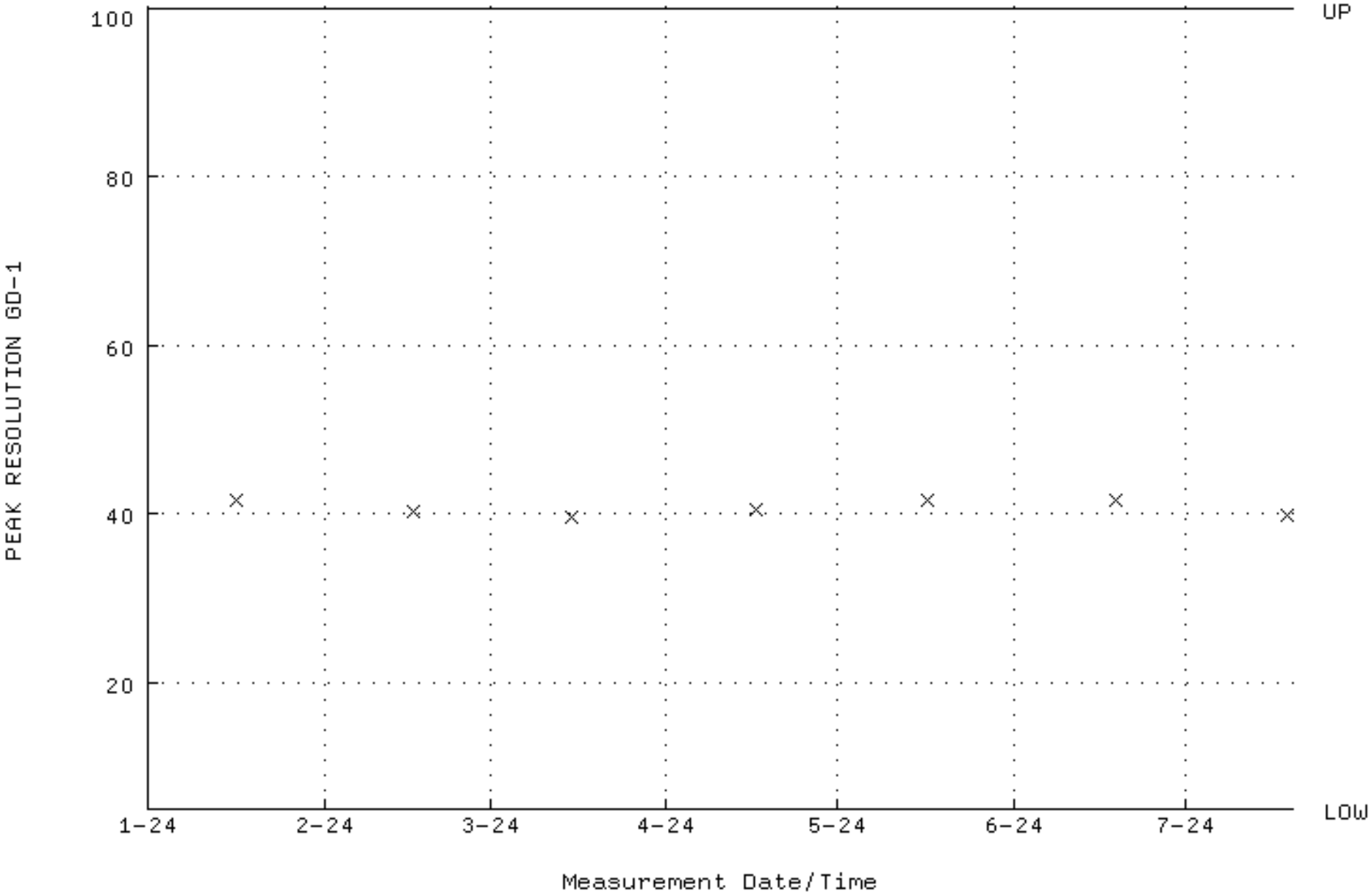
QA filename : DKA100:[ENV_ALPHA.QA.W]W177.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 16-JAN-2024 10:19:14 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.261660 through 0.277840



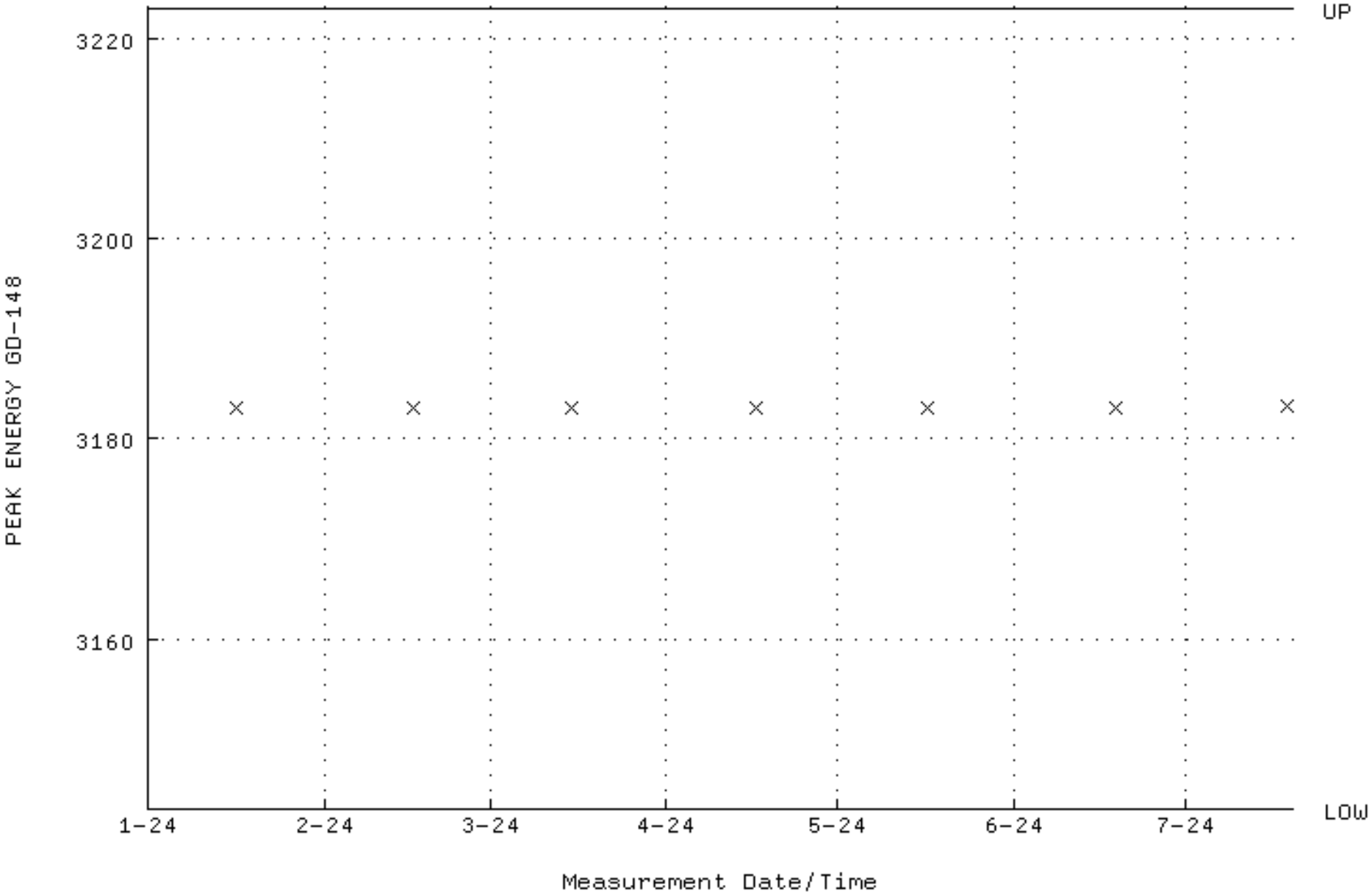
QA filename : DKA100:[ENV_ALPHA.QA.W]W177.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 16-JAN-2024 10:19:14 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



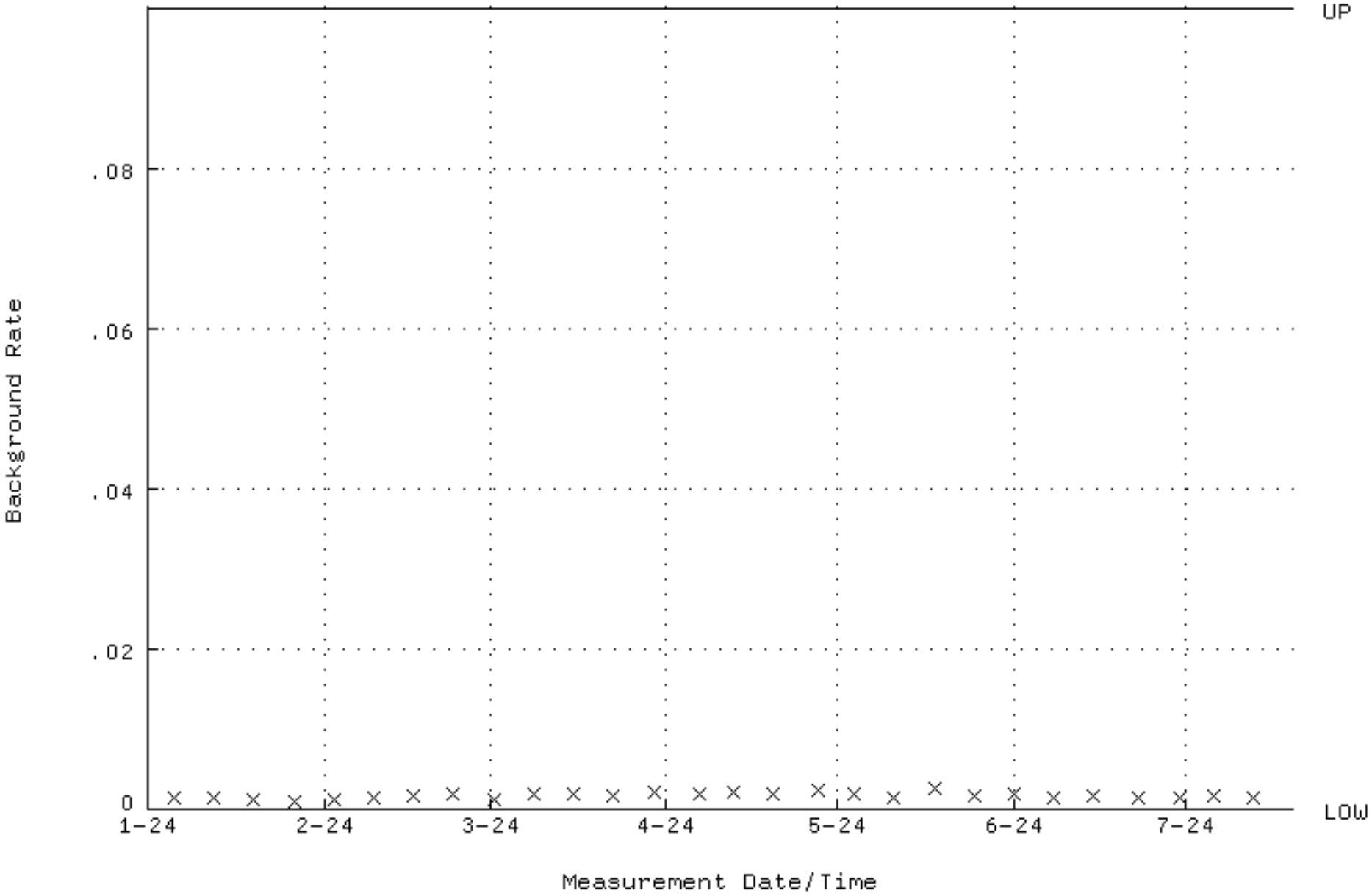
QA filename : DKA100:[ENV_ALPHA.QA.W]W177.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 16-JAN-2024 10:19:14 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



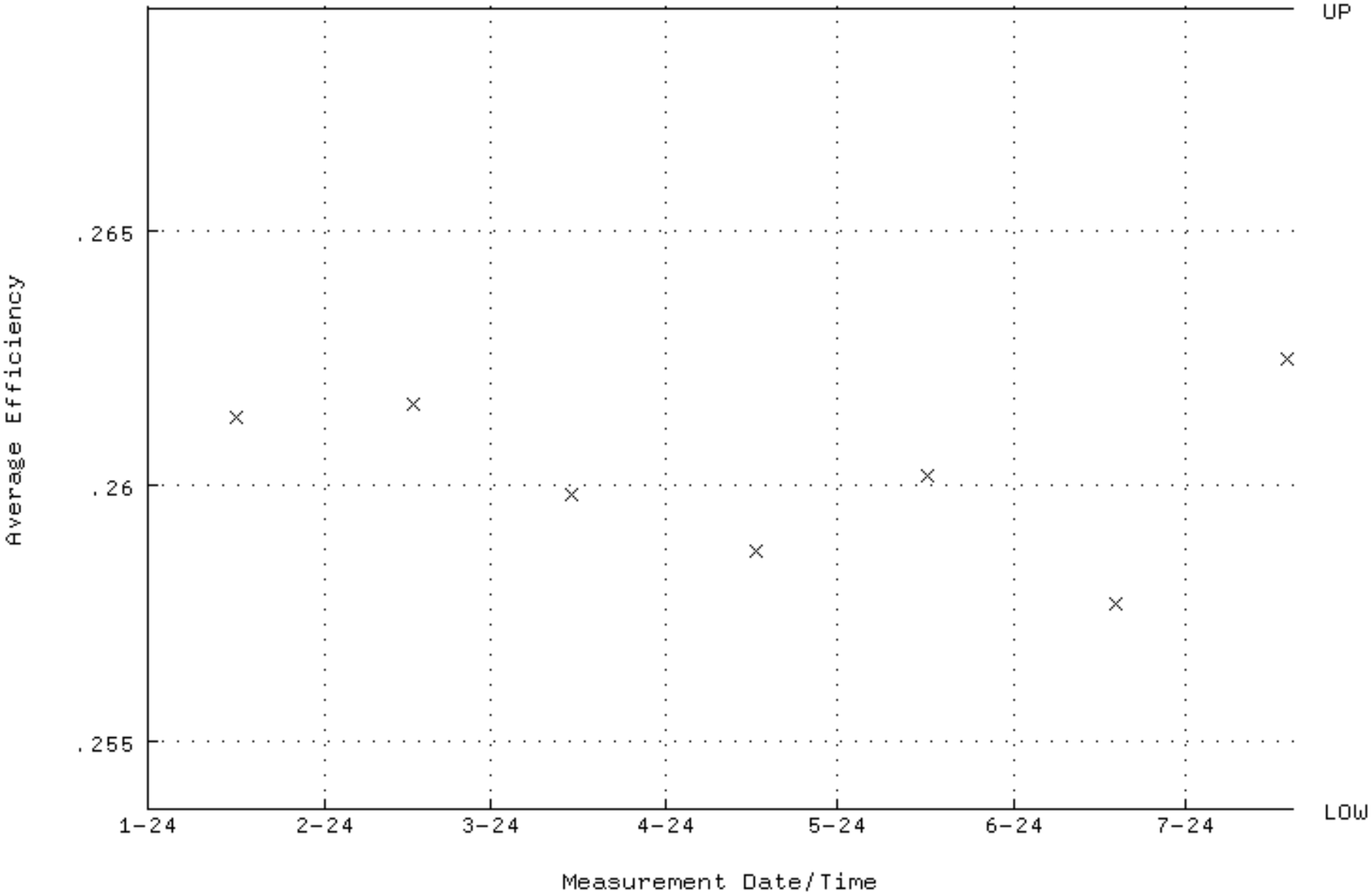
QA filename : DKA100:[ENV_ALPHA.QA.W]W177.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 16-JAN-2024 10:19:14 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



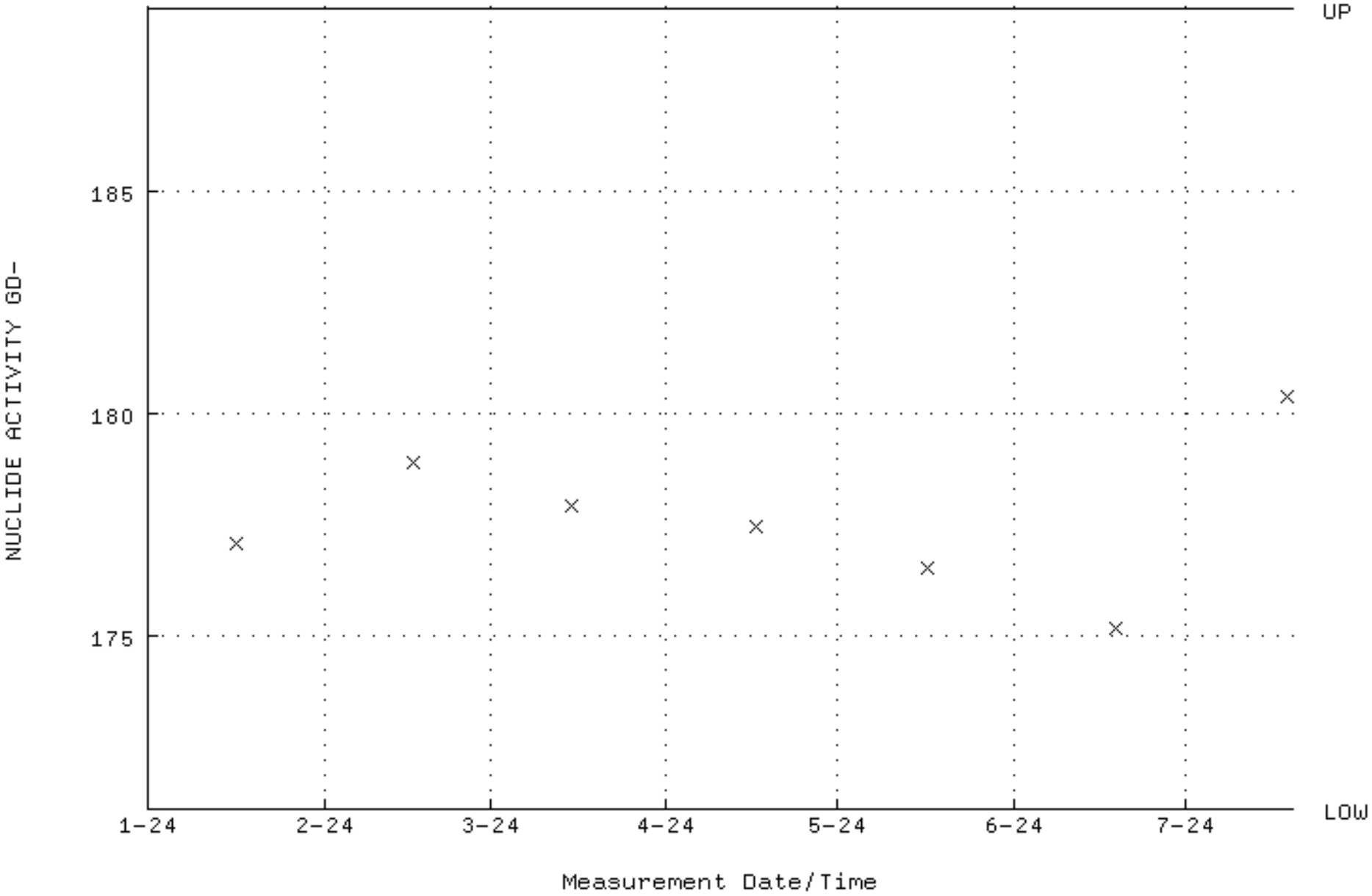
QA filename : DKA100:[ENV_ALPHA.QA.B]B177.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:46:49 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



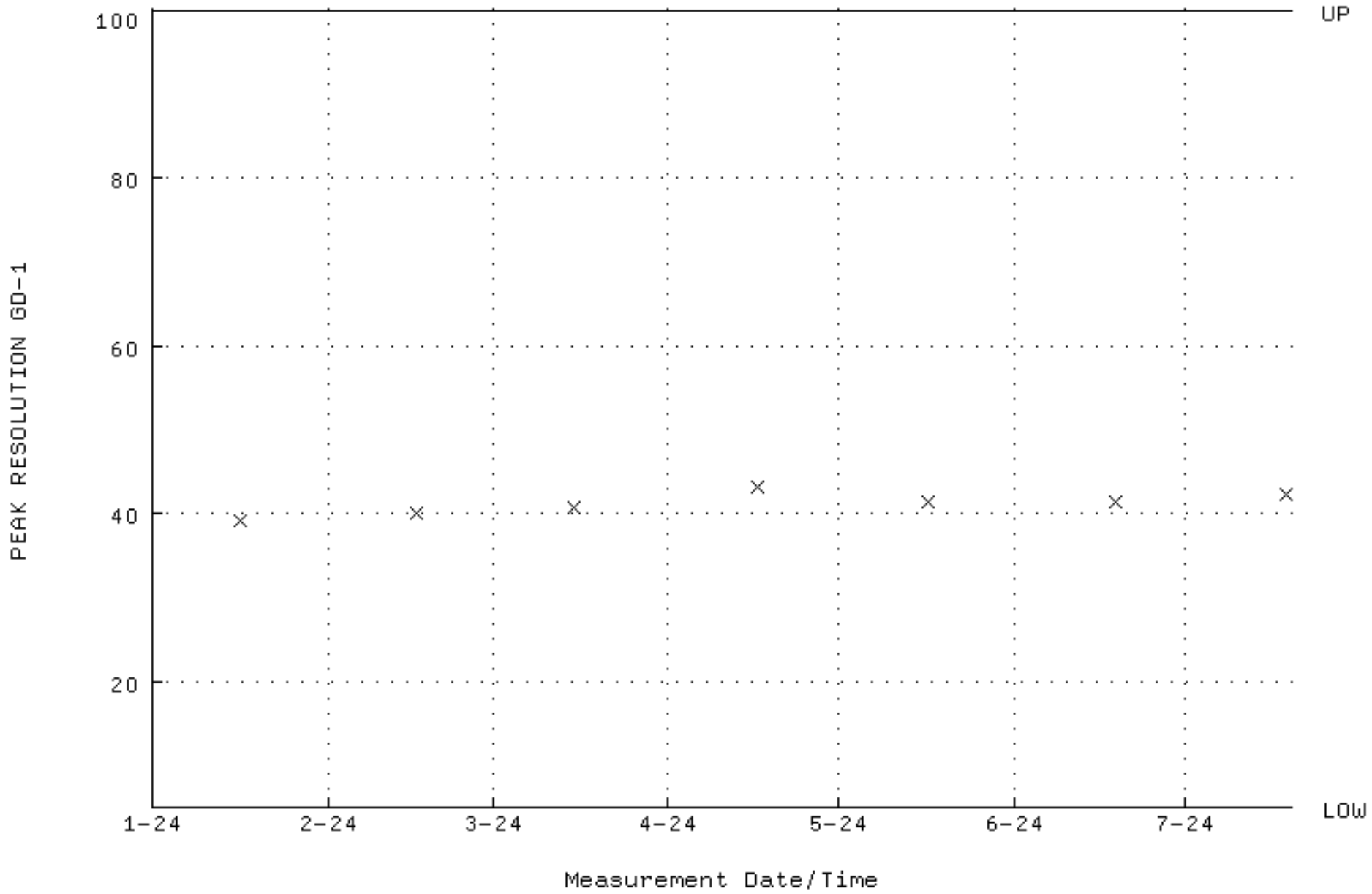
QA filename : DKA100:[ENV_ALPHA.QA.W]W178.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 16-JAN-2024 10:24:39 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.253660 through 0.269350



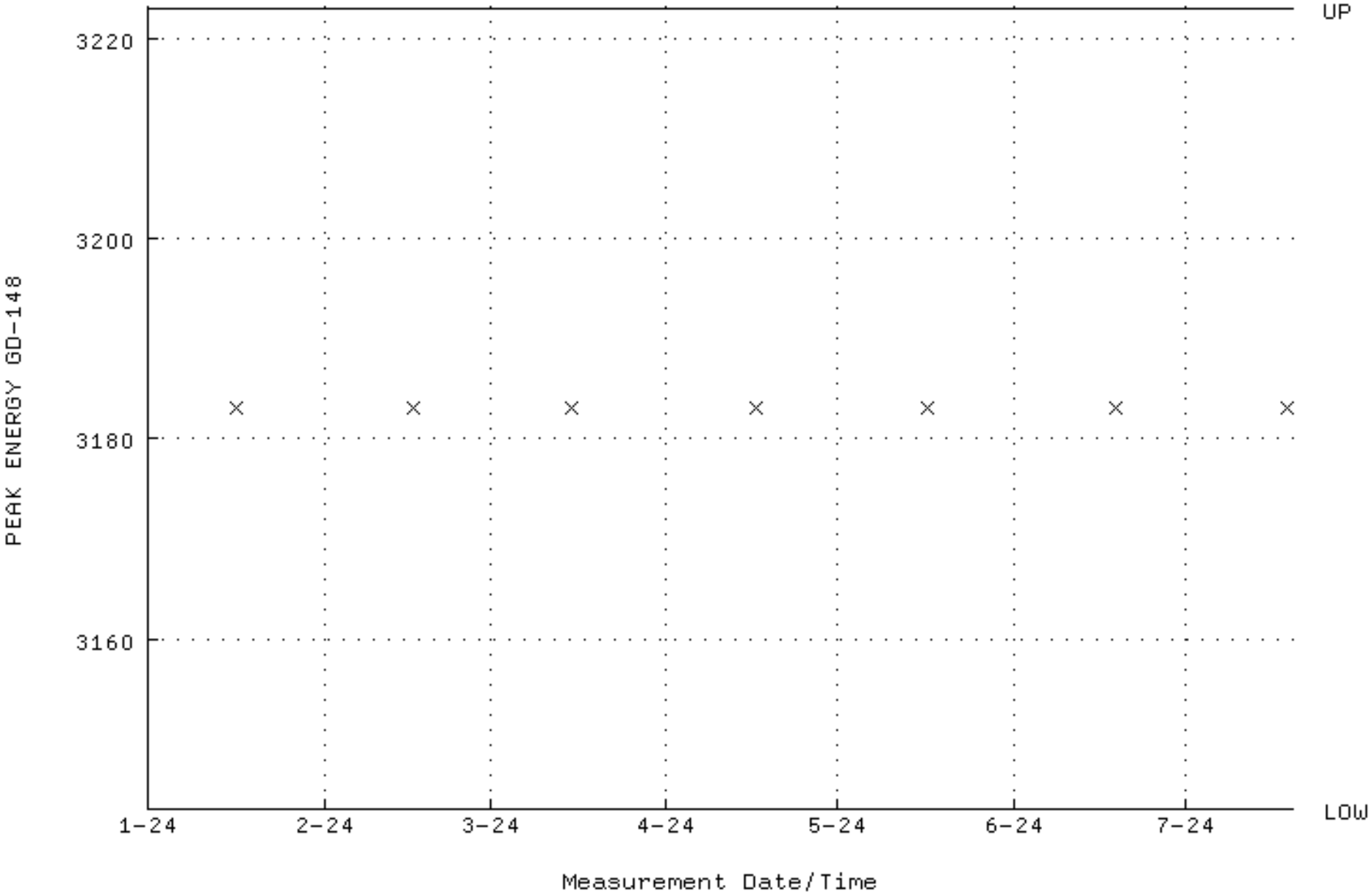
QA filename : DKA100:[ENV_ALPHA.QA.W]W178.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 16-JAN-2024 10:24:39 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



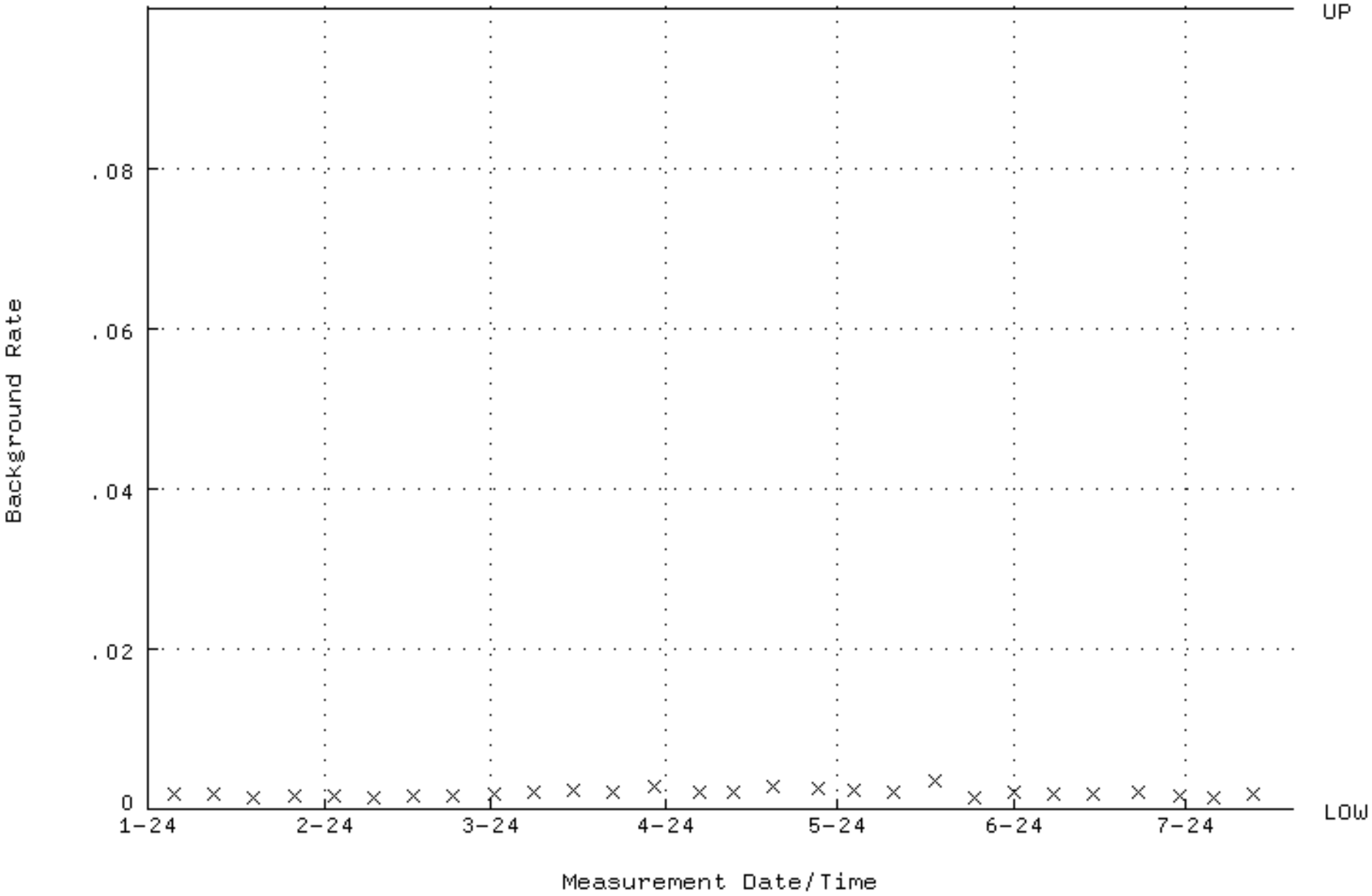
QA filename : DKA100:[ENV_ALPHA.QA.W]W178.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 16-JAN-2024 10:24:39 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



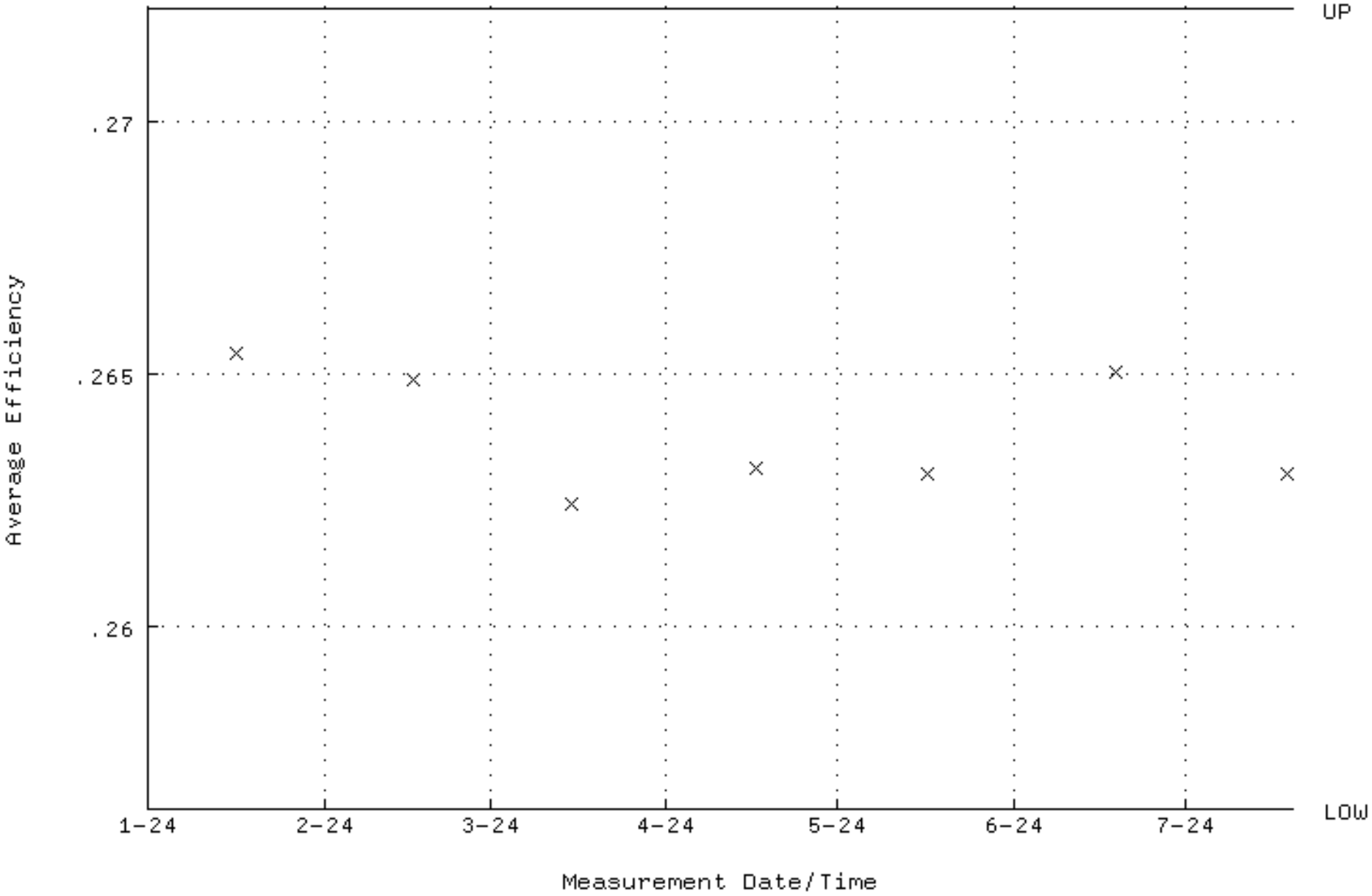
QA filename : DKA100:[ENV_ALPHA.QA.W]W178.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 16-JAN-2024 10:24:39 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



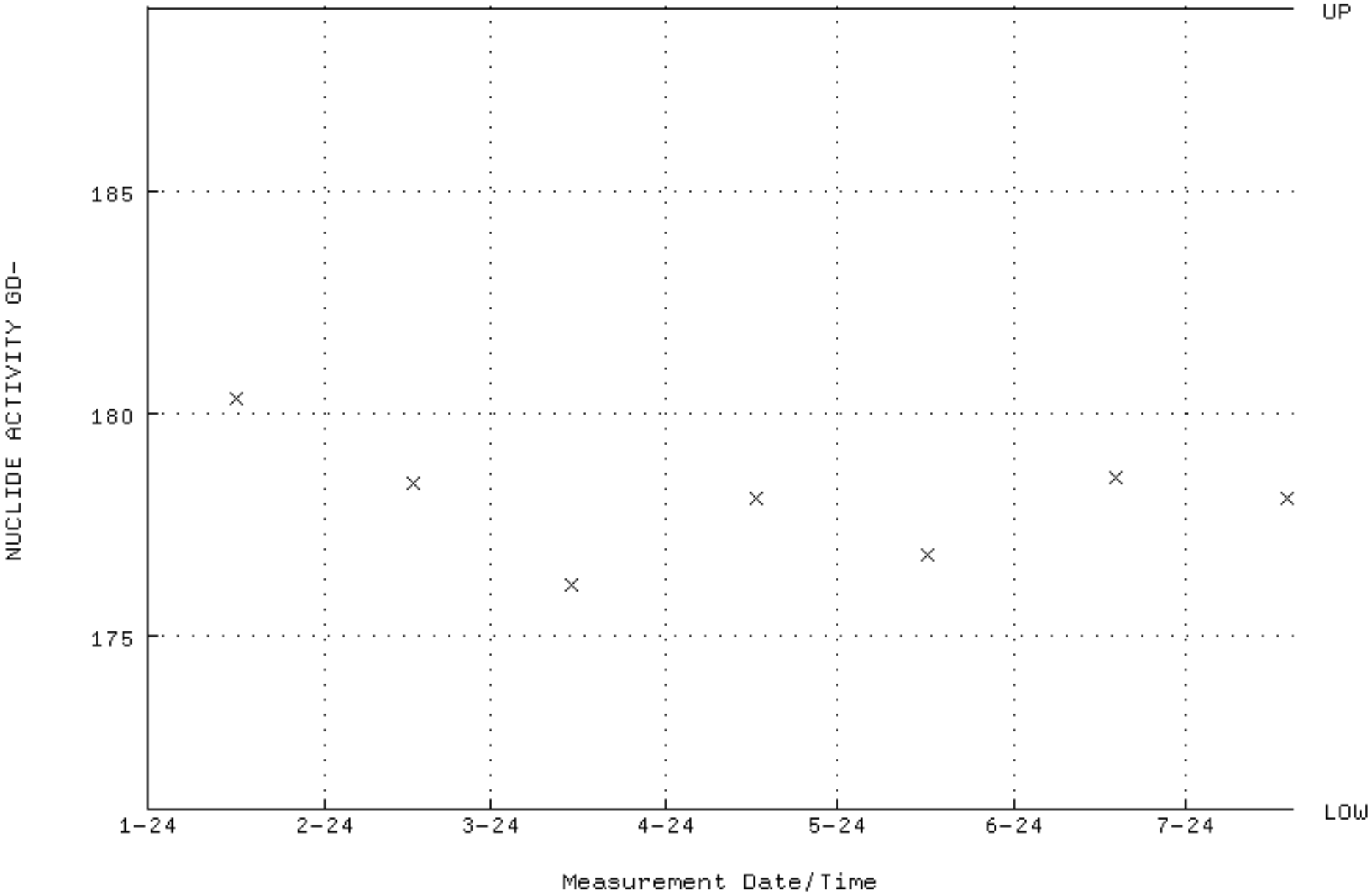
QA filename : DKA100:[ENV_ALPHA.QA.B]B178.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:46:53 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



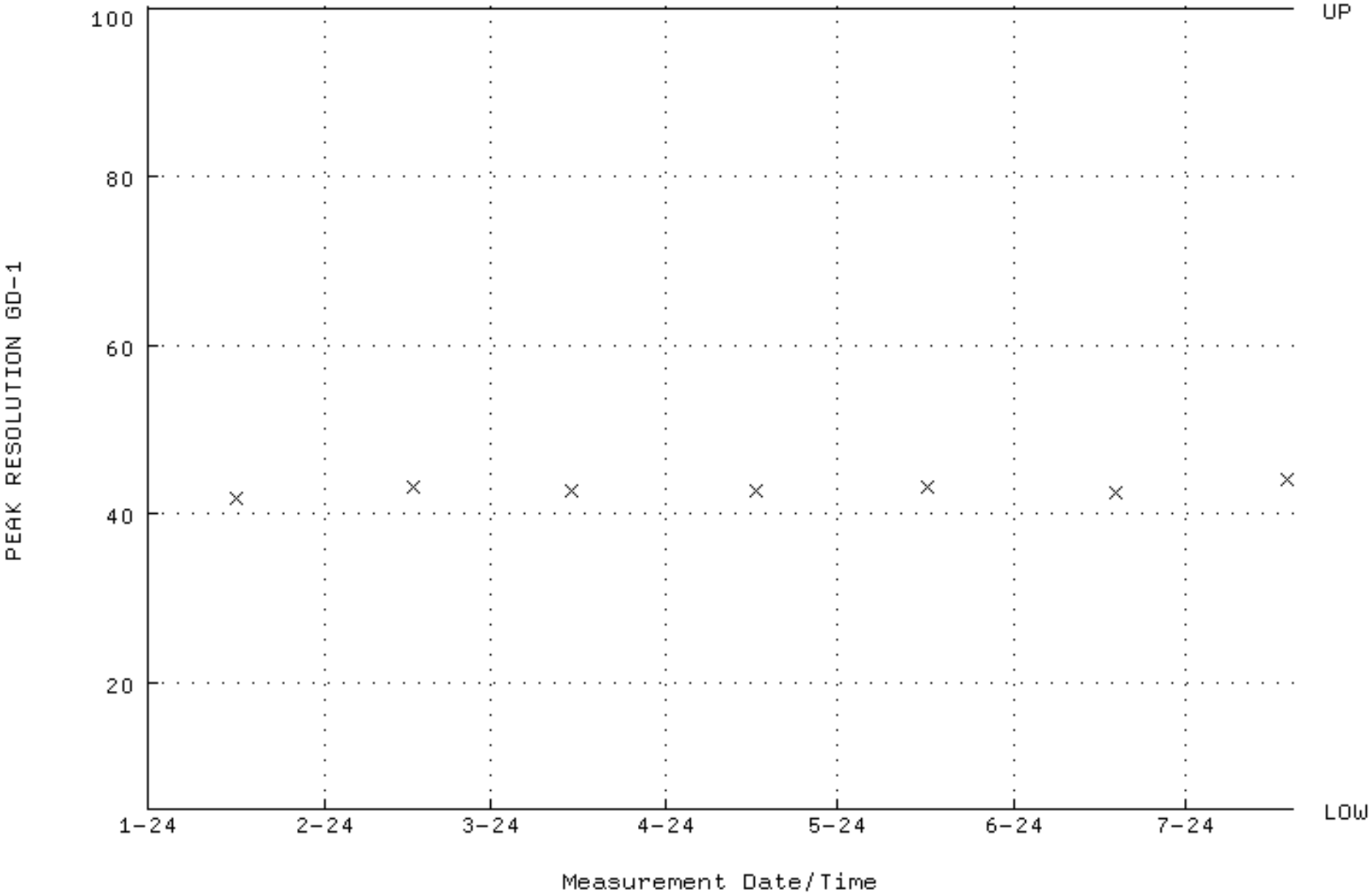
QA filename : DKA100:[ENV_ALPHA.QA.W]W179.QAF;5
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 16-JAN-2024 10:21:22 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.256380 through 0.272240



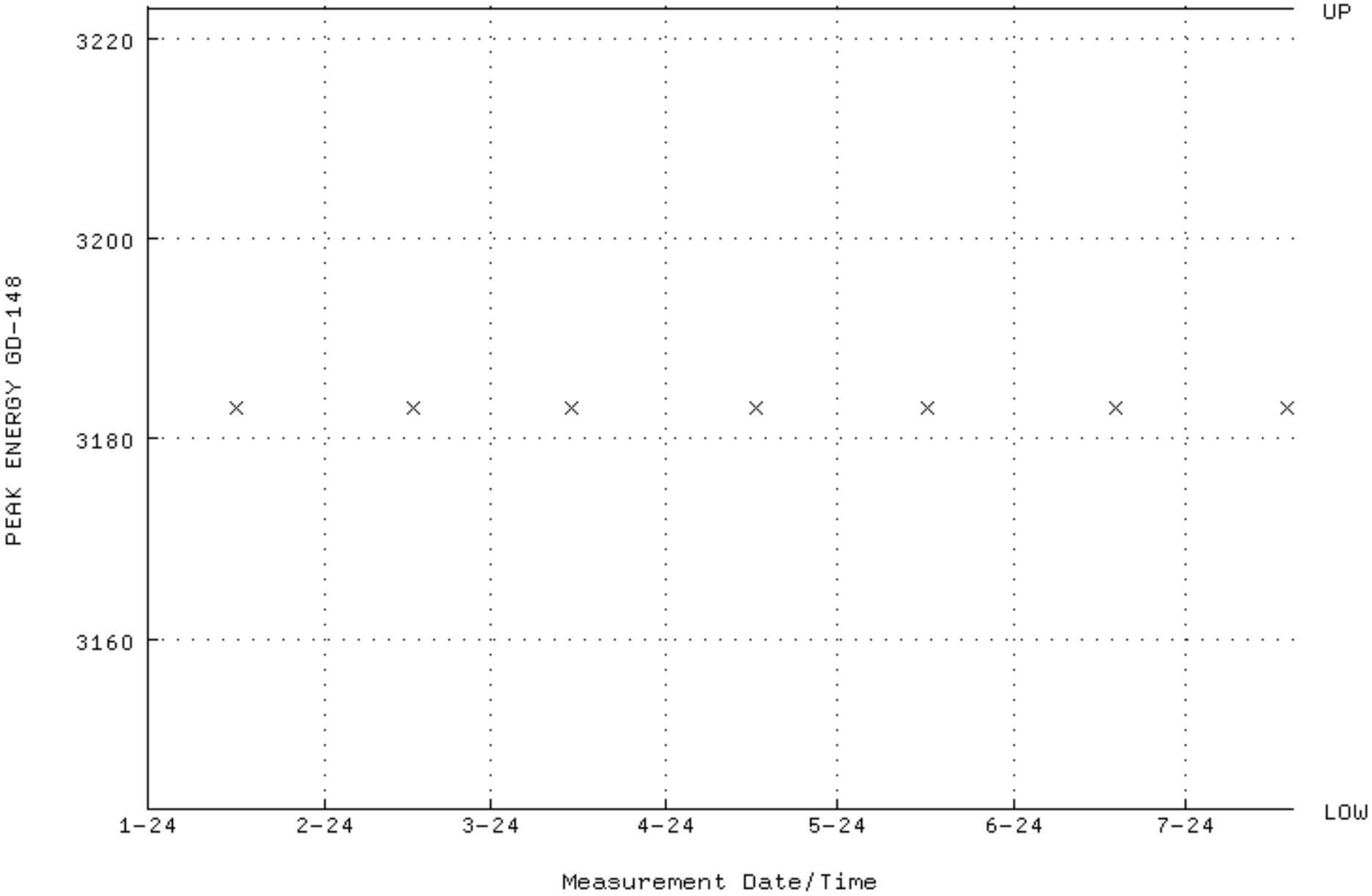
QA filename : DKA100:[ENV_ALPHA.QA.W]W179.QAF;5
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 16-JAN-2024 10:21:22 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



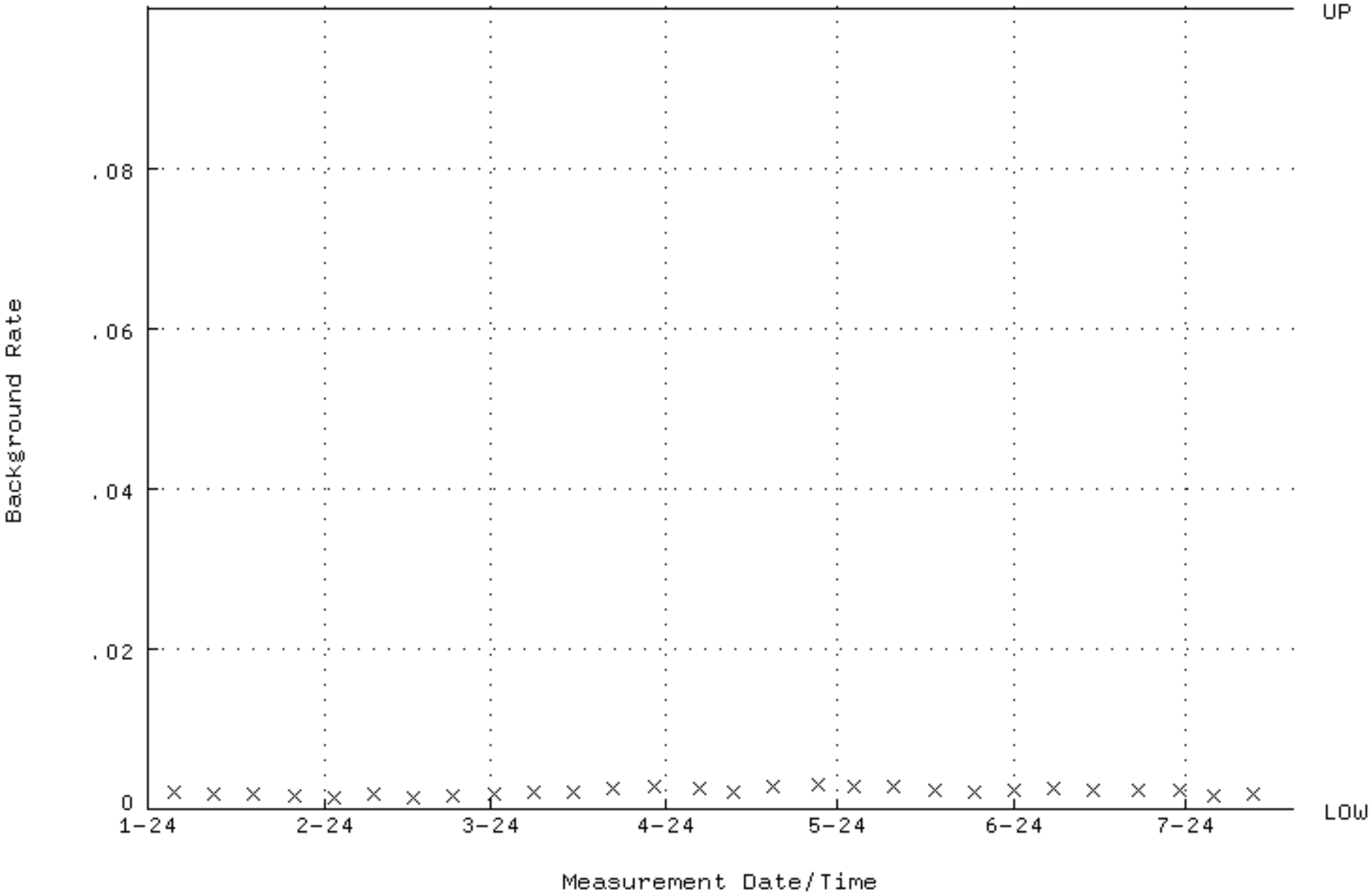
QA filename : DKA100:[ENV_ALPHA.QA.W]W179.QAF;5
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 16-JAN-2024 10:21:22 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



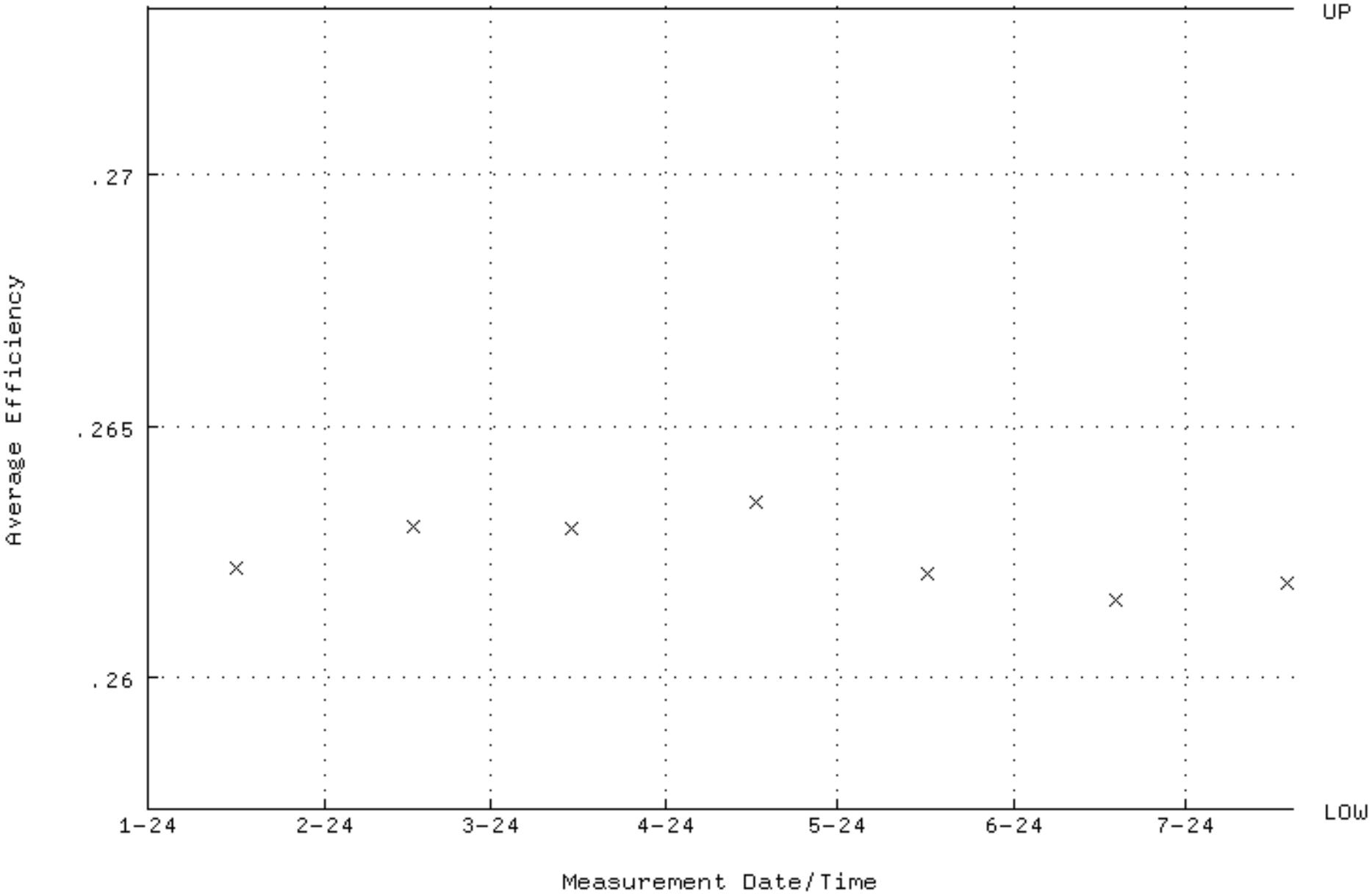
QA filename : DKA100:[ENV_ALPHA.QA.W]W179.QAF;5
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 16-JAN-2024 10:21:22 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



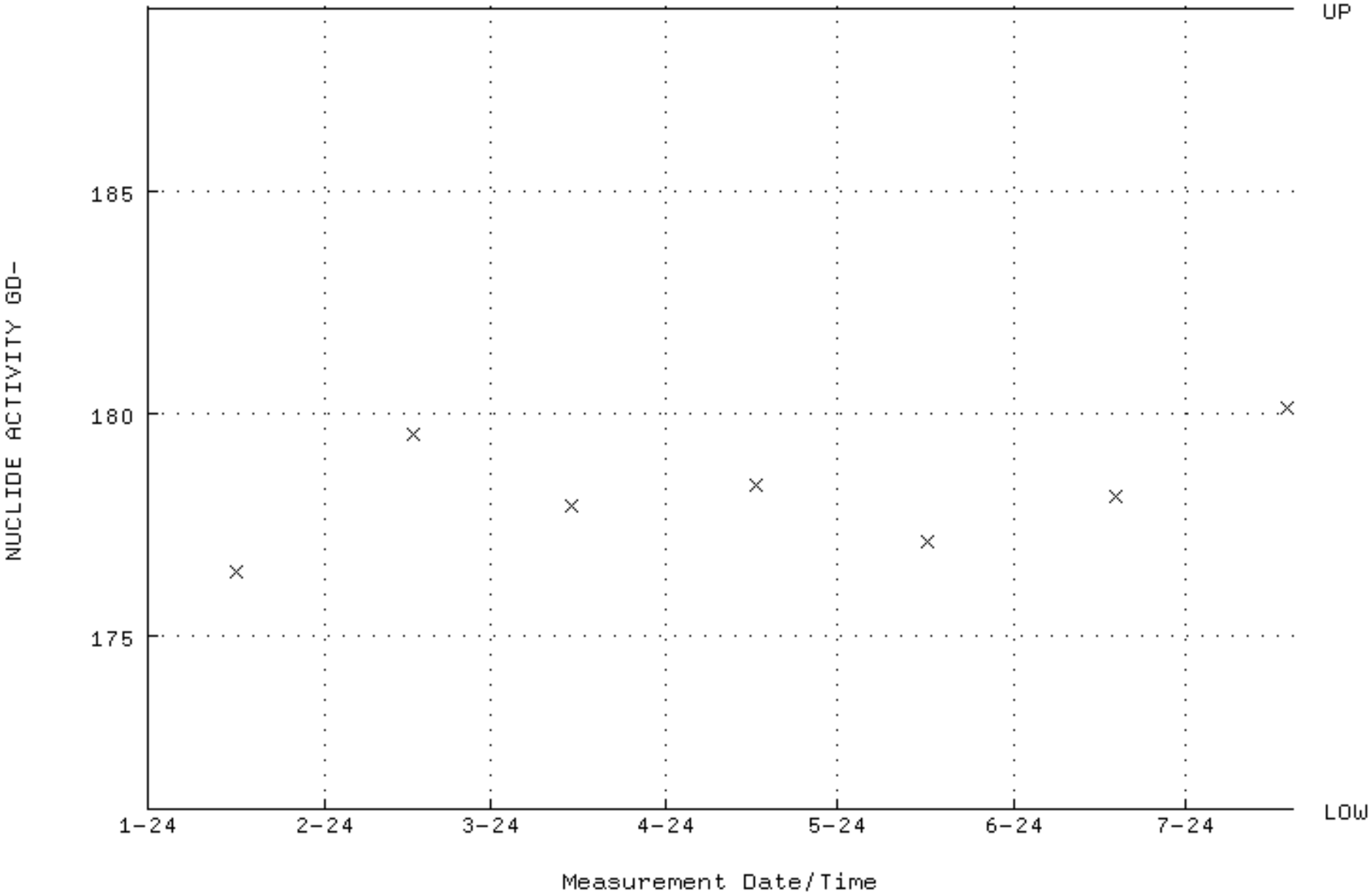
QA filename : DKA100:[ENV_ALPHA.QA.B]B179.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:46:58 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



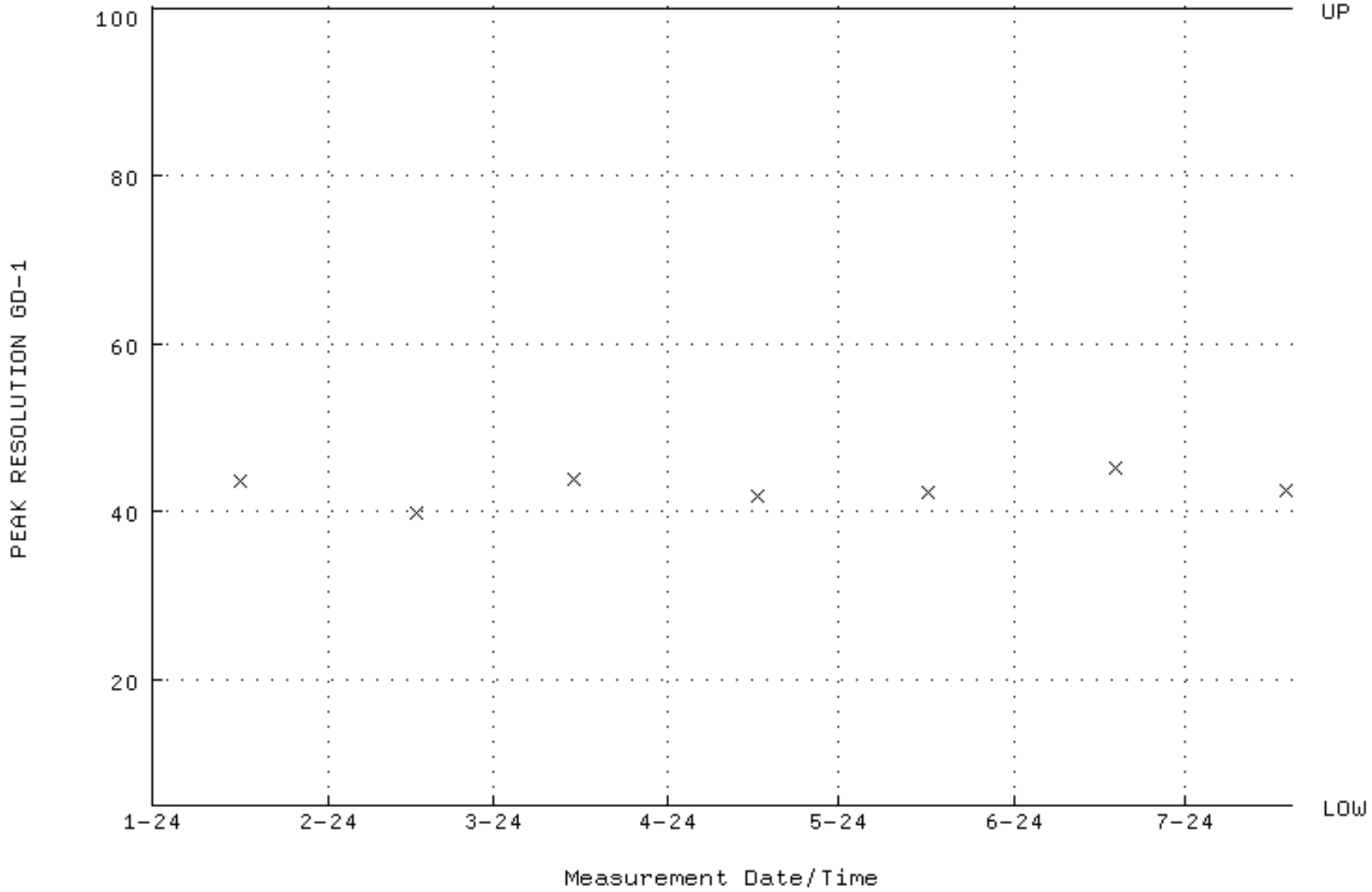
QA filename : DKA100:[ENV_ALPHA.QA.W]W180.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 16-JAN-2024 10:14:36 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.257380 through 0.273300



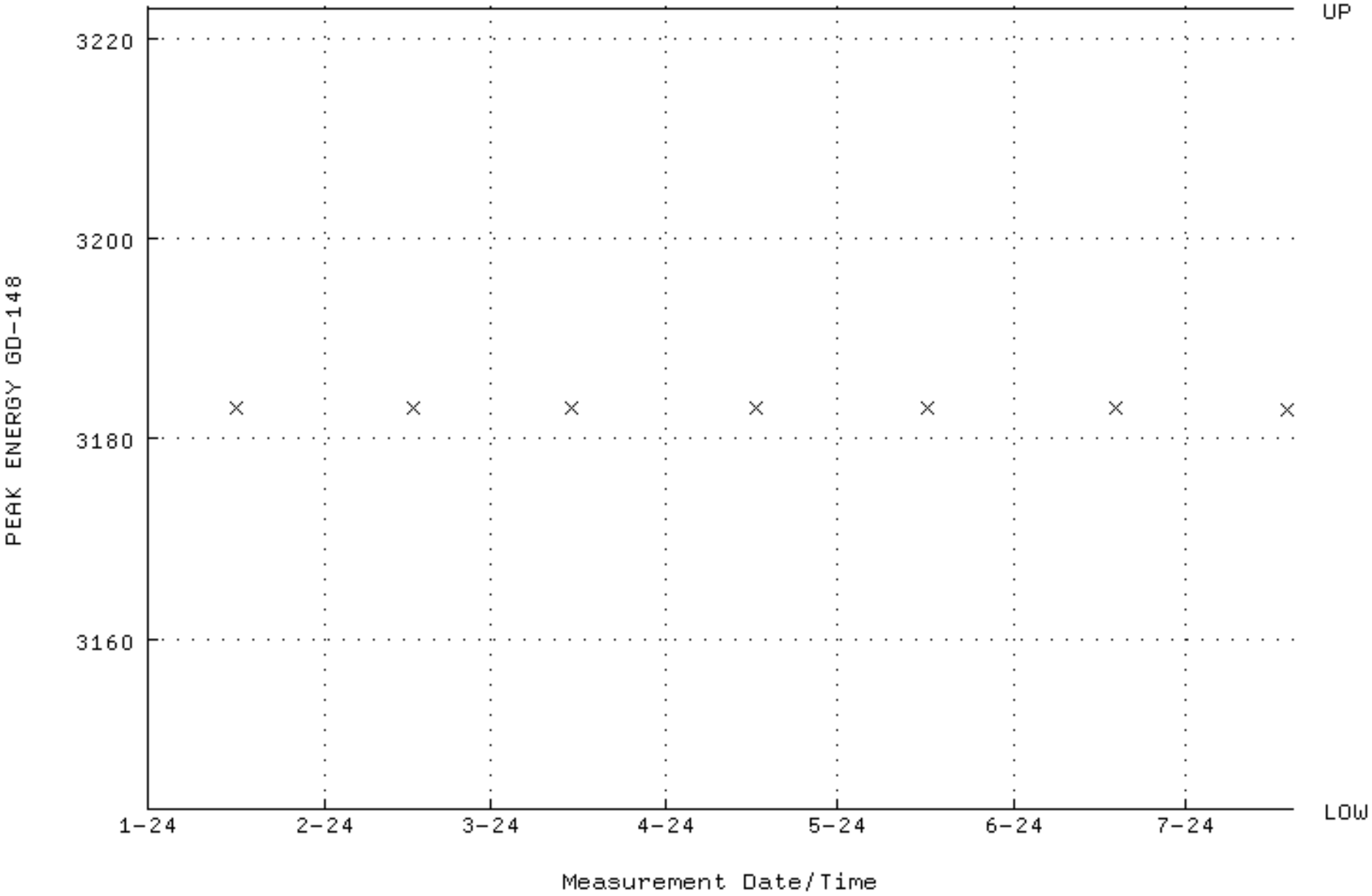
QA filename : DKA100:[ENV_ALPHA.QA.W]W180.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 16-JAN-2024 10:14:36 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



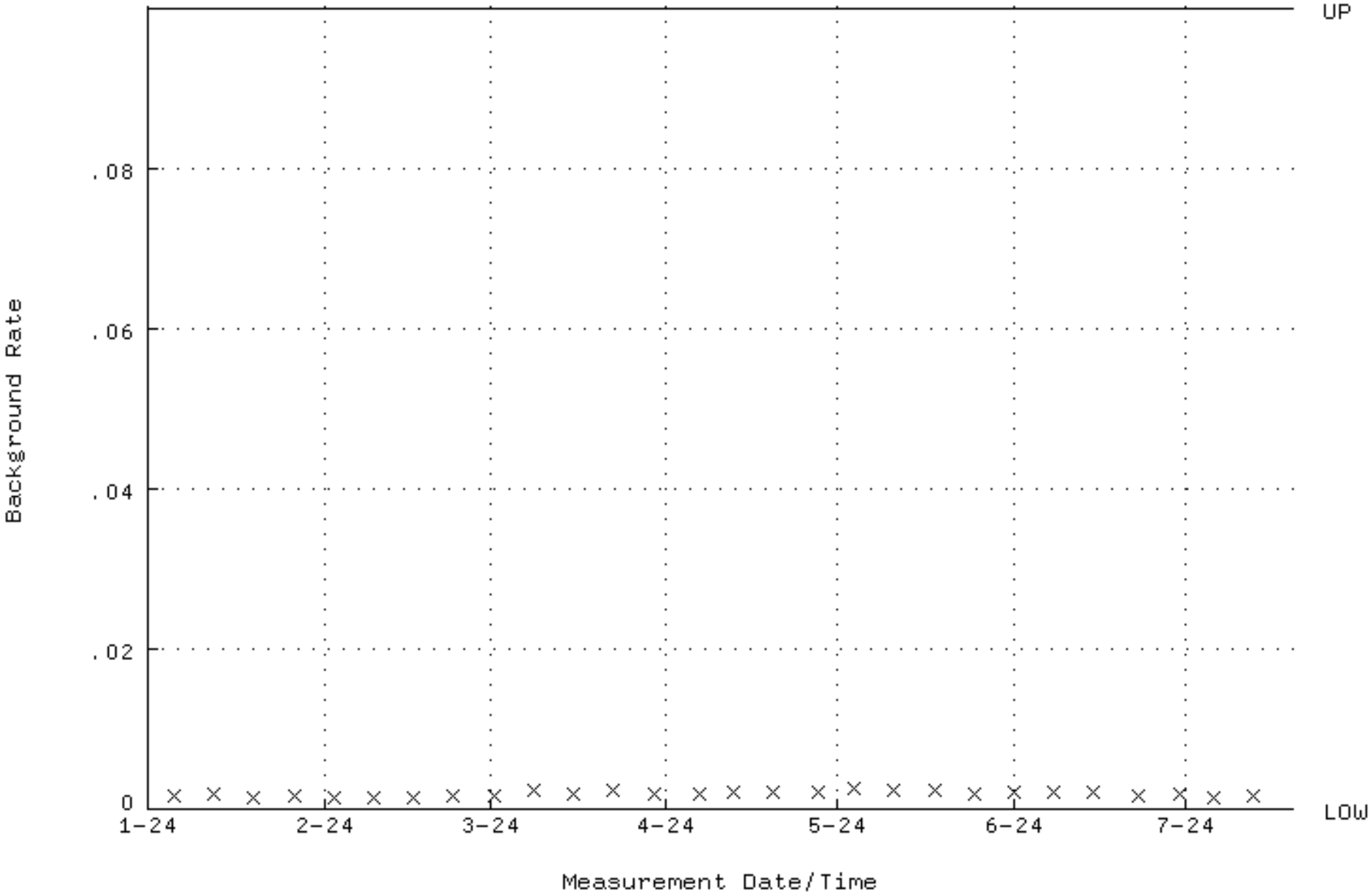
QA filename : DKA100:[ENV_ALPHA.QA.W]W180.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 16-JAN-2024 10:14:36 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



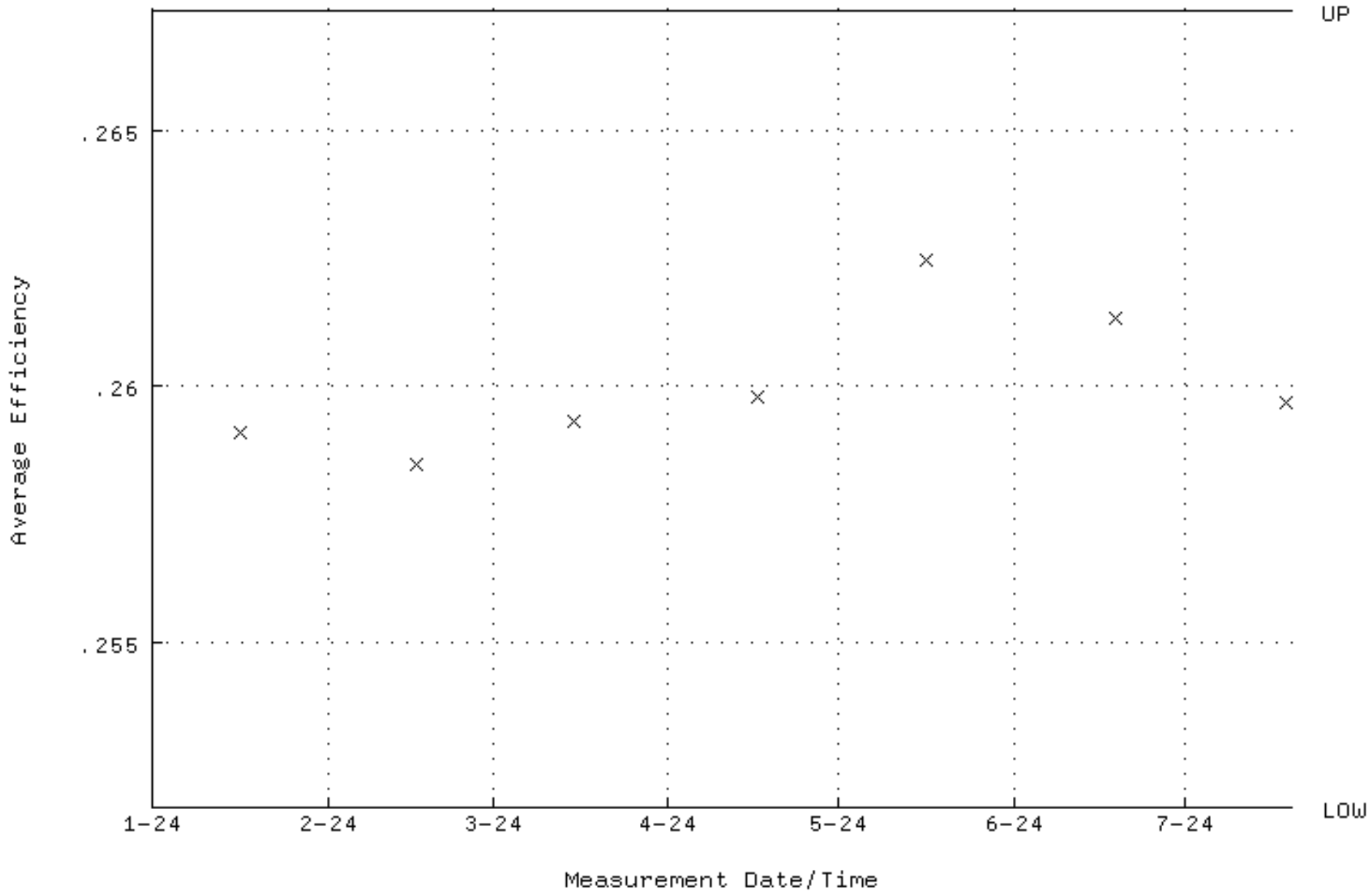
QA filename : DKA100:[ENV_ALPHA.QA.W]W180.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 16-JAN-2024 10:14:36 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



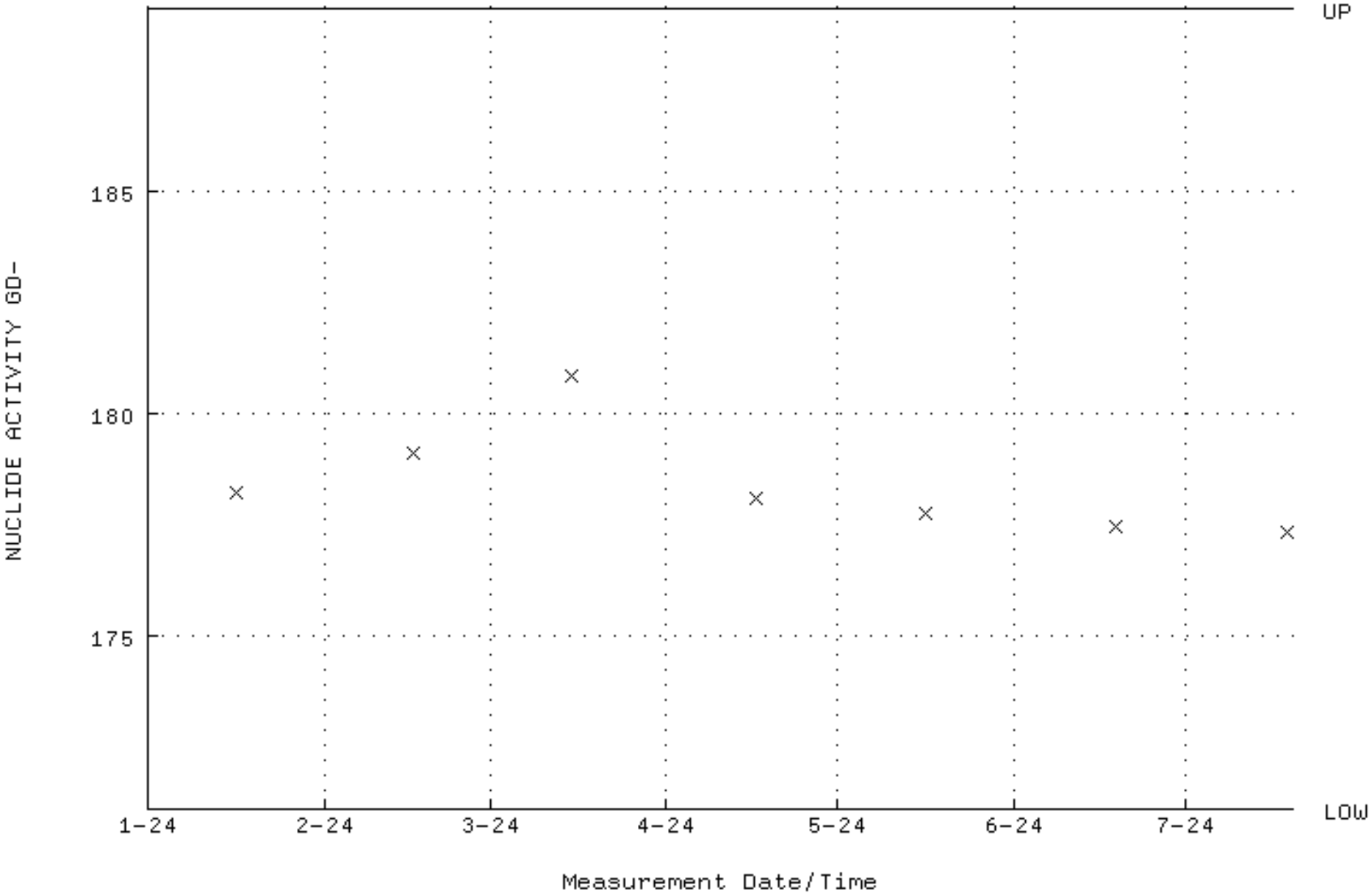
QA filename : DKA100:[ENV_ALPHA.QA.B]B180.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:47:03 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



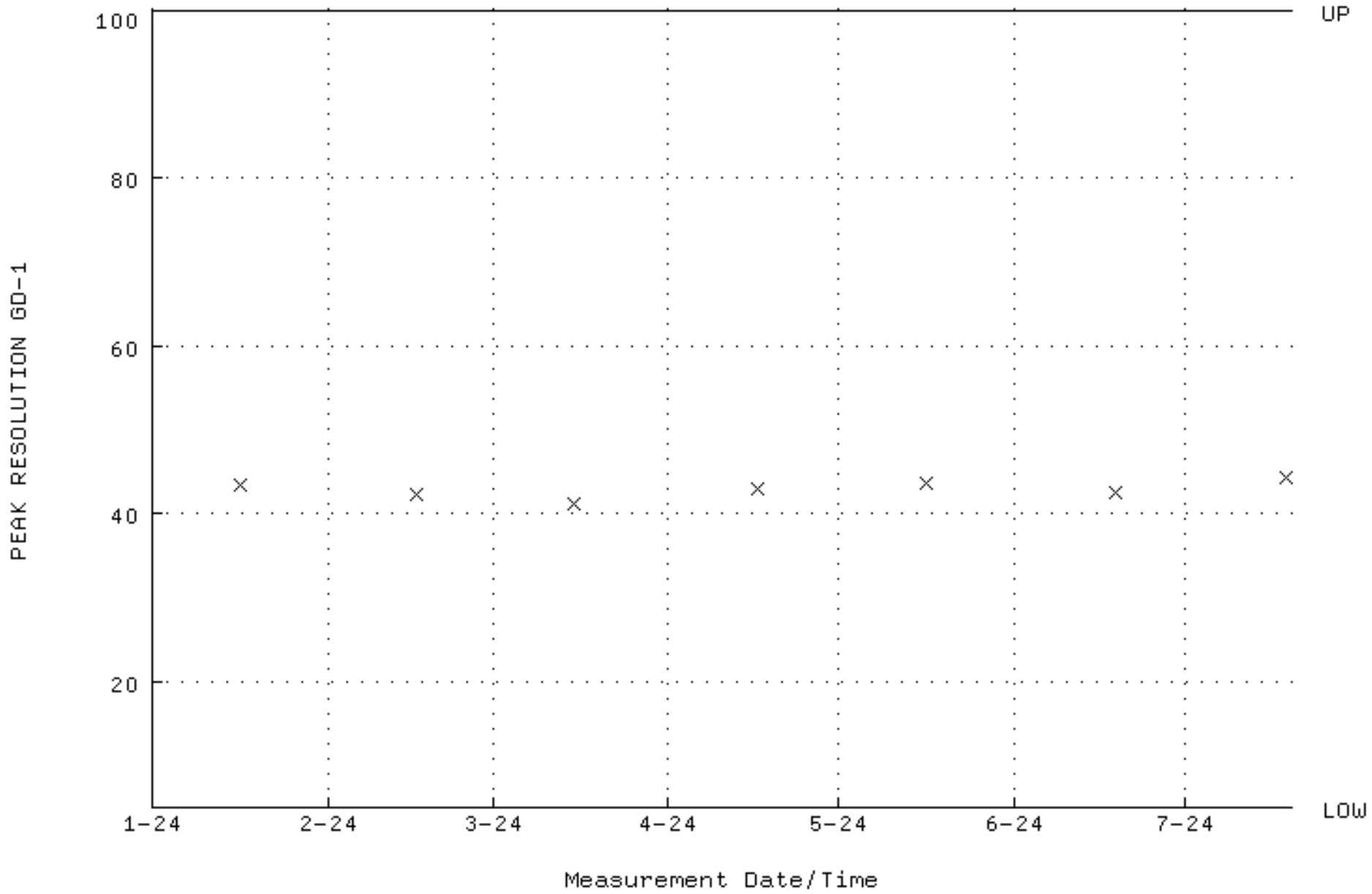
QA filename : DKA100:[ENV_ALPHA.QA.W]W181.QAF;4
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 16-JAN-2024 10:19:25 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.251760 through 0.267330



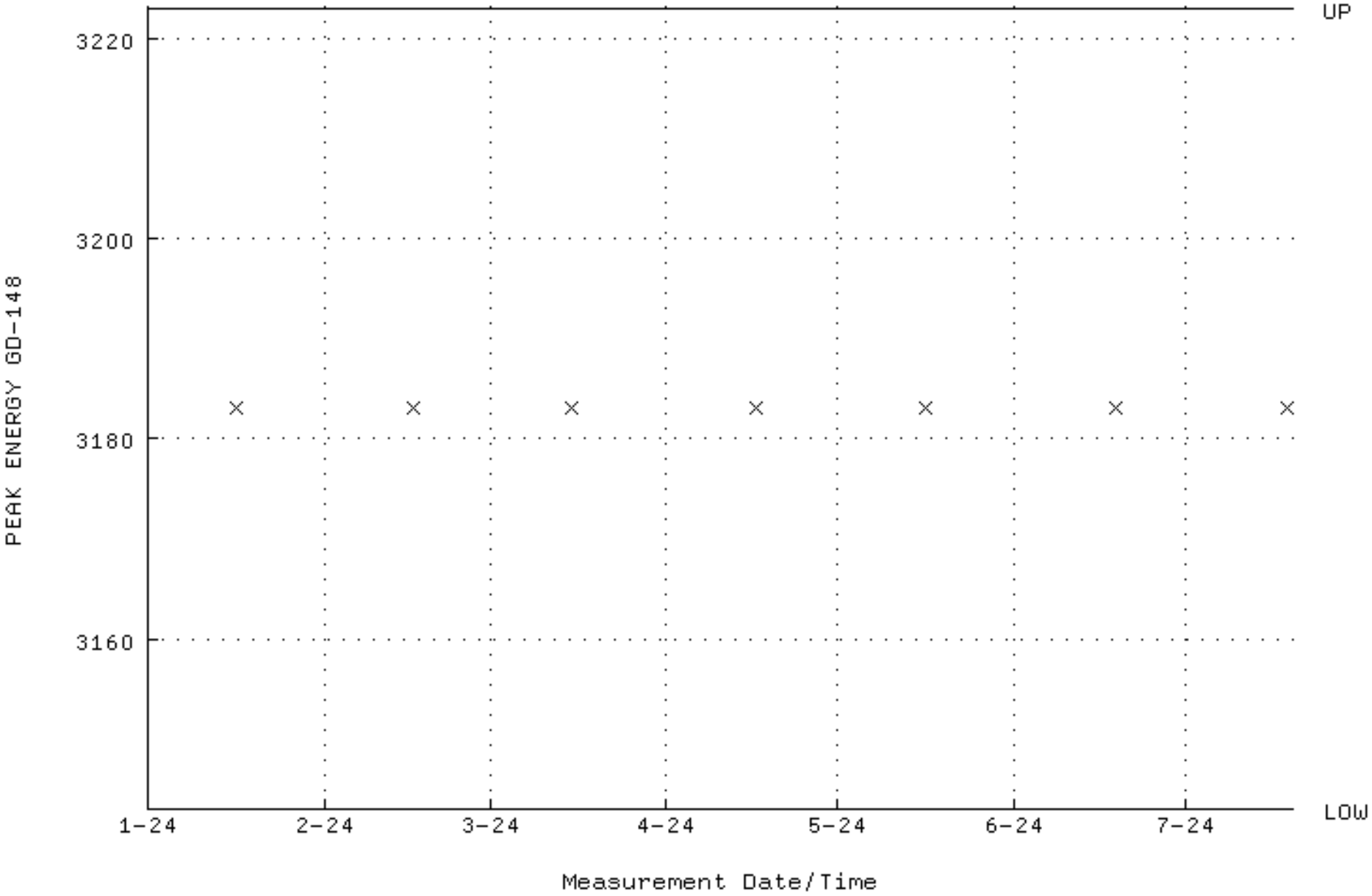
QA filename : DKA100:[ENV_ALPHA.QA.W]W181.QAF;4
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 16-JAN-2024 10:19:25 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



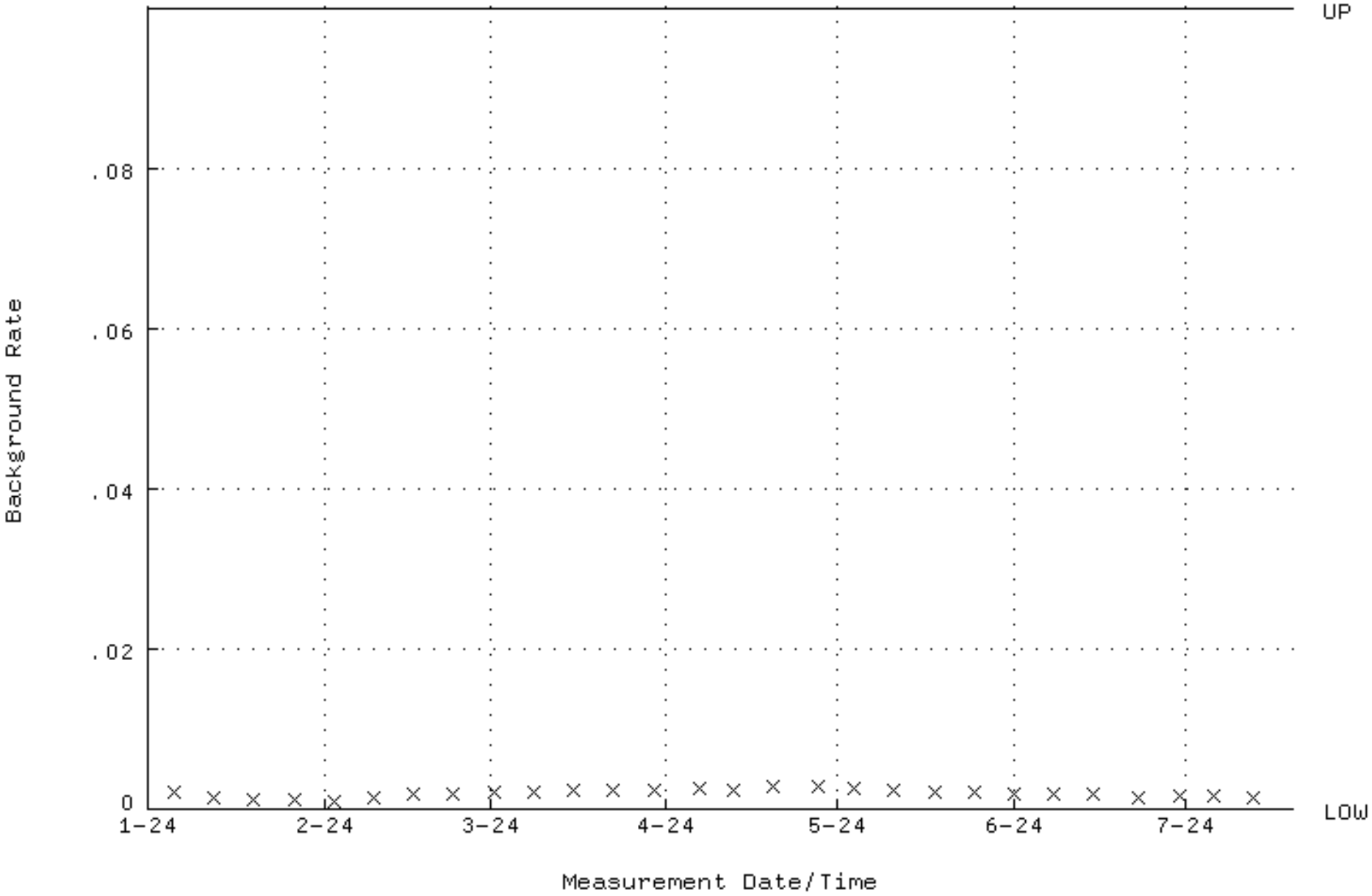
QA filename : DKA100:[ENV_ALPHA.QA.W]W181.QAF;4
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 16-JAN-2024 10:19:25 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



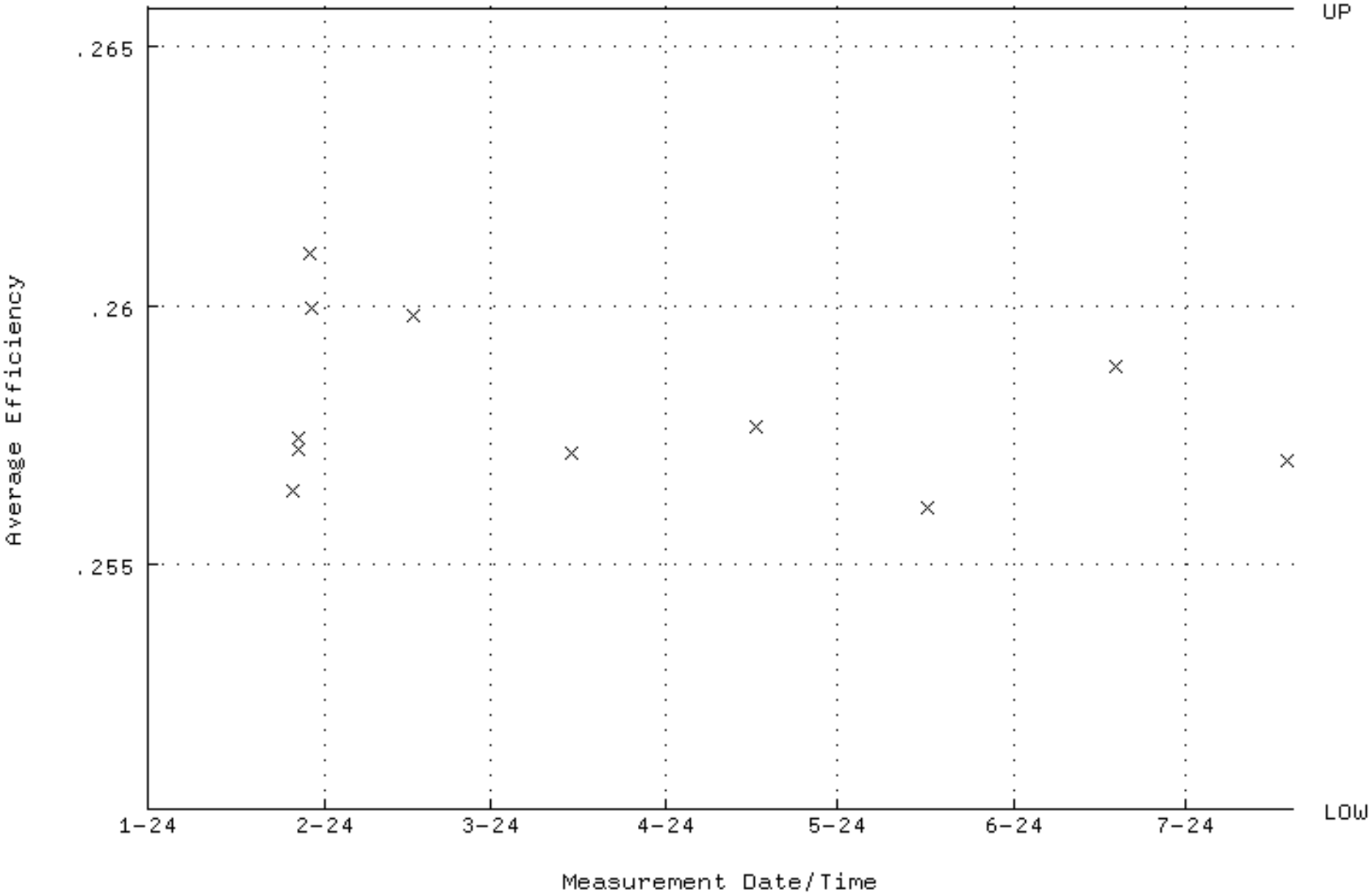
QA filename : DKA100:[ENV_ALPHA.QA.W]W181.QAF;4
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 16-JAN-2024 10:19:25 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



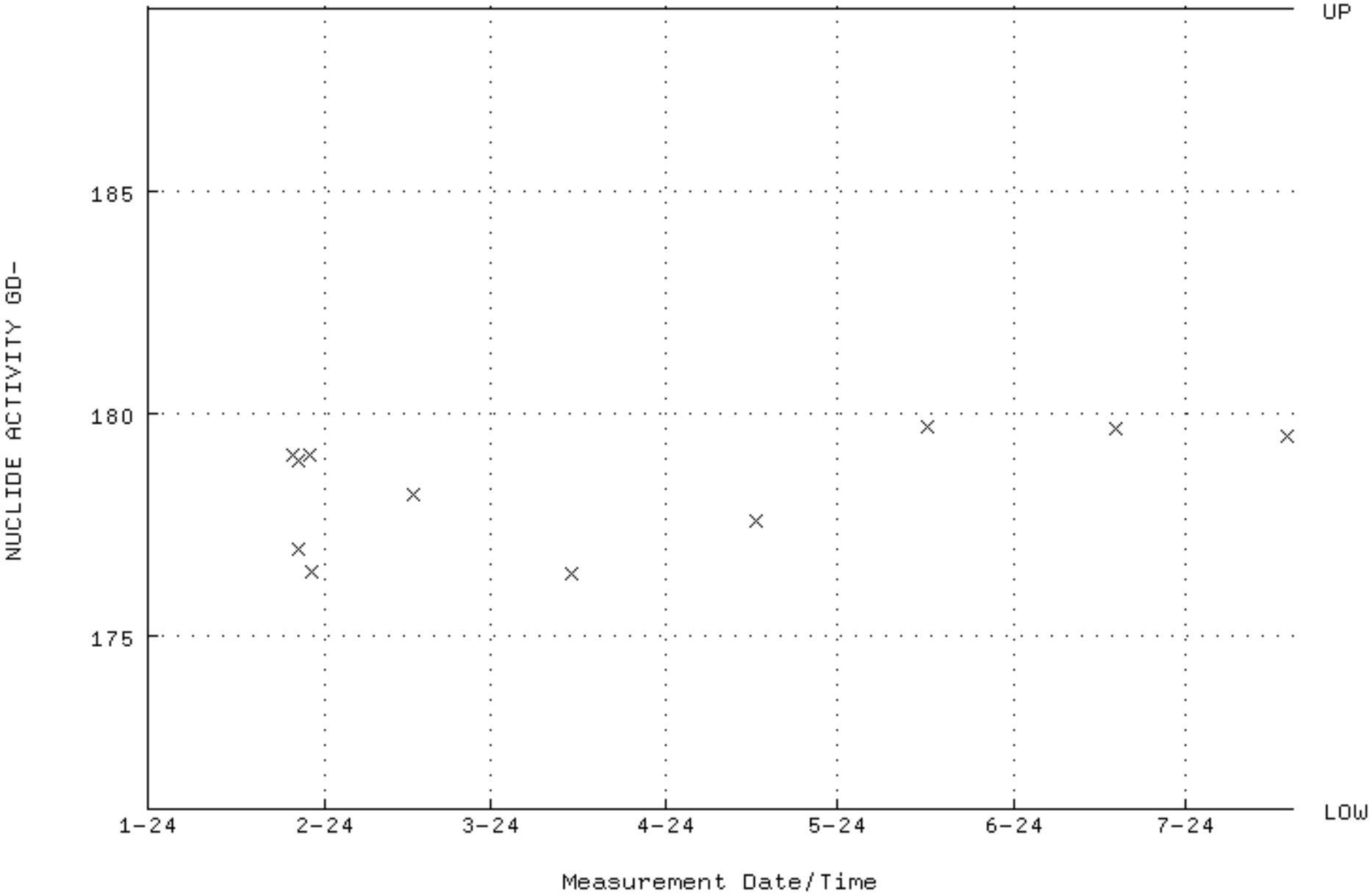
QA filename : DKA100:[ENV_ALPHA.QA.B]B181.QAF;3
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:47:07 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



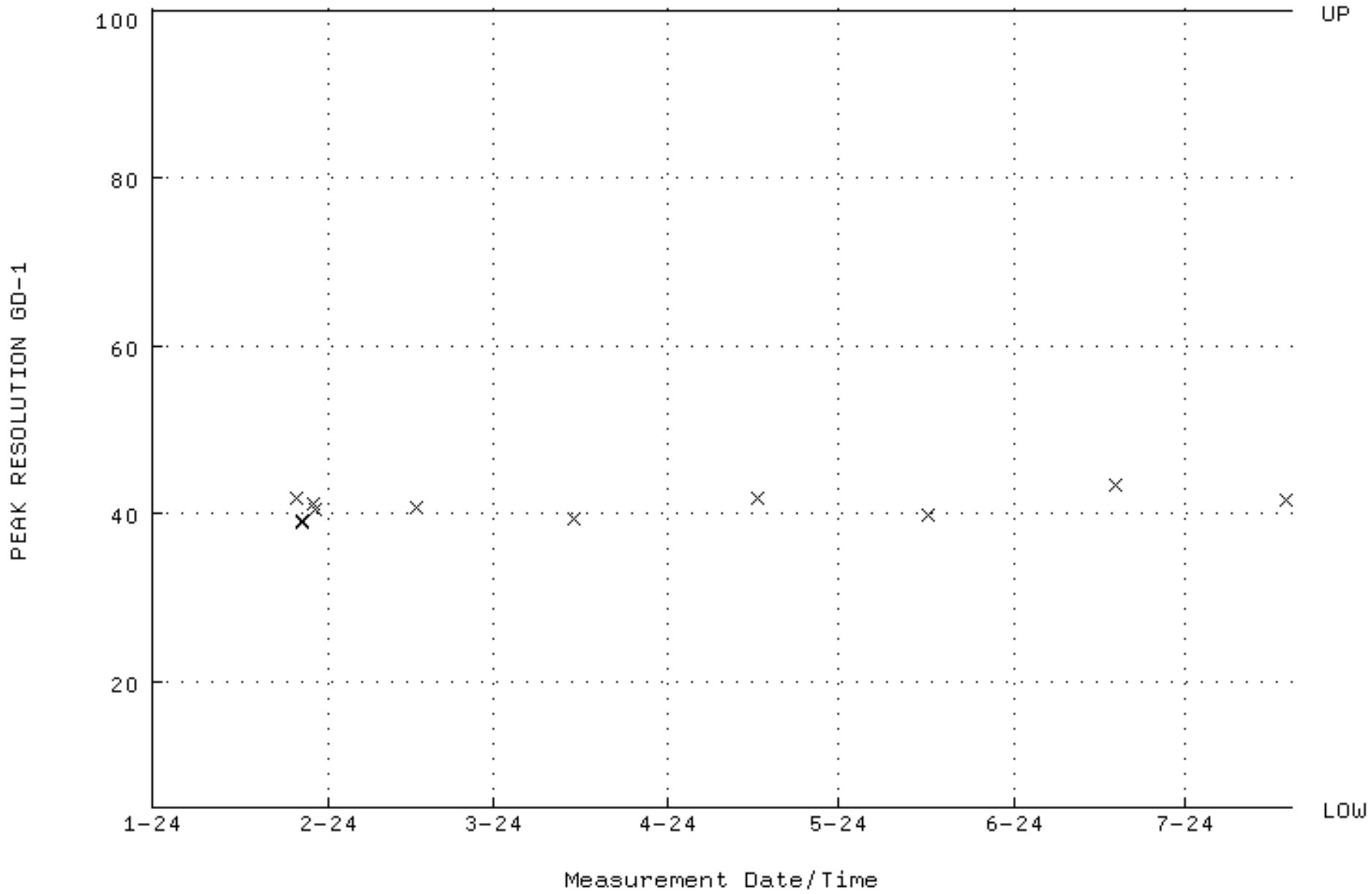
QA filename : DKA100:[ENV_ALPHA.QA.W]W182.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 26-JAN-2024 09:48:18 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.250263 through 0.265743



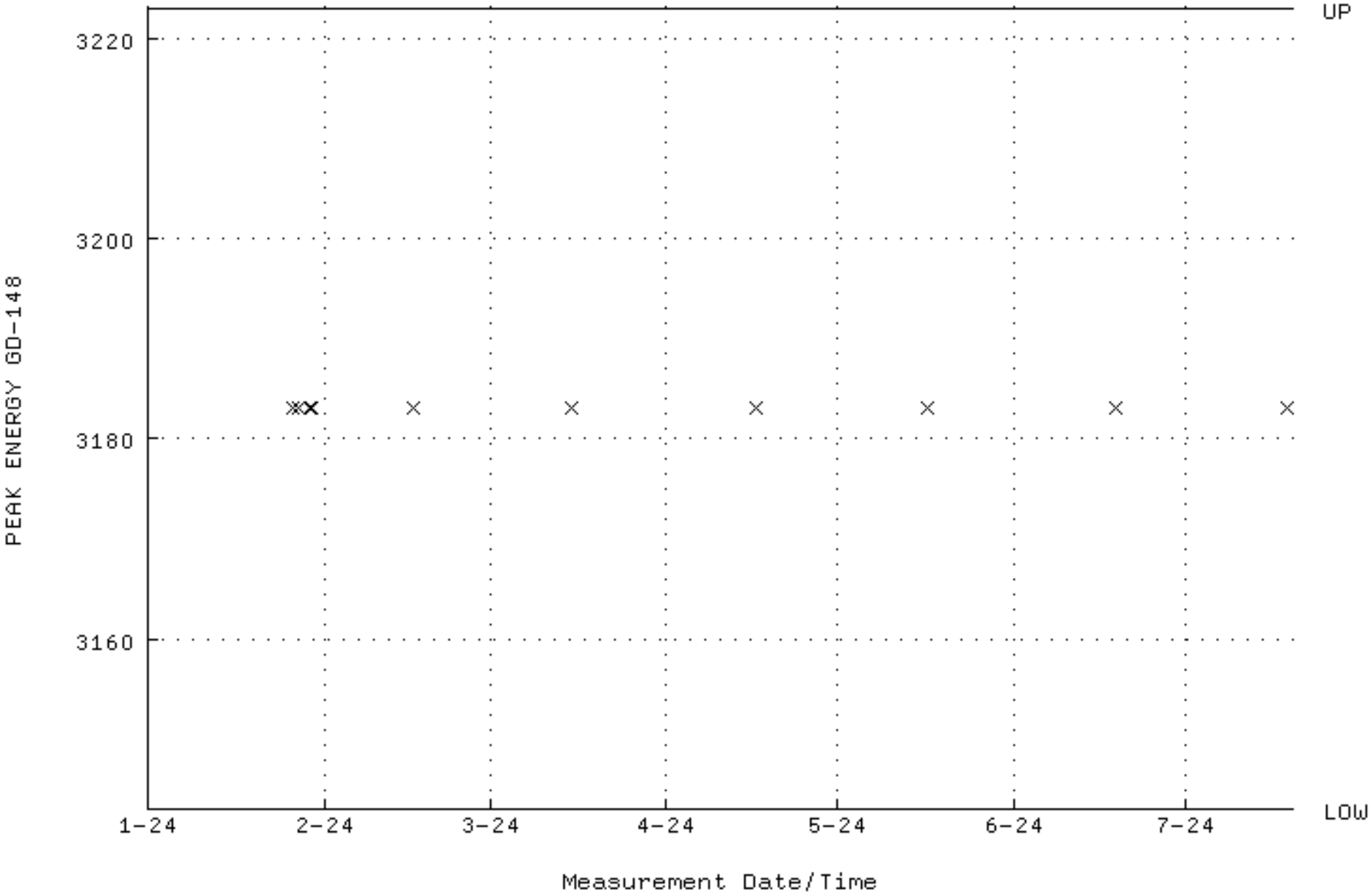
QA filename : DKA100:[ENV_ALPHA.QA.W]W182.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 26-JAN-2024 09:48:18 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



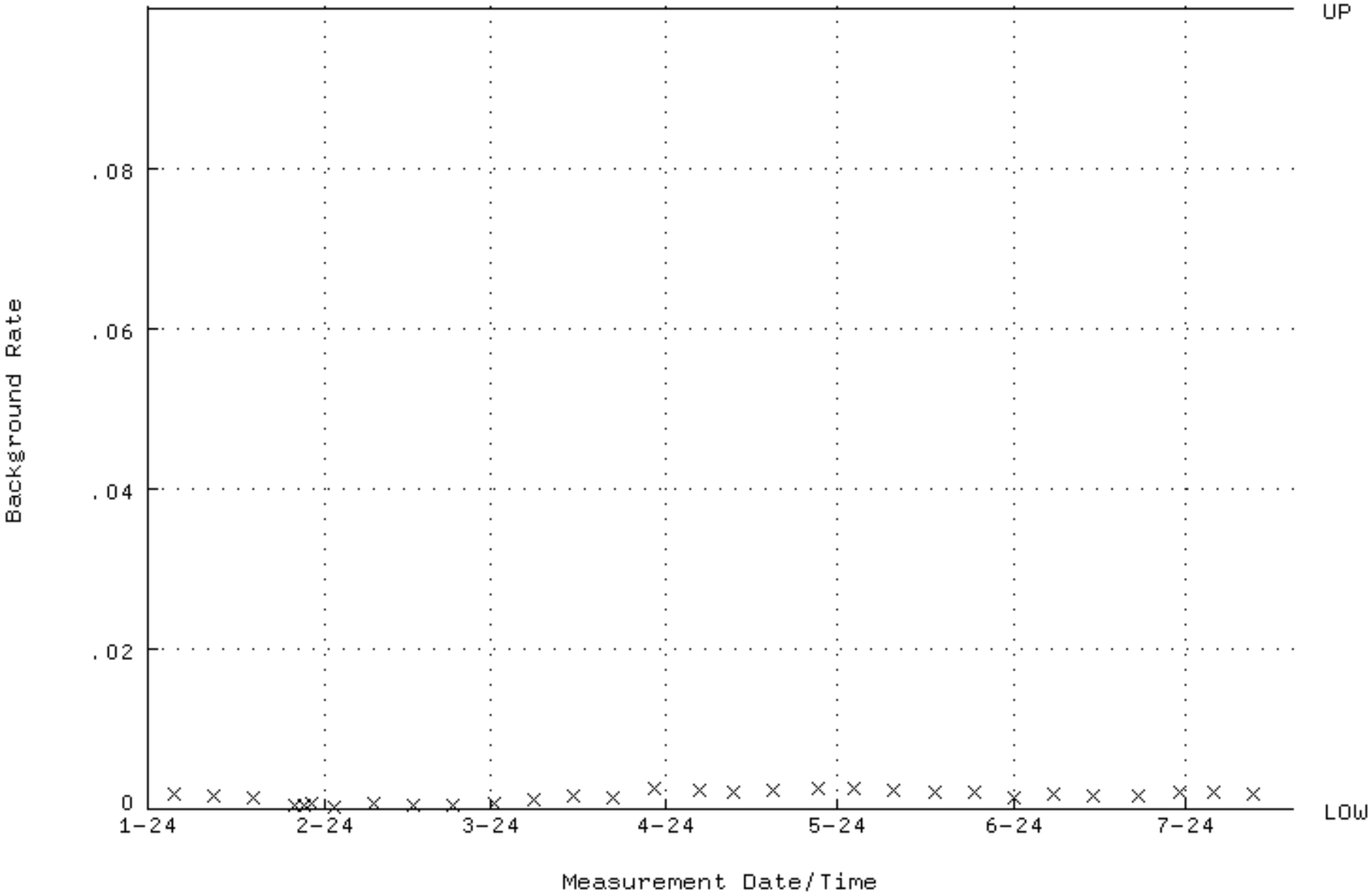
QA filename : DKA100:[ENV_ALPHA.QA.W]W182.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 26-JAN-2024 09:48:18 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



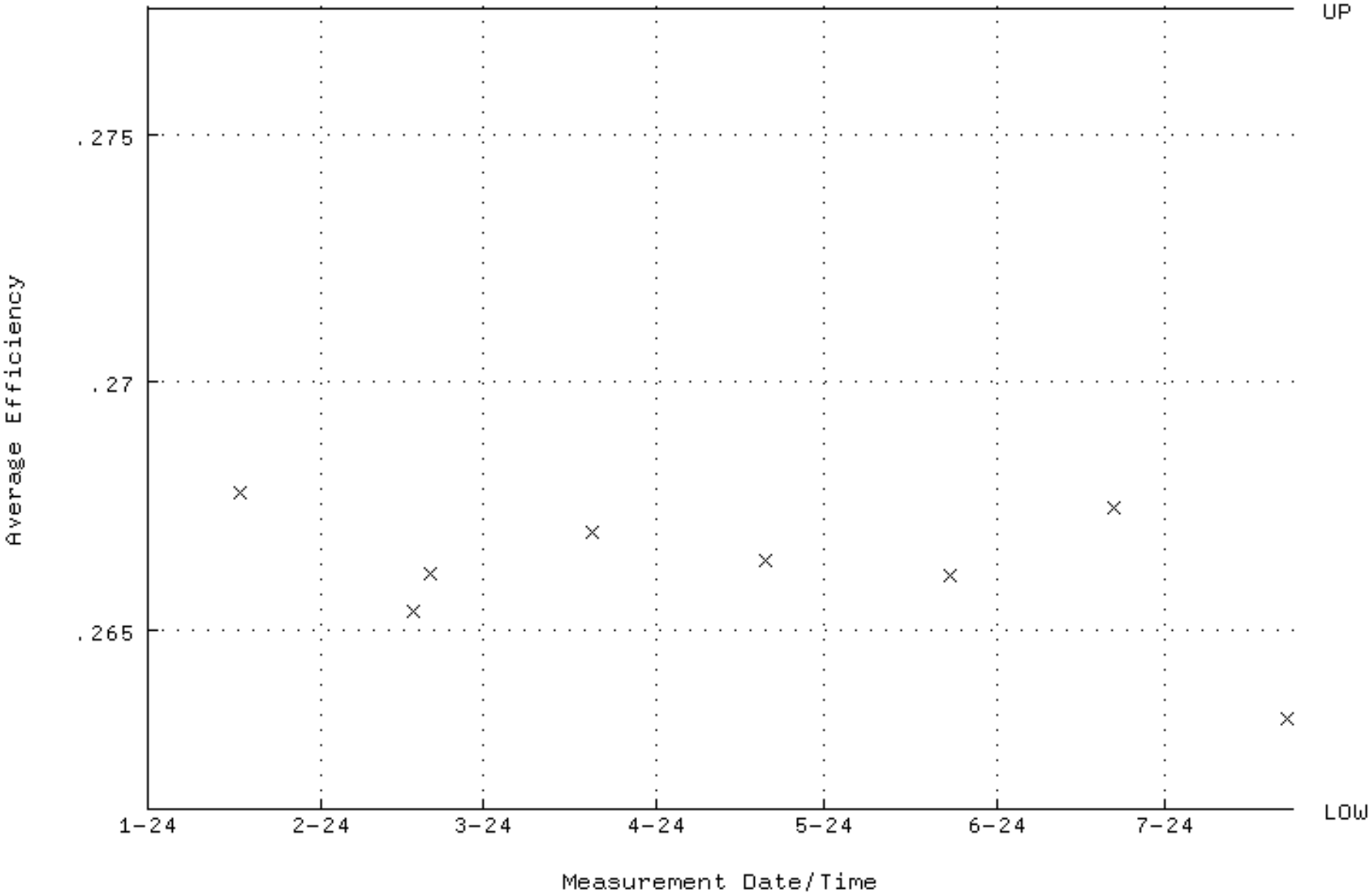
QA filename : DKA100:[ENV_ALPHA.QA.W]W182.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 26-JAN-2024 09:48:18 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



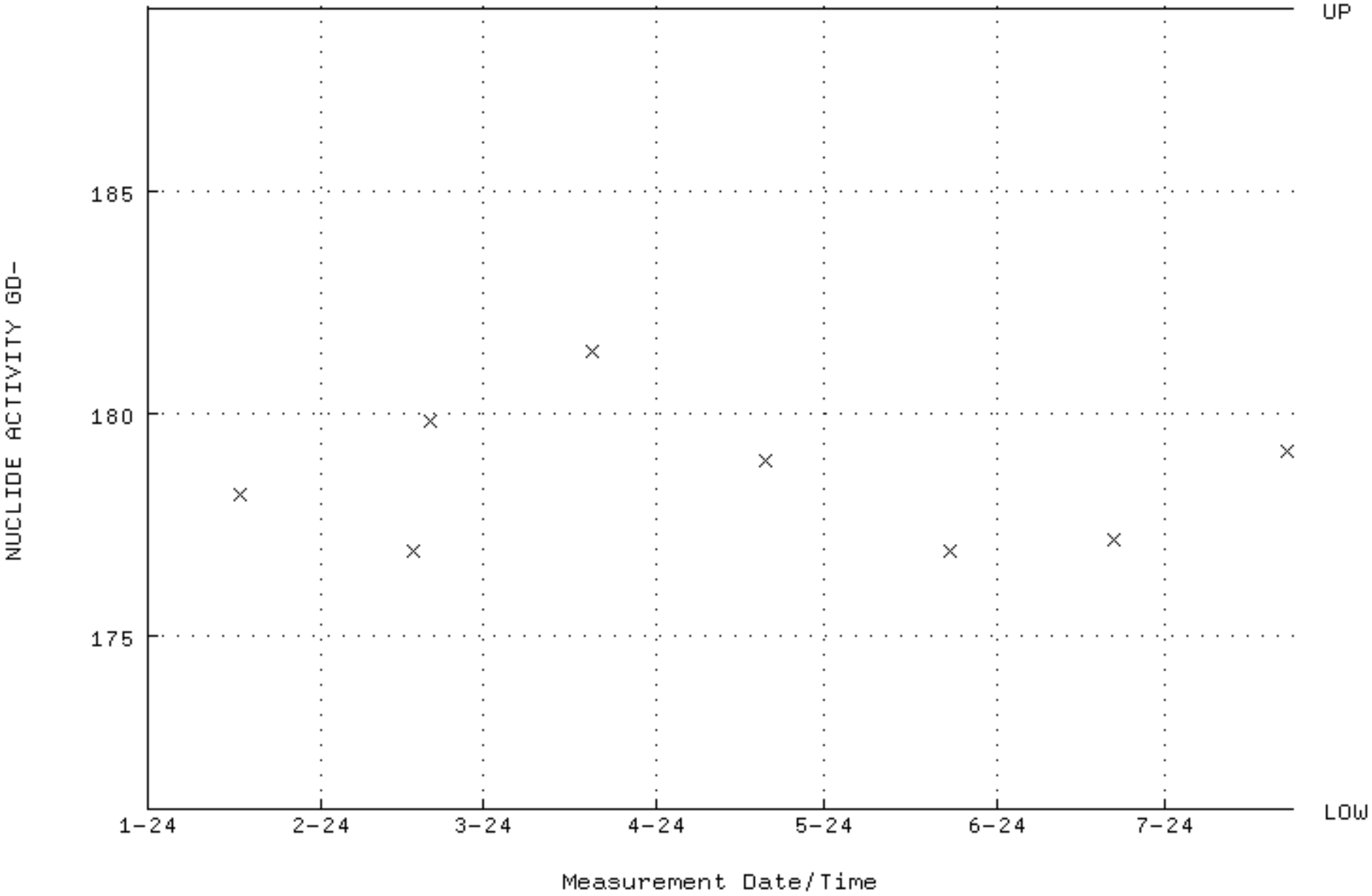
QA filename : DKA100:[ENV_ALPHA.QA.B]B182.QAF;3
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:47:11 through 19-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



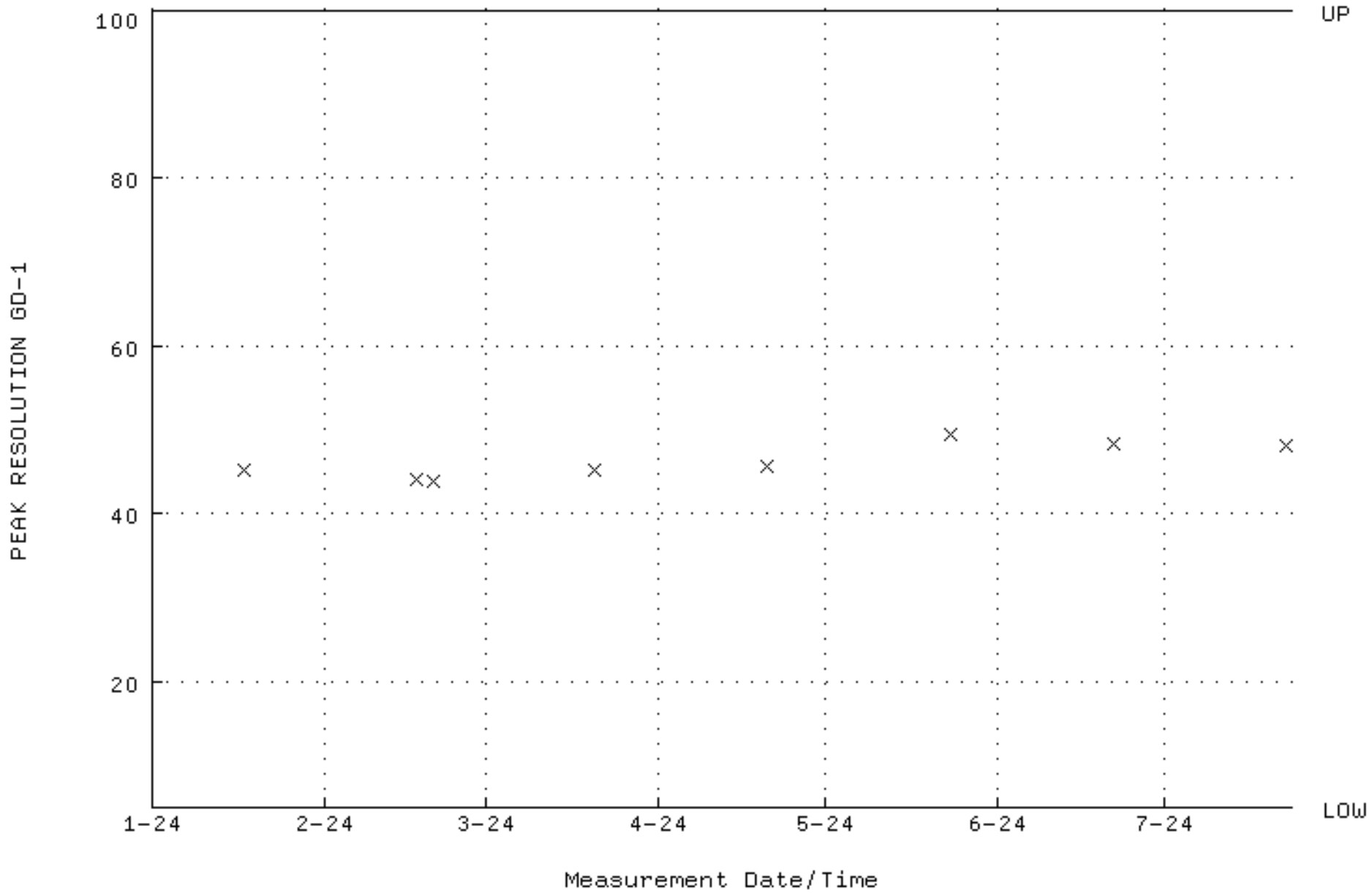
QA filename : DKA100:[ENV_ALPHA.QA.W]W195.QAF;4
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 17-JAN-2024 09:22:26 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.261380 through 0.277540



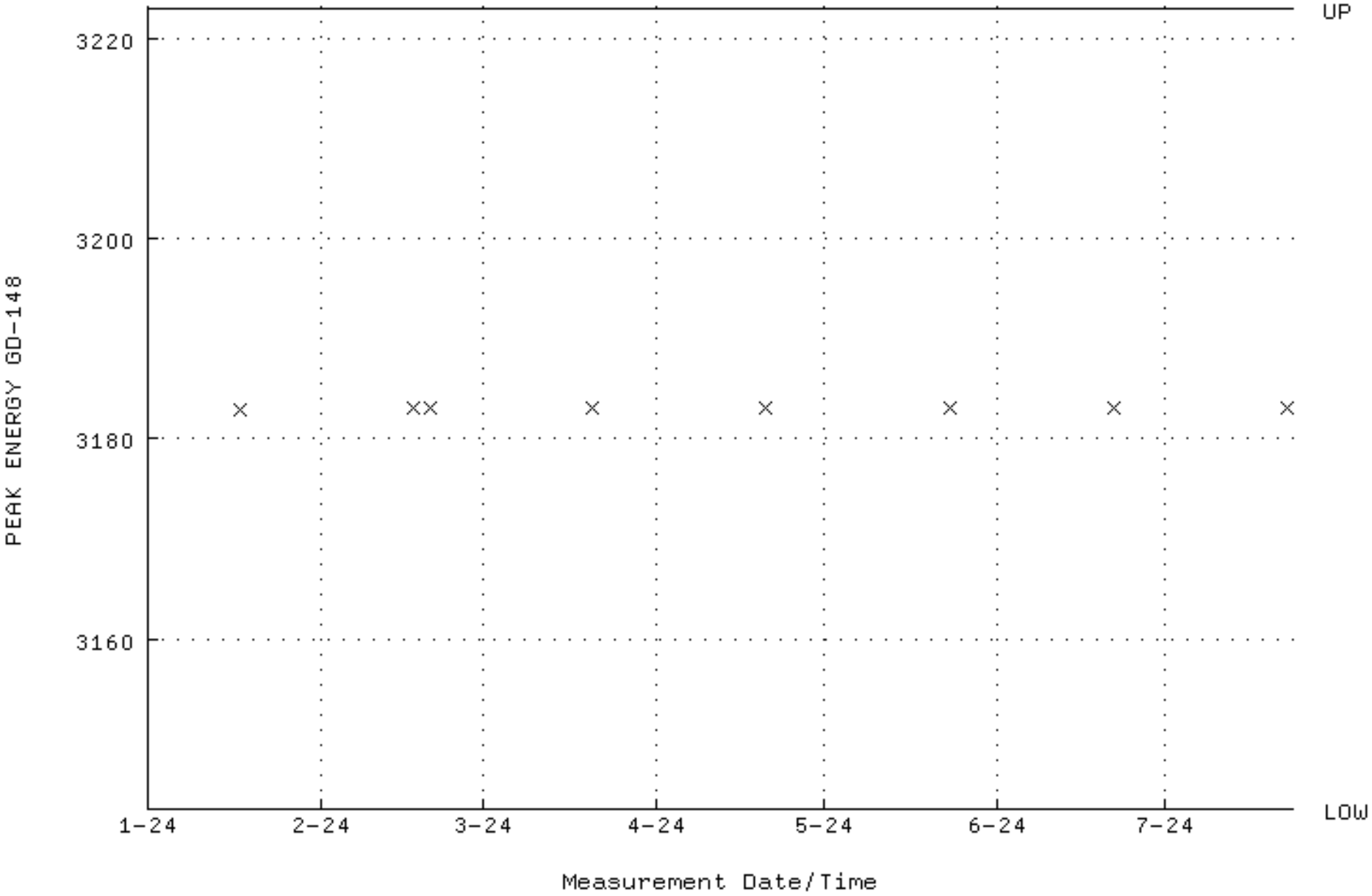
QA filename : DKA100:[ENV_ALPHA.QA.W]W195.QAF;4
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 17-JAN-2024 09:22:26 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



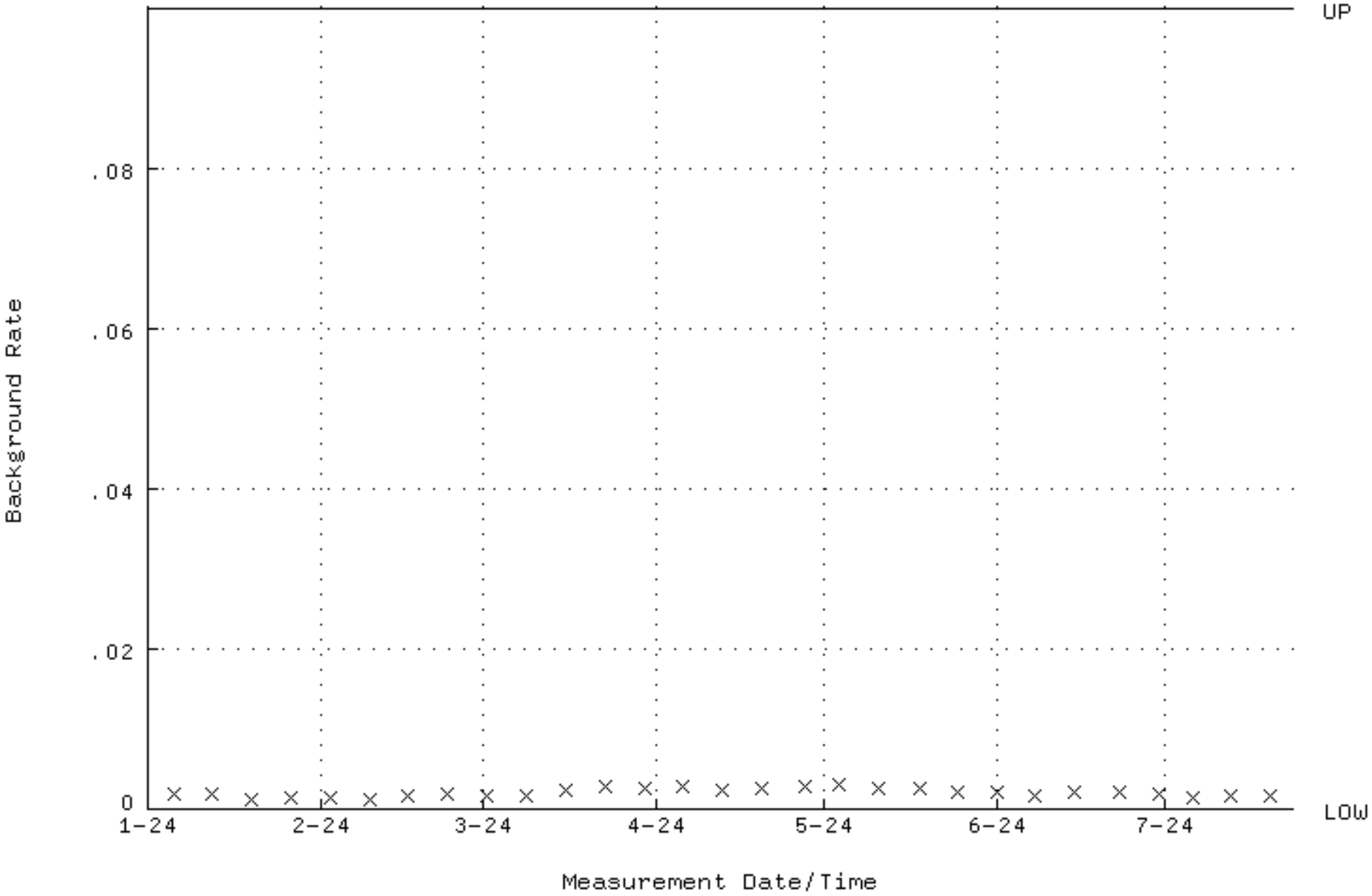
QA filename : DKA100:[ENV_ALPHA.QA.W]W195.QAF;4
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 17-JAN-2024 09:22:26 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



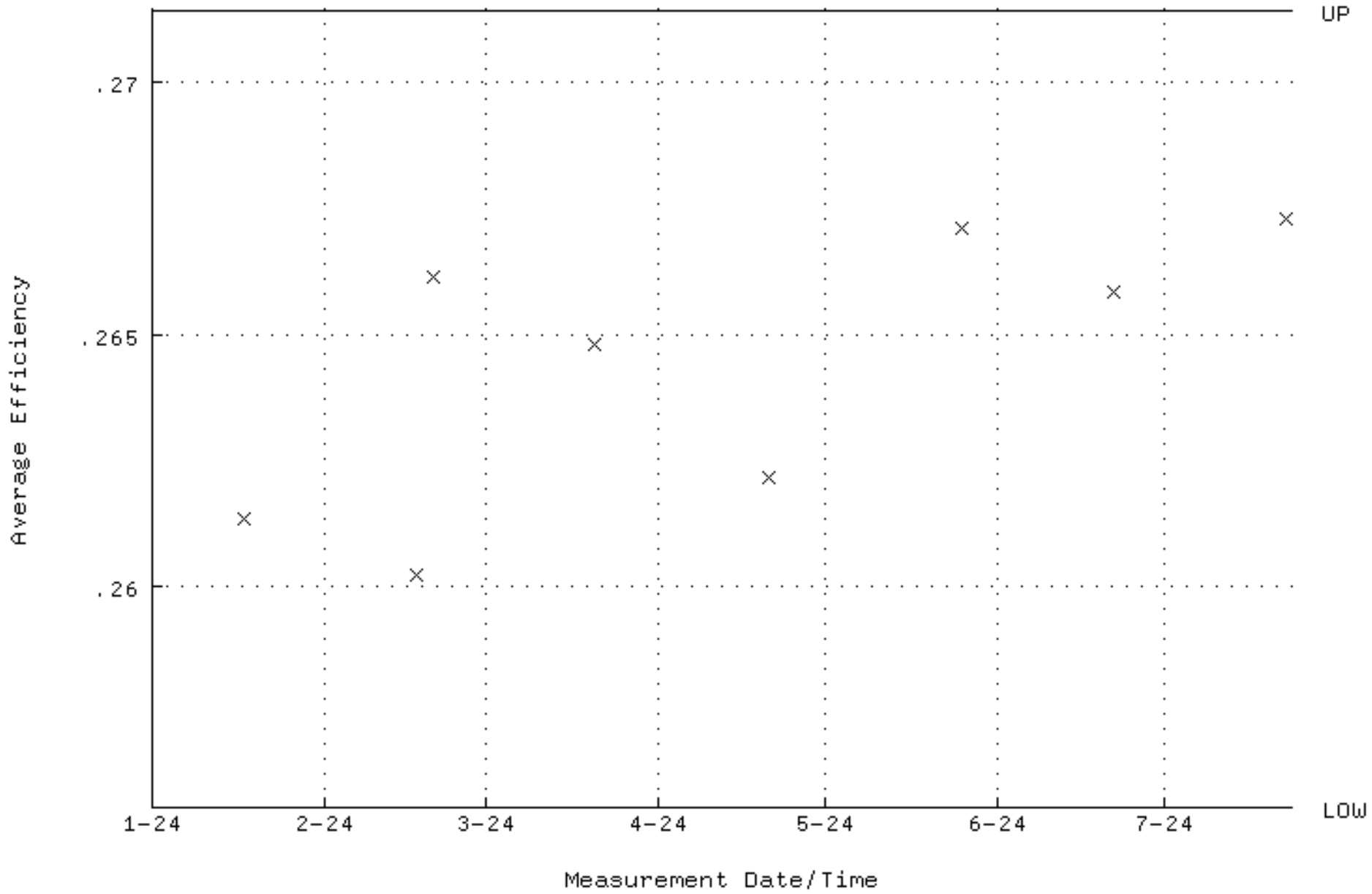
QA filename : DKA100:[ENV_ALPHA.QA.W]W195.QAF;4
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 17-JAN-2024 09:22:26 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



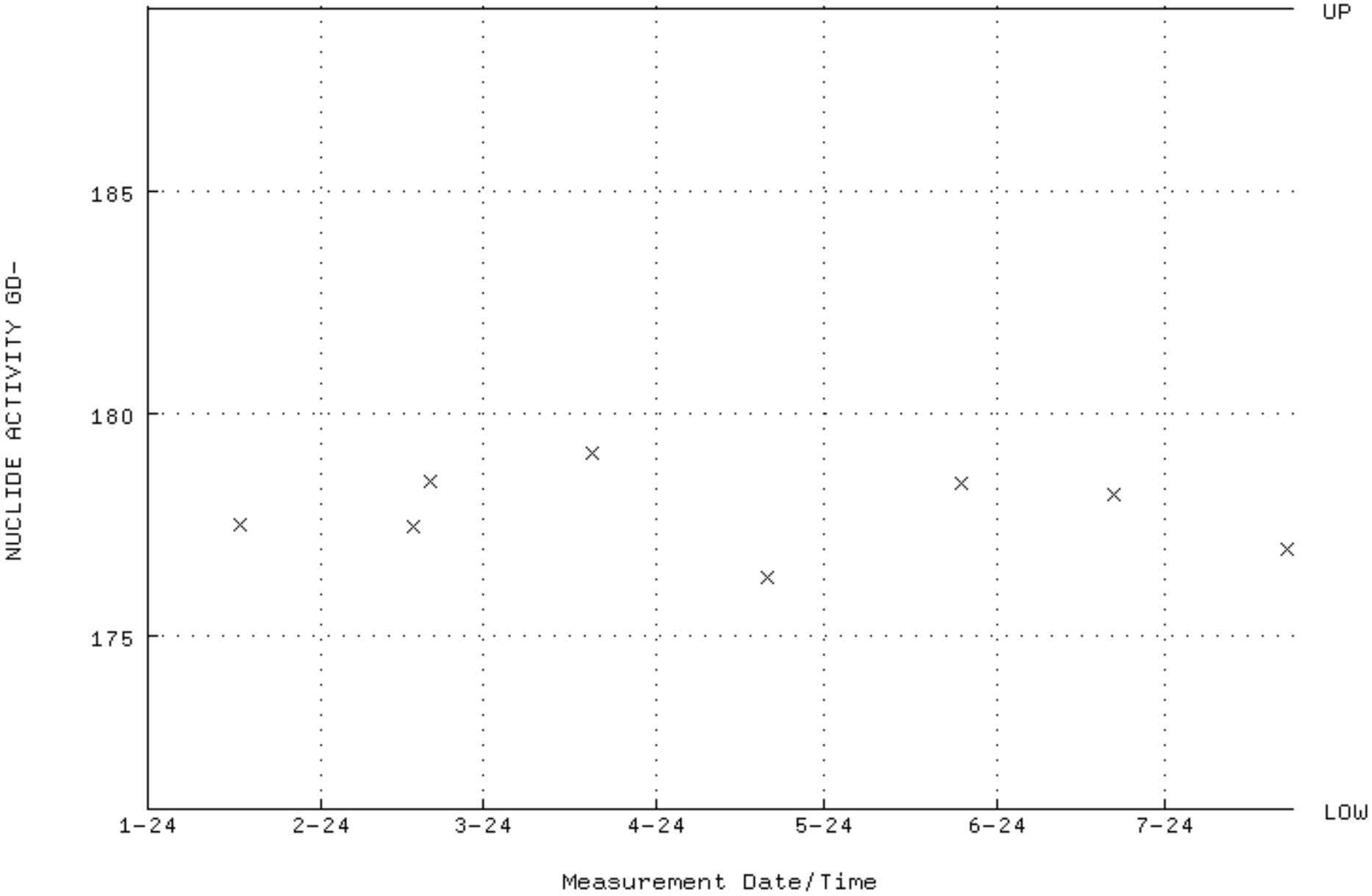
QA filename : DKA100:[ENV_ALPHA.QA.B]B195.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:55:37 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



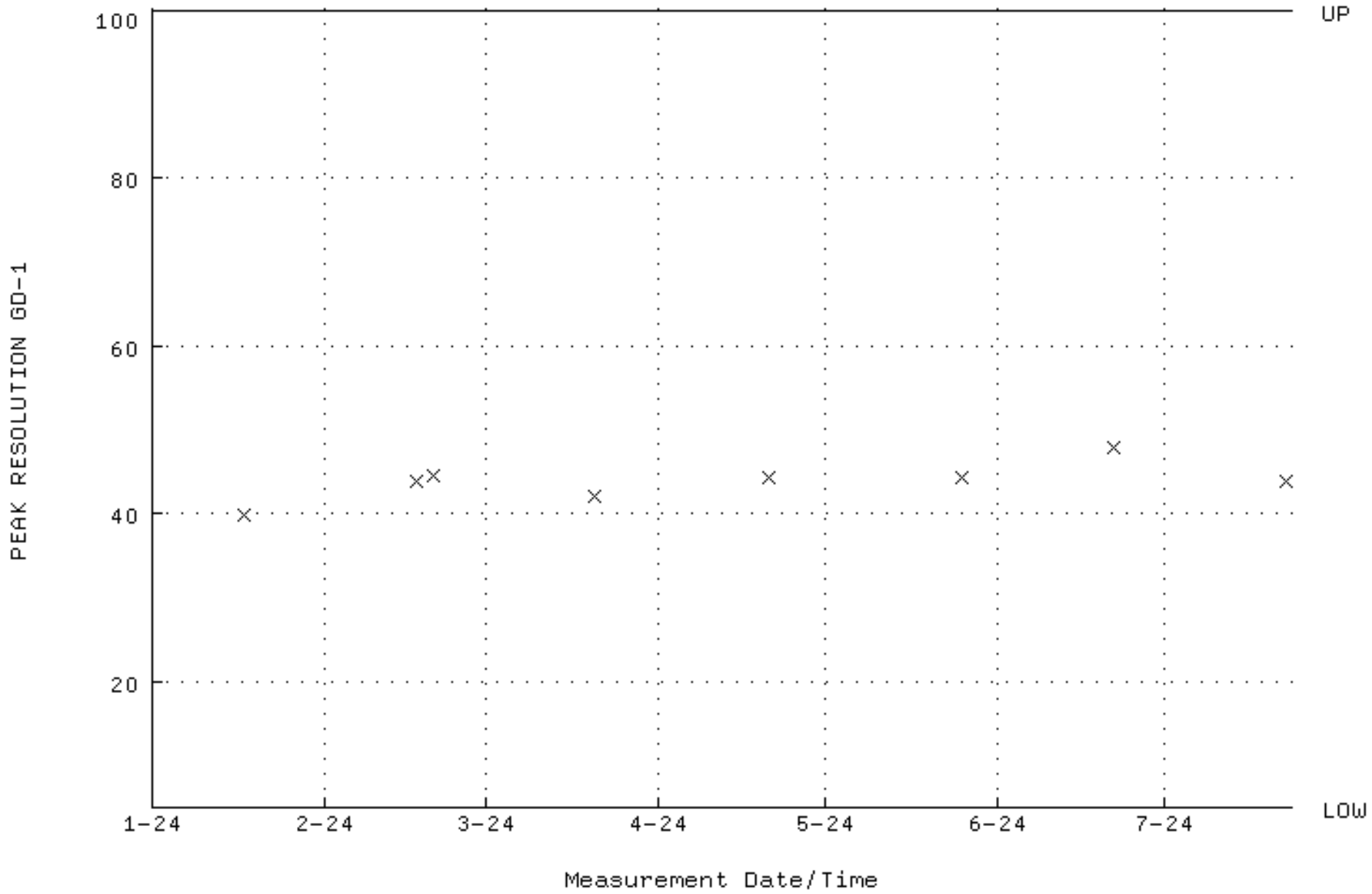
QA filename : DKA100:[ENV_ALPHA.QA.W]W197.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 17-JAN-2024 09:17:33 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.255618 through 0.271430



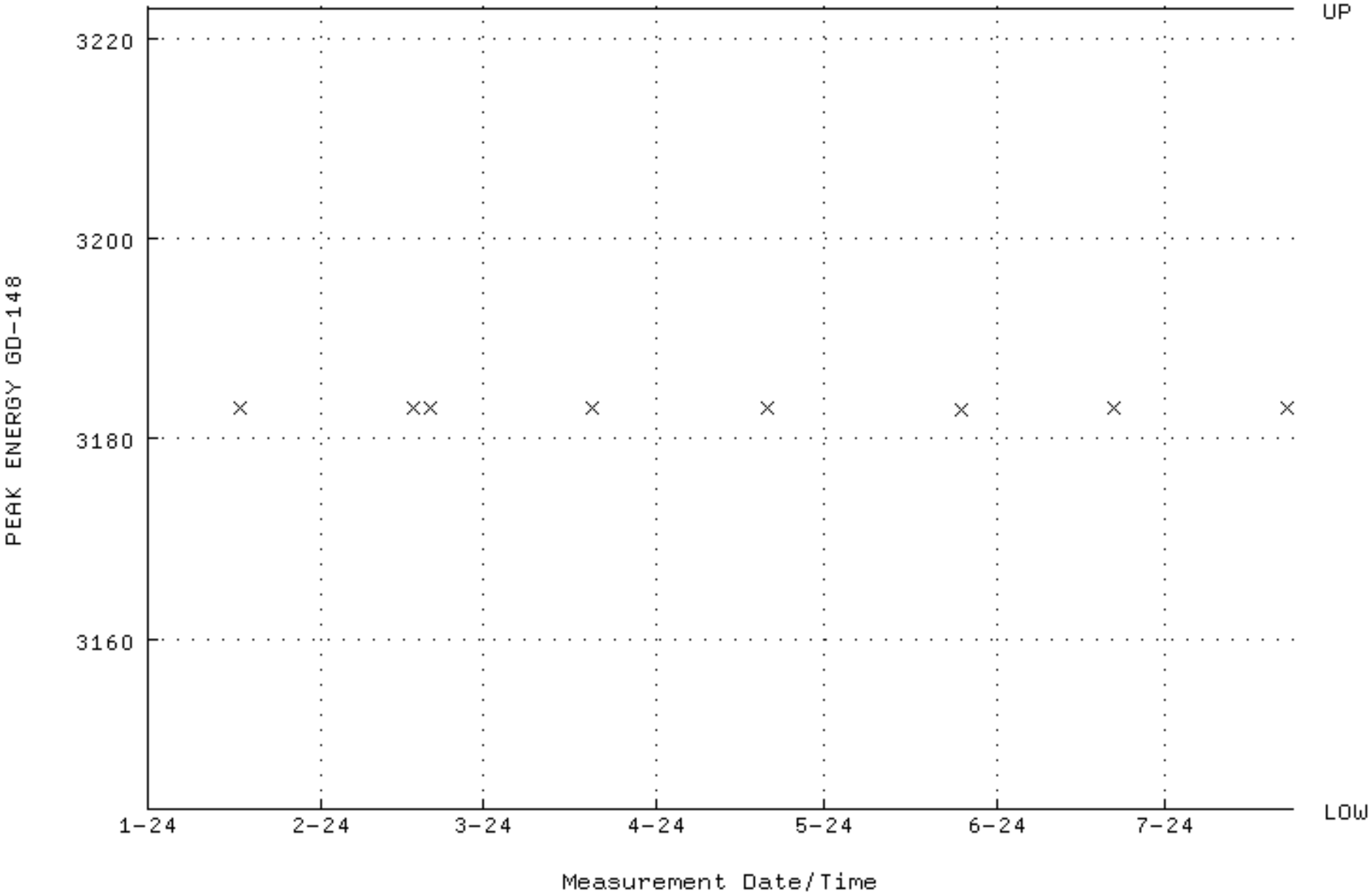
QA filename : DKA100:[ENV_ALPHA.QA.W]W197.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 17-JAN-2024 09:17:33 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



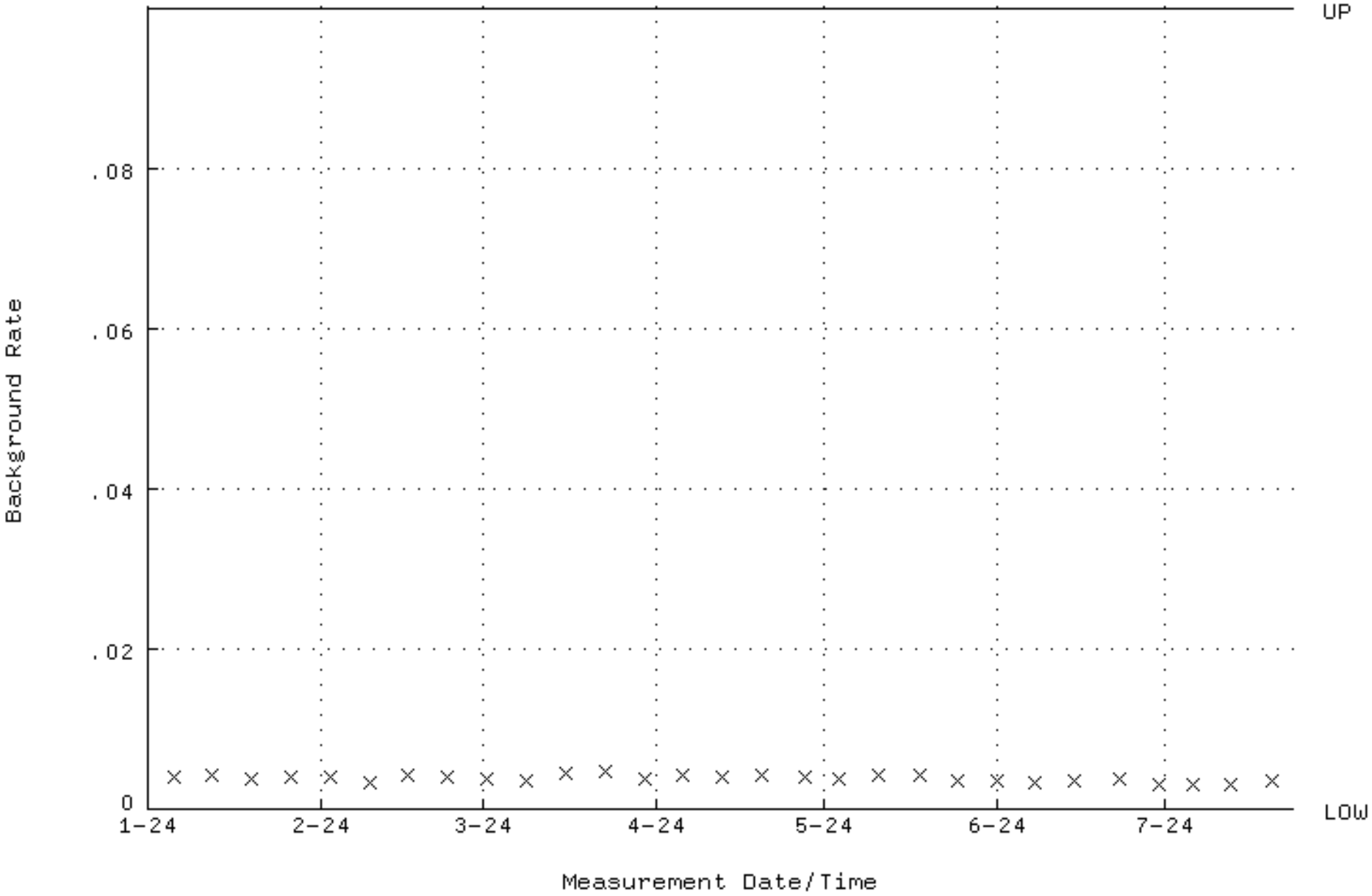
QA filename : DKA100:[ENV_ALPHA.QA.W]W197.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 17-JAN-2024 09:17:33 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



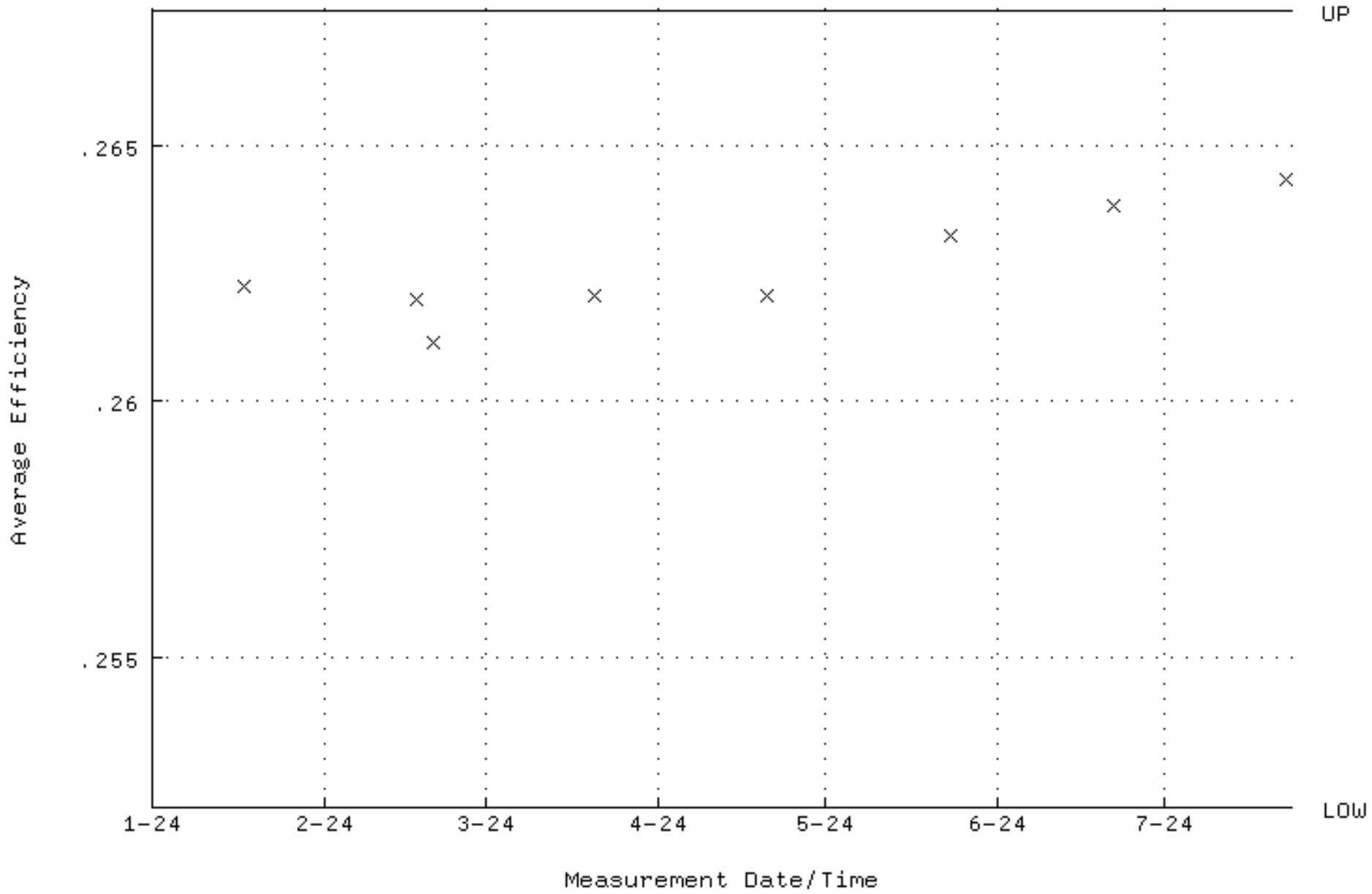
QA filename : DKA100:[ENV_ALPHA.QA.W]W197.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 17-JAN-2024 09:17:33 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



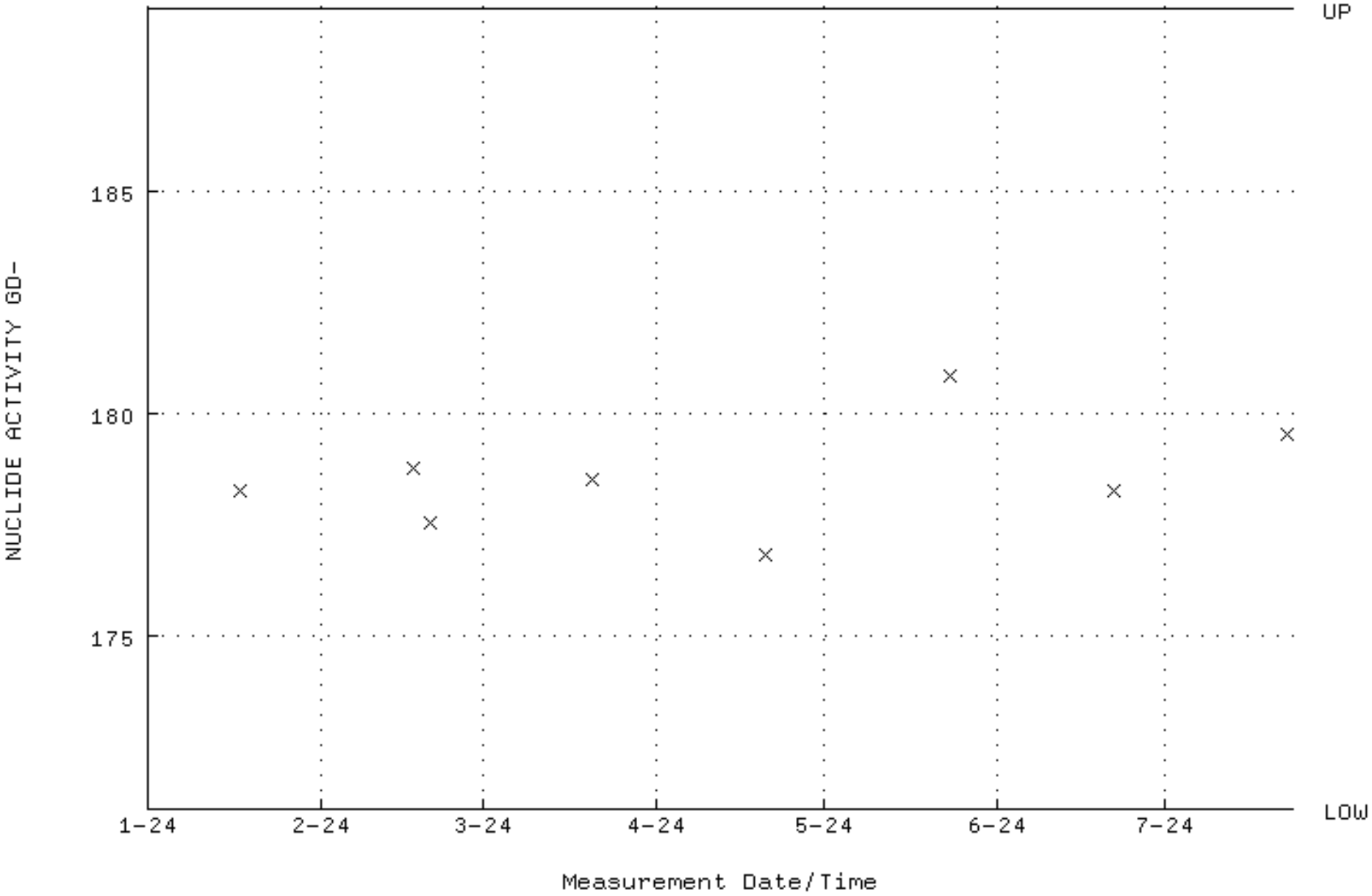
QA filename : DKA100:[ENV_ALPHA.QA.B]B197.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:55:46 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



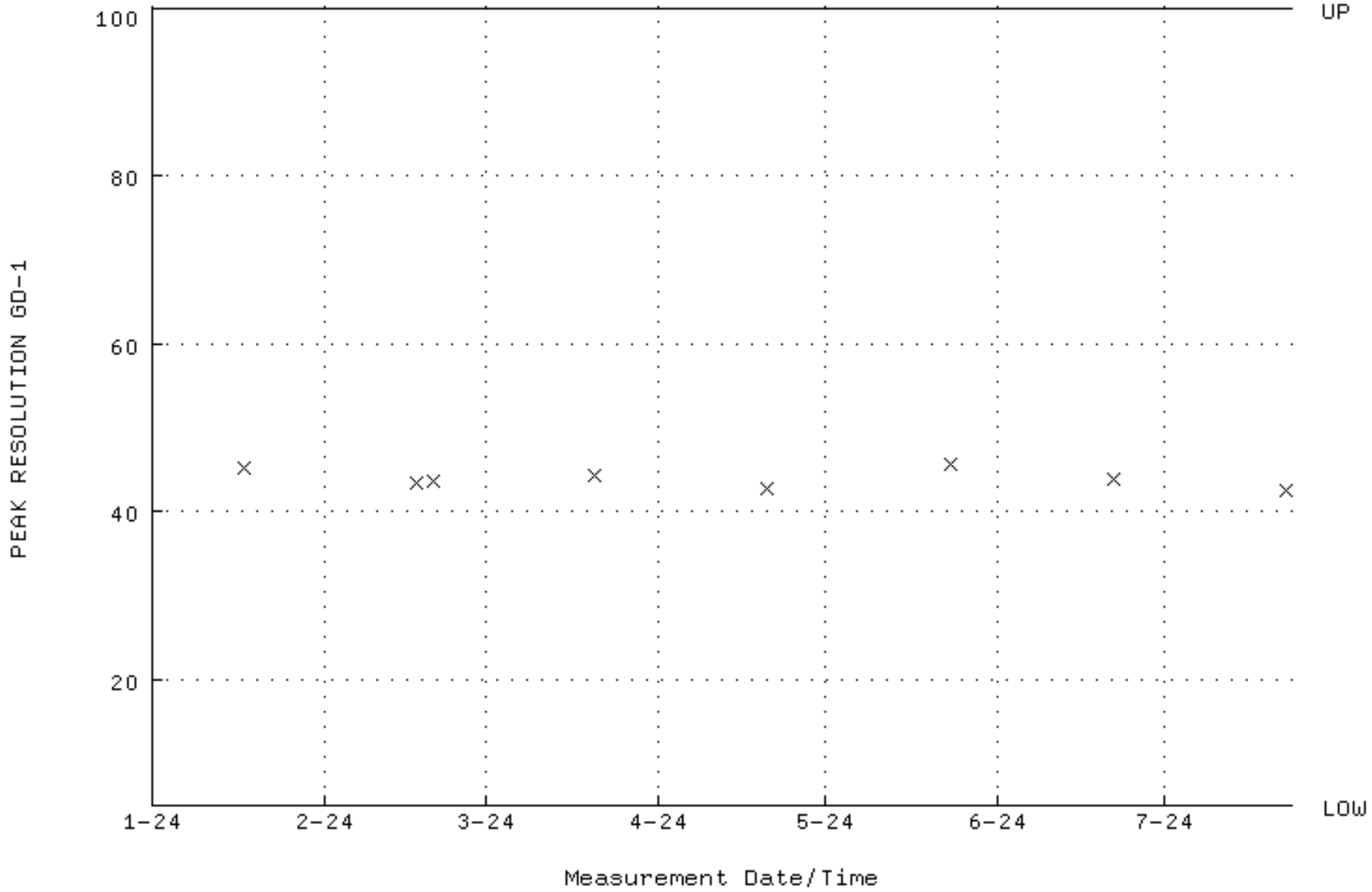
QA filename : DKA100:[ENV_ALPHA.QA.W]W199.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 17-JAN-2024 09:17:45 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.252050 through 0.267640



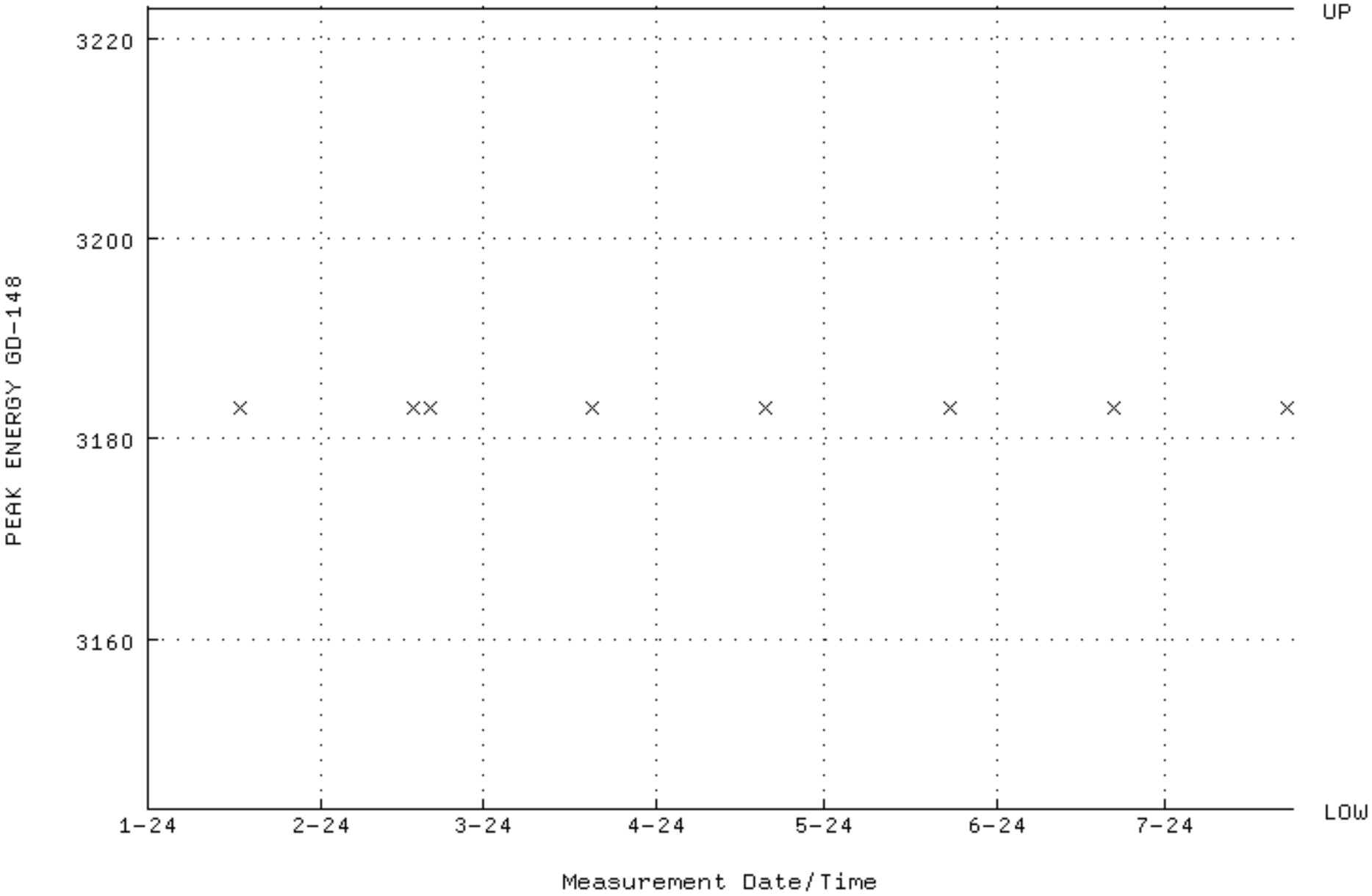
QA filename : DKA100:[ENV_ALPHA.QA.W]W199.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 17-JAN-2024 09:17:45 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



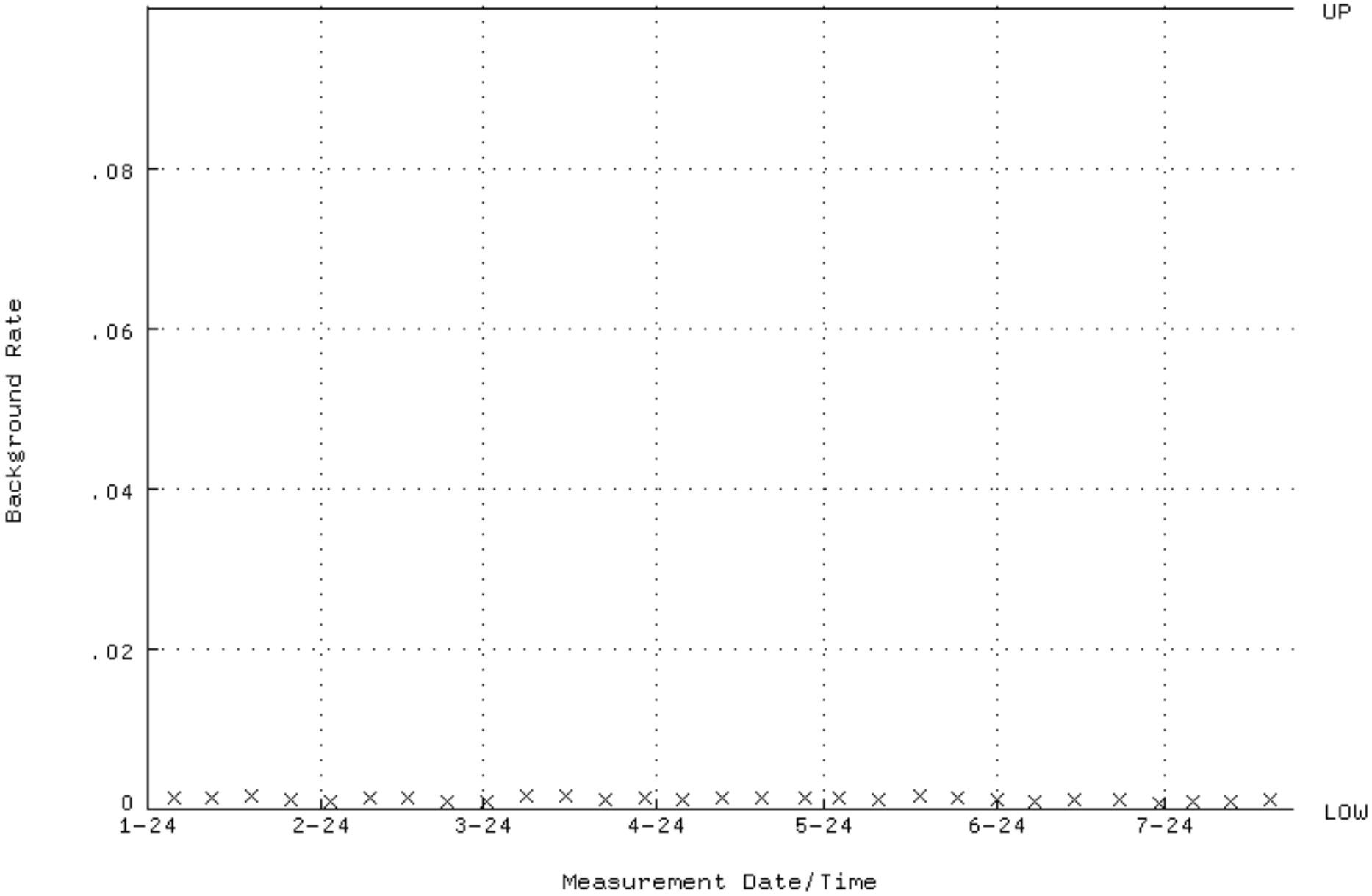
QA filename : DKA100:[ENV_ALPHA.QA.W]W199.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 17-JAN-2024 09:17:45 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



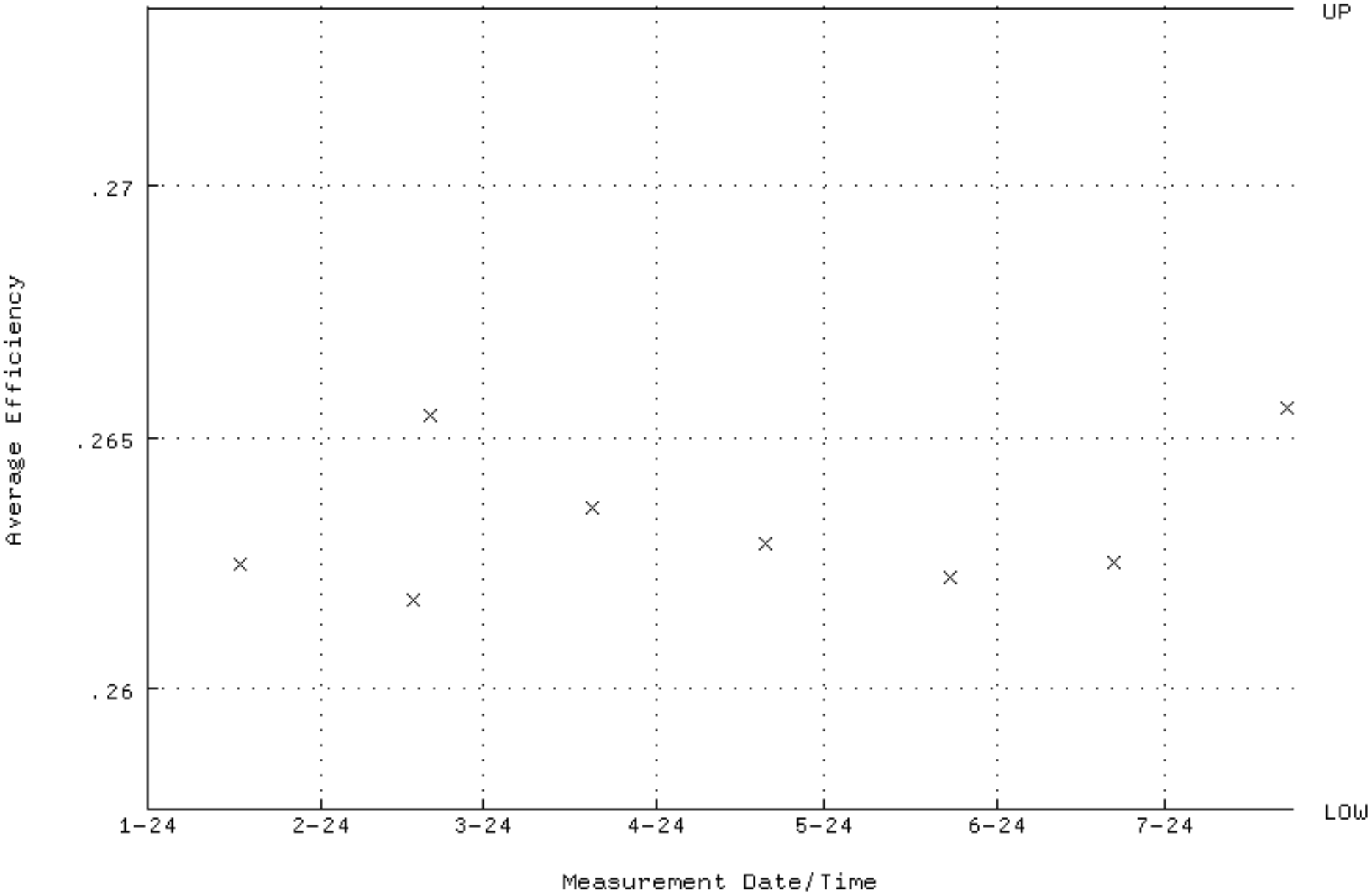
QA filename : DKA100:[ENV_ALPHA.QA.W]W199.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 17-JAN-2024 09:17:45 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



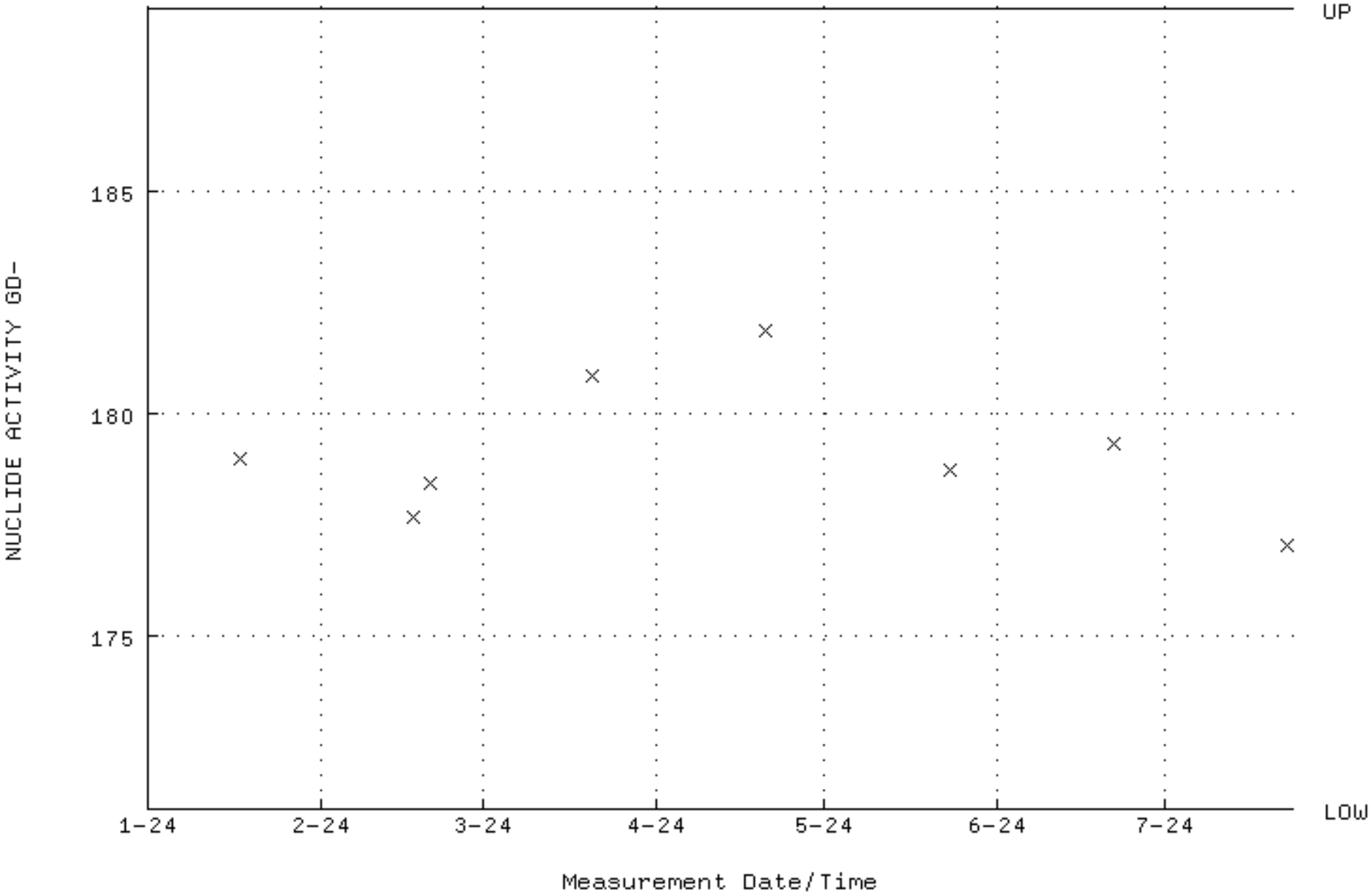
QA filename : DKA100:[ENV_ALPHA.QA.B]B199.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:55:49 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



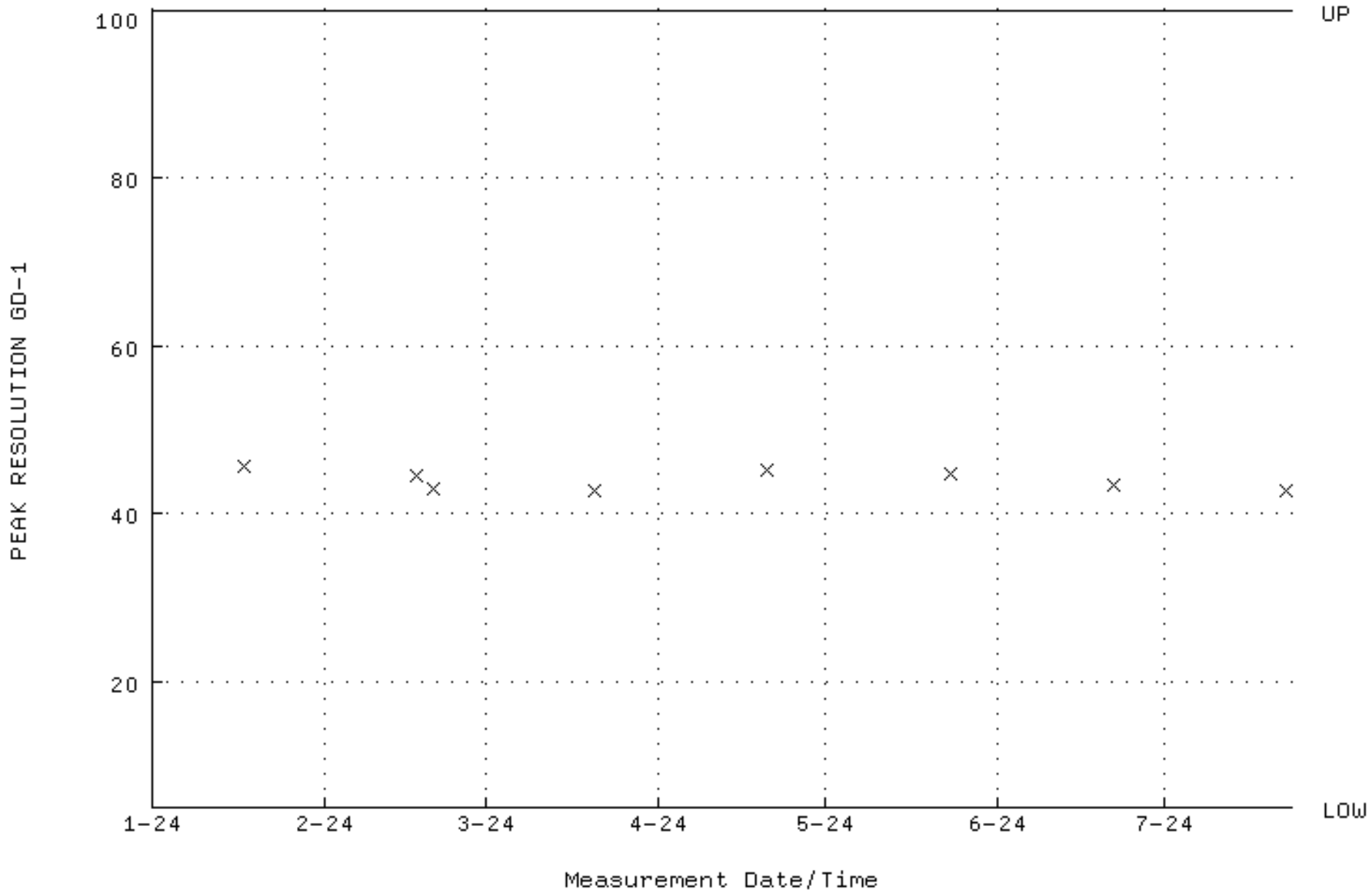
QA filename : DKA100:[ENV_ALPHA.QA.W]W200.QAF;4
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 17-JAN-2024 09:23:45 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.257600 through 0.273540



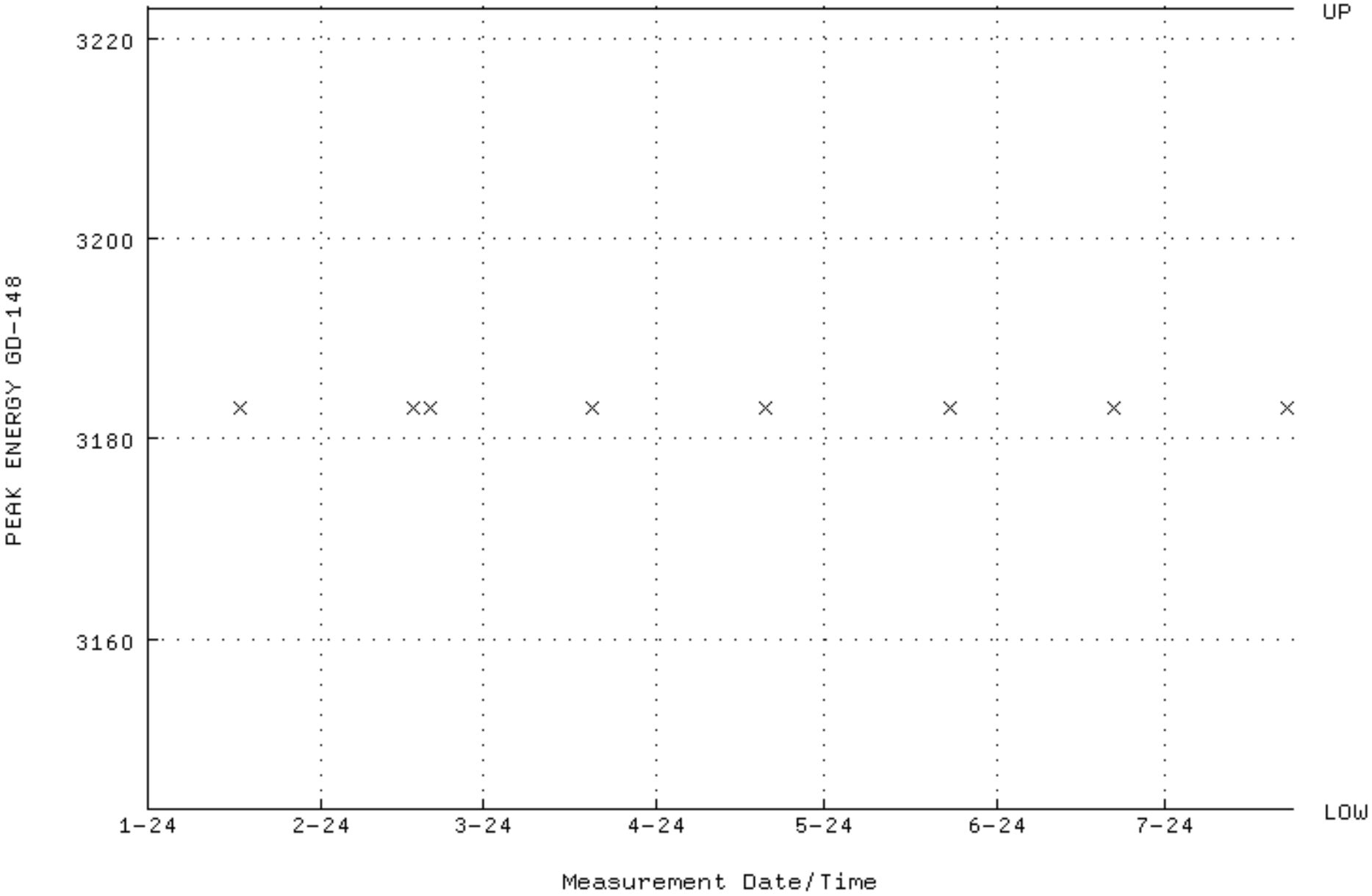
QA filename : DKA100:[ENV_ALPHA.QA.W]W200.QAF;4
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 17-JAN-2024 09:23:45 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



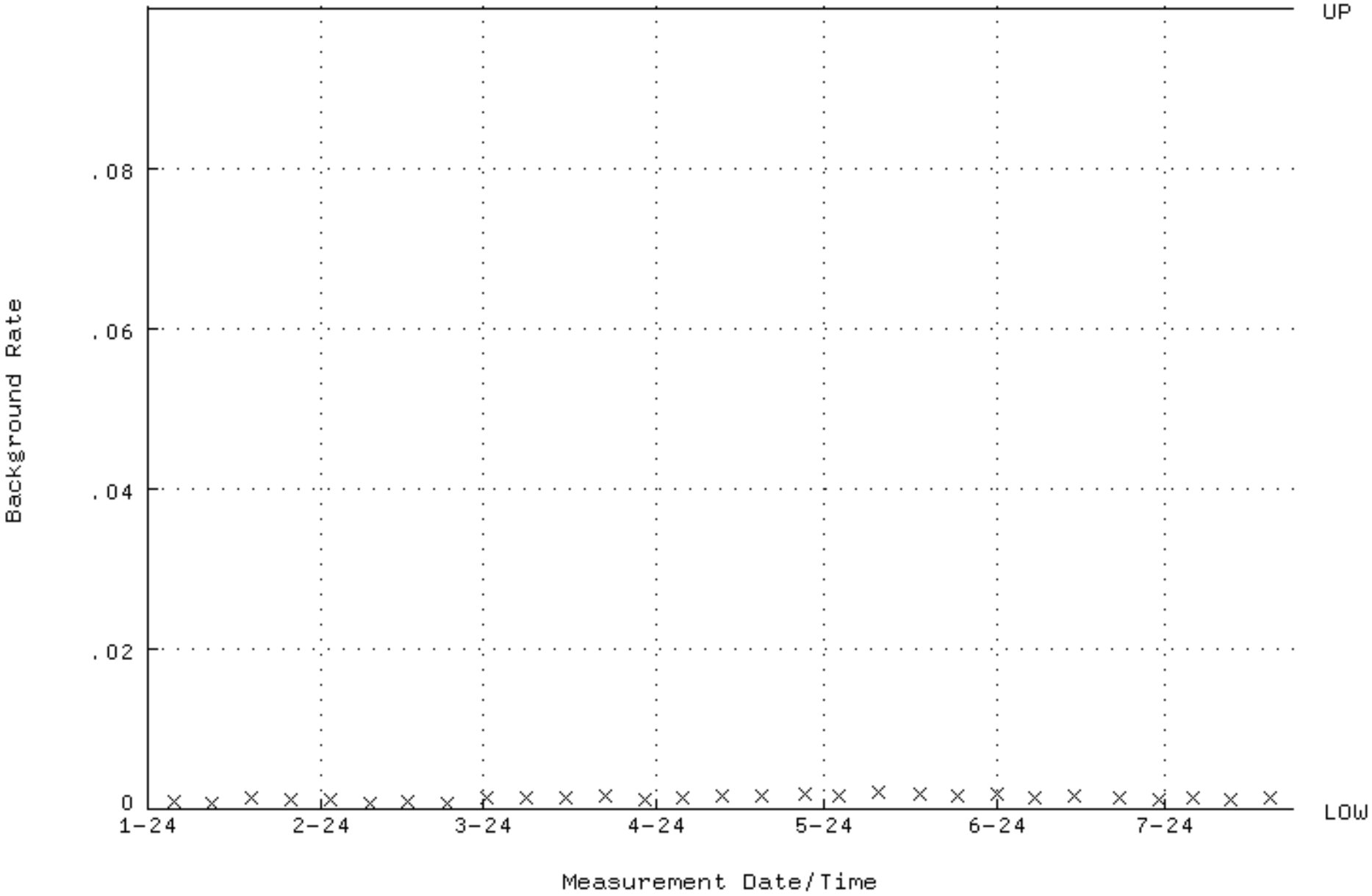
QA filename : DKA100:[ENV_ALPHA.QA.W]W200.QAF;4
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 17-JAN-2024 09:23:45 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



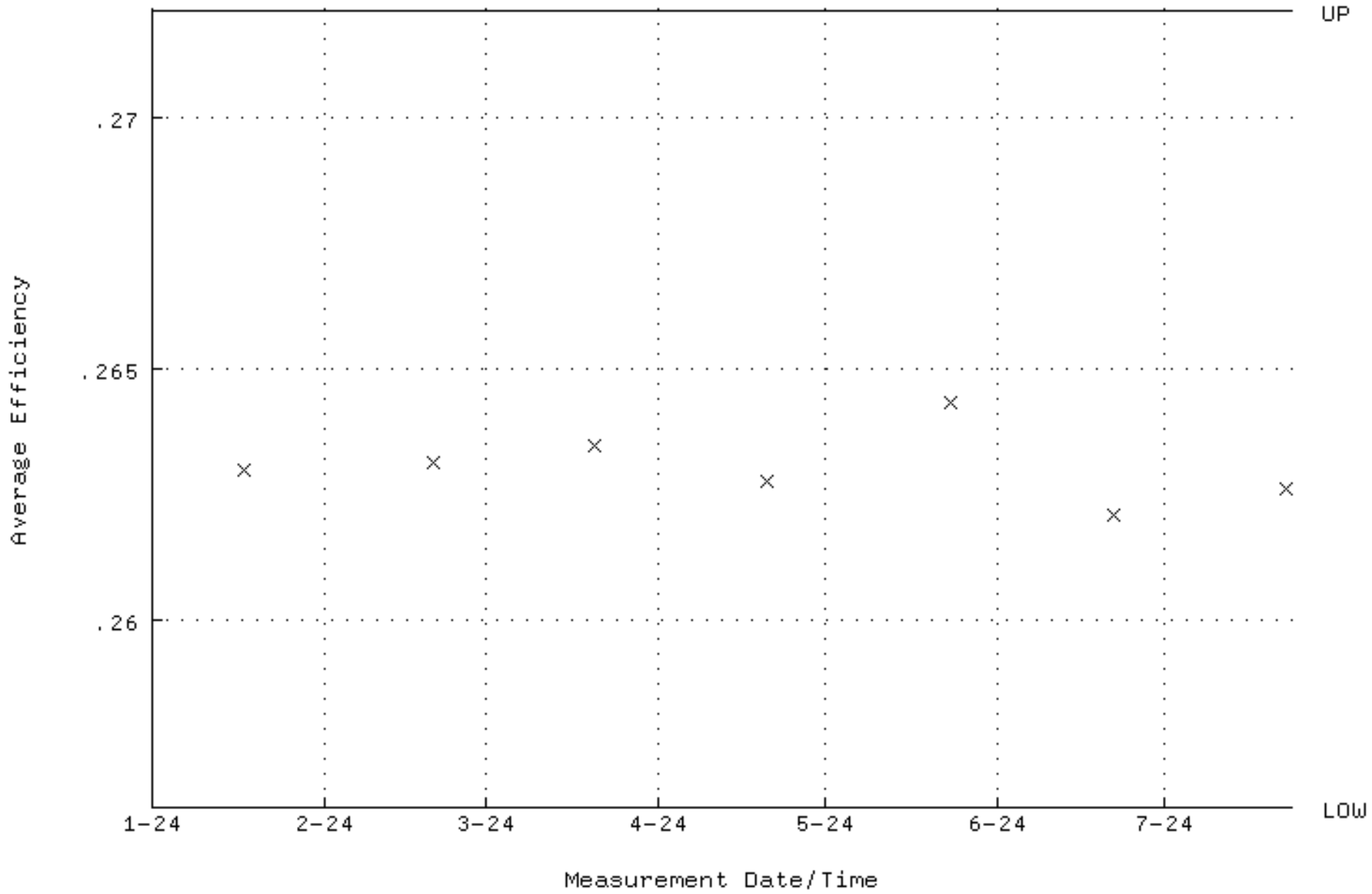
QA filename : DKA100:[ENV_ALPHA.QA.W]W200.QAF;4
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 17-JAN-2024 09:23:45 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



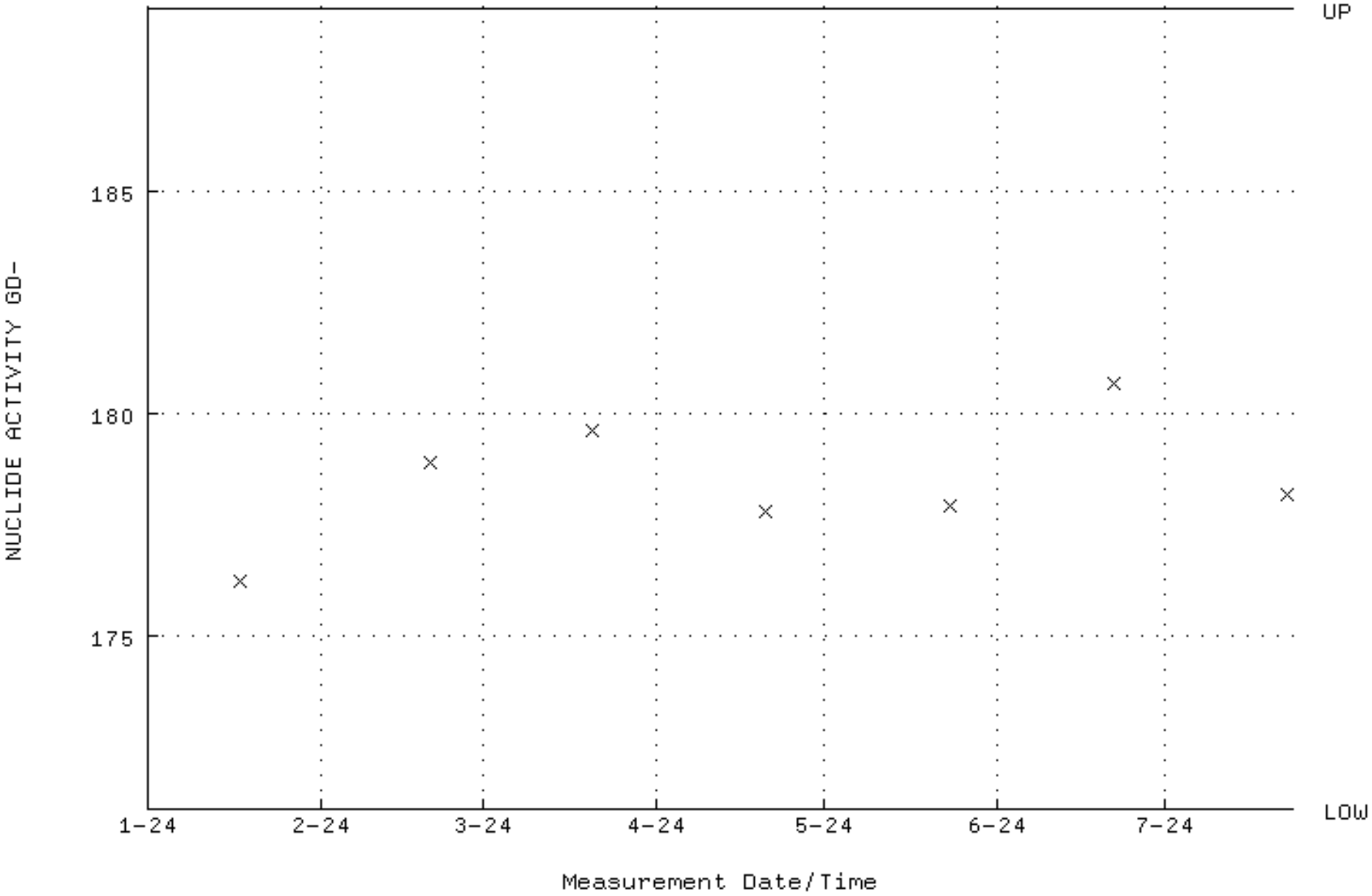
QA filename : DKA100:[ENV_ALPHA.QA.B]B200.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:55:53 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



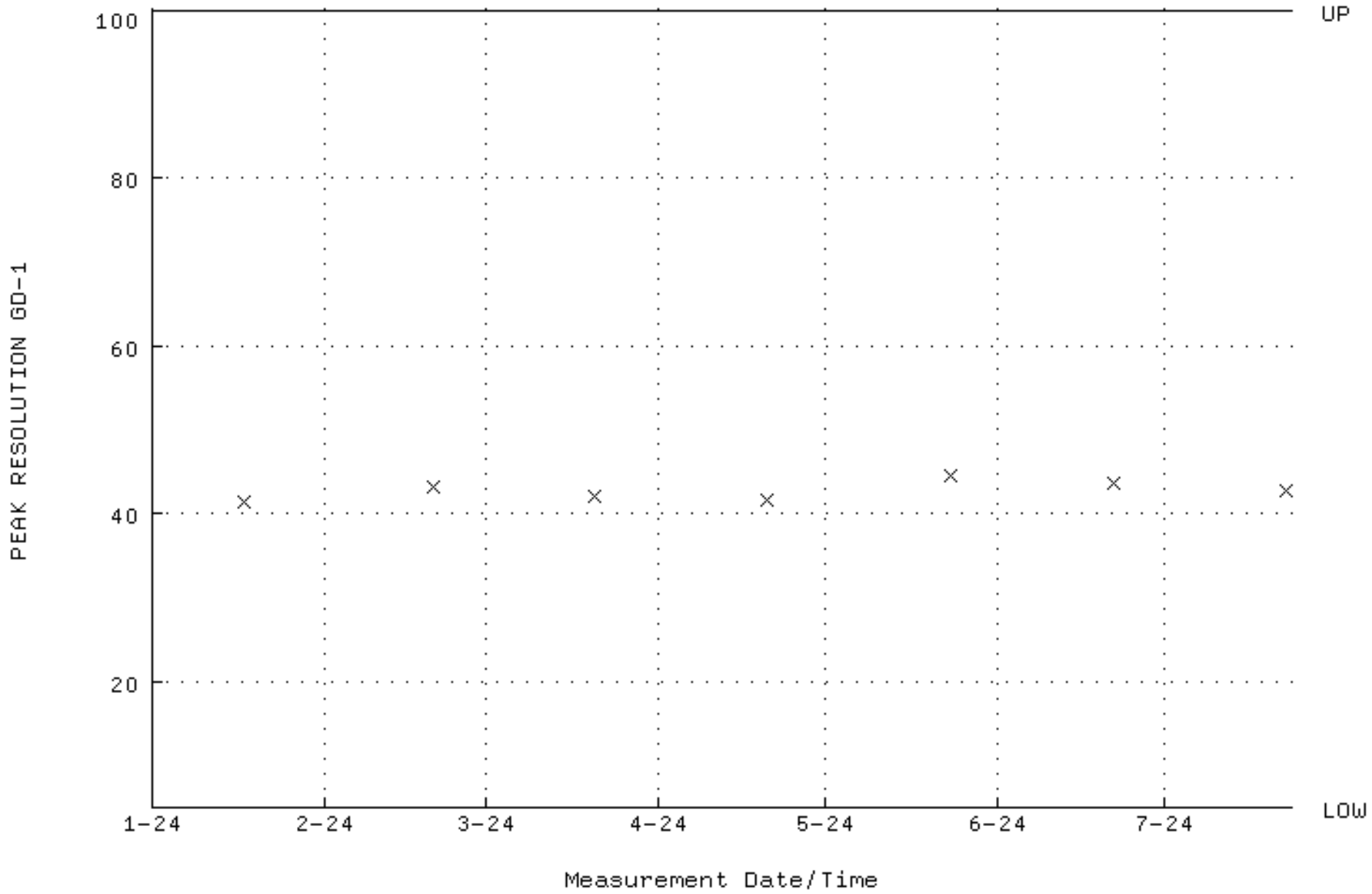
QA filename : DKA100:[ENV_ALPHA.QA.W]W203.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 17-JAN-2024 08:35:30 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.256270 through 0.272120



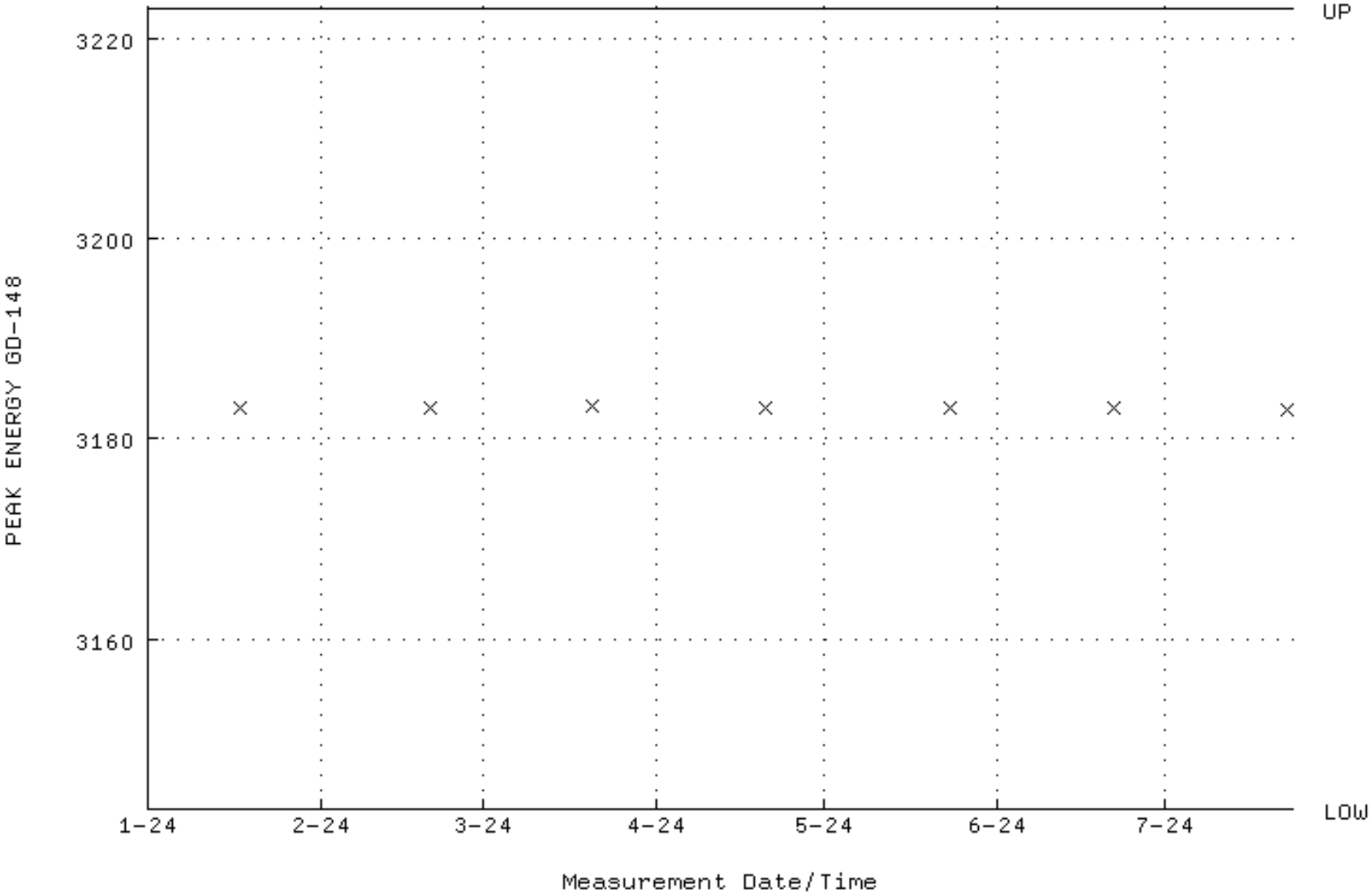
QA filename : DKA100:[ENV_ALPHA.QA.W]W203.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 17-JAN-2024 08:35:30 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



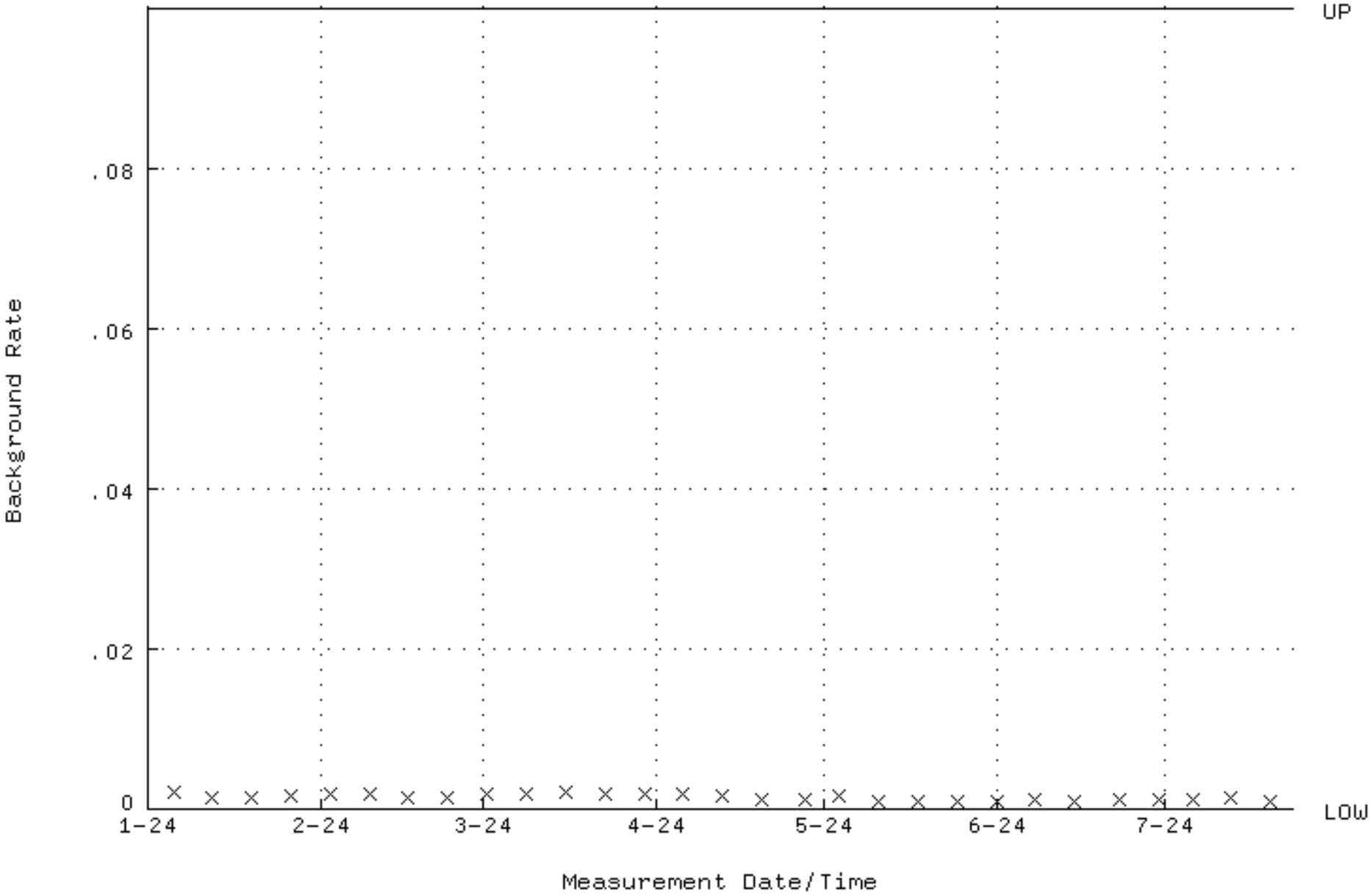
QA filename : DKA100:[ENV_ALPHA.QA.W]W203.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 17-JAN-2024 08:35:30 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



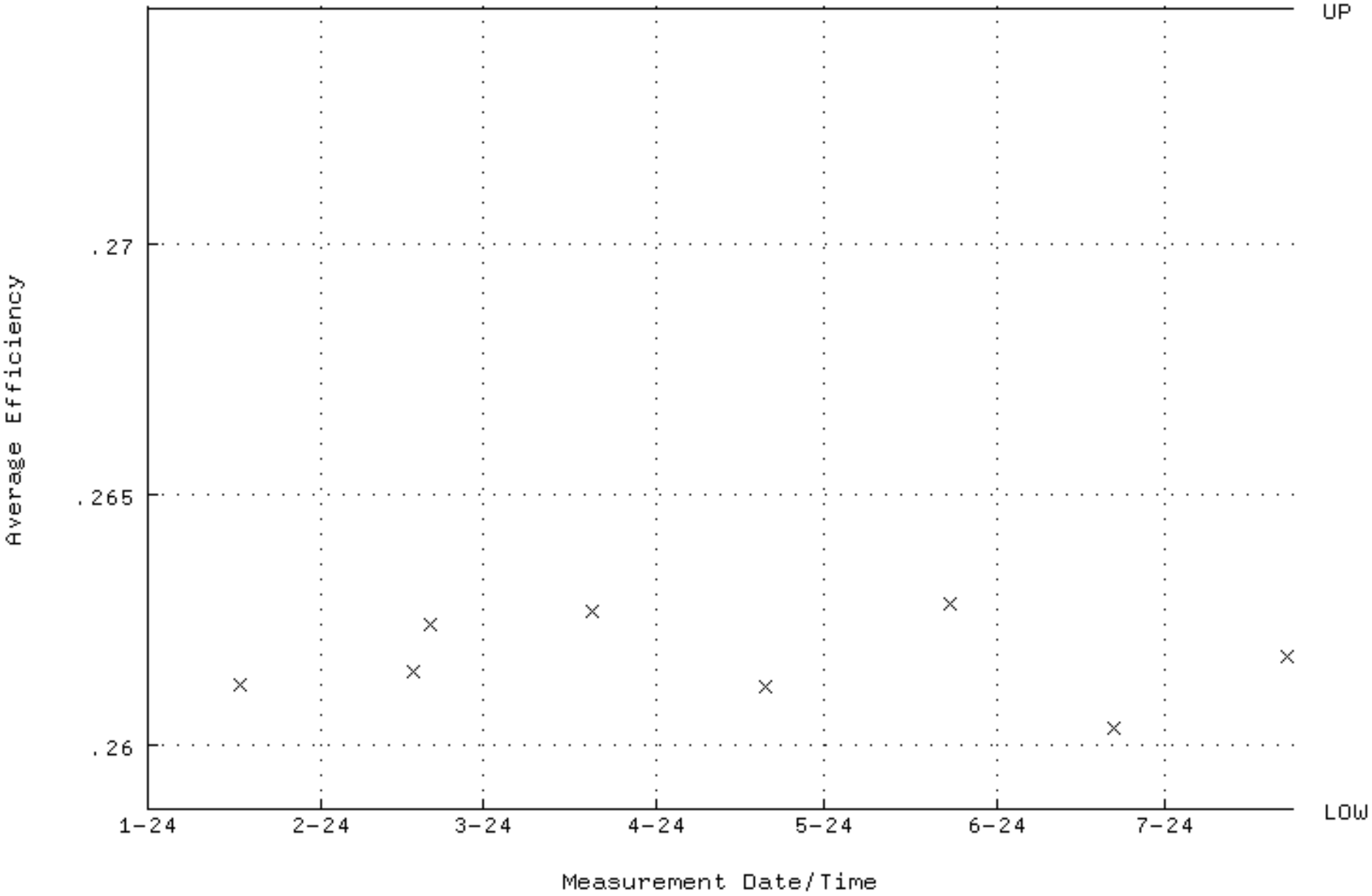
QA filename : DKA100:[ENV_ALPHA.QA.W]W203.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 17-JAN-2024 08:35:30 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



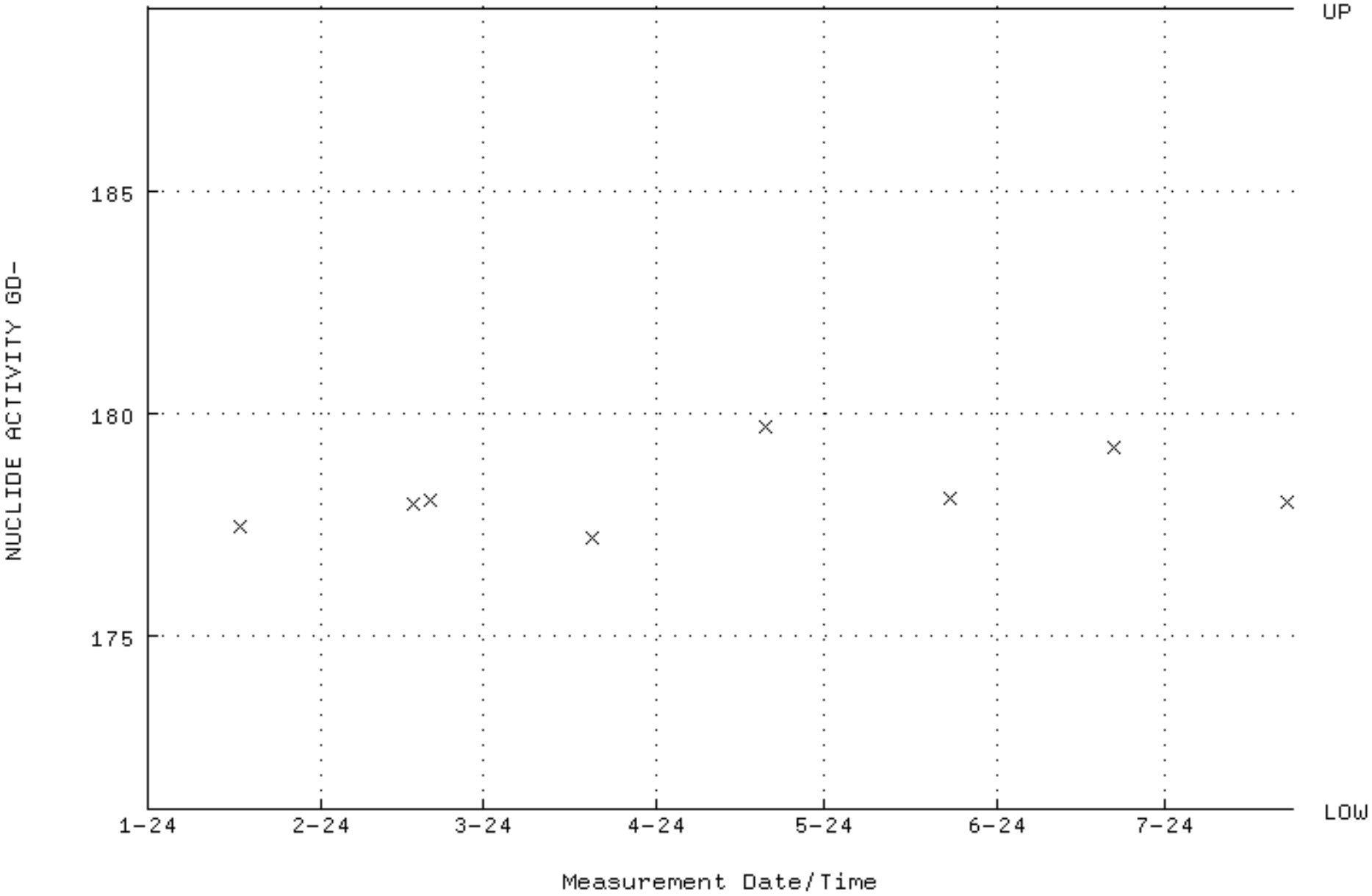
QA filename : DKA100:[ENV_ALPHA.QA.B]B203.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:56:04 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



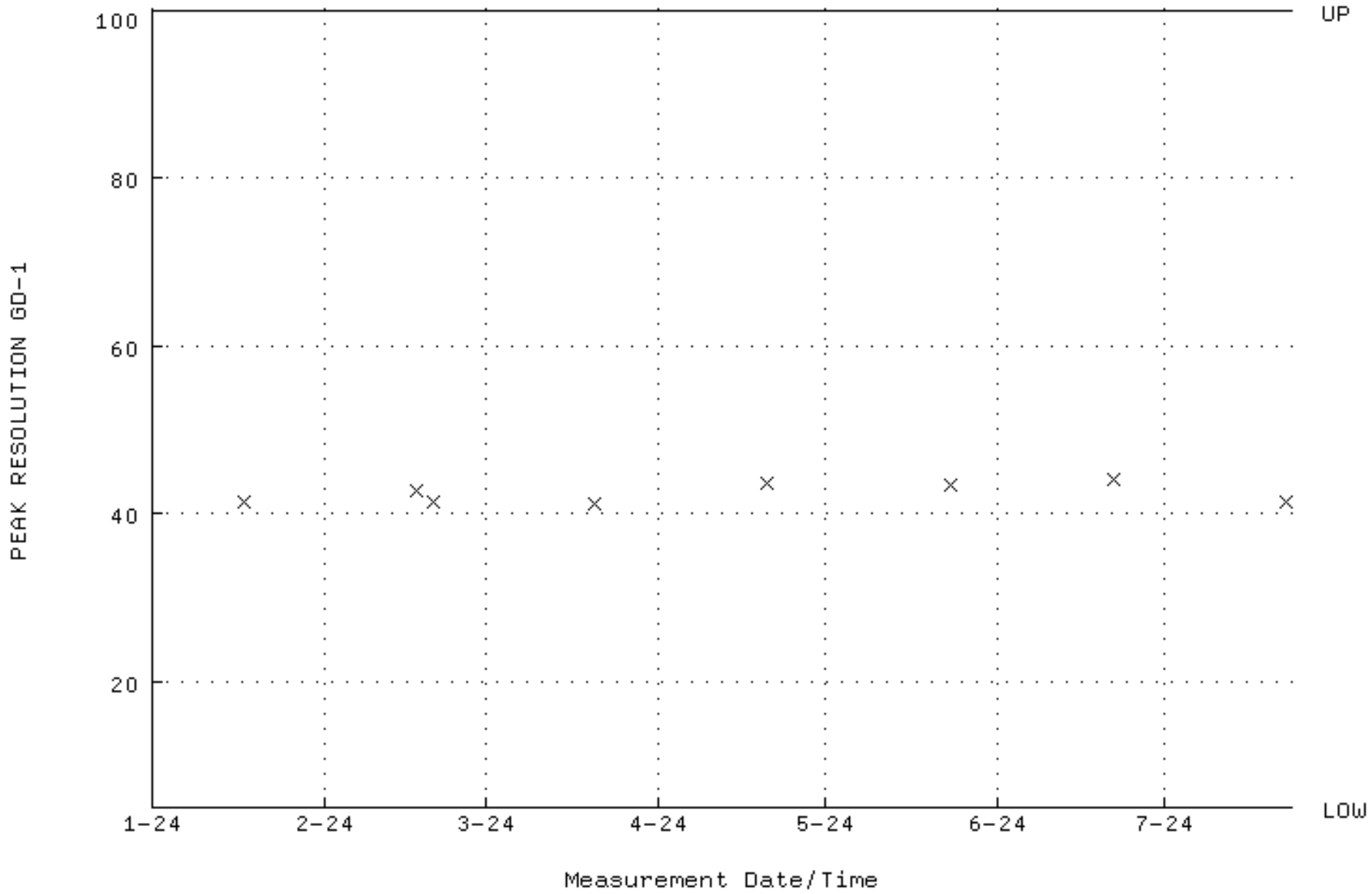
QA filename : DKA100:[ENV_ALPHA.QA.W]W205.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 17-JAN-2024 09:03:17 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.258720 through 0.274720



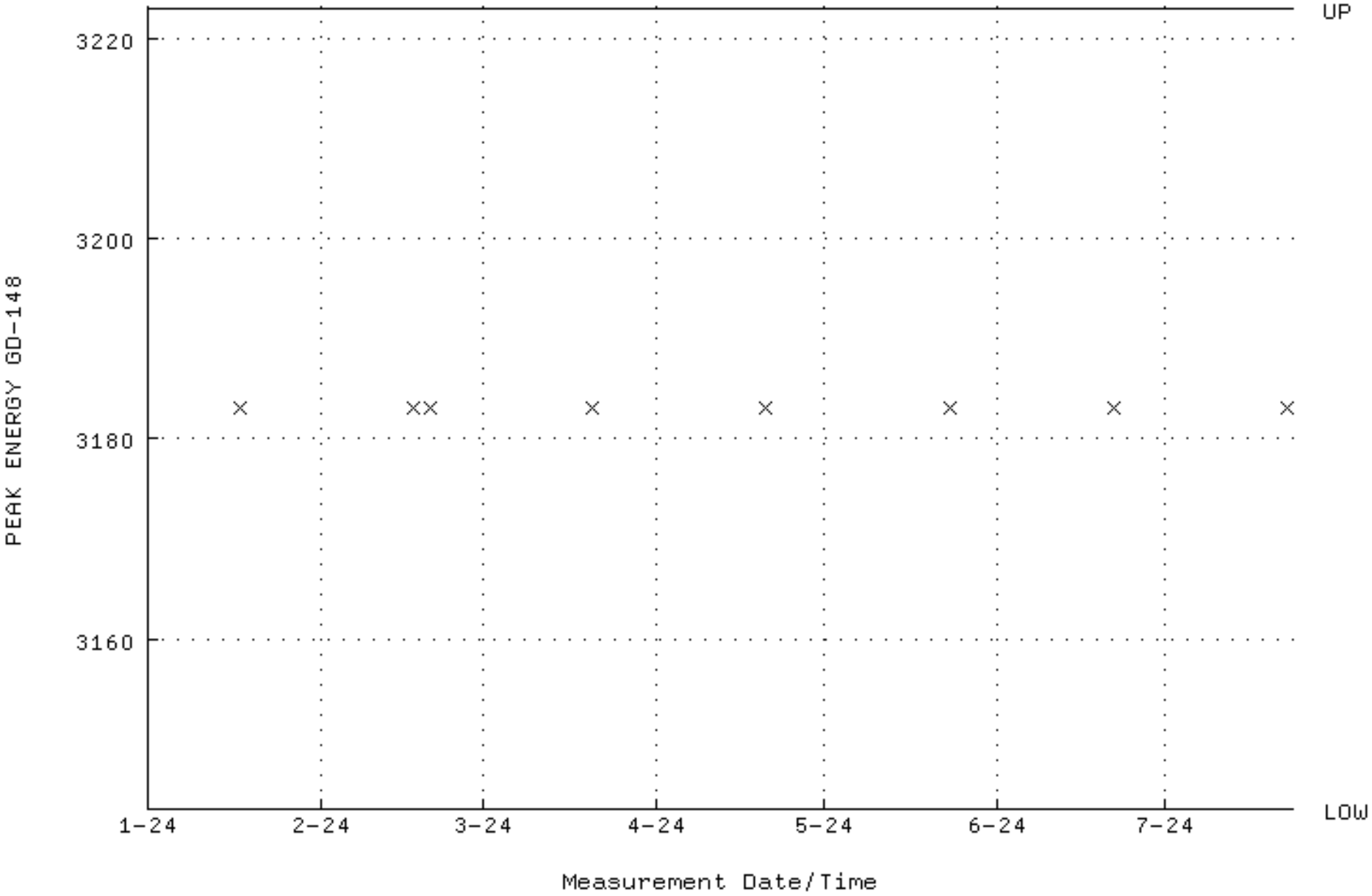
QA filename : DKA100:[ENV_ALPHA.QA.W]W205.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 17-JAN-2024 09:03:17 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



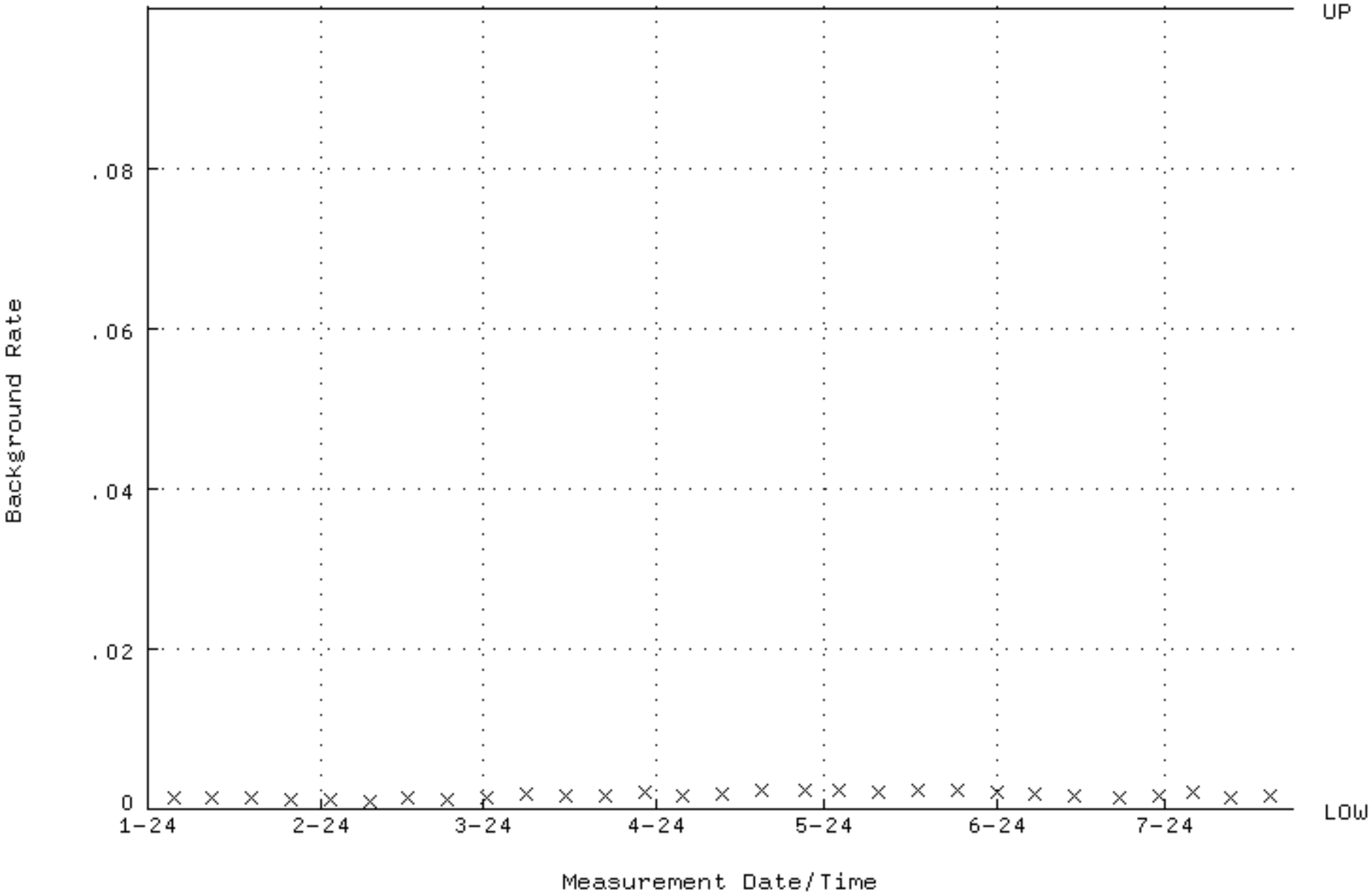
QA filename : DKA100:[ENV_ALPHA.QA.W]W205.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 17-JAN-2024 09:03:17 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



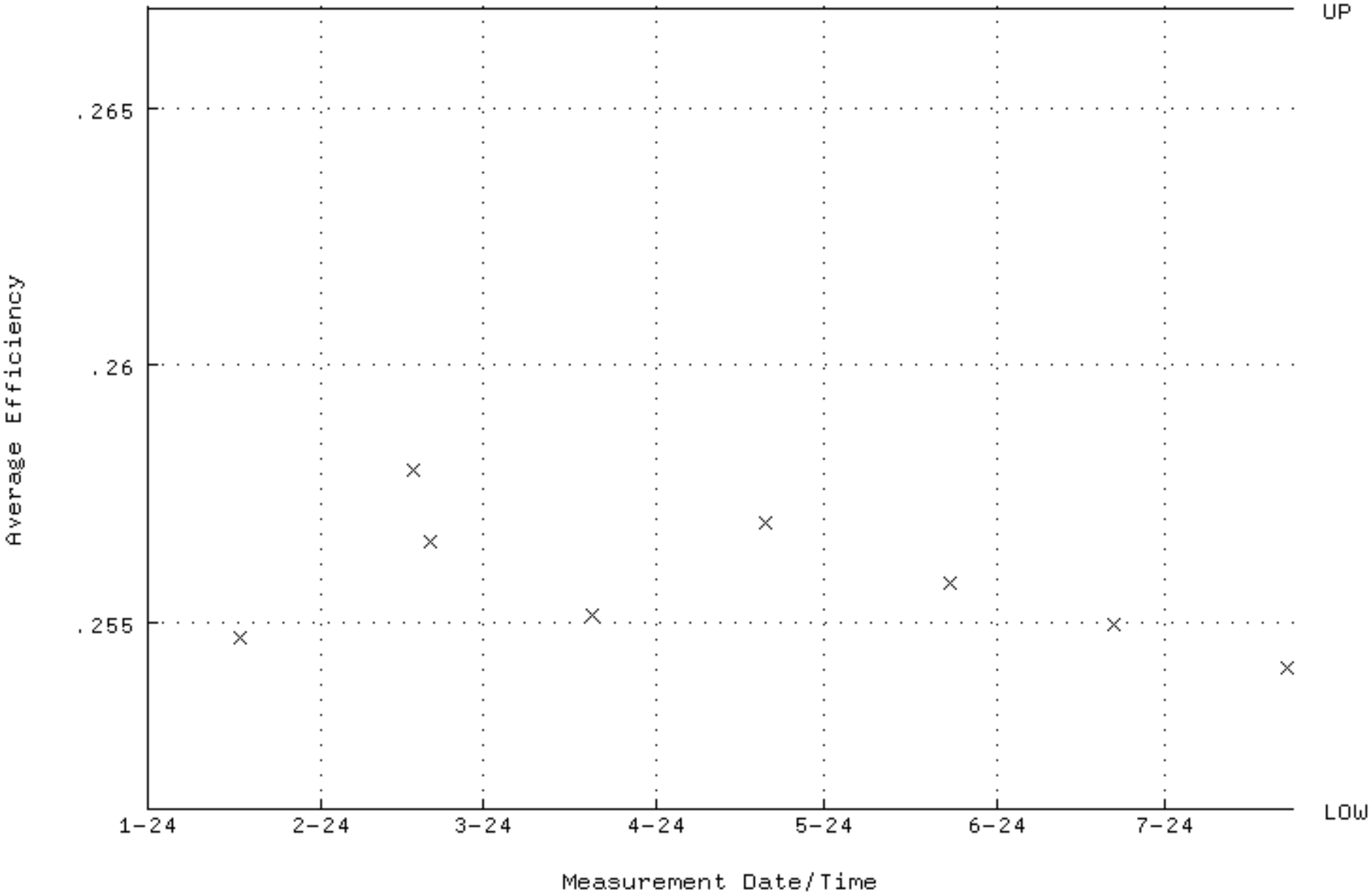
QA filename : DKA100:[ENV_ALPHA.QA.W]W205.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 17-JAN-2024 09:03:17 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



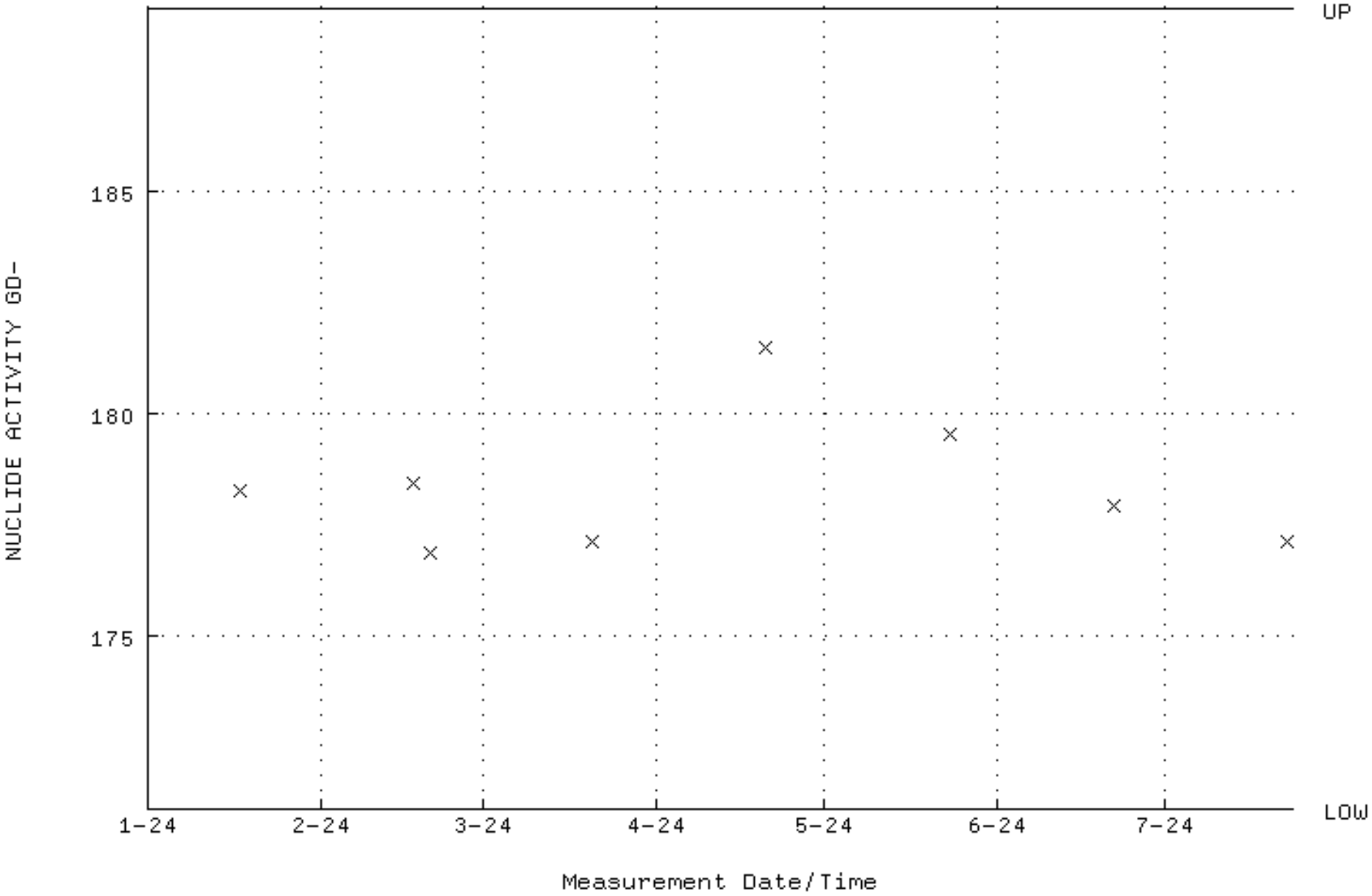
QA filename : DKA100:[ENV_ALPHA.QA.B]B205.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:56:13 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



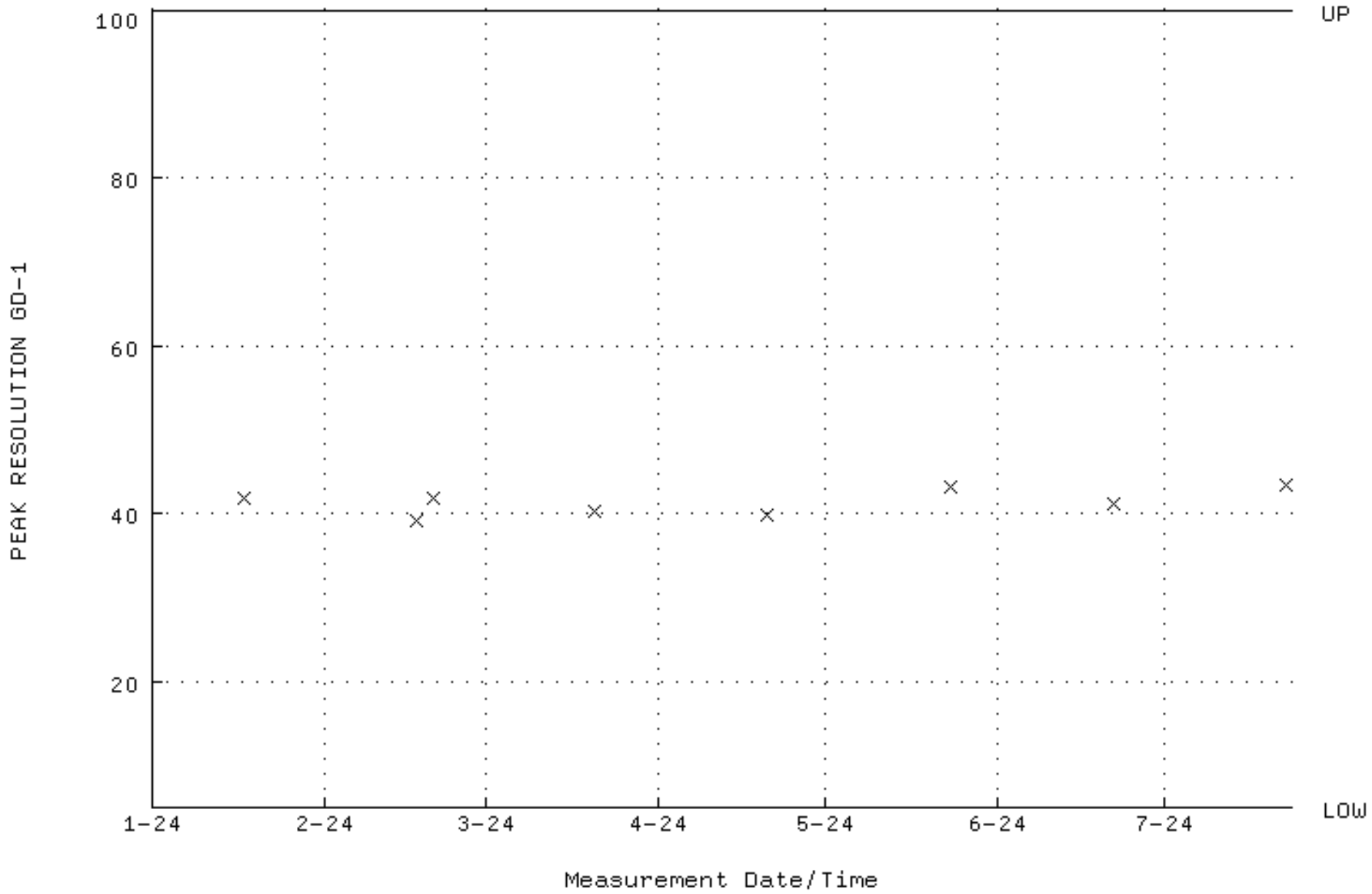
QA filename : DKA100:[ENV_ALPHA.QA.W]W206.QAF;4
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 17-JAN-2024 09:10:14 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.251380 through 0.266930



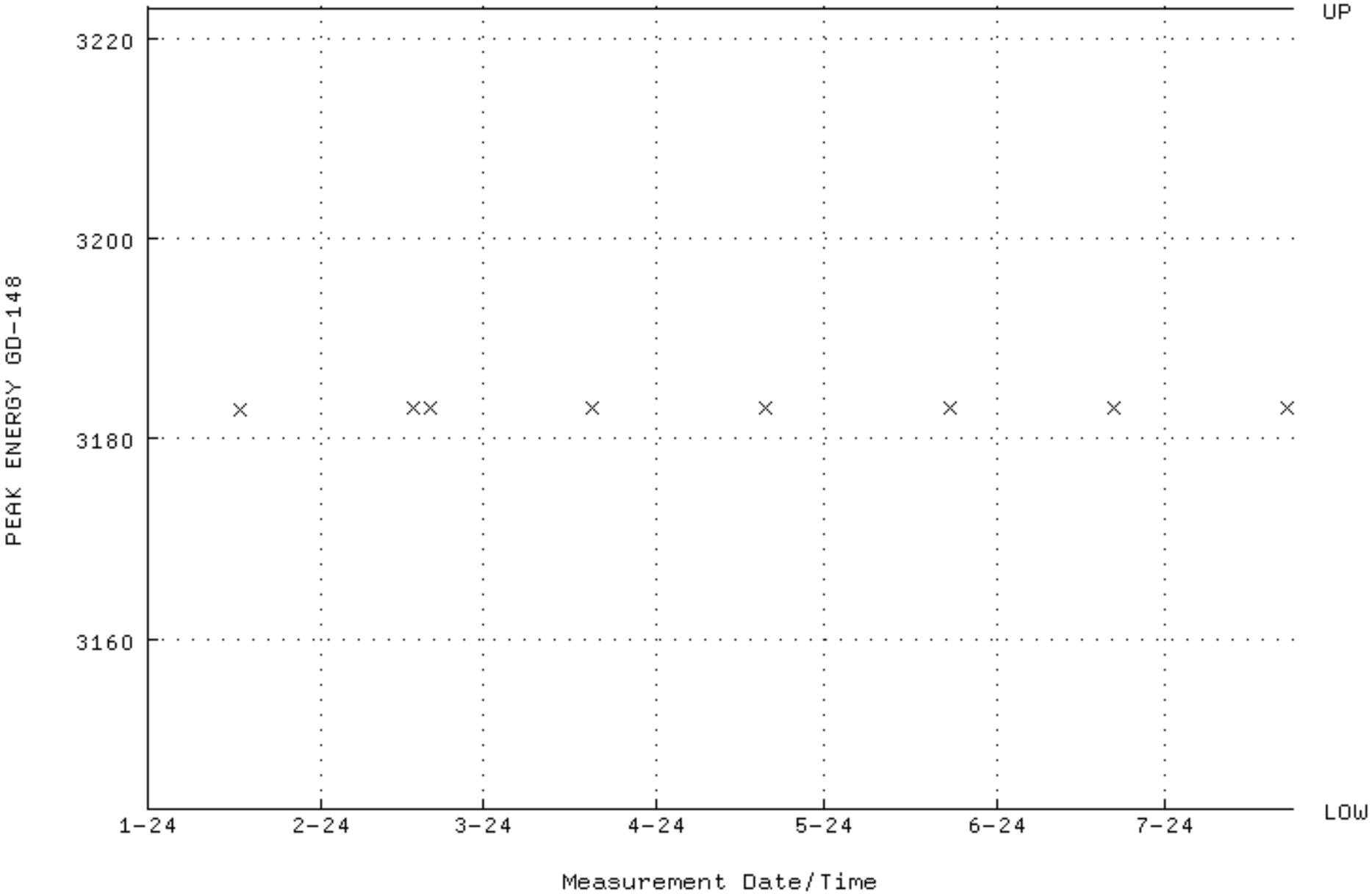
QA filename : DKA100:[ENV_ALPHA.QA.W]W206.QAF;4
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 17-JAN-2024 09:10:14 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



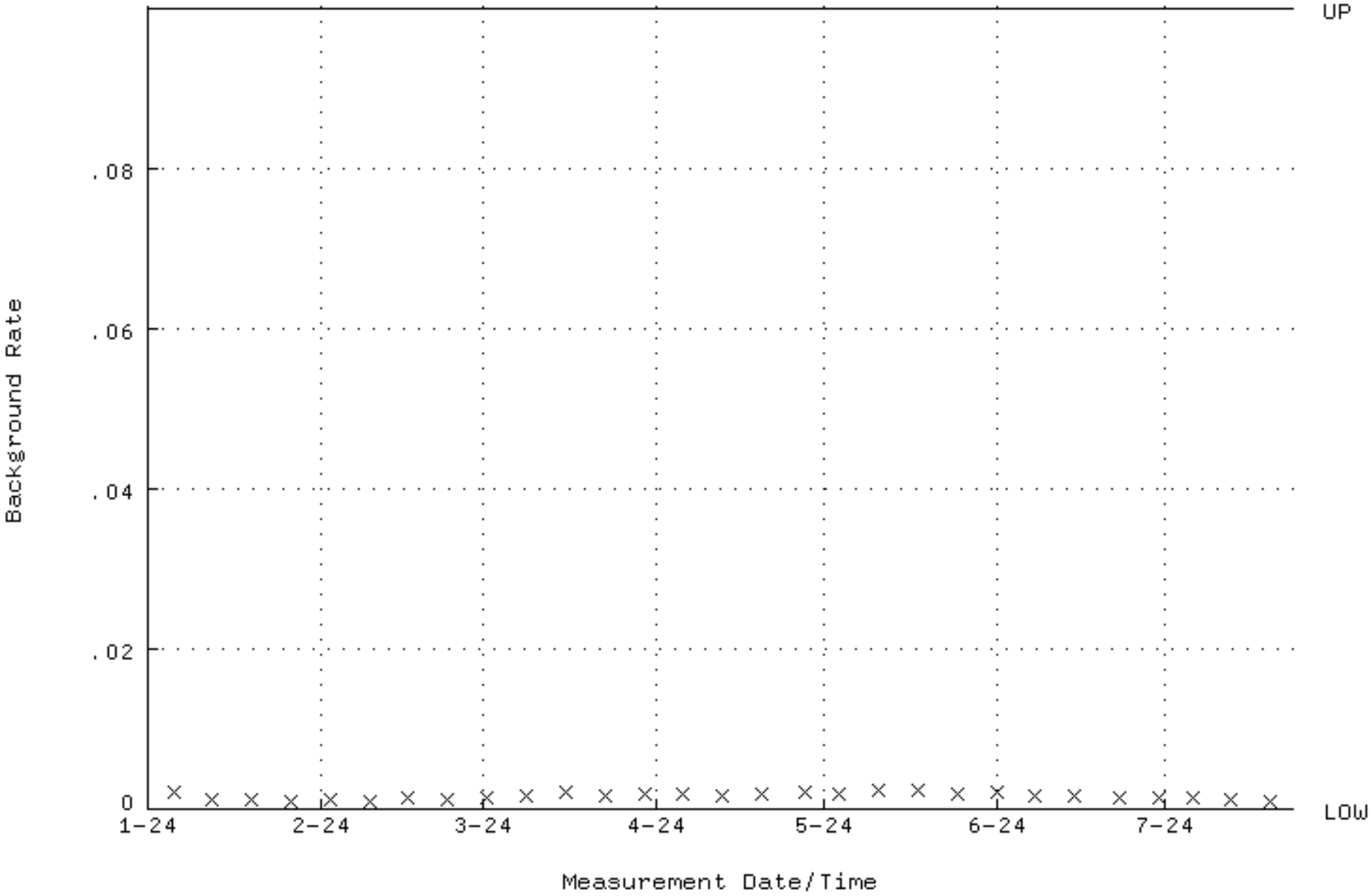
QA filename : DKA100:[ENV_ALPHA.QA.W]W206.QAF;4
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 17-JAN-2024 09:10:14 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



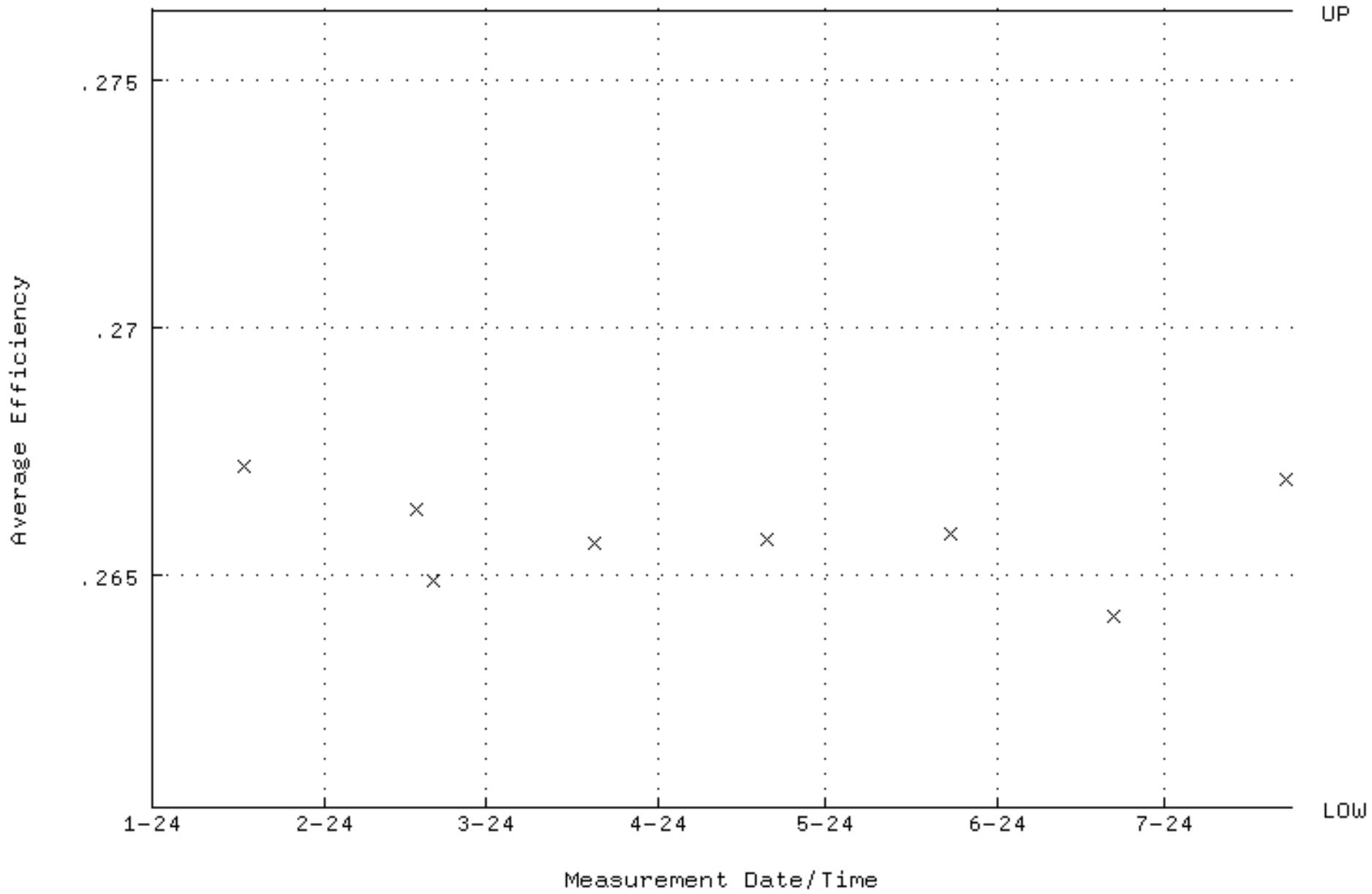
QA filename : DKA100:[ENV_ALPHA.QA.W]W206.QAF;4
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 17-JAN-2024 09:10:14 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



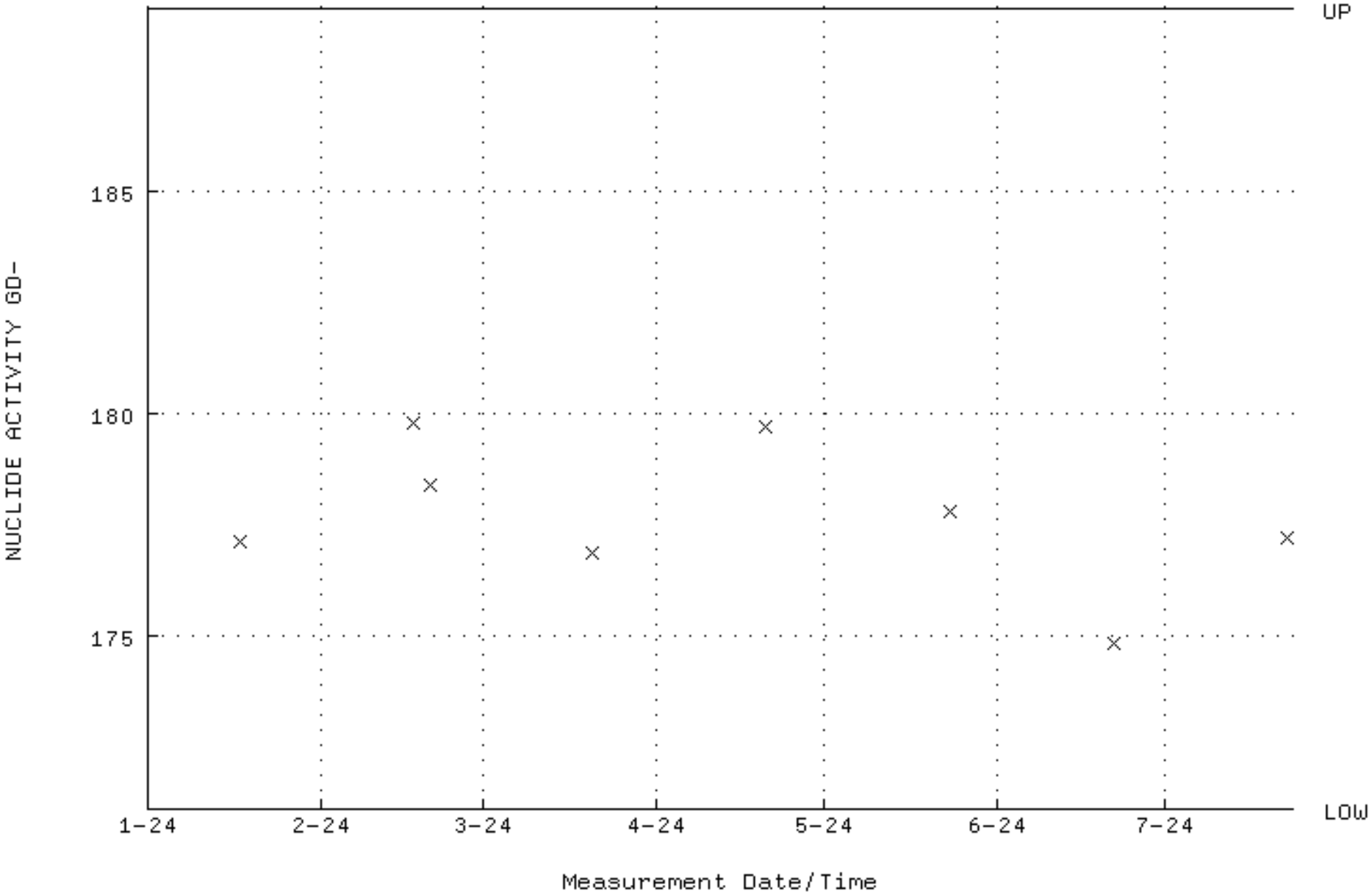
QA filename : DKA100:[ENV_ALPHA.QA.B]B206.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:56:17 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



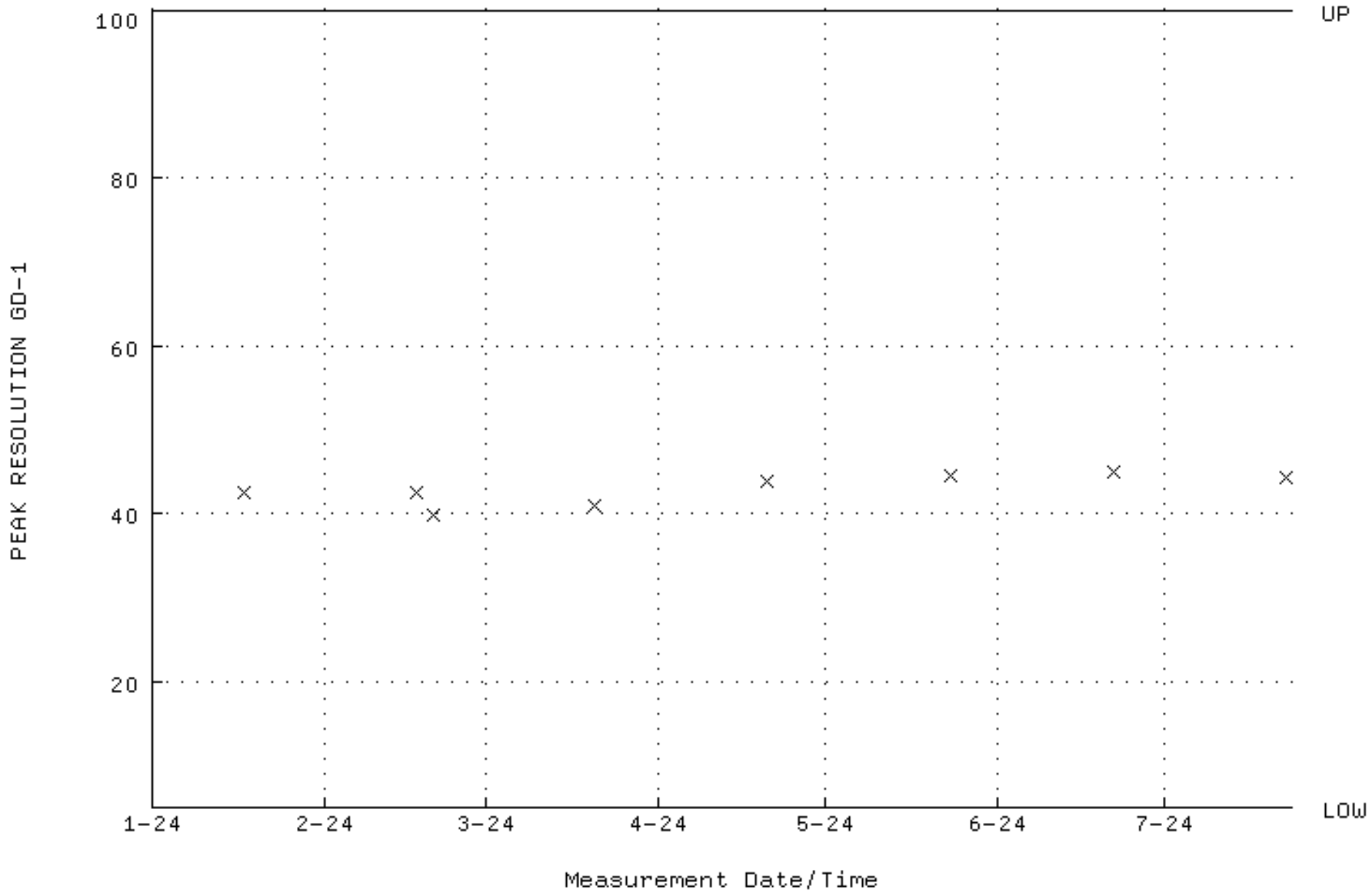
QA filename : DKA100:[ENV_ALPHA.QA.W]W207.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 17-JAN-2024 09:31:07 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.260310 through 0.276410



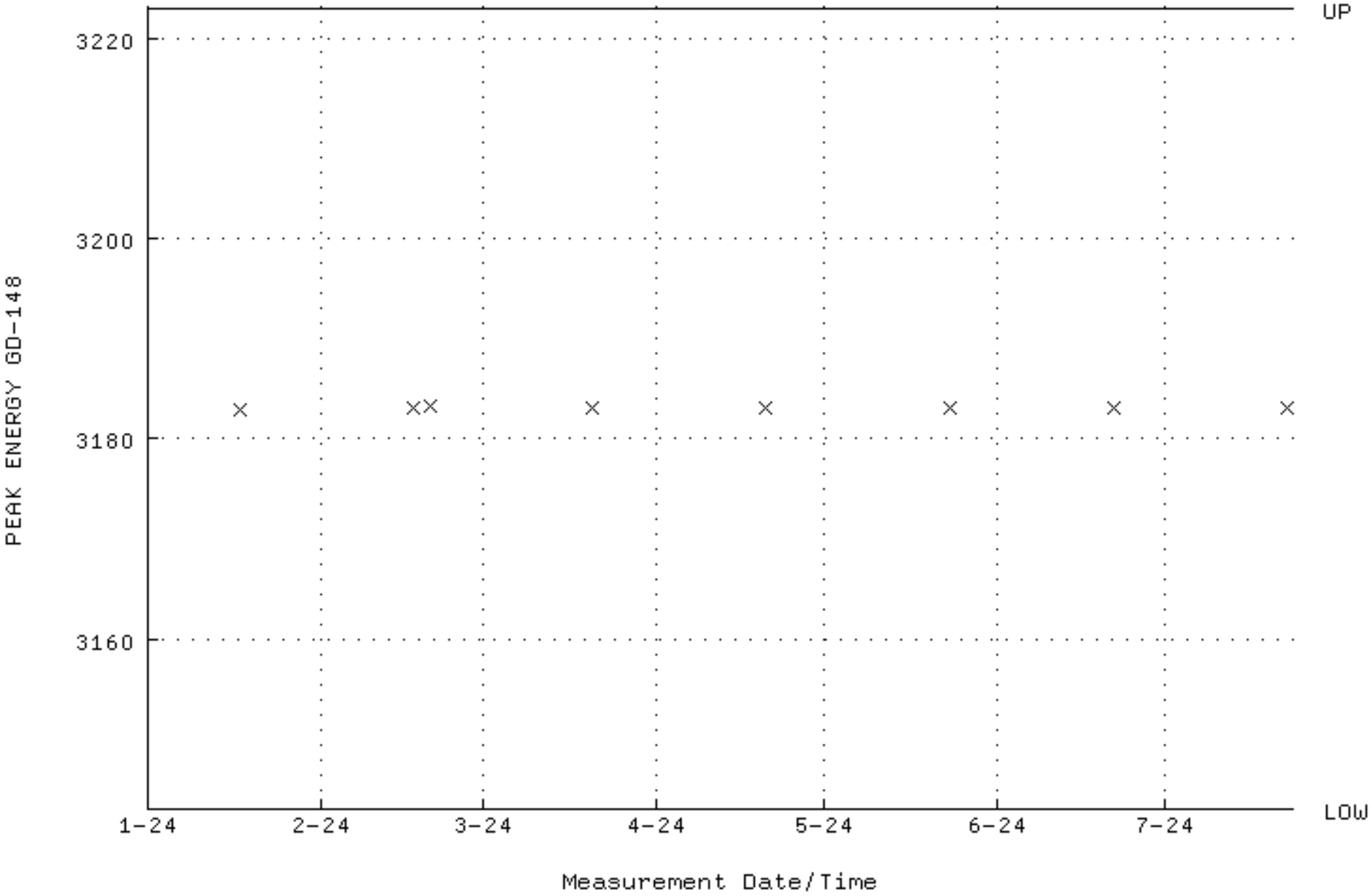
QA filename : DKA100:[ENV_ALPHA.QA.W]W207.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 17-JAN-2024 09:31:07 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



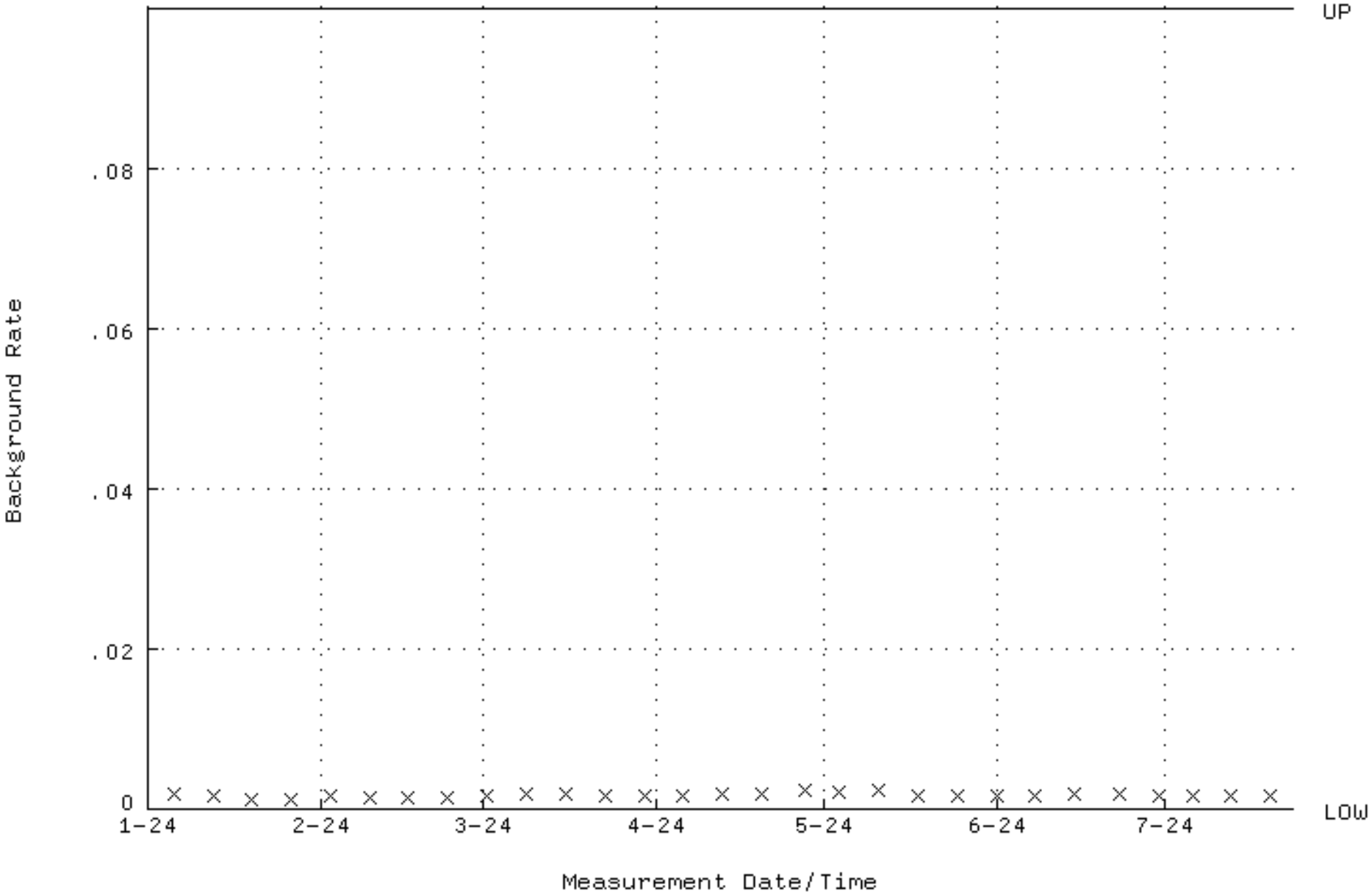
QA filename : DKA100:[ENV_ALPHA.QA.W]W207.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 17-JAN-2024 09:31:07 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



QA filename : DKA100:[ENV_ALPHA.QA.W]W207.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 17-JAN-2024 09:31:07 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



QA filename : DKA100:[ENV_ALPHA.QA.B]B207.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 5-JAN-2024 13:56:21 through 23-JUL-2024 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



RAD Standards Traceability

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.ezag.com

1845

Received: 12-1-17 12:00

CERTIFICATE OF CALIBRATION
Standard Reference Source

SRS Number: 108018
Source Description: 5 mL Liquid in Flame Sealed Ampoule
Product Code: 8229
Customer: GEL Laboratories LLC
P.O. Number: GEL1718798, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution calibrated by Eckert & Ziegler Analytics (EZA). The master solution was calibrated by liquid scintillation counting. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. EZA maintains traceability to the National Institute of Standards and Technology (NIST) through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Reference Date: 29-November-2017 12:00 PM EST

Isotope	Half-Life, d	Activity, Bq	Uncertainty u_A, %	u_B, %	U, %*	Calibration Method**
Th-229	2.897E+06	1.999E+04	0.5	1.5	3.1	4π LS

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results." ****Calibration Methods:** 4π LS - 4π Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber.

(Certificate continued on reverse side)

SRS Number: 108018

Comments:

5.21561 g of 0.5 M HNO_3 solution, carrier free.

Impurities:

γ-impurities (other than decay products) < 0.1%

α-impurities: Th-228 6.6E+00 Bq, Th-230 1.2E+02 Bq, Th-232 8.0E+00 Bq

This source was wipe tested in its inactive areas with leak test results < 185 Bq (5 nCi) of removable activity per ISO 9978:1992.

Source Prepared by: _____

K. Hardley, Radiochemist

QC Approved by: _____ Date: 27-Nov-17

J. Lahr, Spectroscopist

Standard Logbook

Serial ID:	1845	**Open/Reference Date:**	29-NOV-17	**Aliquot :**	5.21561 g
Name:	Thorium-229	**Received:**	01-DEC-17	**Density :**	Hand Calculated
Type:	Source Material	**Expires:**	01-DEC-18	**Logbook Num :**	GL-CED-297-138
Employee:	Tim Chandler			**Lot Number :**	108018
Supplier:	Eckert & Ziegler			**Solvent :**	0.5M HNO3
				Uncertainty :	1.55 percent

Description: 1 ampoule

Comments: None

Analyte	Concentration	Analyte	Concentration
Thorium-229	19990 Bq		

Standard Traceability Log Rad

Source Material Info	
Parent Code:	1845
Prepared By:	Tim Chandler
Carrier Conc:	0.5M HNO3
Reference Date:	11/29/2017
Ampoule Mass (g):	5.21561 g
Uncertainty:	+/- 1.55 %
LogBook No:	GL-CED-297-138
Supplier:	Eckert & Ziegler

A Solution Material Info			
Isotope:	Thorium-229		
Prepared By:	Tim Chandler		
Prep Date:	06/08/2018		
Verification Date:	03/04/2024		
Expiration Date:	03/04/2025		
Primary Code:	1845-A		
Dilution(mL):	100 mL		
Mass of Parent(g):	5.1906 g		
Density(g/mL):	1.0291	Balance ID:	B733529066

Calculations Converting parent activity to dpm/mL|dpm/g

(Mass of parent(g)) * (Parm Activity (Bq)) * (conversion dpm to Bq) / (Ampoule Mass(g) *(Dilution Vol)) = Parent Activity (dpm/mL)

(Mass of parent(g)) * (Parm Activity (Bq)) * (conversion dpm to Bq) / Density / (Ampoule Mass (g) * (Dilution Vol)) = Parent Activity (dpm/g)

(5.1906 g) * (19990 Bq) * (60 dpm/Bq) / (5.21561 g * 100 mL) = 11936.4861 dpm/mL

(5.1906 g) * (19990 Bq) * (60 dpm/Bq) / (1.0291 g/mL)/ (5.21561 g * 100 mL) = 11598.7987 dpm/g

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
06/08/2018	Tim Chandler	2.0385	1000	1845-B	23.6442 dpm/mL	06/01/2020	06/01/2021
07/10/2019	Tim Chandler	4.0198	1000	1845-C	46.62485 dpm/mL	07/07/2020	07/07/2021
10/26/2020	Tim Chandler	4.0184	1000	1845-D	46.6086 dpm/mL	10/27/2020	10/27/2021
04/23/2021	Tim Chandler	4.2911	1000	1845-E	49.7716 dpm/mL	04/26/2021	04/26/2022
11/10/2021	Matelon DeFreese	4.211	1000	1845-F	48.8425 dpm/mL	11/10/2021	11/10/2022
05/11/2022	Matelon DeFreese	4.1951	1000	1845-G	48.6581 dpm/mL	05/12/2022	05/11/2023
01/11/2023	Matelon DeFreese	4.1664	1000	1845-H	48.3252 dpm/mL	01/11/2023	01/11/2024
06/27/2023	Matelon DeFreese	4.1464	1000	1845-I	48.093259 dpm/mL	06/27/2023	06/27/2024
03/04/2024	Matelon DeFreese	4.1756	1000	1845-J	48.4319439 dpm/mL	03/04/2024	03/04/2025
01/11/2023	Tim Chandler	4.1664	1000	2073-A	48.3252 dpm/mL	01/11/2023	01/11/2024
01/11/2023	Tim Chandler	4.1664	1000	2074-A	48.3252 dpm/mL	01/11/2023	01/11/2024

Verification for Th-229 Standard 1845-J

v1.2

Analyst	MXS2
Verification Prep Date	3/4/2024

Tracer Information	
Isotope	Th-232
Serial Number	1513-J
Amount of Std. (mL)	0.2
Expiration Date	4/25/2024

Standard Information	
Isotope	Th-229
Serial Number	1845-J
Isotope Halflife	7.3400E+03 Y
Reference Date	11/29/2017
Ref. Act. (dpm/mL)	48.4319439
Amount of Std. (mL)	0.2
Standard Prep Date	3/4/2024

Std #	Count Date	Activity pCi	Standard dpm/mL
1	3/4/2024	4.580	50.84
2	3/4/2024	4.470	49.62
3	3/4/2024	4.430	49.17
	Mean Value =	4.493	49.876
	Stdev =	0.077674535	0.862187335

	pCi	dpm/mL
Certificate Value* =	**4.3607**	**48.4033**
Two sigma =	0.1553	1.7244
10 % of Mean =	0.4493	4.9876
Rule A (Pass/Fail)	**Pass**	**Pass**
% Recovery	103.04%	103.04%
Rule B (Pass/Fail)	**Pass**	**Pass**
Expiration Date	**3/4/2025**	

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule B = The determined mean value shall be within 5% of the certificate value.

*** Certificate Value is decay corrected to Verification Prep Date.**

The analyst prepared three standard verification sources for Th-229 standard 1845-J using 0.2 mL for each source. Each standard was combined with 0.2 mL of Th-232 standard 1513-J and was diluted in a centrifuge tube containing 4 mL 2M HCl, diluted to 40 mL with DI water. 0.1 mL of neodymium carrier and 5 mL of 48% HF was added to precipitate neodymium (and Thorium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for Th-229 were calculated by comparison to Th-232 certified values.

8/12/24

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

~~1506~~ 1513
BR 11/30/10

RECEIVED
10/14/10 23
21

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	Th-232	**Customer:**	GEL LABORATORIES, LLC
Half-life:	(1.405 ± 0.006)E+10 years	**P.O. No.:**	7347RD
Catalog No.:	7232	**Reference Date:**	1-Nov-10 12:00 PST
Source No.:	1451-62	**Contained Radioactivity: (Th-232 only)**	50.26 **nCi** 1860 **Bq**

Physical Description:

A. Mass of solution: 5.73256 g in 5 mL flame-sealed ampoule
B. Chemical form: $Th(NO_3)_4$ in H_2O
C. Carrier content: None
D. Density: 1.15 g/mL @ 20°C

Radioimpurities:

Not determined

Radionuclide Concentration: 8.767 nCi/g, 324.4 Bq/g

Method of Calibration:

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement:

A. Type A (random) uncertainty: ± 0.0 %
B. Type B (systematic) uncertainty: ± 3.0 %
C. Uncertainty in aliquot weighing: ± 0.0 %
D. Total uncertainty at the 99% confidence level: ± 3.0 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from NCRP Report No. 58, 1985.
- This solution has a working life of 5 years.

Daniel James Van Dalsem
Quality Control

15-OCT-10
Date

EZIP Ref. No.: 1451-62

RC-S-060-058

Standard Logbook

Serial ID:	1513	**Open/Reference Date:**	01-NOV-10	**Aliquot :**	5.73256 g
Name:	Thorium-232	**Received:**	21-OCT-10	**Density :**	Hand Calculated g/mL
Type:	Source Material	**Expires:**	30-NOV-11	**Logbook Num :**	RC-S-060-058
Employee:	Gregory Ramsay	**Verified:**	28-APR-11	**Lot Number :**	1451-62
Supplier:	Eckert & Ziegler			**Solvent :**	DI water
				Uncertainty :	1.172 PERCENT

Description: in water

Comments: None

Analyte	Concentration	Analyte	Concentration
Thorium-232	324.4 Bq/g		

Standard Traceability Log Rad

Source Material Info	
Parent Code:	1513
Prepared By:	Gregory Ramsay
Carrier Conc:	DI water
Reference Date:	11/01/2010
Ampoule Mass (g):	5.73256 g
Uncertainty:	+/- 1.172 %
LogBook No:	RC-S-060-058
Supplier:	Eckert & Ziegler

A Solution Material Info			
Isotope:	Thorium-232		
Prepared By:	Christina Kimball		
Prep Date:	04/19/2011		
Verification Date:	06/14/2024		
Expiration Date:	06/14/2025		
Primary Code:	1513-A		
Dilution(mL):	250 mL		
Mass of Parent(g):	5.672 g		
Density(g/mL):	1.0020	Balance ID:	60108592

Calculations Converting parent activity to dpm/mL|dpm/g

(Mass of parent(g)) * (Parm Activity (Bq/g)) * (conversion dpm to Bq) / (Dilution Vol) = Parent Activity (dpm/mL)
(Mass of parent(g)) * (Parm Activity (Bq/g)) * (conversion dpm to Bq) / Density (g/mL)/ (Dilution Vol) = Parent Activity (dpm/g)
(5.672 g) * (324.4 Bq/g) * (60 dpm/Bq) / (250 mL) = 441.5992 dpm/mL
(5.672 g) * (324.4 Bq/g) * (60 dpm/Bq) / (1.0020 g/mL) / (250 mL) = 440.7354 dpm/g

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
04/19/2011	Christina Kimball	5.0665	100	1513-B	22.3299 dpm/mL	04/11/2013	04/11/2014
02/26/2014	Matelon DeFreese	100.0316	1000	1513-C	44.08747 dpm/mL	12/14/2022	12/14/2023
04/18/2014	Christina Kimball	5.0477	100	1513-D	22.247 dpm/mL	07/12/2024	07/12/2025
01/04/2016	Christina Kimball	.2487	100	1513-E	1.096117 dpm/mL	02/11/2020	02/11/2021
08/01/2016	Christina Kimball	2.053	250	1513-F	3.61932 dpm/mL	07/12/2024	07/12/2025
02/21/2020	Christina Kimball	.248	100	1513-G	1.093 dpm/mL	02/16/2023	02/16/2024
11/11/2022	Christina Kimball	.3	100	1513-H	1.3222 dpm/mL	11/14/2022	11/14/2023
12/13/2022	Christina Kimball	.23	100	1513-I	1.0137 dpm/mL	12/20/2023	12/20/2024
04/25/2023	Matelon DeFreese	25.022	250	1513-J	44.1123247 dpm/mL	04/20/2024	04/20/2025

06/16/2023	Christina Kimball	5.02	100	1513-K	22.1249 dpm/mL	06/21/2023	06/21/2024
06/10/2024	Matelon DeFreese	25.0217	250	1513-L	44.1117958 dpm/mL	06/14/2024	06/14/2025

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for Th-232 Standard 1513-J

v1.2

Analyst	MXS2
Verification Prep Date	4/20/2024

Tracer Information	
Isotope	Th-229
Serial Number	1845-J
Amount of Std. (mL)	0.1
Expiration Date	3/4/2025

Standard Information	
Isotope	Th-232
Serial Number	1513-J
Isotope Halflife	1.4050E+10 Y
Reference Date	11/1/2010
Ref. Act. (dpm/mL)	44.1123247
Amount of Std. (mL)	0.1
Standard Prep Date	4/25/2023

Std #	Count Date	Activity pCi	Standard dpm/mL
1	4/21/2024	1.990	44.18
2	4/21/2024	2.020	44.84
3	4/21/2024	2.010	44.62
	Mean Value =	2.007	44.548
	Stdev =	0.015275252	0.339110601

	pCi	dpm/mL
Certificate Value* =	**1.9870**	**44.1123**
Two sigma =	0.0306	0.6782
10 % of Mean =	0.2007	4.4548
Rule A (Pass/Fail)	**Pass**	**Pass**
% Recovery	100.99%	100.99%
Rule B (Pass/Fail)	**Pass**	**Pass**
Expiration Date	**4/20/2025**	

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule B = The determined mean value shall be within 5% of the certificate value.

*** Certificate Value is decay corrected to Verification Prep Date.**

The analyst prepared three standard verification sources for Th-232 standard 1513-J using 0.1 mL for each source. Each standard was combined with 0.1 mL of Th-229 standard 1845-J and was diluted in a centrifuge tube containing 4 mL 2M HCl, diluted to 40 mL with DI water. 0.1 mL of neodymium carrier and 5 mL of 48% HF was added to precipitate neodymium (and Thorium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for Th-232 were calculated by comparison to Th-229 certified values.

1564

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

85621-278
5 mL Liquid in Flame Sealed Vial

Customer: General Engineering Labs/Charleston, SC
P.O. No.: 936814RD, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by the Department Des Applications Et De La Metrologie Des Rayonnements Ionisants (DAMRI), Paris, France. Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
U-232	2.517E+04	3.393E+04	0.5	2.4	4.9	09/12/2011

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: γ-impurities (other than decay products) < 0.1 %, U-233 < 1.20E2 Bq, Am-241 < 5.8E1 Bq. 5.06048 grams 2M HNO3 solution.

Source Prepared by: M Taskaeva
M. I. Taskaeva, Radiochemist

QA Approved:
J. D. McCorvey, QA Manager Alternate

Date: 9/12/11

RECEIVED 9/14/11 AM

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

ANA Form005 Rev. ---

Single Isotope Certificate, Rev 1 9/28/2009

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Standard Logbook

Serial ID:	1564	**Open/Reference Date:**	12-SEP-11	**Aliquot :**	5.06048 g
Name:	Uranium-232	**Received:**	14-SEP-11	**Density :**	Hand Calculated
Type:	Source Material	**Expires:**	26-SEP-14	**Logbook Num :**	RC-S-060-109
Employee:	Ashley Drochter			**Lot Number :**	85621-278
Supplier:	Eckert & Ziegler			**Solvent :**	2M HNO3
				Uncertainty :	2.45 percent

Description: Ampoule

Comments: None

Analyte	Concentration	Analyte	Concentration
Uranium-232	33930 Bq		

Standard Traceability Log Rad

Source Material Info	
Parent Code:	1564
Prepared By:	Ashley Drochter
Carrier Conc:	2M HNO3
Reference Date:	09/12/2011
Ampoule Mass (g):	5.06048 g
Uncertainty:	+/- 2.45 %
LogBook No:	RC-S-060-109
Supplier:	Eckert & Ziegler

A Solution Material Info			
Isotope:	Uranium-232		
Prepared By:	Ashley Drochter		
Prep Date:	11/15/2012		
Verification Date:	10/10/2023		
Expiration Date:	10/10/2024		
Primary Code:	1564-A		
Dilution(mL):	100 mL		
Mass of Parent(g):	4.9067 g		
Density(g/mL):	1.0615	Balance ID:	38080204

Calculations Converting parent activity to dpm/mL|dpm/g

(Mass of parent(g)) * (Parm Activity (Bq)) * (conversion dpm to Bq) / (Ampoule Mass(g) *(Dilution Vol)) = Parent Activity (dpm/mL)
(Mass of parent(g)) * (Parm Activity (Bq)) * (conversion dpm to Bq) / Density / (Ampoule Mass (g) * (Dilution Vol)) = Parent Activity (dpm/g)
(4.9067 g) * (33930 Bq) * (60 dpm/Bq) / (5.06048 g * 100 mL) = 19739.3525 dpm/mL
(4.9067 g) * (33930 Bq) * (60 dpm/Bq) / (1.0615 g/mL)/ (5.06048 g * 100 mL) = 18595.7160 dpm/g

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
11/16/2012	Ashley Drochter	2.6179	1000	1564-B	48.6817 dpm/mL	11/13/2013	11/13/2014
07/26/2021	Christina Kimball	.635	500	1564-BB	23.6166 dpm/mL	07/21/2022	07/21/2023
07/26/2021	Christina Kimball	.635	500	1564-BB Spike	23.6166 dpm/mL	07/21/2022	07/21/2023
01/15/2013	Christina Kimball	.265	250	1564-C	19.7115 dpm/mL	01/13/2014	01/13/2015
12/14/2021	Tim Chandler	2.6412	1000	1564-CC	49.115 dpm/mL	12/15/2021	12/15/2022
02/18/2013	Christina Kimball	.116	500	1564-D	4.31421 dpm/mL	02/16/2015	02/13/2016
04/13/2022	Matelon DeFreese	2.7103	1000	1564-DD	50.4 dpm/mL	04/13/2022	04/13/2023
01/02/2014	Gregory Ramsay	2.6936	1000	1564-E	50.08942 dpm/mL	12/10/2014	12/10/2015
09/21/2022	Tim Chandler	2.6897	1000	1564-EE	50.0169 dpm/mL	09/21/2022	09/21/2023

03/17/2014	Christina Kimball	.266	250	1564-F	19.78584 dpm/mL	03/25/2015	03/25/2016
12/27/2022	Christina Kimball	.61	500	1564-FF	22.6868 dpm/mL	12/01/2023	12/01/2024
12/27/2022	Christina Kimball	.61	500	1564-FF Spike	22.6868 dpm/mL	12/01/2023	12/01/2024
12/10/2014	Tim Chandler	2.6312	1000	1564-G	48.929 dpm/mL	12/10/2014	12/10/2015
01/19/2023	Matelon DeFreese	2.689	1000	1564-GG	50.0039 dpm/mL	01/20/2023	01/20/2024
07/20/2015	Christina Kimball	.266	250	1564-H	19.78584 dpm/mL	07/25/2016	07/25/2017
05/19/2023	Matelon DeFreese	2.685	1000	1564-HH	49.9294975 dpm/mL	05/19/2023	05/19/2024
11/23/2015	Tim Chandler	2.6117	1000	1564-I	48.5664 dpm/mL	11/23/2015	11/23/2016
10/09/2023	Matelon DeFreese	2.6864	1000	1564-II	49.9555315 dpm/mL	10/10/2023	10/10/2024
01/05/2016	Christina Kimball	.119	500	1564-J	4.4258 dpm/mL	12/27/2017	12/27/2018
01/05/2016	Christina Kimball	.119	500	1564-J Spike	4.4258 dpm/mL	12/27/2017	12/27/2018
04/03/2024	Matelon DeFreese	2.6968	1000	1564-JJ	50.1489269 dpm/mL	04/03/2024	04/03/2025
09/20/2016	Tim Chandler	2.6389	1000	1564-K	49.0722 dpm/mL	09/18/2017	09/18/2018
12/20/2016	Christina Kimball	.276	250	1564-L	20.52974 dpm/mL	12/21/2017	12/21/2018
06/20/2017	Tim Chandler	2.6611	1000	1564-M	49.4851 dpm/mL	06/19/2018	06/19/2019
01/18/2018	Tim Chandler	2.6367	1000	1564-N	49.0313 dpm/mL	04/25/2018	04/25/2019
04/25/2018	Tim Chandler	2.6505	1000	1564-O	49.2879 dpm/mL	04/25/2018	04/25/2019
08/06/2018	Christina Kimball	.106	500	1564-P	3.9423 dpm/mL	12/19/2019	12/19/2020
08/06/2018	Christina Kimball	.106	500	1564-P Spike	3.9423 dpm/mL	12/19/2019	12/19/2020
12/13/2018	Tim Chandler	2.6502	1000	1564-Q	49.2824 dpm/mL	12/13/2018	12/13/2019
01/08/2019	Christina Kimball	.29	250	1564-R	21.571 dpm/mL	01/08/2019	01/08/2020
01/08/2019	Christina Kimball	.29	250	1564-R Spike	21.571 dpm/mL	01/08/2019	01/08/2020
10/01/2019	Tim Chandler	2.6957	1000	1564-S	50.1285 dpm/mL	10/01/2019	10/01/2020

12/18/2019	Christina Kimball	.307	250	1564-T	22.83554 dpm/mL	12/19/2019	12/19/2020
12/18/2019	Christina Kimball	.307	250	1564-T Spike	22.83554 dpm/mL	12/19/2019	12/19/2020
03/31/2020	Tim Chandler	2.6645	1000	1564-U	49.5483 dpm/mL	03/31/2020	03/31/2021
08/14/2020	Christina Kimball	.111	500	1564-V	4.1282 dpm/mL	08/14/2020	08/14/2021
08/14/2020	Christina Kimball	.111	500	1564-V Spike	4.1282 dpm/mL	08/14/2020	08/14/2021
10/13/2020	Tim Chandler	2.6983	1000	1564-W	50.1768 dpm/mL	10/13/2020	10/13/2021
11/04/2020	Christina Kimball	.315	250	1564-X	23.4306 dpm/mL	11/04/2020	11/04/2021
11/04/2020	Christina Kimball	.315	250	1564-X Spike	23.4306 dpm/mL	11/04/2020	11/04/2021
03/19/2021	Matelon DeFreese	2.7599	1000	1564-Y	51.32232 dpm/mL	03/19/2021	03/19/2022
03/19/2021	Matelon DeFreese	2.7599	1000	1564-Z	51.32232 dpm/mL	03/20/2021	03/20/2022

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for U-232 Standard 1564-JJ

v1.2

Analyst	MXS2
Verification Prep Date	4/3/2024

Tracer Information	
Isotope	U-238
Serial Number	1600-P
Amount of Std. (mL)	0.2
Expiration Date	5/8/2024

Standard Information	
Isotope	U-232
Serial Number	1564-JJ
Isotope Halflife	68.9000 Y
Reference Date	9/12/2011
Ref. Act. (dpm/mL)	50.1489269
Amount of Std. (mL)	0.2
Standard Prep Date	4/3/2024

Std #	Count Date	Activity pCi	Standard dpm/mL
1	4/3/2024	3.880	43.07
2	4/3/2024	3.950	43.85
3	4/3/2024	3.920	43.51
	Mean Value =	3.917	43.475
	Stdev =	0.035118846	0.389819189

	pCi	dpm/mL
Certificate Value* =	**3.9817**	**44.1970**
Two sigma =	0.0702	0.7796
10 % of Mean =	0.3917	4.3475
Rule A (Pass/Fail)	**Pass**	**Pass**
% Recovery	98.37%	98.37%
Rule B (Pass/Fail)	**Pass**	**Pass**
Expiration Date	**4/3/2025**	

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule B = The determined mean value shall be within 5% of the certificate value.

*** Certificate Value is decay corrected to Verification Prep Date.**

The analyst prepared three standard verification sources for U-232 standard 1564-JJ using 0.2 mL for each source. Each standard was combined with 0.2 mL of U-238 standard 1600-P and was diluted in a centrifuge tube containing 15 mL 0.1M HCl and 25 mL of DI water. 0.1 mL of neodymium carrier, 0.5 mL of titanium (III) chloride, and 5 mL of 48% HF was added to precipitate neodymium (and Uranium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for U-232 were calculated by comparison to U-238 certified values.

4/18/24

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661·309·1010
Fax 661·257·8303

HS 3/26/12 1600

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	U-238 (Nat)	**Customer:**	GENERAL ENGINEERING LABS.
Half-life:	(4.468 ± 0.005)E+09 years	**P.O. No.:**	936823 RD
Catalog No.:	7338	**Reference Date:**	15-Apr-12 12:00 PST
Source No.:	1577-71-2	**Contained Radioactivity: (Total Uranium)**	1.023 µCi 37.85 kBq

Physical Description:

A. Mass of solution: 7.05210 g in 10 mL flame-sealed ampoule
B. Chemical form: $UO_2(NO_3)_2$ in dilute HNO_3
C. Carrier content: None
D. Density: Approximately 1.41 g/mL @ 20°C

Radioimpurities:

See Technical Data Sheet

Radionuclide Concentration: 0.1451 µCi/g, 5.369 kBq/g

Method of Calibration:

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement:

A. Type A (random) uncertainty: ± 0.0 %
B. Type B (systematic) uncertainty: ± 3.0 %
C. Uncertainty in aliquot weighing: ± 0.0 %
D. Total uncertainty at the 99% confidence level: ± 3.0 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This solution has a working life of 5 years.

Daniel James Van Dalsem
Quality Control

21-Mar-12
Date

EZIP Ref. No.: 1577-71

RC-S-065-030a

ISO 9001 CERTIFIED

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661·309·1010
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U-238 Natural Technical Data

The U-238 Natural used to prepare your order was taken from Eckert & Ziegler Isotope Products Lot #4550102
It had the following composition as of 9 Feb 10:

Nuclide	Atom %	Activity %
U-234	0.0055	49.086
U-235	0.7200	2.241
U-238	99.274	48.673

Isotopic composition provided by New Brunswick Laboratory.

If you have any question, please contact Eckert & Ziegler Isotope Products Technical Service: (661) 309-1010

ISO 9001 CERTIFIED

Medical Imaging Laboratory
24937 Avenue Tibbitts Valencia, California 91355

Industrial Gauging Laboratory
1800 North Keystone Street Burbank, California 91504

Standard Logbook

Serial ID:	1600	**Open/Reference Date:**	15-APR-12	**Aliquot :**	7.0521 g
Name:	Uranium-238	**Received:**	24-MAR-12	**Density :**	Hand Calculated g/mL
Type:	Source Material	**Expires:**	26-MAR-15	**Logbook Num :**	RC-S-065-030
Employee:	Ashley Drochter			**Lot Number :**	4550102
Supplier:	Eckert & Ziegler			**Solvent :**	UO2(NO3)2 in dilute HNO3
				Uncertainty :	1.17 percent

Description: Ampoule

Comments: None

Analyte	Concentration	Analyte	Concentration
Uranium-238	18.42 kbq		

Standard Traceability Log Rad

Source Material Info	
Parent Code:	1600
Prepared By:	Ashley Drochter
Carrier Conc:	UO2(NO3)2 in dilute HNO3
Reference Date:	04/15/2012
Ampoule Mass (g):	7.0521 g
Uncertainty:	+/- 1.17 %
LogBook No:	RC-S-065-030
Supplier:	Eckert & Ziegler

A Solution Material Info			
Isotope:	Uranium-238		
Prepared By:	Ashley Drochter		
Prep Date:	09/04/2012		
Verification Date:	06/10/2024		
Expiration Date:	06/10/2025		
Primary Code:	1600-A		
Dilution(mL):	100 mL		
Mass of Parent(g):	6.8204 g		
Density(g/mL):	1.0789	Balance ID:	38080204

Calculations Converting parent activity to dpm/mL|dpm/g

(Mass of parent(g)) * (Parm Activity (kbq)) * (conversion dpm to kbq) / (Ampoule Mass(g) *(Dilution Vol)) = Parent Activity (dpm/mL)
(Mass of parent(g)) * (Parm Activity (kbq)) * (conversion dpm to kbq) / Density / (Ampoule Mass (g) * (Dilution Vol)) = Parent Activity (dpm/g)
(6.8204 g) * (18.42 kbq) * (60000 dpm/kbq) / (7.0521 g * 100 mL) = 10688.8814 dpm/mL
(6.8204 g) * (18.42 kbq) * (60000 dpm/kbq) / (1.0789 g/mL)/ (7.0521 g * 100 mL) = 9907.0626 dpm/g

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
09/04/2012	Ashley Drochter	1.4579	500	1600-B	28.8913 dpm/mL	09/04/2012	09/04/2013
09/11/2012	Ashley Drochter	3.0288	500	1600-C	60.0219 dpm/mL	09/04/2013	09/04/2014
03/27/2014	Tim Chandler	3.0445	500	1600-D	60.3241 dpm/mL	03/18/2015	03/18/2016
07/24/2015	Tim Chandler	3.0177	500	1600-E	59.7931 dpm/mL	07/10/2017	07/10/2018
02/16/2017	Tim Chandler	3.0261	500	1600-F	59.9595 dpm/mL	02/06/2018	02/06/2019
10/10/2017	Christina Kimball	.539	250	1600-G	21.3596 dpm/mL	12/01/2023	12/01/2024
04/02/2018	Tim Chandler	3.0544	500	1600-H	60.5203 dpm/mL	03/29/2019	03/29/2020

06/21/2019	Tim Chandler	3.0536	500	1600-I	60.5044 dpm/mL	06/21/2019	06/21/2020
01/30/2020	Tim Chandler	3.0563	500	1600-J	60.5579 dpm/mL	01/26/2021	01/26/2022
03/13/2020	Christina Kimball	.01222	500	1600-K	.24207 dpm/mL	03/15/2022	03/15/2023
04/23/2021	Tim Chandler	3.0507	500	1600-L	60.4469 dpm/mL	04/26/2021	04/26/2022
01/21/2022	Matelon DeFreese	3.1075	500	1600-M	61.5723941 dpm/mL	01/21/2022	01/21/2023
05/19/2022	Christina Kimball	.01275	500	1600-N	.2527 dpm/mL	05/14/2024	05/14/2025
09/06/2022	Matelon DeFreese	3.1499	500	1600-O	62.412513 dpm/mL	09/06/2022	09/06/2023
05/08/2023	Matelon DeFreese	6.0105	1000	1600-P	59.5463998 dpm/mL	05/03/2024	05/03/2025
05/30/2024	Christina Kimball	.012077	500	1600-Q	.2393 dpm/mL	05/30/2024	05/30/2025
06/10/2024	Matelon DeFreese	6.011	1000	1600-R	59.5513533 dpm/mL	06/10/2024	06/10/2025

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for U-238 Standard 1600-R

v1.2

Analyst	MXS2
Verification Prep Date	6/10/2024

Tracer Information	
Isotope	U-232
Serial Number	1564-JJ
Amount of Std. (mL)	0.2
Expiration Date	4/3/2025

Standard Information	
Isotope	U-238
Serial Number	1600-R
Isotope Halflife	4.4680E+09 Y
Reference Date	4/15/2012
Ref. Act. (dpm/mL)	59.5513533
Amount of Std. (mL)	0.2
Standard Prep Date	6/10/2024

Std #	Count Date	Activity pCi	Standard dpm/mL
1	6/12/2024	5.580	61.94
2	6/11/2024	5.280	58.61
3	6/12/2024	5.130	56.94
Mean Value =		5.330	59.163
Stdev =		0.229128785	2.543329511

	pCi	dpm/mL
Certificate Value* =	**5.3650**	**59.5514**
Two sigma =	0.4583	5.0867
10 % of Mean =	0.5330	5.9163
Rule A (Pass/Fail)	**Pass**	**Pass**
% Recovery	99.35%	99.35%
Rule B (Pass/Fail)	**Pass**	**Pass**
Expiration Date	**6/10/2025**	

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule B = The determined mean value shall be within 5% of the certificate value.

*** Certificate Value is decay corrected to Verification Prep Date.**

The analyst prepared three standard verification sources for U-238 standard 1600-R using 0.2 mL for each source. Each standard was combined with 0.2 mL of U-232 standard 1564-JJ and was diluted in a centrifuge tube containing 20 mL of 0.1M HCL diluted to 40 mL with DI water. 0.1 mL of neodymium carrier, 0.5 mL of titanium (III) chloride, and 5 mL of 48% HF was added to precipitate neodymium (and Uranium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for U-238 were calculated by comparison to U-232 certified values.

6/14/24

Runlogs

Instrument Run Log

Instrument Type: ALPHA SPECTROMETER **Batch ID: 2640430**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
674299011	SAMPLE	CM4	1160	JUL-18-24 08:40:30	DONE		16-JUL-24 12:18
1205789020	MB	CM4	1125	JUL-18-24 13:27:56	DONE		13-JUL-24 12:38
1205789021	DUP	CM4	1126	JUL-18-24 13:27:57	DONE		13-JUL-24 12:38
674299012	SAMPLE	CM4	1007	JUL-18-24 13:28:01	DONE		02-JUL-24 11:32
674299013	SAMPLE	CM4	1008	JUL-18-24 13:28:01	DONE		02-JUL-24 11:33
674299016	SAMPLE	CM4	1009	JUL-18-24 13:28:01	DONE		02-JUL-24 11:33
674299019	SAMPLE	CM4	1010	JUL-18-24 13:28:01	DONE		02-JUL-24 11:33
674299020	SAMPLE	CM4	1011	JUL-18-24 13:28:01	DONE		02-JUL-24 11:33
674299022	SAMPLE	CM4	1012	JUL-18-24 13:28:01	DONE		02-JUL-24 11:33
1205789022	LCS	CM4	1135	JUL-18-24 13:28:01	DONE		13-JUL-24 13:07
674299027	SAMPLE	CM4	1013	JUL-18-24 13:28:04	DONE		02-JUL-24 13:14
674299030	SAMPLE	CM4	1014	JUL-18-24 13:28:04	DONE		02-JUL-24 13:14
674299031	SAMPLE	CM4	1015	JUL-18-24 13:28:04	DONE		02-JUL-24 13:16
674299033	SAMPLE	CM4	1016	JUL-18-24 13:28:04	DONE		02-JUL-24 13:16
674299034	SAMPLE	CM4	1017	JUL-18-24 13:28:04	DONE		02-JUL-24 13:19
674299037	SAMPLE	CM4	1018	JUL-18-24 13:28:04	DONE		02-JUL-24 13:19

Instrument Run Log

Instrument Type: ALPHA SPECTROMETER **Batch ID: 2640431**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
674299011	SAMPLE	CM4	1197	JUL-18-24 10:28:36	DONE		21-JUN-24 11:54
674299012	SAMPLE	CM4	1199	JUL-18-24 10:28:37	DONE		21-JUN-24 12:57
674299013	SAMPLE	CM4	1200	JUL-18-24 10:28:41	DONE		21-JUN-24 12:57
674299016	SAMPLE	CM4	1203	JUL-18-24 10:28:42	DONE		21-JUN-24 11:54
674299019	SAMPLE	CM4	1205	JUL-18-24 10:28:45	DONE		21-JUN-24 12:59
674299020	SAMPLE	CM4	1206	JUL-18-24 10:28:47	DONE		21-JUN-24 12:59
674299022	SAMPLE	CM4	1207	JUL-18-24 10:28:49	DONE		21-JUN-24 12:59
674299027	SAMPLE	CM4	1166	JUL-18-24 12:37:08	DONE		18-JUL-24 11:31
674299030	SAMPLE	CM4	1176	JUL-18-24 12:37:10	DONE		18-JUL-24 12:23
674299031	SAMPLE	CM4	1177	JUL-18-24 12:37:12	DONE		18-JUL-24 12:23
674299033	SAMPLE	CM4	1178	JUL-18-24 12:37:15	DONE		18-JUL-24 12:23
674299034	SAMPLE	CM4	1179	JUL-18-24 12:37:17	DONE		18-JUL-24 11:41
674299037	SAMPLE	CM4	1180	JUL-18-24 12:37:20	DONE		18-JUL-24 12:23
1205789023	MB	CM4	1181	JUL-18-24 12:37:22	DONE		18-JUL-24 12:24
1205789024	DUP	CM4	1182	JUL-18-24 12:37:24	DONE		18-JUL-24 12:24
1205789025	LCS	CM4	1195	JUL-18-24 12:37:26	DONE		21-JUN-24 11:54

Instrument Run Log

Instrument Type: ALPHA SPECTROMETER **Batch ID: 2641120**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1205790381	MB	RM3	1113	JUL-19-24 08:21:10	DONE		13-JUL-24 13:06
1205790382	DUP	RM3	1117	JUL-19-24 08:21:12	DONE		13-JUL-24 12:38
1205790383	LCS	RM3	1125	JUL-19-24 08:21:15	DONE		13-JUL-24 12:38
674299006	SAMPLE	RM3	1017	JUL-19-24 08:21:26	DONE		02-JUL-24 13:19
674299010	SAMPLE	RM3	1018	JUL-19-24 08:21:26	DONE		02-JUL-24 13:19

Instrument Run Log

Instrument Type: ALPHA SPECTROMETER **Batch ID: 2641153**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
674299006	SAMPLE	AG2	1207	JUL-19-24 10:08:56	DONE		21-JUN-24 12:59
674299010	SAMPLE	AG2	1031	JUL-19-24 10:43:02	DONE		03-JUL-24 12:49
1205790430	MB	AG2	1032	JUL-19-24 10:43:02	DONE		03-JUL-24 12:49
1205790431	DUP	AG2	1034	JUL-19-24 10:43:02	DONE		03-JUL-24 12:50
1205790432	LCS	AG2	1035	JUL-19-24 10:43:02	DONE		03-JUL-24 12:50

Gamma Spectroscopy
Raw Data

Batch 2636543 Check-list

This check-list was completed on 01-AUG-24 by Michael Hilton

This batch was reviewed by Michael Hilton on 01-AUG-24 and Spencer Collins on 01-AUG-24.

Batch ID: 2636543 **Product:** GSCGAMMS **Description:** Gamma Spec Solid RAD A-013

#	Criteria	Yes	No	Comments
Preparation Information				
1	Did any sample(s) require dilution?		No	
2	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
3	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
4	Are instrument source checks within limits?	Yes		
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were any additional radionuclides added that were not requested by the client?		No	
7	Were all the samples prepared/analyzed within the required holding time period?	Yes		
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Gamma Spectroscopy

Batch ID: **2636543**
Analyst: Maggie Stamps (MXR1)
Method: DOE HASL 300, 4.5.2.3/Ga-01-R
Lab SOP: GL-RAD-A-013 REV# 29
Instrument: No instrument-manual method

Due Dates for Lab: 31-JUL-2024 **Hold: 08-JUL-2024** **Package: 01-AUG-2024** **SDG: 02-AU**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1205781348	84680-278	1556	1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)	Adjusted Aliquot (g)
1	674299021	09-JUL-2024	.1	Dry to Dry	106.54	106.54	106.54
2	674299022	09-JUL-2024	.1	Dry to Dry	93.82	93.82	93.82
3	674299023	09-JUL-2024	.1	Dry to Dry	109.51	109.51	109.51
4	674299024	09-JUL-2024	.1	Dry to Dry	113.77	113.77	113.77
5	674299025 - 2	09-JUL-2024	.1	Dry to Dry	112.3	112.3	112.3
6	674299026	09-JUL-2024	.1	Dry to Dry	140.02	140.02	140.02
7	674299027	09-JUL-2024	.1	Dry to Dry	134.49	134.49	134.49
8	674299028	09-JUL-2024	.1	Dry to Dry	112.91	112.91	112.91
9	674299029	09-JUL-2024	.1	Dry to Dry	117.95	117.95	117.95
10	674299030	09-JUL-2024	.1	Dry to Dry	114.63	114.63	114.63
11	674299031	09-JUL-2024	.1	Dry to Dry	108.01	108.01	108.01
12	674299032	09-JUL-2024	.1	Dry to Dry	116.02	116.02	116.02
13	674299033	09-JUL-2024	.1	Dry to Dry	127.15	127.15	127.15
14	674299034	09-JUL-2024	.1	Dry to Dry	102.38	102.38	102.38
15	674299035	09-JUL-2024	.1	Dry to Dry	94.18	94.18	94.18
16	674299036	09-JUL-2024	.1	Dry to Dry	92.61	92.61	92.61
17	674299037	09-JUL-2024	.1	Dry to Dry	97.32	97.32	97.32
18	1205781346 MB	09-JUL-2024	.1	Dry to Wet	140.02	140.02	140.02
19	1205781347 DUP (674299021)	09-JUL-2024	.1	Dry to Dry	106.54	106.54	106.54
20	1205781348 - 2 LCS	09-JUL-2024	.1	Dry to Wet	115	115	115

Reagent/Solvent Lot ID	Description	Amount

Comments:

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 15:34:40.19

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299021.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM22.CNF;678
                                         Background date  : 28-JUL-2024 11:28:18
Sample date      : 26-JUN-2024 10:50:00  Acquisition date : 31-JUL-2024 14:30:48
Sample ID        : G674299021            Sample quantity  : 1.06540E+02 GRAM
Detector name    : GAM22                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:04.22  0.1%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	57.13	53	245	0.72	114.77	112	6	1.46E-02	49.1	
2	0	63.24*	47	396	0.77	126.99	123	9	1.30E-02	79.5	
3	3	74.83	255	478	1.75	150.18	145	17	7.07E-02	19.2	1.32E+00
4	3	77.19	445	395	1.48	154.89	145	17	1.24E-01	9.8	
5	0	83.68	61	269	1.71	167.87	166	6	1.69E-02	44.5	
6	0	87.00	87	336	1.26	174.52	172	7	2.43E-02	36.4	
7	0	92.60*	257	538	1.28	185.72	179	14	7.15E-02	20.7	
8	0	98.57	45	180	0.82	197.65	195	7	1.24E-02	52.1	
9	0	143.96*	59	190	1.66	288.41	285	7	1.64E-02	42.0	
10	0	185.88*	482	296	1.74	372.25	365	13	1.34E-01	8.8	
11	0	190.61	34	182	0.95	381.70	379	8	9.36E-03	71.5	
12	2	238.66*	425	195	1.53	477.79	470	21	1.18E-01	7.8	1.59E+00
13	2	242.10	425	216	1.78	484.67	470	21	1.18E-01	8.8	
14	0	270.54	48	156	1.81	541.54	538	8	1.33E-02	47.3	
15	0	295.15*	930	189	1.65	590.75	583	14	2.58E-01	4.6	
16	0	301.14	116	154	4.03	602.73	597	14	3.21E-02	25.3	
17	0	312.30	20	112	1.56	625.05	618	10	5.69E-03	102.2	
18	0	339.03*	91	200	1.83	678.51	670	15	2.53E-02	35.9	
19	0	351.94*	1499	201	1.64	704.31	698	15	4.17E-01	3.3	
20	0	410.27	57	54	2.09	820.97	817	9	1.57E-02	27.2	
21	0	440.49*	49	84	3.73	881.42	875	14	1.37E-02	42.3	
22	0	511.12*	68	137	1.86	1022.67	1014	19	1.89E-02	47.1	
23	0	527.43	43	62	4.72	1055.29	1048	13	1.20E-02	40.3	
24	1	534.29	29	47	1.95	1069.00	1061	30	8.12E-03	51.1	2.41E+00
25	1	537.29	27	42	1.95	1075.00	1061	30	7.52E-03	55.3	
26	0	583.61*	88	127	1.91	1167.63	1161	14	2.44E-02	29.6	
27	0	609.32*	1056	85	1.72	1219.06	1212	13	2.93E-01	3.6	
28	0	666.38	56	42	1.78	1333.18	1327	15	1.56E-02	28.4	
29	0	727.46*	36	79	4.52	1455.34	1444	20	1.01E-02	63.3	
30	0	736.73	31	58	4.85	1473.88	1466	20	8.72E-03	60.8	
31	0	768.49*	113	62	1.92	1537.40	1530	13	3.15E-02	17.3	
32	0	786.08	43	24	1.31	1572.58	1567	11	1.19E-02	27.1	
33	0	799.06	21	63	4.52	1598.54	1582	18	5.75E-03	92.6	
34	0	911.49*	91	44	2.16	1823.40	1815	15	2.54E-02	19.7	

Sample ID : G674299021 Acquisition date : 31-JUL-2024 14:30:48

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	934.32	75	21	2.05	1869.08	1864	11	2.07E-02	16.8	
36	0	953.33	14	18	0.92	1907.11	1900	12	3.89E-03	66.2	
37	0	969.13*	42	50	1.48	1938.71	1935	13	1.16E-02	38.5	
38	0	1017.68	13	19	2.26	2035.81	2030	10	3.50E-03	71.9	
39	0	1109.20	16	11	1.36	2218.86	2215	9	4.48E-03	44.8	
40	0	1120.19*	272	38	2.24	2240.85	2231	17	7.56E-02	8.1	
41	0	1156.93	11	41	1.11	2314.35	2306	12	3.17E-03	113.9	
42	0	1237.95	107	30	2.12	2476.42	2465	20	2.97E-02	15.8	
43	0	1295.24	10	26	2.46	2591.01	2579	14	2.78E-03	115.8	
44	0	1377.21	116	13	2.45	2754.99	2743	25	3.23E-02	12.4	
45	0	1407.13	31	58	6.71	2814.84	2795	29	8.61E-03	72.8	
46	1	1458.70	37	24	2.46	2918.00	2912	21	1.02E-02	35.5	3.46E+00
47	1	1461.20*	80	25	2.46	2923.00	2912	21	2.22E-02	18.3	
48	0	1509.76*	57	17	1.41	3020.16	3007	23	1.57E-02	23.4	
49	0	1534.74	7	16	3.54	3070.12	3059	14	1.93E-03	132.4	
50	0	1609.84	5	15	0.73	3220.36	3210	12	1.50E-03	149.3	
51	0	1662.25	17	13	2.80	3325.21	3316	15	4.74E-03	54.4	
52	0	1715.59	9	3	4.44	3431.93	3424	13	2.49E-03	53.0	
53	0	1730.20	46	11	3.05	3461.16	3453	14	1.28E-02	21.0	
54	0	1764.44*	226	5	2.91	3529.66	3519	19	6.26E-02	7.2	
55	0	1804.06	15	0	4.72	3608.93	3603	13	4.17E-03	25.8	
56	0	1847.88	45	0	2.45	3696.60	3691	14	1.25E-02	14.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 15:34:42

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299021.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4		
Sample title	: MXR1		
Sample date	: 26-JUN-2024 10:50:00	Acquisition date	: 31-JUL-2024 14:30:48
Sample ID	: G674299021	Sample quantity	: 106.54 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA22	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:04.22 0.1%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.821E+00	2.727E+00	2.727E+00	36.70	OK
CD-109	88.03	3.70*	5.935E+00	2.843E+00	2.997E+00	72.72	OK
SN-126	64.28	9.60	2.474E+00	1.423E+00	1.423E+00	159.09	OK
	86.94	8.90	5.935E+00	1.182E+00	1.182E+00	72.72	OK
	87.57	37.00*	5.935E+00	2.843E-01	2.843E-01	72.72	OK
TL-208	277.37	6.60	5.729E+00	----- Line Not Found		-----	Absent
	583.19	85.00*	3.729E+00	1.884E-01	1.884E-01	59.20	OK
	860.56	12.50	2.805E+00	----- Line Not Found		-----	Absent
BI-211	72.87	1.23	4.039E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	5.021E+00	1.591E+01	1.591E+01	6.66	OK
BI-212	727.33	6.67*	3.197E+00	1.150E+00	1.150E+00	126.65	OK
	1620.50	1.47	1.707E+00	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	4.342E+00	4.093E+00	4.093E+00	38.41	OK
	77.11	17.10	4.690E+00	3.978E+00	3.978E+00	19.59	OK
	238.63	43.60*	6.225E+00	1.089E+00	1.089E+00	15.68	OK
	300.09	3.30	5.474E+00	4.426E+00	4.426E+00	50.65	OK
BI-213	440.45	25.94*	4.426E+00	2.939E-01	2.939E-01	84.55	OK
BI-214	609.32	45.49*	3.624E+00	4.342E+00	4.342E+00	7.23	OK
	1120.29	14.92	2.248E+00	5.408E+00	5.408E+00	16.15	OK
	1764.49	15.30	1.641E+00	5.903E+00	5.904E+00	14.40	OK
PB-214	74.82	5.80	4.342E+00	7.254E+00	7.254E+00	38.41	OK
	77.11	9.70	4.690E+00	7.012E+00	7.012E+00	19.59	OK
	87.09	3.41	5.935E+00	3.084E+00	3.084E+00	72.72	OK
	242.00	7.25	6.176E+00	6.605E+00	6.605E+00	17.56	OK
	295.22	18.42	5.535E+00	6.310E+00	6.311E+00	9.15	OK
	351.93	35.60*	5.021E+00	5.773E+00	5.773E+00	6.66	OK
RN-222	609.32	45.49*	3.624E+00	4.342E+00	4.342E+00	7.23	OK
	1120.29	14.92	2.248E+00	5.408E+00	5.408E+00	16.15	OK
	1764.49	15.30	1.641E+00	5.903E+00	5.904E+00	14.40	OK
RA-224	240.99	4.10*	6.176E+00	1.168E+01	1.168E+01	17.56	OK
RA-226	74.82	5.80	4.342E+00	7.254E+00	7.254E+00	38.41	OK
	77.11	9.70	4.690E+00	7.012E+00	7.012E+00	19.59	OK
	87.09	3.41	5.935E+00	3.084E+00	3.084E+00	72.72	OK
	242.00	7.25	6.176E+00	6.605E+00	6.605E+00	17.56	OK
	295.22	18.42	5.535E+00	6.310E+00	6.311E+00	9.15	OK
	351.93	35.60*	5.021E+00	5.773E+00	5.773E+00	6.66	OK
AC-228	105.21	1.10	7.303E+00	----- Line Not Found		-----	Absent
	338.32	11.27	5.126E+00	1.086E+00	1.086E+00	71.75	OK
	835.71	1.61	2.872E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	2.676E+00	8.868E-01	8.868E-01	39.33	OK
	968.97	15.80	2.542E+00	6.935E-01	6.935E-01	77.04	OK
RA-228	105.21	1.10	7.303E+00	----- Line Not Found		-----	Absent
	338.32	11.27	5.126E+00	1.086E+00	1.086E+00	71.75	OK
	835.71	1.61	2.872E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	2.676E+00	8.868E-01	8.868E-01	39.33	OK
	968.97	15.80	2.542E+00	6.935E-01	6.935E-01	77.04	OK
TH-228	74.82	10.28	4.342E+00	4.093E+00	4.093E+00	38.41	OK
	77.11	17.10	4.690E+00	3.978E+00	3.978E+00	19.59	OK
	238.63	43.60*	6.225E+00	1.089E+00	1.089E+00	15.68	OK

Sample ID : G674299021 Acquisition date : 31-JUL-2024 14:30:48

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	300.09	3.30	5.474E+00	4.426E+00	4.426E+00	50.65	OK
TH-230	74.82	5.80	4.342E+00	7.254E+00	7.254E+00	38.41	OK
	77.11	9.70	4.690E+00	7.012E+00	7.012E+00	19.59	OK
	87.09	3.41	5.935E+00	3.084E+00	3.084E+00	72.72	OK
	242.00	7.25	6.176E+00	6.605E+00	6.605E+00	17.56	OK
	295.22	18.42	5.535E+00	6.310E+00	6.310E+00	9.15	OK
	351.93	35.60*	5.021E+00	5.773E+00	5.773E+00	6.66	OK
PA-231	283.69	1.70	5.658E+00	----- Line Not Found		-----	Absent
	301.36	5.35*	5.474E+00	2.730E+00	2.730E+00	50.65	OK
TH-232	105.21	1.10	7.303E+00	----- Line Not Found		-----	Absent
	338.32	11.27	5.126E+00	1.086E+00	1.086E+00	71.75	OK
	835.71	1.61	2.872E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	2.676E+00	8.868E-01	8.868E-01	39.33	OK
	968.97	15.80	2.542E+00	6.935E-01	6.935E-01	77.04	OK
PA-233	300.13	6.63	5.474E+00	2.203E+00	2.203E+00	50.65	OK
	311.90	38.50*	5.364E+00	6.846E-02	6.846E-02	204.46	OK
	340.48	4.45	5.126E+00	2.750E+00	2.750E+00	71.75	OK
TH-234	63.29	3.70*	2.474E+00	3.693E+00	3.693E+00	159.09	OK
	92.59	4.23	6.479E+00	6.702E+00	6.702E+00	41.43	OK
U-234	74.82	5.80	4.342E+00	7.254E+00	7.254E+00	38.41	OK
	77.11	9.70	4.690E+00	7.012E+00	7.012E+00	19.59	OK
	87.09	3.41	5.935E+00	3.084E+00	3.084E+00	72.72	OK
	242.00	7.25	6.176E+00	6.605E+00	6.605E+00	17.56	OK
	295.22	18.42	5.535E+00	6.310E+00	6.310E+00	9.15	OK
	351.93	35.60*	5.021E+00	5.773E+00	5.773E+00	6.66	OK
U-235	89.96	3.47	6.237E+00	----- Line Not Found		-----	Absent
	93.35	5.60	6.479E+00	5.062E+00	5.062E+00	41.43	OK
	143.76	10.96*	7.731E+00	4.924E-01	4.924E-01	84.04	OK
	163.33	5.08	7.469E+00	----- Line Not Found		-----	Absent
	185.72	57.20	7.080E+00	8.330E-01	8.330E-01	17.67	OK
	205.31	5.01	6.744E+00	----- Line Not Found		-----	Absent
NP-237	94.65	10.56	6.649E+00	----- Line Not Found		-----	Absent
	98.43	16.90	6.934E+00	2.708E-01	2.708E-01	104.10	OK
	300.13	6.63	5.474E+00	2.203E+00	2.203E+00	50.65	OK
	311.90	38.50*	5.364E+00	6.846E-02	6.846E-02	204.46	OK
	340.48	4.45	5.126E+00	2.750E+00	2.750E+00	71.75	OK
U-238	63.29	3.70*	2.474E+00	3.693E+00	3.693E+00	159.09	OK
	92.59	4.23	6.479E+00	6.702E+00	6.702E+00	41.43	OK
AM-243	43.53	5.90	2.160E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	4.342E+00	6.261E-01	6.261E-01	38.41	OK
ANH-511	511.00	100.00*	4.054E+00	1.141E-01	1.141E-01	94.20	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 15:34:43.17

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299021.CNF;1  *
* Acquisition date : 31-JUL-2024 14:30:48 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:04.22     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:50:00 Analyst initials: MXR1            *
* Sample ID        : G674299021           Sample Quantity : 1.0654E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.727E+00	9.807E-01	8.599E-01
CD-109	2.997E+00	2.136E+00	2.752E+00
SN-126	2.843E-01	2.026E-01	2.631E-01
TL-208	1.884E-01	1.093E-01	8.363E-02
BI-211	1.591E+01	1.038E+00	5.137E-01
BI-212	1.150E+00	1.427E+00	9.545E-01
PB-212	1.089E+00	1.674E-01	1.604E-01
BI-213	2.939E-01	2.435E-01	2.199E-01
BI-214	4.342E+00	3.075E-01	1.534E-01
PB-214	5.773E+00	3.768E-01	1.867E-01
RN-222	4.342E+00	3.075E-01	1.534E-01
RA-224	1.168E+01	2.010E+00	1.716E+00
RA-226	5.773E+00	3.768E-01	1.867E-01
AC-228	8.868E-01	3.418E-01	3.028E-01
RA-228	8.868E-01	3.418E-01	3.028E-01
TH-228	1.089E+00	1.674E-01	1.604E-01
TH-230	5.773E+00	3.768E-01	1.867E-01
PA-231	2.730E+00	1.355E+00	1.069E+00
TH-232	8.868E-01	3.418E-01	3.028E-01
PA-233	6.846E-02	1.372E-01	1.627E-01
TH-234	3.693E+00	5.758E+00	5.894E+00
U-234	5.773E+00	3.768E-01	1.867E-01
U-235	4.924E-01	4.056E-01	5.707E-01
NP-237	6.846E-02	1.372E-01	1.627E-01
U-238	3.693E+00	5.758E+00	5.894E+00
AM-243	6.261E-01	2.357E-01	1.965E-01
ANH-511	1.141E-01	1.053E-01	6.517E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-7.138E-01	5.889E-01	9.675E-01	NOT IDENT.
NA-22	1.400E-02	4.595E-02	9.055E-02	NOT IDENT.
NA-24	0.000E+00	4.591E+15	0.000E+00	SHORT HLIF

AL-26	-6.345E-03	4.017E-02	6.547E-02	NOT IDENT.
SC-46	1.872E-02	5.714E-02	1.066E-01	FAIL ABUN
V-48	-4.059E-02	1.930E-01	3.388E-01	NOT IDENT.
CR-51	2.786E-02	9.492E-01	1.733E+00	NOT IDENT.
MN-52	2.007E-01	3.303E+00	6.396E+00	FAIL ABUN
MN-54	9.352E-04	5.148E-02	9.186E-02	NOT IDENT.
CO-56	7.706E-02	5.736E-02	1.177E-01	FAIL ABUN
MN-56	0.000E+00	7.400E+40	0.000E+00	SHORT HLIF
CO-57	-1.088E-03	4.598E-02	8.023E-02	NOT IDENT.
CO-58	-1.388E-02	6.258E-02	1.096E-01	NOT IDENT.
FE-59	1.976E-02	1.302E-01	2.517E-01	NOT IDENT.
CO-60	-1.591E-02	4.896E-02	8.852E-02	NOT IDENT.
ZN-65	1.051E-01	1.166E-01	2.018E-01	NOT IDENT.
GE-68	2.496E-01	1.173E+00	2.346E+00	NOT IDENT.
AS-73	5.161E+00	4.550E+00	7.680E+00	NOT IDENT.
AS-74	1.654E-01	2.685E-01	5.093E-01	NOT IDENT.
SE-75	4.337E-02	7.744E-02	1.375E-01	NOT IDENT.
BR-77	0.000E+00	9.011E+03	0.000E+00	SHORT HLIF
SR-82	2.371E-02	7.449E-01	1.342E+00	NOT IDENT.
RB-83	6.209E-02	1.174E-01	2.082E-01	NOT IDENT.
RB-84	7.405E-02	1.425E-01	2.677E-01	NOT IDENT.
KR-85	1.645E+01	9.744E+00	1.959E+01	NOT IDENT.
SR-85	1.074E-01	6.374E-02	1.281E-01	NOT IDENT.
RB-86	6.234E-01	1.492E+00	3.055E+00	NOT IDENT.
Y-88	1.431E-03	5.027E-02	9.804E-02	NOT IDENT.
Y-91	4.238E+00	2.867E+01	5.472E+01	NOT IDENT.
NB-94	1.091E-02	4.548E-02	8.301E-02	NOT IDENT.
NB-95	1.444E-01	8.100E-02	1.513E-01	NOT IDENT.
NB-95M	2.165E-01	2.674E-01	4.309E-01	NOT IDENT.
ZR-95	2.997E-02	1.013E-01	1.898E-01	NOT IDENT.
NB-97	0.000E+00	1.378E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	9.789E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.563E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	7.848E+40	0.000E+00	SHORT HLIF
RH-101	-3.172E-02	5.369E-02	9.096E-02	NOT IDENT.
RH-102	-1.097E-02	6.020E-02	1.082E-01	NOT IDENT.
RU-103	1.805E-02	7.330E-02	1.362E-01	FAIL ABUN
RH-106	5.888E-02	3.796E-01	7.027E-01	NOT IDENT.
RU-106	5.888E-02	3.796E-01	7.027E-01	NOT IDENT.
AG-108M	-1.516E-02	4.508E-02	7.380E-02	NOT IDENT.
AG-110	-3.029E-01	9.567E-01	1.678E+00	NOT IDENT.
AG-110M	-1.886E-02	7.170E-02	1.243E-01	NOT IDENT.
SN-113	1.383E-02	7.030E-02	1.299E-01	NOT IDENT.
CD-115	0.000E+00	1.209E+04	0.000E+00	SHORT HLIF
SN-117M	-2.300E-01	2.651E-01	4.387E-01	NOT IDENT.
SB-122	0.000E+00	4.297E+02	0.000E+00	SHORT HLIF
TE-123M	-5.088E-02	5.720E-02	9.453E-02	NOT IDENT.
SB-124	-3.560E-02	1.168E-01	2.154E-01	NOT IDENT.
SB-125	-1.262E-01	1.360E-01	2.309E-01	NOT IDENT.
TE-125M	-6.701E+00	2.150E+01	3.712E+01	NOT IDENT.
I-126	0.000E+00	1.238E+00	1.760E+00	FAIL ABUN
SB-126	-1.411E-01	5.901E-01	9.022E-01	FAIL ABUN
SB-127	2.400E+01	5.365E+01	1.025E+02	NOT IDENT.
I-131	-2.914E-01	9.446E-01	1.690E+00	NOT IDENT.
I-132	0.000E+00	5.560E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	9.192E+01	0.000E+00	SHORT HLIF
BA-133	-8.685E-02	6.714E-02	9.485E-02	NOT IDENT.
I-133	0.000E+00	9.285E+10	0.000E+00	SHORT HLIF
CS-134	6.346E-02	4.972E-02	1.010E-01	NOT IDENT.
I-135	0.000E+00	6.274E+37	0.000E+00	SHORT HLIF
CS-136	1.696E-01	3.552E-01	7.039E-01	NOT IDENT.
BA-137M	3.263E-03	4.497E-02	7.261E-02	NOT IDENT.
CS-137	3.447E-03	4.751E-02	7.670E-02	NOT IDENT.
LA-138	-1.663E-03	6.139E-02	1.181E-01	NOT IDENT.
CE-139	-2.873E-02	5.614E-02	9.446E-02	NOT IDENT.
BA-140	1.299E+00	1.408E+00	1.858E+00	FAIL ABUN
LA-140	-1.479E-03	3.335E-01	6.321E-01	NOT IDENT.
CE-141	2.366E-01	1.949E-01	2.704E-01	FAIL ABUN
CE-143	0.000E+00	7.238E+06	0.000E+00	SHORT HLIF
CE-144	3.151E-01	3.444E-01	6.268E-01	NOT IDENT.
PM-144	-5.089E-02	4.285E-02	6.776E-02	NOT IDENT.
PR-144	-3.849E+00	3.240E+00	5.125E+00	NOT IDENT.
PM-146	1.901E-02	5.610E-02	1.049E-01	FAIL ABUN
ND-147	2.161E+00	3.371E+00	4.544E+00	FAIL ABUN
PM-147	-2.104E+02	1.267E+03	2.198E+03	NOT IDENT.
PM-149	0.000E+00	8.262E+04	0.000E+00	SHORT HLIF
EU-150	2.332E-02	4.370E-02	7.360E-02	FAIL ABUN
EU-152	-8.562E-02	1.611E-01	2.475E-01	FAIL ABUN

GD-153	1.746E-01	1.782E-01	2.632E-01	FAIL ABUN
EU-154	3.724E-02	1.286E-01	2.530E-01	NOT IDENT.
EU-155	1.198E-01	1.741E-01	3.166E-01	FAIL ABUN
TB-160	-3.463E-02	2.067E-01	3.636E-01	FAIL ABUN
HO-166M	6.712E-02	6.931E-02	1.380E-01	FAIL ABUN
TM-171	-3.449E+01	8.162E+01	1.430E+02	NOT IDENT.
HF-172	-2.148E-01	3.330E-01	5.579E-01	FAIL ABUN
LU-172	4.605E-02	6.446E-02	1.339E-01	FAIL ABUN
LU-176	-1.448E-02	5.579E-02	6.337E-02	FAIL ABUN
HF-181	2.910E-02	7.955E-02	1.491E-01	FAIL ABUN
TA-182	-3.983E-02	2.068E-01	3.827E-01	FAIL ABUN
RE-183	1.027E+00	9.870E-01	1.441E+00	FAIL ABUN
RE-184	1.462E-01	2.188E-01	4.147E-01	NOT IDENT.
W-188	-1.393E+01	1.615E+01	2.247E+01	FAIL ABUN
IR-192	-3.712E-02	6.585E-02	1.074E-01	FAIL ABUN
HG-203	-2.998E-02	8.449E-02	1.405E-01	NOT IDENT.
TL-204	3.813E+00	1.231E+01	1.982E+01	FAIL ABUN
BI-207	-1.054E-02	5.249E-02	9.813E-02	FAIL ABUN
BI-210	-1.263E+01	2.456E+01	4.293E+01	NOT IDENT.
PB-210	-1.263E+01	2.456E+01	4.293E+01	NOT IDENT.
PB-211	-1.167E-01	1.076E+00	1.802E+00	NOT IDENT.
RN-219	8.940E-02	5.552E-01	1.024E+00	FAIL ABUN
RA-223	5.079E-01	9.984E-01	1.868E+00	FAIL ABUN
AC-225	-1.547E+00	3.849E+00	6.450E+00	NOT IDENT.
AC-227	-1.923E-01	4.450E-01	7.384E-01	FAIL ABUN
TH-227	-1.923E-01	4.450E-01	7.384E-01	FAIL ABUN
TH-229	-6.760E-01	9.711E-01	1.412E+00	FAIL ABUN
TH-231	5.079E-01	9.984E-01	1.868E+00	FAIL ABUN
PA-234	2.920E-01	3.741E-01	6.938E-01	FAIL ABUN
PA-234M	2.304E+00	6.159E+00	1.147E+01	NOT IDENT.
NP-238	0.000E+00	1.551E+04	0.000E+00	SHORT HLIF
NP-239	-2.709E-01	4.384E-01	7.445E-01	FAIL ABUN
PU-239	4.950E+02	5.653E+02	1.027E+03	NOT IDENT.
AM-241	1.236E-01	6.240E-01	8.042E-01	NOT IDENT.
CM-243	-2.110E-01	1.865E-01	2.923E-01	FAIL ABUN
BK-247	-6.098E-03	1.268E-01	2.161E-01	FAIL ABUN
CM-247	1.025E-02	5.110E-02	9.445E-02	NOT IDENT.
CF-249	1.189E-02	5.868E-02	1.081E-01	NOT IDENT.
CF-251	-6.370E-03	2.303E-01	3.957E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 15:34:41.45

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	75	10.66*	1.821E+00	2.727E+00	2.727E+00	36.70
CD-109	88.03	89	3.70*	5.935E+00	2.843E+00	2.997E+00	72.72
SN-126	64.28	48	9.60	2.474E+00	1.423E+00	1.423E+00	159.09
	86.94	89	8.90	5.935E+00	1.182E+00	1.182E+00	72.72
	87.57	89	37.00*	5.935E+00	2.843E-01	2.843E-01	72.72
CE-141	145.44	59	48.29*	7.731E+00	1.118E-01	2.366E-01	84.04
TL-208	277.37	------	6.60	5.729E+00	------	Line Not Found	------
	583.19	85	85.00*	3.729E+00	1.884E-01	1.884E-01	59.20
	860.56	------	12.50	2.805E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.039E+00	------	Line Not Found	------
	351.06	1464	12.92*	5.021E+00	1.591E+01	1.591E+01	6.66
BI-212	727.33	35	6.67*	3.197E+00	1.150E+00	1.150E+00	126.65
	1620.50	------	1.47	1.707E+00	------	Line Not Found	------
PB-212	74.82	259	10.28	4.342E+00	4.093E+00	4.093E+00	38.41
	77.11	453	17.10	4.690E+00	3.978E+00	3.978E+00	19.59
	238.63	419	43.60*	6.225E+00	1.089E+00	1.089E+00	15.68
	300.09	113	3.30	5.474E+00	4.426E+00	4.426E+00	50.65
BI-213	440.45	48	25.94*	4.426E+00	2.939E-01	2.939E-01	84.55
BI-214	609.32	1016	45.49*	3.624E+00	4.342E+00	4.342E+00	7.23
	1120.29	257	14.92	2.248E+00	5.408E+00	5.408E+00	16.15
	1764.49	210	15.30	1.641E+00	5.903E+00	5.904E+00	14.40
PB-214	74.82	259	5.80	4.342E+00	7.254E+00	7.254E+00	38.41
	77.11	453	9.70	4.690E+00	7.012E+00	7.012E+00	19.59
	87.09	89	3.41	5.935E+00	3.084E+00	3.084E+00	72.72
	242.00	420	7.25	6.176E+00	6.605E+00	6.605E+00	17.56
	295.22	913	18.42	5.535E+00	6.310E+00	6.311E+00	9.15
	351.93	1464	35.60*	5.021E+00	5.773E+00	5.773E+00	6.66
RN-222	609.32	1016	45.49*	3.624E+00	4.342E+00	4.342E+00	7.23
	1120.29	257	14.92	2.248E+00	5.408E+00	5.408E+00	16.15
	1764.49	210	15.30	1.641E+00	5.903E+00	5.904E+00	14.40
RA-224	240.99	420	4.10*	6.176E+00	1.168E+01	1.168E+01	17.56
RA-226	74.82	259	5.80	4.342E+00	7.254E+00	7.254E+00	38.41
	77.11	453	9.70	4.690E+00	7.012E+00	7.012E+00	19.59
	87.09	89	3.41	5.935E+00	3.084E+00	3.084E+00	72.72
	242.00	420	7.25	6.176E+00	6.605E+00	6.605E+00	17.56
	295.22	913	18.42	5.535E+00	6.310E+00	6.311E+00	9.15
	351.93	1464	35.60*	5.021E+00	5.773E+00	5.773E+00	6.66
AC-228	105.21	------	1.10	7.303E+00	------	Line Not Found	------
	338.32	89	11.27	5.126E+00	1.086E+00	1.086E+00	71.75
	835.71	------	1.61	2.872E+00	------	Line Not Found	------
	911.20	87	25.80*	2.676E+00	8.868E-01	8.868E-01	39.33
	968.97	40	15.80	2.542E+00	6.935E-01	6.935E-01	77.04
RA-228	105.21	------	1.10	7.303E+00	------	Line Not Found	------
	338.32	89	11.27	5.126E+00	1.086E+00	1.086E+00	71.75
	835.71	------	1.61	2.872E+00	------	Line Not Found	------
	911.20	87	25.80*	2.676E+00	8.868E-01	8.868E-01	39.33
	968.97	40	15.80	2.542E+00	6.935E-01	6.935E-01	77.04

Sample ID : G674299021 Acquisition date : 31-JUL-2024 14:30:48

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	259	10.28	4.342E+00	4.093E+00	4.093E+00	38.41
	77.11	453	17.10	4.690E+00	3.978E+00	3.978E+00	19.59
	238.63	419	43.60*	6.225E+00	1.089E+00	1.089E+00	15.68
	300.09	113	3.30	5.474E+00	4.426E+00	4.426E+00	50.65
TH-230	74.82	259	5.80	4.342E+00	7.254E+00	7.254E+00	38.41
	77.11	453	9.70	4.690E+00	7.012E+00	7.012E+00	19.59
	87.09	89	3.41	5.935E+00	3.084E+00	3.084E+00	72.72
	242.00	420	7.25	6.176E+00	6.605E+00	6.605E+00	17.56
	295.22	913	18.42	5.535E+00	6.310E+00	6.310E+00	9.15
	351.93	1464	35.60*	5.021E+00	5.773E+00	5.773E+00	6.66
PA-231	283.69	------	1.70	5.658E+00	------	Line Not Found	------
	301.36	113	5.35*	5.474E+00	2.730E+00	2.730E+00	50.65
TH-232	105.21	------	1.10	7.303E+00	------	Line Not Found	------
	338.32	89	11.27	5.126E+00	1.086E+00	1.086E+00	71.75
	835.71	------	1.61	2.872E+00	------	Line Not Found	------
	911.20	87	25.80*	2.676E+00	8.868E-01	8.868E-01	39.33
	968.97	40	15.80	2.542E+00	6.935E-01	6.935E-01	77.04
PA-233	300.13	113	6.63	5.474E+00	2.203E+00	2.203E+00	50.65
	311.90	20	38.50*	5.364E+00	6.846E-02	6.846E-02	204.46
	340.48	89	4.45	5.126E+00	2.750E+00	2.750E+00	71.75
TH-234	63.29	48	3.70*	2.474E+00	3.693E+00	3.693E+00	159.09
	92.59	261	4.23	6.479E+00	6.702E+00	6.702E+00	41.43
U-234	74.82	259	5.80	4.342E+00	7.254E+00	7.254E+00	38.41
	77.11	453	9.70	4.690E+00	7.012E+00	7.012E+00	19.59
	87.09	89	3.41	5.935E+00	3.084E+00	3.084E+00	72.72
	242.00	420	7.25	6.176E+00	6.605E+00	6.605E+00	17.56
	295.22	913	18.42	5.535E+00	6.310E+00	6.310E+00	9.15
	351.93	1464	35.60*	5.021E+00	5.773E+00	5.773E+00	6.66
U-235	89.96	------	3.47	6.237E+00	------	Line Not Found	------
	93.35	261	5.60	6.479E+00	5.062E+00	5.062E+00	41.43
	143.76	59	10.96*	7.731E+00	4.924E-01	4.924E-01	84.04
	163.33	------	5.08	7.469E+00	------	Line Not Found	------
	185.72	479	57.20	7.080E+00	8.330E-01	8.330E-01	17.67
	205.31	------	5.01	6.744E+00	------	Line Not Found	------
NP-237	94.65	------	10.56	6.649E+00	------	Line Not Found	------
	98.43	45	16.90	6.934E+00	2.708E-01	2.708E-01	104.10
	300.13	113	6.63	5.474E+00	2.203E+00	2.203E+00	50.65
	311.90	20	38.50*	5.364E+00	6.846E-02	6.846E-02	204.46
	340.48	89	4.45	5.126E+00	2.750E+00	2.750E+00	71.75
U-238	63.29	48	3.70*	2.474E+00	3.693E+00	3.693E+00	159.09
	92.59	261	4.23	6.479E+00	6.702E+00	6.702E+00	41.43
AM-243	43.53	------	5.90	2.160E-01	------	Line Not Found	------
	74.66	259	67.20*	4.342E+00	6.261E-01	6.261E-01	38.41
ANH-511	511.00	66	100.00*	4.054E+00	1.141E-01	1.141E-01	94.20

Flag: "*" = Keyline

Sample ID : G674299021 Acquisition date : 31-JUL-2024 14:30:48

Total number of lines in spectrum	56	
Number of unidentified lines	18	
Number of lines tentatively identified by NID	38	67.86%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.727E+00	2.727E+00	1.001E+00	36.70	
CD-109	461.40D	1.05	2.843E+00	2.997E+00	2.179E+00	72.72	
SN-126	2.30E+05Y	1.00	2.843E-01	2.843E-01	2.067E-01	72.72	
CE-141	32.51D	2.12	1.118E-01	2.366E-01	1.988E-01	84.04	
TL-208	1.41E+10Y	1.00	1.884E-01	1.884E-01	1.115E-01	59.20	
BI-211	7.04E+08Y	1.00	1.591E+01	1.591E+01	0.106E+01	6.66	
BI-212	1.41E+10Y	1.00	1.150E+00	1.150E+00	1.456E+00	126.65	
PB-212	1.41E+10Y	1.00	1.089E+00	1.089E+00	0.171E+00	15.68	
BI-213	7340.00Y	1.00	2.939E-01	2.939E-01	2.485E-01	84.55	
BI-214	1600.00Y	1.00	4.342E+00	4.342E+00	0.314E+00	7.23	
PB-214	1600.00Y	1.00	5.773E+00	5.773E+00	0.385E+00	6.66	
RN-222	1600.00Y	1.00	4.342E+00	4.342E+00	0.314E+00	7.23	
RA-224	1.41E+10Y	1.00	1.168E+01	1.168E+01	0.205E+01	17.56	
RA-226	1600.00Y	1.00	5.773E+00	5.773E+00	0.385E+00	6.66	
AC-228	1.41E+10Y	1.00	8.868E-01	8.868E-01	3.488E-01	39.33	
RA-228	1.41E+10Y	1.00	8.868E-01	8.868E-01	3.488E-01	39.33	
TH-228	1.41E+10Y	1.00	1.089E+00	1.089E+00	0.171E+00	15.68	
TH-230	7.54E+04Y	1.00	5.773E+00	5.773E+00	0.384E+00	6.66	
PA-231	7.04E+08Y	1.00	2.730E+00	2.730E+00	1.383E+00	50.65	
TH-232	1.41E+10Y	1.00	8.868E-01	8.868E-01	3.488E-01	39.33	
PA-233	2.14E+06Y	1.00	6.846E-02	6.846E-02	14.00E-02	204.46	
TH-234	4.47E+09Y	1.00	3.693E+00	3.693E+00	5.876E+00	159.09	
U-234	2.45E+05Y	1.00	5.773E+00	5.773E+00	0.384E+00	6.66	
U-235	7.04E+08Y	1.00	4.924E-01	4.924E-01	4.138E-01	84.04	
NP-237	2.14E+06Y	1.00	6.846E-02	6.846E-02	14.00E-02	204.46	
U-238	4.47E+09Y	1.00	3.693E+00	3.693E+00	5.876E+00	159.09	
AM-243	7370.00Y	1.00	6.261E-01	6.261E-01	2.405E-01	38.41	
ANH-511	1.00E+09Y	1.00	1.141E-01	1.141E-01	1.075E-01	94.20	
		Total Activity :	8.328E+01	8.356E+01			

Grand Total Activity : 8.328E+01 8.356E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299021 Acquisition date : 31-JUL-2024 14:30:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	57.13	54	252	0.72	114.77	112	6	1.46E-02	98.1	1.53E+00	T
0	83.68	62	273	1.71	167.87	166	6	1.69E-02	89.1	5.55E+00	T
0	190.61	33	181	0.95	381.70	379	8	9.36E-03	****	7.00E+00	
0	270.54	47	153	1.81	541.54	538	8	1.33E-02	94.6	5.81E+00	T
0	410.27	55	53	2.09	820.97	817	9	1.57E-02	54.4	4.61E+00	T
0	527.43	42	60	4.72	1055.29	1048	13	1.20E-02	80.7	3.98E+00	T
1	534.29	28	46	1.95	1069.00	1061	30	8.12E-03	****	3.94E+00	
1	537.29	26	41	1.95	1075.00	1061	30	7.52E-03	****	3.93E+00	T
0	666.38	54	40	1.78	1333.18	1327	15	1.56E-02	56.7	3.41E+00	T
0	736.73	30	55	4.85	1473.88	1466	20	8.72E-03	****	3.17E+00	T
0	768.49	108	59	1.92	1537.40	1530	13	3.15E-02	34.5	3.07E+00	
0	786.08	41	23	1.31	1572.58	1567	11	1.19E-02	54.2	3.01E+00	
0	799.06	20	60	4.52	1598.54	1582	18	5.75E-03	****	2.98E+00	
0	934.32	71	20	2.05	1869.08	1864	11	2.07E-02	33.5	2.62E+00	T
0	953.33	13	17	0.92	1907.11	1900	12	3.89E-03	****	2.58E+00	T
0	1017.68	12	18	2.26	2035.81	2030	10	3.50E-03	****	2.44E+00	
0	1109.20	15	10	1.36	2218.86	2215	9	4.48E-03	89.7	2.27E+00	
0	1156.93	11	38	1.11	2314.35	2306	12	3.17E-03	****	2.19E+00	
0	1237.95	101	28	2.12	2476.42	2465	20	2.97E-02	31.7	2.07E+00	T
0	1295.24	9	24	2.46	2591.01	2579	14	2.78E-03	****	1.99E+00	
0	1377.21	109	12	2.45	2754.99	2743	25	3.23E-02	24.7	1.90E+00	
0	1407.13	29	54	6.71	2814.84	2795	29	8.61E-03	****	1.87E+00	T
1	1458.70	35	23	2.46	2918.00	2912	21	1.02E-02	70.9	1.82E+00	T
0	1509.76	53	16	1.41	3020.16	3007	23	1.57E-02	46.8	1.78E+00	
0	1534.74	6	15	3.54	3070.12	3059	14	1.93E-03	****	1.76E+00	
0	1609.84	5	14	0.73	3220.36	3210	12	1.50E-03	****	1.71E+00	
0	1662.25	16	12	2.80	3325.21	3316	15	4.74E-03	****	1.68E+00	
0	1715.59	8	3	4.44	3431.93	3424	13	2.49E-03	****	1.66E+00	
0	1730.20	43	10	3.05	3461.16	3453	14	1.28E-02	42.0	1.65E+00	
0	1804.06	14	0	4.72	3608.93	3603	13	4.17E-03	51.6	1.63E+00	
0	1847.88	42	0	2.45	3696.60	3691	14	1.25E-02	29.8	1.62E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 15:34:54.22

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299021.CNF;1  *
* Acquisition date : 31-JUL-2024 14:30:48 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:04.22     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:50:00 Nuclide Library : SOLID           *
* Sample ID        : G674299021           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0654E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.813E-01
CD-109	1.332E+00
SN-126	1.273E-01
TL-208	3.883E-02
BI-211	2.423E-01
BI-212	4.329E-01
PB-212	7.670E-02
BI-213	1.017E-01
BI-214	7.095E-02
PB-214	8.808E-02
RN-222	7.095E-02
RA-224	8.206E-01
RA-226	8.808E-02
AC-228	1.377E-01
RA-228	1.377E-01
TH-228	7.670E-02
TH-230	8.807E-02
PA-231	5.023E-01
TH-232	1.377E-01
PA-233	7.675E-02
TH-234	2.844E+00
U-234	8.807E-02
U-235	2.742E-01
NP-237	7.675E-02
U-238	2.844E+00
AM-243	9.498E-02
ANH-511	3.025E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.498E-01	NOT IDENT.
NA-22	4.047E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.692E-02	NOT IDENT.

SC-46	4.865E-02	FAIL ABUN
V-48	1.521E-01	NOT IDENT.
CR-51	8.232E-01	NOT IDENT.
MN-52	2.797E+00	FAIL ABUN
MN-54	4.238E-02	NOT IDENT.
CO-56	5.429E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.855E-02	NOT IDENT.
CO-58	5.023E-02	NOT IDENT.
FE-59	1.132E-01	NOT IDENT.
CO-60	3.935E-02	NOT IDENT.
ZN-65	9.177E-02	NOT IDENT.
GE-68	1.035E+00	NOT IDENT.
AS-73	3.721E+00	NOT IDENT.
AS-74	2.375E-01	NOT IDENT.
SE-75	6.539E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.170E-01	NOT IDENT.
RB-83	9.712E-02	NOT IDENT.
RB-84	1.234E-01	NOT IDENT.
KR-85	9.250E+00	NOT IDENT.
SR-85	6.050E-02	NOT IDENT.
RB-86	1.353E+00	NOT IDENT.
Y-88	4.164E-02	NOT IDENT.
Y-91	2.475E+01	NOT IDENT.
NB-94	3.862E-02	NOT IDENT.
NB-95	7.114E-02	NOT IDENT.
NB-95M	2.066E-01	NOT IDENT.
ZR-95	8.670E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.366E-02	NOT IDENT.
RH-102	4.924E-02	NOT IDENT.
RU-103	6.343E-02	FAIL ABUN
RH-106	3.229E-01	NOT IDENT.
RU-106	3.229E-01	NOT IDENT.
AG-108M	3.456E-02	NOT IDENT.
AG-110	7.714E-01	NOT IDENT.
AG-110M	5.691E-02	NOT IDENT.
SN-113	6.112E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.106E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	4.543E-02	NOT IDENT.
SB-124	8.988E-02	NOT IDENT.
SB-125	1.082E-01	NOT IDENT.
TE-125M	1.784E+01	NOT IDENT.
I-126	8.245E-01	FAIL ABUN
SB-126	4.117E-01	FAIL ABUN
SB-127	4.693E+01	NOT IDENT.
I-131	7.958E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.434E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.669E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.203E-01	NOT IDENT.
BA-137M	3.322E-02	NOT IDENT.
CS-137	3.510E-02	NOT IDENT.
LA-138	5.120E-02	NOT IDENT.
CE-139	4.533E-02	NOT IDENT.
BA-140	8.621E-01	FAIL ABUN
LA-140	2.772E-01	NOT IDENT.
CE-141	1.298E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	3.015E-01	NOT IDENT.
PM-144	3.080E-02	NOT IDENT.
PR-144	2.329E+00	NOT IDENT.
PM-146	4.905E-02	FAIL ABUN
ND-147	2.104E+00	FAIL ABUN
PM-147	1.055E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.489E-02	FAIL ABUN
EU-152	1.167E-01	FAIL ABUN
GD-153	1.263E-01	FAIL ABUN

EU-154	1.130E-01	NOT IDENT.
EU-155	1.521E-01	FAIL ABUN
TB-160	1.658E-01	FAIL ABUN
HO-166M	6.360E-02	FAIL ABUN
TM-171	6.924E+01	NOT IDENT.
HF-172	2.678E-01	FAIL ABUN
LU-172	6.019E-02	FAIL ABUN
LU-176	2.981E-02	FAIL ABUN
HF-181	6.958E-02	FAIL ABUN
TA-182	1.706E-01	FAIL ABUN
RE-183	6.967E-01	FAIL ABUN
RE-184	1.890E-01	NOT IDENT.
W-188	1.064E+01	FAIL ABUN
IR-192	5.070E-02	FAIL ABUN
HG-203	6.684E-02	NOT IDENT.
TL-204	9.582E+00	FAIL ABUN
BI-207	4.366E-02	FAIL ABUN
BI-210	2.089E+01	NOT IDENT.
PB-210	2.089E+01	NOT IDENT.
PB-211	8.470E-01	NOT IDENT.
RN-219	4.810E-01	FAIL ABUN
RA-223	8.888E-01	FAIL ABUN
AC-225	3.079E+00	NOT IDENT.
AC-227	3.526E-01	FAIL ABUN
TH-227	3.526E-01	FAIL ABUN
TH-229	6.748E-01	FAIL ABUN
TH-231	8.888E-01	FAIL ABUN
PA-234	3.166E-01	FAIL ABUN
PA-234M	5.280E+00	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	3.567E-01	FAIL ABUN
PU-239	4.940E+02	NOT IDENT.
AM-241	3.881E-01	NOT IDENT.
CM-243	1.399E-01	FAIL ABUN
BK-247	1.027E-01	FAIL ABUN
CM-247	4.440E-02	NOT IDENT.
CF-249	5.103E-02	NOT IDENT.
CF-251	1.903E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 15:34:58.35

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299021.CNF;1  *
* Acquisition date : 31-JUL-2024 14:30:48 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:04.22     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:50:00 Nuclide Library : SOLID           *
* Sample ID        : G674299021           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0654E+02 GRAM *
*                                         Quantity Err(%) : 1.8772E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.727E+00	1.017E+00	1.017E+00
CD-109	2.997E+00	2.175E+00	2.175E+00
SN-126	2.843E-01	2.058E-01	2.058E-01
TL-208	1.884E-01	1.108E-01	1.108E-01
BI-211	1.591E+01	1.820E+00	1.820E+00
BI-212	1.150E+00	1.433E+00	1.433E+00
PB-212	1.089E+00	2.096E-01	2.096E-01
BI-213	2.939E-01	2.449E-01	2.449E-01
BI-214	4.342E+00	5.347E-01	5.347E-01
PB-214	5.773E+00	6.537E-01	6.537E-01
RN-222	4.342E+00	5.347E-01	5.347E-01
RA-224	1.168E+01	2.421E+00	2.421E+00
RA-226	5.773E+00	6.537E-01	6.537E-01
AC-228	8.868E-01	3.578E-01	3.578E-01
RA-228	8.868E-01	3.578E-01	3.578E-01
TH-228	1.089E+00	2.096E-01	2.096E-01
TH-230	5.773E+00	6.537E-01	6.537E-01
PA-231	2.730E+00	1.496E+00	1.496E+00
TH-232	8.868E-01	3.578E-01	3.578E-01
PA-233	6.846E-02	1.374E-01	1.374E-01
TH-234	3.693E+00	5.829E+00	5.829E+00
U-234	5.773E+00	6.537E-01	6.537E-01
U-235	4.924E-01	4.085E-01	4.085E-01
NP-237	6.846E-02	1.374E-01	1.374E-01
U-238	3.693E+00	5.829E+00	5.829E+00
AM-243	6.261E-01	2.475E-01	2.475E-01
ANH-511	1.141E-01	1.059E-01	1.059E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-7.138E-01	5.924E-01	6.742E-01	NOT IDENT.
NA-22	1.400E-02	4.596E-02	4.640E-02	NOT IDENT.
NA-24	7.072E+14	4.592E+15	4.603E+15	SHORT HLIF

AL-26	-6.345E-03	4.017E-02	4.027E-02	NOT IDENT.
SC-46	1.872E-02	5.718E-02	5.780E-02	FAIL ABUN
V-48	-4.059E-02	1.931E-01	1.939E-01	NOT IDENT.
CR-51	2.786E-02	9.492E-01	9.493E-01	NOT IDENT.
MN-52	2.007E-01	3.303E+00	3.304E+00	FAIL ABUN
MN-54	9.352E-04	5.148E-02	5.148E-02	NOT IDENT.
CO-56	7.706E-02	5.804E-02	6.764E-02	FAIL ABUN
MN-56	1.000E+41	7.488E+40	0.000E+00	SHORT HLIF
CO-57	-1.088E-03	4.598E-02	4.598E-02	NOT IDENT.
CO-58	-1.388E-02	6.260E-02	6.291E-02	NOT IDENT.
FE-59	1.976E-02	1.302E-01	1.305E-01	NOT IDENT.
CO-60	-1.591E-02	4.898E-02	4.950E-02	NOT IDENT.
ZN-65	1.051E-01	1.169E-01	1.262E-01	NOT IDENT.
GE-68	2.496E-01	1.174E+00	1.179E+00	NOT IDENT.
AS-73	5.161E+00	4.711E+00	5.254E+00	NOT IDENT.
AS-74	1.654E-01	2.692E-01	2.793E-01	NOT IDENT.
SE-75	4.337E-02	7.759E-02	8.001E-02	NOT IDENT.
BR-77	5.863E+04	6.056E+04	6.608E+04	SHORT HLIF
SR-82	2.371E-02	7.449E-01	7.450E-01	NOT IDENT.
RB-83	6.209E-02	1.178E-01	1.211E-01	NOT IDENT.
RB-84	7.405E-02	1.427E-01	1.466E-01	NOT IDENT.
KR-85	1.645E+01	9.862E+00	1.234E+01	NOT IDENT.
SR-85	1.074E-01	6.451E-02	8.066E-02	NOT IDENT.
RB-86	6.234E-01	1.493E+00	1.519E+00	NOT IDENT.
Y-88	1.431E-03	5.027E-02	5.027E-02	NOT IDENT.
Y-91	4.238E+00	2.867E+01	2.874E+01	NOT IDENT.
NB-94	1.091E-02	4.550E-02	4.576E-02	NOT IDENT.
NB-95	1.444E-01	8.255E-02	1.051E-01	NOT IDENT.
NB-95M	2.165E-01	2.689E-01	2.861E-01	NOT IDENT.
ZR-95	2.997E-02	1.013E-01	1.022E-01	NOT IDENT.
NB-97	-1.000E+41	1.382E+41	0.000E+00	SHORT HLIF
ZR-97	7.298E+14	9.812E+14	1.035E+15	SHORT HLIF
MO-99	-1.034E+02	2.563E+03	2.563E+03	SHORT HLIF
TC-99M	2.658E+40	7.855E+40	0.000E+00	SHORT HLIF
RH-101	-3.172E-02	5.403E-02	5.589E-02	NOT IDENT.
RH-102	-1.097E-02	6.021E-02	6.042E-02	NOT IDENT.
RU-103	1.805E-02	7.332E-02	7.377E-02	FAIL ABUN
RH-106	5.888E-02	3.797E-01	3.806E-01	NOT IDENT.
RU-106	5.888E-02	3.797E-01	3.806E-01	NOT IDENT.
AG-108M	-1.516E-02	4.510E-02	4.561E-02	NOT IDENT.
AG-110	-3.029E-01	9.572E-01	9.669E-01	NOT IDENT.
AG-110M	-1.886E-02	7.173E-02	7.223E-02	NOT IDENT.
SN-113	1.383E-02	7.031E-02	7.058E-02	NOT IDENT.
CD-115	1.530E+04	1.220E+04	1.401E+04	SHORT HLIF
SN-117M	-2.300E-01	2.664E-01	2.859E-01	NOT IDENT.
SB-122	-3.698E+02	4.312E+02	4.623E+02	SHORT HLIF
TE-123M	-5.088E-02	5.748E-02	6.189E-02	NOT IDENT.
SB-124	-3.560E-02	1.168E-01	1.179E-01	NOT IDENT.
SB-125	-1.262E-01	1.365E-01	1.478E-01	NOT IDENT.
TE-125M	-6.701E+00	2.150E+01	2.172E+01	NOT IDENT.
I-126	2.227E+00	1.264E+00	1.614E+00	FAIL ABUN
SB-126	-1.411E-01	5.904E-01	5.939E-01	FAIL ABUN
SB-127	2.400E+01	5.385E+01	5.493E+01	NOT IDENT.
I-131	-2.914E-01	9.449E-01	9.540E-01	NOT IDENT.
I-132	1.000E+41	2.241E+41	0.000E+00	SHORT HLIF
TE-132	-7.363E+00	9.193E+01	9.199E+01	SHORT HLIF
BA-133	-8.685E-02	6.761E-02	7.813E-02	NOT IDENT.
I-133	8.785E+10	9.517E+10	1.031E+11	SHORT HLIF
CS-134	6.346E-02	5.023E-02	5.780E-02	NOT IDENT.
I-135	2.753E+37	6.652E+37	0.000E+00	SHORT HLIF
CS-136	1.696E-01	3.558E-01	3.639E-01	NOT IDENT.
BA-137M	3.263E-03	4.497E-02	4.500E-02	NOT IDENT.
CS-137	3.447E-03	4.751E-02	4.754E-02	NOT IDENT.
LA-138	-1.663E-03	6.139E-02	6.140E-02	NOT IDENT.
CE-139	-2.873E-02	5.652E-02	5.799E-02	NOT IDENT.
BA-140	1.299E+00	1.414E+00	1.530E+00	FAIL ABUN
LA-140	-1.479E-03	3.335E-01	3.335E-01	NOT IDENT.
CE-141	2.366E-01	1.962E-01	2.233E-01	FAIL ABUN
CE-143	4.888E+07	8.901E+06	2.377E+07	SHORT HLIF
CE-144	3.151E-01	3.456E-01	3.737E-01	NOT IDENT.
PM-144	-5.089E-02	4.319E-02	4.891E-02	NOT IDENT.
PR-144	-3.849E+00	3.266E+00	3.699E+00	NOT IDENT.
PM-146	1.901E-02	5.613E-02	5.678E-02	FAIL ABUN
ND-147	2.161E+00	3.377E+00	3.515E+00	FAIL ABUN
PM-147	-2.104E+02	1.267E+03	1.270E+03	NOT IDENT.
PM-149	2.987E+04	8.277E+04	8.386E+04	SHORT HLIF
EU-150	2.332E-02	4.375E-02	4.500E-02	FAIL ABUN
EU-152	-8.562E-02	1.613E-01	1.659E-01	FAIL ABUN

GD-153	1.746E-01	1.791E-01	1.956E-01	FAIL ABUN
EU-154	3.724E-02	1.286E-01	1.297E-01	NOT IDENT.
EU-155	1.198E-01	1.746E-01	1.827E-01	FAIL ABUN
TB-160	-3.463E-02	2.068E-01	2.074E-01	FAIL ABUN
HO-166M	6.712E-02	6.972E-02	7.600E-02	FAIL ABUN
TM-171	-3.449E+01	8.178E+01	8.325E+01	NOT IDENT.
HF-172	-2.148E-01	3.351E-01	3.488E-01	FAIL ABUN
LU-172	4.605E-02	6.474E-02	6.799E-02	FAIL ABUN
LU-176	-1.448E-02	5.581E-02	5.619E-02	FAIL ABUN
HF-181	2.910E-02	7.960E-02	8.067E-02	FAIL ABUN
TA-182	-3.983E-02	2.068E-01	2.076E-01	FAIL ABUN
RE-183	1.027E+00	9.992E-01	1.101E+00	FAIL ABUN
RE-184	1.462E-01	2.197E-01	2.294E-01	NOT IDENT.
W-188	-1.393E+01	1.628E+01	1.745E+01	FAIL ABUN
IR-192	-3.712E-02	6.595E-02	6.804E-02	FAIL ABUN
HG-203	-2.998E-02	8.455E-02	8.562E-02	NOT IDENT.
TL-204	3.813E+00	1.232E+01	1.244E+01	FAIL ABUN
BI-207	-1.054E-02	5.250E-02	5.271E-02	FAIL ABUN
BI-210	-1.263E+01	2.461E+01	2.526E+01	NOT IDENT.
PB-210	-1.263E+01	2.461E+01	2.526E+01	NOT IDENT.
PB-211	-1.167E-01	1.076E+00	1.077E+00	NOT IDENT.
RN-219	8.940E-02	5.553E-01	5.568E-01	FAIL ABUN
RA-223	5.079E-01	9.999E-01	1.026E+00	FAIL ABUN
AC-225	-1.547E+00	3.855E+00	3.918E+00	NOT IDENT.
AC-227	-1.923E-01	4.462E-01	4.545E-01	FAIL ABUN
TH-227	-1.923E-01	4.462E-01	4.545E-01	FAIL ABUN
TH-229	-6.760E-01	9.744E-01	1.021E+00	FAIL ABUN
TH-231	5.079E-01	9.999E-01	1.026E+00	FAIL ABUN
PA-234	2.920E-01	5.024E-01	5.194E-01	FAIL ABUN
PA-234M	2.304E+00	6.164E+00	6.251E+00	NOT IDENT.
NP-238	2.383E+03	1.551E+04	1.555E+04	SHORT HLIF
NP-239	-2.709E-01	4.393E-01	4.560E-01	FAIL ABUN
PU-239	4.950E+02	5.667E+02	6.091E+02	NOT IDENT.
AM-241	1.236E-01	6.242E-01	6.267E-01	NOT IDENT.
CM-243	-2.110E-01	1.882E-01	2.109E-01	FAIL ABUN
BK-247	-6.098E-03	1.268E-01	1.268E-01	FAIL ABUN
CM-247	1.025E-02	5.114E-02	5.135E-02	NOT IDENT.
CF-249	1.189E-02	5.869E-02	5.894E-02	NOT IDENT.
CF-251	-6.370E-03	2.303E-01	2.303E-01	NOT IDENT.

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*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	459.5634	85.43	275.6283	131.20	225.1741
45.60	441.7194	86.55	276.0072	133.02	197.4953
46.54	460.1940	86.79	276.0881	133.52	174.7095
49.72	0.0000	86.94	276.1392	136.00	231.3990
51.35	355.7708	87.09	288.0679	136.47	245.0546
51.87	359.8465	87.57	291.2082	140.51	0.0000
52.39	327.1569	88.03	291.3712	143.76	198.3977
52.97	306.8963	88.34	291.4803	144.24	178.0040
53.44	260.6655	88.47	291.5252	145.44	197.1169
54.07	311.9842	89.96	292.0471	152.43	191.4490
57.36	0.0000	1093.63	186.9023	153.25	193.7022
57.53	250.9637	91.11	187.0065	323.87	205.5132
57.98	245.4312	92.59	187.3335	156.02	219.6237
59.27	240.2010	93.35	187.4999	158.56	227.5383
59.32	240.2195	94.56	155.8040	159.00	239.3234
59.54	240.3003	94.65	155.8207	162.33	199.4560
60.96	277.1327	94.67	155.8239	162.66	199.5112
61.17	277.2205	94.87	155.8604	163.33	219.9039
62.93	248.2373	97.43	156.3182	165.86	207.5242
63.29	248.3697	98.43	156.4959	176.31	222.2111
63.58	248.4754	98.44	156.4975	176.60	224.4203
64.28	259.2942	99.53	183.8089	177.52	209.4661
66.73	274.6703	100.11	168.8528	181.07	0.0000
67.24	279.2104	102.03	173.7459	181.52	206.3266
125.81	290.9648	103.18	206.9440	184.41	175.8477
67.75	290.9939	103.37	206.9868	143.76	176.0240
68.89	249.4100	105.21	169.8038	193.51	186.8904
69.67	272.9092	105.31	169.8218	197.03	179.7053
70.82	261.7108	106.12	178.0652	198.01	169.9649
70.83	261.7149	106.47	178.1323	201.83	174.8347
72.81	279.9199	109.28	215.2133	203.43	194.8505
72.87	279.9434	111.00	195.2637	205.31	175.2697
74.66	276.7212	111.76	0.0000	210.85	152.7175
74.82	276.7789	114.06	211.1904	215.65	139.9043
74.97	276.8353	116.30	0.0000	218.12	162.3861
77.11	277.6196	116.74	196.4258	222.11	151.6746
78.74	278.2090	119.76	191.8945	227.09	172.3257
79.69	256.9721	121.12	195.2378	227.38	152.2128
80.03	247.2704	121.22	195.2572	228.16	0.0000
80.12	247.2999	121.78	200.5076	228.18	160.1331
80.19	247.3229	122.06	201.5917	116.74	160.1331
80.57	297.5197	122.92	199.7043	235.69	145.1709
81.00	297.6831	123.07	184.2906	235.96	157.0155
81.07	247.5998	265.00	190.5818	238.63	160.1053
81.75	247.8138	125.81	212.6575	238.98	0.0000
82.47	248.0394	127.23	211.9151	240.99	160.3495
83.79	304.6465	127.91	206.8827	242.00	160.4535
84.00	281.0586	129.30	182.2985	244.70	139.2233

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	148.9981	344.28	107.7667	563.25	72.9205
252.80	138.7964	345.93	86.2852	564.24	0.0000
254.15	0.0000	351.06	91.9146	569.33	65.1802
256.23	164.1738	351.93	91.9550	946.00	65.1843
260.90	0.0000	355.39	0.0000	569.70	63.2129
264.66	108.8677	356.01	106.9549	583.19	56.5703
264.80	107.7294	364.49	95.2460	584.27	56.5912
265.00	122.6434	366.42	0.0000	595.83	50.8381
269.46	106.8823	372.51	82.8673	427.87	59.9084
270.03	117.2651	375.05	63.8220	602.52	0.0000
271.23	174.2996	377.52	88.5427	604.72	54.3950
273.65	164.1800	356.01	98.8802	607.14	56.0410
276.40	153.4809	388.16	89.9056	609.32	51.0747
277.37	150.1062	388.63	82.5842	610.33	51.2938
277.60	150.1247	391.69	80.8645	614.28	46.5473
278.00	135.1432	264.66	73.8171	618.01	42.1859
279.20	137.5502	401.81	77.5490	620.36	51.2661
279.54	136.4207	402.40	77.5695	621.93	40.2307
279.70	136.4351	404.85	85.0526	630.19	0.0000
280.46	129.5547	410.95	74.1626	631.29	37.3297
283.69	111.2539	413.71	66.8287	633.25	40.3833
284.31	122.8860	414.70	72.8014	634.78	41.4142
285.41	129.9261	423.72	83.9067	635.95	32.3350
285.90	0.0000	427.09	90.5675	636.99	33.3575
287.50	133.5654	427.87	98.0690	657.50	49.8643
290.67	136.1334	433.94	81.1601	657.76	53.9381
293.27	0.0000	439.40	50.6884	657.90	0.0000
351.93	111.9863	440.45	50.7107	661.66	37.4985
295.96	113.4336	453.88	62.3332	664.57	0.0000
879.38	115.7034	463.37	70.1654	666.33	40.8215
299.98	80.0018	468.07	76.9522	666.50	40.8228
300.09	80.0073	473.00	78.0587	667.71	0.0000
300.13	80.0087	475.06	53.3536	677.62	33.7986
301.36	80.0630	476.78	79.1322	685.70	31.8316
302.85	80.1298	477.60	86.7885	692.65	0.0000
256.23	81.6092	482.18	57.3294	695.00	38.1021
304.85	87.9578	487.02	56.4828	696.49	55.6348
306.78	95.0949	492.35	0.0000	696.51	55.6348
308.46	93.4196	497.08	55.7477	697.00	50.4909
311.90	93.2411	505.52	58.6319	697.30	44.3123
316.51	112.1206	507.63	0.0000	697.49	44.3149
319.41	114.3631	511.00	56.0508	702.65	54.7080
320.08	117.9498	514.00	56.1149	706.68	57.8765
321.04	113.5742	514.00	56.1167	711.68	30.0178
323.87	113.7441	520.40	53.0201	720.70	41.5173
325.23	136.0578	520.69	0.0000	721.93	0.0000
328.76	101.5643	522.65	0.0000	722.78	41.5442
333.37	110.0239	527.90	0.0000	722.91	41.5454
333.97	94.3352	528.26	35.0200	723.31	39.8883
334.37	104.3618	529.59	35.0376	724.19	31.8636
338.28	94.9028	529.87	0.0000	727.33	31.8945
338.32	94.9044	531.02	35.0563	733.00	29.1707
311.90	83.1782	537.26	46.8516	735.93	41.7078
340.48	83.1782	546.56	0.0000	333.97	41.7273
340.55	83.1810	552.55	43.1903	739.50	0.0000

ENERGY	MDA COUNTS
744.23	55.1912
747.24	33.4785
748.06	31.3943
752.31	46.1014
753.82	29.3510
756.73	32.5231
756.80	32.5241
884.68	40.3711
765.81	40.3934
766.42	42.0837
766.84	44.1931
772.60	0.0000
776.52	43.2610
739.50	0.0000
778.90	39.0675
783.70	27.0680
788.74	25.4121
792.07	19.7838
795.86	27.5853
810.06	61.7825
810.29	56.4597
344.28	51.1348
810.76	44.7468
815.77	28.8062
1048.07	43.7765
832.01	51.4395
834.85	47.1904
835.71	50.4194
836.80	0.0000
846.75	0.0000
846.77	24.7470
856.80	39.9177
860.56	34.5586
871.09	36.8212
873.19	34.6738
875.33	0.0000
879.38	39.0718
880.51	41.2552
881.60	36.9229
883.24	34.7656
884.68	44.5597
889.28	31.5559
894.76	32.6907
898.04	39.2618
900.72	25.1015
903.28	24.9616
911.20	33.9233
912.08	33.9308
923.98	0.0000
926.50	20.8729
929.11	31.6591
935.54	24.6641
937.49	14.1004
944.13	26.4822
946.00	23.5508

ENERGY	MDA COUNTS
949.00	28.2820
667.71	0.0000
962.31	48.7695
964.08	30.1617
966.17	40.8272
911.20	63.9475
983.53	28.9675
984.45	0.0000
1274.44	26.8213
1001.03	32.4453
1002.74	41.4127
1004.73	44.7925
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	19.8623
1038.76	0.0000
631.29	18.0938
1048.07	27.1494
1049.04	32.5863
1050.41	32.5969
1063.66	24.5215
1077.00	15.4868
1077.34	16.3986
1085.87	17.3431
1093.63	17.3728
1099.45	24.7206
1112.07	9.1812
1112.84	9.1826
1115.54	18.3760
1120.29	25.7537
1120.55	25.7551
1221.41	26.0658
1129.67	23.0420
1131.51	0.0000
1147.95	0.0000
1173.23	23.2581
1177.95	27.9375
1189.05	25.2031
1204.77	28.0957
1221.41	25.3731
1231.02	25.1094
1235.36	18.8486
1238.28	18.8594
1260.41	0.0000
1271.87	20.8860
1274.44	19.9469
1274.54	19.9479
1291.59	19.0615
1298.22	0.0000
1312.11	14.3540
1332.49	25.9387
1362.66	0.0000
1365.19	21.2674
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	24.2554
1408.01	18.5148
1434.09	15.6664
1435.80	14.6917
1457.56	0.0000
1460.82	20.6616
1489.16	17.7996
1505.03	14.8748
1584.12	23.1202
1596.21	17.1237
1620.50	8.0910
1621.92	15.1743
1678.03	0.0000
1690.97	11.2535
1750.46	0.0000
1764.49	7.2451
1063.66	5.1794
1771.35	6.9072
1791.20	0.0000
1808.65	8.6837
1810.72	0.0000
1836.06	10.4639

VAX/VMS Nuclide Identification Report Generated 1-AUG-2024 08:30:20.30

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299022.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM01.CNF;859
                                        Background date  : 28-JUL-2024 11:21:41
Sample date      : 26-JUN-2024 10:55:00 Acquisition date : 31-JUL-2024 15:04:33
Sample ID        : G674299022           Sample quantity  : 9.38200E+01 GRAM
Detector name    : GAM01                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.29  0.0%
Energy tolerance : 2.00000 keV          Analyst Initials : MXR1
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2636543              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	35.38*	28	43	1.93	70.88	67	9	7.67E-03	51.2	
2	0	63.12*	16	85	0.85	126.34	123	8	4.46E-03	107.2	
3	3	74.94	103	93	1.12	149.97	146	16	2.87E-02	17.8	2.72E+00
4	3	77.31*	195	95	1.49	154.72	146	16	5.42E-02	12.5	
5	0	87.48	45	110	0.99	175.05	172	7	1.24E-02	41.9	
6	0	93.39*	59	143	1.19	186.88	182	10	1.64E-02	43.4	
7	0	144.45*	18	93	1.00	288.98	284	10	4.89E-03	107.8	
8	0	154.65	43	73	1.91	309.38	304	10	1.20E-02	40.4	
9	0	186.47*	60	59	1.24	373.00	369	11	1.67E-02	31.2	
10	3	238.87*	215	48	1.41	477.80	473	21	5.98E-02	9.0	7.49E-01
11	3	242.04	85	51	1.87	484.15	473	21	2.37E-02	22.6	
12	0	270.55	46	33	1.40	541.15	536	9	1.27E-02	25.5	
13	1	295.57*	152	43	1.59	591.19	585	32	4.22E-02	11.0	2.90E+00
14	1	300.48	21	29	1.45	601.00	585	32	5.81E-03	57.3	
15	1	306.12	22	27	1.60	612.29	585	32	6.23E-03	54.3	
16	0	338.89*	49	59	1.41	677.83	673	12	1.37E-02	35.0	
17	0	352.42*	198	53	1.23	704.88	699	13	5.50E-02	10.6	
18	0	402.17	3	27	0.60	804.37	798	8	8.80E-04	286.0	
19	0	441.33	13	26	4.33	882.69	876	13	3.61E-03	85.5	
20	0	511.75*	14	41	2.05	1023.53	1018	14	3.97E-03	114.3	
21	0	571.16	28	15	2.74	1142.36	1136	12	7.75E-03	33.6	
22	0	584.36*	73	17	1.29	1168.75	1163	11	2.03E-02	16.6	
23	0	610.35*	179	24	1.60	1220.74	1213	16	4.99E-02	9.8	
24	0	649.39	17	6	1.16	1298.82	1293	12	4.72E-03	37.7	
25	0	663.59	9	15	1.26	1327.22	1322	10	2.50E-03	87.1	
26	0	721.78	9	3	1.36	1443.61	1440	6	2.50E-03	45.1	
27	0	728.15*	13	24	0.99	1456.35	1447	16	3.48E-03	94.0	
28	0	807.27	14	11	2.82	1614.61	1609	9	3.93E-03	50.2	
29	0	825.31	13	3	1.08	1650.69	1647	10	3.59E-03	36.5	
30	0	843.98	8	11	5.39	1688.04	1679	13	2.30E-03	94.7	
31	0	883.05	7	4	0.48	1766.19	1761	7	2.02E-03	56.9	
32	0	912.65	50	11	1.84	1825.40	1819	14	1.39E-02	19.7	
33	0	968.95	51	16	5.68	1938.00	1926	21	1.42E-02	24.0	
34	0	1056.40	11	6	2.77	2112.94	2108	11	3.10E-03	50.7	

Sample ID : G674299022 Acquisition date : 31-JUL-2024 15:04:33

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1122.20	27	16	1.52	2244.57	2239	15	7.42E-03	37.3	
36	0	1255.13	6	3	0.46	2510.50	2506	6	1.67E-03	61.2	
37	0	1276.48	6	2	1.19	2553.21	2550	6	1.53E-03	55.3	
38	0	1379.78	11	3	0.81	2759.88	2752	11	2.98E-03	43.3	
39	0	1462.75	100	3	1.71	2925.88	2920	12	2.78E-02	10.6	
40	0	1767.11	33	0	1.38	3534.85	3528	13	9.17E-03	17.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 1-AUG-2024 08:30:21

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299022.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : MXR1
Sample date : 26-JUN-2024 10:55:00 Acquisition date : 31-JUL-2024 15:04:33
Sample ID : G674299022 Sample quantity : 93.820 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA1 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.29 0.0%
Energy tolerance : 2.00 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
NA-22	1274.54	99.94*	1.088E+00	3.767E-02	3.865E-02	110.60	OK
K-40	1460.82	10.66*	9.667E-01	7.220E+00	7.220E+00	21.18	OK
RB-84	881.60	68.90*	1.523E+00	5.171E-02	1.087E-01	113.80	OK
CD-109	88.03	3.70*	4.818E+00	1.892E+00	1.994E+00	83.80	OK
SN-126	64.28	9.60	2.388E+00	5.293E-01	5.293E-01	214.42	OK
	86.94	8.90	4.818E+00	7.864E-01	7.864E-01	83.80	OK
	87.57	37.00*	4.818E+00	1.892E-01	1.892E-01	83.80	OK
BA-137M	661.66	89.90*	1.969E+00	3.800E-02	3.808E-02	174.27	OK
CS-137	661.66	85.10*	1.969E+00	4.014E-02	4.023E-02	174.27	OK
CE-141	145.44	48.29*	5.915E+00	1.274E-02	2.698E-02	802.83	OK
TL-208	277.37	6.60	4.070E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	2.200E+00	2.917E-01	2.917E-01	33.24	OK
	860.56	12.50	1.559E+00	-----	Line Not Found	-----	Absent
BI-211	72.87	1.23	3.515E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	3.364E+00	3.416E+00	3.416E+00	21.23	OK
BI-212	727.33	6.67*	1.813E+00	7.729E-01	7.729E-01	188.01	OK
	1620.50	1.47	8.896E-01	-----	Line Not Found	-----	Absent
PB-212	74.82	10.28	3.732E+00	2.033E+00	2.033E+00	35.62	OK
	77.11	17.10	3.969E+00	2.168E+00	2.168E+00	24.91	OK
	238.63	43.60*	4.549E+00	8.154E-01	8.154E-01	17.95	OK
	300.09	3.30	3.824E+00	1.244E+00	1.244E+00	114.65	OK
BI-213	440.45	25.94*	2.794E+00	1.343E-01	1.343E-01	170.97	OK
BI-214	609.32	45.49*	2.118E+00	1.392E+00	1.392E+00	19.54	OK
	1120.29	14.92	1.223E+00	1.091E+00	1.091E+00	74.60	OK
	1764.49	15.30	8.350E-01	-----	Line Not Found	-----	Absent
PB-214	74.82	5.80	3.732E+00	3.603E+00	3.603E+00	35.62	OK
	77.11	9.70	3.969E+00	3.821E+00	3.822E+00	24.91	OK
	87.09	3.41	4.818E+00	2.052E+00	2.053E+00	83.80	OK
	242.00	7.25	4.506E+00	1.960E+00	1.961E+00	45.17	OK
	295.22	18.42	3.873E+00	1.598E+00	1.598E+00	21.94	OK
	351.93	35.60*	3.364E+00	1.240E+00	1.240E+00	21.23	OK
RN-219	271.23	10.80	4.148E+00	7.634E-01	7.634E-01	50.92	OK
	401.81	6.60*	3.018E+00	1.190E-01	1.190E-01	571.92	OK
RN-222	609.32	45.49*	2.118E+00	1.392E+00	1.392E+00	19.54	OK
	1120.29	14.92	1.223E+00	1.091E+00	1.091E+00	74.60	OK
	1764.49	15.30	8.350E-01	-----	Line Not Found	-----	Absent
RA-224	240.99	4.10*	4.506E+00	3.467E+00	3.467E+00	45.17	OK
RA-226	74.82	5.80	3.732E+00	3.603E+00	3.603E+00	35.62	OK
	77.11	9.70	3.969E+00	3.821E+00	3.822E+00	24.91	OK
	87.09	3.41	4.818E+00	2.052E+00	2.053E+00	83.80	OK
	242.00	7.25	4.506E+00	1.960E+00	1.961E+00	45.17	OK
	295.22	18.42	3.873E+00	1.598E+00	1.598E+00	21.94	OK
	351.93	35.60*	3.364E+00	1.240E+00	1.240E+00	21.23	OK
AC-228	105.21	1.10	5.682E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.473E+00	9.443E-01	9.443E-01	69.94	OK
	835.71	1.61	1.601E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.478E+00	9.819E-01	9.819E-01	39.41	OK
	968.97	15.80	1.399E+00	1.721E+00	1.721E+00	47.98	OK
RA-228	105.21	1.10	5.682E+00	-----	Line Not Found	-----	Absent

Sample ID : G674299022 Acquisition date : 31-JUL-2024 15:04:33

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	338.32	11.27	3.473E+00	9.443E-01	9.443E-01	69.94	OK
	835.71	1.61	1.601E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.478E+00	9.819E-01	9.819E-01	39.41	OK
	968.97	15.80	1.399E+00	1.721E+00	1.721E+00	47.98	OK
TH-228	74.82	10.28	3.732E+00	2.033E+00	2.033E+00	35.62	OK
	77.11	17.10	3.969E+00	2.168E+00	2.168E+00	24.91	OK
	238.63	43.60*	4.549E+00	8.154E-01	8.154E-01	17.95	OK
	300.09	3.30	3.824E+00	1.244E+00	1.244E+00	114.65	OK
TH-230	74.82	5.80	3.732E+00	3.603E+00	3.603E+00	35.62	OK
	77.11	9.70	3.969E+00	3.821E+00	3.821E+00	24.91	OK
	87.09	3.41	4.818E+00	2.052E+00	2.052E+00	83.80	OK
	242.00	7.25	4.506E+00	1.960E+00	1.960E+00	45.17	OK
	295.22	18.42	3.873E+00	1.598E+00	1.598E+00	21.94	OK
	351.93	35.60*	3.364E+00	1.240E+00	1.240E+00	21.23	OK
PA-231	283.69	1.70	3.999E+00	----- Line Not Found		-----	Absent
	301.36	5.35*	3.824E+00	7.673E-01	7.673E-01	114.65	OK
TH-232	105.21	1.10	5.682E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.473E+00	9.443E-01	9.443E-01	69.94	OK
	835.71	1.61	1.601E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.478E+00	9.819E-01	9.819E-01	39.41	OK
	968.97	15.80	1.399E+00	1.721E+00	1.721E+00	47.98	OK
TH-234	63.29	3.70*	2.388E+00	1.373E+00	1.373E+00	214.42	OK
	92.59	4.23	5.187E+00	2.034E+00	2.034E+00	86.82	OK
U-234	74.82	5.80	3.732E+00	3.603E+00	3.603E+00	35.62	OK
	77.11	9.70	3.969E+00	3.821E+00	3.821E+00	24.91	OK
	87.09	3.41	4.818E+00	2.052E+00	2.052E+00	83.80	OK
	242.00	7.25	4.506E+00	1.960E+00	1.960E+00	45.17	OK
	295.22	18.42	3.873E+00	1.598E+00	1.598E+00	21.94	OK
	351.93	35.60*	3.364E+00	1.240E+00	1.240E+00	21.23	OK
U-235	89.96	3.47	4.984E+00	----- Line Not Found		-----	Absent
	93.35	5.60	5.187E+00	1.537E+00	1.537E+00	86.82	OK
	143.76	10.96*	5.921E+00	----- Line Not Found		-----	<<INT Reject
	163.33	5.08	5.689E+00	----- Line Not Found		-----	Absent
	185.72	57.20	5.336E+00	1.484E-01	1.484E-01	62.46	OK
	205.31	5.01	5.040E+00	----- Line Not Found		-----	Absent
U-238	63.29	3.70*	2.388E+00	1.373E+00	1.373E+00	214.42	OK
	92.59	4.23	5.187E+00	2.034E+00	2.034E+00	86.82	OK
AM-243	43.53	5.90	3.984E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	3.732E+00	3.110E-01	3.110E-01	35.62	OK
CM-247	278.00	3.40	4.062E+00	----- Line Not Found		-----	Absent
	287.50	2.00	3.958E+00	----- Line Not Found		-----	Absent
	402.40	72.00*	3.018E+00	1.091E-02	1.091E-02	571.92	OK
ANH-511	511.00	100.00*	2.465E+00	4.342E-02	4.342E-02	228.60	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 08:30:22.77

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299022.CNF;1  *
* Acquisition date : 31-JUL-2024 15:04:33 Sensitivity     : 3.000           *
* Detector ID      : GAM01                Energy tolerance: 2.000           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.29     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:55:00 Analyst initials: MXR1            *
* Sample ID        : G674299022           Sample Quantity : 9.3820E+01 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  5-JUN-2024 05:42:50 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM01_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
NA-22	3.865E-02	4.189E-02	9.502E-02
K-40	7.220E+00	1.498E+00	1.219E+00
RB-84	1.087E-01	1.213E-01	2.267E-01
CD-109	1.994E+00	1.638E+00	2.343E+00
SN-126	1.892E-01	1.553E-01	2.118E-01
BA-137M	3.808E-02	6.504E-02	7.798E-02
CS-137	4.023E-02	6.871E-02	8.238E-02
CE-141	2.698E-02	2.122E-01	2.111E-01
TL-208	2.917E-01	9.502E-02	7.940E-02
BI-211	3.416E+00	7.107E-01	4.692E-01
BI-212	7.729E-01	1.424E+00	1.369E+00
PB-212	8.154E-01	1.434E-01	1.295E-01
BI-213	1.343E-01	2.250E-01	2.418E-01
BI-214	1.392E+00	2.666E-01	1.717E-01
PB-214	1.240E+00	2.579E-01	1.707E-01
RN-219	1.190E-01	6.672E-01	9.894E-01
RN-222	1.392E+00	2.666E-01	1.717E-01
RA-224	3.467E+00	1.535E+00	1.388E+00
RA-226	1.240E+00	2.579E-01	1.707E-01
AC-228	9.819E-01	3.792E-01	2.142E-01
RA-228	9.819E-01	3.792E-01	2.142E-01
TH-228	8.154E-01	1.434E-01	1.295E-01
TH-230	1.240E+00	2.579E-01	1.707E-01
PA-231	7.673E-01	8.620E-01	1.060E+00
TH-232	9.819E-01	3.792E-01	2.142E-01
TH-234	1.373E+00	2.886E+00	3.468E+00
U-234	1.240E+00	2.579E-01	1.707E-01
U-235	2.045E-01	4.321E-01	5.141E-01
U-238	1.373E+00	2.886E+00	3.468E+00
AM-243	3.110E-01	1.086E-01	1.339E-01
CM-247	1.091E-02	6.116E-02	9.604E-02
ANH-511	4.342E-02	9.728E-02	7.559E-02

---- Non-Identified Nuclides ----

	Key-Line Activity	K.L. Cnt Uncert	MDA

Nuclide	(pCi/GRAM)	(1.96-sigma)	(pCi/GRAM)	
BE-7	2.659E-01	5.593E-01	1.112E+00	NOT IDENT.
NA-24	0.000E+00	4.050E+15	0.000E+00	SHORT HLIF
AL-26	1.896E-02	3.890E-02	1.041E-01	NOT IDENT.
SC-46	2.654E-02	4.115E-02	1.015E-01	FAIL ABUN
V-48	-3.086E-02	2.248E-01	4.324E-01	NOT IDENT.
CR-51	2.179E-01	8.263E-01	1.566E+00	NOT IDENT.
MN-52	2.537E+00	3.954E+00	9.478E+00	NOT IDENT.
MN-54	-7.528E-03	4.333E-02	8.590E-02	NOT IDENT.
CO-56	-2.331E-02	6.148E-02	1.001E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	1.827E-02	3.452E-02	6.655E-02	NOT IDENT.
CO-58	2.754E-02	7.150E-02	1.317E-01	NOT IDENT.
FE-59	-1.463E-01	1.457E-01	2.289E-01	NOT IDENT.
CO-60	5.928E-03	4.429E-02	9.780E-02	NOT IDENT.
ZN-65	-6.046E-03	1.001E-01	1.985E-01	NOT IDENT.
GE-68	-2.123E+00	1.734E+00	2.560E+00	NOT IDENT.
AS-73	8.963E-01	1.711E+00	3.093E+00	NOT IDENT.
AS-74	-7.539E-02	2.789E-01	4.920E-01	NOT IDENT.
SE-75	-5.533E-03	6.500E-02	1.188E-01	FAIL ABUN
BR-77	0.000E+00	7.764E+03	0.000E+00	SHORT HLIF
SR-82	1.201E-01	7.766E-01	1.503E+00	NOT IDENT.
RB-83	-3.848E-03	1.121E-01	2.081E-01	NOT IDENT.
KR-85	1.495E+01	1.160E+01	2.398E+01	NOT IDENT.
SR-85	9.737E-02	7.584E-02	1.568E-01	NOT IDENT.
RB-86	-2.337E+00	2.030E+00	3.030E+00	NOT IDENT.
Y-88	-1.490E-02	5.684E-02	1.147E-01	NOT IDENT.
Y-91	3.359E+00	2.301E+01	5.133E+01	NOT IDENT.
NB-94	2.077E-02	5.371E-02	1.035E-01	NOT IDENT.
NB-95	-6.824E-02	6.897E-02	1.016E-01	NOT IDENT.
NB-95M	-6.310E-02	2.091E-01	3.316E-01	NOT IDENT.
ZR-95	1.631E-02	1.228E-01	2.353E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	7.761E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.506E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	5.950E+40	0.000E+00	SHORT HLIF
RH-101	-1.130E-02	4.137E-02	7.496E-02	NOT IDENT.
RH-102	-3.388E-02	7.892E-02	1.357E-01	NOT IDENT.
RU-103	-4.613E-04	6.983E-02	1.315E-01	FAIL ABUN
RH-106	2.484E-01	4.370E-01	8.944E-01	NOT IDENT.
RU-106	2.484E-01	4.370E-01	8.944E-01	NOT IDENT.
AG-108M	-5.277E-04	3.740E-02	6.984E-02	FAIL ABUN
AG-110	4.487E-01	9.822E-01	1.999E+00	NOT IDENT.
AG-110M	5.404E-02	6.027E-02	1.089E-01	FAIL ABUN
SN-113	5.327E-03	6.544E-02	1.228E-01	NOT IDENT.
CD-115	0.000E+00	6.842E+03	0.000E+00	SHORT HLIF
SN-117M	2.222E-01	2.008E-01	3.743E-01	FAIL ABUN
SB-122	0.000E+00	4.067E+02	0.000E+00	SHORT HLIF
TE-123M	2.382E-02	4.465E-02	7.827E-02	NOT IDENT.
SB-124	-4.870E-03	1.658E-01	3.481E-01	FAIL ABUN
SB-125	3.596E-02	1.377E-01	2.607E-01	NOT IDENT.
TE-125M	-4.702E+00	1.460E+01	2.659E+01	NOT IDENT.
I-126	1.058E+00	8.235E-01	1.814E+00	NOT IDENT.
SB-126	4.929E-01	4.361E-01	1.146E+00	FAIL ABUN
SB-127	-1.153E+01	7.337E+01	1.318E+02	NOT IDENT.
I-131	1.596E-01	8.172E-01	1.563E+00	NOT IDENT.
I-132	0.000E+00	1.561E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.891E+01	0.000E+00	SHORT HLIF
BA-133	-2.135E-02	4.985E-02	7.706E-02	NOT IDENT.
I-133	0.000E+00	6.126E+10	0.000E+00	SHORT HLIF
CS-134	4.419E-02	6.474E-02	1.321E-01	FAIL ABUN
I-135	0.000E+00	8.970E+37	0.000E+00	SHORT HLIF
CS-136	4.571E-02	3.277E-01	7.060E-01	FAIL ABUN
LA-138	5.658E-03	7.876E-02	1.669E-01	NOT IDENT.
CE-139	-1.567E-03	4.203E-02	7.720E-02	NOT IDENT.
BA-140	7.354E-01	1.009E+00	2.112E+00	FAIL ABUN
LA-140	-7.298E-02	4.163E-01	8.188E-01	NOT IDENT.
CE-143	0.000E+00	4.599E+06	0.000E+00	SHORT HLIF
CE-144	-2.016E-01	2.642E-01	4.596E-01	NOT IDENT.
PM-144	-8.958E-03	5.025E-02	9.020E-02	NOT IDENT.
PR-144	-6.500E-01	3.805E+00	6.838E+00	NOT IDENT.
PM-146	-2.219E-03	5.928E-02	1.091E-01	NOT IDENT.
ND-147	1.885E+00	2.017E+00	4.593E+00	NOT IDENT.
PM-147	-2.870E+02	9.764E+02	1.771E+03	NOT IDENT.
PM-149	0.000E+00	6.941E+04	0.000E+00	SHORT HLIF
EU-150	2.062E-02	4.016E-02	7.121E-02	FAIL ABUN
EU-152	-3.373E-02	1.517E-01	2.411E-01	NOT IDENT.

GD-153	-7.522E-02	1.254E-01	1.979E-01	NOT IDENT.
EU-154	4.443E-02	1.549E-01	3.095E-01	FAIL ABUN
EU-155	-3.474E-02	1.390E-01	2.518E-01	FAIL ABUN
TB-160	-6.688E-02	2.379E-01	3.946E-01	FAIL ABUN
HO-166M	6.217E-02	8.852E-02	1.821E-01	NOT IDENT.
TM-171	-2.756E+00	3.144E+01	5.355E+01	NOT IDENT.
HF-172	-1.251E-01	2.529E-01	4.505E-01	FAIL ABUN
LU-172	2.578E-02	8.607E-02	1.859E-01	FAIL ABUN
LU-176	4.772E-02	5.083E-02	6.671E-02	FAIL ABUN
HF-181	2.852E-02	9.172E-02	1.755E-01	NOT IDENT.
TA-182	-2.450E-02	2.060E-01	4.201E-01	FAIL ABUN
RE-183	2.630E-01	3.799E-01	6.969E-01	NOT IDENT.
RE-184	-1.624E-01	2.327E-01	4.098E-01	NOT IDENT.
W-188	4.480E+00	1.176E+01	2.069E+01	FAIL ABUN
IR-192	-3.148E-02	5.690E-02	9.826E-02	FAIL ABUN
HG-203	5.227E-02	6.916E-02	1.361E-01	NOT IDENT.
TL-204	-8.941E-01	8.224E+00	1.261E+01	NOT IDENT.
BI-207	1.321E-02	4.324E-02	1.029E-01	FAIL ABUN
BI-210	8.239E+00	6.946E+00	1.313E+01	NOT IDENT.
PB-210	8.239E+00	6.946E+00	1.313E+01	NOT IDENT.
PB-211	2.518E-01	1.012E+00	1.757E+00	NOT IDENT.
RA-223	-1.016E-01	7.895E-01	1.443E+00	FAIL ABUN
AC-225	2.529E+00	2.892E+00	5.757E+00	NOT IDENT.
AC-227	-1.868E-01	3.301E-01	5.731E-01	FAIL ABUN
TH-227	-1.868E-01	3.301E-01	5.731E-01	FAIL ABUN
TH-229	-5.242E-01	6.274E-01	1.070E+00	FAIL ABUN
TH-231	-1.016E-01	7.895E-01	1.443E+00	FAIL ABUN
PA-233	3.528E-02	7.640E-02	1.505E-01	FAIL ABUN
PA-234	1.817E-01	4.023E-01	8.689E-01	FAIL ABUN
PA-234M	-6.266E+00	6.547E+00	1.138E+01	NOT IDENT.
NP-237	3.528E-02	7.640E-02	1.505E-01	FAIL ABUN
NP-238	0.000E+00	2.112E+04	0.000E+00	SHORT HLIF
NP-239	1.391E-01	3.555E-01	6.770E-01	NOT IDENT.
PU-239	3.553E+02	4.590E+02	8.911E+02	NOT IDENT.
AM-241	-6.479E-02	2.667E-01	4.064E-01	NOT IDENT.
CM-243	-1.831E-02	1.366E-01	2.500E-01	NOT IDENT.
BK-247	1.525E-02	1.041E-01	1.873E-01	NOT IDENT.
CF-249	1.652E-02	4.628E-02	9.142E-02	NOT IDENT.
CF-251	-1.724E-02	1.653E-01	3.017E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 1-AUG-2024 08:30:21.12

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
NA-22	1274.54	5	99.94*	1.088E+00	3.767E-02	3.865E-02	110.60
K-40	1460.82	93	10.66*	9.667E-01	7.220E+00	7.220E+00	21.18
RB-84	881.60	7	68.90*	1.523E+00	5.171E-02	1.087E-01	113.80
CD-109	88.03	42	3.70*	4.818E+00	1.892E+00	1.994E+00	83.80
SN-126	64.28	15	9.60	2.388E+00	5.293E-01	5.293E-01	214.42
	86.94	42	8.90	4.818E+00	7.864E-01	7.864E-01	83.80
	87.57	42	37.00*	4.818E+00	1.892E-01	1.892E-01	83.80
BA-137M	661.66	8	89.90*	1.969E+00	3.800E-02	3.808E-02	174.27
CS-137	661.66	8	85.10*	1.969E+00	4.014E-02	4.023E-02	174.27
CE-141	145.44	17	48.29*	5.915E+00	4.642E-02	9.830E-02	215.61
TL-208	277.37	------	6.60	4.070E+00	------	Line Not Found	------
	583.19	68	85.00*	2.200E+00	2.917E-01	2.917E-01	33.24
	860.56	------	12.50	1.559E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.515E+00	------	Line Not Found	------
	351.06	186	12.92*	3.364E+00	3.416E+00	3.416E+00	21.23
BI-212	727.33	12	6.67*	1.813E+00	7.729E-01	7.729E-01	188.01
	1620.50	------	1.47	8.896E-01	------	Line Not Found	------
PB-212	74.82	97	10.28	3.732E+00	2.033E+00	2.033E+00	35.62
	77.11	184	17.10	3.969E+00	2.168E+00	2.168E+00	24.91
	238.63	202	43.60*	4.549E+00	8.154E-01	8.154E-01	17.95
	300.09	20	3.30	3.824E+00	1.244E+00	1.244E+00	114.65
BI-213	440.45	12	25.94*	2.794E+00	1.343E-01	1.343E-01	170.97
BI-214	609.32	168	45.49*	2.118E+00	1.392E+00	1.392E+00	19.54
	1120.29	25	14.92	1.223E+00	1.091E+00	1.091E+00	74.60
	1764.49	------	15.30	8.350E-01	------	Line Not Found	------
PB-214	74.82	97	5.80	3.732E+00	3.603E+00	3.603E+00	35.62
	77.11	184	9.70	3.969E+00	3.821E+00	3.822E+00	24.91
	87.09	42	3.41	4.818E+00	2.052E+00	2.053E+00	83.80
	242.00	80	7.25	4.506E+00	1.960E+00	1.961E+00	45.17
	295.22	143	18.42	3.873E+00	1.598E+00	1.598E+00	21.94
	351.93	186	35.60*	3.364E+00	1.240E+00	1.240E+00	21.23
RN-219	271.23	43	10.80	4.148E+00	7.634E-01	7.634E-01	50.92
	401.81	3	6.60*	3.018E+00	1.190E-01	1.190E-01	571.92
RN-222	609.32	168	45.49*	2.118E+00	1.392E+00	1.392E+00	19.54
	1120.29	25	14.92	1.223E+00	1.091E+00	1.091E+00	74.60
	1764.49	------	15.30	8.350E-01	------	Line Not Found	------
RA-224	240.99	80	4.10*	4.506E+00	3.467E+00	3.467E+00	45.17
RA-226	74.82	97	5.80	3.732E+00	3.603E+00	3.603E+00	35.62
	77.11	184	9.70	3.969E+00	3.821E+00	3.822E+00	24.91
	87.09	42	3.41	4.818E+00	2.052E+00	2.053E+00	83.80
	242.00	80	7.25	4.506E+00	1.960E+00	1.961E+00	45.17
	295.22	143	18.42	3.873E+00	1.598E+00	1.598E+00	21.94
	351.93	186	35.60*	3.364E+00	1.240E+00	1.240E+00	21.23
AC-228	105.21	------	1.10	5.682E+00	------	Line Not Found	------
	338.32	46	11.27	3.473E+00	9.443E-01	9.443E-01	69.94
	835.71	------	1.61	1.601E+00	------	Line Not Found	------
	911.20	47	25.80*	1.478E+00	9.819E-01	9.819E-01	39.41

Sample ID : G674299022 Acquisition date : 31-JUL-2024 15:04:33

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	968.97	48	15.80	1.399E+00	1.721E+00	1.721E+00	47.98
RA-228	105.21	------	1.10	5.682E+00	------	Line Not Found	------
	338.32	46	11.27	3.473E+00	9.443E-01	9.443E-01	69.94
	835.71	------	1.61	1.601E+00	------	Line Not Found	------
	911.20	47	25.80*	1.478E+00	9.819E-01	9.819E-01	39.41
	968.97	48	15.80	1.399E+00	1.721E+00	1.721E+00	47.98
TH-228	74.82	97	10.28	3.732E+00	2.033E+00	2.033E+00	35.62
	77.11	184	17.10	3.969E+00	2.168E+00	2.168E+00	24.91
	238.63	202	43.60*	4.549E+00	8.154E-01	8.154E-01	17.95
	300.09	20	3.30	3.824E+00	1.244E+00	1.244E+00	114.65
TH-230	74.82	97	5.80	3.732E+00	3.603E+00	3.603E+00	35.62
	77.11	184	9.70	3.969E+00	3.821E+00	3.821E+00	24.91
	87.09	42	3.41	4.818E+00	2.052E+00	2.052E+00	83.80
	242.00	80	7.25	4.506E+00	1.960E+00	1.960E+00	45.17
	295.22	143	18.42	3.873E+00	1.598E+00	1.598E+00	21.94
	351.93	186	35.60*	3.364E+00	1.240E+00	1.240E+00	21.23
PA-231	283.69	------	1.70	3.999E+00	------	Line Not Found	------
	301.36	20	5.35*	3.824E+00	7.673E-01	7.673E-01	114.65
TH-232	105.21	------	1.10	5.682E+00	------	Line Not Found	------
	338.32	46	11.27	3.473E+00	9.443E-01	9.443E-01	69.94
	835.71	------	1.61	1.601E+00	------	Line Not Found	------
	911.20	47	25.80*	1.478E+00	9.819E-01	9.819E-01	39.41
	968.97	48	15.80	1.399E+00	1.721E+00	1.721E+00	47.98
TH-234	63.29	15	3.70*	2.388E+00	1.373E+00	1.373E+00	214.42
	92.59	56	4.23	5.187E+00	2.034E+00	2.034E+00	86.82
U-234	74.82	97	5.80	3.732E+00	3.603E+00	3.603E+00	35.62
	77.11	184	9.70	3.969E+00	3.821E+00	3.821E+00	24.91
	87.09	42	3.41	4.818E+00	2.052E+00	2.052E+00	83.80
	242.00	80	7.25	4.506E+00	1.960E+00	1.960E+00	45.17
	295.22	143	18.42	3.873E+00	1.598E+00	1.598E+00	21.94
	351.93	186	35.60*	3.364E+00	1.240E+00	1.240E+00	21.23
U-235	89.96	------	3.47	4.984E+00	------	Line Not Found	------
	93.35	56	5.60	5.187E+00	1.537E+00	1.537E+00	86.82
	143.76	17	10.96*	5.915E+00	2.045E-01	2.045E-01	215.61
	163.33	------	5.08	5.689E+00	------	Line Not Found	------
	185.72	57	57.20	5.336E+00	1.484E-01	1.484E-01	62.46
	205.31	------	5.01	5.040E+00	------	Line Not Found	------
U-238	63.29	15	3.70*	2.388E+00	1.373E+00	1.373E+00	214.42
	92.59	56	4.23	5.187E+00	2.034E+00	2.034E+00	86.82
AM-243	43.53	------	5.90	3.984E-01	------	Line Not Found	------
	74.66	97	67.20*	3.732E+00	3.110E-01	3.110E-01	35.62
CM-247	278.00	------	3.40	4.062E+00	------	Line Not Found	------
	287.50	------	2.00	3.958E+00	------	Line Not Found	------
	402.40	3	72.00*	3.018E+00	1.091E-02	1.091E-02	571.92
ANH-511	511.00	13	100.00*	2.465E+00	4.342E-02	4.342E-02	228.60

Flag: "*" = Keyline

Sample ID : G674299022 Acquisition date : 31-JUL-2024 15:04:33

Total number of lines in spectrum 40
Number of unidentified lines 9
Number of lines tentatively identified by NID 31 77.50%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
NA-22	2.60Y	1.03	3.767E-02	3.865E-02	4.275E-02	110.60	
K-40	1.25E+09Y	1.00	7.220E+00	7.220E+00	1.529E+00	21.18	
RB-84	32.82D	2.10	5.171E-02	1.087E-01	1.238E-01	113.80	
CD-109	461.40D	1.05	1.892E+00	1.994E+00	1.671E+00	83.80	
SN-126	2.30E+05Y	1.00	1.892E-01	1.892E-01	1.585E-01	83.80	
BA-137M	30.08Y	1.00	3.800E-02	3.808E-02	6.637E-02	174.27	
CS-137	30.08Y	1.00	4.014E-02	4.023E-02	7.011E-02	174.27	
CE-141	32.51D	2.12	4.642E-02	9.830E-02	21.19E-02	215.61	
TL-208	1.41E+10Y	1.00	2.917E-01	2.917E-01	0.970E-01	33.24	
BI-211	7.04E+08Y	1.00	3.416E+00	3.416E+00	0.725E+00	21.23	
BI-212	1.41E+10Y	1.00	7.729E-01	7.729E-01	14.53E-01	188.01	
PB-212	1.41E+10Y	1.00	8.154E-01	8.154E-01	1.463E-01	17.95	
BI-213	7340.00Y	1.00	1.343E-01	1.343E-01	2.296E-01	170.97	
BI-214	1600.00Y	1.00	1.392E+00	1.392E+00	0.272E+00	19.54	
PB-214	1600.00Y	1.00	1.240E+00	1.240E+00	0.263E+00	21.23	
RN-219	7.04E+08Y	1.00	1.190E-01	1.190E-01	6.808E-01	571.92	
RN-222	1600.00Y	1.00	1.392E+00	1.392E+00	0.272E+00	19.54	
RA-224	1.41E+10Y	1.00	3.467E+00	3.467E+00	1.566E+00	45.17	
RA-226	1600.00Y	1.00	1.240E+00	1.240E+00	0.263E+00	21.23	
AC-228	1.41E+10Y	1.00	9.819E-01	9.819E-01	3.869E-01	39.41	
RA-228	1.41E+10Y	1.00	9.819E-01	9.819E-01	3.869E-01	39.41	
TH-228	1.41E+10Y	1.00	8.154E-01	8.154E-01	1.463E-01	17.95	
TH-230	7.54E+04Y	1.00	1.240E+00	1.240E+00	0.263E+00	21.23	
PA-231	7.04E+08Y	1.00	7.673E-01	7.673E-01	8.796E-01	114.65	
TH-232	1.41E+10Y	1.00	9.819E-01	9.819E-01	3.869E-01	39.41	
TH-234	4.47E+09Y	1.00	1.373E+00	1.373E+00	2.945E+00	214.42	
U-234	2.45E+05Y	1.00	1.240E+00	1.240E+00	0.263E+00	21.23	
U-235	7.04E+08Y	1.00	2.045E-01	2.045E-01	4.410E-01	215.61	
U-238	4.47E+09Y	1.00	1.373E+00	1.373E+00	2.945E+00	214.42	
AM-243	7370.00Y	1.00	3.110E-01	3.110E-01	1.108E-01	35.62	
CM-247	1.56E+07Y	1.00	1.091E-02	1.091E-02	6.241E-02	571.92	
ANH-511	1.00E+09Y	1.00	4.342E-02	4.342E-02	9.926E-02	228.60	
			---	---			
	Total Activity :		3.412E+01	3.433E+01			

Grand Total Activity : 3.412E+01 3.433E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299022 Acquisition date : 31-JUL-2024 15:04:33

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	35.38	26	41	1.93	70.88	67	9	7.67E-03	****	7.48E-02	
0	154.65	41	68	1.91	309.38	304	10	1.20E-02	80.7	5.80E+00	T
1	306.12	21	25	1.60	612.29	585	32	6.23E-03	****	3.77E+00	T
0	571.16	26	14	2.74	1142.36	1136	12	7.75E-03	67.3	2.24E+00	T
0	649.39	16	6	1.16	1298.82	1293	12	4.72E-03	75.3	2.01E+00	
0	721.78	8	3	1.36	1443.61	1440	6	2.50E-03	90.3	1.83E+00	T
0	807.27	13	10	2.82	1614.61	1609	9	3.93E-03	****	1.65E+00	
0	825.31	12	3	1.08	1650.69	1647	10	3.59E-03	72.9	1.62E+00	
0	843.98	8	10	5.39	1688.04	1679	13	2.30E-03	****	1.59E+00	
0	1056.40	10	5	2.77	2112.94	2108	11	3.10E-03	****	1.29E+00	
0	1255.13	6	3	0.46	2510.50	2506	6	1.67E-03	****	1.10E+00	
0	1379.78	10	3	0.81	2759.88	2752	11	2.98E-03	86.7	1.02E+00	
0	1767.11	31	0	1.38	3534.85	3528	13	9.17E-03	34.8	8.34E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 08:30:32.56

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299022.CNF;1  *
* Acquisition date : 31-JUL-2024 15:04:33 Sensitivity     : 3.000           *
* Detector ID      : GAM01                Energy tolerance: 2.000           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.29     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:55:00 Nuclide Library : SOLID           *
* Sample ID        : G674299022           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 9.3820E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  5-JUN-2024 05:42:50 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM01_CAN.CNF;19            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
NA-22	3.743E-02
K-40	5.057E-01
RB-84	9.193E-02
CD-109	1.109E+00
SN-126	9.994E-02
BA-137M	3.295E-02
CS-137	3.481E-02
CE-141	9.763E-02
TL-208	3.400E-02
BI-211	2.102E-01
BI-212	5.961E-01
PB-212	5.941E-02
BI-213	1.062E-01
BI-214	7.477E-02
PB-214	7.644E-02
RN-219	4.412E-01
RN-222	7.477E-02
RA-224	6.367E-01
RA-226	7.644E-02
AC-228	7.906E-02
RA-228	7.906E-02
TH-228	5.941E-02
TH-230	7.644E-02
PA-231	4.776E-01
TH-232	7.906E-02
TH-234	1.614E+00
U-234	7.644E-02
U-235	2.407E-01
U-238	1.614E+00
AM-243	6.266E-02
CM-247	4.311E-02
ANH-511	3.347E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)

BE-7	4.939E-01	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.896E-02	NOT IDENT.
SC-46	4.127E-02	FAIL ABUN
V-48	1.805E-01	NOT IDENT.
CR-51	7.117E-01	NOT IDENT.
MN-52	3.884E+00	NOT IDENT.
MN-54	3.573E-02	NOT IDENT.
CO-56	4.075E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	3.100E-02	NOT IDENT.
CO-58	5.662E-02	NOT IDENT.
FE-59	8.812E-02	NOT IDENT.
CO-60	3.855E-02	NOT IDENT.
ZN-65	8.022E-02	NOT IDENT.
GE-68	9.933E-01	NOT IDENT.
AS-73	1.435E+00	NOT IDENT.
AS-74	2.130E-01	NOT IDENT.
SE-75	5.415E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	6.432E-01	NOT IDENT.
RB-83	9.108E-02	NOT IDENT.
KR-85	1.099E+01	NOT IDENT.
SR-85	7.181E-02	NOT IDENT.
RB-86	1.154E+00	NOT IDENT.
Y-88	4.063E-02	NOT IDENT.
Y-91	2.022E+01	NOT IDENT.
NB-94	4.601E-02	NOT IDENT.
NB-95	4.173E-02	NOT IDENT.
NB-95M	1.521E-01	NOT IDENT.
ZR-95	1.012E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.482E-02	NOT IDENT.
RH-102	5.841E-02	NOT IDENT.
RU-103	5.712E-02	FAIL ABUN
RH-106	3.921E-01	NOT IDENT.
RU-106	3.921E-01	NOT IDENT.
AG-108M	3.075E-02	FAIL ABUN
AG-110	8.676E-01	NOT IDENT.
AG-110M	4.379E-02	FAIL ABUN
SN-113	5.482E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.743E-01	FAIL ABUN
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.643E-02	NOT IDENT.
SB-124	1.349E-01	FAIL ABUN
SB-125	1.176E-01	NOT IDENT.
TE-125M	1.225E+01	NOT IDENT.
I-126	7.977E-01	NOT IDENT.
SB-126	4.946E-01	FAIL ABUN
SB-127	5.733E+01	NOT IDENT.
I-131	6.979E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.334E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.832E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.874E-01	FAIL ABUN
LA-138	6.683E-02	NOT IDENT.
CE-139	3.579E-02	NOT IDENT.
BA-140	9.308E-01	FAIL ABUN
LA-140	3.249E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.123E-01	NOT IDENT.
PM-144	3.901E-02	NOT IDENT.
PR-144	2.959E+00	NOT IDENT.
PM-146	4.847E-02	NOT IDENT.
ND-147	1.981E+00	NOT IDENT.
PM-147	8.211E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.244E-02	FAIL ABUN
EU-152	1.088E-01	NOT IDENT.
GD-153	9.143E-02	NOT IDENT.

EU-154	1.265E-01	FAIL ABUN
EU-155	1.169E-01	FAIL ABUN
TB-160	1.647E-01	FAIL ABUN
HO-166M	8.039E-02	NOT IDENT.
TM-171	2.473E+01	NOT IDENT.
HF-172	2.090E-01	FAIL ABUN
LU-172	7.891E-02	FAIL ABUN
LU-176	3.033E-02	FAIL ABUN
HF-181	7.865E-02	NOT IDENT.
TA-182	1.667E-01	FAIL ABUN
RE-183	3.237E-01	NOT IDENT.
RE-184	1.674E-01	NOT IDENT.
W-188	9.389E+00	FAIL ABUN
IR-192	4.424E-02	FAIL ABUN
HG-203	6.263E-02	NOT IDENT.
TL-204	5.888E+00	NOT IDENT.
BI-207	4.023E-02	FAIL ABUN
BI-210	6.154E+00	NOT IDENT.
PB-210	6.154E+00	NOT IDENT.
PB-211	7.845E-01	NOT IDENT.
RA-223	6.475E-01	FAIL ABUN
AC-225	2.657E+00	NOT IDENT.
AC-227	2.606E-01	FAIL ABUN
TH-227	2.606E-01	FAIL ABUN
TH-229	4.886E-01	FAIL ABUN
TH-231	6.475E-01	FAIL ABUN
PA-233	6.777E-02	FAIL ABUN
PA-234	3.722E-01	FAIL ABUN
PA-234M	4.753E+00	NOT IDENT.
NP-237	6.777E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	3.159E-01	NOT IDENT.
PU-239	4.175E+02	NOT IDENT.
AM-241	1.881E-01	NOT IDENT.
CM-243	1.159E-01	NOT IDENT.
BK-247	8.521E-02	NOT IDENT.
CF-249	4.051E-02	NOT IDENT.
CF-251	1.396E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 08:30:36.82

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299022.CNF;1  *
* Acquisition date : 31-JUL-2024 15:04:33 Sensitivity     : 3.000           *
* Detector ID      : GAM01                Energy tolerance: 2.000           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.29     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:55:00 Nuclide Library : SOLID           *
* Sample ID        : G674299022           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 9.3820E+01 GRAM *
*                                         Quantity Err(%) : 1.0659E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  5-JUN-2024 05:42:50 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM01_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
NA-22	3.865E-02	4.202E-02	4.202E-02
K-40	7.220E+00	1.632E+00	1.632E+00
RB-84	1.087E-01	1.218E-01	1.218E-01
CD-109	1.994E+00	1.650E+00	1.650E+00
SN-126	1.892E-01	1.562E-01	1.562E-01
BA-137M	3.808E-02	6.513E-02	6.513E-02
CS-137	4.023E-02	6.880E-02	6.880E-02
CE-141	2.698E-02	2.124E-01	2.124E-01
TL-208	2.917E-01	9.860E-02	9.860E-02
BI-211	3.416E+00	7.633E-01	7.633E-01
BI-212	7.729E-01	1.426E+00	1.426E+00
PB-212	8.154E-01	1.573E-01	1.573E-01
BI-213	1.343E-01	2.253E-01	2.253E-01
BI-214	1.392E+00	2.948E-01	2.948E-01
PB-214	1.240E+00	2.763E-01	2.763E-01
RN-219	1.190E-01	6.674E-01	6.674E-01
RN-222	1.392E+00	2.948E-01	2.948E-01
RA-224	3.467E+00	1.559E+00	1.559E+00
RA-226	1.240E+00	2.763E-01	2.763E-01
AC-228	9.819E-01	3.930E-01	3.930E-01
RA-228	9.819E-01	3.930E-01	3.930E-01
TH-228	8.154E-01	1.573E-01	1.573E-01
TH-230	1.240E+00	2.763E-01	2.763E-01
PA-231	7.673E-01	8.787E-01	8.787E-01
TH-232	9.819E-01	3.930E-01	3.930E-01
TH-234	1.373E+00	2.902E+00	2.902E+00
U-234	1.240E+00	2.763E-01	2.763E-01
U-235	2.045E-01	4.324E-01	4.324E-01
U-238	1.373E+00	2.902E+00	2.902E+00
AM-243	3.110E-01	1.113E-01	1.113E-01
CM-247	1.091E-02	6.119E-02	6.119E-02
ANH-511	4.342E-02	9.735E-02	9.735E-02

---- Non-Identified Nuclides ----

Key-Line Activity	K.L Act error	TPU

Nuclide	(pCi/GRAM)	(1.96-sigma)	(1.96-sigma)	
BE-7	2.659E-01	5.597E-01	5.724E-01	NOT IDENT.
NA-24	-7.375E+14	4.050E+15	4.064E+15	SHORT HLIF
AL-26	1.896E-02	3.893E-02	3.985E-02	NOT IDENT.
SC-46	2.654E-02	4.124E-02	4.294E-02	FAIL ABUN
V-48	-3.086E-02	2.248E-01	2.253E-01	NOT IDENT.
CR-51	2.179E-01	8.265E-01	8.323E-01	NOT IDENT.
MN-52	2.537E+00	3.960E+00	4.122E+00	NOT IDENT.
MN-54	-7.528E-03	4.334E-02	4.347E-02	NOT IDENT.
CO-56	-2.331E-02	6.153E-02	6.242E-02	NOT IDENT.
MN-56	-1.000E+41	2.673E+41	0.000E+00	SHORT HLIF
CO-57	1.827E-02	3.455E-02	3.552E-02	NOT IDENT.
CO-58	2.754E-02	7.155E-02	7.262E-02	NOT IDENT.
FE-59	-1.463E-01	1.467E-01	1.608E-01	NOT IDENT.
CO-60	5.928E-03	4.429E-02	4.437E-02	NOT IDENT.
ZN-65	-6.046E-03	1.001E-01	1.002E-01	NOT IDENT.
GE-68	-2.123E+00	1.746E+00	1.991E+00	NOT IDENT.
AS-73	8.963E-01	1.721E+00	1.768E+00	NOT IDENT.
AS-74	-7.539E-02	2.791E-01	2.811E-01	NOT IDENT.
SE-75	-5.533E-03	6.500E-02	6.505E-02	FAIL ABUN
BR-77	4.415E+04	4.564E+04	4.979E+04	SHORT HLIF
SR-82	1.201E-01	7.767E-01	7.786E-01	NOT IDENT.
RB-83	-3.848E-03	1.121E-01	1.122E-01	NOT IDENT.
KR-85	1.495E+01	1.167E+01	1.348E+01	NOT IDENT.
SR-85	9.737E-02	7.632E-02	8.805E-02	NOT IDENT.
RB-86	-2.337E+00	2.042E+00	2.298E+00	NOT IDENT.
Y-88	-1.490E-02	5.685E-02	5.725E-02	NOT IDENT.
Y-91	3.359E+00	2.301E+01	2.306E+01	NOT IDENT.
NB-94	2.077E-02	5.374E-02	5.455E-02	NOT IDENT.
NB-95	-6.824E-02	6.928E-02	7.581E-02	NOT IDENT.
NB-95M	-6.310E-02	2.092E-01	2.111E-01	NOT IDENT.
ZR-95	1.631E-02	1.228E-01	1.230E-01	NOT IDENT.
NB-97	1.000E+41	2.646E+41	0.000E+00	SHORT HLIF
ZR-97	3.795E+14	7.768E+14	7.954E+14	SHORT HLIF
MO-99	-9.476E+02	2.508E+03	2.544E+03	SHORT HLIF
TC-99M	-3.000E+40	5.959E+40	0.000E+00	SHORT HLIF
RH-101	-1.130E-02	4.142E-02	4.173E-02	NOT IDENT.
RH-102	-3.388E-02	7.901E-02	8.047E-02	NOT IDENT.
RU-103	-4.613E-04	6.983E-02	6.983E-02	FAIL ABUN
RH-106	2.484E-01	4.378E-01	4.519E-01	NOT IDENT.
RU-106	2.484E-01	4.378E-01	4.519E-01	NOT IDENT.
AG-108M	-5.277E-04	3.740E-02	3.740E-02	FAIL ABUN
AG-110	4.487E-01	9.831E-01	1.004E+00	NOT IDENT.
AG-110M	5.404E-02	6.053E-02	6.525E-02	FAIL ABUN
SN-113	5.327E-03	6.544E-02	6.549E-02	NOT IDENT.
CD-115	5.435E+03	6.864E+03	7.288E+03	SHORT HLIF
SN-117M	2.222E-01	2.015E-01	2.250E-01	FAIL ABUN
SB-122	1.286E+02	4.069E+02	4.110E+02	SHORT HLIF
TE-123M	2.382E-02	4.468E-02	4.595E-02	NOT IDENT.
SB-124	-4.870E-03	1.658E-01	1.658E-01	FAIL ABUN
SB-125	3.596E-02	1.378E-01	1.387E-01	NOT IDENT.
TE-125M	-4.702E+00	1.460E+01	1.475E+01	NOT IDENT.
I-126	1.058E+00	8.303E-01	9.575E-01	NOT IDENT.
SB-126	4.929E-01	4.407E-01	4.935E-01	FAIL ABUN
SB-127	-1.153E+01	7.340E+01	7.359E+01	NOT IDENT.
I-131	1.596E-01	8.173E-01	8.205E-01	NOT IDENT.
I-132	1.000E+41	2.674E+41	0.000E+00	SHORT HLIF
TE-132	2.793E+01	7.898E+01	7.997E+01	SHORT HLIF
BA-133	-2.135E-02	4.988E-02	5.080E-02	NOT IDENT.
I-133	2.369E+10	6.152E+10	6.244E+10	SHORT HLIF
CS-134	4.419E-02	6.488E-02	6.787E-02	FAIL ABUN
I-135	-6.522E+37	1.038E+38	0.000E+00	SHORT HLIF
CS-136	4.571E-02	3.277E-01	3.284E-01	FAIL ABUN
LA-138	5.658E-03	7.876E-02	7.880E-02	NOT IDENT.
CE-139	-1.567E-03	4.204E-02	4.204E-02	NOT IDENT.
BA-140	7.354E-01	1.011E+00	1.064E+00	FAIL ABUN
LA-140	-7.298E-02	4.163E-01	4.176E-01	NOT IDENT.
CE-143	-3.213E+06	4.606E+06	4.829E+06	SHORT HLIF
CE-144	-2.016E-01	2.647E-01	2.799E-01	NOT IDENT.
PM-144	-8.958E-03	5.026E-02	5.042E-02	NOT IDENT.
PR-144	-6.500E-01	3.806E+00	3.817E+00	NOT IDENT.
PM-146	-2.219E-03	5.928E-02	5.928E-02	NOT IDENT.
ND-147	1.885E+00	2.024E+00	2.195E+00	NOT IDENT.
PM-147	-2.870E+02	9.766E+02	9.852E+02	NOT IDENT.
PM-149	6.480E+04	7.007E+04	7.592E+04	SHORT HLIF
EU-150	2.062E-02	4.019E-02	4.125E-02	FAIL ABUN
EU-152	-3.373E-02	1.518E-01	1.525E-01	NOT IDENT.

GD-153	-7.522E-02	1.255E-01	1.300E-01	NOT IDENT.
EU-154	4.443E-02	1.549E-01	1.562E-01	FAIL ABUN
EU-155	-3.474E-02	1.390E-01	1.399E-01	FAIL ABUN
TB-160	-6.688E-02	2.380E-01	2.399E-01	FAIL ABUN
HO-166M	6.217E-02	8.873E-02	9.305E-02	NOT IDENT.
TM-171	-2.756E+00	3.144E+01	3.147E+01	NOT IDENT.
HF-172	-1.251E-01	2.538E-01	2.600E-01	FAIL ABUN
LU-172	2.578E-02	8.614E-02	8.692E-02	FAIL ABUN
LU-176	4.772E-02	5.096E-02	5.531E-02	FAIL ABUN
HF-181	2.852E-02	9.175E-02	9.265E-02	NOT IDENT.
TA-182	-2.450E-02	2.060E-01	2.063E-01	FAIL ABUN
RE-183	2.630E-01	3.810E-01	3.990E-01	NOT IDENT.
RE-184	-1.624E-01	2.335E-01	2.447E-01	NOT IDENT.
W-188	4.480E+00	1.178E+01	1.195E+01	FAIL ABUN
IR-192	-3.148E-02	5.695E-02	5.870E-02	FAIL ABUN
HG-203	5.227E-02	6.926E-02	7.316E-02	NOT IDENT.
TL-204	-8.941E-01	8.225E+00	8.235E+00	NOT IDENT.
BI-207	1.321E-02	4.326E-02	4.367E-02	FAIL ABUN
BI-210	8.239E+00	6.992E+00	7.917E+00	NOT IDENT.
PB-210	8.239E+00	6.992E+00	7.917E+00	NOT IDENT.
PB-211	2.518E-01	1.012E+00	1.018E+00	NOT IDENT.
RA-223	-1.016E-01	7.895E-01	7.909E-01	FAIL ABUN
AC-225	2.529E+00	2.904E+00	3.120E+00	NOT IDENT.
AC-227	-1.868E-01	3.312E-01	3.417E-01	FAIL ABUN
TH-227	-1.868E-01	3.312E-01	3.417E-01	FAIL ABUN
TH-229	-5.242E-01	6.287E-01	6.717E-01	FAIL ABUN
TH-231	-1.016E-01	7.895E-01	7.909E-01	FAIL ABUN
PA-233	3.528E-02	7.646E-02	7.809E-02	FAIL ABUN
PA-234	1.817E-01	4.531E-01	4.605E-01	FAIL ABUN
PA-234M	-6.266E+00	6.577E+00	7.158E+00	NOT IDENT.
NP-237	3.528E-02	7.646E-02	7.809E-02	FAIL ABUN
NP-238	-1.198E+03	2.112E+04	2.113E+04	SHORT HLIF
NP-239	1.391E-01	3.558E-01	3.613E-01	NOT IDENT.
PU-239	3.553E+02	4.596E+02	4.867E+02	NOT IDENT.
AM-241	-6.479E-02	2.667E-01	2.683E-01	NOT IDENT.
CM-243	-1.831E-02	1.366E-01	1.368E-01	NOT IDENT.
BK-247	1.525E-02	1.042E-01	1.044E-01	NOT IDENT.
CF-249	1.652E-02	4.632E-02	4.691E-02	NOT IDENT.
CF-251	-1.724E-02	1.653E-01	1.655E-01	NOT IDENT.

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*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	50.0204	82.47	81.9626	125.81	65.1737
45.60	65.3742	323.87	91.9417	127.23	62.6830
46.54	47.9388	84.00	68.9738	127.91	65.2997
49.72	0.0000	85.43	80.6045	129.30	56.7792
51.35	54.2065	86.55	98.8281	131.20	65.4950
51.87	62.5065	879.38	98.8550	482.18	62.1489
52.39	50.7540	87.57	93.9290	133.52	64.7675
52.97	42.5300	87.09	93.9453	264.66	61.4475
53.44	44.9254	87.57	93.9975	122.06	59.7419
125.81	43.7856	88.03	105.5964	140.51	0.0000
57.36	0.0000	88.34	105.6341	143.76	54.0198
57.53	39.2557	193.51	101.5228	144.24	54.0419
57.98	42.8527	89.96	101.6955	145.44	51.0429
1093.63	50.8841	90.64	94.3268	152.43	36.8598
57.98	50.8879	91.11	101.8275	153.25	48.3012
59.54	57.2672	63.29	84.5818	154.21	48.3393
60.96	46.2261	143.76	84.6534	156.02	58.0924
61.17	46.2400	94.56	49.8627	158.56	38.3665
62.93	61.1406	94.65	49.8676	159.00	48.9673
63.29	61.1714	94.67	49.8688	162.33	45.1163
63.58	61.1962	94.87	49.8796	162.66	46.0126
64.28	59.2540	97.43	62.5233	163.33	46.0369
66.73	62.6664	311.90	46.0668	165.86	54.9986
67.24	53.0620	946.00	46.0674	176.31	60.8039
67.68	62.7466	99.53	56.8157	1048.07	54.5565
67.75	62.7525	1221.41	53.5065	177.52	53.6987
68.89	64.0568	265.00	50.2643	739.50	0.0000
69.67	71.3823	103.18	52.8409	181.52	50.6265
70.82	69.4704	103.37	52.8515	711.68	44.5265
70.83	69.4713	116.74	52.8515	185.72	42.3179
72.81	61.5509	105.21	57.1547	193.51	52.5135
279.20	61.5560	105.31	57.1606	197.03	39.0287
72.87	61.5560	106.12	47.9540	127.23	49.9545
74.66	71.8441	106.47	43.7631	306.78	47.3546
74.82	71.8585	109.28	52.3283	203.43	47.4064
1063.66	71.8720	111.00	51.5730	205.31	41.9903
351.93	72.0651	228.16	0.0000	210.85	54.9744
238.63	72.0651	114.06	62.7533	215.65	36.7664
351.93	72.0651	116.30	0.0000	218.12	33.1436
78.74	72.2101	116.74	56.9657	222.11	41.5370
79.69	75.1534	119.76	63.9526	290.67	45.3737
80.03	57.2050	121.12	60.6198	177.52	42.6032
80.12	57.2118	121.22	60.6256	228.16	0.0000
80.19	57.2164	121.78	58.9491	228.18	50.0383
80.57	55.6073	122.06	51.2735	235.69	47.4815
81.00	63.8181	122.92	46.1835	256.23	47.4898
81.07	63.8233	123.07	53.0331	238.63	41.0392
81.75	63.8757	123.68	61.6216	238.98	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
240.99	41.0987	340.48	34.5129	546.56	0.0000
242.00	41.1242	340.55	34.5137	552.55	13.9860
344.28	41.1918	344.28	32.6005	563.25	11.8786
252.40	33.8584	345.93	36.5815	564.24	0.0000
252.80	35.7479	351.06	24.7782	795.86	9.7394
254.15	0.0000	351.93	24.7884	569.50	14.0685
256.23	43.3618	507.63	0.0000	569.70	14.0696
260.90	0.0000	356.01	19.3727	583.19	11.9601
264.66	36.9442	364.49	20.9462	584.27	11.9646
264.80	36.9473	366.42	0.0000	595.83	15.2863
265.00	31.8350	372.51	20.0228	600.60	25.1534
269.46	37.0457	129.30	24.0557	602.52	0.0000
270.03	37.0576	377.52	17.0585	604.72	14.7843
271.23	39.9355	383.85	29.1835	607.14	26.3037
273.65	21.4233	388.16	16.1325	609.32	15.3547
356.01	43.8671	388.63	16.1357	497.08	15.3598
277.37	36.2574	391.69	22.2171	433.94	18.1261
277.60	36.2620	400.66	19.2632	696.49	14.2986
278.00	31.4981	401.81	22.8232	620.36	22.0150
279.20	31.5189	402.40	25.8730	621.93	11.0128
279.54	35.3462	404.85	19.8067	667.71	0.0000
279.70	39.1707	410.95	21.3862	631.29	17.6738
280.46	42.0548	413.71	31.6080	453.88	8.8424
283.69	40.2150	414.70	24.4810	595.83	6.6350
364.49	39.2708	423.72	28.6705	635.95	14.3811
285.41	32.5854	404.85	31.7877	636.99	14.3859
285.90	0.0000	427.87	24.6177	657.50	10.0239
402.40	40.2987	433.94	18.5101	884.68	10.6934
290.67	25.9514	333.97	17.5212	657.90	0.0000
293.27	0.0000	440.45	17.5288	661.66	10.0371
295.22	27.9421	453.88	21.7716	664.57	0.0000
295.96	27.9527	463.37	19.7727	666.33	5.0257
298.58	27.9923	468.07	16.6816	720.70	5.0261
299.98	28.0129	685.70	17.7588	667.71	0.0000
300.09	28.0147	475.06	16.7275	677.62	6.7241
300.13	28.0153	476.78	16.7386	685.70	16.8518
301.36	28.0336	477.60	15.6976	564.24	0.0000
302.85	28.0554	482.18	20.9672	695.00	11.2659
304.50	28.0802	1596.21	16.8050	696.49	15.7791
537.26	28.0849	527.90	0.0000	696.51	15.7796
306.78	18.9041	497.08	14.7608	697.00	18.0365
316.51	24.7420	505.52	13.7501	697.30	16.9104
311.90	21.3846	507.63	0.0000	697.49	15.7842
316.51	36.0500	511.00	20.1372	702.65	16.9373
531.02	25.3700	514.00	20.1597	706.68	14.6964
320.08	29.2828	514.00	20.1597	711.68	11.3216
427.87	34.1804	520.40	17.0163	720.70	8.5138
323.87	27.3836	238.98	0.0000	721.93	0.0000
325.23	31.3171	522.65	0.0000	722.78	6.8152
328.76	27.4508	527.90	0.0000	722.91	6.8154
388.16	27.1205	528.26	8.5326	1274.44	6.8162
333.97	26.5391	520.40	19.2078	724.19	6.8179
334.37	30.9681	529.87	0.0000	727.33	15.3545
338.28	34.4752	531.02	5.3381	733.00	5.1266
911.20	34.4759	537.26	10.7003	735.93	12.5420

ENERGY	MDA COUNTS
737.46	6.8440
739.50	0.0000
744.23	8.0003
747.24	13.7266
748.06	14.8736
752.31	13.7461
753.82	12.6060
756.73	11.4693
756.80	11.4697
763.94	5.7463
765.81	17.2479
766.42	16.1009
766.84	16.1026
772.60	0.0000
776.52	10.3795
777.92	0.0000
778.90	10.3865
783.70	13.8667
788.74	10.4147
792.07	10.4242
795.86	11.5942
801.95	13.9360
810.06	15.7121
810.29	15.7132
810.45	15.7137
810.76	8.7308
815.77	15.1534
818.51	9.3320
832.01	8.7802
834.85	9.6653
835.71	10.0439
1260.41	0.0000
846.75	0.0000
846.77	9.8718
856.80	9.7207
860.56	12.3837
702.65	10.6432
873.19	13.3109
529.87	0.0000
879.38	11.3766
880.51	15.6471
881.60	6.2250
883.24	1.4234
884.68	0.0000
889.28	2.6731
903.28	6.2457
898.04	8.9297
900.72	8.0420
903.28	12.5179
911.20	2.6876
912.08	2.6882
923.98	0.0000
926.50	8.9923
929.11	7.1985
1434.09	8.1109

ENERGY	MDA COUNTS
937.49	10.8197
944.13	9.9338
946.00	8.1313
949.00	4.5207
954.55	0.0000
962.31	8.7073
964.08	10.1626
966.17	9.0784
968.97	9.0842
983.53	9.1153
984.45	0.0000
996.26	10.9706
1001.03	12.8131
1002.74	7.3247
1004.73	6.4121
1021.30	0.0000
1025.87	0.0000
1028.54	0.0000
846.77	5.5375
1038.76	0.0000
1046.59	9.2474
1048.07	5.5503
1049.04	3.7009
621.93	3.7019
1063.66	2.7847
1077.00	12.1018
1077.34	13.9655
1085.87	8.3947
1093.63	6.5403
1099.45	11.2258
1112.07	6.5659
1112.84	4.6909
1115.54	6.4365
609.32	7.5171
889.28	7.5176
1121.30	8.4584
1129.67	8.7876
1131.51	0.0000
1147.95	0.0000
1173.23	7.6006
1177.95	3.8040
1189.05	5.7188
1204.77	3.8245
1221.41	5.7561
1231.02	12.4954
1235.36	14.4296
1238.28	9.6252
1260.41	0.0000
1271.87	1.5502
1274.44	4.6526
1274.54	4.6529
1099.45	2.9176
1298.22	0.0000
1312.11	8.7869
1332.49	3.9202

ENERGY	MDA COUNTS
1362.66	0.0000
1365.19	7.8877
1368.63	0.0000
1384.29	6.5959
1408.01	5.9619
1434.09	2.9947
1435.80	4.9927
1457.56	0.0000
1460.82	8.0234
696.51	4.0313
1505.03	6.0634
1584.12	4.0959
1596.21	6.1560
727.33	4.1201
1621.92	2.0605
1678.03	0.0000
1690.97	4.1663
1750.46	0.0000
1764.49	1.6854
1770.23	1.6868
1771.35	0.0000
1791.20	0.0000
1808.65	1.0603
846.75	0.0000
1836.06	3.1937

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 16:05:40.77

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299023.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM02.CNF;642
                                         Background date  : 28-JUL-2024 11:21:47
Sample date      : 26-JUN-2024 11:15:00  Acquisition date : 31-JUL-2024 15:04:59
Sample ID        : G674299023            Sample quantity  : 1.09510E+02 GRAM
Detector name    : GAM02                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:01.02  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.40*	33	130	1.08	127.45	124	8	9.05E-03	67.7	
2	3	74.91*	121	143	1.15	150.47	144	15	3.37E-02	19.5	2.82E+00
3	3	77.23	191	128	0.96	155.11	144	15	5.30E-02	11.8	
4	2	84.57*	27	95	1.22	169.80	167	12	7.52E-03	60.1	9.59E-01
5	2	87.45*	65	126	1.13	175.58	167	12	1.80E-02	31.8	
6	0	93.20*	53	247	1.32	187.07	182	12	1.46E-02	66.6	
7	0	143.99*	37	117	1.32	288.69	284	10	1.02E-02	59.0	
8	0	185.76*	29	141	1.01	372.25	368	10	7.98E-03	86.7	
9	0	209.31	51	54	1.85	419.36	416	7	1.42E-02	27.7	
10	5	238.75*	394	46	1.11	478.25	471	18	1.09E-01	5.9	1.22E+00
11	5	241.60	95	53	1.70	483.94	471	18	2.63E-02	22.9	
12	0	270.48	21	77	0.69	541.72	537	9	5.82E-03	78.4	
13	0	295.45*	105	71	1.07	591.65	586	11	2.91E-02	18.8	
14	0	300.63*	18	73	0.60	602.03	598	10	4.89E-03	94.8	
15	0	338.62*	66	67	0.95	678.01	673	11	1.82E-02	27.6	
16	0	352.38*	181	98	1.18	705.53	700	13	5.03E-02	13.8	
17	0	464.45	39	35	1.97	929.68	924	12	1.08E-02	35.5	
18	0	511.59*	57	39	1.73	1023.96	1016	18	1.58E-02	34.4	
19	0	526.52	25	28	3.00	1053.81	1048	12	7.05E-03	47.1	
20	0	583.42*	97	52	1.31	1167.59	1162	14	2.70E-02	18.8	
21	0	609.49*	170	26	1.15	1219.72	1213	13	4.73E-02	10.0	
22	0	641.61	15	32	2.98	1283.95	1275	12	4.07E-03	82.5	
23	0	727.99	26	28	2.03	1456.67	1450	11	7.28E-03	44.7	
24	0	755.62	23	2	1.33	1511.92	1507	10	6.29E-03	24.7	
25	0	769.12	41	37	1.97	1538.90	1530	19	1.15E-02	39.0	
26	0	838.20	14	29	4.66	1677.03	1669	16	3.92E-03	88.1	
27	0	891.49	10	15	4.44	1783.57	1775	12	2.83E-03	82.2	
28	0	911.16*	53	30	2.58	1822.89	1817	13	1.46E-02	26.0	
29	0	935.10	14	14	2.08	1870.73	1863	11	3.75E-03	59.6	
30	0	937.87	8	3	1.43	1876.29	1873	6	2.30E-03	47.6	
31	1	965.05*	17	11	2.12	1930.61	1927	20	4.60E-03	40.4	2.46E+00
32	1	969.13*	35	23	2.12	1938.78	1927	20	9.66E-03	34.4	
33	0	1120.64*	24	25	0.99	2241.61	2237	12	6.64E-03	48.5	
34	0	1145.77	14	10	1.72	2291.85	2284	13	4.01E-03	51.7	

Sample ID : G674299023 Acquisition date : 31-JUL-2024 15:04:59

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1155.62	9	10	0.83	2311.52	2302	13	2.61E-03	75.8	
36	0	1161.92	7	7	0.56	2324.13	2316	10	1.87E-03	85.2	
37	0	1204.32	20	21	4.04	2408.86	2399	15	5.50E-03	56.6	
38	0	1231.98	25	5	3.87	2464.13	2459	11	7.02E-03	26.6	
39	0	1286.84	13	8	1.92	2573.78	2567	11	3.67E-03	50.0	
40	0	1306.88	14	3	3.40	2613.84	2606	14	3.77E-03	39.9	
41	0	1328.76	10	4	2.05	2657.55	2654	8	2.78E-03	46.9	
42	0	1376.82	14	8	0.77	2753.59	2750	10	3.91E-03	45.4	
43	0	1460.80*	343	8	2.22	2921.40	2914	15	9.53E-02	5.8	
44	0	1765.01*	29	3	2.00	3529.15	3522	14	8.01E-03	25.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 16:05:42

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299023.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : MXR1
Sample date : 26-JUN-2024 11:15:00 Acquisition date : 31-JUL-2024 15:04:59
Sample ID : G674299023 Sample quantity : 109.51 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA2 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.02 0.0%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Sample ID : G674299023 Acquisition date : 31-JUL-2024 15:04:59

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.737E-01	2.131E+01	2.131E+01	11.52	OK
Y-91	1204.77	0.26*	1.145E+00	4.313E+01	6.543E+01	113.14	OK
CD-109	88.03	3.70*	4.711E+00	2.629E+00	2.772E+00	63.52	OK
SN-126	64.28	9.60	2.241E+00	1.082E+00	1.082E+00	135.41	OK
	86.94	8.90	4.711E+00	1.093E+00	1.093E+00	63.52	OK
	87.57	37.00*	4.711E+00	2.629E-01	2.629E-01	63.52	OK
CE-141	145.44	48.29*	5.492E+00	8.004E-02	1.695E-01	146.44	OK
TL-208	277.37	6.60	3.664E+00	----- Line Not Found		-----	Absent
	583.19	85.00*	2.130E+00	3.566E-01	3.566E-01	37.56	OK
	860.56	12.50	1.547E+00	----- Line Not Found		-----	Absent
BI-211	72.87	1.23	3.389E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	3.084E+00	3.074E+00	3.074E+00	27.62	OK
BI-212	727.33	6.67*	1.784E+00	1.453E+00	1.453E+00	89.37	OK
	1620.50	1.47	9.038E-01	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	3.611E+00	2.321E+00	2.321E+00	39.00	OK
	77.11	17.10	3.851E+00	2.056E+00	2.056E+00	23.62	OK
	238.63	43.60*	4.080E+00	1.516E+00	1.516E+00	11.84	OK
	300.09	3.30	3.457E+00	1.048E+00	1.048E+00	189.61	OK
BI-214	609.32	45.49*	2.059E+00	1.208E+00	1.208E+00	20.07	OK
	1120.29	14.92	1.221E+00	8.533E-01	8.533E-01	97.10	OK
	1764.49	15.30	8.595E-01	1.404E+00	1.405E+00	51.30	OK
PB-214	74.82	5.80	3.611E+00	4.113E+00	4.114E+00	39.00	OK
	77.11	9.70	3.851E+00	3.624E+00	3.624E+00	23.62	OK
	87.09	3.41	4.711E+00	2.852E+00	2.853E+00	63.52	OK
	242.00	7.25	4.046E+00	2.211E+00	2.211E+00	45.82	OK
	295.22	18.42	3.501E+00	1.104E+00	1.104E+00	37.51	OK
	351.93	35.60*	3.084E+00	1.116E+00	1.116E+00	27.62	OK
RN-222	609.32	45.49*	2.059E+00	1.208E+00	1.208E+00	20.07	OK
	1120.29	14.92	1.221E+00	8.533E-01	8.533E-01	97.10	OK
	1764.49	15.30	8.595E-01	1.404E+00	1.405E+00	51.30	OK
RA-224	240.99	4.10*	4.046E+00	3.910E+00	3.910E+00	45.82	OK
RA-226	74.82	5.80	3.611E+00	4.113E+00	4.114E+00	39.00	OK
	77.11	9.70	3.851E+00	3.624E+00	3.624E+00	23.62	OK
	87.09	3.41	4.711E+00	2.852E+00	2.853E+00	63.52	OK
	242.00	7.25	4.046E+00	2.211E+00	2.211E+00	45.82	OK
	295.22	18.42	3.501E+00	1.104E+00	1.104E+00	37.51	OK
	351.93	35.60*	3.084E+00	1.116E+00	1.116E+00	27.62	OK
AC-228	105.21	1.10	5.492E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.173E+00	1.241E+00	1.241E+00	55.21	OK
	835.71	1.61	1.587E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.471E+00	9.078E-01	9.078E-01	52.05	OK
	968.97	15.80	1.392E+00	1.034E+00	1.034E+00	68.70	OK
RA-228	105.21	1.10	5.492E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.173E+00	1.241E+00	1.241E+00	55.21	OK
	835.71	1.61	1.587E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.471E+00	9.078E-01	9.078E-01	52.05	OK
	968.97	15.80	1.392E+00	1.034E+00	1.034E+00	68.70	OK
TH-228	74.82	10.28	3.611E+00	2.321E+00	2.321E+00	39.00	OK
	77.11	17.10	3.851E+00	2.056E+00	2.056E+00	23.62	OK

Sample ID : G674299023 Acquisition date : 31-JUL-2024 15:04:59

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	238.63	43.60*	4.080E+00	1.516E+00	1.516E+00	11.84	OK
	300.09	3.30	3.457E+00	1.048E+00	1.048E+00	189.61	OK
TH-229	85.43	14.70	4.502E+00	2.893E-01	2.893E-01	120.14	OK
	88.47	24.00	4.711E+00	4.053E-01	4.053E-01	63.52	OK
	193.51	4.41*	4.710E+00	-----	Line Not Found	-----	Absent
	210.85	2.80	4.449E+00	-----	Line Not Found	-----	Absent
TH-230	74.82	5.80	3.611E+00	4.113E+00	4.113E+00	39.00	OK
	77.11	9.70	3.851E+00	3.624E+00	3.624E+00	23.62	OK
	87.09	3.41	4.711E+00	2.852E+00	2.852E+00	63.52	OK
	242.00	7.25	4.046E+00	2.211E+00	2.211E+00	45.82	OK
	295.22	18.42	3.501E+00	1.104E+00	1.104E+00	37.51	OK
	351.93	35.60*	3.084E+00	1.116E+00	1.116E+00	27.62	OK
PA-231	283.69	1.70	3.605E+00	-----	Line Not Found	-----	Absent
	301.36	5.35*	3.457E+00	6.466E-01	6.466E-01	189.61	OK
TH-232	105.21	1.10	5.492E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.173E+00	1.241E+00	1.241E+00	55.21	OK
	835.71	1.61	1.587E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.471E+00	9.078E-01	9.078E-01	52.05	OK
	968.97	15.80	1.392E+00	1.034E+00	1.034E+00	68.70	OK
TH-234	63.29	3.70*	2.241E+00	2.806E+00	2.806E+00	135.41	OK
	92.59	4.23	5.053E+00	1.740E+00	1.740E+00	133.25	OK
U-234	74.82	5.80	3.611E+00	4.113E+00	4.113E+00	39.00	OK
	77.11	9.70	3.851E+00	3.624E+00	3.624E+00	23.62	OK
	87.09	3.41	4.711E+00	2.852E+00	2.852E+00	63.52	OK
	242.00	7.25	4.046E+00	2.211E+00	2.211E+00	45.82	OK
	295.22	18.42	3.501E+00	1.104E+00	1.104E+00	37.51	OK
	351.93	35.60*	3.084E+00	1.116E+00	1.116E+00	27.62	OK
U-235	89.96	3.47	4.872E+00	-----	Line Not Found	-----	Absent
	93.35	5.60	5.053E+00	1.314E+00	1.314E+00	133.25	OK
	143.76	10.96*	5.495E+00	-----	Line Not Found	-----	<<INT Reject
	163.33	5.08	5.200E+00	-----	Line Not Found	-----	Absent
	185.72	57.20	4.833E+00	7.175E-02	7.175E-02	173.50	OK
	205.31	5.01	4.530E+00	-----	Line Not Found	-----	Absent
U-238	63.29	3.70*	2.241E+00	2.806E+00	2.806E+00	135.41	OK
	92.59	4.23	5.053E+00	1.740E+00	1.740E+00	133.25	OK
AM-243	43.53	5.90	2.631E-01	-----	Line Not Found	-----	Absent
	74.66	67.20*	3.611E+00	3.550E-01	3.550E-01	39.00	OK
ANH-511	511.00	100.00*	2.353E+00	1.609E-01	1.609E-01	68.83	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 16:05:43.14

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299023.CNF;1  *
* Acquisition date : 31-JUL-2024 15:04:59 Sensitivity     : 3.000           *
* Detector ID      : GAM02                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.02     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:15:00 Analyst initials: MXR1            *
* Sample ID        : G674299023           Sample Quantity : 1.0951E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-SEP-2023 09:49:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM02_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.131E+01	2.404E+00	1.031E+00
Y-91	6.543E+01	7.255E+01	6.060E+01
CD-109	2.772E+00	1.725E+00	2.203E+00
SN-126	2.629E-01	1.637E-01	1.835E-01
CE-141	1.695E-01	2.432E-01	2.150E-01
TL-208	3.566E-01	1.313E-01	9.047E-02
BI-211	3.074E+00	8.321E-01	5.190E-01
BI-212	1.453E+00	1.273E+00	1.434E+00
PB-212	1.516E+00	1.759E-01	1.358E-01
BI-214	1.208E+00	2.375E-01	1.585E-01
PB-214	1.116E+00	3.020E-01	1.888E-01
RN-222	1.208E+00	2.375E-01	1.585E-01
RA-224	3.910E+00	1.756E+00	1.456E+00
RA-226	1.116E+00	3.020E-01	1.888E-01
AC-228	9.078E-01	4.630E-01	3.539E-01
RA-228	9.078E-01	4.630E-01	3.539E-01
TH-228	1.516E+00	1.759E-01	1.358E-01
TH-229	1.834E-01	7.605E-01	1.345E+00
TH-230	1.116E+00	3.020E-01	1.888E-01
PA-231	6.466E-01	1.201E+00	1.311E+00
TH-232	9.078E-01	4.630E-01	3.539E-01
TH-234	2.806E+00	3.724E+00	3.573E+00
U-234	1.116E+00	3.020E-01	1.888E-01
U-235	4.244E-01	4.912E-01	5.338E-01
U-238	2.806E+00	3.724E+00	3.573E+00
AM-243	3.550E-01	1.357E-01	1.361E-01
ANH-511	1.609E-01	1.085E-01	6.166E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-5.970E-01	5.961E-01	9.451E-01	NOT IDENT.
NA-22	-2.427E-03	4.526E-02	9.066E-02	NOT IDENT.
NA-24	0.000E+00	3.209E+15	0.000E+00	SHORT HLIF

AL-26	1.106E-02	3.604E-02	8.962E-02	NOT IDENT.
SC-46	1.040E-02	6.024E-02	1.221E-01	FAIL ABUN
V-48	1.813E-01	2.342E-01	5.092E-01	NOT IDENT.
CR-51	-3.806E-01	8.355E-01	1.506E+00	NOT IDENT.
MN-52	-1.443E+00	3.598E+00	6.502E+00	FAIL ABUN
MN-54	1.125E-02	6.205E-02	1.097E-01	NOT IDENT.
CO-56	-3.665E-02	6.925E-02	1.244E-01	NOT IDENT.
MN-56	0.000E+00	1.876E+41	0.000E+00	SHORT HLIF
CO-57	-6.647E-03	3.559E-02	6.242E-02	NOT IDENT.
CO-58	-2.775E-02	6.954E-02	1.280E-01	NOT IDENT.
FE-59	-5.410E-02	1.791E-01	3.272E-01	NOT IDENT.
CO-60	-9.031E-03	6.731E-02	1.097E-01	NOT IDENT.
ZN-65	8.712E-03	1.722E-01	2.871E-01	NOT IDENT.
GE-68	-1.517E-01	1.814E+00	3.478E+00	NOT IDENT.
AS-73	5.540E-01	1.734E+00	3.338E+00	NOT IDENT.
AS-74	-1.156E-01	2.961E-01	5.141E-01	NOT IDENT.
SE-75	1.215E-02	6.582E-02	1.272E-01	NOT IDENT.
BR-77	0.000E+00	9.485E+03	0.000E+00	SHORT HLIF
SR-82	-2.611E-01	9.277E-01	1.514E+00	NOT IDENT.
RB-83	-2.928E-02	1.218E-01	2.078E-01	NOT IDENT.
RB-84	5.293E-02	1.463E-01	3.011E-01	NOT IDENT.
KR-85	1.522E+01	9.829E+00	2.136E+01	NOT IDENT.
SR-85	9.944E-02	6.430E-02	1.397E-01	NOT IDENT.
RB-86	2.567E-01	2.456E+00	4.808E+00	NOT IDENT.
Y-88	-2.091E-03	4.751E-02	1.060E-01	NOT IDENT.
NB-94	-1.213E-02	5.008E-02	8.765E-02	NOT IDENT.
NB-95	2.164E-02	8.864E-02	1.566E-01	NOT IDENT.
NB-95M	3.279E-02	2.091E-01	3.647E-01	NOT IDENT.
ZR-95	2.323E-01	1.123E-01	2.407E-01	FAIL ABUN
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.060E+15	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.789E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	5.659E+40	0.000E+00	SHORT HLIF
RH-101	-3.171E-02	4.494E-02	7.493E-02	NOT IDENT.
RH-102	-3.371E-02	8.545E-02	1.473E-01	NOT IDENT.
RU-103	-8.315E-02	7.674E-02	1.205E-01	FAIL ABUN
RH-106	-9.561E-02	4.752E-01	8.484E-01	NOT IDENT.
RU-106	-9.561E-02	4.752E-01	8.484E-01	NOT IDENT.
AG-108M	-1.141E-02	3.787E-02	6.867E-02	NOT IDENT.
AG-110	-1.379E-01	1.130E+00	2.033E+00	NOT IDENT.
AG-110M	-2.410E-02	8.289E-02	1.338E-01	FAIL ABUN
SN-113	0.000E+00	7.412E-02	1.382E-01	NOT IDENT.
CD-115	0.000E+00	1.402E+04	0.000E+00	SHORT HLIF
SN-117M	-3.616E-02	2.088E-01	3.603E-01	NOT IDENT.
SB-122	0.000E+00	5.106E+02	0.000E+00	SHORT HLIF
TE-123M	1.078E-02	4.468E-02	7.987E-02	NOT IDENT.
SB-124	1.455E-02	1.186E-01	2.757E-01	NOT IDENT.
SB-125	3.545E-02	1.261E-01	2.441E-01	FAIL ABUN
TE-125M	2.758E-01	1.664E+01	2.982E+01	NOT IDENT.
I-126	-2.901E-01	9.374E-01	1.634E+00	NOT IDENT.
SB-126	-9.701E-02	6.173E-01	1.147E+00	NOT IDENT.
SB-127	-4.160E+00	7.044E+01	1.280E+02	NOT IDENT.
I-131	1.396E-01	8.109E-01	1.573E+00	NOT IDENT.
I-132	0.000E+00	1.182E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.884E+01	0.000E+00	SHORT HLIF
BA-133	5.373E-02	5.930E-02	1.136E-01	NOT IDENT.
I-133	0.000E+00	8.167E+10	0.000E+00	SHORT HLIF
CS-134	2.863E-02	6.972E-02	1.392E-01	NOT IDENT.
I-135	0.000E+00	8.160E+37	0.000E+00	SHORT HLIF
CS-136	-3.762E-01	4.105E-01	6.644E-01	NOT IDENT.
BA-137M	-3.353E-02	5.454E-02	9.223E-02	NOT IDENT.
CS-137	-3.542E-02	5.761E-02	9.744E-02	NOT IDENT.
LA-138	1.101E-02	5.899E-02	1.310E-01	NOT IDENT.
CE-139	-1.685E-02	4.421E-02	7.467E-02	NOT IDENT.
BA-140	7.462E-01	1.006E+00	2.090E+00	NOT IDENT.
LA-140	-2.374E-01	2.945E-01	4.917E-01	NOT IDENT.
CE-143	0.000E+00	4.323E+06	0.000E+00	SHORT HLIF
CE-144	-9.956E-03	2.700E-01	4.779E-01	NOT IDENT.
PM-144	-2.085E-02	5.207E-02	8.898E-02	NOT IDENT.
PR-144	-1.577E+00	3.938E+00	6.730E+00	NOT IDENT.
PM-146	6.226E-02	6.503E-02	1.326E-01	NOT IDENT.
ND-147	9.839E-01	2.797E+00	5.023E+00	NOT IDENT.
PM-147	-7.464E+02	1.059E+03	1.773E+03	NOT IDENT.
PM-149	0.000E+00	6.314E+04	0.000E+00	SHORT HLIF
EU-150	2.303E-02	3.912E-02	7.160E-02	FAIL ABUN
EU-152	9.155E-02	1.326E-01	2.666E-01	FAIL ABUN
GD-153	-1.146E-01	1.279E-01	1.945E-01	NOT IDENT.
EU-154	-6.801E-03	1.269E-01	2.543E-01	FAIL ABUN

EU-155	7.916E-02	1.444E-01	2.697E-01	FAIL ABUN
TB-160	1.282E-01	2.243E-01	4.737E-01	FAIL ABUN
HO-166M	-5.802E-02	8.848E-02	1.440E-01	FAIL ABUN
TM-171	-3.634E+01	3.406E+01	5.821E+01	NOT IDENT.
HF-172	1.587E-01	2.574E-01	4.809E-01	FAIL ABUN
LU-172	-3.535E-02	1.009E-01	1.822E-01	FAIL ABUN
LU-176	1.719E-03	3.809E-02	7.198E-02	FAIL ABUN
HF-181	4.659E-02	7.922E-02	1.604E-01	NOT IDENT.
TA-182	-1.571E-02	2.845E-01	5.396E-01	FAIL ABUN
RE-183	5.867E-02	3.872E-01	7.294E-01	NOT IDENT.
RE-184	2.308E-01	2.332E-01	5.292E-01	NOT IDENT.
W-188	2.919E+00	1.325E+01	2.313E+01	FAIL ABUN
IR-192	3.918E-02	5.977E-02	1.191E-01	FAIL ABUN
HG-203	-3.044E-02	7.497E-02	1.363E-01	NOT IDENT.
TL-204	-3.274E-01	7.500E+00	1.265E+01	NOT IDENT.
BI-207	-3.912E-02	8.739E-02	1.549E-01	FAIL ABUN
BI-210	-1.637E+00	8.250E+00	1.506E+01	NOT IDENT.
PB-210	-1.637E+00	8.250E+00	1.506E+01	NOT IDENT.
PB-211	-4.514E-02	1.077E+00	1.951E+00	NOT IDENT.
BI-213	1.329E-01	1.545E-01	3.138E-01	NOT IDENT.
RN-219	-9.000E-02	5.763E-01	1.058E+00	FAIL ABUN
RA-223	-1.815E-01	8.874E-01	1.592E+00	FAIL ABUN
AC-225	-1.434E+00	3.430E+00	5.610E+00	NOT IDENT.
AC-227	-4.348E-02	3.411E-01	6.408E-01	FAIL ABUN
TH-227	-4.348E-02	3.411E-01	6.408E-01	FAIL ABUN
TH-231	-1.815E-01	8.874E-01	1.592E+00	FAIL ABUN
PA-233	9.700E-04	8.425E-02	1.600E-01	FAIL ABUN
PA-234	2.987E-01	4.309E-01	9.192E-01	FAIL ABUN
PA-234M	-1.979E+00	7.120E+00	1.393E+01	NOT IDENT.
NP-237	9.700E-04	8.425E-02	1.600E-01	FAIL ABUN
NP-238	0.000E+00	1.997E+04	0.000E+00	SHORT HLIF
NP-239	-8.154E-02	3.418E-01	5.994E-01	NOT IDENT.
PU-239	5.169E+02	4.422E+02	8.604E+02	NOT IDENT.
AM-241	5.278E-03	2.614E-01	4.506E-01	NOT IDENT.
CM-243	-8.118E-02	1.455E-01	2.495E-01	NOT IDENT.
BK-247	2.392E-02	1.123E-01	2.162E-01	FAIL ABUN
CM-247	-4.963E-02	5.533E-02	9.024E-02	NOT IDENT.
CF-249	-2.720E-03	5.654E-02	1.053E-01	NOT IDENT.
CF-251	1.439E-01	1.859E-01	3.452E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 16:05:41.60

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	323	10.66*	9.737E-01	2.131E+01	2.131E+01	11.52
Y-91	1204.77	19	0.26*	1.145E+00	4.313E+01	6.543E+01	113.14
CD-109	88.03	67	3.70*	4.711E+00	2.629E+00	2.772E+00	63.52
SN-126	64.28	34	9.60	2.241E+00	1.082E+00	1.082E+00	135.41
	86.94	67	8.90	4.711E+00	1.093E+00	1.093E+00	63.52
	87.57	67	37.00*	4.711E+00	2.629E-01	2.629E-01	63.52
CE-141	145.44	37	48.29*	5.492E+00	9.633E-02	2.039E-01	118.10
TL-208	277.37	------	6.60	3.664E+00	------	Line Not Found	------
	583.19	94	85.00*	2.130E+00	3.566E-01	3.566E-01	37.56
	860.56	------	12.50	1.547E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.389E+00	------	Line Not Found	------
	351.06	179	12.92*	3.084E+00	3.074E+00	3.074E+00	27.62
BI-212	727.33	25	6.67*	1.784E+00	1.453E+00	1.453E+00	89.37
	1620.50	------	1.47	9.038E-01	------	Line Not Found	------
PB-212	74.82	126	10.28	3.611E+00	2.321E+00	2.321E+00	39.00
	77.11	197	17.10	3.851E+00	2.056E+00	2.056E+00	23.62
	238.63	393	43.60*	4.080E+00	1.516E+00	1.516E+00	11.84
	300.09	17	3.30	3.457E+00	1.048E+00	1.048E+00	189.61
BI-214	609.32	165	45.49*	2.059E+00	1.208E+00	1.208E+00	20.07
	1120.29	23	14.92	1.221E+00	8.533E-01	8.533E-01	97.10
	1764.49	27	15.30	8.595E-01	1.404E+00	1.405E+00	51.30
PB-214	74.82	126	5.80	3.611E+00	4.113E+00	4.114E+00	39.00
	77.11	197	9.70	3.851E+00	3.624E+00	3.624E+00	23.62
	87.09	67	3.41	4.711E+00	2.852E+00	2.853E+00	63.52
	242.00	95	7.25	4.046E+00	2.211E+00	2.211E+00	45.82
	295.22	104	18.42	3.501E+00	1.104E+00	1.104E+00	37.51
	351.93	179	35.60*	3.084E+00	1.116E+00	1.116E+00	27.62
RN-222	609.32	165	45.49*	2.059E+00	1.208E+00	1.208E+00	20.07
	1120.29	23	14.92	1.221E+00	8.533E-01	8.533E-01	97.10
	1764.49	27	15.30	8.595E-01	1.404E+00	1.405E+00	51.30
RA-224	240.99	95	4.10*	4.046E+00	3.910E+00	3.910E+00	45.82
RA-226	74.82	126	5.80	3.611E+00	4.113E+00	4.114E+00	39.00
	77.11	197	9.70	3.851E+00	3.624E+00	3.624E+00	23.62
	87.09	67	3.41	4.711E+00	2.852E+00	2.853E+00	63.52
	242.00	95	7.25	4.046E+00	2.211E+00	2.211E+00	45.82
	295.22	104	18.42	3.501E+00	1.104E+00	1.104E+00	37.51
	351.93	179	35.60*	3.084E+00	1.116E+00	1.116E+00	27.62
AC-228	105.21	------	1.10	5.492E+00	------	Line Not Found	------
	338.32	65	11.27	3.173E+00	1.241E+00	1.241E+00	55.21
	835.71	------	1.61	1.587E+00	------	Line Not Found	------
	911.20	50	25.80*	1.471E+00	9.078E-01	9.078E-01	52.05
	968.97	33	15.80	1.392E+00	1.034E+00	1.034E+00	68.70
RA-228	105.21	------	1.10	5.492E+00	------	Line Not Found	------
	338.32	65	11.27	3.173E+00	1.241E+00	1.241E+00	55.21
	835.71	------	1.61	1.587E+00	------	Line Not Found	------
	911.20	50	25.80*	1.471E+00	9.078E-01	9.078E-01	52.05
	968.97	33	15.80	1.392E+00	1.034E+00	1.034E+00	68.70

Sample ID : G674299023 Acquisition date : 31-JUL-2024 15:04:59

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	126	10.28	3.611E+00	2.321E+00	2.321E+00	39.00
	77.11	197	17.10	3.851E+00	2.056E+00	2.056E+00	23.62
	238.63	393	43.60*	4.080E+00	1.516E+00	1.516E+00	11.84
	300.09	17	3.30	3.457E+00	1.048E+00	1.048E+00	189.61
TH-229	85.43	28	14.70	4.502E+00	2.893E-01	2.893E-01	120.14
	88.47	67	24.00	4.711E+00	4.053E-01	4.053E-01	63.52
	193.51	------	4.41*	4.710E+00	------	Line Not Found	------
	210.85	------	2.80	4.449E+00	------	Line Not Found	------
TH-230	74.82	126	5.80	3.611E+00	4.113E+00	4.113E+00	39.00
	77.11	197	9.70	3.851E+00	3.624E+00	3.624E+00	23.62
	87.09	67	3.41	4.711E+00	2.852E+00	2.852E+00	63.52
	242.00	95	7.25	4.046E+00	2.211E+00	2.211E+00	45.82
	295.22	104	18.42	3.501E+00	1.104E+00	1.104E+00	37.51
	351.93	179	35.60*	3.084E+00	1.116E+00	1.116E+00	27.62
PA-231	283.69	------	1.70	3.605E+00	------	Line Not Found	------
	301.36	17	5.35*	3.457E+00	6.466E-01	6.466E-01	189.61
TH-232	105.21	------	1.10	5.492E+00	------	Line Not Found	------
	338.32	65	11.27	3.173E+00	1.241E+00	1.241E+00	55.21
	835.71	------	1.61	1.587E+00	------	Line Not Found	------
	911.20	50	25.80*	1.471E+00	9.078E-01	9.078E-01	52.05
	968.97	33	15.80	1.392E+00	1.034E+00	1.034E+00	68.70
TH-234	63.29	34	3.70*	2.241E+00	2.806E+00	2.806E+00	135.41
	92.59	54	4.23	5.053E+00	1.740E+00	1.740E+00	133.25
U-234	74.82	126	5.80	3.611E+00	4.113E+00	4.113E+00	39.00
	77.11	197	9.70	3.851E+00	3.624E+00	3.624E+00	23.62
	87.09	67	3.41	4.711E+00	2.852E+00	2.852E+00	63.52
	242.00	95	7.25	4.046E+00	2.211E+00	2.211E+00	45.82
	295.22	104	18.42	3.501E+00	1.104E+00	1.104E+00	37.51
	351.93	179	35.60*	3.084E+00	1.116E+00	1.116E+00	27.62
U-235	89.96	------	3.47	4.872E+00	------	Line Not Found	------
	93.35	54	5.60	5.053E+00	1.314E+00	1.314E+00	133.25
	143.76	37	10.96*	5.492E+00	4.244E-01	4.244E-01	118.10
	163.33	------	5.08	5.200E+00	------	Line Not Found	------
	185.72	29	57.20	4.833E+00	7.175E-02	7.175E-02	173.50
	205.31	------	5.01	4.530E+00	------	Line Not Found	------
U-238	63.29	34	3.70*	2.241E+00	2.806E+00	2.806E+00	135.41
	92.59	54	4.23	5.053E+00	1.740E+00	1.740E+00	133.25
AM-243	43.53	------	5.90	2.631E-01	------	Line Not Found	------
	74.66	126	67.20*	3.611E+00	3.550E-01	3.550E-01	39.00
ANH-511	511.00	55	100.00*	2.353E+00	1.609E-01	1.609E-01	68.83

Flag: "*" = Keyline

Sample ID : G674299023 Acquisition date : 31-JUL-2024 15:04:59

Total number of lines in spectrum	44	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	33	75.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.131E+01	2.131E+01	0.245E+01	11.52	
Y-91	58.51D	1.52	4.313E+01	6.543E+01	7.403E+01	113.14	
CD-109	461.40D	1.05	2.629E+00	2.772E+00	1.761E+00	63.52	
SN-126	2.30E+05Y	1.00	2.629E-01	2.629E-01	1.670E-01	63.52	
CE-141	32.51D	2.12	9.633E-02	2.039E-01	2.409E-01	118.10	
TL-208	1.41E+10Y	1.00	3.566E-01	3.566E-01	1.339E-01	37.56	
BI-211	7.04E+08Y	1.00	3.074E+00	3.074E+00	0.849E+00	27.62	
BI-212	1.41E+10Y	1.00	1.453E+00	1.453E+00	1.299E+00	89.37	
PB-212	1.41E+10Y	1.00	1.516E+00	1.516E+00	0.179E+00	11.84	
BI-214	1600.00Y	1.00	1.208E+00	1.208E+00	0.242E+00	20.07	
PB-214	1600.00Y	1.00	1.116E+00	1.116E+00	0.308E+00	27.62	
RN-222	1600.00Y	1.00	1.208E+00	1.208E+00	0.242E+00	20.07	
RA-224	1.41E+10Y	1.00	3.910E+00	3.910E+00	1.792E+00	45.82	
RA-226	1600.00Y	1.00	1.116E+00	1.116E+00	0.308E+00	27.62	
AC-228	1.41E+10Y	1.00	9.078E-01	9.078E-01	4.725E-01	52.05	
RA-228	1.41E+10Y	1.00	9.078E-01	9.078E-01	4.725E-01	52.05	
TH-228	1.41E+10Y	1.00	1.516E+00	1.516E+00	0.179E+00	11.84	
TH-229	7340.00Y	1.00	4.053E-01	4.053E-01	2.575E-01	63.52	K
TH-230	7.54E+04Y	1.00	1.116E+00	1.116E+00	0.308E+00	27.62	
PA-231	7.04E+08Y	1.00	6.466E-01	6.466E-01	12.26E-01	189.61	
TH-232	1.41E+10Y	1.00	9.078E-01	9.078E-01	4.725E-01	52.05	
TH-234	4.47E+09Y	1.00	2.806E+00	2.806E+00	3.800E+00	135.41	
U-234	2.45E+05Y	1.00	1.116E+00	1.116E+00	0.308E+00	27.62	
U-235	7.04E+08Y	1.00	4.244E-01	4.244E-01	5.012E-01	118.10	
U-238	4.47E+09Y	1.00	2.806E+00	2.806E+00	3.800E+00	135.41	
AM-243	7370.00Y	1.00	3.550E-01	3.550E-01	1.385E-01	39.00	
ANH-511	1.00E+09Y	1.00	1.609E-01	1.609E-01	1.108E-01	68.83	
			---	---			
	Total Activity :		9.646E+01	1.190E+02			

Grand Total Activity : 9.646E+01 1.190E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299023 Acquisition date : 31-JUL-2024 15:04:59

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	209.31	51	54	1.85	419.36	416	7	1.42E-02	55.5	4.47E+00	
0	270.48	21	77	0.69	541.72	537	9	5.82E-03	****	3.73E+00	T
0	464.45	38	34	1.97	929.68	924	12	1.08E-02	71.0	2.53E+00	T
0	526.52	25	27	3.00	1053.81	1048	12	7.05E-03	94.2	2.30E+00	T
0	641.61	14	31	2.98	1283.95	1275	12	4.07E-03	****	1.98E+00	
0	755.62	22	2	1.33	1511.92	1507	10	6.29E-03	49.3	1.73E+00	T
0	769.12	40	35	1.97	1538.90	1530	19	1.15E-02	78.0	1.70E+00	
0	838.20	14	28	4.66	1677.03	1669	16	3.92E-03	****	1.58E+00	T
0	891.49	10	14	4.44	1783.57	1775	12	2.83E-03	****	1.50E+00	
0	935.10	13	13	2.08	1870.73	1863	11	3.75E-03	****	1.44E+00	T
0	937.87	8	3	1.43	1876.29	1873	6	2.30E-03	95.2	1.43E+00	T
1	965.05	16	10	2.12	1930.61	1927	20	4.60E-03	80.7	1.40E+00	T
0	1145.77	14	9	1.72	2291.85	2284	13	4.01E-03	****	1.20E+00	
0	1155.62	9	9	0.83	2311.52	2302	13	2.61E-03	****	1.19E+00	
0	1161.92	6	7	0.56	2324.13	2316	10	1.87E-03	****	1.18E+00	
0	1231.98	24	4	3.87	2464.13	2459	11	7.02E-03	53.2	1.12E+00	T
0	1286.84	12	7	1.92	2573.78	2567	11	3.67E-03	****	1.08E+00	
0	1306.88	13	3	3.40	2613.84	2606	14	3.77E-03	79.8	1.07E+00	
0	1328.76	9	4	2.05	2657.55	2654	8	2.78E-03	93.8	1.05E+00	
0	1376.82	13	7	0.77	2753.59	2750	10	3.91E-03	90.8	1.02E+00	

Flags: "T" = Tentatively associated

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299023.CNF;1  *
* Acquisition date : 31-JUL-2024 15:04:59 Sensitivity     : 3.000           *
* Detector ID      : GAM02                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.02     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:15:00 Nuclide Library : SOLID           *
* Sample ID        : G674299023           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0951E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-SEP-2023 09:49:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM02_CAN.CNF;19            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	4.270E-01
Y-91	2.560E+01
CD-109	1.045E+00
SN-126	8.639E-02
CE-141	1.000E-01
TL-208	4.012E-02
BI-211	2.363E-01
BI-212	6.393E-01
PB-212	6.267E-02
BI-214	6.938E-02
PB-214	8.594E-02
RN-222	6.938E-02
RA-224	6.720E-01
RA-226	8.594E-02
AC-228	1.526E-01
RA-228	1.526E-01
TH-228	6.267E-02
TH-229	6.279E-01
TH-230	8.594E-02
PA-231	6.054E-01
TH-232	1.526E-01
TH-234	1.673E+00
U-234	8.594E-02
U-235	2.514E-01
U-238	1.673E+00
AM-243	6.419E-02
ANH-511	2.689E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.158E-01	NOT IDENT.
NA-22	3.664E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.394E-02	NOT IDENT.

SC-46	5.284E-02	FAIL ABUN
V-48	2.237E-01	NOT IDENT.
CR-51	6.845E-01	NOT IDENT.
MN-52	2.519E+00	FAIL ABUN
MN-54	4.855E-02	NOT IDENT.
CO-56	5.414E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.911E-02	NOT IDENT.
CO-58	5.595E-02	NOT IDENT.
FE-59	1.409E-01	NOT IDENT.
CO-60	4.597E-02	NOT IDENT.
ZN-65	1.272E-01	NOT IDENT.
GE-68	1.491E+00	NOT IDENT.
AS-73	1.552E+00	NOT IDENT.
AS-74	2.275E-01	NOT IDENT.
SE-75	5.851E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.620E-01	NOT IDENT.
RB-83	9.215E-02	NOT IDENT.
RB-84	1.320E-01	NOT IDENT.
KR-85	9.764E+00	NOT IDENT.
SR-85	6.386E-02	NOT IDENT.
RB-86	2.092E+00	NOT IDENT.
Y-88	3.915E-02	NOT IDENT.
NB-94	3.878E-02	NOT IDENT.
NB-95	7.037E-02	NOT IDENT.
NB-95M	1.691E-01	NOT IDENT.
ZR-95	1.060E-01	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.499E-02	NOT IDENT.
RH-102	6.525E-02	NOT IDENT.
RU-103	5.236E-02	FAIL ABUN
RH-106	3.751E-01	NOT IDENT.
RU-106	3.751E-01	NOT IDENT.
AG-108M	3.047E-02	NOT IDENT.
AG-110	8.998E-01	NOT IDENT.
AG-110M	5.762E-02	FAIL ABUN
SN-113	6.293E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.679E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.736E-02	NOT IDENT.
SB-124	1.049E-01	NOT IDENT.
SB-125	1.102E-01	FAIL ABUN
TE-125M	1.396E+01	NOT IDENT.
I-126	7.204E-01	NOT IDENT.
SB-126	5.046E-01	NOT IDENT.
SB-127	5.643E+01	NOT IDENT.
I-131	7.077E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.191E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	6.287E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.755E-01	NOT IDENT.
BA-137M	4.077E-02	NOT IDENT.
CS-137	4.307E-02	NOT IDENT.
LA-138	5.126E-02	NOT IDENT.
CE-139	3.464E-02	NOT IDENT.
BA-140	9.317E-01	NOT IDENT.
LA-140	1.742E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.226E-01	NOT IDENT.
PM-144	3.912E-02	NOT IDENT.
PR-144	2.959E+00	NOT IDENT.
PM-146	6.071E-02	NOT IDENT.
ND-147	2.227E+00	NOT IDENT.
PM-147	8.270E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.278E-02	FAIL ABUN
EU-152	1.221E-01	FAIL ABUN
GD-153	9.044E-02	NOT IDENT.
EU-154	1.028E-01	FAIL ABUN
EU-155	1.267E-01	FAIL ABUN

TB-160	2.085E-01	FAIL ABUN
HO-166M	6.260E-02	FAIL ABUN
TM-171	2.691E+01	NOT IDENT.
HF-172	2.253E-01	FAIL ABUN
LU-172	7.897E-02	FAIL ABUN
LU-176	3.308E-02	FAIL ABUN
HF-181	7.188E-02	NOT IDENT.
TA-182	2.324E-01	FAIL ABUN
RE-183	3.400E-01	NOT IDENT.
RE-184	2.320E-01	NOT IDENT.
W-188	1.064E+01	FAIL ABUN
IR-192	5.489E-02	FAIL ABUN
HG-203	6.289E-02	NOT IDENT.
TL-204	5.943E+00	NOT IDENT.
BI-207	6.778E-02	FAIL ABUN
BI-210	7.028E+00	NOT IDENT.
PB-210	7.028E+00	NOT IDENT.
PB-211	8.876E-01	NOT IDENT.
BI-213	1.433E-01	NOT IDENT.
RN-219	4.791E-01	FAIL ABUN
RA-223	7.253E-01	FAIL ABUN
AC-225	2.590E+00	NOT IDENT.
AC-227	2.952E-01	FAIL ABUN
TH-227	2.952E-01	FAIL ABUN
TH-231	7.253E-01	FAIL ABUN
PA-233	7.286E-02	FAIL ABUN
PA-234	4.056E-01	FAIL ABUN
PA-234M	6.154E+00	NOT IDENT.
NP-237	7.286E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.789E-01	NOT IDENT.
PU-239	4.040E+02	NOT IDENT.
AM-241	2.105E-01	NOT IDENT.
CM-243	1.165E-01	NOT IDENT.
BK-247	9.995E-02	FAIL ABUN
CM-247	4.053E-02	NOT IDENT.
CF-249	4.777E-02	NOT IDENT.
CF-251	1.618E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 16:05:57.42

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299023.CNF;1  *
* Acquisition date : 31-JUL-2024 15:04:59 Sensitivity     : 3.000           *
* Detector ID      : GAM02                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.02     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:15:00 Nuclide Library : SOLID           *
* Sample ID        : G674299023           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0951E+02 GRAM *
*                                         Quantity Err(%) : 1.8263E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-SEP-2023 09:49:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM02_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.131E+01	3.377E+00	3.377E+00
Y-91	6.543E+01	7.276E+01	7.276E+01
CD-109	2.772E+00	1.757E+00	1.757E+00
SN-126	2.629E-01	1.661E-01	1.661E-01
CE-141	1.695E-01	2.436E-01	2.436E-01
TL-208	3.566E-01	1.348E-01	1.348E-01
BI-211	3.074E+00	8.695E-01	8.695E-01
BI-212	1.453E+00	1.280E+00	1.280E+00
PB-212	1.516E+00	2.174E-01	2.174E-01
BI-214	1.208E+00	2.588E-01	2.588E-01
PB-214	1.116E+00	3.151E-01	3.151E-01
RN-222	1.208E+00	2.588E-01	2.588E-01
RA-224	3.910E+00	1.786E+00	1.786E+00
RA-226	1.116E+00	3.151E-01	3.151E-01
AC-228	9.078E-01	4.735E-01	4.735E-01
RA-228	9.078E-01	4.735E-01	4.735E-01
TH-228	1.516E+00	2.174E-01	2.174E-01
TH-229	1.834E-01	7.607E-01	7.607E-01
TH-230	1.116E+00	3.150E-01	3.150E-01
PA-231	6.466E-01	1.210E+00	1.210E+00
TH-232	9.078E-01	4.735E-01	4.735E-01
TH-234	2.806E+00	3.785E+00	3.785E+00
U-234	1.116E+00	3.150E-01	3.150E-01
U-235	4.244E-01	4.924E-01	4.924E-01
U-238	2.806E+00	3.785E+00	3.785E+00
AM-243	3.550E-01	1.407E-01	1.407E-01
ANH-511	1.609E-01	1.094E-01	1.094E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-5.970E-01	5.982E-01	6.560E-01	NOT IDENT.
NA-22	-2.427E-03	4.526E-02	4.527E-02	NOT IDENT.
NA-24	-2.146E+15	3.219E+15	3.361E+15	SHORT HLIF

AL-26	1.106E-02	3.605E-02	3.639E-02	NOT IDENT.
SC-46	1.040E-02	6.025E-02	6.043E-02	FAIL ABUN
V-48	1.813E-01	2.349E-01	2.487E-01	NOT IDENT.
CR-51	-3.806E-01	8.360E-01	8.535E-01	NOT IDENT.
MN-52	-1.443E+00	3.602E+00	3.660E+00	FAIL ABUN
MN-54	1.125E-02	6.206E-02	6.226E-02	NOT IDENT.
CO-56	-3.665E-02	6.935E-02	7.129E-02	NOT IDENT.
MN-56	-1.000E+41	1.879E+41	0.000E+00	SHORT HLIF
CO-57	-6.647E-03	3.559E-02	3.572E-02	NOT IDENT.
CO-58	-2.775E-02	6.960E-02	7.071E-02	NOT IDENT.
FE-59	-5.410E-02	1.791E-01	1.808E-01	NOT IDENT.
CO-60	-9.031E-03	6.731E-02	6.744E-02	NOT IDENT.
ZN-65	8.712E-03	1.722E-01	1.723E-01	NOT IDENT.
GE-68	-1.517E-01	1.814E+00	1.815E+00	NOT IDENT.
AS-73	5.540E-01	1.739E+00	1.757E+00	NOT IDENT.
AS-74	-1.156E-01	2.964E-01	3.009E-01	NOT IDENT.
SE-75	1.215E-02	6.582E-02	6.605E-02	NOT IDENT.
BR-77	8.174E+04	8.380E+04	9.154E+04	SHORT HLIF
SR-82	-2.611E-01	9.280E-01	9.354E-01	NOT IDENT.
RB-83	-2.928E-02	1.219E-01	1.226E-01	NOT IDENT.
RB-84	5.293E-02	1.464E-01	1.483E-01	NOT IDENT.
KR-85	1.522E+01	9.915E+00	1.206E+01	NOT IDENT.
SR-85	9.944E-02	6.485E-02	7.884E-02	NOT IDENT.
RB-86	2.567E-01	2.456E+00	2.459E+00	NOT IDENT.
Y-88	-2.091E-03	4.751E-02	4.752E-02	NOT IDENT.
NB-94	-1.213E-02	5.009E-02	5.039E-02	NOT IDENT.
NB-95	2.164E-02	8.866E-02	8.920E-02	NOT IDENT.
NB-95M	3.279E-02	2.091E-01	2.097E-01	NOT IDENT.
ZR-95	2.323E-01	1.144E-01	1.551E-01	FAIL ABUN
NB-97	-1.000E+41	1.599E+42	0.000E+00	SHORT HLIF
ZR-97	-9.027E+14	1.063E+15	1.138E+15	SHORT HLIF
MO-99	-1.864E+03	2.795E+03	2.919E+03	SHORT HLIF
TC-99M	3.508E+40	5.674E+40	0.000E+00	SHORT HLIF
RH-101	-3.171E-02	4.534E-02	4.754E-02	NOT IDENT.
RH-102	-3.371E-02	8.553E-02	8.687E-02	NOT IDENT.
RU-103	-8.315E-02	7.709E-02	8.572E-02	FAIL ABUN
RH-106	-9.561E-02	4.753E-01	4.772E-01	NOT IDENT.
RU-106	-9.561E-02	4.753E-01	4.772E-01	NOT IDENT.
AG-108M	-1.141E-02	3.788E-02	3.823E-02	NOT IDENT.
AG-110	-1.379E-01	1.131E+00	1.132E+00	NOT IDENT.
AG-110M	-2.410E-02	8.293E-02	8.364E-02	FAIL ABUN
SN-113	0.000E+00	7.412E-02	0.000E+00	NOT IDENT.
CD-115	1.518E+04	1.410E+04	1.567E+04	SHORT HLIF
SN-117M	-3.616E-02	2.088E-01	2.094E-01	NOT IDENT.
SB-122	-7.503E+01	5.106E+02	5.118E+02	SHORT HLIF
TE-123M	1.078E-02	4.469E-02	4.495E-02	NOT IDENT.
SB-124	1.455E-02	1.186E-01	1.188E-01	NOT IDENT.
SB-125	3.545E-02	1.261E-01	1.271E-01	FAIL ABUN
TE-125M	2.758E-01	1.664E+01	1.664E+01	NOT IDENT.
I-126	-2.901E-01	9.378E-01	9.469E-01	NOT IDENT.
SB-126	-9.701E-02	6.175E-01	6.190E-01	NOT IDENT.
SB-127	-4.160E+00	7.045E+01	7.047E+01	NOT IDENT.
I-131	1.396E-01	8.109E-01	8.134E-01	NOT IDENT.
I-132	-1.000E+41	2.471E+41	0.000E+00	SHORT HLIF
TE-132	1.215E+01	7.886E+01	7.905E+01	SHORT HLIF
BA-133	5.373E-02	5.946E-02	6.420E-02	NOT IDENT.
I-133	-2.382E+10	8.186E+10	8.256E+10	SHORT HLIF
CS-134	2.863E-02	6.977E-02	7.096E-02	NOT IDENT.
I-135	-5.249E+37	9.184E+37	0.000E+00	SHORT HLIF
CS-136	-3.762E-01	4.129E-01	4.464E-01	NOT IDENT.
BA-137M	-3.353E-02	5.461E-02	5.666E-02	NOT IDENT.
CS-137	-3.542E-02	5.769E-02	5.986E-02	NOT IDENT.
LA-138	1.101E-02	5.901E-02	5.921E-02	NOT IDENT.
CE-139	-1.685E-02	4.435E-02	4.500E-02	NOT IDENT.
BA-140	7.462E-01	1.008E+00	1.063E+00	NOT IDENT.
LA-140	-2.374E-01	2.954E-01	3.142E-01	NOT IDENT.
CE-143	1.991E+06	4.326E+06	4.418E+06	SHORT HLIF
CE-144	-9.956E-03	2.700E-01	2.701E-01	NOT IDENT.
PM-144	-2.085E-02	5.210E-02	5.294E-02	NOT IDENT.
PR-144	-1.577E+00	3.940E+00	4.004E+00	NOT IDENT.
PM-146	6.226E-02	6.535E-02	7.112E-02	NOT IDENT.
ND-147	9.839E-01	2.798E+00	2.833E+00	NOT IDENT.
PM-147	-7.464E+02	1.061E+03	1.113E+03	NOT IDENT.
PM-149	-1.802E+04	6.320E+04	6.372E+04	SHORT HLIF
EU-150	2.303E-02	3.916E-02	4.052E-02	FAIL ABUN
EU-152	9.155E-02	1.328E-01	1.391E-01	FAIL ABUN
GD-153	-1.146E-01	1.283E-01	1.384E-01	NOT IDENT.
EU-154	-6.801E-03	1.269E-01	1.270E-01	FAIL ABUN

EU-155	7.916E-02	1.446E-01	1.489E-01	FAIL ABUN
TB-160	1.282E-01	2.247E-01	2.320E-01	FAIL ABUN
HO-166M	-5.802E-02	8.865E-02	9.243E-02	FAIL ABUN
TM-171	-3.634E+01	3.445E+01	3.815E+01	NOT IDENT.
HF-172	1.587E-01	2.588E-01	2.685E-01	FAIL ABUN
LU-172	-3.535E-02	1.010E-01	1.023E-01	FAIL ABUN
LU-176	1.719E-03	3.809E-02	3.810E-02	FAIL ABUN
HF-181	4.659E-02	7.932E-02	8.206E-02	NOT IDENT.
TA-182	-1.571E-02	2.845E-01	2.846E-01	FAIL ABUN
RE-183	5.867E-02	3.873E-01	3.882E-01	NOT IDENT.
RE-184	2.308E-01	2.350E-01	2.570E-01	NOT IDENT.
W-188	2.919E+00	1.325E+01	1.332E+01	FAIL ABUN
IR-192	3.918E-02	5.984E-02	6.240E-02	FAIL ABUN
HG-203	-3.044E-02	7.500E-02	7.625E-02	NOT IDENT.
TL-204	-3.274E-01	7.500E+00	7.502E+00	NOT IDENT.
BI-207	-3.912E-02	8.746E-02	8.922E-02	FAIL ABUN
BI-210	-1.637E+00	8.253E+00	8.286E+00	NOT IDENT.
PB-210	-1.637E+00	8.253E+00	8.286E+00	NOT IDENT.
PB-211	-4.514E-02	1.077E+00	1.078E+00	NOT IDENT.
BI-213	1.329E-01	1.549E-01	1.661E-01	NOT IDENT.
RN-219	-9.000E-02	5.764E-01	5.779E-01	FAIL ABUN
RA-223	-1.815E-01	8.875E-01	8.913E-01	FAIL ABUN
AC-225	-1.434E+00	3.434E+00	3.494E+00	NOT IDENT.
AC-227	-4.348E-02	3.411E-01	3.417E-01	FAIL ABUN
TH-227	-4.348E-02	3.411E-01	3.417E-01	FAIL ABUN
TH-231	-1.815E-01	8.875E-01	8.913E-01	FAIL ABUN
PA-233	9.700E-04	8.425E-02	8.425E-02	FAIL ABUN
PA-234	2.987E-01	5.506E-01	5.668E-01	FAIL ABUN
PA-234M	-1.979E+00	7.123E+00	7.178E+00	NOT IDENT.
NP-237	9.700E-04	8.425E-02	8.425E-02	FAIL ABUN
NP-238	3.057E+02	1.997E+04	1.997E+04	SHORT HLIF
NP-239	-8.154E-02	3.419E-01	3.439E-01	NOT IDENT.
PU-239	5.169E+02	4.440E+02	5.014E+02	NOT IDENT.
AM-241	5.278E-03	2.614E-01	2.614E-01	NOT IDENT.
CM-243	-8.118E-02	1.458E-01	1.504E-01	NOT IDENT.
BK-247	2.392E-02	1.124E-01	1.129E-01	FAIL ABUN
CM-247	-4.963E-02	5.606E-02	6.036E-02	NOT IDENT.
CF-249	-2.720E-03	5.654E-02	5.655E-02	NOT IDENT.
CF-251	1.439E-01	1.869E-01	1.978E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	53.6797	85.43	86.5597	131.20	73.7004
45.60	58.5792	86.55	86.7795	133.02	58.4782
46.54	66.0028	86.79	86.8254	133.52	62.9439
49.72	0.0000	86.94	86.8556	136.00	82.0508
51.35	54.2025	87.09	86.8845	136.47	64.3597
51.87	65.3353	87.57	86.9776	140.51	0.0000
52.39	72.8173	88.03	116.0896	143.76	60.6239
52.97	55.4057	88.34	116.1696	144.24	60.6693
53.44	51.7882	88.47	115.5273	145.44	60.0334
54.07	65.7892	89.96	109.8070	152.43	68.2635
57.36	0.0000	1093.63	116.0804	153.25	63.7913
57.53	60.8663	91.11	116.8783	323.87	69.5865
57.98	60.0098	92.59	98.1650	156.02	61.7676
59.27	64.0027	93.35	98.3254	158.56	66.5917
59.32	64.0120	94.56	98.5789	159.00	64.3364
59.54	66.5649	94.65	98.5972	162.33	63.4930
60.96	63.0549	94.67	98.6016	162.66	61.2133
61.17	63.0928	94.87	98.6433	163.33	56.6473
62.93	72.2849	97.43	75.7570	165.86	63.8136
63.29	72.3575	98.43	70.3927	176.31	81.2226
63.58	72.4160	98.44	70.3943	176.60	77.7214
64.28	72.5568	99.53	64.3268	177.52	56.5950
66.73	66.6361	100.11	63.3642	181.07	0.0000
67.24	69.2935	102.03	76.1239	181.52	56.8975
125.81	66.4847	103.18	76.2988	184.41	61.8738
67.75	66.4968	103.37	80.5101	143.76	65.5559
68.89	77.3309	105.21	67.1616	193.51	60.1944
69.67	71.0327	105.31	67.1748	197.03	64.0883
70.82	81.6076	106.12	74.6401	198.01	65.3766
70.83	81.6102	106.47	75.7430	201.83	55.9544
72.81	90.8132	109.28	71.9242	203.43	47.5318
72.87	90.8274	111.00	77.4656	205.31	50.4910
74.66	91.2368	111.76	0.0000	210.85	45.9079
74.82	91.2730	114.06	67.2379	215.65	48.2281
74.97	91.3071	116.30	0.0000	218.12	54.5676
77.11	91.7902	116.74	65.4254	222.11	56.0632
78.74	97.7679	119.76	71.1754	227.09	60.9737
79.69	94.0181	121.12	82.1590	227.38	61.8285
80.03	63.6123	121.22	82.1735	228.16	0.0000
80.12	63.6265	121.78	80.0906	228.18	60.2117
80.19	63.6372	122.06	68.2189	116.74	60.2117
80.57	88.9067	122.92	61.8154	235.69	50.5933
81.00	99.6239	123.07	61.8319	235.96	50.6079
81.07	99.6407	265.00	72.7573	238.63	48.2173
81.75	83.8315	125.81	59.9477	238.98	0.0000
82.47	87.9718	127.23	84.1318	240.99	48.3396
83.79	76.2082	127.91	70.0098	242.00	48.3918
84.00	86.2769	129.30	52.6311	244.70	35.7596

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	53.2144	344.28	28.9383	563.25	24.8278
252.80	53.2365	345.93	33.6511	564.24	0.0000
254.15	0.0000	351.06	34.7289	569.33	30.3254
256.23	48.2546	351.93	34.7530	946.00	27.0793
260.90	0.0000	355.39	0.0000	569.70	27.0823
264.66	40.8448	356.01	22.6162	583.19	20.7325
264.80	46.0655	364.49	24.6643	584.27	20.7449
265.00	46.0752	366.42	0.0000	595.83	25.2667
269.46	47.1522	372.51	20.9996	427.87	20.9243
270.03	47.1786	375.05	24.8659	602.52	0.0000
271.23	47.2335	377.52	22.0379	604.72	24.8318
273.65	49.9759	356.01	25.0315	607.14	13.2603
276.40	50.1093	388.16	32.8386	609.32	16.5942
277.37	48.3958	388.63	33.8158	610.33	16.6028
277.60	44.8865	391.69	34.8604	614.28	14.9733
278.00	40.5008	264.66	30.2160	618.01	25.5587
279.20	55.5326	401.81	33.1672	620.36	17.8008
279.54	55.5505	402.40	37.0854	621.93	22.2689
279.70	52.9138	404.85	31.2845	630.19	0.0000
280.46	51.1866	410.95	38.2938	631.29	25.7309
283.69	37.1807	413.71	25.5795	633.25	23.5165
284.31	38.9736	414.70	29.5349	634.78	20.1724
285.41	37.2405	423.72	18.8237	635.95	25.2301
285.90	0.0000	427.09	26.8116	636.99	21.8772
287.50	44.4214	427.87	24.8388	657.50	21.5319
290.67	40.0974	433.94	24.9415	657.76	20.4016
293.27	0.0000	439.40	28.0376	657.90	0.0000
351.93	36.2392	440.45	24.0493	661.66	21.5752
295.96	36.2639	453.88	24.2642	664.57	0.0000
879.38	48.4673	463.37	24.4141	666.33	22.7620
299.98	48.5288	468.07	26.0183	666.50	22.7637
300.09	48.5343	473.00	31.7291	667.71	0.0000
300.13	48.5354	475.06	20.4972	677.62	22.8849
301.36	48.5903	476.78	21.5456	685.70	19.5262
302.85	47.3036	477.60	30.7953	692.65	0.0000
256.23	54.1418	482.18	17.5005	695.00	20.7649
304.85	43.3262	487.02	20.6510	696.49	23.0876
306.78	42.4972	492.35	0.0000	696.51	23.0884
308.46	40.7492	497.08	29.0903	697.00	24.2479
311.90	34.5156	505.52	21.9293	697.30	23.0965
316.51	34.6547	507.63	0.0000	697.49	23.0990
319.41	43.8838	511.00	15.7153	702.65	23.1535
320.08	41.1649	514.00	15.7434	706.68	18.5573
321.04	36.6211	514.00	15.7434	711.68	23.2495
323.87	36.7106	520.40	24.0200	720.70	20.0091
325.23	49.6165	520.69	0.0000	721.93	0.0000
328.76	38.7059	522.65	0.0000	722.78	22.4312
333.37	33.3054	527.90	0.0000	722.91	22.4328
333.97	29.1563	528.26	20.6378	723.31	25.2413
334.37	37.4999	529.59	20.6537	724.19	21.0425
338.28	29.7253	529.87	0.0000	727.33	22.8286
338.32	29.7266	531.02	15.9009	733.00	22.2996
311.90	37.6894	537.26	13.8300	735.93	18.5089
340.48	37.6894	546.56	0.0000	333.97	21.1677
340.55	37.6919	552.55	22.5347	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	24.7692	949.00	19.1827	1384.29	6.5665
747.24	23.0301	667.71	0.0000	1408.01	4.4045
748.06	20.3798	962.31	10.7933	1434.09	6.6508
752.31	17.0443	964.08	13.8858	1435.80	3.3268
753.82	17.0555	966.17	18.3349	1457.56	0.0000
756.73	19.9233	911.20	18.3529	1460.82	7.8113
756.80	19.9240	983.53	9.7089	1489.16	5.6186
884.68	19.9849	984.45	0.0000	1505.03	7.2195
765.81	22.8586	1274.44	13.6522	1584.12	12.8721
766.42	19.6488	1001.03	15.6279	1596.21	6.4542
766.84	19.6528	1002.74	13.6826	1620.50	2.7814
772.60	0.0000	1004.73	15.6479	1621.92	2.7823
776.52	20.0922	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	2.8254
778.90	12.5704	1028.54	0.0000	1750.46	0.0000
783.70	19.7932	1037.84	14.8343	1764.49	6.6972
788.74	27.0483	1038.76	0.0000	1063.66	1.5965
792.07	18.9601	631.29	16.8610	1771.35	5.7486
795.86	23.5109	1048.07	16.8693	1791.20	0.0000
810.06	18.1915	1049.04	15.8818	1808.65	1.9312
810.29	18.1934	1050.41	11.9165	1810.72	0.0000
344.28	18.1946	1063.66	21.9423	1836.06	2.9130
810.76	20.9259	1077.00	14.0231		
815.77	17.3220	1077.34	13.0230		
1048.07	15.5157	1085.87	7.0316		
832.01	11.7461	1093.63	18.1263		
834.85	17.6391	1099.45	16.1416		
835.71	19.1160	1112.07	19.2447		
836.80	0.0000	1112.84	18.2362		
846.75	0.0000	1115.54	19.4684		
846.77	21.2305	1120.29	18.2791		
856.80	23.1674	1120.55	18.2802		
860.56	18.5608	1221.41	18.2845		
871.09	17.7047	1129.67	8.1475		
873.19	13.9888	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	12.1522	1173.23	14.4478		
880.51	14.0277	1177.95	20.6689		
881.60	13.0981	1189.05	12.4424		
883.24	17.1183	1204.77	10.0002		
884.68	16.4855	1221.41	13.6070		
889.28	12.1978	1231.02	16.7939		
894.76	12.0352	1235.36	31.9475		
898.04	10.3555	1238.28	13.2229		
900.72	16.9623	1260.41	0.0000		
903.28	7.5459	1271.87	10.6183		
911.20	13.2446	1274.44	6.3754		
912.08	13.2489	1274.54	6.3757		
923.98	0.0000	1291.59	8.5410		
926.50	14.2703	1298.22	0.0000		
929.11	15.2363	1312.11	8.5894		
935.54	0.0000	1332.49	10.3641		
937.49	7.6414	1362.66	0.0000		
944.13	11.4895	1365.19	5.4449		
946.00	11.4972	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:09:34.07

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*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299024.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM04.CNF;776
                                         Background date  : 28-JUL-2024 11:21:52
Sample date      : 26-JUN-2024 11:20:00  Acquisition date : 31-JUL-2024 16:09:00
Sample ID        : G674299024            Sample quantity  : 1.13770E+02 GRAM
Detector name    : GAM04                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.91  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.09*	78	275	1.09	127.15	123	9	2.17E-02	40.2	
2	0	67.97	52	204	1.48	136.92	134	6	1.43E-02	46.0	
3	3	74.88*	307	294	1.01	150.74	147	14	8.53E-02	10.5	6.97E-01
4	3	77.07	444	236	0.88	155.12	147	14	1.23E-01	7.2	
5	0	81.17	52	226	1.09	163.30	161	6	1.45E-02	48.2	
6	0	83.96*	81	207	1.36	168.87	167	6	2.26E-02	30.3	
7	0	87.24	181	293	1.05	175.44	172	7	5.04E-02	17.3	
8	2	90.04	76	135	0.89	181.04	179	12	2.10E-02	22.2	1.38E+00
9	2	92.71*	139	287	1.12	186.37	179	12	3.85E-02	22.7	
10	0	144.35*	26	308	0.97	289.61	285	9	7.12E-03	125.6	
11	0	186.18*	394	351	1.32	373.23	368	11	1.09E-01	10.7	
12	0	209.53	38	186	1.28	419.90	416	8	1.04E-02	65.3	
13	3	238.77*	300	145	0.94	478.36	474	16	8.34E-02	8.5	1.71E+00
14	3	242.08	454	131	1.11	484.97	474	16	1.26E-01	6.4	
15	0	256.24	40	98	0.76	513.27	510	7	1.10E-02	44.4	
16	0	270.08	69	216	1.93	540.95	536	11	1.91E-02	43.0	
17	0	277.20	19	118	0.94	555.18	552	7	5.14E-03	100.4	
18	0	295.31*	912	188	1.14	591.39	584	13	2.53E-01	4.5	
19	0	338.33	67	108	1.00	677.39	673	9	1.86E-02	30.5	
20	0	352.00*	1594	144	1.15	704.72	698	14	4.43E-01	3.0	
21	0	409.60	22	54	1.24	819.88	815	7	5.97E-03	60.6	
22	0	436.38	15	68	1.25	873.42	866	9	4.15E-03	104.8	
23	0	476.65	16	46	0.77	953.93	949	7	4.53E-03	73.1	
24	2	480.31	32	35	1.67	961.25	958	25	9.00E-03	32.1	1.86E+00
25	2	488.58	24	47	1.68	977.77	958	25	6.69E-03	59.9	
26	0	511.34*	26	59	1.77	1023.29	1018	12	7.24E-03	72.1	
27	0	583.55*	88	59	1.26	1167.66	1163	11	2.45E-02	20.4	
28	0	609.49*	1056	45	1.29	1219.52	1215	12	2.93E-01	3.3	
29	0	630.81	12	51	4.34	1262.16	1254	14	3.31E-03	135.2	
30	1	662.09*	47	33	1.68	1324.69	1316	25	1.31E-02	27.2	1.74E+00
31	1	665.59	34	26	1.68	1331.69	1316	25	9.38E-03	35.3	
32	0	706.57	16	75	4.87	1413.63	1402	17	4.50E-03	125.9	
33	0	713.47	18	55	3.25	1427.44	1419	19	4.91E-03	104.8	
34	0	720.27	16	33	2.05	1441.04	1437	9	4.49E-03	67.8	

Sample ID : G674299024 Acquisition date : 31-JUL-2024 16:09:00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	727.79	35	18	2.19	1456.06	1451	10	9.75E-03	28.9	
36	0	746.57	16	50	4.91	1493.62	1481	16	4.47E-03	102.9	
37	0	768.60	116	42	0.96	1537.66	1530	14	3.22E-02	15.1	
38	0	786.36	34	19	2.59	1573.18	1567	11	9.40E-03	30.4	
39	0	807.02	56	29	1.86	1614.49	1608	16	1.54E-02	26.2	
40	0	840.79	13	53	1.98	1682.03	1674	13	3.74E-03	116.3	
41	0	891.99	25	28	4.00	1784.40	1778	14	6.94E-03	49.2	
42	0	911.49*	94	33	1.56	1823.40	1818	13	2.62E-02	16.4	
43	0	934.63	63	48	1.48	1869.67	1862	16	1.75E-02	27.6	
44	0	958.91	11	22	1.72	1918.24	1910	13	2.93E-03	98.1	
45	3	964.85	29	20	2.29	1930.11	1925	19	8.18E-03	35.1	8.72E-01
46	3	969.36	56	20	2.00	1939.13	1925	19	1.55E-02	20.4	
47	0	1120.40	236	30	1.78	2241.18	2232	16	6.56E-02	8.6	
48	0	1155.13	30	11	1.90	2310.65	2304	11	8.28E-03	28.3	
49	0	1238.54	99	31	2.02	2477.46	2470	14	2.74E-02	15.7	
50	0	1281.54	21	9	1.10	2563.47	2560	8	5.92E-03	31.8	
51	0	1298.43	7	4	0.98	2597.25	2593	6	1.84E-03	63.5	
52	0	1325.34	11	9	4.22	2651.07	2644	11	2.97E-03	66.2	
53	0	1377.93	90	6	1.27	2756.24	2750	13	2.50E-02	12.0	
54	0	1400.96	35	0	4.21	2802.31	2796	12	9.72E-03	16.9	
55	0	1408.23	38	5	2.46	2816.87	2811	12	1.04E-02	20.8	
56	0	1460.93*	66	18	1.43	2922.28	2916	14	1.82E-02	18.9	
57	4	1505.90	10	0	1.47	3012.22	3010	19	2.66E-03	33.9	7.53E-01
58	4	1509.25	31	4	2.95	3018.92	3010	19	8.62E-03	28.2	
59	0	1600.07	11	7	0.61	3200.60	3195	9	3.14E-03	51.0	
60	0	1632.77	10	5	3.05	3266.01	3259	12	2.69E-03	59.4	
61	0	1729.56	55	3	2.34	3459.63	3453	13	1.52E-02	15.1	
62	0	1764.78*	177	4	2.08	3530.08	3523	14	4.91E-02	7.9	
63	0	1806.51	9	0	1.50	3613.56	3607	11	2.50E-03	33.3	
64	0	1847.39	34	0	3.71	3695.35	3688	14	9.44E-03	17.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:09:35

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299024.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4		
Sample title	: MXR1		
Sample date	: 26-JUN-2024 11:20:00	Acquisition date	: 31-JUL-2024 16:09:00
Sample ID	: G674299024	Sample quantity	: 113.77 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA4	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.91 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	TH-231	144.24
U-235	143.76	RA-223	144.24
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
BE-7	477.60	10.44*	2.263E+00	4.492E-01	7.106E-01	146.11	OK
K-40	1460.82	10.66*	8.675E-01	4.417E+00	4.417E+00	37.79	OK
CD-109	88.03	3.70*	3.853E+00	8.858E+00	9.339E+00	34.57	OK
SN-126	64.28	9.60	1.435E+00	4.005E+00	4.005E+00	80.46	OK
	86.94	8.90	3.853E+00	3.683E+00	3.683E+00	34.57	OK
	87.57	37.00*	3.853E+00	8.858E-01	8.858E-01	34.57	OK
BA-137M	661.66	89.90*	1.775E+00	1.894E-01	1.898E-01	54.45	OK
CS-137	661.66	85.10*	1.775E+00	2.001E-01	2.005E-01	54.45	OK
TL-208	277.37	6.60	3.271E+00	5.707E-01	5.707E-01	200.80	OK
	583.19	85.00*	1.957E+00	3.422E-01	3.422E-01	40.90	OK
	860.56	12.50	1.416E+00	----- Line Not Found		-----	Absent
BI-211	72.87	1.23	2.515E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	2.778E+00	2.930E+01	2.930E+01	5.95	OK
BI-212	727.33	6.67*	1.641E+00	2.053E+00	2.053E+00	57.84	OK
	1620.50	1.47	8.062E-01	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	2.730E+00	7.667E+00	7.667E+00	20.94	OK
	77.11	17.10	2.956E+00	6.151E+00	6.151E+00	14.38	OK
	238.63	43.60*	3.632E+00	1.270E+00	1.270E+00	16.93	OK
	300.09	3.30	3.096E+00	----- Line Not Found		-----	Absent
BI-214	609.32	45.49*	1.894E+00	7.907E+00	7.908E+00	6.66	OK
	1120.29	14.92	1.101E+00	9.036E+00	9.037E+00	17.15	OK
	1764.49	15.30	7.710E-01	9.253E+00	9.253E+00	15.86	OK
PB-214	74.82	5.80	2.730E+00	1.359E+01	1.359E+01	20.94	OK
	77.11	9.70	2.956E+00	1.084E+01	1.084E+01	14.38	OK
	87.09	3.41	3.853E+00	9.611E+00	9.612E+00	34.57	OK
	242.00	7.25	3.597E+00	1.165E+01	1.165E+01	12.82	OK
	295.22	18.42	3.131E+00	1.051E+01	1.051E+01	9.06	OK
	351.93	35.60*	2.778E+00	1.063E+01	1.063E+01	5.95	OK
RN-222	609.32	45.49*	1.894E+00	7.907E+00	7.908E+00	6.66	OK
	1120.29	14.92	1.101E+00	9.036E+00	9.037E+00	17.15	OK
	1764.49	15.30	7.710E-01	9.253E+00	9.253E+00	15.86	OK
RA-224	240.99	4.10*	3.597E+00	2.059E+01	2.059E+01	12.82	OK
RA-226	74.82	5.80	2.730E+00	1.359E+01	1.359E+01	20.94	OK
	77.11	9.70	2.956E+00	1.084E+01	1.084E+01	14.38	OK
	87.09	3.41	3.853E+00	9.611E+00	9.612E+00	34.57	OK
	242.00	7.25	3.597E+00	1.165E+01	1.165E+01	12.82	OK
	295.22	18.42	3.131E+00	1.051E+01	1.051E+01	9.06	OK
	351.93	35.60*	2.778E+00	1.063E+01	1.063E+01	5.95	OK
AC-228	105.21	1.10	4.756E+00	----- Line Not Found		-----	Absent
	338.32	11.27	2.853E+00	1.376E+00	1.376E+00	61.03	OK
	835.71	1.61	1.454E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.342E+00	1.728E+00	1.728E+00	32.77	OK
	968.97	15.80	1.266E+00	1.760E+00	1.760E+00	40.82	OK
RA-228	105.21	1.10	4.756E+00	----- Line Not Found		-----	Absent
	338.32	11.27	2.853E+00	1.376E+00	1.376E+00	61.03	OK
	835.71	1.61	1.454E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.342E+00	1.728E+00	1.728E+00	32.77	OK
	968.97	15.80	1.266E+00	1.760E+00	1.760E+00	40.82	OK
TH-228	74.82	10.28	2.730E+00	7.667E+00	7.667E+00	20.94	OK

Sample ID : G674299024 Acquisition date : 31-JUL-2024 16:09:00

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	77.11	17.10	2.956E+00	6.151E+00	6.151E+00	14.38	OK
	238.63	43.60*	3.632E+00	1.270E+00	1.270E+00	16.93	OK
	300.09	3.30	3.096E+00	----- Line Not Found		-----	Absent
TH-229	85.43	14.70	3.593E+00	1.076E+00	1.076E+00	60.66	OK
	88.47	24.00	3.853E+00	1.366E+00	1.366E+00	34.57	OK
	193.51	4.41*	4.193E+00	----- Line Not Found		-----	Absent
	210.85	2.80	3.976E+00	2.269E+00	2.269E+00	130.55	OK
TH-230	74.82	5.80	2.730E+00	1.359E+01	1.359E+01	20.94	OK
	77.11	9.70	2.956E+00	1.084E+01	1.084E+01	14.38	OK
	87.09	3.41	3.853E+00	9.611E+00	9.611E+00	34.57	OK
	242.00	7.25	3.597E+00	1.165E+01	1.165E+01	12.82	OK
	295.22	18.42	3.131E+00	1.051E+01	1.051E+01	9.06	OK
	351.93	35.60*	2.778E+00	1.063E+01	1.063E+01	5.95	OK
TH-231	81.07	15.00	3.350E+00	7.236E-01	7.236E-01	96.33	OK
	83.79	24.70	3.593E+00	6.404E-01	6.404E-01	60.66	OK
	94.87	5.69	4.338E+00	----- Line Not Found		-----	Absent
	144.24	3.27	4.887E+00	----- Line Not Found		-----	<<INT Reject
	154.21	5.70	4.763E+00	----- Line Not Found		-----	Absent
	269.46	13.90	3.331E+00	9.907E-01	9.907E-01	85.95	OK
	323.87	3.99*	2.939E+00	----- Line Not Found		-----	Absent
	338.28	2.84	2.853E+00	5.462E+00	5.462E+00	61.03	OK
TH-232	105.21	1.10	4.756E+00	----- Line Not Found		-----	Absent
	338.32	11.27	2.853E+00	1.376E+00	1.376E+00	61.03	OK
	835.71	1.61	1.454E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.342E+00	1.728E+00	1.728E+00	32.77	OK
	968.97	15.80	1.266E+00	1.760E+00	1.760E+00	40.82	OK
TH-234	63.29	3.70*	1.435E+00	1.039E+01	1.039E+01	80.46	OK
	92.59	4.23	4.217E+00	5.399E+00	5.399E+00	45.45	OK
U-234	74.82	5.80	2.730E+00	1.359E+01	1.359E+01	20.94	OK
	77.11	9.70	2.956E+00	1.084E+01	1.084E+01	14.38	OK
	87.09	3.41	3.853E+00	9.611E+00	9.611E+00	34.57	OK
	242.00	7.25	3.597E+00	1.165E+01	1.165E+01	12.82	OK
	295.22	18.42	3.131E+00	1.051E+01	1.051E+01	9.06	OK
	351.93	35.60*	2.778E+00	1.063E+01	1.063E+01	5.95	OK
U-235	89.96	3.47	4.050E+00	3.743E+00	3.743E+00	44.34	OK
	93.35	5.60	4.217E+00	4.078E+00	4.078E+00	45.45	OK
	143.76	10.96*	4.885E+00	3.269E-01	3.269E-01	251.26	OK
	163.33	5.08	4.634E+00	----- Line Not Found		-----	Absent
	185.72	57.20	4.298E+00	1.084E+00	1.084E+00	21.31	OK
	205.31	5.01	4.031E+00	----- Line Not Found		-----	Absent
U-238	63.29	3.70*	1.435E+00	1.039E+01	1.039E+01	80.46	OK
	92.59	4.23	4.217E+00	5.399E+00	5.399E+00	45.45	OK
AM-243	43.53	5.90	8.958E-02	----- Line Not Found		-----	Absent
	74.66	67.20*	2.730E+00	1.173E+00	1.173E+00	20.94	OK
ANH-511	511.00	100.00*	2.155E+00	7.855E-02	7.855E-02	144.11	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:09:36.39

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299024.CNF;1  *
* Acquisition date : 31-JUL-2024 16:09:00 Sensitivity     : 3.000           *
* Detector ID      : GAM04                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.91     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:20:00 Analyst initials: MXR1            *
* Sample ID        : G674299024           Sample Quantity : 1.1377E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-DEC-2023 04:08:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM04_CAN.CNF;19            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
BE-7	7.106E-01	1.018E+00	1.580E+00
K-40	4.417E+00	1.636E+00	1.285E+00
CD-109	9.339E+00	3.164E+00	3.099E+00
SN-126	8.858E-01	3.001E-01	2.805E-01
BA-137M	1.898E-01	1.013E-01	1.047E-01
CS-137	2.005E-01	1.070E-01	1.106E-01
TL-208	3.422E-01	1.371E-01	1.206E-01
BI-211	2.930E+01	1.708E+00	6.875E-01
BI-212	2.053E+00	1.163E+00	1.348E+00
PB-212	1.270E+00	2.106E-01	2.113E-01
BI-214	7.908E+00	5.161E-01	2.541E-01
PB-214	1.063E+01	6.200E-01	2.500E-01
RN-222	7.908E+00	5.161E-01	2.541E-01
RA-224	2.059E+01	2.587E+00	2.265E+00
RA-226	1.063E+01	6.200E-01	2.500E-01
AC-228	1.728E+00	5.550E-01	5.403E-01
RA-228	1.728E+00	5.550E-01	5.403E-01
TH-228	1.270E+00	2.106E-01	2.113E-01
TH-229	1.552E-01	1.138E+00	2.011E+00
TH-230	1.063E+01	6.200E-01	2.500E-01
TH-231	1.083E+00	1.348E+00	2.477E+00
TH-232	1.728E+00	5.550E-01	5.403E-01
TH-234	1.039E+01	8.194E+00	6.909E+00
U-234	1.063E+01	6.200E-01	2.500E-01
U-235	3.269E-01	8.049E-01	7.046E-01
U-238	1.039E+01	8.194E+00	6.909E+00
AM-243	1.173E+00	2.407E-01	2.300E-01
ANH-511	7.855E-02	1.109E-01	1.014E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
NA-22	-2.710E-02	6.893E-02	1.268E-01	NOT IDENT.
NA-24	0.000E+00	6.222E+15	0.000E+00	SHORT HLIF

AL-26	9.196E-04	5.675E-02	1.128E-01	NOT IDENT.
SC-46	-1.068E-02	1.022E-01	1.624E-01	FAIL ABUN
V-48	-1.072E-01	2.745E-01	4.736E-01	NOT IDENT.
CR-51	2.839E-01	1.247E+00	2.193E+00	NOT IDENT.
MN-52	-6.048E-01	5.960E+00	1.139E+01	FAIL ABUN
MN-54	-6.302E-02	9.187E-02	1.309E-01	NOT IDENT.
CO-56	7.812E-02	8.049E-02	1.687E-01	FAIL ABUN
MN-56	0.000E+00	1.048E+41	0.000E+00	SHORT HLIF
CO-57	1.114E-02	5.234E-02	9.565E-02	NOT IDENT.
CO-58	-1.126E-02	7.861E-02	1.280E-01	NOT IDENT.
FE-59	-4.048E-02	1.710E-01	3.295E-01	NOT IDENT.
CO-60	4.106E-02	6.671E-02	1.448E-01	NOT IDENT.
ZN-65	-6.732E-03	1.854E-01	3.138E-01	NOT IDENT.
GE-68	-1.121E+00	2.040E+00	3.706E+00	NOT IDENT.
AS-73	-2.553E+00	4.215E+00	7.715E+00	NOT IDENT.
AS-74	-1.568E-02	4.004E-01	7.365E-01	NOT IDENT.
SE-75	7.812E-03	1.047E-01	1.827E-01	NOT IDENT.
BR-77	0.000E+00	1.150E+04	0.000E+00	SHORT HLIF
SR-82	-1.981E-01	9.819E-01	1.771E+00	NOT IDENT.
RB-83	-9.364E-02	1.525E-01	2.677E-01	NOT IDENT.
RB-84	-2.707E-02	2.111E-01	3.773E-01	NOT IDENT.
KR-85	4.079E-01	1.240E+01	2.109E+01	NOT IDENT.
SR-85	2.451E-03	8.118E-02	1.380E-01	NOT IDENT.
RB-86	-6.350E-01	2.562E+00	4.893E+00	NOT IDENT.
Y-88	-3.447E-02	7.661E-02	1.367E-01	NOT IDENT.
Y-91	-2.069E+01	3.926E+01	7.070E+01	NOT IDENT.
NB-94	6.073E-02	6.641E-02	1.242E-01	NOT IDENT.
NB-95	5.003E-02	9.512E-02	1.709E-01	NOT IDENT.
NB-95M	7.610E-03	3.581E-01	5.719E-01	NOT IDENT.
ZR-95	1.316E-01	1.634E-01	3.297E-01	NOT IDENT.
NB-97	0.000E+00	1.802E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.212E+15	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.760E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.055E+41	0.000E+00	SHORT HLIF
RH-101	-3.061E-02	6.102E-02	1.067E-01	NOT IDENT.
RH-102	7.560E-02	2.003E-01	1.654E-01	FAIL ABUN
RU-103	-3.964E-02	1.014E-01	1.833E-01	FAIL ABUN
RH-106	-8.017E-01	5.095E-01	7.398E-01	NOT IDENT.
RU-106	-8.017E-01	5.095E-01	7.398E-01	NOT IDENT.
AG-108M	5.736E-03	5.570E-02	1.058E-01	NOT IDENT.
AG-110	-1.347E-02	1.390E+00	2.325E+00	NOT IDENT.
AG-110M	1.619E-02	1.047E-01	1.943E-01	FAIL ABUN
SN-113	-9.692E-02	9.226E-02	1.589E-01	NOT IDENT.
CD-115	0.000E+00	1.043E+04	0.000E+00	SHORT HLIF
SN-117M	4.484E-02	3.250E-01	5.801E-01	NOT IDENT.
SB-122	0.000E+00	5.718E+02	0.000E+00	SHORT HLIF
TE-123M	-1.069E-02	6.836E-02	1.200E-01	NOT IDENT.
SB-124	-1.290E-01	1.819E-01	3.004E-01	NOT IDENT.
SB-125	1.793E-01	1.812E-01	3.663E-01	NOT IDENT.
TE-125M	-2.977E+00	2.300E+01	4.155E+01	NOT IDENT.
I-126	2.467E+00	1.706E+00	2.650E+00	FAIL ABUN
SB-126	8.386E-01	1.114E+00	1.713E+00	FAIL ABUN
SB-127	-4.432E+01	8.415E+01	1.459E+02	NOT IDENT.
I-131	-8.140E-02	1.221E+00	2.305E+00	FAIL ABUN
I-132	0.000E+00	1.746E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	1.234E+02	0.000E+00	SHORT HLIF
BA-133	-1.097E-02	8.572E-02	1.448E-01	FAIL ABUN
I-133	0.000E+00	9.716E+10	0.000E+00	SHORT HLIF
CS-134	3.806E-02	6.929E-02	1.379E-01	NOT IDENT.
I-135	0.000E+00	1.042E+38	0.000E+00	SHORT HLIF
CS-136	2.164E-01	5.787E-01	1.168E+00	NOT IDENT.
LA-138	-5.572E-02	1.280E-01	2.288E-01	NOT IDENT.
CE-139	3.399E-02	7.022E-02	1.276E-01	NOT IDENT.
BA-140	-7.736E-02	1.407E+00	2.625E+00	NOT IDENT.
LA-140	-4.477E-01	7.527E-01	1.078E+00	NOT IDENT.
CE-141	1.572E-01	3.871E-01	3.573E-01	FAIL ABUN
CE-143	0.000E+00	7.277E+06	0.000E+00	SHORT HLIF
CE-144	-1.219E-01	4.000E-01	7.057E-01	FAIL ABUN
PM-144	-1.167E-02	5.634E-02	1.024E-01	FAIL ABUN
PR-144	-8.825E-01	4.261E+00	7.743E+00	NOT IDENT.
PM-146	2.293E-02	8.318E-02	1.594E-01	FAIL ABUN
ND-147	-1.159E+00	3.658E+00	6.626E+00	FAIL ABUN
PM-147	1.691E+03	1.445E+03	2.785E+03	NOT IDENT.
PM-149	0.000E+00	1.087E+05	0.000E+00	SHORT HLIF
EU-150	-5.506E-03	6.658E-02	1.033E-01	FAIL ABUN
EU-152	8.754E-02	1.978E-01	3.841E-01	FAIL ABUN
GD-153	-1.045E-01	1.734E-01	3.063E-01	NOT IDENT.
EU-154	-1.056E-01	1.946E-01	3.479E-01	NOT IDENT.

EU-155	7.013E-02	2.025E-01	3.763E-01	FAIL ABUN
TB-160	-2.688E-02	3.296E-01	5.916E-01	FAIL ABUN
HO-166M	4.216E-02	1.490E-01	2.083E-01	FAIL ABUN
TM-171	1.219E+01	8.321E+01	1.591E+02	FAIL ABUN
HF-172	-1.217E-01	3.747E-01	6.625E-01	FAIL ABUN
LU-172	-3.002E-02	9.606E-02	1.819E-01	FAIL ABUN
LU-176	-2.780E-02	5.301E-02	8.686E-02	FAIL ABUN
HF-181	3.097E-02	1.200E-01	2.206E-01	NOT IDENT.
TA-182	-1.878E-01	3.191E-01	5.671E-01	FAIL ABUN
RE-183	-9.173E-01	8.439E-01	1.493E+00	FAIL ABUN
RE-184	2.418E-01	3.452E-01	6.906E-01	NOT IDENT.
W-188	-2.122E+00	2.145E+01	3.358E+01	FAIL ABUN
IR-192	4.187E-03	8.047E-02	1.400E-01	FAIL ABUN
HG-203	-3.822E-02	1.188E-01	1.823E-01	NOT IDENT.
TL-204	-5.958E-01	1.320E+01	2.269E+01	FAIL ABUN
BI-207	2.040E-02	9.043E-02	1.815E-01	FAIL ABUN
BI-210	5.622E+00	2.512E+01	4.834E+01	NOT IDENT.
PB-210	5.622E+00	2.512E+01	4.834E+01	NOT IDENT.
PB-211	-4.050E-02	1.599E+00	2.693E+00	NOT IDENT.
BI-213	1.650E-01	2.096E-01	4.165E-01	NOT IDENT.
RN-219	7.135E-01	8.152E-01	1.628E+00	FAIL ABUN
RA-223	1.083E+00	1.348E+00	2.477E+00	FAIL ABUN
AC-225	1.936E+00	5.073E+00	9.078E+00	NOT IDENT.
AC-227	8.057E-01	7.014E-01	1.003E+00	FAIL ABUN
TH-227	8.057E-01	7.014E-01	1.003E+00	FAIL ABUN
PA-231	5.654E-01	1.121E+00	1.989E+00	NOT IDENT.
PA-233	1.332E-01	1.420E-01	2.629E-01	NOT IDENT.
PA-234	-4.964E-01	5.700E-01	8.964E-01	NOT IDENT.
PA-234M	1.481E+01	8.717E+00	1.926E+01	NOT IDENT.
NP-237	1.332E-01	1.420E-01	2.629E-01	NOT IDENT.
NP-238	0.000E+00	2.478E+04	0.000E+00	SHORT HLIF
NP-239	1.478E-01	4.916E-01	9.083E-01	FAIL ABUN
PU-239	3.098E+02	6.850E+02	1.260E+03	NOT IDENT.
AM-241	4.880E-01	5.356E-01	9.925E-01	NOT IDENT.
CM-243	1.178E-01	2.078E-01	3.907E-01	FAIL ABUN
BK-247	-1.765E-02	1.694E-01	2.909E-01	FAIL ABUN
CM-247	2.853E-02	7.579E-02	1.460E-01	FAIL ABUN
CF-249	6.633E-02	8.060E-02	1.604E-01	NOT IDENT.
CF-251	4.154E-02	2.901E-01	5.140E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:09:34.87

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
BE-7	477.60	16	10.44*	2.263E+00	4.492E-01	7.106E-01	146.11
K-40	1460.82	62	10.66*	8.675E-01	4.417E+00	4.417E+00	37.79
CD-109	88.03	191	3.70*	3.853E+00	8.858E+00	9.339E+00	34.57
SN-126	64.28	84	9.60	1.435E+00	4.005E+00	4.005E+00	80.46
	86.94	191	8.90	3.853E+00	3.683E+00	3.683E+00	34.57
	87.57	191	37.00*	3.853E+00	8.858E-01	8.858E-01	34.57
BA-137M	661.66	46	89.90*	1.775E+00	1.894E-01	1.898E-01	54.45
CS-137	661.66	46	85.10*	1.775E+00	2.001E-01	2.005E-01	54.45
CE-141	145.44	27	48.29*	4.885E+00	7.419E-02	1.572E-01	251.26
TL-208	277.37	19	6.60	3.271E+00	5.707E-01	5.707E-01	200.80
	583.19	86	85.00*	1.957E+00	3.422E-01	3.422E-01	40.90
	860.56	------	12.50	1.416E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	2.515E+00	------	Line Not Found	------
	351.06	1594	12.92*	2.778E+00	2.930E+01	2.930E+01	5.95
BI-212	727.33	34	6.67*	1.641E+00	2.053E+00	2.053E+00	57.84
	1620.50	------	1.47	8.062E-01	------	Line Not Found	------
PB-212	74.82	326	10.28	2.730E+00	7.667E+00	7.667E+00	20.94
	77.11	471	17.10	2.956E+00	6.151E+00	6.151E+00	14.38
	238.63	305	43.60*	3.632E+00	1.270E+00	1.270E+00	16.93
	300.09	------	3.30	3.096E+00	------	Line Not Found	------
BI-214	609.32	1032	45.49*	1.894E+00	7.907E+00	7.908E+00	6.66
	1120.29	225	14.92	1.101E+00	9.036E+00	9.037E+00	17.15
	1764.49	165	15.30	7.710E-01	9.253E+00	9.253E+00	15.86
PB-214	74.82	326	5.80	2.730E+00	1.359E+01	1.359E+01	20.94
	77.11	471	9.70	2.956E+00	1.084E+01	1.084E+01	14.38
	87.09	191	3.41	3.853E+00	9.611E+00	9.612E+00	34.57
	242.00	460	7.25	3.597E+00	1.165E+01	1.165E+01	12.82
	295.22	918	18.42	3.131E+00	1.051E+01	1.051E+01	9.06
	351.93	1594	35.60*	2.778E+00	1.063E+01	1.063E+01	5.95
RN-222	609.32	1032	45.49*	1.894E+00	7.907E+00	7.908E+00	6.66
	1120.29	225	14.92	1.101E+00	9.036E+00	9.037E+00	17.15
	1764.49	165	15.30	7.710E-01	9.253E+00	9.253E+00	15.86
RA-223	81.07	55	15.00	3.350E+00	7.236E-01	7.236E-01	96.33
	83.79	86	24.70	3.593E+00	6.404E-01	6.404E-01	60.66
	94.56	------	8.67	4.321E+00	------	Line Not Found	------
	144.24	27	3.27	4.885E+00	1.096E+00	1.096E+00	251.26
	154.21	------	5.70	4.763E+00	------	Line Not Found	------
	269.46	70	13.90	3.331E+00	9.907E-01	9.907E-01	85.95
	323.87	------	3.99*	2.939E+00	------	Line Not Found	------
	338.28	67	2.84	2.853E+00	5.462E+00	5.462E+00	61.03
RA-224	240.99	460	4.10*	3.597E+00	2.059E+01	2.059E+01	12.82
RA-226	74.82	326	5.80	2.730E+00	1.359E+01	1.359E+01	20.94
	77.11	471	9.70	2.956E+00	1.084E+01	1.084E+01	14.38
	87.09	191	3.41	3.853E+00	9.611E+00	9.612E+00	34.57
	242.00	460	7.25	3.597E+00	1.165E+01	1.165E+01	12.82
	295.22	918	18.42	3.131E+00	1.051E+01	1.051E+01	9.06
	351.93	1594	35.60*	2.778E+00	1.063E+01	1.063E+01	5.95

Sample ID : G674299024 Acquisition date : 31-JUL-2024 16:09:00

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
AC-228	105.21	------	1.10	4.756E+00	------	Line Not Found	------
	338.32	67	11.27	2.853E+00	1.376E+00	1.376E+00	61.03
	835.71	------	1.61	1.454E+00	------	Line Not Found	------
	911.20	91	25.80*	1.342E+00	1.728E+00	1.728E+00	32.77
	968.97	53	15.80	1.266E+00	1.760E+00	1.760E+00	40.82
RA-228	105.21	------	1.10	4.756E+00	------	Line Not Found	------
	338.32	67	11.27	2.853E+00	1.376E+00	1.376E+00	61.03
	835.71	------	1.61	1.454E+00	------	Line Not Found	------
	911.20	91	25.80*	1.342E+00	1.728E+00	1.728E+00	32.77
	968.97	53	15.80	1.266E+00	1.760E+00	1.760E+00	40.82
TH-228	74.82	326	10.28	2.730E+00	7.667E+00	7.667E+00	20.94
	77.11	471	17.10	2.956E+00	6.151E+00	6.151E+00	14.38
	238.63	305	43.60*	3.632E+00	1.270E+00	1.270E+00	16.93
	300.09	------	3.30	3.096E+00	------	Line Not Found	------
TH-229	85.43	86	14.70	3.593E+00	1.076E+00	1.076E+00	60.66
	88.47	191	24.00	3.853E+00	1.366E+00	1.366E+00	34.57
	193.51	------	4.41*	4.193E+00	------	Line Not Found	------
	210.85	38	2.80	3.976E+00	2.269E+00	2.269E+00	130.55
TH-230	74.82	326	5.80	2.730E+00	1.359E+01	1.359E+01	20.94
	77.11	471	9.70	2.956E+00	1.084E+01	1.084E+01	14.38
	87.09	191	3.41	3.853E+00	9.611E+00	9.611E+00	34.57
	242.00	460	7.25	3.597E+00	1.165E+01	1.165E+01	12.82
	295.22	918	18.42	3.131E+00	1.051E+01	1.051E+01	9.06
	351.93	1594	35.60*	2.778E+00	1.063E+01	1.063E+01	5.95
TH-231	81.07	55	15.00	3.350E+00	7.236E-01	7.236E-01	96.33
	83.79	86	24.70	3.593E+00	6.404E-01	6.404E-01	60.66
	94.87	------	5.69	4.338E+00	------	Line Not Found	------
	144.24	27	3.27	4.885E+00	1.096E+00	1.096E+00	251.26
	154.21	------	5.70	4.763E+00	------	Line Not Found	------
	269.46	70	13.90	3.331E+00	9.907E-01	9.907E-01	85.95
	323.87	------	3.99*	2.939E+00	------	Line Not Found	------
	338.28	67	2.84	2.853E+00	5.462E+00	5.462E+00	61.03
TH-232	105.21	------	1.10	4.756E+00	------	Line Not Found	------
	338.32	67	11.27	2.853E+00	1.376E+00	1.376E+00	61.03
	835.71	------	1.61	1.454E+00	------	Line Not Found	------
	911.20	91	25.80*	1.342E+00	1.728E+00	1.728E+00	32.77
	968.97	53	15.80	1.266E+00	1.760E+00	1.760E+00	40.82
TH-234	63.29	84	3.70*	1.435E+00	1.039E+01	1.039E+01	80.46
	92.59	146	4.23	4.217E+00	5.399E+00	5.399E+00	45.45
U-234	74.82	326	5.80	2.730E+00	1.359E+01	1.359E+01	20.94
	77.11	471	9.70	2.956E+00	1.084E+01	1.084E+01	14.38
	87.09	191	3.41	3.853E+00	9.611E+00	9.611E+00	34.57
	242.00	460	7.25	3.597E+00	1.165E+01	1.165E+01	12.82
	295.22	918	18.42	3.131E+00	1.051E+01	1.051E+01	9.06
	351.93	1594	35.60*	2.778E+00	1.063E+01	1.063E+01	5.95
U-235	89.96	80	3.47	4.050E+00	3.743E+00	3.743E+00	44.34
	93.35	146	5.60	4.217E+00	4.078E+00	4.078E+00	45.45
	143.76	27	10.96*	4.885E+00	3.269E-01	3.269E-01	251.26
	163.33	------	5.08	4.634E+00	------	Line Not Found	------

Sample ID : G674299024 Acquisition date : 31-JUL-2024 16:09:00

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	185.72	404	57.20	4.298E+00	1.084E+00	1.084E+00	21.31
	205.31	------	5.01	4.031E+00	------	Line Not Found	------
U-238	63.29	84	3.70*	1.435E+00	1.039E+01	1.039E+01	80.46
	92.59	146	4.23	4.217E+00	5.399E+00	5.399E+00	45.45
AM-243	43.53	------	5.90	8.958E-02	------	Line Not Found	------
	74.66	326	67.20*	2.730E+00	1.173E+00	1.173E+00	20.94
ANH-511	511.00	26	100.00*	2.155E+00	7.855E-02	7.855E-02	144.11

Flag: "*" = Keyline

Sample ID : G674299024 Acquisition date : 31-JUL-2024 16:09:00

Total number of lines in spectrum 64
Number of unidentified lines 21
Number of lines tentatively identified by NID 43 67.19%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BE-7	53.22D	1.58	4.492E-01	7.106E-01	10.38E-01	146.11	
K-40	1.25E+09Y	1.00	4.417E+00	4.417E+00	1.669E+00	37.79	
CD-109	461.40D	1.05	8.858E+00	9.339E+00	3.229E+00	34.57	
SN-126	2.30E+05Y	1.00	8.858E-01	8.858E-01	3.062E-01	34.57	
BA-137M	30.08Y	1.00	1.894E-01	1.898E-01	1.033E-01	54.45	
CS-137	30.08Y	1.00	2.001E-01	2.005E-01	1.092E-01	54.45	
CE-141	32.51D	2.12	7.419E-02	1.572E-01	3.950E-01	251.26	
TL-208	1.41E+10Y	1.00	3.422E-01	3.422E-01	1.399E-01	40.90	
BI-211	7.04E+08Y	1.00	2.930E+01	2.930E+01	0.174E+01	5.95	
BI-212	1.41E+10Y	1.00	2.053E+00	2.053E+00	1.187E+00	57.84	
PB-212	1.41E+10Y	1.00	1.270E+00	1.270E+00	0.215E+00	16.93	
BI-214	1600.00Y	1.00	7.907E+00	7.908E+00	0.527E+00	6.66	
PB-214	1600.00Y	1.00	1.063E+01	1.063E+01	0.063E+01	5.95	
RN-222	1600.00Y	1.00	7.907E+00	7.908E+00	0.527E+00	6.66	
RA-223	7.04E+08Y	1.00	6.404E-01	6.404E-01	3.885E-01	60.66	K
RA-224	1.41E+10Y	1.00	2.059E+01	2.059E+01	0.264E+01	12.82	
RA-226	1600.00Y	1.00	1.063E+01	1.063E+01	0.063E+01	5.95	
AC-228	1.41E+10Y	1.00	1.728E+00	1.728E+00	0.566E+00	32.77	
RA-228	1.41E+10Y	1.00	1.728E+00	1.728E+00	0.566E+00	32.77	
TH-228	1.41E+10Y	1.00	1.270E+00	1.270E+00	0.215E+00	16.93	
TH-229	7340.00Y	1.00	1.366E+00	1.366E+00	0.472E+00	34.57	K
TH-230	7.54E+04Y	1.00	1.063E+01	1.063E+01	0.063E+01	5.95	
TH-231	7.04E+08Y	1.00	6.404E-01	6.404E-01	3.885E-01	60.66	K
TH-232	1.41E+10Y	1.00	1.728E+00	1.728E+00	0.566E+00	32.77	
TH-234	4.47E+09Y	1.00	1.039E+01	1.039E+01	0.836E+01	80.46	
U-234	2.45E+05Y	1.00	1.063E+01	1.063E+01	0.063E+01	5.95	
U-235	7.04E+08Y	1.00	3.269E-01	3.269E-01	8.214E-01	251.26	
U-238	4.47E+09Y	1.00	1.039E+01	1.039E+01	0.836E+01	80.46	
AM-243	7370.00Y	1.00	1.173E+00	1.173E+00	0.246E+00	20.94	
ANH-511	1.00E+09Y	1.00	7.855E-02	7.855E-02	11.32E-02	144.11	
			---	---			
	Total Activity :		1.584E+02	1.593E+02			

Grand Total Activity : 1.584E+02 1.593E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299024 Acquisition date : 31-JUL-2024 16:09:00

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	67.97	55	218	1.48	136.92	134	6	1.43E-02	92.0	1.97E+00	T
0	256.24	40	100	0.76	513.27	510	7	1.10E-02	88.8	3.46E+00	T
0	409.60	21	53	1.24	819.88	815	7	5.97E-03	****	2.51E+00	T
0	436.38	15	67	1.25	873.42	866	9	4.15E-03	****	2.40E+00	
2	480.31	32	34	1.67	961.25	958	25	9.00E-03	64.2	2.25E+00	
2	488.58	24	47	1.68	977.77	958	25	6.69E-03	****	2.22E+00	
0	630.81	12	50	4.34	1262.16	1254	14	3.31E-03	****	1.84E+00	T
1	665.59	33	25	1.68	1331.69	1316	25	9.38E-03	70.6	1.77E+00	T
0	706.57	16	73	4.87	1413.63	1402	17	4.50E-03	****	1.68E+00	T
0	713.47	17	54	3.25	1427.44	1419	19	4.91E-03	****	1.67E+00	
0	720.27	16	32	2.05	1441.04	1437	9	4.49E-03	****	1.66E+00	T
0	746.57	16	48	4.91	1493.62	1481	16	4.47E-03	****	1.61E+00	T
0	768.60	112	41	0.96	1537.66	1530	14	3.22E-02	30.1	1.57E+00	
0	786.36	33	19	2.59	1573.18	1567	11	9.40E-03	60.8	1.54E+00	
0	807.02	54	28	1.86	1614.49	1608	16	1.54E-02	52.5	1.50E+00	
0	840.79	13	51	1.98	1682.03	1674	13	3.74E-03	****	1.45E+00	
0	891.99	24	27	4.00	1784.40	1778	14	6.94E-03	98.3	1.37E+00	
0	934.63	61	46	1.48	1869.67	1862	16	1.75E-02	55.3	1.31E+00	T
0	958.91	10	22	1.72	1918.24	1910	13	2.93E-03	****	1.28E+00	
3	964.85	28	19	2.29	1930.11	1925	19	8.18E-03	70.3	1.27E+00	T
0	1155.13	28	11	1.90	2310.65	2304	11	8.28E-03	56.7	1.07E+00	
0	1238.54	94	30	2.02	2477.46	2470	14	2.74E-02	31.5	1.00E+00	T
0	1281.54	20	8	1.10	2563.47	2560	8	5.92E-03	63.7	9.71E-01	
0	1298.43	6	4	0.98	2597.25	2593	6	1.84E-03	****	9.59E-01	T
0	1325.34	10	9	4.22	2651.07	2644	11	2.97E-03	****	9.42E-01	
0	1377.93	85	6	1.27	2756.24	2750	13	2.50E-02	24.1	9.10E-01	
0	1400.96	33	0	4.21	2802.31	2796	12	9.72E-03	33.8	8.98E-01	
0	1408.23	35	5	2.46	2816.87	2811	12	1.04E-02	41.6	8.94E-01	T
4	1505.90	9	0	1.47	3012.22	3010	19	2.66E-03	67.8	8.48E-01	T
4	1509.25	29	4	2.95	3018.92	3010	19	8.62E-03	56.3	8.46E-01	
0	1600.07	11	6	0.61	3200.60	3195	9	3.14E-03	****	8.13E-01	
0	1632.77	9	5	3.05	3266.01	3259	12	2.69E-03	****	8.03E-01	
0	1729.56	51	3	2.34	3459.63	3453	13	1.52E-02	30.2	7.78E-01	
0	1806.51	8	0	1.50	3613.56	3607	11	2.50E-03	66.7	7.64E-01	
0	1847.39	32	0	3.71	3695.35	3688	14	9.44E-03	34.3	7.58E-01	

Flags: "T" = Tentatively associated

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299024.CNF;1  *
* Acquisition date : 31-JUL-2024 16:09:00 Sensitivity     : 3.000           *
* Detector ID      : GAM04                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.91     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:20:00 Nuclide Library : SOLID           *
* Sample ID        : G674299024           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1377E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-DEC-2023 04:08:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM04_CAN.CNF;19            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
BE-7	7.300E-01
K-40	5.467E-01
CD-109	1.484E+00
SN-126	1.340E-01
BA-137M	4.674E-02
CS-137	4.938E-02
TL-208	5.493E-02
BI-211	3.188E-01
BI-212	5.925E-01
PB-212	1.000E-01
BI-214	1.167E-01
PB-214	1.159E-01
RN-222	1.167E-01
RA-224	1.072E+00
RA-226	1.159E-01
AC-228	2.445E-01
RA-228	2.445E-01
TH-228	1.000E-01
TH-229	9.569E-01
TH-230	1.159E-01
TH-231	1.162E+00
TH-232	2.445E-01
TH-234	3.287E+00
U-234	1.159E-01
U-235	3.355E-01
U-238	3.287E+00
AM-243	1.100E-01
ANH-511	4.654E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
NA-22	5.406E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	4.477E-02	NOT IDENT.

SC-46	7.254E-02	FAIL ABUN
V-48	2.039E-01	NOT IDENT.
CR-51	1.023E+00	NOT IDENT.
MN-52	4.899E+00	FAIL ABUN
MN-54	5.886E-02	NOT IDENT.
CO-56	7.582E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	4.552E-02	NOT IDENT.
CO-58	5.552E-02	NOT IDENT.
FE-59	1.405E-01	NOT IDENT.
CO-60	6.279E-02	NOT IDENT.
ZN-65	1.393E-01	NOT IDENT.
GE-68	1.589E+00	NOT IDENT.
AS-73	3.639E+00	NOT IDENT.
AS-74	3.373E-01	NOT IDENT.
SE-75	8.582E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	7.855E-01	NOT IDENT.
RB-83	1.215E-01	NOT IDENT.
RB-84	1.690E-01	NOT IDENT.
KR-85	9.579E+00	NOT IDENT.
SR-85	6.266E-02	NOT IDENT.
RB-86	2.113E+00	NOT IDENT.
Y-88	5.357E-02	NOT IDENT.
Y-91	3.030E+01	NOT IDENT.
NB-94	5.683E-02	NOT IDENT.
NB-95	7.715E-02	NOT IDENT.
NB-95M	2.715E-01	NOT IDENT.
ZR-95	1.497E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	5.063E-02	NOT IDENT.
RH-102	7.387E-02	FAIL ABUN
RU-103	8.331E-02	FAIL ABUN
RH-106	3.184E-01	NOT IDENT.
RU-106	3.184E-01	NOT IDENT.
AG-108M	4.881E-02	NOT IDENT.
AG-110	1.040E+00	NOT IDENT.
AG-110M	8.735E-02	FAIL ABUN
SN-113	7.286E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.768E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	5.719E-02	NOT IDENT.
SB-124	1.146E-01	NOT IDENT.
SB-125	1.706E-01	NOT IDENT.
TE-125M	1.972E+01	NOT IDENT.
I-126	1.224E+00	FAIL ABUN
SB-126	7.845E-01	FAIL ABUN
SB-127	6.498E+01	NOT IDENT.
I-131	1.068E+00	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	6.713E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	6.184E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	5.235E-01	NOT IDENT.
LA-138	9.899E-02	NOT IDENT.
CE-139	6.087E-02	NOT IDENT.
BA-140	1.193E+00	NOT IDENT.
LA-140	4.614E-01	NOT IDENT.
CE-141	1.706E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	3.351E-01	FAIL ABUN
PM-144	4.556E-02	FAIL ABUN
PR-144	3.446E+00	NOT IDENT.
PM-146	7.374E-02	FAIL ABUN
ND-147	3.013E+00	FAIL ABUN
PM-147	1.328E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	4.839E-02	FAIL ABUN
EU-152	1.801E-01	FAIL ABUN
GD-153	1.454E-01	NOT IDENT.
EU-154	1.477E-01	NOT IDENT.
EU-155	1.791E-01	FAIL ABUN

TB-160	2.659E-01	FAIL ABUN
HO-166M	9.428E-02	FAIL ABUN
TM-171	7.536E+01	FAIL ABUN
HF-172	3.148E-01	FAIL ABUN
LU-172	7.800E-02	FAIL ABUN
LU-176	4.029E-02	FAIL ABUN
HF-181	1.015E-01	NOT IDENT.
TA-182	2.434E-01	FAIL ABUN
RE-183	7.056E-01	FAIL ABUN
RE-184	3.109E-01	NOT IDENT.
W-188	1.579E+01	FAIL ABUN
IR-192	6.493E-02	FAIL ABUN
HG-203	8.546E-02	NOT IDENT.
TL-204	1.084E+01	FAIL ABUN
BI-207	8.045E-02	FAIL ABUN
BI-210	2.295E+01	NOT IDENT.
PB-210	2.295E+01	NOT IDENT.
PB-211	1.253E+00	NOT IDENT.
BI-213	1.939E-01	NOT IDENT.
RN-219	7.605E-01	FAIL ABUN
RA-223	1.162E+00	FAIL ABUN
AC-225	4.306E+00	NOT IDENT.
AC-227	4.743E-01	FAIL ABUN
TH-227	4.743E-01	FAIL ABUN
PA-231	9.402E-01	NOT IDENT.
PA-233	1.237E-01	NOT IDENT.
PA-234	3.910E-01	NOT IDENT.
PA-234M	8.771E+00	NOT IDENT.
NP-237	1.237E-01	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	4.313E-01	FAIL ABUN
PU-239	6.015E+02	NOT IDENT.
AM-241	4.727E-01	NOT IDENT.
CM-243	1.862E-01	FAIL ABUN
BK-247	1.366E-01	FAIL ABUN
CM-247	6.812E-02	FAIL ABUN
CF-249	7.502E-02	NOT IDENT.
CF-251	2.453E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:09:51.66

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299024.CNF;1  *
* Acquisition date : 31-JUL-2024 16:09:00 Sensitivity     : 3.000           *
* Detector ID      : GAM04                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.91     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:20:00 Nuclide Library : SOLID           *
* Sample ID        : G674299024           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1377E+02 GRAM *
*                                         Quantity Err(%) : 1.7579E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-DEC-2023 04:08:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM04_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
BE-7	7.106E-01	1.019E+00	1.019E+00
K-40	4.417E+00	1.709E+00	1.709E+00
CD-109	9.339E+00	3.522E+00	3.522E+00
SN-126	8.858E-01	3.307E-01	3.307E-01
BA-137M	1.898E-01	1.024E-01	1.024E-01
CS-137	2.005E-01	1.082E-01	1.082E-01
TL-208	3.422E-01	1.401E-01	1.401E-01
BI-211	2.930E+01	2.981E+00	2.981E+00
BI-212	2.053E+00	1.178E+00	1.178E+00
PB-212	1.270E+00	2.486E-01	2.486E-01
BI-214	7.908E+00	8.335E-01	8.335E-01
PB-214	1.063E+01	1.068E+00	1.068E+00
RN-222	7.908E+00	8.335E-01	8.335E-01
RA-224	2.059E+01	3.343E+00	3.343E+00
RA-226	1.063E+01	1.068E+00	1.068E+00
AC-228	1.728E+00	5.845E-01	5.845E-01
RA-228	1.728E+00	5.845E-01	5.845E-01
TH-228	1.270E+00	2.486E-01	2.486E-01
TH-229	1.552E-01	1.138E+00	1.138E+00
TH-230	1.063E+01	1.068E+00	1.068E+00
TH-231	1.083E+00	1.352E+00	1.352E+00
TH-232	1.728E+00	5.845E-01	5.845E-01
TH-234	1.039E+01	8.671E+00	8.671E+00
U-234	1.063E+01	1.068E+00	1.068E+00
U-235	3.269E-01	8.057E-01	8.057E-01
U-238	1.039E+01	8.671E+00	8.671E+00
AM-243	1.173E+00	3.012E-01	3.012E-01
ANH-511	7.855E-02	1.111E-01	1.111E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
NA-22	-2.710E-02	6.899E-02	7.006E-02	NOT IDENT.
NA-24	1.181E+15	6.224E+15	6.247E+15	SHORT HLIF

AL-26	9.196E-04	5.675E-02	5.675E-02	NOT IDENT.
SC-46	-1.068E-02	1.022E-01	1.023E-01	FAIL ABUN
V-48	-1.072E-01	2.747E-01	2.789E-01	NOT IDENT.
CR-51	2.839E-01	1.247E+00	1.254E+00	NOT IDENT.
MN-52	-6.048E-01	5.960E+00	5.966E+00	FAIL ABUN
MN-54	-6.302E-02	9.207E-02	9.635E-02	NOT IDENT.
CO-56	7.812E-02	8.085E-02	8.819E-02	FAIL ABUN
MN-56	1.000E+41	1.052E+41	0.000E+00	SHORT HLIF
CO-57	1.114E-02	5.235E-02	5.259E-02	NOT IDENT.
CO-58	-1.126E-02	7.862E-02	7.878E-02	NOT IDENT.
FE-59	-4.048E-02	1.710E-01	1.720E-01	NOT IDENT.
CO-60	4.106E-02	6.686E-02	6.938E-02	NOT IDENT.
ZN-65	-6.732E-03	1.854E-01	1.854E-01	NOT IDENT.
GE-68	-1.121E+00	2.042E+00	2.104E+00	NOT IDENT.
AS-73	-2.553E+00	4.277E+00	4.429E+00	NOT IDENT.
AS-74	-1.568E-02	4.004E-01	4.005E-01	NOT IDENT.
SE-75	7.812E-03	1.047E-01	1.048E-01	NOT IDENT.
BR-77	6.930E+04	7.172E+04	7.823E+04	SHORT HLIF
SR-82	-1.981E-01	9.821E-01	9.862E-01	NOT IDENT.
RB-83	-9.364E-02	1.532E-01	1.589E-01	NOT IDENT.
RB-84	-2.707E-02	2.111E-01	2.114E-01	NOT IDENT.
KR-85	4.079E-01	1.240E+01	1.241E+01	NOT IDENT.
SR-85	2.451E-03	8.118E-02	8.119E-02	NOT IDENT.
RB-86	-6.350E-01	2.562E+00	2.578E+00	NOT IDENT.
Y-88	-3.447E-02	7.665E-02	7.821E-02	NOT IDENT.
Y-91	-2.069E+01	3.930E+01	4.039E+01	NOT IDENT.
NB-94	6.073E-02	6.661E-02	7.202E-02	NOT IDENT.
NB-95	5.003E-02	9.523E-02	9.787E-02	NOT IDENT.
NB-95M	7.610E-03	3.581E-01	3.581E-01	NOT IDENT.
ZR-95	1.316E-01	1.638E-01	1.742E-01	NOT IDENT.
NB-97	-1.000E+41	1.804E+41	0.000E+00	SHORT HLIF
ZR-97	9.481E+14	1.214E+15	1.287E+15	SHORT HLIF
MO-99	-2.656E+03	3.769E+03	3.954E+03	SHORT HLIF
TC-99M	-7.309E+40	1.059E+41	0.000E+00	SHORT HLIF
RH-101	-3.061E-02	6.131E-02	6.285E-02	NOT IDENT.
RH-102	7.560E-02	2.005E-01	2.033E-01	FAIL ABUN
RU-103	-3.964E-02	1.015E-01	1.030E-01	FAIL ABUN
RH-106	-8.017E-01	5.150E-01	6.292E-01	NOT IDENT.
RU-106	-8.017E-01	5.150E-01	6.292E-01	NOT IDENT.
AG-108M	5.736E-03	5.571E-02	5.577E-02	NOT IDENT.
AG-110	-1.347E-02	1.390E+00	1.390E+00	NOT IDENT.
AG-110M	1.619E-02	1.047E-01	1.049E-01	FAIL ABUN
SN-113	-9.692E-02	9.260E-02	1.024E-01	NOT IDENT.
CD-115	-3.892E+02	1.043E+04	1.043E+04	SHORT HLIF
SN-117M	4.484E-02	3.250E-01	3.256E-01	NOT IDENT.
SB-122	-6.942E+01	5.718E+02	5.727E+02	SHORT HLIF
TE-123M	-1.069E-02	6.837E-02	6.854E-02	NOT IDENT.
SB-124	-1.290E-01	1.823E-01	1.913E-01	NOT IDENT.
SB-125	1.793E-01	1.818E-01	1.989E-01	NOT IDENT.
TE-125M	-2.977E+00	2.300E+01	2.304E+01	NOT IDENT.
I-126	2.467E+00	1.721E+00	2.049E+00	FAIL ABUN
SB-126	8.386E-01	1.119E+00	1.181E+00	FAIL ABUN
SB-127	-4.432E+01	8.453E+01	8.686E+01	NOT IDENT.
I-131	-8.140E-02	1.221E+00	1.222E+00	FAIL ABUN
I-132	1.000E+41	2.787E+41	0.000E+00	SHORT HLIF
TE-132	1.166E+01	1.234E+02	1.235E+02	SHORT HLIF
BA-133	-1.097E-02	8.573E-02	8.587E-02	FAIL ABUN
I-133	-3.808E+10	9.757E+10	9.907E+10	SHORT HLIF
CS-134	3.806E-02	6.938E-02	7.147E-02	NOT IDENT.
I-135	-2.435E+37	1.061E+38	0.000E+00	SHORT HLIF
CS-136	2.164E-01	5.792E-01	5.874E-01	NOT IDENT.
LA-138	-5.572E-02	1.281E-01	1.305E-01	NOT IDENT.
CE-139	3.399E-02	7.066E-02	7.230E-02	NOT IDENT.
BA-140	-7.736E-02	1.407E+00	1.408E+00	NOT IDENT.
LA-140	-4.477E-01	7.540E-01	7.805E-01	NOT IDENT.
CE-141	1.572E-01	3.875E-01	3.939E-01	FAIL ABUN
CE-143	1.656E+07	7.406E+06	1.052E+07	SHORT HLIF
CE-144	-1.219E-01	4.002E-01	4.040E-01	FAIL ABUN
PM-144	-1.167E-02	5.635E-02	5.660E-02	FAIL ABUN
PR-144	-8.825E-01	4.262E+00	4.280E+00	NOT IDENT.
PM-146	2.293E-02	8.321E-02	8.385E-02	FAIL ABUN
ND-147	-1.159E+00	3.660E+00	3.697E+00	FAIL ABUN
PM-147	1.691E+03	1.452E+03	1.640E+03	NOT IDENT.
PM-149	-6.227E+04	1.091E+05	1.126E+05	SHORT HLIF
EU-150	-5.506E-03	6.658E-02	6.663E-02	FAIL ABUN
EU-152	8.754E-02	1.979E-01	2.018E-01	FAIL ABUN
GD-153	-1.045E-01	1.739E-01	1.801E-01	NOT IDENT.
EU-154	-1.056E-01	1.948E-01	2.006E-01	NOT IDENT.

EU-155	7.013E-02	2.027E-01	2.051E-01	FAIL ABUN
TB-160	-2.688E-02	3.296E-01	3.298E-01	FAIL ABUN
HO-166M	4.216E-02	1.491E-01	1.503E-01	FAIL ABUN
TM-171	1.219E+01	8.325E+01	8.343E+01	FAIL ABUN
HF-172	-1.217E-01	3.754E-01	3.793E-01	FAIL ABUN
LU-172	-3.002E-02	9.613E-02	9.708E-02	FAIL ABUN
LU-176	-2.780E-02	5.306E-02	5.452E-02	FAIL ABUN
HF-181	3.097E-02	1.200E-01	1.208E-01	NOT IDENT.
TA-182	-1.878E-01	3.196E-01	3.306E-01	FAIL ABUN
RE-183	-9.173E-01	8.643E-01	9.581E-01	FAIL ABUN
RE-184	2.418E-01	3.464E-01	3.632E-01	NOT IDENT.
W-188	-2.122E+00	2.145E+01	2.147E+01	FAIL ABUN
IR-192	4.187E-03	8.047E-02	8.049E-02	FAIL ABUN
HG-203	-3.822E-02	1.188E-01	1.200E-01	NOT IDENT.
TL-204	-5.958E-01	1.320E+01	1.320E+01	FAIL ABUN
BI-207	2.040E-02	9.045E-02	9.092E-02	FAIL ABUN
BI-210	5.622E+00	2.513E+01	2.526E+01	NOT IDENT.
PB-210	5.622E+00	2.513E+01	2.526E+01	NOT IDENT.
PB-211	-4.050E-02	1.599E+00	1.599E+00	NOT IDENT.
BI-213	1.650E-01	2.101E-01	2.229E-01	NOT IDENT.
RN-219	7.135E-01	8.217E-01	8.824E-01	FAIL ABUN
RA-223	1.083E+00	1.352E+00	1.437E+00	FAIL ABUN
AC-225	1.936E+00	5.079E+00	5.154E+00	NOT IDENT.
AC-227	8.057E-01	7.124E-01	7.997E-01	FAIL ABUN
TH-227	8.057E-01	7.124E-01	7.997E-01	FAIL ABUN
PA-231	5.654E-01	1.128E+00	1.157E+00	NOT IDENT.
PA-233	1.332E-01	1.424E-01	1.546E-01	NOT IDENT.
PA-234	-4.964E-01	8.059E-01	8.364E-01	NOT IDENT.
PA-234M	1.481E+01	8.837E+00	1.108E+01	NOT IDENT.
NP-237	1.332E-01	1.424E-01	1.546E-01	NOT IDENT.
NP-238	-1.871E+04	2.484E+04	2.623E+04	SHORT HLIF
NP-239	1.478E-01	4.919E-01	4.964E-01	FAIL ABUN
PU-239	3.098E+02	6.856E+02	6.997E+02	NOT IDENT.
AM-241	4.880E-01	5.429E-01	5.858E-01	NOT IDENT.
CM-243	1.178E-01	2.084E-01	2.151E-01	FAIL ABUN
BK-247	-1.765E-02	1.694E-01	1.696E-01	FAIL ABUN
CM-247	2.853E-02	7.597E-02	7.705E-02	FAIL ABUN
CF-249	6.633E-02	8.092E-02	8.627E-02	NOT IDENT.
CF-251	4.154E-02	2.902E-01	2.908E-01	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
74.66	114.7701	81.75	161.0572	123.68	130.6215
879.38	120.5013	82.47	119.6310	125.81	131.0934
46.54	111.8338	83.79	110.8957	127.23	132.3919
228.16	0.0000	265.00	110.9478	127.91	136.4992
52.39	99.3758	193.51	127.7209	129.30	132.8468
1093.63	101.2089	105.31	144.4978	131.20	132.2674
52.39	102.2087	86.79	150.0627	133.02	128.6693
125.81	111.6216	86.94	150.1127	133.52	127.7754
53.44	108.4191	87.09	150.1615	136.00	120.2655
54.07	111.1514	87.57	150.3179	136.47	147.4352
293.27	0.0000	88.03	168.8178	739.50	0.0000
482.18	119.9445	306.78	168.9301	140.51	0.0000
57.98	131.1718	88.47	168.9778	143.76	132.8890
59.27	109.4268	143.76	157.2331	144.24	132.9849
59.32	109.4424	90.64	157.4596	145.44	141.0259
59.54	104.9473	531.02	157.6159	152.43	165.4515
60.96	124.8337	92.59	158.1068	1048.07	161.5349
61.17	131.7819	93.35	158.3568	154.21	176.1846
62.93	126.9494	94.56	130.2267	158.56	167.3517
63.29	127.0728	311.90	130.2502	159.00	144.2049
290.67	127.1726	946.00	130.2556	162.33	137.5873
87.57	127.4115	94.87	126.5859	537.26	139.7353
66.73	123.8773	97.43	136.6021	163.33	133.6035
67.24	130.1556	98.43	116.2509	165.86	128.8351
67.68	130.3045	98.44	116.2538	427.87	129.6008
1221.41	130.3273	103.37	110.8690	176.60	130.7119
70.82	127.4938	116.74	110.8690	177.52	140.4474
97.43	155.8756	100.11	113.8178	181.07	0.0000
70.82	151.6246	102.03	125.5784	181.52	139.7525
279.20	151.6285	103.18	123.9659	184.41	141.7022
1063.66	181.9053	103.37	118.3319	185.72	141.9399
72.87	181.9319	911.20	124.4506	193.51	124.8688
351.06	181.9319	105.31	117.8223	197.03	139.5840
74.66	162.5565	106.12	122.7622	198.01	112.4551
351.93	162.6192	106.47	132.3667	201.83	131.6180
238.63	162.6192	109.28	120.6205	203.43	124.1765
351.93	162.6192	111.00	101.7971	205.31	127.7565
238.63	162.6192	111.76	0.0000	210.85	119.7169
74.97	162.6777	114.06	106.2285	215.65	118.1469
77.11	163.5111	116.30	0.0000	218.12	101.7113
78.74	164.1383	116.74	109.6498	222.11	105.5349
256.23	162.0992	119.76	132.6693	227.09	99.3424
80.03	162.2255	264.66	103.6483	227.38	101.6318
133.52	162.2598	121.22	103.6660	228.16	0.0000
364.49	162.2859	344.28	119.4292	228.18	108.5024
711.68	162.4287	122.06	123.4045	235.69	116.9773
356.01	160.7815	122.92	151.0498	235.96	117.0117
323.87	160.8073	1274.44	151.0885	238.63	104.0079

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
238.98	0.0000	338.28	66.7952	531.02	38.9580
240.99	104.2648	338.32	66.7969	537.26	34.3271
242.00	104.3759	340.48	71.5127	1260.41	0.0000
244.70	92.0154	340.55	71.5179	552.55	34.6201
685.70	77.2847	344.28	65.4396	795.86	27.0840
388.16	86.5942	345.93	65.5253	564.24	0.0000
507.63	0.0000	351.06	54.8252	569.33	26.2024
256.23	87.2801	351.93	54.8623	569.50	32.0278
527.90	0.0000	355.39	0.0000	569.70	31.0599
264.66	78.6219	356.01	57.1536	583.19	35.1943
264.80	82.1530	364.49	54.5443	584.27	35.2134
265.00	82.1680	366.42	0.0000	595.83	40.3460
269.46	99.0271	372.51	58.3061	600.60	50.3090
270.03	99.0835	375.05	53.2623	602.52	0.0000
401.81	99.1963	377.52	41.3105	604.72	41.5198
273.65	106.5262	383.85	61.3912	607.14	32.6616
276.40	88.6074	388.16	52.0435	609.32	42.6063
583.19	91.4610	666.33	55.5313	610.33	42.6291
277.60	91.4798	391.69	60.8726	614.28	28.3098
402.40	79.2338	400.66	67.3891	618.01	21.8944
279.20	84.0827	401.81	49.9260	884.68	18.9312
279.54	84.1086	402.40	56.9570	621.93	33.9032
279.70	92.0575	404.85	60.5659	630.19	0.0000
280.46	85.7703	410.95	52.8906	631.29	37.0662
301.36	84.8325	413.71	66.2399	633.25	21.0581
284.31	92.0532	720.70	60.0990	634.78	21.0735
285.41	78.9833	423.72	59.5805	635.95	30.1221
285.90	0.0000	427.09	40.9987	636.99	32.1471
287.50	64.7463	427.87	41.9120	657.50	24.3496
290.67	83.3701	433.94	45.6636	657.76	28.9198
293.27	0.0000	439.40	46.3688	657.90	0.0000
295.22	72.4438	440.45	44.9615	661.66	23.3818
316.51	72.4933	453.88	46.2623	664.57	0.0000
298.58	103.3411	463.37	48.3677	666.33	23.4333
299.98	85.6851	468.07	39.3572	666.50	23.4352
300.09	83.6726	473.00	41.3150	667.71	0.0000
300.13	83.6768	631.29	27.5781	677.62	22.5335
311.90	83.6768	696.49	38.6504	685.70	29.8142
301.36	86.1954	477.60	49.7186	692.65	0.0000
302.85	93.6017	482.18	39.8874	695.00	28.9092
304.50	70.6078	487.02	40.0052	696.49	24.7959
304.85	81.5888	492.35	0.0000	696.51	24.7959
306.78	67.0883	497.08	40.0614	697.00	29.9688
308.46	58.6362	505.52	42.1344	697.30	26.8717
311.90	62.4862	507.63	0.0000	697.49	28.5276
316.51	54.1218	511.00	42.2699	702.65	23.3112
319.41	59.1870	514.00	32.4631	706.68	23.3533
320.08	59.2207	514.00	32.4645	711.68	24.9658
321.04	53.0939	520.40	42.5006	720.70	26.6331
323.87	58.1705	520.69	0.0000	721.93	0.0000
325.23	79.3008	667.71	0.0000	1690.97	31.3611
1596.21	79.5332	527.90	0.0000	722.91	31.3635
333.37	69.8564	528.26	37.0005	723.31	28.2316
333.97	76.5469	529.59	36.0780	756.73	28.2426
334.37	61.5899	529.87	0.0000	727.33	17.8073

ENERGY	MDA COUNTS
733.00	21.4218
735.93	13.6686
737.46	31.5637
739.50	0.0000
1434.09	18.9939
747.24	26.9423
748.06	26.9516
752.31	28.5886
753.82	32.8454
756.73	21.2166
756.80	21.2174
763.94	11.1729
765.81	20.7664
1001.03	19.1733
766.84	19.1770
772.60	0.0000
776.52	23.5334
777.92	0.0000
778.90	20.3444
783.70	19.3118
1435.80	25.8027
903.28	21.5316
795.86	18.3302
801.95	17.8354
810.06	19.5205
810.29	19.5220
810.45	16.2695
810.76	16.2714
815.77	22.8260
818.51	23.9390
832.01	21.8791
834.85	39.4263
835.71	27.9363
836.80	0.0000
846.75	0.0000
846.77	14.3034
856.80	26.5088
860.56	17.6979
871.09	16.6583
873.19	24.4519
875.33	0.0000
879.38	27.8503
880.51	34.5496
881.60	26.7588
883.24	17.8503
884.68	24.5575
889.28	25.1587
894.76	18.4866
1836.06	21.8748
900.72	24.7035
903.28	17.9831
911.20	30.4343
912.08	30.4442
984.45	0.0000
926.50	14.7350

ENERGY	MDA COUNTS
929.11	18.7196
935.54	18.1940
937.49	13.6548
983.53	17.1088
946.00	27.3926
949.00	21.7090
954.55	0.0000
962.31	13.7749
964.08	23.4314
966.17	23.4480
968.97	23.4713
983.53	17.3450
984.45	0.0000
996.26	12.7747
1001.03	11.6321
1002.74	16.2940
1004.73	26.7875
1021.30	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	23.8442
1038.76	0.0000
1046.59	15.9412
1048.07	20.3791
1049.04	21.2725
1050.41	16.8477
1063.66	17.8101
1077.00	16.0972
1077.34	17.8882
1085.87	13.4518
1093.63	15.2828
1099.45	13.5095
1112.07	18.6002
1112.84	13.0228
1115.54	21.7236
1120.29	29.0059
1120.55	29.0078
1121.30	29.0156
1808.65	23.6355
1131.51	0.0000
1147.95	0.0000
1332.49	18.4192
1177.95	19.3671
1189.05	22.2056
1204.77	17.6606
1221.41	18.6780
1231.02	9.6322
1235.36	25.5033
1238.28	15.0146
1260.41	0.0000
1271.87	8.5248
1274.44	16.1139
1274.54	15.1660
1291.59	17.1420
1298.22	0.0000

ENERGY	MDA COUNTS
1312.11	12.4485
1332.49	8.6655
1362.66	0.0000
1365.19	13.5950
1368.63	0.0000
1384.29	10.4095
1408.01	10.0980
1434.09	13.8351
1435.80	18.7843
1457.56	0.0000
1460.82	10.9423
1489.16	9.0143
1505.03	17.6945
1584.12	17.4099
1596.21	19.7168
1620.50	7.2277
1621.92	5.1645
1678.03	0.0000
1690.97	8.3892
1750.46	0.0000
1764.49	6.3904
1770.23	5.1185
1771.35	2.8442
1791.20	0.0000
1808.65	3.4393
1810.72	0.0000
1836.06	7.5652

VAX/VMS Nuclide Identification Report Generated 1-AUG-2024 11:05:28.51

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*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299025.CNF;2
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM06.CNF;954
                                         Background date  : 28-JUL-2024 11:21:57
Sample date      : 26-JUN-2024 11:25:00  Acquisition date : 1-AUG-2024 10:04:51.
Sample ID        : G674299025            Sample quantity  : 1.12300E+02 GRAM
Detector name    : GAM06                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.63  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	57.32	36	111	2.19	113.45	110	8	9.91E-03	53.7	
2	2	74.92	127	104	1.08	148.67	144	15	3.53E-02	16.8	3.07E+00
3	2	77.28	165	96	1.06	153.38	144	15	4.58E-02	12.5	
4	0	87.21	57	215	1.18	173.26	167	10	1.59E-02	49.8	
5	5	90.04	43	79	0.95	178.92	177	18	1.20E-02	31.2	1.48E+00
6	5	93.01*	70	152	1.51	184.87	177	18	1.95E-02	35.0	
7	0	185.76*	68	98	1.04	370.46	366	10	1.88E-02	31.0	
8	0	209.37	39	92	1.42	417.70	413	10	1.08E-02	50.0	
9	5	238.74*	273	54	1.09	476.47	473	17	7.59E-02	7.7	7.70E-01
10	5	241.82	105	69	1.95	482.64	473	17	2.93E-02	23.1	
11	0	270.19*	47	86	2.22	539.41	532	16	1.29E-02	48.4	
12	0	295.47*	113	80	1.34	590.01	583	11	3.14E-02	18.1	
13	0	300.13	23	47	1.82	599.33	595	9	6.43E-03	57.4	
14	0	324.54	17	54	1.45	648.18	641	11	4.65E-03	90.6	
15	0	328.20	21	29	0.76	655.51	652	7	5.69E-03	48.3	
16	0	338.50	64	59	0.80	676.13	671	10	1.77E-02	25.9	
17	0	352.03*	276	36	1.25	703.20	698	11	7.66E-02	7.4	
18	0	369.27	15	64	3.26	737.70	728	13	4.22E-03	112.3	
19	0	410.44*	12	36	1.01	820.09	814	10	3.45E-03	94.7	
20	0	503.66	10	20	0.81	1006.67	1000	10	2.65E-03	93.8	
21	0	511.22*	25	31	1.30	1021.81	1016	11	6.90E-03	60.5	
22	0	570.75	16	35	5.10	1140.97	1131	14	4.44E-03	82.3	
23	0	583.53*	98	33	1.19	1166.54	1161	13	2.72E-02	16.6	
24	0	609.17*	150	47	1.23	1217.88	1212	13	4.16E-02	12.5	
25	0	626.27	18	7	0.92	1252.11	1247	9	5.08E-03	34.6	
26	1	727.28	24	21	1.90	1454.31	1450	21	6.74E-03	38.1	1.13E+00
27	1	733.14	18	14	1.91	1466.04	1450	21	4.86E-03	52.8	
28	0	768.55	17	24	1.75	1536.92	1529	11	4.58E-03	63.0	
29	0	878.18	15	6	0.94	1756.41	1751	9	4.05E-03	41.3	
30	0	884.33	26	6	3.12	1768.73	1761	14	7.14E-03	29.3	
31	0	910.99*	57	21	1.28	1822.10	1815	14	1.59E-02	22.2	
32	0	951.16	8	6	2.27	1902.55	1898	8	2.29E-03	61.8	
33	0	969.15	45	29	1.85	1938.56	1929	14	1.26E-02	29.0	
34	0	1027.75	15	6	3.35	2055.90	2049	12	4.25E-03	40.9	

Sample ID : G674299025 Acquisition date : 1-AUG-2024 10:04:51

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1038.32	10	1	1.35	2077.08	2074	6	2.66E-03	38.0	
36	0	1120.14	45	6	2.93	2240.91	2235	12	1.26E-02	18.3	
37	0	1135.91	10	16	0.56	2272.50	2263	16	2.78E-03	94.9	
38	0	1145.88	8	9	1.35	2292.46	2286	10	2.11E-03	85.4	
39	0	1207.87	13	10	0.64	2416.60	2410	13	3.57E-03	57.5	
40	0	1214.85	7	14	2.89	2430.59	2422	11	2.03E-03	104.9	
41	0	1236.94	30	7	0.88	2474.83	2467	14	8.33E-03	26.1	
42	0	1278.15	7	4	1.35	2557.36	2553	8	1.94E-03	62.3	
43	0	1303.04	15	4	1.39	2607.22	2599	13	4.28E-03	35.3	
44	0	1308.04	7	5	1.24	2617.23	2612	11	1.90E-03	76.2	
45	0	1333.07	12	3	1.48	2667.36	2660	14	3.25E-03	44.6	
46	0	1460.25	303	16	2.24	2922.10	2914	16	8.42E-02	6.5	
47	0	1763.95	25	4	1.88	3530.50	3522	13	6.97E-03	25.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 1-AUG-2024 11:05:30

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299025.CNF;2		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: MXR1		
Sample date	: 26-JUN-2024 11:25:00	Acquisition date	: 1-AUG-2024 10:04:51
Sample ID	: G674299025	Sample quantity	: 112.30 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA6	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.63 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	286	10.66*	9.865E-01	1.815E+01	1.815E+01	12.91
CD-109	88.03	60	3.70*	5.253E+00	2.059E+00	2.173E+00	99.55
SN-126	64.28	------	9.60	2.778E+00	------	Line Not Found	------
	86.94	60	8.90	5.253E+00	8.558E-01	8.558E-01	99.55
	87.57	60	37.00*	5.253E+00	2.059E-01	2.059E-01	99.55
TL-208	277.37	------	6.60	3.940E+00	------	Line Not Found	------
	583.19	95	85.00*	2.227E+00	3.370E-01	3.370E-01	33.20
	860.56	------	12.50	1.593E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.892E+00	------	Line Not Found	------
	351.06	274	12.92*	3.293E+00	4.308E+00	4.308E+00	14.85
BI-212	727.33	23	6.67*	1.851E+00	1.272E+00	1.272E+00	76.22
	1620.50	------	1.47	9.117E-01	------	Line Not Found	------
PB-212	74.82	134	10.28	4.130E+00	2.107E+00	2.107E+00	33.63
	77.11	173	17.10	4.385E+00	1.546E+00	1.546E+00	24.91
	238.63	276	43.60*	4.404E+00	9.598E-01	9.598E-01	15.32
	300.09	23	3.30	3.714E+00	1.263E+00	1.263E+00	114.75
BI-214	609.32	146	45.49*	2.150E+00	9.973E-01	9.974E-01	24.99
	1120.29	43	14.92	1.248E+00	1.552E+00	1.553E+00	36.57
	1764.49	23	15.30	8.636E-01	1.187E+00	1.187E+00	50.11
PB-214	74.82	134	5.80	4.130E+00	3.735E+00	3.735E+00	33.63
	77.11	173	9.70	4.385E+00	2.725E+00	2.725E+00	24.91
	87.09	60	3.41	5.253E+00	2.234E+00	2.234E+00	99.55
	242.00	106	7.25	4.363E+00	2.248E+00	2.248E+00	46.16
	295.22	113	18.42	3.758E+00	1.093E+00	1.093E+00	36.27
	351.93	274	35.60*	3.293E+00	1.563E+00	1.564E+00	14.85
RN-222	609.32	146	45.49*	2.150E+00	9.973E-01	9.974E-01	24.99
	1120.29	43	14.92	1.248E+00	1.552E+00	1.553E+00	36.57
	1764.49	23	15.30	8.636E-01	1.187E+00	1.187E+00	50.11
RA-224	240.99	106	4.10*	4.363E+00	3.974E+00	3.974E+00	46.16
RA-226	74.82	134	5.80	4.130E+00	3.735E+00	3.735E+00	33.63
	77.11	173	9.70	4.385E+00	2.725E+00	2.725E+00	24.91
	87.09	60	3.41	5.253E+00	2.234E+00	2.234E+00	99.55
	242.00	106	7.25	4.363E+00	2.248E+00	2.248E+00	46.16
	295.22	113	18.42	3.758E+00	1.093E+00	1.093E+00	36.27
	351.93	274	35.60*	3.293E+00	1.563E+00	1.564E+00	14.85
AC-228	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	64	11.27	3.392E+00	1.111E+00	1.111E+00	51.82
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	55	25.80*	1.512E+00	9.403E-01	9.403E-01	44.38
	968.97	43	15.80	1.428E+00	1.284E+00	1.284E+00	57.94
RA-228	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	64	11.27	3.392E+00	1.111E+00	1.111E+00	51.82
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	55	25.80*	1.512E+00	9.403E-01	9.403E-01	44.38
	968.97	43	15.80	1.428E+00	1.284E+00	1.284E+00	57.94
TH-228	74.82	134	10.28	4.130E+00	2.107E+00	2.107E+00	33.63
	77.11	173	17.10	4.385E+00	1.546E+00	1.546E+00	24.91
	238.63	276	43.60*	4.404E+00	9.598E-01	9.598E-01	15.32
	300.09	23	3.30	3.714E+00	1.263E+00	1.263E+00	114.75

Sample ID : G674299025 Acquisition date : 1-AUG-2024 10:04:51

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-230	74.82	134	5.80	4.130E+00	3.735E+00	3.735E+00	33.63
	77.11	173	9.70	4.385E+00	2.725E+00	2.725E+00	24.91
	87.09	60	3.41	5.253E+00	2.234E+00	2.234E+00	99.55
	242.00	106	7.25	4.363E+00	2.248E+00	2.248E+00	46.16
	295.22	113	18.42	3.758E+00	1.093E+00	1.093E+00	36.27
	351.93	274	35.60*	3.293E+00	1.563E+00	1.563E+00	14.85
PA-231	283.69	------	1.70	3.874E+00	------	Line Not Found	------
	301.36	23	5.35*	3.714E+00	7.793E-01	7.793E-01	114.75
TH-232	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	64	11.27	3.392E+00	1.111E+00	1.111E+00	51.82
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	55	25.80*	1.512E+00	9.403E-01	9.403E-01	44.38
	968.97	43	15.80	1.428E+00	1.284E+00	1.284E+00	57.94
U-234	74.82	134	5.80	4.130E+00	3.735E+00	3.735E+00	33.63
	77.11	173	9.70	4.385E+00	2.725E+00	2.725E+00	24.91
	87.09	60	3.41	5.253E+00	2.234E+00	2.234E+00	99.55
	242.00	106	7.25	4.363E+00	2.248E+00	2.248E+00	46.16
	295.22	113	18.42	3.758E+00	1.093E+00	1.093E+00	36.27
	351.93	274	35.60*	3.293E+00	1.563E+00	1.563E+00	14.85
U-235	89.96	45	3.47	5.438E+00	1.604E+00	1.604E+00	62.49
	93.35	73	5.60	5.607E+00	1.564E+00	1.564E+00	69.94
	143.76	------	10.96*	5.983E+00	------	Line Not Found	------
	163.33	------	5.08	5.649E+00	------	Line Not Found	------
	185.72	69	57.20	5.240E+00	1.536E-01	1.536E-01	62.04
	205.31	------	5.01	4.904E+00	------	Line Not Found	------
AM-243	43.53	------	5.90	3.651E-01	------	Line Not Found	------
	74.66	134	67.20*	4.130E+00	3.223E-01	3.223E-01	33.63
ANH-511	511.00	24	100.00*	2.475E+00	6.583E-02	6.583E-02	120.98

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 11:05:30.90

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299025.CNF;2  *
* Acquisition date :  1-AUG-2024 10:04:51 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:25:00 Analyst initials: MXR1            *
* Sample ID        : G674299025           Sample Quantity : 1.1230E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.815E+01	2.296E+00	9.958E-01
CD-109	2.173E+00	2.120E+00	1.601E+00
SN-126	2.059E-01	2.008E-01	1.603E-01
TL-208	3.370E-01	1.096E-01	8.374E-02
BI-211	4.308E+00	6.269E-01	4.185E-01
BI-212	1.272E+00	9.498E-01	1.160E+00
PB-212	9.598E-01	1.441E-01	1.172E-01
BI-214	9.974E-01	2.443E-01	1.594E-01
PB-214	1.564E+00	2.275E-01	1.522E-01
RN-222	9.974E-01	2.443E-01	1.594E-01
RA-224	3.974E+00	1.798E+00	1.257E+00
RA-226	1.564E+00	2.275E-01	1.522E-01
AC-228	9.403E-01	4.089E-01	3.451E-01
RA-228	9.403E-01	4.089E-01	3.451E-01
TH-228	9.598E-01	1.441E-01	1.172E-01
TH-230	1.563E+00	2.275E-01	1.522E-01
PA-231	7.793E-01	8.764E-01	9.548E-01
TH-232	9.403E-01	4.089E-01	3.451E-01
U-234	1.563E+00	2.275E-01	1.522E-01
U-235	-8.501E-03	2.318E-01	4.118E-01
AM-243	3.223E-01	1.062E-01	9.710E-02
ANH-511	6.583E-02	7.805E-02	6.708E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-3.878E-01	5.426E-01	9.261E-01	NOT IDENT.
NA-22	-1.814E-02	7.529E-02	1.177E-01	NOT IDENT.
NA-24	0.000E+00	9.104E+15	0.000E+00	SHORT HLIF
AL-26	1.179E-02	3.567E-02	8.868E-02	NOT IDENT.
SC-46	6.064E-02	5.294E-02	1.201E-01	FAIL ABUN
V-48	-9.524E-02	2.424E-01	4.420E-01	NOT IDENT.
CR-51	3.172E-01	7.896E-01	1.441E+00	NOT IDENT.
MN-52	-1.129E-01	3.434E+00	7.069E+00	NOT IDENT.

MN-54	4.539E-02	4.965E-02	1.086E-01	NOT IDENT.
CO-56	5.299E-02	6.159E-02	1.350E-01	FAIL ABUN
MN-56	0.000E+00	1.158E+41	0.000E+00	SHORT HLIF
CO-57	-8.218E-03	2.901E-02	5.190E-02	NOT IDENT.
CO-58	-3.146E-02	5.200E-02	9.405E-02	NOT IDENT.
FE-59	1.475E-02	1.898E-01	3.653E-01	NOT IDENT.
CO-60	7.030E-02	6.147E-02	1.150E-01	FAIL ABUN
ZN-65	-1.231E-01	1.599E-01	2.202E-01	NOT IDENT.
GE-68	-8.739E-01	1.855E+00	3.303E+00	NOT IDENT.
AS-73	6.374E-01	1.376E+00	2.739E+00	NOT IDENT.
AS-74	9.226E-02	2.384E-01	4.778E-01	NOT IDENT.
SE-75	-6.680E-03	6.686E-02	1.060E-01	NOT IDENT.
BR-77	0.000E+00	9.770E+03	0.000E+00	SHORT HLIF
SR-82	1.639E-01	6.060E-01	1.284E+00	NOT IDENT.
RB-83	2.393E-03	1.031E-01	1.953E-01	NOT IDENT.
RB-84	1.258E-01	8.019E-02	2.262E-01	NOT IDENT.
KR-85	5.826E+00	8.201E+00	1.582E+01	NOT IDENT.
SR-85	3.821E-02	5.407E-02	1.042E-01	NOT IDENT.
RB-86	-1.131E+00	2.401E+00	4.276E+00	NOT IDENT.
Y-88	4.716E-03	4.956E-02	1.130E-01	NOT IDENT.
Y-91	1.705E+00	3.718E+01	6.368E+01	NOT IDENT.
NB-94	4.953E-03	4.242E-02	7.988E-02	NOT IDENT.
NB-95	1.514E-02	7.765E-02	1.383E-01	NOT IDENT.
NB-95M	1.986E-01	1.905E-01	3.475E-01	NOT IDENT.
ZR-95	-2.186E-02	1.011E-01	1.962E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.200E+15	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.932E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.065E+41	0.000E+00	SHORT HLIF
RH-101	-3.192E-02	3.391E-02	5.673E-02	FAIL ABUN
RH-102	3.333E-02	7.031E-02	1.405E-01	NOT IDENT.
RU-103	1.966E-02	7.536E-02	1.408E-01	FAIL ABUN
RH-106	4.015E-02	4.446E-01	7.577E-01	NOT IDENT.
RU-106	4.015E-02	4.446E-01	7.577E-01	NOT IDENT.
AG-108M	5.452E-03	3.263E-02	6.403E-02	NOT IDENT.
AG-110	-3.266E-01	8.915E-01	1.571E+00	NOT IDENT.
AG-110M	1.613E-01	9.252E-02	1.662E-01	FAIL ABUN
SN-113	3.513E-02	6.037E-02	1.224E-01	NOT IDENT.
CD-115	0.000E+00	9.324E+03	0.000E+00	SHORT HLIF
SN-117M	4.716E-02	1.789E-01	3.294E-01	NOT IDENT.
SB-122	0.000E+00	5.724E+02	0.000E+00	SHORT HLIF
TE-123M	2.418E-02	3.522E-02	6.742E-02	NOT IDENT.
SB-124	4.920E-02	9.291E-02	2.568E-01	NOT IDENT.
SB-125	-5.235E-02	1.059E-01	1.892E-01	NOT IDENT.
TE-125M	-2.642E+00	1.282E+01	2.329E+01	NOT IDENT.
I-126	4.535E-01	7.236E-01	1.517E+00	NOT IDENT.
SB-126	6.305E-02	6.083E-01	1.140E+00	NOT IDENT.
SB-127	-1.780E+00	7.331E+01	1.353E+02	NOT IDENT.
I-131	2.972E-02	9.266E-01	1.601E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.180E+01	0.000E+00	SHORT HLIF
BA-133	1.389E-02	5.255E-02	9.428E-02	NOT IDENT.
I-133	0.000E+00	1.383E+11	0.000E+00	SHORT HLIF
CS-134	6.166E-02	5.352E-02	1.200E-01	FAIL ABUN
I-135	0.000E+00	6.106E+38	0.000E+00	SHORT HLIF
CS-136	1.740E-01	4.001E-01	8.408E-01	NOT IDENT.
BA-137M	1.699E-02	4.321E-02	8.565E-02	NOT IDENT.
CS-137	1.795E-02	4.565E-02	9.048E-02	NOT IDENT.
LA-138	-1.770E-02	6.335E-02	1.200E-01	NOT IDENT.
CE-139	9.333E-03	3.744E-02	6.873E-02	NOT IDENT.
BA-140	1.626E-01	8.346E-01	1.665E+00	NOT IDENT.
LA-140	2.558E-03	3.159E-01	6.828E-01	FAIL ABUN
CE-141	3.646E-02	1.099E-01	2.041E-01	NOT IDENT.
CE-143	0.000E+00	5.681E+06	0.000E+00	SHORT HLIF
CE-144	-1.621E-01	2.167E-01	3.683E-01	NOT IDENT.
PM-144	-7.161E-03	4.604E-02	8.292E-02	NOT IDENT.
PR-144	-5.304E-01	3.485E+00	6.280E+00	NOT IDENT.
PM-146	1.791E-02	5.682E-02	1.105E-01	NOT IDENT.
ND-147	1.248E+00	2.541E+00	5.125E+00	FAIL ABUN
PM-147	2.939E+01	7.955E+02	1.467E+03	NOT IDENT.
PM-149	0.000E+00	7.113E+04	0.000E+00	SHORT HLIF
EU-150	-1.832E-02	3.665E-02	5.867E-02	FAIL ABUN
EU-152	1.634E-02	1.146E-01	2.225E-01	NOT IDENT.
GD-153	-1.616E-03	9.795E-02	1.689E-01	NOT IDENT.
EU-154	-4.040E-02	2.127E-01	3.369E-01	NOT IDENT.
EU-155	6.087E-02	1.194E-01	2.285E-01	FAIL ABUN
TB-160	2.806E-01	2.271E-01	4.008E-01	FAIL ABUN
HO-166M	1.047E-02	8.210E-02	1.539E-01	FAIL ABUN

TM-171	-5.638E+00	2.433E+01	4.625E+01	NOT IDENT.
HF-172	9.904E-02	1.980E-01	3.798E-01	NOT IDENT.
LU-172	-2.025E-02	9.235E-02	1.715E-01	FAIL ABUN
LU-176	-1.678E-02	3.030E-02	5.514E-02	FAIL ABUN
HF-181	2.044E-02	8.436E-02	1.623E-01	FAIL ABUN
TA-182	1.119E-02	2.988E-01	5.694E-01	FAIL ABUN
RE-183	5.806E-01	6.108E-01	6.175E-01	FAIL ABUN
RE-184	-9.314E-02	2.279E-01	4.212E-01	NOT IDENT.
W-188	-4.269E+00	1.194E+01	1.975E+01	NOT IDENT.
IR-192	8.119E-03	4.683E-02	9.207E-02	FAIL ABUN
HG-203	3.183E-03	5.814E-02	1.129E-01	NOT IDENT.
TL-204	-1.378E+00	5.605E+00	9.627E+00	NOT IDENT.
BI-207	-1.163E-02	6.025E-02	1.152E-01	FAIL ABUN
BI-210	-4.039E-01	5.362E+00	1.036E+01	NOT IDENT.
PB-210	-4.039E-01	5.362E+00	1.036E+01	NOT IDENT.
PB-211	-2.694E-01	9.362E-01	1.526E+00	NOT IDENT.
BI-213	6.905E-02	1.204E-01	2.459E-01	NOT IDENT.
RN-219	-1.113E-01	5.118E-01	9.457E-01	FAIL ABUN
RA-223	7.986E-01	1.419E+00	1.588E+00	FAIL ABUN
AC-225	1.297E-01	3.000E+00	5.319E+00	NOT IDENT.
AC-227	4.151E-02	2.781E-01	5.016E-01	FAIL ABUN
TH-227	4.151E-02	2.781E-01	5.016E-01	FAIL ABUN
TH-229	3.490E-01	5.719E-01	1.084E+00	FAIL ABUN
TH-231	7.986E-01	1.419E+00	1.588E+00	FAIL ABUN
PA-233	-2.878E-02	7.051E-02	1.306E-01	FAIL ABUN
PA-234	-2.436E-01	3.967E-01	5.823E-01	FAIL ABUN
PA-234M	2.806E+00	5.942E+00	1.240E+01	NOT IDENT.
TH-234	1.120E+00	1.556E+00	3.121E+00	FAIL ABUN
NP-237	-2.878E-02	7.051E-02	1.306E-01	FAIL ABUN
NP-238	0.000E+00	2.604E+04	0.000E+00	SHORT HLIF
U-238	1.120E+00	1.556E+00	3.121E+00	FAIL ABUN
NP-239	-1.011E-01	2.684E-01	4.789E-01	NOT IDENT.
PU-239	2.822E+02	3.838E+02	7.388E+02	NOT IDENT.
AM-241	-2.268E-02	1.926E-01	3.425E-01	NOT IDENT.
CM-243	-5.223E-02	1.178E-01	2.083E-01	NOT IDENT.
BK-247	1.054E-02	1.041E-01	1.704E-01	NOT IDENT.
CM-247	2.453E-02	4.244E-02	8.656E-02	NOT IDENT.
CF-249	-1.089E-02	4.542E-02	8.456E-02	NOT IDENT.
CF-251	5.880E-03	1.493E-01	2.678E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 1-AUG-2024 11:05:29.33

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	286	10.66*	9.865E-01	1.815E+01	1.815E+01	12.91
CD-109	88.03	60	3.70*	5.253E+00	2.059E+00	2.173E+00	99.55
SN-126	64.28	------	9.60	2.778E+00	------	Line Not Found	------
	86.94	60	8.90	5.253E+00	8.558E-01	8.558E-01	99.55
	87.57	60	37.00*	5.253E+00	2.059E-01	2.059E-01	99.55
TL-208	277.37	------	6.60	3.940E+00	------	Line Not Found	------
	583.19	95	85.00*	2.227E+00	3.370E-01	3.370E-01	33.20
	860.56	------	12.50	1.593E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.892E+00	------	Line Not Found	------
	351.06	274	12.92*	3.293E+00	4.308E+00	4.308E+00	14.85
BI-212	727.33	23	6.67*	1.851E+00	1.272E+00	1.272E+00	76.22
	1620.50	------	1.47	9.117E-01	------	Line Not Found	------
PB-212	74.82	134	10.28	4.130E+00	2.107E+00	2.107E+00	33.63
	77.11	173	17.10	4.385E+00	1.546E+00	1.546E+00	24.91
	238.63	276	43.60*	4.404E+00	9.598E-01	9.598E-01	15.32
	300.09	23	3.30	3.714E+00	1.263E+00	1.263E+00	114.75
BI-214	609.32	146	45.49*	2.150E+00	9.973E-01	9.974E-01	24.99
	1120.29	43	14.92	1.248E+00	1.552E+00	1.553E+00	36.57
	1764.49	23	15.30	8.636E-01	1.187E+00	1.187E+00	50.11
PB-214	74.82	134	5.80	4.130E+00	3.735E+00	3.735E+00	33.63
	77.11	173	9.70	4.385E+00	2.725E+00	2.725E+00	24.91
	87.09	60	3.41	5.253E+00	2.234E+00	2.234E+00	99.55
	242.00	106	7.25	4.363E+00	2.248E+00	2.248E+00	46.16
	295.22	113	18.42	3.758E+00	1.093E+00	1.093E+00	36.27
	351.93	274	35.60*	3.293E+00	1.563E+00	1.564E+00	14.85
RN-222	609.32	146	45.49*	2.150E+00	9.973E-01	9.974E-01	24.99
	1120.29	43	14.92	1.248E+00	1.552E+00	1.553E+00	36.57
	1764.49	23	15.30	8.636E-01	1.187E+00	1.187E+00	50.11
RA-224	240.99	106	4.10*	4.363E+00	3.974E+00	3.974E+00	46.16
RA-226	74.82	134	5.80	4.130E+00	3.735E+00	3.735E+00	33.63
	77.11	173	9.70	4.385E+00	2.725E+00	2.725E+00	24.91
	87.09	60	3.41	5.253E+00	2.234E+00	2.234E+00	99.55
	242.00	106	7.25	4.363E+00	2.248E+00	2.248E+00	46.16
	295.22	113	18.42	3.758E+00	1.093E+00	1.093E+00	36.27
	351.93	274	35.60*	3.293E+00	1.563E+00	1.564E+00	14.85
AC-228	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	64	11.27	3.392E+00	1.111E+00	1.111E+00	51.82
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	55	25.80*	1.512E+00	9.403E-01	9.403E-01	44.38
	968.97	43	15.80	1.428E+00	1.284E+00	1.284E+00	57.94
RA-228	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	64	11.27	3.392E+00	1.111E+00	1.111E+00	51.82
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	55	25.80*	1.512E+00	9.403E-01	9.403E-01	44.38
	968.97	43	15.80	1.428E+00	1.284E+00	1.284E+00	57.94
TH-228	74.82	134	10.28	4.130E+00	2.107E+00	2.107E+00	33.63
	77.11	173	17.10	4.385E+00	1.546E+00	1.546E+00	24.91

Sample ID : G674299025 Acquisition date : 1-AUG-2024 10:04:51

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	276	43.60*	4.404E+00	9.598E-01	9.598E-01	15.32
	300.09	23	3.30	3.714E+00	1.263E+00	1.263E+00	114.75
TH-230	74.82	134	5.80	4.130E+00	3.735E+00	3.735E+00	33.63
	77.11	173	9.70	4.385E+00	2.725E+00	2.725E+00	24.91
	87.09	60	3.41	5.253E+00	2.234E+00	2.234E+00	99.55
	242.00	106	7.25	4.363E+00	2.248E+00	2.248E+00	46.16
	295.22	113	18.42	3.758E+00	1.093E+00	1.093E+00	36.27
	351.93	274	35.60*	3.293E+00	1.563E+00	1.563E+00	14.85
PA-231	283.69	------	1.70	3.874E+00	------	Line Not Found	------
	301.36	23	5.35*	3.714E+00	7.793E-01	7.793E-01	114.75
TH-232	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	64	11.27	3.392E+00	1.111E+00	1.111E+00	51.82
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	55	25.80*	1.512E+00	9.403E-01	9.403E-01	44.38
	968.97	43	15.80	1.428E+00	1.284E+00	1.284E+00	57.94
U-234	74.82	134	5.80	4.130E+00	3.735E+00	3.735E+00	33.63
	77.11	173	9.70	4.385E+00	2.725E+00	2.725E+00	24.91
	87.09	60	3.41	5.253E+00	2.234E+00	2.234E+00	99.55
	242.00	106	7.25	4.363E+00	2.248E+00	2.248E+00	46.16
	295.22	113	18.42	3.758E+00	1.093E+00	1.093E+00	36.27
	351.93	274	35.60*	3.293E+00	1.563E+00	1.563E+00	14.85
U-235	89.96	45	3.47	5.438E+00	1.604E+00	1.604E+00	62.49
	93.35	73	5.60	5.607E+00	1.564E+00	1.564E+00	69.94
	143.76	------	10.96*	5.983E+00	------	Line Not Found	------
	163.33	------	5.08	5.649E+00	------	Line Not Found	------
	185.72	69	57.20	5.240E+00	1.536E-01	1.536E-01	62.04
	205.31	------	5.01	4.904E+00	------	Line Not Found	------
AM-243	43.53	------	5.90	3.651E-01	------	Line Not Found	------
	74.66	134	67.20*	4.130E+00	3.223E-01	3.223E-01	33.63
ANH-511	511.00	24	100.00*	2.475E+00	6.583E-02	6.583E-02	120.98

Flag: "*" = Keyline

Sample ID : G674299025 Acquisition date : 1-AUG-2024 10:04:51

Total number of lines in spectrum	47	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	35	74.47%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.815E+01	1.815E+01	0.234E+01	12.91	
CD-109	461.40D	1.06	2.059E+00	2.173E+00	2.163E+00	99.55	
SN-126	2.30E+05Y	1.00	2.059E-01	2.059E-01	2.049E-01	99.55	
TL-208	1.41E+10Y	1.00	3.370E-01	3.370E-01	1.119E-01	33.20	
BI-211	7.04E+08Y	1.00	4.308E+00	4.308E+00	0.640E+00	14.85	
BI-212	1.41E+10Y	1.00	1.272E+00	1.272E+00	0.969E+00	76.22	
PB-212	1.41E+10Y	1.00	9.598E-01	9.598E-01	1.470E-01	15.32	
BI-214	1600.00Y	1.00	9.973E-01	9.974E-01	2.493E-01	24.99	
PB-214	1600.00Y	1.00	1.563E+00	1.564E+00	0.232E+00	14.85	
RN-222	1600.00Y	1.00	9.973E-01	9.974E-01	2.493E-01	24.99	
RA-224	1.41E+10Y	1.00	3.974E+00	3.974E+00	1.835E+00	46.16	
RA-226	1600.00Y	1.00	1.563E+00	1.564E+00	0.232E+00	14.85	
AC-228	1.41E+10Y	1.00	9.403E-01	9.403E-01	4.173E-01	44.38	
RA-228	1.41E+10Y	1.00	9.403E-01	9.403E-01	4.173E-01	44.38	
TH-228	1.41E+10Y	1.00	9.598E-01	9.598E-01	1.470E-01	15.32	
TH-230	7.54E+04Y	1.00	1.563E+00	1.563E+00	0.232E+00	14.85	
PA-231	7.04E+08Y	1.00	7.793E-01	7.793E-01	8.942E-01	114.75	
TH-232	1.41E+10Y	1.00	9.403E-01	9.403E-01	4.173E-01	44.38	
U-234	2.45E+05Y	1.00	1.563E+00	1.563E+00	0.232E+00	14.85	
U-235	7.04E+08Y	1.00	1.536E-01	1.536E-01	0.953E-01	62.04	K
AM-243	7370.00Y	1.00	3.223E-01	3.223E-01	1.084E-01	33.63	
ANH-511	1.00E+09Y	1.00	6.583E-02	6.583E-02	7.964E-02	120.98	
			---	---			
	Total Activity :		4.462E+01	4.473E+01			

Grand Total Activity : 4.462E+01 4.473E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299025 Acquisition date : 1-AUG-2024 10:04:51

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	57.32	38	118	2.19	113.45	110	8	9.91E-03	****	1.82E+00	T
0	209.37	39	94	1.42	417.70	413	10	1.08E-02	99.9	4.84E+00	T
0	270.19	47	86	2.22	539.41	532	16	1.29E-02	96.8	4.02E+00	T
0	324.54	17	54	1.45	648.18	641	11	4.65E-03	****	3.50E+00	T
0	328.20	20	28	0.76	655.51	652	7	5.69E-03	96.6	3.47E+00	T
0	369.27	15	63	3.26	737.70	728	13	4.22E-03	****	3.18E+00	
0	410.44	12	35	1.01	820.09	814	10	3.45E-03	****	2.93E+00	T
0	503.66	9	20	0.81	1006.67	1000	10	2.65E-03	****	2.50E+00	
0	570.75	16	34	5.10	1140.97	1131	14	4.44E-03	****	2.27E+00	T
0	626.27	18	7	0.92	1252.11	1247	9	5.08E-03	69.3	2.10E+00	
1	733.14	17	14	1.91	1466.04	1450	21	4.86E-03	****	1.84E+00	T
0	768.55	16	23	1.75	1536.92	1529	11	4.58E-03	****	1.76E+00	
0	878.18	14	6	0.94	1756.41	1751	9	4.05E-03	82.6	1.56E+00	T
0	884.33	25	6	3.12	1768.73	1761	14	7.14E-03	58.5	1.55E+00	T
0	951.16	8	6	2.27	1902.55	1898	8	2.29E-03	****	1.45E+00	
0	1027.75	15	5	3.35	2055.90	2049	12	4.25E-03	81.7	1.35E+00	T
0	1038.32	9	1	1.35	2077.08	2074	6	2.66E-03	75.9	1.34E+00	T
0	1135.91	10	15	0.56	2272.50	2263	16	2.78E-03	****	1.23E+00	
0	1145.88	7	9	1.35	2292.46	2286	10	2.11E-03	****	1.22E+00	
0	1207.87	12	10	0.64	2416.60	2410	13	3.57E-03	****	1.16E+00	
0	1214.85	7	13	2.89	2430.59	2422	11	2.03E-03	****	1.16E+00	
0	1236.94	28	7	0.88	2474.83	2467	14	8.33E-03	52.3	1.14E+00	T
0	1278.15	7	4	1.35	2557.36	2553	8	1.94E-03	****	1.11E+00	
0	1303.04	15	3	1.39	2607.22	2599	13	4.28E-03	70.6	1.09E+00	
0	1308.04	6	5	1.24	2617.23	2612	11	1.90E-03	****	1.08E+00	
0	1333.07	11	3	1.48	2667.36	2660	14	3.25E-03	89.2	1.07E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 11:05:40.62

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299025.CNF;2  *
* Acquisition date :  1-AUG-2024 10:04:51 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:25:00 Nuclide Library : SOLID           *
* Sample ID        : G674299025           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1230E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	4.124E-01
CD-109	7.516E-01
SN-126	7.546E-02
TL-208	3.709E-02
BI-211	1.880E-01
BI-212	5.068E-01
PB-212	5.387E-02
BI-214	7.043E-02
PB-214	6.838E-02
RN-222	7.043E-02
RA-224	5.778E-01
RA-226	6.838E-02
AC-228	1.494E-01
RA-228	1.494E-01
TH-228	5.387E-02
TH-230	6.837E-02
PA-231	4.315E-01
TH-232	1.494E-01
U-234	6.837E-02
U-235	1.920E-01
AM-243	4.522E-02
ANH-511	2.988E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.100E-01	NOT IDENT.
NA-22	5.054E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.377E-02	NOT IDENT.
SC-46	5.222E-02	FAIL ABUN
V-48	1.905E-01	NOT IDENT.
CR-51	6.571E-01	NOT IDENT.
MN-52	2.758E+00	NOT IDENT.
MN-54	4.834E-02	NOT IDENT.

CO-56	5.978E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.406E-02	NOT IDENT.
CO-58	3.935E-02	NOT IDENT.
FE-59	1.607E-01	NOT IDENT.
CO-60	4.893E-02	FAIL ABUN
ZN-65	9.435E-02	NOT IDENT.
GE-68	1.415E+00	NOT IDENT.
AS-73	1.277E+00	NOT IDENT.
AS-74	2.104E-01	NOT IDENT.
SE-75	4.835E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.504E-01	NOT IDENT.
RB-83	8.664E-02	NOT IDENT.
RB-84	9.512E-02	NOT IDENT.
KR-85	7.056E+00	NOT IDENT.
SR-85	4.650E-02	NOT IDENT.
RB-86	1.831E+00	NOT IDENT.
Y-88	4.299E-02	NOT IDENT.
Y-91	2.730E+01	NOT IDENT.
NB-94	3.519E-02	NOT IDENT.
NB-95	6.163E-02	NOT IDENT.
NB-95M	1.616E-01	NOT IDENT.
ZR-95	8.441E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.614E-02	FAIL ABUN
RH-102	6.235E-02	NOT IDENT.
RU-103	6.299E-02	FAIL ABUN
RH-106	3.328E-01	NOT IDENT.
RU-106	3.328E-01	NOT IDENT.
AG-108M	2.845E-02	NOT IDENT.
AG-110	6.752E-01	NOT IDENT.
AG-110M	7.428E-02	FAIL ABUN
SN-113	5.548E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.532E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.138E-02	NOT IDENT.
SB-124	9.611E-02	NOT IDENT.
SB-125	8.364E-02	NOT IDENT.
TE-125M	1.079E+01	NOT IDENT.
I-126	6.637E-01	NOT IDENT.
SB-126	5.023E-01	NOT IDENT.
SB-127	5.947E+01	NOT IDENT.
I-131	7.229E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.263E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.364E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	3.640E-01	NOT IDENT.
BA-137M	3.780E-02	NOT IDENT.
CS-137	3.994E-02	NOT IDENT.
LA-138	4.626E-02	NOT IDENT.
CE-139	3.193E-02	NOT IDENT.
BA-140	7.223E-01	NOT IDENT.
LA-140	2.692E-01	FAIL ABUN
CE-141	9.522E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.694E-01	NOT IDENT.
PM-144	3.640E-02	NOT IDENT.
PR-144	2.757E+00	NOT IDENT.
PM-146	5.005E-02	NOT IDENT.
ND-147	2.284E+00	FAIL ABUN
PM-147	6.802E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.657E-02	FAIL ABUN
EU-152	1.010E-01	NOT IDENT.
GD-153	7.844E-02	NOT IDENT.
EU-154	1.451E-01	NOT IDENT.
EU-155	1.070E-01	FAIL ABUN
TB-160	1.733E-01	FAIL ABUN
HO-166M	6.810E-02	FAIL ABUN
TM-171	2.142E+01	NOT IDENT.

HF-172	1.763E-01	NOT IDENT.
LU-172	7.414E-02	FAIL ABUN
LU-176	2.491E-02	FAIL ABUN
HF-181	7.333E-02	FAIL ABUN
TA-182	2.488E-01	FAIL ABUN
RE-183	2.887E-01	FAIL ABUN
RE-184	1.792E-01	NOT IDENT.
W-188	9.024E+00	NOT IDENT.
IR-192	4.172E-02	FAIL ABUN
HG-203	5.159E-02	NOT IDENT.
TL-204	4.489E+00	NOT IDENT.
BI-207	4.838E-02	FAIL ABUN
BI-210	4.812E+00	NOT IDENT.
PB-210	4.812E+00	NOT IDENT.
PB-211	6.821E-01	NOT IDENT.
BI-213	1.104E-01	NOT IDENT.
RN-219	4.268E-01	FAIL ABUN
RA-223	7.291E-01	FAIL ABUN
AC-225	2.454E+00	NOT IDENT.
AC-227	2.279E-01	FAIL ABUN
TH-227	2.279E-01	FAIL ABUN
TH-229	5.017E-01	FAIL ABUN
TH-231	7.291E-01	FAIL ABUN
PA-233	5.875E-02	FAIL ABUN
PA-234	2.396E-01	FAIL ABUN
PA-234M	5.425E+00	NOT IDENT.
TH-234	1.467E+00	FAIL ABUN
NP-237	5.875E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	1.467E+00	FAIL ABUN
NP-239	2.208E-01	NOT IDENT.
PU-239	3.459E+02	NOT IDENT.
AM-241	1.592E-01	NOT IDENT.
CM-243	9.687E-02	NOT IDENT.
BK-247	7.778E-02	NOT IDENT.
CM-247	3.905E-02	NOT IDENT.
CF-249	3.778E-02	NOT IDENT.
CF-251	1.241E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 11:05:44.79

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299025.CNF;2  *
* Acquisition date :  1-AUG-2024 10:04:51 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:25:00 Nuclide Library : SOLID           *
* Sample ID        : G674299025           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1230E+02 GRAM *
*                                         Quantity Err(%) : 1.7809E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.815E+01	2.861E+00	2.861E+00
CD-109	2.173E+00	2.133E+00	2.133E+00
SN-126	2.059E-01	2.017E-01	2.017E-01
TL-208	3.370E-01	1.135E-01	1.135E-01
BI-211	4.308E+00	7.176E-01	7.176E-01
BI-212	1.272E+00	9.572E-01	9.572E-01
PB-212	9.598E-01	1.639E-01	1.639E-01
BI-214	9.974E-01	2.594E-01	2.594E-01
PB-214	1.564E+00	2.592E-01	2.592E-01
RN-222	9.974E-01	2.594E-01	2.594E-01
RA-224	3.974E+00	1.827E+00	1.827E+00
RA-226	1.564E+00	2.592E-01	2.592E-01
AC-228	9.403E-01	4.192E-01	4.192E-01
RA-228	9.403E-01	4.192E-01	4.192E-01
TH-228	9.598E-01	1.639E-01	1.639E-01
TH-230	1.563E+00	2.592E-01	2.592E-01
PA-231	7.793E-01	8.933E-01	8.933E-01
TH-232	9.403E-01	4.192E-01	4.192E-01
U-234	1.563E+00	2.592E-01	2.592E-01
U-235	-8.501E-03	2.318E-01	2.318E-01
AM-243	3.223E-01	1.099E-01	1.099E-01
ANH-511	6.583E-02	7.825E-02	7.825E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-3.878E-01	5.436E-01	5.710E-01	NOT IDENT.
NA-22	-1.814E-02	7.531E-02	7.575E-02	NOT IDENT.
NA-24	-5.615E+15	9.122E+15	9.467E+15	SHORT HLIF
AL-26	1.179E-02	3.569E-02	3.608E-02	NOT IDENT.
SC-46	6.064E-02	5.325E-02	5.985E-02	FAIL ABUN
V-48	-9.524E-02	2.426E-01	2.463E-01	NOT IDENT.
CR-51	3.172E-01	7.900E-01	8.028E-01	NOT IDENT.
MN-52	-1.129E-01	3.434E+00	3.434E+00	NOT IDENT.

MN-54	4.539E-02	4.983E-02	5.387E-02	NOT IDENT.
CO-56	5.299E-02	6.179E-02	6.624E-02	FAIL ABUN
MN-56	1.000E+41	1.162E+41	0.000E+00	SHORT HLIF
CO-57	-8.218E-03	2.902E-02	2.926E-02	NOT IDENT.
CO-58	-3.146E-02	5.208E-02	5.397E-02	NOT IDENT.
FE-59	1.475E-02	1.898E-01	1.899E-01	NOT IDENT.
CO-60	7.030E-02	6.179E-02	6.945E-02	FAIL ABUN
ZN-65	-1.231E-01	1.602E-01	1.696E-01	NOT IDENT.
GE-68	-8.739E-01	1.857E+00	1.898E+00	NOT IDENT.
AS-73	6.374E-01	1.383E+00	1.412E+00	NOT IDENT.
AS-74	9.226E-02	2.386E-01	2.422E-01	NOT IDENT.
SE-75	-6.680E-03	6.686E-02	6.693E-02	NOT IDENT.
BR-77	6.508E+04	6.845E+04	7.447E+04	SHORT HLIF
SR-82	1.639E-01	6.062E-01	6.107E-01	NOT IDENT.
RB-83	2.393E-03	1.031E-01	1.032E-01	NOT IDENT.
RB-84	1.258E-01	8.104E-02	9.891E-02	NOT IDENT.
KR-85	5.826E+00	8.216E+00	8.626E+00	NOT IDENT.
SR-85	3.821E-02	5.417E-02	5.685E-02	NOT IDENT.
RB-86	-1.131E+00	2.403E+00	2.456E+00	NOT IDENT.
Y-88	4.716E-03	4.956E-02	4.960E-02	NOT IDENT.
Y-91	1.705E+00	3.718E+01	3.719E+01	NOT IDENT.
NB-94	4.953E-03	4.242E-02	4.248E-02	NOT IDENT.
NB-95	1.514E-02	7.766E-02	7.796E-02	NOT IDENT.
NB-95M	1.986E-01	1.915E-01	2.114E-01	NOT IDENT.
ZR-95	-2.186E-02	1.011E-01	1.016E-01	NOT IDENT.
NB-97	-1.000E+41	2.041E+41	0.000E+00	SHORT HLIF
ZR-97	-6.701E+14	2.200E+15	2.221E+15	SHORT HLIF
MO-99	-2.067E+03	2.939E+03	3.083E+03	SHORT HLIF
TC-99M	1.000E+41	1.071E+41	0.000E+00	SHORT HLIF
RH-101	-3.192E-02	3.444E-02	3.732E-02	FAIL ABUN
RH-102	3.333E-02	7.041E-02	7.199E-02	NOT IDENT.
RU-103	1.966E-02	7.538E-02	7.590E-02	FAIL ABUN
RH-106	4.015E-02	4.447E-01	4.450E-01	NOT IDENT.
RU-106	4.015E-02	4.447E-01	4.450E-01	NOT IDENT.
AG-108M	5.452E-03	3.263E-02	3.272E-02	NOT IDENT.
AG-110	-3.266E-01	8.919E-01	9.040E-01	NOT IDENT.
AG-110M	1.613E-01	9.386E-02	1.187E-01	FAIL ABUN
SN-113	3.513E-02	6.044E-02	6.248E-02	NOT IDENT.
CD-115	6.478E+03	9.346E+03	9.792E+03	SHORT HLIF
SN-117M	4.716E-02	1.789E-01	1.802E-01	NOT IDENT.
SB-122	-1.037E+02	5.725E+02	5.744E+02	SHORT HLIF
TE-123M	2.418E-02	3.527E-02	3.691E-02	NOT IDENT.
SB-124	4.920E-02	9.300E-02	9.561E-02	NOT IDENT.
SB-125	-5.235E-02	1.059E-01	1.085E-01	NOT IDENT.
TE-125M	-2.642E+00	1.282E+01	1.287E+01	NOT IDENT.
I-126	4.535E-01	7.249E-01	7.532E-01	NOT IDENT.
SB-126	6.305E-02	6.084E-01	6.091E-01	NOT IDENT.
SB-127	-1.780E+00	7.331E+01	7.332E+01	NOT IDENT.
I-131	2.972E-02	9.266E-01	9.267E-01	NOT IDENT.
I-132	-1.000E+41	7.968E+41	0.000E+00	SHORT HLIF
TE-132	7.475E+01	8.224E+01	8.888E+01	SHORT HLIF
BA-133	1.389E-02	5.257E-02	5.294E-02	NOT IDENT.
I-133	-1.228E+11	1.414E+11	1.519E+11	SHORT HLIF
CS-134	6.166E-02	5.381E-02	6.057E-02	FAIL ABUN
I-135	1.148E+38	6.178E+38	0.000E+00	SHORT HLIF
CS-136	1.740E-01	4.006E-01	4.082E-01	NOT IDENT.
BA-137M	1.699E-02	4.324E-02	4.391E-02	NOT IDENT.
CS-137	1.795E-02	4.568E-02	4.639E-02	NOT IDENT.
LA-138	-1.770E-02	6.337E-02	6.387E-02	NOT IDENT.
CE-139	9.333E-03	3.749E-02	3.772E-02	NOT IDENT.
BA-140	1.626E-01	8.348E-01	8.380E-01	NOT IDENT.
LA-140	2.558E-03	3.159E-01	3.159E-01	FAIL ABUN
CE-141	3.646E-02	1.100E-01	1.112E-01	NOT IDENT.
CE-143	1.269E+06	5.682E+06	5.711E+06	SHORT HLIF
CE-144	-1.621E-01	2.171E-01	2.291E-01	NOT IDENT.
PM-144	-7.161E-03	4.604E-02	4.616E-02	NOT IDENT.
PR-144	-5.304E-01	3.485E+00	3.494E+00	NOT IDENT.
PM-146	1.791E-02	5.686E-02	5.743E-02	NOT IDENT.
ND-147	1.248E+00	2.543E+00	2.605E+00	FAIL ABUN
PM-147	2.939E+01	7.955E+02	7.956E+02	NOT IDENT.
PM-149	-3.106E+04	7.128E+04	7.264E+04	SHORT HLIF
EU-150	-1.832E-02	3.667E-02	3.759E-02	FAIL ABUN
EU-152	1.634E-02	1.146E-01	1.148E-01	NOT IDENT.
GD-153	-1.616E-03	9.795E-02	9.796E-02	NOT IDENT.
EU-154	-4.040E-02	2.127E-01	2.135E-01	NOT IDENT.
EU-155	6.087E-02	1.195E-01	1.226E-01	FAIL ABUN
TB-160	2.806E-01	2.289E-01	2.615E-01	FAIL ABUN
HO-166M	1.047E-02	8.210E-02	8.224E-02	FAIL ABUN

TM-171	-5.638E+00	2.434E+01	2.447E+01	NOT IDENT.
HF-172	9.904E-02	1.988E-01	2.037E-01	NOT IDENT.
LU-172	-2.025E-02	9.238E-02	9.283E-02	FAIL ABUN
LU-176	-1.678E-02	3.032E-02	3.125E-02	FAIL ABUN
HF-181	2.044E-02	8.437E-02	8.488E-02	FAIL ABUN
TA-182	1.119E-02	2.988E-01	2.989E-01	FAIL ABUN
RE-183	5.806E-01	6.151E-01	6.685E-01	FAIL ABUN
RE-184	-9.314E-02	2.282E-01	2.320E-01	NOT IDENT.
W-188	-4.269E+00	1.195E+01	1.210E+01	NOT IDENT.
IR-192	8.119E-03	4.683E-02	4.698E-02	FAIL ABUN
HG-203	3.183E-03	5.814E-02	5.816E-02	NOT IDENT.
TL-204	-1.378E+00	5.606E+00	5.641E+00	NOT IDENT.
BI-207	-1.163E-02	6.026E-02	6.048E-02	FAIL ABUN
BI-210	-4.039E-01	5.362E+00	5.365E+00	NOT IDENT.
PB-210	-4.039E-01	5.362E+00	5.365E+00	NOT IDENT.
PB-211	-2.694E-01	9.365E-01	9.443E-01	NOT IDENT.
BI-213	6.905E-02	1.205E-01	1.245E-01	NOT IDENT.
RN-219	-1.113E-01	5.120E-01	5.145E-01	FAIL ABUN
RA-223	7.986E-01	1.421E+00	1.465E+00	FAIL ABUN
AC-225	1.297E-01	3.000E+00	3.001E+00	NOT IDENT.
AC-227	4.151E-02	2.782E-01	2.788E-01	FAIL ABUN
TH-227	4.151E-02	2.782E-01	2.788E-01	FAIL ABUN
TH-229	3.490E-01	5.726E-01	5.938E-01	FAIL ABUN
TH-231	7.986E-01	1.421E+00	1.465E+00	FAIL ABUN
PA-233	-2.878E-02	7.055E-02	7.173E-02	FAIL ABUN
PA-234	-2.436E-01	4.853E-01	4.975E-01	FAIL ABUN
PA-234M	2.806E+00	5.948E+00	6.081E+00	NOT IDENT.
TH-234	1.120E+00	1.578E+00	1.657E+00	FAIL ABUN
NP-237	-2.878E-02	7.055E-02	7.173E-02	FAIL ABUN
NP-238	-9.191E+03	2.605E+04	2.638E+04	SHORT HLIF
U-238	1.120E+00	1.578E+00	1.657E+00	FAIL ABUN
NP-239	-1.011E-01	2.686E-01	2.724E-01	NOT IDENT.
PU-239	2.822E+02	3.844E+02	4.049E+02	NOT IDENT.
AM-241	-2.268E-02	1.926E-01	1.929E-01	NOT IDENT.
CM-243	-5.223E-02	1.180E-01	1.203E-01	NOT IDENT.
BK-247	1.054E-02	1.041E-01	1.042E-01	NOT IDENT.
CM-247	2.453E-02	4.268E-02	4.409E-02	NOT IDENT.
CF-249	-1.089E-02	4.543E-02	4.570E-02	NOT IDENT.
CF-251	5.880E-03	1.493E-01	1.494E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	56.0889	85.43	86.0331	131.20	62.3748
45.60	46.0751	86.55	86.2902	133.02	60.5422
46.54	58.4272	86.79	86.3443	133.52	59.5735
49.72	0.0000	86.94	86.3792	136.00	52.6319
51.35	62.8639	87.09	86.4134	136.47	58.8761
51.87	62.9891	87.57	86.5223	140.51	0.0000
52.39	57.3008	88.03	77.9643	143.76	61.7701
52.97	59.9233	88.34	78.0271	144.24	55.5361
53.44	54.1927	88.47	78.0534	145.44	57.7569
54.07	46.7988	89.96	65.9184	152.43	60.6008
57.36	0.0000	1093.63	66.0333	153.25	59.6222
57.53	63.4689	91.11	66.1125	323.87	56.5220
57.98	63.5696	92.59	66.3611	156.02	59.9067
59.27	52.2212	93.35	66.4883	158.56	53.7193
59.32	52.2303	94.56	66.6894	159.00	46.2321
59.54	55.6790	94.65	66.7040	162.33	56.2204
60.96	59.3768	94.67	66.7072	162.66	51.9236
61.17	68.5608	94.87	66.7406	163.33	60.6450
62.93	68.9679	97.43	57.0232	165.86	52.1968
63.29	53.5142	98.43	69.8639	176.31	47.5424
63.58	50.9737	98.44	69.8656	176.60	50.8824
64.28	77.9362	99.53	63.6805	177.52	53.1702
66.73	67.2093	100.11	62.1743	181.07	0.0000
67.24	76.0613	102.03	68.2228	181.52	47.5527
125.81	75.2920	103.18	70.3328	184.41	49.2523
67.75	77.0598	103.37	64.5806	143.76	49.3489
68.89	71.1852	105.21	57.1117	193.51	39.7061
69.67	74.0012	105.31	60.9981	197.03	49.0285
70.82	69.5475	106.12	61.1110	198.01	54.8057
70.83	69.5505	106.47	62.1304	201.83	49.3612
72.81	71.1548	109.28	57.6401	203.43	51.7724
72.87	71.1676	111.00	62.7637	205.31	59.9822
74.66	61.7100	111.76	0.0000	210.85	46.4899
74.82	61.7390	114.06	63.1846	215.65	53.8080
74.97	61.7663	116.30	0.0000	218.12	46.9421
77.11	62.1517	116.74	54.6119	222.11	44.8281
78.74	62.4423	119.76	58.9568	227.09	51.0520
79.69	68.9614	121.12	54.1129	227.38	51.0704
80.03	62.9714	121.22	54.1240	228.16	0.0000
80.12	62.9883	121.78	60.2074	228.18	40.4225
80.19	63.0005	122.06	60.2417	116.74	40.4225
80.57	61.8548	122.92	51.2957	235.69	36.8041
81.00	70.4291	123.07	51.3117	235.96	43.2191
81.07	70.4426	265.00	51.3755	238.63	43.3614
81.75	76.6595	125.81	46.5384	238.98	0.0000
82.47	69.4966	127.23	65.9472	240.99	43.4861
83.79	73.4180	127.91	64.0048	242.00	43.5394
84.00	73.4595	129.30	56.0306	244.70	30.7389

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	30.6126	344.28	30.5102	563.25	20.5656
252.80	28.1765	345.93	30.5559	564.24	0.0000
254.15	0.0000	351.06	26.1839	569.33	20.1117
256.23	30.7493	351.93	26.2040	946.00	20.1141
260.90	0.0000	355.39	0.0000	569.70	20.1164
264.66	38.0844	356.01	25.8461	583.19	20.2787
264.80	38.0900	364.49	28.7808	584.27	20.2911
265.00	34.7855	366.42	0.0000	595.83	13.9775
269.46	43.6998	372.51	34.5001	427.87	17.2507
270.03	43.7276	375.05	21.2064	602.52	0.0000
271.23	41.7002	377.52	31.4143	604.72	17.8314
273.65	36.3766	356.01	25.0796	607.14	12.9863
276.40	49.0666	388.16	27.0335	609.32	19.5037
277.37	41.1424	388.63	27.9767	610.33	19.5146
277.60	31.9141	391.69	23.3729	614.28	21.1885
278.00	29.4073	264.66	30.1361	618.01	17.4219
279.20	37.0176	401.81	32.0493	620.36	18.3169
279.54	43.7639	402.40	20.7476	621.93	16.3690
279.70	43.7713	404.85	28.3478	630.19	0.0000
280.46	49.7044	410.95	15.6671	631.29	15.3569
283.69	36.3512	413.71	28.5474	633.25	14.2754
284.31	35.5289	414.70	30.8549	634.78	21.9808
285.41	38.9585	423.72	15.3441	635.95	10.9973
285.90	0.0000	427.09	19.2297	636.99	14.3050
287.50	37.3470	427.87	25.9755	657.50	16.6895
290.67	44.7102	433.94	19.3302	657.76	16.6919
293.27	0.0000	439.40	20.3801	657.90	0.0000
351.93	38.5052	440.45	18.4534	661.66	14.4959
295.96	28.2587	453.88	26.4836	664.57	0.0000
879.38	33.4863	463.37	22.7150	666.33	10.0605
299.98	30.9551	468.07	24.7732	666.50	10.0613
300.09	30.9580	473.00	25.8535	667.71	0.0000
300.13	30.9595	475.06	15.9329	677.62	22.4886
301.36	29.7067	476.78	24.9252	685.70	18.0664
302.85	38.8065	477.60	29.9274	692.65	0.0000
256.23	31.0972	482.18	26.0196	695.00	17.0178
304.85	27.9973	487.02	18.0736	696.49	19.3014
306.78	38.0945	492.35	0.0000	696.51	19.3014
308.46	26.8841	497.08	20.6237	697.00	17.0349
311.90	33.0675	505.52	32.5345	697.30	18.1738
316.51	28.8468	507.63	0.0000	697.49	18.1751
319.41	31.5586	511.00	22.4485	702.65	17.0837
320.08	28.9475	514.00	13.8027	706.68	14.8361
321.04	30.2914	514.00	13.8027	711.68	18.3053
323.87	34.3353	520.40	20.5339	720.70	17.2382
325.23	18.5126	520.69	0.0000	721.93	0.0000
328.76	37.1499	522.65	0.0000	722.78	17.2552
333.37	35.9789	527.90	0.0000	722.91	17.2565
333.97	39.9985	528.26	16.5104	723.31	24.1642
334.37	40.0140	529.59	28.9172	724.19	18.9942
338.28	27.6655	529.87	0.0000	727.33	16.1414
338.32	27.6661	531.02	16.5391	733.00	16.1858
311.90	32.1929	537.26	12.4536	735.93	13.8931
340.48	32.1929	546.56	0.0000	333.97	5.2137
340.55	32.1951	552.55	22.0032	739.50	0.0000

ENERGY	MDA COUNTS
744.23	18.5983
747.24	16.2969
748.06	15.1386
752.31	19.2534
753.82	15.7643
756.73	14.9087
756.80	14.9092
884.68	18.3035
765.81	19.7285
766.42	20.2626
766.84	20.2668
772.60	0.0000
776.52	9.7365
739.50	0.0000
778.90	10.6333
783.70	19.5374
788.74	24.0329
792.07	23.1777
795.86	10.7161
810.06	13.4807
810.29	14.3809
344.28	14.3818
810.76	14.3838
815.77	14.4155
1048.07	9.0207
832.01	10.8893
834.85	11.8110
835.71	15.4509
836.80	0.0000
846.75	0.0000
846.77	10.9589
856.80	22.0115
860.56	14.6978
871.09	11.0720
873.19	10.3431
875.33	0.0000
879.38	0.0000
880.51	0.0000
881.60	0.0000
883.24	13.3541
884.68	13.3620
889.28	4.4624
894.76	9.3176
898.04	14.9282
900.72	12.1423
903.28	14.9600
911.20	14.0698
912.08	14.0749
923.98	0.0000
926.50	13.2122
929.11	9.4470
935.54	14.2067
937.49	15.1655
944.13	7.6023
946.00	13.6942

ENERGY	MDA COUNTS
949.00	6.0936
667.71	0.0000
962.31	19.9056
964.08	18.3873
966.17	23.0024
911.20	23.0266
983.53	17.3655
984.45	0.0000
1274.44	19.3872
1001.03	11.6532
1002.74	13.6039
1004.73	16.5310
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	15.7471
1038.76	0.0000
631.29	13.8223
1048.07	9.8785
1049.04	9.8816
1050.41	10.8751
1063.66	10.9261
1077.00	16.9647
1077.34	16.9668
1085.87	13.0127
1093.63	16.0586
1099.45	17.0965
1112.07	11.1101
1112.84	11.1128
1115.54	22.6502
1120.29	12.1538
1120.55	12.1545
1221.41	12.9688
1129.67	11.3791
1131.51	0.0000
1147.95	0.0000
1173.23	15.4596
1177.95	12.3860
1189.05	15.5383
1204.77	11.6594
1221.41	15.6976
1231.02	20.1527
1235.36	14.7144
1238.28	10.0986
1260.41	0.0000
1271.87	13.3602
1274.44	15.3158
1274.54	15.3158
1291.59	9.6213
1298.22	0.0000
1312.11	6.8832
1332.49	7.5734
1362.66	0.0000
1365.19	3.2761
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	5.4895
1408.01	4.4207
1434.09	4.4521
1435.80	5.5676
1457.56	0.0000
1460.82	7.8472
1489.16	6.3246
1505.03	11.7946
1584.12	11.1076
1596.21	4.6418
1620.50	1.8678
1621.92	2.8027
1678.03	0.0000
1690.97	0.9497
1750.46	0.0000
1764.49	1.6096
1063.66	0.9670
1771.35	0.9673
1791.20	0.0000
1808.65	1.9506
1810.72	0.0000
1836.06	2.9435

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:11:03.78

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299026.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM06.CNF;954
                                        Background date  : 28-JUL-2024 11:21:57
Sample date      : 26-JUN-2024 11:30:00 Acquisition date : 31-JUL-2024 16:09:56
Sample ID        : G674299026           Sample quantity  : 1.40020E+02 GRAM
Detector name    : GAM06                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:01.63  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : MXR1
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2636543              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.56*	86	648	0.89	125.94	122	8	2.40E-02	52.4	
2	2	74.93	488	628	1.08	148.69	144	13	1.35E-01	9.6	1.61E+00
3	2	77.23	898	499	0.95	153.30	144	13	2.50E-01	5.3	
4	3	84.28	175	477	1.21	167.39	164	18	4.86E-02	22.1	2.06E+00
5	3	87.38	355	484	1.22	173.59	164	18	9.85E-02	11.5	
6	3	90.00	162	490	1.24	178.84	164	18	4.50E-02	24.0	
7	0	92.97*	477	694	1.15	184.78	181	10	1.33E-01	11.4	
8	0	144.05*	54	473	0.91	287.00	284	8	1.49E-02	71.7	
9	0	155.03	30	451	1.15	308.96	303	8	8.40E-03	123.2	
10	0	186.12*	651	524	1.16	371.18	366	12	1.81E-01	8.1	
11	0	208.87	57	351	0.96	416.70	413	9	1.58E-02	60.7	
12	3	238.75*	416	268	0.98	476.49	472	19	1.16E-01	7.8	1.01E+00
13	3	242.07	672	248	1.12	483.14	472	19	1.87E-01	5.6	
14	0	255.51	22	183	0.77	510.03	508	7	5.99E-03	106.5	
15	7	258.87	82	101	1.50	516.76	514	13	2.26E-02	21.2	1.18E+00
16	7	261.80	77	203	1.74	522.61	514	13	2.13E-02	37.6	
17	2	269.60*	72	175	1.34	538.24	535	11	1.99E-02	31.5	1.30E+00
18	2	270.98*	57	222	1.25	541.00	535	11	1.58E-02	49.8	
19	0	295.26*	1475	262	1.21	589.58	585	12	4.10E-01	3.4	
20	0	302.91	50	112	1.75	604.90	602	7	1.39E-02	38.2	
21	0	338.59	105	187	1.20	676.29	672	9	2.91E-02	25.5	
22	0	351.91*	2551	266	1.26	702.95	696	14	7.09E-01	2.4	
23	0	357.42	29	116	1.84	713.99	712	8	7.97E-03	67.3	
24	0	379.50	20	93	1.04	758.17	755	7	5.45E-03	84.5	
25	0	462.84	56	80	2.32	924.97	920	10	1.57E-02	32.5	
26	0	480.27	63	83	1.97	959.85	955	12	1.76E-02	31.1	
27	0	486.72	37	96	0.74	972.77	967	11	1.03E-02	53.9	
28	0	510.80*	73	151	2.06	1020.98	1014	17	2.03E-02	41.8	
29	0	519.59	21	55	0.95	1038.56	1033	8	5.82E-03	66.8	
30	0	583.48*	128	104	1.40	1166.45	1160	11	3.56E-02	18.0	
31	0	609.20*	1804	48	1.42	1217.93	1212	12	5.01E-01	2.5	
32	0	661.52	39	54	0.62	1322.66	1318	9	1.08E-02	37.8	
33	0	665.44	49	63	0.88	1330.51	1326	9	1.36E-02	32.5	
34	0	677.20	21	32	1.20	1354.05	1350	7	5.80E-03	51.2	

Sample ID : G674299026 Acquisition date : 31-JUL-2024 16:09:56

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	703.85*	27	76	1.92	1407.40	1401	13	7.58E-03	68.9	
36	0	722.91	20	94	3.24	1445.56	1432	15	5.63E-03	106.4	
37	0	726.61	41	51	4.25	1452.97	1447	11	1.14E-02	37.5	
38	0	742.95	40	53	2.67	1485.68	1476	14	1.11E-02	41.6	
39	0	768.22	148	114	1.31	1536.26	1530	14	4.12E-02	17.2	
40	0	785.96	57	57	1.40	1571.79	1567	13	1.59E-02	29.9	
41	0	806.36	43	44	1.22	1612.63	1607	10	1.21E-02	32.5	
42	0	838.65	39	48	3.33	1677.27	1671	12	1.08E-02	39.2	
43	0	860.54	27	70	0.59	1721.10	1711	15	7.57E-03	70.0	
44	0	911.57*	119	76	1.94	1823.28	1816	18	3.32E-02	20.0	
45	0	934.51	38	75	1.32	1869.21	1863	10	1.04E-02	46.1	
46	1	963.93	28	53	2.11	1928.12	1921	28	7.75E-03	54.4	1.39E+00
47	1	968.73	72	42	2.11	1937.73	1921	28	2.00E-02	22.9	
48	0	996.56	18	22	3.55	1993.44	1987	11	5.00E-03	55.7	
49	0	1001.41	63	18	1.88	2003.16	1998	13	1.75E-02	19.1	
50	0	1044.47	24	26	3.96	2089.39	2083	13	6.57E-03	49.1	
51	0	1083.85	22	23	2.79	2168.24	2164	8	6.07E-03	44.1	
52	0	1089.27	21	22	0.81	2179.10	2174	11	5.83E-03	48.4	
53	0	1119.79	387	27	1.71	2240.22	2232	15	1.08E-01	5.8	
54	0	1155.19	55	34	2.89	2311.09	2303	15	1.53E-02	26.6	
55	0	1191.09	17	30	1.62	2383.00	2376	12	4.72E-03	68.9	
56	0	1237.74	139	28	1.97	2476.43	2467	15	3.86E-02	11.7	
57	0	1280.10	51	35	2.71	2561.26	2550	20	1.42E-02	31.6	
58	0	1319.63	11	37	4.75	2640.45	2628	20	3.03E-03	136.8	
59	0	1350.56	21	14	2.02	2702.38	2696	13	5.95E-03	41.0	
60	0	1377.23	110	39	2.14	2755.81	2750	15	3.07E-02	15.8	
61	0	1384.74	18	14	2.84	2770.84	2766	10	4.97E-03	46.6	
62	2	1400.98	34	25	2.67	2803.38	2796	27	9.40E-03	34.9	7.61E-01
63	2	1407.58	68	15	2.67	2816.59	2796	27	1.89E-02	16.6	
64	0	1424.59	19	6	1.06	2850.68	2847	8	5.21E-03	34.1	
65	0	1460.28	175	50	1.71	2922.16	2914	18	4.86E-02	12.1	
66	0	1509.52	55	23	4.86	3020.80	3013	17	1.54E-02	24.6	
67	0	1542.04	44	24	7.45	3085.94	3071	24	1.22E-02	33.0	
68	3	1582.42	19	11	3.08	3166.82	3160	32	5.36E-03	50.9	1.01E+00
69	3	1588.34	17	24	3.08	3178.68	3160	32	4.81E-03	70.8	
70	0	1599.48	28	14	2.92	3201.01	3192	14	7.69E-03	34.5	
71	0	1612.66	5	6	1.12	3227.40	3218	12	1.39E-03	107.7	
72	0	1660.09	26	8	1.58	3322.43	3314	15	7.08E-03	30.7	
73	0	1675.43	11	4	5.32	3353.16	3346	14	3.11E-03	46.6	
74	0	1692.31	9	10	3.53	3386.97	3378	13	2.60E-03	76.2	
75	0	1728.95	70	11	1.93	3460.38	3454	14	1.94E-02	15.5	
76	0	1763.86	307	11	2.34	3530.34	3519	21	8.52E-02	6.3	
77	0	1815.93	9	7	0.57	3634.67	3626	14	2.50E-03	70.7	
78	0	1846.58	68	9	3.50	3696.07	3685	18	1.89E-02	15.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:11:05

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299026.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : MXR1
Sample date : 26-JUN-2024 11:30:00 Acquisition date : 31-JUL-2024 16:09:56
Sample ID : G674299026 Sample quantity : 140.02 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA6 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.63 0.0%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.865E-01	8.558E+00	8.558E+00	24.17	OK
CD-109	88.03	3.70*	5.264E+00	1.176E+01	1.239E+01	22.95	OK
SB-124	722.78	10.76	1.860E+00	5.537E-01	8.306E-01	212.87	OK
	1690.97	47.57*	8.856E-01	1.124E-01	1.687E-01	152.42	OK
SN-126	64.28	9.60	2.679E+00	2.214E+00	2.214E+00	104.86	OK
	86.94	8.90	5.264E+00	4.887E+00	4.887E+00	22.95	OK
	87.57	37.00*	5.264E+00	1.176E+00	1.176E+00	22.95	OK
BA-137M	661.66	89.90*	2.007E+00	1.184E-01	1.187E-01	75.51	OK
CS-137	661.66	85.10*	2.007E+00	1.251E-01	1.254E-01	75.51	OK
TL-208	277.37	6.60	3.940E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	2.227E+00	3.767E-01	3.767E-01	36.03	OK
	860.56	12.50	1.593E+00	7.372E-01	7.372E-01	140.02	OK
BI-211	72.87	1.23	3.892E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	3.294E+00	3.479E+01	3.479E+01	4.81	OK
BI-212	727.33	6.67*	1.852E+00	1.813E+00	1.813E+00	74.94	OK
	1620.50	1.47	9.117E-01	-----	Line Not Found	-----	Absent
PB-212	74.82	10.28	4.131E+00	7.493E+00	7.493E+00	19.20	OK
	77.11	17.10	4.381E+00	7.808E+00	7.808E+00	10.61	OK
	238.63	43.60*	4.404E+00	1.297E+00	1.297E+00	15.62	OK
	300.09	3.30	3.714E+00	-----	Line Not Found	-----	Absent
BI-214	609.32	45.49*	2.150E+00	1.023E+01	1.023E+01	4.96	OK
	1120.29	14.92	1.248E+00	1.095E+01	1.095E+01	11.69	OK
	1764.49	15.30	8.636E-01	1.173E+01	1.173E+01	12.59	OK
PB-214	74.82	5.80	4.131E+00	1.328E+01	1.328E+01	19.20	OK
	77.11	9.70	4.381E+00	1.376E+01	1.376E+01	10.61	OK
	87.09	3.41	5.264E+00	1.275E+01	1.276E+01	22.95	OK
	242.00	7.25	4.359E+00	1.270E+01	1.270E+01	11.17	OK
	295.22	18.42	3.760E+00	1.253E+01	1.253E+01	6.80	OK
	351.93	35.60*	3.294E+00	1.262E+01	1.263E+01	4.81	OK
RN-222	609.32	45.49*	2.150E+00	1.023E+01	1.023E+01	4.96	OK
	1120.29	14.92	1.248E+00	1.095E+01	1.095E+01	11.69	OK
	1764.49	15.30	8.636E-01	1.173E+01	1.173E+01	12.59	OK
RA-224	240.99	4.10*	4.359E+00	2.246E+01	2.246E+01	11.17	OK
RA-226	74.82	5.80	4.131E+00	1.328E+01	1.328E+01	19.20	OK
	77.11	9.70	4.381E+00	1.376E+01	1.376E+01	10.61	OK
	87.09	3.41	5.264E+00	1.275E+01	1.276E+01	22.95	OK
	242.00	7.25	4.359E+00	1.270E+01	1.270E+01	11.17	OK
	295.22	18.42	3.760E+00	1.253E+01	1.253E+01	6.80	OK
	351.93	35.60*	3.294E+00	1.262E+01	1.263E+01	4.81	OK
AC-228	105.21	1.10	6.049E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.391E+00	1.595E+00	1.595E+00	50.97	OK
	835.71	1.61	1.636E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.511E+00	1.641E+00	1.641E+00	39.97	OK
	968.97	15.80	1.428E+00	1.702E+00	1.702E+00	45.77	OK
RA-228	105.21	1.10	6.049E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.391E+00	1.595E+00	1.595E+00	50.97	OK
	835.71	1.61	1.636E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.511E+00	1.641E+00	1.641E+00	39.97	OK
	968.97	15.80	1.428E+00	1.702E+00	1.702E+00	45.77	OK

Sample ID : G674299026 Acquisition date : 31-JUL-2024 16:09:56

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
TH-228	74.82	10.28	4.131E+00	7.493E+00	7.493E+00	19.20	OK
	77.11	17.10	4.381E+00	7.808E+00	7.808E+00	10.61	OK
	238.63	43.60*	4.404E+00	1.297E+00	1.297E+00	15.62	OK
	300.09	3.30	3.714E+00	----- Line Not Found		-----	Absent
TH-229	85.43	14.70	5.032E+00	1.530E+00	1.530E+00	44.29	OK
	88.47	24.00	5.264E+00	1.812E+00	1.812E+00	22.95	OK
	193.51	4.41*	5.103E+00	----- Line Not Found		-----	Absent
	210.85	2.80	4.814E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	4.131E+00	1.328E+01	1.328E+01	19.20	OK
	77.11	9.70	4.381E+00	1.376E+01	1.376E+01	10.61	OK
	87.09	3.41	5.264E+00	1.275E+01	1.275E+01	22.95	OK
	242.00	7.25	4.359E+00	1.270E+01	1.270E+01	11.17	OK
	295.22	18.42	3.760E+00	1.253E+01	1.253E+01	6.80	OK
	351.93	35.60*	3.294E+00	1.262E+01	1.262E+01	4.81	OK
TH-232	105.21	1.10	6.049E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.391E+00	1.595E+00	1.595E+00	50.97	OK
	835.71	1.61	1.636E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.511E+00	1.641E+00	1.641E+00	39.97	OK
	968.97	15.80	1.428E+00	1.702E+00	1.702E+00	45.77	OK
TH-234	63.29	3.70*	2.679E+00	5.744E+00	5.744E+00	104.86	OK
	92.59	4.23	5.604E+00	1.293E+01	1.293E+01	22.85	OK
U-234	74.82	5.80	4.131E+00	1.328E+01	1.328E+01	19.20	OK
	77.11	9.70	4.381E+00	1.376E+01	1.376E+01	10.61	OK
	87.09	3.41	5.264E+00	1.275E+01	1.275E+01	22.95	OK
	242.00	7.25	4.359E+00	1.270E+01	1.270E+01	11.17	OK
	295.22	18.42	3.760E+00	1.253E+01	1.253E+01	6.80	OK
	351.93	35.60*	3.294E+00	1.262E+01	1.262E+01	4.81	OK
U-235	89.96	3.47	5.436E+00	5.529E+00	5.529E+00	48.04	OK
	93.35	5.60	5.604E+00	9.766E+00	9.766E+00	22.85	OK
	143.76	10.96*	5.978E+00	5.082E-01	5.082E-01	143.50	OK
	163.33	5.08	5.649E+00	----- Line Not Found		-----	Absent
	185.72	57.20	5.234E+00	1.327E+00	1.327E+00	16.14	OK
	205.31	5.01	4.904E+00	----- Line Not Found		-----	Absent
U-238	63.29	3.70*	2.679E+00	5.744E+00	5.744E+00	104.86	OK
	92.59	4.23	5.604E+00	1.293E+01	1.293E+01	22.85	OK
AM-243	43.53	5.90	3.651E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	4.131E+00	1.146E+00	1.146E+00	19.20	OK
ANH-511	511.00	100.00*	2.476E+00	1.664E-01	1.664E-01	83.55	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:11:06.44

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299026.CNF;1  *
* Acquisition date : 31-JUL-2024 16:09:56 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:30:00 Analyst initials: MXR1            *
* Sample ID        : G674299026           Sample Quantity : 1.4002E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	8.558E+00	2.027E+00	1.178E+00
CD-109	1.239E+01	2.787E+00	2.553E+00
SB-124	1.687E-01	2.519E-01	3.387E-01
SN-126	1.176E+00	2.644E-01	2.435E-01
BA-137M	1.187E-01	8.784E-02	9.592E-02
CS-137	1.254E-01	9.279E-02	1.013E-01
TL-208	3.767E-01	1.330E-01	1.111E-01
BI-211	3.479E+01	1.638E+00	6.289E-01
BI-212	1.813E+00	1.331E+00	1.330E+00
PB-212	1.297E+00	1.985E-01	2.025E-01
BI-214	1.023E+01	4.975E-01	1.825E-01
PB-214	1.263E+01	5.946E-01	2.287E-01
RN-222	1.023E+01	4.975E-01	1.825E-01
RA-224	2.246E+01	2.459E+00	2.172E+00
RA-226	1.263E+01	5.946E-01	2.287E-01
AC-228	1.641E+00	6.427E-01	4.144E-01
RA-228	1.641E+00	6.427E-01	4.144E-01
TH-228	1.297E+00	1.985E-01	2.025E-01
TH-229	-3.518E-01	1.022E+00	1.773E+00
TH-230	1.262E+01	5.946E-01	2.287E-01
TH-232	1.641E+00	6.427E-01	4.144E-01
TH-234	5.744E+00	5.903E+00	4.525E+00
U-234	1.262E+01	5.946E-01	2.287E-01
U-235	5.082E-01	7.146E-01	6.414E-01
U-238	5.744E+00	5.903E+00	4.525E+00
AM-243	1.146E+00	2.157E-01	1.836E-01
ANH-511	1.664E-01	1.363E-01	9.158E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.414E-02	6.762E-01	1.127E+00	NOT IDENT.
NA-22	9.557E-03	8.456E-02	1.391E-01	NOT IDENT.
NA-24	0.000E+00	4.642E+15	0.000E+00	SHORT HLIF

AL-26	5.980E-03	5.250E-02	9.711E-02	NOT IDENT.
SC-46	-9.742E-03	8.250E-02	1.540E-01	FAIL ABUN
V-48	-1.445E-02	2.865E-01	5.362E-01	NOT IDENT.
CR-51	1.083E+00	1.078E+00	2.146E+00	NOT IDENT.
MN-52	-7.264E-01	6.247E+00	1.121E+01	FAIL ABUN
MN-54	-2.920E-02	7.022E-02	1.112E-01	NOT IDENT.
CO-56	1.848E-02	8.613E-02	1.655E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-2.148E-02	4.728E-02	8.507E-02	NOT IDENT.
CO-58	3.689E-02	8.360E-02	1.498E-01	NOT IDENT.
FE-59	-9.112E-02	1.709E-01	3.009E-01	NOT IDENT.
CO-60	-2.350E-02	6.172E-02	1.091E-01	NOT IDENT.
ZN-65	8.611E-02	1.469E-01	2.670E-01	NOT IDENT.
GE-68	3.652E-01	2.037E+00	3.920E+00	NOT IDENT.
AS-73	4.549E-02	2.065E+00	4.038E+00	NOT IDENT.
AS-74	-2.609E-01	3.286E-01	5.517E-01	NOT IDENT.
SE-75	4.523E-04	1.006E-01	1.600E-01	NOT IDENT.
BR-77	0.000E+00	1.081E+04	0.000E+00	SHORT HLIF
SR-82	4.086E-01	8.704E-01	1.750E+00	NOT IDENT.
RB-83	1.421E-01	1.862E-01	2.418E-01	FAIL ABUN
RB-84	6.847E-02	1.818E-01	3.561E-01	NOT IDENT.
KR-85	4.455E+00	1.258E+01	2.259E+01	NOT IDENT.
SR-85	2.900E-02	8.233E-02	1.479E-01	NOT IDENT.
RB-86	7.025E-01	2.601E+00	5.050E+00	NOT IDENT.
Y-88	1.980E-02	5.362E-02	1.193E-01	NOT IDENT.
Y-91	-1.594E+01	4.350E+01	7.676E+01	NOT IDENT.
NB-94	7.869E-02	1.062E-01	1.122E-01	FAIL ABUN
NB-95	0.000E+00	1.015E-01	2.075E-01	NOT IDENT.
NB-95M	9.340E-02	3.248E-01	5.276E-01	NOT IDENT.
ZR-95	-1.230E-01	1.343E-01	2.359E-01	FAIL ABUN
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.078E+15	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.565E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	8.398E+40	0.000E+00	SHORT HLIF
RH-101	-1.104E-04	5.430E-02	9.944E-02	NOT IDENT.
RH-102	-3.513E-02	9.180E-02	1.601E-01	FAIL ABUN
RU-103	6.152E-02	8.905E-02	1.747E-01	FAIL ABUN
RH-106	-5.779E-02	4.716E-01	8.543E-01	NOT IDENT.
RU-106	-5.779E-02	4.716E-01	8.543E-01	NOT IDENT.
AG-108M	-1.403E-02	4.716E-02	8.597E-02	FAIL ABUN
AG-110	1.216E-01	1.436E+00	2.335E+00	NOT IDENT.
AG-110M	2.534E-02	9.279E-02	1.796E-01	FAIL ABUN
SN-113	-4.613E-02	8.697E-02	1.567E-01	NOT IDENT.
CD-115	0.000E+00	9.869E+03	0.000E+00	SHORT HLIF
SN-117M	2.490E-01	2.769E-01	5.180E-01	FAIL ABUN
SB-122	0.000E+00	5.243E+02	0.000E+00	SHORT HLIF
TE-123M	-3.528E-03	5.950E-02	1.065E-01	NOT IDENT.
SB-125	1.016E-01	1.614E-01	3.125E-01	FAIL ABUN
TE-125M	-9.762E+00	2.102E+01	3.815E+01	NOT IDENT.
I-126	0.000E+00	1.728E+00	2.589E+00	FAIL ABUN
SB-126	7.764E-01	9.306E-01	1.617E+00	FAIL ABUN
SB-127	-5.154E+01	8.250E+01	1.386E+02	NOT IDENT.
I-131	4.160E-01	1.108E+00	2.133E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	1.042E+02	0.000E+00	SHORT HLIF
BA-133	8.282E-02	1.093E-01	1.322E-01	FAIL ABUN
I-133	0.000E+00	9.062E+10	0.000E+00	SHORT HLIF
CS-134	5.267E-02	7.113E-02	1.433E-01	NOT IDENT.
I-135	0.000E+00	1.027E+38	0.000E+00	SHORT HLIF
CS-136	-9.447E-02	5.310E-01	8.546E-01	NOT IDENT.
LA-138	-3.212E-02	1.163E-01	2.047E-01	NOT IDENT.
CE-139	1.052E-02	6.013E-02	1.086E-01	NOT IDENT.
BA-140	-9.119E-01	1.290E+00	2.215E+00	NOT IDENT.
LA-140	1.218E-01	8.415E-01	1.006E+00	FAIL ABUN
CE-141	2.444E-01	3.436E-01	3.249E-01	FAIL ABUN
CE-143	0.000E+00	6.282E+06	0.000E+00	SHORT HLIF
CE-144	6.724E-02	3.610E-01	6.640E-01	NOT IDENT.
PM-144	2.169E-02	5.416E-02	1.022E-01	NOT IDENT.
PR-144	1.677E+00	4.100E+00	7.741E+00	NOT IDENT.
PM-146	3.981E-02	7.640E-02	1.462E-01	NOT IDENT.
ND-147	-4.867E-01	3.363E+00	6.095E+00	FAIL ABUN
PM-147	1.045E+02	1.302E+03	2.402E+03	NOT IDENT.
PM-149	0.000E+00	8.652E+04	0.000E+00	SHORT HLIF
EU-150	2.796E-02	5.033E-02	8.913E-02	FAIL ABUN
EU-152	-5.206E-02	1.797E-01	3.316E-01	FAIL ABUN
GD-153	3.966E-02	1.557E-01	2.738E-01	NOT IDENT.
EU-154	2.960E-02	2.375E-01	3.912E-01	FAIL ABUN
EU-155	-2.037E-02	1.809E-01	3.345E-01	FAIL ABUN

TB-160	3.200E-02	2.715E-01	5.207E-01	FAIL ABUN
HO-166M	3.528E-02	9.510E-02	1.785E-01	NOT IDENT.
TM-171	-1.019E+01	3.835E+01	7.422E+01	NOT IDENT.
HF-172	-1.840E-01	3.349E-01	5.985E-01	FAIL ABUN
LU-172	-1.156E-02	1.095E-01	1.781E-01	FAIL ABUN
LU-176	2.385E-02	4.693E-02	8.369E-02	FAIL ABUN
HF-181	7.482E-02	1.367E-01	1.960E-01	NOT IDENT.
TA-182	1.551E-01	3.374E-01	6.541E-01	NOT IDENT.
RE-183	-1.774E-01	4.587E-01	8.772E-01	NOT IDENT.
RE-184	7.843E-02	3.082E-01	5.979E-01	NOT IDENT.
W-188	-1.295E+01	1.647E+01	2.665E+01	FAIL ABUN
IR-192	-6.801E-02	7.166E-02	1.283E-01	FAIL ABUN
HG-203	-4.830E-02	9.111E-02	1.689E-01	NOT IDENT.
TL-204	7.242E-01	9.756E+00	1.733E+01	NOT IDENT.
BI-207	5.465E-02	7.588E-02	1.562E-01	FAIL ABUN
BI-210	4.031E+00	8.733E+00	1.747E+01	NOT IDENT.
PB-210	4.031E+00	8.733E+00	1.747E+01	NOT IDENT.
PB-211	3.515E-01	1.334E+00	2.513E+00	NOT IDENT.
BI-213	3.896E-02	1.802E-01	3.393E-01	NOT IDENT.
RN-219	1.446E-01	7.407E-01	1.393E+00	FAIL ABUN
RA-223	2.918E-01	1.138E+00	2.175E+00	FAIL ABUN
AC-225	-9.601E-01	4.401E+00	7.621E+00	NOT IDENT.
AC-227	3.224E-01	6.728E-01	8.552E-01	FAIL ABUN
TH-227	3.224E-01	6.728E-01	8.552E-01	FAIL ABUN
PA-231	2.975E-01	9.905E-01	1.593E+00	NOT IDENT.
TH-231	2.918E-01	1.138E+00	2.175E+00	FAIL ABUN
PA-233	-3.891E-02	1.078E-01	2.005E-01	NOT IDENT.
PA-234	2.347E-02	5.128E-01	9.708E-01	NOT IDENT.
PA-234M	0.000E+00	1.076E+01	1.878E+01	FAIL ABUN
NP-237	-3.891E-02	1.078E-01	2.005E-01	NOT IDENT.
NP-238	0.000E+00	2.561E+04	0.000E+00	SHORT HLIF
NP-239	7.789E-02	4.416E-01	8.217E-01	NOT IDENT.
PU-239	3.886E+02	5.815E+02	1.094E+03	NOT IDENT.
AM-241	-2.011E-01	3.146E-01	5.505E-01	NOT IDENT.
CM-243	6.999E-02	1.704E-01	3.229E-01	NOT IDENT.
BK-247	-1.411E-03	1.632E-01	2.591E-01	FAIL ABUN
CM-247	2.201E-02	6.764E-02	1.282E-01	NOT IDENT.
CF-249	6.633E-02	7.391E-02	1.449E-01	NOT IDENT.
CF-251	1.590E-01	2.342E-01	4.313E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:11:04.85

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	168	10.66*	9.865E-01	8.558E+00	8.558E+00	24.17
CD-109	88.03	427	3.70*	5.264E+00	1.176E+01	1.239E+01	22.95
SB-124	722.78	21	10.76	1.860E+00	5.537E-01	8.306E-01	212.87
	1690.97	9	47.57*	8.856E-01	1.124E-01	1.687E-01	152.42
SN-126	64.28	106	9.60	2.679E+00	2.214E+00	2.214E+00	104.86
	86.94	427	8.90	5.264E+00	4.887E+00	4.887E+00	22.95
	87.57	427	37.00*	5.264E+00	1.176E+00	1.176E+00	22.95
BA-137M	661.66	40	89.90*	2.007E+00	1.184E-01	1.187E-01	75.51
CS-137	661.66	40	85.10*	2.007E+00	1.251E-01	1.254E-01	75.51
CE-141	145.44	62	48.29*	5.978E+00	1.153E-01	2.444E-01	143.50
TL-208	277.37	------	6.60	3.940E+00	------	Line Not Found	------
	583.19	133	85.00*	2.227E+00	3.767E-01	3.767E-01	36.03
	860.56	27	12.50	1.593E+00	7.372E-01	7.372E-01	140.02
BI-211	72.87	------	1.23	3.892E+00	------	Line Not Found	------
	351.06	2761	12.92*	3.294E+00	3.479E+01	3.479E+01	4.81
BI-212	727.33	42	6.67*	1.852E+00	1.813E+00	1.813E+00	74.94
	1620.50	------	1.47	9.117E-01	------	Line Not Found	------
PB-212	74.82	593	10.28	4.131E+00	7.493E+00	7.493E+00	19.20
	77.11	1091	17.10	4.381E+00	7.808E+00	7.808E+00	10.61
	238.63	465	43.60*	4.404E+00	1.297E+00	1.297E+00	15.62
	300.09	------	3.30	3.714E+00	------	Line Not Found	------
BI-214	609.32	1867	45.49*	2.150E+00	1.023E+01	1.023E+01	4.96
	1120.29	380	14.92	1.248E+00	1.095E+01	1.095E+01	11.69
	1764.49	289	15.30	8.636E-01	1.173E+01	1.173E+01	12.59
PB-214	74.82	593	5.80	4.131E+00	1.328E+01	1.328E+01	19.20
	77.11	1091	9.70	4.381E+00	1.376E+01	1.376E+01	10.61
	87.09	427	3.41	5.264E+00	1.275E+01	1.276E+01	22.95
	242.00	749	7.25	4.359E+00	1.270E+01	1.270E+01	11.17
	295.22	1619	18.42	3.760E+00	1.253E+01	1.253E+01	6.80
	351.93	2761	35.60*	3.294E+00	1.262E+01	1.263E+01	4.81
RN-222	609.32	1867	45.49*	2.150E+00	1.023E+01	1.023E+01	4.96
	1120.29	380	14.92	1.248E+00	1.095E+01	1.095E+01	11.69
	1764.49	289	15.30	8.636E-01	1.173E+01	1.173E+01	12.59
RA-224	240.99	749	4.10*	4.359E+00	2.246E+01	2.246E+01	11.17
RA-226	74.82	593	5.80	4.131E+00	1.328E+01	1.328E+01	19.20
	77.11	1091	9.70	4.381E+00	1.376E+01	1.376E+01	10.61
	87.09	427	3.41	5.264E+00	1.275E+01	1.276E+01	22.95
	242.00	749	7.25	4.359E+00	1.270E+01	1.270E+01	11.17
	295.22	1619	18.42	3.760E+00	1.253E+01	1.253E+01	6.80
	351.93	2761	35.60*	3.294E+00	1.262E+01	1.263E+01	4.81
AC-228	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	114	11.27	3.391E+00	1.595E+00	1.595E+00	50.97
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	119	25.80*	1.511E+00	1.641E+00	1.641E+00	39.97
	968.97	72	15.80	1.428E+00	1.702E+00	1.702E+00	45.77
RA-228	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	114	11.27	3.391E+00	1.595E+00	1.595E+00	50.97

Sample ID : G674299026 Acquisition date : 31-JUL-2024 16:09:56

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	119	25.80*	1.511E+00	1.641E+00	1.641E+00	39.97
	968.97	72	15.80	1.428E+00	1.702E+00	1.702E+00	45.77
TH-228	74.82	593	10.28	4.131E+00	7.493E+00	7.493E+00	19.20
	77.11	1091	17.10	4.381E+00	7.808E+00	7.808E+00	10.61
	238.63	465	43.60*	4.404E+00	1.297E+00	1.297E+00	15.62
	300.09	------	3.30	3.714E+00	------	Line Not Found	------
TH-229	85.43	211	14.70	5.032E+00	1.530E+00	1.530E+00	44.29
	88.47	427	24.00	5.264E+00	1.812E+00	1.812E+00	22.95
	193.51	------	4.41*	5.103E+00	------	Line Not Found	------
	210.85	------	2.80	4.814E+00	------	Line Not Found	------
TH-230	74.82	593	5.80	4.131E+00	1.328E+01	1.328E+01	19.20
	77.11	1091	9.70	4.381E+00	1.376E+01	1.376E+01	10.61
	87.09	427	3.41	5.264E+00	1.275E+01	1.275E+01	22.95
	242.00	749	7.25	4.359E+00	1.270E+01	1.270E+01	11.17
	295.22	1619	18.42	3.760E+00	1.253E+01	1.253E+01	6.80
	351.93	2761	35.60*	3.294E+00	1.262E+01	1.262E+01	4.81
TH-232	105.21	------	1.10	6.049E+00	------	Line Not Found	------
	338.32	114	11.27	3.391E+00	1.595E+00	1.595E+00	50.97
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	119	25.80*	1.511E+00	1.641E+00	1.641E+00	39.97
	968.97	72	15.80	1.428E+00	1.702E+00	1.702E+00	45.77
TH-234	63.29	106	3.70*	2.679E+00	5.744E+00	5.744E+00	104.86
	92.59	572	4.23	5.604E+00	1.293E+01	1.293E+01	22.85
U-234	74.82	593	5.80	4.131E+00	1.328E+01	1.328E+01	19.20
	77.11	1091	9.70	4.381E+00	1.376E+01	1.376E+01	10.61
	87.09	427	3.41	5.264E+00	1.275E+01	1.275E+01	22.95
	242.00	749	7.25	4.359E+00	1.270E+01	1.270E+01	11.17
	295.22	1619	18.42	3.760E+00	1.253E+01	1.253E+01	6.80
	351.93	2761	35.60*	3.294E+00	1.262E+01	1.262E+01	4.81
U-235	89.96	195	3.47	5.436E+00	5.529E+00	5.529E+00	48.04
	93.35	572	5.60	5.604E+00	9.766E+00	9.766E+00	22.85
	143.76	62	10.96*	5.978E+00	5.082E-01	5.082E-01	143.50
	163.33	------	5.08	5.649E+00	------	Line Not Found	------
	185.72	741	57.20	5.234E+00	1.327E+00	1.327E+00	16.14
	205.31	------	5.01	4.904E+00	------	Line Not Found	------
U-238	63.29	106	3.70*	2.679E+00	5.744E+00	5.744E+00	104.86
	92.59	572	4.23	5.604E+00	1.293E+01	1.293E+01	22.85
AM-243	43.53	------	5.90	3.651E-01	------	Line Not Found	------
	74.66	593	67.20*	4.131E+00	1.146E+00	1.146E+00	19.20
ANH-511	511.00	77	100.00*	2.476E+00	1.664E-01	1.664E-01	83.55

Flag: "*" = Keyline

Sample ID : G674299026 Acquisition date : 31-JUL-2024 16:09:56

Total number of lines in spectrum	78	
Number of unidentified lines	29	
Number of lines tentatively identified by NID	49	62.82%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	8.558E+00	8.558E+00	2.068E+00	24.17	
CD-109	461.40D	1.05	1.176E+01	1.239E+01	0.284E+01	22.95	
SB-124	60.20D	1.50	1.124E-01	1.687E-01	2.571E-01	152.42	
SN-126	2.30E+05Y	1.00	1.176E+00	1.176E+00	0.270E+00	22.95	
BA-137M	30.08Y	1.00	1.184E-01	1.187E-01	0.896E-01	75.51	
CS-137	30.08Y	1.00	1.251E-01	1.254E-01	0.947E-01	75.51	
CE-141	32.51D	2.12	1.153E-01	2.444E-01	3.507E-01	143.50	
TL-208	1.41E+10Y	1.00	3.767E-01	3.767E-01	1.357E-01	36.03	
BI-211	7.04E+08Y	1.00	3.479E+01	3.479E+01	0.167E+01	4.81	
BI-212	1.41E+10Y	1.00	1.813E+00	1.813E+00	1.358E+00	74.94	
PB-212	1.41E+10Y	1.00	1.297E+00	1.297E+00	0.203E+00	15.62	
BI-214	1600.00Y	1.00	1.023E+01	1.023E+01	0.051E+01	4.96	
PB-214	1600.00Y	1.00	1.262E+01	1.263E+01	0.061E+01	4.81	
RN-222	1600.00Y	1.00	1.023E+01	1.023E+01	0.051E+01	4.96	
RA-224	1.41E+10Y	1.00	2.246E+01	2.246E+01	0.251E+01	11.17	
RA-226	1600.00Y	1.00	1.262E+01	1.263E+01	0.061E+01	4.81	
AC-228	1.41E+10Y	1.00	1.641E+00	1.641E+00	0.656E+00	39.97	
RA-228	1.41E+10Y	1.00	1.641E+00	1.641E+00	0.656E+00	39.97	
TH-228	1.41E+10Y	1.00	1.297E+00	1.297E+00	0.203E+00	15.62	
TH-229	7340.00Y	1.00	1.812E+00	1.812E+00	0.416E+00	22.95	K
TH-230	7.54E+04Y	1.00	1.262E+01	1.262E+01	0.061E+01	4.81	
TH-232	1.41E+10Y	1.00	1.641E+00	1.641E+00	0.656E+00	39.97	
TH-234	4.47E+09Y	1.00	5.744E+00	5.744E+00	6.024E+00	104.86	
U-234	2.45E+05Y	1.00	1.262E+01	1.262E+01	0.061E+01	4.81	
U-235	7.04E+08Y	1.00	5.082E-01	5.082E-01	7.292E-01	143.50	
U-238	4.47E+09Y	1.00	5.744E+00	5.744E+00	6.024E+00	104.86	
AM-243	7370.00Y	1.00	1.146E+00	1.146E+00	0.220E+00	19.20	
ANH-511	1.00E+09Y	1.00	1.664E-01	1.664E-01	1.390E-01	83.55	
			---	---			
	Total Activity :		1.750E+02	1.758E+02			

Grand Total Activity : 1.750E+02 1.758E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299026 Acquisition date : 31-JUL-2024 16:09:56

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	155.03	35	520	1.15	308.96	303	8	8.40E-03	****	5.80E+00	T
0	208.87	64	396	0.96	416.70	413	9	1.58E-02	****	4.85E+00	
0	255.51	24	204	0.77	510.03	508	7	5.99E-03	****	4.19E+00	T
7	258.87	90	112	1.50	516.76	514	13	2.26E-02	42.3	4.15E+00	
7	261.80	85	225	1.74	522.61	514	13	2.13E-02	75.3	4.11E+00	T
2	269.60	79	193	1.34	538.24	535	11	1.99E-02	62.9	4.02E+00	T
2	270.98	63	245	1.25	541.00	535	11	1.58E-02	99.6	4.01E+00	T
0	302.91	55	122	1.75	604.90	602	7	1.39E-02	76.3	3.69E+00	T
0	357.42	31	126	1.84	713.99	712	8	7.97E-03	****	3.26E+00	T
0	379.50	21	100	1.04	758.17	755	7	5.45E-03	****	3.11E+00	
0	462.84	60	84	2.32	924.97	920	10	1.57E-02	64.9	2.67E+00	T
0	480.27	67	87	1.97	959.85	955	12	1.76E-02	62.3	2.60E+00	
0	486.72	39	101	0.74	972.77	967	11	1.03E-02	****	2.57E+00	T
0	519.59	22	58	0.95	1038.56	1033	8	5.82E-03	****	2.44E+00	T
0	665.44	50	65	0.88	1330.51	1326	9	1.36E-02	65.0	2.00E+00	T
0	677.20	21	33	1.20	1354.05	1350	7	5.80E-03	****	1.97E+00	T
0	703.85	28	78	1.92	1407.40	1401	13	7.58E-03	****	1.90E+00	T
0	742.95	41	54	2.67	1485.68	1476	14	1.11E-02	83.2	1.82E+00	T
0	768.22	150	115	1.31	1536.26	1530	14	4.12E-02	34.5	1.76E+00	T
0	785.96	58	57	1.40	1571.79	1567	13	1.59E-02	59.9	1.73E+00	
0	806.36	44	44	1.22	1612.63	1607	10	1.21E-02	65.0	1.69E+00	
0	838.65	39	49	3.33	1677.27	1671	12	1.08E-02	78.3	1.63E+00	
0	934.51	37	75	1.32	1869.21	1863	10	1.04E-02	92.3	1.48E+00	T
1	963.93	28	53	2.11	1928.12	1921	28	7.75E-03	****	1.44E+00	T
0	996.56	18	22	3.55	1993.44	1987	11	5.00E-03	****	1.39E+00	T
0	1001.41	62	18	1.88	2003.16	1998	13	1.75E-02	38.2	1.38E+00	T
0	1044.47	23	26	3.96	2089.39	2083	13	6.57E-03	98.1	1.33E+00	
0	1083.85	22	23	2.79	2168.24	2164	8	6.07E-03	88.3	1.29E+00	
0	1089.27	21	22	0.81	2179.10	2174	11	5.83E-03	96.9	1.28E+00	
0	1155.19	54	33	2.89	2311.09	2303	15	1.53E-02	53.2	1.21E+00	
0	1191.09	17	29	1.62	2383.00	2376	12	4.72E-03	****	1.18E+00	
0	1237.74	135	27	1.97	2476.43	2467	15	3.86E-02	23.4	1.14E+00	T
0	1280.10	50	34	2.71	2561.26	2550	20	1.42E-02	63.3	1.10E+00	
0	1319.63	11	36	4.75	2640.45	2628	20	3.03E-03	****	1.07E+00	
0	1350.56	21	13	2.02	2702.38	2696	13	5.95E-03	82.1	1.05E+00	
0	1377.23	106	37	2.14	2755.81	2750	15	3.07E-02	31.6	1.04E+00	
0	1384.74	17	14	2.84	2770.84	2766	10	4.97E-03	93.1	1.03E+00	T
2	1400.98	33	24	2.67	2803.38	2796	27	9.40E-03	69.8	1.02E+00	
2	1407.58	65	14	2.67	2816.59	2796	27	1.89E-02	33.2	1.02E+00	T
0	1424.59	18	6	1.06	2850.68	2847	8	5.21E-03	68.3	1.01E+00	
0	1509.52	53	22	4.86	3020.80	3013	17	1.54E-02	49.3	9.61E-01	
0	1542.04	42	23	7.45	3085.94	3071	24	1.22E-02	66.1	9.45E-01	
3	1582.42	18	11	3.08	3166.82	3160	32	5.36E-03	****	9.27E-01	
3	1588.34	16	23	3.08	3178.68	3160	32	4.81E-03	****	9.25E-01	
0	1599.48	26	14	2.92	3201.01	3192	14	7.69E-03	69.0	9.20E-01	
0	1612.66	5	6	1.12	3227.40	3218	12	1.39E-03	****	9.15E-01	
0	1660.09	24	7	1.58	3322.43	3314	15	7.08E-03	61.3	8.97E-01	
0	1675.43	11	4	5.32	3353.16	3346	14	3.11E-03	93.2	8.91E-01	
0	1728.95	66	11	1.93	3460.38	3454	14	1.94E-02	31.1	8.74E-01	
0	1815.93	8	7	0.57	3634.67	3626	14	2.50E-03	****	8.50E-01	
0	1846.58	64	8	3.50	3696.07	3685	18	1.89E-02	31.9	8.43E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:11:16.79

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299026.CNF;1  *
* Acquisition date : 31-JUL-2024 16:09:56 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:30:00 Nuclide Library : SOLID           *
* Sample ID        : G674299026           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.4002E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	5.199E-01
CD-109	1.236E+00
SB-124	1.436E-01
SN-126	1.178E-01
BA-137M	4.387E-02
CS-137	4.634E-02
TL-208	5.164E-02
BI-211	2.970E-01
BI-212	6.054E-01
PB-212	9.738E-02
BI-214	8.369E-02
PB-214	1.080E-01
RN-222	8.369E-02
RA-224	1.044E+00
RA-226	1.080E-01
AC-228	1.884E-01
RA-228	1.884E-01
TH-228	9.738E-02
TH-229	8.535E-01
TH-230	1.080E-01
TH-232	1.884E-01
TH-234	2.184E+00
U-234	1.080E-01
U-235	3.092E-01
U-238	2.184E+00
AM-243	8.905E-02
ANH-511	4.281E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.204E-01	NOT IDENT.
NA-22	6.279E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	4.003E-02	NOT IDENT.

SC-46	7.065E-02	FAIL ABUN
V-48	2.441E-01	NOT IDENT.
CR-51	1.022E+00	NOT IDENT.
MN-52	5.035E+00	FAIL ABUN
MN-54	5.078E-02	NOT IDENT.
CO-56	7.652E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	4.097E-02	NOT IDENT.
CO-58	6.871E-02	NOT IDENT.
FE-59	1.329E-01	NOT IDENT.
CO-60	4.761E-02	NOT IDENT.
ZN-65	1.208E-01	NOT IDENT.
GE-68	1.768E+00	NOT IDENT.
AS-73	1.942E+00	NOT IDENT.
AS-74	2.533E-01	NOT IDENT.
SE-75	7.618E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	8.019E-01	NOT IDENT.
RB-83	1.120E-01	FAIL ABUN
RB-84	1.637E-01	NOT IDENT.
KR-85	1.060E+01	NOT IDENT.
SR-85	6.938E-02	NOT IDENT.
RB-86	2.283E+00	NOT IDENT.
Y-88	4.880E-02	NOT IDENT.
Y-91	3.474E+01	NOT IDENT.
NB-94	5.223E-02	FAIL ABUN
NB-95	9.766E-02	NOT IDENT.
NB-95M	2.539E-01	NOT IDENT.
ZR-95	1.069E-01	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.789E-02	NOT IDENT.
RH-102	7.365E-02	FAIL ABUN
RU-103	8.136E-02	FAIL ABUN
RH-106	3.896E-01	NOT IDENT.
RU-106	3.896E-01	NOT IDENT.
AG-108M	4.007E-02	FAIL ABUN
AG-110	1.078E+00	NOT IDENT.
AG-110M	8.265E-02	FAIL ABUN
SN-113	7.368E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.499E-01	FAIL ABUN
SB-122	0.000E+00	SHORT HLIF
TE-123M	5.134E-02	NOT IDENT.
SB-125	1.473E-01	FAIL ABUN
TE-125M	1.838E+01	NOT IDENT.
I-126	1.221E+00	FAIL ABUN
SB-126	7.559E-01	FAIL ABUN
SB-127	6.349E+01	NOT IDENT.
I-131	1.007E+00	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	6.238E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	6.648E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.833E-01	NOT IDENT.
LA-138	9.129E-02	NOT IDENT.
CE-139	5.228E-02	NOT IDENT.
BA-140	1.021E+00	NOT IDENT.
LA-140	4.472E-01	FAIL ABUN
CE-141	1.569E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	3.199E-01	NOT IDENT.
PM-144	4.697E-02	NOT IDENT.
PR-144	3.559E+00	NOT IDENT.
PM-146	6.883E-02	NOT IDENT.
ND-147	2.831E+00	FAIL ABUN
PM-147	1.157E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	4.230E-02	FAIL ABUN
EU-152	1.574E-01	FAIL ABUN
GD-153	1.319E-01	NOT IDENT.
EU-154	1.767E-01	FAIL ABUN
EU-155	1.612E-01	FAIL ABUN
TB-160	2.385E-01	FAIL ABUN

HO-166M	8.202E-02	NOT IDENT.
TM-171	3.569E+01	NOT IDENT.
HF-172	2.881E-01	FAIL ABUN
LU-172	7.962E-02	FAIL ABUN
LU-176	3.967E-02	FAIL ABUN
HF-181	9.169E-02	NOT IDENT.
TA-182	2.981E-01	NOT IDENT.
RE-183	4.220E-01	NOT IDENT.
RE-184	2.738E-01	NOT IDENT.
W-188	1.263E+01	FAIL ABUN
IR-192	6.063E-02	FAIL ABUN
HG-203	8.053E-02	NOT IDENT.
TL-204	8.395E+00	NOT IDENT.
BI-207	7.060E-02	FAIL ABUN
BI-210	8.425E+00	NOT IDENT.
PB-210	8.425E+00	NOT IDENT.
PB-211	1.191E+00	NOT IDENT.
BI-213	1.594E-01	NOT IDENT.
RN-219	6.587E-01	FAIL ABUN
RA-223	1.035E+00	FAIL ABUN
AC-225	3.650E+00	NOT IDENT.
AC-227	4.088E-01	FAIL ABUN
TH-227	4.088E-01	FAIL ABUN
PA-231	7.587E-01	NOT IDENT.
TH-231	1.035E+00	FAIL ABUN
PA-233	9.487E-02	NOT IDENT.
PA-234	4.437E-01	NOT IDENT.
PA-234M	8.765E+00	FAIL ABUN
NP-237	9.487E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	3.955E-01	NOT IDENT.
PU-239	5.278E+02	NOT IDENT.
AM-241	2.652E-01	NOT IDENT.
CM-243	1.554E-01	NOT IDENT.
BK-247	1.234E-01	FAIL ABUN
CM-247	6.066E-02	NOT IDENT.
CF-249	6.877E-02	NOT IDENT.
CF-251	2.076E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:11:21.54

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299026.CNF;1  *
* Acquisition date : 31-JUL-2024 16:09:56 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:30:00 Nuclide Library : SOLID           *
* Sample ID        : G674299026           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.4002E+02 GRAM *
*                                         Quantity Err(%) : 1.4284E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	8.558E+00	2.181E+00	2.181E+00
CD-109	1.239E+01	3.087E+00	3.087E+00
SB-124	1.687E-01	2.523E-01	2.523E-01
SN-126	1.176E+00	2.861E-01	2.861E-01
BA-137M	1.187E-01	8.843E-02	8.843E-02
CS-137	1.254E-01	9.342E-02	9.342E-02
TL-208	3.767E-01	1.371E-01	1.371E-01
BI-211	3.479E+01	3.261E+00	3.261E+00
BI-212	1.813E+00	1.342E+00	1.342E+00
PB-212	1.297E+00	2.248E-01	2.248E-01
BI-214	1.023E+01	1.025E+00	1.025E+00
PB-214	1.263E+01	1.166E+00	1.166E+00
RN-222	1.023E+01	1.025E+00	1.025E+00
RA-224	2.246E+01	3.066E+00	3.066E+00
RA-226	1.263E+01	1.166E+00	1.166E+00
AC-228	1.641E+00	6.625E-01	6.625E-01
RA-228	1.641E+00	6.625E-01	6.625E-01
TH-228	1.297E+00	2.248E-01	2.248E-01
TH-229	-3.518E-01	1.023E+00	1.023E+00
TH-230	1.262E+01	1.166E+00	1.166E+00
TH-232	1.641E+00	6.625E-01	6.625E-01
TH-234	5.744E+00	6.051E+00	6.051E+00
U-234	1.262E+01	1.166E+00	1.166E+00
U-235	5.082E-01	7.157E-01	7.157E-01
U-238	5.744E+00	6.051E+00	6.051E+00
AM-243	1.146E+00	2.380E-01	2.380E-01
ANH-511	1.664E-01	1.370E-01	1.370E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.414E-02	6.762E-01	6.762E-01	NOT IDENT.
NA-22	9.557E-03	8.456E-02	8.467E-02	NOT IDENT.
NA-24	4.365E+15	4.663E+15	5.061E+15	SHORT HLIF

AL-26	5.980E-03	5.250E-02	5.257E-02	NOT IDENT.
SC-46	-9.742E-03	8.250E-02	8.262E-02	FAIL ABUN
V-48	-1.445E-02	2.865E-01	2.866E-01	NOT IDENT.
CR-51	1.083E+00	1.081E+00	1.186E+00	NOT IDENT.
MN-52	-7.264E-01	6.247E+00	6.256E+00	FAIL ABUN
MN-54	-2.920E-02	7.027E-02	7.149E-02	NOT IDENT.
CO-56	1.848E-02	8.614E-02	8.655E-02	FAIL ABUN
MN-56	1.000E+41	4.405E+41	0.000E+00	SHORT HLIF
CO-57	-2.148E-02	4.730E-02	4.828E-02	NOT IDENT.
CO-58	3.689E-02	8.367E-02	8.530E-02	NOT IDENT.
FE-59	-9.112E-02	1.711E-01	1.760E-01	NOT IDENT.
CO-60	-2.350E-02	6.176E-02	6.266E-02	NOT IDENT.
ZN-65	8.611E-02	1.471E-01	1.521E-01	NOT IDENT.
GE-68	3.652E-01	2.037E+00	2.044E+00	NOT IDENT.
AS-73	4.549E-02	2.065E+00	2.065E+00	NOT IDENT.
AS-74	-2.609E-01	3.299E-01	3.502E-01	NOT IDENT.
SE-75	4.523E-04	1.006E-01	1.006E-01	NOT IDENT.
BR-77	7.067E+04	7.285E+04	7.951E+04	SHORT HLIF
SR-82	4.086E-01	8.712E-01	8.904E-01	NOT IDENT.
RB-83	1.421E-01	1.875E-01	1.982E-01	FAIL ABUN
RB-84	6.847E-02	1.819E-01	1.845E-01	NOT IDENT.
KR-85	4.455E+00	1.259E+01	1.274E+01	NOT IDENT.
SR-85	2.900E-02	8.237E-02	8.340E-02	NOT IDENT.
RB-86	7.025E-01	2.601E+00	2.621E+00	NOT IDENT.
Y-88	1.980E-02	5.364E-02	5.438E-02	NOT IDENT.
Y-91	-1.594E+01	4.352E+01	4.411E+01	NOT IDENT.
NB-94	7.869E-02	1.064E-01	1.122E-01	FAIL ABUN
NB-95	2.261E-01	1.036E-01	1.453E-01	NOT IDENT.
NB-95M	9.340E-02	3.249E-01	3.276E-01	NOT IDENT.
ZR-95	-1.230E-01	1.348E-01	1.457E-01	FAIL ABUN
NB-97	-1.000E+41	2.492E+42	0.000E+00	SHORT HLIF
ZR-97	1.610E+14	1.078E+15	1.080E+15	SHORT HLIF
MO-99	-1.929E+03	3.570E+03	3.674E+03	SHORT HLIF
TC-99M	-5.292E+39	8.398E+40	0.000E+00	SHORT HLIF
RH-101	-1.104E-04	5.430E-02	5.430E-02	NOT IDENT.
RH-102	-3.513E-02	9.188E-02	9.324E-02	FAIL ABUN
RU-103	6.152E-02	8.922E-02	9.343E-02	FAIL ABUN
RH-106	-5.779E-02	4.716E-01	4.723E-01	NOT IDENT.
RU-106	-5.779E-02	4.716E-01	4.723E-01	NOT IDENT.
AG-108M	-1.403E-02	4.718E-02	4.760E-02	FAIL ABUN
AG-110	1.216E-01	1.436E+00	1.437E+00	NOT IDENT.
AG-110M	2.534E-02	9.282E-02	9.352E-02	FAIL ABUN
SN-113	-4.613E-02	8.705E-02	8.950E-02	NOT IDENT.
CD-115	-3.709E+03	9.876E+03	1.002E+04	SHORT HLIF
SN-117M	2.490E-01	2.776E-01	2.994E-01	FAIL ABUN
SB-122	3.489E+02	5.252E+02	5.483E+02	SHORT HLIF
TE-123M	-3.528E-03	5.950E-02	5.953E-02	NOT IDENT.
SB-125	1.016E-01	1.616E-01	1.680E-01	FAIL ABUN
TE-125M	-9.762E+00	2.103E+01	2.148E+01	NOT IDENT.
I-126	2.712E+00	1.748E+00	2.133E+00	FAIL ABUN
SB-126	7.764E-01	9.358E-01	9.991E-01	FAIL ABUN
SB-127	-5.154E+01	8.304E+01	8.623E+01	NOT IDENT.
I-131	4.160E-01	1.109E+00	1.125E+00	NOT IDENT.
I-132	1.000E+41	4.802E+41	0.000E+00	SHORT HLIF
TE-132	-3.273E+01	1.042E+02	1.053E+02	SHORT HLIF
BA-133	8.282E-02	1.095E-01	1.157E-01	FAIL ABUN
I-133	7.669E+10	9.240E+10	9.865E+10	SHORT HLIF
CS-134	5.267E-02	7.130E-02	7.515E-02	NOT IDENT.
I-135	-8.251E+37	1.222E+38	0.000E+00	SHORT HLIF
CS-136	-9.447E-02	5.311E-01	5.328E-01	NOT IDENT.
LA-138	-3.212E-02	1.163E-01	1.172E-01	NOT IDENT.
CE-139	1.052E-02	6.017E-02	6.036E-02	NOT IDENT.
BA-140	-9.119E-01	1.292E+00	1.356E+00	NOT IDENT.
LA-140	1.218E-01	8.416E-01	8.434E-01	FAIL ABUN
CE-141	2.444E-01	3.441E-01	3.613E-01	FAIL ABUN
CE-143	2.242E+07	6.519E+06	1.203E+07	SHORT HLIF
CE-144	6.724E-02	3.610E-01	3.623E-01	NOT IDENT.
PM-144	2.169E-02	5.420E-02	5.507E-02	NOT IDENT.
PR-144	1.677E+00	4.103E+00	4.172E+00	NOT IDENT.
PM-146	3.981E-02	7.651E-02	7.858E-02	NOT IDENT.
ND-147	-4.867E-01	3.363E+00	3.370E+00	FAIL ABUN
PM-147	1.045E+02	1.302E+03	1.303E+03	NOT IDENT.
PM-149	-6.535E+04	8.706E+04	9.191E+04	SHORT HLIF
EU-150	2.796E-02	5.038E-02	5.193E-02	FAIL ABUN
EU-152	-5.206E-02	1.798E-01	1.813E-01	FAIL ABUN
GD-153	3.966E-02	1.557E-01	1.567E-01	NOT IDENT.
EU-154	2.960E-02	2.375E-01	2.379E-01	FAIL ABUN
EU-155	-2.037E-02	1.809E-01	1.812E-01	FAIL ABUN

TB-160	3.200E-02	2.716E-01	2.719E-01	FAIL ABUN
HO-166M	3.528E-02	9.516E-02	9.648E-02	NOT IDENT.
TM-171	-1.019E+01	3.836E+01	3.864E+01	NOT IDENT.
HF-172	-1.840E-01	3.364E-01	3.465E-01	FAIL ABUN
LU-172	-1.156E-02	1.095E-01	1.096E-01	FAIL ABUN
LU-176	2.385E-02	4.696E-02	4.818E-02	FAIL ABUN
HF-181	7.482E-02	1.369E-01	1.410E-01	NOT IDENT.
TA-182	1.551E-01	3.376E-01	3.448E-01	NOT IDENT.
RE-183	-1.774E-01	4.593E-01	4.662E-01	NOT IDENT.
RE-184	7.843E-02	3.083E-01	3.104E-01	NOT IDENT.
W-188	-1.295E+01	1.655E+01	1.755E+01	FAIL ABUN
IR-192	-6.801E-02	7.185E-02	7.811E-02	FAIL ABUN
HG-203	-4.830E-02	9.117E-02	9.374E-02	NOT IDENT.
TL-204	7.242E-01	9.757E+00	9.762E+00	NOT IDENT.
BI-207	5.465E-02	7.603E-02	7.992E-02	FAIL ABUN
BI-210	4.031E+00	8.743E+00	8.930E+00	NOT IDENT.
PB-210	4.031E+00	8.743E+00	8.930E+00	NOT IDENT.
PB-211	3.515E-01	1.335E+00	1.344E+00	NOT IDENT.
BI-213	3.896E-02	1.802E-01	1.811E-01	NOT IDENT.
RN-219	1.446E-01	7.410E-01	7.438E-01	FAIL ABUN
RA-223	2.918E-01	1.138E+00	1.146E+00	FAIL ABUN
AC-225	-9.601E-01	4.402E+00	4.424E+00	NOT IDENT.
AC-227	3.224E-01	6.744E-01	6.899E-01	FAIL ABUN
TH-227	3.224E-01	6.744E-01	6.899E-01	FAIL ABUN
PA-231	2.975E-01	9.927E-01	1.002E+00	NOT IDENT.
TH-231	2.918E-01	1.138E+00	1.146E+00	FAIL ABUN
PA-233	-3.891E-02	1.079E-01	1.093E-01	NOT IDENT.
PA-234	2.347E-02	5.136E-01	5.137E-01	NOT IDENT.
PA-234M	2.871E+01	1.108E+01	1.704E+01	FAIL ABUN
NP-237	-3.891E-02	1.079E-01	1.093E-01	NOT IDENT.
NP-238	7.969E+02	2.561E+04	2.561E+04	SHORT HLIF
NP-239	7.789E-02	4.417E-01	4.430E-01	NOT IDENT.
PU-239	3.886E+02	5.821E+02	6.079E+02	NOT IDENT.
AM-241	-2.011E-01	3.152E-01	3.280E-01	NOT IDENT.
CM-243	6.999E-02	1.706E-01	1.735E-01	NOT IDENT.
BK-247	-1.411E-03	1.632E-01	1.632E-01	FAIL ABUN
CM-247	2.201E-02	6.776E-02	6.848E-02	NOT IDENT.
CF-249	6.633E-02	7.425E-02	8.005E-02	NOT IDENT.
CF-251	1.590E-01	2.351E-01	2.458E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	209.9326	85.43	299.8869	131.20	245.4089
45.60	214.2086	86.55	300.7829	133.02	227.8027
46.54	227.2169	86.79	300.9716	133.52	221.8601
49.72	0.0000	86.94	301.0932	136.00	230.1355
51.35	207.6162	87.09	301.2123	136.47	233.4384
51.87	195.5977	87.57	301.5921	140.51	0.0000
52.39	217.5769	88.03	301.9570	143.76	238.7049
52.97	217.2219	88.34	302.2002	144.24	238.9102
53.44	210.1011	88.47	302.3020	145.44	256.2305
54.07	208.9233	89.96	303.4735	152.43	243.8206
57.36	0.0000	1093.63	209.3130	153.25	254.4590
57.53	218.3331	91.11	209.5642	323.87	254.8820
57.98	228.0031	92.59	286.7299	156.02	245.3324
59.27	231.5897	93.35	287.2797	158.56	208.4310
59.32	231.6302	94.56	288.1486	159.00	238.6866
59.54	252.2601	94.65	288.2115	162.33	204.3395
60.96	254.6350	94.67	288.2254	162.66	230.4109
61.17	254.8176	94.87	288.3699	163.33	237.1653
62.93	256.0433	97.43	219.2224	165.86	217.4866
63.29	256.3503	98.43	226.7402	176.31	216.7048
63.58	256.5962	98.44	226.7457	176.60	225.6526
64.28	257.1893	99.53	209.1905	177.52	191.6341
66.73	294.4409	100.11	215.2187	181.07	0.0000
67.24	279.7656	102.03	226.7686	181.52	205.0712
125.81	290.6621	103.18	211.9618	184.41	223.8739
67.75	287.2227	103.37	196.6336	143.76	224.3134
68.89	325.1671	105.21	231.3507	193.51	231.4299
69.67	325.9575	105.31	241.0877	197.03	202.9552
70.82	313.5533	106.12	235.7140	198.01	232.9241
70.83	313.5669	106.47	222.3102	201.83	211.2198
72.81	324.9402	109.28	246.1918	203.43	230.0995
72.87	324.9987	111.00	246.1513	205.31	192.2506
74.66	340.7466	111.76	0.0000	210.85	168.9132
74.82	340.9065	114.06	232.0058	215.65	152.0660
74.97	341.0577	116.30	0.0000	218.12	179.5537
77.11	343.1855	116.74	210.5039	222.11	165.1563
78.74	306.4800	119.76	223.8359	227.09	166.2158
79.69	355.6956	121.12	225.4704	227.38	166.2756
80.03	262.7845	121.22	225.5167	228.16	0.0000
80.12	262.8551	121.78	243.8398	228.18	175.9566
80.19	262.9059	122.06	246.9910	116.74	175.9566
80.57	289.2623	122.92	229.3220	235.69	203.2227
81.00	341.2167	123.07	229.3933	235.96	200.0885
81.07	341.2825	265.00	216.5829	238.63	207.1711
81.75	261.6157	125.81	240.7854	238.98	0.0000
82.47	279.2056	127.23	224.2204	240.99	207.7668
83.79	298.5664	127.91	236.7162	242.00	208.0214
84.00	298.7352	129.30	214.9537	244.70	174.7266

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	153.4710	344.28	125.6303	563.25	53.7870
252.80	145.3746	345.93	102.4520	564.24	0.0000
254.15	0.0000	351.06	96.4290	569.33	44.4575
256.23	127.9172	351.93	96.5029	946.00	46.5799
260.90	0.0000	355.39	0.0000	569.70	49.7616
264.66	132.4674	356.01	81.6193	583.19	58.7016
264.80	132.4870	364.49	85.8855	584.27	46.4559
265.00	135.8292	366.42	0.0000	595.83	58.0605
269.46	146.0822	372.51	82.8003	427.87	48.5175
270.03	146.1750	375.05	82.9816	602.52	0.0000
271.23	146.7848	377.52	60.9807	604.72	32.4207
273.65	131.7082	356.01	98.0891	607.14	30.8425
276.40	145.9417	388.16	91.3546	609.32	41.1744
277.37	141.0596	388.63	90.4579	610.33	41.1976
277.60	130.1758	391.69	97.2313	614.28	45.6367
278.00	125.1913	264.66	102.6510	618.01	37.0215
279.20	155.6421	401.81	96.1479	620.36	34.8893
279.54	159.0650	402.40	93.3644	621.93	38.1944
279.70	159.0919	404.85	100.1621	630.19	0.0000
280.46	171.8594	410.95	94.9524	631.29	51.5554
283.69	135.2604	413.71	103.7221	633.25	42.8260
284.31	131.9646	414.70	104.7542	634.78	53.8529
285.41	137.2017	423.72	104.5315	635.95	59.3855
285.90	0.0000	427.09	78.8419	636.99	37.4130
287.50	121.3778	427.87	74.0783	657.50	46.7305
290.67	136.6856	433.94	69.5889	657.76	46.7373
293.27	0.0000	439.40	76.6679	657.90	0.0000
351.93	137.7632	440.45	74.7849	661.66	38.4700
295.96	137.8680	453.88	74.5466	664.57	0.0000
879.38	139.0968	463.37	60.2442	666.33	50.3027
299.98	121.2407	468.07	68.9685	666.50	50.3064
300.09	90.2942	473.00	65.6281	667.71	0.0000
300.13	90.2985	475.06	60.9435	677.62	35.4196
301.36	123.9932	476.78	61.3161	685.70	51.9409
302.85	119.8688	477.60	49.3802	692.65	0.0000
256.23	107.5444	482.18	54.0406	695.00	53.3225
304.85	107.5824	487.02	61.7515	696.49	36.3320
306.78	94.8033	492.35	0.0000	696.51	36.3320
308.46	105.8018	497.08	47.5154	697.00	35.2055
311.90	113.9960	505.52	61.0022	697.30	31.3499
316.51	125.8770	507.63	0.0000	697.49	31.3521
319.41	90.2926	511.00	68.5699	702.65	42.1399
320.08	102.6321	514.00	68.7066	706.68	44.5082
321.04	130.8237	514.00	68.7066	711.68	36.6107
323.87	117.9725	520.40	55.4414	720.70	48.2668
325.23	124.2987	520.69	0.0000	721.93	0.0000
328.76	112.3342	522.65	0.0000	722.78	58.6678
333.37	114.0663	527.90	0.0000	722.91	41.4155
333.97	98.6629	528.26	58.8184	723.31	41.4243
334.37	98.7013	529.59	49.5723	724.19	41.4419
338.28	118.6939	529.87	0.0000	727.33	34.5886
338.32	118.6967	531.02	59.9541	733.00	39.3083
311.90	104.6268	537.26	61.2303	735.93	32.9960
340.48	104.6268	546.56	0.0000	333.97	45.1858
340.55	104.6340	552.55	53.4363	739.50	0.0000

ENERGY	MDA COUNTS
744.23	41.8462
747.24	43.6523
748.06	43.3198
752.31	39.3819
753.82	35.0317
756.73	46.4801
756.80	46.4818
884.68	42.2388
765.81	35.2295
766.42	38.0584
766.84	39.6524
772.60	0.0000
776.52	32.7499
739.50	0.0000
778.90	42.5332
783.70	36.9434
788.74	25.6351
792.07	47.0685
795.86	41.0782
810.06	35.9485
810.29	33.0760
344.28	33.0782
810.76	33.0827
815.77	36.0388
1048.07	40.5931
832.01	38.7174
834.85	45.0635
835.71	47.9886
836.80	0.0000
846.75	0.0000
846.77	46.5752
856.80	32.2835
860.56	31.2327
871.09	42.4427
873.19	33.2457
875.33	0.0000
879.38	37.9608
880.51	43.5361
881.60	37.0691
883.24	44.5137
884.68	39.9005
889.28	43.6939
894.76	47.5199
898.04	37.3206
900.72	49.5031
903.28	35.5299
911.20	33.7676
912.08	33.7797
923.98	0.0000
926.50	40.5802
929.11	28.7189
935.54	43.9460
937.49	36.3973
944.13	32.3098
946.00	37.0886

ENERGY	MDA COUNTS
949.00	30.4678
667.71	0.0000
962.31	28.7100
964.08	28.7302
966.17	28.7531
911.20	28.7833
983.53	35.6958
984.45	0.0000
1274.44	21.7137
1001.03	20.1989
1002.74	20.2116
1004.73	32.6730
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	31.4941
1038.76	0.0000
631.29	26.8547
1048.07	28.4502
1049.04	33.2021
1050.41	28.4730
1063.66	19.8657
1077.00	25.9460
1077.34	25.9492
1085.87	24.0234
1093.63	25.6938
1099.45	26.1476
1112.07	26.9336
1112.84	25.8625
1115.54	21.0323
1120.29	25.3204
1120.55	25.3220
1221.41	22.6953
1129.67	32.5117
1131.51	0.0000
1147.95	0.0000
1173.23	32.9805
1177.95	39.2223
1189.05	16.5742
1204.77	36.4355
1221.41	28.2557
1231.02	30.2291
1235.36	27.3267
1238.28	25.2466
1260.41	0.0000
1271.87	18.7043
1274.44	27.2281
1274.54	27.2281
1291.59	21.3806
1298.22	0.0000
1312.11	20.6496
1332.49	20.5563
1362.66	0.0000
1365.19	17.4727
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	33.3762
1408.01	18.7878
1434.09	27.8259
1435.80	26.7246
1457.56	0.0000
1460.82	19.0576
1489.16	23.4914
1505.03	25.7061
1584.12	15.4272
1596.21	18.5674
1620.50	16.8100
1621.92	15.8819
1678.03	0.0000
1690.97	10.4462
1750.46	0.0000
1764.49	11.5893
1063.66	3.2235
1771.35	1.6121
1791.20	0.0000
1808.65	6.5020
1810.72	0.0000
1836.06	4.3607

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:11:49.13

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*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299027.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM08.CNF;726
                                         Background date  : 29-JUL-2024 05:38:49
Sample date      : 26-JUN-2024 11:35:00  Acquisition date : 31-JUL-2024 16:10:20
Sample ID        : G674299027            Sample quantity  : 1.34490E+02 GRAM
Detector name    : GAM08                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:01.04  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.90*	66	298	1.28	94.00	91	8	1.82E-02	47.4	
2	0	63.01*	56	501	1.07	126.22	121	11	1.56E-02	78.8	
3	2	75.02	322	405	1.20	150.25	145	14	8.94E-02	11.9	8.11E-01
4	2	77.22*	514	342	0.95	154.65	145	14	1.43E-01	7.4	
5	0	83.89	59	383	1.25	168.00	166	7	1.64E-02	56.3	
6	1	87.50	220	236	1.25	175.23	172	22	6.12E-02	12.1	2.45E+00
7	1	89.94	112	344	1.25	180.10	172	22	3.10E-02	31.3	
8	1	92.88*	232	267	1.11	185.99	172	22	6.45E-02	14.4	
9	0	186.27*	423	343	1.42	372.82	368	11	1.18E-01	9.9	
10	0	209.72	56	189	1.19	419.74	416	8	1.55E-02	44.9	
11	3	238.78*	373	185	1.16	477.87	473	18	1.04E-01	7.9	1.23E+00
12	3	242.08	511	181	1.49	484.49	473	18	1.42E-01	6.7	
13	0	259.34	44	159	1.36	519.01	515	8	1.22E-02	52.5	
14	0	270.27	88	269	2.82	540.88	536	13	2.43E-02	40.1	
15	1	295.36*	935	153	1.45	591.06	585	23	2.60E-01	4.0	1.87E+00
16	1	300.32	35	166	1.61	601.00	585	23	9.72E-03	72.2	
17	0	338.56*	63	122	1.05	677.49	673	7	1.76E-02	31.9	
18	0	352.01*	1569	183	1.34	704.39	699	13	4.36E-01	3.1	
19	0	387.44	16	92	1.12	775.26	772	8	4.35E-03	109.8	
20	0	439.34	24	83	1.86	879.09	872	10	6.73E-03	73.7	
21	0	475.06	20	44	0.74	950.54	946	9	5.44E-03	65.7	
22	0	511.41*	40	95	1.75	1023.26	1016	15	1.11E-02	61.1	
23	0	583.24*	114	97	1.47	1166.94	1161	14	3.17E-02	21.0	
24	0	609.33*	1065	90	1.69	1219.14	1213	15	2.96E-01	3.7	
25	2	661.67	34	44	2.18	1323.83	1319	17	9.36E-03	39.6	1.68E+00
26	2	665.48	29	51	1.82	1331.45	1319	17	8.11E-03	45.5	
27	0	703.67	25	26	2.40	1407.83	1403	9	6.91E-03	42.5	
28	0	727.45	30	45	2.14	1455.39	1448	11	8.36E-03	42.8	
29	0	768.42	98	50	1.80	1537.34	1531	11	2.73E-02	17.1	
30	4	782.15	11	6	1.52	1564.80	1563	15	2.93E-03	39.2	2.11E+00
31	4	786.09	50	23	2.29	1572.68	1563	15	1.38E-02	23.0	
32	0	882.16	32	12	1.88	1764.84	1758	12	8.89E-03	28.0	
33	0	911.50*	77	34	1.27	1823.51	1817	13	2.15E-02	19.8	
34	0	934.09	60	29	1.68	1868.70	1862	14	1.68E-02	22.7	

Sample ID : G674299027 Acquisition date : 31-JUL-2024 16:10:20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1001.26*	23	13	2.22	2003.04	1998	9	6.49E-03	36.5	
36	0	1120.15	268	30	1.32	2240.80	2233	15	7.45E-02	7.6	
37	0	1156.78	46	20	8.28	2314.05	2304	22	1.27E-02	29.9	
38	0	1238.30	84	35	1.73	2477.07	2473	14	2.33E-02	18.5	
39	0	1266.97	10	17	0.73	2534.40	2525	13	2.71E-03	97.4	
40	0	1280.02	28	24	4.29	2560.50	2551	16	7.89E-03	42.8	
41	0	1377.64	67	18	3.41	2755.70	2746	18	1.86E-02	19.2	
42	0	1401.48	21	16	5.70	2803.38	2794	16	5.83E-03	47.9	
43	0	1408.20*	25	22	1.69	2816.81	2811	13	7.07E-03	43.7	
44	0	1436.21	18	9	4.21	2872.83	2861	18	5.00E-03	45.6	
45	0	1460.48*	125	14	1.89	2921.35	2915	16	3.49E-02	11.1	
46	0	1478.02	13	12	1.29	2956.43	2950	13	3.67E-03	62.0	
47	0	1491.83	20	22	5.94	2984.05	2972	22	5.56E-03	63.8	
48	0	1509.06	38	17	1.37	3018.50	3010	17	1.06E-02	29.7	
49	0	1583.03	13	16	6.32	3166.39	3156	16	3.60E-03	80.5	
50	0	1663.09	4	9	0.50	3326.46	3321	8	1.03E-03	155.6	
51	0	1729.32	52	4	2.81	3458.89	3452	16	1.43E-02	16.5	
52	0	1764.35*	189	5	2.77	3528.92	3521	17	5.25E-02	7.7	
53	0	1848.50	30	16	0.92	3697.17	3687	16	8.33E-03	35.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:11:50

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299027.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 11:35:00 Acquisition date : 31-JUL-2024 16:10:20
Sample ID        : G674299027           Sample quantity  : 134.49 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA8               Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:01.04   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	120	10.66*	9.540E-01	6.577E+00	6.577E+00	22.17
RB-84	881.60	32	68.90*	1.484E+00	1.737E-01	3.654E-01	55.90
CD-109	88.03	258	3.70*	4.606E+00	8.461E+00	8.921E+00	24.16
I-126	388.63	17	35.60	2.874E+00	9.039E-02	5.969E-01	219.63
	666.33	30	32.90*	1.890E+00	2.662E-01	1.758E+00	90.96
	753.82	------	4.15	1.702E+00	------	Line Not Found	------
SN-126	64.28	67	9.60	2.106E+00	1.855E+00	1.855E+00	157.63
	86.94	258	8.90	4.606E+00	3.517E+00	3.517E+00	24.16
	87.57	258	37.00*	4.606E+00	8.461E-01	8.461E-01	24.16
BA-137M	661.66	34	89.90*	1.899E+00	1.120E-01	1.123E-01	79.22
CS-137	661.66	34	85.10*	1.899E+00	1.183E-01	1.186E-01	79.22
TL-208	277.37	------	6.60	3.683E+00	------	Line Not Found	------
	583.19	117	85.00*	2.103E+00	3.651E-01	3.651E-01	42.08
	860.56	------	12.50	1.517E+00	------	Line Not Found	------
BI-210	46.54	80	4.25*	4.463E-01	2.354E+01	2.361E+01	94.81
PB-210	46.54	80	4.25*	4.463E-01	2.354E+01	2.361E+01	94.81
BI-211	72.87	------	1.23	3.277E+00	------	Line Not Found	------
	351.06	1671	12.92*	3.086E+00	2.339E+01	2.339E+01	6.20
BI-212	727.33	30	6.67*	1.754E+00	1.449E+00	1.449E+00	85.53
	1620.50	------	1.47	8.851E-01	------	Line Not Found	------
PB-212	74.82	381	10.28	3.510E+00	5.893E+00	5.893E+00	23.70
	77.11	608	17.10	3.736E+00	5.313E+00	5.313E+00	14.72
	238.63	409	43.60*	4.108E+00	1.274E+00	1.274E+00	15.79
	300.09	38	3.30	3.473E+00	1.836E+00	1.836E+00	144.45
BI-213	440.45	25	25.94*	2.616E+00	2.090E-01	2.090E-01	147.46
BI-214	609.32	1089	45.49*	2.030E+00	6.584E+00	6.584E+00	7.34
	1120.29	262	14.92	1.196E+00	8.182E+00	8.183E+00	15.11
	1764.49	178	15.30	8.412E-01	7.716E+00	7.717E+00	15.49
PB-214	74.82	381	5.80	3.510E+00	1.044E+01	1.045E+01	23.70
	77.11	608	9.70	3.736E+00	9.366E+00	9.366E+00	14.72
	87.09	258	3.41	4.606E+00	9.180E+00	9.181E+00	24.16
	242.00	559	7.25	4.068E+00	1.058E+01	1.058E+01	13.35
	295.22	1009	18.42	3.516E+00	8.695E+00	8.696E+00	8.10
	351.93	1671	35.60*	3.086E+00	8.488E+00	8.488E+00	6.20
RN-222	609.32	1089	45.49*	2.030E+00	6.584E+00	6.584E+00	7.34
	1120.29	262	14.92	1.196E+00	8.182E+00	8.183E+00	15.11
	1764.49	178	15.30	8.412E-01	7.716E+00	7.717E+00	15.49
RA-224	240.99	559	4.10*	4.068E+00	1.870E+01	1.870E+01	13.35
RA-226	74.82	381	5.80	3.510E+00	1.044E+01	1.045E+01	23.70
	77.11	608	9.70	3.736E+00	9.366E+00	9.366E+00	14.72
	87.09	258	3.41	4.606E+00	9.180E+00	9.181E+00	24.16
	242.00	559	7.25	4.068E+00	1.058E+01	1.058E+01	13.35
	295.22	1009	18.42	3.516E+00	8.695E+00	8.696E+00	8.10
	351.93	1671	35.60*	3.086E+00	8.488E+00	8.488E+00	6.20
TH-228	74.82	381	10.28	3.510E+00	5.893E+00	5.893E+00	23.70
	77.11	608	17.10	3.736E+00	5.313E+00	5.313E+00	14.72
	238.63	409	43.60*	4.108E+00	1.274E+00	1.274E+00	15.79
	300.09	38	3.30	3.473E+00	1.836E+00	1.836E+00	144.45
TH-230	74.82	381	5.80	3.510E+00	1.044E+01	1.044E+01	23.70

Sample ID : G674299027 Acquisition date : 31-JUL-2024 16:10:20

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	77.11	608	9.70	3.736E+00	9.366E+00	9.366E+00	14.72
	87.09	258	3.41	4.606E+00	9.180E+00	9.180E+00	24.16
	242.00	559	7.25	4.068E+00	1.058E+01	1.058E+01	13.35
	295.22	1009	18.42	3.516E+00	8.695E+00	8.695E+00	8.10
	351.93	1671	35.60*	3.086E+00	8.488E+00	8.488E+00	6.20
PA-231	283.69	------	1.70	3.622E+00	------	Line Not Found	------
	301.36	38	5.35*	3.473E+00	1.133E+00	1.133E+00	144.45
TH-234	63.29	67	3.70*	2.106E+00	4.813E+00	4.813E+00	157.63
	92.59	271	4.23	4.938E+00	7.241E+00	7.241E+00	28.85
U-234	74.82	381	5.80	3.510E+00	1.044E+01	1.044E+01	23.70
	77.11	608	9.70	3.736E+00	9.366E+00	9.366E+00	14.72
	87.09	258	3.41	4.606E+00	9.180E+00	9.180E+00	24.16
	242.00	559	7.25	4.068E+00	1.058E+01	1.058E+01	13.35
	295.22	1009	18.42	3.516E+00	8.695E+00	8.695E+00	8.10
	351.93	1671	35.60*	3.086E+00	8.488E+00	8.488E+00	6.20
U-235	89.96	131	3.47	4.767E+00	4.406E+00	4.406E+00	62.51
	93.35	271	5.60	4.938E+00	5.469E+00	5.469E+00	28.85
	143.76	------	10.96*	5.499E+00	------	Line Not Found	------
	163.33	------	5.08	5.223E+00	------	Line Not Found	------
	185.72	472	57.20	4.857E+00	9.479E-01	9.479E-01	19.83
	205.31	------	5.01	4.563E+00	------	Line Not Found	------
U-238	63.29	67	3.70*	2.106E+00	4.813E+00	4.813E+00	157.63
	92.59	271	4.23	4.938E+00	7.241E+00	7.241E+00	28.85
AM-243	43.53	------	5.90	2.524E-01	------	Line Not Found	------
	74.66	381	67.20*	3.510E+00	9.015E-01	9.015E-01	23.70
CF-249	252.80	------	2.50	3.942E+00	------	Line Not Found	------
	333.37	------	14.60	3.214E+00	------	Line Not Found	------
	388.16	17	66.00*	2.874E+00	4.876E-02	4.877E-02	219.63
ANH-511	511.00	41	100.00*	2.330E+00	9.873E-02	9.873E-02	122.12

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:11:51.46

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299027.CNF;1  *
* Acquisition date : 31-JUL-2024 16:10:20 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.04     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:35:00 Analyst initials: MXR1            *
* Sample ID        : G674299027           Sample Quantity : 1.3449E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	6.577E+00	1.429E+00	1.037E+00
RB-84	3.654E-01	2.002E-01	2.587E-01
CD-109	8.921E+00	2.112E+00	2.443E+00
I-126	1.758E+00	1.567E+00	1.710E+00
SN-126	8.461E-01	2.004E-01	2.332E-01
BA-137M	1.123E-01	8.716E-02	1.021E-01
CS-137	1.186E-01	9.208E-02	1.079E-01
TL-208	3.651E-01	1.506E-01	1.082E-01
BI-210	2.361E+01	2.193E+01	2.086E+01
PB-210	2.361E+01	2.193E+01	2.086E+01
BI-211	2.339E+01	1.421E+00	6.513E-01
BI-212	1.449E+00	1.214E+00	1.583E+00
PB-212	1.274E+00	1.971E-01	1.926E-01
BI-213	2.090E-01	3.020E-01	2.865E-01
BI-214	6.584E+00	4.736E-01	2.159E-01
PB-214	8.488E+00	5.156E-01	2.369E-01
RN-222	6.584E+00	4.736E-01	2.159E-01
RA-224	1.870E+01	2.447E+00	2.065E+00
RA-226	8.488E+00	5.156E-01	2.369E-01
TH-228	1.274E+00	1.971E-01	1.926E-01
TH-230	8.488E+00	5.156E-01	2.369E-01
PA-231	1.133E+00	1.603E+00	1.600E+00
TH-234	4.813E+00	7.435E+00	5.115E+00
U-234	8.488E+00	5.156E-01	2.369E-01
U-235	5.568E-01	4.132E-01	7.580E-01
U-238	4.813E+00	7.435E+00	5.115E+00
AM-243	9.015E-01	2.094E-01	1.970E-01
CF-249	4.877E-02	1.050E-01	1.150E-01
ANH-511	9.873E-02	1.182E-01	8.906E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-5.889E-01	8.223E-01	1.200E+00	NOT IDENT.

NA-22	1.242E-02	6.372E-02	1.108E-01	NOT IDENT.
NA-24	0.000E+00	5.605E+15	0.000E+00	SHORT HLIF
AL-26	-6.796E-03	4.368E-02	8.795E-02	NOT IDENT.
SC-46	-2.020E-02	7.090E-02	1.299E-01	FAIL ABUN
V-48	-2.482E-03	2.573E-01	4.856E-01	NOT IDENT.
CR-51	-1.950E-01	1.068E+00	1.940E+00	NOT IDENT.
MN-52	9.120E-01	4.607E+00	9.407E+00	FAIL ABUN
MN-54	-2.246E-02	6.623E-02	1.198E-01	NOT IDENT.
CO-56	-5.046E-02	7.842E-02	1.372E-01	FAIL ABUN
MN-56	0.000E+00	1.547E+41	0.000E+00	SHORT HLIF
CO-57	-9.617E-03	4.867E-02	8.414E-02	NOT IDENT.
CO-58	-5.650E-03	7.338E-02	1.384E-01	NOT IDENT.
FE-59	-2.418E-01	1.904E-01	2.884E-01	NOT IDENT.
CO-60	1.060E-02	5.961E-02	1.158E-01	NOT IDENT.
ZN-65	5.127E-03	1.540E-01	2.535E-01	NOT IDENT.
GE-68	1.062E+00	2.025E+00	4.062E+00	NOT IDENT.
AS-73	-2.047E+00	2.642E+00	4.658E+00	NOT IDENT.
AS-74	1.264E-01	3.312E-01	6.546E-01	NOT IDENT.
SE-75	-6.085E-02	8.741E-02	1.539E-01	NOT IDENT.
BR-77	0.000E+00	1.073E+04	0.000E+00	SHORT HLIF
SR-82	-1.648E-01	8.718E-01	1.629E+00	NOT IDENT.
RB-83	7.858E-03	1.327E-01	2.420E-01	NOT IDENT.
KR-85	2.126E+00	1.329E+01	2.164E+01	NOT IDENT.
SR-85	1.379E-02	8.696E-02	1.416E-01	NOT IDENT.
RB-86	1.089E+00	2.577E+00	5.100E+00	NOT IDENT.
Y-88	5.101E-03	4.325E-02	9.873E-02	NOT IDENT.
Y-91	-1.876E+00	4.176E+01	7.646E+01	NOT IDENT.
NB-94	7.801E-02	6.496E-02	1.083E-01	FAIL ABUN
NB-95	1.759E-01	8.214E-02	1.778E-01	NOT IDENT.
NB-95M	2.404E-01	2.866E-01	5.063E-01	NOT IDENT.
ZR-95	-6.382E-02	1.387E-01	2.510E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.124E+15	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.006E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	8.407E+40	0.000E+00	SHORT HLIF
RH-101	-2.350E-02	6.061E-02	1.032E-01	NOT IDENT.
RH-102	5.662E-02	7.902E-02	1.636E-01	FAIL ABUN
RU-103	2.757E-02	9.257E-02	1.729E-01	FAIL ABUN
RH-106	-6.086E-02	4.619E-01	8.833E-01	NOT IDENT.
RU-106	-6.086E-02	4.619E-01	8.833E-01	NOT IDENT.
AG-108M	1.190E-02	5.632E-02	9.361E-02	NOT IDENT.
AG-110	1.671E-01	1.434E+00	2.448E+00	NOT IDENT.
AG-110M	1.940E-02	8.700E-02	1.514E-01	NOT IDENT.
SN-113	-2.672E-02	8.912E-02	1.408E-01	NOT IDENT.
CD-115	0.000E+00	1.008E+04	0.000E+00	SHORT HLIF
SN-117M	1.523E-01	2.664E-01	5.185E-01	NOT IDENT.
SB-122	0.000E+00	5.409E+02	0.000E+00	SHORT HLIF
TE-123M	3.463E-02	5.548E-02	1.082E-01	NOT IDENT.
SB-124	2.411E-02	1.532E-01	3.238E-01	NOT IDENT.
SB-125	-2.194E-02	1.628E-01	2.920E-01	NOT IDENT.
TE-125M	1.531E+01	2.275E+01	4.147E+01	NOT IDENT.
SB-126	3.458E-01	7.151E-01	1.296E+00	FAIL ABUN
SB-127	5.698E+00	7.405E+01	1.431E+02	NOT IDENT.
I-131	2.238E-01	1.058E+00	1.980E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	9.629E+01	0.000E+00	SHORT HLIF
BA-133	-5.843E-02	8.419E-02	1.280E-01	NOT IDENT.
I-133	0.000E+00	1.003E+11	0.000E+00	SHORT HLIF
CS-134	3.892E-02	6.760E-02	1.350E-01	NOT IDENT.
I-135	0.000E+00	1.022E+38	0.000E+00	SHORT HLIF
CS-136	-3.681E-01	4.907E-01	8.248E-01	NOT IDENT.
LA-138	1.518E-01	1.358E-01	2.004E-01	FAIL ABUN
CE-139	-1.301E-02	6.115E-02	1.146E-01	NOT IDENT.
BA-140	-4.982E-01	1.266E+00	2.189E+00	NOT IDENT.
LA-140	-5.356E-01	4.209E-01	6.294E-01	NOT IDENT.
CE-141	-1.439E-01	2.013E-01	3.328E-01	NOT IDENT.
CE-143	0.000E+00	7.324E+06	0.000E+00	SHORT HLIF
CE-144	1.368E-01	3.801E-01	6.742E-01	NOT IDENT.
PM-144	4.136E-02	5.003E-02	1.042E-01	NOT IDENT.
PR-144	3.138E+00	3.785E+00	7.883E+00	NOT IDENT.
PM-146	1.440E-02	7.490E-02	1.378E-01	NOT IDENT.
ND-147	-1.799E+00	3.611E+00	6.155E+00	FAIL ABUN
PM-147	-2.384E+02	1.352E+03	2.343E+03	NOT IDENT.
PM-149	0.000E+00	8.859E+04	0.000E+00	SHORT HLIF
EU-150	-2.459E-02	5.524E-02	8.674E-02	FAIL ABUN
EU-152	-1.353E-02	1.806E-01	3.282E-01	FAIL ABUN
GD-153	-8.048E-02	1.781E-01	2.816E-01	NOT IDENT.
EU-154	3.482E-02	1.787E-01	3.108E-01	NOT IDENT.

EU-155	-1.432E-02	1.774E-01	3.127E-01	FAIL ABUN
TB-160	-8.661E-02	2.556E-01	4.026E-01	FAIL ABUN
HO-166M	-2.051E-03	9.012E-02	1.721E-01	NOT IDENT.
TM-171	-1.533E+01	4.859E+01	8.805E+01	NOT IDENT.
HF-172	-7.960E-02	3.515E-01	6.053E-01	FAIL ABUN
LU-172	5.060E-02	1.063E-01	2.095E-01	FAIL ABUN
LU-176	5.771E-03	4.703E-02	8.735E-02	FAIL ABUN
HF-181	-1.908E-02	1.031E-01	1.826E-01	NOT IDENT.
TA-182	1.822E-01	2.858E-01	5.828E-01	FAIL ABUN
RE-183	1.152E-01	5.799E-01	1.072E+00	NOT IDENT.
RE-184	7.693E-02	2.650E-01	5.241E-01	NOT IDENT.
W-188	2.292E+00	1.796E+01	2.995E+01	FAIL ABUN
IR-192	2.871E-03	7.175E-02	1.327E-01	FAIL ABUN
HG-203	-2.034E-02	9.320E-02	1.699E-01	NOT IDENT.
TL-204	3.456E-01	1.102E+01	1.834E+01	FAIL ABUN
BI-207	-3.560E-02	7.502E-02	1.319E-01	FAIL ABUN
PB-211	-2.569E-01	1.329E+00	2.371E+00	NOT IDENT.
RN-219	-5.335E-02	7.627E-01	1.374E+00	FAIL ABUN
RA-223	4.292E-01	1.138E+00	2.143E+00	FAIL ABUN
AC-225	-1.101E+00	4.000E+00	7.386E+00	NOT IDENT.
AC-227	-8.420E-02	5.128E-01	8.429E-01	FAIL ABUN
TH-227	-8.420E-02	5.128E-01	8.429E-01	FAIL ABUN
AC-228	0.000E+00	4.466E-01	7.602E-01	FAIL ABUN
RA-228	0.000E+00	4.466E-01	7.602E-01	FAIL ABUN
TH-229	3.752E-01	9.383E-01	1.795E+00	FAIL ABUN
TH-231	4.292E-01	1.138E+00	2.143E+00	FAIL ABUN
TH-232	0.000E+00	4.466E-01	7.602E-01	FAIL ABUN
PA-233	-8.259E-03	1.133E-01	2.077E-01	FAIL ABUN
PA-234	-1.992E-01	4.740E-01	8.464E-01	FAIL ABUN
PA-234M	1.154E+01	8.253E+00	1.574E+01	FAIL ABUN
NP-237	-8.259E-03	1.133E-01	2.077E-01	FAIL ABUN
NP-238	0.000E+00	2.084E+04	0.000E+00	SHORT HLIF
NP-239	1.082E-01	4.706E-01	8.373E-01	NOT IDENT.
PU-239	3.964E+02	6.309E+02	1.135E+03	NOT IDENT.
AM-241	-2.045E-01	3.819E-01	6.220E-01	NOT IDENT.
CM-243	4.127E-02	1.759E-01	3.165E-01	NOT IDENT.
BK-247	-1.283E-01	1.480E-01	2.442E-01	FAIL ABUN
CM-247	6.328E-03	6.996E-02	1.276E-01	NOT IDENT.
CF-251	-3.349E-02	2.270E-01	4.260E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:11:49.94

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	120	10.66*	9.540E-01	6.577E+00	6.577E+00	22.17
RB-84	881.60	32	68.90*	1.484E+00	1.737E-01	3.654E-01	55.90
CD-109	88.03	258	3.70*	4.606E+00	8.461E+00	8.921E+00	24.16
I-126	388.63	17	35.60	2.874E+00	9.039E-02	5.969E-01	219.63
	666.33	30	32.90*	1.890E+00	2.662E-01	1.758E+00	90.96
	753.82	------	4.15	1.702E+00	------	Line Not Found	------
SN-126	64.28	67	9.60	2.106E+00	1.855E+00	1.855E+00	157.63
	86.94	258	8.90	4.606E+00	3.517E+00	3.517E+00	24.16
	87.57	258	37.00*	4.606E+00	8.461E-01	8.461E-01	24.16
BA-137M	661.66	34	89.90*	1.899E+00	1.120E-01	1.123E-01	79.22
CS-137	661.66	34	85.10*	1.899E+00	1.183E-01	1.186E-01	79.22
TL-208	277.37	------	6.60	3.683E+00	------	Line Not Found	------
	583.19	117	85.00*	2.103E+00	3.651E-01	3.651E-01	42.08
	860.56	------	12.50	1.517E+00	------	Line Not Found	------
BI-210	46.54	80	4.25*	4.463E-01	2.354E+01	2.361E+01	94.81
PB-210	46.54	80	4.25*	4.463E-01	2.354E+01	2.361E+01	94.81
BI-211	72.87	------	1.23	3.277E+00	------	Line Not Found	------
	351.06	1671	12.92*	3.086E+00	2.339E+01	2.339E+01	6.20
BI-212	727.33	30	6.67*	1.754E+00	1.449E+00	1.449E+00	85.53
	1620.50	------	1.47	8.851E-01	------	Line Not Found	------
PB-212	74.82	381	10.28	3.510E+00	5.893E+00	5.893E+00	23.70
	77.11	608	17.10	3.736E+00	5.313E+00	5.313E+00	14.72
	238.63	409	43.60*	4.108E+00	1.274E+00	1.274E+00	15.79
	300.09	38	3.30	3.473E+00	1.836E+00	1.836E+00	144.45
BI-213	440.45	25	25.94*	2.616E+00	2.090E-01	2.090E-01	147.46
BI-214	609.32	1089	45.49*	2.030E+00	6.584E+00	6.584E+00	7.34
	1120.29	262	14.92	1.196E+00	8.182E+00	8.183E+00	15.11
	1764.49	178	15.30	8.412E-01	7.716E+00	7.717E+00	15.49
PB-214	74.82	381	5.80	3.510E+00	1.044E+01	1.045E+01	23.70
	77.11	608	9.70	3.736E+00	9.366E+00	9.366E+00	14.72
	87.09	258	3.41	4.606E+00	9.180E+00	9.181E+00	24.16
	242.00	559	7.25	4.068E+00	1.058E+01	1.058E+01	13.35
	295.22	1009	18.42	3.516E+00	8.695E+00	8.696E+00	8.10
	351.93	1671	35.60*	3.086E+00	8.488E+00	8.488E+00	6.20
RN-222	609.32	1089	45.49*	2.030E+00	6.584E+00	6.584E+00	7.34
	1120.29	262	14.92	1.196E+00	8.182E+00	8.183E+00	15.11
	1764.49	178	15.30	8.412E-01	7.716E+00	7.717E+00	15.49
RA-224	240.99	559	4.10*	4.068E+00	1.870E+01	1.870E+01	13.35
RA-226	74.82	381	5.80	3.510E+00	1.044E+01	1.045E+01	23.70
	77.11	608	9.70	3.736E+00	9.366E+00	9.366E+00	14.72
	87.09	258	3.41	4.606E+00	9.180E+00	9.181E+00	24.16
	242.00	559	7.25	4.068E+00	1.058E+01	1.058E+01	13.35
	295.22	1009	18.42	3.516E+00	8.695E+00	8.696E+00	8.10
	351.93	1671	35.60*	3.086E+00	8.488E+00	8.488E+00	6.20
TH-228	74.82	381	10.28	3.510E+00	5.893E+00	5.893E+00	23.70
	77.11	608	17.10	3.736E+00	5.313E+00	5.313E+00	14.72
	238.63	409	43.60*	4.108E+00	1.274E+00	1.274E+00	15.79

Sample ID : G674299027 Acquisition date : 31-JUL-2024 16:10:20

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	300.09	38	3.30	3.473E+00	1.836E+00	1.836E+00	144.45
TH-230	74.82	381	5.80	3.510E+00	1.044E+01	1.044E+01	23.70
	77.11	608	9.70	3.736E+00	9.366E+00	9.366E+00	14.72
	87.09	258	3.41	4.606E+00	9.180E+00	9.180E+00	24.16
	242.00	559	7.25	4.068E+00	1.058E+01	1.058E+01	13.35
	295.22	1009	18.42	3.516E+00	8.695E+00	8.695E+00	8.10
	351.93	1671	35.60*	3.086E+00	8.488E+00	8.488E+00	6.20
PA-231	283.69	------	1.70	3.622E+00	------	Line Not Found	------
	301.36	38	5.35*	3.473E+00	1.133E+00	1.133E+00	144.45
TH-234	63.29	67	3.70*	2.106E+00	4.813E+00	4.813E+00	157.63
	92.59	271	4.23	4.938E+00	7.241E+00	7.241E+00	28.85
U-234	74.82	381	5.80	3.510E+00	1.044E+01	1.044E+01	23.70
	77.11	608	9.70	3.736E+00	9.366E+00	9.366E+00	14.72
	87.09	258	3.41	4.606E+00	9.180E+00	9.180E+00	24.16
	242.00	559	7.25	4.068E+00	1.058E+01	1.058E+01	13.35
	295.22	1009	18.42	3.516E+00	8.695E+00	8.695E+00	8.10
	351.93	1671	35.60*	3.086E+00	8.488E+00	8.488E+00	6.20
U-235	89.96	131	3.47	4.767E+00	4.406E+00	4.406E+00	62.51
	93.35	271	5.60	4.938E+00	5.469E+00	5.469E+00	28.85
	143.76	------	10.96*	5.499E+00	------	Line Not Found	------
	163.33	------	5.08	5.223E+00	------	Line Not Found	------
	185.72	472	57.20	4.857E+00	9.479E-01	9.479E-01	19.83
	205.31	------	5.01	4.563E+00	------	Line Not Found	------
U-238	63.29	67	3.70*	2.106E+00	4.813E+00	4.813E+00	157.63
	92.59	271	4.23	4.938E+00	7.241E+00	7.241E+00	28.85
AM-243	43.53	------	5.90	2.524E-01	------	Line Not Found	------
	74.66	381	67.20*	3.510E+00	9.015E-01	9.015E-01	23.70
CF-249	252.80	------	2.50	3.942E+00	------	Line Not Found	------
	333.37	------	14.60	3.214E+00	------	Line Not Found	------
	388.16	17	66.00*	2.874E+00	4.876E-02	4.877E-02	219.63
ANH-511	511.00	41	100.00*	2.330E+00	9.873E-02	9.873E-02	122.12

Flag: "*" = Keyline

Sample ID : G674299027 Acquisition date : 31-JUL-2024 16:10:20

Total number of lines in spectrum	53	
Number of unidentified lines	15	
Number of lines tentatively identified by NID	38	71.70%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	6.577E+00	6.577E+00	1.458E+00	22.17	
RB-84	32.82D	2.10	1.737E-01	3.654E-01	2.043E-01	55.90	
CD-109	461.40D	1.05	8.461E+00	8.921E+00	2.156E+00	24.16	
I-126	12.93D	6.60	2.662E-01	1.758E+00	1.599E+00	90.96	
SN-126	2.30E+05Y	1.00	8.461E-01	8.461E-01	2.045E-01	24.16	
BA-137M	30.08Y	1.00	1.120E-01	1.123E-01	0.889E-01	79.22	
CS-137	30.08Y	1.00	1.183E-01	1.186E-01	0.940E-01	79.22	
TL-208	1.41E+10Y	1.00	3.651E-01	3.651E-01	1.536E-01	42.08	
BI-210	22.20Y	1.00	2.354E+01	2.361E+01	2.238E+01	94.81	
PB-210	22.20Y	1.00	2.354E+01	2.361E+01	2.238E+01	94.81	
BI-211	7.04E+08Y	1.00	2.339E+01	2.339E+01	0.145E+01	6.20	
BI-212	1.41E+10Y	1.00	1.449E+00	1.449E+00	1.239E+00	85.53	
PB-212	1.41E+10Y	1.00	1.274E+00	1.274E+00	0.201E+00	15.79	
BI-213	7340.00Y	1.00	2.090E-01	2.090E-01	3.082E-01	147.46	
BI-214	1600.00Y	1.00	6.584E+00	6.584E+00	0.483E+00	7.34	
PB-214	1600.00Y	1.00	8.488E+00	8.488E+00	0.526E+00	6.20	
RN-222	1600.00Y	1.00	6.584E+00	6.584E+00	0.483E+00	7.34	
RA-224	1.41E+10Y	1.00	1.870E+01	1.870E+01	0.250E+01	13.35	
RA-226	1600.00Y	1.00	8.488E+00	8.488E+00	0.526E+00	6.20	
TH-228	1.41E+10Y	1.00	1.274E+00	1.274E+00	0.201E+00	15.79	
TH-230	7.54E+04Y	1.00	8.488E+00	8.488E+00	0.526E+00	6.20	
PA-231	7.04E+08Y	1.00	1.133E+00	1.133E+00	1.636E+00	144.45	
TH-234	4.47E+09Y	1.00	4.813E+00	4.813E+00	7.587E+00	157.63	
U-234	2.45E+05Y	1.00	8.488E+00	8.488E+00	0.526E+00	6.20	
U-235	7.04E+08Y	1.00	9.479E-01	9.479E-01	1.880E-01	19.83	K
U-238	4.47E+09Y	1.00	4.813E+00	4.813E+00	7.587E+00	157.63	
AM-243	7370.00Y	1.00	9.015E-01	9.015E-01	2.137E-01	23.70	
CF-249	351.00Y	1.00	4.876E-02	4.877E-02	10.71E-02	219.63	
ANH-511	1.00E+09Y	1.00	9.873E-02	9.873E-02	12.06E-02	122.12	
			---	---			
	Total Activity :		1.702E+02	1.724E+02			

Grand Total Activity : 1.702E+02 1.724E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299027 Acquisition date : 31-JUL-2024 16:10:20

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	83.89	69	450	1.25	168.00	166	7	1.64E-02	****	4.34E+00	T
0	209.72	62	209	1.19	419.74	416	8	1.55E-02	89.7	4.50E+00	T
0	259.34	48	173	1.36	519.01	515	8	1.22E-02	****	3.87E+00	
0	270.27	95	292	2.82	540.88	536	13	2.43E-02	80.1	3.75E+00	T
0	338.56	68	130	1.05	677.49	673	7	1.76E-02	63.8	3.18E+00	T
0	475.06	20	46	0.74	950.54	946	9	5.44E-03	****	2.47E+00	T
0	703.67	25	26	2.40	1407.83	1403	9	6.91E-03	85.0	1.80E+00	T
0	768.42	99	50	1.80	1537.34	1531	11	2.73E-02	34.3	1.67E+00	
4	782.15	11	6	1.52	1564.80	1563	15	2.93E-03	78.3	1.65E+00	
4	786.09	50	23	2.29	1572.68	1563	15	1.38E-02	46.0	1.64E+00	
0	911.50	77	34	1.27	1823.51	1817	13	2.15E-02	39.6	1.44E+00	T
0	934.09	60	28	1.68	1868.70	1862	14	1.68E-02	45.3	1.41E+00	T
0	1001.26	23	13	2.22	2003.04	1998	9	6.49E-03	73.0	1.32E+00	T
0	1156.78	44	20	8.28	2314.05	2304	22	1.27E-02	59.9	1.16E+00	
0	1238.30	81	34	1.73	2477.07	2473	14	2.33E-02	37.0	1.09E+00	T
0	1266.97	9	17	0.73	2534.40	2525	13	2.71E-03	****	1.07E+00	
0	1280.02	27	23	4.29	2560.50	2551	16	7.89E-03	85.7	1.06E+00	
0	1377.64	64	17	3.41	2755.70	2746	18	1.86E-02	38.5	1.00E+00	
0	1401.48	20	15	5.70	2803.38	2794	16	5.83E-03	95.7	9.86E-01	
0	1408.20	24	21	1.69	2816.81	2811	13	7.07E-03	87.4	9.82E-01	T
0	1436.21	17	9	4.21	2872.83	2861	18	5.00E-03	91.3	9.67E-01	T
0	1478.02	13	11	1.29	2956.43	2950	13	3.67E-03	****	9.45E-01	
0	1491.83	19	21	5.94	2984.05	2972	22	5.56E-03	****	9.39E-01	
0	1509.06	36	16	1.37	3018.50	3010	17	1.06E-02	59.4	9.31E-01	
0	1583.03	12	15	6.32	3166.39	3156	16	3.60E-03	****	8.99E-01	T
0	1663.09	3	9	0.50	3326.46	3321	8	1.03E-03	****	8.70E-01	
0	1729.32	49	4	2.81	3458.89	3452	16	1.43E-02	32.9	8.50E-01	
0	1848.50	28	15	0.92	3697.17	3687	16	8.33E-03	69.9	8.22E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:12:01.27

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299027.CNF;1  *
* Acquisition date : 31-JUL-2024 16:10:20 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.04     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:35:00 Nuclide Library : SOLID           *
* Sample ID        : G674299027           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.3449E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	4.442E-01
RB-84	1.137E-01
CD-109	1.173E+00
I-126	7.737E-01
SN-126	1.120E-01
BA-137M	4.657E-02
CS-137	4.920E-02
TL-208	4.980E-02
BI-210	9.985E+00
PB-210	9.985E+00
BI-211	3.064E-01
BI-212	7.261E-01
PB-212	9.200E-02
BI-213	1.319E-01
BI-214	9.966E-02
PB-214	1.114E-01
RN-222	9.966E-02
RA-224	9.862E-01
RA-226	1.114E-01
TH-228	9.200E-02
TH-230	1.114E-01
PA-231	7.583E-01
TH-234	2.458E+00
U-234	1.114E-01
U-235	3.661E-01
U-238	2.458E+00
AM-243	9.513E-02
CF-249	5.345E-02
ANH-511	4.124E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.525E-01	NOT IDENT.
NA-22	4.813E-02	NOT IDENT.

NA-24	0.000E+00	SHORT HLIF
AL-26	3.489E-02	NOT IDENT.
SC-46	5.801E-02	FAIL ABUN
V-48	2.168E-01	NOT IDENT.
CR-51	9.134E-01	NOT IDENT.
MN-52	4.089E+00	FAIL ABUN
MN-54	5.462E-02	NOT IDENT.
CO-56	6.178E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	4.030E-02	NOT IDENT.
CO-58	6.244E-02	NOT IDENT.
FE-59	1.251E-01	NOT IDENT.
CO-60	5.043E-02	NOT IDENT.
ZN-65	1.129E-01	NOT IDENT.
GE-68	1.823E+00	NOT IDENT.
AS-73	2.225E+00	NOT IDENT.
AS-74	3.025E-01	NOT IDENT.
SE-75	7.273E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	7.345E-01	NOT IDENT.
RB-83	1.111E-01	NOT IDENT.
KR-85	1.005E+01	NOT IDENT.
SR-85	6.578E-02	NOT IDENT.
RB-86	2.288E+00	NOT IDENT.
Y-88	3.779E-02	NOT IDENT.
Y-91	3.429E+01	NOT IDENT.
NB-94	4.994E-02	FAIL ABUN
NB-95	8.227E-02	NOT IDENT.
NB-95M	2.421E-01	NOT IDENT.
ZR-95	1.134E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.951E-02	NOT IDENT.
RH-102	7.477E-02	FAIL ABUN
RU-103	7.983E-02	FAIL ABUN
RH-106	4.004E-01	NOT IDENT.
RU-106	4.004E-01	NOT IDENT.
AG-108M	4.358E-02	NOT IDENT.
AG-110	1.126E+00	NOT IDENT.
AG-110M	6.791E-02	NOT IDENT.
SN-113	6.525E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.490E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	5.197E-02	NOT IDENT.
SB-124	1.343E-01	NOT IDENT.
SB-125	1.361E-01	NOT IDENT.
TE-125M	1.993E+01	NOT IDENT.
SB-126	5.901E-01	FAIL ABUN
SB-127	6.515E+01	NOT IDENT.
I-131	9.244E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.989E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	6.183E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.647E-01	NOT IDENT.
LA-138	8.830E-02	FAIL ABUN
CE-139	5.508E-02	NOT IDENT.
BA-140	9.996E-01	NOT IDENT.
LA-140	2.547E-01	NOT IDENT.
CE-141	1.602E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.234E-01	NOT IDENT.
PM-144	4.758E-02	NOT IDENT.
PR-144	3.600E+00	NOT IDENT.
PM-146	6.422E-02	NOT IDENT.
ND-147	2.839E+00	FAIL ABUN
PM-147	1.122E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	4.086E-02	FAIL ABUN
EU-152	1.548E-01	FAIL ABUN
GD-153	1.350E-01	NOT IDENT.
EU-154	1.350E-01	NOT IDENT.
EU-155	1.494E-01	FAIL ABUN

TB-160	1.775E-01	FAIL ABUN
HO-166M	7.815E-02	NOT IDENT.
TM-171	4.208E+01	NOT IDENT.
HF-172	2.899E-01	FAIL ABUN
LU-172	9.456E-02	FAIL ABUN
LU-176	4.126E-02	FAIL ABUN
HF-181	8.432E-02	NOT IDENT.
TA-182	2.601E-01	FAIL ABUN
RE-183	5.141E-01	NOT IDENT.
RE-184	2.347E-01	NOT IDENT.
W-188	1.421E+01	FAIL ABUN
IR-192	6.245E-02	FAIL ABUN
HG-203	8.056E-02	NOT IDENT.
TL-204	8.835E+00	FAIL ABUN
BI-207	5.784E-02	FAIL ABUN
PB-211	1.112E+00	NOT IDENT.
RN-219	6.455E-01	FAIL ABUN
RA-223	1.012E+00	FAIL ABUN
AC-225	3.515E+00	NOT IDENT.
AC-227	4.006E-01	FAIL ABUN
TH-227	4.006E-01	FAIL ABUN
AC-228	3.598E-01	FAIL ABUN
RA-228	3.598E-01	FAIL ABUN
TH-229	8.604E-01	FAIL ABUN
TH-231	1.012E+00	FAIL ABUN
TH-232	3.598E-01	FAIL ABUN
PA-233	9.791E-02	FAIL ABUN
PA-234	3.777E-01	FAIL ABUN
PA-234M	7.190E+00	FAIL ABUN
NP-237	9.791E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	4.011E-01	NOT IDENT.
PU-239	5.455E+02	NOT IDENT.
AM-241	2.979E-01	NOT IDENT.
CM-243	1.512E-01	NOT IDENT.
BK-247	1.153E-01	FAIL ABUN
CM-247	5.996E-02	NOT IDENT.
CF-251	2.040E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:12:05.58

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299027.CNF;1  *
* Acquisition date : 31-JUL-2024 16:10:20 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.04     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:35:00 Nuclide Library : SOLID           *
* Sample ID        : G674299027           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.3449E+02 GRAM *
*                                         Quantity Err(%) : 1.4871E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	6.577E+00	1.559E+00	1.559E+00
RB-84	3.654E-01	2.030E-01	2.030E-01
CD-109	8.921E+00	2.389E+00	2.389E+00
I-126	1.758E+00	1.576E+00	1.576E+00
SN-126	8.461E-01	2.222E-01	2.222E-01
BA-137M	1.123E-01	8.766E-02	8.766E-02
CS-137	1.186E-01	9.261E-02	9.261E-02
TL-208	3.651E-01	1.539E-01	1.539E-01
BI-210	2.361E+01	2.210E+01	2.210E+01
PB-210	2.361E+01	2.210E+01	2.210E+01
BI-211	2.339E+01	2.696E+00	2.696E+00
BI-212	1.449E+00	1.221E+00	1.221E+00
PB-212	1.274E+00	2.370E-01	2.370E-01
BI-213	2.090E-01	3.026E-01	3.026E-01
BI-214	6.584E+00	7.411E-01	7.411E-01
PB-214	8.488E+00	9.686E-01	9.686E-01
RN-222	6.584E+00	7.411E-01	7.411E-01
RA-224	1.870E+01	3.127E+00	3.127E+00
RA-226	8.488E+00	9.686E-01	9.686E-01
TH-228	1.274E+00	2.370E-01	2.370E-01
TH-230	8.488E+00	9.685E-01	9.685E-01
PA-231	1.133E+00	1.625E+00	1.625E+00
TH-234	4.813E+00	7.527E+00	7.527E+00
U-234	8.488E+00	9.685E-01	9.685E-01
U-235	5.568E-01	4.159E-01	4.159E-01
U-238	4.813E+00	7.527E+00	7.527E+00
AM-243	9.015E-01	2.315E-01	2.315E-01
CF-249	4.877E-02	1.051E-01	1.051E-01
ANH-511	9.873E-02	1.185E-01	1.185E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-5.889E-01	8.240E-01	8.657E-01	NOT IDENT.

NA-22	1.242E-02	6.373E-02	6.397E-02	NOT IDENT.
NA-24	-4.658E+15	5.626E+15	6.005E+15	SHORT HLIF
AL-26	-6.796E-03	4.368E-02	4.379E-02	NOT IDENT.
SC-46	-2.020E-02	7.092E-02	7.150E-02	FAIL ABUN
V-48	-2.482E-03	2.573E-01	2.573E-01	NOT IDENT.
CR-51	-1.950E-01	1.068E+00	1.071E+00	NOT IDENT.
MN-52	9.120E-01	4.607E+00	4.626E+00	FAIL ABUN
MN-54	-2.246E-02	6.626E-02	6.703E-02	NOT IDENT.
CO-56	-5.046E-02	7.856E-02	8.178E-02	FAIL ABUN
MN-56	-1.000E+41	1.550E+41	0.000E+00	SHORT HLIF
CO-57	-9.617E-03	4.868E-02	4.887E-02	NOT IDENT.
CO-58	-5.650E-03	7.338E-02	7.342E-02	NOT IDENT.
FE-59	-2.418E-01	1.921E-01	2.209E-01	NOT IDENT.
CO-60	1.060E-02	5.961E-02	5.980E-02	NOT IDENT.
ZN-65	5.127E-03	1.540E-01	1.540E-01	NOT IDENT.
GE-68	1.062E+00	2.027E+00	2.083E+00	NOT IDENT.
AS-73	-2.047E+00	2.685E+00	2.839E+00	NOT IDENT.
AS-74	1.264E-01	3.315E-01	3.364E-01	NOT IDENT.
SE-75	-6.085E-02	8.764E-02	9.184E-02	NOT IDENT.
BR-77	6.936E+04	7.164E+04	7.817E+04	SHORT HLIF
SR-82	-1.648E-01	8.719E-01	8.750E-01	NOT IDENT.
RB-83	7.858E-03	1.327E-01	1.327E-01	NOT IDENT.
KR-85	2.126E+00	1.329E+01	1.332E+01	NOT IDENT.
SR-85	1.379E-02	8.696E-02	8.719E-02	NOT IDENT.
RB-86	1.089E+00	2.579E+00	2.626E+00	NOT IDENT.
Y-88	5.101E-03	4.325E-02	4.331E-02	NOT IDENT.
Y-91	-1.876E+00	4.176E+01	4.177E+01	NOT IDENT.
NB-94	7.801E-02	6.530E-02	7.417E-02	FAIL ABUN
NB-95	1.759E-01	8.358E-02	1.152E-01	NOT IDENT.
NB-95M	2.404E-01	2.880E-01	3.077E-01	NOT IDENT.
ZR-95	-6.382E-02	1.388E-01	1.417E-01	NOT IDENT.
NB-97	-1.000E+41	3.630E+41	0.000E+00	SHORT HLIF
ZR-97	5.676E+14	1.125E+15	1.154E+15	SHORT HLIF
MO-99	-1.216E+03	3.008E+03	3.057E+03	SHORT HLIF
TC-99M	-2.238E+40	8.412E+40	0.000E+00	SHORT HLIF
RH-101	-2.350E-02	6.077E-02	6.169E-02	NOT IDENT.
RH-102	5.662E-02	7.927E-02	8.328E-02	FAIL ABUN
RU-103	2.757E-02	9.261E-02	9.344E-02	FAIL ABUN
RH-106	-6.086E-02	4.619E-01	4.628E-01	NOT IDENT.
RU-106	-6.086E-02	4.619E-01	4.628E-01	NOT IDENT.
AG-108M	1.190E-02	5.633E-02	5.659E-02	NOT IDENT.
AG-110	1.671E-01	1.435E+00	1.437E+00	NOT IDENT.
AG-110M	1.940E-02	8.702E-02	8.746E-02	NOT IDENT.
SN-113	-2.672E-02	8.915E-02	8.996E-02	NOT IDENT.
CD-115	3.345E+01	1.008E+04	1.008E+04	SHORT HLIF
SN-117M	1.523E-01	2.667E-01	2.754E-01	NOT IDENT.
SB-122	2.142E+02	5.412E+02	5.497E+02	SHORT HLIF
TE-123M	3.463E-02	5.556E-02	5.771E-02	NOT IDENT.
SB-124	2.411E-02	1.532E-01	1.536E-01	NOT IDENT.
SB-125	-2.194E-02	1.628E-01	1.631E-01	NOT IDENT.
TE-125M	1.531E+01	2.279E+01	2.381E+01	NOT IDENT.
SB-126	3.458E-01	7.164E-01	7.332E-01	FAIL ABUN
SB-127	5.698E+00	7.406E+01	7.411E+01	NOT IDENT.
I-131	2.238E-01	1.058E+00	1.063E+00	NOT IDENT.
I-132	1.000E+41	5.122E+41	0.000E+00	SHORT HLIF
TE-132	-6.416E+00	9.630E+01	9.634E+01	SHORT HLIF
BA-133	-5.843E-02	8.437E-02	8.839E-02	NOT IDENT.
I-133	-2.266E+10	1.004E+11	1.010E+11	SHORT HLIF
CS-134	3.892E-02	6.768E-02	6.992E-02	NOT IDENT.
I-135	4.380E+36	1.022E+38	0.000E+00	SHORT HLIF
CS-136	-3.681E-01	4.926E-01	5.198E-01	NOT IDENT.
LA-138	1.518E-01	1.365E-01	1.527E-01	FAIL ABUN
CE-139	-1.301E-02	6.121E-02	6.149E-02	NOT IDENT.
BA-140	-4.982E-01	1.267E+00	1.286E+00	NOT IDENT.
LA-140	-5.356E-01	4.234E-01	4.874E-01	NOT IDENT.
CE-141	-1.439E-01	2.016E-01	2.118E-01	NOT IDENT.
CE-143	2.360E+07	7.750E+06	1.316E+07	SHORT HLIF
CE-144	1.368E-01	3.803E-01	3.853E-01	NOT IDENT.
PM-144	4.136E-02	5.015E-02	5.351E-02	NOT IDENT.
PR-144	3.138E+00	3.794E+00	4.049E+00	NOT IDENT.
PM-146	1.440E-02	7.491E-02	7.519E-02	NOT IDENT.
ND-147	-1.799E+00	3.615E+00	3.705E+00	FAIL ABUN
PM-147	-2.384E+02	1.353E+03	1.357E+03	NOT IDENT.
PM-149	8.833E+03	8.860E+04	8.869E+04	SHORT HLIF
EU-150	-2.459E-02	5.530E-02	5.640E-02	FAIL ABUN
EU-152	-1.353E-02	1.806E-01	1.807E-01	FAIL ABUN
GD-153	-8.048E-02	1.782E-01	1.819E-01	NOT IDENT.
EU-154	3.482E-02	1.787E-01	1.794E-01	NOT IDENT.

EU-155	-1.432E-02	1.774E-01	1.775E-01	FAIL ABUN
TB-160	-8.661E-02	2.557E-01	2.587E-01	FAIL ABUN
HO-166M	-2.051E-03	9.012E-02	9.012E-02	NOT IDENT.
TM-171	-1.533E+01	4.864E+01	4.913E+01	NOT IDENT.
HF-172	-7.960E-02	3.518E-01	3.536E-01	FAIL ABUN
LU-172	5.060E-02	1.065E-01	1.089E-01	FAIL ABUN
LU-176	5.771E-03	4.703E-02	4.710E-02	FAIL ABUN
HF-181	-1.908E-02	1.031E-01	1.034E-01	NOT IDENT.
TA-182	1.822E-01	2.862E-01	2.978E-01	FAIL ABUN
RE-183	1.152E-01	5.802E-01	5.825E-01	NOT IDENT.
RE-184	7.693E-02	2.652E-01	2.674E-01	NOT IDENT.
W-188	2.292E+00	1.796E+01	1.799E+01	FAIL ABUN
IR-192	2.871E-03	7.175E-02	7.176E-02	FAIL ABUN
HG-203	-2.034E-02	9.323E-02	9.368E-02	NOT IDENT.
TL-204	3.456E-01	1.102E+01	1.102E+01	FAIL ABUN
BI-207	-3.560E-02	7.509E-02	7.678E-02	FAIL ABUN
PB-211	-2.569E-01	1.329E+00	1.334E+00	NOT IDENT.
RN-219	-5.335E-02	7.627E-01	7.631E-01	FAIL ABUN
RA-223	4.292E-01	1.139E+00	1.156E+00	FAIL ABUN
AC-225	-1.101E+00	4.003E+00	4.033E+00	NOT IDENT.
AC-227	-8.420E-02	5.130E-01	5.144E-01	FAIL ABUN
TH-227	-8.420E-02	5.130E-01	5.144E-01	FAIL ABUN
AC-228	1.151E+00	4.602E-01	6.934E-01	FAIL ABUN
RA-228	1.151E+00	4.602E-01	6.934E-01	FAIL ABUN
TH-229	3.752E-01	9.389E-01	9.541E-01	FAIL ABUN
TH-231	4.292E-01	1.139E+00	1.156E+00	FAIL ABUN
TH-232	1.151E+00	4.602E-01	6.934E-01	FAIL ABUN
PA-233	-8.259E-03	1.133E-01	1.133E-01	FAIL ABUN
PA-234	-1.992E-01	5.262E-01	5.338E-01	FAIL ABUN
PA-234M	1.154E+01	8.320E+00	9.812E+00	FAIL ABUN
NP-237	-8.259E-03	1.133E-01	1.133E-01	FAIL ABUN
NP-238	8.558E+02	2.084E+04	2.084E+04	SHORT HLIF
NP-239	1.082E-01	4.708E-01	4.733E-01	NOT IDENT.
PU-239	3.964E+02	6.316E+02	6.564E+02	NOT IDENT.
AM-241	-2.045E-01	3.829E-01	3.938E-01	NOT IDENT.
CM-243	4.127E-02	1.760E-01	1.769E-01	NOT IDENT.
BK-247	-1.283E-01	1.507E-01	1.615E-01	FAIL ABUN
CM-247	6.328E-03	6.997E-02	7.003E-02	NOT IDENT.
CF-251	-3.349E-02	2.271E-01	2.276E-01	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	163.1952	85.43	198.6056	131.20	203.5950
45.60	172.4233	86.55	199.0406	133.02	160.1300
46.54	166.7257	86.79	217.2363	133.52	170.0319
49.72	0.0000	86.94	217.3008	136.00	195.1957
51.35	154.4040	87.09	217.3638	136.47	180.5851
51.87	166.1159	87.57	194.9028	140.51	0.0000
52.39	166.3506	88.03	195.0760	143.76	197.3331
52.97	168.7072	88.34	195.1928	144.24	204.9156
53.44	179.4116	88.47	195.2414	145.44	242.5717
54.07	170.2544	89.96	195.7978	152.43	220.1673
57.36	0.0000	1093.63	196.0497	153.25	189.3978
57.53	179.2169	91.11	196.2242	323.87	182.9240
57.98	176.2363	92.59	196.7688	156.02	216.1588
59.27	193.1419	93.35	197.0470	158.56	174.6794
59.32	193.1657	94.56	197.4866	159.00	170.5546
59.54	193.2719	94.65	197.5194	162.33	185.6946
60.96	173.9863	94.67	197.5273	162.66	182.3795
61.17	174.0762	94.87	197.5995	163.33	188.4778
62.93	199.8983	97.43	193.9026	165.86	207.8135
63.29	200.0708	98.43	172.6678	176.31	163.0333
63.58	200.2098	98.44	172.6712	176.60	169.1313
64.28	200.5437	99.53	157.5592	177.52	175.3617
66.73	218.3251	100.11	191.3528	181.07	0.0000
67.24	227.2686	102.03	146.6171	181.52	184.8713
125.81	244.8870	103.18	134.0848	184.41	176.3491
67.75	241.3017	103.37	145.7930	143.76	167.4570
68.89	233.2119	105.21	174.3354	193.51	163.6620
69.67	256.5508	105.31	155.6412	197.03	169.6035
70.82	229.1164	106.12	139.4504	198.01	166.2480
70.83	229.1228	106.47	173.5369	201.83	161.6161
72.81	252.1123	109.28	175.5359	203.43	174.3492
72.87	252.1456	111.00	185.4888	205.31	163.1128
74.66	261.5875	111.76	0.0000	210.85	134.4864
74.82	261.6779	114.06	191.1666	215.65	131.5565
74.97	261.7610	116.30	0.0000	218.12	137.3109
77.11	262.9544	116.74	163.3700	222.11	133.3354
78.74	253.8316	119.76	147.3763	227.09	143.1181
79.69	272.1786	121.12	172.9039	227.38	140.4241
80.03	272.3666	121.22	172.9303	228.16	0.0000
80.12	251.5780	121.78	186.3023	228.18	135.0599
80.19	251.6141	122.06	177.9654	116.74	135.0599
80.57	227.9701	122.92	162.5486	235.69	129.6229
81.00	270.6732	123.07	163.7900	235.96	129.6573
81.07	255.0510	265.00	144.6561	238.63	150.2739
81.75	264.3639	125.81	180.1967	238.98	0.0000
82.47	239.3229	127.23	202.3960	240.99	150.6122
83.79	259.4507	127.91	189.2585	242.00	150.7581
84.00	259.5581	129.30	177.4919	244.70	104.3163

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	121.4121	344.28	94.6445	563.25	33.3047
252.80	117.7187	345.93	102.8239	564.24	0.0000
254.15	0.0000	351.06	83.9828	569.33	33.4050
256.23	127.9299	351.93	84.0351	946.00	33.4085
260.90	0.0000	355.39	0.0000	569.70	33.4121
264.66	117.1002	356.01	91.3898	583.19	45.2318
264.80	121.2710	364.49	61.2927	584.27	45.2556
265.00	121.2919	366.42	0.0000	595.83	42.8840
269.46	111.9070	372.51	78.0704	427.87	45.6143
270.03	111.9646	375.05	72.0337	602.52	0.0000
271.23	112.0822	377.52	83.4933	604.72	47.8125
273.65	112.7934	356.01	69.8772	607.14	43.6437
276.40	124.5129	388.16	57.6217	609.32	48.4456
277.37	107.9054	388.63	60.7554	610.33	48.4691
277.60	100.2853	391.69	60.8792	614.28	46.6157
278.00	108.9183	264.66	75.3721	618.01	37.1461
279.20	119.5526	401.81	81.7134	620.36	38.9579
279.54	117.6723	402.40	79.6491	621.93	33.6698
279.70	114.8193	404.85	81.8752	630.19	0.0000
280.46	119.6798	410.95	66.3902	631.29	26.6959
283.69	121.9280	413.71	64.3955	633.25	30.2823
284.31	103.7417	414.70	73.9435	634.78	35.6519
285.41	105.7613	423.72	61.6167	635.95	32.9949
285.90	0.0000	427.09	75.5848	636.99	36.5794
287.50	116.5418	427.87	66.0365	657.50	41.7810
290.67	110.0896	433.94	56.1273	657.76	41.7866
293.27	0.0000	439.40	41.8342	657.90	0.0000
351.93	109.5354	440.45	45.0804	661.66	36.0852
295.96	109.6021	453.88	58.4297	664.57	0.0000
879.38	109.8366	463.37	53.3166	666.33	30.3731
299.98	109.9607	468.07	48.0068	666.50	30.3762
300.09	109.9699	473.00	50.8792	667.71	0.0000
300.13	109.9745	475.06	42.7237	677.62	37.2463
301.36	110.0849	476.78	59.2130	685.70	33.7300
302.85	96.5609	477.60	62.5328	692.65	0.0000
256.23	95.2248	482.18	51.6960	695.00	32.0338
304.85	106.9737	487.02	35.2936	696.49	24.7275
306.78	93.9297	492.35	0.0000	696.51	24.7275
308.46	93.0769	497.08	43.2561	697.00	25.6484
311.90	92.3477	505.52	43.4568	697.30	25.1283
316.51	84.7945	507.63	0.0000	697.49	26.1771
319.41	92.8908	511.00	52.5269	702.65	27.9137
320.08	90.9612	514.00	53.7324	706.68	29.4326
321.04	91.0286	514.00	53.7324	711.68	33.1809
323.87	88.2522	520.40	41.5603	720.70	26.6440
325.23	101.2488	520.69	0.0000	721.93	0.0000
328.76	87.5864	522.65	0.0000	722.78	34.0744
333.37	92.2853	527.90	0.0000	722.91	31.1134
333.97	101.9191	528.26	46.2451	723.31	31.1186
334.37	83.9590	529.59	44.0210	724.19	25.2003
338.28	106.7578	529.87	0.0000	727.33	41.5598
338.32	106.7622	531.02	57.6095	733.00	35.3328
311.90	85.8462	537.26	44.1971	735.93	21.4116
340.48	85.8462	546.56	0.0000	333.97	25.1510
340.55	85.8514	552.55	33.1241	739.50	0.0000

ENERGY	MDA COUNTS
744.23	30.8237
747.24	33.6665
748.06	34.6130
752.31	36.5458
753.82	30.0049
756.73	36.6113
756.80	36.6113
884.68	19.5812
765.81	15.0737
766.42	27.1389
766.84	27.1441
772.60	0.0000
776.52	31.2205
739.50	0.0000
778.90	21.2112
783.70	32.2558
788.74	31.9378
792.07	38.0701
795.86	30.5000
810.06	38.3313
810.29	38.3337
344.28	34.5026
810.76	29.7143
815.77	31.6908
1048.07	28.8391
832.01	29.9499
834.85	41.5867
835.71	49.3393
836.80	0.0000
846.75	0.0000
846.77	37.8824
856.80	48.7442
860.56	29.2859
871.09	17.6375
873.19	30.3983
875.33	0.0000
879.38	23.5854
880.51	17.6962
881.60	17.7028
883.24	20.4687
884.68	22.0541
889.28	27.6121
894.76	30.6292
898.04	32.6415
900.72	27.7214
903.28	20.8097
911.20	23.8469
912.08	23.8542
923.98	0.0000
926.50	20.5469
929.11	22.3932
935.54	22.4410
937.49	25.6641
944.13	24.1135
946.00	29.1549

ENERGY	MDA COUNTS
949.00	25.1587
667.71	0.0000
962.31	33.3545
964.08	43.4882
966.17	59.7094
911.20	38.4917
983.53	23.4078
984.45	0.0000
1274.44	21.2551
1001.03	23.5391
1002.74	19.6605
1004.73	18.0334
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	20.7043
1038.76	0.0000
631.29	28.0267
1048.07	30.1169
1049.04	24.9316
1050.41	18.7064
1063.66	22.9547
1077.00	19.9045
1077.34	18.8580
1085.87	14.7050
1093.63	22.1074
1099.45	31.6370
1112.07	16.9355
1112.84	15.5278
1115.54	22.0378
1120.29	14.8536
1120.55	14.8545
1221.41	14.8579
1129.67	28.7238
1131.51	0.0000
1147.95	0.0000
1173.23	24.7716
1177.95	18.3333
1189.05	19.4711
1204.77	26.0728
1221.41	15.2783
1231.02	16.4117
1235.36	10.5152
1238.28	18.6353
1260.41	0.0000
1271.87	20.6445
1274.44	12.3949
1274.54	12.3949
1291.59	8.8926
1298.22	0.0000
1312.11	21.2312
1332.49	13.4780
1362.66	0.0000
1365.19	11.7755
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	4.5503
1408.01	16.7802
1434.09	12.8933
1435.80	12.8980
1457.56	0.0000
1460.82	12.0472
1489.16	8.3949
1505.03	17.1624
1584.12	26.9914
1596.21	18.1474
1620.50	7.6805
1621.92	5.7621
1678.03	0.0000
1690.97	6.8199
1750.46	0.0000
1764.49	4.9438
1063.66	4.9495
1771.35	1.6502
1791.20	0.0000
1808.65	5.9842
1810.72	0.0000
1836.06	3.0079

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:12:32.63

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299028.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM10.CNF;712
                                         Background date  : 29-JUL-2024 05:36:52
Sample date      : 26-JUN-2024 11:40:00  Acquisition date : 31-JUL-2024 16:10:48
Sample ID        : G674299028            Sample quantity  : 1.12910E+02 GRAM
Detector name    : GAM10                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.61  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.48*	9	164	0.53	126.53	123	8	2.44E-03	258.8	
2	0	65.95	13	127	0.59	131.45	130	6	3.59E-03	140.0	
3	2	74.98	126	159	1.39	149.51	144	17	3.50E-02	19.3	1.65E+00
4	2	77.55	233	146	1.40	154.67	144	17	6.48E-02	11.7	
5	2	87.68	59	224	1.31	174.93	170	20	1.64E-02	44.3	2.34E+00
6	2	90.37	59	181	1.12	180.31	170	20	1.63E-02	40.0	
7	2	93.21*	95	188	1.29	185.98	170	20	2.65E-02	28.4	
8	0	128.97	29	121	1.87	257.53	256	7	7.93E-03	66.0	
9	0	154.32	47	118	1.59	308.21	304	9	1.31E-02	44.2	
10	0	186.30*	88	153	1.63	372.18	366	13	2.44E-02	31.6	
11	0	209.20	56	82	1.07	418.00	414	8	1.56E-02	30.9	
12	3	238.86*	514	67	1.25	477.32	469	21	1.43E-01	5.2	1.10E+00
13	3	241.84	114	105	1.81	483.28	469	21	3.16E-02	24.0	
14	2	270.42	39	95	1.68	540.46	534	25	1.09E-02	47.3	2.34E+00
15	2	277.48	40	66	1.69	554.59	534	25	1.10E-02	38.6	
16	0	295.41	178	91	1.18	590.46	585	11	4.93E-02	12.9	
17	0	300.11	47	64	0.84	599.84	596	9	1.31E-02	33.6	
18	0	329.49	37	94	2.05	658.62	648	14	1.01E-02	58.8	
19	0	338.28*	64	84	1.01	676.20	673	8	1.77E-02	28.1	
20	0	351.95*	372	75	1.46	703.56	697	15	1.03E-01	7.3	
21	0	360.98	18	52	0.54	721.62	715	11	4.99E-03	81.3	
22	0	409.60	21	33	1.26	818.88	816	9	5.83E-03	53.3	
23	0	463.98	83	56	2.58	927.65	918	24	2.32E-02	25.8	
24	0	480.43	12	37	2.76	960.57	954	12	3.44E-03	101.3	
25	0	510.66*	50	40	2.05	1021.04	1014	16	1.40E-02	36.4	
26	0	557.74*	23	29	4.30	1115.23	1107	15	6.51E-03	55.9	
27	0	583.37*	170	44	1.80	1166.49	1161	15	4.73E-02	12.2	
28	0	591.88	10	29	1.37	1183.53	1176	14	2.84E-03	114.4	
29	0	597.96	6	22	0.90	1195.69	1190	8	1.80E-03	131.3	
30	0	609.23*	206	19	1.68	1218.22	1213	12	5.73E-02	8.4	
31	0	647.79	22	21	0.72	1295.37	1288	11	6.15E-03	45.9	
32	0	677.05	14	21	0.71	1353.91	1349	10	4.02E-03	68.3	
33	0	727.61	48	47	3.03	1455.06	1449	19	1.35E-02	35.6	
34	0	768.15	30	24	0.69	1536.17	1526	16	8.29E-03	41.1	

Sample ID : G674299028 Acquisition date : 31-JUL-2024 16:10:48

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	839.73	29	8	1.20	1679.38	1675	11	8.16E-03	26.3	
36	0	861.86*	20	29	2.67	1723.67	1713	19	5.68E-03	67.0	
37	0	910.50*	130	9	1.55	1820.98	1812	18	3.61E-02	10.5	
38	0	933.07	20	16	3.85	1866.13	1858	13	5.43E-03	48.2	
39	0	967.62	91	40	4.95	1935.25	1921	27	2.53E-02	22.1	
40	0	1119.86*	38	15	1.73	2239.87	2234	12	1.06E-02	26.5	
41	0	1127.07	7	4	1.31	2254.30	2251	6	2.03E-03	57.6	
42	3	1233.02	13	2	2.38	2466.29	2464	16	3.58E-03	25.8	1.22E+00
43	3	1237.49	30	5	2.25	2475.24	2464	16	8.29E-03	22.7	
44	0	1245.65	15	10	1.43	2491.56	2487	9	4.18E-03	47.2	
45	0	1254.65	21	0	4.62	2509.57	2503	14	5.83E-03	21.8	
46	0	1339.36	11	0	3.49	2679.09	2674	10	3.06E-03	30.2	
47	0	1361.94	14	2	1.19	2724.27	2718	11	3.78E-03	35.7	
48	0	1365.67	5	8	0.83	2731.73	2728	10	1.41E-03	111.0	
49	0	1377.77	12	9	0.96	2755.94	2747	12	3.41E-03	56.4	
50	0	1406.69	14	6	2.36	2813.82	2807	12	3.96E-03	43.3	
51	0	1459.63*	312	17	2.33	2919.76	2910	17	8.67E-02	6.4	
52	0	1637.75	6	3	1.43	3276.20	3269	10	1.76E-03	61.7	
53	0	1728.09	15	0	0.73	3457.00	3450	13	4.17E-03	25.8	
54	0	1763.07*	45	3	1.35	3527.01	3520	12	1.24E-02	17.5	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:12:34

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299028.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 11:40:00 Acquisition date : 31-JUL-2024 16:10:48
Sample ID        : G674299028           Sample quantity  : 112.91 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA10              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.61   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	294	10.66*	1.032E+00	1.778E+01	1.778E+01	12.90
CD-109	88.03	62	3.70*	4.506E+00	2.466E+00	2.600E+00	88.60
SN-126	64.28	9	9.60	1.658E+00	3.896E-01	3.896E-01	517.66
	86.94	62	8.90	4.506E+00	1.025E+00	1.025E+00	88.60
	87.57	62	37.00*	4.506E+00	2.466E-01	2.466E-01	88.60
TL-208	277.37	40	6.60	4.211E+00	9.539E-01	9.539E-01	77.18
	583.19	166	85.00*	2.441E+00	5.336E-01	5.336E-01	24.47
	860.56	20	12.50	1.714E+00	6.106E-01	6.106E-01	134.01
BI-211	72.87	------	1.23	2.854E+00	------	Line Not Found	------
	351.06	371	12.92*	3.566E+00	5.351E+00	5.351E+00	14.63
BI-212	727.33	47	6.67*	2.014E+00	2.325E+00	2.325E+00	71.24
	1620.50	------	1.47	9.584E-01	------	Line Not Found	------
PB-212	74.82	133	10.28	3.118E+00	2.764E+00	2.764E+00	38.54
	77.11	246	17.10	3.432E+00	2.788E+00	2.788E+00	23.48
	238.63	520	43.60*	4.665E+00	1.700E+00	1.700E+00	10.47
	300.09	47	3.30	3.988E+00	2.396E+00	2.396E+00	67.25
BI-214	609.32	201	45.49*	2.354E+00	1.249E+00	1.249E+00	16.72
	1120.29	36	14.92	1.318E+00	1.226E+00	1.226E+00	53.07
	1764.49	42	15.30	9.181E-01	1.979E+00	1.979E+00	34.94
PB-214	74.82	133	5.80	3.118E+00	4.899E+00	4.899E+00	38.54
	77.11	246	9.70	3.432E+00	4.916E+00	4.916E+00	23.48
	87.09	62	3.41	4.506E+00	2.675E+00	2.676E+00	88.60
	242.00	115	7.25	4.626E+00	2.283E+00	2.283E+00	47.95
	295.22	178	18.42	4.032E+00	1.596E+00	1.596E+00	25.83
	351.93	371	35.60*	3.566E+00	1.942E+00	1.942E+00	14.63
RN-222	609.32	201	45.49*	2.354E+00	1.249E+00	1.249E+00	16.72
	1120.29	36	14.92	1.318E+00	1.226E+00	1.226E+00	53.07
	1764.49	42	15.30	9.181E-01	1.979E+00	1.979E+00	34.94
RA-224	240.99	115	4.10*	4.626E+00	4.037E+00	4.037E+00	47.95
RA-226	74.82	133	5.80	3.118E+00	4.899E+00	4.899E+00	38.54
	77.11	246	9.70	3.432E+00	4.916E+00	4.916E+00	23.48
	87.09	62	3.41	4.506E+00	2.675E+00	2.676E+00	88.60
	242.00	115	7.25	4.626E+00	2.283E+00	2.283E+00	47.95
	295.22	178	18.42	4.032E+00	1.596E+00	1.596E+00	25.83
	351.93	371	35.60*	3.566E+00	1.942E+00	1.942E+00	14.63
AC-228	105.21	------	1.10	5.653E+00	------	Line Not Found	------
	338.32	64	11.27	3.667E+00	1.023E+00	1.023E+00	56.12
	835.71	------	1.61	1.766E+00	------	Line Not Found	------
	911.20	125	25.80*	1.623E+00	1.980E+00	1.980E+00	21.03
	968.97	87	15.80	1.527E+00	2.401E+00	2.401E+00	44.22
RA-228	105.21	------	1.10	5.653E+00	------	Line Not Found	------
	338.32	64	11.27	3.667E+00	1.023E+00	1.023E+00	56.12
	835.71	------	1.61	1.766E+00	------	Line Not Found	------
	911.20	125	25.80*	1.623E+00	1.980E+00	1.980E+00	21.03
	968.97	87	15.80	1.527E+00	2.401E+00	2.401E+00	44.22
TH-228	74.82	133	10.28	3.118E+00	2.764E+00	2.764E+00	38.54
	77.11	246	17.10	3.432E+00	2.788E+00	2.788E+00	23.48
	238.63	520	43.60*	4.665E+00	1.700E+00	1.700E+00	10.47
	300.09	47	3.30	3.988E+00	2.396E+00	2.396E+00	67.25

Sample ID : G674299028 Acquisition date : 31-JUL-2024 16:10:48

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-230	74.82	133	5.80	3.118E+00	4.899E+00	4.899E+00	38.54
	77.11	246	9.70	3.432E+00	4.915E+00	4.916E+00	23.48
	87.09	62	3.41	4.506E+00	2.675E+00	2.675E+00	88.60
	242.00	115	7.25	4.626E+00	2.283E+00	2.283E+00	47.95
	295.22	178	18.42	4.032E+00	1.596E+00	1.596E+00	25.83
	351.93	371	35.60*	3.566E+00	1.942E+00	1.942E+00	14.63
PA-231	283.69	------	1.70	4.147E+00	------	Line Not Found	------
	301.36	47	5.35*	3.988E+00	1.478E+00	1.478E+00	67.25
TH-232	105.21	------	1.10	5.653E+00	------	Line Not Found	------
	338.32	64	11.27	3.667E+00	1.023E+00	1.023E+00	56.12
	835.71	------	1.61	1.766E+00	------	Line Not Found	------
	911.20	125	25.80*	1.623E+00	1.980E+00	1.980E+00	21.03
	968.97	87	15.80	1.527E+00	2.401E+00	2.401E+00	44.22
TH-234	63.29	9	3.70*	1.658E+00	1.011E+00	1.011E+00	517.66
	92.59	100	4.23	4.964E+00	3.161E+00	3.161E+00	56.80
U-234	74.82	133	5.80	3.118E+00	4.899E+00	4.899E+00	38.54
	77.11	246	9.70	3.432E+00	4.916E+00	4.916E+00	23.48
	87.09	62	3.41	4.506E+00	2.675E+00	2.675E+00	88.60
	242.00	115	7.25	4.626E+00	2.283E+00	2.283E+00	47.95
	295.22	178	18.42	4.032E+00	1.596E+00	1.596E+00	25.83
	351.93	371	35.60*	3.566E+00	1.942E+00	1.942E+00	14.63
U-235	89.96	62	3.47	4.740E+00	2.492E+00	2.492E+00	79.93
	93.35	100	5.60	4.964E+00	2.388E+00	2.388E+00	56.80
	143.76	------	10.96*	6.053E+00	------	Line Not Found	------
	163.33	------	5.08	5.812E+00	------	Line Not Found	------
	185.72	90	57.20	5.449E+00	1.914E-01	1.914E-01	63.26
	205.31	------	5.01	5.146E+00	------	Line Not Found	------
U-238	63.29	9	3.70*	1.658E+00	1.011E+00	1.011E+00	517.66
	92.59	100	4.23	4.964E+00	3.161E+00	3.161E+00	56.80
AM-243	43.53	------	5.90	1.019E-01	------	Line Not Found	------
	74.66	133	67.20*	3.118E+00	4.229E-01	4.229E-01	38.54
ANH-511	511.00	49	100.00*	2.715E+00	1.211E-01	1.211E-01	72.72

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:12:35.05

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299028.CNF;1  *
* Acquisition date : 31-JUL-2024 16:10:48 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.61     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:40:00 Analyst initials: MXR1            *
* Sample ID        : G674299028           Sample Quantity : 1.1291E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.778E+01	2.248E+00	9.626E-01
CD-109	2.600E+00	2.257E+00	2.358E+00
SN-126	2.466E-01	2.141E-01	2.257E-01
TL-208	5.336E-01	1.280E-01	8.236E-02
BI-211	5.351E+00	7.673E-01	4.548E-01
BI-212	2.325E+00	1.623E+00	1.146E+00
PB-212	1.700E+00	1.744E-01	1.277E-01
BI-214	1.249E+00	2.046E-01	1.587E-01
PB-214	1.942E+00	2.785E-01	1.654E-01
RN-222	1.249E+00	2.046E-01	1.587E-01
RA-224	4.037E+00	1.897E+00	1.368E+00
RA-226	1.942E+00	2.785E-01	1.654E-01
AC-228	1.980E+00	4.081E-01	3.318E-01
RA-228	1.980E+00	4.081E-01	3.318E-01
TH-228	1.700E+00	1.744E-01	1.277E-01
TH-230	1.942E+00	2.785E-01	1.654E-01
PA-231	1.478E+00	9.739E-01	1.057E+00
TH-232	1.980E+00	4.081E-01	3.318E-01
TH-234	1.011E+00	5.128E+00	5.285E+00
U-234	1.942E+00	2.785E-01	1.654E-01
U-235	1.418E-01	2.648E-01	5.082E-01
U-238	1.011E+00	5.128E+00	5.285E+00
AM-243	4.229E-01	1.597E-01	1.627E-01
ANH-511	1.211E-01	8.631E-02	6.287E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-2.661E-02	5.958E-01	9.786E-01	NOT IDENT.
NA-22	-1.610E-02	5.700E-02	1.062E-01	NOT IDENT.
NA-24	0.000E+00	5.338E+15	0.000E+00	SHORT HLIF
AL-26	1.283E-02	4.192E-02	9.542E-02	NOT IDENT.
SC-46	-2.213E-02	5.722E-02	1.068E-01	FAIL ABUN
V-48	4.933E-02	2.010E-01	4.141E-01	NOT IDENT.

CR-51	5.919E-02	7.605E-01	1.428E+00	NOT IDENT.
MN-52	2.334E+00	3.780E+00	8.573E+00	NOT IDENT.
MN-54	5.524E-02	5.366E-02	1.106E-01	NOT IDENT.
CO-56	2.810E-03	5.962E-02	1.180E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	3.145E-02	3.749E-02	6.877E-02	NOT IDENT.
CO-58	2.187E-02	6.592E-02	1.265E-01	NOT IDENT.
FE-59	6.042E-02	1.516E-01	3.165E-01	NOT IDENT.
CO-60	1.196E-02	4.081E-02	9.007E-02	NOT IDENT.
ZN-65	-4.283E-03	1.449E-01	2.446E-01	NOT IDENT.
GE-68	-1.733E-02	1.686E+00	3.307E+00	NOT IDENT.
AS-73	-2.072E+00	3.689E+00	6.272E+00	NOT IDENT.
AS-74	1.359E-01	3.456E-01	4.988E-01	NOT IDENT.
SE-75	-3.895E-02	6.912E-02	1.083E-01	NOT IDENT.
BR-77	0.000E+00	9.483E+03	0.000E+00	SHORT HLIF
SR-82	-5.500E-01	7.373E-01	1.183E+00	NOT IDENT.
RB-83	-1.298E-01	1.093E-01	1.697E-01	NOT IDENT.
RB-84	-2.441E-02	1.146E-01	2.226E-01	NOT IDENT.
KR-85	6.080E-01	9.357E+00	1.562E+01	NOT IDENT.
SR-85	3.820E-03	6.123E-02	1.022E-01	NOT IDENT.
RB-86	1.126E-01	2.005E+00	4.008E+00	NOT IDENT.
Y-88	6.851E-03	5.012E-02	1.110E-01	NOT IDENT.
Y-91	2.537E+00	3.672E+01	7.118E+01	NOT IDENT.
NB-94	9.194E-03	3.661E-02	7.115E-02	NOT IDENT.
NB-95	3.248E-03	6.592E-02	1.212E-01	NOT IDENT.
NB-95M	7.676E-03	2.030E-01	3.413E-01	NOT IDENT.
ZR-95	-3.408E-02	1.041E-01	1.826E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	9.190E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.308E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	5.407E+40	0.000E+00	SHORT HLIF
RH-101	1.097E-02	4.753E-02	7.671E-02	NOT IDENT.
RH-102	-5.812E-02	7.589E-02	1.241E-01	FAIL ABUN
RU-103	1.778E-02	6.686E-02	1.292E-01	FAIL ABUN
RH-106	-1.740E-02	3.523E-01	6.578E-01	NOT IDENT.
RU-106	-1.740E-02	3.523E-01	6.578E-01	NOT IDENT.
AG-108M	3.493E-04	3.602E-02	6.758E-02	NOT IDENT.
AG-110	5.741E-01	8.945E-01	1.822E+00	NOT IDENT.
AG-110M	-3.099E-03	6.094E-02	1.205E-01	FAIL ABUN
SN-113	-4.167E-02	6.632E-02	1.146E-01	NOT IDENT.
CD-115	0.000E+00	8.046E+03	0.000E+00	SHORT HLIF
SN-117M	-8.847E-03	2.044E-01	3.466E-01	NOT IDENT.
SB-122	0.000E+00	4.246E+02	0.000E+00	SHORT HLIF
TE-123M	-3.974E-03	3.995E-02	7.166E-02	NOT IDENT.
SB-124	-7.557E-02	1.372E-01	2.397E-01	NOT IDENT.
SB-125	4.475E-02	1.050E-01	2.068E-01	FAIL ABUN
TE-125M	8.002E+00	1.833E+01	3.261E+01	NOT IDENT.
I-126	1.876E-01	8.080E-01	1.537E+00	NOT IDENT.
SB-126	-1.162E-01	5.813E-01	1.033E+00	NOT IDENT.
SB-127	-3.384E+01	6.506E+01	1.101E+02	NOT IDENT.
I-131	7.941E-01	7.187E-01	1.439E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.993E+01	0.000E+00	SHORT HLIF
BA-133	1.580E-02	5.880E-02	8.465E-02	FAIL ABUN
I-133	0.000E+00	7.049E+10	0.000E+00	SHORT HLIF
CS-134	-1.606E-02	6.389E-02	1.110E-01	FAIL ABUN
I-135	0.000E+00	8.125E+37	0.000E+00	SHORT HLIF
CS-136	-3.914E-01	4.347E-01	7.308E-01	FAIL ABUN
BA-137M	-6.142E-03	4.329E-02	7.834E-02	NOT IDENT.
CS-137	-6.489E-03	4.573E-02	8.276E-02	NOT IDENT.
LA-138	-1.090E-03	7.666E-02	1.533E-01	NOT IDENT.
CE-139	1.799E-02	4.147E-02	8.011E-02	NOT IDENT.
BA-140	-3.094E-01	9.402E-01	1.673E+00	NOT IDENT.
LA-140	-6.760E-02	2.147E-01	4.306E-01	FAIL ABUN
CE-141	5.858E-02	1.260E-01	2.409E-01	NOT IDENT.
CE-143	0.000E+00	4.857E+06	0.000E+00	SHORT HLIF
CE-144	-1.454E-01	3.227E-01	4.835E-01	NOT IDENT.
PM-144	-2.786E-02	3.662E-02	5.902E-02	NOT IDENT.
PR-144	-2.118E+00	2.768E+00	4.456E+00	NOT IDENT.
PM-146	7.043E-03	4.912E-02	9.354E-02	NOT IDENT.
ND-147	-2.775E-01	2.482E+00	4.539E+00	FAIL ABUN
PM-147	-6.489E+02	1.122E+03	1.835E+03	NOT IDENT.
PM-149	0.000E+00	5.551E+04	0.000E+00	SHORT HLIF
EU-150	2.122E-02	3.599E-02	6.763E-02	FAIL ABUN
EU-152	-9.006E-02	1.128E-01	1.928E-01	FAIL ABUN
GD-153	-4.623E-02	1.450E-01	2.454E-01	NOT IDENT.
EU-154	-4.514E-02	1.599E-01	2.979E-01	NOT IDENT.
EU-155	1.763E-01	1.670E-01	3.089E-01	FAIL ABUN

TB-160	-1.575E-02	1.590E-01	3.186E-01	FAIL ABUN
HO-166M	-9.724E-02	7.973E-02	1.171E-01	FAIL ABUN
TM-171	4.775E+01	7.015E+01	1.314E+02	FAIL ABUN
HF-172	3.691E-01	2.786E-01	4.987E-01	FAIL ABUN
LU-172	6.921E-02	9.286E-02	1.973E-01	FAIL ABUN
LU-176	-2.635E-03	3.201E-02	5.938E-02	FAIL ABUN
HF-181	9.469E-03	7.946E-02	1.354E-01	NOT IDENT.
TA-182	-3.902E-03	2.638E-01	5.114E-01	FAIL ABUN
RE-183	3.942E-01	6.670E-01	1.240E+00	FAIL ABUN
RE-184	2.426E-01	2.371E-01	4.997E-01	NOT IDENT.
W-188	-5.107E+00	1.199E+01	1.903E+01	FAIL ABUN
IR-192	-3.959E-02	5.085E-02	8.762E-02	FAIL ABUN
HG-203	2.375E-02	7.078E-02	1.230E-01	NOT IDENT.
TL-204	-2.381E+00	1.047E+01	1.652E+01	NOT IDENT.
BI-207	1.628E-02	6.660E-02	1.355E-01	FAIL ABUN
BI-210	-7.797E+00	2.156E+01	3.733E+01	NOT IDENT.
PB-210	-7.797E+00	2.156E+01	3.733E+01	NOT IDENT.
PB-211	-1.722E+00	8.693E-01	1.211E+00	NOT IDENT.
BI-213	2.394E-02	1.240E-01	2.366E-01	NOT IDENT.
RN-219	6.377E-01	4.957E-01	1.043E+00	FAIL ABUN
RA-223	-4.642E-01	9.131E-01	1.422E+00	FAIL ABUN
AC-225	-1.602E-01	3.007E+00	5.596E+00	NOT IDENT.
AC-227	1.994E-01	2.868E-01	5.720E-01	FAIL ABUN
TH-227	1.994E-01	2.868E-01	5.720E-01	FAIL ABUN
TH-229	1.254E-03	6.661E-01	1.247E+00	FAIL ABUN
TH-231	-4.642E-01	9.131E-01	1.422E+00	FAIL ABUN
PA-233	-1.109E-02	8.784E-02	1.584E-01	FAIL ABUN
PA-234	-2.766E-01	3.716E-01	6.491E-01	FAIL ABUN
PA-234M	3.634E+00	4.988E+00	1.115E+01	NOT IDENT.
NP-237	-1.109E-02	8.784E-02	1.584E-01	FAIL ABUN
NP-238	0.000E+00	1.758E+04	0.000E+00	SHORT HLIF
NP-239	1.919E-01	3.609E-01	6.506E-01	FAIL ABUN
PU-239	5.098E+02	6.596E+02	9.393E+02	FAIL ABUN
AM-241	-8.108E-05	4.403E-01	7.181E-01	NOT IDENT.
CM-243	4.827E-03	1.752E-01	3.017E-01	FAIL ABUN
BK-247	-6.790E-02	1.103E-01	1.717E-01	NOT IDENT.
CM-247	7.103E-02	4.563E-02	9.809E-02	FAIL ABUN
CF-249	2.649E-02	4.599E-02	9.156E-02	NOT IDENT.
CF-251	-5.698E-02	1.546E-01	2.838E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:12:33.46

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	294	10.66*	1.032E+00	1.778E+01	1.778E+01	12.90
CD-109	88.03	62	3.70*	4.506E+00	2.466E+00	2.600E+00	88.60
SN-126	64.28	9	9.60	1.658E+00	3.896E-01	3.896E-01	517.66
	86.94	62	8.90	4.506E+00	1.025E+00	1.025E+00	88.60
	87.57	62	37.00*	4.506E+00	2.466E-01	2.466E-01	88.60
TL-208	277.37	40	6.60	4.211E+00	9.539E-01	9.539E-01	77.18
	583.19	166	85.00*	2.441E+00	5.336E-01	5.336E-01	24.47
	860.56	20	12.50	1.714E+00	6.106E-01	6.106E-01	134.01
BI-211	72.87	------	1.23	2.854E+00	------	Line Not Found	------
	351.06	371	12.92*	3.566E+00	5.351E+00	5.351E+00	14.63
BI-212	727.33	47	6.67*	2.014E+00	2.325E+00	2.325E+00	71.24
	1620.50	------	1.47	9.584E-01	------	Line Not Found	------
PB-212	74.82	133	10.28	3.118E+00	2.764E+00	2.764E+00	38.54
	77.11	246	17.10	3.432E+00	2.788E+00	2.788E+00	23.48
	238.63	520	43.60*	4.665E+00	1.700E+00	1.700E+00	10.47
	300.09	47	3.30	3.988E+00	2.396E+00	2.396E+00	67.25
BI-214	609.32	201	45.49*	2.354E+00	1.249E+00	1.249E+00	16.72
	1120.29	36	14.92	1.318E+00	1.226E+00	1.226E+00	53.07
	1764.49	42	15.30	9.181E-01	1.979E+00	1.979E+00	34.94
PB-214	74.82	133	5.80	3.118E+00	4.899E+00	4.899E+00	38.54
	77.11	246	9.70	3.432E+00	4.916E+00	4.916E+00	23.48
	87.09	62	3.41	4.506E+00	2.675E+00	2.676E+00	88.60
	242.00	115	7.25	4.626E+00	2.283E+00	2.283E+00	47.95
	295.22	178	18.42	4.032E+00	1.596E+00	1.596E+00	25.83
	351.93	371	35.60*	3.566E+00	1.942E+00	1.942E+00	14.63
RN-222	609.32	201	45.49*	2.354E+00	1.249E+00	1.249E+00	16.72
	1120.29	36	14.92	1.318E+00	1.226E+00	1.226E+00	53.07
	1764.49	42	15.30	9.181E-01	1.979E+00	1.979E+00	34.94
RA-224	240.99	115	4.10*	4.626E+00	4.037E+00	4.037E+00	47.95
RA-226	74.82	133	5.80	3.118E+00	4.899E+00	4.899E+00	38.54
	77.11	246	9.70	3.432E+00	4.916E+00	4.916E+00	23.48
	87.09	62	3.41	4.506E+00	2.675E+00	2.676E+00	88.60
	242.00	115	7.25	4.626E+00	2.283E+00	2.283E+00	47.95
	295.22	178	18.42	4.032E+00	1.596E+00	1.596E+00	25.83
	351.93	371	35.60*	3.566E+00	1.942E+00	1.942E+00	14.63
AC-228	105.21	------	1.10	5.653E+00	------	Line Not Found	------
	338.32	64	11.27	3.667E+00	1.023E+00	1.023E+00	56.12
	835.71	------	1.61	1.766E+00	------	Line Not Found	------
	911.20	125	25.80*	1.623E+00	1.980E+00	1.980E+00	21.03
	968.97	87	15.80	1.527E+00	2.401E+00	2.401E+00	44.22
RA-228	105.21	------	1.10	5.653E+00	------	Line Not Found	------
	338.32	64	11.27	3.667E+00	1.023E+00	1.023E+00	56.12
	835.71	------	1.61	1.766E+00	------	Line Not Found	------
	911.20	125	25.80*	1.623E+00	1.980E+00	1.980E+00	21.03
	968.97	87	15.80	1.527E+00	2.401E+00	2.401E+00	44.22
TH-228	74.82	133	10.28	3.118E+00	2.764E+00	2.764E+00	38.54
	77.11	246	17.10	3.432E+00	2.788E+00	2.788E+00	23.48

Sample ID : G674299028 Acquisition date : 31-JUL-2024 16:10:48

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	520	43.60*	4.665E+00	1.700E+00	1.700E+00	10.47
	300.09	47	3.30	3.988E+00	2.396E+00	2.396E+00	67.25
TH-230	74.82	133	5.80	3.118E+00	4.899E+00	4.899E+00	38.54
	77.11	246	9.70	3.432E+00	4.915E+00	4.916E+00	23.48
	87.09	62	3.41	4.506E+00	2.675E+00	2.675E+00	88.60
	242.00	115	7.25	4.626E+00	2.283E+00	2.283E+00	47.95
	295.22	178	18.42	4.032E+00	1.596E+00	1.596E+00	25.83
	351.93	371	35.60*	3.566E+00	1.942E+00	1.942E+00	14.63
PA-231	283.69	------	1.70	4.147E+00	------	Line Not Found	------
	301.36	47	5.35*	3.988E+00	1.478E+00	1.478E+00	67.25
TH-232	105.21	------	1.10	5.653E+00	------	Line Not Found	------
	338.32	64	11.27	3.667E+00	1.023E+00	1.023E+00	56.12
	835.71	------	1.61	1.766E+00	------	Line Not Found	------
	911.20	125	25.80*	1.623E+00	1.980E+00	1.980E+00	21.03
	968.97	87	15.80	1.527E+00	2.401E+00	2.401E+00	44.22
TH-234	63.29	9	3.70*	1.658E+00	1.011E+00	1.011E+00	517.66
	92.59	100	4.23	4.964E+00	3.161E+00	3.161E+00	56.80
U-234	74.82	133	5.80	3.118E+00	4.899E+00	4.899E+00	38.54
	77.11	246	9.70	3.432E+00	4.916E+00	4.916E+00	23.48
	87.09	62	3.41	4.506E+00	2.675E+00	2.675E+00	88.60
	242.00	115	7.25	4.626E+00	2.283E+00	2.283E+00	47.95
	295.22	178	18.42	4.032E+00	1.596E+00	1.596E+00	25.83
	351.93	371	35.60*	3.566E+00	1.942E+00	1.942E+00	14.63
U-235	89.96	62	3.47	4.740E+00	2.492E+00	2.492E+00	79.93
	93.35	100	5.60	4.964E+00	2.388E+00	2.388E+00	56.80
	143.76	------	10.96*	6.053E+00	------	Line Not Found	------
	163.33	------	5.08	5.812E+00	------	Line Not Found	------
	185.72	90	57.20	5.449E+00	1.914E-01	1.914E-01	63.26
	205.31	------	5.01	5.146E+00	------	Line Not Found	------
U-238	63.29	9	3.70*	1.658E+00	1.011E+00	1.011E+00	517.66
	92.59	100	4.23	4.964E+00	3.161E+00	3.161E+00	56.80
AM-243	43.53	------	5.90	1.019E-01	------	Line Not Found	------
	74.66	133	67.20*	3.118E+00	4.229E-01	4.229E-01	38.54
ANH-511	511.00	49	100.00*	2.715E+00	1.211E-01	1.211E-01	72.72

Flag: "*" = Keyline

Sample ID : G674299028 Acquisition date : 31-JUL-2024 16:10:48

Total number of lines in spectrum 54
Number of unidentified lines 17
Number of lines tentatively identified by NID 37 68.52%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.778E+01	1.778E+01	0.229E+01	12.90	
CD-109	461.40D	1.05	2.466E+00	2.600E+00	2.303E+00	88.60	
SN-126	2.30E+05Y	1.00	2.466E-01	2.466E-01	2.185E-01	88.60	
TL-208	1.41E+10Y	1.00	5.336E-01	5.336E-01	1.306E-01	24.47	
BI-211	7.04E+08Y	1.00	5.351E+00	5.351E+00	0.783E+00	14.63	
BI-212	1.41E+10Y	1.00	2.325E+00	2.325E+00	1.656E+00	71.24	
PB-212	1.41E+10Y	1.00	1.700E+00	1.700E+00	0.178E+00	10.47	
BI-214	1600.00Y	1.00	1.249E+00	1.249E+00	0.209E+00	16.72	
PB-214	1600.00Y	1.00	1.942E+00	1.942E+00	0.284E+00	14.63	
RN-222	1600.00Y	1.00	1.249E+00	1.249E+00	0.209E+00	16.72	
RA-224	1.41E+10Y	1.00	4.037E+00	4.037E+00	1.935E+00	47.95	
RA-226	1600.00Y	1.00	1.942E+00	1.942E+00	0.284E+00	14.63	
AC-228	1.41E+10Y	1.00	1.980E+00	1.980E+00	0.416E+00	21.03	
RA-228	1.41E+10Y	1.00	1.980E+00	1.980E+00	0.416E+00	21.03	
TH-228	1.41E+10Y	1.00	1.700E+00	1.700E+00	0.178E+00	10.47	
TH-230	7.54E+04Y	1.00	1.942E+00	1.942E+00	0.284E+00	14.63	
PA-231	7.04E+08Y	1.00	1.478E+00	1.478E+00	0.994E+00	67.25	
TH-232	1.41E+10Y	1.00	1.980E+00	1.980E+00	0.416E+00	21.03	
TH-234	4.47E+09Y	1.00	1.011E+00	1.011E+00	5.233E+00	517.66	
U-234	2.45E+05Y	1.00	1.942E+00	1.942E+00	0.284E+00	14.63	
U-235	7.04E+08Y	1.00	1.914E-01	1.914E-01	1.211E-01	63.26	K
U-238	4.47E+09Y	1.00	1.011E+00	1.011E+00	5.233E+00	517.66	
AM-243	7370.00Y	1.00	4.229E-01	4.229E-01	1.630E-01	38.54	
ANH-511	1.00E+09Y	1.00	1.211E-01	1.211E-01	0.881E-01	72.72	
			---	---			
	Total Activity :		5.658E+01	5.672E+01			

Grand Total Activity : 5.658E+01 5.672E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299028 Acquisition date : 31-JUL-2024 16:10:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	65.95	14	135	0.59	131.45	130	6	3.59E-03	****	1.97E+00	T
0	128.97	30	126	1.87	257.53	256	7	7.93E-03	****	6.11E+00	T
0	154.32	48	121	1.59	308.21	304	9	1.31E-02	88.4	5.94E+00	T
0	209.20	57	83	1.07	418.00	414	8	1.56E-02	61.9	5.09E+00	
2	270.42	39	96	1.68	540.46	534	25	1.09E-02	94.6	4.29E+00	T
0	329.49	37	94	2.05	658.62	648	14	1.01E-02	****	3.74E+00	T
0	360.98	18	52	0.54	721.62	715	11	4.99E-03	****	3.50E+00	
0	409.60	21	33	1.26	818.88	816	9	5.83E-03	****	3.20E+00	T
0	463.98	82	55	2.58	927.65	918	24	2.32E-02	51.6	2.92E+00	T
0	480.43	12	36	2.76	960.57	954	12	3.44E-03	****	2.84E+00	
0	557.74	23	29	4.30	1115.23	1107	15	6.51E-03	****	2.53E+00	
0	591.88	10	28	1.37	1183.53	1176	14	2.84E-03	****	2.41E+00	
0	597.96	6	21	0.90	1195.69	1190	8	1.80E-03	****	2.39E+00	
0	647.79	22	20	0.72	1295.37	1288	11	6.15E-03	91.9	2.23E+00	
0	677.05	14	20	0.71	1353.91	1349	10	4.02E-03	****	2.15E+00	T
0	768.15	29	23	0.69	1536.17	1526	16	8.29E-03	82.1	1.91E+00	T
0	839.73	28	7	1.20	1679.38	1675	11	8.16E-03	52.6	1.76E+00	
0	933.07	19	16	3.85	1866.13	1858	13	5.43E-03	96.4	1.58E+00	
0	1127.07	7	4	1.31	2254.30	2251	6	2.03E-03	****	1.31E+00	
3	1233.02	12	2	2.38	2466.29	2464	16	3.58E-03	51.5	1.20E+00	
3	1237.49	28	4	2.25	2475.24	2464	16	8.29E-03	45.5	1.19E+00	T
0	1245.65	14	9	1.43	2491.56	2487	9	4.18E-03	94.3	1.19E+00	
0	1254.65	20	0	4.62	2509.57	2503	14	5.83E-03	43.6	1.18E+00	
0	1339.36	10	0	3.49	2679.09	2674	10	3.06E-03	60.3	1.11E+00	
0	1361.94	13	2	1.19	2724.27	2718	11	3.78E-03	71.4	1.09E+00	T
0	1365.67	5	7	0.83	2731.73	2728	10	1.41E-03	****	1.09E+00	T
0	1377.77	12	8	0.96	2755.94	2747	12	3.41E-03	****	1.08E+00	
0	1406.69	13	5	2.36	2813.82	2807	12	3.96E-03	86.5	1.06E+00	T
0	1637.75	6	3	1.43	3276.20	3269	10	1.76E-03	****	9.52E-01	
0	1728.09	14	0	0.73	3457.00	3450	13	4.17E-03	51.6	9.26E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:12:44.98

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299028.CNF;1  *
* Acquisition date : 31-JUL-2024 16:10:48 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.61     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:40:00 Nuclide Library : SOLID           *
* Sample ID        : G674299028           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1291E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.999E-01
CD-109	1.122E+00
SN-126	1.074E-01
TL-208	3.685E-02
BI-211	2.078E-01
BI-212	5.064E-01
PB-212	5.941E-02
BI-214	7.093E-02
PB-214	7.558E-02
RN-222	7.093E-02
RA-224	6.364E-01
RA-226	7.558E-02
AC-228	1.445E-01
RA-228	1.445E-01
TH-228	5.941E-02
TH-230	7.558E-02
PA-231	4.860E-01
TH-232	1.445E-01
TH-234	2.492E+00
U-234	7.558E-02
U-235	2.404E-01
U-238	2.492E+00
AM-243	7.697E-02
ANH-511	2.812E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.416E-01	NOT IDENT.
NA-22	4.519E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.787E-02	NOT IDENT.
SC-46	4.617E-02	FAIL ABUN
V-48	1.796E-01	NOT IDENT.
CR-51	6.564E-01	NOT IDENT.

MN-52	3.614E+00	NOT IDENT.
MN-54	4.983E-02	NOT IDENT.
CO-56	5.194E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.248E-02	NOT IDENT.
CO-58	5.623E-02	NOT IDENT.
FE-59	1.378E-01	NOT IDENT.
CO-60	3.690E-02	NOT IDENT.
ZN-65	1.075E-01	NOT IDENT.
GE-68	1.432E+00	NOT IDENT.
AS-73	2.939E+00	NOT IDENT.
AS-74	2.243E-01	NOT IDENT.
SE-75	4.984E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.090E-01	NOT IDENT.
RB-83	7.490E-02	NOT IDENT.
RB-84	9.495E-02	NOT IDENT.
KR-85	7.036E+00	NOT IDENT.
SR-85	4.602E-02	NOT IDENT.
RB-86	1.724E+00	NOT IDENT.
Y-88	4.301E-02	NOT IDENT.
Y-91	3.133E+01	NOT IDENT.
NB-94	3.124E-02	NOT IDENT.
NB-95	5.373E-02	NOT IDENT.
NB-95M	1.593E-01	NOT IDENT.
ZR-95	7.884E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.612E-02	NOT IDENT.
RH-102	5.488E-02	FAIL ABUN
RU-103	5.794E-02	FAIL ABUN
RH-106	2.871E-01	NOT IDENT.
RU-106	2.871E-01	NOT IDENT.
AG-108M	3.055E-02	NOT IDENT.
AG-110	8.113E-01	NOT IDENT.
AG-110M	5.211E-02	FAIL ABUN
SN-113	5.212E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.626E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.358E-02	NOT IDENT.
SB-124	8.974E-02	NOT IDENT.
SB-125	9.340E-02	FAIL ABUN
TE-125M	1.542E+01	NOT IDENT.
I-126	6.857E-01	NOT IDENT.
SB-126	4.574E-01	NOT IDENT.
SB-127	4.855E+01	NOT IDENT.
I-131	6.530E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.819E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	4.963E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	3.146E-01	FAIL ABUN
BA-137M	3.460E-02	NOT IDENT.
CS-137	3.655E-02	NOT IDENT.
LA-138	6.360E-02	NOT IDENT.
CE-139	3.772E-02	NOT IDENT.
BA-140	7.403E-01	NOT IDENT.
LA-140	1.496E-01	FAIL ABUN
CE-141	1.139E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.271E-01	NOT IDENT.
PM-144	2.490E-02	NOT IDENT.
PR-144	1.879E+00	NOT IDENT.
PM-146	4.204E-02	NOT IDENT.
ND-147	2.028E+00	FAIL ABUN
PM-147	8.634E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.127E-02	FAIL ABUN
EU-152	8.700E-02	FAIL ABUN
GD-153	1.161E-01	NOT IDENT.
EU-154	1.267E-01	NOT IDENT.
EU-155	1.467E-01	FAIL ABUN
TB-160	1.344E-01	FAIL ABUN

HO-166M	5.044E-02	FAIL ABUN
TM-171	6.191E+01	FAIL ABUN
HF-172	2.357E-01	FAIL ABUN
LU-172	8.772E-02	FAIL ABUN
LU-176	2.724E-02	FAIL ABUN
HF-181	6.068E-02	NOT IDENT.
TA-182	2.218E-01	FAIL ABUN
RE-183	5.833E-01	FAIL ABUN
RE-184	2.212E-01	NOT IDENT.
W-188	8.732E+00	FAIL ABUN
IR-192	3.985E-02	FAIL ABUN
HG-203	5.703E-02	NOT IDENT.
TL-204	7.806E+00	NOT IDENT.
BI-207	5.908E-02	FAIL ABUN
BI-210	1.758E+01	NOT IDENT.
PB-210	1.758E+01	NOT IDENT.
PB-211	5.315E-01	NOT IDENT.
BI-213	1.069E-01	NOT IDENT.
RN-219	4.794E-01	FAIL ABUN
RA-223	6.513E-01	FAIL ABUN
AC-225	2.614E+00	NOT IDENT.
AC-227	2.646E-01	FAIL ABUN
TH-227	2.646E-01	FAIL ABUN
TH-229	5.848E-01	FAIL ABUN
TH-231	6.513E-01	FAIL ABUN
PA-233	7.315E-02	FAIL ABUN
PA-234	2.767E-01	FAIL ABUN
PA-234M	4.852E+00	NOT IDENT.
NP-237	7.315E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	3.062E-01	FAIL ABUN
PU-239	4.462E+02	FAIL ABUN
AM-241	3.378E-01	NOT IDENT.
CM-243	1.430E-01	FAIL ABUN
BK-247	7.894E-02	NOT IDENT.
CM-247	4.519E-02	FAIL ABUN
CF-249	4.167E-02	NOT IDENT.
CF-251	1.325E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:12:49.59

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299028.CNF;1  *
* Acquisition date : 31-JUL-2024 16:10:48 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.61     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:40:00 Nuclide Library : SOLID           *
* Sample ID        : G674299028           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1291E+02 GRAM *
*                                         Quantity Err(%) : 1.7713E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.778E+01	3.178E+00	3.178E+00
CD-109	2.600E+00	2.272E+00	2.272E+00
SN-126	2.466E-01	2.151E-01	2.151E-01
TL-208	5.336E-01	1.356E-01	1.356E-01
BI-211	5.351E+00	9.160E-01	9.160E-01
BI-212	2.325E+00	1.639E+00	1.639E+00
PB-212	1.700E+00	2.384E-01	2.384E-01
BI-214	1.249E+00	2.296E-01	2.296E-01
PB-214	1.942E+00	3.310E-01	3.310E-01
RN-222	1.249E+00	2.296E-01	2.296E-01
RA-224	4.037E+00	1.937E+00	1.937E+00
RA-226	1.942E+00	3.310E-01	3.310E-01
AC-228	1.980E+00	4.887E-01	4.887E-01
RA-228	1.980E+00	4.887E-01	4.887E-01
TH-228	1.700E+00	2.384E-01	2.384E-01
TH-230	1.942E+00	3.310E-01	3.310E-01
PA-231	1.478E+00	1.033E+00	1.033E+00
TH-232	1.980E+00	4.887E-01	4.887E-01
TH-234	1.011E+00	5.134E+00	5.134E+00
U-234	1.942E+00	3.310E-01	3.310E-01
U-235	1.418E-01	2.651E-01	2.651E-01
U-238	1.011E+00	5.134E+00	5.134E+00
AM-243	4.229E-01	1.642E-01	1.642E-01
ANH-511	1.211E-01	8.690E-02	8.690E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-2.661E-02	5.958E-01	5.959E-01	NOT IDENT.
NA-22	-1.610E-02	5.703E-02	5.749E-02	NOT IDENT.
NA-24	-2.803E+15	5.352E+15	5.499E+15	SHORT HLIF
AL-26	1.283E-02	4.194E-02	4.233E-02	NOT IDENT.
SC-46	-2.213E-02	5.729E-02	5.815E-02	FAIL ABUN
V-48	4.933E-02	2.011E-01	2.024E-01	NOT IDENT.

CR-51	5.919E-02	7.606E-01	7.610E-01	NOT IDENT.
MN-52	2.334E+00	3.791E+00	3.935E+00	NOT IDENT.
MN-54	5.524E-02	5.405E-02	5.951E-02	NOT IDENT.
CO-56	2.810E-03	5.962E-02	5.964E-02	FAIL ABUN
MN-56	1.000E+41	1.848E+42	0.000E+00	SHORT HLIF
CO-57	3.145E-02	3.760E-02	4.018E-02	NOT IDENT.
CO-58	2.187E-02	6.597E-02	6.670E-02	NOT IDENT.
FE-59	6.042E-02	1.518E-01	1.542E-01	NOT IDENT.
CO-60	1.196E-02	4.084E-02	4.120E-02	NOT IDENT.
ZN-65	-4.283E-03	1.449E-01	1.449E-01	NOT IDENT.
GE-68	-1.733E-02	1.686E+00	1.686E+00	NOT IDENT.
AS-73	-2.072E+00	3.724E+00	3.840E+00	NOT IDENT.
AS-74	1.359E-01	3.459E-01	3.512E-01	NOT IDENT.
SE-75	-3.895E-02	6.923E-02	7.142E-02	NOT IDENT.
BR-77	9.246E+04	9.482E+04	1.036E+05	SHORT HLIF
SR-82	-5.500E-01	7.395E-01	7.800E-01	NOT IDENT.
RB-83	-1.298E-01	1.112E-01	1.256E-01	NOT IDENT.
RB-84	-2.441E-02	1.146E-01	1.151E-01	NOT IDENT.
KR-85	6.080E-01	9.357E+00	9.361E+00	NOT IDENT.
SR-85	3.820E-03	6.123E-02	6.125E-02	NOT IDENT.
RB-86	1.126E-01	2.005E+00	2.006E+00	NOT IDENT.
Y-88	6.851E-03	5.013E-02	5.022E-02	NOT IDENT.
Y-91	2.537E+00	3.672E+01	3.674E+01	NOT IDENT.
NB-94	9.194E-03	3.662E-02	3.686E-02	NOT IDENT.
NB-95	3.248E-03	6.592E-02	6.593E-02	NOT IDENT.
NB-95M	7.676E-03	2.030E-01	2.030E-01	NOT IDENT.
ZR-95	-3.408E-02	1.041E-01	1.052E-01	NOT IDENT.
NB-97	1.000E+41	2.128E+41	0.000E+00	SHORT HLIF
ZR-97	4.792E+14	9.199E+14	9.449E+14	SHORT HLIF
MO-99	-7.999E+02	2.309E+03	2.337E+03	SHORT HLIF
TC-99M	1.037E+40	5.409E+40	0.000E+00	SHORT HLIF
RH-101	1.097E-02	4.757E-02	4.783E-02	NOT IDENT.
RH-102	-5.812E-02	7.615E-02	8.053E-02	FAIL ABUN
RU-103	1.778E-02	6.688E-02	6.736E-02	FAIL ABUN
RH-106	-1.740E-02	3.523E-01	3.524E-01	NOT IDENT.
RU-106	-1.740E-02	3.523E-01	3.524E-01	NOT IDENT.
AG-108M	3.493E-04	3.602E-02	3.602E-02	NOT IDENT.
AG-110	5.741E-01	8.957E-01	9.324E-01	NOT IDENT.
AG-110M	-3.099E-03	6.094E-02	6.096E-02	FAIL ABUN
SN-113	-4.167E-02	6.641E-02	6.901E-02	NOT IDENT.
CD-115	1.484E+03	8.047E+03	8.075E+03	SHORT HLIF
SN-117M	-8.847E-03	2.044E-01	2.044E-01	NOT IDENT.
SB-122	1.344E+01	4.246E+02	4.247E+02	SHORT HLIF
TE-123M	-3.974E-03	3.995E-02	3.999E-02	NOT IDENT.
SB-124	-7.557E-02	1.375E-01	1.416E-01	NOT IDENT.
SB-125	4.475E-02	1.050E-01	1.069E-01	FAIL ABUN
TE-125M	8.002E+00	1.834E+01	1.869E+01	NOT IDENT.
I-126	1.876E-01	8.081E-01	8.126E-01	NOT IDENT.
SB-126	-1.162E-01	5.814E-01	5.838E-01	NOT IDENT.
SB-127	-3.384E+01	6.535E+01	6.711E+01	NOT IDENT.
I-131	7.941E-01	7.223E-01	8.062E-01	NOT IDENT.
I-132	1.000E+41	1.150E+42	0.000E+00	SHORT HLIF
TE-132	-1.224E+01	6.995E+01	7.017E+01	SHORT HLIF
BA-133	1.580E-02	5.881E-02	5.924E-02	FAIL ABUN
I-133	6.873E+09	7.051E+10	7.058E+10	SHORT HLIF
CS-134	-1.606E-02	6.391E-02	6.432E-02	FAIL ABUN
I-135	1.055E+37	8.169E+37	0.000E+00	SHORT HLIF
CS-136	-3.914E-01	4.380E-01	4.722E-01	FAIL ABUN
BA-137M	-6.142E-03	4.329E-02	4.338E-02	NOT IDENT.
CS-137	-6.489E-03	4.573E-02	4.582E-02	NOT IDENT.
LA-138	-1.090E-03	7.666E-02	7.666E-02	NOT IDENT.
CE-139	1.799E-02	4.164E-02	4.242E-02	NOT IDENT.
BA-140	-3.094E-01	9.405E-01	9.508E-01	NOT IDENT.
LA-140	-6.760E-02	2.148E-01	2.169E-01	FAIL ABUN
CE-141	5.858E-02	1.261E-01	1.288E-01	NOT IDENT.
CE-143	4.065E+06	4.876E+06	5.209E+06	SHORT HLIF
CE-144	-1.454E-01	3.230E-01	3.296E-01	NOT IDENT.
PM-144	-2.786E-02	3.670E-02	3.879E-02	NOT IDENT.
PR-144	-2.118E+00	2.774E+00	2.934E+00	NOT IDENT.
PM-146	7.043E-03	4.913E-02	4.923E-02	NOT IDENT.
ND-147	-2.775E-01	2.482E+00	2.485E+00	FAIL ABUN
PM-147	-6.489E+02	1.124E+03	1.161E+03	NOT IDENT.
PM-149	-1.345E+04	5.556E+04	5.589E+04	SHORT HLIF
EU-150	2.122E-02	3.605E-02	3.729E-02	FAIL ABUN
EU-152	-9.006E-02	1.132E-01	1.202E-01	FAIL ABUN
GD-153	-4.623E-02	1.451E-01	1.465E-01	NOT IDENT.
EU-154	-4.514E-02	1.599E-01	1.612E-01	NOT IDENT.
EU-155	1.763E-01	1.679E-01	1.857E-01	FAIL ABUN

TB-160	-1.575E-02	1.590E-01	1.591E-01	FAIL ABUN
HO-166M	-9.724E-02	8.028E-02	9.147E-02	FAIL ABUN
TM-171	4.775E+01	7.060E+01	7.380E+01	FAIL ABUN
HF-172	3.691E-01	2.863E-01	3.312E-01	FAIL ABUN
LU-172	6.921E-02	9.338E-02	9.846E-02	FAIL ABUN
LU-176	-2.635E-03	3.201E-02	3.203E-02	FAIL ABUN
HF-181	9.469E-03	7.946E-02	7.958E-02	NOT IDENT.
TA-182	-3.902E-03	2.638E-01	2.638E-01	FAIL ABUN
RE-183	3.942E-01	6.698E-01	6.930E-01	FAIL ABUN
RE-184	2.426E-01	2.398E-01	2.636E-01	NOT IDENT.
W-188	-5.107E+00	1.201E+01	1.223E+01	FAIL ABUN
IR-192	-3.959E-02	5.100E-02	5.403E-02	FAIL ABUN
HG-203	2.375E-02	7.082E-02	7.162E-02	NOT IDENT.
TL-204	-2.381E+00	1.047E+01	1.053E+01	NOT IDENT.
BI-207	1.628E-02	6.663E-02	6.703E-02	FAIL ABUN
BI-210	-7.797E+00	2.159E+01	2.187E+01	NOT IDENT.
PB-210	-7.797E+00	2.159E+01	2.187E+01	NOT IDENT.
PB-211	-1.722E+00	8.821E-01	1.175E+00	NOT IDENT.
BI-213	2.394E-02	1.240E-01	1.244E-01	NOT IDENT.
RN-219	6.377E-01	5.041E-01	5.803E-01	FAIL ABUN
RA-223	-4.642E-01	9.145E-01	9.381E-01	FAIL ABUN
AC-225	-1.602E-01	3.007E+00	3.008E+00	NOT IDENT.
AC-227	1.994E-01	2.885E-01	3.022E-01	FAIL ABUN
TH-227	1.994E-01	2.885E-01	3.022E-01	FAIL ABUN
TH-229	1.254E-03	6.661E-01	6.661E-01	FAIL ABUN
TH-231	-4.642E-01	9.145E-01	9.381E-01	FAIL ABUN
PA-233	-1.109E-02	8.785E-02	8.799E-02	FAIL ABUN
PA-234	-2.766E-01	4.892E-01	5.049E-01	FAIL ABUN
PA-234M	3.634E+00	5.008E+00	5.269E+00	NOT IDENT.
NP-237	-1.109E-02	8.785E-02	8.799E-02	FAIL ABUN
NP-238	-6.708E+03	1.760E+04	1.786E+04	SHORT HLIF
NP-239	1.919E-01	3.615E-01	3.717E-01	FAIL ABUN
PU-239	5.098E+02	6.611E+02	6.999E+02	FAIL ABUN
AM-241	-8.108E-05	4.403E-01	4.403E-01	NOT IDENT.
CM-243	4.827E-03	1.752E-01	1.752E-01	FAIL ABUN
BK-247	-6.790E-02	1.113E-01	1.155E-01	NOT IDENT.
CM-247	7.103E-02	4.743E-02	5.723E-02	FAIL ABUN
CF-249	2.649E-02	4.608E-02	4.760E-02	NOT IDENT.
CF-251	-5.698E-02	1.548E-01	1.569E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	82.0928	85.43	117.3470	131.20	105.7656
45.60	80.2411	86.55	128.1053	133.02	72.8526
46.54	96.9110	86.79	128.1464	133.52	94.4260
49.72	0.0000	86.94	128.1726	136.00	67.2643
51.35	83.3639	87.09	128.1992	136.47	89.7286
51.87	80.1071	87.57	128.2824	140.51	0.0000
52.39	71.2749	88.03	128.3622	143.76	84.5314
52.97	66.8919	88.34	128.4163	144.24	72.8487
53.44	83.6869	88.47	128.4388	145.44	82.9955
54.07	94.9540	89.96	128.6949	152.43	73.4310
57.36	0.0000	1093.63	128.8113	153.25	81.9355
57.53	79.8054	91.11	128.8911	323.87	82.0095
57.98	69.7436	92.59	129.1423	156.02	81.3027
59.27	80.0462	93.35	129.2704	158.56	77.6760
59.32	80.0529	94.56	117.1990	159.00	76.4337
59.54	84.2190	94.65	117.2133	162.33	74.1134
60.96	104.0208	94.67	117.2163	162.66	74.1355
61.17	84.4526	94.87	104.5712	163.33	85.2661
62.93	90.7516	97.43	108.4902	165.86	76.0616
63.29	90.8058	98.43	112.2088	176.31	61.2424
63.58	90.8490	98.44	112.2102	176.60	61.2576
64.28	90.9535	99.53	100.4101	177.52	75.1218
66.73	97.0219	100.11	98.0901	181.07	0.0000
67.24	115.7596	102.03	105.5185	181.52	66.2823
125.81	117.3650	103.18	105.6669	184.41	74.6962
67.75	117.3775	103.37	110.4959	143.76	74.7785
68.89	99.2635	105.21	104.7243	193.51	77.0125
69.67	102.4431	105.31	89.0866	197.03	62.3135
70.82	105.6885	106.12	87.9688	198.01	56.2142
70.83	108.7541	106.47	110.9114	201.83	62.5533
72.81	92.1838	109.28	88.3004	203.43	53.8112
72.87	92.1918	111.00	87.2666	205.31	70.2345
74.66	101.6849	111.76	0.0000	210.85	66.5459
74.82	101.7090	114.06	93.6581	215.65	74.8057
74.97	101.7319	116.30	0.0000	218.12	68.7003
77.11	102.0541	116.74	71.9837	222.11	59.9575
78.74	102.2965	119.76	86.9186	227.09	54.7898
79.69	102.4362	121.12	100.5362	227.38	58.3945
80.03	83.8518	121.22	101.7737	228.16	0.0000
80.12	83.8630	121.78	73.6166	228.18	66.5190
80.19	83.8718	122.06	73.6395	116.74	66.5190
80.57	93.2410	122.92	81.0800	235.69	65.0742
81.00	91.7434	123.07	81.0931	235.96	59.6628
81.07	91.7524	265.00	88.5240	238.63	59.7769
81.75	94.9538	125.81	62.4388	238.98	0.0000
82.47	119.9819	127.23	80.6361	240.99	59.8770
83.79	104.5928	127.91	97.1633	242.00	59.9193
84.00	101.5003	129.30	94.0085	244.70	60.0327

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	38.4069	344.28	41.6029	563.25	24.0857
252.80	43.9053	345.93	38.3480	564.24	0.0000
254.15	0.0000	351.06	37.8733	569.33	35.4089
256.23	38.5070	351.93	37.8915	946.00	35.4116
260.90	0.0000	355.39	0.0000	569.70	35.4143
264.66	56.7053	356.01	23.3696	583.19	24.2725
264.80	56.7103	364.49	16.1398	584.27	24.2816
265.00	56.7178	366.42	0.0000	595.83	19.5110
269.46	49.0222	372.51	40.2751	427.87	17.9166
270.03	49.0405	375.05	35.4111	602.52	0.0000
271.23	49.0793	377.52	34.4716	604.72	16.3129
273.65	49.1559	356.01	23.7148	607.14	27.7568
276.40	49.2432	388.16	25.7482	609.32	23.9667
277.37	49.2745	388.63	29.7162	610.33	23.9757
277.60	49.2821	391.69	44.6439	614.28	22.9192
278.00	49.2939	264.66	40.8590	618.01	19.6721
279.20	47.4711	401.81	22.9340	620.36	19.6890
279.54	47.4815	402.40	20.9462	621.93	16.4166
279.70	44.6924	404.85	48.9332	630.19	0.0000
280.46	47.5085	410.95	25.5420	631.29	30.7492
283.69	43.8722	413.71	24.0718	633.25	19.7813
284.31	38.2865	414.70	27.0939	634.78	17.5928
285.41	45.7890	423.72	31.2434	635.95	20.9003
285.90	0.0000	427.09	27.2560	636.99	26.4102
287.50	31.8141	427.87	23.2269	657.50	14.4097
290.67	50.6283	433.94	27.3450	657.76	16.6278
293.27	0.0000	439.40	28.4301	657.90	0.0000
351.93	56.4124	440.45	26.4126	661.66	21.0913
295.96	56.4380	453.88	24.5322	664.57	0.0000
879.38	36.7434	463.37	18.4786	666.33	20.0134
299.98	33.9456	468.07	18.5175	666.50	20.0142
300.09	33.9485	473.00	27.8372	667.71	0.0000
300.13	33.9492	475.06	18.5753	677.62	18.9749
301.36	43.8832	476.78	21.6874	685.70	25.7430
302.85	42.5061	477.60	29.4434	692.65	0.0000
256.23	41.1308	482.18	23.2919	695.00	19.0870
304.85	41.1388	487.02	25.9343	696.49	17.9733
306.78	42.6068	492.35	0.0000	696.51	17.9733
308.46	46.4409	497.08	21.8797	697.00	17.9766
311.90	50.3355	505.52	29.8006	697.30	16.8549
316.51	47.6156	507.63	0.0000	697.49	16.8555
319.41	48.6498	511.00	24.1050	702.65	14.6335
320.08	41.9885	514.00	26.7586	706.68	11.2716
321.04	44.6862	514.00	26.7586	711.68	29.3547
323.87	50.2110	520.40	36.8258	720.70	22.6473
325.23	40.2004	520.69	0.0000	721.93	0.0000
328.76	38.3634	522.65	0.0000	722.78	22.0962
333.37	54.8117	527.90	0.0000	722.91	22.0978
333.97	39.2469	528.26	28.5007	723.31	25.5002
334.37	43.2971	529.59	27.4600	724.19	18.7055
338.28	62.6778	529.87	0.0000	727.33	19.2924
338.32	62.6791	531.02	25.3623	733.00	23.8754
311.90	44.8936	537.26	24.3673	735.93	11.9488
340.48	44.8936	546.56	0.0000	333.97	14.8011
340.55	44.8955	552.55	12.7915	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	18.2565	949.00	9.9919	1384.29	5.0189
747.24	27.4111	667.71	0.0000	1408.01	11.2957
748.06	22.8483	962.31	15.4965	1434.09	5.0687
752.31	14.8715	964.08	15.5038	1435.80	8.1123
753.82	20.6008	966.17	15.5121	1457.56	0.0000
756.73	17.1832	911.20	15.5235	1460.82	8.1514
756.80	17.1838	983.53	11.9161	1489.16	2.0490
884.68	17.2223	984.45	0.0000	1505.03	6.1652
765.81	18.3815	1274.44	16.5536	1584.12	14.5956
766.42	18.3848	1001.03	6.4454	1596.21	3.1344
766.84	18.3874	1002.74	12.8964	1620.50	12.5918
772.60	0.0000	1004.73	10.1383	1621.92	7.3469
776.52	21.9007	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	6.3732
778.90	23.0705	1028.54	0.0000	1750.46	0.0000
783.70	26.5704	1037.84	9.2938	1764.49	5.1618
788.74	19.6694	1038.76	0.0000	1063.66	3.2292
792.07	22.0059	631.29	12.1082	1771.35	4.3064
795.86	27.8291	1048.07	23.2941	1791.20	0.0000
810.06	16.3031	1049.04	21.4348	1808.65	3.2496
810.29	16.3043	1050.41	15.8483	1810.72	0.0000
344.28	16.3048	1063.66	13.0942	1836.06	3.2639
810.76	17.4713	1077.00	12.1986		
815.77	15.1646	1077.34	14.0762		
1048.07	11.3825	1085.87	13.1652		
832.01	16.7027	1093.63	13.1899		
834.85	11.2617	1099.45	11.3210		
835.71	19.7135	1112.07	13.2480		
836.80	0.0000	1112.84	18.3874		
846.75	0.0000	1115.54	18.1828		
846.77	17.6581	1120.29	19.9105		
856.80	15.5842	1120.55	19.9118		
860.56	16.8419	1221.41	15.1729		
871.09	12.4474	1129.67	10.6422		
873.19	12.4547	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	10.6941	1173.23	15.3564		
880.51	9.8059	1177.95	14.4113		
881.60	13.3759	1189.05	17.3375		
883.24	14.2744	1204.77	17.3979		
884.68	14.2803	1221.41	14.5523		
889.28	17.8729	1231.02	9.3328		
894.76	17.9004	1235.36	12.6501		
898.04	17.0210	1238.28	17.1381		
900.72	18.8268	1260.41	0.0000		
903.28	8.6127	1271.87	12.7501		
911.20	15.2849	1274.44	13.7385		
912.08	15.2885	1274.54	13.7394		
923.98	0.0000	1291.59	13.7889		
926.50	7.2229	1298.22	0.0000		
929.11	7.2280	1312.11	7.9131		
935.54	15.9296	1332.49	4.9667		
937.49	15.9376	1362.66	0.0000		
944.13	12.7003	1365.19	0.0000		
946.00	19.0601	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:13:17.18

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299029.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM12.CNF;1051
                                         Background date  : 29-JUL-2024 06:18:59
Sample date      : 26-JUN-2024 11:45:00  Acquisition date : 31-JUL-2024 16:11:11
Sample ID        : G674299029            Sample quantity  : 1.17950E+02 GRAM
Detector name    : GAM12                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.53  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	4	37.28*	62	23	2.40	74.52	69	24	1.71E-02	28.1	1.79E+00
2	4	40.02	46	81	2.41	79.99	69	24	1.28E-02	52.5	
3	4	43.37*	33	121	2.00	86.69	69	24	9.18E-03	65.4	
4	1	74.72	110	163	1.87	149.34	140	21	3.04E-02	26.0	1.05E+00
5	1	77.38	177	153	1.88	154.66	140	21	4.92E-02	16.5	
6	0	86.37	28	170	2.90	172.62	171	8	7.65E-03	85.1	
7	0	93.28*	41	183	1.27	186.43	181	11	1.15E-02	69.9	
8	0	153.80	11	149	0.66	307.39	300	11	3.08E-03	214.8	
9	0	185.65*	5	154	1.14	371.04	366	12	1.48E-03	484.7	
10	1	238.47*	357	84	1.81	476.63	469	21	9.93E-02	7.6	9.04E-01
11	1	241.48	90	87	2.06	482.63	469	21	2.49E-02	30.6	
12	5	294.97	127	93	2.10	589.56	583	24	3.54E-02	17.5	3.91E+00
13	5	300.64	27	64	3.09	600.89	583	24	7.62E-03	63.1	
14	0	328.98	29	68	0.70	657.54	652	14	8.15E-03	61.9	
15	1	337.91*	72	77	2.14	675.39	669	23	2.00E-02	27.4	2.17E+00
16	1	343.72	36	44	1.95	687.00	669	23	9.98E-03	40.6	
17	0	351.69*	127	123	1.44	702.93	696	15	3.52E-02	21.0	
18	0	409.49	21	47	1.64	818.48	813	10	5.92E-03	64.1	
19	0	510.69*	47	55	2.25	1020.81	1013	19	1.32E-02	44.3	
20	0	523.34	31	30	3.34	1046.10	1034	20	8.62E-03	49.5	
21	0	582.99*	76	42	1.90	1165.36	1158	13	2.11E-02	21.5	
22	0	608.96	149	32	1.35	1217.29	1211	14	4.13E-02	11.5	
23	0	635.17	20	18	1.03	1269.70	1264	10	5.55E-03	47.0	
24	1	851.05	20	10	2.43	1701.44	1691	35	5.61E-03	43.5	7.65E-01
25	1	860.61	28	10	2.43	1720.56	1691	35	7.80E-03	27.7	
26	0	912.85*	22	68	2.40	1825.05	1815	20	6.06E-03	99.9	
27	0	970.49	25	46	1.05	1940.35	1931	14	7.07E-03	61.2	
28	0	1023.66	18	30	3.76	2046.70	2034	24	4.88E-03	85.9	
29	0	1063.89	33	18	3.66	2127.18	2120	18	9.17E-03	34.8	
30	0	1119.75	39	13	2.58	2238.93	2232	13	1.09E-02	24.8	
31	0	1310.39	5	5	1.35	2620.38	2615	8	1.44E-03	90.2	
32	0	1460.21*	392	4	2.23	2920.19	2912	17	1.09E-01	5.2	
33	0	1763.44	38	0	1.17	3527.16	3521	12	1.06E-02	16.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:13:18

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299029.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 11:45:00 Acquisition date : 31-JUL-2024 16:11:11
Sample ID        : G674299029           Sample quantity  : 117.95 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA12              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.53   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	370	10.66*	1.082E+00	2.044E+01	2.044E+01	10.43
SN-126	64.28	------	9.60	2.090E+00	------	Line Not Found	------
	86.94	30	8.90	4.265E+00	4.986E-01	4.986E-01	170.28
	87.57	30	37.00*	4.265E+00	1.199E-01	1.199E-01	170.28
TL-208	277.37	------	6.60	4.130E+00	------	Line Not Found	------
	583.19	75	85.00*	2.288E+00	2.461E-01	2.461E-01	42.91
	860.56	27	12.50	1.669E+00	8.314E-01	8.314E-01	55.49
BI-211	72.87	------	1.23	3.022E+00	------	Line Not Found	------
	351.06	128	12.92*	3.434E+00	1.839E+00	1.839E+00	42.08
PB-212	74.82	119	10.28	3.213E+00	2.294E+00	2.294E+00	51.91
	77.11	192	17.10	3.477E+00	2.055E+00	2.055E+00	33.05
	238.63	368	43.60*	4.607E+00	1.168E+00	1.168E+00	15.25
	300.09	28	3.30	3.884E+00	1.389E+00	1.389E+00	126.17
BI-214	609.32	147	45.49*	2.209E+00	9.296E-01	9.297E-01	22.94
	1120.29	38	14.92	1.344E+00	1.191E+00	1.192E+00	49.54
	1764.49	36	15.30	9.363E-01	1.581E+00	1.581E+00	32.44
PB-214	74.82	119	5.80	3.213E+00	4.065E+00	4.066E+00	51.91
	77.11	192	9.70	3.477E+00	3.623E+00	3.623E+00	33.05
	87.09	30	3.41	4.265E+00	1.301E+00	1.301E+00	170.28
	242.00	92	7.25	4.567E+00	1.776E+00	1.776E+00	61.21
	295.22	130	18.42	3.941E+00	1.139E+00	1.139E+00	34.97
	351.93	128	35.60*	3.434E+00	6.674E-01	6.674E-01	42.08
RN-222	609.32	147	45.49*	2.209E+00	9.296E-01	9.297E-01	22.94
	1120.29	38	14.92	1.344E+00	1.191E+00	1.192E+00	49.54
	1764.49	36	15.30	9.363E-01	1.581E+00	1.581E+00	32.44
RA-224	240.99	92	4.10*	4.567E+00	3.141E+00	3.141E+00	61.21
RA-226	74.82	119	5.80	3.213E+00	4.065E+00	4.066E+00	51.91
	77.11	192	9.70	3.477E+00	3.623E+00	3.623E+00	33.05
	87.09	30	3.41	4.265E+00	1.301E+00	1.301E+00	170.28
	242.00	92	7.25	4.567E+00	1.776E+00	1.776E+00	61.21
	295.22	130	18.42	3.941E+00	1.139E+00	1.139E+00	34.97
	351.93	128	35.60*	3.434E+00	6.674E-01	6.674E-01	42.08
TH-228	74.82	119	10.28	3.213E+00	2.294E+00	2.294E+00	51.91
	77.11	192	17.10	3.477E+00	2.055E+00	2.055E+00	33.05
	238.63	368	43.60*	4.607E+00	1.168E+00	1.168E+00	15.25
	300.09	28	3.30	3.884E+00	1.389E+00	1.389E+00	126.17
TH-230	74.82	119	5.80	3.213E+00	4.065E+00	4.065E+00	51.91
	77.11	192	9.70	3.477E+00	3.623E+00	3.623E+00	33.05
	87.09	30	3.41	4.265E+00	1.301E+00	1.301E+00	170.28
	242.00	92	7.25	4.567E+00	1.776E+00	1.776E+00	61.21
	295.22	130	18.42	3.941E+00	1.139E+00	1.139E+00	34.97
	351.93	128	35.60*	3.434E+00	6.674E-01	6.674E-01	42.08
PA-231	283.69	------	1.70	4.060E+00	------	Line Not Found	------
	301.36	28	5.35*	3.884E+00	8.568E-01	8.568E-01	126.17
U-234	74.82	119	5.80	3.213E+00	4.065E+00	4.065E+00	51.91
	77.11	192	9.70	3.477E+00	3.623E+00	3.623E+00	33.05
	87.09	30	3.41	4.265E+00	1.301E+00	1.301E+00	170.28
	242.00	92	7.25	4.567E+00	1.776E+00	1.776E+00	61.21
	295.22	130	18.42	3.941E+00	1.139E+00	1.139E+00	34.97

Sample ID : G674299029 Acquisition date : 31-JUL-2024 16:11:11

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	351.93	128	35.60*	3.434E+00	6.674E-01	6.674E-01	42.08
AM-243	43.53	37	5.90	2.774E-01	1.430E+01	1.430E+01	130.77
	74.66	119	67.20*	3.213E+00	3.509E-01	3.509E-01	51.91
ANH-511	511.00	47	100.00*	2.545E+00	1.178E-01	1.178E-01	88.57

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:13:19.46

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299029.CNF;1  *
* Acquisition date : 31-JUL-2024 16:11:11 Sensitivity     : 3.000           *
* Detector ID      : GAM12                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.53     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:45:00 Analyst initials: MXR1            *
* Sample ID        : G674299029           Sample Quantity : 1.1795E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-OCT-2023 07:18:34 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM12_CAN.CNF;20            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.044E+01	2.088E+00	9.854E-01
SN-126	1.199E-01	2.001E-01	2.644E-01
TL-208	2.461E-01	1.035E-01	9.173E-02
BI-211	1.839E+00	7.583E-01	5.056E-01
PB-212	1.168E+00	1.745E-01	1.384E-01
BI-214	9.297E-01	2.090E-01	1.808E-01
PB-214	6.674E-01	2.752E-01	1.839E-01
RN-222	9.297E-01	2.090E-01	1.808E-01
RA-224	3.141E+00	1.884E+00	1.482E+00
RA-226	6.674E-01	2.752E-01	1.839E-01
TH-228	1.168E+00	1.745E-01	1.384E-01
TH-230	6.674E-01	2.752E-01	1.839E-01
PA-231	8.568E-01	1.059E+00	1.086E+00
U-234	6.674E-01	2.752E-01	1.839E-01
AM-243	3.509E-01	1.785E-01	1.641E-01
ANH-511	1.178E-01	1.023E-01	6.164E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.929E-03	6.116E-01	1.131E+00	NOT IDENT.
NA-22	2.741E-02	6.232E-02	1.275E-01	NOT IDENT.
NA-24	0.000E+00	4.442E+15	0.000E+00	SHORT HLIF
AL-26	4.921E-03	4.496E-02	9.587E-02	NOT IDENT.
SC-46	-1.016E-02	7.580E-02	1.358E-01	FAIL ABUN
V-48	-1.079E-01	2.130E-01	3.888E-01	NOT IDENT.
CR-51	-3.847E-01	8.009E-01	1.423E+00	NOT IDENT.
MN-52	2.073E+00	3.118E+00	7.368E+00	NOT IDENT.
MN-54	2.795E-04	5.627E-02	1.034E-01	NOT IDENT.
CO-56	2.495E-04	6.712E-02	1.102E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-6.240E-03	3.433E-02	6.397E-02	NOT IDENT.
CO-58	-6.808E-02	7.217E-02	1.145E-01	NOT IDENT.
FE-59	-9.025E-02	1.805E-01	3.251E-01	NOT IDENT.

CO-60	7.098E-02	5.903E-02	1.338E-01	NOT IDENT.
ZN-65	3.723E-02	1.052E-01	1.999E-01	NOT IDENT.
GE-68	4.067E-01	1.544E+00	3.189E+00	NOT IDENT.
AS-73	-9.021E-01	2.348E+00	4.078E+00	NOT IDENT.
AS-74	2.486E-01	2.611E-01	5.447E-01	FAIL ABUN
SE-75	-2.319E-02	6.960E-02	1.241E-01	NOT IDENT.
BR-77	0.000E+00	9.483E+03	0.000E+00	SHORT HLIF
SR-82	8.226E-02	7.757E-01	1.466E+00	NOT IDENT.
RB-83	2.343E-02	1.180E-01	2.099E-01	NOT IDENT.
RB-84	-9.284E-02	1.410E-01	2.340E-01	NOT IDENT.
KR-85	-1.483E-01	1.475E+01	1.717E+01	NOT IDENT.
SR-85	-1.199E-03	9.650E-02	1.123E-01	NOT IDENT.
RB-86	-1.006E-01	2.028E+00	3.977E+00	NOT IDENT.
Y-88	3.676E-02	3.539E-02	1.074E-01	NOT IDENT.
Y-91	1.435E+01	3.441E+01	7.018E+01	NOT IDENT.
NB-94	1.414E-02	4.119E-02	8.077E-02	NOT IDENT.
NB-95	-3.215E-02	8.105E-02	1.404E-01	NOT IDENT.
NB-95M	2.548E-01	2.495E-01	4.381E-01	NOT IDENT.
ZR-95	6.780E-02	1.313E-01	2.577E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	9.855E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.198E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	5.997E+40	0.000E+00	SHORT HLIF
RH-101	1.512E-02	4.156E-02	7.989E-02	NOT IDENT.
RH-102	-1.618E-02	8.517E-02	1.338E-01	NOT IDENT.
RU-103	-3.491E-02	7.912E-02	1.395E-01	FAIL ABUN
RH-106	-3.243E-03	4.622E-01	8.556E-01	NOT IDENT.
RU-106	-3.243E-03	4.622E-01	8.556E-01	NOT IDENT.
AG-108M	-1.074E-02	3.909E-02	7.066E-02	NOT IDENT.
CD-109	-3.949E-01	2.247E+00	2.658E+00	NOT IDENT.
AG-110	6.899E-02	9.588E-01	1.817E+00	NOT IDENT.
AG-110M	3.816E-02	7.047E-02	1.421E-01	NOT IDENT.
SN-113	-4.723E-03	6.459E-02	1.195E-01	NOT IDENT.
CD-115	0.000E+00	7.903E+03	0.000E+00	SHORT HLIF
SN-117M	-1.883E-02	2.228E-01	3.830E-01	NOT IDENT.
SB-122	0.000E+00	5.597E+02	0.000E+00	SHORT HLIF
TE-123M	-1.906E-02	4.418E-02	7.726E-02	NOT IDENT.
SB-124	-1.247E-01	1.411E-01	2.226E-01	NOT IDENT.
SB-125	8.861E-02	1.167E-01	2.360E-01	FAIL ABUN
TE-125M	7.004E-01	1.961E+01	3.433E+01	NOT IDENT.
I-126	-7.770E-01	9.248E-01	1.517E+00	NOT IDENT.
SB-126	9.965E-02	6.734E-01	1.257E+00	NOT IDENT.
SB-127	-1.870E+01	6.228E+01	1.115E+02	NOT IDENT.
I-131	-3.927E-01	9.227E-01	1.641E+00	NOT IDENT.
I-132	0.000E+00	1.112E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.620E+01	0.000E+00	SHORT HLIF
BA-133	5.224E-02	6.446E-02	1.155E-01	NOT IDENT.
I-133	0.000E+00	8.747E+10	0.000E+00	SHORT HLIF
CS-134	1.469E-02	5.462E-02	1.030E-01	NOT IDENT.
I-135	0.000E+00	8.235E+37	0.000E+00	SHORT HLIF
CS-136	-1.841E-01	3.835E-01	7.011E-01	FAIL ABUN
BA-137M	3.759E-02	4.775E-02	9.740E-02	NOT IDENT.
CS-137	3.972E-02	5.045E-02	1.029E-01	NOT IDENT.
LA-138	8.019E-03	6.554E-02	1.378E-01	NOT IDENT.
CE-139	9.371E-04	4.128E-02	7.725E-02	NOT IDENT.
BA-140	-3.233E-01	1.043E+00	1.873E+00	NOT IDENT.
LA-140	4.380E-02	3.591E-01	7.397E-01	FAIL ABUN
CE-141	-2.991E-02	1.345E-01	2.470E-01	NOT IDENT.
CE-143	0.000E+00	5.187E+06	0.000E+00	SHORT HLIF
CE-144	4.154E-02	2.779E-01	5.256E-01	NOT IDENT.
PM-144	1.905E-02	4.557E-02	8.970E-02	NOT IDENT.
PR-144	1.461E+00	3.449E+00	6.794E+00	NOT IDENT.
PM-146	-4.863E-02	5.422E-02	9.033E-02	NOT IDENT.
ND-147	9.907E-01	2.680E+00	5.082E+00	NOT IDENT.
PM-147	2.398E+02	9.593E+02	1.840E+03	NOT IDENT.
PM-149	0.000E+00	6.344E+04	0.000E+00	SHORT HLIF
EU-150	6.976E-03	5.529E-02	6.713E-02	FAIL ABUN
EU-152	2.504E-01	1.992E-01	2.521E-01	FAIL ABUN
GD-153	-8.934E-03	1.605E-01	2.487E-01	NOT IDENT.
EU-154	7.079E-02	1.738E-01	3.545E-01	NOT IDENT.
EU-155	2.906E-02	1.707E-01	3.021E-01	FAIL ABUN
TB-160	-9.274E-02	2.155E-01	3.738E-01	FAIL ABUN
HO-166M	-4.687E-02	7.597E-02	1.288E-01	FAIL ABUN
TM-171	-2.870E+01	4.309E+01	7.320E+01	NOT IDENT.
HF-172	-8.676E-02	2.509E-01	4.615E-01	NOT IDENT.
LU-172	3.263E-03	8.963E-02	1.750E-01	FAIL ABUN
LU-176	2.145E-03	3.443E-02	6.018E-02	NOT IDENT.
HF-181	7.251E-02	8.059E-02	1.652E-01	NOT IDENT.

TA-182	-1.626E-01	2.970E-01	5.277E-01	FAIL ABUN
RE-183	7.016E-02	5.280E-01	9.492E-01	NOT IDENT.
RE-184	-2.011E-01	2.785E-01	4.558E-01	NOT IDENT.
W-188	-1.025E+01	1.289E+01	1.897E+01	NOT IDENT.
IR-192	-2.197E-03	5.665E-02	1.048E-01	FAIL ABUN
HG-203	4.404E-02	7.025E-02	1.361E-01	NOT IDENT.
TL-204	-1.179E+00	1.031E+01	1.591E+01	NOT IDENT.
BI-207	0.000E+00	1.319E-01	1.825E-01	FAIL ABUN
BI-210	-4.510E-01	1.059E+01	1.682E+01	NOT IDENT.
PB-210	-4.510E-01	1.059E+01	1.682E+01	NOT IDENT.
PB-211	-2.031E-01	1.135E+00	1.797E+00	NOT IDENT.
BI-212	1.215E+00	8.382E-01	1.751E+00	NOT IDENT.
BI-213	4.644E-02	1.400E-01	2.696E-01	NOT IDENT.
RN-219	2.133E-01	5.266E-01	1.021E+00	NOT IDENT.
RA-223	2.473E-01	9.640E-01	1.621E+00	FAIL ABUN
AC-225	-1.549E+00	3.039E+00	5.438E+00	NOT IDENT.
AC-227	-1.746E-01	3.314E-01	5.896E-01	FAIL ABUN
TH-227	-1.746E-01	3.314E-01	5.896E-01	FAIL ABUN
AC-228	0.000E+00	2.939E-01	6.461E-01	FAIL ABUN
RA-228	0.000E+00	2.939E-01	6.461E-01	FAIL ABUN
TH-229	-1.373E-01	6.594E-01	1.210E+00	FAIL ABUN
TH-231	2.473E-01	9.640E-01	1.621E+00	FAIL ABUN
TH-232	0.000E+00	2.939E-01	6.461E-01	FAIL ABUN
PA-233	-2.289E-02	8.766E-02	1.589E-01	FAIL ABUN
PA-234	-8.138E-02	4.411E-01	7.902E-01	FAIL ABUN
PA-234M	-3.421E-01	6.570E+00	1.276E+01	NOT IDENT.
TH-234	-5.822E-01	2.905E+00	5.026E+00	FAIL ABUN
U-235	6.855E-03	2.809E-01	5.222E-01	FAIL ABUN
NP-237	-2.289E-02	8.766E-02	1.589E-01	FAIL ABUN
NP-238	0.000E+00	1.942E+04	0.000E+00	SHORT HLIF
U-238	-5.822E-01	2.905E+00	5.026E+00	FAIL ABUN
NP-239	-1.704E-02	3.744E-01	7.014E-01	NOT IDENT.
PU-239	1.315E+02	4.514E+02	8.616E+02	NOT IDENT.
AM-241	-1.153E-01	3.357E-01	5.817E-01	NOT IDENT.
CM-243	1.560E-02	1.717E-01	3.025E-01	NOT IDENT.
BK-247	-4.344E-02	1.126E-01	1.999E-01	NOT IDENT.
CM-247	-4.676E-03	5.005E-02	9.206E-02	NOT IDENT.
CF-249	6.930E-03	5.154E-02	9.738E-02	NOT IDENT.
CF-251	1.129E-02	1.637E-01	3.068E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:13:17.97

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	370	10.66*	1.082E+00	2.044E+01	2.044E+01	10.43
SN-126	64.28	------	9.60	2.090E+00	------	Line Not Found	------
	86.94	30	8.90	4.265E+00	4.986E-01	4.986E-01	170.28
	87.57	30	37.00*	4.265E+00	1.199E-01	1.199E-01	170.28
TL-208	277.37	------	6.60	4.130E+00	------	Line Not Found	------
	583.19	75	85.00*	2.288E+00	2.461E-01	2.461E-01	42.91
	860.56	27	12.50	1.669E+00	8.314E-01	8.314E-01	55.49
BI-211	72.87	------	1.23	3.022E+00	------	Line Not Found	------
	351.06	128	12.92*	3.434E+00	1.839E+00	1.839E+00	42.08
PB-212	74.82	119	10.28	3.213E+00	2.294E+00	2.294E+00	51.91
	77.11	192	17.10	3.477E+00	2.055E+00	2.055E+00	33.05
	238.63	368	43.60*	4.607E+00	1.168E+00	1.168E+00	15.25
	300.09	28	3.30	3.884E+00	1.389E+00	1.389E+00	126.17
BI-214	609.32	147	45.49*	2.209E+00	9.296E-01	9.297E-01	22.94
	1120.29	38	14.92	1.344E+00	1.191E+00	1.192E+00	49.54
	1764.49	36	15.30	9.363E-01	1.581E+00	1.581E+00	32.44
PB-214	74.82	119	5.80	3.213E+00	4.065E+00	4.066E+00	51.91
	77.11	192	9.70	3.477E+00	3.623E+00	3.623E+00	33.05
	87.09	30	3.41	4.265E+00	1.301E+00	1.301E+00	170.28
	242.00	92	7.25	4.567E+00	1.776E+00	1.776E+00	61.21
	295.22	130	18.42	3.941E+00	1.139E+00	1.139E+00	34.97
	351.93	128	35.60*	3.434E+00	6.674E-01	6.674E-01	42.08
RN-222	609.32	147	45.49*	2.209E+00	9.296E-01	9.297E-01	22.94
	1120.29	38	14.92	1.344E+00	1.191E+00	1.192E+00	49.54
	1764.49	36	15.30	9.363E-01	1.581E+00	1.581E+00	32.44
RA-224	240.99	92	4.10*	4.567E+00	3.141E+00	3.141E+00	61.21
RA-226	74.82	119	5.80	3.213E+00	4.065E+00	4.066E+00	51.91
	77.11	192	9.70	3.477E+00	3.623E+00	3.623E+00	33.05
	87.09	30	3.41	4.265E+00	1.301E+00	1.301E+00	170.28
	242.00	92	7.25	4.567E+00	1.776E+00	1.776E+00	61.21
	295.22	130	18.42	3.941E+00	1.139E+00	1.139E+00	34.97
	351.93	128	35.60*	3.434E+00	6.674E-01	6.674E-01	42.08
TH-228	74.82	119	10.28	3.213E+00	2.294E+00	2.294E+00	51.91
	77.11	192	17.10	3.477E+00	2.055E+00	2.055E+00	33.05
	238.63	368	43.60*	4.607E+00	1.168E+00	1.168E+00	15.25
	300.09	28	3.30	3.884E+00	1.389E+00	1.389E+00	126.17
TH-230	74.82	119	5.80	3.213E+00	4.065E+00	4.065E+00	51.91
	77.11	192	9.70	3.477E+00	3.623E+00	3.623E+00	33.05
	87.09	30	3.41	4.265E+00	1.301E+00	1.301E+00	170.28
	242.00	92	7.25	4.567E+00	1.776E+00	1.776E+00	61.21
	295.22	130	18.42	3.941E+00	1.139E+00	1.139E+00	34.97
	351.93	128	35.60*	3.434E+00	6.674E-01	6.674E-01	42.08
PA-231	283.69	------	1.70	4.060E+00	------	Line Not Found	------
	301.36	28	5.35*	3.884E+00	8.568E-01	8.568E-01	126.17
U-234	74.82	119	5.80	3.213E+00	4.065E+00	4.065E+00	51.91
	77.11	192	9.70	3.477E+00	3.623E+00	3.623E+00	33.05
	87.09	30	3.41	4.265E+00	1.301E+00	1.301E+00	170.28

Sample ID : G674299029 Acquisition date : 31-JUL-2024 16:11:11

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	242.00	92	7.25	4.567E+00	1.776E+00	1.776E+00	61.21
	295.22	130	18.42	3.941E+00	1.139E+00	1.139E+00	34.97
	351.93	128	35.60*	3.434E+00	6.674E-01	6.674E-01	42.08
AM-243	43.53	37	5.90	2.774E-01	1.430E+01	1.430E+01	130.77
	74.66	119	67.20*	3.213E+00	3.509E-01	3.509E-01	51.91
ANH-511	511.00	47	100.00*	2.545E+00	1.178E-01	1.178E-01	88.57

Flag: "*" = Keyline

Sample ID : G674299029 Acquisition date : 31-JUL-2024 16:11:11

Total number of lines in spectrum 33
Number of unidentified lines 6
Number of lines tentatively identified by NID 27 81.82%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.044E+01	2.044E+01	0.213E+01	10.43	
SN-126	2.30E+05Y	1.00	1.199E-01	1.199E-01	2.042E-01	170.28	
TL-208	1.41E+10Y	1.00	2.461E-01	2.461E-01	1.056E-01	42.91	
BI-211	7.04E+08Y	1.00	1.839E+00	1.839E+00	0.774E+00	42.08	
PB-212	1.41E+10Y	1.00	1.168E+00	1.168E+00	0.178E+00	15.25	
BI-214	1600.00Y	1.00	9.296E-01	9.297E-01	2.133E-01	22.94	
PB-214	1600.00Y	1.00	6.674E-01	6.674E-01	2.808E-01	42.08	
RN-222	1600.00Y	1.00	9.296E-01	9.297E-01	2.133E-01	22.94	
RA-224	1.41E+10Y	1.00	3.141E+00	3.141E+00	1.923E+00	61.21	
RA-226	1600.00Y	1.00	6.674E-01	6.674E-01	2.808E-01	42.08	
TH-228	1.41E+10Y	1.00	1.168E+00	1.168E+00	0.178E+00	15.25	
TH-230	7.54E+04Y	1.00	6.674E-01	6.674E-01	2.808E-01	42.08	
PA-231	7.04E+08Y	1.00	8.568E-01	8.568E-01	10.81E-01	126.17	
U-234	2.45E+05Y	1.00	6.674E-01	6.674E-01	2.808E-01	42.08	
AM-243	7370.00Y	1.00	3.509E-01	3.509E-01	1.821E-01	51.91	
ANH-511	1.00E+09Y	1.00	1.178E-01	1.178E-01	1.043E-01	88.57	
			---	---			
	Total Activity :		3.397E+01	3.397E+01			

Grand Total Activity : 3.397E+01 3.397E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299029 Acquisition date : 31-JUL-2024 16:11:11

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	37.28	69	25	2.40	74.52	69	24	1.71E-02	56.2	8.08E-02	
4	40.02	52	90	2.41	79.99	69	24	1.28E-02	****	1.49E-01	
0	93.28	44	197	1.27	186.43	181	11	1.15E-02	****	4.75E+00	T
0	153.80	12	157	0.66	307.39	300	11	3.08E-03	****	5.75E+00	T
0	185.65	6	161	1.14	371.04	366	12	1.48E-03	****	5.36E+00	T
0	328.98	30	69	0.70	657.54	652	14	8.15E-03	****	3.62E+00	T
1	337.91	73	78	2.14	675.39	669	23	2.00E-02	54.7	3.54E+00	T
1	343.72	36	45	1.95	687.00	669	23	9.98E-03	81.2	3.50E+00	T
0	409.49	21	47	1.64	818.48	813	10	5.92E-03	****	3.04E+00	T
0	523.34	31	30	3.34	1046.10	1034	20	8.62E-03	99.0	2.50E+00	T
0	635.17	20	18	1.03	1269.70	1264	10	5.55E-03	93.9	2.14E+00	T
1	851.05	20	9	2.43	1701.44	1691	35	5.61E-03	86.9	1.68E+00	
0	912.85	21	66	2.40	1825.05	1815	20	6.06E-03	****	1.59E+00	T
0	970.49	25	44	1.05	1940.35	1931	14	7.07E-03	****	1.51E+00	
0	1023.66	17	29	3.76	2046.70	2034	24	4.88E-03	****	1.45E+00	
0	1063.89	32	17	3.66	2127.18	2120	18	9.17E-03	69.6	1.40E+00	T
0	1310.39	5	5	1.35	2620.38	2615	8	1.44E-03	****	1.18E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:13:31.09

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299029.CNF;1  *
* Acquisition date : 31-JUL-2024 16:11:11 Sensitivity     : 3.000           *
* Detector ID      : GAM12                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.53     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:45:00 Nuclide Library : SOLID           *
* Sample ID        : G674299029           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1795E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-OCT-2023 07:18:34 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM12_CAN.CNF;20            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	4.184E-01
SN-126	1.268E-01
TL-208	4.142E-02
BI-211	2.333E-01
PB-212	6.486E-02
BI-214	8.183E-02
PB-214	8.485E-02
RN-222	8.183E-02
RA-224	6.947E-01
RA-226	8.485E-02
TH-228	6.486E-02
TH-230	8.485E-02
PA-231	5.013E-01
U-234	8.485E-02
AM-243	7.795E-02
ANH-511	2.742E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.165E-01	NOT IDENT.
NA-22	5.649E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.861E-02	NOT IDENT.
SC-46	6.082E-02	FAIL ABUN
V-48	1.679E-01	NOT IDENT.
CR-51	6.546E-01	NOT IDENT.
MN-52	3.070E+00	NOT IDENT.
MN-54	4.627E-02	NOT IDENT.
CO-56	4.811E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	3.004E-02	NOT IDENT.
CO-58	5.028E-02	NOT IDENT.
FE-59	1.433E-01	NOT IDENT.
CO-60	5.946E-02	NOT IDENT.

ZN-65	8.600E-02	NOT IDENT.
GE-68	1.384E+00	NOT IDENT.
AS-73	1.920E+00	NOT IDENT.
AS-74	2.466E-01	FAIL ABUN
SE-75	5.783E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.507E-01	NOT IDENT.
RB-83	9.476E-02	NOT IDENT.
RB-84	1.009E-01	NOT IDENT.
KR-85	7.795E+00	NOT IDENT.
SR-85	5.097E-02	NOT IDENT.
RB-86	1.723E+00	NOT IDENT.
Y-88	4.177E-02	NOT IDENT.
Y-91	3.114E+01	NOT IDENT.
NB-94	3.599E-02	NOT IDENT.
NB-95	6.333E-02	NOT IDENT.
NB-95M	2.080E-01	NOT IDENT.
ZR-95	1.163E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.768E-02	NOT IDENT.
RH-102	5.959E-02	NOT IDENT.
RU-103	6.293E-02	FAIL ABUN
RH-106	3.851E-01	NOT IDENT.
RU-106	3.851E-01	NOT IDENT.
AG-108M	3.203E-02	NOT IDENT.
CD-109	1.272E+00	NOT IDENT.
AG-110	8.065E-01	NOT IDENT.
AG-110M	6.307E-02	NOT IDENT.
SN-113	5.453E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.809E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.639E-02	NOT IDENT.
SB-124	8.333E-02	NOT IDENT.
SB-125	1.078E-01	FAIL ABUN
TE-125M	1.626E+01	NOT IDENT.
I-126	6.743E-01	NOT IDENT.
SB-126	5.686E-01	NOT IDENT.
SB-127	4.914E+01	NOT IDENT.
I-131	7.537E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.364E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.565E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.022E-01	FAIL ABUN
BA-137M	4.405E-02	NOT IDENT.
CS-137	4.653E-02	NOT IDENT.
LA-138	5.696E-02	NOT IDENT.
CE-139	3.631E-02	NOT IDENT.
BA-140	8.382E-01	NOT IDENT.
LA-140	3.096E-01	FAIL ABUN
CE-141	1.169E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.481E-01	NOT IDENT.
PM-144	4.017E-02	NOT IDENT.
PR-144	3.043E+00	NOT IDENT.
PM-146	4.034E-02	NOT IDENT.
ND-147	2.294E+00	NOT IDENT.
PM-147	8.652E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.104E-02	FAIL ABUN
EU-152	1.167E-01	FAIL ABUN
GD-153	1.176E-01	NOT IDENT.
EU-154	1.568E-01	NOT IDENT.
EU-155	1.432E-01	FAIL ABUN
TB-160	1.624E-01	FAIL ABUN
HO-166M	5.622E-02	FAIL ABUN
TM-171	3.439E+01	NOT IDENT.
HF-172	2.169E-01	NOT IDENT.
LU-172	7.719E-02	FAIL ABUN
LU-176	2.766E-02	NOT IDENT.
HF-181	7.541E-02	NOT IDENT.
TA-182	2.324E-01	FAIL ABUN

RE-183	4.489E-01	NOT IDENT.
RE-184	1.998E-01	NOT IDENT.
W-188	8.714E+00	NOT IDENT.
IR-192	4.847E-02	FAIL ABUN
HG-203	6.370E-02	NOT IDENT.
TL-204	7.550E+00	NOT IDENT.
BI-207	8.303E-02	FAIL ABUN
BI-210	7.943E+00	NOT IDENT.
PB-210	7.943E+00	NOT IDENT.
PB-211	8.240E-01	NOT IDENT.
BI-212	8.080E-01	NOT IDENT.
BI-213	1.232E-01	NOT IDENT.
RN-219	4.679E-01	NOT IDENT.
RA-223	7.514E-01	FAIL ABUN
AC-225	2.540E+00	NOT IDENT.
AC-227	2.739E-01	FAIL ABUN
TH-227	2.739E-01	FAIL ABUN
AC-228	3.022E-01	FAIL ABUN
RA-228	3.022E-01	FAIL ABUN
TH-229	5.673E-01	FAIL ABUN
TH-231	7.514E-01	FAIL ABUN
TH-232	3.022E-01	FAIL ABUN
PA-233	7.347E-02	FAIL ABUN
PA-234	3.487E-01	FAIL ABUN
PA-234M	5.684E+00	NOT IDENT.
TH-234	2.393E+00	FAIL ABUN
U-235	2.474E-01	FAIL ABUN
NP-237	7.347E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	2.393E+00	FAIL ABUN
NP-239	3.313E-01	NOT IDENT.
PU-239	4.069E+02	NOT IDENT.
AM-241	2.753E-01	NOT IDENT.
CM-243	1.432E-01	NOT IDENT.
BK-247	9.318E-02	NOT IDENT.
CM-247	4.213E-02	NOT IDENT.
CF-249	4.455E-02	NOT IDENT.
CF-251	1.442E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:13:35.46

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299029.CNF;1  *
* Acquisition date : 31-JUL-2024 16:11:11 Sensitivity     : 3.000           *
* Detector ID      : GAM12                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.53     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:45:00 Nuclide Library : SOLID           *
* Sample ID        : G674299029           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1795E+02 GRAM *
*                                         Quantity Err(%) : 1.6956E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-OCT-2023 07:18:34 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM12_CAN.CNF;20            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.044E+01	2.706E+00	2.706E+00
SN-126	1.199E-01	2.004E-01	2.004E-01
TL-208	2.461E-01	1.067E-01	1.067E-01
BI-211	1.839E+00	7.740E-01	7.740E-01
PB-212	1.168E+00	1.976E-01	1.976E-01
BI-214	9.297E-01	2.316E-01	2.316E-01
PB-214	6.674E-01	2.807E-01	2.807E-01
RN-222	9.297E-01	2.316E-01	2.316E-01
RA-224	3.141E+00	1.901E+00	1.901E+00
RA-226	6.674E-01	2.807E-01	2.807E-01
TH-228	1.168E+00	1.976E-01	1.976E-01
TH-230	6.674E-01	2.807E-01	2.807E-01
PA-231	8.568E-01	1.077E+00	1.077E+00
U-234	6.674E-01	2.807E-01	2.807E-01
AM-243	3.509E-01	1.806E-01	1.806E-01
ANH-511	1.178E-01	1.029E-01	1.029E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.929E-03	6.116E-01	6.116E-01	NOT IDENT.
NA-22	2.741E-02	6.236E-02	6.357E-02	NOT IDENT.
NA-24	4.466E+15	4.461E+15	4.895E+15	SHORT HLIF
AL-26	4.921E-03	4.496E-02	4.501E-02	NOT IDENT.
SC-46	-1.016E-02	7.580E-02	7.594E-02	FAIL ABUN
V-48	-1.079E-01	2.131E-01	2.186E-01	NOT IDENT.
CR-51	-3.847E-01	8.015E-01	8.200E-01	NOT IDENT.
MN-52	2.073E+00	3.122E+00	3.259E+00	NOT IDENT.
MN-54	2.795E-04	5.627E-02	5.627E-02	NOT IDENT.
CO-56	2.495E-04	6.712E-02	6.712E-02	NOT IDENT.
MN-56	1.000E+41	7.725E+42	0.000E+00	SHORT HLIF
CO-57	-6.240E-03	3.433E-02	3.445E-02	NOT IDENT.
CO-58	-6.808E-02	7.245E-02	7.868E-02	NOT IDENT.
FE-59	-9.025E-02	1.807E-01	1.852E-01	NOT IDENT.

CO-60	7.098E-02	5.928E-02	6.737E-02	NOT IDENT.
ZN-65	3.723E-02	1.052E-01	1.066E-01	NOT IDENT.
GE-68	4.067E-01	1.544E+00	1.555E+00	NOT IDENT.
AS-73	-9.021E-01	2.355E+00	2.390E+00	NOT IDENT.
AS-74	2.486E-01	2.630E-01	2.859E-01	FAIL ABUN
SE-75	-2.319E-02	6.962E-02	7.040E-02	NOT IDENT.
BR-77	6.344E+04	6.533E+04	7.132E+04	SHORT HLIF
SR-82	8.226E-02	7.757E-01	7.766E-01	NOT IDENT.
RB-83	2.343E-02	1.180E-01	1.185E-01	NOT IDENT.
RB-84	-9.284E-02	1.412E-01	1.473E-01	NOT IDENT.
KR-85	-1.483E-01	1.475E+01	1.475E+01	NOT IDENT.
SR-85	-1.199E-03	9.650E-02	9.650E-02	NOT IDENT.
RB-86	-1.006E-01	2.028E+00	2.028E+00	NOT IDENT.
Y-88	3.676E-02	3.550E-02	3.918E-02	NOT IDENT.
Y-91	1.435E+01	3.442E+01	3.503E+01	NOT IDENT.
NB-94	1.414E-02	4.122E-02	4.171E-02	NOT IDENT.
NB-95	-3.215E-02	8.112E-02	8.240E-02	NOT IDENT.
NB-95M	2.548E-01	2.508E-01	2.758E-01	NOT IDENT.
ZR-95	6.780E-02	1.314E-01	1.350E-01	NOT IDENT.
NB-97	1.000E+41	8.208E+41	0.000E+00	SHORT HLIF
ZR-97	1.161E+15	9.921E+14	1.122E+15	SHORT HLIF
MO-99	8.950E+02	2.200E+03	2.237E+03	SHORT HLIF
TC-99M	-1.351E+40	5.999E+40	0.000E+00	SHORT HLIF
RH-101	1.512E-02	4.166E-02	4.221E-02	NOT IDENT.
RH-102	-1.618E-02	8.519E-02	8.550E-02	NOT IDENT.
RU-103	-3.491E-02	7.920E-02	8.075E-02	FAIL ABUN
RH-106	-3.243E-03	4.622E-01	4.622E-01	NOT IDENT.
RU-106	-3.243E-03	4.622E-01	4.622E-01	NOT IDENT.
AG-108M	-1.074E-02	3.910E-02	3.940E-02	NOT IDENT.
CD-109	-3.949E-01	2.247E+00	2.254E+00	NOT IDENT.
AG-110	6.899E-02	9.588E-01	9.593E-01	NOT IDENT.
AG-110M	3.816E-02	7.055E-02	7.262E-02	NOT IDENT.
SN-113	-4.723E-03	6.459E-02	6.463E-02	NOT IDENT.
CD-115	2.014E+02	7.903E+03	7.903E+03	SHORT HLIF
SN-117M	-1.883E-02	2.228E-01	2.230E-01	NOT IDENT.
SB-122	-2.974E+02	5.606E+02	5.764E+02	SHORT HLIF
TE-123M	-1.906E-02	4.420E-02	4.503E-02	NOT IDENT.
SB-124	-1.247E-01	1.414E-01	1.522E-01	NOT IDENT.
SB-125	8.861E-02	1.170E-01	1.236E-01	FAIL ABUN
TE-125M	7.004E-01	1.961E+01	1.961E+01	NOT IDENT.
I-126	-7.770E-01	9.294E-01	9.933E-01	NOT IDENT.
SB-126	9.965E-02	6.736E-01	6.751E-01	NOT IDENT.
SB-127	-1.870E+01	6.239E+01	6.296E+01	NOT IDENT.
I-131	-3.927E-01	9.233E-01	9.402E-01	NOT IDENT.
I-132	-1.000E+41	2.441E+41	0.000E+00	SHORT HLIF
TE-132	2.900E+01	7.627E+01	7.738E+01	SHORT HLIF
BA-133	5.224E-02	6.460E-02	6.876E-02	NOT IDENT.
I-133	5.386E+09	8.748E+10	8.752E+10	SHORT HLIF
CS-134	1.469E-02	5.464E-02	5.504E-02	NOT IDENT.
I-135	4.860E+37	9.109E+37	0.000E+00	SHORT HLIF
CS-136	-1.841E-01	3.840E-01	3.929E-01	FAIL ABUN
BA-137M	3.759E-02	4.793E-02	5.084E-02	NOT IDENT.
CS-137	3.972E-02	5.064E-02	5.371E-02	NOT IDENT.
LA-138	8.019E-03	6.554E-02	6.564E-02	NOT IDENT.
CE-139	9.371E-04	4.128E-02	4.128E-02	NOT IDENT.
BA-140	-3.233E-01	1.044E+00	1.054E+00	NOT IDENT.
LA-140	4.380E-02	3.591E-01	3.596E-01	FAIL ABUN
CE-141	-2.991E-02	1.345E-01	1.352E-01	NOT IDENT.
CE-143	1.560E+07	5.337E+06	8.827E+06	SHORT HLIF
CE-144	4.154E-02	2.779E-01	2.786E-01	NOT IDENT.
PM-144	1.905E-02	4.561E-02	4.641E-02	NOT IDENT.
PR-144	1.461E+00	3.453E+00	3.515E+00	NOT IDENT.
PM-146	-4.863E-02	5.449E-02	5.873E-02	NOT IDENT.
ND-147	9.907E-01	2.682E+00	2.719E+00	NOT IDENT.
PM-147	2.398E+02	9.594E+02	9.655E+02	NOT IDENT.
PM-149	-1.328E+04	6.347E+04	6.375E+04	SHORT HLIF
EU-150	6.976E-03	5.529E-02	5.538E-02	FAIL ABUN
EU-152	2.504E-01	2.005E-01	2.300E-01	FAIL ABUN
GD-153	-8.934E-03	1.605E-01	1.605E-01	NOT IDENT.
EU-154	7.079E-02	1.739E-01	1.768E-01	NOT IDENT.
EU-155	2.906E-02	1.707E-01	1.712E-01	FAIL ABUN
TB-160	-9.274E-02	2.157E-01	2.197E-01	FAIL ABUN
HO-166M	-4.687E-02	7.615E-02	7.903E-02	FAIL ABUN
TM-171	-2.870E+01	4.318E+01	4.508E+01	NOT IDENT.
HF-172	-8.676E-02	2.514E-01	2.544E-01	NOT IDENT.
LU-172	3.263E-03	8.963E-02	8.965E-02	FAIL ABUN
LU-176	2.145E-03	3.443E-02	3.445E-02	NOT IDENT.
HF-181	7.251E-02	8.089E-02	8.725E-02	NOT IDENT.

TA-182	-1.626E-01	2.973E-01	3.062E-01	FAIL ABUN
RE-183	7.016E-02	5.281E-01	5.290E-01	NOT IDENT.
RE-184	-2.011E-01	2.792E-01	2.936E-01	NOT IDENT.
W-188	-1.025E+01	1.296E+01	1.376E+01	NOT IDENT.
IR-192	-2.197E-03	5.665E-02	5.666E-02	FAIL ABUN
HG-203	4.404E-02	7.033E-02	7.308E-02	NOT IDENT.
TL-204	-1.179E+00	1.031E+01	1.033E+01	NOT IDENT.
BI-207	1.932E-01	1.327E-01	1.588E-01	FAIL ABUN
BI-210	-4.510E-01	1.059E+01	1.059E+01	NOT IDENT.
PB-210	-4.510E-01	1.059E+01	1.059E+01	NOT IDENT.
PB-211	-2.031E-01	1.135E+00	1.139E+00	NOT IDENT.
BI-212	1.215E+00	8.484E-01	1.010E+00	NOT IDENT.
BI-213	4.644E-02	1.401E-01	1.417E-01	NOT IDENT.
RN-219	2.133E-01	5.275E-01	5.362E-01	NOT IDENT.
RA-223	2.473E-01	9.643E-01	9.707E-01	FAIL ABUN
AC-225	-1.549E+00	3.043E+00	3.122E+00	NOT IDENT.
AC-227	-1.746E-01	3.324E-01	3.415E-01	FAIL ABUN
TH-227	-1.746E-01	3.324E-01	3.415E-01	FAIL ABUN
AC-228	7.558E-01	3.006E-01	4.544E-01	FAIL ABUN
RA-228	7.558E-01	3.006E-01	4.544E-01	FAIL ABUN
TH-229	-1.373E-01	6.595E-01	6.624E-01	FAIL ABUN
TH-231	2.473E-01	9.643E-01	9.707E-01	FAIL ABUN
TH-232	7.558E-01	3.006E-01	4.544E-01	FAIL ABUN
PA-233	-2.289E-02	8.768E-02	8.828E-02	FAIL ABUN
PA-234	-8.138E-02	4.509E-01	4.524E-01	FAIL ABUN
PA-234M	-3.421E-01	6.570E+00	6.571E+00	NOT IDENT.
TH-234	-5.822E-01	2.908E+00	2.919E+00	FAIL ABUN
U-235	6.855E-03	2.809E-01	2.809E-01	FAIL ABUN
NP-237	-2.289E-02	8.768E-02	8.828E-02	FAIL ABUN
NP-238	5.866E+03	1.942E+04	1.960E+04	SHORT HLIF
U-238	-5.822E-01	2.908E+00	2.919E+00	FAIL ABUN
NP-239	-1.704E-02	3.744E-01	3.744E-01	NOT IDENT.
PU-239	1.315E+02	4.515E+02	4.554E+02	NOT IDENT.
AM-241	-1.153E-01	3.359E-01	3.399E-01	NOT IDENT.
CM-243	1.560E-02	1.717E-01	1.719E-01	NOT IDENT.
BK-247	-4.344E-02	1.130E-01	1.147E-01	NOT IDENT.
CM-247	-4.676E-03	5.006E-02	5.010E-02	NOT IDENT.
CF-249	6.930E-03	5.155E-02	5.164E-02	NOT IDENT.
CF-251	1.129E-02	1.638E-01	1.638E-01	NOT IDENT.

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*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	49.5734	85.43	142.5454	131.20	98.3309
45.60	96.0627	86.55	171.8895	133.02	94.0051
46.54	97.8194	86.79	171.9215	133.52	90.4850
49.72	0.0000	86.94	171.9414	136.00	102.1674
51.35	98.8731	87.09	180.2154	136.47	96.8644
51.87	97.8143	87.57	180.2809	140.51	0.0000
52.39	98.9784	88.03	175.5257	143.76	102.6316
52.97	102.3748	88.34	172.1252	144.24	107.1231
53.44	96.8570	88.47	172.1420	145.44	110.7696
54.07	90.2341	89.96	175.7825	152.43	113.8961
57.36	0.0000	1093.63	175.8720	153.25	113.9475
57.53	99.4840	91.11	127.6380	323.87	100.5430
57.98	97.2902	92.59	131.2321	156.02	94.8919
59.27	105.2480	93.35	131.3057	158.56	98.3827
59.32	105.2530	94.56	103.7544	159.00	99.7775
59.54	114.2346	94.65	107.2200	162.33	82.0515
60.96	126.7233	94.67	107.2214	162.66	82.0661
61.17	121.1396	94.87	107.2370	163.33	80.2909
62.93	116.8432	97.43	103.9700	165.86	81.3023
63.29	130.3681	98.43	95.3743	176.31	87.1934
63.58	141.6444	98.44	95.3751	176.60	83.5729
64.28	116.9873	99.53	102.9692	177.52	79.9763
66.73	146.1052	100.11	113.4281	181.07	0.0000
67.24	130.2688	102.03	110.1047	181.52	99.0798
125.81	99.8551	103.18	104.3930	184.41	93.3859
67.75	99.8614	103.37	104.4072	143.76	97.6439
68.89	149.0948	105.21	104.5399	193.51	80.6107
69.67	125.4605	105.31	104.5468	197.03	77.9943
70.82	117.0992	106.12	111.5786	198.01	83.5386
70.83	117.1003	106.47	111.6055	201.83	96.5654
72.81	121.2648	109.28	105.9940	203.43	76.3896
72.87	121.2714	111.00	107.2823	205.31	97.6435
74.66	121.4537	111.76	0.0000	210.85	98.8170
74.82	121.4700	114.06	99.0280	215.65	64.7881
74.97	121.4852	116.30	0.0000	218.12	78.7589
77.11	121.7002	116.74	97.4455	222.11	67.7603
78.74	114.4590	119.76	86.2001	227.09	75.3517
79.69	135.0628	121.12	76.5910	227.38	77.2217
80.03	135.0990	121.22	76.5956	228.16	0.0000
80.12	136.8195	121.78	83.6686	228.18	75.3875
80.19	136.8274	122.06	83.6835	116.74	75.3875
80.57	136.8689	122.92	85.4915	235.69	86.6510
81.00	145.4731	123.07	85.4996	235.96	88.1550
81.07	145.4816	265.00	81.1233	238.63	74.7925
81.75	162.6848	125.81	90.0605	238.98	0.0000
82.47	143.9302	127.23	83.0695	240.99	74.8676
83.79	114.9201	127.91	84.8727	242.00	74.8993
84.00	114.9390	129.30	89.3690	244.70	61.4875

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	58.2991	344.28	35.0305	563.25	46.6493
252.80	55.4872	345.93	46.7336	564.24	0.0000
254.15	0.0000	351.06	47.7895	569.33	43.6060
256.23	68.7497	351.93	47.8037	946.00	42.5690
260.90	0.0000	355.39	0.0000	569.70	45.6865
264.66	67.0944	356.01	39.0765	583.19	29.1698
264.80	67.0977	364.49	50.9423	584.27	18.3401
265.00	68.9933	366.42	0.0000	595.83	17.7647
269.46	56.8076	372.51	40.2712	427.87	33.4775
270.03	61.5554	375.05	48.1686	602.52	0.0000
271.23	62.5316	377.52	40.3362	604.72	26.8086
273.65	79.6613	356.01	39.4324	607.14	25.1470
276.40	64.5573	388.16	36.5246	609.32	30.4019
277.37	64.5811	388.63	38.5049	610.33	30.4089
277.60	56.9888	391.69	37.5535	614.28	31.9066
278.00	55.0981	264.66	32.7034	618.01	27.3132
279.20	57.0245	401.81	33.7064	620.36	31.5326
279.54	60.8340	402.40	40.6534	621.93	27.3378
279.70	60.8379	404.85	44.4548	630.19	0.0000
280.46	59.9046	410.95	33.4036	631.29	25.2905
283.69	61.8827	413.71	39.7998	633.25	21.9280
284.31	57.1362	414.70	37.1573	634.78	23.2018
285.41	50.4914	423.72	32.9335	635.95	21.9419
285.90	0.0000	427.09	36.9627	636.99	16.8823
287.50	49.5784	427.87	25.9798	657.50	20.1417
290.67	61.0928	433.94	36.0368	657.76	19.0827
293.27	0.0000	439.40	40.1050	657.90	0.0000
351.93	47.8104	440.45	32.0938	661.66	19.0997
295.96	47.8233	453.88	37.2529	664.57	0.0000
879.38	47.8699	463.37	29.2770	666.33	33.9902
299.98	47.8951	468.07	15.1634	666.50	38.2412
300.09	47.8973	473.00	42.5159	667.71	0.0000
300.13	47.8981	475.06	22.2830	677.62	24.4922
301.36	47.9195	476.78	36.4807	685.70	22.4022
302.85	38.3569	477.60	37.5025	692.65	0.0000
256.23	46.0562	482.18	23.3418	695.00	19.2415
304.85	50.6682	487.02	30.4866	696.49	19.2475
306.78	42.2531	492.35	0.0000	696.51	19.2475
308.46	42.2792	497.08	35.6649	697.00	18.1803
311.90	55.8008	505.52	29.4139	697.30	20.3203
316.51	52.0389	507.63	0.0000	697.49	19.2519
319.41	49.1985	511.00	21.8200	702.65	18.2026
320.08	53.0698	514.00	32.7559	706.68	25.7197
321.04	52.1230	514.00	32.7559	711.68	23.6019
323.87	47.9236	520.40	25.9758	720.70	27.9471
325.23	47.9471	520.69	0.0000	721.93	0.0000
328.76	56.4127	522.65	0.0000	722.78	48.3920
333.37	46.5322	527.90	0.0000	722.91	48.3920
333.97	46.5425	528.26	21.3713	723.31	40.8679
334.37	46.5483	529.59	29.6007	724.19	39.8003
338.28	43.2819	529.87	0.0000	727.33	23.6812
338.32	43.2826	531.02	23.5017	733.00	23.7094
311.90	43.3146	537.26	28.8357	735.93	15.0970
340.48	43.3146	546.56	0.0000	333.97	14.0232
340.55	43.3160	552.55	27.9146	739.50	0.0000

ENERGY	MDA COUNTS
744.23	21.6046
747.24	15.1326
748.06	17.2974
752.31	28.1328
753.82	28.1415
756.73	21.6608
756.80	23.8268
884.68	34.7080
765.81	34.7217
766.42	29.2997
766.84	29.3022
772.60	0.0000
776.52	19.5738
739.50	0.0000
778.90	19.5831
783.70	19.6018
788.74	19.6216
792.07	19.6348
795.86	16.3747
810.06	33.9365
810.29	33.9384
344.28	30.6549
810.76	30.6566
815.77	19.7271
1048.07	25.2208
832.01	19.7897
834.85	24.2008
835.71	25.3051
836.80	0.0000
846.75	0.0000
846.77	15.8770
856.80	18.7795
860.56	18.7930
871.09	27.6917
873.19	21.0538
875.33	0.0000
879.38	19.9688
880.51	18.8635
881.60	21.0868
883.24	18.8729
884.68	14.4362
889.28	26.6741
894.76	24.4761
898.04	25.6041
900.72	15.5928
903.28	26.7429
911.20	21.2022
912.08	21.2057
923.98	0.0000
926.50	15.6663
929.11	27.9884
935.54	25.7788
937.49	31.3940
944.13	24.6963
946.00	21.3356

ENERGY	MDA COUNTS
949.00	20.2236
667.71	0.0000
962.31	16.7315
964.08	24.0326
966.17	30.0513
911.20	25.2554
983.53	18.9897
984.45	0.0000
1274.44	19.0313
1001.03	19.9542
1002.74	26.3110
1004.73	17.2438
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	15.5150
1038.76	0.0000
631.29	20.1083
1048.07	18.2842
1049.04	12.8010
1050.41	9.1460
1063.66	13.7490
1077.00	14.6977
1077.34	11.9425
1085.87	12.8789
1093.63	18.4209
1099.45	24.8919
1112.07	10.3925
1112.84	10.7791
1115.54	9.2432
1120.29	13.8750
1120.55	13.8757
1221.41	12.3353
1129.67	15.7482
1131.51	0.0000
1147.95	0.0000
1173.23	14.9227
1177.95	25.2004
1189.05	13.0895
1204.77	15.9317
1221.41	25.3666
1231.02	21.6400
1235.36	34.8338
1238.28	20.7217
1260.41	0.0000
1271.87	11.3584
1274.44	15.1500
1274.54	15.1508
1291.59	13.2897
1298.22	0.0000
1312.11	7.9338
1332.49	8.5931
1362.66	0.0000
1365.19	14.3877
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	12.5023
1408.01	7.7184
1434.09	3.8729
1435.80	6.7792
1457.56	0.0000
1460.82	10.6885
1489.16	5.8518
1505.03	3.9092
1584.12	5.9232
1596.21	7.9094
1620.50	5.9499
1621.92	5.9511
1678.03	0.0000
1690.97	9.0013
1750.46	0.0000
1764.49	1.6814
1063.66	4.0381
1771.35	2.0193
1791.20	0.0000
1808.65	5.0698
1810.72	0.0000
1836.06	0.0000

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:14:03.37

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299030.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM16.CNF;887
                                         Background date  : 28-JUL-2024 11:23:57
Sample date      : 26-JUN-2024 11:50:00  Acquisition date : 31-JUL-2024 16:11:34
Sample ID        : G674299030            Sample quantity  : 1.14630E+02 GRAM
Detector name    : GAM16                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.71  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.25*	73	218	1.21	127.06	124	7	2.02E-02	36.3	
2	3	75.00*	233	284	0.94	150.55	144	15	6.48E-02	13.1	1.76E+00
3	3	77.28	395	274	0.92	155.11	144	15	1.10E-01	8.4	
4	0	84.24*	135	212	1.35	169.03	166	7	3.76E-02	19.9	
5	0	87.08	100	301	1.45	174.69	173	7	2.77E-02	30.3	
6	4	90.15	74	154	0.96	180.84	179	15	2.07E-02	25.4	2.30E+00
7	4	92.82*	220	221	1.11	186.17	179	15	6.12E-02	13.6	
8	4	94.78	31	162	1.06	190.09	179	15	8.53E-03	79.4	
9	0	154.23	66	265	0.73	308.91	304	10	1.83E-02	48.0	
10	0	186.11*	306	238	1.08	372.62	367	10	8.49E-02	11.3	
11	0	209.19	53	160	0.65	418.75	415	8	1.49E-02	43.2	
12	2	238.87*	460	127	1.37	478.08	471	20	1.28E-01	6.4	1.99E+00
13	2	242.15	331	146	1.45	484.63	471	20	9.19E-02	8.8	
14	0	255.93	17	91	1.38	512.17	511	6	4.70E-03	91.7	
15	0	269.80	78	161	2.28	539.91	534	12	2.17E-02	34.5	
16	5	277.39	38	52	1.11	555.08	553	11	1.06E-02	33.0	1.78E+00
17	5	279.64*	29	89	1.96	559.56	553	11	8.15E-03	60.0	
18	0	295.51*	596	149	1.25	591.29	584	12	1.66E-01	5.8	
19	0	327.80	26	98	1.33	655.84	651	8	7.22E-03	68.8	
20	0	338.88*	79	82	1.58	677.98	673	9	2.20E-02	24.0	
21	0	352.20*	1002	130	1.23	704.60	699	12	2.78E-01	3.9	
22	0	455.13	18	52	1.08	910.36	907	8	5.00E-03	73.3	
23	0	463.36	31	62	0.94	926.81	921	10	8.53E-03	51.4	
24	0	511.21*	18	108	1.65	1022.48	1014	16	5.10E-03	139.0	
25	0	583.51*	138	78	1.39	1167.00	1160	15	3.84E-02	16.6	
26	0	609.61*	701	100	1.43	1219.18	1213	14	1.95E-01	4.9	
27	0	703.22	21	90	5.93	1406.32	1396	22	5.94E-03	114.0	
28	0	727.77*	28	33	0.77	1455.39	1450	11	7.71E-03	45.6	
29	0	768.63	45	35	1.08	1537.09	1531	11	1.25E-02	29.7	
30	0	809.63	48	33	6.96	1619.06	1610	22	1.33E-02	33.8	
31	0	911.66*	79	44	1.87	1823.04	1817	11	2.20E-02	20.3	
32	0	936.54	23	48	3.54	1872.79	1863	14	6.48E-03	68.5	
33	2	964.73*	21	23	2.36	1929.16	1923	26	5.73E-03	51.9	6.50E-01
34	2	969.60*	39	23	2.36	1938.90	1923	26	1.07E-02	33.4	

Sample ID : G674299030 Acquisition date : 31-JUL-2024 16:11:34

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1120.76*	140	29	1.76	2241.15	2235	15	3.88E-02	12.2	
36	0	1238.69	77	48	2.04	2476.95	2466	19	2.14E-02	24.3	
37	0	1267.02	37	6	7.81	2533.61	2525	21	1.03E-02	22.7	
38	0	1377.84	70	7	1.90	2755.23	2749	14	1.93E-02	14.5	
39	0	1461.14*	288	21	2.69	2921.80	2910	18	8.00E-02	7.2	
40	0	1510.89*	32	9	3.51	3021.30	3013	18	8.97E-03	28.6	
41	0	1582.26	18	8	0.80	3164.03	3155	15	4.86E-03	41.6	
42	0	1729.75	28	11	2.12	3459.03	3452	15	7.84E-03	31.9	
43	0	1764.92*	125	8	2.41	3529.36	3521	16	3.46E-02	10.6	
44	0	1848.01*	25	0	1.48	3695.57	3689	12	6.87E-03	21.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:14:05

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299030.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 11:50:00 Acquisition date : 31-JUL-2024 16:11:34
Sample ID        : G674299030           Sample quantity  : 114.63 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA16              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.71   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Sample ID : G674299030 Acquisition date : 31-JUL-2024 16:11:34

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	272	10.66*	1.208E+00	1.382E+01	1.382E+01	14.30
CO-58	810.76	46	99.45*	2.032E+00	1.505E-01	2.124E-01	67.51
CD-109	88.03	106	3.70*	5.813E+00	3.216E+00	3.391E+00	60.54
SN-126	64.28	78	9.60	2.917E+00	1.827E+00	1.827E+00	72.61
	86.94	106	8.90	5.813E+00	1.337E+00	1.337E+00	60.54
	87.57	106	37.00*	5.813E+00	3.216E-01	3.216E-01	60.54
HG-203	70.83	------	3.69	4.027E+00	------	Line Not Found	------
	72.87	------	6.19	4.302E+00	------	Line Not Found	------
	279.20	30	81.56*	4.612E+00	5.170E-02	8.729E-02	120.04
TL-208	277.37	38	6.60	4.638E+00	8.235E-01	8.235E-01	65.93
	583.19	136	85.00*	2.674E+00	3.911E-01	3.911E-01	33.21
	860.56	------	12.50	1.925E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.302E+00	------	Line Not Found	------
	351.06	1005	12.92*	3.909E+00	1.303E+01	1.303E+01	7.87
BI-212	727.33	27	6.67*	2.228E+00	1.189E+00	1.189E+00	91.22
	1620.50	------	1.47	1.122E+00	------	Line Not Found	------
PB-212	74.82	249	10.28	4.574E+00	3.462E+00	3.462E+00	26.20
	77.11	421	17.10	4.850E+00	3.326E+00	3.326E+00	16.76
	238.63	468	43.60*	5.148E+00	1.366E+00	1.366E+00	12.82
	300.09	------	3.30	4.386E+00	------	Line Not Found	------
BI-214	609.32	686	45.49*	2.582E+00	3.828E+00	3.828E+00	9.70
	1120.29	133	14.92	1.515E+00	3.864E+00	3.864E+00	24.33
	1764.49	117	15.30	1.067E+00	4.675E+00	4.675E+00	21.17
PB-214	74.82	249	5.80	4.574E+00	6.136E+00	6.137E+00	26.20
	77.11	421	9.70	4.850E+00	5.863E+00	5.863E+00	16.76
	87.09	106	3.41	5.813E+00	3.490E+00	3.490E+00	60.54
	242.00	337	7.25	5.100E+00	5.964E+00	5.964E+00	17.56
	295.22	602	18.42	4.434E+00	4.828E+00	4.828E+00	11.57
	351.93	1005	35.60*	3.909E+00	4.728E+00	4.728E+00	7.87
RN-222	609.32	686	45.49*	2.582E+00	3.828E+00	3.828E+00	9.70
	1120.29	133	14.92	1.515E+00	3.864E+00	3.864E+00	24.33
	1764.49	117	15.30	1.067E+00	4.675E+00	4.675E+00	21.17
RA-224	240.99	337	4.10*	5.100E+00	1.055E+01	1.055E+01	17.56
RA-226	74.82	249	5.80	4.574E+00	6.136E+00	6.137E+00	26.20
	77.11	421	9.70	4.850E+00	5.863E+00	5.863E+00	16.76
	87.09	106	3.41	5.813E+00	3.490E+00	3.490E+00	60.54
	242.00	337	7.25	5.100E+00	5.964E+00	5.964E+00	17.56
	295.22	602	18.42	4.434E+00	4.828E+00	4.828E+00	11.57
	351.93	1005	35.60*	3.909E+00	4.728E+00	4.728E+00	7.87
AC-228	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	79	11.27	4.019E+00	1.147E+00	1.147E+00	47.95
	835.71	------	1.61	1.975E+00	------	Line Not Found	------
	911.20	76	25.80*	1.827E+00	1.060E+00	1.060E+00	40.67
	968.97	37	15.80	1.728E+00	8.906E-01	8.906E-01	66.74
RA-228	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	79	11.27	4.019E+00	1.147E+00	1.147E+00	47.95
	835.71	------	1.61	1.975E+00	------	Line Not Found	------
	911.20	76	25.80*	1.827E+00	1.060E+00	1.060E+00	40.67
	968.97	37	15.80	1.728E+00	8.906E-01	8.906E-01	66.74

Sample ID : G674299030 Acquisition date : 31-JUL-2024 16:11:34

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	249	10.28	4.574E+00	3.462E+00	3.462E+00	26.20
	77.11	421	17.10	4.850E+00	3.326E+00	3.326E+00	16.76
	238.63	468	43.60*	5.148E+00	1.366E+00	1.366E+00	12.82
	300.09	------	3.30	4.386E+00	------	Line Not Found	------
TH-229	85.43	144	14.70	5.571E+00	1.148E+00	1.148E+00	39.90
	88.47	106	24.00	5.813E+00	4.958E-01	4.958E-01	60.54
	193.51	------	4.41*	5.903E+00	------	Line Not Found	------
	210.85	------	2.80	5.595E+00	------	Line Not Found	------
TH-230	74.82	249	5.80	4.574E+00	6.136E+00	6.136E+00	26.20
	77.11	421	9.70	4.850E+00	5.863E+00	5.863E+00	16.76
	87.09	106	3.41	5.813E+00	3.490E+00	3.490E+00	60.54
	242.00	337	7.25	5.100E+00	5.964E+00	5.964E+00	17.56
	295.22	602	18.42	4.434E+00	4.828E+00	4.828E+00	11.57
	351.93	1005	35.60*	3.909E+00	4.728E+00	4.728E+00	7.87
TH-232	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	79	11.27	4.019E+00	1.147E+00	1.147E+00	47.95
	835.71	------	1.61	1.975E+00	------	Line Not Found	------
	911.20	76	25.80*	1.827E+00	1.060E+00	1.060E+00	40.67
	968.97	37	15.80	1.728E+00	8.906E-01	8.906E-01	66.74
TH-234	63.29	78	3.70*	2.917E+00	4.741E+00	4.741E+00	72.61
	92.59	233	4.23	6.219E+00	5.799E+00	5.799E+00	27.30
U-234	74.82	249	5.80	4.574E+00	6.136E+00	6.136E+00	26.20
	77.11	421	9.70	4.850E+00	5.863E+00	5.863E+00	16.76
	87.09	106	3.41	5.813E+00	3.490E+00	3.490E+00	60.54
	242.00	337	7.25	5.100E+00	5.964E+00	5.964E+00	17.56
	295.22	602	18.42	4.434E+00	4.828E+00	4.828E+00	11.57
	351.93	1005	35.60*	3.909E+00	4.728E+00	4.728E+00	7.87
U-235	89.96	79	3.47	6.044E+00	2.459E+00	2.459E+00	50.80
	93.35	233	5.60	6.219E+00	4.380E+00	4.380E+00	27.30
	143.76	------	10.96*	6.802E+00	------	Line Not Found	------
	163.33	------	5.08	6.472E+00	------	Line Not Found	------
	185.72	314	57.20	6.041E+00	5.959E-01	5.959E-01	22.53
	205.31	------	5.01	5.691E+00	------	Line Not Found	------
U-238	63.29	78	3.70*	2.917E+00	4.741E+00	4.741E+00	72.61
	92.59	233	4.23	6.219E+00	5.799E+00	5.799E+00	27.30
AM-243	43.53	------	5.90	4.169E-01	------	Line Not Found	------
	74.66	249	67.20*	4.574E+00	5.296E-01	5.296E-01	26.20
ANH-511	511.00	18	100.00*	2.965E+00	4.003E-02	4.003E-02	278.07

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:14:06.04

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299030.CNF;1  *
* Acquisition date : 31-JUL-2024 16:11:34 Sensitivity     : 3.000           *
* Detector ID      : GAM16                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.71     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:50:00 Analyst initials: MXR1            *
* Sample ID        : G674299030           Sample Quantity : 1.1463E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-NOV-2023 11:06:02 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM16_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.382E+01	1.937E+00	8.133E-01
CO-58	2.124E-01	1.405E-01	1.079E-01
CD-109	3.391E+00	2.012E+00	2.060E+00
SN-126	3.216E-01	1.908E-01	1.965E-01
HG-203	8.729E-02	1.027E-01	1.292E-01
TL-208	3.911E-01	1.273E-01	9.385E-02
BI-211	1.303E+01	1.004E+00	5.380E-01
BI-212	1.189E+00	1.063E+00	1.159E+00
PB-212	1.366E+00	1.716E-01	1.362E-01
BI-214	3.828E+00	3.640E-01	1.738E-01
PB-214	4.728E+00	3.644E-01	1.957E-01
RN-222	3.828E+00	3.640E-01	1.738E-01
RA-224	1.055E+01	1.815E+00	1.461E+00
RA-226	4.728E+00	3.644E-01	1.957E-01
AC-228	1.060E+00	4.227E-01	3.770E-01
RA-228	1.060E+00	4.227E-01	3.770E-01
TH-228	1.366E+00	1.716E-01	1.362E-01
TH-229	3.123E-01	7.337E-01	1.320E+00
TH-230	4.728E+00	3.644E-01	1.957E-01
TH-232	1.060E+00	4.227E-01	3.770E-01
TH-234	4.741E+00	3.374E+00	3.320E+00
U-234	4.728E+00	3.644E-01	1.957E-01
U-235	8.259E-04	2.893E-01	5.142E-01
U-238	4.741E+00	3.374E+00	3.320E+00
AM-243	5.296E-01	1.360E-01	1.370E-01
ANH-511	4.003E-02	1.091E-01	7.049E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.583E-01	5.881E-01	1.107E+00	NOT IDENT.
NA-22	2.738E-02	6.428E-02	1.150E-01	NOT IDENT.
NA-24	0.000E+00	3.236E+15	0.000E+00	SHORT HLIF
AL-26	5.192E-02	5.225E-02	1.219E-01	NOT IDENT.

SC-46	2.652E-02	6.937E-02	1.363E-01	FAIL ABUN
V-48	-3.219E-02	2.370E-01	4.397E-01	NOT IDENT.
CR-51	-6.540E-02	8.229E-01	1.528E+00	NOT IDENT.
MN-52	-1.108E+00	3.834E+00	7.318E+00	FAIL ABUN
MN-54	3.941E-03	5.081E-02	9.765E-02	NOT IDENT.
CO-56	-1.218E-02	5.715E-02	1.073E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	1.781E-02	3.259E-02	6.137E-02	NOT IDENT.
FE-59	1.232E-02	1.700E-01	3.214E-01	NOT IDENT.
CO-60	-1.567E-02	5.202E-02	9.310E-02	NOT IDENT.
ZN-65	9.230E-03	1.345E-01	2.242E-01	NOT IDENT.
GE-68	-8.762E-01	1.637E+00	2.858E+00	NOT IDENT.
AS-73	1.182E-01	1.597E+00	3.074E+00	NOT IDENT.
AS-74	-9.019E-03	2.893E-01	5.212E-01	NOT IDENT.
SE-75	4.577E-02	8.517E-02	1.405E-01	FAIL ABUN
BR-77	0.000E+00	9.315E+03	0.000E+00	SHORT HLIF
SR-82	3.256E-01	6.546E-01	1.354E+00	NOT IDENT.
RB-83	-4.204E-02	1.109E-01	1.950E-01	NOT IDENT.
RB-84	7.777E-02	1.513E-01	3.030E-01	NOT IDENT.
KR-85	5.975E+00	1.055E+01	1.844E+01	NOT IDENT.
SR-85	3.896E-02	6.905E-02	1.206E-01	NOT IDENT.
RB-86	-1.104E+00	2.064E+00	3.602E+00	NOT IDENT.
Y-88	-2.393E-04	5.398E-02	1.111E-01	NOT IDENT.
Y-91	-1.822E+01	3.733E+01	6.425E+01	NOT IDENT.
NB-94	5.957E-02	1.331E-01	8.619E-02	FAIL ABUN
NB-95	-8.914E-04	8.302E-02	1.391E-01	NOT IDENT.
NB-95M	1.695E-02	2.317E-01	3.693E-01	NOT IDENT.
ZR-95	4.522E-03	1.085E-01	2.110E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	8.814E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.453E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	6.017E+40	0.000E+00	SHORT HLIF
RH-101	1.078E-02	4.365E-02	7.976E-02	NOT IDENT.
RH-102	5.210E-02	8.364E-02	1.601E-01	NOT IDENT.
RU-103	-3.586E-02	7.389E-02	1.289E-01	FAIL ABUN
RH-106	-3.737E-01	4.307E-01	6.940E-01	NOT IDENT.
RU-106	-3.737E-01	4.307E-01	6.940E-01	NOT IDENT.
AG-108M	-6.213E-03	4.689E-02	8.485E-02	NOT IDENT.
AG-110	-1.160E-01	1.045E+00	1.861E+00	NOT IDENT.
AG-110M	-2.050E-02	8.157E-02	1.492E-01	FAIL ABUN
SN-113	-5.505E-02	7.279E-02	1.263E-01	NOT IDENT.
CD-115	0.000E+00	8.074E+03	0.000E+00	SHORT HLIF
SN-117M	9.233E-02	2.158E-01	3.668E-01	NOT IDENT.
SB-122	0.000E+00	4.279E+02	0.000E+00	SHORT HLIF
TE-123M	2.120E-02	4.152E-02	7.635E-02	NOT IDENT.
SB-124	5.115E-02	1.396E-01	3.063E-01	NOT IDENT.
SB-125	4.081E-02	1.331E-01	2.515E-01	FAIL ABUN
TE-125M	-2.976E+00	1.658E+01	2.990E+01	NOT IDENT.
I-126	3.963E-01	9.699E-01	1.808E+00	NOT IDENT.
SB-126	2.944E-01	6.306E-01	1.190E+00	NOT IDENT.
SB-127	-2.323E+01	6.278E+01	1.080E+02	NOT IDENT.
I-131	-1.673E-01	8.439E-01	1.554E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.747E+01	0.000E+00	SHORT HLIF
BA-133	7.991E-02	5.272E-02	1.051E-01	FAIL ABUN
I-133	0.000E+00	7.657E+10	0.000E+00	SHORT HLIF
CS-134	4.364E-02	5.636E-02	1.160E-01	NOT IDENT.
I-135	0.000E+00	8.460E+37	0.000E+00	SHORT HLIF
CS-136	-3.356E-01	3.597E-01	5.827E-01	FAIL ABUN
BA-137M	-2.944E-02	5.099E-02	8.507E-02	NOT IDENT.
CS-137	-3.110E-02	5.387E-02	8.987E-02	NOT IDENT.
LA-138	-1.125E-02	7.665E-02	1.495E-01	NOT IDENT.
CE-139	1.891E-02	4.732E-02	8.556E-02	NOT IDENT.
BA-140	9.603E-01	1.184E+00	2.316E+00	NOT IDENT.
LA-140	-1.734E-01	3.413E-01	6.195E-01	FAIL ABUN
CE-141	-2.140E-02	1.376E-01	2.422E-01	NOT IDENT.
CE-143	0.000E+00	4.366E+06	0.000E+00	SHORT HLIF
CE-144	-2.514E-01	2.819E-01	4.783E-01	NOT IDENT.
PM-144	2.419E-04	5.166E-02	8.286E-02	NOT IDENT.
PR-144	9.077E-03	3.906E+00	6.263E+00	NOT IDENT.
PM-146	5.621E-02	8.073E-02	1.232E-01	FAIL ABUN
ND-147	-1.034E+00	2.817E+00	4.942E+00	FAIL ABUN
PM-147	-5.592E+02	9.746E+02	1.704E+03	NOT IDENT.
PM-149	0.000E+00	6.446E+04	0.000E+00	SHORT HLIF
EU-150	-1.117E-02	4.221E-02	6.904E-02	FAIL ABUN
EU-152	-7.513E-03	1.275E-01	2.378E-01	FAIL ABUN
GD-153	-7.925E-02	1.190E-01	1.935E-01	NOT IDENT.
EU-154	8.237E-02	1.811E-01	3.254E-01	NOT IDENT.

EU-155	2.586E-02	1.383E-01	2.557E-01	FAIL ABUN
TB-160	-1.363E-01	2.109E-01	3.696E-01	FAIL ABUN
HO-166M	-6.282E-02	7.942E-02	1.180E-01	FAIL ABUN
TM-171	-8.083E+00	2.983E+01	5.639E+01	NOT IDENT.
HF-172	-2.960E-02	2.467E-01	4.431E-01	FAIL ABUN
LU-172	-9.863E-03	8.381E-02	1.558E-01	FAIL ABUN
LU-176	1.624E-02	3.301E-02	6.471E-02	FAIL ABUN
HF-181	-9.733E-03	8.410E-02	1.528E-01	NOT IDENT.
TA-182	-5.122E-02	2.635E-01	4.775E-01	FAIL ABUN
RE-183	-4.370E-02	3.268E-01	6.208E-01	NOT IDENT.
RE-184	5.389E-02	2.404E-01	4.719E-01	NOT IDENT.
W-188	1.324E+00	1.316E+01	2.257E+01	FAIL ABUN
IR-192	-7.511E-02	5.594E-02	9.429E-02	FAIL ABUN
TL-204	-3.366E+00	7.620E+00	1.290E+01	NOT IDENT.
BI-207	2.830E-02	6.092E-02	1.249E-01	FAIL ABUN
BI-210	5.148E+00	6.200E+00	1.249E+01	NOT IDENT.
PB-210	5.148E+00	6.200E+00	1.249E+01	NOT IDENT.
PB-211	8.073E-01	9.845E-01	1.943E+00	NOT IDENT.
BI-213	4.834E-02	1.538E-01	2.898E-01	NOT IDENT.
RN-219	-5.589E-02	5.975E-01	1.093E+00	FAIL ABUN
RA-223	3.210E-01	9.043E-01	1.587E+00	FAIL ABUN
AC-225	-2.264E+00	3.598E+00	5.934E+00	NOT IDENT.
AC-227	2.413E-01	4.337E-01	6.804E-01	FAIL ABUN
TH-227	2.413E-01	4.337E-01	6.804E-01	FAIL ABUN
PA-231	7.372E-01	6.291E-01	1.275E+00	NOT IDENT.
TH-231	3.210E-01	9.043E-01	1.587E+00	FAIL ABUN
PA-233	1.246E-03	8.792E-02	1.653E-01	NOT IDENT.
PA-234	-1.822E-01	4.403E-01	7.876E-01	FAIL ABUN
PA-234M	4.943E+00	7.030E+00	1.408E+01	NOT IDENT.
NP-237	1.246E-03	8.792E-02	1.653E-01	FAIL ABUN
NP-238	0.000E+00	2.161E+04	0.000E+00	SHORT HLIF
NP-239	-7.124E-03	3.443E-01	6.253E-01	FAIL ABUN
PU-239	-3.136E+01	4.885E+02	8.733E+02	NOT IDENT.
AM-241	6.568E-02	2.077E-01	4.030E-01	NOT IDENT.
CM-243	9.202E-03	1.313E-01	2.423E-01	FAIL ABUN
BK-247	8.569E-02	1.348E-01	2.246E-01	FAIL ABUN
CM-247	-2.440E-02	5.481E-02	9.741E-02	FAIL ABUN
CF-249	4.178E-02	5.623E-02	1.103E-01	NOT IDENT.
CF-251	-3.334E-03	1.868E-01	3.276E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:14:04.42

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	272	10.66*	1.208E+00	1.382E+01	1.382E+01	14.30
CO-58	810.76	46	99.45*	2.032E+00	1.505E-01	2.124E-01	67.51
CD-109	88.03	106	3.70*	5.813E+00	3.216E+00	3.391E+00	60.54
SN-126	64.28	78	9.60	2.917E+00	1.827E+00	1.827E+00	72.61
	86.94	106	8.90	5.813E+00	1.337E+00	1.337E+00	60.54
	87.57	106	37.00*	5.813E+00	3.216E-01	3.216E-01	60.54
HG-203	70.83	------	3.69	4.027E+00	------	Line Not Found	------
	72.87	------	6.19	4.302E+00	------	Line Not Found	------
	279.20	30	81.56*	4.612E+00	5.170E-02	8.729E-02	120.04
TL-208	277.37	38	6.60	4.638E+00	8.235E-01	8.235E-01	65.93
	583.19	136	85.00*	2.674E+00	3.911E-01	3.911E-01	33.21
	860.56	------	12.50	1.925E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.302E+00	------	Line Not Found	------
	351.06	1005	12.92*	3.909E+00	1.303E+01	1.303E+01	7.87
BI-212	727.33	27	6.67*	2.228E+00	1.189E+00	1.189E+00	91.22
	1620.50	------	1.47	1.122E+00	------	Line Not Found	------
PB-212	74.82	249	10.28	4.574E+00	3.462E+00	3.462E+00	26.20
	77.11	421	17.10	4.850E+00	3.326E+00	3.326E+00	16.76
	238.63	468	43.60*	5.148E+00	1.366E+00	1.366E+00	12.82
	300.09	------	3.30	4.386E+00	------	Line Not Found	------
BI-214	609.32	686	45.49*	2.582E+00	3.828E+00	3.828E+00	9.70
	1120.29	133	14.92	1.515E+00	3.864E+00	3.864E+00	24.33
	1764.49	117	15.30	1.067E+00	4.675E+00	4.675E+00	21.17
PB-214	74.82	249	5.80	4.574E+00	6.136E+00	6.137E+00	26.20
	77.11	421	9.70	4.850E+00	5.863E+00	5.863E+00	16.76
	87.09	106	3.41	5.813E+00	3.490E+00	3.490E+00	60.54
	242.00	337	7.25	5.100E+00	5.964E+00	5.964E+00	17.56
	295.22	602	18.42	4.434E+00	4.828E+00	4.828E+00	11.57
	351.93	1005	35.60*	3.909E+00	4.728E+00	4.728E+00	7.87
RN-222	609.32	686	45.49*	2.582E+00	3.828E+00	3.828E+00	9.70
	1120.29	133	14.92	1.515E+00	3.864E+00	3.864E+00	24.33
	1764.49	117	15.30	1.067E+00	4.675E+00	4.675E+00	21.17
RA-224	240.99	337	4.10*	5.100E+00	1.055E+01	1.055E+01	17.56
RA-226	74.82	249	5.80	4.574E+00	6.136E+00	6.137E+00	26.20
	77.11	421	9.70	4.850E+00	5.863E+00	5.863E+00	16.76
	87.09	106	3.41	5.813E+00	3.490E+00	3.490E+00	60.54
	242.00	337	7.25	5.100E+00	5.964E+00	5.964E+00	17.56
	295.22	602	18.42	4.434E+00	4.828E+00	4.828E+00	11.57
	351.93	1005	35.60*	3.909E+00	4.728E+00	4.728E+00	7.87
AC-228	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	79	11.27	4.019E+00	1.147E+00	1.147E+00	47.95
	835.71	------	1.61	1.975E+00	------	Line Not Found	------
	911.20	76	25.80*	1.827E+00	1.060E+00	1.060E+00	40.67
	968.97	37	15.80	1.728E+00	8.906E-01	8.906E-01	66.74
RA-228	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	79	11.27	4.019E+00	1.147E+00	1.147E+00	47.95
	835.71	------	1.61	1.975E+00	------	Line Not Found	------

Sample ID : G674299030 Acquisition date : 31-JUL-2024 16:11:34

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	76	25.80*	1.827E+00	1.060E+00	1.060E+00	40.67
	968.97	37	15.80	1.728E+00	8.906E-01	8.906E-01	66.74
TH-228	74.82	249	10.28	4.574E+00	3.462E+00	3.462E+00	26.20
	77.11	421	17.10	4.850E+00	3.326E+00	3.326E+00	16.76
	238.63	468	43.60*	5.148E+00	1.366E+00	1.366E+00	12.82
	300.09	------	3.30	4.386E+00	------	Line Not Found	------
TH-229	85.43	144	14.70	5.571E+00	1.148E+00	1.148E+00	39.90
	88.47	106	24.00	5.813E+00	4.958E-01	4.958E-01	60.54
	193.51	------	4.41*	5.903E+00	------	Line Not Found	------
	210.85	------	2.80	5.595E+00	------	Line Not Found	------
TH-230	74.82	249	5.80	4.574E+00	6.136E+00	6.136E+00	26.20
	77.11	421	9.70	4.850E+00	5.863E+00	5.863E+00	16.76
	87.09	106	3.41	5.813E+00	3.490E+00	3.490E+00	60.54
	242.00	337	7.25	5.100E+00	5.964E+00	5.964E+00	17.56
	295.22	602	18.42	4.434E+00	4.828E+00	4.828E+00	11.57
	351.93	1005	35.60*	3.909E+00	4.728E+00	4.728E+00	7.87
TH-232	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	79	11.27	4.019E+00	1.147E+00	1.147E+00	47.95
	835.71	------	1.61	1.975E+00	------	Line Not Found	------
	911.20	76	25.80*	1.827E+00	1.060E+00	1.060E+00	40.67
	968.97	37	15.80	1.728E+00	8.906E-01	8.906E-01	66.74
TH-234	63.29	78	3.70*	2.917E+00	4.741E+00	4.741E+00	72.61
	92.59	233	4.23	6.219E+00	5.799E+00	5.799E+00	27.30
U-234	74.82	249	5.80	4.574E+00	6.136E+00	6.136E+00	26.20
	77.11	421	9.70	4.850E+00	5.863E+00	5.863E+00	16.76
	87.09	106	3.41	5.813E+00	3.490E+00	3.490E+00	60.54
	242.00	337	7.25	5.100E+00	5.964E+00	5.964E+00	17.56
	295.22	602	18.42	4.434E+00	4.828E+00	4.828E+00	11.57
	351.93	1005	35.60*	3.909E+00	4.728E+00	4.728E+00	7.87
U-235	89.96	79	3.47	6.044E+00	2.459E+00	2.459E+00	50.80
	93.35	233	5.60	6.219E+00	4.380E+00	4.380E+00	27.30
	143.76	------	10.96*	6.802E+00	------	Line Not Found	------
	163.33	------	5.08	6.472E+00	------	Line Not Found	------
	185.72	314	57.20	6.041E+00	5.959E-01	5.959E-01	22.53
	205.31	------	5.01	5.691E+00	------	Line Not Found	------
U-238	63.29	78	3.70*	2.917E+00	4.741E+00	4.741E+00	72.61
	92.59	233	4.23	6.219E+00	5.799E+00	5.799E+00	27.30
AM-243	43.53	------	5.90	4.169E-01	------	Line Not Found	------
	74.66	249	67.20*	4.574E+00	5.296E-01	5.296E-01	26.20
ANH-511	511.00	18	100.00*	2.965E+00	4.003E-02	4.003E-02	278.07

Flag: "*" = Keyline

Sample ID : G674299030 Acquisition date : 31-JUL-2024 16:11:34

Total number of lines in spectrum 44
Number of unidentified lines 8
Number of lines tentatively identified by NID 36 81.82%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.382E+01	1.382E+01	0.198E+01	14.30	
CO-58	70.86D	1.41	1.505E-01	2.124E-01	1.434E-01	67.51	
CD-109	461.40D	1.05	3.216E+00	3.391E+00	2.053E+00	60.54	
SN-126	2.30E+05Y	1.00	3.216E-01	3.216E-01	1.947E-01	60.54	
HG-203	46.59D	1.69	5.170E-02	8.729E-02	10.48E-02	120.04	
TL-208	1.41E+10Y	1.00	3.911E-01	3.911E-01	1.299E-01	33.21	
BI-211	7.04E+08Y	1.00	1.303E+01	1.303E+01	0.102E+01	7.87	
BI-212	1.41E+10Y	1.00	1.189E+00	1.189E+00	1.084E+00	91.22	
PB-212	1.41E+10Y	1.00	1.366E+00	1.366E+00	0.175E+00	12.82	
BI-214	1600.00Y	1.00	3.828E+00	3.828E+00	0.371E+00	9.70	
PB-214	1600.00Y	1.00	4.728E+00	4.728E+00	0.372E+00	7.87	
RN-222	1600.00Y	1.00	3.828E+00	3.828E+00	0.371E+00	9.70	
RA-224	1.41E+10Y	1.00	1.055E+01	1.055E+01	0.185E+01	17.56	
RA-226	1600.00Y	1.00	4.728E+00	4.728E+00	0.372E+00	7.87	
AC-228	1.41E+10Y	1.00	1.060E+00	1.060E+00	0.431E+00	40.67	
RA-228	1.41E+10Y	1.00	1.060E+00	1.060E+00	0.431E+00	40.67	
TH-228	1.41E+10Y	1.00	1.366E+00	1.366E+00	0.175E+00	12.82	
TH-229	7340.00Y	1.00	4.958E-01	4.958E-01	3.002E-01	60.54	K
TH-230	7.54E+04Y	1.00	4.728E+00	4.728E+00	0.372E+00	7.87	
TH-232	1.41E+10Y	1.00	1.060E+00	1.060E+00	0.431E+00	40.67	
TH-234	4.47E+09Y	1.00	4.741E+00	4.741E+00	3.443E+00	72.61	
U-234	2.45E+05Y	1.00	4.728E+00	4.728E+00	0.372E+00	7.87	
U-235	7.04E+08Y	1.00	5.959E-01	5.959E-01	1.342E-01	22.53	K
U-238	4.47E+09Y	1.00	4.741E+00	4.741E+00	3.443E+00	72.61	
AM-243	7370.00Y	1.00	5.296E-01	5.296E-01	1.388E-01	26.20	
ANH-511	1.00E+09Y	1.00	4.003E-02	4.003E-02	11.13E-02	278.07	
			---	---			
	Total Activity :		8.633E+01	8.661E+01			

Grand Total Activity : 8.633E+01 8.661E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299030 Acquisition date : 31-JUL-2024 16:11:34

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	94.78	32	172	1.06	190.09	179	15	8.53E-03	****	6.33E+00	T
0	154.23	68	275	0.73	308.91	304	10	1.83E-02	95.9	6.64E+00	T
0	209.19	55	163	0.65	418.75	415	8	1.49E-02	86.4	5.62E+00	
0	255.93	17	92	1.38	512.17	511	6	4.70E-03	****	4.91E+00	T
0	269.80	79	163	2.28	539.91	534	12	2.17E-02	69.1	4.73E+00	T
0	327.80	26	99	1.33	655.84	651	8	7.22E-03	****	4.12E+00	T
0	455.13	18	52	1.08	910.36	907	8	5.00E-03	****	3.24E+00	T
0	463.36	30	62	0.94	926.81	921	10	8.53E-03	****	3.19E+00	T
0	703.22	21	87	5.93	1406.32	1396	22	5.94E-03	****	2.29E+00	T
0	768.63	44	34	1.08	1537.09	1531	11	1.25E-02	59.5	2.13E+00	
0	936.54	22	46	3.54	1872.79	1863	14	6.48E-03	****	1.78E+00	T
2	964.73	20	22	2.36	1929.16	1923	26	5.73E-03	****	1.74E+00	T
0	1238.69	73	45	2.04	2476.95	2466	19	2.14E-02	48.6	1.39E+00	T
0	1267.02	35	6	7.81	2533.61	2525	21	1.03E-02	45.4	1.36E+00	
0	1377.84	66	7	1.90	2755.23	2749	14	1.93E-02	29.0	1.27E+00	
0	1510.89	30	8	3.51	3021.30	3013	18	8.97E-03	57.2	1.18E+00	
0	1582.26	16	7	0.80	3164.03	3155	15	4.86E-03	83.3	1.14E+00	
0	1729.75	26	10	2.12	3459.03	3452	15	7.84E-03	63.8	1.08E+00	
0	1848.01	23	0	1.48	3695.57	3689	12	6.87E-03	43.3	1.04E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:14:16.63

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299030.CNF;1  *
* Acquisition date : 31-JUL-2024 16:11:34 Sensitivity     : 3.000           *
* Detector ID      : GAM16                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.71     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:50:00 Nuclide Library : SOLID           *
* Sample ID        : G674299030           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1463E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-NOV-2023 11:06:02 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM16_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.382E-01
CO-58	4.775E-02
CD-109	9.869E-01
SN-126	9.412E-02
HG-203	6.062E-02
TL-208	4.303E-02
BI-211	2.515E-01
BI-212	5.201E-01
PB-212	6.416E-02
BI-214	7.937E-02
PB-214	9.147E-02
RN-222	7.937E-02
RA-224	6.878E-01
RA-226	9.147E-02
AC-228	1.698E-01
RA-228	1.698E-01
TH-228	6.416E-02
TH-229	6.258E-01
TH-230	9.146E-02
TH-232	1.698E-01
TH-234	1.577E+00
U-234	9.146E-02
U-235	2.451E-01
U-238	1.577E+00
AM-243	6.555E-02
ANH-511	3.226E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.103E-01	NOT IDENT.
NA-22	5.081E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	5.258E-02	NOT IDENT.
SC-46	6.181E-02	FAIL ABUN

V-48	1.960E-01	NOT IDENT.
CR-51	7.125E-01	NOT IDENT.
MN-52	3.094E+00	FAIL ABUN
MN-54	4.399E-02	NOT IDENT.
CO-56	4.742E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.905E-02	NOT IDENT.
FE-59	1.432E-01	NOT IDENT.
CO-60	3.969E-02	NOT IDENT.
ZN-65	9.946E-02	NOT IDENT.
GE-68	1.238E+00	NOT IDENT.
AS-73	1.456E+00	NOT IDENT.
AS-74	2.381E-01	NOT IDENT.
SE-75	6.638E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	6.039E-01	NOT IDENT.
RB-83	8.857E-02	NOT IDENT.
RB-84	1.372E-01	NOT IDENT.
KR-85	8.523E+00	NOT IDENT.
SR-85	5.576E-02	NOT IDENT.
RB-86	1.560E+00	NOT IDENT.
Y-88	4.490E-02	NOT IDENT.
Y-91	2.850E+01	NOT IDENT.
NB-94	3.923E-02	FAIL ABUN
NB-95	6.347E-02	NOT IDENT.
NB-95M	1.745E-01	NOT IDENT.
ZR-95	9.442E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.796E-02	NOT IDENT.
RH-102	7.364E-02	NOT IDENT.
RU-103	5.848E-02	FAIL ABUN
RH-106	3.095E-01	NOT IDENT.
RU-106	3.095E-01	NOT IDENT.
AG-108M	3.950E-02	NOT IDENT.
AG-110	8.411E-01	NOT IDENT.
AG-110M	6.746E-02	FAIL ABUN
SN-113	5.846E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.739E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.618E-02	NOT IDENT.
SB-124	1.278E-01	NOT IDENT.
SB-125	1.168E-01	FAIL ABUN
TE-125M	1.421E+01	NOT IDENT.
I-126	8.303E-01	NOT IDENT.
SB-126	5.423E-01	NOT IDENT.
SB-127	4.817E+01	NOT IDENT.
I-131	7.173E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.885E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	5.282E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.475E-01	FAIL ABUN
BA-137M	3.845E-02	NOT IDENT.
CS-137	4.062E-02	NOT IDENT.
LA-138	6.376E-02	NOT IDENT.
CE-139	4.071E-02	NOT IDENT.
BA-140	1.072E+00	NOT IDENT.
LA-140	2.545E-01	FAIL ABUN
CE-141	1.153E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.265E-01	NOT IDENT.
PM-144	3.732E-02	NOT IDENT.
PR-144	2.820E+00	NOT IDENT.
PM-146	5.733E-02	FAIL ABUN
ND-147	2.254E+00	FAIL ABUN
PM-147	8.059E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.224E-02	FAIL ABUN
EU-152	1.104E-01	FAIL ABUN
GD-153	9.146E-02	NOT IDENT.
EU-154	1.440E-01	NOT IDENT.
EU-155	1.215E-01	FAIL ABUN

TB-160	1.630E-01	FAIL ABUN
HO-166M	5.180E-02	FAIL ABUN
TM-171	2.670E+01	NOT IDENT.
HF-172	2.098E-01	FAIL ABUN
LU-172	6.853E-02	FAIL ABUN
LU-176	3.015E-02	FAIL ABUN
HF-181	7.006E-02	NOT IDENT.
TA-182	2.099E-01	FAIL ABUN
RE-183	2.928E-01	NOT IDENT.
RE-184	2.109E-01	NOT IDENT.
W-188	1.058E+01	FAIL ABUN
IR-192	4.360E-02	FAIL ABUN
TL-204	6.160E+00	NOT IDENT.
BI-207	5.497E-02	FAIL ABUN
BI-210	5.923E+00	NOT IDENT.
PB-210	5.923E+00	NOT IDENT.
PB-211	9.049E-01	NOT IDENT.
BI-213	1.346E-01	NOT IDENT.
RN-219	5.088E-01	FAIL ABUN
RA-223	7.397E-01	FAIL ABUN
AC-225	2.803E+00	NOT IDENT.
AC-227	3.211E-01	FAIL ABUN
TH-227	3.211E-01	FAIL ABUN
PA-231	5.995E-01	NOT IDENT.
TH-231	7.397E-01	FAIL ABUN
PA-233	7.726E-02	NOT IDENT.
PA-234	3.522E-01	FAIL ABUN
PA-234M	6.417E+00	NOT IDENT.
NP-237	7.726E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.965E-01	FAIL ABUN
PU-239	4.163E+02	NOT IDENT.
AM-241	1.908E-01	NOT IDENT.
CM-243	1.147E-01	FAIL ABUN
BK-247	1.061E-01	FAIL ABUN
CM-247	4.523E-02	FAIL ABUN
CF-249	5.144E-02	NOT IDENT.
CF-251	1.555E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:14:20.74

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299030.CNF;1  *
* Acquisition date : 31-JUL-2024 16:11:34 Sensitivity     : 3.000           *
* Detector ID      : GAM16                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.71     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:50:00 Nuclide Library : SOLID           *
* Sample ID        : G674299030           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1463E+02 GRAM *
*                                         Quantity Err(%) : 1.7447E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-NOV-2023 11:06:02 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM16_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.382E+01	2.303E+00	2.303E+00
CO-58	2.124E-01	1.421E-01	1.421E-01
CD-109	3.391E+00	2.058E+00	2.058E+00
SN-126	3.216E-01	1.945E-01	1.945E-01
HG-203	8.729E-02	1.029E-01	1.029E-01
TL-208	3.911E-01	1.328E-01	1.328E-01
BI-211	1.303E+01	1.494E+00	1.494E+00
BI-212	1.189E+00	1.070E+00	1.070E+00
PB-212	1.366E+00	2.088E-01	2.088E-01
BI-214	3.828E+00	5.222E-01	5.222E-01
PB-214	4.728E+00	5.366E-01	5.366E-01
RN-222	3.828E+00	5.222E-01	5.222E-01
RA-224	1.055E+01	2.033E+00	2.033E+00
RA-226	4.728E+00	5.366E-01	5.366E-01
AC-228	1.060E+00	4.358E-01	4.358E-01
RA-228	1.060E+00	4.358E-01	4.358E-01
TH-228	1.366E+00	2.088E-01	2.088E-01
TH-229	3.123E-01	7.342E-01	7.342E-01
TH-230	4.728E+00	5.366E-01	5.366E-01
TH-232	1.060E+00	4.358E-01	4.358E-01
TH-234	4.741E+00	3.559E+00	3.559E+00
U-234	4.728E+00	5.366E-01	5.366E-01
U-235	8.259E-04	2.893E-01	2.893E-01
U-238	4.741E+00	3.559E+00	3.559E+00
AM-243	5.296E-01	1.478E-01	1.478E-01
ANH-511	4.003E-02	1.092E-01	1.092E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.583E-01	5.883E-01	5.926E-01	NOT IDENT.
NA-22	2.738E-02	6.432E-02	6.549E-02	NOT IDENT.
NA-24	2.588E+15	3.246E+15	3.450E+15	SHORT HLIF
AL-26	5.192E-02	5.240E-02	5.739E-02	NOT IDENT.

SC-46	2.652E-02	6.942E-02	7.044E-02	FAIL ABUN
V-48	-3.219E-02	2.370E-01	2.375E-01	NOT IDENT.
CR-51	-6.540E-02	8.230E-01	8.235E-01	NOT IDENT.
MN-52	-1.108E+00	3.835E+00	3.867E+00	FAIL ABUN
MN-54	3.941E-03	5.082E-02	5.085E-02	NOT IDENT.
CO-56	-1.218E-02	5.717E-02	5.743E-02	FAIL ABUN
MN-56	-1.000E+41	4.354E+41	0.000E+00	SHORT HLIF
CO-57	1.781E-02	3.261E-02	3.359E-02	NOT IDENT.
FE-59	1.232E-02	1.700E-01	1.701E-01	NOT IDENT.
CO-60	-1.567E-02	5.204E-02	5.251E-02	NOT IDENT.
ZN-65	9.230E-03	1.345E-01	1.346E-01	NOT IDENT.
GE-68	-8.762E-01	1.639E+00	1.686E+00	NOT IDENT.
AS-73	1.182E-01	1.597E+00	1.598E+00	NOT IDENT.
AS-74	-9.019E-03	2.893E-01	2.894E-01	NOT IDENT.
SE-75	4.577E-02	8.525E-02	8.771E-02	FAIL ABUN
BR-77	7.413E+04	7.615E+04	8.316E+04	SHORT HLIF
SR-82	3.256E-01	6.554E-01	6.716E-01	NOT IDENT.
RB-83	-4.204E-02	1.111E-01	1.127E-01	NOT IDENT.
RB-84	7.777E-02	1.515E-01	1.555E-01	NOT IDENT.
KR-85	5.975E+00	1.057E+01	1.090E+01	NOT IDENT.
SR-85	3.896E-02	6.915E-02	7.134E-02	NOT IDENT.
RB-86	-1.104E+00	2.066E+00	2.125E+00	NOT IDENT.
Y-88	-2.393E-04	5.398E-02	5.398E-02	NOT IDENT.
Y-91	-1.822E+01	3.735E+01	3.825E+01	NOT IDENT.
NB-94	5.957E-02	1.332E-01	1.359E-01	FAIL ABUN
NB-95	-8.914E-04	8.302E-02	8.302E-02	NOT IDENT.
NB-95M	1.695E-02	2.317E-01	2.319E-01	NOT IDENT.
ZR-95	4.522E-03	1.085E-01	1.085E-01	NOT IDENT.
NB-97	1.000E+41	5.564E+41	0.000E+00	SHORT HLIF
ZR-97	3.874E+14	8.822E+14	8.993E+14	SHORT HLIF
MO-99	6.819E+02	2.454E+03	2.473E+03	SHORT HLIF
TC-99M	6.621E+40	6.067E+40	0.000E+00	SHORT HLIF
RH-101	1.078E-02	4.370E-02	4.397E-02	NOT IDENT.
RH-102	5.210E-02	8.388E-02	8.710E-02	NOT IDENT.
RU-103	-3.586E-02	7.397E-02	7.571E-02	FAIL ABUN
RH-106	-3.737E-01	4.325E-01	4.642E-01	NOT IDENT.
RU-106	-3.737E-01	4.325E-01	4.642E-01	NOT IDENT.
AG-108M	-6.213E-03	4.690E-02	4.698E-02	NOT IDENT.
AG-110	-1.160E-01	1.045E+00	1.046E+00	NOT IDENT.
AG-110M	-2.050E-02	8.160E-02	8.212E-02	FAIL ABUN
SN-113	-5.505E-02	7.295E-02	7.706E-02	NOT IDENT.
CD-115	3.185E+03	8.081E+03	8.207E+03	SHORT HLIF
SN-117M	9.233E-02	2.159E-01	2.199E-01	NOT IDENT.
SB-122	3.396E+02	4.291E+02	4.556E+02	SHORT HLIF
TE-123M	2.120E-02	4.156E-02	4.265E-02	NOT IDENT.
SB-124	5.115E-02	1.397E-01	1.416E-01	NOT IDENT.
SB-125	4.081E-02	1.332E-01	1.344E-01	FAIL ABUN
TE-125M	-2.976E+00	1.658E+01	1.664E+01	NOT IDENT.
I-126	3.963E-01	9.708E-01	9.871E-01	NOT IDENT.
SB-126	2.944E-01	6.318E-01	6.456E-01	NOT IDENT.
SB-127	-2.323E+01	6.293E+01	6.380E+01	NOT IDENT.
I-131	-1.673E-01	8.440E-01	8.473E-01	NOT IDENT.
I-132	-1.000E+41	7.548E+41	0.000E+00	SHORT HLIF
TE-132	3.602E+01	7.759E+01	7.927E+01	SHORT HLIF
BA-133	7.991E-02	5.314E-02	6.420E-02	FAIL ABUN
I-133	3.853E+10	7.711E+10	7.905E+10	SHORT HLIF
CS-134	4.364E-02	5.652E-02	5.985E-02	NOT IDENT.
I-135	1.454E+36	8.461E+37	0.000E+00	SHORT HLIF
CS-136	-3.356E-01	3.618E-01	3.921E-01	FAIL ABUN
BA-137M	-2.944E-02	5.108E-02	5.277E-02	NOT IDENT.
CS-137	-3.110E-02	5.396E-02	5.575E-02	NOT IDENT.
LA-138	-1.125E-02	7.666E-02	7.682E-02	NOT IDENT.
CE-139	1.891E-02	4.750E-02	4.826E-02	NOT IDENT.
BA-140	9.603E-01	1.188E+00	1.264E+00	NOT IDENT.
LA-140	-1.734E-01	3.416E-01	3.504E-01	FAIL ABUN
CE-141	-2.140E-02	1.376E-01	1.379E-01	NOT IDENT.
CE-143	5.877E+06	4.391E+06	5.128E+06	SHORT HLIF
CE-144	-2.514E-01	2.827E-01	3.045E-01	NOT IDENT.
PM-144	2.419E-04	5.166E-02	5.166E-02	NOT IDENT.
PR-144	9.077E-03	3.906E+00	3.906E+00	NOT IDENT.
PM-146	5.621E-02	8.097E-02	8.484E-02	FAIL ABUN
ND-147	-1.034E+00	2.819E+00	2.858E+00	FAIL ABUN
PM-147	-5.592E+02	9.754E+02	1.007E+03	NOT IDENT.
PM-149	1.352E+04	6.449E+04	6.478E+04	SHORT HLIF
EU-150	-1.117E-02	4.222E-02	4.252E-02	FAIL ABUN
EU-152	-7.513E-03	1.275E-01	1.276E-01	FAIL ABUN
GD-153	-7.925E-02	1.193E-01	1.245E-01	NOT IDENT.
EU-154	8.237E-02	1.812E-01	1.850E-01	NOT IDENT.

EU-155	2.586E-02	1.383E-01	1.388E-01	FAIL ABUN
TB-160	-1.363E-01	2.113E-01	2.201E-01	FAIL ABUN
HO-166M	-6.282E-02	7.969E-02	8.457E-02	FAIL ABUN
TM-171	-8.083E+00	2.985E+01	3.007E+01	NOT IDENT.
HF-172	-2.960E-02	2.467E-01	2.471E-01	FAIL ABUN
LU-172	-9.863E-03	8.382E-02	8.394E-02	FAIL ABUN
LU-176	1.624E-02	3.303E-02	3.384E-02	FAIL ABUN
HF-181	-9.733E-03	8.410E-02	8.422E-02	NOT IDENT.
TA-182	-5.122E-02	2.636E-01	2.646E-01	FAIL ABUN
RE-183	-4.370E-02	3.268E-01	3.274E-01	NOT IDENT.
RE-184	5.389E-02	2.405E-01	2.417E-01	NOT IDENT.
W-188	1.324E+00	1.317E+01	1.318E+01	FAIL ABUN
IR-192	-7.511E-02	5.626E-02	6.567E-02	FAIL ABUN
TL-204	-3.366E+00	7.631E+00	7.780E+00	NOT IDENT.
BI-207	2.830E-02	6.098E-02	6.230E-02	FAIL ABUN
BI-210	5.148E+00	6.223E+00	6.641E+00	NOT IDENT.
PB-210	5.148E+00	6.223E+00	6.641E+00	NOT IDENT.
PB-211	8.073E-01	9.873E-01	1.052E+00	NOT IDENT.
BI-213	4.834E-02	1.538E-01	1.553E-01	NOT IDENT.
RN-219	-5.589E-02	5.976E-01	5.981E-01	FAIL ABUN
RA-223	3.210E-01	9.048E-01	9.163E-01	FAIL ABUN
AC-225	-2.264E+00	3.607E+00	3.748E+00	NOT IDENT.
AC-227	2.413E-01	4.352E-01	4.486E-01	FAIL ABUN
TH-227	2.413E-01	4.352E-01	4.486E-01	FAIL ABUN
PA-231	7.372E-01	6.502E-01	7.302E-01	NOT IDENT.
TH-231	3.210E-01	9.048E-01	9.163E-01	FAIL ABUN
PA-233	1.246E-03	8.792E-02	8.792E-02	NOT IDENT.
PA-234	-1.822E-01	4.874E-01	4.943E-01	FAIL ABUN
PA-234M	4.943E+00	7.046E+00	7.390E+00	NOT IDENT.
NP-237	1.246E-03	8.792E-02	8.792E-02	FAIL ABUN
NP-238	-1.447E+04	2.166E+04	2.262E+04	SHORT HLIF
NP-239	-7.124E-03	3.443E-01	3.443E-01	FAIL ABUN
PU-239	-3.136E+01	4.885E+02	4.887E+02	NOT IDENT.
AM-241	6.568E-02	2.079E-01	2.100E-01	NOT IDENT.
CM-243	9.202E-03	1.313E-01	1.314E-01	FAIL ABUN
BK-247	8.569E-02	1.360E-01	1.414E-01	FAIL ABUN
CM-247	-2.440E-02	5.500E-02	5.609E-02	FAIL ABUN
CF-249	4.178E-02	5.643E-02	5.949E-02	NOT IDENT.
CF-251	-3.334E-03	1.868E-01	1.868E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	93.7288	85.43	118.2111	131.20	124.2403
45.60	98.5172	86.55	118.5948	133.02	127.7306
46.54	83.3595	86.79	118.6763	133.52	132.8963
49.72	0.0000	86.94	170.8959	136.00	106.2529
51.35	101.8374	87.09	170.9698	136.47	114.4587
51.87	118.8049	87.57	171.2047	140.51	0.0000
52.39	113.4693	88.03	171.4294	143.76	127.4379
52.97	96.9213	88.34	171.5801	144.24	122.4137
53.44	105.9368	88.47	171.6425	145.44	125.7920
54.07	107.0143	89.96	131.8436	152.43	123.9902
57.36	0.0000	1093.63	110.2796	153.25	110.9251
57.53	104.4185	91.11	110.4240	323.87	111.1224
57.98	95.6110	92.59	110.8748	156.02	122.0110
59.27	97.7280	93.35	111.1044	158.56	98.6255
59.32	97.7466	94.56	111.4691	159.00	95.1773
59.54	97.8283	94.65	111.4959	162.33	115.9605
60.96	102.4841	94.67	111.5024	162.66	118.1560
61.17	102.5645	94.87	111.5616	163.33	121.4938
62.93	119.0484	97.43	119.7304	165.86	115.6119
63.29	119.2044	98.43	114.1658	176.31	119.8677
63.58	119.3296	98.44	114.1686	176.60	126.4661
64.28	128.2756	99.53	99.5998	177.52	116.8321
66.73	140.6441	100.11	110.9361	181.07	0.0000
67.24	145.4019	102.03	114.2931	181.52	115.7693
125.81	149.0103	103.18	104.2912	184.41	124.7766
67.75	149.0465	103.37	104.3411	143.76	125.0387
68.89	124.1254	105.21	115.2099	193.51	98.5730
69.67	152.3012	105.31	115.2388	197.03	96.8537
70.82	167.7212	106.12	115.4705	198.01	80.0798
70.83	173.4338	106.47	126.9377	201.83	85.0788
72.81	162.8011	109.28	127.8097	203.43	114.8456
72.87	162.8328	111.00	130.2538	205.31	94.2601
74.66	163.7802	111.76	0.0000	210.85	85.8286
74.82	163.8638	114.06	132.1617	215.65	111.1099
74.97	163.9431	116.30	0.0000	218.12	116.1438
77.11	165.0592	116.74	111.6291	222.11	112.1191
78.74	165.0207	119.76	112.3977	227.09	79.9604
79.69	154.9399	121.12	117.6416	227.38	85.8744
80.03	135.1236	121.22	117.6682	228.16	0.0000
80.12	105.7800	121.78	107.0150	228.18	81.2563
80.19	105.8020	122.06	89.3983	116.74	81.2563
80.57	125.9327	122.92	98.4268	235.69	96.7459
81.00	146.1311	123.07	106.3364	235.96	93.6075
81.07	146.1614	265.00	95.6339	238.63	87.1687
81.75	125.2011	125.81	108.9552	238.98	0.0000
82.47	156.2478	127.23	121.2107	240.99	87.4360
83.79	96.2551	127.91	118.4040	242.00	87.5508
84.00	96.3144	129.30	140.7074	244.70	86.6514

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	78.9906	344.28	58.2226	563.25	37.1633
252.80	79.0293	345.93	67.2867	564.24	0.0000
254.15	0.0000	351.06	68.5194	569.33	37.3071
256.23	71.6325	351.93	68.5750	946.00	36.2454
260.90	0.0000	355.39	0.0000	569.70	36.2495
264.66	82.2388	356.01	28.5321	583.19	40.8574
264.80	82.2530	364.49	52.0378	584.27	40.8837
265.00	78.9805	366.42	0.0000	595.83	37.9238
269.46	74.4397	372.51	55.1794	427.87	34.7734
270.03	74.4891	375.05	58.0704	602.52	0.0000
271.23	74.5935	377.52	48.9618	604.72	34.3147
273.65	71.4812	356.01	53.8818	607.14	31.0919
276.40	70.0427	388.16	49.4233	609.32	37.1405
277.37	76.7996	388.63	63.4373	610.33	37.1626
277.60	76.8201	391.69	68.2830	614.28	32.8674
278.00	76.8538	264.66	51.8434	618.01	32.9395
279.20	76.9605	401.81	62.2738	620.36	27.4872
279.54	76.9905	402.40	66.0807	621.93	36.3167
279.70	77.0054	404.85	45.4063	630.19	0.0000
280.46	66.5994	410.95	54.1959	631.29	33.1946
283.69	76.9351	413.71	40.0253	633.25	33.2324
284.31	72.6979	414.70	46.7350	634.78	36.5879
285.41	68.2383	423.72	59.5718	635.95	41.0499
285.90	0.0000	427.09	54.9172	636.99	36.6349
287.50	72.6220	427.87	50.1317	657.50	31.4453
290.67	73.7266	433.94	63.9375	657.76	28.0802
293.27	0.0000	439.40	61.2953	657.90	0.0000
351.93	73.2449	440.45	50.6342	661.66	39.3978
295.96	73.3044	453.88	39.8491	664.57	0.0000
879.38	85.9092	463.37	37.6598	666.33	34.9860
299.98	57.5313	468.07	60.8651	666.50	31.6025
300.09	57.5381	473.00	50.9066	667.71	0.0000
300.13	57.5408	475.06	49.9847	677.62	29.5240
301.36	56.5885	476.78	41.0392	685.70	28.5126
302.85	73.8538	477.60	42.0658	692.65	0.0000
256.23	60.2203	482.18	43.2117	695.00	28.8842
304.85	60.2431	487.02	41.3462	696.49	27.5303
306.78	52.6056	492.35	0.0000	696.51	27.5303
308.46	67.3851	497.08	37.5811	697.00	29.2592
311.90	67.6295	505.52	32.1857	697.30	36.1489
316.51	79.2806	507.63	0.0000	697.49	36.1527
319.41	60.2936	511.00	38.9753	702.65	26.4693
320.08	60.3357	514.00	38.5422	706.68	26.5254
321.04	70.0228	514.00	38.5422	711.68	29.1385
323.87	55.3019	520.40	39.2277	720.70	27.8809
325.23	67.2457	520.69	0.0000	721.93	0.0000
328.76	88.6572	522.65	0.0000	722.78	33.1433
333.37	78.6973	527.90	0.0000	722.91	33.1456
333.97	73.1560	528.26	37.3608	723.31	34.8975
334.37	67.8636	529.59	35.3171	724.19	34.9133
338.28	56.1030	529.87	0.0000	727.33	25.6443
338.32	56.1055	531.02	42.6283	733.00	25.2501
311.90	60.2394	537.26	36.5424	735.93	23.7074
340.48	60.2394	546.56	0.0000	333.97	29.8766
340.55	60.2435	552.55	43.2372	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	29.9783	949.00	27.0626	1384.29	5.3783
747.24	23.8425	667.71	0.0000	1408.01	19.8559
748.06	24.7358	962.31	18.6568	1434.09	12.7285
752.31	19.4763	964.08	19.4482	1435.80	12.7347
753.82	24.8059	966.17	19.4641	1457.56	0.0000
756.73	23.9546	911.20	19.4861	1460.82	8.2433
756.80	23.9554	983.53	24.4972	1489.16	9.2305
884.68	22.7930	984.45	0.0000	1505.03	21.6300
765.81	35.6470	1274.44	29.5432	1584.12	20.5040
766.42	34.2316	1001.03	24.6643	1596.21	11.3912
766.84	35.6641	1002.74	24.6803	1620.50	9.5508
772.60	0.0000	1004.73	26.6754	1621.92	10.5096
776.52	17.0204	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	5.8307
778.90	20.6269	1028.54	0.0000	1750.46	0.0000
783.70	27.8658	1037.84	17.0073	1764.49	4.9438
788.74	28.8340	1038.76	0.0000	1063.66	1.6501
792.07	37.9048	631.29	16.0596	1771.35	3.3011
795.86	23.5070	1048.07	21.0897	1791.20	0.0000
810.06	20.0228	1049.04	18.0835	1808.65	4.9941
810.29	20.0248	1050.41	17.0872	1810.72	0.0000
344.28	20.0268	1063.66	13.1301	1836.06	6.0302
810.76	20.0295	1077.00	20.2991		
815.77	11.6805	1077.34	20.3015		
1048.07	27.7764	1085.87	14.2546		
832.01	25.7416	1093.63	19.3989		
834.85	26.6954	1099.45	21.4858		
835.71	29.4688	1112.07	13.3602		
836.80	0.0000	1112.84	22.6150		
846.75	0.0000	1115.54	19.7555		
846.77	22.2114	1120.29	18.5515		
856.80	40.9022	1120.55	18.5537		
860.56	27.0034	1221.41	18.5581		
871.09	17.7737	1129.67	22.7479		
873.19	20.5988	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	27.2264	1173.23	22.0382		
880.51	20.6646	1177.95	17.8685		
881.60	23.4932	1189.05	20.0449		
883.24	21.6292	1204.77	27.5710		
884.68	33.8752	1221.41	20.2582		
889.28	26.3995	1231.02	29.0909		
894.76	23.6259	1235.36	25.7036		
898.04	16.0880	1238.28	25.7271		
900.72	23.6862	1260.41	0.0000		
903.28	20.8660	1271.87	24.2676		
911.20	27.5973	1274.44	13.8789		
912.08	25.8935	1274.54	13.8789		
923.98	0.0000	1291.59	14.1703		
926.50	13.4078	1298.22	0.0000		
929.11	30.6787	1312.11	16.4529		
935.54	24.0311	1332.49	14.3465		
937.49	20.0104	1362.66	0.0000		
944.13	23.1511	1365.19	14.4861		
946.00	29.9262	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 1-AUG-2024 08:30:47.55

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299031.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM18.CNF;895
                                         Background date  : 30-JUL-2024 08:46:21
Sample date      : 26-JUN-2024 11:55:00  Acquisition date : 31-JUL-2024 16:12:14
Sample ID        : G674299031            Sample quantity  : 1.08010E+02 GRAM
Detector name    : GAM18                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.84  0.0%
Energy tolerance : 2.00000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	49.94*	21	87	1.39	99.69	97	6	5.78E-03	76.4	
2	0	63.19*	49	177	1.93	126.16	122	10	1.37E-02	53.0	
3	0	76.63*	334	556	3.17	153.05	144	22	9.29E-02	19.2	
4	0	86.74	69	197	0.96	173.26	170	8	1.93E-02	36.9	
5	0	93.14*	55	250	1.18	186.05	181	11	1.54E-02	59.9	
6	0	167.22	39	54	1.44	334.15	331	7	1.07E-02	35.6	
7	0	186.40*	212	151	1.62	372.50	366	15	5.88E-02	14.9	
8	2	238.57*	390	99	1.20	476.80	472	20	1.08E-01	6.6	1.12E+00
9	2	241.87	148	95	1.78	483.42	472	20	4.10E-02	18.4	
10	0	270.32*	94	112	2.31	540.31	532	15	2.61E-02	26.9	
11	0	278.44	17	120	1.25	556.54	550	12	4.78E-03	130.6	
12	0	294.94	252	205	1.42	589.53	582	16	7.00E-02	14.1	
13	0	300.48	23	88	1.43	600.60	597	9	6.45E-03	77.4	
14	0	327.58	54	61	2.18	654.80	649	12	1.51E-02	31.6	
15	0	334.07	7	50	0.83	667.77	662	7	1.87E-03	181.1	
16	0	338.08*	118	80	1.10	675.79	670	11	3.29E-02	17.5	
17	0	351.68*	548	91	1.45	702.99	696	15	1.52E-01	5.8	
18	0	462.47	49	42	0.76	924.53	918	14	1.35E-02	31.8	
19	0	510.71*	25	49	2.69	1021.01	1014	13	6.98E-03	78.1	
20	0	582.81*	102	69	1.41	1165.21	1157	16	2.83E-02	21.3	
21	0	608.84*	371	72	1.77	1217.27	1209	18	1.03E-01	7.6	
22	2	719.53	25	26	2.69	1438.65	1434	25	6.92E-03	42.6	1.19E+00
23	2	726.73	37	34	2.70	1453.06	1434	25	1.04E-02	35.1	
24	0	767.66	29	45	5.08	1534.92	1525	17	8.16E-03	56.2	
25	0	787.40	47	80	7.58	1574.41	1553	32	1.30E-02	59.2	
26	0	795.04	23	28	1.51	1589.69	1584	11	6.25E-03	49.8	
27	0	865.66	15	62	5.54	1730.97	1711	22	4.14E-03	140.8	
28	0	874.35	10	15	0.60	1748.34	1741	11	2.82E-03	86.9	
29	0	896.47	7	21	0.50	1792.59	1784	10	1.87E-03	136.3	
30	0	910.27*	102	19	1.87	1820.21	1812	15	2.84E-02	14.1	
31	0	966.95*	81	36	2.31	1933.59	1921	21	2.25E-02	22.0	
32	0	1119.02*	82	18	1.47	2237.84	2231	14	2.29E-02	15.7	
33	0	1237.43	24	29	0.69	2474.76	2469	13	6.59E-03	53.1	
34	0	1268.69	1	6	0.79	2537.32	2537	3	2.91E-04	361.1	

Sample ID : G674299031 Acquisition date : 31-JUL-2024 16:12:14

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1341.23	17	3	3.48	2682.48	2675	16	4.63E-03	36.0	
36	0	1375.16	34	16	2.50	2750.37	2742	20	9.55E-03	32.5	
37	0	1459.03*	395	10	2.88	2918.23	2907	21	1.10E-01	5.5	
38	0	1727.35	21	5	0.66	3455.29	3447	16	5.82E-03	30.3	
39	0	1762.80*	100	6	1.66	3526.24	3517	16	2.77E-02	11.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 1-AUG-2024 08:30:48

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299031.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : MXR1
Sample date : 26-JUN-2024 11:55:00 Acquisition date : 31-JUL-2024 16:12:14
Sample ID : G674299031 Sample quantity : 108.01 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA18 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.84 0.0%
Energy tolerance : 2.00 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
TL-208	277.37	HG-203	279.20

Sample ID : G674299031 Acquisition date : 31-JUL-2024 16:12:14

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.809E+00	1.336E+01	1.336E+01	10.99	OK
NB-95	765.81	99.81*	3.212E+00	6.102E-02	8.932E-02	112.42	OK
CD-109	88.03	3.70*	6.175E+00	2.161E+00	2.279E+00	73.86	OK
SN-126	64.28	9.60	2.671E+00	1.382E+00	1.382E+00	105.94	OK
	86.94	8.90	6.175E+00	8.986E-01	8.986E-01	73.86	OK
	87.57	37.00*	6.175E+00	2.161E-01	2.161E-01	73.86	OK
CE-139	165.86	80.00*	7.692E+00	4.368E-02	5.215E-02	71.14	OK
HG-203	70.83	3.69	3.964E+00	-----	Line Not Found	-----	Absent
	72.87	6.19	4.295E+00	-----	Line Not Found	-----	Absent
	279.20	81.56*	6.112E+00	7.407E-03	1.251E-02	842.13	OK
TL-208	277.37	6.60	6.124E+00	-----	Line Not Found	-----	<<INT Reject
	583.19	85.00*	3.995E+00	2.017E-01	2.017E-01	42.56	OK
	860.56	12.50	2.900E+00	-----	Line Not Found	-----	Absent
BI-211	72.87	1.23	4.295E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	5.421E+00	5.332E+00	5.332E+00	11.57	OK
BI-212	727.33	6.67*	3.366E+00	1.112E+00	1.112E+00	70.11	OK
	1620.50	1.47	1.701E+00	-----	Line Not Found	-----	Absent
PB-212	74.82	10.28	4.875E+00	4.762E+00	4.762E+00	38.34	OK
	77.11	17.10	4.875E+00	2.863E+00	2.863E+00	38.34	OK
	238.63	43.60*	6.598E+00	9.344E-01	9.344E-01	13.27	OK
	300.09	3.30	5.881E+00	8.203E-01	8.203E-01	154.88	OK
BI-214	609.32	45.49*	3.870E+00	1.415E+00	1.415E+00	15.20	OK
	1120.29	14.92	2.264E+00	1.604E+00	1.604E+00	31.40	OK
	1764.49	15.30	1.649E+00	2.563E+00	2.563E+00	22.72	OK
PB-214	74.82	5.80	4.875E+00	8.441E+00	8.441E+00	38.34	OK
	77.11	9.70	4.875E+00	5.047E+00	5.047E+00	38.34	OK
	87.09	3.41	6.175E+00	2.345E+00	2.345E+00	73.86	OK
	242.00	7.25	6.554E+00	2.143E+00	2.143E+00	36.72	OK
	295.22	18.42	5.937E+00	1.581E+00	1.581E+00	28.30	OK
	351.93	35.60*	5.421E+00	1.935E+00	1.935E+00	11.57	OK
RN-222	609.32	45.49*	3.870E+00	1.415E+00	1.415E+00	15.20	OK
	1120.29	14.92	2.264E+00	1.604E+00	1.604E+00	31.40	OK
	1764.49	15.30	1.649E+00	2.563E+00	2.563E+00	22.72	OK
RA-224	240.99	4.10*	6.554E+00	3.789E+00	3.789E+00	36.72	OK
RA-226	74.82	5.80	4.875E+00	8.441E+00	8.441E+00	38.34	OK
	77.11	9.70	4.875E+00	5.047E+00	5.047E+00	38.34	OK
	87.09	3.41	6.175E+00	2.345E+00	2.345E+00	73.86	OK
	242.00	7.25	6.554E+00	2.143E+00	2.143E+00	36.72	OK
	295.22	18.42	5.937E+00	1.581E+00	1.581E+00	28.30	OK
	351.93	35.60*	5.421E+00	1.935E+00	1.935E+00	11.57	OK
TH-228	74.82	10.28	4.875E+00	4.762E+00	4.762E+00	38.34	OK
	77.11	17.10	4.875E+00	2.863E+00	2.863E+00	38.34	OK
	238.63	43.60*	6.598E+00	9.344E-01	9.344E-01	13.27	OK
	300.09	3.30	5.881E+00	8.203E-01	8.203E-01	154.88	OK
TH-229	85.43	14.70	6.175E+00	5.440E-01	5.441E-01	73.86	OK
	88.47	24.00	6.175E+00	3.332E-01	3.332E-01	73.86	OK
	193.51	4.41*	7.270E+00	-----	Line Not Found	-----	Absent
	210.85	2.80	6.997E+00	-----	Line Not Found	-----	Absent
TH-230	74.82	5.80	4.875E+00	8.441E+00	8.441E+00	38.34	OK

Sample ID : G674299031 Acquisition date : 31-JUL-2024 16:12:14

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	77.11	9.70	4.875E+00	5.047E+00	5.047E+00	38.34	OK
	87.09	3.41	6.175E+00	2.345E+00	2.345E+00	73.86	OK
	242.00	7.25	6.554E+00	2.143E+00	2.143E+00	36.72	OK
	295.22	18.42	5.937E+00	1.581E+00	1.581E+00	28.30	OK
	351.93	35.60*	5.421E+00	1.935E+00	1.935E+00	11.57	OK
PA-231	283.69	1.70	6.055E+00	----- Line Not Found		-----	Absent
	301.36	5.35*	5.881E+00	5.060E-01	5.060E-01	154.88	OK
TH-234	63.29	3.70*	2.671E+00	3.585E+00	3.585E+00	105.94	OK
	92.59	4.23	6.789E+00	1.366E+00	1.366E+00	119.73	OK
U-234	74.82	5.80	4.875E+00	8.441E+00	8.441E+00	38.34	OK
	77.11	9.70	4.875E+00	5.047E+00	5.047E+00	38.34	OK
	87.09	3.41	6.175E+00	2.345E+00	2.345E+00	73.86	OK
	242.00	7.25	6.554E+00	2.143E+00	2.143E+00	36.72	OK
	295.22	18.42	5.937E+00	1.581E+00	1.581E+00	28.30	OK
	351.93	35.60*	5.421E+00	1.935E+00	1.935E+00	11.57	OK
U-238	63.29	3.70*	2.671E+00	3.585E+00	3.585E+00	105.94	OK
	92.59	4.23	6.789E+00	1.366E+00	1.366E+00	119.73	OK
AM-243	43.53	5.90	2.485E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	4.875E+00	7.285E-01	7.285E-01	38.34	OK
ANH-511	511.00	100.00*	4.370E+00	3.877E-02	3.877E-02	156.20	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 08:30:49.98

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299031.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:14 Sensitivity     : 3.000           *
* Detector ID      : GAM18                Energy tolerance: 2.000           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.84     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:55:00 Analyst initials: MXR1            *
* Sample ID        : G674299031           Sample Quantity : 1.0801E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-JUN-2024 09:10:49 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM18_CAN.CNF;20            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.336E+01	1.439E+00	6.726E-01
NB-95	8.932E-02	9.841E-02	9.945E-02
CD-109	2.279E+00	1.650E+00	1.811E+00
SN-126	2.161E-01	1.565E-01	1.636E-01
CE-139	5.215E-02	3.636E-02	5.577E-02
HG-203	1.251E-02	1.032E-01	9.718E-02
TL-208	2.017E-01	8.410E-02	5.909E-02
BI-211	5.332E+00	6.045E-01	2.994E-01
BI-212	1.112E+00	7.638E-01	1.044E+00
PB-212	9.344E-01	1.215E-01	1.081E-01
BI-214	1.415E+00	2.109E-01	1.260E-01
PB-214	1.935E+00	2.194E-01	1.088E-01
RN-222	1.415E+00	2.109E-01	1.260E-01
RA-224	3.789E+00	1.364E+00	1.157E+00
RA-226	1.935E+00	2.194E-01	1.088E-01
TH-228	9.344E-01	1.215E-01	1.081E-01
TH-229	2.078E-01	5.040E-01	9.577E-01
TH-230	1.935E+00	2.194E-01	1.088E-01
PA-231	5.060E-01	7.680E-01	8.730E-01
TH-234	3.585E+00	3.722E+00	3.168E+00
U-234	1.935E+00	2.194E-01	1.088E-01
U-238	3.585E+00	3.722E+00	3.168E+00
AM-243	7.285E-01	2.737E-01	1.227E-01
ANH-511	3.877E-02	5.935E-02	4.982E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-2.559E-01	3.626E-01	6.277E-01	NOT IDENT.
NA-22	2.477E-02	5.275E-02	9.862E-02	NOT IDENT.
NA-24	0.000E+00	4.535E+15	0.000E+00	SHORT HLIF
AL-26	-1.429E-03	3.503E-02	7.020E-02	NOT IDENT.
SC-46	3.190E-02	5.369E-02	9.595E-02	FAIL ABUN
V-48	7.257E-02	1.476E-01	2.992E-01	NOT IDENT.

CR-51	-2.414E-01	5.893E-01	1.010E+00	NOT IDENT.
MN-52	-3.785E-01	3.505E+00	6.566E+00	NOT IDENT.
MN-54	-3.140E-03	4.032E-02	7.465E-02	NOT IDENT.
CO-56	-9.505E-03	4.603E-02	8.469E-02	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.221E-03	2.694E-02	4.670E-02	NOT IDENT.
CO-58	-2.559E-02	4.201E-02	7.399E-02	NOT IDENT.
FE-59	-8.627E-03	1.270E-01	2.319E-01	NOT IDENT.
CO-60	2.062E-02	4.362E-02	8.431E-02	NOT IDENT.
ZN-65	1.138E-01	1.142E-01	2.096E-01	NOT IDENT.
GE-68	-1.050E-01	1.371E+00	2.510E+00	NOT IDENT.
AS-73	3.994E-01	1.958E+00	3.615E+00	NOT IDENT.
AS-74	-6.848E-03	2.213E-01	4.066E-01	NOT IDENT.
SE-75	-5.016E-03	5.615E-02	8.976E-02	FAIL ABUN
BR-77	0.000E+00	6.590E+03	0.000E+00	SHORT HLIF
SR-82	-2.909E-01	6.533E-01	9.988E-01	NOT IDENT.
RB-83	3.369E-02	8.141E-02	1.564E-01	NOT IDENT.
RB-84	4.264E-02	1.029E-01	2.033E-01	NOT IDENT.
KR-85	1.128E+01	7.607E+00	1.452E+01	NOT IDENT.
SR-85	7.351E-02	4.976E-02	9.493E-02	NOT IDENT.
RB-86	3.062E-01	1.714E+00	3.246E+00	NOT IDENT.
Y-88	-2.773E-02	4.757E-02	8.466E-02	FAIL ABUN
Y-91	-1.060E+01	2.888E+01	4.975E+01	NOT IDENT.
NB-94	1.448E-02	3.448E-02	6.466E-02	NOT IDENT.
NB-95M	1.890E-01	1.722E-01	3.064E-01	NOT IDENT.
ZR-95	5.819E-03	8.716E-02	1.662E-01	NOT IDENT.
NB-97	0.000E+00	9.461E+40	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	6.908E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.910E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	4.306E+40	0.000E+00	SHORT HLIF
RH-101	-1.582E-03	3.432E-02	5.895E-02	NOT IDENT.
RH-102	-7.333E-03	5.637E-02	1.009E-01	FAIL ABUN
RU-103	-2.276E-02	5.514E-02	9.798E-02	FAIL ABUN
RH-106	1.208E-01	3.178E-01	6.041E-01	NOT IDENT.
RU-106	1.208E-01	3.178E-01	6.041E-01	NOT IDENT.
AG-108M	-3.836E-04	2.784E-02	5.212E-02	NOT IDENT.
AG-110	-8.807E-01	7.392E-01	1.138E+00	NOT IDENT.
AG-110M	-3.101E-02	5.097E-02	8.865E-02	NOT IDENT.
SN-113	1.386E-02	4.784E-02	9.225E-02	NOT IDENT.
CD-115	0.000E+00	5.226E+03	0.000E+00	SHORT HLIF
SN-117M	3.299E-02	1.557E-01	2.946E-01	NOT IDENT.
SB-122	0.000E+00	3.074E+02	0.000E+00	SHORT HLIF
TE-123M	-5.353E-03	3.334E-02	6.159E-02	NOT IDENT.
SB-124	-7.396E-02	1.100E-01	1.837E-01	NOT IDENT.
SB-125	1.923E-03	8.774E-02	1.647E-01	FAIL ABUN
TE-125M	4.628E+00	1.331E+01	2.389E+01	NOT IDENT.
I-126	-7.640E-02	6.205E-01	1.109E+00	NOT IDENT.
SB-126	6.561E-01	5.484E-01	8.756E-01	FAIL ABUN
SB-127	5.633E+00	4.452E+01	8.247E+01	NOT IDENT.
I-131	2.684E-01	6.566E-01	1.207E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	5.362E+01	0.000E+00	SHORT HLIF
BA-133	-1.254E-04	4.787E-02	7.512E-02	NOT IDENT.
I-133	0.000E+00	4.858E+10	0.000E+00	SHORT HLIF
CS-134	5.807E-02	5.669E-02	8.985E-02	FAIL ABUN
I-135	0.000E+00	6.481E+37	0.000E+00	SHORT HLIF
CS-136	-1.330E-02	3.326E-01	6.098E-01	NOT IDENT.
BA-137M	9.209E-03	3.525E-02	6.564E-02	NOT IDENT.
CS-137	9.729E-03	3.723E-02	6.935E-02	NOT IDENT.
LA-138	-3.414E-02	6.748E-02	1.188E-01	FAIL ABUN
BA-140	2.199E-01	6.696E-01	1.298E+00	NOT IDENT.
LA-140	-2.219E-01	2.872E-01	4.727E-01	FAIL ABUN
CE-141	-2.103E-02	1.085E-01	1.813E-01	NOT IDENT.
CE-143	0.000E+00	9.391E+06	0.000E+00	SHORT HLIF
CE-144	2.200E-02	2.077E-01	3.616E-01	NOT IDENT.
PM-144	1.870E-02	3.416E-02	6.560E-02	NOT IDENT.
PR-144	1.440E+00	2.586E+00	4.971E+00	NOT IDENT.
PM-146	-1.865E-02	4.061E-02	7.247E-02	NOT IDENT.
ND-147	-1.023E-01	1.849E+00	3.407E+00	NOT IDENT.
PM-147	1.621E+02	7.616E+02	1.350E+03	NOT IDENT.
PM-149	0.000E+00	4.806E+04	0.000E+00	SHORT HLIF
EU-150	8.623E-03	3.061E-02	4.651E-02	FAIL ABUN
EU-152	-5.909E-02	9.071E-02	1.502E-01	NOT IDENT.
GD-153	2.532E-02	1.022E-01	1.706E-01	NOT IDENT.
EU-154	1.272E-01	1.408E-01	2.800E-01	FAIL ABUN
EU-155	3.201E-02	1.089E-01	1.962E-01	FAIL ABUN
TB-160	1.085E-01	1.708E-01	3.207E-01	FAIL ABUN
HO-166M	5.209E-03	5.447E-02	1.003E-01	FAIL ABUN

TM-171	1.991E+00	3.848E+01	6.594E+01	FAIL ABUN
HF-172	2.501E-02	2.044E-01	3.569E-01	FAIL ABUN
LU-172	2.269E-02	6.857E-02	1.317E-01	FAIL ABUN
LU-176	-1.136E-03	2.560E-02	4.570E-02	FAIL ABUN
HF-181	-1.167E-02	5.346E-02	9.783E-02	NOT IDENT.
TA-182	5.350E-02	2.065E-01	4.046E-01	NOT IDENT.
RE-183	-2.474E-01	3.624E-01	6.353E-01	NOT IDENT.
RE-184	9.668E-02	2.035E-01	3.597E-01	FAIL ABUN
W-188	-2.864E+00	1.023E+01	1.581E+01	FAIL ABUN
IR-192	1.066E-02	4.208E-02	7.679E-02	FAIL ABUN
TL-204	-1.043E+00	7.185E+00	1.182E+01	NOT IDENT.
BI-207	2.128E-02	4.572E-02	9.203E-02	FAIL ABUN
BI-210	-1.200E+01	9.365E+00	1.533E+01	NOT IDENT.
PB-210	-1.200E+01	9.365E+00	1.533E+01	NOT IDENT.
PB-211	2.942E-01	6.613E-01	1.291E+00	NOT IDENT.
BI-213	-6.196E-02	1.014E-01	1.785E-01	NOT IDENT.
RN-219	2.202E-02	3.757E-01	7.111E-01	FAIL ABUN
RA-223	2.132E-02	6.863E-01	1.095E+00	FAIL ABUN
AC-225	6.284E-01	2.245E+00	4.207E+00	NOT IDENT.
AC-227	1.649E-01	2.607E-01	4.938E-01	FAIL ABUN
TH-227	1.649E-01	2.607E-01	4.938E-01	FAIL ABUN
AC-228	0.000E+00	2.640E-01	5.197E-01	FAIL ABUN
RA-228	0.000E+00	2.640E-01	5.197E-01	FAIL ABUN
TH-231	2.132E-02	6.863E-01	1.095E+00	FAIL ABUN
TH-232	0.000E+00	2.640E-01	5.197E-01	FAIL ABUN
PA-233	1.945E-02	6.118E-02	1.130E-01	FAIL ABUN
PA-234	-1.504E-01	2.790E-01	4.870E-01	FAIL ABUN
PA-234M	1.368E+00	5.115E+00	9.766E+00	FAIL ABUN
U-235	1.775E-01	2.173E-01	3.936E-01	FAIL ABUN
NP-237	1.945E-02	6.118E-02	1.130E-01	FAIL ABUN
NP-238	0.000E+00	1.319E+04	0.000E+00	SHORT HLIF
NP-239	-8.572E-02	2.830E-01	4.803E-01	FAIL ABUN
PU-239	3.473E+02	3.510E+02	6.536E+02	NOT IDENT.
AM-241	1.656E-01	2.061E-01	3.836E-01	NOT IDENT.
CM-243	-8.716E-02	1.100E-01	1.810E-01	FAIL ABUN
BK-247	-5.119E-03	8.800E-02	1.414E-01	NOT IDENT.
CM-247	-7.946E-03	3.512E-02	6.473E-02	FAIL ABUN
CF-249	-7.161E-03	4.254E-02	7.309E-02	FAIL ABUN
CF-251	-2.564E-02	1.318E-01	2.412E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 1-AUG-2024 08:30:48.37

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	371	10.66*	1.809E+00	1.336E+01	1.336E+01	10.99
NB-95	765.81	28	99.81*	3.212E+00	6.102E-02	8.932E-02	112.42
CD-109	88.03	71	3.70*	6.175E+00	2.161E+00	2.279E+00	73.86
SN-126	64.28	51	9.60	2.671E+00	1.382E+00	1.382E+00	105.94
	86.94	71	8.90	6.175E+00	8.986E-01	8.986E-01	73.86
	87.57	71	37.00*	6.175E+00	2.161E-01	2.161E-01	73.86
CE-139	165.86	39	80.00*	7.692E+00	4.368E-02	5.215E-02	71.14
HG-203	70.83	------	3.69	3.964E+00	------	Line Not Found	------
	72.87	------	6.19	4.295E+00	------	Line Not Found	------
	279.20	17	81.56*	6.112E+00	2.373E-02	4.006E-02	261.27
TL-208	277.37	17	6.60	6.112E+00	2.932E-01	2.932E-01	261.28
	583.19	99	85.00*	3.995E+00	2.017E-01	2.017E-01	42.56
	860.56	------	12.50	2.900E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.295E+00	------	Line Not Found	------
	351.06	537	12.92*	5.421E+00	5.332E+00	5.332E+00	11.57
BI-212	727.33	36	6.67*	3.366E+00	1.112E+00	1.112E+00	70.11
	1620.50	------	1.47	1.701E+00	------	Line Not Found	------
PB-212	74.82	343	10.28	4.875E+00	4.762E+00	4.762E+00	38.34
	77.11	343	17.10	4.875E+00	2.863E+00	2.863E+00	38.34
	238.63	387	43.60*	6.598E+00	9.344E-01	9.344E-01	13.27
	300.09	23	3.30	5.881E+00	8.203E-01	8.203E-01	154.88
BI-214	609.32	358	45.49*	3.870E+00	1.415E+00	1.415E+00	15.20
	1120.29	78	14.92	2.264E+00	1.604E+00	1.604E+00	31.40
	1764.49	93	15.30	1.649E+00	2.563E+00	2.563E+00	22.72
PB-214	74.82	343	5.80	4.875E+00	8.441E+00	8.441E+00	38.34
	77.11	343	9.70	4.875E+00	5.047E+00	5.047E+00	38.34
	87.09	71	3.41	6.175E+00	2.345E+00	2.345E+00	73.86
	242.00	146	7.25	6.554E+00	2.143E+00	2.143E+00	36.72
	295.22	249	18.42	5.937E+00	1.581E+00	1.581E+00	28.30
	351.93	537	35.60*	5.421E+00	1.935E+00	1.935E+00	11.57
RN-222	609.32	358	45.49*	3.870E+00	1.415E+00	1.415E+00	15.20
	1120.29	78	14.92	2.264E+00	1.604E+00	1.604E+00	31.40
	1764.49	93	15.30	1.649E+00	2.563E+00	2.563E+00	22.72
RA-224	240.99	146	4.10*	6.554E+00	3.789E+00	3.789E+00	36.72
RA-226	74.82	343	5.80	4.875E+00	8.441E+00	8.441E+00	38.34
	77.11	343	9.70	4.875E+00	5.047E+00	5.047E+00	38.34
	87.09	71	3.41	6.175E+00	2.345E+00	2.345E+00	73.86
	242.00	146	7.25	6.554E+00	2.143E+00	2.143E+00	36.72
	295.22	249	18.42	5.937E+00	1.581E+00	1.581E+00	28.30
	351.93	537	35.60*	5.421E+00	1.935E+00	1.935E+00	11.57
TH-228	74.82	343	10.28	4.875E+00	4.762E+00	4.762E+00	38.34
	77.11	343	17.10	4.875E+00	2.863E+00	2.863E+00	38.34
	238.63	387	43.60*	6.598E+00	9.344E-01	9.344E-01	13.27
	300.09	23	3.30	5.881E+00	8.203E-01	8.203E-01	154.88
TH-229	85.43	71	14.70	6.175E+00	5.440E-01	5.441E-01	73.86
	88.47	71	24.00	6.175E+00	3.332E-01	3.332E-01	73.86
	193.51	------	4.41*	7.270E+00	------	Line Not Found	------

Sample ID : G674299031 Acquisition date : 31-JUL-2024 16:12:14

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	210.85	------	2.80	6.997E+00	------	Line Not Found	------
TH-230	74.82	343	5.80	4.875E+00	8.441E+00	8.441E+00	38.34
	77.11	343	9.70	4.875E+00	5.047E+00	5.047E+00	38.34
	87.09	71	3.41	6.175E+00	2.345E+00	2.345E+00	73.86
	242.00	146	7.25	6.554E+00	2.143E+00	2.143E+00	36.72
	295.22	249	18.42	5.937E+00	1.581E+00	1.581E+00	28.30
	351.93	537	35.60*	5.421E+00	1.935E+00	1.935E+00	11.57
PA-231	283.69	------	1.70	6.055E+00	------	Line Not Found	------
	301.36	23	5.35*	5.881E+00	5.060E-01	5.060E-01	154.88
TH-234	63.29	51	3.70*	2.671E+00	3.585E+00	3.585E+00	105.94
	92.59	56	4.23	6.789E+00	1.366E+00	1.366E+00	119.73
U-234	74.82	343	5.80	4.875E+00	8.441E+00	8.441E+00	38.34
	77.11	343	9.70	4.875E+00	5.047E+00	5.047E+00	38.34
	87.09	71	3.41	6.175E+00	2.345E+00	2.345E+00	73.86
	242.00	146	7.25	6.554E+00	2.143E+00	2.143E+00	36.72
	295.22	249	18.42	5.937E+00	1.581E+00	1.581E+00	28.30
	351.93	537	35.60*	5.421E+00	1.935E+00	1.935E+00	11.57
U-238	63.29	51	3.70*	2.671E+00	3.585E+00	3.585E+00	105.94
	92.59	56	4.23	6.789E+00	1.366E+00	1.366E+00	119.73
AM-243	43.53	------	5.90	2.485E-01	------	Line Not Found	------
	74.66	343	67.20*	4.875E+00	7.285E-01	7.285E-01	38.34
ANH-511	511.00	24	100.00*	4.370E+00	3.877E-02	3.877E-02	156.20

Flag: "*" = Keyline

Sample ID : G674299031 Acquisition date : 31-JUL-2024 16:12:14

Total number of lines in spectrum 39
Number of unidentified lines 5
Number of lines tentatively identified by NID 34 87.18%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.336E+01	1.336E+01	0.147E+01	10.99	
NB-95	64.03D	1.46	6.102E-02	8.932E-02	10.04E-02	112.42	
CD-109	461.40D	1.05	2.161E+00	2.279E+00	1.683E+00	73.86	
SN-126	2.30E+05Y	1.00	2.161E-01	2.161E-01	1.596E-01	73.86	
CE-139	137.64D	1.19	4.368E-02	5.215E-02	3.710E-02	71.14	
HG-203	46.59D	1.69	2.373E-02	4.006E-02	10.47E-02	261.27	
TL-208	1.41E+10Y	1.00	2.017E-01	2.017E-01	0.858E-01	42.56	
BI-211	7.04E+08Y	1.00	5.332E+00	5.332E+00	0.617E+00	11.57	
BI-212	1.41E+10Y	1.00	1.112E+00	1.112E+00	0.779E+00	70.11	
PB-212	1.41E+10Y	1.00	9.344E-01	9.344E-01	1.240E-01	13.27	
BI-214	1600.00Y	1.00	1.415E+00	1.415E+00	0.215E+00	15.20	
PB-214	1600.00Y	1.00	1.935E+00	1.935E+00	0.224E+00	11.57	
RN-222	1600.00Y	1.00	1.415E+00	1.415E+00	0.215E+00	15.20	
RA-224	1.41E+10Y	1.00	3.789E+00	3.789E+00	1.391E+00	36.72	
RA-226	1600.00Y	1.00	1.935E+00	1.935E+00	0.224E+00	11.57	
TH-228	1.41E+10Y	1.00	9.344E-01	9.344E-01	1.240E-01	13.27	
TH-229	7340.00Y	1.00	3.332E-01	3.332E-01	2.461E-01	73.86	K
TH-230	7.54E+04Y	1.00	1.935E+00	1.935E+00	0.224E+00	11.57	
PA-231	7.04E+08Y	1.00	5.060E-01	5.060E-01	7.837E-01	154.88	
TH-234	4.47E+09Y	1.00	3.585E+00	3.585E+00	3.798E+00	105.94	
U-234	2.45E+05Y	1.00	1.935E+00	1.935E+00	0.224E+00	11.57	
U-238	4.47E+09Y	1.00	3.585E+00	3.585E+00	3.798E+00	105.94	
AM-243	7370.00Y	1.00	7.285E-01	7.285E-01	2.793E-01	38.34	
ANH-511	1.00E+09Y	1.00	3.877E-02	3.877E-02	6.056E-02	156.20	
			---	---			
	Total Activity :		4.752E+01	4.769E+01			

Grand Total Activity : 4.752E+01 4.769E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299031 Acquisition date : 31-JUL-2024 16:12:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	49.94	22	91	1.39	99.69	97	6	5.78E-03	****	7.52E-01	T
0	186.40	212	151	1.62	372.50	366	15	5.88E-02	29.8	7.39E+00	T
0	270.32	93	111	2.31	540.31	532	15	2.61E-02	53.8	6.20E+00	T
0	327.58	53	60	2.18	654.80	649	12	1.51E-02	63.3	5.63E+00	T
0	334.07	7	49	0.83	667.77	662	7	1.87E-03	****	5.57E+00	T
0	338.08	116	78	1.10	675.79	670	11	3.29E-02	35.0	5.53E+00	T
0	462.47	47	41	0.76	924.53	918	14	1.35E-02	63.5	4.65E+00	T
2	719.53	24	25	2.69	1438.65	1434	25	6.92E-03	85.3	3.39E+00	T
0	787.40	45	77	7.58	1574.41	1553	32	1.30E-02	****	3.14E+00	T
0	795.04	22	26	1.51	1589.69	1584	11	6.25E-03	99.6	3.12E+00	T
0	865.66	14	59	5.54	1730.97	1711	22	4.14E-03	****	2.88E+00	
0	874.35	10	14	0.60	1748.34	1741	11	2.82E-03	****	2.86E+00	T
0	896.47	6	20	0.50	1792.59	1784	10	1.87E-03	****	2.79E+00	T
0	910.27	97	18	1.87	1820.21	1812	15	2.84E-02	28.2	2.75E+00	T
0	966.95	77	34	2.31	1933.59	1921	21	2.25E-02	44.0	2.60E+00	T
0	1237.43	22	28	0.69	2474.76	2469	13	6.59E-03	****	2.06E+00	T
0	1268.69	1	6	0.79	2537.32	2537	3	2.91E-04	****	2.02E+00	
0	1341.23	16	3	3.48	2682.48	2675	16	4.63E-03	72.1	1.93E+00	
0	1375.16	32	15	2.50	2750.37	2742	20	9.55E-03	65.1	1.89E+00	
0	1727.35	20	5	0.66	3455.29	3447	16	5.82E-03	60.5	1.66E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 08:30:59.73

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299031.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:14 Sensitivity     : 3.000           *
* Detector ID      : GAM18                Energy tolerance: 2.000           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.84     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:55:00 Nuclide Library : SOLID           *
* Sample ID        : G674299031           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0801E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-JUN-2024 09:10:49 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM18_CAN.CNF;20            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.879E-01
NB-95	4.547E-02
CD-109	8.631E-01
SN-126	7.773E-02
CE-139	2.606E-02
HG-203	4.541E-02
TL-208	2.679E-02
BI-211	1.363E-01
BI-212	4.804E-01
PB-212	5.081E-02
BI-214	5.770E-02
PB-214	4.956E-02
RN-222	5.770E-02
RA-224	5.438E-01
RA-226	4.956E-02
TH-228	5.081E-02
TH-229	4.495E-01
TH-230	4.955E-02
PA-231	4.067E-01
TH-234	1.489E+00
U-234	4.955E-02
U-238	1.489E+00
AM-243	5.827E-02
ANH-511	2.277E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	2.827E-01	NOT IDENT.
NA-22	4.456E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.941E-02	NOT IDENT.
SC-46	4.353E-02	FAIL ABUN
V-48	1.328E-01	NOT IDENT.
CR-51	4.650E-01	NOT IDENT.

MN-52	2.883E+00	NOT IDENT.
MN-54	3.394E-02	NOT IDENT.
CO-56	3.799E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.184E-02	NOT IDENT.
CO-58	3.266E-02	NOT IDENT.
FE-59	1.036E-01	NOT IDENT.
CO-60	3.728E-02	NOT IDENT.
ZN-65	9.583E-02	NOT IDENT.
GE-68	1.120E+00	NOT IDENT.
AS-73	1.701E+00	NOT IDENT.
AS-74	1.874E-01	NOT IDENT.
SE-75	4.176E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	4.484E-01	NOT IDENT.
RB-83	7.182E-02	NOT IDENT.
RB-84	9.162E-02	NOT IDENT.
KR-85	6.762E+00	NOT IDENT.
SR-85	4.421E-02	NOT IDENT.
RB-86	1.453E+00	NOT IDENT.
Y-88	3.512E-02	FAIL ABUN
Y-91	2.230E+01	NOT IDENT.
NB-94	2.962E-02	NOT IDENT.
NB-95M	1.449E-01	NOT IDENT.
ZR-95	7.535E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.772E-02	NOT IDENT.
RH-102	4.592E-02	FAIL ABUN
RU-103	4.468E-02	FAIL ABUN
RH-106	2.756E-01	NOT IDENT.
RU-106	2.756E-01	NOT IDENT.
AG-108M	2.391E-02	NOT IDENT.
AG-110	5.062E-01	NOT IDENT.
AG-110M	3.931E-02	NOT IDENT.
SN-113	4.264E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.389E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.904E-02	NOT IDENT.
SB-124	7.423E-02	NOT IDENT.
SB-125	7.574E-02	FAIL ABUN
TE-125M	1.125E+01	NOT IDENT.
I-126	5.024E-01	NOT IDENT.
SB-126	4.009E-01	FAIL ABUN
SB-127	3.717E+01	NOT IDENT.
I-131	5.585E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.473E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.130E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.740E-01	NOT IDENT.
BA-137M	2.995E-02	NOT IDENT.
CS-137	3.164E-02	NOT IDENT.
LA-138	5.162E-02	FAIL ABUN
BA-140	5.873E-01	NOT IDENT.
LA-140	1.977E-01	FAIL ABUN
CE-141	8.545E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.693E-01	NOT IDENT.
PM-144	2.992E-02	NOT IDENT.
PR-144	2.268E+00	NOT IDENT.
PM-146	3.313E-02	NOT IDENT.
ND-147	1.549E+00	NOT IDENT.
PM-147	6.324E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.150E-02	FAIL ABUN
EU-152	6.863E-02	NOT IDENT.
GD-153	8.024E-02	NOT IDENT.
EU-154	1.267E-01	FAIL ABUN
EU-155	9.212E-02	FAIL ABUN
TB-160	1.450E-01	FAIL ABUN
HO-166M	4.511E-02	FAIL ABUN
TM-171	3.094E+01	FAIL ABUN

HF-172	1.677E-01	FAIL ABUN
LU-172	5.920E-02	FAIL ABUN
LU-176	2.113E-02	FAIL ABUN
HF-181	4.435E-02	NOT IDENT.
TA-182	1.818E-01	NOT IDENT.
RE-183	2.961E-01	NOT IDENT.
RE-184	1.622E-01	FAIL ABUN
W-188	7.349E+00	FAIL ABUN
IR-192	3.564E-02	FAIL ABUN
TL-204	5.603E+00	NOT IDENT.
BI-207	4.073E-02	FAIL ABUN
BI-210	7.159E+00	NOT IDENT.
PB-210	7.159E+00	NOT IDENT.
PB-211	5.962E-01	NOT IDENT.
BI-213	8.173E-02	NOT IDENT.
RN-219	3.274E-01	FAIL ABUN
RA-223	5.061E-01	FAIL ABUN
AC-225	1.966E+00	NOT IDENT.
AC-227	2.314E-01	FAIL ABUN
TH-227	2.314E-01	FAIL ABUN
AC-228	2.468E-01	FAIL ABUN
RA-228	2.468E-01	FAIL ABUN
TH-231	5.061E-01	FAIL ABUN
TH-232	2.468E-01	FAIL ABUN
PA-233	5.230E-02	FAIL ABUN
PA-234	2.142E-01	FAIL ABUN
PA-234M	4.442E+00	FAIL ABUN
U-235	1.861E-01	FAIL ABUN
NP-237	5.230E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.252E-01	FAIL ABUN
PU-239	3.082E+02	NOT IDENT.
AM-241	1.790E-01	NOT IDENT.
CM-243	8.445E-02	FAIL ABUN
BK-247	6.569E-02	NOT IDENT.
CM-247	2.978E-02	FAIL ABUN
CF-249	3.378E-02	FAIL ABUN
CF-251	1.134E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 08:31:03.94

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299031.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:14 Sensitivity     : 3.000           *
* Detector ID      : GAM18                Energy tolerance: 2.000           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.84     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 11:55:00 Nuclide Library : SOLID           *
* Sample ID        : G674299031           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0801E+02 GRAM *
*                                         Quantity Err(%) : 1.8517E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-JUN-2024 09:10:49 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM18_CAN.CNF;20            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.336E+01	1.944E+00	1.944E+00
NB-95	8.932E-02	9.880E-02	9.880E-02
CD-109	2.279E+00	1.667E+00	1.667E+00
SN-126	2.161E-01	1.577E-01	1.577E-01
CE-139	5.215E-02	3.797E-02	3.797E-02
HG-203	1.251E-02	1.033E-01	1.033E-01
TL-208	2.017E-01	8.577E-02	8.577E-02
BI-211	5.332E+00	7.641E-01	7.641E-01
BI-212	1.112E+00	7.711E-01	7.711E-01
PB-212	9.344E-01	1.466E-01	1.466E-01
BI-214	1.415E+00	2.415E-01	2.415E-01
PB-214	1.935E+00	2.755E-01	2.755E-01
RN-222	1.415E+00	2.415E-01	2.415E-01
RA-224	3.789E+00	1.404E+00	1.404E+00
RA-226	1.935E+00	2.755E-01	2.755E-01
TH-228	9.344E-01	1.466E-01	1.466E-01
TH-229	2.078E-01	5.043E-01	5.043E-01
TH-230	1.935E+00	2.755E-01	2.755E-01
PA-231	5.060E-01	7.766E-01	7.766E-01
TH-234	3.585E+00	3.818E+00	3.818E+00
U-234	1.935E+00	2.755E-01	2.755E-01
U-238	3.585E+00	3.818E+00	3.818E+00
AM-243	7.285E-01	2.816E-01	2.816E-01
ANH-511	3.877E-02	5.943E-02	5.943E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-2.559E-01	3.632E-01	3.811E-01	NOT IDENT.
NA-22	2.477E-02	5.281E-02	5.398E-02	NOT IDENT.
NA-24	-1.130E+15	4.537E+15	4.565E+15	SHORT HLIF
AL-26	-1.429E-03	3.503E-02	3.504E-02	NOT IDENT.
SC-46	3.190E-02	5.383E-02	5.572E-02	FAIL ABUN
V-48	7.257E-02	1.479E-01	1.515E-01	NOT IDENT.

CR-51	-2.414E-01	5.897E-01	5.997E-01	NOT IDENT.
MN-52	-3.785E-01	3.505E+00	3.509E+00	NOT IDENT.
MN-54	-3.140E-03	4.032E-02	4.034E-02	NOT IDENT.
CO-56	-9.505E-03	4.605E-02	4.624E-02	FAIL ABUN
MN-56	-1.000E+41	4.913E+41	0.000E+00	SHORT HLIF
CO-57	-1.221E-03	2.694E-02	2.695E-02	NOT IDENT.
CO-58	-2.559E-02	4.210E-02	4.365E-02	NOT IDENT.
FE-59	-8.627E-03	1.270E-01	1.270E-01	NOT IDENT.
CO-60	2.062E-02	4.366E-02	4.464E-02	NOT IDENT.
ZN-65	1.138E-01	1.149E-01	1.259E-01	NOT IDENT.
GE-68	-1.050E-01	1.372E+00	1.372E+00	NOT IDENT.
AS-73	3.994E-01	1.960E+00	1.968E+00	NOT IDENT.
AS-74	-6.848E-03	2.213E-01	2.213E-01	NOT IDENT.
SE-75	-5.016E-03	5.615E-02	5.620E-02	FAIL ABUN
BR-77	5.067E+04	5.208E+04	5.687E+04	SHORT HLIF
SR-82	-2.909E-01	6.539E-01	6.670E-01	NOT IDENT.
RB-83	3.369E-02	8.158E-02	8.298E-02	NOT IDENT.
RB-84	4.264E-02	1.030E-01	1.048E-01	NOT IDENT.
KR-85	1.128E+01	7.665E+00	9.199E+00	NOT IDENT.
SR-85	7.351E-02	5.014E-02	6.010E-02	NOT IDENT.
RB-86	3.062E-01	1.714E+00	1.720E+00	NOT IDENT.
Y-88	-2.773E-02	4.762E-02	4.923E-02	FAIL ABUN
Y-91	-1.060E+01	2.890E+01	2.929E+01	NOT IDENT.
NB-94	1.448E-02	3.450E-02	3.511E-02	NOT IDENT.
NB-95M	1.890E-01	1.733E-01	1.931E-01	NOT IDENT.
ZR-95	5.819E-03	8.716E-02	8.720E-02	NOT IDENT.
NB-97	-1.000E+41	9.497E+40	0.000E+00	SHORT HLIF
ZR-97	4.392E+14	6.918E+14	7.196E+14	SHORT HLIF
MO-99	1.437E+03	1.916E+03	2.022E+03	SHORT HLIF
TC-99M	1.786E+40	4.311E+40	0.000E+00	SHORT HLIF
RH-101	-1.582E-03	3.432E-02	3.433E-02	NOT IDENT.
RH-102	-7.333E-03	5.637E-02	5.647E-02	FAIL ABUN
RU-103	-2.276E-02	5.517E-02	5.612E-02	FAIL ABUN
RH-106	1.208E-01	3.180E-01	3.227E-01	NOT IDENT.
RU-106	1.208E-01	3.180E-01	3.227E-01	NOT IDENT.
AG-108M	-3.836E-04	2.784E-02	2.784E-02	NOT IDENT.
AG-110	-8.807E-01	7.427E-01	8.421E-01	NOT IDENT.
AG-110M	-3.101E-02	5.112E-02	5.299E-02	NOT IDENT.
SN-113	1.386E-02	4.785E-02	4.826E-02	NOT IDENT.
CD-115	2.663E+03	5.232E+03	5.368E+03	SHORT HLIF
SN-117M	3.299E-02	1.557E-01	1.564E-01	NOT IDENT.
SB-122	-1.161E+02	3.075E+02	3.120E+02	SHORT HLIF
TE-123M	-5.353E-03	3.334E-02	3.343E-02	NOT IDENT.
SB-124	-7.396E-02	1.102E-01	1.151E-01	NOT IDENT.
SB-125	1.923E-03	8.774E-02	8.774E-02	FAIL ABUN
TE-125M	4.628E+00	1.331E+01	1.348E+01	NOT IDENT.
I-126	-7.640E-02	6.206E-01	6.215E-01	NOT IDENT.
SB-126	6.561E-01	5.547E-01	6.286E-01	FAIL ABUN
SB-127	5.633E+00	4.453E+01	4.461E+01	NOT IDENT.
I-131	2.684E-01	6.570E-01	6.681E-01	NOT IDENT.
I-132	-1.000E+41	3.164E+41	0.000E+00	SHORT HLIF
TE-132	-5.278E+01	5.398E+01	5.899E+01	SHORT HLIF
BA-133	-1.254E-04	4.787E-02	4.787E-02	NOT IDENT.
I-133	4.341E+09	4.859E+10	4.863E+10	SHORT HLIF
CS-134	5.807E-02	5.701E-02	6.273E-02	FAIL ABUN
I-135	2.449E+37	6.773E+37	0.000E+00	SHORT HLIF
CS-136	-1.330E-02	3.326E-01	3.326E-01	NOT IDENT.
BA-137M	9.209E-03	3.525E-02	3.550E-02	NOT IDENT.
CS-137	9.729E-03	3.724E-02	3.750E-02	NOT IDENT.
LA-138	-3.414E-02	6.755E-02	6.928E-02	FAIL ABUN
BA-140	2.199E-01	6.699E-01	6.772E-01	NOT IDENT.
LA-140	-2.219E-01	2.879E-01	3.048E-01	FAIL ABUN
CE-141	-2.103E-02	1.085E-01	1.089E-01	NOT IDENT.
CE-143	3.386E+07	9.900E+06	1.820E+07	SHORT HLIF
CE-144	2.200E-02	2.077E-01	2.079E-01	NOT IDENT.
PM-144	1.870E-02	3.420E-02	3.522E-02	NOT IDENT.
PR-144	1.440E+00	2.589E+00	2.670E+00	NOT IDENT.
PM-146	-1.865E-02	4.066E-02	4.152E-02	NOT IDENT.
ND-147	-1.023E-01	1.849E+00	1.850E+00	NOT IDENT.
PM-147	1.621E+02	7.617E+02	7.652E+02	NOT IDENT.
PM-149	-1.081E+04	4.809E+04	4.834E+04	SHORT HLIF
EU-150	8.623E-03	3.062E-02	3.087E-02	FAIL ABUN
EU-152	-5.909E-02	9.088E-02	9.470E-02	NOT IDENT.
GD-153	2.532E-02	1.022E-01	1.028E-01	NOT IDENT.
EU-154	1.272E-01	1.414E-01	1.526E-01	FAIL ABUN
EU-155	3.201E-02	1.090E-01	1.099E-01	FAIL ABUN
TB-160	1.085E-01	1.713E-01	1.782E-01	FAIL ABUN
HO-166M	5.209E-03	5.447E-02	5.453E-02	FAIL ABUN

TM-171	1.991E+00	3.848E+01	3.849E+01	FAIL ABUN
HF-172	2.501E-02	2.045E-01	2.048E-01	FAIL ABUN
LU-172	2.269E-02	6.864E-02	6.940E-02	FAIL ABUN
LU-176	-1.136E-03	2.560E-02	2.561E-02	FAIL ABUN
HF-181	-1.167E-02	5.347E-02	5.373E-02	NOT IDENT.
TA-182	5.350E-02	2.066E-01	2.080E-01	NOT IDENT.
RE-183	-2.474E-01	3.641E-01	3.808E-01	NOT IDENT.
RE-184	9.668E-02	2.039E-01	2.085E-01	FAIL ABUN
W-188	-2.864E+00	1.024E+01	1.032E+01	FAIL ABUN
IR-192	1.066E-02	4.209E-02	4.236E-02	FAIL ABUN
TL-204	-1.043E+00	7.186E+00	7.201E+00	NOT IDENT.
BI-207	2.128E-02	4.579E-02	4.678E-02	FAIL ABUN
BI-210	-1.200E+01	9.459E+00	1.090E+01	NOT IDENT.
PB-210	-1.200E+01	9.459E+00	1.090E+01	NOT IDENT.
PB-211	2.942E-01	6.618E-01	6.749E-01	NOT IDENT.
BI-213	-6.196E-02	1.015E-01	1.053E-01	NOT IDENT.
RN-219	2.202E-02	3.757E-01	3.759E-01	FAIL ABUN
RA-223	2.132E-02	6.863E-01	6.864E-01	FAIL ABUN
AC-225	6.284E-01	2.246E+00	2.264E+00	NOT IDENT.
AC-227	1.649E-01	2.619E-01	2.722E-01	FAIL ABUN
TH-227	1.649E-01	2.619E-01	2.722E-01	FAIL ABUN
AC-228	9.539E-01	2.900E-01	5.187E-01	FAIL ABUN
RA-228	9.539E-01	2.900E-01	5.187E-01	FAIL ABUN
TH-231	2.132E-02	6.863E-01	6.864E-01	FAIL ABUN
TH-232	9.539E-01	2.900E-01	5.187E-01	FAIL ABUN
PA-233	1.945E-02	6.121E-02	6.183E-02	FAIL ABUN
PA-234	-1.504E-01	3.282E-01	3.352E-01	FAIL ABUN
PA-234M	1.368E+00	5.118E+00	5.155E+00	FAIL ABUN
U-235	1.775E-01	2.178E-01	2.320E-01	FAIL ABUN
NP-237	1.945E-02	6.121E-02	6.183E-02	FAIL ABUN
NP-238	1.165E+04	1.327E+04	1.427E+04	SHORT HLIF
NP-239	-8.572E-02	2.832E-01	2.858E-01	FAIL ABUN
PU-239	3.473E+02	3.521E+02	3.853E+02	NOT IDENT.
AM-241	1.656E-01	2.071E-01	2.201E-01	NOT IDENT.
CM-243	-8.716E-02	1.105E-01	1.172E-01	FAIL ABUN
BK-247	-5.119E-03	8.801E-02	8.804E-02	NOT IDENT.
CM-247	-7.946E-03	3.515E-02	3.533E-02	FAIL ABUN
CF-249	-7.161E-03	4.255E-02	4.267E-02	FAIL ABUN
CF-251	-2.564E-02	1.318E-01	1.324E-01	NOT IDENT.

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*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	68.7367	85.43	128.3830	131.20	76.4268
45.60	58.1085	86.55	120.8223	133.02	59.9724
46.54	74.3443	86.79	120.9206	133.52	69.6520
49.72	0.0000	86.94	120.9829	136.00	72.4814
51.35	72.6401	87.09	121.0443	136.47	64.0964
51.87	80.1166	87.57	121.2417	140.51	0.0000
52.39	71.8084	88.03	136.5651	143.76	77.4849
52.97	68.3562	88.34	145.8680	144.24	66.4882
53.44	74.3283	88.47	145.9322	145.44	96.2979
54.07	79.1631	89.96	125.4029	152.43	91.1017
57.36	0.0000	1093.63	146.9872	153.25	87.9134
57.53	72.0694	91.11	137.9692	323.87	94.8058
57.98	78.7865	92.59	105.0484	156.02	92.6447
59.27	62.9036	93.35	105.3063	158.56	86.3676
59.32	50.3345	94.56	105.7146	159.00	94.9215
59.54	47.8661	94.65	105.7445	162.33	61.4414
60.96	57.0497	94.67	105.7512	162.66	57.3843
61.17	57.1035	94.87	83.5030	163.33	66.6972
62.93	81.5302	97.43	76.9202	165.86	68.3292
63.29	81.6589	98.43	73.1550	176.31	80.7078
63.58	81.7620	98.44	73.1570	176.60	78.9972
64.28	82.0104	99.53	79.9757	177.52	87.0490
66.73	97.4930	100.11	86.7016	181.07	0.0000
67.24	93.7925	102.03	70.6475	181.52	70.4311
125.81	92.6595	103.18	78.6432	184.41	75.7075
67.75	92.6855	103.37	84.2290	143.76	75.8890
68.89	99.3518	105.21	70.2002	193.51	68.8101
69.67	112.4971	105.31	71.3354	197.03	74.7020
70.82	114.9999	106.12	72.6207	198.01	72.0920
70.83	115.0052	106.47	74.9313	201.83	66.1362
72.81	113.2451	109.28	78.9182	203.43	72.7638
72.87	118.9355	111.00	91.7628	205.31	65.6033
74.66	119.7626	111.76	0.0000	210.85	104.4440
74.82	119.8362	114.06	92.5420	215.65	75.1872
74.97	119.9052	116.30	0.0000	218.12	62.2758
77.11	120.8793	116.74	82.8589	222.11	75.0148
78.74	121.6129	119.76	62.6447	227.09	70.8143
79.69	122.0369	121.12	62.8680	227.38	77.5475
80.03	122.1849	121.22	68.7067	228.16	0.0000
80.12	122.2276	121.78	65.3084	228.18	77.6431
80.19	122.2584	122.06	71.1912	116.74	77.6431
80.57	122.4264	122.92	83.0455	235.69	69.8057
81.00	122.6171	123.07	76.0573	235.96	58.1952
81.07	122.6479	265.00	77.3483	238.63	80.8233
81.75	122.9466	125.81	77.7682	238.98	0.0000
82.47	110.4883	127.23	83.9580	240.99	81.1045
83.79	93.6584	127.91	80.5479	242.00	81.2244
84.00	85.3958	129.30	66.5617	244.70	61.8945

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	68.5392	344.28	50.0400	563.25	39.2642
252.80	69.5720	345.93	36.7611	564.24	0.0000
254.15	0.0000	351.06	34.7230	569.33	26.2872
256.23	59.9197	351.93	34.7545	946.00	29.3239
260.90	0.0000	355.39	0.0000	569.70	29.3275
264.66	62.1319	356.01	50.6671	583.19	31.6405
264.80	62.1444	364.49	43.1636	584.27	31.6641
265.00	59.1284	366.42	0.0000	595.83	39.1156
269.46	61.0095	372.51	44.6621	427.87	44.8440
270.03	61.0559	375.05	40.1839	602.52	0.0000
271.23	61.1523	377.52	47.1885	604.72	33.1328
273.65	55.2140	356.01	61.3815	607.14	39.4078
276.40	59.5175	388.16	53.4991	609.32	39.4635
277.37	67.8127	388.63	44.2150	610.33	39.4902
277.60	67.8329	391.69	44.6382	614.28	40.0078
278.00	67.8678	264.66	36.1934	618.01	33.4199
279.20	67.9739	401.81	44.1864	620.36	42.8843
279.54	72.6400	402.40	48.6319	621.93	30.3629
279.70	72.6544	404.85	40.7680	630.19	0.0000
280.46	60.3472	410.95	33.8693	631.29	36.8639
283.69	62.1509	413.71	42.8914	633.25	34.7997
284.31	65.3097	414.70	39.3527	634.78	32.7218
285.41	71.6307	423.72	40.5773	635.95	35.9154
285.90	0.0000	427.09	46.1269	636.99	41.2233
287.50	53.0845	427.87	43.4436	657.50	40.6777
290.67	65.8365	433.94	41.8581	657.76	36.4020
293.27	0.0000	439.40	42.0588	657.90	0.0000
351.93	70.9373	440.45	50.3330	661.66	32.1954
295.96	71.0019	453.88	46.2875	664.57	0.0000
879.38	75.9785	463.37	27.0609	666.33	33.3623
299.98	76.1089	468.07	25.4801	666.50	33.3651
300.09	82.4624	473.00	39.5038	667.71	0.0000
300.13	82.4656	475.06	22.6113	677.62	27.0866
301.36	61.9420	476.78	33.9642	685.70	26.1270
302.85	39.7781	477.60	38.7078	692.65	0.0000
256.23	58.9879	482.18	35.0601	695.00	31.7409
304.85	55.8229	487.02	20.9273	696.49	27.3865
306.78	51.1563	492.35	0.0000	696.51	27.3872
308.46	44.8506	497.08	43.1461	697.00	29.5865
311.90	45.0334	505.52	24.7066	697.30	33.9753
316.51	50.6661	507.63	0.0000	697.49	33.9791
319.41	61.6526	511.00	37.7967	702.65	32.9810
320.08	53.0405	514.00	31.0837	706.68	34.1588
321.04	45.5137	514.00	31.0837	711.68	25.4153
323.87	48.9221	520.40	35.1376	720.70	38.8719
325.23	50.6314	520.69	0.0000	721.93	0.0000
328.76	49.1931	522.65	0.0000	722.78	38.9178
333.37	42.8538	527.90	0.0000	722.91	38.9200
333.97	59.3756	528.26	26.5081	723.31	38.9296
334.37	52.8018	529.59	30.4655	724.19	38.9478
338.28	58.0008	529.87	0.0000	727.33	44.5898
338.32	58.0029	531.02	34.4328	733.00	31.3112
311.90	39.8679	537.26	25.6953	735.93	33.6017
340.48	39.8679	546.56	0.0000	333.97	25.7831
340.55	39.8708	552.55	32.9738	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	28.8039	949.00	24.8553	1384.29	16.6434
747.24	26.1460	667.71	0.0000	1408.01	14.6692
748.06	21.6475	962.31	21.6656	1434.09	18.7271
752.31	28.0256	964.08	20.0146	1435.80	20.7086
753.82	27.1436	966.17	20.0322	1457.56	0.0000
756.73	30.8108	911.20	26.7422	1460.82	11.9214
756.80	30.8125	983.53	15.1355	1489.16	14.0234
884.68	30.3231	984.45	0.0000	1505.03	15.0934
765.81	38.2450	1274.44	33.4770	1584.12	19.5435
766.42	38.2573	1001.03	25.4114	1596.21	16.5117
766.84	38.2655	1002.74	30.5156	1620.50	8.3096
772.60	0.0000	1004.73	34.6126	1621.92	10.3910
776.52	33.5774	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	11.6378
778.90	32.0913	1028.54	0.0000	1750.46	0.0000
783.70	32.1708	1037.84	19.6049	1764.49	1.8474
788.74	32.2554	1038.76	0.0000	1063.66	22.6628
792.07	9.2314	631.29	22.7799	1771.35	8.6357
795.86	30.8317	1048.07	26.9382	1791.20	0.0000
810.06	22.3594	1049.04	19.6930	1808.65	9.3366
810.29	21.4300	1050.41	25.9253	1810.72	0.0000
344.28	21.4317	1063.66	14.5947	1836.06	13.1567
810.76	27.0268	1077.00	22.0059		
815.77	21.4889	1077.34	24.1051		
1048.07	23.3899	1085.87	22.0818		
832.01	24.4886	1093.63	22.1474		
834.85	34.8980	1099.45	24.3106		
835.71	31.1381	1112.07	15.9309		
836.80	0.0000	1112.84	17.7059		
846.75	0.0000	1115.54	21.2695		
846.77	28.4597	1120.29	30.1844		
856.80	22.2424	1120.55	30.1872		
860.56	25.7838	1221.41	26.6443		
871.09	23.0338	1129.67	24.5891		
873.19	29.7815	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	20.6459	1173.23	30.4145		
880.51	18.2087	1177.95	23.9368		
881.60	22.1830	1189.05	26.2172		
883.24	32.8171	1204.77	30.7563		
884.68	28.9761	1221.41	23.0164		
889.28	22.5848	1231.02	20.5854		
894.76	32.9923	1235.36	26.9598		
898.04	29.1548	1238.28	25.3996		
900.72	33.3608	1260.41	0.0000		
903.28	21.1070	1271.87	17.6609		
911.20	17.9238	1274.44	17.4977		
912.08	17.9310	1274.54	22.4971		
923.98	0.0000	1291.59	17.9111		
926.50	19.6880	1298.22	0.0000		
929.11	29.5664	1312.11	13.2862		
935.54	18.7787	1332.49	14.0102		
937.49	27.6979	1362.66	0.0000		
944.13	16.8659	1365.19	18.9524		
946.00	24.8230	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:15:31.24

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299032.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM19.CNF;964
                                         Background date  : 28-JUL-2024 11:25:05
Sample date      : 26-JUN-2024 12:00:00  Acquisition date : 31-JUL-2024 16:12:36
Sample ID        : G674299032            Sample quantity  : 1.16020E+02 GRAM
Detector name    : GAM19                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:01.39  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.09*	142	436	1.00	126.32	123	8	3.96E-02	26.9	
2	2	74.78	504	433	1.00	149.69	145	13	1.40E-01	7.9	1.87E+00
3	2	77.06	870	422	0.98	154.26	145	13	2.42E-01	5.2	
4	0	83.71*	160	377	1.20	167.55	165	7	4.46E-02	21.7	
5	0	87.00	291	509	1.12	174.14	171	8	8.10E-02	14.5	
6	0	92.70*	357	456	1.30	185.53	183	7	9.91E-02	11.4	
7	0	98.39	50	270	1.22	196.90	194	7	1.39E-02	56.6	
8	0	108.42	70	358	1.94	216.97	212	9	1.95E-02	50.2	
9	0	134.52	55	233	1.29	269.16	267	6	1.53E-02	45.9	
10	0	143.67*	92	409	1.13	287.46	282	10	2.56E-02	42.7	
11	0	154.01	36	321	1.13	308.13	305	7	1.00E-02	84.0	
12	2	184.16	49	105	0.91	368.43	367	10	1.36E-02	30.5	2.82E+00
13	2	186.01*	556	285	1.10	372.11	367	10	1.54E-01	6.7	
14	0	200.61	74	239	2.34	401.33	399	8	2.05E-02	38.0	
15	2	209.35	42	118	0.96	418.80	417	12	1.17E-02	38.9	1.29E+00
16	2	212.00	68	223	1.40	424.09	417	12	1.90E-02	39.9	
17	3	238.65*	400	248	1.00	477.39	473	16	1.11E-01	7.8	2.15E+00
18	3	241.98	563	212	1.16	484.06	473	16	1.56E-01	6.2	
19	0	258.27	90	263	1.11	516.63	510	12	2.51E-02	37.6	
20	0	269.68	85	249	1.53	539.43	535	10	2.37E-02	36.2	
21	0	295.21*	1308	162	1.21	590.50	586	10	3.63E-01	3.3	
22	0	299.89	42	156	0.92	599.86	597	9	1.16E-02	56.1	
23	0	328.15	19	150	1.27	656.37	653	7	5.35E-03	107.5	
24	0	338.14*	90	112	0.93	676.35	673	7	2.50E-02	22.5	
25	0	351.92*	2175	206	1.21	703.90	697	14	6.04E-01	2.6	
26	0	453.96	18	99	1.37	907.96	905	10	5.02E-03	105.1	
27	4	460.49	45	34	1.68	921.01	918	15	1.25E-02	25.7	2.28E+00
28	4	462.84	45	62	1.52	925.72	918	15	1.26E-02	37.5	
29	0	510.81*	49	123	1.63	1021.64	1016	11	1.36E-02	49.9	
30	0	561.33	22	50	0.92	1122.68	1119	8	6.12E-03	60.2	
31	0	583.65*	120	123	1.78	1167.31	1162	15	3.33E-02	23.0	
32	0	609.37*	1577	86	1.34	1218.76	1213	14	4.38E-01	2.8	
33	0	661.84	73	63	1.11	1323.68	1317	12	2.03E-02	24.6	
34	0	666.04	47	47	1.60	1332.08	1328	10	1.30E-02	31.1	

Sample ID : G674299032 Acquisition date : 31-JUL-2024 16:12:36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	720.16	10	42	0.99	1440.31	1436	8	2.90E-03	111.7	
36	0	727.18	41	33	2.05	1454.34	1451	8	1.15E-02	28.3	
37	0	768.26	131	51	1.70	1536.51	1530	11	3.65E-02	13.7	
38	0	786.85	37	74	0.62	1573.68	1566	13	1.02E-02	52.0	
39	0	806.43	27	79	1.63	1612.83	1604	15	7.49E-03	74.3	
40	0	861.39*	21	28	1.86	1722.75	1720	8	5.71E-03	50.5	
41	1	911.18*	97	40	1.84	1822.33	1815	32	2.70E-02	16.4	1.08E+00
42	1	918.53	24	35	1.84	1837.04	1815	32	6.67E-03	53.0	
43	0	934.69	72	58	2.06	1869.35	1862	13	2.00E-02	24.8	
44	0	963.77	27	48	1.39	1927.50	1922	11	7.39E-03	54.6	
45	0	969.42*	64	47	2.45	1938.80	1933	10	1.79E-02	23.9	
46	0	1003.54*	29	52	5.80	2007.04	1996	18	8.02E-03	62.7	
47	10	1060.45	15	12	1.66	2120.86	2118	15	4.20E-03	43.8	1.19E+00
48	0	1090.61	29	9	3.20	2181.17	2177	9	7.98E-03	26.6	
49	0	1109.42	16	22	1.50	2218.80	2212	11	4.55E-03	60.6	
50	0	1120.49	326	65	1.89	2240.94	2234	18	9.05E-02	8.0	
51	0	1155.44	50	43	2.51	2310.84	2302	17	1.39E-02	33.0	
52	0	1238.39	119	38	1.14	2476.74	2471	13	3.30E-02	14.2	
53	0	1280.84	35	26	1.48	2561.63	2554	15	9.75E-03	36.0	
54	1	1290.21	23	14	2.05	2580.37	2577	14	6.33E-03	28.7	2.61E+00
55	1	1293.02	16	14	1.86	2586.00	2577	14	4.33E-03	63.4	
56	0	1361.99	8	8	1.38	2723.94	2721	6	2.27E-03	63.8	
57	0	1377.78*	121	10	2.08	2755.52	2749	13	3.37E-02	10.6	
58	0	1385.97	40	9	4.23	2771.89	2765	16	1.10E-02	24.9	
59	0	1397.45*	10	17	1.00	2794.85	2786	12	2.88E-03	87.9	
60	0	1402.61	29	34	2.20	2805.17	2798	15	8.08E-03	45.6	
61	0	1408.02	37	20	2.81	2815.99	2812	10	1.03E-02	27.0	
62	0	1424.38	16	6	0.73	2848.71	2843	11	4.31E-03	38.8	
63	0	1461.08*	224	24	2.00	2922.11	2914	16	6.21E-02	8.4	
64	0	1509.73	46	22	2.78	3019.43	3011	18	1.27E-02	28.3	
65	0	1544.72	14	24	0.90	3089.41	3079	14	3.87E-03	79.8	
66	0	1631.37	5	7	1.01	3262.71	3256	9	1.42E-03	101.7	
67	0	1661.99	12	13	1.54	3323.95	3318	10	3.42E-03	60.9	
68	0	1688.04	10	2	2.37	3376.06	3371	9	2.72E-03	42.2	
69	0	1729.48	82	6	2.09	3458.94	3450	15	2.28E-02	13.2	
70	0	1764.69	280	8	2.55	3529.36	3522	16	7.78E-02	6.4	
71	0	1847.32	36	6	1.75	3694.63	3687	14	9.90E-03	22.9	
72	0	1898.16*	9	10	2.20	3796.32	3787	13	2.41E-03	82.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:15:32

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299032.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 12:00:00 Acquisition date : 31-JUL-2024 16:12:36
Sample ID        : G674299032           Sample quantity  : 116.02 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA19              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:01.39   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	211	10.66*	1.182E+00	1.085E+01	1.085E+01	16.75
CD-109	88.03	311	3.70*	5.992E+00	9.086E+00	9.579E+00	29.08
TE-125M	109.28	74	0.27*	6.838E+00	2.601E+01	3.978E+01	100.37
SN-126	64.28	154	9.60	3.283E+00	3.164E+00	3.164E+00	53.73
	86.94	311	8.90	5.992E+00	3.777E+00	3.777E+00	29.08
	87.57	311	37.00*	5.992E+00	9.086E-01	9.086E-01	29.08
BA-137M	661.66	72	89.90*	2.334E+00	2.208E-01	2.212E-01	49.29
CS-137	661.66	72	85.10*	2.334E+00	2.332E-01	2.337E-01	49.29
CE-144	80.12	------	1.36	5.424E+00	------	Line Not Found	------
	133.52	58	11.09*	6.808E+00	4.937E-01	5.378E-01	91.74
TL-208	277.37	------	6.60	4.498E+00	------	Line Not Found	------
	583.19	118	85.00*	2.582E+00	3.477E-01	3.477E-01	46.08
	860.56	20	12.50	1.868E+00	5.505E-01	5.505E-01	101.00
BI-211	72.87	------	1.23	4.634E+00	------	Line Not Found	------
	351.06	2189	12.92*	3.784E+00	2.898E+01	2.898E+01	5.14
BI-212	727.33	40	6.67*	2.159E+00	1.815E+00	1.815E+00	56.69
	1620.50	------	1.47	1.094E+00	------	Line Not Found	------
PB-212	74.82	542	10.28	4.862E+00	7.019E+00	7.019E+00	15.82
	77.11	934	17.10	5.116E+00	6.906E+00	6.906E+00	10.31
	238.63	410	43.60*	5.004E+00	1.215E+00	1.215E+00	15.54
	300.09	42	3.30	4.252E+00	1.950E+00	1.950E+00	112.15
BI-214	609.32	1549	45.49*	2.495E+00	8.831E+00	8.831E+00	5.64
	1120.29	311	14.92	1.480E+00	9.126E+00	9.127E+00	15.94
	1764.49	262	15.30	1.036E+00	1.070E+01	1.070E+01	12.78
PB-214	74.82	542	5.80	4.862E+00	1.244E+01	1.244E+01	15.82
	77.11	934	9.70	5.116E+00	1.217E+01	1.218E+01	10.31
	87.09	311	3.41	5.992E+00	9.858E+00	9.859E+00	29.08
	242.00	576	7.25	4.956E+00	1.037E+01	1.037E+01	12.37
	295.22	1326	18.42	4.300E+00	1.083E+01	1.083E+01	6.64
	351.93	2189	35.60*	3.784E+00	1.052E+01	1.052E+01	5.14
RN-222	609.32	1549	45.49*	2.495E+00	8.831E+00	8.831E+00	5.64
	1120.29	311	14.92	1.480E+00	9.126E+00	9.127E+00	15.94
	1764.49	262	15.30	1.036E+00	1.070E+01	1.070E+01	12.78
RA-224	240.99	576	4.10*	4.956E+00	1.834E+01	1.834E+01	12.37
RA-226	74.82	542	5.80	4.862E+00	1.244E+01	1.244E+01	15.82
	77.11	934	9.70	5.116E+00	1.217E+01	1.218E+01	10.31
	87.09	311	3.41	5.992E+00	9.858E+00	9.859E+00	29.08
	242.00	576	7.25	4.956E+00	1.037E+01	1.037E+01	12.37
	295.22	1326	18.42	4.300E+00	1.083E+01	1.083E+01	6.64
	351.93	2189	35.60*	3.784E+00	1.052E+01	1.052E+01	5.14
AC-228	105.21	------	1.10	6.781E+00	------	Line Not Found	------
	338.32	91	11.27	3.896E+00	1.338E+00	1.338E+00	45.01
	835.71	------	1.61	1.918E+00	------	Line Not Found	------
	911.20	94	25.80*	1.778E+00	1.324E+00	1.324E+00	32.74
	968.97	62	15.80	1.683E+00	1.506E+00	1.506E+00	47.72
RA-228	105.21	------	1.10	6.781E+00	------	Line Not Found	------
	338.32	91	11.27	3.896E+00	1.338E+00	1.338E+00	45.01
	835.71	------	1.61	1.918E+00	------	Line Not Found	------
	911.20	94	25.80*	1.778E+00	1.324E+00	1.324E+00	32.74

Sample ID : G674299032 Acquisition date : 31-JUL-2024 16:12:36

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	968.97	62	15.80	1.683E+00	1.506E+00	1.506E+00	47.72
TH-228	74.82	542	10.28	4.862E+00	7.019E+00	7.019E+00	15.82
	77.11	934	17.10	5.116E+00	6.906E+00	6.906E+00	10.31
	238.63	410	43.60*	5.004E+00	1.215E+00	1.215E+00	15.54
	300.09	42	3.30	4.252E+00	1.950E+00	1.950E+00	112.15
TH-230	74.82	542	5.80	4.862E+00	1.244E+01	1.244E+01	15.82
	77.11	934	9.70	5.116E+00	1.217E+01	1.217E+01	10.31
	87.09	311	3.41	5.992E+00	9.859E+00	9.859E+00	29.08
	242.00	576	7.25	4.956E+00	1.037E+01	1.037E+01	12.37
	295.22	1326	18.42	4.300E+00	1.083E+01	1.083E+01	6.64
	351.93	2189	35.60*	3.784E+00	1.052E+01	1.052E+01	5.14
PA-231	283.69	------	1.70	4.426E+00	------	Line Not Found	------
	301.36	42	5.35*	4.252E+00	1.203E+00	1.203E+00	112.15
TH-232	105.21	------	1.10	6.781E+00	------	Line Not Found	------
	338.32	91	11.27	3.896E+00	1.338E+00	1.338E+00	45.01
	835.71	------	1.61	1.918E+00	------	Line Not Found	------
	911.20	94	25.80*	1.778E+00	1.324E+00	1.324E+00	32.74
	968.97	62	15.80	1.683E+00	1.506E+00	1.506E+00	47.72
TH-234	63.29	154	3.70*	3.283E+00	8.210E+00	8.210E+00	53.73
	92.59	380	4.23	6.339E+00	9.169E+00	9.169E+00	22.84
U-234	74.82	542	5.80	4.862E+00	1.244E+01	1.244E+01	15.82
	77.11	934	9.70	5.116E+00	1.217E+01	1.217E+01	10.31
	87.09	311	3.41	5.992E+00	9.858E+00	9.858E+00	29.08
	242.00	576	7.25	4.956E+00	1.037E+01	1.037E+01	12.37
	295.22	1326	18.42	4.300E+00	1.083E+01	1.083E+01	6.64
	351.93	2189	35.60*	3.784E+00	1.052E+01	1.052E+01	5.14
U-235	89.96	------	3.47	6.185E+00	------	Line Not Found	------
	93.35	380	5.60	6.339E+00	6.926E+00	6.926E+00	22.84
	143.76	96	10.96*	6.679E+00	8.519E-01	8.519E-01	85.33
	163.33	------	5.08	6.327E+00	------	Line Not Found	------
	185.72	575	57.20	5.891E+00	1.105E+00	1.105E+00	13.30
	205.31	------	5.01	5.539E+00	------	Line Not Found	------
U-238	63.29	154	3.70*	3.283E+00	8.210E+00	8.210E+00	53.73
	92.59	380	4.23	6.339E+00	9.169E+00	9.169E+00	22.84
AM-243	43.53	------	5.90	6.010E-01	------	Line Not Found	------
	74.66	542	67.20*	4.862E+00	1.074E+00	1.074E+00	15.82
ANH-511	511.00	49	100.00*	2.865E+00	1.099E-01	1.099E-01	99.87

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:15:33.56

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299032.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:36 Sensitivity     : 3.000           *
* Detector ID      : GAM19                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:00:00 Analyst initials: MXR1            *
* Sample ID        : G674299032           Sample Quantity : 1.1602E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  4-DEC-2023 10:59:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;25            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.085E+01	1.780E+00	1.104E+00
CD-109	9.579E+00	2.730E+00	2.730E+00
TE-125M	3.978E+01	3.913E+01	3.465E+01
SN-126	9.086E-01	2.589E-01	2.602E-01
BA-137M	2.212E-01	1.069E-01	8.607E-02
CS-137	2.337E-01	1.129E-01	9.093E-02
CE-144	5.378E-01	4.835E-01	6.173E-01
TL-208	3.477E-01	1.570E-01	1.055E-01
BI-211	2.898E+01	1.458E+00	5.679E-01
BI-212	1.815E+00	1.008E+00	1.334E+00
PB-212	1.215E+00	1.851E-01	1.871E-01
BI-214	8.831E+00	4.885E-01	2.014E-01
PB-214	1.052E+01	5.293E-01	2.065E-01
RN-222	8.831E+00	4.885E-01	2.014E-01
RA-224	1.834E+01	2.224E+00	2.005E+00
RA-226	1.052E+01	5.293E-01	2.065E-01
AC-228	1.324E+00	4.248E-01	4.116E-01
RA-228	1.324E+00	4.248E-01	4.116E-01
TH-228	1.215E+00	1.851E-01	1.871E-01
TH-230	1.052E+01	5.293E-01	2.065E-01
PA-231	1.203E+00	1.322E+00	1.292E+00
TH-232	1.324E+00	4.248E-01	4.116E-01
TH-234	8.210E+00	4.323E+00	3.994E+00
U-234	1.052E+01	5.293E-01	2.065E-01
U-235	8.519E-01	7.124E-01	6.000E-01
U-238	8.210E+00	4.323E+00	3.994E+00
AM-243	1.074E+00	1.664E-01	1.730E-01
ANH-511	1.099E-01	1.076E-01	9.295E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.110E-01	6.388E-01	1.205E+00	NOT IDENT.
NA-22	1.712E-02	6.245E-02	1.131E-01	NOT IDENT.

NA-24	0.000E+00	5.051E+15	0.000E+00	SHORT HLIF
AL-26	-2.117E-02	4.223E-02	7.542E-02	NOT IDENT.
SC-46	1.216E-02	8.080E-02	1.477E-01	FAIL ABUN
V-48	-4.141E-02	2.961E-01	5.200E-01	NOT IDENT.
CR-51	-7.521E-02	9.628E-01	1.800E+00	NOT IDENT.
MN-52	2.842E+00	4.621E+00	9.748E+00	FAIL ABUN
MN-54	-2.043E-02	6.848E-02	1.188E-01	NOT IDENT.
CO-56	3.389E-02	6.955E-02	1.346E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.492E-02	4.636E-02	8.065E-02	NOT IDENT.
CO-58	1.147E-02	8.098E-02	1.347E-01	NOT IDENT.
FE-59	-7.216E-02	1.480E-01	2.715E-01	FAIL ABUN
CO-60	-1.298E-02	5.209E-02	9.837E-02	NOT IDENT.
ZN-65	2.530E-02	1.330E-01	2.357E-01	NOT IDENT.
GE-68	-1.929E-01	1.741E+00	3.353E+00	NOT IDENT.
AS-73	1.438E+00	1.755E+00	3.344E+00	NOT IDENT.
AS-74	1.850E-01	3.122E-01	6.061E-01	NOT IDENT.
SE-75	1.727E-02	8.971E-02	1.551E-01	FAIL ABUN
BR-77	0.000E+00	1.003E+04	0.000E+00	SHORT HLIF
SR-82	9.077E-01	7.744E-01	1.634E+00	NOT IDENT.
RB-83	-9.184E-02	1.221E-01	2.106E-01	NOT IDENT.
RB-84	4.748E-02	1.848E-01	3.415E-01	NOT IDENT.
KR-85	4.202E+00	1.232E+01	2.107E+01	NOT IDENT.
SR-85	2.732E-02	8.059E-02	1.379E-01	NOT IDENT.
RB-86	-3.726E-02	2.131E+00	4.167E+00	NOT IDENT.
Y-88	-2.258E-02	6.001E-02	1.101E-01	NOT IDENT.
Y-91	-2.702E+00	3.099E+01	5.974E+01	NOT IDENT.
NB-94	5.330E-02	5.353E-02	1.065E-01	NOT IDENT.
NB-95	3.849E-02	8.759E-02	1.508E-01	NOT IDENT.
NB-95M	-2.179E-01	3.285E-01	4.903E-01	NOT IDENT.
ZR-95	1.354E-01	1.351E-01	2.735E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.086E+15	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.056E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	7.812E+40	0.000E+00	SHORT HLIF
RH-101	-2.320E-02	5.454E-02	9.416E-02	NOT IDENT.
RH-102	1.246E-02	8.116E-02	1.523E-01	FAIL ABUN
RU-103	8.327E-02	8.136E-02	1.656E-01	FAIL ABUN
RH-106	2.316E-01	4.909E-01	9.472E-01	NOT IDENT.
RU-106	2.316E-01	4.909E-01	9.472E-01	NOT IDENT.
AG-108M	-1.567E-02	4.750E-02	8.560E-02	NOT IDENT.
AG-110	2.849E-01	1.247E+00	2.121E+00	NOT IDENT.
AG-110M	6.644E-03	9.085E-02	1.633E-01	NOT IDENT.
SN-113	-9.099E-02	8.347E-02	1.434E-01	NOT IDENT.
CD-115	0.000E+00	9.153E+03	0.000E+00	SHORT HLIF
SN-117M	-1.019E-01	2.776E-01	4.742E-01	NOT IDENT.
SB-122	0.000E+00	5.209E+02	0.000E+00	SHORT HLIF
TE-123M	1.749E-02	5.714E-02	1.011E-01	NOT IDENT.
SB-124	-6.605E-02	2.084E-01	3.262E-01	NOT IDENT.
SB-125	-1.124E-01	1.568E-01	2.753E-01	FAIL ABUN
I-126	0.000E+00	1.563E+00	2.427E+00	FAIL ABUN
SB-126	4.056E-01	8.877E-01	1.305E+00	FAIL ABUN
SB-127	-2.146E+00	7.611E+01	1.389E+02	NOT IDENT.
I-131	-3.846E-01	1.034E+00	1.886E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	1.041E+02	0.000E+00	SHORT HLIF
BA-133	6.169E-03	7.070E-02	1.204E-01	NOT IDENT.
I-133	0.000E+00	9.107E+10	0.000E+00	SHORT HLIF
CS-134	4.337E-02	6.655E-02	1.289E-01	NOT IDENT.
I-135	0.000E+00	8.923E+37	0.000E+00	SHORT HLIF
CS-136	-1.900E-01	5.180E-01	8.799E-01	FAIL ABUN
LA-138	4.887E-02	9.200E-02	1.906E-01	NOT IDENT.
CE-139	5.449E-03	6.072E-02	1.059E-01	NOT IDENT.
BA-140	-5.456E-01	1.260E+00	2.236E+00	NOT IDENT.
LA-140	-3.047E-01	4.351E-01	7.391E-01	FAIL ABUN
CE-141	4.456E-02	1.785E-01	2.933E-01	NOT IDENT.
CE-143	0.000E+00	6.884E+06	0.000E+00	SHORT HLIF
PM-144	-3.555E-02	5.542E-02	9.423E-02	NOT IDENT.
PR-144	-2.641E+00	4.197E+00	7.145E+00	NOT IDENT.
PM-146	5.784E-02	1.192E-01	1.371E-01	FAIL ABUN
ND-147	-2.595E+00	3.478E+00	5.986E+00	NOT IDENT.
PM-147	1.459E+02	1.304E+03	2.319E+03	NOT IDENT.
PM-149	0.000E+00	9.284E+04	0.000E+00	SHORT HLIF
EU-150	-2.218E-02	5.189E-02	8.426E-02	FAIL ABUN
EU-152	6.678E-02	1.670E-01	3.185E-01	FAIL ABUN
GD-153	1.988E-01	2.206E-01	2.587E-01	FAIL ABUN
EU-154	4.521E-02	1.747E-01	3.157E-01	FAIL ABUN
EU-155	1.948E-01	1.830E-01	3.216E-01	FAIL ABUN

TB-160	4.397E-02	3.028E-01	5.488E-01	FAIL ABUN
HO-166M	-3.792E-02	9.890E-02	1.727E-01	FAIL ABUN
TM-171	3.435E+00	3.137E+01	5.807E+01	NOT IDENT.
HF-172	5.913E-02	3.220E-01	5.746E-01	FAIL ABUN
LU-172	3.067E-02	8.929E-02	1.650E-01	FAIL ABUN
LU-176	5.318E-03	4.172E-02	7.906E-02	FAIL ABUN
HF-181	9.928E-02	9.535E-02	1.916E-01	NOT IDENT.
TA-182	-6.282E-02	2.590E-01	4.857E-01	FAIL ABUN
RE-183	2.337E-01	4.068E-01	7.641E-01	NOT IDENT.
RE-184	2.129E-02	2.972E-01	5.418E-01	NOT IDENT.
W-188	1.961E+01	1.742E+01	2.978E+01	FAIL ABUN
IR-192	-3.110E-02	6.921E-02	1.263E-01	FAIL ABUN
HG-203	2.325E-03	9.896E-02	1.679E-01	NOT IDENT.
TL-204	-4.864E-01	8.949E+00	1.499E+01	FAIL ABUN
BI-207	-1.011E-01	1.242E-01	2.764E-01	FAIL ABUN
BI-210	5.775E+00	6.255E+00	1.200E+01	NOT IDENT.
PB-210	5.775E+00	6.255E+00	1.200E+01	NOT IDENT.
PB-211	-7.195E-01	1.301E+00	2.316E+00	NOT IDENT.
BI-213	-9.254E-02	1.490E-01	2.634E-01	NOT IDENT.
RN-219	5.256E-01	7.157E-01	1.386E+00	NOT IDENT.
RA-223	5.744E-01	1.108E+00	2.051E+00	FAIL ABUN
AC-225	-8.542E-01	4.549E+00	7.705E+00	NOT IDENT.
AC-227	3.517E-01	4.708E-01	8.412E-01	FAIL ABUN
TH-227	3.517E-01	4.708E-01	8.412E-01	FAIL ABUN
TH-229	2.626E-01	9.788E-01	1.711E+00	FAIL ABUN
TH-231	5.744E-01	1.108E+00	2.051E+00	FAIL ABUN
PA-233	-5.423E-02	1.049E-01	1.908E-01	FAIL ABUN
PA-234	-4.203E-01	5.415E-01	8.762E-01	FAIL ABUN
PA-234M	1.074E+01	7.890E+00	1.621E+01	NOT IDENT.
NP-237	-5.423E-02	1.049E-01	1.908E-01	FAIL ABUN
NP-238	0.000E+00	2.476E+04	0.000E+00	SHORT HLIF
NP-239	-1.425E-01	4.456E-01	7.776E-01	FAIL ABUN
PU-239	6.873E+01	6.003E+02	1.062E+03	NOT IDENT.
AM-241	1.706E-01	2.745E-01	4.815E-01	NOT IDENT.
CM-243	-1.639E-02	1.713E-01	3.045E-01	FAIL ABUN
BK-247	1.070E-01	1.537E-01	2.556E-01	FAIL ABUN
CM-247	6.092E-02	6.799E-02	1.324E-01	NOT IDENT.
CF-249	2.630E-02	7.103E-02	1.346E-01	NOT IDENT.
CF-251	6.458E-02	2.435E-01	4.271E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:15:32.06

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	211	10.66*	1.182E+00	1.085E+01	1.085E+01	16.75
CD-109	88.03	311	3.70*	5.992E+00	9.086E+00	9.579E+00	29.08
TE-125M	109.28	74	0.27*	6.838E+00	2.601E+01	3.978E+01	100.37
SN-126	64.28	154	9.60	3.283E+00	3.164E+00	3.164E+00	53.73
	86.94	311	8.90	5.992E+00	3.777E+00	3.777E+00	29.08
	87.57	311	37.00*	5.992E+00	9.086E-01	9.086E-01	29.08
BA-137M	661.66	72	89.90*	2.334E+00	2.208E-01	2.212E-01	49.29
CS-137	661.66	72	85.10*	2.334E+00	2.332E-01	2.337E-01	49.29
CE-144	80.12	------	1.36	5.424E+00	------	Line Not Found	------
	133.52	58	11.09*	6.808E+00	4.937E-01	5.378E-01	91.74
TL-208	277.37	------	6.60	4.498E+00	------	Line Not Found	------
	583.19	118	85.00*	2.582E+00	3.477E-01	3.477E-01	46.08
	860.56	20	12.50	1.868E+00	5.505E-01	5.505E-01	101.00
BI-211	72.87	------	1.23	4.634E+00	------	Line Not Found	------
	351.06	2189	12.92*	3.784E+00	2.898E+01	2.898E+01	5.14
BI-212	727.33	40	6.67*	2.159E+00	1.815E+00	1.815E+00	56.69
	1620.50	------	1.47	1.094E+00	------	Line Not Found	------
PB-212	74.82	542	10.28	4.862E+00	7.019E+00	7.019E+00	15.82
	77.11	934	17.10	5.116E+00	6.906E+00	6.906E+00	10.31
	238.63	410	43.60*	5.004E+00	1.215E+00	1.215E+00	15.54
	300.09	42	3.30	4.252E+00	1.950E+00	1.950E+00	112.15
BI-214	609.32	1549	45.49*	2.495E+00	8.831E+00	8.831E+00	5.64
	1120.29	311	14.92	1.480E+00	9.126E+00	9.127E+00	15.94
	1764.49	262	15.30	1.036E+00	1.070E+01	1.070E+01	12.78
PB-214	74.82	542	5.80	4.862E+00	1.244E+01	1.244E+01	15.82
	77.11	934	9.70	5.116E+00	1.217E+01	1.218E+01	10.31
	87.09	311	3.41	5.992E+00	9.858E+00	9.859E+00	29.08
	242.00	576	7.25	4.956E+00	1.037E+01	1.037E+01	12.37
	295.22	1326	18.42	4.300E+00	1.083E+01	1.083E+01	6.64
	351.93	2189	35.60*	3.784E+00	1.052E+01	1.052E+01	5.14
RN-222	609.32	1549	45.49*	2.495E+00	8.831E+00	8.831E+00	5.64
	1120.29	311	14.92	1.480E+00	9.126E+00	9.127E+00	15.94
	1764.49	262	15.30	1.036E+00	1.070E+01	1.070E+01	12.78
RA-224	240.99	576	4.10*	4.956E+00	1.834E+01	1.834E+01	12.37
RA-226	74.82	542	5.80	4.862E+00	1.244E+01	1.244E+01	15.82
	77.11	934	9.70	5.116E+00	1.217E+01	1.218E+01	10.31
	87.09	311	3.41	5.992E+00	9.858E+00	9.859E+00	29.08
	242.00	576	7.25	4.956E+00	1.037E+01	1.037E+01	12.37
	295.22	1326	18.42	4.300E+00	1.083E+01	1.083E+01	6.64
	351.93	2189	35.60*	3.784E+00	1.052E+01	1.052E+01	5.14
AC-228	105.21	------	1.10	6.781E+00	------	Line Not Found	------
	338.32	91	11.27	3.896E+00	1.338E+00	1.338E+00	45.01
	835.71	------	1.61	1.918E+00	------	Line Not Found	------
	911.20	94	25.80*	1.778E+00	1.324E+00	1.324E+00	32.74
	968.97	62	15.80	1.683E+00	1.506E+00	1.506E+00	47.72
RA-228	105.21	------	1.10	6.781E+00	------	Line Not Found	------
	338.32	91	11.27	3.896E+00	1.338E+00	1.338E+00	45.01

Sample ID : G674299032 Acquisition date : 31-JUL-2024 16:12:36

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	835.71	------	1.61	1.918E+00	------	Line Not Found	------
	911.20	94	25.80*	1.778E+00	1.324E+00	1.324E+00	32.74
	968.97	62	15.80	1.683E+00	1.506E+00	1.506E+00	47.72
TH-228	74.82	542	10.28	4.862E+00	7.019E+00	7.019E+00	15.82
	77.11	934	17.10	5.116E+00	6.906E+00	6.906E+00	10.31
	238.63	410	43.60*	5.004E+00	1.215E+00	1.215E+00	15.54
	300.09	42	3.30	4.252E+00	1.950E+00	1.950E+00	112.15
TH-230	74.82	542	5.80	4.862E+00	1.244E+01	1.244E+01	15.82
	77.11	934	9.70	5.116E+00	1.217E+01	1.217E+01	10.31
	87.09	311	3.41	5.992E+00	9.859E+00	9.859E+00	29.08
	242.00	576	7.25	4.956E+00	1.037E+01	1.037E+01	12.37
	295.22	1326	18.42	4.300E+00	1.083E+01	1.083E+01	6.64
	351.93	2189	35.60*	3.784E+00	1.052E+01	1.052E+01	5.14
PA-231	283.69	------	1.70	4.426E+00	------	Line Not Found	------
	301.36	42	5.35*	4.252E+00	1.203E+00	1.203E+00	112.15
TH-232	105.21	------	1.10	6.781E+00	------	Line Not Found	------
	338.32	91	11.27	3.896E+00	1.338E+00	1.338E+00	45.01
	835.71	------	1.61	1.918E+00	------	Line Not Found	------
	911.20	94	25.80*	1.778E+00	1.324E+00	1.324E+00	32.74
	968.97	62	15.80	1.683E+00	1.506E+00	1.506E+00	47.72
TH-234	63.29	154	3.70*	3.283E+00	8.210E+00	8.210E+00	53.73
	92.59	380	4.23	6.339E+00	9.169E+00	9.169E+00	22.84
U-234	74.82	542	5.80	4.862E+00	1.244E+01	1.244E+01	15.82
	77.11	934	9.70	5.116E+00	1.217E+01	1.217E+01	10.31
	87.09	311	3.41	5.992E+00	9.858E+00	9.858E+00	29.08
	242.00	576	7.25	4.956E+00	1.037E+01	1.037E+01	12.37
	295.22	1326	18.42	4.300E+00	1.083E+01	1.083E+01	6.64
	351.93	2189	35.60*	3.784E+00	1.052E+01	1.052E+01	5.14
U-235	89.96	------	3.47	6.185E+00	------	Line Not Found	------
	93.35	380	5.60	6.339E+00	6.926E+00	6.926E+00	22.84
	143.76	96	10.96*	6.679E+00	8.519E-01	8.519E-01	85.33
	163.33	------	5.08	6.327E+00	------	Line Not Found	------
	185.72	575	57.20	5.891E+00	1.105E+00	1.105E+00	13.30
	205.31	------	5.01	5.539E+00	------	Line Not Found	------
U-238	63.29	154	3.70*	3.283E+00	8.210E+00	8.210E+00	53.73
	92.59	380	4.23	6.339E+00	9.169E+00	9.169E+00	22.84
AM-243	43.53	------	5.90	6.010E-01	------	Line Not Found	------
	74.66	542	67.20*	4.862E+00	1.074E+00	1.074E+00	15.82
ANH-511	511.00	49	100.00*	2.865E+00	1.099E-01	1.099E-01	99.87

Flag: "*" = Keyline

Sample ID : G674299032 Acquisition date : 31-JUL-2024 16:12:36

Total number of lines in spectrum	72	
Number of unidentified lines	26	
Number of lines tentatively identified by NID	46	63.89%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.085E+01	1.085E+01	0.182E+01	16.75	
CD-109	461.40D	1.05	9.086E+00	9.579E+00	2.786E+00	29.08	
TE-125M	57.40D	1.53	2.601E+01	3.978E+01	3.993E+01	100.37	
SN-126	2.30E+05Y	1.00	9.086E-01	9.086E-01	2.642E-01	29.08	
BA-137M	30.08Y	1.00	2.208E-01	2.212E-01	1.091E-01	49.29	
CS-137	30.08Y	1.00	2.332E-01	2.337E-01	1.152E-01	49.29	
CE-144	284.91D	1.09	4.937E-01	5.378E-01	4.934E-01	91.74	
TL-208	1.41E+10Y	1.00	3.477E-01	3.477E-01	1.602E-01	46.08	
BI-211	7.04E+08Y	1.00	2.898E+01	2.898E+01	0.149E+01	5.14	
BI-212	1.41E+10Y	1.00	1.815E+00	1.815E+00	1.029E+00	56.69	
PB-212	1.41E+10Y	1.00	1.215E+00	1.215E+00	0.189E+00	15.54	
BI-214	1600.00Y	1.00	8.831E+00	8.831E+00	0.498E+00	5.64	
PB-214	1600.00Y	1.00	1.052E+01	1.052E+01	0.054E+01	5.14	
RN-222	1600.00Y	1.00	8.831E+00	8.831E+00	0.498E+00	5.64	
RA-224	1.41E+10Y	1.00	1.834E+01	1.834E+01	0.227E+01	12.37	
RA-226	1600.00Y	1.00	1.052E+01	1.052E+01	0.054E+01	5.14	
AC-228	1.41E+10Y	1.00	1.324E+00	1.324E+00	0.434E+00	32.74	
RA-228	1.41E+10Y	1.00	1.324E+00	1.324E+00	0.434E+00	32.74	
TH-228	1.41E+10Y	1.00	1.215E+00	1.215E+00	0.189E+00	15.54	
TH-230	7.54E+04Y	1.00	1.052E+01	1.052E+01	0.054E+01	5.14	
PA-231	7.04E+08Y	1.00	1.203E+00	1.203E+00	1.349E+00	112.15	
TH-232	1.41E+10Y	1.00	1.324E+00	1.324E+00	0.434E+00	32.74	
TH-234	4.47E+09Y	1.00	8.210E+00	8.210E+00	4.411E+00	53.73	
U-234	2.45E+05Y	1.00	1.052E+01	1.052E+01	0.054E+01	5.14	
U-235	7.04E+08Y	1.00	8.519E-01	8.519E-01	7.270E-01	85.33	
U-238	4.47E+09Y	1.00	8.210E+00	8.210E+00	4.411E+00	53.73	
AM-243	7370.00Y	1.00	1.074E+00	1.074E+00	0.170E+00	15.82	
ANH-511	1.00E+09Y	1.00	1.099E-01	1.099E-01	1.098E-01	99.87	
			---	---			
	Total Activity :		1.831E+02	1.974E+02			

Grand Total Activity : 1.831E+02 1.974E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299032 Acquisition date : 31-JUL-2024 16:12:36

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	83.71	172	404	1.20	167.55	165	7	4.46E-02	43.4	5.74E+00	T
0	98.39	53	287	1.22	196.90	194	7	1.39E-02	****	6.59E+00	T
0	154.01	38	335	1.13	308.13	305	7	1.00E-02	****	6.50E+00	T
2	184.16	51	109	0.91	368.43	367	10	1.36E-02	61.1	5.93E+00	T
0	200.61	76	247	2.34	401.33	399	8	2.05E-02	76.0	5.62E+00	T
2	209.35	43	122	0.96	418.80	417	12	1.17E-02	77.7	5.47E+00	
2	212.00	70	229	1.40	424.09	417	12	1.90E-02	79.8	5.42E+00	T
0	258.27	92	268	1.11	516.63	510	12	2.51E-02	75.1	4.73E+00	
0	269.68	87	253	1.53	539.43	535	10	2.37E-02	72.3	4.59E+00	T
0	328.15	19	151	1.27	656.37	653	7	5.35E-03	****	3.98E+00	T
0	453.96	18	98	1.37	907.96	905	10	5.02E-03	****	3.13E+00	T
4	460.49	45	34	1.68	921.01	918	15	1.25E-02	51.4	3.10E+00	
4	462.84	45	62	1.52	925.72	918	15	1.26E-02	75.0	3.09E+00	T
0	561.33	22	49	0.92	1122.68	1119	8	6.12E-03	****	2.66E+00	
0	666.04	46	46	1.60	1332.08	1328	10	1.30E-02	62.1	2.32E+00	T
0	720.16	10	41	0.99	1440.31	1436	8	2.90E-03	****	2.18E+00	T
0	768.26	128	49	1.70	1536.51	1530	11	3.65E-02	27.5	2.06E+00	T
0	786.85	36	72	0.62	1573.68	1566	13	1.02E-02	****	2.02E+00	
0	806.43	26	77	1.63	1612.83	1604	15	7.49E-03	****	1.98E+00	
1	918.53	23	34	1.84	1837.04	1815	32	6.67E-03	****	1.77E+00	
0	934.69	69	56	2.06	1869.35	1862	13	2.00E-02	49.6	1.74E+00	T
0	963.77	26	47	1.39	1927.50	1922	11	7.39E-03	****	1.69E+00	T
0	1003.54	28	50	5.80	2007.04	1996	18	8.02E-03	****	1.63E+00	T
10	1060.45	14	11	1.66	2120.86	2118	15	4.20E-03	87.6	1.55E+00	
0	1090.61	27	9	3.20	2181.17	2177	9	7.98E-03	53.1	1.52E+00	
0	1109.42	16	21	1.50	2218.80	2212	11	4.55E-03	****	1.49E+00	
0	1155.44	48	41	2.51	2310.84	2302	17	1.39E-02	66.0	1.44E+00	
0	1238.39	113	36	1.14	2476.74	2471	13	3.30E-02	28.3	1.36E+00	T
0	1280.84	33	25	1.48	2561.63	2554	15	9.75E-03	71.9	1.32E+00	
1	1290.21	22	13	2.05	2580.37	2577	14	6.33E-03	57.4	1.31E+00	T
1	1293.02	15	14	1.86	2586.00	2577	14	4.33E-03	****	1.31E+00	
0	1361.99	8	7	1.38	2723.94	2721	6	2.27E-03	****	1.25E+00	T
0	1377.78	115	9	2.08	2755.52	2749	13	3.37E-02	21.2	1.24E+00	
0	1385.97	37	9	4.23	2771.89	2765	16	1.10E-02	49.7	1.23E+00	
0	1397.45	10	16	1.00	2794.85	2786	12	2.88E-03	****	1.22E+00	
0	1402.61	27	32	2.20	2805.17	2798	15	8.08E-03	91.1	1.22E+00	
0	1408.02	35	19	2.81	2815.99	2812	10	1.03E-02	54.0	1.22E+00	T
0	1424.38	15	5	0.73	2848.71	2843	11	4.31E-03	77.6	1.21E+00	
0	1509.73	43	21	2.78	3019.43	3011	18	1.27E-02	56.7	1.15E+00	
0	1544.72	13	23	0.90	3089.41	3079	14	3.87E-03	****	1.13E+00	
0	1631.37	5	6	1.01	3262.71	3256	9	1.42E-03	****	1.09E+00	
0	1661.99	12	12	1.54	3323.95	3318	10	3.42E-03	****	1.08E+00	
0	1688.04	9	2	2.37	3376.06	3371	9	2.72E-03	84.4	1.06E+00	
0	1729.48	77	6	2.09	3458.94	3450	15	2.28E-02	26.3	1.05E+00	
0	1847.32	33	6	1.75	3694.63	3687	14	9.90E-03	45.8	1.01E+00	
0	1898.16	8	9	2.20	3796.32	3787	13	2.41E-03	****	9.96E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:15:43.16

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299032.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:36 Sensitivity     : 3.000           *
* Detector ID      : GAM19                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:00:00 Nuclide Library : SOLID           *
* Sample ID        : G674299032           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1602E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  4-DEC-2023 10:59:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;25            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	4.832E-01
CD-109	1.324E+00
TE-125M	1.660E+01
SN-126	1.262E-01
BA-137M	3.885E-02
CS-137	4.105E-02
CE-144	2.959E-01
TL-208	4.877E-02
BI-211	2.660E-01
BI-212	6.062E-01
PB-212	8.951E-02
BI-214	9.301E-02
PB-214	9.675E-02
RN-222	9.301E-02
RA-224	9.594E-01
RA-226	9.675E-02
AC-228	1.868E-01
RA-228	1.868E-01
TH-228	8.951E-02
TH-230	9.675E-02
PA-231	6.071E-01
TH-232	1.868E-01
TH-234	1.925E+00
U-234	9.675E-02
U-235	2.879E-01
U-238	1.925E+00
AM-243	8.376E-02
ANH-511	4.342E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.584E-01	NOT IDENT.
NA-22	4.979E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF

AL-26	2.917E-02	NOT IDENT.
SC-46	6.741E-02	FAIL ABUN
V-48	2.358E-01	NOT IDENT.
CR-51	8.470E-01	NOT IDENT.
MN-52	4.304E+00	FAIL ABUN
MN-54	5.449E-02	NOT IDENT.
CO-56	6.100E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.869E-02	NOT IDENT.
CO-58	6.106E-02	NOT IDENT.
FE-59	1.180E-01	FAIL ABUN
CO-60	4.225E-02	NOT IDENT.
ZN-65	1.050E-01	NOT IDENT.
GE-68	1.483E+00	NOT IDENT.
AS-73	1.607E+00	NOT IDENT.
AS-74	2.800E-01	NOT IDENT.
SE-75	7.361E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	7.427E-01	NOT IDENT.
RB-83	9.612E-02	NOT IDENT.
RB-84	1.562E-01	NOT IDENT.
KR-85	9.824E+00	NOT IDENT.
SR-85	6.427E-02	NOT IDENT.
RB-86	1.839E+00	NOT IDENT.
Y-88	4.417E-02	NOT IDENT.
Y-91	2.621E+01	NOT IDENT.
NB-94	4.931E-02	NOT IDENT.
NB-95	6.921E-02	NOT IDENT.
NB-95M	2.349E-01	NOT IDENT.
ZR-95	1.255E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.516E-02	NOT IDENT.
RH-102	6.959E-02	FAIL ABUN
RU-103	7.667E-02	FAIL ABUN
RH-106	4.353E-01	NOT IDENT.
RU-106	4.353E-01	NOT IDENT.
AG-108M	3.981E-02	NOT IDENT.
AG-110	9.693E-01	NOT IDENT.
AG-110M	7.439E-02	NOT IDENT.
SN-113	6.690E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.276E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	4.856E-02	NOT IDENT.
SB-124	1.373E-01	NOT IDENT.
SB-125	1.285E-01	FAIL ABUN
I-126	1.138E+00	FAIL ABUN
SB-126	5.985E-01	FAIL ABUN
SB-127	6.351E+01	NOT IDENT.
I-131	8.821E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.642E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.920E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.957E-01	FAIL ABUN
LA-138	8.423E-02	NOT IDENT.
CE-139	5.088E-02	NOT IDENT.
BA-140	1.030E+00	NOT IDENT.
LA-140	3.137E-01	FAIL ABUN
CE-141	1.408E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
PM-144	4.291E-02	NOT IDENT.
PR-144	3.255E+00	NOT IDENT.
PM-146	6.421E-02	FAIL ABUN
ND-147	2.771E+00	NOT IDENT.
PM-147	1.113E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.980E-02	FAIL ABUN
EU-152	1.506E-01	FAIL ABUN
GD-153	1.242E-01	FAIL ABUN
EU-154	1.389E-01	FAIL ABUN
EU-155	1.545E-01	FAIL ABUN
TB-160	2.523E-01	FAIL ABUN

HO-166M	7.900E-02	FAIL ABUN
TM-171	2.786E+01	NOT IDENT.
HF-172	2.755E-01	FAIL ABUN
LU-172	7.300E-02	FAIL ABUN
LU-176	3.729E-02	FAIL ABUN
HF-181	8.934E-02	NOT IDENT.
TA-182	2.137E-01	FAIL ABUN
RE-183	3.674E-01	NOT IDENT.
RE-184	2.454E-01	NOT IDENT.
W-188	1.418E+01	FAIL ABUN
IR-192	5.951E-02	FAIL ABUN
HG-203	7.987E-02	NOT IDENT.
TL-204	7.234E+00	FAIL ABUN
BI-207	1.307E-01	FAIL ABUN
BI-210	5.768E+00	NOT IDENT.
PB-210	5.768E+00	NOT IDENT.
PB-211	1.090E+00	NOT IDENT.
BI-213	1.212E-01	NOT IDENT.
RN-219	6.541E-01	NOT IDENT.
RA-223	9.709E-01	FAIL ABUN
AC-225	3.687E+00	NOT IDENT.
AC-227	4.012E-01	FAIL ABUN
TH-227	4.012E-01	FAIL ABUN
TH-229	8.207E-01	FAIL ABUN
TH-231	9.709E-01	FAIL ABUN
PA-233	8.990E-02	FAIL ABUN
PA-234	3.958E-01	FAIL ABUN
PA-234M	7.470E+00	NOT IDENT.
NP-237	8.990E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	3.727E-01	FAIL ABUN
PU-239	5.108E+02	NOT IDENT.
AM-241	2.317E-01	NOT IDENT.
CM-243	1.459E-01	FAIL ABUN
BK-247	1.215E-01	FAIL ABUN
CM-247	6.263E-02	NOT IDENT.
CF-249	6.353E-02	NOT IDENT.
CF-251	2.051E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:15:47.50

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299032.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:36 Sensitivity     : 3.000           *
* Detector ID      : GAM19                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:00:00 Nuclide Library : SOLID           *
* Sample ID        : G674299032           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1602E+02 GRAM *
*                                         Quantity Err(%) : 1.7238E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  4-DEC-2023 10:59:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;25            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.085E+01	2.031E+00	2.031E+00
CD-109	9.579E+00	2.974E+00	2.974E+00
TE-125M	3.978E+01	3.927E+01	3.927E+01
SN-126	9.086E-01	2.780E-01	2.780E-01
BA-137M	2.212E-01	1.089E-01	1.089E-01
CS-137	2.337E-01	1.150E-01	1.150E-01
CE-144	5.378E-01	4.855E-01	4.855E-01
TL-208	3.477E-01	1.603E-01	1.603E-01
BI-211	2.898E+01	2.820E+00	2.820E+00
BI-212	1.815E+00	1.024E+00	1.024E+00
PB-212	1.215E+00	2.148E-01	2.148E-01
BI-214	8.831E+00	9.580E-01	9.580E-01
PB-214	1.052E+01	1.009E+00	1.009E+00
RN-222	8.831E+00	9.580E-01	9.580E-01
RA-224	1.834E+01	2.765E+00	2.765E+00
RA-226	1.052E+01	1.009E+00	1.009E+00
AC-228	1.324E+00	4.435E-01	4.435E-01
RA-228	1.324E+00	4.435E-01	4.435E-01
TH-228	1.215E+00	2.148E-01	2.148E-01
TH-230	1.052E+01	1.009E+00	1.009E+00
PA-231	1.203E+00	1.349E+00	1.349E+00
TH-232	1.324E+00	4.435E-01	4.435E-01
TH-234	8.210E+00	4.730E+00	4.730E+00
U-234	1.052E+01	1.009E+00	1.009E+00
U-235	8.519E-01	7.159E-01	7.159E-01
U-238	8.210E+00	4.730E+00	4.730E+00
AM-243	1.074E+00	1.988E-01	1.988E-01
ANH-511	1.099E-01	1.080E-01	1.080E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.110E-01	6.389E-01	6.409E-01	NOT IDENT.
NA-22	1.712E-02	6.247E-02	6.294E-02	NOT IDENT.

NA-24	3.281E+15	5.062E+15	5.273E+15	SHORT HLIF
AL-26	-2.117E-02	4.226E-02	4.333E-02	NOT IDENT.
SC-46	1.216E-02	8.081E-02	8.100E-02	FAIL ABUN
V-48	-4.141E-02	2.962E-01	2.968E-01	NOT IDENT.
CR-51	-7.521E-02	9.628E-01	9.634E-01	NOT IDENT.
MN-52	2.842E+00	4.627E+00	4.801E+00	FAIL ABUN
MN-54	-2.043E-02	6.850E-02	6.912E-02	NOT IDENT.
CO-56	3.389E-02	6.962E-02	7.127E-02	FAIL ABUN
MN-56	1.000E+41	2.033E+41	0.000E+00	SHORT HLIF
CO-57	-1.492E-02	4.637E-02	4.686E-02	NOT IDENT.
CO-58	1.147E-02	8.099E-02	8.115E-02	NOT IDENT.
FE-59	-7.216E-02	1.482E-01	1.517E-01	FAIL ABUN
CO-60	-1.298E-02	5.211E-02	5.243E-02	NOT IDENT.
ZN-65	2.530E-02	1.330E-01	1.335E-01	NOT IDENT.
GE-68	-1.929E-01	1.741E+00	1.743E+00	NOT IDENT.
AS-73	1.438E+00	1.782E+00	1.896E+00	NOT IDENT.
AS-74	1.850E-01	3.129E-01	3.238E-01	NOT IDENT.
SE-75	1.727E-02	8.972E-02	9.006E-02	FAIL ABUN
BR-77	6.584E+04	6.787E+04	7.407E+04	SHORT HLIF
SR-82	9.077E-01	7.791E-01	8.800E-01	NOT IDENT.
RB-83	-9.184E-02	1.229E-01	1.297E-01	NOT IDENT.
RB-84	4.748E-02	1.849E-01	1.861E-01	NOT IDENT.
KR-85	4.202E+00	1.232E+01	1.247E+01	NOT IDENT.
SR-85	2.732E-02	8.063E-02	8.156E-02	NOT IDENT.
RB-86	-3.726E-02	2.131E+00	2.131E+00	NOT IDENT.
Y-88	-2.258E-02	6.003E-02	6.089E-02	NOT IDENT.
Y-91	-2.702E+00	3.099E+01	3.102E+01	NOT IDENT.
NB-94	5.330E-02	5.377E-02	5.890E-02	NOT IDENT.
NB-95	3.849E-02	8.767E-02	8.937E-02	NOT IDENT.
NB-95M	-2.179E-01	3.294E-01	3.437E-01	NOT IDENT.
ZR-95	1.354E-01	1.357E-01	1.488E-01	NOT IDENT.
NB-97	1.000E+41	3.847E+41	0.000E+00	SHORT HLIF
ZR-97	3.459E+14	1.086E+15	1.097E+15	SHORT HLIF
MO-99	7.462E+02	3.057E+03	3.075E+03	SHORT HLIF
TC-99M	-1.758E+40	7.815E+40	0.000E+00	SHORT HLIF
RH-101	-2.320E-02	5.472E-02	5.571E-02	NOT IDENT.
RH-102	1.246E-02	8.117E-02	8.137E-02	FAIL ABUN
RU-103	8.327E-02	8.172E-02	8.993E-02	FAIL ABUN
RH-106	2.316E-01	4.915E-01	5.024E-01	NOT IDENT.
RU-106	2.316E-01	4.915E-01	5.024E-01	NOT IDENT.
AG-108M	-1.567E-02	4.752E-02	4.804E-02	NOT IDENT.
AG-110	2.849E-01	1.247E+00	1.254E+00	NOT IDENT.
AG-110M	6.644E-03	9.085E-02	9.090E-02	NOT IDENT.
SN-113	-9.099E-02	8.380E-02	9.330E-02	NOT IDENT.
CD-115	4.886E+03	9.166E+03	9.427E+03	SHORT HLIF
SN-117M	-1.019E-01	2.777E-01	2.815E-01	NOT IDENT.
SB-122	-2.205E+02	5.213E+02	5.306E+02	SHORT HLIF
TE-123M	1.749E-02	5.716E-02	5.770E-02	NOT IDENT.
SB-124	-6.605E-02	2.085E-01	2.106E-01	NOT IDENT.
SB-125	-1.124E-01	1.571E-01	1.651E-01	FAIL ABUN
I-126	2.567E+00	1.586E+00	1.963E+00	FAIL ABUN
SB-126	4.056E-01	8.893E-01	9.079E-01	FAIL ABUN
SB-127	-2.146E+00	7.611E+01	7.611E+01	NOT IDENT.
I-131	-3.846E-01	1.035E+00	1.049E+00	NOT IDENT.
I-132	1.000E+41	4.777E+41	0.000E+00	SHORT HLIF
TE-132	-5.133E+01	1.043E+02	1.068E+02	SHORT HLIF
BA-133	6.169E-03	7.070E-02	7.076E-02	NOT IDENT.
I-133	-3.918E+10	9.154E+10	9.323E+10	SHORT HLIF
CS-134	4.337E-02	6.667E-02	6.948E-02	NOT IDENT.
I-135	-2.630E+37	9.169E+37	0.000E+00	SHORT HLIF
CS-136	-1.900E-01	5.185E-01	5.255E-01	FAIL ABUN
LA-138	4.887E-02	9.210E-02	9.469E-02	NOT IDENT.
CE-139	5.449E-03	6.073E-02	6.078E-02	NOT IDENT.
BA-140	-5.456E-01	1.261E+00	1.285E+00	NOT IDENT.
LA-140	-3.047E-01	4.358E-01	4.569E-01	FAIL ABUN
CE-141	4.456E-02	1.786E-01	1.797E-01	NOT IDENT.
CE-143	1.678E+07	7.023E+06	1.032E+07	SHORT HLIF
PM-144	-3.555E-02	5.553E-02	5.779E-02	NOT IDENT.
PR-144	-2.641E+00	4.204E+00	4.370E+00	NOT IDENT.
PM-146	5.784E-02	1.193E-01	1.221E-01	FAIL ABUN
ND-147	-2.595E+00	3.486E+00	3.677E+00	NOT IDENT.
PM-147	1.459E+02	1.304E+03	1.306E+03	NOT IDENT.
PM-149	-5.641E+04	9.323E+04	9.663E+04	SHORT HLIF
EU-150	-2.218E-02	5.192E-02	5.288E-02	FAIL ABUN
EU-152	6.678E-02	1.671E-01	1.698E-01	FAIL ABUN
GD-153	1.988E-01	2.213E-01	2.388E-01	FAIL ABUN
EU-154	4.521E-02	1.748E-01	1.759E-01	FAIL ABUN
EU-155	1.948E-01	1.839E-01	2.038E-01	FAIL ABUN

TB-160	4.397E-02	3.028E-01	3.034E-01	FAIL ABUN
HO-166M	-3.792E-02	9.897E-02	1.004E-01	FAIL ABUN
TM-171	3.435E+00	3.137E+01	3.141E+01	NOT IDENT.
HF-172	5.913E-02	3.222E-01	3.233E-01	FAIL ABUN
LU-172	3.067E-02	8.937E-02	9.043E-02	FAIL ABUN
LU-176	5.318E-03	4.172E-02	4.179E-02	FAIL ABUN
HF-181	9.928E-02	9.575E-02	1.057E-01	NOT IDENT.
TA-182	-6.282E-02	2.591E-01	2.606E-01	FAIL ABUN
RE-183	2.337E-01	4.079E-01	4.213E-01	NOT IDENT.
RE-184	2.129E-02	2.972E-01	2.974E-01	NOT IDENT.
W-188	1.961E+01	1.761E+01	1.971E+01	FAIL ABUN
IR-192	-3.110E-02	6.926E-02	7.066E-02	FAIL ABUN
HG-203	2.325E-03	9.896E-02	9.897E-02	NOT IDENT.
TL-204	-4.864E-01	8.949E+00	8.952E+00	FAIL ABUN
BI-207	-1.011E-01	1.245E-01	1.325E-01	FAIL ABUN
BI-210	5.775E+00	6.280E+00	6.798E+00	NOT IDENT.
PB-210	5.775E+00	6.280E+00	6.798E+00	NOT IDENT.
PB-211	-7.195E-01	1.302E+00	1.342E+00	NOT IDENT.
BI-213	-9.254E-02	1.492E-01	1.549E-01	NOT IDENT.
RN-219	5.256E-01	7.197E-01	7.577E-01	NOT IDENT.
RA-223	5.744E-01	1.109E+00	1.139E+00	FAIL ABUN
AC-225	-8.542E-01	4.550E+00	4.567E+00	NOT IDENT.
AC-227	3.517E-01	4.737E-01	4.996E-01	FAIL ABUN
TH-227	3.517E-01	4.737E-01	4.996E-01	FAIL ABUN
TH-229	2.626E-01	9.791E-01	9.862E-01	FAIL ABUN
TH-231	5.744E-01	1.109E+00	1.139E+00	FAIL ABUN
PA-233	-5.423E-02	1.050E-01	1.078E-01	FAIL ABUN
PA-234	-4.203E-01	7.250E-01	7.494E-01	FAIL ABUN
PA-234M	1.074E+01	7.949E+00	9.308E+00	NOT IDENT.
NP-237	-5.423E-02	1.050E-01	1.078E-01	FAIL ABUN
NP-238	-8.993E+03	2.478E+04	2.511E+04	SHORT HLIF
NP-239	-1.425E-01	4.458E-01	4.504E-01	FAIL ABUN
PU-239	6.873E+01	6.004E+02	6.012E+02	NOT IDENT.
AM-241	1.706E-01	2.751E-01	2.856E-01	NOT IDENT.
CM-243	-1.639E-02	1.713E-01	1.715E-01	FAIL ABUN
BK-247	1.070E-01	1.553E-01	1.626E-01	FAIL ABUN
CM-247	6.092E-02	6.889E-02	7.416E-02	NOT IDENT.
CF-249	2.630E-02	7.108E-02	7.207E-02	NOT IDENT.
CF-251	6.458E-02	2.437E-01	2.454E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	149.9736	85.43	196.0144	131.20	193.7733
45.60	179.5647	86.55	335.2109	133.02	204.1068
46.54	165.6206	86.79	332.7342	133.52	178.8909
49.72	0.0000	86.94	332.8272	136.00	195.0339
51.35	185.0281	87.09	332.9177	136.47	185.2582
51.87	179.7945	87.57	333.2045	140.51	0.0000
52.39	180.0290	88.03	333.4783	143.76	188.4609
52.97	173.8828	88.34	366.5025	144.24	188.5791
53.44	174.0850	88.47	366.5877	145.44	183.1458
54.07	165.1781	89.96	302.3464	152.43	216.5161
57.36	0.0000	1093.63	245.3322	153.25	219.6226
57.53	189.6890	91.11	308.8960	323.87	214.8192
57.98	184.3307	92.59	254.1074	156.02	184.1231
59.27	190.7682	93.35	254.4395	158.56	201.7792
59.32	190.7901	94.56	201.8503	159.00	181.1496
59.54	190.8872	94.65	201.8812	162.33	189.5408
60.96	203.9431	94.67	201.8874	162.66	200.5751
61.17	210.2606	94.87	209.2646	163.33	191.9590
62.93	232.3269	97.43	194.8241	165.86	191.4276
63.29	232.5118	98.43	177.4375	176.31	173.6838
63.58	232.6608	98.44	177.4416	176.60	169.2837
64.28	259.3286	99.53	164.7057	177.52	186.1804
66.73	241.8164	100.11	146.0973	181.07	0.0000
67.24	247.7538	102.03	154.6237	181.52	191.1094
125.81	254.6113	103.18	194.9849	184.41	190.9647
67.75	250.8616	103.37	180.8969	143.76	191.2344
68.89	242.9258	105.21	158.1173	193.51	174.6740
69.67	256.6290	105.31	158.1423	197.03	152.5473
70.82	247.7113	106.12	173.2331	198.01	159.5380
70.83	247.7173	106.47	211.2437	201.83	157.8758
72.81	272.9554	109.28	170.0109	203.43	181.8120
72.87	272.9880	111.00	185.4630	205.31	182.1582
74.66	312.0567	111.76	0.0000	210.85	158.1512
74.82	312.1559	114.06	195.2316	215.65	142.2713
74.97	312.2502	116.30	0.0000	218.12	169.7393
77.11	313.5668	116.74	188.7928	222.11	150.5479
78.74	303.2668	119.76	198.9580	227.09	126.6317
79.69	250.8122	121.12	184.8146	227.38	146.6045
80.03	216.0430	121.22	188.9955	228.16	0.0000
80.12	216.0821	121.78	197.4625	228.18	160.7998
80.19	265.2859	122.06	197.5422	116.74	160.7998
80.57	270.0103	122.92	167.5974	235.69	201.7031
81.00	312.3508	123.07	167.6330	235.96	189.1431
81.07	312.3924	265.00	200.0845	238.63	163.5318
81.75	249.1953	125.81	174.5580	238.98	0.0000
82.47	257.3311	127.23	197.9473	240.99	163.8792
83.79	221.4821	127.91	179.2655	242.00	164.0266
84.00	221.5669	129.30	202.7183	244.70	123.9126

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	118.7529	344.28	90.9924	563.25	30.6323
252.80	118.3937	345.93	90.7522	564.24	0.0000
254.15	0.0000	351.06	73.3063	569.33	46.8125
256.23	116.7386	351.93	73.3495	946.00	46.8164
260.90	0.0000	355.39	0.0000	569.70	46.8203
264.66	110.3036	356.01	71.3902	583.19	50.0620
264.80	110.3147	364.49	78.3215	584.27	50.0869
265.00	100.2303	366.42	0.0000	595.83	38.5065
269.46	122.9150	372.51	62.9897	427.87	39.5801
270.03	122.9720	375.05	76.2383	602.52	0.0000
271.23	131.6250	377.52	76.3604	604.72	47.5840
273.65	120.4879	356.01	74.9076	607.14	69.9664
276.40	135.8537	388.16	84.8340	609.32	48.6770
277.37	131.0626	388.63	76.9038	610.33	48.6989
277.60	118.8345	391.69	91.2231	614.28	40.3220
278.00	133.5789	264.66	89.0605	618.01	45.8746
279.20	127.5752	401.81	76.6462	620.36	40.9299
279.54	149.6965	402.40	80.2405	621.93	34.9644
279.70	149.7151	404.85	100.0052	630.19	0.0000
280.46	139.9847	410.95	75.2842	631.29	35.1082
283.69	139.1154	413.71	79.8976	633.25	29.1156
284.31	126.8672	414.70	88.9292	634.78	30.1392
285.41	139.3051	423.72	88.5055	635.95	31.1602
285.90	0.0000	427.09	75.1090	636.99	37.2078
287.50	142.0058	427.87	81.4801	657.50	33.4780
290.67	94.0815	433.94	63.5984	657.76	33.4821
293.27	0.0000	439.40	60.1549	657.90	0.0000
351.93	86.1335	440.45	52.8953	661.66	28.9639
295.96	86.1821	453.88	52.3810	664.57	0.0000
879.38	74.7308	463.37	57.2786	666.33	38.1851
299.98	81.4613	468.07	55.5750	666.50	38.1882
300.09	81.4673	473.00	59.4401	667.71	0.0000
300.13	81.4713	475.06	58.5767	677.62	31.7152
301.36	81.5470	476.78	45.6025	685.70	39.0050
302.85	89.9692	477.60	50.2778	692.65	0.0000
256.23	93.8370	482.18	42.9350	695.00	47.3963
304.85	93.8599	487.02	44.9180	696.49	46.3934
306.78	88.5662	492.35	0.0000	696.51	46.3953
308.46	97.0443	497.08	33.8687	697.00	47.4356
311.90	101.4882	505.52	55.2794	697.30	39.1906
316.51	101.8328	507.63	0.0000	697.49	39.1937
319.41	85.1818	511.00	67.2811	702.65	34.1064
320.08	87.7563	514.00	55.5198	706.68	48.6543
321.04	95.4173	514.00	55.5222	711.68	45.6400
323.87	90.3667	520.40	50.4660	720.70	51.5283
325.23	101.6357	520.69	0.0000	721.93	0.0000
328.76	123.5471	522.65	0.0000	722.78	31.2549
333.37	110.7481	527.90	0.0000	722.91	31.2573
333.97	109.9408	528.26	44.9307	723.31	34.3884
334.37	89.5123	529.59	48.7858	724.19	31.2732
338.28	100.0184	529.87	0.0000	727.33	33.3984
338.32	100.0208	531.02	67.9666	733.00	32.4266
311.90	97.6023	537.26	53.7738	735.93	35.6048
340.48	97.6023	546.56	0.0000	333.97	35.6256
340.55	97.6069	552.55	53.2096	739.50	0.0000

ENERGY	MDA COUNTS
744.23	39.9220
747.24	30.5022
748.06	33.6680
752.31	31.6150
753.82	42.1777
756.73	25.3340
756.80	25.3350
884.68	31.7542
765.81	33.3649
766.42	36.0212
766.84	36.0268
772.60	0.0000
776.52	17.0156
739.50	0.0000
778.90	29.8035
783.70	28.7897
788.74	43.2653
792.07	41.0719
795.86	31.0603
810.06	25.8379
810.29	29.0698
344.28	29.0720
810.76	29.0742
815.77	32.3633
1048.07	25.9160
832.01	41.2301
834.85	46.7023
835.71	53.2349
836.80	0.0000
846.75	0.0000
846.77	23.9936
856.80	34.1453
860.56	31.2310
871.09	38.4906
873.19	31.9158
875.33	0.0000
879.38	40.8045
880.51	35.3047
881.60	34.2140
883.24	37.5458
884.68	33.1445
889.28	34.3011
894.76	37.6897
898.04	34.4020
900.72	38.8751
903.28	30.0146
911.20	32.3217
912.08	32.3312
923.98	0.0000
926.50	31.3633
929.11	33.6316
935.54	30.3311
937.49	26.9775
944.13	29.2881
946.00	42.8304

ENERGY	MDA COUNTS
949.00	37.2297
667.71	0.0000
962.31	39.0862
964.08	37.4070
966.17	44.2384
911.20	34.0588
983.53	34.2126
984.45	0.0000
1274.44	27.4775
1001.03	21.7840
1002.74	21.7956
1004.73	21.8087
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	25.5037
1038.76	0.0000
631.29	24.4060
1048.07	32.5573
1049.04	19.7725
1050.41	27.9238
1063.66	21.0234
1077.00	19.3467
1077.34	21.1069
1085.87	25.3898
1093.63	15.5504
1099.45	20.3552
1112.07	22.7359
1112.84	27.0045
1115.54	19.9131
1120.29	21.3633
1120.55	21.3647
1221.41	21.3691
1129.67	19.6340
1131.51	0.0000
1147.95	0.0000
1173.23	29.8015
1177.95	19.8918
1189.05	13.6029
1204.77	18.2129
1221.41	21.0347
1231.02	27.5043
1235.36	17.6227
1238.28	27.5555
1260.41	0.0000
1271.87	18.5278
1274.44	14.8311
1274.54	14.8320
1291.59	19.5491
1298.22	0.0000
1312.11	16.8409
1332.49	15.0439
1362.66	0.0000
1365.19	12.1289
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	9.7904
1408.01	27.5643
1434.09	11.5532
1435.80	13.4847
1457.56	0.0000
1460.82	16.4667
1489.16	14.6201
1505.03	12.5195
1584.12	14.9203
1596.21	17.9495
1620.50	10.0220
1621.92	16.0400
1678.03	0.0000
1690.97	13.0109
1750.46	0.0000
1764.49	9.2802
1063.66	3.3031
1771.35	1.6520
1791.20	0.0000
1808.65	7.2781
1810.72	0.0000
1836.06	8.3604

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:16:15.07

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299033.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM20.CNF;970
                                         Background date  : 28-JUL-2024 11:27:01
Sample date      : 26-JUN-2024 12:05:00  Acquisition date : 31-JUL-2024 16:12:58
Sample ID        : G674299033            Sample quantity  : 1.27150E+02 GRAM
Detector name    : GAM20                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:14.17  0.4%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.72*	20	83	0.71	75.53	73	6	5.59E-03	77.1	
2	0	40.55	19	69	1.31	81.19	79	5	5.17E-03	70.8	
3	0	43.85	21	85	0.52	87.77	85	6	5.76E-03	73.8	
4	0	46.39*	11	102	1.03	92.85	91	6	3.02E-03	156.2	
5	0	63.26*	41	220	1.08	126.57	121	10	1.13E-02	71.8	
6	3	74.82*	184	183	1.39	149.67	145	16	5.11E-02	15.4	5.18E-01
7	3	77.17	300	155	1.22	154.36	145	16	8.33E-02	9.3	
8	6	84.22*	77	153	1.88	168.45	164	29	2.14E-02	30.4	1.90E+00
9	6	87.31	144	146	1.56	174.62	164	29	4.00E-02	17.2	
10	6	90.07	126	153	1.68	180.13	164	29	3.49E-02	21.9	
11	6	92.86*	142	130	1.46	185.70	164	29	3.96E-02	18.8	
12	0	129.24	18	136	0.62	258.39	254	8	5.00E-03	114.7	
13	0	143.84*	28	123	1.15	287.57	284	9	7.70E-03	75.8	
14	0	185.86*	78	121	1.16	371.54	367	11	2.17E-02	30.7	
15	0	209.02	54	105	1.50	417.82	414	9	1.51E-02	36.8	
16	4	238.52*	482	73	1.19	476.78	472	16	1.34E-01	5.4	8.53E-01
17	4	241.60	154	91	1.88	482.95	472	16	4.28E-02	18.8	
18	0	295.18	164	75	1.40	590.02	583	12	4.56E-02	13.1	
19	0	305.25	27	64	3.49	610.15	605	14	7.57E-03	64.8	
20	0	327.88	39	57	1.12	655.40	651	10	1.08E-02	39.9	
21	0	338.36*	76	85	0.93	676.33	672	10	2.11E-02	26.3	
22	0	351.86*	305	69	1.29	703.32	698	12	8.47E-02	8.0	
23	0	375.31	21	28	1.03	750.20	747	7	5.79E-03	48.2	
24	0	403.04	39	97	7.23	805.62	792	22	1.09E-02	66.8	
25	0	462.76	35	34	1.00	925.03	921	10	9.84E-03	34.6	
26	0	473.89	12	54	3.82	947.28	939	13	3.27E-03	133.1	
27	0	510.70*	61	36	1.94	1020.88	1013	16	1.69E-02	30.2	
28	0	583.17	105	52	1.16	1165.78	1161	12	2.93E-02	16.7	
29	0	609.30*	203	38	1.53	1218.03	1213	11	5.64E-02	9.4	
30	0	727.72	40	20	3.21	1454.85	1445	15	1.12E-02	28.2	
31	5	768.16*	31	13	2.76	1535.73	1529	26	8.50E-03	33.8	1.77E+00
32	5	772.25	21	17	2.77	1543.91	1529	26	5.77E-03	56.4	
33	1	779.77	12	1	1.70	1558.96	1557	13	3.42E-03	28.1	1.30E+00
34	1	782.92	15	6	1.90	1565.26	1557	13	4.26E-03	39.7	

Sample ID : G674299033 Acquisition date : 31-JUL-2024 16:12:58

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	860.84	25	13	1.12	1721.13	1715	11	6.92E-03	34.9	
36	0	911.07*	123	16	1.84	1821.62	1813	16	3.43E-02	11.7	
37	0	969.04	57	43	1.10	1937.59	1932	11	1.57E-02	26.3	
38	0	995.80	7	10	0.83	1991.14	1986	10	1.94E-03	92.6	
39	0	1033.12	14	11	2.53	2065.80	2062	10	3.92E-03	50.1	
40	0	1066.63	10	15	0.53	2132.86	2123	12	2.74E-03	84.9	
41	2	1120.20	36	15	2.32	2240.07	2233	23	9.88E-03	29.2	9.79E-01
42	2	1126.16	14	5	1.92	2252.00	2233	23	3.91E-03	38.9	
43	0	1134.94	10	3	0.85	2269.56	2267	6	2.74E-03	42.5	
44	0	1304.86	8	11	3.43	2609.67	2602	12	2.18E-03	94.6	
45	0	1307.91	9	4	1.58	2615.78	2613	6	2.41E-03	54.0	
46	0	1378.41	16	11	1.90	2756.91	2750	12	4.37E-03	50.4	
47	0	1402.14	9	6	1.98	2804.41	2797	11	2.36E-03	63.5	
48	0	1409.63	5	8	0.61	2819.41	2810	11	1.37E-03	121.3	
49	0	1415.07	10	8	3.80	2830.31	2824	12	2.65E-03	70.2	
50	0	1460.70*	456	11	2.32	2921.66	2914	15	1.27E-01	5.0	
51	0	1764.20	52	3	1.44	3529.50	3523	13	1.44E-02	15.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:16:16

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299033.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: MXR1		
Sample date	: 26-JUN-2024 12:05:00	Acquisition date	: 31-JUL-2024 16:12:58
Sample ID	: G674299033	Sample quantity	: 127.15 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA20	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:14.17 0.4%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	433	10.66*	1.267E+00	1.894E+01	1.894E+01	9.96
CD-109	88.03	163	3.70*	7.132E+00	3.648E+00	3.846E+00	34.48
SN-126	64.28	47	9.60	4.714E+00	6.116E-01	6.116E-01	143.52
	86.94	163	8.90	7.132E+00	1.517E+00	1.517E+00	34.48
	87.57	163	37.00*	7.132E+00	3.648E-01	3.648E-01	34.48
TL-208	277.37	------	6.60	4.980E+00	------	Line Not Found	------
	583.19	106	85.00*	2.860E+00	2.586E-01	2.586E-01	33.39
	860.56	25	12.50	2.033E+00	5.700E-01	5.700E-01	69.88
BI-210	46.54	13	4.25*	1.796E+00	9.859E-01	9.889E-01	312.32
PB-210	46.54	13	4.25*	1.796E+00	9.859E-01	9.889E-01	312.32
BI-211	72.87	------	1.23	5.985E+00	------	Line Not Found	------
	351.06	318	12.92*	4.214E+00	3.444E+00	3.444E+00	16.04
BI-212	727.33	40	6.67*	2.366E+00	1.506E+00	1.506E+00	56.43
	1620.50	------	1.47	1.174E+00	------	Line Not Found	------
PB-212	74.82	210	10.28	6.191E+00	1.947E+00	1.947E+00	30.75
	77.11	342	17.10	6.417E+00	1.838E+00	1.838E+00	18.53
	238.63	514	43.60*	5.509E+00	1.264E+00	1.264E+00	10.87
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
BI-214	609.32	204	45.49*	2.757E+00	9.620E-01	9.621E-01	18.88
	1120.29	34	14.92	1.594E+00	8.547E-01	8.548E-01	58.43
	1764.49	49	15.30	1.115E+00	1.682E+00	1.682E+00	31.28
PB-214	74.82	210	5.80	6.191E+00	3.451E+00	3.451E+00	30.75
	77.11	342	9.70	6.417E+00	3.241E+00	3.241E+00	18.53
	87.09	163	3.41	7.132E+00	3.958E+00	3.958E+00	34.48
	242.00	164	7.25	5.463E+00	2.449E+00	2.450E+00	37.57
	295.22	173	18.42	4.771E+00	1.162E+00	1.162E+00	26.23
	351.93	318	35.60*	4.214E+00	1.250E+00	1.250E+00	16.04
RN-222	609.32	204	45.49*	2.757E+00	9.620E-01	9.621E-01	18.88
	1120.29	34	14.92	1.594E+00	8.547E-01	8.548E-01	58.43
	1764.49	49	15.30	1.115E+00	1.682E+00	1.682E+00	31.28
RA-224	240.99	164	4.10*	5.463E+00	4.331E+00	4.331E+00	37.57
RA-226	74.82	210	5.80	6.191E+00	3.451E+00	3.451E+00	30.75
	77.11	342	9.70	6.417E+00	3.241E+00	3.241E+00	18.53
	87.09	163	3.41	7.132E+00	3.958E+00	3.958E+00	34.48
	242.00	164	7.25	5.463E+00	2.449E+00	2.450E+00	37.57
	295.22	173	18.42	4.771E+00	1.162E+00	1.162E+00	26.23
	351.93	318	35.60*	4.214E+00	1.250E+00	1.250E+00	16.04
AC-228	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	79	11.27	4.334E+00	9.578E-01	9.578E-01	52.61
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	121	25.80*	1.930E+00	1.436E+00	1.436E+00	23.48
	968.97	55	15.80	1.822E+00	1.133E+00	1.133E+00	52.57
RA-228	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	79	11.27	4.334E+00	9.578E-01	9.578E-01	52.61
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	121	25.80*	1.930E+00	1.436E+00	1.436E+00	23.48
	968.97	55	15.80	1.822E+00	1.133E+00	1.133E+00	52.57
TH-228	74.82	210	10.28	6.191E+00	1.947E+00	1.947E+00	30.75
	77.11	342	17.10	6.417E+00	1.838E+00	1.838E+00	18.53

Sample ID : G674299033 Acquisition date : 31-JUL-2024 16:12:58

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	514	43.60*	5.509E+00	1.264E+00	1.264E+00	10.87
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
TH-229	85.43	87	14.70	6.955E+00	5.049E-01	5.049E-01	60.78
	88.47	163	24.00	7.132E+00	5.624E-01	5.624E-01	34.48
	193.51	------	4.41*	6.278E+00	------	Line Not Found	------
	210.85	------	2.80	5.961E+00	------	Line Not Found	------
TH-230	74.82	210	5.80	6.191E+00	3.451E+00	3.451E+00	30.75
	77.11	342	9.70	6.417E+00	3.241E+00	3.241E+00	18.53
	87.09	163	3.41	7.132E+00	3.958E+00	3.958E+00	34.48
	242.00	164	7.25	5.463E+00	2.449E+00	2.449E+00	37.57
	295.22	173	18.42	4.771E+00	1.162E+00	1.162E+00	26.23
	351.93	318	35.60*	4.214E+00	1.250E+00	1.250E+00	16.04
TH-232	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	79	11.27	4.334E+00	9.578E-01	9.578E-01	52.61
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	121	25.80*	1.930E+00	1.436E+00	1.436E+00	23.48
	968.97	55	15.80	1.822E+00	1.133E+00	1.133E+00	52.57
TH-234	63.29	47	3.70*	4.714E+00	1.587E+00	1.587E+00	143.52
	92.59	161	4.23	7.373E+00	3.040E+00	3.040E+00	37.62
U-234	74.82	210	5.80	6.191E+00	3.451E+00	3.451E+00	30.75
	77.11	342	9.70	6.417E+00	3.241E+00	3.241E+00	18.53
	87.09	163	3.41	7.132E+00	3.958E+00	3.958E+00	34.48
	242.00	164	7.25	5.463E+00	2.449E+00	2.449E+00	37.57
	295.22	173	18.42	4.771E+00	1.162E+00	1.162E+00	26.23
	351.93	318	35.60*	4.214E+00	1.250E+00	1.250E+00	16.04
U-235	89.96	142	3.47	7.264E+00	3.319E+00	3.319E+00	43.86
	93.35	161	5.60	7.373E+00	2.296E+00	2.296E+00	37.62
	143.76	30	10.96*	7.274E+00	2.257E-01	2.257E-01	151.58
	163.33	------	5.08	6.883E+00	------	Line Not Found	------
	185.72	85	57.20	6.427E+00	1.359E-01	1.359E-01	61.34
	205.31	------	5.01	6.059E+00	------	Line Not Found	------
U-238	63.29	47	3.70*	4.714E+00	1.587E+00	1.587E+00	143.52
	92.59	161	4.23	7.373E+00	3.040E+00	3.040E+00	37.62
PU-239	129.30	20	0.01*	7.522E+00	2.476E+02	2.476E+02	229.33
	375.05	22	0.00	4.022E+00	2.044E+03	2.044E+03	96.40
	413.71	------	0.00	3.743E+00	------	Line Not Found	------
AM-243	43.53	24	5.90	1.387E+00	1.758E+00	1.758E+00	147.65
	74.66	210	67.20*	6.191E+00	2.978E-01	2.978E-01	30.75
CM-247	278.00	------	3.40	4.972E+00	------	Line Not Found	------
	287.50	------	2.00	4.858E+00	------	Line Not Found	------
	402.40	40	72.00*	3.817E+00	8.673E-02	8.673E-02	133.52
ANH-511	511.00	62	100.00*	3.184E+00	1.150E-01	1.150E-01	60.39

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:16:17.41

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299033.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:58 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:14.17     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:05:00 Analyst initials: MXR1            *
* Sample ID        : G674299033           Sample Quantity : 1.2715E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.894E+01	1.849E+00	7.408E-01
CD-109	3.846E+00	1.300E+00	1.029E+00
SN-126	3.648E-01	1.233E-01	9.786E-02
TL-208	2.586E-01	8.461E-02	7.013E-02
BI-210	9.889E-01	3.027E+00	3.416E+00
PB-210	9.889E-01	3.027E+00	3.416E+00
BI-211	3.444E+00	5.415E-01	3.630E-01
BI-212	1.506E+00	8.331E-01	7.997E-01
PB-212	1.264E+00	1.346E-01	9.304E-02
BI-214	9.621E-01	1.781E-01	1.130E-01
PB-214	1.250E+00	1.965E-01	1.320E-01
RN-222	9.621E-01	1.781E-01	1.130E-01
RA-224	4.331E+00	1.595E+00	9.966E-01
RA-226	1.250E+00	1.965E-01	1.320E-01
AC-228	1.436E+00	3.305E-01	2.681E-01
RA-228	1.436E+00	3.305E-01	2.681E-01
TH-228	1.264E+00	1.346E-01	9.304E-02
TH-229	6.030E-02	4.742E-01	8.465E-01
TH-230	1.250E+00	1.965E-01	1.320E-01
TH-232	1.436E+00	3.305E-01	2.681E-01
TH-234	1.587E+00	2.232E+00	1.749E+00
U-234	1.250E+00	1.965E-01	1.320E-01
U-235	2.257E-01	3.352E-01	3.105E-01
U-238	1.587E+00	2.232E+00	1.749E+00
PU-239	2.476E+02	5.565E+02	5.428E+02
AM-243	2.978E-01	8.977E-02	7.245E-02
CM-247	8.673E-02	1.135E-01	6.499E-02
ANH-511	1.150E-01	6.808E-02	4.668E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	2.250E-01	3.832E-01	7.226E-01	NOT IDENT.
NA-22	-4.293E-02	4.253E-02	6.753E-02	NOT IDENT.

NA-24	0.000E+00	3.007E+15	0.000E+00	SHORT HLIF
AL-26	3.484E-03	2.935E-02	6.439E-02	NOT IDENT.
SC-46	4.710E-03	4.415E-02	8.887E-02	FAIL ABUN
V-48	-1.207E-01	1.603E-01	2.799E-01	NOT IDENT.
CR-51	-6.795E-02	5.704E-01	1.078E+00	NOT IDENT.
MN-52	-1.070E+00	2.428E+00	4.451E+00	NOT IDENT.
MN-54	-5.000E-04	3.834E-02	7.516E-02	NOT IDENT.
CO-56	-2.256E-03	4.391E-02	8.671E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-6.247E-04	2.403E-02	4.324E-02	NOT IDENT.
CO-58	-4.817E-03	4.281E-02	7.876E-02	NOT IDENT.
FE-59	-6.173E-02	1.266E-01	2.284E-01	NOT IDENT.
CO-60	2.851E-02	4.276E-02	9.244E-02	NOT IDENT.
ZN-65	2.580E-02	8.701E-02	1.623E-01	NOT IDENT.
GE-68	4.283E-01	1.116E+00	2.376E+00	NOT IDENT.
AS-73	2.111E-01	6.071E-01	1.172E+00	NOT IDENT.
AS-74	1.369E-01	1.847E-01	3.815E-01	NOT IDENT.
SE-75	-1.153E-02	4.489E-02	8.460E-02	NOT IDENT.
BR-77	0.000E+00	7.289E+03	0.000E+00	SHORT HLIF
SR-82	2.098E-01	5.329E-01	8.545E-01	NOT IDENT.
RB-83	-5.856E-03	6.934E-02	1.310E-01	NOT IDENT.
RB-84	-3.623E-02	9.404E-02	1.774E-01	NOT IDENT.
KR-85	6.978E-01	6.565E+00	1.133E+01	NOT IDENT.
SR-85	4.381E-03	4.294E-02	7.404E-02	NOT IDENT.
RB-86	1.063E+00	1.397E+00	3.141E+00	NOT IDENT.
Y-88	-3.374E-03	4.039E-02	8.199E-02	NOT IDENT.
Y-91	7.759E+00	2.579E+01	5.205E+01	NOT IDENT.
NB-94	-5.276E-04	3.171E-02	5.881E-02	NOT IDENT.
NB-95	1.452E-02	5.560E-02	9.600E-02	NOT IDENT.
NB-95M	1.158E-01	1.350E-01	2.559E-01	NOT IDENT.
ZR-95	-2.618E-02	9.131E-02	1.613E-01	NOT IDENT.
NB-97	0.000E+00	1.601E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	6.026E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.559E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	4.264E+40	0.000E+00	SHORT HLIF
RH-101	-1.007E-02	3.165E-02	5.068E-02	NOT IDENT.
RH-102	-2.688E-03	5.236E-02	9.748E-02	FAIL ABUN
RU-103	1.252E-02	5.169E-02	1.009E-01	FAIL ABUN
RH-106	5.319E-02	3.149E-01	6.028E-01	NOT IDENT.
RU-106	5.319E-02	3.149E-01	6.028E-01	NOT IDENT.
AG-108M	7.608E-03	2.271E-02	4.588E-02	NOT IDENT.
AG-110	2.382E-01	7.016E-01	1.382E+00	NOT IDENT.
AG-110M	3.482E-03	4.667E-02	9.442E-02	NOT IDENT.
SN-113	-3.504E-02	4.798E-02	8.397E-02	NOT IDENT.
CD-115	0.000E+00	4.917E+03	0.000E+00	SHORT HLIF
SN-117M	4.621E-02	1.386E-01	2.539E-01	NOT IDENT.
SB-122	0.000E+00	3.065E+02	0.000E+00	SHORT HLIF
TE-123M	6.296E-03	2.888E-02	5.239E-02	NOT IDENT.
SB-124	-2.233E-02	8.903E-02	1.749E-01	NOT IDENT.
SB-125	6.374E-02	9.085E-02	1.836E-01	FAIL ABUN
TE-125M	3.645E+00	1.066E+01	1.987E+01	NOT IDENT.
I-126	2.713E-01	5.772E-01	1.157E+00	NOT IDENT.
SB-126	2.348E-01	4.271E-01	7.969E-01	NOT IDENT.
SB-127	3.950E+01	5.177E+01	1.048E+02	FAIL ABUN
I-131	-7.649E-02	5.321E-01	1.010E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	4.826E+01	0.000E+00	SHORT HLIF
BA-133	-1.287E-02	3.982E-02	6.540E-02	NOT IDENT.
I-133	0.000E+00	4.606E+10	0.000E+00	SHORT HLIF
CS-134	6.888E-02	4.340E-02	9.650E-02	NOT IDENT.
I-135	0.000E+00	5.668E+37	0.000E+00	SHORT HLIF
CS-136	-9.468E-02	2.860E-01	5.360E-01	NOT IDENT.
BA-137M	1.427E-02	2.888E-02	5.915E-02	NOT IDENT.
CS-137	1.508E-02	3.051E-02	6.249E-02	NOT IDENT.
LA-138	-3.357E-02	4.832E-02	8.430E-02	NOT IDENT.
CE-139	-5.404E-03	2.986E-02	5.213E-02	NOT IDENT.
BA-140	-1.629E-01	7.412E-01	1.358E+00	FAIL ABUN
LA-140	-2.797E-01	2.619E-01	3.705E-01	FAIL ABUN
CE-141	2.519E-02	9.113E-02	1.546E-01	NOT IDENT.
CE-143	0.000E+00	2.918E+06	0.000E+00	SHORT HLIF
CE-144	9.157E-02	1.832E-01	3.433E-01	NOT IDENT.
PM-144	1.232E-02	3.954E-02	7.513E-02	NOT IDENT.
PR-144	9.006E-01	2.987E+00	5.669E+00	NOT IDENT.
PM-146	1.344E-02	3.881E-02	7.656E-02	NOT IDENT.
ND-147	-1.432E-01	1.814E+00	3.400E+00	FAIL ABUN
PM-147	-4.054E+02	6.973E+02	1.195E+03	NOT IDENT.
PM-149	0.000E+00	4.503E+04	0.000E+00	SHORT HLIF
EU-150	-2.224E-02	2.842E-02	4.370E-02	FAIL ABUN

EU-152	7.504E-02	9.167E-02	1.873E-01	FAIL ABUN
GD-153	-2.948E-02	8.210E-02	1.349E-01	NOT IDENT.
EU-154	-1.252E-01	1.183E-01	1.854E-01	FAIL ABUN
EU-155	1.116E-01	9.392E-02	1.855E-01	FAIL ABUN
TB-160	-2.156E-02	1.532E-01	2.981E-01	FAIL ABUN
HO-166M	2.660E-02	5.368E-02	1.085E-01	FAIL ABUN
TM-171	-1.688E+01	1.140E+01	1.899E+01	NOT IDENT.
HF-172	-1.733E-02	1.958E-01	3.212E-01	FAIL ABUN
LU-172	-4.015E-02	6.634E-02	1.175E-01	FAIL ABUN
LU-176	2.403E-03	2.181E-02	4.260E-02	FAIL ABUN
HF-181	-2.733E-02	5.623E-02	1.000E-01	NOT IDENT.
TA-182	1.673E-01	1.991E-01	4.322E-01	FAIL ABUN
RE-183	-5.428E-02	1.672E-01	3.045E-01	NOT IDENT.
RE-184	2.153E-01	1.608E-01	3.720E-01	NOT IDENT.
W-188	-4.576E+00	8.424E+00	1.359E+01	FAIL ABUN
IR-192	2.823E-03	3.778E-02	7.291E-02	FAIL ABUN
HG-203	-2.727E-02	4.382E-02	7.971E-02	NOT IDENT.
TL-204	-2.961E+00	3.969E+00	6.321E+00	NOT IDENT.
BI-207	7.954E-03	4.862E-02	9.842E-02	FAIL ABUN
PB-211	-2.859E-01	6.200E-01	1.121E+00	NOT IDENT.
BI-213	-1.998E-02	9.470E-02	1.755E-01	NOT IDENT.
RN-219	0.000E+00	1.238E+00	8.488E-01	FAIL ABUN
RA-223	-3.248E-01	6.618E-01	1.065E+00	FAIL ABUN
AC-225	-4.719E-01	2.102E+00	4.000E+00	NOT IDENT.
AC-227	4.243E-03	2.272E-01	4.383E-01	FAIL ABUN
TH-227	4.243E-03	2.272E-01	4.383E-01	FAIL ABUN
PA-231	-2.162E-01	4.988E-01	8.126E-01	NOT IDENT.
TH-231	-3.248E-01	6.618E-01	1.065E+00	FAIL ABUN
PA-233	2.391E-02	5.767E-02	1.109E-01	NOT IDENT.
PA-234	-3.587E-02	2.992E-01	5.792E-01	NOT IDENT.
PA-234M	2.169E+00	3.981E+00	8.238E+00	NOT IDENT.
NP-237	2.391E-02	5.767E-02	1.109E-01	NOT IDENT.
NP-238	0.000E+00	1.328E+04	0.000E+00	SHORT HLIF
NP-239	-2.383E-01	2.359E-01	3.889E-01	NOT IDENT.
AM-241	1.466E-03	1.158E-01	1.995E-01	NOT IDENT.
CM-243	-6.728E-02	9.051E-02	1.544E-01	NOT IDENT.
BK-247	-2.071E-02	7.111E-02	1.337E-01	FAIL ABUN
CF-249	3.332E-02	3.853E-02	7.898E-02	NOT IDENT.
CF-251	7.071E-02	1.196E-01	2.229E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:16:15.91

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	433	10.66*	1.267E+00	1.894E+01	1.894E+01	9.96
CD-109	88.03	163	3.70*	7.132E+00	3.648E+00	3.846E+00	34.48
SN-126	64.28	47	9.60	4.714E+00	6.116E-01	6.116E-01	143.52
	86.94	163	8.90	7.132E+00	1.517E+00	1.517E+00	34.48
	87.57	163	37.00*	7.132E+00	3.648E-01	3.648E-01	34.48
TL-208	277.37	------	6.60	4.980E+00	------	Line Not Found	------
	583.19	106	85.00*	2.860E+00	2.586E-01	2.586E-01	33.39
	860.56	25	12.50	2.033E+00	5.700E-01	5.700E-01	69.88
BI-210	46.54	13	4.25*	1.796E+00	9.859E-01	9.889E-01	312.32
PB-210	46.54	13	4.25*	1.796E+00	9.859E-01	9.889E-01	312.32
BI-211	72.87	------	1.23	5.985E+00	------	Line Not Found	------
	351.06	318	12.92*	4.214E+00	3.444E+00	3.444E+00	16.04
BI-212	727.33	40	6.67*	2.366E+00	1.506E+00	1.506E+00	56.43
	1620.50	------	1.47	1.174E+00	------	Line Not Found	------
PB-212	74.82	210	10.28	6.191E+00	1.947E+00	1.947E+00	30.75
	77.11	342	17.10	6.417E+00	1.838E+00	1.838E+00	18.53
	238.63	514	43.60*	5.509E+00	1.264E+00	1.264E+00	10.87
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
BI-214	609.32	204	45.49*	2.757E+00	9.620E-01	9.621E-01	18.88
	1120.29	34	14.92	1.594E+00	8.547E-01	8.548E-01	58.43
	1764.49	49	15.30	1.115E+00	1.682E+00	1.682E+00	31.28
PB-214	74.82	210	5.80	6.191E+00	3.451E+00	3.451E+00	30.75
	77.11	342	9.70	6.417E+00	3.241E+00	3.241E+00	18.53
	87.09	163	3.41	7.132E+00	3.958E+00	3.958E+00	34.48
	242.00	164	7.25	5.463E+00	2.449E+00	2.450E+00	37.57
	295.22	173	18.42	4.771E+00	1.162E+00	1.162E+00	26.23
	351.93	318	35.60*	4.214E+00	1.250E+00	1.250E+00	16.04
RN-222	609.32	204	45.49*	2.757E+00	9.620E-01	9.621E-01	18.88
	1120.29	34	14.92	1.594E+00	8.547E-01	8.548E-01	58.43
	1764.49	49	15.30	1.115E+00	1.682E+00	1.682E+00	31.28
RA-224	240.99	164	4.10*	5.463E+00	4.331E+00	4.331E+00	37.57
RA-226	74.82	210	5.80	6.191E+00	3.451E+00	3.451E+00	30.75
	77.11	342	9.70	6.417E+00	3.241E+00	3.241E+00	18.53
	87.09	163	3.41	7.132E+00	3.958E+00	3.958E+00	34.48
	242.00	164	7.25	5.463E+00	2.449E+00	2.450E+00	37.57
	295.22	173	18.42	4.771E+00	1.162E+00	1.162E+00	26.23
	351.93	318	35.60*	4.214E+00	1.250E+00	1.250E+00	16.04
AC-228	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	79	11.27	4.334E+00	9.578E-01	9.578E-01	52.61
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	121	25.80*	1.930E+00	1.436E+00	1.436E+00	23.48
	968.97	55	15.80	1.822E+00	1.133E+00	1.133E+00	52.57
RA-228	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	79	11.27	4.334E+00	9.578E-01	9.578E-01	52.61
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	121	25.80*	1.930E+00	1.436E+00	1.436E+00	23.48
	968.97	55	15.80	1.822E+00	1.133E+00	1.133E+00	52.57

Sample ID : G674299033 Acquisition date : 31-JUL-2024 16:12:58

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	210	10.28	6.191E+00	1.947E+00	1.947E+00	30.75
	77.11	342	17.10	6.417E+00	1.838E+00	1.838E+00	18.53
	238.63	514	43.60*	5.509E+00	1.264E+00	1.264E+00	10.87
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
TH-229	85.43	87	14.70	6.955E+00	5.049E-01	5.049E-01	60.78
	88.47	163	24.00	7.132E+00	5.624E-01	5.624E-01	34.48
	193.51	------	4.41*	6.278E+00	------	Line Not Found	------
	210.85	------	2.80	5.961E+00	------	Line Not Found	------
TH-230	74.82	210	5.80	6.191E+00	3.451E+00	3.451E+00	30.75
	77.11	342	9.70	6.417E+00	3.241E+00	3.241E+00	18.53
	87.09	163	3.41	7.132E+00	3.958E+00	3.958E+00	34.48
	242.00	164	7.25	5.463E+00	2.449E+00	2.449E+00	37.57
	295.22	173	18.42	4.771E+00	1.162E+00	1.162E+00	26.23
	351.93	318	35.60*	4.214E+00	1.250E+00	1.250E+00	16.04
TH-232	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	79	11.27	4.334E+00	9.578E-01	9.578E-01	52.61
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	121	25.80*	1.930E+00	1.436E+00	1.436E+00	23.48
	968.97	55	15.80	1.822E+00	1.133E+00	1.133E+00	52.57
TH-234	63.29	47	3.70*	4.714E+00	1.587E+00	1.587E+00	143.52
	92.59	161	4.23	7.373E+00	3.040E+00	3.040E+00	37.62
U-234	74.82	210	5.80	6.191E+00	3.451E+00	3.451E+00	30.75
	77.11	342	9.70	6.417E+00	3.241E+00	3.241E+00	18.53
	87.09	163	3.41	7.132E+00	3.958E+00	3.958E+00	34.48
	242.00	164	7.25	5.463E+00	2.449E+00	2.449E+00	37.57
	295.22	173	18.42	4.771E+00	1.162E+00	1.162E+00	26.23
	351.93	318	35.60*	4.214E+00	1.250E+00	1.250E+00	16.04
U-235	89.96	142	3.47	7.264E+00	3.319E+00	3.319E+00	43.86
	93.35	161	5.60	7.373E+00	2.296E+00	2.296E+00	37.62
	143.76	30	10.96*	7.274E+00	2.257E-01	2.257E-01	151.58
	163.33	------	5.08	6.883E+00	------	Line Not Found	------
	185.72	85	57.20	6.427E+00	1.359E-01	1.359E-01	61.34
	205.31	------	5.01	6.059E+00	------	Line Not Found	------
U-238	63.29	47	3.70*	4.714E+00	1.587E+00	1.587E+00	143.52
	92.59	161	4.23	7.373E+00	3.040E+00	3.040E+00	37.62
PU-239	129.30	20	0.01*	7.522E+00	2.476E+02	2.476E+02	229.33
	375.05	22	0.00	4.022E+00	2.044E+03	2.044E+03	96.40
	413.71	------	0.00	3.743E+00	------	Line Not Found	------
AM-243	43.53	24	5.90	1.387E+00	1.758E+00	1.758E+00	147.65
	74.66	210	67.20*	6.191E+00	2.978E-01	2.978E-01	30.75
CM-247	278.00	------	3.40	4.972E+00	------	Line Not Found	------
	287.50	------	2.00	4.858E+00	------	Line Not Found	------
	402.40	40	72.00*	3.817E+00	8.673E-02	8.673E-02	133.52
ANH-511	511.00	62	100.00*	3.184E+00	1.150E-01	1.150E-01	60.39

Flag: "*" = Keyline

Sample ID : G674299033 Acquisition date : 31-JUL-2024 16:12:58

Total number of lines in spectrum	51	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	38	74.51%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.894E+01	1.894E+01	0.189E+01	9.96	
CD-109	461.40D	1.05	3.648E+00	3.846E+00	1.326E+00	34.48	
SN-126	2.30E+05Y	1.00	3.648E-01	3.648E-01	1.258E-01	34.48	
TL-208	1.41E+10Y	1.00	2.586E-01	2.586E-01	0.863E-01	33.39	
BI-210	22.20Y	1.00	9.859E-01	9.889E-01	30.89E-01	312.32	
PB-210	22.20Y	1.00	9.859E-01	9.889E-01	30.89E-01	312.32	
BI-211	7.04E+08Y	1.00	3.444E+00	3.444E+00	0.553E+00	16.04	
BI-212	1.41E+10Y	1.00	1.506E+00	1.506E+00	0.850E+00	56.43	
PB-212	1.41E+10Y	1.00	1.264E+00	1.264E+00	0.137E+00	10.87	
BI-214	1600.00Y	1.00	9.620E-01	9.621E-01	1.817E-01	18.88	
PB-214	1600.00Y	1.00	1.250E+00	1.250E+00	0.201E+00	16.04	
RN-222	1600.00Y	1.00	9.620E-01	9.621E-01	1.817E-01	18.88	
RA-224	1.41E+10Y	1.00	4.331E+00	4.331E+00	1.627E+00	37.57	
RA-226	1600.00Y	1.00	1.250E+00	1.250E+00	0.201E+00	16.04	
AC-228	1.41E+10Y	1.00	1.436E+00	1.436E+00	0.337E+00	23.48	
RA-228	1.41E+10Y	1.00	1.436E+00	1.436E+00	0.337E+00	23.48	
TH-228	1.41E+10Y	1.00	1.264E+00	1.264E+00	0.137E+00	10.87	
TH-229	7340.00Y	1.00	5.624E-01	5.624E-01	1.939E-01	34.48	K
TH-230	7.54E+04Y	1.00	1.250E+00	1.250E+00	0.201E+00	16.04	
TH-232	1.41E+10Y	1.00	1.436E+00	1.436E+00	0.337E+00	23.48	
TH-234	4.47E+09Y	1.00	1.587E+00	1.587E+00	2.277E+00	143.52	
U-234	2.45E+05Y	1.00	1.250E+00	1.250E+00	0.201E+00	16.04	
U-235	7.04E+08Y	1.00	2.257E-01	2.257E-01	3.421E-01	151.58	
U-238	4.47E+09Y	1.00	1.587E+00	1.587E+00	2.277E+00	143.52	
PU-239	24110.00Y	1.00	2.476E+02	2.476E+02	5.679E+02	229.33	
AM-243	7370.00Y	1.00	2.978E-01	2.978E-01	0.916E-01	30.75	
CM-247	1.56E+07Y	1.00	8.673E-02	8.673E-02	11.58E-02	133.52	
ANH-511	1.00E+09Y	1.00	1.150E-01	1.150E-01	0.695E-01	60.39	
			---	---			
	Total Activity :		3.003E+02	3.005E+02			

Grand Total Activity : 3.003E+02 3.005E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299033 Acquisition date : 31-JUL-2024 16:12:58

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	37.72	24	98	0.71	75.53	73	6	5.59E-03	****	5.93E-01	
0	40.55	22	82	1.31	81.19	79	5	5.17E-03	****	9.20E-01	
0	209.02	58	113	1.50	417.82	414	9	1.51E-02	73.5	5.99E+00	
0	305.25	29	67	3.49	610.15	605	14	7.57E-03	****	4.66E+00	T
0	327.88	41	60	1.12	655.40	651	10	1.08E-02	79.8	4.43E+00	T
0	462.76	36	34	1.00	925.03	921	10	9.84E-03	69.2	3.44E+00	T
0	473.89	12	55	3.82	947.28	939	13	3.27E-03	****	3.38E+00	T
5	768.16	30	13	2.76	1535.73	1529	26	8.50E-03	67.6	2.25E+00	T
5	772.25	21	17	2.77	1543.91	1529	26	5.77E-03	****	2.24E+00	T
1	779.77	12	1	1.70	1558.96	1557	13	3.42E-03	56.2	2.22E+00	T
1	782.92	15	6	1.90	1565.26	1557	13	4.26E-03	79.4	2.22E+00	T
0	995.80	7	10	0.83	1991.14	1986	10	1.94E-03	****	1.78E+00	T
0	1033.12	14	11	2.53	2065.80	2062	10	3.92E-03	****	1.72E+00	
0	1066.63	10	15	0.53	2132.86	2123	12	2.74E-03	****	1.67E+00	
2	1126.16	14	4	1.92	2252.00	2233	23	3.91E-03	77.8	1.59E+00	
0	1134.94	10	3	0.85	2269.56	2267	6	2.74E-03	85.0	1.57E+00	
0	1304.86	8	11	3.43	2609.67	2602	12	2.18E-03	****	1.39E+00	
0	1307.91	8	4	1.58	2615.78	2613	6	2.41E-03	****	1.39E+00	
0	1378.41	15	11	1.90	2756.91	2750	12	4.37E-03	****	1.33E+00	
0	1402.14	8	5	1.98	2804.41	2797	11	2.36E-03	****	1.31E+00	
0	1409.63	5	8	0.61	2819.41	2810	11	1.37E-03	****	1.30E+00	
0	1415.07	9	8	3.80	2830.31	2824	12	2.65E-03	****	1.30E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:16:27.02

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299033.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:58 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:14.17     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:05:00 Nuclide Library : SOLID           *
* Sample ID        : G674299033           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.2715E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.114E-01
CD-109	4.815E-01
SN-126	4.580E-02
TL-208	3.175E-02
BI-210	1.600E+00
PB-210	1.600E+00
BI-211	1.666E-01
BI-212	3.489E-01
PB-212	4.312E-02
BI-214	5.006E-02
PB-214	6.059E-02
RN-222	5.006E-02
RA-224	4.619E-01
RA-226	6.059E-02
AC-228	1.179E-01
RA-228	1.179E-01
TH-228	4.312E-02
TH-229	3.937E-01
TH-230	6.059E-02
TH-232	1.179E-01
TH-234	8.271E-01
U-234	6.059E-02
U-235	1.450E-01
U-238	8.271E-01
PU-239	2.541E+02
AM-243	3.423E-02
CM-247	2.955E-02
ANH-511	2.080E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.248E-01	NOT IDENT.
NA-22	2.798E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF

AL-26	2.494E-02	NOT IDENT.
SC-46	3.899E-02	FAIL ABUN
V-48	1.194E-01	NOT IDENT.
CR-51	4.950E-01	NOT IDENT.
MN-52	1.738E+00	NOT IDENT.
MN-54	3.343E-02	NOT IDENT.
CO-56	3.801E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.024E-02	NOT IDENT.
CO-58	3.407E-02	NOT IDENT.
FE-59	9.910E-02	NOT IDENT.
CO-60	4.030E-02	NOT IDENT.
ZN-65	7.024E-02	NOT IDENT.
GE-68	1.023E+00	NOT IDENT.
AS-73	5.501E-01	NOT IDENT.
AS-74	1.715E-01	NOT IDENT.
SE-75	3.900E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	3.647E-01	NOT IDENT.
RB-83	5.791E-02	NOT IDENT.
RB-84	7.639E-02	NOT IDENT.
KR-85	5.072E+00	NOT IDENT.
SR-85	3.315E-02	NOT IDENT.
RB-86	1.363E+00	NOT IDENT.
Y-88	3.176E-02	NOT IDENT.
Y-91	2.290E+01	NOT IDENT.
NB-94	2.610E-02	NOT IDENT.
NB-95	4.279E-02	NOT IDENT.
NB-95M	1.193E-01	NOT IDENT.
ZR-95	7.119E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.371E-02	NOT IDENT.
RH-102	4.326E-02	FAIL ABUN
RU-103	4.539E-02	FAIL ABUN
RH-106	2.694E-01	NOT IDENT.
RU-106	2.694E-01	NOT IDENT.
AG-108M	2.046E-02	NOT IDENT.
AG-110	6.146E-01	NOT IDENT.
AG-110M	4.107E-02	NOT IDENT.
SN-113	3.802E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.188E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.448E-02	NOT IDENT.
SB-124	6.548E-02	NOT IDENT.
SB-125	8.416E-02	FAIL ABUN
TE-125M	9.324E+00	NOT IDENT.
I-126	5.153E-01	NOT IDENT.
SB-126	3.533E-01	NOT IDENT.
SB-127	4.744E+01	FAIL ABUN
I-131	4.545E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.955E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.381E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.303E-01	NOT IDENT.
BA-137M	2.608E-02	NOT IDENT.
CS-137	2.755E-02	NOT IDENT.
LA-138	3.266E-02	NOT IDENT.
CE-139	2.428E-02	NOT IDENT.
BA-140	6.057E-01	FAIL ABUN
LA-140	1.375E-01	FAIL ABUN
CE-141	7.231E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.608E-01	NOT IDENT.
PM-144	3.405E-02	NOT IDENT.
PR-144	2.568E+00	NOT IDENT.
PM-146	3.467E-02	NOT IDENT.
ND-147	1.515E+00	FAIL ABUN
PM-147	5.585E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.991E-02	FAIL ABUN
EU-152	8.646E-02	FAIL ABUN

GD-153	6.326E-02	NOT IDENT.
EU-154	7.646E-02	FAIL ABUN
EU-155	8.755E-02	FAIL ABUN
TB-160	1.303E-01	FAIL ABUN
HO-166M	4.806E-02	FAIL ABUN
TM-171	8.853E+00	NOT IDENT.
HF-172	1.506E-01	FAIL ABUN
LU-172	5.068E-02	FAIL ABUN
LU-176	1.943E-02	FAIL ABUN
HF-181	4.465E-02	NOT IDENT.
TA-182	1.913E-01	FAIL ABUN
RE-183	1.433E-01	NOT IDENT.
RE-184	1.644E-01	NOT IDENT.
W-188	6.200E+00	FAIL ABUN
IR-192	3.345E-02	FAIL ABUN
HG-203	3.645E-02	NOT IDENT.
TL-204	2.975E+00	NOT IDENT.
BI-207	4.278E-02	FAIL ABUN
PB-211	5.040E-01	NOT IDENT.
BI-213	7.902E-02	NOT IDENT.
RN-219	3.923E-01	FAIL ABUN
RA-223	4.867E-01	FAIL ABUN
AC-225	1.859E+00	NOT IDENT.
AC-227	2.028E-01	FAIL ABUN
TH-227	2.028E-01	FAIL ABUN
PA-231	3.740E-01	NOT IDENT.
TH-231	4.867E-01	FAIL ABUN
PA-233	5.085E-02	NOT IDENT.
PA-234	2.538E-01	NOT IDENT.
PA-234M	3.579E+00	NOT IDENT.
NP-237	5.085E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	1.809E-01	NOT IDENT.
AM-241	9.413E-02	NOT IDENT.
CM-243	7.202E-02	NOT IDENT.
BK-247	6.155E-02	FAIL ABUN
CF-249	3.636E-02	NOT IDENT.
CF-251	1.043E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:16:31.18

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299033.CNF;1  *
* Acquisition date : 31-JUL-2024 16:12:58 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:14.17     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:05:00 Nuclide Library : SOLID           *
* Sample ID        : G674299033           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.2715E+02 GRAM *
*                                         Quantity Err(%) : 1.5729E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.894E+01	2.639E+00	2.639E+00
CD-109	3.846E+00	1.353E+00	1.353E+00
SN-126	3.648E-01	1.268E-01	1.268E-01
TL-208	2.586E-01	8.761E-02	8.761E-02
BI-210	9.889E-01	3.028E+00	3.028E+00
PB-210	9.889E-01	3.028E+00	3.028E+00
BI-211	3.444E+00	6.132E-01	6.132E-01
BI-212	1.506E+00	8.458E-01	8.458E-01
PB-212	1.264E+00	1.737E-01	1.737E-01
BI-214	9.621E-01	1.972E-01	1.972E-01
PB-214	1.250E+00	2.216E-01	2.216E-01
RN-222	9.621E-01	1.972E-01	1.972E-01
RA-224	4.331E+00	1.639E+00	1.639E+00
RA-226	1.250E+00	2.216E-01	2.216E-01
AC-228	1.436E+00	3.679E-01	3.679E-01
RA-228	1.436E+00	3.679E-01	3.679E-01
TH-228	1.264E+00	1.737E-01	1.737E-01
TH-229	6.030E-02	4.742E-01	4.742E-01
TH-230	1.250E+00	2.216E-01	2.216E-01
TH-232	1.436E+00	3.679E-01	3.679E-01
TH-234	1.587E+00	2.260E+00	2.260E+00
U-234	1.250E+00	2.216E-01	2.216E-01
U-235	2.257E-01	3.357E-01	3.357E-01
U-238	1.587E+00	2.260E+00	2.260E+00
PU-239	2.476E+02	5.568E+02	5.568E+02
AM-243	2.978E-01	9.250E-02	9.250E-02
CM-247	8.673E-02	1.146E-01	1.146E-01
ANH-511	1.150E-01	6.880E-02	6.880E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	2.250E-01	3.837E-01	3.969E-01	NOT IDENT.
NA-22	-4.293E-02	4.271E-02	4.689E-02	NOT IDENT.

NA-24	1.897E+15	3.014E+15	3.133E+15	SHORT HLIF
AL-26	3.484E-03	2.935E-02	2.939E-02	NOT IDENT.
SC-46	4.710E-03	4.415E-02	4.420E-02	FAIL ABUN
V-48	-1.207E-01	1.607E-01	1.697E-01	NOT IDENT.
CR-51	-6.795E-02	5.704E-01	5.713E-01	NOT IDENT.
MN-52	-1.070E+00	2.431E+00	2.478E+00	NOT IDENT.
MN-54	-5.000E-04	3.834E-02	3.834E-02	NOT IDENT.
CO-56	-2.256E-03	4.392E-02	4.393E-02	NOT IDENT.
MN-56	1.000E+41	3.602E+42	0.000E+00	SHORT HLIF
CO-57	-6.247E-04	2.403E-02	2.403E-02	NOT IDENT.
CO-58	-4.817E-03	4.281E-02	4.286E-02	NOT IDENT.
FE-59	-6.173E-02	1.268E-01	1.298E-01	NOT IDENT.
CO-60	2.851E-02	4.285E-02	4.474E-02	NOT IDENT.
ZN-65	2.580E-02	8.704E-02	8.781E-02	NOT IDENT.
GE-68	4.283E-01	1.116E+00	1.133E+00	NOT IDENT.
AS-73	2.111E-01	6.087E-01	6.161E-01	NOT IDENT.
AS-74	1.369E-01	1.853E-01	1.953E-01	NOT IDENT.
SE-75	-1.153E-02	4.490E-02	4.520E-02	NOT IDENT.
BR-77	6.841E+04	7.010E+04	7.659E+04	SHORT HLIF
SR-82	2.098E-01	5.333E-01	5.416E-01	NOT IDENT.
RB-83	-5.856E-03	6.934E-02	6.939E-02	NOT IDENT.
RB-84	-3.623E-02	9.412E-02	9.552E-02	NOT IDENT.
KR-85	6.978E-01	6.565E+00	6.573E+00	NOT IDENT.
SR-85	4.381E-03	4.294E-02	4.299E-02	NOT IDENT.
RB-86	1.063E+00	1.401E+00	1.481E+00	NOT IDENT.
Y-88	-3.374E-03	4.039E-02	4.042E-02	NOT IDENT.
Y-91	7.759E+00	2.580E+01	2.604E+01	NOT IDENT.
NB-94	-5.276E-04	3.171E-02	3.171E-02	NOT IDENT.
NB-95	1.452E-02	5.562E-02	5.600E-02	NOT IDENT.
NB-95M	1.158E-01	1.355E-01	1.453E-01	NOT IDENT.
ZR-95	-2.618E-02	9.134E-02	9.210E-02	NOT IDENT.
NB-97	1.000E+41	1.603E+41	0.000E+00	SHORT HLIF
ZR-97	2.015E+14	6.028E+14	6.096E+14	SHORT HLIF
MO-99	2.595E+02	1.559E+03	1.564E+03	SHORT HLIF
TC-99M	-7.100E+38	4.264E+40	0.000E+00	SHORT HLIF
RH-101	-1.007E-02	3.171E-02	3.203E-02	NOT IDENT.
RH-102	-2.688E-03	5.236E-02	5.238E-02	FAIL ABUN
RU-103	1.252E-02	5.170E-02	5.201E-02	FAIL ABUN
RH-106	5.319E-02	3.149E-01	3.159E-01	NOT IDENT.
RU-106	5.319E-02	3.149E-01	3.159E-01	NOT IDENT.
AG-108M	7.608E-03	2.272E-02	2.298E-02	NOT IDENT.
AG-110	2.382E-01	7.019E-01	7.100E-01	NOT IDENT.
AG-110M	3.482E-03	4.667E-02	4.670E-02	NOT IDENT.
SN-113	-3.504E-02	4.806E-02	5.059E-02	NOT IDENT.
CD-115	-6.081E+02	4.917E+03	4.925E+03	SHORT HLIF
SN-117M	4.621E-02	1.387E-01	1.402E-01	NOT IDENT.
SB-122	-9.047E+00	3.065E+02	3.065E+02	SHORT HLIF
TE-123M	6.296E-03	2.888E-02	2.902E-02	NOT IDENT.
SB-124	-2.233E-02	8.905E-02	8.962E-02	NOT IDENT.
SB-125	6.374E-02	9.100E-02	9.543E-02	FAIL ABUN
TE-125M	3.645E+00	1.066E+01	1.079E+01	NOT IDENT.
I-126	2.713E-01	5.778E-01	5.906E-01	NOT IDENT.
SB-126	2.348E-01	4.282E-01	4.411E-01	NOT IDENT.
SB-127	3.950E+01	5.228E+01	5.523E+01	FAIL ABUN
I-131	-7.649E-02	5.322E-01	5.333E-01	NOT IDENT.
I-132	-1.000E+41	2.332E+42	0.000E+00	SHORT HLIF
TE-132	1.603E+01	4.830E+01	4.884E+01	SHORT HLIF
BA-133	-1.287E-02	3.984E-02	4.026E-02	NOT IDENT.
I-133	2.674E+10	4.648E+10	4.802E+10	SHORT HLIF
CS-134	6.888E-02	4.395E-02	5.381E-02	NOT IDENT.
I-135	-1.634E+37	5.818E+37	0.000E+00	SHORT HLIF
CS-136	-9.468E-02	2.862E-01	2.894E-01	NOT IDENT.
BA-137M	1.427E-02	2.891E-02	2.962E-02	NOT IDENT.
CS-137	1.508E-02	3.054E-02	3.129E-02	NOT IDENT.
LA-138	-3.357E-02	4.842E-02	5.073E-02	NOT IDENT.
CE-139	-5.404E-03	2.988E-02	2.998E-02	NOT IDENT.
BA-140	-1.629E-01	7.414E-01	7.450E-01	FAIL ABUN
LA-140	-2.797E-01	2.631E-01	2.918E-01	FAIL ABUN
CE-141	2.519E-02	9.115E-02	9.185E-02	NOT IDENT.
CE-143	4.155E+06	2.939E+06	3.485E+06	SHORT HLIF
CE-144	9.157E-02	1.834E-01	1.879E-01	NOT IDENT.
PM-144	1.232E-02	3.956E-02	3.995E-02	NOT IDENT.
PR-144	9.006E-01	2.988E+00	3.015E+00	NOT IDENT.
PM-146	1.344E-02	3.883E-02	3.930E-02	NOT IDENT.
ND-147	-1.432E-01	1.814E+00	1.815E+00	FAIL ABUN
PM-147	-4.054E+02	6.979E+02	7.214E+02	NOT IDENT.
PM-149	1.280E+04	4.507E+04	4.544E+04	SHORT HLIF
EU-150	-2.224E-02	2.848E-02	3.019E-02	FAIL ABUN

EU-152	7.504E-02	9.192E-02	9.795E-02	FAIL ABUN
GD-153	-2.948E-02	8.213E-02	8.320E-02	NOT IDENT.
EU-154	-1.252E-01	1.189E-01	1.316E-01	FAIL ABUN
EU-155	1.116E-01	9.442E-02	1.070E-01	FAIL ABUN
TB-160	-2.156E-02	1.532E-01	1.535E-01	FAIL ABUN
HO-166M	2.660E-02	5.375E-02	5.507E-02	FAIL ABUN
TM-171	-1.688E+01	1.150E+01	1.379E+01	NOT IDENT.
HF-172	-1.733E-02	1.958E-01	1.960E-01	FAIL ABUN
LU-172	-4.015E-02	6.655E-02	6.897E-02	FAIL ABUN
LU-176	2.403E-03	2.181E-02	2.183E-02	FAIL ABUN
HF-181	-2.733E-02	5.628E-02	5.761E-02	NOT IDENT.
TA-182	1.673E-01	1.996E-01	2.134E-01	FAIL ABUN
RE-183	-5.428E-02	1.673E-01	1.691E-01	NOT IDENT.
RE-184	2.153E-01	1.631E-01	1.898E-01	NOT IDENT.
W-188	-4.576E+00	8.446E+00	8.694E+00	FAIL ABUN
IR-192	2.823E-03	3.778E-02	3.780E-02	FAIL ABUN
HG-203	-2.727E-02	4.388E-02	4.557E-02	NOT IDENT.
TL-204	-2.961E+00	3.979E+00	4.197E+00	NOT IDENT.
BI-207	7.954E-03	4.862E-02	4.876E-02	FAIL ABUN
PB-211	-2.859E-01	6.205E-01	6.337E-01	NOT IDENT.
BI-213	-1.998E-02	9.471E-02	9.514E-02	NOT IDENT.
RN-219	9.461E-01	1.246E+00	1.317E+00	FAIL ABUN
RA-223	-3.248E-01	6.625E-01	6.785E-01	FAIL ABUN
AC-225	-4.719E-01	2.102E+00	2.113E+00	NOT IDENT.
AC-227	4.243E-03	2.272E-01	2.272E-01	FAIL ABUN
TH-227	4.243E-03	2.272E-01	2.272E-01	FAIL ABUN
PA-231	-2.162E-01	5.012E-01	5.106E-01	NOT IDENT.
TH-231	-3.248E-01	6.625E-01	6.785E-01	FAIL ABUN
PA-233	2.391E-02	5.770E-02	5.870E-02	NOT IDENT.
PA-234	-3.587E-02	3.020E-01	3.024E-01	NOT IDENT.
PA-234M	2.169E+00	3.987E+00	4.105E+00	NOT IDENT.
NP-237	2.391E-02	5.770E-02	5.870E-02	NOT IDENT.
NP-238	-1.325E+03	1.328E+04	1.330E+04	SHORT HLIF
NP-239	-2.383E-01	2.370E-01	2.602E-01	NOT IDENT.
AM-241	1.466E-03	1.158E-01	1.158E-01	NOT IDENT.
CM-243	-6.728E-02	9.078E-02	9.572E-02	NOT IDENT.
BK-247	-2.071E-02	7.124E-02	7.185E-02	FAIL ABUN
CF-249	3.332E-02	3.869E-02	4.151E-02	NOT IDENT.
CF-251	7.071E-02	1.200E-01	1.241E-01	NOT IDENT.

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*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	66.0070	85.43	71.2718	131.20	80.6710
45.60	54.6642	86.55	71.4145	133.02	67.5174
46.54	73.0676	86.79	71.4446	133.52	61.8368
49.72	0.0000	86.94	71.4635	136.00	71.2306
51.35	70.3383	87.09	71.4824	136.47	59.7783
51.87	94.2357	87.57	71.5433	140.51	0.0000
52.39	100.3154	88.03	71.6010	143.76	66.1437
52.97	82.5542	88.34	71.6399	144.24	66.1846
53.44	69.7033	88.47	71.6562	145.44	63.5704
54.07	56.8445	89.96	71.8423	152.43	64.5127
57.36	0.0000	1093.63	71.9267	153.25	61.0541
57.53	72.3908	91.11	71.9849	323.87	85.8109
57.98	94.6078	92.59	72.1669	156.02	64.7922
59.27	92.8676	93.35	72.2594	158.56	62.6253
59.32	92.8781	94.56	72.4066	159.00	62.6577
59.54	92.9244	94.65	72.4179	162.33	55.7817
60.96	98.6243	94.67	72.4199	162.66	52.2413
61.17	98.6704	94.87	72.4445	163.33	61.7873
62.93	100.7493	97.43	78.1815	165.86	65.5433
63.29	100.8280	98.43	79.3971	176.31	75.9622
63.58	100.8915	98.44	79.3982	176.60	66.3372
64.28	103.4254	99.53	74.0912	177.52	56.7455
66.73	110.8048	100.11	62.1641	181.07	0.0000
67.24	106.8152	102.03	72.2011	181.52	51.7376
125.81	106.9128	103.18	85.4845	184.41	56.7632
67.75	99.7315	103.37	82.2212	143.76	57.2483
68.89	88.6304	105.21	64.8675	193.51	56.4886
69.67	102.1919	105.31	64.8779	197.03	59.1570
70.82	107.6031	106.12	70.4648	198.01	59.2156
70.83	107.6055	106.47	87.0271	201.83	66.8746
72.81	101.1079	109.28	69.7012	203.43	65.7413
72.87	101.1198	111.00	63.2274	205.31	69.5916
74.66	98.0018	111.76	0.0000	210.85	61.6403
74.82	98.0326	114.06	65.7453	215.65	65.2729
74.97	98.0613	116.30	0.0000	218.12	62.9097
77.11	98.4665	116.74	83.9035	222.11	51.3589
78.74	98.7720	119.76	62.9214	227.09	55.8265
79.69	81.4044	121.12	83.3076	227.38	53.3030
80.03	88.4778	121.22	83.3194	228.16	0.0000
80.12	88.4931	121.78	76.6245	228.18	52.4954
80.19	88.5047	122.06	72.1460	116.74	52.4954
80.57	86.4587	122.92	68.8475	235.69	44.7551
81.00	88.6380	123.07	68.8619	235.96	44.7663
81.07	88.6495	265.00	75.7001	238.63	53.8477
81.75	78.1942	125.81	78.5692	238.98	0.0000
82.47	81.8251	127.23	78.7223	240.99	53.9599
83.79	71.0618	127.91	78.7966	242.00	54.0080
84.00	71.0888	129.30	71.7344	244.70	29.6460

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	57.9571	344.28	34.3217	563.25	22.0305
252.80	48.4583	345.93	54.7903	564.24	0.0000
254.15	0.0000	351.06	41.9339	569.33	21.0417
256.23	51.2028	351.93	41.9586	946.00	24.1998
260.90	0.0000	355.39	0.0000	569.70	25.2539
264.66	51.5650	356.01	35.0609	583.19	30.7063
264.80	50.6957	364.49	29.1464	584.27	30.7216
265.00	50.7052	366.42	0.0000	595.83	17.0391
269.46	50.8904	372.51	25.5174	427.87	14.9411
270.03	46.5249	375.05	34.0789	602.52	0.0000
271.23	44.8128	377.52	24.1776	604.72	30.4726
273.65	54.5843	356.01	19.9908	607.14	24.0829
276.40	39.7055	388.16	30.5443	609.32	20.3560
277.37	43.2688	388.63	25.7794	610.33	20.3653
277.60	42.3936	391.69	43.0472	614.28	17.7166
278.00	34.4551	264.66	33.6663	618.01	30.1146
279.20	49.5218	401.81	33.6898	620.36	20.4558
279.54	58.3811	402.40	33.7019	621.93	21.5470
279.70	57.5032	404.85	33.7517	630.19	0.0000
280.46	43.3745	410.95	35.8114	631.29	21.6349
283.69	46.1475	413.71	39.7488	633.25	16.2396
284.31	43.5060	414.70	32.9818	634.78	19.5007
285.41	43.5439	423.72	38.0336	635.95	27.0976
285.90	0.0000	427.09	27.3597	636.99	24.9410
287.50	43.6147	427.87	29.3274	657.50	17.5013
290.67	46.8454	433.94	18.6390	657.76	14.2214
293.27	0.0000	439.40	28.5380	657.90	0.0000
351.93	42.0841	440.45	30.5245	661.66	13.1489
295.96	42.1080	453.88	25.7948	664.57	0.0000
879.38	48.4750	463.37	24.9324	666.33	16.4679
299.98	33.6990	468.07	23.9966	666.50	16.4691
300.09	32.3540	473.00	24.0605	667.71	0.0000
300.13	32.3547	475.06	24.0874	677.62	9.9269
301.36	53.9746	476.78	24.1094	685.70	19.9189
302.85	51.3327	477.60	18.0901	692.65	0.0000
256.23	34.2643	482.18	30.2234	695.00	18.8829
304.85	34.2728	487.02	24.2407	696.49	26.6738
306.78	34.3223	492.35	0.0000	696.51	26.6748
308.46	36.6257	497.08	23.3528	697.00	27.7913
311.90	33.7269	505.52	15.2966	697.30	27.7944
316.51	40.0263	507.63	0.0000	697.49	26.6846
319.41	49.2264	511.00	22.4977	702.65	21.1686
320.08	44.6894	514.00	23.0438	706.68	17.8548
321.04	41.9823	514.00	23.0438	711.68	14.5356
323.87	48.0118	520.40	20.5493	720.70	13.4648
325.23	30.2077	520.69	0.0000	721.93	0.0000
328.76	40.3781	522.65	0.0000	722.78	25.2676
333.37	44.1914	527.90	0.0000	722.91	25.2686
333.97	51.1178	528.26	21.6614	723.31	28.6418
334.37	48.3685	529.59	16.5150	724.19	25.2814
338.28	36.9515	529.87	0.0000	727.33	15.7500
338.32	36.9531	531.02	23.7571	733.00	12.1764
311.90	45.7970	537.26	25.9023	735.93	15.8018
340.48	45.7970	546.56	0.0000	333.97	18.0697
340.55	45.7990	552.55	31.3123	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	13.5874	949.00	9.1122	1384.29	7.0204
747.24	11.3359	667.71	0.0000	1408.01	8.2354
748.06	17.0093	962.31	32.4174	1434.09	7.2487
752.31	20.4434	964.08	19.0430	1435.80	7.2512
753.82	20.4551	966.17	32.2470	1457.56	0.0000
756.73	22.7531	911.20	33.9253	1460.82	9.3752
756.80	23.8907	983.53	19.3414	1489.16	5.2408
884.68	6.8442	984.45	0.0000	1505.03	12.6211
765.81	18.8344	1274.44	5.9172	1584.12	17.1113
766.42	10.9609	1001.03	6.1727	1596.21	10.7214
766.84	10.9625	1002.74	10.1900	1620.50	5.3873
772.60	0.0000	1004.73	15.7575	1621.92	5.3891
776.52	6.8762	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	4.3708
778.90	6.8821	1028.54	0.0000	1750.46	0.0000
783.70	18.9593	1037.84	14.9766	1764.49	3.3248
788.74	18.4186	1038.76	0.0000	1063.66	8.8760
792.07	36.8815	631.29	17.8299	1771.35	2.2194
795.86	11.5409	1048.07	15.9603	1791.20	0.0000
810.06	16.2399	1049.04	15.9645	1808.65	3.3525
810.29	17.4011	1050.41	12.2129	1810.72	0.0000
344.28	15.0820	1063.66	13.2028	1836.06	4.4924
810.76	15.0836	1077.00	7.5732		
815.77	16.2729	1077.34	9.4672		
1048.07	15.1249	1085.87	16.1326		
832.01	20.1650	1093.63	19.9720		
834.85	21.9398	1099.45	20.0054		
835.71	24.5803	1112.07	20.0746		
836.80	0.0000	1112.84	22.9482		
846.75	0.0000	1115.54	10.7167		
846.77	17.6245	1120.29	17.2463		
856.80	14.1479	1120.55	17.2474		
860.56	14.1660	1221.41	17.2507		
871.09	16.8819	1129.67	5.7634		
873.19	15.1152	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	17.8198	1173.23	20.4091		
880.51	20.5005	1177.95	15.5693		
881.60	16.9410	1189.05	15.6143		
883.24	13.3818	1204.77	14.6988		
884.68	14.2808	1221.41	10.8254		
889.28	16.0900	1231.02	16.7707		
894.76	17.0146	1235.36	26.6655		
898.04	14.3438	1238.28	15.8135		
900.72	17.0483	1260.41	0.0000		
903.28	5.9867	1271.87	8.9703		
911.20	18.0066	1274.44	17.9517		
912.08	18.0115	1274.54	17.9528		
923.98	0.0000	1291.59	12.0183		
926.50	16.2861	1298.22	0.0000		
929.11	27.1655	1312.11	12.8836		
935.54	22.6845	1332.49	9.1033		
937.49	22.6982	1362.66	0.0000		
944.13	10.9182	1365.19	9.1736		
946.00	18.2074	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:16:57.38

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299034.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM21.CNF;850
                                         Background date  : 28-JUL-2024 11:27:08
Sample date      : 26-JUN-2024 12:15:00  Acquisition date : 31-JUL-2024 16:13:25
Sample ID        : G674299034            Sample quantity  : 1.02380E+02 GRAM
Detector name    : GAM21                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.36  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.68	28	116	0.70	127.65	124	7	7.64E-03	67.6	
2	2	73.54	24	108	1.04	147.36	144	23	6.53E-03	74.2	2.77E+00
3	2	74.90	161	102	0.99	150.08	144	23	4.48E-02	12.6	
4	2	77.04	285	90	1.05	154.36	144	23	7.93E-02	8.1	
5	0	87.05	84	153	0.98	174.37	171	8	2.33E-02	27.7	
6	6	90.04	37	61	1.32	180.34	178	12	1.02E-02	33.4	1.26E+00
7	6	92.94	83	116	1.25	186.13	178	12	2.29E-02	25.3	
8	0	130.00	25	61	0.98	260.18	256	7	6.94E-03	56.0	
9	0	186.25*	92	51	1.17	372.59	368	10	2.56E-02	18.2	
10	0	238.74	215	74	1.11	477.49	474	7	5.96E-02	9.5	
11	0	242.03	69	52	0.92	484.08	482	7	1.91E-02	22.4	
12	0	270.87	24	33	0.61	541.72	536	10	6.59E-03	50.6	
13	0	295.29	104	37	1.11	590.53	584	10	2.88E-02	15.0	
14	0	300.36	15	30	0.70	600.65	596	8	4.28E-03	67.8	
15	0	338.78	37	36	1.10	677.45	673	8	1.02E-02	33.2	
16	0	351.90*	162	39	1.20	703.67	698	11	4.51E-02	10.9	
17	0	412.53	3	26	3.56	824.85	818	9	8.00E-04	329.0	
18	0	423.52	16	40	2.31	846.81	841	14	4.43E-03	86.7	
19	0	487.87	9	14	0.54	975.46	971	11	2.43E-03	89.0	
20	4	510.79*	24	14	2.24	1021.27	1014	21	6.64E-03	49.8	1.53E+00
21	4	515.28	17	5	2.24	1030.25	1014	21	4.72E-03	36.4	
22	0	569.72	9	23	0.83	1139.08	1133	10	2.61E-03	100.0	
23	0	583.14	48	24	1.30	1165.90	1161	12	1.33E-02	25.0	
24	0	609.04*	120	11	1.53	1217.68	1211	12	3.34E-02	11.0	
25	0	665.27	8	13	1.34	1330.11	1322	10	2.22E-03	95.6	
26	0	860.36	17	0	1.49	1720.18	1716	9	4.72E-03	24.3	
27	0	886.06	8	4	0.94	1771.57	1766	9	2.20E-03	59.4	
28	0	911.13	30	20	1.86	1821.70	1814	14	8.21E-03	37.6	
29	0	969.46	17	12	1.00	1938.35	1931	12	4.72E-03	47.4	
30	0	1120.56*	30	5	1.32	2240.55	2235	11	8.31E-03	24.1	
31	0	1460.26*	96	10	1.87	2920.07	2914	16	2.67E-02	12.4	
32	0	1763.62*	10	4	1.90	3527.07	3519	12	2.72E-03	59.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:16:58

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299034.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: MXR1		
Sample date	: 26-JUN-2024 12:15:00	Acquisition date	: 31-JUL-2024 16:13:25
Sample ID	: G674299034	Sample quantity	: 102.38 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA21	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.36 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	90	10.66*	9.379E-01	6.599E+00	6.599E+00	24.77
KR-85	514.00	16	0.43*	2.839E+00	9.663E+00	9.724E+00	72.82
SR-85	514.00	16	96.00*	2.839E+00	4.369E-02	6.363E-02	72.82
CD-109	88.03	83	3.70*	1.132E+01	1.458E+00	1.537E+00	55.37
SN-126	64.28	27	9.60	1.177E+01	1.779E-01	1.779E-01	135.11
	86.94	83	8.90	1.132E+01	6.060E-01	6.060E-01	55.37
	87.57	83	37.00*	1.132E+01	1.458E-01	1.458E-01	55.37
TL-208	277.37	------	6.60	5.337E+00	------	Line Not Found	------
	583.19	46	85.00*	2.484E+00	1.590E-01	1.590E-01	50.00
	860.56	16	12.50	1.626E+00	5.801E-01	5.801E-01	48.51
BI-211	72.87	23	1.23	1.169E+01	1.192E+00	1.192E+00	148.37
	351.06	157	12.92*	4.232E+00	2.099E+00	2.099E+00	21.79
PB-212	74.82	160	10.28	1.166E+01	9.810E-01	9.810E-01	25.13
	77.11	283	17.10	1.162E+01	1.046E+00	1.046E+00	16.19
	238.63	208	43.60*	6.118E+00	5.726E-01	5.726E-01	19.03
	300.09	15	3.30	4.948E+00	6.685E-01	6.685E-01	135.59
BI-214	609.32	115	45.49*	2.369E+00	7.794E-01	7.795E-01	21.99
	1120.29	28	14.92	1.227E+00	1.127E+00	1.127E+00	48.29
	1764.49	9	15.30	7.839E-01	5.584E-01	5.585E-01	119.43
PB-214	74.82	160	5.80	1.166E+01	1.739E+00	1.739E+00	25.13
	77.11	283	9.70	1.162E+01	1.844E+00	1.844E+00	16.19
	87.09	83	3.41	1.132E+01	1.582E+00	1.582E+00	55.37
	242.00	67	7.25	6.045E+00	1.116E+00	1.116E+00	44.87
	295.22	100	18.42	5.030E+00	7.943E-01	7.943E-01	29.92
	351.93	157	35.60*	4.232E+00	7.619E-01	7.619E-01	21.79
RN-222	609.32	115	45.49*	2.369E+00	7.794E-01	7.795E-01	21.99
	1120.29	28	14.92	1.227E+00	1.127E+00	1.127E+00	48.29
	1764.49	9	15.30	7.839E-01	5.584E-01	5.585E-01	119.43
RA-224	240.99	67	4.10*	6.045E+00	1.973E+00	1.973E+00	44.87
RA-226	74.82	160	5.80	1.166E+01	1.739E+00	1.739E+00	25.13
	77.11	283	9.70	1.162E+01	1.844E+00	1.844E+00	16.19
	87.09	83	3.41	1.132E+01	1.582E+00	1.582E+00	55.37
	242.00	67	7.25	6.045E+00	1.116E+00	1.116E+00	44.87
	295.22	100	18.42	5.030E+00	7.943E-01	7.943E-01	29.92
	351.93	157	35.60*	4.232E+00	7.619E-01	7.619E-01	21.79
AC-228	105.21	------	1.10	1.061E+01	------	Line Not Found	------
	338.32	35	11.27	4.397E+00	5.240E-01	5.240E-01	66.47
	835.71	------	1.61	1.678E+00	------	Line Not Found	------
	911.20	28	25.80*	1.529E+00	5.193E-01	5.193E-01	75.19
	968.97	16	15.80	1.430E+00	5.205E-01	5.205E-01	94.85
RA-228	105.21	------	1.10	1.061E+01	------	Line Not Found	------
	338.32	35	11.27	4.397E+00	5.240E-01	5.240E-01	66.47
	835.71	------	1.61	1.678E+00	------	Line Not Found	------
	911.20	28	25.80*	1.529E+00	5.193E-01	5.193E-01	75.19
	968.97	16	15.80	1.430E+00	5.205E-01	5.205E-01	94.85
TH-228	74.82	160	10.28	1.166E+01	9.810E-01	9.810E-01	25.13
	77.11	283	17.10	1.162E+01	1.046E+00	1.046E+00	16.19
	238.63	208	43.60*	6.118E+00	5.726E-01	5.726E-01	19.03
	300.09	15	3.30	4.948E+00	6.685E-01	6.685E-01	135.59

Sample ID : G674299034 Acquisition date : 31-JUL-2024 16:13:25

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-230	74.82	160	5.80	1.166E+01	1.739E+00	1.739E+00	25.13
	77.11	283	9.70	1.162E+01	1.844E+00	1.844E+00	16.19
	87.09	83	3.41	1.132E+01	1.582E+00	1.582E+00	55.37
	242.00	67	7.25	6.045E+00	1.116E+00	1.116E+00	44.87
	295.22	100	18.42	5.030E+00	7.943E-01	7.943E-01	29.92
	351.93	157	35.60*	4.232E+00	7.619E-01	7.619E-01	21.79
PA-231	283.69	------	1.70	5.225E+00	------	Line Not Found	------
	301.36	15	5.35*	4.948E+00	4.123E-01	4.123E-01	135.59
TH-232	105.21	------	1.10	1.061E+01	------	Line Not Found	------
	338.32	35	11.27	4.397E+00	5.240E-01	5.240E-01	66.47
	835.71	------	1.61	1.678E+00	------	Line Not Found	------
	911.20	28	25.80*	1.529E+00	5.193E-01	5.193E-01	75.19
	968.97	16	15.80	1.430E+00	5.205E-01	5.205E-01	94.85
TH-234	63.29	27	3.70*	1.177E+01	4.615E-01	4.615E-01	135.11
	92.59	82	4.23	1.111E+01	1.275E+00	1.275E+00	50.55
U-234	74.82	160	5.80	1.166E+01	1.739E+00	1.739E+00	25.13
	77.11	283	9.70	1.162E+01	1.844E+00	1.844E+00	16.19
	87.09	83	3.41	1.132E+01	1.582E+00	1.582E+00	55.37
	242.00	67	7.25	6.045E+00	1.116E+00	1.116E+00	44.87
	295.22	100	18.42	5.030E+00	7.943E-01	7.943E-01	29.92
	351.93	157	35.60*	4.232E+00	7.619E-01	7.619E-01	21.79
U-235	89.96	36	3.47	1.121E+01	6.857E-01	6.857E-01	66.89
	93.35	82	5.60	1.111E+01	9.629E-01	9.629E-01	50.55
	143.76	------	10.96*	9.009E+00	------	Line Not Found	------
	163.33	------	5.08	8.277E+00	------	Line Not Found	------
	185.72	90	57.20	7.515E+00	1.532E-01	1.532E-01	36.49
	205.31	------	5.01	6.956E+00	------	Line Not Found	------
U-238	63.29	27	3.70*	1.177E+01	4.615E-01	4.615E-01	135.11
	92.59	82	4.23	1.111E+01	1.275E+00	1.275E+00	50.55
PU-239	129.30	25	0.01*	9.565E+00	2.986E+02	2.986E+02	112.07
	375.05	------	0.00	3.967E+00	------	Line Not Found	------
	413.71	3	0.00	3.595E+00	3.847E+02	3.847E+02	658.05
AM-243	43.53	------	5.90	1.082E+01	------	Line Not Found	------
	74.66	160	67.20*	1.166E+01	1.501E-01	1.501E-01	25.13
ANH-511	511.00	23	100.00*	2.866E+00	5.849E-02	5.849E-02	99.53

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:16:59.68

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
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*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299034.CNF;1  *
* Acquisition date : 31-JUL-2024 16:13:25 Sensitivity     : 3.000           *
* Detector ID      : GAM21                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.36     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:15:00 Analyst initials: MXR1            *
* Sample ID        : G674299034           Sample Quantity : 1.0238E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-JUL-2024 06:28:17 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM21_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	6.599E+00	1.602E+00	7.558E-01
KR-85	9.724E+00	6.940E+00	9.989E+00
SR-85	6.363E-02	4.541E-02	6.537E-02
CD-109	1.537E+00	8.339E-01	8.451E-01
SN-126	1.458E-01	7.909E-02	8.000E-02
TL-208	1.590E-01	7.791E-02	6.924E-02
BI-211	2.099E+00	4.484E-01	3.353E-01
PB-212	5.726E-01	1.068E-01	1.010E-01
BI-214	7.795E-01	1.679E-01	1.320E-01
PB-214	7.619E-01	1.627E-01	1.220E-01
RN-222	7.795E-01	1.679E-01	1.320E-01
RA-224	1.973E+00	8.674E-01	1.070E+00
RA-226	7.619E-01	1.627E-01	1.220E-01
AC-228	5.193E-01	3.826E-01	3.005E-01
RA-228	5.193E-01	3.826E-01	3.005E-01
TH-228	5.726E-01	1.068E-01	1.010E-01
TH-230	7.619E-01	1.627E-01	1.220E-01
PA-231	4.123E-01	5.479E-01	7.736E-01
TH-232	5.193E-01	3.826E-01	3.005E-01
TH-234	4.615E-01	6.111E-01	6.309E-01
U-234	7.619E-01	1.627E-01	1.220E-01
U-235	1.087E-01	1.403E-01	2.726E-01
U-238	4.615E-01	6.111E-01	6.309E-01
PU-239	2.986E+02	3.279E+02	3.878E+02
AM-243	1.501E-01	3.697E-02	3.711E-02
ANH-511	5.849E-02	5.705E-02	4.277E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-2.863E-01	4.099E-01	6.978E-01	NOT IDENT.
NA-22	-2.631E-02	5.912E-02	1.043E-01	NOT IDENT.
NA-24	0.000E+00	3.626E+15	0.000E+00	SHORT HLIF
AL-26	-1.880E-02	4.575E-02	8.833E-02	NOT IDENT.

SC-46	4.073E-02	5.158E-02	1.127E-01	FAIL ABUN
V-48	-4.659E-02	1.950E-01	3.734E-01	NOT IDENT.
CR-51	-7.972E-02	5.129E-01	9.748E-01	NOT IDENT.
MN-52	-1.742E+00	2.352E+00	3.974E+00	NOT IDENT.
MN-54	2.310E-03	3.919E-02	8.038E-02	NOT IDENT.
CO-56	-1.417E-02	5.166E-02	9.921E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	3.074E-04	1.391E-02	2.615E-02	NOT IDENT.
CO-58	-1.509E-02	5.000E-02	9.613E-02	NOT IDENT.
FE-59	1.329E-01	1.476E-01	3.409E-01	NOT IDENT.
CO-60	1.898E-02	4.865E-02	1.077E-01	NOT IDENT.
ZN-65	1.535E-01	1.150E-01	2.679E-01	NOT IDENT.
GE-68	5.057E-01	1.247E+00	2.840E+00	NOT IDENT.
AS-73	7.869E-02	1.525E-01	3.052E-01	NOT IDENT.
AS-74	4.342E-02	2.436E-01	4.659E-01	NOT IDENT.
SE-75	2.038E-02	3.727E-02	7.196E-02	NOT IDENT.
BR-77	0.000E+00	5.770E+03	0.000E+00	SHORT HLIF
SR-82	1.109E-01	5.315E-01	1.143E+00	NOT IDENT.
RB-83	7.843E-02	8.903E-02	1.851E-01	NOT IDENT.
RB-84	7.589E-02	1.245E-01	2.579E-01	NOT IDENT.
RB-86	5.118E-01	1.533E+00	3.463E+00	NOT IDENT.
Y-88	-4.893E-02	5.883E-02	8.970E-02	NOT IDENT.
Y-91	3.137E+00	4.103E+01	7.855E+01	NOT IDENT.
NB-94	-1.385E-02	4.070E-02	7.091E-02	NOT IDENT.
NB-95	-2.894E-02	5.516E-02	1.011E-01	NOT IDENT.
NB-95M	7.269E-04	1.434E-01	2.309E-01	NOT IDENT.
ZR-95	3.782E-02	1.036E-01	2.176E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	6.422E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.045E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	2.690E+40	0.000E+00	SHORT HLIF
RH-101	1.375E-03	2.178E-02	3.737E-02	NOT IDENT.
RH-102	1.703E-02	5.839E-02	1.167E-01	NOT IDENT.
RU-103	3.022E-02	5.095E-02	1.079E-01	FAIL ABUN
RH-106	-5.741E-02	3.068E-01	5.705E-01	NOT IDENT.
RU-106	-5.741E-02	3.068E-01	5.705E-01	NOT IDENT.
AG-108M	-8.065E-03	2.728E-02	5.023E-02	NOT IDENT.
AG-110	3.431E-01	7.340E-01	1.541E+00	NOT IDENT.
AG-110M	5.284E-02	6.153E-02	1.272E-01	FAIL ABUN
SN-113	-5.039E-02	4.557E-02	7.405E-02	NOT IDENT.
CD-115	0.000E+00	5.246E+03	0.000E+00	SHORT HLIF
SN-117M	4.033E-02	1.061E-01	1.999E-01	NOT IDENT.
SB-122	0.000E+00	4.002E+02	0.000E+00	SHORT HLIF
TE-123M	6.585E-03	2.242E-02	4.188E-02	NOT IDENT.
SB-124	-5.252E-02	1.328E-01	2.611E-01	NOT IDENT.
SB-125	-1.773E-02	9.357E-02	1.556E-01	NOT IDENT.
TE-125M	-2.003E+00	6.635E+00	1.200E+01	NOT IDENT.
I-126	5.198E-01	9.740E-01	9.542E-01	FAIL ABUN
SB-126	-1.586E-01	3.674E-01	6.432E-01	FAIL ABUN
SB-127	-4.173E-01	5.914E+01	1.100E+02	NOT IDENT.
I-131	3.762E-01	5.514E-01	1.158E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	4.329E+01	0.000E+00	SHORT HLIF
BA-133	3.103E-02	3.204E-02	6.716E-02	NOT IDENT.
I-133	0.000E+00	5.428E+10	0.000E+00	SHORT HLIF
CS-134	9.496E-03	5.137E-02	1.042E-01	FAIL ABUN
I-135	0.000E+00	6.042E+37	0.000E+00	SHORT HLIF
CS-136	8.761E-02	4.069E-01	8.282E-01	NOT IDENT.
BA-137M	1.910E-02	3.878E-02	7.422E-02	NOT IDENT.
CS-137	2.017E-02	4.097E-02	7.841E-02	NOT IDENT.
LA-138	3.522E-02	3.986E-02	1.254E-01	NOT IDENT.
CE-139	-1.662E-02	2.238E-02	3.709E-02	NOT IDENT.
BA-140	-2.067E-01	6.645E-01	1.223E+00	FAIL ABUN
LA-140	-7.485E-02	3.696E-01	7.482E-01	FAIL ABUN
CE-141	-2.567E-02	6.614E-02	1.155E-01	NOT IDENT.
CE-143	0.000E+00	2.506E+06	0.000E+00	SHORT HLIF
CE-144	-7.653E-03	1.314E-01	2.400E-01	NOT IDENT.
PM-144	-4.170E-03	3.638E-02	6.754E-02	NOT IDENT.
PR-144	-2.804E-01	2.759E+00	5.133E+00	NOT IDENT.
PM-146	-1.405E-02	4.266E-02	7.748E-02	NOT IDENT.
ND-147	-1.753E+00	2.099E+00	3.427E+00	FAIL ABUN
PM-147	1.910E+02	3.869E+02	7.667E+02	NOT IDENT.
PM-149	0.000E+00	3.379E+04	0.000E+00	SHORT HLIF
EU-150	-3.258E-04	2.422E-02	4.454E-02	FAIL ABUN
EU-152	-4.896E-02	8.037E-02	1.437E-01	NOT IDENT.
GD-153	-2.343E-02	4.361E-02	7.750E-02	NOT IDENT.
EU-154	-8.560E-02	1.631E-01	2.821E-01	NOT IDENT.
EU-155	2.472E-02	6.416E-02	1.210E-01	FAIL ABUN

TB-160	-6.963E-02	1.926E-01	3.468E-01	FAIL ABUN
HO-166M	1.654E-02	6.590E-02	1.303E-01	NOT IDENT.
TM-171	-3.292E-01	2.655E+00	5.060E+00	NOT IDENT.
HF-172	-1.865E-02	1.226E-01	2.062E-01	FAIL ABUN
LU-172	3.032E-02	6.861E-02	1.527E-01	FAIL ABUN
LU-176	-1.075E-02	1.776E-02	3.230E-02	FAIL ABUN
HF-181	-2.127E-03	5.649E-02	1.082E-01	NOT IDENT.
TA-182	1.266E-01	2.110E-01	4.825E-01	FAIL ABUN
RE-183	3.428E-02	5.036E-02	1.009E-01	NOT IDENT.
RE-184	-3.872E-02	2.333E-01	4.347E-01	NOT IDENT.
W-188	-2.492E+00	6.764E+00	1.129E+01	FAIL ABUN
IR-192	-1.039E-02	3.665E-02	6.845E-02	FAIL ABUN
HG-203	-1.667E-02	5.040E-02	8.374E-02	FAIL ABUN
TL-204	-1.021E+00	1.750E+00	2.899E+00	NOT IDENT.
BI-207	5.784E-03	5.727E-02	1.183E-01	FAIL ABUN
BI-210	6.847E-01	3.179E-01	6.946E-01	NOT IDENT.
PB-210	6.847E-01	3.179E-01	6.946E-01	NOT IDENT.
PB-211	4.633E-01	6.380E-01	1.339E+00	NOT IDENT.
BI-212	3.926E-01	5.985E-01	1.238E+00	NOT IDENT.
BI-213	-7.789E-02	9.412E-02	1.579E-01	NOT IDENT.
RN-219	-2.590E-01	3.479E-01	5.998E-01	FAIL ABUN
RA-223	7.262E-01	5.210E-01	1.159E+00	FAIL ABUN
AC-225	5.233E-01	1.817E+00	3.350E+00	NOT IDENT.
AC-227	-2.424E-01	2.210E-01	3.287E-01	FAIL ABUN
TH-227	-2.424E-01	2.210E-01	3.287E-01	FAIL ABUN
TH-229	1.624E-01	3.493E-01	6.676E-01	FAIL ABUN
TH-231	7.262E-01	5.210E-01	1.159E+00	FAIL ABUN
PA-233	3.693E-03	5.144E-02	1.013E-01	FAIL ABUN
PA-234	-1.177E-01	1.761E-01	3.044E-01	FAIL ABUN
PA-234M	3.858E+00	5.751E+00	1.259E+01	NOT IDENT.
NP-237	3.693E-03	5.144E-02	1.013E-01	FAIL ABUN
NP-238	0.000E+00	1.562E+04	0.000E+00	SHORT HLIF
NP-239	-1.089E-01	1.607E-01	2.771E-01	NOT IDENT.
AM-241	-2.509E-02	3.409E-02	6.132E-02	NOT IDENT.
CM-243	1.927E-03	5.500E-02	1.033E-01	NOT IDENT.
BK-247	-3.103E-03	6.146E-02	1.087E-01	NOT IDENT.
CM-247	5.217E-05	3.176E-02	6.145E-02	NOT IDENT.
CF-249	4.848E-02	3.747E-02	8.223E-02	NOT IDENT.
CF-251	1.134E-03	1.014E-01	1.816E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:16:58.17

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	90	10.66*	9.379E-01	6.599E+00	6.599E+00	24.77
KR-85	514.00	16	0.43*	2.839E+00	9.663E+00	9.724E+00	72.82
SR-85	514.00	16	96.00*	2.839E+00	4.369E-02	6.363E-02	72.82
CD-109	88.03	83	3.70*	1.132E+01	1.458E+00	1.537E+00	55.37
SN-126	64.28	27	9.60	1.177E+01	1.779E-01	1.779E-01	135.11
	86.94	83	8.90	1.132E+01	6.060E-01	6.060E-01	55.37
	87.57	83	37.00*	1.132E+01	1.458E-01	1.458E-01	55.37
TL-208	277.37	------	6.60	5.337E+00	------	Line Not Found	------
	583.19	46	85.00*	2.484E+00	1.590E-01	1.590E-01	50.00
	860.56	16	12.50	1.626E+00	5.801E-01	5.801E-01	48.51
BI-211	72.87	23	1.23	1.169E+01	1.192E+00	1.192E+00	148.37
	351.06	157	12.92*	4.232E+00	2.099E+00	2.099E+00	21.79
PB-212	74.82	160	10.28	1.166E+01	9.810E-01	9.810E-01	25.13
	77.11	283	17.10	1.162E+01	1.046E+00	1.046E+00	16.19
	238.63	208	43.60*	6.118E+00	5.726E-01	5.726E-01	19.03
	300.09	15	3.30	4.948E+00	6.685E-01	6.685E-01	135.59
BI-214	609.32	115	45.49*	2.369E+00	7.794E-01	7.795E-01	21.99
	1120.29	28	14.92	1.227E+00	1.127E+00	1.127E+00	48.29
	1764.49	9	15.30	7.839E-01	5.584E-01	5.585E-01	119.43
PB-214	74.82	160	5.80	1.166E+01	1.739E+00	1.739E+00	25.13
	77.11	283	9.70	1.162E+01	1.844E+00	1.844E+00	16.19
	87.09	83	3.41	1.132E+01	1.582E+00	1.582E+00	55.37
	242.00	67	7.25	6.045E+00	1.116E+00	1.116E+00	44.87
	295.22	100	18.42	5.030E+00	7.943E-01	7.943E-01	29.92
	351.93	157	35.60*	4.232E+00	7.619E-01	7.619E-01	21.79
RN-222	609.32	115	45.49*	2.369E+00	7.794E-01	7.795E-01	21.99
	1120.29	28	14.92	1.227E+00	1.127E+00	1.127E+00	48.29
	1764.49	9	15.30	7.839E-01	5.584E-01	5.585E-01	119.43
RA-224	240.99	67	4.10*	6.045E+00	1.973E+00	1.973E+00	44.87
RA-226	74.82	160	5.80	1.166E+01	1.739E+00	1.739E+00	25.13
	77.11	283	9.70	1.162E+01	1.844E+00	1.844E+00	16.19
	87.09	83	3.41	1.132E+01	1.582E+00	1.582E+00	55.37
	242.00	67	7.25	6.045E+00	1.116E+00	1.116E+00	44.87
	295.22	100	18.42	5.030E+00	7.943E-01	7.943E-01	29.92
	351.93	157	35.60*	4.232E+00	7.619E-01	7.619E-01	21.79
AC-228	105.21	------	1.10	1.061E+01	------	Line Not Found	------
	338.32	35	11.27	4.397E+00	5.240E-01	5.240E-01	66.47
	835.71	------	1.61	1.678E+00	------	Line Not Found	------
	911.20	28	25.80*	1.529E+00	5.193E-01	5.193E-01	75.19
	968.97	16	15.80	1.430E+00	5.205E-01	5.205E-01	94.85
RA-228	105.21	------	1.10	1.061E+01	------	Line Not Found	------
	338.32	35	11.27	4.397E+00	5.240E-01	5.240E-01	66.47
	835.71	------	1.61	1.678E+00	------	Line Not Found	------
	911.20	28	25.80*	1.529E+00	5.193E-01	5.193E-01	75.19
	968.97	16	15.80	1.430E+00	5.205E-01	5.205E-01	94.85
TH-228	74.82	160	10.28	1.166E+01	9.810E-01	9.810E-01	25.13
	77.11	283	17.10	1.162E+01	1.046E+00	1.046E+00	16.19

Sample ID : G674299034 Acquisition date : 31-JUL-2024 16:13:25

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	208	43.60*	6.118E+00	5.726E-01	5.726E-01	19.03
	300.09	15	3.30	4.948E+00	6.685E-01	6.685E-01	135.59
TH-230	74.82	160	5.80	1.166E+01	1.739E+00	1.739E+00	25.13
	77.11	283	9.70	1.162E+01	1.844E+00	1.844E+00	16.19
	87.09	83	3.41	1.132E+01	1.582E+00	1.582E+00	55.37
	242.00	67	7.25	6.045E+00	1.116E+00	1.116E+00	44.87
	295.22	100	18.42	5.030E+00	7.943E-01	7.943E-01	29.92
	351.93	157	35.60*	4.232E+00	7.619E-01	7.619E-01	21.79
PA-231	283.69	------	1.70	5.225E+00	------	Line Not Found	------
	301.36	15	5.35*	4.948E+00	4.123E-01	4.123E-01	135.59
TH-232	105.21	------	1.10	1.061E+01	------	Line Not Found	------
	338.32	35	11.27	4.397E+00	5.240E-01	5.240E-01	66.47
	835.71	------	1.61	1.678E+00	------	Line Not Found	------
	911.20	28	25.80*	1.529E+00	5.193E-01	5.193E-01	75.19
	968.97	16	15.80	1.430E+00	5.205E-01	5.205E-01	94.85
TH-234	63.29	27	3.70*	1.177E+01	4.615E-01	4.615E-01	135.11
	92.59	82	4.23	1.111E+01	1.275E+00	1.275E+00	50.55
U-234	74.82	160	5.80	1.166E+01	1.739E+00	1.739E+00	25.13
	77.11	283	9.70	1.162E+01	1.844E+00	1.844E+00	16.19
	87.09	83	3.41	1.132E+01	1.582E+00	1.582E+00	55.37
	242.00	67	7.25	6.045E+00	1.116E+00	1.116E+00	44.87
	295.22	100	18.42	5.030E+00	7.943E-01	7.943E-01	29.92
	351.93	157	35.60*	4.232E+00	7.619E-01	7.619E-01	21.79
U-235	89.96	36	3.47	1.121E+01	6.857E-01	6.857E-01	66.89
	93.35	82	5.60	1.111E+01	9.629E-01	9.629E-01	50.55
	143.76	------	10.96*	9.009E+00	------	Line Not Found	------
	163.33	------	5.08	8.277E+00	------	Line Not Found	------
	185.72	90	57.20	7.515E+00	1.532E-01	1.532E-01	36.49
	205.31	------	5.01	6.956E+00	------	Line Not Found	------
U-238	63.29	27	3.70*	1.177E+01	4.615E-01	4.615E-01	135.11
	92.59	82	4.23	1.111E+01	1.275E+00	1.275E+00	50.55
PU-239	129.30	25	0.01*	9.565E+00	2.986E+02	2.986E+02	112.07
	375.05	------	0.00	3.967E+00	------	Line Not Found	------
	413.71	3	0.00	3.595E+00	3.847E+02	3.847E+02	658.05
AM-243	43.53	------	5.90	1.082E+01	------	Line Not Found	------
	74.66	160	67.20*	1.166E+01	1.501E-01	1.501E-01	25.13
ANH-511	511.00	23	100.00*	2.866E+00	5.849E-02	5.849E-02	99.53

Flag: "*" = Keyline

Sample ID : G674299034 Acquisition date : 31-JUL-2024 16:13:25

Total number of lines in spectrum 32
Number of unidentified lines 0
Number of lines tentatively identified by NID 32 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	6.599E+00	6.599E+00	1.634E+00	24.77	
KR-85	10.56Y	1.01	9.663E+00	9.724E+00	7.082E+00	72.82	
SR-85	64.84D	1.46	4.369E-02	6.363E-02	4.634E-02	72.82	
CD-109	461.40D	1.05	1.458E+00	1.537E+00	0.851E+00	55.37	
SN-126	2.30E+05Y	1.00	1.458E-01	1.458E-01	0.807E-01	55.37	
TL-208	1.41E+10Y	1.00	1.590E-01	1.590E-01	0.795E-01	50.00	
BI-211	7.04E+08Y	1.00	2.099E+00	2.099E+00	0.458E+00	21.79	
PB-212	1.41E+10Y	1.00	5.726E-01	5.726E-01	1.090E-01	19.03	
BI-214	1600.00Y	1.00	7.794E-01	7.795E-01	1.714E-01	21.99	
PB-214	1600.00Y	1.00	7.619E-01	7.619E-01	1.660E-01	21.79	
RN-222	1600.00Y	1.00	7.794E-01	7.795E-01	1.714E-01	21.99	
RA-224	1.41E+10Y	1.00	1.973E+00	1.973E+00	0.885E+00	44.87	
RA-226	1600.00Y	1.00	7.619E-01	7.619E-01	1.660E-01	21.79	
AC-228	1.41E+10Y	1.00	5.193E-01	5.193E-01	3.905E-01	75.19	
RA-228	1.41E+10Y	1.00	5.193E-01	5.193E-01	3.905E-01	75.19	
TH-228	1.41E+10Y	1.00	5.726E-01	5.726E-01	1.090E-01	19.03	
TH-230	7.54E+04Y	1.00	7.619E-01	7.619E-01	1.660E-01	21.79	
PA-231	7.04E+08Y	1.00	4.123E-01	4.123E-01	5.591E-01	135.59	
TH-232	1.41E+10Y	1.00	5.193E-01	5.193E-01	3.905E-01	75.19	
TH-234	4.47E+09Y	1.00	4.615E-01	4.615E-01	6.235E-01	135.11	
U-234	2.45E+05Y	1.00	7.619E-01	7.619E-01	1.660E-01	21.79	
U-235	7.04E+08Y	1.00	1.532E-01	1.532E-01	0.559E-01	36.49	K
U-238	4.47E+09Y	1.00	4.615E-01	4.615E-01	6.235E-01	135.11	
PU-239	24110.00Y	1.00	2.986E+02	2.986E+02	3.346E+02	112.07	
AM-243	7370.00Y	1.00	1.501E-01	1.501E-01	0.377E-01	25.13	
ANH-511	1.00E+09Y	1.00	5.849E-02	5.849E-02	5.822E-02	99.53	
		Total Activity :	3.297E+02	3.299E+02			
		Grand Total Activity :	3.297E+02	3.299E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299034 Acquisition date : 31-JUL-2024 16:13:25

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	270.87	23	32	0.61	541.72	536	10	6.59E-03	****	5.46E+00	T
0	423.52	15	38	2.31	846.81	841	14	4.43E-03	****	3.50E+00	T
0	487.87	8	14	0.54	975.46	971	11	2.43E-03	****	3.01E+00	T
0	569.72	9	22	0.83	1139.08	1133	10	2.61E-03	****	2.55E+00	T
0	665.27	8	12	1.34	1330.11	1322	10	2.22E-03	****	2.15E+00	T
0	886.06	7	4	0.94	1771.57	1766	9	2.20E-03	****	1.58E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:17:09.54

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299034.CNF;1  *
* Acquisition date : 31-JUL-2024 16:13:25 Sensitivity     : 3.000           *
* Detector ID      : GAM21                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.36     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:15:00 Nuclide Library : SOLID           *
* Sample ID        : G674299034           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0238E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-JUL-2024 06:28:17 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM21_CAN.CNF;26            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.794E-01
KR-85	4.191E+00
SR-85	2.742E-02
CD-109	3.976E-01
SN-126	3.764E-02
TL-208	2.995E-02
BI-211	1.497E-01
PB-212	4.679E-02
BI-214	5.683E-02
PB-214	5.448E-02
RN-222	5.683E-02
RA-224	4.952E-01
RA-226	5.448E-02
AC-228	1.253E-01
RA-228	1.253E-01
TH-228	4.679E-02
TH-230	5.447E-02
PA-231	3.494E-01
TH-232	1.253E-01
TH-234	2.927E-01
U-234	5.447E-02
U-235	1.263E-01
U-238	2.927E-01
PU-239	1.776E+02
AM-243	1.729E-02
ANH-511	1.794E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.004E-01	NOT IDENT.
NA-22	4.277E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.129E-02	NOT IDENT.
SC-46	4.796E-02	FAIL ABUN

V-48	1.545E-01	NOT IDENT.
CR-51	4.358E-01	NOT IDENT.
MN-52	1.177E+00	NOT IDENT.
MN-54	3.385E-02	NOT IDENT.
CO-56	4.144E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.180E-02	NOT IDENT.
CO-58	4.001E-02	NOT IDENT.
FE-59	1.464E-01	NOT IDENT.
CO-60	4.417E-02	NOT IDENT.
ZN-65	1.165E-01	NOT IDENT.
GE-68	1.158E+00	NOT IDENT.
AS-73	1.413E-01	NOT IDENT.
AS-74	2.058E-01	NOT IDENT.
SE-75	3.229E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	4.774E-01	NOT IDENT.
RB-83	8.220E-02	NOT IDENT.
RB-84	1.100E-01	NOT IDENT.
RB-86	1.402E+00	NOT IDENT.
Y-88	2.835E-02	NOT IDENT.
Y-91	3.424E+01	NOT IDENT.
NB-94	3.058E-02	NOT IDENT.
NB-95	4.274E-02	NOT IDENT.
NB-95M	1.061E-01	NOT IDENT.
ZR-95	9.465E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.715E-02	NOT IDENT.
RH-102	5.047E-02	NOT IDENT.
RU-103	4.713E-02	FAIL ABUN
RH-106	2.395E-01	NOT IDENT.
RU-106	2.395E-01	NOT IDENT.
AG-108M	2.192E-02	NOT IDENT.
AG-110	6.599E-01	NOT IDENT.
AG-110M	5.414E-02	FAIL ABUN
SN-113	3.207E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	9.185E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	1.923E-02	NOT IDENT.
SB-124	9.252E-02	NOT IDENT.
SB-125	6.800E-02	NOT IDENT.
TE-125M	5.464E+00	NOT IDENT.
I-126	3.850E-01	FAIL ABUN
SB-126	2.546E-01	FAIL ABUN
SB-127	4.777E+01	NOT IDENT.
I-131	5.174E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.975E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.537E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	3.545E-01	NOT IDENT.
BA-137M	3.204E-02	NOT IDENT.
CS-137	3.384E-02	NOT IDENT.
LA-138	4.693E-02	NOT IDENT.
CE-139	1.674E-02	NOT IDENT.
BA-140	5.106E-01	FAIL ABUN
LA-140	2.930E-01	FAIL ABUN
CE-141	5.288E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.097E-01	NOT IDENT.
PM-144	2.860E-02	NOT IDENT.
PR-144	2.175E+00	NOT IDENT.
PM-146	3.402E-02	NOT IDENT.
ND-147	1.461E+00	FAIL ABUN
PM-147	3.475E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.996E-02	FAIL ABUN
EU-152	6.324E-02	NOT IDENT.
GD-153	3.530E-02	NOT IDENT.
EU-154	1.147E-01	NOT IDENT.
EU-155	5.601E-02	FAIL ABUN
TB-160	1.446E-01	FAIL ABUN

HO-166M	5.605E-02	NOT IDENT.
TM-171	2.340E+00	NOT IDENT.
HF-172	9.378E-02	FAIL ABUN
LU-172	6.349E-02	FAIL ABUN
LU-176	1.397E-02	FAIL ABUN
HF-181	4.695E-02	NOT IDENT.
TA-182	2.011E-01	FAIL ABUN
RE-183	4.696E-02	NOT IDENT.
RE-184	1.840E-01	NOT IDENT.
W-188	4.961E+00	FAIL ABUN
IR-192	3.070E-02	FAIL ABUN
HG-203	3.802E-02	FAIL ABUN
TL-204	1.341E+00	NOT IDENT.
BI-207	4.894E-02	FAIL ABUN
BI-210	3.263E-01	NOT IDENT.
PB-210	3.263E-01	NOT IDENT.
PB-211	5.982E-01	NOT IDENT.
BI-212	5.432E-01	NOT IDENT.
BI-213	6.763E-02	NOT IDENT.
RN-219	2.594E-01	FAIL ABUN
RA-223	5.256E-01	FAIL ABUN
AC-225	1.525E+00	NOT IDENT.
AC-227	1.462E-01	FAIL ABUN
TH-227	1.462E-01	FAIL ABUN
TH-229	3.031E-01	FAIL ABUN
TH-231	5.256E-01	FAIL ABUN
PA-233	4.529E-02	FAIL ABUN
PA-234	9.621E-02	FAIL ABUN
PA-234M	5.448E+00	NOT IDENT.
NP-237	4.529E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.262E-01	NOT IDENT.
AM-241	2.831E-02	NOT IDENT.
CM-243	4.722E-02	NOT IDENT.
BK-247	4.842E-02	NOT IDENT.
CM-247	2.701E-02	NOT IDENT.
CF-249	3.722E-02	NOT IDENT.
CF-251	8.349E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:17:14.01

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299034.CNF;1  *
* Acquisition date : 31-JUL-2024 16:13:25 Sensitivity     : 3.000           *
* Detector ID      : GAM21                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.36     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:15:00 Nuclide Library : SOLID           *
* Sample ID        : G674299034           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0238E+02 GRAM *
*                                         Quantity Err(%) : 1.9535E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-JUL-2024 06:28:17 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM21_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	6.599E+00	1.726E+00	1.726E+00
KR-85	9.724E+00	7.005E+00	7.005E+00
SR-85	6.363E-02	4.584E-02	4.584E-02
CD-109	1.537E+00	8.478E-01	8.478E-01
SN-126	1.458E-01	8.004E-02	8.004E-02
TL-208	1.590E-01	7.970E-02	7.970E-02
BI-211	2.099E+00	4.851E-01	4.851E-01
PB-212	5.726E-01	1.317E-01	1.317E-01
BI-214	7.795E-01	1.880E-01	1.880E-01
PB-214	7.619E-01	1.756E-01	1.756E-01
RN-222	7.795E-01	1.880E-01	1.880E-01
RA-224	1.973E+00	9.056E-01	9.056E-01
RA-226	7.619E-01	1.756E-01	1.756E-01
AC-228	5.193E-01	3.890E-01	3.890E-01
RA-228	5.193E-01	3.890E-01	3.890E-01
TH-228	5.726E-01	1.317E-01	1.317E-01
TH-230	7.619E-01	1.756E-01	1.756E-01
PA-231	4.123E-01	5.558E-01	5.558E-01
TH-232	5.193E-01	3.890E-01	3.890E-01
TH-234	4.615E-01	6.201E-01	6.201E-01
U-234	7.619E-01	1.756E-01	1.756E-01
U-235	1.087E-01	1.413E-01	1.413E-01
U-238	4.615E-01	6.201E-01	6.201E-01
PU-239	2.986E+02	3.307E+02	3.307E+02
AM-243	1.501E-01	3.903E-02	3.903E-02
ANH-511	5.849E-02	5.734E-02	5.734E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-2.863E-01	4.108E-01	4.306E-01	NOT IDENT.
NA-22	-2.631E-02	5.917E-02	6.035E-02	NOT IDENT.
NA-24	-2.291E+15	3.634E+15	3.778E+15	SHORT HLIF
AL-26	-1.880E-02	4.578E-02	4.655E-02	NOT IDENT.

SC-46	4.073E-02	5.186E-02	5.501E-02	FAIL ABUN
V-48	-4.659E-02	1.951E-01	1.962E-01	NOT IDENT.
CR-51	-7.972E-02	5.130E-01	5.142E-01	NOT IDENT.
MN-52	-1.742E+00	2.358E+00	2.485E+00	NOT IDENT.
MN-54	2.310E-03	3.919E-02	3.920E-02	NOT IDENT.
CO-56	-1.417E-02	5.169E-02	5.208E-02	NOT IDENT.
MN-56	-1.000E+41	3.646E+41	0.000E+00	SHORT HLIF
CO-57	3.074E-04	1.391E-02	1.391E-02	NOT IDENT.
CO-58	-1.509E-02	5.004E-02	5.050E-02	NOT IDENT.
FE-59	1.329E-01	1.484E-01	1.601E-01	NOT IDENT.
CO-60	1.898E-02	4.869E-02	4.943E-02	NOT IDENT.
ZN-65	1.535E-01	1.160E-01	1.350E-01	NOT IDENT.
GE-68	5.057E-01	1.249E+00	1.269E+00	NOT IDENT.
AS-73	7.869E-02	1.534E-01	1.574E-01	NOT IDENT.
AS-74	4.342E-02	2.436E-01	2.444E-01	NOT IDENT.
SE-75	2.038E-02	3.734E-02	3.845E-02	NOT IDENT.
BR-77	3.093E+04	3.220E+04	3.509E+04	SHORT HLIF
SR-82	1.109E-01	5.316E-01	5.340E-01	NOT IDENT.
RB-83	7.843E-02	8.995E-02	9.665E-02	NOT IDENT.
RB-84	7.589E-02	1.249E-01	1.295E-01	NOT IDENT.
RB-86	5.118E-01	1.534E+00	1.552E+00	NOT IDENT.
Y-88	-4.893E-02	5.894E-02	6.293E-02	NOT IDENT.
Y-91	3.137E+00	4.103E+01	4.106E+01	NOT IDENT.
NB-94	-1.385E-02	4.073E-02	4.121E-02	NOT IDENT.
NB-95	-2.894E-02	5.527E-02	5.679E-02	NOT IDENT.
NB-95M	7.269E-04	1.434E-01	1.434E-01	NOT IDENT.
ZR-95	3.782E-02	1.037E-01	1.051E-01	NOT IDENT.
NB-97	1.000E+41	1.267E+42	0.000E+00	SHORT HLIF
ZR-97	-1.984E+14	6.425E+14	6.487E+14	SHORT HLIF
MO-99	2.707E+02	2.045E+03	2.049E+03	SHORT HLIF
TC-99M	-6.661E+39	2.693E+40	0.000E+00	SHORT HLIF
RH-101	1.375E-03	2.178E-02	2.179E-02	NOT IDENT.
RH-102	1.703E-02	5.843E-02	5.893E-02	NOT IDENT.
RU-103	3.022E-02	5.104E-02	5.282E-02	FAIL ABUN
RH-106	-5.741E-02	3.069E-01	3.080E-01	NOT IDENT.
RU-106	-5.741E-02	3.069E-01	3.080E-01	NOT IDENT.
AG-108M	-8.065E-03	2.728E-02	2.753E-02	NOT IDENT.
AG-110	3.431E-01	7.351E-01	7.512E-01	NOT IDENT.
AG-110M	5.284E-02	6.195E-02	6.637E-02	FAIL ABUN
SN-113	-5.039E-02	4.576E-02	5.108E-02	NOT IDENT.
CD-115	6.191E+03	5.290E+03	5.981E+03	SHORT HLIF
SN-117M	4.033E-02	1.063E-01	1.078E-01	NOT IDENT.
SB-122	-9.728E+01	4.003E+02	4.027E+02	SHORT HLIF
TE-123M	6.585E-03	2.245E-02	2.265E-02	NOT IDENT.
SB-124	-5.252E-02	1.329E-01	1.350E-01	NOT IDENT.
SB-125	-1.773E-02	9.358E-02	9.392E-02	NOT IDENT.
TE-125M	-2.003E+00	6.639E+00	6.700E+00	NOT IDENT.
I-126	5.198E-01	9.760E-01	1.004E+00	FAIL ABUN
SB-126	-1.586E-01	3.682E-01	3.751E-01	FAIL ABUN
SB-127	-4.173E-01	5.914E+01	5.914E+01	NOT IDENT.
I-131	3.762E-01	5.524E-01	5.778E-01	NOT IDENT.
I-132	1.000E+41	7.035E+42	0.000E+00	SHORT HLIF
TE-132	-1.387E+01	4.335E+01	4.380E+01	SHORT HLIF
BA-133	3.103E-02	3.215E-02	3.506E-02	NOT IDENT.
I-133	-2.007E+10	5.450E+10	5.524E+10	SHORT HLIF
CS-134	9.496E-03	5.138E-02	5.156E-02	FAIL ABUN
I-135	-1.812E+37	6.214E+37	0.000E+00	SHORT HLIF
CS-136	8.761E-02	4.070E-01	4.090E-01	NOT IDENT.
BA-137M	1.910E-02	3.884E-02	3.978E-02	NOT IDENT.
CS-137	2.017E-02	4.103E-02	4.203E-02	NOT IDENT.
LA-138	3.522E-02	3.999E-02	4.303E-02	NOT IDENT.
CE-139	-1.662E-02	2.280E-02	2.400E-02	NOT IDENT.
BA-140	-2.067E-01	6.648E-01	6.713E-01	FAIL ABUN
LA-140	-7.485E-02	3.697E-01	3.712E-01	FAIL ABUN
CE-141	-2.567E-02	6.626E-02	6.726E-02	NOT IDENT.
CE-143	5.786E+05	2.506E+06	2.520E+06	SHORT HLIF
CE-144	-7.653E-03	1.314E-01	1.315E-01	NOT IDENT.
PM-144	-4.170E-03	3.639E-02	3.643E-02	NOT IDENT.
PR-144	-2.804E-01	2.759E+00	2.762E+00	NOT IDENT.
PM-146	-1.405E-02	4.268E-02	4.315E-02	NOT IDENT.
ND-147	-1.753E+00	2.106E+00	2.250E+00	FAIL ABUN
PM-147	1.910E+02	3.878E+02	3.973E+02	NOT IDENT.
PM-149	-6.164E+03	3.380E+04	3.391E+04	SHORT HLIF
EU-150	-3.258E-04	2.422E-02	2.422E-02	FAIL ABUN
EU-152	-4.896E-02	8.050E-02	8.347E-02	NOT IDENT.
GD-153	-2.343E-02	4.367E-02	4.493E-02	NOT IDENT.
EU-154	-8.560E-02	1.633E-01	1.678E-01	NOT IDENT.
EU-155	2.472E-02	6.423E-02	6.519E-02	FAIL ABUN

TB-160	-6.963E-02	1.928E-01	1.954E-01	FAIL ABUN
HO-166M	1.654E-02	6.593E-02	6.635E-02	NOT IDENT.
TM-171	-3.292E-01	2.656E+00	2.660E+00	NOT IDENT.
HF-172	-1.865E-02	1.227E-01	1.230E-01	FAIL ABUN
LU-172	3.032E-02	6.874E-02	7.009E-02	FAIL ABUN
LU-176	-1.075E-02	1.778E-02	1.843E-02	FAIL ABUN
HF-181	-2.127E-03	5.649E-02	5.650E-02	NOT IDENT.
TA-182	1.266E-01	2.113E-01	2.188E-01	FAIL ABUN
RE-183	3.428E-02	5.052E-02	5.283E-02	NOT IDENT.
RE-184	-3.872E-02	2.334E-01	2.340E-01	NOT IDENT.
W-188	-2.492E+00	6.773E+00	6.866E+00	FAIL ABUN
IR-192	-1.039E-02	3.666E-02	3.696E-02	FAIL ABUN
HG-203	-1.667E-02	5.042E-02	5.098E-02	FAIL ABUN
TL-204	-1.021E+00	1.753E+00	1.812E+00	NOT IDENT.
BI-207	5.784E-03	5.727E-02	5.733E-02	FAIL ABUN
BI-210	6.847E-01	3.246E-01	4.479E-01	NOT IDENT.
PB-210	6.847E-01	3.246E-01	4.479E-01	NOT IDENT.
PB-211	4.633E-01	6.393E-01	6.726E-01	NOT IDENT.
BI-212	3.926E-01	6.004E-01	6.259E-01	NOT IDENT.
BI-213	-7.789E-02	9.438E-02	1.007E-01	NOT IDENT.
RN-219	-2.590E-01	3.500E-01	3.689E-01	FAIL ABUN
RA-223	7.262E-01	5.260E-01	6.196E-01	FAIL ABUN
AC-225	5.233E-01	1.819E+00	1.834E+00	NOT IDENT.
AC-227	-2.424E-01	2.248E-01	2.499E-01	FAIL ABUN
TH-227	-2.424E-01	2.248E-01	2.499E-01	FAIL ABUN
TH-229	1.624E-01	3.503E-01	3.578E-01	FAIL ABUN
TH-231	7.262E-01	5.260E-01	6.196E-01	FAIL ABUN
PA-233	3.693E-03	5.144E-02	5.147E-02	FAIL ABUN
PA-234	-1.177E-01	2.222E-01	2.284E-01	FAIL ABUN
PA-234M	3.858E+00	5.770E+00	6.026E+00	NOT IDENT.
NP-237	3.693E-03	5.144E-02	5.147E-02	FAIL ABUN
NP-238	-4.663E+02	1.562E+04	1.562E+04	SHORT HLIF
NP-239	-1.089E-01	1.615E-01	1.688E-01	NOT IDENT.
AM-241	-2.509E-02	3.416E-02	3.599E-02	NOT IDENT.
CM-243	1.927E-03	5.500E-02	5.501E-02	NOT IDENT.
BK-247	-3.103E-03	6.146E-02	6.148E-02	NOT IDENT.
CM-247	5.217E-05	3.176E-02	3.176E-02	NOT IDENT.
CF-249	4.848E-02	3.784E-02	4.370E-02	NOT IDENT.
CF-251	1.134E-03	1.014E-01	1.014E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	39.6830	85.43	72.3140	131.20	35.7995
45.60	59.3300	86.55	84.4411	133.02	38.5970
46.54	36.3693	86.79	84.4988	133.52	38.9697
49.72	0.0000	86.94	84.5357	136.00	39.1684
51.35	46.6213	87.09	84.5718	136.47	39.2056
51.87	43.5554	87.57	84.6873	140.51	0.0000
52.39	53.1734	88.03	84.7979	143.76	38.7578
52.97	38.9811	88.34	46.6200	144.24	35.7311
53.44	43.0418	88.47	46.6370	145.44	47.0704
54.07	45.5495	89.96	68.4477	152.43	45.6241
57.36	0.0000	1093.63	57.7490	153.25	47.7702
57.53	39.6974	91.11	57.8242	323.87	33.2905
57.98	47.0701	92.59	58.0596	156.02	53.2334
59.27	53.8274	93.35	58.1797	158.56	32.5070
59.32	60.3635	94.56	40.1295	159.00	33.5820
59.54	62.8630	94.65	40.1392	162.33	28.5038
60.96	58.0003	94.67	40.1412	162.66	30.6333
61.17	58.0453	94.87	41.3797	163.33	40.1877
62.93	55.3901	97.43	44.1123	165.86	41.4280
63.29	55.4625	98.43	41.4634	176.31	40.0075
63.58	55.5205	98.44	41.4645	176.60	40.0267
64.28	48.7373	99.53	30.4934	177.52	43.3380
66.73	54.7467	100.11	37.9426	181.07	0.0000
67.24	47.8480	102.03	39.9890	181.52	52.3469
125.81	53.8057	103.18	45.7012	184.41	49.6698
67.75	53.8188	103.37	37.3248	143.76	35.1343
68.89	54.0288	105.21	41.2463	193.51	25.5627
69.67	55.0188	105.31	41.2564	197.03	36.8747
70.82	63.4438	106.12	51.6737	198.01	50.3586
70.83	63.4466	106.47	50.7778	201.83	46.1456
72.81	62.4364	109.28	39.7643	203.43	42.8712
72.87	62.4487	111.00	38.9777	205.31	24.8890
74.66	62.8112	111.76	0.0000	210.85	42.1969
74.82	62.8430	114.06	45.0045	215.65	32.1520
74.97	62.8731	116.30	0.0000	218.12	29.9594
77.11	63.2997	116.74	47.2108	222.11	38.2368
78.74	63.6210	119.76	42.6844	227.09	30.3315
79.69	63.8065	121.12	30.1646	227.38	30.3434
80.03	63.8717	121.22	24.3317	228.16	0.0000
80.12	63.8900	121.78	28.2598	228.18	33.8813
80.19	63.9034	122.06	28.2774	116.74	33.8813
80.57	63.9775	122.92	33.2156	235.69	42.4825
81.00	64.0605	123.07	33.2265	235.96	44.0713
81.07	64.0738	265.00	32.2925	238.63	53.7019
81.75	64.2053	125.81	36.7024	238.98	0.0000
82.47	76.3901	127.23	40.7588	240.99	52.2822
83.79	54.8611	127.91	42.1349	242.00	39.6596
84.00	54.8952	129.30	39.6179	244.70	33.4294

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	25.3163	344.28	25.7632	563.25	17.8972
252.80	31.3594	345.93	23.1346	564.24	0.0000
254.15	0.0000	351.06	23.2483	569.33	15.8527
256.23	39.9713	351.93	23.2673	946.00	15.8545
260.90	0.0000	355.39	0.0000	569.70	15.8563
264.66	18.3554	356.01	9.4325	583.19	13.8580
264.80	18.3586	364.49	15.3924	584.27	13.8675
265.00	23.2595	366.42	0.0000	595.83	17.1882
269.46	17.2296	372.51	15.5052	427.87	17.2383
270.03	17.2411	375.05	18.2833	602.52	0.0000
271.23	17.2654	377.52	17.4074	604.72	12.9604
273.65	26.3841	356.01	19.3478	607.14	12.9790
276.40	31.0173	388.16	13.8721	609.32	12.9961
277.37	32.2937	388.63	17.5786	610.33	13.0039
277.60	36.0296	391.69	27.8296	614.28	11.7308
278.00	36.0464	264.66	19.6307	618.01	6.5315
279.20	38.5854	401.81	22.4570	620.36	4.3604
279.54	33.6198	402.40	17.7874	621.93	10.9106
279.70	33.6256	404.85	15.0098	630.19	0.0000
280.46	23.6833	410.95	11.3149	631.29	10.9701
283.69	25.0214	413.71	19.8464	633.25	10.9823
284.31	21.7005	414.70	17.0251	634.78	13.1904
285.41	17.5487	423.72	15.2454	635.95	9.8994
285.90	0.0000	427.09	20.0639	636.99	11.0059
287.50	22.6159	427.87	18.6423	657.50	7.7938
290.67	22.6956	433.94	19.2135	657.76	8.9085
293.27	0.0000	439.40	11.5778	657.90	0.0000
351.93	27.3718	440.45	21.2436	661.66	8.3698
295.96	40.5830	453.88	21.4651	664.57	0.0000
879.38	40.6992	463.37	18.6718	666.33	6.7131
299.98	29.5515	468.07	19.7237	666.50	6.7136
300.09	29.5551	473.00	14.8468	667.71	0.0000
300.13	29.5565	475.06	15.8607	677.62	4.5031
301.36	29.3403	476.78	21.8362	685.70	14.6985
302.85	24.2765	477.60	20.8560	692.65	0.0000
256.23	19.4555	482.18	14.9469	695.00	13.6357
304.85	17.9264	487.02	9.9996	696.49	11.3721
306.78	20.5293	492.35	0.0000	696.51	11.3721
308.46	16.2810	497.08	10.0714	697.00	12.5124
311.90	19.7801	505.52	15.1971	697.30	11.3770
316.51	29.3806	507.63	0.0000	697.49	11.3778
319.41	21.6680	511.00	9.1530	702.65	17.1130
320.08	26.0193	514.00	9.1718	706.68	13.7197
321.04	29.5176	514.00	9.1718	711.68	10.3165
323.87	13.9307	520.40	11.0544	720.70	8.0613
325.23	27.0279	520.69	0.0000	721.93	0.0000
328.76	10.4995	522.65	0.0000	722.78	6.9172
333.37	21.9747	527.90	0.0000	722.91	6.9177
333.97	25.3295	528.26	5.1451	723.31	13.8379
334.37	31.6743	529.59	17.5091	724.19	14.9979
338.28	27.3804	529.87	0.0000	727.33	10.4000
338.32	27.3811	531.02	20.6185	733.00	16.2240
311.90	26.5540	537.26	11.3872	735.93	11.6060
340.48	26.5540	546.56	0.0000	333.97	11.6150
340.55	27.8836	552.55	17.7754	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	10.4890	949.00	2.8740	1384.29	3.3312
747.24	13.1310	667.71	0.0000	1408.01	5.5899
748.06	10.5088	962.31	12.8418	1434.09	3.6039
752.31	13.1639	964.08	10.7950	1435.80	0.0000
753.82	10.5388	966.17	12.3473	1457.56	0.0000
756.73	11.4337	911.20	13.5198	1460.82	2.7230
756.80	12.3137	983.53	9.7125	1489.16	5.4882
884.68	11.4742	984.45	0.0000	1505.03	5.5116
765.81	15.0182	1274.44	10.7368	1584.12	4.6890
766.42	13.2555	1001.03	7.8228	1596.21	5.6440
766.84	10.6066	1002.74	11.7422	1620.50	1.8929
772.60	0.0000	1004.73	11.7510	1621.92	1.8936
776.52	7.1040	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	3.8518
778.90	8.0013	1028.54	0.0000	1750.46	0.0000
783.70	12.4752	1037.84	8.9242	1764.49	8.1649
788.74	16.9712	1038.76	0.0000	1063.66	2.9432
792.07	17.8925	631.29	8.9533	1771.35	3.9254
795.86	13.4436	1048.07	9.9536	1791.20	0.0000
810.06	9.9241	1049.04	8.9615	1808.65	3.9590
810.29	9.9251	1050.41	9.9622	1810.72	0.0000
344.28	12.6328	1063.66	7.0077	1836.06	4.9792
810.76	10.8300	1077.00	4.0237		
815.77	7.2366	1077.34	4.0242		
1048.07	5.4344	1085.87	5.0458		
832.01	8.2018	1093.63	5.0598		
834.85	9.1248	1099.45	5.0702		
835.71	7.3027	1112.07	15.2783		
836.80	0.0000	1112.84	16.3008		
846.75	0.0000	1115.54	3.2633		
846.77	11.0087	1120.29	12.2578		
856.80	1.4744	1120.55	12.2585		
860.56	2.7690	1221.41	6.5398		
871.09	8.3454	1129.67	14.3469		
873.19	6.4967	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	11.6990	1173.23	10.4010		
880.51	5.9588	1177.95	7.2922		
881.60	5.9615	1189.05	11.5015		
883.24	7.4573	1204.77	14.7135		
884.68	10.4463	1221.41	4.2266		
889.28	4.4859	1231.02	10.5994		
894.76	10.3041	1235.36	11.6754		
898.04	8.4424	1238.28	5.3119		
900.72	8.4521	1260.41	0.0000		
903.28	11.8187	1271.87	7.5157		
911.20	8.4894	1274.44	10.7452		
912.08	8.4924	1274.54	10.7458		
923.98	0.0000	1291.59	5.4013		
926.50	9.4928	1298.22	0.0000		
929.11	10.4532	1312.11	4.3481		
935.54	9.5279	1332.49	4.3748		
937.49	11.4426	1362.66	0.0000		
944.13	7.6492	1365.19	4.4172		
946.00	3.8274	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:17:42.91

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299035.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM22.CNF;678
                                         Background date  : 28-JUL-2024 11:28:18
Sample date      : 26-JUN-2024 12:20:00  Acquisition date : 31-JUL-2024 16:13:52
Sample ID        : G674299035            Sample quantity  : 9.41800E+01 GRAM
Detector name    : GAM22                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:03.84  0.1%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	41.58	38	378	1.25	83.69	81	7	1.06E-02	86.2	
2	0	74.92	26	196	1.28	150.35	145	10	7.23E-03	102.3	
3	0	98.27	18	134	1.39	197.05	192	11	5.04E-03	126.0	
4	0	113.20	26	76	1.58	226.91	223	8	7.31E-03	61.1	
5	0	166.27	32	155	4.84	333.02	322	16	8.89E-03	89.0	
6	0	185.94*	42	121	1.23	372.36	366	13	1.18E-02	59.2	
7	4	238.72*	138	93	1.63	477.91	470	26	3.83E-02	16.0	1.22E+00
8	4	241.85	60	58	1.38	484.17	470	26	1.67E-02	27.4	
9	4	245.75	41	54	2.24	491.97	470	26	1.14E-02	38.9	
10	0	288.06	46	35	1.38	576.58	571	11	1.28E-02	29.1	
11	0	295.02*	123	35	2.09	590.49	583	14	3.42E-02	14.1	
12	0	351.86*	152	68	1.68	704.17	695	17	4.23E-02	15.1	
13	0	421.17	11	64	3.31	842.77	826	19	3.12E-03	170.8	
14	0	436.35	17	46	1.49	873.12	867	13	4.58E-03	87.8	
15	0	492.22	34	39	6.05	984.86	972	22	9.57E-03	49.0	
16	0	511.31*	12	52	2.95	1023.03	1013	20	3.41E-03	182.8	
17	0	553.11*	31	12	3.90	1106.64	1100	12	8.58E-03	29.7	
18	0	583.32*	33	38	1.92	1167.05	1158	14	9.10E-03	46.1	
19	0	609.76*	100	39	1.55	1219.93	1213	16	2.77E-02	18.5	
20	0	635.47	13	28	3.41	1271.35	1261	14	3.74E-03	87.6	
21	0	661.02	27	17	1.15	1322.45	1315	14	7.36E-03	38.7	
22	0	728.36	26	20	0.96	1457.13	1448	16	7.29E-03	42.8	
23	0	772.01	33	34	12.26	1544.43	1531	28	9.12E-03	53.8	
24	0	850.05	14	14	3.67	1700.52	1695	11	3.85E-03	58.5	
25	0	900.49	7	13	2.13	1801.42	1796	9	2.07E-03	95.3	
26	0	910.79*	32	6	2.63	1822.01	1816	12	8.84E-03	27.0	
27	0	964.54	16	10	5.82	1929.53	1921	14	4.34E-03	50.7	
28	0	969.07*	16	10	2.35	1938.58	1934	9	4.49E-03	47.7	
29	0	988.46	10	8	4.52	1977.36	1969	12	2.73E-03	68.2	
30	0	1081.02	10	0	1.00	2162.50	2159	8	2.78E-03	31.6	
31	0	1109.56	19	4	4.90	2219.60	2210	17	5.36E-03	33.2	
32	0	1120.50*	16	4	1.62	2241.48	2237	10	4.40E-03	41.5	
33	0	1312.39	12	2	3.14	2625.31	2620	11	3.23E-03	39.9	
34	0	1342.15	8	2	0.96	2684.84	2681	8	2.31E-03	45.1	

Sample ID : G674299035 Acquisition date : 31-JUL-2024 16:13:52

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1373.12	7	3	1.17	2746.81	2741	10	1.81E-03	60.1	
36	0	1461.38*	56	4	1.57	2923.36	2915	17	1.57E-02	17.3	
37	0	1509.98*	11	0	4.10	3020.58	3015	12	2.97E-03	33.7	
38	0	1589.91	7	10	0.75	3180.49	3170	13	2.02E-03	96.0	
39	0	1765.01*	36	0	2.21	3530.80	3523	16	9.94E-03	19.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:17:44

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299035.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 12:20:00 Acquisition date : 31-JUL-2024 16:13:52
Sample ID        : G674299035           Sample quantity  : 94.180 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA22              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:03.84   0.1%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Sample ID : G674299035 Acquisition date : 31-JUL-2024 16:13:52

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	52	10.66*	1.820E+00	2.156E+00	2.156E+00	34.63
BA-137M	661.66	25	89.90*	3.427E+00	6.410E-02	6.424E-02	77.39
CS-137	661.66	25	85.10*	3.427E+00	6.772E-02	6.787E-02	77.39
CE-139	165.86	30	80.00*	7.420E+00	4.045E-02	4.829E-02	177.97
TL-208	277.37	------	6.60	5.729E+00	------	Line Not Found	------
	583.19	31	85.00*	3.730E+00	7.701E-02	7.701E-02	92.19
	860.56	------	12.50	2.805E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.039E+00	------	Line Not Found	------
	351.06	143	12.92*	5.021E+00	1.756E+00	1.756E+00	30.17
BI-212	727.33	25	6.67*	3.195E+00	9.172E-01	9.172E-01	85.52
	1620.50	------	1.47	1.707E+00	------	Line Not Found	------
BI-214	609.32	93	45.49*	3.622E+00	4.503E-01	4.503E-01	36.97
	1120.29	15	14.92	2.247E+00	3.510E-01	3.510E-01	83.02
	1764.49	33	15.30	1.641E+00	1.056E+00	1.056E+00	37.96
PB-214	74.82	25	5.80	4.355E+00	7.765E-01	7.765E-01	204.68
	77.11	------	9.70	4.680E+00	------	Line Not Found	------
	87.09	------	3.41	5.944E+00	------	Line Not Found	------
	242.00	57	7.25	6.180E+00	1.008E+00	1.008E+00	54.82
	295.22	116	18.42	5.536E+00	9.031E-01	9.032E-01	28.14
	351.93	143	35.60*	5.021E+00	6.374E-01	6.374E-01	30.17
RN-222	609.32	93	45.49*	3.622E+00	4.503E-01	4.503E-01	36.97
	1120.29	15	14.92	2.247E+00	3.510E-01	3.510E-01	83.02
	1764.49	33	15.30	1.641E+00	1.056E+00	1.056E+00	37.96
RA-224	240.99	57	4.10*	6.180E+00	1.782E+00	1.782E+00	54.82
RA-226	74.82	25	5.80	4.355E+00	7.765E-01	7.765E-01	204.68
	77.11	------	9.70	4.680E+00	------	Line Not Found	------
	87.09	------	3.41	5.944E+00	------	Line Not Found	------
	242.00	57	7.25	6.180E+00	1.008E+00	1.008E+00	54.82
	295.22	116	18.42	5.536E+00	9.031E-01	9.032E-01	28.14
	351.93	143	35.60*	5.021E+00	6.374E-01	6.374E-01	30.17
TH-230	74.82	25	5.80	4.355E+00	7.765E-01	7.765E-01	204.68
	77.11	------	9.70	4.680E+00	------	Line Not Found	------
	87.09	------	3.41	5.944E+00	------	Line Not Found	------
	242.00	57	7.25	6.180E+00	1.008E+00	1.008E+00	54.82
	295.22	116	18.42	5.536E+00	9.031E-01	9.031E-01	28.14
	351.93	143	35.60*	5.021E+00	6.374E-01	6.374E-01	30.17
U-234	74.82	25	5.80	4.355E+00	7.765E-01	7.765E-01	204.68
	77.11	------	9.70	4.680E+00	------	Line Not Found	------
	87.09	------	3.41	5.944E+00	------	Line Not Found	------
	242.00	57	7.25	6.180E+00	1.008E+00	1.008E+00	54.82
	295.22	116	18.42	5.536E+00	9.031E-01	9.031E-01	28.14
	351.93	143	35.60*	5.021E+00	6.374E-01	6.374E-01	30.17
AM-243	43.53	------	5.90	2.160E-01	------	Line Not Found	------
	74.66	25	67.20*	4.355E+00	6.702E-02	6.702E-02	204.68
ANH-511	511.00	11	100.00*	4.053E+00	2.258E-02	2.258E-02	365.56

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:17:45.32

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299035.CNF;1  *
* Acquisition date : 31-JUL-2024 16:13:52 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:03.84     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:20:00 Analyst initials: MXR1            *
* Sample ID        : G674299035           Sample Quantity : 9.4180E+01 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.156E+00	7.318E-01	5.692E-01
BA-137M	6.424E-02	4.873E-02	5.664E-02
CS-137	6.787E-02	5.147E-02	5.984E-02
CE-139	4.829E-02	8.423E-02	6.282E-02
TL-208	7.701E-02	6.957E-02	6.318E-02
BI-211	1.756E+00	5.193E-01	3.675E-01
BI-212	9.172E-01	7.687E-01	8.231E-01
BI-214	4.503E-01	1.631E-01	1.220E-01
PB-214	6.374E-01	1.885E-01	1.336E-01
RN-222	4.503E-01	1.631E-01	1.220E-01
RA-224	1.782E+00	9.571E-01	1.273E+00
RA-226	6.374E-01	1.885E-01	1.336E-01
TH-230	6.374E-01	1.884E-01	1.336E-01
U-234	6.374E-01	1.884E-01	1.336E-01
AM-243	6.702E-02	1.344E-01	1.400E-01
ANH-511	2.258E-02	8.091E-02	5.147E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	5.582E-01	4.154E-01	8.837E-01	NOT IDENT.
NA-22	1.626E-02	3.090E-02	6.899E-02	NOT IDENT.
NA-24	0.000E+00	3.030E+15	0.000E+00	SHORT HLIF
AL-26	1.902E-02	3.082E-02	7.293E-02	NOT IDENT.
SC-46	-3.838E-03	4.250E-02	7.830E-02	FAIL ABUN
V-48	5.505E-02	1.659E-01	2.950E-01	FAIL ABUN
CR-51	-3.536E-02	6.600E-01	1.220E+00	NOT IDENT.
MN-52	5.005E-02	2.787E+00	5.579E+00	NOT IDENT.
MN-54	-3.591E-02	3.233E-02	4.804E-02	NOT IDENT.
CO-56	3.304E-02	5.119E-02	9.403E-02	NOT IDENT.
MN-56	0.000E+00	1.563E+41	0.000E+00	SHORT HLIF
CO-57	1.440E-02	3.004E-02	5.503E-02	NOT IDENT.
CO-58	1.617E-02	4.015E-02	8.087E-02	NOT IDENT.
FE-59	-2.492E-02	9.475E-02	1.807E-01	NOT IDENT.

CO-60	-8.523E-03	3.326E-02	6.349E-02	NOT IDENT.
ZN-65	4.901E-02	1.149E-01	1.607E-01	NOT IDENT.
GE-68	1.874E-01	1.040E+00	1.939E+00	NOT IDENT.
AS-73	1.323E-01	3.604E+00	6.343E+00	NOT IDENT.
AS-74	-9.311E-02	1.994E-01	3.478E-01	FAIL ABUN
SE-75	3.479E-02	5.416E-02	1.005E-01	NOT IDENT.
BR-77	0.000E+00	6.453E+03	0.000E+00	SHORT HLIF
SR-82	1.083E-01	5.425E-01	1.040E+00	NOT IDENT.
RB-83	-1.282E-02	8.077E-02	1.478E-01	FAIL ABUN
RB-84	-8.802E-03	9.606E-02	1.771E-01	NOT IDENT.
KR-85	9.475E+00	7.615E+00	1.563E+01	NOT IDENT.
SR-85	6.163E-02	4.979E-02	1.022E-01	NOT IDENT.
RB-86	-3.754E-01	1.524E+00	2.486E+00	NOT IDENT.
Y-88	2.236E-02	3.427E-02	8.507E-02	NOT IDENT.
Y-91	3.317E+00	1.726E+01	3.626E+01	NOT IDENT.
NB-94	1.312E-02	3.283E-02	6.368E-02	NOT IDENT.
NB-95	1.590E-02	5.232E-02	9.034E-02	NOT IDENT.
NB-95M	1.202E-01	2.019E-01	3.292E-01	NOT IDENT.
ZR-95	-3.560E-02	8.795E-02	1.532E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	8.269E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.616E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	4.845E+40	0.000E+00	SHORT HLIF
RH-101	-8.007E-03	3.611E-02	6.241E-02	NOT IDENT.
RH-102	1.562E-02	6.149E-02	1.048E-01	NOT IDENT.
RU-103	8.803E-03	5.208E-02	9.019E-02	FAIL ABUN
RH-106	-2.984E-02	3.159E-01	5.805E-01	NOT IDENT.
RU-106	-2.984E-02	3.159E-01	5.805E-01	NOT IDENT.
AG-108M	1.662E-02	3.608E-02	6.262E-02	NOT IDENT.
CD-109	5.359E-01	1.130E+00	2.035E+00	NOT IDENT.
AG-110	2.196E-01	6.472E-01	1.173E+00	NOT IDENT.
AG-110M	-3.140E-02	4.480E-02	7.325E-02	NOT IDENT.
SN-113	2.196E-02	4.859E-02	9.515E-02	NOT IDENT.
CD-115	0.000E+00	6.138E+03	0.000E+00	SHORT HLIF
SN-117M	-1.680E-01	2.183E-01	3.113E-01	NOT IDENT.
SB-122	0.000E+00	2.961E+02	0.000E+00	SHORT HLIF
TE-123M	-1.706E-02	4.240E-02	6.305E-02	NOT IDENT.
SB-124	3.146E-02	1.123E-01	2.388E-01	NOT IDENT.
SB-125	-5.379E-03	9.424E-02	1.743E-01	FAIL ABUN
TE-125M	-3.426E+00	1.601E+01	2.471E+01	NOT IDENT.
I-126	-1.644E-01	7.175E-01	1.114E+00	NOT IDENT.
SB-126	-2.019E-01	5.399E-01	8.066E-01	NOT IDENT.
SN-126	1.028E-01	1.108E-01	2.042E-01	NOT IDENT.
SB-127	3.706E+01	4.119E+01	8.767E+01	NOT IDENT.
I-131	-1.257E-01	6.060E-01	1.115E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.175E+01	0.000E+00	SHORT HLIF
BA-133	-6.954E-03	4.503E-02	7.284E-02	NOT IDENT.
I-133	0.000E+00	5.708E+10	0.000E+00	SHORT HLIF
CS-134	2.552E-02	3.925E-02	7.948E-02	NOT IDENT.
I-135	0.000E+00	4.692E+37	0.000E+00	SHORT HLIF
CS-136	7.127E-02	2.531E-01	5.238E-01	NOT IDENT.
LA-138	4.703E-02	5.605E-02	1.272E-01	NOT IDENT.
BA-140	1.520E-02	8.273E-01	1.535E+00	NOT IDENT.
LA-140	1.327E-02	2.089E-01	4.409E-01	NOT IDENT.
CE-141	2.309E-02	1.062E-01	1.894E-01	NOT IDENT.
CE-143	0.000E+00	3.961E+06	0.000E+00	SHORT HLIF
CE-144	2.582E-02	2.436E-01	4.306E-01	NOT IDENT.
PM-144	5.184E-04	3.612E-02	6.658E-02	NOT IDENT.
PR-144	1.562E-02	2.728E+00	5.024E+00	NOT IDENT.
PM-146	-1.036E-02	4.795E-02	8.645E-02	NOT IDENT.
ND-147	1.803E+00	2.130E+00	4.295E+00	NOT IDENT.
PM-147	-2.448E+02	8.569E+02	1.476E+03	NOT IDENT.
PM-149	0.000E+00	6.678E+04	0.000E+00	SHORT HLIF
EU-150	-2.735E-02	3.096E-02	5.278E-02	FAIL ABUN
EU-152	1.169E-02	1.182E-01	1.959E-01	FAIL ABUN
GD-153	7.538E-02	1.861E-01	2.006E-01	FAIL ABUN
EU-154	4.106E-02	8.550E-02	1.901E-01	NOT IDENT.
EU-155	-3.854E-02	1.264E-01	2.179E-01	NOT IDENT.
TB-160	4.498E-02	1.457E-01	2.867E-01	NOT IDENT.
HO-166M	-1.567E-02	5.675E-02	1.013E-01	NOT IDENT.
TM-171	4.356E+01	7.082E+01	1.278E+02	NOT IDENT.
HF-172	-9.269E-02	2.298E-01	3.820E-01	FAIL ABUN
LU-172	1.257E-02	5.789E-02	1.172E-01	FAIL ABUN
LU-176	-1.704E-02	2.844E-02	5.008E-02	NOT IDENT.
HF-181	-2.438E-02	6.707E-02	1.097E-01	NOT IDENT.
TA-182	9.855E-02	1.232E-01	2.934E-01	FAIL ABUN
RE-183	6.303E-02	6.159E-01	1.094E+00	NOT IDENT.

RE-184	-1.406E-01	1.640E-01	1.985E-01	NOT IDENT.
W-188	5.911E+00	1.016E+01	1.460E+01	NOT IDENT.
IR-192	-4.073E-03	4.373E-02	8.081E-02	FAIL ABUN
HG-203	-2.684E-02	5.882E-02	9.695E-02	NOT IDENT.
TL-204	-3.149E+00	8.627E+00	1.323E+01	NOT IDENT.
BI-207	-1.040E-02	4.350E-02	8.284E-02	FAIL ABUN
BI-210	7.466E+00	2.318E+01	4.087E+01	NOT IDENT.
PB-210	7.466E+00	2.318E+01	4.087E+01	NOT IDENT.
PB-211	4.987E-01	7.141E-01	1.422E+00	NOT IDENT.
PB-212	0.000E+00	1.196E-01	2.066E-01	FAIL ABUN
BI-213	-3.985E-02	1.221E-01	1.877E-01	NOT IDENT.
RN-219	-2.937E-01	4.037E-01	6.935E-01	NOT IDENT.
RA-223	-2.091E-01	6.524E-01	1.180E+00	NOT IDENT.
AC-225	-9.083E-01	2.753E+00	4.632E+00	NOT IDENT.
AC-227	-2.585E-02	2.950E-01	5.064E-01	NOT IDENT.
TH-227	-2.585E-02	2.950E-01	5.064E-01	NOT IDENT.
AC-228	3.427E-01	1.817E-01	3.873E-01	FAIL ABUN
RA-228	3.427E-01	1.817E-01	3.873E-01	FAIL ABUN
TH-228	0.000E+00	1.196E-01	2.066E-01	FAIL ABUN
TH-229	1.571E-01	6.056E-01	1.075E+00	NOT IDENT.
PA-231	3.292E-01	5.298E-01	1.004E+00	NOT IDENT.
TH-231	-2.091E-01	6.524E-01	1.180E+00	NOT IDENT.
TH-232	3.427E-01	1.817E-01	3.873E-01	FAIL ABUN
PA-233	6.383E-02	6.750E-02	1.359E-01	NOT IDENT.
PA-234	9.603E-02	2.245E-01	4.677E-01	FAIL ABUN
PA-234M	1.038E+00	3.925E+00	7.951E+00	NOT IDENT.
TH-234	-3.091E-01	2.701E+00	4.684E+00	NOT IDENT.
U-235	-8.157E-02	2.392E-01	3.997E-01	FAIL ABUN
NP-237	6.383E-02	6.750E-02	1.359E-01	FAIL ABUN
NP-238	0.000E+00	1.276E+04	0.000E+00	SHORT HLIF
U-238	-3.091E-01	2.701E+00	4.684E+00	NOT IDENT.
NP-239	1.575E-01	2.996E-01	5.056E-01	FAIL ABUN
PU-239	5.059E+01	3.787E+02	6.733E+02	NOT IDENT.
AM-241	3.819E-03	3.627E-01	6.407E-01	NOT IDENT.
CM-243	-8.711E-03	1.440E-01	2.260E-01	FAIL ABUN
BK-247	1.281E-03	9.022E-02	1.569E-01	NOT IDENT.
CM-247	-6.750E-03	3.641E-02	6.664E-02	FAIL ABUN
CF-249	-5.954E-03	3.945E-02	7.251E-02	NOT IDENT.
CF-251	1.088E-03	1.390E-01	2.434E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:17:43.72

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	52	10.66*	1.820E+00	2.156E+00	2.156E+00	34.63
BA-137M	661.66	25	89.90*	3.427E+00	6.410E-02	6.424E-02	77.39
CS-137	661.66	25	85.10*	3.427E+00	6.772E-02	6.787E-02	77.39
CE-139	165.86	30	80.00*	7.420E+00	4.045E-02	4.829E-02	177.97
TL-208	277.37	------	6.60	5.729E+00	------	Line Not Found	------
	583.19	31	85.00*	3.730E+00	7.701E-02	7.701E-02	92.19
	860.56	------	12.50	2.805E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.039E+00	------	Line Not Found	------
	351.06	143	12.92*	5.021E+00	1.756E+00	1.756E+00	30.17
BI-212	727.33	25	6.67*	3.195E+00	9.172E-01	9.172E-01	85.52
	1620.50	------	1.47	1.707E+00	------	Line Not Found	------
BI-214	609.32	93	45.49*	3.622E+00	4.503E-01	4.503E-01	36.97
	1120.29	15	14.92	2.247E+00	3.510E-01	3.510E-01	83.02
	1764.49	33	15.30	1.641E+00	1.056E+00	1.056E+00	37.96
PB-214	74.82	25	5.80	4.355E+00	7.765E-01	7.765E-01	204.68
	77.11	------	9.70	4.680E+00	------	Line Not Found	------
	87.09	------	3.41	5.944E+00	------	Line Not Found	------
	242.00	57	7.25	6.180E+00	1.008E+00	1.008E+00	54.82
	295.22	116	18.42	5.536E+00	9.031E-01	9.032E-01	28.14
	351.93	143	35.60*	5.021E+00	6.374E-01	6.374E-01	30.17
RN-222	609.32	93	45.49*	3.622E+00	4.503E-01	4.503E-01	36.97
	1120.29	15	14.92	2.247E+00	3.510E-01	3.510E-01	83.02
	1764.49	33	15.30	1.641E+00	1.056E+00	1.056E+00	37.96
RA-224	240.99	57	4.10*	6.180E+00	1.782E+00	1.782E+00	54.82
RA-226	74.82	25	5.80	4.355E+00	7.765E-01	7.765E-01	204.68
	77.11	------	9.70	4.680E+00	------	Line Not Found	------
	87.09	------	3.41	5.944E+00	------	Line Not Found	------
	242.00	57	7.25	6.180E+00	1.008E+00	1.008E+00	54.82
	295.22	116	18.42	5.536E+00	9.031E-01	9.032E-01	28.14
	351.93	143	35.60*	5.021E+00	6.374E-01	6.374E-01	30.17
TH-230	74.82	25	5.80	4.355E+00	7.765E-01	7.765E-01	204.68
	77.11	------	9.70	4.680E+00	------	Line Not Found	------
	87.09	------	3.41	5.944E+00	------	Line Not Found	------
	242.00	57	7.25	6.180E+00	1.008E+00	1.008E+00	54.82
	295.22	116	18.42	5.536E+00	9.031E-01	9.031E-01	28.14
	351.93	143	35.60*	5.021E+00	6.374E-01	6.374E-01	30.17
U-234	74.82	25	5.80	4.355E+00	7.765E-01	7.765E-01	204.68
	77.11	------	9.70	4.680E+00	------	Line Not Found	------
	87.09	------	3.41	5.944E+00	------	Line Not Found	------
	242.00	57	7.25	6.180E+00	1.008E+00	1.008E+00	54.82
	295.22	116	18.42	5.536E+00	9.031E-01	9.031E-01	28.14
	351.93	143	35.60*	5.021E+00	6.374E-01	6.374E-01	30.17
AM-243	43.53	------	5.90	2.160E-01	------	Line Not Found	------
	74.66	25	67.20*	4.355E+00	6.702E-02	6.702E-02	204.68
ANH-511	511.00	11	100.00*	4.053E+00	2.258E-02	2.258E-02	365.56

Flag: "*" = Keyline

Sample ID : G674299035 Acquisition date : 31-JUL-2024 16:13:52

Total number of lines in spectrum	39	
Number of unidentified lines	11	
Number of lines tentatively identified by NID	28	71.79%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.156E+00	2.156E+00	0.747E+00	34.63	
BA-137M	30.08Y	1.00	6.410E-02	6.424E-02	4.972E-02	77.39	
CS-137	30.08Y	1.00	6.772E-02	6.787E-02	5.253E-02	77.39	
CE-139	137.64D	1.19	4.045E-02	4.829E-02	8.595E-02	177.97	
TL-208	1.41E+10Y	1.00	7.701E-02	7.701E-02	7.099E-02	92.19	
BI-211	7.04E+08Y	1.00	1.756E+00	1.756E+00	0.530E+00	30.17	
BI-212	1.41E+10Y	1.00	9.172E-01	9.172E-01	7.844E-01	85.52	
BI-214	1600.00Y	1.00	4.503E-01	4.503E-01	1.665E-01	36.97	
PB-214	1600.00Y	1.00	6.374E-01	6.374E-01	1.923E-01	30.17	
RN-222	1600.00Y	1.00	4.503E-01	4.503E-01	1.665E-01	36.97	
RA-224	1.41E+10Y	1.00	1.782E+00	1.782E+00	0.977E+00	54.82	
RA-226	1600.00Y	1.00	6.374E-01	6.374E-01	1.923E-01	30.17	
TH-230	7.54E+04Y	1.00	6.374E-01	6.374E-01	1.923E-01	30.17	
U-234	2.45E+05Y	1.00	6.374E-01	6.374E-01	1.923E-01	30.17	
AM-243	7370.00Y	1.00	6.702E-02	6.702E-02	13.72E-02	204.68	
ANH-511	1.00E+09Y	1.00	2.258E-02	2.258E-02	8.256E-02	365.56	
			---	---			
	Total Activity :		1.040E+01	1.041E+01			

Grand Total Activity : 1.040E+01 1.041E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299035 Acquisition date : 31-JUL-2024 16:13:52

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	41.58	36	358	1.25	83.69	81	7	1.06E-02	****	1.38E-01	
0	98.27	17	126	1.39	197.05	192	11	5.04E-03	****	6.91E+00	T
0	113.20	25	71	1.58	226.91	223	8	7.31E-03	****	7.59E+00	T
0	185.94	40	114	1.23	372.36	366	13	1.18E-02	****	7.08E+00	T
4	238.72	130	87	1.63	477.91	470	26	3.83E-02	32.0	6.22E+00	T
4	245.75	39	51	2.24	491.97	470	26	1.14E-02	77.8	6.13E+00	T
0	288.06	43	33	1.38	576.58	571	11	1.28E-02	58.3	5.61E+00	T
0	421.17	11	60	3.31	842.77	826	19	3.12E-03	****	4.54E+00	
0	436.35	15	43	1.49	873.12	867	13	4.58E-03	****	4.45E+00	
0	492.22	32	36	6.05	984.86	972	22	9.57E-03	97.9	4.15E+00	T
0	553.11	29	11	3.90	1106.64	1100	12	8.58E-03	59.4	3.86E+00	T
0	635.47	13	26	3.41	1271.35	1261	14	3.74E-03	****	3.52E+00	T
0	772.01	31	32	12.26	1544.43	1531	28	9.12E-03	****	3.06E+00	T
0	850.05	13	13	3.67	1700.52	1695	11	3.85E-03	****	2.83E+00	
0	900.49	7	12	2.13	1801.42	1796	9	2.07E-03	****	2.70E+00	T
0	910.79	30	6	2.63	1822.01	1816	12	8.84E-03	54.1	2.68E+00	T
0	964.54	15	10	5.82	1929.53	1921	14	4.34E-03	****	2.55E+00	T
0	969.07	15	10	2.35	1938.58	1934	9	4.49E-03	95.3	2.54E+00	T
0	988.46	9	8	4.52	1977.36	1969	12	2.73E-03	****	2.50E+00	
0	1081.02	9	0	1.00	2162.50	2159	8	2.78E-03	63.2	2.32E+00	
0	1109.56	18	3	4.90	2219.60	2210	17	5.36E-03	66.5	2.27E+00	
0	1312.39	11	2	3.14	2625.31	2620	11	3.23E-03	79.8	1.97E+00	T
0	1342.15	8	2	0.96	2684.84	2681	8	2.31E-03	90.2	1.94E+00	
0	1373.12	6	2	1.17	2746.81	2741	10	1.81E-03	****	1.90E+00	
0	1509.98	10	0	4.10	3020.58	3015	12	2.97E-03	67.3	1.78E+00	
0	1589.91	7	9	0.75	3180.49	3170	13	2.02E-03	****	1.73E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:17:55.72

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299035.CNF;1  *
* Acquisition date : 31-JUL-2024 16:13:52 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:03.84     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:20:00 Nuclide Library : SOLID           *
* Sample ID        : G674299035           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 9.4180E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.297E-01
BA-137M	2.486E-02
CS-137	2.626E-02
CE-139	2.928E-02
TL-208	2.824E-02
BI-211	1.674E-01
BI-212	3.617E-01
BI-214	5.456E-02
PB-214	6.086E-02
RN-222	5.456E-02
RA-224	5.948E-01
RA-226	6.086E-02
TH-230	6.086E-02
U-234	6.086E-02
AM-243	6.635E-02
ANH-511	2.311E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.038E-01	NOT IDENT.
NA-22	2.908E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.990E-02	NOT IDENT.
SC-46	3.393E-02	FAIL ABUN
V-48	1.280E-01	FAIL ABUN
CR-51	5.613E-01	NOT IDENT.
MN-52	2.336E+00	NOT IDENT.
MN-54	2.001E-02	NOT IDENT.
CO-56	4.188E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.577E-02	NOT IDENT.
CO-58	3.530E-02	NOT IDENT.
FE-59	7.609E-02	NOT IDENT.
CO-60	2.621E-02	NOT IDENT.

ZN-65	7.002E-02	NOT IDENT.
GE-68	8.138E-01	NOT IDENT.
AS-73	3.039E+00	NOT IDENT.
AS-74	1.546E-01	FAIL ABUN
SE-75	4.650E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	4.592E-01	NOT IDENT.
RB-83	6.610E-02	FAIL ABUN
RB-84	7.672E-02	NOT IDENT.
KR-85	7.206E+00	NOT IDENT.
SR-85	4.709E-02	NOT IDENT.
RB-86	1.047E+00	NOT IDENT.
Y-88	3.420E-02	NOT IDENT.
Y-91	1.519E+01	NOT IDENT.
NB-94	2.859E-02	NOT IDENT.
NB-95	4.010E-02	NOT IDENT.
NB-95M	1.546E-01	NOT IDENT.
ZR-95	6.736E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.916E-02	NOT IDENT.
RH-102	4.694E-02	NOT IDENT.
RU-103	3.982E-02	FAIL ABUN
RH-106	2.582E-01	NOT IDENT.
RU-106	2.582E-01	NOT IDENT.
AG-108M	2.868E-02	NOT IDENT.
CD-109	9.678E-01	NOT IDENT.
AG-110	5.106E-01	NOT IDENT.
AG-110M	3.074E-02	NOT IDENT.
SN-113	4.330E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.459E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.947E-02	NOT IDENT.
SB-124	9.932E-02	NOT IDENT.
SB-125	7.904E-02	FAIL ABUN
TE-125M	1.155E+01	NOT IDENT.
I-126	4.943E-01	NOT IDENT.
SB-126	3.591E-01	NOT IDENT.
SN-126	9.732E-02	NOT IDENT.
SB-127	3.896E+01	NOT IDENT.
I-131	5.024E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.297E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	3.543E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.262E-01	NOT IDENT.
LA-138	5.480E-02	NOT IDENT.
BA-140	6.927E-01	NOT IDENT.
LA-140	1.765E-01	NOT IDENT.
CE-141	8.867E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.020E-01	NOT IDENT.
PM-144	2.983E-02	NOT IDENT.
PR-144	2.250E+00	NOT IDENT.
PM-146	3.942E-02	NOT IDENT.
ND-147	1.959E+00	NOT IDENT.
PM-147	6.890E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.425E-02	FAIL ABUN
EU-152	9.009E-02	FAIL ABUN
GD-153	9.442E-02	FAIL ABUN
EU-154	7.985E-02	NOT IDENT.
EU-155	1.020E-01	NOT IDENT.
TB-160	1.254E-01	NOT IDENT.
HO-166M	4.462E-02	NOT IDENT.
TM-171	6.139E+01	NOT IDENT.
HF-172	1.785E-01	FAIL ABUN
LU-172	5.095E-02	FAIL ABUN
LU-176	2.295E-02	NOT IDENT.
HF-181	4.924E-02	NOT IDENT.
TA-182	1.233E-01	FAIL ABUN
RE-183	5.206E-01	NOT IDENT.
RE-184	7.856E-02	NOT IDENT.

W-188	6.628E+00	NOT IDENT.
IR-192	3.705E-02	FAIL ABUN
HG-203	4.463E-02	NOT IDENT.
TL-204	6.249E+00	NOT IDENT.
BI-207	3.533E-02	FAIL ABUN
BI-210	1.980E+01	NOT IDENT.
PB-210	1.980E+01	NOT IDENT.
PB-211	6.503E-01	NOT IDENT.
PB-212	9.942E-02	FAIL ABUN
BI-213	8.459E-02	NOT IDENT.
RN-219	3.122E-01	NOT IDENT.
RA-223	5.394E-01	NOT IDENT.
AC-225	2.153E+00	NOT IDENT.
AC-227	2.346E-01	NOT IDENT.
TH-227	2.346E-01	NOT IDENT.
AC-228	1.783E-01	FAIL ABUN
RA-228	1.783E-01	FAIL ABUN
TH-228	9.942E-02	FAIL ABUN
TH-229	5.028E-01	NOT IDENT.
PA-231	4.657E-01	NOT IDENT.
TH-231	5.394E-01	NOT IDENT.
TH-232	1.783E-01	FAIL ABUN
PA-233	6.283E-02	NOT IDENT.
PA-234	1.997E-01	FAIL ABUN
PA-234M	3.463E+00	NOT IDENT.
TH-234	2.227E+00	NOT IDENT.
U-235	1.874E-01	FAIL ABUN
NP-237	6.283E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	2.227E+00	NOT IDENT.
NP-239	2.354E-01	FAIL ABUN
PU-239	3.151E+02	NOT IDENT.
AM-241	3.048E-01	NOT IDENT.
CM-243	1.060E-01	FAIL ABUN
BK-247	7.242E-02	NOT IDENT.
CM-247	3.015E-02	FAIL ABUN
CF-249	3.287E-02	NOT IDENT.
CF-251	1.132E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:17:59.89

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299035.CNF;1  *
* Acquisition date : 31-JUL-2024 16:13:52 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:03.84     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:20:00 Nuclide Library : SOLID           *
* Sample ID        : G674299035           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 9.4180E+01 GRAM *
*                                         Quantity Err(%) : 1.0618E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.156E+00	7.625E-01	7.625E-01
BA-137M	6.424E-02	4.919E-02	4.919E-02
CS-137	6.787E-02	5.196E-02	5.196E-02
CE-139	4.829E-02	8.496E-02	8.496E-02
TL-208	7.701E-02	6.998E-02	6.998E-02
BI-211	1.756E+00	5.448E-01	5.448E-01
BI-212	9.172E-01	7.755E-01	7.755E-01
BI-214	4.503E-01	1.693E-01	1.693E-01
PB-214	6.374E-01	1.975E-01	1.975E-01
RN-222	4.503E-01	1.693E-01	1.693E-01
RA-224	1.782E+00	9.791E-01	9.791E-01
RA-226	6.374E-01	1.975E-01	1.975E-01
TH-230	6.374E-01	1.975E-01	1.975E-01
U-234	6.374E-01	1.975E-01	1.975E-01
AM-243	6.702E-02	1.347E-01	1.347E-01
ANH-511	2.258E-02	8.093E-02	8.093E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	5.582E-01	4.184E-01	4.882E-01	NOT IDENT.
NA-22	1.626E-02	3.093E-02	3.179E-02	NOT IDENT.
NA-24	2.718E+14	3.030E+15	3.032E+15	SHORT HLIF
AL-26	1.902E-02	3.085E-02	3.202E-02	NOT IDENT.
SC-46	-3.838E-03	4.250E-02	4.254E-02	FAIL ABUN
V-48	5.505E-02	1.660E-01	1.679E-01	FAIL ABUN
CR-51	-3.536E-02	6.601E-01	6.602E-01	NOT IDENT.
MN-52	5.005E-02	2.787E+00	2.787E+00	NOT IDENT.
MN-54	-3.591E-02	3.259E-02	3.639E-02	NOT IDENT.
CO-56	3.304E-02	5.133E-02	5.345E-02	NOT IDENT.
MN-56	1.000E+41	1.567E+41	0.000E+00	SHORT HLIF
CO-57	1.440E-02	3.006E-02	3.076E-02	NOT IDENT.
CO-58	1.617E-02	4.019E-02	4.085E-02	NOT IDENT.
FE-59	-2.492E-02	9.479E-02	9.546E-02	NOT IDENT.

CO-60	-8.523E-03	3.327E-02	3.350E-02	NOT IDENT.
ZN-65	4.901E-02	1.150E-01	1.171E-01	NOT IDENT.
GE-68	1.874E-01	1.040E+00	1.044E+00	NOT IDENT.
AS-73	1.323E-01	3.604E+00	3.605E+00	NOT IDENT.
AS-74	-9.311E-02	1.997E-01	2.041E-01	FAIL ABUN
SE-75	3.479E-02	5.430E-02	5.652E-02	NOT IDENT.
BR-77	2.056E+04	2.198E+04	2.385E+04	SHORT HLIF
SR-82	1.083E-01	5.427E-01	5.448E-01	NOT IDENT.
RB-83	-1.282E-02	8.079E-02	8.100E-02	FAIL ABUN
RB-84	-8.802E-03	9.606E-02	9.615E-02	NOT IDENT.
KR-85	9.475E+00	7.665E+00	8.775E+00	NOT IDENT.
SR-85	6.163E-02	5.011E-02	5.730E-02	NOT IDENT.
RB-86	-3.754E-01	1.524E+00	1.534E+00	NOT IDENT.
Y-88	2.236E-02	3.431E-02	3.576E-02	NOT IDENT.
Y-91	3.317E+00	1.726E+01	1.732E+01	NOT IDENT.
NB-94	1.312E-02	3.286E-02	3.339E-02	NOT IDENT.
NB-95	1.590E-02	5.235E-02	5.284E-02	NOT IDENT.
NB-95M	1.202E-01	2.026E-01	2.097E-01	NOT IDENT.
ZR-95	-3.560E-02	8.803E-02	8.949E-02	NOT IDENT.
NB-97	1.000E+41	3.937E+41	0.000E+00	SHORT HLIF
ZR-97	3.996E+14	8.277E+14	8.471E+14	SHORT HLIF
MO-99	7.518E+02	1.619E+03	1.654E+03	SHORT HLIF
TC-99M	3.432E+40	4.864E+40	0.000E+00	SHORT HLIF
RH-101	-8.007E-03	3.614E-02	3.632E-02	NOT IDENT.
RH-102	1.562E-02	6.152E-02	6.192E-02	NOT IDENT.
RU-103	8.803E-03	5.209E-02	5.224E-02	FAIL ABUN
RH-106	-2.984E-02	3.159E-01	3.162E-01	NOT IDENT.
RU-106	-2.984E-02	3.159E-01	3.162E-01	NOT IDENT.
AG-108M	1.662E-02	3.611E-02	3.688E-02	NOT IDENT.
CD-109	5.359E-01	1.132E+00	1.158E+00	NOT IDENT.
AG-110	2.196E-01	6.476E-01	6.552E-01	NOT IDENT.
AG-110M	-3.140E-02	4.496E-02	4.714E-02	NOT IDENT.
SN-113	2.196E-02	4.862E-02	4.962E-02	NOT IDENT.
CD-115	-2.186E+02	6.138E+03	6.139E+03	SHORT HLIF
SN-117M	-1.680E-01	2.191E-01	2.318E-01	NOT IDENT.
SB-122	3.496E+02	2.981E+02	3.372E+02	SHORT HLIF
TE-123M	-1.706E-02	4.244E-02	4.313E-02	NOT IDENT.
SB-124	3.146E-02	1.123E-01	1.132E-01	NOT IDENT.
SB-125	-5.379E-03	9.424E-02	9.427E-02	FAIL ABUN
TE-125M	-3.426E+00	1.601E+01	1.609E+01	NOT IDENT.
I-126	-1.644E-01	7.178E-01	7.216E-01	NOT IDENT.
SB-126	-2.019E-01	5.406E-01	5.482E-01	NOT IDENT.
SN-126	1.028E-01	1.116E-01	1.208E-01	NOT IDENT.
SB-127	3.706E+01	4.180E+01	4.502E+01	NOT IDENT.
I-131	-1.257E-01	6.061E-01	6.088E-01	NOT IDENT.
I-132	1.000E+41	1.121E+42	0.000E+00	SHORT HLIF
TE-132	5.539E+00	6.176E+01	6.181E+01	SHORT HLIF
BA-133	-6.954E-03	4.504E-02	4.515E-02	NOT IDENT.
I-133	6.864E+09	5.710E+10	5.718E+10	SHORT HLIF
CS-134	2.552E-02	3.936E-02	4.100E-02	NOT IDENT.
I-135	1.254E+37	4.798E+37	0.000E+00	SHORT HLIF
CS-136	7.127E-02	2.533E-01	2.553E-01	NOT IDENT.
LA-138	4.703E-02	5.622E-02	6.009E-02	NOT IDENT.
BA-140	1.520E-02	8.273E-01	8.273E-01	NOT IDENT.
LA-140	1.327E-02	2.089E-01	2.090E-01	NOT IDENT.
CE-141	2.309E-02	1.062E-01	1.067E-01	NOT IDENT.
CE-143	5.604E+06	4.006E+06	4.736E+06	SHORT HLIF
CE-144	2.582E-02	2.436E-01	2.439E-01	NOT IDENT.
PM-144	5.184E-04	3.612E-02	3.612E-02	NOT IDENT.
PR-144	1.562E-02	2.728E+00	2.728E+00	NOT IDENT.
PM-146	-1.036E-02	4.796E-02	4.819E-02	NOT IDENT.
ND-147	1.803E+00	2.137E+00	2.286E+00	NOT IDENT.
PM-147	-2.448E+02	8.571E+02	8.642E+02	NOT IDENT.
PM-149	-4.152E+04	6.714E+04	6.970E+04	SHORT HLIF
EU-150	-2.735E-02	3.107E-02	3.343E-02	FAIL ABUN
EU-152	1.169E-02	1.182E-01	1.183E-01	FAIL ABUN
GD-153	7.538E-02	1.863E-01	1.893E-01	FAIL ABUN
EU-154	4.106E-02	8.558E-02	8.756E-02	NOT IDENT.
EU-155	-3.854E-02	1.264E-01	1.276E-01	NOT IDENT.
TB-160	4.498E-02	1.458E-01	1.472E-01	NOT IDENT.
HO-166M	-1.567E-02	5.678E-02	5.722E-02	NOT IDENT.
TM-171	4.356E+01	7.111E+01	7.377E+01	NOT IDENT.
HF-172	-9.269E-02	2.304E-01	2.342E-01	FAIL ABUN
LU-172	1.257E-02	5.791E-02	5.819E-02	FAIL ABUN
LU-176	-1.704E-02	2.849E-02	2.951E-02	NOT IDENT.
HF-181	-2.438E-02	6.711E-02	6.800E-02	NOT IDENT.
TA-182	9.855E-02	1.235E-01	1.312E-01	FAIL ABUN
RE-183	6.303E-02	6.160E-01	6.166E-01	NOT IDENT.

RE-184	-1.406E-01	1.650E-01	1.768E-01	NOT IDENT.
W-188	5.911E+00	1.019E+01	1.054E+01	NOT IDENT.
IR-192	-4.073E-03	4.373E-02	4.377E-02	FAIL ABUN
HG-203	-2.684E-02	5.889E-02	6.012E-02	NOT IDENT.
TL-204	-3.149E+00	8.637E+00	8.753E+00	NOT IDENT.
BI-207	-1.040E-02	4.351E-02	4.377E-02	FAIL ABUN
BI-210	7.466E+00	2.319E+01	2.343E+01	NOT IDENT.
PB-210	7.466E+00	2.319E+01	2.343E+01	NOT IDENT.
PB-211	4.987E-01	7.155E-01	7.499E-01	NOT IDENT.
PB-212	3.810E-01	1.274E-01	2.139E-01	FAIL ABUN
BI-213	-3.985E-02	1.222E-01	1.235E-01	NOT IDENT.
RN-219	-2.937E-01	4.059E-01	4.270E-01	NOT IDENT.
RA-223	-2.091E-01	6.528E-01	6.596E-01	NOT IDENT.
AC-225	-9.083E-01	2.755E+00	2.786E+00	NOT IDENT.
AC-227	-2.585E-02	2.950E-01	2.952E-01	NOT IDENT.
TH-227	-2.585E-02	2.950E-01	2.952E-01	NOT IDENT.
AC-228	3.427E-01	1.862E-01	2.420E-01	FAIL ABUN
RA-228	3.427E-01	1.862E-01	2.420E-01	FAIL ABUN
TH-228	3.810E-01	1.274E-01	2.139E-01	FAIL ABUN
TH-229	1.571E-01	6.059E-01	6.100E-01	NOT IDENT.
PA-231	3.292E-01	5.353E-01	5.555E-01	NOT IDENT.
TH-231	-2.091E-01	6.528E-01	6.596E-01	NOT IDENT.
TH-232	3.427E-01	1.862E-01	2.420E-01	FAIL ABUN
PA-233	6.383E-02	6.782E-02	7.367E-02	NOT IDENT.
PA-234	9.603E-02	2.501E-01	2.538E-01	FAIL ABUN
PA-234M	1.038E+00	3.927E+00	3.955E+00	NOT IDENT.
TH-234	-3.091E-01	2.702E+00	2.705E+00	NOT IDENT.
U-235	-8.157E-02	2.393E-01	2.421E-01	FAIL ABUN
NP-237	6.383E-02	6.782E-02	7.367E-02	FAIL ABUN
NP-238	9.134E+03	1.280E+04	1.344E+04	SHORT HLIF
U-238	-3.091E-01	2.702E+00	2.705E+00	NOT IDENT.
NP-239	1.575E-01	3.001E-01	3.084E-01	FAIL ABUN
PU-239	5.059E+01	3.787E+02	3.794E+02	NOT IDENT.
AM-241	3.819E-03	3.627E-01	3.627E-01	NOT IDENT.
CM-243	-8.711E-03	1.440E-01	1.441E-01	FAIL ABUN
BK-247	1.281E-03	9.022E-02	9.022E-02	NOT IDENT.
CM-247	-6.750E-03	3.643E-02	3.655E-02	FAIL ABUN
CF-249	-5.954E-03	3.945E-02	3.954E-02	NOT IDENT.
CF-251	1.088E-03	1.390E-01	1.390E-01	NOT IDENT.

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*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	341.1910	85.43	111.6344	131.20	73.6745
45.60	293.5477	86.55	101.8951	133.02	68.6036
46.54	301.5064	86.79	101.9250	133.52	73.8355
49.72	0.0000	86.94	101.9438	136.00	60.4556
51.35	219.2979	87.09	110.8715	136.47	79.2517
51.87	211.0094	87.57	109.9459	140.51	0.0000
52.39	174.4208	88.03	110.9985	143.76	76.6298
52.97	163.2628	88.34	111.0401	144.24	73.5120
53.44	172.8326	88.47	111.0572	145.44	67.2826
54.07	174.9002	89.96	157.9438	152.43	78.2719
57.36	0.0000	1093.63	142.1650	153.25	86.7955
57.53	129.2843	91.11	108.4240	323.87	83.6884
57.98	126.5207	92.59	104.0299	156.02	82.7568
59.27	130.5854	93.35	94.2486	158.56	97.2886
59.32	130.5956	94.56	137.8266	159.00	79.7745
59.54	126.8251	94.65	137.8414	162.33	62.9300
60.96	124.2319	94.67	137.8442	162.66	62.9474
61.17	118.5356	94.87	137.8765	163.33	62.9822
62.93	113.0965	97.43	79.1611	165.86	63.1130
63.29	103.5673	98.43	79.2511	176.31	70.1152
63.58	106.4895	98.44	79.2519	176.60	66.8945
64.28	110.4401	99.53	76.8381	177.52	59.3847
66.73	115.6506	100.11	85.9340	181.07	0.0000
67.24	106.0903	102.03	78.5634	181.52	61.7355
125.81	106.1563	103.18	77.1502	184.41	68.3852
67.75	106.1669	103.37	77.1661	143.76	68.4538
68.89	94.7371	105.21	78.8375	193.51	64.4826
69.67	95.8086	105.31	78.8458	197.03	74.5120
70.82	107.5922	106.12	73.8566	198.01	77.8549
70.83	107.5939	106.47	73.8844	201.83	75.8716
72.81	103.5121	109.28	74.6140	203.43	66.0510
72.87	103.5207	111.00	62.5454	205.31	78.2651
74.66	110.1039	111.76	0.0000	210.85	71.9322
74.82	110.1268	114.06	55.0931	215.65	58.8486
74.97	110.1493	116.30	0.0000	218.12	65.6218
77.11	105.5737	116.74	49.1064	222.11	62.4543
78.74	92.5731	119.76	63.6228	227.09	62.6639
79.69	107.1044	121.12	71.9297	227.38	67.1527
80.03	104.0106	121.22	71.9369	228.16	0.0000
80.12	104.0230	121.78	70.9488	228.18	54.8708
80.19	104.0327	122.06	61.7117	116.74	54.8708
80.57	99.1732	122.92	57.6466	235.69	64.1453
81.00	94.3154	123.07	60.7438	235.96	70.9102
81.07	100.2190	265.00	75.2025	238.63	67.6501
81.75	104.2392	125.81	75.3592	238.98	0.0000
82.47	93.5069	127.23	73.3950	240.99	67.7533
83.79	109.4361	127.91	69.3057	242.00	67.7972
84.00	109.4649	129.30	68.3619	244.70	67.9138

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	50.0452	344.28	41.6698	563.25	24.6353
252.80	47.7823	345.93	43.1426	564.24	0.0000
254.15	0.0000	351.06	35.1438	569.33	30.6150
256.23	54.7246	351.93	35.1593	946.00	30.6169
260.90	0.0000	355.39	0.0000	569.70	27.6556
264.66	38.9632	356.01	33.2427	583.19	23.8191
264.80	43.5502	364.49	30.8416	584.27	20.6508
265.00	48.1404	366.42	0.0000	595.83	27.9111
269.46	42.5230	372.51	32.7827	427.87	33.9481
270.03	41.3877	375.05	39.2050	602.52	0.0000
271.23	48.3207	377.52	36.5125	604.72	27.1975
273.65	57.6070	356.01	38.4534	607.14	38.4281
276.40	42.6977	388.16	33.9440	609.32	24.0352
277.37	55.4238	388.63	33.9513	610.33	24.0439
277.60	55.4307	391.69	27.5674	614.28	17.6559
278.00	60.0636	264.66	34.1404	618.01	20.6625
279.20	54.3265	401.81	38.7745	620.36	27.1409
279.54	48.5565	402.40	33.2441	621.93	23.1327
279.70	48.5616	404.85	27.7345	630.19	0.0000
280.46	50.8965	410.95	29.6650	631.29	20.9854
283.69	46.9352	413.71	37.1271	633.25	20.1917
284.31	48.6907	414.70	36.2150	634.78	20.2020
285.41	53.9425	423.72	34.3085	635.95	17.7842
285.90	0.0000	427.09	27.0769	636.99	17.7907
287.50	50.5226	427.87	32.6897	657.50	11.3976
290.67	20.9436	433.94	31.4651	657.76	13.0266
293.27	0.0000	439.40	33.0414	657.90	0.0000
351.93	41.9949	440.45	31.5533	661.66	17.3227
295.96	47.6141	453.88	39.6666	664.57	0.0000
879.38	37.8666	463.37	30.3418	666.33	24.4929
299.98	46.3168	468.07	34.2010	666.50	24.4937
300.09	46.3200	473.00	34.2697	667.71	0.0000
300.13	46.3209	475.06	34.2988	677.62	16.3872
301.36	43.1417	476.78	23.8350	685.70	11.2951
302.85	55.3528	477.60	18.1207	692.65	0.0000
256.23	43.0911	482.18	31.8497	695.00	24.7148
304.85	39.5810	487.02	24.5078	696.49	24.7266
306.78	51.0695	492.35	0.0000	696.51	24.7266
308.46	44.9472	497.08	16.9165	697.00	22.6694
311.90	33.5527	505.52	37.0307	697.30	21.6409
316.51	42.4878	507.63	0.0000	697.49	20.6116
319.41	45.2133	511.00	26.0926	702.65	20.6445
320.08	45.2289	514.00	26.1225	706.68	23.7707
321.04	34.6046	514.00	26.1233	711.68	21.7370
323.87	43.5427	520.40	26.1867	720.70	28.2318
325.23	47.1311	520.69	0.0000	721.93	0.0000
328.76	37.4184	522.65	0.0000	722.78	19.9412
333.37	65.1927	527.90	0.0000	722.91	19.9418
333.97	59.8528	528.26	31.1289	723.31	19.9441
334.37	60.7586	529.59	33.0911	724.19	18.2870
338.28	38.4983	529.87	0.0000	727.33	17.6807
338.32	42.9756	531.02	23.3708	733.00	16.6689
311.90	60.9495	537.26	28.3062	735.93	15.6404
340.48	60.9495	546.56	0.0000	333.97	19.8205
340.55	60.9516	552.55	17.6688	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	17.7699	949.00	12.1524	1384.29	8.7319
747.24	12.5544	667.71	0.0000	1408.01	3.8979
748.06	14.6507	962.31	15.9609	1434.09	8.8124
752.31	15.7164	964.08	15.9680	1435.80	5.8767
753.82	16.7720	966.17	0.0000	1457.56	0.0000
756.73	23.0809	911.20	12.4342	1460.82	5.9033
756.80	23.0816	983.53	10.6957	1489.16	4.9443
884.68	20.1855	984.45	0.0000	1505.03	1.6528
765.81	16.8306	1274.44	16.7633	1584.12	5.0261
766.42	16.8335	1001.03	6.7128	1596.21	5.0364
766.84	20.2025	1002.74	14.5504	1620.50	11.1251
772.60	0.0000	1004.73	12.3179	1621.92	8.0930
776.52	16.8823	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	6.1383
778.90	15.2046	1028.54	0.0000	1750.46	0.0000
783.70	20.0895	1037.84	14.4453	1764.49	1.0350
788.74	20.1179	1038.76	0.0000	1063.66	3.4530
792.07	28.6158	631.29	11.7609	1771.35	0.0000
795.86	14.8536	1048.07	10.8598	1791.20	0.0000
810.06	9.5869	1049.04	15.3880	1808.65	3.1261
810.29	10.6528	1050.41	17.2039	1810.72	0.0000
344.28	9.5878	1063.66	13.6230	1836.06	2.0928
810.76	11.7194	1077.00	12.1465		
815.77	10.6689	1077.34	7.5920		
1048.07	14.9481	1085.87	7.6066		
832.01	13.9315	1093.63	12.8010		
834.85	20.3777	1099.45	11.9025		
835.71	18.2368	1112.07	15.3019		
836.80	0.0000	1112.84	13.7739		
846.75	0.0000	1115.54	9.1880		
846.77	13.7723	1120.29	17.4757		
856.80	21.5771	1120.55	13.7974		
860.56	14.0394	1221.41	13.7996		
871.09	12.9957	1129.67	13.8252		
873.19	16.2534	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	13.0239	1173.23	12.0942		
880.51	11.9423	1177.95	9.3125		
881.60	15.2036	1189.05	15.8686		
883.24	13.0371	1204.77	7.4922		
884.68	16.3023	1221.41	3.7590		
889.28	15.2339	1231.02	13.1824		
894.76	22.6656	1235.36	13.1940		
898.04	13.9598	1238.28	15.0875		
900.72	6.9848	1260.41	0.0000		
903.28	13.9785	1271.87	12.3417		
911.20	15.3202	1274.44	5.6991		
912.08	19.2640	1274.54	5.6994		
923.98	0.0000	1291.59	6.6715		
926.50	15.3800	1298.22	0.0000		
929.11	14.2906	1312.11	8.6124		
935.54	13.2129	1332.49	9.6069		
937.49	13.2191	1362.66	0.0000		
944.13	8.8274	1365.19	5.3706		
946.00	7.7276	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:18:27.35

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299036.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM23.CNF;911
                                         Background date  : 28-JUL-2024 11:28:24
Sample date      : 26-JUN-2024 12:25:00  Acquisition date : 31-JUL-2024 16:14:14
Sample ID        : G674299036            Sample quantity  : 9.26100E+01 GRAM
Detector name    : GAM23                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.79  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	4	74.92	33	54	1.18	149.82	144	15	9.21E-03	41.8	3.11E+00
2	4	76.88	46	58	1.17	153.75	144	15	1.29E-02	33.0	
3	0	87.58	13	49	0.93	175.14	173	6	3.66E-03	87.2	
4	5	90.02	24	30	1.13	180.02	178	15	6.55E-03	40.1	1.60E+00
5	5	92.53*	16	48	1.39	185.04	178	15	4.35E-03	93.5	
6	0	122.31	21	31	2.17	244.60	241	8	5.87E-03	50.1	
7	6	183.76	12	20	0.92	367.46	366	10	3.45E-03	57.5	3.25E+00
8	6	185.84*	28	38	1.39	371.62	366	10	7.81E-03	50.4	
9	0	209.61	26	27	1.59	419.16	415	9	7.14E-03	42.4	
10	0	238.86*	73	56	1.09	477.64	474	9	2.03E-02	22.0	
11	3	241.79	22	12	0.86	483.51	482	11	6.03E-03	28.1	1.90E+00
12	3	243.29	20	27	1.43	486.50	482	11	5.47E-03	58.8	
13	0	269.98	15	27	0.85	539.87	536	8	4.04E-03	68.0	
14	0	295.03*	38	25	1.33	589.96	584	11	1.07E-02	30.6	
15	0	338.50	17	21	1.31	676.90	672	9	4.66E-03	56.2	
16	0	351.98*	63	33	1.50	703.85	698	11	1.75E-02	22.0	
17	2	515.92	16	1	1.72	1031.69	1015	22	4.51E-03	36.2	1.72E+00
18	0	553.22	8	6	0.99	1106.28	1103	7	2.35E-03	56.9	
19	0	582.97	32	9	1.10	1165.78	1161	11	9.02E-03	24.6	
20	0	609.26*	75	7	1.94	1218.35	1212	14	2.08E-02	14.2	
21	0	686.69	6	3	0.56	1373.19	1366	10	1.74E-03	62.2	
22	0	699.29	8	6	0.82	1398.40	1394	8	2.17E-03	65.2	
23	0	714.96	14	12	0.78	1429.73	1423	15	4.00E-03	57.3	
24	3	768.83	15	0	2.22	1537.45	1529	17	4.23E-03	34.2	1.01E+00
25	3	771.87	10	0	1.46	1543.53	1529	17	2.72E-03	30.6	
26	0	797.39	5	8	0.89	1594.57	1590	6	1.41E-03	101.4	
27	0	859.46	14	0	3.97	1718.71	1713	11	3.89E-03	26.7	
28	0	910.80*	19	0	0.88	1821.38	1815	12	5.41E-03	24.2	
29	0	969.85	13	6	0.99	1939.48	1931	13	3.48E-03	50.6	
30	0	1460.27	40	0	1.82	2920.32	2914	13	1.11E-02	15.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:18:28

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299036.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 12:25:00 Acquisition date : 31-JUL-2024 16:14:14
Sample ID        : G674299036           Sample quantity  : 92.610 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA23              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.79   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Sample ID : G674299036 Acquisition date : 31-JUL-2024 16:14:14

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	37	10.66*	9.698E-01	2.916E+00	2.916E+00	31.62
CO-57	122.06	20	85.60*	6.054E+00	3.089E-02	3.379E-02	100.19
	136.47	------	10.68	5.982E+00	------	Line Not Found	------
CD-109	88.03	12	3.70*	4.981E+00	5.416E-01	5.710E-01	174.42
SN-126	64.28	------	9.60	2.453E+00	------	Line Not Found	------
	86.94	12	8.90	4.981E+00	2.252E-01	2.252E-01	174.42
	87.57	12	37.00*	4.981E+00	5.416E-02	5.416E-02	174.42
PM-147	121.22	20	0.00*	6.054E+00	9.279E+02	9.518E+02	100.19
TL-208	277.37	------	6.60	3.918E+00	------	Line Not Found	------
	583.19	30	85.00*	2.204E+00	1.310E-01	1.310E-01	49.13
	860.56	13	12.50	1.570E+00	5.383E-01	5.383E-01	53.45
BI-211	72.87	------	1.23	3.550E+00	------	Line Not Found	------
	351.06	59	12.92*	3.272E+00	1.129E+00	1.129E+00	44.07
PB-212	74.82	31	10.28	3.789E+00	6.456E-01	6.456E-01	83.63
	77.11	43	17.10	4.007E+00	5.132E-01	5.132E-01	66.01
	238.63	68	43.60*	4.378E+00	2.902E-01	2.902E-01	44.01
	300.09	------	3.30	3.693E+00	------	Line Not Found	------
PB-214	74.82	31	5.80	3.789E+00	1.144E+00	1.144E+00	83.63
	77.11	43	9.70	4.007E+00	9.046E-01	9.047E-01	66.01
	87.09	12	3.41	4.981E+00	5.876E-01	5.877E-01	174.42
	242.00	20	7.25	4.339E+00	5.223E-01	5.223E-01	56.27
	295.22	36	18.42	3.740E+00	4.224E-01	4.224E-01	61.28
	351.93	59	35.60*	3.272E+00	4.096E-01	4.096E-01	44.07
RA-224	240.99	20	4.10*	4.339E+00	9.236E-01	9.236E-01	56.27
RA-226	74.82	31	5.80	3.789E+00	1.144E+00	1.144E+00	83.63
	77.11	43	9.70	4.007E+00	9.046E-01	9.047E-01	66.01
	87.09	12	3.41	4.981E+00	5.876E-01	5.877E-01	174.42
	242.00	20	7.25	4.339E+00	5.223E-01	5.223E-01	56.27
	295.22	36	18.42	3.740E+00	4.224E-01	4.224E-01	61.28
	351.93	59	35.60*	3.272E+00	4.096E-01	4.096E-01	44.07
AC-228	105.21	------	1.10	5.840E+00	------	Line Not Found	------
	338.32	16	11.27	3.370E+00	3.337E-01	3.337E-01	112.32
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	18	25.80*	1.488E+00	3.826E-01	3.826E-01	48.32
	968.97	12	15.80	1.403E+00	4.263E-01	4.263E-01	101.14
RA-228	105.21	------	1.10	5.840E+00	------	Line Not Found	------
	338.32	16	11.27	3.370E+00	3.337E-01	3.337E-01	112.32
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	18	25.80*	1.488E+00	3.826E-01	3.826E-01	48.32
	968.97	12	15.80	1.403E+00	4.263E-01	4.263E-01	101.14
TH-228	74.82	31	10.28	3.789E+00	6.456E-01	6.456E-01	83.63
	77.11	43	17.10	4.007E+00	5.132E-01	5.132E-01	66.01
	238.63	68	43.60*	4.378E+00	2.902E-01	2.902E-01	44.01
	300.09	------	3.30	3.693E+00	------	Line Not Found	------
TH-230	74.82	31	5.80	3.789E+00	1.144E+00	1.144E+00	83.63
	77.11	43	9.70	4.007E+00	9.046E-01	9.046E-01	66.01
	87.09	12	3.41	4.981E+00	5.876E-01	5.876E-01	174.42
	242.00	20	7.25	4.339E+00	5.223E-01	5.223E-01	56.27
	295.22	36	18.42	3.740E+00	4.224E-01	4.224E-01	61.28

Sample ID : G674299036 Acquisition date : 31-JUL-2024 16:14:14

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	351.93	59	35.60*	3.272E+00	4.096E-01	4.096E-01	44.07
TH-232	105.21	------	1.10	5.840E+00	------	Line Not Found	------
	338.32	16	11.27	3.370E+00	3.337E-01	3.337E-01	112.32
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	18	25.80*	1.488E+00	3.826E-01	3.826E-01	48.32
	968.97	12	15.80	1.403E+00	4.263E-01	4.263E-01	101.14
U-234	74.82	31	5.80	3.789E+00	1.144E+00	1.144E+00	83.63
	77.11	43	9.70	4.007E+00	9.046E-01	9.046E-01	66.01
	87.09	12	3.41	4.981E+00	5.876E-01	5.876E-01	174.42
	242.00	20	7.25	4.339E+00	5.223E-01	5.223E-01	56.27
	295.22	36	18.42	3.740E+00	4.224E-01	4.224E-01	61.28
	351.93	59	35.60*	3.272E+00	4.096E-01	4.096E-01	44.07
U-235	89.96	22	3.47	5.152E+00	9.998E-01	9.998E-01	80.28
	93.35	15	5.60	5.309E+00	3.991E-01	3.991E-01	186.99
	143.76	------	10.96*	5.897E+00	------	Line Not Found	------
	163.33	------	5.08	5.592E+00	------	Line Not Found	------
	185.72	26	57.20	5.199E+00	7.159E-02	7.159E-02	100.78
	205.31	------	5.01	4.872E+00	------	Line Not Found	------
AM-243	43.53	------	5.90	2.737E-01	------	Line Not Found	------
	74.66	31	67.20*	3.789E+00	9.875E-02	9.876E-02	83.63

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:18:29.77

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299036.CNF;1  *
* Acquisition date : 31-JUL-2024 16:14:14 Sensitivity     : 3.000           *
* Detector ID      : GAM23                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.79     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:25:00 Analyst initials: MXR1            *
* Sample ID        : G674299036           Sample Quantity : 9.2610E+01 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  6-SEP-2023 11:17:47 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM23_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.916E+00	9.036E-01	9.997E-01
CO-57	3.379E-02	3.318E-02	4.021E-02
CD-109	5.710E-01	9.760E-01	1.353E+00
SN-126	5.416E-02	9.258E-02	1.291E-01
PM-147	9.518E+02	9.346E+02	1.132E+03
TL-208	1.310E-01	6.306E-02	8.363E-02
BI-211	1.129E+00	4.874E-01	3.949E-01
PB-212	2.902E-01	1.252E-01	1.307E-01
PB-214	4.096E-01	1.769E-01	1.437E-01
RA-224	9.236E-01	5.093E-01	9.058E-01
RA-226	4.096E-01	1.769E-01	1.437E-01
AC-228	3.826E-01	1.812E-01	3.288E-01
RA-228	3.826E-01	1.812E-01	3.288E-01
TH-228	2.902E-01	1.252E-01	1.307E-01
TH-230	4.096E-01	1.769E-01	1.437E-01
TH-232	3.826E-01	1.812E-01	3.288E-01
U-234	4.096E-01	1.769E-01	1.437E-01
U-235	1.009E-01	1.756E-01	3.474E-01
AM-243	9.876E-02	8.093E-02	8.099E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-4.747E-02	4.500E-01	8.547E-01	NOT IDENT.
NA-22	-2.543E-02	4.424E-02	8.138E-02	NOT IDENT.
NA-24	0.000E+00	3.817E+15	0.000E+00	SHORT HLIF
AL-26	-2.027E-02	2.809E-02	2.586E-02	NOT IDENT.
SC-46	-4.218E-02	5.443E-02	9.073E-02	NOT IDENT.
V-48	-5.321E-02	1.693E-01	3.234E-01	NOT IDENT.
CR-51	4.388E-01	5.915E-01	1.277E+00	NOT IDENT.
MN-52	4.523E+00	3.351E+00	9.594E+00	NOT IDENT.
MN-54	3.851E-03	3.933E-02	8.227E-02	NOT IDENT.
CO-56	-5.222E-02	5.295E-02	8.518E-02	NOT IDENT.
MN-56	0.000E+00	1.004E+41	0.000E+00	SHORT HLIF

CO-58	-2.040E-03	6.031E-02	1.195E-01	NOT IDENT.
FE-59	-4.428E-02	1.288E-01	2.396E-01	NOT IDENT.
CO-60	1.032E-02	4.454E-02	1.017E-01	NOT IDENT.
ZN-65	5.287E-02	9.054E-02	2.121E-01	NOT IDENT.
GE-68	-1.165E+00	1.926E+00	3.265E+00	NOT IDENT.
AS-73	5.732E-02	1.514E+00	2.530E+00	NOT IDENT.
AS-74	1.201E-01	2.371E-01	4.916E-01	NOT IDENT.
SE-75	1.446E-02	5.722E-02	1.049E-01	FAIL ABUN
BR-77	0.000E+00	6.749E+03	0.000E+00	SHORT HLIF
SR-82	-6.217E-01	6.841E-01	1.058E+00	NOT IDENT.
RB-83	1.045E-01	9.227E-02	2.041E-01	FAIL ABUN
RB-84	4.737E-02	1.199E-01	2.625E-01	NOT IDENT.
KR-85	1.896E+00	7.978E+00	1.574E+01	NOT IDENT.
SR-85	1.244E-02	5.221E-02	1.030E-01	NOT IDENT.
RB-86	-9.887E-01	2.269E+00	4.030E+00	NOT IDENT.
Y-88	-2.902E-02	6.334E-02	1.308E-01	NOT IDENT.
Y-91	-9.537E+00	1.745E+01	3.005E+01	NOT IDENT.
NB-94	-8.286E-03	4.806E-02	8.067E-02	NOT IDENT.
NB-95	-1.366E-03	6.184E-02	1.100E-01	NOT IDENT.
NB-95M	3.483E-02	1.628E-01	2.774E-01	NOT IDENT.
ZR-95	6.464E-02	9.599E-02	2.191E-01	NOT IDENT.
NB-97	0.000E+00	9.038E+40	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	8.225E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.115E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	3.354E+40	0.000E+00	SHORT HLIF
RH-101	-1.264E-02	2.433E-02	4.286E-02	NOT IDENT.
RH-102	-3.503E-02	5.724E-02	9.437E-02	NOT IDENT.
RU-103	2.529E-03	5.013E-02	1.013E-01	FAIL ABUN
RH-106	2.643E-01	3.922E-01	8.341E-01	NOT IDENT.
RU-106	2.643E-01	3.922E-01	8.341E-01	NOT IDENT.
AG-108M	-7.224E-03	2.445E-02	4.631E-02	NOT IDENT.
AG-110	6.298E-01	7.233E-01	1.698E+00	NOT IDENT.
AG-110M	-2.763E-02	6.610E-02	1.210E-01	NOT IDENT.
SN-113	-1.190E-02	4.423E-02	8.388E-02	NOT IDENT.
CD-115	0.000E+00	5.851E+03	0.000E+00	SHORT HLIF
SN-117M	-7.794E-02	1.483E-01	2.536E-01	NOT IDENT.
SB-122	0.000E+00	3.607E+02	0.000E+00	SHORT HLIF
TE-123M	1.262E-02	2.877E-02	5.586E-02	NOT IDENT.
SB-124	2.865E-02	9.992E-02	2.685E-01	NOT IDENT.
SB-125	-3.059E-02	9.795E-02	1.802E-01	NOT IDENT.
TE-125M	-9.780E-01	9.393E+00	1.776E+01	NOT IDENT.
I-126	5.165E-03	7.649E-01	1.445E+00	NOT IDENT.
SB-126	1.431E-01	4.666E-01	9.313E-01	NOT IDENT.
SB-127	3.780E+01	4.608E+01	9.894E+01	FAIL ABUN
I-131	-3.667E-01	6.470E-01	1.155E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	4.971E+01	0.000E+00	SHORT HLIF
BA-133	-5.527E-03	4.831E-02	8.273E-02	NOT IDENT.
I-133	0.000E+00	5.794E+10	0.000E+00	SHORT HLIF
CS-134	5.217E-02	5.504E-02	1.239E-01	NOT IDENT.
I-135	0.000E+00	8.034E+37	0.000E+00	SHORT HLIF
CS-136	-2.288E-01	3.698E-01	6.292E-01	NOT IDENT.
BA-137M	-2.399E-02	3.683E-02	5.948E-02	NOT IDENT.
CS-137	-2.534E-02	3.891E-02	6.283E-02	NOT IDENT.
LA-138	-2.208E-02	6.767E-02	1.340E-01	NOT IDENT.
CE-139	-3.385E-03	2.791E-02	5.078E-02	NOT IDENT.
BA-140	3.242E-01	6.515E-01	1.468E+00	NOT IDENT.
LA-140	3.165E-02	3.157E-01	7.142E-01	NOT IDENT.
CE-141	-3.796E-02	8.461E-02	1.477E-01	NOT IDENT.
CE-143	0.000E+00	2.706E+06	0.000E+00	SHORT HLIF
CE-144	-1.569E-01	1.666E-01	2.720E-01	NOT IDENT.
PM-144	6.292E-03	3.481E-02	6.821E-02	NOT IDENT.
PR-144	4.758E-01	2.633E+00	5.158E+00	NOT IDENT.
PM-146	-2.900E-02	4.057E-02	6.834E-02	NOT IDENT.
ND-147	1.212E+00	1.873E+00	4.182E+00	FAIL ABUN
PM-149	0.000E+00	4.323E+04	0.000E+00	SHORT HLIF
EU-150	1.465E-02	2.949E-02	5.656E-02	FAIL ABUN
EU-152	3.319E-03	1.266E-01	2.114E-01	FAIL ABUN
GD-153	8.767E-03	7.468E-02	1.360E-01	NOT IDENT.
EU-154	-7.132E-02	1.241E-01	2.282E-01	FAIL ABUN
EU-155	-1.814E-02	9.222E-02	1.708E-01	FAIL ABUN
TB-160	0.000E+00	1.878E-01	3.797E-01	FAIL ABUN
HO-166M	3.516E-03	6.627E-02	1.232E-01	FAIL ABUN
TM-171	-1.255E+01	2.972E+01	4.580E+01	NOT IDENT.
HF-172	9.324E-03	1.588E-01	2.828E-01	FAIL ABUN
LU-172	2.571E-02	8.212E-02	1.734E-01	FAIL ABUN
LU-176	1.351E-02	2.671E-02	5.562E-02	FAIL ABUN
HF-181	-1.061E-02	6.258E-02	1.181E-01	NOT IDENT.

TA-182	-8.009E-02	1.694E-01	3.016E-01	NOT IDENT.
RE-183	-1.238E-01	2.632E-01	4.947E-01	NOT IDENT.
RE-184	5.713E-03	2.194E-01	4.438E-01	NOT IDENT.
W-188	-5.630E-02	9.668E+00	1.708E+01	NOT IDENT.
IR-192	2.123E-02	4.220E-02	8.800E-02	FAIL ABUN
HG-203	-1.107E-02	5.635E-02	9.651E-02	NOT IDENT.
TL-204	2.755E+00	4.400E+00	8.651E+00	NOT IDENT.
BI-207	1.207E-03	7.314E-02	1.431E-01	FAIL ABUN
BI-210	-6.116E-02	6.426E+00	1.076E+01	NOT IDENT.
PB-210	-6.116E-02	6.426E+00	1.076E+01	NOT IDENT.
PB-211	1.270E-01	6.431E-01	1.318E+00	NOT IDENT.
BI-212	1.169E-01	6.370E-01	1.298E+00	NOT IDENT.
BI-213	5.351E-02	1.092E-01	2.289E-01	NOT IDENT.
BI-214	0.000E+00	1.629E-01	3.535E-01	FAIL ABUN
RN-219	-1.525E-01	3.984E-01	7.300E-01	FAIL ABUN
RN-222	0.000E+00	1.629E-01	3.535E-01	FAIL ABUN
RA-223	-2.396E-01	6.927E-01	1.283E+00	FAIL ABUN
AC-225	-4.530E-01	2.057E+00	3.625E+00	NOT IDENT.
AC-227	4.105E-02	2.680E-01	4.892E-01	NOT IDENT.
TH-227	4.105E-02	2.680E-01	4.892E-01	NOT IDENT.
TH-229	2.704E-01	5.064E-01	9.807E-01	FAIL ABUN
PA-231	2.326E-01	5.018E-01	1.027E+00	NOT IDENT.
TH-231	-2.396E-01	6.927E-01	1.283E+00	FAIL ABUN
PA-233	-1.033E-02	5.808E-02	1.125E-01	NOT IDENT.
PA-234	-1.619E-01	2.987E-01	5.328E-01	NOT IDENT.
PA-234M	3.470E+00	5.417E+00	1.220E+01	NOT IDENT.
TH-234	-4.743E-02	1.357E+00	2.693E+00	FAIL ABUN
NP-237	-1.033E-02	5.808E-02	1.125E-01	NOT IDENT.
NP-238	0.000E+00	1.631E+04	0.000E+00	SHORT HLIF
U-238	-4.743E-02	1.357E+00	2.693E+00	FAIL ABUN
NP-239	-1.487E-01	2.300E-01	3.992E-01	NOT IDENT.
PU-239	7.428E+01	2.781E+02	5.399E+02	NOT IDENT.
AM-241	2.580E-02	1.618E-01	3.235E-01	NOT IDENT.
CM-243	5.401E-02	9.468E-02	1.900E-01	NOT IDENT.
BK-247	1.866E-02	9.114E-02	1.662E-01	FAIL ABUN
CM-247	-6.372E-03	3.378E-02	6.470E-02	NOT IDENT.
CF-249	2.226E-02	4.134E-02	8.679E-02	NOT IDENT.
CF-251	-3.998E-02	1.132E-01	1.976E-01	NOT IDENT.
ANH-511	-1.459E-02	6.589E-02	1.437E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:18:28.29

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	37	10.66*	9.698E-01	2.916E+00	2.916E+00	31.62
CO-57	122.06	20	85.60*	6.054E+00	3.089E-02	3.379E-02	100.19
	136.47	------	10.68	5.982E+00	------	Line Not Found	------
CD-109	88.03	12	3.70*	4.981E+00	5.416E-01	5.710E-01	174.42
SN-126	64.28	------	9.60	2.453E+00	------	Line Not Found	------
	86.94	12	8.90	4.981E+00	2.252E-01	2.252E-01	174.42
	87.57	12	37.00*	4.981E+00	5.416E-02	5.416E-02	174.42
PM-147	121.22	20	0.00*	6.054E+00	9.279E+02	9.518E+02	100.19
TL-208	277.37	------	6.60	3.918E+00	------	Line Not Found	------
	583.19	30	85.00*	2.204E+00	1.310E-01	1.310E-01	49.13
	860.56	13	12.50	1.570E+00	5.383E-01	5.383E-01	53.45
BI-211	72.87	------	1.23	3.550E+00	------	Line Not Found	------
	351.06	59	12.92*	3.272E+00	1.129E+00	1.129E+00	44.07
PB-212	74.82	31	10.28	3.789E+00	6.456E-01	6.456E-01	83.63
	77.11	43	17.10	4.007E+00	5.132E-01	5.132E-01	66.01
	238.63	68	43.60*	4.378E+00	2.902E-01	2.902E-01	44.01
	300.09	------	3.30	3.693E+00	------	Line Not Found	------
PB-214	74.82	31	5.80	3.789E+00	1.144E+00	1.144E+00	83.63
	77.11	43	9.70	4.007E+00	9.046E-01	9.047E-01	66.01
	87.09	12	3.41	4.981E+00	5.876E-01	5.877E-01	174.42
	242.00	20	7.25	4.339E+00	5.223E-01	5.223E-01	56.27
	295.22	36	18.42	3.740E+00	4.224E-01	4.224E-01	61.28
	351.93	59	35.60*	3.272E+00	4.096E-01	4.096E-01	44.07
RA-224	240.99	20	4.10*	4.339E+00	9.236E-01	9.236E-01	56.27
RA-226	74.82	31	5.80	3.789E+00	1.144E+00	1.144E+00	83.63
	77.11	43	9.70	4.007E+00	9.046E-01	9.047E-01	66.01
	87.09	12	3.41	4.981E+00	5.876E-01	5.877E-01	174.42
	242.00	20	7.25	4.339E+00	5.223E-01	5.223E-01	56.27
	295.22	36	18.42	3.740E+00	4.224E-01	4.224E-01	61.28
	351.93	59	35.60*	3.272E+00	4.096E-01	4.096E-01	44.07
AC-228	105.21	------	1.10	5.840E+00	------	Line Not Found	------
	338.32	16	11.27	3.370E+00	3.337E-01	3.337E-01	112.32
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	18	25.80*	1.488E+00	3.826E-01	3.826E-01	48.32
	968.97	12	15.80	1.403E+00	4.263E-01	4.263E-01	101.14
RA-228	105.21	------	1.10	5.840E+00	------	Line Not Found	------
	338.32	16	11.27	3.370E+00	3.337E-01	3.337E-01	112.32
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	18	25.80*	1.488E+00	3.826E-01	3.826E-01	48.32
	968.97	12	15.80	1.403E+00	4.263E-01	4.263E-01	101.14
TH-228	74.82	31	10.28	3.789E+00	6.456E-01	6.456E-01	83.63
	77.11	43	17.10	4.007E+00	5.132E-01	5.132E-01	66.01
	238.63	68	43.60*	4.378E+00	2.902E-01	2.902E-01	44.01
	300.09	------	3.30	3.693E+00	------	Line Not Found	------
TH-230	74.82	31	5.80	3.789E+00	1.144E+00	1.144E+00	83.63
	77.11	43	9.70	4.007E+00	9.046E-01	9.046E-01	66.01
	87.09	12	3.41	4.981E+00	5.876E-01	5.876E-01	174.42

Sample ID : G674299036 Acquisition date : 31-JUL-2024 16:14:14

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	242.00	20	7.25	4.339E+00	5.223E-01	5.223E-01	56.27
	295.22	36	18.42	3.740E+00	4.224E-01	4.224E-01	61.28
	351.93	59	35.60*	3.272E+00	4.096E-01	4.096E-01	44.07
TH-232	105.21	------	1.10	5.840E+00	------	Line Not Found	------
	338.32	16	11.27	3.370E+00	3.337E-01	3.337E-01	112.32
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	18	25.80*	1.488E+00	3.826E-01	3.826E-01	48.32
	968.97	12	15.80	1.403E+00	4.263E-01	4.263E-01	101.14
U-234	74.82	31	5.80	3.789E+00	1.144E+00	1.144E+00	83.63
	77.11	43	9.70	4.007E+00	9.046E-01	9.046E-01	66.01
	87.09	12	3.41	4.981E+00	5.876E-01	5.876E-01	174.42
	242.00	20	7.25	4.339E+00	5.223E-01	5.223E-01	56.27
	295.22	36	18.42	3.740E+00	4.224E-01	4.224E-01	61.28
	351.93	59	35.60*	3.272E+00	4.096E-01	4.096E-01	44.07
U-235	89.96	22	3.47	5.152E+00	9.998E-01	9.998E-01	80.28
	93.35	15	5.60	5.309E+00	3.991E-01	3.991E-01	186.99
	143.76	------	10.96*	5.897E+00	------	Line Not Found	------
	163.33	------	5.08	5.592E+00	------	Line Not Found	------
	185.72	26	57.20	5.199E+00	7.159E-02	7.159E-02	100.78
	205.31	------	5.01	4.872E+00	------	Line Not Found	------
AM-243	43.53	------	5.90	2.737E-01	------	Line Not Found	------
	74.66	31	67.20*	3.789E+00	9.875E-02	9.876E-02	83.63

Flag: "*" = Keyline

Sample ID : G674299036 Acquisition date : 31-JUL-2024 16:14:14

Total number of lines in spectrum 30
Number of unidentified lines 5
Number of lines tentatively identified by NID 25 83.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.916E+00	2.916E+00	0.922E+00	31.62	
CO-57	271.74D	1.09	3.089E-02	3.379E-02	3.386E-02	100.19	
CD-109	461.40D	1.05	5.416E-01	5.710E-01	9.959E-01	174.42	
SN-126	2.30E+05Y	1.00	5.416E-02	5.416E-02	9.447E-02	174.42	
PM-147	2.62Y	1.03	9.279E+02	9.518E+02	9.537E+02	100.19	
TL-208	1.41E+10Y	1.00	1.310E-01	1.310E-01	0.643E-01	49.13	
BI-211	7.04E+08Y	1.00	1.129E+00	1.129E+00	0.497E+00	44.07	
PB-212	1.41E+10Y	1.00	2.902E-01	2.902E-01	1.277E-01	44.01	
PB-214	1600.00Y	1.00	4.096E-01	4.096E-01	1.805E-01	44.07	
RA-224	1.41E+10Y	1.00	9.236E-01	9.236E-01	5.196E-01	56.27	
RA-226	1600.00Y	1.00	4.096E-01	4.096E-01	1.805E-01	44.07	
AC-228	1.41E+10Y	1.00	3.826E-01	3.826E-01	1.849E-01	48.32	
RA-228	1.41E+10Y	1.00	3.826E-01	3.826E-01	1.849E-01	48.32	
TH-228	1.41E+10Y	1.00	2.902E-01	2.902E-01	1.277E-01	44.01	
TH-230	7.54E+04Y	1.00	4.096E-01	4.096E-01	1.805E-01	44.07	
TH-232	1.41E+10Y	1.00	3.826E-01	3.826E-01	1.849E-01	48.32	
U-234	2.45E+05Y	1.00	4.096E-01	4.096E-01	1.805E-01	44.07	
U-235	7.04E+08Y	1.00	7.159E-02	7.159E-02	7.215E-02	100.78	K
AM-243	7370.00Y	1.00	9.875E-02	9.876E-02	8.259E-02	83.63	
			---	---			
	Total Activity :		9.372E+02	9.611E+02			

Grand Total Activity : 9.372E+02 9.611E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299036 Acquisition date : 31-JUL-2024 16:14:14

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
6	183.76	12	18	0.92	367.46	366	10	3.45E-03	****	5.23E+00	T
0	209.61	24	25	1.59	419.16	415	9	7.14E-03	84.8	4.80E+00	T
3	243.29	18	26	1.43	486.50	482	11	5.47E-03	****	4.32E+00	T
0	269.98	14	26	0.85	539.87	536	8	4.04E-03	****	4.00E+00	T
2	515.92	15	1	1.72	1031.69	1015	22	4.51E-03	72.4	2.43E+00	
0	553.22	8	5	0.99	1106.28	1103	7	2.35E-03	****	2.30E+00	T
0	609.26	70	7	1.94	1218.35	1212	14	2.08E-02	28.4	2.12E+00	T
0	686.69	6	3	0.56	1373.19	1366	10	1.74E-03	****	1.92E+00	T
0	699.29	7	6	0.82	1398.40	1394	8	2.17E-03	****	1.89E+00	
0	714.96	13	11	0.78	1429.73	1423	15	4.00E-03	****	1.85E+00	
3	768.83	14	0	2.22	1537.45	1529	17	4.23E-03	68.3	1.74E+00	
3	771.87	9	0	1.46	1543.53	1529	17	2.72E-03	61.2	1.73E+00	T
0	797.39	5	7	0.89	1594.57	1590	6	1.41E-03	****	1.68E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:18:40.10

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
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*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299036.CNF;1  *
* Acquisition date : 31-JUL-2024 16:14:14 Sensitivity     : 3.000           *
* Detector ID      : GAM23                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.79     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:25:00 Nuclide Library : SOLID           *
* Sample ID        : G674299036           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 9.2610E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  6-SEP-2023 11:17:47 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM23_CAN.CNF;21            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.950E-01
CO-57	1.783E-02
CD-109	6.152E-01
SN-126	5.870E-02
PM-147	5.017E+02
TL-208	3.604E-02
BI-211	1.719E-01
PB-212	5.971E-02
PB-214	6.255E-02
RA-224	3.923E-01
RA-226	6.255E-02
AC-228	1.362E-01
RA-228	1.362E-01
TH-228	5.971E-02
TH-230	6.255E-02
TH-232	1.362E-01
U-234	6.255E-02
U-235	1.570E-01
AM-243	3.623E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.640E-01	NOT IDENT.
NA-22	3.046E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	0.000E+00	NOT IDENT.
SC-46	3.583E-02	NOT IDENT.
V-48	1.257E-01	NOT IDENT.
CR-51	5.636E-01	NOT IDENT.
MN-52	3.933E+00	NOT IDENT.
MN-54	3.387E-02	NOT IDENT.
CO-56	3.325E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-58	5.050E-02	NOT IDENT.

FE-59	9.321E-02	NOT IDENT.
CO-60	4.036E-02	NOT IDENT.
ZN-65	8.682E-02	NOT IDENT.
GE-68	1.343E+00	NOT IDENT.
AS-73	1.135E+00	NOT IDENT.
AS-74	2.124E-01	NOT IDENT.
SE-75	4.694E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	4.201E-01	NOT IDENT.
RB-83	8.886E-02	FAIL ABUN
RB-84	1.097E-01	NOT IDENT.
KR-85	6.844E+00	NOT IDENT.
SR-85	4.479E-02	NOT IDENT.
RB-86	1.650E+00	NOT IDENT.
Y-88	4.895E-02	NOT IDENT.
Y-91	9.499E+00	NOT IDENT.
NB-94	3.457E-02	NOT IDENT.
NB-95	4.591E-02	NOT IDENT.
NB-95M	1.243E-01	NOT IDENT.
ZR-95	9.304E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.875E-02	NOT IDENT.
RH-102	3.764E-02	NOT IDENT.
RU-103	4.183E-02	FAIL ABUN
RH-106	3.614E-01	NOT IDENT.
RU-106	3.614E-01	NOT IDENT.
AG-108M	1.886E-02	NOT IDENT.
AG-110	7.160E-01	NOT IDENT.
AG-110M	4.975E-02	NOT IDENT.
SN-113	3.511E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.136E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.515E-02	NOT IDENT.
SB-124	9.514E-02	NOT IDENT.
SB-125	7.689E-02	NOT IDENT.
TE-125M	7.851E+00	NOT IDENT.
I-126	6.125E-01	NOT IDENT.
SB-126	3.869E-01	NOT IDENT.
SB-127	4.085E+01	FAIL ABUN
I-131	4.908E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.596E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.417E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.484E-01	NOT IDENT.
BA-137M	2.364E-02	NOT IDENT.
CS-137	2.498E-02	NOT IDENT.
LA-138	5.017E-02	NOT IDENT.
CE-139	2.249E-02	NOT IDENT.
BA-140	6.065E-01	NOT IDENT.
LA-140	2.723E-01	NOT IDENT.
CE-141	6.582E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.184E-01	NOT IDENT.
PM-144	2.796E-02	NOT IDENT.
PR-144	2.115E+00	NOT IDENT.
PM-146	2.791E-02	NOT IDENT.
ND-147	1.771E+00	FAIL ABUN
PM-149	0.000E+00	SHORT HLIF
EU-150	2.497E-02	FAIL ABUN
EU-152	9.342E-02	FAIL ABUN
GD-153	6.059E-02	NOT IDENT.
EU-154	8.544E-02	FAIL ABUN
EU-155	7.653E-02	FAIL ABUN
TB-160	1.571E-01	FAIL ABUN
HO-166M	5.085E-02	FAIL ABUN
TM-171	2.047E+01	NOT IDENT.
HF-172	1.251E-01	FAIL ABUN
LU-172	7.249E-02	FAIL ABUN
LU-176	2.463E-02	FAIL ABUN
HF-181	4.976E-02	NOT IDENT.
TA-182	1.069E-01	NOT IDENT.

RE-183	2.200E-01	NOT IDENT.
RE-184	1.842E-01	NOT IDENT.
W-188	7.532E+00	NOT IDENT.
IR-192	3.888E-02	FAIL ABUN
HG-203	4.252E-02	NOT IDENT.
TL-204	3.904E+00	NOT IDENT.
BI-207	6.022E-02	FAIL ABUN
BI-210	4.826E+00	NOT IDENT.
PB-210	4.826E+00	NOT IDENT.
PB-211	5.617E-01	NOT IDENT.
BI-212	5.604E-01	NOT IDENT.
BI-213	9.932E-02	NOT IDENT.
BI-214	1.656E-01	FAIL ABUN
RN-219	3.096E-01	FAIL ABUN
RN-222	1.656E-01	FAIL ABUN
RA-223	5.636E-01	FAIL ABUN
AC-225	1.580E+00	NOT IDENT.
AC-227	2.173E-01	NOT IDENT.
TH-227	2.173E-01	NOT IDENT.
TH-229	4.421E-01	FAIL ABUN
PA-231	4.585E-01	NOT IDENT.
TH-231	5.636E-01	FAIL ABUN
PA-233	4.840E-02	NOT IDENT.
PA-234	2.035E-01	NOT IDENT.
PA-234M	5.155E+00	NOT IDENT.
TH-234	1.221E+00	FAIL ABUN
NP-237	4.840E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	1.221E+00	FAIL ABUN
NP-239	1.771E-01	NOT IDENT.
PU-239	2.416E+02	NOT IDENT.
AM-241	1.453E-01	NOT IDENT.
CM-243	8.606E-02	NOT IDENT.
BK-247	7.420E-02	FAIL ABUN
CM-247	2.726E-02	NOT IDENT.
CF-249	3.800E-02	NOT IDENT.
CF-251	8.713E-02	NOT IDENT.
ANH-511	6.744E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:18:44.31

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299036.CNF;1  *
* Acquisition date : 31-JUL-2024 16:14:14 Sensitivity     : 3.000           *
* Detector ID      : GAM23                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.79     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:25:00 Nuclide Library : SOLID           *
* Sample ID        : G674299036           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 9.2610E+01 GRAM *
*                                         Quantity Err(%) : 1.0798E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  6-SEP-2023 11:17:47 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM23_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.916E+00	9.399E-01	9.399E-01
CO-57	3.379E-02	3.328E-02	3.328E-02
CD-109	5.710E-01	9.790E-01	9.790E-01
SN-126	5.416E-02	9.282E-02	9.282E-02
PM-147	9.518E+02	9.372E+02	9.372E+02
TL-208	1.310E-01	6.413E-02	6.413E-02
BI-211	1.129E+00	4.958E-01	4.958E-01
PB-212	2.902E-01	1.280E-01	1.280E-01
PB-214	4.096E-01	1.798E-01	1.798E-01
RA-224	9.236E-01	5.162E-01	5.162E-01
RA-226	4.096E-01	1.798E-01	1.798E-01
AC-228	3.826E-01	1.846E-01	1.846E-01
RA-228	3.826E-01	1.846E-01	1.846E-01
TH-228	2.902E-01	1.280E-01	1.280E-01
TH-230	4.096E-01	1.798E-01	1.798E-01
TH-232	3.826E-01	1.846E-01	1.846E-01
U-234	4.096E-01	1.798E-01	1.798E-01
U-235	1.009E-01	1.758E-01	1.758E-01
AM-243	9.876E-02	8.175E-02	8.175E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-4.747E-02	4.500E-01	4.505E-01	NOT IDENT.
NA-22	-2.543E-02	4.429E-02	4.575E-02	NOT IDENT.
NA-24	1.678E+15	3.821E+15	3.895E+15	SHORT HLIF
AL-26	-2.027E-02	2.813E-02	2.957E-02	NOT IDENT.
SC-46	-4.218E-02	5.455E-02	5.777E-02	NOT IDENT.
V-48	-5.321E-02	1.694E-01	1.711E-01	NOT IDENT.
CR-51	4.388E-01	5.924E-01	6.246E-01	NOT IDENT.
MN-52	4.523E+00	3.372E+00	3.940E+00	NOT IDENT.
MN-54	3.851E-03	3.933E-02	3.937E-02	NOT IDENT.
CO-56	-5.222E-02	5.316E-02	5.814E-02	NOT IDENT.
MN-56	-1.000E+41	1.008E+41	0.000E+00	SHORT HLIF

CO-58	-2.040E-03	6.031E-02	6.032E-02	NOT IDENT.
FE-59	-4.428E-02	1.289E-01	1.305E-01	NOT IDENT.
CO-60	1.032E-02	4.455E-02	4.480E-02	NOT IDENT.
ZN-65	5.287E-02	9.064E-02	9.372E-02	NOT IDENT.
GE-68	-1.165E+00	1.928E+00	1.999E+00	NOT IDENT.
AS-73	5.732E-02	1.514E+00	1.514E+00	NOT IDENT.
AS-74	1.201E-01	2.374E-01	2.435E-01	NOT IDENT.
SE-75	1.446E-02	5.723E-02	5.760E-02	FAIL ABUN
BR-77	1.565E+04	1.732E+04	1.870E+04	SHORT HLIF
SR-82	-6.217E-01	6.863E-01	7.414E-01	NOT IDENT.
RB-83	1.045E-01	9.372E-02	1.049E-01	FAIL ABUN
RB-84	4.737E-02	1.199E-01	1.218E-01	NOT IDENT.
KR-85	1.896E+00	7.979E+00	8.025E+00	NOT IDENT.
SR-85	1.244E-02	5.222E-02	5.252E-02	NOT IDENT.
RB-86	-9.887E-01	2.271E+00	2.314E+00	NOT IDENT.
Y-88	-2.902E-02	6.338E-02	6.472E-02	NOT IDENT.
Y-91	-9.537E+00	1.747E+01	1.799E+01	NOT IDENT.
NB-94	-8.286E-03	4.807E-02	4.821E-02	NOT IDENT.
NB-95	-1.366E-03	6.184E-02	6.185E-02	NOT IDENT.
NB-95M	3.483E-02	1.629E-01	1.636E-01	NOT IDENT.
ZR-95	6.464E-02	9.617E-02	1.005E-01	NOT IDENT.
NB-97	1.000E+41	9.081E+40	0.000E+00	SHORT HLIF
ZR-97	-3.701E+14	8.232E+14	8.399E+14	SHORT HLIF
MO-99	-1.087E+03	2.117E+03	2.173E+03	SHORT HLIF
TC-99M	1.133E+40	3.357E+40	0.000E+00	SHORT HLIF
RH-101	-1.264E-02	2.445E-02	2.511E-02	NOT IDENT.
RH-102	-3.503E-02	5.737E-02	5.951E-02	NOT IDENT.
RU-103	2.529E-03	5.013E-02	5.014E-02	FAIL ABUN
RH-106	2.643E-01	3.931E-01	4.107E-01	NOT IDENT.
RU-106	2.643E-01	3.931E-01	4.107E-01	NOT IDENT.
AG-108M	-7.224E-03	2.446E-02	2.468E-02	NOT IDENT.
AG-110	6.298E-01	7.254E-01	7.790E-01	NOT IDENT.
AG-110M	-2.763E-02	6.615E-02	6.732E-02	NOT IDENT.
SN-113	-1.190E-02	4.424E-02	4.457E-02	NOT IDENT.
CD-115	6.294E+02	5.852E+03	5.858E+03	SHORT HLIF
SN-117M	-7.794E-02	1.486E-01	1.527E-01	NOT IDENT.
SB-122	-3.548E+01	3.607E+02	3.610E+02	SHORT HLIF
TE-123M	1.262E-02	2.880E-02	2.936E-02	NOT IDENT.
SB-124	2.865E-02	9.995E-02	1.008E-01	NOT IDENT.
SB-125	-3.059E-02	9.799E-02	9.895E-02	NOT IDENT.
TE-125M	-9.780E-01	9.394E+00	9.404E+00	NOT IDENT.
I-126	5.165E-03	7.649E-01	7.649E-01	NOT IDENT.
SB-126	1.431E-01	4.669E-01	4.714E-01	NOT IDENT.
SB-127	3.780E+01	4.660E+01	4.962E+01	FAIL ABUN
I-131	-3.667E-01	6.477E-01	6.685E-01	NOT IDENT.
I-132	-1.000E+41	4.578E+42	0.000E+00	SHORT HLIF
TE-132	3.113E+01	4.986E+01	5.179E+01	SHORT HLIF
BA-133	-5.527E-03	4.831E-02	4.838E-02	NOT IDENT.
I-133	-3.339E+10	5.847E+10	6.038E+10	SHORT HLIF
CS-134	5.217E-02	5.523E-02	6.003E-02	NOT IDENT.
I-135	7.646E+37	1.010E+38	0.000E+00	SHORT HLIF
CS-136	-2.288E-01	3.707E-01	3.848E-01	NOT IDENT.
BA-137M	-2.399E-02	3.689E-02	3.844E-02	NOT IDENT.
CS-137	-2.534E-02	3.897E-02	4.061E-02	NOT IDENT.
LA-138	-2.208E-02	6.769E-02	6.842E-02	NOT IDENT.
CE-139	-3.385E-03	2.792E-02	2.796E-02	NOT IDENT.
BA-140	3.242E-01	6.522E-01	6.683E-01	NOT IDENT.
LA-140	3.165E-02	3.157E-01	3.160E-01	NOT IDENT.
CE-141	-3.796E-02	8.468E-02	8.639E-02	NOT IDENT.
CE-143	1.896E+06	2.710E+06	2.841E+06	SHORT HLIF
CE-144	-1.569E-01	1.671E-01	1.815E-01	NOT IDENT.
PM-144	6.292E-03	3.482E-02	3.493E-02	NOT IDENT.
PR-144	4.758E-01	2.633E+00	2.642E+00	NOT IDENT.
PM-146	-2.900E-02	4.068E-02	4.273E-02	NOT IDENT.
ND-147	1.212E+00	1.876E+00	1.954E+00	FAIL ABUN
PM-149	5.470E+02	4.323E+04	4.323E+04	SHORT HLIF
EU-150	1.465E-02	2.951E-02	3.024E-02	FAIL ABUN
EU-152	3.319E-03	1.266E-01	1.266E-01	FAIL ABUN
GD-153	8.767E-03	7.468E-02	7.479E-02	NOT IDENT.
EU-154	-7.132E-02	1.242E-01	1.283E-01	FAIL ABUN
EU-155	-1.814E-02	9.224E-02	9.260E-02	FAIL ABUN
TB-160	0.000E+00	1.878E-01	0.000E+00	FAIL ABUN
HO-166M	3.516E-03	6.628E-02	6.629E-02	FAIL ABUN
TM-171	-1.255E+01	2.977E+01	3.030E+01	NOT IDENT.
HF-172	9.324E-03	1.588E-01	1.589E-01	FAIL ABUN
LU-172	2.571E-02	8.219E-02	8.300E-02	FAIL ABUN
LU-176	1.351E-02	2.673E-02	2.742E-02	FAIL ABUN
HF-181	-1.061E-02	6.258E-02	6.277E-02	NOT IDENT.

TA-182	-8.009E-02	1.695E-01	1.733E-01	NOT IDENT.
RE-183	-1.238E-01	2.638E-01	2.697E-01	NOT IDENT.
RE-184	5.713E-03	2.194E-01	2.194E-01	NOT IDENT.
W-188	-5.630E-02	9.668E+00	9.668E+00	NOT IDENT.
IR-192	2.123E-02	4.223E-02	4.330E-02	FAIL ABUN
HG-203	-1.107E-02	5.636E-02	5.658E-02	NOT IDENT.
TL-204	2.755E+00	4.415E+00	4.586E+00	NOT IDENT.
BI-207	1.207E-03	7.314E-02	7.314E-02	FAIL ABUN
BI-210	-6.116E-02	6.426E+00	6.426E+00	NOT IDENT.
PB-210	-6.116E-02	6.426E+00	6.426E+00	NOT IDENT.
PB-211	1.270E-01	6.432E-01	6.457E-01	NOT IDENT.
BI-212	1.169E-01	6.371E-01	6.393E-01	NOT IDENT.
BI-213	5.351E-02	1.093E-01	1.119E-01	NOT IDENT.
BI-214	5.862E-01	1.710E-01	3.148E-01	FAIL ABUN
RN-219	-1.525E-01	3.990E-01	4.049E-01	FAIL ABUN
RN-222	5.862E-01	1.710E-01	3.148E-01	FAIL ABUN
RA-223	-2.396E-01	6.930E-01	7.014E-01	FAIL ABUN
AC-225	-4.530E-01	2.057E+00	2.067E+00	NOT IDENT.
AC-227	4.105E-02	2.681E-01	2.687E-01	NOT IDENT.
TH-227	4.105E-02	2.681E-01	2.687E-01	NOT IDENT.
TH-229	2.704E-01	5.072E-01	5.216E-01	FAIL ABUN
PA-231	2.326E-01	5.044E-01	5.152E-01	NOT IDENT.
TH-231	-2.396E-01	6.930E-01	7.014E-01	FAIL ABUN
PA-233	-1.033E-02	5.808E-02	5.827E-02	NOT IDENT.
PA-234	-1.619E-01	3.517E-01	3.592E-01	NOT IDENT.
PA-234M	3.470E+00	5.426E+00	5.647E+00	NOT IDENT.
TH-234	-4.743E-02	1.357E+00	1.357E+00	FAIL ABUN
NP-237	-1.033E-02	5.808E-02	5.827E-02	NOT IDENT.
NP-238	-2.806E+03	1.631E+04	1.636E+04	SHORT HLIF
U-238	-4.743E-02	1.357E+00	1.357E+00	FAIL ABUN
NP-239	-1.487E-01	2.305E-01	2.400E-01	NOT IDENT.
PU-239	7.428E+01	2.782E+02	2.802E+02	NOT IDENT.
AM-241	2.580E-02	1.618E-01	1.622E-01	NOT IDENT.
CM-243	5.401E-02	9.491E-02	9.798E-02	NOT IDENT.
BK-247	1.866E-02	9.122E-02	9.161E-02	FAIL ABUN
CM-247	-6.372E-03	3.380E-02	3.392E-02	NOT IDENT.
CF-249	2.226E-02	4.141E-02	4.260E-02	NOT IDENT.
CF-251	-3.998E-02	1.133E-01	1.148E-01	NOT IDENT.
ANH-511	-1.459E-02	6.590E-02	6.623E-02	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	16.7376	85.43	27.9790	131.20	18.2033
45.60	16.9373	86.55	29.2106	133.02	25.0201
46.54	25.5398	86.79	33.7320	133.52	26.9776
49.72	0.0000	86.94	33.7494	136.00	23.2610
51.35	27.6600	87.09	33.7668	136.47	26.1979
51.87	13.1370	87.57	33.8220	140.51	0.0000
52.39	30.7343	88.03	33.8745	143.76	18.7497
52.97	23.4852	88.34	33.9099	144.24	19.7580
53.44	25.0119	88.47	13.5699	145.44	28.7265
54.07	25.0903	89.96	28.4119	152.43	20.1190
57.36	0.0000	1093.63	21.6417	153.25	23.1776
57.53	27.7644	91.11	21.6752	323.87	28.2743
57.98	27.8230	92.59	21.7801	156.02	19.2603
59.27	30.2597	93.35	21.8338	158.56	32.6128
59.32	30.2667	94.56	21.9187	159.00	21.4217
59.54	24.2379	94.65	21.9249	162.33	24.6511
60.96	25.1574	94.67	21.9264	162.66	24.6676
61.17	27.4704	94.87	21.9403	163.33	20.5847
62.93	22.3028	97.43	20.9537	165.86	21.7248
63.29	18.4866	98.43	16.6399	176.31	13.7276
63.58	23.1376	98.44	16.6404	176.60	14.7917
64.28	27.8497	99.53	21.0901	177.52	23.2850
66.73	26.5788	100.11	22.8881	181.07	0.0000
67.24	24.2854	102.03	19.4796	181.52	19.9065
125.81	19.6209	103.18	23.1005	184.41	23.5875
67.75	19.6266	103.37	23.1136	143.76	23.6442
68.89	30.7618	105.21	27.7082	193.51	20.7085
69.67	22.1561	105.31	27.7165	197.03	20.8369
70.82	20.1390	106.12	24.1973	198.01	34.0553
70.83	20.1400	106.47	20.6334	201.83	27.6451
72.81	24.0381	109.28	20.8004	203.43	23.2853
72.87	24.0436	111.00	17.2664	205.31	20.7639
74.66	24.2113	111.76	0.0000	210.85	17.9624
74.82	24.2265	114.06	22.9126	215.65	18.1036
74.97	24.2404	116.30	0.0000	218.12	18.1755
77.11	24.4379	116.74	29.5425	222.11	11.4319
78.74	29.5038	119.76	21.0949	227.09	13.8254
79.69	31.8002	121.12	19.9250	227.38	12.6790
80.03	28.5454	121.22	20.5530	228.16	0.0000
80.12	19.7690	121.78	20.5829	228.18	13.8486
80.19	19.7741	122.06	20.5978	116.74	13.8486
80.57	18.7013	122.92	20.6438	235.69	21.7893
81.00	26.4429	123.07	20.6517	235.96	20.2411
81.07	26.4495	265.00	22.5646	238.63	37.5171
81.75	24.0285	125.81	18.9061	238.98	0.0000
82.47	30.7363	127.23	22.7684	240.99	14.1180
83.79	30.8797	127.91	19.0062	242.00	26.7067
84.00	23.3857	129.30	20.9792	244.70	26.8122

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	9.5680	344.28	16.0701	563.25	9.7028
252.80	13.1634	345.93	18.7817	564.24	0.0000
254.15	0.0000	351.06	15.2880	569.33	9.7438
256.23	19.2391	351.93	15.3021	946.00	10.8276
260.90	0.0000	355.39	0.0000	569.70	10.8293
264.66	20.6798	356.01	16.2722	583.19	13.1157
264.80	20.6840	364.49	16.4161	584.27	16.4069
265.00	20.6892	366.42	0.0000	595.83	8.8184
269.46	14.6920	372.51	7.3558	427.87	6.6348
270.03	14.7034	375.05	12.9057	602.52	0.0000
271.23	21.2721	377.52	12.0132	604.72	3.3263
273.65	16.4156	356.01	12.0888	607.14	6.6633
276.40	14.8275	388.16	11.2061	609.32	6.6729
277.37	16.0834	388.63	9.3427	610.33	6.6772
277.60	16.0881	391.69	11.2444	614.28	5.0208
278.00	16.0965	264.66	7.5607	618.01	13.4209
279.20	21.0819	401.81	14.1919	620.36	7.8405
279.54	23.5726	402.40	11.3599	621.93	7.8485
279.70	21.0959	404.85	9.4883	630.19	0.0000
280.46	22.3588	410.95	10.4965	631.29	10.1510
283.69	21.2043	413.71	8.6100	633.25	4.5173
284.31	22.4692	414.70	10.5329	634.78	7.9126
285.41	15.8341	423.72	15.4466	635.95	9.0498
285.90	0.0000	427.09	16.4618	636.99	11.3196
287.50	15.8759	427.87	14.5352	657.50	3.4391
290.67	18.8754	433.94	8.7682	657.76	2.2931
293.27	0.0000	439.40	11.7471	657.90	0.0000
351.93	12.6550	440.45	9.7982	661.66	10.3436
295.96	12.6666	453.88	12.8852	664.57	0.0000
879.38	17.7901	463.37	15.9857	666.33	10.3726
299.98	17.3115	468.07	17.0512	666.50	10.3737
300.09	20.3691	473.00	17.1204	667.71	0.0000
300.13	20.3701	475.06	11.0965	677.62	8.1222
301.36	17.8503	476.78	12.1221	685.70	4.6634
302.85	24.6953	477.60	12.1301	692.65	0.0000
256.23	20.4780	482.18	11.1605	695.00	2.8133
304.85	25.6085	487.02	8.1481	696.49	5.6312
306.78	14.5450	492.35	0.0000	696.51	5.6314
308.46	18.0033	497.08	7.1864	697.00	5.6330
311.90	14.6336	505.52	12.4006	697.30	7.0425
316.51	13.8473	507.63	0.0000	697.49	7.0432
319.41	21.7092	511.00	12.4526	702.65	12.7156
320.08	11.2972	514.00	12.4810	706.68	7.9656
321.04	16.5299	514.00	12.4810	711.68	7.1006
323.87	21.8201	520.40	4.7031	720.70	5.7094
325.23	18.3575	520.69	0.0000	721.93	0.0000
328.76	16.6753	522.65	0.0000	722.78	15.1832
333.37	20.1137	527.90	0.0000	722.91	15.1842
333.97	13.2416	528.26	9.4614	723.31	10.7208
334.37	19.8711	529.59	13.6803	724.19	8.9383
338.28	20.4006	529.87	0.0000	727.33	11.6404
338.32	20.4016	531.02	5.2671	733.00	8.9822
311.90	12.0031	537.26	4.2331	735.93	5.3979
340.48	12.0031	546.56	0.0000	333.97	7.2034
340.55	12.0039	552.55	14.4448	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	9.0378	949.00	1.9968	1384.29	1.8723
747.24	9.0524	667.71	0.0000	1408.01	5.6575
748.06	4.5282	962.31	2.6777	1434.09	0.0000
752.31	8.1694	964.08	9.6472	1435.80	4.7542
753.82	11.8102	966.17	11.2653	1457.56	0.0000
756.73	5.4593	911.20	10.0702	1460.82	4.7896
756.80	5.4595	983.53	6.0797	1489.16	2.8975
884.68	4.3843	984.45	0.0000	1505.03	3.8809
765.81	8.7773	1274.44	4.0748	1584.12	3.9674
766.42	8.2315	1001.03	5.1036	1596.21	2.9852
766.84	8.2332	1002.74	4.0858	1620.50	5.0078
772.60	0.0000	1004.73	10.2231	1621.92	1.0020
776.52	12.6102	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	1.0202
778.90	1.8412	1028.54	0.0000	1750.46	0.0000
783.70	11.0753	1037.84	5.1810	1764.49	5.1958
788.74	8.3282	1038.76	0.0000	1063.66	4.1625
792.07	4.4493	631.29	8.3188	1771.35	2.0818
795.86	7.4299	1048.07	9.3642	1791.20	0.0000
810.06	11.2255	1049.04	11.4492	1808.65	2.1008
810.29	10.2914	1050.41	9.3730	1810.72	0.0000
344.28	10.2920	1063.66	9.4219	1836.06	3.1718
810.76	10.2937	1077.00	10.5237		
815.77	7.5051	1077.34	12.6299		
1048.07	8.4548	1085.87	5.2798		
832.01	3.7830	1093.63	6.3549		
834.85	6.6294	1099.45	6.3691		
835.71	6.6321	1112.07	5.3329		
836.80	0.0000	1112.84	5.3345		
846.75	0.0000	1115.54	3.2040		
846.77	9.5258	1120.29	5.3494		
856.80	4.5945	1120.55	5.3500		
860.56	3.0686	1221.41	3.2109		
871.09	2.8911	1129.67	2.1473		
873.19	5.7880	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	7.7397	1173.23	6.5453		
880.51	3.8719	1177.95	1.0927		
881.60	5.8109	1189.05	7.6793		
883.24	8.7229	1204.77	3.3094		
884.68	10.6687	1221.41	4.4382		
889.28	10.6912	1231.02	2.2264		
894.76	7.7952	1235.36	5.5743		
898.04	5.8552	1238.28	5.5801		
900.72	5.8625	1260.41	0.0000		
903.28	7.8257	1271.87	7.2238		
911.20	7.8540	1274.44	6.3263		
912.08	7.8572	1274.54	6.3267		
923.98	0.0000	1291.59	6.3622		
926.50	7.9082	1298.22	0.0000		
929.11	7.9172	1312.11	4.5750		
935.54	7.9399	1332.49	3.6842		
937.49	4.9667	1362.66	0.0000		
944.13	4.9812	1365.19	1.8611		
946.00	6.9795	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:19:11.32

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299037.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM24.CNF;751
                                         Background date  : 28-JUL-2024 09:55:36
Sample date      : 26-JUN-2024 12:30:00  Acquisition date : 31-JUL-2024 16:14:36
Sample ID        : G674299037            Sample quantity  : 9.73200E+01 GRAM
Detector name    : GAM24                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.55  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : MXR1
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636543               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.69*	26	60	1.65	127.61	124	7	7.35E-03	56.3	
2	2	74.60*	34	92	1.18	149.41	144	19	9.32E-03	51.8	1.35E+00
3	2	77.10	110	79	1.16	154.41	144	19	3.05E-02	16.9	
4	0	93.08*	25	88	0.71	186.37	183	8	7.05E-03	74.9	
5	0	105.64	30	41	1.89	211.48	207	8	8.27E-03	41.8	
6	0	172.21	51	171	12.10	344.59	322	32	1.43E-02	78.6	
7	0	186.28*	32	74	1.09	372.73	368	9	8.98E-03	54.4	
8	0	199.38*	14	54	1.98	398.93	391	10	3.83E-03	107.2	
9	4	238.59*	128	36	1.36	477.33	470	21	3.56E-02	12.4	1.71E+00
10	4	241.52	49	35	1.85	483.19	470	21	1.35E-02	35.6	
11	0	264.87	16	25	0.79	529.88	525	8	4.44E-03	60.4	
12	0	295.67*	89	55	1.25	591.47	584	14	2.46E-02	21.0	
13	0	327.84	25	39	0.54	655.81	651	11	6.87E-03	52.7	
14	0	338.56	31	22	1.27	677.25	674	8	8.72E-03	31.4	
15	0	352.12*	107	55	1.48	704.36	699	13	2.97E-02	17.2	
16	0	391.70	20	8	3.75	783.52	778	10	5.42E-03	34.7	
17	0	510.89*	33	25	2.85	1021.87	1013	21	9.19E-03	52.7	
18	0	583.58*	35	23	1.72	1167.24	1162	10	9.83E-03	32.1	
19	0	590.49	12	8	1.80	1181.07	1174	11	3.26E-03	55.7	
20	0	609.12*	106	15	2.01	1218.32	1210	15	2.95E-02	12.9	
21	0	671.97	12	3	0.89	1344.02	1340	8	3.22E-03	41.3	
22	0	679.73	9	9	1.42	1359.53	1352	10	2.44E-03	74.7	
23	0	727.64	10	9	0.84	1455.35	1450	10	2.75E-03	67.0	
24	0	785.56	11	4	1.51	1571.20	1567	8	3.06E-03	43.6	
25	0	800.89	11	7	2.68	1601.87	1597	8	3.06E-03	53.0	
26	0	807.77	7	3	1.33	1615.62	1612	6	1.97E-03	53.6	
27	0	844.86	8	2	0.68	1689.80	1687	6	2.32E-03	41.9	
28	0	868.86	10	3	1.69	1737.80	1735	6	2.78E-03	41.8	
29	0	911.07*	26	11	1.80	1822.24	1815	15	7.20E-03	36.2	
30	0	970.48	9	21	0.88	1941.07	1932	12	2.56E-03	104.4	
31	0	1090.57	7	3	0.66	2181.26	2178	6	2.03E-03	52.2	
32	0	1120.03*	17	6	2.66	2240.19	2234	11	4.82E-03	40.6	
33	0	1154.80	14	10	2.40	2309.75	2302	13	4.02E-03	51.5	
34	0	1238.33	11	2	1.60	2476.83	2472	10	3.01E-03	40.5	

Sample ID : G674299037 Acquisition date : 31-JUL-2024 16:14:36

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1399.59	10	3	1.02	2799.43	2793	12	2.83E-03	46.0	
36	0	1460.46*	51	8	1.35	2921.19	2915	11	1.43E-02	18.5	
37	0	1764.42*	26	0	2.99	3529.31	3522	13	7.31E-03	22.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:19:12

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299037.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 12:30:00 Acquisition date : 31-JUL-2024 16:14:36
Sample ID        : G674299037           Sample quantity  : 97.320 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA24              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.55   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Sample ID : G674299037 Acquisition date : 31-JUL-2024 16:14:36

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	48	10.66*	1.314E+00	2.639E+00	2.639E+00	36.98
SN-113	391.69	18	64.94*	4.047E+00	5.416E-02	6.694E-02	69.37
TL-208	277.37	------	6.60	5.118E+00	------	Line Not Found	------
	583.19	33	85.00*	2.999E+00	1.009E-01	1.009E-01	64.15
	860.56	------	12.50	2.132E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	6.856E+00	------	Line Not Found	------
	351.06	101	12.92*	4.358E+00	1.386E+00	1.386E+00	34.49
BI-212	727.33	9	6.67*	2.485E+00	4.327E-01	4.327E-01	134.08
	1620.50	------	1.47	1.219E+00	------	Line Not Found	------
PB-212	74.82	32	10.28	7.036E+00	3.449E-01	3.449E-01	103.52
	77.11	106	17.10	7.270E+00	6.563E-01	6.563E-01	33.80
	238.63	122	43.60*	5.650E+00	3.814E-01	3.814E-01	24.75
	300.09	------	3.30	4.857E+00	------	Line Not Found	------
BI-214	609.32	100	45.49*	2.895E+00	5.867E-01	5.867E-01	25.80
	1120.29	16	14.92	1.661E+00	5.054E-01	5.055E-01	81.10
	1764.49	24	15.30	1.161E+00	1.064E+00	1.064E+00	44.11
PB-214	74.82	32	5.80	7.036E+00	6.114E-01	6.114E-01	103.52
	77.11	106	9.70	7.270E+00	1.157E+00	1.157E+00	33.80
	87.09	------	3.41	7.910E+00	------	Line Not Found	------
	242.00	46	7.25	5.605E+00	8.778E-01	8.779E-01	71.27
	295.22	84	18.42	4.905E+00	7.176E-01	7.176E-01	42.09
	351.93	101	35.60*	4.358E+00	5.032E-01	5.032E-01	34.49
RN-222	609.32	100	45.49*	2.895E+00	5.867E-01	5.867E-01	25.80
	1120.29	16	14.92	1.661E+00	5.054E-01	5.055E-01	81.10
	1764.49	24	15.30	1.161E+00	1.064E+00	1.064E+00	44.11
RA-224	240.99	46	4.10*	5.605E+00	1.552E+00	1.552E+00	71.27
RA-226	74.82	32	5.80	7.036E+00	6.114E-01	6.114E-01	103.52
	77.11	106	9.70	7.270E+00	1.157E+00	1.157E+00	33.80
	87.09	------	3.41	7.910E+00	------	Line Not Found	------
	242.00	46	7.25	5.605E+00	8.778E-01	8.779E-01	71.27
	295.22	84	18.42	4.905E+00	7.176E-01	7.176E-01	42.09
	351.93	101	35.60*	4.358E+00	5.032E-01	5.032E-01	34.49
TH-228	74.82	32	10.28	7.036E+00	3.449E-01	3.449E-01	103.52
	77.11	106	17.10	7.270E+00	6.563E-01	6.563E-01	33.80
	238.63	122	43.60*	5.650E+00	3.814E-01	3.814E-01	24.75
	300.09	------	3.30	4.857E+00	------	Line Not Found	------
TH-230	74.82	32	5.80	7.036E+00	6.114E-01	6.114E-01	103.52
	77.11	106	9.70	7.270E+00	1.157E+00	1.157E+00	33.80
	87.09	------	3.41	7.910E+00	------	Line Not Found	------
	242.00	46	7.25	5.605E+00	8.778E-01	8.778E-01	71.27
	295.22	84	18.42	4.905E+00	7.176E-01	7.176E-01	42.09
	351.93	101	35.60*	4.358E+00	5.032E-01	5.032E-01	34.49
TH-234	63.29	26	3.70*	5.608E+00	9.500E-01	9.500E-01	112.63
	92.59	24	4.23	8.112E+00	5.484E-01	5.484E-01	149.82
U-234	74.82	32	5.80	7.036E+00	6.114E-01	6.114E-01	103.52
	77.11	106	9.70	7.270E+00	1.157E+00	1.157E+00	33.80
	87.09	------	3.41	7.910E+00	------	Line Not Found	------
	242.00	46	7.25	5.605E+00	8.778E-01	8.778E-01	71.27
	295.22	84	18.42	4.905E+00	7.176E-01	7.176E-01	42.09

Sample ID : G674299037 Acquisition date : 31-JUL-2024 16:14:36

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	351.93	101	35.60*	4.358E+00	5.032E-01	5.032E-01	34.49
U-238	63.29	26	3.70*	5.608E+00	9.500E-01	9.500E-01	112.63
	92.59	24	4.23	8.112E+00	5.484E-01	5.484E-01	149.82
AM-243	43.53	------	5.90	1.656E+00	------	Line Not Found	------
	74.66	32	67.20*	7.036E+00	5.277E-02	5.277E-02	103.52
ANH-511	511.00	31	100.00*	3.331E+00	7.231E-02	7.231E-02	105.49

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:19:13.60

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299037.CNF;1  *
* Acquisition date : 31-JUL-2024 16:14:36 Sensitivity     : 3.000           *
* Detector ID      : GAM24                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.55     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:30:00 Analyst initials: MXR1            *
* Sample ID        : G674299037           Sample Quantity : 9.7320E+01 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 24-JUN-2024 07:06:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;16            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.639E+00	9.566E-01	8.222E-01
SN-113	6.694E-02	4.551E-02	7.116E-02
TL-208	1.009E-01	6.345E-02	6.762E-02
BI-211	1.386E+00	4.686E-01	3.092E-01
BI-212	4.327E-01	5.686E-01	6.416E-01
PB-212	3.814E-01	9.252E-02	8.225E-02
BI-214	5.867E-01	1.483E-01	9.063E-02
PB-214	5.032E-01	1.701E-01	1.124E-01
RN-222	5.867E-01	1.483E-01	9.063E-02
RA-224	1.552E+00	1.084E+00	8.813E-01
RA-226	5.032E-01	1.701E-01	1.124E-01
TH-228	3.814E-01	9.252E-02	8.225E-02
TH-230	5.032E-01	1.701E-01	1.124E-01
TH-234	9.500E-01	1.049E+00	1.226E+00
U-234	5.032E-01	1.701E-01	1.124E-01
U-238	9.500E-01	1.049E+00	1.226E+00
AM-243	5.277E-02	5.353E-02	5.967E-02
ANH-511	7.231E-02	7.476E-02	4.396E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	5.412E-01	4.282E-01	9.243E-01	NOT IDENT.
NA-22	-1.328E-02	4.336E-02	7.988E-02	NOT IDENT.
NA-24	0.000E+00	2.998E+15	0.000E+00	SHORT HLIF
AL-26	7.340E-03	2.904E-02	7.187E-02	NOT IDENT.
SC-46	-1.713E-02	3.728E-02	6.915E-02	FAIL ABUN
V-48	-6.425E-02	1.544E-01	2.842E-01	NOT IDENT.
CR-51	-4.454E-01	4.958E-01	8.377E-01	NOT IDENT.
MN-52	-1.476E+00	2.889E+00	5.030E+00	NOT IDENT.
MN-54	1.653E-02	3.187E-02	7.001E-02	NOT IDENT.
CO-56	2.968E-02	3.939E-02	8.603E-02	FAIL ABUN
MN-56	0.000E+00	1.299E+41	0.000E+00	SHORT HLIF
CO-57	1.531E-02	2.016E-02	3.927E-02	NOT IDENT.

CO-58	1.426E-02	3.929E-02	7.910E-02	NOT IDENT.
FE-59	-3.448E-02	9.296E-02	1.745E-01	NOT IDENT.
CO-60	-1.560E-02	3.490E-02	6.284E-02	NOT IDENT.
ZN-65	5.129E-02	9.256E-02	1.851E-01	NOT IDENT.
GE-68	-9.003E-01	1.187E+00	1.976E+00	NOT IDENT.
AS-73	1.065E-01	4.621E-01	8.869E-01	NOT IDENT.
AS-74	1.262E-01	1.805E-01	3.798E-01	NOT IDENT.
SE-75	4.620E-02	5.466E-02	8.194E-02	FAIL ABUN
BR-77	0.000E+00	4.984E+03	0.000E+00	SHORT HLIF
SR-82	-1.493E-01	4.458E-01	8.580E-01	NOT IDENT.
RB-83	-5.540E-03	6.770E-02	1.281E-01	NOT IDENT.
RB-84	5.058E-02	1.004E-01	2.167E-01	NOT IDENT.
KR-85	7.794E+00	6.685E+00	1.437E+01	NOT IDENT.
SR-85	5.089E-02	4.372E-02	9.396E-02	NOT IDENT.
RB-86	-3.963E-01	1.289E+00	2.465E+00	NOT IDENT.
Y-88	1.783E-02	4.066E-02	1.020E-01	NOT IDENT.
Y-91	-2.036E+01	2.277E+01	3.560E+01	NOT IDENT.
NB-94	-1.091E-02	3.286E-02	5.716E-02	NOT IDENT.
NB-95	2.502E-02	4.996E-02	1.051E-01	NOT IDENT.
NB-95M	-3.950E-02	1.273E-01	2.115E-01	NOT IDENT.
ZR-95	-3.440E-02	9.422E-02	1.753E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	6.818E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.690E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	3.526E+40	0.000E+00	SHORT HLIF
RH-101	-1.655E-02	2.428E-02	4.000E-02	FAIL ABUN
RH-102	-3.068E-02	4.582E-02	7.502E-02	NOT IDENT.
RU-103	1.495E-02	5.016E-02	9.969E-02	FAIL ABUN
RH-106	-1.640E-01	3.438E-01	5.858E-01	NOT IDENT.
RU-106	-1.640E-01	3.438E-01	5.858E-01	NOT IDENT.
AG-108M	7.923E-03	2.842E-02	5.547E-02	NOT IDENT.
CD-109	5.678E-01	6.415E-01	1.218E+00	NOT IDENT.
AG-110	-1.128E-01	6.774E-01	1.239E+00	NOT IDENT.
AG-110M	-3.217E-02	4.383E-02	7.559E-02	NOT IDENT.
CD-115	0.000E+00	5.425E+03	0.000E+00	SHORT HLIF
SN-117M	4.155E-02	1.409E-01	2.383E-01	NOT IDENT.
SB-122	0.000E+00	3.190E+02	0.000E+00	SHORT HLIF
TE-123M	2.060E-02	2.965E-02	5.265E-02	NOT IDENT.
SB-124	6.025E-02	1.027E-01	2.616E-01	NOT IDENT.
SB-125	1.675E-02	8.609E-02	1.668E-01	NOT IDENT.
TE-125M	4.283E+00	8.892E+00	1.689E+01	NOT IDENT.
I-126	4.101E-02	5.614E-01	1.074E+00	NOT IDENT.
SB-126	-1.148E-01	4.011E-01	7.096E-01	NOT IDENT.
SN-126	5.650E-02	6.116E-02	1.164E-01	FAIL ABUN
SB-127	1.395E+01	4.198E+01	8.471E+01	NOT IDENT.
I-131	-6.733E-01	5.769E-01	9.168E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	5.324E+01	0.000E+00	SHORT HLIF
BA-133	3.139E-04	4.423E-02	7.502E-02	NOT IDENT.
I-133	0.000E+00	5.471E+10	0.000E+00	SHORT HLIF
CS-134	1.145E-02	4.162E-02	7.814E-02	FAIL ABUN
I-135	0.000E+00	5.495E+37	0.000E+00	SHORT HLIF
CS-136	-1.350E-01	2.130E-01	3.709E-01	NOT IDENT.
BA-137M	2.366E-02	3.219E-02	6.809E-02	NOT IDENT.
CS-137	2.500E-02	3.400E-02	7.194E-02	NOT IDENT.
LA-138	3.145E-02	4.951E-02	1.214E-01	NOT IDENT.
CE-139	-3.265E-02	2.804E-02	4.204E-02	NOT IDENT.
BA-140	4.016E-01	6.620E-01	1.394E+00	NOT IDENT.
LA-140	-2.506E-03	2.812E-01	5.958E-01	FAIL ABUN
CE-141	-8.545E-02	8.554E-02	1.340E-01	NOT IDENT.
CE-143	0.000E+00	2.407E+06	0.000E+00	SHORT HLIF
CE-144	1.778E-02	1.675E-01	3.021E-01	NOT IDENT.
PM-144	3.047E-03	3.607E-02	6.752E-02	NOT IDENT.
PR-144	5.411E-01	2.679E+00	5.125E+00	NOT IDENT.
PM-146	1.770E-02	2.995E-02	6.457E-02	NOT IDENT.
ND-147	4.167E-01	2.115E+00	4.033E+00	NOT IDENT.
PM-147	4.701E+02	5.620E+02	1.105E+03	NOT IDENT.
PM-149	0.000E+00	4.255E+04	0.000E+00	SHORT HLIF
EU-150	-2.346E-03	2.405E-02	4.322E-02	FAIL ABUN
EU-152	2.945E-02	9.371E-02	1.828E-01	NOT IDENT.
GD-153	-8.263E-03	6.264E-02	1.118E-01	NOT IDENT.
EU-154	-3.723E-02	1.216E-01	2.240E-01	NOT IDENT.
EU-155	1.287E-01	1.054E-01	1.620E-01	FAIL ABUN
TB-160	1.583E-01	1.503E-01	3.506E-01	NOT IDENT.
HO-166M	-2.492E-02	6.071E-02	1.039E-01	NOT IDENT.
TM-171	-8.315E+00	8.036E+00	1.353E+01	NOT IDENT.
HF-172	8.344E-02	1.360E-01	2.637E-01	FAIL ABUN
LU-172	6.032E-03	4.416E-02	8.890E-02	FAIL ABUN

LU-176	-5.430E-03	2.254E-02	4.192E-02	NOT IDENT.
HF-181	5.961E-03	4.891E-02	9.603E-02	NOT IDENT.
TA-182	5.538E-02	1.875E-01	3.923E-01	FAIL ABUN
RE-183	-6.044E-03	1.235E-01	2.272E-01	NOT IDENT.
RE-184	4.428E-02	1.497E-01	3.234E-01	NOT IDENT.
W-188	1.322E-01	7.581E+00	1.321E+01	FAIL ABUN
IR-192	5.272E-03	3.428E-02	6.717E-02	FAIL ABUN
HG-203	-1.245E-02	4.628E-02	8.553E-02	NOT IDENT.
TL-204	-1.039E+00	3.311E+00	5.380E+00	NOT IDENT.
BI-207	6.951E-04	4.913E-02	9.813E-02	FAIL ABUN
BI-210	2.981E-01	1.482E+00	2.794E+00	NOT IDENT.
PB-210	2.981E-01	1.482E+00	2.794E+00	NOT IDENT.
PB-211	8.519E-02	5.210E-01	1.038E+00	NOT IDENT.
BI-213	-7.597E-02	8.316E-02	1.345E-01	NOT IDENT.
RN-219	3.679E-02	3.047E-01	6.011E-01	NOT IDENT.
RA-223	-6.193E-02	5.636E-01	9.565E-01	FAIL ABUN
AC-225	2.446E+00	1.923E+00	3.943E+00	NOT IDENT.
AC-227	4.763E-02	2.137E-01	4.194E-01	NOT IDENT.
TH-227	4.763E-02	2.137E-01	4.194E-01	NOT IDENT.
AC-228	3.597E-01	2.553E-01	4.503E-01	FAIL ABUN
RA-228	3.597E-01	2.553E-01	4.503E-01	FAIL ABUN
TH-229	-4.629E-01	5.505E-01	7.681E-01	NOT IDENT.
PA-231	2.149E-01	3.916E-01	7.734E-01	NOT IDENT.
TH-231	-6.193E-02	5.636E-01	9.565E-01	FAIL ABUN
TH-232	3.597E-01	2.553E-01	4.503E-01	FAIL ABUN
PA-233	-1.768E-02	5.812E-02	1.067E-01	NOT IDENT.
PA-234	1.961E-01	2.810E-01	6.277E-01	NOT IDENT.
PA-234M	-5.768E-01	4.334E+00	8.388E+00	NOT IDENT.
U-235	-4.351E-02	1.805E-01	3.076E-01	FAIL ABUN
NP-237	-1.768E-02	5.812E-02	1.067E-01	NOT IDENT.
NP-238	0.000E+00	1.237E+04	0.000E+00	SHORT HLIF
NP-239	1.509E-01	1.796E-01	3.585E-01	FAIL ABUN
PU-239	2.027E+01	2.609E+02	4.709E+02	NOT IDENT.
AM-241	3.801E-02	7.960E-02	1.530E-01	NOT IDENT.
CM-243	-1.004E-02	7.225E-02	1.198E-01	NOT IDENT.
BK-247	7.400E-02	8.756E-02	1.287E-01	FAIL ABUN
CM-247	-8.556E-03	2.861E-02	5.265E-02	NOT IDENT.
CF-249	1.103E-02	3.348E-02	6.198E-02	NOT IDENT.
CF-251	3.312E-02	1.160E-01	1.964E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:19:12.20

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	48	10.66*	1.314E+00	2.639E+00	2.639E+00	36.98
SN-113	391.69	18	64.94*	4.047E+00	5.416E-02	6.694E-02	69.37
TL-208	277.37	------	6.60	5.118E+00	------	Line Not Found	------
	583.19	33	85.00*	2.999E+00	1.009E-01	1.009E-01	64.15
	860.56	------	12.50	2.132E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	6.856E+00	------	Line Not Found	------
	351.06	101	12.92*	4.358E+00	1.386E+00	1.386E+00	34.49
BI-212	727.33	9	6.67*	2.485E+00	4.327E-01	4.327E-01	134.08
	1620.50	------	1.47	1.219E+00	------	Line Not Found	------
PB-212	74.82	32	10.28	7.036E+00	3.449E-01	3.449E-01	103.52
	77.11	106	17.10	7.270E+00	6.563E-01	6.563E-01	33.80
	238.63	122	43.60*	5.650E+00	3.814E-01	3.814E-01	24.75
	300.09	------	3.30	4.857E+00	------	Line Not Found	------
BI-214	609.32	100	45.49*	2.895E+00	5.867E-01	5.867E-01	25.80
	1120.29	16	14.92	1.661E+00	5.054E-01	5.055E-01	81.10
	1764.49	24	15.30	1.161E+00	1.064E+00	1.064E+00	44.11
PB-214	74.82	32	5.80	7.036E+00	6.114E-01	6.114E-01	103.52
	77.11	106	9.70	7.270E+00	1.157E+00	1.157E+00	33.80
	87.09	------	3.41	7.910E+00	------	Line Not Found	------
	242.00	46	7.25	5.605E+00	8.778E-01	8.779E-01	71.27
	295.22	84	18.42	4.905E+00	7.176E-01	7.176E-01	42.09
	351.93	101	35.60*	4.358E+00	5.032E-01	5.032E-01	34.49
RN-222	609.32	100	45.49*	2.895E+00	5.867E-01	5.867E-01	25.80
	1120.29	16	14.92	1.661E+00	5.054E-01	5.055E-01	81.10
	1764.49	24	15.30	1.161E+00	1.064E+00	1.064E+00	44.11
RA-224	240.99	46	4.10*	5.605E+00	1.552E+00	1.552E+00	71.27
RA-226	74.82	32	5.80	7.036E+00	6.114E-01	6.114E-01	103.52
	77.11	106	9.70	7.270E+00	1.157E+00	1.157E+00	33.80
	87.09	------	3.41	7.910E+00	------	Line Not Found	------
	242.00	46	7.25	5.605E+00	8.778E-01	8.779E-01	71.27
	295.22	84	18.42	4.905E+00	7.176E-01	7.176E-01	42.09
	351.93	101	35.60*	4.358E+00	5.032E-01	5.032E-01	34.49
TH-228	74.82	32	10.28	7.036E+00	3.449E-01	3.449E-01	103.52
	77.11	106	17.10	7.270E+00	6.563E-01	6.563E-01	33.80
	238.63	122	43.60*	5.650E+00	3.814E-01	3.814E-01	24.75
	300.09	------	3.30	4.857E+00	------	Line Not Found	------
TH-230	74.82	32	5.80	7.036E+00	6.114E-01	6.114E-01	103.52
	77.11	106	9.70	7.270E+00	1.157E+00	1.157E+00	33.80
	87.09	------	3.41	7.910E+00	------	Line Not Found	------
	242.00	46	7.25	5.605E+00	8.778E-01	8.778E-01	71.27
	295.22	84	18.42	4.905E+00	7.176E-01	7.176E-01	42.09
	351.93	101	35.60*	4.358E+00	5.032E-01	5.032E-01	34.49
TH-234	63.29	26	3.70*	5.608E+00	9.500E-01	9.500E-01	112.63
	92.59	24	4.23	8.112E+00	5.484E-01	5.484E-01	149.82
U-234	74.82	32	5.80	7.036E+00	6.114E-01	6.114E-01	103.52
	77.11	106	9.70	7.270E+00	1.157E+00	1.157E+00	33.80
	87.09	------	3.41	7.910E+00	------	Line Not Found	------

Sample ID : G674299037 Acquisition date : 31-JUL-2024 16:14:36

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	242.00	46	7.25	5.605E+00	8.778E-01	8.778E-01	71.27
	295.22	84	18.42	4.905E+00	7.176E-01	7.176E-01	42.09
	351.93	101	35.60*	4.358E+00	5.032E-01	5.032E-01	34.49
U-238	63.29	26	3.70*	5.608E+00	9.500E-01	9.500E-01	112.63
	92.59	24	4.23	8.112E+00	5.484E-01	5.484E-01	149.82
AM-243	43.53	------	5.90	1.656E+00	------	Line Not Found	------
	74.66	32	67.20*	7.036E+00	5.277E-02	5.277E-02	103.52
ANH-511	511.00	31	100.00*	3.331E+00	7.231E-02	7.231E-02	105.49

Flag: "*" = Keyline

Sample ID : G674299037 Acquisition date : 31-JUL-2024 16:14:36

Total number of lines in spectrum	37	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	25	67.57%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.639E+00	2.639E+00	0.976E+00	36.98	
SN-113	115.09D	1.24	5.416E-02	6.694E-02	4.644E-02	69.37	
TL-208	1.41E+10Y	1.00	1.009E-01	1.009E-01	0.647E-01	64.15	
BI-211	7.04E+08Y	1.00	1.386E+00	1.386E+00	0.478E+00	34.49	
BI-212	1.41E+10Y	1.00	4.327E-01	4.327E-01	5.802E-01	134.08	
PB-212	1.41E+10Y	1.00	3.814E-01	3.814E-01	0.944E-01	24.75	
BI-214	1600.00Y	1.00	5.867E-01	5.867E-01	1.514E-01	25.80	
PB-214	1600.00Y	1.00	5.032E-01	5.032E-01	1.736E-01	34.49	
RN-222	1600.00Y	1.00	5.867E-01	5.867E-01	1.514E-01	25.80	
RA-224	1.41E+10Y	1.00	1.552E+00	1.552E+00	1.106E+00	71.27	
RA-226	1600.00Y	1.00	5.032E-01	5.032E-01	1.736E-01	34.49	
TH-228	1.41E+10Y	1.00	3.814E-01	3.814E-01	0.944E-01	24.75	
TH-230	7.54E+04Y	1.00	5.032E-01	5.032E-01	1.735E-01	34.49	
TH-234	4.47E+09Y	1.00	9.500E-01	9.500E-01	10.70E-01	112.63	
U-234	2.45E+05Y	1.00	5.032E-01	5.032E-01	1.735E-01	34.49	
U-238	4.47E+09Y	1.00	9.500E-01	9.500E-01	10.70E-01	112.63	
AM-243	7370.00Y	1.00	5.277E-02	5.277E-02	5.462E-02	103.52	
ANH-511	1.00E+09Y	1.00	7.231E-02	7.231E-02	7.628E-02	105.49	
			---	---			
	Total Activity :		1.214E+01	1.215E+01			

Grand Total Activity : 1.214E+01 1.215E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299037 Acquisition date : 31-JUL-2024 16:14:36

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	105.64	29	40	1.89	211.48	207	8	8.27E-03	83.6	8.24E+00	T
0	172.21	49	163	12.10	344.59	322	32	1.43E-02	****	6.91E+00	
0	186.28	31	71	1.09	372.73	368	9	8.98E-03	****	6.60E+00	T
0	199.38	13	52	1.98	398.93	391	10	3.83E-03	****	6.33E+00	T
0	264.87	15	24	0.79	529.88	525	8	4.44E-03	****	5.28E+00	T
0	327.84	23	37	0.54	655.81	651	11	6.87E-03	****	4.58E+00	T
0	338.56	30	20	1.27	677.25	674	8	8.72E-03	62.8	4.48E+00	T
0	590.49	11	8	1.80	1181.07	1174	11	3.26E-03	****	2.97E+00	
0	671.97	11	3	0.89	1344.02	1340	8	3.22E-03	82.7	2.66E+00	
0	679.73	8	9	1.42	1359.53	1352	10	2.44E-03	****	2.64E+00	
0	785.56	10	4	1.51	1571.20	1567	8	3.06E-03	87.2	2.32E+00	
0	800.89	10	7	2.68	1601.87	1597	8	3.06E-03	****	2.28E+00	T
0	807.77	7	3	1.33	1615.62	1612	6	1.97E-03	****	2.26E+00	
0	844.86	8	2	0.68	1689.80	1687	6	2.32E-03	83.8	2.17E+00	
0	868.86	9	3	1.69	1737.80	1735	6	2.78E-03	83.7	2.11E+00	
0	911.07	24	11	1.80	1822.24	1815	15	7.20E-03	72.4	2.02E+00	T
0	970.48	9	19	0.88	1941.07	1932	12	2.56E-03	****	1.90E+00	
0	1090.57	7	3	0.66	2181.26	2178	6	2.03E-03	****	1.70E+00	
0	1154.80	14	9	2.40	2309.75	2302	13	4.02E-03	****	1.61E+00	
0	1238.33	10	2	1.60	2476.83	2472	10	3.01E-03	80.9	1.51E+00	T
0	1399.59	10	3	1.02	2799.43	2793	12	2.83E-03	92.0	1.36E+00	

Flags: "T" = Tentatively associated

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299037.CNF;1  *
* Acquisition date : 31-JUL-2024 16:14:36 Sensitivity     : 3.000           *
* Detector ID      : GAM24                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.55     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:30:00 Nuclide Library : SOLID           *
* Sample ID        : G674299037           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 9.7320E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 24-JUN-2024 07:06:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;16            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.374E-01
SN-113	3.072E-02
TL-208	2.976E-02
BI-211	1.363E-01
BI-212	2.585E-01
PB-212	3.694E-02
BI-214	3.746E-02
PB-214	4.957E-02
RN-222	3.746E-02
RA-224	3.958E-01
RA-226	4.957E-02
TH-228	3.694E-02
TH-230	4.956E-02
TH-234	5.626E-01
U-234	4.956E-02
U-238	5.626E-01
AM-243	2.765E-02
ANH-511	1.888E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.176E-01	NOT IDENT.
NA-22	3.275E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.690E-02	NOT IDENT.
SC-46	2.789E-02	FAIL ABUN
V-48	1.168E-01	NOT IDENT.
CR-51	3.648E-01	NOT IDENT.
MN-52	1.907E+00	NOT IDENT.
MN-54	2.992E-02	NOT IDENT.
CO-56	3.647E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	1.800E-02	NOT IDENT.
CO-58	3.305E-02	NOT IDENT.

FE-59	6.854E-02	NOT IDENT.
CO-60	2.404E-02	NOT IDENT.
ZN-65	7.901E-02	NOT IDENT.
GE-68	7.842E-01	NOT IDENT.
AS-73	4.065E-01	NOT IDENT.
AS-74	1.665E-01	NOT IDENT.
SE-75	3.690E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	3.525E-01	NOT IDENT.
RB-83	5.478E-02	NOT IDENT.
RB-84	9.324E-02	NOT IDENT.
KR-85	6.462E+00	NOT IDENT.
SR-85	4.226E-02	NOT IDENT.
RB-86	9.757E-01	NOT IDENT.
Y-88	3.953E-02	NOT IDENT.
Y-91	1.391E+01	NOT IDENT.
NB-94	2.454E-02	NOT IDENT.
NB-95	4.616E-02	NOT IDENT.
NB-95M	9.503E-02	NOT IDENT.
ZR-95	7.609E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.805E-02	FAIL ABUN
RH-102	3.082E-02	NOT IDENT.
RU-103	4.364E-02	FAIL ABUN
RH-106	2.539E-01	NOT IDENT.
RU-106	2.539E-01	NOT IDENT.
AG-108M	2.471E-02	NOT IDENT.
CD-109	5.722E-01	NOT IDENT.
AG-110	5.264E-01	NOT IDENT.
AG-110M	3.025E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.092E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.424E-02	NOT IDENT.
SB-124	1.034E-01	NOT IDENT.
SB-125	7.405E-02	NOT IDENT.
TE-125M	7.735E+00	NOT IDENT.
I-126	4.601E-01	NOT IDENT.
SB-126	2.996E-01	NOT IDENT.
SN-126	5.471E-02	FAIL ABUN
SB-127	3.632E+01	NOT IDENT.
I-131	3.963E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.364E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	3.363E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	1.388E-01	NOT IDENT.
BA-137M	2.979E-02	NOT IDENT.
CS-137	3.147E-02	NOT IDENT.
LA-138	4.886E-02	NOT IDENT.
CE-139	1.884E-02	NOT IDENT.
BA-140	6.073E-01	NOT IDENT.
LA-140	2.384E-01	FAIL ABUN
CE-141	6.098E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.381E-01	NOT IDENT.
PM-144	2.946E-02	NOT IDENT.
PR-144	2.238E+00	NOT IDENT.
PM-146	2.787E-02	NOT IDENT.
ND-147	1.792E+00	NOT IDENT.
PM-147	5.063E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.923E-02	FAIL ABUN
EU-152	8.258E-02	NOT IDENT.
GD-153	5.110E-02	NOT IDENT.
EU-154	9.185E-02	NOT IDENT.
EU-155	7.501E-02	FAIL ABUN
TB-160	1.523E-01	NOT IDENT.
HO-166M	4.440E-02	NOT IDENT.
TM-171	6.107E+00	NOT IDENT.
HF-172	1.200E-01	FAIL ABUN
LU-172	3.444E-02	FAIL ABUN
LU-176	1.865E-02	NOT IDENT.

HF-181	4.146E-02	NOT IDENT.
TA-182	1.653E-01	FAIL ABUN
RE-183	1.043E-01	NOT IDENT.
RE-184	1.352E-01	NOT IDENT.
W-188	5.872E+00	FAIL ABUN
IR-192	2.988E-02	FAIL ABUN
HG-203	3.858E-02	NOT IDENT.
TL-204	2.489E+00	NOT IDENT.
BI-207	4.111E-02	FAIL ABUN
BI-210	1.288E+00	NOT IDENT.
PB-210	1.288E+00	NOT IDENT.
PB-211	4.500E-01	NOT IDENT.
BI-213	5.652E-02	NOT IDENT.
RN-219	2.612E-01	NOT IDENT.
RA-223	4.221E-01	FAIL ABUN
AC-225	1.799E+00	NOT IDENT.
AC-227	1.896E-01	NOT IDENT.
TH-227	1.896E-01	NOT IDENT.
AC-228	2.054E-01	FAIL ABUN
RA-228	2.054E-01	FAIL ABUN
TH-229	3.478E-01	NOT IDENT.
PA-231	3.469E-01	NOT IDENT.
TH-231	4.221E-01	FAIL ABUN
TH-232	2.054E-01	FAIL ABUN
PA-233	4.769E-02	NOT IDENT.
PA-234	2.698E-01	NOT IDENT.
PA-234M	3.529E+00	NOT IDENT.
U-235	1.414E-01	FAIL ABUN
NP-237	4.769E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	1.633E-01	FAIL ABUN
PU-239	2.148E+02	NOT IDENT.
AM-241	7.062E-02	NOT IDENT.
CM-243	5.387E-02	NOT IDENT.
BK-247	5.781E-02	FAIL ABUN
CM-247	2.271E-02	NOT IDENT.
CF-249	2.715E-02	NOT IDENT.
CF-251	8.943E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:19:27.44

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299037.CNF;1  *
* Acquisition date : 31-JUL-2024 16:14:36 Sensitivity     : 3.000           *
* Detector ID      : GAM24                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.55     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 12:30:00 Nuclide Library : SOLID           *
* Sample ID        : G674299037           Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 9.7320E+01 GRAM *
*                                         Quantity Err(%) : 1.0275E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 24-JUN-2024 07:06:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;16            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.639E+00	1.005E+00	1.005E+00
SN-113	6.694E-02	4.584E-02	4.584E-02
TL-208	1.009E-01	6.401E-02	6.401E-02
BI-211	1.386E+00	4.867E-01	4.867E-01
BI-212	4.327E-01	5.701E-01	5.701E-01
PB-212	3.814E-01	1.006E-01	1.006E-01
BI-214	5.867E-01	1.562E-01	1.562E-01
PB-214	5.032E-01	1.765E-01	1.765E-01
RN-222	5.867E-01	1.562E-01	1.562E-01
RA-224	1.552E+00	1.096E+00	1.096E+00
RA-226	5.032E-01	1.765E-01	1.765E-01
TH-228	3.814E-01	1.006E-01	1.006E-01
TH-230	5.032E-01	1.765E-01	1.765E-01
TH-234	9.500E-01	1.071E+00	1.071E+00
U-234	5.032E-01	1.765E-01	1.765E-01
U-238	9.500E-01	1.071E+00	1.071E+00
AM-243	5.277E-02	5.369E-02	5.369E-02
ANH-511	7.231E-02	7.501E-02	7.501E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	5.412E-01	4.306E-01	4.950E-01	NOT IDENT.
NA-22	-1.328E-02	4.339E-02	4.380E-02	NOT IDENT.
NA-24	-6.816E+14	2.999E+15	3.015E+15	SHORT HLIF
AL-26	7.340E-03	2.904E-02	2.923E-02	NOT IDENT.
SC-46	-1.713E-02	3.734E-02	3.813E-02	FAIL ABUN
V-48	-6.425E-02	1.546E-01	1.573E-01	NOT IDENT.
CR-51	-4.454E-01	4.978E-01	5.368E-01	NOT IDENT.
MN-52	-1.476E+00	2.893E+00	2.969E+00	NOT IDENT.
MN-54	1.653E-02	3.192E-02	3.278E-02	NOT IDENT.
CO-56	2.968E-02	3.953E-02	4.174E-02	FAIL ABUN
MN-56	1.000E+41	1.304E+41	0.000E+00	SHORT HLIF
CO-57	1.531E-02	2.019E-02	2.134E-02	NOT IDENT.

CO-58	1.426E-02	3.932E-02	3.984E-02	NOT IDENT.
FE-59	-3.448E-02	9.305E-02	9.434E-02	NOT IDENT.
CO-60	-1.560E-02	3.495E-02	3.565E-02	NOT IDENT.
ZN-65	5.129E-02	9.269E-02	9.553E-02	NOT IDENT.
GE-68	-9.003E-01	1.190E+00	1.258E+00	NOT IDENT.
AS-73	1.065E-01	4.626E-01	4.651E-01	NOT IDENT.
AS-74	1.262E-01	1.810E-01	1.897E-01	NOT IDENT.
SE-75	4.620E-02	5.488E-02	5.870E-02	FAIL ABUN
BR-77	2.055E+04	2.155E+04	2.346E+04	SHORT HLIF
SR-82	-1.493E-01	4.460E-01	4.511E-01	NOT IDENT.
RB-83	-5.540E-03	6.770E-02	6.775E-02	NOT IDENT.
RB-84	5.058E-02	1.005E-01	1.031E-01	NOT IDENT.
KR-85	7.794E+00	6.717E+00	7.580E+00	NOT IDENT.
SR-85	5.089E-02	4.393E-02	4.956E-02	NOT IDENT.
RB-86	-3.963E-01	1.289E+00	1.302E+00	NOT IDENT.
Y-88	1.783E-02	4.069E-02	4.147E-02	NOT IDENT.
Y-91	-2.036E+01	2.285E+01	2.462E+01	NOT IDENT.
NB-94	-1.091E-02	3.287E-02	3.324E-02	NOT IDENT.
NB-95	2.502E-02	5.002E-02	5.128E-02	NOT IDENT.
NB-95M	-3.950E-02	1.274E-01	1.286E-01	NOT IDENT.
ZR-95	-3.440E-02	9.428E-02	9.555E-02	NOT IDENT.
NB-97	-1.000E+41	5.044E+41	0.000E+00	SHORT HLIF
ZR-97	6.615E+14	6.841E+14	7.463E+14	SHORT HLIF
MO-99	9.592E+02	1.692E+03	1.747E+03	SHORT HLIF
TC-99M	2.045E+40	3.534E+40	0.000E+00	SHORT HLIF
RH-101	-1.655E-02	2.448E-02	2.559E-02	FAIL ABUN
RH-102	-3.068E-02	4.594E-02	4.798E-02	NOT IDENT.
RU-103	1.495E-02	5.017E-02	5.063E-02	FAIL ABUN
RH-106	-1.640E-01	3.442E-01	3.520E-01	NOT IDENT.
RU-106	-1.640E-01	3.442E-01	3.520E-01	NOT IDENT.
AG-108M	7.923E-03	2.843E-02	2.865E-02	NOT IDENT.
CD-109	5.678E-01	6.439E-01	6.929E-01	NOT IDENT.
AG-110	-1.128E-01	6.774E-01	6.793E-01	NOT IDENT.
AG-110M	-3.217E-02	4.401E-02	4.634E-02	NOT IDENT.
CD-115	8.621E+02	5.426E+03	5.439E+03	SHORT HLIF
SN-117M	4.155E-02	1.409E-01	1.422E-01	NOT IDENT.
SB-122	-8.888E+01	3.191E+02	3.216E+02	SHORT HLIF
TE-123M	2.060E-02	2.970E-02	3.111E-02	NOT IDENT.
SB-124	6.025E-02	1.028E-01	1.063E-01	NOT IDENT.
SB-125	1.675E-02	8.611E-02	8.644E-02	NOT IDENT.
TE-125M	4.283E+00	8.898E+00	9.105E+00	NOT IDENT.
I-126	4.101E-02	5.614E-01	5.617E-01	NOT IDENT.
SB-126	-1.148E-01	4.014E-01	4.047E-01	NOT IDENT.
SN-126	5.650E-02	6.134E-02	6.642E-02	FAIL ABUN
SB-127	1.395E+01	4.206E+01	4.253E+01	NOT IDENT.
I-131	-6.733E-01	5.802E-01	6.548E-01	NOT IDENT.
I-132	-1.000E+41	6.555E+41	0.000E+00	SHORT HLIF
TE-132	4.224E+01	5.352E+01	5.680E+01	SHORT HLIF
BA-133	3.139E-04	4.423E-02	4.423E-02	NOT IDENT.
I-133	5.492E+10	5.619E+10	6.141E+10	SHORT HLIF
CS-134	1.145E-02	4.164E-02	4.195E-02	FAIL ABUN
I-135	5.484E+37	7.044E+37	0.000E+00	SHORT HLIF
CS-136	-1.350E-01	2.137E-01	2.222E-01	NOT IDENT.
BA-137M	2.366E-02	3.224E-02	3.396E-02	NOT IDENT.
CS-137	2.500E-02	3.406E-02	3.588E-02	NOT IDENT.
LA-138	3.145E-02	4.964E-02	5.162E-02	NOT IDENT.
CE-139	-3.265E-02	2.889E-02	3.243E-02	NOT IDENT.
BA-140	4.016E-01	6.629E-01	6.872E-01	NOT IDENT.
LA-140	-2.506E-03	2.812E-01	2.812E-01	FAIL ABUN
CE-141	-8.545E-02	8.581E-02	9.406E-02	NOT IDENT.
CE-143	2.664E+06	2.424E+06	2.705E+06	SHORT HLIF
CE-144	1.778E-02	1.675E-01	1.677E-01	NOT IDENT.
PM-144	3.047E-03	3.608E-02	3.610E-02	NOT IDENT.
PR-144	5.411E-01	2.679E+00	2.691E+00	NOT IDENT.
PM-146	1.770E-02	3.001E-02	3.105E-02	NOT IDENT.
ND-147	4.167E-01	2.115E+00	2.123E+00	NOT IDENT.
PM-147	4.701E+02	5.630E+02	6.016E+02	NOT IDENT.
PM-149	1.346E+04	4.261E+04	4.304E+04	SHORT HLIF
EU-150	-2.346E-03	2.405E-02	2.407E-02	FAIL ABUN
EU-152	2.945E-02	9.376E-02	9.469E-02	NOT IDENT.
GD-153	-8.263E-03	6.264E-02	6.275E-02	NOT IDENT.
EU-154	-3.723E-02	1.217E-01	1.228E-01	NOT IDENT.
EU-155	1.287E-01	1.060E-01	1.209E-01	FAIL ABUN
TB-160	1.583E-01	1.517E-01	1.676E-01	NOT IDENT.
HO-166M	-2.492E-02	6.076E-02	6.179E-02	NOT IDENT.
TM-171	-8.315E+00	8.079E+00	8.906E+00	NOT IDENT.
HF-172	8.344E-02	1.368E-01	1.419E-01	FAIL ABUN
LU-172	6.032E-03	4.417E-02	4.425E-02	FAIL ABUN

LU-176	-5.430E-03	2.255E-02	2.268E-02	NOT IDENT.
HF-181	5.961E-03	4.892E-02	4.899E-02	NOT IDENT.
TA-182	5.538E-02	1.875E-01	1.892E-01	FAIL ABUN
RE-183	-6.044E-03	1.235E-01	1.236E-01	NOT IDENT.
RE-184	4.428E-02	1.499E-01	1.512E-01	NOT IDENT.
W-188	1.322E-01	7.581E+00	7.581E+00	FAIL ABUN
IR-192	5.272E-03	3.429E-02	3.437E-02	FAIL ABUN
HG-203	-1.245E-02	4.630E-02	4.664E-02	NOT IDENT.
TL-204	-1.039E+00	3.312E+00	3.345E+00	NOT IDENT.
BI-207	6.951E-04	4.913E-02	4.913E-02	FAIL ABUN
BI-210	2.981E-01	1.482E+00	1.488E+00	NOT IDENT.
PB-210	2.981E-01	1.482E+00	1.488E+00	NOT IDENT.
PB-211	8.519E-02	5.210E-01	5.224E-01	NOT IDENT.
BI-213	-7.597E-02	8.341E-02	9.016E-02	NOT IDENT.
RN-219	3.679E-02	3.047E-01	3.051E-01	NOT IDENT.
RA-223	-6.193E-02	5.637E-01	5.644E-01	FAIL ABUN
AC-225	2.446E+00	1.946E+00	2.237E+00	NOT IDENT.
AC-227	4.763E-02	2.139E-01	2.150E-01	NOT IDENT.
TH-227	4.763E-02	2.139E-01	2.150E-01	NOT IDENT.
AC-228	3.597E-01	2.593E-01	3.058E-01	FAIL ABUN
RA-228	3.597E-01	2.593E-01	3.058E-01	FAIL ABUN
TH-229	-4.629E-01	5.521E-01	5.902E-01	NOT IDENT.
PA-231	2.149E-01	3.948E-01	4.065E-01	NOT IDENT.
TH-231	-6.193E-02	5.637E-01	5.644E-01	FAIL ABUN
TH-232	3.597E-01	2.593E-01	3.058E-01	FAIL ABUN
PA-233	-1.768E-02	5.814E-02	5.869E-02	NOT IDENT.
PA-234	1.961E-01	3.602E-01	3.709E-01	NOT IDENT.
PA-234M	-5.768E-01	4.334E+00	4.342E+00	NOT IDENT.
U-235	-4.351E-02	1.806E-01	1.816E-01	FAIL ABUN
NP-237	-1.768E-02	5.814E-02	5.869E-02	NOT IDENT.
NP-238	-5.757E+03	1.238E+04	1.265E+04	SHORT HLIF
NP-239	1.509E-01	1.802E-01	1.926E-01	FAIL ABUN
PU-239	2.027E+01	2.609E+02	2.611E+02	NOT IDENT.
AM-241	3.801E-02	7.968E-02	8.150E-02	NOT IDENT.
CM-243	-1.004E-02	7.226E-02	7.240E-02	NOT IDENT.
BK-247	7.400E-02	8.910E-02	9.514E-02	FAIL ABUN
CM-247	-8.556E-03	2.865E-02	2.891E-02	NOT IDENT.
CF-249	1.103E-02	3.350E-02	3.387E-02	NOT IDENT.
CF-251	3.312E-02	1.161E-01	1.170E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	29.4638	85.43	76.2290	131.20	43.8043
45.60	35.9720	86.55	59.3259	133.02	41.7399
46.54	34.2830	86.79	57.3453	133.52	36.2775
49.72	0.0000	86.94	57.3649	136.00	45.2542
51.35	34.8273	87.09	57.3836	136.47	51.9162
51.87	35.8026	87.57	59.4605	140.51	0.0000
52.39	37.7001	88.03	59.5208	143.76	42.4624
52.97	33.1624	88.34	60.5708	144.24	39.1389
53.44	28.5981	88.47	60.5878	145.44	53.7759
54.07	29.5779	89.96	66.1882	152.43	41.8937
57.36	0.0000	1093.63	55.4633	153.25	37.4105
57.53	36.4244	91.11	55.5196	323.87	29.5166
57.98	43.0187	92.59	43.8090	156.02	39.8402
59.27	39.4253	93.35	43.8799	158.56	35.0367
59.32	39.4309	94.56	36.8300	159.00	32.0106
59.54	39.4559	94.65	27.2868	162.33	44.7992
60.96	44.0177	94.67	27.2878	162.66	44.8206
61.17	50.3359	94.87	27.2992	163.33	44.8629
62.93	41.7317	97.43	40.1372	165.86	45.0229
63.29	41.7733	98.43	26.8129	176.31	28.1060
63.58	41.8067	98.44	26.8135	176.60	32.8031
64.28	45.6948	99.53	38.2421	177.52	29.7153
66.73	39.6090	100.11	31.0432	181.07	0.0000
67.24	50.8577	102.03	26.3150	181.52	36.1621
125.81	51.8774	103.18	27.7631	184.41	42.6110
67.75	51.8869	103.37	29.1621	143.76	42.6835
68.89	52.0422	105.21	28.2220	193.51	47.8973
69.67	51.1820	105.31	28.2275	197.03	38.4854
70.82	58.1126	106.12	37.6957	198.01	38.5322
70.83	58.1145	106.47	37.7210	201.83	33.8729
72.81	53.5393	109.28	31.6033	203.43	36.3629
72.87	53.5473	111.00	28.5351	205.31	26.7262
74.66	53.7860	111.76	0.0000	210.85	39.1304
74.82	53.8070	114.06	29.7603	215.65	31.9716
74.97	53.8272	116.30	0.0000	218.12	17.2644
77.11	54.1083	116.74	22.4293	222.11	24.7754
78.74	54.3198	119.76	39.7323	227.09	33.6334
79.69	54.4419	121.12	26.9106	227.38	33.6445
80.03	54.4847	121.22	26.9154	228.16	0.0000
80.12	54.4969	121.78	28.0193	228.18	28.6854
80.19	46.2476	122.06	28.0332	116.74	28.6854
80.57	46.2886	122.92	26.9955	235.69	31.4365
81.00	41.0397	123.07	27.0025	235.96	25.9951
81.07	41.0464	265.00	42.1683	238.63	26.0698
81.75	55.6992	125.81	24.9599	238.98	0.0000
82.47	46.4936	127.23	40.2500	240.99	26.1354
83.79	50.9642	127.91	35.9402	242.00	26.1632
84.00	50.9883	129.30	34.9326	244.70	25.3912

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	30.7137	344.28	25.0351	563.25	14.9941
252.80	31.5797	345.93	22.2832	564.24	0.0000
254.15	0.0000	351.06	18.6454	569.33	15.0436
256.23	26.5512	351.93	18.6584	946.00	15.0453
260.90	0.0000	355.39	0.0000	569.70	15.0470
264.66	19.8662	356.01	25.2702	583.19	18.1870
264.80	19.8690	364.49	28.2642	584.27	9.7489
265.00	19.4408	366.42	0.0000	595.83	9.8082
269.46	19.9598	372.51	15.1670	427.87	10.9249
270.03	20.8394	375.05	19.9451	602.52	0.0000
271.23	25.2104	377.52	14.2731	604.72	21.3495
273.65	26.1407	356.01	21.0328	607.14	7.6733
276.40	27.0834	388.16	12.9477	609.32	7.6819
277.37	21.8618	388.63	20.1476	610.33	7.6859
277.60	24.4903	391.69	13.4620	614.28	9.9020
278.00	22.7500	264.66	14.5172	618.01	13.2275
279.20	32.4119	401.81	13.5605	620.36	16.5540
279.54	32.4220	402.40	16.4732	621.93	19.8809
279.70	32.4269	404.85	12.6194	630.19	0.0000
280.46	30.6962	410.95	20.4732	631.29	13.3159
283.69	28.1504	413.71	22.4666	633.25	7.7753
284.31	27.2865	414.70	27.3694	634.78	11.1161
285.41	22.9092	423.72	16.7209	635.95	16.6840
285.90	0.0000	427.09	20.7031	636.99	8.9027
287.50	28.2507	427.87	18.7414	657.50	12.3643
290.67	21.2500	433.94	18.8183	657.76	13.4897
293.27	0.0000	439.40	17.8931	657.90	0.0000
351.93	16.8933	440.45	18.9007	661.66	9.0101
295.96	16.9045	453.88	8.0286	664.57	0.0000
879.38	22.7415	463.37	14.1361	666.33	11.2878
299.98	20.0912	468.07	12.1531	666.50	7.9021
300.09	22.7722	473.00	13.2068	667.71	0.0000
300.13	22.7732	475.06	33.5687	677.62	10.2133
301.36	18.2385	476.78	14.2563	685.70	9.1130
302.85	25.0668	477.60	13.2449	692.65	0.0000
256.23	25.1033	482.18	12.2610	695.00	22.8809
304.85	20.6271	487.02	12.2976	696.49	14.8826
306.78	25.1540	492.35	0.0000	696.51	13.7378
308.46	26.0913	497.08	13.4041	697.00	11.4510
311.90	27.9745	505.52	24.8716	697.30	11.4526
316.51	19.9326	507.63	0.0000	697.49	14.8895
319.41	25.4320	511.00	12.4764	702.65	16.0727
320.08	26.3550	514.00	12.4985	706.68	11.5015
321.04	20.9196	514.00	12.4985	711.68	16.1385
323.87	20.5138	520.40	12.5454	720.70	12.7317
325.23	21.9067	520.69	0.0000	721.93	0.0000
328.76	20.1407	522.65	0.0000	722.78	10.4268
333.37	27.5702	527.90	0.0000	722.91	10.4271
333.97	23.1702	528.26	14.7030	723.31	13.9053
334.37	23.4539	529.59	13.6633	724.19	10.4333
338.28	24.9137	529.87	0.0000	727.33	5.8042
338.32	24.9142	531.02	18.9338	733.00	5.8189
311.90	27.7313	537.26	9.5006	735.93	11.6528
340.48	27.7313	546.56	0.0000	333.97	11.6606
340.55	27.7332	552.55	14.9063	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	10.5256	949.00	7.6045	1384.29	2.1676
747.24	5.2698	667.71	0.0000	1408.01	6.5427
748.06	5.2716	962.31	12.7336	1434.09	6.5859
752.31	15.8439	964.08	13.7610	1435.80	2.1963
753.82	8.8080	966.17	7.6506	1457.56	0.0000
756.73	18.5198	911.20	12.4446	1460.82	7.0719
756.80	18.5205	983.53	10.5834	1489.16	3.3380
884.68	17.6923	984.45	0.0000	1505.03	5.5847
765.81	12.3944	1274.44	10.6297	1584.12	6.3721
766.42	13.2829	1001.03	10.6469	1596.21	5.4771
766.84	11.5143	1002.74	8.7163	1620.50	3.6715
772.60	0.0000	1004.73	7.7529	1621.92	2.7545
776.52	9.7828	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	1.8646
778.90	8.9023	1028.54	0.0000	1750.46	0.0000
783.70	9.9904	1037.84	3.9197	1764.49	3.7881
788.74	11.4418	1038.76	0.0000	1063.66	12.3259
792.07	13.4267	631.29	4.9136	1771.35	5.6903
795.86	10.0410	1048.07	6.8825	1791.20	0.0000
810.06	5.7711	1049.04	5.9011	1808.65	1.9114
810.29	5.7717	1050.41	5.9037	1810.72	0.0000
344.28	5.7721	1063.66	8.8940	1836.06	1.9222
810.76	5.7727	1077.00	6.9470		
815.77	8.1343	1077.34	10.9181		
1048.07	6.3337	1085.87	4.7771		
832.01	14.5552	1093.63	3.1926		
834.85	7.2859	1099.45	6.9966		
835.71	9.1104	1112.07	12.0417		
836.80	0.0000	1112.84	6.8827		
846.75	0.0000	1115.54	6.4293		
846.77	4.3920	1120.29	4.8290		
856.80	9.1858	1120.55	4.8293		
860.56	5.5195	1221.41	1.6102		
871.09	7.3892	1129.67	4.0359		
873.19	4.9300	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	5.5594	1173.23	5.1117		
880.51	5.5618	1177.95	8.1899		
881.60	8.3460	1189.05	6.1626		
883.24	14.8467	1204.77	11.3505		
884.68	11.1412	1221.41	7.2576		
889.28	9.3002	1231.02	5.1984		
894.76	7.4556	1235.36	4.9966		
898.04	4.6654	1238.28	6.2509		
900.72	6.5381	1260.41	0.0000		
903.28	6.5443	1271.87	6.3102		
911.20	9.3765	1274.44	9.4719		
912.08	9.3796	1274.54	9.4724		
923.98	0.0000	1291.59	4.2297		
926.50	4.7145	1298.22	0.0000		
929.11	7.5503	1312.11	3.1901		
935.54	8.5139	1332.49	6.4153		
937.49	11.3599	1362.66	0.0000		
944.13	11.3870	1365.19	4.3140		
946.00	6.6467	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:19:53.71

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781346.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM27.CNF;738
                                        Background date  : 28-JUL-2024 11:28:58
Sample date      : 9-JUL-2024 00:00:00. Acquisition date : 31-JUL-2024 16:15:08
Sample ID        : G1205781346          Sample quantity  : 1.40020E+02 GRAM
Detector name    : GAM27                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.50  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : MXR1
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2636543              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	47.25*	10	57	1.00	95.34	90	10	2.80E-03	155.0	
2	0	87.91	19	53	1.43	176.62	170	10	5.18E-03	84.3	
3	0	92.68*	4	35	0.87	186.15	181	10	1.14E-03	354.5	
4	1	95.70	14	10	1.09	192.20	191	12	3.89E-03	35.5	1.86E+00
5	1	98.70*	10	20	1.10	198.20	191	12	2.73E-03	94.6	
6	0	148.29	19	8	1.54	297.34	295	6	5.21E-03	34.0	
7	0	174.06	17	26	1.28	348.86	345	9	4.68E-03	60.5	
8	0	185.91*	8	21	0.80	372.54	369	9	2.28E-03	135.8	
9	0	225.89	14	10	0.68	452.49	450	5	3.86E-03	44.4	
10	0	232.31	11	4	1.16	465.32	463	5	2.92E-03	41.2	
11	0	239.53*	7	49	1.14	479.75	473	14	1.89E-03	237.0	
12	0	389.09	9	9	1.17	778.77	776	8	2.44E-03	66.4	
13	0	431.74	10	5	0.76	864.06	861	7	2.82E-03	48.4	
14	0	436.12	20	3	3.44	872.81	867	12	5.63E-03	27.9	
15	0	492.80	8	13	1.32	986.15	979	9	2.22E-03	93.9	
16	0	511.25*	11	8	2.37	1023.03	1015	18	2.92E-03	118.7	
17	0	528.55	11	4	0.58	1057.62	1053	9	3.07E-03	45.3	
18	0	569.19*	5	8	1.46	1138.88	1135	8	1.51E-03	107.3	
19	0	586.79	7	23	3.56	1174.07	1163	14	2.00E-03	149.4	
20	0	599.71*	16	12	3.37	1199.92	1193	12	4.50E-03	51.0	
21	0	614.47	21	3	0.69	1229.43	1224	12	5.95E-03	26.8	
22	0	657.48	6	4	1.27	1315.42	1309	8	1.67E-03	70.7	
23	0	956.83	10	2	0.69	1914.03	1909	9	2.72E-03	42.2	
24	0	1001.50*	2	5	0.59	2003.35	1998	7	6.51E-04	205.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:19:54

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781346.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: MXR1		
Sample date	: 9-JUL-2024 00:00:00	Acquisition date	: 31-JUL-2024 16:15:08
Sample ID	: G1205781346	Sample quantity	: 140.02 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA27	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.50 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G1205781346 Acquisition date : 31-JUL-2024 16:15:08

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CD-109	88.03	22	3.70*	6.771E+00	4.802E-01	4.969E-01	168.51
AG-110	657.50	6	4.50*	2.632E+00	2.792E-01	2.973E-01	141.42
SN-126	64.28	------	9.60	4.008E+00	------	Line Not Found	------
	86.94	22	8.90	6.771E+00	1.996E-01	1.996E-01	168.51
	87.57	22	37.00*	6.771E+00	4.802E-02	4.802E-02	168.51
BI-210	46.54	13	4.25*	1.126E+00	1.418E+00	1.421E+00	310.06
PB-210	46.54	13	4.25*	1.126E+00	1.418E+00	1.421E+00	310.06
RA-224	240.99	8	4.10*	5.348E+00	1.861E-01	1.861E-01	473.93
CF-249	252.80	------	2.50	5.169E+00	------	Line Not Found	------
	333.37	------	14.60	4.328E+00	------	Line Not Found	------
	388.16	9	66.00*	3.908E+00	1.959E-02	1.959E-02	132.86
ANH-511	511.00	11	100.00*	3.221E+00	1.836E-02	1.836E-02	237.34

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:19:55.71

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781346.CNF;1  *
* Acquisition date : 31-JUL-2024 16:15:08 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.50     Half life ratio : *****           *
* Sample date      :  9-JUL-2024 00:00:00 Analyst initials: MXR1            *
* Sample ID        : G1205781346          Sample Quantity : 1.4002E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
CD-109	4.969E-01	8.206E-01	6.496E-01
AG-110	2.973E-01	4.120E-01	8.890E-01
SN-126	4.802E-02	7.931E-02	6.304E-02
BI-210	1.421E+00	4.318E+00	3.310E+00
PB-210	1.421E+00	4.318E+00	3.310E+00
RA-224	1.861E-01	8.642E-01	5.202E-01
CF-249	1.959E-02	2.551E-02	2.893E-02
ANH-511	1.836E-02	4.271E-02	2.528E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-8.124E-02	1.800E-01	3.266E-01	NOT IDENT.
NA-22	6.533E-04	2.105E-02	4.689E-02	NOT IDENT.
NA-24	0.000E+00	1.174E+09	0.000E+00	SHORT HLIF
AL-26	4.458E-03	1.688E-02	4.492E-02	NOT IDENT.
K-40	2.259E-01	3.181E-01	7.722E-01	NOT IDENT.
SC-46	1.152E-02	2.886E-02	6.086E-02	NOT IDENT.
V-48	-3.502E-02	3.070E-02	2.181E-02	NOT IDENT.
CR-51	6.498E-03	2.068E-01	4.353E-01	NOT IDENT.
MN-52	8.992E-03	3.203E-01	7.603E-01	NOT IDENT.
MN-54	-2.284E-03	1.807E-02	3.786E-02	NOT IDENT.
CO-56	-1.582E-04	2.585E-02	5.153E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	6.046E-03	1.201E-02	2.514E-02	NOT IDENT.
CO-58	4.544E-04	2.456E-02	4.952E-02	NOT IDENT.
FE-59	2.830E-02	5.728E-02	1.331E-01	NOT IDENT.
CO-60	7.013E-03	1.853E-02	4.687E-02	NOT IDENT.
ZN-65	7.640E-03	3.954E-02	9.182E-02	NOT IDENT.
GE-68	5.629E-02	5.716E-01	1.316E+00	NOT IDENT.
AS-73	-5.960E-02	3.971E-01	7.946E-01	NOT IDENT.
AS-74	3.229E-02	6.657E-02	1.387E-01	NOT IDENT.
SE-75	-1.834E-03	2.564E-02	4.764E-02	NOT IDENT.
BR-77	2.476E+01	1.150E+02	1.111E+02	FAIL ABUN

SR-82	1.216E-01	2.256E-01	5.083E-01	NOT IDENT.
RB-83	9.125E-03	3.465E-02	7.627E-02	FAIL ABUN
RB-84	2.609E-02	3.147E-02	8.513E-02	NOT IDENT.
KR-85	4.440E+00	3.776E+00	8.957E+00	NOT IDENT.
SR-85	2.544E-02	2.166E-02	5.138E-02	NOT IDENT.
RB-86	-5.943E-02	4.277E-01	9.441E-01	NOT IDENT.
Y-88	7.309E-03	2.094E-02	5.591E-02	NOT IDENT.
Y-91	-7.876E-01	8.014E+00	1.816E+01	NOT IDENT.
NB-94	-2.365E-04	1.873E-02	3.744E-02	NOT IDENT.
NB-95	1.301E-03	2.366E-02	4.835E-02	NOT IDENT.
NB-95M	3.084E-02	4.757E-02	1.017E-01	NOT IDENT.
ZR-95	-1.688E-02	4.410E-02	8.112E-02	NOT IDENT.
NB-97	0.000E+00	1.386E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.667E+09	0.000E+00	SHORT HLIF
MO-99	-3.722E+01	4.760E+01	7.820E+01	NOT IDENT.
TC-99M	0.000E+00	2.093E+25	0.000E+00	SHORT HLIF
RH-101	-2.434E-04	1.352E-02	2.667E-02	NOT IDENT.
RH-102	3.933E-03	2.935E-02	6.139E-02	NOT IDENT.
RU-103	2.890E-03	2.744E-02	5.607E-02	NOT IDENT.
RH-106	9.038E-02	1.920E-01	4.147E-01	NOT IDENT.
RU-106	9.038E-02	1.920E-01	4.147E-01	NOT IDENT.
AG-108M	1.843E-02	1.075E-02	3.082E-02	FAIL ABUN
AG-110M	-1.433E-02	2.537E-02	4.365E-02	FAIL ABUN
SN-113	-3.411E-03	2.336E-02	4.259E-02	NOT IDENT.
CD-115	0.000E+00	7.457E+01	0.000E+00	SHORT HLIF
SN-117M	4.543E-04	3.953E-02	7.643E-02	NOT IDENT.
SB-122	1.470E+00	6.770E+00	1.405E+01	NOT IDENT.
TE-123M	2.529E-03	1.425E-02	2.826E-02	NOT IDENT.
SB-124	-1.383E-02	4.533E-02	9.534E-02	NOT IDENT.
SB-125	-1.779E-02	4.318E-02	7.299E-02	FAIL ABUN
TE-125M	9.755E-01	4.221E+00	8.735E+00	NOT IDENT.
I-126	1.182E-01	1.557E-01	3.720E-01	FAIL ABUN
SB-126	-1.265E-02	1.012E-01	2.041E-01	NOT IDENT.
SB-127	8.866E-01	2.244E+00	5.171E+00	NOT IDENT.
I-131	-4.547E-02	1.105E-01	2.146E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	1.150E+00	1.564E+00	3.307E+00	NOT IDENT.
BA-133	-1.191E-02	2.078E-02	3.923E-02	NOT IDENT.
I-133	0.000E+00	1.545E+06	0.000E+00	SHORT HLIF
CS-134	1.349E-03	1.764E-02	3.809E-02	FAIL ABUN
I-135	0.000E+00	5.916E+23	0.000E+00	SHORT HLIF
CS-136	4.080E-03	8.962E-02	1.935E-01	NOT IDENT.
BA-137M	-2.194E-03	1.905E-02	3.770E-02	NOT IDENT.
CS-137	-2.317E-03	2.013E-02	3.982E-02	NOT IDENT.
LA-138	-9.329E-03	3.044E-02	6.434E-02	NOT IDENT.
CE-139	-1.245E-02	1.444E-02	2.414E-02	NOT IDENT.
BA-140	5.800E-02	1.659E-01	3.808E-01	NOT IDENT.
LA-140	-3.494E-02	8.038E-02	1.524E-01	NOT IDENT.
CE-141	-9.394E-03	3.531E-02	6.006E-02	NOT IDENT.
CE-143	0.000E+00	2.542E+03	0.000E+00	SHORT HLIF
CE-144	-3.239E-02	8.577E-02	1.598E-01	NOT IDENT.
PM-144	1.635E-03	2.085E-02	4.416E-02	NOT IDENT.
PR-144	1.229E-01	1.567E+00	3.318E+00	NOT IDENT.
PM-146	4.313E-03	1.975E-02	4.282E-02	NOT IDENT.
ND-147	1.839E-02	3.592E-01	7.207E-01	NOT IDENT.
PM-147	9.263E+01	3.644E+02	7.354E+02	NOT IDENT.
PM-149	0.000E+00	5.012E+02	0.000E+00	SHORT HLIF
EU-150	-4.099E-03	1.206E-02	2.395E-02	NOT IDENT.
EU-152	-5.355E-04	4.766E-02	9.870E-02	NOT IDENT.
GD-153	3.182E-02	5.900E-02	6.959E-02	FAIL ABUN
EU-154	-8.641E-03	6.287E-02	1.323E-01	NOT IDENT.
EU-155	3.937E-02	4.172E-02	9.429E-02	FAIL ABUN
TB-160	-1.632E-02	6.164E-02	1.207E-01	FAIL ABUN
HO-166M	-3.336E-02	3.362E-02	5.168E-02	FAIL ABUN
TM-171	-3.172E+00	8.299E+00	1.611E+01	NOT IDENT.
HF-172	-4.213E-02	7.990E-02	1.458E-01	NOT IDENT.
LU-172	1.990E-02	2.816E-02	7.383E-02	FAIL ABUN
LU-176	9.702E-03	1.302E-02	2.970E-02	FAIL ABUN
HF-181	-1.101E-02	2.706E-02	5.340E-02	NOT IDENT.
TA-182	-1.480E-02	7.853E-02	1.777E-01	FAIL ABUN
RE-183	-1.197E-02	1.006E-01	2.015E-01	NOT IDENT.
RE-184	-8.016E-03	7.441E-02	1.486E-01	NOT IDENT.
W-188	1.595E+00	3.633E+00	8.035E+00	FAIL ABUN
IR-192	-9.824E-03	1.563E-02	2.971E-02	NOT IDENT.
HG-203	-1.001E-03	2.041E-02	3.858E-02	NOT IDENT.
TL-204	3.552E-01	2.006E+00	4.112E+00	NOT IDENT.
BI-207	3.579E-03	2.342E-02	5.443E-02	FAIL ABUN
TL-208	-1.211E-03	2.305E-02	4.829E-02	NOT IDENT.

BI-211	-5.974E-02	1.095E-01	2.177E-01	NOT IDENT.
PB-211	1.963E-01	3.474E-01	7.812E-01	NOT IDENT.
BI-212	4.760E-02	2.346E-01	4.927E-01	NOT IDENT.
PB-212	1.750E-02	8.127E-02	7.794E-02	FAIL ABUN
BI-213	-1.865E-02	5.060E-02	8.640E-02	NOT IDENT.
BI-214	-2.573E-02	5.123E-02	8.479E-02	NOT IDENT.
PB-214	-7.686E-03	3.701E-02	7.807E-02	FAIL ABUN
RN-219	-3.940E-02	1.809E-01	3.653E-01	NOT IDENT.
RN-222	-2.573E-02	5.123E-02	8.479E-02	NOT IDENT.
RA-223	-3.991E-02	2.631E-01	5.459E-01	FAIL ABUN
AC-225	-6.464E-02	5.212E-01	9.698E-01	NOT IDENT.
RA-226	-7.686E-03	3.701E-02	7.807E-02	FAIL ABUN
AC-227	-2.284E-02	1.383E-01	2.532E-01	NOT IDENT.
TH-227	-2.284E-02	1.383E-01	2.532E-01	NOT IDENT.
AC-228	6.234E-02	1.039E-01	2.176E-01	NOT IDENT.
RA-228	6.234E-02	1.039E-01	2.176E-01	NOT IDENT.
TH-228	1.750E-02	8.127E-02	7.794E-02	FAIL ABUN
TH-229	2.373E-01	2.654E-01	5.686E-01	FAIL ABUN
TH-230	-7.686E-03	3.701E-02	7.807E-02	FAIL ABUN
PA-231	1.044E-01	2.126E-01	4.764E-01	NOT IDENT.
TH-231	-3.991E-02	2.631E-01	5.459E-01	FAIL ABUN
TH-232	6.234E-02	1.039E-01	2.176E-01	NOT IDENT.
PA-233	2.314E-03	2.566E-02	5.586E-02	NOT IDENT.
PA-234	-1.533E-01	1.873E-01	2.897E-01	FAIL ABUN
PA-234M	8.358E-01	3.368E+00	6.360E+00	FAIL ABUN
TH-234	-4.854E-01	6.092E-01	1.250E+00	FAIL ABUN
U-234	-7.686E-03	3.701E-02	7.807E-02	FAIL ABUN
U-235	-6.222E-02	9.205E-02	1.710E-01	FAIL ABUN
NP-237	2.314E-03	2.566E-02	5.586E-02	FAIL ABUN
NP-238	0.000E+00	9.006E+01	0.000E+00	SHORT HLIF
U-238	-4.854E-01	6.092E-01	1.250E+00	FAIL ABUN
NP-239	2.025E-02	1.121E-01	2.286E-01	FAIL ABUN
PU-239	4.113E+01	1.549E+02	3.142E+02	NOT IDENT.
AM-241	1.483E-02	6.449E-02	1.352E-01	NOT IDENT.
AM-243	8.051E-03	2.109E-02	4.344E-02	NOT IDENT.
CM-243	-6.287E-03	4.246E-02	8.347E-02	FAIL ABUN
BK-247	1.080E-02	4.333E-02	8.505E-02	NOT IDENT.
CM-247	-2.373E-03	1.689E-02	3.450E-02	NOT IDENT.
CF-251	2.686E-02	5.926E-02	1.164E-01	FAIL ABUN

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:19:54.44

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CD-109	88.03	22	3.70*	6.771E+00	4.802E-01	4.969E-01	168.51
AG-110	657.50	6	4.50*	2.632E+00	2.792E-01	2.973E-01	141.42
SN-126	64.28	------	9.60	4.008E+00	------	Line Not Found	------
	86.94	22	8.90	6.771E+00	1.996E-01	1.996E-01	168.51
	87.57	22	37.00*	6.771E+00	4.802E-02	4.802E-02	168.51
BI-210	46.54	13	4.25*	1.126E+00	1.418E+00	1.421E+00	310.06
PB-210	46.54	13	4.25*	1.126E+00	1.418E+00	1.421E+00	310.06
RA-224	240.99	8	4.10*	5.348E+00	1.861E-01	1.861E-01	473.93
CF-249	252.80	------	2.50	5.169E+00	------	Line Not Found	------
	333.37	------	14.60	4.328E+00	------	Line Not Found	------
	388.16	9	66.00*	3.908E+00	1.959E-02	1.959E-02	132.86
ANH-511	511.00	11	100.00*	3.221E+00	1.836E-02	1.836E-02	237.34

Flag: "*" = Keyline

Sample ID : G1205781346 Acquisition date : 31-JUL-2024 16:15:08

Total number of lines in spectrum 24
Number of unidentified lines 7
Number of lines tentatively identified by NID 17 70.83%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CD-109	461.40D	1.03	4.802E-01	4.969E-01	8.373E-01	168.51	
AG-110	249.76D	1.07	2.792E-01	2.973E-01	4.205E-01	141.42	
SN-126	2.30E+05Y	1.00	4.802E-02	4.802E-02	8.093E-02	168.51	
BI-210	22.20Y	1.00	1.418E+00	1.421E+00	4.406E+00	310.06	
PB-210	22.20Y	1.00	1.418E+00	1.421E+00	4.406E+00	310.06	
RA-224	1.41E+10Y	1.00	1.861E-01	1.861E-01	8.819E-01	473.93	
CF-249	351.00Y	1.00	1.959E-02	1.959E-02	2.603E-02	132.86	
ANH-511	1.00E+09Y	1.00	1.836E-02	1.836E-02	4.358E-02	237.34	
			---	---			
	Total Activity :		3.868E+00	3.908E+00			

Grand Total Activity : 3.868E+00 3.908E+00

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1205781346 Acquisition date : 31-JUL-2024 16:15:08

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	92.68	5	42	0.87	186.15	181	10	1.14E-03	****	7.04E+00	T
1	95.70	17	12	1.09	192.20	191	12	3.89E-03	71.0	7.17E+00	T
1	98.70	12	23	1.10	198.20	191	12	2.73E-03	****	7.27E+00	T
0	148.29	22	10	1.54	297.34	295	6	5.21E-03	67.9	7.01E+00	
0	174.06	19	30	1.28	348.86	345	9	4.68E-03	****	6.48E+00	
0	185.91	9	24	0.80	372.54	369	9	2.28E-03	****	6.24E+00	T
0	225.89	16	11	0.68	452.49	450	5	3.86E-03	88.8	5.55E+00	T
0	232.31	12	4	1.16	465.32	463	5	2.92E-03	82.3	5.45E+00	
0	431.74	11	5	0.76	864.06	861	7	2.82E-03	96.7	3.64E+00	
0	436.12	22	3	3.44	872.81	867	12	5.63E-03	55.8	3.61E+00	
0	492.80	8	14	1.32	986.15	979	9	2.22E-03	****	3.31E+00	T
0	528.55	12	4	0.58	1057.62	1053	9	3.07E-03	90.6	3.14E+00	T
0	569.19	6	8	1.46	1138.88	1135	8	1.51E-03	****	2.97E+00	T
0	586.79	7	24	3.56	1174.07	1163	14	2.00E-03	****	2.89E+00	
0	599.71	17	12	3.37	1199.92	1193	12	4.50E-03	****	2.84E+00	T
0	614.47	22	3	0.69	1229.43	1224	12	5.95E-03	53.6	2.79E+00	T
0	956.83	10	2	0.69	1914.03	1909	9	2.72E-03	84.4	1.86E+00	
0	1001.50	2	5	0.59	2003.35	1998	7	6.51E-04	****	1.77E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:20:05.80

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781346.CNF;1  *
* Acquisition date : 31-JUL-2024 16:15:08 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.50     Half life ratio : *****           *
* Sample date      :  9-JUL-2024 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781346          Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.4002E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
CD-109	2.931E-01
AG-110	3.781E-01
SN-126	2.845E-02
BI-210	1.477E+00
PB-210	1.477E+00
RA-224	2.256E-01
CF-249	1.157E-02
ANH-511	1.033E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.350E-01	NOT IDENT.
NA-22	1.817E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.591E-02	NOT IDENT.
K-40	3.317E-01	NOT IDENT.
SC-46	2.599E-02	NOT IDENT.
V-48	0.000E+00	NOT IDENT.
CR-51	1.876E-01	NOT IDENT.
MN-52	2.846E-01	NOT IDENT.
MN-54	1.528E-02	NOT IDENT.
CO-56	2.145E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.130E-02	NOT IDENT.
CO-58	2.052E-02	NOT IDENT.
FE-59	5.517E-02	NOT IDENT.
CO-60	1.799E-02	NOT IDENT.
ZN-65	3.624E-02	NOT IDENT.
GE-68	5.120E-01	NOT IDENT.
AS-73	3.537E-01	NOT IDENT.
AS-74	5.871E-02	NOT IDENT.
SE-75	2.092E-02	NOT IDENT.
BR-77	5.098E+01	FAIL ABUN
SR-82	2.141E-01	NOT IDENT.

RB-83	3.190E-02	FAIL ABUN
RB-84	3.399E-02	NOT IDENT.
KR-85	3.944E+00	NOT IDENT.
SR-85	2.262E-02	NOT IDENT.
RB-86	3.526E-01	NOT IDENT.
Y-88	2.030E-02	NOT IDENT.
Y-91	6.599E+00	NOT IDENT.
NB-94	1.574E-02	NOT IDENT.
NB-95	2.007E-02	NOT IDENT.
NB-95M	4.366E-02	NOT IDENT.
ZR-95	3.310E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	3.123E+01	NOT IDENT.
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.179E-02	NOT IDENT.
RH-102	2.579E-02	NOT IDENT.
RU-103	2.433E-02	NOT IDENT.
RH-106	1.792E-01	NOT IDENT.
RU-106	1.792E-01	NOT IDENT.
AG-108M	1.314E-02	FAIL ABUN
AG-110M	1.645E-02	FAIL ABUN
SN-113	1.791E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	3.411E-02	NOT IDENT.
SB-122	5.884E+00	NOT IDENT.
TE-123M	1.261E-02	NOT IDENT.
SB-124	3.030E-02	NOT IDENT.
SB-125	2.955E-02	FAIL ABUN
TE-125M	3.867E+00	NOT IDENT.
I-126	1.568E-01	FAIL ABUN
SB-126	8.186E-02	NOT IDENT.
SB-127	2.114E+00	NOT IDENT.
I-131	9.134E-02	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	1.441E+00	NOT IDENT.
BA-133	1.669E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	1.508E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	7.892E-02	NOT IDENT.
BA-137M	1.570E-02	NOT IDENT.
CS-137	1.659E-02	NOT IDENT.
LA-138	2.342E-02	NOT IDENT.
CE-139	1.047E-02	NOT IDENT.
BA-140	1.567E-01	NOT IDENT.
LA-140	5.398E-02	NOT IDENT.
CE-141	2.641E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	6.993E-02	NOT IDENT.
PM-144	1.898E-02	NOT IDENT.
PR-144	1.426E+00	NOT IDENT.
PM-146	1.812E-02	NOT IDENT.
ND-147	2.844E-01	NOT IDENT.
PM-147	3.311E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.017E-02	NOT IDENT.
EU-152	4.269E-02	NOT IDENT.
GD-153	3.089E-02	FAIL ABUN
EU-154	5.127E-02	NOT IDENT.
EU-155	4.221E-02	FAIL ABUN
TB-160	4.529E-02	FAIL ABUN
HO-166M	2.028E-02	FAIL ABUN
TM-171	7.177E+00	NOT IDENT.
HF-172	6.357E-02	NOT IDENT.
LU-172	2.961E-02	FAIL ABUN
LU-176	1.309E-02	FAIL ABUN
HF-181	2.272E-02	NOT IDENT.
TA-182	6.762E-02	FAIL ABUN
RE-183	9.103E-02	NOT IDENT.
RE-184	5.896E-02	NOT IDENT.
W-188	3.523E+00	FAIL ABUN
IR-192	1.234E-02	NOT IDENT.
HG-203	1.662E-02	NOT IDENT.
TL-204	1.860E+00	NOT IDENT.
BI-207	2.133E-02	FAIL ABUN
TL-208	2.115E-02	NOT IDENT.
BI-211	9.500E-02	NOT IDENT.

PB-211	3.387E-01	NOT IDENT.
BI-212	2.004E-01	NOT IDENT.
PB-212	3.575E-02	FAIL ABUN
BI-213	3.519E-02	NOT IDENT.
BI-214	3.660E-02	NOT IDENT.
PB-214	3.400E-02	FAIL ABUN
RN-219	1.531E-01	NOT IDENT.
RN-222	3.660E-02	NOT IDENT.
RA-223	2.303E-01	FAIL ABUN
AC-225	4.286E-01	NOT IDENT.
RA-226	3.400E-02	FAIL ABUN
AC-227	1.111E-01	NOT IDENT.
TH-227	1.111E-01	NOT IDENT.
AC-228	9.420E-02	NOT IDENT.
RA-228	9.420E-02	NOT IDENT.
TH-228	3.575E-02	FAIL ABUN
TH-229	2.562E-01	FAIL ABUN
TH-230	3.400E-02	FAIL ABUN
PA-231	2.078E-01	NOT IDENT.
TH-231	2.303E-01	FAIL ABUN
TH-232	9.420E-02	NOT IDENT.
PA-233	2.361E-02	NOT IDENT.
PA-234	1.122E-01	FAIL ABUN
PA-234M	2.688E+00	FAIL ABUN
TH-234	5.705E-01	FAIL ABUN
U-234	3.400E-02	FAIL ABUN
U-235	7.570E-02	FAIL ABUN
NP-237	2.361E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	5.705E-01	FAIL ABUN
NP-239	1.014E-01	FAIL ABUN
PU-239	1.407E+02	NOT IDENT.
AM-241	6.082E-02	NOT IDENT.
AM-243	1.965E-02	NOT IDENT.
CM-243	3.676E-02	FAIL ABUN
BK-247	3.753E-02	NOT IDENT.
CM-247	1.454E-02	NOT IDENT.
CF-251	5.139E-02	FAIL ABUN

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:20:09.68

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781346.CNF;1  *
* Acquisition date : 31-JUL-2024 16:15:08 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.50     Half life ratio : *****           *
* Sample date      :  9-JUL-2024 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781346          Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.4002E+02 GRAM *
*                                         Quantity Err(%) : 1.4284E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
CD-109	4.969E-01	8.230E-01	8.230E-01
AG-110	2.973E-01	4.128E-01	4.128E-01
SN-126	4.802E-02	7.950E-02	7.950E-02
BI-210	1.421E+00	4.322E+00	4.322E+00
PB-210	1.421E+00	4.322E+00	4.322E+00
RA-224	1.861E-01	8.644E-01	8.644E-01
CF-249	1.959E-02	2.560E-02	2.560E-02
ANH-511	1.836E-02	4.274E-02	4.274E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-8.124E-02	1.801E-01	1.838E-01	NOT IDENT.
NA-22	6.533E-04	2.105E-02	2.105E-02	NOT IDENT.
NA-24	3.586E+08	1.175E+09	1.186E+09	SHORT HLIF
AL-26	4.458E-03	1.688E-02	1.700E-02	NOT IDENT.
K-40	2.259E-01	3.193E-01	3.352E-01	NOT IDENT.
SC-46	1.152E-02	2.889E-02	2.935E-02	NOT IDENT.
V-48	-3.502E-02	3.099E-02	3.478E-02	NOT IDENT.
CR-51	6.498E-03	2.068E-01	2.068E-01	NOT IDENT.
MN-52	8.992E-03	3.203E-01	3.203E-01	NOT IDENT.
MN-54	-2.284E-03	1.807E-02	1.810E-02	NOT IDENT.
CO-56	-1.582E-04	2.585E-02	2.585E-02	NOT IDENT.
MN-56	-1.000E+41	6.288E+42	0.000E+00	SHORT HLIF
CO-57	6.046E-03	1.202E-02	1.232E-02	NOT IDENT.
CO-58	4.544E-04	2.456E-02	2.457E-02	NOT IDENT.
FE-59	2.830E-02	5.739E-02	5.879E-02	NOT IDENT.
CO-60	7.013E-03	1.855E-02	1.882E-02	NOT IDENT.
ZN-65	7.640E-03	3.955E-02	3.970E-02	NOT IDENT.
GE-68	5.629E-02	5.716E-01	5.722E-01	NOT IDENT.
AS-73	-5.960E-02	3.973E-01	3.982E-01	NOT IDENT.
AS-74	3.229E-02	6.666E-02	6.824E-02	NOT IDENT.
SE-75	-1.834E-03	2.564E-02	2.565E-02	NOT IDENT.
BR-77	2.476E+01	1.162E+02	1.167E+02	FAIL ABUN

SR-82	1.216E-01	2.260E-01	2.325E-01	NOT IDENT.
RB-83	9.125E-03	3.468E-02	3.493E-02	FAIL ABUN
RB-84	2.609E-02	3.164E-02	3.375E-02	NOT IDENT.
KR-85	4.440E+00	3.795E+00	4.290E+00	NOT IDENT.
SR-85	2.544E-02	2.177E-02	2.461E-02	NOT IDENT.
RB-86	-5.943E-02	4.278E-01	4.286E-01	NOT IDENT.
Y-88	7.309E-03	2.094E-02	2.120E-02	NOT IDENT.
Y-91	-7.876E-01	8.014E+00	8.022E+00	NOT IDENT.
NB-94	-2.365E-04	1.873E-02	1.873E-02	NOT IDENT.
NB-95	1.301E-03	2.366E-02	2.367E-02	NOT IDENT.
NB-95M	3.084E-02	4.770E-02	4.968E-02	NOT IDENT.
ZR-95	-1.688E-02	4.413E-02	4.478E-02	NOT IDENT.
NB-97	1.000E+41	1.388E+41	0.000E+00	SHORT HLIF
ZR-97	6.718E+08	1.668E+09	1.695E+09	SHORT HLIF
MO-99	-3.722E+01	4.775E+01	5.061E+01	NOT IDENT.
TC-99M	8.518E+23	2.093E+25	0.000E+00	SHORT HLIF
RH-101	-2.434E-04	1.352E-02	1.352E-02	NOT IDENT.
RH-102	3.933E-03	2.936E-02	2.941E-02	NOT IDENT.
RU-103	2.890E-03	2.744E-02	2.747E-02	NOT IDENT.
RH-106	9.038E-02	1.922E-01	1.965E-01	NOT IDENT.
RU-106	9.038E-02	1.922E-01	1.965E-01	NOT IDENT.
AG-108M	1.843E-02	1.086E-02	1.368E-02	FAIL ABUN
AG-110M	-1.433E-02	2.544E-02	2.625E-02	FAIL ABUN
SN-113	-3.411E-03	2.336E-02	2.341E-02	NOT IDENT.
CD-115	8.400E+01	7.500E+01	8.402E+01	SHORT HLIF
SN-117M	4.543E-04	3.953E-02	3.953E-02	NOT IDENT.
SB-122	1.470E+00	6.771E+00	6.803E+00	NOT IDENT.
TE-123M	2.529E-03	1.425E-02	1.430E-02	NOT IDENT.
SB-124	-1.383E-02	4.535E-02	4.578E-02	NOT IDENT.
SB-125	-1.779E-02	4.320E-02	4.394E-02	FAIL ABUN
TE-125M	9.755E-01	4.221E+00	4.244E+00	NOT IDENT.
I-126	1.182E-01	1.561E-01	1.649E-01	FAIL ABUN
SB-126	-1.265E-02	1.012E-01	1.013E-01	NOT IDENT.
SB-127	8.866E-01	2.247E+00	2.283E+00	NOT IDENT.
I-131	-4.547E-02	1.106E-01	1.125E-01	NOT IDENT.
I-132	-1.000E+41	9.036E+41	0.000E+00	SHORT HLIF
TE-132	1.150E+00	1.570E+00	1.653E+00	NOT IDENT.
BA-133	-1.191E-02	2.081E-02	2.149E-02	NOT IDENT.
I-133	1.740E+06	1.573E+06	1.757E+06	SHORT HLIF
CS-134	1.349E-03	1.764E-02	1.765E-02	FAIL ABUN
I-135	-1.946E+23	6.005E+23	0.000E+00	SHORT HLIF
CS-136	4.080E-03	8.962E-02	8.964E-02	NOT IDENT.
BA-137M	-2.194E-03	1.905E-02	1.908E-02	NOT IDENT.
CS-137	-2.317E-03	2.013E-02	2.015E-02	NOT IDENT.
LA-138	-9.329E-03	3.046E-02	3.075E-02	NOT IDENT.
CE-139	-1.245E-02	1.467E-02	1.571E-02	NOT IDENT.
BA-140	5.800E-02	1.660E-01	1.680E-01	NOT IDENT.
LA-140	-3.494E-02	8.047E-02	8.200E-02	NOT IDENT.
CE-141	-9.394E-03	3.532E-02	3.557E-02	NOT IDENT.
CE-143	-1.418E+03	2.546E+03	2.625E+03	SHORT HLIF
CE-144	-3.239E-02	8.581E-02	8.705E-02	NOT IDENT.
PM-144	1.635E-03	2.085E-02	2.086E-02	NOT IDENT.
PR-144	1.229E-01	1.567E+00	1.568E+00	NOT IDENT.
PM-146	4.313E-03	1.975E-02	1.985E-02	NOT IDENT.
ND-147	1.839E-02	3.592E-01	3.593E-01	NOT IDENT.
PM-147	9.263E+01	3.645E+02	3.669E+02	NOT IDENT.
PM-149	3.474E+02	5.045E+02	5.282E+02	SHORT HLIF
EU-150	-4.099E-03	1.206E-02	1.221E-02	NOT IDENT.
EU-152	-5.355E-04	4.766E-02	4.766E-02	NOT IDENT.
GD-153	3.182E-02	5.908E-02	6.080E-02	FAIL ABUN
EU-154	-8.641E-03	6.288E-02	6.300E-02	NOT IDENT.
EU-155	3.937E-02	4.191E-02	4.551E-02	FAIL ABUN
TB-160	-1.632E-02	6.168E-02	6.211E-02	FAIL ABUN
HO-166M	-3.336E-02	3.377E-02	3.697E-02	FAIL ABUN
TM-171	-3.172E+00	8.313E+00	8.435E+00	NOT IDENT.
HF-172	-4.213E-02	8.023E-02	8.245E-02	NOT IDENT.
LU-172	1.990E-02	2.830E-02	2.969E-02	FAIL ABUN
LU-176	9.702E-03	1.306E-02	1.377E-02	FAIL ABUN
HF-181	-1.101E-02	2.708E-02	2.753E-02	NOT IDENT.
TA-182	-1.480E-02	7.855E-02	7.883E-02	FAIL ABUN
RE-183	-1.197E-02	1.006E-01	1.008E-01	NOT IDENT.
RE-184	-8.016E-03	7.442E-02	7.451E-02	NOT IDENT.
W-188	1.595E+00	3.641E+00	3.711E+00	FAIL ABUN
IR-192	-9.824E-03	1.567E-02	1.628E-02	NOT IDENT.
HG-203	-1.001E-03	2.041E-02	2.042E-02	NOT IDENT.
TL-204	3.552E-01	2.006E+00	2.013E+00	NOT IDENT.
BI-207	3.579E-03	2.342E-02	2.348E-02	FAIL ABUN
TL-208	-1.211E-03	2.305E-02	2.306E-02	NOT IDENT.

BI-211	-5.974E-02	1.096E-01	1.129E-01	NOT IDENT.
PB-211	1.963E-01	3.478E-01	3.589E-01	NOT IDENT.
BI-212	4.760E-02	2.347E-01	2.356E-01	NOT IDENT.
PB-212	1.750E-02	8.129E-02	8.167E-02	FAIL ABUN
BI-213	-1.865E-02	5.063E-02	5.132E-02	NOT IDENT.
BI-214	-2.573E-02	5.128E-02	5.257E-02	NOT IDENT.
PB-214	-7.686E-03	3.702E-02	3.718E-02	FAIL ABUN
RN-219	-3.940E-02	1.810E-01	1.819E-01	NOT IDENT.
RN-222	-2.573E-02	5.128E-02	5.257E-02	NOT IDENT.
RA-223	-3.991E-02	2.632E-01	2.638E-01	FAIL ABUN
AC-225	-6.464E-02	5.212E-01	5.220E-01	NOT IDENT.
RA-226	-7.686E-03	3.702E-02	3.718E-02	FAIL ABUN
AC-227	-2.284E-02	1.383E-01	1.387E-01	NOT IDENT.
TH-227	-2.284E-02	1.383E-01	1.387E-01	NOT IDENT.
AC-228	6.234E-02	1.042E-01	1.079E-01	NOT IDENT.
RA-228	6.234E-02	1.042E-01	1.079E-01	NOT IDENT.
TH-228	1.750E-02	8.129E-02	8.167E-02	FAIL ABUN
TH-229	2.373E-01	2.661E-01	2.868E-01	FAIL ABUN
TH-230	-7.686E-03	3.701E-02	3.718E-02	FAIL ABUN
PA-231	1.044E-01	2.140E-01	2.191E-01	NOT IDENT.
TH-231	-3.991E-02	2.632E-01	2.638E-01	FAIL ABUN
TH-232	6.234E-02	1.042E-01	1.079E-01	NOT IDENT.
PA-233	2.314E-03	2.566E-02	2.568E-02	NOT IDENT.
PA-234	-1.533E-01	2.573E-01	2.664E-01	FAIL ABUN
PA-234M	8.358E-01	3.370E+00	3.391E+00	FAIL ABUN
TH-234	-4.854E-01	6.212E-01	6.586E-01	FAIL ABUN
U-234	-7.686E-03	3.701E-02	3.718E-02	FAIL ABUN
U-235	-6.222E-02	9.218E-02	9.635E-02	FAIL ABUN
NP-237	2.314E-03	2.566E-02	2.568E-02	FAIL ABUN
NP-238	-1.216E+02	9.125E+01	1.064E+02	SHORT HLIF
U-238	-4.854E-01	6.212E-01	6.586E-01	FAIL ABUN
NP-239	2.025E-02	1.121E-01	1.125E-01	FAIL ABUN
PU-239	4.113E+01	1.549E+02	1.560E+02	NOT IDENT.
AM-241	1.483E-02	6.453E-02	6.488E-02	NOT IDENT.
AM-243	8.051E-03	2.111E-02	2.142E-02	NOT IDENT.
CM-243	-6.287E-03	4.247E-02	4.256E-02	FAIL ABUN
BK-247	1.080E-02	4.339E-02	4.367E-02	NOT IDENT.
CM-247	-2.373E-03	1.689E-02	1.693E-02	NOT IDENT.
CF-251	2.686E-02	5.936E-02	6.058E-02	FAIL ABUN

```
*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	19.9845	85.43	28.6192	131.20	24.2473
45.60	23.0666	86.55	28.6821	133.02	20.0840
46.54	23.1306	86.79	28.6955	133.52	21.1563
49.72	19.1527	86.94	28.7040	136.00	27.6020
51.35	21.6445	87.09	28.7123	136.47	19.1220
51.87	19.8691	87.57	28.7392	140.51	19.2316
52.39	22.6105	88.03	28.7647	143.76	19.3189
52.97	17.2110	88.34	28.7819	144.24	20.4055
53.44	19.0467	88.47	13.7402	145.44	18.6462
54.07	27.2554	89.96	11.8110	152.43	18.4607
57.36	0.0000	90.64	5.9131	153.25	8.6969
57.53	22.9187	91.11	13.8096	154.21	18.5043
57.98	31.2050	92.59	13.8480	156.02	18.5481
59.27	22.0989	93.35	13.8676	158.56	22.9880
59.32	22.1017	94.56	13.8986	159.00	20.8102
59.54	23.9566	94.65	13.9009	162.33	25.2987
60.96	23.1165	94.67	13.9014	162.66	19.8073
61.17	23.1284	94.87	13.9065	163.33	12.1148
62.93	22.2986	97.43	13.3062	165.86	25.4114
63.29	19.5281	98.43	13.3301	176.31	17.9045
63.58	19.5417	98.44	13.3304	176.60	17.9109
64.28	24.2350	99.53	13.3563	177.52	13.4478
66.73	22.4998	100.11	16.0441	181.07	16.8805
67.24	22.5264	102.03	12.0738	181.52	18.0154
67.68	24.4284	103.18	22.1796	184.41	15.0635
67.75	24.4321	103.37	20.1700	185.72	21.4979
68.89	26.3803	105.21	13.1520	193.51	15.9814
69.67	19.8203	105.31	13.1543	197.03	22.9199
70.82	27.4413	106.12	27.3582	198.01	26.3863
70.83	27.4419	106.47	29.4022	201.83	24.1928
72.81	26.6120	109.28	17.3175	203.43	24.2348
72.87	26.6155	111.00	25.5398	205.31	21.9711
74.66	21.9478	111.76	21.4803	210.85	18.6111
74.82	17.1825	114.06	22.5878	215.65	18.7046
74.97	23.8724	116.30	18.5477	218.12	21.0962
77.11	26.8590	116.74	18.5607	222.11	18.8286
78.74	23.1008	119.76	29.0104	227.09	12.6154
79.69	28.9330	121.12	23.8805	227.38	11.0416
80.03	18.3368	121.22	23.8842	228.16	7.8930
80.12	18.3404	121.78	23.9051	228.18	7.8932
80.19	18.3430	122.06	19.7562	235.69	6.3612
80.57	20.2898	122.92	30.1943	235.96	6.3630
81.00	28.0437	123.07	30.2012	238.63	14.3535
81.07	28.0477	123.68	19.8055	238.98	14.3584
81.75	22.2756	125.81	21.9615	240.99	14.3860
82.47	36.2102	127.23	19.9124	242.00	17.6000
83.79	32.4163	127.91	19.9329	244.70	14.4368
84.00	29.8354	129.30	21.0254	252.40	19.3879

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.80	20.6072	351.06	12.2546	569.33	7.9736
254.15	0.0000	351.93	7.8829	569.50	7.9743
256.23	19.4561	355.39	0.0000	569.70	8.9722
260.90	0.0000	356.01	16.6903	583.19	10.0354
264.66	18.3792	364.49	15.0237	584.27	10.0407
264.80	15.9306	366.42	14.1589	595.83	6.0583
265.00	15.9334	372.51	5.3322	600.60	9.1084
269.46	14.7660	375.05	10.6829	602.52	0.0000
270.03	24.6228	377.52	8.0257	604.72	10.9512
271.23	14.7891	383.85	10.7471	607.14	12.1821
273.65	22.2303	388.16	5.3892	609.32	13.7192
276.40	11.1418	388.63	6.7386	610.33	12.2007
277.37	14.8682	391.69	10.8037	614.28	5.0930
277.60	14.8711	400.66	11.7733	618.01	13.7752
278.00	14.8762	401.81	10.8760	620.36	9.8063
279.20	13.6506	402.40	10.8801	621.93	9.2003
279.54	13.6547	404.85	9.0812	630.19	0.0000
279.70	8.6904	410.95	14.5872	631.29	8.2132
280.46	8.6962	413.71	7.3065	633.25	5.1379
283.69	16.1945	414.70	5.4833	634.78	8.2266
284.31	14.9564	423.72	9.1911	635.95	9.2596
285.41	13.7228	427.09	8.8420	636.99	3.0880
285.90	0.0000	427.87	9.6756	657.50	10.9084
287.50	14.9967	433.94	0.0000	657.76	10.9097
290.67	12.5302	439.40	8.3524	657.90	0.0000
293.27	0.0000	440.45	9.7506	661.66	9.3673
295.22	13.4160	453.88	8.4254	664.57	0.0000
295.96	7.5511	463.37	9.4141	666.33	4.1719
298.58	15.1348	468.07	9.4399	666.50	3.1292
299.98	15.1520	473.00	9.4668	667.71	0.0000
300.09	15.1531	475.06	5.6868	677.62	5.2407
300.13	15.1538	476.78	13.2822	685.70	4.2072
301.36	10.9553	477.60	9.4918	692.65	8.4395
302.85	15.1871	482.18	10.4683	695.00	9.5039
304.50	19.4315	487.02	8.5884	696.49	7.3965
304.85	17.7469	492.35	0.0000	696.51	7.3968
306.78	11.0031	497.08	13.4349	697.00	8.4551
308.46	16.9507	505.52	5.7845	697.30	9.5131
311.90	9.3482	507.63	0.0000	697.49	8.4567
316.51	13.6468	511.00	6.7688	702.65	9.5347
319.41	7.6937	514.00	6.7798	706.68	13.7956
320.08	12.8293	514.00	6.7798	711.68	12.7612
321.04	12.8391	520.40	6.8032	720.70	6.4045
323.87	11.1512	520.69	7.7764	721.93	0.0000
325.23	12.0216	522.65	0.0000	722.78	3.2051
328.76	13.7760	527.90	0.0000	722.91	3.2052
333.37	17.2799	528.26	4.8798	723.31	7.4799
333.97	13.8304	529.59	5.8599	724.19	6.4138
334.37	10.3757	529.87	0.0000	727.33	4.2814
338.28	14.7418	531.02	4.3982	733.00	5.3642
338.32	14.7425	537.26	4.9028	735.93	4.2964
340.48	15.6346	546.56	0.0000	737.46	4.2992
340.55	15.6354	552.55	5.9299	739.50	11.8325
344.28	13.9362	563.25	10.9306	744.23	11.8549
345.93	12.2090	564.24	7.1581	747.24	6.4741

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
748.06	6.4763	954.55	0.0000	1408.01	4.9515
752.31	3.2437	962.31	4.6654	1434.09	1.9928
753.82	8.6549	964.08	4.3762	1435.80	2.9905
756.73	9.7482	966.17	4.3793	1457.56	0.0000
756.80	9.7485	968.97	4.3832	1460.82	2.0054
763.94	7.6036	983.53	4.4040	1489.16	3.0276
765.81	7.6093	984.45	0.0000	1505.03	3.0386
766.42	9.7855	996.26	7.0752	1584.12	2.0615
766.84	8.6999	1001.03	8.5028	1596.21	4.1338
772.60	0.0000	1002.74	5.6717	1620.50	1.0388
776.52	5.4580	1004.73	7.0940	1621.92	3.1174
777.92	6.5532	1021.30	0.0000	1678.03	0.0000
778.90	6.5557	1025.87	0.0000	1690.97	2.1084
783.70	5.4732	1028.54	0.0000	1750.46	0.0000
788.74	3.2903	1037.84	3.5840	1764.49	5.3494
792.07	5.4909	1038.76	0.0000	1770.23	2.1422
795.86	4.3991	1046.59	3.5935	1771.35	2.1427
801.95	6.6138	1048.07	6.2916	1791.20	0.0000
810.06	4.4229	1049.04	8.9905	1808.65	1.0792
810.29	6.6348	1050.41	8.9941	1810.72	0.0000
810.45	6.6353	1063.66	3.6121	1836.06	1.0849
810.76	7.7420	1077.00	3.6267		
815.77	6.6484	1077.34	3.6270		
818.51	5.5461	1085.87	6.3634		
832.01	4.4591	1093.63	1.8223		
834.85	4.4637	1099.45	3.6509		
835.71	3.3489	1112.07	6.4125		
836.80	0.0000	1112.84	5.4976		
846.75	0.0000	1115.54	3.6680		
846.77	6.7249	1120.29	2.7548		
856.80	6.7493	1120.55	3.6733		
860.56	6.7583	1121.30	2.7556		
871.09	2.2612	1129.67	3.6831		
873.19	4.5259	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	4.5358	1173.23	1.8643		
880.51	3.4032	1177.95	1.8667		
881.60	1.1348	1189.05	2.8087		
883.24	5.6775	1204.77	2.8209		
884.68	6.8164	1221.41	2.8336		
889.28	7.9653	1231.02	2.8409		
894.76	6.8403	1235.36	4.7403		
898.04	7.9895	1238.28	2.8464		
900.72	4.5697	1260.41	0.0000		
903.28	5.7172	1271.87	4.7861		
911.20	6.8794	1274.44	4.7894		
912.08	6.8813	1274.54	3.8315		
923.98	0.0000	1291.59	3.8484		
926.50	9.2204	1298.22	0.0000		
929.11	5.7676	1312.11	2.9015		
935.54	9.2484	1332.49	1.9443		
937.49	6.9407	1362.66	0.0000		
944.13	4.6374	1365.19	1.9601		
946.00	10.4407	1368.63	0.0000		
949.00	4.6449	1384.29	2.9539		

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:20:35.63

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781347.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM28.CNF;655
                                        Background date  : 28-JUL-2024 11:29:42
Sample date      : 26-JUN-2024 10:50:00 Acquisition date : 31-JUL-2024 16:15:47
Sample ID        : G1205781347          Sample quantity  : 1.06540E+02 GRAM
Detector name    : GAM28                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.73  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : MXR1
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2636543              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.09*	62	236	1.17	126.69	123	9	1.72E-02	47.5	
2	0	66.59*	35	179	1.36	133.69	131	7	9.82E-03	65.1	
3	3	74.79	229	191	0.76	150.07	146	13	6.37E-02	11.1	2.50E+00
4	3	77.05*	444	179	0.91	154.59	146	13	1.23E-01	6.6	
5	0	79.93	38	267	2.68	160.35	159	8	1.05E-02	76.8	
6	0	83.86*	45	151	0.89	168.20	166	5	1.25E-02	44.3	
7	0	87.12	125	186	1.06	174.72	172	6	3.48E-02	19.4	
8	4	89.93	90	118	1.07	180.34	178	17	2.50E-02	18.9	2.01E+00
9	4	92.62*	219	183	1.13	185.72	178	17	6.09E-02	12.9	
10	0	143.75*	60	136	0.89	287.92	285	7	1.67E-02	35.1	
11	0	185.94*	375	223	1.32	372.26	367	13	1.04E-01	10.0	
12	0	195.14	22	102	1.16	390.64	389	6	6.11E-03	75.0	
13	0	208.72	53	236	3.96	417.80	411	15	1.48E-02	64.6	
14	2	238.49*	285	125	0.98	477.31	473	16	7.91E-02	8.5	1.60E+00
15	2	241.81	298	111	1.15	483.95	473	16	8.29E-02	8.4	
16	0	259.43	33	111	1.60	519.17	512	10	9.24E-03	62.4	
17	0	270.19	74	140	1.61	540.68	535	11	2.05E-02	33.5	
18	0	295.02	731	111	1.21	590.33	585	10	2.03E-01	4.6	
19	0	303.59	33	60	1.05	607.45	604	8	9.17E-03	44.2	
20	0	338.21*	70	71	1.16	676.66	673	8	1.93E-02	24.6	
21	0	351.66*	1180	111	1.19	703.55	699	11	3.28E-01	3.4	
22	0	411.23	74	136	10.21	822.65	807	24	2.05E-02	43.6	
23	0	462.92	27	25	0.94	926.00	924	7	7.43E-03	38.1	
24	0	510.52*	58	57	1.69	1021.17	1013	17	1.60E-02	37.6	
25	0	583.06*	100	45	1.63	1166.20	1161	14	2.77E-02	18.5	
26	0	608.85*	781	74	1.20	1217.75	1211	14	2.17E-01	4.3	
27	0	664.84	33	28	1.63	1329.71	1321	16	9.22E-03	39.6	
28	0	702.54*	31	11	2.03	1405.09	1400	9	8.61E-03	27.7	
29	0	767.83	67	37	1.28	1535.64	1530	10	1.87E-02	18.8	
30	0	806.84	10	32	2.38	1613.66	1606	9	2.73E-03	110.4	
31	0	910.71*	61	36	1.14	1821.36	1815	13	1.70E-02	24.1	
32	0	934.03	35	32	1.51	1868.00	1859	16	9.72E-03	39.9	
33	0	964.08	24	10	1.16	1928.09	1924	7	6.67E-03	30.1	
34	0	968.37*	44	24	2.13	1936.67	1932	13	1.22E-02	28.5	

Sample ID : G1205781347 Acquisition date : 31-JUL-2024 16:15:47

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	995.41	11	12	0.96	1990.75	1987	9	3.16E-03	61.0	
36	0	1000.61*	22	14	1.96	2001.15	1996	12	6.22E-03	41.5	
37	0	1119.55	156	33	1.55	2239.01	2232	14	4.32E-02	11.3	
38	0	1132.82	9	13	2.46	2265.54	2258	11	2.37E-03	90.7	
39	0	1237.21	66	19	1.40	2474.33	2467	15	1.84E-02	18.8	
40	0	1280.17	24	9	3.04	2560.25	2553	12	6.67E-03	32.3	
41	0	1359.59	9	5	4.02	2719.11	2712	11	2.44E-03	61.4	
42	0	1376.91	68	6	1.79	2753.75	2747	17	1.88E-02	15.5	
43	0	1384.68	24	0	1.47	2769.29	2764	12	6.67E-03	20.4	
44	0	1400.84	14	11	2.04	2801.60	2797	9	3.77E-03	52.2	
45	0	1406.66*	22	9	0.77	2813.26	2806	13	6.21E-03	36.2	
46	0	1460.29*	73	7	2.05	2920.53	2913	19	2.02E-02	15.7	
47	0	1470.27	9	2	0.68	2940.49	2937	8	2.61E-03	41.2	
48	0	1507.68	35	10	2.44	3015.33	3006	20	9.72E-03	27.8	
49	0	1660.14*	4	3	1.04	3320.30	3316	9	1.07E-03	133.2	
50	0	1728.50	44	3	2.40	3457.06	3450	13	1.21E-02	17.4	
51	0	1763.05	135	3	2.18	3526.17	3519	14	3.74E-02	9.1	
52	0	1845.89	24	3	0.97	3691.90	3685	12	6.78E-03	24.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 31-JUL-2024 17:20:37

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781347.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : MXR1
Sample date      : 26-JUN-2024 10:50:00 Acquisition date : 31-JUL-2024 16:15:47
Sample ID        : G1205781347          Sample quantity  : 106.54 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA28              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.73   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	68	10.66*	1.226E+00	3.680E+00	3.680E+00	31.33
CD-109	88.03	127	3.70*	5.630E+00	4.304E+00	4.538E+00	38.73
SN-126	64.28	63	9.60	2.875E+00	1.618E+00	1.618E+00	94.95
	86.94	127	8.90	5.630E+00	1.789E+00	1.789E+00	38.73
	87.57	127	37.00*	5.630E+00	4.304E-01	4.304E-01	38.73
TL-208	277.37	------	6.60	4.410E+00	------	Line Not Found	------
	583.19	96	85.00*	2.608E+00	3.052E-01	3.052E-01	37.04
	860.56	------	12.50	1.916E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.216E+00	------	Line Not Found	------
	351.06	1152	12.92*	3.739E+00	1.681E+01	1.681E+01	6.79
PB-212	74.82	233	10.28	4.448E+00	3.597E+00	3.597E+00	22.24
	77.11	452	17.10	4.705E+00	3.955E+00	3.955E+00	13.24
	238.63	281	43.60*	4.891E+00	9.288E-01	9.288E-01	16.96
	300.09	------	3.30	4.175E+00	------	Line Not Found	------
BI-214	609.32	751	45.49*	2.524E+00	4.608E+00	4.609E+00	8.57
	1120.29	147	14.92	1.529E+00	4.546E+00	4.546E+00	22.68
	1764.49	126	15.30	1.079E+00	5.358E+00	5.358E+00	18.21
PB-214	74.82	233	5.80	4.448E+00	6.376E+00	6.376E+00	22.24
	77.11	452	9.70	4.705E+00	6.972E+00	6.972E+00	13.24
	87.09	127	3.41	5.630E+00	4.670E+00	4.670E+00	38.73
	242.00	294	7.25	4.845E+00	5.906E+00	5.906E+00	16.75
	295.22	718	18.42	4.225E+00	6.500E+00	6.501E+00	9.14
	351.93	1152	35.60*	3.739E+00	6.101E+00	6.101E+00	6.79
RN-222	609.32	751	45.49*	2.524E+00	4.608E+00	4.609E+00	8.57
	1120.29	147	14.92	1.529E+00	4.546E+00	4.546E+00	22.68
	1764.49	126	15.30	1.079E+00	5.358E+00	5.358E+00	18.21
RA-223	81.07	38	15.00	5.007E+00	3.604E-01	3.604E-01	153.51
	83.79	46	24.70	5.370E+00	2.431E-01	2.431E-01	88.61
	94.56	------	8.67	6.091E+00	------	Line Not Found	------
	144.24	60	3.27	6.469E+00	2.005E+00	2.005E+00	70.19
	154.21	------	5.70	6.304E+00	------	Line Not Found	------
	269.46	72	13.90	4.490E+00	8.181E-01	8.181E-01	66.91
	323.87	------	3.99*	3.959E+00	------	Line Not Found	------
	338.28	68	2.84	3.842E+00	4.398E+00	4.398E+00	49.13
RA-224	240.99	294	4.10*	4.845E+00	1.044E+01	1.044E+01	16.75
RA-226	74.82	233	5.80	4.448E+00	6.376E+00	6.376E+00	22.24
	77.11	452	9.70	4.705E+00	6.972E+00	6.972E+00	13.24
	87.09	127	3.41	5.630E+00	4.670E+00	4.670E+00	38.73
	242.00	294	7.25	4.845E+00	5.906E+00	5.906E+00	16.75
	295.22	718	18.42	4.225E+00	6.500E+00	6.501E+00	9.14
	351.93	1152	35.60*	3.739E+00	6.101E+00	6.101E+00	6.79
AC-228	105.21	------	1.10	6.483E+00	------	Line Not Found	------
	338.32	68	11.27	3.842E+00	1.108E+00	1.108E+00	49.13
	835.71	------	1.61	1.963E+00	------	Line Not Found	------
	911.20	58	25.80*	1.826E+00	8.725E-01	8.725E-01	48.23
	968.97	42	15.80	1.733E+00	1.070E+00	1.070E+00	56.95
RA-228	105.21	------	1.10	6.483E+00	------	Line Not Found	------
	338.32	68	11.27	3.842E+00	1.108E+00	1.108E+00	49.13
	835.71	------	1.61	1.963E+00	------	Line Not Found	------

Sample ID : G1205781347 Acquisition date : 31-JUL-2024 16:15:47

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	58	25.80*	1.826E+00	8.725E-01	8.725E-01	48.23
	968.97	42	15.80	1.733E+00	1.070E+00	1.070E+00	56.95
TH-228	74.82	233	10.28	4.448E+00	3.597E+00	3.597E+00	22.24
	77.11	452	17.10	4.705E+00	3.955E+00	3.955E+00	13.24
	238.63	281	43.60*	4.891E+00	9.288E-01	9.288E-01	16.96
	300.09	------	3.30	4.175E+00	------	Line Not Found	------
TH-230	74.82	233	5.80	4.448E+00	6.376E+00	6.376E+00	22.24
	77.11	452	9.70	4.705E+00	6.972E+00	6.972E+00	13.24
	87.09	127	3.41	5.630E+00	4.670E+00	4.670E+00	38.73
	242.00	294	7.25	4.845E+00	5.906E+00	5.906E+00	16.75
	295.22	718	18.42	4.225E+00	6.500E+00	6.500E+00	9.14
	351.93	1152	35.60*	3.739E+00	6.101E+00	6.101E+00	6.79
TH-231	81.07	38	15.00	5.007E+00	3.604E-01	3.604E-01	153.51
	83.79	46	24.70	5.370E+00	2.431E-01	2.431E-01	88.61
	94.87	------	5.69	6.107E+00	------	Line Not Found	------
	144.24	60	3.27	6.469E+00	2.005E+00	2.005E+00	70.19
	154.21	------	5.70	6.304E+00	------	Line Not Found	------
	269.46	72	13.90	4.490E+00	8.181E-01	8.181E-01	66.91
	323.87	------	3.99*	3.959E+00	------	Line Not Found	------
	338.28	68	2.84	3.842E+00	4.398E+00	4.398E+00	49.13
TH-232	105.21	------	1.10	6.483E+00	------	Line Not Found	------
	338.32	68	11.27	3.842E+00	1.108E+00	1.108E+00	49.13
	835.71	------	1.61	1.963E+00	------	Line Not Found	------
	911.20	58	25.80*	1.826E+00	8.725E-01	8.725E-01	48.23
	968.97	42	15.80	1.733E+00	1.070E+00	1.070E+00	56.95
PA-234M	766.42	64	0.32	2.105E+00	6.742E+01	6.742E+01	37.54
	1001.03	21	0.84*	1.685E+00	1.057E+01	1.057E+01	82.91
TH-234	63.29	63	3.70*	2.875E+00	4.198E+00	4.198E+00	94.95
	92.59	222	4.23	5.988E+00	6.178E+00	6.178E+00	25.76
U-234	74.82	233	5.80	4.448E+00	6.376E+00	6.376E+00	22.24
	77.11	452	9.70	4.705E+00	6.972E+00	6.972E+00	13.24
	87.09	127	3.41	5.630E+00	4.670E+00	4.670E+00	38.73
	242.00	294	7.25	4.845E+00	5.906E+00	5.906E+00	16.75
	295.22	718	18.42	4.225E+00	6.500E+00	6.500E+00	9.14
	351.93	1152	35.60*	3.739E+00	6.101E+00	6.101E+00	6.79
U-235	89.96	91	3.47	5.825E+00	3.175E+00	3.175E+00	37.83
	93.35	222	5.60	5.988E+00	4.667E+00	4.667E+00	25.76
	143.76	60	10.96*	6.469E+00	5.981E-01	5.981E-01	70.19
	163.33	------	5.08	6.144E+00	------	Line Not Found	------
	185.72	373	57.20	5.733E+00	8.018E-01	8.018E-01	19.90
	205.31	------	5.01	5.397E+00	------	Line Not Found	------
U-238	63.29	63	3.70*	2.875E+00	4.198E+00	4.198E+00	94.95
	92.59	222	4.23	5.988E+00	6.178E+00	6.178E+00	25.76
AM-243	43.53	------	5.90	4.389E-01	------	Line Not Found	------
	74.66	233	67.20*	4.448E+00	5.503E-01	5.503E-01	22.24
ANH-511	511.00	56	100.00*	2.875E+00	1.364E-01	1.364E-01	75.30

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:20:37.89

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781347.CNF;1  *
* Acquisition date : 31-JUL-2024 16:15:47 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.73     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:50:00 Analyst initials: MXR1            *
* Sample ID        : G1205781347          Sample Quantity : 1.0654E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-MAR-2024 04:24:53 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	3.680E+00	1.130E+00	8.465E-01
CD-109	4.538E+00	1.723E+00	1.894E+00
SN-126	4.304E-01	1.634E-01	1.806E-01
TL-208	3.052E-01	1.108E-01	8.912E-02
BI-211	1.681E+01	1.118E+00	5.241E-01
PB-212	9.288E-01	1.544E-01	1.599E-01
BI-214	4.609E+00	3.871E-01	1.594E-01
PB-214	6.101E+00	4.057E-01	1.906E-01
RN-222	4.609E+00	3.871E-01	1.594E-01
RA-223	-1.021E-01	9.185E-01	1.713E+00
RA-224	1.044E+01	1.715E+00	1.713E+00
RA-226	6.101E+00	4.057E-01	1.906E-01
AC-228	8.725E-01	4.124E-01	3.064E-01
RA-228	8.725E-01	4.124E-01	3.064E-01
TH-228	9.288E-01	1.544E-01	1.599E-01
TH-230	6.101E+00	4.057E-01	1.906E-01
TH-231	-1.021E-01	9.185E-01	1.713E+00
TH-232	8.725E-01	4.124E-01	3.064E-01
PA-234M	1.057E+01	8.588E+00	1.155E+01
TH-234	4.198E+00	3.906E+00	3.415E+00
U-234	6.101E+00	4.057E-01	1.906E-01
U-235	5.981E-01	4.114E-01	4.863E-01
U-238	4.198E+00	3.906E+00	3.415E+00
AM-243	5.503E-01	1.199E-01	1.473E-01
ANH-511	1.364E-01	1.006E-01	6.664E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.905E-01	6.068E-01	1.095E+00	NOT IDENT.
NA-22	2.246E-02	5.761E-02	1.084E-01	NOT IDENT.
NA-24	0.000E+00	5.055E+15	0.000E+00	SHORT HLIF
AL-26	-8.411E-03	3.574E-02	7.087E-02	NOT IDENT.
SC-46	1.528E-02	5.992E-02	1.152E-01	FAIL ABUN

V-48	-1.171E-01	1.918E-01	3.147E-01	NOT IDENT.
CR-51	-2.617E-01	8.624E-01	1.589E+00	NOT IDENT.
MN-52	-5.351E-01	3.959E+00	7.634E+00	NOT IDENT.
MN-54	-1.013E-02	5.290E-02	9.411E-02	NOT IDENT.
CO-56	-2.529E-02	7.128E-02	1.232E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-2.066E-02	3.620E-02	6.185E-02	NOT IDENT.
CO-58	-2.827E-02	6.337E-02	1.091E-01	NOT IDENT.
FE-59	2.775E-02	1.245E-01	2.596E-01	NOT IDENT.
CO-60	-3.919E-03	5.372E-02	1.038E-01	NOT IDENT.
ZN-65	3.750E-02	1.287E-01	2.331E-01	NOT IDENT.
GE-68	5.018E-01	1.393E+00	2.953E+00	NOT IDENT.
AS-73	2.024E-01	1.419E+00	2.673E+00	NOT IDENT.
AS-74	2.021E-01	2.904E-01	5.760E-01	NOT IDENT.
SE-75	-9.502E-03	7.292E-02	1.239E-01	NOT IDENT.
BR-77	0.000E+00	8.489E+03	0.000E+00	SHORT HLIF
SR-82	3.289E-01	6.333E-01	1.297E+00	NOT IDENT.
RB-83	-1.567E-04	1.024E-01	1.933E-01	NOT IDENT.
RB-84	9.447E-02	1.174E-01	2.514E-01	NOT IDENT.
KR-85	3.029E-01	8.668E+00	1.480E+01	NOT IDENT.
SR-85	2.006E-03	5.676E-02	9.691E-02	NOT IDENT.
RB-86	9.773E-01	1.694E+00	3.729E+00	NOT IDENT.
Y-88	2.966E-02	3.968E-02	1.062E-01	NOT IDENT.
Y-91	-6.873E+00	3.071E+01	5.791E+01	NOT IDENT.
NB-94	9.280E-02	5.035E-02	1.004E-01	FAIL ABUN
NB-95	9.100E-02	8.683E-02	1.618E-01	NOT IDENT.
NB-95M	5.927E-02	2.612E-01	4.194E-01	NOT IDENT.
ZR-95	3.366E-02	1.124E-01	2.177E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	8.985E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.544E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	7.400E+40	0.000E+00	SHORT HLIF
RH-101	-2.903E-02	4.556E-02	7.722E-02	NOT IDENT.
RH-102	-1.967E-02	6.722E-02	1.212E-01	FAIL ABUN
RU-103	-6.007E-02	6.808E-02	1.126E-01	FAIL ABUN
RH-106	-1.389E-01	3.974E-01	7.108E-01	NOT IDENT.
RU-106	-1.389E-01	3.974E-01	7.108E-01	NOT IDENT.
AG-108M	-9.011E-03	3.639E-02	6.714E-02	NOT IDENT.
AG-110	-3.462E-01	9.211E-01	1.550E+00	NOT IDENT.
AG-110M	8.995E-03	6.838E-02	1.289E-01	FAIL ABUN
SN-113	1.072E-02	6.494E-02	1.245E-01	NOT IDENT.
CD-115	0.000E+00	8.661E+03	0.000E+00	SHORT HLIF
SN-117M	1.966E-01	2.165E-01	4.035E-01	NOT IDENT.
SB-122	0.000E+00	4.671E+02	0.000E+00	SHORT HLIF
TE-123M	5.260E-02	4.568E-02	8.637E-02	NOT IDENT.
SB-124	-9.674E-03	9.566E-02	2.048E-01	NOT IDENT.
SB-125	-3.129E-02	1.239E-01	2.271E-01	FAIL ABUN
TE-125M	-6.671E-01	1.755E+01	3.123E+01	NOT IDENT.
I-126	0.000E+00	1.485E+00	1.677E+00	FAIL ABUN
SB-126	-1.800E-01	5.385E-01	9.554E-01	NOT IDENT.
SB-127	1.497E+00	5.599E+01	1.060E+02	NOT IDENT.
I-131	-1.750E-01	8.523E-01	1.584E+00	FAIL ABUN
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.403E+01	0.000E+00	SHORT HLIF
BA-133	2.315E-02	5.584E-02	1.007E-01	FAIL ABUN
I-133	0.000E+00	7.745E+10	0.000E+00	SHORT HLIF
CS-134	8.746E-02	5.108E-02	1.165E-01	NOT IDENT.
I-135	0.000E+00	8.486E+37	0.000E+00	SHORT HLIF
CS-136	1.125E-01	4.045E-01	8.168E-01	NOT IDENT.
BA-137M	-7.084E-03	4.722E-02	7.685E-02	NOT IDENT.
CS-137	-7.484E-03	4.988E-02	8.119E-02	NOT IDENT.
LA-138	6.084E-03	6.863E-02	1.405E-01	NOT IDENT.
CE-139	-3.589E-02	4.867E-02	8.048E-02	NOT IDENT.
BA-140	-4.208E-01	1.049E+00	1.872E+00	FAIL ABUN
LA-140	-4.462E-02	3.588E-01	6.940E-01	NOT IDENT.
CE-141	6.268E-02	1.401E-01	2.371E-01	NOT IDENT.
CE-143	0.000E+00	6.533E+06	0.000E+00	SHORT HLIF
CE-144	-2.014E-02	2.837E-01	5.002E-01	FAIL ABUN
PM-144	-3.466E-03	4.101E-02	7.595E-02	NOT IDENT.
PR-144	-2.823E-01	3.099E+00	5.733E+00	NOT IDENT.
PM-146	-5.435E-03	5.716E-02	1.005E-01	NOT IDENT.
ND-147	-9.902E-02	2.793E+00	5.185E+00	FAIL ABUN
PM-147	-4.995E+01	9.995E+02	1.776E+03	NOT IDENT.
PM-149	0.000E+00	7.213E+04	0.000E+00	SHORT HLIF
EU-150	-1.716E-02	4.163E-02	6.756E-02	FAIL ABUN
EU-152	-6.835E-02	1.380E-01	2.492E-01	FAIL ABUN
GD-153	-8.055E-02	1.266E-01	2.008E-01	NOT IDENT.
EU-154	6.003E-02	1.610E-01	3.023E-01	FAIL ABUN

EU-155	6.860E-02	1.392E-01	2.579E-01	FAIL ABUN
TB-160	-1.177E-01	1.984E-01	3.306E-01	FAIL ABUN
HO-166M	1.430E-02	6.730E-02	1.310E-01	FAIL ABUN
TM-171	-1.982E+01	2.642E+01	4.661E+01	FAIL ABUN
HF-172	5.740E-02	2.729E-01	4.907E-01	FAIL ABUN
LU-172	4.038E-02	7.173E-02	1.547E-01	FAIL ABUN
LU-176	-1.953E-02	3.920E-02	6.348E-02	FAIL ABUN
HF-181	-6.200E-02	8.198E-02	1.410E-01	NOT IDENT.
TA-182	1.407E-01	2.355E-01	5.004E-01	FAIL ABUN
RE-183	1.883E-01	3.365E-01	6.453E-01	FAIL ABUN
RE-184	1.745E-01	2.559E-01	5.141E-01	NOT IDENT.
W-188	-7.780E+00	1.471E+01	2.160E+01	FAIL ABUN
IR-192	4.567E-02	5.529E-02	1.115E-01	FAIL ABUN
HG-203	-1.373E-02	7.495E-02	1.262E-01	NOT IDENT.
TL-204	-2.271E+00	7.881E+00	1.298E+01	FAIL ABUN
BI-207	3.740E-02	5.385E-02	1.198E-01	FAIL ABUN
BI-210	-3.237E+00	6.080E+00	1.096E+01	NOT IDENT.
PB-210	-3.237E+00	6.080E+00	1.096E+01	NOT IDENT.
PB-211	6.934E-01	1.018E+00	2.012E+00	NOT IDENT.
BI-212	5.548E-01	6.988E-01	1.404E+00	NOT IDENT.
BI-213	-9.209E-03	1.405E-01	2.621E-01	NOT IDENT.
RN-219	5.943E-02	6.221E-01	1.062E+00	FAIL ABUN
AC-225	1.435E+00	3.531E+00	6.297E+00	NOT IDENT.
AC-227	4.050E-03	4.276E-01	6.750E-01	FAIL ABUN
TH-227	4.050E-03	4.276E-01	6.750E-01	FAIL ABUN
TH-229	-1.580E-01	7.862E-01	1.237E+00	FAIL ABUN
PA-231	-8.961E-01	8.280E-01	1.128E+00	NOT IDENT.
PA-233	1.549E-03	8.719E-02	1.653E-01	NOT IDENT.
PA-234	-3.291E-01	4.081E-01	6.446E-01	NOT IDENT.
NP-237	1.549E-03	8.719E-02	1.653E-01	NOT IDENT.
NP-238	0.000E+00	1.675E+04	0.000E+00	SHORT HLIF
NP-239	9.025E-02	3.622E-01	6.569E-01	NOT IDENT.
PU-239	2.980E+02	4.737E+02	8.734E+02	NOT IDENT.
AM-241	-1.446E-01	2.388E-01	3.887E-01	NOT IDENT.
CM-243	-1.686E-02	1.379E-01	2.458E-01	NOT IDENT.
BK-247	-6.579E-02	1.346E-01	2.003E-01	FAIL ABUN
CM-247	1.391E-02	5.435E-02	9.499E-02	NOT IDENT.
CF-249	-4.822E-03	5.435E-02	1.014E-01	NOT IDENT.
CF-251	-4.154E-02	1.813E-01	3.120E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:20:36.40

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	68	10.66*	1.226E+00	3.680E+00	3.680E+00	31.33
CD-109	88.03	127	3.70*	5.630E+00	4.304E+00	4.538E+00	38.73
SN-126	64.28	63	9.60	2.875E+00	1.618E+00	1.618E+00	94.95
	86.94	127	8.90	5.630E+00	1.789E+00	1.789E+00	38.73
	87.57	127	37.00*	5.630E+00	4.304E-01	4.304E-01	38.73
TL-208	277.37	------	6.60	4.410E+00	------	Line Not Found	------
	583.19	96	85.00*	2.608E+00	3.052E-01	3.052E-01	37.04
	860.56	------	12.50	1.916E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.216E+00	------	Line Not Found	------
	351.06	1152	12.92*	3.739E+00	1.681E+01	1.681E+01	6.79
PB-212	74.82	233	10.28	4.448E+00	3.597E+00	3.597E+00	22.24
	77.11	452	17.10	4.705E+00	3.955E+00	3.955E+00	13.24
	238.63	281	43.60*	4.891E+00	9.288E-01	9.288E-01	16.96
	300.09	------	3.30	4.175E+00	------	Line Not Found	------
BI-214	609.32	751	45.49*	2.524E+00	4.608E+00	4.609E+00	8.57
	1120.29	147	14.92	1.529E+00	4.546E+00	4.546E+00	22.68
	1764.49	126	15.30	1.079E+00	5.358E+00	5.358E+00	18.21
PB-214	74.82	233	5.80	4.448E+00	6.376E+00	6.376E+00	22.24
	77.11	452	9.70	4.705E+00	6.972E+00	6.972E+00	13.24
	87.09	127	3.41	5.630E+00	4.670E+00	4.670E+00	38.73
	242.00	294	7.25	4.845E+00	5.906E+00	5.906E+00	16.75
	295.22	718	18.42	4.225E+00	6.500E+00	6.501E+00	9.14
	351.93	1152	35.60*	3.739E+00	6.101E+00	6.101E+00	6.79
RN-222	609.32	751	45.49*	2.524E+00	4.608E+00	4.609E+00	8.57
	1120.29	147	14.92	1.529E+00	4.546E+00	4.546E+00	22.68
	1764.49	126	15.30	1.079E+00	5.358E+00	5.358E+00	18.21
RA-223	81.07	38	15.00	5.007E+00	3.604E-01	3.604E-01	153.51
	83.79	46	24.70	5.370E+00	2.431E-01	2.431E-01	88.61
	94.56	------	8.67	6.091E+00	------	Line Not Found	------
	144.24	60	3.27	6.469E+00	2.005E+00	2.005E+00	70.19
	154.21	------	5.70	6.304E+00	------	Line Not Found	------
	269.46	72	13.90	4.490E+00	8.181E-01	8.181E-01	66.91
	323.87	------	3.99*	3.959E+00	------	Line Not Found	------
	338.28	68	2.84	3.842E+00	4.398E+00	4.398E+00	49.13
RA-224	240.99	294	4.10*	4.845E+00	1.044E+01	1.044E+01	16.75
RA-226	74.82	233	5.80	4.448E+00	6.376E+00	6.376E+00	22.24
	77.11	452	9.70	4.705E+00	6.972E+00	6.972E+00	13.24
	87.09	127	3.41	5.630E+00	4.670E+00	4.670E+00	38.73
	242.00	294	7.25	4.845E+00	5.906E+00	5.906E+00	16.75
	295.22	718	18.42	4.225E+00	6.500E+00	6.501E+00	9.14
	351.93	1152	35.60*	3.739E+00	6.101E+00	6.101E+00	6.79
AC-228	105.21	------	1.10	6.483E+00	------	Line Not Found	------
	338.32	68	11.27	3.842E+00	1.108E+00	1.108E+00	49.13
	835.71	------	1.61	1.963E+00	------	Line Not Found	------
	911.20	58	25.80*	1.826E+00	8.725E-01	8.725E-01	48.23
	968.97	42	15.80	1.733E+00	1.070E+00	1.070E+00	56.95
RA-228	105.21	------	1.10	6.483E+00	------	Line Not Found	------

Sample ID : G1205781347 Acquisition date : 31-JUL-2024 16:15:47

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	338.32	68	11.27	3.842E+00	1.108E+00	1.108E+00	49.13
	835.71	------	1.61	1.963E+00	------	Line Not Found	------
	911.20	58	25.80*	1.826E+00	8.725E-01	8.725E-01	48.23
	968.97	42	15.80	1.733E+00	1.070E+00	1.070E+00	56.95
TH-228	74.82	233	10.28	4.448E+00	3.597E+00	3.597E+00	22.24
	77.11	452	17.10	4.705E+00	3.955E+00	3.955E+00	13.24
	238.63	281	43.60*	4.891E+00	9.288E-01	9.288E-01	16.96
	300.09	------	3.30	4.175E+00	------	Line Not Found	------
TH-230	74.82	233	5.80	4.448E+00	6.376E+00	6.376E+00	22.24
	77.11	452	9.70	4.705E+00	6.972E+00	6.972E+00	13.24
	87.09	127	3.41	5.630E+00	4.670E+00	4.670E+00	38.73
	242.00	294	7.25	4.845E+00	5.906E+00	5.906E+00	16.75
	295.22	718	18.42	4.225E+00	6.500E+00	6.500E+00	9.14
	351.93	1152	35.60*	3.739E+00	6.101E+00	6.101E+00	6.79
TH-231	81.07	38	15.00	5.007E+00	3.604E-01	3.604E-01	153.51
	83.79	46	24.70	5.370E+00	2.431E-01	2.431E-01	88.61
	94.87	------	5.69	6.107E+00	------	Line Not Found	------
	144.24	60	3.27	6.469E+00	2.005E+00	2.005E+00	70.19
	154.21	------	5.70	6.304E+00	------	Line Not Found	------
	269.46	72	13.90	4.490E+00	8.181E-01	8.181E-01	66.91
	323.87	------	3.99*	3.959E+00	------	Line Not Found	------
	338.28	68	2.84	3.842E+00	4.398E+00	4.398E+00	49.13
TH-232	105.21	------	1.10	6.483E+00	------	Line Not Found	------
	338.32	68	11.27	3.842E+00	1.108E+00	1.108E+00	49.13
	835.71	------	1.61	1.963E+00	------	Line Not Found	------
	911.20	58	25.80*	1.826E+00	8.725E-01	8.725E-01	48.23
	968.97	42	15.80	1.733E+00	1.070E+00	1.070E+00	56.95
PA-234M	766.42	64	0.32	2.105E+00	6.742E+01	6.742E+01	37.54
	1001.03	21	0.84*	1.685E+00	1.057E+01	1.057E+01	82.91
TH-234	63.29	63	3.70*	2.875E+00	4.198E+00	4.198E+00	94.95
	92.59	222	4.23	5.988E+00	6.178E+00	6.178E+00	25.76
U-234	74.82	233	5.80	4.448E+00	6.376E+00	6.376E+00	22.24
	77.11	452	9.70	4.705E+00	6.972E+00	6.972E+00	13.24
	87.09	127	3.41	5.630E+00	4.670E+00	4.670E+00	38.73
	242.00	294	7.25	4.845E+00	5.906E+00	5.906E+00	16.75
	295.22	718	18.42	4.225E+00	6.500E+00	6.500E+00	9.14
	351.93	1152	35.60*	3.739E+00	6.101E+00	6.101E+00	6.79
U-235	89.96	91	3.47	5.825E+00	3.175E+00	3.175E+00	37.83
	93.35	222	5.60	5.988E+00	4.667E+00	4.667E+00	25.76
	143.76	60	10.96*	6.469E+00	5.981E-01	5.981E-01	70.19
	163.33	------	5.08	6.144E+00	------	Line Not Found	------
	185.72	373	57.20	5.733E+00	8.018E-01	8.018E-01	19.90
	205.31	------	5.01	5.397E+00	------	Line Not Found	------
U-238	63.29	63	3.70*	2.875E+00	4.198E+00	4.198E+00	94.95
	92.59	222	4.23	5.988E+00	6.178E+00	6.178E+00	25.76
AM-243	43.53	------	5.90	4.389E-01	------	Line Not Found	------
	74.66	233	67.20*	4.448E+00	5.503E-01	5.503E-01	22.24
ANH-511	511.00	56	100.00*	2.875E+00	1.364E-01	1.364E-01	75.30

Flag: "*" = Keyline

Sample ID : G1205781347 Acquisition date : 31-JUL-2024 16:15:47

Total number of lines in spectrum	52	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	39	75.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.680E+00	3.680E+00	1.153E+00	31.33	
CD-109	461.40D	1.05	4.304E+00	4.538E+00	1.758E+00	38.73	
SN-126	2.30E+05Y	1.00	4.304E-01	4.304E-01	1.667E-01	38.73	
TL-208	1.41E+10Y	1.00	3.052E-01	3.052E-01	1.130E-01	37.04	
BI-211	7.04E+08Y	1.00	1.681E+01	1.681E+01	0.114E+01	6.79	
PB-212	1.41E+10Y	1.00	9.288E-01	9.288E-01	1.575E-01	16.96	
BI-214	1600.00Y	1.00	4.608E+00	4.609E+00	0.395E+00	8.57	
PB-214	1600.00Y	1.00	6.101E+00	6.101E+00	0.414E+00	6.79	
RN-222	1600.00Y	1.00	4.608E+00	4.609E+00	0.395E+00	8.57	
RA-223	7.04E+08Y	1.00	2.431E-01	2.431E-01	2.154E-01	88.61	K
RA-224	1.41E+10Y	1.00	1.044E+01	1.044E+01	0.175E+01	16.75	
RA-226	1600.00Y	1.00	6.101E+00	6.101E+00	0.414E+00	6.79	
AC-228	1.41E+10Y	1.00	8.725E-01	8.725E-01	4.208E-01	48.23	
RA-228	1.41E+10Y	1.00	8.725E-01	8.725E-01	4.208E-01	48.23	
TH-228	1.41E+10Y	1.00	9.288E-01	9.288E-01	1.575E-01	16.96	
TH-230	7.54E+04Y	1.00	6.101E+00	6.101E+00	0.414E+00	6.79	
TH-231	7.04E+08Y	1.00	2.431E-01	2.431E-01	2.154E-01	88.61	K
TH-232	1.41E+10Y	1.00	8.725E-01	8.725E-01	4.208E-01	48.23	
PA-234M	4.47E+09Y	1.00	1.057E+01	1.057E+01	0.876E+01	82.91	
TH-234	4.47E+09Y	1.00	4.198E+00	4.198E+00	3.986E+00	94.95	
U-234	2.45E+05Y	1.00	6.101E+00	6.101E+00	0.414E+00	6.79	
U-235	7.04E+08Y	1.00	5.981E-01	5.981E-01	4.198E-01	70.19	
U-238	4.47E+09Y	1.00	4.198E+00	4.198E+00	3.986E+00	94.95	
AM-243	7370.00Y	1.00	5.503E-01	5.503E-01	1.224E-01	22.24	
ANH-511	1.00E+09Y	1.00	1.364E-01	1.364E-01	1.027E-01	75.30	
		Total Activity :	9.481E+01	9.504E+01			

Grand Total Activity : 9.481E+01 9.504E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1205781347 Acquisition date : 31-JUL-2024 16:15:47

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	66.59	36	183	1.36	133.69	131	7	9.82E-03	****	3.38E+00	T
0	195.14	22	101	1.16	390.64	389	6	6.11E-03	****	5.57E+00	
0	208.72	53	233	3.96	417.80	411	15	1.48E-02	****	5.34E+00	
0	259.43	33	109	1.60	519.17	512	10	9.24E-03	****	4.62E+00	T
0	303.59	32	59	1.05	607.45	604	8	9.17E-03	88.5	4.14E+00	T
0	411.23	72	132	10.21	822.65	807	24	2.05E-02	87.2	3.35E+00	T
0	462.92	26	24	0.94	926.00	924	7	7.43E-03	76.2	3.08E+00	T
0	664.84	32	27	1.63	1329.71	1321	16	9.22E-03	79.3	2.36E+00	T
0	702.54	30	10	2.03	1405.09	1400	9	8.61E-03	55.4	2.26E+00	T
0	806.84	9	31	2.38	1613.66	1606	9	2.73E-03	****	2.02E+00	
0	934.03	33	30	1.51	1868.00	1859	16	9.72E-03	79.8	1.79E+00	
0	964.08	23	9	1.16	1928.09	1924	7	6.67E-03	60.2	1.74E+00	T
0	995.41	11	11	0.96	1990.75	1987	9	3.16E-03	****	1.69E+00	T
0	1132.82	8	13	2.46	2265.54	2258	11	2.37E-03	****	1.51E+00	T
0	1237.21	62	18	1.40	2474.33	2467	15	1.84E-02	37.7	1.40E+00	T
0	1280.17	23	8	3.04	2560.25	2553	12	6.67E-03	64.5	1.36E+00	
0	1359.59	8	5	4.02	2719.11	2712	11	2.44E-03	****	1.30E+00	
0	1376.91	63	6	1.79	2753.75	2747	17	1.88E-02	31.1	1.28E+00	
0	1384.68	23	0	1.47	2769.29	2764	12	6.67E-03	40.8	1.28E+00	T
0	1400.84	13	11	2.04	2801.60	2797	9	3.77E-03	****	1.27E+00	
0	1406.66	21	9	0.77	2813.26	2806	13	6.21E-03	72.5	1.26E+00	T
0	1470.27	9	1	0.68	2940.49	2937	8	2.61E-03	82.3	1.22E+00	
0	1507.68	33	9	2.44	3015.33	3006	20	9.72E-03	55.7	1.20E+00	
0	1660.14	4	3	1.04	3320.30	3316	9	1.07E-03	****	1.12E+00	
0	1728.50	41	3	2.40	3457.06	3450	13	1.21E-02	34.8	1.09E+00	
0	1845.89	23	2	0.97	3691.90	3685	12	6.78E-03	49.1	1.05E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:20:47.54

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781347.CNF;1  *
* Acquisition date : 31-JUL-2024 16:15:47 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.73     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:50:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781347          Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0654E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-MAR-2024 04:24:53 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;19            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.509E-01
CD-109	8.994E-01
SN-126	8.576E-02
TL-208	4.028E-02
BI-211	2.424E-01
PB-212	7.550E-02
BI-214	7.145E-02
PB-214	8.817E-02
RN-222	7.145E-02
RA-223	7.966E-01
RA-224	8.091E-01
RA-226	8.817E-02
AC-228	1.331E-01
RA-228	1.331E-01
TH-228	7.550E-02
TH-230	8.816E-02
TH-231	7.966E-01
TH-232	1.331E-01
PA-234M	5.108E+00
TH-234	1.619E+00
U-234	8.816E-02
U-235	2.297E-01
U-238	1.619E+00
AM-243	7.047E-02
ANH-511	3.001E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.999E-01	NOT IDENT.
NA-22	4.712E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.653E-02	NOT IDENT.
SC-46	5.082E-02	FAIL ABUN
V-48	1.318E-01	NOT IDENT.

CR-51	7.363E-01	NOT IDENT.
MN-52	3.216E+00	NOT IDENT.
MN-54	4.184E-02	NOT IDENT.
CO-56	5.492E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.910E-02	NOT IDENT.
CO-58	4.787E-02	NOT IDENT.
FE-59	1.111E-01	NOT IDENT.
CO-60	4.464E-02	NOT IDENT.
ZN-65	1.031E-01	NOT IDENT.
GE-68	1.273E+00	NOT IDENT.
AS-73	1.252E+00	NOT IDENT.
AS-74	2.633E-01	NOT IDENT.
SE-75	5.761E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.693E-01	NOT IDENT.
RB-83	8.675E-02	NOT IDENT.
RB-84	1.103E-01	NOT IDENT.
KR-85	6.630E+00	NOT IDENT.
SR-85	4.342E-02	NOT IDENT.
RB-86	1.608E+00	NOT IDENT.
Y-88	4.177E-02	NOT IDENT.
Y-91	2.511E+01	NOT IDENT.
NB-94	4.602E-02	FAIL ABUN
NB-95	7.432E-02	NOT IDENT.
NB-95M	1.983E-01	NOT IDENT.
ZR-95	9.689E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.646E-02	NOT IDENT.
RH-102	5.357E-02	FAIL ABUN
RU-103	4.966E-02	FAIL ABUN
RH-106	3.143E-01	NOT IDENT.
RU-106	3.143E-01	NOT IDENT.
AG-108M	3.032E-02	NOT IDENT.
AG-110	6.772E-01	NOT IDENT.
AG-110M	5.680E-02	FAIL ABUN
SN-113	5.706E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.911E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	4.095E-02	NOT IDENT.
SB-124	7.544E-02	NOT IDENT.
SB-125	1.035E-01	FAIL ABUN
TE-125M	1.479E+01	NOT IDENT.
I-126	7.575E-01	FAIL ABUN
SB-126	4.202E-01	NOT IDENT.
SB-127	4.664E+01	NOT IDENT.
I-131	7.251E-01	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.618E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	5.264E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.617E-01	NOT IDENT.
BA-137M	3.396E-02	NOT IDENT.
CS-137	3.588E-02	NOT IDENT.
LA-138	5.864E-02	NOT IDENT.
CE-139	3.791E-02	NOT IDENT.
BA-140	8.404E-01	FAIL ABUN
LA-140	2.884E-01	NOT IDENT.
CE-141	1.121E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.359E-01	FAIL ABUN
PM-144	3.350E-02	NOT IDENT.
PR-144	2.528E+00	NOT IDENT.
PM-146	4.553E-02	NOT IDENT.
ND-147	2.353E+00	FAIL ABUN
PM-147	8.367E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.122E-02	FAIL ABUN
EU-152	1.152E-01	FAIL ABUN
GD-153	9.454E-02	NOT IDENT.
EU-154	1.312E-01	FAIL ABUN
EU-155	1.219E-01	FAIL ABUN

TB-160	1.418E-01	FAIL ABUN
HO-166M	5.767E-02	FAIL ABUN
TM-171	2.175E+01	FAIL ABUN
HF-172	2.322E-01	FAIL ABUN
LU-172	6.737E-02	FAIL ABUN
LU-176	2.927E-02	FAIL ABUN
HF-181	6.350E-02	NOT IDENT.
TA-182	2.196E-01	FAIL ABUN
RE-183	3.040E-01	FAIL ABUN
RE-184	2.301E-01	NOT IDENT.
W-188	1.002E+01	FAIL ABUN
IR-192	5.178E-02	FAIL ABUN
HG-203	5.864E-02	NOT IDENT.
TL-204	6.180E+00	FAIL ABUN
BI-207	5.194E-02	FAIL ABUN
BI-210	5.153E+00	NOT IDENT.
PB-210	5.153E+00	NOT IDENT.
PB-211	9.320E-01	NOT IDENT.
BI-212	6.375E-01	NOT IDENT.
BI-213	1.196E-01	NOT IDENT.
RN-219	4.887E-01	FAIL ABUN
AC-225	2.964E+00	NOT IDENT.
AC-227	3.161E-01	FAIL ABUN
TH-227	3.161E-01	FAIL ABUN
TH-229	5.801E-01	FAIL ABUN
PA-231	5.213E-01	NOT IDENT.
PA-233	7.659E-02	NOT IDENT.
PA-234	2.777E-01	NOT IDENT.
NP-237	7.659E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	3.104E-01	NOT IDENT.
PU-239	4.139E+02	NOT IDENT.
AM-241	1.830E-01	NOT IDENT.
CM-243	1.158E-01	NOT IDENT.
BK-247	9.320E-02	FAIL ABUN
CM-247	4.362E-02	NOT IDENT.
CF-249	4.660E-02	NOT IDENT.
CF-251	1.466E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 31-JUL-2024 17:20:51.43

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781347.CNF;1  *
* Acquisition date : 31-JUL-2024 16:15:47 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.73     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:50:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781347          Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.0654E+02 GRAM *
*                                         Quantity Err(%) : 1.8772E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-MAR-2024 04:24:53 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	3.680E+00	1.184E+00	1.184E+00
CD-109	4.538E+00	1.817E+00	1.817E+00
SN-126	4.304E-01	1.708E-01	1.708E-01
TL-208	3.052E-01	1.143E-01	1.143E-01
BI-211	1.681E+01	1.801E+00	1.801E+00
PB-212	9.288E-01	1.773E-01	1.773E-01
BI-214	4.609E+00	5.751E-01	5.751E-01
PB-214	6.101E+00	6.459E-01	6.459E-01
RN-222	4.609E+00	5.751E-01	5.751E-01
RA-223	-1.021E-01	9.186E-01	9.186E-01
RA-224	1.044E+01	1.973E+00	1.973E+00
RA-226	6.101E+00	6.459E-01	6.459E-01
AC-228	8.725E-01	4.213E-01	4.213E-01
RA-228	8.725E-01	4.213E-01	4.213E-01
TH-228	9.288E-01	1.773E-01	1.773E-01
TH-230	6.101E+00	6.459E-01	6.459E-01
TH-231	-1.021E-01	9.186E-01	9.186E-01
TH-232	8.725E-01	4.213E-01	4.213E-01
PA-234M	1.057E+01	8.643E+00	8.643E+00
TH-234	4.198E+00	4.032E+00	4.032E+00
U-234	6.101E+00	6.459E-01	6.459E-01
U-235	5.981E-01	4.146E-01	4.146E-01
U-238	4.198E+00	4.032E+00	4.032E+00
AM-243	5.503E-01	1.337E-01	1.337E-01
ANH-511	1.364E-01	1.013E-01	1.013E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.905E-01	6.070E-01	6.130E-01	NOT IDENT.
NA-22	2.246E-02	5.764E-02	5.852E-02	NOT IDENT.
NA-24	9.981E+14	5.056E+15	5.076E+15	SHORT HLIF
AL-26	-8.411E-03	3.575E-02	3.595E-02	NOT IDENT.
SC-46	1.528E-02	5.994E-02	6.033E-02	FAIL ABUN

V-48	-1.171E-01	1.921E-01	1.993E-01	NOT IDENT.
CR-51	-2.617E-01	8.626E-01	8.707E-01	NOT IDENT.
MN-52	-5.351E-01	3.959E+00	3.966E+00	NOT IDENT.
MN-54	-1.013E-02	5.291E-02	5.310E-02	NOT IDENT.
CO-56	-2.529E-02	7.132E-02	7.223E-02	FAIL ABUN
MN-56	-1.000E+41	2.844E+41	0.000E+00	SHORT HLIF
CO-57	-2.066E-02	3.623E-02	3.740E-02	NOT IDENT.
CO-58	-2.827E-02	6.343E-02	6.470E-02	NOT IDENT.
FE-59	2.775E-02	1.245E-01	1.252E-01	NOT IDENT.
CO-60	-3.919E-03	5.372E-02	5.375E-02	NOT IDENT.
ZN-65	3.750E-02	1.288E-01	1.299E-01	NOT IDENT.
GE-68	5.018E-01	1.394E+00	1.412E+00	NOT IDENT.
AS-73	2.024E-01	1.420E+00	1.423E+00	NOT IDENT.
AS-74	2.021E-01	2.913E-01	3.052E-01	NOT IDENT.
SE-75	-9.502E-03	7.292E-02	7.305E-02	NOT IDENT.
BR-77	5.108E+04	5.286E+04	5.765E+04	SHORT HLIF
SR-82	3.289E-01	6.341E-01	6.512E-01	NOT IDENT.
RB-83	-1.567E-04	1.024E-01	1.024E-01	NOT IDENT.
RB-84	9.447E-02	1.177E-01	1.252E-01	NOT IDENT.
KR-85	3.029E-01	8.668E+00	8.669E+00	NOT IDENT.
SR-85	2.006E-03	5.676E-02	5.677E-02	NOT IDENT.
RB-86	9.773E-01	1.696E+00	1.752E+00	NOT IDENT.
Y-88	2.966E-02	3.974E-02	4.193E-02	NOT IDENT.
Y-91	-6.873E+00	3.072E+01	3.087E+01	NOT IDENT.
NB-94	9.280E-02	5.110E-02	6.604E-02	FAIL ABUN
NB-95	9.100E-02	8.725E-02	9.642E-02	NOT IDENT.
NB-95M	5.927E-02	2.612E-01	2.626E-01	NOT IDENT.
ZR-95	3.366E-02	1.125E-01	1.135E-01	NOT IDENT.
NB-97	1.000E+41	3.729E+41	0.000E+00	SHORT HLIF
ZR-97	9.910E+14	9.028E+14	1.007E+15	SHORT HLIF
MO-99	1.095E+02	2.544E+03	2.545E+03	SHORT HLIF
TC-99M	3.054E+40	7.409E+40	0.000E+00	SHORT HLIF
RH-101	-2.903E-02	4.589E-02	4.772E-02	NOT IDENT.
RH-102	-1.967E-02	6.725E-02	6.784E-02	FAIL ABUN
RU-103	-6.007E-02	6.830E-02	7.347E-02	FAIL ABUN
RH-106	-1.389E-01	3.976E-01	4.025E-01	NOT IDENT.
RU-106	-1.389E-01	3.976E-01	4.025E-01	NOT IDENT.
AG-108M	-9.011E-03	3.640E-02	3.662E-02	NOT IDENT.
AG-110	-3.462E-01	9.216E-01	9.348E-01	NOT IDENT.
AG-110M	8.995E-03	6.839E-02	6.851E-02	FAIL ABUN
SN-113	1.072E-02	6.494E-02	6.512E-02	NOT IDENT.
CD-115	-3.239E+03	8.667E+03	8.789E+03	SHORT HLIF
SN-117M	1.966E-01	2.172E-01	2.346E-01	NOT IDENT.
SB-122	3.872E+00	4.671E+02	4.671E+02	SHORT HLIF
TE-123M	5.260E-02	4.595E-02	5.170E-02	NOT IDENT.
SB-124	-9.674E-03	9.567E-02	9.577E-02	NOT IDENT.
SB-125	-3.129E-02	1.239E-01	1.247E-01	FAIL ABUN
TE-125M	-6.671E-01	1.755E+01	1.755E+01	NOT IDENT.
I-126	1.912E+00	1.498E+00	1.728E+00	FAIL ABUN
SB-126	-1.800E-01	5.390E-01	5.451E-01	NOT IDENT.
SB-127	1.497E+00	5.599E+01	5.600E+01	NOT IDENT.
I-131	-1.750E-01	8.524E-01	8.561E-01	FAIL ABUN
I-132	1.000E+41	4.425E+41	0.000E+00	SHORT HLIF
TE-132	2.534E+01	8.409E+01	8.486E+01	SHORT HLIF
BA-133	2.315E-02	5.587E-02	5.684E-02	FAIL ABUN
I-133	1.274E+09	7.745E+10	7.745E+10	SHORT HLIF
CS-134	8.746E-02	5.176E-02	6.506E-02	NOT IDENT.
I-135	-2.270E+36	8.488E+37	0.000E+00	SHORT HLIF
CS-136	1.125E-01	4.047E-01	4.079E-01	NOT IDENT.
BA-137M	-7.084E-03	4.723E-02	4.733E-02	NOT IDENT.
CS-137	-7.484E-03	4.989E-02	5.000E-02	NOT IDENT.
LA-138	6.084E-03	6.863E-02	6.868E-02	NOT IDENT.
CE-139	-3.589E-02	4.930E-02	5.189E-02	NOT IDENT.
BA-140	-4.208E-01	1.049E+00	1.066E+00	FAIL ABUN
LA-140	-4.462E-02	3.588E-01	3.594E-01	NOT IDENT.
CE-141	6.268E-02	1.402E-01	1.430E-01	NOT IDENT.
CE-143	2.492E+07	6.867E+06	1.317E+07	SHORT HLIF
CE-144	-2.014E-02	2.837E-01	2.839E-01	FAIL ABUN
PM-144	-3.466E-03	4.101E-02	4.104E-02	NOT IDENT.
PR-144	-2.823E-01	3.099E+00	3.101E+00	NOT IDENT.
PM-146	-5.435E-03	5.716E-02	5.722E-02	NOT IDENT.
ND-147	-9.902E-02	2.793E+00	2.794E+00	FAIL ABUN
PM-147	-4.995E+01	9.995E+02	9.997E+02	NOT IDENT.
PM-149	1.238E+03	7.213E+04	7.213E+04	SHORT HLIF
EU-150	-1.716E-02	4.165E-02	4.236E-02	FAIL ABUN
EU-152	-6.835E-02	1.381E-01	1.415E-01	FAIL ABUN
GD-153	-8.055E-02	1.269E-01	1.320E-01	NOT IDENT.
EU-154	6.003E-02	1.611E-01	1.634E-01	FAIL ABUN

EU-155	6.860E-02	1.393E-01	1.427E-01	FAIL ABUN
TB-160	-1.177E-01	1.987E-01	2.057E-01	FAIL ABUN
HO-166M	1.430E-02	6.732E-02	6.762E-02	FAIL ABUN
TM-171	-1.982E+01	2.653E+01	2.799E+01	FAIL ABUN
HF-172	5.740E-02	2.731E-01	2.743E-01	FAIL ABUN
LU-172	4.038E-02	7.191E-02	7.418E-02	FAIL ABUN
LU-176	-1.953E-02	3.924E-02	4.021E-02	FAIL ABUN
HF-181	-6.200E-02	8.216E-02	8.678E-02	NOT IDENT.
TA-182	1.407E-01	2.358E-01	2.442E-01	FAIL ABUN
RE-183	1.883E-01	3.374E-01	3.479E-01	FAIL ABUN
RE-184	1.745E-01	2.567E-01	2.685E-01	NOT IDENT.
W-188	-7.780E+00	1.475E+01	1.516E+01	FAIL ABUN
IR-192	4.567E-02	5.541E-02	5.912E-02	FAIL ABUN
HG-203	-1.373E-02	7.495E-02	7.521E-02	NOT IDENT.
TL-204	-2.271E+00	7.886E+00	7.952E+00	FAIL ABUN
BI-207	3.740E-02	5.394E-02	5.652E-02	FAIL ABUN
BI-210	-3.237E+00	6.088E+00	6.261E+00	NOT IDENT.
PB-210	-3.237E+00	6.088E+00	6.261E+00	NOT IDENT.
PB-211	6.934E-01	1.020E+00	1.067E+00	NOT IDENT.
BI-212	5.548E-01	7.010E-01	7.443E-01	NOT IDENT.
BI-213	-9.209E-03	1.405E-01	1.406E-01	NOT IDENT.
RN-219	5.943E-02	6.222E-01	6.228E-01	FAIL ABUN
AC-225	1.435E+00	3.535E+00	3.593E+00	NOT IDENT.
AC-227	4.050E-03	4.276E-01	4.276E-01	FAIL ABUN
TH-227	4.050E-03	4.276E-01	4.276E-01	FAIL ABUN
TH-229	-1.580E-01	7.864E-01	7.896E-01	FAIL ABUN
PA-231	-8.961E-01	8.521E-01	9.430E-01	NOT IDENT.
PA-233	1.549E-03	8.719E-02	8.720E-02	NOT IDENT.
PA-234	-3.291E-01	5.560E-01	5.755E-01	NOT IDENT.
NP-237	1.549E-03	8.719E-02	8.720E-02	NOT IDENT.
NP-238	-9.884E+03	1.678E+04	1.736E+04	SHORT HLIF
NP-239	9.025E-02	3.623E-01	3.646E-01	NOT IDENT.
PU-239	2.980E+02	4.742E+02	4.928E+02	NOT IDENT.
AM-241	-1.446E-01	2.394E-01	2.481E-01	NOT IDENT.
CM-243	-1.686E-02	1.379E-01	1.381E-01	NOT IDENT.
BK-247	-6.579E-02	1.354E-01	1.386E-01	FAIL ABUN
CM-247	1.391E-02	5.441E-02	5.477E-02	NOT IDENT.
CF-249	-4.822E-03	5.435E-02	5.440E-02	NOT IDENT.
CF-251	-4.154E-02	1.814E-01	1.824E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	77.4082	85.43	123.2393	131.20	95.7355
45.60	68.2661	86.55	121.5809	133.02	82.4271
46.54	87.7644	86.79	121.6376	133.52	93.9729
49.72	0.0000	86.94	121.6741	136.00	88.0234
51.35	78.2971	87.09	121.7097	136.47	76.5489
51.87	81.9733	87.57	117.9557	140.51	0.0000
52.39	82.0898	88.03	118.0609	143.76	97.4692
52.97	81.3253	88.34	118.1317	144.24	97.5338
53.44	69.7961	88.47	118.1614	145.44	86.3683
54.07	65.4322	89.96	88.0658	152.43	122.2052
57.36	0.0000	1093.63	88.1799	153.25	109.4614
57.53	78.6901	91.11	88.2587	323.87	101.0038
57.98	75.1583	92.59	88.5050	156.02	108.7827
59.27	87.2146	93.35	88.6302	158.56	82.1277
59.32	87.2256	94.56	88.8294	159.00	80.0116
59.54	104.2434	94.65	88.8439	162.33	94.4699
60.96	97.3140	94.67	88.8474	162.66	87.9918
61.17	97.3645	94.87	88.8806	163.33	97.8511
62.93	110.0063	97.43	101.1150	165.86	109.0714
63.29	110.1020	98.43	98.6664	176.31	92.8004
63.58	110.1791	98.44	98.6687	176.60	92.8325
64.28	110.3638	99.53	81.0660	177.52	82.9765
66.73	116.5533	100.11	87.0876	181.07	0.0000
67.24	116.6907	102.03	90.3620	181.52	69.6614
125.81	126.0806	103.18	91.5388	184.41	100.3835
67.75	126.1003	103.37	91.5690	143.76	100.5359
68.89	133.8673	105.21	85.8701	193.51	81.1450
69.67	121.6885	105.31	85.8845	197.03	89.0065
70.82	140.6764	106.12	101.0046	198.01	69.4707
70.83	140.6799	106.47	101.0647	201.83	75.0698
72.81	133.7968	109.28	108.5834	203.43	80.5179
72.87	133.8142	111.00	107.8866	205.31	95.9035
74.66	160.7031	111.76	0.0000	210.85	86.1351
74.82	160.7578	114.06	105.3893	215.65	86.5688
74.97	160.8099	116.30	0.0000	218.12	75.2177
77.11	161.5469	116.74	91.5971	222.11	75.5252
78.74	129.1747	119.76	84.8782	227.09	75.9051
79.69	129.4299	121.12	89.1585	227.38	87.6091
80.03	119.9957	121.22	89.1725	228.16	0.0000
80.12	120.0197	121.78	80.0174	228.18	74.8193
80.19	120.0370	122.06	99.5517	116.74	74.8193
80.57	120.1312	122.92	99.6849	235.69	94.2175
81.00	120.2370	123.07	87.3729	235.96	91.1005
81.07	120.2543	265.00	96.7145	238.63	95.6672
81.75	120.4216	125.81	98.0622	238.98	0.0000
82.47	91.8845	127.23	113.7891	240.99	95.8847
83.79	142.0313	127.91	111.8352	242.00	95.9774
84.00	126.7289	129.30	92.3516	244.70	71.2766

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	55.0405	344.28	59.3572	563.25	21.5972
252.80	51.4700	345.93	51.6772	564.24	0.0000
254.15	0.0000	351.06	51.0068	569.33	26.5869
256.23	72.0461	351.93	51.0392	946.00	26.5891
260.90	0.0000	355.39	0.0000	569.70	29.5459
264.66	61.7080	356.01	33.8370	583.19	29.7437
264.80	61.7158	364.49	42.7693	584.27	29.7595
265.00	72.6196	366.42	0.0000	595.83	26.9341
269.46	64.4013	372.51	34.2321	427.87	34.9943
270.03	64.4336	375.05	39.5682	602.52	0.0000
271.23	64.5016	377.52	50.2043	604.72	27.0494
273.65	61.7933	356.01	45.1137	607.14	25.0743
276.40	63.5702	388.16	44.3573	609.32	25.1007
277.37	55.0594	388.63	46.1464	610.33	25.1119
277.60	63.6368	391.69	37.3481	614.28	27.1714
278.00	64.8817	264.66	38.6437	618.01	19.1546
279.20	61.2732	401.81	42.9697	620.36	24.2217
279.54	42.9041	402.40	37.6130	621.93	24.2393
279.70	42.9094	404.85	40.3647	630.19	0.0000
280.46	62.5656	410.95	40.5240	631.29	23.3304
283.69	43.0557	413.71	40.5954	633.25	24.3662
284.31	55.3862	414.70	40.6210	634.78	9.1439
285.41	68.9900	423.72	44.4850	635.95	16.2643
285.90	0.0000	427.09	38.2103	636.99	14.2381
287.50	50.5994	427.87	40.0496	657.50	20.9396
290.67	67.6460	433.94	32.8909	657.76	18.4783
293.27	0.0000	439.40	42.1685	657.90	0.0000
351.93	64.5890	440.45	37.6092	661.66	21.5956
295.96	66.2858	453.88	30.5165	664.57	0.0000
879.38	48.1599	463.37	20.4585	666.33	19.5791
299.98	58.1909	468.07	21.2609	666.50	19.5806
300.09	58.1952	473.00	32.7306	667.71	0.0000
300.13	58.1980	475.06	32.7691	677.62	16.5697
301.36	74.9011	476.78	45.9225	685.70	17.6668
302.85	53.3268	477.60	42.1930	692.65	0.0000
256.23	41.3004	482.18	39.4835	695.00	23.9976
304.85	41.3114	487.02	33.9360	696.49	19.8365
306.78	57.6755	492.35	0.0000	696.51	19.8365
308.46	51.8937	497.08	30.3353	697.00	23.8094
311.90	52.8755	505.52	28.5718	697.30	18.7991
316.51	41.2750	507.63	0.0000	697.49	18.8005
319.41	67.5391	511.00	27.7023	702.65	27.2156
320.08	59.9727	514.00	24.3981	706.68	28.3107
321.04	51.5643	514.00	24.3981	711.68	15.7611
323.87	60.9961	520.40	25.9222	720.70	22.1484
325.23	64.4513	520.69	0.0000	721.93	0.0000
328.76	59.5239	522.65	0.0000	722.78	26.3906
333.37	65.5344	527.90	0.0000	722.91	24.2803
333.97	58.9052	528.26	36.6362	723.31	24.2840
334.37	49.9557	529.59	24.1201	724.19	24.2934
338.28	53.9561	529.87	0.0000	727.33	21.1515
338.32	53.9573	531.02	32.8282	733.00	22.2612
311.90	61.7651	537.26	31.9674	735.93	20.1651
340.48	61.7651	546.56	0.0000	333.97	25.4873
340.55	61.7681	552.55	22.4572	739.50	0.0000

ENERGY	MDA COUNTS
744.23	22.3629
747.24	22.3903
748.06	17.0645
752.31	26.7090
753.82	27.7943
756.73	18.1939
756.80	18.1946
884.68	19.3198
765.81	24.1672
766.42	23.6364
766.84	23.6400
772.60	0.0000
776.52	11.8647
739.50	0.0000
778.90	21.5926
783.70	23.7957
788.74	23.8423
792.07	19.5322
795.86	8.6937
810.06	23.6004
810.29	24.9134
344.28	22.9474
810.76	22.9508
815.77	16.4240
1048.07	24.1135
832.01	19.8281
834.85	24.2603
835.71	25.3706
836.80	0.0000
846.75	0.0000
846.77	27.6886
856.80	21.1199
860.56	20.0354
871.09	7.8209
873.19	14.5356
875.33	0.0000
879.38	19.0496
880.51	22.4202
881.60	8.9717
883.24	13.4648
884.68	16.8396
889.28	15.7426
894.76	15.7728
898.04	18.0462
900.72	15.8053
903.28	15.8195
911.20	14.7292
912.08	10.2004
923.98	0.0000
926.50	13.6675
929.11	18.8096
935.54	12.5666
937.49	18.8626
944.13	12.6028
946.00	22.9289

ENERGY	MDA COUNTS
949.00	16.0662
667.71	0.0000
962.31	25.9341
964.08	6.9197
966.17	0.0000
911.20	12.1291
983.53	15.0879
984.45	0.0000
1274.44	10.4879
1001.03	19.6075
1002.74	9.8089
1004.73	15.4242
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	24.7939
1038.76	0.0000
631.29	19.5333
1048.07	16.8766
1049.04	14.2168
1050.41	12.4448
1063.66	8.0321
1077.00	8.0645
1077.34	9.8580
1085.87	9.8828
1093.63	9.9056
1099.45	9.9224
1112.07	17.5905
1112.84	20.5264
1115.54	15.9511
1120.29	14.5205
1120.55	14.5215
1221.41	8.7152
1129.67	16.0166
1131.51	0.0000
1147.95	0.0000
1173.23	11.0559
1177.95	12.9148
1189.05	8.3282
1204.77	16.7278
1221.41	11.2024
1231.02	7.4878
1235.36	14.0561
1238.28	14.0671
1260.41	0.0000
1271.87	9.4611
1274.44	10.6039
1274.54	10.6039
1291.59	8.5589
1298.22	0.0000
1312.11	7.6475
1332.49	13.4523
1362.66	0.0000
1365.19	11.0714
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	1.5572
1408.01	12.5289
1434.09	10.8342
1435.80	7.8823
1457.56	0.0000
1460.82	7.9287
1489.16	7.9805
1505.03	6.0073
1584.12	15.2838
1596.21	9.1939
1620.50	4.1077
1621.92	9.2450
1678.03	0.0000
1690.97	3.1263
1750.46	0.0000
1764.49	1.6923
1063.66	1.2102
1771.35	3.1772
1791.20	0.0000
1808.65	4.2676
1810.72	0.0000
1836.06	1.0725

VAX/VMS Nuclide Identification Report Generated 1-AUG-2024 10:35:57.88

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781348.CNF;2
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM07.CNF;884
                                        Background date  : 28-JUL-2024 09:24:38
Sample date      : 9-JUL-2024 00:00:00. Acquisition date : 1-AUG-2024 10:05:23.
Sample ID        : G1205781348          Sample quantity  : 1.15000E+02 GRAM
Detector name    : GAM07                Detector geometry: CAN
Elapsed live time: 0 00:30:00.00        Elapsed real time: 0 00:30:05.63  0.3%
Energy tolerance : 1.50000 keV          Analyst Initials : MXR1
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2636543              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.49*	10906	7355	0.96	93.86	89	9	6.06E+00	1.7	
2	5	58.13	1097	5932	1.49	117.13	114	12	6.09E-01	17.9	2.13E+00
3	5	59.59	33291	3372	0.97	120.05	114	12	1.85E+01	0.6	
4	1	88.18	122	476	0.92	177.20	175	8	6.77E-02	24.5	2.49E+00
5	1	89.54	70	794	0.89	179.92	175	8	3.88E-02	63.1	
6	0	176.41	63	699	1.52	353.61	350	7	3.52E-02	70.3	
7	0	245.55	66	548	1.36	491.83	490	6	3.68E-02	57.3	
8	0	320.28	48	634	1.33	641.25	639	8	2.66E-02	91.9	
9	0	336.27	31	665	1.34	673.22	668	8	1.73E-02	145.5	
10	0	384.65	80	700	1.49	769.94	767	9	4.46E-02	60.4	
11	0	494.39	40	384	1.25	989.35	987	7	2.22E-02	83.0	
12	0	661.69	20972	423	1.58	1323.87	1316	16	1.17E+01	0.7	
13	0	828.41	22	294	4.15	1657.23	1652	12	1.22E-02	157.3	
14	0	837.70	69	300	0.64	1675.82	1666	16	3.85E-02	57.2	
15	4	851.24	41	180	1.71	1702.88	1699	15	2.27E-02	57.3	2.65E+00
16	4	854.33	69	195	1.73	1709.07	1699	15	3.82E-02	41.0	
17	0	1058.46	30	272	0.87	2117.26	2110	15	1.65E-02	123.7	
18	0	1069.10	254	504	9.85	2138.54	2124	34	1.41E-01	27.8	
19	0	1173.21	5754	200	1.96	2346.72	2337	19	3.20E+00	1.4	
20	0	1222.85	36	24	2.54	2446.00	2442	9	1.98E-02	30.8	
21	0	1332.46*	5276	39	1.98	2665.18	2654	22	2.93E+00	1.4	
22	0	1414.59	11	3	0.79	2829.44	2826	8	6.11E-03	42.6	
23	0	1448.45	5	10	1.45	2897.16	2889	10	2.87E-03	131.6	
24	0	1451.08	12	0	2.13	2902.42	2898	9	6.67E-03	28.9	
25	0	1455.02	8	2	0.78	2910.29	2906	8	4.53E-03	45.9	
26	4	1552.38	8	1	2.25	3105.01	3103	12	4.50E-03	26.3	1.36E+00
27	4	1555.23	19	2	2.56	3110.71	3103	12	1.04E-02	24.0	
28	0	1607.13	10	6	3.92	3214.50	3209	12	5.35E-03	60.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 1-AUG-2024 10:35:59

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781348.CNF;2		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: MXR1		
Sample date	: 9-JUL-2024 00:00:00	Acquisition date	: 1-AUG-2024 10:05:23
Sample ID	: G1205781348	Sample quantity	: 115.00 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA7	Detector geometry	: CAN
Elapsed live time	: 0 00:30:00.00	Elapsed real time	: 0 00:30:05.63 0.3%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G1205781348 Acquisition date : 1-AUG-2024 10:05:23

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CR-51	320.08	48	9.91*	3.867E+00	1.642E+00	2.951E+00	183.87
CO-60	1173.23	5481	99.85	1.279E+00	5.604E+01	5.652E+01	2.89
	1332.49	4997	99.98*	1.136E+00	5.747E+01	5.796E+01	2.82
CD-109	88.03	129	3.70*	5.883E+00	7.760E+00	8.038E+00	48.98
SN-126	64.28	------	9.60	3.275E+00	------	Line Not Found	------
	86.94	129	8.90	5.883E+00	3.226E+00	3.226E+00	48.98
	87.57	129	37.00*	5.883E+00	7.760E-01	7.760E-01	48.98
BA-137M	661.66	20483	89.90*	2.214E+00	1.344E+02	1.346E+02	1.45
CS-137	661.66	20483	85.10*	2.214E+00	1.420E+02	1.422E+02	1.45
BI-210	46.54	11874	4.25*	7.572E-01	4.818E+03	4.827E+03	3.43
PB-210	46.54	11874	4.25*	7.572E-01	4.818E+03	4.827E+03	3.43
AM-241	59.54	35898	35.90*	2.558E+00	5.103E+02	5.104E+02	1.25

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 10:35:59.87

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781348.CNF;2  *
* Acquisition date :  1-AUG-2024 10:05:23 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:30:05.63     Half life ratio : *****           *
* Sample date      :  9-JUL-2024 00:00:00 Analyst initials: MXR1            *
* Sample ID        : G1205781348          Sample Quantity : 1.1500E+02 GRAM *
* Batch Number     : 2636543              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
CR-51	2.951E+00	5.317E+00	5.870E+00
CO-60	5.796E+01	1.601E+00	2.962E-01
CD-109	8.038E+00	3.858E+00	7.719E+00
SN-126	7.760E-01	3.725E-01	7.635E-01
BA-137M	1.346E+02	1.911E+00	4.397E-01
CS-137	1.422E+02	2.019E+00	4.645E-01
BI-210	4.827E+03	1.621E+02	1.058E+02
PB-210	4.827E+03	1.621E+02	1.058E+02
AM-241	5.104E+02	6.231E+00	3.230E+00

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-6.172E-01	3.713E+00	6.437E+00	NOT IDENT.
NA-22	-1.107E-02	1.629E-01	3.008E-01	NOT IDENT.
NA-24	0.000E+00	2.214E+10	0.000E+00	SHORT HLIF
AL-26	5.280E-02	1.105E-01	2.464E-01	NOT IDENT.
K-40	1.136E-01	1.095E+00	2.240E+00	NOT IDENT.
SC-46	-2.105E-02	3.481E-01	6.260E-01	NOT IDENT.
V-48	2.827E-02	8.604E-01	1.542E+00	NOT IDENT.
MN-52	-4.421E-01	2.215E+00	4.120E+00	NOT IDENT.
MN-54	-7.634E-02	2.983E-01	4.715E-01	NOT IDENT.
CO-56	-1.373E-01	4.050E-01	5.908E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.672E-02	1.600E-01	2.759E-01	NOT IDENT.
CO-58	1.422E-01	3.201E-01	5.578E-01	NOT IDENT.
FE-59	3.020E-01	9.241E-01	1.660E+00	NOT IDENT.
ZN-65	4.974E-01	7.302E-01	1.336E+00	NOT IDENT.
GE-68	-7.803E-01	1.193E+01	1.861E+01	NOT IDENT.
AS-73	-9.990E+00	1.441E+01	2.546E+01	NOT IDENT.
AS-74	4.689E-01	9.205E-01	1.636E+00	NOT IDENT.
SE-75	-6.018E-02	3.353E-01	6.074E-01	NOT IDENT.
BR-77	1.579E+02	7.541E+02	1.262E+03	NOT IDENT.
SR-82	6.916E-01	2.922E+00	5.065E+00	NOT IDENT.

RB-83	-1.745E-02	6.401E-01	1.114E+00	NOT IDENT.
RB-84	2.902E-01	7.113E-01	1.305E+00	NOT IDENT.
KR-85	1.515E+01	5.709E+01	1.004E+02	NOT IDENT.
SR-85	8.747E-02	3.301E-01	5.804E-01	NOT IDENT.
RB-86	1.693E+00	9.829E+00	1.561E+01	NOT IDENT.
Y-88	-7.021E-02	1.497E-01	2.798E-01	NOT IDENT.
Y-91	2.470E+01	1.078E+02	1.998E+02	NOT IDENT.
NB-94	1.128E-01	2.085E-01	3.712E-01	NOT IDENT.
NB-95	-5.542E-02	3.110E-01	5.254E-01	NOT IDENT.
NB-95M	1.805E-01	9.714E-01	1.617E+00	NOT IDENT.
ZR-95	2.636E-01	5.332E-01	9.406E-01	NOT IDENT.
NB-97	0.000E+00	1.460E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	4.747E+10	0.000E+00	SHORT HLIF
MO-99	1.447E+02	6.852E+02	1.190E+03	NOT IDENT.
TC-99M	0.000E+00	2.015E+27	0.000E+00	SHORT HLIF
RH-101	-1.828E-01	1.987E-01	3.333E-01	NOT IDENT.
RH-102	-1.045E-01	4.012E-01	6.847E-01	NOT IDENT.
RU-103	1.823E-02	4.203E-01	6.595E-01	NOT IDENT.
RH-106	8.886E-01	2.232E+00	3.948E+00	NOT IDENT.
RU-106	8.886E-01	2.232E+00	3.948E+00	NOT IDENT.
AG-108M	1.154E-01	2.952E-01	5.236E-01	NOT IDENT.
AG-110	2.445E+00	6.521E+00	1.023E+01	NOT IDENT.
AG-110M	-6.517E-02	4.393E-01	7.859E-01	NOT IDENT.
SN-113	-3.496E-01	4.157E-01	7.180E-01	NOT IDENT.
CD-115	0.000E+00	1.239E+03	0.000E+00	SHORT HLIF
SN-117M	-1.119E-01	5.359E-01	9.063E-01	NOT IDENT.
SB-122	1.408E+00	1.147E+02	2.002E+02	NOT IDENT.
TE-123M	-5.887E-02	1.912E-01	3.222E-01	NOT IDENT.
SB-124	9.397E-02	2.996E-01	6.291E-01	NOT IDENT.
SB-125	1.268E-02	8.902E-01	1.565E+00	FAIL ABUN
TE-125M	-5.045E-01	6.520E+01	1.135E+02	NOT IDENT.
I-126	2.468E-01	2.394E+00	3.726E+00	NOT IDENT.
SB-126	-1.473E+00	1.556E+00	2.522E+00	NOT IDENT.
SB-127	-1.632E+01	3.791E+01	6.383E+01	NOT IDENT.
I-131	2.408E+00	2.035E+00	3.744E+00	NOT IDENT.
I-132	0.000E+00	1.768E+41	0.000E+00	SHORT HLIF
TE-132	5.067E+00	3.262E+01	5.442E+01	NOT IDENT.
BA-133	1.089E-01	3.381E-01	6.091E-01	FAIL ABUN
I-133	0.000E+00	3.540E+07	0.000E+00	SHORT HLIF
CS-134	-1.245E-01	2.864E-01	4.751E-01	NOT IDENT.
I-135	0.000E+00	3.111E+25	0.000E+00	SHORT HLIF
CS-136	-3.851E-01	1.396E+00	2.453E+00	FAIL ABUN
LA-138	-5.051E-02	1.826E-01	3.353E-01	NOT IDENT.
CE-139	-9.664E-02	1.921E-01	3.209E-01	NOT IDENT.
BA-140	-2.498E+00	3.263E+00	5.504E+00	NOT IDENT.
LA-140	1.427E-02	4.154E-01	8.202E-01	NOT IDENT.
CE-141	2.348E-01	4.672E-01	8.118E-01	NOT IDENT.
CE-143	0.000E+00	5.741E+04	0.000E+00	SHORT HLIF
CE-144	7.708E-01	1.245E+00	2.183E+00	NOT IDENT.
PM-144	1.025E-01	2.200E-01	3.899E-01	NOT IDENT.
PR-144	7.605E+00	1.653E+01	2.929E+01	NOT IDENT.
PM-146	-2.644E-01	4.316E-01	7.415E-01	NOT IDENT.
ND-147	-4.714E+00	7.496E+00	1.273E+01	FAIL ABUN
PM-147	-2.152E+02	4.531E+03	7.836E+03	NOT IDENT.
PM-149	0.000E+00	9.146E+03	0.000E+00	SHORT HLIF
EU-150	-8.456E-02	2.348E-01	3.734E-01	NOT IDENT.
EU-152	4.273E-02	7.713E-01	1.382E+00	FAIL ABUN
GD-153	-1.601E-01	5.263E-01	9.136E-01	NOT IDENT.
EU-154	-3.123E-02	4.597E-01	8.487E-01	NOT IDENT.
EU-155	-3.876E-01	6.307E-01	1.081E+00	NOT IDENT.
TB-160	-6.394E-01	1.215E+00	2.141E+00	FAIL ABUN
HO-166M	5.226E-01	4.121E-01	7.578E-01	NOT IDENT.
TM-171	-2.035E+02	2.837E+02	5.019E+02	NOT IDENT.
HF-172	-1.145E+00	1.199E+00	2.011E+00	NOT IDENT.
LU-172	-2.444E-01	5.521E-01	9.583E-01	FAIL ABUN
LU-176	-1.642E-02	1.998E-01	3.594E-01	FAIL ABUN
HF-181	-5.540E-01	4.705E-01	7.895E-01	FAIL ABUN
TA-182	1.537E+00	9.286E-01	1.730E+00	FAIL ABUN
RE-183	0.000E+00	8.548E+00	7.978E+00	FAIL ABUN
RE-184	2.023E-01	1.315E+00	2.375E+00	NOT IDENT.
W-188	2.660E+00	5.752E+01	1.042E+02	NOT IDENT.
IR-192	7.778E-02	2.859E-01	4.974E-01	NOT IDENT.
HG-203	-5.617E-02	3.140E-01	5.667E-01	NOT IDENT.
TL-204	7.119E+00	2.708E+01	4.855E+01	NOT IDENT.
BI-207	1.862E-01	4.888E-01	7.867E-01	NOT IDENT.
TL-208	1.446E-01	2.552E-01	4.565E-01	NOT IDENT.
BI-211	3.188E-01	1.628E+00	2.925E+00	NOT IDENT.
PB-211	6.764E+00	6.461E+00	1.174E+01	NOT IDENT.

BI-212	2.995E-01	3.263E+00	5.655E+00	NOT IDENT.
PB-212	-3.261E-03	4.305E-01	7.152E-01	NOT IDENT.
BI-213	-2.197E-02	1.037E+00	1.816E+00	NOT IDENT.
BI-214	1.226E-01	4.896E-01	8.613E-01	NOT IDENT.
PB-214	4.173E-02	5.861E-01	1.050E+00	FAIL ABUN
RN-219	-2.027E+00	3.657E+00	6.357E+00	NOT IDENT.
RN-222	1.226E-01	4.896E-01	8.613E-01	NOT IDENT.
RA-223	7.336E-01	5.356E+00	8.713E+00	NOT IDENT.
RA-224	1.986E+00	4.591E+00	7.696E+00	NOT IDENT.
AC-225	-5.245E-01	8.112E+00	1.346E+01	NOT IDENT.
RA-226	4.173E-02	5.861E-01	1.050E+00	FAIL ABUN
AC-227	-1.046E+00	1.963E+00	3.170E+00	NOT IDENT.
TH-227	-1.046E+00	1.963E+00	3.170E+00	NOT IDENT.
AC-228	6.192E-01	1.246E+00	2.284E+00	NOT IDENT.
RA-228	6.192E-01	1.246E+00	2.284E+00	NOT IDENT.
TH-228	-3.261E-03	4.305E-01	7.152E-01	NOT IDENT.
TH-229	-5.211E-01	3.963E+00	6.616E+00	FAIL ABUN
TH-230	4.173E-02	5.861E-01	1.050E+00	FAIL ABUN
PA-231	7.303E-01	3.474E+00	6.309E+00	NOT IDENT.
TH-231	7.336E-01	5.356E+00	8.713E+00	NOT IDENT.
TH-232	6.192E-01	1.246E+00	2.284E+00	NOT IDENT.
PA-233	2.279E-01	4.906E-01	8.955E-01	NOT IDENT.
PA-234	-1.220E+00	2.955E+00	5.185E+00	NOT IDENT.
PA-234M	-2.257E+00	3.738E+01	6.662E+01	NOT IDENT.
TH-234	-1.218E-01	8.260E+00	1.374E+01	NOT IDENT.
U-234	4.173E-02	5.861E-01	1.050E+00	FAIL ABUN
U-235	4.479E-01	1.240E+00	2.149E+00	FAIL ABUN
NP-237	2.279E-01	4.906E-01	8.955E-01	NOT IDENT.
NP-238	0.000E+00	2.594E+03	0.000E+00	SHORT HLIF
U-238	-1.218E-01	8.260E+00	1.374E+01	NOT IDENT.
NP-239	-1.348E-01	1.693E+00	2.928E+00	NOT IDENT.
PU-239	1.752E+03	2.108E+03	3.722E+03	NOT IDENT.
AM-243	3.373E-02	2.898E-01	5.161E-01	NOT IDENT.
CM-243	3.931E-01	6.489E-01	1.152E+00	NOT IDENT.
BK-247	-8.329E-02	5.762E-01	1.045E+00	NOT IDENT.
CM-247	-2.708E-01	3.395E-01	5.859E-01	NOT IDENT.
CF-249	1.771E-01	3.862E-01	6.257E-01	NOT IDENT.
CF-251	8.587E-01	1.183E+00	1.409E+00	FAIL ABUN
ANH-511	-6.502E-02	2.482E-01	4.384E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 1-AUG-2024 10:35:58.62

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CR-51	320.08	48	9.91*	3.867E+00	1.642E+00	2.951E+00	183.87
CO-60	1173.23	5481	99.85	1.279E+00	5.604E+01	5.652E+01	2.89
	1332.49	4997	99.98*	1.136E+00	5.747E+01	5.796E+01	2.82
CD-109	88.03	129	3.70*	5.883E+00	7.760E+00	8.038E+00	48.98
SN-126	64.28	------	9.60	3.275E+00	------	Line Not Found	------
	86.94	129	8.90	5.883E+00	3.226E+00	3.226E+00	48.98
	87.57	129	37.00*	5.883E+00	7.760E-01	7.760E-01	48.98
BA-137M	661.66	20483	89.90*	2.214E+00	1.344E+02	1.346E+02	1.45
CS-137	661.66	20483	85.10*	2.214E+00	1.420E+02	1.422E+02	1.45
BI-210	46.54	11874	4.25*	7.572E-01	4.818E+03	4.827E+03	3.43
PB-210	46.54	11874	4.25*	7.572E-01	4.818E+03	4.827E+03	3.43
AM-241	59.54	35898	35.90*	2.558E+00	5.103E+02	5.104E+02	1.25

Flag: "*" = Keyline

Sample ID : G1205781348 Acquisition date : 1-AUG-2024 10:05:23

Total number of lines in spectrum	28	
Number of unidentified lines	14	
Number of lines tentatively identified by NID	14	50.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CR-51	27.70D	1.80	1.642E+00	2.951E+00	5.425E+00	183.87	
CO-60	5.27Y	1.01	5.747E+01	5.796E+01	0.163E+01	2.82	
CD-109	461.40D	1.04	7.760E+00	8.038E+00	3.937E+00	48.98	
SN-126	2.30E+05Y	1.00	7.760E-01	7.760E-01	3.801E-01	48.98	
BA-137M	30.08Y	1.00	1.344E+02	1.346E+02	0.020E+02	1.45	
CS-137	30.08Y	1.00	1.420E+02	1.422E+02	0.021E+02	1.45	
BI-210	22.20Y	1.00	4.818E+03	4.827E+03	0.165E+03	3.43	
PB-210	22.20Y	1.00	4.818E+03	4.827E+03	0.165E+03	3.43	
AM-241	432.60Y	1.00	5.103E+02	5.104E+02	0.064E+02	1.25	
			---	---			
		Total Activity :	1.049E+04	1.051E+04			

Grand Total Activity : 1.049E+04 1.051E+04

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1205781348 Acquisition date : 1-AUG-2024 10:05:23

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	58.13	1184	6402	1.49	117.13	114	12	6.09E-01	35.8	2.33E+00	T
1	89.54	74	843	0.89	179.92	175	8	3.88E-02	****	5.97E+00	T
0	176.41	65	721	1.52	353.61	350	7	3.52E-02	****	5.75E+00	T
0	245.55	67	558	1.36	491.83	490	6	3.68E-02	****	4.65E+00	T
0	336.27	31	668	1.34	673.22	668	8	1.73E-02	****	3.74E+00	
0	384.65	80	699	1.49	769.94	767	9	4.46E-02	****	3.39E+00	T
0	494.39	40	380	1.25	989.35	987	7	2.22E-02	****	2.82E+00	
0	828.41	21	284	4.15	1657.23	1652	12	1.22E-02	****	1.80E+00	
0	837.70	67	290	0.64	1675.82	1666	16	3.85E-02	****	1.78E+00	T
4	851.24	39	174	1.71	1702.88	1699	15	2.27E-02	****	1.75E+00	
4	854.33	66	189	1.73	1709.07	1699	15	3.82E-02	81.9	1.75E+00	
0	1058.46	28	261	0.87	2117.26	2110	15	1.65E-02	****	1.41E+00	
0	1069.10	243	482	9.85	2138.54	2124	34	1.41E-01	55.7	1.40E+00	
0	1222.85	34	23	2.54	2446.00	2442	9	1.98E-02	61.6	1.23E+00	T
0	1414.59	10	3	0.79	2829.44	2826	8	6.11E-03	85.3	1.08E+00	
0	1448.45	5	9	1.45	2897.16	2889	10	2.87E-03	****	1.06E+00	
0	1451.08	11	0	2.13	2902.42	2898	9	6.67E-03	57.7	1.06E+00	
0	1455.02	8	2	0.78	2910.29	2906	8	4.53E-03	91.8	1.05E+00	
4	1552.38	8	1	2.25	3105.01	3103	12	4.50E-03	52.7	1.00E+00	
4	1555.23	18	2	2.56	3110.71	3103	12	1.04E-02	48.0	1.00E+00	
0	1607.13	9	6	3.92	3214.50	3209	12	5.35E-03	****	9.80E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 10:36:08.95

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781348.CNF;2  *
* Acquisition date :  1-AUG-2024 10:05:23 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:30:05.63     Half life ratio : *****           *
* Sample date      :  9-JUL-2024 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781348          Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1500E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
CR-51	2.853E+00
CO-60	1.325E-01
CD-109	3.775E+00
SN-126	3.736E-01
BA-137M	2.110E-01
CS-137	2.229E-01
BI-210	5.239E+01
PB-210	5.239E+01
AM-241	1.596E+00

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.140E+00	NOT IDENT.
NA-22	1.353E-01	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.041E-01	NOT IDENT.
K-40	9.630E-01	NOT IDENT.
SC-46	3.004E-01	NOT IDENT.
V-48	7.393E-01	NOT IDENT.
MN-52	1.759E+00	NOT IDENT.
MN-54	2.254E-01	NOT IDENT.
CO-56	2.832E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.347E-01	NOT IDENT.
CO-58	2.669E-01	NOT IDENT.
FE-59	7.972E-01	NOT IDENT.
ZN-65	6.408E-01	NOT IDENT.
GE-68	8.893E+00	NOT IDENT.
AS-73	1.261E+01	NOT IDENT.
AS-74	7.873E-01	NOT IDENT.
SE-75	2.960E-01	NOT IDENT.
BR-77	6.160E+02	NOT IDENT.
SR-82	2.418E+00	NOT IDENT.
RB-83	5.397E-01	NOT IDENT.

RB-84	6.278E-01	NOT IDENT.
KR-85	4.870E+01	NOT IDENT.
SR-85	2.817E-01	NOT IDENT.
RB-86	7.458E+00	NOT IDENT.
Y-88	1.174E-01	NOT IDENT.
Y-91	9.274E+01	NOT IDENT.
NB-94	1.772E-01	NOT IDENT.
NB-95	2.511E-01	NOT IDENT.
NB-95M	7.896E-01	NOT IDENT.
ZR-95	4.491E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	5.683E+02	NOT IDENT.
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.627E-01	NOT IDENT.
RH-102	3.286E-01	NOT IDENT.
RU-103	3.194E-01	NOT IDENT.
RH-106	1.895E+00	NOT IDENT.
RU-106	1.895E+00	NOT IDENT.
AG-108M	2.556E-01	NOT IDENT.
AG-110	4.927E+00	NOT IDENT.
AG-110M	3.778E-01	NOT IDENT.
SN-113	3.498E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	4.421E-01	NOT IDENT.
SB-122	9.626E+01	NOT IDENT.
TE-123M	1.572E-01	NOT IDENT.
SB-124	2.637E-01	NOT IDENT.
SB-125	7.634E-01	FAIL ABUN
TE-125M	5.542E+01	NOT IDENT.
I-126	1.778E+00	NOT IDENT.
SB-126	1.202E+00	NOT IDENT.
SB-127	3.041E+01	NOT IDENT.
I-131	1.826E+00	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	2.656E+01	NOT IDENT.
BA-133	2.967E-01	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	2.264E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	1.174E+00	FAIL ABUN
LA-138	1.425E-01	NOT IDENT.
CE-139	1.563E-01	NOT IDENT.
BA-140	2.655E+00	NOT IDENT.
LA-140	3.433E-01	NOT IDENT.
CE-141	3.964E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.066E+00	NOT IDENT.
PM-144	1.862E-01	NOT IDENT.
PR-144	1.399E+01	NOT IDENT.
PM-146	3.617E-01	NOT IDENT.
ND-147	6.145E+00	FAIL ABUN
PM-147	3.823E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.818E-01	NOT IDENT.
EU-152	6.730E-01	FAIL ABUN
GD-153	4.465E-01	NOT IDENT.
EU-154	3.817E-01	NOT IDENT.
EU-155	5.274E-01	NOT IDENT.
TB-160	1.028E+00	FAIL ABUN
HO-166M	3.633E-01	NOT IDENT.
TM-171	2.484E+02	NOT IDENT.
HF-172	9.812E-01	NOT IDENT.
LU-172	4.585E-01	FAIL ABUN
LU-176	1.750E-01	FAIL ABUN
HF-181	3.836E-01	FAIL ABUN
TA-182	8.044E-01	FAIL ABUN
RE-183	3.962E+00	FAIL ABUN
RE-184	1.144E+00	NOT IDENT.
W-188	5.078E+01	NOT IDENT.
IR-192	2.419E-01	NOT IDENT.
HG-203	2.762E-01	NOT IDENT.
TL-204	2.374E+01	NOT IDENT.
BI-207	3.767E-01	NOT IDENT.
TL-208	2.199E-01	NOT IDENT.
BI-211	1.425E+00	NOT IDENT.
PB-211	5.730E+00	NOT IDENT.
BI-212	2.698E+00	NOT IDENT.

PB-212	3.491E-01	NOT IDENT.
BI-213	8.864E-01	NOT IDENT.
BI-214	4.144E-01	NOT IDENT.
PB-214	5.112E-01	FAIL ABUN
RN-219	3.098E+00	NOT IDENT.
RN-222	4.144E-01	NOT IDENT.
RA-223	4.242E+00	NOT IDENT.
RA-224	3.758E+00	NOT IDENT.
AC-225	6.577E+00	NOT IDENT.
RA-226	5.112E-01	FAIL ABUN
AC-227	1.544E+00	NOT IDENT.
TH-227	1.544E+00	NOT IDENT.
AC-228	1.101E+00	NOT IDENT.
RA-228	1.101E+00	NOT IDENT.
TH-228	3.491E-01	NOT IDENT.
TH-229	3.235E+00	FAIL ABUN
TH-230	5.112E-01	FAIL ABUN
PA-231	3.074E+00	NOT IDENT.
TH-231	4.242E+00	NOT IDENT.
TH-232	1.101E+00	NOT IDENT.
PA-233	4.362E-01	NOT IDENT.
PA-234	2.501E+00	NOT IDENT.
PA-234M	3.192E+01	NOT IDENT.
TH-234	6.717E+00	NOT IDENT.
U-234	5.112E-01	FAIL ABUN
U-235	1.049E+00	FAIL ABUN
NP-237	4.362E-01	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	6.717E+00	NOT IDENT.
NP-239	1.431E+00	NOT IDENT.
PU-239	1.818E+03	NOT IDENT.
AM-243	2.524E-01	NOT IDENT.
CM-243	5.631E-01	NOT IDENT.
BK-247	5.091E-01	NOT IDENT.
CM-247	2.856E-01	NOT IDENT.
CF-249	3.050E-01	NOT IDENT.
CF-251	6.870E-01	FAIL ABUN
ANH-511	2.128E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 01-AUG-2024 10:36:12.64

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781348.CNF;2  *
* Acquisition date :  1-AUG-2024 10:05:23 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:30:05.63     Half life ratio : *****           *
* Sample date      :  9-JUL-2024 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781348          Analyst initials: MXR1            *
* Batch Number     : 2636543              Sample Quantity : 1.1500E+02 GRAM *
*                                         Quantity Err(%) : 1.7391E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
CR-51	2.951E+00	5.324E+00	5.324E+00
CO-60	5.796E+01	7.003E+00	7.003E+00
CD-109	8.038E+00	3.953E+00	3.953E+00
SN-126	7.760E-01	3.795E-01	3.795E-01
BA-137M	1.346E+02	1.105E+01	1.105E+01
CS-137	1.422E+02	1.167E+01	1.167E+01
BI-210	4.827E+03	5.424E+02	5.424E+02
PB-210	4.827E+03	5.424E+02	5.424E+02
AM-241	5.104E+02	6.101E+01	6.101E+01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-6.172E-01	3.713E+00	3.724E+00	NOT IDENT.
NA-22	-1.107E-02	1.629E-01	1.630E-01	NOT IDENT.
NA-24	-1.880E+10	2.226E+10	2.381E+10	SHORT HLIF
AL-26	5.280E-02	1.106E-01	1.131E-01	NOT IDENT.
K-40	1.136E-01	1.095E+00	1.096E+00	NOT IDENT.
SC-46	-2.105E-02	3.481E-01	3.483E-01	NOT IDENT.
V-48	2.827E-02	8.604E-01	8.605E-01	NOT IDENT.
MN-52	-4.421E-01	2.215E+00	2.224E+00	NOT IDENT.
MN-54	-7.634E-02	2.984E-01	3.004E-01	NOT IDENT.
CO-56	-1.373E-01	4.053E-01	4.100E-01	NOT IDENT.
MN-56	-1.000E+41	3.008E+41	0.000E+00	SHORT HLIF
CO-57	-1.672E-02	1.600E-01	1.601E-01	NOT IDENT.
CO-58	1.422E-01	3.204E-01	3.268E-01	NOT IDENT.
FE-59	3.020E-01	9.247E-01	9.347E-01	NOT IDENT.
ZN-65	4.974E-01	7.317E-01	7.653E-01	NOT IDENT.
GE-68	-7.803E-01	1.193E+01	1.194E+01	NOT IDENT.
AS-73	-9.990E+00	1.458E+01	1.526E+01	NOT IDENT.
AS-74	4.689E-01	9.218E-01	9.457E-01	NOT IDENT.
SE-75	-6.018E-02	3.354E-01	3.365E-01	NOT IDENT.
BR-77	1.579E+02	7.617E+02	7.651E+02	NOT IDENT.
SR-82	6.916E-01	2.923E+00	2.940E+00	NOT IDENT.

RB-83	-1.745E-02	6.401E-01	6.402E-01	NOT IDENT.
RB-84	2.902E-01	7.121E-01	7.240E-01	NOT IDENT.
KR-85	1.515E+01	5.710E+01	5.751E+01	NOT IDENT.
SR-85	8.747E-02	3.302E-01	3.326E-01	NOT IDENT.
RB-86	1.693E+00	9.830E+00	9.860E+00	NOT IDENT.
Y-88	-7.021E-02	1.498E-01	1.531E-01	NOT IDENT.
Y-91	2.470E+01	1.079E+02	1.084E+02	NOT IDENT.
NB-94	1.128E-01	2.087E-01	2.148E-01	NOT IDENT.
NB-95	-5.542E-02	3.110E-01	3.120E-01	NOT IDENT.
NB-95M	1.805E-01	9.716E-01	9.750E-01	NOT IDENT.
ZR-95	2.636E-01	5.338E-01	5.469E-01	NOT IDENT.
NB-97	1.000E+41	1.462E+41	0.000E+00	SHORT HLIF
ZR-97	1.019E+10	4.748E+10	4.770E+10	SHORT HLIF
MO-99	1.447E+02	6.854E+02	6.885E+02	NOT IDENT.
TC-99M	2.182E+26	2.016E+27	0.000E+00	SHORT HLIF
RH-101	-1.828E-01	2.017E-01	2.179E-01	NOT IDENT.
RH-102	-1.045E-01	4.014E-01	4.041E-01	NOT IDENT.
RU-103	1.823E-02	4.203E-01	4.204E-01	NOT IDENT.
RH-106	8.886E-01	2.234E+00	2.270E+00	NOT IDENT.
RU-106	8.886E-01	2.234E+00	2.270E+00	NOT IDENT.
AG-108M	1.154E-01	2.953E-01	2.999E-01	NOT IDENT.
AG-110	2.445E+00	6.524E+00	6.616E+00	NOT IDENT.
AG-110M	-6.517E-02	4.393E-01	4.403E-01	NOT IDENT.
SN-113	-3.496E-01	4.167E-01	4.455E-01	NOT IDENT.
CD-115	-2.706E+02	1.239E+03	1.245E+03	SHORT HLIF
SN-117M	-1.119E-01	5.360E-01	5.383E-01	NOT IDENT.
SB-122	1.408E+00	1.147E+02	1.147E+02	NOT IDENT.
TE-123M	-5.887E-02	1.912E-01	1.930E-01	NOT IDENT.
SB-124	9.397E-02	2.998E-01	3.027E-01	NOT IDENT.
SB-125	1.268E-02	8.902E-01	8.902E-01	FAIL ABUN
TE-125M	-5.045E-01	6.520E+01	6.520E+01	NOT IDENT.
I-126	2.468E-01	2.394E+00	2.397E+00	NOT IDENT.
SB-126	-1.473E+00	1.567E+00	1.702E+00	NOT IDENT.
SB-127	-1.632E+01	3.797E+01	3.868E+01	NOT IDENT.
I-131	2.408E+00	2.046E+00	2.316E+00	NOT IDENT.
I-132	1.000E+41	2.284E+41	0.000E+00	SHORT HLIF
TE-132	5.067E+00	3.263E+01	3.271E+01	NOT IDENT.
BA-133	1.089E-01	3.382E-01	3.418E-01	FAIL ABUN
I-133	-1.041E+07	3.544E+07	3.575E+07	SHORT HLIF
CS-134	-1.245E-01	2.867E-01	2.921E-01	NOT IDENT.
I-135	1.181E+25	3.177E+25	0.000E+00	SHORT HLIF
CS-136	-3.851E-01	1.397E+00	1.408E+00	FAIL ABUN
LA-138	-5.051E-02	1.827E-01	1.841E-01	NOT IDENT.
CE-139	-9.664E-02	1.931E-01	1.980E-01	NOT IDENT.
BA-140	-2.498E+00	3.270E+00	3.458E+00	NOT IDENT.
LA-140	1.427E-02	4.154E-01	4.154E-01	NOT IDENT.
CE-141	2.348E-01	4.675E-01	4.793E-01	NOT IDENT.
CE-143	-4.545E+04	5.758E+04	6.111E+04	SHORT HLIF
CE-144	7.708E-01	1.246E+00	1.294E+00	NOT IDENT.
PM-144	1.025E-01	2.201E-01	2.249E-01	NOT IDENT.
PR-144	7.605E+00	1.654E+01	1.689E+01	NOT IDENT.
PM-146	-2.644E-01	4.325E-01	4.486E-01	NOT IDENT.
ND-147	-4.714E+00	7.506E+00	7.801E+00	FAIL ABUN
PM-147	-2.152E+02	4.531E+03	4.532E+03	NOT IDENT.
PM-149	-5.106E+03	9.181E+03	9.466E+03	SHORT HLIF
EU-150	-8.456E-02	2.349E-01	2.380E-01	NOT IDENT.
EU-152	4.273E-02	7.713E-01	7.715E-01	FAIL ABUN
GD-153	-1.601E-01	5.265E-01	5.314E-01	NOT IDENT.
EU-154	-3.123E-02	4.597E-01	4.600E-01	NOT IDENT.
EU-155	-3.876E-01	6.317E-01	6.555E-01	NOT IDENT.
TB-160	-6.394E-01	1.218E+00	1.251E+00	FAIL ABUN
HO-166M	5.226E-01	4.150E-01	4.772E-01	NOT IDENT.
TM-171	-2.035E+02	2.849E+02	2.993E+02	NOT IDENT.
HF-172	-1.145E+00	1.216E+00	1.321E+00	NOT IDENT.
LU-172	-2.444E-01	5.531E-01	5.640E-01	FAIL ABUN
LU-176	-1.642E-02	1.998E-01	1.999E-01	FAIL ABUN
HF-181	-5.540E-01	4.728E-01	5.347E-01	FAIL ABUN
TA-182	1.537E+00	9.398E-01	1.168E+00	FAIL ABUN
RE-183	2.436E+01	9.200E+00	1.432E+01	FAIL ABUN
RE-184	2.023E-01	1.315E+00	1.318E+00	NOT IDENT.
W-188	2.660E+00	5.753E+01	5.754E+01	NOT IDENT.
IR-192	7.778E-02	2.860E-01	2.881E-01	NOT IDENT.
HG-203	-5.617E-02	3.141E-01	3.151E-01	NOT IDENT.
TL-204	7.119E+00	2.709E+01	2.728E+01	NOT IDENT.
BI-207	1.862E-01	4.892E-01	4.963E-01	NOT IDENT.
TL-208	1.446E-01	2.554E-01	2.636E-01	NOT IDENT.
BI-211	3.188E-01	1.628E+00	1.634E+00	NOT IDENT.
PB-211	6.764E+00	6.488E+00	7.169E+00	NOT IDENT.

BI-212	2.995E-01	3.263E+00	3.266E+00	NOT IDENT.
PB-212	-3.261E-03	4.305E-01	4.305E-01	NOT IDENT.
BI-213	-2.197E-02	1.037E+00	1.037E+00	NOT IDENT.
BI-214	1.226E-01	4.897E-01	4.928E-01	NOT IDENT.
PB-214	4.173E-02	5.861E-01	5.865E-01	FAIL ABUN
RN-219	-2.027E+00	3.668E+00	3.780E+00	NOT IDENT.
RN-222	1.226E-01	4.897E-01	4.928E-01	NOT IDENT.
RA-223	7.336E-01	5.356E+00	5.367E+00	NOT IDENT.
RA-224	1.986E+00	4.595E+00	4.681E+00	NOT IDENT.
AC-225	-5.245E-01	8.112E+00	8.116E+00	NOT IDENT.
RA-226	4.173E-02	5.861E-01	5.865E-01	FAIL ABUN
AC-227	-1.046E+00	1.970E+00	2.025E+00	NOT IDENT.
TH-227	-1.046E+00	1.970E+00	2.025E+00	NOT IDENT.
AC-228	6.192E-01	1.248E+00	1.279E+00	NOT IDENT.
RA-228	6.192E-01	1.248E+00	1.279E+00	NOT IDENT.
TH-228	-3.261E-03	4.305E-01	4.305E-01	NOT IDENT.
TH-229	-5.211E-01	3.964E+00	3.971E+00	FAIL ABUN
TH-230	4.173E-02	5.861E-01	5.864E-01	FAIL ABUN
PA-231	7.303E-01	3.478E+00	3.494E+00	NOT IDENT.
TH-231	7.336E-01	5.356E+00	5.367E+00	NOT IDENT.
TH-232	6.192E-01	1.248E+00	1.279E+00	NOT IDENT.
PA-233	2.279E-01	4.911E-01	5.017E-01	NOT IDENT.
PA-234	-1.220E+00	3.271E+00	3.317E+00	NOT IDENT.
PA-234M	-2.257E+00	3.738E+01	3.739E+01	NOT IDENT.
TH-234	-1.218E-01	8.260E+00	8.260E+00	NOT IDENT.
U-234	4.173E-02	5.861E-01	5.864E-01	FAIL ABUN
U-235	4.479E-01	1.240E+00	1.257E+00	FAIL ABUN
NP-237	2.279E-01	4.911E-01	5.017E-01	NOT IDENT.
NP-238	3.642E+02	2.594E+03	2.599E+03	SHORT HLIF
U-238	-1.218E-01	8.260E+00	8.260E+00	NOT IDENT.
NP-239	-1.348E-01	1.693E+00	1.695E+00	NOT IDENT.
PU-239	1.752E+03	2.112E+03	2.255E+03	NOT IDENT.
AM-243	3.373E-02	2.898E-01	2.902E-01	NOT IDENT.
CM-243	3.931E-01	6.503E-01	6.740E-01	NOT IDENT.
BK-247	-8.329E-02	5.765E-01	5.777E-01	NOT IDENT.
CM-247	-2.708E-01	3.431E-01	3.642E-01	NOT IDENT.
CF-249	1.771E-01	3.867E-01	3.948E-01	NOT IDENT.
CF-251	8.587E-01	1.188E+00	1.250E+00	FAIL ABUN
ANH-511	-6.502E-02	2.482E-01	2.499E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	3213.2332	85.43	570.2078	131.20	554.0267
45.60	2928.2998	86.55	622.8959	133.02	524.4871
46.54	2936.9668	86.79	623.2039	133.52	512.0093
49.72	2772.0308	86.94	649.7556	136.00	541.9592
51.35	2922.9023	87.09	649.9612	136.47	540.1865
51.87	2994.5134	87.57	675.6771	140.51	555.3984
52.39	3040.8489	88.03	649.8940	143.76	531.8959
52.97	3147.0161	88.34	650.3094	144.24	537.7142
53.44	3175.8672	88.47	650.4796	145.44	532.0989
54.07	3319.4990	89.96	637.8593	152.43	523.0592
57.36	0.0000	90.64	642.7189	153.25	528.0786
57.53	2183.9575	91.11	644.6537	154.21	517.7164
57.98	2186.6133	92.59	585.2306	156.02	533.4332
59.27	2194.2012	93.35	610.8098	158.56	534.1772
59.32	2194.4993	94.56	655.4163	159.00	534.4922
59.54	2195.7820	94.65	655.5309	162.33	561.5022
60.96	2204.0293	94.67	655.5558	162.66	527.0577
61.17	2205.2397	94.87	634.7243	163.33	467.0443
62.93	632.4091	97.43	631.8076	165.86	489.9611
63.29	616.7626	98.43	571.3280	176.31	466.9806
63.58	594.7289	98.44	571.3409	176.60	467.1495
64.28	613.9346	99.53	603.9302	177.52	486.6992
66.73	592.2039	100.11	632.9930	181.07	517.8799
67.24	575.9230	102.03	555.8517	181.52	507.8520
67.68	588.8528	103.18	583.5559	184.41	570.6240
67.75	588.9525	103.37	566.4115	185.72	579.5982
68.89	614.3223	105.21	581.6245	193.51	643.1697
69.67	613.5748	105.31	581.7328	197.03	611.9517
70.82	604.7601	106.12	596.9417	198.01	581.0796
70.83	604.7795	106.47	565.5031	201.83	571.8921
72.81	624.8499	109.28	576.5924	203.43	562.3444
72.87	616.3081	111.00	549.3682	205.31	544.6772
74.66	638.1082	111.76	589.4597	210.85	597.8771
74.82	653.7457	114.06	577.2429	215.65	577.1797
74.97	687.6837	116.30	602.4181	218.12	588.2889
77.11	654.2407	116.74	597.6386	222.11	569.1964
78.74	699.3512	119.76	588.0615	227.09	584.2622
79.69	630.7361	121.12	528.3386	227.38	538.5537
80.03	608.7923	121.22	528.4267	228.16	526.9109
80.12	608.9211	121.78	552.0926	228.18	563.1734
80.19	609.0117	122.06	546.0199	235.69	544.4130
80.57	648.5262	125.81	580.5649	235.96	544.5562
81.00	713.5549	123.07	580.7076	238.63	538.7069
81.07	713.6664	123.68	552.7468	238.98	530.3414
81.75	664.8511	125.81	596.0016	240.99	526.5164
82.47	606.1498	127.23	600.5388	242.00	524.5965
83.79	605.8860	127.91	519.2577	244.70	478.4863
84.00	657.2402	129.30	536.3870	252.40	484.1680

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.80	516.5605	351.06	459.6875	569.33	226.1231
254.15	0.0000	351.93	454.5991	569.50	213.8145
256.23	498.3834	355.39	0.0000	569.70	212.8033
260.90	0.0000	356.01	441.5702	583.19	200.8203
264.66	488.5831	364.49	443.4448	584.27	205.0737
1093.63	488.6545	366.42	473.1314	595.83	197.9398
265.00	488.7378	372.51	450.5921	600.60	213.0313
269.46	511.7462	375.05	487.0544	602.52	0.0000
270.03	481.7900	377.52	444.8969	604.72	212.4165
271.23	467.2020	383.85	420.6874	607.14	193.8149
273.65	486.7585	388.16	460.7001	609.32	201.3594
276.40	461.8094	388.63	469.1562	610.33	221.3972
277.37	467.2800	391.69	515.9161	614.28	192.3898
277.60	467.3813	400.66	506.0820	618.01	195.8994
278.00	501.3693	401.81	515.7908	620.36	186.6293
279.20	495.1291	402.40	535.5530	621.93	175.1659
279.54	495.2838	404.85	471.1360	630.19	0.0000
279.70	474.1862	410.95	515.2333	631.29	199.2681
280.46	475.3525	413.71	510.5534	633.25	190.9680
283.69	492.0181	414.70	503.3724	634.78	182.6100
284.31	488.0378	423.72	514.8738	635.95	181.6527
285.41	500.4316	427.09	519.7919	636.99	206.1881
285.90	0.0000	427.87	526.6797	657.50	212.4617
287.50	476.6262	433.94	526.8365	657.76	204.4371
290.67	471.9604	439.40	545.8508	657.90	0.0000
293.27	0.0000	440.45	534.7640	661.66	189.2201
295.22	469.5328	453.88	564.3135	664.57	0.0000
295.96	477.5636	463.37	615.0659	666.33	140.5997
298.58	493.2729	468.07	610.0232	666.50	138.9941
299.98	479.2039	473.00	605.9919	667.71	0.0000
300.09	479.2491	475.06	535.5297	677.62	121.2878
300.13	482.7083	476.78	523.3830	685.70	148.8961
301.36	454.7455	477.60	532.4261	692.65	130.8252
302.85	449.2659	482.18	457.4704	695.00	151.6975
304.50	463.7329	487.02	402.7763	696.49	135.4131
304.85	457.8166	492.35	0.0000	696.51	135.4181
306.78	456.8148	497.08	308.2930	697.00	148.5508
308.46	465.2705	505.52	337.5928	697.30	149.6654
311.90	437.8736	507.63	0.0000	697.49	149.6765
316.51	400.5591	511.00	340.6328	702.65	130.3064
319.41	402.0359	514.00	340.2091	706.68	149.1816
320.08	393.0489	514.00	340.2091	711.68	134.1176
321.04	417.4684	520.40	318.4011	720.70	169.9539
323.87	439.0848	520.69	313.4458	721.93	0.0000
325.23	439.5624	522.65	0.0000	722.78	141.3854
328.76	448.3034	527.90	0.0000	722.91	153.5470
333.37	464.9933	528.26	285.5947	723.31	148.0456
333.97	478.4985	529.59	277.7520	724.19	139.2634
334.37	489.2891	529.87	0.0000	727.33	139.4480
323.87	452.1069	531.02	284.0081	733.00	155.3125
338.32	452.1172	537.26	278.9087	735.93	135.5125
340.48	441.7399	546.56	0.0000	737.46	168.9466
340.55	441.7601	552.55	240.4461	739.50	143.5031
344.28	453.7501	563.25	227.4651	744.23	138.2134
345.93	444.4910	564.24	207.0796	747.24	139.5060

ENERGY	MDA COUNTS
748.06	147.3667
752.31	137.5592
753.82	130.9299
756.73	132.2074
756.80	132.2122
763.94	168.5608
765.81	159.6922
766.42	167.6068
766.84	162.0117
772.60	0.0000
776.52	137.7961
777.92	140.1357
778.90	139.0607
783.70	135.9277
788.74	157.7720
792.07	126.1532
795.86	150.2456
801.95	147.1879
810.06	187.7165
810.29	163.6913
810.45	148.8208
810.76	146.5469
815.77	144.5391
818.51	172.2534
832.01	176.6074
834.85	167.7871
835.71	167.8402
836.80	0.0000
846.75	0.0000
846.77	191.5265
856.80	160.7922
860.56	175.0183
871.09	184.4806
873.19	174.9509
875.33	0.0000
879.38	210.5910
880.51	200.1006
881.60	198.4200
946.00	181.7714
884.68	210.1166
889.28	189.2419
894.76	209.1072
898.04	220.0046
900.72	219.3286
903.28	218.6358
911.20	212.1213
912.08	209.5120
923.98	0.0000
926.50	210.5734
929.11	242.1579
935.54	226.5216
937.49	240.1680
944.13	233.5015
946.00	261.6177
949.00	241.1213

ENERGY	MDA COUNTS
954.55	0.0000
962.31	245.8419
964.08	226.0210
879.38	207.1051
968.97	203.6631
983.53	178.1589
984.45	0.0000
996.26	188.0835
1001.03	176.4316
1002.74	182.9673
1004.73	159.1676
1021.30	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	172.0261
1038.76	0.0000
1046.59	173.4441
1048.07	175.3894
1049.04	167.0368
1050.41	161.5117
1063.66	154.5000
1077.00	146.0968
1077.34	155.1538
1085.87	185.9500
1093.63	177.8794
1099.45	184.8239
344.28	175.0605
1112.84	179.8638
1115.54	156.2024
1120.29	163.0992
1120.55	163.1096
1121.30	141.1980
1129.67	130.0732
1131.51	0.0000
1147.95	0.0000
1173.23	92.9883
1177.95	66.7340
1189.05	72.9767
1204.77	51.7999
1221.41	51.8461
1235.36	28.5858
1238.28	38.4739
1260.41	0.0000
1271.87	22.8961
1274.44	27.8940
1274.54	27.8940
1291.59	25.0183
1298.22	0.0000
1312.11	24.1479
1332.49	24.2754
1362.66	0.0000
1365.19	9.1796
1368.63	0.0000
884.68	10.2484
1408.01	9.2780

ENERGY	MDA COUNTS
1434.09	13.4872
1435.80	13.4927
1457.56	0.0000
1460.82	9.3977
1489.16	14.7169
1505.03	10.5511
1584.12	10.7428
1596.21	8.6172
1620.50	5.4144
1621.92	6.4995
1678.03	0.0000
1690.97	6.5962
507.63	0.0000
1764.49	7.8135
1770.23	5.5875
1771.35	5.5887
1260.41	0.0000
1808.65	6.3065
1810.72	0.0000
1836.06	12.6813

Batch 2636542 Check-list

This check-list was completed on 30-JUL-24 by Michael Hilton

This batch was reviewed by Michael Hilton on 30-JUL-24 and Spencer Collins on 31-JUL-24.

Batch ID: 2636542 **Product:** GSCGAMMS **Description:** Gamma Spec Solid RAD A-013

#	Criteria	Yes	No	Comments
Preparation Information				
1	Did any sample(s) require dilution?		No	
2	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
3	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
4	Are instrument source checks within limits?	Yes		
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were any additional radionuclides added that were not requested by the client?		No	
7	Were all the samples prepared/analyzed within the required holding time period?	Yes		
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Gamma Spectroscopy

Batch ID: **2636542**
Analyst: Rebekah Futch (RXF2)
Method: DOE HASL 300, 4.5.2.3/Ga-01-R
Lab SOP: GL-RAD-A-013 REV# 29
Instrument: No instrument-manual method

Due Dates for Lab: 31-JUL-2024 **Hold: 08-JUL-2024** **Package: 01-AUG-2024** **SDG: 02-AU**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1205781345	84680-278	1556	1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)	Adjusted Aliquot (g)
1	674299001	10-JUL-2024	.1	Dry to Dry	118.84	118.84	118.84
2	674299002	10-JUL-2024	.1	Dry to Dry	113.58	113.58	113.58
3	674299003	10-JUL-2024	.1	Dry to Dry	118.58	118.58	118.58
4	674299004	10-JUL-2024	.1	Dry to Dry	103.65	103.65	103.65
5	674299005	10-JUL-2024	.1	Dry to Dry	99.94	99.94	99.94
6	674299006	10-JUL-2024	.1	Dry to Dry	149.98	149.98	149.98
7	674299007	10-JUL-2024	.1	Dry to Dry	100.47	100.47	100.47
8	674299008	10-JUL-2024	.1	Dry to Dry	89.44	89.44	89.44
9	674299009	10-JUL-2024	.1	Dry to Dry	113.77	113.77	113.77
10	674299010	10-JUL-2024	.1	Dry to Dry	107.75	107.75	107.75
11	674299011	10-JUL-2024	.1	Dry to Dry	107.06	107.06	107.06
12	674299012	10-JUL-2024	.1	Dry to Dry	101.65	101.65	101.65
13	674299013	10-JUL-2024	.1	Dry to Dry	132.04	132.04	132.04
14	674299014	10-JUL-2024	.1	Dry to Dry	77.79	77.79	77.79
15	674299015	10-JUL-2024	.1	Dry to Dry	89.51	89.51	89.51
16	674299016	10-JUL-2024	.1	Dry to Dry	127.25	127.25	127.25
17	674299017	10-JUL-2024	.1	Dry to Dry	84.75	84.75	84.75
18	674299018	10-JUL-2024	.1	Dry to Dry	94.87	94.87	94.87
19	674299019	10-JUL-2024	.1	Dry to Dry	79.26	79.26	79.26
20	674299020	10-JUL-2024	.1	Dry to Dry	121.04	121.04	121.04
21	1205781343 MB	10-JUL-2024	.1	Dry to Wet	149.98	149.98	149.98
22	1205781344 DUP (674299001)	10-JUL-2024	.1	Dry to Dry	118.84	118.84	118.84
23	1205781345 LCS	10-JUL-2024	.1	Dry to Wet	115	115	115

Reagent/Solvent Lot ID	Description	Amount

Comments:

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:13:44.49

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299001.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM07.CNF;884
                                         Background date  : 28-JUL-2024 09:24:38
Sample date      : 26-JUN-2024 09:03:00  Acquisition date : 30-JUL-2024 11:13:06
Sample ID        : G674299001            Sample quantity  : 1.18840E+02 GRAM
Detector name    : GAM07                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.59  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.55*	55	192	0.62	127.96	124	8	1.53E-02	46.6	
2	1	74.98*	161	165	1.06	150.81	145	21	4.48E-02	15.1	2.91E+00
3	1	77.17*	333	141	1.06	155.19	145	21	9.25E-02	8.2	
4	1	79.17	53	121	1.07	159.19	145	21	1.48E-02	42.3	
5	0	86.22	201	265	1.32	173.29	166	13	5.57E-02	18.2	
6	3	89.96	84	89	1.00	180.77	179	13	2.32E-02	19.2	7.23E-01
7	3	92.65*	193	165	1.33	186.14	179	13	5.36E-02	14.2	
8	0	104.86	42	109	1.50	210.55	206	9	1.18E-02	46.8	
9	0	128.64	27	112	1.75	258.09	256	7	7.44E-03	68.0	
10	0	144.57*	30	128	2.24	289.94	286	8	8.25E-03	69.4	
11	0	186.24*	142	235	1.20	373.26	368	12	3.94E-02	23.6	
12	0	195.04	26	55	1.46	390.85	389	5	7.13E-03	47.4	
13	0	202.29	23	85	0.82	405.35	402	7	6.35E-03	70.7	
14	1	238.73*	162	129	1.15	478.21	474	17	4.49E-02	13.6	2.48E+00
15	1	242.07	201	90	1.35	484.88	474	17	5.58E-02	11.4	
16	1	269.27	37	56	1.38	539.25	532	16	1.03E-02	38.4	8.28E-01
17	1	271.52	29	56	1.39	543.75	532	16	7.96E-03	51.1	
18	0	295.33*	442	52	1.26	591.35	586	11	1.23E-01	5.7	
19	0	300.93	14	59	1.33	602.56	599	8	3.77E-03	101.4	
20	0	338.32	32	47	1.09	677.31	673	9	8.89E-03	42.5	
21	0	352.03*	704	100	1.19	704.73	699	13	1.96E-01	4.8	
22	0	392.76	15	37	0.98	786.16	780	8	4.05E-03	78.7	
23	1	401.71	19	41	1.54	804.06	798	16	5.29E-03	65.2	1.23E+00
24	1	404.80	16	32	1.54	810.23	798	16	4.49E-03	59.7	
25	0	411.24	26	49	0.60	823.10	816	13	7.35E-03	57.7	
26	0	511.68*	20	63	2.59	1023.94	1017	15	5.47E-03	106.5	
27	0	583.74*	58	45	1.22	1168.00	1162	13	1.62E-02	27.7	
28	0	602.62	11	23	3.26	1205.75	1197	10	3.16E-03	83.6	
29	0	609.30*	529	33	1.44	1219.12	1213	14	1.47E-01	4.9	
30	0	662.59	13	5	0.67	1325.68	1322	7	3.59E-03	40.4	
31	0	668.13	40	19	4.05	1336.75	1329	18	1.11E-02	29.6	
32	0	697.83	18	20	1.52	1396.14	1391	10	4.99E-03	52.3	
33	0	727.05*	20	18	0.66	1454.56	1449	12	5.66E-03	48.5	
34	1	768.61	46	8	1.78	1537.66	1530	20	1.28E-02	20.6	2.29E+00

Sample ID : G674299001 Acquisition date : 30-JUL-2024 11:13:06

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	1	772.35	16	12	1.86	1545.14	1530	20	4.51E-03	35.0	
36	0	786.26	21	23	1.09	1572.96	1567	13	5.82E-03	51.8	
37	0	795.39	11	8	0.93	1591.20	1588	6	3.10E-03	51.1	
38	0	911.09*	32	17	1.32	1822.56	1817	13	8.93E-03	32.7	
39	0	934.96	35	15	1.47	1870.29	1862	16	9.64E-03	30.8	
40	0	969.56	13	25	0.62	1939.48	1930	13	3.60E-03	85.3	
41	0	972.32	7	7	1.41	1945.00	1942	7	1.94E-03	73.2	
42	0	1050.61	10	7	0.89	2101.56	2095	10	2.74E-03	60.7	
43	0	1075.93	5	8	3.33	2152.19	2145	9	1.47E-03	108.6	
44	0	1120.21	112	10	1.51	2240.75	2234	14	3.10E-02	11.3	
45	0	1196.06	7	3	0.85	2392.42	2389	6	2.00E-03	52.9	
46	0	1202.54	13	0	1.00	2405.38	2400	10	3.61E-03	27.7	
47	0	1207.08	9	2	0.89	2414.46	2411	7	2.55E-03	40.8	
48	0	1238.44	33	11	1.96	2477.18	2472	12	9.22E-03	26.9	
49	0	1281.48	19	5	0.92	2563.24	2558	10	5.28E-03	31.8	
50	0	1378.67	19	15	2.51	2757.60	2749	12	5.18E-03	47.7	
51	0	1407.54	24	3	0.77	2815.35	2809	13	6.58E-03	25.9	
52	0	1460.49*	63	8	3.24	2921.24	2912	15	1.75E-02	16.3	
53	0	1495.21	5	9	0.65	2990.68	2984	8	1.38E-03	117.5	
54	0	1511.62	6	10	2.18	3023.50	3015	10	1.62E-03	117.6	
55	0	1730.09	25	6	1.88	3460.43	3454	12	7.03E-03	27.7	
56	0	1764.98	74	9	2.29	3530.20	3524	13	2.06E-02	14.4	
57	0	1849.19*	9	9	2.34	3698.63	3689	12	2.49E-03	75.9	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:13:46

```
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299001.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 09:03:00 Acquisition date : 30-JUL-2024 11:13:06
Sample ID        : G674299001           Sample quantity  : 118.84 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA7               Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.59   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Sample ID : G674299001 Acquisition date : 30-JUL-2024 11:13:06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.051E+00	3.351E+00	3.351E+00	32.60	OK
GE-68	1077.34	3.22*	1.392E+00	7.187E-01	7.842E-01	217.28	OK
RB-86	1077.00	8.64*	1.392E+00	2.678E-01	9.523E-01	217.28	OK
SN-113	391.69	64.94*	3.344E+00	4.289E-02	5.267E-02	157.43	OK
SN-126	64.28	9.60	3.164E+00	1.256E+00	1.256E+00	93.13	OK
	86.94	8.90	5.751E+00	2.685E+00	2.685E+00	36.40	OK
	87.57	37.00*	5.751E+00	6.458E-01	6.458E-01	36.40	OK
BA-137M	661.66	89.90*	2.211E+00	4.041E-02	4.050E-02	80.74	OK
CS-137	661.66	85.10*	2.211E+00	4.269E-02	4.278E-02	80.74	OK
PR-144	696.51	1.34*	2.111E+00	3.935E+00	4.275E+00	104.54	OK
	1489.16	0.28	1.035E+00	----- Line Not Found		-----	Absent
EU-155	86.55	30.70	5.751E+00	7.783E-01	7.890E-01	36.40	OK
	105.31	21.10*	6.537E+00	2.088E-01	2.116E-01	93.62	OK
TL-208	277.37	6.60	4.276E+00	----- Line Not Found		-----	Absent
	583.19	85.00*	2.464E+00	1.746E-01	1.746E-01	55.46	OK
	860.56	12.50	1.735E+00	----- Line Not Found		-----	Absent
BI-211	72.87	1.23	4.457E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	3.617E+00	9.665E+00	9.665E+00	9.59	OK
BI-212	727.33	6.67*	2.034E+00	9.294E-01	9.294E-01	96.93	OK
	1620.50	1.47	9.748E-01	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	4.708E+00	2.299E+00	2.299E+00	30.11	OK
	77.11	17.10	4.951E+00	2.707E+00	2.707E+00	16.48	OK
	238.63	43.60*	4.741E+00	5.110E-01	5.110E-01	27.17	OK
	300.09	3.30	4.040E+00	6.575E-01	6.575E-01	202.74	OK
BI-214	609.32	45.49*	2.377E+00	3.055E+00	3.055E+00	9.89	OK
	1120.29	14.92	1.338E+00	3.390E+00	3.390E+00	22.56	OK
	1764.49	15.30	9.298E-01	3.088E+00	3.088E+00	28.84	OK
PB-214	74.82	5.80	4.708E+00	4.075E+00	4.075E+00	30.11	OK
	77.11	9.70	4.951E+00	4.773E+00	4.773E+00	16.48	OK
	87.09	3.41	5.751E+00	7.007E+00	7.008E+00	36.40	OK
	242.00	7.25	4.696E+00	3.856E+00	3.857E+00	22.88	OK
	295.22	18.42	4.093E+00	3.791E+00	3.791E+00	11.48	OK
	351.93	35.60*	3.617E+00	3.508E+00	3.508E+00	9.59	OK
RN-219	271.23	10.80	4.340E+00	3.971E-01	3.971E-01	102.12	OK
	401.81	6.60*	3.290E+00	5.592E-01	5.592E-01	130.34	OK
RN-222	609.32	45.49*	2.377E+00	3.055E+00	3.055E+00	9.89	OK
	1120.29	14.92	1.338E+00	3.390E+00	3.390E+00	22.56	OK
	1764.49	15.30	9.298E-01	3.088E+00	3.088E+00	28.84	OK
RA-224	240.99	4.10*	4.696E+00	6.819E+00	6.819E+00	22.88	OK
RA-226	74.82	5.80	4.708E+00	4.075E+00	4.075E+00	30.11	OK
	77.11	9.70	4.951E+00	4.773E+00	4.773E+00	16.48	OK
	87.09	3.41	5.751E+00	7.007E+00	7.008E+00	36.40	OK
	242.00	7.25	4.696E+00	3.856E+00	3.857E+00	22.88	OK
	295.22	18.42	4.093E+00	3.791E+00	3.791E+00	11.48	OK
	351.93	35.60*	3.617E+00	3.508E+00	3.508E+00	9.59	OK
AC-228	105.21	1.10	6.537E+00	4.005E+00	4.005E+00	93.62	OK
	338.32	11.27	3.721E+00	4.907E-01	4.907E-01	85.05	OK
	835.71	1.61	1.784E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.641E+00	4.646E-01	4.646E-01	65.34	OK

Sample ID : G674299001 Acquisition date : 30-JUL-2024 11:13:06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	968.97	15.80	1.543E+00	3.246E-01	3.246E-01	170.62	OK
RA-228	105.21	1.10	6.537E+00	4.005E+00	4.005E+00	93.62	OK
	338.32	11.27	3.721E+00	4.907E-01	4.907E-01	85.05	OK
	835.71	1.61	1.784E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.641E+00	4.646E-01	4.646E-01	65.34	OK
	968.97	15.80	1.543E+00	3.246E-01	3.246E-01	170.62	OK
TH-228	74.82	10.28	4.708E+00	2.299E+00	2.299E+00	30.11	OK
	77.11	17.10	4.951E+00	2.707E+00	2.707E+00	16.48	OK
	238.63	43.60*	4.741E+00	5.110E-01	5.110E-01	27.17	OK
	300.09	3.30	4.040E+00	6.575E-01	6.575E-01	202.74	OK
TH-229	85.43	14.70	5.751E+00	1.625E+00	1.626E+00	36.40	OK
	88.47	24.00	5.991E+00	3.977E-01	3.977E-01	38.34	OK
	193.51	4.41*	5.442E+00	----- Line Not Found		-----	Absent
	210.85	2.80	5.151E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	4.708E+00	4.075E+00	4.075E+00	30.11	OK
	77.11	9.70	4.951E+00	4.773E+00	4.773E+00	16.48	OK
	87.09	3.41	5.751E+00	7.007E+00	7.007E+00	36.40	OK
	242.00	7.25	4.696E+00	3.856E+00	3.856E+00	22.88	OK
	295.22	18.42	4.093E+00	3.791E+00	3.791E+00	11.48	OK
	351.93	35.60*	3.617E+00	3.508E+00	3.508E+00	9.59	OK
PA-231	283.69	1.70	4.209E+00	----- Line Not Found		-----	Absent
	301.36	5.35*	4.040E+00	4.056E-01	4.056E-01	202.74	OK
TH-232	105.21	1.10	6.537E+00	4.005E+00	4.005E+00	93.62	OK
	338.32	11.27	3.721E+00	4.907E-01	4.907E-01	85.05	OK
	835.71	1.61	1.784E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.641E+00	4.646E-01	4.646E-01	65.34	OK
	968.97	15.80	1.543E+00	3.246E-01	3.246E-01	170.62	OK
TH-234	63.29	3.70*	3.164E+00	3.258E+00	3.258E+00	93.13	OK
	92.59	4.23	6.135E+00	5.081E+00	5.081E+00	28.35	OK
U-234	74.82	5.80	4.708E+00	4.075E+00	4.075E+00	30.11	OK
	77.11	9.70	4.951E+00	4.773E+00	4.773E+00	16.48	OK
	87.09	3.41	5.751E+00	7.007E+00	7.007E+00	36.40	OK
	242.00	7.25	4.696E+00	3.856E+00	3.856E+00	22.88	OK
	295.22	18.42	4.093E+00	3.791E+00	3.791E+00	11.48	OK
	351.93	35.60*	3.617E+00	3.508E+00	3.508E+00	9.59	OK
U-235	89.96	3.47	5.991E+00	2.751E+00	2.751E+00	38.34	OK
	93.35	5.60	6.135E+00	3.838E+00	3.838E+00	28.35	OK
	143.76	10.96*	6.345E+00	2.858E-01	2.858E-01	138.88	OK
	163.33	5.08	6.002E+00	----- Line Not Found		-----	Absent
	185.72	57.20	5.572E+00	2.939E-01	2.939E-01	47.22	OK
	205.31	5.01	5.241E+00	----- Line Not Found		-----	Absent
U-238	63.29	3.70*	3.164E+00	3.258E+00	3.258E+00	93.13	OK
	92.59	4.23	6.135E+00	5.081E+00	5.081E+00	28.35	OK
AM-243	43.53	5.90	4.826E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	4.708E+00	3.517E-01	3.517E-01	30.11	OK
CM-247	278.00	3.40	4.269E+00	----- Line Not Found		-----	Absent
	287.50	2.00	4.171E+00	----- Line Not Found		-----	Absent
	402.40	72.00*	3.290E+00	5.126E-02	5.126E-02	130.34	OK
ANH-511	511.00	100.00*	2.741E+00	4.527E-02	4.527E-02	213.04	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:13:47.11

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299001.CNF;1  *
* Acquisition date : 30-JUL-2024 11:13:06 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.59     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:03:00 Analyst initials: RXF2            *
* Sample ID        : G674299001           Sample Quantity : 1.1884E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	3.351E+00	1.070E+00	9.085E-01
GE-68	7.842E-01	1.670E+00	2.745E+00
RB-86	9.523E-01	2.028E+00	3.332E+00
SN-113	5.267E-02	8.125E-02	1.011E-01
SN-126	6.458E-01	2.303E-01	1.401E-01
BA-137M	4.050E-02	3.204E-02	4.142E-02
CS-137	4.278E-02	3.385E-02	4.375E-02
PR-144	4.275E+00	4.380E+00	5.887E+00
EU-155	2.116E-01	1.942E-01	1.791E-01
TL-208	1.746E-01	9.488E-02	7.714E-02
BI-211	9.665E+00	9.083E-01	5.037E-01
BI-212	9.294E-01	8.829E-01	1.043E+00
PB-212	5.110E-01	1.361E-01	1.312E-01
BI-214	3.055E+00	2.961E-01	1.245E-01
PB-214	3.508E+00	3.297E-01	1.832E-01
RN-219	5.592E-01	7.143E-01	8.725E-01
RN-222	3.055E+00	2.961E-01	1.245E-01
RA-224	6.819E+00	1.529E+00	1.406E+00
RA-226	3.508E+00	3.297E-01	1.832E-01
AC-228	4.646E-01	2.975E-01	3.033E-01
RA-228	4.646E-01	2.975E-01	3.033E-01
TH-228	5.110E-01	1.361E-01	1.312E-01
TH-229	-5.603E-02	6.364E-01	1.027E+00
TH-230	3.508E+00	3.297E-01	1.832E-01
PA-231	4.056E-01	8.058E-01	1.013E+00
TH-232	4.646E-01	2.975E-01	3.033E-01
TH-234	3.258E+00	2.973E+00	2.627E+00
U-234	3.508E+00	3.297E-01	1.832E-01
U-235	2.858E-01	3.891E-01	4.100E-01
U-238	3.258E+00	2.973E+00	2.627E+00
AM-243	3.517E-01	1.038E-01	1.070E-01
CM-247	5.126E-02	6.548E-02	8.008E-02
ANH-511	4.527E-02	9.451E-02	6.128E-02

---- Non-Identified Nuclides ----

Key-Line

Nuclide	Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.238E-01	4.706E-01	8.634E-01	NOT IDENT.
NA-22	4.925E-02	4.422E-02	1.065E-01	NOT IDENT.
NA-24	0.000E+00	1.008E+15	0.000E+00	SHORT HLIF
AL-26	-1.104E-02	3.090E-02	6.358E-02	NOT IDENT.
SC-46	-1.113E-02	4.489E-02	8.764E-02	FAIL ABUN
V-48	1.468E-01	1.679E-01	3.827E-01	NOT IDENT.
CR-51	2.186E-01	6.259E-01	1.245E+00	NOT IDENT.
MN-52	6.615E-01	3.806E+00	7.639E+00	FAIL ABUN
MN-54	-1.467E-02	4.641E-02	8.116E-02	NOT IDENT.
CO-56	-2.027E-02	5.093E-02	8.841E-02	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.109E-02	2.843E-02	4.998E-02	NOT IDENT.
CO-58	-5.184E-02	5.474E-02	8.393E-02	NOT IDENT.
FE-59	-3.229E-02	1.100E-01	2.117E-01	NOT IDENT.
CO-60	-1.836E-02	4.648E-02	8.726E-02	NOT IDENT.
ZN-65	6.298E-03	1.191E-01	2.081E-01	NOT IDENT.
AS-73	5.755E-01	1.266E+00	2.460E+00	NOT IDENT.
AS-74	-1.549E-02	2.605E-01	4.301E-01	NOT IDENT.
SE-75	-6.796E-03	5.526E-02	9.553E-02	FAIL ABUN
BR-77	0.000E+00	5.373E+03	0.000E+00	SHORT HLIF
SR-82	-3.285E-02	6.536E-01	1.087E+00	NOT IDENT.
RB-83	7.617E-02	8.164E-02	1.762E-01	NOT IDENT.
RB-84	-8.699E-02	9.887E-02	1.774E-01	NOT IDENT.
KR-85	6.241E+00	7.357E+00	1.444E+01	NOT IDENT.
SR-85	4.027E-02	4.759E-02	9.342E-02	NOT IDENT.
Y-88	-3.789E-02	3.552E-02	5.610E-02	NOT IDENT.
Y-91	2.511E+01	1.678E+01	4.770E+01	NOT IDENT.
NB-94	2.030E-02	3.385E-02	6.566E-02	NOT IDENT.
NB-95	3.957E-02	5.158E-02	1.033E-01	NOT IDENT.
NB-95M	-1.899E-02	2.214E-01	3.482E-01	NOT IDENT.
ZR-95	-3.342E-02	9.814E-02	1.734E-01	NOT IDENT.
NB-97	0.000E+00	1.624E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.106E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.513E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	2.574E+39	0.000E+00	SHORT HLIF
RH-101	4.110E-02	5.482E-02	6.358E-02	FAIL ABUN
RH-102	-1.227E-02	4.967E-02	9.196E-02	FAIL ABUN
RU-103	-3.907E-03	5.900E-02	1.116E-01	FAIL ABUN
RH-106	-7.247E-02	3.732E-01	6.819E-01	FAIL ABUN
RU-106	-7.247E-02	3.732E-01	6.819E-01	FAIL ABUN
AG-108M	-6.927E-03	3.410E-02	6.326E-02	NOT IDENT.
CD-109	0.000E+00	1.151E+00	2.091E+00	NOT IDENT.
AG-110	3.148E-01	7.572E-01	1.492E+00	NOT IDENT.
AG-110M	1.643E-02	4.686E-02	1.023E-01	NOT IDENT.
CD-115	0.000E+00	4.983E+03	0.000E+00	SHORT HLIF
SN-117M	-9.777E-02	1.740E-01	2.953E-01	NOT IDENT.
SB-122	0.000E+00	2.760E+02	0.000E+00	SHORT HLIF
TE-123M	1.827E-03	3.697E-02	6.612E-02	NOT IDENT.
SB-124	8.239E-02	1.017E-01	2.718E-01	NOT IDENT.
SB-125	2.938E-02	9.611E-02	1.906E-01	NOT IDENT.
TE-125M	1.005E+00	1.214E+01	2.238E+01	NOT IDENT.
I-126	5.522E-01	7.063E-01	1.370E+00	NOT IDENT.
SB-126	1.207E-02	3.506E-01	6.870E-01	FAIL ABUN
SB-127	5.695E+00	4.483E+01	8.581E+01	NOT IDENT.
I-131	6.792E-02	6.713E-01	1.296E+00	FAIL ABUN
I-132	0.000E+00	5.805E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	5.276E+01	0.000E+00	SHORT HLIF
BA-133	6.847E-03	5.622E-02	9.737E-02	NOT IDENT.
I-133	0.000E+00	2.598E+10	0.000E+00	SHORT HLIF
CS-134	4.437E-02	4.443E-02	8.977E-02	FAIL ABUN
I-135	0.000E+00	3.874E+36	0.000E+00	SHORT HLIF
CS-136	-1.241E-01	3.564E-01	5.740E-01	NOT IDENT.
LA-138	8.099E-02	7.403E-02	1.764E-01	NOT IDENT.
CE-139	2.050E-02	3.739E-02	6.959E-02	NOT IDENT.
BA-140	2.930E-01	7.898E-01	1.579E+00	NOT IDENT.
LA-140	-4.960E-02	3.880E-01	7.333E-01	NOT IDENT.
CE-141	1.343E-01	1.827E-01	2.046E-01	FAIL ABUN
CE-143	0.000E+00	2.208E+06	0.000E+00	SHORT HLIF
CE-144	2.871E-01	2.367E-01	4.641E-01	FAIL ABUN
PM-144	5.656E-02	5.795E-02	8.016E-02	FAIL ABUN
PM-146	2.748E-02	4.534E-02	9.258E-02	NOT IDENT.
ND-147	2.838E-01	2.081E+00	4.011E+00	FAIL ABUN
PM-147	-6.855E+01	7.843E+02	1.417E+03	NOT IDENT.
PM-149	0.000E+00	3.913E+04	0.000E+00	SHORT HLIF
EU-150	-3.246E-03	3.338E-02	5.676E-02	FAIL ABUN

EU-152	-5.597E-02	1.121E-01	2.039E-01	FAIL ABUN
GD-153	2.279E-02	9.346E-02	1.744E-01	NOT IDENT.
EU-154	1.382E-01	1.241E-01	2.989E-01	NOT IDENT.
TB-160	-4.074E-03	1.610E-01	3.246E-01	FAIL ABUN
HO-166M	4.359E-02	5.649E-02	1.224E-01	FAIL ABUN
TM-171	-8.649E-02	2.314E+01	4.374E+01	NOT IDENT.
HF-172	3.693E-02	2.206E-01	3.758E-01	FAIL ABUN
LU-172	-5.885E-02	7.485E-02	1.279E-01	FAIL ABUN
LU-176	1.318E-02	2.980E-02	5.933E-02	FAIL ABUN
HF-181	3.626E-02	5.817E-02	1.212E-01	NOT IDENT.
TA-182	1.759E-02	1.738E-01	3.633E-01	FAIL ABUN
RE-183	-2.376E-01	2.739E-01	4.843E-01	NOT IDENT.
RE-184	-8.900E-02	2.122E-01	3.954E-01	NOT IDENT.
W-188	6.464E-01	1.001E+01	1.757E+01	FAIL ABUN
IR-192	-3.839E-02	4.349E-02	7.652E-02	FAIL ABUN
HG-203	4.738E-03	5.543E-02	1.074E-01	NOT IDENT.
TL-204	6.604E-01	6.003E+00	1.037E+01	FAIL ABUN
BI-207	5.092E-03	5.622E-02	1.139E-01	FAIL ABUN
BI-210	-1.477E-01	4.735E+00	9.141E+00	NOT IDENT.
PB-210	-1.477E-01	4.735E+00	9.141E+00	NOT IDENT.
PB-211	8.322E-01	9.745E-01	1.524E+00	FAIL ABUN
BI-213	-9.513E-02	1.114E-01	1.901E-01	NOT IDENT.
RA-223	2.100E-01	6.743E-01	1.335E+00	FAIL ABUN
AC-225	-4.687E-01	2.692E+00	4.638E+00	NOT IDENT.
AC-227	1.329E-01	3.311E-01	5.963E-01	FAIL ABUN
TH-227	1.329E-01	3.311E-01	5.963E-01	FAIL ABUN
TH-231	2.100E-01	6.743E-01	1.335E+00	FAIL ABUN
PA-233	-1.228E-03	6.816E-02	1.312E-01	FAIL ABUN
PA-234	3.136E-02	2.777E-01	5.802E-01	NOT IDENT.
PA-234M	3.152E+00	5.164E+00	1.111E+01	NOT IDENT.
NP-237	-1.228E-03	6.816E-02	1.312E-01	FAIL ABUN
NP-238	0.000E+00	1.078E+04	0.000E+00	SHORT HLIF
NP-239	1.991E-01	2.827E-01	5.425E-01	FAIL ABUN
PU-239	4.343E+02	5.793E+02	7.508E+02	FAIL ABUN
AM-241	8.576E-02	1.902E-01	3.430E-01	NOT IDENT.
CM-243	0.000E+00	1.938E-01	1.862E-01	FAIL ABUN
BK-247	-1.421E-02	8.883E-02	1.529E-01	NOT IDENT.
CF-249	-9.822E-03	5.799E-02	9.599E-02	NOT IDENT.
CF-251	-7.125E-02	1.590E-01	2.704E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:13:45.52

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	59	10.66*	1.051E+00	3.351E+00	3.351E+00	32.60
GE-68	1077.34	5	3.22*	1.392E+00	7.187E-01	7.842E-01	217.28
RB-86	1077.00	5	8.64*	1.392E+00	2.678E-01	9.523E-01	217.28
SN-113	391.69	15	64.94*	3.344E+00	4.289E-02	5.267E-02	157.43
SN-126	64.28	60	9.60	3.164E+00	1.256E+00	1.256E+00	93.13
	86.94	218	8.90	5.751E+00	2.685E+00	2.685E+00	36.40
	87.57	218	37.00*	5.751E+00	6.458E-01	6.458E-01	36.40
BA-137M	661.66	13	89.90*	2.211E+00	4.041E-02	4.050E-02	80.74
CS-137	661.66	13	85.10*	2.211E+00	4.269E-02	4.278E-02	80.74
CE-141	145.44	31	48.29*	6.345E+00	6.488E-02	1.343E-01	138.88
PR-144	696.51	18	1.34*	2.111E+00	3.935E+00	4.275E+00	104.54
	1489.16	------	0.28	1.035E+00	------	Line Not Found	------
EU-155	86.55	218	30.70	5.751E+00	7.783E-01	7.890E-01	36.40
	105.31	46	21.10*	6.537E+00	2.088E-01	2.116E-01	93.62
TL-208	277.37	------	6.60	4.276E+00	------	Line Not Found	------
	583.19	58	85.00*	2.464E+00	1.746E-01	1.746E-01	55.46
	860.56	------	12.50	1.735E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.457E+00	------	Line Not Found	------
	351.06	715	12.92*	3.617E+00	9.665E+00	9.665E+00	9.59
BI-212	727.33	20	6.67*	2.034E+00	9.294E-01	9.294E-01	96.93
	1620.50	------	1.47	9.748E-01	------	Line Not Found	------
PB-212	74.82	176	10.28	4.708E+00	2.299E+00	2.299E+00	30.11
	77.11	363	17.10	4.951E+00	2.707E+00	2.707E+00	16.48
	238.63	167	43.60*	4.741E+00	5.110E-01	5.110E-01	27.17
	300.09	14	3.30	4.040E+00	6.575E-01	6.575E-01	202.74
BI-214	609.32	523	45.49*	2.377E+00	3.055E+00	3.055E+00	9.89
	1120.29	107	14.92	1.338E+00	3.390E+00	3.390E+00	22.56
	1764.49	70	15.30	9.298E-01	3.088E+00	3.088E+00	28.84
PB-214	74.82	176	5.80	4.708E+00	4.075E+00	4.075E+00	30.11
	77.11	363	9.70	4.951E+00	4.773E+00	4.773E+00	16.48
	87.09	218	3.41	5.751E+00	7.007E+00	7.008E+00	36.40
	242.00	208	7.25	4.696E+00	3.856E+00	3.857E+00	22.88
	295.22	452	18.42	4.093E+00	3.791E+00	3.791E+00	11.48
	351.93	715	35.60*	3.617E+00	3.508E+00	3.508E+00	9.59
RN-219	271.23	29	10.80	4.340E+00	3.971E-01	3.971E-01	102.12
	401.81	19	6.60*	3.290E+00	5.592E-01	5.592E-01	130.34
RN-222	609.32	523	45.49*	2.377E+00	3.055E+00	3.055E+00	9.89
	1120.29	107	14.92	1.338E+00	3.390E+00	3.390E+00	22.56
	1764.49	70	15.30	9.298E-01	3.088E+00	3.088E+00	28.84
RA-224	240.99	208	4.10*	4.696E+00	6.819E+00	6.819E+00	22.88
RA-226	74.82	176	5.80	4.708E+00	4.075E+00	4.075E+00	30.11
	77.11	363	9.70	4.951E+00	4.773E+00	4.773E+00	16.48
	87.09	218	3.41	5.751E+00	7.007E+00	7.008E+00	36.40
	242.00	208	7.25	4.696E+00	3.856E+00	3.857E+00	22.88
	295.22	452	18.42	4.093E+00	3.791E+00	3.791E+00	11.48
	351.93	715	35.60*	3.617E+00	3.508E+00	3.508E+00	9.59
AC-228	105.21	46	1.10	6.537E+00	4.005E+00	4.005E+00	93.62

Sample ID : G674299001 Acquisition date : 30-JUL-2024 11:13:06

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	338.32	33	11.27	3.721E+00	4.907E-01	4.907E-01	85.05
	835.71	------	1.61	1.784E+00	------	Line Not Found	------
	911.20	31	25.80*	1.641E+00	4.646E-01	4.646E-01	65.34
	968.97	13	15.80	1.543E+00	3.246E-01	3.246E-01	170.62
RA-228	105.21	46	1.10	6.537E+00	4.005E+00	4.005E+00	93.62
	338.32	33	11.27	3.721E+00	4.907E-01	4.907E-01	85.05
	835.71	------	1.61	1.784E+00	------	Line Not Found	------
	911.20	31	25.80*	1.641E+00	4.646E-01	4.646E-01	65.34
	968.97	13	15.80	1.543E+00	3.246E-01	3.246E-01	170.62
TH-228	74.82	176	10.28	4.708E+00	2.299E+00	2.299E+00	30.11
	77.11	363	17.10	4.951E+00	2.707E+00	2.707E+00	16.48
	238.63	167	43.60*	4.741E+00	5.110E-01	5.110E-01	27.17
	300.09	14	3.30	4.040E+00	6.575E-01	6.575E-01	202.74
TH-229	85.43	218	14.70	5.751E+00	1.625E+00	1.626E+00	36.40
	88.47	91	24.00	5.991E+00	3.977E-01	3.977E-01	38.34
	193.51	------	4.41*	5.442E+00	------	Line Not Found	------
	210.85	------	2.80	5.151E+00	------	Line Not Found	------
TH-230	74.82	176	5.80	4.708E+00	4.075E+00	4.075E+00	30.11
	77.11	363	9.70	4.951E+00	4.773E+00	4.773E+00	16.48
	87.09	218	3.41	5.751E+00	7.007E+00	7.007E+00	36.40
	242.00	208	7.25	4.696E+00	3.856E+00	3.856E+00	22.88
	295.22	452	18.42	4.093E+00	3.791E+00	3.791E+00	11.48
	351.93	715	35.60*	3.617E+00	3.508E+00	3.508E+00	9.59
PA-231	283.69	------	1.70	4.209E+00	------	Line Not Found	------
	301.36	14	5.35*	4.040E+00	4.056E-01	4.056E-01	202.74
TH-232	105.21	46	1.10	6.537E+00	4.005E+00	4.005E+00	93.62
	338.32	33	11.27	3.721E+00	4.907E-01	4.907E-01	85.05
	835.71	------	1.61	1.784E+00	------	Line Not Found	------
	911.20	31	25.80*	1.641E+00	4.646E-01	4.646E-01	65.34
	968.97	13	15.80	1.543E+00	3.246E-01	3.246E-01	170.62
TH-234	63.29	60	3.70*	3.164E+00	3.258E+00	3.258E+00	93.13
	92.59	209	4.23	6.135E+00	5.081E+00	5.081E+00	28.35
U-234	74.82	176	5.80	4.708E+00	4.075E+00	4.075E+00	30.11
	77.11	363	9.70	4.951E+00	4.773E+00	4.773E+00	16.48
	87.09	218	3.41	5.751E+00	7.007E+00	7.007E+00	36.40
	242.00	208	7.25	4.696E+00	3.856E+00	3.856E+00	22.88
	295.22	452	18.42	4.093E+00	3.791E+00	3.791E+00	11.48
	351.93	715	35.60*	3.617E+00	3.508E+00	3.508E+00	9.59
U-235	89.96	91	3.47	5.991E+00	2.751E+00	2.751E+00	38.34
	93.35	209	5.60	6.135E+00	3.838E+00	3.838E+00	28.35
	143.76	31	10.96*	6.345E+00	2.858E-01	2.858E-01	138.88
	163.33	------	5.08	6.002E+00	------	Line Not Found	------
	185.72	148	57.20	5.572E+00	2.939E-01	2.939E-01	47.22
	205.31	------	5.01	5.241E+00	------	Line Not Found	------
U-238	63.29	60	3.70*	3.164E+00	3.258E+00	3.258E+00	93.13
	92.59	209	4.23	6.135E+00	5.081E+00	5.081E+00	28.35
AM-243	43.53	------	5.90	4.826E-01	------	Line Not Found	------
	74.66	176	67.20*	4.708E+00	3.517E-01	3.517E-01	30.11
CM-247	278.00	------	3.40	4.269E+00	------	Line Not Found	------

Sample ID : G674299001 Acquisition date : 30-JUL-2024 11:13:06

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	287.50	------	2.00	4.171E+00	------	Line Not Found	------
	402.40	19	72.00*	3.290E+00	5.126E-02	5.126E-02	130.34
ANH-511	511.00	20	100.00*	2.741E+00	4.527E-02	4.527E-02	213.04

Flag: "*" = Keyline

Sample ID : G674299001 Acquisition date : 30-JUL-2024 11:13:06

Total number of lines in spectrum	57	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	44	77.19%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.351E+00	3.351E+00	1.092E+00	32.60	
GE-68	270.95D	1.09	7.187E-01	7.842E-01	17.04E-01	217.28	
RB-86	18.64D	3.56	2.678E-01	9.523E-01	20.69E-01	217.28	
SN-113	115.09D	1.23	4.289E-02	5.267E-02	8.291E-02	157.43	
SN-126	2.30E+05Y	1.00	6.458E-01	6.458E-01	2.350E-01	36.40	
BA-137M	30.08Y	1.00	4.041E-02	4.050E-02	3.270E-02	80.74	
CS-137	30.08Y	1.00	4.269E-02	4.278E-02	3.454E-02	80.74	
CE-141	32.51D	2.07	6.488E-02	1.343E-01	1.865E-01	138.88	
PR-144	284.91D	1.09	3.935E+00	4.275E+00	4.469E+00	104.54	
EU-155	4.75Y	1.01	2.088E-01	2.116E-01	1.981E-01	93.62	
TL-208	1.41E+10Y	1.00	1.746E-01	1.746E-01	0.968E-01	55.46	
BI-211	7.04E+08Y	1.00	9.665E+00	9.665E+00	0.927E+00	9.59	
BI-212	1.41E+10Y	1.00	9.294E-01	9.294E-01	9.009E-01	96.93	
PB-212	1.41E+10Y	1.00	5.110E-01	5.110E-01	1.389E-01	27.17	
BI-214	1600.00Y	1.00	3.055E+00	3.055E+00	0.302E+00	9.89	
PB-214	1600.00Y	1.00	3.508E+00	3.508E+00	0.336E+00	9.59	
RN-219	7.04E+08Y	1.00	5.592E-01	5.592E-01	7.289E-01	130.34	
RN-222	1600.00Y	1.00	3.055E+00	3.055E+00	0.302E+00	9.89	
RA-224	1.41E+10Y	1.00	6.819E+00	6.819E+00	1.560E+00	22.88	
RA-226	1600.00Y	1.00	3.508E+00	3.508E+00	0.336E+00	9.59	
AC-228	1.41E+10Y	1.00	4.646E-01	4.646E-01	3.036E-01	65.34	
RA-228	1.41E+10Y	1.00	4.646E-01	4.646E-01	3.036E-01	65.34	
TH-228	1.41E+10Y	1.00	5.110E-01	5.110E-01	1.389E-01	27.17	
TH-229	7340.00Y	1.00	3.977E-01	3.977E-01	1.525E-01	38.34	K
TH-230	7.54E+04Y	1.00	3.508E+00	3.508E+00	0.336E+00	9.59	
PA-231	7.04E+08Y	1.00	4.056E-01	4.056E-01	8.223E-01	202.74	
TH-232	1.41E+10Y	1.00	4.646E-01	4.646E-01	3.036E-01	65.34	
TH-234	4.47E+09Y	1.00	3.258E+00	3.258E+00	3.034E+00	93.13	
U-234	2.45E+05Y	1.00	3.508E+00	3.508E+00	0.336E+00	9.59	
U-235	7.04E+08Y	1.00	2.858E-01	2.858E-01	3.970E-01	138.88	
U-238	4.47E+09Y	1.00	3.258E+00	3.258E+00	3.034E+00	93.13	
AM-243	7370.00Y	1.00	3.517E-01	3.517E-01	1.059E-01	30.11	
CM-247	1.56E+07Y	1.00	5.126E-02	5.126E-02	6.681E-02	130.34	
ANH-511	1.00E+09Y	1.00	4.527E-02	4.527E-02	9.644E-02	213.04	
			---	---			
	Total Activity :		5.807E+01	5.925E+01			

Grand Total Activity : 5.807E+01 5.925E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299001 Acquisition date : 30-JUL-2024 11:13:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	79.17	58	132	1.07	159.19	145	21	1.48E-02	84.5	5.16E+00	T
0	128.64	29	120	1.75	258.09	256	7	7.44E-03	****	6.57E+00	T
0	195.04	27	58	1.46	390.85	389	5	7.13E-03	94.8	5.42E+00	
0	202.29	24	89	0.82	405.35	402	7	6.35E-03	****	5.29E+00	T
1	269.27	38	58	1.38	539.25	532	16	1.03E-02	76.7	4.36E+00	T
1	404.80	16	32	1.54	810.23	798	16	4.49E-03	****	3.27E+00	T
0	411.24	27	49	0.60	823.10	816	13	7.35E-03	****	3.23E+00	T
0	602.62	11	22	3.26	1205.75	1197	10	3.16E-03	****	2.40E+00	T
0	668.13	39	19	4.05	1336.75	1329	18	1.11E-02	59.2	2.19E+00	T
1	768.61	45	8	1.78	1537.66	1530	20	1.28E-02	41.2	1.93E+00	
1	772.35	16	12	1.86	1545.14	1530	20	4.51E-03	70.0	1.92E+00	T
0	786.26	20	22	1.09	1572.96	1567	13	5.82E-03	****	1.89E+00	
0	795.39	11	8	0.93	1591.20	1588	6	3.10E-03	****	1.87E+00	T
0	934.96	34	15	1.47	1870.29	1862	16	9.64E-03	61.5	1.60E+00	T
0	972.32	7	7	1.41	1945.00	1942	7	1.94E-03	****	1.54E+00	
0	1050.61	9	7	0.89	2101.56	2095	10	2.74E-03	****	1.42E+00	T
0	1196.06	7	3	0.85	2392.42	2389	6	2.00E-03	****	1.26E+00	
0	1202.54	12	0	1.00	2405.38	2400	10	3.61E-03	55.5	1.25E+00	
0	1207.08	9	2	0.89	2414.46	2411	7	2.55E-03	81.7	1.24E+00	
0	1238.44	32	10	1.96	2477.18	2472	12	9.22E-03	53.9	1.21E+00	T
0	1281.48	18	5	0.92	2563.24	2558	10	5.28E-03	63.6	1.18E+00	
0	1378.67	18	15	2.51	2757.60	2749	12	5.18E-03	95.3	1.10E+00	
0	1407.54	22	3	0.77	2815.35	2809	13	6.58E-03	51.7	1.08E+00	T
0	1495.21	5	9	0.65	2990.68	2984	8	1.38E-03	****	1.03E+00	
0	1511.62	6	10	2.18	3023.50	3015	10	1.62E-03	****	1.02E+00	
0	1730.09	24	5	1.88	3460.43	3454	12	7.03E-03	55.4	9.39E-01	
0	1849.19	8	9	2.34	3698.63	3689	12	2.49E-03	****	9.12E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:13:57.70

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299001.CNF;1  *
* Acquisition date : 30-JUL-2024 11:13:06 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.59     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:03:00 Nuclide Library : SOLID           *
* Sample ID        : G674299001           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1884E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.782E-01
GE-68	1.164E+00
RB-86	1.413E+00
SN-113	4.567E-02
SN-126	6.602E-02
BA-137M	1.638E-02
CS-137	1.730E-02
PR-144	2.615E+00
EU-155	8.316E-02
TL-208	3.448E-02
BI-211	2.335E-01
BI-212	4.584E-01
PB-212	6.142E-02
BI-214	5.430E-02
PB-214	8.490E-02
RN-219	3.966E-01
RN-222	5.430E-02
RA-224	6.583E-01
RA-226	8.490E-02
AC-228	1.315E-01
RA-228	1.315E-01
TH-228	6.142E-02
TH-229	4.772E-01
TH-230	8.490E-02
PA-231	4.664E-01
TH-232	1.315E-01
TH-234	1.238E+00
U-234	8.490E-02
U-235	1.925E-01
U-238	1.238E+00
AM-243	5.070E-02
CM-247	3.640E-02
ANH-511	2.751E-02

---- Non-Identified Nuclides ----

Lc

Nuclide	(pCi/GRAM)	
BE-7	3.873E-01	NOT IDENT.
NA-22	4.587E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.253E-02	NOT IDENT.
SC-46	3.707E-02	FAIL ABUN
V-48	1.667E-01	NOT IDENT.
CR-51	5.699E-01	NOT IDENT.
MN-52	3.271E+00	FAIL ABUN
MN-54	3.541E-02	NOT IDENT.
CO-56	3.760E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.331E-02	NOT IDENT.
CO-58	3.542E-02	NOT IDENT.
FE-59	8.698E-02	NOT IDENT.
CO-60	3.603E-02	NOT IDENT.
ZN-65	9.022E-02	NOT IDENT.
AS-73	1.160E+00	NOT IDENT.
AS-74	1.923E-01	NOT IDENT.
SE-75	4.372E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	4.681E-01	NOT IDENT.
RB-83	7.880E-02	NOT IDENT.
RB-84	7.365E-02	NOT IDENT.
KR-85	6.493E+00	NOT IDENT.
SR-85	4.199E-02	NOT IDENT.
Y-88	1.635E-02	NOT IDENT.
Y-91	1.991E+01	NOT IDENT.
NB-94	2.874E-02	NOT IDENT.
NB-95	4.526E-02	NOT IDENT.
NB-95M	1.636E-01	NOT IDENT.
ZR-95	7.505E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.981E-02	FAIL ABUN
RH-102	3.921E-02	FAIL ABUN
RU-103	4.965E-02	FAIL ABUN
RH-106	3.015E-01	FAIL ABUN
RU-106	3.015E-01	FAIL ABUN
AG-108M	2.857E-02	NOT IDENT.
CD-109	1.003E+00	NOT IDENT.
AG-110	6.519E-01	NOT IDENT.
AG-110M	4.348E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.383E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.099E-02	NOT IDENT.
SB-124	1.080E-01	NOT IDENT.
SB-125	8.591E-02	NOT IDENT.
TE-125M	1.045E+01	NOT IDENT.
I-126	6.112E-01	NOT IDENT.
SB-126	2.908E-01	FAIL ABUN
SB-127	3.786E+01	NOT IDENT.
I-131	5.909E-01	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.479E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	3.936E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.419E-01	NOT IDENT.
LA-138	7.603E-02	NOT IDENT.
CE-139	3.263E-02	NOT IDENT.
BA-140	7.040E-01	NOT IDENT.
LA-140	3.088E-01	NOT IDENT.
CE-141	9.643E-02	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	2.190E-01	FAIL ABUN
PM-144	3.574E-02	FAIL ABUN
PM-146	4.184E-02	NOT IDENT.
ND-147	1.793E+00	FAIL ABUN
PM-147	6.611E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.598E-02	FAIL ABUN
EU-152	9.307E-02	FAIL ABUN

GD-153	8.197E-02	NOT IDENT.
EU-154	1.287E-01	NOT IDENT.
TB-160	1.391E-01	FAIL ABUN
HO-166M	5.356E-02	FAIL ABUN
TM-171	2.057E+01	NOT IDENT.
HF-172	1.758E-01	FAIL ABUN
LU-172	5.371E-02	FAIL ABUN
LU-176	2.735E-02	FAIL ABUN
HF-181	5.412E-02	NOT IDENT.
TA-182	1.501E-01	FAIL ABUN
RE-183	2.266E-01	NOT IDENT.
RE-184	1.712E-01	NOT IDENT.
W-188	8.058E+00	FAIL ABUN
IR-192	3.457E-02	FAIL ABUN
HG-203	4.956E-02	NOT IDENT.
TL-204	4.918E+00	FAIL ABUN
BI-207	4.881E-02	FAIL ABUN
BI-210	4.299E+00	NOT IDENT.
PB-210	4.299E+00	NOT IDENT.
PB-211	6.926E-01	FAIL ABUN
BI-213	8.427E-02	NOT IDENT.
RA-223	6.110E-01	FAIL ABUN
AC-225	2.159E+00	NOT IDENT.
AC-227	2.781E-01	FAIL ABUN
TH-227	2.781E-01	FAIL ABUN
TH-231	6.110E-01	FAIL ABUN
PA-233	5.992E-02	FAIL ABUN
PA-234	2.450E-01	NOT IDENT.
PA-234M	4.874E+00	NOT IDENT.
NP-237	5.992E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.547E-01	FAIL ABUN
PU-239	3.544E+02	FAIL ABUN
AM-241	1.619E-01	NOT IDENT.
CM-243	8.667E-02	FAIL ABUN
BK-247	6.992E-02	NOT IDENT.
CF-249	4.413E-02	NOT IDENT.
CF-251	1.264E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:14:02.01

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299001.CNF;1  *
* Acquisition date : 30-JUL-2024 11:13:06 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.59     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:03:00 Nuclide Library : SOLID           *
* Sample ID        : G674299001           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1884E+02 GRAM *
*                                         Quantity Err(%) : 1.6829E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	3.351E+00	1.140E+00	1.140E+00
GE-68	7.842E-01	1.672E+00	1.672E+00
RB-86	9.523E-01	2.030E+00	2.030E+00
SN-113	5.267E-02	8.137E-02	8.137E-02
SN-126	6.458E-01	2.380E-01	2.380E-01
BA-137M	4.050E-02	3.221E-02	3.221E-02
CS-137	4.278E-02	3.403E-02	3.403E-02
PR-144	4.275E+00	4.395E+00	4.395E+00
EU-155	2.116E-01	1.952E-01	1.952E-01
TL-208	1.746E-01	9.600E-02	9.600E-02
BI-211	9.665E+00	1.251E+00	1.251E+00
BI-212	9.294E-01	8.872E-01	8.872E-01
PB-212	5.110E-01	1.436E-01	1.436E-01
BI-214	3.055E+00	3.899E-01	3.899E-01
PB-214	3.508E+00	4.504E-01	4.504E-01
RN-219	5.592E-01	7.188E-01	7.188E-01
RN-222	3.055E+00	3.899E-01	3.899E-01
RA-224	6.819E+00	1.650E+00	1.650E+00
RA-226	3.508E+00	4.504E-01	4.504E-01
AC-228	4.646E-01	3.028E-01	3.028E-01
RA-228	4.646E-01	3.028E-01	3.028E-01
TH-228	5.110E-01	1.436E-01	1.436E-01
TH-229	-5.603E-02	6.364E-01	6.364E-01
TH-230	3.508E+00	4.504E-01	4.504E-01
PA-231	4.056E-01	8.111E-01	8.111E-01
TH-232	4.646E-01	3.028E-01	3.028E-01
TH-234	3.258E+00	3.072E+00	3.072E+00
U-234	3.508E+00	4.504E-01	4.504E-01
U-235	2.858E-01	3.897E-01	3.897E-01
U-238	3.258E+00	3.072E+00	3.072E+00
AM-243	3.517E-01	1.087E-01	1.087E-01
CM-247	5.126E-02	6.614E-02	6.614E-02
ANH-511	4.527E-02	9.459E-02	9.459E-02

---- Non-Identified Nuclides ----

Key-Line

Nuclide	Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.238E-01	4.707E-01	4.740E-01	NOT IDENT.
NA-22	4.925E-02	4.452E-02	4.975E-02	NOT IDENT.
NA-24	4.636E+14	1.010E+15	1.031E+15	SHORT HLIF
AL-26	-1.104E-02	3.091E-02	3.131E-02	NOT IDENT.
SC-46	-1.113E-02	4.491E-02	4.519E-02	FAIL ABUN
V-48	1.468E-01	1.687E-01	1.812E-01	NOT IDENT.
CR-51	2.186E-01	6.262E-01	6.339E-01	NOT IDENT.
MN-52	6.615E-01	3.807E+00	3.818E+00	FAIL ABUN
MN-54	-1.467E-02	4.643E-02	4.690E-02	NOT IDENT.
CO-56	-2.027E-02	5.098E-02	5.179E-02	FAIL ABUN
MN-56	-1.000E+41	2.515E+41	0.000E+00	SHORT HLIF
CO-57	-1.109E-02	2.844E-02	2.888E-02	NOT IDENT.
CO-58	-5.184E-02	5.500E-02	5.976E-02	NOT IDENT.
FE-59	-3.229E-02	1.100E-01	1.110E-01	NOT IDENT.
CO-60	-1.836E-02	4.653E-02	4.726E-02	NOT IDENT.
ZN-65	6.298E-03	1.191E-01	1.192E-01	NOT IDENT.
AS-73	5.755E-01	1.273E+00	1.299E+00	NOT IDENT.
AS-74	-1.549E-02	2.605E-01	2.606E-01	NOT IDENT.
SE-75	-6.796E-03	5.526E-02	5.535E-02	FAIL ABUN
BR-77	2.018E+04	2.065E+04	2.257E+04	SHORT HLIF
SR-82	-3.285E-02	6.536E-01	6.538E-01	NOT IDENT.
RB-83	7.617E-02	8.249E-02	8.935E-02	NOT IDENT.
RB-84	-8.699E-02	9.937E-02	1.068E-01	NOT IDENT.
KR-85	6.241E+00	7.376E+00	7.894E+00	NOT IDENT.
SR-85	4.027E-02	4.771E-02	5.104E-02	NOT IDENT.
Y-88	-3.789E-02	3.565E-02	3.953E-02	NOT IDENT.
Y-91	2.511E+01	1.693E+01	2.037E+01	NOT IDENT.
NB-94	2.030E-02	3.389E-02	3.511E-02	NOT IDENT.
NB-95	3.957E-02	5.172E-02	5.471E-02	NOT IDENT.
NB-95M	-1.899E-02	2.214E-01	2.216E-01	NOT IDENT.
ZR-95	-3.342E-02	9.819E-02	9.934E-02	NOT IDENT.
NB-97	-1.000E+41	1.626E+41	0.000E+00	SHORT HLIF
ZR-97	-7.598E+13	3.107E+14	3.125E+14	SHORT HLIF
MO-99	8.541E+02	1.515E+03	1.563E+03	SHORT HLIF
TC-99M	-1.290E+39	2.579E+39	0.000E+00	SHORT HLIF
RH-101	4.110E-02	5.536E-02	5.838E-02	FAIL ABUN
RH-102	-1.227E-02	4.968E-02	4.999E-02	FAIL ABUN
RU-103	-3.907E-03	5.900E-02	5.903E-02	FAIL ABUN
RH-106	-7.247E-02	3.733E-01	3.747E-01	FAIL ABUN
RU-106	-7.247E-02	3.733E-01	3.747E-01	FAIL ABUN
AG-108M	-6.927E-03	3.410E-02	3.425E-02	NOT IDENT.
CD-109	2.951E+00	1.194E+00	1.787E+00	NOT IDENT.
AG-110	3.148E-01	7.577E-01	7.708E-01	NOT IDENT.
AG-110M	1.643E-02	4.690E-02	4.748E-02	NOT IDENT.
CD-115	-1.276E+03	4.985E+03	5.018E+03	SHORT HLIF
SN-117M	-9.777E-02	1.742E-01	1.797E-01	NOT IDENT.
SB-122	-6.021E+01	2.761E+02	2.774E+02	SHORT HLIF
TE-123M	1.827E-03	3.697E-02	3.698E-02	NOT IDENT.
SB-124	8.239E-02	1.020E-01	1.086E-01	NOT IDENT.
SB-125	2.938E-02	9.614E-02	9.705E-02	NOT IDENT.
TE-125M	1.005E+00	1.214E+01	1.215E+01	NOT IDENT.
I-126	5.522E-01	7.082E-01	7.506E-01	NOT IDENT.
SB-126	1.207E-02	3.506E-01	3.507E-01	FAIL ABUN
SB-127	5.695E+00	4.484E+01	4.492E+01	NOT IDENT.
I-131	6.792E-02	6.713E-01	6.720E-01	FAIL ABUN
I-132	1.000E+41	2.183E+41	0.000E+00	SHORT HLIF
TE-132	6.926E+00	5.276E+01	5.286E+01	SHORT HLIF
BA-133	6.847E-03	5.622E-02	5.630E-02	NOT IDENT.
I-133	1.392E+10	2.617E+10	2.691E+10	SHORT HLIF
CS-134	4.437E-02	4.466E-02	4.893E-02	FAIL ABUN
I-135	1.260E+36	3.997E+36	0.000E+00	SHORT HLIF
CS-136	-1.241E-01	3.568E-01	3.611E-01	NOT IDENT.
LA-138	8.099E-02	7.460E-02	8.306E-02	NOT IDENT.
CE-139	2.050E-02	3.763E-02	3.875E-02	NOT IDENT.
BA-140	2.930E-01	7.902E-01	8.012E-01	NOT IDENT.
LA-140	-4.960E-02	3.880E-01	3.886E-01	NOT IDENT.
CE-141	1.343E-01	1.830E-01	1.927E-01	FAIL ABUN
CE-143	2.889E+06	2.225E+06	2.578E+06	SHORT HLIF
CE-144	2.871E-01	2.378E-01	2.708E-01	FAIL ABUN
PM-144	5.656E-02	5.815E-02	6.350E-02	FAIL ABUN
PM-146	2.748E-02	4.542E-02	4.708E-02	NOT IDENT.
ND-147	2.838E-01	2.081E+00	2.085E+00	FAIL ABUN
PM-147	-6.855E+01	7.843E+02	7.849E+02	NOT IDENT.
PM-149	2.448E+04	3.932E+04	4.084E+04	SHORT HLIF
EU-150	-3.246E-03	3.339E-02	3.342E-02	FAIL ABUN

EU-152	-5.597E-02	1.123E-01	1.151E-01	FAIL ABUN
GD-153	2.279E-02	9.348E-02	9.404E-02	NOT IDENT.
EU-154	1.382E-01	1.249E-01	1.396E-01	NOT IDENT.
TB-160	-4.074E-03	1.610E-01	1.610E-01	FAIL ABUN
HO-166M	4.359E-02	5.664E-02	5.995E-02	FAIL ABUN
TM-171	-8.649E-02	2.314E+01	2.314E+01	NOT IDENT.
HF-172	3.693E-02	2.207E-01	2.213E-01	FAIL ABUN
LU-172	-5.885E-02	7.526E-02	7.980E-02	FAIL ABUN
LU-176	1.318E-02	2.982E-02	3.041E-02	FAIL ABUN
HF-181	3.626E-02	5.825E-02	6.050E-02	NOT IDENT.
TA-182	1.759E-02	1.738E-01	1.739E-01	FAIL ABUN
RE-183	-2.376E-01	2.759E-01	2.960E-01	NOT IDENT.
RE-184	-8.900E-02	2.126E-01	2.163E-01	NOT IDENT.
W-188	6.464E-01	1.002E+01	1.002E+01	FAIL ABUN
IR-192	-3.839E-02	4.363E-02	4.694E-02	FAIL ABUN
HG-203	4.738E-03	5.543E-02	5.547E-02	NOT IDENT.
TL-204	6.604E-01	6.003E+00	6.010E+00	FAIL ABUN
BI-207	5.092E-03	5.622E-02	5.627E-02	FAIL ABUN
BI-210	-1.477E-01	4.735E+00	4.736E+00	NOT IDENT.
PB-210	-1.477E-01	4.735E+00	4.736E+00	NOT IDENT.
PB-211	8.322E-01	9.772E-01	1.047E+00	FAIL ABUN
BI-213	-9.513E-02	1.117E-01	1.196E-01	NOT IDENT.
RA-223	2.100E-01	6.746E-01	6.812E-01	FAIL ABUN
AC-225	-4.687E-01	2.693E+00	2.701E+00	NOT IDENT.
AC-227	1.329E-01	3.318E-01	3.371E-01	FAIL ABUN
TH-227	1.329E-01	3.318E-01	3.371E-01	FAIL ABUN
TH-231	2.100E-01	6.746E-01	6.812E-01	FAIL ABUN
PA-233	-1.228E-03	6.816E-02	6.816E-02	FAIL ABUN
PA-234	3.136E-02	2.800E-01	2.804E-01	NOT IDENT.
PA-234M	3.152E+00	5.176E+00	5.367E+00	NOT IDENT.
NP-237	-1.228E-03	6.816E-02	6.816E-02	FAIL ABUN
NP-238	-3.911E+03	1.079E+04	1.093E+04	SHORT HLIF
NP-239	1.991E-01	2.834E-01	2.973E-01	FAIL ABUN
PU-239	4.343E+02	5.802E+02	6.124E+02	FAIL ABUN
AM-241	8.576E-02	1.904E-01	1.943E-01	NOT IDENT.
CM-243	2.112E-01	1.952E-01	2.172E-01	FAIL ABUN
BK-247	-1.421E-02	8.888E-02	8.911E-02	NOT IDENT.
CF-249	-9.822E-03	5.800E-02	5.817E-02	NOT IDENT.
CF-251	-7.125E-02	1.593E-01	1.625E-01	NOT IDENT.

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*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	76.9690	85.43	88.6844	131.20	88.4161
45.60	74.8106	86.55	88.8911	133.02	82.5880
46.54	73.2455	86.79	88.9350	133.52	63.3303
49.72	0.0000	86.94	88.9625	136.00	91.5836
51.35	87.9137	87.09	88.9906	136.47	85.1791
51.87	75.3394	87.57	89.0785	140.51	0.0000
52.39	78.1803	88.03	91.1437	143.76	79.5664
52.97	74.6688	88.34	91.2019	144.24	79.6210
53.44	74.7692	88.47	91.2258	145.44	71.3836
54.07	78.5572	89.96	79.5667	152.43	101.5220
57.36	0.0000	1093.63	79.6759	153.25	62.9717
57.53	88.5388	91.11	79.7510	323.87	81.8611
57.98	92.3401	92.59	79.9860	156.02	94.2657
59.27	83.3945	93.35	80.1062	158.56	86.8038
59.32	83.4058	94.56	81.6343	159.00	73.4927
59.54	82.8364	94.65	81.6486	162.33	71.5859
60.96	103.0036	94.67	81.6517	162.66	62.6650
61.17	103.0602	94.87	68.2931	163.33	71.6807
62.93	88.8741	97.43	75.6958	165.86	62.9308
63.29	88.9561	98.43	66.7392	176.31	61.5048
63.58	89.0219	98.44	66.7407	176.60	66.0846
64.28	89.1801	99.53	80.0511	177.52	80.9898
66.73	102.0064	100.11	73.0377	181.07	0.0000
67.24	89.5250	102.03	65.1548	181.52	87.1259
125.81	93.7242	103.18	54.4108	184.41	87.4343
67.75	93.7400	103.37	56.1309	143.76	89.8781
68.89	100.6463	105.21	56.3193	193.51	60.4789
69.67	113.2022	105.31	56.3298	197.03	71.6279
70.82	108.1064	106.12	58.8052	198.01	59.2382
70.83	108.1099	106.47	54.7371	201.83	66.9360
72.81	109.8918	109.28	64.9827	203.43	54.9011
72.87	109.9067	111.00	93.1133	205.31	59.7337
74.66	110.3616	111.76	0.0000	210.85	88.9698
74.82	110.4018	114.06	87.3665	215.65	73.9362
74.97	110.4403	116.30	0.0000	218.12	64.5683
77.11	110.9757	116.74	62.6894	222.11	48.0334
78.74	111.3782	119.76	63.0066	227.09	63.9791
79.69	111.6117	121.12	67.3579	227.38	59.1685
80.03	111.6931	121.22	67.3691	228.16	0.0000
80.12	111.7167	121.78	73.7528	228.18	61.6349
80.19	111.7333	122.06	73.7865	116.74	61.6349
80.57	111.8261	122.92	64.3899	235.69	82.8190
81.00	111.9302	123.07	64.4057	235.96	82.8408
81.07	111.9477	265.00	65.5264	238.63	72.0719
81.75	70.3960	125.81	66.4581	238.98	0.0000
82.47	70.5053	127.23	65.1912	240.99	72.2430
83.79	88.3788	127.91	76.6118	242.00	72.3159
84.00	88.4180	129.30	79.9782	244.70	40.9663

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	45.8164	344.28	45.5536	563.25	22.5416
252.80	47.0727	345.93	43.8231	564.24	0.0000
254.15	0.0000	351.06	53.8696	569.33	31.8628
256.23	54.6855	351.93	53.9050	946.00	30.8386
260.90	0.0000	355.39	0.0000	569.70	35.9812
264.66	41.3416	356.01	41.9041	583.19	23.8086
264.80	41.3477	364.49	34.4599	584.27	23.8217
265.00	41.3547	366.42	0.0000	595.83	25.0029
269.46	48.6578	372.51	31.9245	427.87	22.9740
270.03	48.6826	375.05	22.8449	602.52	0.0000
271.23	48.7369	377.52	36.6170	604.72	9.4175
273.65	41.6861	356.01	41.3791	607.14	20.4291
276.40	55.7211	388.16	47.0385	609.32	15.7312
277.37	48.1645	388.63	48.4380	610.33	15.7391
277.60	48.1749	391.69	29.5866	614.28	20.5005
278.00	41.4285	264.66	33.4907	618.01	22.1177
279.20	46.5506	401.81	33.5171	620.36	20.0337
279.54	46.5651	402.40	33.5303	621.93	22.1595
279.70	44.8783	404.85	33.5859	630.19	0.0000
280.46	43.2139	410.95	33.7244	631.29	13.7792
283.69	50.1366	413.71	26.7477	633.25	12.7312
284.31	49.3139	414.70	35.2173	634.78	12.7402
285.41	45.9580	423.72	32.1206	635.95	11.6853
285.90	0.0000	427.09	25.5635	636.99	10.6283
287.50	43.4847	427.87	23.6816	657.50	11.5888
290.67	39.7575	433.94	32.3329	657.76	16.7413
293.27	0.0000	439.40	33.4000	657.90	0.0000
351.93	38.1120	440.45	32.4678	661.66	4.8380
295.96	38.1364	453.88	21.1858	664.57	0.0000
879.38	33.5735	463.37	22.2780	666.33	12.9287
299.98	33.6132	468.07	19.4275	666.50	12.9297
300.09	33.6164	473.00	27.2794	667.71	0.0000
300.13	33.6172	475.06	23.4111	677.62	10.8293
301.36	45.5608	476.78	19.5292	685.70	17.3893
302.85	51.8384	477.60	29.3079	692.65	0.0000
256.23	41.5283	482.18	15.6735	695.00	14.7332
304.85	48.0318	487.02	14.7357	696.49	21.2948
306.78	39.0070	492.35	0.0000	696.51	21.2956
308.46	44.2701	497.08	22.7267	697.00	17.4766
311.90	37.4325	505.52	28.2982	697.30	17.4792
316.51	43.6910	507.63	0.0000	697.49	17.4805
319.41	30.6563	511.00	25.8961	702.65	9.8551
320.08	33.3018	514.00	14.9652	706.68	7.6785
321.04	42.9747	514.00	14.9652	711.68	8.7946
323.87	34.2829	520.40	13.0164	720.70	9.9324
325.23	38.7202	520.69	0.0000	721.93	0.0000
328.76	37.9469	522.65	0.0000	722.78	8.2843
333.37	37.1995	527.90	0.0000	722.91	8.2849
333.97	41.2040	528.26	23.1292	723.31	11.6006
334.37	41.2173	529.59	20.1270	724.19	13.2632
338.28	34.6749	529.87	0.0000	727.33	17.7077
338.32	34.6757	531.02	22.1567	733.00	17.3062
311.90	40.0772	537.26	18.1897	735.93	14.4399
340.48	40.0772	546.56	0.0000	333.97	14.4494
340.55	40.0790	552.55	14.2638	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	22.2925	949.00	11.7400	1384.29	4.0994
747.24	12.2765	667.71	0.0000	1408.01	8.2471
748.06	16.7462	962.31	13.0632	1434.09	10.3748
752.31	14.5388	964.08	8.7141	1435.80	4.1516
753.82	13.4287	966.17	14.5337	1457.56	0.0000
756.73	17.9264	911.20	18.9116	1460.82	8.3535
756.80	17.9271	983.53	7.3091	1489.16	6.7277
884.68	8.4280	984.45	0.0000	1505.03	13.5055
765.81	8.4344	1274.44	14.6797	1584.12	6.4457
766.42	8.9990	1001.03	11.0270	1596.21	10.7715
766.84	9.0007	1002.74	9.1943	1620.50	4.3315
772.60	0.0000	1004.73	12.8806	1621.92	5.4163
776.52	13.5537	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	1.0994
778.90	14.6975	1028.54	0.0000	1750.46	0.0000
783.70	8.4955	1037.84	6.5091	1764.49	6.6973
788.74	8.5129	1038.76	0.0000	1063.66	1.7880
792.07	17.0477	631.29	10.4439	1771.35	3.5768
795.86	10.2440	1048.07	13.4341	1791.20	0.0000
810.06	16.0246	1049.04	11.1980	1808.65	3.6037
810.29	14.8810	1050.41	10.4563	1810.72	0.0000
344.28	17.1716	1063.66	11.2500	1836.06	3.6232
810.76	20.6082	1077.00	10.5431		
815.77	12.6185	1077.34	10.5444		
1048.07	11.4836	1085.87	9.4391		
832.01	16.1602	1093.63	17.0310		
834.85	19.6445	1099.45	9.4781		
835.71	21.9626	1112.07	15.2227		
836.80	0.0000	1112.84	17.4018		
846.75	0.0000	1115.54	13.7153		
846.77	15.0900	1120.29	11.4456		
856.80	18.6426	1120.55	11.4463		
860.56	9.6260	1221.41	11.4485		
871.09	11.4202	1129.67	12.4335		
873.19	13.1873	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	12.3359	1173.23	10.6549		
880.51	10.5780	1177.95	6.7898		
881.60	12.3461	1189.05	10.7032		
883.24	12.3534	1204.77	0.0000		
884.68	7.9456	1221.41	6.8735		
889.28	12.3803	1231.02	8.8605		
894.76	20.3791	1235.36	14.1943		
898.04	15.0810	1238.28	11.8381		
900.72	21.3113	1260.41	0.0000		
903.28	18.6640	1271.87	8.9594		
911.20	14.2603	1274.44	3.9849		
912.08	14.2646	1274.54	3.9849		
923.98	0.0000	1291.59	4.0029		
926.50	11.6487	1298.22	0.0000		
929.11	12.9151	1312.11	4.0247		
935.54	8.0901	1332.49	9.1033		
937.49	10.0745	1362.66	0.0000		
944.13	9.9171	1365.19	6.1198		
946.00	9.0213	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:15:08.34

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299002.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM08.CNF;726
                                         Background date  : 29-JUL-2024 05:38:49
Sample date      : 26-JUN-2024 09:06:00  Acquisition date : 30-JUL-2024 11:13:34
Sample ID        : G674299002            Sample quantity  : 1.13580E+02 GRAM
Detector name    : GAM08                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.73  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.38*	38	223	1.16	126.96	123	8	1.05E-02	71.5	
2	3	73.59	55	172	1.46	147.38	144	15	1.54E-02	45.8	1.58E+00
3	3	75.08	178	151	1.08	150.38	144	15	4.94E-02	13.9	
4	3	77.20*	302	185	1.21	154.62	144	15	8.40E-02	9.9	
5	0	83.93	64	217	1.08	168.08	165	7	1.77E-02	40.3	
6	0	87.36	88	235	1.18	174.93	172	7	2.43E-02	30.9	
7	0	93.22*	85	332	0.95	186.67	181	10	2.36E-02	43.6	
8	0	144.22*	34	160	1.78	288.70	285	8	9.57E-03	66.8	
9	0	186.21*	242	185	1.33	372.70	368	10	6.71E-02	12.7	
10	0	210.81	32	180	2.93	421.91	412	13	8.91E-03	88.9	
11	1	238.87*	172	118	1.37	478.04	474	15	4.77E-02	13.6	1.71E+00
12	1	241.98	244	95	1.34	484.28	474	15	6.78E-02	9.8	
13	0	270.79	57	133	3.26	541.90	533	14	1.58E-02	44.9	
14	0	295.48*	496	149	1.40	591.30	584	15	1.38E-01	7.0	
15	0	338.70*	29	70	1.49	677.77	673	9	8.07E-03	56.2	
16	0	352.05*	820	98	1.40	704.48	697	14	2.28E-01	4.3	
17	0	413.36	23	55	4.86	827.12	818	12	6.32E-03	69.4	
18	0	424.35	11	28	1.28	849.11	846	6	3.08E-03	82.7	
19	0	431.36	22	48	3.86	863.12	855	13	6.00E-03	71.6	
20	0	475.20	16	48	0.95	950.83	942	12	4.45E-03	90.1	
21	0	509.20	153	68	3.88	1018.84	999	31	4.24E-02	18.1	
22	0	533.82	24	24	2.00	1068.08	1063	9	6.55E-03	44.2	
23	4	543.06	24	5	2.49	1086.58	1082	23	6.64E-03	29.0	1.30E+00
24	4	548.12	22	8	2.50	1096.70	1082	23	6.24E-03	41.3	
25	0	584.09*	45	47	1.11	1168.65	1162	12	1.25E-02	35.3	
26	0	609.58*	551	71	1.66	1219.64	1213	12	1.53E-01	5.3	
27	0	730.48	61	11	7.98	1461.46	1450	22	1.70E-02	18.8	
28	0	742.95*	24	8	1.33	1486.39	1480	11	6.57E-03	32.1	
29	0	759.98	12	10	0.70	1520.46	1513	10	3.30E-03	57.8	
30	0	768.13	91	8	1.90	1536.76	1529	16	2.53E-02	12.6	
31	0	786.08	33	21	1.88	1572.67	1567	12	9.08E-03	33.1	
32	0	819.78	18	20	1.33	1640.07	1634	11	4.93E-03	58.0	
33	0	832.12	22	7	1.31	1664.76	1661	9	6.07E-03	30.4	
34	0	853.16	7	11	0.97	1706.83	1703	9	2.05E-03	89.1	

Sample ID : G674299002 Acquisition date : 30-JUL-2024 11:13:34

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	911.05*	34	10	1.42	1822.62	1817	10	9.52E-03	25.4	
36	0	934.57	50	5	2.31	1869.65	1863	17	1.39E-02	17.1	
37	0	969.43*	30	21	2.09	1939.37	1932	13	8.24E-03	38.7	
38	0	1079.95	16	13	3.57	2160.41	2154	16	4.55E-03	53.6	
39	0	1120.24	114	25	1.49	2240.97	2234	14	3.18E-02	13.1	
40	0	1148.26	13	11	2.82	2297.01	2292	13	3.72E-03	55.8	
41	0	1157.11	7	11	0.90	2314.71	2306	11	1.98E-03	97.7	
42	0	1186.18	5	19	3.31	2372.85	2360	14	1.42E-03	180.2	
43	0	1238.04	70	5	0.90	2476.55	2470	16	1.95E-02	13.6	
44	0	1261.54	12	6	1.16	2523.55	2519	11	3.43E-03	46.7	
45	0	1281.31*	20	13	2.53	2563.07	2556	13	5.62E-03	43.5	
46	0	1378.26	27	16	0.81	2756.95	2752	10	7.41E-03	34.9	
47	0	1386.83	18	8	5.97	2774.08	2767	16	5.00E-03	42.3	
48	0	1407.90*	22	11	1.38	2816.22	2809	15	6.08E-03	40.0	
49	0	1461.43*	43	18	2.42	2923.25	2915	14	1.19E-02	26.4	
50	0	1508.55	26	7	1.81	3017.47	3010	15	7.13E-03	30.5	
51	0	1531.10	9	0	1.87	3062.56	3059	8	2.50E-03	33.3	
52	0	1731.01	19	8	3.79	3462.26	3450	16	5.28E-03	40.4	
53	0	1764.61*	97	4	2.20	3529.44	3520	17	2.69E-02	11.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:15:09

```
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299002.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 09:06:00 Acquisition date : 30-JUL-2024 11:13:34
Sample ID        : G674299002           Sample quantity  : 113.58 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA8               Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.73   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.535E-01	2.624E+00	2.624E+00	52.76	OK
CD-109	88.03	3.70*	4.596E+00	3.585E+00	3.774E+00	61.86	OK
SN-126	64.28	9.60	2.151E+00	1.293E+00	1.293E+00	143.09	OK
	86.94	8.90	4.596E+00	1.490E+00	1.490E+00	61.86	OK
	87.57	37.00*	4.596E+00	3.585E-01	3.585E-01	61.86	OK
TL-208	277.37	6.60	3.683E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	2.100E+00	1.633E-01	1.633E-01	70.66	OK
	860.56	12.50	1.517E+00	-----	Line Not Found	-----	Absent
BI-211	72.87	1.23	3.356E+00	9.423E+00	9.423E+00	91.53	OK
	351.06	12.92*	3.086E+00	1.358E+01	1.358E+01	8.70	OK
PB-212	74.82	10.28	3.517E+00	3.445E+00	3.445E+00	27.81	OK
	77.11	17.10	3.734E+00	3.316E+00	3.316E+00	19.87	OK
	238.63	43.60*	4.107E+00	6.433E-01	6.433E-01	27.25	OK
	300.09	3.30	3.475E+00	-----	Line Not Found	-----	Absent
BI-214	609.32	45.49*	2.030E+00	3.852E+00	3.852E+00	10.50	OK
	1120.29	14.92	1.196E+00	4.039E+00	4.039E+00	26.19	OK
	1764.49	15.30	8.411E-01	4.653E+00	4.653E+00	22.76	OK
PB-214	74.82	5.80	3.517E+00	6.106E+00	6.106E+00	27.81	OK
	77.11	9.70	3.734E+00	5.846E+00	5.846E+00	19.87	OK
	87.09	3.41	4.596E+00	3.890E+00	3.890E+00	61.86	OK
	242.00	7.25	4.069E+00	5.546E+00	5.547E+00	19.59	OK
	295.22	18.42	3.515E+00	5.097E+00	5.097E+00	14.07	OK
	351.93	35.60*	3.086E+00	4.929E+00	4.929E+00	8.70	OK
RN-222	609.32	45.49*	2.030E+00	3.852E+00	3.852E+00	10.50	OK
	1120.29	14.92	1.196E+00	4.039E+00	4.039E+00	26.19	OK
	1764.49	15.30	8.411E-01	4.653E+00	4.653E+00	22.76	OK
RA-224	240.99	4.10*	4.069E+00	9.808E+00	9.808E+00	19.59	OK
RA-226	74.82	5.80	3.517E+00	6.106E+00	6.106E+00	27.81	OK
	77.11	9.70	3.734E+00	5.846E+00	5.846E+00	19.87	OK
	87.09	3.41	4.596E+00	3.890E+00	3.890E+00	61.86	OK
	242.00	7.25	4.069E+00	5.546E+00	5.547E+00	19.59	OK
	295.22	18.42	3.515E+00	5.097E+00	5.097E+00	14.07	OK
	351.93	35.60*	3.086E+00	4.929E+00	4.929E+00	8.70	OK
AC-228	105.21	1.10	5.421E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.176E+00	5.368E-01	5.368E-01	112.33	OK
	835.71	1.61	1.556E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.442E+00	5.853E-01	5.853E-01	50.89	OK
	968.97	15.80	1.363E+00	8.724E-01	8.724E-01	77.50	OK
RA-228	105.21	1.10	5.421E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.176E+00	5.368E-01	5.368E-01	112.33	OK
	835.71	1.61	1.556E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.442E+00	5.853E-01	5.853E-01	50.89	OK
	968.97	15.80	1.363E+00	8.724E-01	8.724E-01	77.50	OK
TH-228	74.82	10.28	3.517E+00	3.445E+00	3.445E+00	27.81	OK
	77.11	17.10	3.734E+00	3.316E+00	3.316E+00	19.87	OK
	238.63	43.60*	4.107E+00	6.433E-01	6.433E-01	27.25	OK
	300.09	3.30	3.475E+00	-----	Line Not Found	-----	Absent
TH-229	85.43	14.70	4.340E+00	6.954E-01	6.954E-01	80.69	OK
	88.47	24.00	4.596E+00	5.527E-01	5.527E-01	61.86	OK

Sample ID : G674299002 Acquisition date : 30-JUL-2024 11:13:34

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	193.51	4.41*	4.743E+00	----- Line	Not Found	-----	Absent
	210.85	2.80	4.483E+00	1.722E+00	1.722E+00	177.86	OK
TH-230	74.82	5.80	3.517E+00	6.106E+00	6.106E+00	27.81	OK
	77.11	9.70	3.734E+00	5.846E+00	5.846E+00	19.87	OK
	87.09	3.41	4.596E+00	3.890E+00	3.890E+00	61.86	OK
	242.00	7.25	4.069E+00	5.546E+00	5.546E+00	19.59	OK
	295.22	18.42	3.515E+00	5.097E+00	5.097E+00	14.07	OK
	351.93	35.60*	3.086E+00	4.929E+00	4.929E+00	8.70	OK
TH-232	105.21	1.10	5.421E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.176E+00	5.368E-01	5.368E-01	112.33	OK
	835.71	1.61	1.556E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.442E+00	5.853E-01	5.853E-01	50.89	OK
	968.97	15.80	1.363E+00	8.724E-01	8.724E-01	77.50	OK
TH-234	63.29	3.70*	2.151E+00	3.356E+00	3.356E+00	143.09	OK
	92.59	4.23	4.956E+00	2.816E+00	2.816E+00	87.10	OK
U-234	74.82	5.80	3.517E+00	6.106E+00	6.106E+00	27.81	OK
	77.11	9.70	3.734E+00	5.846E+00	5.846E+00	19.87	OK
	87.09	3.41	4.596E+00	3.890E+00	3.890E+00	61.86	OK
	242.00	7.25	4.069E+00	5.546E+00	5.546E+00	19.59	OK
	295.22	18.42	3.515E+00	5.097E+00	5.097E+00	14.07	OK
	351.93	35.60*	3.086E+00	4.929E+00	4.929E+00	8.70	OK
U-235	89.96	3.47	4.768E+00	----- Line	Not Found	-----	Absent
	93.35	5.60	4.956E+00	2.127E+00	2.127E+00	87.10	OK
	143.76	10.96*	5.494E+00	3.910E-01	3.910E-01	133.66	OK
	163.33	5.08	5.223E+00	----- Line	Not Found	-----	Absent
	185.72	57.20	4.858E+00	5.885E-01	5.885E-01	25.47	OK
	205.31	5.01	4.563E+00	----- Line	Not Found	-----	Absent
U-238	63.29	3.70*	2.151E+00	3.356E+00	3.356E+00	143.09	OK
	92.59	4.23	4.956E+00	2.816E+00	2.816E+00	87.10	OK
AM-243	43.53	5.90	2.524E-01	----- Line	Not Found	-----	Absent
	74.66	67.20*	3.517E+00	5.270E-01	5.270E-01	27.81	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:15:10.65

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299002.CNF;1  *
* Acquisition date : 30-JUL-2024 11:13:34 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.73     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:06:00 Analyst initials: RXF2            *
* Sample ID        : G674299002           Sample Quantity : 1.1358E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.624E+00	1.357E+00	1.297E+00
CD-109	3.774E+00	2.288E+00	2.765E+00
SN-126	3.585E-01	2.173E-01	2.583E-01
TL-208	1.633E-01	1.131E-01	1.119E-01
BI-211	1.358E+01	1.158E+00	5.969E-01
PB-212	6.433E-01	1.718E-01	1.682E-01
BI-214	3.852E+00	3.964E-01	1.911E-01
PB-214	4.929E+00	4.202E-01	2.171E-01
RN-222	3.852E+00	3.964E-01	1.911E-01
RA-224	9.808E+00	1.883E+00	1.803E+00
RA-226	4.929E+00	4.202E-01	2.171E-01
AC-228	5.853E-01	2.919E-01	4.091E-01
RA-228	5.853E-01	2.919E-01	4.091E-01
TH-228	6.433E-01	1.718E-01	1.682E-01
TH-229	1.592E-01	8.508E-01	1.596E+00
TH-230	4.929E+00	4.202E-01	2.171E-01
TH-232	5.853E-01	2.919E-01	4.091E-01
TH-234	3.356E+00	4.706E+00	4.573E+00
U-234	4.929E+00	4.202E-01	2.171E-01
U-235	3.910E-01	5.122E-01	5.780E-01
U-238	3.356E+00	4.706E+00	4.573E+00
AM-243	5.270E-01	1.436E-01	1.673E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.219E-01	7.110E-01	1.184E+00	NOT IDENT.
NA-22	1.861E-02	4.445E-02	9.207E-02	NOT IDENT.
NA-24	0.000E+00	9.045E+14	0.000E+00	SHORT HLIF
AL-26	-1.620E-02	5.396E-02	1.035E-01	NOT IDENT.
SC-46	-4.905E-02	6.487E-02	1.099E-01	FAIL ABUN
V-48	1.152E-01	2.395E-01	4.907E-01	NOT IDENT.
CR-51	-2.922E-01	8.894E-01	1.588E+00	NOT IDENT.
MN-52	-4.776E+00	3.914E+00	5.901E+00	FAIL ABUN

MN-54	-1.259E-02	6.249E-02	1.012E-01	NOT IDENT.
CO-56	-6.006E-03	6.023E-02	1.158E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	6.147E-03	4.281E-02	7.458E-02	NOT IDENT.
CO-58	-5.436E-02	6.798E-02	1.155E-01	NOT IDENT.
FE-59	-7.793E-02	1.621E-01	2.843E-01	NOT IDENT.
CO-60	3.055E-02	5.903E-02	1.245E-01	NOT IDENT.
ZN-65	8.579E-02	1.287E-01	2.523E-01	NOT IDENT.
GE-68	3.891E-01	2.052E+00	3.616E+00	NOT IDENT.
AS-73	2.565E+00	2.377E+00	4.581E+00	NOT IDENT.
AS-74	-1.689E-01	2.818E-01	5.085E-01	NOT IDENT.
SE-75	4.819E-02	8.306E-02	1.450E-01	NOT IDENT.
BR-77	0.000E+00	6.780E+03	0.000E+00	SHORT HLIF
SR-82	2.577E-01	6.935E-01	1.438E+00	NOT IDENT.
RB-83	3.369E-02	1.264E-01	2.374E-01	NOT IDENT.
RB-84	6.346E-02	1.723E-01	3.414E-01	NOT IDENT.
KR-85	9.115E+00	1.260E+01	2.227E+01	NOT IDENT.
SR-85	5.854E-02	8.146E-02	1.439E-01	NOT IDENT.
RB-86	9.487E-01	2.404E+00	4.456E+00	NOT IDENT.
Y-88	-4.052E-02	6.262E-02	1.078E-01	NOT IDENT.
Y-91	2.532E+00	3.659E+01	6.992E+01	NOT IDENT.
NB-94	3.740E-02	5.377E-02	1.097E-01	NOT IDENT.
NB-95	5.545E-02	8.579E-02	1.593E-01	NOT IDENT.
NB-95M	7.863E-02	2.505E-01	4.272E-01	NOT IDENT.
ZR-95	1.656E-02	1.272E-01	2.249E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.267E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.685E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	3.847E+39	0.000E+00	SHORT HLIF
RH-101	-6.911E-03	5.008E-02	8.520E-02	NOT IDENT.
RH-102	-3.523E-02	7.508E-02	1.378E-01	FAIL ABUN
RU-103	4.638E-02	7.920E-02	1.452E-01	FAIL ABUN
RH-106	1.470E-01	4.170E-01	8.554E-01	NOT IDENT.
RU-106	1.470E-01	4.170E-01	8.554E-01	NOT IDENT.
AG-108M	-7.518E-03	4.049E-02	6.507E-02	NOT IDENT.
AG-110	-6.298E-02	9.836E-01	1.911E+00	NOT IDENT.
AG-110M	2.702E-02	8.689E-02	1.712E-01	NOT IDENT.
SN-113	-1.966E-02	8.392E-02	1.489E-01	NOT IDENT.
CD-115	0.000E+00	6.118E+03	0.000E+00	SHORT HLIF
SN-117M	5.507E-03	2.223E-01	4.176E-01	NOT IDENT.
SB-122	0.000E+00	4.216E+02	0.000E+00	SHORT HLIF
TE-123M	-3.476E-03	4.936E-02	9.218E-02	NOT IDENT.
SB-124	2.757E-02	1.668E-01	3.565E-01	NOT IDENT.
SB-125	-2.783E-03	2.113E-01	2.688E-01	NOT IDENT.
TE-125M	1.003E+01	1.784E+01	3.244E+01	NOT IDENT.
I-126	1.178E+00	9.381E-01	2.029E+00	NOT IDENT.
SB-126	5.601E-01	5.528E-01	1.193E+00	FAIL ABUN
SB-127	2.206E+00	5.770E+01	1.121E+02	NOT IDENT.
I-131	1.286E-01	8.441E-01	1.585E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.926E+01	0.000E+00	SHORT HLIF
BA-133	-1.760E-02	7.208E-02	1.143E-01	NOT IDENT.
I-133	0.000E+00	3.788E+10	0.000E+00	SHORT HLIF
CS-134	2.528E-02	6.130E-02	1.236E-01	NOT IDENT.
I-135	0.000E+00	6.468E+36	0.000E+00	SHORT HLIF
CS-136	4.040E-01	4.011E-01	8.915E-01	FAIL ABUN
BA-137M	-2.843E-02	5.054E-02	9.092E-02	NOT IDENT.
CS-137	-3.003E-02	5.339E-02	9.605E-02	NOT IDENT.
LA-138	-9.616E-03	8.811E-02	1.749E-01	NOT IDENT.
CE-139	-2.477E-02	4.722E-02	8.583E-02	NOT IDENT.
BA-140	6.097E-01	9.570E-01	1.814E+00	FAIL ABUN
LA-140	8.678E-02	3.231E-01	7.184E-01	NOT IDENT.
CE-141	1.837E-01	2.406E-01	2.895E-01	FAIL ABUN
CE-143	0.000E+00	3.436E+06	0.000E+00	SHORT HLIF
CE-144	8.810E-02	3.298E-01	5.772E-01	NOT IDENT.
PM-144	3.021E-03	4.225E-02	8.400E-02	NOT IDENT.
PR-144	2.165E-01	3.191E+00	6.342E+00	NOT IDENT.
PM-146	4.151E-02	6.768E-02	1.312E-01	NOT IDENT.
ND-147	3.891E-01	3.160E+00	5.222E+00	NOT IDENT.
PM-147	2.497E+02	1.190E+03	2.086E+03	NOT IDENT.
PM-149	0.000E+00	5.454E+04	0.000E+00	SHORT HLIF
EU-150	-1.780E-02	4.668E-02	7.288E-02	FAIL ABUN
EU-152	2.245E-02	1.558E-01	2.886E-01	FAIL ABUN
GD-153	-4.512E-02	1.419E-01	2.404E-01	NOT IDENT.
EU-154	4.866E-02	1.237E-01	2.551E-01	NOT IDENT.
EU-155	2.069E-01	1.625E-01	3.090E-01	FAIL ABUN
TB-160	1.048E-02	2.701E-01	5.132E-01	FAIL ABUN
HO-166M	-1.110E-03	8.536E-02	1.647E-01	NOT IDENT.

TM-171	-3.008E+01	4.572E+01	7.850E+01	NOT IDENT.
HF-172	4.434E-02	2.934E-01	5.121E-01	FAIL ABUN
LU-172	1.451E-02	9.143E-02	1.798E-01	FAIL ABUN
LU-176	-3.826E-02	4.079E-02	6.861E-02	FAIL ABUN
HF-181	4.329E-02	9.534E-02	1.811E-01	NOT IDENT.
TA-182	1.112E-01	2.386E-01	5.050E-01	FAIL ABUN
RE-183	2.997E-02	5.159E-01	9.267E-01	NOT IDENT.
RE-184	-2.456E-02	2.680E-01	5.067E-01	NOT IDENT.
W-188	-8.922E+00	1.554E+01	2.392E+01	FAIL ABUN
IR-192	-6.757E-02	5.964E-02	9.752E-02	FAIL ABUN
HG-203	-1.095E-02	7.779E-02	1.417E-01	FAIL ABUN
TL-204	3.800E-01	9.770E+00	1.594E+01	FAIL ABUN
BI-207	3.325E-02	6.474E-02	1.379E-01	FAIL ABUN
BI-210	-6.125E+00	1.014E+01	1.739E+01	NOT IDENT.
PB-210	-6.125E+00	1.014E+01	1.739E+01	NOT IDENT.
PB-211	-4.523E-01	1.124E+00	1.960E+00	FAIL ABUN
BI-212	9.776E-01	7.050E-01	1.579E+00	NOT IDENT.
BI-213	7.086E-04	1.590E-01	2.904E-01	NOT IDENT.
RN-219	-1.305E-01	6.526E-01	1.163E+00	FAIL ABUN
RA-223	-1.469E-02	1.075E+00	1.959E+00	FAIL ABUN
AC-225	6.709E-01	3.391E+00	6.374E+00	NOT IDENT.
AC-227	-9.908E-02	3.764E-01	6.828E-01	NOT IDENT.
TH-227	-9.908E-02	3.764E-01	6.828E-01	NOT IDENT.
PA-231	3.567E-02	9.212E-01	1.510E+00	NOT IDENT.
TH-231	-1.469E-02	1.075E+00	1.959E+00	FAIL ABUN
PA-233	-3.592E-02	1.016E-01	1.808E-01	NOT IDENT.
PA-234	5.016E-03	4.269E-01	8.234E-01	FAIL ABUN
PA-234M	4.430E+00	7.408E+00	1.556E+01	NOT IDENT.
NP-237	-3.592E-02	1.016E-01	1.808E-01	FAIL ABUN
NP-238	0.000E+00	1.553E+04	0.000E+00	SHORT HLIF
NP-239	-3.058E-02	4.214E-01	7.243E-01	NOT IDENT.
PU-239	1.756E+02	5.606E+02	9.821E+02	FAIL ABUN
AM-241	-1.613E-01	3.547E-01	5.626E-01	NOT IDENT.
CM-243	-9.581E-02	1.731E-01	2.883E-01	NOT IDENT.
BK-247	8.192E-02	1.327E-01	2.328E-01	FAIL ABUN
CM-247	1.571E-02	5.680E-02	1.068E-01	NOT IDENT.
CF-249	4.059E-02	6.786E-02	1.299E-01	NOT IDENT.
CF-251	-5.737E-02	1.980E-01	3.634E-01	NOT IDENT.
ANH-511	9.543E-04	6.775E-02	1.416E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:15:09.12

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	40	10.66*	9.535E-01	2.624E+00	2.624E+00	52.76
CD-109	88.03	92	3.70*	4.596E+00	3.585E+00	3.774E+00	61.86
SN-126	64.28	40	9.60	2.151E+00	1.293E+00	1.293E+00	143.09
	86.94	92	8.90	4.596E+00	1.490E+00	1.490E+00	61.86
	87.57	92	37.00*	4.596E+00	3.585E-01	3.585E-01	61.86
CE-141	145.44	36	48.29*	5.494E+00	8.875E-02	1.837E-01	133.66
TL-208	277.37	------	6.60	3.683E+00	------	Line Not Found	------
	583.19	44	85.00*	2.100E+00	1.633E-01	1.633E-01	70.66
	860.56	------	12.50	1.517E+00	------	Line Not Found	------
BI-211	72.87	59	1.23	3.356E+00	9.423E+00	9.423E+00	91.53
	351.06	819	12.92*	3.086E+00	1.358E+01	1.358E+01	8.70
PB-212	74.82	188	10.28	3.517E+00	3.445E+00	3.445E+00	27.81
	77.11	320	17.10	3.734E+00	3.316E+00	3.316E+00	19.87
	238.63	174	43.60*	4.107E+00	6.433E-01	6.433E-01	27.25
	300.09	------	3.30	3.475E+00	------	Line Not Found	------
BI-214	609.32	538	45.49*	2.030E+00	3.852E+00	3.852E+00	10.50
	1120.29	109	14.92	1.196E+00	4.039E+00	4.039E+00	26.19
	1764.49	91	15.30	8.411E-01	4.653E+00	4.653E+00	22.76
PB-214	74.82	188	5.80	3.517E+00	6.106E+00	6.106E+00	27.81
	77.11	320	9.70	3.734E+00	5.846E+00	5.846E+00	19.87
	87.09	92	3.41	4.596E+00	3.890E+00	3.890E+00	61.86
	242.00	248	7.25	4.069E+00	5.546E+00	5.547E+00	19.59
	295.22	499	18.42	3.515E+00	5.097E+00	5.097E+00	14.07
	351.93	819	35.60*	3.086E+00	4.929E+00	4.929E+00	8.70
RN-222	609.32	538	45.49*	2.030E+00	3.852E+00	3.852E+00	10.50
	1120.29	109	14.92	1.196E+00	4.039E+00	4.039E+00	26.19
	1764.49	91	15.30	8.411E-01	4.653E+00	4.653E+00	22.76
RA-224	240.99	248	4.10*	4.069E+00	9.808E+00	9.808E+00	19.59
RA-226	74.82	188	5.80	3.517E+00	6.106E+00	6.106E+00	27.81
	77.11	320	9.70	3.734E+00	5.846E+00	5.846E+00	19.87
	87.09	92	3.41	4.596E+00	3.890E+00	3.890E+00	61.86
	242.00	248	7.25	4.069E+00	5.546E+00	5.547E+00	19.59
	295.22	499	18.42	3.515E+00	5.097E+00	5.097E+00	14.07
	351.93	819	35.60*	3.086E+00	4.929E+00	4.929E+00	8.70
AC-228	105.21	------	1.10	5.421E+00	------	Line Not Found	------
	338.32	29	11.27	3.176E+00	5.368E-01	5.368E-01	112.33
	835.71	------	1.61	1.556E+00	------	Line Not Found	------
	911.20	33	25.80*	1.442E+00	5.853E-01	5.853E-01	50.89
	968.97	28	15.80	1.363E+00	8.724E-01	8.724E-01	77.50
RA-228	105.21	------	1.10	5.421E+00	------	Line Not Found	------
	338.32	29	11.27	3.176E+00	5.368E-01	5.368E-01	112.33
	835.71	------	1.61	1.556E+00	------	Line Not Found	------
	911.20	33	25.80*	1.442E+00	5.853E-01	5.853E-01	50.89
	968.97	28	15.80	1.363E+00	8.724E-01	8.724E-01	77.50
TH-228	74.82	188	10.28	3.517E+00	3.445E+00	3.445E+00	27.81
	77.11	320	17.10	3.734E+00	3.316E+00	3.316E+00	19.87
	238.63	174	43.60*	4.107E+00	6.433E-01	6.433E-01	27.25

Sample ID : G674299002 Acquisition date : 30-JUL-2024 11:13:34

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	300.09	------	3.30	3.475E+00	------	Line Not Found	------
TH-229	85.43	67	14.70	4.340E+00	6.954E-01	6.954E-01	80.69
	88.47	92	24.00	4.596E+00	5.527E-01	5.527E-01	61.86
	193.51	------	4.41*	4.743E+00	------	Line Not Found	------
	210.85	33	2.80	4.483E+00	1.722E+00	1.722E+00	177.86
TH-230	74.82	188	5.80	3.517E+00	6.106E+00	6.106E+00	27.81
	77.11	320	9.70	3.734E+00	5.846E+00	5.846E+00	19.87
	87.09	92	3.41	4.596E+00	3.890E+00	3.890E+00	61.86
	242.00	248	7.25	4.069E+00	5.546E+00	5.546E+00	19.59
	295.22	499	18.42	3.515E+00	5.097E+00	5.097E+00	14.07
	351.93	819	35.60*	3.086E+00	4.929E+00	4.929E+00	8.70
TH-232	105.21	------	1.10	5.421E+00	------	Line Not Found	------
	338.32	29	11.27	3.176E+00	5.368E-01	5.368E-01	112.33
	835.71	------	1.61	1.556E+00	------	Line Not Found	------
	911.20	33	25.80*	1.442E+00	5.853E-01	5.853E-01	50.89
	968.97	28	15.80	1.363E+00	8.724E-01	8.724E-01	77.50
TH-234	63.29	40	3.70*	2.151E+00	3.356E+00	3.356E+00	143.09
	92.59	89	4.23	4.956E+00	2.816E+00	2.816E+00	87.10
U-234	74.82	188	5.80	3.517E+00	6.106E+00	6.106E+00	27.81
	77.11	320	9.70	3.734E+00	5.846E+00	5.846E+00	19.87
	87.09	92	3.41	4.596E+00	3.890E+00	3.890E+00	61.86
	242.00	248	7.25	4.069E+00	5.546E+00	5.546E+00	19.59
	295.22	499	18.42	3.515E+00	5.097E+00	5.097E+00	14.07
	351.93	819	35.60*	3.086E+00	4.929E+00	4.929E+00	8.70
U-235	89.96	------	3.47	4.768E+00	------	Line Not Found	------
	93.35	89	5.60	4.956E+00	2.127E+00	2.127E+00	87.10
	143.76	36	10.96*	5.494E+00	3.910E-01	3.910E-01	133.66
	163.33	------	5.08	5.223E+00	------	Line Not Found	------
	185.72	247	57.20	4.858E+00	5.885E-01	5.885E-01	25.47
	205.31	------	5.01	4.563E+00	------	Line Not Found	------
U-238	63.29	40	3.70*	2.151E+00	3.356E+00	3.356E+00	143.09
	92.59	89	4.23	4.956E+00	2.816E+00	2.816E+00	87.10
AM-243	43.53	------	5.90	2.524E-01	------	Line Not Found	------
	74.66	188	67.20*	3.517E+00	5.270E-01	5.270E-01	27.81

Flag: "*" = Keyline

Sample ID : G674299002 Acquisition date : 30-JUL-2024 11:13:34

Total number of lines in spectrum	53	
Number of unidentified lines	18	
Number of lines tentatively identified by NID	35	66.04%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.624E+00	2.624E+00	1.384E+00	52.76	
CD-109	461.40D	1.05	3.585E+00	3.774E+00	2.334E+00	61.86	
SN-126	2.30E+05Y	1.00	3.585E-01	3.585E-01	2.218E-01	61.86	
CE-141	32.51D	2.07	8.875E-02	1.837E-01	2.455E-01	133.66	
TL-208	1.41E+10Y	1.00	1.633E-01	1.633E-01	1.154E-01	70.66	
BI-211	7.04E+08Y	1.00	1.358E+01	1.358E+01	0.118E+01	8.70	
PB-212	1.41E+10Y	1.00	6.433E-01	6.433E-01	1.753E-01	27.25	
BI-214	1600.00Y	1.00	3.852E+00	3.852E+00	0.405E+00	10.50	
PB-214	1600.00Y	1.00	4.929E+00	4.929E+00	0.429E+00	8.70	
RN-222	1600.00Y	1.00	3.852E+00	3.852E+00	0.405E+00	10.50	
RA-224	1.41E+10Y	1.00	9.808E+00	9.808E+00	1.921E+00	19.59	
RA-226	1600.00Y	1.00	4.929E+00	4.929E+00	0.429E+00	8.70	
AC-228	1.41E+10Y	1.00	5.853E-01	5.853E-01	2.979E-01	50.89	
RA-228	1.41E+10Y	1.00	5.853E-01	5.853E-01	2.979E-01	50.89	
TH-228	1.41E+10Y	1.00	6.433E-01	6.433E-01	1.753E-01	27.25	
TH-229	7340.00Y	1.00	5.527E-01	5.527E-01	3.419E-01	61.86	K
TH-230	7.54E+04Y	1.00	4.929E+00	4.929E+00	0.429E+00	8.70	
TH-232	1.41E+10Y	1.00	5.853E-01	5.853E-01	2.979E-01	50.89	
TH-234	4.47E+09Y	1.00	3.356E+00	3.356E+00	4.802E+00	143.09	
U-234	2.45E+05Y	1.00	4.929E+00	4.929E+00	0.429E+00	8.70	
U-235	7.04E+08Y	1.00	3.910E-01	3.910E-01	5.226E-01	133.66	
U-238	4.47E+09Y	1.00	3.356E+00	3.356E+00	4.802E+00	143.09	
AM-243	7370.00Y	1.00	5.270E-01	5.270E-01	1.466E-01	27.81	
			---	---			
	Total Activity :		6.885E+01	6.914E+01			

Grand Total Activity : 6.885E+01 6.914E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299002 Acquisition date : 30-JUL-2024 11:13:34

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	270.79	58	134	3.26	541.90	533	14	1.58E-02	89.8	3.75E+00	T
0	413.36	23	55	4.86	827.12	818	12	6.32E-03	****	2.74E+00	T
0	424.35	11	28	1.28	849.11	846	6	3.08E-03	****	2.68E+00	T
0	431.36	21	48	3.86	863.12	855	13	6.00E-03	****	2.65E+00	
0	475.20	16	47	0.95	950.83	942	12	4.45E-03	****	2.46E+00	T
0	509.20	150	67	3.88	1018.84	999	31	4.24E-02	36.1	2.34E+00	
0	533.82	23	24	2.00	1068.08	1063	9	6.55E-03	88.4	2.25E+00	
4	543.06	23	4	2.49	1086.58	1082	23	6.64E-03	58.0	2.22E+00	
4	548.12	22	7	2.50	1096.70	1082	23	6.24E-03	82.6	2.21E+00	
0	730.48	59	10	7.98	1461.46	1450	22	1.70E-02	37.5	1.75E+00	
0	742.95	23	8	1.33	1486.39	1480	11	6.57E-03	64.1	1.72E+00	T
0	759.98	11	10	0.70	1520.46	1513	10	3.30E-03	****	1.69E+00	
0	768.13	88	8	1.90	1536.76	1529	16	2.53E-02	25.1	1.67E+00	T
0	786.08	32	21	1.88	1572.67	1567	12	9.08E-03	66.2	1.64E+00	
0	819.78	17	20	1.33	1640.07	1634	11	4.93E-03	****	1.58E+00	T
0	832.12	21	7	1.31	1664.76	1661	9	6.07E-03	60.9	1.56E+00	T
0	853.16	7	10	0.97	1706.83	1703	9	2.05E-03	****	1.53E+00	
0	934.57	48	5	2.31	1869.65	1863	17	1.39E-02	34.2	1.41E+00	T
0	1079.95	16	12	3.57	2160.41	2154	16	4.55E-03	****	1.24E+00	
0	1148.26	13	10	2.82	2297.01	2292	13	3.72E-03	****	1.17E+00	T
0	1157.11	7	10	0.90	2314.71	2306	11	1.98E-03	****	1.16E+00	
0	1186.18	5	18	3.31	2372.85	2360	14	1.42E-03	****	1.14E+00	
0	1238.04	67	4	0.90	2476.55	2470	16	1.95E-02	27.1	1.09E+00	T
0	1261.54	12	5	1.16	2523.55	2519	11	3.43E-03	93.3	1.08E+00	T
0	1281.31	19	12	2.53	2563.07	2556	13	5.62E-03	87.0	1.06E+00	
0	1378.26	25	15	0.81	2756.95	2752	10	7.41E-03	69.8	9.99E-01	
0	1386.83	17	8	5.97	2774.08	2767	16	5.00E-03	84.6	9.94E-01	
0	1407.90	21	10	1.38	2816.22	2809	15	6.08E-03	80.0	9.82E-01	T
0	1508.55	24	7	1.81	3017.47	3010	15	7.13E-03	60.9	9.31E-01	
0	1531.10	8	0	1.87	3062.56	3059	8	2.50E-03	66.7	9.21E-01	
0	1731.01	18	7	3.79	3462.26	3450	16	5.28E-03	80.9	8.50E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:15:20.46

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299002.CNF;1  *
* Acquisition date : 30-JUL-2024 11:13:34 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.73     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:06:00 Nuclide Library : SOLID           *
* Sample ID        : G674299002           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1358E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	5.613E-01
CD-109	1.328E+00
SN-126	1.239E-01
TL-208	5.094E-02
BI-211	2.760E-01
PB-212	7.908E-02
BI-214	8.587E-02
PB-214	1.004E-01
RN-222	8.587E-02
RA-224	8.478E-01
RA-226	1.004E-01
AC-228	1.806E-01
RA-228	1.806E-01
TH-228	7.908E-02
TH-229	7.553E-01
TH-230	1.004E-01
TH-232	1.806E-01
TH-234	2.172E+00
U-234	1.004E-01
U-235	2.740E-01
U-238	2.172E+00
AM-243	7.976E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.375E-01	NOT IDENT.
NA-22	3.748E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	4.103E-02	NOT IDENT.
SC-46	4.691E-02	FAIL ABUN
V-48	2.163E-01	NOT IDENT.
CR-51	7.300E-01	NOT IDENT.
MN-52	2.319E+00	FAIL ABUN
MN-54	4.441E-02	NOT IDENT.

CO-56	5.001E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.525E-02	NOT IDENT.
CO-58	4.993E-02	NOT IDENT.
FE-59	1.201E-01	NOT IDENT.
CO-60	5.349E-02	NOT IDENT.
ZN-65	1.100E-01	NOT IDENT.
GE-68	1.564E+00	NOT IDENT.
AS-73	2.173E+00	NOT IDENT.
AS-74	2.265E-01	NOT IDENT.
SE-75	6.765E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.282E-01	NOT IDENT.
RB-83	1.073E-01	NOT IDENT.
RB-84	1.528E-01	NOT IDENT.
KR-85	1.024E+01	NOT IDENT.
SR-85	6.619E-02	NOT IDENT.
RB-86	1.932E+00	NOT IDENT.
Y-88	4.037E-02	NOT IDENT.
Y-91	3.039E+01	NOT IDENT.
NB-94	4.989E-02	NOT IDENT.
NB-95	7.196E-02	NOT IDENT.
NB-95M	2.010E-01	NOT IDENT.
ZR-95	9.845E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.020E-02	NOT IDENT.
RH-102	6.065E-02	FAIL ABUN
RU-103	6.508E-02	FAIL ABUN
RH-106	3.796E-01	NOT IDENT.
RU-106	3.796E-01	NOT IDENT.
AG-108M	2.878E-02	NOT IDENT.
AG-110	8.411E-01	NOT IDENT.
AG-110M	7.649E-02	NOT IDENT.
SN-113	6.850E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.976E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	4.362E-02	NOT IDENT.
SB-124	1.462E-01	NOT IDENT.
SB-125	1.229E-01	NOT IDENT.
TE-125M	1.530E+01	NOT IDENT.
I-126	9.253E-01	NOT IDENT.
SB-126	5.327E-01	FAIL ABUN
SB-127	4.991E+01	NOT IDENT.
I-131	7.230E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.238E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.518E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.929E-01	FAIL ABUN
BA-137M	4.021E-02	NOT IDENT.
CS-137	4.248E-02	NOT IDENT.
LA-138	7.339E-02	NOT IDENT.
CE-139	4.034E-02	NOT IDENT.
BA-140	8.026E-01	FAIL ABUN
LA-140	2.927E-01	NOT IDENT.
CE-141	1.377E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	2.728E-01	NOT IDENT.
PM-144	3.673E-02	NOT IDENT.
PR-144	2.773E+00	NOT IDENT.
PM-146	6.012E-02	NOT IDENT.
ND-147	2.351E+00	NOT IDENT.
PM-147	9.854E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.352E-02	FAIL ABUN
EU-152	1.335E-01	FAIL ABUN
GD-153	1.135E-01	NOT IDENT.
EU-154	1.035E-01	NOT IDENT.
EU-155	1.465E-01	FAIL ABUN
TB-160	2.290E-01	FAIL ABUN
HO-166M	7.310E-02	NOT IDENT.
TM-171	3.703E+01	NOT IDENT.

HF-172	2.414E-01	FAIL ABUN
LU-172	7.792E-02	FAIL ABUN
LU-176	3.150E-02	FAIL ABUN
HF-181	8.258E-02	NOT IDENT.
TA-182	2.159E-01	FAIL ABUN
RE-183	4.386E-01	NOT IDENT.
RE-184	2.219E-01	NOT IDENT.
W-188	1.108E+01	FAIL ABUN
IR-192	4.428E-02	FAIL ABUN
HG-203	6.588E-02	FAIL ABUN
TL-204	7.584E+00	FAIL ABUN
BI-207	5.940E-02	FAIL ABUN
BI-210	8.185E+00	NOT IDENT.
PB-210	8.185E+00	NOT IDENT.
PB-211	8.948E-01	FAIL ABUN
BI-212	7.134E-01	NOT IDENT.
BI-213	1.320E-01	NOT IDENT.
RN-219	5.330E-01	FAIL ABUN
RA-223	9.113E-01	FAIL ABUN
AC-225	2.996E+00	NOT IDENT.
AC-227	3.172E-01	NOT IDENT.
TH-227	3.172E-01	NOT IDENT.
PA-231	7.067E-01	NOT IDENT.
TH-231	9.113E-01	FAIL ABUN
PA-233	8.352E-02	NOT IDENT.
PA-234	3.584E-01	FAIL ABUN
PA-234M	6.982E+00	NOT IDENT.
NP-237	8.352E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	3.419E-01	NOT IDENT.
PU-239	4.657E+02	FAIL ABUN
AM-241	2.663E-01	NOT IDENT.
CM-243	1.361E-01	NOT IDENT.
BK-247	1.086E-01	FAIL ABUN
CM-247	4.895E-02	NOT IDENT.
CF-249	6.023E-02	NOT IDENT.
CF-251	1.713E-01	NOT IDENT.
ANH-511	6.696E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:15:24.89

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299002.CNF;1  *
* Acquisition date : 30-JUL-2024 11:13:34 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.73     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:06:00 Nuclide Library : SOLID           *
* Sample ID        : G674299002           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1358E+02 GRAM *
*                                         Quantity Err(%) : 1.7609E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.624E+00	1.379E+00	1.379E+00
CD-109	3.774E+00	2.336E+00	2.336E+00
SN-126	3.585E-01	2.211E-01	2.211E-01
TL-208	1.633E-01	1.140E-01	1.140E-01
BI-211	1.358E+01	1.763E+00	1.763E+00
PB-212	6.433E-01	1.842E-01	1.842E-01
BI-214	3.852E+00	5.180E-01	5.180E-01
PB-214	4.929E+00	6.350E-01	6.350E-01
RN-222	3.852E+00	5.180E-01	5.180E-01
RA-224	9.808E+00	2.142E+00	2.142E+00
RA-226	4.929E+00	6.350E-01	6.350E-01
AC-228	5.853E-01	2.974E-01	2.974E-01
RA-228	5.853E-01	2.974E-01	2.974E-01
TH-228	6.433E-01	1.842E-01	1.842E-01
TH-229	1.592E-01	8.509E-01	8.509E-01
TH-230	4.929E+00	6.349E-01	6.349E-01
TH-232	5.853E-01	2.974E-01	2.974E-01
TH-234	3.356E+00	4.776E+00	4.776E+00
U-234	4.929E+00	6.349E-01	6.349E-01
U-235	3.910E-01	5.133E-01	5.133E-01
U-238	3.356E+00	4.776E+00	4.776E+00
AM-243	5.270E-01	1.548E-01	1.548E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.219E-01	7.111E-01	7.132E-01	NOT IDENT.
NA-22	1.861E-02	4.448E-02	4.526E-02	NOT IDENT.
NA-24	-3.189E+14	9.051E+14	9.164E+14	SHORT HLIF
AL-26	-1.620E-02	5.398E-02	5.447E-02	NOT IDENT.
SC-46	-4.905E-02	6.503E-02	6.868E-02	FAIL ABUN
V-48	1.152E-01	2.398E-01	2.453E-01	NOT IDENT.
CR-51	-2.922E-01	8.899E-01	8.996E-01	NOT IDENT.
MN-52	-4.776E+00	3.938E+00	4.488E+00	FAIL ABUN

MN-54	-1.259E-02	6.250E-02	6.276E-02	NOT IDENT.
CO-56	-6.006E-03	6.023E-02	6.029E-02	FAIL ABUN
MN-56	-1.000E+41	1.003E+42	0.000E+00	SHORT HLIF
CO-57	6.147E-03	4.282E-02	4.291E-02	NOT IDENT.
CO-58	-5.436E-02	6.816E-02	7.243E-02	NOT IDENT.
FE-59	-7.793E-02	1.623E-01	1.661E-01	NOT IDENT.
CO-60	3.055E-02	5.910E-02	6.068E-02	NOT IDENT.
ZN-65	8.579E-02	1.289E-01	1.345E-01	NOT IDENT.
GE-68	3.891E-01	2.053E+00	2.060E+00	NOT IDENT.
AS-73	2.565E+00	2.450E+00	2.710E+00	NOT IDENT.
AS-74	-1.689E-01	2.825E-01	2.925E-01	NOT IDENT.
SE-75	4.819E-02	8.321E-02	8.600E-02	NOT IDENT.
BR-77	2.539E+04	2.602E+04	2.843E+04	SHORT HLIF
SR-82	2.577E-01	6.938E-01	7.035E-01	NOT IDENT.
RB-83	3.369E-02	1.265E-01	1.274E-01	NOT IDENT.
RB-84	6.346E-02	1.724E-01	1.747E-01	NOT IDENT.
KR-85	9.115E+00	1.262E+01	1.328E+01	NOT IDENT.
SR-85	5.854E-02	8.163E-02	8.579E-02	NOT IDENT.
RB-86	9.487E-01	2.405E+00	2.443E+00	NOT IDENT.
Y-88	-4.052E-02	6.269E-02	6.530E-02	NOT IDENT.
Y-91	2.532E+00	3.659E+01	3.661E+01	NOT IDENT.
NB-94	3.740E-02	5.386E-02	5.644E-02	NOT IDENT.
NB-95	5.545E-02	8.593E-02	8.949E-02	NOT IDENT.
NB-95M	7.863E-02	2.506E-01	2.531E-01	NOT IDENT.
ZR-95	1.656E-02	1.272E-01	1.274E-01	NOT IDENT.
NB-97	-1.000E+41	4.269E+41	0.000E+00	SHORT HLIF
ZR-97	1.691E+14	3.270E+14	3.358E+14	SHORT HLIF
MO-99	4.636E+02	1.686E+03	1.699E+03	SHORT HLIF
TC-99M	6.172E+38	3.847E+39	0.000E+00	SHORT HLIF
RH-101	-6.911E-03	5.009E-02	5.019E-02	NOT IDENT.
RH-102	-3.523E-02	7.518E-02	7.684E-02	FAIL ABUN
RU-103	4.638E-02	7.932E-02	8.203E-02	FAIL ABUN
RH-106	1.470E-01	4.173E-01	4.225E-01	NOT IDENT.
RU-106	1.470E-01	4.173E-01	4.225E-01	NOT IDENT.
AG-108M	-7.518E-03	4.049E-02	4.064E-02	NOT IDENT.
AG-110	-6.298E-02	9.836E-01	9.840E-01	NOT IDENT.
AG-110M	2.702E-02	8.693E-02	8.777E-02	NOT IDENT.
SN-113	-1.966E-02	8.394E-02	8.440E-02	NOT IDENT.
CD-115	7.205E+02	6.118E+03	6.127E+03	SHORT HLIF
SN-117M	5.507E-03	2.223E-01	2.223E-01	NOT IDENT.
SB-122	3.272E+02	4.226E+02	4.476E+02	SHORT HLIF
TE-123M	-3.476E-03	4.936E-02	4.939E-02	NOT IDENT.
SB-124	2.757E-02	1.668E-01	1.673E-01	NOT IDENT.
SB-125	-2.783E-03	2.113E-01	2.114E-01	NOT IDENT.
TE-125M	1.003E+01	1.787E+01	1.843E+01	NOT IDENT.
I-126	1.178E+00	9.446E-01	1.084E+00	NOT IDENT.
SB-126	5.601E-01	5.571E-01	6.117E-01	FAIL ABUN
SB-127	2.206E+00	5.770E+01	5.771E+01	NOT IDENT.
I-131	1.286E-01	8.441E-01	8.461E-01	NOT IDENT.
I-132	1.000E+41	3.396E+41	0.000E+00	SHORT HLIF
TE-132	1.588E+00	6.926E+01	6.926E+01	SHORT HLIF
BA-133	-1.760E-02	7.210E-02	7.253E-02	NOT IDENT.
I-133	7.638E+09	3.792E+10	3.808E+10	SHORT HLIF
CS-134	2.528E-02	6.134E-02	6.239E-02	NOT IDENT.
I-135	7.071E+36	8.490E+36	0.000E+00	SHORT HLIF
CS-136	4.040E-01	4.038E-01	4.429E-01	FAIL ABUN
BA-137M	-2.843E-02	5.059E-02	5.219E-02	NOT IDENT.
CS-137	-3.003E-02	5.345E-02	5.513E-02	NOT IDENT.
LA-138	-9.616E-03	8.811E-02	8.822E-02	NOT IDENT.
CE-139	-2.477E-02	4.751E-02	4.881E-02	NOT IDENT.
BA-140	6.097E-01	9.586E-01	9.972E-01	FAIL ABUN
LA-140	8.678E-02	3.232E-01	3.255E-01	NOT IDENT.
CE-141	1.837E-01	2.410E-01	2.549E-01	FAIL ABUN
CE-143	7.249E+06	3.523E+06	4.806E+06	SHORT HLIF
CE-144	8.810E-02	3.299E-01	3.323E-01	NOT IDENT.
PM-144	3.021E-03	4.225E-02	4.227E-02	NOT IDENT.
PR-144	2.165E-01	3.191E+00	3.193E+00	NOT IDENT.
PM-146	4.151E-02	6.783E-02	7.036E-02	NOT IDENT.
ND-147	3.891E-01	3.160E+00	3.165E+00	NOT IDENT.
PM-147	2.497E+02	1.190E+03	1.195E+03	NOT IDENT.
PM-149	-6.371E+03	5.455E+04	5.462E+04	SHORT HLIF
EU-150	-1.780E-02	4.671E-02	4.739E-02	FAIL ABUN
EU-152	2.245E-02	1.558E-01	1.562E-01	FAIL ABUN
GD-153	-4.512E-02	1.419E-01	1.434E-01	NOT IDENT.
EU-154	4.866E-02	1.238E-01	1.257E-01	NOT IDENT.
EU-155	2.069E-01	1.638E-01	1.885E-01	FAIL ABUN
TB-160	1.048E-02	2.701E-01	2.702E-01	FAIL ABUN
HO-166M	-1.110E-03	8.536E-02	8.536E-02	NOT IDENT.

TM-171	-3.008E+01	4.592E+01	4.788E+01	NOT IDENT.
HF-172	4.434E-02	2.935E-01	2.941E-01	FAIL ABUN
LU-172	1.451E-02	9.144E-02	9.168E-02	FAIL ABUN
LU-176	-3.826E-02	4.098E-02	4.447E-02	FAIL ABUN
HF-181	4.329E-02	9.542E-02	9.739E-02	NOT IDENT.
TA-182	1.112E-01	2.388E-01	2.440E-01	FAIL ABUN
RE-183	2.997E-02	5.159E-01	5.161E-01	NOT IDENT.
RE-184	-2.456E-02	2.680E-01	2.682E-01	NOT IDENT.
W-188	-8.922E+00	1.559E+01	1.610E+01	FAIL ABUN
IR-192	-6.757E-02	6.004E-02	6.732E-02	FAIL ABUN
HG-203	-1.095E-02	7.780E-02	7.795E-02	FAIL ABUN
TL-204	3.800E-01	9.770E+00	9.771E+00	FAIL ABUN
BI-207	3.325E-02	6.480E-02	6.651E-02	FAIL ABUN
BI-210	-6.125E+00	1.016E+01	1.053E+01	NOT IDENT.
PB-210	-6.125E+00	1.016E+01	1.053E+01	NOT IDENT.
PB-211	-4.523E-01	1.125E+00	1.143E+00	FAIL ABUN
BI-212	9.776E-01	7.105E-01	8.360E-01	NOT IDENT.
BI-213	7.086E-04	1.590E-01	1.590E-01	NOT IDENT.
RN-219	-1.305E-01	6.529E-01	6.555E-01	FAIL ABUN
RA-223	-1.469E-02	1.075E+00	1.075E+00	FAIL ABUN
AC-225	6.709E-01	3.392E+00	3.405E+00	NOT IDENT.
AC-227	-9.908E-02	3.767E-01	3.794E-01	NOT IDENT.
TH-227	-9.908E-02	3.767E-01	3.794E-01	NOT IDENT.
PA-231	3.567E-02	9.212E-01	9.214E-01	NOT IDENT.
TH-231	-1.469E-02	1.075E+00	1.075E+00	FAIL ABUN
PA-233	-3.592E-02	1.017E-01	1.030E-01	NOT IDENT.
PA-234	5.016E-03	4.269E-01	4.269E-01	FAIL ABUN
PA-234M	4.430E+00	7.419E+00	7.683E+00	NOT IDENT.
NP-237	-3.592E-02	1.017E-01	1.030E-01	FAIL ABUN
NP-238	1.380E+03	1.553E+04	1.554E+04	SHORT HLIF
NP-239	-3.058E-02	4.214E-01	4.216E-01	NOT IDENT.
PU-239	1.756E+02	5.608E+02	5.664E+02	FAIL ABUN
AM-241	-1.613E-01	3.553E-01	3.627E-01	NOT IDENT.
CM-243	-9.581E-02	1.734E-01	1.787E-01	NOT IDENT.
BK-247	8.192E-02	1.340E-01	1.390E-01	FAIL ABUN
CM-247	1.571E-02	5.687E-02	5.731E-02	NOT IDENT.
CF-249	4.059E-02	6.802E-02	7.043E-02	NOT IDENT.
CF-251	-5.737E-02	1.981E-01	1.998E-01	NOT IDENT.
ANH-511	9.543E-04	6.775E-02	6.775E-02	NOT IDENT.

```
*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	86.6974	85.43	151.2111	131.20	108.5027
45.60	91.3433	86.55	151.5423	133.02	101.4564
46.54	99.8296	86.79	181.0303	133.52	91.7439
49.72	0.0000	86.94	181.0840	136.00	94.5287
51.35	107.4568	87.09	181.1365	136.47	108.1053
51.87	101.3411	87.57	181.3049	140.51	0.0000
52.39	110.9004	88.03	190.5394	143.76	111.6980
52.97	98.4998	88.34	190.6534	144.24	111.7722
53.44	82.8861	88.47	190.7009	145.44	96.1994
54.07	83.0253	89.96	191.2443	152.43	116.3622
57.36	0.0000	1093.63	180.0922	153.25	103.9174
57.53	96.5014	91.11	191.6609	323.87	114.1178
57.98	102.9815	92.59	148.7206	156.02	121.1162
59.27	119.2935	93.35	148.9309	158.56	102.9512
59.32	119.3083	94.56	96.4470	159.00	105.5412
59.54	119.3738	94.65	96.4630	162.33	91.5754
60.96	111.2371	94.67	96.4668	162.66	83.1311
61.17	111.2946	94.87	96.5021	163.33	78.9569
62.93	119.2942	97.43	101.5681	165.86	94.5381
63.29	119.3971	98.43	94.8131	176.31	87.9862
63.58	119.4801	98.44	94.8150	176.60	89.7432
64.28	130.8206	99.53	90.3648	177.52	97.6152
66.73	134.4651	100.11	106.6937	181.07	0.0000
67.24	132.4527	102.03	98.9083	181.52	95.0395
125.81	127.1529	103.18	109.5997	184.41	107.1158
67.75	132.6072	103.37	110.8027	143.76	109.8937
68.89	134.0423	105.21	79.5625	193.51	97.6693
69.67	112.0817	105.31	76.0653	197.03	107.7689
70.82	128.4220	106.12	91.4045	198.01	99.9256
70.83	128.4255	106.47	111.3919	201.83	90.5760
72.81	139.6145	109.28	77.7541	203.43	94.7356
72.87	139.6329	111.00	103.9683	205.31	97.6003
74.66	140.1756	111.76	0.0000	210.85	79.3470
74.82	140.2240	114.06	85.4907	215.65	92.8104
74.97	140.2686	116.30	0.0000	218.12	76.7857
77.11	140.9081	116.74	96.5910	222.11	71.6564
78.74	141.0175	119.76	100.6472	227.09	75.6612
79.69	141.2949	121.12	91.2549	227.38	77.5068
80.03	141.3925	121.22	91.2688	228.16	0.0000
80.12	138.4423	121.78	92.5502	228.18	79.3933
80.19	138.4622	122.06	94.9950	116.74	79.3933
80.57	109.5150	122.92	102.3454	235.69	75.8432
81.00	147.6400	123.07	96.3470	235.96	75.8633
81.07	138.7119	265.00	98.8483	238.63	82.9733
81.75	132.9287	125.81	85.8655	238.98	0.0000
82.47	127.1403	127.23	96.9562	240.99	83.1601
83.79	134.9744	127.91	105.5480	242.00	83.2407
84.00	135.0302	129.30	102.1187	244.70	66.7625

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	67.2437	344.28	48.3291	563.25	34.4531
252.80	71.0049	345.93	51.4119	564.24	0.0000
254.15	0.0000	351.06	50.5920	569.33	26.4936
256.23	62.7934	351.93	50.6236	946.00	26.4964
260.90	0.0000	355.39	0.0000	569.70	26.4992
264.66	49.5787	356.01	45.6949	583.19	34.7937
264.80	48.1684	364.49	33.7110	584.27	34.8120
265.00	48.1767	366.42	0.0000	595.83	30.6314
269.46	70.1790	372.51	28.7628	427.87	23.6843
270.03	70.2151	375.05	37.0459	602.52	0.0000
271.23	70.2889	377.52	36.0774	604.72	49.2188
273.65	58.5384	356.01	49.6904	607.14	36.6044
276.40	66.7885	388.16	42.5674	609.32	26.4249
277.37	73.5285	388.63	47.7735	610.33	9.8701
277.60	64.9467	391.69	48.9115	614.28	21.1890
278.00	64.0134	264.66	40.8265	618.01	22.1107
279.20	61.2109	401.81	43.9995	620.36	23.0206
279.54	57.4011	402.40	35.6325	621.93	16.8349
279.70	52.6255	404.85	44.0867	630.19	0.0000
280.46	47.8719	410.95	35.8296	631.29	24.0263
283.69	59.5239	413.71	42.7544	633.25	15.1411
284.31	60.5160	414.70	39.6126	634.78	21.3911
285.41	53.8421	423.72	38.2449	635.95	14.2681
285.90	0.0000	427.09	38.3247	636.99	16.9514
287.50	56.8261	427.87	38.3438	657.50	18.9095
290.67	66.6332	433.94	22.4509	657.76	22.5143
293.27	0.0000	439.40	35.3982	657.90	0.0000
351.93	69.7925	440.45	33.2737	661.66	27.0639
295.96	69.8350	453.88	30.2969	664.57	0.0000
879.38	74.3584	463.37	34.8190	666.33	18.0792
299.98	67.1442	468.07	36.0051	666.50	18.0811
300.09	67.1498	473.00	36.1078	667.71	0.0000
300.13	68.6124	475.06	34.5076	677.62	19.9858
301.36	70.1426	476.78	24.6721	685.70	21.8789
302.85	72.1768	477.60	29.6208	692.65	0.0000
256.23	48.8332	482.18	27.4979	695.00	18.3051
304.85	51.7772	487.02	23.1614	696.49	15.5692
306.78	60.6629	492.35	0.0000	696.51	15.5692
308.46	50.9473	497.08	16.6370	697.00	18.3203
311.90	55.9980	505.52	27.8570	697.30	18.3228
316.51	53.2430	507.63	0.0000	697.49	18.3240
319.41	45.4572	511.00	27.9399	702.65	23.8735
320.08	49.4354	514.00	30.2245	706.68	30.3524
321.04	48.4826	514.00	30.2245	711.68	21.1989
323.87	59.4958	520.40	25.8348	720.70	11.6303
325.23	52.6097	520.69	0.0000	721.93	0.0000
328.76	56.7321	522.65	0.0000	722.78	23.7039
333.37	46.7419	527.90	0.0000	722.91	20.7423
333.97	52.4583	528.26	25.7168	723.31	20.7457
334.37	44.9780	529.59	25.3967	724.19	13.3414
338.28	44.1065	529.87	0.0000	727.33	12.0598
338.32	44.1083	531.02	25.4160	733.00	12.0875
311.90	57.2308	537.26	11.8992	735.93	7.4475
340.48	57.2308	546.56	0.0000	333.97	0.0000
340.55	57.2343	552.55	22.2731	739.50	0.0000

ENERGY	MDA COUNTS
744.23	22.4172
747.24	13.4666
748.06	13.7205
752.31	21.4188
753.82	13.5022
756.73	15.0200
756.80	15.0200
884.68	7.5313
765.81	19.5958
766.42	18.8464
766.84	18.8501
772.60	0.0000
776.52	12.2990
739.50	0.0000
778.90	19.8855
783.70	19.7330
788.74	13.6876
792.07	25.3800
795.86	18.1094
810.06	22.0405
810.29	24.9169
344.28	23.9601
810.76	23.0046
815.77	16.9018
1048.07	17.3035
832.01	19.3225
834.85	20.1164
835.71	23.2185
836.80	0.0000
846.75	0.0000
846.77	14.5702
856.80	28.0767
860.56	17.5715
871.09	16.6576
873.19	20.5924
875.33	0.0000
879.38	22.6027
880.51	21.6287
881.60	19.6698
883.24	24.6017
884.68	19.6912
889.28	19.7229
894.76	14.8206
898.04	15.8262
900.72	15.8408
903.28	17.8369
911.20	19.0775
912.08	14.3125
923.98	0.0000
926.50	13.9833
929.11	6.3980
935.54	15.0275
937.49	19.2480
944.13	19.0899
946.00	15.0801

ENERGY	MDA COUNTS
949.00	14.0889
667.71	0.0000
962.31	17.5195
964.08	21.0361
966.17	25.9078
911.20	14.1812
983.53	13.2305
984.45	0.0000
1274.44	21.4595
1001.03	13.3047
1002.74	17.4078
1004.73	24.5911
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	21.7396
1038.76	0.0000
631.29	17.6464
1048.07	8.3081
1049.04	11.4270
1050.41	20.7849
1063.66	8.3472
1077.00	10.0570
1077.34	11.7339
1085.87	15.1251
1093.63	12.6328
1099.45	14.7639
1112.07	12.7017
1112.84	14.5195
1115.54	8.4761
1120.29	19.0975
1120.55	19.0986
1221.41	19.1030
1129.67	21.2769
1131.51	0.0000
1147.95	0.0000
1173.23	10.7703
1177.95	5.1765
1189.05	3.4615
1204.77	14.1227
1221.41	7.6392
1231.02	10.2118
1235.36	8.7627
1238.28	7.6733
1260.41	0.0000
1271.87	11.0596
1274.44	3.5414
1274.54	3.5414
1291.59	7.7810
1298.22	0.0000
1312.11	11.1743
1332.49	7.8622
1362.66	0.0000
1365.19	8.1523
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	15.1676
1408.01	8.2375
1434.09	14.7352
1435.80	10.1342
1457.56	0.0000
1460.82	13.9006
1489.16	8.3949
1505.03	9.3613
1584.12	11.4316
1596.21	4.7756
1620.50	3.8402
1621.92	1.9207
1678.03	0.0000
1690.97	5.8456
1750.46	0.0000
1764.49	4.9438
1063.66	4.9495
1771.35	3.3005
1791.20	0.0000
1808.65	6.9815
1810.72	0.0000
1836.06	7.0185

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:16:28.62

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299003.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM10.CNF;712
                                         Background date  : 29-JUL-2024 05:36:52
Sample date      : 26-JUN-2024 09:08:00  Acquisition date : 30-JUL-2024 11:14:02
Sample ID        : G674299003            Sample quantity  : 1.18580E+02 GRAM
Detector name    : GAM10                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.80  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	75.18	184	296	1.19	149.92	146	14	5.11E-02	17.1	1.20E+00
2	3	77.52	294	301	1.23	154.61	146	14	8.18E-02	11.6	
3	0	83.69*	84	336	1.38	166.95	162	10	2.33E-02	42.5	
4	0	88.35	191	377	1.45	176.27	172	11	5.31E-02	20.9	
5	0	93.34*	59	335	1.30	186.24	182	8	1.63E-02	57.3	
6	0	186.38*	342	244	1.39	372.36	367	11	9.50E-02	10.5	
7	2	238.97*	264	173	1.57	477.56	473	17	7.34E-02	10.7	2.78E+00
8	2	242.43	361	128	1.51	484.48	473	17	1.00E-01	8.0	
9	0	270.86	70	153	2.10	541.34	535	12	1.95E-02	37.2	
10	2	295.62	687	98	1.35	590.86	585	19	1.91E-01	4.5	7.96E-01
11	2	300.15	56	64	1.71	599.93	585	19	1.56E-02	31.3	
12	0	323.76	20	85	0.93	647.16	644	8	5.50E-03	83.4	
13	0	352.26*	1248	96	1.39	704.18	696	14	3.47E-01	3.3	
14	0	452.57	23	25	1.45	904.84	902	6	6.32E-03	40.8	
15	0	456.03	29	38	1.48	911.75	908	8	7.92E-03	41.9	
16	0	511.40*	22	75	1.90	1022.52	1016	16	6.12E-03	100.0	
17	0	583.34*	65	45	2.07	1166.45	1163	9	1.79E-02	22.8	
18	0	609.65*	876	55	1.48	1219.07	1212	15	2.43E-01	3.9	
19	0	727.53	24	20	1.64	1454.90	1450	9	6.75E-03	39.0	
20	0	742.01	17	24	0.92	1483.88	1477	10	4.58E-03	61.4	
21	0	768.80	79	66	1.48	1537.47	1530	17	2.19E-02	25.9	
22	0	786.82	29	22	2.64	1573.52	1568	10	7.97E-03	36.1	
23	5	803.24	14	6	2.16	1606.38	1605	34	3.78E-03	29.3	1.04E+00
24	5	806.38	34	22	1.92	1612.65	1605	34	9.36E-03	33.2	
25	0	911.47*	60	33	2.13	1822.90	1817	13	1.66E-02	24.0	
26	0	934.61	33	36	1.18	1869.22	1863	13	9.11E-03	41.5	
27	0	969.65*	47	18	1.33	1939.31	1934	13	1.31E-02	23.6	
28	0	1058.43	12	12	3.76	2116.96	2111	11	3.28E-03	66.6	
29	0	1069.97	17	6	3.82	2140.03	2135	10	4.60E-03	39.1	
30	3	1120.46*	174	13	2.07	2241.07	2234	28	4.83E-02	8.8	1.02E+00
31	3	1125.24*	15	3	2.53	2250.64	2234	28	4.05E-03	76.0	
32	0	1132.55*	7	6	1.30	2265.26	2261	6	1.85E-03	71.4	
33	0	1156.06	15	22	2.33	2312.31	2306	11	4.12E-03	66.6	
34	0	1201.79	17	16	0.63	2403.81	2398	13	4.83E-03	53.3	

Sample ID : G674299003 Acquisition date : 30-JUL-2024 11:14:02

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1238.41	88	4	2.55	2477.07	2469	16	2.45E-02	11.8	
36	0	1280.63	18	18	1.85	2561.56	2555	12	5.00E-03	52.7	
37	0	1285.11	11	4	2.24	2570.52	2567	7	3.00E-03	45.5	
38	0	1377.82	61	13	1.23	2756.05	2749	13	1.69E-02	17.7	
39	0	1401.40	27	3	2.99	2803.23	2798	11	7.51E-03	22.7	
40	0	1408.42	31	3	1.66	2817.27	2811	12	8.62E-03	21.1	
41	0	1460.91*	87	15	2.14	2922.30	2914	15	2.42E-02	14.7	
42	0	1491.34	5	6	3.81	2983.20	2974	12	1.39E-03	107.7	
43	0	1509.82	35	4	1.58	3020.19	3014	15	9.66E-03	20.9	
44	0	1593.60	16	5	2.33	3187.85	3182	11	4.46E-03	37.5	
45	0	1661.09*	25	0	0.63	3322.92	3315	14	6.81E-03	20.5	
46	0	1685.34*	4	5	0.95	3371.43	3365	10	1.18E-03	133.6	
47	0	1729.72	38	0	2.58	3460.26	3454	11	1.06E-02	16.2	
48	0	1764.48*	133	8	1.68	3529.82	3522	16	3.68E-02	10.0	
49	0	1847.03	27	0	0.62	3695.04	3686	15	7.50E-03	19.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:16:30

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299003.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 09:08:00 Acquisition date : 30-JUL-2024 11:14:02
Sample ID        : G674299003           Sample quantity  : 118.58 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA10              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.80   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	82	10.66*	1.031E+00	4.737E+00	4.737E+00	29.33
CD-109	88.03	207	3.70*	4.566E+00	7.756E+00	8.164E+00	41.77
SN-126	64.28	------	9.60	1.756E+00	------	Line Not Found	------
	86.94	207	8.90	4.566E+00	3.224E+00	3.224E+00	41.77
	87.57	207	37.00*	4.566E+00	7.756E-01	7.756E-01	41.77
TL-208	277.37	------	6.60	4.212E+00	------	Line Not Found	------
	583.19	64	85.00*	2.441E+00	1.950E-01	1.950E-01	45.52
	860.56	------	12.50	1.716E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	2.854E+00	------	Line Not Found	------
	351.06	1266	12.92*	3.564E+00	1.741E+01	1.741E+01	6.58
BI-212	727.33	24	6.67*	2.014E+00	1.121E+00	1.121E+00	77.91
	1620.50	------	1.47	9.584E-01	------	Line Not Found	------
PB-212	74.82	200	10.28	3.143E+00	3.928E+00	3.928E+00	34.27
	77.11	320	17.10	3.428E+00	3.460E+00	3.460E+00	23.14
	238.63	273	43.60*	4.664E+00	8.505E-01	8.505E-01	21.46
	300.09	57	3.30	3.987E+00	2.763E+00	2.763E+00	62.50
BI-214	609.32	865	45.49*	2.353E+00	5.118E+00	5.118E+00	7.75
	1120.29	167	14.92	1.317E+00	5.373E+00	5.373E+00	17.58
	1764.49	124	15.30	9.178E-01	5.593E+00	5.593E+00	20.03
PB-214	74.82	200	5.80	3.143E+00	6.962E+00	6.963E+00	34.27
	77.11	320	9.70	3.428E+00	6.099E+00	6.100E+00	23.14
	87.09	207	3.41	4.566E+00	8.415E+00	8.416E+00	41.77
	242.00	373	7.25	4.619E+00	7.044E+00	7.045E+00	16.01
	295.22	703	18.42	4.030E+00	5.997E+00	5.997E+00	9.08
	351.93	1266	35.60*	3.564E+00	6.319E+00	6.319E+00	6.58
RN-222	609.32	865	45.49*	2.353E+00	5.118E+00	5.118E+00	7.75
	1120.29	167	14.92	1.317E+00	5.373E+00	5.373E+00	17.58
	1764.49	124	15.30	9.178E-01	5.593E+00	5.593E+00	20.03
RA-224	240.99	373	4.10*	4.619E+00	1.246E+01	1.246E+01	16.01
RA-226	74.82	200	5.80	3.143E+00	6.962E+00	6.963E+00	34.27
	77.11	320	9.70	3.428E+00	6.099E+00	6.100E+00	23.14
	87.09	207	3.41	4.566E+00	8.415E+00	8.416E+00	41.77
	242.00	373	7.25	4.619E+00	7.044E+00	7.045E+00	16.01
	295.22	703	18.42	4.030E+00	5.997E+00	5.997E+00	9.08
	351.93	1266	35.60*	3.564E+00	6.319E+00	6.319E+00	6.58
TH-228	74.82	200	10.28	3.143E+00	3.928E+00	3.928E+00	34.27
	77.11	320	17.10	3.428E+00	3.460E+00	3.460E+00	23.14
	238.63	273	43.60*	4.664E+00	8.505E-01	8.505E-01	21.46
	300.09	57	3.30	3.987E+00	2.763E+00	2.763E+00	62.50
TH-230	74.82	200	5.80	3.143E+00	6.962E+00	6.963E+00	34.27
	77.11	320	9.70	3.428E+00	6.099E+00	6.099E+00	23.14
	87.09	207	3.41	4.566E+00	8.415E+00	8.415E+00	41.77
	242.00	373	7.25	4.619E+00	7.044E+00	7.045E+00	16.01
	295.22	703	18.42	4.030E+00	5.997E+00	5.997E+00	9.08
	351.93	1266	35.60*	3.564E+00	6.319E+00	6.319E+00	6.58
PA-231	283.69	------	1.70	4.147E+00	------	Line Not Found	------
	301.36	57	5.35*	3.987E+00	1.704E+00	1.704E+00	62.50
U-234	74.82	200	5.80	3.143E+00	6.962E+00	6.962E+00	34.27
	77.11	320	9.70	3.428E+00	6.099E+00	6.099E+00	23.14

Sample ID : G674299003 Acquisition date : 30-JUL-2024 11:14:02

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	87.09	207	3.41	4.566E+00	8.415E+00	8.415E+00	41.77
	242.00	373	7.25	4.619E+00	7.045E+00	7.045E+00	16.01
	295.22	703	18.42	4.030E+00	5.997E+00	5.997E+00	9.08
	351.93	1266	35.60*	3.564E+00	6.319E+00	6.319E+00	6.58
AM-243	43.53	------	5.90	1.019E-01	------	Line Not Found	------
	74.66	200	67.20*	3.143E+00	6.009E-01	6.009E-01	34.27
ANH-511	511.00	22	100.00*	2.711E+00	5.127E-02	5.127E-02	200.06

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:16:30.89

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299003.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:02 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.80     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:08:00 Analyst initials: RXF2            *
* Sample ID        : G674299003           Sample Quantity : 1.1858E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	4.737E+00	1.361E+00	1.200E+00
CD-109	8.164E+00	3.342E+00	2.460E+00
SN-126	7.756E-01	3.175E-01	2.358E-01
TL-208	1.950E-01	8.699E-02	1.034E-01
BI-211	1.741E+01	1.123E+00	4.789E-01
BI-212	1.121E+00	8.562E-01	1.229E+00
PB-212	8.505E-01	1.789E-01	1.633E-01
BI-214	5.118E+00	3.886E-01	1.635E-01
PB-214	6.319E+00	4.076E-01	1.742E-01
RN-222	5.118E+00	3.886E-01	1.635E-01
RA-224	1.246E+01	1.955E+00	1.749E+00
RA-226	6.319E+00	4.076E-01	1.742E-01
TH-228	8.505E-01	1.789E-01	1.633E-01
TH-230	6.319E+00	4.076E-01	1.741E-01
PA-231	1.704E+00	1.044E+00	1.275E+00
U-234	6.319E+00	4.076E-01	1.741E-01
AM-243	6.009E-01	2.018E-01	2.134E-01
ANH-511	5.127E-02	1.005E-01	6.674E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-4.463E-01	5.113E-01	8.472E-01	NOT IDENT.
NA-22	-9.393E-03	6.451E-02	1.068E-01	NOT IDENT.
NA-24	0.000E+00	1.502E+15	0.000E+00	SHORT HLIF
AL-26	-5.418E-03	4.885E-02	9.601E-02	NOT IDENT.
SC-46	8.729E-03	5.765E-02	1.156E-01	FAIL ABUN
V-48	-1.649E-01	2.254E-01	3.938E-01	NOT IDENT.
CR-51	4.317E-01	9.880E-01	1.704E+00	NOT IDENT.
MN-52	-1.526E+00	3.894E+00	7.063E+00	FAIL ABUN
MN-54	-1.559E-02	4.999E-02	9.452E-02	NOT IDENT.
CO-56	-4.231E-02	5.828E-02	1.034E-01	FAIL ABUN
MN-56	0.000E+00	1.407E+41	0.000E+00	SHORT HLIF
CO-57	-3.579E-02	4.313E-02	6.960E-02	NOT IDENT.

CO-58	-2.718E-02	6.044E-02	1.028E-01	NOT IDENT.
FE-59	-7.076E-02	1.474E-01	2.674E-01	NOT IDENT.
CO-60	-1.055E-02	5.278E-02	1.003E-01	NOT IDENT.
ZN-65	7.864E-02	1.195E-01	2.348E-01	NOT IDENT.
GE-68	9.869E-01	1.779E+00	3.714E+00	NOT IDENT.
AS-73	-3.921E+00	4.619E+00	7.749E+00	NOT IDENT.
AS-74	-2.863E-01	2.708E-01	4.280E-01	NOT IDENT.
SE-75	1.856E-03	7.276E-02	1.294E-01	NOT IDENT.
BR-77	0.000E+00	7.057E+03	0.000E+00	SHORT HLIF
SR-82	-3.476E-01	8.761E-01	1.411E+00	NOT IDENT.
RB-83	7.800E-02	1.059E-01	2.122E-01	NOT IDENT.
RB-84	1.016E-01	1.356E-01	2.890E-01	NOT IDENT.
KR-85	7.836E+00	9.334E+00	1.856E+01	NOT IDENT.
SR-85	5.046E-02	6.036E-02	1.200E-01	NOT IDENT.
RB-86	1.494E+00	2.265E+00	4.746E+00	NOT IDENT.
Y-88	-2.504E-02	6.231E-02	1.126E-01	NOT IDENT.
Y-91	-2.614E+01	3.971E+01	5.766E+01	NOT IDENT.
NB-94	4.277E-02	5.055E-02	9.970E-02	NOT IDENT.
NB-95	-7.722E-03	8.229E-02	1.302E-01	NOT IDENT.
NB-95M	5.185E-02	2.505E-01	4.222E-01	NOT IDENT.
ZR-95	-6.312E-03	1.089E-01	1.990E-01	NOT IDENT.
NB-97	0.000E+00	1.100E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.224E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.445E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	3.175E+39	0.000E+00	SHORT HLIF
RH-101	3.556E-02	5.120E-02	9.165E-02	FAIL ABUN
RH-102	-1.035E-02	6.884E-02	1.246E-01	NOT IDENT.
RU-103	7.469E-02	7.256E-02	1.490E-01	FAIL ABUN
RH-106	-2.861E-01	4.336E-01	7.250E-01	NOT IDENT.
RU-106	-2.861E-01	4.336E-01	7.250E-01	NOT IDENT.
AG-108M	2.292E-03	4.051E-02	7.547E-02	NOT IDENT.
AG-110	1.026E+00	9.915E-01	2.058E+00	NOT IDENT.
AG-110M	-2.461E-02	7.221E-02	1.345E-01	NOT IDENT.
SN-113	2.686E-02	7.453E-02	1.409E-01	NOT IDENT.
CD-115	0.000E+00	5.449E+03	0.000E+00	SHORT HLIF
SN-117M	6.795E-02	2.209E-01	4.199E-01	NOT IDENT.
SB-122	0.000E+00	2.967E+02	0.000E+00	SHORT HLIF
TE-123M	-5.450E-03	4.903E-02	9.125E-02	NOT IDENT.
SB-124	-3.866E-03	1.159E-01	2.381E-01	NOT IDENT.
SB-125	3.771E-02	1.408E-01	2.635E-01	NOT IDENT.
TE-125M	-7.591E+00	2.171E+01	3.643E+01	NOT IDENT.
I-126	2.985E-01	8.467E-01	1.607E+00	NOT IDENT.
SB-126	3.724E-01	5.975E-01	1.166E+00	NOT IDENT.
SB-127	-1.565E+01	4.849E+01	8.532E+01	NOT IDENT.
I-131	1.462E-01	7.825E-01	1.478E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.144E+01	0.000E+00	SHORT HLIF
BA-133	-1.744E-02	6.036E-02	9.678E-02	NOT IDENT.
I-133	0.000E+00	2.930E+10	0.000E+00	SHORT HLIF
CS-134	3.683E-03	6.055E-02	1.103E-01	FAIL ABUN
I-135	0.000E+00	5.245E+36	0.000E+00	SHORT HLIF
CS-136	6.455E-02	3.679E-01	7.383E-01	NOT IDENT.
BA-137M	-4.934E-02	4.575E-02	7.060E-02	NOT IDENT.
CS-137	-5.213E-02	4.833E-02	7.458E-02	NOT IDENT.
LA-138	1.914E-02	8.976E-02	1.809E-01	NOT IDENT.
CE-139	2.324E-02	4.869E-02	9.340E-02	NOT IDENT.
BA-140	-1.137E+00	1.038E+00	1.649E+00	NOT IDENT.
LA-140	9.641E-02	3.392E-01	6.634E-01	NOT IDENT.
CE-141	1.631E-02	1.484E-01	2.777E-01	NOT IDENT.
CE-143	0.000E+00	3.238E+06	0.000E+00	SHORT HLIF
CE-144	1.564E-01	3.554E-01	6.218E-01	NOT IDENT.
PM-144	-2.864E-02	5.489E-02	9.251E-02	NOT IDENT.
PR-144	-2.204E+00	4.145E+00	6.976E+00	NOT IDENT.
PM-146	7.551E-02	6.045E-02	1.133E-01	FAIL ABUN
ND-147	-1.457E+00	2.407E+00	4.110E+00	NOT IDENT.
PM-147	-7.600E+02	1.209E+03	1.981E+03	NOT IDENT.
PM-149	0.000E+00	5.517E+04	0.000E+00	SHORT HLIF
EU-150	2.222E-03	3.651E-02	6.793E-02	FAIL ABUN
EU-152	4.927E-02	1.450E-01	2.737E-01	FAIL ABUN
GD-153	3.811E-02	1.667E-01	2.920E-01	NOT IDENT.
EU-154	-3.265E-02	1.800E-01	2.954E-01	NOT IDENT.
EU-155	-1.549E-02	1.911E-01	3.268E-01	NOT IDENT.
TB-160	-1.868E-02	2.089E-01	4.040E-01	NOT IDENT.
HO-166M	-5.151E-03	8.048E-02	1.458E-01	NOT IDENT.
TM-171	-1.350E+01	8.610E+01	1.512E+02	NOT IDENT.
HF-172	1.067E-01	3.185E-01	5.568E-01	NOT IDENT.
LU-172	2.403E-02	7.567E-02	1.571E-01	FAIL ABUN
LU-176	-1.756E-03	3.764E-02	6.943E-02	FAIL ABUN

HF-181	5.174E-02	8.159E-02	1.601E-01	NOT IDENT.
TA-182	-9.653E-02	2.492E-01	4.552E-01	FAIL ABUN
RE-183	-6.072E-01	8.536E-01	1.439E+00	NOT IDENT.
RE-184	-1.107E-01	2.897E-01	5.310E-01	NOT IDENT.
W-188	-7.496E+00	1.408E+01	2.211E+01	NOT IDENT.
IR-192	-6.197E-02	6.041E-02	1.023E-01	FAIL ABUN
HG-203	-3.737E-02	7.460E-02	1.330E-01	NOT IDENT.
TL-204	-8.528E+00	1.239E+01	2.073E+01	FAIL ABUN
BI-207	-2.547E-02	7.300E-02	1.167E-01	FAIL ABUN
BI-210	5.888E+00	2.409E+01	4.360E+01	NOT IDENT.
PB-210	5.888E+00	2.409E+01	4.360E+01	NOT IDENT.
PB-211	2.521E-01	1.010E+00	1.899E+00	NOT IDENT.
BI-213	-8.293E-02	1.529E-01	2.655E-01	NOT IDENT.
RN-219	2.002E-01	5.919E-01	1.118E+00	FAIL ABUN
RA-223	8.463E-01	1.384E+00	1.887E+00	FAIL ABUN
AC-225	7.549E-01	3.337E+00	6.272E+00	NOT IDENT.
AC-227	2.740E-01	4.053E-01	7.779E-01	FAIL ABUN
TH-227	2.740E-01	4.053E-01	7.779E-01	FAIL ABUN
AC-228	0.000E+00	4.120E-01	6.565E-01	FAIL ABUN
RA-228	0.000E+00	4.120E-01	6.565E-01	FAIL ABUN
TH-229	-9.735E-02	8.135E-01	1.502E+00	FAIL ABUN
TH-231	8.463E-01	1.384E+00	1.887E+00	FAIL ABUN
TH-232	0.000E+00	4.120E-01	6.565E-01	FAIL ABUN
PA-233	-6.645E-02	9.632E-02	1.660E-01	FAIL ABUN
PA-234	-1.337E-01	3.965E-01	7.391E-01	FAIL ABUN
PA-234M	5.045E+00	6.852E+00	1.426E+01	NOT IDENT.
TH-234	2.545E+00	3.838E+00	6.993E+00	FAIL ABUN
U-235	2.093E-01	3.224E-01	6.176E-01	FAIL ABUN
NP-237	-6.645E-02	9.632E-02	1.660E-01	FAIL ABUN
NP-238	0.000E+00	1.504E+04	0.000E+00	SHORT HLIF
U-238	2.545E+00	3.838E+00	6.993E+00	FAIL ABUN
NP-239	1.075E-01	4.250E-01	7.437E-01	NOT IDENT.
PU-239	-6.015E+01	5.708E+02	9.663E+02	NOT IDENT.
AM-241	-1.147E-01	4.996E-01	8.680E-01	NOT IDENT.
CM-243	4.098E-02	1.940E-01	3.381E-01	NOT IDENT.
BK-247	2.523E-02	1.174E-01	2.120E-01	FAIL ABUN
CM-247	4.068E-02	5.174E-02	1.020E-01	NOT IDENT.
CF-249	1.813E-03	6.464E-02	1.182E-01	NOT IDENT.
CF-251	-1.209E-01	2.199E-01	3.975E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:16:29.45

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	82	10.66*	1.031E+00	4.737E+00	4.737E+00	29.33
CD-109	88.03	207	3.70*	4.566E+00	7.756E+00	8.164E+00	41.77
SN-126	64.28	------	9.60	1.756E+00	------	Line Not Found	------
	86.94	207	8.90	4.566E+00	3.224E+00	3.224E+00	41.77
	87.57	207	37.00*	4.566E+00	7.756E-01	7.756E-01	41.77
TL-208	277.37	------	6.60	4.212E+00	------	Line Not Found	------
	583.19	64	85.00*	2.441E+00	1.950E-01	1.950E-01	45.52
	860.56	------	12.50	1.716E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	2.854E+00	------	Line Not Found	------
	351.06	1266	12.92*	3.564E+00	1.741E+01	1.741E+01	6.58
BI-212	727.33	24	6.67*	2.014E+00	1.121E+00	1.121E+00	77.91
	1620.50	------	1.47	9.584E-01	------	Line Not Found	------
PB-212	74.82	200	10.28	3.143E+00	3.928E+00	3.928E+00	34.27
	77.11	320	17.10	3.428E+00	3.460E+00	3.460E+00	23.14
	238.63	273	43.60*	4.664E+00	8.505E-01	8.505E-01	21.46
	300.09	57	3.30	3.987E+00	2.763E+00	2.763E+00	62.50
BI-214	609.32	865	45.49*	2.353E+00	5.118E+00	5.118E+00	7.75
	1120.29	167	14.92	1.317E+00	5.373E+00	5.373E+00	17.58
	1764.49	124	15.30	9.178E-01	5.593E+00	5.593E+00	20.03
PB-214	74.82	200	5.80	3.143E+00	6.962E+00	6.963E+00	34.27
	77.11	320	9.70	3.428E+00	6.099E+00	6.100E+00	23.14
	87.09	207	3.41	4.566E+00	8.415E+00	8.416E+00	41.77
	242.00	373	7.25	4.619E+00	7.044E+00	7.045E+00	16.01
	295.22	703	18.42	4.030E+00	5.997E+00	5.997E+00	9.08
	351.93	1266	35.60*	3.564E+00	6.319E+00	6.319E+00	6.58
RN-222	609.32	865	45.49*	2.353E+00	5.118E+00	5.118E+00	7.75
	1120.29	167	14.92	1.317E+00	5.373E+00	5.373E+00	17.58
	1764.49	124	15.30	9.178E-01	5.593E+00	5.593E+00	20.03
RA-224	240.99	373	4.10*	4.619E+00	1.246E+01	1.246E+01	16.01
RA-226	74.82	200	5.80	3.143E+00	6.962E+00	6.963E+00	34.27
	77.11	320	9.70	3.428E+00	6.099E+00	6.100E+00	23.14
	87.09	207	3.41	4.566E+00	8.415E+00	8.416E+00	41.77
	242.00	373	7.25	4.619E+00	7.044E+00	7.045E+00	16.01
	295.22	703	18.42	4.030E+00	5.997E+00	5.997E+00	9.08
	351.93	1266	35.60*	3.564E+00	6.319E+00	6.319E+00	6.58
TH-228	74.82	200	10.28	3.143E+00	3.928E+00	3.928E+00	34.27
	77.11	320	17.10	3.428E+00	3.460E+00	3.460E+00	23.14
	238.63	273	43.60*	4.664E+00	8.505E-01	8.505E-01	21.46
	300.09	57	3.30	3.987E+00	2.763E+00	2.763E+00	62.50
TH-230	74.82	200	5.80	3.143E+00	6.962E+00	6.963E+00	34.27
	77.11	320	9.70	3.428E+00	6.099E+00	6.099E+00	23.14
	87.09	207	3.41	4.566E+00	8.415E+00	8.415E+00	41.77
	242.00	373	7.25	4.619E+00	7.044E+00	7.045E+00	16.01
	295.22	703	18.42	4.030E+00	5.997E+00	5.997E+00	9.08
	351.93	1266	35.60*	3.564E+00	6.319E+00	6.319E+00	6.58
PA-231	283.69	------	1.70	4.147E+00	------	Line Not Found	------
	301.36	57	5.35*	3.987E+00	1.704E+00	1.704E+00	62.50

Sample ID : G674299003 Acquisition date : 30-JUL-2024 11:14:02

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
U-234	74.82	200	5.80	3.143E+00	6.962E+00	6.962E+00	34.27
	77.11	320	9.70	3.428E+00	6.099E+00	6.099E+00	23.14
	87.09	207	3.41	4.566E+00	8.415E+00	8.415E+00	41.77
	242.00	373	7.25	4.619E+00	7.045E+00	7.045E+00	16.01
	295.22	703	18.42	4.030E+00	5.997E+00	5.997E+00	9.08
	351.93	1266	35.60*	3.564E+00	6.319E+00	6.319E+00	6.58
AM-243	43.53	------	5.90	1.019E-01	------	Line Not Found	------
	74.66	200	67.20*	3.143E+00	6.009E-01	6.009E-01	34.27
ANH-511	511.00	22	100.00*	2.711E+00	5.127E-02	5.127E-02	200.06

Flag: "*" = Keyline

Sample ID : G674299003 Acquisition date : 30-JUL-2024 11:14:02

Total number of lines in spectrum	49	
Number of unidentified lines	21	
Number of lines tentatively identified by NID	28	57.14%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	4.737E+00	4.737E+00	1.389E+00	29.33	
CD-109	461.40D	1.05	7.756E+00	8.164E+00	3.410E+00	41.77	
SN-126	2.30E+05Y	1.00	7.756E-01	7.756E-01	3.240E-01	41.77	
TL-208	1.41E+10Y	1.00	1.950E-01	1.950E-01	0.888E-01	45.52	
BI-211	7.04E+08Y	1.00	1.741E+01	1.741E+01	0.115E+01	6.58	
BI-212	1.41E+10Y	1.00	1.121E+00	1.121E+00	0.874E+00	77.91	
PB-212	1.41E+10Y	1.00	8.505E-01	8.505E-01	1.825E-01	21.46	
BI-214	1600.00Y	1.00	5.118E+00	5.118E+00	0.396E+00	7.75	
PB-214	1600.00Y	1.00	6.319E+00	6.319E+00	0.416E+00	6.58	
RN-222	1600.00Y	1.00	5.118E+00	5.118E+00	0.396E+00	7.75	
RA-224	1.41E+10Y	1.00	1.246E+01	1.246E+01	0.199E+01	16.01	
RA-226	1600.00Y	1.00	6.319E+00	6.319E+00	0.416E+00	6.58	
TH-228	1.41E+10Y	1.00	8.505E-01	8.505E-01	1.825E-01	21.46	
TH-230	7.54E+04Y	1.00	6.319E+00	6.319E+00	0.416E+00	6.58	
PA-231	7.04E+08Y	1.00	1.704E+00	1.704E+00	1.065E+00	62.50	
U-234	2.45E+05Y	1.00	6.319E+00	6.319E+00	0.416E+00	6.58	
AM-243	7370.00Y	1.00	6.009E-01	6.009E-01	2.059E-01	34.27	
ANH-511	1.00E+09Y	1.00	5.127E-02	5.127E-02	10.26E-02	200.06	
		Total Activity :	8.402E+01	8.443E+01			

Grand Total Activity : 8.402E+01 8.443E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299003 Acquisition date : 30-JUL-2024 11:14:02

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	83.69	91	364	1.38	166.95	162	10	2.33E-02	84.9	4.12E+00	T
0	93.34	63	362	1.30	186.24	182	8	1.63E-02	****	4.97E+00	T
0	186.38	357	255	1.39	372.36	367	11	9.50E-02	21.0	5.45E+00	T
0	270.86	72	157	2.10	541.34	535	12	1.95E-02	74.5	4.28E+00	T
0	323.76	20	87	0.93	647.16	644	8	5.50E-03	****	3.78E+00	T
0	452.57	23	25	1.45	904.84	902	6	6.32E-03	81.7	2.97E+00	T
0	456.03	29	39	1.48	911.75	908	8	7.92E-03	83.8	2.96E+00	
0	742.01	16	23	0.92	1483.88	1477	10	4.58E-03	****	1.98E+00	
0	768.80	77	65	1.48	1537.47	1530	17	2.19E-02	51.8	1.91E+00	
0	786.82	28	22	2.64	1573.52	1568	10	7.97E-03	72.2	1.87E+00	
5	803.24	13	6	2.16	1606.38	1605	34	3.78E-03	58.7	1.84E+00	T
5	806.38	33	21	1.92	1612.65	1605	34	9.36E-03	66.4	1.83E+00	
0	911.47	58	32	2.13	1822.90	1817	13	1.66E-02	48.0	1.62E+00	T
0	934.61	32	35	1.18	1869.22	1863	13	9.11E-03	83.0	1.58E+00	T
0	969.65	45	17	1.33	1939.31	1934	13	1.31E-02	47.2	1.52E+00	T
0	1058.43	11	12	3.76	2116.96	2111	11	3.28E-03	****	1.39E+00	
0	1069.97	16	6	3.82	2140.03	2135	10	4.60E-03	78.1	1.38E+00	
3	1125.24	14	3	2.53	2250.64	2234	28	4.05E-03	****	1.31E+00	
0	1132.55	6	6	1.30	2265.26	2261	6	1.85E-03	****	1.30E+00	T
0	1156.06	14	21	2.33	2312.31	2306	11	4.12E-03	****	1.28E+00	
0	1201.79	17	15	0.63	2403.81	2398	13	4.83E-03	****	1.23E+00	
0	1238.41	84	4	2.55	2477.07	2469	16	2.45E-02	23.6	1.19E+00	T
0	1280.63	17	17	1.85	2561.56	2555	12	5.00E-03	****	1.16E+00	
0	1285.11	10	4	2.24	2570.52	2567	7	3.00E-03	91.1	1.15E+00	
0	1377.82	58	12	1.23	2756.05	2749	13	1.69E-02	35.4	1.08E+00	
0	1401.40	26	3	2.99	2803.23	2798	11	7.51E-03	45.3	1.07E+00	
0	1408.42	29	3	1.66	2817.27	2811	12	8.62E-03	42.3	1.06E+00	T
0	1491.34	5	6	3.81	2983.20	2974	12	1.39E-03	****	1.01E+00	
0	1509.82	33	4	1.58	3020.19	3014	15	9.66E-03	41.9	1.01E+00	
0	1593.60	15	5	2.33	3187.85	3182	11	4.46E-03	74.9	9.68E-01	
0	1661.09	23	0	0.63	3322.92	3315	14	6.81E-03	40.9	9.45E-01	
0	1685.34	4	5	0.95	3371.43	3365	10	1.18E-03	****	9.37E-01	
0	1729.72	36	0	2.58	3460.26	3454	11	1.06E-02	32.4	9.26E-01	
0	1847.03	25	0	0.62	3695.04	3686	15	7.50E-03	38.5	9.04E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:16:41.02

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299003.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:02 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.80     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:08:00 Nuclide Library : SOLID           *
* Sample ID        : G674299003           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1858E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	5.224E-01
CD-109	1.175E+00
SN-126	1.127E-01
TL-208	4.756E-02
BI-211	2.208E-01
BI-212	5.505E-01
PB-212	7.740E-02
BI-214	7.372E-02
PB-214	8.028E-02
RN-222	7.372E-02
RA-224	8.292E-01
RA-226	8.028E-02
TH-228	7.740E-02
TH-230	8.027E-02
PA-231	5.971E-01
U-234	8.027E-02
AM-243	1.025E-01
ANH-511	3.020E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.785E-01	NOT IDENT.
NA-22	4.584E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.862E-02	NOT IDENT.
SC-46	5.099E-02	FAIL ABUN
V-48	1.719E-01	NOT IDENT.
CR-51	7.984E-01	NOT IDENT.
MN-52	2.972E+00	FAIL ABUN
MN-54	4.203E-02	NOT IDENT.
CO-56	4.500E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.297E-02	NOT IDENT.
CO-58	4.479E-02	NOT IDENT.

FE-59	1.145E-01	NOT IDENT.
CO-60	4.241E-02	NOT IDENT.
ZN-65	1.033E-01	NOT IDENT.
GE-68	1.646E+00	NOT IDENT.
AS-73	3.687E+00	NOT IDENT.
AS-74	1.910E-01	NOT IDENT.
SE-75	6.061E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.290E-01	NOT IDENT.
RB-83	9.672E-02	NOT IDENT.
RB-84	1.293E-01	NOT IDENT.
KR-85	8.542E+00	NOT IDENT.
SR-85	5.523E-02	NOT IDENT.
RB-86	2.116E+00	NOT IDENT.
Y-88	4.446E-02	NOT IDENT.
Y-91	2.481E+01	NOT IDENT.
NB-94	4.572E-02	NOT IDENT.
NB-95	5.864E-02	NOT IDENT.
NB-95M	2.004E-01	NOT IDENT.
ZR-95	8.777E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.369E-02	FAIL ABUN
RH-102	5.545E-02	NOT IDENT.
RU-103	6.829E-02	FAIL ABUN
RH-106	3.226E-01	NOT IDENT.
RU-106	3.226E-01	NOT IDENT.
AG-108M	3.463E-02	NOT IDENT.
AG-110	9.339E-01	NOT IDENT.
AG-110M	5.951E-02	NOT IDENT.
SN-113	6.551E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.002E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	4.348E-02	NOT IDENT.
SB-124	9.071E-02	NOT IDENT.
SB-125	1.222E-01	NOT IDENT.
TE-125M	1.738E+01	NOT IDENT.
I-126	7.289E-01	NOT IDENT.
SB-126	5.299E-01	NOT IDENT.
SB-127	3.756E+01	NOT IDENT.
I-131	6.814E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.443E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.955E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	3.234E-01	NOT IDENT.
BA-137M	3.093E-02	NOT IDENT.
CS-137	3.267E-02	NOT IDENT.
LA-138	7.801E-02	NOT IDENT.
CE-139	4.447E-02	NOT IDENT.
BA-140	7.380E-01	NOT IDENT.
LA-140	2.727E-01	NOT IDENT.
CE-141	1.327E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.970E-01	NOT IDENT.
PM-144	4.186E-02	NOT IDENT.
PR-144	3.156E+00	NOT IDENT.
PM-146	5.216E-02	FAIL ABUN
ND-147	1.840E+00	NOT IDENT.
PM-147	9.391E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.153E-02	FAIL ABUN
EU-152	1.279E-01	FAIL ABUN
GD-153	1.397E-01	NOT IDENT.
EU-154	1.266E-01	NOT IDENT.
EU-155	1.560E-01	NOT IDENT.
TB-160	1.785E-01	NOT IDENT.
HO-166M	6.517E-02	NOT IDENT.
TM-171	7.196E+01	NOT IDENT.
HF-172	2.653E-01	NOT IDENT.
LU-172	6.815E-02	FAIL ABUN
LU-176	3.237E-02	FAIL ABUN
HF-181	7.349E-02	NOT IDENT.

TA-182	1.954E-01	FAIL ABUN
RE-183	6.849E-01	NOT IDENT.
RE-184	2.388E-01	NOT IDENT.
W-188	1.032E+01	NOT IDENT.
IR-192	4.741E-02	FAIL ABUN
HG-203	6.229E-02	NOT IDENT.
TL-204	9.933E+00	FAIL ABUN
BI-207	5.005E-02	FAIL ABUN
BI-210	2.076E+01	NOT IDENT.
PB-210	2.076E+01	NOT IDENT.
PB-211	8.790E-01	NOT IDENT.
BI-213	1.218E-01	NOT IDENT.
RN-219	5.190E-01	FAIL ABUN
RA-223	8.863E-01	FAIL ABUN
AC-225	2.973E+00	NOT IDENT.
AC-227	3.685E-01	FAIL ABUN
TH-227	3.685E-01	FAIL ABUN
AC-228	3.079E-01	FAIL ABUN
RA-228	3.079E-01	FAIL ABUN
TH-229	7.143E-01	FAIL ABUN
TH-231	8.863E-01	FAIL ABUN
TH-232	3.079E-01	FAIL ABUN
PA-233	7.721E-02	FAIL ABUN
PA-234	3.239E-01	FAIL ABUN
PA-234M	6.443E+00	NOT IDENT.
TH-234	3.352E+00	FAIL ABUN
U-235	2.958E-01	FAIL ABUN
NP-237	7.721E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	3.352E+00	FAIL ABUN
NP-239	3.536E-01	NOT IDENT.
PU-239	4.607E+02	NOT IDENT.
AM-241	4.136E-01	NOT IDENT.
CM-243	1.615E-01	NOT IDENT.
BK-247	9.937E-02	FAIL ABUN
CM-247	4.730E-02	NOT IDENT.
CF-249	5.517E-02	NOT IDENT.
CF-251	1.898E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:16:45.74

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299003.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:02 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.80     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:08:00 Nuclide Library : SOLID           *
* Sample ID        : G674299003           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1858E+02 GRAM *
*                                         Quantity Err(%) : 1.6866E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	4.737E+00	1.487E+00	1.487E+00
CD-109	8.164E+00	3.441E+00	3.441E+00
SN-126	7.756E-01	3.243E-01	3.243E-01
TL-208	1.950E-01	8.852E-02	8.852E-02
BI-211	1.741E+01	1.977E+00	1.977E+00
BI-212	1.121E+00	8.632E-01	8.632E-01
PB-212	8.505E-01	1.965E-01	1.965E-01
BI-214	5.118E+00	5.776E-01	5.776E-01
PB-214	6.319E+00	7.101E-01	7.101E-01
RN-222	5.118E+00	5.776E-01	5.776E-01
RA-224	1.246E+01	2.298E+00	2.298E+00
RA-226	6.319E+00	7.101E-01	7.101E-01
TH-228	8.505E-01	1.965E-01	1.965E-01
TH-230	6.319E+00	7.101E-01	7.101E-01
PA-231	1.704E+00	1.116E+00	1.116E+00
U-234	6.319E+00	7.101E-01	7.101E-01
AM-243	6.009E-01	2.089E-01	2.089E-01
ANH-511	5.127E-02	1.006E-01	1.006E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-4.463E-01	5.127E-01	5.507E-01	NOT IDENT.
NA-22	-9.393E-03	6.452E-02	6.466E-02	NOT IDENT.
NA-24	3.347E+14	1.503E+15	1.510E+15	SHORT HLIF
AL-26	-5.418E-03	4.886E-02	4.892E-02	NOT IDENT.
SC-46	8.729E-03	5.766E-02	5.780E-02	FAIL ABUN
V-48	-1.649E-01	2.264E-01	2.383E-01	NOT IDENT.
CR-51	4.317E-01	9.889E-01	1.008E+00	NOT IDENT.
MN-52	-1.526E+00	3.898E+00	3.959E+00	FAIL ABUN
MN-54	-1.559E-02	5.002E-02	5.051E-02	NOT IDENT.
CO-56	-4.231E-02	5.850E-02	6.153E-02	FAIL ABUN
MN-56	-1.000E+41	1.412E+41	0.000E+00	SHORT HLIF
CO-57	-3.579E-02	4.325E-02	4.616E-02	NOT IDENT.

CO-58	-2.718E-02	6.052E-02	6.175E-02	NOT IDENT.
FE-59	-7.076E-02	1.476E-01	1.510E-01	NOT IDENT.
CO-60	-1.055E-02	5.279E-02	5.301E-02	NOT IDENT.
ZN-65	7.864E-02	1.198E-01	1.249E-01	NOT IDENT.
GE-68	9.869E-01	1.782E+00	1.837E+00	NOT IDENT.
AS-73	-3.921E+00	4.718E+00	5.039E+00	NOT IDENT.
AS-74	-2.863E-01	2.726E-01	3.016E-01	NOT IDENT.
SE-75	1.856E-03	7.276E-02	7.276E-02	NOT IDENT.
BR-77	3.355E+04	3.392E+04	3.714E+04	SHORT HLIF
SR-82	-3.476E-01	8.769E-01	8.908E-01	NOT IDENT.
RB-83	7.800E-02	1.066E-01	1.122E-01	NOT IDENT.
RB-84	1.016E-01	1.362E-01	1.437E-01	NOT IDENT.
KR-85	7.836E+00	9.357E+00	1.000E+01	NOT IDENT.
SR-85	5.046E-02	6.051E-02	6.465E-02	NOT IDENT.
RB-86	1.494E+00	2.271E+00	2.369E+00	NOT IDENT.
Y-88	-2.504E-02	6.234E-02	6.336E-02	NOT IDENT.
Y-91	-2.614E+01	3.979E+01	4.150E+01	NOT IDENT.
NB-94	4.277E-02	5.070E-02	5.424E-02	NOT IDENT.
NB-95	-7.722E-03	8.229E-02	8.236E-02	NOT IDENT.
NB-95M	5.185E-02	2.505E-01	2.516E-01	NOT IDENT.
ZR-95	-6.312E-03	1.089E-01	1.090E-01	NOT IDENT.
NB-97	1.000E+41	1.103E+41	0.000E+00	SHORT HLIF
ZR-97	-6.401E+13	3.225E+14	3.238E+14	SHORT HLIF
MO-99	-4.665E+02	2.446E+03	2.455E+03	SHORT HLIF
TC-99M	1.227E+39	3.178E+39	0.000E+00	SHORT HLIF
RH-101	3.556E-02	5.167E-02	5.410E-02	FAIL ABUN
RH-102	-1.035E-02	6.885E-02	6.901E-02	NOT IDENT.
RU-103	7.469E-02	7.286E-02	8.026E-02	FAIL ABUN
RH-106	-2.861E-01	4.344E-01	4.532E-01	NOT IDENT.
RU-106	-2.861E-01	4.344E-01	4.532E-01	NOT IDENT.
AG-108M	2.292E-03	4.051E-02	4.053E-02	NOT IDENT.
AG-110	1.026E+00	9.950E-01	1.097E+00	NOT IDENT.
AG-110M	-2.461E-02	7.229E-02	7.313E-02	NOT IDENT.
SN-113	2.686E-02	7.456E-02	7.554E-02	NOT IDENT.
CD-115	1.080E+03	5.450E+03	5.472E+03	SHORT HLIF
SN-117M	6.795E-02	2.210E-01	2.231E-01	NOT IDENT.
SB-122	-5.476E+01	2.967E+02	2.978E+02	SHORT HLIF
TE-123M	-5.450E-03	4.903E-02	4.909E-02	NOT IDENT.
SB-124	-3.866E-03	1.159E-01	1.159E-01	NOT IDENT.
SB-125	3.771E-02	1.408E-01	1.418E-01	NOT IDENT.
TE-125M	-7.591E+00	2.172E+01	2.199E+01	NOT IDENT.
I-126	2.985E-01	8.472E-01	8.578E-01	NOT IDENT.
SB-126	3.724E-01	5.994E-01	6.225E-01	NOT IDENT.
SB-127	-1.565E+01	4.857E+01	4.908E+01	NOT IDENT.
I-131	1.462E-01	7.826E-01	7.854E-01	NOT IDENT.
I-132	-1.000E+41	4.474E+41	0.000E+00	SHORT HLIF
TE-132	-1.058E+01	6.146E+01	6.164E+01	SHORT HLIF
BA-133	-1.744E-02	6.038E-02	6.089E-02	NOT IDENT.
I-133	1.311E+09	2.930E+10	2.931E+10	SHORT HLIF
CS-134	3.683E-03	6.055E-02	6.057E-02	FAIL ABUN
I-135	-1.874E+36	5.445E+36	0.000E+00	SHORT HLIF
CS-136	6.455E-02	3.680E-01	3.692E-01	NOT IDENT.
BA-137M	-4.934E-02	4.592E-02	5.103E-02	NOT IDENT.
CS-137	-5.213E-02	4.851E-02	5.391E-02	NOT IDENT.
LA-138	1.914E-02	8.979E-02	9.020E-02	NOT IDENT.
CE-139	2.324E-02	4.893E-02	5.004E-02	NOT IDENT.
BA-140	-1.137E+00	1.042E+00	1.161E+00	NOT IDENT.
LA-140	9.641E-02	3.393E-01	3.421E-01	NOT IDENT.
CE-141	1.631E-02	1.485E-01	1.486E-01	NOT IDENT.
CE-143	6.099E+06	3.301E+06	4.296E+06	SHORT HLIF
CE-144	1.564E-01	3.557E-01	3.626E-01	NOT IDENT.
PM-144	-2.864E-02	5.495E-02	5.645E-02	NOT IDENT.
PR-144	-2.204E+00	4.149E+00	4.267E+00	NOT IDENT.
PM-146	7.551E-02	6.094E-02	6.980E-02	FAIL ABUN
ND-147	-1.457E+00	2.410E+00	2.498E+00	NOT IDENT.
PM-147	-7.600E+02	1.211E+03	1.258E+03	NOT IDENT.
PM-149	-1.290E+04	5.522E+04	5.552E+04	SHORT HLIF
EU-150	2.222E-03	3.651E-02	3.652E-02	FAIL ABUN
EU-152	4.927E-02	1.451E-01	1.468E-01	FAIL ABUN
GD-153	3.811E-02	1.667E-01	1.676E-01	NOT IDENT.
EU-154	-3.265E-02	1.800E-01	1.806E-01	NOT IDENT.
EU-155	-1.549E-02	1.911E-01	1.912E-01	NOT IDENT.
TB-160	-1.868E-02	2.089E-01	2.091E-01	NOT IDENT.
HO-166M	-5.151E-03	8.049E-02	8.052E-02	NOT IDENT.
TM-171	-1.350E+01	8.613E+01	8.635E+01	NOT IDENT.
HF-172	1.067E-01	3.191E-01	3.227E-01	NOT IDENT.
LU-172	2.403E-02	7.575E-02	7.652E-02	FAIL ABUN
LU-176	-1.756E-03	3.764E-02	3.765E-02	FAIL ABUN

HF-181	5.174E-02	8.171E-02	8.497E-02	NOT IDENT.
TA-182	-9.653E-02	2.494E-01	2.531E-01	FAIL ABUN
RE-183	-6.072E-01	8.587E-01	9.013E-01	NOT IDENT.
RE-184	-1.107E-01	2.902E-01	2.944E-01	NOT IDENT.
W-188	-7.496E+00	1.412E+01	1.452E+01	NOT IDENT.
IR-192	-6.197E-02	6.073E-02	6.685E-02	FAIL ABUN
HG-203	-3.737E-02	7.470E-02	7.658E-02	NOT IDENT.
TL-204	-8.528E+00	1.242E+01	1.300E+01	FAIL ABUN
BI-207	-2.547E-02	7.306E-02	7.396E-02	FAIL ABUN
BI-210	5.888E+00	2.411E+01	2.426E+01	NOT IDENT.
PB-210	5.888E+00	2.411E+01	2.426E+01	NOT IDENT.
PB-211	2.521E-01	1.011E+00	1.017E+00	NOT IDENT.
BI-213	-8.293E-02	1.531E-01	1.576E-01	NOT IDENT.
RN-219	2.002E-01	5.926E-01	5.994E-01	FAIL ABUN
RA-223	8.463E-01	1.387E+00	1.439E+00	FAIL ABUN
AC-225	7.549E-01	3.338E+00	3.356E+00	NOT IDENT.
AC-227	2.740E-01	4.076E-01	4.259E-01	FAIL ABUN
TH-227	2.740E-01	4.076E-01	4.259E-01	FAIL ABUN
AC-228	8.756E-01	4.288E-01	5.828E-01	FAIL ABUN
RA-228	8.756E-01	4.288E-01	5.828E-01	FAIL ABUN
TH-229	-9.735E-02	8.135E-01	8.147E-01	FAIL ABUN
TH-231	8.463E-01	1.387E+00	1.439E+00	FAIL ABUN
TH-232	8.756E-01	4.288E-01	5.828E-01	FAIL ABUN
PA-233	-6.645E-02	9.656E-02	1.011E-01	FAIL ABUN
PA-234	-1.337E-01	4.252E-01	4.295E-01	FAIL ABUN
PA-234M	5.045E+00	6.880E+00	7.246E+00	NOT IDENT.
TH-234	2.545E+00	3.887E+00	4.052E+00	FAIL ABUN
U-235	2.093E-01	3.229E-01	3.364E-01	FAIL ABUN
NP-237	-6.645E-02	9.656E-02	1.011E-01	FAIL ABUN
NP-238	-8.446E+02	1.504E+04	1.505E+04	SHORT HLIF
U-238	2.545E+00	3.887E+00	4.052E+00	FAIL ABUN
NP-239	1.075E-01	4.252E-01	4.279E-01	NOT IDENT.
PU-239	-6.015E+01	5.708E+02	5.715E+02	NOT IDENT.
AM-241	-1.147E-01	4.998E-01	5.025E-01	NOT IDENT.
CM-243	4.098E-02	1.941E-01	1.949E-01	NOT IDENT.
BK-247	2.523E-02	1.175E-01	1.180E-01	FAIL ABUN
CM-247	4.068E-02	5.227E-02	5.539E-02	NOT IDENT.
CF-249	1.813E-03	6.464E-02	6.464E-02	NOT IDENT.
CF-251	-1.209E-01	2.204E-01	2.271E-01	NOT IDENT.

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*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	147.7670	85.43	150.2041	131.20	142.5357
45.60	138.4984	86.55	150.4355	133.02	137.8405
46.54	123.3412	86.79	150.4839	133.52	135.4267
49.72	0.0000	86.94	150.5146	136.00	114.5985
51.35	124.4901	87.09	150.5459	136.47	128.3618
51.87	130.1740	87.57	152.9974	140.51	0.0000
52.39	134.7541	88.03	153.0926	143.76	143.1175
52.97	139.3580	88.34	153.1570	144.24	142.3480
53.44	152.8681	88.47	153.1838	145.44	145.8708
54.07	138.5211	89.96	153.4893	152.43	164.5868
57.36	0.0000	1093.63	174.8997	153.25	138.5302
57.53	155.1147	91.11	175.0081	323.87	131.0461
57.98	152.9860	92.59	169.0303	156.02	149.9019
59.27	135.2893	93.35	199.2424	158.56	131.5822
59.32	135.3008	94.56	167.8797	159.00	140.1285
59.54	144.3755	94.65	167.9002	162.33	128.6335
60.96	154.9006	94.67	167.9045	162.66	128.6720
61.17	166.2661	94.87	166.3632	163.33	153.4790
62.93	136.1275	97.43	150.2172	165.86	117.9382
63.29	145.2893	98.43	153.9886	176.31	154.3999
63.58	146.4940	98.44	153.9906	176.60	154.4381
64.28	153.4841	99.53	149.4198	177.52	167.5131
66.73	164.3665	100.11	151.9200	181.07	0.0000
67.24	167.9276	102.03	157.0787	181.52	148.1603
125.81	146.3252	103.18	128.4813	184.41	125.0728
67.75	146.3408	103.37	146.5271	143.76	127.8190
68.89	170.6568	105.21	139.6324	193.51	128.6459
69.67	180.0400	105.31	150.4841	197.03	143.9354
70.82	199.8892	106.12	139.7860	198.01	131.7520
70.83	196.0638	106.47	126.5837	201.83	139.2031
72.81	181.2949	109.28	154.8281	203.43	128.7941
72.87	181.3105	111.00	135.7480	205.31	113.9655
74.66	195.2812	111.76	0.0000	210.85	113.5716
74.82	195.3276	114.06	133.7973	215.65	86.3827
74.97	195.3714	116.30	0.0000	218.12	104.3888
77.11	195.9903	116.74	115.9059	222.11	106.4916
78.74	196.4558	119.76	102.8332	227.09	88.0229
79.69	214.1847	121.12	122.6051	227.38	94.3295
80.03	184.0081	121.22	129.9760	228.16	0.0000
80.12	184.0328	121.78	134.9638	228.18	90.7895
80.19	184.0521	122.06	135.0058	116.74	90.7895
80.57	184.1509	122.92	126.5340	235.69	109.8127
81.00	184.2642	123.07	126.5544	235.96	98.9860
81.07	184.2823	265.00	109.4255	238.63	110.4967
81.75	184.4595	125.81	125.6992	238.98	0.0000
82.47	176.0774	127.23	116.0173	240.99	110.6816
83.79	176.4027	127.91	155.6259	242.00	110.7598
84.00	176.4545	129.30	142.2497	244.70	94.1422

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	85.9582	344.28	59.9856	563.25	20.3390
252.80	96.0428	345.93	58.1030	564.24	0.0000
254.15	0.0000	351.06	46.6133	569.33	24.6790
256.23	89.8498	351.93	46.6357	946.00	26.8270
260.90	0.0000	355.39	0.0000	569.70	26.8290
264.66	71.9189	356.01	48.1999	583.19	44.2298
264.80	71.9253	364.49	43.0395	584.27	46.9445
265.00	69.7214	366.42	0.0000	595.83	40.1059
269.46	80.4704	372.51	48.1337	427.87	29.3181
270.03	80.5005	375.05	60.0022	602.52	0.0000
271.23	80.5642	377.52	45.3056	604.72	40.7822
273.65	77.9075	356.01	49.4059	607.14	24.4913
276.40	74.3294	388.16	65.3608	609.32	28.3243
277.37	84.6034	388.63	63.3945	610.33	28.3349
277.60	86.4761	391.69	51.5885	614.28	29.4675
278.00	85.5668	264.66	54.8109	618.01	29.5082
279.20	85.6342	401.81	48.8594	620.36	21.8766
279.54	94.0320	402.40	39.8975	621.93	31.7388
279.70	94.0402	404.85	46.9359	630.19	0.0000
280.46	84.7700	410.95	48.0791	631.29	24.1601
283.69	87.7444	413.71	53.1585	633.25	19.7813
284.31	91.5141	414.70	49.1705	634.78	24.1901
285.41	82.2332	423.72	60.4712	635.95	33.0005
285.90	0.0000	427.09	50.4740	636.99	30.8118
287.50	61.7568	427.87	49.4835	657.50	17.7350
290.67	78.7551	433.94	38.4855	657.76	18.8448
293.27	0.0000	439.40	43.6605	657.90	0.0000
351.93	83.6783	440.45	51.8093	661.66	32.1919
295.96	83.7163	453.88	24.5322	664.57	0.0000
879.38	83.8503	463.37	23.6116	666.33	26.6846
299.98	83.9210	468.07	33.9487	666.50	26.6855
300.09	83.9282	473.00	31.9612	667.71	0.0000
300.13	83.9300	475.06	26.8310	677.62	25.6719
301.36	72.1950	476.78	38.2112	685.70	22.3853
302.85	76.5110	477.60	37.1917	692.65	0.0000
256.23	61.2708	482.18	31.0559	695.00	21.3325
304.85	60.1478	487.02	35.2707	696.49	39.3166
306.78	64.3836	492.35	0.0000	696.51	39.3166
308.46	65.3964	497.08	23.9635	697.00	37.0767
311.90	74.0787	505.52	40.7797	697.30	37.0807
316.51	76.1849	507.63	0.0000	697.49	37.0820
319.41	49.2222	511.00	30.3933	702.65	27.0156
320.08	62.9828	514.00	30.4314	706.68	33.8147
321.04	74.4771	514.00	30.4314	711.68	24.8386
323.87	64.0788	520.40	24.1998	720.70	23.7797
325.23	87.5795	520.69	0.0000	721.93	0.0000
328.76	63.2997	522.65	0.0000	722.78	32.2944
333.37	61.5430	527.90	0.0000	722.91	32.2968
333.97	54.8303	528.26	32.7231	723.31	32.3002
334.37	54.8430	529.59	24.2915	724.19	25.5075
338.28	66.5349	529.87	0.0000	727.33	24.9666
338.32	66.5363	531.02	33.8164	733.00	22.7384
311.90	91.7181	537.26	42.3779	735.93	23.8976
340.48	91.7181	546.56	0.0000	333.97	25.6174
340.55	91.7220	552.55	31.9788	739.50	0.0000

ENERGY	MDA COUNTS
744.23	23.9617
747.24	20.5583
748.06	18.2786
752.31	19.4473
753.82	17.1674
756.73	19.4743
756.80	19.4750
884.68	18.9445
765.81	27.5723
766.42	27.5771
766.84	24.1334
772.60	0.0000
776.52	29.0473
739.50	0.0000
778.90	19.6099
783.70	24.2599
788.74	26.0330
792.07	18.5313
795.86	25.5100
810.06	20.9612
810.29	20.9626
344.28	20.9634
810.76	20.9656
815.77	20.9971
1048.07	22.4148
832.01	20.2191
834.85	22.8754
835.71	27.2820
836.80	0.0000
846.75	0.0000
846.77	23.8384
856.80	18.5948
860.56	12.4098
871.09	28.4512
873.19	14.2339
875.33	0.0000
879.38	20.4970
880.51	25.8520
881.60	15.1593
883.24	17.8430
884.68	24.0980
889.28	16.9793
894.76	21.4805
898.04	19.7086
900.72	29.5850
903.28	32.2976
911.20	18.8813
912.08	18.8858
923.98	0.0000
926.50	18.9601
929.11	23.1297
935.54	19.0069
937.49	21.7332
944.13	24.4935
946.00	20.8753

ENERGY	MDA COUNTS
949.00	15.4420
667.71	0.0000
962.31	20.0543
964.08	14.5918
966.17	8.7598
911.20	15.5235
983.53	24.7489
984.45	0.0000
1274.44	20.2322
1001.03	17.4948
1002.74	25.7928
1004.73	20.2766
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	13.9407
1038.76	0.0000
631.29	15.8337
1048.07	14.9082
1049.04	19.5709
1050.41	20.5095
1063.66	16.4613
1077.00	15.0137
1077.34	14.0762
1085.87	16.9266
1093.63	11.3057
1099.45	16.9816
1112.07	19.8721
1112.84	18.3874
1115.54	10.6066
1120.29	13.6529
1120.55	13.6538
1221.41	13.6556
1129.67	0.0000
1131.51	0.0000
1147.95	0.0000
1173.23	12.4771
1177.95	13.4506
1189.05	10.5952
1204.77	21.6508
1221.41	16.4926
1231.02	11.6660
1235.36	12.4555
1238.28	9.7375
1260.41	0.0000
1271.87	12.7501
1274.44	14.1311
1274.54	14.1319
1291.59	16.7437
1298.22	0.0000
1312.11	10.8805
1332.49	11.9202
1362.66	0.0000
1365.19	11.9993
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	8.0303
1408.01	10.7578
1434.09	13.1785
1435.80	11.1544
1457.56	0.0000
1460.82	15.2838
1489.16	9.2203
1505.03	8.2202
1584.12	13.5530
1596.21	5.0150
1620.50	12.5918
1621.92	7.3469
1678.03	0.0000
1690.97	3.6418
1750.46	0.0000
1764.49	2.1508
1063.66	1.7223
1771.35	5.1677
1791.20	0.0000
1808.65	6.4991
1810.72	0.0000
1836.06	7.6157

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:17:13.75

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299004.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM12.CNF;1051
                                         Background date  : 29-JUL-2024 06:18:59
Sample date      : 26-JUN-2024 09:11:00  Acquisition date : 30-JUL-2024 11:14:26
Sample ID        : G674299004            Sample quantity  : 1.03650E+02 GRAM
Detector name    : GAM12                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.63  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	38.00*	151	138	5.40	75.96	69	16	4.20E-02	20.0	
2	0	63.42*	38	215	1.24	126.77	123	10	1.04E-02	76.4	
3	2	75.09	179	228	2.06	150.08	144	18	4.98E-02	20.1	1.52E+00
4	2	77.21	240	238	1.96	154.31	144	18	6.68E-02	15.2	
5	5	87.84	56	333	2.77	175.56	170	24	1.55E-02	58.7	1.57E+00
6	5	92.89*	138	300	2.60	185.64	170	24	3.84E-02	32.9	
7	0	113.06	46	126	1.02	225.96	223	9	1.27E-02	46.5	
8	0	185.83*	241	170	2.02	371.40	366	14	6.70E-02	13.4	
9	1	238.35*	257	124	2.06	476.37	470	20	7.14E-02	10.8	2.05E+00
10	1	241.63	206	102	2.06	482.93	470	20	5.72E-02	13.6	
11	0	257.17	58	116	3.51	513.99	506	15	1.60E-02	42.8	
12	0	265.63*	22	81	1.37	530.91	525	9	6.15E-03	78.8	
13	6	294.96	353	68	1.70	589.53	581	23	9.79E-02	6.9	9.49E-01
14	6	299.02	30	63	3.36	597.65	581	23	8.20E-03	65.0	
15	0	338.59*	63	50	1.49	676.76	671	10	1.76E-02	24.7	
16	0	351.58*	597	67	1.68	702.71	697	14	1.66E-01	5.1	
17	0	372.06	14	64	0.63	743.66	734	12	3.78E-03	122.0	
18	0	404.38	30	75	5.19	808.26	799	15	8.44E-03	64.7	
19	0	510.81*	44	51	2.26	1021.04	1013	17	1.22E-02	45.5	
20	0	567.87	24	42	3.69	1135.14	1128	12	6.56E-03	60.1	
21	0	583.18*	67	41	1.50	1165.74	1158	15	1.87E-02	24.5	
22	1	608.97	470	20	2.08	1217.31	1208	32	1.31E-01	4.9	1.82E+00
23	1	616.60	31	1	2.31	1232.58	1208	32	8.48E-03	35.7	
24	0	668.12	19	47	5.80	1335.60	1320	19	5.26E-03	90.2	
25	0	767.97	22	44	3.31	1535.28	1527	14	6.21E-03	67.2	
26	0	888.39	9	8	0.56	1776.11	1772	8	2.50E-03	63.8	
27	7	911.00	49	16	3.07	1821.34	1815	21	1.36E-02	21.2	1.02E+00
28	7	916.35	14	8	2.68	1832.05	1815	21	3.81E-03	45.6	
29	0	948.84	12	5	0.94	1897.04	1893	8	3.35E-03	44.7	
30	0	952.88	6	7	1.39	1905.11	1900	9	1.59E-03	92.6	
31	0	979.18	13	6	2.10	1957.73	1952	12	3.61E-03	46.8	
32	0	1077.32	8	10	0.56	2154.06	2147	11	2.15E-03	90.0	
33	0	1100.41	19	10	6.29	2200.24	2189	19	5.14E-03	46.2	
34	0	1119.65	91	26	2.06	2238.74	2231	19	2.52E-02	16.7	

Sample ID : G674299004 Acquisition date : 30-JUL-2024 11:14:26

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1133.90	10	13	1.42	2267.24	2260	11	2.85E-03	76.0	
36	0	1209.09	4	10	0.54	2417.67	2411	8	1.22E-03	132.7	
37	0	1237.72	39	26	2.31	2474.96	2464	18	1.07E-02	35.3	
38	0	1377.37	30	7	1.77	2754.42	2746	14	8.24E-03	26.5	
39	0	1383.97	5	7	1.32	2767.61	2761	10	1.42E-03	108.2	
40	0	1407.26	19	7	1.37	2814.23	2809	10	5.21E-03	35.7	
41	0	1426.10	6	4	0.53	2851.94	2841	12	1.53E-03	77.1	
42	0	1428.71	10	6	1.50	2857.16	2852	12	2.74E-03	59.0	
43	0	1460.21*	124	8	1.87	2920.20	2912	15	3.43E-02	10.3	
44	0	1668.05	8	8	1.31	3336.20	3324	15	2.08E-03	87.6	
45	0	1728.79	24	0	3.32	3457.79	3451	14	6.67E-03	20.4	
46	0	1763.90	76	0	2.33	3528.09	3520	15	2.11E-02	11.5	
47	0	1846.86	15	4	2.31	3694.18	3686	12	4.28E-03	34.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:17:15

```
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299004.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 09:11:00 Acquisition date : 30-JUL-2024 11:14:26
Sample ID        : G674299004           Sample quantity  : 103.65 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA12              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.63   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	116	10.66*	1.082E+00	7.266E+00	7.266E+00	20.65
SC-46	889.28	9	99.98*	1.626E+00	3.799E-02	5.037E-02	127.66
	1120.55	86	99.99	1.344E+00	4.613E-01	6.117E-01	33.37
GE-68	1077.34	7	3.22*	1.387E+00	1.181E+00	1.288E+00	179.90
RB-86	1077.00	7	8.64*	1.387E+00	4.400E-01	1.564E+00	179.90
CD-109	88.03	56	3.70*	4.377E+00	2.497E+00	2.628E+00	117.40
SN-126	64.28	38	9.60	1.996E+00	1.428E+00	1.428E+00	152.70
	86.94	56	8.90	4.377E+00	1.038E+00	1.038E+00	117.40
	87.57	56	37.00*	4.377E+00	2.497E-01	2.497E-01	117.40
TL-208	277.37	------	6.60	4.130E+00	------	Line Not Found	------
	583.19	64	85.00*	2.287E+00	2.402E-01	2.402E-01	49.07
	860.56	------	12.50	1.669E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.022E+00	------	Line Not Found	------
	351.06	578	12.92*	3.435E+00	9.431E+00	9.431E+00	10.15
PB-212	74.82	180	10.28	3.250E+00	3.895E+00	3.895E+00	40.23
	77.11	241	17.10	3.460E+00	2.946E+00	2.946E+00	30.39
	238.63	251	43.60*	4.608E+00	9.047E-01	9.047E-01	21.54
	300.09	29	3.30	3.900E+00	1.613E+00	1.613E+00	129.98
BI-214	609.32	449	45.49*	2.209E+00	3.239E+00	3.240E+00	9.89
	1120.29	86	14.92	1.344E+00	3.092E+00	3.092E+00	33.37
	1764.49	71	15.30	9.361E-01	3.583E+00	3.583E+00	22.94
PB-214	74.82	180	5.80	3.250E+00	6.903E+00	6.904E+00	40.23
	77.11	241	9.70	3.460E+00	5.193E+00	5.193E+00	30.39
	87.09	56	3.41	4.377E+00	2.709E+00	2.710E+00	117.40
	242.00	201	7.25	4.565E+00	4.395E+00	4.396E+00	27.19
	295.22	343	18.42	3.941E+00	3.417E+00	3.417E+00	13.70
	351.93	578	35.60*	3.435E+00	3.423E+00	3.423E+00	10.15
RN-222	609.32	449	45.49*	2.209E+00	3.239E+00	3.240E+00	9.89
	1120.29	86	14.92	1.344E+00	3.092E+00	3.092E+00	33.37
	1764.49	71	15.30	9.361E-01	3.583E+00	3.583E+00	22.94
RA-224	240.99	201	4.10*	4.565E+00	7.772E+00	7.772E+00	27.19
RA-226	74.82	180	5.80	3.250E+00	6.903E+00	6.904E+00	40.23
	77.11	241	9.70	3.460E+00	5.193E+00	5.193E+00	30.39
	87.09	56	3.41	4.377E+00	2.709E+00	2.710E+00	117.40
	242.00	201	7.25	4.565E+00	4.395E+00	4.396E+00	27.19
	295.22	343	18.42	3.941E+00	3.417E+00	3.417E+00	13.70
	351.93	578	35.60*	3.435E+00	3.423E+00	3.423E+00	10.15
TH-228	74.82	180	10.28	3.250E+00	3.895E+00	3.895E+00	40.23
	77.11	241	17.10	3.460E+00	2.946E+00	2.946E+00	30.39
	238.63	251	43.60*	4.608E+00	9.047E-01	9.047E-01	21.54
	300.09	29	3.30	3.900E+00	1.613E+00	1.613E+00	129.98
TH-230	74.82	180	5.80	3.250E+00	6.903E+00	6.903E+00	40.23
	77.11	241	9.70	3.460E+00	5.193E+00	5.193E+00	30.39
	87.09	56	3.41	4.377E+00	2.709E+00	2.709E+00	117.40
	242.00	201	7.25	4.565E+00	4.395E+00	4.395E+00	27.19
	295.22	343	18.42	3.941E+00	3.417E+00	3.417E+00	13.70
	351.93	578	35.60*	3.435E+00	3.423E+00	3.423E+00	10.15
TH-234	63.29	38	3.70*	1.996E+00	3.705E+00	3.705E+00	152.70
	92.59	138	4.23	4.722E+00	4.996E+00	4.996E+00	65.78

Sample ID : G674299004 Acquisition date : 30-JUL-2024 11:14:26

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
U-234	74.82	180	5.80	3.250E+00	6.903E+00	6.903E+00	40.23
	77.11	241	9.70	3.460E+00	5.193E+00	5.193E+00	30.39
	87.09	56	3.41	4.377E+00	2.709E+00	2.709E+00	117.40
	242.00	201	7.25	4.565E+00	4.395E+00	4.395E+00	27.19
	295.22	343	18.42	3.941E+00	3.417E+00	3.417E+00	13.70
	351.93	578	35.60*	3.435E+00	3.423E+00	3.423E+00	10.15
U-238	63.29	38	3.70*	1.996E+00	3.705E+00	3.705E+00	152.70
	92.59	138	4.23	4.722E+00	4.996E+00	4.996E+00	65.78
AM-243	43.53	------	5.90	2.847E-01	------	Line Not Found	------
	74.66	180	67.20*	3.250E+00	5.958E-01	5.958E-01	40.23
ANH-511	511.00	42	100.00*	2.545E+00	1.202E-01	1.202E-01	91.01

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:17:16.07

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299004.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:26 Sensitivity     : 3.000           *
* Detector ID      : GAM12                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:11:00 Analyst initials: RXF2            *
* Sample ID        : G674299004           Sample Quantity : 1.0365E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-OCT-2023 07:18:34 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM12_CAN.CNF;20            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	7.266E+00	1.470E+00	9.769E-01
SC-46	5.037E-02	6.302E-02	1.053E-01
GE-68	1.288E+00	2.271E+00	3.338E+00
RB-86	1.564E+00	2.758E+00	4.461E+00
CD-109	2.628E+00	3.024E+00	2.876E+00
SN-126	2.497E-01	2.873E-01	2.753E-01
TL-208	2.402E-01	1.155E-01	9.637E-02
BI-211	9.431E+00	9.383E-01	6.328E-01
PB-212	9.047E-01	1.910E-01	1.558E-01
BI-214	3.240E+00	3.140E-01	1.905E-01
PB-214	3.423E+00	3.406E-01	2.301E-01
RN-222	3.240E+00	3.140E-01	1.905E-01
RA-224	7.772E+00	2.071E+00	1.669E+00
RA-226	3.423E+00	3.406E-01	2.301E-01
TH-228	9.047E-01	1.910E-01	1.558E-01
TH-230	3.423E+00	3.405E-01	2.301E-01
TH-234	3.705E+00	5.545E+00	6.190E+00
U-234	3.423E+00	3.405E-01	2.301E-01
U-238	3.705E+00	5.545E+00	6.190E+00
AM-243	5.958E-01	2.349E-01	2.051E-01
ANH-511	1.202E-01	1.072E-01	8.888E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	5.779E-02	6.349E-01	1.179E+00	NOT IDENT.
NA-22	-1.188E-03	6.100E-02	1.192E-01	NOT IDENT.
NA-24	0.000E+00	1.409E+15	0.000E+00	SHORT HLIF
AL-26	7.347E-03	5.167E-02	1.104E-01	NOT IDENT.
V-48	-3.209E-02	2.084E-01	3.533E-01	NOT IDENT.
CR-51	-2.566E-01	8.860E-01	1.581E+00	NOT IDENT.
MN-52	5.705E-01	3.311E+00	6.381E+00	NOT IDENT.
MN-54	-3.061E-02	5.111E-02	8.554E-02	NOT IDENT.
CO-56	4.490E-03	6.344E-02	1.204E-01	FAIL ABUN

MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	6.903E-03	4.525E-02	8.361E-02	NOT IDENT.
CO-58	-5.507E-04	7.095E-02	1.312E-01	NOT IDENT.
FE-59	2.789E-01	2.527E-01	3.271E-01	FAIL ABUN
CO-60	2.568E-02	5.637E-02	1.204E-01	NOT IDENT.
ZN-65	1.010E-01	1.299E-01	2.600E-01	NOT IDENT.
AS-73	-9.184E-01	3.507E+00	5.937E+00	NOT IDENT.
AS-74	-5.837E-02	3.169E-01	5.668E-01	NOT IDENT.
SE-75	7.566E-02	1.169E-01	1.674E-01	FAIL ABUN
BR-77	0.000E+00	7.530E+03	0.000E+00	SHORT HLIF
SR-82	-2.698E-01	9.153E-01	1.608E+00	NOT IDENT.
RB-83	4.723E-02	1.322E-01	2.521E-01	NOT IDENT.
RB-84	5.906E-02	1.722E-01	3.307E-01	NOT IDENT.
KR-85	3.627E+00	1.303E+01	2.160E+01	NOT IDENT.
SR-85	2.321E-02	8.428E-02	1.396E-01	NOT IDENT.
Y-88	-2.090E-02	5.616E-02	1.070E-01	NOT IDENT.
Y-91	-1.401E+01	3.866E+01	6.024E+01	NOT IDENT.
NB-94	2.888E-02	5.438E-02	1.056E-01	NOT IDENT.
NB-95	8.847E-02	8.737E-02	1.768E-01	NOT IDENT.
NB-95M	1.850E-01	2.930E-01	4.891E-01	NOT IDENT.
ZR-95	-4.156E-02	1.307E-01	2.303E-01	NOT IDENT.
NB-97	0.000E+00	1.663E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	4.078E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.117E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	3.503E+39	0.000E+00	SHORT HLIF
RH-101	-1.056E-02	5.268E-02	9.532E-02	NOT IDENT.
RH-102	7.724E-02	8.810E-02	1.788E-01	FAIL ABUN
RU-103	-3.891E-02	7.950E-02	1.382E-01	FAIL ABUN
RH-106	2.654E-01	4.628E-01	8.541E-01	NOT IDENT.
RU-106	2.654E-01	4.628E-01	8.541E-01	NOT IDENT.
AG-108M	1.417E-02	4.752E-02	8.957E-02	NOT IDENT.
AG-110	3.920E-01	1.238E+00	2.133E+00	NOT IDENT.
AG-110M	-1.980E-02	1.070E-01	1.635E-01	FAIL ABUN
SN-113	-2.387E-02	7.667E-02	1.361E-01	NOT IDENT.
CD-115	0.000E+00	5.889E+03	0.000E+00	SHORT HLIF
SN-117M	-1.865E-01	2.480E-01	4.313E-01	NOT IDENT.
SB-122	0.000E+00	5.370E+02	0.000E+00	SHORT HLIF
TE-123M	-4.317E-02	5.400E-02	9.363E-02	NOT IDENT.
SB-124	9.338E-02	1.121E-01	3.035E-01	NOT IDENT.
SB-125	2.379E-03	1.450E-01	2.662E-01	NOT IDENT.
TE-125M	1.358E+01	2.616E+01	4.141E+01	NOT IDENT.
I-126	1.014E+00	1.076E+00	2.150E+00	NOT IDENT.
SB-126	-9.953E-02	6.800E-01	1.219E+00	NOT IDENT.
SB-127	-2.887E+00	5.577E+01	1.031E+02	NOT IDENT.
I-131	-2.188E-01	1.106E+00	1.726E+00	NOT IDENT.
I-132	0.000E+00	1.769E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.342E+01	0.000E+00	SHORT HLIF
BA-133	-3.070E-02	7.875E-02	1.197E-01	NOT IDENT.
I-133	0.000E+00	3.261E+10	0.000E+00	SHORT HLIF
CS-134	7.006E-02	6.820E-02	1.383E-01	FAIL ABUN
I-135	0.000E+00	5.068E+36	0.000E+00	SHORT HLIF
CS-136	-5.534E-02	3.620E-01	7.026E-01	NOT IDENT.
BA-137M	-1.757E-02	6.353E-02	9.672E-02	NOT IDENT.
CS-137	-1.856E-02	6.712E-02	1.022E-01	NOT IDENT.
LA-138	-1.591E-02	7.517E-02	1.380E-01	NOT IDENT.
CE-139	8.740E-03	5.354E-02	9.836E-02	NOT IDENT.
BA-140	-2.641E-01	1.271E+00	2.265E+00	NOT IDENT.
LA-140	6.594E-01	4.171E-01	1.035E+00	NOT IDENT.
CE-141	1.933E-01	1.693E-01	3.247E-01	NOT IDENT.
CE-143	0.000E+00	4.372E+06	0.000E+00	SHORT HLIF
CE-144	2.225E-01	3.600E-01	6.784E-01	NOT IDENT.
PM-144	-3.528E-03	6.322E-02	1.137E-01	FAIL ABUN
PR-144	-3.260E-01	4.772E+00	8.567E+00	NOT IDENT.
PM-146	6.631E-02	7.022E-02	1.399E-01	NOT IDENT.
ND-147	-7.472E-01	2.684E+00	4.799E+00	NOT IDENT.
PM-147	3.927E+02	1.302E+03	2.424E+03	NOT IDENT.
PM-149	0.000E+00	5.774E+04	0.000E+00	SHORT HLIF
EU-150	-7.973E-03	4.946E-02	7.758E-02	FAIL ABUN
EU-152	-8.280E-02	1.570E-01	2.623E-01	FAIL ABUN
GD-153	-2.609E-02	1.930E-01	2.896E-01	NOT IDENT.
EU-154	1.197E-04	1.718E-01	3.366E-01	NOT IDENT.
EU-155	-3.325E-03	2.112E-01	3.594E-01	FAIL ABUN
TB-160	-4.846E-02	2.588E-01	4.620E-01	FAIL ABUN
HO-166M	-2.923E-02	9.444E-02	1.661E-01	FAIL ABUN
TM-171	2.083E+01	6.401E+01	1.122E+02	NOT IDENT.
HF-172	1.239E-01	3.208E-01	6.004E-01	FAIL ABUN
LU-172	-4.094E-02	8.751E-02	1.338E-01	FAIL ABUN
LU-176	5.664E-03	4.504E-02	8.253E-02	FAIL ABUN

HF-181	6.014E-03	1.051E-01	1.923E-01	NOT IDENT.
TA-182	3.940E-02	2.774E-01	5.517E-01	NOT IDENT.
RE-183	-4.261E-01	7.348E-01	1.219E+00	NOT IDENT.
RE-184	-5.475E-02	2.867E-01	5.119E-01	NOT IDENT.
W-188	-1.490E+01	1.673E+01	2.406E+01	FAIL ABUN
IR-192	-4.173E-04	6.691E-02	1.219E-01	FAIL ABUN
HG-203	-4.597E-02	8.732E-02	1.520E-01	NOT IDENT.
TL-204	7.333E+00	1.348E+01	2.125E+01	NOT IDENT.
BI-207	-5.723E-02	6.575E-02	1.108E-01	FAIL ABUN
BI-210	-7.928E+00	1.289E+01	2.143E+01	NOT IDENT.
PB-210	-7.928E+00	1.289E+01	2.143E+01	NOT IDENT.
PB-211	1.828E+00	2.318E+00	2.382E+00	FAIL ABUN
BI-212	7.332E-01	8.443E-01	1.695E+00	NOT IDENT.
BI-213	7.192E-02	1.570E-01	3.029E-01	NOT IDENT.
RN-219	1.323E-01	7.052E-01	1.301E+00	NOT IDENT.
RA-223	1.290E-01	1.040E+00	1.910E+00	FAIL ABUN
AC-225	-7.763E-02	3.650E+00	6.609E+00	NOT IDENT.
AC-227	0.000E+00	8.234E-01	7.992E-01	FAIL ABUN
TH-227	0.000E+00	8.234E-01	7.992E-01	FAIL ABUN
AC-228	0.000E+00	3.383E-01	6.661E-01	FAIL ABUN
RA-228	0.000E+00	3.383E-01	6.661E-01	FAIL ABUN
TH-229	-4.516E-01	9.086E-01	1.541E+00	FAIL ABUN
PA-231	3.268E-01	8.786E-01	1.459E+00	NOT IDENT.
TH-231	1.290E-01	1.040E+00	1.910E+00	FAIL ABUN
TH-232	0.000E+00	3.383E-01	6.661E-01	FAIL ABUN
PA-233	1.094E-04	1.099E-01	1.994E-01	FAIL ABUN
PA-234	-8.901E-02	5.307E-01	8.213E-01	FAIL ABUN
PA-234M	4.661E+00	7.625E+00	1.577E+01	NOT IDENT.
U-235	3.384E-01	3.617E-01	6.856E-01	FAIL ABUN
NP-237	1.094E-04	1.099E-01	1.994E-01	FAIL ABUN
NP-238	0.000E+00	1.244E+04	0.000E+00	SHORT HLIF
NP-239	1.249E-02	5.298E-01	8.586E-01	NOT IDENT.
PU-239	-1.700E+02	5.697E+02	1.024E+03	NOT IDENT.
AM-241	3.565E-01	4.913E-01	7.938E-01	NOT IDENT.
CM-243	-5.055E-02	2.167E-01	3.634E-01	NOT IDENT.
BK-247	1.219E-01	1.884E-01	2.635E-01	FAIL ABUN
CM-247	1.985E-02	6.547E-02	1.218E-01	NOT IDENT.
CF-249	4.375E-02	6.540E-02	1.264E-01	NOT IDENT.
CF-251	-2.385E-01	2.244E-01	3.815E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:17:14.59

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	116	10.66*	1.082E+00	7.266E+00	7.266E+00	20.65
SC-46	889.28	9	99.98*	1.626E+00	3.799E-02	5.037E-02	127.66
	1120.55	86	99.99	1.344E+00	4.613E-01	6.117E-01	33.37
GE-68	1077.34	7	3.22*	1.387E+00	1.181E+00	1.288E+00	179.90
RB-86	1077.00	7	8.64*	1.387E+00	4.400E-01	1.564E+00	179.90
CD-109	88.03	56	3.70*	4.377E+00	2.497E+00	2.628E+00	117.40
SN-126	64.28	38	9.60	1.996E+00	1.428E+00	1.428E+00	152.70
	86.94	56	8.90	4.377E+00	1.038E+00	1.038E+00	117.40
	87.57	56	37.00*	4.377E+00	2.497E-01	2.497E-01	117.40
TL-208	277.37	------	6.60	4.130E+00	------	Line Not Found	------
	583.19	64	85.00*	2.287E+00	2.402E-01	2.402E-01	49.07
	860.56	------	12.50	1.669E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.022E+00	------	Line Not Found	------
	351.06	578	12.92*	3.435E+00	9.431E+00	9.431E+00	10.15
PB-212	74.82	180	10.28	3.250E+00	3.895E+00	3.895E+00	40.23
	77.11	241	17.10	3.460E+00	2.946E+00	2.946E+00	30.39
	238.63	251	43.60*	4.608E+00	9.047E-01	9.047E-01	21.54
	300.09	29	3.30	3.900E+00	1.613E+00	1.613E+00	129.98
BI-214	609.32	449	45.49*	2.209E+00	3.239E+00	3.240E+00	9.89
	1120.29	86	14.92	1.344E+00	3.092E+00	3.092E+00	33.37
	1764.49	71	15.30	9.361E-01	3.583E+00	3.583E+00	22.94
PB-214	74.82	180	5.80	3.250E+00	6.903E+00	6.904E+00	40.23
	77.11	241	9.70	3.460E+00	5.193E+00	5.193E+00	30.39
	87.09	56	3.41	4.377E+00	2.709E+00	2.710E+00	117.40
	242.00	201	7.25	4.565E+00	4.395E+00	4.396E+00	27.19
	295.22	343	18.42	3.941E+00	3.417E+00	3.417E+00	13.70
	351.93	578	35.60*	3.435E+00	3.423E+00	3.423E+00	10.15
RN-222	609.32	449	45.49*	2.209E+00	3.239E+00	3.240E+00	9.89
	1120.29	86	14.92	1.344E+00	3.092E+00	3.092E+00	33.37
	1764.49	71	15.30	9.361E-01	3.583E+00	3.583E+00	22.94
RA-224	240.99	201	4.10*	4.565E+00	7.772E+00	7.772E+00	27.19
RA-226	74.82	180	5.80	3.250E+00	6.903E+00	6.904E+00	40.23
	77.11	241	9.70	3.460E+00	5.193E+00	5.193E+00	30.39
	87.09	56	3.41	4.377E+00	2.709E+00	2.710E+00	117.40
	242.00	201	7.25	4.565E+00	4.395E+00	4.396E+00	27.19
	295.22	343	18.42	3.941E+00	3.417E+00	3.417E+00	13.70
	351.93	578	35.60*	3.435E+00	3.423E+00	3.423E+00	10.15
TH-228	74.82	180	10.28	3.250E+00	3.895E+00	3.895E+00	40.23
	77.11	241	17.10	3.460E+00	2.946E+00	2.946E+00	30.39
	238.63	251	43.60*	4.608E+00	9.047E-01	9.047E-01	21.54
	300.09	29	3.30	3.900E+00	1.613E+00	1.613E+00	129.98
TH-230	74.82	180	5.80	3.250E+00	6.903E+00	6.903E+00	40.23
	77.11	241	9.70	3.460E+00	5.193E+00	5.193E+00	30.39
	87.09	56	3.41	4.377E+00	2.709E+00	2.709E+00	117.40
	242.00	201	7.25	4.565E+00	4.395E+00	4.395E+00	27.19
	295.22	343	18.42	3.941E+00	3.417E+00	3.417E+00	13.70
	351.93	578	35.60*	3.435E+00	3.423E+00	3.423E+00	10.15

Sample ID : G674299004 Acquisition date : 30-JUL-2024 11:14:26

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-234	63.29	38	3.70*	1.996E+00	3.705E+00	3.705E+00	152.70
	92.59	138	4.23	4.722E+00	4.996E+00	4.996E+00	65.78
U-234	74.82	180	5.80	3.250E+00	6.903E+00	6.903E+00	40.23
	77.11	241	9.70	3.460E+00	5.193E+00	5.193E+00	30.39
	87.09	56	3.41	4.377E+00	2.709E+00	2.709E+00	117.40
	242.00	201	7.25	4.565E+00	4.395E+00	4.395E+00	27.19
	295.22	343	18.42	3.941E+00	3.417E+00	3.417E+00	13.70
	351.93	578	35.60*	3.435E+00	3.423E+00	3.423E+00	10.15
U-238	63.29	38	3.70*	1.996E+00	3.705E+00	3.705E+00	152.70
	92.59	138	4.23	4.722E+00	4.996E+00	4.996E+00	65.78
AM-243	43.53	------	5.90	2.847E-01	------	Line Not Found	------
	74.66	180	67.20*	3.250E+00	5.958E-01	5.958E-01	40.23
ANH-511	511.00	42	100.00*	2.545E+00	1.202E-01	1.202E-01	91.01

Flag: "*" = Keyline

Sample ID : G674299004 Acquisition date : 30-JUL-2024 11:14:26

Total number of lines in spectrum	47	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	35	74.47%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	7.266E+00	7.266E+00	1.500E+00	20.65	
SC-46	83.79D	1.33	3.799E-02	5.037E-02	6.430E-02	127.66	
GE-68	270.95D	1.09	1.181E+00	1.288E+00	2.318E+00	179.90	
RB-86	18.64D	3.55	4.400E-01	1.564E+00	2.814E+00	179.90	
CD-109	461.40D	1.05	2.497E+00	2.628E+00	3.086E+00	117.40	
SN-126	2.30E+05Y	1.00	2.497E-01	2.497E-01	2.932E-01	117.40	
TL-208	1.41E+10Y	1.00	2.402E-01	2.402E-01	1.179E-01	49.07	
BI-211	7.04E+08Y	1.00	9.431E+00	9.431E+00	0.957E+00	10.15	
PB-212	1.41E+10Y	1.00	9.047E-01	9.047E-01	1.949E-01	21.54	
BI-214	1600.00Y	1.00	3.239E+00	3.240E+00	0.320E+00	9.89	
PB-214	1600.00Y	1.00	3.423E+00	3.423E+00	0.348E+00	10.15	
RN-222	1600.00Y	1.00	3.239E+00	3.240E+00	0.320E+00	9.89	
RA-224	1.41E+10Y	1.00	7.772E+00	7.772E+00	2.113E+00	27.19	
RA-226	1600.00Y	1.00	3.423E+00	3.423E+00	0.348E+00	10.15	
TH-228	1.41E+10Y	1.00	9.047E-01	9.047E-01	1.949E-01	21.54	
TH-230	7.54E+04Y	1.00	3.423E+00	3.423E+00	0.347E+00	10.15	
TH-234	4.47E+09Y	1.00	3.705E+00	3.705E+00	5.658E+00	152.70	
U-234	2.45E+05Y	1.00	3.423E+00	3.423E+00	0.347E+00	10.15	
U-238	4.47E+09Y	1.00	3.705E+00	3.705E+00	5.658E+00	152.70	
AM-243	7370.00Y	1.00	5.958E-01	5.958E-01	2.397E-01	40.23	
ANH-511	1.00E+09Y	1.00	1.202E-01	1.202E-01	1.094E-01	91.01	
			---	---			
	Total Activity :		5.922E+01	6.060E+01			

Grand Total Activity : 5.922E+01 6.060E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299004 Acquisition date : 30-JUL-2024 11:14:26

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	38.00	154	140	5.40	75.96	69	16	4.20E-02	40.1	9.60E-02	
0	113.06	45	125	1.02	225.96	223	9	1.27E-02	93.1	5.58E+00	T
0	185.83	237	167	2.02	371.40	366	14	6.70E-02	26.9	5.36E+00	T
0	257.17	56	113	3.51	513.99	506	15	1.60E-02	85.7	4.37E+00	T
0	265.63	22	79	1.37	530.91	525	9	6.15E-03	****	4.26E+00	T
0	338.59	61	48	1.49	676.76	671	10	1.76E-02	49.3	3.54E+00	T
0	372.06	13	62	0.63	743.66	734	12	3.78E-03	****	3.28E+00	T
0	404.38	29	72	5.19	808.26	799	15	8.44E-03	****	3.07E+00	T
0	567.87	23	41	3.69	1135.14	1128	12	6.56E-03	****	2.34E+00	T
1	616.60	29	1	2.31	1232.58	1208	32	8.48E-03	71.3	2.19E+00	T
0	668.12	18	45	5.80	1335.60	1320	19	5.26E-03	****	2.05E+00	T
0	767.97	21	41	3.31	1535.28	1527	14	6.21E-03	****	1.83E+00	T
7	911.00	46	15	3.07	1821.34	1815	21	1.36E-02	42.4	1.59E+00	T
7	916.35	13	8	2.68	1832.05	1815	21	3.81E-03	91.2	1.58E+00	
0	948.84	11	5	0.94	1897.04	1893	8	3.35E-03	89.3	1.54E+00	T
0	952.88	5	7	1.39	1905.11	1900	9	1.59E-03	****	1.53E+00	
0	979.18	12	6	2.10	1957.73	1952	12	3.61E-03	93.6	1.50E+00	
0	1100.41	17	9	6.29	2200.24	2189	19	5.14E-03	92.4	1.36E+00	T
0	1133.90	10	12	1.42	2267.24	2260	11	2.85E-03	****	1.33E+00	
0	1209.09	4	9	0.54	2417.67	2411	8	1.22E-03	****	1.26E+00	
0	1237.72	36	25	2.31	2474.96	2464	18	1.07E-02	70.6	1.24E+00	T
0	1377.37	28	7	1.77	2754.42	2746	14	8.24E-03	52.9	1.13E+00	
0	1383.97	5	6	1.32	2767.61	2761	10	1.42E-03	****	1.13E+00	T
0	1407.26	18	7	1.37	2814.23	2809	10	5.21E-03	71.4	1.11E+00	T
0	1426.10	5	3	0.53	2851.94	2841	12	1.53E-03	****	1.10E+00	
0	1428.71	9	6	1.50	2857.16	2852	12	2.74E-03	****	1.10E+00	
0	1668.05	7	7	1.31	3336.20	3324	15	2.08E-03	****	9.76E-01	
0	1728.79	22	0	3.32	3457.79	3451	14	6.67E-03	40.8	9.50E-01	
0	1846.86	14	3	2.31	3694.18	3686	12	4.28E-03	68.6	9.06E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:17:26.06

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299004.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:26 Sensitivity     : 3.000           *
* Detector ID      : GAM12                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:11:00 Nuclide Library : SOLID           *
* Sample ID        : G674299004           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0365E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-OCT-2023 07:18:34 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM12_CAN.CNF;20            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	4.042E-01
SC-46	4.470E-02
GE-68	1.432E+00
RB-86	1.943E+00
CD-109	1.375E+00
SN-126	1.316E-01
TL-208	4.318E-02
BI-211	2.945E-01
PB-212	7.306E-02
BI-214	8.557E-02
PB-214	1.071E-01
RN-222	8.557E-02
RA-224	7.826E-01
RA-226	1.071E-01
TH-228	7.306E-02
TH-230	1.071E-01
TH-234	2.962E+00
U-234	1.071E-01
U-238	2.962E+00
AM-243	9.803E-02
ANH-511	4.062E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.355E-01	NOT IDENT.
NA-22	5.135E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	4.463E-02	NOT IDENT.
V-48	1.481E-01	NOT IDENT.
CR-51	7.281E-01	NOT IDENT.
MN-52	2.583E+00	NOT IDENT.
MN-54	3.663E-02	NOT IDENT.
CO-56	5.236E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF

CO-57	3.964E-02	NOT IDENT.
CO-58	5.781E-02	NOT IDENT.
FE-59	1.421E-01	FAIL ABUN
CO-60	5.176E-02	NOT IDENT.
ZN-65	1.143E-01	NOT IDENT.
AS-73	2.838E+00	NOT IDENT.
AS-74	2.557E-01	NOT IDENT.
SE-75	7.900E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	7.136E-01	NOT IDENT.
RB-83	1.147E-01	NOT IDENT.
RB-84	1.476E-01	NOT IDENT.
KR-85	9.908E+00	NOT IDENT.
SR-85	6.406E-02	NOT IDENT.
Y-88	4.004E-02	NOT IDENT.
Y-91	2.570E+01	NOT IDENT.
NB-94	4.785E-02	NOT IDENT.
NB-95	8.075E-02	NOT IDENT.
NB-95M	2.323E-01	NOT IDENT.
ZR-95	1.012E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.514E-02	NOT IDENT.
RH-102	8.116E-02	FAIL ABUN
RU-103	6.160E-02	FAIL ABUN
RH-106	3.790E-01	NOT IDENT.
RU-106	3.790E-01	NOT IDENT.
AG-108M	4.108E-02	NOT IDENT.
AG-110	9.521E-01	NOT IDENT.
AG-110M	7.274E-02	FAIL ABUN
SN-113	6.222E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.044E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	4.433E-02	NOT IDENT.
SB-124	1.205E-01	NOT IDENT.
SB-125	1.217E-01	NOT IDENT.
TE-125M	1.971E+01	NOT IDENT.
I-126	9.858E-01	NOT IDENT.
SB-126	5.459E-01	NOT IDENT.
SB-127	4.545E+01	NOT IDENT.
I-131	7.953E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.523E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	6.255E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.997E-01	NOT IDENT.
BA-137M	4.311E-02	NOT IDENT.
CS-137	4.554E-02	NOT IDENT.
LA-138	5.549E-02	NOT IDENT.
CE-139	4.661E-02	NOT IDENT.
BA-140	1.028E+00	NOT IDENT.
LA-140	4.530E-01	NOT IDENT.
CE-141	1.552E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.228E-01	NOT IDENT.
PM-144	5.157E-02	FAIL ABUN
PR-144	3.886E+00	NOT IDENT.
PM-146	6.454E-02	NOT IDENT.
ND-147	2.140E+00	NOT IDENT.
PM-147	1.151E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.595E-02	FAIL ABUN
EU-152	1.206E-01	FAIL ABUN
GD-153	1.373E-01	NOT IDENT.
EU-154	1.452E-01	NOT IDENT.
EU-155	1.709E-01	FAIL ABUN
TB-160	2.037E-01	FAIL ABUN
HO-166M	7.382E-02	FAIL ABUN
TM-171	5.366E+01	NOT IDENT.
HF-172	2.848E-01	FAIL ABUN
LU-172	5.524E-02	FAIL ABUN
LU-176	3.855E-02	FAIL ABUN
HF-181	8.822E-02	NOT IDENT.

TA-182	2.405E-01	NOT IDENT.
RE-183	5.813E-01	NOT IDENT.
RE-184	2.249E-01	NOT IDENT.
W-188	1.118E+01	FAIL ABUN
IR-192	5.659E-02	FAIL ABUN
HG-203	7.119E-02	NOT IDENT.
TL-204	1.018E+01	NOT IDENT.
BI-207	4.608E-02	FAIL ABUN
BI-210	1.020E+01	NOT IDENT.
PB-210	1.020E+01	NOT IDENT.
PB-211	1.107E+00	FAIL ABUN
BI-212	7.714E-01	NOT IDENT.
BI-213	1.384E-01	NOT IDENT.
RN-219	6.025E-01	NOT IDENT.
RA-223	8.887E-01	FAIL ABUN
AC-225	3.119E+00	NOT IDENT.
AC-227	3.762E-01	FAIL ABUN
TH-227	3.762E-01	FAIL ABUN
AC-228	3.095E-01	FAIL ABUN
RA-228	3.095E-01	FAIL ABUN
TH-229	7.282E-01	FAIL ABUN
PA-231	6.826E-01	NOT IDENT.
TH-231	8.887E-01	FAIL ABUN
TH-232	3.095E-01	FAIL ABUN
PA-233	9.303E-02	FAIL ABUN
PA-234	3.582E-01	FAIL ABUN
PA-234M	7.101E+00	NOT IDENT.
U-235	3.276E-01	FAIL ABUN
NP-237	9.303E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	4.076E-01	NOT IDENT.
PU-239	4.852E+02	NOT IDENT.
AM-241	3.797E-01	NOT IDENT.
CM-243	1.728E-01	NOT IDENT.
BK-247	1.242E-01	FAIL ABUN
CM-247	5.652E-02	NOT IDENT.
CF-249	5.854E-02	NOT IDENT.
CF-251	1.805E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:17:30.24

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299004.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:26 Sensitivity     : 3.000           *
* Detector ID      : GAM12                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:11:00 Nuclide Library : SOLID           *
* Sample ID        : G674299004           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0365E+02 GRAM *
*                                         Quantity Err(%) : 1.9296E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 11-OCT-2023 07:18:34 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM12_CAN.CNF;20            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	7.266E+00	1.592E+00	1.592E+00
SC-46	5.037E-02	6.314E-02	6.314E-02
GE-68	1.288E+00	2.274E+00	2.274E+00
RB-86	1.564E+00	2.760E+00	2.760E+00
CD-109	2.628E+00	3.035E+00	3.035E+00
SN-126	2.497E-01	2.880E-01	2.880E-01
TL-208	2.402E-01	1.182E-01	1.182E-01
BI-211	9.431E+00	1.231E+00	1.231E+00
PB-212	9.047E-01	2.040E-01	2.040E-01
BI-214	3.240E+00	4.682E-01	4.682E-01
PB-214	3.423E+00	4.433E-01	4.433E-01
RN-222	3.240E+00	4.682E-01	4.682E-01
RA-224	7.772E+00	2.162E+00	2.162E+00
RA-226	3.423E+00	4.433E-01	4.433E-01
TH-228	9.047E-01	2.040E-01	2.040E-01
TH-230	3.423E+00	4.433E-01	4.433E-01
TH-234	3.705E+00	5.608E+00	5.608E+00
U-234	3.423E+00	4.433E-01	4.433E-01
U-238	3.705E+00	5.608E+00	5.608E+00
AM-243	5.958E-01	2.395E-01	2.395E-01
ANH-511	1.202E-01	1.079E-01	1.079E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	5.779E-02	6.349E-01	6.354E-01	NOT IDENT.
NA-22	-1.188E-03	6.100E-02	6.101E-02	NOT IDENT.
NA-24	-5.470E+14	1.410E+15	1.431E+15	SHORT HLIF
AL-26	7.347E-03	5.168E-02	5.178E-02	NOT IDENT.
V-48	-3.209E-02	2.084E-01	2.089E-01	NOT IDENT.
CR-51	-2.566E-01	8.862E-01	8.937E-01	NOT IDENT.
MN-52	5.705E-01	3.311E+00	3.321E+00	NOT IDENT.
MN-54	-3.061E-02	5.118E-02	5.301E-02	NOT IDENT.
CO-56	4.490E-03	6.344E-02	6.347E-02	FAIL ABUN

MN-56	1.000E+41	1.225E+42	0.000E+00	SHORT HLIF
CO-57	6.903E-03	4.525E-02	4.536E-02	NOT IDENT.
CO-58	-5.507E-04	7.095E-02	7.095E-02	NOT IDENT.
FE-59	2.789E-01	2.542E-01	2.836E-01	FAIL ABUN
CO-60	2.568E-02	5.640E-02	5.758E-02	NOT IDENT.
ZN-65	1.010E-01	1.302E-01	1.379E-01	NOT IDENT.
AS-73	-9.184E-01	3.513E+00	3.537E+00	NOT IDENT.
AS-74	-5.837E-02	3.170E-01	3.181E-01	NOT IDENT.
SE-75	7.566E-02	1.170E-01	1.219E-01	FAIL ABUN
BR-77	3.567E+04	3.602E+04	3.944E+04	SHORT HLIF
SR-82	-2.698E-01	9.157E-01	9.237E-01	NOT IDENT.
RB-83	4.723E-02	1.324E-01	1.341E-01	NOT IDENT.
RB-84	5.906E-02	1.723E-01	1.743E-01	NOT IDENT.
KR-85	3.627E+00	1.304E+01	1.314E+01	NOT IDENT.
SR-85	2.321E-02	8.431E-02	8.496E-02	NOT IDENT.
Y-88	-2.090E-02	5.618E-02	5.696E-02	NOT IDENT.
Y-91	-1.401E+01	3.867E+01	3.919E+01	NOT IDENT.
NB-94	2.888E-02	5.447E-02	5.601E-02	NOT IDENT.
NB-95	8.847E-02	8.781E-02	9.644E-02	NOT IDENT.
NB-95M	1.850E-01	2.936E-01	3.052E-01	NOT IDENT.
ZR-95	-4.156E-02	1.308E-01	1.321E-01	NOT IDENT.
NB-97	1.000E+41	1.666E+41	0.000E+00	SHORT HLIF
ZR-97	3.771E+14	4.095E+14	4.434E+14	SHORT HLIF
MO-99	2.116E+03	2.130E+03	2.334E+03	SHORT HLIF
TC-99M	-3.371E+39	3.523E+39	0.000E+00	SHORT HLIF
RH-101	-1.056E-02	5.272E-02	5.293E-02	NOT IDENT.
RH-102	7.724E-02	8.866E-02	9.526E-02	FAIL ABUN
RU-103	-3.891E-02	7.959E-02	8.150E-02	FAIL ABUN
RH-106	2.654E-01	4.638E-01	4.790E-01	NOT IDENT.
RU-106	2.654E-01	4.638E-01	4.790E-01	NOT IDENT.
AG-108M	1.417E-02	4.753E-02	4.796E-02	NOT IDENT.
AG-110	3.920E-01	1.238E+00	1.251E+00	NOT IDENT.
AG-110M	-1.980E-02	1.070E-01	1.074E-01	FAIL ABUN
SN-113	-2.387E-02	7.669E-02	7.744E-02	NOT IDENT.
CD-115	-3.417E+03	5.901E+03	6.099E+03	SHORT HLIF
SN-117M	-1.865E-01	2.484E-01	2.622E-01	NOT IDENT.
SB-122	-8.817E+01	5.371E+02	5.386E+02	SHORT HLIF
TE-123M	-4.317E-02	5.409E-02	5.748E-02	NOT IDENT.
SB-124	9.338E-02	1.123E-01	1.199E-01	NOT IDENT.
SB-125	2.379E-03	1.450E-01	1.450E-01	NOT IDENT.
TE-125M	1.358E+01	2.618E+01	2.689E+01	NOT IDENT.
I-126	1.014E+00	1.083E+00	1.175E+00	NOT IDENT.
SB-126	-9.953E-02	6.801E-01	6.816E-01	NOT IDENT.
SB-127	-2.887E+00	5.577E+01	5.578E+01	NOT IDENT.
I-131	-2.188E-01	1.106E+00	1.110E+00	NOT IDENT.
I-132	1.000E+41	2.749E+41	0.000E+00	SHORT HLIF
TE-132	2.288E+00	7.342E+01	7.343E+01	SHORT HLIF
BA-133	-3.070E-02	7.879E-02	8.000E-02	NOT IDENT.
I-133	-1.622E+10	3.284E+10	3.364E+10	SHORT HLIF
CS-134	7.006E-02	6.853E-02	7.546E-02	FAIL ABUN
I-135	-3.440E+36	5.729E+36	0.000E+00	SHORT HLIF
CS-136	-5.534E-02	3.620E-01	3.629E-01	NOT IDENT.
BA-137M	-1.757E-02	6.356E-02	6.406E-02	NOT IDENT.
CS-137	-1.856E-02	6.715E-02	6.767E-02	NOT IDENT.
LA-138	-1.591E-02	7.518E-02	7.552E-02	NOT IDENT.
CE-139	8.740E-03	5.357E-02	5.372E-02	NOT IDENT.
BA-140	-2.641E-01	1.271E+00	1.276E+00	NOT IDENT.
LA-140	6.594E-01	4.202E-01	5.147E-01	NOT IDENT.
CE-141	1.933E-01	1.699E-01	1.909E-01	NOT IDENT.
CE-143	2.679E+07	4.874E+06	1.302E+07	SHORT HLIF
CE-144	2.225E-01	3.604E-01	3.741E-01	NOT IDENT.
PM-144	-3.528E-03	6.323E-02	6.325E-02	FAIL ABUN
PR-144	-3.260E-01	4.772E+00	4.774E+00	NOT IDENT.
PM-146	6.631E-02	7.060E-02	7.667E-02	NOT IDENT.
ND-147	-7.472E-01	2.686E+00	2.707E+00	NOT IDENT.
PM-147	3.927E+02	1.303E+03	1.315E+03	NOT IDENT.
PM-149	2.503E+04	5.786E+04	5.895E+04	SHORT HLIF
EU-150	-7.973E-03	4.947E-02	4.960E-02	FAIL ABUN
EU-152	-8.280E-02	1.572E-01	1.615E-01	FAIL ABUN
GD-153	-2.609E-02	1.930E-01	1.934E-01	NOT IDENT.
EU-154	1.197E-04	1.718E-01	1.718E-01	NOT IDENT.
EU-155	-3.325E-03	2.112E-01	2.112E-01	FAIL ABUN
TB-160	-4.846E-02	2.589E-01	2.598E-01	FAIL ABUN
HO-166M	-2.923E-02	9.449E-02	9.541E-02	FAIL ABUN
TM-171	2.083E+01	6.405E+01	6.473E+01	NOT IDENT.
HF-172	1.239E-01	3.215E-01	3.263E-01	FAIL ABUN
LU-172	-4.094E-02	8.765E-02	8.957E-02	FAIL ABUN
LU-176	5.664E-03	4.504E-02	4.512E-02	FAIL ABUN

HF-181	6.014E-03	1.051E-01	1.052E-01	NOT IDENT.
TA-182	3.940E-02	2.774E-01	2.780E-01	NOT IDENT.
RE-183	-4.261E-01	7.363E-01	7.610E-01	NOT IDENT.
RE-184	-5.475E-02	2.867E-01	2.878E-01	NOT IDENT.
W-188	-1.490E+01	1.684E+01	1.813E+01	FAIL ABUN
IR-192	-4.173E-04	6.691E-02	6.691E-02	FAIL ABUN
HG-203	-4.597E-02	8.739E-02	8.981E-02	NOT IDENT.
TL-204	7.333E+00	1.350E+01	1.390E+01	NOT IDENT.
BI-207	-5.723E-02	6.591E-02	7.078E-02	FAIL ABUN
BI-210	-7.928E+00	1.291E+01	1.340E+01	NOT IDENT.
PB-210	-7.928E+00	1.291E+01	1.340E+01	NOT IDENT.
PB-211	1.828E+00	2.324E+00	2.466E+00	FAIL ABUN
BI-212	7.332E-01	8.480E-01	9.102E-01	NOT IDENT.
BI-213	7.192E-02	1.571E-01	1.604E-01	NOT IDENT.
RN-219	1.323E-01	7.055E-01	7.080E-01	NOT IDENT.
RA-223	1.290E-01	1.040E+00	1.041E+00	FAIL ABUN
AC-225	-7.763E-02	3.650E+00	3.650E+00	NOT IDENT.
AC-227	9.807E-01	8.357E-01	9.454E-01	FAIL ABUN
TH-227	9.807E-01	8.357E-01	9.454E-01	FAIL ABUN
AC-228	8.143E-01	3.452E-01	5.039E-01	FAIL ABUN
RA-228	8.143E-01	3.452E-01	5.039E-01	FAIL ABUN
TH-229	-4.516E-01	9.092E-01	9.318E-01	FAIL ABUN
PA-231	3.268E-01	8.816E-01	8.938E-01	NOT IDENT.
TH-231	1.290E-01	1.040E+00	1.041E+00	FAIL ABUN
TH-232	8.143E-01	3.452E-01	5.039E-01	FAIL ABUN
PA-233	1.094E-04	1.099E-01	1.099E-01	FAIL ABUN
PA-234	-8.901E-02	5.404E-01	5.419E-01	FAIL ABUN
PA-234M	4.661E+00	7.634E+00	7.918E+00	NOT IDENT.
U-235	3.384E-01	3.626E-01	3.934E-01	FAIL ABUN
NP-237	1.094E-04	1.099E-01	1.099E-01	FAIL ABUN
NP-238	4.701E+03	1.244E+04	1.262E+04	SHORT HLIF
NP-239	1.249E-02	5.298E-01	5.298E-01	NOT IDENT.
PU-239	-1.700E+02	5.699E+02	5.750E+02	NOT IDENT.
AM-241	3.565E-01	4.922E-01	5.177E-01	NOT IDENT.
CM-243	-5.055E-02	2.167E-01	2.179E-01	NOT IDENT.
BK-247	1.219E-01	1.901E-01	1.979E-01	FAIL ABUN
CM-247	1.985E-02	6.557E-02	6.618E-02	NOT IDENT.
CF-249	4.375E-02	6.558E-02	6.848E-02	NOT IDENT.
CF-251	-2.385E-01	2.264E-01	2.506E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	156.9824	85.43	164.8718	131.20	116.9341
45.60	132.5003	86.55	156.9924	133.02	117.9498
46.54	150.3213	86.79	157.0217	133.52	110.8885
49.72	0.0000	86.94	157.0398	136.00	112.8284
51.35	148.8652	87.09	157.0579	136.47	118.1923
51.87	153.3907	87.57	157.1151	140.51	0.0000
52.39	149.0236	88.03	157.1701	143.76	117.8032
52.97	159.1261	88.34	157.2077	144.24	111.5866
53.44	165.8816	88.47	157.2231	145.44	118.8093
54.07	149.2761	89.96	157.4001	152.43	123.7612
57.36	0.0000	1093.63	157.4802	153.25	116.6392
57.53	152.0205	91.11	157.5352	323.87	114.9063
57.98	161.0321	92.59	157.7087	156.02	126.7023
59.27	144.4361	93.35	157.7972	158.56	132.2767
59.32	144.4430	94.56	157.9373	159.00	129.6079
59.54	132.7137	94.65	157.9478	162.33	106.3964
60.96	173.2632	94.67	157.9498	162.66	107.3172
61.17	166.5670	94.87	157.9728	163.33	110.0617
62.93	160.0976	97.43	117.8327	165.86	104.7896
63.29	164.0840	98.43	102.3106	176.31	127.1570
63.58	164.1277	98.44	102.3115	176.60	127.1762
64.28	164.2322	99.53	112.8033	177.52	133.5967
66.73	172.4853	100.11	122.6876	181.07	0.0000
67.24	172.5639	102.03	121.6946	181.52	106.3651
125.81	160.7836	103.18	133.3911	184.41	116.7324
67.75	160.7938	103.37	133.4092	143.76	109.5071
68.89	140.0588	105.21	126.6095	193.51	114.1113
69.67	147.5008	105.31	126.6178	197.03	111.0271
70.82	145.9498	106.12	140.6355	198.01	104.6528
70.83	145.9511	106.47	140.6694	201.83	100.2440
72.81	176.7973	109.28	111.8179	203.43	86.5135
72.87	176.8068	111.00	104.9501	205.31	94.8800
74.66	155.5061	111.76	0.0000	210.85	95.1229
74.82	155.5270	114.06	127.0714	215.65	90.7034
74.97	155.5465	116.30	0.0000	218.12	94.5106
77.11	155.8218	116.74	116.5835	222.11	82.6118
78.74	156.0287	119.76	116.1063	227.09	106.9807
79.69	138.4821	121.12	109.1641	227.38	98.6205
80.03	138.5192	121.22	109.1707	228.16	0.0000
80.12	152.2117	121.78	107.4481	228.18	92.1403
80.19	152.2205	122.06	107.4672	116.74	92.1403
80.57	152.2666	122.92	113.6948	235.69	100.0968
81.00	164.2991	123.07	113.7057	235.96	92.6375
81.07	164.3086	265.00	116.3943	238.63	75.7274
81.75	210.0631	125.81	102.4217	238.98	0.0000
82.47	236.4568	127.23	112.2322	240.99	75.8034
83.79	214.9749	127.91	117.5840	242.00	75.8355
84.00	215.0103	129.30	119.4537	244.70	61.4875

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	51.1527	344.28	54.4918	563.25	34.8315
252.80	51.1610	345.93	37.3869	564.24	0.0000
254.15	0.0000	351.06	60.4684	569.33	29.9013
256.23	77.2257	351.93	60.4863	946.00	26.5797
260.90	0.0000	355.39	0.0000	569.70	26.5813
264.66	77.4893	356.01	56.2702	583.19	25.0027
264.80	77.4931	364.49	50.1586	584.27	25.0093
265.00	77.4994	366.42	0.0000	595.83	31.3495
269.46	69.6839	372.51	59.7192	427.87	26.5031
270.03	61.8711	375.05	39.3213	602.52	0.0000
271.23	71.0587	377.52	44.2715	604.72	21.7820
273.65	98.6283	356.01	46.3330	607.14	26.1948
276.40	58.8610	388.16	40.4732	609.32	26.2085
277.37	66.4806	388.63	47.3906	610.33	26.2146
277.60	73.1357	391.69	43.4830	614.28	26.2390
278.00	81.6971	264.66	55.4967	618.01	21.8505
279.20	85.5368	401.81	49.5682	620.36	13.4539
279.54	85.5478	402.40	49.5773	621.93	13.4586
279.70	85.5533	404.85	49.6147	630.19	0.0000
280.46	94.1358	410.95	38.6301	631.29	20.0217
283.69	69.4990	413.71	50.7448	633.25	30.5727
284.31	79.0385	414.70	45.7831	634.78	36.9119
285.41	76.2134	423.72	44.9094	635.95	35.8666
285.90	0.0000	427.09	35.9637	636.99	24.2683
287.50	53.3921	427.87	37.9704	657.50	18.6576
290.67	80.9479	433.94	36.0368	657.76	16.9624
293.27	0.0000	439.40	38.0997	657.90	0.0000
351.93	57.3724	440.45	30.0879	661.66	27.1641
295.96	57.3880	453.88	31.2119	664.57	0.0000
879.38	57.4438	463.37	34.3248	666.33	25.4927
299.98	57.4741	468.07	41.4467	666.50	25.4941
300.09	61.3086	473.00	31.3808	667.71	0.0000
300.13	61.3096	475.06	41.5274	677.62	23.4274
301.36	61.3369	476.78	34.4539	685.70	19.2019
302.85	55.2340	477.60	31.4210	692.65	0.0000
256.23	72.1546	482.18	40.5945	695.00	17.1035
304.85	64.4868	487.02	42.6812	696.49	33.1485
306.78	64.3399	492.35	0.0000	696.51	33.1485
308.46	57.6535	497.08	29.5509	697.00	35.2911
311.90	64.4595	505.52	42.4868	697.30	39.5711
316.51	56.8574	507.63	0.0000	697.49	42.7820
319.41	58.8452	511.00	37.8440	702.65	23.5563
320.08	51.1400	514.00	36.0314	706.68	20.3615
321.04	51.1577	514.00	36.0314	711.68	25.7476
323.87	57.0059	520.40	28.7101	720.70	26.8723
325.23	67.6672	520.69	0.0000	721.93	0.0000
328.76	68.7184	522.65	0.0000	722.78	33.3367
333.37	43.4301	527.90	0.0000	722.91	33.3367
333.97	57.4024	528.26	23.6317	723.31	35.4905
334.37	57.4096	529.59	28.7784	724.19	27.9678
338.28	36.9006	529.87	0.0000	727.33	21.5283
338.32	36.9012	531.02	26.7332	733.00	16.1655
311.90	46.6465	537.26	36.0446	735.93	22.6454
340.48	46.6465	546.56	0.0000	333.97	25.8889
340.55	48.2029	552.55	32.0501	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	21.6046	949.00	10.7859	1384.29	12.8229
747.24	20.5371	667.71	0.0000	1408.01	6.4320
748.06	17.2974	962.31	18.9195	1434.09	4.8411
752.31	10.8203	964.08	21.6293	1435.80	7.2634
753.82	21.6473	966.17	20.7354	1457.56	0.0000
756.73	21.6608	911.20	16.2356	1460.82	7.7734
756.80	21.6608	983.53	10.5498	1489.16	6.8271
884.68	22.5602	984.45	0.0000	1505.03	11.7275
765.81	21.7010	1274.44	20.8438	1584.12	8.8849
766.42	21.7035	1001.03	16.3261	1596.21	2.9660
766.84	21.7053	1002.74	15.4237	1620.50	3.9666
772.60	0.0000	1004.73	20.8741	1621.92	5.9511
776.52	25.0110	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	1.0001
778.90	19.5831	1028.54	0.0000	1750.46	0.0000
783.70	20.6908	1037.84	9.1265	1764.49	2.0177
788.74	19.6216	1038.76	0.0000	1063.66	1.6825
792.07	19.6348	631.29	14.6242	1771.35	1.2621
795.86	15.2830	1048.07	12.7989	1791.20	0.0000
810.06	21.8945	1049.04	17.3728	1808.65	5.0698
810.29	17.5166	1050.41	16.4628	1810.72	0.0000
344.28	18.6119	1063.66	16.4988	1836.06	5.0857
810.76	18.6129	1077.00	15.3101		
815.77	23.0149	1077.34	12.2487		
1048.07	20.8346	1085.87	14.7188		
832.01	21.9885	1093.63	12.2806		
834.85	18.7006	1099.45	14.7508		
835.71	15.4031	1112.07	11.8772		
836.80	0.0000	1112.84	12.3190		
846.75	0.0000	1115.54	9.2432		
846.77	14.3334	1120.29	14.8000		
856.80	17.6748	1120.55	14.8008		
860.56	15.4766	1221.41	14.8023		
871.09	14.3997	1129.67	16.6746		
873.19	26.5942	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	21.0781	1173.23	14.9227		
880.51	25.5212	1177.95	14.0002		
881.60	18.8672	1189.05	17.7643		
883.24	19.5390	1204.77	15.6193		
884.68	24.8746	1221.41	14.0925		
889.28	10.6696	1231.02	12.5449		
894.76	18.9133	1235.36	13.1804		
898.04	12.2454	1238.28	13.1865		
900.72	17.8203	1260.41	0.0000		
903.28	20.0572	1271.87	17.0376		
911.20	20.0863	1274.44	13.2562		
912.08	20.0896	1274.54	13.2569		
923.98	0.0000	1291.59	11.3912		
926.50	22.3804	1298.22	0.0000		
929.11	25.7494	1312.11	10.4726		
935.54	23.5372	1332.49	8.5931		
937.49	26.9092	1362.66	0.0000		
944.13	14.3688	1365.19	6.7143		
946.00	17.9668	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:17:58.02

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299005.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM16.CNF;887
                                         Background date  : 28-JUL-2024 11:23:57
Sample date      : 26-JUN-2024 09:15:00  Acquisition date : 30-JUL-2024 11:14:57
Sample ID        : G674299005            Sample quantity  : 9.99400E+01 GRAM
Detector name    : GAM16                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.58  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	54.11	19	144	0.83	108.80	105	7	5.20E-03	109.5	
2	0	63.74*	36	201	0.89	128.04	124	8	9.94E-03	72.2	
3	1	75.15*	163	190	0.96	150.85	145	13	4.52E-02	15.8	3.47E+00
4	1	77.25	339	168	0.96	155.05	145	13	9.42E-02	8.4	
5	0	83.88*	58	133	0.99	168.30	166	6	1.61E-02	34.6	
6	6	87.42	141	150	1.08	175.36	172	21	3.91E-02	16.6	1.29E+00
7	6	90.04	103	170	1.41	180.61	172	21	2.87E-02	25.0	
8	6	92.85*	194	169	1.38	186.22	172	21	5.39E-02	14.4	
9	0	144.30*	33	164	0.63	289.06	285	8	9.19E-03	70.8	
10	0	186.13*	264	199	1.18	372.66	367	12	7.33E-02	12.6	
11	2	236.70	35	70	1.44	473.74	471	23	9.75E-03	36.3	3.24E+00
12	2	238.90*	336	86	1.23	478.15	471	23	9.33E-02	7.1	
13	2	242.19	234	80	1.45	484.72	471	23	6.51E-02	10.2	
14	0	270.54	79	120	2.74	541.37	535	14	2.20E-02	31.3	
15	0	275.89	58	122	3.29	552.09	548	12	1.62E-02	39.8	
16	2	295.49*	506	70	1.21	591.26	586	32	1.41E-01	5.2	1.84E+00
17	2	300.14	27	63	1.55	600.54	586	32	7.46E-03	63.3	
18	0	313.70	59	112	3.85	627.64	619	16	1.64E-02	42.2	
19	0	328.38	26	108	3.47	656.99	649	12	7.34E-03	81.0	
20	0	338.10*	94	119	1.42	676.43	669	15	2.61E-02	27.7	
21	0	352.13*	734	143	1.33	704.46	699	13	2.04E-01	5.0	
22	0	381.97	27	69	3.89	764.11	758	12	7.59E-03	63.7	
23	0	463.62	39	35	1.27	927.33	923	10	1.09E-02	33.0	
24	0	511.24*	43	53	1.90	1022.53	1015	15	1.19E-02	45.9	
25	0	548.66	17	42	0.88	1097.33	1089	12	4.77E-03	79.2	
26	0	562.93	18	10	1.58	1125.85	1123	6	5.05E-03	36.3	
27	0	583.45*	102	42	1.52	1166.87	1158	15	2.83E-02	17.4	
28	0	609.50*	560	57	1.54	1218.95	1212	15	1.56E-01	5.2	
29	0	661.66	11	16	0.93	1323.24	1319	7	3.09E-03	66.4	
30	0	665.69	20	37	1.86	1331.30	1327	9	5.64E-03	57.8	
31	0	701.57	27	15	2.31	1403.02	1398	10	7.38E-03	34.8	
32	0	732.37	22	9	4.04	1464.59	1459	12	6.24E-03	33.9	
33	0	748.28	16	5	2.38	1496.39	1493	7	4.44E-03	34.4	
34	0	753.51	42	11	3.47	1506.86	1501	14	1.17E-02	22.6	

Sample ID : G674299005 Acquisition date : 30-JUL-2024 11:14:57

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	769.12	50	51	1.38	1538.07	1531	15	1.39E-02	33.7	
36	0	835.77	11	39	0.88	1671.31	1662	12	3.16E-03	113.8	
37	0	860.84	17	12	0.95	1721.44	1717	8	4.72E-03	42.8	
38	0	911.36*	81	34	1.59	1822.46	1814	17	2.25E-02	20.5	
39	0	934.61	31	15	1.34	1868.94	1864	10	8.55E-03	30.8	
40	0	965.61*	12	13	1.26	1930.91	1926	9	3.27E-03	66.9	
41	0	969.32*	34	11	0.68	1938.34	1934	10	9.31E-03	26.3	
42	0	1002.20	10	20	3.00	2004.08	1994	12	2.69E-03	99.4	
43	0	1059.62	20	19	2.59	2118.88	2111	15	5.65E-03	51.4	
44	0	1088.40	13	11	0.77	2176.43	2171	9	3.54E-03	55.2	
45	0	1120.46*	118	25	2.04	2240.54	2234	14	3.29E-02	13.0	
46	0	1155.76	49	9	1.18	2311.12	2304	16	1.37E-02	19.2	
47	0	1162.86	12	17	1.65	2325.32	2320	13	3.36E-03	74.8	
48	0	1238.86	80	10	2.16	2477.29	2470	19	2.21E-02	14.6	
49	0	1266.66	15	5	1.43	2532.88	2527	10	4.19E-03	37.8	
50	0	1272.68	18	20	2.01	2544.93	2538	18	5.13E-03	59.1	
51	0	1378.10	26	18	2.84	2755.75	2750	15	7.27E-03	40.9	
52	0	1386.51	13	6	2.22	2772.55	2765	11	3.68E-03	44.0	
53	0	1400.81	30	4	6.59	2801.16	2792	17	8.26E-03	24.3	
54	0	1461.11*	202	7	2.19	2921.76	2915	16	5.60E-02	7.9	
55	0	1579.55	9	7	3.60	3158.61	3149	14	2.50E-03	70.7	
56	0	1729.60	32	8	2.47	3458.73	3450	14	8.97E-03	24.9	
57	0	1764.81*	108	0	2.47	3529.16	3521	15	2.99E-02	10.0	
58	0	1848.41*	16	5	3.29	3696.37	3690	12	4.52E-03	40.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:17:59

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299005.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 09:15:00 Acquisition date : 30-JUL-2024 11:14:57
Sample ID        : G674299005           Sample quantity  : 99.940 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA16              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.58   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.208E+00	1.099E+01	1.099E+01	15.82	OK
MN-54	834.85	99.98*	1.975E+00	4.073E-02	4.393E-02	227.51	OK
AS-73	53.44	10.30*	1.560E+00	8.610E-01	1.156E+00	219.08	OK
NB-95M	235.69	24.80*	5.180E+00	1.973E-01	2.854E-01	72.59	OK
CD-109	88.03	3.70*	5.840E+00	4.783E+00	5.034E+00	33.22	OK
SN-126	64.28	9.60	2.991E+00	9.193E-01	9.193E-01	144.48	OK
	86.94	8.90	5.840E+00	1.988E+00	1.988E+00	33.22	OK
	87.57	37.00*	5.840E+00	4.783E-01	4.783E-01	33.22	OK
BA-137M	661.66	89.90*	2.414E+00	3.645E-02	3.652E-02	132.74	OK
CS-137	661.66	85.10*	2.414E+00	3.850E-02	3.858E-02	132.74	OK
TL-208	277.37	6.60	4.656E+00	1.369E+00	1.369E+00	79.61	OK
	583.19	85.00*	2.674E+00	3.187E-01	3.187E-01	34.85	OK
	860.56	12.50	1.924E+00	5.003E-01	5.003E-01	85.65	OK
BI-211	72.87	1.23	4.302E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	3.910E+00	1.043E+01	1.043E+01	10.04	OK
PB-212	74.82	10.28	4.593E+00	2.536E+00	2.536E+00	31.59	OK
	77.11	17.10	4.846E+00	3.011E+00	3.011E+00	16.81	OK
	238.63	43.60*	5.148E+00	1.081E+00	1.081E+00	14.16	OK
	300.09	3.30	4.386E+00	1.336E+00	1.336E+00	126.67	OK
BI-214	609.32	45.49*	2.582E+00	3.394E+00	3.394E+00	10.35	OK
	1120.29	14.92	1.515E+00	3.687E+00	3.687E+00	26.05	OK
	1764.49	15.30	1.067E+00	4.610E+00	4.611E+00	20.10	OK
PB-214	74.82	5.80	4.593E+00	4.495E+00	4.496E+00	31.59	OK
	77.11	9.70	4.846E+00	5.307E+00	5.308E+00	16.81	OK
	87.09	3.41	5.840E+00	5.190E+00	5.190E+00	33.22	OK
	242.00	7.25	5.100E+00	4.576E+00	4.576E+00	20.33	OK
	295.22	18.42	4.435E+00	4.460E+00	4.460E+00	10.38	OK
	351.93	35.60*	3.910E+00	3.785E+00	3.785E+00	10.04	OK
RN-222	609.32	45.49*	2.582E+00	3.394E+00	3.394E+00	10.35	OK
	1120.29	14.92	1.515E+00	3.687E+00	3.687E+00	26.05	OK
	1764.49	15.30	1.067E+00	4.610E+00	4.611E+00	20.10	OK
RA-224	240.99	4.10*	5.100E+00	8.091E+00	8.091E+00	20.33	OK
RA-226	74.82	5.80	4.593E+00	4.495E+00	4.496E+00	31.59	OK
	77.11	9.70	4.846E+00	5.307E+00	5.308E+00	16.81	OK
	87.09	3.41	5.840E+00	5.190E+00	5.190E+00	33.22	OK
	242.00	7.25	5.100E+00	4.576E+00	4.576E+00	20.33	OK
	295.22	18.42	4.435E+00	4.460E+00	4.460E+00	10.38	OK
	351.93	35.60*	3.910E+00	3.785E+00	3.785E+00	10.04	OK
AC-228	105.21	1.10	6.758E+00	----- Line Not Found		-----	Absent
	338.32	11.27	4.026E+00	1.486E+00	1.486E+00	55.32	OK
	835.71	1.61	1.975E+00	2.529E+00	2.529E+00	227.51	OK
	911.20	25.80*	1.828E+00	1.216E+00	1.216E+00	40.92	OK
	968.97	15.80	1.729E+00	8.669E-01	8.669E-01	52.62	OK
RA-228	105.21	1.10	6.758E+00	----- Line Not Found		-----	Absent
	338.32	11.27	4.026E+00	1.486E+00	1.486E+00	55.32	OK
	835.71	1.61	1.975E+00	2.529E+00	2.529E+00	227.51	OK
	911.20	25.80*	1.828E+00	1.216E+00	1.216E+00	40.92	OK
	968.97	15.80	1.729E+00	8.669E-01	8.669E-01	52.62	OK
TH-228	74.82	10.28	4.593E+00	2.536E+00	2.536E+00	31.59	OK

Sample ID : G674299005 Acquisition date : 30-JUL-2024 11:14:57

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	77.11	17.10	4.846E+00	3.011E+00	3.011E+00	16.81	OK
	238.63	43.60*	5.148E+00	1.081E+00	1.081E+00	14.16	OK
	300.09	3.30	4.386E+00	1.336E+00	1.336E+00	126.67	OK
TH-230	74.82	5.80	4.593E+00	4.495E+00	4.495E+00	31.59	OK
	77.11	9.70	4.846E+00	5.307E+00	5.307E+00	16.81	OK
	87.09	3.41	5.840E+00	5.190E+00	5.190E+00	33.22	OK
	242.00	7.25	5.100E+00	4.576E+00	4.576E+00	20.33	OK
	295.22	18.42	4.435E+00	4.460E+00	4.460E+00	10.38	OK
	351.93	35.60*	3.910E+00	3.785E+00	3.785E+00	10.04	OK
PA-231	283.69	1.70	4.565E+00	----- Line Not Found		-----	Absent
	301.36	5.35*	4.386E+00	8.239E-01	8.239E-01	126.67	OK
TH-232	105.21	1.10	6.758E+00	----- Line Not Found		-----	Absent
	338.32	11.27	4.026E+00	1.486E+00	1.486E+00	55.32	OK
	835.71	1.61	1.975E+00	2.529E+00	2.529E+00	227.51	OK
	911.20	25.80*	1.828E+00	1.216E+00	1.216E+00	40.92	OK
	968.97	15.80	1.729E+00	8.669E-01	8.669E-01	52.62	OK
TH-234	63.29	3.70*	2.991E+00	2.385E+00	2.385E+00	144.48	OK
	92.59	4.23	6.221E+00	5.402E+00	5.402E+00	28.84	OK
U-234	74.82	5.80	4.593E+00	4.495E+00	4.495E+00	31.59	OK
	77.11	9.70	4.846E+00	5.307E+00	5.307E+00	16.81	OK
	87.09	3.41	5.840E+00	5.190E+00	5.190E+00	33.22	OK
	242.00	7.25	5.100E+00	4.576E+00	4.576E+00	20.33	OK
	295.22	18.42	4.435E+00	4.460E+00	4.460E+00	10.38	OK
	351.93	35.60*	3.910E+00	3.785E+00	3.785E+00	10.04	OK
U-235	89.96	3.47	6.036E+00	3.624E+00	3.624E+00	49.96	OK
	93.35	5.60	6.221E+00	4.081E+00	4.081E+00	28.84	OK
	143.76	10.96*	6.794E+00	3.234E-01	3.234E-01	141.63	OK
	163.33	5.08	6.472E+00	----- Line Not Found		-----	Absent
	185.72	57.20	6.041E+00	5.537E-01	5.537E-01	25.19	OK
	205.31	5.01	5.691E+00	----- Line Not Found		-----	Absent
U-238	63.29	3.70*	2.991E+00	2.385E+00	2.385E+00	144.48	OK
	92.59	4.23	6.221E+00	5.402E+00	5.402E+00	28.84	OK
AM-243	43.53	5.90	4.169E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	4.593E+00	3.880E-01	3.880E-01	31.59	OK
ANH-511	511.00	100.00*	2.965E+00	1.031E-01	1.031E-01	91.80	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:18:00.49

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299005.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:57 Sensitivity     : 3.000           *
* Detector ID      : GAM16                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.58     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:15:00 Analyst initials: RXF2            *
* Sample ID        : G674299005           Sample Quantity : 9.9940E+01 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-NOV-2023 11:06:02 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM16_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.099E+01	1.704E+00	9.285E-01
MN-54	4.393E-02	9.796E-02	1.071E-01
AS-73	1.156E+00	2.481E+00	2.858E+00
NB-95M	2.854E-01	2.031E-01	3.706E-01
CD-109	5.034E+00	1.639E+00	1.565E+00
SN-126	4.783E-01	1.557E-01	1.495E-01
BA-137M	3.652E-02	4.751E-02	8.723E-02
CS-137	3.858E-02	5.019E-02	9.215E-02
TL-208	3.187E-01	1.088E-01	7.789E-02
BI-211	1.043E+01	1.027E+00	5.491E-01
PB-212	1.081E+00	1.501E-01	1.322E-01
BI-214	3.394E+00	3.443E-01	2.075E-01
PB-214	3.785E+00	3.726E-01	1.997E-01
RN-222	3.394E+00	3.443E-01	2.075E-01
RA-224	8.091E+00	1.612E+00	1.418E+00
RA-226	3.785E+00	3.726E-01	1.997E-01
AC-228	1.216E+00	4.879E-01	3.941E-01
RA-228	1.216E+00	4.879E-01	3.941E-01
TH-228	1.081E+00	1.501E-01	1.322E-01
TH-230	3.785E+00	3.725E-01	1.997E-01
PA-231	8.239E-01	1.023E+00	1.230E+00
TH-232	1.216E+00	4.879E-01	3.941E-01
TH-234	2.385E+00	3.377E+00	3.222E+00
U-234	3.785E+00	3.725E-01	1.997E-01
U-235	3.234E-01	4.489E-01	4.320E-01
U-238	2.385E+00	3.377E+00	3.222E+00
AM-243	3.880E-01	1.201E-01	1.297E-01
ANH-511	1.031E-01	9.272E-02	6.727E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	2.268E-01	6.158E-01	1.165E+00	NOT IDENT.
NA-22	6.448E-02	6.150E-02	1.276E-01	NOT IDENT.

NA-24	0.000E+00	1.331E+15	0.000E+00	SHORT HLIF
AL-26	2.853E-02	4.847E-02	1.122E-01	NOT IDENT.
SC-46	-8.834E-03	6.495E-02	1.218E-01	FAIL ABUN
V-48	9.143E-02	2.446E-01	4.835E-01	NOT IDENT.
CR-51	5.138E-01	8.162E-01	1.589E+00	NOT IDENT.
MN-52	4.592E+00	4.247E+00	9.604E+00	FAIL ABUN
CO-56	-7.133E-03	5.679E-02	1.085E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.917E-02	3.577E-02	6.146E-02	NOT IDENT.
CO-58	-2.697E-02	6.583E-02	1.196E-01	NOT IDENT.
FE-59	1.323E-02	1.626E-01	3.123E-01	NOT IDENT.
CO-60	1.333E-02	5.515E-02	1.099E-01	NOT IDENT.
ZN-65	-3.995E-02	1.255E-01	1.941E-01	NOT IDENT.
GE-68	1.687E+00	2.087E+00	4.297E+00	NOT IDENT.
AS-74	5.265E-02	2.545E-01	4.776E-01	NOT IDENT.
SE-75	-5.995E-02	7.172E-02	1.115E-01	NOT IDENT.
BR-77	0.000E+00	5.915E+03	0.000E+00	SHORT HLIF
SR-82	-1.575E-01	8.428E-01	1.520E+00	NOT IDENT.
RB-83	2.376E-02	1.177E-01	2.199E-01	NOT IDENT.
RB-84	2.390E-02	1.223E-01	2.458E-01	NOT IDENT.
KR-85	6.661E+00	9.676E+00	1.758E+01	NOT IDENT.
SR-85	4.289E-02	6.258E-02	1.137E-01	NOT IDENT.
RB-86	1.378E+00	2.431E+00	4.905E+00	NOT IDENT.
Y-88	2.573E-02	5.279E-02	1.250E-01	NOT IDENT.
Y-91	1.728E+01	3.704E+01	7.348E+01	NOT IDENT.
NB-94	8.227E-02	5.617E-02	8.896E-02	FAIL ABUN
NB-95	5.041E-02	7.781E-02	1.448E-01	NOT IDENT.
ZR-95	-6.362E-02	1.260E-01	1.954E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.827E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.577E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	2.941E+39	0.000E+00	SHORT HLIF
RH-101	3.120E-02	4.178E-02	7.816E-02	NOT IDENT.
RH-102	-5.046E-02	7.282E-02	1.191E-01	NOT IDENT.
RU-103	-1.715E-02	8.108E-02	1.445E-01	FAIL ABUN
RH-106	1.232E-01	4.504E-01	8.472E-01	NOT IDENT.
RU-106	1.232E-01	4.504E-01	8.472E-01	NOT IDENT.
AG-108M	-6.779E-03	4.369E-02	7.892E-02	NOT IDENT.
AG-110	-4.521E-01	1.122E+00	1.669E+00	NOT IDENT.
AG-110M	-3.259E-02	6.995E-02	1.256E-01	NOT IDENT.
SN-113	-4.405E-02	7.452E-02	1.297E-01	NOT IDENT.
CD-115	0.000E+00	5.457E+03	0.000E+00	SHORT HLIF
SN-117M	-6.645E-02	2.031E-01	3.470E-01	NOT IDENT.
SB-122	0.000E+00	2.826E+02	0.000E+00	SHORT HLIF
TE-123M	-4.898E-03	4.454E-02	7.732E-02	NOT IDENT.
SB-124	-8.079E-02	1.426E-01	2.547E-01	NOT IDENT.
SB-125	-2.593E-02	1.334E-01	2.403E-01	FAIL ABUN
TE-125M	-4.736E-01	1.577E+01	2.832E+01	NOT IDENT.
I-126	1.137E+00	1.288E+00	2.056E+00	FAIL ABUN
SB-126	4.208E-01	5.849E-01	1.154E+00	FAIL ABUN
SB-127	-3.737E+01	5.701E+01	9.283E+01	NOT IDENT.
I-131	-2.299E-01	8.334E-01	1.508E+00	NOT IDENT.
I-132	0.000E+00	1.015E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.580E+01	0.000E+00	SHORT HLIF
BA-133	-3.361E-02	7.281E-02	1.144E-01	FAIL ABUN
I-133	0.000E+00	2.944E+10	0.000E+00	SHORT HLIF
CS-134	3.705E-02	5.755E-02	1.181E-01	FAIL ABUN
I-135	0.000E+00	7.373E+36	0.000E+00	SHORT HLIF
CS-136	-2.267E-01	3.631E-01	6.231E-01	NOT IDENT.
LA-138	6.648E-02	9.703E-02	2.084E-01	NOT IDENT.
CE-139	6.978E-03	4.799E-02	8.442E-02	NOT IDENT.
BA-140	2.150E-02	9.896E-01	1.823E+00	NOT IDENT.
LA-140	-5.498E-02	4.478E-01	8.565E-01	FAIL ABUN
CE-141	1.519E-01	2.108E-01	2.305E-01	FAIL ABUN
CE-143	0.000E+00	2.585E+06	0.000E+00	SHORT HLIF
CE-144	1.925E-01	2.777E-01	5.159E-01	NOT IDENT.
PM-144	-4.390E-02	6.492E-02	9.024E-02	NOT IDENT.
PR-144	-3.297E+00	4.909E+00	6.830E+00	NOT IDENT.
PM-146	-1.198E-02	6.027E-02	1.083E-01	FAIL ABUN
ND-147	-2.153E+00	2.499E+00	4.068E+00	FAIL ABUN
PM-147	3.579E+02	9.329E+02	1.720E+03	NOT IDENT.
PM-149	0.000E+00	5.015E+04	0.000E+00	SHORT HLIF
EU-150	-1.613E-02	4.121E-02	6.588E-02	FAIL ABUN
EU-152	1.432E-01	1.386E-01	2.702E-01	NOT IDENT.
GD-153	6.019E-02	1.228E-01	2.145E-01	NOT IDENT.
EU-154	1.905E-01	1.743E-01	3.633E-01	NOT IDENT.
EU-155	4.250E-02	1.348E-01	2.484E-01	FAIL ABUN
TB-160	-2.064E-01	2.046E-01	3.335E-01	FAIL ABUN

HO-166M	-4.957E-03	8.604E-02	1.532E-01	FAIL ABUN
TM-171	5.746E+00	2.962E+01	5.306E+01	NOT IDENT.
HF-172	-5.658E-02	2.635E-01	4.619E-01	FAIL ABUN
LU-172	-1.012E-01	9.287E-02	1.346E-01	FAIL ABUN
LU-176	-1.832E-02	4.100E-02	6.564E-02	FAIL ABUN
HF-181	5.713E-02	8.701E-02	1.698E-01	NOT IDENT.
TA-182	-1.716E-02	2.897E-01	5.349E-01	FAIL ABUN
RE-183	-1.798E-01	3.456E-01	6.260E-01	NOT IDENT.
RE-184	2.772E-02	2.921E-01	5.393E-01	NOT IDENT.
W-188	-1.037E+01	1.346E+01	2.088E+01	FAIL ABUN
IR-192	1.976E-02	5.811E-02	1.022E-01	FAIL ABUN
HG-203	-3.853E-03	7.506E-02	1.252E-01	NOT IDENT.
TL-204	9.354E-01	7.244E+00	1.250E+01	FAIL ABUN
BI-207	-3.977E-02	8.688E-02	1.296E-01	FAIL ABUN
BI-210	-2.825E+00	6.030E+00	1.109E+01	NOT IDENT.
PB-210	-2.825E+00	6.030E+00	1.109E+01	NOT IDENT.
PB-211	-5.079E-01	1.080E+00	1.895E+00	NOT IDENT.
BI-212	5.395E-01	7.533E-01	1.412E+00	NOT IDENT.
BI-213	-1.310E-01	1.407E-01	2.327E-01	NOT IDENT.
RN-219	1.786E-01	6.078E-01	1.144E+00	FAIL ABUN
RA-223	5.891E-02	9.495E-01	1.606E+00	FAIL ABUN
AC-225	-6.710E-01	3.348E+00	5.635E+00	NOT IDENT.
AC-227	3.468E-02	3.745E-01	6.427E-01	FAIL ABUN
TH-227	3.468E-02	3.745E-01	6.427E-01	FAIL ABUN
TH-229	9.486E-02	7.207E-01	1.261E+00	FAIL ABUN
TH-231	5.891E-02	9.495E-01	1.606E+00	FAIL ABUN
PA-233	1.458E-01	9.764E-02	1.889E-01	FAIL ABUN
PA-234	-1.379E-01	3.441E-01	6.272E-01	FAIL ABUN
PA-234M	4.862E+00	9.473E+00	1.298E+01	FAIL ABUN
NP-237	1.458E-01	9.764E-02	1.889E-01	FAIL ABUN
NP-238	0.000E+00	1.575E+04	0.000E+00	SHORT HLIF
NP-239	-4.666E-02	3.219E-01	5.734E-01	NOT IDENT.
PU-239	2.039E+02	4.340E+02	7.983E+02	NOT IDENT.
AM-241	1.630E-01	2.179E-01	4.248E-01	NOT IDENT.
CM-243	1.337E-02	1.283E-01	2.344E-01	NOT IDENT.
BK-247	-6.652E-02	1.248E-01	1.821E-01	FAIL ABUN
CM-247	9.363E-03	5.452E-02	1.017E-01	NOT IDENT.
CF-249	2.435E-02	5.834E-02	1.114E-01	NOT IDENT.
CF-251	4.200E-02	1.885E-01	3.324E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:17:58.92

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	188	10.66*	1.208E+00	1.099E+01	1.099E+01	15.82
MN-54	834.85	11	99.98*	1.975E+00	4.073E-02	4.393E-02	227.51
AS-73	53.44	18	10.30*	1.560E+00	8.610E-01	1.156E+00	219.08
NB-95M	235.69	34	24.80*	5.180E+00	1.973E-01	2.854E-01	72.59
CD-109	88.03	138	3.70*	5.840E+00	4.783E+00	5.034E+00	33.22
SN-126	64.28	35	9.60	2.991E+00	9.193E-01	9.193E-01	144.48
	86.94	138	8.90	5.840E+00	1.988E+00	1.988E+00	33.22
	87.57	138	37.00*	5.840E+00	4.783E-01	4.783E-01	33.22
BA-137M	661.66	11	89.90*	2.414E+00	3.645E-02	3.652E-02	132.74
CS-137	661.66	11	85.10*	2.414E+00	3.850E-02	3.858E-02	132.74
CE-141	145.44	32	48.29*	6.794E+00	7.340E-02	1.519E-01	141.63
TL-208	277.37	56	6.60	4.656E+00	1.369E+00	1.369E+00	79.61
	583.19	96	85.00*	2.674E+00	3.187E-01	3.187E-01	34.85
	860.56	16	12.50	1.924E+00	5.003E-01	5.003E-01	85.65
BI-211	72.87	------	1.23	4.302E+00	------	Line Not Found	------
	351.06	701	12.92*	3.910E+00	1.043E+01	1.043E+01	10.04
PB-212	74.82	159	10.28	4.593E+00	2.536E+00	2.536E+00	31.59
	77.11	332	17.10	4.846E+00	3.011E+00	3.011E+00	16.81
	238.63	323	43.60*	5.148E+00	1.081E+00	1.081E+00	14.16
	300.09	26	3.30	4.386E+00	1.336E+00	1.336E+00	126.67
BI-214	609.32	531	45.49*	2.582E+00	3.394E+00	3.394E+00	10.35
	1120.29	111	14.92	1.515E+00	3.687E+00	3.687E+00	26.05
	1764.49	100	15.30	1.067E+00	4.610E+00	4.611E+00	20.10
PB-214	74.82	159	5.80	4.593E+00	4.495E+00	4.496E+00	31.59
	77.11	332	9.70	4.846E+00	5.307E+00	5.308E+00	16.81
	87.09	138	3.41	5.840E+00	5.190E+00	5.190E+00	33.22
	242.00	225	7.25	5.100E+00	4.576E+00	4.576E+00	20.33
	295.22	485	18.42	4.435E+00	4.460E+00	4.460E+00	10.38
	351.93	701	35.60*	3.910E+00	3.785E+00	3.785E+00	10.04
RN-222	609.32	531	45.49*	2.582E+00	3.394E+00	3.394E+00	10.35
	1120.29	111	14.92	1.515E+00	3.687E+00	3.687E+00	26.05
	1764.49	100	15.30	1.067E+00	4.610E+00	4.611E+00	20.10
RA-224	240.99	225	4.10*	5.100E+00	8.091E+00	8.091E+00	20.33
RA-226	74.82	159	5.80	4.593E+00	4.495E+00	4.496E+00	31.59
	77.11	332	9.70	4.846E+00	5.307E+00	5.308E+00	16.81
	87.09	138	3.41	5.840E+00	5.190E+00	5.190E+00	33.22
	242.00	225	7.25	5.100E+00	4.576E+00	4.576E+00	20.33
	295.22	485	18.42	4.435E+00	4.460E+00	4.460E+00	10.38
	351.93	701	35.60*	3.910E+00	3.785E+00	3.785E+00	10.04
AC-228	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	90	11.27	4.026E+00	1.486E+00	1.486E+00	55.32
	835.71	11	1.61	1.975E+00	2.529E+00	2.529E+00	227.51
	911.20	76	25.80*	1.828E+00	1.216E+00	1.216E+00	40.92
	968.97	32	15.80	1.729E+00	8.669E-01	8.669E-01	52.62
RA-228	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	90	11.27	4.026E+00	1.486E+00	1.486E+00	55.32
	835.71	11	1.61	1.975E+00	2.529E+00	2.529E+00	227.51

Sample ID : G674299005 Acquisition date : 30-JUL-2024 11:14:57

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	76	25.80*	1.828E+00	1.216E+00	1.216E+00	40.92
	968.97	32	15.80	1.729E+00	8.669E-01	8.669E-01	52.62
TH-228	74.82	159	10.28	4.593E+00	2.536E+00	2.536E+00	31.59
	77.11	332	17.10	4.846E+00	3.011E+00	3.011E+00	16.81
	238.63	323	43.60*	5.148E+00	1.081E+00	1.081E+00	14.16
	300.09	26	3.30	4.386E+00	1.336E+00	1.336E+00	126.67
TH-230	74.82	159	5.80	4.593E+00	4.495E+00	4.495E+00	31.59
	77.11	332	9.70	4.846E+00	5.307E+00	5.307E+00	16.81
	87.09	138	3.41	5.840E+00	5.190E+00	5.190E+00	33.22
	242.00	225	7.25	5.100E+00	4.576E+00	4.576E+00	20.33
	295.22	485	18.42	4.435E+00	4.460E+00	4.460E+00	10.38
	351.93	701	35.60*	3.910E+00	3.785E+00	3.785E+00	10.04
PA-231	283.69	------	1.70	4.565E+00	------	Line Not Found	------
	301.36	26	5.35*	4.386E+00	8.239E-01	8.239E-01	126.67
TH-232	105.21	------	1.10	6.758E+00	------	Line Not Found	------
	338.32	90	11.27	4.026E+00	1.486E+00	1.486E+00	55.32
	835.71	11	1.61	1.975E+00	2.529E+00	2.529E+00	227.51
	911.20	76	25.80*	1.828E+00	1.216E+00	1.216E+00	40.92
	968.97	32	15.80	1.729E+00	8.669E-01	8.669E-01	52.62
TH-234	63.29	35	3.70*	2.991E+00	2.385E+00	2.385E+00	144.48
	92.59	189	4.23	6.221E+00	5.402E+00	5.402E+00	28.84
U-234	74.82	159	5.80	4.593E+00	4.495E+00	4.495E+00	31.59
	77.11	332	9.70	4.846E+00	5.307E+00	5.307E+00	16.81
	87.09	138	3.41	5.840E+00	5.190E+00	5.190E+00	33.22
	242.00	225	7.25	5.100E+00	4.576E+00	4.576E+00	20.33
	295.22	485	18.42	4.435E+00	4.460E+00	4.460E+00	10.38
	351.93	701	35.60*	3.910E+00	3.785E+00	3.785E+00	10.04
U-235	89.96	101	3.47	6.036E+00	3.624E+00	3.624E+00	49.96
	93.35	189	5.60	6.221E+00	4.081E+00	4.081E+00	28.84
	143.76	32	10.96*	6.794E+00	3.234E-01	3.234E-01	141.63
	163.33	------	5.08	6.472E+00	------	Line Not Found	------
	185.72	255	57.20	6.041E+00	5.537E-01	5.537E-01	25.19
	205.31	------	5.01	5.691E+00	------	Line Not Found	------
U-238	63.29	35	3.70*	2.991E+00	2.385E+00	2.385E+00	144.48
	92.59	189	4.23	6.221E+00	5.402E+00	5.402E+00	28.84
AM-243	43.53	------	5.90	4.169E-01	------	Line Not Found	------
	74.66	159	67.20*	4.593E+00	3.880E-01	3.880E-01	31.59
ANH-511	511.00	41	100.00*	2.965E+00	1.031E-01	1.031E-01	91.80

Flag: "*" = Keyline

Sample ID : G674299005 Acquisition date : 30-JUL-2024 11:14:57

Total number of lines in spectrum	58	
Number of unidentified lines	15	
Number of lines tentatively identified by NID	43	74.14%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.099E+01	1.099E+01	0.174E+01	15.82	
MN-54	312.05D	1.08	4.073E-02	4.393E-02	9.996E-02	227.51	
AS-73	80.30D	1.34	8.610E-01	1.156E+00	2.532E+00	219.08	
NB-95M	64.03D	1.45	1.973E-01	2.854E-01	2.072E-01	72.59	
CD-109	461.40D	1.05	4.783E+00	5.034E+00	1.673E+00	33.22	
SN-126	2.30E+05Y	1.00	4.783E-01	4.783E-01	1.589E-01	33.22	
BA-137M	30.08Y	1.00	3.645E-02	3.652E-02	4.848E-02	132.74	
CS-137	30.08Y	1.00	3.850E-02	3.858E-02	5.122E-02	132.74	
CE-141	32.51D	2.07	7.340E-02	1.519E-01	2.151E-01	141.63	
TL-208	1.41E+10Y	1.00	3.187E-01	3.187E-01	1.110E-01	34.85	
BI-211	7.04E+08Y	1.00	1.043E+01	1.043E+01	0.105E+01	10.04	
PB-212	1.41E+10Y	1.00	1.081E+00	1.081E+00	0.153E+00	14.16	
BI-214	1600.00Y	1.00	3.394E+00	3.394E+00	0.351E+00	10.35	
PB-214	1600.00Y	1.00	3.785E+00	3.785E+00	0.380E+00	10.04	
RN-222	1600.00Y	1.00	3.394E+00	3.394E+00	0.351E+00	10.35	
RA-224	1.41E+10Y	1.00	8.091E+00	8.091E+00	1.645E+00	20.33	
RA-226	1600.00Y	1.00	3.785E+00	3.785E+00	0.380E+00	10.04	
AC-228	1.41E+10Y	1.00	1.216E+00	1.216E+00	0.498E+00	40.92	
RA-228	1.41E+10Y	1.00	1.216E+00	1.216E+00	0.498E+00	40.92	
TH-228	1.41E+10Y	1.00	1.081E+00	1.081E+00	0.153E+00	14.16	
TH-230	7.54E+04Y	1.00	3.785E+00	3.785E+00	0.380E+00	10.04	
PA-231	7.04E+08Y	1.00	8.239E-01	8.239E-01	10.44E-01	126.67	
TH-232	1.41E+10Y	1.00	1.216E+00	1.216E+00	0.498E+00	40.92	
TH-234	4.47E+09Y	1.00	2.385E+00	2.385E+00	3.446E+00	144.48	
U-234	2.45E+05Y	1.00	3.785E+00	3.785E+00	0.380E+00	10.04	
U-235	7.04E+08Y	1.00	3.234E-01	3.234E-01	4.580E-01	141.63	
U-238	4.47E+09Y	1.00	2.385E+00	2.385E+00	3.446E+00	144.48	
AM-243	7370.00Y	1.00	3.880E-01	3.880E-01	1.226E-01	31.59	
ANH-511	1.00E+09Y	1.00	1.031E-01	1.031E-01	0.946E-01	91.80	
			---	---			
	Total Activity :		7.049E+01	7.121E+01			

Grand Total Activity : 7.049E+01 7.121E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299005 Acquisition date : 30-JUL-2024 11:14:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	83.88	57	130	0.99	168.30	166	6	1.61E-02	69.2	5.54E+00	T
0	270.54	76	115	2.74	541.37	535	14	2.20E-02	62.5	4.72E+00	T
0	313.70	56	107	3.85	627.64	619	16	1.64E-02	84.3	4.25E+00	
0	328.38	25	103	3.47	656.99	649	12	7.34E-03	****	4.11E+00	T
0	381.97	26	66	3.89	764.11	758	12	7.59E-03	****	3.69E+00	
0	463.62	37	33	1.27	927.33	923	10	1.09E-02	66.0	3.19E+00	T
0	548.66	16	40	0.88	1097.33	1089	12	4.77E-03	****	2.81E+00	
0	562.93	17	9	1.58	1125.85	1123	6	5.05E-03	72.7	2.75E+00	T
0	665.69	19	35	1.86	1331.30	1327	9	5.64E-03	****	2.40E+00	T
0	701.57	25	15	2.31	1403.02	1398	10	7.38E-03	69.7	2.30E+00	T
0	732.37	21	8	4.04	1464.59	1459	12	6.24E-03	67.8	2.22E+00	T
0	748.28	15	5	2.38	1496.39	1493	7	4.44E-03	68.8	2.18E+00	T
0	753.51	40	10	3.47	1506.86	1501	14	1.17E-02	45.2	2.16E+00	T
0	769.12	47	48	1.38	1538.07	1531	15	1.39E-02	67.5	2.12E+00	
0	934.61	29	14	1.34	1868.94	1864	10	8.55E-03	61.6	1.79E+00	T
0	965.61	11	12	1.26	1930.91	1926	9	3.27E-03	****	1.73E+00	T
0	1002.20	9	19	3.00	2004.08	1994	12	2.69E-03	****	1.68E+00	T
0	1059.62	19	18	2.59	2118.88	2111	15	5.65E-03	****	1.59E+00	
0	1088.40	12	11	0.77	2176.43	2171	9	3.54E-03	****	1.56E+00	
0	1155.76	46	8	1.18	2311.12	2304	16	1.37E-02	38.4	1.47E+00	
0	1162.86	11	16	1.65	2325.32	2320	13	3.36E-03	****	1.47E+00	
0	1238.86	74	9	2.16	2477.29	2470	19	2.21E-02	29.1	1.39E+00	T
0	1266.66	14	5	1.43	2532.88	2527	10	4.19E-03	75.5	1.36E+00	
0	1272.68	17	18	2.01	2544.93	2538	18	5.13E-03	****	1.35E+00	T
0	1378.10	24	17	2.84	2755.75	2750	15	7.27E-03	81.7	1.27E+00	
0	1386.51	12	5	2.22	2772.55	2765	11	3.68E-03	88.1	1.26E+00	
0	1400.81	28	4	6.59	2801.16	2792	17	8.26E-03	48.6	1.25E+00	
0	1579.55	8	7	3.60	3158.61	3149	14	2.50E-03	****	1.14E+00	
0	1729.60	30	7	2.47	3458.73	3450	14	8.97E-03	49.7	1.08E+00	
0	1848.41	15	5	3.29	3696.37	3690	12	4.52E-03	81.2	1.04E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:18:10.50

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299005.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:57 Sensitivity     : 3.000           *
* Detector ID      : GAM16                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.58     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:15:00 Nuclide Library : SOLID           *
* Sample ID        : G674299005           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 9.9940E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-NOV-2023 11:06:02 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM16_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.862E-01
MN-54	4.806E-02
AS-73	1.339E+00
NB-95M	1.740E-01
CD-109	7.339E-01
SN-126	7.011E-02
BA-137M	3.897E-02
CS-137	4.117E-02
TL-208	3.452E-02
BI-211	2.547E-01
PB-212	6.164E-02
BI-214	9.522E-02
PB-214	9.265E-02
RN-222	9.522E-02
RA-224	6.610E-01
RA-226	9.265E-02
AC-228	1.757E-01
RA-228	1.757E-01
TH-228	6.164E-02
TH-230	9.265E-02
PA-231	5.719E-01
TH-232	1.757E-01
TH-234	1.518E+00
U-234	9.265E-02
U-235	2.025E-01
U-238	1.518E+00
AM-243	6.153E-02
ANH-511	3.024E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.344E-01	NOT IDENT.
NA-22	5.619E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF

AL-26	4.654E-02	NOT IDENT.
SC-46	5.378E-02	FAIL ABUN
V-48	2.159E-01	NOT IDENT.
CR-51	7.375E-01	NOT IDENT.
MN-52	4.240E+00	FAIL ABUN
CO-56	4.722E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.889E-02	NOT IDENT.
CO-58	5.286E-02	NOT IDENT.
FE-59	1.365E-01	NOT IDENT.
CO-60	4.712E-02	NOT IDENT.
ZN-65	8.267E-02	NOT IDENT.
GE-68	1.931E+00	NOT IDENT.
AS-74	2.143E-01	NOT IDENT.
SE-75	5.139E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.797E-01	NOT IDENT.
RB-83	9.989E-02	NOT IDENT.
RB-84	1.070E-01	NOT IDENT.
KR-85	8.001E+00	NOT IDENT.
SR-85	5.172E-02	NOT IDENT.
RB-86	2.189E+00	NOT IDENT.
Y-88	5.040E-02	NOT IDENT.
Y-91	3.267E+01	NOT IDENT.
NB-94	4.009E-02	FAIL ABUN
NB-95	6.558E-02	NOT IDENT.
ZR-95	8.529E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.692E-02	NOT IDENT.
RH-102	5.225E-02	NOT IDENT.
RU-103	6.560E-02	FAIL ABUN
RH-106	3.811E-01	NOT IDENT.
RU-106	3.811E-01	NOT IDENT.
AG-108M	3.615E-02	NOT IDENT.
AG-110	7.331E-01	NOT IDENT.
AG-110M	5.467E-02	NOT IDENT.
SN-113	5.960E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.634E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.643E-02	NOT IDENT.
SB-124	9.869E-02	NOT IDENT.
SB-125	1.100E-01	FAIL ABUN
TE-125M	1.334E+01	NOT IDENT.
I-126	9.490E-01	FAIL ABUN
SB-126	5.204E-01	FAIL ABUN
SB-127	4.100E+01	NOT IDENT.
I-131	6.923E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.300E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	5.318E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.645E-01	NOT IDENT.
LA-138	9.167E-02	NOT IDENT.
CE-139	3.989E-02	NOT IDENT.
BA-140	8.190E-01	NOT IDENT.
LA-140	3.689E-01	FAIL ABUN
CE-141	1.089E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	2.437E-01	NOT IDENT.
PM-144	4.045E-02	NOT IDENT.
PR-144	3.063E+00	NOT IDENT.
PM-146	4.935E-02	FAIL ABUN
ND-147	1.804E+00	FAIL ABUN
PM-147	8.081E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.036E-02	FAIL ABUN
EU-152	1.255E-01	NOT IDENT.
GD-153	1.013E-01	NOT IDENT.
EU-154	1.602E-01	NOT IDENT.
EU-155	1.170E-01	FAIL ABUN
TB-160	1.422E-01	FAIL ABUN
HO-166M	6.844E-02	FAIL ABUN

TM-171	2.486E+01	NOT IDENT.
HF-172	2.177E-01	FAIL ABUN
LU-172	5.662E-02	FAIL ABUN
LU-176	3.033E-02	FAIL ABUN
HF-181	7.786E-02	NOT IDENT.
TA-182	2.348E-01	FAIL ABUN
RE-183	2.935E-01	NOT IDENT.
RE-184	2.417E-01	NOT IDENT.
W-188	9.655E+00	FAIL ABUN
IR-192	4.712E-02	FAIL ABUN
HG-203	5.816E-02	NOT IDENT.
TL-204	5.926E+00	FAIL ABUN
BI-207	5.630E-02	FAIL ABUN
BI-210	5.189E+00	NOT IDENT.
PB-210	5.189E+00	NOT IDENT.
PB-211	8.724E-01	NOT IDENT.
BI-212	6.383E-01	NOT IDENT.
BI-213	1.046E-01	NOT IDENT.
RN-219	5.289E-01	FAIL ABUN
RA-223	7.423E-01	FAIL ABUN
AC-225	2.646E+00	NOT IDENT.
AC-227	2.998E-01	FAIL ABUN
TH-227	2.998E-01	FAIL ABUN
TH-229	5.920E-01	FAIL ABUN
TH-231	7.423E-01	FAIL ABUN
PA-233	8.834E-02	FAIL ABUN
PA-234	2.661E-01	FAIL ABUN
PA-234M	5.778E+00	FAIL ABUN
NP-237	8.834E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.685E-01	NOT IDENT.
PU-239	3.762E+02	NOT IDENT.
AM-241	2.005E-01	NOT IDENT.
CM-243	1.100E-01	NOT IDENT.
BK-247	8.403E-02	FAIL ABUN
CM-247	4.693E-02	NOT IDENT.
CF-249	5.149E-02	NOT IDENT.
CF-251	1.568E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:18:14.64

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299005.CNF;1  *
* Acquisition date : 30-JUL-2024 11:14:57 Sensitivity     : 3.000           *
* Detector ID      : GAM16                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.58     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:15:00 Nuclide Library : SOLID           *
* Sample ID        : G674299005           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 9.9940E+01 GRAM *
*                                         Quantity Err(%) : 1.0006E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-NOV-2023 11:06:02 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM16_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.099E+01	1.971E+00	1.971E+00
MN-54	4.393E-02	9.805E-02	9.805E-02
AS-73	1.156E+00	2.495E+00	2.495E+00
NB-95M	2.854E-01	2.053E-01	2.053E-01
CD-109	5.034E+00	1.763E+00	1.763E+00
SN-126	4.783E-01	1.656E-01	1.656E-01
BA-137M	3.652E-02	4.765E-02	4.765E-02
CS-137	3.858E-02	5.033E-02	5.033E-02
TL-208	3.187E-01	1.131E-01	1.131E-01
BI-211	1.043E+01	1.355E+00	1.355E+00
PB-212	1.081E+00	1.772E-01	1.772E-01
BI-214	3.394E+00	4.782E-01	4.782E-01
PB-214	3.785E+00	4.881E-01	4.881E-01
RN-222	3.394E+00	4.782E-01	4.782E-01
RA-224	8.091E+00	1.758E+00	1.758E+00
RA-226	3.785E+00	4.881E-01	4.881E-01
AC-228	1.216E+00	5.028E-01	5.028E-01
RA-228	1.216E+00	5.028E-01	5.028E-01
TH-228	1.081E+00	1.772E-01	1.772E-01
TH-230	3.785E+00	4.881E-01	4.881E-01
PA-231	8.239E-01	1.039E+00	1.039E+00
TH-232	1.216E+00	5.028E-01	5.028E-01
TH-234	2.385E+00	3.425E+00	3.425E+00
U-234	3.785E+00	4.881E-01	4.881E-01
U-235	3.234E-01	4.497E-01	4.497E-01
U-238	2.385E+00	3.425E+00	3.425E+00
AM-243	3.880E-01	1.274E-01	1.274E-01
ANH-511	1.031E-01	9.322E-02	9.322E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	2.268E-01	6.161E-01	6.246E-01	NOT IDENT.
NA-22	6.448E-02	6.173E-02	6.823E-02	NOT IDENT.

NA-24	-7.865E+14	1.333E+15	1.380E+15	SHORT HLIF
AL-26	2.853E-02	4.851E-02	5.019E-02	NOT IDENT.
SC-46	-8.834E-03	6.496E-02	6.508E-02	FAIL ABUN
V-48	9.143E-02	2.448E-01	2.482E-01	NOT IDENT.
CR-51	5.138E-01	8.173E-01	8.495E-01	NOT IDENT.
MN-52	4.592E+00	4.265E+00	4.741E+00	FAIL ABUN
CO-56	-7.133E-03	5.679E-02	5.689E-02	FAIL ABUN
MN-56	-1.000E+41	8.208E+41	0.000E+00	SHORT HLIF
CO-57	-1.917E-02	3.580E-02	3.682E-02	NOT IDENT.
CO-58	-2.697E-02	6.589E-02	6.700E-02	NOT IDENT.
FE-59	1.323E-02	1.626E-01	1.627E-01	NOT IDENT.
CO-60	1.333E-02	5.516E-02	5.549E-02	NOT IDENT.
ZN-65	-3.995E-02	1.256E-01	1.269E-01	NOT IDENT.
GE-68	1.687E+00	2.092E+00	2.226E+00	NOT IDENT.
AS-74	5.265E-02	2.546E-01	2.557E-01	NOT IDENT.
SE-75	-5.995E-02	7.188E-02	7.679E-02	NOT IDENT.
BR-77	4.261E+04	4.251E+04	4.665E+04	SHORT HLIF
SR-82	-1.575E-01	8.430E-01	8.459E-01	NOT IDENT.
RB-83	2.376E-02	1.178E-01	1.183E-01	NOT IDENT.
RB-84	2.390E-02	1.224E-01	1.228E-01	NOT IDENT.
KR-85	6.661E+00	9.697E+00	1.015E+01	NOT IDENT.
SR-85	4.289E-02	6.271E-02	6.562E-02	NOT IDENT.
RB-86	1.378E+00	2.434E+00	2.512E+00	NOT IDENT.
Y-88	2.573E-02	5.282E-02	5.408E-02	NOT IDENT.
Y-91	1.728E+01	3.707E+01	3.788E+01	NOT IDENT.
NB-94	8.227E-02	5.675E-02	6.780E-02	FAIL ABUN
NB-95	5.041E-02	7.797E-02	8.121E-02	NOT IDENT.
ZR-95	-6.362E-02	1.262E-01	1.294E-01	NOT IDENT.
NB-97	-1.000E+41	3.623E+41	0.000E+00	SHORT HLIF
ZR-97	1.691E+14	2.831E+14	2.932E+14	SHORT HLIF
MO-99	-1.373E+03	1.584E+03	1.701E+03	SHORT HLIF
TC-99M	2.028E+39	2.951E+39	0.000E+00	SHORT HLIF
RH-101	3.120E-02	4.219E-02	4.447E-02	NOT IDENT.
RH-102	-5.046E-02	7.307E-02	7.653E-02	NOT IDENT.
RU-103	-1.715E-02	8.109E-02	8.146E-02	FAIL ABUN
RH-106	1.232E-01	4.506E-01	4.540E-01	NOT IDENT.
RU-106	1.232E-01	4.506E-01	4.540E-01	NOT IDENT.
AG-108M	-6.779E-03	4.370E-02	4.381E-02	NOT IDENT.
AG-110	-4.521E-01	1.123E+00	1.141E+00	NOT IDENT.
AG-110M	-3.259E-02	7.002E-02	7.155E-02	NOT IDENT.
SN-113	-4.405E-02	7.462E-02	7.721E-02	NOT IDENT.
CD-115	3.161E+03	5.467E+03	5.649E+03	SHORT HLIF
SN-117M	-6.645E-02	2.032E-01	2.054E-01	NOT IDENT.
SB-122	3.967E+02	2.852E+02	3.366E+02	SHORT HLIF
TE-123M	-4.898E-03	4.454E-02	4.460E-02	NOT IDENT.
SB-124	-8.079E-02	1.428E-01	1.473E-01	NOT IDENT.
SB-125	-2.593E-02	1.334E-01	1.339E-01	FAIL ABUN
TE-125M	-4.736E-01	1.577E+01	1.577E+01	NOT IDENT.
I-126	1.137E+00	1.294E+00	1.392E+00	FAIL ABUN
SB-126	4.208E-01	5.876E-01	6.175E-01	FAIL ABUN
SB-127	-3.737E+01	5.743E+01	5.985E+01	NOT IDENT.
I-131	-2.299E-01	8.336E-01	8.400E-01	NOT IDENT.
I-132	1.000E+41	2.336E+41	0.000E+00	SHORT HLIF
TE-132	2.795E+01	6.588E+01	6.707E+01	SHORT HLIF
BA-133	-3.361E-02	7.287E-02	7.442E-02	FAIL ABUN
I-133	1.414E+10	2.962E+10	3.030E+10	SHORT HLIF
CS-134	3.705E-02	5.766E-02	6.003E-02	FAIL ABUN
I-135	-3.793E+36	7.940E+36	0.000E+00	SHORT HLIF
CS-136	-2.267E-01	3.640E-01	3.781E-01	NOT IDENT.
LA-138	6.648E-02	9.719E-02	1.017E-01	NOT IDENT.
CE-139	6.978E-03	4.802E-02	4.812E-02	NOT IDENT.
BA-140	2.150E-02	9.896E-01	9.897E-01	NOT IDENT.
LA-140	-5.498E-02	4.479E-01	4.486E-01	FAIL ABUN
CE-141	1.519E-01	2.111E-01	2.220E-01	FAIL ABUN
CE-143	2.324E+06	2.592E+06	2.796E+06	SHORT HLIF
CE-144	1.925E-01	2.782E-01	2.914E-01	NOT IDENT.
PM-144	-4.390E-02	6.507E-02	6.801E-02	NOT IDENT.
PR-144	-3.297E+00	4.920E+00	5.140E+00	NOT IDENT.
PM-146	-1.198E-02	6.028E-02	6.052E-02	FAIL ABUN
ND-147	-2.153E+00	2.508E+00	2.689E+00	FAIL ABUN
PM-147	3.579E+02	9.332E+02	9.471E+02	NOT IDENT.
PM-149	-7.455E+03	5.016E+04	5.027E+04	SHORT HLIF
EU-150	-1.613E-02	4.123E-02	4.187E-02	FAIL ABUN
EU-152	1.432E-01	1.392E-01	1.535E-01	NOT IDENT.
GD-153	6.019E-02	1.230E-01	1.259E-01	NOT IDENT.
EU-154	1.905E-01	1.750E-01	1.950E-01	NOT IDENT.
EU-155	4.250E-02	1.348E-01	1.362E-01	FAIL ABUN
TB-160	-2.064E-01	2.058E-01	2.258E-01	FAIL ABUN

HO-166M	-4.957E-03	8.604E-02	8.607E-02	FAIL ABUN
TM-171	5.746E+00	2.962E+01	2.974E+01	NOT IDENT.
HF-172	-5.658E-02	2.637E-01	2.649E-01	FAIL ABUN
LU-172	-1.012E-01	9.375E-02	1.043E-01	FAIL ABUN
LU-176	-1.832E-02	4.102E-02	4.185E-02	FAIL ABUN
HF-181	5.713E-02	8.717E-02	9.090E-02	NOT IDENT.
TA-182	-1.716E-02	2.897E-01	2.898E-01	FAIL ABUN
RE-183	-1.798E-01	3.464E-01	3.558E-01	NOT IDENT.
RE-184	2.772E-02	2.921E-01	2.924E-01	NOT IDENT.
W-188	-1.037E+01	1.353E+01	1.431E+01	FAIL ABUN
IR-192	1.976E-02	5.813E-02	5.881E-02	FAIL ABUN
HG-203	-3.853E-03	7.506E-02	7.508E-02	NOT IDENT.
TL-204	9.354E-01	7.245E+00	7.257E+00	FAIL ABUN
BI-207	-3.977E-02	8.695E-02	8.878E-02	FAIL ABUN
BI-210	-2.825E+00	6.037E+00	6.170E+00	NOT IDENT.
PB-210	-2.825E+00	6.037E+00	6.170E+00	NOT IDENT.
PB-211	-5.079E-01	1.081E+00	1.105E+00	NOT IDENT.
BI-212	5.395E-01	7.553E-01	7.935E-01	NOT IDENT.
BI-213	-1.310E-01	1.412E-01	1.530E-01	NOT IDENT.
RN-219	1.786E-01	6.083E-01	6.136E-01	FAIL ABUN
RA-223	5.891E-02	9.495E-01	9.498E-01	FAIL ABUN
AC-225	-6.710E-01	3.349E+00	3.363E+00	NOT IDENT.
AC-227	3.468E-02	3.746E-01	3.749E-01	FAIL ABUN
TH-227	3.468E-02	3.746E-01	3.749E-01	FAIL ABUN
TH-229	9.486E-02	7.208E-01	7.221E-01	FAIL ABUN
TH-231	5.891E-02	9.495E-01	9.498E-01	FAIL ABUN
PA-233	1.458E-01	9.836E-02	1.183E-01	FAIL ABUN
PA-234	-1.379E-01	3.787E-01	3.838E-01	FAIL ABUN
PA-234M	4.862E+00	9.484E+00	9.734E+00	FAIL ABUN
NP-237	1.458E-01	9.836E-02	1.183E-01	FAIL ABUN
NP-238	-6.065E+03	1.576E+04	1.600E+04	SHORT HLIF
NP-239	-4.666E-02	3.220E-01	3.226E-01	NOT IDENT.
PU-239	2.039E+02	4.343E+02	4.439E+02	NOT IDENT.
AM-241	1.630E-01	2.187E-01	2.307E-01	NOT IDENT.
CM-243	1.337E-02	1.283E-01	1.285E-01	NOT IDENT.
BK-247	-6.652E-02	1.256E-01	1.291E-01	FAIL ABUN
CM-247	9.363E-03	5.454E-02	5.471E-02	NOT IDENT.
CF-249	2.435E-02	5.840E-02	5.943E-02	NOT IDENT.
CF-251	4.200E-02	1.886E-01	1.895E-01	NOT IDENT.

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*******************************************************************************
*                          GEL Laboratories LLC                               *
*                            2040 Savage Road                                 *
*                           Charleston, SC 29407                              *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                    *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	70.6807	85.43	77.0163	131.20	87.1686
45.60	61.2824	86.55	75.4694	133.02	82.4717
46.54	72.4526	86.79	75.5213	133.52	79.5364
49.72	0.0000	86.94	75.5540	136.00	95.1216
51.35	80.6213	87.09	75.5867	136.47	95.2134
51.87	78.6717	87.57	75.6905	140.51	0.0000
52.39	69.2536	88.03	75.7898	143.76	75.0239
52.97	74.4932	88.34	75.8565	144.24	75.0941
53.44	74.6373	88.47	75.8840	145.44	71.4884
54.07	74.8296	89.96	76.2032	152.43	109.7104
57.36	0.0000	1093.63	76.3474	153.25	102.5534
57.53	87.2873	91.11	76.4474	323.87	101.6875
57.98	88.2563	92.59	76.7595	156.02	107.2855
59.27	71.4482	93.35	76.9184	158.56	96.1599
59.32	75.5688	94.56	77.1709	159.00	92.0047
59.54	75.6319	94.65	77.1895	162.33	93.6195
60.96	92.5663	94.67	77.1940	162.66	78.7707
61.17	92.6389	94.87	77.2350	163.33	87.3903
62.93	88.2457	97.43	83.9347	165.86	94.2023
63.29	88.3613	98.43	93.7459	176.31	81.7280
63.58	88.4541	98.44	93.7482	176.60	78.4962
64.28	88.6775	99.53	96.8073	177.52	87.3511
66.73	88.8871	100.11	81.1045	181.07	0.0000
67.24	91.2989	102.03	93.6829	181.52	83.5297
125.81	99.0580	103.18	75.1648	184.41	75.0868
67.75	99.0821	103.37	75.2008	143.76	75.2445
68.89	105.4216	105.21	81.2135	193.51	75.0499
69.67	109.9638	105.31	81.2339	197.03	90.0964
70.82	108.3913	106.12	81.3973	198.01	75.5682
70.83	109.5371	106.47	78.6256	201.83	86.2132
72.81	124.0389	109.28	88.7038	203.43	94.3781
72.87	114.5861	111.00	86.1974	205.31	82.0975
74.66	115.2527	111.76	0.0000	210.85	97.7067
74.82	115.3116	114.06	70.4219	215.65	74.0732
74.97	115.3674	116.30	0.0000	218.12	84.7850
77.11	116.1528	116.74	75.7137	222.11	74.7461
78.74	94.7991	119.76	81.1218	227.09	71.7292
79.69	112.6836	121.12	71.5653	227.38	76.4635
80.03	113.9738	121.22	71.5815	228.16	0.0000
80.12	95.2020	121.78	85.4156	228.18	71.8353
80.19	95.2218	122.06	96.2751	116.74	71.8353
80.57	101.5112	122.92	82.6785	235.69	79.2999
81.00	100.1705	123.07	84.6753	235.96	74.5687
81.07	100.1913	265.00	87.7465	238.63	63.2869
81.75	92.1291	125.81	96.0786	238.98	0.0000
82.47	99.4304	127.23	77.4954	240.99	63.4810
83.79	93.8784	127.91	79.5993	242.00	63.5643
84.00	93.9363	129.30	77.8381	244.70	63.7850

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	58.3315	344.28	37.6207	563.25	25.4834
252.80	58.3601	345.93	51.1379	564.24	0.0000
254.15	0.0000	351.06	54.9958	569.33	30.9116
256.23	62.2714	351.93	55.0405	946.00	26.6510
260.90	0.0000	355.39	0.0000	569.70	30.9187
264.66	65.3798	356.01	63.8576	583.19	20.4287
264.80	65.3911	364.49	47.4731	584.27	20.4419
265.00	60.8808	366.42	0.0000	595.83	22.7543
269.46	59.5518	372.51	45.9829	427.87	24.9934
270.03	59.5913	375.05	35.9484	602.52	0.0000
271.23	59.6748	377.52	40.1856	604.72	32.6807
273.65	29.9224	356.01	30.6569	607.14	45.8196
276.40	66.2904	388.16	42.8957	609.32	41.5099
277.37	66.3648	388.63	35.4503	610.33	41.5347
277.60	66.3826	391.69	54.2523	614.28	23.0072
278.00	66.4117	264.66	38.6469	618.01	24.1556
279.20	56.4656	401.81	45.2900	620.36	24.1887
279.54	38.9137	402.40	44.3685	621.93	23.1106
279.70	38.9212	404.85	53.9199	630.19	0.0000
280.46	50.2637	410.95	46.5895	631.29	26.5557
283.69	56.3350	413.71	53.3670	633.25	13.2930
284.31	51.3260	414.70	46.7350	634.78	22.1745
285.41	58.1289	423.72	49.0026	635.95	23.2986
285.90	0.0000	427.09	35.6480	636.99	25.5334
287.50	48.1332	427.87	42.4191	657.50	23.5840
290.67	68.6420	433.94	42.6250	657.76	20.2178
293.27	0.0000	439.40	41.8365	657.90	0.0000
351.93	58.7662	440.45	41.8706	661.66	23.6387
295.96	58.8140	453.88	38.3732	664.57	0.0000
879.38	58.9824	463.37	32.7046	666.33	33.8574
299.98	59.0723	468.07	25.3604	666.50	33.8599
300.09	59.0793	473.00	32.9396	667.71	0.0000
300.13	59.0821	475.06	39.9878	677.62	28.3885
301.36	59.1607	476.78	40.0382	685.70	28.5126
302.85	59.2548	477.60	35.0548	692.65	0.0000
256.23	59.3600	482.18	30.1477	695.00	26.3626
304.85	59.3825	487.02	22.1858	696.49	37.8541
306.78	59.5046	492.35	0.0000	696.51	37.8541
308.46	41.4678	497.08	33.5183	697.00	36.1437
311.90	37.7165	505.52	15.3265	697.30	29.2634
316.51	40.5115	507.63	0.0000	697.49	29.2665
319.41	36.7004	511.00	26.6673	702.65	22.4413
320.08	39.3494	514.00	23.1253	706.68	29.0626
321.04	46.3901	514.00	23.1253	711.68	24.2821
323.87	48.7183	520.40	29.9369	720.70	18.5872
325.23	48.7861	520.69	0.0000	721.93	0.0000
328.76	54.6940	522.65	0.0000	722.78	23.2585
333.37	51.8445	527.90	0.0000	722.91	23.2601
333.97	54.5345	528.26	22.8316	723.31	24.4282
334.37	54.5570	529.59	24.9297	724.19	33.7496
338.28	53.4314	529.87	0.0000	727.33	13.9878
338.32	53.4338	531.02	33.2708	733.00	22.7952
311.90	52.2075	537.26	26.1017	735.93	8.4293
340.48	52.2075	546.56	0.0000	333.97	11.2477
340.55	52.2111	552.55	25.3096	739.50	0.0000

ENERGY	MDA COUNTS
744.23	14.1074
747.24	14.1289
748.06	11.3078
752.31	12.7481
753.82	12.7573
756.73	22.7125
756.80	22.7133
884.68	27.0667
765.81	19.9623
766.42	19.9685
766.84	24.2516
772.60	0.0000
776.52	26.6184
739.50	0.0000
778.90	26.0078
783.70	26.0680
788.74	27.9329
792.07	29.7824
795.86	18.9864
810.06	23.6633
810.29	25.4861
344.28	25.4886
810.76	24.5816
815.77	12.7755
1048.07	21.0150
832.01	17.6514
834.85	25.7749
835.71	22.1016
836.80	0.0000
846.75	0.0000
846.77	16.6586
856.80	20.8229
860.56	19.5542
871.09	21.5155
873.19	17.7899
875.33	0.0000
879.38	22.5322
880.51	20.6646
881.60	13.1562
883.24	12.2252
884.68	20.7015
889.28	20.7425
894.76	21.7359
898.04	19.8734
900.72	23.6862
903.28	23.8469
911.20	22.8391
912.08	22.8472
923.98	0.0000
926.50	15.3232
929.11	18.4072
935.54	13.8419
937.49	15.3926
944.13	17.3633
946.00	14.4804

ENERGY	MDA COUNTS
949.00	11.5983
667.71	0.0000
962.31	21.7663
964.08	20.2262
966.17	0.0000
911.20	18.7066
983.53	18.6179
984.45	0.0000
1274.44	14.1807
1001.03	12.6281
1002.74	18.9545
1004.73	18.9691
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	13.0056
1038.76	0.0000
631.29	19.0707
1048.07	17.0726
1049.04	9.0417
1050.41	10.0513
1063.66	21.0082
1077.00	16.2393
1077.34	16.2412
1085.87	17.9201
1093.63	22.1702
1099.45	15.3470
1112.07	11.3048
1112.84	14.3914
1115.54	14.8166
1120.29	16.4902
1120.55	16.4922
1221.41	16.4961
1129.67	17.5779
1131.51	0.0000
1147.95	0.0000
1173.23	12.5933
1177.95	14.7152
1189.05	18.9899
1204.77	15.9064
1221.41	18.1258
1231.02	11.0008
1235.36	20.5629
1238.28	12.8635
1260.41	0.0000
1271.87	6.9336
1274.44	6.9395
1274.54	6.9395
1291.59	9.8102
1298.22	0.0000
1312.11	15.3561
1332.49	9.9322
1362.66	0.0000
1365.19	7.8002
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	8.9639
1408.01	7.7360
1434.09	8.1826
1435.80	10.9154
1457.56	0.0000
1460.82	8.2433
1489.16	6.4613
1505.03	19.4670
1584.12	12.6178
1596.21	14.2390
1620.50	5.7305
1621.92	1.9108
1678.03	0.0000
1690.97	7.7742
1750.46	0.0000
1764.49	4.9438
1063.66	0.0000
1771.35	0.0000
1791.20	0.0000
1808.65	3.9953
1810.72	0.0000
1836.06	3.0151

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:18:41.60

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299006.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM19.CNF;964
                                         Background date  : 28-JUL-2024 11:25:05
Sample date      : 26-JUN-2024 09:17:00  Acquisition date : 30-JUL-2024 11:15:37
Sample ID        : G674299006            Sample quantity  : 1.49980E+02 GRAM
Detector name    : GAM19                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.45  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.73	38	83	1.16	149.60	146	16	1.06E-02	43.9	1.80E+00
2	2	77.23	58	87	1.17	154.59	146	16	1.60E-02	30.2	
3	5	87.65	32	100	1.58	175.43	169	23	8.82E-03	61.5	2.22E+00
4	5	92.78*	38	83	1.60	185.69	169	23	1.06E-02	54.0	
5	0	129.87	29	83	1.31	259.86	254	11	7.92E-03	64.5	
6	0	185.62*	40	70	0.75	371.34	367	9	1.12E-02	43.3	
7	0	205.39	18	32	0.87	410.88	408	5	4.92E-03	54.2	
8	2	238.71*	119	52	1.23	477.50	473	17	3.31E-02	13.8	3.04E+00
9	2	241.79	50	54	1.44	483.66	473	17	1.39E-02	31.6	
10	0	295.56*	58	47	1.12	591.19	585	12	1.62E-02	27.5	
11	0	314.43	16	16	1.32	628.92	626	7	4.44E-03	51.8	
12	0	352.10*	79	50	1.44	704.26	699	12	2.19E-02	21.8	
13	0	371.77	22	21	1.36	743.60	740	9	6.22E-03	42.0	
14	0	439.48*	21	23	2.84	879.01	874	10	5.93E-03	48.3	
15	0	443.38	13	19	0.89	886.81	884	8	3.66E-03	64.3	
16	0	503.48	12	14	1.70	1006.98	1000	9	3.45E-03	60.4	
17	0	569.83*	5	23	1.14	1139.68	1135	12	1.34E-03	305.9	
18	0	583.52*	36	23	1.17	1167.04	1160	13	9.95E-03	33.7	
19	0	589.25	16	16	0.69	1178.51	1173	13	4.57E-03	56.0	
20	0	602.83	11	17	1.67	1205.66	1201	9	3.03E-03	76.0	
21	0	609.17*	69	23	1.21	1218.36	1211	12	1.90E-02	19.3	
22	0	662.19	14	10	1.70	1324.37	1320	8	3.95E-03	46.7	
23	0	696.12	37	17	9.88	1392.24	1383	22	1.02E-02	32.7	
24	0	728.07	10	10	0.50	1456.12	1451	7	2.68E-03	64.2	
25	0	801.18	10	5	0.97	1602.34	1598	8	2.75E-03	52.5	
26	0	821.03	9	13	1.39	1642.04	1635	11	2.39E-03	90.0	
27	0	844.61	6	31	3.89	1689.19	1678	15	1.57E-03	215.9	
28	0	911.77*	21	15	2.32	1823.51	1817	10	5.87E-03	42.9	
29	0	969.95*	20	14	2.48	1939.86	1931	14	5.54E-03	47.3	
30	0	1020.25	12	2	0.99	2040.46	2036	8	3.32E-03	35.5	
31	0	1063.83*	0	10	1.85	2127.62	2120	13	9.56E-05	*****	
32	0	1121.25	8	8	1.03	2242.46	2236	11	2.14E-03	80.9	
33	0	1207.28	11	2	2.33	2414.51	2409	9	2.95E-03	40.0	
34	0	1224.32	13	5	1.35	2448.60	2443	11	3.72E-03	43.0	

Sample ID : G674299006 Acquisition date : 30-JUL-2024 11:15:37

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1239.56	4	18	1.09	2479.08	2473	10	1.09E-03	207.4	
36	0	1461.05*	251	4	1.88	2922.06	2914	16	6.97E-02	6.6	
37	0	1765.47	7	6	1.16	3530.93	3527	8	1.88E-03	73.9	
38	0	1770.40*	6	5	1.15	3540.79	3535	10	1.72E-03	93.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:18:42

```
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299006.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 09:17:00 Acquisition date : 30-JUL-2024 11:15:37
Sample ID        : G674299006           Sample quantity  : 149.98 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA19              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.45   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Sample ID : G674299006 Acquisition date : 30-JUL-2024 11:15:37

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	242	10.66*	1.182E+00	9.611E+00	9.611E+00	13.30
CD-109	88.03	40	3.70*	6.037E+00	8.964E-01	9.435E-01	122.97
SN-126	64.28	------	9.60	3.461E+00	------	Line Not Found	------
	86.94	40	8.90	6.037E+00	3.727E-01	3.727E-01	122.97
	87.57	40	37.00*	6.037E+00	8.964E-02	8.964E-02	122.97
BA-137M	661.66	15	89.90*	2.333E+00	3.552E-02	3.559E-02	93.37
CS-137	661.66	15	85.10*	2.333E+00	3.752E-02	3.760E-02	93.37
PR-144	696.51	38	1.34*	2.239E+00	6.401E+00	6.955E+00	65.36
	1489.16	------	0.28	1.164E+00	------	Line Not Found	------
BI-207	72.81	------	21.40	4.627E+00	------	Line Not Found	------
	74.97	49	35.70	4.856E+00	1.411E-01	1.413E-01	87.74
	569.70	5	97.76	2.631E+00	1.002E-02	1.004E-02	611.80
	1063.66	0	74.60*	1.550E+00	1.486E-03	1.489E-03	7083.12
	1770.23	6	6.87	1.034E+00	4.109E-01	4.117E-01	186.04
TL-208	277.37	------	6.60	4.498E+00	------	Line Not Found	------
	583.19	38	85.00*	2.583E+00	8.662E-02	8.662E-02	67.45
	860.56	------	12.50	1.870E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.634E+00	------	Line Not Found	------
	351.06	88	12.92*	3.782E+00	8.982E-01	8.982E-01	43.70
BI-212	727.33	10	6.67*	2.157E+00	3.483E-01	3.483E-01	128.39
	1620.50	------	1.47	1.094E+00	------	Line Not Found	------
PB-212	74.82	49	10.28	4.856E+00	4.899E-01	4.899E-01	87.74
	77.11	74	17.10	5.134E+00	4.191E-01	4.191E-01	60.49
	238.63	138	43.60*	5.003E+00	3.159E-01	3.159E-01	27.53
	300.09	------	3.30	4.250E+00	------	Line Not Found	------
BI-213	440.45	23	25.94*	3.210E+00	1.398E-01	1.398E-01	96.68
BI-214	609.32	72	45.49*	2.496E+00	3.191E-01	3.191E-01	38.62
	1120.29	8	14.92	1.479E+00	1.730E-01	1.730E-01	161.82
	1764.49	6	15.30	1.036E+00	2.020E-01	2.020E-01	147.73
PB-214	74.82	49	5.80	4.856E+00	8.683E-01	8.683E-01	87.74
	77.11	74	9.70	5.134E+00	7.389E-01	7.389E-01	60.49
	87.09	40	3.41	6.037E+00	9.726E-01	9.727E-01	122.97
	242.00	58	7.25	4.959E+00	8.013E-01	8.013E-01	63.21
	295.22	66	18.42	4.297E+00	4.175E-01	4.175E-01	55.03
	351.93	88	35.60*	3.782E+00	3.260E-01	3.260E-01	43.70
RN-222	609.32	72	45.49*	2.496E+00	3.191E-01	3.191E-01	38.62
	1120.29	8	14.92	1.479E+00	1.730E-01	1.730E-01	161.82
	1764.49	6	15.30	1.036E+00	2.020E-01	2.020E-01	147.73
RA-224	240.99	58	4.10*	4.959E+00	1.417E+00	1.417E+00	63.21
RA-226	74.82	49	5.80	4.856E+00	8.683E-01	8.683E-01	87.74
	77.11	74	9.70	5.134E+00	7.389E-01	7.389E-01	60.49
	87.09	40	3.41	6.037E+00	9.726E-01	9.727E-01	122.97
	242.00	58	7.25	4.959E+00	8.013E-01	8.013E-01	63.21
	295.22	66	18.42	4.297E+00	4.175E-01	4.175E-01	55.03
	351.93	88	35.60*	3.782E+00	3.260E-01	3.260E-01	43.70
TH-228	74.82	49	10.28	4.856E+00	4.899E-01	4.899E-01	87.74
	77.11	74	17.10	5.134E+00	4.191E-01	4.191E-01	60.49
	238.63	138	43.60*	5.003E+00	3.159E-01	3.159E-01	27.53
	300.09	------	3.30	4.250E+00	------	Line Not Found	------

Sample ID : G674299006 Acquisition date : 30-JUL-2024 11:15:37

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-230	74.82	49	5.80	4.856E+00	8.683E-01	8.683E-01	87.74
	77.11	74	9.70	5.134E+00	7.389E-01	7.389E-01	60.49
	87.09	40	3.41	6.037E+00	9.726E-01	9.726E-01	122.97
	242.00	58	7.25	4.959E+00	8.013E-01	8.013E-01	63.21
	295.22	66	18.42	4.297E+00	4.175E-01	4.175E-01	55.03
	351.93	88	35.60*	3.782E+00	3.260E-01	3.260E-01	43.70
U-234	74.82	49	5.80	4.856E+00	8.683E-01	8.683E-01	87.74
	77.11	74	9.70	5.134E+00	7.389E-01	7.389E-01	60.49
	87.09	40	3.41	6.037E+00	9.726E-01	9.726E-01	122.97
	242.00	58	7.25	4.959E+00	8.013E-01	8.013E-01	63.21
	295.22	66	18.42	4.297E+00	4.175E-01	4.175E-01	55.03
	351.93	88	35.60*	3.782E+00	3.260E-01	3.260E-01	43.70
U-235	89.96	------	3.47	6.185E+00	------	Line Not Found	------
	93.35	48	5.60	6.343E+00	6.732E-01	6.732E-01	107.97
	143.76	------	10.96*	6.677E+00	------	Line Not Found	------
	163.33	------	5.08	6.327E+00	------	Line Not Found	------
	185.72	47	57.20	5.898E+00	7.046E-02	7.046E-02	86.50
	205.31	21	5.01	5.538E+00	3.741E-01	3.741E-01	108.37
AM-243	43.53	------	5.90	6.010E-01	------	Line Not Found	------
	74.66	49	67.20*	4.856E+00	7.494E-02	7.494E-02	87.74

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:18:43.81

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299006.CNF;1  *
* Acquisition date : 30-JUL-2024 11:15:37 Sensitivity     : 3.000           *
* Detector ID      : GAM19                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.45     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:17:00 Analyst initials: RXF2            *
* Sample ID        : G674299006           Sample Quantity : 1.4998E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  4-DEC-2023 10:59:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;25            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	9.611E+00	1.252E+00	5.179E-01
CD-109	9.435E-01	1.137E+00	8.692E-01
SN-126	8.964E-02	1.080E-01	8.298E-02
BA-137M	3.559E-02	3.257E-02	4.482E-02
CS-137	3.760E-02	3.441E-02	4.735E-02
PR-144	6.955E+00	4.455E+00	3.418E+00
BI-207	1.489E-03	1.033E-01	8.101E-02
TL-208	8.662E-02	5.726E-02	4.385E-02
BI-211	8.982E-01	3.846E-01	2.637E-01
BI-212	3.483E-01	4.383E-01	6.828E-01
PB-212	3.159E-01	8.521E-02	7.008E-02
BI-213	1.398E-01	1.325E-01	1.346E-01
BI-214	3.191E-01	1.208E-01	8.960E-02
PB-214	3.260E-01	1.396E-01	9.590E-02
RN-222	3.191E-01	1.208E-01	8.960E-02
RA-224	1.417E+00	8.776E-01	7.509E-01
RA-226	3.260E-01	1.396E-01	9.590E-02
TH-228	3.159E-01	8.521E-02	7.008E-02
TH-230	3.260E-01	1.396E-01	9.590E-02
U-234	3.260E-01	1.396E-01	9.590E-02
U-235	9.829E-03	1.310E-01	2.506E-01
AM-243	7.494E-02	6.444E-02	5.963E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.471E-01	2.936E-01	6.265E-01	NOT IDENT.
NA-22	1.417E-03	2.320E-02	5.142E-02	NOT IDENT.
NA-24	0.000E+00	6.457E+14	0.000E+00	SHORT HLIF
AL-26	-5.303E-03	1.712E-02	3.620E-02	NOT IDENT.
SC-46	-2.752E-02	3.048E-02	4.741E-02	FAIL ABUN
V-48	-4.320E-02	1.122E-01	2.021E-01	NOT IDENT.
CR-51	-1.398E-01	4.164E-01	8.139E-01	NOT IDENT.
MN-52	-6.616E-01	1.241E+00	2.418E+00	NOT IDENT.

MN-54	-2.579E-02	3.210E-02	5.304E-02	NOT IDENT.
CO-56	-1.494E-02	4.625E-02	7.327E-02	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-3.028E-03	1.676E-02	3.186E-02	NOT IDENT.
CO-58	-2.773E-02	3.552E-02	5.900E-02	NOT IDENT.
FE-59	1.621E-03	8.443E-02	1.761E-01	NOT IDENT.
CO-60	-8.730E-03	2.537E-02	5.001E-02	NOT IDENT.
ZN-65	-2.578E-02	5.955E-02	9.762E-02	NOT IDENT.
GE-68	-4.027E-01	8.273E-01	1.587E+00	NOT IDENT.
AS-73	4.931E-02	5.662E-01	1.174E+00	NOT IDENT.
AS-74	2.023E-02	1.422E-01	2.876E-01	NOT IDENT.
SE-75	-3.148E-02	3.692E-02	6.029E-02	NOT IDENT.
BR-77	0.000E+00	3.357E+03	0.000E+00	SHORT HLIF
SR-82	-1.966E-01	3.759E-01	6.701E-01	NOT IDENT.
RB-83	-2.545E-02	5.933E-02	1.112E-01	NOT IDENT.
RB-84	3.798E-03	5.555E-02	1.172E-01	NOT IDENT.
KR-85	-1.123E+01	7.602E+00	1.241E+01	NOT IDENT.
SR-85	-7.276E-02	4.918E-02	8.022E-02	NOT IDENT.
RB-86	-8.397E-01	1.082E+00	1.930E+00	NOT IDENT.
Y-88	-2.800E-04	1.762E-02	4.580E-02	NOT IDENT.
Y-91	-8.128E+00	1.872E+01	3.019E+01	NOT IDENT.
NB-94	-1.422E-02	2.550E-02	3.893E-02	NOT IDENT.
NB-95	-2.561E-02	3.754E-02	6.440E-02	NOT IDENT.
NB-95M	-8.599E-02	1.216E-01	1.854E-01	NOT IDENT.
ZR-95	-2.976E-02	5.778E-02	1.036E-01	NOT IDENT.
NB-97	0.000E+00	5.330E+40	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.790E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	9.933E+02	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.297E+39	0.000E+00	SHORT HLIF
RH-101	-2.360E-03	1.931E-02	3.418E-02	NOT IDENT.
RH-102	-1.816E-02	3.840E-02	7.048E-02	FAIL ABUN
RU-103	1.635E-02	3.760E-02	7.810E-02	FAIL ABUN
RH-106	1.311E-01	2.100E-01	4.662E-01	NOT IDENT.
RU-106	1.311E-01	2.100E-01	4.662E-01	NOT IDENT.
AG-108M	3.907E-03	2.189E-02	4.278E-02	NOT IDENT.
AG-110	2.097E-01	4.920E-01	9.941E-01	NOT IDENT.
AG-110M	8.906E-04	2.631E-02	5.274E-02	NOT IDENT.
SN-113	-2.525E-02	3.719E-02	6.860E-02	NOT IDENT.
CD-115	0.000E+00	3.035E+03	0.000E+00	SHORT HLIF
SN-117M	-7.641E-03	1.035E-01	1.938E-01	NOT IDENT.
SB-122	0.000E+00	1.591E+02	0.000E+00	SHORT HLIF
TE-123M	1.330E-02	2.179E-02	4.372E-02	NOT IDENT.
SB-124	2.883E-02	7.074E-02	1.765E-01	NOT IDENT.
SB-125	-3.536E-02	6.060E-02	1.129E-01	NOT IDENT.
TE-125M	-3.511E+00	6.976E+00	1.293E+01	NOT IDENT.
I-126	-1.268E-01	3.920E-01	7.014E-01	NOT IDENT.
SB-126	-2.763E-02	3.160E-01	6.098E-01	FAIL ABUN
SB-127	-3.884E+01	2.644E+01	3.600E+01	NOT IDENT.
I-131	-1.698E-01	4.087E-01	7.874E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.300E+01	0.000E+00	SHORT HLIF
BA-133	-1.416E-02	3.002E-02	5.078E-02	NOT IDENT.
I-133	0.000E+00	1.636E+10	0.000E+00	SHORT HLIF
CS-134	3.931E-02	3.116E-02	7.171E-02	FAIL ABUN
I-135	0.000E+00	2.560E+36	0.000E+00	SHORT HLIF
CS-136	1.735E-01	2.094E-01	4.755E-01	NOT IDENT.
LA-138	-1.820E-02	2.714E-02	4.730E-02	NOT IDENT.
CE-139	6.098E-03	2.032E-02	4.002E-02	NOT IDENT.
BA-140	-1.028E-01	4.929E-01	9.629E-01	NOT IDENT.
LA-140	-1.244E-01	1.862E-01	3.224E-01	NOT IDENT.
CE-141	-2.034E-02	6.266E-02	1.154E-01	NOT IDENT.
CE-143	0.000E+00	1.261E+06	0.000E+00	SHORT HLIF
CE-144	-1.986E-02	1.402E-01	2.451E-01	NOT IDENT.
PM-144	0.000E+00	5.894E-02	5.146E-02	FAIL ABUN
PM-146	2.131E-02	3.354E-02	7.131E-02	NOT IDENT.
ND-147	7.765E-01	1.366E+00	2.931E+00	NOT IDENT.
PM-147	2.178E+02	4.754E+02	9.618E+02	NOT IDENT.
PM-149	0.000E+00	2.351E+04	0.000E+00	SHORT HLIF
EU-150	5.733E-03	1.900E-02	3.954E-02	FAIL ABUN
EU-152	-1.944E-03	6.641E-02	1.341E-01	NOT IDENT.
GD-153	3.082E-02	5.359E-02	1.048E-01	NOT IDENT.
EU-154	3.980E-03	6.511E-02	1.443E-01	NOT IDENT.
EU-155	9.609E-05	6.587E-02	1.285E-01	FAIL ABUN
TB-160	4.805E-02	8.917E-02	2.058E-01	FAIL ABUN
HO-166M	1.495E-02	4.436E-02	9.197E-02	FAIL ABUN
TM-171	2.751E+00	1.036E+01	2.188E+01	NOT IDENT.
HF-172	1.276E-01	1.136E-01	2.358E-01	NOT IDENT.
LU-172	2.102E-02	4.627E-02	1.031E-01	FAIL ABUN

LU-176	-5.945E-03	1.782E-02	3.501E-02	FAIL ABUN
HF-181	-2.900E-02	3.770E-02	6.725E-02	NOT IDENT.
TA-182	9.951E-02	1.711E-01	3.458E-01	FAIL ABUN
RE-183	-1.293E-01	1.407E-01	2.595E-01	NOT IDENT.
RE-184	4.805E-02	1.387E-01	2.872E-01	NOT IDENT.
W-188	-1.310E+00	6.433E+00	1.056E+01	NOT IDENT.
IR-192	-3.040E-02	3.004E-02	4.624E-02	FAIL ABUN
HG-203	3.289E-02	3.782E-02	7.690E-02	NOT IDENT.
TL-204	-3.897E+00	2.917E+00	4.583E+00	NOT IDENT.
BI-210	-3.861E-01	2.015E+00	4.021E+00	NOT IDENT.
PB-210	-3.861E-01	2.015E+00	4.021E+00	NOT IDENT.
PB-211	-7.309E-02	4.833E-01	9.576E-01	NOT IDENT.
RN-219	3.592E-02	2.513E-01	5.227E-01	NOT IDENT.
RA-223	-1.663E-02	4.092E-01	8.315E-01	NOT IDENT.
AC-225	-1.255E+00	1.525E+00	2.557E+00	NOT IDENT.
AC-227	1.110E-01	1.960E-01	3.843E-01	NOT IDENT.
TH-227	1.110E-01	1.960E-01	3.843E-01	NOT IDENT.
AC-228	2.340E-01	1.970E-01	3.488E-01	FAIL ABUN
RA-228	2.340E-01	1.970E-01	3.488E-01	FAIL ABUN
TH-229	-1.099E-01	3.389E-01	6.144E-01	FAIL ABUN
PA-231	2.178E-01	3.440E-01	6.858E-01	NOT IDENT.
TH-231	-1.663E-02	4.092E-01	8.315E-01	NOT IDENT.
TH-232	2.340E-01	1.970E-01	3.488E-01	FAIL ABUN
PA-233	-1.850E-02	4.523E-02	7.830E-02	NOT IDENT.
PA-234	1.263E-01	1.674E-01	4.034E-01	FAIL ABUN
PA-234M	-2.277E+00	3.147E+00	5.208E+00	NOT IDENT.
TH-234	9.651E-02	8.167E-01	1.669E+00	FAIL ABUN
NP-237	-1.850E-02	4.523E-02	7.830E-02	NOT IDENT.
NP-238	0.000E+00	6.832E+03	0.000E+00	SHORT HLIF
U-238	9.651E-02	8.167E-01	1.669E+00	FAIL ABUN
NP-239	2.498E-02	1.644E-01	3.242E-01	NOT IDENT.
PU-239	4.016E+02	5.077E+02	4.526E+02	FAIL ABUN
AM-241	8.651E-02	8.393E-02	1.873E-01	NOT IDENT.
CM-243	4.762E-02	6.417E-02	1.345E-01	NOT IDENT.
BK-247	-2.889E-02	5.406E-02	9.296E-02	NOT IDENT.
CM-247	-5.034E-03	2.557E-02	5.033E-02	NOT IDENT.
CF-249	-3.122E-03	2.890E-02	5.736E-02	NOT IDENT.
CF-251	-7.077E-02	8.718E-02	1.494E-01	NOT IDENT.
ANH-511	-2.781E-02	3.810E-02	8.225E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:18:42.40

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	242	10.66*	1.182E+00	9.611E+00	9.611E+00	13.30
CD-109	88.03	40	3.70*	6.037E+00	8.964E-01	9.435E-01	122.97
SN-126	64.28	------	9.60	3.461E+00	------	Line Not Found	------
	86.94	40	8.90	6.037E+00	3.727E-01	3.727E-01	122.97
	87.57	40	37.00*	6.037E+00	8.964E-02	8.964E-02	122.97
BA-137M	661.66	15	89.90*	2.333E+00	3.552E-02	3.559E-02	93.37
CS-137	661.66	15	85.10*	2.333E+00	3.752E-02	3.760E-02	93.37
PR-144	696.51	38	1.34*	2.239E+00	6.401E+00	6.955E+00	65.36
	1489.16	------	0.28	1.164E+00	------	Line Not Found	------
BI-207	72.81	------	21.40	4.627E+00	------	Line Not Found	------
	74.97	49	35.70	4.856E+00	1.411E-01	1.413E-01	87.74
	569.70	5	97.76	2.631E+00	1.002E-02	1.004E-02	611.80
	1063.66	0	74.60*	1.550E+00	1.486E-03	1.489E-03	7083.12
	1770.23	6	6.87	1.034E+00	4.109E-01	4.117E-01	186.04
TL-208	277.37	------	6.60	4.498E+00	------	Line Not Found	------
	583.19	38	85.00*	2.583E+00	8.662E-02	8.662E-02	67.45
	860.56	------	12.50	1.870E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.634E+00	------	Line Not Found	------
	351.06	88	12.92*	3.782E+00	8.982E-01	8.982E-01	43.70
BI-212	727.33	10	6.67*	2.157E+00	3.483E-01	3.483E-01	128.39
	1620.50	------	1.47	1.094E+00	------	Line Not Found	------
PB-212	74.82	49	10.28	4.856E+00	4.899E-01	4.899E-01	87.74
	77.11	74	17.10	5.134E+00	4.191E-01	4.191E-01	60.49
	238.63	138	43.60*	5.003E+00	3.159E-01	3.159E-01	27.53
	300.09	------	3.30	4.250E+00	------	Line Not Found	------
BI-213	440.45	23	25.94*	3.210E+00	1.398E-01	1.398E-01	96.68
BI-214	609.32	72	45.49*	2.496E+00	3.191E-01	3.191E-01	38.62
	1120.29	8	14.92	1.479E+00	1.730E-01	1.730E-01	161.82
	1764.49	6	15.30	1.036E+00	2.020E-01	2.020E-01	147.73
PB-214	74.82	49	5.80	4.856E+00	8.683E-01	8.683E-01	87.74
	77.11	74	9.70	5.134E+00	7.389E-01	7.389E-01	60.49
	87.09	40	3.41	6.037E+00	9.726E-01	9.727E-01	122.97
	242.00	58	7.25	4.959E+00	8.013E-01	8.013E-01	63.21
	295.22	66	18.42	4.297E+00	4.175E-01	4.175E-01	55.03
	351.93	88	35.60*	3.782E+00	3.260E-01	3.260E-01	43.70
RN-222	609.32	72	45.49*	2.496E+00	3.191E-01	3.191E-01	38.62
	1120.29	8	14.92	1.479E+00	1.730E-01	1.730E-01	161.82
	1764.49	6	15.30	1.036E+00	2.020E-01	2.020E-01	147.73
RA-224	240.99	58	4.10*	4.959E+00	1.417E+00	1.417E+00	63.21
RA-226	74.82	49	5.80	4.856E+00	8.683E-01	8.683E-01	87.74
	77.11	74	9.70	5.134E+00	7.389E-01	7.389E-01	60.49
	87.09	40	3.41	6.037E+00	9.726E-01	9.727E-01	122.97
	242.00	58	7.25	4.959E+00	8.013E-01	8.013E-01	63.21
	295.22	66	18.42	4.297E+00	4.175E-01	4.175E-01	55.03
	351.93	88	35.60*	3.782E+00	3.260E-01	3.260E-01	43.70
TH-228	74.82	49	10.28	4.856E+00	4.899E-01	4.899E-01	87.74
	77.11	74	17.10	5.134E+00	4.191E-01	4.191E-01	60.49

Sample ID : G674299006 Acquisition date : 30-JUL-2024 11:15:37

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	138	43.60*	5.003E+00	3.159E-01	3.159E-01	27.53
	300.09	------	3.30	4.250E+00	------	Line Not Found	------
TH-230	74.82	49	5.80	4.856E+00	8.683E-01	8.683E-01	87.74
	77.11	74	9.70	5.134E+00	7.389E-01	7.389E-01	60.49
	87.09	40	3.41	6.037E+00	9.726E-01	9.726E-01	122.97
	242.00	58	7.25	4.959E+00	8.013E-01	8.013E-01	63.21
	295.22	66	18.42	4.297E+00	4.175E-01	4.175E-01	55.03
	351.93	88	35.60*	3.782E+00	3.260E-01	3.260E-01	43.70
U-234	74.82	49	5.80	4.856E+00	8.683E-01	8.683E-01	87.74
	77.11	74	9.70	5.134E+00	7.389E-01	7.389E-01	60.49
	87.09	40	3.41	6.037E+00	9.726E-01	9.726E-01	122.97
	242.00	58	7.25	4.959E+00	8.013E-01	8.013E-01	63.21
	295.22	66	18.42	4.297E+00	4.175E-01	4.175E-01	55.03
	351.93	88	35.60*	3.782E+00	3.260E-01	3.260E-01	43.70
U-235	89.96	------	3.47	6.185E+00	------	Line Not Found	------
	93.35	48	5.60	6.343E+00	6.732E-01	6.732E-01	107.97
	143.76	------	10.96*	6.677E+00	------	Line Not Found	------
	163.33	------	5.08	6.327E+00	------	Line Not Found	------
	185.72	47	57.20	5.898E+00	7.046E-02	7.046E-02	86.50
	205.31	21	5.01	5.538E+00	3.741E-01	3.741E-01	108.37
AM-243	43.53	------	5.90	6.010E-01	------	Line Not Found	------
	74.66	49	67.20*	4.856E+00	7.494E-02	7.494E-02	87.74

Flag: "*" = Keyline

Sample ID : G674299006 Acquisition date : 30-JUL-2024 11:15:37

Total number of lines in spectrum 38
Number of unidentified lines 8
Number of lines tentatively identified by NID 30 78.95%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	9.611E+00	9.611E+00	1.278E+00	13.30	
CD-109	461.40D	1.05	8.964E-01	9.435E-01	11.60E-01	122.97	
SN-126	2.30E+05Y	1.00	8.964E-02	8.964E-02	11.02E-02	122.97	
BA-137M	30.08Y	1.00	3.552E-02	3.559E-02	3.323E-02	93.37	
CS-137	30.08Y	1.00	3.752E-02	3.760E-02	3.511E-02	93.37	
PR-144	284.91D	1.09	6.401E+00	6.955E+00	4.546E+00	65.36	
BI-207	32.90Y	1.00	1.486E-03	1.489E-03	105.5E-03	7083.12	
TL-208	1.41E+10Y	1.00	8.662E-02	8.662E-02	5.843E-02	67.45	
BI-211	7.04E+08Y	1.00	8.982E-01	8.982E-01	3.925E-01	43.70	
BI-212	1.41E+10Y	1.00	3.483E-01	3.483E-01	4.472E-01	128.39	
PB-212	1.41E+10Y	1.00	3.159E-01	3.159E-01	0.870E-01	27.53	
BI-213	7340.00Y	1.00	1.398E-01	1.398E-01	1.352E-01	96.68	
BI-214	1600.00Y	1.00	3.191E-01	3.191E-01	1.232E-01	38.62	
PB-214	1600.00Y	1.00	3.260E-01	3.260E-01	1.425E-01	43.70	
RN-222	1600.00Y	1.00	3.191E-01	3.191E-01	1.232E-01	38.62	
RA-224	1.41E+10Y	1.00	1.417E+00	1.417E+00	0.896E+00	63.21	
RA-226	1600.00Y	1.00	3.260E-01	3.260E-01	1.425E-01	43.70	
TH-228	1.41E+10Y	1.00	3.159E-01	3.159E-01	0.870E-01	27.53	
TH-230	7.54E+04Y	1.00	3.260E-01	3.260E-01	1.424E-01	43.70	
U-234	2.45E+05Y	1.00	3.260E-01	3.260E-01	1.424E-01	43.70	
U-235	7.04E+08Y	1.00	7.046E-02	7.046E-02	6.095E-02	86.50	K
AM-243	7370.00Y	1.00	7.494E-02	7.494E-02	6.576E-02	87.74	
			---	---			
	Total Activity :		2.268E+01	2.328E+01			

Grand Total Activity : 2.268E+01 2.328E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299006 Acquisition date : 30-JUL-2024 11:15:37

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	129.87	35	101	1.31	259.86	254	11	7.92E-03	****	6.86E+00	T
0	314.43	18	18	1.32	628.92	626	7	4.44E-03	****	4.11E+00	
0	371.77	25	23	1.36	743.60	740	9	6.22E-03	84.0	3.63E+00	T
0	443.38	14	20	0.89	886.81	884	8	3.66E-03	****	3.19E+00	
0	503.48	13	15	1.70	1006.98	1000	9	3.45E-03	****	2.90E+00	
0	589.25	17	16	0.69	1178.51	1173	13	4.57E-03	****	2.56E+00	
0	602.83	12	18	1.67	1205.66	1201	9	3.03E-03	****	2.52E+00	T
0	801.18	10	5	0.97	1602.34	1598	8	2.75E-03	****	1.99E+00	T
0	821.03	9	14	1.39	1642.04	1635	11	2.39E-03	****	1.95E+00	
0	844.61	6	32	3.89	1689.19	1678	15	1.57E-03	****	1.90E+00	
0	911.77	21	15	2.32	1823.51	1817	10	5.87E-03	85.9	1.78E+00	T
0	969.95	20	14	2.48	1939.86	1931	14	5.54E-03	94.5	1.68E+00	T
0	1020.25	12	2	0.99	2040.46	2036	8	3.32E-03	70.9	1.61E+00	T
0	1207.28	10	2	2.33	2414.51	2409	9	2.95E-03	80.1	1.39E+00	
0	1224.32	13	5	1.35	2448.60	2443	11	3.72E-03	86.0	1.37E+00	
0	1239.56	4	18	1.09	2479.08	2473	10	1.09E-03	****	1.35E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:18:53.51

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299006.CNF;1  *
* Acquisition date : 30-JUL-2024 11:15:37 Sensitivity     : 3.000           *
* Detector ID      : GAM19                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.45     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:17:00 Nuclide Library : SOLID           *
* Sample ID        : G674299006           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.4998E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  4-DEC-2023 10:59:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;25            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.048E-01
CD-109	4.005E-01
SN-126	3.824E-02
BA-137M	1.910E-02
CS-137	2.017E-02
PR-144	1.458E+00
BI-207	3.456E-02
TL-208	1.875E-02
BI-211	1.175E-01
BI-212	2.933E-01
PB-212	3.179E-02
BI-213	5.889E-02
BI-214	3.867E-02
PB-214	4.272E-02
RN-222	3.867E-02
RA-224	3.406E-01
RA-226	4.272E-02
TH-228	3.179E-02
TH-230	4.272E-02
U-234	4.272E-02
U-235	1.155E-01
AM-243	2.758E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	2.786E-01	NOT IDENT.
NA-22	2.041E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.144E-02	NOT IDENT.
SC-46	1.867E-02	FAIL ABUN
V-48	8.286E-02	NOT IDENT.
CR-51	3.657E-01	NOT IDENT.
MN-52	8.185E-01	NOT IDENT.
MN-54	2.264E-02	NOT IDENT.

CO-56	3.169E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	1.460E-02	NOT IDENT.
CO-58	2.457E-02	NOT IDENT.
FE-59	7.431E-02	NOT IDENT.
CO-60	1.957E-02	NOT IDENT.
ZN-65	3.876E-02	NOT IDENT.
GE-68	6.419E-01	NOT IDENT.
AS-73	5.340E-01	NOT IDENT.
AS-74	1.262E-01	NOT IDENT.
SE-75	2.699E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	2.780E-01	NOT IDENT.
RB-83	4.838E-02	NOT IDENT.
RB-84	4.734E-02	NOT IDENT.
KR-85	5.636E+00	NOT IDENT.
SR-85	3.644E-02	NOT IDENT.
RB-86	7.805E-01	NOT IDENT.
Y-88	1.448E-02	NOT IDENT.
Y-91	1.226E+01	NOT IDENT.
NB-94	1.634E-02	NOT IDENT.
NB-95	2.735E-02	NOT IDENT.
NB-95M	8.451E-02	NOT IDENT.
ZR-95	4.296E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.552E-02	NOT IDENT.
RH-102	3.003E-02	FAIL ABUN
RU-103	3.426E-02	FAIL ABUN
RH-106	2.027E-01	NOT IDENT.
RU-106	2.027E-01	NOT IDENT.
AG-108M	1.900E-02	NOT IDENT.
AG-110	4.248E-01	NOT IDENT.
AG-110M	2.065E-02	NOT IDENT.
SN-113	3.050E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	8.958E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.024E-02	NOT IDENT.
SB-124	6.839E-02	NOT IDENT.
SB-125	4.911E-02	NOT IDENT.
TE-125M	5.874E+00	NOT IDENT.
I-126	2.941E-01	NOT IDENT.
SB-126	2.648E-01	FAIL ABUN
SB-127	1.414E+01	NOT IDENT.
I-131	3.493E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.234E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	3.169E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.048E-01	NOT IDENT.
LA-138	1.495E-02	NOT IDENT.
CE-139	1.832E-02	NOT IDENT.
BA-140	4.151E-01	NOT IDENT.
LA-140	1.200E-01	NOT IDENT.
CE-141	5.309E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.122E-01	NOT IDENT.
PM-144	2.241E-02	FAIL ABUN
PM-146	3.218E-02	NOT IDENT.
ND-147	1.300E+00	NOT IDENT.
PM-147	4.434E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.790E-02	FAIL ABUN
EU-152	6.013E-02	NOT IDENT.
GD-153	4.820E-02	NOT IDENT.
EU-154	5.727E-02	NOT IDENT.
EU-155	5.913E-02	FAIL ABUN
TB-160	8.559E-02	FAIL ABUN
HO-166M	4.016E-02	FAIL ABUN
TM-171	9.969E+00	NOT IDENT.
HF-172	1.083E-01	NOT IDENT.
LU-172	4.412E-02	FAIL ABUN
LU-176	1.570E-02	FAIL ABUN

HF-181	2.855E-02	NOT IDENT.
TA-182	1.502E-01	FAIL ABUN
RE-183	1.178E-01	NOT IDENT.
RE-184	1.239E-01	NOT IDENT.
W-188	4.713E+00	NOT IDENT.
IR-192	2.024E-02	FAIL ABUN
HG-203	3.523E-02	NOT IDENT.
TL-204	2.077E+00	NOT IDENT.
BI-210	1.819E+00	NOT IDENT.
PB-210	1.819E+00	NOT IDENT.
PB-211	4.244E-01	NOT IDENT.
RN-219	2.303E-01	NOT IDENT.
RA-223	3.718E-01	NOT IDENT.
AC-225	1.154E+00	NOT IDENT.
AC-227	1.765E-01	NOT IDENT.
TH-227	1.765E-01	NOT IDENT.
AC-228	1.595E-01	FAIL ABUN
RA-228	1.595E-01	FAIL ABUN
TH-229	2.791E-01	FAIL ABUN
PA-231	3.117E-01	NOT IDENT.
TH-231	3.718E-01	NOT IDENT.
TH-232	1.595E-01	FAIL ABUN
PA-233	3.471E-02	NOT IDENT.
PA-234	1.683E-01	FAIL ABUN
PA-234M	2.103E+00	NOT IDENT.
TH-234	7.748E-01	FAIL ABUN
NP-237	3.471E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	7.748E-01	FAIL ABUN
NP-239	1.490E-01	NOT IDENT.
PU-239	2.097E+02	FAIL ABUN
AM-241	8.621E-02	NOT IDENT.
CM-243	6.211E-02	NOT IDENT.
BK-247	4.139E-02	NOT IDENT.
CM-247	2.232E-02	NOT IDENT.
CF-249	2.565E-02	NOT IDENT.
CF-251	6.787E-02	NOT IDENT.
ANH-511	3.870E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:18:57.59

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299006.CNF;1  *
* Acquisition date : 30-JUL-2024 11:15:37 Sensitivity     : 3.000           *
* Detector ID      : GAM19                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.45     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:17:00 Nuclide Library : SOLID           *
* Sample ID        : G674299006           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.4998E+02 GRAM *
*                                         Quantity Err(%) : 1.3335E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  4-DEC-2023 10:59:51 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;25            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	9.611E+00	1.523E+00	1.523E+00
CD-109	9.435E-01	1.143E+00	1.143E+00
SN-126	8.964E-02	1.085E-01	1.085E-01
BA-137M	3.559E-02	3.274E-02	3.274E-02
CS-137	3.760E-02	3.459E-02	3.459E-02
PR-144	6.955E+00	4.503E+00	4.503E+00
BI-207	1.489E-03	1.033E-01	1.033E-01
TL-208	8.662E-02	5.782E-02	5.782E-02
BI-211	8.982E-01	3.919E-01	3.919E-01
BI-212	3.483E-01	4.396E-01	4.396E-01
PB-212	3.159E-01	8.980E-02	8.980E-02
BI-213	1.398E-01	1.330E-01	1.330E-01
BI-214	3.191E-01	1.244E-01	1.244E-01
PB-214	3.260E-01	1.421E-01	1.421E-01
RN-222	3.191E-01	1.244E-01	1.244E-01
RA-224	1.417E+00	8.868E-01	8.868E-01
RA-226	3.260E-01	1.421E-01	1.421E-01
TH-228	3.159E-01	8.980E-02	8.980E-02
TH-230	3.260E-01	1.421E-01	1.421E-01
U-234	3.260E-01	1.421E-01	1.421E-01
U-235	9.829E-03	1.310E-01	1.310E-01
AM-243	7.494E-02	6.489E-02	6.489E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.471E-01	2.939E-01	3.013E-01	NOT IDENT.
NA-22	1.417E-03	2.320E-02	2.321E-02	NOT IDENT.
NA-24	6.675E+13	6.457E+14	6.464E+14	SHORT HLIF
AL-26	-5.303E-03	1.713E-02	1.729E-02	NOT IDENT.
SC-46	-2.752E-02	3.058E-02	3.300E-02	FAIL ABUN
V-48	-4.320E-02	1.123E-01	1.139E-01	NOT IDENT.
CR-51	-1.398E-01	4.165E-01	4.213E-01	NOT IDENT.
MN-52	-6.616E-01	1.242E+00	1.277E+00	NOT IDENT.

MN-54	-2.579E-02	3.219E-02	3.423E-02	NOT IDENT.
CO-56	-1.494E-02	4.628E-02	4.676E-02	FAIL ABUN
MN-56	-1.000E+41	3.067E+41	0.000E+00	SHORT HLIF
CO-57	-3.028E-03	1.677E-02	1.682E-02	NOT IDENT.
CO-58	-2.773E-02	3.561E-02	3.774E-02	NOT IDENT.
FE-59	1.621E-03	8.443E-02	8.443E-02	NOT IDENT.
CO-60	-8.730E-03	2.538E-02	2.568E-02	NOT IDENT.
ZN-65	-2.578E-02	5.958E-02	6.071E-02	NOT IDENT.
GE-68	-4.027E-01	8.279E-01	8.476E-01	NOT IDENT.
AS-73	4.931E-02	5.663E-01	5.667E-01	NOT IDENT.
AS-74	2.023E-02	1.422E-01	1.425E-01	NOT IDENT.
SE-75	-3.148E-02	3.702E-02	3.964E-02	NOT IDENT.
BR-77	1.244E+04	1.274E+04	1.392E+04	SHORT HLIF
SR-82	-1.966E-01	3.763E-01	3.866E-01	NOT IDENT.
RB-83	-2.545E-02	5.947E-02	6.057E-02	NOT IDENT.
RB-84	3.798E-03	5.555E-02	5.557E-02	NOT IDENT.
KR-85	-1.123E+01	7.668E+00	9.188E+00	NOT IDENT.
SR-85	-7.276E-02	4.960E-02	5.947E-02	NOT IDENT.
RB-86	-8.397E-01	1.084E+00	1.148E+00	NOT IDENT.
Y-88	-2.800E-04	1.762E-02	1.763E-02	NOT IDENT.
Y-91	-8.128E+00	1.873E+01	1.908E+01	NOT IDENT.
NB-94	-1.422E-02	2.554E-02	2.633E-02	NOT IDENT.
NB-95	-2.561E-02	3.762E-02	3.935E-02	NOT IDENT.
NB-95M	-8.599E-02	1.219E-01	1.280E-01	NOT IDENT.
ZR-95	-2.976E-02	5.785E-02	5.939E-02	NOT IDENT.
NB-97	1.000E+41	5.413E+40	0.000E+00	SHORT HLIF
ZR-97	-2.004E+14	1.799E+14	2.013E+14	SHORT HLIF
MO-99	-7.477E+02	9.962E+02	1.052E+03	SHORT HLIF
TC-99M	-1.981E+38	1.297E+39	0.000E+00	SHORT HLIF
RH-101	-2.360E-03	1.931E-02	1.934E-02	NOT IDENT.
RH-102	-1.816E-02	3.846E-02	3.932E-02	FAIL ABUN
RU-103	1.635E-02	3.763E-02	3.834E-02	FAIL ABUN
RH-106	1.311E-01	2.104E-01	2.185E-01	NOT IDENT.
RU-106	1.311E-01	2.104E-01	2.185E-01	NOT IDENT.
AG-108M	3.907E-03	2.189E-02	2.196E-02	NOT IDENT.
AG-110	2.097E-01	4.924E-01	5.014E-01	NOT IDENT.
AG-110M	8.906E-04	2.631E-02	2.632E-02	NOT IDENT.
SN-113	-2.525E-02	3.724E-02	3.894E-02	NOT IDENT.
CD-115	-8.447E+02	3.036E+03	3.060E+03	SHORT HLIF
SN-117M	-7.641E-03	1.035E-01	1.035E-01	NOT IDENT.
SB-122	-4.255E+01	1.591E+02	1.603E+02	SHORT HLIF
TE-123M	1.330E-02	2.182E-02	2.263E-02	NOT IDENT.
SB-124	2.883E-02	7.078E-02	7.196E-02	NOT IDENT.
SB-125	-3.536E-02	6.067E-02	6.273E-02	NOT IDENT.
TE-125M	-3.511E+00	6.982E+00	7.159E+00	NOT IDENT.
I-126	-1.268E-01	3.922E-01	3.963E-01	NOT IDENT.
SB-126	-2.763E-02	3.161E-01	3.163E-01	FAIL ABUN
SB-127	-3.884E+01	2.738E+01	3.250E+01	NOT IDENT.
I-131	-1.698E-01	4.089E-01	4.160E-01	NOT IDENT.
I-132	-1.000E+41	4.415E+41	0.000E+00	SHORT HLIF
TE-132	-1.324E+01	3.304E+01	3.357E+01	SHORT HLIF
BA-133	-1.416E-02	3.005E-02	3.072E-02	NOT IDENT.
I-133	4.793E+09	1.640E+10	1.654E+10	SHORT HLIF
CS-134	3.931E-02	3.138E-02	3.604E-02	FAIL ABUN
I-135	1.707E+35	2.563E+36	0.000E+00	SHORT HLIF
CS-136	1.735E-01	2.103E-01	2.244E-01	NOT IDENT.
LA-138	-1.820E-02	2.718E-02	2.839E-02	NOT IDENT.
CE-139	6.098E-03	2.037E-02	2.055E-02	NOT IDENT.
BA-140	-1.028E-01	4.930E-01	4.952E-01	NOT IDENT.
LA-140	-1.244E-01	1.865E-01	1.948E-01	NOT IDENT.
CE-141	-2.034E-02	6.268E-02	6.335E-02	NOT IDENT.
CE-143	2.273E+05	1.261E+06	1.265E+06	SHORT HLIF
CE-144	-1.986E-02	1.403E-01	1.405E-01	NOT IDENT.
PM-144	9.201E-02	5.958E-02	7.260E-02	FAIL ABUN
PM-146	2.131E-02	3.362E-02	3.496E-02	NOT IDENT.
ND-147	7.765E-01	1.367E+00	1.412E+00	NOT IDENT.
PM-147	2.178E+02	4.756E+02	4.857E+02	NOT IDENT.
PM-149	3.191E+04	2.400E+04	2.798E+04	SHORT HLIF
EU-150	5.733E-03	1.901E-02	1.918E-02	FAIL ABUN
EU-152	-1.944E-03	6.641E-02	6.641E-02	NOT IDENT.
GD-153	3.082E-02	5.367E-02	5.544E-02	NOT IDENT.
EU-154	3.980E-03	6.511E-02	6.514E-02	NOT IDENT.
EU-155	9.609E-05	6.587E-02	6.587E-02	FAIL ABUN
TB-160	4.805E-02	8.930E-02	9.189E-02	FAIL ABUN
HO-166M	1.495E-02	4.438E-02	4.489E-02	FAIL ABUN
TM-171	2.751E+00	1.036E+01	1.043E+01	NOT IDENT.
HF-172	1.276E-01	1.157E-01	1.292E-01	NOT IDENT.
LU-172	2.102E-02	4.635E-02	4.731E-02	FAIL ABUN

LU-176	-5.945E-03	1.783E-02	1.803E-02	FAIL ABUN
HF-181	-2.900E-02	3.778E-02	3.998E-02	NOT IDENT.
TA-182	9.951E-02	1.713E-01	1.771E-01	FAIL ABUN
RE-183	-1.293E-01	1.416E-01	1.532E-01	NOT IDENT.
RE-184	4.805E-02	1.388E-01	1.404E-01	NOT IDENT.
W-188	-1.310E+00	6.435E+00	6.462E+00	NOT IDENT.
IR-192	-3.040E-02	3.014E-02	3.311E-02	FAIL ABUN
HG-203	3.289E-02	3.791E-02	4.070E-02	NOT IDENT.
TL-204	-3.897E+00	2.952E+00	3.435E+00	NOT IDENT.
BI-210	-3.861E-01	2.016E+00	2.023E+00	NOT IDENT.
PB-210	-3.861E-01	2.016E+00	2.023E+00	NOT IDENT.
PB-211	-7.309E-02	4.833E-01	4.845E-01	NOT IDENT.
RN-219	3.592E-02	2.514E-01	2.519E-01	NOT IDENT.
RA-223	-1.663E-02	4.092E-01	4.093E-01	NOT IDENT.
AC-225	-1.255E+00	1.532E+00	1.633E+00	NOT IDENT.
AC-227	1.110E-01	1.967E-01	2.030E-01	NOT IDENT.
TH-227	1.110E-01	1.967E-01	2.030E-01	NOT IDENT.
AC-228	2.340E-01	1.983E-01	2.246E-01	FAIL ABUN
RA-228	2.340E-01	1.983E-01	2.246E-01	FAIL ABUN
TH-229	-1.099E-01	3.390E-01	3.426E-01	FAIL ABUN
PA-231	2.178E-01	3.475E-01	3.611E-01	NOT IDENT.
TH-231	-1.663E-02	4.092E-01	4.093E-01	NOT IDENT.
TH-232	2.340E-01	1.983E-01	2.246E-01	FAIL ABUN
PA-233	-1.850E-02	4.525E-02	4.601E-02	NOT IDENT.
PA-234	1.263E-01	2.214E-01	2.286E-01	FAIL ABUN
PA-234M	-2.277E+00	3.153E+00	3.316E+00	NOT IDENT.
TH-234	9.651E-02	8.170E-01	8.182E-01	FAIL ABUN
NP-237	-1.850E-02	4.525E-02	4.601E-02	NOT IDENT.
NP-238	-1.673E+03	6.834E+03	6.875E+03	SHORT HLIF
U-238	9.651E-02	8.170E-01	8.182E-01	FAIL ABUN
NP-239	2.498E-02	1.644E-01	1.648E-01	NOT IDENT.
PU-239	4.016E+02	5.085E+02	5.398E+02	FAIL ABUN
AM-241	8.651E-02	8.439E-02	9.297E-02	NOT IDENT.
CM-243	4.762E-02	6.441E-02	6.789E-02	NOT IDENT.
BK-247	-2.889E-02	5.441E-02	5.594E-02	NOT IDENT.
CM-247	-5.034E-03	2.558E-02	2.569E-02	NOT IDENT.
CF-249	-3.122E-03	2.890E-02	2.894E-02	NOT IDENT.
CF-251	-7.077E-02	8.772E-02	9.334E-02	NOT IDENT.
ANH-511	-2.781E-02	3.818E-02	4.019E-02	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	36.6007	85.43	46.0634	131.20	33.6997
45.60	29.6282	86.55	46.1570	133.02	33.7832
46.54	28.8036	86.79	46.1767	133.52	42.2577
49.72	0.0000	86.94	46.1896	136.00	37.0988
51.35	27.3441	87.09	46.2022	136.47	36.0617
51.87	23.7292	87.57	46.2420	140.51	0.0000
52.39	31.0710	88.03	46.2800	143.76	36.4072
52.97	32.0310	88.34	46.3054	144.24	47.1448
53.44	32.9845	88.47	46.3162	145.44	50.4366
54.07	34.8709	89.96	46.4388	152.43	46.5510
57.36	0.0000	1093.63	46.4944	153.25	42.2629
57.53	38.8631	91.11	46.5324	323.87	60.7570
57.98	48.1668	92.59	46.6525	156.02	44.5810
59.27	27.8720	93.35	46.7135	158.56	51.2628
59.32	27.8752	94.56	46.8107	159.00	40.3767
59.54	27.8894	94.65	46.8178	162.33	40.5376
60.96	47.5660	94.67	46.8193	162.66	39.4574
61.17	56.9197	94.87	39.8599	163.33	44.9733
62.93	30.9145	97.43	33.3603	165.86	34.1049
63.29	41.2521	98.43	52.1285	176.31	36.7408
63.58	41.2785	98.44	52.1297	176.60	43.4346
64.28	58.2550	99.53	33.1420	177.52	47.9387
66.73	38.7284	100.11	39.2050	181.07	0.0000
67.24	50.1181	102.03	53.4460	181.52	38.8191
125.81	55.8441	103.18	39.4011	184.41	37.0696
67.75	49.2257	103.37	35.3709	143.76	37.1220
68.89	31.3147	105.21	44.5972	193.51	38.5644
69.67	32.3162	105.31	44.6042	197.03	44.3981
70.82	50.8126	106.12	40.6015	198.01	52.4196
70.83	50.8138	106.47	34.5302	201.83	47.2865
72.81	31.8873	109.28	41.8227	203.43	33.6123
72.87	31.8911	111.00	39.8882	205.31	41.3300
74.66	50.8893	111.76	0.0000	210.85	28.8597
74.82	50.9054	114.06	48.2941	215.65	22.0366
74.97	50.9208	116.30	0.0000	218.12	43.0161
77.11	51.1355	116.74	40.2345	222.11	26.8419
78.74	51.2972	119.76	47.6670	227.09	30.4854
79.69	51.3907	121.12	40.4931	227.38	34.0123
80.03	43.9848	121.22	38.4222	228.16	0.0000
80.12	43.9928	121.78	43.6496	228.18	44.6014
80.19	43.9986	122.06	43.6672	116.74	44.6014
80.57	41.4404	122.92	37.4752	235.69	50.4258
81.00	41.4740	123.07	37.4832	235.96	50.4382
81.07	41.4795	265.00	45.8527	238.63	31.9953
81.75	50.6178	125.81	23.6925	238.98	0.0000
82.47	52.6359	127.23	34.9113	240.99	32.0633
83.79	40.3879	127.91	42.9818	242.00	32.0922
84.00	40.4034	129.30	43.0645	244.70	41.3042

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	29.9881	344.28	25.7526	563.25	12.6419
252.80	23.9987	345.93	22.3443	564.24	0.0000
254.15	0.0000	351.06	22.4231	569.33	17.5547
256.23	32.4943	351.93	22.4363	946.00	17.5562
260.90	0.0000	355.39	0.0000	569.70	17.5576
264.66	38.7881	356.01	24.6621	583.19	11.7793
264.80	38.7920	364.49	26.1072	584.27	11.7852
265.00	30.3116	366.42	0.0000	595.83	15.7975
269.46	21.9056	372.51	16.6223	427.87	17.8110
270.03	36.5263	375.05	35.4902	602.52	0.0000
271.23	35.3438	377.52	19.3095	604.72	11.8960
273.65	25.6444	356.01	26.4380	607.14	13.3978
276.40	39.1650	388.16	25.6269	609.32	13.4110
277.37	37.9714	388.63	25.6346	610.33	19.3802
277.60	34.3027	391.69	30.9981	614.28	15.9297
278.00	29.4119	264.66	17.8121	618.01	18.9482
279.20	25.7604	401.81	16.9335	620.36	18.9675
279.54	26.9944	402.40	23.1806	621.93	8.9908
279.70	26.9978	404.85	22.3226	630.19	0.0000
280.46	35.6101	410.95	24.1985	631.29	16.0495
283.69	25.8533	413.71	16.1591	633.25	8.0319
284.31	30.7930	414.70	19.7620	634.78	15.0696
285.41	20.9574	423.72	13.5468	635.95	19.0982
285.90	0.0000	427.09	23.5281	636.99	18.1011
287.50	23.4618	427.87	21.7280	657.50	7.6086
290.67	26.4089	433.94	16.3539	657.76	3.0438
293.27	0.0000	439.40	20.5074	657.90	0.0000
351.93	26.0885	440.45	16.4158	661.66	11.1790
295.96	26.1032	453.88	20.2172	664.57	0.0000
879.38	29.8923	463.37	13.8577	666.33	12.2192
299.98	21.6122	468.07	20.3775	666.50	12.2202
300.09	21.6138	473.00	19.5038	667.71	0.0000
300.13	21.6148	475.06	19.5256	677.62	12.2769
301.36	23.7152	476.78	16.7520	685.70	18.4761
302.85	34.9880	477.60	15.8282	692.65	0.0000
256.23	23.3550	482.18	18.6674	695.00	11.3339
304.85	23.3607	487.02	18.7158	696.49	11.3406
306.78	30.0791	492.35	0.0000	696.51	11.3411
308.46	29.2806	497.08	12.4185	697.00	11.3433
311.90	26.4205	505.52	14.1742	697.30	11.3446
316.51	31.5598	507.63	0.0000	697.49	11.3455
319.41	19.3978	511.00	25.5858	702.65	15.5029
320.08	31.2210	514.00	60.7396	706.68	11.3872
321.04	32.9316	514.00	60.7422	711.68	12.4473
323.87	24.5378	520.40	19.9960	720.70	15.6146
325.23	29.6438	520.69	0.0000	721.93	0.0000
328.76	29.7192	522.65	0.0000	722.78	9.3765
333.37	32.3725	527.90	0.0000	722.91	10.9401
333.97	26.4199	528.26	17.2075	723.31	10.9418
334.37	28.9849	529.59	15.3053	724.19	14.0729
338.28	25.6458	529.87	0.0000	727.33	12.5244
338.32	25.6464	531.02	14.3591	733.00	12.5522
311.90	33.3903	537.26	15.3639	735.93	9.4248
340.48	33.3903	546.56	0.0000	333.97	13.6215
340.55	35.9604	552.55	15.4792	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	9.4552	949.00	12.4099	1384.29	7.6147
747.24	12.6216	667.71	0.0000	1408.01	2.8713
748.06	13.6776	962.31	12.2357	1434.09	2.8883
752.31	14.7537	964.08	11.9022	1435.80	3.8528
753.82	5.2722	966.17	8.5074	1457.56	0.0000
756.73	12.6670	911.20	11.3529	1460.82	4.8431
756.80	12.6675	983.53	10.2638	1489.16	5.8480
884.68	11.6432	984.45	0.0000	1505.03	3.9124
765.81	18.0065	1274.44	9.1592	1584.12	2.9841
766.42	22.2484	1001.03	10.3187	1596.21	6.9803
766.84	19.0730	1002.74	2.2943	1620.50	4.0088
772.60	0.0000	1004.73	9.1826	1621.92	3.0075
776.52	12.7617	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	2.0330
778.90	9.5797	1028.54	0.0000	1750.46	0.0000
783.70	10.6628	1037.84	2.3185	1764.49	4.9494
788.74	12.8193	1038.76	0.0000	1063.66	1.6516
792.07	17.1133	631.29	12.7841	1771.35	1.6520
795.86	6.4263	1048.07	5.8138	1791.20	0.0000
810.06	13.9955	1049.04	9.3047	1808.65	2.0795
810.29	17.2266	1050.41	5.8175	1810.72	0.0000
344.28	17.2279	1063.66	11.3877	1836.06	1.0450
810.76	16.1523	1077.00	12.3115		
815.77	16.1816	1077.34	9.6740		
1048.07	8.0988	1085.87	7.9343		
832.01	13.0200	1093.63	7.9519		
834.85	20.6359	1099.45	9.7351		
835.71	13.0371	1112.07	6.2169		
836.80	0.0000	1112.84	7.1064		
846.75	0.0000	1115.54	8.5342		
846.77	17.9952	1120.29	10.6816		
856.80	9.8496	1120.55	10.6824		
860.56	10.9583	1221.41	10.6846		
871.09	6.5984	1129.67	8.0321		
873.19	15.4076	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	4.4113	1173.23	9.0308		
880.51	8.8262	1177.95	9.0417		
881.60	5.5184	1189.05	14.5098		
883.24	9.9386	1204.77	10.1992		
884.68	3.3145	1221.41	8.7797		
889.28	12.1713	1231.02	11.9185		
894.76	15.5193	1235.36	7.3428		
898.04	9.9877	1238.28	9.1852		
900.72	17.7715	1260.41	0.0000		
903.28	10.0049	1271.87	3.7056		
911.20	8.9163	1274.44	4.6347		
912.08	6.6892	1274.54	4.6350		
923.98	0.0000	1291.59	3.7236		
926.50	8.9609	1298.22	0.0000		
929.11	8.9684	1312.11	6.5493		
935.54	6.7402	1332.49	6.5817		
937.49	5.6203	1362.66	0.0000		
944.13	9.0117	1365.19	5.6854		
946.00	3.3813	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:19:25.33

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299007.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM20.CNF;970
                                         Background date  : 28-JUL-2024 11:27:01
Sample date      : 26-JUN-2024 09:20:00 Acquisition date : 30-JUL-2024 11:16:04
Sample ID        : G674299007            Sample quantity  : 1.00470E+02 GRAM
Detector name    : GAM20                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:13.81  0.4%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.56*	3	87	2.25	61.22	57	9	8.32E-04	582.3	
2	0	46.46*	31	94	1.43	92.99	88	12	8.67E-03	66.6	
3	0	63.77*	29	85	0.95	127.57	124	8	7.98E-03	63.1	
4	2	74.88*	71	88	1.26	149.78	142	23	1.97E-02	27.4	1.43E+00
5	2	77.21	155	67	1.18	154.43	142	23	4.32E-02	12.4	
6	2	79.72	28	67	1.27	159.44	142	23	7.65E-03	60.4	
7	0	87.43	41	68	0.93	174.86	172	6	1.13E-02	35.9	
8	2	92.78*	57	69	1.07	185.55	181	11	1.59E-02	29.7	2.04E+00
9	2	94.53	23	28	1.13	189.04	181	11	6.30E-03	49.7	
10	0	112.72	25	45	1.01	225.38	222	7	6.92E-03	49.1	
11	7	115.63	19	17	1.58	231.21	229	11	5.24E-03	33.2	2.60E+00
12	7	118.48	14	22	1.43	236.90	229	11	3.95E-03	58.1	
13	3	185.71*	79	46	1.47	371.25	367	16	2.20E-02	20.8	2.88E+00
14	3	188.49	23	47	1.63	376.81	367	16	6.49E-03	66.8	
15	0	197.39*	25	39	1.56	394.58	390	10	6.86E-03	55.7	
16	3	238.42*	106	44	1.40	476.59	471	17	2.94E-02	15.8	2.19E+00
17	3	241.64	46	58	1.37	483.02	471	17	1.27E-02	31.8	
18	0	270.01	30	42	1.33	539.72	534	11	8.47E-03	44.7	
19	0	295.21	118	36	1.35	590.10	584	12	3.28E-02	13.7	
20	0	308.59	32	18	2.96	616.83	611	14	8.91E-03	32.9	
21	0	328.29	10	28	1.44	656.20	652	8	2.78E-03	97.0	
22	0	338.15*	32	25	2.75	675.91	670	9	8.89E-03	34.9	
23	0	351.83*	184	52	1.58	703.26	697	15	5.10E-02	11.3	
24	0	402.17	20	40	4.82	803.90	791	20	5.56E-03	80.6	
25	0	407.25	12	16	2.10	814.05	810	9	3.33E-03	66.5	
26	0	451.10	15	12	1.43	901.72	896	10	4.08E-03	51.9	
27	3	463.24	14	16	1.99	925.99	918	29	3.96E-03	65.5	1.56E+00
28	3	470.38	21	13	2.00	940.25	918	29	5.94E-03	41.5	
29	0	511.03*	23	43	2.09	1021.53	1013	17	6.40E-03	80.5	
30	0	583.43	27	16	0.91	1166.29	1160	11	7.41E-03	35.2	
31	0	601.85	24	0	3.59	1203.13	1198	11	6.67E-03	20.4	
32	0	609.00*	149	7	1.66	1217.43	1210	13	4.15E-02	9.2	
33	0	661.35	9	17	1.95	1322.12	1318	9	2.57E-03	84.6	
34	0	664.46	10	5	0.87	1328.34	1326	6	2.78E-03	49.0	

Sample ID : G674299007 Acquisition date : 30-JUL-2024 11:16:04

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	727.25	11	3	1.44	1453.91	1451	6	3.06E-03	39.1	
36	0	753.20	19	11	3.39	1505.82	1496	17	5.22E-03	48.8	
37	0	775.98	5	6	0.53	1551.38	1545	8	1.38E-03	96.8	
38	0	788.90	6	1	1.04	1577.23	1574	6	1.57E-03	53.9	
39	0	795.53	11	3	1.00	1590.48	1587	7	3.06E-03	40.8	
40	0	814.59	6	4	1.31	1628.61	1622	9	1.58E-03	78.7	
41	0	899.87	15	0	1.75	1799.20	1794	10	4.17E-03	25.8	
42	0	911.34*	28	7	1.19	1822.15	1815	14	7.91E-03	28.7	
43	0	981.87	9	1	0.64	1963.27	1960	7	2.37E-03	42.3	
44	0	1000.86*	3	5	0.55	2001.26	1997	7	7.69E-04	176.4	
45	0	1120.12	31	3	2.52	2239.91	2234	12	8.66E-03	21.0	
46	0	1239.08*	5	8	0.67	2478.00	2474	8	1.27E-03	121.1	
47	0	1290.58	7	4	0.91	2581.07	2577	7	1.88E-03	66.3	
48	0	1460.51*	31	3	3.09	2921.27	2915	12	8.63E-03	22.5	
49	0	1764.10	27	0	2.24	3529.30	3523	11	7.50E-03	19.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:19:26

```
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299007.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 09:20:00 Acquisition date : 30-JUL-2024 11:16:04
Sample ID        : G674299007           Sample quantity  : 100.47 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA20              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:13.81   0.4%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	29	10.66*	1.267E+00	1.606E+00	1.606E+00	44.97
SR-82	776.52	5	15.08*	2.234E+00	1.038E-01	2.637E-01	193.59
CD-109	88.03	40	3.70*	7.138E+00	1.132E+00	1.191E+00	71.81
SN-126	64.28	28	9.60	4.791E+00	4.596E-01	4.596E-01	126.21
	86.94	40	8.90	7.138E+00	4.704E-01	4.704E-01	71.81
	87.57	40	37.00*	7.138E+00	1.132E-01	1.132E-01	71.81
BA-137M	661.66	9	89.90*	2.572E+00	2.837E-02	2.844E-02	169.12
CS-137	661.66	9	85.10*	2.572E+00	2.998E-02	3.004E-02	169.12
TL-208	277.37	------	6.60	4.980E+00	------	Line Not Found	------
	583.19	25	85.00*	2.859E+00	7.787E-02	7.787E-02	70.49
	860.56	------	12.50	2.034E+00	------	Line Not Found	------
BI-210	46.54	31	4.25*	1.807E+00	3.005E+00	3.014E+00	133.25
PB-210	46.54	31	4.25*	1.807E+00	3.005E+00	3.014E+00	133.25
BI-211	72.87	------	1.23	5.985E+00	------	Line Not Found	------
	351.06	176	12.92*	4.215E+00	2.412E+00	2.412E+00	22.52
BI-212	727.33	10	6.67*	2.367E+00	4.923E-01	4.923E-01	78.20
	1620.50	------	1.47	1.174E+00	------	Line Not Found	------
PB-212	74.82	70	10.28	6.197E+00	8.181E-01	8.181E-01	54.73
	77.11	153	17.10	6.420E+00	1.039E+00	1.039E+00	24.74
	238.63	102	43.60*	5.511E+00	3.168E-01	3.168E-01	31.67
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
BI-214	609.32	142	45.49*	2.758E+00	8.431E-01	8.431E-01	18.48
	1120.29	29	14.92	1.594E+00	9.197E-01	9.197E-01	42.07
	1764.49	25	15.30	1.115E+00	1.102E+00	1.102E+00	38.49
PB-214	74.82	70	5.80	6.197E+00	1.450E+00	1.450E+00	54.73
	77.11	153	9.70	6.420E+00	1.831E+00	1.831E+00	24.74
	87.09	40	3.41	7.138E+00	1.228E+00	1.228E+00	71.81
	242.00	44	7.25	5.463E+00	8.314E-01	8.315E-01	63.67
	295.22	113	18.42	4.770E+00	9.640E-01	9.640E-01	27.42
	351.93	176	35.60*	4.215E+00	8.752E-01	8.752E-01	22.52
RN-219	271.23	29	10.80	5.072E+00	4.001E-01	4.001E-01	89.32
	401.81	19	6.60*	3.823E+00	5.659E-01	5.659E-01	161.25
RN-222	609.32	142	45.49*	2.758E+00	8.431E-01	8.431E-01	18.48
	1120.29	29	14.92	1.594E+00	9.197E-01	9.197E-01	42.07
	1764.49	25	15.30	1.115E+00	1.102E+00	1.102E+00	38.49
RA-224	240.99	44	4.10*	5.463E+00	1.470E+00	1.470E+00	63.67
RA-226	74.82	70	5.80	6.197E+00	1.450E+00	1.450E+00	54.73
	77.11	153	9.70	6.420E+00	1.831E+00	1.831E+00	24.74
	87.09	40	3.41	7.138E+00	1.228E+00	1.228E+00	71.81
	242.00	44	7.25	5.463E+00	8.314E-01	8.315E-01	63.67
	295.22	113	18.42	4.770E+00	9.640E-01	9.640E-01	27.42
	351.93	176	35.60*	4.215E+00	8.752E-01	8.752E-01	22.52
TH-228	74.82	70	10.28	6.197E+00	8.181E-01	8.181E-01	54.73
	77.11	153	17.10	6.420E+00	1.039E+00	1.039E+00	24.74
	238.63	102	43.60*	5.511E+00	3.168E-01	3.168E-01	31.67
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
TH-230	74.82	70	5.80	6.197E+00	1.450E+00	1.450E+00	54.73
	77.11	153	9.70	6.420E+00	1.831E+00	1.831E+00	24.74
	87.09	40	3.41	7.138E+00	1.228E+00	1.228E+00	71.81

Sample ID : G674299007 Acquisition date : 30-JUL-2024 11:16:04

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	242.00	44	7.25	5.463E+00	8.314E-01	8.314E-01	63.67
	295.22	113	18.42	4.770E+00	9.640E-01	9.640E-01	27.42
	351.93	176	35.60*	4.215E+00	8.752E-01	8.752E-01	22.52
TH-234	63.29	28	3.70*	4.791E+00	1.192E+00	1.192E+00	126.21
	92.59	56	4.23	7.371E+00	1.343E+00	1.343E+00	59.30
U-234	74.82	70	5.80	6.197E+00	1.450E+00	1.450E+00	54.73
	77.11	153	9.70	6.420E+00	1.831E+00	1.831E+00	24.74
	87.09	40	3.41	7.138E+00	1.228E+00	1.228E+00	71.81
	242.00	44	7.25	5.463E+00	8.314E-01	8.314E-01	63.67
	295.22	113	18.42	4.770E+00	9.640E-01	9.640E-01	27.42
	351.93	176	35.60*	4.215E+00	8.752E-01	8.752E-01	22.52
U-238	63.29	28	3.70*	4.791E+00	1.192E+00	1.192E+00	126.21
	92.59	56	4.23	7.371E+00	1.343E+00	1.343E+00	59.30
AM-243	43.53	------	5.90	1.338E+00	------	Line Not Found	------
	74.66	70	67.20*	6.197E+00	1.252E-01	1.252E-01	54.73
CM-247	278.00	------	3.40	4.972E+00	------	Line Not Found	------
	287.50	------	2.00	4.858E+00	------	Line Not Found	------
	402.40	19	72.00*	3.823E+00	5.187E-02	5.187E-02	161.25
ANH-511	511.00	22	100.00*	3.182E+00	5.146E-02	5.146E-02	161.09

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:19:27.66

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299007.CNF;1  *
* Acquisition date : 30-JUL-2024 11:16:04 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:13.81     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:20:00 Analyst initials: RXF2            *
* Sample ID        : G674299007           Sample Quantity : 1.0047E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.606E+00	7.079E-01	5.996E-01
SR-82	2.637E-01	5.003E-01	7.431E-01
CD-109	1.191E+00	8.382E-01	1.243E+00
SN-126	1.132E-01	7.964E-02	1.196E-01
BA-137M	2.844E-02	4.713E-02	6.301E-02
CS-137	3.004E-02	4.979E-02	6.657E-02
TL-208	7.787E-02	5.379E-02	4.410E-02
BI-210	3.014E+00	3.936E+00	2.938E+00
PB-210	3.014E+00	3.936E+00	2.938E+00
BI-211	2.412E+00	5.321E-01	3.369E-01
BI-212	4.923E-01	3.773E-01	7.409E-01
PB-212	3.168E-01	9.834E-02	9.166E-02
BI-214	8.431E-01	1.527E-01	1.370E-01
PB-214	8.752E-01	1.931E-01	1.225E-01
RN-219	5.659E-01	8.942E-01	5.735E-01
RN-222	8.431E-01	1.527E-01	1.370E-01
RA-224	1.470E+00	9.174E-01	9.819E-01
RA-226	8.752E-01	1.931E-01	1.225E-01
TH-228	3.168E-01	9.834E-02	9.166E-02
TH-230	8.752E-01	1.931E-01	1.225E-01
TH-234	1.192E+00	1.475E+00	1.579E+00
U-234	8.752E-01	1.931E-01	1.225E-01
U-238	1.192E+00	1.475E+00	1.579E+00
AM-243	1.252E-01	6.713E-02	6.411E-02
CM-247	5.187E-02	8.197E-02	5.264E-02
ANH-511	5.146E-02	8.124E-02	5.160E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	9.944E-02	3.641E-01	7.249E-01	NOT IDENT.
NA-22	2.957E-02	4.159E-02	9.509E-02	NOT IDENT.
NA-24	0.000E+00	5.923E+14	0.000E+00	SHORT HLIF
AL-26	-9.209E-03	3.199E-02	6.265E-02	NOT IDENT.

SC-46	1.447E-02	3.554E-02	8.008E-02	FAIL ABUN
V-48	1.570E-01	1.427E-01	3.356E-01	NOT IDENT.
CR-51	-2.284E-02	5.535E-01	1.047E+00	NOT IDENT.
MN-52	8.303E-01	2.777E+00	6.026E+00	NOT IDENT.
MN-54	-2.085E-02	3.176E-02	5.706E-02	NOT IDENT.
CO-56	-2.190E-02	3.987E-02	7.336E-02	FAIL ABUN
MN-56	0.000E+00	1.352E+41	0.000E+00	SHORT HLIF
CO-57	1.142E-02	2.108E-02	3.993E-02	NOT IDENT.
CO-58	1.139E-02	2.551E-02	5.866E-02	NOT IDENT.
FE-59	-1.519E-02	8.629E-02	1.749E-01	FAIL ABUN
CO-60	2.840E-03	3.549E-02	7.518E-02	NOT IDENT.
ZN-65	3.658E-02	8.711E-02	1.736E-01	NOT IDENT.
GE-68	-2.258E-01	1.016E+00	2.018E+00	NOT IDENT.
AS-73	4.122E-01	5.265E-01	1.049E+00	NOT IDENT.
AS-74	-5.476E-02	1.609E-01	2.897E-01	NOT IDENT.
SE-75	1.495E-03	3.994E-02	7.065E-02	NOT IDENT.
BR-77	0.000E+00	3.872E+03	0.000E+00	SHORT HLIF
RB-83	-4.250E-03	6.447E-02	1.241E-01	NOT IDENT.
RB-84	-1.849E-02	8.566E-02	1.696E-01	NOT IDENT.
KR-85	4.176E-01	7.686E+00	1.299E+01	NOT IDENT.
SR-85	2.617E-03	4.971E-02	8.399E-02	NOT IDENT.
RB-86	-5.581E-01	1.249E+00	2.336E+00	NOT IDENT.
Y-88	1.497E-02	4.305E-02	1.023E-01	NOT IDENT.
Y-91	-4.847E+00	1.785E+01	3.504E+01	NOT IDENT.
NB-94	6.720E-03	2.758E-02	5.549E-02	NOT IDENT.
NB-95	3.680E-03	5.744E-02	1.065E-01	NOT IDENT.
NB-95M	3.798E-03	1.291E-01	2.243E-01	NOT IDENT.
ZR-95	5.811E-03	5.365E-02	1.046E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.198E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.166E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.844E+39	0.000E+00	SHORT HLIF
RH-101	-1.138E-02	2.750E-02	4.636E-02	FAIL ABUN
RH-102	2.363E-02	5.184E-02	1.059E-01	NOT IDENT.
RU-103	-2.590E-02	4.880E-02	8.516E-02	FAIL ABUN
RH-106	1.261E-01	2.589E-01	5.495E-01	NOT IDENT.
RU-106	1.261E-01	2.589E-01	5.495E-01	NOT IDENT.
AG-108M	-2.679E-02	2.574E-02	4.101E-02	NOT IDENT.
AG-110	1.672E-01	6.143E-01	1.165E+00	NOT IDENT.
AG-110M	4.012E-02	4.629E-02	1.080E-01	NOT IDENT.
SN-113	3.384E-03	3.827E-02	7.535E-02	NOT IDENT.
CD-115	0.000E+00	3.417E+03	0.000E+00	SHORT HLIF
SN-117M	-3.139E-03	1.231E-01	2.156E-01	NOT IDENT.
SB-122	0.000E+00	2.130E+02	0.000E+00	SHORT HLIF
TE-123M	1.071E-02	2.622E-02	4.848E-02	NOT IDENT.
SB-124	-4.695E-02	1.044E-01	1.895E-01	NOT IDENT.
SB-125	-5.405E-02	8.995E-02	1.560E-01	FAIL ABUN
TE-125M	-4.773E+00	1.092E+01	1.688E+01	NOT IDENT.
I-126	-5.066E-01	6.360E-01	8.396E-01	FAIL ABUN
SB-126	-6.130E-02	3.839E-01	7.050E-01	NOT IDENT.
SB-127	-3.639E+00	3.114E+01	5.921E+01	NOT IDENT.
I-131	5.503E-02	4.720E-01	9.295E-01	FAIL ABUN
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.055E+01	0.000E+00	SHORT HLIF
BA-133	3.716E-02	4.276E-02	8.261E-02	FAIL ABUN
I-133	0.000E+00	1.759E+10	0.000E+00	SHORT HLIF
CS-134	4.289E-02	3.428E-02	8.185E-02	FAIL ABUN
I-135	0.000E+00	3.258E+36	0.000E+00	SHORT HLIF
CS-136	-5.373E-02	2.172E-01	4.306E-01	NOT IDENT.
LA-138	-2.315E-03	6.190E-02	1.279E-01	FAIL ABUN
CE-139	2.254E-02	3.183E-02	5.932E-02	NOT IDENT.
BA-140	3.674E-01	6.236E-01	1.321E+00	NOT IDENT.
LA-140	-2.694E-02	2.028E-01	4.251E-01	FAIL ABUN
CE-141	-3.676E-02	7.974E-02	1.328E-01	NOT IDENT.
CE-143	0.000E+00	1.435E+06	0.000E+00	SHORT HLIF
CE-144	6.685E-03	1.766E-01	3.134E-01	FAIL ABUN
PM-144	3.623E-03	3.315E-02	6.378E-02	NOT IDENT.
PR-144	2.738E-01	2.506E+00	4.821E+00	NOT IDENT.
PM-146	3.175E-03	3.612E-02	6.426E-02	NOT IDENT.
ND-147	6.106E-01	1.417E+00	2.988E+00	NOT IDENT.
PM-147	-6.687E+01	6.213E+02	1.009E+03	NOT IDENT.
PM-149	0.000E+00	3.199E+04	0.000E+00	SHORT HLIF
EU-150	-1.412E-02	2.581E-02	4.014E-02	FAIL ABUN
EU-152	-5.301E-02	7.825E-02	1.366E-01	NOT IDENT.
GD-153	-7.808E-03	6.577E-02	1.111E-01	NOT IDENT.
EU-154	7.993E-02	1.159E-01	2.647E-01	NOT IDENT.
EU-155	-3.636E-02	8.590E-02	1.462E-01	FAIL ABUN
TB-160	-1.759E-02	1.273E-01	2.574E-01	FAIL ABUN

HO-166M	-2.320E-02	5.262E-02	9.135E-02	FAIL ABUN
TM-171	-7.245E+00	1.000E+01	1.699E+01	NOT IDENT.
HF-172	1.041E-01	1.602E-01	3.042E-01	FAIL ABUN
LU-172	5.169E-03	5.078E-02	1.082E-01	FAIL ABUN
LU-176	6.458E-03	1.935E-02	3.944E-02	FAIL ABUN
HF-181	6.632E-03	5.017E-02	9.871E-02	NOT IDENT.
TA-182	-7.001E-02	1.334E-01	2.426E-01	FAIL ABUN
RE-183	-1.561E-02	1.432E-01	2.587E-01	NOT IDENT.
RE-184	-2.695E-02	1.708E-01	2.973E-01	NOT IDENT.
W-188	-5.415E-01	6.938E+00	1.201E+01	FAIL ABUN
IR-192	-2.246E-02	3.413E-02	6.009E-02	FAIL ABUN
HG-203	-1.613E-02	4.650E-02	8.516E-02	NOT IDENT.
TL-204	1.403E+00	3.548E+00	6.174E+00	FAIL ABUN
BI-207	-3.953E-03	3.784E-02	7.810E-02	FAIL ABUN
PB-211	8.390E-01	4.093E-01	1.106E+00	NOT IDENT.
BI-213	-3.268E-02	8.540E-02	1.547E-01	NOT IDENT.
RA-223	4.830E-03	6.112E-01	1.052E+00	FAIL ABUN
AC-225	-1.333E+00	1.689E+00	2.990E+00	NOT IDENT.
AC-227	1.133E-02	2.161E-01	4.165E-01	FAIL ABUN
TH-227	1.133E-02	2.161E-01	4.165E-01	FAIL ABUN
AC-228	4.025E-01	2.263E-01	4.443E-01	FAIL ABUN
RA-228	4.025E-01	2.263E-01	4.443E-01	FAIL ABUN
TH-229	3.045E-01	6.034E-01	9.186E-01	FAIL ABUN
PA-231	-2.792E-02	4.467E-01	8.403E-01	NOT IDENT.
TH-231	4.830E-03	6.112E-01	1.052E+00	FAIL ABUN
TH-232	4.025E-01	2.263E-01	4.443E-01	FAIL ABUN
PA-233	-7.151E-03	5.243E-02	8.968E-02	NOT IDENT.
PA-234	-2.421E-02	2.216E-01	4.565E-01	FAIL ABUN
PA-234M	1.310E+00	4.529E+00	9.329E+00	FAIL ABUN
U-235	9.843E-02	1.839E-01	3.398E-01	FAIL ABUN
NP-237	-7.151E-03	5.243E-02	8.968E-02	FAIL ABUN
NP-238	0.000E+00	9.023E+03	0.000E+00	SHORT HLIF
NP-239	2.263E-01	1.473E-01	3.820E-01	FAIL ABUN
PU-239	9.339E+01	3.024E+02	5.493E+02	NOT IDENT.
AM-241	1.831E-02	9.560E-02	1.769E-01	NOT IDENT.
CM-243	2.477E-02	7.820E-02	1.458E-01	NOT IDENT.
BK-247	-4.850E-03	6.551E-02	1.135E-01	FAIL ABUN
CF-249	-1.574E-02	3.547E-02	6.357E-02	NOT IDENT.
CF-251	-2.261E-02	1.180E-01	2.010E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:19:26.21

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	29	10.66*	1.267E+00	1.606E+00	1.606E+00	44.97
SR-82	776.52	5	15.08*	2.234E+00	1.038E-01	2.637E-01	193.59
CD-109	88.03	40	3.70*	7.138E+00	1.132E+00	1.191E+00	71.81
SN-126	64.28	28	9.60	4.791E+00	4.596E-01	4.596E-01	126.21
	86.94	40	8.90	7.138E+00	4.704E-01	4.704E-01	71.81
	87.57	40	37.00*	7.138E+00	1.132E-01	1.132E-01	71.81
BA-137M	661.66	9	89.90*	2.572E+00	2.837E-02	2.844E-02	169.12
CS-137	661.66	9	85.10*	2.572E+00	2.998E-02	3.004E-02	169.12
TL-208	277.37	------	6.60	4.980E+00	------	Line Not Found	------
	583.19	25	85.00*	2.859E+00	7.787E-02	7.787E-02	70.49
	860.56	------	12.50	2.034E+00	------	Line Not Found	------
BI-210	46.54	31	4.25*	1.807E+00	3.005E+00	3.014E+00	133.25
PB-210	46.54	31	4.25*	1.807E+00	3.005E+00	3.014E+00	133.25
BI-211	72.87	------	1.23	5.985E+00	------	Line Not Found	------
	351.06	176	12.92*	4.215E+00	2.412E+00	2.412E+00	22.52
BI-212	727.33	10	6.67*	2.367E+00	4.923E-01	4.923E-01	78.20
	1620.50	------	1.47	1.174E+00	------	Line Not Found	------
PB-212	74.82	70	10.28	6.197E+00	8.181E-01	8.181E-01	54.73
	77.11	153	17.10	6.420E+00	1.039E+00	1.039E+00	24.74
	238.63	102	43.60*	5.511E+00	3.168E-01	3.168E-01	31.67
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
BI-214	609.32	142	45.49*	2.758E+00	8.431E-01	8.431E-01	18.48
	1120.29	29	14.92	1.594E+00	9.197E-01	9.197E-01	42.07
	1764.49	25	15.30	1.115E+00	1.102E+00	1.102E+00	38.49
PB-214	74.82	70	5.80	6.197E+00	1.450E+00	1.450E+00	54.73
	77.11	153	9.70	6.420E+00	1.831E+00	1.831E+00	24.74
	87.09	40	3.41	7.138E+00	1.228E+00	1.228E+00	71.81
	242.00	44	7.25	5.463E+00	8.314E-01	8.315E-01	63.67
	295.22	113	18.42	4.770E+00	9.640E-01	9.640E-01	27.42
	351.93	176	35.60*	4.215E+00	8.752E-01	8.752E-01	22.52
RN-219	271.23	29	10.80	5.072E+00	4.001E-01	4.001E-01	89.32
	401.81	19	6.60*	3.823E+00	5.659E-01	5.659E-01	161.25
RN-222	609.32	142	45.49*	2.758E+00	8.431E-01	8.431E-01	18.48
	1120.29	29	14.92	1.594E+00	9.197E-01	9.197E-01	42.07
	1764.49	25	15.30	1.115E+00	1.102E+00	1.102E+00	38.49
RA-224	240.99	44	4.10*	5.463E+00	1.470E+00	1.470E+00	63.67
RA-226	74.82	70	5.80	6.197E+00	1.450E+00	1.450E+00	54.73
	77.11	153	9.70	6.420E+00	1.831E+00	1.831E+00	24.74
	87.09	40	3.41	7.138E+00	1.228E+00	1.228E+00	71.81
	242.00	44	7.25	5.463E+00	8.314E-01	8.315E-01	63.67
	295.22	113	18.42	4.770E+00	9.640E-01	9.640E-01	27.42
	351.93	176	35.60*	4.215E+00	8.752E-01	8.752E-01	22.52
TH-228	74.82	70	10.28	6.197E+00	8.181E-01	8.181E-01	54.73
	77.11	153	17.10	6.420E+00	1.039E+00	1.039E+00	24.74
	238.63	102	43.60*	5.511E+00	3.168E-01	3.168E-01	31.67
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
TH-230	74.82	70	5.80	6.197E+00	1.450E+00	1.450E+00	54.73

Sample ID : G674299007 Acquisition date : 30-JUL-2024 11:16:04

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	77.11	153	9.70	6.420E+00	1.831E+00	1.831E+00	24.74
	87.09	40	3.41	7.138E+00	1.228E+00	1.228E+00	71.81
	242.00	44	7.25	5.463E+00	8.314E-01	8.314E-01	63.67
	295.22	113	18.42	4.770E+00	9.640E-01	9.640E-01	27.42
	351.93	176	35.60*	4.215E+00	8.752E-01	8.752E-01	22.52
TH-234	63.29	28	3.70*	4.791E+00	1.192E+00	1.192E+00	126.21
	92.59	56	4.23	7.371E+00	1.343E+00	1.343E+00	59.30
U-234	74.82	70	5.80	6.197E+00	1.450E+00	1.450E+00	54.73
	77.11	153	9.70	6.420E+00	1.831E+00	1.831E+00	24.74
	87.09	40	3.41	7.138E+00	1.228E+00	1.228E+00	71.81
	242.00	44	7.25	5.463E+00	8.314E-01	8.314E-01	63.67
	295.22	113	18.42	4.770E+00	9.640E-01	9.640E-01	27.42
	351.93	176	35.60*	4.215E+00	8.752E-01	8.752E-01	22.52
U-238	63.29	28	3.70*	4.791E+00	1.192E+00	1.192E+00	126.21
	92.59	56	4.23	7.371E+00	1.343E+00	1.343E+00	59.30
AM-243	43.53	------	5.90	1.338E+00	------	Line Not Found	------
	74.66	70	67.20*	6.197E+00	1.252E-01	1.252E-01	54.73
CM-247	278.00	------	3.40	4.972E+00	------	Line Not Found	------
	287.50	------	2.00	4.858E+00	------	Line Not Found	------
	402.40	19	72.00*	3.823E+00	5.187E-02	5.187E-02	161.25
ANH-511	511.00	22	100.00*	3.182E+00	5.146E-02	5.146E-02	161.09

Flag: "*" = Keyline

Sample ID : G674299007 Acquisition date : 30-JUL-2024 11:16:04

Total number of lines in spectrum 49
Number of unidentified lines 6
Number of lines tentatively identified by NID 43 87.76%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.606E+00	1.606E+00	0.722E+00	44.97	
SR-82	25.35D	2.54	1.038E-01	2.637E-01	5.105E-01	193.59	
CD-109	461.40D	1.05	1.132E+00	1.191E+00	0.855E+00	71.81	
SN-126	2.30E+05Y	1.00	1.132E-01	1.132E-01	0.813E-01	71.81	
BA-137M	30.08Y	1.00	2.837E-02	2.844E-02	4.809E-02	169.12	
CS-137	30.08Y	1.00	2.998E-02	3.004E-02	5.080E-02	169.12	
TL-208	1.41E+10Y	1.00	7.787E-02	7.787E-02	5.488E-02	70.49	
BI-210	22.20Y	1.00	3.005E+00	3.014E+00	4.017E+00	133.25	
PB-210	22.20Y	1.00	3.005E+00	3.014E+00	4.017E+00	133.25	
BI-211	7.04E+08Y	1.00	2.412E+00	2.412E+00	0.543E+00	22.52	
BI-212	1.41E+10Y	1.00	4.923E-01	4.923E-01	3.850E-01	78.20	
PB-212	1.41E+10Y	1.00	3.168E-01	3.168E-01	1.003E-01	31.67	
BI-214	1600.00Y	1.00	8.431E-01	8.431E-01	1.558E-01	18.48	
PB-214	1600.00Y	1.00	8.752E-01	8.752E-01	1.971E-01	22.52	
RN-219	7.04E+08Y	1.00	5.659E-01	5.659E-01	9.124E-01	161.25	
RN-222	1600.00Y	1.00	8.431E-01	8.431E-01	1.558E-01	18.48	
RA-224	1.41E+10Y	1.00	1.470E+00	1.470E+00	0.936E+00	63.67	
RA-226	1600.00Y	1.00	8.752E-01	8.752E-01	1.971E-01	22.52	
TH-228	1.41E+10Y	1.00	3.168E-01	3.168E-01	1.003E-01	31.67	
TH-230	7.54E+04Y	1.00	8.752E-01	8.752E-01	1.971E-01	22.52	
TH-234	4.47E+09Y	1.00	1.192E+00	1.192E+00	1.505E+00	126.21	
U-234	2.45E+05Y	1.00	8.752E-01	8.752E-01	1.971E-01	22.52	
U-238	4.47E+09Y	1.00	1.192E+00	1.192E+00	1.505E+00	126.21	
AM-243	7370.00Y	1.00	1.252E-01	1.252E-01	0.685E-01	54.73	
CM-247	1.56E+07Y	1.00	5.187E-02	5.187E-02	8.364E-02	161.25	
ANH-511	1.00E+09Y	1.00	5.146E-02	5.146E-02	8.290E-02	161.09	
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	Total Activity :		2.248E+01	2.271E+01			

Grand Total Activity : 2.248E+01 2.271E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299007 Acquisition date : 30-JUL-2024 11:16:04

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.56	3	86	2.25	61.22	57	9	8.32E-04	****	1.14E-01	
2	79.72	27	66	1.27	159.44	142	23	7.65E-03	****	6.63E+00	T
2	94.53	22	27	1.13	189.04	181	11	6.30E-03	99.4	7.43E+00	T
0	112.72	24	44	1.01	225.38	222	7	6.92E-03	98.1	7.66E+00	T
7	115.63	18	16	1.58	231.21	229	11	5.24E-03	66.4	7.66E+00	T
7	118.48	14	21	1.43	236.90	229	11	3.95E-03	****	7.64E+00	T
3	185.71	77	44	1.47	371.25	367	16	2.20E-02	41.6	6.43E+00	T
3	188.49	23	45	1.63	376.81	367	16	6.49E-03	****	6.37E+00	
0	197.39	24	38	1.56	394.58	390	10	6.86E-03	****	6.21E+00	T
0	308.59	31	17	2.96	616.83	611	14	8.91E-03	65.8	4.63E+00	T
0	328.29	10	27	1.44	656.20	652	8	2.78E-03	****	4.43E+00	T
0	338.15	31	24	2.75	675.91	670	9	8.89E-03	69.9	4.34E+00	T
0	407.25	11	15	2.10	814.05	810	9	3.33E-03	****	3.79E+00	
0	451.10	14	12	1.43	901.72	896	10	4.08E-03	****	3.51E+00	
3	463.24	14	15	1.99	925.99	918	29	3.96E-03	****	3.44E+00	T
3	470.38	20	13	2.00	940.25	918	29	5.94E-03	83.1	3.40E+00	
0	601.85	23	0	3.59	1203.13	1198	11	6.67E-03	40.8	2.79E+00	T
0	664.46	9	5	0.87	1328.34	1326	6	2.78E-03	98.0	2.56E+00	T
0	753.20	18	11	3.39	1505.82	1496	17	5.22E-03	97.6	2.29E+00	T
0	788.90	5	1	1.04	1577.23	1574	6	1.57E-03	****	2.20E+00	T
0	795.53	10	3	1.00	1590.48	1587	7	3.06E-03	81.6	2.18E+00	T
0	814.59	5	4	1.31	1628.61	1622	9	1.58E-03	****	2.14E+00	T
0	899.87	14	0	1.75	1799.20	1794	10	4.17E-03	51.6	1.95E+00	T
0	911.34	27	7	1.19	1822.15	1815	14	7.91E-03	57.4	1.93E+00	T
0	981.87	8	1	0.64	1963.27	1960	7	2.37E-03	84.5	1.80E+00	
0	1000.86	3	5	0.55	2001.26	1997	7	7.69E-04	****	1.77E+00	T
0	1239.08	4	7	0.67	2478.00	2474	8	1.27E-03	****	1.45E+00	T
0	1290.58	6	4	0.91	2581.07	2577	7	1.88E-03	****	1.40E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:19:38.02

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299007.CNF;1  *
* Acquisition date : 30-JUL-2024 11:16:04 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:13.81     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:20:00 Nuclide Library : SOLID           *
* Sample ID        : G674299007           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0047E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.256E-01
SR-82	2.958E-01
CD-109	5.819E-01
SN-126	5.599E-02
BA-137M	2.716E-02
CS-137	2.869E-02
TL-208	1.792E-02
BI-210	1.338E+00
PB-210	1.338E+00
BI-211	1.501E-01
BI-212	3.069E-01
PB-212	4.165E-02
BI-214	6.050E-02
PB-214	5.457E-02
RN-219	2.470E-01
RN-222	6.050E-02
RA-224	4.463E-01
RA-226	5.457E-02
TH-228	4.165E-02
TH-230	5.457E-02
TH-234	7.317E-01
U-234	5.457E-02
U-238	7.317E-01
AM-243	2.963E-02
CM-247	2.267E-02
ANH-511	2.265E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.178E-01	NOT IDENT.
NA-22	4.031E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.220E-02	NOT IDENT.
SC-46	3.331E-02	FAIL ABUN

V-48	1.433E-01	NOT IDENT.
CR-51	4.707E-01	NOT IDENT.
MN-52	2.479E+00	NOT IDENT.
MN-54	2.336E-02	NOT IDENT.
CO-56	3.008E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	1.828E-02	NOT IDENT.
CO-58	2.277E-02	NOT IDENT.
FE-59	6.886E-02	FAIL ABUN
CO-60	3.016E-02	NOT IDENT.
ZN-65	7.319E-02	NOT IDENT.
GE-68	8.034E-01	NOT IDENT.
AS-73	4.813E-01	NOT IDENT.
AS-74	1.219E-01	NOT IDENT.
SE-75	3.128E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
RB-83	5.268E-02	NOT IDENT.
RB-84	6.976E-02	NOT IDENT.
KR-85	5.761E+00	NOT IDENT.
SR-85	3.725E-02	NOT IDENT.
RB-86	9.184E-01	NOT IDENT.
Y-88	3.962E-02	NOT IDENT.
Y-91	1.365E+01	NOT IDENT.
NB-94	2.363E-02	NOT IDENT.
NB-95	4.681E-02	NOT IDENT.
NB-95M	1.016E-01	NOT IDENT.
ZR-95	4.060E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.118E-02	FAIL ABUN
RH-102	4.614E-02	NOT IDENT.
RU-103	3.639E-02	FAIL ABUN
RH-106	2.351E-01	NOT IDENT.
RU-106	2.351E-01	NOT IDENT.
AG-108M	1.743E-02	NOT IDENT.
AG-110	4.879E-01	NOT IDENT.
AG-110M	4.634E-02	NOT IDENT.
SN-113	3.281E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	9.835E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.215E-02	NOT IDENT.
SB-124	6.744E-02	NOT IDENT.
SB-125	6.855E-02	FAIL ABUN
TE-125M	7.705E+00	NOT IDENT.
I-126	3.456E-01	FAIL ABUN
SB-126	2.996E-01	NOT IDENT.
SB-127	2.453E+01	NOT IDENT.
I-131	4.078E-01	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.741E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	3.539E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	1.707E-01	NOT IDENT.
LA-138	5.204E-02	FAIL ABUN
CE-139	2.748E-02	NOT IDENT.
BA-140	5.744E-01	NOT IDENT.
LA-140	1.560E-01	FAIL ABUN
CE-141	6.045E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.435E-01	FAIL ABUN
PM-144	2.752E-02	NOT IDENT.
PR-144	2.080E+00	NOT IDENT.
PM-146	2.766E-02	NOT IDENT.
ND-147	1.280E+00	NOT IDENT.
PM-147	4.572E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.767E-02	FAIL ABUN
EU-152	5.944E-02	NOT IDENT.
GD-153	5.047E-02	NOT IDENT.
EU-154	1.120E-01	NOT IDENT.
EU-155	6.676E-02	FAIL ABUN
TB-160	1.055E-01	FAIL ABUN
HO-166M	3.799E-02	FAIL ABUN

TM-171	7.718E+00	NOT IDENT.
HF-172	1.400E-01	FAIL ABUN
LU-172	4.399E-02	FAIL ABUN
LU-176	1.741E-02	FAIL ABUN
HF-181	4.282E-02	NOT IDENT.
TA-182	9.032E-02	FAIL ABUN
RE-183	1.187E-01	NOT IDENT.
RE-184	1.223E-01	NOT IDENT.
W-188	5.279E+00	FAIL ABUN
IR-192	2.636E-02	FAIL ABUN
HG-203	3.846E-02	NOT IDENT.
TL-204	2.862E+00	FAIL ABUN
BI-207	3.100E-02	FAIL ABUN
PB-211	4.834E-01	NOT IDENT.
BI-213	6.651E-02	NOT IDENT.
RA-223	4.697E-01	FAIL ABUN
AC-225	1.334E+00	NOT IDENT.
AC-227	1.881E-01	FAIL ABUN
TH-227	1.881E-01	FAIL ABUN
AC-228	2.021E-01	FAIL ABUN
RA-228	2.021E-01	FAIL ABUN
TH-229	4.231E-01	FAIL ABUN
PA-231	3.803E-01	NOT IDENT.
TH-231	4.697E-01	FAIL ABUN
TH-232	2.021E-01	FAIL ABUN
PA-233	3.916E-02	NOT IDENT.
PA-234	1.834E-01	FAIL ABUN
PA-234M	3.990E+00	FAIL ABUN
U-235	1.573E-01	FAIL ABUN
NP-237	3.916E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.745E-01	FAIL ABUN
PU-239	2.535E+02	NOT IDENT.
AM-241	8.163E-02	NOT IDENT.
CM-243	6.655E-02	NOT IDENT.
BK-247	5.024E-02	FAIL ABUN
CF-249	2.791E-02	NOT IDENT.
CF-251	9.171E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:19:42.69

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299007.CNF;1  *
* Acquisition date : 30-JUL-2024 11:16:04 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:13.81     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:20:00 Nuclide Library : SOLID           *
* Sample ID        : G674299007           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0047E+02 GRAM *
*                                         Quantity Err(%) : 1.9906E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.606E+00	7.257E-01	7.257E-01
SR-82	2.637E-01	5.010E-01	5.010E-01
CD-109	1.191E+00	8.463E-01	8.463E-01
SN-126	1.132E-01	8.018E-02	8.018E-02
BA-137M	2.844E-02	4.720E-02	4.720E-02
CS-137	3.004E-02	4.986E-02	4.986E-02
TL-208	7.787E-02	5.422E-02	5.422E-02
BI-210	3.014E+00	3.946E+00	3.946E+00
PB-210	3.014E+00	3.946E+00	3.946E+00
BI-211	2.412E+00	5.690E-01	5.690E-01
BI-212	4.923E-01	3.803E-01	3.803E-01
PB-212	3.168E-01	1.021E-01	1.021E-01
BI-214	8.431E-01	1.698E-01	1.698E-01
PB-214	8.752E-01	2.060E-01	2.060E-01
RN-219	5.659E-01	8.979E-01	8.979E-01
RN-222	8.431E-01	1.698E-01	1.698E-01
RA-224	1.470E+00	9.263E-01	9.263E-01
RA-226	8.752E-01	2.060E-01	2.060E-01
TH-228	3.168E-01	1.021E-01	1.021E-01
TH-230	8.752E-01	2.060E-01	2.060E-01
TH-234	1.192E+00	1.499E+00	1.499E+00
U-234	8.752E-01	2.060E-01	2.060E-01
U-238	1.192E+00	1.499E+00	1.499E+00
AM-243	1.252E-01	6.778E-02	6.778E-02
CM-247	5.187E-02	8.251E-02	8.251E-02
ANH-511	5.146E-02	8.136E-02	8.136E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	9.944E-02	3.642E-01	3.669E-01	NOT IDENT.
NA-22	2.957E-02	4.168E-02	4.376E-02	NOT IDENT.
NA-24	-3.067E+14	5.932E+14	6.091E+14	SHORT HLIF
AL-26	-9.209E-03	3.200E-02	3.227E-02	NOT IDENT.

SC-46	1.447E-02	3.558E-02	3.617E-02	FAIL ABUN
V-48	1.570E-01	1.436E-01	1.601E-01	NOT IDENT.
CR-51	-2.284E-02	5.535E-01	5.536E-01	NOT IDENT.
MN-52	8.303E-01	2.778E+00	2.803E+00	NOT IDENT.
MN-54	-2.085E-02	3.183E-02	3.319E-02	NOT IDENT.
CO-56	-2.190E-02	3.994E-02	4.114E-02	FAIL ABUN
MN-56	-1.000E+41	1.356E+41	0.000E+00	SHORT HLIF
CO-57	1.142E-02	2.110E-02	2.172E-02	NOT IDENT.
CO-58	1.139E-02	2.554E-02	2.605E-02	NOT IDENT.
FE-59	-1.519E-02	8.630E-02	8.657E-02	FAIL ABUN
CO-60	2.840E-03	3.549E-02	3.552E-02	NOT IDENT.
ZN-65	3.658E-02	8.717E-02	8.871E-02	NOT IDENT.
GE-68	-2.258E-01	1.016E+00	1.021E+00	NOT IDENT.
AS-73	4.122E-01	5.333E-01	5.648E-01	NOT IDENT.
AS-74	-5.476E-02	1.610E-01	1.629E-01	NOT IDENT.
SE-75	1.495E-03	3.994E-02	3.994E-02	NOT IDENT.
BR-77	1.247E+04	1.292E+04	1.409E+04	SHORT HLIF
RB-83	-4.250E-03	6.447E-02	6.450E-02	NOT IDENT.
RB-84	-1.849E-02	8.568E-02	8.609E-02	NOT IDENT.
KR-85	4.176E-01	7.686E+00	7.688E+00	NOT IDENT.
SR-85	2.617E-03	4.971E-02	4.973E-02	NOT IDENT.
RB-86	-5.581E-01	1.251E+00	1.276E+00	NOT IDENT.
Y-88	1.497E-02	4.307E-02	4.359E-02	NOT IDENT.
Y-91	-4.847E+00	1.786E+01	1.799E+01	NOT IDENT.
NB-94	6.720E-03	2.759E-02	2.775E-02	NOT IDENT.
NB-95	3.680E-03	5.744E-02	5.746E-02	NOT IDENT.
NB-95M	3.798E-03	1.291E-01	1.291E-01	NOT IDENT.
ZR-95	5.811E-03	5.366E-02	5.372E-02	NOT IDENT.
NB-97	-1.000E+41	7.602E+41	0.000E+00	SHORT HLIF
ZR-97	1.062E+14	2.199E+14	2.251E+14	SHORT HLIF
MO-99	-1.008E+03	1.170E+03	1.255E+03	SHORT HLIF
TC-99M	-1.441E+38	1.845E+39	0.000E+00	SHORT HLIF
RH-101	-1.138E-02	2.758E-02	2.805E-02	FAIL ABUN
RH-102	2.363E-02	5.190E-02	5.298E-02	NOT IDENT.
RU-103	-2.590E-02	4.885E-02	5.023E-02	FAIL ABUN
RH-106	1.261E-01	2.592E-01	2.654E-01	NOT IDENT.
RU-106	1.261E-01	2.592E-01	2.654E-01	NOT IDENT.
AG-108M	-2.679E-02	2.584E-02	2.852E-02	NOT IDENT.
AG-110	1.672E-01	6.145E-01	6.191E-01	NOT IDENT.
AG-110M	4.012E-02	4.650E-02	4.990E-02	NOT IDENT.
SN-113	3.384E-03	3.827E-02	3.830E-02	NOT IDENT.
CD-115	-1.145E+03	3.419E+03	3.458E+03	SHORT HLIF
SN-117M	-3.139E-03	1.231E-01	1.231E-01	NOT IDENT.
SB-122	0.000E+00	2.130E+02	0.000E+00	SHORT HLIF
TE-123M	1.071E-02	2.624E-02	2.668E-02	NOT IDENT.
SB-124	-4.695E-02	1.044E-01	1.066E-01	NOT IDENT.
SB-125	-5.405E-02	9.006E-02	9.330E-02	FAIL ABUN
TE-125M	-4.773E+00	1.093E+01	1.114E+01	NOT IDENT.
I-126	-5.066E-01	6.379E-01	6.776E-01	FAIL ABUN
SB-126	-6.130E-02	3.840E-01	3.850E-01	NOT IDENT.
SB-127	-3.639E+00	3.115E+01	3.119E+01	NOT IDENT.
I-131	5.503E-02	4.720E-01	4.727E-01	FAIL ABUN
I-132	1.000E+41	1.615E+42	0.000E+00	SHORT HLIF
TE-132	9.766E+00	3.057E+01	3.088E+01	SHORT HLIF
BA-133	3.716E-02	4.287E-02	4.603E-02	FAIL ABUN
I-133	8.796E+09	1.770E+10	1.814E+10	SHORT HLIF
CS-134	4.289E-02	3.455E-02	3.959E-02	FAIL ABUN
I-135	1.498E+36	3.460E+36	0.000E+00	SHORT HLIF
CS-136	-5.373E-02	2.173E-01	2.186E-01	NOT IDENT.
LA-138	-2.315E-03	6.190E-02	6.191E-02	FAIL ABUN
CE-139	2.254E-02	3.219E-02	3.376E-02	NOT IDENT.
BA-140	3.674E-01	6.244E-01	6.460E-01	NOT IDENT.
LA-140	-2.694E-02	2.028E-01	2.031E-01	FAIL ABUN
CE-141	-3.676E-02	7.979E-02	8.150E-02	NOT IDENT.
CE-143	1.608E+06	1.442E+06	1.614E+06	SHORT HLIF
CE-144	6.685E-03	1.766E-01	1.766E-01	FAIL ABUN
PM-144	3.623E-03	3.315E-02	3.319E-02	NOT IDENT.
PR-144	2.738E-01	2.506E+00	2.509E+00	NOT IDENT.
PM-146	3.175E-03	3.612E-02	3.615E-02	NOT IDENT.
ND-147	6.106E-01	1.418E+00	1.444E+00	NOT IDENT.
PM-147	-6.687E+01	6.213E+02	6.220E+02	NOT IDENT.
PM-149	3.052E+03	3.199E+04	3.202E+04	SHORT HLIF
EU-150	-1.412E-02	2.584E-02	2.661E-02	FAIL ABUN
EU-152	-5.301E-02	7.840E-02	8.196E-02	NOT IDENT.
GD-153	-7.808E-03	6.578E-02	6.587E-02	NOT IDENT.
EU-154	7.993E-02	1.162E-01	1.216E-01	NOT IDENT.
EU-155	-3.636E-02	8.596E-02	8.751E-02	FAIL ABUN
TB-160	-1.759E-02	1.273E-01	1.275E-01	FAIL ABUN

HO-166M	-2.320E-02	5.267E-02	5.370E-02	FAIL ABUN
TM-171	-7.245E+00	1.003E+01	1.054E+01	NOT IDENT.
HF-172	1.041E-01	1.612E-01	1.679E-01	FAIL ABUN
LU-172	5.169E-03	5.079E-02	5.084E-02	FAIL ABUN
LU-176	6.458E-03	1.936E-02	1.957E-02	FAIL ABUN
HF-181	6.632E-03	5.017E-02	5.026E-02	NOT IDENT.
TA-182	-7.001E-02	1.335E-01	1.372E-01	FAIL ABUN
RE-183	-1.561E-02	1.433E-01	1.434E-01	NOT IDENT.
RE-184	-2.695E-02	1.708E-01	1.712E-01	NOT IDENT.
W-188	-5.415E-01	6.938E+00	6.942E+00	FAIL ABUN
IR-192	-2.246E-02	3.418E-02	3.565E-02	FAIL ABUN
HG-203	-1.613E-02	4.652E-02	4.708E-02	NOT IDENT.
TL-204	1.403E+00	3.550E+00	3.606E+00	FAIL ABUN
BI-207	-3.953E-03	3.784E-02	3.788E-02	FAIL ABUN
PB-211	8.390E-01	4.158E-01	5.621E-01	NOT IDENT.
BI-213	-3.268E-02	8.545E-02	8.671E-02	NOT IDENT.
RA-223	4.830E-03	6.112E-01	6.112E-01	FAIL ABUN
AC-225	-1.333E+00	1.695E+00	1.798E+00	NOT IDENT.
AC-227	1.133E-02	2.161E-01	2.162E-01	FAIL ABUN
TH-227	1.133E-02	2.161E-01	2.162E-01	FAIL ABUN
AC-228	4.025E-01	2.308E-01	2.936E-01	FAIL ABUN
RA-228	4.025E-01	2.308E-01	2.936E-01	FAIL ABUN
TH-229	3.045E-01	6.039E-01	6.193E-01	FAIL ABUN
PA-231	-2.792E-02	4.467E-01	4.469E-01	NOT IDENT.
TH-231	4.830E-03	6.112E-01	6.112E-01	FAIL ABUN
TH-232	4.025E-01	2.308E-01	2.936E-01	FAIL ABUN
PA-233	-7.151E-03	5.243E-02	5.253E-02	NOT IDENT.
PA-234	-2.421E-02	2.233E-01	2.236E-01	FAIL ABUN
PA-234M	1.310E+00	4.531E+00	4.569E+00	FAIL ABUN
U-235	9.843E-02	1.840E-01	1.893E-01	FAIL ABUN
NP-237	-7.151E-03	5.243E-02	5.253E-02	FAIL ABUN
NP-238	1.693E+03	9.025E+03	9.057E+03	SHORT HLIF
NP-239	2.263E-01	1.489E-01	1.805E-01	FAIL ABUN
PU-239	9.339E+01	3.025E+02	3.054E+02	NOT IDENT.
AM-241	1.831E-02	9.561E-02	9.597E-02	NOT IDENT.
CM-243	2.477E-02	7.824E-02	7.903E-02	NOT IDENT.
BK-247	-4.850E-03	6.551E-02	6.555E-02	FAIL ABUN
CF-249	-1.574E-02	3.551E-02	3.621E-02	NOT IDENT.
CF-251	-2.261E-02	1.181E-01	1.185E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	31.0621	85.43	70.9173	131.20	43.3797
45.60	35.1413	86.55	72.4803	133.02	36.6196
46.54	35.2290	86.79	72.5110	133.52	38.9343
49.72	0.0000	86.94	72.5302	136.00	35.6153
51.35	39.6272	87.09	72.5493	136.47	25.2908
51.87	45.6299	87.57	72.6111	140.51	0.0000
52.39	45.6882	88.03	71.2448	143.76	35.9729
52.97	30.8335	88.34	66.2936	144.24	37.1563
53.44	28.8771	88.47	66.3088	145.44	43.0263
54.07	36.8991	89.96	49.3246	152.43	31.6699
57.36	0.0000	1093.63	66.5590	153.25	55.1835
57.53	48.2606	91.11	71.6268	323.87	30.5628
57.98	43.2780	92.59	49.5474	156.02	42.4094
59.27	44.4149	93.35	49.6109	158.56	36.6299
59.32	44.4200	94.56	49.7120	159.00	30.7377
59.54	44.4421	94.65	49.7197	162.33	34.4185
60.96	48.6367	94.67	49.7211	162.66	39.1810
61.17	48.6594	94.87	23.0669	163.33	42.7758
62.93	53.9365	97.43	27.5083	165.86	39.3260
63.29	53.9786	98.43	31.5413	176.31	34.9667
63.58	54.0126	98.44	31.5417	176.60	41.0085
64.28	54.0942	99.53	34.8665	177.52	39.8426
66.73	43.7747	100.11	30.5368	181.07	0.0000
67.24	36.9745	102.03	35.0066	181.52	35.5696
125.81	45.2323	103.18	31.7827	184.41	37.3015
67.75	49.3517	103.37	31.7922	143.76	38.9775
68.89	54.9646	105.21	45.0774	193.51	34.3843
69.67	66.0635	105.31	45.0846	197.03	36.9731
70.82	45.5244	106.12	35.2324	198.01	37.0097
70.83	45.5254	106.47	34.1499	201.83	21.4659
72.81	49.8615	109.28	45.7299	203.43	43.4141
72.87	49.8673	111.00	35.4961	205.31	34.7958
74.66	50.0435	111.76	0.0000	210.85	39.9829
74.82	50.0592	114.06	26.7438	215.65	31.7996
74.97	50.0739	116.30	0.0000	218.12	34.3906
77.11	50.2808	116.74	26.8491	222.11	30.3102
78.74	50.4368	119.76	23.9701	227.09	23.6840
79.69	50.5269	121.12	42.0291	227.38	16.9216
80.03	50.5587	121.22	33.0275	228.16	0.0000
80.12	50.5675	121.78	28.5464	228.18	20.3208
80.19	50.5741	122.06	30.4366	116.74	20.3208
80.57	50.6100	122.92	33.8594	235.69	30.6892
81.00	50.6503	123.07	33.8665	235.96	30.6969
81.07	50.6569	265.00	33.8956	238.63	33.3343
81.75	60.5829	125.81	32.8631	238.98	0.0000
82.47	63.4850	127.23	45.4167	240.99	33.4037
83.79	48.7887	127.91	42.0501	242.00	33.4335
84.00	53.0514	129.30	42.1297	244.70	37.3797

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	21.6258	344.28	23.1903	563.25	12.5889
252.80	22.4985	345.93	12.2582	564.24	0.0000
254.15	0.0000	351.06	22.3647	569.33	13.6771
256.23	28.6388	351.93	22.3779	946.00	14.7303
260.90	0.0000	355.39	0.0000	569.70	13.6792
264.66	19.6646	356.01	18.2317	583.19	6.3530
264.80	20.9775	364.49	15.9835	584.27	11.1234
265.00	20.9814	366.42	0.0000	595.83	12.7793
269.46	29.8323	372.51	13.2312	427.87	14.4075
270.03	29.8461	375.05	18.9327	602.52	0.0000
271.23	32.9506	377.52	14.2221	604.72	0.0000
273.65	38.2970	356.01	19.0389	607.14	19.2664
276.40	26.4703	388.16	22.9082	609.32	19.2847
277.37	31.7893	388.63	21.0055	610.33	20.9012
277.60	29.1456	391.69	14.3491	614.28	20.6156
278.00	29.1543	264.66	12.9856	618.01	12.9063
279.20	34.4884	401.81	12.9946	620.36	8.6130
279.54	36.2671	402.40	12.9993	621.93	7.5415
279.70	37.1559	404.85	0.0000	630.19	0.0000
280.46	30.9818	410.95	15.9699	631.29	10.8175
283.69	30.1733	413.71	13.5728	633.25	15.1570
284.31	31.9636	414.70	13.5807	634.78	14.0839
285.41	25.7709	423.72	25.3557	635.95	15.1746
285.90	0.0000	427.09	23.4512	636.99	7.5907
287.50	25.8128	427.87	25.4171	657.50	6.5630
290.67	18.7382	433.94	22.5629	657.76	9.8456
293.27	0.0000	439.40	16.7292	657.90	0.0000
351.93	17.9081	440.45	16.7392	661.66	13.1489
295.96	17.9183	453.88	11.9053	664.57	0.0000
879.38	26.9305	463.37	8.9756	666.33	16.4679
299.98	26.9592	468.07	8.9987	666.50	19.7629
300.09	24.2655	473.00	12.0303	667.71	0.0000
300.13	24.2661	475.06	16.5601	677.62	12.1329
301.36	31.4852	476.78	13.0592	685.70	8.8529
302.85	22.6945	477.60	14.0701	692.65	0.0000
256.23	22.9932	482.18	13.0968	695.00	12.2183
304.85	20.2931	487.02	11.1103	696.49	12.2255
306.78	15.3547	492.35	0.0000	696.51	12.2260
308.46	15.3737	497.08	17.2608	697.00	12.2282
311.90	17.6794	505.52	16.8263	697.30	12.2295
316.51	25.4713	507.63	0.0000	697.49	8.8949
319.41	25.5248	511.00	17.3846	702.65	8.9131
320.08	27.3608	514.00	19.9713	706.68	10.0433
321.04	30.1177	514.00	19.9713	711.68	12.2994
323.87	23.3200	520.40	11.3021	720.70	12.3428
325.23	23.3423	520.69	0.0000	721.93	0.0000
328.76	23.4009	522.65	0.0000	722.78	5.3904
333.37	17.9528	527.90	0.0000	722.91	3.3691
333.97	26.2497	528.26	12.3779	723.31	11.7937
334.37	27.6392	529.59	8.2575	724.19	11.7980
338.28	22.1709	529.87	0.0000	727.33	7.8750
338.32	22.1719	531.02	8.2633	733.00	7.8921
311.90	22.2046	537.26	9.3248	735.93	5.6435
340.48	22.2046	546.56	0.0000	333.97	7.9055
340.55	22.2056	552.55	14.6124	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	11.3228	949.00	5.4673	1384.29	2.0476
747.24	6.8015	667.71	0.0000	1408.01	6.1765
748.06	3.4019	962.31	8.2351	1434.09	5.1776
752.31	9.0859	964.08	9.1553	1435.80	5.1794
753.82	9.0911	966.17	17.4060	1457.56	0.0000
756.73	3.4130	911.20	6.4183	1460.82	3.1251
756.80	3.4130	983.53	2.9473	1489.16	5.2408
884.68	15.9699	984.45	0.0000	1505.03	5.2588
765.81	17.1222	1274.44	5.9172	1584.12	5.3473
766.42	12.5594	1001.03	10.3701	1596.21	3.2164
766.84	15.9870	1002.74	7.4109	1620.50	3.2324
772.60	0.0000	1004.73	7.4153	1621.92	5.3891
776.52	5.1572	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	4.3708
778.90	3.4410	1028.54	0.0000	1750.46	0.0000
783.70	3.4471	1037.84	9.3604	1764.49	1.7732
788.74	11.5116	1038.76	0.0000	1063.66	0.0000
792.07	6.9153	631.29	6.5689	1771.35	1.1097
795.86	5.1934	1048.07	6.5719	1791.20	0.0000
810.06	5.2200	1049.04	5.6345	1808.65	3.3525
810.29	1.7401	1050.41	5.6367	1810.72	0.0000
344.28	1.7402	1063.66	5.6583	1836.06	2.2462
810.76	1.7404	1077.00	7.5732		
815.77	3.4871	1077.34	6.6270		
1048.07	4.1884	1085.87	8.5408		
832.01	11.3976	1093.63	5.7063		
834.85	12.2863	1099.45	5.7158		
835.71	11.4123	1112.07	4.7797		
836.80	0.0000	1112.84	5.7371		
846.75	0.0000	1115.54	6.1238		
846.77	11.4559	1120.29	8.6232		
856.80	10.6110	1120.55	8.6237		
860.56	11.5099	1221.41	6.1336		
871.09	6.2196	1129.67	9.6057		
873.19	8.8913	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	8.0189	1173.23	4.8593		
880.51	9.8046	1177.95	3.8923		
881.60	8.9163	1189.05	7.8071		
883.24	8.0291	1204.77	5.8795		
884.68	5.3553	1221.41	5.9048		
889.28	5.3633	1231.02	4.9326		
894.76	7.1641	1235.36	11.0612		
898.04	8.6063	1238.28	6.3254		
900.72	8.6139	1260.41	0.0000		
903.28	8.6209	1271.87	7.9736		
911.20	8.1030	1274.44	4.9866		
912.08	8.1052	1274.54	4.9869		
923.98	0.0000	1291.59	1.6024		
926.50	10.8574	1298.22	0.0000		
929.11	11.7717	1312.11	6.0392		
935.54	9.9812	1332.49	5.0574		
937.49	9.9872	1362.66	0.0000		
944.13	7.2788	1365.19	4.0771		
946.00	6.3726	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:20:10.45

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299008.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM21.CNF;850
                                        Background date  : 28-JUL-2024 11:27:08
Sample date      : 26-JUN-2024 09:25:00 Acquisition date : 30-JUL-2024 11:16:32
Sample ID        : G674299008           Sample quantity  : 8.94400E+01 GRAM
Detector name    : GAM21                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.25  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2636542              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.80	39	57	1.74	93.93	90	9	1.07E-02	38.6	
2	10	68.02	272	344	2.18	136.34	122	27	7.57E-02	16.8	4.44E+00
3	10	70.10	270	353	2.20	140.49	122	27	7.49E-02	16.8	
4	0	77.39	67	87	0.96	155.06	152	7	1.85E-02	27.0	
5	0	87.26	37	38	1.01	174.77	172	7	1.04E-02	31.2	
6	0	93.25	22	58	1.16	186.74	182	7	5.98E-03	63.6	
7	0	149.51*	15	22	1.35	299.18	297	7	4.24E-03	60.5	
8	0	186.44*	33	34	0.94	372.99	367	10	9.04E-03	39.1	
9	0	238.42	85	32	1.12	476.87	470	11	2.36E-02	17.0	
10	0	242.97	9	36	0.95	485.96	483	7	2.39E-03	123.1	
11	0	278.37	23	21	2.10	556.70	550	12	6.45E-03	44.5	
12	0	295.68	37	29	1.04	591.30	587	8	1.03E-02	30.1	
13	0	316.34	22	12	3.82	632.60	628	11	6.20E-03	38.0	
14	0	337.95	25	4	1.20	675.78	672	7	6.81E-03	23.8	
15	0	347.18	11	12	1.65	694.23	690	7	3.01E-03	61.5	
16	0	352.12*	62	15	1.44	704.11	700	9	1.73E-02	17.6	
17	0	583.52	18	9	0.80	1166.66	1159	10	5.09E-03	36.9	
18	0	597.71	9	7	1.08	1195.03	1189	10	2.42E-03	67.6	
19	0	608.93*	43	9	0.99	1217.47	1211	12	1.19E-02	21.6	
20	0	726.71	18	3	1.19	1452.93	1446	12	4.97E-03	30.6	
21	0	903.92	7	3	1.34	1807.28	1799	11	1.92E-03	60.7	
22	0	911.34	13	7	1.12	1822.12	1816	10	3.47E-03	49.8	
23	0	995.44	17	0	5.41	1990.29	1984	13	4.72E-03	24.3	
24	0	1000.46	6	0	0.50	2000.33	1997	6	1.67E-03	40.8	
25	0	1460.48*	26	4	2.23	2920.51	2913	13	7.28E-03	25.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:20:11

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299008.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : RXF2
Sample date : 26-JUN-2024 09:25:00 Acquisition date : 30-JUL-2024 11:16:32
Sample ID : G674299008 Sample quantity : 89.440 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA21 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.25 0.0%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
TL-208	277.37	HG-203	279.20

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.377E-01	2.041E+00	2.041E+00	50.86	OK
CD-109	88.03	3.70*	1.131E+01	6.885E-01	7.247E-01	62.40	OK
SN-126	64.28	9.60	1.178E+01	----- Line Not Found		-----	Absent
	86.94	8.90	1.131E+01	2.862E-01	2.862E-01	62.40	OK
	87.57	37.00*	1.131E+01	6.885E-02	6.885E-02	62.40	OK
HG-203	70.83	3.69	1.174E+01	4.789E+00	7.954E+00	33.60	OK
	72.87	6.19	1.170E+01	----- Line Not Found		-----	Absent
	279.20	81.56*	5.319E+00	3.597E-02	5.973E-02	103.19	OK
TL-204	68.89	0.47	1.177E+01	3.798E+01	3.864E+01	33.67	OK
	70.82	0.79*	1.174E+01	2.240E+01	2.279E+01	33.60	OK
	80.03	0.28	1.154E+01	----- Line Not Found		-----	Absent
	82.47	0.07	1.147E+01	----- Line Not Found		-----	Absent
TL-208	277.37	6.60	5.337E+00	----- Line Not Found		-----	<<INT Reject
	583.19	85.00*	2.482E+00	6.743E-02	6.743E-02	73.79	OK
	860.56	12.50	1.626E+00	----- Line Not Found		-----	Absent
BI-210	46.54	4.25*	1.113E+01	6.271E-01	6.290E-01	77.26	OK
PB-210	46.54	4.25*	1.113E+01	6.271E-01	6.290E-01	77.26	OK
BI-211	72.87	1.23	1.170E+01	----- Line Not Found		-----	Absent
	351.06	12.92*	4.230E+00	8.805E-01	8.805E-01	35.12	OK
BI-212	727.33	6.67*	1.954E+00	1.066E+00	1.066E+00	61.26	OK
	1620.50	1.47	8.483E-01	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	1.167E+01	----- Line Not Found		-----	Absent
	77.11	17.10	1.161E+01	2.588E-01	2.588E-01	54.09	OK
	238.63	43.60*	6.126E+00	2.456E-01	2.456E-01	33.98	OK
	300.09	3.30	4.953E+00	----- Line Not Found		-----	Absent
PB-214	74.82	5.80	1.167E+01	----- Line Not Found		-----	Absent
	77.11	9.70	1.161E+01	4.562E-01	4.562E-01	54.09	OK
	87.09	3.41	1.131E+01	7.471E-01	7.471E-01	62.40	OK
	242.00	7.25	6.024E+00	1.525E-01	1.525E-01	246.21	OK
	295.22	18.42	5.023E+00	3.115E-01	3.116E-01	60.27	OK
	351.93	35.60*	4.230E+00	3.196E-01	3.196E-01	35.12	OK
RA-226	74.82	5.80	1.167E+01	----- Line Not Found		-----	Absent
	77.11	9.70	1.161E+01	4.562E-01	4.562E-01	54.09	OK
	87.09	3.41	1.131E+01	7.471E-01	7.471E-01	62.40	OK
	242.00	7.25	6.024E+00	1.525E-01	1.525E-01	246.21	OK
	295.22	18.42	5.023E+00	3.115E-01	3.116E-01	60.27	OK
	351.93	35.60*	4.230E+00	3.196E-01	3.196E-01	35.12	OK
TH-228	74.82	10.28	1.167E+01	----- Line Not Found		-----	Absent
	77.11	17.10	1.161E+01	2.588E-01	2.588E-01	54.09	OK
	238.63	43.60*	6.126E+00	2.456E-01	2.456E-01	33.98	OK
	300.09	3.30	4.953E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	1.167E+01	----- Line Not Found		-----	Absent
	77.11	9.70	1.161E+01	4.562E-01	4.562E-01	54.09	OK
	87.09	3.41	1.131E+01	7.471E-01	7.471E-01	62.40	OK
	242.00	7.25	6.024E+00	1.525E-01	1.525E-01	246.21	OK
	295.22	18.42	5.023E+00	3.115E-01	3.115E-01	60.27	OK
	351.93	35.60*	4.230E+00	3.196E-01	3.196E-01	35.12	OK
U-234	74.82	5.80	1.167E+01	----- Line Not Found		-----	Absent
	77.11	9.70	1.161E+01	4.562E-01	4.562E-01	54.09	OK

Sample ID : G674299008 Acquisition date : 30-JUL-2024 11:16:32

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	87.09	3.41	1.131E+01	7.471E-01	7.471E-01	62.40	OK
	242.00	7.25	6.024E+00	1.525E-01	1.525E-01	246.21	OK
	295.22	18.42	5.023E+00	3.115E-01	3.115E-01	60.27	OK
	351.93	35.60*	4.230E+00	3.196E-01	3.196E-01	35.12	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:20:12.67

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299008.CNF;1  *
* Acquisition date : 30-JUL-2024 11:16:32 Sensitivity     : 3.000           *
* Detector ID      : GAM21                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.25     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:25:00 Analyst initials: RXF2            *
* Sample ID        : G674299008           Sample Quantity : 8.9440E+01 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-JUL-2024 06:28:17 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM21_CAN.CNF;26            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.041E+00	1.017E+00	8.961E-01
CD-109	7.247E-01	4.432E-01	6.044E-01
SN-126	6.885E-02	4.210E-02	5.731E-02
HG-203	5.973E-02	6.041E-02	7.438E-02
TL-204	2.279E+01	7.502E+00	4.365E+00
TL-208	6.743E-02	4.876E-02	3.367E-02
BI-210	6.290E-01	4.762E-01	4.385E-01
PB-210	6.290E-01	4.762E-01	4.385E-01
BI-211	8.805E-01	3.031E-01	3.221E-01
BI-212	1.066E+00	6.398E-01	5.616E-01
PB-212	2.456E-01	8.180E-02	7.481E-02
PB-214	3.196E-01	1.100E-01	1.019E-01
RA-226	3.196E-01	1.100E-01	1.019E-01
TH-228	2.456E-01	8.180E-02	7.481E-02
TH-230	3.196E-01	1.100E-01	1.019E-01
U-234	3.196E-01	1.100E-01	1.019E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-2.886E-01	3.792E-01	6.296E-01	NOT IDENT.
NA-22	1.483E-02	3.945E-02	9.506E-02	NOT IDENT.
NA-24	0.000E+00	1.324E+15	0.000E+00	SHORT HLIF
AL-26	3.060E-03	4.421E-02	1.053E-01	NOT IDENT.
SC-46	6.961E-03	3.985E-02	8.969E-02	NOT IDENT.
V-48	2.723E-02	1.817E-01	3.850E-01	NOT IDENT.
CR-51	-2.832E-01	4.761E-01	7.415E-01	NOT IDENT.
MN-52	-5.223E-02	2.160E+00	5.243E+00	NOT IDENT.
MN-54	-9.559E-03	3.414E-02	6.754E-02	NOT IDENT.
CO-56	-3.738E-02	3.547E-02	5.007E-02	NOT IDENT.
MN-56	0.000E+00	9.490E+40	0.000E+00	SHORT HLIF
CO-57	4.050E-03	1.468E-02	2.812E-02	NOT IDENT.
CO-58	-1.953E-02	4.388E-02	8.313E-02	NOT IDENT.
FE-59	6.254E-02	8.970E-02	2.419E-01	NOT IDENT.

CO-60	-1.614E-02	3.597E-02	6.597E-02	NOT IDENT.
ZN-65	-9.066E-02	1.106E-01	1.772E-01	NOT IDENT.
GE-68	5.921E-01	9.431E-01	2.551E+00	NOT IDENT.
AS-73	3.775E-02	1.291E-01	2.563E-01	NOT IDENT.
AS-74	1.106E-01	2.030E-01	4.029E-01	NOT IDENT.
SE-75	-3.276E-04	3.482E-02	6.269E-02	FAIL ABUN
BR-77	0.000E+00	3.217E+03	0.000E+00	SHORT HLIF
SR-82	6.263E-03	4.436E-01	9.668E-01	NOT IDENT.
RB-83	-6.995E-02	7.843E-02	1.240E-01	NOT IDENT.
RB-84	3.053E-02	1.181E-01	2.531E-01	NOT IDENT.
KR-85	-5.538E+00	8.820E+00	1.488E+01	NOT IDENT.
SR-85	-3.599E-02	5.703E-02	9.619E-02	NOT IDENT.
RB-86	-2.927E-01	1.398E+00	2.846E+00	NOT IDENT.
Y-88	2.807E-02	6.700E-02	1.659E-01	NOT IDENT.
Y-91	-6.250E+00	2.227E+01	4.362E+01	NOT IDENT.
NB-94	-7.874E-03	3.171E-02	5.804E-02	NOT IDENT.
NB-95	-4.062E-03	5.172E-02	1.043E-01	NOT IDENT.
NB-95M	2.001E-02	9.681E-02	1.689E-01	NOT IDENT.
ZR-95	8.993E-02	8.273E-02	2.066E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.384E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.326E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.229E+39	0.000E+00	SHORT HLIF
RH-101	1.649E-03	1.975E-02	3.644E-02	NOT IDENT.
RH-102	-1.719E-02	5.222E-02	9.436E-02	NOT IDENT.
RU-103	-1.162E-02	5.027E-02	9.387E-02	FAIL ABUN
RH-106	-2.085E-03	3.253E-01	6.292E-01	NOT IDENT.
RU-106	-2.085E-03	3.253E-01	6.292E-01	NOT IDENT.
AG-108M	-2.224E-02	2.499E-02	4.069E-02	NOT IDENT.
AG-110	3.657E-02	6.429E-01	1.304E+00	NOT IDENT.
AG-110M	-1.926E-02	5.863E-02	1.119E-01	NOT IDENT.
SN-113	-1.391E-02	3.660E-02	6.778E-02	NOT IDENT.
CD-115	0.000E+00	3.776E+03	0.000E+00	SHORT HLIF
SN-117M	4.747E-02	7.672E-02	1.553E-01	NOT IDENT.
SB-122	0.000E+00	2.062E+02	0.000E+00	SHORT HLIF
TE-123M	-1.172E-02	1.882E-02	3.145E-02	NOT IDENT.
SB-124	3.224E-02	6.302E-02	2.336E-01	NOT IDENT.
SB-125	1.672E-02	6.727E-02	1.408E-01	NOT IDENT.
TE-125M	-5.488E+00	5.783E+00	9.453E+00	NOT IDENT.
I-126	2.429E-01	6.061E-01	1.269E+00	NOT IDENT.
SB-126	4.387E-02	4.066E-01	7.460E-01	NOT IDENT.
SB-127	-6.015E+00	3.943E+01	7.401E+01	NOT IDENT.
I-131	3.056E-01	4.724E-01	1.014E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.182E+01	0.000E+00	SHORT HLIF
BA-133	1.452E-02	2.638E-02	5.544E-02	NOT IDENT.
I-133	0.000E+00	2.278E+10	0.000E+00	SHORT HLIF
CS-134	4.246E-02	4.232E-02	1.024E-01	NOT IDENT.
I-135	0.000E+00	3.303E+36	0.000E+00	SHORT HLIF
CS-136	-1.905E-01	2.967E-01	5.103E-01	NOT IDENT.
BA-137M	-1.130E-02	2.569E-02	4.569E-02	NOT IDENT.
CS-137	-1.194E-02	2.714E-02	4.827E-02	NOT IDENT.
LA-138	1.309E-02	4.318E-02	1.205E-01	NOT IDENT.
CE-139	-5.777E-03	2.083E-02	3.644E-02	NOT IDENT.
BA-140	-1.192E-01	6.634E-01	1.255E+00	NOT IDENT.
LA-140	-5.365E-02	2.760E-01	5.990E-01	NOT IDENT.
CE-141	-4.455E-02	5.397E-02	8.770E-02	NOT IDENT.
CE-143	0.000E+00	1.353E+06	0.000E+00	SHORT HLIF
CE-144	6.302E-03	1.218E-01	2.254E-01	NOT IDENT.
PM-144	-1.984E-02	4.066E-02	6.883E-02	NOT IDENT.
PR-144	-1.500E+00	3.073E+00	5.203E+00	NOT IDENT.
PM-146	-2.395E-02	4.078E-02	7.074E-02	NOT IDENT.
ND-147	1.058E+00	1.756E+00	3.785E+00	NOT IDENT.
PM-147	3.544E+02	4.374E+02	8.789E+02	NOT IDENT.
PM-149	0.000E+00	2.608E+04	0.000E+00	SHORT HLIF
EU-150	1.567E-02	1.975E-02	4.108E-02	FAIL ABUN
EU-152	-2.684E-02	7.082E-02	1.164E-01	NOT IDENT.
GD-153	3.218E-03	3.617E-02	6.933E-02	FAIL ABUN
EU-154	4.162E-02	1.107E-01	2.667E-01	FAIL ABUN
EU-155	-4.997E-02	5.131E-02	8.108E-02	FAIL ABUN
TB-160	-1.041E-01	1.766E-01	3.157E-01	FAIL ABUN
HO-166M	3.826E-02	6.751E-02	1.431E-01	NOT IDENT.
TM-171	-1.008E+00	2.363E+00	4.343E+00	FAIL ABUN
HF-172	3.852E-02	1.070E-01	2.066E-01	FAIL ABUN
LU-172	-2.622E-04	4.321E-02	1.005E-01	FAIL ABUN
LU-176	8.365E-03	1.760E-02	3.749E-02	FAIL ABUN
HF-181	-1.036E-02	6.206E-02	1.154E-01	FAIL ABUN
TA-182	-2.634E-02	1.878E-01	3.818E-01	FAIL ABUN

RE-183	9.515E-05	4.928E-02	9.293E-02	FAIL ABUN
RE-184	1.780E-01	2.119E-01	4.577E-01	FAIL ABUN
W-188	-7.261E-01	6.069E+00	1.131E+01	NOT IDENT.
IR-192	6.116E-02	4.551E-02	6.570E-02	FAIL ABUN
BI-207	2.818E-02	3.069E-02	9.515E-02	NOT IDENT.
PB-211	3.107E-01	6.565E-01	1.347E+00	NOT IDENT.
BI-213	-1.813E-03	1.038E-01	1.983E-01	NOT IDENT.
BI-214	0.000E+00	1.306E-01	2.644E-01	FAIL ABUN
RN-219	9.849E-02	2.953E-01	6.213E-01	NOT IDENT.
RN-222	0.000E+00	1.306E-01	2.644E-01	FAIL ABUN
RA-223	5.980E-02	4.963E-01	9.850E-01	FAIL ABUN
RA-224	-1.022E-01	6.914E-01	9.385E-01	NOT IDENT.
AC-225	8.572E-02	1.519E+00	2.753E+00	NOT IDENT.
AC-227	-5.985E-02	1.748E-01	2.954E-01	NOT IDENT.
TH-227	-5.985E-02	1.748E-01	2.954E-01	NOT IDENT.
AC-228	2.464E-01	2.405E-01	4.763E-01	FAIL ABUN
RA-228	2.464E-01	2.405E-01	4.763E-01	FAIL ABUN
TH-229	6.996E-02	4.156E-01	7.515E-01	FAIL ABUN
PA-231	9.108E-03	3.684E-01	7.193E-01	NOT IDENT.
TH-231	5.980E-02	4.963E-01	9.850E-01	FAIL ABUN
TH-232	2.464E-01	2.405E-01	4.763E-01	FAIL ABUN
PA-233	-5.961E-04	4.572E-02	8.488E-02	NOT IDENT.
PA-234	4.895E-02	2.407E-01	5.591E-01	FAIL ABUN
PA-234M	4.016E+00	3.213E+00	1.006E+01	FAIL ABUN
TH-234	7.035E-01	5.440E-01	1.053E+00	FAIL ABUN
U-235	1.186E-01	1.116E-01	2.326E-01	FAIL ABUN
NP-237	-5.961E-04	4.572E-02	8.488E-02	FAIL ABUN
NP-238	0.000E+00	1.093E+04	0.000E+00	SHORT HLIF
U-238	7.035E-01	5.440E-01	1.053E+00	FAIL ABUN
NP-239	2.402E-02	1.202E-01	2.338E-01	FAIL ABUN
PU-239	4.524E+01	2.180E+02	4.059E+02	NOT IDENT.
AM-241	-1.977E-02	4.192E-02	6.950E-02	NOT IDENT.
AM-243	3.940E-02	3.301E-02	5.502E-02	NOT IDENT.
CM-243	1.098E-02	4.502E-02	8.812E-02	FAIL ABUN
BK-247	-6.670E-03	5.748E-02	1.012E-01	NOT IDENT.
CM-247	-6.069E-04	3.108E-02	6.044E-02	FAIL ABUN
CF-249	7.008E-03	3.154E-02	6.414E-02	NOT IDENT.
CF-251	5.483E-02	8.581E-02	1.680E-01	NOT IDENT.
ANH-511	-6.095E-02	4.623E-02	9.378E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:20:11.21

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	24	10.66*	9.377E-01	2.041E+00	2.041E+00	50.86
CD-109	88.03	34	3.70*	1.131E+01	6.885E-01	7.247E-01	62.40
SN-126	64.28	------	9.60	1.178E+01	------	Line Not Found	------
	86.94	34	8.90	1.131E+01	2.862E-01	2.862E-01	62.40
	87.57	34	37.00*	1.131E+01	6.885E-02	6.885E-02	62.40
HG-203	70.83	247	3.69	1.174E+01	4.789E+00	7.954E+00	33.60
	72.87	------	6.19	1.170E+01	------	Line Not Found	------
	279.20	21	81.56*	5.319E+00	4.142E-02	6.880E-02	89.07
TL-204	68.89	250	0.47	1.177E+01	3.798E+01	3.864E+01	33.67
	70.82	247	0.79*	1.174E+01	2.240E+01	2.279E+01	33.60
	80.03	------	0.28	1.154E+01	------	Line Not Found	------
	82.47	------	0.07	1.147E+01	------	Line Not Found	------
TL-208	277.37	21	6.60	5.319E+00	5.119E-01	5.119E-01	89.07
	583.19	17	85.00*	2.482E+00	6.743E-02	6.743E-02	73.79
	860.56	------	12.50	1.626E+00	------	Line Not Found	------
BI-210	46.54	35	4.25*	1.113E+01	6.271E-01	6.290E-01	77.26
PB-210	46.54	35	4.25*	1.113E+01	6.271E-01	6.290E-01	77.26
BI-211	72.87	------	1.23	1.170E+01	------	Line Not Found	------
	351.06	57	12.92*	4.230E+00	8.805E-01	8.805E-01	35.12
BI-212	727.33	17	6.67*	1.954E+00	1.066E+00	1.066E+00	61.26
	1620.50	------	1.47	8.483E-01	------	Line Not Found	------
PB-212	74.82	------	10.28	1.167E+01	------	Line Not Found	------
	77.11	61	17.10	1.161E+01	2.588E-01	2.588E-01	54.09
	238.63	78	43.60*	6.126E+00	2.456E-01	2.456E-01	33.98
	300.09	------	3.30	4.953E+00	------	Line Not Found	------
PB-214	74.82	------	5.80	1.167E+01	------	Line Not Found	------
	77.11	61	9.70	1.161E+01	4.562E-01	4.562E-01	54.09
	87.09	34	3.41	1.131E+01	7.471E-01	7.471E-01	62.40
	242.00	8	7.25	6.024E+00	1.525E-01	1.525E-01	246.21
	295.22	34	18.42	5.023E+00	3.115E-01	3.116E-01	60.27
	351.93	57	35.60*	4.230E+00	3.196E-01	3.196E-01	35.12
RA-226	74.82	------	5.80	1.167E+01	------	Line Not Found	------
	77.11	61	9.70	1.161E+01	4.562E-01	4.562E-01	54.09
	87.09	34	3.41	1.131E+01	7.471E-01	7.471E-01	62.40
	242.00	8	7.25	6.024E+00	1.525E-01	1.525E-01	246.21
	295.22	34	18.42	5.023E+00	3.115E-01	3.116E-01	60.27
	351.93	57	35.60*	4.230E+00	3.196E-01	3.196E-01	35.12
TH-228	74.82	------	10.28	1.167E+01	------	Line Not Found	------
	77.11	61	17.10	1.161E+01	2.588E-01	2.588E-01	54.09
	238.63	78	43.60*	6.126E+00	2.456E-01	2.456E-01	33.98
	300.09	------	3.30	4.953E+00	------	Line Not Found	------
TH-230	74.82	------	5.80	1.167E+01	------	Line Not Found	------
	77.11	61	9.70	1.161E+01	4.562E-01	4.562E-01	54.09
	87.09	34	3.41	1.131E+01	7.471E-01	7.471E-01	62.40
	242.00	8	7.25	6.024E+00	1.525E-01	1.525E-01	246.21
	295.22	34	18.42	5.023E+00	3.115E-01	3.115E-01	60.27
	351.93	57	35.60*	4.230E+00	3.196E-01	3.196E-01	35.12

Sample ID : G674299008 Acquisition date : 30-JUL-2024 11:16:32

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
U-234	74.82	------	5.80	1.167E+01	------	Line Not Found	------
	77.11	61	9.70	1.161E+01	4.562E-01	4.562E-01	54.09
	87.09	34	3.41	1.131E+01	7.471E-01	7.471E-01	62.40
	242.00	8	7.25	6.024E+00	1.525E-01	1.525E-01	246.21
	295.22	34	18.42	5.023E+00	3.115E-01	3.115E-01	60.27
	351.93	57	35.60*	4.230E+00	3.196E-01	3.196E-01	35.12

Flag: "*" = Keyline

Sample ID : G674299008 Acquisition date : 30-JUL-2024 11:16:32

Total number of lines in spectrum 25
Number of unidentified lines 2
Number of lines tentatively identified by NID 23 92.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.041E+00	2.041E+00	1.038E+00	50.86	
CD-109	461.40D	1.05	6.885E-01	7.247E-01	4.522E-01	62.40	
SN-126	2.30E+05Y	1.00	6.885E-02	6.885E-02	4.296E-02	62.40	
HG-203	46.59D	1.66	4.142E-02	6.880E-02	6.128E-02	89.07	
TL-204	3.78Y	1.02	2.240E+01	2.279E+01	0.766E+01	33.60	
TL-208	1.41E+10Y	1.00	6.743E-02	6.743E-02	4.976E-02	73.79	
BI-210	22.20Y	1.00	6.271E-01	6.290E-01	4.859E-01	77.26	
PB-210	22.20Y	1.00	6.271E-01	6.290E-01	4.859E-01	77.26	
BI-211	7.04E+08Y	1.00	8.805E-01	8.805E-01	3.092E-01	35.12	
BI-212	1.41E+10Y	1.00	1.066E+00	1.066E+00	0.653E+00	61.26	
PB-212	1.41E+10Y	1.00	2.456E-01	2.456E-01	0.835E-01	33.98	
PB-214	1600.00Y	1.00	3.196E-01	3.196E-01	1.122E-01	35.12	
RA-226	1600.00Y	1.00	3.196E-01	3.196E-01	1.122E-01	35.12	
TH-228	1.41E+10Y	1.00	2.456E-01	2.456E-01	0.835E-01	33.98	
TH-230	7.54E+04Y	1.00	3.196E-01	3.196E-01	1.122E-01	35.12	
U-234	2.45E+05Y	1.00	3.196E-01	3.196E-01	1.122E-01	35.12	
			---	---			
	Total Activity :		3.028E+01	3.073E+01			

Grand Total Activity : 3.028E+01 3.073E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299008 Acquisition date : 30-JUL-2024 11:16:32

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	93.25	20	54	1.16	186.74	182	7	5.98E-03	****	1.11E+01	T
0	149.51	14	20	1.35	299.18	297	7	4.24E-03	****	8.79E+00	
0	186.44	30	32	0.94	372.99	367	10	9.04E-03	78.2	7.51E+00	T
0	316.34	21	11	3.82	632.60	628	11	6.20E-03	75.9	4.71E+00	T
0	337.95	23	3	1.20	675.78	672	7	6.81E-03	47.7	4.41E+00	T
0	347.18	10	11	1.65	694.23	690	7	3.01E-03	****	4.29E+00	T
0	597.71	8	7	1.08	1195.03	1189	10	2.42E-03	****	2.42E+00	
0	608.93	40	8	0.99	1217.47	1211	12	1.19E-02	43.2	2.37E+00	T
0	903.92	6	3	1.34	1807.28	1799	11	1.92E-03	****	1.54E+00	T
0	911.34	12	7	1.12	1822.12	1816	10	3.47E-03	99.6	1.53E+00	T
0	995.44	16	0	5.41	1990.29	1984	13	4.72E-03	48.5	1.39E+00	T
0	1000.46	6	0	0.50	2000.33	1997	6	1.67E-03	81.6	1.38E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:20:22.57

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299008.CNF;1  *
* Acquisition date : 30-JUL-2024 11:16:32 Sensitivity     : 3.000           *
* Detector ID      : GAM21                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.25     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:25:00 Nuclide Library : SOLID           *
* Sample ID        : G674299008           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 8.9440E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-JUL-2024 06:28:17 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM21_CAN.CNF;26            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.358E-01
CD-109	2.742E-01
SN-126	2.600E-02
HG-203	3.292E-02
TL-204	2.061E+00
TL-208	1.153E-02
BI-210	1.957E-01
PB-210	1.957E-01
BI-211	1.407E-01
BI-212	1.948E-01
PB-212	3.323E-02
PB-214	4.353E-02
RA-226	4.353E-02
TH-228	3.323E-02
TH-230	4.352E-02
U-234	4.352E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	2.606E-01	NOT IDENT.
NA-22	3.683E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.796E-02	NOT IDENT.
SC-46	3.538E-02	NOT IDENT.
V-48	1.576E-01	NOT IDENT.
CR-51	3.139E-01	NOT IDENT.
MN-52	1.815E+00	NOT IDENT.
MN-54	2.658E-02	NOT IDENT.
CO-56	1.582E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.263E-02	NOT IDENT.
CO-58	3.250E-02	NOT IDENT.
FE-59	9.402E-02	NOT IDENT.
CO-60	2.193E-02	NOT IDENT.

ZN-65	6.879E-02	NOT IDENT.
GE-68	9.784E-01	NOT IDENT.
AS-73	1.157E-01	NOT IDENT.
AS-74	1.719E-01	NOT IDENT.
SE-75	2.721E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	3.796E-01	NOT IDENT.
RB-83	5.035E-02	NOT IDENT.
RB-84	1.055E-01	NOT IDENT.
KR-85	6.532E+00	NOT IDENT.
SR-85	4.221E-02	NOT IDENT.
RB-86	1.063E+00	NOT IDENT.
Y-88	6.428E-02	NOT IDENT.
Y-91	1.613E+01	NOT IDENT.
NB-94	2.349E-02	NOT IDENT.
NB-95	4.337E-02	NOT IDENT.
NB-95M	7.396E-02	NOT IDENT.
ZR-95	8.740E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.650E-02	NOT IDENT.
RH-102	3.826E-02	NOT IDENT.
RU-103	3.934E-02	FAIL ABUN
RH-106	2.628E-01	NOT IDENT.
RU-106	2.628E-01	NOT IDENT.
AG-108M	1.672E-02	NOT IDENT.
AG-110	5.267E-01	NOT IDENT.
AG-110M	4.523E-02	NOT IDENT.
SN-113	2.833E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	6.897E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	1.381E-02	NOT IDENT.
SB-124	7.393E-02	NOT IDENT.
SB-125	5.933E-02	NOT IDENT.
TE-125M	4.131E+00	NOT IDENT.
I-126	5.361E-01	NOT IDENT.
SB-126	3.015E-01	NOT IDENT.
SB-127	3.023E+01	NOT IDENT.
I-131	4.432E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.339E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.359E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	1.910E-01	NOT IDENT.
BA-137M	1.708E-02	NOT IDENT.
CS-137	1.804E-02	NOT IDENT.
LA-138	4.230E-02	NOT IDENT.
CE-139	1.620E-02	NOT IDENT.
BA-140	5.197E-01	NOT IDENT.
LA-140	2.122E-01	NOT IDENT.
CE-141	3.852E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.011E-01	NOT IDENT.
PM-144	2.855E-02	NOT IDENT.
PR-144	2.158E+00	NOT IDENT.
PM-146	3.002E-02	NOT IDENT.
ND-147	1.626E+00	NOT IDENT.
PM-147	3.992E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.793E-02	FAIL ABUN
EU-152	4.844E-02	NOT IDENT.
GD-153	3.080E-02	FAIL ABUN
EU-154	1.033E-01	FAIL ABUN
EU-155	3.551E-02	FAIL ABUN
TB-160	1.253E-01	FAIL ABUN
HO-166M	6.120E-02	NOT IDENT.
TM-171	1.959E+00	FAIL ABUN
HF-172	9.286E-02	FAIL ABUN
LU-172	3.559E-02	FAIL ABUN
LU-176	1.629E-02	FAIL ABUN
HF-181	4.976E-02	FAIL ABUN
TA-182	1.454E-01	FAIL ABUN
RE-183	4.260E-02	FAIL ABUN

RE-184	1.917E-01	FAIL ABUN
W-188	4.891E+00	NOT IDENT.
IR-192	2.890E-02	FAIL ABUN
BI-207	3.596E-02	NOT IDENT.
PB-211	5.931E-01	NOT IDENT.
BI-213	8.631E-02	NOT IDENT.
BI-214	1.219E-01	FAIL ABUN
RN-219	2.649E-01	NOT IDENT.
RN-222	1.219E-01	FAIL ABUN
RA-223	4.317E-01	FAIL ABUN
RA-224	4.245E-01	NOT IDENT.
AC-225	1.220E+00	NOT IDENT.
AC-227	1.273E-01	NOT IDENT.
TH-227	1.273E-01	NOT IDENT.
AC-228	2.098E-01	FAIL ABUN
RA-228	2.098E-01	FAIL ABUN
TH-229	3.412E-01	FAIL ABUN
PA-231	3.174E-01	NOT IDENT.
TH-231	4.317E-01	FAIL ABUN
TH-232	2.098E-01	FAIL ABUN
PA-233	3.637E-02	NOT IDENT.
PA-234	2.160E-01	FAIL ABUN
PA-234M	4.067E+00	FAIL ABUN
TH-234	5.012E-01	FAIL ABUN
U-235	1.051E-01	FAIL ABUN
NP-237	3.637E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	5.012E-01	FAIL ABUN
NP-239	1.031E-01	FAIL ABUN
PU-239	1.846E+02	NOT IDENT.
AM-241	3.212E-02	NOT IDENT.
AM-243	2.610E-02	NOT IDENT.
CM-243	3.907E-02	FAIL ABUN
BK-247	4.392E-02	NOT IDENT.
CM-247	2.602E-02	FAIL ABUN
CF-249	2.765E-02	NOT IDENT.
CF-251	7.574E-02	NOT IDENT.
ANH-511	4.300E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:20:27.96

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299008.CNF;1  *
* Acquisition date : 30-JUL-2024 11:16:32 Sensitivity     : 3.000           *
* Detector ID      : GAM21                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.25     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:25:00 Nuclide Library : SOLID           *
* Sample ID        : G674299008           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 8.9440E+01 GRAM *
*                                         Quantity Err(%) : 1.1181E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-JUL-2024 06:28:17 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM21_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.041E+00	1.037E+00	1.037E+00
CD-109	7.247E-01	4.490E-01	4.490E-01
SN-126	6.885E-02	4.250E-02	4.250E-02
HG-203	5.973E-02	6.067E-02	6.067E-02
TL-204	2.279E+01	7.859E+00	7.859E+00
TL-208	6.743E-02	4.928E-02	4.928E-02
BI-210	6.290E-01	4.800E-01	4.800E-01
PB-210	6.290E-01	4.800E-01	4.800E-01
BI-211	8.805E-01	3.128E-01	3.128E-01
BI-212	1.066E+00	6.529E-01	6.529E-01
PB-212	2.456E-01	8.824E-02	8.824E-02
PB-214	3.196E-01	1.134E-01	1.134E-01
RA-226	3.196E-01	1.134E-01	1.134E-01
TH-228	2.456E-01	8.824E-02	8.824E-02
TH-230	3.196E-01	1.134E-01	1.134E-01
U-234	3.196E-01	1.134E-01	1.134E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-2.886E-01	3.802E-01	4.018E-01	NOT IDENT.
NA-22	1.483E-02	3.948E-02	4.004E-02	NOT IDENT.
NA-24	-1.863E+13	1.324E+15	1.324E+15	SHORT HLIF
AL-26	3.060E-03	4.421E-02	4.423E-02	NOT IDENT.
SC-46	6.961E-03	3.986E-02	3.998E-02	NOT IDENT.
V-48	2.723E-02	1.817E-01	1.821E-01	NOT IDENT.
CR-51	-2.832E-01	4.767E-01	4.935E-01	NOT IDENT.
MN-52	-5.223E-02	2.160E+00	2.160E+00	NOT IDENT.
MN-54	-9.559E-03	3.416E-02	3.443E-02	NOT IDENT.
CO-56	-3.738E-02	3.580E-02	3.957E-02	NOT IDENT.
MN-56	-1.000E+41	9.578E+40	0.000E+00	SHORT HLIF
CO-57	4.050E-03	1.469E-02	1.481E-02	NOT IDENT.
CO-58	-1.953E-02	4.395E-02	4.483E-02	NOT IDENT.
FE-59	6.254E-02	9.001E-02	9.433E-02	NOT IDENT.

CO-60	-1.614E-02	3.600E-02	3.673E-02	NOT IDENT.
ZN-65	-9.066E-02	1.109E-01	1.182E-01	NOT IDENT.
GE-68	5.921E-01	9.452E-01	9.822E-01	NOT IDENT.
AS-73	3.775E-02	1.294E-01	1.305E-01	NOT IDENT.
AS-74	1.106E-01	2.035E-01	2.095E-01	NOT IDENT.
SE-75	-3.276E-04	3.482E-02	3.482E-02	FAIL ABUN
BR-77	9.662E+03	1.012E+04	1.102E+04	SHORT HLIF
SR-82	6.263E-03	4.436E-01	4.436E-01	NOT IDENT.
RB-83	-6.995E-02	7.926E-02	8.531E-02	NOT IDENT.
RB-84	3.053E-02	1.181E-01	1.189E-01	NOT IDENT.
KR-85	-5.538E+00	8.836E+00	9.182E+00	NOT IDENT.
SR-85	-3.599E-02	5.714E-02	5.940E-02	NOT IDENT.
RB-86	-2.927E-01	1.399E+00	1.405E+00	NOT IDENT.
Y-88	2.807E-02	6.704E-02	6.822E-02	NOT IDENT.
Y-91	-6.250E+00	2.227E+01	2.245E+01	NOT IDENT.
NB-94	-7.874E-03	3.172E-02	3.192E-02	NOT IDENT.
NB-95	-4.062E-03	5.172E-02	5.176E-02	NOT IDENT.
NB-95M	2.001E-02	9.685E-02	9.727E-02	NOT IDENT.
ZR-95	8.993E-02	8.346E-02	9.279E-02	NOT IDENT.
NB-97	-1.000E+41	1.611E+42	0.000E+00	SHORT HLIF
ZR-97	-2.605E+14	2.397E+14	2.669E+14	SHORT HLIF
MO-99	1.835E+03	1.346E+03	1.580E+03	SHORT HLIF
TC-99M	-3.585E+38	1.230E+39	0.000E+00	SHORT HLIF
RH-101	1.649E-03	1.975E-02	1.976E-02	NOT IDENT.
RH-102	-1.719E-02	5.226E-02	5.284E-02	NOT IDENT.
RU-103	-1.162E-02	5.028E-02	5.056E-02	FAIL ABUN
RH-106	-2.085E-03	3.253E-01	3.253E-01	NOT IDENT.
RU-106	-2.085E-03	3.253E-01	3.253E-01	NOT IDENT.
AG-108M	-2.224E-02	2.507E-02	2.700E-02	NOT IDENT.
AG-110	3.657E-02	6.430E-01	6.432E-01	NOT IDENT.
AG-110M	-1.926E-02	5.869E-02	5.932E-02	NOT IDENT.
SN-113	-1.391E-02	3.662E-02	3.715E-02	NOT IDENT.
CD-115	8.188E+02	3.777E+03	3.795E+03	SHORT HLIF
SN-117M	4.747E-02	7.713E-02	8.004E-02	NOT IDENT.
SB-122	-7.034E+01	2.064E+02	2.088E+02	SHORT HLIF
TE-123M	-1.172E-02	1.892E-02	1.964E-02	NOT IDENT.
SB-124	3.224E-02	6.307E-02	6.473E-02	NOT IDENT.
SB-125	1.672E-02	6.729E-02	6.771E-02	NOT IDENT.
TE-125M	-5.488E+00	5.819E+00	6.323E+00	NOT IDENT.
I-126	2.429E-01	6.068E-01	6.166E-01	NOT IDENT.
SB-126	4.387E-02	4.066E-01	4.071E-01	NOT IDENT.
SB-127	-6.015E+00	3.944E+01	3.954E+01	NOT IDENT.
I-131	3.056E-01	4.732E-01	4.928E-01	NOT IDENT.
I-132	1.000E+41	2.906E+41	0.000E+00	SHORT HLIF
TE-132	-1.231E+00	3.182E+01	3.182E+01	SHORT HLIF
BA-133	1.452E-02	2.641E-02	2.721E-02	NOT IDENT.
I-133	4.164E+09	2.280E+10	2.288E+10	SHORT HLIF
CS-134	4.246E-02	4.265E-02	4.675E-02	NOT IDENT.
I-135	2.202E+36	3.721E+36	0.000E+00	SHORT HLIF
CS-136	-1.905E-01	2.978E-01	3.099E-01	NOT IDENT.
BA-137M	-1.130E-02	2.572E-02	2.622E-02	NOT IDENT.
CS-137	-1.194E-02	2.718E-02	2.770E-02	NOT IDENT.
LA-138	1.309E-02	4.320E-02	4.360E-02	NOT IDENT.
CE-139	-5.777E-03	2.088E-02	2.104E-02	NOT IDENT.
BA-140	-1.192E-01	6.636E-01	6.657E-01	NOT IDENT.
LA-140	-5.365E-02	2.760E-01	2.771E-01	NOT IDENT.
CE-141	-4.455E-02	5.441E-02	5.800E-02	NOT IDENT.
CE-143	4.996E+05	1.354E+06	1.372E+06	SHORT HLIF
CE-144	6.302E-03	1.218E-01	1.218E-01	NOT IDENT.
PM-144	-1.984E-02	4.072E-02	4.170E-02	NOT IDENT.
PR-144	-1.500E+00	3.078E+00	3.152E+00	NOT IDENT.
PM-146	-2.395E-02	4.086E-02	4.226E-02	NOT IDENT.
ND-147	1.058E+00	1.759E+00	1.822E+00	NOT IDENT.
PM-147	3.544E+02	4.400E+02	4.682E+02	NOT IDENT.
PM-149	1.436E+04	2.617E+04	2.696E+04	SHORT HLIF
EU-150	1.567E-02	1.980E-02	2.102E-02	FAIL ABUN
EU-152	-2.684E-02	7.087E-02	7.190E-02	NOT IDENT.
GD-153	3.218E-03	3.618E-02	3.620E-02	FAIL ABUN
EU-154	4.162E-02	1.108E-01	1.124E-01	FAIL ABUN
EU-155	-4.997E-02	5.165E-02	5.635E-02	FAIL ABUN
TB-160	-1.041E-01	1.772E-01	1.833E-01	FAIL ABUN
HO-166M	3.826E-02	6.768E-02	6.984E-02	NOT IDENT.
TM-171	-1.008E+00	2.365E+00	2.409E+00	FAIL ABUN
HF-172	3.852E-02	1.073E-01	1.087E-01	FAIL ABUN
LU-172	-2.622E-04	4.321E-02	4.321E-02	FAIL ABUN
LU-176	8.365E-03	1.762E-02	1.802E-02	FAIL ABUN
HF-181	-1.036E-02	6.207E-02	6.225E-02	FAIL ABUN
TA-182	-2.634E-02	1.879E-01	1.882E-01	FAIL ABUN

RE-183	9.515E-05	4.928E-02	4.928E-02	FAIL ABUN
RE-184	1.780E-01	2.135E-01	2.281E-01	FAIL ABUN
W-188	-7.261E-01	6.070E+00	6.079E+00	NOT IDENT.
IR-192	6.116E-02	4.583E-02	5.349E-02	FAIL ABUN
BI-207	2.818E-02	3.084E-02	3.336E-02	NOT IDENT.
PB-211	3.107E-01	6.571E-01	6.719E-01	NOT IDENT.
BI-213	-1.813E-03	1.038E-01	1.038E-01	NOT IDENT.
BI-214	3.088E-01	1.348E-01	1.938E-01	FAIL ABUN
RN-219	9.849E-02	2.957E-01	2.990E-01	NOT IDENT.
RN-222	3.088E-01	1.348E-01	1.938E-01	FAIL ABUN
RA-223	5.980E-02	4.963E-01	4.971E-01	FAIL ABUN
RA-224	-1.022E-01	6.915E-01	6.931E-01	NOT IDENT.
AC-225	8.572E-02	1.519E+00	1.519E+00	NOT IDENT.
AC-227	-5.985E-02	1.751E-01	1.772E-01	NOT IDENT.
TH-227	-5.985E-02	1.751E-01	1.772E-01	NOT IDENT.
AC-228	2.464E-01	2.428E-01	2.670E-01	FAIL ABUN
RA-228	2.464E-01	2.428E-01	2.670E-01	FAIL ABUN
TH-229	6.996E-02	4.158E-01	4.170E-01	FAIL ABUN
PA-231	9.108E-03	3.684E-01	3.684E-01	NOT IDENT.
TH-231	5.980E-02	4.963E-01	4.971E-01	FAIL ABUN
TH-232	2.464E-01	2.428E-01	2.670E-01	FAIL ABUN
PA-233	-5.961E-04	4.572E-02	4.572E-02	NOT IDENT.
PA-234	4.895E-02	2.472E-01	2.482E-01	FAIL ABUN
PA-234M	4.016E+00	3.250E+00	3.720E+00	FAIL ABUN
TH-234	7.035E-01	5.672E-01	6.499E-01	FAIL ABUN
U-235	1.186E-01	1.131E-01	1.251E-01	FAIL ABUN
NP-237	-5.961E-04	4.572E-02	4.572E-02	FAIL ABUN
NP-238	3.150E+03	1.094E+04	1.103E+04	SHORT HLIF
U-238	7.035E-01	5.672E-01	6.499E-01	FAIL ABUN
NP-239	2.402E-02	1.202E-01	1.207E-01	FAIL ABUN
PU-239	4.524E+01	2.181E+02	2.191E+02	NOT IDENT.
AM-241	-1.977E-02	4.196E-02	4.289E-02	NOT IDENT.
AM-243	3.940E-02	3.317E-02	3.762E-02	NOT IDENT.
CM-243	1.098E-02	4.504E-02	4.531E-02	FAIL ABUN
BK-247	-6.670E-03	5.750E-02	5.758E-02	NOT IDENT.
CM-247	-6.069E-04	3.108E-02	3.108E-02	FAIL ABUN
CF-249	7.008E-03	3.155E-02	3.171E-02	NOT IDENT.
CF-251	5.483E-02	8.649E-02	8.995E-02	NOT IDENT.
ANH-511	-6.095E-02	4.661E-02	5.411E-02	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	25.4378	85.43	27.2659	131.20	26.8496
45.60	23.1156	86.55	32.1114	133.02	27.9496
46.54	23.2145	86.79	32.1334	133.52	24.9805
49.72	0.0000	86.94	32.1474	136.00	29.1252
51.35	20.5450	87.09	32.1611	136.47	25.1318
51.87	22.9656	87.57	32.2050	140.51	0.0000
52.39	34.9198	88.03	32.2471	143.76	15.2991
52.97	21.4794	88.34	34.6661	144.24	22.4596
53.44	24.7092	88.47	34.6788	145.44	28.6516
54.07	25.5717	89.96	36.0251	152.43	24.8859
57.36	0.0000	1093.63	36.0931	153.25	8.3079
57.53	32.4060	91.11	34.9355	323.87	12.4839
57.98	40.5777	92.59	31.7513	156.02	30.2700
59.27	47.8466	93.35	31.5140	158.56	10.4861
59.32	50.0310	94.56	13.3765	159.00	22.0382
59.54	59.8695	94.65	13.3797	162.33	24.2810
60.96	59.0946	94.67	13.3804	162.66	22.1827
61.17	59.1405	94.87	13.3876	163.33	24.3241
62.93	93.4191	97.43	20.2181	165.86	25.4941
63.29	93.5413	98.43	17.5068	176.31	28.1134
63.58	93.6391	98.44	17.5072	176.60	28.1269
64.28	93.8747	99.53	23.1010	177.52	19.5021
66.73	94.6894	100.11	16.6577	181.07	0.0000
67.24	94.8567	102.03	25.1094	181.52	24.7194
125.81	95.0006	103.18	17.7209	184.41	23.0088
67.75	95.0239	103.37	17.7293	143.76	23.0569
68.89	95.3946	105.21	26.2477	193.51	30.0083
69.67	95.6481	105.31	26.2541	197.03	27.9354
70.82	96.0153	106.12	24.4276	198.01	30.2151
70.83	96.0197	106.47	21.6276	201.83	36.0161
72.81	96.6481	109.28	28.4031	203.43	18.0510
72.87	96.6671	111.00	27.5696	205.31	19.2324
74.66	77.4385	111.76	0.0000	210.85	27.3710
74.82	99.8601	114.06	17.2358	215.65	28.7071
74.97	99.9079	116.30	0.0000	218.12	19.5888
77.11	80.6421	116.74	16.3793	222.11	18.5391
78.74	29.0507	119.76	23.2824	227.09	13.9991
79.69	30.3008	121.12	16.5419	227.38	14.0046
80.03	33.8316	121.22	21.4119	228.16	0.0000
80.12	33.8413	121.78	22.4129	228.18	21.0298
80.19	33.8484	122.06	22.4269	116.74	21.0298
80.57	36.2247	122.92	26.3771	235.69	14.1608
81.00	28.0813	123.07	26.3857	235.96	21.2487
81.07	28.0872	265.00	24.4640	238.63	21.3228
81.75	29.9038	125.81	21.6282	238.98	0.0000
82.47	22.0356	127.23	29.5830	240.99	33.2705
83.79	24.7760	127.91	33.5763	242.00	33.3141
84.00	24.7914	129.30	30.7039	244.70	22.2863

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	12.0554	344.28	11.9932	563.25	3.1583
252.80	14.4736	345.93	8.0081	564.24	0.0000
254.15	0.0000	351.06	16.0950	569.33	7.3979
256.23	16.9575	351.93	11.6337	946.00	9.5127
260.90	0.0000	355.39	0.0000	569.70	8.4567
264.66	14.6843	356.01	5.3900	583.19	1.5990
264.80	14.6869	364.49	9.9598	584.27	1.6001
265.00	15.9144	366.42	0.0000	595.83	6.4456
269.46	20.9216	372.51	9.1207	427.87	1.6161
270.03	20.9356	375.05	13.7125	602.52	0.0000
271.23	18.4987	377.52	9.1618	604.72	3.2401
273.65	21.4371	356.01	14.7412	607.14	2.1632
276.40	19.8511	388.16	11.0977	609.32	2.1660
277.37	19.8730	388.63	15.7283	610.33	1.6255
277.60	19.8784	391.69	12.0595	614.28	6.5171
278.00	19.8877	264.66	14.9567	618.01	11.9744
279.20	19.9150	401.81	8.4214	620.36	9.8108
279.54	23.2433	402.40	13.1065	621.93	8.7285
279.70	23.2473	404.85	13.1335	630.19	0.0000
280.46	16.6199	410.95	12.2579	631.29	8.7760
283.69	21.6852	413.71	12.2859	633.25	4.3929
284.31	24.2044	414.70	9.4584	634.78	4.3968
285.41	18.3844	423.72	12.3869	635.95	10.9993
285.90	0.0000	427.09	8.5988	636.99	8.8047
287.50	17.5901	427.87	7.6481	657.50	5.5670
290.67	15.1304	433.94	15.3708	657.76	5.5678
293.27	0.0000	439.40	12.5426	657.90	0.0000
351.93	17.7410	440.45	15.4499	661.66	5.5798
295.96	17.7551	453.88	16.5867	664.57	0.0000
879.38	15.2622	463.37	7.8618	666.33	6.7131
299.98	18.3423	468.07	4.9309	666.50	6.7136
300.09	18.6842	473.00	4.9489	667.71	0.0000
300.13	18.6851	475.06	5.9478	677.62	10.1320
301.36	18.7098	476.78	7.9404	685.70	7.9146
302.85	16.1843	477.60	14.8972	692.65	0.0000
256.23	18.7729	482.18	14.9469	695.00	6.8179
304.85	16.2191	487.02	13.9994	696.49	12.5093
306.78	10.2646	492.35	0.0000	696.51	12.5093
308.46	11.9965	497.08	11.0786	697.00	9.0999
311.90	9.0301	505.52	9.1183	697.30	6.8262
316.51	15.5544	507.63	0.0000	697.49	6.8267
319.41	10.4006	511.00	14.2380	702.65	7.9861
320.08	16.9125	514.00	25.4771	706.68	6.8599
321.04	18.2314	514.00	25.4771	711.68	6.8777
323.87	15.6720	520.40	14.3298	720.70	5.1823
325.23	21.7967	520.69	0.0000	721.93	0.0000
328.76	16.6242	522.65	0.0000	722.78	3.4586
333.37	8.4383	527.90	0.0000	722.91	3.4589
333.97	7.9155	528.26	8.2321	723.31	0.0000
334.37	10.5581	529.59	12.3594	724.19	3.4611
338.28	13.2486	529.87	0.0000	727.33	1.7333
338.32	13.2489	531.02	7.2165	733.00	4.6354
311.90	9.2939	537.26	9.3168	735.93	4.6424
340.48	9.2939	546.56	0.0000	333.97	10.4535
340.55	6.6389	552.55	5.2281	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	2.3309	949.00	3.8320	1384.29	1.1104
747.24	2.6262	667.71	0.0000	1408.01	2.2360
748.06	0.8757	962.31	6.7419	1434.09	1.8020
752.31	9.6535	964.08	2.8915	1435.80	0.9014
753.82	7.9041	966.17	4.8232	1457.56	0.0000
756.73	2.6385	911.20	2.8971	1460.82	3.0256
756.80	5.2773	983.53	5.8275	1489.16	2.7441
884.68	7.0610	984.45	0.0000	1505.03	2.7558
765.81	8.8342	1274.44	4.6852	1584.12	0.9378
766.42	8.8370	1001.03	3.1291	1596.21	2.8220
766.84	12.3743	1002.74	0.0000	1620.50	1.8929
772.60	0.0000	1004.73	3.9170	1621.92	1.8936
776.52	4.4400	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	0.0000
778.90	6.2233	1028.54	0.0000	1750.46	0.0000
783.70	5.3465	1037.84	4.9579	1764.49	1.9596
788.74	8.0390	1038.76	0.0000	1063.66	2.9432
792.07	5.3677	631.29	0.9948	1771.35	3.9254
795.86	3.5850	1048.07	6.9675	1791.20	0.0000
810.06	6.3153	1049.04	5.9744	1808.65	1.9795
810.29	6.3160	1050.41	2.9886	1810.72	0.0000
344.28	7.2188	1063.66	0.0000	1836.06	1.9917
810.76	7.2200	1077.00	4.0237		
815.77	5.4274	1077.34	1.0060		
1048.07	5.4344	1085.87	2.0183		
832.01	6.3792	1093.63	2.0239		
834.85	6.3873	1099.45	1.0140		
835.71	8.2156	1112.07	4.0742		
836.80	0.0000	1112.84	0.0000		
846.75	0.0000	1115.54	10.1978		
846.77	6.4217	1120.29	3.0645		
856.80	3.6859	1120.55	3.0646		
860.56	4.6150	1221.41	8.1748		
871.09	11.1271	1129.67	7.1735		
873.19	8.3529	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	9.3060	1173.23	3.1203		
880.51	8.3795	1177.95	3.1252		
881.60	6.5204	1189.05	5.2280		
883.24	3.7286	1204.77	4.2039		
884.68	8.3944	1221.41	4.2266		
889.28	3.7383	1231.02	5.2997		
894.76	9.3674	1235.36	7.4298		
898.04	4.5026	1238.28	5.3119		
900.72	4.5078	1260.41	0.0000		
903.28	9.0252	1271.87	3.2210		
911.20	9.0554	1274.44	2.1490		
912.08	9.0586	1274.54	2.1492		
923.98	0.0000	1291.59	2.1605		
926.50	4.7464	1298.22	0.0000		
929.11	4.7514	1312.11	6.5222		
935.54	4.7639	1332.49	3.2811		
937.49	6.6749	1362.66	0.0000		
944.13	5.7369	1365.19	4.4172		
946.00	2.8705	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:20:55.26

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*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299009.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM22.CNF;678
                                         Background date  : 28-JUL-2024 11:28:18
Sample date      : 26-JUN-2024 09:28:00  Acquisition date : 30-JUL-2024 11:17:17
Sample ID        : G674299009            Sample quantity  : 1.13770E+02 GRAM
Detector name    : GAM22                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:04.85  0.1%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	41.65	41	757	1.52	83.82	81	7	1.13E-02	113.2	
2	0	63.44*	131	658	1.26	127.39	123	9	3.65E-02	36.7	
3	5	74.72	312	591	1.23	149.95	146	15	8.68E-02	14.3	1.10E+00
4	5	77.06	825	831	1.61	154.63	146	15	2.29E-01	7.6	
5	0	83.52	104	704	0.86	167.56	162	9	2.90E-02	46.9	
6	0	87.13	234	480	1.36	174.77	172	6	6.49E-02	16.2	
7	0	93.14*	326	974	1.38	186.80	181	13	9.05E-02	21.3	
8	0	143.79*	137	504	3.06	288.07	283	10	3.80E-02	32.0	
9	0	153.72	34	433	1.26	307.92	305	8	9.57E-03	105.8	
10	0	185.90*	813	644	1.56	372.28	365	14	2.26E-01	7.6	
11	0	220.49	77	285	1.25	441.45	437	9	2.14E-02	41.2	
12	1	238.67*	626	393	1.80	477.81	469	23	1.74E-01	7.5	2.13E+00
13	1	242.10	797	346	1.62	484.66	469	23	2.21E-01	5.7	
14	0	259.21	78	223	1.87	518.88	516	8	2.18E-02	35.0	
15	0	270.17	136	317	2.44	540.79	536	11	3.79E-02	26.6	
16	0	295.29*	1702	431	1.65	591.04	584	15	4.73E-01	3.6	
17	0	299.91	38	222	1.65	600.28	598	8	1.06E-02	69.2	
18	0	332.29	14	182	1.44	665.03	665	8	3.89E-03	168.3	
19	0	338.40*	171	235	1.72	677.25	672	12	4.74E-02	19.6	
20	0	352.02*	2989	411	1.68	704.48	695	18	8.30E-01	2.4	
21	0	374.99	18	171	0.43	750.41	743	10	4.92E-03	141.4	
22	0	418.42	17	99	0.71	837.27	836	7	4.75E-03	98.6	
23	0	455.27	39	105	1.49	910.97	906	10	1.08E-02	52.0	
24	0	487.80	85	100	1.14	976.01	970	13	2.37E-02	26.5	
25	0	511.04*	29	163	1.98	1022.49	1017	12	7.93E-03	102.2	
26	0	521.77	27	61	0.74	1043.96	1041	8	7.59E-03	52.8	
27	0	535.97	48	92	4.31	1072.36	1066	13	1.33E-02	44.0	
28	0	541.00	23	56	1.57	1082.42	1079	7	6.51E-03	56.3	
29	0	583.59*	156	133	1.47	1167.60	1162	13	4.33E-02	17.9	
30	0	609.40*	2264	112	1.68	1219.21	1211	16	6.29E-01	2.4	
31	0	617.25	32	71	3.52	1234.92	1228	11	8.82E-03	51.7	
32	0	628.82	43	73	3.14	1258.05	1251	14	1.21E-02	44.4	
33	0	665.63	75	101	2.73	1331.67	1323	13	2.08E-02	29.9	
34	0	702.78	37	116	4.94	1405.97	1397	17	1.04E-02	67.6	

Sample ID : G674299009 Acquisition date : 30-JUL-2024 11:17:17

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	727.81	42	97	1.01	1456.03	1447	14	1.17E-02	52.1	
36	0	768.63*	265	117	2.09	1537.67	1529	20	7.37E-02	11.9	
37	0	785.99	66	87	2.79	1572.39	1565	15	1.84E-02	32.9	
38	0	796.06	68	46	5.05	1592.53	1586	14	1.89E-02	24.9	
39	0	807.13	49	83	1.81	1614.69	1608	14	1.35E-02	42.5	
40	0	833.86	12	73	4.27	1668.15	1659	12	3.46E-03	141.2	
41	0	841.53	40	139	0.80	1683.49	1673	19	1.11E-02	74.3	
42	0	861.51	48	70	1.51	1723.44	1717	14	1.33E-02	39.7	
43	0	874.95	101	88	11.24	1750.32	1737	27	2.82E-02	27.5	
44	0	887.13	20	102	2.84	1774.69	1764	18	5.47E-03	121.0	
45	5	911.27*	126	60	2.49	1822.97	1817	35	3.50E-02	15.0	1.12E+00
46	5	917.68	36	96	3.53	1835.80	1817	35	1.01E-02	74.2	
47	0	934.51	127	30	1.70	1869.46	1862	15	3.54E-02	12.9	
48	0	941.15	16	33	1.78	1882.73	1878	9	4.56E-03	66.7	
49	2	964.25	41	82	2.68	1928.93	1921	25	1.14E-02	53.9	1.38E+00
50	2	968.94*	78	80	2.58	1938.32	1921	25	2.16E-02	28.2	
51	0	1001.22*	51	45	2.79	2002.89	1993	15	1.42E-02	32.5	
52	0	1077.67	14	22	0.85	2155.80	2151	9	3.90E-03	66.3	
53	0	1120.34*	481	56	1.88	2241.15	2233	17	1.34E-01	5.8	
54	0	1156.81	65	64	2.56	2314.10	2302	25	1.82E-02	36.1	
55	0	1232.56	29	14	3.74	2465.63	2460	11	8.18E-03	30.5	
56	0	1238.40	227	35	2.51	2477.32	2471	18	6.31E-02	8.8	
57	0	1275.98	15	26	1.30	2552.49	2543	15	4.09E-03	80.2	
58	0	1281.31	66	21	2.01	2563.15	2557	12	1.84E-02	18.4	
59	0	1312.53	46	115	14.73	2625.61	2598	51	1.28E-02	87.2	
60	0	1377.68	131	55	1.72	2755.92	2748	18	3.64E-02	15.8	
61	0	1387.09	21	50	1.87	2774.76	2766	17	5.92E-03	79.6	
62	0	1394.68	9	25	0.75	2789.94	2783	10	2.50E-03	109.1	
63	3	1401.59	39	30	3.24	2803.76	2797	50	1.08E-02	31.4	1.30E+00
64	3	1408.63	69	33	3.24	2817.84	2797	50	1.91E-02	24.3	
65	0	1460.99*	126	34	2.65	2922.58	2915	21	3.49E-02	14.7	
66	0	1509.48*	62	53	1.63	3019.58	3011	15	1.73E-02	28.5	
67	0	1661.19	28	18	2.19	3323.08	3318	14	7.71E-03	37.3	
68	0	1730.24	107	30	2.28	3461.23	3449	19	2.97E-02	15.4	
69	0	1748.94	10	9	2.10	3498.66	3490	11	2.89E-03	62.1	
70	0	1764.75*	451	29	2.56	3530.29	3522	21	1.25E-01	5.7	
71	0	1847.98	67	25	0.82	3696.80	3688	14	1.85E-02	20.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:20:56

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299009.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : RXF2
Sample date : 26-JUN-2024 09:28:00 Acquisition date : 30-JUL-2024 11:17:17
Sample ID : G674299009 Sample quantity : 113.77 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA22 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:04.85 0.1%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
RA-223	94.56	U-238	92.59
RA-223	94.56	TH-234	92.59
RA-223	94.56	U-235	93.35
RA-223	144.24	U-235	143.76

Sample ID : G674299009 Acquisition date : 30-JUL-2024 11:17:17

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
NA-22	1274.54	99.94*	2.017E+00	4.571E-02	4.686E-02	160.31	OK
K-40	1460.82	10.66*	1.821E+00	4.030E+00	4.030E+00	29.40	OK
MN-54	834.85	99.98*	2.877E+00	2.760E-02	2.977E-02	282.37	OK
GE-68	1077.34	3.22*	2.323E+00	1.181E+00	1.289E+00	132.70	OK
RB-86	1077.00	8.64*	2.323E+00	4.402E-01	1.564E+00	132.70	OK
CD-109	88.03	3.70*	5.948E+00	7.393E+00	7.781E+00	32.31	OK
SN-126	64.28	9.60	2.506E+00	3.850E+00	3.850E+00	73.38	OK
	86.94	8.90	5.948E+00	3.073E+00	3.073E+00	32.31	OK
	87.57	37.00*	5.948E+00	7.393E-01	7.393E-01	32.31	OK
TL-208	277.37	6.60	5.729E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	3.729E+00	3.181E-01	3.181E-01	35.70	OK
	860.56	12.50	2.803E+00	8.712E-01	8.712E-01	79.39	OK
BI-211	72.87	1.23	4.039E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	5.020E+00	3.039E+01	3.039E+01	4.85	OK
BI-212	727.33	6.67*	3.196E+00	1.264E+00	1.264E+00	104.30	OK
	1620.50	1.47	1.707E+00	-----	Line Not Found	-----	Absent
PB-212	74.82	10.28	4.324E+00	4.921E+00	4.921E+00	28.53	OK
	77.11	17.10	4.672E+00	7.222E+00	7.222E+00	15.26	OK
	238.63	43.60*	6.225E+00	1.545E+00	1.545E+00	15.06	OK
	300.09	3.30	5.486E+00	1.397E+00	1.397E+00	138.47	OK
BI-214	609.32	45.49*	3.624E+00	8.859E+00	8.859E+00	4.73	OK
	1120.29	14.92	2.248E+00	9.021E+00	9.021E+00	11.63	OK
	1764.49	15.30	1.641E+00	1.107E+01	1.107E+01	11.37	OK
PB-214	74.82	5.80	4.324E+00	8.722E+00	8.722E+00	28.53	OK
	77.11	9.70	4.672E+00	1.273E+01	1.273E+01	15.26	OK
	87.09	3.41	5.948E+00	8.022E+00	8.022E+00	32.31	OK
	242.00	7.25	6.176E+00	1.192E+01	1.192E+01	11.48	OK
	295.22	18.42	5.534E+00	1.109E+01	1.109E+01	7.24	OK
	351.93	35.60*	5.020E+00	1.103E+01	1.103E+01	4.85	OK
RN-222	609.32	45.49*	3.624E+00	8.859E+00	8.859E+00	4.73	OK
	1120.29	14.92	2.248E+00	9.021E+00	9.021E+00	11.63	OK
	1764.49	15.30	1.641E+00	1.107E+01	1.107E+01	11.37	OK
RA-223	81.07	15.00	5.226E+00	-----	Line Not Found	-----	Absent
	83.79	24.70	5.535E+00	5.327E-01	5.327E-01	93.79	OK
	94.56	8.67	6.642E+00	-----	Line Not Found	-----	<<INT Reject
	144.24	3.27	7.729E+00	-----	Line Not Found	-----	<<INT Reject
	154.21	5.70	7.614E+00	5.412E-01	5.412E-01	211.69	OK
	269.46	13.90	5.813E+00	1.126E+00	1.126E+00	53.30	OK
	323.87	3.99*	5.257E+00	-----	Line Not Found	-----	Absent
	338.28	2.84	5.131E+00	7.743E+00	7.743E+00	39.27	OK
RA-224	240.99	4.10*	6.176E+00	2.107E+01	2.107E+01	11.48	OK
RA-226	74.82	5.80	4.324E+00	8.722E+00	8.722E+00	28.53	OK
	77.11	9.70	4.672E+00	1.273E+01	1.273E+01	15.26	OK
	87.09	3.41	5.948E+00	8.022E+00	8.022E+00	32.31	OK
	242.00	7.25	6.176E+00	1.192E+01	1.192E+01	11.48	OK
	295.22	18.42	5.534E+00	1.109E+01	1.109E+01	7.24	OK
	351.93	35.60*	5.020E+00	1.103E+01	1.103E+01	4.85	OK
AC-228	105.21	1.10	7.303E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	5.131E+00	1.951E+00	1.951E+00	39.27	OK

Sample ID : G674299009 Acquisition date : 30-JUL-2024 11:17:17

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	835.71	1.61	2.872E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	2.677E+00	1.157E+00	1.157E+00	30.01	OK
	968.97	15.80	2.543E+00	1.223E+00	1.223E+00	56.32	OK
RA-228	105.21	1.10	7.303E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	5.131E+00	1.951E+00	1.951E+00	39.27	OK
	835.71	1.61	2.872E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	2.677E+00	1.157E+00	1.157E+00	30.01	OK
	968.97	15.80	2.543E+00	1.223E+00	1.223E+00	56.32	OK
TH-228	74.82	10.28	4.324E+00	4.921E+00	4.921E+00	28.53	OK
	77.11	17.10	4.672E+00	7.222E+00	7.222E+00	15.26	OK
	238.63	43.60*	6.225E+00	1.545E+00	1.545E+00	15.06	OK
	300.09	3.30	5.486E+00	1.397E+00	1.397E+00	138.47	OK
TH-230	74.82	5.80	4.324E+00	8.722E+00	8.722E+00	28.53	OK
	77.11	9.70	4.672E+00	1.273E+01	1.273E+01	15.26	OK
	87.09	3.41	5.948E+00	8.022E+00	8.022E+00	32.31	OK
	242.00	7.25	6.176E+00	1.192E+01	1.192E+01	11.48	OK
	295.22	18.42	5.534E+00	1.109E+01	1.109E+01	7.24	OK
	351.93	35.60*	5.020E+00	1.103E+01	1.103E+01	4.85	OK
PA-231	283.69	1.70	5.658E+00	----- Line	Not Found	-----	Absent
	301.36	5.35*	5.486E+00	8.617E-01	8.617E-01	138.47	OK
TH-232	105.21	1.10	7.303E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	5.131E+00	1.951E+00	1.951E+00	39.27	OK
	835.71	1.61	2.872E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	2.677E+00	1.157E+00	1.157E+00	30.01	OK
	968.97	15.80	2.543E+00	1.223E+00	1.223E+00	56.32	OK
TH-234	63.29	3.70*	2.506E+00	9.990E+00	9.990E+00	73.38	OK
	92.59	4.23	6.526E+00	6.659E+00	6.659E+00	53.56	OK
U-234	74.82	5.80	4.324E+00	8.722E+00	8.722E+00	28.53	OK
	77.11	9.70	4.672E+00	1.273E+01	1.273E+01	15.26	OK
	87.09	3.41	5.948E+00	8.022E+00	8.022E+00	32.31	OK
	242.00	7.25	6.176E+00	1.192E+01	1.192E+01	11.48	OK
	295.22	18.42	5.534E+00	1.109E+01	1.109E+01	7.24	OK
	351.93	35.60*	5.020E+00	1.103E+01	1.103E+01	4.85	OK
U-235	89.96	3.47	6.237E+00	----- Line	Not Found	-----	Absent
	93.35	5.60	6.526E+00	5.030E+00	5.030E+00	53.56	OK
	143.76	10.96*	7.733E+00	8.788E-01	8.788E-01	81.26	OK
	163.33	5.08	7.469E+00	----- Line	Not Found	-----	Absent
	185.72	57.20	7.080E+00	1.358E+00	1.358E+00	15.13	OK
	205.31	5.01	6.744E+00	----- Line	Not Found	-----	Absent
U-238	63.29	3.70*	2.506E+00	9.990E+00	9.990E+00	73.38	OK
	92.59	4.23	6.526E+00	6.659E+00	6.659E+00	53.56	OK
AM-243	43.53	5.90	2.160E-01	----- Line	Not Found	-----	Absent
	74.66	67.20*	4.324E+00	7.528E-01	7.528E-01	28.53	OK
ANH-511	511.00	100.00*	4.054E+00	4.572E-02	4.572E-02	204.36	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:20:58.02

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299009.CNF;1  *
* Acquisition date : 30-JUL-2024 11:17:17 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:04.85     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:28:00 Analyst initials: RXF2            *
* Sample ID        : G674299009           Sample Quantity : 1.1377E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
NA-22	4.686E-02	7.362E-02	7.957E-02
K-40	4.030E+00	1.161E+00	9.609E-01
MN-54	2.977E-02	8.239E-02	1.080E-01
GE-68	1.289E+00	1.676E+00	3.215E+00
RB-86	1.564E+00	2.034E+00	3.863E+00
CD-109	7.781E+00	2.464E+00	3.700E+00
SN-126	7.393E-01	2.341E-01	3.473E-01
TL-208	3.181E-01	1.113E-01	9.900E-02
BI-211	3.039E+01	1.446E+00	6.191E-01
BI-212	1.264E+00	1.292E+00	1.184E+00
PB-212	1.545E+00	2.281E-01	1.864E-01
BI-214	8.859E+00	4.105E-01	1.956E-01
PB-214	1.103E+01	5.247E-01	2.251E-01
RN-222	8.859E+00	4.105E-01	1.956E-01
RA-223	2.478E-01	1.140E+00	2.092E+00
RA-224	2.107E+01	2.372E+00	1.995E+00
RA-226	1.103E+01	5.247E-01	2.251E-01
AC-228	1.157E+00	3.404E-01	3.342E-01
RA-228	1.157E+00	3.404E-01	3.342E-01
TH-228	1.545E+00	2.281E-01	1.864E-01
TH-230	1.103E+01	5.247E-01	2.250E-01
PA-231	8.617E-01	1.169E+00	1.598E+00
TH-232	1.157E+00	3.404E-01	3.342E-01
TH-234	9.990E+00	7.184E+00	7.217E+00
U-234	1.103E+01	5.247E-01	2.250E-01
U-235	8.788E-01	6.999E-01	7.379E-01
U-238	9.990E+00	7.184E+00	7.217E+00
AM-243	7.528E-01	2.105E-01	2.481E-01
ANH-511	4.572E-02	9.157E-02	8.215E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-3.027E-01	6.580E-01	1.153E+00	NOT IDENT.

NA-24	0.000E+00	1.444E+15	0.000E+00	SHORT HLIF
AL-26	-2.087E-02	2.746E-02	4.454E-02	NOT IDENT.
SC-46	-4.735E-02	8.556E-02	1.225E-01	FAIL ABUN
V-48	2.144E-03	2.115E-01	3.765E-01	FAIL ABUN
CR-51	-6.289E-01	1.025E+00	1.813E+00	NOT IDENT.
MN-52	-1.328E+00	3.617E+00	6.445E+00	FAIL ABUN
CO-56	-6.052E-02	7.560E-02	1.046E-01	FAIL ABUN
MN-56	0.000E+00	1.260E+41	0.000E+00	SHORT HLIF
CO-57	-1.692E-02	5.514E-02	9.537E-02	NOT IDENT.
CO-58	-2.127E-02	7.672E-02	1.151E-01	NOT IDENT.
FE-59	1.295E-01	1.364E-01	2.805E-01	NOT IDENT.
CO-60	-1.637E-02	5.645E-02	1.014E-01	NOT IDENT.
ZN-65	-3.431E-02	1.142E-01	1.787E-01	NOT IDENT.
AS-73	-1.776E+00	4.892E+00	8.667E+00	NOT IDENT.
AS-74	-5.063E-02	2.962E-01	5.240E-01	NOT IDENT.
SE-75	-3.881E-03	1.085E-01	1.637E-01	NOT IDENT.
BR-77	0.000E+00	8.967E+03	0.000E+00	SHORT HLIF
SR-82	1.570E-03	8.215E-01	1.290E+00	NOT IDENT.
RB-83	1.295E-01	1.340E-01	2.278E-01	FAIL ABUN
RB-84	1.668E-01	2.027E-01	2.729E-01	NOT IDENT.
KR-85	5.357E+00	1.185E+01	1.947E+01	NOT IDENT.
SR-85	3.445E-02	7.663E-02	1.259E-01	NOT IDENT.
Y-88	4.860E-02	5.956E-02	1.249E-01	NOT IDENT.
Y-91	-1.089E+01	3.171E+01	5.686E+01	NOT IDENT.
NB-94	7.332E-02	9.718E-02	9.386E-02	FAIL ABUN
NB-95	0.000E+00	9.583E-02	1.795E-01	NOT IDENT.
NB-95M	4.438E-01	3.400E-01	5.516E-01	NOT IDENT.
ZR-95	-2.050E-02	1.293E-01	2.270E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.781E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.084E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	4.657E+39	0.000E+00	SHORT HLIF
RH-101	-3.364E-02	6.698E-02	1.147E-01	NOT IDENT.
RH-102	-2.374E-03	8.503E-02	1.339E-01	NOT IDENT.
RU-103	2.012E-02	8.742E-02	1.599E-01	FAIL ABUN
RH-106	3.319E-01	5.940E-01	8.585E-01	NOT IDENT.
RU-106	3.319E-01	5.940E-01	8.585E-01	NOT IDENT.
AG-108M	3.450E-03	4.805E-02	8.727E-02	NOT IDENT.
AG-110	-1.740E-01	1.066E+00	1.824E+00	NOT IDENT.
AG-110M	2.893E-02	9.293E-02	1.484E-01	NOT IDENT.
SN-113	-4.630E-02	8.153E-02	1.433E-01	NOT IDENT.
CD-115	0.000E+00	6.613E+03	0.000E+00	SHORT HLIF
SN-117M	3.546E-02	3.369E-01	5.226E-01	NOT IDENT.
SB-122	0.000E+00	3.595E+02	0.000E+00	SHORT HLIF
TE-123M	-2.774E-02	7.073E-02	1.145E-01	NOT IDENT.
SB-124	7.715E-02	1.388E-01	2.846E-01	NOT IDENT.
SB-125	-2.740E-02	1.587E-01	2.836E-01	NOT IDENT.
TE-125M	-2.220E+01	2.554E+01	4.340E+01	NOT IDENT.
I-126	0.000E+00	1.567E+00	2.088E+00	FAIL ABUN
SB-126	1.578E-01	7.087E-01	1.129E+00	FAIL ABUN
SB-127	5.398E+01	5.561E+01	1.073E+02	NOT IDENT.
I-131	-6.818E-04	9.851E-01	1.791E+00	NOT IDENT.
I-132	0.000E+00	8.705E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.846E+01	0.000E+00	SHORT HLIF
BA-133	-1.949E-02	7.880E-02	1.242E-01	NOT IDENT.
I-133	0.000E+00	3.925E+10	0.000E+00	SHORT HLIF
CS-134	0.000E+00	8.545E-02	1.209E-01	FAIL ABUN
I-135	0.000E+00	4.752E+36	0.000E+00	SHORT HLIF
CS-136	-2.615E-01	3.829E-01	6.698E-01	FAIL ABUN
BA-137M	-8.780E-03	5.517E-02	8.519E-02	NOT IDENT.
CS-137	-9.275E-03	5.828E-02	8.999E-02	NOT IDENT.
LA-138	1.596E-02	7.823E-02	1.496E-01	NOT IDENT.
CE-139	-6.824E-02	7.014E-02	1.166E-01	NOT IDENT.
BA-140	0.000E+00	1.785E+00	1.955E+00	FAIL ABUN
LA-140	-2.429E-01	3.870E-01	6.597E-01	FAIL ABUN
CE-141	1.645E-01	2.238E-01	3.583E-01	NOT IDENT.
CE-143	0.000E+00	5.318E+06	0.000E+00	SHORT HLIF
CE-144	-7.649E-02	4.400E-01	7.615E-01	NOT IDENT.
PM-144	3.133E-02	5.221E-02	8.785E-02	FAIL ABUN
PR-144	2.355E+00	3.945E+00	6.636E+00	NOT IDENT.
PM-146	9.137E-02	9.317E-02	1.269E-01	FAIL ABUN
ND-147	-2.893E+00	3.410E+00	4.948E+00	NOT IDENT.
PM-147	-4.842E+02	1.552E+03	2.685E+03	NOT IDENT.
PM-149	0.000E+00	6.972E+04	0.000E+00	SHORT HLIF
EU-150	-1.895E-02	5.588E-02	8.754E-02	FAIL ABUN
EU-152	-1.012E-01	2.781E-01	3.099E-01	FAIL ABUN
GD-153	1.721E-02	2.094E-01	3.317E-01	NOT IDENT.
EU-154	8.536E-02	1.455E-01	2.629E-01	NOT IDENT.

EU-155	-7.632E-02	2.129E-01	3.698E-01	FAIL ABUN
TB-160	3.270E-01	3.171E-01	4.415E-01	FAIL ABUN
HO-166M	9.194E-03	8.419E-02	1.519E-01	FAIL ABUN
TM-171	1.791E+01	9.550E+01	1.720E+02	NOT IDENT.
HF-172	7.909E-02	4.010E-01	7.023E-01	FAIL ABUN
LU-172	5.712E-02	7.545E-02	1.523E-01	FAIL ABUN
LU-176	-8.332E-04	4.864E-02	8.846E-02	FAIL ABUN
HF-181	-2.930E-03	1.049E-01	1.663E-01	NOT IDENT.
TA-182	9.369E-02	2.362E-01	4.573E-01	FAIL ABUN
RE-183	2.823E-01	9.304E-01	1.680E+00	NOT IDENT.
RE-184	-1.375E-01	2.381E-01	3.988E-01	NOT IDENT.
W-188	-9.663E-02	1.939E+01	2.916E+01	FAIL ABUN
IR-192	-5.332E-03	7.077E-02	1.286E-01	FAIL ABUN
HG-203	-6.598E-02	1.089E-01	1.791E-01	NOT IDENT.
TL-204	7.468E+00	1.532E+01	2.484E+01	FAIL ABUN
BI-207	3.980E-02	6.609E-02	1.301E-01	FAIL ABUN
BI-210	-5.005E+00	2.715E+01	4.843E+01	NOT IDENT.
PB-210	-5.005E+00	2.715E+01	4.843E+01	NOT IDENT.
PB-211	8.757E-01	1.274E+00	2.375E+00	NOT IDENT.
BI-213	8.928E-02	1.683E-01	3.116E-01	NOT IDENT.
RN-219	2.017E-01	7.435E-01	1.357E+00	FAIL ABUN
AC-225	-2.292E+00	4.855E+00	7.187E+00	NOT IDENT.
AC-227	3.994E-01	5.634E-01	8.915E-01	FAIL ABUN
TH-227	3.994E-01	5.634E-01	8.915E-01	FAIL ABUN
TH-229	1.826E-01	1.081E+00	1.870E+00	FAIL ABUN
TH-231	2.478E-01	1.140E+00	2.092E+00	FAIL ABUN
PA-233	1.297E-02	1.125E-01	2.062E-01	FAIL ABUN
PA-234	1.572E-01	4.817E-01	7.769E-01	NOT IDENT.
PA-234M	0.000E+00	9.888E+00	1.434E+01	FAIL ABUN
NP-237	1.297E-02	1.125E-01	2.062E-01	FAIL ABUN
NP-238	0.000E+00	1.336E+04	0.000E+00	SHORT HLIF
NP-239	2.843E-01	5.401E-01	9.662E-01	NOT IDENT.
PU-239	7.980E+02	6.998E+02	1.271E+03	FAIL ABUN
AM-241	-3.115E-01	6.225E-01	9.764E-01	NOT IDENT.
CM-243	-1.041E-01	2.124E-01	3.675E-01	NOT IDENT.
BK-247	1.401E-01	1.687E-01	2.701E-01	FAIL ABUN
CM-247	1.876E-02	6.862E-02	1.252E-01	NOT IDENT.
CF-249	1.006E-01	6.920E-02	1.342E-01	FAIL ABUN
CF-251	-3.109E-01	2.763E-01	4.548E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:20:56.12

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
NA-22	1274.54	14	99.94*	2.017E+00	4.571E-02	4.686E-02	160.31
K-40	1460.82	119	10.66*	1.821E+00	4.030E+00	4.030E+00	29.40
MN-54	834.85	12	99.98*	2.877E+00	2.760E-02	2.977E-02	282.37
GE-68	1077.34	13	3.22*	2.323E+00	1.181E+00	1.289E+00	132.70
RB-86	1077.00	13	8.64*	2.323E+00	4.402E-01	1.564E+00	132.70
CD-109	88.03	247	3.70*	5.948E+00	7.393E+00	7.781E+00	32.31
SN-126	64.28	140	9.60	2.506E+00	3.850E+00	3.850E+00	73.38
	86.94	247	8.90	5.948E+00	3.073E+00	3.073E+00	32.31
	87.57	247	37.00*	5.948E+00	7.393E-01	7.393E-01	32.31
TL-208	277.37	------	6.60	5.729E+00	------	Line Not Found	------
	583.19	153	85.00*	3.729E+00	3.181E-01	3.181E-01	35.70
	860.56	46	12.50	2.803E+00	8.712E-01	8.712E-01	79.39
BI-211	72.87	------	1.23	4.039E+00	------	Line Not Found	------
	351.06	2987	12.92*	5.020E+00	3.039E+01	3.039E+01	4.85
BI-212	727.33	41	6.67*	3.196E+00	1.264E+00	1.264E+00	104.30
	1620.50	------	1.47	1.707E+00	------	Line Not Found	------
PB-212	74.82	332	10.28	4.324E+00	4.921E+00	4.921E+00	28.53
	77.11	874	17.10	4.672E+00	7.222E+00	7.222E+00	15.26
	238.63	636	43.60*	6.225E+00	1.545E+00	1.545E+00	15.06
	300.09	38	3.30	5.486E+00	1.397E+00	1.397E+00	138.47
BI-214	609.32	2213	45.49*	3.624E+00	8.859E+00	8.859E+00	4.73
	1120.29	458	14.92	2.248E+00	9.021E+00	9.021E+00	11.63
	1764.49	421	15.30	1.641E+00	1.107E+01	1.107E+01	11.37
PB-214	74.82	332	5.80	4.324E+00	8.722E+00	8.722E+00	28.53
	77.11	874	9.70	4.672E+00	1.273E+01	1.273E+01	15.26
	87.09	247	3.41	5.948E+00	8.022E+00	8.022E+00	32.31
	242.00	809	7.25	6.176E+00	1.192E+01	1.192E+01	11.48
	295.22	1713	18.42	5.534E+00	1.109E+01	1.109E+01	7.24
	351.93	2987	35.60*	5.020E+00	1.103E+01	1.103E+01	4.85
RN-222	609.32	2213	45.49*	3.624E+00	8.859E+00	8.859E+00	4.73
	1120.29	458	14.92	2.248E+00	9.021E+00	9.021E+00	11.63
	1764.49	421	15.30	1.641E+00	1.107E+01	1.107E+01	11.37
RA-223	81.07	------	15.00	5.226E+00	------	Line Not Found	------
	83.79	110	24.70	5.535E+00	5.327E-01	5.327E-01	93.79
	94.56	343	8.67	6.526E+00	4.001E+00	4.001E+00	42.53
	144.24	142	3.27	7.733E+00	3.697E+00	3.697E+00	63.99
	154.21	36	5.70	7.614E+00	5.412E-01	5.412E-01	211.69
	269.46	138	13.90	5.813E+00	1.126E+00	1.126E+00	53.30
	323.87	------	3.99*	5.257E+00	------	Line Not Found	------
	338.28	171	2.84	5.131E+00	7.743E+00	7.743E+00	39.27
RA-224	240.99	809	4.10*	6.176E+00	2.107E+01	2.107E+01	11.48
RA-226	74.82	332	5.80	4.324E+00	8.722E+00	8.722E+00	28.53
	77.11	874	9.70	4.672E+00	1.273E+01	1.273E+01	15.26
	87.09	247	3.41	5.948E+00	8.022E+00	8.022E+00	32.31
	242.00	809	7.25	6.176E+00	1.192E+01	1.192E+01	11.48
	295.22	1713	18.42	5.534E+00	1.109E+01	1.109E+01	7.24
	351.93	2987	35.60*	5.020E+00	1.103E+01	1.103E+01	4.85

Sample ID : G674299009 Acquisition date : 30-JUL-2024 11:17:17

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
AC-228	105.21	------	1.10	7.303E+00	------	Line Not Found	------
	338.32	171	11.27	5.131E+00	1.951E+00	1.951E+00	39.27
	835.71	------	1.61	2.872E+00	------	Line Not Found	------
	911.20	121	25.80*	2.677E+00	1.157E+00	1.157E+00	30.01
	968.97	74	15.80	2.543E+00	1.223E+00	1.223E+00	56.32
RA-228	105.21	------	1.10	7.303E+00	------	Line Not Found	------
	338.32	171	11.27	5.131E+00	1.951E+00	1.951E+00	39.27
	835.71	------	1.61	2.872E+00	------	Line Not Found	------
	911.20	121	25.80*	2.677E+00	1.157E+00	1.157E+00	30.01
	968.97	74	15.80	2.543E+00	1.223E+00	1.223E+00	56.32
TH-228	74.82	332	10.28	4.324E+00	4.921E+00	4.921E+00	28.53
	77.11	874	17.10	4.672E+00	7.222E+00	7.222E+00	15.26
	238.63	636	43.60*	6.225E+00	1.545E+00	1.545E+00	15.06
	300.09	38	3.30	5.486E+00	1.397E+00	1.397E+00	138.47
TH-230	74.82	332	5.80	4.324E+00	8.722E+00	8.722E+00	28.53
	77.11	874	9.70	4.672E+00	1.273E+01	1.273E+01	15.26
	87.09	247	3.41	5.948E+00	8.022E+00	8.022E+00	32.31
	242.00	809	7.25	6.176E+00	1.192E+01	1.192E+01	11.48
	295.22	1713	18.42	5.534E+00	1.109E+01	1.109E+01	7.24
	351.93	2987	35.60*	5.020E+00	1.103E+01	1.103E+01	4.85
PA-231	283.69	------	1.70	5.658E+00	------	Line Not Found	------
	301.36	38	5.35*	5.486E+00	8.617E-01	8.617E-01	138.47
TH-232	105.21	------	1.10	7.303E+00	------	Line Not Found	------
	338.32	171	11.27	5.131E+00	1.951E+00	1.951E+00	39.27
	835.71	------	1.61	2.872E+00	------	Line Not Found	------
	911.20	121	25.80*	2.677E+00	1.157E+00	1.157E+00	30.01
	968.97	74	15.80	2.543E+00	1.223E+00	1.223E+00	56.32
TH-234	63.29	140	3.70*	2.506E+00	9.990E+00	9.990E+00	73.38
	92.59	343	4.23	6.526E+00	8.200E+00	8.200E+00	42.53
U-234	74.82	332	5.80	4.324E+00	8.722E+00	8.722E+00	28.53
	77.11	874	9.70	4.672E+00	1.273E+01	1.273E+01	15.26
	87.09	247	3.41	5.948E+00	8.022E+00	8.022E+00	32.31
	242.00	809	7.25	6.176E+00	1.192E+01	1.192E+01	11.48
	295.22	1713	18.42	5.534E+00	1.109E+01	1.109E+01	7.24
	351.93	2987	35.60*	5.020E+00	1.103E+01	1.103E+01	4.85
U-235	89.96	------	3.47	6.237E+00	------	Line Not Found	------
	93.35	343	5.60	6.526E+00	6.194E+00	6.194E+00	42.53
	143.76	142	10.96*	7.733E+00	1.103E+00	1.103E+00	63.99
	163.33	------	5.08	7.469E+00	------	Line Not Found	------
	185.72	834	57.20	7.080E+00	1.358E+00	1.358E+00	15.13
	205.31	------	5.01	6.744E+00	------	Line Not Found	------
U-238	63.29	140	3.70*	2.506E+00	9.990E+00	9.990E+00	73.38
	92.59	343	4.23	6.526E+00	8.200E+00	8.200E+00	42.53
AM-243	43.53	------	5.90	2.160E-01	------	Line Not Found	------
	74.66	332	67.20*	4.324E+00	7.528E-01	7.528E-01	28.53
ANH-511	511.00	28	100.00*	4.054E+00	4.572E-02	4.572E-02	204.36

Flag: "*" = Keyline

Sample ID : G674299009 Acquisition date : 30-JUL-2024 11:17:17

Total number of lines in spectrum	71	
Number of unidentified lines	24	
Number of lines tentatively identified by NID	47	66.20%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
NA-22	2.60Y	1.03	4.571E-02	4.686E-02	7.512E-02	160.31	
K-40	1.25E+09Y	1.00	4.030E+00	4.030E+00	1.185E+00	29.40	
MN-54	312.05D	1.08	2.760E-02	2.977E-02	8.407E-02	282.37	
GE-68	270.95D	1.09	1.181E+00	1.289E+00	1.710E+00	132.70	
RB-86	18.64D	3.55	4.402E-01	1.564E+00	2.076E+00	132.70	
CD-109	461.40D	1.05	7.393E+00	7.781E+00	2.514E+00	32.31	
SN-126	2.30E+05Y	1.00	7.393E-01	7.393E-01	2.389E-01	32.31	
TL-208	1.41E+10Y	1.00	3.181E-01	3.181E-01	1.136E-01	35.70	
BI-211	7.04E+08Y	1.00	3.039E+01	3.039E+01	0.148E+01	4.85	
BI-212	1.41E+10Y	1.00	1.264E+00	1.264E+00	1.319E+00	104.30	
PB-212	1.41E+10Y	1.00	1.545E+00	1.545E+00	0.233E+00	15.06	
BI-214	1600.00Y	1.00	8.859E+00	8.859E+00	0.419E+00	4.73	
PB-214	1600.00Y	1.00	1.103E+01	1.103E+01	0.054E+01	4.85	
RN-222	1600.00Y	1.00	8.859E+00	8.859E+00	0.419E+00	4.73	
RA-223	7.04E+08Y	1.00	5.327E-01	5.327E-01	4.996E-01	93.79	K
RA-224	1.41E+10Y	1.00	2.107E+01	2.107E+01	0.242E+01	11.48	
RA-226	1600.00Y	1.00	1.103E+01	1.103E+01	0.054E+01	4.85	
AC-228	1.41E+10Y	1.00	1.157E+00	1.157E+00	0.347E+00	30.01	
RA-228	1.41E+10Y	1.00	1.157E+00	1.157E+00	0.347E+00	30.01	
TH-228	1.41E+10Y	1.00	1.545E+00	1.545E+00	0.233E+00	15.06	
TH-230	7.54E+04Y	1.00	1.103E+01	1.103E+01	0.054E+01	4.85	
PA-231	7.04E+08Y	1.00	8.617E-01	8.617E-01	11.93E-01	138.47	
TH-232	1.41E+10Y	1.00	1.157E+00	1.157E+00	0.347E+00	30.01	
TH-234	4.47E+09Y	1.00	9.990E+00	9.990E+00	7.330E+00	73.38	
U-234	2.45E+05Y	1.00	1.103E+01	1.103E+01	0.054E+01	4.85	
U-235	7.04E+08Y	1.00	1.103E+00	1.103E+00	0.706E+00	63.99	
U-238	4.47E+09Y	1.00	9.990E+00	9.990E+00	7.330E+00	73.38	
AM-243	7370.00Y	1.00	7.528E-01	7.528E-01	2.148E-01	28.53	
ANH-511	1.00E+09Y	1.00	4.572E-02	4.572E-02	9.344E-02	204.36	
			---	---			
	Total Activity :		1.586E+02	1.602E+02			

Grand Total Activity : 1.586E+02 1.602E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299009 Acquisition date : 30-JUL-2024 11:17:17

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	41.65	44	822	1.52	83.82	81	7	1.13E-02	****	1.40E-01	
0	220.49	78	290	1.25	441.45	437	9	2.14E-02	82.4	6.50E+00	
0	259.21	79	225	1.87	518.88	516	8	2.18E-02	70.0	5.95E+00	
0	332.29	14	182	1.44	665.03	665	8	3.89E-03	****	5.18E+00	T
0	374.99	18	171	0.43	750.41	743	10	4.92E-03	****	4.85E+00	T
0	418.42	17	98	0.71	837.27	836	7	4.75E-03	****	4.56E+00	
0	455.27	39	104	1.49	910.97	906	10	1.08E-02	****	4.34E+00	T
0	487.80	84	98	1.14	976.01	970	13	2.37E-02	53.0	4.17E+00	T
0	521.77	27	60	0.74	1043.96	1041	8	7.59E-03	****	4.00E+00	T
0	535.97	47	90	4.31	1072.36	1066	13	1.33E-02	88.0	3.94E+00	T
0	541.00	23	55	1.57	1082.42	1079	7	6.51E-03	****	3.91E+00	
0	617.25	31	70	3.52	1234.92	1228	11	8.82E-03	****	3.59E+00	T
0	628.82	42	71	3.14	1258.05	1251	14	1.21E-02	88.9	3.55E+00	T
0	665.63	73	98	2.73	1331.67	1323	13	2.08E-02	59.8	3.41E+00	T
0	702.78	36	112	4.94	1405.97	1397	17	1.04E-02	****	3.28E+00	T
0	768.63	257	113	2.09	1537.67	1529	20	7.37E-02	23.7	3.07E+00	
0	785.99	64	84	2.79	1572.39	1565	15	1.84E-02	65.9	3.01E+00	
0	796.06	66	45	5.05	1592.53	1586	14	1.89E-02	49.8	2.99E+00	T
0	807.13	47	81	1.81	1614.69	1608	14	1.35E-02	84.9	2.95E+00	
0	841.53	38	134	0.80	1683.49	1673	19	1.11E-02	****	2.86E+00	
0	874.95	98	84	11.24	1750.32	1737	27	2.82E-02	55.1	2.77E+00	T
0	887.13	19	98	2.84	1774.69	1764	18	5.47E-03	****	2.74E+00	
5	917.68	35	92	3.53	1835.80	1817	35	1.01E-02	****	2.66E+00	
0	934.51	122	28	1.70	1869.46	1862	15	3.54E-02	25.8	2.62E+00	T
0	941.15	16	31	1.78	1882.73	1878	9	4.56E-03	****	2.61E+00	
2	964.25	39	79	2.68	1928.93	1921	25	1.14E-02	****	2.55E+00	T
0	1001.22	49	43	2.79	2002.89	1993	15	1.42E-02	65.0	2.47E+00	T
0	1156.81	62	60	2.56	2314.10	2302	25	1.82E-02	72.2	2.19E+00	
0	1232.56	28	13	3.74	2465.63	2460	11	8.18E-03	61.0	2.07E+00	
0	1238.40	215	33	2.51	2477.32	2471	18	6.31E-02	17.7	2.07E+00	T
0	1281.31	63	20	2.01	2563.15	2557	12	1.84E-02	36.9	2.01E+00	
0	1312.53	44	109	14.73	2625.61	2598	51	1.28E-02	****	1.97E+00	T
0	1377.68	124	52	1.72	2755.92	2748	18	3.64E-02	31.6	1.90E+00	
0	1387.09	20	47	1.87	2774.76	2766	17	5.92E-03	****	1.89E+00	
0	1394.68	8	24	0.75	2789.94	2783	10	2.50E-03	****	1.88E+00	
3	1401.59	37	28	3.24	2803.76	2797	50	1.08E-02	62.8	1.88E+00	
3	1408.63	65	31	3.24	2817.84	2797	50	1.91E-02	48.5	1.87E+00	T
0	1509.48	59	49	1.63	3019.58	3011	15	1.73E-02	57.0	1.78E+00	
0	1661.19	26	17	2.19	3323.08	3318	14	7.71E-03	74.6	1.69E+00	
0	1730.24	100	28	2.28	3461.23	3449	19	2.97E-02	30.8	1.65E+00	
0	1748.94	10	8	2.10	3498.66	3490	11	2.89E-03	****	1.65E+00	
0	1847.98	62	24	0.82	3696.80	3688	14	1.85E-02	40.0	1.62E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:21:08.72

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299009.CNF;1  *
* Acquisition date : 30-JUL-2024 11:17:17 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:04.85     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:28:00 Nuclide Library : SOLID           *
* Sample ID        : G674299009           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1377E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
NA-22	3.527E-02
K-40	4.349E-01
MN-54	5.066E-02
GE-68	1.478E+00
RB-86	1.775E+00
CD-109	1.808E+00
SN-126	1.696E-01
TL-208	4.670E-02
BI-211	2.959E-01
BI-212	5.503E-01
PB-212	8.994E-02
BI-214	9.240E-02
PB-214	1.075E-01
RN-222	9.240E-02
RA-223	1.004E+00
RA-224	9.623E-01
RA-226	1.075E-01
AC-228	1.542E-01
RA-228	1.542E-01
TH-228	8.994E-02
TH-230	1.075E-01
PA-231	7.688E-01
TH-232	1.542E-01
TH-234	3.511E+00
U-234	1.075E-01
U-235	3.584E-01
U-238	3.511E+00
AM-243	1.210E-01
ANH-511	3.888E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.449E-01	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF

AL-26	1.681E-02	NOT IDENT.
SC-46	5.694E-02	FAIL ABUN
V-48	1.727E-01	FAIL ABUN
CR-51	8.664E-01	NOT IDENT.
MN-52	2.893E+00	FAIL ABUN
CO-56	4.804E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	4.622E-02	NOT IDENT.
CO-58	5.332E-02	NOT IDENT.
FE-59	1.286E-01	NOT IDENT.
CO-60	4.610E-02	NOT IDENT.
ZN-65	8.077E-02	NOT IDENT.
AS-73	4.222E+00	NOT IDENT.
AS-74	2.465E-01	NOT IDENT.
SE-75	7.874E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.957E-01	NOT IDENT.
RB-83	1.074E-01	FAIL ABUN
RB-84	1.268E-01	NOT IDENT.
KR-85	9.226E+00	NOT IDENT.
SR-85	5.966E-02	NOT IDENT.
Y-88	5.559E-02	NOT IDENT.
Y-91	2.602E+01	NOT IDENT.
NB-94	4.422E-02	FAIL ABUN
NB-95	8.560E-02	NOT IDENT.
NB-95M	2.675E-01	NOT IDENT.
ZR-95	1.059E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	5.564E-02	NOT IDENT.
RH-102	6.240E-02	NOT IDENT.
RU-103	7.564E-02	FAIL ABUN
RH-106	4.025E-01	NOT IDENT.
RU-106	4.025E-01	NOT IDENT.
AG-108M	4.143E-02	NOT IDENT.
AG-110	8.487E-01	NOT IDENT.
AG-110M	6.932E-02	NOT IDENT.
SN-113	6.807E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.535E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	5.553E-02	NOT IDENT.
SB-124	1.258E-01	NOT IDENT.
SB-125	1.350E-01	NOT IDENT.
TE-125M	2.103E+01	NOT IDENT.
I-126	9.949E-01	FAIL ABUN
SB-126	5.300E-01	FAIL ABUN
SB-127	5.030E+01	NOT IDENT.
I-131	8.536E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.918E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.686E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	3.068E-01	FAIL ABUN
BA-137M	3.970E-02	NOT IDENT.
CS-137	4.194E-02	NOT IDENT.
LA-138	6.746E-02	NOT IDENT.
CE-139	5.650E-02	NOT IDENT.
BA-140	9.181E-01	FAIL ABUN
LA-140	2.955E-01	FAIL ABUN
CE-141	1.742E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.695E-01	NOT IDENT.
PM-144	4.104E-02	FAIL ABUN
PR-144	3.100E+00	NOT IDENT.
PM-146	6.024E-02	FAIL ABUN
ND-147	2.326E+00	NOT IDENT.
PM-147	1.301E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	4.197E-02	FAIL ABUN
EU-152	1.484E-01	FAIL ABUN
GD-153	1.609E-01	NOT IDENT.
EU-154	1.188E-01	NOT IDENT.
EU-155	1.790E-01	FAIL ABUN

TB-160	2.059E-01	FAIL ABUN
HO-166M	7.087E-02	FAIL ABUN
TM-171	8.386E+01	NOT IDENT.
HF-172	3.406E-01	FAIL ABUN
LU-172	6.979E-02	FAIL ABUN
LU-176	4.247E-02	FAIL ABUN
HF-181	7.856E-02	NOT IDENT.
TA-182	2.093E-01	FAIL ABUN
RE-183	8.178E-01	NOT IDENT.
RE-184	1.825E-01	NOT IDENT.
W-188	1.403E+01	FAIL ABUN
IR-192	6.152E-02	FAIL ABUN
HG-203	8.638E-02	NOT IDENT.
TL-204	1.211E+01	FAIL ABUN
BI-207	6.000E-02	FAIL ABUN
BI-210	2.367E+01	NOT IDENT.
PB-210	2.367E+01	NOT IDENT.
PB-211	1.137E+00	NOT IDENT.
BI-213	1.481E-01	NOT IDENT.
RN-219	6.498E-01	FAIL ABUN
AC-225	3.466E+00	NOT IDENT.
AC-227	4.301E-01	FAIL ABUN
TH-227	4.301E-01	FAIL ABUN
TH-229	9.058E-01	FAIL ABUN
TH-231	1.004E+00	FAIL ABUN
PA-233	9.880E-02	FAIL ABUN
PA-234	3.600E-01	NOT IDENT.
PA-234M	6.742E+00	FAIL ABUN
NP-237	9.880E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	4.684E-01	NOT IDENT.
PU-239	6.175E+02	FAIL ABUN
AM-241	4.750E-01	NOT IDENT.
CM-243	1.778E-01	NOT IDENT.
BK-247	1.300E-01	FAIL ABUN
CM-247	5.997E-02	NOT IDENT.
CF-249	6.426E-02	FAIL ABUN
CF-251	2.203E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:21:14.20

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299009.CNF;1  *
* Acquisition date : 30-JUL-2024 11:17:17 Sensitivity     : 3.000           *
* Detector ID      : GAM22                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:04.85     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:28:00 Nuclide Library : SOLID           *
* Sample ID        : G674299009           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1377E+02 GRAM *
*                                         Quantity Err(%) : 1.7579E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-JAN-2024 07:21:39 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM22_CAN.CNF;26            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
NA-22	4.686E-02	7.374E-02	7.374E-02
K-40	4.030E+00	1.228E+00	1.228E+00
MN-54	2.977E-02	8.246E-02	8.246E-02
GE-68	1.289E+00	1.681E+00	1.681E+00
RB-86	1.564E+00	2.040E+00	2.040E+00
CD-109	7.781E+00	2.687E+00	2.687E+00
SN-126	7.393E-01	2.523E-01	2.523E-01
TL-208	3.181E-01	1.156E-01	1.156E-01
BI-211	3.039E+01	3.200E+00	3.200E+00
BI-212	1.264E+00	1.300E+00	1.300E+00
PB-212	1.545E+00	2.899E-01	2.899E-01
BI-214	8.859E+00	9.824E-01	9.824E-01
PB-214	1.103E+01	1.147E+00	1.147E+00
RN-222	8.859E+00	9.824E-01	9.824E-01
RA-223	2.478E-01	1.140E+00	1.140E+00
RA-224	2.107E+01	3.400E+00	3.400E+00
RA-226	1.103E+01	1.147E+00	1.147E+00
AC-228	1.157E+00	3.673E-01	3.673E-01
RA-228	1.157E+00	3.673E-01	3.673E-01
TH-228	1.545E+00	2.899E-01	2.899E-01
TH-230	1.103E+01	1.147E+00	1.147E+00
PA-231	8.617E-01	1.186E+00	1.186E+00
TH-232	1.157E+00	3.673E-01	3.673E-01
TH-234	9.990E+00	7.591E+00	7.591E+00
U-234	1.103E+01	1.147E+00	1.147E+00
U-235	8.801E-01	7.059E-01	7.059E-01
U-238	9.990E+00	7.591E+00	7.591E+00
AM-243	7.528E-01	2.293E-01	2.293E-01
ANH-511	4.572E-02	9.167E-02	9.167E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-3.027E-01	6.586E-01	6.726E-01	NOT IDENT.

NA-24	-1.199E+15	1.450E+15	1.548E+15	SHORT HLIF
AL-26	-2.087E-02	2.751E-02	2.907E-02	NOT IDENT.
SC-46	-4.735E-02	8.574E-02	8.836E-02	FAIL ABUN
V-48	2.144E-03	2.115E-01	2.115E-01	FAIL ABUN
CR-51	-6.289E-01	1.027E+00	1.065E+00	NOT IDENT.
MN-52	-1.328E+00	3.619E+00	3.668E+00	FAIL ABUN
CO-56	-6.052E-02	7.592E-02	8.067E-02	FAIL ABUN
MN-56	-1.000E+41	1.266E+41	0.000E+00	SHORT HLIF
CO-57	-1.692E-02	5.516E-02	5.568E-02	NOT IDENT.
CO-58	-2.127E-02	7.675E-02	7.735E-02	NOT IDENT.
FE-59	1.295E-01	1.371E-01	1.490E-01	NOT IDENT.
CO-60	-1.637E-02	5.647E-02	5.695E-02	NOT IDENT.
ZN-65	-3.431E-02	1.143E-01	1.153E-01	NOT IDENT.
AS-73	-1.776E+00	4.910E+00	4.975E+00	NOT IDENT.
AS-74	-5.063E-02	2.962E-01	2.971E-01	NOT IDENT.
SE-75	-3.881E-03	1.085E-01	1.085E-01	NOT IDENT.
BR-77	6.075E+04	6.085E+04	6.673E+04	SHORT HLIF
SR-82	1.570E-03	8.215E-01	8.215E-01	NOT IDENT.
RB-83	1.295E-01	1.356E-01	1.476E-01	FAIL ABUN
RB-84	1.668E-01	2.036E-01	2.171E-01	NOT IDENT.
KR-85	5.357E+00	1.186E+01	1.210E+01	NOT IDENT.
SR-85	3.445E-02	7.669E-02	7.825E-02	NOT IDENT.
Y-88	4.860E-02	5.967E-02	6.356E-02	NOT IDENT.
Y-91	-1.089E+01	3.173E+01	3.210E+01	NOT IDENT.
NB-94	7.332E-02	9.750E-02	1.029E-01	FAIL ABUN
NB-95	2.354E-01	9.929E-02	1.453E-01	NOT IDENT.
NB-95M	4.438E-01	3.449E-01	3.988E-01	NOT IDENT.
ZR-95	-2.050E-02	1.293E-01	1.297E-01	NOT IDENT.
NB-97	-1.000E+41	2.502E+41	0.000E+00	SHORT HLIF
ZR-97	5.631E+13	3.781E+14	3.789E+14	SHORT HLIF
MO-99	-1.387E+02	2.084E+03	2.085E+03	SHORT HLIF
TC-99M	4.351E+39	4.690E+39	0.000E+00	SHORT HLIF
RH-101	-3.364E-02	6.728E-02	6.897E-02	NOT IDENT.
RH-102	-2.374E-03	8.503E-02	8.503E-02	NOT IDENT.
RU-103	2.012E-02	8.744E-02	8.791E-02	FAIL ABUN
RH-106	3.319E-01	5.952E-01	6.137E-01	NOT IDENT.
RU-106	3.319E-01	5.952E-01	6.137E-01	NOT IDENT.
AG-108M	3.450E-03	4.805E-02	4.807E-02	NOT IDENT.
AG-110	-1.740E-01	1.066E+00	1.069E+00	NOT IDENT.
AG-110M	2.893E-02	9.300E-02	9.391E-02	NOT IDENT.
SN-113	-4.630E-02	8.162E-02	8.425E-02	NOT IDENT.
CD-115	2.827E+03	6.619E+03	6.741E+03	SHORT HLIF
SN-117M	3.546E-02	3.369E-01	3.373E-01	NOT IDENT.
SB-122	-2.214E+01	3.595E+02	3.597E+02	SHORT HLIF
TE-123M	-2.774E-02	7.080E-02	7.189E-02	NOT IDENT.
SB-124	7.715E-02	1.390E-01	1.432E-01	NOT IDENT.
SB-125	-2.740E-02	1.587E-01	1.592E-01	NOT IDENT.
TE-125M	-2.220E+01	2.561E+01	2.750E+01	NOT IDENT.
I-126	2.674E+00	1.596E+00	2.000E+00	FAIL ABUN
SB-126	1.578E-01	7.091E-01	7.126E-01	FAIL ABUN
SB-127	5.398E+01	5.653E+01	6.155E+01	NOT IDENT.
I-131	-6.818E-04	9.851E-01	9.851E-01	NOT IDENT.
I-132	1.000E+41	2.277E+41	0.000E+00	SHORT HLIF
TE-132	-9.127E-01	8.846E+01	8.846E+01	SHORT HLIF
BA-133	-1.949E-02	7.883E-02	7.931E-02	NOT IDENT.
I-133	1.403E+10	3.939E+10	3.989E+10	SHORT HLIF
CS-134	1.751E-01	8.767E-02	1.180E-01	FAIL ABUN
I-135	2.129E+35	4.755E+36	0.000E+00	SHORT HLIF
CS-136	-2.615E-01	3.843E-01	4.020E-01	FAIL ABUN
BA-137M	-8.780E-03	5.518E-02	5.532E-02	NOT IDENT.
CS-137	-9.275E-03	5.829E-02	5.844E-02	NOT IDENT.
LA-138	1.596E-02	7.825E-02	7.858E-02	NOT IDENT.
CE-139	-6.824E-02	7.187E-02	7.818E-02	NOT IDENT.
BA-140	2.070E+00	1.796E+00	2.024E+00	FAIL ABUN
LA-140	-2.429E-01	3.876E-01	4.028E-01	FAIL ABUN
CE-141	1.645E-01	2.244E-01	2.363E-01	NOT IDENT.
CE-143	4.414E+07	7.082E+06	2.112E+07	SHORT HLIF
CE-144	-7.649E-02	4.401E-01	4.414E-01	NOT IDENT.
PM-144	3.133E-02	5.231E-02	5.419E-02	FAIL ABUN
PR-144	2.355E+00	3.953E+00	4.093E+00	NOT IDENT.
PM-146	9.137E-02	9.367E-02	1.023E-01	FAIL ABUN
ND-147	-2.893E+00	3.421E+00	3.662E+00	NOT IDENT.
PM-147	-4.842E+02	1.552E+03	1.568E+03	NOT IDENT.
PM-149	-3.410E+04	6.995E+04	7.162E+04	SHORT HLIF
EU-150	-1.895E-02	5.591E-02	5.656E-02	FAIL ABUN
EU-152	-1.012E-01	2.783E-01	2.820E-01	FAIL ABUN
GD-153	1.721E-02	2.094E-01	2.095E-01	NOT IDENT.
EU-154	8.536E-02	1.457E-01	1.507E-01	NOT IDENT.

EU-155	-7.632E-02	2.130E-01	2.158E-01	FAIL ABUN
TB-160	3.270E-01	3.196E-01	3.520E-01	FAIL ABUN
HO-166M	9.194E-03	8.419E-02	8.430E-02	FAIL ABUN
TM-171	1.791E+01	9.553E+01	9.587E+01	NOT IDENT.
HF-172	7.909E-02	4.012E-01	4.028E-01	FAIL ABUN
LU-172	5.712E-02	7.583E-02	8.008E-02	FAIL ABUN
LU-176	-8.332E-04	4.864E-02	4.864E-02	FAIL ABUN
HF-181	-2.930E-03	1.049E-01	1.050E-01	NOT IDENT.
TA-182	9.369E-02	2.364E-01	2.401E-01	FAIL ABUN
RE-183	2.823E-01	9.313E-01	9.400E-01	NOT IDENT.
RE-184	-1.375E-01	2.388E-01	2.468E-01	NOT IDENT.
W-188	-9.663E-02	1.939E+01	1.939E+01	FAIL ABUN
IR-192	-5.332E-03	7.077E-02	7.081E-02	FAIL ABUN
HG-203	-6.598E-02	1.092E-01	1.131E-01	NOT IDENT.
TL-204	7.468E+00	1.535E+01	1.572E+01	FAIL ABUN
BI-207	3.980E-02	6.620E-02	6.859E-02	FAIL ABUN
BI-210	-5.005E+00	2.715E+01	2.725E+01	NOT IDENT.
PB-210	-5.005E+00	2.715E+01	2.725E+01	NOT IDENT.
PB-211	8.757E-01	1.277E+00	1.336E+00	NOT IDENT.
BI-213	8.928E-02	1.685E-01	1.732E-01	NOT IDENT.
RN-219	2.017E-01	7.441E-01	7.496E-01	FAIL ABUN
AC-225	-2.292E+00	4.865E+00	4.973E+00	NOT IDENT.
AC-227	3.994E-01	5.673E-01	5.952E-01	FAIL ABUN
TH-227	3.994E-01	5.673E-01	5.952E-01	FAIL ABUN
TH-229	1.826E-01	1.081E+00	1.085E+00	FAIL ABUN
TH-231	2.478E-01	1.140E+00	1.146E+00	FAIL ABUN
PA-233	1.297E-02	1.125E-01	1.127E-01	FAIL ABUN
PA-234	1.572E-01	5.144E-01	5.193E-01	NOT IDENT.
PA-234M	1.552E+01	1.003E+01	1.223E+01	FAIL ABUN
NP-237	1.297E-02	1.125E-01	1.127E-01	FAIL ABUN
NP-238	2.602E+03	1.336E+04	1.342E+04	SHORT HLIF
NP-239	2.843E-01	5.409E-01	5.559E-01	NOT IDENT.
PU-239	7.980E+02	7.028E+02	7.895E+02	FAIL ABUN
AM-241	-3.115E-01	6.238E-01	6.394E-01	NOT IDENT.
CM-243	-1.041E-01	2.128E-01	2.179E-01	NOT IDENT.
BK-247	1.401E-01	1.716E-01	1.828E-01	FAIL ABUN
CM-247	1.876E-02	6.871E-02	6.923E-02	NOT IDENT.
CF-249	1.006E-01	7.007E-02	8.347E-02	FAIL ABUN
CF-251	-3.109E-01	2.806E-01	3.137E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	637.8182	82.47	437.0219	125.81	330.3418
45.60	619.2458	323.87	408.1672	127.23	369.0424
46.54	626.3492	84.00	408.2746	127.91	365.1480
49.72	0.0000	85.43	414.9243	129.30	319.0224
51.35	523.3031	86.55	554.9822	131.20	359.0334
51.87	510.5675	879.38	555.1448	482.18	379.3989
52.39	489.3211	87.57	555.2476	133.52	363.9781
52.97	485.0697	87.09	546.4381	264.66	363.7760
53.44	486.3867	87.57	576.4733	122.06	352.4615
125.81	479.3211	88.03	600.5814	140.51	0.0000
57.36	0.0000	88.34	600.8064	143.76	378.9501
57.53	433.4827	193.51	600.8989	144.24	379.1117
57.98	427.1264	89.96	578.1340	145.44	359.5411
1093.63	433.2196	90.64	578.6017	152.43	336.3578
57.98	433.2531	91.11	586.8821	153.25	350.8867
59.54	451.9934	63.29	463.3515	154.21	348.5250
60.96	430.0335	143.76	463.7631	156.02	367.6311
61.17	430.1697	94.56	464.4158	158.56	341.3074
62.93	420.7574	94.65	464.4655	159.00	363.7716
63.29	420.9818	94.67	464.4749	162.33	311.4500
63.58	421.1610	94.87	464.5837	162.66	314.7369
64.28	436.4785	97.43	338.1884	163.33	320.2484
66.73	438.0268	311.90	325.0300	165.86	380.8176
67.24	455.7060	946.00	325.0333	176.31	345.1823
67.68	463.2275	99.53	331.4586	1048.07	349.5778
67.75	463.2739	1221.41	340.7208	177.52	371.4244
68.89	469.8188	265.00	334.3979	739.50	0.0000
69.67	480.7848	103.18	315.6602	181.52	324.9237
70.82	460.9018	103.37	315.7255	711.68	326.7294
70.83	460.9091	116.74	315.7255	185.72	327.0570
72.81	489.8599	105.21	320.4037	193.51	309.2981
279.20	489.9009	105.31	320.4375	197.03	350.6445
72.87	489.9009	106.12	283.2855	127.23	313.6126
74.66	499.8520	106.47	283.3923	306.78	321.0800
74.82	499.9564	109.28	367.4868	203.43	309.3390
1063.66	500.0581	111.00	301.0315	205.31	325.1860
351.93	501.4749	228.16	0.0000	210.85	287.7287
238.63	501.4749	114.06	335.6600	215.65	263.1533
351.93	501.4749	116.30	0.0000	218.12	268.6044
78.74	484.9066	116.74	306.9153	222.11	235.8764
79.69	459.0189	119.76	326.3233	290.67	286.4636
80.03	459.2164	121.12	337.0422	177.52	264.1340
80.12	459.2712	121.22	337.0755	228.16	0.0000
80.19	459.3140	121.78	335.2076	228.18	267.6351
80.57	459.5354	122.06	339.4145	235.69	270.0854
81.00	459.7877	122.92	329.4092	256.23	246.4975
81.07	459.8282	123.07	331.5171	238.63	246.9230
81.75	483.8270	123.68	334.8058	238.98	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
240.99	247.2995	340.48	169.2246	546.56	0.0000
242.00	247.4599	340.55	169.2303	552.55	72.6382
344.28	215.6264	344.28	186.7957	563.25	77.8476
252.40	244.5389	345.93	182.6369	564.24	0.0000
252.80	229.8103	351.06	154.0920	795.86	85.9194
254.15	0.0000	351.93	154.1599	569.50	85.9247
256.23	213.7680	507.63	0.0000	569.70	77.0407
260.90	0.0000	356.01	147.4244	583.19	92.2990
264.66	209.7136	364.49	136.0657	584.27	92.3330
264.80	199.4139	366.42	0.0000	595.83	88.7175
265.00	180.5264	372.51	129.6736	600.60	100.8459
269.46	224.1080	129.30	110.8680	602.52	0.0000
270.03	224.1833	377.52	127.0633	604.72	75.1931
271.23	224.3460	383.85	144.6581	607.14	97.6715
273.65	279.9701	388.16	122.0148	609.32	97.7430
356.01	238.8763	388.63	122.9587	497.08	97.7787
277.37	248.2525	391.69	138.7561	433.94	48.1523
277.60	248.2832	400.66	153.1706	696.49	75.5328
278.00	251.8053	401.81	157.8676	620.36	67.5507
279.20	271.6327	402.40	159.7563	621.93	59.0050
279.54	270.5292	404.85	143.2951	667.71	0.0000
279.70	270.5577	410.95	135.3467	631.29	62.9561
280.46	268.3633	413.71	105.0166	453.88	53.3060
283.69	202.8066	414.70	102.5162	595.83	63.0303
364.49	213.3115	423.72	137.2341	635.95	66.9796
285.41	220.4104	404.85	128.8486	636.99	68.7367
285.90	0.0000	427.87	136.3626	657.50	63.9659
402.40	212.5432	433.94	115.1849	884.68	69.2036
290.67	209.4360	333.97	93.8675	657.90	0.0000
293.27	0.0000	440.45	103.2996	661.66	66.8452
295.22	232.7216	453.88	89.1554	664.57	0.0000
295.96	229.6681	463.37	105.2481	666.33	48.9858
298.58	147.2589	468.07	106.4031	720.70	48.9873
299.98	207.0222	685.70	114.2322	667.71	0.0000
300.09	207.0366	475.06	108.6128	677.62	51.2100
300.13	207.0402	476.78	105.8274	685.70	53.3949
301.36	210.6921	477.60	112.5390	564.24	0.0000
302.85	205.2448	482.18	97.8422	695.00	51.0773
304.50	180.1031	1596.21	75.6296	696.49	52.7500
537.26	195.6181	527.90	0.0000	696.51	52.7500
306.78	193.7119	497.08	95.1555	697.00	64.2986
316.51	193.0085	505.52	97.2055	697.30	67.6020
311.90	169.5293	507.63	0.0000	697.49	67.6060
316.51	163.7550	511.00	104.3704	702.65	65.0303
531.02	173.7610	514.00	94.4279	706.68	62.8373
320.08	177.3682	514.00	94.4309	711.68	63.1408
427.87	177.4597	520.40	90.0048	720.70	71.4098
323.87	176.8366	238.98	0.0000	721.93	0.0000
325.23	176.9641	522.65	0.0000	722.78	94.7207
328.76	174.6193	527.90	0.0000	722.91	94.7235
388.16	188.6124	528.26	78.7950	1274.44	96.3967
333.97	194.3877	520.40	85.6475	724.19	79.7977
334.37	114.3691	529.87	0.0000	727.33	58.2422
338.28	160.4395	531.02	109.0640	733.00	46.6730
911.20	160.4422	537.26	46.8516	735.93	43.7932

ENERGY	MDA COUNTS
737.46	52.1591
739.50	0.0000
744.23	67.9437
747.24	60.6798
748.06	70.1140
752.31	69.1522
753.82	42.9782
756.73	68.1937
756.80	68.1956
763.94	58.8745
765.81	63.9562
766.42	54.7089
766.84	54.7152
772.60	0.0000
776.52	48.9587
777.92	0.0000
778.90	49.2743
783.70	57.5194
788.74	65.6479
792.07	42.3938
795.86	50.9268
801.95	46.7634
810.06	59.6521
810.29	59.6555
810.45	59.6572
810.76	59.6624
815.77	54.4116
818.51	54.4536
832.01	70.0148
834.85	77.2207
835.71	77.2383
1260.41	0.0000
846.75	0.0000
846.77	61.9752
856.80	43.1543
860.56	48.5980
702.65	43.3191
873.19	43.3423
529.87	0.0000
879.38	34.7305
880.51	34.7412
881.60	34.7510
883.24	34.7656
884.68	59.1231
889.28	73.1227
903.28	54.4846
898.04	35.9900
900.72	43.6548
903.28	50.2353
911.20	48.1492
912.08	48.1599
923.98	0.0000
926.50	41.7457
929.11	41.0396
1434.09	42.2813

ENERGY	MDA COUNTS
937.49	17.6255
944.13	49.4334
946.00	45.9240
949.00	54.1336
954.55	0.0000
962.31	47.6611
964.08	47.6821
966.17	47.7057
968.97	47.7386
983.53	41.2230
984.45	0.0000
996.26	48.2783
1001.03	41.3958
1002.74	46.5613
1004.73	48.3759
1021.30	0.0000
1025.87	0.0000
1028.54	0.0000
846.77	41.5303
1038.76	0.0000
1046.59	46.1391
1048.07	52.4889
1049.04	56.1209
621.93	41.6516
1063.66	36.3281
1077.00	42.8164
1077.34	43.7297
1085.87	37.4245
1093.63	28.3450
1099.45	25.6361
1112.07	19.5099
1112.84	22.9565
1115.54	35.2206
609.32	34.9515
889.28	34.9533
1121.30	34.9589
1129.67	52.5357
1131.51	0.0000
1147.95	0.0000
1173.23	46.5161
1177.95	42.8375
1189.05	29.8703
1204.77	44.9531
1221.41	32.8911
1231.02	31.3867
1235.36	9.4243
1238.28	31.4323
1260.41	0.0000
1271.87	15.8228
1274.44	20.5802
1274.54	20.5812
1099.45	24.7800
1298.22	0.0000
1312.11	26.7941
1332.49	38.4277

ENERGY	MDA COUNTS
1362.66	0.0000
1365.19	29.9677
1368.63	0.0000
1384.29	33.9575
1408.01	24.9029
1434.09	31.3328
1435.80	25.4655
1457.56	0.0000
1460.82	30.5005
696.51	27.6883
1505.03	26.4440
1584.12	38.1985
1596.21	34.2474
727.33	19.2162
1621.92	23.2673
1678.03	0.0000
1690.97	13.2996
1750.46	0.0000
1764.49	16.5602
1770.23	17.2648
1771.35	25.9021
1791.20	0.0000
1808.65	8.3363
846.75	0.0000
1836.06	12.5566

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:21:41.43

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*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299010.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM23.CNF;911
                                         Background date  : 28-JUL-2024 11:28:24
Sample date      : 26-JUN-2024 09:30:00  Acquisition date : 30-JUL-2024 11:17:40
Sample ID        : G674299010            Sample quantity  : 1.07750E+02 GRAM
Detector name    : GAM23                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:01.57  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.60*	99	324	0.86	127.20	123	9	2.74E-02	34.7	
2	0	68.02	74	392	1.41	136.02	133	10	2.05E-02	51.3	
3	3	74.99	326	315	0.95	149.97	146	27	9.07E-02	10.2	4.26E+00
4	3	77.26	560	304	0.95	154.50	146	27	1.56E-01	6.4	
5	3	84.16*	83	339	1.11	168.30	146	27	2.31E-02	38.1	
6	0	87.23	221	220	1.14	174.45	172	6	6.13E-02	12.5	
7	3	90.08	135	190	1.13	180.14	178	14	3.75E-02	17.3	2.17E+00
8	3	92.77*	304	218	1.07	185.52	178	14	8.45E-02	9.8	
9	0	112.58	67	186	1.94	225.13	222	7	1.85E-02	36.0	
10	0	128.63	49	246	0.92	257.23	254	8	1.35E-02	57.6	
11	0	144.14*	78	226	1.83	288.24	285	8	2.17E-02	35.3	
12	1	183.92	37	142	1.18	367.79	365	14	1.02E-02	49.5	2.67E+00
13	1	186.11*	453	169	1.18	372.17	365	14	1.26E-01	7.0	
14	0	208.40	58	189	1.39	416.74	413	9	1.61E-02	44.8	
15	0	238.73*	353	218	1.13	477.39	472	9	9.81E-02	9.3	
16	0	241.99	471	144	0.96	483.90	481	8	1.31E-01	6.4	
17	0	258.91	23	131	1.33	517.75	514	7	6.39E-03	85.5	
18	0	270.25	49	170	1.34	540.42	537	9	1.37E-02	49.7	
19	0	295.29*	996	175	1.18	590.48	584	13	2.77E-01	4.2	
20	0	299.99	35	68	0.88	599.88	597	6	9.69E-03	41.2	
21	0	329.08	51	192	5.67	658.07	652	17	1.43E-02	63.3	
22	0	337.91	69	147	1.12	675.72	672	10	1.91E-02	35.0	
23	0	351.95*	1747	166	1.23	703.80	697	13	4.85E-01	2.8	
24	0	357.35	46	84	1.46	714.58	711	10	1.27E-02	40.3	
25	0	429.40	12	88	1.52	858.67	851	9	3.24E-03	148.9	
26	0	487.65	32	64	1.74	975.16	971	11	8.97E-03	50.9	
27	0	511.46*	90	53	2.58	1022.77	1014	18	2.49E-02	24.1	
28	0	582.81	136	71	1.48	1165.45	1157	15	3.79E-02	16.0	
29	0	596.33	34	29	3.22	1192.49	1186	13	9.34E-03	37.4	
30	0	609.22*	1201	53	1.55	1218.26	1209	18	3.33E-01	3.2	
31	0	665.96	39	34	0.93	1331.73	1327	10	1.09E-02	32.2	
32	0	727.26	60	19	2.65	1454.32	1448	13	1.67E-02	19.8	
33	0	768.36	115	70	1.78	1536.52	1529	18	3.21E-02	19.1	
34	0	786.37	53	21	1.55	1572.53	1564	17	1.47E-02	24.2	

Sample ID : G674299010 Acquisition date : 30-JUL-2024 11:17:40

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	806.21	28	24	2.03	1612.20	1607	11	7.91E-03	38.5	
36	0	815.94	20	15	2.27	1631.67	1627	9	5.63E-03	41.4	
37	0	841.42	24	49	4.73	1682.63	1672	18	6.61E-03	74.7	
38	0	910.99*	74	35	1.41	1821.77	1814	14	2.07E-02	20.6	
39	0	934.04	55	23	1.41	1867.87	1863	13	1.52E-02	22.6	
40	0	940.12	7	8	1.15	1880.03	1876	6	1.81E-03	81.7	
41	3	964.29*	29	12	2.47	1928.36	1924	20	8.12E-03	28.6	4.91E-01
42	3	968.68	72	12	2.68	1937.13	1924	20	2.00E-02	17.0	
43	0	991.32	15	26	4.81	1982.43	1969	16	4.25E-03	80.8	
44	0	1001.39	33	21	1.81	2002.56	1997	11	9.25E-03	32.1	
45	0	1075.91	9	13	1.32	2151.60	2146	9	2.58E-03	78.0	
46	0	1120.08	236	12	1.74	2239.93	2231	16	6.54E-02	7.3	
47	0	1126.84	18	12	0.94	2253.45	2248	10	5.11E-03	42.5	
48	0	1154.79	29	30	0.93	2309.34	2303	12	8.18E-03	41.4	
49	0	1203.36	5	16	0.71	2406.49	2400	9	1.31E-03	159.4	
50	0	1237.46	91	21	1.86	2474.69	2465	16	2.54E-02	15.1	
51	0	1281.56	15	25	2.76	2562.89	2556	12	4.27E-03	71.5	
52	0	1323.51	17	16	4.83	2646.80	2638	16	4.74E-03	57.7	
53	0	1346.23	15	10	3.09	2692.23	2685	13	4.03E-03	51.5	
54	0	1377.51	84	11	2.28	2754.80	2747	14	2.34E-02	13.6	
55	0	1401.00	18	11	1.55	2801.80	2795	13	4.88E-03	48.1	
56	0	1410.17	19	55	1.94	2820.13	2811	20	5.38E-03	99.9	
57	0	1461.89	29	39	1.61	2923.56	2917	16	8.15E-03	53.3	
58	0	1574.13	14	0	4.46	3148.07	3141	14	3.89E-03	26.7	
59	0	1660.25	31	4	1.49	3320.32	3312	16	8.64E-03	23.0	
60	6	1727.10	20	0	2.50	3454.04	3451	14	5.60E-03	21.1	1.26E+01
61	6	1729.58	80	0	2.58	3459.00	3451	14	2.23E-02	9.9	
62	0	1764.13	206	14	3.44	3528.11	3518	19	5.71E-02	8.3	
63	0	1848.32	20	14	2.38	3696.51	3688	14	5.62E-03	45.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:21:43

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299010.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4		
Sample title	: RXF2		
Sample date	: 26-JUN-2024 09:30:00	Acquisition date	: 30-JUL-2024 11:17:40
Sample ID	: G674299010	Sample quantity	: 107.75 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA23	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:01.57 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.690E-01	1.857E+00	1.857E+00	106.51	OK
GE-68	1077.34	3.22*	1.272E+00	1.494E+00	1.631E+00	156.09	OK
AS-74	595.83	59.00*	2.163E+00	1.771E-01	6.698E-01	74.79	OK
	634.78	15.40	2.053E+00	----- Line Not Found		-----	Absent
RB-86	1077.00	8.64*	1.272E+00	5.570E-01	1.979E+00	156.09	OK
Y-91	1204.77	0.26*	1.147E+00	1.041E+01	1.558E+01	318.71	OK
CD-109	88.03	3.70*	4.956E+00	8.570E+00	9.020E+00	25.08	OK
SN-126	64.28	9.60	2.364E+00	3.124E+00	3.124E+00	69.40	OK
	86.94	8.90	4.956E+00	3.563E+00	3.563E+00	25.08	OK
	87.57	37.00*	4.956E+00	8.570E-01	8.570E-01	25.08	OK
TL-208	277.37	6.60	3.918E+00	----- Line Not Found		-----	Absent
	583.19	85.00*	2.204E+00	4.899E-01	4.899E-01	31.93	OK
	860.56	12.50	1.568E+00	----- Line Not Found		-----	Absent
BI-211	72.87	1.23	3.550E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	3.272E+00	2.822E+01	2.822E+01	5.68	OK
BI-212	727.33	6.67*	1.825E+00	3.301E+00	3.301E+00	39.69	OK
	1620.50	1.47	8.981E-01	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	3.797E+00	5.977E+00	5.977E+00	20.32	OK
	77.11	17.10	4.047E+00	5.777E+00	5.777E+00	12.87	OK
	238.63	43.60*	4.379E+00	1.278E+00	1.278E+00	18.54	OK
	300.09	3.30	3.693E+00	1.964E+00	1.964E+00	82.41	OK
BI-214	609.32	45.49*	2.125E+00	8.346E+00	8.347E+00	6.46	OK
	1120.29	14.92	1.225E+00	8.500E+00	8.500E+00	14.60	OK
	1764.49	15.30	8.531E-01	1.024E+01	1.024E+01	16.50	OK
PB-214	74.82	5.80	3.797E+00	1.059E+01	1.059E+01	20.32	OK
	77.11	9.70	4.047E+00	1.018E+01	1.018E+01	12.87	OK
	87.09	3.41	4.956E+00	9.299E+00	9.299E+00	25.08	OK
	242.00	7.25	4.336E+00	1.035E+01	1.035E+01	12.76	OK
	295.22	18.42	3.738E+00	9.934E+00	9.934E+00	8.40	OK
	351.93	35.60*	3.272E+00	1.024E+01	1.024E+01	5.68	OK
RN-222	609.32	45.49*	2.125E+00	8.346E+00	8.347E+00	6.46	OK
	1120.29	14.92	1.225E+00	8.500E+00	8.500E+00	14.60	OK
	1764.49	15.30	8.531E-01	1.024E+01	1.024E+01	16.50	OK
RA-224	240.99	4.10*	4.336E+00	1.830E+01	1.830E+01	12.76	OK
RA-226	74.82	5.80	3.797E+00	1.059E+01	1.059E+01	20.32	OK
	77.11	9.70	4.047E+00	1.018E+01	1.018E+01	12.87	OK
	87.09	3.41	4.956E+00	9.299E+00	9.299E+00	25.08	OK
	242.00	7.25	4.336E+00	1.035E+01	1.035E+01	12.76	OK
	295.22	18.42	3.738E+00	9.934E+00	9.934E+00	8.40	OK
	351.93	35.60*	3.272E+00	1.024E+01	1.024E+01	5.68	OK
AC-228	105.21	1.10	5.840E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.375E+00	1.235E+00	1.235E+00	70.04	OK
	835.71	1.61	1.611E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.487E+00	1.287E+00	1.287E+00	41.18	OK
	968.97	15.80	1.404E+00	2.147E+00	2.147E+00	34.07	OK
RA-228	105.21	1.10	5.840E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.375E+00	1.235E+00	1.235E+00	70.04	OK
	835.71	1.61	1.611E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.487E+00	1.287E+00	1.287E+00	41.18	OK

Sample ID : G674299010 Acquisition date : 30-JUL-2024 11:17:40

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	968.97	15.80	1.404E+00	2.147E+00	2.147E+00	34.07	OK
TH-228	74.82	10.28	3.797E+00	5.977E+00	5.977E+00	20.32	OK
	77.11	17.10	4.047E+00	5.777E+00	5.777E+00	12.87	OK
	238.63	43.60*	4.379E+00	1.278E+00	1.278E+00	18.54	OK
	300.09	3.30	3.693E+00	1.964E+00	1.964E+00	82.41	OK
TH-229	85.43	14.70	4.710E+00	8.561E-01	8.561E-01	76.28	OK
	88.47	24.00	4.956E+00	1.321E+00	1.321E+00	25.08	OK
	193.51	4.41*	5.067E+00	----- Line Not Found		-----	Absent
	210.85	2.80	4.784E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	3.797E+00	1.059E+01	1.059E+01	20.32	OK
	77.11	9.70	4.047E+00	1.018E+01	1.018E+01	12.87	OK
	87.09	3.41	4.956E+00	9.299E+00	9.299E+00	25.08	OK
	242.00	7.25	4.336E+00	1.035E+01	1.035E+01	12.76	OK
	295.22	18.42	3.738E+00	9.934E+00	9.934E+00	8.40	OK
	351.93	35.60*	3.272E+00	1.024E+01	1.024E+01	5.68	OK
PA-231	283.69	1.70	3.852E+00	----- Line Not Found		-----	Absent
	301.36	5.35*	3.693E+00	1.211E+00	1.211E+00	82.41	OK
TH-232	105.21	1.10	5.840E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.375E+00	1.235E+00	1.235E+00	70.04	OK
	835.71	1.61	1.611E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.487E+00	1.287E+00	1.287E+00	41.18	OK
	968.97	15.80	1.404E+00	2.147E+00	2.147E+00	34.07	OK
TH-234	63.29	3.70*	2.364E+00	8.106E+00	8.106E+00	69.40	OK
	92.59	4.23	5.323E+00	9.593E+00	9.593E+00	19.59	OK
U-234	74.82	5.80	3.797E+00	1.059E+01	1.059E+01	20.32	OK
	77.11	9.70	4.047E+00	1.018E+01	1.018E+01	12.87	OK
	87.09	3.41	4.956E+00	9.299E+00	9.299E+00	25.08	OK
	242.00	7.25	4.336E+00	1.035E+01	1.035E+01	12.76	OK
	295.22	18.42	3.738E+00	9.934E+00	9.934E+00	8.40	OK
	351.93	35.60*	3.272E+00	1.024E+01	1.024E+01	5.68	OK
U-235	89.96	3.47	5.156E+00	5.360E+00	5.360E+00	34.64	OK
	93.35	5.60	5.323E+00	7.246E+00	7.246E+00	19.59	OK
	143.76	10.96*	5.892E+00	8.480E-01	8.480E-01	70.51	OK
	163.33	5.08	5.592E+00	----- Line Not Found		-----	Absent
	185.72	57.20	5.194E+00	1.061E+00	1.061E+00	13.98	OK
	205.31	5.01	4.872E+00	----- Line Not Found		-----	Absent
U-238	63.29	3.70*	2.364E+00	8.106E+00	8.106E+00	69.40	OK
	92.59	4.23	5.323E+00	9.593E+00	9.593E+00	19.59	OK
AM-243	43.53	5.90	2.737E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	3.797E+00	9.143E-01	9.143E-01	20.32	OK
ANH-511	511.00	100.00*	2.450E+00	2.472E-01	2.472E-01	48.24	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:21:43.96

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299010.CNF;1  *
* Acquisition date : 30-JUL-2024 11:17:40 Sensitivity     : 3.000           *
* Detector ID      : GAM23                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.57     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:30:00 Analyst initials: RXF2            *
* Sample ID        : G674299010           Sample Quantity : 1.0775E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  6-SEP-2023 11:17:47 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM23_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.857E+00	1.939E+00	1.706E+00
GE-68	1.631E+00	2.495E+00	3.850E+00
AS-74	6.698E-01	4.909E-01	5.060E-01
RB-86	1.979E+00	3.027E+00	4.439E+00
Y-91	1.558E+01	4.868E+01	9.286E+01
CD-109	9.020E+00	2.218E+00	2.245E+00
SN-126	8.570E-01	2.107E-01	2.223E-01
TL-208	4.899E-01	1.533E-01	1.200E-01
BI-211	2.822E+01	1.570E+00	7.053E-01
BI-212	3.301E+00	1.284E+00	1.508E+00
PB-212	1.278E+00	2.321E-01	1.970E-01
BI-214	8.347E+00	5.284E-01	1.775E-01
PB-214	1.024E+01	5.699E-01	2.566E-01
RN-222	8.347E+00	5.284E-01	1.775E-01
RA-224	1.830E+01	2.288E+00	1.787E+00
RA-226	1.024E+01	5.699E-01	2.566E-01
AC-228	1.287E+00	5.193E-01	4.903E-01
RA-228	1.287E+00	5.193E-01	4.903E-01
TH-228	1.278E+00	2.321E-01	1.970E-01
TH-229	-3.529E-01	9.762E-01	1.658E+00
TH-230	1.024E+01	5.699E-01	2.566E-01
PA-231	1.211E+00	9.783E-01	1.599E+00
TH-232	1.287E+00	5.193E-01	4.903E-01
TH-234	8.106E+00	5.513E+00	4.429E+00
U-234	1.024E+01	5.699E-01	2.566E-01
U-235	8.480E-01	5.860E-01	5.655E-01
U-238	8.106E+00	5.513E+00	4.429E+00
AM-243	9.143E-01	1.821E-01	1.811E-01
ANH-511	2.472E-01	1.169E-01	8.146E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	7.103E-02	7.360E-01	1.354E+00	NOT IDENT.

NA-22	-5.067E-02	8.684E-02	1.373E-01	NOT IDENT.
NA-24	0.000E+00	1.779E+15	0.000E+00	SHORT HLIF
AL-26	2.362E-02	4.959E-02	1.160E-01	NOT IDENT.
SC-46	-9.744E-02	9.269E-02	1.509E-01	FAIL ABUN
V-48	5.326E-02	3.409E-01	5.729E-01	NOT IDENT.
CR-51	2.027E-01	1.079E+00	2.031E+00	NOT IDENT.
MN-52	2.940E+00	4.893E+00	1.042E+01	FAIL ABUN
MN-54	-9.810E-03	7.452E-02	1.211E-01	NOT IDENT.
CO-56	1.424E-02	7.794E-02	1.390E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.245E-02	4.281E-02	7.634E-02	NOT IDENT.
CO-58	8.707E-02	9.545E-02	1.556E-01	NOT IDENT.
FE-59	-1.372E-02	2.215E-01	4.062E-01	NOT IDENT.
CO-60	-1.724E-02	7.362E-02	1.386E-01	NOT IDENT.
ZN-65	8.942E-02	1.431E-01	2.721E-01	NOT IDENT.
AS-73	2.466E-01	2.763E+00	4.490E+00	NOT IDENT.
SE-75	3.923E-03	9.100E-02	1.559E-01	NOT IDENT.
BR-77	0.000E+00	9.124E+03	0.000E+00	SHORT HLIF
SR-82	9.140E-02	1.023E+00	1.830E+00	NOT IDENT.
RB-83	1.248E-01	1.407E-01	2.800E-01	NOT IDENT.
RB-84	1.339E-01	2.015E-01	4.034E-01	NOT IDENT.
KR-85	1.511E+01	1.206E+01	2.442E+01	NOT IDENT.
SR-85	9.750E-02	7.802E-02	1.579E-01	NOT IDENT.
Y-88	-3.765E-02	7.795E-02	1.466E-01	NOT IDENT.
NB-94	9.228E-03	6.121E-02	1.166E-01	NOT IDENT.
NB-95	1.579E-01	1.191E-01	2.254E-01	NOT IDENT.
NB-95M	8.006E-02	3.218E-01	5.151E-01	NOT IDENT.
ZR-95	-2.179E-02	1.626E-01	3.027E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.776E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.753E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	3.582E+39	0.000E+00	SHORT HLIF
RH-101	8.512E-02	9.605E-02	9.615E-02	FAIL ABUN
RH-102	5.479E-02	9.989E-02	1.904E-01	NOT IDENT.
RU-103	-5.008E-02	9.681E-02	1.667E-01	FAIL ABUN
RH-106	3.526E-01	5.638E-01	1.090E+00	NOT IDENT.
RU-106	3.526E-01	5.638E-01	1.090E+00	NOT IDENT.
AG-108M	-3.033E-03	5.691E-02	1.033E-01	NOT IDENT.
AG-110	-9.794E-02	1.301E+00	2.312E+00	NOT IDENT.
AG-110M	5.105E-02	1.087E-01	2.117E-01	NOT IDENT.
SN-113	-6.150E-02	9.319E-02	1.619E-01	NOT IDENT.
CD-115	0.000E+00	7.461E+03	0.000E+00	SHORT HLIF
SN-117M	3.401E-02	2.650E-01	4.713E-01	NOT IDENT.
SB-122	0.000E+00	4.183E+02	0.000E+00	SHORT HLIF
TE-123M	4.725E-02	5.724E-02	1.059E-01	NOT IDENT.
SB-124	2.081E-02	2.025E-01	4.105E-01	NOT IDENT.
SB-125	1.453E-01	1.796E-01	3.481E-01	NOT IDENT.
TE-125M	1.833E+01	2.072E+01	3.733E+01	NOT IDENT.
I-126	2.526E+00	1.597E+00	2.559E+00	FAIL ABUN
SB-126	8.479E-01	7.668E-01	1.536E+00	FAIL ABUN
SB-127	-7.748E+00	7.157E+01	1.258E+02	NOT IDENT.
I-131	2.465E-01	1.044E+00	1.970E+00	NOT IDENT.
I-132	0.000E+00	7.973E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.937E+01	0.000E+00	SHORT HLIF
BA-133	0.000E+00	1.242E-01	1.470E-01	FAIL ABUN
I-133	0.000E+00	3.826E+10	0.000E+00	SHORT HLIF
CS-134	-5.251E-04	7.964E-02	1.491E-01	NOT IDENT.
I-135	0.000E+00	6.044E+36	0.000E+00	SHORT HLIF
CS-136	2.931E-01	5.442E-01	1.078E+00	NOT IDENT.
BA-137M	-1.844E-02	7.445E-02	1.128E-01	NOT IDENT.
CS-137	-1.948E-02	7.865E-02	1.191E-01	NOT IDENT.
LA-138	3.772E-02	1.151E-01	2.341E-01	NOT IDENT.
CE-139	2.749E-03	5.823E-02	1.029E-01	NOT IDENT.
BA-140	-1.922E-01	1.303E+00	2.326E+00	NOT IDENT.
LA-140	-2.818E-02	5.802E-01	1.098E+00	FAIL ABUN
CE-141	0.000E+00	2.751E-01	3.005E-01	FAIL ABUN
CE-143	0.000E+00	3.858E+06	0.000E+00	SHORT HLIF
CE-144	-2.364E-01	3.558E-01	6.144E-01	NOT IDENT.
PM-144	-2.410E-02	5.471E-02	9.998E-02	NOT IDENT.
PR-144	-1.857E+00	4.131E+00	7.540E+00	NOT IDENT.
PM-146	6.467E-02	8.459E-02	1.629E-01	NOT IDENT.
ND-147	-2.220E+00	3.267E+00	5.474E+00	FAIL ABUN
PM-147	7.902E+02	1.193E+03	2.250E+03	NOT IDENT.
PM-149	0.000E+00	6.188E+04	0.000E+00	SHORT HLIF
EU-150	8.442E-03	6.685E-02	9.077E-02	FAIL ABUN
EU-152	-7.325E-02	1.895E-01	3.255E-01	FAIL ABUN
GD-153	-6.774E-02	1.564E-01	2.604E-01	NOT IDENT.
EU-154	-1.311E-01	2.453E-01	3.918E-01	NOT IDENT.

EU-155	-6.661E-02	1.686E-01	3.025E-01	FAIL ABUN
TB-160	-1.464E-01	3.109E-01	5.489E-01	FAIL ABUN
HO-166M	1.085E-01	1.102E-01	2.277E-01	FAIL ABUN
TM-171	7.393E-02	4.920E+01	7.976E+01	FAIL ABUN
HF-172	5.717E-02	3.453E-01	5.853E-01	FAIL ABUN
LU-172	1.179E-02	1.200E-01	2.252E-01	FAIL ABUN
LU-176	3.828E-03	4.533E-02	8.529E-02	FAIL ABUN
HF-181	-5.729E-02	1.060E-01	1.825E-01	NOT IDENT.
TA-182	-8.559E-02	3.538E-01	6.265E-01	FAIL ABUN
RE-183	-5.688E-02	4.473E-01	8.549E-01	FAIL ABUN
RE-184	4.359E-02	3.979E-01	7.198E-01	NOT IDENT.
W-188	-8.383E+00	1.744E+01	2.818E+01	FAIL ABUN
IR-192	-2.237E-03	7.176E-02	1.337E-01	FAIL ABUN
HG-203	-5.007E-02	9.364E-02	1.514E-01	NOT IDENT.
TL-204	-7.474E+00	9.176E+00	1.533E+01	FAIL ABUN
BI-207	8.640E-03	9.464E-02	1.781E-01	FAIL ABUN
BI-210	5.489E+00	1.147E+01	1.946E+01	NOT IDENT.
PB-210	5.489E+00	1.147E+01	1.946E+01	NOT IDENT.
PB-211	1.851E-01	1.394E+00	2.569E+00	NOT IDENT.
BI-213	-8.101E-02	1.819E-01	3.194E-01	NOT IDENT.
RN-219	6.162E-01	8.133E-01	1.564E+00	FAIL ABUN
RA-223	1.000E+00	1.250E+00	2.246E+00	FAIL ABUN
AC-225	-2.900E+00	4.273E+00	7.010E+00	NOT IDENT.
AC-227	2.488E-01	5.489E-01	8.945E-01	FAIL ABUN
TH-227	2.488E-01	5.489E-01	8.945E-01	FAIL ABUN
TH-231	1.000E+00	1.250E+00	2.246E+00	FAIL ABUN
PA-233	4.025E-02	1.133E-01	2.166E-01	FAIL ABUN
PA-234	-2.482E-01	5.469E-01	9.633E-01	NOT IDENT.
PA-234M	1.927E+01	1.214E+01	2.131E+01	FAIL ABUN
NP-237	4.025E-02	1.133E-01	2.166E-01	FAIL ABUN
NP-238	0.000E+00	2.046E+04	0.000E+00	SHORT HLIF
NP-239	-2.185E-01	4.325E-01	7.639E-01	NOT IDENT.
PU-239	8.995E+02	1.015E+03	1.104E+03	FAIL ABUN
AM-241	9.530E-02	2.999E-01	5.489E-01	NOT IDENT.
CM-243	7.760E-02	1.666E-01	3.142E-01	NOT IDENT.
BK-247	5.698E-02	1.506E-01	2.646E-01	FAIL ABUN
CM-247	1.138E-02	7.643E-02	1.406E-01	NOT IDENT.
CF-249	9.894E-02	7.256E-02	1.472E-01	NOT IDENT.
CF-251	-1.592E-01	2.280E-01	3.819E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:21:42.27

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	28	10.66*	9.690E-01	1.857E+00	1.857E+00	106.51
GE-68	1077.34	9	3.22*	1.272E+00	1.494E+00	1.631E+00	156.09
AS-74	595.83	32	59.00*	2.163E+00	1.771E-01	6.698E-01	74.79
	634.78	------	15.40	2.053E+00	------	Line Not Found	------
RB-86	1077.00	9	8.64*	1.272E+00	5.570E-01	1.979E+00	156.09
Y-91	1204.77	4	0.26*	1.147E+00	1.041E+01	1.558E+01	318.71
CD-109	88.03	226	3.70*	4.956E+00	8.570E+00	9.020E+00	25.08
SN-126	64.28	102	9.60	2.364E+00	3.124E+00	3.124E+00	69.40
	86.94	226	8.90	4.956E+00	3.563E+00	3.563E+00	25.08
	87.57	226	37.00*	4.956E+00	8.570E-01	8.570E-01	25.08
CE-141	145.44	79	48.29*	5.892E+00	1.925E-01	3.982E-01	70.51
TL-208	277.37	------	6.60	3.918E+00	------	Line Not Found	------
	583.19	132	85.00*	2.204E+00	4.899E-01	4.899E-01	31.93
	860.56	------	12.50	1.568E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.550E+00	------	Line Not Found	------
	351.06	1712	12.92*	3.272E+00	2.822E+01	2.822E+01	5.68
BI-212	727.33	58	6.67*	1.825E+00	3.301E+00	3.301E+00	39.69
	1620.50	------	1.47	8.981E-01	------	Line Not Found	------
PB-212	74.82	335	10.28	3.797E+00	5.977E+00	5.977E+00	20.32
	77.11	574	17.10	4.047E+00	5.777E+00	5.777E+00	12.87
	238.63	350	43.60*	4.379E+00	1.278E+00	1.278E+00	18.54
	300.09	34	3.30	3.693E+00	1.964E+00	1.964E+00	82.41
BI-214	609.32	1158	45.49*	2.125E+00	8.346E+00	8.347E+00	6.46
	1120.29	223	14.92	1.225E+00	8.500E+00	8.500E+00	14.60
	1764.49	192	15.30	8.531E-01	1.024E+01	1.024E+01	16.50
PB-214	74.82	335	5.80	3.797E+00	1.059E+01	1.059E+01	20.32
	77.11	574	9.70	4.047E+00	1.018E+01	1.018E+01	12.87
	87.09	226	3.41	4.956E+00	9.299E+00	9.299E+00	25.08
	242.00	467	7.25	4.336E+00	1.035E+01	1.035E+01	12.76
	295.22	982	18.42	3.738E+00	9.934E+00	9.934E+00	8.40
	351.93	1712	35.60*	3.272E+00	1.024E+01	1.024E+01	5.68
RN-222	609.32	1158	45.49*	2.125E+00	8.346E+00	8.347E+00	6.46
	1120.29	223	14.92	1.225E+00	8.500E+00	8.500E+00	14.60
	1764.49	192	15.30	8.531E-01	1.024E+01	1.024E+01	16.50
RA-224	240.99	467	4.10*	4.336E+00	1.830E+01	1.830E+01	12.76
RA-226	74.82	335	5.80	3.797E+00	1.059E+01	1.059E+01	20.32
	77.11	574	9.70	4.047E+00	1.018E+01	1.018E+01	12.87
	87.09	226	3.41	4.956E+00	9.299E+00	9.299E+00	25.08
	242.00	467	7.25	4.336E+00	1.035E+01	1.035E+01	12.76
	295.22	982	18.42	3.738E+00	9.934E+00	9.934E+00	8.40
	351.93	1712	35.60*	3.272E+00	1.024E+01	1.024E+01	5.68
AC-228	105.21	------	1.10	5.840E+00	------	Line Not Found	------
	338.32	67	11.27	3.375E+00	1.235E+00	1.235E+00	70.04
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	71	25.80*	1.487E+00	1.287E+00	1.287E+00	41.18
	968.97	68	15.80	1.404E+00	2.147E+00	2.147E+00	34.07
RA-228	105.21	------	1.10	5.840E+00	------	Line Not Found	------

Sample ID : G674299010 Acquisition date : 30-JUL-2024 11:17:40

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	338.32	67	11.27	3.375E+00	1.235E+00	1.235E+00	70.04
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	71	25.80*	1.487E+00	1.287E+00	1.287E+00	41.18
	968.97	68	15.80	1.404E+00	2.147E+00	2.147E+00	34.07
TH-228	74.82	335	10.28	3.797E+00	5.977E+00	5.977E+00	20.32
	77.11	574	17.10	4.047E+00	5.777E+00	5.777E+00	12.87
	238.63	350	43.60*	4.379E+00	1.278E+00	1.278E+00	18.54
	300.09	34	3.30	3.693E+00	1.964E+00	1.964E+00	82.41
TH-229	85.43	85	14.70	4.710E+00	8.561E-01	8.561E-01	76.28
	88.47	226	24.00	4.956E+00	1.321E+00	1.321E+00	25.08
	193.51	------	4.41*	5.067E+00	------	Line Not Found	------
	210.85	------	2.80	4.784E+00	------	Line Not Found	------
TH-230	74.82	335	5.80	3.797E+00	1.059E+01	1.059E+01	20.32
	77.11	574	9.70	4.047E+00	1.018E+01	1.018E+01	12.87
	87.09	226	3.41	4.956E+00	9.299E+00	9.299E+00	25.08
	242.00	467	7.25	4.336E+00	1.035E+01	1.035E+01	12.76
	295.22	982	18.42	3.738E+00	9.934E+00	9.934E+00	8.40
	351.93	1712	35.60*	3.272E+00	1.024E+01	1.024E+01	5.68
PA-231	283.69	------	1.70	3.852E+00	------	Line Not Found	------
	301.36	34	5.35*	3.693E+00	1.211E+00	1.211E+00	82.41
TH-232	105.21	------	1.10	5.840E+00	------	Line Not Found	------
	338.32	67	11.27	3.375E+00	1.235E+00	1.235E+00	70.04
	835.71	------	1.61	1.611E+00	------	Line Not Found	------
	911.20	71	25.80*	1.487E+00	1.287E+00	1.287E+00	41.18
	968.97	68	15.80	1.404E+00	2.147E+00	2.147E+00	34.07
TH-234	63.29	102	3.70*	2.364E+00	8.106E+00	8.106E+00	69.40
	92.59	310	4.23	5.323E+00	9.593E+00	9.593E+00	19.59
U-234	74.82	335	5.80	3.797E+00	1.059E+01	1.059E+01	20.32
	77.11	574	9.70	4.047E+00	1.018E+01	1.018E+01	12.87
	87.09	226	3.41	4.956E+00	9.299E+00	9.299E+00	25.08
	242.00	467	7.25	4.336E+00	1.035E+01	1.035E+01	12.76
	295.22	982	18.42	3.738E+00	9.934E+00	9.934E+00	8.40
	351.93	1712	35.60*	3.272E+00	1.024E+01	1.024E+01	5.68
U-235	89.96	138	3.47	5.156E+00	5.360E+00	5.360E+00	34.64
	93.35	310	5.60	5.323E+00	7.246E+00	7.246E+00	19.59
	143.76	79	10.96*	5.892E+00	8.480E-01	8.480E-01	70.51
	163.33	------	5.08	5.592E+00	------	Line Not Found	------
	185.72	452	57.20	5.194E+00	1.061E+00	1.061E+00	13.98
	205.31	------	5.01	4.872E+00	------	Line Not Found	------
U-238	63.29	102	3.70*	2.364E+00	8.106E+00	8.106E+00	69.40
	92.59	310	4.23	5.323E+00	9.593E+00	9.593E+00	19.59
AM-243	43.53	------	5.90	2.737E-01	------	Line Not Found	------
	74.66	335	67.20*	3.797E+00	9.143E-01	9.143E-01	20.32
ANH-511	511.00	87	100.00*	2.450E+00	2.472E-01	2.472E-01	48.24

Flag: "*" = Keyline

Sample ID : G674299010 Acquisition date : 30-JUL-2024 11:17:40

Total number of lines in spectrum 63
Number of unidentified lines 22
Number of lines tentatively identified by NID 41 65.08%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.857E+00	1.857E+00	1.978E+00	106.51	
GE-68	270.95D	1.09	1.494E+00	1.631E+00	2.545E+00	156.09	
AS-74	17.77D	3.78	1.771E-01	6.698E-01	5.009E-01	74.79	
RB-86	18.64D	3.55	5.570E-01	1.979E+00	3.089E+00	156.09	
Y-91	58.51D	1.50	1.041E+01	1.558E+01	4.967E+01	318.71	
CD-109	461.40D	1.05	8.570E+00	9.020E+00	2.263E+00	25.08	
SN-126	2.30E+05Y	1.00	8.570E-01	8.570E-01	2.150E-01	25.08	
CE-141	32.51D	2.07	1.925E-01	3.982E-01	2.807E-01	70.51	
TL-208	1.41E+10Y	1.00	4.899E-01	4.899E-01	1.564E-01	31.93	
BI-211	7.04E+08Y	1.00	2.822E+01	2.822E+01	0.160E+01	5.68	
BI-212	1.41E+10Y	1.00	3.301E+00	3.301E+00	1.310E+00	39.69	
PB-212	1.41E+10Y	1.00	1.278E+00	1.278E+00	0.237E+00	18.54	
BI-214	1600.00Y	1.00	8.346E+00	8.347E+00	0.539E+00	6.46	
PB-214	1600.00Y	1.00	1.024E+01	1.024E+01	0.058E+01	5.68	
RN-222	1600.00Y	1.00	8.346E+00	8.347E+00	0.539E+00	6.46	
RA-224	1.41E+10Y	1.00	1.830E+01	1.830E+01	0.234E+01	12.76	
RA-226	1600.00Y	1.00	1.024E+01	1.024E+01	0.058E+01	5.68	
AC-228	1.41E+10Y	1.00	1.287E+00	1.287E+00	0.530E+00	41.18	
RA-228	1.41E+10Y	1.00	1.287E+00	1.287E+00	0.530E+00	41.18	
TH-228	1.41E+10Y	1.00	1.278E+00	1.278E+00	0.237E+00	18.54	
TH-229	7340.00Y	1.00	1.321E+00	1.321E+00	0.331E+00	25.08	K
TH-230	7.54E+04Y	1.00	1.024E+01	1.024E+01	0.058E+01	5.68	
PA-231	7.04E+08Y	1.00	1.211E+00	1.211E+00	0.998E+00	82.41	
TH-232	1.41E+10Y	1.00	1.287E+00	1.287E+00	0.530E+00	41.18	
TH-234	4.47E+09Y	1.00	8.106E+00	8.106E+00	5.626E+00	69.40	
U-234	2.45E+05Y	1.00	1.024E+01	1.024E+01	0.058E+01	5.68	
U-235	7.04E+08Y	1.00	8.480E-01	8.480E-01	5.979E-01	70.51	
U-238	4.47E+09Y	1.00	8.106E+00	8.106E+00	5.626E+00	69.40	
AM-243	7370.00Y	1.00	9.143E-01	9.143E-01	1.858E-01	20.32	
ANH-511	1.00E+09Y	1.00	2.472E-01	2.472E-01	1.193E-01	48.24	
			---	---			
	Total Activity :		1.593E+02	1.672E+02			

Grand Total Activity : 1.593E+02 1.672E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299010 Acquisition date : 30-JUL-2024 11:17:40

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	68.02	76	403	1.41	136.02	133	10	2.05E-02	****	2.94E+00	T
0	112.58	67	188	1.94	225.13	222	7	1.85E-02	72.0	5.99E+00	T
0	128.63	49	249	0.92	257.23	254	8	1.35E-02	****	6.04E+00	T
1	183.92	37	142	1.18	367.79	365	14	1.02E-02	99.0	5.23E+00	T
0	208.40	58	188	1.39	416.74	413	9	1.61E-02	89.6	4.82E+00	
0	258.91	23	130	1.33	517.75	514	7	6.39E-03	****	4.13E+00	
0	270.25	49	168	1.34	540.42	537	9	1.37E-02	99.5	4.00E+00	T
0	329.08	50	188	5.67	658.07	652	17	1.43E-02	****	3.44E+00	T
0	357.35	45	82	1.46	714.58	711	10	1.27E-02	80.7	3.23E+00	T
0	429.40	11	86	1.52	858.67	851	9	3.24E-03	****	2.81E+00	
0	487.65	31	62	1.74	975.16	971	11	8.97E-03	****	2.54E+00	T
0	665.96	38	32	0.93	1331.73	1327	10	1.09E-02	64.5	1.97E+00	T
0	768.36	111	67	1.78	1536.52	1529	18	3.21E-02	38.3	1.74E+00	
0	786.37	51	20	1.55	1572.53	1564	17	1.47E-02	48.4	1.70E+00	
0	806.21	27	22	2.03	1612.20	1607	11	7.91E-03	76.9	1.66E+00	
0	815.94	19	14	2.27	1631.67	1627	9	5.63E-03	82.9	1.65E+00	T
0	841.42	23	47	4.73	1682.63	1672	18	6.61E-03	****	1.60E+00	
0	934.04	52	22	1.41	1867.87	1863	13	1.52E-02	45.1	1.45E+00	T
0	940.12	6	8	1.15	1880.03	1876	6	1.81E-03	****	1.44E+00	
3	964.29	28	11	2.47	1928.36	1924	20	8.12E-03	57.2	1.41E+00	T
0	991.32	15	24	4.81	1982.43	1969	16	4.25E-03	****	1.37E+00	
0	1001.39	32	20	1.81	2002.56	1997	11	9.25E-03	64.3	1.36E+00	T
0	1126.84	17	11	0.94	2253.45	2248	10	5.11E-03	85.1	1.22E+00	
0	1154.79	28	28	0.93	2309.34	2303	12	8.18E-03	82.9	1.19E+00	
0	1237.46	86	19	1.86	2474.69	2465	16	2.54E-02	30.3	1.12E+00	T
0	1281.56	14	23	2.76	2562.89	2556	12	4.27E-03	****	1.08E+00	
0	1323.51	16	15	4.83	2646.80	2638	16	4.74E-03	****	1.05E+00	
0	1346.23	14	9	3.09	2692.23	2685	13	4.03E-03	****	1.04E+00	
0	1377.51	79	10	2.28	2754.80	2747	14	2.34E-02	27.2	1.02E+00	
0	1401.00	16	11	1.55	2801.80	2795	13	4.88E-03	96.2	1.00E+00	
0	1410.17	18	51	1.94	2820.13	2811	20	5.38E-03	****	9.98E-01	
0	1574.13	13	0	4.46	3148.07	3141	14	3.89E-03	53.5	9.16E-01	
0	1660.25	29	4	1.49	3320.32	3312	16	8.64E-03	45.9	8.84E-01	
6	1727.10	19	0	2.50	3454.04	3451	14	5.60E-03	42.1	8.63E-01	
6	1729.58	75	0	2.58	3459.00	3451	14	2.23E-02	19.8	8.62E-01	
0	1848.32	19	13	2.38	3696.51	3688	14	5.62E-03	90.0	8.34E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:21:54.55

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299010.CNF;1  *
* Acquisition date : 30-JUL-2024 11:17:40 Sensitivity     : 3.000           *
* Detector ID      : GAM23                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.57     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:30:00 Nuclide Library : SOLID           *
* Sample ID        : G674299010           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0775E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  6-SEP-2023 11:17:47 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM23_CAN.CNF;21            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	7.627E-01
GE-68	1.675E+00
AS-74	2.252E-01
RB-86	1.916E+00
Y-91	4.173E+01
CD-109	1.069E+00
SN-126	1.060E-01
TL-208	5.502E-02
BI-211	3.305E-01
BI-212	6.772E-01
PB-212	9.357E-02
BI-214	7.905E-02
PB-214	1.202E-01
RN-222	7.905E-02
RA-224	8.407E-01
RA-226	1.202E-01
AC-228	2.208E-01
RA-228	2.208E-01
TH-228	9.357E-02
TH-229	7.869E-01
TH-230	1.202E-01
PA-231	7.520E-01
TH-232	2.208E-01
TH-234	2.105E+00
U-234	1.202E-01
U-235	2.682E-01
U-238	2.105E+00
AM-243	8.681E-02
ANH-511	3.690E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	6.228E-01	NOT IDENT.
NA-22	5.986E-02	NOT IDENT.

NA-24	0.000E+00	SHORT HLIF
AL-26	4.689E-02	NOT IDENT.
SC-46	6.731E-02	FAIL ABUN
V-48	2.567E-01	NOT IDENT.
CR-51	9.521E-01	NOT IDENT.
MN-52	4.561E+00	FAIL ABUN
MN-54	5.427E-02	NOT IDENT.
CO-56	6.150E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.619E-02	NOT IDENT.
CO-58	6.984E-02	NOT IDENT.
FE-59	1.805E-01	NOT IDENT.
CO-60	6.026E-02	NOT IDENT.
ZN-65	1.195E-01	NOT IDENT.
AS-73	2.132E+00	NOT IDENT.
SE-75	7.315E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	8.234E-01	NOT IDENT.
RB-83	1.286E-01	NOT IDENT.
RB-84	1.835E-01	NOT IDENT.
KR-85	1.132E+01	NOT IDENT.
SR-85	7.320E-02	NOT IDENT.
Y-88	5.927E-02	NOT IDENT.
NB-94	5.331E-02	NOT IDENT.
NB-95	1.049E-01	NOT IDENT.
NB-95M	2.452E-01	NOT IDENT.
ZR-95	1.372E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.574E-02	FAIL ABUN
RH-102	8.692E-02	NOT IDENT.
RU-103	7.586E-02	FAIL ABUN
RH-106	4.968E-01	NOT IDENT.
RU-106	4.968E-01	NOT IDENT.
AG-108M	4.791E-02	NOT IDENT.
AG-110	1.041E+00	NOT IDENT.
AG-110M	9.658E-02	NOT IDENT.
SN-113	7.506E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.248E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	5.053E-02	NOT IDENT.
SB-124	1.720E-01	NOT IDENT.
SB-125	1.626E-01	NOT IDENT.
TE-125M	1.778E+01	NOT IDENT.
I-126	1.190E+00	FAIL ABUN
SB-126	7.039E-01	FAIL ABUN
SB-127	5.673E+01	NOT IDENT.
I-131	9.164E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	6.883E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	6.785E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	4.848E-01	NOT IDENT.
BA-137M	5.111E-02	NOT IDENT.
CS-137	5.400E-02	NOT IDENT.
LA-138	1.025E-01	NOT IDENT.
CE-139	4.895E-02	NOT IDENT.
BA-140	1.059E+00	NOT IDENT.
LA-140	4.802E-01	FAIL ABUN
CE-141	1.434E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	2.918E-01	NOT IDENT.
PM-144	4.468E-02	NOT IDENT.
PR-144	3.369E+00	NOT IDENT.
PM-146	7.601E-02	NOT IDENT.
ND-147	2.478E+00	FAIL ABUN
PM-147	1.069E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	4.251E-02	FAIL ABUN
EU-152	1.521E-01	FAIL ABUN
GD-153	1.237E-01	NOT IDENT.
EU-154	1.712E-01	NOT IDENT.
EU-155	1.435E-01	FAIL ABUN

TB-160	2.464E-01	FAIL ABUN
HO-166M	1.046E-01	FAIL ABUN
TM-171	3.775E+01	FAIL ABUN
HF-172	2.784E-01	FAIL ABUN
LU-172	1.003E-01	FAIL ABUN
LU-176	3.988E-02	FAIL ABUN
HF-181	8.331E-02	NOT IDENT.
TA-182	2.756E-01	FAIL ABUN
RE-183	4.037E-01	FAIL ABUN
RE-184	3.280E-01	NOT IDENT.
W-188	1.322E+01	FAIL ABUN
IR-192	6.242E-02	FAIL ABUN
HG-203	7.077E-02	NOT IDENT.
TL-204	7.296E+00	FAIL ABUN
BI-207	7.928E-02	FAIL ABUN
BI-210	9.241E+00	NOT IDENT.
PB-210	9.241E+00	NOT IDENT.
PB-211	1.200E+00	NOT IDENT.
BI-213	1.466E-01	NOT IDENT.
RN-219	7.339E-01	FAIL ABUN
RA-223	1.056E+00	FAIL ABUN
AC-225	3.317E+00	NOT IDENT.
AC-227	4.235E-01	FAIL ABUN
TH-227	4.235E-01	FAIL ABUN
TH-231	1.056E+00	FAIL ABUN
PA-233	1.015E-01	FAIL ABUN
PA-234	4.273E-01	NOT IDENT.
PA-234M	9.839E+00	FAIL ABUN
NP-237	1.015E-01	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	3.623E-01	NOT IDENT.
PU-239	5.272E+02	FAIL ABUN
AM-241	2.600E-01	NOT IDENT.
CM-243	1.493E-01	NOT IDENT.
BK-247	1.246E-01	FAIL ABUN
CM-247	6.589E-02	NOT IDENT.
CF-249	6.894E-02	NOT IDENT.
CF-251	1.808E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:21:59.06

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299010.CNF;1  *
* Acquisition date : 30-JUL-2024 11:17:40 Sensitivity     : 3.000           *
* Detector ID      : GAM23                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.57     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:30:00 Nuclide Library : SOLID           *
* Sample ID        : G674299010           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0775E+02 GRAM *
*                                         Quantity Err(%) : 1.8561E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  6-SEP-2023 11:17:47 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM23_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.857E+00	1.946E+00	1.946E+00
GE-68	1.631E+00	2.498E+00	2.498E+00
AS-74	6.698E-01	4.965E-01	4.965E-01
RB-86	1.979E+00	3.032E+00	3.032E+00
Y-91	1.558E+01	4.869E+01	4.869E+01
CD-109	9.020E+00	2.528E+00	2.528E+00
SN-126	8.570E-01	2.359E-01	2.359E-01
TL-208	4.899E-01	1.593E-01	1.593E-01
BI-211	2.822E+01	2.765E+00	2.765E+00
BI-212	3.301E+00	1.320E+00	1.320E+00
PB-212	1.278E+00	2.602E-01	2.602E-01
BI-214	8.347E+00	9.116E-01	9.116E-01
PB-214	1.024E+01	9.898E-01	9.898E-01
RN-222	8.347E+00	9.116E-01	9.116E-01
RA-224	1.830E+01	2.832E+00	2.832E+00
RA-226	1.024E+01	9.898E-01	9.898E-01
AC-228	1.287E+00	5.328E-01	5.328E-01
RA-228	1.287E+00	5.328E-01	5.328E-01
TH-228	1.278E+00	2.602E-01	2.602E-01
TH-229	-3.529E-01	9.769E-01	9.769E-01
TH-230	1.024E+01	9.897E-01	9.897E-01
PA-231	1.211E+00	1.014E+00	1.014E+00
TH-232	1.287E+00	5.328E-01	5.328E-01
TH-234	8.106E+00	5.856E+00	5.856E+00
U-234	1.024E+01	9.897E-01	9.897E-01
U-235	8.480E-01	5.911E-01	5.911E-01
U-238	8.106E+00	5.856E+00	5.856E+00
AM-243	9.143E-01	2.110E-01	2.110E-01
ANH-511	2.472E-01	1.189E-01	1.189E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	7.103E-02	7.361E-01	7.368E-01	NOT IDENT.

NA-22	-5.067E-02	8.693E-02	8.988E-02	NOT IDENT.
NA-24	-7.310E+14	1.780E+15	1.811E+15	SHORT HLIF
AL-26	2.362E-02	4.962E-02	5.075E-02	NOT IDENT.
SC-46	-9.744E-02	9.309E-02	1.029E-01	FAIL ABUN
V-48	5.326E-02	3.410E-01	3.418E-01	NOT IDENT.
CR-51	2.027E-01	1.079E+00	1.082E+00	NOT IDENT.
MN-52	2.940E+00	4.899E+00	5.076E+00	FAIL ABUN
MN-54	-9.810E-03	7.452E-02	7.466E-02	NOT IDENT.
CO-56	1.424E-02	7.795E-02	7.821E-02	FAIL ABUN
MN-56	-1.000E+41	6.285E+41	0.000E+00	SHORT HLIF
CO-57	-1.245E-02	4.282E-02	4.319E-02	NOT IDENT.
CO-58	8.707E-02	9.577E-02	1.035E-01	NOT IDENT.
FE-59	-1.372E-02	2.215E-01	2.216E-01	NOT IDENT.
CO-60	-1.724E-02	7.364E-02	7.404E-02	NOT IDENT.
ZN-65	8.942E-02	1.432E-01	1.488E-01	NOT IDENT.
AS-73	2.466E-01	2.763E+00	2.766E+00	NOT IDENT.
SE-75	3.923E-03	9.100E-02	9.101E-02	NOT IDENT.
BR-77	5.022E+04	5.046E+04	5.530E+04	SHORT HLIF
SR-82	9.140E-02	1.023E+00	1.024E+00	NOT IDENT.
RB-83	1.248E-01	1.420E-01	1.528E-01	NOT IDENT.
RB-84	1.339E-01	2.018E-01	2.106E-01	NOT IDENT.
KR-85	1.511E+01	1.214E+01	1.392E+01	NOT IDENT.
SR-85	9.750E-02	7.849E-02	8.996E-02	NOT IDENT.
Y-88	-3.765E-02	7.800E-02	7.982E-02	NOT IDENT.
NB-94	9.228E-03	6.122E-02	6.136E-02	NOT IDENT.
NB-95	1.579E-01	1.200E-01	1.395E-01	NOT IDENT.
NB-95M	8.006E-02	3.220E-01	3.240E-01	NOT IDENT.
ZR-95	-2.179E-02	1.626E-01	1.629E-01	NOT IDENT.
NB-97	1.000E+41	3.313E+41	0.000E+00	SHORT HLIF
ZR-97	2.565E+14	3.783E+14	3.956E+14	SHORT HLIF
MO-99	3.335E+02	2.753E+03	2.757E+03	SHORT HLIF
TC-99M	2.751E+39	3.598E+39	0.000E+00	SHORT HLIF
RH-101	8.512E-02	9.739E-02	1.047E-01	FAIL ABUN
RH-102	5.479E-02	1.001E-01	1.031E-01	NOT IDENT.
RU-103	-5.008E-02	9.691E-02	9.951E-02	FAIL ABUN
RH-106	3.526E-01	5.649E-01	5.869E-01	NOT IDENT.
RU-106	3.526E-01	5.649E-01	5.869E-01	NOT IDENT.
AG-108M	-3.033E-03	5.691E-02	5.693E-02	NOT IDENT.
AG-110	-9.794E-02	1.301E+00	1.302E+00	NOT IDENT.
AG-110M	5.105E-02	1.088E-01	1.112E-01	NOT IDENT.
SN-113	-6.150E-02	9.332E-02	9.735E-02	NOT IDENT.
CD-115	-5.718E+02	7.461E+03	7.466E+03	SHORT HLIF
SN-117M	3.401E-02	2.651E-01	2.655E-01	NOT IDENT.
SB-122	-2.095E+02	4.187E+02	4.292E+02	SHORT HLIF
TE-123M	4.725E-02	5.743E-02	6.126E-02	NOT IDENT.
SB-124	2.081E-02	2.025E-01	2.027E-01	NOT IDENT.
SB-125	1.453E-01	1.800E-01	1.916E-01	NOT IDENT.
TE-125M	1.833E+01	2.079E+01	2.237E+01	NOT IDENT.
I-126	2.526E+00	1.616E+00	1.977E+00	FAIL ABUN
SB-126	8.479E-01	7.743E-01	8.635E-01	FAIL ABUN
SB-127	-7.748E+00	7.158E+01	7.166E+01	NOT IDENT.
I-131	2.465E-01	1.044E+00	1.050E+00	NOT IDENT.
I-132	1.000E+41	2.249E+41	0.000E+00	SHORT HLIF
TE-132	-1.470E+01	7.939E+01	7.966E+01	SHORT HLIF
BA-133	1.571E-01	1.248E-01	1.435E-01	FAIL ABUN
I-133	8.390E+08	3.826E+10	3.826E+10	SHORT HLIF
CS-134	-5.251E-04	7.964E-02	7.964E-02	NOT IDENT.
I-135	-1.506E+36	6.156E+36	0.000E+00	SHORT HLIF
CS-136	2.931E-01	5.452E-01	5.610E-01	NOT IDENT.
BA-137M	-1.844E-02	7.447E-02	7.493E-02	NOT IDENT.
CS-137	-1.948E-02	7.867E-02	7.916E-02	NOT IDENT.
LA-138	3.772E-02	1.151E-01	1.164E-01	NOT IDENT.
CE-139	2.749E-03	5.823E-02	5.824E-02	NOT IDENT.
BA-140	-1.922E-01	1.303E+00	1.306E+00	NOT IDENT.
LA-140	-2.818E-02	5.802E-01	5.803E-01	FAIL ABUN
CE-141	3.982E-01	2.773E-01	3.304E-01	FAIL ABUN
CE-143	1.014E+07	3.935E+06	6.031E+06	SHORT HLIF
CE-144	-2.364E-01	3.564E-01	3.720E-01	NOT IDENT.
PM-144	-2.410E-02	5.476E-02	5.582E-02	NOT IDENT.
PR-144	-1.857E+00	4.134E+00	4.218E+00	NOT IDENT.
PM-146	6.467E-02	8.486E-02	8.973E-02	NOT IDENT.
ND-147	-2.220E+00	3.274E+00	3.423E+00	FAIL ABUN
PM-147	7.902E+02	1.194E+03	1.246E+03	NOT IDENT.
PM-149	7.763E+03	6.189E+04	6.199E+04	SHORT HLIF
EU-150	8.442E-03	6.685E-02	6.696E-02	FAIL ABUN
EU-152	-7.325E-02	1.896E-01	1.925E-01	FAIL ABUN
GD-153	-6.774E-02	1.566E-01	1.596E-01	NOT IDENT.
EU-154	-1.311E-01	2.455E-01	2.525E-01	NOT IDENT.

EU-155	-6.661E-02	1.688E-01	1.714E-01	FAIL ABUN
TB-160	-1.464E-01	3.113E-01	3.182E-01	FAIL ABUN
HO-166M	1.085E-01	1.107E-01	1.210E-01	FAIL ABUN
TM-171	7.393E-02	4.920E+01	4.920E+01	FAIL ABUN
HF-172	5.717E-02	3.454E-01	3.464E-01	FAIL ABUN
LU-172	1.179E-02	1.200E-01	1.201E-01	FAIL ABUN
LU-176	3.828E-03	4.533E-02	4.536E-02	FAIL ABUN
HF-181	-5.729E-02	1.061E-01	1.092E-01	NOT IDENT.
TA-182	-8.559E-02	3.539E-01	3.560E-01	FAIL ABUN
RE-183	-5.688E-02	4.474E-01	4.481E-01	FAIL ABUN
RE-184	4.359E-02	3.979E-01	3.984E-01	NOT IDENT.
W-188	-8.383E+00	1.747E+01	1.788E+01	FAIL ABUN
IR-192	-2.237E-03	7.176E-02	7.176E-02	FAIL ABUN
HG-203	-5.007E-02	9.370E-02	9.638E-02	NOT IDENT.
TL-204	-7.474E+00	9.228E+00	9.824E+00	FAIL ABUN
BI-207	8.640E-03	9.465E-02	9.473E-02	FAIL ABUN
BI-210	5.489E+00	1.149E+01	1.175E+01	NOT IDENT.
PB-210	5.489E+00	1.149E+01	1.175E+01	NOT IDENT.
PB-211	1.851E-01	1.394E+00	1.397E+00	NOT IDENT.
BI-213	-8.101E-02	1.820E-01	1.857E-01	NOT IDENT.
RN-219	6.162E-01	8.182E-01	8.640E-01	FAIL ABUN
RA-223	1.000E+00	1.253E+00	1.332E+00	FAIL ABUN
AC-225	-2.900E+00	4.287E+00	4.482E+00	NOT IDENT.
AC-227	2.488E-01	5.502E-01	5.615E-01	FAIL ABUN
TH-227	2.488E-01	5.502E-01	5.615E-01	FAIL ABUN
TH-231	1.000E+00	1.253E+00	1.332E+00	FAIL ABUN
PA-233	4.025E-02	1.134E-01	1.148E-01	FAIL ABUN
PA-234	-2.482E-01	6.165E-01	6.266E-01	NOT IDENT.
PA-234M	1.927E+01	1.226E+01	1.502E+01	FAIL ABUN
NP-237	4.025E-02	1.134E-01	1.148E-01	FAIL ABUN
NP-238	1.802E+03	2.046E+04	2.048E+04	SHORT HLIF
NP-239	-2.185E-01	4.331E-01	4.442E-01	NOT IDENT.
PU-239	8.995E+02	1.017E+03	1.095E+03	FAIL ABUN
AM-241	9.530E-02	3.002E-01	3.032E-01	NOT IDENT.
CM-243	7.760E-02	1.668E-01	1.705E-01	NOT IDENT.
BK-247	5.698E-02	1.511E-01	1.533E-01	FAIL ABUN
CM-247	1.138E-02	7.646E-02	7.663E-02	NOT IDENT.
CF-249	9.894E-02	7.334E-02	8.584E-02	NOT IDENT.
CF-251	-1.592E-01	2.291E-01	2.401E-01	NOT IDENT.

```
*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                         GAMMA SPECTROSCOPY BACKGROUND REPORT                *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	83.6879	85.43	87.2946	131.20	125.1877
45.60	100.2126	86.55	87.6318	133.02	127.0250
46.54	103.5780	86.79	190.5858	133.52	140.6689
49.72	0.0000	86.94	190.6841	136.00	122.1202
51.35	96.0820	87.09	190.7823	136.47	127.1081
51.87	102.1770	87.57	142.0525	140.51	0.0000
52.39	103.9113	88.03	132.1106	143.76	112.4979
52.97	98.3444	88.34	132.2487	144.24	112.6206
53.44	114.7607	88.47	132.3070	145.44	136.0383
54.07	92.9816	89.96	121.6028	152.43	155.9224
57.36	0.0000	1093.63	121.8771	153.25	163.2508
57.53	99.0514	91.11	122.0654	323.87	151.4694
57.98	99.2603	92.59	122.6564	156.02	158.1376
59.27	115.7434	93.35	122.9590	158.56	136.5661
59.32	115.7702	94.56	123.4368	159.00	119.3494
59.54	98.9715	94.65	123.4717	162.33	116.0657
60.96	107.7447	94.67	123.4804	162.66	116.1433
61.17	108.8640	94.87	123.5588	163.33	125.5668
62.93	120.9991	97.43	136.1989	165.86	124.1418
63.29	121.1899	98.43	124.3616	176.31	119.3245
63.58	121.3439	98.44	124.3648	176.60	120.4466
64.28	121.7136	99.53	114.2380	177.52	125.9509
66.73	114.1327	100.11	129.4056	181.07	0.0000
67.24	137.8787	102.03	128.3884	181.52	113.7516
125.81	138.1311	103.18	107.5062	184.41	119.0096
67.75	138.1714	103.37	107.5671	143.76	119.2959
68.89	134.0900	105.21	125.1340	193.51	127.5206
69.67	134.5193	105.31	125.1714	197.03	119.5381
70.82	156.8721	106.12	112.9205	198.01	147.2066
70.83	156.8796	106.47	109.4465	201.83	134.9081
72.81	165.0615	109.28	104.9064	203.43	125.2973
72.87	165.0992	111.00	124.8030	205.31	139.4146
74.66	178.6259	111.76	0.0000	210.85	136.2149
74.82	178.7374	114.06	112.4245	215.65	99.5700
74.97	178.8404	116.30	0.0000	218.12	124.9568
77.11	180.2977	116.74	127.4019	222.11	114.3188
78.74	181.3936	119.76	123.7773	227.09	100.2340
79.69	182.0286	121.12	99.9362	227.38	112.9581
80.03	182.2515	121.22	101.8307	228.16	0.0000
80.12	182.3139	121.78	114.1414	228.18	98.0945
80.19	182.3612	122.06	118.9055	116.74	98.0945
80.57	182.6128	122.92	119.1710	235.69	121.3973
81.00	182.8965	123.07	119.2166	235.96	123.0035
81.07	182.9421	265.00	116.5840	238.63	120.3673
81.75	183.3896	125.81	120.9990	238.98	0.0000
82.47	183.8641	127.23	135.3457	240.99	84.7079
83.79	184.7219	127.91	123.5403	242.00	86.4041
84.00	184.8587	129.30	123.9677	244.70	89.8998

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	100.4639	344.28	74.1009	563.25	33.4206
252.80	108.8970	345.93	82.6396	564.24	0.0000
254.15	0.0000	351.06	74.1916	569.33	38.9751
256.23	91.3859	351.93	74.2604	946.00	38.9795
260.90	0.0000	355.39	0.0000	569.70	38.9854
264.66	76.6371	356.01	54.2407	583.19	40.4401
264.80	76.6524	364.49	54.7205	584.27	37.7358
265.00	76.6717	366.42	0.0000	595.83	22.0459
269.46	91.4170	372.51	61.6048	427.87	33.1738
270.03	109.0500	375.05	60.8411	602.52	0.0000
271.23	109.2238	377.52	57.2937	604.72	34.9261
273.65	105.0599	356.01	58.5844	607.14	22.2111
276.40	97.6145	388.16	43.8904	609.32	22.2428
277.37	90.3143	388.63	49.5161	610.33	22.2575
277.60	82.9158	391.69	68.4033	614.28	33.4717
278.00	82.9587	264.66	72.7718	618.01	31.3154
279.20	83.0875	401.81	60.5521	620.36	38.0826
279.54	86.8463	402.40	70.9991	621.93	25.7880
279.70	94.3112	404.85	64.5206	630.19	0.0000
280.46	99.3726	410.95	67.7499	631.29	28.1972
283.69	76.0862	413.71	54.5299	633.25	30.4915
284.31	96.1184	414.70	45.0044	634.78	28.2593
285.41	94.1713	423.72	70.9579	635.95	31.6743
285.90	0.0000	427.09	50.3538	636.99	27.1670
287.50	86.8994	427.87	50.3888	657.50	28.6591
290.67	90.6021	433.94	56.5061	657.76	24.0779
293.27	0.0000	439.40	52.8618	657.90	0.0000
351.93	75.9302	440.45	49.9707	661.66	36.2027
295.96	75.9998	453.88	49.5585	664.57	0.0000
879.38	63.5361	463.37	55.9499	666.33	32.2702
299.98	82.7387	468.07	47.1415	666.50	32.2736
300.09	86.5688	473.00	35.2478	667.71	0.0000
300.13	86.5730	475.06	43.3771	677.62	19.7254
301.36	82.8766	476.78	47.4781	685.70	30.3122
302.85	52.3711	477.60	42.4554	692.65	0.0000
256.23	77.6459	482.18	46.6710	695.00	29.8911
304.85	81.9473	487.02	42.7776	696.49	29.9160
306.78	67.5917	492.35	0.0000	696.51	29.9171
308.46	66.0121	497.08	43.1185	697.00	32.5658
311.90	66.2815	505.52	48.0525	697.30	28.1699
316.51	67.5057	507.63	0.0000	697.49	28.1729
319.41	70.3378	511.00	31.1316	702.65	34.4380
320.08	71.2595	514.00	31.2024	706.68	36.2879
321.04	79.1696	514.00	31.2024	711.68	26.6272
323.87	61.5326	520.40	28.2184	720.70	22.5996
325.23	66.8737	520.69	0.0000	721.93	0.0000
328.76	66.7010	522.65	0.0000	722.78	31.4381
333.37	67.0458	527.90	0.0000	722.91	31.4402
333.97	68.8562	528.26	40.9995	723.31	38.5950
334.37	71.5358	529.59	31.5698	724.19	41.4737
338.28	66.5237	529.87	0.0000	727.33	25.9671
338.32	66.5268	531.02	42.1370	733.00	28.7432
311.90	80.0208	537.26	37.0394	735.93	36.8860
340.48	80.0208	546.56	0.0000	333.97	31.5147
340.55	80.0262	552.55	36.3796	739.50	0.0000

ENERGY	MDA COUNTS
744.23	37.9587
747.24	28.9678
748.06	21.7354
752.31	30.8623
753.82	22.7119
756.73	33.6656
756.80	33.6667
884.68	26.3057
765.81	33.6465
766.42	33.8406
766.84	33.8474
772.60	0.0000
776.52	25.7458
739.50	0.0000
778.90	29.4600
783.70	22.1506
788.74	20.7279
792.07	34.1114
795.86	34.3634
810.06	14.9673
810.29	14.9692
344.28	14.9702
810.76	11.2295
815.77	21.5772
1048.07	27.0554
832.01	27.0211
834.85	27.2751
835.71	25.7706
836.80	0.0000
846.75	0.0000
846.77	15.2412
856.80	33.5014
860.56	23.9731
871.09	26.9840
873.19	27.9752
875.33	0.0000
879.38	32.8939
880.51	32.9116
881.60	24.2119
883.24	28.1070
884.68	29.0964
889.28	38.8770
894.76	32.1551
898.04	32.2034
900.72	36.1520
903.28	33.5386
911.20	27.4890
912.08	31.4287
923.98	0.0000
926.50	21.7476
929.11	20.5848
935.54	19.0559
937.49	15.8936
944.13	21.2533
946.00	26.9209

ENERGY	MDA COUNTS
949.00	16.9725
667.71	0.0000
962.31	32.1328
964.08	22.1081
966.17	22.1282
911.20	22.1544
983.53	22.6974
984.45	0.0000
1274.44	14.2619
1001.03	19.3937
1002.74	21.2462
1004.73	29.4425
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	22.7963
1038.76	0.0000
631.29	23.9167
1048.07	19.7689
1049.04	20.8167
1050.41	18.7460
1063.66	20.9375
1077.00	13.4703
1077.34	15.1559
1085.87	22.1754
1093.63	21.1829
1099.45	22.2920
1112.07	18.4875
1112.84	17.0703
1115.54	10.2527
1120.29	13.6945
1120.55	13.6961
1221.41	17.1250
1129.67	13.7430
1131.51	0.0000
1147.95	0.0000
1173.23	10.9088
1177.95	21.8542
1189.05	17.5527
1204.77	26.4756
1221.41	21.0816
1231.02	12.4681
1235.36	13.3784
1238.28	16.0708
1260.41	0.0000
1271.87	18.0596
1274.44	23.2395
1274.54	23.2408
1291.59	14.5422
1298.22	0.0000
1312.11	13.7249
1332.49	17.4999
1362.66	0.0000
1365.19	16.7502
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	17.5525
1408.01	20.0370
1434.09	10.4538
1435.80	13.3116
1457.56	0.0000
1460.82	23.9478
1489.16	10.6240
1505.03	29.1064
1584.12	14.8777
1596.21	16.9162
1620.50	6.0094
1621.92	7.0137
1678.03	0.0000
1690.97	8.1613
1750.46	0.0000
1764.49	7.2741
1063.66	8.6719
1771.35	5.2046
1791.20	0.0000
1808.65	3.1512
1810.72	0.0000
1836.06	7.4009

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:22:26.46

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299011.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM24.CNF;751
                                         Background date  : 28-JUL-2024 09:55:36
Sample date      : 26-JUN-2024 09:35:00  Acquisition date : 30-JUL-2024 11:18:49
Sample ID        : G674299011            Sample quantity  : 1.07060E+02 GRAM
Detector name    : GAM24                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.53  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.01*	44	110	1.07	126.24	121	11	1.23E-02	49.9	
2	3	74.78*	72	101	1.30	149.78	146	13	1.99E-02	28.3	1.23E+00
3	3	77.16	136	90	1.31	154.54	146	13	3.79E-02	15.3	
4	0	87.22	25	77	0.98	174.65	172	7	6.90E-03	61.5	
5	0	93.40*	67	142	1.72	187.01	181	13	1.86E-02	42.3	
6	0	166.08	12	53	1.30	332.33	329	8	3.43E-03	105.4	
7	0	185.99*	75	94	1.40	372.16	366	13	2.09E-02	30.0	
8	0	203.29	25	39	0.78	406.75	403	8	7.05E-03	46.6	
9	2	238.72*	138	55	1.15	477.60	470	19	3.84E-02	12.5	2.04E+00
10	2	241.75	30	68	1.53	483.66	470	19	8.36E-03	56.0	
11	0	294.91*	86	39	1.47	589.95	583	13	2.39E-02	18.7	
12	0	338.36	31	32	1.49	676.85	673	9	8.47E-03	37.8	
13	0	352.06*	115	62	1.21	704.24	698	13	3.20E-02	17.0	
14	0	397.02	16	16	1.41	794.15	790	9	4.43E-03	53.4	
15	0	511.47*	20	17	2.20	1023.02	1017	17	5.59E-03	76.4	
16	0	519.28	30	9	3.84	1038.64	1033	12	8.27E-03	27.3	
17	0	523.88	13	7	1.50	1047.85	1045	7	3.61E-03	43.7	
18	0	582.87*	57	9	1.56	1165.83	1160	12	1.59E-02	17.6	
19	1	609.31*	89	18	1.51	1218.70	1210	30	2.48E-02	14.3	1.52E+00
20	1	613.12	14	22	1.81	1226.33	1210	30	3.85E-03	70.6	
21	0	687.25	6	9	1.46	1374.58	1370	9	1.58E-03	104.2	
22	0	728.10	10	25	1.35	1456.27	1450	11	2.66E-03	105.9	
23	0	758.56	8	4	0.59	1517.20	1514	6	2.29E-03	52.5	
24	0	768.90	12	11	3.45	1537.89	1533	10	3.47E-03	55.5	
25	0	831.24	9	9	0.74	1662.56	1656	9	2.50E-03	68.7	
26	0	859.40	15	9	3.33	1718.89	1713	12	4.16E-03	47.7	
27	0	911.55*	26	12	1.21	1823.20	1817	10	7.26E-03	33.8	
28	0	923.27	7	2	0.83	1846.64	1843	7	1.98E-03	48.8	
29	0	935.27	24	3	3.72	1870.65	1865	13	6.75E-03	25.2	
30	0	969.94*	22	12	2.15	1939.98	1933	17	6.25E-03	43.3	
31	0	1120.32*	13	7	1.89	2240.77	2236	10	3.55E-03	55.5	
32	0	1170.03	6	7	1.37	2340.22	2332	10	1.72E-03	91.0	
33	0	1460.69*	108	0	1.71	2921.66	2915	15	3.01E-02	10.0	
34	0	1764.43*	9	0	1.59	3529.33	3523	11	2.59E-03	43.8	

Sample ID : G674299011 Acquisition date : 30-JUL-2024 11:18:49

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:22:27

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299011.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 09:35:00 Acquisition date : 30-JUL-2024 11:18:49
Sample ID        : G674299011           Sample quantity  : 107.06 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA24              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.53   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	102	10.66*	1.314E+00	5.092E+00	5.092E+00	19.93
CD-109	88.03	25	3.70*	7.915E+00	6.050E-01	6.368E-01	123.09
SN-126	64.28	45	9.60	5.495E+00	6.024E-01	6.024E-01	99.80
	86.94	25	8.90	7.915E+00	2.515E-01	2.515E-01	123.09
	87.57	25	37.00*	7.915E+00	6.050E-02	6.050E-02	123.09
CE-139	165.86	12	80.00*	7.055E+00	1.532E-02	1.819E-02	210.72
TL-208	277.37	------	6.60	5.118E+00	------	Line Not Found	------
	583.19	55	85.00*	3.002E+00	1.515E-01	1.515E-01	35.22
	860.56	14	12.50	2.135E+00	3.747E-01	3.747E-01	95.48
BI-211	72.87	------	1.23	6.856E+00	------	Line Not Found	------
	351.06	113	12.92*	4.359E+00	1.404E+00	1.404E+00	34.10
BI-212	727.33	9	6.67*	2.484E+00	3.886E-01	3.886E-01	211.81
	1620.50	------	1.47	1.219E+00	------	Line Not Found	------
PB-212	74.82	73	10.28	7.055E+00	7.081E-01	7.081E-01	56.61
	77.11	139	17.10	7.275E+00	7.842E-01	7.842E-01	30.57
	238.63	137	43.60*	5.648E+00	3.897E-01	3.897E-01	24.90
	300.09	------	3.30	4.857E+00	------	Line Not Found	------
BI-214	609.32	86	45.49*	2.894E+00	4.583E-01	4.583E-01	28.62
	1120.29	12	14.92	1.660E+00	3.417E-01	3.417E-01	111.01
	1764.49	9	15.30	1.161E+00	3.438E-01	3.438E-01	87.64
PB-214	74.82	73	5.80	7.055E+00	1.255E+00	1.255E+00	56.61
	77.11	139	9.70	7.275E+00	1.382E+00	1.383E+00	30.57
	87.09	25	3.41	7.915E+00	6.565E-01	6.565E-01	123.09
	242.00	30	7.25	5.602E+00	5.138E-01	5.139E-01	111.97
	295.22	85	18.42	4.914E+00	6.556E-01	6.557E-01	37.39
	351.93	113	35.60*	4.359E+00	5.095E-01	5.095E-01	34.10
RN-222	609.32	86	45.49*	2.894E+00	4.583E-01	4.583E-01	28.62
	1120.29	12	14.92	1.660E+00	3.417E-01	3.417E-01	111.01
	1764.49	9	15.30	1.161E+00	3.438E-01	3.438E-01	87.64
RA-224	240.99	30	4.10*	5.602E+00	9.086E-01	9.086E-01	111.97
RA-226	74.82	73	5.80	7.055E+00	1.255E+00	1.255E+00	56.61
	77.11	139	9.70	7.275E+00	1.382E+00	1.383E+00	30.57
	87.09	25	3.41	7.915E+00	6.565E-01	6.565E-01	123.09
	242.00	30	7.25	5.602E+00	5.138E-01	5.139E-01	111.97
	295.22	85	18.42	4.914E+00	6.556E-01	6.557E-01	37.39
	351.93	113	35.60*	4.359E+00	5.095E-01	5.095E-01	34.10
AC-228	105.21	------	1.10	8.242E+00	------	Line Not Found	------
	338.32	30	11.27	4.479E+00	4.150E-01	4.150E-01	75.59
	835.71	------	1.61	2.191E+00	------	Line Not Found	------
	911.20	25	25.80*	2.020E+00	3.347E-01	3.347E-01	67.68
	968.97	21	15.80	1.904E+00	4.979E-01	4.979E-01	86.68
RA-228	105.21	------	1.10	8.242E+00	------	Line Not Found	------
	338.32	30	11.27	4.479E+00	4.150E-01	4.150E-01	75.59
	835.71	------	1.61	2.191E+00	------	Line Not Found	------
	911.20	25	25.80*	2.020E+00	3.347E-01	3.347E-01	67.68
	968.97	21	15.80	1.904E+00	4.979E-01	4.979E-01	86.68
TH-228	74.82	73	10.28	7.055E+00	7.081E-01	7.081E-01	56.61
	77.11	139	17.10	7.275E+00	7.842E-01	7.842E-01	30.57
	238.63	137	43.60*	5.648E+00	3.897E-01	3.897E-01	24.90

Sample ID : G674299011 Acquisition date : 30-JUL-2024 11:18:49

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	300.09	------	3.30	4.857E+00	------	Line Not Found	------
TH-230	74.82	73	5.80	7.055E+00	1.255E+00	1.255E+00	56.61
	77.11	139	9.70	7.275E+00	1.382E+00	1.382E+00	30.57
	87.09	25	3.41	7.915E+00	6.565E-01	6.565E-01	123.09
	242.00	30	7.25	5.602E+00	5.138E-01	5.138E-01	111.97
	295.22	85	18.42	4.914E+00	6.556E-01	6.556E-01	37.39
	351.93	113	35.60*	4.359E+00	5.095E-01	5.095E-01	34.10
TH-232	105.21	------	1.10	8.242E+00	------	Line Not Found	------
	338.32	30	11.27	4.479E+00	4.150E-01	4.150E-01	75.59
	835.71	------	1.61	2.191E+00	------	Line Not Found	------
	911.20	25	25.80*	2.020E+00	3.347E-01	3.347E-01	67.68
	968.97	21	15.80	1.904E+00	4.979E-01	4.979E-01	86.68
TH-234	63.29	45	3.70*	5.495E+00	1.563E+00	1.563E+00	99.80
	92.59	68	4.23	8.120E+00	1.391E+00	1.391E+00	84.59
U-234	74.82	73	5.80	7.055E+00	1.255E+00	1.255E+00	56.61
	77.11	139	9.70	7.275E+00	1.382E+00	1.382E+00	30.57
	87.09	25	3.41	7.915E+00	6.565E-01	6.565E-01	123.09
	242.00	30	7.25	5.602E+00	5.138E-01	5.138E-01	111.97
	295.22	85	18.42	4.914E+00	6.556E-01	6.556E-01	37.39
	351.93	113	35.60*	4.359E+00	5.095E-01	5.095E-01	34.10
U-238	63.29	45	3.70*	5.495E+00	1.563E+00	1.563E+00	99.80
	92.59	68	4.23	8.120E+00	1.391E+00	1.391E+00	84.59
AM-243	43.53	------	5.90	1.656E+00	------	Line Not Found	------
	74.66	73	67.20*	7.055E+00	1.083E-01	1.083E-01	56.61
ANH-511	511.00	19	100.00*	3.328E+00	4.102E-02	4.102E-02	152.80

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:22:28.89

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299011.CNF;1  *
* Acquisition date : 30-JUL-2024 11:18:49 Sensitivity     : 3.000           *
* Detector ID      : GAM24                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.53     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:35:00 Analyst initials: RXF2            *
* Sample ID        : G674299011           Sample Quantity : 1.0706E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 24-JUN-2024 07:06:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;16            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	5.092E+00	9.945E-01	4.785E-01
CD-109	6.368E-01	7.682E-01	9.142E-01
SN-126	6.050E-02	7.299E-02	8.702E-02
CE-139	1.819E-02	3.756E-02	4.253E-02
TL-208	1.515E-01	5.229E-02	6.061E-02
BI-211	1.404E+00	4.691E-01	2.960E-01
BI-212	3.886E-01	8.067E-01	8.465E-01
PB-212	3.897E-01	9.512E-02	8.769E-02
BI-214	4.583E-01	1.285E-01	1.078E-01
PB-214	5.095E-01	1.702E-01	1.076E-01
RN-222	4.583E-01	1.285E-01	1.078E-01
RA-224	9.086E-01	9.970E-01	9.395E-01
RA-226	5.095E-01	1.702E-01	1.076E-01
AC-228	3.347E-01	2.220E-01	2.539E-01
RA-228	3.347E-01	2.220E-01	2.539E-01
TH-228	3.897E-01	9.512E-02	8.769E-02
TH-230	5.095E-01	1.702E-01	1.076E-01
TH-232	3.347E-01	2.220E-01	2.539E-01
TH-234	1.563E+00	1.529E+00	1.110E+00
U-234	5.095E-01	1.702E-01	1.076E-01
U-238	1.563E+00	1.529E+00	1.110E+00
AM-243	1.083E-01	6.009E-02	6.451E-02
ANH-511	4.102E-02	6.142E-02	4.436E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.794E-01	3.243E-01	6.741E-01	NOT IDENT.
NA-22	8.220E-03	3.659E-02	7.694E-02	NOT IDENT.
NA-24	0.000E+00	8.726E+14	0.000E+00	SHORT HLIF
AL-26	6.401E-03	2.051E-02	5.648E-02	NOT IDENT.
SC-46	3.911E-03	3.440E-02	7.222E-02	FAIL ABUN
V-48	-2.178E-02	1.192E-01	2.358E-01	NOT IDENT.
CR-51	3.380E-02	5.011E-01	9.668E-01	NOT IDENT.

MN-52	6.152E-01	2.073E+00	4.694E+00	FAIL ABUN
MN-54	8.264E-03	4.370E-02	7.795E-02	NOT IDENT.
CO-56	8.143E-03	3.797E-02	7.956E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-2.027E-03	1.956E-02	3.509E-02	NOT IDENT.
CO-58	-2.579E-02	3.643E-02	6.430E-02	NOT IDENT.
FE-59	-4.922E-02	9.173E-02	1.636E-01	NOT IDENT.
CO-60	2.697E-02	3.074E-02	7.698E-02	NOT IDENT.
ZN-65	4.775E-02	7.570E-02	1.589E-01	NOT IDENT.
GE-68	2.707E-01	7.595E-01	1.791E+00	NOT IDENT.
AS-73	1.306E-01	4.349E-01	8.506E-01	NOT IDENT.
AS-74	-1.231E-01	1.714E-01	2.817E-01	NOT IDENT.
SE-75	-1.211E-02	3.365E-02	6.322E-02	NOT IDENT.
BR-77	0.000E+00	3.736E+03	0.000E+00	SHORT HLIF
SR-82	-1.817E-01	3.809E-01	7.169E-01	NOT IDENT.
RB-83	0.000E+00	9.599E-02	1.506E-01	FAIL ABUN
RB-84	6.560E-03	8.044E-02	1.665E-01	NOT IDENT.
KR-85	6.693E+00	7.041E+00	1.366E+01	NOT IDENT.
SR-85	4.316E-02	4.553E-02	8.832E-02	NOT IDENT.
RB-86	6.331E-03	1.033E+00	2.183E+00	NOT IDENT.
Y-88	4.863E-04	3.629E-02	8.215E-02	NOT IDENT.
Y-91	-1.109E+01	1.805E+01	3.108E+01	NOT IDENT.
NB-94	8.151E-03	2.824E-02	5.577E-02	NOT IDENT.
NB-95	3.352E-02	4.469E-02	9.179E-02	NOT IDENT.
NB-95M	-2.703E-02	1.270E-01	2.150E-01	NOT IDENT.
ZR-95	4.706E-02	7.316E-02	1.515E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.001E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.115E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.651E+39	0.000E+00	SHORT HLIF
RH-101	-1.156E-02	2.345E-02	4.010E-02	NOT IDENT.
RH-102	-1.513E-02	4.421E-02	7.877E-02	NOT IDENT.
RU-103	-1.109E-02	4.651E-02	8.531E-02	FAIL ABUN
RH-106	-5.547E-02	2.778E-01	4.501E-01	NOT IDENT.
RU-106	-5.547E-02	2.778E-01	4.501E-01	NOT IDENT.
AG-108M	1.822E-02	2.628E-02	5.416E-02	FAIL ABUN
AG-110	-7.659E-02	5.568E-01	1.045E+00	NOT IDENT.
AG-110M	-2.479E-02	3.613E-02	6.354E-02	NOT IDENT.
SN-113	1.569E-02	3.693E-02	7.575E-02	NOT IDENT.
CD-115	0.000E+00	3.151E+03	0.000E+00	SHORT HLIF
SN-117M	8.356E-02	1.059E-01	2.074E-01	NOT IDENT.
SB-122	0.000E+00	1.962E+02	0.000E+00	SHORT HLIF
TE-123M	2.130E-02	2.212E-02	4.450E-02	NOT IDENT.
SB-124	1.443E-03	9.722E-02	2.150E-01	NOT IDENT.
SB-125	-5.408E-02	6.424E-02	1.068E-01	NOT IDENT.
TE-125M	-6.349E+00	8.562E+00	1.435E+01	NOT IDENT.
I-126	3.767E-02	5.476E-01	1.034E+00	NOT IDENT.
SB-126	1.457E-01	3.392E-01	6.936E-01	NOT IDENT.
SB-127	5.334E+00	3.579E+01	6.293E+01	NOT IDENT.
I-131	4.478E-02	5.809E-01	1.104E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.509E+01	0.000E+00	SHORT HLIF
BA-133	-1.358E-02	3.601E-02	5.807E-02	NOT IDENT.
I-133	0.000E+00	1.835E+10	0.000E+00	SHORT HLIF
CS-134	3.362E-02	3.576E-02	8.094E-02	NOT IDENT.
I-135	0.000E+00	3.045E+36	0.000E+00	SHORT HLIF
CS-136	-3.608E-02	1.895E-01	3.798E-01	NOT IDENT.
BA-137M	7.588E-03	2.790E-02	5.583E-02	NOT IDENT.
CS-137	8.016E-03	2.947E-02	5.897E-02	NOT IDENT.
LA-138	1.395E-02	4.632E-02	1.049E-01	NOT IDENT.
BA-140	-7.034E-02	6.062E-01	1.135E+00	NOT IDENT.
LA-140	-6.249E-02	2.219E-01	4.469E-01	NOT IDENT.
CE-141	-9.800E-03	7.208E-02	1.272E-01	NOT IDENT.
CE-143	0.000E+00	1.508E+06	0.000E+00	SHORT HLIF
CE-144	-3.706E-02	1.550E-01	2.722E-01	NOT IDENT.
PM-144	1.743E-02	2.748E-02	5.844E-02	NOT IDENT.
PR-144	1.073E+00	2.136E+00	4.422E+00	NOT IDENT.
PM-146	-1.884E-03	2.849E-02	5.525E-02	NOT IDENT.
ND-147	-1.804E-01	1.503E+00	2.815E+00	NOT IDENT.
PM-147	1.292E+02	5.324E+02	9.947E+02	NOT IDENT.
PM-149	0.000E+00	2.445E+04	0.000E+00	SHORT HLIF
EU-150	1.345E-02	2.338E-02	4.406E-02	FAIL ABUN
EU-152	-9.993E-03	7.366E-02	1.399E-01	NOT IDENT.
GD-153	-2.501E-02	5.942E-02	9.550E-02	NOT IDENT.
EU-154	2.307E-02	1.027E-01	2.159E-01	NOT IDENT.
EU-155	2.815E-02	7.703E-02	1.450E-01	FAIL ABUN
TB-160	4.580E-02	1.121E-01	2.509E-01	FAIL ABUN
HO-166M	-2.202E-02	5.530E-02	9.545E-02	NOT IDENT.

TM-171	-5.020E+00	7.589E+00	1.357E+01	NOT IDENT.
HF-172	2.615E-02	1.219E-01	2.296E-01	FAIL ABUN
LU-172	-1.436E-02	5.288E-02	1.005E-01	FAIL ABUN
LU-176	4.207E-03	1.946E-02	3.884E-02	FAIL ABUN
HF-181	-2.661E-02	3.904E-02	6.636E-02	NOT IDENT.
TA-182	-1.198E-01	1.708E-01	2.854E-01	FAIL ABUN
RE-183	4.449E-02	1.027E-01	2.028E-01	NOT IDENT.
RE-184	-4.940E-02	1.427E-01	2.707E-01	NOT IDENT.
W-188	1.798E+00	6.624E+00	1.219E+01	FAIL ABUN
IR-192	7.983E-03	3.135E-02	6.265E-02	FAIL ABUN
HG-203	1.716E-02	3.773E-02	7.682E-02	NOT IDENT.
TL-204	3.179E+00	2.834E+00	5.433E+00	NOT IDENT.
BI-207	-1.049E-02	4.923E-02	9.328E-02	FAIL ABUN
BI-210	3.821E-01	1.290E+00	2.509E+00	NOT IDENT.
PB-210	3.821E-01	1.290E+00	2.509E+00	NOT IDENT.
PB-211	-2.314E-01	5.459E-01	9.859E-01	FAIL ABUN
BI-213	3.222E-02	8.081E-02	1.645E-01	NOT IDENT.
RN-219	3.497E-01	3.018E-01	6.612E-01	NOT IDENT.
RA-223	-3.269E-01	5.223E-01	9.269E-01	FAIL ABUN
AC-225	4.163E-01	1.989E+00	3.556E+00	NOT IDENT.
AC-227	3.686E-02	1.993E-01	3.927E-01	NOT IDENT.
TH-227	3.686E-02	1.993E-01	3.927E-01	NOT IDENT.
TH-229	3.557E-01	4.534E-01	8.652E-01	FAIL ABUN
PA-231	8.467E-02	4.358E-01	8.423E-01	NOT IDENT.
TH-231	-3.269E-01	5.223E-01	9.269E-01	FAIL ABUN
PA-233	2.153E-02	5.160E-02	1.041E-01	NOT IDENT.
PA-234	1.140E-01	2.534E-01	5.496E-01	FAIL ABUN
PA-234M	2.953E+00	3.331E+00	7.968E+00	NOT IDENT.
U-235	-1.013E-01	1.599E-01	2.642E-01	FAIL ABUN
NP-237	2.153E-02	5.160E-02	1.041E-01	FAIL ABUN
NP-238	0.000E+00	8.141E+03	0.000E+00	SHORT HLIF
NP-239	5.120E-02	1.845E-01	3.467E-01	NOT IDENT.
PU-239	2.150E+02	2.619E+02	5.095E+02	NOT IDENT.
AM-241	-6.194E-02	7.393E-02	1.156E-01	NOT IDENT.
CM-243	3.444E-03	7.227E-02	1.329E-01	NOT IDENT.
BK-247	-3.371E-02	5.542E-02	1.006E-01	NOT IDENT.
CM-247	3.574E-02	2.789E-02	6.290E-02	NOT IDENT.
CF-249	1.046E-02	3.371E-02	6.678E-02	NOT IDENT.
CF-251	1.171E-02	1.101E-01	1.968E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:22:27.33

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	102	10.66*	1.314E+00	5.092E+00	5.092E+00	19.93
CD-109	88.03	25	3.70*	7.915E+00	6.050E-01	6.368E-01	123.09
SN-126	64.28	45	9.60	5.495E+00	6.024E-01	6.024E-01	99.80
	86.94	25	8.90	7.915E+00	2.515E-01	2.515E-01	123.09
	87.57	25	37.00*	7.915E+00	6.050E-02	6.050E-02	123.09
CE-139	165.86	12	80.00*	7.055E+00	1.532E-02	1.819E-02	210.72
TL-208	277.37	------	6.60	5.118E+00	------	Line Not Found	------
	583.19	55	85.00*	3.002E+00	1.515E-01	1.515E-01	35.22
	860.56	14	12.50	2.135E+00	3.747E-01	3.747E-01	95.48
BI-211	72.87	------	1.23	6.856E+00	------	Line Not Found	------
	351.06	113	12.92*	4.359E+00	1.404E+00	1.404E+00	34.10
BI-212	727.33	9	6.67*	2.484E+00	3.886E-01	3.886E-01	211.81
	1620.50	------	1.47	1.219E+00	------	Line Not Found	------
PB-212	74.82	73	10.28	7.055E+00	7.081E-01	7.081E-01	56.61
	77.11	139	17.10	7.275E+00	7.842E-01	7.842E-01	30.57
	238.63	137	43.60*	5.648E+00	3.897E-01	3.897E-01	24.90
	300.09	------	3.30	4.857E+00	------	Line Not Found	------
BI-214	609.32	86	45.49*	2.894E+00	4.583E-01	4.583E-01	28.62
	1120.29	12	14.92	1.660E+00	3.417E-01	3.417E-01	111.01
	1764.49	9	15.30	1.161E+00	3.438E-01	3.438E-01	87.64
PB-214	74.82	73	5.80	7.055E+00	1.255E+00	1.255E+00	56.61
	77.11	139	9.70	7.275E+00	1.382E+00	1.383E+00	30.57
	87.09	25	3.41	7.915E+00	6.565E-01	6.565E-01	123.09
	242.00	30	7.25	5.602E+00	5.138E-01	5.139E-01	111.97
	295.22	85	18.42	4.914E+00	6.556E-01	6.557E-01	37.39
	351.93	113	35.60*	4.359E+00	5.095E-01	5.095E-01	34.10
RN-222	609.32	86	45.49*	2.894E+00	4.583E-01	4.583E-01	28.62
	1120.29	12	14.92	1.660E+00	3.417E-01	3.417E-01	111.01
	1764.49	9	15.30	1.161E+00	3.438E-01	3.438E-01	87.64
RA-224	240.99	30	4.10*	5.602E+00	9.086E-01	9.086E-01	111.97
RA-226	74.82	73	5.80	7.055E+00	1.255E+00	1.255E+00	56.61
	77.11	139	9.70	7.275E+00	1.382E+00	1.383E+00	30.57
	87.09	25	3.41	7.915E+00	6.565E-01	6.565E-01	123.09
	242.00	30	7.25	5.602E+00	5.138E-01	5.139E-01	111.97
	295.22	85	18.42	4.914E+00	6.556E-01	6.557E-01	37.39
	351.93	113	35.60*	4.359E+00	5.095E-01	5.095E-01	34.10
AC-228	105.21	------	1.10	8.242E+00	------	Line Not Found	------
	338.32	30	11.27	4.479E+00	4.150E-01	4.150E-01	75.59
	835.71	------	1.61	2.191E+00	------	Line Not Found	------
	911.20	25	25.80*	2.020E+00	3.347E-01	3.347E-01	67.68
	968.97	21	15.80	1.904E+00	4.979E-01	4.979E-01	86.68
RA-228	105.21	------	1.10	8.242E+00	------	Line Not Found	------
	338.32	30	11.27	4.479E+00	4.150E-01	4.150E-01	75.59
	835.71	------	1.61	2.191E+00	------	Line Not Found	------
	911.20	25	25.80*	2.020E+00	3.347E-01	3.347E-01	67.68
	968.97	21	15.80	1.904E+00	4.979E-01	4.979E-01	86.68
TH-228	74.82	73	10.28	7.055E+00	7.081E-01	7.081E-01	56.61

Sample ID : G674299011 Acquisition date : 30-JUL-2024 11:18:49

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	77.11	139	17.10	7.275E+00	7.842E-01	7.842E-01	30.57
	238.63	137	43.60*	5.648E+00	3.897E-01	3.897E-01	24.90
	300.09	------	3.30	4.857E+00	------	Line Not Found	------
TH-230	74.82	73	5.80	7.055E+00	1.255E+00	1.255E+00	56.61
	77.11	139	9.70	7.275E+00	1.382E+00	1.382E+00	30.57
	87.09	25	3.41	7.915E+00	6.565E-01	6.565E-01	123.09
	242.00	30	7.25	5.602E+00	5.138E-01	5.138E-01	111.97
	295.22	85	18.42	4.914E+00	6.556E-01	6.556E-01	37.39
	351.93	113	35.60*	4.359E+00	5.095E-01	5.095E-01	34.10
TH-232	105.21	------	1.10	8.242E+00	------	Line Not Found	------
	338.32	30	11.27	4.479E+00	4.150E-01	4.150E-01	75.59
	835.71	------	1.61	2.191E+00	------	Line Not Found	------
	911.20	25	25.80*	2.020E+00	3.347E-01	3.347E-01	67.68
	968.97	21	15.80	1.904E+00	4.979E-01	4.979E-01	86.68
TH-234	63.29	45	3.70*	5.495E+00	1.563E+00	1.563E+00	99.80
	92.59	68	4.23	8.120E+00	1.391E+00	1.391E+00	84.59
U-234	74.82	73	5.80	7.055E+00	1.255E+00	1.255E+00	56.61
	77.11	139	9.70	7.275E+00	1.382E+00	1.382E+00	30.57
	87.09	25	3.41	7.915E+00	6.565E-01	6.565E-01	123.09
	242.00	30	7.25	5.602E+00	5.138E-01	5.138E-01	111.97
	295.22	85	18.42	4.914E+00	6.556E-01	6.556E-01	37.39
	351.93	113	35.60*	4.359E+00	5.095E-01	5.095E-01	34.10
U-238	63.29	45	3.70*	5.495E+00	1.563E+00	1.563E+00	99.80
	92.59	68	4.23	8.120E+00	1.391E+00	1.391E+00	84.59
AM-243	43.53	------	5.90	1.656E+00	------	Line Not Found	------
	74.66	73	67.20*	7.055E+00	1.083E-01	1.083E-01	56.61
ANH-511	511.00	19	100.00*	3.328E+00	4.102E-02	4.102E-02	152.80

Flag: "*" = Keyline

Sample ID : G674299011 Acquisition date : 30-JUL-2024 11:18:49

Total number of lines in spectrum 34
Number of unidentified lines 5
Number of lines tentatively identified by NID 29 85.29%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	5.092E+00	5.092E+00	1.015E+00	19.93	
CD-109	461.40D	1.05	6.050E-01	6.368E-01	7.839E-01	123.09	
SN-126	2.30E+05Y	1.00	6.050E-02	6.050E-02	7.447E-02	123.09	
CE-139	137.64D	1.19	1.532E-02	1.819E-02	3.833E-02	210.72	
TL-208	1.41E+10Y	1.00	1.515E-01	1.515E-01	0.534E-01	35.22	
BI-211	7.04E+08Y	1.00	1.404E+00	1.404E+00	0.479E+00	34.10	
BI-212	1.41E+10Y	1.00	3.886E-01	3.886E-01	8.232E-01	211.81	
PB-212	1.41E+10Y	1.00	3.897E-01	3.897E-01	0.971E-01	24.90	
BI-214	1600.00Y	1.00	4.583E-01	4.583E-01	1.312E-01	28.62	
PB-214	1600.00Y	1.00	5.095E-01	5.095E-01	1.737E-01	34.10	
RN-222	1600.00Y	1.00	4.583E-01	4.583E-01	1.312E-01	28.62	
RA-224	1.41E+10Y	1.00	9.086E-01	9.086E-01	10.17E-01	111.97	
RA-226	1600.00Y	1.00	5.095E-01	5.095E-01	1.737E-01	34.10	
AC-228	1.41E+10Y	1.00	3.347E-01	3.347E-01	2.265E-01	67.68	
RA-228	1.41E+10Y	1.00	3.347E-01	3.347E-01	2.265E-01	67.68	
TH-228	1.41E+10Y	1.00	3.897E-01	3.897E-01	0.971E-01	24.90	
TH-230	7.54E+04Y	1.00	5.095E-01	5.095E-01	1.737E-01	34.10	
TH-232	1.41E+10Y	1.00	3.347E-01	3.347E-01	2.265E-01	67.68	
TH-234	4.47E+09Y	1.00	1.563E+00	1.563E+00	1.560E+00	99.80	
U-234	2.45E+05Y	1.00	5.095E-01	5.095E-01	1.737E-01	34.10	
U-238	4.47E+09Y	1.00	1.563E+00	1.563E+00	1.560E+00	99.80	
AM-243	7370.00Y	1.00	1.083E-01	1.083E-01	0.613E-01	56.61	
ANH-511	1.00E+09Y	1.00	4.102E-02	4.102E-02	6.268E-02	152.80	
			---	---			
		Total Activity :	1.664E+01	1.667E+01			

Grand Total Activity : 1.664E+01 1.667E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299011 Acquisition date : 30-JUL-2024 11:18:49

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	185.99	75	94	1.40	372.16	366	13	2.09E-02	60.0	6.61E+00	T
0	203.29	25	38	0.78	406.75	403	8	7.05E-03	93.3	6.26E+00	T
0	397.02	16	16	1.41	794.15	790	9	4.43E-03	****	4.01E+00	
0	519.28	29	9	3.84	1038.64	1033	12	8.27E-03	54.6	3.29E+00	T
0	523.88	13	7	1.50	1047.85	1045	7	3.61E-03	87.4	3.27E+00	T
1	613.12	13	21	1.81	1226.33	1210	30	3.85E-03	****	2.88E+00	T
0	687.25	5	9	1.46	1374.58	1370	9	1.58E-03	****	2.61E+00	
0	758.56	8	4	0.59	1517.20	1514	6	2.29E-03	****	2.39E+00	
0	768.90	12	10	3.45	1537.89	1533	10	3.47E-03	****	2.37E+00	
0	831.24	9	9	0.74	1662.56	1656	9	2.50E-03	****	2.20E+00	T
0	923.27	7	2	0.83	1846.64	1843	7	1.98E-03	97.7	2.00E+00	T
0	935.27	23	3	3.72	1870.65	1865	13	6.75E-03	50.4	1.97E+00	T
0	1170.03	6	6	1.37	2340.22	2332	10	1.72E-03	****	1.59E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:22:38.77

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299011.CNF;1  *
* Acquisition date : 30-JUL-2024 11:18:49 Sensitivity     : 3.000           *
* Detector ID      : GAM24                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.53     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:35:00 Nuclide Library : SOLID           *
* Sample ID        : G674299011           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0706E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 24-JUN-2024 07:06:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;16            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	1.720E-01
CD-109	4.230E-01
SN-126	4.026E-02
CE-139	1.927E-02
TL-208	2.660E-02
BI-211	1.312E-01
BI-212	3.663E-01
PB-212	4.000E-02
BI-214	4.674E-02
PB-214	4.771E-02
RN-222	4.674E-02
RA-224	4.286E-01
RA-226	4.771E-02
AC-228	1.089E-01
RA-228	1.089E-01
TH-228	4.000E-02
TH-230	4.771E-02
TH-232	1.089E-01
TH-234	5.084E-01
U-234	4.771E-02
U-238	5.084E-01
AM-243	3.024E-02
ANH-511	1.934E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	2.967E-01	NOT IDENT.
NA-22	3.192E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.001E-02	NOT IDENT.
SC-46	3.006E-02	FAIL ABUN
V-48	9.584E-02	NOT IDENT.
CR-51	4.352E-01	NOT IDENT.
MN-52	1.863E+00	FAIL ABUN

MN-54	3.434E-02	NOT IDENT.
CO-56	3.385E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.604E-02	NOT IDENT.
CO-58	2.626E-02	NOT IDENT.
FE-59	6.500E-02	NOT IDENT.
CO-60	3.176E-02	NOT IDENT.
ZN-65	6.716E-02	NOT IDENT.
GE-68	7.098E-01	NOT IDENT.
AS-73	3.914E-01	NOT IDENT.
AS-74	1.203E-01	NOT IDENT.
SE-75	2.789E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	2.905E-01	NOT IDENT.
RB-83	6.690E-02	FAIL ABUN
RB-84	6.977E-02	NOT IDENT.
KR-85	6.170E+00	NOT IDENT.
SR-85	3.989E-02	NOT IDENT.
RB-86	8.663E-01	NOT IDENT.
Y-88	3.068E-02	NOT IDENT.
Y-91	1.204E+01	NOT IDENT.
NB-94	2.419E-02	NOT IDENT.
NB-95	4.014E-02	NOT IDENT.
NB-95M	9.778E-02	NOT IDENT.
ZR-95	6.530E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.826E-02	NOT IDENT.
RH-102	3.327E-02	NOT IDENT.
RU-103	3.707E-02	FAIL ABUN
RH-106	1.894E-01	NOT IDENT.
RU-106	1.894E-01	NOT IDENT.
AG-108M	2.430E-02	FAIL ABUN
AG-110	4.372E-01	NOT IDENT.
AG-110M	2.489E-02	NOT IDENT.
SN-113	3.345E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	9.507E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.034E-02	NOT IDENT.
SB-124	8.281E-02	NOT IDENT.
SB-125	4.482E-02	NOT IDENT.
TE-125M	6.529E+00	NOT IDENT.
I-126	4.506E-01	NOT IDENT.
SB-126	2.993E-01	NOT IDENT.
SB-127	2.692E+01	NOT IDENT.
I-131	5.002E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.548E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	3.550E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	1.497E-01	NOT IDENT.
BA-137M	2.401E-02	NOT IDENT.
CS-137	2.537E-02	NOT IDENT.
LA-138	4.166E-02	NOT IDENT.
BA-140	4.903E-01	NOT IDENT.
LA-140	1.723E-01	NOT IDENT.
CE-141	5.821E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.242E-01	NOT IDENT.
PM-144	2.530E-02	NOT IDENT.
PR-144	1.914E+00	NOT IDENT.
PM-146	2.357E-02	NOT IDENT.
ND-147	1.215E+00	NOT IDENT.
PM-147	4.549E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.984E-02	FAIL ABUN
EU-152	6.186E-02	NOT IDENT.
GD-153	4.332E-02	NOT IDENT.
EU-154	8.957E-02	NOT IDENT.
EU-155	6.697E-02	FAIL ABUN
TB-160	1.046E-01	FAIL ABUN
HO-166M	4.084E-02	NOT IDENT.
TM-171	6.178E+00	NOT IDENT.

HF-172	1.039E-01	FAIL ABUN
LU-172	4.114E-02	FAIL ABUN
LU-176	1.731E-02	FAIL ABUN
HF-181	2.727E-02	NOT IDENT.
TA-182	1.147E-01	FAIL ABUN
RE-183	9.286E-02	NOT IDENT.
RE-184	1.116E-01	NOT IDENT.
W-188	5.429E+00	FAIL ABUN
IR-192	2.796E-02	FAIL ABUN
HG-203	3.462E-02	NOT IDENT.
TL-204	2.531E+00	NOT IDENT.
BI-207	3.938E-02	FAIL ABUN
BI-210	1.154E+00	NOT IDENT.
PB-210	1.154E+00	NOT IDENT.
PB-211	4.296E-01	FAIL ABUN
BI-213	7.246E-02	NOT IDENT.
RN-219	2.945E-01	NOT IDENT.
RA-223	4.120E-01	FAIL ABUN
AC-225	1.630E+00	NOT IDENT.
AC-227	1.778E-01	NOT IDENT.
TH-227	1.778E-01	NOT IDENT.
TH-229	3.993E-01	FAIL ABUN
PA-231	3.846E-01	NOT IDENT.
TH-231	4.120E-01	FAIL ABUN
PA-233	4.686E-02	NOT IDENT.
PA-234	2.345E-01	FAIL ABUN
PA-234M	3.376E+00	NOT IDENT.
U-235	1.206E-01	FAIL ABUN
NP-237	4.686E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.586E-01	NOT IDENT.
PU-239	2.357E+02	NOT IDENT.
AM-241	5.234E-02	NOT IDENT.
CM-243	6.091E-02	NOT IDENT.
BK-247	4.428E-02	NOT IDENT.
CM-247	2.814E-02	NOT IDENT.
CF-249	2.987E-02	NOT IDENT.
CF-251	9.034E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:22:43.47

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299011.CNF;1  *
* Acquisition date : 30-JUL-2024 11:18:49 Sensitivity     : 3.000           *
* Detector ID      : GAM24                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.53     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:35:00 Nuclide Library : SOLID           *
* Sample ID        : G674299011           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0706E+02 GRAM *
*                                         Quantity Err(%) : 1.8681E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 24-JUN-2024 07:06:44 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;16            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	5.092E+00	1.157E+00	1.157E+00
CD-109	6.368E-01	7.707E-01	7.707E-01
SN-126	6.050E-02	7.315E-02	7.315E-02
CE-139	1.819E-02	3.776E-02	3.776E-02
TL-208	1.515E-01	5.381E-02	5.381E-02
BI-211	1.404E+00	4.876E-01	4.876E-01
BI-212	3.886E-01	8.076E-01	8.076E-01
PB-212	3.897E-01	1.033E-01	1.033E-01
BI-214	4.583E-01	1.341E-01	1.341E-01
PB-214	5.095E-01	1.768E-01	1.768E-01
RN-222	4.583E-01	1.341E-01	1.341E-01
RA-224	9.086E-01	1.002E+00	1.002E+00
RA-226	5.095E-01	1.768E-01	1.768E-01
AC-228	3.347E-01	2.260E-01	2.260E-01
RA-228	3.347E-01	2.260E-01	2.260E-01
TH-228	3.897E-01	1.033E-01	1.033E-01
TH-230	5.095E-01	1.768E-01	1.768E-01
TH-232	3.347E-01	2.260E-01	2.260E-01
TH-234	1.563E+00	1.570E+00	1.570E+00
U-234	5.095E-01	1.768E-01	1.768E-01
U-238	1.563E+00	1.570E+00	1.570E+00
AM-243	1.083E-01	6.070E-02	6.070E-02
ANH-511	4.102E-02	6.152E-02	6.152E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.794E-01	3.247E-01	3.346E-01	NOT IDENT.
NA-22	8.220E-03	3.660E-02	3.679E-02	NOT IDENT.
NA-24	-9.186E+12	8.726E+14	8.727E+14	SHORT HLIF
AL-26	6.401E-03	2.051E-02	2.071E-02	NOT IDENT.
SC-46	3.911E-03	3.440E-02	3.445E-02	FAIL ABUN
V-48	-2.178E-02	1.193E-01	1.197E-01	NOT IDENT.
CR-51	3.380E-02	5.011E-01	5.013E-01	NOT IDENT.

MN-52	6.152E-01	2.074E+00	2.093E+00	FAIL ABUN
MN-54	8.264E-03	4.371E-02	4.387E-02	NOT IDENT.
CO-56	8.143E-03	3.799E-02	3.816E-02	NOT IDENT.
MN-56	1.000E+41	4.665E+41	0.000E+00	SHORT HLIF
CO-57	-2.027E-03	1.956E-02	1.958E-02	NOT IDENT.
CO-58	-2.579E-02	3.654E-02	3.834E-02	NOT IDENT.
FE-59	-4.922E-02	9.192E-02	9.456E-02	NOT IDENT.
CO-60	2.697E-02	3.090E-02	3.321E-02	NOT IDENT.
ZN-65	4.775E-02	7.584E-02	7.884E-02	NOT IDENT.
GE-68	2.707E-01	7.600E-01	7.698E-01	NOT IDENT.
AS-73	1.306E-01	4.358E-01	4.397E-01	NOT IDENT.
AS-74	-1.231E-01	1.719E-01	1.806E-01	NOT IDENT.
SE-75	-1.211E-02	3.367E-02	3.411E-02	NOT IDENT.
BR-77	1.531E+04	1.559E+04	1.705E+04	SHORT HLIF
SR-82	-1.817E-01	3.814E-01	3.901E-01	NOT IDENT.
RB-83	1.794E-01	9.995E-02	1.286E-01	FAIL ABUN
RB-84	6.560E-03	8.045E-02	8.050E-02	NOT IDENT.
KR-85	6.693E+00	7.064E+00	7.681E+00	NOT IDENT.
SR-85	4.316E-02	4.568E-02	4.965E-02	NOT IDENT.
RB-86	6.331E-03	1.033E+00	1.033E+00	NOT IDENT.
Y-88	4.863E-04	3.629E-02	3.629E-02	NOT IDENT.
Y-91	-1.109E+01	1.807E+01	1.875E+01	NOT IDENT.
NB-94	8.151E-03	2.825E-02	2.849E-02	NOT IDENT.
NB-95	3.352E-02	4.481E-02	4.729E-02	NOT IDENT.
NB-95M	-2.703E-02	1.270E-01	1.276E-01	NOT IDENT.
ZR-95	4.706E-02	7.331E-02	7.632E-02	NOT IDENT.
NB-97	1.000E+41	4.551E+41	0.000E+00	SHORT HLIF
ZR-97	1.117E+14	2.003E+14	2.066E+14	SHORT HLIF
MO-99	4.173E+02	1.116E+03	1.132E+03	SHORT HLIF
TC-99M	-5.776E+38	1.653E+39	0.000E+00	SHORT HLIF
RH-101	-1.156E-02	2.355E-02	2.412E-02	NOT IDENT.
RH-102	-1.513E-02	4.424E-02	4.477E-02	NOT IDENT.
RU-103	-1.109E-02	4.652E-02	4.679E-02	FAIL ABUN
RH-106	-5.547E-02	2.778E-01	2.789E-01	NOT IDENT.
RU-106	-5.547E-02	2.778E-01	2.789E-01	NOT IDENT.
AG-108M	1.822E-02	2.632E-02	2.757E-02	FAIL ABUN
AG-110	-7.659E-02	5.568E-01	5.579E-01	NOT IDENT.
AG-110M	-2.479E-02	3.626E-02	3.795E-02	NOT IDENT.
SN-113	1.569E-02	3.695E-02	3.762E-02	NOT IDENT.
CD-115	1.680E+03	3.155E+03	3.245E+03	SHORT HLIF
SN-117M	8.356E-02	1.062E-01	1.127E-01	NOT IDENT.
SB-122	5.833E+01	1.963E+02	1.980E+02	SHORT HLIF
TE-123M	2.130E-02	2.219E-02	2.418E-02	NOT IDENT.
SB-124	1.443E-03	9.722E-02	9.722E-02	NOT IDENT.
SB-125	-5.408E-02	6.439E-02	6.885E-02	NOT IDENT.
TE-125M	-6.349E+00	8.576E+00	9.041E+00	NOT IDENT.
I-126	3.767E-02	5.476E-01	5.479E-01	NOT IDENT.
SB-126	1.457E-01	3.397E-01	3.460E-01	NOT IDENT.
SB-127	5.334E+00	3.580E+01	3.588E+01	NOT IDENT.
I-131	4.478E-02	5.810E-01	5.813E-01	NOT IDENT.
I-132	1.000E+41	3.709E+41	0.000E+00	SHORT HLIF
TE-132	-3.345E+00	3.509E+01	3.512E+01	SHORT HLIF
BA-133	-1.358E-02	3.603E-02	3.654E-02	NOT IDENT.
I-133	-9.002E+09	1.846E+10	1.890E+10	SHORT HLIF
CS-134	3.362E-02	3.593E-02	3.900E-02	NOT IDENT.
I-135	6.475E+35	3.086E+36	0.000E+00	SHORT HLIF
CS-136	-3.608E-02	1.896E-01	1.903E-01	NOT IDENT.
BA-137M	7.588E-03	2.790E-02	2.811E-02	NOT IDENT.
CS-137	8.016E-03	2.948E-02	2.970E-02	NOT IDENT.
LA-138	1.395E-02	4.634E-02	4.677E-02	NOT IDENT.
BA-140	-7.034E-02	6.062E-01	6.070E-01	NOT IDENT.
LA-140	-6.249E-02	2.220E-01	2.238E-01	NOT IDENT.
CE-141	-9.800E-03	7.208E-02	7.222E-02	NOT IDENT.
CE-143	8.543E+05	1.511E+06	1.559E+06	SHORT HLIF
CE-144	-3.706E-02	1.550E-01	1.559E-01	NOT IDENT.
PM-144	1.743E-02	2.752E-02	2.862E-02	NOT IDENT.
PR-144	1.073E+00	2.138E+00	2.192E+00	NOT IDENT.
PM-146	-1.884E-03	2.849E-02	2.850E-02	NOT IDENT.
ND-147	-1.804E-01	1.503E+00	1.505E+00	NOT IDENT.
PM-147	1.292E+02	5.325E+02	5.357E+02	NOT IDENT.
PM-149	1.687E+04	2.461E+04	2.576E+04	SHORT HLIF
EU-150	1.345E-02	2.341E-02	2.419E-02	FAIL ABUN
EU-152	-9.993E-03	7.367E-02	7.380E-02	NOT IDENT.
GD-153	-2.501E-02	5.945E-02	6.051E-02	NOT IDENT.
EU-154	2.307E-02	1.027E-01	1.032E-01	NOT IDENT.
EU-155	2.815E-02	7.707E-02	7.810E-02	FAIL ABUN
TB-160	4.580E-02	1.122E-01	1.141E-01	FAIL ABUN
HO-166M	-2.202E-02	5.534E-02	5.622E-02	NOT IDENT.

TM-171	-5.020E+00	7.605E+00	7.935E+00	NOT IDENT.
HF-172	2.615E-02	1.219E-01	1.225E-01	FAIL ABUN
LU-172	-1.436E-02	5.292E-02	5.331E-02	FAIL ABUN
LU-176	4.207E-03	1.946E-02	1.955E-02	FAIL ABUN
HF-181	-2.661E-02	3.910E-02	4.090E-02	NOT IDENT.
TA-182	-1.198E-01	1.711E-01	1.795E-01	FAIL ABUN
RE-183	4.449E-02	1.029E-01	1.048E-01	NOT IDENT.
RE-184	-4.940E-02	1.429E-01	1.446E-01	NOT IDENT.
W-188	1.798E+00	6.630E+00	6.679E+00	FAIL ABUN
IR-192	7.983E-03	3.136E-02	3.156E-02	FAIL ABUN
HG-203	1.716E-02	3.778E-02	3.856E-02	NOT IDENT.
TL-204	3.179E+00	2.851E+00	3.191E+00	NOT IDENT.
BI-207	-1.049E-02	4.925E-02	4.947E-02	FAIL ABUN
BI-210	3.821E-01	1.291E+00	1.302E+00	NOT IDENT.
PB-210	3.821E-01	1.291E+00	1.302E+00	NOT IDENT.
PB-211	-2.314E-01	5.463E-01	5.561E-01	FAIL ABUN
BI-213	3.222E-02	8.085E-02	8.215E-02	NOT IDENT.
RN-219	3.497E-01	3.060E-01	3.442E-01	NOT IDENT.
RA-223	-3.269E-01	5.235E-01	5.439E-01	FAIL ABUN
AC-225	4.163E-01	1.990E+00	1.999E+00	NOT IDENT.
AC-227	3.686E-02	1.993E-01	2.000E-01	NOT IDENT.
TH-227	3.686E-02	1.993E-01	2.000E-01	NOT IDENT.
TH-229	3.557E-01	4.546E-01	4.821E-01	FAIL ABUN
PA-231	8.467E-02	4.362E-01	4.379E-01	NOT IDENT.
TH-231	-3.269E-01	5.235E-01	5.439E-01	FAIL ABUN
PA-233	2.153E-02	5.165E-02	5.256E-02	NOT IDENT.
PA-234	1.140E-01	2.853E-01	2.899E-01	FAIL ABUN
PA-234M	2.953E+00	3.349E+00	3.604E+00	NOT IDENT.
U-235	-1.013E-01	1.601E-01	1.665E-01	FAIL ABUN
NP-237	2.153E-02	5.165E-02	5.256E-02	FAIL ABUN
NP-238	-2.643E+03	8.147E+03	8.233E+03	SHORT HLIF
NP-239	5.120E-02	1.846E-01	1.860E-01	NOT IDENT.
PU-239	2.150E+02	2.623E+02	2.797E+02	NOT IDENT.
AM-241	-6.194E-02	7.416E-02	7.924E-02	NOT IDENT.
CM-243	3.444E-03	7.227E-02	7.228E-02	NOT IDENT.
BK-247	-3.371E-02	5.593E-02	5.796E-02	NOT IDENT.
CM-247	3.574E-02	2.864E-02	3.286E-02	NOT IDENT.
CF-249	1.046E-02	3.373E-02	3.406E-02	NOT IDENT.
CF-251	1.171E-02	1.101E-01	1.102E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	24.9996	85.43	44.1326	131.20	49.2799
45.60	44.9650	86.55	40.2209	133.02	31.8542
46.54	29.7721	86.79	51.3089	133.52	40.6748
49.72	0.0000	86.94	51.3265	136.00	33.1128
51.35	47.6584	87.09	51.3432	136.47	32.0334
51.87	45.9007	87.57	51.3980	140.51	0.0000
52.39	37.7001	88.03	51.4502	143.76	43.5798
52.97	34.0835	88.34	66.6279	144.24	48.0850
53.44	31.3657	88.47	66.6465	145.44	41.4522
54.07	34.1994	89.96	66.8636	152.43	30.5711
57.36	0.0000	1093.63	77.1075	153.25	31.7422
57.53	31.7546	91.11	67.0297	323.87	46.5454
57.98	32.7316	92.59	50.9407	156.02	28.4573
59.27	46.3091	93.35	51.0231	158.56	27.4200
59.32	46.3157	94.56	51.1528	159.00	22.8647
59.54	46.3450	94.65	51.1627	162.33	27.5687
60.96	33.9565	94.67	51.1646	162.66	27.5819
61.17	39.6395	94.87	51.1860	163.33	38.3443
62.93	39.8348	97.43	39.7942	165.86	31.1697
63.29	39.8745	98.43	38.5006	176.31	44.5011
63.58	39.9064	98.44	38.5014	176.60	43.3470
64.28	39.9829	99.53	26.8728	177.52	39.8811
66.73	40.8867	100.11	32.0780	181.07	0.0000
67.24	39.6626	102.03	38.4337	181.52	42.4512
125.81	42.2705	103.18	34.3568	184.41	37.8765
67.75	42.2782	103.37	39.5771	143.76	37.9409
68.89	63.6072	105.21	41.8103	193.51	33.5281
69.67	56.9762	105.31	41.8185	197.03	40.8907
70.82	38.7418	106.12	38.7428	198.01	36.1240
70.83	38.7430	106.47	45.0556	201.83	32.2599
72.81	59.7044	109.28	47.4050	203.43	33.9387
72.87	59.7133	111.00	38.0468	205.31	43.7338
74.66	75.3005	111.76	0.0000	210.85	41.5760
74.82	75.3298	114.06	42.5146	215.65	36.8903
74.97	75.3580	116.30	0.0000	218.12	36.9951
77.11	75.7516	116.74	34.1780	222.11	38.4019
78.74	52.6737	119.76	44.0276	227.09	24.9136
79.69	47.5129	121.12	34.4456	227.38	24.9219
80.03	47.5503	121.22	34.4517	228.16	0.0000
80.12	47.5609	121.78	39.8737	228.18	29.9326
80.19	29.0699	122.06	39.8934	116.74	29.9326
80.57	29.0957	122.92	25.9156	235.69	37.7238
81.00	43.6875	123.07	25.9224	235.96	36.0577
81.07	43.6945	265.00	31.3559	238.63	36.1614
81.75	57.6885	125.81	27.1303	238.98	0.0000
82.47	52.8035	127.23	43.5135	240.99	36.2524
83.79	30.6451	127.91	41.3857	242.00	36.2909
84.00	30.6596	129.30	36.0243	244.70	29.1999

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	27.3011	344.28	21.3262	563.25	14.9941
252.80	28.1657	345.93	15.5982	564.24	0.0000
254.15	0.0000	351.06	20.5100	569.33	9.6709
256.23	28.2642	351.93	20.5243	946.00	9.6720
260.90	0.0000	355.39	0.0000	569.70	11.8227
264.66	23.3212	356.01	22.4624	583.19	17.3210
264.80	23.3245	364.49	30.1484	584.27	17.8730
265.00	25.9210	366.42	0.0000	595.83	19.6165
269.46	26.9024	372.51	14.2191	427.87	15.2948
270.03	28.6541	375.05	26.5935	602.52	0.0000
271.23	24.3411	377.52	22.8369	604.72	18.0650
273.65	22.6553	356.01	22.9448	607.14	14.2505
276.40	23.5887	388.16	20.1408	609.32	14.2664
277.37	24.4852	388.63	22.0665	610.33	14.2738
277.60	27.1143	391.69	14.4235	614.28	14.3029
278.00	20.1250	264.66	20.3241	618.01	14.3298
279.20	21.8999	401.81	9.2986	620.36	13.2432
279.54	24.5356	402.40	9.6901	621.93	11.5972
279.70	24.5393	404.85	20.3852	630.19	0.0000
280.46	27.1881	410.95	10.7241	631.29	13.3159
283.69	20.2331	413.71	19.5361	633.25	9.9968
284.31	15.8438	414.70	19.5496	634.78	6.6697
285.41	22.0281	423.72	13.7701	635.95	14.4594
285.90	0.0000	427.09	21.6889	636.99	18.9182
287.50	32.6648	427.87	17.7550	657.50	10.1162
290.67	18.5938	433.94	16.8374	657.76	10.1173
293.27	0.0000	439.40	17.8931	657.90	0.0000
351.93	30.2301	440.45	13.9268	661.66	10.1364
295.96	30.2501	453.88	12.0430	664.57	0.0000
879.38	32.1057	463.37	15.1459	666.33	14.6742
299.98	29.4672	468.07	11.1403	666.50	15.8041
300.09	34.2922	473.00	16.2546	667.71	0.0000
300.13	34.2938	475.06	17.2929	677.62	12.4829
301.36	33.9736	476.78	19.3479	685.70	10.2521
302.85	29.5430	477.60	12.2261	692.65	0.0000
256.23	30.4825	482.18	13.2827	695.00	8.0083
304.85	28.6986	487.02	10.2480	696.49	8.0137
306.78	19.7638	492.35	0.0000	696.51	9.1585
308.46	23.3922	497.08	17.5285	697.00	9.1608
311.90	21.6577	505.52	13.6794	697.30	9.1621
316.51	19.9326	507.63	0.0000	697.49	11.4535
319.41	25.4320	511.00	15.5956	702.65	11.4805
320.08	26.3550	514.00	15.6232	706.68	13.8018
321.04	20.0100	514.00	15.6232	711.68	16.1385
323.87	30.0869	520.40	9.4091	720.70	9.2594
325.23	27.3834	520.69	0.0000	721.93	0.0000
328.76	31.1265	522.65	0.0000	722.78	13.9023
333.37	30.8786	527.90	0.0000	722.91	13.9028
333.97	19.3085	528.26	7.8766	723.31	12.1671
334.37	22.0742	529.59	15.7654	724.19	12.1722
338.28	24.9137	529.87	0.0000	727.33	13.9302
338.32	24.9142	531.02	14.7263	733.00	15.3619
311.90	13.8657	537.26	14.7787	735.93	10.4875
340.48	13.8657	546.56	0.0000	333.97	17.4908
340.55	13.8666	552.55	17.0358	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	7.8942	949.00	10.4562	1384.29	3.2514
747.24	7.0264	667.71	0.0000	1408.01	4.3618
748.06	8.7860	962.31	10.9145	1434.09	3.2930
752.31	12.3231	964.08	7.6450	1435.80	3.2944
753.82	11.7440	966.17	16.8314	1457.56	0.0000
756.73	7.0552	911.20	9.5728	1460.82	2.2100
756.80	7.0554	983.53	7.6970	1489.16	4.4507
884.68	2.8308	984.45	0.0000	1505.03	5.5847
765.81	8.4990	1274.44	6.7644	1584.12	6.3721
766.42	12.7516	1001.03	3.8716	1596.21	5.4771
766.84	15.5885	1002.74	10.6532	1620.50	2.7536
772.60	0.0000	1004.73	7.7529	1621.92	2.7545
776.52	9.7828	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	3.7291
778.90	10.6827	1028.54	0.0000	1750.46	0.0000
783.70	13.3800	1037.84	10.7791	1764.49	3.1567
788.74	13.4084	1038.76	0.0000	1063.66	3.7926
792.07	10.7413	631.29	9.8273	1771.35	2.8452
795.86	8.0686	1048.07	5.8993	1791.20	0.0000
810.06	11.7225	1049.04	5.9011	1808.65	0.9557
810.29	11.7237	1050.41	4.9197	1810.72	0.0000
344.28	13.5283	1063.66	11.8586	1836.06	2.8833
810.76	12.6277	1077.00	4.9622		
815.77	11.7495	1077.34	2.9777		
1048.07	7.2385	1085.87	10.9476		
832.01	18.9217	1093.63	8.9791		
834.85	16.0290	1099.45	8.9956		
835.71	15.6178	1112.07	5.0174		
836.80	0.0000	1112.84	9.0335		
846.75	0.0000	1115.54	4.8220		
846.77	9.1501	1120.29	9.0544		
856.80	4.4092	1120.55	9.0549		
860.56	10.3031	1221.41	3.2203		
871.09	7.3892	1129.67	4.0359		
873.19	6.4706	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	5.5594	1173.23	3.2715		
880.51	6.4888	1177.95	11.2612		
881.60	8.3460	1189.05	9.2439		
883.24	6.4954	1204.77	8.2549		
884.68	9.2844	1221.41	11.4048		
889.28	7.4402	1231.02	7.2777		
894.76	13.0472	1235.36	20.8191		
898.04	7.4646	1238.28	6.2509		
900.72	10.2742	1260.41	0.0000		
903.28	10.2840	1271.87	9.4653		
911.20	12.1895	1274.44	6.3146		
912.08	10.5051	1274.54	6.3149		
923.98	0.0000	1291.59	2.1149		
926.50	7.5432	1298.22	0.0000		
929.11	3.7751	1312.11	7.4435		
935.54	8.5139	1332.49	2.1384		
937.49	4.5439	1362.66	0.0000		
944.13	9.4891	1365.19	3.2355		
946.00	7.5962	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:23:10.74

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299012.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM27.CNF;738
                                         Background date  : 28-JUL-2024 11:28:58
Sample date      : 26-JUN-2024 09:50:00  Acquisition date : 30-JUL-2024 11:19:15
Sample ID        : G674299012            Sample quantity  : 1.01650E+02 GRAM
Detector name    : GAM27                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.81  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.81*	13	138	0.77	94.45	89	9	3.74E-03	165.8	
2	0	63.62*	7	159	0.96	128.07	124	9	1.97E-03	335.4	
3	2	74.93*	110	104	0.89	150.67	147	15	3.05E-02	16.6	2.49E+00
4	2	77.23*	194	109	1.04	155.27	147	15	5.39E-02	11.4	
5	2	79.09	24	114	1.17	159.00	147	15	6.77E-03	93.6	
6	0	87.40	59	163	1.16	175.60	172	8	1.65E-02	39.4	
7	0	92.96*	72	130	1.34	186.72	183	8	2.01E-02	32.7	
8	0	109.62	39	71	0.72	220.03	217	7	1.07E-02	39.9	
9	0	186.07*	67	91	1.49	372.86	368	11	1.86E-02	32.2	
10	0	209.99	37	82	1.90	420.70	415	10	1.04E-02	48.7	
11	4	238.77*	349	49	1.15	478.23	473	16	9.69E-02	6.5	1.60E+00
12	4	241.60	84	41	1.76	483.89	473	16	2.34E-02	20.5	
13	0	245.94	38	39	1.74	492.57	489	9	1.07E-02	33.2	
14	0	270.50	44	53	1.05	541.66	537	11	1.22E-02	36.0	
15	0	289.96	11	50	1.57	580.58	575	8	2.95E-03	119.6	
16	0	295.29	148	51	1.16	591.23	585	10	4.11E-02	12.2	
17	0	328.20*	29	72	0.71	657.03	650	14	8.11E-03	66.4	
18	0	338.69	54	74	1.18	678.01	672	11	1.50E-02	33.8	
19	0	352.15*	253	74	1.32	704.91	698	15	7.03E-02	9.9	
20	0	422.03	7	31	1.01	844.64	839	8	2.00E-03	137.3	
21	0	424.25	14	18	1.63	849.09	846	7	3.91E-03	57.6	
22	0	463.28	24	22	0.97	927.12	922	9	6.56E-03	41.6	
23	0	510.67*	60	39	1.46	1021.87	1015	14	1.65E-02	30.5	
24	0	583.36*	126	28	1.41	1167.21	1159	16	3.50E-02	13.2	
25	0	609.47*	165	44	1.50	1219.42	1211	16	4.59E-02	12.0	
26	0	727.13*	21	10	1.66	1454.69	1450	8	5.91E-03	34.5	
27	0	737.77	8	17	3.41	1475.98	1467	10	2.10E-03	109.7	
28	0	744.08	7	15	0.78	1488.58	1483	7	2.06E-03	97.9	
29	5	767.71	17	27	2.63	1535.84	1529	23	4.79E-03	67.8	9.16E-01
30	5	772.96	12	15	2.63	1546.35	1529	23	3.42E-03	78.0	
31	0	787.06	32	16	2.97	1574.54	1568	13	8.89E-03	33.0	
32	0	795.99	55	0	6.00	1592.40	1582	22	1.53E-02	13.5	
33	0	860.41	33	17	3.21	1721.22	1712	18	9.11E-03	34.9	
34	0	911.97*	48	49	1.79	1824.32	1816	16	1.33E-02	35.8	

Sample ID : G674299012 Acquisition date : 30-JUL-2024 11:19:15

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	935.35	30	9	3.82	1871.08	1861	19	8.38E-03	30.4	
36	0	960.13	9	9	3.37	1920.62	1914	12	2.47E-03	75.5	
37	0	969.67	37	22	0.75	1939.70	1931	12	1.01E-02	30.2	
38	0	1042.06	9	13	0.55	2084.47	2075	14	2.44E-03	96.0	
39	0	1074.37	10	4	3.31	2149.09	2144	9	2.74E-03	49.8	
40	0	1086.92	7	8	0.59	2174.19	2170	8	1.81E-03	85.2	
41	0	1105.83	9	0	0.73	2212.00	2209	7	2.50E-03	33.3	
42	0	1110.17	3	6	0.97	2220.69	2216	6	8.95E-04	131.7	
43	0	1120.86	38	19	1.32	2242.06	2235	15	1.06E-02	29.7	
44	0	1166.16	7	11	0.65	2332.66	2325	10	1.83E-03	106.6	
45	0	1187.08	22	17	3.74	2374.50	2365	17	6.11E-03	47.9	
46	0	1271.81	9	4	1.30	2543.94	2540	8	2.50E-03	50.9	
47	0	1293.68*	14	5	2.37	2587.68	2582	10	3.86E-03	41.2	
48	0	1377.25	15	3	1.95	2754.83	2750	10	4.28E-03	31.9	
49	0	1460.76*	331	24	1.92	2921.85	2914	16	9.21E-02	6.5	
50	0	1729.92	11	3	1.08	3460.23	3452	12	2.94E-03	45.4	
51	0	1764.80*	26	0	3.20	3530.00	3524	12	7.16E-03	21.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:23:12

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299012.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 26-JUN-2024 09:50:00	Acquisition date	: 30-JUL-2024 11:19:15
Sample ID	: G674299012	Sample quantity	: 101.65 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA27	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.81 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	310	10.66*	1.254E+00	1.713E+01	1.713E+01	12.91
CD-109	88.03	59	3.70*	6.738E+00	1.735E+00	1.826E+00	78.74
TE-125M	109.28	38	0.27*	7.454E+00	1.388E+01	2.095E+01	79.72
SN-126	64.28	7	9.60	3.897E+00	1.386E-01	1.386E-01	670.71
	86.94	59	8.90	6.738E+00	7.212E-01	7.212E-01	78.74
	87.57	59	37.00*	6.738E+00	1.735E-01	1.735E-01	78.74
TL-208	277.37	------	6.60	4.872E+00	------	Line Not Found	------
	583.19	120	85.00*	2.908E+00	3.589E-01	3.589E-01	26.32
	860.56	31	12.50	2.058E+00	8.890E-01	8.890E-01	69.83
BI-210	46.54	13	4.25*	1.065E+00	2.191E+00	2.198E+00	331.58
PB-210	46.54	13	4.25*	1.065E+00	2.191E+00	2.198E+00	331.58
BI-211	72.87	------	1.23	5.308E+00	------	Line Not Found	------
	351.06	243	12.92*	4.175E+00	3.330E+00	3.330E+00	19.73
BI-212	727.33	20	6.67*	2.409E+00	9.273E-01	9.273E-01	68.96
	1620.50	------	1.47	1.168E+00	------	Line Not Found	------
PB-212	74.82	109	10.28	5.571E+00	1.402E+00	1.402E+00	33.23
	77.11	192	17.10	5.839E+00	1.418E+00	1.418E+00	22.83
	238.63	338	43.60*	5.359E+00	1.068E+00	1.068E+00	13.04
	300.09	------	3.30	4.632E+00	------	Line Not Found	------
BI-214	609.32	157	45.49*	2.806E+00	9.093E-01	9.094E-01	24.07
	1120.29	36	14.92	1.588E+00	1.115E+00	1.115E+00	59.30
	1764.49	24	15.30	1.120E+00	1.035E+00	1.036E+00	42.15
PB-214	74.82	109	5.80	5.571E+00	2.485E+00	2.485E+00	33.23
	77.11	192	9.70	5.839E+00	2.500E+00	2.500E+00	22.83
	87.09	59	3.41	6.738E+00	1.882E+00	1.882E+00	78.74
	242.00	82	7.25	5.319E+00	1.563E+00	1.563E+00	41.08
	295.22	143	18.42	4.681E+00	1.222E+00	1.222E+00	24.34
	351.93	243	35.60*	4.175E+00	1.208E+00	1.208E+00	19.73
RN-222	609.32	157	45.49*	2.806E+00	9.093E-01	9.094E-01	24.07
	1120.29	36	14.92	1.588E+00	1.115E+00	1.115E+00	59.30
	1764.49	24	15.30	1.120E+00	1.035E+00	1.036E+00	42.15
RA-224	240.99	82	4.10*	5.319E+00	2.763E+00	2.763E+00	41.08
RA-226	74.82	109	5.80	5.571E+00	2.485E+00	2.485E+00	33.23
	77.11	192	9.70	5.839E+00	2.500E+00	2.500E+00	22.83
	87.09	59	3.41	6.738E+00	1.882E+00	1.882E+00	78.74
	242.00	82	7.25	5.319E+00	1.563E+00	1.563E+00	41.08
	295.22	143	18.42	4.681E+00	1.222E+00	1.222E+00	24.34
	351.93	243	35.60*	4.175E+00	1.208E+00	1.208E+00	19.73
AC-228	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	52	11.27	4.283E+00	7.931E-01	7.931E-01	67.65
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	45	25.80*	1.945E+00	6.633E-01	6.633E-01	71.65
	968.97	34	15.80	1.832E+00	8.785E-01	8.785E-01	60.49
RA-228	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	52	11.27	4.283E+00	7.931E-01	7.931E-01	67.65
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	45	25.80*	1.945E+00	6.633E-01	6.633E-01	71.65
	968.97	34	15.80	1.832E+00	8.785E-01	8.785E-01	60.49
TH-228	74.82	109	10.28	5.571E+00	1.402E+00	1.402E+00	33.23

Sample ID : G674299012 Acquisition date : 30-JUL-2024 11:19:15

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	77.11	192	17.10	5.839E+00	1.418E+00	1.418E+00	22.83
	238.63	338	43.60*	5.359E+00	1.068E+00	1.068E+00	13.04
	300.09	------	3.30	4.632E+00	------ Line Not Found		------
TH-230	74.82	109	5.80	5.571E+00	2.485E+00	2.485E+00	33.23
	77.11	192	9.70	5.839E+00	2.500E+00	2.500E+00	22.83
	87.09	59	3.41	6.738E+00	1.882E+00	1.882E+00	78.74
	242.00	82	7.25	5.319E+00	1.563E+00	1.563E+00	41.08
	295.22	143	18.42	4.681E+00	1.222E+00	1.222E+00	24.34
	351.93	243	35.60*	4.175E+00	1.208E+00	1.208E+00	19.73
TH-232	105.21	------	1.10	7.409E+00	------ Line Not Found		------
	338.32	52	11.27	4.283E+00	7.931E-01	7.931E-01	67.65
	835.71	------	1.61	2.117E+00	------ Line Not Found		------
	911.20	45	25.80*	1.945E+00	6.633E-01	6.633E-01	71.65
	968.97	34	15.80	1.832E+00	8.785E-01	8.785E-01	60.49
TH-234	63.29	7	3.70*	3.897E+00	3.597E-01	3.597E-01	670.71
	92.59	71	4.23	7.051E+00	1.763E+00	1.763E+00	65.41
U-234	74.82	109	5.80	5.571E+00	2.485E+00	2.485E+00	33.23
	77.11	192	9.70	5.839E+00	2.500E+00	2.500E+00	22.83
	87.09	59	3.41	6.738E+00	1.882E+00	1.882E+00	78.74
	242.00	82	7.25	5.319E+00	1.563E+00	1.563E+00	41.08
	295.22	143	18.42	4.681E+00	1.222E+00	1.222E+00	24.34
	351.93	243	35.60*	4.175E+00	1.208E+00	1.208E+00	19.73
U-238	63.29	7	3.70*	3.897E+00	3.597E-01	3.597E-01	670.71
	92.59	71	4.23	7.051E+00	1.763E+00	1.763E+00	65.41
AM-243	43.53	------	5.90	6.688E-01	------ Line Not Found		------
	74.66	109	67.20*	5.571E+00	2.145E-01	2.145E-01	33.23
ANH-511	511.00	57	100.00*	3.224E+00	1.302E-01	1.302E-01	61.01

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:23:13.10

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299012.CNF;1  *
* Acquisition date : 30-JUL-2024 11:19:15 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.81     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:50:00 Analyst initials: RXF2            *
* Sample ID        : G674299012           Sample Quantity : 1.0165E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.713E+01	2.167E+00	8.705E-01
CD-109	1.826E+00	1.409E+00	1.555E+00
TE-125M	2.095E+01	1.637E+01	1.952E+01
SN-126	1.735E-01	1.339E-01	1.484E-01
TL-208	3.589E-01	9.256E-02	6.680E-02
BI-210	2.198E+00	7.141E+00	6.036E+00
PB-210	2.198E+00	7.141E+00	6.036E+00
BI-211	3.330E+00	6.440E-01	3.874E-01
BI-212	9.273E-01	6.267E-01	7.835E-01
PB-212	1.068E+00	1.364E-01	9.540E-02
BI-214	9.094E-01	2.145E-01	1.505E-01
PB-214	1.208E+00	2.337E-01	1.409E-01
RN-222	9.094E-01	2.145E-01	1.505E-01
RA-224	2.763E+00	1.112E+00	1.022E+00
RA-226	1.208E+00	2.337E-01	1.409E-01
AC-228	6.633E-01	4.657E-01	3.305E-01
RA-228	6.633E-01	4.657E-01	3.305E-01
TH-228	1.068E+00	1.364E-01	9.540E-02
TH-230	1.208E+00	2.337E-01	1.409E-01
TH-232	6.633E-01	4.657E-01	3.305E-01
TH-234	3.597E-01	2.365E+00	2.218E+00
U-234	1.208E+00	2.337E-01	1.409E-01
U-238	3.597E-01	2.365E+00	2.218E+00
AM-243	2.145E-01	6.986E-02	8.668E-02
ANH-511	1.302E-01	7.781E-02	5.165E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.148E-01	4.611E-01	8.305E-01	NOT IDENT.
NA-22	6.782E-03	4.800E-02	8.873E-02	NOT IDENT.
NA-24	0.000E+00	9.785E+14	0.000E+00	SHORT HLIF
AL-26	9.835E-03	3.191E-02	7.649E-02	NOT IDENT.
SC-46	2.183E-02	4.707E-02	9.675E-02	FAIL ABUN

V-48	-5.470E-02	1.705E-01	3.239E-01	NOT IDENT.
CR-51	-3.833E-01	4.941E-01	8.723E-01	NOT IDENT.
MN-52	-1.139E+00	1.968E+00	3.662E+00	FAIL ABUN
MN-54	-2.518E-03	3.950E-02	7.491E-02	NOT IDENT.
CO-56	1.361E-02	6.086E-02	1.153E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	5.360E-04	2.562E-02	4.608E-02	NOT IDENT.
CO-58	3.739E-02	5.580E-02	1.139E-01	NOT IDENT.
FE-59	-6.679E-02	1.297E-01	2.344E-01	NOT IDENT.
CO-60	1.811E-02	4.430E-02	9.590E-02	NOT IDENT.
ZN-65	-6.856E-02	1.135E-01	1.693E-01	NOT IDENT.
GE-68	7.436E-01	1.299E+00	2.698E+00	NOT IDENT.
AS-73	-2.704E-01	9.651E-01	1.740E+00	NOT IDENT.
AS-74	1.160E-01	2.238E-01	4.440E-01	NOT IDENT.
SE-75	-6.065E-02	5.365E-02	7.935E-02	NOT IDENT.
BR-77	0.000E+00	5.343E+03	0.000E+00	SHORT HLIF
SR-82	4.742E-01	5.471E-01	1.136E+00	NOT IDENT.
RB-83	-9.141E-02	9.024E-02	1.467E-01	NOT IDENT.
RB-84	9.647E-02	1.037E-01	2.294E-01	NOT IDENT.
KR-85	1.269E+00	7.300E+00	1.283E+01	NOT IDENT.
SR-85	8.146E-03	4.721E-02	8.296E-02	NOT IDENT.
RB-86	8.849E-01	1.713E+00	3.443E+00	NOT IDENT.
Y-88	1.467E-02	4.813E-02	1.092E-01	NOT IDENT.
Y-91	-2.266E+01	3.009E+01	5.148E+01	NOT IDENT.
NB-94	2.371E-02	3.724E-02	7.529E-02	NOT IDENT.
NB-95	3.657E-02	5.907E-02	1.183E-01	NOT IDENT.
NB-95M	1.008E-01	1.710E-01	2.934E-01	NOT IDENT.
ZR-95	-2.868E-02	8.799E-02	1.569E-01	NOT IDENT.
NB-97	0.000E+00	1.415E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.208E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.727E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.952E+39	0.000E+00	SHORT HLIF
RH-101	-2.607E-03	3.145E-02	5.580E-02	NOT IDENT.
RH-102	2.215E-02	5.421E-02	1.095E-01	FAIL ABUN
RU-103	-5.133E-02	5.405E-02	8.890E-02	FAIL ABUN
RH-106	9.129E-02	3.390E-01	6.647E-01	NOT IDENT.
RU-106	9.129E-02	3.390E-01	6.647E-01	NOT IDENT.
AG-108M	4.502E-03	2.574E-02	5.109E-02	NOT IDENT.
AG-110	-5.731E-01	8.073E-01	1.347E+00	NOT IDENT.
AG-110M	3.249E-03	5.445E-02	1.040E-01	NOT IDENT.
SN-113	-9.141E-03	5.328E-02	9.920E-02	NOT IDENT.
CD-115	0.000E+00	4.414E+03	0.000E+00	SHORT HLIF
SN-117M	1.043E-01	1.459E-01	2.752E-01	NOT IDENT.
SB-122	0.000E+00	2.305E+02	0.000E+00	SHORT HLIF
TE-123M	1.719E-02	3.204E-02	5.960E-02	NOT IDENT.
SB-124	-4.294E-02	8.246E-02	1.483E-01	NOT IDENT.
SB-125	-4.041E-02	8.962E-02	1.426E-01	FAIL ABUN
I-126	4.630E-01	6.696E-01	1.366E+00	NOT IDENT.
SB-126	1.562E-01	4.438E-01	8.751E-01	NOT IDENT.
SB-127	-5.170E+00	3.845E+01	7.152E+01	NOT IDENT.
I-131	-4.100E-02	6.059E-01	1.149E+00	FAIL ABUN
I-132	0.000E+00	8.335E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	4.563E+01	0.000E+00	SHORT HLIF
BA-133	3.975E-02	4.020E-02	8.061E-02	NOT IDENT.
I-133	0.000E+00	2.244E+10	0.000E+00	SHORT HLIF
CS-134	0.000E+00	5.533E-02	9.892E-02	FAIL ABUN
I-135	0.000E+00	4.336E+36	0.000E+00	SHORT HLIF
CS-136	-1.151E-01	2.775E-01	5.207E-01	NOT IDENT.
BA-137M	-2.415E-02	4.056E-02	6.896E-02	NOT IDENT.
CS-137	-2.551E-02	4.284E-02	7.285E-02	NOT IDENT.
LA-138	-7.965E-03	3.637E-02	8.138E-02	NOT IDENT.
CE-139	1.443E-02	3.297E-02	6.078E-02	NOT IDENT.
BA-140	1.123E-01	7.399E-01	1.439E+00	FAIL ABUN
LA-140	-1.275E-01	3.046E-01	5.539E-01	FAIL ABUN
CE-141	-9.009E-02	9.604E-02	1.537E-01	NOT IDENT.
CE-143	0.000E+00	1.904E+06	0.000E+00	SHORT HLIF
CE-144	-7.566E-03	2.200E-01	3.896E-01	FAIL ABUN
PM-144	-1.107E-02	3.918E-02	7.234E-02	NOT IDENT.
PR-144	-8.369E-01	2.961E+00	5.468E+00	NOT IDENT.
PM-146	1.100E-02	4.474E-02	8.721E-02	NOT IDENT.
ND-147	-5.511E-01	1.798E+00	3.284E+00	NOT IDENT.
PM-147	1.209E+02	7.172E+02	1.309E+03	NOT IDENT.
PM-149	0.000E+00	4.006E+04	0.000E+00	SHORT HLIF
EU-150	1.002E-02	2.650E-02	4.584E-02	FAIL ABUN
EU-152	-3.769E-02	1.035E-01	1.897E-01	FAIL ABUN
GD-153	-3.753E-02	8.554E-02	1.480E-01	NOT IDENT.
EU-154	2.391E-02	1.357E-01	2.527E-01	NOT IDENT.
EU-155	7.993E-02	9.488E-02	1.844E-01	FAIL ABUN

TB-160	-1.273E-01	1.618E-01	2.547E-01	FAIL ABUN
HO-166M	-4.355E-03	5.739E-02	1.078E-01	FAIL ABUN
TM-171	4.013E+00	1.794E+01	3.364E+01	NOT IDENT.
HF-172	1.364E-02	1.923E-01	3.459E-01	FAIL ABUN
LU-172	-3.018E-02	6.870E-02	1.269E-01	FAIL ABUN
LU-176	-2.131E-02	2.284E-02	3.957E-02	FAIL ABUN
HF-181	-4.527E-02	6.285E-02	1.104E-01	NOT IDENT.
TA-182	-1.592E-01	2.686E-01	4.782E-01	FAIL ABUN
RE-183	3.693E-02	2.144E-01	4.020E-01	NOT IDENT.
RE-184	-1.131E-01	1.922E-01	3.183E-01	NOT IDENT.
W-188	5.569E+00	1.306E+01	1.666E+01	FAIL ABUN
IR-192	-1.325E-04	4.060E-02	7.795E-02	FAIL ABUN
HG-203	-2.577E-02	6.245E-02	1.022E-01	NOT IDENT.
TL-204	2.835E-01	4.473E+00	8.174E+00	FAIL ABUN
BI-207	-1.823E-02	5.105E-02	9.662E-02	FAIL ABUN
PB-211	2.197E-01	7.071E-01	1.395E+00	NOT IDENT.
BI-213	9.232E-02	1.111E-01	2.295E-01	NOT IDENT.
RN-219	-2.566E-01	3.839E-01	6.751E-01	FAIL ABUN
RA-223	4.054E-01	6.511E-01	1.228E+00	FAIL ABUN
AC-225	-1.066E+00	2.261E+00	3.749E+00	NOT IDENT.
AC-227	1.022E-01	2.651E-01	4.837E-01	FAIL ABUN
TH-227	1.022E-01	2.651E-01	4.837E-01	FAIL ABUN
TH-229	-1.971E-01	5.326E-01	8.997E-01	FAIL ABUN
PA-231	8.817E-03	5.373E-01	1.018E+00	NOT IDENT.
TH-231	4.054E-01	6.511E-01	1.228E+00	FAIL ABUN
PA-233	-5.533E-03	5.825E-02	1.116E-01	NOT IDENT.
PA-234	-2.703E-01	3.330E-01	5.167E-01	FAIL ABUN
PA-234M	-3.924E+00	5.334E+00	9.338E+00	FAIL ABUN
U-235	3.789E-02	2.072E-01	3.794E-01	FAIL ABUN
NP-237	-5.533E-03	5.825E-02	1.116E-01	NOT IDENT.
NP-238	0.000E+00	1.038E+04	0.000E+00	SHORT HLIF
NP-239	-6.894E-02	2.458E-01	4.315E-01	NOT IDENT.
PU-239	2.283E+02	3.451E+02	6.491E+02	NOT IDENT.
AM-241	-1.660E-01	1.400E-01	2.097E-01	NOT IDENT.
CM-243	-1.103E-01	9.047E-02	1.442E-01	NOT IDENT.
BK-247	-6.083E-02	8.623E-02	1.365E-01	NOT IDENT.
CM-247	-1.579E-02	3.569E-02	6.469E-02	NOT IDENT.
CF-249	3.352E-02	4.000E-02	8.311E-02	NOT IDENT.
CF-251	7.072E-02	1.312E-01	2.437E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:23:11.57

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	310	10.66*	1.254E+00	1.713E+01	1.713E+01	12.91
CD-109	88.03	59	3.70*	6.738E+00	1.735E+00	1.826E+00	78.74
TE-125M	109.28	38	0.27*	7.454E+00	1.388E+01	2.095E+01	79.72
SN-126	64.28	7	9.60	3.897E+00	1.386E-01	1.386E-01	670.71
	86.94	59	8.90	6.738E+00	7.212E-01	7.212E-01	78.74
	87.57	59	37.00*	6.738E+00	1.735E-01	1.735E-01	78.74
TL-208	277.37	------	6.60	4.872E+00	------	Line Not Found	------
	583.19	120	85.00*	2.908E+00	3.589E-01	3.589E-01	26.32
	860.56	31	12.50	2.058E+00	8.890E-01	8.890E-01	69.83
BI-210	46.54	13	4.25*	1.065E+00	2.191E+00	2.198E+00	331.58
PB-210	46.54	13	4.25*	1.065E+00	2.191E+00	2.198E+00	331.58
BI-211	72.87	------	1.23	5.308E+00	------	Line Not Found	------
	351.06	243	12.92*	4.175E+00	3.330E+00	3.330E+00	19.73
BI-212	727.33	20	6.67*	2.409E+00	9.273E-01	9.273E-01	68.96
	1620.50	------	1.47	1.168E+00	------	Line Not Found	------
PB-212	74.82	109	10.28	5.571E+00	1.402E+00	1.402E+00	33.23
	77.11	192	17.10	5.839E+00	1.418E+00	1.418E+00	22.83
	238.63	338	43.60*	5.359E+00	1.068E+00	1.068E+00	13.04
	300.09	------	3.30	4.632E+00	------	Line Not Found	------
BI-214	609.32	157	45.49*	2.806E+00	9.093E-01	9.094E-01	24.07
	1120.29	36	14.92	1.588E+00	1.115E+00	1.115E+00	59.30
	1764.49	24	15.30	1.120E+00	1.035E+00	1.036E+00	42.15
PB-214	74.82	109	5.80	5.571E+00	2.485E+00	2.485E+00	33.23
	77.11	192	9.70	5.839E+00	2.500E+00	2.500E+00	22.83
	87.09	59	3.41	6.738E+00	1.882E+00	1.882E+00	78.74
	242.00	82	7.25	5.319E+00	1.563E+00	1.563E+00	41.08
	295.22	143	18.42	4.681E+00	1.222E+00	1.222E+00	24.34
	351.93	243	35.60*	4.175E+00	1.208E+00	1.208E+00	19.73
RN-222	609.32	157	45.49*	2.806E+00	9.093E-01	9.094E-01	24.07
	1120.29	36	14.92	1.588E+00	1.115E+00	1.115E+00	59.30
	1764.49	24	15.30	1.120E+00	1.035E+00	1.036E+00	42.15
RA-224	240.99	82	4.10*	5.319E+00	2.763E+00	2.763E+00	41.08
RA-226	74.82	109	5.80	5.571E+00	2.485E+00	2.485E+00	33.23
	77.11	192	9.70	5.839E+00	2.500E+00	2.500E+00	22.83
	87.09	59	3.41	6.738E+00	1.882E+00	1.882E+00	78.74
	242.00	82	7.25	5.319E+00	1.563E+00	1.563E+00	41.08
	295.22	143	18.42	4.681E+00	1.222E+00	1.222E+00	24.34
	351.93	243	35.60*	4.175E+00	1.208E+00	1.208E+00	19.73
AC-228	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	52	11.27	4.283E+00	7.931E-01	7.931E-01	67.65
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	45	25.80*	1.945E+00	6.633E-01	6.633E-01	71.65
	968.97	34	15.80	1.832E+00	8.785E-01	8.785E-01	60.49
RA-228	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	52	11.27	4.283E+00	7.931E-01	7.931E-01	67.65
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	45	25.80*	1.945E+00	6.633E-01	6.633E-01	71.65

Sample ID : G674299012 Acquisition date : 30-JUL-2024 11:19:15

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	968.97	34	15.80	1.832E+00	8.785E-01	8.785E-01	60.49
TH-228	74.82	109	10.28	5.571E+00	1.402E+00	1.402E+00	33.23
	77.11	192	17.10	5.839E+00	1.418E+00	1.418E+00	22.83
	238.63	338	43.60*	5.359E+00	1.068E+00	1.068E+00	13.04
	300.09	------	3.30	4.632E+00	------	Line Not Found	------
TH-230	74.82	109	5.80	5.571E+00	2.485E+00	2.485E+00	33.23
	77.11	192	9.70	5.839E+00	2.500E+00	2.500E+00	22.83
	87.09	59	3.41	6.738E+00	1.882E+00	1.882E+00	78.74
	242.00	82	7.25	5.319E+00	1.563E+00	1.563E+00	41.08
	295.22	143	18.42	4.681E+00	1.222E+00	1.222E+00	24.34
	351.93	243	35.60*	4.175E+00	1.208E+00	1.208E+00	19.73
TH-232	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	52	11.27	4.283E+00	7.931E-01	7.931E-01	67.65
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	45	25.80*	1.945E+00	6.633E-01	6.633E-01	71.65
	968.97	34	15.80	1.832E+00	8.785E-01	8.785E-01	60.49
TH-234	63.29	7	3.70*	3.897E+00	3.597E-01	3.597E-01	670.71
	92.59	71	4.23	7.051E+00	1.763E+00	1.763E+00	65.41
U-234	74.82	109	5.80	5.571E+00	2.485E+00	2.485E+00	33.23
	77.11	192	9.70	5.839E+00	2.500E+00	2.500E+00	22.83
	87.09	59	3.41	6.738E+00	1.882E+00	1.882E+00	78.74
	242.00	82	7.25	5.319E+00	1.563E+00	1.563E+00	41.08
	295.22	143	18.42	4.681E+00	1.222E+00	1.222E+00	24.34
	351.93	243	35.60*	4.175E+00	1.208E+00	1.208E+00	19.73
U-238	63.29	7	3.70*	3.897E+00	3.597E-01	3.597E-01	670.71
	92.59	71	4.23	7.051E+00	1.763E+00	1.763E+00	65.41
AM-243	43.53	------	5.90	6.688E-01	------	Line Not Found	------
	74.66	109	67.20*	5.571E+00	2.145E-01	2.145E-01	33.23
ANH-511	511.00	57	100.00*	3.224E+00	1.302E-01	1.302E-01	61.01

Flag: "*" = Keyline

Sample ID : G674299012 Acquisition date : 30-JUL-2024 11:19:15

Total number of lines in spectrum	51	
Number of unidentified lines	12	
Number of lines tentatively identified by NID	39	76.47%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.713E+01	1.713E+01	0.221E+01	12.91	
CD-109	461.40D	1.05	1.735E+00	1.826E+00	1.438E+00	78.74	
TE-125M	57.40D	1.51	1.388E+01	2.095E+01	1.670E+01	79.72	
SN-126	2.30E+05Y	1.00	1.735E-01	1.735E-01	1.366E-01	78.74	
TL-208	1.41E+10Y	1.00	3.589E-01	3.589E-01	0.944E-01	26.32	
BI-210	22.20Y	1.00	2.191E+00	2.198E+00	7.287E+00	331.58	
PB-210	22.20Y	1.00	2.191E+00	2.198E+00	7.287E+00	331.58	
BI-211	7.04E+08Y	1.00	3.330E+00	3.330E+00	0.657E+00	19.73	
BI-212	1.41E+10Y	1.00	9.273E-01	9.273E-01	6.394E-01	68.96	
PB-212	1.41E+10Y	1.00	1.068E+00	1.068E+00	0.139E+00	13.04	
BI-214	1600.00Y	1.00	9.093E-01	9.094E-01	2.189E-01	24.07	
PB-214	1600.00Y	1.00	1.208E+00	1.208E+00	0.238E+00	19.73	
RN-222	1600.00Y	1.00	9.093E-01	9.094E-01	2.189E-01	24.07	
RA-224	1.41E+10Y	1.00	2.763E+00	2.763E+00	1.135E+00	41.08	
RA-226	1600.00Y	1.00	1.208E+00	1.208E+00	0.238E+00	19.73	
AC-228	1.41E+10Y	1.00	6.633E-01	6.633E-01	4.752E-01	71.65	
RA-228	1.41E+10Y	1.00	6.633E-01	6.633E-01	4.752E-01	71.65	
TH-228	1.41E+10Y	1.00	1.068E+00	1.068E+00	0.139E+00	13.04	
TH-230	7.54E+04Y	1.00	1.208E+00	1.208E+00	0.238E+00	19.73	
TH-232	1.41E+10Y	1.00	6.633E-01	6.633E-01	4.752E-01	71.65	
TH-234	4.47E+09Y	1.00	3.597E-01	3.597E-01	24.13E-01	670.71	
U-234	2.45E+05Y	1.00	1.208E+00	1.208E+00	0.238E+00	19.73	
U-238	4.47E+09Y	1.00	3.597E-01	3.597E-01	24.13E-01	670.71	
AM-243	7370.00Y	1.00	2.145E-01	2.145E-01	0.713E-01	33.23	
ANH-511	1.00E+09Y	1.00	1.302E-01	1.302E-01	0.794E-01	61.01	
			---	---			
	Total Activity :		5.652E+01	6.369E+01			

Grand Total Activity : 5.652E+01 6.369E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299012 Acquisition date : 30-JUL-2024 11:19:15

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
2	79.09	24	112	1.17	159.00	147	15	6.77E-03	****	6.04E+00	T
0	186.07	65	88	1.49	372.86	368	11	1.86E-02	64.3	6.24E+00	T
0	209.99	36	79	1.90	420.70	415	10	1.04E-02	97.5	5.81E+00	T
0	245.94	37	37	1.74	492.57	489	9	1.07E-02	66.5	5.26E+00	T
0	270.50	42	51	1.05	541.66	537	11	1.22E-02	72.0	4.95E+00	T
0	289.96	10	49	1.57	580.58	575	8	2.95E-03	****	4.74E+00	T
0	328.20	28	70	0.71	657.03	650	14	8.11E-03	****	4.37E+00	T
0	422.03	7	29	1.01	844.64	839	8	2.00E-03	****	3.70E+00	
0	424.25	13	17	1.63	849.09	846	7	3.91E-03	****	3.68E+00	T
0	463.28	23	21	0.97	927.12	922	9	6.56E-03	83.3	3.46E+00	T
0	737.77	7	17	3.41	1475.98	1467	10	2.10E-03	****	2.38E+00	T
0	744.08	7	14	0.78	1488.58	1483	7	2.06E-03	****	2.36E+00	T
5	767.71	16	26	2.63	1535.84	1529	23	4.79E-03	****	2.29E+00	T
5	772.96	12	14	2.63	1546.35	1529	23	3.42E-03	****	2.28E+00	T
0	787.06	30	15	2.97	1574.54	1568	13	8.89E-03	66.0	2.24E+00	
0	795.99	52	0	6.00	1592.40	1582	22	1.53E-02	27.0	2.22E+00	T
0	935.35	28	8	3.82	1871.08	1861	19	8.38E-03	60.8	1.90E+00	T
0	960.13	8	9	3.37	1920.62	1914	12	2.47E-03	****	1.85E+00	
0	1042.06	8	12	0.55	2084.47	2075	14	2.44E-03	****	1.71E+00	
0	1074.37	9	4	3.31	2149.09	2144	9	2.74E-03	99.7	1.66E+00	
0	1086.92	6	8	0.59	2174.19	2170	8	1.81E-03	****	1.64E+00	T
0	1105.83	8	0	0.73	2212.00	2209	7	2.50E-03	66.7	1.61E+00	
0	1110.17	3	5	0.97	2220.69	2216	6	8.95E-04	****	1.60E+00	
0	1166.16	6	11	0.65	2332.66	2325	10	1.83E-03	****	1.53E+00	
0	1187.08	21	16	3.74	2374.50	2365	17	6.11E-03	95.9	1.50E+00	
0	1271.81	8	4	1.30	2543.94	2540	8	2.50E-03	****	1.41E+00	T
0	1293.68	13	4	2.37	2587.68	2582	10	3.86E-03	82.5	1.39E+00	
0	1377.25	14	2	1.95	2754.83	2750	10	4.28E-03	63.9	1.31E+00	
0	1729.92	10	3	1.08	3460.23	3452	12	2.94E-03	90.7	1.13E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:23:22.83

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299012.CNF;1  *
* Acquisition date : 30-JUL-2024 11:19:15 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.81     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:50:00 Nuclide Library : SOLID           *
* Sample ID        : G674299012           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0165E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.612E-01
CD-109	7.360E-01
TE-125M	9.017E+00
SN-126	7.021E-02
TL-208	2.939E-02
BI-210	2.789E+00
PB-210	2.789E+00
BI-211	1.753E-01
BI-212	3.300E-01
PB-212	4.345E-02
BI-214	6.749E-02
PB-214	6.376E-02
RN-222	6.749E-02
RA-224	4.655E-01
RA-226	6.376E-02
AC-228	1.455E-01
RA-228	1.455E-01
TH-228	4.345E-02
TH-230	6.376E-02
TH-232	1.455E-01
TH-234	1.039E+00
U-234	6.376E-02
U-238	1.039E+00
AM-243	4.067E-02
ANH-511	2.275E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.715E-01	NOT IDENT.
NA-22	3.714E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.931E-02	NOT IDENT.
SC-46	4.178E-02	FAIL ABUN
V-48	1.379E-01	NOT IDENT.

CR-51	3.832E-01	NOT IDENT.
MN-52	1.297E+00	FAIL ABUN
MN-54	3.241E-02	NOT IDENT.
CO-56	5.121E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.134E-02	NOT IDENT.
CO-58	5.056E-02	NOT IDENT.
FE-59	9.878E-02	NOT IDENT.
CO-60	4.054E-02	NOT IDENT.
ZN-65	7.112E-02	NOT IDENT.
GE-68	1.146E+00	NOT IDENT.
AS-73	8.081E-01	NOT IDENT.
AS-74	1.998E-01	NOT IDENT.
SE-75	3.558E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	4.942E-01	NOT IDENT.
RB-83	6.421E-02	NOT IDENT.
RB-84	1.000E-01	NOT IDENT.
KR-85	5.699E+00	NOT IDENT.
SR-85	3.684E-02	NOT IDENT.
RB-86	1.475E+00	NOT IDENT.
Y-88	4.334E-02	NOT IDENT.
Y-91	2.189E+01	NOT IDENT.
NB-94	3.365E-02	NOT IDENT.
NB-95	5.293E-02	NOT IDENT.
NB-95M	1.360E-01	NOT IDENT.
ZR-95	6.708E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.588E-02	NOT IDENT.
RH-102	4.814E-02	FAIL ABUN
RU-103	3.840E-02	FAIL ABUN
RH-106	2.938E-01	NOT IDENT.
RU-106	2.938E-01	NOT IDENT.
AG-108M	2.252E-02	NOT IDENT.
AG-110	5.816E-01	NOT IDENT.
AG-110M	4.452E-02	NOT IDENT.
SN-113	4.478E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.280E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.768E-02	NOT IDENT.
SB-124	4.714E-02	NOT IDENT.
SB-125	6.197E-02	FAIL ABUN
I-126	6.113E-01	NOT IDENT.
SB-126	3.862E-01	NOT IDENT.
SB-127	3.085E+01	NOT IDENT.
I-131	5.180E-01	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.642E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.407E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.164E-01	NOT IDENT.
BA-137M	3.026E-02	NOT IDENT.
CS-137	3.197E-02	NOT IDENT.
LA-138	2.878E-02	NOT IDENT.
CE-139	2.817E-02	NOT IDENT.
BA-140	6.358E-01	FAIL ABUN
LA-140	2.208E-01	FAIL ABUN
CE-141	7.082E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.814E-01	FAIL ABUN
PM-144	3.192E-02	NOT IDENT.
PR-144	2.413E+00	NOT IDENT.
PM-146	3.921E-02	NOT IDENT.
ND-147	1.434E+00	NOT IDENT.
PM-147	6.063E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.052E-02	FAIL ABUN
EU-152	8.599E-02	FAIL ABUN
GD-153	6.877E-02	NOT IDENT.
EU-154	1.061E-01	NOT IDENT.
EU-155	8.576E-02	FAIL ABUN
TB-160	1.047E-01	FAIL ABUN

HO-166M	4.643E-02	FAIL ABUN
TM-171	1.568E+01	NOT IDENT.
HF-172	1.607E-01	FAIL ABUN
LU-172	5.344E-02	FAIL ABUN
LU-176	1.746E-02	FAIL ABUN
HF-181	4.880E-02	NOT IDENT.
TA-182	2.083E-01	FAIL ABUN
RE-183	1.870E-01	NOT IDENT.
RE-184	1.333E-01	NOT IDENT.
W-188	7.599E+00	FAIL ABUN
IR-192	3.528E-02	FAIL ABUN
HG-203	4.692E-02	NOT IDENT.
TL-204	3.832E+00	FAIL ABUN
BI-207	4.035E-02	FAIL ABUN
PB-211	6.286E-01	NOT IDENT.
BI-213	1.041E-01	NOT IDENT.
RN-219	2.982E-01	FAIL ABUN
RA-223	5.577E-01	FAIL ABUN
AC-225	1.711E+00	NOT IDENT.
AC-227	2.215E-01	FAIL ABUN
TH-227	2.215E-01	FAIL ABUN
TH-229	4.130E-01	FAIL ABUN
PA-231	4.691E-01	NOT IDENT.
TH-231	5.577E-01	FAIL ABUN
PA-233	5.011E-02	NOT IDENT.
PA-234	2.143E-01	FAIL ABUN
PA-234M	4.005E+00	FAIL ABUN
U-235	1.770E-01	FAIL ABUN
NP-237	5.011E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	1.990E-01	NOT IDENT.
PU-239	3.031E+02	NOT IDENT.
AM-241	9.611E-02	NOT IDENT.
CM-243	6.563E-02	NOT IDENT.
BK-247	6.163E-02	NOT IDENT.
CM-247	2.874E-02	NOT IDENT.
CF-249	3.772E-02	NOT IDENT.
CF-251	1.129E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:23:27.21

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299012.CNF;1  *
* Acquisition date : 30-JUL-2024 11:19:15 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.81     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:50:00 Nuclide Library : SOLID           *
* Sample ID        : G674299012           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.0165E+02 GRAM *
*                                         Quantity Err(%) : 1.9675E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.713E+01	3.009E+00	3.009E+00
CD-109	1.826E+00	1.428E+00	1.428E+00
TE-125M	2.095E+01	1.647E+01	1.647E+01
SN-126	1.735E-01	1.353E-01	1.353E-01
TL-208	3.589E-01	9.737E-02	9.737E-02
BI-210	2.198E+00	7.146E+00	7.146E+00
PB-210	2.198E+00	7.146E+00	7.146E+00
BI-211	3.330E+00	7.169E-01	7.169E-01
BI-212	9.273E-01	6.331E-01	6.331E-01
PB-212	1.068E+00	1.716E-01	1.716E-01
BI-214	9.094E-01	2.276E-01	2.276E-01
PB-214	1.208E+00	2.595E-01	2.595E-01
RN-222	9.094E-01	2.276E-01	2.276E-01
RA-224	2.763E+00	1.145E+00	1.145E+00
RA-226	1.208E+00	2.595E-01	2.595E-01
AC-228	6.633E-01	4.738E-01	4.738E-01
RA-228	6.633E-01	4.738E-01	4.738E-01
TH-228	1.068E+00	1.716E-01	1.716E-01
TH-230	1.208E+00	2.594E-01	2.594E-01
TH-232	6.633E-01	4.738E-01	4.738E-01
TH-234	3.597E-01	2.366E+00	2.366E+00
U-234	1.208E+00	2.594E-01	2.594E-01
U-238	3.597E-01	2.366E+00	2.366E+00
AM-243	2.145E-01	7.404E-02	7.404E-02
ANH-511	1.302E-01	7.859E-02	7.859E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.148E-01	4.612E-01	4.641E-01	NOT IDENT.
NA-22	6.782E-03	4.800E-02	4.810E-02	NOT IDENT.
NA-24	-2.699E+14	9.791E+14	9.867E+14	SHORT HLIF
AL-26	9.835E-03	3.192E-02	3.223E-02	NOT IDENT.
SC-46	2.183E-02	4.715E-02	4.817E-02	FAIL ABUN

V-48	-5.470E-02	1.706E-01	1.724E-01	NOT IDENT.
CR-51	-3.833E-01	4.956E-01	5.249E-01	NOT IDENT.
MN-52	-1.139E+00	1.973E+00	2.039E+00	FAIL ABUN
MN-54	-2.518E-03	3.950E-02	3.951E-02	NOT IDENT.
CO-56	1.361E-02	6.089E-02	6.119E-02	NOT IDENT.
MN-56	1.000E+41	4.355E+41	0.000E+00	SHORT HLIF
CO-57	5.360E-04	2.562E-02	2.562E-02	NOT IDENT.
CO-58	3.739E-02	5.595E-02	5.844E-02	NOT IDENT.
FE-59	-6.679E-02	1.299E-01	1.334E-01	NOT IDENT.
CO-60	1.811E-02	4.436E-02	4.510E-02	NOT IDENT.
ZN-65	-6.856E-02	1.137E-01	1.178E-01	NOT IDENT.
GE-68	7.436E-01	1.302E+00	1.344E+00	NOT IDENT.
AS-73	-2.704E-01	9.673E-01	9.749E-01	NOT IDENT.
AS-74	1.160E-01	2.241E-01	2.302E-01	NOT IDENT.
SE-75	-6.065E-02	5.401E-02	6.054E-02	NOT IDENT.
BR-77	4.181E+04	4.167E+04	4.573E+04	SHORT HLIF
SR-82	4.742E-01	5.493E-01	5.894E-01	NOT IDENT.
RB-83	-9.141E-02	9.135E-02	1.002E-01	NOT IDENT.
RB-84	9.647E-02	1.044E-01	1.131E-01	NOT IDENT.
KR-85	1.269E+00	7.301E+00	7.323E+00	NOT IDENT.
SR-85	8.146E-03	4.721E-02	4.736E-02	NOT IDENT.
RB-86	8.849E-01	1.715E+00	1.761E+00	NOT IDENT.
Y-88	1.467E-02	4.814E-02	4.860E-02	NOT IDENT.
Y-91	-2.266E+01	3.017E+01	3.185E+01	NOT IDENT.
NB-94	2.371E-02	3.730E-02	3.880E-02	NOT IDENT.
NB-95	3.657E-02	5.919E-02	6.144E-02	NOT IDENT.
NB-95M	1.008E-01	1.714E-01	1.773E-01	NOT IDENT.
ZR-95	-2.868E-02	8.804E-02	8.898E-02	NOT IDENT.
NB-97	-1.000E+41	1.418E+41	0.000E+00	SHORT HLIF
ZR-97	1.129E+14	2.210E+14	2.268E+14	SHORT HLIF
MO-99	-1.277E+03	2.730E+03	2.790E+03	SHORT HLIF
TC-99M	7.712E+37	1.952E+39	0.000E+00	SHORT HLIF
RH-101	-2.607E-03	3.146E-02	3.148E-02	NOT IDENT.
RH-102	2.215E-02	5.427E-02	5.518E-02	FAIL ABUN
RU-103	-5.133E-02	5.424E-02	5.897E-02	FAIL ABUN
RH-106	9.129E-02	3.391E-01	3.416E-01	NOT IDENT.
RU-106	9.129E-02	3.391E-01	3.416E-01	NOT IDENT.
AG-108M	4.502E-03	2.574E-02	2.582E-02	NOT IDENT.
AG-110	-5.731E-01	8.087E-01	8.489E-01	NOT IDENT.
AG-110M	3.249E-03	5.445E-02	5.447E-02	NOT IDENT.
SN-113	-9.141E-03	5.328E-02	5.344E-02	NOT IDENT.
CD-115	8.548E+01	4.414E+03	4.414E+03	SHORT HLIF
SN-117M	1.043E-01	1.461E-01	1.534E-01	NOT IDENT.
SB-122	-2.998E+01	2.305E+02	2.309E+02	SHORT HLIF
TE-123M	1.719E-02	3.207E-02	3.299E-02	NOT IDENT.
SB-124	-4.294E-02	8.256E-02	8.480E-02	NOT IDENT.
SB-125	-4.041E-02	8.969E-02	9.152E-02	FAIL ABUN
I-126	4.630E-01	6.710E-01	7.027E-01	NOT IDENT.
SB-126	1.562E-01	4.442E-01	4.498E-01	NOT IDENT.
SB-127	-5.170E+00	3.846E+01	3.853E+01	NOT IDENT.
I-131	-4.100E-02	6.059E-01	6.062E-01	FAIL ABUN
I-132	-1.000E+41	2.261E+41	0.000E+00	SHORT HLIF
TE-132	-1.258E+01	4.566E+01	4.601E+01	SHORT HLIF
BA-133	3.975E-02	4.037E-02	4.417E-02	NOT IDENT.
I-133	8.976E+09	2.253E+10	2.289E+10	SHORT HLIF
CS-134	2.093E-01	5.968E-02	1.117E-01	FAIL ABUN
I-135	4.008E+35	4.347E+36	0.000E+00	SHORT HLIF
CS-136	-1.151E-01	2.780E-01	2.828E-01	NOT IDENT.
BA-137M	-2.415E-02	4.061E-02	4.204E-02	NOT IDENT.
CS-137	-2.551E-02	4.290E-02	4.441E-02	NOT IDENT.
LA-138	-7.965E-03	3.639E-02	3.656E-02	NOT IDENT.
CE-139	1.443E-02	3.311E-02	3.374E-02	NOT IDENT.
BA-140	1.123E-01	7.400E-01	7.417E-01	FAIL ABUN
LA-140	-1.275E-01	3.049E-01	3.103E-01	FAIL ABUN
CE-141	-9.009E-02	9.627E-02	1.045E-01	NOT IDENT.
CE-143	2.634E+05	1.905E+06	1.908E+06	SHORT HLIF
CE-144	-7.566E-03	2.200E-01	2.200E-01	FAIL ABUN
PM-144	-1.107E-02	3.919E-02	3.951E-02	NOT IDENT.
PR-144	-8.369E-01	2.962E+00	2.986E+00	NOT IDENT.
PM-146	1.100E-02	4.476E-02	4.503E-02	NOT IDENT.
ND-147	-5.511E-01	1.799E+00	1.816E+00	NOT IDENT.
PM-147	1.209E+02	7.173E+02	7.194E+02	NOT IDENT.
PM-149	2.879E+04	4.035E+04	4.238E+04	SHORT HLIF
EU-150	1.002E-02	2.652E-02	2.690E-02	FAIL ABUN
EU-152	-3.769E-02	1.036E-01	1.050E-01	FAIL ABUN
GD-153	-3.753E-02	8.562E-02	8.728E-02	NOT IDENT.
EU-154	2.391E-02	1.358E-01	1.362E-01	NOT IDENT.
EU-155	7.993E-02	9.522E-02	1.018E-01	FAIL ABUN

TB-160	-1.273E-01	1.626E-01	1.725E-01	FAIL ABUN
HO-166M	-4.355E-03	5.739E-02	5.742E-02	FAIL ABUN
TM-171	4.013E+00	1.795E+01	1.804E+01	NOT IDENT.
HF-172	1.364E-02	1.923E-01	1.924E-01	FAIL ABUN
LU-172	-3.018E-02	6.883E-02	7.016E-02	FAIL ABUN
LU-176	-2.131E-02	2.294E-02	2.488E-02	FAIL ABUN
HF-181	-4.527E-02	6.296E-02	6.619E-02	NOT IDENT.
TA-182	-1.592E-01	2.691E-01	2.785E-01	FAIL ABUN
RE-183	3.693E-02	2.145E-01	2.152E-01	NOT IDENT.
RE-184	-1.131E-01	1.929E-01	1.996E-01	NOT IDENT.
W-188	5.569E+00	1.308E+01	1.332E+01	FAIL ABUN
IR-192	-1.325E-04	4.060E-02	4.060E-02	FAIL ABUN
HG-203	-2.577E-02	6.251E-02	6.358E-02	NOT IDENT.
TL-204	2.835E-01	4.473E+00	4.475E+00	FAIL ABUN
BI-207	-1.823E-02	5.109E-02	5.175E-02	FAIL ABUN
PB-211	2.197E-01	7.074E-01	7.143E-01	NOT IDENT.
BI-213	9.232E-02	1.114E-01	1.189E-01	NOT IDENT.
RN-219	-2.566E-01	3.857E-01	4.027E-01	FAIL ABUN
RA-223	4.054E-01	6.526E-01	6.777E-01	FAIL ABUN
AC-225	-1.066E+00	2.264E+00	2.315E+00	NOT IDENT.
AC-227	1.022E-01	2.656E-01	2.696E-01	FAIL ABUN
TH-227	1.022E-01	2.656E-01	2.696E-01	FAIL ABUN
TH-229	-1.971E-01	5.329E-01	5.402E-01	FAIL ABUN
PA-231	8.817E-03	5.373E-01	5.373E-01	NOT IDENT.
TH-231	4.054E-01	6.526E-01	6.777E-01	FAIL ABUN
PA-233	-5.533E-03	5.825E-02	5.831E-02	NOT IDENT.
PA-234	-2.703E-01	4.555E-01	4.716E-01	FAIL ABUN
PA-234M	-3.924E+00	5.355E+00	5.639E+00	FAIL ABUN
U-235	3.789E-02	2.072E-01	2.079E-01	FAIL ABUN
NP-237	-5.533E-03	5.825E-02	5.831E-02	NOT IDENT.
NP-238	-4.815E+03	1.039E+04	1.062E+04	SHORT HLIF
NP-239	-6.894E-02	2.459E-01	2.479E-01	NOT IDENT.
PU-239	2.283E+02	3.455E+02	3.605E+02	NOT IDENT.
AM-241	-1.660E-01	1.422E-01	1.607E-01	NOT IDENT.
CM-243	-1.103E-01	9.140E-02	1.041E-01	NOT IDENT.
BK-247	-6.083E-02	8.728E-02	9.148E-02	NOT IDENT.
CM-247	-1.579E-02	3.581E-02	3.651E-02	NOT IDENT.
CF-249	3.352E-02	4.017E-02	4.292E-02	NOT IDENT.
CF-251	7.072E-02	1.315E-01	1.353E-01	NOT IDENT.

GEL Laboratories LLC
2040 Savage Road
Charleston, SC 29407

GAMMA SPECTROSCOPY BACKGROUND REPORT

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	68.1823	85.43	94.9637	131.20	83.2841
45.60	49.6819	86.55	103.6466	133.02	56.0238
46.54	49.8197	86.79	103.6952	133.52	62.4111
49.72	0.0000	86.94	103.7259	136.00	50.9575
51.35	67.6392	87.09	103.7558	136.47	59.4906
51.87	60.5104	87.57	103.8529	140.51	0.0000
52.39	53.3608	88.03	103.9451	143.76	50.4438
52.97	58.8797	88.34	104.0073	144.24	50.4768
53.44	58.0471	88.47	109.9219	145.44	63.4689
54.07	63.5958	89.96	104.3308	152.43	57.5539
57.36	0.0000	1093.63	76.8705	153.25	69.5752
57.53	53.1714	91.11	104.5581	323.87	54.4243
57.98	55.9854	92.59	87.0446	156.02	63.2817
59.27	67.2175	93.35	87.1675	158.56	44.8813
59.32	67.2259	94.56	56.9182	159.00	46.0016
59.54	66.3415	94.65	56.9274	162.33	45.0977
60.96	49.3152	94.67	56.9296	162.66	41.8153
61.17	49.3406	94.87	56.9506	163.33	46.2567
62.93	73.3995	97.43	59.8778	165.86	45.2986
63.29	73.4629	98.43	51.9873	176.31	45.8804
63.58	73.5140	98.44	51.9885	176.60	52.6132
64.28	73.6370	99.53	57.0983	177.52	42.5847
66.73	66.2495	100.11	60.1653	181.07	0.0000
67.24	43.8013	102.03	43.2644	181.52	45.0385
125.81	71.4060	103.18	48.3918	184.41	57.2412
67.75	71.4170	103.37	57.4845	143.76	42.9958
68.89	86.6782	105.21	42.4912	193.51	49.0856
69.67	75.5060	105.31	42.4986	197.03	50.4238
70.82	73.8076	106.12	48.6368	198.01	55.0671
70.83	73.8094	106.47	40.5548	201.83	44.9295
72.81	77.3015	109.28	48.8965	203.43	43.8534
72.87	77.3117	111.00	47.6743	205.31	32.3784
74.66	77.2946	111.76	0.0000	210.85	38.7731
74.82	77.3212	114.06	55.4428	215.65	40.9163
74.97	77.3465	116.30	0.0000	218.12	45.7085
77.11	77.6994	116.74	52.5887	222.11	41.1876
78.74	77.9651	119.76	47.6600	227.09	41.3943
79.69	75.8686	121.12	49.8376	227.38	46.1381
80.03	79.7812	121.22	49.8453	228.16	0.0000
80.12	79.7970	121.78	45.7315	228.18	43.8071
80.19	79.8083	122.06	51.9901	116.74	43.8071
80.57	73.4296	122.92	53.1004	235.69	41.3481
81.00	76.0727	123.07	53.1124	235.96	41.3592
81.07	76.0835	265.00	45.8654	238.63	35.0862
81.75	74.8978	125.81	55.4266	238.98	0.0000
82.47	81.4731	127.23	56.5930	240.99	35.1659
83.79	81.6890	127.91	62.9459	242.00	35.1999
84.00	71.3455	129.30	52.5635	244.70	19.2490

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	41.1994	344.28	37.4535	563.25	16.8928
252.80	38.7900	345.93	25.1156	564.24	0.0000
254.15	0.0000	351.06	30.6364	569.33	15.9473
256.23	32.8321	351.93	30.6556	946.00	14.9518
260.90	0.0000	355.39	0.0000	569.70	15.9505
264.66	45.3354	356.01	15.8119	583.19	18.0637
264.80	41.6647	364.49	29.1637	584.27	18.0732
265.00	41.6720	366.42	0.0000	595.83	20.1945
269.46	24.6100	372.51	28.4382	427.87	23.2770
270.03	24.6228	375.05	16.9145	602.52	0.0000
271.23	24.6484	377.52	25.8606	604.72	25.8569
273.65	32.9338	356.01	28.6589	607.14	25.3794
276.40	49.5190	388.16	20.6584	609.32	25.4059
277.37	39.6484	388.63	22.4620	610.33	25.4181
277.60	39.6563	391.69	31.5108	614.28	18.3347
278.00	42.1493	264.66	23.5466	618.01	17.3466
279.20	50.8796	401.81	28.0963	620.36	18.3867
279.54	50.8947	402.40	27.2003	621.93	16.3561
279.70	40.9690	404.85	23.6112	630.19	0.0000
280.46	34.7847	410.95	31.9096	631.29	13.3465
283.69	33.6346	413.71	28.3126	633.25	15.4138
284.31	28.6665	414.70	22.8470	634.78	24.6797
285.41	34.9308	423.72	11.0293	635.95	15.4327
285.90	0.0000	427.09	16.5787	636.99	9.2640
287.50	36.6586	427.87	20.7335	657.50	21.8169
290.67	50.1208	433.94	16.6490	657.76	18.7024
293.27	0.0000	439.40	24.1290	657.90	0.0000
351.93	42.2604	440.45	20.4299	661.66	24.9795
295.96	45.3065	453.88	23.4039	664.57	0.0000
879.38	51.7104	463.37	23.5352	666.33	15.6445
299.98	31.1457	468.07	16.9918	666.50	18.7749
300.09	31.1480	473.00	20.8269	667.71	0.0000
300.13	31.1495	475.06	15.1647	677.62	18.8665
301.36	45.5065	476.78	20.8721	685.70	14.7252
302.85	50.6238	477.60	25.6278	692.65	0.0000
256.23	22.8109	482.18	24.7432	695.00	20.0638
304.85	22.8175	487.02	20.9938	696.49	17.9629
306.78	31.3166	492.35	0.0000	696.51	17.9636
308.46	19.4933	497.08	24.9505	697.00	19.0239
311.90	27.1947	505.52	13.0152	697.30	17.9691
316.51	30.7053	507.63	0.0000	697.49	22.1989
319.41	22.2263	511.00	18.3724	702.65	15.8911
320.08	27.3691	514.00	18.8867	706.68	18.0404
321.04	29.9578	514.00	18.8867	711.68	13.8247
323.87	23.1603	520.40	30.1284	720.70	14.9439
325.23	32.2006	520.69	0.0000	721.93	0.0000
328.76	26.6911	522.65	0.0000	722.78	12.8203
333.37	23.3278	527.90	0.0000	722.91	12.8208
333.97	19.0168	528.26	20.4950	723.31	14.4256
334.37	25.9393	529.59	16.6029	724.19	19.2415
338.28	37.2882	529.87	0.0000	727.33	9.6332
338.32	37.2899	531.02	19.5475	733.00	14.4833
311.90	40.3895	537.26	17.6499	735.93	13.9633
340.48	40.3895	546.56	0.0000	333.97	22.5706
340.55	40.3914	552.55	15.8132	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	16.1658	949.00	13.9346	1384.29	6.8923
747.24	11.6534	667.71	0.0000	1408.01	7.9224
748.06	10.7939	962.31	23.3268	1434.09	3.9856
752.31	18.3807	964.08	17.5049	1435.80	1.9937
753.82	14.0643	966.17	15.7654	1457.56	0.0000
756.73	15.1638	911.20	14.0264	1460.82	8.0215
756.80	15.1644	983.53	14.0928	1489.16	5.0461
884.68	17.9227	984.45	0.0000	1505.03	9.1159
765.81	16.3055	1274.44	15.9192	1584.12	9.2769
766.42	16.3092	1001.03	16.8285	1596.21	8.2676
766.84	16.3123	1002.74	14.1792	1620.50	3.1165
772.60	0.0000	1004.73	9.7542	1621.92	3.1174
776.52	6.5496	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	3.1626
778.90	14.2039	1028.54	0.0000	1750.46	0.0000
783.70	14.7777	1037.84	15.7695	1764.49	2.1398
788.74	0.0000	1038.76	0.0000	1063.66	8.5688
792.07	0.0000	631.29	10.0618	1771.35	3.2141
795.86	4.9490	1048.07	11.6844	1791.20	0.0000
810.06	7.7400	1049.04	8.0914	1808.65	2.1583
810.29	8.8464	1050.41	8.0947	1810.72	0.0000
344.28	6.6353	1063.66	11.7392	1836.06	3.2547
810.76	13.2720	1077.00	7.2534		
815.77	9.9727	1077.34	5.8031		
1048.07	11.0921	1085.87	10.1814		
832.01	8.9183	1093.63	13.6670		
834.85	12.2752	1099.45	13.6908		
835.71	6.6978	1112.07	13.1915		
836.80	0.0000	1112.84	5.8641		
846.75	0.0000	1115.54	16.1391		
846.77	16.8121	1120.29	7.3462		
856.80	10.1239	1120.55	7.3467		
860.56	10.1375	1221.41	7.3481		
871.09	23.7429	1129.67	13.8116		
873.19	15.8406	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	14.7414	1173.23	13.0498		
880.51	10.2096	1177.95	8.4001		
881.60	6.8091	1189.05	10.4856		
883.24	13.6260	1204.77	18.8062		
884.68	11.3607	1221.41	20.7794		
889.28	9.1032	1231.02	14.2044		
894.76	12.5406	1235.36	20.8573		
898.04	11.4136	1238.28	15.1807		
900.72	13.7090	1260.41	0.0000		
903.28	14.8646	1271.87	11.4866		
911.20	18.3451	1274.44	7.6631		
912.08	18.3503	1274.54	7.6631		
923.98	0.0000	1291.59	4.6181		
926.50	13.8306	1298.22	0.0000		
929.11	12.1120	1312.11	8.7045		
935.54	11.5605	1332.49	6.8052		
937.49	11.5678	1362.66	0.0000		
944.13	9.2747	1365.19	5.8802		
946.00	16.2410	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:23:53.99

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299013.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM28.CNF;655
                                         Background date  : 28-JUL-2024 11:29:42
Sample date      : 26-JUN-2024 09:55:00  Acquisition date : 30-JUL-2024 11:19:43
Sample ID        : G674299013            Sample quantity  : 1.32040E+02 GRAM
Detector name    : GAM28                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:01.14  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	49.69	58	212	1.31	99.91	97	7	1.61E-02	43.6	
2	0	63.39*	120	446	0.99	127.28	122	10	3.34E-02	34.4	
3	2	73.45	54	370	1.14	147.39	143	19	1.50E-02	67.3	5.66E+00
4	2	74.81	376	372	1.14	150.12	143	19	1.04E-01	10.2	
5	2	77.09*	663	323	0.96	154.66	143	19	1.84E-01	5.8	
6	2	79.06	64	380	1.15	158.61	143	19	1.79E-02	59.1	
7	0	83.69*	98	362	1.03	167.86	165	7	2.72E-02	34.1	
8	0	87.01	219	414	1.10	174.49	172	7	6.09E-02	16.7	
9	4	89.79	85	179	0.87	180.06	178	12	2.35E-02	22.5	1.15E+00
10	4	92.56*	327	344	1.06	185.60	178	12	9.09E-02	10.8	
11	0	98.53*	60	298	1.69	197.54	194	9	1.67E-02	53.8	
12	0	144.11*	27	292	0.67	288.64	285	7	7.40E-03	110.0	
13	0	159.35	24	259	1.24	319.11	315	7	6.65E-03	114.1	
14	0	185.85*	538	399	1.32	372.08	368	12	1.49E-01	8.6	
15	0	204.55	29	165	1.00	409.46	408	6	8.09E-03	71.8	
16	2	238.50*	313	247	1.11	477.33	473	16	8.70E-02	9.7	1.81E+00
17	2	241.80	605	177	1.12	483.93	473	16	1.68E-01	5.6	
18	3	269.71	83	187	1.62	539.73	532	15	2.30E-02	34.3	1.26E+00
19	3	271.36	57	147	1.33	543.03	532	15	1.58E-02	41.5	
20	0	295.08	1221	155	1.14	590.44	587	9	3.39E-01	3.4	
21	2	328.14	51	118	1.54	656.54	651	29	1.40E-02	41.8	1.87E+00
22	2	338.11*	66	82	1.47	676.47	651	29	1.84E-02	26.8	
23	0	351.65*	2031	189	1.20	703.54	697	13	5.64E-01	2.6	
24	0	390.06	30	161	4.20	780.32	774	13	8.42E-03	89.1	
25	0	454.87*	20	56	1.01	909.90	906	8	5.48E-03	71.7	
26	0	463.86	31	125	1.48	927.88	921	14	8.58E-03	79.1	
27	0	487.70	32	75	1.33	975.53	968	12	8.92E-03	56.8	
28	0	511.40*	105	48	2.92	1022.91	1015	20	2.93E-02	21.3	
29	0	519.50	22	45	2.75	1039.12	1035	10	6.17E-03	59.2	
30	0	559.87	10	45	1.31	1119.83	1113	8	2.73E-03	114.8	
31	1	562.10	21	13	1.62	1124.29	1121	28	5.78E-03	39.0	1.91E+00
32	1	567.81*	20	31	1.62	1135.70	1121	28	5.50E-03	61.5	
33	1	570.31*	22	35	1.63	1140.70	1121	28	5.99E-03	57.6	
34	0	582.98*	101	78	1.19	1166.04	1160	13	2.80E-02	21.2	

Sample ID : G674299013 Acquisition date : 30-JUL-2024 11:19:43

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	608.93*	1442	90	1.41	1217.93	1212	14	4.00E-01	3.0	
36	0	664.85	51	27	1.60	1329.73	1325	9	1.42E-02	23.0	
37	2	719.29	19	17	1.91	1438.58	1435	26	5.14E-03	41.3	2.06E+00
38	2	726.44	36	21	1.92	1452.88	1435	26	9.92E-03	35.5	
39	0	767.84	150	82	1.67	1535.67	1528	17	4.16E-02	16.0	
40	0	785.63	56	25	2.24	1571.24	1566	12	1.57E-02	21.9	
41	0	806.85	35	53	1.33	1613.67	1607	15	9.58E-03	48.8	
42	0	820.33	15	34	3.43	1640.63	1634	10	4.12E-03	78.9	
43	0	839.40	26	44	2.12	1678.76	1673	11	7.18E-03	55.5	
44	0	854.19	16	19	1.43	1708.34	1705	7	4.47E-03	51.5	
45	0	878.07	20	49	4.85	1756.09	1743	18	5.43E-03	87.4	
46	0	910.62*	112	24	1.69	1821.18	1814	14	3.12E-02	13.4	
47	0	933.82	91	52	0.76	1867.58	1860	14	2.52E-02	19.9	
48	0	964.29	29	26	2.45	1928.51	1923	10	8.06E-03	37.4	
49	0	968.13*	50	24	2.71	1936.20	1932	10	1.39E-02	23.1	
50	0	999.98*	44	18	4.13	1999.88	1994	12	1.22E-02	25.0	
51	0	1053.76	21	60	7.67	2107.43	2095	20	5.83E-03	92.9	
52	0	1069.65	42	35	3.71	2139.22	2130	20	1.16E-02	38.1	
53	0	1119.65	340	41	1.76	2239.21	2230	18	9.46E-02	7.0	
54	0	1155.66	38	49	2.05	2311.22	2304	18	1.07E-02	45.8	
55	0	1237.49	138	5	1.86	2474.89	2470	14	3.84E-02	9.4	
56	0	1281.50	16	26	2.15	2562.91	2556	15	4.48E-03	77.0	
57	0	1340.00	12	10	4.11	2679.92	2673	11	3.36E-03	59.8	
58	0	1346.36	6	17	0.57	2692.64	2683	11	1.53E-03	149.2	
59	0	1366.50	7	3	0.57	2732.93	2729	6	1.94E-03	54.4	
60	0	1376.66	75	21	1.58	2753.25	2747	12	2.09E-02	16.7	
61	0	1384.55	13	9	1.28	2769.04	2765	8	3.67E-03	49.0	
62	0	1400.57	33	9	1.16	2801.08	2795	12	9.22E-03	25.0	
63	0	1406.95*	50	12	1.35	2813.83	2807	15	1.38E-02	20.7	
64	0	1451.94	13	11	0.71	2903.82	2896	11	3.68E-03	55.6	
65	0	1459.87	112	14	1.52	2919.69	2914	14	3.11E-02	11.8	
66	0	1508.46	37	16	1.57	3016.88	3009	13	1.02E-02	28.1	
67	0	1549.44	7	11	0.50	3098.85	3092	11	1.85E-03	112.1	
68	0	1581.93	14	14	1.39	3163.86	3157	14	3.89E-03	62.7	
69	0	1587.29	9	6	1.41	3174.56	3170	9	2.44E-03	62.4	
70	0	1614.63	7	6	0.89	3229.27	3223	9	1.98E-03	74.6	
71	0	1628.02	18	0	1.01	3256.06	3250	13	5.00E-03	23.6	
72	0	1654.64	15	3	4.31	3309.29	3303	12	4.20E-03	34.4	
73	0	1660.40*	18	3	2.30	3320.82	3315	12	4.88E-03	35.2	
74	0	1728.34	76	9	1.60	3456.75	3450	16	2.12E-02	14.2	
75	0	1763.32	272	13	1.79	3526.72	3518	15	7.56E-02	6.6	
76	0	1846.14	48	4	1.72	3692.42	3683	15	1.32E-02	17.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:23:55

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299013.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4		
Sample title	: RXF2		
Sample date	: 26-JUN-2024 09:55:00	Acquisition date	: 30-JUL-2024 11:19:43
Sample ID	: G674299013	Sample quantity	: 132.04 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA28	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:01.14 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.227E+00	4.644E+00	4.644E+00	23.62	OK
CD-109	88.03	3.70*	5.622E+00	6.943E+00	7.307E+00	33.41	OK
SN-117M	156.02	2.11	6.273E+00	----- Line Not Found		-----	Absent
	158.56	86.40*	6.215E+00	2.825E-02	1.605E-01	228.13	OK
TE-123M	159.00	84.00*	6.215E+00	2.906E-02	3.543E-02	228.13	OK
I-126	388.63	35.60	3.478E+00	1.461E-01	9.077E-01	178.28	OK
	666.33	32.90*	2.360E+00	3.796E-01	2.359E+00	45.94	OK
	753.82	4.15	2.136E+00	----- Line Not Found		-----	Absent
SN-126	64.28	9.60	2.918E+00	2.882E+00	2.882E+00	68.71	OK
	86.94	8.90	5.622E+00	2.886E+00	2.886E+00	33.41	OK
	87.57	37.00*	5.622E+00	6.943E-01	6.943E-01	33.41	OK
TL-208	277.37	6.60	4.410E+00	----- Line Not Found		-----	Absent
	583.19	85.00*	2.608E+00	2.639E-01	2.639E-01	42.31	OK
	860.56	12.50	1.916E+00	----- Line Not Found		-----	Absent
BI-211	72.87	1.23	4.287E+00	6.827E+00	6.827E+00	134.67	OK
	351.06	12.92*	3.739E+00	2.528E+01	2.528E+01	5.25	OK
BI-212	727.33	6.67*	2.201E+00	1.390E+00	1.390E+00	71.03	OK
	1620.50	1.47	1.137E+00	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	4.451E+00	5.460E+00	5.460E+00	20.49	OK
	77.11	17.10	4.709E+00	5.464E+00	5.464E+00	11.62	OK
	238.63	43.60*	4.891E+00	9.062E-01	9.062E-01	19.47	OK
	300.09	3.30	4.175E+00	----- Line Not Found		-----	Absent
BI-214	609.32	45.49*	2.524E+00	7.262E+00	7.262E+00	5.98	OK
	1120.29	14.92	1.529E+00	8.258E+00	8.258E+00	13.94	OK
	1764.49	15.30	1.079E+00	8.811E+00	8.811E+00	13.29	OK
PB-214	74.82	5.80	4.451E+00	9.677E+00	9.677E+00	20.49	OK
	77.11	9.70	4.709E+00	9.632E+00	9.632E+00	11.62	OK
	87.09	3.41	5.622E+00	7.533E+00	7.533E+00	33.41	OK
	242.00	7.25	4.845E+00	1.062E+01	1.062E+01	11.22	OK
	295.22	18.42	4.224E+00	9.545E+00	9.545E+00	6.78	OK
	351.93	35.60*	3.739E+00	9.174E+00	9.174E+00	5.25	OK
RN-222	609.32	45.49*	2.524E+00	7.262E+00	7.262E+00	5.98	OK
	1120.29	14.92	1.529E+00	8.258E+00	8.258E+00	13.94	OK
	1764.49	15.30	1.079E+00	8.811E+00	8.811E+00	13.29	OK
RA-224	240.99	4.10*	4.845E+00	1.877E+01	1.877E+01	11.22	OK
RA-226	74.82	5.80	4.451E+00	9.677E+00	9.677E+00	20.49	OK
	77.11	9.70	4.709E+00	9.632E+00	9.632E+00	11.62	OK
	87.09	3.41	5.622E+00	7.533E+00	7.533E+00	33.41	OK
	242.00	7.25	4.845E+00	1.062E+01	1.062E+01	11.22	OK
	295.22	18.42	4.224E+00	9.545E+00	9.545E+00	6.78	OK
	351.93	35.60*	3.739E+00	9.174E+00	9.174E+00	5.25	OK
AC-228	105.21	1.10	6.483E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.843E+00	9.196E-01	9.196E-01	53.64	OK
	835.71	1.61	1.963E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.826E+00	1.337E+00	1.337E+00	26.89	OK
	968.97	15.80	1.733E+00	1.021E+00	1.021E+00	46.17	OK
RA-228	105.21	1.10	6.483E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.843E+00	9.196E-01	9.196E-01	53.64	OK
	835.71	1.61	1.963E+00	----- Line Not Found		-----	Absent

Sample ID : G674299013 Acquisition date : 30-JUL-2024 11:19:43

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	911.20	25.80*	1.826E+00	1.337E+00	1.337E+00	26.89	OK
	968.97	15.80	1.733E+00	1.021E+00	1.021E+00	46.17	OK
TH-228	74.82	10.28	4.451E+00	5.460E+00	5.460E+00	20.49	OK
	77.11	17.10	4.709E+00	5.464E+00	5.464E+00	11.62	OK
	238.63	43.60*	4.891E+00	9.062E-01	9.062E-01	19.47	OK
	300.09	3.30	4.175E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	4.451E+00	9.677E+00	9.677E+00	20.49	OK
	77.11	9.70	4.709E+00	9.632E+00	9.632E+00	11.62	OK
	87.09	3.41	5.622E+00	7.533E+00	7.533E+00	33.41	OK
	242.00	7.25	4.845E+00	1.062E+01	1.062E+01	11.22	OK
	295.22	18.42	4.224E+00	9.545E+00	9.545E+00	6.78	OK
	351.93	35.60*	3.739E+00	9.174E+00	9.174E+00	5.25	OK
TH-232	105.21	1.10	6.483E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.843E+00	9.196E-01	9.196E-01	53.64	OK
	835.71	1.61	1.963E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.826E+00	1.337E+00	1.337E+00	26.89	OK
	968.97	15.80	1.733E+00	1.021E+00	1.021E+00	46.17	OK
PA-234M	766.42	0.32	2.105E+00	1.265E+02	1.265E+02	32.03	OK
	1001.03	0.84*	1.686E+00	1.726E+01	1.726E+01	50.05	OK
TH-234	63.29	3.70*	2.918E+00	7.477E+00	7.477E+00	68.71	OK
	92.59	4.23	5.984E+00	8.485E+00	8.485E+00	21.59	OK
U-234	74.82	5.80	4.451E+00	9.677E+00	9.677E+00	20.49	OK
	77.11	9.70	4.709E+00	9.632E+00	9.632E+00	11.62	OK
	87.09	3.41	5.622E+00	7.533E+00	7.533E+00	33.41	OK
	242.00	7.25	4.845E+00	1.062E+01	1.062E+01	11.22	OK
	295.22	18.42	4.224E+00	9.545E+00	9.545E+00	6.78	OK
	351.93	35.60*	3.739E+00	9.174E+00	9.174E+00	5.25	OK
U-235	89.96	3.47	5.816E+00	2.762E+00	2.762E+00	45.01	OK
	93.35	5.60	5.984E+00	6.410E+00	6.410E+00	21.59	OK
	143.76	10.96*	6.464E+00	2.399E-01	2.399E-01	220.06	OK
	163.33	5.08	6.144E+00	----- Line Not Found		-----	Absent
	185.72	57.20	5.735E+00	1.029E+00	1.029E+00	17.29	OK
	205.31	5.01	5.410E+00	6.697E-01	6.697E-01	143.61	OK
U-238	63.29	3.70*	2.918E+00	7.477E+00	7.477E+00	68.71	OK
	92.59	4.23	5.984E+00	8.485E+00	8.485E+00	21.59	OK
AM-243	43.53	5.90	4.389E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	4.451E+00	8.352E-01	8.352E-01	20.49	OK
ANH-511	511.00	100.00*	2.871E+00	2.150E-01	2.150E-01	42.67	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:23:56.37

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299013.CNF;1  *
* Acquisition date : 30-JUL-2024 11:19:43 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.14     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:55:00 Analyst initials: RXF2            *
* Sample ID        : G674299013           Sample Quantity : 1.3204E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-MAR-2024 04:24:53 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	4.644E+00	1.075E+00	8.452E-01
CD-109	7.307E+00	2.392E+00	2.237E+00
SN-117M	1.605E-01	3.588E-01	4.136E-01
TE-123M	3.543E-02	7.921E-02	9.145E-02
I-126	2.359E+00	1.062E+00	1.229E+00
SN-126	6.943E-01	2.273E-01	2.137E-01
TL-208	2.639E-01	1.094E-01	8.540E-02
BI-211	2.528E+01	1.300E+00	5.411E-01
BI-212	1.390E+00	9.675E-01	9.676E-01
PB-212	9.062E-01	1.729E-01	1.600E-01
BI-214	7.262E+00	4.256E-01	1.583E-01
PB-214	9.174E+00	4.719E-01	1.968E-01
RN-222	7.262E+00	4.256E-01	1.583E-01
RA-224	1.877E+01	2.063E+00	1.714E+00
RA-226	9.174E+00	4.719E-01	1.968E-01
AC-228	1.337E+00	3.524E-01	3.160E-01
RA-228	1.337E+00	3.524E-01	3.160E-01
TH-228	9.062E-01	1.729E-01	1.600E-01
TH-230	9.174E+00	4.718E-01	1.968E-01
TH-232	1.337E+00	3.524E-01	3.160E-01
PA-234M	1.726E+01	8.463E+00	1.042E+01
TH-234	7.477E+00	5.035E+00	3.590E+00
U-234	9.174E+00	4.718E-01	1.968E-01
U-235	2.399E-01	5.174E-01	5.454E-01
U-238	7.477E+00	5.035E+00	3.590E+00
AM-243	8.352E-01	1.677E-01	1.417E-01
ANH-511	2.150E-01	8.989E-02	6.164E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-3.062E-01	5.206E-01	9.303E-01	NOT IDENT.
NA-22	2.627E-02	5.496E-02	1.061E-01	NOT IDENT.
NA-24	0.000E+00	1.262E+15	0.000E+00	SHORT HLIF

AL-26	-3.499E-02	3.497E-02	4.960E-02	NOT IDENT.
SC-46	3.010E-03	5.917E-02	1.091E-01	FAIL ABUN
V-48	-2.376E-01	2.288E-01	3.525E-01	NOT IDENT.
CR-51	-5.735E-03	7.734E-01	1.482E+00	NOT IDENT.
MN-52	1.223E+00	3.834E+00	7.628E+00	NOT IDENT.
MN-54	4.203E-03	5.633E-02	9.259E-02	NOT IDENT.
CO-56	3.581E-02	5.939E-02	1.171E-01	FAIL ABUN
MN-56	0.000E+00	1.652E+41	0.000E+00	SHORT HLIF
CO-57	-5.626E-03	3.968E-02	7.162E-02	NOT IDENT.
CO-58	1.754E-03	6.484E-02	1.072E-01	NOT IDENT.
FE-59	-1.385E-01	1.317E-01	2.201E-01	NOT IDENT.
CO-60	-1.226E-02	5.158E-02	9.292E-02	NOT IDENT.
ZN-65	2.201E-02	1.146E-01	2.032E-01	NOT IDENT.
GE-68	7.621E-02	1.850E+00	3.186E+00	NOT IDENT.
AS-73	1.017E+00	1.538E+00	3.049E+00	NOT IDENT.
AS-74	1.133E-01	2.290E-01	4.524E-01	NOT IDENT.
SE-75	6.205E-02	7.470E-02	1.299E-01	NOT IDENT.
BR-77	0.000E+00	6.765E+03	0.000E+00	SHORT HLIF
SR-82	2.183E-02	6.204E-01	1.165E+00	NOT IDENT.
RB-83	1.338E-01	1.554E-01	1.957E-01	FAIL ABUN
RB-84	-7.290E-02	1.466E-01	2.169E-01	NOT IDENT.
KR-85	6.067E+00	9.056E+00	1.657E+01	NOT IDENT.
SR-85	3.905E-02	5.855E-02	1.071E-01	NOT IDENT.
RB-86	3.550E-01	2.211E+00	3.887E+00	NOT IDENT.
Y-88	4.141E-02	5.854E-02	1.295E-01	NOT IDENT.
Y-91	6.862E+00	3.206E+01	6.271E+01	NOT IDENT.
NB-94	1.695E-02	4.350E-02	8.420E-02	NOT IDENT.
NB-95	1.744E-01	8.705E-02	1.807E-01	NOT IDENT.
NB-95M	2.217E-03	2.816E-01	4.496E-01	NOT IDENT.
ZR-95	-4.110E-02	1.142E-01	2.012E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.668E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.835E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	3.185E+39	0.000E+00	SHORT HLIF
RH-101	-3.900E-02	4.552E-02	7.876E-02	NOT IDENT.
RH-102	2.620E-02	6.352E-02	1.251E-01	FAIL ABUN
RU-103	-6.728E-03	6.924E-02	1.285E-01	FAIL ABUN
RH-106	1.233E-01	3.787E-01	7.375E-01	NOT IDENT.
RU-106	1.233E-01	3.787E-01	7.375E-01	NOT IDENT.
AG-108M	-1.759E-02	3.935E-02	7.167E-02	NOT IDENT.
AG-110	-4.570E-01	8.285E-01	1.451E+00	NOT IDENT.
AG-110M	1.096E-02	6.808E-02	1.272E-01	FAIL ABUN
SN-113	-1.631E-02	6.949E-02	1.293E-01	NOT IDENT.
CD-115	0.000E+00	4.499E+03	0.000E+00	SHORT HLIF
SB-122	0.000E+00	3.018E+02	0.000E+00	SHORT HLIF
SB-124	-5.905E-02	1.145E-01	2.034E-01	NOT IDENT.
SB-125	6.374E-02	1.315E-01	2.562E-01	FAIL ABUN
TE-125M	1.186E+00	1.662E+01	3.062E+01	NOT IDENT.
SB-126	6.004E-01	4.861E-01	9.414E-01	FAIL ABUN
SB-127	-5.057E+01	5.102E+01	8.348E+01	NOT IDENT.
I-131	-7.005E-01	8.033E-01	1.431E+00	FAIL ABUN
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.749E+01	0.000E+00	SHORT HLIF
BA-133	1.394E-02	6.192E-02	1.085E-01	NOT IDENT.
I-133	0.000E+00	2.551E+10	0.000E+00	SHORT HLIF
CS-134	-2.746E-05	5.150E-02	9.480E-02	FAIL ABUN
I-135	0.000E+00	3.797E+36	0.000E+00	SHORT HLIF
CS-136	1.474E-01	4.034E-01	7.308E-01	NOT IDENT.
BA-137M	3.678E-03	4.449E-02	7.555E-02	NOT IDENT.
CS-137	3.885E-03	4.700E-02	7.981E-02	NOT IDENT.
LA-138	8.181E-02	7.894E-02	1.735E-01	NOT IDENT.
CE-139	-5.749E-02	5.095E-02	8.499E-02	NOT IDENT.
BA-140	5.869E-02	9.698E-01	1.829E+00	NOT IDENT.
LA-140	-8.421E-02	3.927E-01	7.210E-01	FAIL ABUN
CE-141	1.126E-01	2.428E-01	2.428E-01	FAIL ABUN
CE-143	0.000E+00	3.585E+06	0.000E+00	SHORT HLIF
CE-144	1.943E-02	3.079E-01	5.585E-01	FAIL ABUN
PM-144	-1.620E-02	4.486E-02	7.953E-02	NOT IDENT.
PR-144	-1.224E+00	3.390E+00	6.011E+00	NOT IDENT.
PM-146	5.806E-02	8.155E-02	1.174E-01	FAIL ABUN
ND-147	8.960E-01	2.057E+00	4.097E+00	FAIL ABUN
PM-147	1.681E+02	1.109E+03	2.034E+03	NOT IDENT.
PM-149	0.000E+00	5.317E+04	0.000E+00	SHORT HLIF
EU-150	1.059E-03	4.002E-02	7.601E-02	FAIL ABUN
EU-152	-9.856E-02	1.404E-01	2.545E-01	FAIL ABUN
GD-153	0.000E+00	2.519E-01	2.278E-01	FAIL ABUN
EU-154	7.371E-02	1.542E-01	2.977E-01	NOT IDENT.
EU-155	3.889E-02	1.460E-01	2.721E-01	FAIL ABUN

TB-160	2.691E-01	4.611E-01	3.617E-01	FAIL ABUN
HO-166M	1.252E-02	7.183E-02	1.363E-01	FAIL ABUN
TM-171	1.032E+00	3.087E+01	5.517E+01	NOT IDENT.
HF-172	-2.458E-01	2.786E-01	4.818E-01	FAIL ABUN
LU-172	3.811E-02	6.819E-02	1.441E-01	FAIL ABUN
LU-176	-4.092E-03	3.626E-02	6.894E-02	FAIL ABUN
HF-181	-4.720E-02	8.754E-02	1.382E-01	NOT IDENT.
TA-182	1.899E-02	2.014E-01	4.001E-01	NOT IDENT.
RE-183	1.309E-01	3.614E-01	7.001E-01	NOT IDENT.
RE-184	1.458E-01	2.247E-01	4.470E-01	NOT IDENT.
W-188	1.447E+01	1.349E+01	2.519E+01	FAIL ABUN
IR-192	-1.735E-02	5.488E-02	1.030E-01	FAIL ABUN
HG-203	-1.270E-02	7.880E-02	1.348E-01	FAIL ABUN
TL-204	2.085E+00	7.684E+00	1.355E+01	FAIL ABUN
BI-207	3.035E-02	6.486E-02	1.215E-01	FAIL ABUN
BI-210	4.991E+00	6.120E+00	1.166E+01	NOT IDENT.
PB-210	4.991E+00	6.120E+00	1.166E+01	NOT IDENT.
PB-211	-1.994E-01	1.042E+00	1.935E+00	NOT IDENT.
BI-213	-8.902E-02	1.400E-01	2.504E-01	NOT IDENT.
RN-219	1.942E-01	5.829E-01	1.124E+00	FAIL ABUN
RA-223	4.665E-01	9.623E-01	1.725E+00	FAIL ABUN
AC-225	-2.178E+00	3.437E+00	5.784E+00	NOT IDENT.
AC-227	-6.861E-02	4.195E-01	7.200E-01	FAIL ABUN
TH-227	-6.861E-02	4.195E-01	7.200E-01	FAIL ABUN
TH-229	-2.071E-01	8.157E-01	1.418E+00	FAIL ABUN
PA-231	-2.582E-01	7.770E-01	1.304E+00	NOT IDENT.
TH-231	4.665E-01	9.623E-01	1.725E+00	FAIL ABUN
PA-233	2.540E-02	9.552E-02	1.847E-01	NOT IDENT.
PA-234	-7.220E-02	3.768E-01	6.701E-01	FAIL ABUN
NP-237	2.540E-02	9.552E-02	1.847E-01	FAIL ABUN
NP-238	0.000E+00	1.421E+04	0.000E+00	SHORT HLIF
NP-239	-1.114E-01	3.693E-01	6.639E-01	FAIL ABUN
PU-239	1.599E+01	5.043E+02	9.144E+02	NOT IDENT.
AM-241	-8.771E-03	2.401E-01	4.229E-01	NOT IDENT.
CM-243	-1.436E-02	1.425E-01	2.613E-01	FAIL ABUN
BK-247	3.681E-02	1.267E-01	2.089E-01	FAIL ABUN
CM-247	2.330E-02	5.264E-02	1.024E-01	NOT IDENT.
CF-249	5.101E-02	6.049E-02	1.200E-01	NOT IDENT.
CF-251	8.715E-02	2.005E-01	3.649E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:23:54.84

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	107	10.66*	1.227E+00	4.644E+00	4.644E+00	23.62
CD-109	88.03	254	3.70*	5.622E+00	6.943E+00	7.307E+00	33.41
SN-117M	156.02	------	2.11	6.273E+00	------	Line Not Found	------
	158.56	27	86.40*	6.215E+00	2.825E-02	1.605E-01	228.13
TE-123M	159.00	27	84.00*	6.215E+00	2.906E-02	3.543E-02	228.13
I-126	388.63	32	35.60	3.478E+00	1.461E-01	9.077E-01	178.28
	666.33	52	32.90*	2.360E+00	3.796E-01	2.359E+00	45.94
	753.82	------	4.15	2.136E+00	------	Line Not Found	------
SN-126	64.28	142	9.60	2.918E+00	2.882E+00	2.882E+00	68.71
	86.94	254	8.90	5.622E+00	2.886E+00	2.886E+00	33.41
	87.57	254	37.00*	5.622E+00	6.943E-01	6.943E-01	33.41
CE-141	145.44	30	48.29*	6.464E+00	5.445E-02	1.126E-01	220.06
TL-208	277.37	------	6.60	4.410E+00	------	Line Not Found	------
	583.19	103	85.00*	2.608E+00	2.639E-01	2.639E-01	42.31
	860.56	------	12.50	1.916E+00	------	Line Not Found	------
BI-211	72.87	63	1.23	4.287E+00	6.827E+00	6.827E+00	134.67
	351.06	2148	12.92*	3.739E+00	2.528E+01	2.528E+01	5.25
BI-212	727.33	36	6.67*	2.201E+00	1.390E+00	1.390E+00	71.03
	1620.50	------	1.47	1.137E+00	------	Line Not Found	------
PB-212	74.82	439	10.28	4.451E+00	5.460E+00	5.460E+00	20.49
	77.11	774	17.10	4.709E+00	5.464E+00	5.464E+00	11.62
	238.63	340	43.60*	4.891E+00	9.062E-01	9.062E-01	19.47
	300.09	------	3.30	4.175E+00	------	Line Not Found	------
BI-214	609.32	1466	45.49*	2.524E+00	7.262E+00	7.262E+00	5.98
	1120.29	331	14.92	1.529E+00	8.258E+00	8.258E+00	13.94
	1764.49	256	15.30	1.079E+00	8.811E+00	8.811E+00	13.29
PB-214	74.82	439	5.80	4.451E+00	9.677E+00	9.677E+00	20.49
	77.11	774	9.70	4.709E+00	9.632E+00	9.632E+00	11.62
	87.09	254	3.41	5.622E+00	7.533E+00	7.533E+00	33.41
	242.00	656	7.25	4.845E+00	1.062E+01	1.062E+01	11.22
	295.22	1306	18.42	4.224E+00	9.545E+00	9.545E+00	6.78
	351.93	2148	35.60*	3.739E+00	9.174E+00	9.174E+00	5.25
RN-222	609.32	1466	45.49*	2.524E+00	7.262E+00	7.262E+00	5.98
	1120.29	331	14.92	1.529E+00	8.258E+00	8.258E+00	13.94
	1764.49	256	15.30	1.079E+00	8.811E+00	8.811E+00	13.29
RA-224	240.99	656	4.10*	4.845E+00	1.877E+01	1.877E+01	11.22
RA-226	74.82	439	5.80	4.451E+00	9.677E+00	9.677E+00	20.49
	77.11	774	9.70	4.709E+00	9.632E+00	9.632E+00	11.62
	87.09	254	3.41	5.622E+00	7.533E+00	7.533E+00	33.41
	242.00	656	7.25	4.845E+00	1.062E+01	1.062E+01	11.22
	295.22	1306	18.42	4.224E+00	9.545E+00	9.545E+00	6.78
	351.93	2148	35.60*	3.739E+00	9.174E+00	9.174E+00	5.25
AC-228	105.21	------	1.10	6.483E+00	------	Line Not Found	------
	338.32	70	11.27	3.843E+00	9.196E-01	9.196E-01	53.64
	835.71	------	1.61	1.963E+00	------	Line Not Found	------
	911.20	111	25.80*	1.826E+00	1.337E+00	1.337E+00	26.89
	968.97	49	15.80	1.733E+00	1.021E+00	1.021E+00	46.17

Sample ID : G674299013 Acquisition date : 30-JUL-2024 11:19:43

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	105.21	------	1.10	6.483E+00	------	Line Not Found	------
	338.32	70	11.27	3.843E+00	9.196E-01	9.196E-01	53.64
	835.71	------	1.61	1.963E+00	------	Line Not Found	------
	911.20	111	25.80*	1.826E+00	1.337E+00	1.337E+00	26.89
	968.97	49	15.80	1.733E+00	1.021E+00	1.021E+00	46.17
TH-228	74.82	439	10.28	4.451E+00	5.460E+00	5.460E+00	20.49
	77.11	774	17.10	4.709E+00	5.464E+00	5.464E+00	11.62
	238.63	340	43.60*	4.891E+00	9.062E-01	9.062E-01	19.47
	300.09	------	3.30	4.175E+00	------	Line Not Found	------
TH-230	74.82	439	5.80	4.451E+00	9.677E+00	9.677E+00	20.49
	77.11	774	9.70	4.709E+00	9.632E+00	9.632E+00	11.62
	87.09	254	3.41	5.622E+00	7.533E+00	7.533E+00	33.41
	242.00	656	7.25	4.845E+00	1.062E+01	1.062E+01	11.22
	295.22	1306	18.42	4.224E+00	9.545E+00	9.545E+00	6.78
	351.93	2148	35.60*	3.739E+00	9.174E+00	9.174E+00	5.25
TH-232	105.21	------	1.10	6.483E+00	------	Line Not Found	------
	338.32	70	11.27	3.843E+00	9.196E-01	9.196E-01	53.64
	835.71	------	1.61	1.963E+00	------	Line Not Found	------
	911.20	111	25.80*	1.826E+00	1.337E+00	1.337E+00	26.89
	968.97	49	15.80	1.733E+00	1.021E+00	1.021E+00	46.17
PA-234M	766.42	150	0.32	2.105E+00	1.265E+02	1.265E+02	32.03
	1001.03	43	0.84*	1.686E+00	1.726E+01	1.726E+01	50.05
TH-234	63.29	142	3.70*	2.918E+00	7.477E+00	7.477E+00	68.71
	92.59	378	4.23	5.984E+00	8.485E+00	8.485E+00	21.59
U-234	74.82	439	5.80	4.451E+00	9.677E+00	9.677E+00	20.49
	77.11	774	9.70	4.709E+00	9.632E+00	9.632E+00	11.62
	87.09	254	3.41	5.622E+00	7.533E+00	7.533E+00	33.41
	242.00	656	7.25	4.845E+00	1.062E+01	1.062E+01	11.22
	295.22	1306	18.42	4.224E+00	9.545E+00	9.545E+00	6.78
	351.93	2148	35.60*	3.739E+00	9.174E+00	9.174E+00	5.25
U-235	89.96	98	3.47	5.816E+00	2.762E+00	2.762E+00	45.01
	93.35	378	5.60	5.984E+00	6.410E+00	6.410E+00	21.59
	143.76	30	10.96*	6.464E+00	2.399E-01	2.399E-01	220.06
	163.33	------	5.08	6.144E+00	------	Line Not Found	------
	185.72	594	57.20	5.735E+00	1.029E+00	1.029E+00	17.29
	205.31	32	5.01	5.410E+00	6.697E-01	6.697E-01	143.61
U-238	63.29	142	3.70*	2.918E+00	7.477E+00	7.477E+00	68.71
	92.59	378	4.23	5.984E+00	8.485E+00	8.485E+00	21.59
AM-243	43.53	------	5.90	4.389E-01	------	Line Not Found	------
	74.66	439	67.20*	4.451E+00	8.352E-01	8.352E-01	20.49
ANH-511	511.00	109	100.00*	2.871E+00	2.150E-01	2.150E-01	42.67

Flag: "*" = Keyline

Sample ID : G674299013 Acquisition date : 30-JUL-2024 11:19:43

Total number of lines in spectrum 76
Number of unidentified lines 27
Number of lines tentatively identified by NID 49 64.47%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	4.644E+00	4.644E+00	1.097E+00	23.62	
CD-109	461.40D	1.05	6.943E+00	7.307E+00	2.441E+00	33.41	
SN-117M	13.60D	5.68	2.825E-02	1.605E-01	3.661E-01	228.13	
TE-123M	119.20D	1.22	2.906E-02	3.543E-02	8.082E-02	228.13	
I-126	12.93D	6.21	3.796E-01	2.359E+00	1.084E+00	45.94	
SN-126	2.30E+05Y	1.00	6.943E-01	6.943E-01	2.319E-01	33.41	
CE-141	32.51D	2.07	5.445E-02	1.126E-01	2.478E-01	220.06	
TL-208	1.41E+10Y	1.00	2.639E-01	2.639E-01	1.117E-01	42.31	
BI-211	7.04E+08Y	1.00	2.528E+01	2.528E+01	0.133E+01	5.25	
BI-212	1.41E+10Y	1.00	1.390E+00	1.390E+00	0.987E+00	71.03	
PB-212	1.41E+10Y	1.00	9.062E-01	9.062E-01	1.765E-01	19.47	
BI-214	1600.00Y	1.00	7.262E+00	7.262E+00	0.434E+00	5.98	
PB-214	1600.00Y	1.00	9.174E+00	9.174E+00	0.481E+00	5.25	
RN-222	1600.00Y	1.00	7.262E+00	7.262E+00	0.434E+00	5.98	
RA-224	1.41E+10Y	1.00	1.877E+01	1.877E+01	0.211E+01	11.22	
RA-226	1600.00Y	1.00	9.174E+00	9.174E+00	0.481E+00	5.25	
AC-228	1.41E+10Y	1.00	1.337E+00	1.337E+00	0.360E+00	26.89	
RA-228	1.41E+10Y	1.00	1.337E+00	1.337E+00	0.360E+00	26.89	
TH-228	1.41E+10Y	1.00	9.062E-01	9.062E-01	1.765E-01	19.47	
TH-230	7.54E+04Y	1.00	9.174E+00	9.174E+00	0.481E+00	5.25	
TH-232	1.41E+10Y	1.00	1.337E+00	1.337E+00	0.360E+00	26.89	
PA-234M	4.47E+09Y	1.00	1.726E+01	1.726E+01	0.864E+01	50.05	
TH-234	4.47E+09Y	1.00	7.477E+00	7.477E+00	5.138E+00	68.71	
U-234	2.45E+05Y	1.00	9.174E+00	9.174E+00	0.481E+00	5.25	
U-235	7.04E+08Y	1.00	2.399E-01	2.399E-01	5.279E-01	220.06	
U-238	4.47E+09Y	1.00	7.477E+00	7.477E+00	5.138E+00	68.71	
AM-243	7370.00Y	1.00	8.352E-01	8.352E-01	1.711E-01	20.49	
ANH-511	1.00E+09Y	1.00	2.150E-01	2.150E-01	0.917E-01	42.67	
		Total Activity :	1.490E+02	1.516E+02			

Grand Total Activity : 1.490E+02 1.516E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299013 Acquisition date : 30-JUL-2024 11:19:43

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	49.69	70	254	1.31	99.91	97	7	1.61E-02	87.3	1.02E+00	T
2	79.06	75	443	1.15	158.61	143	19	1.79E-02	****	4.92E+00	T
0	83.69	114	420	1.03	167.86	165	7	2.72E-02	68.1	5.36E+00	T
0	98.53	69	343	1.69	197.54	194	9	1.67E-02	****	6.27E+00	T
3	269.71	89	201	1.62	539.73	532	15	2.30E-02	68.7	4.50E+00	T
3	271.36	61	158	1.33	543.03	532	15	1.58E-02	83.0	4.48E+00	T
2	328.14	54	125	1.54	656.54	651	29	1.40E-02	83.6	3.92E+00	T
0	454.87	20	58	1.01	909.90	906	8	5.48E-03	****	3.12E+00	T
0	463.86	32	130	1.48	927.88	921	14	8.58E-03	****	3.08E+00	T
0	487.70	33	77	1.33	975.53	968	12	8.92E-03	****	2.97E+00	T
0	519.50	23	46	2.75	1039.12	1035	10	6.17E-03	****	2.84E+00	T
0	559.87	10	46	1.31	1119.83	1113	8	2.73E-03	****	2.69E+00	
1	562.10	21	14	1.62	1124.29	1121	28	5.78E-03	78.1	2.68E+00	T
1	567.81	20	31	1.62	1135.70	1121	28	5.50E-03	****	2.66E+00	
1	570.31	22	35	1.63	1140.70	1121	28	5.99E-03	****	2.65E+00	T
2	719.29	19	17	1.91	1438.58	1435	26	5.14E-03	82.6	2.22E+00	T
0	785.63	56	24	2.24	1571.24	1566	12	1.57E-02	43.8	2.07E+00	
0	806.85	34	52	1.33	1613.67	1607	15	9.58E-03	97.7	2.02E+00	
0	820.33	15	34	3.43	1640.63	1634	10	4.12E-03	****	1.99E+00	
0	839.40	26	44	2.12	1678.76	1673	11	7.18E-03	****	1.96E+00	
0	854.19	16	19	1.43	1708.34	1705	7	4.47E-03	****	1.93E+00	
0	878.07	19	49	4.85	1756.09	1743	18	5.43E-03	****	1.88E+00	T
0	933.82	90	51	0.76	1867.58	1860	14	2.52E-02	39.8	1.79E+00	
0	964.29	29	26	2.45	1928.51	1923	10	8.06E-03	74.7	1.74E+00	T
0	1053.76	21	59	7.67	2107.43	2095	20	5.83E-03	****	1.61E+00	
0	1069.65	41	34	3.71	2139.22	2130	20	1.16E-02	76.2	1.59E+00	
0	1155.66	37	47	2.05	2311.22	2304	18	1.07E-02	91.5	1.49E+00	
0	1237.49	133	5	1.86	2474.89	2470	14	3.84E-02	18.7	1.40E+00	T
0	1281.50	16	25	2.15	2562.91	2556	15	4.48E-03	****	1.36E+00	
0	1340.00	12	10	4.11	2679.92	2673	11	3.36E-03	****	1.31E+00	
0	1346.36	5	16	0.57	2692.64	2683	11	1.53E-03	****	1.31E+00	
0	1366.50	7	3	0.57	2732.93	2729	6	1.94E-03	****	1.29E+00	T
0	1376.66	72	20	1.58	2753.25	2747	12	2.09E-02	33.5	1.28E+00	
0	1384.55	13	8	1.28	2769.04	2765	8	3.67E-03	98.0	1.28E+00	T
0	1400.57	32	8	1.16	2801.08	2795	12	9.22E-03	50.1	1.27E+00	
0	1406.95	48	11	1.35	2813.83	2807	15	1.38E-02	41.3	1.26E+00	T
0	1451.94	13	10	0.71	2903.82	2896	11	3.68E-03	****	1.23E+00	
0	1508.46	35	16	1.57	3016.88	3009	13	1.02E-02	56.2	1.20E+00	
0	1549.44	6	11	0.50	3098.85	3092	11	1.85E-03	****	1.17E+00	
0	1581.93	13	13	1.39	3163.86	3157	14	3.89E-03	****	1.16E+00	
0	1587.29	8	6	1.41	3174.56	3170	9	2.44E-03	****	1.15E+00	
0	1614.63	7	6	0.89	3229.27	3223	9	1.98E-03	****	1.14E+00	
0	1628.02	17	0	1.01	3256.06	3250	13	5.00E-03	47.1	1.13E+00	
0	1654.64	14	3	4.31	3309.29	3303	12	4.20E-03	68.8	1.12E+00	
0	1660.40	17	3	2.30	3320.82	3315	12	4.88E-03	70.5	1.12E+00	
0	1728.34	72	8	1.60	3456.75	3450	16	2.12E-02	28.4	1.09E+00	
0	1846.14	45	4	1.72	3692.42	3683	15	1.32E-02	34.2	1.05E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:24:06.16

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299013.CNF;1  *
* Acquisition date : 30-JUL-2024 11:19:43 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.14     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:55:00 Nuclide Library : SOLID           *
* Sample ID        : G674299013           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.3204E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-MAR-2024 04:24:53 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;19            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.638E-01
CD-109	1.079E+00
SN-117M	1.985E-01
TE-123M	4.388E-02
I-126	5.519E-01
SN-126	1.030E-01
TL-208	3.918E-02
BI-211	2.544E-01
BI-212	4.308E-01
PB-212	7.630E-02
BI-214	7.238E-02
PB-214	9.250E-02
RN-222	7.238E-02
RA-224	8.176E-01
RA-226	9.250E-02
AC-228	1.416E-01
RA-228	1.416E-01
TH-228	7.630E-02
TH-230	9.250E-02
TH-232	1.416E-01
PA-234M	4.666E+00
TH-234	1.720E+00
U-234	9.250E-02
U-235	2.615E-01
U-238	1.720E+00
AM-243	6.818E-02
ANH-511	2.810E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.265E-01	NOT IDENT.
NA-22	4.728E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.757E-02	NOT IDENT.

SC-46	4.903E-02	FAIL ABUN
V-48	1.564E-01	NOT IDENT.
CR-51	6.943E-01	NOT IDENT.
MN-52	3.391E+00	NOT IDENT.
MN-54	4.204E-02	NOT IDENT.
CO-56	5.314E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.429E-02	NOT IDENT.
CO-58	4.818E-02	NOT IDENT.
FE-59	9.510E-02	NOT IDENT.
CO-60	4.055E-02	NOT IDENT.
ZN-65	9.066E-02	NOT IDENT.
GE-68	1.427E+00	NOT IDENT.
AS-73	1.454E+00	NOT IDENT.
AS-74	2.068E-01	NOT IDENT.
SE-75	6.137E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.199E-01	NOT IDENT.
RB-83	8.983E-02	FAIL ABUN
RB-84	9.613E-02	NOT IDENT.
KR-85	7.654E+00	NOT IDENT.
SR-85	4.948E-02	NOT IDENT.
RB-86	1.743E+00	NOT IDENT.
Y-88	5.566E-02	NOT IDENT.
Y-91	2.827E+01	NOT IDENT.
NB-94	3.866E-02	NOT IDENT.
NB-95	8.506E-02	NOT IDENT.
NB-95M	2.155E-01	NOT IDENT.
ZR-95	9.090E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.759E-02	NOT IDENT.
RH-102	5.677E-02	FAIL ABUN
RU-103	5.890E-02	FAIL ABUN
RH-106	3.351E-01	NOT IDENT.
RU-106	3.351E-01	NOT IDENT.
AG-108M	3.316E-02	NOT IDENT.
AG-110	6.455E-01	NOT IDENT.
AG-110M	5.733E-02	FAIL ABUN
SN-113	6.036E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SB-122	0.000E+00	SHORT HLIF
SB-124	8.008E-02	NOT IDENT.
SB-125	1.199E-01	FAIL ABUN
TE-125M	1.463E+01	NOT IDENT.
SB-126	4.266E-01	FAIL ABUN
SB-127	3.750E+01	NOT IDENT.
I-131	6.657E-01	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.082E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.282E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	3.295E-01	NOT IDENT.
BA-137M	3.411E-02	NOT IDENT.
CS-137	3.604E-02	NOT IDENT.
LA-138	7.730E-02	NOT IDENT.
CE-139	4.057E-02	NOT IDENT.
BA-140	8.411E-01	NOT IDENT.
LA-140	3.159E-01	FAIL ABUN
CE-141	1.161E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	2.675E-01	FAIL ABUN
PM-144	3.610E-02	NOT IDENT.
PR-144	2.729E+00	NOT IDENT.
PM-146	5.481E-02	FAIL ABUN
ND-147	1.865E+00	FAIL ABUN
PM-147	9.741E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.590E-02	FAIL ABUN
EU-152	1.194E-01	FAIL ABUN
GD-153	1.090E-01	FAIL ABUN
EU-154	1.327E-01	NOT IDENT.
EU-155	1.302E-01	FAIL ABUN
TB-160	1.619E-01	FAIL ABUN

HO-166M	6.174E-02	FAIL ABUN
TM-171	2.627E+01	NOT IDENT.
HF-172	2.299E-01	FAIL ABUN
LU-172	6.390E-02	FAIL ABUN
LU-176	3.243E-02	FAIL ABUN
HF-181	6.345E-02	NOT IDENT.
TA-182	1.753E-01	NOT IDENT.
RE-183	3.346E-01	NOT IDENT.
RE-184	2.020E-01	NOT IDENT.
W-188	1.195E+01	FAIL ABUN
IR-192	4.824E-02	FAIL ABUN
HG-203	6.376E-02	FAIL ABUN
TL-204	6.512E+00	FAIL ABUN
BI-207	5.425E-02	FAIL ABUN
BI-210	5.555E+00	NOT IDENT.
PB-210	5.555E+00	NOT IDENT.
PB-211	9.066E-01	NOT IDENT.
BI-213	1.158E-01	NOT IDENT.
RN-219	5.272E-01	FAIL ABUN
RA-223	8.126E-01	FAIL ABUN
AC-225	2.751E+00	NOT IDENT.
AC-227	3.422E-01	FAIL ABUN
TH-227	3.422E-01	FAIL ABUN
TH-229	6.773E-01	FAIL ABUN
PA-231	6.167E-01	NOT IDENT.
TH-231	8.126E-01	FAIL ABUN
PA-233	8.735E-02	NOT IDENT.
PA-234	2.986E-01	FAIL ABUN
NP-237	8.735E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	3.169E-01	FAIL ABUN
PU-239	4.383E+02	NOT IDENT.
AM-241	2.019E-01	NOT IDENT.
CM-243	1.247E-01	FAIL ABUN
BK-247	9.869E-02	FAIL ABUN
CM-247	4.800E-02	NOT IDENT.
CF-249	5.660E-02	NOT IDENT.
CF-251	1.747E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:24:10.35

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299013.CNF;1  *
* Acquisition date : 30-JUL-2024 11:19:43 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.14     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:55:00 Nuclide Library : SOLID           *
* Sample ID        : G674299013           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.3204E+02 GRAM *
*                                         Quantity Err(%) : 1.5147E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-MAR-2024 04:24:53 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	4.644E+00	1.164E+00	1.164E+00
CD-109	7.307E+00	2.567E+00	2.567E+00
SN-117M	1.605E-01	3.591E-01	3.591E-01
TE-123M	3.543E-02	7.928E-02	7.928E-02
I-126	2.359E+00	1.090E+00	1.090E+00
SN-126	6.943E-01	2.411E-01	2.411E-01
TL-208	2.639E-01	1.121E-01	1.121E-01
BI-211	2.528E+01	2.489E+00	2.489E+00
BI-212	1.390E+00	9.770E-01	9.770E-01
PB-212	9.062E-01	1.927E-01	1.927E-01
BI-214	7.262E+00	7.940E-01	7.940E-01
PB-214	9.174E+00	8.909E-01	8.909E-01
RN-222	7.262E+00	7.940E-01	7.940E-01
RA-224	1.877E+01	2.709E+00	2.709E+00
RA-226	9.174E+00	8.909E-01	8.909E-01
AC-228	1.337E+00	3.763E-01	3.763E-01
RA-228	1.337E+00	3.763E-01	3.763E-01
TH-228	9.062E-01	1.927E-01	1.927E-01
TH-230	9.174E+00	8.909E-01	8.909E-01
TH-232	1.337E+00	3.763E-01	3.763E-01
PA-234M	1.726E+01	8.610E+00	8.610E+00
TH-234	7.477E+00	5.340E+00	5.340E+00
U-234	9.174E+00	8.909E-01	8.909E-01
U-235	2.399E-01	5.178E-01	5.178E-01
U-238	7.477E+00	5.340E+00	5.340E+00
AM-243	8.352E-01	1.902E-01	1.902E-01
ANH-511	2.150E-01	9.187E-02	9.187E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-3.062E-01	5.213E-01	5.393E-01	NOT IDENT.
NA-22	2.627E-02	5.500E-02	5.626E-02	NOT IDENT.
NA-24	4.563E+14	1.263E+15	1.280E+15	SHORT HLIF

AL-26	-3.499E-02	3.507E-02	3.846E-02	NOT IDENT.
SC-46	3.010E-03	5.917E-02	5.919E-02	FAIL ABUN
V-48	-2.376E-01	2.299E-01	2.536E-01	NOT IDENT.
CR-51	-5.735E-03	7.734E-01	7.734E-01	NOT IDENT.
MN-52	1.223E+00	3.836E+00	3.875E+00	NOT IDENT.
MN-54	4.203E-03	5.634E-02	5.637E-02	NOT IDENT.
CO-56	3.581E-02	5.949E-02	6.164E-02	FAIL ABUN
MN-56	1.000E+41	1.655E+41	0.000E+00	SHORT HLIF
CO-57	-5.626E-03	3.969E-02	3.977E-02	NOT IDENT.
CO-58	1.754E-03	6.485E-02	6.485E-02	NOT IDENT.
FE-59	-1.385E-01	1.325E-01	1.465E-01	NOT IDENT.
CO-60	-1.226E-02	5.160E-02	5.189E-02	NOT IDENT.
ZN-65	2.201E-02	1.146E-01	1.150E-01	NOT IDENT.
GE-68	7.621E-02	1.850E+00	1.850E+00	NOT IDENT.
AS-73	1.017E+00	1.555E+00	1.621E+00	NOT IDENT.
AS-74	1.133E-01	2.293E-01	2.350E-01	NOT IDENT.
SE-75	6.205E-02	7.489E-02	7.994E-02	NOT IDENT.
BR-77	3.545E+04	3.567E+04	3.908E+04	SHORT HLIF
SR-82	2.183E-02	6.205E-01	6.205E-01	NOT IDENT.
RB-83	1.338E-01	1.568E-01	1.680E-01	FAIL ABUN
RB-84	-7.290E-02	1.468E-01	1.504E-01	NOT IDENT.
KR-85	6.067E+00	9.072E+00	9.475E+00	NOT IDENT.
SR-85	3.905E-02	5.866E-02	6.124E-02	NOT IDENT.
RB-86	3.550E-01	2.211E+00	2.217E+00	NOT IDENT.
Y-88	4.141E-02	5.862E-02	6.152E-02	NOT IDENT.
Y-91	6.862E+00	3.207E+01	3.222E+01	NOT IDENT.
NB-94	1.695E-02	4.353E-02	4.420E-02	NOT IDENT.
NB-95	1.744E-01	8.861E-02	1.185E-01	NOT IDENT.
NB-95M	2.217E-03	2.816E-01	2.816E-01	NOT IDENT.
ZR-95	-4.110E-02	1.142E-01	1.157E-01	NOT IDENT.
NB-97	-1.000E+41	2.148E+41	0.000E+00	SHORT HLIF
ZR-97	5.270E+13	2.669E+14	2.679E+14	SHORT HLIF
MO-99	-7.247E+02	1.837E+03	1.866E+03	SHORT HLIF
TC-99M	3.285E+38	3.185E+39	0.000E+00	SHORT HLIF
RH-101	-3.900E-02	4.611E-02	4.935E-02	NOT IDENT.
RH-102	2.620E-02	6.359E-02	6.468E-02	FAIL ABUN
RU-103	-6.728E-03	6.924E-02	6.931E-02	FAIL ABUN
RH-106	1.233E-01	3.789E-01	3.829E-01	NOT IDENT.
RU-106	1.233E-01	3.789E-01	3.829E-01	NOT IDENT.
AG-108M	-1.759E-02	3.938E-02	4.017E-02	NOT IDENT.
AG-110	-4.570E-01	8.296E-01	8.548E-01	NOT IDENT.
AG-110M	1.096E-02	6.809E-02	6.827E-02	FAIL ABUN
SN-113	-1.631E-02	6.950E-02	6.989E-02	NOT IDENT.
CD-115	8.529E+02	4.500E+03	4.516E+03	SHORT HLIF
SB-122	9.959E+01	3.019E+02	3.052E+02	SHORT HLIF
SB-124	-5.905E-02	1.146E-01	1.176E-01	NOT IDENT.
SB-125	6.374E-02	1.316E-01	1.347E-01	FAIL ABUN
TE-125M	1.186E+00	1.662E+01	1.663E+01	NOT IDENT.
SB-126	6.004E-01	4.923E-01	5.618E-01	FAIL ABUN
SB-127	-5.057E+01	5.185E+01	5.664E+01	NOT IDENT.
I-131	-7.005E-01	8.054E-01	8.651E-01	FAIL ABUN
I-132	1.000E+41	1.854E+42	0.000E+00	SHORT HLIF
TE-132	1.119E+01	6.750E+01	6.769E+01	SHORT HLIF
BA-133	1.394E-02	6.193E-02	6.225E-02	NOT IDENT.
I-133	5.041E+09	2.554E+10	2.564E+10	SHORT HLIF
CS-134	-2.746E-05	5.150E-02	5.150E-02	FAIL ABUN
I-135	3.303E+35	3.806E+36	0.000E+00	SHORT HLIF
CS-136	1.474E-01	4.037E-01	4.092E-01	NOT IDENT.
BA-137M	3.678E-03	4.449E-02	4.452E-02	NOT IDENT.
CS-137	3.885E-03	4.700E-02	4.704E-02	NOT IDENT.
LA-138	8.181E-02	7.928E-02	8.744E-02	NOT IDENT.
CE-139	-5.749E-02	5.248E-02	5.853E-02	NOT IDENT.
BA-140	5.869E-02	9.698E-01	9.702E-01	NOT IDENT.
LA-140	-8.421E-02	3.927E-01	3.946E-01	FAIL ABUN
CE-141	1.126E-01	2.430E-01	2.483E-01	FAIL ABUN
CE-143	1.049E+07	3.693E+06	5.999E+06	SHORT HLIF
CE-144	1.943E-02	3.079E-01	3.080E-01	FAIL ABUN
PM-144	-1.620E-02	4.488E-02	4.547E-02	NOT IDENT.
PR-144	-1.224E+00	3.392E+00	3.437E+00	NOT IDENT.
PM-146	5.806E-02	8.177E-02	8.586E-02	FAIL ABUN
ND-147	8.960E-01	2.059E+00	2.098E+00	FAIL ABUN
PM-147	1.681E+02	1.109E+03	1.112E+03	NOT IDENT.
PM-149	-8.645E+03	5.318E+04	5.333E+04	SHORT HLIF
EU-150	1.059E-03	4.002E-02	4.003E-02	FAIL ABUN
EU-152	-9.856E-02	1.407E-01	1.476E-01	FAIL ABUN
GD-153	2.390E-01	2.530E-01	2.750E-01	FAIL ABUN
EU-154	7.371E-02	1.544E-01	1.579E-01	NOT IDENT.
EU-155	3.889E-02	1.460E-01	1.471E-01	FAIL ABUN

TB-160	2.691E-01	4.619E-01	4.776E-01	FAIL ABUN
HO-166M	1.252E-02	7.184E-02	7.206E-02	FAIL ABUN
TM-171	1.032E+00	3.087E+01	3.088E+01	NOT IDENT.
HF-172	-2.458E-01	2.818E-01	3.028E-01	FAIL ABUN
LU-172	3.811E-02	6.835E-02	7.048E-02	FAIL ABUN
LU-176	-4.092E-03	3.626E-02	3.631E-02	FAIL ABUN
HF-181	-4.720E-02	8.764E-02	9.018E-02	NOT IDENT.
TA-182	1.899E-02	2.014E-01	2.016E-01	NOT IDENT.
RE-183	1.309E-01	3.618E-01	3.666E-01	NOT IDENT.
RE-184	1.458E-01	2.253E-01	2.347E-01	NOT IDENT.
W-188	1.447E+01	1.363E+01	1.511E+01	FAIL ABUN
IR-192	-1.735E-02	5.490E-02	5.545E-02	FAIL ABUN
HG-203	-1.270E-02	7.880E-02	7.901E-02	FAIL ABUN
TL-204	2.085E+00	7.688E+00	7.746E+00	FAIL ABUN
BI-207	3.035E-02	6.491E-02	6.634E-02	FAIL ABUN
BI-210	4.991E+00	6.140E+00	6.539E+00	NOT IDENT.
PB-210	4.991E+00	6.140E+00	6.539E+00	NOT IDENT.
PB-211	-1.994E-01	1.043E+00	1.046E+00	NOT IDENT.
BI-213	-8.902E-02	1.402E-01	1.459E-01	NOT IDENT.
RN-219	1.942E-01	5.836E-01	5.901E-01	FAIL ABUN
RA-223	4.665E-01	9.633E-01	9.860E-01	FAIL ABUN
AC-225	-2.178E+00	3.447E+00	3.584E+00	NOT IDENT.
AC-227	-6.861E-02	4.196E-01	4.208E-01	FAIL ABUN
TH-227	-6.861E-02	4.196E-01	4.208E-01	FAIL ABUN
TH-229	-2.071E-01	8.159E-01	8.213E-01	FAIL ABUN
PA-231	-2.582E-01	7.791E-01	7.878E-01	NOT IDENT.
TH-231	4.665E-01	9.633E-01	9.860E-01	FAIL ABUN
PA-233	2.540E-02	9.554E-02	9.622E-02	NOT IDENT.
PA-234	-7.220E-02	3.858E-01	3.871E-01	FAIL ABUN
NP-237	2.540E-02	9.554E-02	9.622E-02	FAIL ABUN
NP-238	-6.443E+03	1.422E+04	1.452E+04	SHORT HLIF
NP-239	-1.114E-01	3.695E-01	3.729E-01	FAIL ABUN
PU-239	1.599E+01	5.043E+02	5.044E+02	NOT IDENT.
AM-241	-8.771E-03	2.401E-01	2.401E-01	NOT IDENT.
CM-243	-1.436E-02	1.425E-01	1.427E-01	FAIL ABUN
BK-247	3.681E-02	1.269E-01	1.280E-01	FAIL ABUN
CM-247	2.330E-02	5.281E-02	5.385E-02	NOT IDENT.
CF-249	5.101E-02	6.074E-02	6.495E-02	NOT IDENT.
CF-251	8.715E-02	2.008E-01	2.046E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	107.8496	85.43	188.7101	131.20	174.8214
45.60	136.5321	86.55	241.2319	133.02	179.4615
46.54	100.6365	86.79	241.3445	133.52	168.1071
49.72	0.0000	86.94	241.4169	136.00	154.0409
51.35	128.1226	87.09	241.4875	136.47	162.5352
51.87	125.9300	87.57	241.7126	140.51	0.0000
52.39	132.0575	88.03	241.9281	143.76	181.1656
52.97	119.1579	88.34	213.0243	144.24	181.2857
53.44	120.8009	88.47	213.0780	145.44	185.4794
54.07	145.2057	89.96	218.8693	152.43	199.3875
57.36	0.0000	1093.63	219.1530	153.25	196.3866
57.53	147.4309	91.11	219.3489	323.87	183.7410
57.98	143.0724	92.59	219.9610	156.02	212.5392
59.27	157.4708	93.35	220.2721	158.56	186.9485
59.32	157.4906	94.56	182.2310	159.00	187.0541
59.54	150.3045	94.65	182.2608	162.33	182.4247
60.96	147.1875	94.67	182.2679	162.66	171.6384
61.17	147.2638	94.87	182.3360	163.33	173.9575
62.93	175.0934	97.43	145.7632	165.86	188.6934
63.29	175.2457	98.43	135.1729	176.31	161.2960
63.58	175.3685	98.44	135.1761	176.60	156.9311
64.28	175.6625	99.53	135.4395	177.52	147.1451
66.73	178.8383	100.11	138.5484	181.07	0.0000
67.24	197.5716	102.03	149.6103	181.52	137.8406
125.81	207.6621	103.18	149.2481	184.41	172.5108
67.75	207.6946	103.37	149.2973	143.76	145.2185
68.89	179.4194	105.21	151.7704	193.51	157.7820
69.67	199.9169	105.31	151.7959	197.03	158.4015
70.82	194.2081	106.12	160.0073	198.01	177.8300
70.83	194.2129	106.47	160.1025	201.83	142.5567
72.81	211.9491	109.28	151.8156	203.43	159.5166
72.87	211.9767	111.00	165.3588	205.31	127.8713
74.66	212.8061	111.76	0.0000	210.85	153.8947
74.82	212.8785	114.06	180.3779	215.65	125.8134
74.97	212.9475	116.30	0.0000	218.12	146.9639
77.11	213.9234	116.74	156.7329	222.11	139.4312
78.74	214.6579	119.76	164.6432	227.09	114.4415
79.69	223.3301	121.12	164.9945	227.38	113.3078
80.03	223.4841	121.22	165.0203	228.16	0.0000
80.12	213.3684	121.78	171.3192	228.18	126.2576
80.19	213.3992	122.06	173.4457	116.74	126.2576
80.57	230.7283	122.92	182.9269	235.69	177.4430
81.00	230.9314	123.07	188.1086	235.96	155.4992
81.07	213.7854	265.00	159.4760	238.63	141.7291
81.75	189.2339	125.81	177.5443	238.98	0.0000
82.47	224.6066	127.23	175.8559	240.99	142.0514
83.79	212.4072	127.91	149.1136	242.00	142.1887
84.00	212.4950	129.30	175.3643	244.70	110.8746

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	114.8672	344.28	95.4877	563.25	27.9781
252.80	122.0915	345.93	68.4724	564.24	0.0000
254.15	0.0000	351.06	82.1296	569.33	28.0640
256.23	128.4821	351.93	82.1818	946.00	28.0663
260.90	0.0000	355.39	0.0000	569.70	28.0686
264.66	74.2109	356.01	67.6740	583.19	41.6411
264.80	74.2203	364.49	78.5559	584.27	41.6633
265.00	88.7573	366.42	0.0000	595.83	29.9268
269.46	99.6397	372.51	59.6868	427.87	35.9941
270.03	99.6898	375.05	70.3434	602.52	0.0000
271.23	99.7949	377.52	71.3430	604.72	45.0824
273.65	91.0638	356.01	81.7354	607.14	48.1426
276.40	101.4678	388.16	71.8588	609.32	38.1531
277.37	92.9891	388.63	71.8819	610.33	38.1701
277.60	91.7839	391.69	72.0286	614.28	40.7571
278.00	102.8313	264.66	62.6172	618.01	33.2686
279.20	106.6154	401.81	68.9306	620.36	33.3048
279.54	115.2280	402.40	65.3750	621.93	28.2791
279.70	115.2424	404.85	78.0384	630.19	0.0000
280.46	111.6366	410.95	67.5400	631.29	26.3735
283.69	99.6432	413.71	66.7569	633.25	32.4883
284.31	100.9260	414.70	76.7286	634.78	24.3838
285.41	102.2530	423.72	72.6286	635.95	39.6443
285.90	0.0000	427.09	55.4960	636.99	34.5783
287.50	85.1550	427.87	60.0743	657.50	29.7670
290.67	84.1450	433.94	60.2999	657.76	29.7705
293.27	0.0000	439.40	66.0029	657.90	0.0000
351.93	95.6414	440.45	63.2935	661.66	27.7657
295.96	95.7001	453.88	59.6460	664.57	0.0000
879.38	104.6232	463.37	54.8660	666.33	26.2772
299.98	96.0150	468.07	50.3547	666.50	26.2792
300.09	96.0221	473.00	48.6283	667.71	0.0000
300.13	96.0268	475.06	52.4305	677.62	30.0325
301.36	108.6066	476.78	48.7341	685.70	42.6082
302.85	94.9884	477.60	51.5692	692.65	0.0000
256.23	80.9320	482.18	53.5848	695.00	39.6483
304.85	80.9537	487.02	45.2480	696.49	38.6290
306.78	86.9312	492.35	0.0000	696.51	38.6290
308.46	85.3735	497.08	41.7110	697.00	34.4609
311.90	94.0010	505.52	35.7147	697.30	35.5094
316.51	80.8652	507.63	0.0000	697.49	31.3342
319.41	78.5142	511.00	35.8219	702.65	31.4026
320.08	74.3324	514.00	35.8795	706.68	31.4563
321.04	71.8519	514.00	35.8795	711.68	28.3700
323.87	76.2451	520.40	38.8834	720.70	22.1484
325.23	75.0518	520.69	0.0000	721.93	0.0000
328.76	95.2383	522.65	0.0000	722.78	22.1681
333.37	95.5710	527.90	0.0000	722.91	22.1689
333.97	95.6143	528.26	32.7798	723.31	22.1724
334.37	95.6416	529.59	35.6977	724.19	22.1809
338.28	95.9219	529.87	0.0000	727.33	22.2091
338.32	95.9241	531.02	28.0005	733.00	24.1693
311.90	66.9122	537.26	42.6232	735.93	28.6556
340.48	66.9122	546.56	0.0000	333.97	35.0450
340.55	66.9154	552.55	38.0796	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	23.4278	949.00	20.6565	1384.29	13.6257
747.24	29.8537	667.71	0.0000	1408.01	7.8306
748.06	23.4636	962.31	19.0184	1434.09	17.7286
752.31	30.9824	964.08	29.4086	1435.80	10.8382
753.82	23.5182	966.17	0.0000	1457.56	0.0000
756.73	35.3176	911.20	13.8618	1460.82	12.8842
756.80	35.3190	983.53	37.1393	1489.16	21.9463
884.68	25.7598	984.45	0.0000	1505.03	16.0195
765.81	40.8157	1274.44	17.4799	1584.12	0.0000
766.42	40.8265	1001.03	24.5094	1596.21	19.4094
766.84	40.8327	1002.74	15.4140	1620.50	8.2153
772.60	0.0000	1004.73	19.6308	1621.92	6.5742
776.52	22.6509	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	8.3369
778.90	32.3889	1028.54	0.0000	1750.46	0.0000
783.70	32.4487	1037.84	23.9084	1764.49	11.8460
788.74	32.5122	1038.76	0.0000	1063.66	6.0509
792.07	24.9578	631.29	21.3091	1771.35	5.2954
795.86	29.3412	1048.07	22.7391	1791.20	0.0000
810.06	24.5837	1049.04	25.5902	1808.65	8.5352
810.29	21.3075	1050.41	24.0007	1810.72	0.0000
344.28	21.3083	1063.66	17.1352	1836.06	6.4351
810.76	26.2295	1077.00	22.9391		
815.77	22.9935	1077.34	24.3761		
1048.07	29.5939	1085.87	23.3594		
832.01	33.0469	1093.63	14.4082		
834.85	31.4282	1099.45	26.1591		
835.71	21.5098	1112.07	26.0754		
836.80	0.0000	1112.84	21.7339		
846.75	0.0000	1115.54	20.3014		
846.77	23.2584	1120.29	25.4109		
856.80	53.3555	1120.55	25.4126		
860.56	34.5054	1221.41	25.4194		
871.09	30.1663	1129.67	31.8512		
873.19	20.1262	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	21.8510	1173.23	16.5839		
880.51	25.2228	1177.95	22.1396		
881.60	28.5972	1189.05	17.5817		
883.24	24.2367	1204.77	25.0917		
884.68	25.8207	1221.41	15.8701		
889.28	25.8628	1231.02	18.1846		
894.76	28.1657	1235.36	19.4911		
898.04	18.0462	1238.28	17.8183		
900.72	29.3526	1260.41	0.0000		
903.28	20.3394	1271.87	25.5449		
911.20	24.9264	1274.44	16.4108		
912.08	32.3014	1274.54	16.4108		
923.98	0.0000	1291.59	13.3138		
926.50	38.7245	1298.22	0.0000		
929.11	27.3594	1312.11	12.4271		
935.54	18.8499	1332.49	18.6685		
937.49	24.0070	1362.66	0.0000		
944.13	18.3314	1365.19	9.6875		
946.00	25.2218	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:24:37.20

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299014.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM30.CNF;699
                                        Background date  : 28-JUL-2024 11:30:33
Sample date      : 26-JUN-2024 10:00:00 Acquisition date : 30-JUL-2024 11:20:20
Sample ID        : G674299014           Sample quantity  : 7.77900E+01 GRAM
Detector name    : GAM30                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.20  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2636542              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.41*	13	36	1.14	127.09	123	8	3.52E-03	101.6	
2	0	66.93	15	31	1.29	134.14	130	7	4.21E-03	63.3	
3	1	75.00	39	90	1.46	150.27	144	19	1.08E-02	45.6	1.53E+00
4	1	77.35*	51	68	1.47	154.98	144	19	1.43E-02	35.5	
5	0	92.96*	39	73	1.56	186.19	181	14	1.08E-02	55.9	
6	0	186.24*	2	69	1.65	372.74	366	12	6.21E-04	811.3	
7	1	238.34*	50	45	1.62	476.95	471	18	1.39E-02	31.5	1.25E+00
8	1	241.88	30	45	1.66	484.03	471	18	8.34E-03	47.2	
9	0	294.89	49	25	2.12	590.04	585	12	1.37E-02	24.6	
10	0	338.34	44	19	5.31	676.95	669	16	1.23E-02	26.9	
11	0	346.82	4	19	1.15	693.90	687	9	1.15E-03	191.9	
12	1	351.94*	88	23	1.73	704.14	697	28	2.45E-02	14.9	1.11E+00
13	1	360.87	13	12	1.59	722.00	697	28	3.74E-03	47.1	
14	0	433.44	21	13	3.90	867.14	862	13	5.83E-03	41.6	
15	0	491.71	14	8	0.88	983.67	978	11	3.78E-03	49.1	
16	0	511.21*	23	22	2.31	1022.67	1014	22	6.46E-03	70.5	
17	0	553.17	11	20	6.35	1106.59	1096	16	3.04E-03	96.3	
18	3	566.10	11	3	2.28	1132.45	1131	12	3.10E-03	28.3	1.22E+00
19	3	569.86*	12	2	1.87	1139.96	1131	12	3.26E-03	48.6	
20	0	583.43*	8	12	0.75	1167.10	1163	9	2.34E-03	89.2	
21	0	609.44*	37	20	1.65	1219.12	1214	13	1.03E-02	32.3	
22	0	661.48*	9	2	1.13	1323.19	1320	7	2.40E-03	52.9	
23	0	964.82	7	6	1.12	1929.84	1923	9	1.88E-03	78.4	
24	0	968.17*	19	0	3.20	1936.55	1932	10	5.30E-03	24.3	
25	0	998.81	9	7	1.91	1997.82	1988	13	2.57E-03	65.9	
26	0	1270.41	6	0	0.67	2541.00	2537	8	1.67E-03	40.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:24:38

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299014.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 26-JUN-2024 10:00:00	Acquisition date	: 30-JUL-2024 11:20:20
Sample ID	: G674299014	Sample quantity	: 77.790 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA30	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.20 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G674299014 Acquisition date : 30-JUL-2024 11:20:20

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
BA-137M	661.66	8	89.90*	2.462E+00	3.398E-02	3.405E-02	105.84
CS-137	661.66	8	85.10*	2.462E+00	3.590E-02	3.598E-02	105.84
TL-208	277.37	------	6.60	4.727E+00	------	Line Not Found	------
	583.19	8	85.00*	2.735E+00	3.145E-02	3.145E-02	178.34
	860.56	------	12.50	1.946E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.708E+00	------	Line Not Found	------
	351.06	78	12.92*	4.004E+00	1.456E+00	1.456E+00	29.84
PB-212	74.82	33	10.28	4.970E+00	6.224E-01	6.224E-01	91.12
	77.11	44	17.10	5.238E+00	4.709E-01	4.709E-01	71.09
	238.63	44	43.60*	5.234E+00	1.857E-01	1.857E-01	63.10
	300.09	------	3.30	4.478E+00	------	Line Not Found	------
PB-214	74.82	33	5.80	4.970E+00	1.103E+00	1.103E+00	91.12
	77.11	44	9.70	5.238E+00	8.302E-01	8.303E-01	71.09
	87.09	------	3.41	6.122E+00	------	Line Not Found	------
	242.00	26	7.25	5.184E+00	6.759E-01	6.760E-01	94.32
	295.22	43	18.42	4.532E+00	5.013E-01	5.013E-01	49.13
	351.93	78	35.60*	4.004E+00	5.285E-01	5.285E-01	29.84
RA-224	240.99	26	4.10*	5.184E+00	1.195E+00	1.195E+00	94.32
RA-226	74.82	33	5.80	4.970E+00	1.103E+00	1.103E+00	91.12
	77.11	44	9.70	5.238E+00	8.302E-01	8.303E-01	71.09
	87.09	------	3.41	6.122E+00	------	Line Not Found	------
	242.00	26	7.25	5.184E+00	6.759E-01	6.760E-01	94.32
	295.22	43	18.42	4.532E+00	5.013E-01	5.013E-01	49.13
	351.93	78	35.60*	4.004E+00	5.285E-01	5.285E-01	29.84
TH-228	74.82	33	10.28	4.970E+00	6.224E-01	6.224E-01	91.12
	77.11	44	17.10	5.238E+00	4.709E-01	4.709E-01	71.09
	238.63	44	43.60*	5.234E+00	1.857E-01	1.857E-01	63.10
	300.09	------	3.30	4.478E+00	------	Line Not Found	------
TH-230	74.82	33	5.80	4.970E+00	1.103E+00	1.103E+00	91.12
	77.11	44	9.70	5.238E+00	8.302E-01	8.302E-01	71.09
	87.09	------	3.41	6.122E+00	------	Line Not Found	------
	242.00	26	7.25	5.184E+00	6.759E-01	6.759E-01	94.32
	295.22	43	18.42	4.532E+00	5.013E-01	5.013E-01	49.13
	351.93	78	35.60*	4.004E+00	5.285E-01	5.285E-01	29.84
TH-234	63.29	11	3.70*	3.361E+00	8.290E-01	8.290E-01	203.14
	92.59	33	4.23	6.489E+00	1.171E+00	1.171E+00	111.78
U-234	74.82	33	5.80	4.970E+00	1.103E+00	1.103E+00	91.12
	77.11	44	9.70	5.238E+00	8.302E-01	8.302E-01	71.09
	87.09	------	3.41	6.122E+00	------	Line Not Found	------
	242.00	26	7.25	5.184E+00	6.759E-01	6.759E-01	94.32
	295.22	43	18.42	4.532E+00	5.013E-01	5.013E-01	49.13
	351.93	78	35.60*	4.004E+00	5.285E-01	5.285E-01	29.84
U-238	63.29	11	3.70*	3.361E+00	8.290E-01	8.290E-01	203.14
	92.59	33	4.23	6.489E+00	1.171E+00	1.171E+00	111.78
AM-243	43.53	------	5.90	5.764E-01	------	Line Not Found	------
	74.66	33	67.20*	4.970E+00	9.521E-02	9.521E-02	91.12
ANH-511	511.00	21	100.00*	3.038E+00	6.613E-02	6.613E-02	141.00

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:24:39.43

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299014.CNF;1  *
* Acquisition date : 30-JUL-2024 11:20:20 Sensitivity     : 3.000           *
* Detector ID      : GAM30                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.20     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:00:00 Analyst initials: RXF2            *
* Sample ID        : G674299014           Sample Quantity : 7.7790E+01 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 21-MAY-2024 06:33:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM30_CAN.CNF;18            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
BA-137M	3.405E-02	3.532E-02	8.392E-02
CS-137	3.598E-02	3.731E-02	8.865E-02
TL-208	3.145E-02	5.497E-02	8.391E-02
BI-211	1.456E+00	4.258E-01	4.167E-01
PB-212	1.857E-01	1.148E-01	1.175E-01
PB-214	5.285E-01	1.545E-01	1.515E-01
RA-224	1.195E+00	1.105E+00	1.258E+00
RA-226	5.285E-01	1.545E-01	1.515E-01
TH-228	1.857E-01	1.148E-01	1.175E-01
TH-230	5.285E-01	1.545E-01	1.515E-01
TH-234	8.290E-01	1.650E+00	2.028E+00
U-234	5.285E-01	1.545E-01	1.515E-01
U-238	8.290E-01	1.650E+00	2.028E+00
AM-243	9.521E-02	8.502E-02	9.239E-02
ANH-511	6.613E-02	9.137E-02	4.882E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-2.074E-01	3.320E-01	5.414E-01	NOT IDENT.
NA-22	-2.976E-02	3.556E-02	5.310E-02	NOT IDENT.
NA-24	0.000E+00	9.585E+14	0.000E+00	SHORT HLIF
AL-26	-1.658E-02	4.086E-02	7.632E-02	NOT IDENT.
K-40	5.596E-01	6.987E-01	1.621E+00	NOT IDENT.
SC-46	4.068E-02	3.255E-02	9.371E-02	NOT IDENT.
V-48	5.910E-02	1.657E-01	3.671E-01	NOT IDENT.
CR-51	1.558E-01	6.367E-01	1.209E+00	NOT IDENT.
MN-52	1.337E-01	2.245E+00	5.217E+00	NOT IDENT.
MN-54	3.026E-03	4.152E-02	8.451E-02	NOT IDENT.
CO-56	-1.304E-02	4.565E-02	8.822E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.911E-02	2.526E-02	4.210E-02	NOT IDENT.
CO-58	1.569E-03	3.884E-02	8.343E-02	NOT IDENT.
FE-59	2.991E-02	1.126E-01	2.514E-01	NOT IDENT.

CO-60	-2.356E-02	4.491E-02	7.973E-02	NOT IDENT.
ZN-65	-2.363E-02	9.321E-02	1.796E-01	NOT IDENT.
GE-68	3.376E-01	1.242E+00	2.780E+00	NOT IDENT.
AS-73	6.748E-01	1.069E+00	2.077E+00	NOT IDENT.
AS-74	1.978E-01	2.795E-01	5.560E-01	NOT IDENT.
SE-75	4.337E-02	5.402E-02	1.082E-01	NOT IDENT.
BR-77	0.000E+00	4.488E+03	0.000E+00	SHORT HLIF
SR-82	2.497E-01	6.178E-01	1.327E+00	NOT IDENT.
RB-83	-9.804E-02	1.079E-01	1.497E-01	FAIL ABUN
RB-84	7.161E-02	1.025E-01	2.408E-01	NOT IDENT.
KR-85	1.348E+01	8.572E+00	1.910E+01	NOT IDENT.
SR-85	8.691E-02	5.540E-02	1.234E-01	NOT IDENT.
RB-86	6.717E-01	1.433E+00	3.388E+00	NOT IDENT.
Y-88	-2.390E-03	4.804E-02	1.066E-01	NOT IDENT.
Y-91	1.172E+01	2.543E+01	5.773E+01	NOT IDENT.
NB-94	8.181E-03	3.014E-02	6.497E-02	NOT IDENT.
NB-95	-2.783E-02	6.126E-02	1.111E-01	NOT IDENT.
NB-95M	9.083E-02	1.779E-01	3.087E-01	NOT IDENT.
ZR-95	-1.688E-02	9.145E-02	1.785E-01	NOT IDENT.
NB-97	0.000E+00	1.187E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.572E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.469E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.989E+39	0.000E+00	SHORT HLIF
RH-101	-1.700E-03	3.212E-02	5.792E-02	NOT IDENT.
RH-102	-5.484E-02	4.899E-02	7.525E-02	NOT IDENT.
RU-103	-4.511E-02	6.750E-02	1.007E-01	FAIL ABUN
RH-106	2.991E-01	4.298E-01	8.750E-01	NOT IDENT.
RU-106	2.991E-01	4.298E-01	8.750E-01	NOT IDENT.
AG-108M	5.794E-02	4.722E-02	7.044E-02	FAIL ABUN
CD-109	-3.218E-01	9.371E-01	1.451E+00	NOT IDENT.
AG-110	1.066E-01	9.324E-01	1.689E+00	NOT IDENT.
AG-110M	-1.034E-02	4.184E-02	8.443E-02	NOT IDENT.
SN-113	-1.610E-02	5.862E-02	1.024E-01	NOT IDENT.
CD-115	0.000E+00	4.463E+03	0.000E+00	SHORT HLIF
SN-117M	4.812E-02	1.466E-01	2.749E-01	NOT IDENT.
SB-122	0.000E+00	2.731E+02	0.000E+00	SHORT HLIF
TE-123M	1.070E-02	3.293E-02	6.159E-02	NOT IDENT.
SB-124	-2.985E-02	5.851E-02	7.378E-02	NOT IDENT.
SB-125	1.182E-02	1.098E-01	1.961E-01	NOT IDENT.
TE-125M	5.960E+00	1.206E+01	2.299E+01	NOT IDENT.
I-126	1.089E-01	7.240E-01	1.375E+00	NOT IDENT.
SB-126	-1.634E-01	3.891E-01	7.283E-01	NOT IDENT.
SN-126	-2.755E-02	8.345E-02	1.384E-01	FAIL ABUN
SB-127	-1.037E+01	3.819E+01	7.383E+01	NOT IDENT.
I-131	4.597E-01	6.850E-01	1.290E+00	NOT IDENT.
I-132	0.000E+00	1.382E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	4.817E+01	0.000E+00	SHORT HLIF
BA-133	9.784E-03	5.566E-02	9.318E-02	NOT IDENT.
I-133	0.000E+00	2.389E+10	0.000E+00	SHORT HLIF
CS-134	1.351E-02	3.653E-02	8.193E-02	FAIL ABUN
I-135	0.000E+00	3.096E+36	0.000E+00	SHORT HLIF
CS-136	2.743E-02	3.056E-01	6.390E-01	NOT IDENT.
LA-138	-7.534E-02	6.028E-02	3.223E-02	NOT IDENT.
CE-139	-1.767E-02	3.395E-02	5.784E-02	NOT IDENT.
BA-140	6.071E-03	7.911E-01	1.485E+00	NOT IDENT.
LA-140	5.818E-02	3.095E-01	6.906E-01	NOT IDENT.
CE-141	-1.288E-01	1.020E-01	1.588E-01	NOT IDENT.
CE-143	0.000E+00	2.317E+06	0.000E+00	SHORT HLIF
CE-144	-1.075E-01	2.241E-01	3.843E-01	NOT IDENT.
PM-144	4.573E-03	4.124E-02	8.173E-02	NOT IDENT.
PR-144	3.589E-01	3.120E+00	6.186E+00	NOT IDENT.
PM-146	-6.463E-03	5.283E-02	9.431E-02	NOT IDENT.
ND-147	1.440E-01	1.764E+00	3.425E+00	NOT IDENT.
PM-147	-6.255E+02	7.007E+02	1.146E+03	NOT IDENT.
PM-149	0.000E+00	3.608E+04	0.000E+00	SHORT HLIF
EU-150	1.636E-02	3.268E-02	5.837E-02	FAIL ABUN
EU-152	1.145E-01	8.951E-02	1.855E-01	FAIL ABUN
GD-153	1.979E-02	1.041E-01	1.650E-01	NOT IDENT.
EU-154	-8.351E-02	9.977E-02	1.490E-01	NOT IDENT.
EU-155	8.805E-02	1.017E-01	2.014E-01	NOT IDENT.
TB-160	-2.818E-02	1.662E-01	3.277E-01	FAIL ABUN
HO-166M	4.143E-03	6.331E-02	1.287E-01	NOT IDENT.
TM-171	1.392E+01	2.091E+01	4.044E+01	FAIL ABUN
HF-172	-1.023E-02	1.958E-01	3.532E-01	FAIL ABUN
LU-172	7.064E-02	6.572E-02	1.661E-01	FAIL ABUN
LU-176	-4.769E-03	3.128E-02	5.551E-02	NOT IDENT.
HF-181	2.554E-02	6.460E-02	1.287E-01	FAIL ABUN
TA-182	7.845E-02	1.993E-01	4.490E-01	FAIL ABUN

RE-183	1.093E-01	2.300E-01	4.435E-01	FAIL ABUN
RE-184	4.333E-02	1.194E-01	2.972E-01	NOT IDENT.
W-188	1.936E+00	1.017E+01	1.722E+01	FAIL ABUN
IR-192	-2.812E-02	5.315E-02	8.492E-02	FAIL ABUN
HG-203	3.285E-03	5.446E-02	9.996E-02	NOT IDENT.
TL-204	4.368E+00	6.325E+00	1.025E+01	NOT IDENT.
BI-207	1.477E-02	5.380E-02	1.175E-01	FAIL ABUN
BI-210	-1.855E+00	4.511E+00	7.827E+00	NOT IDENT.
PB-210	-1.855E+00	4.511E+00	7.827E+00	NOT IDENT.
PB-211	-5.205E-01	8.225E-01	1.345E+00	NOT IDENT.
BI-212	5.095E-02	6.218E-01	1.232E+00	NOT IDENT.
BI-213	6.924E-02	9.615E-02	2.069E-01	NOT IDENT.
BI-214	2.691E-01	1.703E-01	2.852E-01	FAIL ABUN
RN-219	2.690E-01	4.413E-01	8.901E-01	NOT IDENT.
RN-222	2.691E-01	1.703E-01	2.852E-01	FAIL ABUN
RA-223	-2.072E-01	6.593E-01	1.153E+00	FAIL ABUN
AC-225	6.325E-01	2.184E+00	4.127E+00	NOT IDENT.
AC-227	-6.844E-02	2.692E-01	4.738E-01	NOT IDENT.
TH-227	-6.844E-02	2.692E-01	4.738E-01	NOT IDENT.
AC-228	2.162E-01	2.083E-01	4.793E-01	FAIL ABUN
RA-228	2.162E-01	2.083E-01	4.793E-01	FAIL ABUN
TH-229	-3.945E-01	5.858E-01	9.744E-01	NOT IDENT.
PA-231	4.849E-01	5.594E-01	1.117E+00	NOT IDENT.
TH-231	-2.072E-01	6.593E-01	1.153E+00	FAIL ABUN
TH-232	2.162E-01	2.083E-01	4.793E-01	FAIL ABUN
PA-233	-4.578E-02	7.567E-02	1.255E-01	NOT IDENT.
PA-234	1.082E-01	3.249E-01	7.056E-01	FAIL ABUN
PA-234M	-4.922E-01	6.255E+00	1.180E+01	NOT IDENT.
U-235	1.494E-01	2.243E-01	4.311E-01	FAIL ABUN
NP-237	-4.578E-02	7.567E-02	1.255E-01	NOT IDENT.
NP-238	0.000E+00	1.085E+04	0.000E+00	SHORT HLIF
NP-239	8.584E-02	3.001E-01	5.538E-01	NOT IDENT.
PU-239	1.428E+01	3.674E+02	6.641E+02	NOT IDENT.
AM-241	7.722E-02	1.579E-01	2.791E-01	NOT IDENT.
CM-243	-6.834E-02	1.000E-01	1.689E-01	NOT IDENT.
BK-247	4.307E-02	8.317E-02	1.626E-01	NOT IDENT.
CM-247	2.316E-02	4.024E-02	8.088E-02	NOT IDENT.
CF-249	1.159E-02	4.646E-02	8.836E-02	NOT IDENT.
CF-251	1.158E-01	1.292E-01	2.579E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:24:38.00

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
BA-137M	661.66	8	89.90*	2.462E+00	3.398E-02	3.405E-02	105.84
CS-137	661.66	8	85.10*	2.462E+00	3.590E-02	3.598E-02	105.84
TL-208	277.37	------	6.60	4.727E+00	------	Line Not Found	------
	583.19	8	85.00*	2.735E+00	3.145E-02	3.145E-02	178.34
	860.56	------	12.50	1.946E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	4.708E+00	------	Line Not Found	------
	351.06	78	12.92*	4.004E+00	1.456E+00	1.456E+00	29.84
PB-212	74.82	33	10.28	4.970E+00	6.224E-01	6.224E-01	91.12
	77.11	44	17.10	5.238E+00	4.709E-01	4.709E-01	71.09
	238.63	44	43.60*	5.234E+00	1.857E-01	1.857E-01	63.10
	300.09	------	3.30	4.478E+00	------	Line Not Found	------
PB-214	74.82	33	5.80	4.970E+00	1.103E+00	1.103E+00	91.12
	77.11	44	9.70	5.238E+00	8.302E-01	8.303E-01	71.09
	87.09	------	3.41	6.122E+00	------	Line Not Found	------
	242.00	26	7.25	5.184E+00	6.759E-01	6.760E-01	94.32
	295.22	43	18.42	4.532E+00	5.013E-01	5.013E-01	49.13
	351.93	78	35.60*	4.004E+00	5.285E-01	5.285E-01	29.84
RA-224	240.99	26	4.10*	5.184E+00	1.195E+00	1.195E+00	94.32
RA-226	74.82	33	5.80	4.970E+00	1.103E+00	1.103E+00	91.12
	77.11	44	9.70	5.238E+00	8.302E-01	8.303E-01	71.09
	87.09	------	3.41	6.122E+00	------	Line Not Found	------
	242.00	26	7.25	5.184E+00	6.759E-01	6.760E-01	94.32
	295.22	43	18.42	4.532E+00	5.013E-01	5.013E-01	49.13
	351.93	78	35.60*	4.004E+00	5.285E-01	5.285E-01	29.84
TH-228	74.82	33	10.28	4.970E+00	6.224E-01	6.224E-01	91.12
	77.11	44	17.10	5.238E+00	4.709E-01	4.709E-01	71.09
	238.63	44	43.60*	5.234E+00	1.857E-01	1.857E-01	63.10
	300.09	------	3.30	4.478E+00	------	Line Not Found	------
TH-230	74.82	33	5.80	4.970E+00	1.103E+00	1.103E+00	91.12
	77.11	44	9.70	5.238E+00	8.302E-01	8.302E-01	71.09
	87.09	------	3.41	6.122E+00	------	Line Not Found	------
	242.00	26	7.25	5.184E+00	6.759E-01	6.759E-01	94.32
	295.22	43	18.42	4.532E+00	5.013E-01	5.013E-01	49.13
	351.93	78	35.60*	4.004E+00	5.285E-01	5.285E-01	29.84
TH-234	63.29	11	3.70*	3.361E+00	8.290E-01	8.290E-01	203.14
	92.59	33	4.23	6.489E+00	1.171E+00	1.171E+00	111.78
U-234	74.82	33	5.80	4.970E+00	1.103E+00	1.103E+00	91.12
	77.11	44	9.70	5.238E+00	8.302E-01	8.302E-01	71.09
	87.09	------	3.41	6.122E+00	------	Line Not Found	------
	242.00	26	7.25	5.184E+00	6.759E-01	6.759E-01	94.32
	295.22	43	18.42	4.532E+00	5.013E-01	5.013E-01	49.13
	351.93	78	35.60*	4.004E+00	5.285E-01	5.285E-01	29.84
U-238	63.29	11	3.70*	3.361E+00	8.290E-01	8.290E-01	203.14
	92.59	33	4.23	6.489E+00	1.171E+00	1.171E+00	111.78
AM-243	43.53	------	5.90	5.764E-01	------	Line Not Found	------
	74.66	33	67.20*	4.970E+00	9.521E-02	9.521E-02	91.12
ANH-511	511.00	21	100.00*	3.038E+00	6.613E-02	6.613E-02	141.00

Flag: "*" = Keyline

Sample ID : G674299014 Acquisition date : 30-JUL-2024 11:20:20

Total number of lines in spectrum 26
Number of unidentified lines 3
Number of lines tentatively identified by NID 23 88.46%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BA-137M	30.08Y	1.00	3.398E-02	3.405E-02	3.604E-02	105.84	
CS-137	30.08Y	1.00	3.590E-02	3.598E-02	3.808E-02	105.84	
TL-208	1.41E+10Y	1.00	3.145E-02	3.145E-02	5.609E-02	178.34	
BI-211	7.04E+08Y	1.00	1.456E+00	1.456E+00	0.434E+00	29.84	
PB-212	1.41E+10Y	1.00	1.857E-01	1.857E-01	1.172E-01	63.10	
PB-214	1600.00Y	1.00	5.285E-01	5.285E-01	1.577E-01	29.84	
RA-224	1.41E+10Y	1.00	1.195E+00	1.195E+00	1.127E+00	94.32	
RA-226	1600.00Y	1.00	5.285E-01	5.285E-01	1.577E-01	29.84	
TH-228	1.41E+10Y	1.00	1.857E-01	1.857E-01	1.172E-01	63.10	
TH-230	7.54E+04Y	1.00	5.285E-01	5.285E-01	1.577E-01	29.84	
TH-234	4.47E+09Y	1.00	8.290E-01	8.290E-01	16.84E-01	203.14	
U-234	2.45E+05Y	1.00	5.285E-01	5.285E-01	1.577E-01	29.84	
U-238	4.47E+09Y	1.00	8.290E-01	8.290E-01	16.84E-01	203.14	
AM-243	7370.00Y	1.00	9.521E-02	9.521E-02	8.676E-02	91.12	
ANH-511	1.00E+09Y	1.00	6.613E-02	6.613E-02	9.324E-02	141.00	
			---	---			
	Total Activity :		7.057E+00	7.057E+00			

Grand Total Activity : 7.057E+00 7.057E+00

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299014 Acquisition date : 30-JUL-2024 11:20:20

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	66.93	13	26	1.29	134.14	130	7	4.21E-03	****	3.89E+00	T
0	186.24	2	60	1.65	372.74	366	12	6.21E-04	****	6.10E+00	T
0	338.34	39	16	5.31	676.95	669	16	1.23E-02	53.9	4.12E+00	T
0	346.82	4	17	1.15	693.90	687	9	1.15E-03	****	4.05E+00	T
1	360.87	12	11	1.59	722.00	697	28	3.74E-03	94.3	3.93E+00	
0	433.44	19	12	3.90	867.14	862	13	5.83E-03	83.2	3.44E+00	T
0	491.71	12	7	0.88	983.67	978	11	3.78E-03	98.2	3.13E+00	T
0	553.17	10	18	6.35	1106.59	1096	16	3.04E-03	****	2.85E+00	T
3	566.10	10	3	2.28	1132.45	1131	12	3.10E-03	56.6	2.80E+00	
3	569.86	11	2	1.87	1139.96	1131	12	3.26E-03	97.3	2.79E+00	T
0	609.44	33	18	1.65	1219.12	1214	13	1.03E-02	64.6	2.64E+00	T
0	964.82	6	6	1.12	1929.84	1923	9	1.88E-03	****	1.75E+00	T
0	968.17	17	0	3.20	1936.55	1932	10	5.30E-03	48.7	1.74E+00	T
0	998.81	8	6	1.91	1997.82	1988	13	2.57E-03	****	1.69E+00	
0	1270.41	6	0	0.67	2541.00	2537	8	1.67E-03	81.6	1.35E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:24:49.17

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299014.CNF;1  *
* Acquisition date : 30-JUL-2024 11:20:20 Sensitivity     : 3.000           *
* Detector ID      : GAM30                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.20     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:00:00 Nuclide Library : SOLID           *
* Sample ID        : G674299014           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 7.7790E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 21-MAY-2024 06:33:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM30_CAN.CNF;18            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
BA-137M	3.619E-02
CS-137	3.823E-02
TL-208	3.648E-02
BI-211	1.839E-01
PB-212	5.321E-02
PB-214	6.688E-02
RA-224	5.699E-01
RA-226	6.688E-02
TH-228	5.321E-02
TH-230	6.688E-02
TH-234	9.133E-01
U-234	6.688E-02
U-238	9.133E-01
AM-243	4.243E-02
ANH-511	2.022E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	2.113E-01	NOT IDENT.
NA-22	1.679E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.586E-02	NOT IDENT.
K-40	7.108E-01	NOT IDENT.
SC-46	3.787E-02	NOT IDENT.
V-48	1.508E-01	NOT IDENT.
CR-51	5.345E-01	NOT IDENT.
MN-52	1.888E+00	NOT IDENT.
MN-54	3.537E-02	NOT IDENT.
CO-56	3.532E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.879E-02	NOT IDENT.
CO-58	3.299E-02	NOT IDENT.
FE-59	1.008E-01	NOT IDENT.
CO-60	2.985E-02	NOT IDENT.

ZN-65	7.152E-02	NOT IDENT.
GE-68	1.115E+00	NOT IDENT.
AS-73	9.485E-01	NOT IDENT.
AS-74	2.477E-01	NOT IDENT.
SE-75	4.875E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.628E-01	NOT IDENT.
RB-83	6.244E-02	FAIL ABUN
RB-84	1.004E-01	NOT IDENT.
KR-85	8.579E+00	NOT IDENT.
SR-85	5.542E-02	NOT IDENT.
RB-86	1.360E+00	NOT IDENT.
Y-88	3.777E-02	NOT IDENT.
Y-91	2.367E+01	NOT IDENT.
NB-94	2.702E-02	NOT IDENT.
NB-95	4.703E-02	NOT IDENT.
NB-95M	1.404E-01	NOT IDENT.
ZR-95	7.373E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.630E-02	NOT IDENT.
RH-102	2.857E-02	NOT IDENT.
RU-103	4.216E-02	FAIL ABUN
RH-106	3.848E-01	NOT IDENT.
RU-106	3.848E-01	NOT IDENT.
AG-108M	3.114E-02	FAIL ABUN
CD-109	6.679E-01	NOT IDENT.
AG-110	7.186E-01	NOT IDENT.
AG-110M	3.202E-02	NOT IDENT.
SN-113	4.472E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.250E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.804E-02	NOT IDENT.
SB-124	0.000E+00	NOT IDENT.
SB-125	8.551E-02	NOT IDENT.
TE-125M	1.050E+01	NOT IDENT.
I-126	5.889E-01	NOT IDENT.
SB-126	2.939E-01	NOT IDENT.
SN-126	6.373E-02	FAIL ABUN
SB-127	3.021E+01	NOT IDENT.
I-131	5.694E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.142E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	3.359E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.599E-01	NOT IDENT.
LA-138	0.000E+00	NOT IDENT.
CE-139	2.604E-02	NOT IDENT.
BA-140	6.287E-01	NOT IDENT.
LA-140	2.691E-01	NOT IDENT.
CE-141	7.152E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.746E-01	NOT IDENT.
PM-144	3.506E-02	NOT IDENT.
PR-144	2.654E+00	NOT IDENT.
PM-146	4.122E-02	NOT IDENT.
ND-147	1.429E+00	NOT IDENT.
PM-147	5.095E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.601E-02	FAIL ABUN
EU-152	8.097E-02	FAIL ABUN
GD-153	7.542E-02	NOT IDENT.
EU-154	4.710E-02	NOT IDENT.
EU-155	9.206E-02	NOT IDENT.
TB-160	1.330E-01	FAIL ABUN
HO-166M	5.414E-02	NOT IDENT.
TM-171	1.856E+01	FAIL ABUN
HF-172	1.604E-01	FAIL ABUN
LU-172	6.949E-02	FAIL ABUN
LU-176	2.469E-02	NOT IDENT.
HF-181	5.570E-02	FAIL ABUN
TA-182	1.829E-01	FAIL ABUN
RE-183	2.015E-01	FAIL ABUN

RE-184	1.134E-01	NOT IDENT.
W-188	7.647E+00	FAIL ABUN
IR-192	3.758E-02	FAIL ABUN
HG-203	4.451E-02	NOT IDENT.
TL-204	4.761E+00	NOT IDENT.
BI-207	4.798E-02	FAIL ABUN
BI-210	3.581E+00	NOT IDENT.
PB-210	3.581E+00	NOT IDENT.
PB-211	5.799E-01	NOT IDENT.
BI-212	5.317E-01	NOT IDENT.
BI-213	8.908E-02	NOT IDENT.
BI-214	1.320E-01	FAIL ABUN
RN-219	3.923E-01	NOT IDENT.
RN-222	1.320E-01	FAIL ABUN
RA-223	5.020E-01	FAIL ABUN
AC-225	1.852E+00	NOT IDENT.
AC-227	2.102E-01	NOT IDENT.
TH-227	2.102E-01	NOT IDENT.
AC-228	2.128E-01	FAIL ABUN
RA-228	2.128E-01	FAIL ABUN
TH-229	4.393E-01	NOT IDENT.
PA-231	5.054E-01	NOT IDENT.
TH-231	5.020E-01	FAIL ABUN
TH-232	2.128E-01	FAIL ABUN
PA-233	5.521E-02	NOT IDENT.
PA-234	2.930E-01	FAIL ABUN
PA-234M	4.997E+00	NOT IDENT.
U-235	1.989E-01	FAIL ABUN
NP-237	5.521E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	2.546E-01	NOT IDENT.
PU-239	3.038E+02	NOT IDENT.
AM-241	1.270E-01	NOT IDENT.
CM-243	7.575E-02	NOT IDENT.
BK-247	7.268E-02	NOT IDENT.
CM-247	3.560E-02	NOT IDENT.
CF-249	3.903E-02	NOT IDENT.
CF-251	1.173E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:24:53.13

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299014.CNF;1  *
* Acquisition date : 30-JUL-2024 11:20:20 Sensitivity     : 3.000           *
* Detector ID      : GAM30                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.20     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:00:00 Nuclide Library : SOLID           *
* Sample ID        : G674299014           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 7.7790E+01 GRAM *
*                                         Quantity Err(%) : 1.2855E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 21-MAY-2024 06:33:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM30_CAN.CNF;18            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
BA-137M	3.405E-02	3.543E-02	3.543E-02
CS-137	3.598E-02	3.743E-02	3.743E-02
TL-208	3.145E-02	5.504E-02	5.504E-02
BI-211	1.456E+00	4.436E-01	4.436E-01
PB-212	1.857E-01	1.159E-01	1.159E-01
PB-214	5.285E-01	1.608E-01	1.608E-01
RA-224	1.195E+00	1.110E+00	1.110E+00
RA-226	5.285E-01	1.608E-01	1.608E-01
TH-228	1.857E-01	1.159E-01	1.159E-01
TH-230	5.285E-01	1.607E-01	1.607E-01
TH-234	8.290E-01	1.662E+00	1.662E+00
U-234	5.285E-01	1.607E-01	1.607E-01
U-238	8.290E-01	1.662E+00	1.662E+00
AM-243	9.521E-02	8.545E-02	8.545E-02
ANH-511	6.613E-02	9.155E-02	9.155E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-2.074E-01	3.325E-01	3.454E-01	NOT IDENT.
NA-22	-2.976E-02	3.568E-02	3.812E-02	NOT IDENT.
NA-24	-1.635E+13	9.585E+14	9.585E+14	SHORT HLIF
AL-26	-1.658E-02	4.088E-02	4.156E-02	NOT IDENT.
K-40	5.596E-01	7.010E-01	7.450E-01	NOT IDENT.
SC-46	4.068E-02	3.292E-02	3.768E-02	NOT IDENT.
V-48	5.910E-02	1.659E-01	1.680E-01	NOT IDENT.
CR-51	1.558E-01	6.368E-01	6.407E-01	NOT IDENT.
MN-52	1.337E-01	2.245E+00	2.245E+00	NOT IDENT.
MN-54	3.026E-03	4.152E-02	4.154E-02	NOT IDENT.
CO-56	-1.304E-02	4.568E-02	4.605E-02	NOT IDENT.
MN-56	-1.000E+41	3.583E+41	0.000E+00	SHORT HLIF
CO-57	-1.911E-02	2.529E-02	2.672E-02	NOT IDENT.
CO-58	1.569E-03	3.884E-02	3.884E-02	NOT IDENT.
FE-59	2.991E-02	1.126E-01	1.134E-01	NOT IDENT.

CO-60	-2.356E-02	4.498E-02	4.621E-02	NOT IDENT.
ZN-65	-2.363E-02	9.324E-02	9.385E-02	NOT IDENT.
GE-68	3.376E-01	1.243E+00	1.252E+00	NOT IDENT.
AS-73	6.748E-01	1.079E+00	1.121E+00	NOT IDENT.
AS-74	1.978E-01	2.803E-01	2.942E-01	NOT IDENT.
SE-75	4.337E-02	5.415E-02	5.757E-02	NOT IDENT.
BR-77	7.258E+03	8.453E+03	9.064E+03	SHORT HLIF
SR-82	2.497E-01	6.183E-01	6.285E-01	NOT IDENT.
RB-83	-9.804E-02	1.090E-01	1.176E-01	FAIL ABUN
RB-84	7.161E-02	1.029E-01	1.078E-01	NOT IDENT.
KR-85	1.348E+01	8.649E+00	1.057E+01	NOT IDENT.
SR-85	8.691E-02	5.589E-02	6.825E-02	NOT IDENT.
RB-86	6.717E-01	1.435E+00	1.467E+00	NOT IDENT.
Y-88	-2.390E-03	4.804E-02	4.805E-02	NOT IDENT.
Y-91	1.172E+01	2.545E+01	2.599E+01	NOT IDENT.
NB-94	8.181E-03	3.015E-02	3.038E-02	NOT IDENT.
NB-95	-2.783E-02	6.132E-02	6.259E-02	NOT IDENT.
NB-95M	9.083E-02	1.781E-01	1.828E-01	NOT IDENT.
ZR-95	-1.688E-02	9.147E-02	9.178E-02	NOT IDENT.
NB-97	1.000E+41	1.190E+41	0.000E+00	SHORT HLIF
ZR-97	8.468E+13	2.573E+14	2.602E+14	SHORT HLIF
MO-99	-1.059E+03	1.473E+03	1.548E+03	SHORT HLIF
TC-99M	-8.732E+38	1.991E+39	0.000E+00	SHORT HLIF
RH-101	-1.700E-03	3.212E-02	3.213E-02	NOT IDENT.
RH-102	-5.484E-02	4.936E-02	5.520E-02	NOT IDENT.
RU-103	-4.511E-02	6.762E-02	7.061E-02	FAIL ABUN
RH-106	2.991E-01	4.308E-01	4.514E-01	NOT IDENT.
RU-106	2.991E-01	4.308E-01	4.514E-01	NOT IDENT.
AG-108M	5.794E-02	4.747E-02	5.418E-02	FAIL ABUN
CD-109	-3.218E-01	9.377E-01	9.489E-01	NOT IDENT.
AG-110	1.066E-01	9.324E-01	9.337E-01	NOT IDENT.
AG-110M	-1.034E-02	4.186E-02	4.212E-02	NOT IDENT.
SN-113	-1.610E-02	5.863E-02	5.908E-02	NOT IDENT.
CD-115	1.666E+03	4.466E+03	4.528E+03	SHORT HLIF
SN-117M	4.812E-02	1.467E-01	1.483E-01	NOT IDENT.
SB-122	7.149E+00	2.731E+02	2.731E+02	SHORT HLIF
TE-123M	1.070E-02	3.294E-02	3.329E-02	NOT IDENT.
SB-124	-2.985E-02	5.857E-02	6.009E-02	NOT IDENT.
SB-125	1.182E-02	1.098E-01	1.099E-01	NOT IDENT.
TE-125M	5.960E+00	1.207E+01	1.236E+01	NOT IDENT.
I-126	1.089E-01	7.241E-01	7.257E-01	NOT IDENT.
SB-126	-1.634E-01	3.897E-01	3.966E-01	NOT IDENT.
SN-126	-2.755E-02	8.349E-02	8.441E-02	FAIL ABUN
SB-127	-1.037E+01	3.824E+01	3.852E+01	NOT IDENT.
I-131	4.597E-01	6.861E-01	7.167E-01	NOT IDENT.
I-132	-1.000E+41	2.516E+41	0.000E+00	SHORT HLIF
TE-132	-3.848E+00	4.817E+01	4.820E+01	SHORT HLIF
BA-133	9.784E-03	5.566E-02	5.584E-02	NOT IDENT.
I-133	1.794E+09	2.389E+10	2.391E+10	SHORT HLIF
CS-134	1.351E-02	3.655E-02	3.706E-02	FAIL ABUN
I-135	-1.646E+34	3.096E+36	0.000E+00	SHORT HLIF
CS-136	2.743E-02	3.056E-01	3.058E-01	NOT IDENT.
LA-138	-7.534E-02	6.073E-02	6.958E-02	NOT IDENT.
CE-139	-1.767E-02	3.415E-02	3.507E-02	NOT IDENT.
BA-140	6.071E-03	7.911E-01	7.912E-01	NOT IDENT.
LA-140	5.818E-02	3.096E-01	3.107E-01	NOT IDENT.
CE-141	-1.288E-01	1.024E-01	1.177E-01	NOT IDENT.
CE-143	5.947E+05	2.318E+06	2.333E+06	SHORT HLIF
CE-144	-1.075E-01	2.242E-01	2.294E-01	NOT IDENT.
PM-144	4.573E-03	4.124E-02	4.129E-02	NOT IDENT.
PR-144	3.589E-01	3.120E+00	3.124E+00	NOT IDENT.
PM-146	-6.463E-03	5.283E-02	5.291E-02	NOT IDENT.
ND-147	1.440E-01	1.764E+00	1.765E+00	NOT IDENT.
PM-147	-6.255E+02	7.021E+02	7.566E+02	NOT IDENT.
PM-149	1.251E+04	3.613E+04	3.657E+04	SHORT HLIF
EU-150	1.636E-02	3.271E-02	3.353E-02	FAIL ABUN
EU-152	1.145E-01	9.012E-02	1.039E-01	FAIL ABUN
GD-153	1.979E-02	1.041E-01	1.045E-01	NOT IDENT.
EU-154	-8.351E-02	1.001E-01	1.070E-01	NOT IDENT.
EU-155	8.805E-02	1.020E-01	1.095E-01	NOT IDENT.
TB-160	-2.818E-02	1.662E-01	1.667E-01	FAIL ABUN
HO-166M	4.143E-03	6.331E-02	6.334E-02	NOT IDENT.
TM-171	1.392E+01	2.098E+01	2.190E+01	FAIL ABUN
HF-172	-1.023E-02	1.958E-01	1.958E-01	FAIL ABUN
LU-172	7.064E-02	6.648E-02	7.371E-02	FAIL ABUN
LU-176	-4.769E-03	3.128E-02	3.135E-02	NOT IDENT.
HF-181	2.554E-02	6.464E-02	6.566E-02	FAIL ABUN
TA-182	7.845E-02	1.994E-01	2.025E-01	FAIL ABUN

RE-183	1.093E-01	2.305E-01	2.357E-01	FAIL ABUN
RE-184	4.333E-02	1.196E-01	1.212E-01	NOT IDENT.
W-188	1.936E+00	1.018E+01	1.021E+01	FAIL ABUN
IR-192	-2.812E-02	5.321E-02	5.470E-02	FAIL ABUN
HG-203	3.285E-03	5.446E-02	5.448E-02	NOT IDENT.
TL-204	4.368E+00	6.343E+00	6.641E+00	NOT IDENT.
BI-207	1.477E-02	5.382E-02	5.423E-02	FAIL ABUN
BI-210	-1.855E+00	4.515E+00	4.592E+00	NOT IDENT.
PB-210	-1.855E+00	4.515E+00	4.592E+00	NOT IDENT.
PB-211	-5.205E-01	8.238E-01	8.565E-01	NOT IDENT.
BI-212	5.095E-02	6.218E-01	6.222E-01	NOT IDENT.
BI-213	6.924E-02	9.632E-02	1.013E-01	NOT IDENT.
BI-214	2.691E-01	1.718E-01	2.103E-01	FAIL ABUN
RN-219	2.690E-01	4.430E-01	4.593E-01	NOT IDENT.
RN-222	2.691E-01	1.718E-01	2.103E-01	FAIL ABUN
RA-223	-2.072E-01	6.596E-01	6.661E-01	FAIL ABUN
AC-225	6.325E-01	2.185E+00	2.204E+00	NOT IDENT.
AC-227	-6.844E-02	2.694E-01	2.712E-01	NOT IDENT.
TH-227	-6.844E-02	2.694E-01	2.712E-01	NOT IDENT.
AC-228	2.162E-01	2.101E-01	2.316E-01	FAIL ABUN
RA-228	2.162E-01	2.101E-01	2.316E-01	FAIL ABUN
TH-229	-3.945E-01	5.867E-01	6.130E-01	NOT IDENT.
PA-231	4.849E-01	5.700E-01	6.105E-01	NOT IDENT.
TH-231	-2.072E-01	6.596E-01	6.661E-01	FAIL ABUN
TH-232	2.162E-01	2.101E-01	2.316E-01	FAIL ABUN
PA-233	-4.578E-02	7.577E-02	7.853E-02	NOT IDENT.
PA-234	1.082E-01	3.479E-01	3.513E-01	FAIL ABUN
PA-234M	-4.922E-01	6.256E+00	6.259E+00	NOT IDENT.
U-235	1.494E-01	2.246E-01	2.345E-01	FAIL ABUN
NP-237	-4.578E-02	7.577E-02	7.853E-02	NOT IDENT.
NP-238	2.608E+03	1.085E+04	1.092E+04	SHORT HLIF
NP-239	8.584E-02	3.002E-01	3.027E-01	NOT IDENT.
PU-239	1.428E+01	3.674E+02	3.675E+02	NOT IDENT.
AM-241	7.722E-02	1.582E-01	1.620E-01	NOT IDENT.
CM-243	-6.834E-02	1.003E-01	1.049E-01	NOT IDENT.
BK-247	4.307E-02	8.367E-02	8.590E-02	NOT IDENT.
CM-247	2.316E-02	4.046E-02	4.178E-02	NOT IDENT.
CF-249	1.159E-02	4.648E-02	4.677E-02	NOT IDENT.
CF-251	1.158E-01	1.301E-01	1.402E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                          Charleston, SC 29407                             *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	35.7389	85.43	44.8058	131.20	43.8932
45.60	36.7037	86.55	52.0344	133.02	41.1511
46.54	38.4641	86.79	49.3550	133.52	41.1672
49.72	0.0000	86.94	49.3629	136.00	27.1857
51.35	37.8679	87.09	51.1657	136.47	26.2580
51.87	33.5888	87.57	51.7295	140.51	0.0000
52.39	31.0272	88.03	52.5622	143.76	23.5761
52.97	27.6016	88.34	59.3197	144.24	33.0186
53.44	27.6191	88.47	51.2373	145.44	49.1007
54.07	31.9618	89.96	37.8104	152.43	27.5250
57.36	0.0000	90.64	31.0796	153.25	29.4406
57.53	26.9016	91.11	41.9096	154.21	30.4115
57.98	26.0489	92.59	46.0325	156.02	32.3547
59.27	28.7013	93.35	46.0670	158.56	28.6002
59.32	24.7891	94.56	46.1212	159.00	29.5626
59.54	26.1011	94.65	46.1254	162.33	28.6765
60.96	40.5293	94.67	46.1261	162.66	21.9902
61.17	40.5399	94.87	46.1352	163.33	25.8267
62.93	27.5227	97.43	32.6462	165.86	35.4546
63.29	27.5349	98.43	34.0389	176.31	24.1264
63.58	27.5446	98.44	34.0393	176.60	21.2353
64.28	10.5022	99.53	33.8018	177.52	21.2483
66.73	34.2329	100.11	36.3658	181.07	0.0000
67.24	40.8410	102.03	30.0556	181.52	23.2412
67.68	43.4986	103.18	35.5580	184.41	28.1359
67.75	43.5021	103.37	35.5643	185.72	28.1598
68.89	40.4805	105.21	23.7496	193.51	39.0344
69.67	34.3515	105.31	24.6653	197.03	29.3405
70.82	42.3350	106.12	26.5118	198.01	28.3796
70.83	42.3354	106.47	30.1782	201.83	35.3130
72.81	55.6912	109.28	29.3377	203.43	30.4384
72.87	55.6951	111.00	39.4827	205.31	26.5410
74.66	42.5198	111.76	0.0000	210.85	20.7120
74.82	42.5273	114.06	33.1439	215.65	20.7710
74.97	42.5344	116.30	0.0000	218.12	21.7914
77.11	42.6350	116.74	38.7574	222.11	24.8205
78.74	42.7107	119.76	34.2313	227.09	28.8740
79.69	42.7544	121.12	34.2705	227.38	26.8871
80.03	37.4236	121.22	34.2733	228.16	0.0000
80.12	37.4274	121.78	37.0697	228.18	28.8920
80.19	37.4302	122.06	34.2974	235.69	25.5125
80.57	45.4693	122.92	29.6839	235.96	25.5163
81.00	53.5181	123.07	25.0488	238.63	31.0656
81.07	53.5220	123.68	25.0616	238.98	0.0000
81.75	54.8995	125.81	33.4741	240.99	31.1060
82.47	48.2412	127.23	33.5127	242.00	31.1233
83.79	45.0874	127.91	35.3942	244.70	28.6554
84.00	42.9500	129.30	38.2315	252.40	16.1540

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.80	15.1477	351.06	19.0496	569.33	6.8750
254.15	0.0000	351.93	19.0565	569.50	8.5944
256.23	24.2803	355.39	0.0000	569.70	8.5950
260.90	0.0000	356.01	19.0902	583.19	14.9604
264.66	17.2743	364.49	11.1759	584.27	8.6337
264.80	17.2757	366.42	0.0000	595.83	13.8628
265.00	17.2774	372.51	17.0872	600.60	15.0397
269.46	17.3172	375.05	17.1051	602.52	0.0000
270.03	20.3788	377.52	14.9821	604.72	15.6374
271.23	19.3719	383.85	10.7292	607.14	6.9551
273.65	19.3954	388.16	13.9722	609.32	15.0789
276.40	16.3558	388.63	12.9001	610.33	15.0836
277.37	21.4777	391.69	19.3740	614.28	8.7122
277.60	19.4341	400.66	14.0423	618.01	12.7922
278.00	21.4841	401.81	11.8874	620.36	13.9648
279.20	21.4973	402.40	11.8900	621.93	10.4784
279.54	21.5007	404.85	20.5570	630.19	0.0000
279.70	17.4067	410.95	11.9299	631.29	11.3825
280.46	15.3647	413.71	16.2854	633.25	5.2566
283.69	19.4932	414.70	18.4641	634.78	4.3825
284.31	23.6041	423.72	11.9887	635.95	4.3839
285.41	15.4025	427.09	8.7301	636.99	7.8934
285.90	0.0000	427.87	14.4090	657.50	9.8807
287.50	22.6136	433.94	8.7528	657.76	9.8813
290.67	18.5306	439.40	6.5780	657.90	0.0000
293.27	0.0000	440.45	6.5806	661.66	13.2486
295.22	19.6034	453.88	17.6348	664.57	0.0000
295.96	19.6104	463.37	12.1655	666.33	10.6128
298.58	32.5523	468.07	19.9409	666.50	8.0865
299.98	27.9207	473.00	12.2074	667.71	0.0000
300.09	20.1661	475.06	7.7740	677.62	7.0977
300.13	20.1665	476.78	13.3350	685.70	8.8919
301.36	18.6262	477.60	8.8926	692.65	0.0000
302.85	26.9236	482.18	10.0203	695.00	6.2401
304.50	27.9811	487.02	8.3643	696.49	8.9182
304.85	24.8760	492.35	0.0000	696.51	8.9182
306.78	23.8610	497.08	16.1150	697.00	10.7032
308.46	25.9567	505.52	11.7845	697.30	10.7040
311.90	25.9984	507.63	0.0000	697.49	8.9206
316.51	22.9274	511.00	7.8709	702.65	6.2532
319.41	19.8272	514.00	7.8787	706.68	7.1543
320.08	16.7018	514.00	7.8787	711.68	8.9548
321.04	21.9305	520.40	18.9492	720.70	8.9764
323.87	18.8218	520.69	0.0000	721.93	0.0000
325.23	20.9261	522.65	0.0000	722.78	10.7776
328.76	15.7196	527.90	0.0000	722.91	8.9816
333.37	22.0527	528.26	7.9160	723.31	8.9825
333.97	15.7562	529.59	10.1821	724.19	9.8831
334.37	20.4867	529.87	0.0000	727.33	12.5888
338.28	13.8921	531.02	7.9231	733.00	8.1052
338.32	13.8923	537.26	10.2078	735.93	8.1112
340.48	13.9055	546.56	0.0000	737.46	7.2129
340.55	3.1605	552.55	7.9787	739.50	0.0000
344.28	3.1656	563.25	8.5776	744.23	6.3224
345.93	12.6716	564.24	0.0000	747.24	6.3273

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
748.06	5.4247	954.55	0.0000	1408.01	5.1721
752.31	9.9560	962.31	6.0873	1434.09	2.0778
753.82	5.4327	964.08	7.6121	1435.80	6.2351
756.73	9.0613	966.17	0.0000	1457.56	0.0000
756.80	9.0616	968.97	3.0480	1460.82	4.1736
763.94	11.8015	983.53	4.7775	1489.16	3.1443
765.81	14.5317	984.45	0.0000	1505.03	5.2536
766.42	11.8090	996.26	10.5391	1584.12	3.1910
766.84	7.2678	1001.03	6.1379	1596.21	3.1967
772.60	0.0000	1002.74	10.7454	1620.50	0.0000
776.52	7.2856	1004.73	12.4775	1621.92	3.2091
777.92	0.0000	1021.30	0.0000	1678.03	0.0000
778.90	7.2900	1025.87	0.0000	1690.97	1.0806
783.70	6.3865	1028.54	0.0000	1750.46	0.0000
788.74	8.2216	1037.84	1.9329	1764.49	2.1837
792.07	4.5714	1038.76	0.0000	1770.23	3.2783
795.86	4.5757	1046.59	7.7456	1771.35	2.1859
801.95	8.2485	1048.07	5.8107	1791.20	0.0000
810.06	4.5917	1049.04	2.9061	1808.65	3.2957
810.29	4.5920	1050.41	5.8136	1810.72	0.0000
810.45	2.7553	1063.66	4.8578	1836.06	2.2053
810.76	4.5924	1077.00	2.9225		
815.77	8.2766	1077.34	3.8970		
818.51	4.6011	1085.87	6.8312		
832.01	1.8465	1093.63	1.9548		
834.85	8.3150	1099.45	3.9141		
835.71	7.3926	1112.07	4.9048		
836.80	0.0000	1112.84	2.9432		
846.75	0.0000	1115.54	6.8714		
846.77	7.4121	1120.29	4.9127		
856.80	6.5010	1120.55	4.9127		
860.56	7.4363	1121.30	5.8964		
871.09	9.3182	1129.67	3.9373		
873.19	4.6614	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	7.4690	1173.23	5.9553		
880.51	4.6693	1177.95	3.9736		
881.60	3.7365	1189.05	5.9729		
883.24	3.7378	1204.77	3.9937		
884.68	4.6738	1221.41	4.0059		
889.28	0.0000	1231.02	5.0162		
894.76	7.4954	1235.36	4.0161		
898.04	7.5010	1238.28	1.0045		
900.72	6.5674	1260.41	0.0000		
903.28	1.8775	1271.87	1.6170		
911.20	3.7617	1274.44	5.0552		
912.08	12.2280	1274.54	5.0555		
923.98	0.0000	1291.59	8.1133		
926.50	5.6620	1298.22	0.0000		
929.11	7.5537	1312.11	0.0000		
935.54	4.7278	1332.49	6.1282		
937.49	7.5679	1362.66	0.0000		
944.13	9.4736	1365.19	4.1084		
946.00	5.6865	1368.63	0.0000		
949.00	4.7418	1384.29	3.0912		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:25:19.74

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299015.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM40.CNF;522
                                        Background date  : 28-JUL-2024 11:31:12
Sample date      : 26-JUN-2024 10:05:00 Acquisition date : 30-JUL-2024 11:20:47
Sample ID        : G674299015           Sample quantity  : 8.95100E+01 GRAM
Detector name    : GAM40                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.28  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2636542              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	64.12*	6	47	0.61	129.31	125	6	1.64E-03	196.9	
2	4	83.39	17	53	1.39	167.88	162	17	4.77E-03	77.5	1.20E+00
3	4	87.10*	37	39	1.40	175.31	162	17	1.02E-02	37.1	
4	0	92.98*	13	119	1.31	187.08	182	13	3.62E-03	185.3	
5	0	186.41*	28	51	0.97	374.14	370	9	7.74E-03	53.5	
6	4	238.57*	65	42	1.32	478.56	474	18	1.80E-02	23.1	2.43E+00
7	4	241.97	20	44	1.73	485.36	474	18	5.45E-03	76.2	
8	0	295.39	64	25	0.92	592.28	587	9	1.78E-02	18.8	
9	0	352.46*	88	21	1.60	706.51	701	15	2.45E-02	16.4	
10	0	383.60	7	4	1.05	768.85	764	7	1.81E-03	61.8	
11	0	394.19	10	5	1.51	790.03	787	6	2.64E-03	47.9	
12	0	489.98	5	15	1.05	981.73	976	8	1.52E-03	126.5	
13	0	609.30*	70	3	1.29	1220.49	1215	11	1.94E-02	13.8	
14	0	619.55	8	7	0.47	1241.00	1236	7	2.22E-03	65.3	
15	0	656.16	10	7	3.37	1314.24	1308	10	2.65E-03	62.7	
16	0	661.92*	12	2	2.28	1325.77	1321	9	3.22E-03	41.4	
17	5	738.85	9	2	1.51	1479.66	1478	10	2.46E-03	32.2	1.22E+00
18	5	741.52	9	2	1.52	1485.01	1478	10	2.60E-03	38.7	
19	0	763.64*	10	9	0.56	1529.26	1521	13	2.74E-03	74.7	
20	0	848.61	9	3	2.23	1699.22	1693	10	2.60E-03	45.6	
21	0	865.37	6	7	0.93	1732.74	1724	10	1.59E-03	98.3	
22	0	912.68*	15	12	1.88	1827.37	1818	11	4.16E-03	52.7	
23	0	916.39	12	2	2.37	1834.79	1831	8	3.29E-03	35.8	
24	0	969.74*	15	3	1.72	1941.49	1936	12	4.29E-03	37.4	
25	0	1044.38	10	3	1.00	2090.75	2083	11	2.75E-03	45.9	
26	0	1120.57	10	8	1.67	2243.10	2237	11	2.87E-03	61.7	
27	0	1461.04*	35	0	1.88	2923.71	2918	10	9.78E-03	18.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:25:21

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299015.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 10:05:00 Acquisition date : 30-JUL-2024 11:20:47
Sample ID        : G674299015           Sample quantity  : 89.510 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA40              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.28   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Sample ID : G674299015 Acquisition date : 30-JUL-2024 11:20:47

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	33	10.66*	9.685E-01	2.654E+00	2.654E+00	36.81
CD-109	88.03	34	3.70*	4.282E+00	1.791E+00	1.885E+00	74.26
AG-110	657.50	9	4.50*	1.989E+00	8.259E-01	9.078E-01	125.49
SN-126	64.28	5	9.60	1.838E+00	2.570E-01	2.570E-01	393.89
	86.94	34	8.90	4.282E+00	7.447E-01	7.447E-01	74.26
	87.57	34	37.00*	4.282E+00	1.791E-01	1.791E-01	74.26
BA-137M	661.66	11	89.90*	1.975E+00	5.070E-02	5.081E-02	82.77
CS-137	661.66	11	85.10*	1.975E+00	5.356E-02	5.367E-02	82.77
BI-211	72.87	------	1.23	2.870E+00	------	Line Not Found	------
	351.06	82	12.92*	3.214E+00	1.647E+00	1.647E+00	32.88
BI-214	609.32	65	45.49*	2.115E+00	5.640E-01	5.641E-01	27.58
	1120.29	10	14.92	1.224E+00	4.397E-01	4.398E-01	123.46
	1764.49	------	15.30	8.540E-01	------	Line Not Found	------
PB-214	74.82	------	5.80	3.091E+00	------	Line Not Found	------
	77.11	------	9.70	3.341E+00	------	Line Not Found	------
	87.09	34	3.41	4.282E+00	1.944E+00	1.944E+00	74.26
	242.00	18	7.25	4.221E+00	4.959E-01	4.959E-01	152.46
	295.22	59	18.42	3.658E+00	7.350E-01	7.351E-01	37.58
	351.93	82	35.60*	3.214E+00	5.977E-01	5.978E-01	32.88
RN-222	609.32	65	45.49*	2.115E+00	5.640E-01	5.641E-01	27.58
	1120.29	10	14.92	1.224E+00	4.397E-01	4.398E-01	123.46
	1764.49	------	15.30	8.540E-01	------	Line Not Found	------
RA-224	240.99	18	4.10*	4.221E+00	8.768E-01	8.768E-01	152.46
RA-226	74.82	------	5.80	3.091E+00	------	Line Not Found	------
	77.11	------	9.70	3.341E+00	------	Line Not Found	------
	87.09	34	3.41	4.282E+00	1.944E+00	1.944E+00	74.26
	242.00	18	7.25	4.221E+00	4.959E-01	4.959E-01	152.46
	295.22	59	18.42	3.658E+00	7.350E-01	7.351E-01	37.58
	351.93	82	35.60*	3.214E+00	5.977E-01	5.978E-01	32.88
TH-230	74.82	------	5.80	3.091E+00	------	Line Not Found	------
	77.11	------	9.70	3.341E+00	------	Line Not Found	------
	87.09	34	3.41	4.282E+00	1.944E+00	1.944E+00	74.26
	242.00	18	7.25	4.221E+00	4.959E-01	4.959E-01	152.46
	295.22	59	18.42	3.658E+00	7.350E-01	7.350E-01	37.58
	351.93	82	35.60*	3.214E+00	5.977E-01	5.977E-01	32.88
TH-234	63.29	5	3.70*	1.838E+00	6.667E-01	6.667E-01	393.89
	92.59	12	4.23	4.707E+00	5.035E-01	5.035E-01	370.53
U-234	74.82	------	5.80	3.091E+00	------	Line Not Found	------
	77.11	------	9.70	3.341E+00	------	Line Not Found	------
	87.09	34	3.41	4.282E+00	1.944E+00	1.944E+00	74.26
	242.00	18	7.25	4.221E+00	4.959E-01	4.959E-01	152.46
	295.22	59	18.42	3.658E+00	7.350E-01	7.350E-01	37.58
	351.93	82	35.60*	3.214E+00	5.977E-01	5.977E-01	32.88
U-238	63.29	5	3.70*	1.838E+00	6.667E-01	6.667E-01	393.89
	92.59	12	4.23	4.707E+00	5.035E-01	5.035E-01	370.53

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:25:21.93

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299015.CNF;1  *
* Acquisition date : 30-JUL-2024 11:20:47 Sensitivity     : 3.000           *
* Detector ID      : GAM40                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.28     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:05:00 Analyst initials: RXF2            *
* Sample ID        : G674299015           Sample Quantity : 8.9510E+01 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 31-OCT-2023 08:42:58 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM40_CAN.CNF;14            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	2.654E+00	9.575E-01	5.894E-01
CD-109	1.885E+00	1.372E+00	1.669E+00
AG-110	9.078E-01	1.116E+00	1.713E+00
SN-126	1.791E-01	1.304E-01	1.424E-01
BA-137M	5.081E-02	4.122E-02	5.076E-02
CS-137	5.367E-02	4.354E-02	5.362E-02
BI-211	1.647E+00	5.307E-01	4.068E-01
BI-214	5.641E-01	1.525E-01	1.292E-01
PB-214	5.978E-01	1.926E-01	1.479E-01
RN-222	5.641E-01	1.525E-01	1.292E-01
RA-224	8.768E-01	1.310E+00	1.229E+00
RA-226	5.978E-01	1.926E-01	1.479E-01
TH-230	5.977E-01	1.926E-01	1.479E-01
TH-234	6.667E-01	2.574E+00	3.836E+00
U-234	5.977E-01	1.926E-01	1.479E-01
U-238	6.667E-01	2.574E+00	3.836E+00

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.522E-01	5.040E-01	9.315E-01	NOT IDENT.
NA-22	-1.882E-02	4.060E-02	7.701E-02	NOT IDENT.
NA-24	0.000E+00	1.250E+15	0.000E+00	SHORT HLIF
AL-26	-2.269E-02	5.007E-02	9.147E-02	NOT IDENT.
SC-46	2.468E-02	4.654E-02	1.067E-01	FAIL ABUN
V-48	6.486E-03	1.864E-01	3.714E-01	NOT IDENT.
CR-51	-9.768E-02	6.424E-01	1.234E+00	NOT IDENT.
MN-52	1.316E+00	3.970E+00	8.748E+00	NOT IDENT.
MN-54	3.996E-03	3.048E-02	6.668E-02	NOT IDENT.
CO-56	4.739E-03	5.240E-02	9.726E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	1.786E-04	2.972E-02	5.381E-02	NOT IDENT.
CO-58	4.622E-03	4.847E-02	9.972E-02	NOT IDENT.
FE-59	-6.038E-02	1.302E-01	2.457E-01	NOT IDENT.

CO-60	2.454E-03	4.324E-02	9.748E-02	NOT IDENT.
ZN-65	4.456E-02	5.042E-02	1.579E-01	NOT IDENT.
GE-68	-8.880E-01	1.584E+00	2.895E+00	NOT IDENT.
AS-73	-1.496E+00	1.957E+00	3.362E+00	NOT IDENT.
AS-74	7.306E-02	1.884E-01	4.078E-01	NOT IDENT.
SE-75	-1.051E-02	5.437E-02	9.400E-02	NOT IDENT.
BR-77	0.000E+00	4.770E+03	0.000E+00	SHORT HLIF
SR-82	8.682E-01	5.761E-01	1.505E+00	NOT IDENT.
RB-83	-2.796E-02	1.109E-01	1.993E-01	NOT IDENT.
RB-84	6.346E-02	1.171E-01	2.602E-01	NOT IDENT.
KR-85	-1.013E+01	1.102E+01	1.815E+01	NOT IDENT.
SR-85	-6.570E-02	7.125E-02	1.173E-01	NOT IDENT.
RB-86	-1.319E+00	1.978E+00	3.510E+00	NOT IDENT.
Y-88	8.852E-03	5.607E-02	1.315E-01	NOT IDENT.
Y-91	-4.400E+01	2.973E+01	3.633E+01	NOT IDENT.
NB-94	4.995E-04	3.159E-02	6.387E-02	NOT IDENT.
NB-95	-3.970E-02	6.623E-02	9.787E-02	NOT IDENT.
NB-95M	-1.628E-01	2.066E-01	2.893E-01	NOT IDENT.
ZR-95	3.722E-02	1.315E-01	2.400E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.226E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.076E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.885E+39	0.000E+00	SHORT HLIF
RH-101	-1.087E-02	3.602E-02	6.158E-02	NOT IDENT.
RH-102	-3.030E-02	7.194E-02	1.279E-01	NOT IDENT.
RU-103	-4.828E-02	6.525E-02	1.109E-01	FAIL ABUN
RH-106	2.457E-02	2.936E-01	5.641E-01	NOT IDENT.
RU-106	2.457E-02	2.936E-01	5.641E-01	NOT IDENT.
AG-108M	2.782E-03	3.313E-02	6.581E-02	NOT IDENT.
AG-110M	-8.592E-02	6.481E-02	7.606E-02	FAIL ABUN
SN-113	-3.474E-02	5.793E-02	8.934E-02	NOT IDENT.
CD-115	0.000E+00	4.867E+03	0.000E+00	SHORT HLIF
SN-117M	6.600E-02	1.456E-01	2.776E-01	NOT IDENT.
SB-122	0.000E+00	3.166E+02	0.000E+00	SHORT HLIF
TE-123M	1.158E-02	3.246E-02	6.114E-02	NOT IDENT.
SB-124	1.330E-02	9.400E-02	2.475E-01	NOT IDENT.
SB-125	7.710E-02	1.078E-01	2.307E-01	NOT IDENT.
TE-125M	-8.429E+00	1.515E+01	2.568E+01	NOT IDENT.
I-126	7.023E-01	5.964E-01	1.452E+00	NOT IDENT.
SB-126	7.617E-02	4.263E-01	8.827E-01	NOT IDENT.
SB-127	-1.270E+00	3.799E+01	7.632E+01	NOT IDENT.
I-131	1.953E-02	6.060E-01	1.207E+00	NOT IDENT.
I-132	0.000E+00	1.908E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	5.144E+01	0.000E+00	SHORT HLIF
BA-133	1.852E-02	4.196E-02	8.291E-02	FAIL ABUN
I-133	0.000E+00	2.371E+10	0.000E+00	SHORT HLIF
CS-134	3.420E-02	4.168E-02	9.866E-02	NOT IDENT.
I-135	0.000E+00	4.716E+36	0.000E+00	SHORT HLIF
CS-136	1.007E-01	2.841E-01	6.225E-01	NOT IDENT.
LA-138	-1.185E-02	9.150E-02	1.816E-01	NOT IDENT.
CE-139	-9.975E-03	3.724E-02	6.422E-02	NOT IDENT.
BA-140	6.617E-01	7.896E-01	1.791E+00	NOT IDENT.
LA-140	-1.280E-01	2.465E-01	4.494E-01	NOT IDENT.
CE-141	3.968E-02	9.636E-02	1.823E-01	NOT IDENT.
CE-143	0.000E+00	2.206E+06	0.000E+00	SHORT HLIF
CE-144	-1.178E-02	2.291E-01	4.103E-01	NOT IDENT.
PM-144	-5.958E-03	4.394E-02	8.248E-02	NOT IDENT.
PR-144	-4.648E-01	3.318E+00	6.224E+00	NOT IDENT.
PM-146	3.024E-03	4.849E-02	9.572E-02	NOT IDENT.
ND-147	1.912E-01	1.714E+00	3.561E+00	NOT IDENT.
PM-147	-1.716E+02	8.708E+02	1.536E+03	NOT IDENT.
PM-149	0.000E+00	3.590E+04	0.000E+00	SHORT HLIF
EU-150	5.380E-03	2.902E-02	5.814E-02	FAIL ABUN
EU-152	-4.638E-02	1.150E-01	2.115E-01	NOT IDENT.
GD-153	-1.744E-02	1.093E-01	1.808E-01	NOT IDENT.
EU-154	-4.835E-02	1.156E-01	2.226E-01	NOT IDENT.
EU-155	1.170E-02	1.082E-01	2.014E-01	FAIL ABUN
TB-160	-1.309E-01	2.123E-01	3.499E-01	FAIL ABUN
HO-166M	5.127E-03	6.483E-02	1.304E-01	NOT IDENT.
TM-171	1.731E+00	3.763E+01	7.180E+01	NOT IDENT.
HF-172	-5.060E-03	2.170E-01	3.841E-01	FAIL ABUN
LU-172	-5.469E-02	5.716E-02	8.788E-02	FAIL ABUN
LU-176	9.654E-03	3.026E-02	5.674E-02	FAIL ABUN
HF-181	2.552E-02	6.806E-02	1.412E-01	NOT IDENT.
TA-182	-6.030E-02	1.546E-01	3.073E-01	FAIL ABUN
RE-183	-5.309E-01	3.689E-01	5.614E-01	NOT IDENT.
RE-184	4.809E-02	2.253E-01	4.587E-01	NOT IDENT.
W-188	6.119E+00	1.061E+01	1.929E+01	FAIL ABUN

IR-192	1.909E-02	4.272E-02	8.909E-02	FAIL ABUN
HG-203	3.202E-02	6.569E-02	1.226E-01	NOT IDENT.
TL-204	4.461E+00	6.371E+00	1.260E+01	FAIL ABUN
BI-207	-5.541E-02	5.052E-02	8.033E-02	NOT IDENT.
TL-208	6.340E-02	6.648E-02	1.378E-01	NOT IDENT.
BI-210	1.747E+00	9.896E+00	1.908E+01	NOT IDENT.
PB-210	1.747E+00	9.896E+00	1.908E+01	NOT IDENT.
PB-211	-6.221E-01	7.858E-01	1.348E+00	NOT IDENT.
BI-212	5.141E-01	5.791E-01	1.314E+00	NOT IDENT.
PB-212	0.000E+00	1.221E-01	2.378E-01	FAIL ABUN
BI-213	9.498E-02	1.215E-01	2.628E-01	NOT IDENT.
RN-219	1.257E-01	4.400E-01	8.989E-01	NOT IDENT.
RA-223	-4.456E-01	7.162E-01	1.249E+00	FAIL ABUN
AC-225	-5.689E-01	2.416E+00	4.155E+00	NOT IDENT.
AC-227	-2.213E-01	2.779E-01	4.277E-01	NOT IDENT.
TH-227	-2.213E-01	2.779E-01	4.277E-01	NOT IDENT.
AC-228	3.041E-01	3.143E-01	5.895E-01	FAIL ABUN
RA-228	3.041E-01	3.143E-01	5.895E-01	FAIL ABUN
TH-228	0.000E+00	1.221E-01	2.378E-01	FAIL ABUN
TH-229	-1.897E-01	5.985E-01	1.018E+00	FAIL ABUN
PA-231	-1.200E-01	5.875E-01	9.980E-01	NOT IDENT.
TH-231	-4.456E-01	7.162E-01	1.249E+00	FAIL ABUN
TH-232	3.041E-01	3.143E-01	5.895E-01	FAIL ABUN
PA-233	-5.065E-03	6.470E-02	1.267E-01	NOT IDENT.
PA-234	6.639E-02	3.196E-01	6.754E-01	NOT IDENT.
PA-234M	1.120E+00	5.184E+00	1.145E+01	NOT IDENT.
U-235	7.431E-02	2.162E-01	3.917E-01	FAIL ABUN
NP-237	-5.065E-03	6.470E-02	1.267E-01	NOT IDENT.
NP-238	0.000E+00	7.997E+03	0.000E+00	SHORT HLIF
NP-239	-2.691E-01	2.801E-01	4.483E-01	NOT IDENT.
PU-239	-3.843E+01	3.838E+02	6.823E+02	NOT IDENT.
AM-241	1.141E-01	2.353E-01	4.684E-01	NOT IDENT.
AM-243	3.126E-02	7.586E-02	1.427E-01	NOT IDENT.
CM-243	-5.339E-02	1.126E-01	1.946E-01	NOT IDENT.
BK-247	-6.317E-02	9.485E-02	1.497E-01	FAIL ABUN
CM-247	4.842E-02	3.835E-02	8.913E-02	NOT IDENT.
CF-249	-1.385E-02	4.306E-02	8.056E-02	NOT IDENT.
CF-251	6.652E-02	1.462E-01	2.745E-01	NOT IDENT.
ANH-511	-1.103E-01	6.429E-02	1.257E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:25:20.53

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	33	10.66*	9.685E-01	2.654E+00	2.654E+00	36.81
CD-109	88.03	34	3.70*	4.282E+00	1.791E+00	1.885E+00	74.26
AG-110	657.50	9	4.50*	1.989E+00	8.259E-01	9.078E-01	125.49
SN-126	64.28	5	9.60	1.838E+00	2.570E-01	2.570E-01	393.89
	86.94	34	8.90	4.282E+00	7.447E-01	7.447E-01	74.26
	87.57	34	37.00*	4.282E+00	1.791E-01	1.791E-01	74.26
BA-137M	661.66	11	89.90*	1.975E+00	5.070E-02	5.081E-02	82.77
CS-137	661.66	11	85.10*	1.975E+00	5.356E-02	5.367E-02	82.77
BI-211	72.87	------	1.23	2.870E+00	------	Line Not Found	------
	351.06	82	12.92*	3.214E+00	1.647E+00	1.647E+00	32.88
BI-214	609.32	65	45.49*	2.115E+00	5.640E-01	5.641E-01	27.58
	1120.29	10	14.92	1.224E+00	4.397E-01	4.398E-01	123.46
	1764.49	------	15.30	8.540E-01	------	Line Not Found	------
PB-214	74.82	------	5.80	3.091E+00	------	Line Not Found	------
	77.11	------	9.70	3.341E+00	------	Line Not Found	------
	87.09	34	3.41	4.282E+00	1.944E+00	1.944E+00	74.26
	242.00	18	7.25	4.221E+00	4.959E-01	4.959E-01	152.46
	295.22	59	18.42	3.658E+00	7.350E-01	7.351E-01	37.58
	351.93	82	35.60*	3.214E+00	5.977E-01	5.978E-01	32.88
RN-222	609.32	65	45.49*	2.115E+00	5.640E-01	5.641E-01	27.58
	1120.29	10	14.92	1.224E+00	4.397E-01	4.398E-01	123.46
	1764.49	------	15.30	8.540E-01	------	Line Not Found	------
RA-224	240.99	18	4.10*	4.221E+00	8.768E-01	8.768E-01	152.46
RA-226	74.82	------	5.80	3.091E+00	------	Line Not Found	------
	77.11	------	9.70	3.341E+00	------	Line Not Found	------
	87.09	34	3.41	4.282E+00	1.944E+00	1.944E+00	74.26
	242.00	18	7.25	4.221E+00	4.959E-01	4.959E-01	152.46
	295.22	59	18.42	3.658E+00	7.350E-01	7.351E-01	37.58
	351.93	82	35.60*	3.214E+00	5.977E-01	5.978E-01	32.88
TH-230	74.82	------	5.80	3.091E+00	------	Line Not Found	------
	77.11	------	9.70	3.341E+00	------	Line Not Found	------
	87.09	34	3.41	4.282E+00	1.944E+00	1.944E+00	74.26
	242.00	18	7.25	4.221E+00	4.959E-01	4.959E-01	152.46
	295.22	59	18.42	3.658E+00	7.350E-01	7.350E-01	37.58
	351.93	82	35.60*	3.214E+00	5.977E-01	5.977E-01	32.88
TH-234	63.29	5	3.70*	1.838E+00	6.667E-01	6.667E-01	393.89
	92.59	12	4.23	4.707E+00	5.035E-01	5.035E-01	370.53
U-234	74.82	------	5.80	3.091E+00	------	Line Not Found	------
	77.11	------	9.70	3.341E+00	------	Line Not Found	------
	87.09	34	3.41	4.282E+00	1.944E+00	1.944E+00	74.26
	242.00	18	7.25	4.221E+00	4.959E-01	4.959E-01	152.46
	295.22	59	18.42	3.658E+00	7.350E-01	7.350E-01	37.58
	351.93	82	35.60*	3.214E+00	5.977E-01	5.977E-01	32.88
U-238	63.29	5	3.70*	1.838E+00	6.667E-01	6.667E-01	393.89
	92.59	12	4.23	4.707E+00	5.035E-01	5.035E-01	370.53

Flag: "*" = Keyline

Sample ID : G674299015 Acquisition date : 30-JUL-2024 11:20:47

Total number of lines in spectrum 27
Number of unidentified lines 7
Number of lines tentatively identified by NID 20 74.07%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	2.654E+00	2.654E+00	0.977E+00	36.81	
CD-109	461.40D	1.05	1.791E+00	1.885E+00	1.400E+00	74.26	
AG-110	249.76D	1.10	8.259E-01	9.078E-01	11.39E-01	125.49	
SN-126	2.30E+05Y	1.00	1.791E-01	1.791E-01	1.330E-01	74.26	
BA-137M	30.08Y	1.00	5.070E-02	5.081E-02	4.206E-02	82.77	
CS-137	30.08Y	1.00	5.356E-02	5.367E-02	4.443E-02	82.77	
BI-211	7.04E+08Y	1.00	1.647E+00	1.647E+00	0.542E+00	32.88	
BI-214	1600.00Y	1.00	5.640E-01	5.641E-01	1.556E-01	27.58	
PB-214	1600.00Y	1.00	5.977E-01	5.978E-01	1.965E-01	32.88	
RN-222	1600.00Y	1.00	5.640E-01	5.641E-01	1.556E-01	27.58	
RA-224	1.41E+10Y	1.00	8.768E-01	8.768E-01	13.37E-01	152.46	
RA-226	1600.00Y	1.00	5.977E-01	5.978E-01	1.965E-01	32.88	
TH-230	7.54E+04Y	1.00	5.977E-01	5.977E-01	1.965E-01	32.88	
TH-234	4.47E+09Y	1.00	6.667E-01	6.667E-01	26.26E-01	393.89	
U-234	2.45E+05Y	1.00	5.977E-01	5.977E-01	1.965E-01	32.88	
U-238	4.47E+09Y	1.00	6.667E-01	6.667E-01	26.26E-01	393.89	
		Total Activity :	1.293E+01	1.311E+01			

Grand Total Activity : 1.293E+01 1.311E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299015 Acquisition date : 30-JUL-2024 11:20:47

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	83.39	16	49	1.39	167.88	162	17	4.77E-03	****	3.96E+00	T
0	186.41	26	47	0.97	374.14	370	9	7.74E-03	****	5.00E+00	T
4	238.57	60	39	1.32	478.56	474	18	1.80E-02	46.1	4.26E+00	T
0	383.60	6	3	1.05	768.85	764	7	1.81E-03	****	3.02E+00	T
0	394.19	9	4	1.51	790.03	787	6	2.64E-03	95.9	2.96E+00	
0	489.98	5	13	1.05	981.73	976	8	1.52E-03	****	2.51E+00	
0	619.55	7	6	0.47	1241.00	1236	7	2.22E-03	****	2.09E+00	T
5	738.85	8	2	1.51	1479.66	1478	10	2.46E-03	64.4	1.80E+00	T
5	741.52	9	2	1.52	1485.01	1478	10	2.60E-03	77.4	1.79E+00	
0	763.64	9	8	0.56	1529.26	1521	13	2.74E-03	****	1.75E+00	T
0	848.61	9	2	2.23	1699.22	1693	10	2.60E-03	91.1	1.59E+00	
0	865.37	5	7	0.93	1732.74	1724	10	1.59E-03	****	1.56E+00	
0	912.68	14	11	1.88	1827.37	1818	11	4.16E-03	****	1.48E+00	T
0	916.39	11	2	2.37	1834.79	1831	8	3.29E-03	71.6	1.48E+00	
0	969.74	14	2	1.72	1941.49	1936	12	4.29E-03	74.9	1.40E+00	T
0	1044.38	9	3	1.00	2090.75	2083	11	2.75E-03	91.8	1.31E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:25:31.68

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
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*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299015.CNF;1  *
* Acquisition date : 30-JUL-2024 11:20:47 Sensitivity     : 3.000           *
* Detector ID      : GAM40                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.28     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:05:00 Nuclide Library : SOLID           *
* Sample ID        : G674299015           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 8.9510E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 31-OCT-2023 08:42:58 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM40_CAN.CNF;14            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	1.860E-01
CD-109	7.620E-01
AG-110	7.191E-01
SN-126	6.427E-02
BA-137M	1.907E-02
CS-137	2.014E-02
BI-211	1.766E-01
BI-214	5.298E-02
PB-214	6.424E-02
RN-222	5.298E-02
RA-224	5.502E-01
RA-226	6.424E-02
TH-230	6.423E-02
TH-234	1.746E+00
U-234	6.423E-02
U-238	1.746E+00

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.007E-01	NOT IDENT.
NA-22	2.793E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.241E-02	NOT IDENT.
SC-46	4.362E-02	FAIL ABUN
V-48	1.502E-01	NOT IDENT.
CR-51	5.407E-01	NOT IDENT.
MN-52	3.595E+00	NOT IDENT.
MN-54	2.585E-02	NOT IDENT.
CO-56	3.907E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.440E-02	NOT IDENT.
CO-58	4.037E-02	NOT IDENT.
FE-59	9.579E-02	NOT IDENT.
CO-60	3.789E-02	NOT IDENT.

ZN-65	5.909E-02	NOT IDENT.
GE-68	1.149E+00	NOT IDENT.
AS-73	1.481E+00	NOT IDENT.
AS-74	1.707E-01	NOT IDENT.
SE-75	4.119E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.432E-01	NOT IDENT.
RB-83	8.605E-02	NOT IDENT.
RB-84	1.084E-01	NOT IDENT.
KR-85	8.006E+00	NOT IDENT.
SR-85	5.173E-02	NOT IDENT.
RB-86	1.393E+00	NOT IDENT.
Y-88	4.890E-02	NOT IDENT.
Y-91	1.253E+01	NOT IDENT.
NB-94	2.597E-02	NOT IDENT.
NB-95	3.963E-02	NOT IDENT.
NB-95M	1.296E-01	NOT IDENT.
ZR-95	1.031E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.785E-02	NOT IDENT.
RH-102	5.409E-02	NOT IDENT.
RU-103	4.644E-02	FAIL ABUN
RH-106	2.244E-01	NOT IDENT.
RU-106	2.244E-01	NOT IDENT.
AG-108M	2.843E-02	NOT IDENT.
AG-110M	2.695E-02	FAIL ABUN
SN-113	3.758E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.253E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.759E-02	NOT IDENT.
SB-124	8.379E-02	NOT IDENT.
SB-125	1.016E-01	NOT IDENT.
TE-125M	1.170E+01	NOT IDENT.
I-126	6.187E-01	NOT IDENT.
SB-126	3.648E-01	NOT IDENT.
SB-127	3.084E+01	NOT IDENT.
I-131	5.207E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.579E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	4.131E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.466E-01	NOT IDENT.
LA-138	7.341E-02	NOT IDENT.
CE-139	2.901E-02	NOT IDENT.
BA-140	7.707E-01	NOT IDENT.
LA-140	1.421E-01	NOT IDENT.
CE-141	8.263E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.859E-01	NOT IDENT.
PM-144	3.491E-02	NOT IDENT.
PR-144	2.633E+00	NOT IDENT.
PM-146	4.134E-02	NOT IDENT.
ND-147	1.470E+00	NOT IDENT.
PM-147	6.973E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.559E-02	FAIL ABUN
EU-152	9.288E-02	NOT IDENT.
GD-153	8.191E-02	NOT IDENT.
EU-154	8.164E-02	NOT IDENT.
EU-155	9.065E-02	FAIL ABUN
TB-160	1.414E-01	FAIL ABUN
HO-166M	5.408E-02	NOT IDENT.
TM-171	3.207E+01	NOT IDENT.
HF-172	1.741E-01	FAIL ABUN
LU-172	2.924E-02	FAIL ABUN
LU-176	2.502E-02	FAIL ABUN
HF-181	6.110E-02	NOT IDENT.
TA-182	1.085E-01	FAIL ABUN
RE-183	2.413E-01	NOT IDENT.
RE-184	1.912E-01	NOT IDENT.
W-188	8.595E+00	FAIL ABUN
IR-192	3.921E-02	FAIL ABUN

HG-203	5.535E-02	NOT IDENT.
TL-204	5.757E+00	FAIL ABUN
BI-207	2.846E-02	NOT IDENT.
TL-208	6.290E-02	NOT IDENT.
BI-210	8.556E+00	NOT IDENT.
PB-210	8.556E+00	NOT IDENT.
PB-211	5.722E-01	NOT IDENT.
BI-212	5.652E-01	NOT IDENT.
PB-212	1.130E-01	FAIL ABUN
BI-213	1.156E-01	NOT IDENT.
RN-219	3.915E-01	NOT IDENT.
RA-223	5.430E-01	FAIL ABUN
AC-225	1.849E+00	NOT IDENT.
AC-227	1.849E-01	NOT IDENT.
TH-227	1.849E-01	NOT IDENT.
AC-228	2.657E-01	FAIL ABUN
RA-228	2.657E-01	FAIL ABUN
TH-228	1.130E-01	FAIL ABUN
TH-229	4.577E-01	FAIL ABUN
PA-231	4.413E-01	NOT IDENT.
TH-231	5.430E-01	FAIL ABUN
TH-232	2.657E-01	FAIL ABUN
PA-233	5.510E-02	NOT IDENT.
PA-234	2.727E-01	NOT IDENT.
PA-234M	4.746E+00	NOT IDENT.
U-235	1.777E-01	FAIL ABUN
NP-237	5.510E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	1.991E-01	NOT IDENT.
PU-239	3.101E+02	NOT IDENT.
AM-241	2.108E-01	NOT IDENT.
AM-243	6.597E-02	NOT IDENT.
CM-243	8.713E-02	NOT IDENT.
BK-247	6.546E-02	FAIL ABUN
CM-247	3.925E-02	NOT IDENT.
CF-249	3.463E-02	NOT IDENT.
CF-251	1.248E-01	NOT IDENT.
ANH-511	5.828E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:25:35.70

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299015.CNF;1  *
* Acquisition date : 30-JUL-2024 11:20:47 Sensitivity     : 3.000           *
* Detector ID      : GAM40                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.28     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:05:00 Nuclide Library : SOLID           *
* Sample ID        : G674299015           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 8.9510E+01 GRAM *
*                                         Quantity Err(%) : 1.1172E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 31-OCT-2023 08:42:58 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM40_CAN.CNF;14            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	2.654E+00	9.903E-01	9.903E-01
CD-109	1.885E+00	1.393E+00	1.393E+00
AG-110	9.078E-01	1.119E+00	1.119E+00
SN-126	1.791E-01	1.320E-01	1.320E-01
BA-137M	5.081E-02	4.143E-02	4.143E-02
CS-137	5.367E-02	4.377E-02	4.377E-02
BI-211	1.647E+00	5.507E-01	5.507E-01
BI-214	5.641E-01	1.601E-01	1.601E-01
PB-214	5.978E-01	1.996E-01	1.996E-01
RN-222	5.641E-01	1.601E-01	1.601E-01
RA-224	8.768E-01	1.313E+00	1.313E+00
RA-226	5.978E-01	1.996E-01	1.996E-01
TH-230	5.977E-01	1.996E-01	1.996E-01
TH-234	6.667E-01	2.579E+00	2.579E+00
U-234	5.977E-01	1.996E-01	1.996E-01
U-238	6.667E-01	2.579E+00	2.579E+00

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.522E-01	5.042E-01	5.089E-01	NOT IDENT.
NA-22	-1.882E-02	4.063E-02	4.151E-02	NOT IDENT.
NA-24	-1.025E+14	1.250E+15	1.251E+15	SHORT HLIF
AL-26	-2.269E-02	5.010E-02	5.114E-02	NOT IDENT.
SC-46	2.468E-02	4.660E-02	4.791E-02	FAIL ABUN
V-48	6.486E-03	1.864E-01	1.865E-01	NOT IDENT.
CR-51	-9.768E-02	6.425E-01	6.440E-01	NOT IDENT.
MN-52	1.316E+00	3.972E+00	4.016E+00	NOT IDENT.
MN-54	3.996E-03	3.048E-02	3.054E-02	NOT IDENT.
CO-56	4.739E-03	5.240E-02	5.245E-02	NOT IDENT.
MN-56	1.000E+41	1.106E+42	0.000E+00	SHORT HLIF
CO-57	1.786E-04	2.972E-02	2.972E-02	NOT IDENT.
CO-58	4.622E-03	4.847E-02	4.852E-02	NOT IDENT.
FE-59	-6.038E-02	1.304E-01	1.332E-01	NOT IDENT.

CO-60	2.454E-03	4.324E-02	4.326E-02	NOT IDENT.
ZN-65	4.456E-02	5.056E-02	5.440E-02	NOT IDENT.
GE-68	-8.880E-01	1.586E+00	1.635E+00	NOT IDENT.
AS-73	-1.496E+00	1.990E+00	2.102E+00	NOT IDENT.
AS-74	7.306E-02	1.886E-01	1.915E-01	NOT IDENT.
SE-75	-1.051E-02	5.438E-02	5.459E-02	NOT IDENT.
BR-77	1.055E+04	1.146E+04	1.241E+04	SHORT HLIF
SR-82	8.682E-01	5.811E-01	7.006E-01	NOT IDENT.
RB-83	-2.796E-02	1.110E-01	1.117E-01	NOT IDENT.
RB-84	6.346E-02	1.172E-01	1.206E-01	NOT IDENT.
KR-85	-1.013E+01	1.106E+01	1.196E+01	NOT IDENT.
SR-85	-6.570E-02	7.149E-02	7.738E-02	NOT IDENT.
RB-86	-1.319E+00	1.981E+00	2.069E+00	NOT IDENT.
Y-88	8.852E-03	5.608E-02	5.622E-02	NOT IDENT.
Y-91	-4.400E+01	2.995E+01	3.592E+01	NOT IDENT.
NB-94	4.995E-04	3.159E-02	3.159E-02	NOT IDENT.
NB-95	-3.970E-02	6.632E-02	6.869E-02	NOT IDENT.
NB-95M	-1.628E-01	2.074E-01	2.200E-01	NOT IDENT.
ZR-95	3.722E-02	1.316E-01	1.326E-01	NOT IDENT.
NB-97	1.000E+41	3.813E+41	0.000E+00	SHORT HLIF
ZR-97	-2.373E+14	3.233E+14	3.406E+14	SHORT HLIF
MO-99	1.706E+03	1.088E+03	1.333E+03	SHORT HLIF
TC-99M	1.178E+39	1.890E+39	0.000E+00	SHORT HLIF
RH-101	-1.087E-02	3.608E-02	3.641E-02	NOT IDENT.
RH-102	-3.030E-02	7.202E-02	7.330E-02	NOT IDENT.
RU-103	-4.828E-02	6.540E-02	6.893E-02	FAIL ABUN
RH-106	2.457E-02	2.936E-01	2.938E-01	NOT IDENT.
RU-106	2.457E-02	2.936E-01	2.938E-01	NOT IDENT.
AG-108M	2.782E-03	3.313E-02	3.315E-02	NOT IDENT.
AG-110M	-8.592E-02	6.532E-02	7.594E-02	FAIL ABUN
SN-113	-3.474E-02	5.801E-02	6.008E-02	NOT IDENT.
CD-115	-9.629E+02	4.868E+03	4.888E+03	SHORT HLIF
SN-117M	6.600E-02	1.457E-01	1.487E-01	NOT IDENT.
SB-122	2.335E+02	3.173E+02	3.343E+02	SHORT HLIF
TE-123M	1.158E-02	3.248E-02	3.289E-02	NOT IDENT.
SB-124	1.330E-02	9.401E-02	9.420E-02	NOT IDENT.
SB-125	7.710E-02	1.080E-01	1.135E-01	NOT IDENT.
TE-125M	-8.429E+00	1.517E+01	1.563E+01	NOT IDENT.
I-126	7.023E-01	6.001E-01	6.785E-01	NOT IDENT.
SB-126	7.617E-02	4.264E-01	4.277E-01	NOT IDENT.
SB-127	-1.270E+00	3.799E+01	3.800E+01	NOT IDENT.
I-131	1.953E-02	6.060E-01	6.061E-01	NOT IDENT.
I-132	1.000E+41	2.839E+41	0.000E+00	SHORT HLIF
TE-132	-2.092E+01	5.151E+01	5.236E+01	SHORT HLIF
BA-133	1.852E-02	4.200E-02	4.282E-02	FAIL ABUN
I-133	-1.085E+10	2.384E+10	2.434E+10	SHORT HLIF
CS-134	3.420E-02	4.179E-02	4.454E-02	NOT IDENT.
I-135	3.385E+36	5.400E+36	0.000E+00	SHORT HLIF
CS-136	1.007E-01	2.843E-01	2.879E-01	NOT IDENT.
LA-138	-1.185E-02	9.150E-02	9.166E-02	NOT IDENT.
CE-139	-9.975E-03	3.730E-02	3.757E-02	NOT IDENT.
BA-140	6.617E-01	7.918E-01	8.462E-01	NOT IDENT.
LA-140	-1.280E-01	2.468E-01	2.534E-01	NOT IDENT.
CE-141	3.968E-02	9.642E-02	9.807E-02	NOT IDENT.
CE-143	-7.693E+05	2.207E+06	2.234E+06	SHORT HLIF
CE-144	-1.178E-02	2.291E-01	2.292E-01	NOT IDENT.
PM-144	-5.958E-03	4.394E-02	4.402E-02	NOT IDENT.
PR-144	-4.648E-01	3.318E+00	3.325E+00	NOT IDENT.
PM-146	3.024E-03	4.849E-02	4.851E-02	NOT IDENT.
ND-147	1.912E-01	1.714E+00	1.716E+00	NOT IDENT.
PM-147	-1.716E+02	8.709E+02	8.743E+02	NOT IDENT.
PM-149	-4.626E+03	3.591E+04	3.597E+04	SHORT HLIF
EU-150	5.380E-03	2.902E-02	2.912E-02	FAIL ABUN
EU-152	-4.638E-02	1.151E-01	1.169E-01	NOT IDENT.
GD-153	-1.744E-02	1.093E-01	1.096E-01	NOT IDENT.
EU-154	-4.835E-02	1.156E-01	1.177E-01	NOT IDENT.
EU-155	1.170E-02	1.083E-01	1.084E-01	FAIL ABUN
TB-160	-1.309E-01	2.127E-01	2.208E-01	FAIL ABUN
HO-166M	5.127E-03	6.484E-02	6.488E-02	NOT IDENT.
TM-171	1.731E+00	3.763E+01	3.764E+01	NOT IDENT.
HF-172	-5.060E-03	2.170E-01	2.171E-01	FAIL ABUN
LU-172	-5.469E-02	5.757E-02	6.263E-02	FAIL ABUN
LU-176	9.654E-03	3.027E-02	3.058E-02	FAIL ABUN
HF-181	2.552E-02	6.810E-02	6.906E-02	NOT IDENT.
TA-182	-6.030E-02	1.546E-01	1.570E-01	FAIL ABUN
RE-183	-5.309E-01	3.782E-01	4.475E-01	NOT IDENT.
RE-184	4.809E-02	2.254E-01	2.264E-01	NOT IDENT.
W-188	6.119E+00	1.064E+01	1.099E+01	FAIL ABUN

IR-192	1.909E-02	4.275E-02	4.361E-02	FAIL ABUN
HG-203	3.202E-02	6.575E-02	6.731E-02	NOT IDENT.
TL-204	4.461E+00	6.398E+00	6.707E+00	FAIL ABUN
BI-207	-5.541E-02	5.075E-02	5.657E-02	NOT IDENT.
TL-208	6.340E-02	6.671E-02	7.258E-02	NOT IDENT.
BI-210	1.747E+00	9.899E+00	9.930E+00	NOT IDENT.
PB-210	1.747E+00	9.899E+00	9.930E+00	NOT IDENT.
PB-211	-6.221E-01	7.880E-01	8.364E-01	NOT IDENT.
BI-212	5.141E-01	5.810E-01	6.255E-01	NOT IDENT.
PB-212	2.701E-01	1.247E-01	1.743E-01	FAIL ABUN
BI-213	9.498E-02	1.218E-01	1.291E-01	NOT IDENT.
RN-219	1.257E-01	4.404E-01	4.440E-01	NOT IDENT.
RA-223	-4.456E-01	7.175E-01	7.451E-01	FAIL ABUN
AC-225	-5.689E-01	2.417E+00	2.430E+00	NOT IDENT.
AC-227	-2.213E-01	2.799E-01	2.972E-01	NOT IDENT.
TH-227	-2.213E-01	2.799E-01	2.972E-01	NOT IDENT.
AC-228	3.041E-01	3.156E-01	3.441E-01	FAIL ABUN
RA-228	3.041E-01	3.156E-01	3.441E-01	FAIL ABUN
TH-228	2.701E-01	1.247E-01	1.743E-01	FAIL ABUN
TH-229	-1.897E-01	5.987E-01	6.048E-01	FAIL ABUN
PA-231	-1.200E-01	5.881E-01	5.906E-01	NOT IDENT.
TH-231	-4.456E-01	7.175E-01	7.451E-01	FAIL ABUN
TH-232	3.041E-01	3.156E-01	3.441E-01	FAIL ABUN
PA-233	-5.065E-03	6.471E-02	6.475E-02	NOT IDENT.
PA-234	6.639E-02	3.285E-01	3.299E-01	NOT IDENT.
PA-234M	1.120E+00	5.185E+00	5.209E+00	NOT IDENT.
U-235	7.431E-02	2.163E-01	2.189E-01	FAIL ABUN
NP-237	-5.065E-03	6.471E-02	6.475E-02	NOT IDENT.
NP-238	1.003E+04	8.047E+03	9.232E+03	SHORT HLIF
NP-239	-2.691E-01	2.816E-01	3.066E-01	NOT IDENT.
PU-239	-3.843E+01	3.838E+02	3.842E+02	NOT IDENT.
AM-241	1.141E-01	2.358E-01	2.414E-01	NOT IDENT.
AM-243	3.126E-02	7.595E-02	7.724E-02	NOT IDENT.
CM-243	-5.339E-02	1.128E-01	1.153E-01	NOT IDENT.
BK-247	-6.317E-02	9.581E-02	9.996E-02	FAIL ABUN
CM-247	4.842E-02	3.939E-02	4.503E-02	NOT IDENT.
CF-249	-1.385E-02	4.309E-02	4.354E-02	NOT IDENT.
CF-251	6.652E-02	1.465E-01	1.495E-01	NOT IDENT.
ANH-511	-1.103E-01	6.504E-02	8.188E-02	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	23.2619	85.43	28.6674	131.20	22.7523
45.60	20.8096	86.55	28.7318	133.02	37.3321
46.54	19.9991	86.79	28.7455	133.52	32.1712
49.72	0.0000	86.94	28.7542	136.00	35.4137
51.35	27.3343	87.09	28.7627	136.47	30.2266
51.87	21.1929	87.57	28.7901	140.51	0.0000
52.39	22.9923	88.03	37.1409	143.76	22.1180
52.97	31.0008	88.34	32.6784	144.24	25.2949
53.44	28.3802	88.47	32.6869	145.44	25.3374
54.07	26.6523	89.96	36.6388	152.43	31.9771
57.36	0.0000	1093.63	32.8254	153.25	35.2136
57.53	27.7961	91.11	37.3648	323.87	33.1220
57.98	30.5217	92.59	36.8247	156.02	35.3445
59.27	18.9145	93.35	36.8780	158.56	22.5676
59.32	18.9169	94.56	36.9624	159.00	23.6556
59.54	20.7302	94.65	36.9685	162.33	29.1580
60.96	28.9460	94.67	36.9699	162.66	31.3311
61.17	33.7883	94.87	36.9838	163.33	30.2772
62.93	34.5425	97.43	33.9005	165.86	33.6295
63.29	34.5731	98.43	26.1253	176.31	41.7631
63.58	34.5978	98.44	26.1257	176.60	37.3800
64.28	37.6970	99.53	31.4131	177.52	26.4155
66.73	38.5310	100.11	39.3079	181.07	0.0000
67.24	28.4738	102.03	21.6938	181.52	29.8608
125.81	29.4229	103.18	35.5718	184.41	31.0732
67.75	29.4275	103.37	31.6301	143.76	31.1210
68.89	40.5709	105.21	25.7826	193.51	31.4026
69.67	37.8732	105.31	25.7872	197.03	29.2758
70.82	26.8587	106.12	40.7219	198.01	20.2901
70.83	26.8596	106.47	39.7528	201.83	19.2446
72.81	52.0992	109.28	44.9382	203.43	41.9592
72.87	52.1061	111.00	35.0539	205.31	25.0001
74.66	42.9720	111.76	0.0000	210.85	19.4345
74.82	68.2186	114.06	35.2334	215.65	27.5771
74.97	68.2415	116.30	0.0000	218.12	25.3445
77.11	43.2019	116.74	35.3885	222.11	26.6064
78.74	74.1395	119.76	27.4330	227.09	22.0914
79.69	30.2192	121.12	29.5290	227.38	22.0981
80.03	30.2405	121.22	35.6441	228.16	0.0000
80.12	30.2466	121.78	31.5984	228.18	29.0997
80.19	35.2928	122.06	31.6123	116.74	29.0997
80.57	35.3210	122.92	32.6763	235.69	39.0920
81.00	34.0903	123.07	32.6841	235.96	32.8458
81.07	34.0952	265.00	32.7153	238.63	24.6991
81.75	28.4528	125.81	29.7465	238.98	0.0000
82.47	28.4953	127.23	32.8953	240.99	24.7561
83.79	28.5725	127.91	23.6682	242.00	24.7802
84.00	28.5846	129.30	35.0620	244.70	22.0844

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	28.6025	344.28	22.3009	563.25	14.7070
252.80	27.4209	345.93	20.6108	564.24	0.0000
254.15	0.0000	351.06	14.6547	569.33	13.7687
256.23	23.9209	351.93	14.6640	946.00	12.7863
260.90	0.0000	355.39	0.0000	569.70	12.7874
264.66	19.2852	356.01	9.0842	583.19	17.8257
264.80	24.1095	364.49	13.0569	584.27	12.8810
265.00	25.3195	366.42	0.0000	595.83	5.9790
269.46	23.0003	372.51	17.5081	427.87	7.9902
270.03	24.2230	375.05	14.9085	602.52	0.0000
271.23	30.3116	377.52	17.5696	604.72	7.5058
273.65	24.3011	356.01	14.5583	607.14	15.0293
276.40	34.1045	388.16	15.9283	609.32	7.0211
277.37	21.9430	388.63	15.9335	610.33	9.0315
277.60	21.9474	391.69	15.9668	614.28	4.0215
278.00	20.7354	264.66	15.1704	618.01	7.5537
279.20	21.9781	401.81	12.5026	620.36	7.5620
279.54	23.2061	402.40	6.2539	621.93	4.5406
279.70	23.2090	404.85	18.7920	630.19	0.0000
280.46	30.5588	410.95	17.0703	631.29	14.1886
283.69	15.9350	413.71	11.7006	633.25	7.1005
284.31	23.3018	414.70	12.6086	634.78	9.1359
285.41	22.0963	423.72	10.8701	635.95	9.1406
285.90	0.0000	427.09	15.4322	636.99	5.0807
287.50	12.2977	427.87	10.8987	657.50	9.2311
290.67	14.7968	433.94	12.7635	657.76	6.1548
293.27	0.0000	439.40	14.6364	657.90	0.0000
351.93	16.0913	440.45	10.0690	661.66	3.0828
295.96	13.2113	453.88	12.9205	664.57	0.0000
879.38	19.8604	463.37	11.1377	666.33	2.4714
299.98	11.1844	468.07	14.8916	666.50	2.4716
300.09	11.1855	473.00	14.0015	667.71	0.0000
300.13	11.1857	475.06	13.0837	677.62	8.2793
301.36	22.3940	476.78	15.9033	685.70	6.2314
302.85	17.4389	477.60	15.9107	692.65	0.0000
256.23	23.6990	482.18	10.3223	695.00	14.5987
304.85	23.7059	487.02	7.0575	696.49	11.4780
306.78	14.9956	492.35	0.0000	696.51	11.4780
308.46	22.5242	497.08	16.0883	697.00	14.6112
311.90	15.8944	505.52	19.9678	697.30	12.5259
316.51	13.4339	507.63	0.0000	697.49	10.4390
319.41	18.5142	511.00	23.8434	702.65	6.2773
320.08	18.5240	514.00	31.5243	706.68	7.3361
321.04	13.4821	514.00	31.5243	711.68	7.3515
323.87	20.2681	520.40	13.4207	720.70	6.3254
325.23	19.4442	520.69	0.0000	721.93	0.0000
328.76	22.0406	522.65	0.0000	722.78	7.3859
333.37	18.7156	527.90	0.0000	722.91	7.3865
333.97	16.1708	528.26	4.8134	723.31	11.6092
334.37	14.4731	529.59	12.5239	724.19	12.6689
338.28	13.6621	529.87	0.0000	727.33	5.2856
338.32	13.6624	531.02	6.7488	733.00	6.3577
311.90	30.7910	537.26	5.8040	735.93	4.7741
340.48	30.7910	546.56	0.0000	333.97	4.7770
340.55	30.7925	552.55	12.6763	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	1.5968	949.00	10.3326	1384.29	3.8992
747.24	7.4609	667.71	0.0000	1408.01	1.9609
748.06	5.3310	962.31	9.2253	1434.09	4.9329
752.31	9.6123	964.08	1.7308	1435.80	6.9090
753.82	7.4808	966.17	3.4640	1457.56	0.0000
756.73	9.6295	911.20	2.3114	1460.82	0.9929
756.80	9.6295	983.53	5.8061	1489.16	0.9994
884.68	5.3652	984.45	0.0000	1505.03	7.0214
765.81	9.6643	1274.44	6.9961	1584.12	4.0837
766.42	9.6669	1001.03	3.5034	1596.21	3.0709
766.84	6.4456	1002.74	3.5054	1620.50	1.0290
772.60	0.0000	1004.73	6.1382	1621.92	4.1172
776.52	1.0784	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	1.0444
778.90	7.5560	1028.54	0.0000	1750.46	0.0000
783.70	7.5702	1037.84	7.0889	1764.49	2.1202
788.74	8.6686	1038.76	0.0000	1063.66	6.3680
792.07	9.7646	631.29	0.0000	1771.35	5.3079
795.86	3.2598	1048.07	2.8445	1791.20	0.0000
810.06	6.5552	1049.04	4.0647	1808.65	4.2776
810.29	6.5557	1050.41	5.3375	1810.72	0.0000
344.28	4.3708	1063.66	5.3591	1836.06	2.1503
810.76	5.4641	1077.00	9.8647		
815.77	7.6642	1077.34	8.9691		
1048.07	4.3841	1085.87	4.4962		
832.01	7.7112	1093.63	6.3091		
834.85	3.3082	1099.45	7.2227		
835.71	3.3093	1112.07	4.5313		
836.80	0.0000	1112.84	5.4386		
846.75	0.0000	1115.54	0.0000		
846.77	4.9843	1120.29	5.4507		
856.80	5.5585	1120.55	5.4510		
860.56	5.0094	1221.41	5.8156		
871.09	4.4699	1129.67	3.6436		
873.19	5.5914	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	11.2077	1173.23	4.6115		
880.51	4.4849	1177.95	8.3117		
881.60	4.4867	1189.05	2.7792		
883.24	3.3669	1204.77	12.0955		
884.68	12.3517	1221.41	3.7388		
889.28	3.3741	1231.02	1.8743		
894.76	5.6346	1235.36	5.6294		
898.04	4.5129	1238.28	5.6338		
900.72	5.6464	1260.41	0.0000		
903.28	6.7815	1271.87	1.8948		
911.20	6.8003	1274.44	4.7400		
912.08	3.4011	1274.54	4.7403		
923.98	0.0000	1291.59	4.7614		
926.50	7.9755	1298.22	0.0000		
929.11	9.1230	1312.11	3.8293		
935.54	11.4286	1332.49	1.9247		
937.49	12.5800	1362.66	0.0000		
944.13	6.8772	1365.19	3.8809		
946.00	4.5877	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:02.86

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299016.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM46.CNF;171
                                         Background date  : 28-JUL-2024 10:37:59
Sample date      : 26-JUN-2024 10:10:00  Acquisition date : 30-JUL-2024 11:21:37
Sample ID        : G674299016            Sample quantity  : 1.27250E+02 GRAM
Detector name    : GAM46                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:01.46  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	9.98	174	426	2.78	20.01	18	6	4.84E-02	20.1	
2	0	17.04	116	813	1.69	34.13	28	14	3.23E-02	53.1	
3	0	46.58*	288	480	1.10	93.19	90	9	8.01E-02	14.9	
4	0	53.24	105	441	1.22	106.52	103	8	2.92E-02	35.8	
5	0	63.33*	457	752	0.88	126.68	122	10	1.27E-01	12.2	
6	3	74.92*	971	527	1.01	149.85	146	12	2.70E-01	4.9	2.24E+00
7	3	77.22	1599	507	0.95	154.46	146	12	4.44E-01	3.4	
8	0	80.86	38	534	0.88	161.73	160	6	1.07E-02	97.3	
9	3	83.97*	238	415	1.26	167.95	165	29	6.62E-02	14.6	2.86E+00
10	3	87.30	559	449	1.16	174.60	165	29	1.55E-01	7.5	
11	3	89.98	236	418	1.18	179.97	165	29	6.56E-02	16.4	
12	3	92.74*	677	432	1.27	185.48	165	29	1.88E-01	6.9	
13	0	98.89	76	456	1.02	197.79	194	10	2.12E-02	53.8	
14	0	122.10	20	249	1.25	244.18	242	6	5.50E-03	127.7	
15	0	144.66*	58	485	1.14	289.31	283	9	1.61E-02	69.9	
16	0	154.13	90	353	1.24	308.23	305	8	2.50E-02	37.7	
17	0	157.53	58	319	0.90	315.03	312	8	1.61E-02	55.2	
18	0	163.31	91	421	1.93	326.60	321	11	2.53E-02	45.0	
19	0	167.18	41	186	1.02	334.33	332	5	1.14E-02	52.0	
20	0	186.00*	770	523	1.28	371.95	365	13	2.14E-01	7.1	
21	3	238.67*	449	239	0.97	477.27	473	16	1.25E-01	7.0	2.00E+00
22	3	242.02	760	194	1.21	483.97	473	16	2.11E-01	4.8	
23	0	250.94	29	192	1.87	501.80	500	9	8.15E-03	86.6	
24	0	269.83	54	254	2.64	539.57	536	10	1.49E-02	57.2	
25	0	295.33*	1596	185	1.21	590.56	586	11	4.43E-01	3.0	
26	0	299.60	43	145	2.00	599.11	597	8	1.19E-02	50.5	
27	0	338.29	90	186	1.04	676.47	673	9	2.51E-02	29.4	
28	0	351.99*	2606	205	1.29	703.87	698	13	7.24E-01	2.3	
29	0	401.64	37	97	2.25	803.16	800	8	1.04E-02	48.2	
30	0	409.49	13	94	1.31	818.84	817	6	3.53E-03	121.4	
31	0	487.82	27	59	2.74	975.48	971	9	7.44E-03	55.7	
32	0	511.37*	87	78	1.90	1022.59	1017	13	2.42E-02	26.2	
33	2	533.52	22	40	1.80	1066.88	1063	19	6.21E-03	53.2	1.29E+00
34	2	537.40	24	68	1.80	1074.63	1063	19	6.74E-03	67.9	

Sample ID : G674299016 Acquisition date : 30-JUL-2024 11:21:37

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	583.90*	88	131	1.22	1167.62	1162	13	2.44E-02	29.8	
36	0	589.62	13	44	0.62	1179.07	1175	7	3.64E-03	89.3	
37	0	609.50*	1785	76	1.46	1218.81	1214	13	4.96E-01	2.6	
38	0	665.90	43	65	1.13	1331.62	1326	10	1.19E-02	38.2	
39	0	672.77	25	38	3.46	1345.35	1340	11	7.00E-03	51.6	
40	2	703.25	23	60	1.92	1406.30	1400	31	6.40E-03	69.4	1.83E+00
41	2	713.80	25	22	1.93	1427.41	1400	31	6.82E-03	36.3	
42	0	728.04	39	103	2.33	1455.89	1447	17	1.09E-02	60.9	
43	0	743.73	36	59	2.19	1487.27	1481	13	9.86E-03	47.5	
44	0	752.80	29	66	2.03	1505.40	1499	16	7.99E-03	65.1	
45	0	768.58	154	78	1.64	1536.96	1530	15	4.28E-02	14.9	
46	0	786.67	67	37	1.70	1573.15	1567	15	1.85E-02	24.1	
47	0	806.49	48	50	1.09	1612.79	1607	11	1.32E-02	32.1	
48	0	852.49	21	37	3.82	1704.78	1699	12	5.88E-03	60.9	
49	0	871.13	13	44	4.33	1742.07	1733	11	3.53E-03	105.1	
50	0	896.09	16	25	1.46	1791.99	1788	8	4.38E-03	62.4	
51	0	911.54*	112	41	1.56	1822.90	1815	15	3.11E-02	15.8	
52	0	928.77	12	33	0.87	1857.36	1850	9	3.33E-03	89.7	
53	0	934.59	83	47	1.53	1869.00	1863	11	2.31E-02	19.3	
54	0	954.87	24	26	4.31	1909.56	1903	12	6.54E-03	50.3	
55	3	964.48	40	20	2.16	1928.78	1925	20	1.12E-02	23.7	1.63E+00
56	3	969.40*	54	32	2.30	1938.61	1925	20	1.50E-02	26.7	
57	0	1000.95*	37	42	1.43	2001.72	1996	12	1.03E-02	38.8	
58	0	1019.62	28	66	6.39	2039.07	2024	23	7.84E-03	78.5	
59	0	1095.12	17	17	2.57	2190.08	2184	11	4.69E-03	52.8	
60	0	1100.17	11	23	4.22	2200.18	2194	11	3.14E-03	86.1	
61	0	1120.68	380	32	1.83	2241.21	2234	14	1.06E-01	6.0	
62	0	1156.08	34	35	1.25	2312.01	2305	12	9.32E-03	39.7	
63	0	1208.29	24	44	3.69	2416.46	2407	16	6.70E-03	64.8	
64	0	1238.75	117	51	1.40	2477.38	2471	14	3.25E-02	16.0	
65	0	1281.94	20	42	1.59	2563.77	2556	14	5.50E-03	73.0	
66	0	1321.52	22	3	3.38	2642.95	2638	11	6.11E-03	25.9	
67	0	1335.30	7	12	1.01	2670.52	2667	6	2.08E-03	81.4	
68	0	1352.38	16	7	1.20	2704.69	2699	10	4.47E-03	40.2	
69	0	1378.14	128	33	2.07	2756.22	2748	19	3.57E-02	13.9	
70	0	1387.93	50	9	4.94	2775.82	2768	18	1.39E-02	19.9	
71	0	1402.45	31	33	2.61	2804.86	2796	12	8.51E-03	41.7	
72	0	1408.60	54	29	1.52	2817.16	2810	13	1.50E-02	24.7	
73	0	1461.26*	111	49	1.14	2922.51	2915	16	3.08E-02	17.1	
74	0	1509.93	48	23	1.46	3019.88	3014	11	1.32E-02	24.8	
75	0	1516.74	22	31	0.66	3033.51	3025	20	6.23E-03	63.6	
76	0	1525.85	11	15	1.03	3051.72	3046	9	2.93E-03	74.4	
77	0	1627.31	7	4	1.30	3254.72	3250	8	2.07E-03	58.5	
78	0	1661.89	29	8	2.80	3323.90	3314	16	8.06E-03	28.6	
79	0	1730.12	80	12	1.48	3460.40	3452	14	2.23E-02	14.1	
80	0	1764.88*	340	14	1.91	3529.95	3520	19	9.43E-02	6.1	
81	0	1839.12	10	0	0.60	3678.50	3672	11	2.78E-03	31.6	
82	0	1847.50	49	7	2.50	3695.27	3687	14	1.36E-02	18.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:26:04

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299016.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : RXF2
Sample date : 26-JUN-2024 10:10:00 Acquisition date : 30-JUL-2024 11:21:37
Sample ID : G674299016 Sample quantity : 127.25 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA46 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.46 0.0%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	TH-231	144.24
U-235	143.76	RA-223	144.24
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.247E+00	4.680E+00	4.680E+00	34.23	OK
CO-57	122.06	85.60*	8.337E+00	1.818E-02	1.983E-02	255.48	OK
	136.47	10.68	7.909E+00	----- Line Not Found		-----	Absent
AS-73	53.44	10.30*	9.732E+00	7.204E-01	9.667E-01	71.67	OK
NB-94	702.65	99.81*	2.356E+00	5.762E-02	5.762E-02	138.71	OK
	871.09	99.89	1.950E+00	3.783E-02	3.783E-02	210.22	OK
CD-109	88.03	3.70*	9.401E+00	1.074E+01	1.130E+01	14.94	OK
SN-117M	156.02	2.11	7.370E+00	----- Line Not Found		-----	Absent
	158.56	86.40*	7.330E+00	5.896E-02	3.347E-01	110.42	OK
TE-123M	159.00	84.00*	7.330E+00	6.064E-02	7.393E-02	110.42	OK
SN-126	64.28	9.60	9.843E+00	3.289E+00	3.289E+00	24.39	OK
	86.94	8.90	9.401E+00	4.464E+00	4.464E+00	14.94	OK
	87.57	37.00*	9.401E+00	1.074E+00	1.074E+00	14.94	OK
CE-139	165.86	80.00*	7.086E+00	4.668E-02	5.542E-02	104.02	OK
BA-140	162.66	6.22	7.182E+00	1.311E+00	8.358E+00	90.00	OK
	304.85	4.29	4.721E+00	----- Line Not Found		-----	Absent
	423.72	3.15	3.637E+00	----- Line Not Found		-----	Absent
	537.26	24.39*	2.978E+00	1.999E-01	1.274E+00	135.89	OK
PM-147	121.22	0.00*	8.337E+00	5.459E+02	5.596E+02	255.48	OK
TL-208	277.37	6.60	5.066E+00	----- Line Not Found		-----	Absent
	583.19	85.00*	2.773E+00	2.217E-01	2.217E-01	59.66	OK
	860.56	12.50	1.971E+00	----- Line Not Found		-----	Absent
BI-210	46.54	4.25*	9.449E+00	4.965E+00	4.979E+00	29.71	OK
PB-210	46.54	4.25*	9.449E+00	4.965E+00	4.979E+00	29.71	OK
BI-211	72.87	1.23	9.741E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	4.224E+00	2.935E+01	2.935E+01	4.54	OK
BI-212	727.33	6.67*	2.285E+00	1.517E+00	1.517E+00	121.81	OK
	1620.50	1.47	1.147E+00	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	9.703E+00	6.554E+00	6.554E+00	9.87	OK
	77.11	17.10	9.655E+00	6.510E+00	6.510E+00	6.74	OK
	238.63	43.60*	5.641E+00	1.150E+00	1.150E+00	13.96	OK
	300.09	3.30	4.783E+00	1.685E+00	1.685E+00	100.99	OK
BI-214	609.32	45.49*	2.671E+00	8.723E+00	8.724E+00	5.15	OK
	1120.29	14.92	1.562E+00	9.321E+00	9.321E+00	12.01	OK
	1764.49	15.30	1.073E+00	1.145E+01	1.145E+01	12.15	OK
PB-214	74.82	5.80	9.703E+00	1.162E+01	1.162E+01	9.87	OK
	77.11	9.70	9.655E+00	1.148E+01	1.148E+01	6.74	OK
	87.09	3.41	9.401E+00	1.165E+01	1.165E+01	14.94	OK
	242.00	7.25	5.586E+00	1.181E+01	1.181E+01	9.64	OK
	295.22	18.42	4.835E+00	1.114E+01	1.114E+01	6.04	OK
	351.93	35.60*	4.224E+00	1.065E+01	1.065E+01	4.54	OK
RN-219	271.23	10.80	5.169E+00	5.993E-01	5.993E-01	114.47	OK
	401.81	6.60*	3.800E+00	9.104E-01	9.104E-01	96.43	OK
RN-222	609.32	45.49*	2.671E+00	8.723E+00	8.724E+00	5.15	OK
	1120.29	14.92	1.562E+00	9.321E+00	9.321E+00	12.01	OK
	1764.49	15.30	1.073E+00	1.145E+01	1.145E+01	12.15	OK
RA-223	81.07	15.00	9.570E+00	1.797E-01	1.797E-01	194.63	OK
	83.79	24.70	9.491E+00	6.800E-01	6.800E-01	29.15	OK
	94.56	8.67	9.190E+00	----- Line Not Found		-----	Absent

Sample ID : G674299016 Acquisition date : 30-JUL-2024 11:21:37

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	144.24	3.27	7.688E+00	----- Line Not Found		-----	<<INT Reject
	154.21	5.70	7.419E+00	1.376E+00	1.376E+00	75.45	OK
	269.46	13.90	5.169E+00	4.657E-01	4.657E-01	114.47	OK
	323.87	3.99*	4.507E+00	----- Line Not Found		-----	Absent
	338.28	2.84	4.358E+00	4.495E+00	4.495E+00	58.89	OK
RA-224	240.99	4.10*	5.586E+00	2.088E+01	2.088E+01	9.64	OK
RA-226	74.82	5.80	9.703E+00	1.162E+01	1.162E+01	9.87	OK
	77.11	9.70	9.655E+00	1.148E+01	1.148E+01	6.74	OK
	87.09	3.41	9.401E+00	1.165E+01	1.165E+01	14.94	OK
	242.00	7.25	5.586E+00	1.181E+01	1.181E+01	9.64	OK
	295.22	18.42	4.835E+00	1.114E+01	1.114E+01	6.04	OK
	351.93	35.60*	4.224E+00	1.065E+01	1.065E+01	4.54	OK
AC-228	105.21	1.10	8.862E+00	----- Line Not Found		-----	Absent
	338.32	11.27	4.358E+00	1.133E+00	1.133E+00	58.89	OK
	835.71	1.61	2.023E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.873E+00	1.339E+00	1.339E+00	31.64	OK
	968.97	15.80	1.774E+00	1.112E+00	1.112E+00	53.44	OK
RA-228	105.21	1.10	8.862E+00	----- Line Not Found		-----	Absent
	338.32	11.27	4.358E+00	1.133E+00	1.133E+00	58.89	OK
	835.71	1.61	2.023E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.873E+00	1.339E+00	1.339E+00	31.64	OK
	968.97	15.80	1.774E+00	1.112E+00	1.112E+00	53.44	OK
TH-228	74.82	10.28	9.703E+00	6.554E+00	6.554E+00	9.87	OK
	77.11	17.10	9.655E+00	6.510E+00	6.510E+00	6.74	OK
	238.63	43.60*	5.641E+00	1.150E+00	1.150E+00	13.96	OK
	300.09	3.30	4.783E+00	1.685E+00	1.685E+00	100.99	OK
TH-229	85.43	14.70	9.491E+00	1.143E+00	1.143E+00	29.15	OK
	88.47	24.00	9.401E+00	1.655E+00	1.655E+00	14.94	OK
	193.51	4.41*	6.484E+00	----- Line Not Found		-----	Absent
	210.85	2.80	6.135E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	9.703E+00	1.162E+01	1.162E+01	9.87	OK
	77.11	9.70	9.655E+00	1.148E+01	1.148E+01	6.74	OK
	87.09	3.41	9.401E+00	1.165E+01	1.165E+01	14.94	OK
	242.00	7.25	5.586E+00	1.181E+01	1.181E+01	9.64	OK
	295.22	18.42	4.835E+00	1.114E+01	1.114E+01	6.04	OK
	351.93	35.60*	4.224E+00	1.065E+01	1.065E+01	4.54	OK
TH-231	81.07	15.00	9.570E+00	1.797E-01	1.797E-01	194.63	OK
	83.79	24.70	9.491E+00	6.800E-01	6.800E-01	29.15	OK
	94.87	5.69	9.180E+00	----- Line Not Found		-----	Absent
	144.24	3.27	7.688E+00	----- Line Not Found		-----	<<INT Reject
	154.21	5.70	7.419E+00	1.376E+00	1.376E+00	75.45	OK
	269.46	13.90	5.169E+00	4.657E-01	4.657E-01	114.47	OK
	323.87	3.99*	4.507E+00	----- Line Not Found		-----	Absent
	338.28	2.84	4.358E+00	4.495E+00	4.495E+00	58.89	OK
TH-232	105.21	1.10	8.862E+00	----- Line Not Found		-----	Absent
	338.32	11.27	4.358E+00	1.133E+00	1.133E+00	58.89	OK
	835.71	1.61	2.023E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.873E+00	1.339E+00	1.339E+00	31.64	OK
	968.97	15.80	1.774E+00	1.112E+00	1.112E+00	53.44	OK

Sample ID : G674299016 Acquisition date : 30-JUL-2024 11:21:37

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
TH-234	63.29	3.70*	9.843E+00	8.533E+00	8.533E+00	24.39	OK
	92.59	4.23	9.244E+00	1.153E+01	1.153E+01	13.87	OK
U-234	74.82	5.80	9.703E+00	1.162E+01	1.162E+01	9.87	OK
	77.11	9.70	9.655E+00	1.148E+01	1.148E+01	6.74	OK
	87.09	3.41	9.401E+00	1.165E+01	1.165E+01	14.94	OK
	242.00	7.25	5.586E+00	1.181E+01	1.181E+01	9.64	OK
	295.22	18.42	4.835E+00	1.114E+01	1.114E+01	6.04	OK
	351.93	35.60*	4.224E+00	1.065E+01	1.065E+01	4.54	OK
U-235	89.96	3.47	9.325E+00	4.863E+00	4.863E+00	32.75	OK
	93.35	5.60	9.244E+00	8.706E+00	8.706E+00	13.87	OK
	143.76	10.96*	7.676E+00	4.472E-01	4.472E-01	139.84	OK
	163.33	5.08	7.182E+00	1.606E+00	1.606E+00	90.00	OK
	185.72	57.20	6.647E+00	1.294E+00	1.294E+00	14.29	OK
	205.31	5.01	6.243E+00	----- Line Not Found		-----	Absent
U-238	63.29	3.70*	9.843E+00	8.533E+00	8.533E+00	24.39	OK
	92.59	4.23	9.244E+00	1.153E+01	1.153E+01	13.87	OK
AM-243	43.53	5.90	9.237E+00	----- Line Not Found		-----	Absent
	74.66	67.20*	9.703E+00	1.003E+00	1.003E+00	9.87	OK
CM-247	278.00	3.40	5.057E+00	----- Line Not Found		-----	Absent
	287.50	2.00	4.933E+00	----- Line Not Found		-----	Absent
	402.40	72.00*	3.800E+00	8.345E-02	8.345E-02	96.43	OK
ANH-511	511.00	100.00*	3.107E+00	1.683E-01	1.683E-01	52.48	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:05.30

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299016.CNF;1  *
* Acquisition date : 30-JUL-2024 11:21:37 Sensitivity     : 3.000           *
* Detector ID      : GAM46                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.46     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:10:00 Analyst initials: RXF2            *
* Sample ID        : G674299016           Sample Quantity : 1.2725E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 26-SEP-2023 07:28:30 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM46_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	4.680E+00	1.570E+00	1.214E+00
CO-57	1.983E-02	4.964E-02	6.255E-02
AS-73	9.667E-01	6.790E-01	6.410E-01
NB-94	5.762E-02	7.833E-02	7.862E-02
CD-109	1.130E+01	1.654E+00	1.479E+00
SN-117M	3.347E-01	3.622E-01	3.936E-01
TE-123M	7.393E-02	8.000E-02	8.156E-02
SN-126	1.074E+00	1.572E-01	1.403E-01
CE-139	5.542E-02	5.649E-02	8.048E-02
BA-140	1.274E+00	1.697E+00	1.682E+00
PM-147	5.596E+02	1.401E+03	1.851E+03
TL-208	2.217E-01	1.296E-01	1.054E-01
BI-210	4.979E+00	1.450E+00	1.126E+00
PB-210	4.979E+00	1.450E+00	1.126E+00
BI-211	2.935E+01	1.306E+00	4.896E-01
BI-212	1.517E+00	1.811E+00	1.248E+00
PB-212	1.150E+00	1.573E-01	1.528E-01
BI-214	8.724E+00	4.402E-01	1.736E-01
PB-214	1.065E+01	4.741E-01	1.781E-01
RN-219	9.104E-01	8.604E-01	1.114E+00
RN-222	8.724E+00	4.402E-01	1.736E-01
RA-223	4.616E-01	8.874E-01	1.708E+00
RA-224	2.088E+01	1.972E+00	1.638E+00
RA-226	1.065E+01	4.741E-01	1.781E-01
AC-228	1.339E+00	4.152E-01	3.313E-01
RA-228	1.339E+00	4.152E-01	3.313E-01
TH-228	1.150E+00	1.573E-01	1.528E-01
TH-229	-6.534E-01	8.432E-01	1.381E+00
TH-230	1.065E+01	4.741E-01	1.781E-01
TH-231	4.616E-01	8.874E-01	1.708E+00
TH-232	1.339E+00	4.152E-01	3.313E-01
TH-234	8.533E+00	2.040E+00	1.456E+00
U-234	1.065E+01	4.741E-01	1.781E-01
U-235	4.472E-01	6.129E-01	5.282E-01
U-238	8.533E+00	2.040E+00	1.456E+00
AM-243	1.003E+00	9.698E-02	9.177E-02
CM-247	8.345E-02	7.887E-02	1.022E-01

ANH-511	1.683E-01	8.658E-02	7.047E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-9.369E-01	5.896E-01	9.420E-01	NOT IDENT.
NA-22	-2.489E-03	5.446E-02	9.745E-02	NOT IDENT.
NA-24	0.000E+00	1.518E+15	0.000E+00	SHORT HLIF
AL-26	-6.560E-03	3.363E-02	6.719E-02	NOT IDENT.
SC-46	1.373E-02	7.471E-02	1.363E-01	FAIL ABUN
V-48	-1.657E-01	2.169E-01	3.495E-01	NOT IDENT.
CR-51	-4.526E-01	8.248E-01	1.491E+00	NOT IDENT.
MN-52	-1.592E+00	3.139E+00	5.645E+00	FAIL ABUN
MN-54	-2.533E-02	5.448E-02	9.313E-02	NOT IDENT.
CO-56	4.647E-03	7.267E-02	1.186E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-58	4.283E-03	8.512E-02	1.370E-01	NOT IDENT.
FE-59	1.224E-01	2.065E-01	2.731E-01	FAIL ABUN
CO-60	-2.630E-02	6.205E-02	9.650E-02	NOT IDENT.
ZN-65	4.426E-02	1.257E-01	2.259E-01	NOT IDENT.
GE-68	4.210E-01	1.440E+00	2.938E+00	NOT IDENT.
AS-74	-7.032E-02	2.432E-01	4.378E-01	NOT IDENT.
SE-75	-3.727E-02	6.981E-02	1.267E-01	FAIL ABUN
BR-77	0.000E+00	6.138E+03	0.000E+00	SHORT HLIF
SR-82	3.093E-01	7.674E-01	1.461E+00	NOT IDENT.
RB-83	4.209E-02	1.122E-01	2.141E-01	NOT IDENT.
RB-84	9.763E-03	1.546E-01	2.806E-01	NOT IDENT.
KR-85	7.402E+00	9.589E+00	1.732E+01	NOT IDENT.
SR-85	4.782E-02	6.202E-02	1.120E-01	NOT IDENT.
RB-86	2.342E-01	1.823E+00	3.625E+00	NOT IDENT.
Y-88	-2.350E-02	3.289E-02	2.445E-02	NOT IDENT.
Y-91	6.019E+00	3.198E+01	5.656E+01	NOT IDENT.
NB-95	3.539E-02	8.389E-02	1.422E-01	NOT IDENT.
NB-95M	2.884E-01	2.289E-01	4.172E-01	NOT IDENT.
ZR-95	-7.611E-03	1.274E-01	2.061E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.944E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.481E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	3.069E+39	0.000E+00	SHORT HLIF
RH-101	-1.478E-02	4.688E-02	8.074E-02	NOT IDENT.
RH-102	-9.576E-03	7.321E-02	1.330E-01	NOT IDENT.
RU-103	-9.315E-03	7.127E-02	1.310E-01	FAIL ABUN
RH-106	2.277E-01	4.237E-01	8.231E-01	NOT IDENT.
RU-106	2.277E-01	4.237E-01	8.231E-01	NOT IDENT.
AG-108M	-2.556E-02	4.020E-02	7.092E-02	NOT IDENT.
AG-110	-4.237E-01	9.961E-01	1.747E+00	NOT IDENT.
AG-110M	-1.317E-02	8.164E-02	1.439E-01	NOT IDENT.
SN-113	-2.547E-02	7.383E-02	1.336E-01	NOT IDENT.
CD-115	0.000E+00	5.571E+03	0.000E+00	SHORT HLIF
SB-122	0.000E+00	3.264E+02	0.000E+00	SHORT HLIF
SB-124	1.022E-01	1.392E-01	3.135E-01	NOT IDENT.
SB-125	-8.883E-02	1.311E-01	2.305E-01	NOT IDENT.
TE-125M	3.747E+00	1.593E+01	2.842E+01	NOT IDENT.
I-126	1.940E+00	1.454E+00	2.091E+00	FAIL ABUN
SB-126	5.089E-01	6.037E-01	1.148E+00	FAIL ABUN
SB-127	-1.382E+01	5.073E+01	9.051E+01	FAIL ABUN
I-131	-3.254E-01	7.784E-01	1.413E+00	FAIL ABUN
I-132	0.000E+00	1.349E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.661E+01	0.000E+00	SHORT HLIF
BA-133	2.169E-02	5.672E-02	9.932E-02	FAIL ABUN
I-133	0.000E+00	3.129E+10	0.000E+00	SHORT HLIF
CS-134	2.369E-02	6.047E-02	1.125E-01	NOT IDENT.
I-135	0.000E+00	4.379E+36	0.000E+00	SHORT HLIF
CS-136	-4.050E-01	3.698E-01	6.226E-01	FAIL ABUN
BA-137M	-5.754E-03	5.344E-02	8.607E-02	NOT IDENT.
CS-137	-6.078E-03	5.645E-02	9.092E-02	NOT IDENT.
LA-138	-1.269E-02	7.454E-02	1.416E-01	NOT IDENT.
LA-140	-6.591E-02	4.091E-01	7.601E-01	FAIL ABUN
CE-141	2.099E-01	2.876E-01	2.683E-01	FAIL ABUN
CE-143	0.000E+00	3.159E+06	0.000E+00	SHORT HLIF
CE-144	2.070E-01	2.928E-01	5.307E-01	FAIL ABUN
PM-144	3.501E-02	4.746E-02	9.311E-02	NOT IDENT.
PR-144	2.662E+00	3.589E+00	7.043E+00	NOT IDENT.
PM-146	4.405E-02	6.025E-02	1.174E-01	NOT IDENT.
ND-147	-1.178E+00	2.803E+00	4.395E+00	FAIL ABUN

PM-149	0.000E+00	4.779E+04	0.000E+00	SHORT HLIF
EU-150	-2.919E-02	4.220E-02	6.668E-02	FAIL ABUN
EU-152	-2.338E-02	1.312E-01	2.422E-01	FAIL ABUN
GD-153	0.000E+00	2.238E-01	1.882E-01	FAIL ABUN
EU-154	-4.564E-03	1.532E-01	2.748E-01	FAIL ABUN
EU-155	9.404E-02	1.339E-01	2.448E-01	FAIL ABUN
TB-160	-1.207E-01	2.418E-01	4.096E-01	FAIL ABUN
HO-166M	-3.207E-03	7.992E-02	1.456E-01	FAIL ABUN
TM-171	0.000E+00	1.147E+01	1.143E+01	FAIL ABUN
HF-172	-2.461E-02	2.965E-01	4.766E-01	FAIL ABUN
LU-172	9.952E-02	1.029E-01	1.561E-01	FAIL ABUN
LU-176	6.142E-03	3.670E-02	6.939E-02	FAIL ABUN
HF-181	-1.565E-02	8.539E-02	1.553E-01	NOT IDENT.
TA-182	-2.446E-02	2.473E-01	4.692E-01	FAIL ABUN
RE-183	7.380E-02	1.107E-01	2.060E-01	FAIL ABUN
RE-184	3.960E-02	2.875E-01	5.222E-01	FAIL ABUN
W-188	-8.794E+00	1.438E+01	2.313E+01	FAIL ABUN
IR-192	-5.975E-03	5.537E-02	1.031E-01	FAIL ABUN
HG-203	-5.990E-02	7.240E-02	1.296E-01	NOT IDENT.
TL-204	-5.917E-02	4.751E+00	7.829E+00	FAIL ABUN
BI-207	-2.416E-03	6.781E-02	1.324E-01	FAIL ABUN
PB-211	-8.619E-01	1.283E+00	1.997E+00	NOT IDENT.
BI-213	9.188E-02	1.426E-01	2.774E-01	NOT IDENT.
AC-225	3.856E-01	3.318E+00	5.710E+00	NOT IDENT.
AC-227	-2.033E-01	4.300E-01	7.045E-01	FAIL ABUN
TH-227	-2.033E-01	4.300E-01	7.045E-01	FAIL ABUN
PA-231	3.821E-01	7.530E-01	1.313E+00	NOT IDENT.
PA-233	-3.625E-02	8.768E-02	1.602E-01	FAIL ABUN
PA-234	-2.591E-01	4.413E-01	7.342E-01	FAIL ABUN
PA-234M	1.478E+01	1.124E+01	1.616E+01	FAIL ABUN
NP-237	-3.625E-02	8.768E-02	1.602E-01	FAIL ABUN
NP-238	0.000E+00	1.380E+04	0.000E+00	SHORT HLIF
NP-239	-1.910E-01	3.566E-01	6.107E-01	FAIL ABUN
PU-239	-1.755E+02	4.893E+02	8.405E+02	NOT IDENT.
AM-241	1.425E-02	8.479E-02	1.429E-01	NOT IDENT.
CM-243	-6.530E-02	1.455E-01	2.311E-01	FAIL ABUN
BK-247	-8.824E-02	1.108E-01	1.982E-01	FAIL ABUN
CF-249	1.200E-02	5.916E-02	1.110E-01	NOT IDENT.
CF-251	-1.777E-01	2.096E-01	3.439E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:03.67

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	105	10.66*	1.247E+00	4.680E+00	4.680E+00	34.23
CO-57	122.06	22	85.60*	8.337E+00	1.818E-02	1.983E-02	255.48
	136.47	------	10.68	7.909E+00	------	Line Not Found	------
AS-73	53.44	122	10.30*	9.732E+00	7.204E-01	9.667E-01	71.67
NB-94	702.65	23	99.81*	2.356E+00	5.762E-02	5.762E-02	138.71
	871.09	12	99.89	1.950E+00	3.783E-02	3.783E-02	210.22
CD-109	88.03	633	3.70*	9.401E+00	1.074E+01	1.130E+01	14.94
SN-117M	156.02	------	2.11	7.370E+00	------	Line Not Found	------
	158.56	63	86.40*	7.330E+00	5.896E-02	3.347E-01	110.42
TE-123M	159.00	63	84.00*	7.330E+00	6.064E-02	7.393E-02	110.42
SN-126	64.28	527	9.60	9.843E+00	3.289E+00	3.289E+00	24.39
	86.94	633	8.90	9.401E+00	4.464E+00	4.464E+00	14.94
	87.57	633	37.00*	9.401E+00	1.074E+00	1.074E+00	14.94
CE-139	165.86	45	80.00*	7.086E+00	4.668E-02	5.542E-02	104.02
BA-140	162.66	99	6.22	7.182E+00	1.311E+00	8.358E+00	90.00
	304.85	------	4.29	4.721E+00	------	Line Not Found	------
	423.72	------	3.15	3.637E+00	------	Line Not Found	------
	537.26	25	24.39*	2.978E+00	1.999E-01	1.274E+00	135.89
CE-141	145.44	64	48.29*	7.676E+00	1.015E-01	2.099E-01	139.84
PM-147	121.22	22	0.00*	8.337E+00	5.459E+02	5.596E+02	255.48
TL-208	277.37	------	6.60	5.066E+00	------	Line Not Found	------
	583.19	89	85.00*	2.773E+00	2.217E-01	2.217E-01	59.66
	860.56	------	12.50	1.971E+00	------	Line Not Found	------
BI-210	46.54	338	4.25*	9.449E+00	4.965E+00	4.979E+00	29.71
PB-210	46.54	338	4.25*	9.449E+00	4.965E+00	4.979E+00	29.71
BI-211	72.87	------	1.23	9.741E+00	------	Line Not Found	------
	351.06	2715	12.92*	4.224E+00	2.935E+01	2.935E+01	4.54
BI-212	727.33	39	6.67*	2.285E+00	1.517E+00	1.517E+00	121.81
	1620.50	------	1.47	1.147E+00	------	Line Not Found	------
PB-212	74.82	1108	10.28	9.703E+00	6.554E+00	6.554E+00	9.87
	77.11	1822	17.10	9.655E+00	6.510E+00	6.510E+00	6.74
	238.63	479	43.60*	5.641E+00	1.150E+00	1.150E+00	13.96
	300.09	45	3.30	4.783E+00	1.685E+00	1.685E+00	100.99
BI-214	609.32	1797	45.49*	2.671E+00	8.723E+00	8.724E+00	5.15
	1120.29	368	14.92	1.562E+00	9.321E+00	9.321E+00	12.01
	1764.49	319	15.30	1.073E+00	1.145E+01	1.145E+01	12.15
PB-214	74.82	1108	5.80	9.703E+00	1.162E+01	1.162E+01	9.87
	77.11	1822	9.70	9.655E+00	1.148E+01	1.148E+01	6.74
	87.09	633	3.41	9.401E+00	1.165E+01	1.165E+01	14.94
	242.00	810	7.25	5.586E+00	1.181E+01	1.181E+01	9.64
	295.22	1682	18.42	4.835E+00	1.114E+01	1.114E+01	6.04
	351.93	2715	35.60*	4.224E+00	1.065E+01	1.065E+01	4.54
RN-219	271.23	57	10.80	5.169E+00	5.993E-01	5.993E-01	114.47
	401.81	39	6.60*	3.800E+00	9.104E-01	9.104E-01	96.43
RN-222	609.32	1797	45.49*	2.671E+00	8.723E+00	8.724E+00	5.15
	1120.29	368	14.92	1.562E+00	9.321E+00	9.321E+00	12.01
	1764.49	319	15.30	1.073E+00	1.145E+01	1.145E+01	12.15

Sample ID : G674299016 Acquisition date : 30-JUL-2024 11:21:37

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-223	81.07	44	15.00	9.570E+00	1.797E-01	1.797E-01	194.63
	83.79	270	24.70	9.491E+00	6.800E-01	6.800E-01	29.15
	94.56	------	8.67	9.190E+00	------	Line Not Found	------
	144.24	64	3.27	7.676E+00	1.499E+00	1.499E+00	139.84
	154.21	99	5.70	7.419E+00	1.376E+00	1.376E+00	75.45
	269.46	57	13.90	5.169E+00	4.657E-01	4.657E-01	114.47
	323.87	------	3.99*	4.507E+00	------	Line Not Found	------
	338.28	94	2.84	4.358E+00	4.495E+00	4.495E+00	58.89
RA-224	240.99	810	4.10*	5.586E+00	2.088E+01	2.088E+01	9.64
RA-226	74.82	1108	5.80	9.703E+00	1.162E+01	1.162E+01	9.87
	77.11	1822	9.70	9.655E+00	1.148E+01	1.148E+01	6.74
	87.09	633	3.41	9.401E+00	1.165E+01	1.165E+01	14.94
	242.00	810	7.25	5.586E+00	1.181E+01	1.181E+01	9.64
	295.22	1682	18.42	4.835E+00	1.114E+01	1.114E+01	6.04
	351.93	2715	35.60*	4.224E+00	1.065E+01	1.065E+01	4.54
AC-228	105.21	------	1.10	8.862E+00	------	Line Not Found	------
	338.32	94	11.27	4.358E+00	1.133E+00	1.133E+00	58.89
	835.71	------	1.61	2.023E+00	------	Line Not Found	------
	911.20	110	25.80*	1.873E+00	1.339E+00	1.339E+00	31.64
	968.97	53	15.80	1.774E+00	1.112E+00	1.112E+00	53.44
RA-228	105.21	------	1.10	8.862E+00	------	Line Not Found	------
	338.32	94	11.27	4.358E+00	1.133E+00	1.133E+00	58.89
	835.71	------	1.61	2.023E+00	------	Line Not Found	------
	911.20	110	25.80*	1.873E+00	1.339E+00	1.339E+00	31.64
	968.97	53	15.80	1.774E+00	1.112E+00	1.112E+00	53.44
TH-228	74.82	1108	10.28	9.703E+00	6.554E+00	6.554E+00	9.87
	77.11	1822	17.10	9.655E+00	6.510E+00	6.510E+00	6.74
	238.63	479	43.60*	5.641E+00	1.150E+00	1.150E+00	13.96
	300.09	45	3.30	4.783E+00	1.685E+00	1.685E+00	100.99
TH-229	85.43	270	14.70	9.491E+00	1.143E+00	1.143E+00	29.15
	88.47	633	24.00	9.401E+00	1.655E+00	1.655E+00	14.94
	193.51	------	4.41*	6.484E+00	------	Line Not Found	------
	210.85	------	2.80	6.135E+00	------	Line Not Found	------
TH-230	74.82	1108	5.80	9.703E+00	1.162E+01	1.162E+01	9.87
	77.11	1822	9.70	9.655E+00	1.148E+01	1.148E+01	6.74
	87.09	633	3.41	9.401E+00	1.165E+01	1.165E+01	14.94
	242.00	810	7.25	5.586E+00	1.181E+01	1.181E+01	9.64
	295.22	1682	18.42	4.835E+00	1.114E+01	1.114E+01	6.04
	351.93	2715	35.60*	4.224E+00	1.065E+01	1.065E+01	4.54
TH-231	81.07	44	15.00	9.570E+00	1.797E-01	1.797E-01	194.63
	83.79	270	24.70	9.491E+00	6.800E-01	6.800E-01	29.15
	94.87	------	5.69	9.180E+00	------	Line Not Found	------
	144.24	64	3.27	7.676E+00	1.499E+00	1.499E+00	139.84
	154.21	99	5.70	7.419E+00	1.376E+00	1.376E+00	75.45
	269.46	57	13.90	5.169E+00	4.657E-01	4.657E-01	114.47
	323.87	------	3.99*	4.507E+00	------	Line Not Found	------
	338.28	94	2.84	4.358E+00	4.495E+00	4.495E+00	58.89
TH-232	105.21	------	1.10	8.862E+00	------	Line Not Found	------
	338.32	94	11.27	4.358E+00	1.133E+00	1.133E+00	58.89

Sample ID : G674299016 Acquisition date : 30-JUL-2024 11:21:37

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	835.71	------	1.61	2.023E+00	------	Line Not Found	------
	911.20	110	25.80*	1.873E+00	1.339E+00	1.339E+00	31.64
	968.97	53	15.80	1.774E+00	1.112E+00	1.112E+00	53.44
TH-234	63.29	527	3.70*	9.843E+00	8.533E+00	8.533E+00	24.39
	92.59	764	4.23	9.244E+00	1.153E+01	1.153E+01	13.87
U-234	74.82	1108	5.80	9.703E+00	1.162E+01	1.162E+01	9.87
	77.11	1822	9.70	9.655E+00	1.148E+01	1.148E+01	6.74
	87.09	633	3.41	9.401E+00	1.165E+01	1.165E+01	14.94
	242.00	810	7.25	5.586E+00	1.181E+01	1.181E+01	9.64
	295.22	1682	18.42	4.835E+00	1.114E+01	1.114E+01	6.04
	351.93	2715	35.60*	4.224E+00	1.065E+01	1.065E+01	4.54
U-235	89.96	267	3.47	9.325E+00	4.863E+00	4.863E+00	32.75
	93.35	764	5.60	9.244E+00	8.706E+00	8.706E+00	13.87
	143.76	64	10.96*	7.676E+00	4.472E-01	4.472E-01	139.84
	163.33	99	5.08	7.182E+00	1.606E+00	1.606E+00	90.00
	185.72	834	57.20	6.647E+00	1.294E+00	1.294E+00	14.29
	205.31	------	5.01	6.243E+00	------	Line Not Found	------
U-238	63.29	527	3.70*	9.843E+00	8.533E+00	8.533E+00	24.39
	92.59	764	4.23	9.244E+00	1.153E+01	1.153E+01	13.87
AM-243	43.53	------	5.90	9.237E+00	------	Line Not Found	------
	74.66	1108	67.20*	9.703E+00	1.003E+00	1.003E+00	9.87
CM-247	278.00	------	3.40	5.057E+00	------	Line Not Found	------
	287.50	------	2.00	4.933E+00	------	Line Not Found	------
	402.40	39	72.00*	3.800E+00	8.345E-02	8.345E-02	96.43
ANH-511	511.00	89	100.00*	3.107E+00	1.683E-01	1.683E-01	52.48

Flag: "*" = Keyline

Sample ID : G674299016 Acquisition date : 30-JUL-2024 11:21:37

Total number of lines in spectrum 82
Number of unidentified lines 28
Number of lines tentatively identified by NID 54 65.85%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	4.680E+00	4.680E+00	1.602E+00	34.23	
CO-57	271.74D	1.09	1.818E-02	1.983E-02	5.065E-02	255.48	
AS-73	80.30D	1.34	7.204E-01	9.667E-01	6.929E-01	71.67	
NB-94	20300.00Y	1.00	5.762E-02	5.762E-02	7.992E-02	138.71	
CD-109	461.40D	1.05	1.074E+01	1.130E+01	0.169E+01	14.94	
SN-117M	13.60D	5.68	5.896E-02	3.347E-01	3.696E-01	110.42	
TE-123M	119.20D	1.22	6.064E-02	7.393E-02	8.163E-02	110.42	
SN-126	2.30E+05Y	1.00	1.074E+00	1.074E+00	0.160E+00	14.94	
CE-139	137.64D	1.19	4.668E-02	5.542E-02	5.765E-02	104.02	
BA-140	12.75D	6.37	1.999E-01	1.274E+00	1.731E+00	135.89	
CE-141	32.51D	2.07	1.015E-01	2.099E-01	2.935E-01	139.84	
PM-147	2.62Y	1.02	5.459E+02	5.596E+02	14.30E+02	255.48	
TL-208	1.41E+10Y	1.00	2.217E-01	2.217E-01	1.323E-01	59.66	
BI-210	22.20Y	1.00	4.965E+00	4.979E+00	1.479E+00	29.71	
PB-210	22.20Y	1.00	4.965E+00	4.979E+00	1.479E+00	29.71	
BI-211	7.04E+08Y	1.00	2.935E+01	2.935E+01	0.133E+01	4.54	
BI-212	1.41E+10Y	1.00	1.517E+00	1.517E+00	1.848E+00	121.81	
PB-212	1.41E+10Y	1.00	1.150E+00	1.150E+00	0.161E+00	13.96	
BI-214	1600.00Y	1.00	8.723E+00	8.724E+00	0.449E+00	5.15	
PB-214	1600.00Y	1.00	1.065E+01	1.065E+01	0.048E+01	4.54	
RN-219	7.04E+08Y	1.00	9.104E-01	9.104E-01	8.779E-01	96.43	
RN-222	1600.00Y	1.00	8.723E+00	8.724E+00	0.449E+00	5.15	
RA-223	7.04E+08Y	1.00	6.800E-01	6.800E-01	1.982E-01	29.15	K
RA-224	1.41E+10Y	1.00	2.088E+01	2.088E+01	0.201E+01	9.64	
RA-226	1600.00Y	1.00	1.065E+01	1.065E+01	0.048E+01	4.54	
AC-228	1.41E+10Y	1.00	1.339E+00	1.339E+00	0.424E+00	31.64	
RA-228	1.41E+10Y	1.00	1.339E+00	1.339E+00	0.424E+00	31.64	
TH-228	1.41E+10Y	1.00	1.150E+00	1.150E+00	0.161E+00	13.96	
TH-229	7340.00Y	1.00	1.655E+00	1.655E+00	0.247E+00	14.94	K
TH-230	7.54E+04Y	1.00	1.065E+01	1.065E+01	0.048E+01	4.54	
TH-231	7.04E+08Y	1.00	6.800E-01	6.800E-01	1.982E-01	29.15	K
TH-232	1.41E+10Y	1.00	1.339E+00	1.339E+00	0.424E+00	31.64	
TH-234	4.47E+09Y	1.00	8.533E+00	8.533E+00	2.082E+00	24.39	
U-234	2.45E+05Y	1.00	1.065E+01	1.065E+01	0.048E+01	4.54	
U-235	7.04E+08Y	1.00	4.472E-01	4.472E-01	6.254E-01	139.84	
U-238	4.47E+09Y	1.00	8.533E+00	8.533E+00	2.082E+00	24.39	
AM-243	7370.00Y	1.00	1.003E+00	1.003E+00	0.099E+00	9.87	
CM-247	1.56E+07Y	1.00	8.345E-02	8.345E-02	8.048E-02	96.43	
ANH-511	1.00E+09Y	1.00	1.683E-01	1.683E-01	0.883E-01	52.48	
			---	---			
	Total Activity :		7.147E+02	7.306E+02			

Grand Total Activity : 7.147E+02 7.306E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299016 Acquisition date : 30-JUL-2024 11:21:37

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	9.98	221	541	2.78	20.01	18	6	4.84E-02	40.1	6.36E-01	
0	17.04	144	1005	1.69	34.13	28	14	3.23E-02	****	3.14E+00	
0	98.89	86	512	1.02	197.79	194	10	2.12E-02	****	9.06E+00	T
0	250.94	31	204	1.87	501.80	500	9	8.15E-03	****	5.45E+00	T
0	409.49	13	97	1.31	818.84	817	6	3.53E-03	****	3.74E+00	T
0	487.82	27	60	2.74	975.48	971	9	7.44E-03	****	3.23E+00	T
2	533.52	23	41	1.80	1066.88	1063	19	6.21E-03	****	3.00E+00	
0	589.62	13	44	0.62	1179.07	1175	7	3.64E-03	****	2.75E+00	
0	665.90	43	65	1.13	1331.62	1326	10	1.19E-02	76.5	2.47E+00	T
0	672.77	25	38	3.46	1345.35	1340	11	7.00E-03	****	2.45E+00	
2	713.80	24	22	1.93	1427.41	1400	31	6.82E-03	72.6	2.33E+00	
0	743.73	35	58	2.19	1487.27	1481	13	9.86E-03	95.0	2.24E+00	T
0	752.80	29	66	2.03	1505.40	1499	16	7.99E-03	****	2.22E+00	T
0	768.58	153	77	1.64	1536.96	1530	15	4.28E-02	29.8	2.18E+00	
0	786.67	66	37	1.70	1573.15	1567	15	1.85E-02	48.3	2.13E+00	
0	806.49	47	49	1.09	1612.79	1607	11	1.32E-02	64.3	2.09E+00	
0	852.49	21	36	3.82	1704.78	1699	12	5.88E-03	****	1.99E+00	
0	896.09	15	25	1.46	1791.99	1788	8	4.38E-03	****	1.90E+00	T
0	928.77	12	32	0.87	1857.36	1850	9	3.33E-03	****	1.84E+00	T
0	934.59	82	46	1.53	1869.00	1863	11	2.31E-02	38.6	1.83E+00	T
0	954.87	23	26	4.31	1909.56	1903	12	6.54E-03	****	1.80E+00	T
3	964.48	39	20	2.16	1928.78	1925	20	1.12E-02	47.4	1.78E+00	T
0	1000.95	36	41	1.43	2001.72	1996	12	1.03E-02	77.6	1.72E+00	T
0	1019.62	27	64	6.39	2039.07	2024	23	7.84E-03	****	1.70E+00	
0	1095.12	16	17	2.57	2190.08	2184	11	4.69E-03	****	1.59E+00	T
0	1100.17	11	22	4.22	2200.18	2194	11	3.14E-03	****	1.59E+00	T
0	1156.08	32	34	1.25	2312.01	2305	12	9.32E-03	79.3	1.52E+00	
0	1208.29	23	42	3.69	2416.46	2407	16	6.70E-03	****	1.46E+00	
0	1238.75	112	49	1.40	2477.38	2471	14	3.25E-02	32.1	1.43E+00	T
0	1281.94	19	40	1.59	2563.77	2556	14	5.50E-03	****	1.39E+00	
0	1321.52	21	3	3.38	2642.95	2638	11	6.11E-03	51.9	1.36E+00	
0	1335.30	7	11	1.01	2670.52	2667	6	2.08E-03	****	1.34E+00	
0	1352.38	15	7	1.20	2704.69	2699	10	4.47E-03	80.3	1.33E+00	
0	1378.14	123	31	2.07	2756.22	2748	19	3.57E-02	27.8	1.31E+00	
0	1387.93	48	9	4.94	2775.82	2768	18	1.39E-02	39.9	1.30E+00	
0	1402.45	29	32	2.61	2804.86	2796	12	8.51E-03	83.3	1.29E+00	
0	1408.60	51	28	1.52	2817.16	2810	13	1.50E-02	49.4	1.29E+00	T
0	1509.93	45	22	1.46	3019.88	3014	11	1.32E-02	49.6	1.21E+00	
0	1516.74	21	29	0.66	3033.51	3025	20	6.23E-03	****	1.21E+00	
0	1525.85	10	15	1.03	3051.72	3046	9	2.93E-03	****	1.20E+00	
0	1627.31	7	3	1.30	3254.72	3250	8	2.07E-03	****	1.14E+00	
0	1661.89	27	8	2.80	3323.90	3314	16	8.06E-03	57.3	1.12E+00	
0	1730.12	75	11	1.48	3460.40	3452	14	2.23E-02	28.3	1.09E+00	
0	1839.12	9	0	0.60	3678.50	3672	11	2.78E-03	63.2	1.04E+00	
0	1847.50	46	7	2.50	3695.27	3687	14	1.36E-02	36.6	1.04E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:15.61

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299016.CNF;1  *
* Acquisition date : 30-JUL-2024 11:21:37 Sensitivity     : 3.000           *
* Detector ID      : GAM46                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.46     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:10:00 Nuclide Library : SOLID           *
* Sample ID        : G674299016           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.2725E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 26-SEP-2023 07:28:30 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM46_CAN.CNF;5             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	5.473E-01
CO-57	3.002E-02
AS-73	3.094E-01
NB-94	3.590E-02
CD-109	7.146E-01
SN-117M	1.895E-01
TE-123M	3.916E-02
SN-126	6.778E-02
CE-139	3.854E-02
BA-140	7.702E-01
PM-147	8.906E+02
TL-208	4.929E-02
BI-210	5.421E-01
PB-210	5.421E-01
BI-211	2.300E-01
BI-212	5.715E-01
PB-212	7.312E-02
BI-214	8.017E-02
PB-214	8.365E-02
RN-219	5.247E-01
RN-222	8.017E-02
RA-223	8.091E-01
RA-224	7.836E-01
RA-226	8.365E-02
AC-228	1.491E-01
RA-228	1.491E-01
TH-228	7.312E-02
TH-229	6.622E-01
TH-230	8.365E-02
TH-231	8.091E-01
TH-232	1.491E-01
TH-234	7.054E-01
U-234	8.365E-02
U-235	2.545E-01
U-238	7.054E-01
AM-243	4.463E-02
CM-247	4.816E-02

ANH-511 3.264E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.344E-01	NOT IDENT.
NA-22	4.287E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.603E-02	NOT IDENT.
SC-46	6.260E-02	FAIL ABUN
V-48	1.547E-01	NOT IDENT.
CR-51	7.032E-01	NOT IDENT.
MN-52	2.392E+00	FAIL ABUN
MN-54	4.229E-02	NOT IDENT.
CO-56	5.386E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-58	6.311E-02	NOT IDENT.
FE-59	1.214E-01	FAIL ABUN
CO-60	4.226E-02	NOT IDENT.
ZN-65	1.019E-01	NOT IDENT.
GE-68	1.302E+00	NOT IDENT.
AS-74	2.000E-01	NOT IDENT.
SE-75	6.015E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	6.680E-01	NOT IDENT.
RB-83	9.937E-02	NOT IDENT.
RB-84	1.280E-01	NOT IDENT.
KR-85	8.058E+00	NOT IDENT.
SR-85	5.211E-02	NOT IDENT.
RB-86	1.609E+00	NOT IDENT.
Y-88	2.606E-03	NOT IDENT.
Y-91	2.515E+01	NOT IDENT.
NB-95	6.577E-02	NOT IDENT.
NB-95M	2.003E-01	NOT IDENT.
ZR-95	9.336E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.887E-02	NOT IDENT.
RH-102	6.083E-02	NOT IDENT.
RU-103	6.039E-02	FAIL ABUN
RH-106	3.787E-01	NOT IDENT.
RU-106	3.787E-01	NOT IDENT.
AG-108M	3.296E-02	NOT IDENT.
AG-110	7.951E-01	NOT IDENT.
AG-110M	6.566E-02	NOT IDENT.
SN-113	6.286E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SB-122	0.000E+00	SHORT HLIF
SB-124	1.345E-01	NOT IDENT.
SB-125	1.075E-01	NOT IDENT.
TE-125M	1.369E+01	NOT IDENT.
I-126	9.845E-01	FAIL ABUN
SB-126	5.301E-01	FAIL ABUN
SB-127	4.107E+01	FAIL ABUN
I-131	6.606E-01	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.653E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	5.169E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.750E-01	FAIL ABUN
BA-137M	3.943E-02	NOT IDENT.
CS-137	4.165E-02	NOT IDENT.
LA-138	6.120E-02	NOT IDENT.
LA-140	3.343E-01	FAIL ABUN
CE-141	1.296E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	2.553E-01	FAIL ABUN
PM-144	4.293E-02	NOT IDENT.
PR-144	3.248E+00	NOT IDENT.
PM-146	5.506E-02	NOT IDENT.
ND-147	2.022E+00	FAIL ABUN
PM-149	0.000E+00	SHORT HLIF

EU-150	3.142E-02	FAIL ABUN
EU-152	1.140E-01	FAIL ABUN
GD-153	9.066E-02	FAIL ABUN
EU-154	1.210E-01	FAIL ABUN
EU-155	1.180E-01	FAIL ABUN
TB-160	1.857E-01	FAIL ABUN
HO-166M	6.645E-02	FAIL ABUN
TM-171	5.529E+00	FAIL ABUN
HF-172	2.292E-01	FAIL ABUN
LU-172	6.984E-02	FAIL ABUN
LU-176	3.285E-02	FAIL ABUN
HF-181	7.230E-02	NOT IDENT.
TA-182	2.096E-01	FAIL ABUN
RE-183	9.959E-02	FAIL ABUN
RE-184	2.394E-01	FAIL ABUN
W-188	1.099E+01	FAIL ABUN
IR-192	4.862E-02	FAIL ABUN
HG-203	6.154E-02	NOT IDENT.
TL-204	3.806E+00	FAIL ABUN
BI-207	5.964E-02	FAIL ABUN
PB-211	9.422E-01	NOT IDENT.
BI-213	1.299E-01	NOT IDENT.
AC-225	2.729E+00	NOT IDENT.
AC-227	3.364E-01	FAIL ABUN
TH-227	3.364E-01	FAIL ABUN
PA-231	6.247E-01	NOT IDENT.
PA-233	7.555E-02	FAIL ABUN
PA-234	3.303E-01	FAIL ABUN
PA-234M	7.532E+00	FAIL ABUN
NP-237	7.555E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.932E-01	FAIL ABUN
PU-239	4.043E+02	NOT IDENT.
AM-241	6.913E-02	NOT IDENT.
CM-243	1.111E-01	FAIL ABUN
BK-247	9.392E-02	FAIL ABUN
CF-249	5.236E-02	NOT IDENT.
CF-251	1.651E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:19.99

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299016.CNF;1  *
* Acquisition date : 30-JUL-2024 11:21:37 Sensitivity     : 3.000           *
* Detector ID      : GAM46                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:01.46     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:10:00 Nuclide Library : SOLID           *
* Sample ID        : G674299016           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.2725E+02 GRAM *
*                                         Quantity Err(%) : 1.5717E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 26-SEP-2023 07:28:30 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM46_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	4.680E+00	1.619E+00	1.619E+00
CO-57	1.983E-02	4.971E-02	4.971E-02
AS-73	9.667E-01	7.083E-01	7.083E-01
NB-94	5.762E-02	7.861E-02	7.861E-02
CD-109	1.130E+01	1.999E+00	1.999E+00
SN-117M	3.347E-01	3.647E-01	3.647E-01
TE-123M	7.393E-02	8.054E-02	8.054E-02
SN-126	1.074E+00	1.812E-01	1.812E-01
CE-139	5.542E-02	5.794E-02	5.794E-02
BA-140	1.274E+00	1.702E+00	1.702E+00
PM-147	5.596E+02	1.403E+03	1.403E+03
TL-208	2.217E-01	1.318E-01	1.318E-01
BI-210	4.979E+00	1.525E+00	1.525E+00
PB-210	4.979E+00	1.525E+00	1.525E+00
BI-211	2.935E+01	2.736E+00	2.736E+00
BI-212	1.517E+00	1.820E+00	1.820E+00
PB-212	1.150E+00	1.959E-01	1.959E-01
BI-214	8.724E+00	1.067E+00	1.067E+00
PB-214	1.065E+01	9.780E-01	9.780E-01
RN-219	9.104E-01	8.705E-01	8.705E-01
RN-222	8.724E+00	1.067E+00	1.067E+00
RA-223	4.616E-01	8.884E-01	8.884E-01
RA-224	2.088E+01	2.874E+00	2.874E+00
RA-226	1.065E+01	9.780E-01	9.780E-01
AC-228	1.339E+00	4.385E-01	4.385E-01
RA-228	1.339E+00	4.385E-01	4.385E-01
TH-228	1.150E+00	1.959E-01	1.959E-01
TH-229	-6.534E-01	8.466E-01	8.466E-01
TH-230	1.065E+01	9.779E-01	9.779E-01
TH-231	4.616E-01	8.884E-01	8.884E-01
TH-232	1.339E+00	4.385E-01	4.385E-01
TH-234	8.533E+00	2.809E+00	2.809E+00
U-234	1.065E+01	9.779E-01	9.779E-01
U-235	4.472E-01	6.156E-01	6.156E-01
U-238	8.533E+00	2.809E+00	2.809E+00
AM-243	1.003E+00	1.265E-01	1.265E-01
CM-247	8.345E-02	8.034E-02	8.034E-02

ANH-511	1.683E-01	8.816E-02	8.816E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-9.369E-01	5.962E-01	7.307E-01	NOT IDENT.
NA-22	-2.489E-03	5.446E-02	5.447E-02	NOT IDENT.
NA-24	7.207E+14	1.520E+15	1.554E+15	SHORT HLIF
AL-26	-6.560E-03	3.364E-02	3.377E-02	NOT IDENT.
SC-46	1.373E-02	7.472E-02	7.498E-02	FAIL ABUN
V-48	-1.657E-01	2.175E-01	2.300E-01	NOT IDENT.
CR-51	-4.526E-01	8.255E-01	8.504E-01	NOT IDENT.
MN-52	-1.592E+00	3.142E+00	3.223E+00	FAIL ABUN
MN-54	-2.533E-02	5.455E-02	5.573E-02	NOT IDENT.
CO-56	4.647E-03	7.267E-02	7.270E-02	FAIL ABUN
MN-56	1.000E+41	1.512E+42	0.000E+00	SHORT HLIF
CO-58	4.283E-03	8.512E-02	8.515E-02	NOT IDENT.
FE-59	1.224E-01	2.069E-01	2.141E-01	FAIL ABUN
CO-60	-2.630E-02	6.208E-02	6.320E-02	NOT IDENT.
ZN-65	4.426E-02	1.258E-01	1.274E-01	NOT IDENT.
GE-68	4.210E-01	1.440E+00	1.453E+00	NOT IDENT.
AS-74	-7.032E-02	2.434E-01	2.454E-01	NOT IDENT.
SE-75	-3.727E-02	6.988E-02	7.187E-02	FAIL ABUN
BR-77	4.487E+04	4.477E+04	4.913E+04	SHORT HLIF
SR-82	3.093E-01	7.682E-01	7.807E-01	NOT IDENT.
RB-83	4.209E-02	1.124E-01	1.140E-01	NOT IDENT.
RB-84	9.763E-03	1.546E-01	1.547E-01	NOT IDENT.
KR-85	7.402E+00	9.617E+00	1.018E+01	NOT IDENT.
SR-85	4.782E-02	6.220E-02	6.583E-02	NOT IDENT.
RB-86	2.342E-01	1.823E+00	1.826E+00	NOT IDENT.
Y-88	-2.350E-02	3.294E-02	3.460E-02	NOT IDENT.
Y-91	6.019E+00	3.198E+01	3.210E+01	NOT IDENT.
NB-95	3.539E-02	8.399E-02	8.549E-02	NOT IDENT.
NB-95M	2.884E-01	2.314E-01	2.655E-01	NOT IDENT.
ZR-95	-7.611E-03	1.274E-01	1.274E-01	NOT IDENT.
NB-97	1.000E+41	9.486E+41	0.000E+00	SHORT HLIF
ZR-97	-3.153E+13	2.944E+14	2.947E+14	SHORT HLIF
MO-99	-9.588E+02	2.484E+03	2.521E+03	SHORT HLIF
TC-99M	2.000E+39	3.084E+39	0.000E+00	SHORT HLIF
RH-101	-1.478E-02	4.699E-02	4.746E-02	NOT IDENT.
RH-102	-9.576E-03	7.323E-02	7.335E-02	NOT IDENT.
RU-103	-9.315E-03	7.128E-02	7.140E-02	FAIL ABUN
RH-106	2.277E-01	4.246E-01	4.368E-01	NOT IDENT.
RU-106	2.277E-01	4.246E-01	4.368E-01	NOT IDENT.
AG-108M	-2.556E-02	4.027E-02	4.188E-02	NOT IDENT.
AG-110	-4.237E-01	9.973E-01	1.015E+00	NOT IDENT.
AG-110M	-1.317E-02	8.165E-02	8.187E-02	NOT IDENT.
SN-113	-2.547E-02	7.386E-02	7.475E-02	NOT IDENT.
CD-115	-2.847E+02	5.571E+03	5.573E+03	SHORT HLIF
SB-122	2.557E+02	3.275E+02	3.472E+02	SHORT HLIF
SB-124	1.022E-01	1.394E-01	1.468E-01	NOT IDENT.
SB-125	-8.883E-02	1.313E-01	1.373E-01	NOT IDENT.
TE-125M	3.747E+00	1.593E+01	1.602E+01	NOT IDENT.
I-126	1.940E+00	1.474E+00	1.714E+00	FAIL ABUN
SB-126	5.089E-01	6.083E-01	6.501E-01	FAIL ABUN
SB-127	-1.382E+01	5.081E+01	5.119E+01	FAIL ABUN
I-131	-3.254E-01	7.789E-01	7.926E-01	FAIL ABUN
I-132	1.000E+41	2.499E+41	0.000E+00	SHORT HLIF
TE-132	1.374E+01	6.663E+01	6.692E+01	SHORT HLIF
BA-133	2.169E-02	5.675E-02	5.758E-02	FAIL ABUN
I-133	1.312E+10	3.144E+10	3.199E+10	SHORT HLIF
CS-134	2.369E-02	6.053E-02	6.146E-02	NOT IDENT.
I-135	-6.652E+35	4.409E+36	0.000E+00	SHORT HLIF
CS-136	-4.050E-01	3.729E-01	4.152E-01	FAIL ABUN
BA-137M	-5.754E-03	5.344E-02	5.350E-02	NOT IDENT.
CS-137	-6.078E-03	5.645E-02	5.652E-02	NOT IDENT.
LA-138	-1.269E-02	7.454E-02	7.476E-02	NOT IDENT.
LA-140	-6.591E-02	4.091E-01	4.102E-01	FAIL ABUN
CE-141	2.099E-01	2.889E-01	3.040E-01	FAIL ABUN
CE-143	1.077E+07	3.271E+06	5.853E+06	SHORT HLIF
CE-144	2.070E-01	2.941E-01	3.086E-01	FAIL ABUN
PM-144	3.501E-02	4.764E-02	5.019E-02	NOT IDENT.
PR-144	2.662E+00	3.603E+00	3.797E+00	NOT IDENT.
PM-146	4.405E-02	6.044E-02	6.362E-02	NOT IDENT.
ND-147	-1.178E+00	2.806E+00	2.856E+00	FAIL ABUN

PM-149	5.522E+03	4.780E+04	4.786E+04	SHORT HLIF
EU-150	-2.919E-02	4.226E-02	4.426E-02	FAIL ABUN
EU-152	-2.338E-02	1.312E-01	1.316E-01	FAIL ABUN
GD-153	2.121E-01	2.247E-01	2.442E-01	FAIL ABUN
EU-154	-4.564E-03	1.532E-01	1.532E-01	FAIL ABUN
EU-155	9.404E-02	1.344E-01	1.409E-01	FAIL ABUN
TB-160	-1.207E-01	2.422E-01	2.482E-01	FAIL ABUN
HO-166M	-3.207E-03	7.992E-02	7.993E-02	FAIL ABUN
TM-171	1.633E+01	1.157E+01	1.372E+01	FAIL ABUN
HF-172	-2.461E-02	2.965E-01	2.967E-01	FAIL ABUN
LU-172	9.952E-02	1.037E-01	1.130E-01	FAIL ABUN
LU-176	6.142E-03	3.670E-02	3.680E-02	FAIL ABUN
HF-181	-1.565E-02	8.541E-02	8.570E-02	NOT IDENT.
TA-182	-2.446E-02	2.473E-01	2.476E-01	FAIL ABUN
RE-183	7.380E-02	1.110E-01	1.158E-01	FAIL ABUN
RE-184	3.960E-02	2.876E-01	2.881E-01	FAIL ABUN
W-188	-8.794E+00	1.443E+01	1.496E+01	FAIL ABUN
IR-192	-5.975E-03	5.537E-02	5.544E-02	FAIL ABUN
HG-203	-5.990E-02	7.254E-02	7.740E-02	NOT IDENT.
TL-204	-5.917E-02	4.751E+00	4.751E+00	FAIL ABUN
BI-207	-2.416E-03	6.781E-02	6.782E-02	FAIL ABUN
PB-211	-8.619E-01	1.285E+00	1.342E+00	NOT IDENT.
BI-213	9.188E-02	1.429E-01	1.488E-01	NOT IDENT.
AC-225	3.856E-01	3.318E+00	3.323E+00	NOT IDENT.
AC-227	-2.033E-01	4.312E-01	4.408E-01	FAIL ABUN
TH-227	-2.033E-01	4.312E-01	4.408E-01	FAIL ABUN
PA-231	3.821E-01	7.578E-01	7.771E-01	NOT IDENT.
PA-233	-3.625E-02	8.773E-02	8.924E-02	FAIL ABUN
PA-234	-2.591E-01	5.321E-01	5.448E-01	FAIL ABUN
PA-234M	1.478E+01	1.133E+01	1.314E+01	FAIL ABUN
NP-237	-3.625E-02	8.773E-02	8.924E-02	FAIL ABUN
NP-238	-1.735E+04	1.391E+04	1.596E+04	SHORT HLIF
NP-239	-1.910E-01	3.576E-01	3.679E-01	FAIL ABUN
PU-239	-1.755E+02	4.899E+02	4.962E+02	NOT IDENT.
AM-241	1.425E-02	8.480E-02	8.504E-02	NOT IDENT.
CM-243	-6.530E-02	1.457E-01	1.486E-01	FAIL ABUN
BK-247	-8.824E-02	1.124E-01	1.193E-01	FAIL ABUN
CF-249	1.200E-02	5.917E-02	5.942E-02	NOT IDENT.
CF-251	-1.777E-01	2.115E-01	2.261E-01	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	172.1689	85.43	270.2321	131.20	240.2147
45.60	194.2612	86.55	270.6877	133.02	188.2359
46.54	225.9966	86.79	270.7839	133.52	186.0587
49.72	0.0000	86.94	270.8454	136.00	208.3297
51.35	259.9750	87.09	270.9050	136.47	205.0022
51.87	269.6925	87.57	271.0992	140.51	0.0000
52.39	257.1558	88.03	271.2838	143.76	228.5840
52.97	257.4591	88.34	271.4087	144.24	228.7049
53.44	257.7033	88.47	271.4606	145.44	234.3952
54.07	258.0298	89.96	272.0547	152.43	233.0231
57.36	0.0000	1093.63	272.3239	153.25	220.7830
57.53	260.8122	91.11	272.5104	323.87	222.5589
57.98	246.7054	92.59	273.0910	156.02	168.4006
59.27	279.1241	93.35	273.3890	158.56	220.4244
59.32	279.1511	94.56	273.8581	159.00	192.3702
59.54	279.2663	94.65	273.8927	162.33	183.5980
60.96	286.8732	94.67	273.9004	162.66	183.6599
61.17	286.9849	94.87	273.9792	163.33	183.7813
62.93	319.2562	97.43	213.8591	165.86	170.0684
63.29	319.4649	98.43	215.6120	176.31	183.7186
63.58	319.6340	98.44	215.6150	176.60	186.1545
64.28	320.0378	99.53	215.9387	177.52	225.7295
66.73	349.5223	100.11	216.1088	181.07	0.0000
67.24	369.2704	102.03	226.9215	181.52	226.9741
125.81	376.5010	103.18	200.8787	184.41	192.3193
67.75	405.7269	103.37	230.2632	143.76	192.5488
68.89	395.7391	105.21	202.8925	193.51	210.8677
69.67	426.5927	105.31	202.9191	197.03	207.8766
70.82	405.0778	106.12	214.1753	198.01	205.6206
70.83	405.0867	106.47	240.7810	201.83	197.7589
72.81	406.4348	109.28	215.0589	203.43	211.4773
72.87	406.4761	111.00	243.3090	205.31	186.1058
74.66	412.2516	111.76	0.0000	210.85	191.8984
74.82	412.3589	114.06	220.8315	215.65	146.9687
74.97	412.4604	116.30	0.0000	218.12	150.9791
77.11	413.8952	116.74	214.8545	222.11	141.5381
78.74	452.1180	119.76	179.7107	227.09	144.5964
79.69	452.7973	121.12	211.5072	227.38	144.6301
80.03	397.7374	121.22	211.5330	228.16	0.0000
80.12	397.7973	121.78	192.1602	228.18	147.2173
80.19	397.8401	122.06	190.3468	116.74	147.2173
80.57	453.4245	122.92	205.9529	235.69	144.3221
81.00	430.2980	123.07	205.9892	235.96	144.3519
81.07	430.3442	265.00	192.5977	238.63	162.6790
81.75	281.5131	125.81	212.6934	238.98	0.0000
82.47	281.8273	127.23	235.7115	240.99	162.9731
83.79	297.3730	127.91	195.0721	242.00	163.0994
84.00	269.6476	129.30	227.1912	244.70	118.7852

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	109.3030	344.28	90.0472	563.25	39.1428
252.80	109.3358	345.93	91.9395	564.24	0.0000
254.15	0.0000	351.06	80.4643	569.33	32.1992
256.23	165.6927	351.93	80.5060	946.00	35.2193
260.90	0.0000	355.39	0.0000	569.70	35.2222
264.66	131.6576	356.01	63.9236	583.19	69.8254
264.80	131.6701	364.49	79.2721	584.27	69.8563
265.00	131.6889	366.42	0.0000	595.83	39.6697
269.46	141.5417	372.51	59.4974	427.87	38.7252
270.03	141.5988	375.05	75.1650	602.52	0.0000
271.23	141.7197	377.52	61.4998	604.72	47.4650
273.65	134.2180	356.01	93.9565	607.14	45.9778
276.40	133.6131	388.16	87.7173	609.32	49.0859
277.37	124.2158	388.63	96.0506	610.33	49.1055
277.60	118.1943	391.69	91.5859	614.28	38.4232
278.00	122.5426	264.66	68.3260	618.01	47.2017
279.20	142.5085	401.81	88.3667	620.36	34.9200
279.54	137.3588	402.40	88.3938	621.93	34.9421
279.70	138.2389	404.85	113.1993	630.19	0.0000
280.46	117.5640	410.95	92.5345	631.29	41.2565
283.69	128.2203	413.71	78.6287	633.25	45.4162
284.31	120.4768	414.70	72.1123	634.78	40.2791
285.41	112.7582	423.72	81.8599	635.95	42.3647
285.90	0.0000	427.09	71.6335	636.99	56.8530
287.50	122.4742	427.87	81.0922	657.50	41.6683
290.67	141.0150	433.94	71.8840	657.76	41.6732
293.27	0.0000	439.40	65.4427	657.90	0.0000
351.93	123.1082	440.45	57.8850	661.66	42.2551
295.96	123.1685	453.88	59.2275	664.57	0.0000
879.38	65.6296	463.37	71.0175	666.33	42.3276
299.98	103.7912	468.07	60.5967	666.50	42.3309
300.09	103.7984	473.00	59.7762	667.71	0.0000
300.13	103.8008	475.06	44.3931	677.62	37.7813
301.36	111.7752	476.78	65.6772	685.70	36.8400
302.85	125.0470	477.60	82.1293	692.65	0.0000
256.23	104.0974	482.18	64.8763	695.00	50.6914
304.85	109.6570	487.02	50.4660	696.49	33.8125
306.78	101.1725	492.35	0.0000	696.51	33.8125
308.46	110.9703	497.08	49.7258	697.00	36.7782
311.90	103.2700	505.52	51.6796	697.30	38.0508
316.51	93.8369	507.63	0.0000	697.49	34.8812
319.41	100.2153	511.00	52.9849	702.65	37.0636
320.08	107.3570	514.00	42.7389	706.68	37.1163
321.04	99.4310	514.00	42.7389	711.68	37.1818
323.87	93.3810	520.40	48.2802	720.70	33.2503
325.23	114.8224	520.69	0.0000	721.93	0.0000
328.76	110.6141	522.65	0.0000	722.78	43.1927
333.37	119.8726	527.90	0.0000	722.91	43.1944
333.97	110.0724	528.26	50.4252	723.31	49.6011
334.37	110.0999	529.59	37.0987	724.19	49.6163
338.28	122.0242	529.87	0.0000	727.33	39.5218
338.32	122.0270	531.02	53.4573	733.00	38.5283
311.90	97.0313	537.26	39.7054	735.93	35.3539
340.48	97.0313	546.56	0.0000	333.97	38.5884
340.55	97.0334	552.55	52.9547	739.50	0.0000

ENERGY	MDA COUNTS
744.23	35.4546
747.24	19.3586
748.06	29.0457
752.31	28.0101
753.82	28.0238
756.73	32.3669
756.80	32.3682
884.68	38.9341
765.81	42.2056
766.42	40.5899
766.84	46.5501
772.60	0.0000
776.52	31.4945
739.50	0.0000
778.90	41.3012
783.70	40.8218
788.74	28.3497
792.07	27.8346
795.86	31.6940
810.06	42.8181
810.29	46.1152
344.28	46.1169
810.76	44.4749
815.77	34.0967
1048.07	38.5305
832.01	33.1665
834.85	40.9415
835.71	52.0201
836.80	0.0000
846.75	0.0000
846.77	31.6520
856.80	38.4349
860.56	25.6523
871.09	48.6720
873.19	41.9846
875.33	0.0000
879.38	40.3799
880.51	37.0283
881.60	34.7955
883.24	37.0579
884.68	39.3209
889.28	39.3750
894.76	40.5659
898.04	35.5298
900.72	23.0272
903.28	38.4077
911.20	27.1748
912.08	27.1816
923.98	0.0000
926.50	27.2949
929.11	30.7299
935.54	29.0766
937.49	34.2261
944.13	29.7187
946.00	36.5964

ENERGY	MDA COUNTS
949.00	22.3199
667.71	0.0000
962.31	25.8508
964.08	33.3354
966.17	33.3542
911.20	33.3802
983.53	31.2034
984.45	0.0000
1274.44	36.5308
1001.03	32.5140
1002.74	24.3975
1004.73	34.8718
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	33.4216
1038.76	0.0000
631.29	19.3937
1048.07	34.3940
1049.04	33.5214
1050.41	22.9436
1063.66	24.7939
1077.00	19.5481
1077.34	16.8836
1085.87	26.7169
1093.63	17.1328
1099.45	17.1574
1112.07	28.6875
1112.84	26.0016
1115.54	22.9688
1120.29	25.1528
1120.55	25.1545
1221.41	25.1580
1129.67	31.5137
1131.51	0.0000
1147.95	0.0000
1173.23	27.2992
1177.95	27.3303
1189.05	25.5750
1204.77	19.0696
1221.41	24.8511
1231.02	24.9055
1235.36	29.5469
1238.28	21.2523
1260.41	0.0000
1271.87	18.6218
1274.44	18.6316
1274.54	18.6328
1291.59	24.3147
1298.22	0.0000
1312.11	16.9102
1332.49	22.6465
1362.66	0.0000
1365.19	21.8559
1368.63	0.0000

ENERGY	MDA COUNTS
1384.29	7.6328
1408.01	21.7342
1434.09	15.4248
1435.80	15.4297
1457.56	0.0000
1460.82	28.1097
1489.16	22.4202
1505.03	17.2101
1584.12	15.8867
1596.21	19.9036
1620.50	8.9973
1621.92	17.5989
1678.03	0.0000
1690.97	6.0758
1750.46	0.0000
1764.49	8.2070
1063.66	6.5723
1771.35	1.6434
1791.20	0.0000
1808.65	5.1685
1810.72	0.0000
1836.06	3.3230

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:47.88

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299017.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM50.CNF;72
                                         Background date  : 28-JUL-2024 11:22:27
Sample date      : 26-JUN-2024 10:15:00  Acquisition date : 30-JUL-2024 11:22:06
Sample ID        : G674299017            Sample quantity  : 8.47500E+01 GRAM
Detector name    : GAM50                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.59  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	38.77	23	64	1.05	77.81	75	7	6.40E-03	61.9	
2	0	63.44*	32	94	1.46	127.12	123	9	8.91E-03	58.1	
3	2	74.95	67	97	1.27	150.14	144	18	1.86E-02	29.0	2.06E+00
4	2	77.08	97	86	1.16	154.40	144	18	2.69E-02	19.0	
5	2	89.78	39	64	1.33	179.79	171	22	1.08E-02	39.6	4.11E+00
6	2	92.80*	100	51	1.29	185.84	171	22	2.79E-02	17.7	
7	2	94.82	25	38	1.23	189.87	171	22	6.93E-03	60.1	
8	0	128.63	26	41	1.47	257.46	255	6	7.11E-03	45.3	
9	0	144.25	24	67	0.63	288.70	284	8	6.69E-03	62.5	
10	0	185.73*	75	89	1.51	371.63	365	12	2.09E-02	28.8	
11	2	238.76*	133	70	1.47	477.64	472	18	3.70E-02	14.2	1.24E+00
12	2	242.22	117	53	1.56	484.56	472	18	3.26E-02	15.4	
13	0	295.29*	203	45	1.40	590.66	584	11	5.64E-02	9.5	
14	0	339.31*	38	71	2.09	678.69	670	18	1.06E-02	55.0	
15	0	352.05*	352	39	1.47	704.16	698	12	9.77E-02	6.5	
16	0	394.47	14	35	4.24	788.96	780	13	3.75E-03	94.9	
17	0	405.32	9	24	1.50	810.67	807	8	2.50E-03	100.0	
18	0	410.24	13	17	0.92	820.51	817	7	3.56E-03	62.2	
19	0	481.00	9	18	0.80	961.98	958	7	2.55E-03	82.8	
20	0	511.65*	32	15	2.90	1023.26	1016	16	8.85E-03	43.4	
21	0	538.50	14	24	4.95	1076.94	1063	16	3.86E-03	83.3	
22	0	583.41*	46	27	1.90	1166.76	1158	17	1.27E-02	32.0	
23	0	609.39*	224	44	1.81	1218.69	1211	13	6.23E-02	9.1	
24	0	656.54	11	11	3.97	1312.97	1304	14	3.19E-03	66.8	
25	0	769.17	19	18	2.95	1538.18	1532	12	5.28E-03	50.2	
26	0	778.64	9	5	0.98	1557.11	1551	10	2.62E-03	54.6	
27	0	783.33	12	16	0.57	1566.50	1560	13	3.31E-03	75.5	
28	0	885.08	7	2	1.34	1769.94	1765	9	1.93E-03	54.0	
29	0	912.46*	21	19	2.08	1824.70	1814	15	5.89E-03	51.0	
30	0	1120.60	44	14	1.54	2240.93	2233	13	1.23E-02	22.6	
31	0	1128.85	9	4	1.47	2257.41	2253	8	2.36E-03	52.6	
32	0	1207.70	12	0	1.99	2415.08	2410	10	3.33E-03	28.9	
33	5	1235.92	39	0	3.81	2471.52	2461	20	1.08E-02	18.4	7.31E-01
34	5	1239.13	22	0	1.54	2477.94	2461	20	6.14E-03	23.5	

Sample ID : G674299017 Acquisition date : 30-JUL-2024 11:22:06

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1384.59	13	0	0.73	2768.85	2762	14	3.61E-03	27.7	
36	0	1461.33*	21	11	2.31	2922.30	2914	14	5.79E-03	41.2	
37	0	1730.70	11	4	1.84	3461.02	3451	15	3.05E-03	49.2	
38	0	1765.41	27	12	1.89	3530.45	3523	13	7.57E-03	30.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:26:49

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299017.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 10:15:00 Acquisition date : 30-JUL-2024 11:22:06
Sample ID        : G674299017           Sample quantity  : 84.750 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA50              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.59   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Sample ID : G674299017 Acquisition date : 30-JUL-2024 11:22:06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.631E-01	1.664E+00	1.664E+00	82.44	OK
AG-110	657.50	4.50*	2.187E+00	9.454E-01	1.039E+00	133.57	OK
CE-141	145.44	48.29*	5.911E+00	2.096E-02	4.334E-02	418.16	OK
TL-208	277.37	6.60	4.200E+00	----- Line Not Found		-----	Absent
	583.19	85.00*	2.430E+00	1.794E-01	1.794E-01	63.96	OK
	860.56	12.50	1.670E+00	----- Line Not Found		-----	Absent
BI-211	72.87	1.23	2.519E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	3.569E+00	6.136E+00	6.136E+00	13.02	OK
PB-212	74.82	10.28	2.774E+00	1.852E+00	1.852E+00	57.91	OK
	77.11	17.10	3.031E+00	1.471E+00	1.471E+00	38.06	OK
	238.63	43.60*	4.637E+00	5.268E-01	5.268E-01	28.48	OK
	300.09	3.30	3.983E+00	----- Line Not Found		-----	Absent
BI-214	609.32	45.49*	2.340E+00	1.707E+00	1.707E+00	18.16	OK
	1120.29	14.92	1.253E+00	1.935E+00	1.935E+00	45.19	OK
	1764.49	15.30	8.555E-01	1.710E+00	1.710E+00	60.14	OK
PB-214	74.82	5.80	2.774E+00	3.283E+00	3.283E+00	57.91	OK
	77.11	9.70	3.031E+00	2.594E+00	2.594E+00	38.06	OK
	87.09	3.41	4.116E+00	----- Line Not Found		-----	Absent
	242.00	7.25	4.594E+00	2.819E+00	2.819E+00	30.81	OK
	295.22	18.42	4.027E+00	2.197E+00	2.198E+00	19.08	OK
	351.93	35.60*	3.569E+00	2.227E+00	2.227E+00	13.02	OK
RN-222	609.32	45.49*	2.340E+00	1.707E+00	1.707E+00	18.16	OK
	1120.29	14.92	1.253E+00	1.935E+00	1.935E+00	45.19	OK
	1764.49	15.30	8.555E-01	1.710E+00	1.710E+00	60.14	OK
RA-224	240.99	4.10*	4.594E+00	4.985E+00	4.985E+00	30.81	OK
RA-226	74.82	5.80	2.774E+00	3.283E+00	3.283E+00	57.91	OK
	77.11	9.70	3.031E+00	2.594E+00	2.594E+00	38.06	OK
	87.09	3.41	4.116E+00	----- Line Not Found		-----	Absent
	242.00	7.25	4.594E+00	2.819E+00	2.819E+00	30.81	OK
	295.22	18.42	4.027E+00	2.197E+00	2.198E+00	19.08	OK
	351.93	35.60*	3.569E+00	2.227E+00	2.227E+00	13.02	OK
TH-228	74.82	10.28	2.774E+00	1.852E+00	1.852E+00	57.91	OK
	77.11	17.10	3.031E+00	1.471E+00	1.471E+00	38.06	OK
	238.63	43.60*	4.637E+00	5.268E-01	5.268E-01	28.48	OK
	300.09	3.30	3.983E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	2.774E+00	3.283E+00	3.283E+00	57.91	OK
	77.11	9.70	3.031E+00	2.594E+00	2.594E+00	38.06	OK
	87.09	3.41	4.116E+00	----- Line Not Found		-----	Absent
	242.00	7.25	4.594E+00	2.819E+00	2.819E+00	30.81	OK
	295.22	18.42	4.027E+00	2.197E+00	2.197E+00	19.08	OK
	351.93	35.60*	3.569E+00	2.227E+00	2.227E+00	13.02	OK
TH-234	63.29	3.70*	1.383E+00	4.928E+00	4.928E+00	116.14	OK
	92.59	4.23	4.617E+00	4.060E+00	4.060E+00	35.35	OK
U-234	74.82	5.80	2.774E+00	3.283E+00	3.283E+00	57.91	OK
	77.11	9.70	3.031E+00	2.594E+00	2.594E+00	38.06	OK
	87.09	3.41	4.116E+00	----- Line Not Found		-----	Absent
	242.00	7.25	4.594E+00	2.819E+00	2.819E+00	30.81	OK
	295.22	18.42	4.027E+00	2.197E+00	2.197E+00	19.08	OK
	351.93	35.60*	3.569E+00	2.227E+00	2.227E+00	13.02	OK

Sample ID : G674299017 Acquisition date : 30-JUL-2024 11:22:06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
U-235	89.96	3.47	4.364E+00	2.036E+00	2.036E+00	79.20	OK
	93.35	5.60	4.617E+00	3.067E+00	3.067E+00	35.35	OK
	143.76	10.96*	5.914E+00	----- Line Not Found		-----	<<INT Reject
	163.33	5.08	5.710E+00	----- Line Not Found		-----	Absent
	185.72	57.20	5.386E+00	1.944E-01	1.944E-01	57.69	OK
	205.31	5.01	5.093E+00	----- Line Not Found		-----	Absent
U-238	63.29	3.70*	1.383E+00	4.928E+00	4.928E+00	116.14	OK
	92.59	4.23	4.617E+00	4.060E+00	4.060E+00	35.35	OK
AM-243	43.53	5.90	6.527E-02	----- Line Not Found		-----	Absent
	74.66	67.20*	2.774E+00	2.834E-01	2.834E-01	57.91	OK
ANH-511	511.00	100.00*	2.710E+00	9.508E-02	9.508E-02	86.83	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:50.21

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299017.CNF;1  *
* Acquisition date : 30-JUL-2024 11:22:06 Sensitivity     : 3.000           *
* Detector ID      : GAM50                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.59     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:15:00 Analyst initials: RXF2            *
* Sample ID        : G674299017           Sample Quantity : 8.4750E+01 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 04:24:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM50_CAN.CNF;3             *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.664E+00	1.344E+00	1.164E+00
AG-110	1.039E+00	1.360E+00	2.269E+00
CE-141	4.334E-02	1.776E-01	2.425E-01
TL-208	1.794E-01	1.124E-01	1.022E-01
BI-211	6.136E+00	7.827E-01	5.509E-01
PB-212	5.268E-01	1.471E-01	1.471E-01
BI-214	1.707E+00	3.038E-01	2.078E-01
PB-214	2.227E+00	2.841E-01	2.004E-01
RN-222	1.707E+00	3.038E-01	2.078E-01
RA-224	4.985E+00	1.505E+00	1.576E+00
RA-226	2.227E+00	2.841E-01	2.004E-01
TH-228	5.268E-01	1.471E-01	1.471E-01
TH-230	2.227E+00	2.841E-01	2.004E-01
TH-234	4.928E+00	5.609E+00	6.078E+00
U-234	2.227E+00	2.841E-01	2.004E-01
U-235	2.956E-01	3.623E-01	5.461E-01
U-238	4.928E+00	5.609E+00	6.078E+00
AM-243	2.834E-01	1.608E-01	1.866E-01
ANH-511	9.508E-02	8.090E-02	6.977E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-4.174E-01	6.295E-01	9.204E-01	NOT IDENT.
NA-22	-3.091E-03	6.255E-02	1.229E-01	NOT IDENT.
NA-24	0.000E+00	1.681E+15	0.000E+00	SHORT HLIF
AL-26	-1.615E-02	4.377E-02	8.665E-02	FAIL ABUN
SC-46	-8.735E-03	6.067E-02	1.039E-01	FAIL ABUN
V-48	7.835E-03	1.782E-01	3.733E-01	NOT IDENT.
CR-51	-3.041E-01	9.616E-01	1.644E+00	NOT IDENT.
MN-52	-4.701E-01	2.583E+00	5.665E+00	NOT IDENT.
MN-54	4.355E-02	4.819E-02	1.077E-01	NOT IDENT.
CO-56	-5.261E-02	7.988E-02	1.296E-01	FAIL ABUN
MN-56	0.000E+00	1.500E+41	0.000E+00	SHORT HLIF

CO-57	2.390E-02	3.787E-02	6.847E-02	NOT IDENT.
CO-58	-6.219E-02	7.867E-02	1.247E-01	NOT IDENT.
FE-59	-3.701E-02	1.420E-01	2.728E-01	NOT IDENT.
CO-60	-2.018E-02	6.302E-02	1.208E-01	NOT IDENT.
ZN-65	1.627E-01	1.599E-01	3.326E-01	NOT IDENT.
GE-68	1.782E+00	1.884E+00	4.358E+00	NOT IDENT.
AS-73	4.260E+00	4.457E+00	8.661E+00	NOT IDENT.
AS-74	-6.641E-02	2.731E-01	4.965E-01	NOT IDENT.
SE-75	-6.090E-02	6.581E-02	1.063E-01	NOT IDENT.
BR-77	0.000E+00	5.733E+03	0.000E+00	SHORT HLIF
SR-82	1.953E-01	8.758E-01	1.530E+00	NOT IDENT.
RB-83	9.690E-02	1.187E-01	2.469E-01	NOT IDENT.
RB-84	-1.568E-01	1.812E-01	2.405E-01	NOT IDENT.
KR-85	1.426E+01	1.188E+01	2.306E+01	NOT IDENT.
SR-85	9.178E-02	7.680E-02	1.489E-01	NOT IDENT.
RB-86	1.970E+00	2.239E+00	5.158E+00	NOT IDENT.
Y-88	2.568E-02	7.355E-02	1.706E-01	NOT IDENT.
Y-91	6.525E+00	4.294E+01	7.572E+01	NOT IDENT.
NB-94	6.484E-02	5.688E-02	1.192E-01	NOT IDENT.
NB-95	1.066E-01	7.844E-02	1.661E-01	NOT IDENT.
NB-95M	2.141E-02	2.280E-01	3.721E-01	NOT IDENT.
ZR-95	2.650E-02	1.142E-01	2.272E-01	NOT IDENT.
NB-97	0.000E+00	1.309E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.895E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.364E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	2.972E+39	0.000E+00	SHORT HLIF
RH-101	5.135E-02	4.562E-02	8.590E-02	FAIL ABUN
RH-102	3.542E-02	7.258E-02	1.489E-01	NOT IDENT.
RU-103	1.121E-02	7.099E-02	1.392E-01	FAIL ABUN
RH-106	2.196E-02	4.180E-01	8.058E-01	NOT IDENT.
RU-106	2.196E-02	4.180E-01	8.058E-01	NOT IDENT.
AG-108M	4.514E-03	4.163E-02	8.008E-02	NOT IDENT.
CD-109	1.897E+00	1.384E+00	2.627E+00	NOT IDENT.
AG-110M	5.273E-02	5.580E-02	1.354E-01	FAIL ABUN
SN-113	-4.479E-03	7.495E-02	1.317E-01	NOT IDENT.
CD-115	0.000E+00	6.185E+03	0.000E+00	SHORT HLIF
SN-117M	-3.438E-02	2.000E-01	3.620E-01	NOT IDENT.
SB-122	0.000E+00	3.325E+02	0.000E+00	SHORT HLIF
TE-123M	1.834E-02	4.470E-02	8.445E-02	NOT IDENT.
SB-124	-6.530E-02	1.924E-01	3.689E-01	NOT IDENT.
SB-125	8.680E-02	1.312E-01	2.667E-01	NOT IDENT.
TE-125M	9.415E+00	1.768E+01	3.181E+01	NOT IDENT.
I-126	2.459E-01	7.756E-01	1.554E+00	NOT IDENT.
SB-126	-4.239E-02	5.491E-01	1.027E+00	NOT IDENT.
SN-126	2.559E-01	1.387E-01	2.698E-01	FAIL ABUN
SB-127	-1.138E+01	5.426E+01	9.904E+01	FAIL ABUN
I-131	-6.566E-03	8.465E-01	1.511E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.212E+01	0.000E+00	SHORT HLIF
BA-133	3.031E-02	7.008E-02	1.193E-01	NOT IDENT.
I-133	0.000E+00	3.993E+10	0.000E+00	SHORT HLIF
CS-134	-9.788E-03	6.269E-02	1.139E-01	NOT IDENT.
I-135	0.000E+00	5.754E+36	0.000E+00	SHORT HLIF
CS-136	2.311E-01	4.127E-01	8.995E-01	FAIL ABUN
BA-137M	2.059E-02	5.257E-02	9.523E-02	NOT IDENT.
CS-137	2.175E-02	5.554E-02	1.006E-01	NOT IDENT.
LA-138	2.565E-02	5.160E-02	1.427E-01	NOT IDENT.
CE-139	8.672E-03	4.359E-02	8.137E-02	NOT IDENT.
BA-140	1.129E+00	1.844E+00	1.989E+00	FAIL ABUN
LA-140	-3.099E-02	4.916E-01	9.847E-01	NOT IDENT.
CE-143	0.000E+00	2.813E+06	0.000E+00	SHORT HLIF
CE-144	1.519E-02	2.875E-01	4.880E-01	NOT IDENT.
PM-144	-2.099E-02	5.067E-02	8.843E-02	NOT IDENT.
PR-144	-1.601E+00	3.828E+00	6.675E+00	NOT IDENT.
PM-146	5.251E-03	5.996E-02	1.149E-01	NOT IDENT.
ND-147	-2.884E+00	2.992E+00	3.955E+00	FAIL ABUN
PM-147	3.565E+02	1.038E+03	1.832E+03	NOT IDENT.
PM-149	0.000E+00	4.600E+04	0.000E+00	SHORT HLIF
EU-150	7.787E-03	4.681E-02	7.578E-02	FAIL ABUN
EU-152	-1.442E-01	1.688E-01	2.281E-01	FAIL ABUN
GD-153	3.467E-02	1.388E-01	2.265E-01	NOT IDENT.
EU-154	-8.675E-03	1.755E-01	3.450E-01	NOT IDENT.
EU-155	4.257E-02	1.456E-01	2.586E-01	NOT IDENT.
TB-160	-2.710E-01	3.055E-01	4.214E-01	NOT IDENT.
HO-166M	8.197E-02	8.922E-02	1.895E-01	FAIL ABUN
TM-171	-6.753E+01	9.131E+01	1.515E+02	NOT IDENT.
HF-172	2.311E-01	3.006E-01	5.119E-01	FAIL ABUN
LU-172	8.435E-02	8.688E-02	2.053E-01	FAIL ABUN

LU-176	1.066E-02	3.595E-02	6.709E-02	FAIL ABUN
HF-181	5.643E-02	9.159E-02	1.871E-01	FAIL ABUN
TA-182	-1.254E-02	3.148E-01	6.056E-01	FAIL ABUN
RE-183	1.451E-01	8.664E-01	1.555E+00	NOT IDENT.
RE-184	1.593E-01	3.216E-01	6.219E-01	NOT IDENT.
W-188	7.257E+00	1.194E+01	2.130E+01	FAIL ABUN
IR-192	-1.756E-03	6.992E-02	1.232E-01	FAIL ABUN
HG-203	2.516E-02	7.227E-02	1.344E-01	NOT IDENT.
TL-204	-9.648E+00	1.188E+01	1.740E+01	NOT IDENT.
BI-207	3.127E-02	7.267E-02	1.561E-01	FAIL ABUN
BI-210	1.625E+01	2.964E+01	5.550E+01	NOT IDENT.
PB-210	1.625E+01	2.964E+01	5.550E+01	NOT IDENT.
PB-211	5.937E-01	1.164E+00	2.051E+00	FAIL ABUN
BI-212	4.612E-01	7.796E-01	1.570E+00	NOT IDENT.
BI-213	1.603E-03	1.424E-01	2.716E-01	NOT IDENT.
RN-219	6.476E-02	6.377E-01	1.029E+00	NOT IDENT.
RA-223	-6.096E-01	9.534E-01	1.569E+00	FAIL ABUN
AC-225	1.112E+00	3.185E+00	5.925E+00	NOT IDENT.
AC-227	-2.821E-01	3.223E-01	5.257E-01	NOT IDENT.
TH-227	-2.821E-01	3.223E-01	5.257E-01	NOT IDENT.
AC-228	4.264E-01	4.262E-01	6.636E-01	FAIL ABUN
RA-228	4.264E-01	4.262E-01	6.636E-01	FAIL ABUN
TH-229	8.490E-02	6.812E-01	1.259E+00	FAIL ABUN
PA-231	-4.164E-02	6.885E-01	1.223E+00	NOT IDENT.
TH-231	-6.096E-01	9.534E-01	1.569E+00	FAIL ABUN
TH-232	4.264E-01	4.262E-01	6.636E-01	FAIL ABUN
PA-233	1.107E-02	1.022E-01	1.836E-01	FAIL ABUN
PA-234	-2.017E-01	4.427E-01	8.028E-01	FAIL ABUN
PA-234M	-3.463E+00	7.480E+00	1.383E+01	NOT IDENT.
NP-237	1.107E-02	1.022E-01	1.836E-01	FAIL ABUN
NP-238	0.000E+00	1.086E+04	0.000E+00	SHORT HLIF
NP-239	1.796E-01	3.858E-01	6.872E-01	NOT IDENT.
PU-239	5.426E+02	4.821E+02	8.131E+02	FAIL ABUN
AM-241	-5.785E-02	5.401E-01	8.730E-01	NOT IDENT.
CM-243	-1.465E-01	1.595E-01	2.466E-01	NOT IDENT.
BK-247	-5.959E-02	1.043E-01	1.767E-01	NOT IDENT.
CM-247	-8.138E-03	6.112E-02	9.396E-02	NOT IDENT.
CF-249	6.304E-02	6.409E-02	1.182E-01	NOT IDENT.
CF-251	1.921E-02	1.850E-01	3.399E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:48.66

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	19	10.66*	9.631E-01	1.664E+00	1.664E+00	82.44
AG-110	657.50	11	4.50*	2.187E+00	9.454E-01	1.039E+00	133.57
CE-141	145.44	22	48.29*	5.911E+00	6.710E-02	1.387E-01	125.04
TL-208	277.37	------	6.60	4.200E+00	------	Line Not Found	------
	583.19	42	85.00*	2.430E+00	1.794E-01	1.794E-01	63.96
	860.56	------	12.50	1.670E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	2.519E+00	------	Line Not Found	------
	351.06	319	12.92*	3.569E+00	6.136E+00	6.136E+00	13.02
PB-212	74.82	60	10.28	2.774E+00	1.852E+00	1.852E+00	57.91
	77.11	86	17.10	3.031E+00	1.471E+00	1.471E+00	38.06
	238.63	120	43.60*	4.637E+00	5.268E-01	5.268E-01	28.48
	300.09	------	3.30	3.983E+00	------	Line Not Found	------
BI-214	609.32	205	45.49*	2.340E+00	1.707E+00	1.707E+00	18.16
	1120.29	41	14.92	1.253E+00	1.935E+00	1.935E+00	45.19
	1764.49	25	15.30	8.555E-01	1.710E+00	1.710E+00	60.14
PB-214	74.82	60	5.80	2.774E+00	3.283E+00	3.283E+00	57.91
	77.11	86	9.70	3.031E+00	2.594E+00	2.594E+00	38.06
	87.09	------	3.41	4.116E+00	------	Line Not Found	------
	242.00	106	7.25	4.594E+00	2.819E+00	2.819E+00	30.81
	295.22	184	18.42	4.027E+00	2.197E+00	2.198E+00	19.08
	351.93	319	35.60*	3.569E+00	2.227E+00	2.227E+00	13.02
RN-222	609.32	205	45.49*	2.340E+00	1.707E+00	1.707E+00	18.16
	1120.29	41	14.92	1.253E+00	1.935E+00	1.935E+00	45.19
	1764.49	25	15.30	8.555E-01	1.710E+00	1.710E+00	60.14
RA-224	240.99	106	4.10*	4.594E+00	4.985E+00	4.985E+00	30.81
RA-226	74.82	60	5.80	2.774E+00	3.283E+00	3.283E+00	57.91
	77.11	86	9.70	3.031E+00	2.594E+00	2.594E+00	38.06
	87.09	------	3.41	4.116E+00	------	Line Not Found	------
	242.00	106	7.25	4.594E+00	2.819E+00	2.819E+00	30.81
	295.22	184	18.42	4.027E+00	2.197E+00	2.198E+00	19.08
	351.93	319	35.60*	3.569E+00	2.227E+00	2.227E+00	13.02
TH-228	74.82	60	10.28	2.774E+00	1.852E+00	1.852E+00	57.91
	77.11	86	17.10	3.031E+00	1.471E+00	1.471E+00	38.06
	238.63	120	43.60*	4.637E+00	5.268E-01	5.268E-01	28.48
	300.09	------	3.30	3.983E+00	------	Line Not Found	------
TH-230	74.82	60	5.80	2.774E+00	3.283E+00	3.283E+00	57.91
	77.11	86	9.70	3.031E+00	2.594E+00	2.594E+00	38.06
	87.09	------	3.41	4.116E+00	------	Line Not Found	------
	242.00	106	7.25	4.594E+00	2.819E+00	2.819E+00	30.81
	295.22	184	18.42	4.027E+00	2.197E+00	2.197E+00	19.08
	351.93	319	35.60*	3.569E+00	2.227E+00	2.227E+00	13.02
TH-234	63.29	28	3.70*	1.383E+00	4.928E+00	4.928E+00	116.14
	92.59	90	4.23	4.617E+00	4.060E+00	4.060E+00	35.35
U-234	74.82	60	5.80	2.774E+00	3.283E+00	3.283E+00	57.91
	77.11	86	9.70	3.031E+00	2.594E+00	2.594E+00	38.06
	87.09	------	3.41	4.116E+00	------	Line Not Found	------
	242.00	106	7.25	4.594E+00	2.819E+00	2.819E+00	30.81

Sample ID : G674299017 Acquisition date : 30-JUL-2024 11:22:06

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	295.22	184	18.42	4.027E+00	2.197E+00	2.197E+00	19.08
	351.93	319	35.60*	3.569E+00	2.227E+00	2.227E+00	13.02
U-235	89.96	35	3.47	4.364E+00	2.036E+00	2.036E+00	79.20
	93.35	90	5.60	4.617E+00	3.067E+00	3.067E+00	35.35
	143.76	22	10.96*	5.911E+00	2.956E-01	2.956E-01	125.04
	163.33	------	5.08	5.710E+00	------	Line Not Found	------
	185.72	68	57.20	5.386E+00	1.944E-01	1.944E-01	57.69
	205.31	------	5.01	5.093E+00	------	Line Not Found	------
U-238	63.29	28	3.70*	1.383E+00	4.928E+00	4.928E+00	116.14
	92.59	90	4.23	4.617E+00	4.060E+00	4.060E+00	35.35
AM-243	43.53	------	5.90	6.527E-02	------	Line Not Found	------
	74.66	60	67.20*	2.774E+00	2.834E-01	2.834E-01	57.91
ANH-511	511.00	29	100.00*	2.710E+00	9.508E-02	9.508E-02	86.83

Flag: "*" = Keyline

Sample ID : G674299017 Acquisition date : 30-JUL-2024 11:22:06

Total number of lines in spectrum 38
Number of unidentified lines 5
Number of lines tentatively identified by NID 33 86.84%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.664E+00	1.664E+00	1.372E+00	82.44	
AG-110	249.76D	1.10	9.454E-01	1.039E+00	1.388E+00	133.57	
CE-141	32.51D	2.07	6.710E-02	1.387E-01	1.735E-01	125.04	
TL-208	1.41E+10Y	1.00	1.794E-01	1.794E-01	1.147E-01	63.96	
BI-211	7.04E+08Y	1.00	6.136E+00	6.136E+00	0.799E+00	13.02	
PB-212	1.41E+10Y	1.00	5.268E-01	5.268E-01	1.501E-01	28.48	
BI-214	1600.00Y	1.00	1.707E+00	1.707E+00	0.310E+00	18.16	
PB-214	1600.00Y	1.00	2.227E+00	2.227E+00	0.290E+00	13.02	
RN-222	1600.00Y	1.00	1.707E+00	1.707E+00	0.310E+00	18.16	
RA-224	1.41E+10Y	1.00	4.985E+00	4.985E+00	1.536E+00	30.81	
RA-226	1600.00Y	1.00	2.227E+00	2.227E+00	0.290E+00	13.02	
TH-228	1.41E+10Y	1.00	5.268E-01	5.268E-01	1.501E-01	28.48	
TH-230	7.54E+04Y	1.00	2.227E+00	2.227E+00	0.290E+00	13.02	
TH-234	4.47E+09Y	1.00	4.928E+00	4.928E+00	5.723E+00	116.14	
U-234	2.45E+05Y	1.00	2.227E+00	2.227E+00	0.290E+00	13.02	
U-235	7.04E+08Y	1.00	2.956E-01	2.956E-01	3.697E-01	125.04	
U-238	4.47E+09Y	1.00	4.928E+00	4.928E+00	5.723E+00	116.14	
AM-243	7370.00Y	1.00	2.834E-01	2.834E-01	1.641E-01	57.91	
ANH-511	1.00E+09Y	1.00	9.508E-02	9.508E-02	8.255E-02	86.83	
			---	---			
	Total Activity :		3.788E+01	3.805E+01			

Grand Total Activity : 3.788E+01 3.805E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299017 Acquisition date : 30-JUL-2024 11:22:06

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	38.77	20	56	1.05	77.81	75	7	6.40E-03	****	1.44E-02	
2	94.82	22	34	1.23	189.87	171	22	6.93E-03	****	4.77E+00	T
0	128.63	23	37	1.47	257.46	255	6	7.11E-03	90.7	5.93E+00	T
0	339.31	35	64	2.09	678.69	670	18	1.06E-02	****	3.66E+00	T
0	394.47	12	31	4.24	788.96	780	13	3.75E-03	****	3.29E+00	
0	405.32	8	22	1.50	810.67	807	8	2.50E-03	****	3.23E+00	T
0	410.24	12	16	0.92	820.51	817	7	3.56E-03	****	3.20E+00	T
0	481.00	8	16	0.80	961.98	958	7	2.55E-03	****	2.84E+00	T
0	538.50	13	22	4.95	1076.94	1063	16	3.86E-03	****	2.60E+00	T
0	769.17	17	17	2.95	1538.18	1532	12	5.28E-03	****	1.88E+00	
0	778.64	9	4	0.98	1557.11	1551	10	2.62E-03	****	1.85E+00	T
0	783.33	11	15	0.57	1566.50	1560	13	3.31E-03	****	1.84E+00	T
0	885.08	6	2	1.34	1769.94	1765	9	1.93E-03	****	1.62E+00	T
0	912.46	19	18	2.08	1824.70	1814	15	5.89E-03	****	1.57E+00	T
0	1128.85	8	3	1.47	2257.41	2253	8	2.36E-03	****	1.24E+00	T
0	1207.70	11	0	1.99	2415.08	2410	10	3.33E-03	57.7	1.16E+00	
5	1235.92	36	0	3.81	2471.52	2461	20	1.08E-02	36.8	1.13E+00	T
5	1239.13	20	0	1.54	2477.94	2461	20	6.14E-03	47.0	1.13E+00	T
0	1384.59	12	0	0.73	2768.85	2762	14	3.61E-03	55.5	1.01E+00	T
0	1730.70	10	4	1.84	3461.02	3451	15	3.05E-03	98.3	8.62E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:26:59.82

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299017.CNF;1  *
* Acquisition date : 30-JUL-2024 11:22:06 Sensitivity     : 3.000           *
* Detector ID      : GAM50                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.59     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:15:00 Nuclide Library : SOLID           *
* Sample ID        : G674299017           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 8.4750E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 04:24:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM50_CAN.CNF;3             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	4.668E-01
AG-110	1.003E+00
CE-141	1.128E-01
TL-208	4.543E-02
BI-211	2.502E-01
PB-212	6.778E-02
BI-214	9.288E-02
PB-214	9.099E-02
RN-222	9.288E-02
RA-224	7.265E-01
RA-226	9.099E-02
TH-228	6.778E-02
TH-230	9.099E-02
TH-234	2.810E+00
U-234	9.099E-02
U-235	2.551E-01
U-238	2.810E+00
AM-243	8.700E-02
ANH-511	3.056E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.990E-01	NOT IDENT.
NA-22	5.040E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.934E-02	FAIL ABUN
SC-46	4.228E-02	FAIL ABUN
V-48	1.509E-01	NOT IDENT.
CR-51	7.497E-01	NOT IDENT.
MN-52	2.007E+00	NOT IDENT.
MN-54	4.651E-02	NOT IDENT.
CO-56	5.538E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.171E-02	NOT IDENT.

CO-58	5.304E-02	NOT IDENT.
FE-59	1.087E-01	NOT IDENT.
CO-60	4.899E-02	NOT IDENT.
ZN-65	1.459E-01	NOT IDENT.
GE-68	1.874E+00	NOT IDENT.
AS-73	4.007E+00	NOT IDENT.
AS-74	2.167E-01	NOT IDENT.
SE-75	4.755E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.586E-01	NOT IDENT.
RB-83	1.106E-01	NOT IDENT.
RB-84	9.866E-02	NOT IDENT.
KR-85	1.052E+01	NOT IDENT.
SR-85	6.797E-02	NOT IDENT.
RB-86	2.209E+00	NOT IDENT.
Y-88	6.772E-02	NOT IDENT.
Y-91	3.200E+01	NOT IDENT.
NB-94	5.387E-02	NOT IDENT.
NB-95	7.402E-02	NOT IDENT.
NB-95M	1.715E-01	NOT IDENT.
ZR-95	9.719E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.001E-02	FAIL ABUN
RH-102	6.504E-02	NOT IDENT.
RU-103	6.111E-02	FAIL ABUN
RH-106	3.480E-01	NOT IDENT.
RU-106	3.480E-01	NOT IDENT.
AG-108M	3.583E-02	NOT IDENT.
CD-109	1.235E+00	NOT IDENT.
AG-110M	5.673E-02	FAIL ABUN
SN-113	5.918E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.678E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.930E-02	NOT IDENT.
SB-124	1.422E-01	NOT IDENT.
SB-125	1.204E-01	NOT IDENT.
TE-125M	1.474E+01	NOT IDENT.
I-126	6.741E-01	NOT IDENT.
SB-126	4.396E-01	NOT IDENT.
SN-126	1.274E-01	FAIL ABUN
SB-127	4.251E+01	FAIL ABUN
I-131	6.776E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.431E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.912E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.840E-01	FAIL ABUN
BA-137M	4.158E-02	NOT IDENT.
CS-137	4.393E-02	NOT IDENT.
LA-138	5.288E-02	NOT IDENT.
CE-139	3.765E-02	NOT IDENT.
BA-140	8.767E-01	FAIL ABUN
LA-140	4.048E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.248E-01	NOT IDENT.
PM-144	3.812E-02	NOT IDENT.
PR-144	2.877E+00	NOT IDENT.
PM-146	5.131E-02	NOT IDENT.
ND-147	1.685E+00	FAIL ABUN
PM-147	8.448E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.459E-02	FAIL ABUN
EU-152	1.019E-01	FAIL ABUN
GD-153	1.044E-01	NOT IDENT.
EU-154	1.414E-01	NOT IDENT.
EU-155	1.189E-01	NOT IDENT.
TB-160	1.775E-01	NOT IDENT.
HO-166M	8.402E-02	FAIL ABUN
TM-171	6.932E+01	NOT IDENT.
HF-172	2.380E-01	FAIL ABUN
LU-172	8.762E-02	FAIL ABUN
LU-176	3.036E-02	FAIL ABUN

HF-181	8.459E-02	FAIL ABUN
TA-182	2.559E-01	FAIL ABUN
RE-183	7.199E-01	NOT IDENT.
RE-184	2.730E-01	NOT IDENT.
W-188	9.647E+00	FAIL ABUN
IR-192	5.653E-02	FAIL ABUN
HG-203	6.152E-02	NOT IDENT.
TL-204	8.042E+00	NOT IDENT.
BI-207	6.614E-02	FAIL ABUN
BI-210	2.574E+01	NOT IDENT.
PB-210	2.574E+01	NOT IDENT.
PB-211	9.298E-01	FAIL ABUN
BI-212	6.963E-01	NOT IDENT.
BI-213	1.210E-01	NOT IDENT.
RN-219	4.600E-01	NOT IDENT.
RA-223	7.068E-01	FAIL ABUN
AC-225	2.742E+00	NOT IDENT.
AC-227	2.351E-01	NOT IDENT.
TH-227	2.351E-01	NOT IDENT.
AC-228	3.028E-01	FAIL ABUN
RA-228	3.028E-01	FAIL ABUN
TH-229	5.794E-01	FAIL ABUN
PA-231	5.563E-01	NOT IDENT.
TH-231	7.068E-01	FAIL ABUN
TH-232	3.028E-01	FAIL ABUN
PA-233	8.397E-02	FAIL ABUN
PA-234	3.363E-01	FAIL ABUN
PA-234M	5.928E+00	NOT IDENT.
NP-237	8.397E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	3.183E-01	NOT IDENT.
PU-239	3.755E+02	FAIL ABUN
AM-241	4.033E-01	NOT IDENT.
CM-243	1.128E-01	NOT IDENT.
BK-247	7.935E-02	NOT IDENT.
CM-247	4.197E-02	NOT IDENT.
CF-249	5.380E-02	NOT IDENT.
CF-251	1.577E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:27:04.15

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299017.CNF;1  *
* Acquisition date : 30-JUL-2024 11:22:06 Sensitivity     : 3.000           *
* Detector ID      : GAM50                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.59     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:15:00 Nuclide Library : SOLID           *
* Sample ID        : G674299017           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 8.4750E+01 GRAM *
*                                         Quantity Err(%) : 1.1799E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 04:24:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM50_CAN.CNF;3             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.664E+00	1.352E+00	1.352E+00
AG-110	1.039E+00	1.363E+00	1.363E+00
CE-141	4.333E-02	1.780E-01	1.780E-01
TL-208	1.794E-01	1.135E-01	1.135E-01
BI-211	6.136E+00	9.693E-01	9.693E-01
PB-212	5.268E-01	1.554E-01	1.554E-01
BI-214	1.707E+00	3.376E-01	3.376E-01
PB-214	2.227E+00	3.499E-01	3.499E-01
RN-222	1.707E+00	3.376E-01	3.376E-01
RA-224	4.985E+00	1.581E+00	1.581E+00
RA-226	2.227E+00	3.499E-01	3.499E-01
TH-228	5.268E-01	1.554E-01	1.554E-01
TH-230	2.227E+00	3.499E-01	3.499E-01
TH-234	4.928E+00	5.739E+00	5.739E+00
U-234	2.227E+00	3.499E-01	3.499E-01
U-235	2.956E-01	3.631E-01	3.631E-01
U-238	4.928E+00	5.739E+00	5.739E+00
AM-243	2.834E-01	1.634E-01	1.634E-01
ANH-511	9.508E-02	8.131E-02	8.131E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-4.174E-01	6.305E-01	6.580E-01	NOT IDENT.
NA-22	-3.091E-03	6.255E-02	6.257E-02	NOT IDENT.
NA-24	2.966E+14	1.681E+15	1.686E+15	SHORT HLIF
AL-26	-1.615E-02	4.379E-02	4.439E-02	FAIL ABUN
SC-46	-8.735E-03	6.068E-02	6.080E-02	FAIL ABUN
V-48	7.835E-03	1.782E-01	1.782E-01	NOT IDENT.
CR-51	-3.041E-01	9.620E-01	9.718E-01	NOT IDENT.
MN-52	-4.701E-01	2.583E+00	2.592E+00	NOT IDENT.
MN-54	4.355E-02	4.843E-02	5.225E-02	NOT IDENT.
CO-56	-5.261E-02	8.010E-02	8.353E-02	FAIL ABUN
MN-56	-1.000E+41	1.505E+41	0.000E+00	SHORT HLIF

CO-57	2.390E-02	3.793E-02	3.943E-02	NOT IDENT.
CO-58	-6.219E-02	7.895E-02	8.378E-02	NOT IDENT.
FE-59	-3.701E-02	1.421E-01	1.431E-01	NOT IDENT.
CO-60	-2.018E-02	6.305E-02	6.370E-02	NOT IDENT.
ZN-65	1.627E-01	1.614E-01	1.773E-01	NOT IDENT.
GE-68	1.782E+00	1.899E+00	2.062E+00	NOT IDENT.
AS-73	4.260E+00	4.594E+00	4.980E+00	NOT IDENT.
AS-74	-6.641E-02	2.732E-01	2.748E-01	NOT IDENT.
SE-75	-6.090E-02	6.609E-02	7.157E-02	NOT IDENT.
BR-77	2.054E+04	2.108E+04	2.302E+04	SHORT HLIF
SR-82	1.953E-01	8.760E-01	8.804E-01	NOT IDENT.
RB-83	9.690E-02	1.197E-01	1.274E-01	NOT IDENT.
RB-84	-1.568E-01	1.821E-01	1.954E-01	NOT IDENT.
KR-85	1.426E+01	1.195E+01	1.357E+01	NOT IDENT.
SR-85	9.178E-02	7.720E-02	8.759E-02	NOT IDENT.
RB-86	1.970E+00	2.255E+00	2.423E+00	NOT IDENT.
Y-88	2.568E-02	7.358E-02	7.448E-02	NOT IDENT.
Y-91	6.525E+00	4.295E+01	4.305E+01	NOT IDENT.
NB-94	6.484E-02	5.718E-02	6.422E-02	NOT IDENT.
NB-95	1.066E-01	7.916E-02	9.260E-02	NOT IDENT.
NB-95M	2.141E-02	2.280E-01	2.282E-01	NOT IDENT.
ZR-95	2.650E-02	1.142E-01	1.149E-01	NOT IDENT.
NB-97	1.000E+41	1.312E+41	0.000E+00	SHORT HLIF
ZR-97	-2.654E+13	2.895E+14	2.897E+14	SHORT HLIF
MO-99	-3.837E+02	2.365E+03	2.371E+03	SHORT HLIF
TC-99M	-5.632E+37	2.972E+39	0.000E+00	SHORT HLIF
RH-101	5.135E-02	4.669E-02	5.212E-02	FAIL ABUN
RH-102	3.542E-02	7.268E-02	7.442E-02	NOT IDENT.
RU-103	1.121E-02	7.100E-02	7.118E-02	FAIL ABUN
RH-106	2.196E-02	4.180E-01	4.181E-01	NOT IDENT.
RU-106	2.196E-02	4.180E-01	4.181E-01	NOT IDENT.
AG-108M	4.514E-03	4.163E-02	4.168E-02	NOT IDENT.
CD-109	1.897E+00	1.399E+00	1.640E+00	NOT IDENT.
AG-110M	5.273E-02	5.618E-02	6.100E-02	FAIL ABUN
SN-113	-4.479E-03	7.495E-02	7.498E-02	NOT IDENT.
CD-115	5.027E+03	6.205E+03	6.606E+03	SHORT HLIF
SN-117M	-3.438E-02	2.000E-01	2.006E-01	NOT IDENT.
SB-122	1.886E+02	3.329E+02	3.436E+02	SHORT HLIF
TE-123M	1.834E-02	4.473E-02	4.548E-02	NOT IDENT.
SB-124	-6.530E-02	1.925E-01	1.947E-01	NOT IDENT.
SB-125	8.680E-02	1.314E-01	1.371E-01	NOT IDENT.
TE-125M	9.415E+00	1.770E+01	1.820E+01	NOT IDENT.
I-126	2.459E-01	7.759E-01	7.838E-01	NOT IDENT.
SB-126	-4.239E-02	5.491E-01	5.494E-01	NOT IDENT.
SN-126	2.559E-01	1.409E-01	1.821E-01	FAIL ABUN
SB-127	-1.138E+01	5.430E+01	5.454E+01	FAIL ABUN
I-131	-6.566E-03	8.465E-01	8.465E-01	NOT IDENT.
I-132	1.000E+41	5.273E+41	0.000E+00	SHORT HLIF
TE-132	2.946E+00	6.213E+01	6.214E+01	SHORT HLIF
BA-133	3.031E-02	7.013E-02	7.145E-02	NOT IDENT.
I-133	-3.215E+10	4.060E+10	4.311E+10	SHORT HLIF
CS-134	-9.788E-03	6.270E-02	6.286E-02	NOT IDENT.
I-135	-1.556E+36	5.881E+36	0.000E+00	SHORT HLIF
CS-136	2.311E-01	4.142E-01	4.271E-01	FAIL ABUN
BA-137M	2.059E-02	5.260E-02	5.341E-02	NOT IDENT.
CS-137	2.175E-02	5.557E-02	5.642E-02	NOT IDENT.
LA-138	2.565E-02	5.164E-02	5.292E-02	NOT IDENT.
CE-139	8.672E-03	4.363E-02	4.381E-02	NOT IDENT.
BA-140	1.129E+00	1.847E+00	1.916E+00	FAIL ABUN
LA-140	-3.099E-02	4.916E-01	4.918E-01	NOT IDENT.
CE-143	4.981E+06	2.861E+06	3.637E+06	SHORT HLIF
CE-144	1.519E-02	2.875E-01	2.875E-01	NOT IDENT.
PM-144	-2.099E-02	5.071E-02	5.158E-02	NOT IDENT.
PR-144	-1.601E+00	3.830E+00	3.898E+00	NOT IDENT.
PM-146	5.251E-03	5.996E-02	6.001E-02	NOT IDENT.
ND-147	-2.884E+00	3.003E+00	3.272E+00	FAIL ABUN
PM-147	3.565E+02	1.038E+03	1.051E+03	NOT IDENT.
PM-149	2.936E+03	4.600E+04	4.602E+04	SHORT HLIF
EU-150	7.787E-03	4.682E-02	4.695E-02	FAIL ABUN
EU-152	-1.442E-01	1.694E-01	1.815E-01	FAIL ABUN
GD-153	3.467E-02	1.388E-01	1.397E-01	NOT IDENT.
EU-154	-8.675E-03	1.755E-01	1.756E-01	NOT IDENT.
EU-155	4.257E-02	1.456E-01	1.469E-01	NOT IDENT.
TB-160	-2.710E-01	3.073E-01	3.307E-01	NOT IDENT.
HO-166M	8.197E-02	8.958E-02	9.690E-02	FAIL ABUN
TM-171	-6.753E+01	9.221E+01	9.711E+01	NOT IDENT.
HF-172	2.311E-01	3.034E-01	3.208E-01	FAIL ABUN
LU-172	8.435E-02	8.798E-02	9.584E-02	FAIL ABUN

LU-176	1.066E-02	3.596E-02	3.628E-02	FAIL ABUN
HF-181	5.643E-02	9.172E-02	9.518E-02	FAIL ABUN
TA-182	-1.254E-02	3.148E-01	3.149E-01	FAIL ABUN
RE-183	1.451E-01	8.667E-01	8.692E-01	NOT IDENT.
RE-184	1.593E-01	3.224E-01	3.303E-01	NOT IDENT.
W-188	7.257E+00	1.198E+01	1.242E+01	FAIL ABUN
IR-192	-1.756E-03	6.992E-02	6.992E-02	FAIL ABUN
HG-203	2.516E-02	7.232E-02	7.321E-02	NOT IDENT.
TL-204	-9.648E+00	1.194E+01	1.271E+01	NOT IDENT.
BI-207	3.127E-02	7.279E-02	7.414E-02	FAIL ABUN
BI-210	1.625E+01	2.976E+01	3.064E+01	NOT IDENT.
PB-210	1.625E+01	2.976E+01	3.064E+01	NOT IDENT.
PB-211	5.937E-01	1.165E+00	1.195E+00	FAIL ABUN
BI-212	4.612E-01	7.809E-01	8.081E-01	NOT IDENT.
BI-213	1.603E-03	1.424E-01	1.424E-01	NOT IDENT.
RN-219	6.476E-02	6.378E-01	6.384E-01	NOT IDENT.
RA-223	-6.096E-01	9.556E-01	9.943E-01	FAIL ABUN
AC-225	1.112E+00	3.188E+00	3.227E+00	NOT IDENT.
AC-227	-2.821E-01	3.254E-01	3.493E-01	NOT IDENT.
TH-227	-2.821E-01	3.254E-01	3.493E-01	NOT IDENT.
AC-228	4.264E-01	4.295E-01	4.706E-01	FAIL ABUN
RA-228	4.264E-01	4.295E-01	4.706E-01	FAIL ABUN
TH-229	8.490E-02	6.812E-01	6.823E-01	FAIL ABUN
PA-231	-4.164E-02	6.886E-01	6.888E-01	NOT IDENT.
TH-231	-6.096E-01	9.556E-01	9.943E-01	FAIL ABUN
TH-232	4.264E-01	4.295E-01	4.706E-01	FAIL ABUN
PA-233	1.107E-02	1.022E-01	1.023E-01	FAIL ABUN
PA-234	-2.017E-01	4.998E-01	5.080E-01	FAIL ABUN
PA-234M	-3.463E+00	7.494E+00	7.655E+00	NOT IDENT.
NP-237	1.107E-02	1.022E-01	1.023E-01	FAIL ABUN
NP-238	-3.452E+03	1.087E+04	1.098E+04	SHORT HLIF
NP-239	1.796E-01	3.863E-01	3.947E-01	NOT IDENT.
PU-239	5.426E+02	4.844E+02	5.427E+02	FAIL ABUN
AM-241	-5.785E-02	5.402E-01	5.408E-01	NOT IDENT.
CM-243	-1.465E-01	1.604E-01	1.735E-01	NOT IDENT.
BK-247	-5.959E-02	1.051E-01	1.085E-01	NOT IDENT.
CM-247	-8.138E-03	6.114E-02	6.125E-02	NOT IDENT.
CF-249	6.304E-02	6.446E-02	7.045E-02	NOT IDENT.
CF-251	1.921E-02	1.850E-01	1.852E-01	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	45.4207	85.43	66.3632	131.20	40.3880
45.60	44.9299	86.55	51.0208	133.02	48.6511
46.54	44.1846	86.79	51.0559	133.52	45.0491
49.72	0.0000	86.94	51.0785	136.00	58.7432
51.35	37.4501	87.09	51.1007	136.47	63.6995
51.87	48.1190	87.57	51.1714	140.51	0.0000
52.39	53.0469	88.03	51.2388	143.76	45.9926
52.97	43.5074	88.34	51.2843	144.24	46.0360
53.44	33.9052	88.47	51.3033	145.44	59.8630
54.07	43.7057	89.96	51.5206	152.43	55.6130
57.36	0.0000	1093.63	51.6192	153.25	56.5422
57.53	49.2413	91.11	51.6874	323.87	54.1074
57.98	49.3277	92.59	51.9000	156.02	50.8960
59.27	51.5574	93.35	52.0087	158.56	57.0997
59.32	51.5674	94.56	52.1804	159.00	52.0272
59.54	51.6108	94.65	52.1933	162.33	63.4951
60.96	45.2372	94.67	52.1962	162.66	64.3913
61.17	42.6099	94.87	52.2245	163.33	62.7489
62.93	50.2607	97.43	37.2938	165.86	47.4883
63.29	50.3271	98.43	47.1145	176.31	52.7423
63.58	50.3805	98.44	47.1157	176.60	46.6117
64.28	50.5089	99.53	52.8757	177.52	53.7299
66.73	52.9906	100.11	34.9282	181.07	0.0000
67.24	61.2524	102.03	41.8956	181.52	45.2190
125.81	60.3243	103.18	54.5105	184.41	52.5589
67.75	60.3387	103.37	56.8092	143.76	52.6699
68.89	52.3638	105.21	42.2345	193.51	42.4766
69.67	60.3971	105.31	38.8196	197.03	49.0688
70.82	68.9000	106.12	40.0423	198.01	41.8620
70.83	68.9026	106.47	36.6418	201.83	53.0888
72.81	63.4638	109.28	42.6607	203.43	44.0410
72.87	63.4764	111.00	53.2584	205.31	46.0047
74.66	63.8491	111.76	0.0000	210.85	50.0900
74.82	63.8822	114.06	46.6498	215.65	43.8990
74.97	63.9129	116.30	0.0000	218.12	44.9902
77.11	64.3518	116.74	43.4218	222.11	46.1852
78.74	64.6822	119.76	55.5400	227.09	37.9618
79.69	52.4656	121.12	40.3013	227.38	46.5217
80.03	52.5198	121.22	40.3104	228.16	0.0000
80.12	53.9547	121.78	36.7997	228.18	44.6716
80.19	53.9663	122.06	40.3862	116.74	44.6716
80.57	69.6694	122.92	48.7945	235.69	44.6443
81.00	69.7611	123.07	52.3823	235.96	44.6604
81.07	82.5921	265.00	58.4137	238.63	46.2637
81.75	59.9317	125.81	41.5204	238.98	0.0000
82.47	71.5032	127.23	57.6671	240.99	46.4063
83.79	41.6356	127.91	59.3564	242.00	46.4673
84.00	41.6615	129.30	41.8342	244.70	27.6865

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	27.4679	344.28	39.0688	563.25	16.4169
252.80	22.5742	345.93	34.7832	564.24	0.0000
254.15	0.0000	351.06	32.7704	569.33	15.5112
256.23	37.4563	351.93	32.7979	946.00	15.5127
260.90	0.0000	355.39	0.0000	569.70	15.5146
264.66	38.8397	356.01	24.6936	583.19	21.5139
264.80	34.8626	364.49	25.4431	584.27	21.5287
265.00	34.8704	366.42	0.0000	595.83	18.7252
269.46	41.0667	372.51	20.0592	427.87	26.6869
270.03	42.0974	375.05	20.1053	602.52	0.0000
271.23	46.1722	377.52	24.6278	604.72	33.2934
273.65	27.1785	356.01	30.3964	607.14	31.7539
276.40	39.3840	388.16	18.6461	609.32	23.8462
277.37	33.3625	388.63	16.9580	610.33	14.3165
277.60	33.3713	391.69	27.2056	614.28	11.1610
278.00	27.3164	264.66	23.9899	618.01	9.9875
279.20	33.4330	401.81	22.2981	620.36	17.0021
279.54	33.4465	402.40	25.7414	621.93	13.0135
279.70	36.4937	404.85	24.0753	630.19	0.0000
280.46	38.5551	410.95	29.3853	631.29	11.0718
283.69	25.4588	413.71	19.0576	633.25	22.1685
284.31	27.5153	414.70	19.4202	634.78	18.1538
285.41	25.5086	423.72	27.9497	635.95	18.1664
285.90	0.0000	427.09	16.6407	636.99	17.1671
287.50	28.6374	427.87	20.1566	657.50	19.6160
290.67	21.5546	433.94	22.8972	657.76	19.6189
293.27	0.0000	439.40	15.9208	657.90	0.0000
351.93	31.9795	440.45	22.1306	661.66	11.4690
295.96	30.9735	453.88	22.3633	664.57	0.0000
879.38	38.8275	463.37	19.8227	666.33	11.2934
299.98	18.6658	468.07	20.7971	666.50	10.2679
300.09	18.6680	473.00	19.0585	667.71	0.0000
300.13	18.6691	475.06	15.5818	677.62	18.5955
301.36	35.3108	476.78	20.3861	685.70	14.5264
302.85	33.2871	477.60	23.3125	692.65	0.0000
256.23	31.2622	482.18	26.3145	695.00	16.6846
304.85	20.8492	487.02	20.1725	696.49	17.7414
306.78	26.1154	492.35	0.0000	696.51	17.7419
308.46	34.5341	497.08	15.7007	697.00	18.7905
311.90	36.7610	505.52	17.8386	697.30	19.8373
316.51	42.2160	507.63	0.0000	697.49	17.7512
319.41	41.2844	511.00	16.7879	702.65	14.6584
320.08	41.3129	514.00	17.9443	706.68	27.2806
321.04	32.8706	514.00	17.9443	711.68	10.5200
323.87	38.2837	520.40	15.0195	720.70	12.6833
325.23	45.7907	520.69	0.0000	721.93	0.0000
328.76	37.4054	522.65	0.0000	722.78	12.6969
333.37	32.2101	527.90	0.0000	722.91	12.6980
333.97	33.8405	528.26	16.3584	723.31	19.0508
334.37	29.0176	529.59	24.1820	724.19	23.2944
338.28	38.8403	529.87	0.0000	727.33	13.7871
338.32	38.8418	531.02	24.2055	733.00	14.8908
311.90	38.9246	537.26	10.4441	735.93	11.7174
340.48	38.9246	546.56	0.0000	333.97	12.7925
340.55	38.9275	552.55	20.1406	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	20.3243	949.00	9.3840	1384.29	11.9732
747.24	14.9985	667.71	0.0000	1408.01	6.5757
748.06	12.8610	962.31	15.0953	1434.09	2.7601
752.31	22.5541	964.08	20.7711	1435.80	0.9205
753.82	16.1224	966.17	22.6781	1457.56	0.0000
756.73	9.6875	911.20	19.8654	1460.82	5.5613
756.80	9.6877	983.53	5.7086	1489.16	6.5389
884.68	10.3699	984.45	0.0000	1505.03	11.2573
765.81	6.9197	1274.44	14.3427	1584.12	7.6621
766.42	6.9217	1001.03	13.4114	1596.21	7.6859
766.84	8.6541	1002.74	15.3375	1620.50	2.9000
772.60	0.0000	1004.73	13.4306	1621.92	1.9340
776.52	10.4338	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	5.9014
778.90	0.0000	1028.54	0.0000	1750.46	0.0000
783.70	8.7249	1037.84	15.5437	1764.49	8.0068
788.74	12.2445	1038.76	0.0000	1063.66	0.0000
792.07	10.9500	631.29	7.7973	1771.35	18.0439
795.86	13.1635	1048.07	6.8264	1791.20	0.0000
810.06	19.8776	1049.04	9.7554	1808.65	3.0332
810.29	20.9842	1050.41	12.6883	1810.72	0.0000
344.28	20.9854	1063.66	6.8657	1836.06	3.0520
810.76	19.8842	1077.00	4.9280		
815.77	14.3941	1077.34	4.9285		
1048.07	14.4124	1085.87	8.8989		
832.01	14.5020	1093.63	3.9660		
834.85	5.5849	1099.45	6.9549		
835.71	4.4696	1112.07	13.7225		
836.80	0.0000	1112.84	11.4090		
846.75	0.0000	1115.54	6.6615		
846.77	19.0908	1120.29	15.0132		
856.80	5.4145	1120.55	11.6781		
860.56	12.6550	1221.41	11.6815		
871.09	16.3463	1129.67	6.6947		
873.19	20.9061	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	18.2280	1173.23	12.2309		
880.51	21.2769	1177.95	9.1876		
881.60	16.7251	1189.05	8.1969		
883.24	9.1294	1204.77	8.5828		
884.68	9.1350	1221.41	10.3555		
889.28	7.6276	1231.02	6.9251		
894.76	12.8444	1235.36	9.3621		
898.04	17.4562	1238.28	6.9414		
900.72	21.1554	1260.41	0.0000		
903.28	11.8389	1271.87	5.2615		
911.20	16.6298	1274.44	7.3722		
912.08	13.8633	1274.54	7.3722		
923.98	0.0000	1291.59	4.2352		
926.50	12.0875	1298.22	0.0000		
929.11	26.9935	1312.11	7.4580		
935.54	12.1326	1332.49	6.4321		
937.49	24.2842	1362.66	0.0000		
944.13	13.1117	1365.19	5.4121		
946.00	13.1219	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:27:30.83

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299018.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM52.CNF;62
                                         Background date  : 28-JUL-2024 11:31:59
Sample date      : 26-JUN-2024 10:30:00  Acquisition date : 30-JUL-2024 11:22:31
Sample ID        : G674299018            Sample quantity  : 9.48700E+01 GRAM
Detector name    : GAM52                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.39  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	62.97*	44	44	2.03	126.21	121	9	1.22E-02	33.1	
2	2	74.73*	70	36	1.14	149.73	147	20	1.95E-02	18.3	1.47E+00
3	2	77.18*	97	33	1.03	154.62	147	20	2.70E-02	14.3	
4	0	86.83*	42	47	0.96	173.92	171	7	1.17E-02	31.9	
5	0	93.16*	64	39	2.14	186.59	182	11	1.77E-02	25.0	
6	0	185.96*	47	40	0.82	372.19	368	9	1.30E-02	30.4	
7	0	238.55*	85	35	1.21	477.38	471	11	2.37E-02	18.0	
8	0	242.67*	36	25	2.54	485.61	482	9	1.01E-02	31.1	
9	0	295.14*	48	27	1.05	590.57	587	10	1.35E-02	24.8	
10	0	321.75	23	28	4.30	643.79	634	16	6.44E-03	55.1	
11	0	328.38	10	20	0.91	657.05	652	8	2.78E-03	83.7	
12	0	351.82*	104	20	1.16	703.93	697	13	2.90E-02	13.4	
13	0	462.93	19	11	1.67	926.16	921	11	5.28E-03	40.9	
14	0	479.06	17	6	0.54	958.42	955	11	4.58E-03	36.9	
15	0	493.99	14	14	3.44	988.29	982	14	3.89E-03	62.7	
16	0	511.34*	8	17	2.88	1022.98	1017	17	2.33E-03	161.9	
17	0	557.30*	20	8	7.28	1114.92	1106	18	5.66E-03	42.3	
18	0	583.71*	22	22	0.81	1167.73	1161	10	6.02E-03	48.5	
19	0	609.45*	77	11	1.33	1219.22	1212	15	2.13E-02	15.3	
20	0	649.47	8	9	0.81	1299.26	1295	9	2.13E-03	79.5	
21	0	751.70	8	7	0.61	1503.76	1496	10	2.17E-03	74.5	
22	0	781.23	8	5	0.92	1562.81	1555	11	2.16E-03	68.3	
23	0	911.21*	8	9	1.67	1822.80	1818	8	2.35E-03	77.5	
24	0	1010.24	6	2	1.57	2020.90	2018	6	1.77E-03	50.2	
25	0	1121.30	25	3	1.26	2243.06	2236	14	6.86E-03	25.7	
26	0	1460.39	20	0	0.54	2921.35	2915	10	5.56E-03	22.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 12:27:32

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299018.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 10:30:00 Acquisition date : 30-JUL-2024 11:22:31
Sample ID        : G674299018           Sample quantity  : 94.870 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA52              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.39   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
BE-7	477.60	15	10.44*	3.070E+00	3.821E-01	5.954E-01	73.85
K-40	1460.82	19	10.66*	1.120E+00	1.234E+00	1.234E+00	44.72
CD-109	88.03	40	3.70*	7.043E+00	1.209E+00	1.272E+00	63.71
SN-126	64.28	42	9.60	4.523E+00	7.608E-01	7.608E-01	66.17
	86.94	40	8.90	7.043E+00	5.025E-01	5.025E-01	63.71
	87.57	40	37.00*	7.043E+00	1.209E-01	1.209E-01	63.71
TL-208	277.37	------	6.60	4.751E+00	------	Line Not Found	------
	583.19	20	85.00*	2.595E+00	7.287E-02	7.287E-02	96.94
	860.56	------	12.50	1.827E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	5.868E+00	------	Line Not Found	------
	351.06	98	12.92*	3.946E+00	1.521E+00	1.521E+00	26.88
PB-212	74.82	67	10.28	6.072E+00	8.446E-01	8.446E-01	36.53
	77.11	92	17.10	6.317E+00	6.751E-01	6.751E-01	28.70
	238.63	80	43.60*	5.318E+00	2.742E-01	2.742E-01	35.95
	300.09	------	3.30	4.471E+00	------	Line Not Found	------
BI-214	609.32	72	45.49*	2.499E+00	4.986E-01	4.986E-01	30.55
	1120.29	23	14.92	1.423E+00	8.584E-01	8.584E-01	51.38
	1764.49	------	15.30	9.673E-01	------	Line Not Found	------
PB-214	74.82	67	5.80	6.072E+00	1.497E+00	1.497E+00	36.53
	77.11	92	9.70	6.317E+00	1.190E+00	1.190E+00	28.70
	87.09	40	3.41	7.043E+00	1.312E+00	1.312E+00	63.71
	242.00	34	7.25	5.252E+00	7.119E-01	7.119E-01	62.21
	295.22	46	18.42	4.529E+00	4.327E-01	4.327E-01	49.55
	351.93	98	35.60*	3.946E+00	5.522E-01	5.522E-01	26.88
RN-222	609.32	72	45.49*	2.499E+00	4.986E-01	4.986E-01	30.55
	1120.29	23	14.92	1.423E+00	8.584E-01	8.584E-01	51.38
	1764.49	------	15.30	9.673E-01	------	Line Not Found	------
RA-226	74.82	67	5.80	6.072E+00	1.497E+00	1.497E+00	36.53
	77.11	92	9.70	6.317E+00	1.190E+00	1.190E+00	28.70
	87.09	40	3.41	7.043E+00	1.312E+00	1.312E+00	63.71
	242.00	34	7.25	5.252E+00	7.119E-01	7.119E-01	62.21
	295.22	46	18.42	4.529E+00	4.327E-01	4.327E-01	49.55
	351.93	98	35.60*	3.946E+00	5.522E-01	5.522E-01	26.88
TH-228	74.82	67	10.28	6.072E+00	8.446E-01	8.446E-01	36.53
	77.11	92	17.10	6.317E+00	6.751E-01	6.751E-01	28.70
	238.63	80	43.60*	5.318E+00	2.742E-01	2.742E-01	35.95
	300.09	------	3.30	4.471E+00	------	Line Not Found	------
TH-230	74.82	67	5.80	6.072E+00	1.497E+00	1.497E+00	36.53
	77.11	92	9.70	6.317E+00	1.190E+00	1.190E+00	28.70
	87.09	40	3.41	7.043E+00	1.312E+00	1.312E+00	63.71
	242.00	34	7.25	5.252E+00	7.119E-01	7.119E-01	62.21
	295.22	46	18.42	4.529E+00	4.327E-01	4.327E-01	49.55
	351.93	98	35.60*	3.946E+00	5.522E-01	5.522E-01	26.88
TH-234	63.29	42	3.70*	4.523E+00	1.974E+00	1.974E+00	66.17
	92.59	61	4.23	7.339E+00	1.544E+00	1.544E+00	50.03
U-234	74.82	67	5.80	6.072E+00	1.497E+00	1.497E+00	36.53
	77.11	92	9.70	6.317E+00	1.190E+00	1.190E+00	28.70
	87.09	40	3.41	7.043E+00	1.312E+00	1.312E+00	63.71
	242.00	34	7.25	5.252E+00	7.119E-01	7.119E-01	62.21

Sample ID : G674299018 Acquisition date : 30-JUL-2024 11:22:31

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	295.22	46	18.42	4.529E+00	4.327E-01	4.327E-01	49.55
	351.93	98	35.60*	3.946E+00	5.522E-01	5.522E-01	26.88
U-238	63.29	42	3.70*	4.523E+00	1.974E+00	1.974E+00	66.17
	92.59	61	4.23	7.339E+00	1.544E+00	1.544E+00	50.03
AM-243	43.53	------	5.90	1.248E+00	------	Line Not Found	------
	74.66	67	67.20*	6.072E+00	1.292E-01	1.292E-01	36.53
ANH-511	511.00	8	100.00*	2.907E+00	2.139E-02	2.139E-02	323.78

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:27:33.20

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299018.CNF;1  *
* Acquisition date : 30-JUL-2024 11:22:31 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:30:00 Analyst initials: RXF2            *
* Sample ID        : G674299018           Sample Quantity : 9.4870E+01 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  1-SEP-2023 08:30:22 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;4             *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
BE-7	5.954E-01	4.309E-01	6.511E-01
K-40	1.234E+00	5.409E-01	8.312E-01
CD-109	1.272E+00	7.943E-01	1.037E+00
SN-126	1.209E-01	7.547E-02	8.900E-02
TL-208	7.287E-02	6.923E-02	6.582E-02
BI-211	1.521E+00	4.008E-01	2.786E-01
PB-212	2.742E-01	9.659E-02	8.248E-02
BI-214	4.986E-01	1.493E-01	1.137E-01
PB-214	5.522E-01	1.455E-01	1.013E-01
RN-222	4.986E-01	1.493E-01	1.137E-01
RA-226	5.522E-01	1.455E-01	1.013E-01
TH-228	2.742E-01	9.659E-02	8.248E-02
TH-230	5.522E-01	1.455E-01	1.013E-01
TH-234	1.974E+00	1.280E+00	1.277E+00
U-234	5.522E-01	1.455E-01	1.013E-01
U-238	1.974E+00	1.280E+00	1.277E+00
AM-243	1.292E-01	4.625E-02	6.283E-02
ANH-511	2.139E-02	6.786E-02	5.093E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
NA-22	1.122E-02	2.884E-02	7.314E-02	NOT IDENT.
NA-24	0.000E+00	5.535E+14	0.000E+00	SHORT HLIF
AL-26	-4.325E-03	3.905E-02	8.372E-02	NOT IDENT.
SC-46	-8.601E-03	3.660E-02	7.038E-02	FAIL ABUN
V-48	-8.601E-02	1.641E-01	2.795E-01	NOT IDENT.
CR-51	5.291E-01	5.063E-01	1.069E+00	NOT IDENT.
MN-52	-3.605E+00	2.498E+00	1.273E+00	NOT IDENT.
MN-54	-3.114E-02	3.220E-02	4.701E-02	NOT IDENT.
CO-56	-2.085E-02	4.286E-02	7.518E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.029E-03	1.858E-02	3.402E-02	NOT IDENT.
CO-58	4.268E-03	4.514E-02	9.104E-02	NOT IDENT.

FE-59	1.648E-02	7.907E-02	1.820E-01	NOT IDENT.
CO-60	6.144E-03	3.246E-02	7.626E-02	NOT IDENT.
ZN-65	1.596E-02	7.983E-02	1.627E-01	NOT IDENT.
GE-68	6.458E-01	1.039E+00	2.510E+00	NOT IDENT.
AS-73	1.813E-01	5.073E-01	9.964E-01	NOT IDENT.
AS-74	-8.842E-02	1.749E-01	3.318E-01	NOT IDENT.
SE-75	1.341E-02	3.422E-02	6.772E-02	NOT IDENT.
BR-77	0.000E+00	3.754E+03	0.000E+00	SHORT HLIF
SR-82	5.991E-01	3.905E-01	1.095E+00	NOT IDENT.
RB-83	-1.225E-02	5.299E-02	1.052E-01	NOT IDENT.
RB-84	-4.194E-02	8.363E-02	1.466E-01	NOT IDENT.
KR-85	2.844E+00	6.575E+00	1.360E+01	NOT IDENT.
SR-85	1.829E-02	4.250E-02	8.792E-02	NOT IDENT.
RB-86	-2.150E-01	1.460E+00	2.807E+00	NOT IDENT.
Y-88	1.809E-02	4.039E-02	1.088E-01	NOT IDENT.
Y-91	-1.097E+01	1.778E+01	3.246E+01	NOT IDENT.
NB-94	-1.107E-02	2.950E-02	5.384E-02	NOT IDENT.
NB-95	-1.230E-02	5.320E-02	9.811E-02	NOT IDENT.
NB-95M	-2.704E-03	1.108E-01	1.851E-01	NOT IDENT.
ZR-95	-1.610E-03	9.646E-02	1.854E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.832E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.261E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.342E+39	0.000E+00	SHORT HLIF
RH-101	7.625E-03	2.248E-02	4.300E-02	NOT IDENT.
RH-102	5.933E-03	5.766E-02	1.138E-01	NOT IDENT.
RU-103	5.694E-03	4.393E-02	8.377E-02	FAIL ABUN
RH-106	1.027E-01	2.226E-01	5.111E-01	NOT IDENT.
RU-106	1.027E-01	2.226E-01	5.111E-01	NOT IDENT.
AG-108M	-2.459E-02	2.366E-02	3.841E-02	NOT IDENT.
AG-110	4.132E-01	5.842E-01	1.363E+00	NOT IDENT.
AG-110M	1.856E-02	4.078E-02	9.396E-02	NOT IDENT.
SN-113	8.427E-03	3.147E-02	6.819E-02	NOT IDENT.
CD-115	0.000E+00	3.447E+03	0.000E+00	SHORT HLIF
SN-117M	-2.762E-02	1.038E-01	1.827E-01	NOT IDENT.
SB-122	0.000E+00	1.738E+02	0.000E+00	SHORT HLIF
TE-123M	1.919E-03	2.359E-02	4.338E-02	NOT IDENT.
SB-124	-1.176E-04	9.695E-02	2.270E-01	NOT IDENT.
SB-125	1.852E-02	6.282E-02	1.356E-01	FAIL ABUN
TE-125M	-9.348E-01	7.745E+00	1.418E+01	NOT IDENT.
I-126	-4.423E-01	5.400E-01	9.022E-01	NOT IDENT.
SB-126	5.916E-02	4.050E-01	8.137E-01	NOT IDENT.
SB-127	7.717E+00	2.710E+01	6.052E+01	NOT IDENT.
I-131	-6.113E-02	3.960E-01	7.896E-01	NOT IDENT.
I-132	0.000E+00	6.462E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.093E+01	0.000E+00	SHORT HLIF
BA-133	1.512E-02	3.398E-02	6.700E-02	NOT IDENT.
I-133	0.000E+00	1.713E+10	0.000E+00	SHORT HLIF
CS-134	-7.124E-03	3.530E-02	6.750E-02	NOT IDENT.
I-135	0.000E+00	2.380E+36	0.000E+00	SHORT HLIF
CS-136	-6.695E-02	2.191E-01	4.112E-01	NOT IDENT.
BA-137M	2.014E-02	2.715E-02	6.349E-02	NOT IDENT.
CS-137	2.128E-02	2.868E-02	6.707E-02	NOT IDENT.
LA-138	1.604E-03	4.978E-02	1.133E-01	NOT IDENT.
CE-139	-7.481E-03	2.405E-02	4.194E-02	NOT IDENT.
BA-140	2.003E-02	6.583E-01	1.314E+00	NOT IDENT.
LA-140	-4.905E-02	1.703E-01	3.696E-01	FAIL ABUN
CE-141	-1.919E-02	6.243E-02	1.100E-01	NOT IDENT.
CE-143	0.000E+00	1.521E+06	0.000E+00	SHORT HLIF
CE-144	-3.740E-02	1.639E-01	2.897E-01	NOT IDENT.
PM-144	1.861E-02	2.708E-02	6.286E-02	NOT IDENT.
PR-144	1.361E+00	2.035E+00	4.715E+00	NOT IDENT.
PM-146	-3.894E-03	3.479E-02	6.820E-02	NOT IDENT.
ND-147	7.983E-01	1.414E+00	3.174E+00	NOT IDENT.
PM-147	2.810E+02	5.128E+02	1.012E+03	NOT IDENT.
PM-149	0.000E+00	3.026E+04	0.000E+00	SHORT HLIF
EU-150	-1.629E-02	2.173E-02	3.854E-02	FAIL ABUN
EU-152	1.851E-02	7.425E-02	1.535E-01	NOT IDENT.
GD-153	2.119E-02	5.791E-02	1.058E-01	NOT IDENT.
EU-154	3.510E-02	8.247E-02	2.096E-01	NOT IDENT.
EU-155	-1.495E-02	6.835E-02	1.235E-01	FAIL ABUN
TB-160	4.601E-02	1.201E-01	2.747E-01	FAIL ABUN
HO-166M	6.720E-02	6.234E-02	1.423E-01	FAIL ABUN
TM-171	-2.794E+00	9.777E+00	1.784E+01	NOT IDENT.
HF-172	-3.255E-02	1.342E-01	2.394E-01	FAIL ABUN
LU-172	-3.211E-03	5.442E-02	1.090E-01	FAIL ABUN
LU-176	1.241E-02	2.013E-02	4.093E-02	NOT IDENT.
HF-181	3.759E-04	4.866E-02	9.172E-02	NOT IDENT.

TA-182	5.259E-02	1.741E-01	3.934E-01	FAIL ABUN
RE-183	1.828E-03	1.320E-01	2.481E-01	NOT IDENT.
RE-184	-1.291E-02	1.143E-01	2.384E-01	NOT IDENT.
W-188	7.427E-01	7.634E+00	1.387E+01	FAIL ABUN
IR-192	-5.263E-03	2.992E-02	4.879E-02	FAIL ABUN
HG-203	1.096E-02	4.110E-02	7.735E-02	NOT IDENT.
TL-204	-3.853E+00	3.263E+00	5.355E+00	NOT IDENT.
BI-207	3.185E-03	4.989E-02	1.005E-01	FAIL ABUN
BI-210	1.400E-01	1.701E+00	3.251E+00	NOT IDENT.
PB-210	1.400E-01	1.701E+00	3.251E+00	NOT IDENT.
PB-211	1.819E-01	4.929E-01	1.065E+00	NOT IDENT.
BI-212	6.490E-01	4.614E-01	1.132E+00	NOT IDENT.
BI-213	-8.135E-02	8.505E-02	1.409E-01	NOT IDENT.
RN-219	-7.169E-02	3.033E-01	5.868E-01	NOT IDENT.
RA-223	4.313E-02	6.743E-01	9.908E-01	FAIL ABUN
RA-224	2.690E-01	6.239E-01	1.003E+00	NOT IDENT.
AC-225	-7.489E-02	1.581E+00	2.862E+00	NOT IDENT.
AC-227	-1.178E-02	1.929E-01	3.472E-01	NOT IDENT.
TH-227	-1.178E-02	1.929E-01	3.472E-01	NOT IDENT.
AC-228	1.401E-01	2.127E-01	3.936E-01	FAIL ABUN
RA-228	1.401E-01	2.127E-01	3.936E-01	FAIL ABUN
TH-229	6.657E-02	4.301E-01	7.882E-01	FAIL ABUN
PA-231	1.287E-01	3.944E-01	7.484E-01	NOT IDENT.
TH-231	4.313E-02	6.743E-01	9.908E-01	NOT IDENT.
TH-232	1.401E-01	2.127E-01	3.936E-01	FAIL ABUN
PA-233	4.625E-02	4.240E-02	9.637E-02	NOT IDENT.
PA-234	-3.508E-02	2.546E-01	4.981E-01	NOT IDENT.
PA-234M	-7.710E-01	2.468E+00	5.465E+00	NOT IDENT.
U-235	5.894E-02	1.507E-01	2.856E-01	FAIL ABUN
NP-237	4.625E-02	4.240E-02	9.637E-02	FAIL ABUN
NP-238	0.000E+00	8.551E+03	0.000E+00	SHORT HLIF
NP-239	2.494E-02	1.752E-01	3.309E-01	NOT IDENT.
PU-239	3.951E+01	2.429E+02	4.537E+02	NOT IDENT.
AM-241	3.066E-02	9.146E-02	1.659E-01	NOT IDENT.
CM-243	1.716E-02	6.860E-02	1.314E-01	NOT IDENT.
BK-247	-3.408E-02	6.494E-02	1.066E-01	NOT IDENT.
CM-247	-3.350E-03	2.957E-02	5.797E-02	NOT IDENT.
CF-249	-1.064E-02	2.849E-02	5.409E-02	NOT IDENT.
CF-251	-1.214E-02	9.424E-02	1.686E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:27:31.68

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
BE-7	477.60	15	10.44*	3.070E+00	3.821E-01	5.954E-01	73.85
K-40	1460.82	19	10.66*	1.120E+00	1.234E+00	1.234E+00	44.72
CD-109	88.03	40	3.70*	7.043E+00	1.209E+00	1.272E+00	63.71
SN-126	64.28	42	9.60	4.523E+00	7.608E-01	7.608E-01	66.17
	86.94	40	8.90	7.043E+00	5.025E-01	5.025E-01	63.71
	87.57	40	37.00*	7.043E+00	1.209E-01	1.209E-01	63.71
TL-208	277.37	------	6.60	4.751E+00	------	Line Not Found	------
	583.19	20	85.00*	2.595E+00	7.287E-02	7.287E-02	96.94
	860.56	------	12.50	1.827E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	5.868E+00	------	Line Not Found	------
	351.06	98	12.92*	3.946E+00	1.521E+00	1.521E+00	26.88
PB-212	74.82	67	10.28	6.072E+00	8.446E-01	8.446E-01	36.53
	77.11	92	17.10	6.317E+00	6.751E-01	6.751E-01	28.70
	238.63	80	43.60*	5.318E+00	2.742E-01	2.742E-01	35.95
	300.09	------	3.30	4.471E+00	------	Line Not Found	------
BI-214	609.32	72	45.49*	2.499E+00	4.986E-01	4.986E-01	30.55
	1120.29	23	14.92	1.423E+00	8.584E-01	8.584E-01	51.38
	1764.49	------	15.30	9.673E-01	------	Line Not Found	------
PB-214	74.82	67	5.80	6.072E+00	1.497E+00	1.497E+00	36.53
	77.11	92	9.70	6.317E+00	1.190E+00	1.190E+00	28.70
	87.09	40	3.41	7.043E+00	1.312E+00	1.312E+00	63.71
	242.00	34	7.25	5.252E+00	7.119E-01	7.119E-01	62.21
	295.22	46	18.42	4.529E+00	4.327E-01	4.327E-01	49.55
	351.93	98	35.60*	3.946E+00	5.522E-01	5.522E-01	26.88
RN-222	609.32	72	45.49*	2.499E+00	4.986E-01	4.986E-01	30.55
	1120.29	23	14.92	1.423E+00	8.584E-01	8.584E-01	51.38
	1764.49	------	15.30	9.673E-01	------	Line Not Found	------
RA-226	74.82	67	5.80	6.072E+00	1.497E+00	1.497E+00	36.53
	77.11	92	9.70	6.317E+00	1.190E+00	1.190E+00	28.70
	87.09	40	3.41	7.043E+00	1.312E+00	1.312E+00	63.71
	242.00	34	7.25	5.252E+00	7.119E-01	7.119E-01	62.21
	295.22	46	18.42	4.529E+00	4.327E-01	4.327E-01	49.55
	351.93	98	35.60*	3.946E+00	5.522E-01	5.522E-01	26.88
TH-228	74.82	67	10.28	6.072E+00	8.446E-01	8.446E-01	36.53
	77.11	92	17.10	6.317E+00	6.751E-01	6.751E-01	28.70
	238.63	80	43.60*	5.318E+00	2.742E-01	2.742E-01	35.95
	300.09	------	3.30	4.471E+00	------	Line Not Found	------
TH-230	74.82	67	5.80	6.072E+00	1.497E+00	1.497E+00	36.53
	77.11	92	9.70	6.317E+00	1.190E+00	1.190E+00	28.70
	87.09	40	3.41	7.043E+00	1.312E+00	1.312E+00	63.71
	242.00	34	7.25	5.252E+00	7.119E-01	7.119E-01	62.21
	295.22	46	18.42	4.529E+00	4.327E-01	4.327E-01	49.55
	351.93	98	35.60*	3.946E+00	5.522E-01	5.522E-01	26.88
TH-234	63.29	42	3.70*	4.523E+00	1.974E+00	1.974E+00	66.17
	92.59	61	4.23	7.339E+00	1.544E+00	1.544E+00	50.03
U-234	74.82	67	5.80	6.072E+00	1.497E+00	1.497E+00	36.53
	77.11	92	9.70	6.317E+00	1.190E+00	1.190E+00	28.70

Sample ID : G674299018 Acquisition date : 30-JUL-2024 11:22:31

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	87.09	40	3.41	7.043E+00	1.312E+00	1.312E+00	63.71
	242.00	34	7.25	5.252E+00	7.119E-01	7.119E-01	62.21
	295.22	46	18.42	4.529E+00	4.327E-01	4.327E-01	49.55
	351.93	98	35.60*	3.946E+00	5.522E-01	5.522E-01	26.88
U-238	63.29	42	3.70*	4.523E+00	1.974E+00	1.974E+00	66.17
	92.59	61	4.23	7.339E+00	1.544E+00	1.544E+00	50.03
AM-243	43.53	------	5.90	1.248E+00	------	Line Not Found	------
	74.66	67	67.20*	6.072E+00	1.292E-01	1.292E-01	36.53
ANH-511	511.00	8	100.00*	2.907E+00	2.139E-02	2.139E-02	323.78

Flag: "*" = Keyline

Sample ID : G674299018 Acquisition date : 30-JUL-2024 11:22:31

Total number of lines in spectrum 26
Number of unidentified lines 5
Number of lines tentatively identified by NID 21 80.77%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BE-7	53.22D	1.56	3.821E-01	5.954E-01	4.397E-01	73.85	
K-40	1.25E+09Y	1.00	1.234E+00	1.234E+00	0.552E+00	44.72	
CD-109	461.40D	1.05	1.209E+00	1.272E+00	0.811E+00	63.71	
SN-126	2.30E+05Y	1.00	1.209E-01	1.209E-01	0.770E-01	63.71	
TL-208	1.41E+10Y	1.00	7.287E-02	7.287E-02	7.064E-02	96.94	
BI-211	7.04E+08Y	1.00	1.521E+00	1.521E+00	0.409E+00	26.88	
PB-212	1.41E+10Y	1.00	2.742E-01	2.742E-01	0.986E-01	35.95	
BI-214	1600.00Y	1.00	4.986E-01	4.986E-01	1.523E-01	30.55	
PB-214	1600.00Y	1.00	5.522E-01	5.522E-01	1.484E-01	26.88	
RN-222	1600.00Y	1.00	4.986E-01	4.986E-01	1.523E-01	30.55	
RA-226	1600.00Y	1.00	5.522E-01	5.522E-01	1.484E-01	26.88	
TH-228	1.41E+10Y	1.00	2.742E-01	2.742E-01	0.986E-01	35.95	
TH-230	7.54E+04Y	1.00	5.522E-01	5.522E-01	1.484E-01	26.88	
TH-234	4.47E+09Y	1.00	1.974E+00	1.974E+00	1.306E+00	66.17	
U-234	2.45E+05Y	1.00	5.522E-01	5.522E-01	1.484E-01	26.88	
U-238	4.47E+09Y	1.00	1.974E+00	1.974E+00	1.306E+00	66.17	
AM-243	7370.00Y	1.00	1.292E-01	1.292E-01	0.472E-01	36.53	
ANH-511	1.00E+09Y	1.00	2.139E-02	2.139E-02	6.925E-02	323.78	
			---	---			
	Total Activity :		1.239E+01	1.267E+01			

Grand Total Activity : 1.239E+01 1.267E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299018 Acquisition date : 30-JUL-2024 11:22:31

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	185.96	44	38	0.82	372.19	368	9	1.30E-02	60.8	6.31E+00	T
0	321.75	22	26	4.30	643.79	634	16	6.44E-03	****	4.23E+00	T
0	328.38	9	19	0.91	657.05	652	8	2.78E-03	****	4.17E+00	T
0	462.93	18	10	1.67	926.16	921	11	5.28E-03	81.7	3.16E+00	T
0	493.99	13	13	3.44	988.29	982	14	3.89E-03	****	2.99E+00	
0	557.30	19	7	7.28	1114.92	1106	18	5.66E-03	84.5	2.70E+00	
0	649.47	7	9	0.81	1299.26	1295	9	2.13E-03	****	2.36E+00	
0	751.70	7	7	0.61	1503.76	1496	10	2.17E-03	****	2.07E+00	T
0	781.23	7	5	0.92	1562.81	1555	11	2.16E-03	****	2.00E+00	
0	911.21	8	8	1.67	1822.80	1818	8	2.35E-03	****	1.73E+00	T
0	1010.24	6	2	1.57	2020.90	2018	6	1.77E-03	****	1.57E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:27:43.34

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299018.CNF;1  *
* Acquisition date : 30-JUL-2024 11:22:31 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:30:00 Nuclide Library : SOLID           *
* Sample ID        : G674299018           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 9.4870E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  1-SEP-2023 08:30:22 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;4             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
BE-7	2.742E-01
K-40	3.269E-01
CD-109	4.761E-01
SN-126	4.047E-02
TL-208	2.812E-02
BI-211	1.186E-01
PB-212	3.669E-02
BI-214	4.756E-02
PB-214	4.313E-02
RN-222	4.756E-02
RA-226	4.313E-02
TH-228	3.669E-02
TH-230	4.313E-02
TH-234	5.760E-01
U-234	4.313E-02
U-238	5.760E-01
AM-243	2.883E-02
ANH-511	2.183E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
NA-22	2.797E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.070E-02	NOT IDENT.
SC-46	2.727E-02	FAIL ABUN
V-48	1.109E-01	NOT IDENT.
CR-51	4.755E-01	NOT IDENT.
MN-52	0.000E+00	NOT IDENT.
MN-54	1.743E-02	NOT IDENT.
CO-56	2.984E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.523E-02	NOT IDENT.
CO-58	3.783E-02	NOT IDENT.
FE-59	6.900E-02	NOT IDENT.

CO-60	2.929E-02	NOT IDENT.
ZN-65	6.524E-02	NOT IDENT.
GE-68	1.012E+00	NOT IDENT.
AS-73	4.508E-01	NOT IDENT.
AS-74	1.393E-01	NOT IDENT.
SE-75	2.942E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	4.587E-01	NOT IDENT.
RB-83	4.178E-02	NOT IDENT.
RB-84	5.562E-02	NOT IDENT.
KR-85	5.955E+00	NOT IDENT.
SR-85	3.848E-02	NOT IDENT.
RB-86	1.109E+00	NOT IDENT.
Y-88	4.028E-02	NOT IDENT.
Y-91	1.165E+01	NOT IDENT.
NB-94	2.211E-02	NOT IDENT.
NB-95	4.153E-02	NOT IDENT.
NB-95M	8.104E-02	NOT IDENT.
ZR-95	7.906E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.940E-02	NOT IDENT.
RH-102	4.900E-02	NOT IDENT.
RU-103	3.476E-02	FAIL ABUN
RH-106	2.093E-01	NOT IDENT.
RU-106	2.093E-01	NOT IDENT.
AG-108M	1.569E-02	NOT IDENT.
AG-110	5.711E-01	NOT IDENT.
AG-110M	3.799E-02	NOT IDENT.
SN-113	2.857E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	8.131E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	1.947E-02	NOT IDENT.
SB-124	8.043E-02	NOT IDENT.
SB-125	5.704E-02	FAIL ABUN
TE-125M	6.317E+00	NOT IDENT.
I-126	3.646E-01	NOT IDENT.
SB-126	3.451E-01	NOT IDENT.
SB-127	2.438E+01	NOT IDENT.
I-131	3.308E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.911E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	2.724E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	1.531E-01	NOT IDENT.
BA-137M	2.667E-02	NOT IDENT.
CS-137	2.817E-02	NOT IDENT.
LA-138	4.240E-02	NOT IDENT.
CE-139	1.865E-02	NOT IDENT.
BA-140	5.579E-01	NOT IDENT.
LA-140	1.168E-01	FAIL ABUN
CE-141	4.870E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.309E-01	NOT IDENT.
PM-144	2.631E-02	NOT IDENT.
PR-144	1.971E+00	NOT IDENT.
PM-146	2.897E-02	NOT IDENT.
ND-147	1.341E+00	NOT IDENT.
PM-147	4.559E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.659E-02	FAIL ABUN
EU-152	6.678E-02	NOT IDENT.
GD-153	4.754E-02	NOT IDENT.
EU-154	8.066E-02	NOT IDENT.
EU-155	5.507E-02	FAIL ABUN
TB-160	1.101E-01	FAIL ABUN
HO-166M	6.215E-02	FAIL ABUN
TM-171	8.066E+00	NOT IDENT.
HF-172	1.069E-01	FAIL ABUN
LU-172	4.254E-02	FAIL ABUN
LU-176	1.790E-02	NOT IDENT.
HF-181	3.835E-02	NOT IDENT.
TA-182	1.600E-01	FAIL ABUN

RE-183	1.124E-01	NOT IDENT.
RE-184	8.817E-02	NOT IDENT.
W-188	6.129E+00	FAIL ABUN
IR-192	2.029E-02	FAIL ABUN
HG-203	3.413E-02	NOT IDENT.
TL-204	2.436E+00	NOT IDENT.
BI-207	4.076E-02	FAIL ABUN
BI-210	1.480E+00	NOT IDENT.
PB-210	1.480E+00	NOT IDENT.
PB-211	4.531E-01	NOT IDENT.
BI-212	4.918E-01	NOT IDENT.
BI-213	5.804E-02	NOT IDENT.
RN-219	2.482E-01	NOT IDENT.
RA-223	4.325E-01	FAIL ABUN
RA-224	4.526E-01	NOT IDENT.
AC-225	1.258E+00	NOT IDENT.
AC-227	1.515E-01	NOT IDENT.
TH-227	1.515E-01	NOT IDENT.
AC-228	1.731E-01	FAIL ABUN
RA-228	1.731E-01	FAIL ABUN
TH-229	3.552E-01	FAIL ABUN
PA-231	3.299E-01	NOT IDENT.
TH-231	4.325E-01	NOT IDENT.
TH-232	1.731E-01	FAIL ABUN
PA-233	4.185E-02	NOT IDENT.
PA-234	1.962E-01	NOT IDENT.
PA-234M	1.936E+00	NOT IDENT.
U-235	1.295E-01	FAIL ABUN
NP-237	4.185E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.480E-01	NOT IDENT.
PU-239	2.046E+02	NOT IDENT.
AM-241	7.553E-02	NOT IDENT.
CM-243	5.904E-02	NOT IDENT.
BK-247	4.612E-02	NOT IDENT.
CM-247	2.484E-02	NOT IDENT.
CF-249	2.265E-02	NOT IDENT.
CF-251	7.490E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 12:27:47.35

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299018.CNF;1  *
* Acquisition date : 30-JUL-2024 11:22:31 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:30:00 Nuclide Library : SOLID           *
* Sample ID        : G674299018           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 9.4870E+01 GRAM *
*                                         Quantity Err(%) : 1.0541E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  1-SEP-2023 08:30:22 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;4             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
BE-7	5.954E-01	4.343E-01	4.343E-01
K-40	1.234E+00	5.518E-01	5.518E-01
CD-109	1.272E+00	8.063E-01	8.063E-01
SN-126	1.209E-01	7.634E-02	7.634E-02
TL-208	7.287E-02	6.959E-02	6.959E-02
BI-211	1.521E+00	4.199E-01	4.199E-01
PB-212	2.742E-01	9.906E-02	9.906E-02
BI-214	4.986E-01	1.570E-01	1.570E-01
PB-214	5.522E-01	1.521E-01	1.521E-01
RN-222	4.986E-01	1.570E-01	1.570E-01
RA-226	5.522E-01	1.521E-01	1.521E-01
TH-228	2.742E-01	9.906E-02	9.906E-02
TH-230	5.522E-01	1.521E-01	1.521E-01
TH-234	1.974E+00	1.355E+00	1.355E+00
U-234	5.522E-01	1.521E-01	1.521E-01
U-238	1.974E+00	1.355E+00	1.355E+00
AM-243	1.292E-01	4.750E-02	4.750E-02
ANH-511	2.139E-02	6.789E-02	6.789E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
NA-22	1.122E-02	2.886E-02	2.930E-02	NOT IDENT.
NA-24	-1.408E+14	5.537E+14	5.573E+14	SHORT HLIF
AL-26	-4.325E-03	3.905E-02	3.910E-02	NOT IDENT.
SC-46	-8.601E-03	3.661E-02	3.681E-02	FAIL ABUN
V-48	-8.601E-02	1.643E-01	1.688E-01	NOT IDENT.
CR-51	5.291E-01	5.080E-01	5.612E-01	NOT IDENT.
MN-52	-3.605E+00	2.516E+00	2.995E+00	NOT IDENT.
MN-54	-3.114E-02	3.233E-02	3.525E-02	NOT IDENT.
CO-56	-2.085E-02	4.290E-02	4.392E-02	NOT IDENT.
MN-56	-1.000E+41	2.057E+41	0.000E+00	SHORT HLIF
CO-57	-1.029E-03	1.858E-02	1.859E-02	NOT IDENT.
CO-58	4.268E-03	4.514E-02	4.518E-02	NOT IDENT.

FE-59	1.648E-02	7.909E-02	7.944E-02	NOT IDENT.
CO-60	6.144E-03	3.246E-02	3.258E-02	NOT IDENT.
ZN-65	1.596E-02	7.984E-02	8.016E-02	NOT IDENT.
GE-68	6.458E-01	1.041E+00	1.081E+00	NOT IDENT.
AS-73	1.813E-01	5.087E-01	5.152E-01	NOT IDENT.
AS-74	-8.842E-02	1.752E-01	1.797E-01	NOT IDENT.
SE-75	1.341E-02	3.423E-02	3.476E-02	NOT IDENT.
BR-77	1.066E+04	1.116E+04	1.215E+04	SHORT HLIF
SR-82	5.991E-01	3.946E-01	4.782E-01	NOT IDENT.
RB-83	-1.225E-02	5.302E-02	5.331E-02	NOT IDENT.
RB-84	-4.194E-02	8.371E-02	8.582E-02	NOT IDENT.
KR-85	2.844E+00	6.581E+00	6.704E+00	NOT IDENT.
SR-85	1.829E-02	4.254E-02	4.333E-02	NOT IDENT.
RB-86	-2.150E-01	1.460E+00	1.463E+00	NOT IDENT.
Y-88	1.809E-02	4.041E-02	4.123E-02	NOT IDENT.
Y-91	-1.097E+01	1.780E+01	1.847E+01	NOT IDENT.
NB-94	-1.107E-02	2.952E-02	2.994E-02	NOT IDENT.
NB-95	-1.230E-02	5.322E-02	5.351E-02	NOT IDENT.
NB-95M	-2.704E-03	1.108E-01	1.108E-01	NOT IDENT.
ZR-95	-1.610E-03	9.646E-02	9.647E-02	NOT IDENT.
NB-97	-1.000E+41	1.305E+42	0.000E+00	SHORT HLIF
ZR-97	9.972E+13	1.834E+14	1.889E+14	SHORT HLIF
MO-99	7.173E+02	1.263E+03	1.304E+03	SHORT HLIF
TC-99M	4.663E+38	1.343E+39	0.000E+00	SHORT HLIF
RH-101	7.625E-03	2.253E-02	2.279E-02	NOT IDENT.
RH-102	5.933E-03	5.766E-02	5.772E-02	NOT IDENT.
RU-103	5.694E-03	4.393E-02	4.401E-02	FAIL ABUN
RH-106	1.027E-01	2.228E-01	2.276E-01	NOT IDENT.
RU-106	1.027E-01	2.228E-01	2.276E-01	NOT IDENT.
AG-108M	-2.459E-02	2.376E-02	2.622E-02	NOT IDENT.
AG-110	4.132E-01	5.856E-01	6.145E-01	NOT IDENT.
AG-110M	1.856E-02	4.081E-02	4.166E-02	NOT IDENT.
SN-113	8.427E-03	3.148E-02	3.171E-02	NOT IDENT.
CD-115	-3.901E+03	3.471E+03	3.891E+03	SHORT HLIF
SN-117M	-2.762E-02	1.039E-01	1.046E-01	NOT IDENT.
SB-122	7.549E+01	1.739E+02	1.772E+02	SHORT HLIF
TE-123M	1.919E-03	2.359E-02	2.360E-02	NOT IDENT.
SB-124	-1.176E-04	9.695E-02	9.695E-02	NOT IDENT.
SB-125	1.852E-02	6.284E-02	6.339E-02	FAIL ABUN
TE-125M	-9.348E-01	7.745E+00	7.756E+00	NOT IDENT.
I-126	-4.423E-01	5.421E-01	5.776E-01	NOT IDENT.
SB-126	5.916E-02	4.050E-01	4.059E-01	NOT IDENT.
SB-127	7.717E+00	2.714E+01	2.736E+01	NOT IDENT.
I-131	-6.113E-02	3.961E-01	3.970E-01	NOT IDENT.
I-132	-1.000E+41	2.199E+41	0.000E+00	SHORT HLIF
TE-132	2.346E+01	3.105E+01	3.280E+01	SHORT HLIF
BA-133	1.512E-02	3.401E-02	3.468E-02	NOT IDENT.
I-133	3.181E+09	1.715E+10	1.721E+10	SHORT HLIF
CS-134	-7.124E-03	3.530E-02	3.545E-02	NOT IDENT.
I-135	-9.723E+35	2.497E+36	0.000E+00	SHORT HLIF
CS-136	-6.695E-02	2.193E-01	2.213E-01	NOT IDENT.
BA-137M	2.014E-02	2.722E-02	2.870E-02	NOT IDENT.
CS-137	2.128E-02	2.876E-02	3.032E-02	NOT IDENT.
LA-138	1.604E-03	4.978E-02	4.979E-02	NOT IDENT.
CE-139	-7.481E-03	2.410E-02	2.434E-02	NOT IDENT.
BA-140	2.003E-02	6.583E-01	6.584E-01	NOT IDENT.
LA-140	-4.905E-02	1.704E-01	1.718E-01	FAIL ABUN
CE-141	-1.919E-02	6.245E-02	6.305E-02	NOT IDENT.
CE-143	-2.970E+05	1.521E+06	1.527E+06	SHORT HLIF
CE-144	-3.740E-02	1.639E-01	1.648E-01	NOT IDENT.
PM-144	1.861E-02	2.715E-02	2.841E-02	NOT IDENT.
PR-144	1.361E+00	2.039E+00	2.129E+00	NOT IDENT.
PM-146	-3.894E-03	3.479E-02	3.483E-02	NOT IDENT.
ND-147	7.983E-01	1.416E+00	1.461E+00	NOT IDENT.
PM-147	2.810E+02	5.133E+02	5.287E+02	NOT IDENT.
PM-149	1.085E+04	3.030E+04	3.069E+04	SHORT HLIF
EU-150	-1.629E-02	2.176E-02	2.297E-02	FAIL ABUN
EU-152	1.851E-02	7.427E-02	7.473E-02	NOT IDENT.
GD-153	2.119E-02	5.794E-02	5.873E-02	NOT IDENT.
EU-154	3.510E-02	8.252E-02	8.402E-02	NOT IDENT.
EU-155	-1.495E-02	6.837E-02	6.870E-02	FAIL ABUN
TB-160	4.601E-02	1.202E-01	1.220E-01	FAIL ABUN
HO-166M	6.720E-02	6.272E-02	6.965E-02	FAIL ABUN
TM-171	-2.794E+00	9.781E+00	9.861E+00	NOT IDENT.
HF-172	-3.255E-02	1.344E-01	1.352E-01	FAIL ABUN
LU-172	-3.211E-03	5.442E-02	5.444E-02	FAIL ABUN
LU-176	1.241E-02	2.015E-02	2.091E-02	NOT IDENT.
HF-181	3.759E-04	4.866E-02	4.866E-02	NOT IDENT.

TA-182	5.259E-02	1.741E-01	1.757E-01	FAIL ABUN
RE-183	1.828E-03	1.320E-01	1.320E-01	NOT IDENT.
RE-184	-1.291E-02	1.143E-01	1.144E-01	NOT IDENT.
W-188	7.427E-01	7.635E+00	7.642E+00	FAIL ABUN
IR-192	-5.263E-03	2.992E-02	3.002E-02	FAIL ABUN
HG-203	1.096E-02	4.111E-02	4.140E-02	NOT IDENT.
TL-204	-3.853E+00	3.286E+00	3.717E+00	NOT IDENT.
BI-207	3.185E-03	4.989E-02	4.991E-02	FAIL ABUN
BI-210	1.400E-01	1.701E+00	1.702E+00	NOT IDENT.
PB-210	1.400E-01	1.701E+00	1.702E+00	NOT IDENT.
PB-211	1.819E-01	4.932E-01	5.000E-01	NOT IDENT.
BI-212	6.490E-01	4.660E-01	5.502E-01	NOT IDENT.
BI-213	-8.135E-02	8.536E-02	9.290E-02	NOT IDENT.
RN-219	-7.169E-02	3.034E-01	3.052E-01	NOT IDENT.
RA-223	4.313E-02	6.743E-01	6.745E-01	FAIL ABUN
RA-224	2.690E-01	6.243E-01	6.360E-01	NOT IDENT.
AC-225	-7.489E-02	1.581E+00	1.582E+00	NOT IDENT.
AC-227	-1.178E-02	1.929E-01	1.930E-01	NOT IDENT.
TH-227	-1.178E-02	1.929E-01	1.930E-01	NOT IDENT.
AC-228	1.401E-01	2.131E-01	2.223E-01	FAIL ABUN
RA-228	1.401E-01	2.131E-01	2.223E-01	FAIL ABUN
TH-229	6.657E-02	4.302E-01	4.312E-01	FAIL ABUN
PA-231	1.287E-01	3.954E-01	3.996E-01	NOT IDENT.
TH-231	4.313E-02	6.743E-01	6.745E-01	NOT IDENT.
TH-232	1.401E-01	2.131E-01	2.223E-01	FAIL ABUN
PA-233	4.625E-02	4.256E-02	4.739E-02	NOT IDENT.
PA-234	-3.508E-02	2.577E-01	2.582E-01	NOT IDENT.
PA-234M	-7.710E-01	2.469E+00	2.493E+00	NOT IDENT.
U-235	5.894E-02	1.508E-01	1.531E-01	FAIL ABUN
NP-237	4.625E-02	4.256E-02	4.739E-02	FAIL ABUN
NP-238	-1.750E+03	8.553E+03	8.589E+03	SHORT HLIF
NP-239	2.494E-02	1.753E-01	1.756E-01	NOT IDENT.
PU-239	3.951E+01	2.429E+02	2.436E+02	NOT IDENT.
AM-241	3.066E-02	9.150E-02	9.253E-02	NOT IDENT.
CM-243	1.716E-02	6.863E-02	6.906E-02	NOT IDENT.
BK-247	-3.408E-02	6.533E-02	6.712E-02	NOT IDENT.
CM-247	-3.350E-03	2.958E-02	2.962E-02	NOT IDENT.
CF-249	-1.064E-02	2.852E-02	2.892E-02	NOT IDENT.
CF-251	-1.214E-02	9.425E-02	9.441E-02	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                          Charleston, SC 29407                             *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
74.66	24.5711	81.75	42.1228	123.68	20.5048
879.38	33.5389	82.47	38.3456	125.81	26.7371
46.54	22.1215	83.79	23.0640	127.23	23.6993
228.16	0.0000	265.00	23.0729	127.91	23.7222
52.39	23.2984	193.51	33.4154	129.30	25.8347
1093.63	31.4046	105.31	33.8058	131.20	29.0113
52.39	34.1411	86.79	33.8203	133.02	25.9674
125.81	28.7921	86.94	33.8296	133.52	33.2612
53.44	25.2226	87.09	33.8390	136.00	25.0294
54.07	27.0662	87.57	33.8683	136.47	21.9145
293.27	0.0000	88.03	42.6126	739.50	0.0000
482.18	36.3910	306.78	40.0521	140.51	0.0000
57.98	30.9650	88.47	40.0615	143.76	21.0721
59.27	31.6675	143.76	31.0977	144.24	17.9224
59.32	31.6712	90.64	33.7299	145.44	24.2855
59.54	29.2499	531.02	46.7413	152.43	30.8922
60.96	37.9045	92.59	30.2653	1048.07	22.3928
61.17	28.4420	93.35	30.3051	154.21	16.0137
62.93	28.5551	94.56	30.3683	158.56	20.3293
63.29	28.5780	311.90	30.3730	159.00	24.6983
290.67	28.5965	946.00	30.3741	162.33	28.0313
87.57	24.6372	94.87	30.3844	537.26	26.9638
66.73	34.3671	97.43	21.0007	163.33	23.7469
67.24	38.1241	98.43	20.7071	165.86	25.9830
67.68	36.2986	98.44	20.7076	427.87	20.8178
1221.41	31.6496	103.37	35.5630	176.60	20.8244
70.82	31.7261	116.74	35.5630	177.52	23.0402
97.43	33.6476	100.11	24.7202	181.07	0.0000
70.82	44.0338	102.03	28.7659	181.52	30.8566
279.20	44.0349	103.18	22.8570	184.41	29.4804
1063.66	32.6119	103.37	22.8640	185.72	23.2488
72.87	32.6158	911.20	25.9226	193.51	25.6753
351.06	32.6158	105.31	25.9268	197.03	22.4088
74.66	41.5468	106.12	24.9619	198.01	23.5532
351.93	41.5598	106.47	24.9756	201.83	25.8978
238.63	41.5598	109.28	24.0826	203.43	21.4286
351.93	41.5598	111.00	20.1224	205.31	27.1194
238.63	41.5598	111.76	0.0000	210.85	23.8612
74.97	41.5723	114.06	23.2490	215.65	13.6992
77.11	41.7488	116.30	0.0000	218.12	18.3096
78.74	41.8814	116.74	22.3278	222.11	16.0822
256.23	41.9580	119.76	22.4277	227.09	20.7749
80.03	41.9848	264.66	23.4936	227.38	21.9351
133.52	41.9926	121.22	20.4321	228.16	0.0000
364.49	41.9983	344.28	25.5610	228.18	12.7087
711.68	42.0288	122.06	25.5713	235.69	17.0631
356.01	42.0630	122.92	27.6511	235.96	17.0673
323.87	42.0688	1274.44	27.6571	238.63	21.7747

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
238.98	0.0000	338.28	13.4684	531.02	5.6582
240.99	18.7039	338.32	13.4688	537.26	10.4056
242.00	12.4806	340.48	21.9200	1260.41	0.0000
244.70	12.5107	340.55	21.9211	552.55	8.5778
685.70	10.6278	344.28	12.6797	795.86	7.1851
388.16	12.9939	345.93	12.6941	564.24	0.0000
507.63	0.0000	351.06	11.0404	569.33	7.6865
256.23	16.5869	351.93	11.0470	569.50	7.6872
527.90	0.0000	355.39	0.0000	569.70	8.6488
264.66	10.7397	356.01	10.2256	583.19	11.6050
264.80	10.7411	364.49	10.2839	584.27	10.1595
265.00	20.2918	366.42	0.0000	595.83	9.7274
269.46	16.7733	372.51	11.1999	600.60	15.5983
270.03	14.3840	375.05	11.2187	602.52	0.0000
401.81	20.3976	377.52	11.2367	604.72	11.7202
273.65	16.8314	383.85	13.0182	607.14	8.8000
276.40	21.6892	388.16	12.1839	609.32	8.8085
583.19	15.6767	666.33	12.1876	610.33	8.8125
277.60	20.5045	391.69	6.9777	614.28	8.8282
402.40	20.5107	400.66	9.6483	618.01	4.9127
279.20	15.7001	401.81	12.2885	884.68	5.9016
279.54	21.7447	402.40	13.1711	621.93	3.9370
279.70	21.7474	404.85	7.9146	630.19	0.0000
280.46	19.3428	410.95	15.0057	631.29	11.8599
301.36	19.3931	413.71	13.2626	633.25	12.8593
284.31	24.2535	720.70	10.6162	634.78	8.9084
285.41	13.3512	423.72	14.2318	635.95	9.9036
285.90	0.0000	427.09	7.1302	636.99	8.9172
287.50	19.4521	427.87	7.1335	657.50	3.9984
290.67	18.2817	433.94	16.1074	657.76	8.9971
293.27	0.0000	439.40	12.5679	657.90	0.0000
295.22	15.9009	440.45	16.1686	661.66	4.0054
316.51	15.9100	453.88	11.7670	664.57	0.0000
298.58	24.5264	463.37	9.0999	666.33	6.0198
299.98	16.3684	468.07	7.6638	666.50	6.0203
300.09	16.3700	473.00	10.0632	667.71	0.0000
300.13	16.3704	631.29	8.2427	677.62	8.0645
311.90	16.3704	696.49	19.2509	685.70	4.0457
301.36	14.7473	477.60	9.6299	692.65	0.0000
302.85	14.7642	482.18	5.5164	695.00	9.1373
304.50	19.7100	487.02	11.9833	696.49	4.0635
304.85	19.7153	492.35	0.0000	696.51	4.0636
306.78	9.8721	497.08	6.9505	697.00	5.0806
308.46	18.5335	505.52	10.0529	697.30	8.1299
311.90	4.9551	507.63	0.0000	697.49	8.1305
316.51	9.9441	511.00	12.1351	702.65	10.1843
319.41	9.9653	514.00	12.1542	706.68	8.1605
320.08	9.9702	514.00	12.1542	711.68	6.1328
321.04	9.9773	520.40	6.5659	720.70	9.2322
323.87	14.9967	520.69	0.0000	721.93	0.0000
325.23	12.5095	667.71	0.0000	1690.97	8.2129
1596.21	16.3040	527.90	0.0000	722.91	8.2135
333.37	17.6158	528.26	10.3590	723.31	7.1880
333.97	20.9803	529.59	6.5964	756.73	6.1631
334.37	20.9864	529.87	0.0000	727.33	3.0854

ENERGY	MDA COUNTS
733.00	6.1846
735.93	10.3194
737.46	5.1628
739.50	0.0000
1434.09	4.1410
747.24	9.3281
748.06	7.7759
752.31	7.7884
753.82	10.9102
756.73	11.4422
756.80	11.4427
763.94	11.4736
765.81	11.4816
1001.03	6.2642
766.84	6.2651
772.60	0.0000
776.52	0.0000
777.92	0.0000
778.90	7.3424
783.70	7.8809
1435.80	9.4746
903.28	7.3783
795.86	7.3885
801.95	8.4629
810.06	7.4267
810.29	6.3662
810.45	6.3667
810.76	7.4287
815.77	8.5052
818.51	10.6417
832.01	1.0693
834.85	9.6332
835.71	6.4241
836.80	0.0000
846.75	0.0000
846.77	8.5986
856.80	5.3929
860.56	12.9600
871.09	11.9225
873.19	1.0846
875.33	0.0000
879.38	3.2607
880.51	4.3493
881.60	6.5264
883.24	4.3534
884.68	3.2666
889.28	5.4527
894.76	8.7402
1836.06	7.6562
900.72	6.5684
903.28	3.2869
911.20	6.5911
912.08	4.9446
984.45	0.0000
926.50	4.4160

ENERGY	MDA COUNTS
929.11	5.5247
935.54	5.5361
937.49	2.2158
983.53	2.2205
946.00	5.5546
949.00	5.5599
954.55	0.0000
962.31	12.2832
964.08	2.2346
966.17	11.1804
968.97	4.4761
983.53	8.9925
984.45	0.0000
996.26	2.2570
1001.03	1.1301
1002.74	4.5228
1004.73	4.5256
1021.30	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	2.2853
1038.76	0.0000
1046.59	6.8735
1048.07	4.5846
1049.04	3.4395
1050.41	1.1469
1063.66	5.7568
1077.00	5.7788
1077.34	2.3118
1085.87	3.4761
1093.63	4.6452
1099.45	2.3263
1112.07	7.0039
1112.84	2.6270
1115.54	4.2064
1120.29	4.3875
1120.55	4.3878
1121.30	4.3887
1808.65	4.3988
1131.51	0.0000
1147.95	0.0000
1332.49	1.7805
1177.95	3.5654
1189.05	2.6821
1204.77	5.3862
1221.41	4.5081
1231.02	3.6155
1235.36	7.2388
1238.28	1.8112
1260.41	0.0000
1271.87	3.6531
1274.44	1.8278
1274.54	1.8278
1291.59	3.6711
1298.22	0.0000

ENERGY	MDA COUNTS
1312.11	5.5345
1332.49	2.7810
1362.66	0.0000
1365.19	0.9343
1368.63	0.0000
1384.29	3.7539
1408.01	3.7747
1434.09	7.5942
1435.80	2.8491
1457.56	0.0000
1460.82	4.5841
1489.16	7.6885
1505.03	0.9644
1584.12	2.9425
1596.21	1.9667
1620.50	1.9766
1621.92	0.9885
1678.03	0.0000
1690.97	2.0048
1750.46	0.0000
1764.49	3.0505
1770.23	5.0897
1771.35	3.0546
1791.20	0.0000
1808.65	3.0762
1810.72	0.0000
1836.06	1.0306

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:38:12.64

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299019.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM05.CNF;914
                                         Background date  : 28-JUL-2024 10:37:54
Sample date      : 26-JUN-2024 10:07:00  Acquisition date : 30-JUL-2024 13:37:44
Sample ID        : G674299019            Sample quantity  : 7.92600E+01 GRAM
Detector name    : GAM05                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.39  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	26.28*	26	150	5.51	52.22	44	16	7.10E-03	111.8	
2	0	46.70*	25	34	0.91	93.00	89	8	7.04E-03	53.3	
3	0	63.37*	11	43	0.84	126.30	124	6	2.92E-03	121.1	
4	2	75.06*	65	38	1.03	149.64	145	26	1.80E-02	21.1	2.16E+00
5	2	77.31*	112	36	1.02	154.13	145	26	3.11E-02	13.3	
6	2	79.93*	12	35	1.05	159.36	145	26	3.28E-03	94.4	
7	1	87.24*	20	32	0.97	173.95	172	11	5.64E-03	48.3	7.98E-01
8	1	89.85	22	44	0.98	179.18	172	11	6.06E-03	53.0	
9	0	92.95*	29	65	1.47	185.37	182	10	8.02E-03	61.7	
10	0	186.62*	17	77	0.98	372.45	366	12	4.63E-03	114.5	
11	0	199.37*	35	57	1.57	397.90	392	15	9.62E-03	51.0	
12	0	209.30	22	17	1.10	417.74	415	6	6.13E-03	36.8	
13	1	237.08	12	7	1.04	473.23	472	9	3.41E-03	34.6	7.16E+00
14	1	238.86*	79	42	1.27	476.77	472	9	2.21E-02	18.5	
15	0	242.41	45	29	0.77	483.87	481	8	1.26E-02	26.2	
16	0	270.00	20	21	1.39	538.98	535	8	5.48E-03	46.7	
17	0	295.82*	51	44	0.96	590.54	586	11	1.42E-02	29.9	
18	0	320.59	8	22	1.38	640.03	635	9	2.27E-03	109.9	
19	0	338.68	18	27	1.45	676.17	669	11	5.10E-03	59.8	
20	0	352.29*	61	27	1.03	703.35	698	8	1.69E-02	20.1	
21	0	456.87	11	30	2.83	912.24	897	17	3.07E-03	117.0	
22	0	467.89	14	29	5.78	934.27	917	20	3.87E-03	99.7	
23	0	511.29*	29	11	1.77	1020.97	1013	15	8.10E-03	44.9	
24	0	583.94*	20	9	1.49	1166.12	1159	11	5.61E-03	38.4	
25	0	610.19*	26	16	1.05	1218.55	1213	9	7.32E-03	36.2	
26	0	820.17	11	6	3.37	1638.12	1633	9	3.03E-03	52.0	
27	0	846.40	8	5	1.80	1690.54	1684	10	2.29E-03	61.4	
28	0	858.67	12	9	3.57	1715.06	1708	13	3.22E-03	62.6	
29	0	868.59*	3	3	0.73	1734.88	1731	6	7.55E-04	137.2	
30	6	908.55	12	0	3.19	1814.73	1811	14	3.24E-03	27.1	7.06E-01
31	6	911.68*	12	0	1.80	1821.00	1811	14	3.31E-03	38.0	
32	0	1195.04	9	0	1.35	2387.33	2382	9	2.50E-03	33.3	
33	0	1462.11*	21	7	1.90	2921.23	2914	14	5.84E-03	36.4	
34	0	1765.29*	4	3	1.42	3527.48	3522	10	1.01E-03	112.0	

Sample ID : G674299019 Acquisition date : 30-JUL-2024 13:37:44

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 14:38:14

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299019.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 26-JUN-2024 10:07:00	Acquisition date	: 30-JUL-2024 13:37:44
Sample ID	: G674299019	Sample quantity	: 79.260 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA5	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.39 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	19	10.66*	1.248E+00	1.380E+00	1.380E+00	72.79
CR-51	320.08	7	9.91*	4.470E+00	1.551E-01	3.648E-01	219.90
NB-95M	235.69	11	24.80*	5.602E+00	7.371E-02	1.067E-01	69.21
CD-109	88.03	17	3.70*	9.318E+00	4.797E-01	5.049E-01	96.66
SN-126	64.28	9	9.60	9.699E+00	9.118E-02	9.118E-02	242.10
	86.94	17	8.90	9.318E+00	1.994E-01	1.994E-01	96.66
	87.57	17	37.00*	9.318E+00	4.797E-02	4.797E-02	96.66
TL-208	277.37	------	6.60	4.995E+00	------	Line Not Found	------
	583.19	18	85.00*	2.727E+00	7.444E-02	7.444E-02	76.75
	860.56	------	12.50	1.955E+00	------	Line Not Found	------
BI-210	46.54	21	4.25*	9.306E+00	5.138E-01	5.153E-01	106.52
PB-210	46.54	21	4.25*	9.306E+00	5.138E-01	5.153E-01	106.52
BI-211	72.87	------	1.23	9.622E+00	------	Line Not Found	------
	351.06	54	12.92*	4.149E+00	9.599E-01	9.599E-01	40.11
PB-212	74.82	55	10.28	9.587E+00	5.328E-01	5.328E-01	42.14
	77.11	96	17.10	9.546E+00	5.575E-01	5.575E-01	26.60
	238.63	70	43.60*	5.573E+00	2.733E-01	2.733E-01	36.95
	300.09	------	3.30	4.705E+00	------	Line Not Found	------
BI-214	609.32	24	45.49*	2.626E+00	1.886E-01	1.886E-01	72.30
	1120.29	------	14.92	1.560E+00	------	Line Not Found	------
	1764.49	3	15.30	1.069E+00	1.950E-01	1.950E-01	223.96
PB-214	74.82	55	5.80	9.587E+00	9.443E-01	9.444E-01	42.14
	77.11	96	9.70	9.546E+00	9.828E-01	9.829E-01	26.60
	87.09	17	3.41	9.318E+00	5.205E-01	5.205E-01	96.66
	242.00	40	7.25	5.514E+00	9.507E-01	9.507E-01	52.41
	295.22	45	18.42	4.757E+00	4.883E-01	4.884E-01	59.72
	351.93	54	35.60*	4.149E+00	3.484E-01	3.484E-01	40.11
RN-222	609.32	24	45.49*	2.626E+00	1.886E-01	1.886E-01	72.30
	1120.29	------	14.92	1.560E+00	------	Line Not Found	------
	1764.49	3	15.30	1.069E+00	1.950E-01	1.950E-01	223.96
RA-224	240.99	40	4.10*	5.514E+00	1.681E+00	1.681E+00	52.41
RA-226	74.82	55	5.80	9.587E+00	9.443E-01	9.444E-01	42.14
	77.11	96	9.70	9.546E+00	9.828E-01	9.829E-01	26.60
	87.09	17	3.41	9.318E+00	5.205E-01	5.205E-01	96.66
	242.00	40	7.25	5.514E+00	9.507E-01	9.507E-01	52.41
	295.22	45	18.42	4.757E+00	4.883E-01	4.884E-01	59.72
	351.93	54	35.60*	4.149E+00	3.484E-01	3.484E-01	40.11
TH-228	74.82	55	10.28	9.587E+00	5.328E-01	5.328E-01	42.14
	77.11	96	17.10	9.546E+00	5.575E-01	5.575E-01	26.60
	238.63	70	43.60*	5.573E+00	2.733E-01	2.733E-01	36.95
	300.09	------	3.30	4.705E+00	------	Line Not Found	------
TH-230	74.82	55	5.80	9.587E+00	9.443E-01	9.443E-01	42.14
	77.11	96	9.70	9.546E+00	9.828E-01	9.828E-01	26.60
	87.09	17	3.41	9.318E+00	5.205E-01	5.205E-01	96.66
	242.00	40	7.25	5.514E+00	9.507E-01	9.507E-01	52.41
	295.22	45	18.42	4.757E+00	4.883E-01	4.883E-01	59.72
	351.93	54	35.60*	4.149E+00	3.484E-01	3.484E-01	40.11
TH-234	63.29	9	3.70*	9.699E+00	2.366E-01	2.366E-01	242.10
	92.59	25	4.23	9.164E+00	6.079E-01	6.079E-01	123.36

Sample ID : G674299019 Acquisition date : 30-JUL-2024 13:37:44

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
U-234	74.82	55	5.80	9.587E+00	9.443E-01	9.443E-01	42.14
	77.11	96	9.70	9.546E+00	9.828E-01	9.828E-01	26.60
	87.09	17	3.41	9.318E+00	5.205E-01	5.205E-01	96.66
	242.00	40	7.25	5.514E+00	9.507E-01	9.507E-01	52.41
	295.22	45	18.42	4.757E+00	4.883E-01	4.883E-01	59.72
	351.93	54	35.60*	4.149E+00	3.484E-01	3.484E-01	40.11
U-235	89.96	19	3.47	9.249E+00	5.538E-01	5.538E-01	106.10
	93.35	25	5.60	9.164E+00	4.592E-01	4.592E-01	123.36
	143.76	------	10.96*	7.659E+00	------	Line Not Found	------
	163.33	------	5.08	7.136E+00	------	Line Not Found	------
	185.72	15	57.20	6.581E+00	3.679E-02	3.679E-02	229.09
	205.31	------	5.01	6.186E+00	------	Line Not Found	------
U-238	63.29	9	3.70*	9.699E+00	2.366E-01	2.366E-01	242.10
	92.59	25	4.23	9.164E+00	6.079E-01	6.079E-01	123.36
AM-243	43.53	------	5.90	9.102E+00	------	Line Not Found	------
	74.66	55	67.20*	9.587E+00	8.150E-02	8.151E-02	42.14
ANH-511	511.00	26	100.00*	3.052E+00	8.131E-02	8.131E-02	89.88

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:38:15.39

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299019.CNF;1  *
* Acquisition date : 30-JUL-2024 13:37:44 Sensitivity     : 3.000           *
* Detector ID      : GAM05                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:07:00 Analyst initials: RXF2            *
* Sample ID        : G674299019           Sample Quantity : 7.9260E+01 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 16-AUG-2023 10:50:42 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;28            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.380E+00	9.844E-01	8.657E-01
CR-51	3.648E-01	7.861E-01	9.111E-01
NB-95M	1.067E-01	7.237E-02	2.453E-01
CD-109	5.049E-01	4.783E-01	7.444E-01
SN-126	4.797E-02	4.544E-02	7.059E-02
TL-208	7.444E-02	5.599E-02	7.305E-02
BI-210	5.153E-01	5.380E-01	6.032E-01
PB-210	5.153E-01	5.380E-01	6.032E-01
BI-211	9.599E-01	3.773E-01	3.781E-01
PB-212	2.733E-01	9.898E-02	1.027E-01
BI-214	1.886E-01	1.336E-01	1.631E-01
PB-214	3.484E-01	1.369E-01	1.375E-01
RN-222	1.886E-01	1.336E-01	1.631E-01
RA-224	1.681E+00	8.634E-01	1.142E+00
RA-226	3.484E-01	1.369E-01	1.375E-01
TH-228	2.733E-01	9.898E-02	1.027E-01
TH-230	3.484E-01	1.369E-01	1.375E-01
TH-234	2.366E-01	5.613E-01	7.189E-01
U-234	3.484E-01	1.369E-01	1.375E-01
U-235	6.030E-02	1.613E-01	3.044E-01
U-238	2.366E-01	5.613E-01	7.189E-01
AM-243	8.151E-02	3.366E-02	3.742E-02
ANH-511	8.131E-02	7.162E-02	5.439E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.484E-01	4.256E-01	7.733E-01	NOT IDENT.
NA-22	-1.729E-03	3.847E-02	8.068E-02	NOT IDENT.
NA-24	0.000E+00	9.203E+14	0.000E+00	SHORT HLIF
AL-26	-7.896E-03	2.946E-02	6.579E-02	NOT IDENT.
SC-46	2.262E-03	4.513E-02	9.494E-02	NOT IDENT.
V-48	-4.969E-02	1.511E-01	2.928E-01	NOT IDENT.
MN-52	-3.476E-02	1.481E+00	3.745E+00	NOT IDENT.

MN-54	-6.725E-03	4.320E-02	7.907E-02	NOT IDENT.
CO-56	4.862E-02	5.847E-02	1.105E-01	FAIL ABUN
MN-56	0.000E+00	1.203E+41	0.000E+00	SHORT HLIF
CO-57	-7.629E-03	2.078E-02	3.516E-02	NOT IDENT.
CO-58	3.019E-02	4.830E-02	1.069E-01	NOT IDENT.
FE-59	-2.157E-02	1.014E-01	2.045E-01	NOT IDENT.
CO-60	-1.815E-02	5.283E-02	9.703E-02	NOT IDENT.
ZN-65	5.448E-02	1.019E-01	2.250E-01	NOT IDENT.
GE-68	-1.098E+00	1.514E+00	2.563E+00	NOT IDENT.
AS-73	8.011E-03	1.644E-01	3.102E-01	NOT IDENT.
AS-74	-8.774E-02	2.503E-01	4.415E-01	NOT IDENT.
SE-75	-1.614E-02	4.305E-02	7.197E-02	NOT IDENT.
BR-77	0.000E+00	3.972E+03	0.000E+00	SHORT HLIF
SR-82	-5.527E-01	5.545E-01	7.685E-01	NOT IDENT.
RB-83	1.555E-02	8.305E-02	1.664E-01	NOT IDENT.
RB-84	-3.150E-03	9.825E-02	2.044E-01	NOT IDENT.
KR-85	2.507E+00	9.700E+00	1.699E+01	NOT IDENT.
SR-85	1.606E-02	6.277E-02	1.099E-01	NOT IDENT.
RB-86	-1.507E-02	1.446E+00	3.047E+00	NOT IDENT.
Y-88	3.523E-02	4.991E-02	1.365E-01	NOT IDENT.
Y-91	-1.480E+01	3.091E+01	5.494E+01	NOT IDENT.
NB-94	-2.576E-03	4.304E-02	7.917E-02	NOT IDENT.
NB-95	-1.558E-03	4.261E-02	8.405E-02	NOT IDENT.
ZR-95	1.481E-02	8.917E-02	1.795E-01	NOT IDENT.
NB-97	0.000E+00	1.116E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.336E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.693E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.945E+39	0.000E+00	SHORT HLIF
RH-101	7.263E-03	2.414E-02	4.562E-02	FAIL ABUN
RH-102	1.521E-02	6.447E-02	1.275E-01	NOT IDENT.
RU-103	-5.996E-02	5.413E-02	8.168E-02	FAIL ABUN
RH-106	-1.890E-01	4.099E-01	7.307E-01	NOT IDENT.
RU-106	-1.890E-01	4.099E-01	7.307E-01	NOT IDENT.
AG-108M	2.830E-03	3.079E-02	6.011E-02	NOT IDENT.
AG-110	-2.518E-01	7.110E-01	1.282E+00	NOT IDENT.
AG-110M	2.701E-02	5.093E-02	1.170E-01	NOT IDENT.
SN-113	-2.842E-02	4.229E-02	7.372E-02	NOT IDENT.
CD-115	0.000E+00	4.431E+03	0.000E+00	SHORT HLIF
SN-117M	7.434E-02	1.195E-01	2.319E-01	NOT IDENT.
SB-122	0.000E+00	2.872E+02	0.000E+00	SHORT HLIF
TE-123M	2.088E-02	2.800E-02	5.448E-02	NOT IDENT.
SB-124	3.683E-02	1.152E-01	2.900E-01	NOT IDENT.
SB-125	-7.375E-04	7.919E-02	1.563E-01	FAIL ABUN
TE-125M	2.267E+00	9.080E+00	1.701E+01	NOT IDENT.
I-126	1.488E-01	7.736E-01	1.491E+00	NOT IDENT.
SB-126	-1.631E-01	3.729E-01	6.538E-01	NOT IDENT.
SB-127	-1.175E+01	4.588E+01	8.720E+01	NOT IDENT.
I-131	2.687E-01	5.508E-01	1.149E+00	FAIL ABUN
I-132	0.000E+00	1.529E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	4.196E+01	0.000E+00	SHORT HLIF
BA-133	-2.539E-02	4.620E-02	7.767E-02	FAIL ABUN
I-133	0.000E+00	2.332E+10	0.000E+00	SHORT HLIF
CS-134	4.937E-03	5.393E-02	1.020E-01	NOT IDENT.
I-135	0.000E+00	5.031E+36	0.000E+00	SHORT HLIF
CS-136	-2.864E-02	3.391E-01	6.706E-01	NOT IDENT.
BA-137M	4.018E-02	3.598E-02	8.376E-02	NOT IDENT.
CS-137	4.245E-02	3.801E-02	8.848E-02	NOT IDENT.
LA-138	-8.312E-03	4.297E-02	9.249E-02	NOT IDENT.
CE-139	3.685E-03	2.588E-02	4.779E-02	NOT IDENT.
BA-140	1.969E-01	7.834E-01	1.577E+00	NOT IDENT.
LA-140	-1.468E-01	3.634E-01	6.489E-01	NOT IDENT.
CE-141	-6.824E-02	7.639E-02	1.221E-01	NOT IDENT.
CE-143	0.000E+00	2.062E+06	0.000E+00	SHORT HLIF
CE-144	-2.309E-02	1.684E-01	3.003E-01	FAIL ABUN
PM-144	6.249E-02	4.848E-02	1.064E-01	NOT IDENT.
PR-144	4.697E+00	3.660E+00	8.030E+00	NOT IDENT.
PM-146	1.596E-02	4.622E-02	9.285E-02	NOT IDENT.
ND-147	1.026E+00	1.588E+00	3.568E+00	FAIL ABUN
PM-147	-1.291E+02	5.407E+02	9.640E+02	NOT IDENT.
PM-149	0.000E+00	3.570E+04	0.000E+00	SHORT HLIF
EU-150	7.497E-03	2.760E-02	5.058E-02	FAIL ABUN
EU-152	-7.380E-03	8.749E-02	1.687E-01	NOT IDENT.
GD-153	-5.693E-02	6.168E-02	9.427E-02	NOT IDENT.
EU-154	-8.753E-03	1.066E-01	2.218E-01	NOT IDENT.
EU-155	8.312E-03	7.252E-02	1.351E-01	FAIL ABUN
TB-160	-5.023E-02	1.375E-01	2.681E-01	FAIL ABUN
HO-166M	2.794E-02	6.227E-02	1.311E-01	FAIL ABUN
TM-171	-1.696E+00	2.959E+00	5.192E+00	NOT IDENT.

HF-172	-7.409E-02	1.439E-01	2.461E-01	FAIL ABUN
LU-172	-2.177E-02	7.357E-02	1.392E-01	FAIL ABUN
LU-176	-1.352E-02	2.928E-02	4.705E-02	FAIL ABUN
HF-181	-1.228E-02	6.200E-02	1.157E-01	NOT IDENT.
TA-182	-1.519E-01	1.965E-01	3.149E-01	NOT IDENT.
RE-183	-2.716E-02	5.708E-02	1.021E-01	NOT IDENT.
RE-184	6.445E-02	2.456E-01	4.786E-01	NOT IDENT.
W-188	-6.312E+00	9.546E+00	1.485E+01	FAIL ABUN
IR-192	6.201E-03	3.924E-02	7.163E-02	FAIL ABUN
HG-203	-7.337E-03	4.524E-02	7.823E-02	NOT IDENT.
TL-204	2.017E+00	1.976E+00	3.837E+00	FAIL ABUN
BI-207	6.771E-04	6.268E-02	1.256E-01	FAIL ABUN
PB-211	-3.229E-01	6.996E-01	1.257E+00	NOT IDENT.
BI-212	-4.628E-01	5.670E-01	9.485E-01	NOT IDENT.
BI-213	-1.071E-01	9.727E-02	1.508E-01	NOT IDENT.
RN-219	7.202E-02	3.571E-01	7.231E-01	FAIL ABUN
RA-223	-1.416E-01	5.897E-01	9.979E-01	FAIL ABUN
AC-225	5.712E-01	1.665E+00	3.195E+00	NOT IDENT.
AC-227	2.238E-02	2.242E-01	4.067E-01	FAIL ABUN
TH-227	2.238E-02	2.242E-01	4.067E-01	FAIL ABUN
AC-228	2.144E-01	1.596E-01	4.562E-01	FAIL ABUN
RA-228	2.144E-01	1.596E-01	4.562E-01	FAIL ABUN
TH-229	2.153E-01	3.913E-01	7.700E-01	FAIL ABUN
PA-231	3.550E-01	5.020E-01	9.828E-01	NOT IDENT.
TH-231	-1.416E-01	5.897E-01	9.979E-01	FAIL ABUN
TH-232	2.144E-01	1.596E-01	4.562E-01	FAIL ABUN
PA-233	7.150E-03	6.241E-02	1.126E-01	NOT IDENT.
PA-234	-5.251E-02	3.265E-01	6.453E-01	NOT IDENT.
PA-234M	-1.064E+00	5.604E+00	1.052E+01	NOT IDENT.
NP-237	7.150E-03	6.241E-02	1.126E-01	NOT IDENT.
NP-238	0.000E+00	9.975E+03	0.000E+00	SHORT HLIF
NP-239	1.635E-02	2.076E-01	3.814E-01	NOT IDENT.
PU-239	1.829E+01	2.545E+02	4.686E+02	NOT IDENT.
AM-241	-1.053E-02	3.845E-02	7.027E-02	NOT IDENT.
CM-243	-3.669E-02	6.788E-02	1.173E-01	NOT IDENT.
BK-247	-1.263E-02	6.904E-02	1.199E-01	NOT IDENT.
CM-247	4.718E-03	3.363E-02	6.719E-02	NOT IDENT.
CF-249	-1.804E-02	3.703E-02	6.668E-02	NOT IDENT.
CF-251	-2.455E-02	1.107E-01	1.928E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:38:13.48

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	19	10.66*	1.248E+00	1.380E+00	1.380E+00	72.79
CR-51	320.08	7	9.91*	4.470E+00	1.551E-01	3.648E-01	219.90
NB-95M	235.69	11	24.80*	5.602E+00	7.371E-02	1.067E-01	69.21
CD-109	88.03	17	3.70*	9.318E+00	4.797E-01	5.049E-01	96.66
SN-126	64.28	9	9.60	9.699E+00	9.118E-02	9.118E-02	242.10
	86.94	17	8.90	9.318E+00	1.994E-01	1.994E-01	96.66
	87.57	17	37.00*	9.318E+00	4.797E-02	4.797E-02	96.66
TL-208	277.37	------	6.60	4.995E+00	------	Line Not Found	------
	583.19	18	85.00*	2.727E+00	7.444E-02	7.444E-02	76.75
	860.56	------	12.50	1.955E+00	------	Line Not Found	------
BI-210	46.54	21	4.25*	9.306E+00	5.138E-01	5.153E-01	106.52
PB-210	46.54	21	4.25*	9.306E+00	5.138E-01	5.153E-01	106.52
BI-211	72.87	------	1.23	9.622E+00	------	Line Not Found	------
	351.06	54	12.92*	4.149E+00	9.599E-01	9.599E-01	40.11
PB-212	74.82	55	10.28	9.587E+00	5.328E-01	5.328E-01	42.14
	77.11	96	17.10	9.546E+00	5.575E-01	5.575E-01	26.60
	238.63	70	43.60*	5.573E+00	2.733E-01	2.733E-01	36.95
	300.09	------	3.30	4.705E+00	------	Line Not Found	------
BI-214	609.32	24	45.49*	2.626E+00	1.886E-01	1.886E-01	72.30
	1120.29	------	14.92	1.560E+00	------	Line Not Found	------
	1764.49	3	15.30	1.069E+00	1.950E-01	1.950E-01	223.96
PB-214	74.82	55	5.80	9.587E+00	9.443E-01	9.444E-01	42.14
	77.11	96	9.70	9.546E+00	9.828E-01	9.829E-01	26.60
	87.09	17	3.41	9.318E+00	5.205E-01	5.205E-01	96.66
	242.00	40	7.25	5.514E+00	9.507E-01	9.507E-01	52.41
	295.22	45	18.42	4.757E+00	4.883E-01	4.884E-01	59.72
	351.93	54	35.60*	4.149E+00	3.484E-01	3.484E-01	40.11
RN-222	609.32	24	45.49*	2.626E+00	1.886E-01	1.886E-01	72.30
	1120.29	------	14.92	1.560E+00	------	Line Not Found	------
	1764.49	3	15.30	1.069E+00	1.950E-01	1.950E-01	223.96
RA-224	240.99	40	4.10*	5.514E+00	1.681E+00	1.681E+00	52.41
RA-226	74.82	55	5.80	9.587E+00	9.443E-01	9.444E-01	42.14
	77.11	96	9.70	9.546E+00	9.828E-01	9.829E-01	26.60
	87.09	17	3.41	9.318E+00	5.205E-01	5.205E-01	96.66
	242.00	40	7.25	5.514E+00	9.507E-01	9.507E-01	52.41
	295.22	45	18.42	4.757E+00	4.883E-01	4.884E-01	59.72
	351.93	54	35.60*	4.149E+00	3.484E-01	3.484E-01	40.11
TH-228	74.82	55	10.28	9.587E+00	5.328E-01	5.328E-01	42.14
	77.11	96	17.10	9.546E+00	5.575E-01	5.575E-01	26.60
	238.63	70	43.60*	5.573E+00	2.733E-01	2.733E-01	36.95
	300.09	------	3.30	4.705E+00	------	Line Not Found	------
TH-230	74.82	55	5.80	9.587E+00	9.443E-01	9.443E-01	42.14
	77.11	96	9.70	9.546E+00	9.828E-01	9.828E-01	26.60
	87.09	17	3.41	9.318E+00	5.205E-01	5.205E-01	96.66
	242.00	40	7.25	5.514E+00	9.507E-01	9.507E-01	52.41
	295.22	45	18.42	4.757E+00	4.883E-01	4.883E-01	59.72
	351.93	54	35.60*	4.149E+00	3.484E-01	3.484E-01	40.11

Sample ID : G674299019 Acquisition date : 30-JUL-2024 13:37:44

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-234	63.29	9	3.70*	9.699E+00	2.366E-01	2.366E-01	242.10
	92.59	25	4.23	9.164E+00	6.079E-01	6.079E-01	123.36
U-234	74.82	55	5.80	9.587E+00	9.443E-01	9.443E-01	42.14
	77.11	96	9.70	9.546E+00	9.828E-01	9.828E-01	26.60
	87.09	17	3.41	9.318E+00	5.205E-01	5.205E-01	96.66
	242.00	40	7.25	5.514E+00	9.507E-01	9.507E-01	52.41
	295.22	45	18.42	4.757E+00	4.883E-01	4.883E-01	59.72
	351.93	54	35.60*	4.149E+00	3.484E-01	3.484E-01	40.11
U-235	89.96	19	3.47	9.249E+00	5.538E-01	5.538E-01	106.10
	93.35	25	5.60	9.164E+00	4.592E-01	4.592E-01	123.36
	143.76	------	10.96*	7.659E+00	------	Line Not Found	------
	163.33	------	5.08	7.136E+00	------	Line Not Found	------
	185.72	15	57.20	6.581E+00	3.679E-02	3.679E-02	229.09
	205.31	------	5.01	6.186E+00	------	Line Not Found	------
U-238	63.29	9	3.70*	9.699E+00	2.366E-01	2.366E-01	242.10
	92.59	25	4.23	9.164E+00	6.079E-01	6.079E-01	123.36
AM-243	43.53	------	5.90	9.102E+00	------	Line Not Found	------
	74.66	55	67.20*	9.587E+00	8.150E-02	8.151E-02	42.14
ANH-511	511.00	26	100.00*	3.052E+00	8.131E-02	8.131E-02	89.88

Flag: "*" = Keyline

Sample ID : G674299019 Acquisition date : 30-JUL-2024 13:37:44

Total number of lines in spectrum 34
Number of unidentified lines 8
Number of lines tentatively identified by NID 26 76.47%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.380E+00	1.380E+00	1.005E+00	72.79	
CR-51	27.70D	2.35	1.551E-01	3.648E-01	8.022E-01	219.90	
NB-95M	64.03D	1.45	7.371E-02	1.067E-01	0.738E-01	69.21	
CD-109	461.40D	1.05	4.797E-01	5.049E-01	4.881E-01	96.66	
SN-126	2.30E+05Y	1.00	4.797E-02	4.797E-02	4.636E-02	96.66	
TL-208	1.41E+10Y	1.00	7.444E-02	7.444E-02	5.713E-02	76.75	
BI-210	22.20Y	1.00	5.138E-01	5.153E-01	5.489E-01	106.52	
PB-210	22.20Y	1.00	5.138E-01	5.153E-01	5.489E-01	106.52	
BI-211	7.04E+08Y	1.00	9.599E-01	9.599E-01	3.850E-01	40.11	
PB-212	1.41E+10Y	1.00	2.733E-01	2.733E-01	1.010E-01	36.95	
BI-214	1600.00Y	1.00	1.886E-01	1.886E-01	1.364E-01	72.30	
PB-214	1600.00Y	1.00	3.484E-01	3.484E-01	1.397E-01	40.11	
RN-222	1600.00Y	1.00	1.886E-01	1.886E-01	1.364E-01	72.30	
RA-224	1.41E+10Y	1.00	1.681E+00	1.681E+00	0.881E+00	52.41	
RA-226	1600.00Y	1.00	3.484E-01	3.484E-01	1.397E-01	40.11	
TH-228	1.41E+10Y	1.00	2.733E-01	2.733E-01	1.010E-01	36.95	
TH-230	7.54E+04Y	1.00	3.484E-01	3.484E-01	1.397E-01	40.11	
TH-234	4.47E+09Y	1.00	2.366E-01	2.366E-01	5.728E-01	242.10	
U-234	2.45E+05Y	1.00	3.484E-01	3.484E-01	1.397E-01	40.11	
U-235	7.04E+08Y	1.00	3.679E-02	3.679E-02	8.428E-02	229.09	K
U-238	4.47E+09Y	1.00	2.366E-01	2.366E-01	5.728E-01	242.10	
AM-243	7370.00Y	1.00	8.150E-02	8.151E-02	3.435E-02	42.14	
ANH-511	1.00E+09Y	1.00	8.131E-02	8.131E-02	7.308E-02	89.88	
			---	---			
	Total Activity :		8.870E+00	9.141E+00			

Grand Total Activity : 8.870E+00 9.141E+00

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299019 Acquisition date : 30-JUL-2024 13:37:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	26.28	21	125	5.51	52.22	44	16	7.10E-03	****	6.58E+00	
2	79.93	10	30	1.05	159.36	145	26	3.28E-03	****	9.49E+00	T
0	199.37	30	50	1.57	397.90	392	15	9.62E-03	****	6.31E+00	T
0	209.30	19	15	1.10	417.74	415	6	6.13E-03	73.6	6.11E+00	
0	270.00	17	19	1.39	538.98	535	8	5.48E-03	93.4	5.10E+00	T
0	338.68	16	24	1.45	676.17	669	11	5.10E-03	****	4.28E+00	T
0	456.87	10	27	2.83	912.24	897	17	3.07E-03	****	3.35E+00	
0	467.89	12	26	5.78	934.27	917	20	3.87E-03	****	3.29E+00	T
0	820.17	10	6	3.37	1638.12	1633	9	3.03E-03	****	2.04E+00	
0	846.40	7	4	1.80	1690.54	1684	10	2.29E-03	****	1.98E+00	T
0	858.67	11	9	3.57	1715.06	1708	13	3.22E-03	****	1.96E+00	
0	868.59	2	3	0.73	1734.88	1731	6	7.55E-04	****	1.94E+00	
6	908.55	11	0	3.19	1814.73	1811	14	3.24E-03	54.2	1.87E+00	
6	911.68	11	0	1.80	1821.00	1811	14	3.31E-03	75.9	1.86E+00	T
0	1195.04	8	0	1.35	2387.33	2382	9	2.50E-03	66.7	1.48E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:38:25.52

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299019.CNF;1  *
* Acquisition date : 30-JUL-2024 13:37:44 Sensitivity     : 3.000           *
* Detector ID      : GAM05                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:07:00 Nuclide Library : SOLID           *
* Sample ID        : G674299019           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 7.9260E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 16-AUG-2023 10:50:42 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;28            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.381E-01
CR-51	3.895E-01
NB-95M	1.098E-01
CD-109	3.346E-01
SN-126	3.172E-02
TL-208	3.113E-02
BI-210	2.705E-01
PB-210	2.705E-01
BI-211	1.659E-01
PB-212	4.624E-02
BI-214	7.108E-02
PB-214	6.035E-02
RN-222	7.108E-02
RA-224	5.162E-01
RA-226	6.035E-02
TH-228	4.624E-02
TH-230	6.035E-02
TH-234	3.252E-01
U-234	6.035E-02
U-235	1.375E-01
U-238	3.252E-01
AM-243	1.680E-02
ANH-511	2.310E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.289E-01	NOT IDENT.
NA-22	3.110E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.079E-02	NOT IDENT.
SC-46	3.870E-02	NOT IDENT.
V-48	1.146E-01	NOT IDENT.
MN-52	1.184E+00	NOT IDENT.
MN-54	3.279E-02	NOT IDENT.

CO-56	4.662E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	1.568E-02	NOT IDENT.
CO-58	4.488E-02	NOT IDENT.
FE-59	7.831E-02	NOT IDENT.
CO-60	3.905E-02	NOT IDENT.
ZN-65	9.499E-02	NOT IDENT.
GE-68	1.017E+00	NOT IDENT.
AS-73	1.384E-01	NOT IDENT.
AS-74	1.908E-01	NOT IDENT.
SE-75	3.101E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	2.850E-01	NOT IDENT.
RB-83	7.105E-02	NOT IDENT.
RB-84	8.259E-02	NOT IDENT.
KR-85	7.541E+00	NOT IDENT.
SR-85	4.878E-02	NOT IDENT.
RB-86	1.202E+00	NOT IDENT.
Y-88	5.287E-02	NOT IDENT.
Y-91	2.253E+01	NOT IDENT.
NB-94	3.419E-02	NOT IDENT.
NB-95	3.361E-02	NOT IDENT.
ZR-95	7.446E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.053E-02	FAIL ABUN
RH-102	5.485E-02	NOT IDENT.
RU-103	3.280E-02	FAIL ABUN
RH-106	3.134E-01	NOT IDENT.
RU-106	3.134E-01	NOT IDENT.
AG-108M	2.612E-02	NOT IDENT.
AG-110	5.169E-01	NOT IDENT.
AG-110M	4.857E-02	NOT IDENT.
SN-113	3.066E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.047E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.477E-02	NOT IDENT.
SB-124	1.095E-01	NOT IDENT.
SB-125	6.606E-02	FAIL ABUN
TE-125M	7.712E+00	NOT IDENT.
I-126	6.479E-01	NOT IDENT.
SB-126	2.572E-01	NOT IDENT.
SB-127	3.688E+01	NOT IDENT.
I-131	5.021E-01	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.393E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	4.376E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.777E-01	NOT IDENT.
BA-137M	3.619E-02	NOT IDENT.
CS-137	3.823E-02	NOT IDENT.
LA-138	3.103E-02	NOT IDENT.
CE-139	2.130E-02	NOT IDENT.
BA-140	6.765E-01	NOT IDENT.
LA-140	2.514E-01	NOT IDENT.
CE-141	5.408E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.349E-01	FAIL ABUN
PM-144	4.747E-02	NOT IDENT.
PR-144	3.582E+00	NOT IDENT.
PM-146	4.067E-02	NOT IDENT.
ND-147	1.505E+00	FAIL ABUN
PM-147	4.286E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.229E-02	FAIL ABUN
EU-152	7.322E-02	NOT IDENT.
GD-153	4.195E-02	NOT IDENT.
EU-154	8.496E-02	NOT IDENT.
EU-155	6.080E-02	FAIL ABUN
TB-160	1.039E-01	FAIL ABUN
HO-166M	5.548E-02	FAIL ABUN
TM-171	2.313E+00	NOT IDENT.
HF-172	1.092E-01	FAIL ABUN

LU-172	5.665E-02	FAIL ABUN
LU-176	2.065E-02	FAIL ABUN
HF-181	4.940E-02	NOT IDENT.
TA-182	1.179E-01	NOT IDENT.
RE-183	4.588E-02	NOT IDENT.
RE-184	2.050E-01	NOT IDENT.
W-188	6.523E+00	FAIL ABUN
IR-192	3.122E-02	FAIL ABUN
HG-203	3.402E-02	NOT IDENT.
TL-204	1.755E+00	FAIL ABUN
BI-207	5.245E-02	FAIL ABUN
PB-211	5.397E-01	NOT IDENT.
BI-212	3.910E-01	NOT IDENT.
BI-213	6.146E-02	NOT IDENT.
RN-219	3.109E-01	FAIL ABUN
RA-223	4.286E-01	FAIL ABUN
AC-225	1.402E+00	NOT IDENT.
AC-227	1.787E-01	FAIL ABUN
TH-227	1.787E-01	FAIL ABUN
AC-228	2.020E-01	FAIL ABUN
RA-228	2.020E-01	FAIL ABUN
TH-229	3.413E-01	FAIL ABUN
PA-231	4.419E-01	NOT IDENT.
TH-231	4.286E-01	FAIL ABUN
TH-232	2.020E-01	FAIL ABUN
PA-233	4.923E-02	NOT IDENT.
PA-234	2.646E-01	NOT IDENT.
PA-234M	4.388E+00	NOT IDENT.
NP-237	4.923E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	1.723E-01	NOT IDENT.
PU-239	2.101E+02	NOT IDENT.
AM-241	3.160E-02	NOT IDENT.
CM-243	5.196E-02	NOT IDENT.
BK-247	5.192E-02	NOT IDENT.
CM-247	2.895E-02	NOT IDENT.
CF-249	2.842E-02	NOT IDENT.
CF-251	8.588E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:38:30.20

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299019.CNF;1  *
* Acquisition date : 30-JUL-2024 13:37:44 Sensitivity     : 3.000           *
* Detector ID      : GAM05                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.39     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:07:00 Nuclide Library : SOLID           *
* Sample ID        : G674299019           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 7.9260E+01 GRAM *
*                                         Quantity Err(%) : 1.2617E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 16-AUG-2023 10:50:42 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;28            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.380E+00	9.915E-01	9.915E-01
CR-51	3.648E-01	7.866E-01	7.866E-01
NB-95M	1.067E-01	7.346E-02	7.346E-02
CD-109	5.049E-01	4.808E-01	4.808E-01
SN-126	4.797E-02	4.561E-02	4.561E-02
TL-208	7.444E-02	5.657E-02	5.657E-02
BI-210	5.153E-01	5.402E-01	5.402E-01
PB-210	5.153E-01	5.402E-01	5.402E-01
BI-211	9.599E-01	3.854E-01	3.854E-01
PB-212	2.733E-01	1.028E-01	1.028E-01
BI-214	1.886E-01	1.353E-01	1.353E-01
PB-214	3.484E-01	1.398E-01	1.398E-01
RN-222	1.886E-01	1.353E-01	1.353E-01
RA-224	1.681E+00	8.796E-01	8.796E-01
RA-226	3.484E-01	1.398E-01	1.398E-01
TH-228	2.733E-01	1.028E-01	1.028E-01
TH-230	3.484E-01	1.397E-01	1.397E-01
TH-234	2.366E-01	5.639E-01	5.639E-01
U-234	3.484E-01	1.397E-01	1.397E-01
U-235	6.030E-02	1.615E-01	1.615E-01
U-238	2.366E-01	5.639E-01	5.639E-01
AM-243	8.151E-02	3.431E-02	3.431E-02
ANH-511	8.131E-02	7.207E-02	7.207E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.484E-01	4.258E-01	4.310E-01	NOT IDENT.
NA-22	-1.729E-03	3.847E-02	3.847E-02	NOT IDENT.
NA-24	6.311E+14	9.222E+14	9.650E+14	SHORT HLIF
AL-26	-7.896E-03	2.947E-02	2.968E-02	NOT IDENT.
SC-46	2.262E-03	4.513E-02	4.514E-02	NOT IDENT.
V-48	-4.969E-02	1.512E-01	1.529E-01	NOT IDENT.
MN-52	-3.476E-02	1.481E+00	1.482E+00	NOT IDENT.

MN-54	-6.725E-03	4.321E-02	4.332E-02	NOT IDENT.
CO-56	4.862E-02	5.869E-02	6.265E-02	FAIL ABUN
MN-56	1.000E+41	1.207E+41	0.000E+00	SHORT HLIF
CO-57	-7.629E-03	2.081E-02	2.109E-02	NOT IDENT.
CO-58	3.019E-02	4.842E-02	5.029E-02	NOT IDENT.
FE-59	-2.157E-02	1.015E-01	1.019E-01	NOT IDENT.
CO-60	-1.815E-02	5.285E-02	5.348E-02	NOT IDENT.
ZN-65	5.448E-02	1.020E-01	1.049E-01	NOT IDENT.
GE-68	-1.098E+00	1.517E+00	1.595E+00	NOT IDENT.
AS-73	8.011E-03	1.644E-01	1.644E-01	NOT IDENT.
AS-74	-8.774E-02	2.506E-01	2.537E-01	NOT IDENT.
SE-75	-1.614E-02	4.307E-02	4.368E-02	NOT IDENT.
BR-77	1.097E+04	1.157E+04	1.259E+04	SHORT HLIF
SR-82	-5.527E-01	5.579E-01	6.110E-01	NOT IDENT.
RB-83	1.555E-02	8.309E-02	8.339E-02	NOT IDENT.
RB-84	-3.150E-03	9.825E-02	9.827E-02	NOT IDENT.
KR-85	2.507E+00	9.703E+00	9.768E+00	NOT IDENT.
SR-85	1.606E-02	6.279E-02	6.321E-02	NOT IDENT.
RB-86	-1.507E-02	1.446E+00	1.446E+00	NOT IDENT.
Y-88	3.523E-02	4.997E-02	5.244E-02	NOT IDENT.
Y-91	-1.480E+01	3.093E+01	3.164E+01	NOT IDENT.
NB-94	-2.576E-03	4.304E-02	4.306E-02	NOT IDENT.
NB-95	-1.558E-03	4.261E-02	4.262E-02	NOT IDENT.
ZR-95	1.481E-02	8.918E-02	8.943E-02	NOT IDENT.
NB-97	-1.000E+41	1.122E+41	0.000E+00	SHORT HLIF
ZR-97	1.269E+13	2.336E+14	2.337E+14	SHORT HLIF
MO-99	6.536E+02	1.695E+03	1.720E+03	SHORT HLIF
TC-99M	-8.355E+38	1.950E+39	0.000E+00	SHORT HLIF
RH-101	7.263E-03	2.419E-02	2.441E-02	FAIL ABUN
RH-102	1.521E-02	6.451E-02	6.487E-02	NOT IDENT.
RU-103	-5.996E-02	5.446E-02	6.080E-02	FAIL ABUN
RH-106	-1.890E-01	4.106E-01	4.193E-01	NOT IDENT.
RU-106	-1.890E-01	4.106E-01	4.193E-01	NOT IDENT.
AG-108M	2.830E-03	3.079E-02	3.082E-02	NOT IDENT.
AG-110	-2.518E-01	7.116E-01	7.206E-01	NOT IDENT.
AG-110M	2.701E-02	5.101E-02	5.244E-02	NOT IDENT.
SN-113	-2.842E-02	4.235E-02	4.425E-02	NOT IDENT.
CD-115	-6.663E+02	4.432E+03	4.442E+03	SHORT HLIF
SN-117M	7.434E-02	1.199E-01	1.245E-01	NOT IDENT.
SB-122	-2.786E+02	2.887E+02	3.149E+02	SHORT HLIF
TE-123M	2.088E-02	2.812E-02	2.966E-02	NOT IDENT.
SB-124	3.683E-02	1.153E-01	1.165E-01	NOT IDENT.
SB-125	-7.375E-04	7.919E-02	7.919E-02	FAIL ABUN
TE-125M	2.267E+00	9.083E+00	9.141E+00	NOT IDENT.
I-126	1.488E-01	7.738E-01	7.767E-01	NOT IDENT.
SB-126	-1.631E-01	3.737E-01	3.808E-01	NOT IDENT.
SB-127	-1.175E+01	4.593E+01	4.624E+01	NOT IDENT.
I-131	2.687E-01	5.513E-01	5.644E-01	FAIL ABUN
I-132	1.000E+41	2.605E+41	0.000E+00	SHORT HLIF
TE-132	4.588E+01	4.240E+01	4.717E+01	SHORT HLIF
BA-133	-2.539E-02	4.624E-02	4.764E-02	FAIL ABUN
I-133	4.306E+09	2.335E+10	2.343E+10	SHORT HLIF
CS-134	4.937E-03	5.393E-02	5.398E-02	NOT IDENT.
I-135	-5.456E+36	6.584E+36	0.000E+00	SHORT HLIF
CS-136	-2.864E-02	3.391E-01	3.393E-01	NOT IDENT.
BA-137M	4.018E-02	3.630E-02	4.056E-02	NOT IDENT.
CS-137	4.245E-02	3.834E-02	4.285E-02	NOT IDENT.
LA-138	-8.312E-03	4.298E-02	4.314E-02	NOT IDENT.
CE-139	3.685E-03	2.589E-02	2.594E-02	NOT IDENT.
BA-140	1.969E-01	7.836E-01	7.887E-01	NOT IDENT.
LA-140	-1.468E-01	3.635E-01	3.695E-01	NOT IDENT.
CE-141	-6.824E-02	7.689E-02	8.281E-02	NOT IDENT.
CE-143	-7.090E+05	2.063E+06	2.087E+06	SHORT HLIF
CE-144	-2.309E-02	1.684E-01	1.687E-01	FAIL ABUN
PM-144	6.249E-02	4.902E-02	5.654E-02	NOT IDENT.
PR-144	4.697E+00	3.701E+00	4.264E+00	NOT IDENT.
PM-146	1.596E-02	4.625E-02	4.680E-02	NOT IDENT.
ND-147	1.026E+00	1.592E+00	1.658E+00	FAIL ABUN
PM-147	-1.291E+02	5.409E+02	5.440E+02	NOT IDENT.
PM-149	2.079E+04	3.583E+04	3.704E+04	SHORT HLIF
EU-150	7.497E-03	2.761E-02	2.781E-02	FAIL ABUN
EU-152	-7.380E-03	8.749E-02	8.755E-02	NOT IDENT.
GD-153	-5.693E-02	6.192E-02	6.703E-02	NOT IDENT.
EU-154	-8.753E-03	1.066E-01	1.067E-01	NOT IDENT.
EU-155	8.312E-03	7.253E-02	7.262E-02	FAIL ABUN
TB-160	-5.023E-02	1.376E-01	1.394E-01	FAIL ABUN
HO-166M	2.794E-02	6.236E-02	6.362E-02	FAIL ABUN
TM-171	-1.696E+00	2.964E+00	3.061E+00	NOT IDENT.

HF-172	-7.409E-02	1.447E-01	1.485E-01	FAIL ABUN
LU-172	-2.177E-02	7.363E-02	7.428E-02	FAIL ABUN
LU-176	-1.352E-02	2.929E-02	2.992E-02	FAIL ABUN
HF-181	-1.228E-02	6.201E-02	6.225E-02	NOT IDENT.
TA-182	-1.519E-01	1.968E-01	2.084E-01	NOT IDENT.
RE-183	-2.716E-02	5.716E-02	5.846E-02	NOT IDENT.
RE-184	6.445E-02	2.458E-01	2.475E-01	NOT IDENT.
W-188	-6.312E+00	9.579E+00	9.993E+00	FAIL ABUN
IR-192	6.201E-03	3.925E-02	3.935E-02	FAIL ABUN
HG-203	-7.337E-03	4.524E-02	4.536E-02	NOT IDENT.
TL-204	2.017E+00	1.987E+00	2.185E+00	FAIL ABUN
BI-207	6.771E-04	6.268E-02	6.268E-02	FAIL ABUN
PB-211	-3.229E-01	7.002E-01	7.152E-01	NOT IDENT.
BI-212	-4.628E-01	5.696E-01	6.066E-01	NOT IDENT.
BI-213	-1.071E-01	9.775E-02	1.090E-01	NOT IDENT.
RN-219	7.202E-02	3.573E-01	3.587E-01	FAIL ABUN
RA-223	-1.416E-01	5.898E-01	5.933E-01	FAIL ABUN
AC-225	5.712E-01	1.666E+00	1.686E+00	NOT IDENT.
AC-227	2.238E-02	2.242E-01	2.244E-01	FAIL ABUN
TH-227	2.238E-02	2.242E-01	2.244E-01	FAIL ABUN
AC-228	2.144E-01	1.611E-01	1.879E-01	FAIL ABUN
RA-228	2.144E-01	1.611E-01	1.879E-01	FAIL ABUN
TH-229	2.153E-01	3.922E-01	4.040E-01	FAIL ABUN
PA-231	3.550E-01	5.081E-01	5.327E-01	NOT IDENT.
TH-231	-1.416E-01	5.898E-01	5.933E-01	FAIL ABUN
TH-232	2.144E-01	1.611E-01	1.879E-01	FAIL ABUN
PA-233	7.150E-03	6.242E-02	6.250E-02	NOT IDENT.
PA-234	-5.251E-02	3.320E-01	3.328E-01	NOT IDENT.
PA-234M	-1.064E+00	5.605E+00	5.625E+00	NOT IDENT.
NP-237	7.150E-03	6.242E-02	6.250E-02	NOT IDENT.
NP-238	-4.942E+03	9.986E+03	1.023E+04	SHORT HLIF
NP-239	1.635E-02	2.076E-01	2.078E-01	NOT IDENT.
PU-239	1.829E+01	2.545E+02	2.546E+02	NOT IDENT.
AM-241	-1.053E-02	3.846E-02	3.875E-02	NOT IDENT.
CM-243	-3.669E-02	6.804E-02	7.002E-02	NOT IDENT.
BK-247	-1.263E-02	6.909E-02	6.932E-02	NOT IDENT.
CM-247	4.718E-03	3.365E-02	3.371E-02	NOT IDENT.
CF-249	-1.804E-02	3.708E-02	3.796E-02	NOT IDENT.
CF-251	-2.455E-02	1.108E-01	1.114E-01	NOT IDENT.

GEL Laboratories LLC
2040 Savage Road
Charleston, SC 29407

GAMMA SPECTROSCOPY BACKGROUND REPORT

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	12.1714	85.43	21.0460	131.20	20.4553
45.60	25.3284	86.55	19.3505	133.02	25.4160
46.54	25.4288	86.79	19.3628	133.52	28.3761
49.72	0.0000	86.94	26.4146	136.00	31.4619
51.35	19.6419	87.09	26.4253	136.47	26.5699
51.87	23.6180	87.57	26.4590	140.51	0.0000
52.39	25.2432	88.03	26.4915	143.76	23.9421
52.97	20.5557	88.34	26.5132	144.24	20.9680
53.44	17.4244	88.47	26.5224	145.44	33.0222
54.07	21.4354	89.96	26.6263	152.43	34.4503
57.36	0.0000	1093.63	17.7823	153.25	17.2501
57.53	28.1430	91.11	17.8040	323.87	14.2296
57.98	33.0207	92.59	26.2118	156.02	34.6661
59.27	33.9814	93.35	26.2626	158.56	20.4810
59.32	30.7505	94.56	26.3432	159.00	22.5458
59.54	30.7744	94.65	26.3490	162.33	22.6727
60.96	26.0438	94.67	26.3504	162.66	24.7474
61.17	27.1487	94.87	26.3636	163.33	26.8399
62.93	30.3166	97.43	28.9438	165.86	20.7327
63.29	30.3534	98.43	29.9216	176.31	28.4630
63.58	30.3830	98.44	28.1089	176.60	31.6402
64.28	39.5080	99.53	24.5468	177.52	25.3484
66.73	28.7641	100.11	26.4021	181.07	0.0000
67.24	29.0885	102.03	25.6091	181.52	29.7568
125.81	39.1173	103.18	27.5132	184.41	18.1463
67.75	39.1259	103.37	27.5256	143.76	18.1823
68.89	38.4328	105.21	25.8014	193.51	14.0656
69.67	36.0152	105.31	25.8074	197.03	18.8502
70.82	22.4150	106.12	23.0854	198.01	20.6917
70.83	35.8652	106.47	24.9524	201.83	20.8044
72.81	32.7014	109.28	27.9032	203.43	16.0958
72.87	31.5795	111.00	35.4809	205.31	19.0723
74.66	26.0807	111.76	0.0000	210.85	23.6536
74.82	26.0933	114.06	31.0213	215.65	21.2037
74.97	26.1050	116.30	0.0000	218.12	13.4361
77.11	26.2702	116.74	28.3658	222.11	20.2604
78.74	26.3946	119.76	26.6454	227.09	19.2589
79.69	26.4665	121.12	24.8130	227.38	18.1328
80.03	26.4917	121.22	24.8181	228.16	0.0000
80.12	26.4988	121.78	32.4924	228.18	15.8824
80.19	26.5041	122.06	26.7740	116.74	15.8824
80.57	26.5327	122.92	25.8639	235.69	24.4329
81.00	26.5650	123.07	26.8302	235.96	32.0789
81.07	26.5701	265.00	20.1480	238.63	27.5878
81.75	26.6209	125.81	27.9448	238.98	0.0000
82.47	26.6747	127.23	23.1932	240.99	29.9736
83.79	26.7720	127.91	20.3220	242.00	16.9292
84.00	26.7875	129.30	24.2599	244.70	9.2645

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	22.2071	344.28	15.4318	563.25	11.0985
252.80	15.2014	345.93	15.4552	564.24	0.0000
254.15	0.0000	351.06	17.2530	569.33	16.2031
256.23	16.4369	351.93	17.2664	946.00	16.2051
260.90	0.0000	355.39	0.0000	569.70	18.2329
264.66	14.2266	356.01	22.8755	583.19	11.2327
264.80	14.2288	364.49	11.3496	584.27	10.7290
265.00	13.0461	366.42	0.0000	595.83	17.4897
269.46	14.3038	372.51	14.9459	427.87	14.4432
270.03	14.3130	375.05	14.9784	602.52	0.0000
271.23	11.1474	377.52	12.3614	604.72	9.3069
273.65	12.7741	356.01	15.0908	607.14	9.3199
276.40	18.0185	388.16	16.0364	609.32	15.5524
277.37	18.0377	388.63	12.4776	610.33	10.8931
277.60	14.4338	391.69	14.2965	614.28	16.2202
278.00	16.8467	264.66	13.5019	618.01	9.3779
279.20	16.8690	401.81	10.8118	620.36	12.5205
279.54	13.2589	402.40	11.7183	621.93	13.5755
279.70	16.8779	404.85	17.1608	630.19	0.0000
280.46	22.9249	410.95	9.9837	631.29	10.4976
283.69	24.2157	413.71	15.4633	633.25	8.4072
284.31	29.0786	414.70	14.5651	634.78	13.6734
285.41	20.6217	423.72	15.5851	635.95	10.5245
285.90	0.0000	427.09	8.2723	636.99	5.2653
287.50	15.8045	427.87	10.1169	657.50	8.5189
290.67	26.8367	433.94	13.8599	657.76	10.6502
293.27	0.0000	439.40	12.9894	657.90	0.0000
351.93	20.8365	440.45	16.7139	661.66	4.2690
295.96	20.8526	453.88	13.1298	664.57	0.0000
879.38	18.0393	463.37	15.1094	666.33	12.8389
299.98	22.9927	468.07	17.0555	666.50	12.8398
300.09	32.8499	473.00	17.1156	667.71	0.0000
300.13	32.8516	475.06	6.6658	677.62	6.4578
301.36	12.3349	476.78	14.3008	685.70	7.5657
302.85	27.1784	477.60	14.3091	692.65	0.0000
256.23	25.9866	482.18	13.3982	695.00	15.2037
304.85	16.0925	487.02	6.7216	696.49	8.6947
306.78	23.5662	492.35	0.0000	696.51	8.6947
308.46	17.3940	497.08	15.4701	697.00	15.2196
311.90	14.9604	505.52	10.2101	697.30	16.3092
316.51	13.7765	507.63	0.0000	697.49	17.3978
319.41	11.7225	511.00	10.7355	702.65	14.1730
320.08	11.7302	514.00	17.6021	706.68	8.7396
321.04	11.7413	514.00	17.6021	711.68	6.5713
323.87	15.1373	520.40	9.8201	720.70	7.7010
325.23	14.3154	520.69	0.0000	721.93	0.0000
328.76	13.5189	522.65	0.0000	722.78	7.7089
333.37	15.2758	527.90	0.0000	722.91	7.7095
333.97	15.2842	528.26	12.8313	723.31	5.5078
334.37	21.6609	529.59	10.8666	724.19	5.5103
338.28	17.0512	529.87	0.0000	727.33	11.0376
338.32	17.0520	531.02	4.9441	733.00	7.7477
311.90	14.0961	537.26	9.9276	735.93	9.9756
340.48	14.0961	546.56	0.0000	333.97	4.4368
340.55	14.0971	552.55	13.0302	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	4.4515	949.00	3.6483	1384.29	4.2107
747.24	6.6870	667.71	0.0000	1408.01	5.2982
748.06	8.9193	962.31	11.9185	1434.09	1.0673
752.31	8.9375	964.08	5.5047	1435.80	2.1355
753.82	12.2980	966.17	14.6909	1457.56	0.0000
756.73	6.7173	911.20	8.2724	1460.82	4.2998
756.80	6.7175	983.53	6.4700	1489.16	2.1661
884.68	7.8636	984.45	0.0000	1505.03	3.2628
765.81	5.6219	1274.44	4.6437	1584.12	5.5484
766.42	5.6234	1001.03	9.3039	1596.21	6.6779
766.84	7.8744	1002.74	5.5858	1620.50	6.7178
772.60	0.0000	1004.73	8.3850	1621.92	4.4802
776.52	10.1700	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	1.8219
778.90	9.0501	1028.54	0.0000	1750.46	0.0000
783.70	11.3379	1037.84	3.7722	1764.49	1.8529
788.74	9.0915	1038.76	0.0000	1063.66	4.6384
792.07	6.8289	631.29	10.4065	1771.35	2.7836
795.86	11.4014	1048.07	8.5188	1791.20	0.0000
810.06	5.7373	1049.04	7.5747	1808.65	1.8713
810.29	2.2952	1050.41	4.7366	1810.72	0.0000
344.28	2.2953	1063.66	8.5660	1836.06	0.9413
810.76	4.5913	1077.00	4.7815		
815.77	8.6279	1077.34	10.5200		
1048.07	10.3660	1085.87	4.7961		
832.01	3.4761	1093.63	8.6561		
834.85	9.2809	1099.45	4.8187		
835.71	8.1239	1112.07	8.7111		
836.80	0.0000	1112.84	5.8088		
846.75	0.0000	1115.54	5.8143		
846.77	3.4984	1120.29	5.8239		
856.80	10.5406	1120.55	4.8535		
860.56	11.2613	1221.41	3.8838		
871.09	7.0698	1129.67	7.7896		
873.19	5.3069	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	6.2075	1173.23	4.9390		
880.51	7.9849	1177.95	7.9146		
881.60	6.2132	1189.05	2.6476		
883.24	4.4411	1204.77	10.9758		
884.68	4.4438	1221.41	7.0214		
889.28	6.2331	1231.02	2.0122		
894.76	7.1396	1235.36	5.0372		
898.04	11.6178	1238.28	1.0084		
900.72	8.9465	1260.41	0.0000		
903.28	9.5527	1271.87	5.0940		
911.20	6.2893	1274.44	4.0784		
912.08	1.4381	1274.54	4.0784		
923.98	0.0000	1291.59	6.1490		
926.50	5.4241	1298.22	0.0000		
929.11	2.7149	1312.11	6.1864		
935.54	5.4435	1332.49	8.2979		
937.49	5.4478	1362.66	0.0000		
944.13	3.6414	1365.19	3.1410		
946.00	8.1991	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:38:57.50

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299020.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM06.CNF;954
                                         Background date  : 28-JUL-2024 11:21:57
Sample date      : 26-JUN-2024 10:45:00  Acquisition date : 30-JUL-2024 13:38:07
Sample ID        : G674299020            Sample quantity  : 1.21040E+02 GRAM
Detector name    : GAM06                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.66  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.39*	38	112	1.01	125.59	123	6	1.05E-02	48.7	
2	2	73.59	26	100	0.89	146.00	143	14	7.28E-03	59.0	1.47E+01
3	2	77.24	260	145	1.09	153.31	143	14	7.21E-02	10.0	
4	5	84.17	64	149	1.48	167.17	163	29	1.77E-02	35.2	1.06E+00
5	5	87.41	138	135	1.49	173.66	163	29	3.83E-02	17.3	
6	5	90.07	90	95	1.18	178.98	163	29	2.49E-02	21.9	
7	5	93.07*	127	108	1.51	184.99	163	29	3.53E-02	18.9	
8	0	104.88	27	111	1.44	208.62	205	8	7.46E-03	70.4	
9	3	129.40	35	99	1.35	257.67	252	14	9.80E-03	53.2	1.37E+00
10	3	131.39	31	90	1.31	261.66	252	14	8.72E-03	58.9	
11	9	150.92	14	50	1.38	300.75	299	12	3.96E-03	75.6	2.16E+00
12	9	153.87	24	116	1.83	306.65	299	12	6.67E-03	82.7	
13	0	186.54*	98	174	1.74	372.02	366	14	2.72E-02	31.1	
14	0	202.83	21	70	1.42	404.61	402	7	5.90E-03	68.3	
15	0	210.06	48	85	1.06	419.07	415	9	1.34E-02	37.4	
16	3	238.76*	469	48	1.09	476.52	473	18	1.30E-01	5.3	1.78E+00
17	3	241.99	127	66	1.61	482.99	473	18	3.54E-02	16.4	
18	2	256.48	38	39	1.49	511.97	508	13	1.05E-02	33.9	2.34E+00
19	2	258.73	18	37	1.49	516.48	508	13	4.95E-03	70.2	
20	1	295.34*	203	39	1.34	589.74	584	23	5.65E-02	8.8	1.64E+00
21	1	300.06	33	28	1.42	599.19	584	23	9.06E-03	39.9	
22	0	317.22	25	56	1.38	633.53	629	11	6.97E-03	60.7	
23	0	322.22	19	51	0.66	643.53	639	10	5.39E-03	71.9	
24	0	338.52	93	78	1.09	676.15	670	12	2.57E-02	21.7	
25	0	352.24*	288	109	1.22	703.62	697	14	8.01E-02	9.7	
26	0	437.57	18	24	0.94	874.40	870	10	5.14E-03	53.6	
27	0	511.00*	56	45	2.29	1021.36	1013	18	1.56E-02	34.8	
28	0	534.18	34	19	4.89	1067.77	1060	13	9.43E-03	31.8	
29	0	544.67	12	12	0.58	1088.77	1085	9	3.44E-03	56.7	
30	0	583.13*	118	50	1.28	1165.74	1161	12	3.27E-02	15.4	
31	0	609.32*	194	26	1.46	1218.16	1212	11	5.40E-02	8.8	
32	0	728.11	20	30	1.43	1455.97	1448	11	5.53E-03	58.0	
33	0	755.34	12	14	0.81	1510.48	1506	9	3.19E-03	64.7	
34	0	768.85	40	24	2.51	1537.53	1529	19	1.11E-02	33.3	

Sample ID : G674299020 Acquisition date : 30-JUL-2024 13:38:07

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	860.47	22	21	1.80	1720.96	1711	17	6.12E-03	52.4	
36	6	866.99	8	0	1.72	1734.02	1732	10	2.17E-03	31.4	4.85E-01
37	6	869.48	13	0	1.34	1739.01	1732	10	3.64E-03	27.6	
38	0	910.84*	77	16	1.21	1821.82	1816	13	2.15E-02	16.1	
39	0	933.42	15	4	2.55	1867.03	1863	8	4.17E-03	34.6	
40	0	969.36	33	27	1.93	1938.98	1932	13	9.24E-03	37.5	
41	0	990.25	8	6	1.19	1980.82	1976	8	2.25E-03	62.9	
42	0	1119.78	48	9	0.97	2240.20	2234	13	1.32E-02	19.8	
43	0	1172.97	8	5	1.43	2346.71	2342	9	2.14E-03	69.0	
44	0	1286.77*	11	0	0.62	2574.62	2569	12	3.12E-03	33.1	
45	0	1372.98	12	4	3.68	2747.28	2741	13	3.19E-03	44.0	
46	0	1378.08	11	6	1.11	2757.50	2753	12	3.06E-03	53.8	
47	0	1460.28	151	7	2.20	2922.15	2915	14	4.19E-02	8.9	
48	0	1763.87	43	4	1.63	3530.36	3523	14	1.21E-02	17.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 14:38:58

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299020.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 26-JUN-2024 10:45:00 Acquisition date : 30-JUL-2024 13:38:07
Sample ID        : G674299020           Sample quantity  : 121.04 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA6               Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.66   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Sample ID : G674299020 Acquisition date : 30-JUL-2024 13:38:07

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	143	10.66*	9.865E-01	8.433E+00	8.433E+00	17.89
CD-109	88.03	151	3.70*	5.267E+00	4.815E+00	5.068E+00	34.65
SN-126	64.28	42	9.60	2.654E+00	1.022E+00	1.022E+00	97.36
	86.94	151	8.90	5.267E+00	2.002E+00	2.002E+00	34.65
	87.57	151	37.00*	5.267E+00	4.815E-01	4.815E-01	34.65
EU-155	86.55	151	30.70	5.267E+00	5.803E-01	5.882E-01	34.65
	105.31	29	21.10*	6.041E+00	1.420E-01	1.440E-01	140.89
TL-208	277.37	------	6.60	3.940E+00	------	Line Not Found	------
	583.19	117	85.00*	2.228E+00	3.836E-01	3.836E-01	30.72
	860.56	21	12.50	1.593E+00	6.691E-01	6.691E-01	104.80
BI-211	72.87	29	1.23	3.977E+00	3.672E+00	3.672E+00	118.05
	351.06	295	12.92*	3.292E+00	4.299E+00	4.299E+00	19.45
BI-212	727.33	20	6.67*	1.849E+00	9.848E-01	9.848E-01	115.99
	1620.50	------	1.47	9.117E-01	------	Line Not Found	------
PB-212	74.82	29	10.28	3.977E+00	4.394E-01	4.394E-01	118.05
	77.11	286	17.10	4.382E+00	2.371E+00	2.371E+00	20.07
	238.63	489	43.60*	4.404E+00	1.580E+00	1.580E+00	10.61
	300.09	34	3.30	3.714E+00	1.702E+00	1.702E+00	79.71
BI-214	609.32	193	45.49*	2.149E+00	1.225E+00	1.225E+00	17.65
	1120.29	46	14.92	1.248E+00	1.522E+00	1.522E+00	39.61
	1764.49	41	15.30	8.636E-01	1.912E+00	1.912E+00	35.42
PB-214	74.82	29	5.80	3.977E+00	7.788E-01	7.788E-01	118.05
	77.11	286	9.70	4.382E+00	4.179E+00	4.179E+00	20.07
	87.09	151	3.41	5.267E+00	5.224E+00	5.224E+00	34.65
	242.00	133	7.25	4.360E+00	2.604E+00	2.604E+00	32.82
	295.22	210	18.42	3.759E+00	1.878E+00	1.878E+00	17.64
	351.93	295	35.60*	3.292E+00	1.560E+00	1.560E+00	19.45
RN-222	609.32	193	45.49*	2.149E+00	1.225E+00	1.225E+00	17.65
	1120.29	46	14.92	1.248E+00	1.522E+00	1.522E+00	39.61
	1764.49	41	15.30	8.636E-01	1.912E+00	1.912E+00	35.42
RA-224	240.99	133	4.10*	4.360E+00	4.605E+00	4.605E+00	32.82
RA-226	74.82	29	5.80	3.977E+00	7.788E-01	7.788E-01	118.05
	77.11	286	9.70	4.382E+00	4.179E+00	4.179E+00	20.07
	87.09	151	3.41	5.267E+00	5.224E+00	5.224E+00	34.65
	242.00	133	7.25	4.360E+00	2.604E+00	2.604E+00	32.82
	295.22	210	18.42	3.759E+00	1.878E+00	1.878E+00	17.64
	351.93	295	35.60*	3.292E+00	1.560E+00	1.560E+00	19.45
AC-228	105.21	29	1.10	6.041E+00	2.724E+00	2.724E+00	140.89
	338.32	95	11.27	3.392E+00	1.539E+00	1.539E+00	43.48
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	75	25.80*	1.512E+00	1.194E+00	1.194E+00	32.27
	968.97	32	15.80	1.428E+00	8.857E-01	8.857E-01	74.90
RA-228	105.21	29	1.10	6.041E+00	2.724E+00	2.724E+00	140.89
	338.32	95	11.27	3.392E+00	1.539E+00	1.539E+00	43.48
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	75	25.80*	1.512E+00	1.194E+00	1.194E+00	32.27
	968.97	32	15.80	1.428E+00	8.857E-01	8.857E-01	74.90
TH-228	74.82	29	10.28	3.977E+00	4.394E-01	4.394E-01	118.05
	77.11	286	17.10	4.382E+00	2.371E+00	2.371E+00	20.07

Sample ID : G674299020 Acquisition date : 30-JUL-2024 13:38:07

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	489	43.60*	4.404E+00	1.580E+00	1.580E+00	10.61
	300.09	34	3.30	3.714E+00	1.702E+00	1.702E+00	79.71
TH-229	85.43	70	14.70	5.023E+00	5.892E-01	5.892E-01	70.48
	88.47	151	24.00	5.267E+00	7.422E-01	7.422E-01	34.65
	193.51	------	4.41*	5.103E+00	------	Line Not Found	------
	210.85	51	2.80	4.827E+00	2.323E+00	2.323E+00	74.83
TH-230	74.82	29	5.80	3.977E+00	7.788E-01	7.788E-01	118.05
	77.11	286	9.70	4.382E+00	4.179E+00	4.179E+00	20.07
	87.09	151	3.41	5.267E+00	5.224E+00	5.224E+00	34.65
	242.00	133	7.25	4.360E+00	2.604E+00	2.604E+00	32.82
	295.22	210	18.42	3.759E+00	1.878E+00	1.878E+00	17.64
	351.93	295	35.60*	3.292E+00	1.560E+00	1.560E+00	19.45
PA-231	283.69	------	1.70	3.874E+00	------	Line Not Found	------
	301.36	34	5.35*	3.714E+00	1.050E+00	1.050E+00	79.71
TH-232	105.21	29	1.10	6.041E+00	2.724E+00	2.724E+00	140.89
	338.32	95	11.27	3.392E+00	1.539E+00	1.539E+00	43.48
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	75	25.80*	1.512E+00	1.194E+00	1.194E+00	32.27
	968.97	32	15.80	1.428E+00	8.857E-01	8.857E-01	74.90
TH-234	63.29	42	3.70*	2.654E+00	2.651E+00	2.651E+00	97.36
	92.59	139	4.23	5.610E+00	3.633E+00	3.633E+00	37.89
U-234	74.82	29	5.80	3.977E+00	7.788E-01	7.788E-01	118.05
	77.11	286	9.70	4.382E+00	4.179E+00	4.179E+00	20.07
	87.09	151	3.41	5.267E+00	5.224E+00	5.224E+00	34.65
	242.00	133	7.25	4.360E+00	2.604E+00	2.604E+00	32.82
	295.22	210	18.42	3.759E+00	1.878E+00	1.878E+00	17.64
	351.93	295	35.60*	3.292E+00	1.560E+00	1.560E+00	19.45
U-235	89.96	98	3.47	5.440E+00	3.229E+00	3.229E+00	43.80
	93.35	139	5.60	5.610E+00	2.744E+00	2.744E+00	37.89
	143.76	------	10.96*	5.983E+00	------	Line Not Found	------
	163.33	------	5.08	5.649E+00	------	Line Not Found	------
	185.72	103	57.20	5.226E+00	2.146E-01	2.146E-01	62.15
	205.31	------	5.01	4.904E+00	------	Line Not Found	------
U-238	63.29	42	3.70*	2.654E+00	2.651E+00	2.651E+00	97.36
	92.59	139	4.23	5.610E+00	3.633E+00	3.633E+00	37.89
AM-243	43.53	------	5.90	3.651E-01	------	Line Not Found	------
	74.66	29	67.20*	3.977E+00	6.722E-02	6.722E-02	118.05
ANH-511	511.00	56	100.00*	2.476E+00	1.413E-01	1.413E-01	69.56

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:38:59.85

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299020.CNF;1  *
* Acquisition date : 30-JUL-2024 13:38:07 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.66     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:45:00 Analyst initials: RXF2            *
* Sample ID        : G674299020           Sample Quantity : 1.2104E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	8.433E+00	1.479E+00	6.616E-01
CD-109	5.068E+00	1.721E+00	1.388E+00
SN-126	4.815E-01	1.635E-01	1.326E-01
EU-155	1.440E-01	1.988E-01	2.024E-01
TL-208	3.836E-01	1.155E-01	8.174E-02
BI-211	4.299E+00	8.194E-01	3.855E-01
BI-212	9.848E-01	1.119E+00	1.178E+00
PB-212	1.580E+00	1.642E-01	1.217E-01
BI-214	1.225E+00	2.119E-01	1.559E-01
PB-214	1.560E+00	2.974E-01	1.402E-01
RN-222	1.225E+00	2.119E-01	1.559E-01
RA-224	4.605E+00	1.481E+00	1.305E+00
RA-226	1.560E+00	2.974E-01	1.402E-01
AC-228	1.194E+00	3.775E-01	2.923E-01
RA-228	1.194E+00	3.775E-01	2.923E-01
TH-228	1.580E+00	1.642E-01	1.217E-01
TH-229	6.962E-02	5.826E-01	1.056E+00
TH-230	1.560E+00	2.974E-01	1.402E-01
PA-231	1.050E+00	8.201E-01	9.226E-01
TH-232	1.194E+00	3.775E-01	2.923E-01
TH-234	2.651E+00	2.529E+00	2.736E+00
U-234	1.560E+00	2.974E-01	1.402E-01
U-235	1.539E-01	2.081E-01	3.992E-01
U-238	2.651E+00	2.529E+00	2.736E+00
AM-243	6.722E-02	7.776E-02	1.024E-01
ANH-511	1.413E-01	9.630E-02	5.734E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-2.131E-01	5.380E-01	9.642E-01	NOT IDENT.
NA-22	-6.843E-03	4.235E-02	8.226E-02	NOT IDENT.
NA-24	0.000E+00	1.437E+15	0.000E+00	SHORT HLIF
AL-26	-8.381E-03	3.664E-02	7.573E-02	NOT IDENT.

SC-46	-2.327E-02	4.952E-02	9.137E-02	FAIL ABUN
V-48	-3.740E-02	1.568E-01	3.038E-01	NOT IDENT.
CR-51	8.234E-01	7.156E-01	1.287E+00	NOT IDENT.
MN-52	1.770E+00	2.134E+00	5.701E+00	NOT IDENT.
MN-54	-1.342E-02	4.234E-02	8.018E-02	NOT IDENT.
CO-56	-3.579E-03	5.338E-02	1.051E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-2.469E-03	2.679E-02	4.935E-02	NOT IDENT.
CO-58	7.241E-04	4.979E-02	1.005E-01	NOT IDENT.
FE-59	2.860E-02	1.357E-01	2.774E-01	NOT IDENT.
CO-60	8.431E-04	4.268E-02	8.647E-02	FAIL ABUN
ZN-65	8.469E-02	8.540E-02	1.965E-01	NOT IDENT.
GE-68	-9.270E-01	1.360E+00	2.336E+00	NOT IDENT.
AS-73	-2.725E-01	1.173E+00	2.266E+00	NOT IDENT.
AS-74	-1.673E-01	2.433E-01	4.086E-01	NOT IDENT.
SE-75	-3.417E-03	5.689E-02	9.982E-02	NOT IDENT.
BR-77	0.000E+00	6.542E+03	0.000E+00	SHORT HLIF
SR-82	3.401E-01	6.747E-01	1.318E+00	NOT IDENT.
RB-83	-4.694E-02	8.906E-02	1.567E-01	NOT IDENT.
RB-84	-3.430E-02	9.010E-02	1.725E-01	NOT IDENT.
KR-85	4.315E+00	7.639E+00	1.553E+01	NOT IDENT.
SR-85	2.777E-02	4.942E-02	1.004E-01	NOT IDENT.
RB-86	-9.921E-01	1.682E+00	2.961E+00	NOT IDENT.
Y-88	-2.684E-02	4.725E-02	8.534E-02	NOT IDENT.
Y-91	3.771E-01	3.164E+01	6.098E+01	NOT IDENT.
NB-94	2.484E-02	4.005E-02	8.118E-02	NOT IDENT.
NB-95	3.235E-02	6.327E-02	1.214E-01	NOT IDENT.
NB-95M	1.873E-02	2.021E-01	3.294E-01	NOT IDENT.
ZR-95	1.041E-01	1.320E-01	2.005E-01	FAIL ABUN
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.515E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.720E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	2.465E+39	0.000E+00	SHORT HLIF
RH-101	-7.623E-03	3.472E-02	5.802E-02	NOT IDENT.
RH-102	-7.105E-04	6.606E-02	1.237E-01	NOT IDENT.
RU-103	5.124E-03	6.077E-02	1.177E-01	FAIL ABUN
RH-106	7.729E-02	3.373E-01	6.686E-01	NOT IDENT.
RU-106	7.729E-02	3.373E-01	6.686E-01	NOT IDENT.
AG-108M	-2.866E-03	3.207E-02	5.500E-02	NOT IDENT.
AG-110	2.841E-01	8.627E-01	1.709E+00	NOT IDENT.
AG-110M	3.855E-02	5.146E-02	1.176E-01	NOT IDENT.
SN-113	-2.494E-02	5.616E-02	1.023E-01	NOT IDENT.
CD-115	0.000E+00	4.688E+03	0.000E+00	SHORT HLIF
SN-117M	3.814E-02	1.567E-01	2.905E-01	NOT IDENT.
SB-122	0.000E+00	3.049E+02	0.000E+00	SHORT HLIF
TE-123M	-2.220E-03	3.517E-02	6.341E-02	NOT IDENT.
SB-124	6.551E-02	9.417E-02	2.597E-01	NOT IDENT.
SB-125	-8.026E-02	1.017E-01	1.752E-01	FAIL ABUN
TE-125M	-2.686E+00	1.249E+01	2.289E+01	NOT IDENT.
I-126	7.745E-01	7.445E-01	1.584E+00	NOT IDENT.
SB-126	-3.624E-02	5.108E-01	8.933E-01	NOT IDENT.
SB-127	-1.024E+01	4.591E+01	8.295E+01	NOT IDENT.
I-131	4.159E-02	6.033E-01	1.184E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	5.516E+01	0.000E+00	SHORT HLIF
BA-133	-6.343E-03	5.228E-02	8.891E-02	NOT IDENT.
I-133	0.000E+00	3.045E+10	0.000E+00	SHORT HLIF
CS-134	2.362E-02	5.491E-02	1.126E-01	NOT IDENT.
I-135	0.000E+00	4.380E+36	0.000E+00	SHORT HLIF
CS-136	-1.040E-01	3.285E-01	6.128E-01	FAIL ABUN
BA-137M	2.002E-02	3.806E-02	7.806E-02	NOT IDENT.
CS-137	2.115E-02	4.020E-02	8.246E-02	NOT IDENT.
LA-138	-5.752E-02	6.627E-02	9.957E-02	NOT IDENT.
CE-139	-1.439E-02	3.504E-02	6.111E-02	NOT IDENT.
BA-140	-7.678E-02	8.754E-01	1.472E+00	NOT IDENT.
LA-140	-3.407E-01	3.303E-01	5.187E-01	NOT IDENT.
CE-141	-5.921E-02	1.002E-01	1.734E-01	NOT IDENT.
CE-143	0.000E+00	2.035E+06	0.000E+00	SHORT HLIF
CE-144	-3.918E-02	2.098E-01	3.521E-01	NOT IDENT.
PM-144	2.115E-02	4.297E-02	8.555E-02	NOT IDENT.
PR-144	1.598E+00	3.248E+00	6.466E+00	NOT IDENT.
PM-146	-5.411E-03	4.476E-02	8.475E-02	NOT IDENT.
ND-147	-1.380E-01	2.179E+00	3.688E+00	FAIL ABUN
PM-147	1.282E+02	7.793E+02	1.464E+03	NOT IDENT.
PM-149	0.000E+00	3.612E+04	0.000E+00	SHORT HLIF
EU-150	-3.778E-03	3.156E-02	5.409E-02	FAIL ABUN
EU-152	-2.507E-02	1.087E-01	2.045E-01	NOT IDENT.
GD-153	3.649E-02	9.066E-02	1.650E-01	NOT IDENT.

EU-154	-1.275E-02	1.205E-01	2.367E-01	FAIL ABUN
TB-160	-1.086E-01	1.565E-01	2.764E-01	FAIL ABUN
HO-166M	1.804E-03	7.946E-02	1.467E-01	NOT IDENT.
TM-171	5.721E+00	2.224E+01	4.459E+01	NOT IDENT.
HF-172	5.254E-02	2.074E-01	3.652E-01	FAIL ABUN
LU-172	7.489E-02	8.208E-02	1.813E-01	FAIL ABUN
LU-176	1.075E-02	2.882E-02	5.787E-02	FAIL ABUN
HF-181	-7.607E-02	7.307E-02	1.191E-01	NOT IDENT.
TA-182	5.134E-03	2.546E-01	4.903E-01	FAIL ABUN
RE-183	-1.146E-01	2.926E-01	5.517E-01	NOT IDENT.
RE-184	-6.122E-02	2.010E-01	3.807E-01	NOT IDENT.
W-188	-4.180E+00	9.607E+00	1.594E+01	FAIL ABUN
IR-192	7.486E-02	8.906E-02	1.015E-01	FAIL ABUN
HG-203	-1.976E-02	5.673E-02	1.066E-01	FAIL ABUN
TL-204	1.930E+00	5.272E+00	9.685E+00	NOT IDENT.
BI-207	4.221E-03	6.644E-02	1.304E-01	FAIL ABUN
BI-210	-9.804E-01	4.735E+00	9.234E+00	NOT IDENT.
PB-210	-9.804E-01	4.735E+00	9.234E+00	NOT IDENT.
PB-211	-4.114E-01	8.947E-01	1.613E+00	NOT IDENT.
BI-213	-7.816E-02	1.171E-01	1.765E-01	NOT IDENT.
RN-219	1.945E-01	4.975E-01	9.830E-01	NOT IDENT.
RA-223	-1.155E-01	7.925E-01	1.351E+00	FAIL ABUN
AC-225	-2.428E+00	2.512E+00	4.001E+00	NOT IDENT.
AC-227	0.000E+00	4.065E-01	5.704E-01	FAIL ABUN
TH-227	0.000E+00	4.065E-01	5.704E-01	FAIL ABUN
TH-231	-1.155E-01	7.925E-01	1.351E+00	FAIL ABUN
PA-233	2.984E-02	7.159E-02	1.440E-01	FAIL ABUN
PA-234	7.253E-02	3.004E-01	6.341E-01	FAIL ABUN
PA-234M	4.643E-01	4.891E+00	9.894E+00	NOT IDENT.
NP-237	2.984E-02	7.159E-02	1.440E-01	FAIL ABUN
NP-238	0.000E+00	8.775E+03	0.000E+00	SHORT HLIF
NP-239	-2.895E-03	2.737E-01	5.080E-01	FAIL ABUN
PU-239	6.057E+02	6.315E+02	7.922E+02	FAIL ABUN
AM-241	-4.380E-02	1.808E-01	3.446E-01	NOT IDENT.
CM-243	-3.577E-02	1.102E-01	1.850E-01	NOT IDENT.
BK-247	-2.150E-03	9.064E-02	1.599E-01	FAIL ABUN
CM-247	1.081E-02	4.414E-02	8.631E-02	NOT IDENT.
CF-249	2.589E-02	4.621E-02	9.362E-02	NOT IDENT.
CF-251	6.355E-02	1.338E-01	2.533E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:38:58.31

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	143	10.66*	9.865E-01	8.433E+00	8.433E+00	17.89
CD-109	88.03	151	3.70*	5.267E+00	4.815E+00	5.068E+00	34.65
SN-126	64.28	42	9.60	2.654E+00	1.022E+00	1.022E+00	97.36
	86.94	151	8.90	5.267E+00	2.002E+00	2.002E+00	34.65
	87.57	151	37.00*	5.267E+00	4.815E-01	4.815E-01	34.65
EU-155	86.55	151	30.70	5.267E+00	5.803E-01	5.882E-01	34.65
	105.31	29	21.10*	6.041E+00	1.420E-01	1.440E-01	140.89
TL-208	277.37	------	6.60	3.940E+00	------	Line Not Found	------
	583.19	117	85.00*	2.228E+00	3.836E-01	3.836E-01	30.72
	860.56	21	12.50	1.593E+00	6.691E-01	6.691E-01	104.80
BI-211	72.87	29	1.23	3.977E+00	3.672E+00	3.672E+00	118.05
	351.06	295	12.92*	3.292E+00	4.299E+00	4.299E+00	19.45
BI-212	727.33	20	6.67*	1.849E+00	9.848E-01	9.848E-01	115.99
	1620.50	------	1.47	9.117E-01	------	Line Not Found	------
PB-212	74.82	29	10.28	3.977E+00	4.394E-01	4.394E-01	118.05
	77.11	286	17.10	4.382E+00	2.371E+00	2.371E+00	20.07
	238.63	489	43.60*	4.404E+00	1.580E+00	1.580E+00	10.61
	300.09	34	3.30	3.714E+00	1.702E+00	1.702E+00	79.71
BI-214	609.32	193	45.49*	2.149E+00	1.225E+00	1.225E+00	17.65
	1120.29	46	14.92	1.248E+00	1.522E+00	1.522E+00	39.61
	1764.49	41	15.30	8.636E-01	1.912E+00	1.912E+00	35.42
PB-214	74.82	29	5.80	3.977E+00	7.788E-01	7.788E-01	118.05
	77.11	286	9.70	4.382E+00	4.179E+00	4.179E+00	20.07
	87.09	151	3.41	5.267E+00	5.224E+00	5.224E+00	34.65
	242.00	133	7.25	4.360E+00	2.604E+00	2.604E+00	32.82
	295.22	210	18.42	3.759E+00	1.878E+00	1.878E+00	17.64
	351.93	295	35.60*	3.292E+00	1.560E+00	1.560E+00	19.45
RN-222	609.32	193	45.49*	2.149E+00	1.225E+00	1.225E+00	17.65
	1120.29	46	14.92	1.248E+00	1.522E+00	1.522E+00	39.61
	1764.49	41	15.30	8.636E-01	1.912E+00	1.912E+00	35.42
RA-224	240.99	133	4.10*	4.360E+00	4.605E+00	4.605E+00	32.82
RA-226	74.82	29	5.80	3.977E+00	7.788E-01	7.788E-01	118.05
	77.11	286	9.70	4.382E+00	4.179E+00	4.179E+00	20.07
	87.09	151	3.41	5.267E+00	5.224E+00	5.224E+00	34.65
	242.00	133	7.25	4.360E+00	2.604E+00	2.604E+00	32.82
	295.22	210	18.42	3.759E+00	1.878E+00	1.878E+00	17.64
	351.93	295	35.60*	3.292E+00	1.560E+00	1.560E+00	19.45
AC-228	105.21	29	1.10	6.041E+00	2.724E+00	2.724E+00	140.89
	338.32	95	11.27	3.392E+00	1.539E+00	1.539E+00	43.48
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	75	25.80*	1.512E+00	1.194E+00	1.194E+00	32.27
	968.97	32	15.80	1.428E+00	8.857E-01	8.857E-01	74.90
RA-228	105.21	29	1.10	6.041E+00	2.724E+00	2.724E+00	140.89
	338.32	95	11.27	3.392E+00	1.539E+00	1.539E+00	43.48
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	75	25.80*	1.512E+00	1.194E+00	1.194E+00	32.27
	968.97	32	15.80	1.428E+00	8.857E-01	8.857E-01	74.90

Sample ID : G674299020 Acquisition date : 30-JUL-2024 13:38:07

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	29	10.28	3.977E+00	4.394E-01	4.394E-01	118.05
	77.11	286	17.10	4.382E+00	2.371E+00	2.371E+00	20.07
	238.63	489	43.60*	4.404E+00	1.580E+00	1.580E+00	10.61
	300.09	34	3.30	3.714E+00	1.702E+00	1.702E+00	79.71
TH-229	85.43	70	14.70	5.023E+00	5.892E-01	5.892E-01	70.48
	88.47	151	24.00	5.267E+00	7.422E-01	7.422E-01	34.65
	193.51	------	4.41*	5.103E+00	------	Line Not Found	------
	210.85	51	2.80	4.827E+00	2.323E+00	2.323E+00	74.83
TH-230	74.82	29	5.80	3.977E+00	7.788E-01	7.788E-01	118.05
	77.11	286	9.70	4.382E+00	4.179E+00	4.179E+00	20.07
	87.09	151	3.41	5.267E+00	5.224E+00	5.224E+00	34.65
	242.00	133	7.25	4.360E+00	2.604E+00	2.604E+00	32.82
	295.22	210	18.42	3.759E+00	1.878E+00	1.878E+00	17.64
	351.93	295	35.60*	3.292E+00	1.560E+00	1.560E+00	19.45
PA-231	283.69	------	1.70	3.874E+00	------	Line Not Found	------
	301.36	34	5.35*	3.714E+00	1.050E+00	1.050E+00	79.71
TH-232	105.21	29	1.10	6.041E+00	2.724E+00	2.724E+00	140.89
	338.32	95	11.27	3.392E+00	1.539E+00	1.539E+00	43.48
	835.71	------	1.61	1.636E+00	------	Line Not Found	------
	911.20	75	25.80*	1.512E+00	1.194E+00	1.194E+00	32.27
	968.97	32	15.80	1.428E+00	8.857E-01	8.857E-01	74.90
TH-234	63.29	42	3.70*	2.654E+00	2.651E+00	2.651E+00	97.36
	92.59	139	4.23	5.610E+00	3.633E+00	3.633E+00	37.89
U-234	74.82	29	5.80	3.977E+00	7.788E-01	7.788E-01	118.05
	77.11	286	9.70	4.382E+00	4.179E+00	4.179E+00	20.07
	87.09	151	3.41	5.267E+00	5.224E+00	5.224E+00	34.65
	242.00	133	7.25	4.360E+00	2.604E+00	2.604E+00	32.82
	295.22	210	18.42	3.759E+00	1.878E+00	1.878E+00	17.64
	351.93	295	35.60*	3.292E+00	1.560E+00	1.560E+00	19.45
U-235	89.96	98	3.47	5.440E+00	3.229E+00	3.229E+00	43.80
	93.35	139	5.60	5.610E+00	2.744E+00	2.744E+00	37.89
	143.76	------	10.96*	5.983E+00	------	Line Not Found	------
	163.33	------	5.08	5.649E+00	------	Line Not Found	------
	185.72	103	57.20	5.226E+00	2.146E-01	2.146E-01	62.15
	205.31	------	5.01	4.904E+00	------	Line Not Found	------
U-238	63.29	42	3.70*	2.654E+00	2.651E+00	2.651E+00	97.36
	92.59	139	4.23	5.610E+00	3.633E+00	3.633E+00	37.89
AM-243	43.53	------	5.90	3.651E-01	------	Line Not Found	------
	74.66	29	67.20*	3.977E+00	6.722E-02	6.722E-02	118.05
ANH-511	511.00	56	100.00*	2.476E+00	1.413E-01	1.413E-01	69.56

Flag: "*" = Keyline

Sample ID : G674299020 Acquisition date : 30-JUL-2024 13:38:07

Total number of lines in spectrum	48	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	35	72.92%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	8.433E+00	8.433E+00	1.509E+00	17.89	
CD-109	461.40D	1.05	4.815E+00	5.068E+00	1.756E+00	34.65	
SN-126	2.30E+05Y	1.00	4.815E-01	4.815E-01	1.668E-01	34.65	
EU-155	4.75Y	1.01	1.420E-01	1.440E-01	2.028E-01	140.89	
TL-208	1.41E+10Y	1.00	3.836E-01	3.836E-01	1.178E-01	30.72	
BI-211	7.04E+08Y	1.00	4.299E+00	4.299E+00	0.836E+00	19.45	
BI-212	1.41E+10Y	1.00	9.848E-01	9.848E-01	11.42E-01	115.99	
PB-212	1.41E+10Y	1.00	1.580E+00	1.580E+00	0.168E+00	10.61	
BI-214	1600.00Y	1.00	1.225E+00	1.225E+00	0.216E+00	17.65	
PB-214	1600.00Y	1.00	1.560E+00	1.560E+00	0.303E+00	19.45	
RN-222	1600.00Y	1.00	1.225E+00	1.225E+00	0.216E+00	17.65	
RA-224	1.41E+10Y	1.00	4.605E+00	4.605E+00	1.511E+00	32.82	
RA-226	1600.00Y	1.00	1.560E+00	1.560E+00	0.303E+00	19.45	
AC-228	1.41E+10Y	1.00	1.194E+00	1.194E+00	0.385E+00	32.27	
RA-228	1.41E+10Y	1.00	1.194E+00	1.194E+00	0.385E+00	32.27	
TH-228	1.41E+10Y	1.00	1.580E+00	1.580E+00	0.168E+00	10.61	
TH-229	7340.00Y	1.00	7.422E-01	7.422E-01	2.572E-01	34.65	K
TH-230	7.54E+04Y	1.00	1.560E+00	1.560E+00	0.303E+00	19.45	
PA-231	7.04E+08Y	1.00	1.050E+00	1.050E+00	0.837E+00	79.71	
TH-232	1.41E+10Y	1.00	1.194E+00	1.194E+00	0.385E+00	32.27	
TH-234	4.47E+09Y	1.00	2.651E+00	2.651E+00	2.581E+00	97.36	
U-234	2.45E+05Y	1.00	1.560E+00	1.560E+00	0.303E+00	19.45	
U-235	7.04E+08Y	1.00	2.146E-01	2.146E-01	1.334E-01	62.15	K
U-238	4.47E+09Y	1.00	2.651E+00	2.651E+00	2.581E+00	97.36	
AM-243	7370.00Y	1.00	6.722E-02	6.722E-02	7.935E-02	118.05	
ANH-511	1.00E+09Y	1.00	1.413E-01	1.413E-01	0.983E-01	69.56	
		Total Activity :	4.709E+01	4.735E+01			
		Grand Total Activity :	4.709E+01	4.735E+01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G674299020 Acquisition date : 30-JUL-2024 13:38:07

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	129.40	38	107	1.35	257.67	252	14	9.80E-03	****	6.16E+00	T
3	131.39	34	97	1.31	261.66	252	14	8.72E-03	****	6.14E+00	T
9	150.92	15	54	1.38	300.75	299	12	3.96E-03	****	5.87E+00	
9	153.87	26	123	1.83	306.65	299	12	6.67E-03	****	5.82E+00	T
0	202.83	22	73	1.42	404.61	402	7	5.90E-03	****	4.94E+00	T
2	256.48	39	40	1.49	511.97	508	13	1.05E-02	67.8	4.18E+00	T
2	258.73	18	38	1.49	516.48	508	13	4.95E-03	****	4.15E+00	
0	317.22	26	57	1.38	633.53	629	11	6.97E-03	****	3.56E+00	T
0	322.22	20	52	0.66	643.53	639	10	5.39E-03	****	3.52E+00	T
0	437.57	19	24	0.94	874.40	870	10	5.14E-03	****	2.79E+00	
0	534.18	34	19	4.89	1067.77	1060	13	9.43E-03	63.5	2.39E+00	
0	544.67	12	12	0.58	1088.77	1085	9	3.44E-03	****	2.35E+00	
0	755.34	11	13	0.81	1510.48	1506	9	3.19E-03	****	1.79E+00	T
0	768.85	39	24	2.51	1537.53	1529	19	1.11E-02	66.6	1.76E+00	
6	866.99	8	0	1.72	1734.02	1732	10	2.17E-03	62.8	1.58E+00	
6	869.48	13	0	1.34	1739.01	1732	10	3.64E-03	55.1	1.58E+00	
0	933.42	15	4	2.55	1867.03	1863	8	4.17E-03	69.3	1.48E+00	
0	990.25	8	6	1.19	1980.82	1976	8	2.25E-03	****	1.40E+00	
0	1172.97	7	5	1.43	2346.71	2342	9	2.14E-03	****	1.20E+00	T
0	1286.77	11	0	0.62	2574.62	2569	12	3.12E-03	66.1	1.10E+00	
0	1372.98	11	3	3.68	2747.28	2741	13	3.19E-03	87.9	1.04E+00	
0	1378.08	10	6	1.11	2757.50	2753	12	3.06E-03	****	1.04E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:39:10.59

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299020.CNF;1  *
* Acquisition date : 30-JUL-2024 13:38:07 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.66     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:45:00 Nuclide Library : SOLID           *
* Sample ID        : G674299020           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.2104E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.512E-01
CD-109	6.481E-01
SN-126	6.190E-02
EU-155	9.436E-02
TL-208	3.641E-02
BI-211	1.728E-01
BI-212	5.210E-01
PB-212	5.643E-02
BI-214	6.931E-02
PB-214	6.286E-02
RN-222	6.931E-02
RA-224	6.053E-01
RA-226	6.286E-02
AC-228	1.246E-01
RA-228	1.246E-01
TH-228	5.643E-02
TH-229	4.901E-01
TH-230	6.286E-02
PA-231	4.184E-01
TH-232	1.246E-01
TH-234	1.280E+00
U-234	6.286E-02
U-235	1.866E-01
U-238	1.280E+00
AM-243	4.806E-02
ANH-511	2.525E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.337E-01	NOT IDENT.
NA-22	3.338E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.804E-02	NOT IDENT.
SC-46	3.847E-02	FAIL ABUN

V-48	1.256E-01	NOT IDENT.
CR-51	5.866E-01	NOT IDENT.
MN-52	2.274E+00	NOT IDENT.
MN-54	3.454E-02	NOT IDENT.
CO-56	4.549E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.291E-02	NOT IDENT.
CO-58	4.322E-02	NOT IDENT.
FE-59	1.188E-01	NOT IDENT.
CO-60	3.528E-02	FAIL ABUN
ZN-65	8.365E-02	NOT IDENT.
GE-68	9.482E-01	NOT IDENT.
AS-73	1.047E+00	NOT IDENT.
AS-74	1.795E-01	NOT IDENT.
SE-75	4.559E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.778E-01	NOT IDENT.
RB-83	6.823E-02	NOT IDENT.
RB-84	7.011E-02	NOT IDENT.
KR-85	6.970E+00	NOT IDENT.
SR-85	4.508E-02	NOT IDENT.
RB-86	1.213E+00	NOT IDENT.
Y-88	3.023E-02	NOT IDENT.
Y-91	2.635E+01	NOT IDENT.
NB-94	3.616E-02	NOT IDENT.
NB-95	5.381E-02	NOT IDENT.
NB-95M	1.535E-01	NOT IDENT.
ZR-95	8.772E-02	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.693E-02	NOT IDENT.
RH-102	5.450E-02	NOT IDENT.
RU-103	5.212E-02	FAIL ABUN
RH-106	2.914E-01	NOT IDENT.
RU-106	2.914E-01	NOT IDENT.
AG-108M	2.417E-02	NOT IDENT.
AG-110	7.523E-01	NOT IDENT.
AG-110M	5.062E-02	NOT IDENT.
SN-113	4.586E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.354E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.954E-02	NOT IDENT.
SB-124	1.005E-01	NOT IDENT.
SB-125	7.733E-02	FAIL ABUN
TE-125M	1.066E+01	NOT IDENT.
I-126	7.119E-01	NOT IDENT.
SB-126	3.896E-01	NOT IDENT.
SB-127	3.598E+01	NOT IDENT.
I-131	5.302E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.024E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.035E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.586E-01	FAIL ABUN
BA-137M	3.435E-02	NOT IDENT.
CS-137	3.628E-02	NOT IDENT.
LA-138	3.700E-02	NOT IDENT.
CE-139	2.829E-02	NOT IDENT.
BA-140	6.429E-01	NOT IDENT.
LA-140	1.985E-01	NOT IDENT.
CE-141	8.056E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.623E-01	NOT IDENT.
PM-144	3.807E-02	NOT IDENT.
PR-144	2.877E+00	NOT IDENT.
PM-146	3.752E-02	NOT IDENT.
ND-147	1.612E+00	FAIL ABUN
PM-147	6.821E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.446E-02	FAIL ABUN
EU-152	9.267E-02	NOT IDENT.
GD-153	7.687E-02	NOT IDENT.
EU-154	9.661E-02	FAIL ABUN

TB-160	1.133E-01	FAIL ABUN
HO-166M	6.510E-02	NOT IDENT.
TM-171	2.069E+01	NOT IDENT.
HF-172	1.699E-01	FAIL ABUN
LU-172	7.986E-02	FAIL ABUN
LU-176	2.645E-02	FAIL ABUN
HF-181	5.246E-02	NOT IDENT.
TA-182	2.121E-01	FAIL ABUN
RE-183	2.573E-01	NOT IDENT.
RE-184	1.621E-01	NOT IDENT.
W-188	7.188E+00	FAIL ABUN
IR-192	4.681E-02	FAIL ABUN
HG-203	4.889E-02	FAIL ABUN
TL-204	4.537E+00	NOT IDENT.
BI-207	5.661E-02	FAIL ABUN
BI-210	4.269E+00	NOT IDENT.
PB-210	4.269E+00	NOT IDENT.
PB-211	7.310E-01	NOT IDENT.
BI-213	7.650E-02	NOT IDENT.
RN-219	4.485E-01	NOT IDENT.
RA-223	6.146E-01	FAIL ABUN
AC-225	1.831E+00	NOT IDENT.
AC-227	2.638E-01	FAIL ABUN
TH-227	2.638E-01	FAIL ABUN
TH-231	6.146E-01	FAIL ABUN
PA-233	6.588E-02	FAIL ABUN
PA-234	2.691E-01	FAIL ABUN
PA-234M	4.225E+00	NOT IDENT.
NP-237	6.588E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.366E-01	FAIL ABUN
PU-239	3.741E+02	FAIL ABUN
AM-241	1.609E-01	NOT IDENT.
CM-243	8.565E-02	NOT IDENT.
BK-247	7.298E-02	FAIL ABUN
CM-247	3.920E-02	NOT IDENT.
CF-249	4.261E-02	NOT IDENT.
CF-251	1.175E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:39:15.12

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G674299020.CNF;1  *
* Acquisition date : 30-JUL-2024 13:38:07 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.66     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 10:45:00 Nuclide Library : SOLID           *
* Sample ID        : G674299020           Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.2104E+02 GRAM *
*                                         Quantity Err(%) : 1.6523E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-SEP-2023 07:18:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	8.433E+00	1.678E+00	1.678E+00
CD-109	5.068E+00	1.805E+00	1.805E+00
SN-126	4.815E-01	1.695E-01	1.695E-01
EU-155	1.440E-01	1.992E-01	1.992E-01
TL-208	3.836E-01	1.203E-01	1.203E-01
BI-211	4.299E+00	8.905E-01	8.905E-01
BI-212	9.848E-01	1.123E+00	1.123E+00
PB-212	1.580E+00	2.086E-01	2.086E-01
BI-214	1.225E+00	2.375E-01	2.375E-01
PB-214	1.560E+00	3.222E-01	3.222E-01
RN-222	1.225E+00	2.375E-01	2.375E-01
RA-224	4.605E+00	1.528E+00	1.528E+00
RA-226	1.560E+00	3.222E-01	3.222E-01
AC-228	1.194E+00	3.953E-01	3.953E-01
RA-228	1.194E+00	3.953E-01	3.953E-01
TH-228	1.580E+00	2.086E-01	2.086E-01
TH-229	6.962E-02	5.827E-01	5.827E-01
TH-230	1.560E+00	3.222E-01	3.222E-01
PA-231	1.050E+00	8.526E-01	8.526E-01
TH-232	1.194E+00	3.953E-01	3.953E-01
TH-234	2.651E+00	2.602E+00	2.602E+00
U-234	1.560E+00	3.222E-01	3.222E-01
U-235	1.539E-01	2.084E-01	2.084E-01
U-238	2.651E+00	2.602E+00	2.602E+00
AM-243	6.722E-02	7.798E-02	7.798E-02
ANH-511	1.413E-01	9.708E-02	9.708E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-2.131E-01	5.383E-01	5.469E-01	NOT IDENT.
NA-22	-6.843E-03	4.235E-02	4.247E-02	NOT IDENT.
NA-24	6.554E+13	1.437E+15	1.438E+15	SHORT HLIF
AL-26	-8.381E-03	3.664E-02	3.684E-02	NOT IDENT.

SC-46	-2.327E-02	4.957E-02	5.067E-02	FAIL ABUN
V-48	-3.740E-02	1.568E-01	1.577E-01	NOT IDENT.
CR-51	8.234E-01	7.184E-01	8.087E-01	NOT IDENT.
MN-52	1.770E+00	2.140E+00	2.284E+00	NOT IDENT.
MN-54	-1.342E-02	4.235E-02	4.278E-02	NOT IDENT.
CO-56	-3.579E-03	5.338E-02	5.341E-02	NOT IDENT.
MN-56	-1.000E+41	1.586E+42	0.000E+00	SHORT HLIF
CO-57	-2.469E-03	2.679E-02	2.682E-02	NOT IDENT.
CO-58	7.241E-04	4.979E-02	4.979E-02	NOT IDENT.
FE-59	2.860E-02	1.357E-01	1.363E-01	NOT IDENT.
CO-60	8.431E-04	4.268E-02	4.269E-02	FAIL ABUN
ZN-65	8.469E-02	8.569E-02	9.381E-02	NOT IDENT.
GE-68	-9.270E-01	1.362E+00	1.425E+00	NOT IDENT.
AS-73	-2.725E-01	1.175E+00	1.181E+00	NOT IDENT.
AS-74	-1.673E-01	2.440E-01	2.554E-01	NOT IDENT.
SE-75	-3.417E-03	5.689E-02	5.691E-02	NOT IDENT.
BR-77	6.291E+04	6.253E+04	6.866E+04	SHORT HLIF
SR-82	3.401E-01	6.755E-01	6.926E-01	NOT IDENT.
RB-83	-4.694E-02	8.937E-02	9.184E-02	NOT IDENT.
RB-84	-3.430E-02	9.015E-02	9.147E-02	NOT IDENT.
KR-85	4.315E+00	7.648E+00	7.892E+00	NOT IDENT.
SR-85	2.777E-02	4.948E-02	5.104E-02	NOT IDENT.
RB-86	-9.921E-01	1.685E+00	1.743E+00	NOT IDENT.
Y-88	-2.684E-02	4.729E-02	4.882E-02	NOT IDENT.
Y-91	3.771E-01	3.164E+01	3.164E+01	NOT IDENT.
NB-94	2.484E-02	4.011E-02	4.164E-02	NOT IDENT.
NB-95	3.235E-02	6.334E-02	6.500E-02	NOT IDENT.
NB-95M	1.873E-02	2.021E-01	2.023E-01	NOT IDENT.
ZR-95	1.041E-01	1.324E-01	1.404E-01	FAIL ABUN
NB-97	-1.000E+41	7.451E+41	0.000E+00	SHORT HLIF
ZR-97	3.170E+13	2.515E+14	2.519E+14	SHORT HLIF
MO-99	-3.105E+01	1.720E+03	1.721E+03	SHORT HLIF
TC-99M	-1.903E+38	2.465E+39	0.000E+00	SHORT HLIF
RH-101	-7.623E-03	3.475E-02	3.492E-02	NOT IDENT.
RH-102	-7.105E-04	6.606E-02	6.607E-02	NOT IDENT.
RU-103	5.124E-03	6.077E-02	6.081E-02	FAIL ABUN
RH-106	7.729E-02	3.373E-01	3.391E-01	NOT IDENT.
RU-106	7.729E-02	3.373E-01	3.391E-01	NOT IDENT.
AG-108M	-2.866E-03	3.207E-02	3.210E-02	NOT IDENT.
AG-110	2.841E-01	8.631E-01	8.725E-01	NOT IDENT.
AG-110M	3.855E-02	5.160E-02	5.445E-02	NOT IDENT.
SN-113	-2.494E-02	5.620E-02	5.731E-02	NOT IDENT.
CD-115	4.286E+03	4.707E+03	5.088E+03	SHORT HLIF
SN-117M	3.814E-02	1.567E-01	1.577E-01	NOT IDENT.
SB-122	1.517E+02	3.052E+02	3.128E+02	SHORT HLIF
TE-123M	-2.220E-03	3.517E-02	3.518E-02	NOT IDENT.
SB-124	6.551E-02	9.432E-02	9.884E-02	NOT IDENT.
SB-125	-8.026E-02	1.019E-01	1.081E-01	FAIL ABUN
TE-125M	-2.686E+00	1.250E+01	1.255E+01	NOT IDENT.
I-126	7.745E-01	7.483E-01	8.258E-01	NOT IDENT.
SB-126	-3.624E-02	5.108E-01	5.111E-01	NOT IDENT.
SB-127	-1.024E+01	4.594E+01	4.617E+01	NOT IDENT.
I-131	4.159E-02	6.033E-01	6.036E-01	NOT IDENT.
I-132	-1.000E+41	4.680E+41	0.000E+00	SHORT HLIF
TE-132	5.754E+00	5.517E+01	5.523E+01	SHORT HLIF
BA-133	-6.343E-03	5.229E-02	5.236E-02	NOT IDENT.
I-133	-5.575E+09	3.047E+10	3.058E+10	SHORT HLIF
CS-134	2.362E-02	5.495E-02	5.597E-02	NOT IDENT.
I-135	7.153E+35	4.415E+36	0.000E+00	SHORT HLIF
CS-136	-1.040E-01	3.287E-01	3.321E-01	FAIL ABUN
BA-137M	2.002E-02	3.810E-02	3.915E-02	NOT IDENT.
CS-137	2.115E-02	4.024E-02	4.136E-02	NOT IDENT.
LA-138	-5.752E-02	6.646E-02	7.134E-02	NOT IDENT.
CE-139	-1.439E-02	3.517E-02	3.577E-02	NOT IDENT.
BA-140	-7.678E-02	8.754E-01	8.761E-01	NOT IDENT.
LA-140	-3.407E-01	3.316E-01	3.654E-01	NOT IDENT.
CE-141	-5.921E-02	1.003E-01	1.037E-01	NOT IDENT.
CE-143	3.409E+06	2.052E+06	2.564E+06	SHORT HLIF
CE-144	-3.918E-02	2.099E-01	2.106E-01	NOT IDENT.
PM-144	2.115E-02	4.301E-02	4.405E-02	NOT IDENT.
PR-144	1.598E+00	3.251E+00	3.330E+00	NOT IDENT.
PM-146	-5.411E-03	4.476E-02	4.483E-02	NOT IDENT.
ND-147	-1.380E-01	2.179E+00	2.180E+00	FAIL ABUN
PM-147	1.282E+02	7.793E+02	7.814E+02	NOT IDENT.
PM-149	-1.850E+04	3.623E+04	3.717E+04	SHORT HLIF
EU-150	-3.778E-03	3.156E-02	3.161E-02	FAIL ABUN
EU-152	-2.507E-02	1.087E-01	1.093E-01	NOT IDENT.
GD-153	3.649E-02	9.071E-02	9.219E-02	NOT IDENT.

EU-154	-1.275E-02	1.205E-01	1.207E-01	FAIL ABUN
TB-160	-1.086E-01	1.569E-01	1.643E-01	FAIL ABUN
HO-166M	1.804E-03	7.946E-02	7.946E-02	NOT IDENT.
TM-171	5.721E+00	2.225E+01	2.240E+01	NOT IDENT.
HF-172	5.254E-02	2.076E-01	2.089E-01	FAIL ABUN
LU-172	7.489E-02	8.262E-02	8.925E-02	FAIL ABUN
LU-176	1.075E-02	2.883E-02	2.923E-02	FAIL ABUN
HF-181	-7.607E-02	7.336E-02	8.098E-02	NOT IDENT.
TA-182	5.134E-03	2.546E-01	2.546E-01	FAIL ABUN
RE-183	-1.146E-01	2.929E-01	2.974E-01	NOT IDENT.
RE-184	-6.122E-02	2.011E-01	2.030E-01	NOT IDENT.
W-188	-4.180E+00	9.622E+00	9.804E+00	FAIL ABUN
IR-192	7.486E-02	8.925E-02	9.542E-02	FAIL ABUN
HG-203	-1.976E-02	5.675E-02	5.744E-02	FAIL ABUN
TL-204	1.930E+00	5.276E+00	5.347E+00	NOT IDENT.
BI-207	4.221E-03	6.644E-02	6.647E-02	FAIL ABUN
BI-210	-9.804E-01	4.736E+00	4.756E+00	NOT IDENT.
PB-210	-9.804E-01	4.736E+00	4.756E+00	NOT IDENT.
PB-211	-4.114E-01	8.954E-01	9.144E-01	NOT IDENT.
BI-213	-7.816E-02	1.173E-01	1.225E-01	NOT IDENT.
RN-219	1.945E-01	4.983E-01	5.060E-01	NOT IDENT.
RA-223	-1.155E-01	7.926E-01	7.943E-01	FAIL ABUN
AC-225	-2.428E+00	2.525E+00	2.752E+00	NOT IDENT.
AC-227	6.121E-01	4.162E-01	4.993E-01	FAIL ABUN
TH-227	6.121E-01	4.162E-01	4.993E-01	FAIL ABUN
TH-231	-1.155E-01	7.926E-01	7.943E-01	FAIL ABUN
PA-233	2.984E-02	7.163E-02	7.288E-02	FAIL ABUN
PA-234	7.253E-02	3.117E-01	3.134E-01	FAIL ABUN
PA-234M	4.643E-01	4.892E+00	4.896E+00	NOT IDENT.
NP-237	2.984E-02	7.163E-02	7.288E-02	FAIL ABUN
NP-238	9.007E+03	8.813E+03	9.704E+03	SHORT HLIF
NP-239	-2.895E-03	2.737E-01	2.737E-01	FAIL ABUN
PU-239	6.057E+02	6.330E+02	6.894E+02	FAIL ABUN
AM-241	-4.380E-02	1.809E-01	1.819E-01	NOT IDENT.
CM-243	-3.577E-02	1.102E-01	1.114E-01	NOT IDENT.
BK-247	-2.150E-03	9.064E-02	9.065E-02	FAIL ABUN
CM-247	1.081E-02	4.419E-02	4.445E-02	NOT IDENT.
CF-249	2.589E-02	4.629E-02	4.774E-02	NOT IDENT.
CF-251	6.355E-02	1.340E-01	1.371E-01	NOT IDENT.

```
*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
*******************************************************************************
```

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	62.4990	85.43	65.4466	131.20	53.1719
45.60	59.0084	86.55	65.6422	133.02	51.9910
46.54	54.3698	86.79	65.6833	133.52	50.6718
49.72	0.0000	86.94	65.7099	136.00	59.8559
51.35	57.9009	87.09	65.7359	136.47	66.1064
51.87	57.1875	87.57	65.8188	140.51	0.0000
52.39	50.6572	88.03	65.8984	143.76	49.2067
52.97	57.4265	88.34	65.9515	144.24	57.6318
53.44	54.1927	88.47	65.9737	145.44	70.3584
54.07	70.1982	89.96	66.2294	152.43	53.1586
57.36	0.0000	1093.63	66.3447	153.25	53.2341
57.53	75.3165	91.11	66.4244	323.87	53.3226
57.98	72.8932	92.59	66.6741	156.02	64.1858
59.27	74.0747	93.35	66.8019	158.56	58.0169
59.32	74.0876	94.56	67.0040	159.00	63.4347
59.54	67.3262	94.65	67.0186	162.33	63.7885
60.96	67.3698	94.67	67.0219	162.66	61.6593
61.17	63.9901	94.87	67.0554	163.33	57.3962
62.93	69.8300	97.43	53.2216	165.86	60.8962
63.29	69.9137	98.43	52.3980	176.31	68.5495
63.58	69.9808	98.44	52.3992	176.60	67.4745
64.28	65.8128	99.53	56.3573	177.52	45.4162
66.73	65.4636	100.11	62.1743	181.07	0.0000
67.24	64.6958	102.03	51.2472	181.52	62.4130
125.81	61.2842	103.18	52.6693	184.41	70.5203
67.75	67.4273	103.37	55.2630	143.76	70.6587
68.89	79.9735	105.21	63.8876	193.51	53.3196
69.67	73.1202	105.31	63.9028	197.03	45.6079
70.82	64.8325	106.12	62.0811	198.01	51.3803
70.83	64.8353	106.47	56.9528	201.83	45.9174
72.81	78.2703	109.28	66.4327	203.43	56.3744
72.87	78.2844	111.00	64.7250	205.31	58.4442
74.66	78.7026	111.76	0.0000	210.85	51.1389
74.82	78.7396	114.06	57.2610	215.65	38.6014
74.97	78.7745	116.30	0.0000	218.12	58.6777
77.11	79.2659	116.74	61.5625	222.11	43.6484
78.74	77.2233	119.76	65.9517	227.09	48.6775
79.69	83.4796	121.12	59.1233	227.38	48.6950
80.03	63.5769	121.22	59.1355	228.16	0.0000
80.12	63.5940	121.78	65.2246	228.18	55.8781
80.19	63.6063	122.06	58.2336	116.74	55.8781
80.57	76.4089	122.92	64.3711	235.69	60.8068
81.00	83.7863	123.07	64.3911	235.96	62.4276
81.07	83.8025	265.00	58.4270	238.63	54.2017
81.75	69.3586	125.81	53.9575	238.98	0.0000
82.47	74.3735	127.23	60.8743	240.99	54.3576
83.79	65.1584	127.91	52.8294	242.00	54.4242
84.00	65.1953	129.30	52.9744	244.70	37.2103

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	35.9187	344.28	34.9970	563.25	15.8197
252.80	31.0350	345.93	26.9611	564.24	0.0000
254.15	0.0000	351.06	25.2810	569.33	22.2288
256.23	30.7493	351.93	25.3004	946.00	21.1727
260.90	0.0000	355.39	0.0000	569.70	20.1164
264.66	38.4984	356.01	32.6477	583.19	22.4133
264.80	38.5040	364.49	23.7556	584.27	22.4270
265.00	37.2702	366.42	0.0000	595.83	26.8799
269.46	52.4398	372.51	31.2801	427.87	21.5633
270.03	48.7250	375.05	30.4266	602.52	0.0000
271.23	43.3682	377.52	27.7185	604.72	25.9365
273.65	50.1746	356.01	32.5106	607.14	29.2192
276.40	41.9373	388.16	26.1013	609.32	21.6707
277.37	40.3027	388.63	28.9092	610.33	14.6360
277.60	35.2734	391.69	31.7871	614.28	20.8625
278.00	34.4486	264.66	33.9031	618.01	22.8662
279.20	47.1133	401.81	30.1641	620.36	15.2641
279.54	45.4471	402.40	29.2353	621.93	13.0952
279.70	45.4548	404.85	38.7420	630.19	0.0000
280.46	46.3346	410.95	37.0314	631.29	18.6477
283.69	40.5781	413.71	27.5958	633.25	24.1583
284.31	35.5289	414.70	29.5216	634.78	16.4856
285.41	32.1831	423.72	23.9751	635.95	18.6954
285.90	0.0000	427.09	30.7676	636.99	23.1080
287.50	28.0103	427.87	29.8237	657.50	14.4642
290.67	35.7682	433.94	18.8470	657.76	18.9175
293.27	0.0000	439.40	17.4686	657.90	0.0000
351.93	31.6599	440.45	23.3096	661.66	12.2658
295.96	31.6840	453.88	21.5793	664.57	0.0000
879.38	31.7690	463.37	19.7522	666.33	13.4141
299.98	31.8149	468.07	19.8185	666.50	13.4150
300.09	31.8180	473.00	24.8591	667.71	0.0000
300.13	31.8195	475.06	17.9246	677.62	21.3642
301.36	31.8594	476.78	27.9163	685.70	16.9373
302.85	33.6323	477.60	32.9201	692.65	0.0000
256.23	36.2800	482.18	33.0248	695.00	23.8250
304.85	36.2928	487.02	24.0981	696.49	15.8953
306.78	32.0340	492.35	0.0000	696.51	15.8953
308.46	37.2908	497.08	19.2084	697.00	13.6279
311.90	32.1973	505.52	19.8257	697.30	14.7662
316.51	30.1580	507.63	0.0000	697.49	14.7673
319.41	15.7793	511.00	18.3669	702.65	14.8059
320.08	15.7896	514.00	18.4036	706.68	23.9659
321.04	35.5594	514.00	18.4036	711.68	20.5935
323.87	36.9764	520.40	21.5605	720.70	16.5486
325.23	35.7028	520.69	0.0000	721.93	0.0000
328.76	35.3809	522.65	0.0000	722.78	18.9808
333.37	30.6487	527.90	0.0000	722.91	18.9821
333.97	31.9988	528.26	7.7393	723.31	20.7122
334.37	30.6774	529.59	24.7861	724.19	13.8140
338.28	29.4504	529.87	0.0000	727.33	19.6002
338.32	29.4510	531.02	17.0559	733.00	24.2787
311.90	34.8756	537.26	17.1237	735.93	15.0508
340.48	34.8756	546.56	0.0000	333.97	25.4894
340.55	34.8780	552.55	18.8599	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	16.2735	949.00	10.4733	1384.29	5.2699
747.24	11.6406	667.71	0.0000	1408.01	7.7361
748.06	9.3161	962.31	14.0360	1434.09	1.1130
752.31	9.8017	964.08	16.8550	1435.80	8.9082
753.82	12.6114	966.17	24.5359	1457.56	0.0000
756.73	5.6127	911.20	13.4322	1460.82	3.3631
756.80	5.6129	983.53	9.6475	1489.16	4.5176
884.68	14.0796	984.45	0.0000	1505.03	10.8873
765.81	14.0918	1274.44	6.7855	1584.12	8.3307
766.42	12.3337	1001.03	10.6821	1596.21	11.1404
766.84	12.3363	1002.74	8.7454	1620.50	3.7355
772.60	0.0000	1004.73	9.7241	1621.92	6.5396
776.52	11.3297	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	0.9497
778.90	15.9500	1028.54	0.0000	1750.46	0.0000
783.70	16.8732	1037.84	10.8261	1764.49	1.9315
788.74	20.4724	1038.76	0.0000	1063.66	5.8022
792.07	27.6349	631.29	14.8096	1771.35	1.9346
795.86	18.7531	1048.07	12.8421	1791.20	0.0000
810.06	9.8858	1049.04	15.8105	1808.65	3.9012
810.29	9.8868	1050.41	17.7957	1810.72	0.0000
344.28	9.8875	1063.66	13.9060	1836.06	4.9058
810.76	12.5858	1077.00	11.9751		
815.77	15.3165	1077.34	11.9766		
1048.07	14.4331	1085.87	8.0078		
832.01	17.2414	1093.63	9.0330		
834.85	16.3537	1099.45	10.0568		
835.71	15.4509	1112.07	12.1201		
836.80	0.0000	1112.84	10.3912		
846.75	0.0000	1115.54	3.2357		
846.77	14.6118	1120.29	9.1154		
856.80	13.2069	1120.55	9.1159		
860.56	9.1861	1221.41	8.1055		
871.09	13.2864	1129.67	11.1759		
873.19	13.2983	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	12.9622	1173.23	6.5961		
880.51	14.8208	1177.95	9.6335		
881.60	9.2673	1189.05	7.2512		
883.24	10.2010	1204.77	13.5332		
884.68	6.4954	1221.41	13.6046		
889.28	13.9449	1231.02	6.2977		
894.76	9.3176	1235.36	10.5103		
898.04	13.0622	1238.28	8.4155		
900.72	10.2742	1260.41	0.0000		
903.28	14.0250	1271.87	5.3137		
911.20	11.2559	1274.44	7.4452		
912.08	11.2599	1274.54	7.4452		
923.98	0.0000	1291.59	11.9731		
926.50	10.3810	1298.22	0.0000		
929.11	13.6037	1312.11	4.3020		
935.54	10.6077	1332.49	6.4915		
937.49	6.0662	1362.66	0.0000		
944.13	8.5526	1365.19	6.5522		
946.00	8.5589	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:39:41.85

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781343.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM07.CNF;884
                                         Background date  : 28-JUL-2024 09:24:38
Sample date      : 10-JUL-2024 00:00:00  Acquisition date : 30-JUL-2024 13:38:47
Sample ID        : G1205781343           Sample quantity  : 1.49980E+02 GRAM
Detector name    : GAM07                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.23  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	92.63*	5	24	1.13	186.11	183	7	1.35E-03	218.0	
2	0	108.10	6	29	0.62	217.03	212	8	1.67E-03	158.2	
3	0	128.10	21	44	2.48	257.02	251	11	5.95E-03	63.7	
4	0	155.57	9	13	1.27	311.94	309	5	2.56E-03	68.0	
5	0	224.78*	23	20	4.24	450.31	444	13	6.43E-03	45.6	
6	0	238.55*	27	35	1.26	477.83	471	14	7.37E-03	55.3	
7	0	314.68	17	21	2.82	630.04	623	13	4.67E-03	62.9	
8	0	328.06	17	9	1.37	656.80	653	9	4.59E-03	41.1	
9	0	351.88*	8	9	0.86	704.42	701	6	2.09E-03	82.1	
10	0	963.91	11	0	0.73	1928.18	1925	7	3.06E-03	30.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 14:39:43

```
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781343.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 10-JUL-2024 00:00:00 Acquisition date : 30-JUL-2024 13:38:47
Sample ID        : G1205781343          Sample quantity  : 149.98 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA7               Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.23   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Sample ID : G1205781343 Acquisition date : 30-JUL-2024 13:38:47

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TE-125M	109.28	7	0.27*	6.587E+00	2.100E+00	2.693E+00	316.47
BI-211	72.87	------	1.23	4.457E+00	------	Line Not Found	------
	351.06	8	12.92*	3.618E+00	8.962E-02	8.962E-02	164.18

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:39:43.84

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781343.CNF;1  *
* Acquisition date : 30-JUL-2024 13:38:47 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.23     Half life ratio : *****           *
* Sample date      : 10-JUL-2024 00:00:00 Analyst initials: RXF2            *
* Sample ID        : G1205781343          Sample Quantity : 1.4998E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
TE-125M	2.693E+00	8.351E+00	9.470E+00
BI-211	8.962E-02	1.442E-01	2.108E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	9.043E-02	1.787E-01	4.072E-01	NOT IDENT.
NA-22	9.659E-03	1.735E-02	4.816E-02	NOT IDENT.
NA-24	0.000E+00	2.212E+08	0.000E+00	SHORT HLIF
AL-26	-1.369E-03	1.904E-02	4.642E-02	NOT IDENT.
K-40	-9.577E-02	2.217E-01	5.175E-01	NOT IDENT.
SC-46	-7.443E-03	2.141E-02	4.362E-02	NOT IDENT.
V-48	-2.662E-02	5.152E-02	9.825E-02	NOT IDENT.
CR-51	-9.385E-02	2.270E-01	4.220E-01	NOT IDENT.
MN-52	-5.127E-02	3.260E-01	6.777E-01	NOT IDENT.
MN-54	1.765E-02	1.907E-02	4.833E-02	NOT IDENT.
CO-56	8.830E-03	2.131E-02	4.944E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-4.395E-03	1.033E-02	1.950E-02	NOT IDENT.
CO-58	-2.833E-03	2.221E-02	4.446E-02	NOT IDENT.
FE-59	-2.338E-03	4.035E-02	9.255E-02	NOT IDENT.
CO-60	-1.238E-02	2.466E-02	4.826E-02	NOT IDENT.
ZN-65	-8.583E-03	3.854E-02	8.207E-02	NOT IDENT.
GE-68	-4.371E-01	5.385E-01	8.805E-01	NOT IDENT.
AS-73	1.437E-02	3.649E-01	7.919E-01	NOT IDENT.
AS-74	-1.029E-02	6.471E-02	1.281E-01	NOT IDENT.
SE-75	8.313E-03	1.933E-02	4.437E-02	NOT IDENT.
BR-77	5.671E+01	6.145E+01	7.065E+01	FAIL ABUN
SR-82	4.909E-02	1.774E-01	4.085E-01	NOT IDENT.
RB-83	2.627E-02	3.737E-02	8.887E-02	NOT IDENT.
RB-84	-3.016E-02	4.219E-02	8.320E-02	NOT IDENT.
KR-85	-8.516E+00	5.364E+00	7.894E+00	NOT IDENT.
SR-85	-4.783E-02	3.011E-02	4.429E-02	NOT IDENT.
RB-86	-3.321E-01	4.093E-01	6.692E-01	NOT IDENT.

Y-88	-1.453E-02	1.369E-02	1.710E-02	NOT IDENT.
Y-91	6.581E+00	1.285E+01	3.037E+01	NOT IDENT.
NB-94	7.184E-03	2.046E-02	4.389E-02	NOT IDENT.
NB-95	-6.258E-03	2.231E-02	4.272E-02	NOT IDENT.
NB-95M	1.911E-02	6.349E-02	1.204E-01	NOT IDENT.
ZR-95	-3.313E-03	4.939E-02	9.724E-02	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.158E+08	0.000E+00	SHORT HLIF
MO-99	-8.264E+00	2.964E+01	5.602E+01	NOT IDENT.
TC-99M	0.000E+00	5.498E+22	0.000E+00	SHORT HLIF
RH-101	2.957E-02	3.693E-02	3.420E-02	FAIL ABUN
RH-102	-1.728E-02	3.205E-02	5.751E-02	NOT IDENT.
RU-103	1.441E-02	1.992E-02	4.877E-02	NOT IDENT.
RH-106	-5.228E-02	1.437E-01	2.771E-01	NOT IDENT.
RU-106	-5.228E-02	1.437E-01	2.771E-01	NOT IDENT.
AG-108M	8.436E-03	1.469E-02	3.400E-02	NOT IDENT.
CD-109	-2.604E-01	2.808E-01	4.955E-01	NOT IDENT.
AG-110	-5.040E-01	4.567E-01	6.791E-01	NOT IDENT.
AG-110M	1.814E-02	2.565E-02	6.551E-02	NOT IDENT.
SN-113	-4.124E-03	2.269E-02	4.620E-02	NOT IDENT.
CD-115	-2.968E+00	2.727E+01	5.722E+01	NOT IDENT.
SN-117M	-2.100E-02	3.023E-02	5.273E-02	FAIL ABUN
SB-122	2.132E+00	4.482E+00	1.000E+01	NOT IDENT.
TE-123M	-4.148E-03	1.215E-02	2.282E-02	NOT IDENT.
SB-124	-1.570E-02	5.145E-02	1.062E-01	NOT IDENT.
SB-125	3.703E-02	3.738E-02	9.669E-02	NOT IDENT.
I-126	-1.075E-01	1.460E-01	2.434E-01	NOT IDENT.
SB-126	-5.295E-02	9.045E-02	1.580E-01	NOT IDENT.
SN-126	-2.628E-02	2.720E-02	4.762E-02	NOT IDENT.
SB-127	-1.190E+00	1.699E+00	2.854E+00	NOT IDENT.
I-131	1.076E-01	1.095E-01	2.546E-01	NOT IDENT.
I-132	0.000E+00	1.782E+41	0.000E+00	SHORT HLIF
TE-132	2.890E-01	1.121E+00	2.143E+00	NOT IDENT.
BA-133	4.473E-03	2.178E-02	4.688E-02	NOT IDENT.
I-133	0.000E+00	2.237E+05	0.000E+00	SHORT HLIF
CS-134	7.267E-03	2.169E-02	4.851E-02	NOT IDENT.
I-135	0.000E+00	1.691E+21	0.000E+00	SHORT HLIF
CS-136	-1.061E-02	8.725E-02	1.819E-01	NOT IDENT.
BA-137M	-4.437E-03	2.113E-02	4.086E-02	NOT IDENT.
CS-137	-4.687E-03	2.232E-02	4.316E-02	NOT IDENT.
LA-138	2.464E-02	3.893E-02	9.846E-02	NOT IDENT.
CE-139	-7.725E-03	1.234E-02	2.177E-02	NOT IDENT.
BA-140	1.339E-01	1.856E-01	4.406E-01	NOT IDENT.
LA-140	1.381E-02	7.380E-02	1.765E-01	FAIL ABUN
CE-141	-2.010E-02	2.444E-02	4.152E-02	NOT IDENT.
CE-143	0.000E+00	8.594E+02	0.000E+00	SHORT HLIF
CE-144	-1.012E-02	7.185E-02	1.436E-01	NOT IDENT.
PM-144	-1.707E-03	2.283E-02	4.464E-02	NOT IDENT.
PR-144	-1.207E-01	1.715E+00	3.356E+00	NOT IDENT.
PM-146	4.636E-03	2.080E-02	4.559E-02	NOT IDENT.
ND-147	2.007E-01	3.851E-01	8.998E-01	NOT IDENT.
PM-147	1.359E+02	2.830E+02	6.235E+02	NOT IDENT.
PM-149	-4.143E+01	2.165E+02	4.510E+02	NOT IDENT.
EU-150	4.418E-03	1.405E-02	3.059E-02	NOT IDENT.
EU-152	3.609E-02	4.564E-02	1.084E-01	FAIL ABUN
GD-153	-5.131E-03	3.032E-02	6.123E-02	NOT IDENT.
EU-154	3.216E-02	5.127E-02	1.422E-01	NOT IDENT.
EU-155	6.496E-03	3.295E-02	6.821E-02	NOT IDENT.
TB-160	5.196E-02	7.140E-02	1.826E-01	NOT IDENT.
HO-166M	-1.114E-02	2.629E-02	4.924E-02	NOT IDENT.
TM-171	-7.303E+00	8.410E+00	1.567E+01	NOT IDENT.
HF-172	2.545E-02	9.643E-02	1.850E-01	FAIL ABUN
LU-172	-1.618E-02	2.955E-02	5.580E-02	NOT IDENT.
LU-176	-2.636E-03	9.916E-03	2.071E-02	NOT IDENT.
HF-181	-5.424E-03	2.628E-02	5.229E-02	NOT IDENT.
TA-182	6.047E-02	6.297E-02	1.979E-01	NOT IDENT.
RE-183	1.953E-02	7.412E-02	1.673E-01	NOT IDENT.
RE-184	-6.998E-02	7.072E-02	1.146E-01	NOT IDENT.
W-188	-8.991E-01	3.217E+00	6.603E+00	NOT IDENT.
IR-192	-3.638E-03	2.068E-02	3.770E-02	NOT IDENT.
HG-203	-7.296E-04	1.965E-02	4.134E-02	NOT IDENT.
TL-204	1.690E-01	1.943E+00	4.063E+00	NOT IDENT.
BI-207	-8.207E-03	2.834E-02	5.765E-02	NOT IDENT.
TL-208	-1.020E-03	2.180E-02	4.744E-02	NOT IDENT.
BI-210	-1.521E+00	2.006E+00	4.094E+00	NOT IDENT.
PB-210	-1.521E+00	2.006E+00	4.094E+00	NOT IDENT.
PB-211	-3.509E-01	3.565E-01	6.037E-01	NOT IDENT.
BI-212	-1.049E-01	3.309E-01	6.486E-01	NOT IDENT.

PB-212	7.412E-02	8.031E-02	9.118E-02	FAIL ABUN
BI-213	1.312E-02	5.077E-02	1.121E-01	NOT IDENT.
BI-214	-6.176E-02	4.338E-02	6.978E-02	NOT IDENT.
PB-214	3.253E-02	5.233E-02	9.497E-02	FAIL ABUN
RN-219	1.345E-01	2.120E-01	4.853E-01	NOT IDENT.
RN-222	-6.176E-02	4.338E-02	6.978E-02	NOT IDENT.
RA-223	-6.540E-02	3.237E-01	5.918E-01	FAIL ABUN
RA-224	3.382E-02	3.541E-01	6.308E-01	NOT IDENT.
AC-225	-3.787E-01	4.164E-01	6.646E-01	NOT IDENT.
RA-226	3.253E-02	5.233E-02	9.497E-02	FAIL ABUN
AC-227	-5.001E-02	1.348E-01	2.397E-01	NOT IDENT.
TH-227	-5.001E-02	1.348E-01	2.397E-01	NOT IDENT.
AC-228	1.203E-02	9.238E-02	2.123E-01	NOT IDENT.
RA-228	1.203E-02	9.238E-02	2.123E-01	NOT IDENT.
TH-228	7.412E-02	8.031E-02	9.118E-02	FAIL ABUN
TH-229	3.875E-02	2.125E-01	4.367E-01	NOT IDENT.
TH-230	3.253E-02	5.233E-02	9.497E-02	FAIL ABUN
PA-231	-5.272E-02	1.688E-01	3.503E-01	NOT IDENT.
TH-231	-6.540E-02	3.237E-01	5.918E-01	FAIL ABUN
TH-232	1.203E-02	9.238E-02	2.123E-01	NOT IDENT.
PA-233	3.566E-03	3.783E-02	7.245E-02	NOT IDENT.
PA-234	4.502E-02	1.659E-01	3.842E-01	NOT IDENT.
PA-234M	1.791E-01	2.378E+00	5.330E+00	NOT IDENT.
TH-234	-2.600E-01	5.852E-01	1.176E+00	FAIL ABUN
U-234	3.253E-02	5.233E-02	9.497E-02	FAIL ABUN
U-235	-4.509E-02	8.886E-02	1.647E-01	FAIL ABUN
NP-237	3.566E-03	3.783E-02	7.245E-02	NOT IDENT.
NP-238	-1.888E+00	6.905E+01	1.497E+02	NOT IDENT.
U-238	-2.600E-01	5.852E-01	1.176E+00	FAIL ABUN
NP-239	8.300E-02	9.844E-02	2.289E-01	NOT IDENT.
PU-239	3.150E+02	3.933E+02	3.352E+02	FAIL ABUN
AM-241	5.952E-04	5.742E-02	1.229E-01	NOT IDENT.
AM-243	-1.004E-03	2.004E-02	4.093E-02	NOT IDENT.
CM-243	4.635E-02	3.643E-02	8.883E-02	NOT IDENT.
BK-247	1.450E-02	3.372E-02	7.741E-02	NOT IDENT.
CM-247	-9.557E-04	1.907E-02	3.947E-02	NOT IDENT.
CF-249	8.297E-03	1.864E-02	4.255E-02	NOT IDENT.
CF-251	2.377E-02	5.973E-02	1.245E-01	NOT IDENT.
ANH-511	-4.648E-02	3.483E-02	7.631E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:39:42.57

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TE-125M	109.28	7	0.27*	6.587E+00	2.100E+00	2.693E+00	316.47
BI-211	72.87	------	1.23	4.457E+00	------	Line Not Found	------
	351.06	8	12.92*	3.618E+00	8.962E-02	8.962E-02	164.18

Flag: "*" = Keyline

Sample ID : G1205781343 Acquisition date : 30-JUL-2024 13:38:47

Total number of lines in spectrum 10
Number of unidentified lines 2
Number of lines tentatively identified by NID 8 80.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
TE-125M	57.40D	1.28	2.100E+00	2.693E+00	8.521E+00	316.47	
BI-211	7.04E+08Y	1.00	8.962E-02	8.962E-02	14.71E-02	164.18	
			---	---			
	Total Activity :		2.190E+00	2.782E+00			
	Grand Total Activity :		2.190E+00	2.782E+00			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1205781343 Acquisition date : 30-JUL-2024 13:38:47

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	92.63	6	30	1.13	186.11	183	7	1.35E-03	****	6.13E+00	T
0	128.10	26	53	2.48	257.02	251	11	5.95E-03	****	6.58E+00	T
0	155.57	11	15	1.27	311.94	309	5	2.56E-03	****	6.15E+00	T
0	224.78	27	23	4.24	450.31	444	13	6.43E-03	91.1	4.94E+00	
0	238.55	31	40	1.26	477.83	471	14	7.37E-03	****	4.74E+00	T
0	314.68	19	24	2.82	630.04	623	13	4.67E-03	****	3.92E+00	
0	328.06	19	11	1.37	656.80	653	9	4.59E-03	82.2	3.80E+00	T
0	963.91	11	0	0.73	1928.18	1925	7	3.06E-03	60.3	1.55E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:39:53.24

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781343.CNF;1  *
* Acquisition date : 30-JUL-2024 13:38:47 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.23     Half life ratio : *****           *
* Sample date      : 10-JUL-2024 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781343          Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.4998E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
TE-125M	4.214E+00
BI-211	9.033E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.733E-01	NOT IDENT.
NA-22	1.820E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.582E-02	NOT IDENT.
K-40	1.979E-01	NOT IDENT.
SC-46	1.694E-02	NOT IDENT.
V-48	3.806E-02	NOT IDENT.
CR-51	1.801E-01	NOT IDENT.
MN-52	2.567E-01	NOT IDENT.
MN-54	2.011E-02	NOT IDENT.
CO-56	2.000E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	8.409E-03	NOT IDENT.
CO-58	1.760E-02	NOT IDENT.
FE-59	3.398E-02	NOT IDENT.
CO-60	1.806E-02	NOT IDENT.
ZN-65	3.032E-02	NOT IDENT.
GE-68	2.783E-01	NOT IDENT.
AS-73	3.436E-01	NOT IDENT.
AS-74	5.319E-02	NOT IDENT.
SE-75	1.911E-02	NOT IDENT.
BR-77	3.270E+01	FAIL ABUN
SR-82	1.621E-01	NOT IDENT.
RB-83	3.766E-02	NOT IDENT.
RB-84	3.247E-02	NOT IDENT.
KR-85	3.355E+00	NOT IDENT.
SR-85	1.882E-02	NOT IDENT.
RB-86	2.115E-01	NOT IDENT.
Y-88	0.000E+00	NOT IDENT.

Y-91	1.249E+01	NOT IDENT.
NB-94	1.863E-02	NOT IDENT.
NB-95	1.689E-02	NOT IDENT.
NB-95M	5.268E-02	NOT IDENT.
ZR-95	4.050E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	2.287E+01	NOT IDENT.
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.547E-02	FAIL ABUN
RH-102	2.331E-02	NOT IDENT.
RU-103	2.044E-02	NOT IDENT.
RH-106	1.074E-01	NOT IDENT.
RU-106	1.074E-01	NOT IDENT.
AG-108M	1.451E-02	NOT IDENT.
CD-109	2.132E-01	NOT IDENT.
AG-110	2.660E-01	NOT IDENT.
AG-110M	2.681E-02	NOT IDENT.
SN-113	1.944E-02	NOT IDENT.
CD-115	2.285E+01	NOT IDENT.
SN-117M	2.247E-02	FAIL ABUN
SB-122	4.262E+00	NOT IDENT.
TE-123M	9.824E-03	NOT IDENT.
SB-124	3.404E-02	NOT IDENT.
SB-125	4.074E-02	NOT IDENT.
I-126	9.275E-02	NOT IDENT.
SB-126	5.900E-02	NOT IDENT.
SN-126	2.044E-02	NOT IDENT.
SB-127	1.068E+00	NOT IDENT.
I-131	1.128E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	9.282E-01	NOT IDENT.
BA-133	2.026E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	1.985E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	7.315E-02	NOT IDENT.
BA-137M	1.693E-02	NOT IDENT.
CS-137	1.789E-02	NOT IDENT.
LA-138	3.946E-02	NOT IDENT.
CE-139	9.212E-03	NOT IDENT.
BA-140	1.870E-01	NOT IDENT.
LA-140	6.608E-02	FAIL ABUN
CE-141	1.710E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	6.132E-02	NOT IDENT.
PM-144	1.889E-02	NOT IDENT.
PR-144	1.421E+00	NOT IDENT.
PM-146	1.918E-02	NOT IDENT.
ND-147	3.764E-01	NOT IDENT.
PM-147	2.729E+02	NOT IDENT.
PM-149	1.909E+02	NOT IDENT.
EU-150	1.334E-02	NOT IDENT.
EU-152	4.695E-02	FAIL ABUN
GD-153	2.642E-02	NOT IDENT.
EU-154	5.451E-02	NOT IDENT.
EU-155	2.881E-02	NOT IDENT.
TB-160	7.488E-02	NOT IDENT.
HO-166M	1.843E-02	NOT IDENT.
TM-171	6.755E+00	NOT IDENT.
HF-172	8.264E-02	FAIL ABUN
LU-172	1.977E-02	NOT IDENT.
LU-176	8.459E-03	NOT IDENT.
HF-181	2.190E-02	NOT IDENT.
TA-182	7.560E-02	NOT IDENT.
RE-183	7.228E-02	NOT IDENT.
RE-184	4.093E-02	NOT IDENT.
W-188	2.779E+00	NOT IDENT.
IR-192	1.619E-02	NOT IDENT.
HG-203	1.790E-02	NOT IDENT.
TL-204	1.808E+00	NOT IDENT.
BI-207	2.227E-02	NOT IDENT.
TL-208	2.040E-02	NOT IDENT.
BI-210	1.819E+00	NOT IDENT.
PB-210	1.819E+00	NOT IDENT.
PB-211	2.449E-01	NOT IDENT.
BI-212	2.732E-01	NOT IDENT.
PB-212	4.216E-02	FAIL ABUN

BI-213	4.726E-02	NOT IDENT.
BI-214	2.845E-02	NOT IDENT.
PB-214	4.202E-02	FAIL ABUN
RN-219	2.103E-01	NOT IDENT.
RN-222	2.845E-02	NOT IDENT.
RA-223	2.498E-01	FAIL ABUN
RA-224	2.786E-01	NOT IDENT.
AC-225	2.805E-01	NOT IDENT.
RA-226	4.202E-02	FAIL ABUN
AC-227	1.033E-01	NOT IDENT.
TH-227	1.033E-01	NOT IDENT.
AC-228	8.989E-02	NOT IDENT.
RA-228	8.989E-02	NOT IDENT.
TH-228	4.216E-02	FAIL ABUN
TH-229	1.886E-01	NOT IDENT.
TH-230	4.202E-02	FAIL ABUN
PA-231	1.424E-01	NOT IDENT.
TH-231	2.498E-01	FAIL ABUN
TH-232	8.989E-02	NOT IDENT.
PA-233	3.157E-02	NOT IDENT.
PA-234	1.558E-01	NOT IDENT.
PA-234M	2.117E+00	NOT IDENT.
TH-234	5.248E-01	FAIL ABUN
U-234	4.202E-02	FAIL ABUN
U-235	7.201E-02	FAIL ABUN
NP-237	3.157E-02	NOT IDENT.
NP-238	5.979E+01	NOT IDENT.
U-238	5.248E-01	FAIL ABUN
NP-239	1.007E-01	NOT IDENT.
PU-239	1.502E+02	FAIL ABUN
AM-241	5.345E-02	NOT IDENT.
AM-243	1.814E-02	NOT IDENT.
CM-243	3.908E-02	NOT IDENT.
BK-247	3.334E-02	NOT IDENT.
CM-247	1.676E-02	NOT IDENT.
CF-249	1.812E-02	NOT IDENT.
CF-251	5.503E-02	NOT IDENT.
ANH-511	3.562E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:39:57.06

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781343.CNF;1  *
* Acquisition date : 30-JUL-2024 13:38:47 Sensitivity     : 3.000           *
* Detector ID      : GAM07                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.23     Half life ratio : *****           *
* Sample date      : 10-JUL-2024 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781343          Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.4998E+02 GRAM *
*                                         Quantity Err(%) : 1.3335E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-JUL-2024 04:21:13 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
TE-125M	2.693E+00	8.354E+00	8.354E+00
BI-211	8.962E-02	1.444E-01	1.444E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	9.043E-02	1.789E-01	1.835E-01	NOT IDENT.
NA-22	9.659E-03	1.738E-02	1.791E-02	NOT IDENT.
NA-24	3.415E+07	2.212E+08	2.217E+08	SHORT HLIF
AL-26	-1.369E-03	1.904E-02	1.905E-02	NOT IDENT.
K-40	-9.577E-02	2.220E-01	2.261E-01	NOT IDENT.
SC-46	-7.443E-03	2.143E-02	2.169E-02	NOT IDENT.
V-48	-2.662E-02	5.160E-02	5.298E-02	NOT IDENT.
CR-51	-9.385E-02	2.271E-01	2.310E-01	NOT IDENT.
MN-52	-5.127E-02	3.260E-01	3.268E-01	NOT IDENT.
MN-54	1.765E-02	1.916E-02	2.075E-02	NOT IDENT.
CO-56	8.830E-03	2.133E-02	2.170E-02	NOT IDENT.
MN-56	1.000E+41	2.352E+41	0.000E+00	SHORT HLIF
CO-57	-4.395E-03	1.033E-02	1.052E-02	NOT IDENT.
CO-58	-2.833E-03	2.221E-02	2.225E-02	NOT IDENT.
FE-59	-2.338E-03	4.035E-02	4.037E-02	NOT IDENT.
CO-60	-1.238E-02	2.470E-02	2.532E-02	NOT IDENT.
ZN-65	-8.583E-03	3.855E-02	3.874E-02	NOT IDENT.
GE-68	-4.371E-01	5.403E-01	5.751E-01	NOT IDENT.
AS-73	1.437E-02	3.649E-01	3.649E-01	NOT IDENT.
AS-74	-1.029E-02	6.472E-02	6.489E-02	NOT IDENT.
SE-75	8.313E-03	1.934E-02	1.970E-02	NOT IDENT.
BR-77	5.671E+01	7.025E+01	7.476E+01	FAIL ABUN
SR-82	4.909E-02	1.774E-01	1.788E-01	NOT IDENT.
RB-83	2.627E-02	3.759E-02	3.941E-02	NOT IDENT.
RB-84	-3.016E-02	4.233E-02	4.446E-02	NOT IDENT.
KR-85	-8.516E+00	5.412E+00	6.635E+00	NOT IDENT.
SR-85	-4.783E-02	3.037E-02	3.725E-02	NOT IDENT.
RB-86	-3.321E-01	4.106E-01	4.370E-01	NOT IDENT.

Y-88	-1.453E-02	1.374E-02	1.522E-02	NOT IDENT.
Y-91	6.581E+00	1.287E+01	1.320E+01	NOT IDENT.
NB-94	7.184E-03	2.047E-02	2.072E-02	NOT IDENT.
NB-95	-6.258E-03	2.232E-02	2.250E-02	NOT IDENT.
NB-95M	1.911E-02	6.352E-02	6.410E-02	NOT IDENT.
ZR-95	-3.313E-03	4.939E-02	4.941E-02	NOT IDENT.
NB-97	-1.000E+41	2.202E+41	0.000E+00	SHORT HLIF
ZR-97	-6.104E+08	3.199E+08	4.220E+08	SHORT HLIF
MO-99	-8.264E+00	2.965E+01	2.988E+01	NOT IDENT.
TC-99M	2.588E+21	5.499E+22	0.000E+00	SHORT HLIF
RH-101	2.957E-02	3.734E-02	3.965E-02	FAIL ABUN
RH-102	-1.728E-02	3.210E-02	3.303E-02	NOT IDENT.
RU-103	1.441E-02	1.996E-02	2.099E-02	NOT IDENT.
RH-106	-5.228E-02	1.437E-01	1.457E-01	NOT IDENT.
RU-106	-5.228E-02	1.437E-01	1.457E-01	NOT IDENT.
AG-108M	8.436E-03	1.470E-02	1.519E-02	NOT IDENT.
CD-109	-2.604E-01	2.822E-01	3.057E-01	NOT IDENT.
AG-110	-5.040E-01	4.585E-01	5.117E-01	NOT IDENT.
AG-110M	1.814E-02	2.574E-02	2.701E-02	NOT IDENT.
SN-113	-4.124E-03	2.270E-02	2.277E-02	NOT IDENT.
CD-115	-2.968E+00	2.728E+01	2.731E+01	NOT IDENT.
SN-117M	-2.100E-02	3.027E-02	3.171E-02	FAIL ABUN
SB-122	2.132E+00	4.486E+00	4.588E+00	NOT IDENT.
TE-123M	-4.148E-03	1.216E-02	1.230E-02	NOT IDENT.
SB-124	-1.570E-02	5.147E-02	5.195E-02	NOT IDENT.
SB-125	3.703E-02	3.750E-02	4.105E-02	NOT IDENT.
I-126	-1.075E-01	1.463E-01	1.541E-01	NOT IDENT.
SB-126	-5.295E-02	9.070E-02	9.379E-02	NOT IDENT.
SN-126	-2.628E-02	2.731E-02	2.977E-02	NOT IDENT.
SB-127	-1.190E+00	1.706E+00	1.789E+00	NOT IDENT.
I-131	1.076E-01	1.099E-01	1.202E-01	NOT IDENT.
I-132	1.000E+41	2.189E+41	0.000E+00	SHORT HLIF
TE-132	2.890E-01	1.122E+00	1.129E+00	NOT IDENT.
BA-133	4.473E-03	2.178E-02	2.188E-02	NOT IDENT.
I-133	-6.834E+04	2.240E+05	2.261E+05	SHORT HLIF
CS-134	7.267E-03	2.170E-02	2.194E-02	NOT IDENT.
I-135	9.467E+19	1.692E+21	0.000E+00	SHORT HLIF
CS-136	-1.061E-02	8.726E-02	8.739E-02	NOT IDENT.
BA-137M	-4.437E-03	2.113E-02	2.123E-02	NOT IDENT.
CS-137	-4.687E-03	2.232E-02	2.242E-02	NOT IDENT.
LA-138	2.464E-02	3.903E-02	4.058E-02	NOT IDENT.
CE-139	-7.725E-03	1.245E-02	1.293E-02	NOT IDENT.
BA-140	1.339E-01	1.859E-01	1.955E-01	NOT IDENT.
LA-140	1.381E-02	7.382E-02	7.408E-02	FAIL ABUN
CE-141	-2.010E-02	2.448E-02	2.610E-02	NOT IDENT.
CE-143	5.457E+02	8.610E+02	8.955E+02	SHORT HLIF
CE-144	-1.012E-02	7.185E-02	7.200E-02	NOT IDENT.
PM-144	-1.707E-03	2.283E-02	2.284E-02	NOT IDENT.
PR-144	-1.207E-01	1.715E+00	1.716E+00	NOT IDENT.
PM-146	4.636E-03	2.081E-02	2.091E-02	NOT IDENT.
ND-147	2.007E-01	3.855E-01	3.960E-01	NOT IDENT.
PM-147	1.359E+02	2.832E+02	2.897E+02	NOT IDENT.
PM-149	-4.143E+01	2.166E+02	2.174E+02	NOT IDENT.
EU-150	4.418E-03	1.405E-02	1.419E-02	NOT IDENT.
EU-152	3.609E-02	4.577E-02	4.857E-02	FAIL ABUN
GD-153	-5.131E-03	3.032E-02	3.041E-02	NOT IDENT.
EU-154	3.216E-02	5.139E-02	5.339E-02	NOT IDENT.
EU-155	6.496E-03	3.296E-02	3.309E-02	NOT IDENT.
TB-160	5.196E-02	7.168E-02	7.541E-02	NOT IDENT.
HO-166M	-1.114E-02	2.632E-02	2.679E-02	NOT IDENT.
TM-171	-7.303E+00	8.461E+00	9.079E+00	NOT IDENT.
HF-172	2.545E-02	9.653E-02	9.721E-02	FAIL ABUN
LU-172	-1.618E-02	2.963E-02	3.051E-02	NOT IDENT.
LU-176	-2.636E-03	9.919E-03	9.990E-03	NOT IDENT.
HF-181	-5.424E-03	2.629E-02	2.640E-02	NOT IDENT.
TA-182	6.047E-02	6.323E-02	6.885E-02	NOT IDENT.
RE-183	1.953E-02	7.417E-02	7.469E-02	NOT IDENT.
RE-184	-6.998E-02	7.133E-02	7.800E-02	NOT IDENT.
W-188	-8.991E-01	3.219E+00	3.245E+00	NOT IDENT.
IR-192	-3.638E-03	2.068E-02	2.074E-02	NOT IDENT.
HG-203	-7.296E-04	1.965E-02	1.965E-02	NOT IDENT.
TL-204	1.690E-01	1.943E+00	1.944E+00	NOT IDENT.
BI-207	-8.207E-03	2.835E-02	2.859E-02	NOT IDENT.
TL-208	-1.020E-03	2.180E-02	2.180E-02	NOT IDENT.
BI-210	-1.521E+00	2.013E+00	2.126E+00	NOT IDENT.
PB-210	-1.521E+00	2.013E+00	2.126E+00	NOT IDENT.
PB-211	-3.509E-01	3.578E-01	3.912E-01	NOT IDENT.
BI-212	-1.049E-01	3.310E-01	3.344E-01	NOT IDENT.

PB-212	7.412E-02	8.058E-02	8.723E-02	FAIL ABUN
BI-213	1.312E-02	5.078E-02	5.112E-02	NOT IDENT.
BI-214	-6.176E-02	4.368E-02	5.180E-02	NOT IDENT.
PB-214	3.253E-02	5.241E-02	5.442E-02	FAIL ABUN
RN-219	1.345E-01	2.129E-01	2.214E-01	NOT IDENT.
RN-222	-6.176E-02	4.368E-02	5.180E-02	NOT IDENT.
RA-223	-6.540E-02	3.238E-01	3.251E-01	FAIL ABUN
RA-224	3.382E-02	3.541E-01	3.544E-01	NOT IDENT.
AC-225	-3.787E-01	4.181E-01	4.516E-01	NOT IDENT.
RA-226	3.253E-02	5.241E-02	5.442E-02	FAIL ABUN
AC-227	-5.001E-02	1.350E-01	1.369E-01	NOT IDENT.
TH-227	-5.001E-02	1.350E-01	1.369E-01	NOT IDENT.
AC-228	1.203E-02	9.239E-02	9.255E-02	NOT IDENT.
RA-228	1.203E-02	9.239E-02	9.255E-02	NOT IDENT.
TH-228	7.412E-02	8.058E-02	8.723E-02	FAIL ABUN
TH-229	3.875E-02	2.125E-01	2.132E-01	NOT IDENT.
TH-230	3.253E-02	5.241E-02	5.442E-02	FAIL ABUN
PA-231	-5.272E-02	1.692E-01	1.709E-01	NOT IDENT.
TH-231	-6.540E-02	3.238E-01	3.251E-01	FAIL ABUN
TH-232	1.203E-02	9.239E-02	9.255E-02	NOT IDENT.
PA-233	3.566E-03	3.783E-02	3.786E-02	NOT IDENT.
PA-234	4.502E-02	1.737E-01	1.749E-01	NOT IDENT.
PA-234M	1.791E-01	2.378E+00	2.380E+00	NOT IDENT.
TH-234	-2.600E-01	5.884E-01	6.000E-01	FAIL ABUN
U-234	3.253E-02	5.241E-02	5.442E-02	FAIL ABUN
U-235	-4.509E-02	8.893E-02	9.122E-02	FAIL ABUN
NP-237	3.566E-03	3.783E-02	3.786E-02	NOT IDENT.
NP-238	-1.888E+00	6.905E+01	6.906E+01	NOT IDENT.
U-238	-2.600E-01	5.884E-01	6.000E-01	FAIL ABUN
NP-239	8.300E-02	9.879E-02	1.056E-01	NOT IDENT.
PU-239	3.150E+02	3.940E+02	4.188E+02	FAIL ABUN
AM-241	5.952E-04	5.742E-02	5.742E-02	NOT IDENT.
AM-243	-1.004E-03	2.004E-02	2.004E-02	NOT IDENT.
CM-243	4.635E-02	3.678E-02	4.231E-02	NOT IDENT.
BK-247	1.450E-02	3.387E-02	3.449E-02	NOT IDENT.
CM-247	-9.557E-04	1.907E-02	1.907E-02	NOT IDENT.
CF-249	8.297E-03	1.866E-02	1.903E-02	NOT IDENT.
CF-251	2.377E-02	5.981E-02	6.076E-02	NOT IDENT.
ANH-511	-4.648E-02	3.505E-02	4.083E-02	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	15.9246	85.43	16.7515	131.20	8.5564
45.60	17.8120	86.55	8.8891	133.02	13.9434
46.54	20.5445	86.79	8.8935	133.52	12.8807
49.72	20.7451	86.94	12.8501	136.00	10.7745
51.35	10.8759	87.09	12.8542	136.47	12.9386
51.87	14.5233	87.57	23.7543	140.51	18.4410
52.39	18.1815	88.03	23.7766	143.76	16.3493
52.97	14.5695	88.34	13.8786	144.24	14.1791
53.44	9.1182	88.47	13.8822	145.44	15.2965
54.07	11.8749	89.96	9.2828	152.43	17.6560
57.36	0.0000	90.64	14.6072	153.25	16.2032
57.53	11.9896	91.11	22.5961	154.21	20.6497
57.98	11.0808	92.59	11.9979	156.02	11.8294
59.27	12.0459	93.35	14.6861	158.56	18.9188
59.32	12.0475	94.56	16.0592	159.00	16.7029
59.54	14.8364	94.65	16.0620	162.33	17.8965
60.96	19.5459	94.67	16.0626	162.66	17.9043
61.17	19.5566	94.87	10.7126	163.33	14.5601
62.93	19.6458	97.43	15.1392	165.86	16.8565
63.29	17.7912	98.43	9.1008	176.31	18.2236
63.58	16.8673	98.44	9.1010	176.60	17.0908
64.28	20.6522	99.53	16.2129	177.52	14.8291
66.73	18.8901	100.11	13.1874	181.07	16.0405
67.24	21.7508	102.03	18.3248	181.52	19.4887
67.68	18.9342	103.18	9.1818	184.41	23.0090
67.75	18.9374	103.37	5.4430	185.72	13.8274
68.89	21.8383	105.21	8.1919	193.51	11.6306
69.67	16.1717	105.31	8.1934	197.03	30.3640
70.82	20.9854	106.12	16.4108	198.01	17.5376
70.83	20.9860	106.47	10.2632	201.83	9.3945
72.81	17.2505	109.28	22.0047	203.43	12.9410
72.87	21.0867	111.00	24.8302	205.31	14.1475
74.66	16.3617	111.76	19.6832	210.85	13.0489
74.82	16.3677	114.06	13.5210	215.65	14.3102
74.97	21.1891	116.30	11.4846	218.12	20.3271
77.11	27.0987	116.74	9.4034	222.11	16.0111
78.74	17.4838	119.76	12.6013	227.09	12.8763
79.69	25.3073	121.12	11.5771	227.38	16.1003
80.03	25.3258	121.22	11.5791	228.16	11.2794
80.12	25.3311	121.78	13.6970	228.18	11.2796
80.19	25.3349	122.06	17.9196	235.69	12.9912
80.57	20.4798	122.92	18.2966	235.96	12.9946
81.00	20.4988	123.07	18.3011	238.63	13.4371
81.07	20.5020	123.68	14.0917	238.98	13.4418
81.75	21.5099	125.81	19.7960	240.99	17.9587
82.47	11.7509	127.23	20.1951	242.00	4.9028
83.79	11.7838	127.91	20.2170	244.70	15.9769
84.00	13.7539	129.30	15.6402	252.40	14.8594

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.80	17.3426	351.06	12.1207	569.33	10.2783
254.15	0.0000	351.93	10.7810	569.50	10.2795
256.23	17.3999	355.39	0.0000	569.70	11.3084
260.90	14.9806	356.01	11.7151	583.19	5.1758
264.66	9.1870	364.49	9.9752	584.27	9.3215
264.80	9.1884	366.42	16.3462	595.83	9.3761
265.00	9.1899	372.51	8.2092	600.60	13.5755
269.46	9.2282	375.05	13.7070	602.52	0.0000
270.03	7.5542	377.52	10.9851	604.72	15.6958
271.23	8.4029	383.85	10.1149	607.14	7.3335
273.65	11.7900	388.16	7.3786	609.32	11.5362
276.40	12.6639	388.63	7.3810	610.33	9.4435
277.37	13.5199	391.69	11.0950	614.28	9.4618
277.60	13.5228	400.66	10.2333	618.01	7.3726
278.00	11.8367	401.81	8.3793	620.36	3.1632
279.20	14.3884	402.40	11.1768	621.93	6.3313
279.54	14.3929	404.85	14.9271	630.19	0.0000
279.70	16.9352	410.95	13.1150	631.29	10.5994
280.46	15.2520	413.71	11.2622	633.25	7.4265
283.69	11.8968	414.70	9.3913	634.78	4.2467
284.31	11.9034	423.72	5.6683	635.95	7.4361
285.41	13.6172	427.09	4.7340	636.99	6.3770
285.90	11.9202	427.87	2.8418	657.50	13.9495
287.50	11.0843	433.94	6.6568	657.76	12.8779
290.67	11.9700	439.40	8.5886	657.90	0.0000
293.27	0.0000	440.45	7.6395	661.66	9.6760
295.22	10.3005	453.88	7.7039	664.57	0.0000
295.96	11.1661	463.37	7.7489	666.33	8.6191
298.58	9.4695	468.07	6.7996	666.50	8.6198
299.98	7.7569	473.00	9.7426	667.71	0.0000
300.09	7.7576	475.06	8.7792	677.62	9.7463
300.13	9.4818	476.78	10.7411	685.70	7.6078
301.36	8.6289	477.60	6.8385	692.65	8.7217
302.85	6.0478	482.18	10.7755	695.00	8.7308
304.50	7.7866	487.02	8.8414	696.49	10.9204
304.85	7.7889	492.35	4.9272	696.51	10.9208
306.78	8.6682	497.08	3.9525	697.00	7.6460
308.46	12.4998	505.52	13.9009	697.30	8.7396
311.90	14.3636	507.63	0.0000	697.49	5.4626
316.51	14.4180	511.00	14.9400	702.65	7.6651
319.41	13.1384	514.00	30.9281	706.68	10.9692
320.08	15.7745	514.00	30.9281	711.68	5.4966
321.04	13.1555	520.40	5.0063	720.70	6.6216
323.87	11.8672	520.69	5.0071	721.93	0.0000
325.23	9.2401	522.65	0.0000	722.78	6.6274
328.76	7.0599	527.90	6.0325	722.91	5.5233
333.37	13.2855	528.26	7.0393	723.31	5.5241
333.97	12.4055	529.59	8.0508	724.19	6.6316
334.37	15.9551	529.87	0.0000	727.33	8.8538
338.28	16.8929	531.02	5.0356	733.00	5.5469
338.32	16.8933	537.26	5.0527	735.93	4.4430
340.48	5.3436	546.56	0.0000	737.46	6.6689
340.55	5.3439	552.55	3.0565	739.50	8.8994
344.28	7.1457	563.25	10.2462	744.23	7.8024
345.93	9.8378	564.24	7.1760	747.24	2.2321

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
748.06	3.3492	954.55	0.0000	1408.01	4.1235
752.31	6.7102	962.31	1.4515	1434.09	4.1499
753.82	2.2381	964.08	4.5386	1435.80	2.0758
756.73	8.9632	966.17	5.8135	1457.56	0.0000
756.80	8.9635	968.97	6.3645	1460.82	1.0442
763.94	7.8662	983.53	7.3091	1489.16	2.1024
765.81	6.7476	984.45	5.4835	1505.03	0.0000
766.42	7.8741	996.26	4.5874	1584.12	2.1486
766.84	7.8756	1001.03	4.5946	1596.21	2.1543
772.60	0.0000	1002.74	8.2749	1620.50	1.0829
776.52	3.3884	1004.73	4.6002	1621.92	2.1665
777.92	2.2603	1021.30	0.0000	1678.03	0.0000
778.90	6.7834	1025.87	4.6317	1690.97	2.1987
783.70	1.1327	1028.54	6.4899	1750.46	0.0000
788.74	3.4052	1037.84	5.5792	1764.49	3.3486
792.07	2.2730	1038.76	0.0000	1770.23	2.2350
795.86	4.5529	1046.59	2.7975	1771.35	2.2355
801.95	6.8459	1048.07	6.5305	1791.20	0.0000
810.06	3.4338	1049.04	7.4653	1808.65	1.8019
810.29	3.4341	1050.41	6.5352	1810.72	0.0000
810.45	4.5791	1063.66	5.6250	1836.06	0.9058
810.76	5.7245	1077.00	4.7067		
815.77	4.5885	1077.34	4.7073		
818.51	8.0385	1085.87	3.7756		
832.01	4.6172	1093.63	4.7308		
834.85	2.3111	1099.45	2.8434		
835.71	1.1559	1112.07	0.9514		
836.80	0.0000	1112.84	0.9517		
846.75	0.0000	1115.54	3.8098		
846.77	3.4823	1120.29	4.7690		
856.80	2.3303	1120.55	5.7231		
860.56	6.1256	1121.30	3.8162		
871.09	7.0278	1129.67	0.9564		
873.19	5.2749	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	2.6434	1173.23	8.7177		
880.51	5.2890	1177.95	3.8799		
881.60	5.2912	1189.05	4.8651		
883.24	7.9415	1204.77	3.9094		
884.68	2.6485	1221.41	0.0000		
889.28	6.1902	1231.02	7.8760		
894.76	0.0000	1235.36	3.9429		
898.04	7.0969	1238.28	2.9595		
900.72	0.0000	1260.41	0.0000		
903.28	7.9989	1271.87	4.9774		
911.20	3.5651	1274.44	0.9962		
912.08	6.2408	1274.54	0.9962		
923.98	2.6859	1291.59	2.0015		
926.50	2.6882	1298.22	0.0000		
929.11	3.5875	1312.11	4.0247		
935.54	3.5956	1332.49	4.0459		
937.49	2.6985	1362.66	0.0000		
944.13	5.4093	1365.19	2.0399		
946.00	4.5107	1368.63	0.0000		
949.00	2.7092	1384.29	2.0497		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:40:24.18

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781344.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM08.CNF;726
                                         Background date  : 29-JUL-2024 05:38:49
Sample date      : 26-JUN-2024 09:03:00  Acquisition date : 30-JUL-2024 13:39:20
Sample ID        : G1205781344           Sample quantity  : 1.18840E+02 GRAM
Detector name    : GAM08                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.65  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.04*	15	102	0.85	92.28	89	6	4.12E-03	112.9	
2	0	63.33*	63	264	1.82	126.85	121	12	1.74E-02	54.0	
3	0	70.19	28	106	0.82	140.58	138	5	7.88E-03	57.6	
4	2	74.93	149	192	1.16	150.07	146	17	4.14E-02	17.3	2.01E+00
5	2	77.35*	234	183	1.15	154.91	146	17	6.51E-02	12.1	
6	0	87.02	45	224	1.62	174.26	172	8	1.24E-02	59.6	
7	0	93.31*	54	279	1.33	186.83	181	10	1.51E-02	61.7	
8	0	112.97	37	105	0.94	226.17	222	8	1.04E-02	50.0	
9	0	144.17*	57	154	1.66	288.59	284	10	1.60E-02	43.2	
10	0	156.62*	66	261	6.92	313.51	306	18	1.82E-02	59.3	
11	0	186.15*	183	143	1.55	372.58	367	11	5.09E-02	15.1	
12	1	238.89*	152	95	1.40	478.09	474	17	4.23E-02	14.0	2.69E+00
13	1	242.24	188	91	1.53	484.80	474	17	5.21E-02	11.8	
14	0	257.42	10	74	1.06	515.16	510	8	2.91E-03	144.1	
15	0	295.37*	386	75	1.37	591.09	585	10	1.07E-01	6.7	
16	0	328.94	20	63	1.28	658.25	653	9	5.45E-03	76.5	
17	0	339.10*	59	84	1.79	678.57	672	13	1.65E-02	34.9	
18	0	352.17*	634	68	1.25	704.71	698	13	1.76E-01	4.8	
19	0	368.65	19	37	0.86	737.69	733	9	5.35E-03	61.9	
20	0	448.02	6	19	0.55	896.46	892	7	1.71E-03	124.8	
21	0	463.53	36	15	1.14	927.49	923	11	9.94E-03	27.4	
22	0	547.33	18	18	1.14	1095.11	1092	8	5.11E-03	46.1	
23	0	583.13*	58	40	1.88	1166.73	1159	18	1.62E-02	29.1	
24	0	609.40*	457	16	1.68	1219.27	1213	13	1.27E-01	5.1	
25	3	666.13	25	19	2.40	1332.75	1324	22	6.82E-03	43.3	1.58E+00
26	3	670.70	22	3	2.19	1341.88	1324	22	6.12E-03	31.2	
27	0	685.95	15	24	3.69	1372.39	1364	14	4.11E-03	75.6	
28	0	701.88	4	16	0.60	1404.25	1398	8	1.06E-03	196.9	
29	0	704.50	6	17	0.93	1409.49	1405	9	1.55E-03	136.8	
30	0	768.46	54	23	1.27	1537.43	1530	13	1.50E-02	22.7	
31	1	783.75	28	0	1.90	1568.00	1562	15	7.78E-03	19.9	3.79E+00
32	1	786.06	24	0	2.09	1572.62	1562	15	6.69E-03	24.6	
33	0	838.20	12	9	3.03	1676.92	1672	9	3.33E-03	53.5	
34	0	860.93	11	13	1.35	1722.38	1715	11	3.06E-03	71.5	

Sample ID : G1205781344 Acquisition date : 30-JUL-2024 13:39:20

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	876.78	12	5	0.67	1754.08	1749	10	3.33E-03	45.3	
36	0	897.68	26	3	3.86	1795.87	1789	15	7.16E-03	25.4	
37	0	911.15*	49	15	2.49	1822.82	1815	15	1.37E-02	22.9	
38	0	933.74	27	9	1.60	1868.00	1862	12	7.47E-03	29.5	
39	0	969.04*	31	10	2.07	1938.60	1932	13	8.75E-03	28.4	
40	0	977.60	8	10	0.97	1955.72	1947	11	2.28E-03	84.5	
41	0	1001.24*	11	11	1.81	2003.00	1994	15	3.07E-03	76.0	
42	0	1063.40	13	8	1.94	2127.30	2121	11	3.58E-03	51.2	
43	0	1077.29	11	7	4.44	2155.10	2148	13	2.92E-03	58.8	
44	0	1120.67	95	14	1.85	2241.84	2235	14	2.65E-02	13.2	
45	0	1134.16	5	10	0.46	2268.81	2261	10	1.33E-03	141.7	
46	0	1173.92	9	8	1.42	2348.33	2344	8	2.50E-03	63.8	
47	0	1196.70	8	5	0.90	2393.88	2389	10	2.22E-03	63.1	
48	0	1213.35	8	5	1.57	2427.18	2422	10	2.09E-03	67.0	
49	0	1238.84	46	18	2.59	2478.15	2468	19	1.27E-02	27.2	
50	0	1378.08	26	9	1.96	2756.59	2750	13	7.10E-03	31.9	
51	0	1460.95*	33	10	2.06	2922.30	2915	14	9.19E-03	28.0	
52	0	1583.98	10	0	0.83	3168.30	3162	11	2.78E-03	31.6	
53	0	1729.82	18	0	1.83	3459.89	3455	10	5.00E-03	23.6	
54	0	1764.54*	83	0	1.39	3529.29	3521	16	2.30E-02	11.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 14:40:25

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781344.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : RXF2
Sample date : 26-JUN-2024 09:03:00 Acquisition date : 30-JUL-2024 13:39:20
Sample ID : G1205781344 Sample quantity : 118.84 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA8 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.65 0.0%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
U-235	143.76	CE-141	145.44

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.538E-01	1.944E+00	1.944E+00	56.08	OK
GE-68	1077.34	3.22*	1.239E+00	1.597E+00	1.743E+00	117.61	OK
RB-86	1077.00	8.64*	1.239E+00	5.951E-01	2.124E+00	117.61	OK
CD-109	88.03	3.70*	4.572E+00	1.813E+00	1.909E+00	119.24	OK
SN-126	64.28	9.60	2.145E+00	2.118E+00	2.118E+00	107.99	OK
	86.94	8.90	4.572E+00	7.537E-01	7.537E-01	119.24	OK
	87.57	37.00*	4.572E+00	1.813E-01	1.813E-01	119.24	OK
CE-141	145.44	48.29*	5.494E+00	4.596E-02	9.532E-02	279.92	OK
TL-204	68.89	0.47	2.972E+00	1.407E+01	1.431E+01	115.22	OK
	70.82	0.79*	2.972E+00	8.362E+00	8.507E+00	115.22	OK
	80.03	0.28	4.004E+00	----- Line Not Found		-----	Absent
	82.47	0.07	4.220E+00	----- Line Not Found		-----	Absent
TL-208	277.37	6.60	3.683E+00	----- Line Not Found		-----	Absent
	583.19	85.00*	2.103E+00	2.047E-01	2.047E-01	58.12	OK
	860.56	12.50	1.516E+00	3.563E-01	3.563E-01	142.95	OK
BI-210	46.54	4.25*	3.905E-01	6.290E+00	6.309E+00	225.86	OK
PB-210	46.54	4.25*	3.905E-01	6.290E+00	6.309E+00	225.86	OK
BI-211	72.87	1.23	3.277E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	3.085E+00	1.021E+01	1.021E+01	9.65	OK
PB-212	74.82	10.28	3.500E+00	2.854E+00	2.854E+00	34.52	OK
	77.11	17.10	3.749E+00	2.517E+00	2.517E+00	24.23	OK
	238.63	43.60*	4.107E+00	5.552E-01	5.552E-01	27.99	OK
	300.09	3.30	3.475E+00	----- Line Not Found		-----	Absent
BI-214	609.32	45.49*	2.030E+00	3.088E+00	3.088E+00	10.11	OK
	1120.29	14.92	1.196E+00	3.240E+00	3.240E+00	26.33	OK
	1764.49	15.30	8.411E-01	3.800E+00	3.800E+00	22.38	OK
PB-214	74.82	5.80	3.500E+00	5.058E+00	5.058E+00	34.52	OK
	77.11	9.70	3.749E+00	4.437E+00	4.437E+00	24.23	OK
	87.09	3.41	4.572E+00	1.967E+00	1.967E+00	119.24	OK
	242.00	7.25	4.066E+00	4.156E+00	4.156E+00	23.69	OK
	295.22	18.42	3.516E+00	3.856E+00	3.856E+00	13.32	OK
	351.93	35.60*	3.085E+00	3.704E+00	3.704E+00	9.65	OK
RN-222	609.32	45.49*	2.030E+00	3.088E+00	3.088E+00	10.11	OK
	1120.29	14.92	1.196E+00	3.240E+00	3.240E+00	26.33	OK
	1764.49	15.30	8.411E-01	3.800E+00	3.800E+00	22.38	OK
RA-224	240.99	4.10*	4.066E+00	7.349E+00	7.349E+00	23.69	OK
RA-226	74.82	5.80	3.500E+00	5.058E+00	5.058E+00	34.52	OK
	77.11	9.70	3.749E+00	4.437E+00	4.437E+00	24.23	OK
	87.09	3.41	4.572E+00	1.967E+00	1.967E+00	119.24	OK
	242.00	7.25	4.066E+00	4.156E+00	4.156E+00	23.69	OK
	295.22	18.42	3.516E+00	3.856E+00	3.856E+00	13.32	OK
	351.93	35.60*	3.085E+00	3.704E+00	3.704E+00	9.65	OK
AC-228	105.21	1.10	5.421E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.173E+00	1.065E+00	1.065E+00	69.82	OK
	835.71	1.61	1.556E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.441E+00	8.111E-01	8.111E-01	45.78	OK
	968.97	15.80	1.364E+00	8.918E-01	8.918E-01	56.72	OK
RA-228	105.21	1.10	5.421E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.173E+00	1.065E+00	1.065E+00	69.82	OK

Sample ID : G1205781344 Acquisition date : 30-JUL-2024 13:39:20

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	835.71	1.61	1.556E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.441E+00	8.111E-01	8.111E-01	45.78	OK
	968.97	15.80	1.364E+00	8.918E-01	8.918E-01	56.72	OK
TH-228	74.82	10.28	3.500E+00	2.854E+00	2.854E+00	34.52	OK
	77.11	17.10	3.749E+00	2.517E+00	2.517E+00	24.23	OK
	238.63	43.60*	4.107E+00	5.552E-01	5.552E-01	27.99	OK
	300.09	3.30	3.475E+00	----- Line	Not Found	-----	Absent
TH-230	74.82	5.80	3.500E+00	5.058E+00	5.058E+00	34.52	OK
	77.11	9.70	3.749E+00	4.437E+00	4.437E+00	24.23	OK
	87.09	3.41	4.572E+00	1.967E+00	1.967E+00	119.24	OK
	242.00	7.25	4.066E+00	4.156E+00	4.156E+00	23.69	OK
	295.22	18.42	3.516E+00	3.856E+00	3.856E+00	13.32	OK
	351.93	35.60*	3.085E+00	3.704E+00	3.704E+00	9.65	OK
TH-232	105.21	1.10	5.421E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.173E+00	1.065E+00	1.065E+00	69.82	OK
	835.71	1.61	1.556E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.441E+00	8.111E-01	8.111E-01	45.78	OK
	968.97	15.80	1.364E+00	8.918E-01	8.918E-01	56.72	OK
TH-234	63.29	3.70*	2.145E+00	5.495E+00	5.495E+00	107.99	OK
	92.59	4.23	4.961E+00	1.771E+00	1.771E+00	123.46	OK
U-234	74.82	5.80	3.500E+00	5.058E+00	5.058E+00	34.52	OK
	77.11	9.70	3.749E+00	4.437E+00	4.437E+00	24.23	OK
	87.09	3.41	4.572E+00	1.967E+00	1.967E+00	119.24	OK
	242.00	7.25	4.066E+00	4.156E+00	4.156E+00	23.69	OK
	295.22	18.42	3.516E+00	3.856E+00	3.856E+00	13.32	OK
	351.93	35.60*	3.085E+00	3.704E+00	3.704E+00	9.65	OK
U-235	89.96	3.47	4.768E+00	----- Line	Not Found	-----	Absent
	93.35	5.60	4.961E+00	1.337E+00	1.337E+00	123.46	OK
	143.76	10.96*	5.499E+00	----- Line	Not Found	-----	<<INT Reject
	163.33	5.08	5.223E+00	----- Line	Not Found	-----	Absent
	185.72	57.20	4.859E+00	4.361E-01	4.361E-01	30.29	OK
	205.31	5.01	4.563E+00	----- Line	Not Found	-----	Absent
U-238	63.29	3.70*	2.145E+00	5.495E+00	5.495E+00	107.99	OK
	92.59	4.23	4.961E+00	1.771E+00	1.771E+00	123.46	OK
AM-243	43.53	5.90	2.524E-01	----- Line	Not Found	-----	Absent
	74.66	67.20*	3.500E+00	4.365E-01	4.365E-01	34.52	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:40:26.48

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781344.CNF;1  *
* Acquisition date : 30-JUL-2024 13:39:20 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.65     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:03:00 Analyst initials: RXF2            *
* Sample ID        : G1205781344          Sample Quantity : 1.1884E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.944E+00	1.068E+00	9.017E-01
GE-68	1.743E+00	2.009E+00	2.797E+00
RB-86	2.124E+00	2.448E+00	3.407E+00
CD-109	1.909E+00	2.230E+00	2.293E+00
SN-126	1.813E-01	2.119E-01	2.192E-01
CE-141	9.532E-02	2.615E-01	2.368E-01
TL-204	8.507E+00	9.605E+00	1.376E+01
TL-208	2.047E-01	1.166E-01	8.319E-02
BI-210	6.309E+00	1.396E+01	1.604E+01
PB-210	6.309E+00	1.396E+01	1.604E+01
BI-211	1.021E+01	9.647E-01	5.291E-01
PB-212	5.552E-01	1.523E-01	1.600E-01
BI-214	3.088E+00	3.060E-01	1.806E-01
PB-214	3.704E+00	3.501E-01	1.924E-01
RN-222	3.088E+00	3.060E-01	1.806E-01
RA-224	7.349E+00	1.706E+00	1.715E+00
RA-226	3.704E+00	3.501E-01	1.924E-01
AC-228	8.111E-01	3.639E-01	3.717E-01
RA-228	8.111E-01	3.639E-01	3.717E-01
TH-228	5.552E-01	1.523E-01	1.600E-01
TH-230	3.704E+00	3.501E-01	1.924E-01
TH-232	8.111E-01	3.639E-01	3.717E-01
TH-234	5.495E+00	5.816E+00	3.993E+00
U-234	3.704E+00	3.501E-01	1.924E-01
U-235	6.386E-01	5.403E-01	5.871E-01
U-238	5.495E+00	5.816E+00	3.993E+00
AM-243	4.365E-01	1.477E-01	1.576E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	5.525E-01	6.186E-01	1.242E+00	NOT IDENT.
NA-22	2.194E-02	4.651E-02	1.017E-01	NOT IDENT.
NA-24	0.000E+00	1.310E+15	0.000E+00	SHORT HLIF

AL-26	-7.523E-03	4.476E-02	9.108E-02	NOT IDENT.
SC-46	5.405E-02	5.811E-02	1.293E-01	FAIL ABUN
V-48	5.840E-02	1.963E-01	4.044E-01	NOT IDENT.
CR-51	1.807E-01	8.167E-01	1.551E+00	NOT IDENT.
MN-52	6.246E-01	3.082E+00	6.761E+00	NOT IDENT.
MN-54	8.470E-03	4.963E-02	8.918E-02	NOT IDENT.
CO-56	-3.005E-02	7.296E-02	1.314E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	5.043E-02	3.657E-02	7.097E-02	NOT IDENT.
CO-58	1.188E-02	5.407E-02	1.109E-01	NOT IDENT.
FE-59	2.114E-02	1.163E-01	2.443E-01	NOT IDENT.
CO-60	3.965E-02	5.219E-02	1.169E-01	FAIL ABUN
ZN-65	2.292E-02	1.119E-01	2.036E-01	NOT IDENT.
AS-73	1.002E+00	2.011E+00	3.816E+00	NOT IDENT.
AS-74	-2.160E-01	2.226E-01	3.815E-01	NOT IDENT.
SE-75	-1.198E-02	6.971E-02	1.260E-01	NOT IDENT.
BR-77	0.000E+00	6.194E+03	0.000E+00	SHORT HLIF
SR-82	-1.490E-02	6.374E-01	1.259E+00	NOT IDENT.
RB-83	-1.225E-02	1.125E-01	2.036E-01	NOT IDENT.
RB-84	5.295E-02	1.330E-01	2.534E-01	NOT IDENT.
KR-85	-1.604E+01	1.224E+01	1.868E+01	NOT IDENT.
SR-85	-1.042E-01	7.925E-02	1.209E-01	NOT IDENT.
Y-88	1.017E-04	6.564E-02	1.355E-01	FAIL ABUN
Y-91	6.486E+00	2.516E+01	5.288E+01	NOT IDENT.
NB-94	1.306E-02	5.040E-02	8.476E-02	FAIL ABUN
NB-95	1.135E-02	7.657E-02	1.336E-01	NOT IDENT.
NB-95M	1.599E-01	2.331E-01	4.140E-01	NOT IDENT.
ZR-95	4.506E-02	1.032E-01	2.166E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.717E+14	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.897E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	4.213E+39	0.000E+00	SHORT HLIF
RH-101	9.079E-03	4.678E-02	8.238E-02	NOT IDENT.
RH-102	-1.683E-02	7.134E-02	1.357E-01	NOT IDENT.
RU-103	-4.078E-02	6.340E-02	1.063E-01	FAIL ABUN
RH-106	1.074E-02	4.142E-01	8.159E-01	NOT IDENT.
RU-106	1.074E-02	4.142E-01	8.159E-01	NOT IDENT.
AG-108M	5.752E-03	3.930E-02	7.409E-02	NOT IDENT.
AG-110	-3.006E-01	7.427E-01	1.405E+00	NOT IDENT.
AG-110M	-4.563E-02	7.160E-02	1.245E-01	NOT IDENT.
SN-113	-4.650E-02	6.537E-02	1.109E-01	NOT IDENT.
CD-115	0.000E+00	5.687E+03	0.000E+00	SHORT HLIF
SN-117M	7.362E-02	2.114E-01	4.074E-01	FAIL ABUN
SB-122	0.000E+00	2.920E+02	0.000E+00	SHORT HLIF
TE-123M	6.061E-03	4.575E-02	8.718E-02	NOT IDENT.
SB-124	2.697E-02	1.714E-01	3.609E-01	NOT IDENT.
SB-125	-1.840E-02	1.378E-01	2.486E-01	FAIL ABUN
TE-125M	1.066E+01	1.789E+01	3.066E+01	NOT IDENT.
I-126	1.539E+00	1.306E+00	1.922E+00	FAIL ABUN
SB-126	-9.656E-02	4.711E-01	9.043E-01	FAIL ABUN
SB-127	6.403E+01	9.482E+01	1.106E+02	FAIL ABUN
I-131	2.184E-01	8.560E-01	1.483E+00	NOT IDENT.
I-132	0.000E+00	8.747E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.367E+01	0.000E+00	SHORT HLIF
BA-133	-4.943E-03	5.549E-02	9.184E-02	NOT IDENT.
I-133	0.000E+00	3.244E+10	0.000E+00	SHORT HLIF
CS-134	-3.637E-03	5.414E-02	1.041E-01	NOT IDENT.
I-135	0.000E+00	6.123E+36	0.000E+00	SHORT HLIF
CS-136	-1.719E-01	3.851E-01	6.843E-01	FAIL ABUN
BA-137M	6.677E-03	3.982E-02	7.351E-02	NOT IDENT.
CS-137	7.054E-03	4.207E-02	7.766E-02	NOT IDENT.
LA-138	-2.061E-02	7.280E-02	1.424E-01	NOT IDENT.
CE-139	-3.356E-02	4.614E-02	8.328E-02	NOT IDENT.
BA-140	9.095E-01	9.872E-01	2.048E+00	NOT IDENT.
LA-140	2.475E-01	3.319E-01	7.904E-01	FAIL ABUN
CE-143	0.000E+00	3.069E+06	0.000E+00	SHORT HLIF
CE-144	-3.155E-02	2.859E-01	4.919E-01	NOT IDENT.
PM-144	-3.349E-03	5.146E-02	8.730E-02	NOT IDENT.
PR-144	-2.419E-01	3.891E+00	6.605E+00	NOT IDENT.
PM-146	1.389E-03	6.225E-02	1.143E-01	NOT IDENT.
ND-147	2.156E+00	2.438E+00	5.048E+00	NOT IDENT.
PM-147	5.620E+02	1.101E+03	1.993E+03	NOT IDENT.
PM-149	0.000E+00	5.127E+04	0.000E+00	SHORT HLIF
EU-150	3.332E-02	4.291E-02	7.759E-02	FAIL ABUN
EU-152	-3.834E-02	1.607E-01	2.568E-01	NOT IDENT.
GD-153	3.597E-02	1.340E-01	2.390E-01	FAIL ABUN
EU-154	7.180E-02	1.330E-01	2.932E-01	NOT IDENT.
EU-155	3.621E-02	1.468E-01	2.635E-01	FAIL ABUN

TB-160	-5.862E-02	2.080E-01	3.360E-01	FAIL ABUN
HO-166M	-2.166E-03	8.318E-02	1.604E-01	NOT IDENT.
TM-171	-2.147E+01	3.850E+01	6.736E+01	NOT IDENT.
HF-172	-7.127E-02	2.723E-01	4.637E-01	FAIL ABUN
LU-172	0.000E+00	6.921E-02	1.377E-01	FAIL ABUN
LU-176	-1.168E-02	3.528E-02	6.370E-02	FAIL ABUN
HF-181	-7.045E-03	8.533E-02	1.538E-01	NOT IDENT.
TA-182	-6.987E-02	2.152E-01	3.929E-01	FAIL ABUN
RE-183	2.625E-02	4.540E-01	8.270E-01	NOT IDENT.
RE-184	1.831E-01	2.226E-01	4.519E-01	NOT IDENT.
W-188	-7.131E+00	1.350E+01	2.104E+01	FAIL ABUN
IR-192	4.428E-02	5.616E-02	1.123E-01	FAIL ABUN
HG-203	-4.634E-02	7.051E-02	1.236E-01	FAIL ABUN
BI-207	8.393E-02	8.426E-02	1.527E-01	FAIL ABUN
PB-211	-1.291E-01	9.774E-01	1.777E+00	NOT IDENT.
BI-212	4.727E-01	6.620E-01	1.397E+00	NOT IDENT.
BI-213	-4.492E-02	1.515E-01	2.682E-01	NOT IDENT.
RN-219	-9.210E-03	5.633E-01	1.037E+00	NOT IDENT.
RA-223	3.741E-01	9.107E-01	1.606E+00	FAIL ABUN
AC-225	-1.506E+00	3.127E+00	5.650E+00	NOT IDENT.
AC-227	1.846E-01	5.214E-01	7.112E-01	FAIL ABUN
TH-227	1.846E-01	5.214E-01	7.112E-01	FAIL ABUN
TH-229	-2.574E-02	7.203E-01	1.352E+00	FAIL ABUN
PA-231	6.547E-01	6.933E-01	1.381E+00	NOT IDENT.
TH-231	3.741E-01	9.107E-01	1.606E+00	FAIL ABUN
PA-233	-2.267E-02	9.074E-02	1.646E-01	FAIL ABUN
PA-234	3.650E-02	3.403E-01	6.870E-01	FAIL ABUN
PA-234M	6.051E+00	9.010E+00	1.313E+01	FAIL ABUN
NP-237	-2.267E-02	9.074E-02	1.646E-01	FAIL ABUN
NP-238	0.000E+00	1.257E+04	0.000E+00	SHORT HLIF
NP-239	-1.001E-01	3.881E-01	6.092E-01	NOT IDENT.
PU-239	4.361E+02	4.964E+02	9.178E+02	NOT IDENT.
AM-241	-3.354E-02	3.087E-01	5.107E-01	NOT IDENT.
CM-243	-6.767E-02	1.441E-01	2.443E-01	NOT IDENT.
BK-247	-3.719E-02	1.126E-01	2.007E-01	NOT IDENT.
CM-247	-1.661E-02	5.223E-02	9.279E-02	NOT IDENT.
CF-249	2.534E-02	5.594E-02	1.082E-01	NOT IDENT.
CF-251	7.745E-02	1.777E-01	3.448E-01	NOT IDENT.
ANH-511	-4.434E-02	5.990E-02	1.233E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:40:24.96

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	31	10.66*	9.538E-01	1.944E+00	1.944E+00	56.08
GE-68	1077.34	10	3.22*	1.239E+00	1.597E+00	1.743E+00	117.61
RB-86	1077.00	10	8.64*	1.239E+00	5.951E-01	2.124E+00	117.61
CD-109	88.03	49	3.70*	4.572E+00	1.813E+00	1.909E+00	119.24
SN-126	64.28	69	9.60	2.145E+00	2.118E+00	2.118E+00	107.99
	86.94	49	8.90	4.572E+00	7.537E-01	7.537E-01	119.24
	87.57	49	37.00*	4.572E+00	1.813E-01	1.813E-01	119.24
CE-141	145.44	61	48.29*	5.494E+00	1.449E-01	3.006E-01	86.32
TL-204	68.89	31	0.47	2.972E+00	1.407E+01	1.431E+01	115.22
	70.82	31	0.79*	2.972E+00	8.362E+00	8.507E+00	115.22
	80.03	------	0.28	4.004E+00	------	Line Not Found	------
	82.47	------	0.07	4.220E+00	------	Line Not Found	------
TL-208	277.37	------	6.60	3.683E+00	------	Line Not Found	------
	583.19	58	85.00*	2.103E+00	2.047E-01	2.047E-01	58.12
	860.56	11	12.50	1.516E+00	3.563E-01	3.563E-01	142.95
BI-210	46.54	17	4.25*	3.905E-01	6.290E+00	6.309E+00	225.86
PB-210	46.54	17	4.25*	3.905E-01	6.290E+00	6.309E+00	225.86
BI-211	72.87	------	1.23	3.277E+00	------	Line Not Found	------
	351.06	644	12.92*	3.085E+00	1.021E+01	1.021E+01	9.65
PB-212	74.82	163	10.28	3.500E+00	2.854E+00	2.854E+00	34.52
	77.11	255	17.10	3.749E+00	2.517E+00	2.517E+00	24.23
	238.63	157	43.60*	4.107E+00	5.552E-01	5.552E-01	27.99
	300.09	------	3.30	3.475E+00	------	Line Not Found	------
BI-214	609.32	451	45.49*	2.030E+00	3.088E+00	3.088E+00	10.11
	1120.29	92	14.92	1.196E+00	3.240E+00	3.240E+00	26.33
	1764.49	77	15.30	8.411E-01	3.800E+00	3.800E+00	22.38
PB-214	74.82	163	5.80	3.500E+00	5.058E+00	5.058E+00	34.52
	77.11	255	9.70	3.749E+00	4.437E+00	4.437E+00	24.23
	87.09	49	3.41	4.572E+00	1.967E+00	1.967E+00	119.24
	242.00	194	7.25	4.066E+00	4.156E+00	4.156E+00	23.69
	295.22	395	18.42	3.516E+00	3.856E+00	3.856E+00	13.32
	351.93	644	35.60*	3.085E+00	3.704E+00	3.704E+00	9.65
RN-222	609.32	451	45.49*	2.030E+00	3.088E+00	3.088E+00	10.11
	1120.29	92	14.92	1.196E+00	3.240E+00	3.240E+00	26.33
	1764.49	77	15.30	8.411E-01	3.800E+00	3.800E+00	22.38
RA-224	240.99	194	4.10*	4.066E+00	7.349E+00	7.349E+00	23.69
RA-226	74.82	163	5.80	3.500E+00	5.058E+00	5.058E+00	34.52
	77.11	255	9.70	3.749E+00	4.437E+00	4.437E+00	24.23
	87.09	49	3.41	4.572E+00	1.967E+00	1.967E+00	119.24
	242.00	194	7.25	4.066E+00	4.156E+00	4.156E+00	23.69
	295.22	395	18.42	3.516E+00	3.856E+00	3.856E+00	13.32
	351.93	644	35.60*	3.085E+00	3.704E+00	3.704E+00	9.65
AC-228	105.21	------	1.10	5.421E+00	------	Line Not Found	------
	338.32	60	11.27	3.173E+00	1.065E+00	1.065E+00	69.82
	835.71	------	1.61	1.556E+00	------	Line Not Found	------
	911.20	48	25.80*	1.441E+00	8.111E-01	8.111E-01	45.78
	968.97	30	15.80	1.364E+00	8.918E-01	8.918E-01	56.72

Sample ID : G1205781344 Acquisition date : 30-JUL-2024 13:39:20

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	105.21	------	1.10	5.421E+00	------	Line Not Found	------
	338.32	60	11.27	3.173E+00	1.065E+00	1.065E+00	69.82
	835.71	------	1.61	1.556E+00	------	Line Not Found	------
	911.20	48	25.80*	1.441E+00	8.111E-01	8.111E-01	45.78
	968.97	30	15.80	1.364E+00	8.918E-01	8.918E-01	56.72
TH-228	74.82	163	10.28	3.500E+00	2.854E+00	2.854E+00	34.52
	77.11	255	17.10	3.749E+00	2.517E+00	2.517E+00	24.23
	238.63	157	43.60*	4.107E+00	5.552E-01	5.552E-01	27.99
	300.09	------	3.30	3.475E+00	------	Line Not Found	------
TH-230	74.82	163	5.80	3.500E+00	5.058E+00	5.058E+00	34.52
	77.11	255	9.70	3.749E+00	4.437E+00	4.437E+00	24.23
	87.09	49	3.41	4.572E+00	1.967E+00	1.967E+00	119.24
	242.00	194	7.25	4.066E+00	4.156E+00	4.156E+00	23.69
	295.22	395	18.42	3.516E+00	3.856E+00	3.856E+00	13.32
	351.93	644	35.60*	3.085E+00	3.704E+00	3.704E+00	9.65
TH-232	105.21	------	1.10	5.421E+00	------	Line Not Found	------
	338.32	60	11.27	3.173E+00	1.065E+00	1.065E+00	69.82
	835.71	------	1.61	1.556E+00	------	Line Not Found	------
	911.20	48	25.80*	1.441E+00	8.111E-01	8.111E-01	45.78
	968.97	30	15.80	1.364E+00	8.918E-01	8.918E-01	56.72
TH-234	63.29	69	3.70*	2.145E+00	5.495E+00	5.495E+00	107.99
	92.59	59	4.23	4.961E+00	1.771E+00	1.771E+00	123.46
U-234	74.82	163	5.80	3.500E+00	5.058E+00	5.058E+00	34.52
	77.11	255	9.70	3.749E+00	4.437E+00	4.437E+00	24.23
	87.09	49	3.41	4.572E+00	1.967E+00	1.967E+00	119.24
	242.00	194	7.25	4.066E+00	4.156E+00	4.156E+00	23.69
	295.22	395	18.42	3.516E+00	3.856E+00	3.856E+00	13.32
	351.93	644	35.60*	3.085E+00	3.704E+00	3.704E+00	9.65
U-235	89.96	------	3.47	4.768E+00	------	Line Not Found	------
	93.35	59	5.60	4.961E+00	1.337E+00	1.337E+00	123.46
	143.76	61	10.96*	5.494E+00	6.386E-01	6.386E-01	86.32
	163.33	------	5.08	5.223E+00	------	Line Not Found	------
	185.72	192	57.20	4.859E+00	4.361E-01	4.361E-01	30.29
	205.31	------	5.01	4.563E+00	------	Line Not Found	------
U-238	63.29	69	3.70*	2.145E+00	5.495E+00	5.495E+00	107.99
	92.59	59	4.23	4.961E+00	1.771E+00	1.771E+00	123.46
AM-243	43.53	------	5.90	2.524E-01	------	Line Not Found	------
	74.66	163	67.20*	3.500E+00	4.365E-01	4.365E-01	34.52

Flag: "*" = Keyline

Sample ID : G1205781344 Acquisition date : 30-JUL-2024 13:39:20

Total number of lines in spectrum	54	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	41	75.93%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.944E+00	1.944E+00	1.090E+00	56.08	
GE-68	270.95D	1.09	1.597E+00	1.743E+00	2.050E+00	117.61	
RB-86	18.64D	3.57	5.951E-01	2.124E+00	2.498E+00	117.61	
CD-109	461.40D	1.05	1.813E+00	1.909E+00	2.276E+00	119.24	
SN-126	2.30E+05Y	1.00	1.813E-01	1.813E-01	2.162E-01	119.24	
CE-141	32.51D	2.07	1.449E-01	3.006E-01	2.595E-01	86.32	
TL-204	3.78Y	1.02	8.362E+00	8.507E+00	9.801E+00	115.22	
TL-208	1.41E+10Y	1.00	2.047E-01	2.047E-01	1.190E-01	58.12	
BI-210	22.20Y	1.00	6.290E+00	6.309E+00	14.25E+00	225.86	
PB-210	22.20Y	1.00	6.290E+00	6.309E+00	14.25E+00	225.86	
BI-211	7.04E+08Y	1.00	1.021E+01	1.021E+01	0.098E+01	9.65	
PB-212	1.41E+10Y	1.00	5.552E-01	5.552E-01	1.554E-01	27.99	
BI-214	1600.00Y	1.00	3.088E+00	3.088E+00	0.312E+00	10.11	
PB-214	1600.00Y	1.00	3.704E+00	3.704E+00	0.357E+00	9.65	
RN-222	1600.00Y	1.00	3.088E+00	3.088E+00	0.312E+00	10.11	
RA-224	1.41E+10Y	1.00	7.349E+00	7.349E+00	1.741E+00	23.69	
RA-226	1600.00Y	1.00	3.704E+00	3.704E+00	0.357E+00	9.65	
AC-228	1.41E+10Y	1.00	8.111E-01	8.111E-01	3.713E-01	45.78	
RA-228	1.41E+10Y	1.00	8.111E-01	8.111E-01	3.713E-01	45.78	
TH-228	1.41E+10Y	1.00	5.552E-01	5.552E-01	1.554E-01	27.99	
TH-230	7.54E+04Y	1.00	3.704E+00	3.704E+00	0.357E+00	9.65	
TH-232	1.41E+10Y	1.00	8.111E-01	8.111E-01	3.713E-01	45.78	
TH-234	4.47E+09Y	1.00	5.495E+00	5.495E+00	5.934E+00	107.99	
U-234	2.45E+05Y	1.00	3.704E+00	3.704E+00	0.357E+00	9.65	
U-235	7.04E+08Y	1.00	6.386E-01	6.386E-01	5.513E-01	86.32	
U-238	4.47E+09Y	1.00	5.495E+00	5.495E+00	5.934E+00	107.99	
AM-243	7370.00Y	1.00	4.365E-01	4.365E-01	1.507E-01	34.52	
			---	---			
	Total Activity :		8.158E+01	8.369E+01			

Grand Total Activity : 8.158E+01 8.369E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1205781344 Acquisition date : 30-JUL-2024 13:39:20

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	112.97	40	112	0.94	226.17	222	8	1.04E-02	99.9	5.57E+00	T
0	156.62	69	275	6.92	313.51	306	18	1.82E-02	****	5.33E+00	T
0	257.42	11	76	1.06	515.16	510	8	2.91E-03	****	3.89E+00	T
0	328.94	20	65	1.28	658.25	653	9	5.45E-03	****	3.25E+00	T
0	368.65	20	37	0.86	737.69	733	9	5.35E-03	****	2.98E+00	
0	448.02	6	19	0.55	896.46	892	7	1.71E-03	****	2.58E+00	
0	463.53	36	15	1.14	927.49	923	11	9.94E-03	54.9	2.51E+00	T
0	547.33	18	18	1.14	1095.11	1092	8	5.11E-03	92.3	2.21E+00	T
3	666.13	24	19	2.40	1332.75	1324	22	6.82E-03	86.6	1.89E+00	T
3	670.70	22	3	2.19	1341.88	1324	22	6.12E-03	62.4	1.88E+00	
0	685.95	15	24	3.69	1372.39	1364	14	4.11E-03	****	1.84E+00	T
0	701.88	4	16	0.60	1404.25	1398	8	1.06E-03	****	1.81E+00	T
0	704.50	5	17	0.93	1409.49	1405	9	1.55E-03	****	1.80E+00	
0	768.46	53	22	1.27	1537.43	1530	13	1.50E-02	45.4	1.67E+00	
1	783.75	27	0	1.90	1568.00	1562	15	7.78E-03	39.8	1.65E+00	T
1	786.06	24	0	2.09	1572.62	1562	15	6.69E-03	49.1	1.64E+00	
0	838.20	12	9	3.03	1676.92	1672	9	3.33E-03	****	1.55E+00	T
0	876.78	12	5	0.67	1754.08	1749	10	3.33E-03	90.5	1.49E+00	T
0	897.68	25	3	3.86	1795.87	1789	15	7.16E-03	50.9	1.46E+00	T
0	933.74	26	9	1.60	1868.00	1862	12	7.47E-03	59.0	1.41E+00	
0	977.60	8	9	0.97	1955.72	1947	11	2.28E-03	****	1.35E+00	
0	1001.24	11	11	1.81	2003.00	1994	15	3.07E-03	****	1.32E+00	T
0	1063.40	12	8	1.94	2127.30	2121	11	3.58E-03	****	1.25E+00	T
0	1134.16	5	10	0.46	2268.81	2261	10	1.33E-03	****	1.18E+00	
0	1173.92	9	8	1.42	2348.33	2344	8	2.50E-03	****	1.15E+00	T
0	1196.70	8	5	0.90	2393.88	2389	10	2.22E-03	****	1.13E+00	
0	1213.35	7	5	1.57	2427.18	2422	10	2.09E-03	****	1.11E+00	
0	1238.84	43	18	2.59	2478.15	2468	19	1.27E-02	54.5	1.09E+00	T
0	1378.08	24	9	1.96	2756.59	2750	13	7.10E-03	63.9	9.99E-01	
0	1583.98	9	0	0.83	3168.30	3162	11	2.78E-03	63.2	8.99E-01	T
0	1729.82	17	0	1.83	3459.89	3455	10	5.00E-03	47.1	8.50E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:40:36.21

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781344.CNF;1  *
* Acquisition date : 30-JUL-2024 13:39:20 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.65     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:03:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781344          Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1884E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.671E-01
GE-68	1.165E+00
RB-86	1.419E+00
CD-109	1.093E+00
SN-126	1.045E-01
CE-141	1.116E-01
TL-204	6.511E+00
TL-208	3.679E-02
BI-210	7.529E+00
PB-210	7.529E+00
BI-211	2.430E-01
PB-212	7.518E-02
BI-214	8.100E-02
PB-214	8.838E-02
RN-222	8.100E-02
RA-224	8.060E-01
RA-226	8.838E-02
AC-228	1.629E-01
RA-228	1.629E-01
TH-228	7.518E-02
TH-230	8.838E-02
TH-232	1.629E-01
TH-234	1.886E+00
U-234	8.838E-02
U-235	2.792E-01
U-238	1.886E+00
AM-243	7.505E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.689E-01	NOT IDENT.
NA-22	4.267E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.528E-02	NOT IDENT.

SC-46	5.693E-02	FAIL ABUN
V-48	1.741E-01	NOT IDENT.
CR-51	7.135E-01	NOT IDENT.
MN-52	2.768E+00	NOT IDENT.
MN-54	3.866E-02	NOT IDENT.
CO-56	5.813E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.352E-02	NOT IDENT.
CO-58	4.791E-02	NOT IDENT.
FE-59	1.010E-01	NOT IDENT.
CO-60	5.005E-02	FAIL ABUN
ZN-65	8.630E-02	NOT IDENT.
AS-73	1.794E+00	NOT IDENT.
AS-74	1.640E-01	NOT IDENT.
SE-75	5.830E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.424E-01	NOT IDENT.
RB-83	9.087E-02	NOT IDENT.
RB-84	1.095E-01	NOT IDENT.
KR-85	8.482E+00	NOT IDENT.
SR-85	5.488E-02	NOT IDENT.
Y-88	5.478E-02	FAIL ABUN
Y-91	2.205E+01	NOT IDENT.
NB-94	3.763E-02	FAIL ABUN
NB-95	5.940E-02	NOT IDENT.
NB-95M	1.949E-01	NOT IDENT.
ZR-95	9.487E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.888E-02	NOT IDENT.
RH-102	5.994E-02	NOT IDENT.
RU-103	4.589E-02	FAIL ABUN
RH-106	3.618E-01	NOT IDENT.
RU-106	3.618E-01	NOT IDENT.
AG-108M	3.344E-02	NOT IDENT.
AG-110	5.924E-01	NOT IDENT.
AG-110M	5.353E-02	NOT IDENT.
SN-113	4.971E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.929E-01	FAIL ABUN
SB-122	0.000E+00	SHORT HLIF
TE-123M	4.121E-02	NOT IDENT.
SB-124	1.497E-01	NOT IDENT.
SB-125	1.132E-01	FAIL ABUN
TE-125M	1.445E+01	NOT IDENT.
I-126	8.748E-01	FAIL ABUN
SB-126	3.907E-01	FAIL ABUN
SB-127	4.931E+01	FAIL ABUN
I-131	6.742E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.135E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.568E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.912E-01	FAIL ABUN
BA-137M	3.172E-02	NOT IDENT.
CS-137	3.351E-02	NOT IDENT.
LA-138	5.775E-02	NOT IDENT.
CE-139	3.916E-02	NOT IDENT.
BA-140	9.231E-01	NOT IDENT.
LA-140	3.312E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	2.307E-01	NOT IDENT.
PM-144	3.860E-02	NOT IDENT.
PR-144	2.921E+00	NOT IDENT.
PM-146	5.190E-02	NOT IDENT.
ND-147	2.273E+00	NOT IDENT.
PM-147	9.412E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.600E-02	FAIL ABUN
EU-152	1.180E-01	NOT IDENT.
GD-153	1.131E-01	FAIL ABUN
EU-154	1.236E-01	NOT IDENT.
EU-155	1.240E-01	FAIL ABUN
TB-160	1.415E-01	FAIL ABUN

HO-166M	7.134E-02	NOT IDENT.
TM-171	3.153E+01	NOT IDENT.
HF-172	2.177E-01	FAIL ABUN
LU-172	5.736E-02	FAIL ABUN
LU-176	2.915E-02	FAIL ABUN
HF-181	6.926E-02	NOT IDENT.
TA-182	1.614E-01	FAIL ABUN
RE-183	3.896E-01	NOT IDENT.
RE-184	1.957E-01	NOT IDENT.
W-188	9.674E+00	FAIL ABUN
IR-192	5.186E-02	FAIL ABUN
HG-203	5.702E-02	FAIL ABUN
BI-207	6.722E-02	FAIL ABUN
PB-211	8.064E-01	NOT IDENT.
BI-212	6.251E-01	NOT IDENT.
BI-213	1.214E-01	NOT IDENT.
RN-219	4.719E-01	NOT IDENT.
RA-223	7.372E-01	FAIL ABUN
AC-225	2.639E+00	NOT IDENT.
AC-227	3.323E-01	FAIL ABUN
TH-227	3.323E-01	FAIL ABUN
TH-229	6.345E-01	FAIL ABUN
PA-231	6.442E-01	NOT IDENT.
TH-231	7.372E-01	FAIL ABUN
PA-233	7.564E-02	FAIL ABUN
PA-234	2.924E-01	FAIL ABUN
PA-234M	5.799E+00	FAIL ABUN
NP-237	7.564E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.850E-01	NOT IDENT.
PU-239	4.344E+02	NOT IDENT.
AM-241	2.409E-01	NOT IDENT.
CM-243	1.144E-01	NOT IDENT.
BK-247	9.279E-02	NOT IDENT.
CM-247	4.211E-02	NOT IDENT.
CF-249	4.955E-02	NOT IDENT.
CF-251	1.624E-01	NOT IDENT.
ANH-511	5.799E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 14:40:40.20

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781344.CNF;1  *
* Acquisition date : 30-JUL-2024 13:39:20 Sensitivity     : 3.000           *
* Detector ID      : GAM08                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.65     Half life ratio : *****           *
* Sample date      : 26-JUN-2024 09:03:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781344          Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1884E+02 GRAM *
*                                         Quantity Err(%) : 1.6829E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 13-FEB-2024 11:13:03 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.944E+00	1.084E+00	1.084E+00
GE-68	1.743E+00	2.014E+00	2.014E+00
RB-86	2.124E+00	2.455E+00	2.455E+00
CD-109	1.909E+00	2.243E+00	2.243E+00
SN-126	1.813E-01	2.128E-01	2.128E-01
CE-141	9.532E-02	2.629E-01	2.629E-01
TL-204	8.507E+00	9.665E+00	9.665E+00
TL-208	2.047E-01	1.180E-01	1.180E-01
BI-210	6.309E+00	1.398E+01	1.398E+01
PB-210	6.309E+00	1.398E+01	1.398E+01
BI-211	1.021E+01	1.389E+00	1.389E+00
PB-212	5.552E-01	1.627E-01	1.627E-01
BI-214	3.088E+00	4.063E-01	4.063E-01
PB-214	3.704E+00	5.005E-01	5.005E-01
RN-222	3.088E+00	4.063E-01	4.063E-01
RA-224	7.349E+00	1.870E+00	1.870E+00
RA-226	3.704E+00	5.005E-01	5.005E-01
AC-228	8.111E-01	3.723E-01	3.723E-01
RA-228	8.111E-01	3.723E-01	3.723E-01
TH-228	5.552E-01	1.627E-01	1.627E-01
TH-230	3.704E+00	5.005E-01	5.005E-01
TH-232	8.111E-01	3.723E-01	3.723E-01
TH-234	5.495E+00	5.967E+00	5.967E+00
U-234	3.704E+00	5.005E-01	5.005E-01
U-235	6.386E-01	5.430E-01	5.430E-01
U-238	5.495E+00	5.967E+00	5.967E+00
AM-243	4.365E-01	1.552E-01	1.552E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	5.525E-01	6.206E-01	6.687E-01	NOT IDENT.
NA-22	2.194E-02	4.655E-02	4.759E-02	NOT IDENT.
NA-24	7.187E+13	1.310E+15	1.310E+15	SHORT HLIF

AL-26	-7.523E-03	4.477E-02	4.489E-02	NOT IDENT.
SC-46	5.405E-02	5.832E-02	6.321E-02	FAIL ABUN
V-48	5.840E-02	1.964E-01	1.982E-01	NOT IDENT.
CR-51	1.807E-01	8.169E-01	8.210E-01	NOT IDENT.
MN-52	6.246E-01	3.083E+00	3.095E+00	NOT IDENT.
MN-54	8.470E-03	4.963E-02	4.978E-02	NOT IDENT.
CO-56	-3.005E-02	7.301E-02	7.425E-02	FAIL ABUN
MN-56	-1.000E+41	2.449E+41	0.000E+00	SHORT HLIF
CO-57	5.043E-02	3.678E-02	4.324E-02	NOT IDENT.
CO-58	1.188E-02	5.408E-02	5.434E-02	NOT IDENT.
FE-59	2.114E-02	1.163E-01	1.167E-01	NOT IDENT.
CO-60	3.965E-02	5.231E-02	5.528E-02	FAIL ABUN
ZN-65	2.292E-02	1.120E-01	1.124E-01	NOT IDENT.
AS-73	1.002E+00	2.024E+00	2.074E+00	NOT IDENT.
AS-74	-2.160E-01	2.239E-01	2.441E-01	NOT IDENT.
SE-75	-1.198E-02	6.972E-02	6.993E-02	NOT IDENT.
BR-77	2.258E+04	2.325E+04	2.538E+04	SHORT HLIF
SR-82	-1.490E-02	6.374E-01	6.374E-01	NOT IDENT.
RB-83	-1.225E-02	1.125E-01	1.126E-01	NOT IDENT.
RB-84	5.295E-02	1.331E-01	1.352E-01	NOT IDENT.
KR-85	-1.604E+01	1.232E+01	1.429E+01	NOT IDENT.
SR-85	-1.042E-01	7.979E-02	9.259E-02	NOT IDENT.
Y-88	1.017E-04	6.564E-02	6.564E-02	FAIL ABUN
Y-91	6.486E+00	2.516E+01	2.533E+01	NOT IDENT.
NB-94	1.306E-02	5.041E-02	5.075E-02	FAIL ABUN
NB-95	1.135E-02	7.658E-02	7.675E-02	NOT IDENT.
NB-95M	1.599E-01	2.339E-01	2.447E-01	NOT IDENT.
ZR-95	4.506E-02	1.033E-01	1.053E-01	NOT IDENT.
NB-97	-1.000E+41	3.470E+41	0.000E+00	SHORT HLIF
ZR-97	-4.055E+14	3.735E+14	4.158E+14	SHORT HLIF
MO-99	-8.321E+02	1.898E+03	1.935E+03	SHORT HLIF
TC-99M	2.657E+39	4.225E+39	0.000E+00	SHORT HLIF
RH-101	9.079E-03	4.681E-02	4.699E-02	NOT IDENT.
RH-102	-1.683E-02	7.136E-02	7.177E-02	NOT IDENT.
RU-103	-4.078E-02	6.352E-02	6.612E-02	FAIL ABUN
RH-106	1.074E-02	4.142E-01	4.143E-01	NOT IDENT.
RU-106	1.074E-02	4.142E-01	4.143E-01	NOT IDENT.
AG-108M	5.752E-03	3.930E-02	3.938E-02	NOT IDENT.
AG-110	-3.006E-01	7.431E-01	7.554E-01	NOT IDENT.
AG-110M	-4.563E-02	7.174E-02	7.463E-02	NOT IDENT.
SN-113	-4.650E-02	6.549E-02	6.876E-02	NOT IDENT.
CD-115	-4.628E+03	5.707E+03	6.076E+03	SHORT HLIF
SN-117M	7.362E-02	2.115E-01	2.141E-01	FAIL ABUN
SB-122	6.356E+01	2.921E+02	2.935E+02	SHORT HLIF
TE-123M	6.061E-03	4.575E-02	4.583E-02	NOT IDENT.
SB-124	2.697E-02	1.714E-01	1.719E-01	NOT IDENT.
SB-125	-1.840E-02	1.378E-01	1.381E-01	FAIL ABUN
TE-125M	1.066E+01	1.792E+01	1.855E+01	NOT IDENT.
I-126	1.539E+00	1.314E+00	1.486E+00	FAIL ABUN
SB-126	-9.656E-02	4.712E-01	4.732E-01	FAIL ABUN
SB-127	6.403E+01	9.551E+01	9.977E+01	FAIL ABUN
I-131	2.184E-01	8.562E-01	8.619E-01	NOT IDENT.
I-132	1.000E+41	2.284E+41	0.000E+00	SHORT HLIF
TE-132	4.525E+01	6.394E+01	6.711E+01	SHORT HLIF
BA-133	-4.943E-03	5.549E-02	5.554E-02	NOT IDENT.
I-133	2.355E+10	3.289E+10	3.456E+10	SHORT HLIF
CS-134	-3.637E-03	5.414E-02	5.417E-02	NOT IDENT.
I-135	-4.370E+36	7.008E+36	0.000E+00	SHORT HLIF
CS-136	-1.719E-01	3.856E-01	3.933E-01	FAIL ABUN
BA-137M	6.677E-03	3.983E-02	3.994E-02	NOT IDENT.
CS-137	7.054E-03	4.207E-02	4.219E-02	NOT IDENT.
LA-138	-2.061E-02	7.283E-02	7.342E-02	NOT IDENT.
CE-139	-3.356E-02	4.670E-02	4.909E-02	NOT IDENT.
BA-140	9.095E-01	9.905E-01	1.072E+00	NOT IDENT.
LA-140	2.475E-01	3.326E-01	3.508E-01	FAIL ABUN
CE-143	7.233E+06	3.165E+06	4.544E+06	SHORT HLIF
CE-144	-3.155E-02	2.859E-01	2.862E-01	NOT IDENT.
PM-144	-3.349E-03	5.146E-02	5.148E-02	NOT IDENT.
PR-144	-2.419E-01	3.891E+00	3.893E+00	NOT IDENT.
PM-146	1.389E-03	6.225E-02	6.225E-02	NOT IDENT.
ND-147	2.156E+00	2.446E+00	2.632E+00	NOT IDENT.
PM-147	5.620E+02	1.102E+03	1.130E+03	NOT IDENT.
PM-149	5.035E+03	5.127E+04	5.132E+04	SHORT HLIF
EU-150	3.332E-02	4.304E-02	4.558E-02	FAIL ABUN
EU-152	-3.834E-02	1.608E-01	1.617E-01	NOT IDENT.
GD-153	3.597E-02	1.340E-01	1.350E-01	FAIL ABUN
EU-154	7.180E-02	1.332E-01	1.371E-01	NOT IDENT.
EU-155	3.621E-02	1.469E-01	1.478E-01	FAIL ABUN

TB-160	-5.862E-02	2.081E-01	2.097E-01	FAIL ABUN
HO-166M	-2.166E-03	8.318E-02	8.318E-02	NOT IDENT.
TM-171	-2.147E+01	3.862E+01	3.981E+01	NOT IDENT.
HF-172	-7.127E-02	2.726E-01	2.745E-01	FAIL ABUN
LU-172	0.000E+00	6.921E-02	0.000E+00	FAIL ABUN
LU-176	-1.168E-02	3.530E-02	3.569E-02	FAIL ABUN
HF-181	-7.045E-03	8.534E-02	8.540E-02	NOT IDENT.
TA-182	-6.987E-02	2.153E-01	2.176E-01	FAIL ABUN
RE-183	2.625E-02	4.540E-01	4.541E-01	NOT IDENT.
RE-184	1.831E-01	2.236E-01	2.384E-01	NOT IDENT.
W-188	-7.131E+00	1.354E+01	1.392E+01	FAIL ABUN
IR-192	4.428E-02	5.634E-02	5.977E-02	FAIL ABUN
HG-203	-4.634E-02	7.068E-02	7.370E-02	FAIL ABUN
BI-207	8.393E-02	8.458E-02	9.266E-02	FAIL ABUN
PB-211	-1.291E-01	9.774E-01	9.792E-01	NOT IDENT.
BI-212	4.727E-01	6.634E-01	6.968E-01	NOT IDENT.
BI-213	-4.492E-02	1.515E-01	1.529E-01	NOT IDENT.
RN-219	-9.210E-03	5.633E-01	5.633E-01	NOT IDENT.
RA-223	3.741E-01	9.116E-01	9.271E-01	FAIL ABUN
AC-225	-1.506E+00	3.132E+00	3.205E+00	NOT IDENT.
AC-227	1.846E-01	5.223E-01	5.289E-01	FAIL ABUN
TH-227	1.846E-01	5.223E-01	5.289E-01	FAIL ABUN
TH-229	-2.574E-02	7.203E-01	7.204E-01	FAIL ABUN
PA-231	6.547E-01	7.100E-01	7.689E-01	NOT IDENT.
TH-231	3.741E-01	9.116E-01	9.271E-01	FAIL ABUN
PA-233	-2.267E-02	9.077E-02	9.134E-02	FAIL ABUN
PA-234	3.650E-02	3.429E-01	3.433E-01	FAIL ABUN
PA-234M	6.051E+00	9.027E+00	9.430E+00	FAIL ABUN
NP-237	-2.267E-02	9.077E-02	9.134E-02	FAIL ABUN
NP-238	-2.574E+03	1.258E+04	1.263E+04	SHORT HLIF
NP-239	-1.001E-01	3.882E-01	3.908E-01	NOT IDENT.
PU-239	4.361E+02	4.975E+02	5.350E+02	NOT IDENT.
AM-241	-3.354E-02	3.087E-01	3.091E-01	NOT IDENT.
CM-243	-6.767E-02	1.443E-01	1.475E-01	NOT IDENT.
BK-247	-3.719E-02	1.130E-01	1.142E-01	NOT IDENT.
CM-247	-1.661E-02	5.232E-02	5.285E-02	NOT IDENT.
CF-249	2.534E-02	5.601E-02	5.717E-02	NOT IDENT.
CF-251	7.745E-02	1.780E-01	1.814E-01	NOT IDENT.
ANH-511	-4.434E-02	6.003E-02	6.327E-02	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	73.4378	85.43	126.3854	131.20	103.6262
45.60	76.9747	86.55	141.7411	133.02	75.7867
46.54	78.2170	86.79	138.7899	133.52	79.5113
49.72	0.0000	86.94	138.8311	136.00	66.2929
51.35	74.0722	87.09	138.8713	136.47	68.7943
51.87	78.3566	87.57	139.0004	140.51	0.0000
52.39	85.7909	88.03	139.1240	143.76	81.9119
52.97	76.4946	88.34	139.2073	144.24	81.9662
53.44	70.2958	88.47	139.2419	145.44	89.5649
54.07	73.5667	89.96	159.3703	152.43	79.1095
57.36	0.0000	1093.63	159.5753	153.25	91.7657
57.53	83.7760	91.11	134.6190	323.87	95.6575
57.98	87.0565	92.59	115.9258	156.02	95.8837
59.27	95.1508	93.35	116.0897	158.56	96.2003
59.32	95.1625	94.56	105.6324	159.00	96.2536
59.54	95.2149	94.65	105.6499	162.33	99.2067
60.96	96.9760	94.67	105.6541	162.66	86.5242
61.17	97.0261	94.87	105.6927	163.33	72.5894
62.93	96.7250	97.43	91.1804	165.86	101.3517
63.29	96.8084	98.43	90.1881	176.31	84.5358
63.58	96.8757	98.44	90.1899	176.60	83.7028
64.28	97.0373	99.53	92.6819	177.52	76.8827
66.73	99.7645	100.11	88.1382	181.07	0.0000
67.24	91.1970	102.03	70.9813	181.52	82.0204
125.81	91.2892	103.18	87.4466	184.41	79.6837
67.75	99.9989	103.37	83.9767	143.76	70.6459
68.89	87.1820	105.21	81.9025	193.51	79.1913
69.67	102.6203	105.31	79.5760	197.03	71.5515
70.82	102.8835	106.12	93.7482	198.01	85.7769
70.83	102.8864	106.47	85.5959	201.83	70.1520
72.81	103.3367	109.28	72.2564	203.43	79.1687
72.87	103.3504	111.00	86.6402	205.31	75.7628
74.66	133.5531	111.76	0.0000	210.85	84.2781
74.82	133.5992	114.06	68.0759	215.65	76.5911
74.97	133.6417	116.30	0.0000	218.12	78.5924
77.11	134.2510	116.74	77.9088	222.11	87.0762
78.74	134.7089	119.76	89.8636	227.09	68.3685
79.69	134.9738	121.12	81.6491	227.38	64.7410
80.03	135.0671	121.22	81.6615	228.16	0.0000
80.12	120.5788	121.78	61.2995	228.18	62.0546
80.19	120.5961	122.06	61.3259	116.74	62.0546
80.57	111.7500	122.92	75.8560	235.69	67.5694
81.00	111.8484	123.07	85.5080	235.96	67.5873
81.07	116.3391	265.00	98.8483	238.63	81.1295
81.75	125.4608	125.81	85.8655	238.98	0.0000
82.47	130.1318	127.23	88.4725	240.99	81.3121
83.79	121.4769	127.91	97.0557	242.00	81.3909
84.00	121.5272	129.30	80.2361	244.70	51.4627

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	53.2346	344.28	48.3291	563.25	16.0781
252.80	44.8452	345.93	42.3392	564.24	0.0000
254.15	0.0000	351.06	42.4973	569.33	17.2784
256.23	61.8562	351.93	42.5238	946.00	17.2803
260.90	0.0000	355.39	0.0000	569.70	17.2821
264.66	53.8283	356.01	28.9401	583.19	19.7164
264.80	55.7242	364.49	29.1140	584.27	19.7268
265.00	55.7338	366.42	0.0000	595.83	23.6299
269.46	46.4698	372.51	32.3581	427.87	28.9475
270.03	61.6754	375.05	29.8425	602.52	0.0000
271.23	66.4895	377.52	27.8311	604.72	21.0938
273.65	65.6772	356.01	36.2326	607.14	30.9729
276.40	47.7061	388.16	32.1851	609.32	25.5440
277.37	52.5203	388.63	34.2723	610.33	25.5564
277.60	54.4406	391.69	36.4234	614.28	24.0142
278.00	58.2809	264.66	32.4519	618.01	19.4575
279.20	60.2545	401.81	34.5710	620.36	29.2184
279.54	59.3145	402.40	37.7285	621.93	20.3791
279.70	59.3233	404.85	34.6395	630.19	0.0000
280.46	54.5740	410.95	35.8296	631.29	22.2466
283.69	62.4041	413.71	40.1152	633.25	16.0318
284.31	48.9891	414.70	33.8027	634.78	18.7172
285.41	53.8421	423.72	39.3072	635.95	16.9433
285.90	0.0000	427.09	38.3247	636.99	20.5202
287.50	51.0472	427.87	37.2786	657.50	13.5068
290.67	55.0448	433.94	26.7273	657.76	13.3800
293.27	0.0000	439.40	28.9622	657.90	0.0000
351.93	45.5590	440.45	35.4203	661.66	11.5473
295.96	52.3762	453.88	32.4609	664.57	0.0000
879.38	65.6104	463.37	17.4095	666.33	13.5594
299.98	47.8767	468.07	26.1855	666.50	13.5608
300.09	48.6593	473.00	29.5428	667.71	0.0000
300.13	47.6881	475.06	33.9599	677.62	17.2605
301.36	44.8133	476.78	27.4134	685.70	16.4092
302.85	62.4232	477.60	25.2325	692.65	0.0000
256.23	43.9499	482.18	27.4979	695.00	21.9661
304.85	40.0541	487.02	23.1614	696.49	20.5146
306.78	45.0080	492.35	0.0000	696.51	20.5146
308.46	44.0891	497.08	21.0735	697.00	23.4500
311.90	48.1387	505.52	24.5141	697.30	23.4531
316.51	34.5094	507.63	0.0000	697.49	19.0569
319.41	43.4808	511.00	25.7047	702.65	0.0000
320.08	40.5370	514.00	58.2101	706.68	16.1879
321.04	41.5565	514.00	58.2101	711.68	22.1206
323.87	34.2101	520.40	24.7115	720.70	15.7274
325.23	44.6686	520.69	0.0000	721.93	0.0000
328.76	36.8261	522.65	0.0000	722.78	19.4446
333.37	39.9504	527.90	0.0000	722.91	21.2979
333.97	38.9691	528.26	27.0703	723.31	22.2275
334.37	41.9795	529.59	20.3174	724.19	19.4561
338.28	45.1089	529.87	0.0000	727.33	15.7704
338.32	45.1108	531.02	15.8144	733.00	15.8068
311.90	45.1822	537.26	15.8656	735.93	16.7569
340.48	45.1822	546.56	0.0000	333.97	22.3564
340.55	45.1849	552.55	17.8185	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	14.0108	949.00	5.0317	1384.29	7.5838
747.24	14.9629	667.71	0.0000	1408.01	9.1528
748.06	12.1613	962.31	18.8672	1434.09	5.5257
752.31	10.3078	964.08	8.0908	1435.80	8.2916
753.82	18.7531	966.17	17.8116	1457.56	0.0000
756.73	12.2038	911.20	17.5576	1460.82	6.4870
756.80	12.2038	983.53	10.1773	1489.16	7.4621
884.68	13.5562	984.45	0.0000	1505.03	19.6588
765.81	19.5958	1274.44	21.2551	1584.12	3.1755
766.42	14.1348	1001.03	8.1875	1596.21	3.8205
766.84	14.1376	1002.74	9.8303	1620.50	6.7204
772.60	0.0000	1004.73	6.5576	1621.92	5.7621
776.52	13.2451	507.63	0.0000	1678.03	0.0000
739.50	0.0000	1025.87	0.0000	1690.97	6.8199
778.90	6.0604	1028.54	0.0000	1750.46	0.0000
783.70	12.3331	1037.84	13.4578	1764.49	0.0000
788.74	7.6042	1038.76	0.0000	1063.66	6.5993
792.07	18.0833	631.29	13.4943	1771.35	10.8915
795.86	18.1094	1048.07	15.5777	1791.20	0.0000
810.06	20.1239	1049.04	17.6599	1808.65	4.9868
810.29	18.2085	1050.41	14.5494	1810.72	0.0000
344.28	12.4593	1063.66	11.6860	1836.06	6.0158
810.76	11.5023	1077.00	8.3809		
815.77	16.3256	1077.34	8.3813		
1048.07	17.3035	1085.87	11.5539		
832.01	12.1456	1093.63	8.4219		
834.85	12.3793	1099.45	6.3274		
835.71	17.0269	1112.07	6.3508		
836.80	0.0000	1112.84	10.5872		
846.75	0.0000	1115.54	8.4761		
846.77	25.2549	1120.29	8.4878		
856.80	10.9187	1120.55	8.4883		
860.56	7.8096	1221.41	8.4902		
871.09	17.2455	1129.67	13.6172		
873.19	17.2584	1131.51	0.0000		
875.33	0.0000	1147.95	0.0000		
879.38	12.5789	1173.23	11.8473		
880.51	14.1570	1177.95	5.1765		
881.60	9.4415	1189.05	6.4904		
883.24	10.8248	1204.77	6.5182		
884.68	19.6912	1221.41	9.8218		
889.28	8.8753	1231.02	1.7506		
894.76	4.7426	1235.36	14.0203		
898.04	7.9131	1238.28	9.8657		
900.72	14.2567	1260.41	0.0000		
903.28	5.9456	1271.87	1.1060		
911.20	16.8916	1274.44	5.5334		
912.08	16.8968	1274.54	5.5334		
923.98	0.0000	1291.59	2.2231		
926.50	11.4150	1298.22	0.0000		
929.11	12.7961	1312.11	5.5872		
935.54	16.0293	1332.49	5.6158		
937.49	6.4160	1362.66	0.0000		
944.13	8.0378	1365.19	8.1523		
946.00	10.0534	1368.63	0.0000		

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 13:55:20.80

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781345.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM10.CNF;712
                                         Background date  : 29-JUL-2024 05:36:52
Sample date      : 10-JUL-2024 00:00:00  Acquisition date : 30-JUL-2024 13:39:53
Sample ID        : G1205781345           Sample quantity  : 1.15000E+02 GRAM
Detector name    : GAM10                 Detector geometry: CAN
Elapsed live time: 0 00:15:00.00         Elapsed real time: 0 00:15:02.58  0.3%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2636542               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.94	1351	1826	1.10	93.43	89	9	1.50E+00	6.3	
2	0	59.87	9269	2109	1.22	119.30	112	13	1.03E+01	1.5	
3	0	89.68	40	568	1.34	178.92	175	7	4.41E-02	101.2	
4	0	128.69	49	369	1.51	256.96	254	6	5.43E-02	64.1	
5	0	192.05	31	472	1.35	383.69	383	7	3.49E-02	115.6	
6	0	661.98	10554	262	1.60	1323.76	1317	16	1.17E+01	1.0	
7	0	860.63*	32	96	3.27	1721.20	1715	10	3.52E-02	60.8	
8	0	902.88	9	184	1.05	1805.72	1801	12	1.02E-02	298.1	
9	0	1081.01	26	101	1.52	2162.14	2157	11	2.84E-02	79.0	
10	0	1173.39	2803	116	1.89	2346.99	2339	16	3.11E+00	2.1	
11	0	1250.70	22	8	2.38	2501.66	2495	11	2.42E-02	33.4	
12	0	1254.66	17	0	1.52	2509.59	2506	8	1.89E-02	24.3	
13	0	1332.66	2595	26	2.00	2665.68	2655	20	2.88E+00	2.0	
14	0	1480.82	9	6	0.49	2962.16	2955	13	9.63E-03	69.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 30-JUL-2024 13:55:22

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781345.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 10-JUL-2024 00:00:00 Acquisition date : 30-JUL-2024 13:39:53
Sample ID        : G1205781345          Sample quantity  : 115.00 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA10              Detector geometry: CAN
Elapsed live time: 0 00:15:00.00        Elapsed real time: 0 00:15:02.58   0.3%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
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Interference Report

No interference correction performed

Sample ID : G1205781345 Acquisition date : 30-JUL-2024 13:39:53

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CO-60	1173.23	2670	99.85	1.258E+00	5.551E+01	5.592E+01	4.15
	1332.49	2458	99.98*	1.115E+00	5.759E+01	5.801E+01	4.04
BA-137M	661.66	10307	89.90*	2.192E+00	1.366E+02	1.368E+02	2.07
CS-137	661.66	10307	85.10*	2.192E+00	1.443E+02	1.445E+02	2.07
BI-210	46.54	1471	4.25*	2.148E-01	4.207E+03	4.214E+03	12.64
PB-210	46.54	1471	4.25*	2.148E-01	4.207E+03	4.214E+03	12.64
AM-241	59.54	9994	35.90*	1.234E+00	5.889E+02	5.890E+02	2.90

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 13:55:22.76

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781345.CNF;1  *
* Acquisition date : 30-JUL-2024 13:39:53 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:15:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:15:02.58     Half life ratio : *****           *
* Sample date      : 10-JUL-2024 00:00:00 Analyst initials: RXF2            *
* Sample ID        : G1205781345          Sample Quantity : 1.1500E+02 GRAM *
* Batch Number     : 2636542              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;17                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
CO-60	5.801E+01	2.296E+00	4.086E-01
BA-137M	1.368E+02	2.771E+00	6.817E-01
CS-137	1.445E+02	2.927E+00	7.201E-01
BI-210	4.214E+03	5.219E+02	4.548E+02
PB-210	4.214E+03	5.219E+02	4.548E+02
AM-241	5.890E+02	1.674E+01	7.997E+00

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	2.422E-02	5.460E+00	9.460E+00	NOT IDENT.
NA-22	-2.397E-01	2.302E-01	3.641E-01	NOT IDENT.
NA-24	0.000E+00	1.386E+09	0.000E+00	SHORT HLIF
AL-26	7.932E-03	1.720E-01	3.630E-01	NOT IDENT.
K-40	5.107E-01	1.404E+00	3.311E+00	NOT IDENT.
SC-46	-1.098E-01	5.386E-01	9.686E-01	NOT IDENT.
V-48	3.710E-01	1.125E+00	2.085E+00	NOT IDENT.
CR-51	2.075E+00	5.140E+00	9.278E+00	NOT IDENT.
MN-52	6.858E-01	2.013E+00	4.554E+00	NOT IDENT.
MN-54	6.982E-02	3.960E-01	7.372E-01	NOT IDENT.
CO-56	1.037E-01	4.543E-01	8.473E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-3.235E-02	2.888E-01	4.805E-01	NOT IDENT.
CO-58	1.922E-01	4.955E-01	8.727E-01	NOT IDENT.
FE-59	2.511E-02	1.210E+00	2.188E+00	NOT IDENT.
ZN-65	-2.214E-01	1.045E+00	1.859E+00	NOT IDENT.
GE-68	8.049E+00	1.733E+01	2.888E+01	NOT IDENT.
AS-73	-2.653E+00	4.464E+01	7.610E+01	NOT IDENT.
AS-74	1.072E-01	1.202E+00	2.109E+00	NOT IDENT.
SE-75	-1.417E-02	5.493E-01	9.822E-01	NOT IDENT.
BR-77	-3.898E+02	4.661E+02	8.153E+02	NOT IDENT.
SR-82	7.769E-02	4.178E+00	7.216E+00	NOT IDENT.
RB-83	1.008E-01	9.692E-01	1.693E+00	NOT IDENT.
RB-84	5.350E-01	9.113E-01	1.728E+00	NOT IDENT.

KR-85	-4.262E+00	8.480E+01	1.471E+02	NOT IDENT.
SR-85	-2.515E-02	4.759E-01	8.254E-01	NOT IDENT.
RB-86	5.278E+00	1.347E+01	2.226E+01	NOT IDENT.
Y-88	1.682E-02	1.762E-01	3.877E-01	NOT IDENT.
Y-91	-1.394E+01	1.476E+02	2.744E+02	NOT IDENT.
NB-94	-7.586E-02	3.040E-01	5.193E-01	NOT IDENT.
NB-95	2.070E-02	4.250E-01	7.393E-01	NOT IDENT.
NB-95M	4.154E-01	1.301E+00	2.370E+00	NOT IDENT.
ZR-95	-1.503E-01	7.715E-01	1.315E+00	NOT IDENT.
NB-97	0.000E+00	1.660E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	4.422E+09	0.000E+00	SHORT HLIF
MO-99	-3.389E+02	4.948E+02	8.087E+02	NOT IDENT.
TC-99M	0.000E+00	1.169E+24	0.000E+00	SHORT HLIF
RH-101	3.248E-01	4.078E-01	5.834E-01	FAIL ABUN
RH-102	-1.064E-01	6.161E-01	1.057E+00	NOT IDENT.
RU-103	-7.867E-01	6.007E-01	9.768E-01	NOT IDENT.
RH-106	5.246E-01	3.692E+00	6.457E+00	NOT IDENT.
RU-106	5.246E-01	3.692E+00	6.457E+00	NOT IDENT.
AG-108M	1.414E-01	4.533E-01	7.994E-01	NOT IDENT.
CD-109	3.318E+00	1.015E+01	1.604E+01	NOT IDENT.
AG-110	4.318E+00	1.025E+01	1.625E+01	NOT IDENT.
AG-110M	-3.224E-01	6.237E-01	1.103E+00	NOT IDENT.
SN-113	5.232E-01	6.180E-01	1.123E+00	NOT IDENT.
CD-115	8.162E+02	7.743E+02	1.423E+03	NOT IDENT.
SN-117M	2.100E-01	6.863E-01	1.271E+00	NOT IDENT.
SB-122	2.170E+01	8.747E+01	1.549E+02	NOT IDENT.
TE-123M	6.180E-02	2.790E-01	5.153E-01	NOT IDENT.
SB-124	-3.297E-01	4.810E-01	7.959E-01	NOT IDENT.
SB-125	-4.799E-01	1.431E+00	2.461E+00	NOT IDENT.
TE-125M	-7.717E+01	1.155E+02	1.886E+02	NOT IDENT.
I-126	-1.459E+00	3.111E+00	4.586E+00	NOT IDENT.
SB-126	-5.671E-01	1.832E+00	3.106E+00	NOT IDENT.
SN-126	5.296E-01	9.698E-01	1.550E+00	NOT IDENT.
SB-127	-1.930E+01	3.301E+01	5.480E+01	NOT IDENT.
I-131	-1.324E+00	2.434E+00	4.198E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	-3.452E+00	2.559E+01	4.592E+01	NOT IDENT.
BA-133	-2.761E-01	5.381E-01	9.303E-01	NOT IDENT.
I-133	0.000E+00	5.692E+06	0.000E+00	SHORT HLIF
CS-134	-2.796E-01	4.249E-01	6.919E-01	NOT IDENT.
I-135	0.000E+00	2.911E+22	0.000E+00	SHORT HLIF
CS-136	-4.917E-01	1.792E+00	3.184E+00	NOT IDENT.
LA-138	2.078E-01	2.543E-01	6.177E-01	NOT IDENT.
CE-139	-1.771E-01	2.965E-01	5.315E-01	NOT IDENT.
BA-140	1.358E+00	4.614E+00	8.137E+00	NOT IDENT.
LA-140	-3.170E-01	5.136E-01	8.805E-01	NOT IDENT.
CE-141	1.656E-01	6.697E-01	1.242E+00	NOT IDENT.
CE-143	0.000E+00	2.125E+04	0.000E+00	SHORT HLIF
CE-144	-9.482E-01	2.228E+00	3.642E+00	NOT IDENT.
PM-144	-1.219E-01	3.006E-01	5.073E-01	NOT IDENT.
PR-144	-8.796E+00	2.259E+01	3.818E+01	NOT IDENT.
PM-146	-8.169E-02	6.925E-01	1.196E+00	NOT IDENT.
ND-147	-1.076E+01	1.015E+01	1.662E+01	FAIL ABUN
PM-147	-6.835E+02	8.501E+03	1.416E+04	NOT IDENT.
PM-149	-8.371E+02	5.683E+03	1.010E+04	NOT IDENT.
EU-150	6.739E-02	3.206E-01	5.737E-01	NOT IDENT.
EU-152	-1.021E+00	1.195E+00	2.040E+00	NOT IDENT.
GD-153	-6.928E-02	1.007E+00	1.695E+00	NOT IDENT.
EU-154	-6.384E-01	6.578E-01	1.060E+00	NOT IDENT.
EU-155	-1.386E+00	1.212E+00	1.942E+00	NOT IDENT.
TB-160	-2.200E+00	1.634E+00	2.730E+00	FAIL ABUN
HO-166M	2.009E-01	5.954E-01	1.062E+00	NOT IDENT.
TM-171	-3.075E+02	9.562E+02	1.621E+03	NOT IDENT.
HF-172	-4.180E-01	2.299E+00	3.494E+00	FAIL ABUN
LU-172	-9.957E-02	8.117E-01	1.453E+00	FAIL ABUN
LU-176	-7.018E-02	3.195E-01	5.638E-01	FAIL ABUN
HF-181	4.179E-01	7.120E-01	1.267E+00	NOT IDENT.
TA-182	3.070E-01	1.091E+00	2.164E+00	NOT IDENT.
RE-183	0.000E+00	9.253E+00	1.910E+01	FAIL ABUN
RE-184	5.549E-01	3.242E+00	3.413E+00	FAIL ABUN
W-188	-4.106E+01	8.814E+01	1.545E+02	NOT IDENT.
IR-192	-1.422E-01	4.356E-01	7.645E-01	NOT IDENT.
HG-203	-1.504E-03	4.820E-01	8.612E-01	NOT IDENT.
TL-204	3.077E+01	7.094E+01	1.233E+02	NOT IDENT.
BI-207	-1.270E-01	6.396E-01	1.143E+00	NOT IDENT.
TL-208	-2.548E-01	3.904E-01	6.529E-01	FAIL ABUN
BI-211	-7.477E-01	2.489E+00	4.355E+00	NOT IDENT.
PB-211	-1.494E+00	9.603E+00	1.673E+01	NOT IDENT.

BI-212	-2.578E+00	4.908E+00	8.149E+00	NOT IDENT.
PB-212	-5.429E-01	6.054E-01	1.057E+00	NOT IDENT.
BI-213	-1.518E+00	1.637E+00	2.744E+00	NOT IDENT.
BI-214	3.511E-02	7.508E-01	1.312E+00	NOT IDENT.
PB-214	3.786E-01	8.976E-01	1.618E+00	NOT IDENT.
RN-219	-4.620E+00	5.510E+00	9.325E+00	NOT IDENT.
RN-222	3.511E-02	7.508E-01	1.312E+00	NOT IDENT.
RA-223	1.110E+00	7.646E+00	1.366E+01	NOT IDENT.
RA-224	9.948E+00	6.595E+00	1.247E+01	NOT IDENT.
AC-225	-2.328E+00	1.001E+01	1.790E+01	NOT IDENT.
RA-226	3.786E-01	8.976E-01	1.618E+00	NOT IDENT.
AC-227	-1.584E+00	2.910E+00	5.115E+00	NOT IDENT.
TH-227	-1.584E+00	2.910E+00	5.115E+00	NOT IDENT.
AC-228	-3.898E-02	1.687E+00	3.080E+00	NOT IDENT.
RA-228	-3.898E-02	1.687E+00	3.080E+00	NOT IDENT.
TH-228	-5.429E-01	6.054E-01	1.057E+00	NOT IDENT.
TH-229	3.573E+00	8.093E+00	1.064E+01	FAIL ABUN
TH-230	3.786E-01	8.976E-01	1.618E+00	NOT IDENT.
PA-231	1.411E+00	5.455E+00	9.822E+00	NOT IDENT.
TH-231	1.110E+00	7.646E+00	1.366E+01	NOT IDENT.
TH-232	-3.898E-02	1.687E+00	3.080E+00	NOT IDENT.
PA-233	-1.412E-01	7.528E-01	1.331E+00	NOT IDENT.
PA-234	1.861E+00	4.092E+00	7.595E+00	NOT IDENT.
PA-234M	-1.524E+01	5.331E+01	9.520E+01	NOT IDENT.
TH-234	4.663E+00	2.495E+01	3.992E+01	NOT IDENT.
U-234	3.786E-01	8.976E-01	1.618E+00	NOT IDENT.
U-235	-7.664E-01	1.947E+00	3.536E+00	FAIL ABUN
NP-237	-1.412E-01	7.528E-01	1.331E+00	NOT IDENT.
NP-238	1.243E+02	1.500E+03	2.740E+03	NOT IDENT.
U-238	4.663E+00	2.495E+01	3.992E+01	NOT IDENT.
NP-239	-1.588E+00	3.094E+00	5.070E+00	NOT IDENT.
PU-239	3.459E+03	4.343E+03	6.162E+03	FAIL ABUN
AM-243	-5.482E-01	7.120E-01	1.177E+00	NOT IDENT.
CM-243	1.324E+00	1.234E+00	2.166E+00	NOT IDENT.
BK-247	-3.322E-01	9.588E-01	1.695E+00	NOT IDENT.
CM-247	-2.705E-01	5.066E-01	8.686E-01	NOT IDENT.
CF-249	-5.122E-02	5.397E-01	9.444E-01	NOT IDENT.
CF-251	-5.397E-01	1.292E+00	2.323E+00	NOT IDENT.
ANH-511	1.187E-01	3.794E-01	6.828E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 13:55:21.52

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CO-60	1173.23	2670	99.85	1.258E+00	5.551E+01	5.592E+01	4.15
	1332.49	2458	99.98*	1.115E+00	5.759E+01	5.801E+01	4.04
BA-137M	661.66	10307	89.90*	2.192E+00	1.366E+02	1.368E+02	2.07
CS-137	661.66	10307	85.10*	2.192E+00	1.443E+02	1.445E+02	2.07
BI-210	46.54	1471	4.25*	2.148E-01	4.207E+03	4.214E+03	12.64
PB-210	46.54	1471	4.25*	2.148E-01	4.207E+03	4.214E+03	12.64
AM-241	59.54	9994	35.90*	1.234E+00	5.889E+02	5.890E+02	2.90

Flag: "*" = Keyline

Sample ID : G1205781345 Acquisition date : 30-JUL-2024 13:39:53

Total number of lines in spectrum 14
Number of unidentified lines 4
Number of lines tentatively identified by NID 10 71.43%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.01	5.759E+01	5.801E+01	0.234E+01	4.04	
BA-137M	30.08Y	1.00	1.366E+02	1.368E+02	0.028E+02	2.07	
CS-137	30.08Y	1.00	1.443E+02	1.445E+02	0.030E+02	2.07	
BI-210	22.20Y	1.00	4.207E+03	4.214E+03	0.533E+03	12.64	
PB-210	22.20Y	1.00	4.207E+03	4.214E+03	0.533E+03	12.64	
AM-241	432.60Y	1.00	5.889E+02	5.890E+02	0.171E+02	2.90	
			---	---			
		Total Activity :	9.341E+03	9.356E+03			
		Grand Total Activity :	9.341E+03	9.356E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1205781345 Acquisition date : 30-JUL-2024 13:39:53

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	89.68	42	603	1.34	178.92	175	7	4.41E-02	****	4.68E+00	T
0	128.69	51	386	1.51	256.96	254	6	5.43E-02	****	6.11E+00	T
0	192.05	32	485	1.35	383.69	383	7	3.49E-02	****	5.36E+00	T
0	860.63	31	92	3.27	1721.20	1715	10	3.52E-02	****	1.72E+00	T
0	902.88	9	177	1.05	1805.72	1801	12	1.02E-02	****	1.64E+00	T
0	1081.01	24	97	1.52	2162.14	2157	11	2.84E-02	****	1.37E+00	
0	1250.70	21	8	2.38	2501.66	2495	11	2.42E-02	66.7	1.18E+00	
0	1254.66	16	0	1.52	2509.59	2506	8	1.89E-02	48.5	1.18E+00	
0	1480.82	8	6	0.49	2962.16	2955	13	9.63E-03	****	1.02E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 13:55:32.04

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781345.CNF;1  *
* Acquisition date : 30-JUL-2024 13:39:53 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:15:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:15:02.58     Half life ratio : *****           *
* Sample date      : 10-JUL-2024 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781345          Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1500E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
CO-60	1.725E-01
BA-137M	3.230E-01
CS-137	3.412E-01
BI-210	2.232E+02
PB-210	2.232E+02
AM-241	3.916E+00

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.577E+00	NOT IDENT.
NA-22	1.513E-01	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.428E-01	NOT IDENT.
K-40	1.335E+00	NOT IDENT.
SC-46	4.593E-01	NOT IDENT.
V-48	9.853E-01	NOT IDENT.
CR-51	4.483E+00	NOT IDENT.
MN-52	1.846E+00	NOT IDENT.
MN-54	3.478E-01	NOT IDENT.
CO-56	3.994E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.331E-01	NOT IDENT.
CO-58	4.126E-01	NOT IDENT.
FE-59	1.030E+00	NOT IDENT.
ZN-65	8.740E-01	NOT IDENT.
GE-68	1.360E+01	NOT IDENT.
AS-73	3.738E+01	NOT IDENT.
AS-74	9.989E-01	NOT IDENT.
SE-75	4.756E-01	NOT IDENT.
BR-77	3.945E+02	NOT IDENT.
SR-82	3.392E+00	NOT IDENT.
RB-83	8.123E-01	NOT IDENT.
RB-84	8.169E-01	NOT IDENT.
KR-85	7.055E+01	NOT IDENT.

SR-85	3.958E-01	NOT IDENT.
RB-86	1.049E+01	NOT IDENT.
Y-88	1.492E-01	NOT IDENT.
Y-91	1.231E+02	NOT IDENT.
NB-94	2.427E-01	NOT IDENT.
NB-95	3.467E-01	NOT IDENT.
NB-95M	1.148E+00	NOT IDENT.
ZR-95	6.158E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	3.781E+02	NOT IDENT.
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.831E-01	FAIL ABUN
RH-102	5.007E-01	NOT IDENT.
RU-103	4.684E-01	NOT IDENT.
RH-106	3.070E+00	NOT IDENT.
RU-106	3.070E+00	NOT IDENT.
AG-108M	3.871E-01	NOT IDENT.
CD-109	7.805E+00	NOT IDENT.
AG-110	7.749E+00	NOT IDENT.
AG-110M	5.209E-01	NOT IDENT.
SN-113	5.428E-01	NOT IDENT.
CD-115	6.822E+02	NOT IDENT.
SN-117M	6.159E-01	NOT IDENT.
SB-122	7.369E+01	NOT IDENT.
TE-123M	2.496E-01	NOT IDENT.
SB-124	2.979E-01	NOT IDENT.
SB-125	1.192E+00	NOT IDENT.
TE-125M	9.138E+01	NOT IDENT.
I-126	2.145E+00	NOT IDENT.
SB-126	1.451E+00	NOT IDENT.
SN-126	7.539E-01	NOT IDENT.
SB-127	2.557E+01	NOT IDENT.
I-131	2.026E+00	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	2.224E+01	NOT IDENT.
BA-133	4.491E-01	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	3.233E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	1.500E+00	NOT IDENT.
LA-138	2.575E-01	NOT IDENT.
CE-139	2.573E-01	NOT IDENT.
BA-140	3.899E+00	NOT IDENT.
LA-140	3.237E-01	NOT IDENT.
CE-141	6.020E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.766E+00	NOT IDENT.
PM-144	2.361E-01	NOT IDENT.
PR-144	1.777E+01	NOT IDENT.
PM-146	5.796E-01	NOT IDENT.
ND-147	7.934E+00	FAIL ABUN
PM-147	6.873E+03	NOT IDENT.
PM-149	4.877E+03	NOT IDENT.
EU-150	2.769E-01	NOT IDENT.
EU-152	9.836E-01	NOT IDENT.
GD-153	8.229E-01	NOT IDENT.
EU-154	4.429E-01	NOT IDENT.
EU-155	9.409E-01	NOT IDENT.
TB-160	1.280E+00	FAIL ABUN
HO-166M	4.996E-01	NOT IDENT.
TM-171	7.962E+02	NOT IDENT.
HF-172	1.695E+00	FAIL ABUN
LU-172	6.846E-01	FAIL ABUN
LU-176	2.723E-01	FAIL ABUN
HF-181	6.118E-01	NOT IDENT.
TA-182	9.600E-01	NOT IDENT.
RE-183	9.429E+00	FAIL ABUN
RE-184	1.623E+00	FAIL ABUN
W-188	7.460E+01	NOT IDENT.
IR-192	3.688E-01	NOT IDENT.
HG-203	4.166E-01	NOT IDENT.
TL-204	5.989E+01	NOT IDENT.
BI-207	5.375E-01	NOT IDENT.
TL-208	3.095E-01	FAIL ABUN
BI-211	2.101E+00	NOT IDENT.
PB-211	8.076E+00	NOT IDENT.
BI-212	3.813E+00	NOT IDENT.

PB-212	5.110E-01	NOT IDENT.
BI-213	1.327E+00	NOT IDENT.
BI-214	6.232E-01	NOT IDENT.
PB-214	7.811E-01	NOT IDENT.
RN-219	4.498E+00	NOT IDENT.
RN-222	6.232E-01	NOT IDENT.
RA-223	6.596E+00	NOT IDENT.
RA-224	6.050E+00	NOT IDENT.
AC-225	8.693E+00	NOT IDENT.
RA-226	7.811E-01	NOT IDENT.
AC-227	2.474E+00	NOT IDENT.
TH-227	2.474E+00	NOT IDENT.
AC-228	1.456E+00	NOT IDENT.
RA-228	1.456E+00	NOT IDENT.
TH-228	5.110E-01	NOT IDENT.
TH-229	5.170E+00	FAIL ABUN
TH-230	7.811E-01	NOT IDENT.
PA-231	4.746E+00	NOT IDENT.
TH-231	6.596E+00	NOT IDENT.
TH-232	1.456E+00	NOT IDENT.
PA-233	6.417E-01	NOT IDENT.
PA-234	3.611E+00	NOT IDENT.
PA-234M	4.477E+01	NOT IDENT.
TH-234	1.937E+01	NOT IDENT.
U-234	7.811E-01	NOT IDENT.
U-235	1.715E+00	FAIL ABUN
NP-237	6.417E-01	NOT IDENT.
NP-238	1.293E+03	NOT IDENT.
U-238	1.937E+01	NOT IDENT.
NP-239	2.461E+00	NOT IDENT.
PU-239	2.989E+03	FAIL ABUN
AM-243	5.715E-01	NOT IDENT.
CM-243	1.053E+00	NOT IDENT.
BK-247	8.203E-01	NOT IDENT.
CM-247	4.193E-01	NOT IDENT.
CF-249	4.562E-01	NOT IDENT.
CF-251	1.125E+00	NOT IDENT.
ANH-511	3.285E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 30-JUL-2024 13:55:35.63

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1205781345.CNF;1  *
* Acquisition date : 30-JUL-2024 13:39:53 Sensitivity     : 3.000           *
* Detector ID      : GAM10                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:15:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:15:02.58     Half life ratio : *****           *
* Sample date      : 10-JUL-2024 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1205781345          Analyst initials: RXF2            *
* Batch Number     : 2636542              Sample Quantity : 1.1500E+02 GRAM *
*                                         Quantity Err(%) : 1.7391E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 14-JUN-2024 04:03:20 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM10_CAN.CNF;5             *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
CO-60	5.801E+01	7.814E+00	7.814E+00
BA-137M	1.368E+02	1.151E+01	1.151E+01
CS-137	1.445E+02	1.215E+01	1.215E+01
BI-210	4.214E+03	8.313E+02	8.313E+02
PB-210	4.214E+03	8.313E+02	8.313E+02
AM-241	5.890E+02	7.796E+01	7.796E+01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	2.422E-02	5.460E+00	5.460E+00	NOT IDENT.
NA-22	-2.397E-01	2.319E-01	2.558E-01	NOT IDENT.
NA-24	-1.656E+08	1.386E+09	1.388E+09	SHORT HLIF
AL-26	7.932E-03	1.720E-01	1.721E-01	NOT IDENT.
K-40	5.107E-01	1.405E+00	1.424E+00	NOT IDENT.
SC-46	-1.098E-01	5.388E-01	5.411E-01	NOT IDENT.
V-48	3.710E-01	1.126E+00	1.138E+00	NOT IDENT.
CR-51	2.075E+00	5.144E+00	5.228E+00	NOT IDENT.
MN-52	6.858E-01	2.015E+00	2.039E+00	NOT IDENT.
MN-54	6.982E-02	3.961E-01	3.974E-01	NOT IDENT.
CO-56	1.037E-01	4.544E-01	4.568E-01	NOT IDENT.
MN-56	1.000E+41	4.351E+41	0.000E+00	SHORT HLIF
CO-57	-3.235E-02	2.888E-01	2.892E-01	NOT IDENT.
CO-58	1.922E-01	4.960E-01	5.035E-01	NOT IDENT.
FE-59	2.511E-02	1.210E+00	1.210E+00	NOT IDENT.
ZN-65	-2.214E-01	1.045E+00	1.050E+00	NOT IDENT.
GE-68	8.049E+00	1.735E+01	1.773E+01	NOT IDENT.
AS-73	-2.653E+00	4.464E+01	4.466E+01	NOT IDENT.
AS-74	1.072E-01	1.202E+00	1.203E+00	NOT IDENT.
SE-75	-1.417E-02	5.493E-01	5.493E-01	NOT IDENT.
BR-77	-3.898E+02	5.217E+02	5.505E+02	NOT IDENT.
SR-82	7.769E-02	4.178E+00	4.178E+00	NOT IDENT.
RB-83	1.008E-01	9.693E-01	9.703E-01	NOT IDENT.
RB-84	5.350E-01	9.139E-01	9.452E-01	NOT IDENT.

KR-85	-4.262E+00	8.481E+01	8.483E+01	NOT IDENT.
SR-85	-2.515E-02	4.759E-01	4.760E-01	NOT IDENT.
RB-86	5.278E+00	1.348E+01	1.369E+01	NOT IDENT.
Y-88	1.682E-02	1.763E-01	1.764E-01	NOT IDENT.
Y-91	-1.394E+01	1.476E+02	1.478E+02	NOT IDENT.
NB-94	-7.586E-02	3.041E-01	3.060E-01	NOT IDENT.
NB-95	2.070E-02	4.250E-01	4.251E-01	NOT IDENT.
NB-95M	4.154E-01	1.302E+00	1.315E+00	NOT IDENT.
ZR-95	-1.503E-01	7.716E-01	7.746E-01	NOT IDENT.
NB-97	1.000E+41	1.662E+41	0.000E+00	SHORT HLIF
ZR-97	-1.535E+09	4.424E+09	4.478E+09	SHORT HLIF
MO-99	-3.389E+02	4.961E+02	5.191E+02	NOT IDENT.
TC-99M	-2.982E+21	1.169E+24	0.000E+00	SHORT HLIF
RH-101	3.248E-01	4.126E-01	4.378E-01	FAIL ABUN
RH-102	-1.064E-01	6.162E-01	6.181E-01	NOT IDENT.
RU-103	-7.867E-01	6.046E-01	7.010E-01	NOT IDENT.
RH-106	5.246E-01	3.692E+00	3.700E+00	NOT IDENT.
RU-106	5.246E-01	3.692E+00	3.700E+00	NOT IDENT.
AG-108M	1.414E-01	4.535E-01	4.579E-01	NOT IDENT.
CD-109	3.318E+00	1.015E+01	1.026E+01	NOT IDENT.
AG-110	4.318E+00	1.025E+01	1.043E+01	NOT IDENT.
AG-110M	-3.224E-01	6.252E-01	6.418E-01	NOT IDENT.
SN-113	5.232E-01	6.195E-01	6.628E-01	NOT IDENT.
CD-115	8.162E+02	7.781E+02	8.607E+02	NOT IDENT.
SN-117M	2.100E-01	6.864E-01	6.929E-01	NOT IDENT.
SB-122	2.170E+01	8.748E+01	8.803E+01	NOT IDENT.
TE-123M	6.180E-02	2.790E-01	2.804E-01	NOT IDENT.
SB-124	-3.297E-01	4.821E-01	5.045E-01	NOT IDENT.
SB-125	-4.799E-01	1.432E+00	1.448E+00	NOT IDENT.
TE-125M	-7.717E+01	1.157E+02	1.208E+02	NOT IDENT.
I-126	-1.459E+00	3.113E+00	3.182E+00	NOT IDENT.
SB-126	-5.671E-01	1.833E+00	1.851E+00	NOT IDENT.
SN-126	5.296E-01	9.708E-01	9.998E-01	NOT IDENT.
SB-127	-1.930E+01	3.311E+01	3.423E+01	NOT IDENT.
I-131	-1.324E+00	2.437E+00	2.509E+00	NOT IDENT.
I-132	1.000E+41	4.431E+41	0.000E+00	SHORT HLIF
TE-132	-3.452E+00	2.560E+01	2.564E+01	NOT IDENT.
BA-133	-2.761E-01	5.386E-01	5.528E-01	NOT IDENT.
I-133	-7.737E+05	5.694E+06	5.704E+06	SHORT HLIF
CS-134	-2.796E-01	4.260E-01	4.443E-01	NOT IDENT.
I-135	8.680E+21	2.941E+22	0.000E+00	SHORT HLIF
CS-136	-4.917E-01	1.793E+00	1.807E+00	NOT IDENT.
LA-138	2.078E-01	2.556E-01	2.722E-01	NOT IDENT.
CE-139	-1.771E-01	2.988E-01	3.093E-01	NOT IDENT.
BA-140	1.358E+00	4.615E+00	4.655E+00	NOT IDENT.
LA-140	-3.170E-01	5.148E-01	5.342E-01	NOT IDENT.
CE-141	1.656E-01	6.698E-01	6.740E-01	NOT IDENT.
CE-143	2.643E+03	2.125E+04	2.128E+04	SHORT HLIF
CE-144	-9.482E-01	2.230E+00	2.270E+00	NOT IDENT.
PM-144	-1.219E-01	3.007E-01	3.057E-01	NOT IDENT.
PR-144	-8.796E+00	2.260E+01	2.295E+01	NOT IDENT.
PM-146	-8.169E-02	6.926E-01	6.935E-01	NOT IDENT.
ND-147	-1.076E+01	1.019E+01	1.128E+01	FAIL ABUN
PM-147	-6.835E+02	8.501E+03	8.506E+03	NOT IDENT.
PM-149	-8.371E+02	5.685E+03	5.697E+03	NOT IDENT.
EU-150	6.739E-02	3.207E-01	3.221E-01	NOT IDENT.
EU-152	-1.021E+00	1.199E+00	1.285E+00	NOT IDENT.
GD-153	-6.928E-02	1.007E+00	1.007E+00	NOT IDENT.
EU-154	-6.384E-01	6.619E-01	7.218E-01	NOT IDENT.
EU-155	-1.386E+00	1.219E+00	1.370E+00	NOT IDENT.
TB-160	-2.200E+00	1.661E+00	1.934E+00	FAIL ABUN
HO-166M	2.009E-01	5.957E-01	6.025E-01	NOT IDENT.
TM-171	-3.075E+02	9.576E+02	9.676E+02	NOT IDENT.
HF-172	-4.180E-01	2.300E+00	2.308E+00	FAIL ABUN
LU-172	-9.957E-02	8.119E-01	8.131E-01	FAIL ABUN
LU-176	-7.018E-02	3.196E-01	3.212E-01	FAIL ABUN
HF-181	4.179E-01	7.129E-01	7.373E-01	NOT IDENT.
TA-182	3.070E-01	1.092E+00	1.101E+00	NOT IDENT.
RE-183	1.062E+02	1.885E+01	5.146E+01	FAIL ABUN
RE-184	5.549E-01	3.243E+00	3.253E+00	FAIL ABUN
W-188	-4.106E+01	8.834E+01	9.026E+01	NOT IDENT.
IR-192	-1.422E-01	4.358E-01	4.405E-01	NOT IDENT.
HG-203	-1.504E-03	4.820E-01	4.820E-01	NOT IDENT.
TL-204	3.077E+01	7.102E+01	7.237E+01	NOT IDENT.
BI-207	-1.270E-01	6.397E-01	6.423E-01	NOT IDENT.
TL-208	-2.548E-01	3.910E-01	4.075E-01	FAIL ABUN
BI-211	-7.477E-01	2.490E+00	2.513E+00	NOT IDENT.
PB-211	-1.494E+00	9.604E+00	9.628E+00	NOT IDENT.

BI-212	-2.578E+00	4.915E+00	5.050E+00	NOT IDENT.
PB-212	-5.429E-01	6.076E-01	6.550E-01	NOT IDENT.
BI-213	-1.518E+00	1.642E+00	1.779E+00	NOT IDENT.
BI-214	3.511E-02	7.508E-01	7.510E-01	NOT IDENT.
PB-214	3.786E-01	8.983E-01	9.144E-01	NOT IDENT.
RN-219	-4.620E+00	5.550E+00	5.928E+00	NOT IDENT.
RN-222	3.511E-02	7.508E-01	7.510E-01	NOT IDENT.
RA-223	1.110E+00	7.647E+00	7.663E+00	NOT IDENT.
RA-224	9.948E+00	6.664E+00	8.033E+00	NOT IDENT.
AC-225	-2.328E+00	1.001E+01	1.007E+01	NOT IDENT.
RA-226	3.786E-01	8.983E-01	9.144E-01	NOT IDENT.
AC-227	-1.584E+00	2.920E+00	3.006E+00	NOT IDENT.
TH-227	-1.584E+00	2.920E+00	3.006E+00	NOT IDENT.
AC-228	-3.898E-02	1.687E+00	1.688E+00	NOT IDENT.
RA-228	-3.898E-02	1.687E+00	1.688E+00	NOT IDENT.
TH-228	-5.429E-01	6.076E-01	6.550E-01	NOT IDENT.
TH-229	3.573E+00	8.098E+00	8.257E+00	FAIL ABUN
TH-230	3.786E-01	8.983E-01	9.144E-01	NOT IDENT.
PA-231	1.411E+00	5.465E+00	5.502E+00	NOT IDENT.
TH-231	1.110E+00	7.647E+00	7.663E+00	NOT IDENT.
TH-232	-3.898E-02	1.687E+00	1.688E+00	NOT IDENT.
PA-233	-1.412E-01	7.530E-01	7.556E-01	NOT IDENT.
PA-234	1.861E+00	4.618E+00	4.694E+00	NOT IDENT.
PA-234M	-1.524E+01	5.335E+01	5.379E+01	NOT IDENT.
TH-234	4.663E+00	2.497E+01	2.506E+01	NOT IDENT.
U-234	3.786E-01	8.983E-01	9.144E-01	NOT IDENT.
U-235	-7.664E-01	1.948E+00	1.979E+00	FAIL ABUN
NP-237	-1.412E-01	7.530E-01	7.556E-01	NOT IDENT.
NP-238	1.243E+02	1.500E+03	1.501E+03	NOT IDENT.
U-238	4.663E+00	2.497E+01	2.506E+01	NOT IDENT.
NP-239	-1.588E+00	3.099E+00	3.181E+00	NOT IDENT.
PU-239	3.459E+03	4.353E+03	4.624E+03	FAIL ABUN
AM-243	-5.482E-01	7.137E-01	7.553E-01	NOT IDENT.
CM-243	1.324E+00	1.243E+00	1.378E+00	NOT IDENT.
BK-247	-3.322E-01	9.616E-01	9.732E-01	NOT IDENT.
CM-247	-2.705E-01	5.090E-01	5.234E-01	NOT IDENT.
CF-249	-5.122E-02	5.397E-01	5.402E-01	NOT IDENT.
CF-251	-5.397E-01	1.294E+00	1.317E+00	NOT IDENT.
ANH-511	1.187E-01	3.796E-01	3.833E-01	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	935.4927	85.43	408.3674	131.20	332.1702
45.60	903.5371	86.55	402.7285	133.02	339.0131
46.54	905.2366	86.79	377.7773	133.52	361.5521
49.72	932.2790	86.94	377.8545	136.00	351.2693
51.35	942.5680	87.09	377.9330	136.47	356.4221
51.87	932.3575	87.57	373.4705	140.51	344.5406
52.39	998.9623	88.03	397.2556	143.76	356.5384
52.97	1010.0671	88.34	420.9855	144.24	348.3340
53.44	1000.8956	88.47	421.0591	145.44	321.9219
54.07	1002.4160	89.96	357.3546	152.43	308.0727
57.36	0.0000	90.64	360.8292	153.25	321.8292
57.53	726.1167	91.11	340.5564	154.21	328.0381
57.98	726.6835	92.59	387.0319	156.02	320.1295
59.27	728.3074	93.35	364.0917	158.56	300.5168
59.32	728.3690	94.56	376.5415	159.00	302.3378
59.54	728.6450	94.65	376.5875	162.33	294.7498
60.96	730.4070	94.67	361.1531	162.66	294.8377
61.17	730.6658	94.87	358.8692	163.33	286.4941
62.93	340.3187	97.43	364.8131	165.86	329.0304
63.29	340.5218	98.43	391.5370	176.31	322.6009
63.58	333.1130	98.44	391.5420	176.60	322.6808
64.28	374.4254	99.53	343.0678	177.52	330.7088
66.73	364.1174	100.11	345.7077	181.07	334.3182
67.24	326.7162	102.03	393.2962	181.52	352.6389
67.68	362.3835	103.18	320.6029	184.41	350.8986
67.75	362.4222	103.37	330.2866	185.72	359.9800
68.89	369.9473	105.21	383.9891	193.51	392.9390
69.67	386.4552	105.31	385.2393	197.03	362.0327
70.82	354.9756	106.12	366.3356	198.01	389.1076
70.83	352.6851	106.47	335.1454	201.83	338.3164
72.81	356.0601	109.28	360.4592	203.43	340.5104
72.87	343.4144	111.00	295.7368	205.31	344.5468
74.66	404.4285	111.76	351.8025	210.85	383.3042
74.82	435.7308	114.06	346.6566	215.65	382.0432
74.97	435.8286	116.30	379.2495	218.12	378.2979
77.11	364.1477	116.74	385.5397	222.11	348.1112
78.74	447.5472	119.76	337.8806	227.09	347.6008
79.69	384.1356	121.12	386.2062	227.38	351.2652
80.03	375.0038	121.22	360.4995	228.16	320.9056
80.12	375.0541	121.78	349.6790	228.18	320.9092
80.19	372.7637	122.06	349.7878	235.69	288.3149
80.57	364.8053	122.92	342.7473	235.96	277.5223
81.00	397.6842	123.07	342.8027	238.63	324.2445
81.07	397.7232	123.68	338.1125	238.98	328.8543
81.75	403.9430	125.81	351.6293	240.99	276.7041
82.47	395.0055	127.23	345.5833	242.00	310.4907
83.79	347.7319	127.91	363.9506	244.70	324.7224
84.00	365.4012	129.30	344.6978	252.40	307.2549

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.80	298.1900	351.06	261.2286	569.33	116.9568
254.15	0.0000	351.93	240.9513	569.50	106.2349
256.23	314.4742	355.39	0.0000	569.70	106.2429
260.90	343.9747	356.01	279.4618	583.19	129.4531
264.66	310.7267	364.49	275.8439	584.27	118.7101
264.80	310.7542	366.42	280.0475	595.83	105.1425
265.00	319.0955	372.51	292.7314	600.60	112.9290
269.46	295.9831	375.05	255.7471	602.52	0.0000
270.03	306.2720	377.52	278.7278	604.72	112.0150
271.23	306.5144	383.85	269.7563	607.14	128.4431
273.65	288.4431	388.16	271.3465	609.32	116.5654
276.40	272.2315	388.63	259.5214	610.33	115.5191
277.37	302.1551	391.69	244.0531	614.28	118.9615
277.60	299.4118	400.66	247.1473	618.01	116.9398
278.00	301.3440	401.81	285.1796	620.36	109.3831
279.20	291.3424	402.40	279.2822	621.93	119.2941
279.54	301.6472	404.85	265.6374	630.19	0.0000
279.70	297.0181	410.95	278.4581	631.29	113.1131
280.46	269.2148	413.71	286.8553	633.25	113.1927
283.69	287.5030	414.70	267.9289	634.78	115.4526
284.31	268.0056	423.72	297.3167	635.95	97.9014
285.41	269.1270	427.09	310.9201	636.99	103.4398
285.90	264.5352	427.87	331.2365	657.50	126.3621
287.50	264.8058	433.94	292.6925	657.76	129.6969
290.67	284.0810	439.40	306.6389	657.90	0.0000
293.27	0.0000	440.45	337.2686	661.66	108.7865
295.22	277.3607	453.88	335.2738	664.57	0.0000
295.96	276.5461	463.37	332.6155	666.33	83.3893
298.58	271.3359	468.07	311.7105	666.50	83.3923
299.98	277.2220	473.00	317.5498	667.71	0.0000
300.09	270.6449	475.06	342.6114	677.62	66.9702
300.13	270.6507	476.78	333.5735	685.70	79.4677
301.36	258.5808	477.60	291.3346	692.65	62.8268
302.85	299.4319	482.18	240.1657	695.00	61.7519
304.50	260.9680	487.02	215.7738	696.49	69.6466
304.85	267.6386	492.35	213.1538	696.51	69.6466
306.78	275.5240	497.08	233.3835	697.00	65.1650
308.46	255.8990	505.52	189.2597	697.30	65.1721
311.90	251.6778	507.63	0.0000	697.49	65.1745
316.51	261.8856	511.00	182.3598	702.65	74.2930
319.41	248.9727	514.00	183.6375	706.68	59.7393
320.08	253.8397	514.00	183.6375	711.68	74.5159
321.04	261.6245	520.40	179.9202	720.70	74.7361
323.87	256.3154	520.69	183.0979	721.93	0.0000
325.23	250.7742	522.65	0.0000	722.78	69.1214
328.76	244.5670	527.90	143.5371	722.91	69.1264
333.37	251.9415	528.26	145.6704	723.31	68.0005
333.97	247.2171	529.59	170.0405	724.19	65.7527
334.37	268.4421	529.87	0.0000	727.33	83.9787
338.28	249.7470	531.02	188.1038	733.00	76.1738
338.32	249.7523	537.26	165.2739	735.93	61.4509
340.48	260.6726	546.56	0.0000	737.46	69.4515
340.55	260.6836	552.55	128.9810	739.50	86.5854
344.28	274.7725	563.25	126.3161	744.23	78.7312
345.93	237.2540	564.24	119.9388	747.24	87.9440

ENERGY	MDA COUNTS
748.06	76.5418
752.31	88.0850
753.82	65.2360
756.73	77.8973
756.80	77.9001
763.94	76.9262
765.81	74.6749
766.42	68.9429
766.84	74.6987
772.60	0.0000
776.52	81.8395
777.92	64.5768
778.90	79.5931
783.70	73.9349
788.74	75.2065
792.07	76.4414
795.86	84.6469
801.95	77.8313
1093.63	80.3512
810.29	80.3568
810.45	80.3596
810.76	89.6861
815.77	90.9873
818.51	95.4382
832.01	87.0298
834.85	87.9822
835.71	81.8461
836.80	0.0000
846.75	0.0000
846.77	84.7588
856.80	113.3398
860.56	80.8409
871.09	94.2445
873.19	106.7542
875.33	0.0000
879.38	111.3968
880.51	84.6877
881.60	85.6055
883.24	92.7837
884.68	110.6721
889.28	117.9613
894.76	119.0376
898.04	107.5012
900.72	127.6637
903.28	102.2758
911.20	99.8011
912.08	93.5295
923.98	104.6613
926.50	124.5950
929.11	108.4204
935.54	123.9974
937.49	116.8157
944.13	117.0244
946.00	110.7300
949.00	127.1698

ENERGY	MDA COUNTS
954.55	0.0000
962.31	102.0947
964.08	109.4385
966.17	120.4468
968.97	96.7936
983.53	90.7460
984.45	90.7671
996.26	103.0005
1001.03	90.2361
1002.74	88.4326
1004.73	81.1062
1021.30	0.0000
1025.87	97.2903
1028.54	86.2339
1037.84	99.4439
1038.76	0.0000
1046.59	92.2083
1048.07	95.9716
1049.04	82.9432
1050.41	81.1058
1063.66	88.8538
1077.00	79.5725
1077.34	75.0732
1085.87	79.7433
1093.63	91.3875
1099.45	86.7947
1112.07	92.7363
1112.84	86.1234
1115.54	88.0730
1120.29	73.0052
1120.55	73.0099
1121.30	62.5880
1129.67	55.1113
1131.51	0.0000
1147.95	0.0000
1173.23	57.5867
1177.95	39.9674
1189.05	32.7487
1204.77	27.0635
1221.41	17.4628
1231.02	24.3042
1235.36	18.4886
1238.28	21.4226
1260.41	0.0000
1271.87	13.7308
1274.44	18.6451
1274.54	18.6463
1291.59	15.7588
1298.22	0.0000
1312.11	13.8479
1332.49	9.9335
1362.66	0.0000
1365.19	8.9995
1368.63	0.0000
1384.29	6.0227

ENERGY	MDA COUNTS
1408.01	5.0427
1434.09	4.0549
1435.80	3.0421
1457.56	0.0000
1460.82	3.0568
1489.16	4.0979
1505.03	6.1652
1584.12	3.1276
1596.21	6.2688
1620.50	7.3452
1621.92	5.2478
1678.03	0.0000
1690.97	7.4354
1750.46	0.0000
1764.49	3.2261
1770.23	4.3057
1771.35	6.4596
1791.20	0.0000
1808.65	4.3328
1810.72	0.0000
1836.06	3.2639

Continuing Calibration Data

Review of Gamma Spectrometer QA results (Daily calibration & background checks)
30-JUL-2024 09:28:29

Run Date	Detector	Parameter	Flag	Status	Comments
30-JUL-24	GAM01	All Parameters Passed			
30-JUL-24	GAM02	All Parameters Passed			
30-JUL-24	GAM04	Cal Check PSFWHM-59	Investigate		
30-JUL-24	GAM04	Cal Check NLACTVTY-1332	Investigate		
30-JUL-24	GAM05	All Parameters Passed			
30-JUL-24	GAM06	All Parameters Passed			
30-JUL-24	GAM07	All Parameters Passed			
30-JUL-24	GAM08	All Parameters Passed			
30-JUL-24	GAM10	All Parameters Passed			
30-JUL-24	GAM12	All Parameters Passed			
30-JUL-24	GAM16	All Parameters Passed			
14-JUL-24	GAM18	Bkg Check may not have run since 30-JUL-2024			Detector locked out.
30-JUL-24	GAM19	Bkg Check BACKRATE	Investigate		
30-JUL-24	GAM20	All Parameters Passed			
30-JUL-24	GAM21	Cal Check PSFWHM-59	Investigate		
30-JUL-24	GAM22	All Parameters Passed			
30-JUL-24	GAM23	All Parameters Passed			
30-JUL-24	GAM24	Cal Check PSFWHM-662	Investigate		
30-JUL-24	GAM27	Cal Check NLACTVTY-1332	Investigate		
30-JUL-24	GAM28	All Parameters Passed			
16-JUL-24	GAM29	Cal Check may not have run since 30-JUL-2024			Detector locked out.
30-JUL-24	GAM30	All Parameters Passed			
23-MAY-24	GAM31	Cal Check may not have run since 30-JUL-2024			Detector locked out.
22-JUL-24	GAM31	Bkg Check may not have run since 30-JUL-2024			Detector locked out.
30-JUL-24	GAM32	All Parameters Passed			
	GAM33	Cal Check may not have run since 30-JUL-2024			Detector locked out.
03-DEC-23	GAM33	Bkg Check may not have run since 30-JUL-2024			Detector locked out.
16-JUL-24	GAM38	Cal Check may not have run since 30-JUL-2024			Detector locked out.
30-JUL-24	GAM40	All Parameters Passed			
30-JUL-24	GAM41	Bkg Check BACKRATE	Action	Lockout	Detector locked out.
30-JUL-24	GAM43	Cal Check PSFWHM-59	Action		Detector locked out.
30-JUL-24	GAM43	Cal Check PSFWHM-1332	Investigate		
21-JUL-24	GAM43	Bkg Check may not have run since 30-JUL-2024			Detector locked out.

30-JUL-24	GAM46	All Parameters Passed			
22-JUN-24	GAM47	Cal Check may not have run since 30-JUL-2024			Detector locked out.
23-JUN-24	GAM47	Bkg Check may not have run since 30-JUL-2024			Detector locked out.
30-JUL-24	GAM48	All Parameters Passed			
30-JUL-24	GAM50	All Parameters Passed			
30-JUL-24	GAM52	All Parameters Passed			
29-JUL-24	GAM53	Cal Check may not have run since 30-JUL-2024			NOT RUN
28-JUL-24	GAM53	Bkg Check may not have run since 30-JUL-2024			NOT RUN
29-JUL-24	GAM56	Cal Check may not have run since 30-JUL-2024			NOT RUN
28-JUL-24	GAM56	Bkg Check may not have run since 30-JUL-2024			NOT RUN
30-JUL-24	GAM61	Bkg Check BACKRATE	Action	Approved	No spectral abnormalities observed, approved for use.
30-JUL-24	XRAY1	All Parameters Passed			
30-JUL-24	XRAY2	All Parameters Passed			
30-JUL-24	XRAY3	All Parameters Passed			
30-JUL-24	XRAY6	Cal Check NLACTVTY-29	Investigate		
30-JUL-24	XRAY6	Cal Check NLACTVTY-40	Investigate		
30-JUL-24	XRAY7	All Parameters Passed			

APPROVAL DATE: 30-JUL-2024 APPROVAL TIME: 09:38:05

APPROVED BY: Rebekah Futch PROCEDURE # GL-RAD-I-001

The Investigate flag does not indicate a lockout and is approved for use. Action flags that have not been approved are locked out of service.

Review of Gamma Spectrometer QA results (Daily calibration & background checks)
31-JUL-2024 15:53:14

Run Date	Detector	Parameter	Flag	Status	Comments
31-JUL-24	GAM01	Cal Check NLACTVTY-662	Investigate		
31-JUL-24	GAM02	Bkg Check BACKRATE	Investigate		
31-JUL-24	GAM04	All Parameters Passed			
31-JUL-24	GAM05	Cal Check PSFWHM-59	Investigate		
31-JUL-24	GAM06	All Parameters Passed			
31-JUL-24	GAM07	All Parameters Passed			
31-JUL-24	GAM08	All Parameters Passed			
31-JUL-24	GAM10	All Parameters Passed			
31-JUL-24	GAM12	Cal Check PSFWHM-59	Investigate		
31-JUL-24	GAM12	Cal Check PSFWHM-662	Investigate		
31-JUL-24	GAM16	All Parameters Passed			
31-JUL-24	GAM18	All Parameters Passed			
31-JUL-24	GAM19	Cal Check PSFWHM-59	Investigate		
31-JUL-24	GAM19	Bkg Check BACKRATE	Action	Approved	No spectral abnormalities observed, approved for use.
31-JUL-24	GAM20	All Parameters Passed			
31-JUL-24	GAM21	All Parameters Passed			
31-JUL-24	GAM22	Bkg Check BACKRATE	Investigate		
31-JUL-24	GAM23	All Parameters Passed			
31-JUL-24	GAM24	All Parameters Passed			
31-JUL-24	GAM27	All Parameters Passed			
31-JUL-24	GAM28	Cal Check NLACTVTY-1332	Investigate		
16-JUL-24	GAM29	Cal Check may not have run since 31-JUL-2024			Detector locked out.
31-JUL-24	GAM29	Bkg Check BACKRATE	Investigate		
31-JUL-24	GAM30	Cal Check NLACTVTY-1332	Investigate		
23-MAY-24	GAM31	Cal Check may not have run since 31-JUL-2024			Detector locked out.
22-JUL-24	GAM31	Bkg Check may not have run since 31-JUL-2024			Detector locked out.
31-JUL-24	GAM32	All Parameters Passed			
	GAM33	Cal Check may not have run since 31-JUL-2024			Detector locked out.
31-JUL-24	GAM33	Bkg Check BACKRATE	Action	Lockout	Detector locked out.
31-JUL-24	GAM38	All Parameters Passed			
31-JUL-24	GAM40	Cal Check NLACTVTY-1332	Investigate		
30-JUL-24	GAM41	Cal Check may not have run since 31-JUL-2024			Detector locked out.
29-JUL-24	GAM41	Bkg Check may not have run since 31-JUL-2024			Detector locked out.

30-JUL-24	GAM43	Cal Check may not have run since 31-JUL-2024			Detector locked out.
31-JUL-24	GAM46	All Parameters Passed			
22-JUN-24	GAM47	Cal Check may not have run since 31-JUL-2024			Detector locked out.
23-JUN-24	GAM47	Bkg Check may not have run since 31-JUL-2024			Detector locked out.
31-JUL-24	GAM48	Cal Check PSFWHM-662	Investigate		
31-JUL-24	GAM50	All Parameters Passed			
31-JUL-24	GAM52	All Parameters Passed			
31-JUL-24	GAM53	All Parameters Passed			
31-JUL-24	GAM56	All Parameters Passed			
31-JUL-24	GAM61	Bkg Check BACKRATE	Action	Approved	No spectral abnormalities observed, approved for use.
31-JUL-24	XRAY1	All Parameters Passed			
31-JUL-24	XRAY2	Cal Check PSFWHM-40	Investigate		
31-JUL-24	XRAY3	All Parameters Passed			
31-JUL-24	XRAY6	All Parameters Passed			
31-JUL-24	XRAY7	All Parameters Passed			

APPROVAL DATE: 31-JUL-2024 APPROVAL TIME: 15:59:11

APPROVED BY: Smith Fenner PROCEDURE # GL-RAD-I-001

The Investigate flag does not indicate a lockout and is approved for use. Action flags that have not been approved are locked out of service.

Review of Gamma Spectrometer QA results (Daily calibration & background checks)
01-AUG-2024 10:31:05

Run Date	Detector	Parameter	Flag	Status	Comments
01-AUG-24	GAM01	All Parameters Passed			
01-AUG-24	GAM02	All Parameters Passed			
01-AUG-24	GAM04	All Parameters Passed			
01-AUG-24	GAM05	All Parameters Passed			
01-AUG-24	GAM06	All Parameters Passed			
01-AUG-24	GAM07	All Parameters Passed			
01-AUG-24	GAM08	All Parameters Passed			
01-AUG-24	GAM10	All Parameters Passed			
01-AUG-24	GAM12	Bkg Check BACKRATE	Investigate		
01-AUG-24	GAM16	All Parameters Passed			
01-AUG-24	GAM18	All Parameters Passed			
01-AUG-24	GAM19	Bkg Check BACKRATE	Investigate		
01-AUG-24	GAM20	All Parameters Passed			
01-AUG-24	GAM21	All Parameters Passed			
01-AUG-24	GAM22	Cal Check PSFWHM-1332	Investigate		
01-AUG-24	GAM23	All Parameters Passed			
01-AUG-24	GAM24	Cal Check PSFWHM-662	Action	Lockout	Detector locked out.
01-AUG-24	GAM27	Cal Check PSFWHM-1332	Investigate		
01-AUG-24	GAM28	All Parameters Passed			
16-JUL-24	GAM29	Cal Check may not have run since 1-AUG-2024			Detector locked out.
01-AUG-24	GAM30	All Parameters Passed			
23-MAY-24	GAM31	Cal Check may not have run since 1-AUG-2024			Detector locked out.
22-JUL-24	GAM31	Bkg Check may not have run since 1-AUG-2024			Detector locked out.
01-AUG-24	GAM32	All Parameters Passed			
	GAM33	Cal Check may not have run since 1-AUG-2024			Detector locked out.
01-AUG-24	GAM33	Bkg Check BACKRATE	Action	Lockout	Detector locked out.
31-JUL-24	GAM38	Cal Check may not have run since 1-AUG-2024			Detector locked out.
01-AUG-24	GAM40	All Parameters Passed			
30-JUL-24	GAM41	Cal Check may not have run since 1-AUG-2024			Detector locked out.
29-JUL-24	GAM41	Bkg Check may not have run since 1-AUG-2024			Detector locked out.
30-JUL-24	GAM43	Cal Check may not have run since 1-AUG-2024			Detector locked out.
01-AUG-24	GAM43	Bkg Check BACKRATE	Investigate		
01-AUG-24	GAM46	All Parameters Passed			

22-JUN-24	GAM47	Cal Check may not have run since 1-AUG-2024			Detector locked out.
23-JUN-24	GAM47	Bkg Check may not have run since 1-AUG-2024			Detector locked out.
01-AUG-24	GAM48	All Parameters Passed			
01-AUG-24	GAM50	Cal Check PSFWHM-59	Action	Approved	Low FWHM, approved for use.
01-AUG-24	GAM52	Cal Check NLACTVTY-662	Investigate		
01-AUG-24	GAM52	Cal Check NLACTVTY-1332	Investigate		
01-AUG-24	GAM53	Cal Check NLACTVTY-1332	Investigate		
01-AUG-24	GAM56	Cal Check PSFWHM-662	Investigate		
01-AUG-24	GAM61	Bkg Check BACKRATE	Action	Approved	No spectral abnormalities observed, approved for use.
01-AUG-24	XRAY1	All Parameters Passed			
01-AUG-24	XRAY2	All Parameters Passed			
01-AUG-24	XRAY3	All Parameters Passed			
01-AUG-24	XRAY6	Cal Check NLACTVTY-29	Investigate		
01-AUG-24	XRAY7	All Parameters Passed			

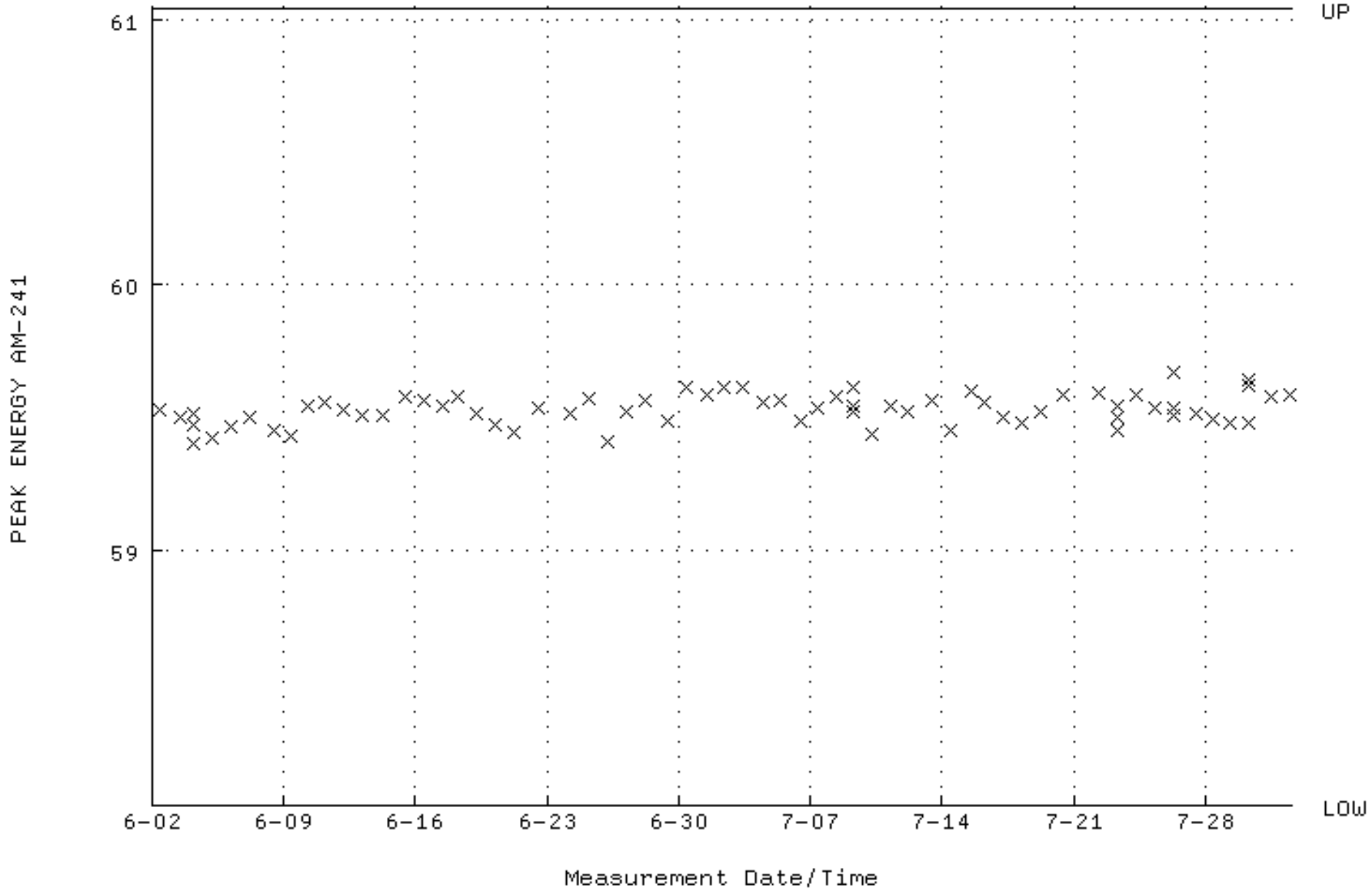
APPROVAL DATE: 01-AUG-2024 APPROVAL TIME: 10:38:25

APPROVED BY: Smith Fenner PROCEDURE # GL-RAD-I-001

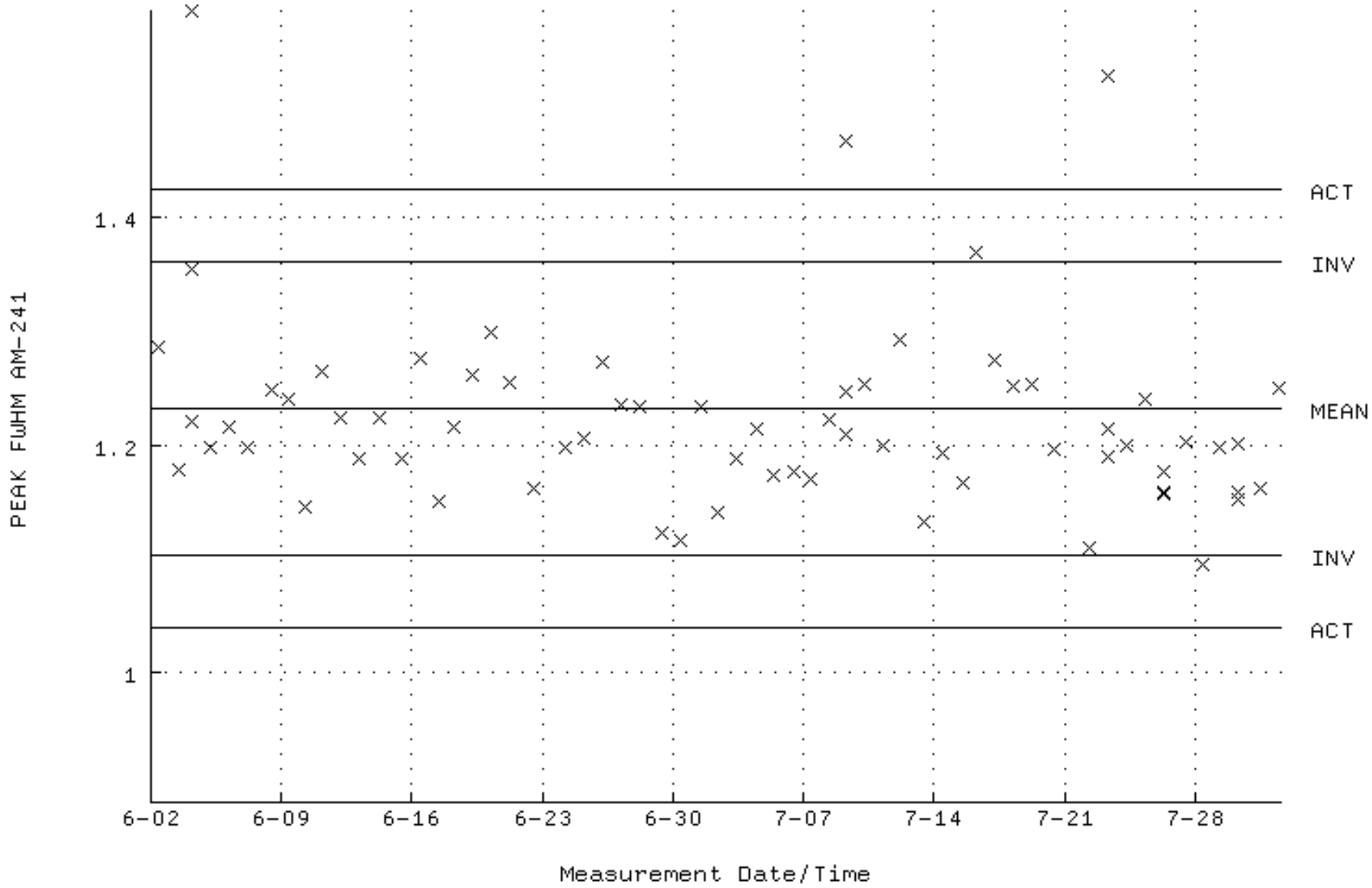
The Investigate flag does not indicate a lockout and is approved for use. Action flags that have not been approved are locked out of service.

Background and Efficiency Data

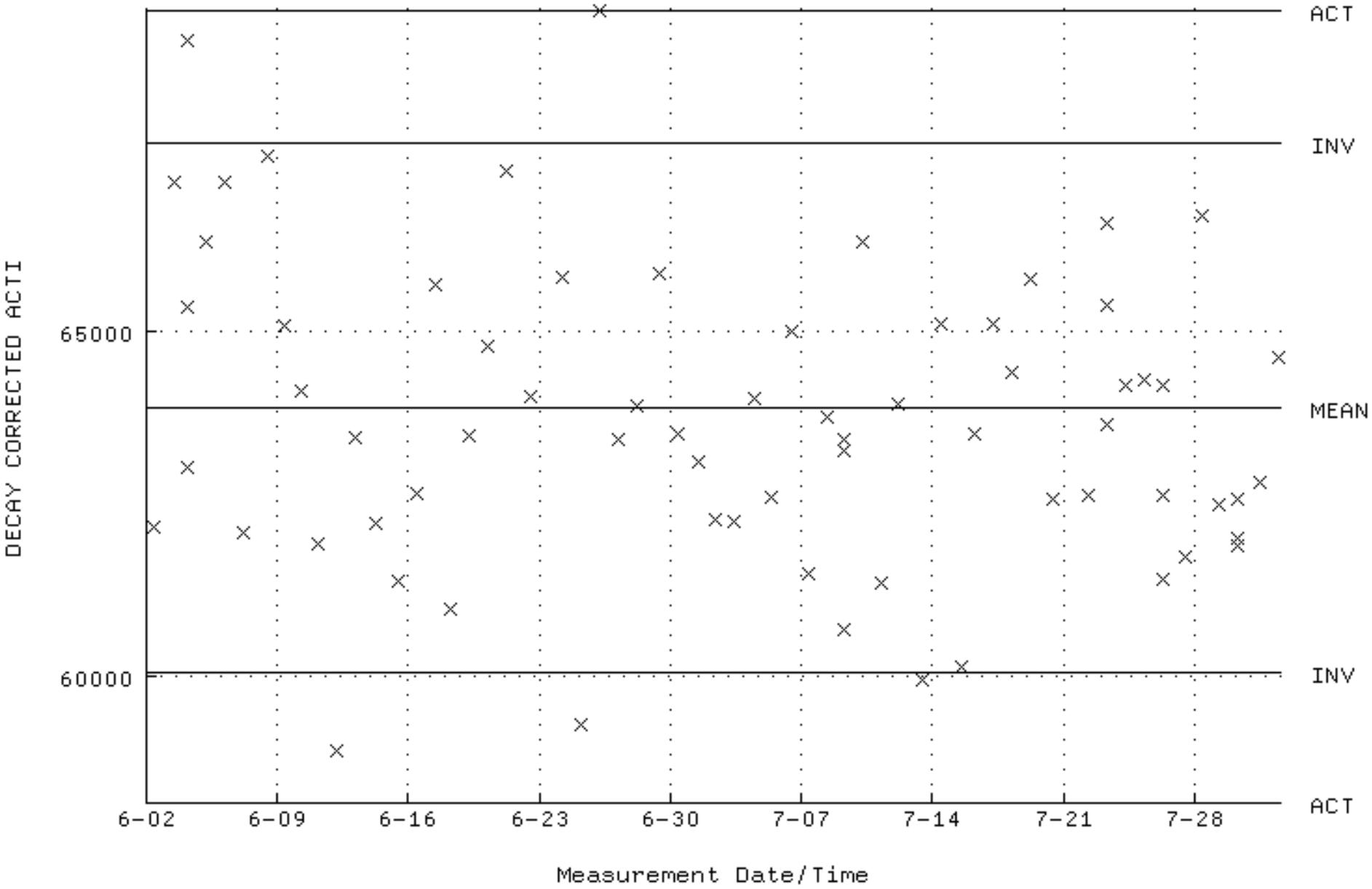
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM01_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-JUN-2024 09:04:57 through 1-AUG-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



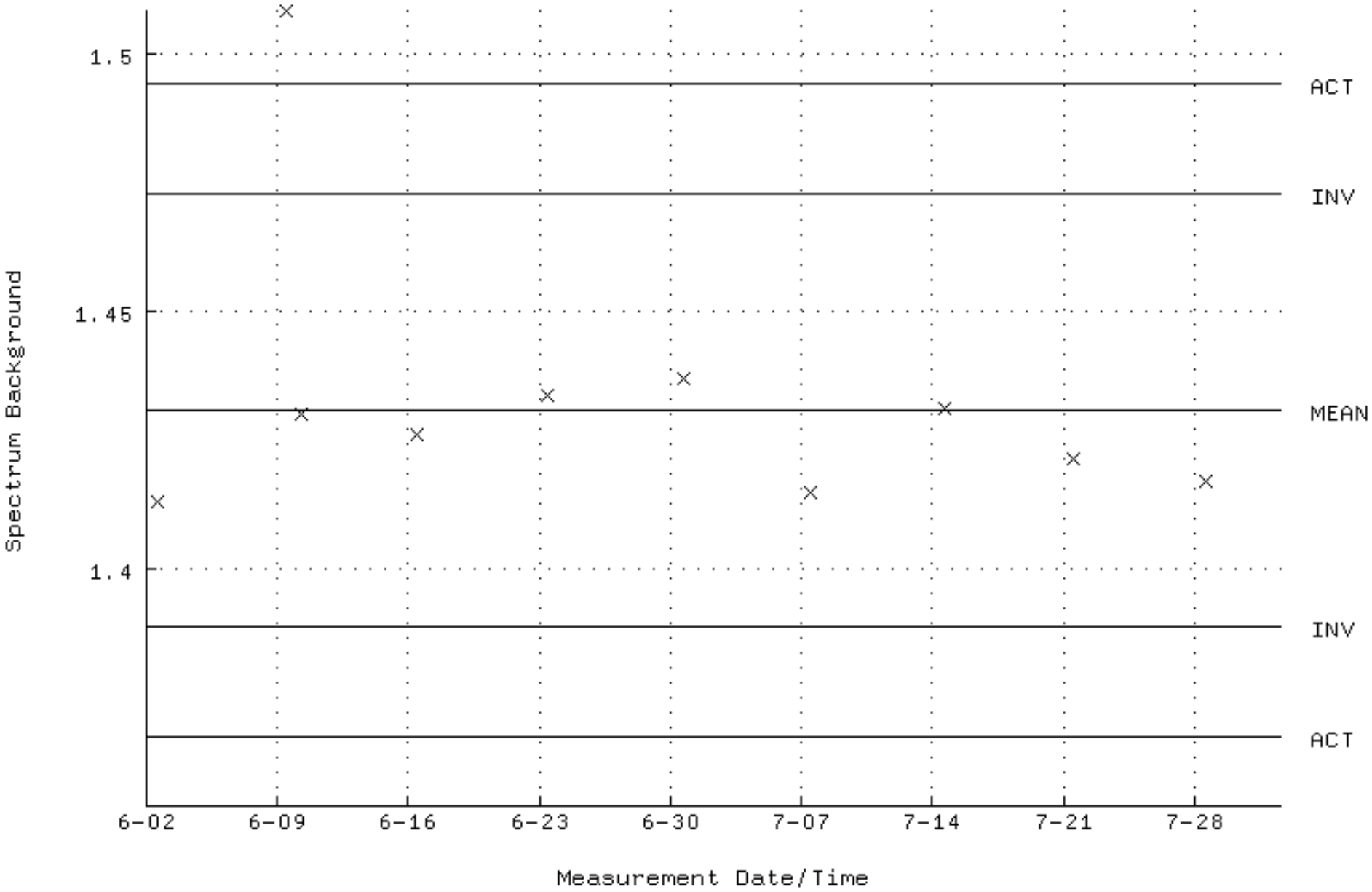
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM01_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-JUN-2024 09:04:57 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 1.23320 +- 6.423878E-02 (5.21 %)



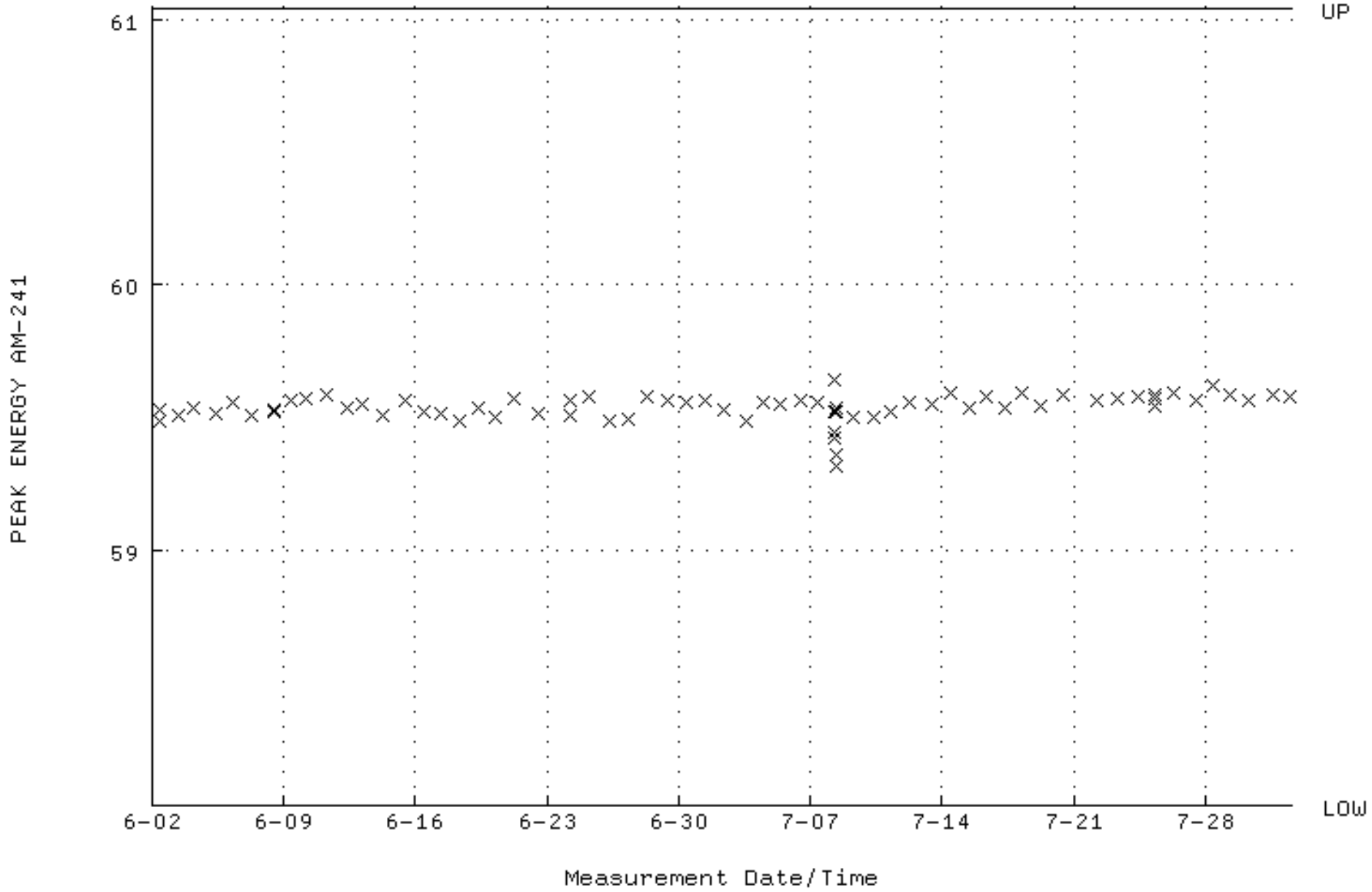
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM01_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-JUN-2024 09:04:57 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 63899.8 +- 1914.80 (3.00 %)



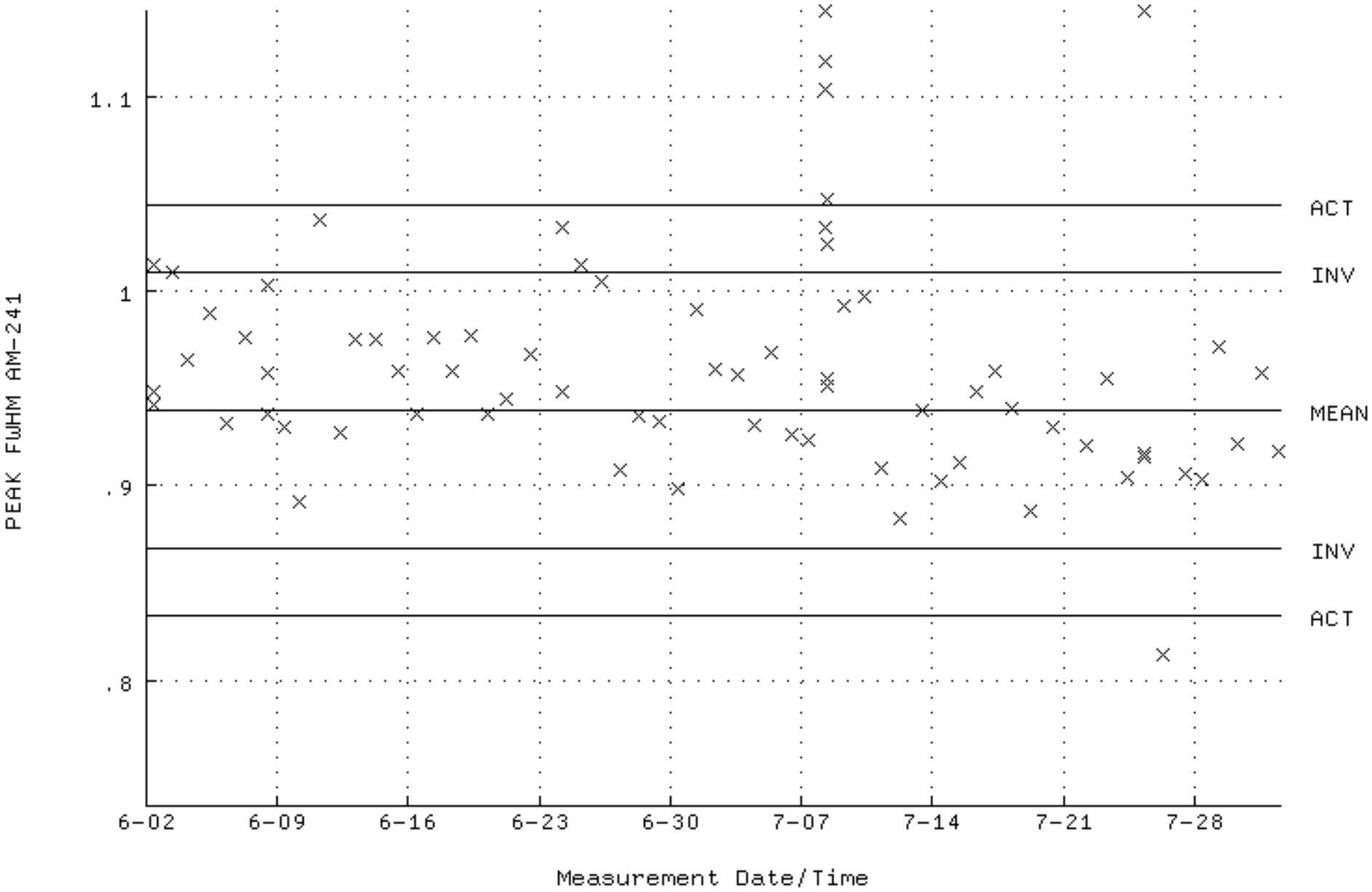
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM01.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 2-JUN-2024 14:09:46 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 1.43087 +- 2.109282E-02 (1.47 %)



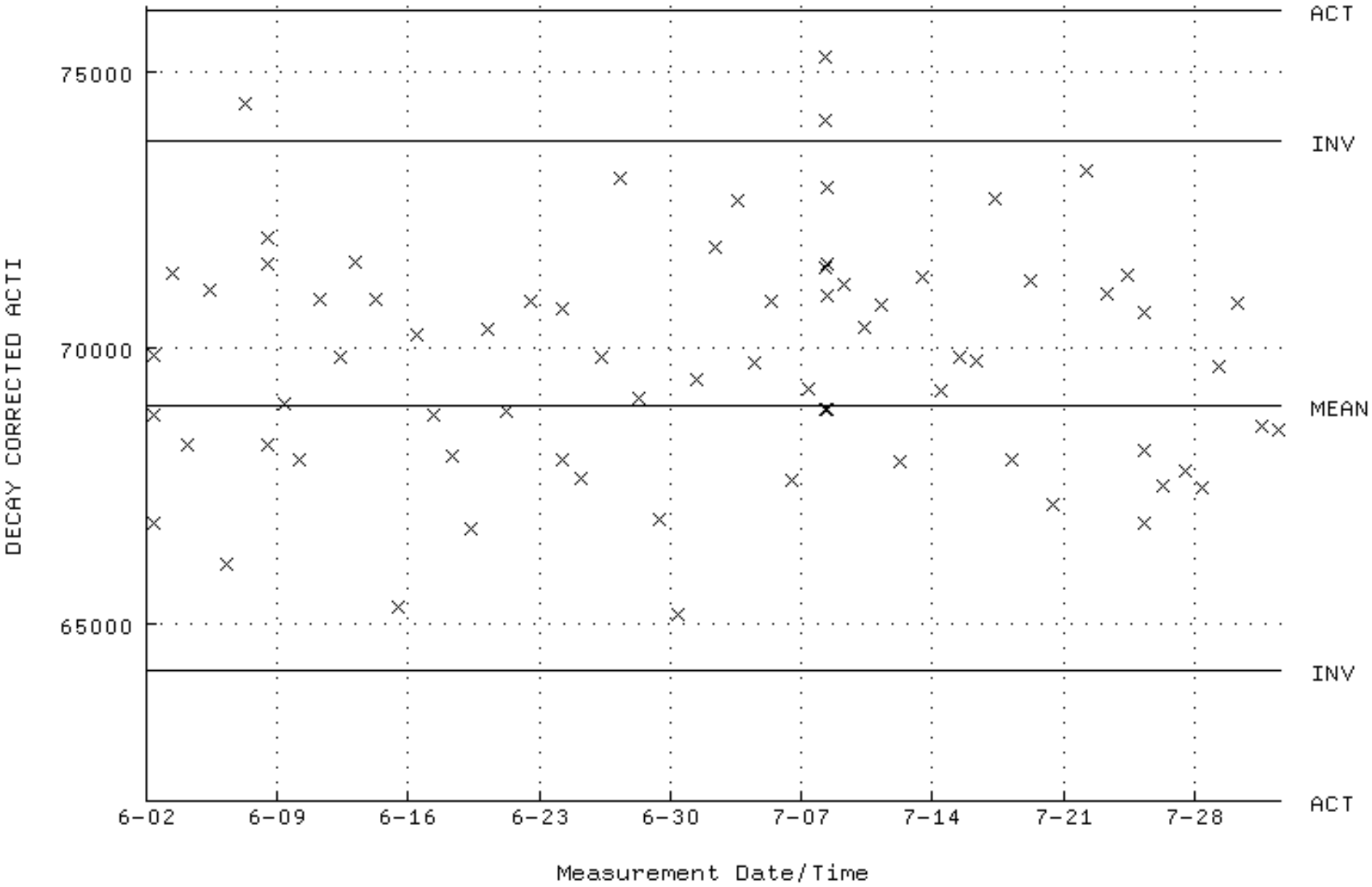
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM02_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-JUN-2024 09:22:58 through 1-AUG-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



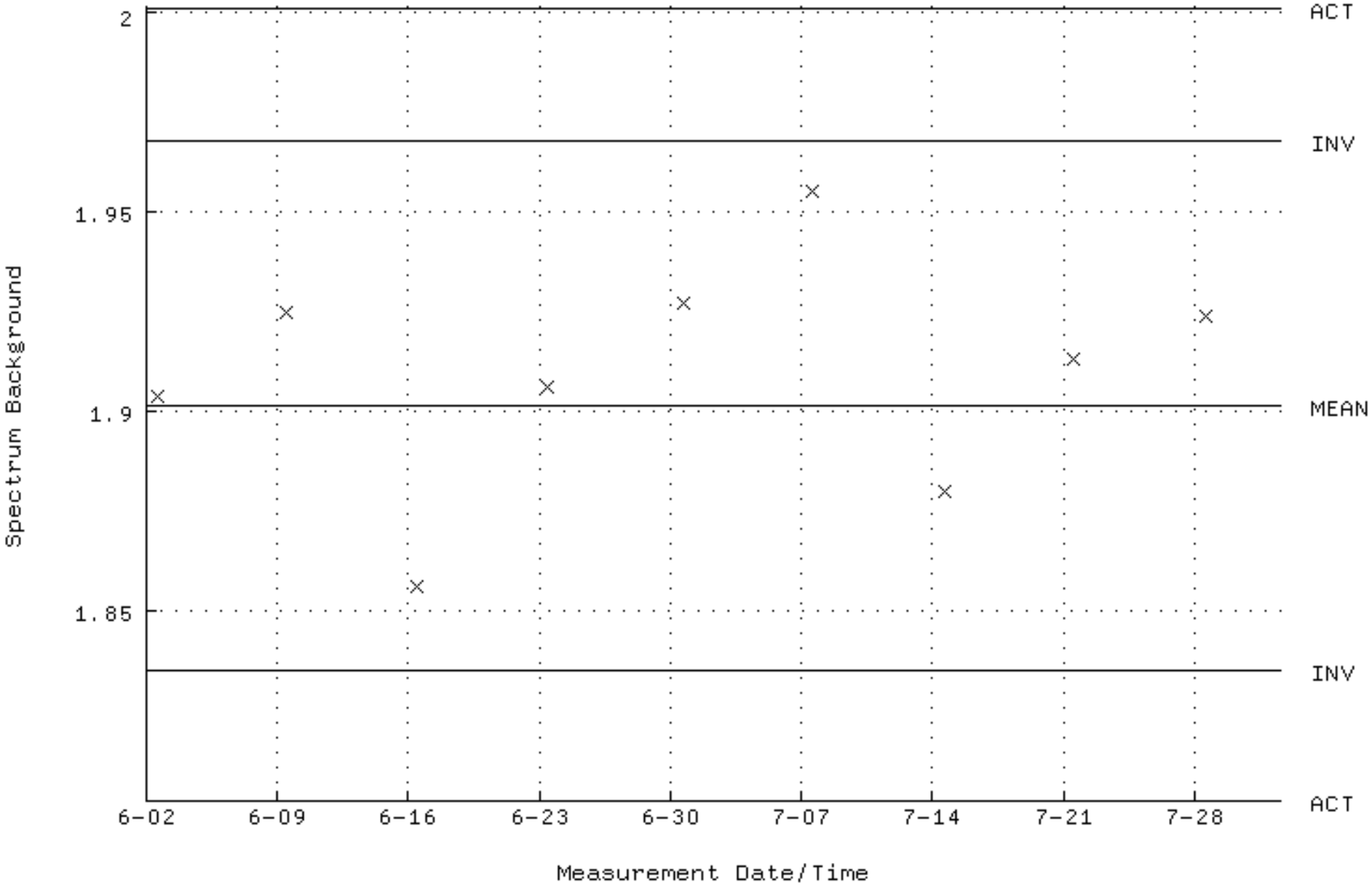
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM02_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-JUN-2024 09:22:58 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 0.939124 +- 3.526196E-02 (3.75 %)



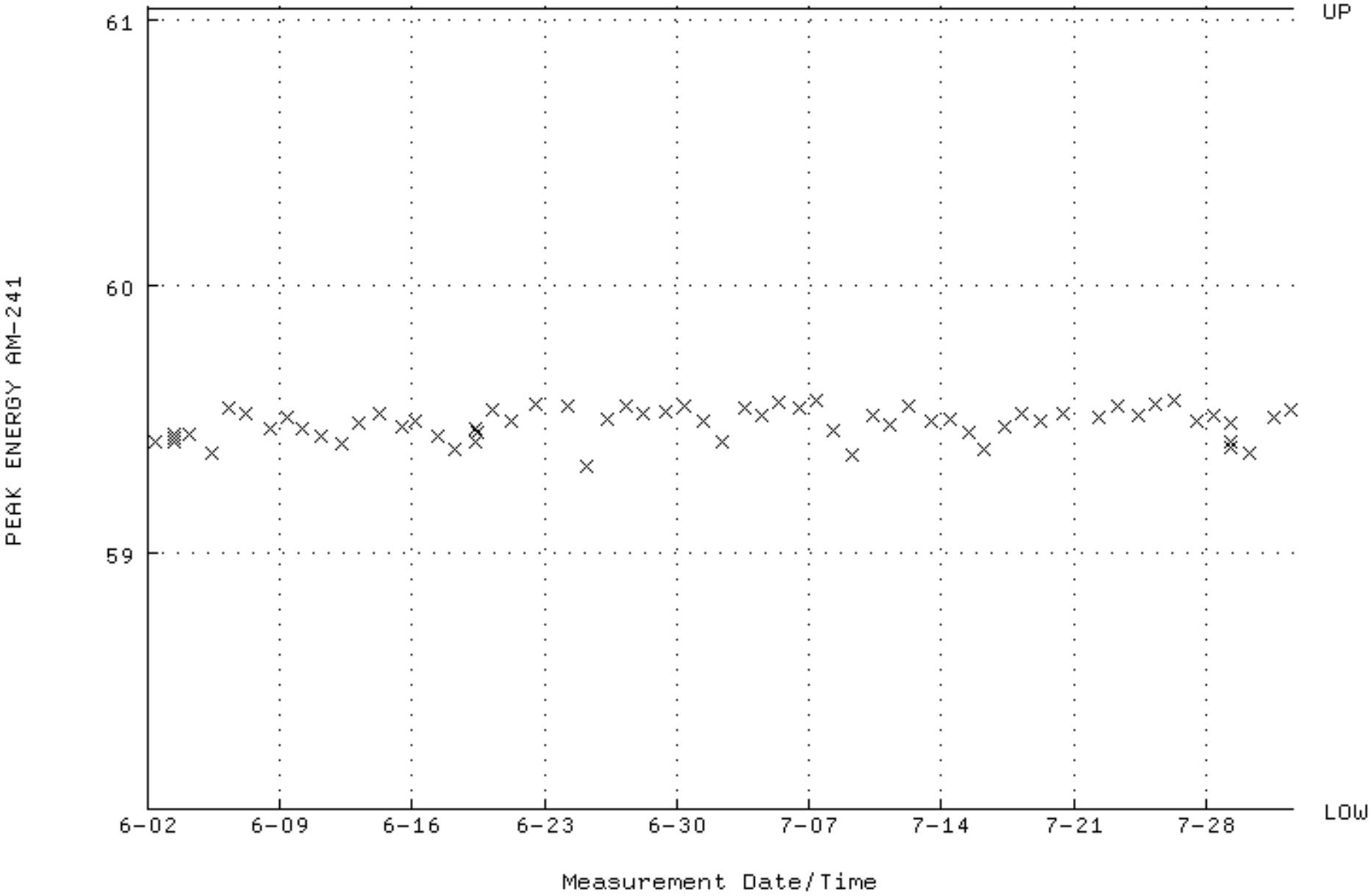
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM02_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-JUN-2024 09:22:58 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 68960.1 +- 2392.16 (3.47 %)



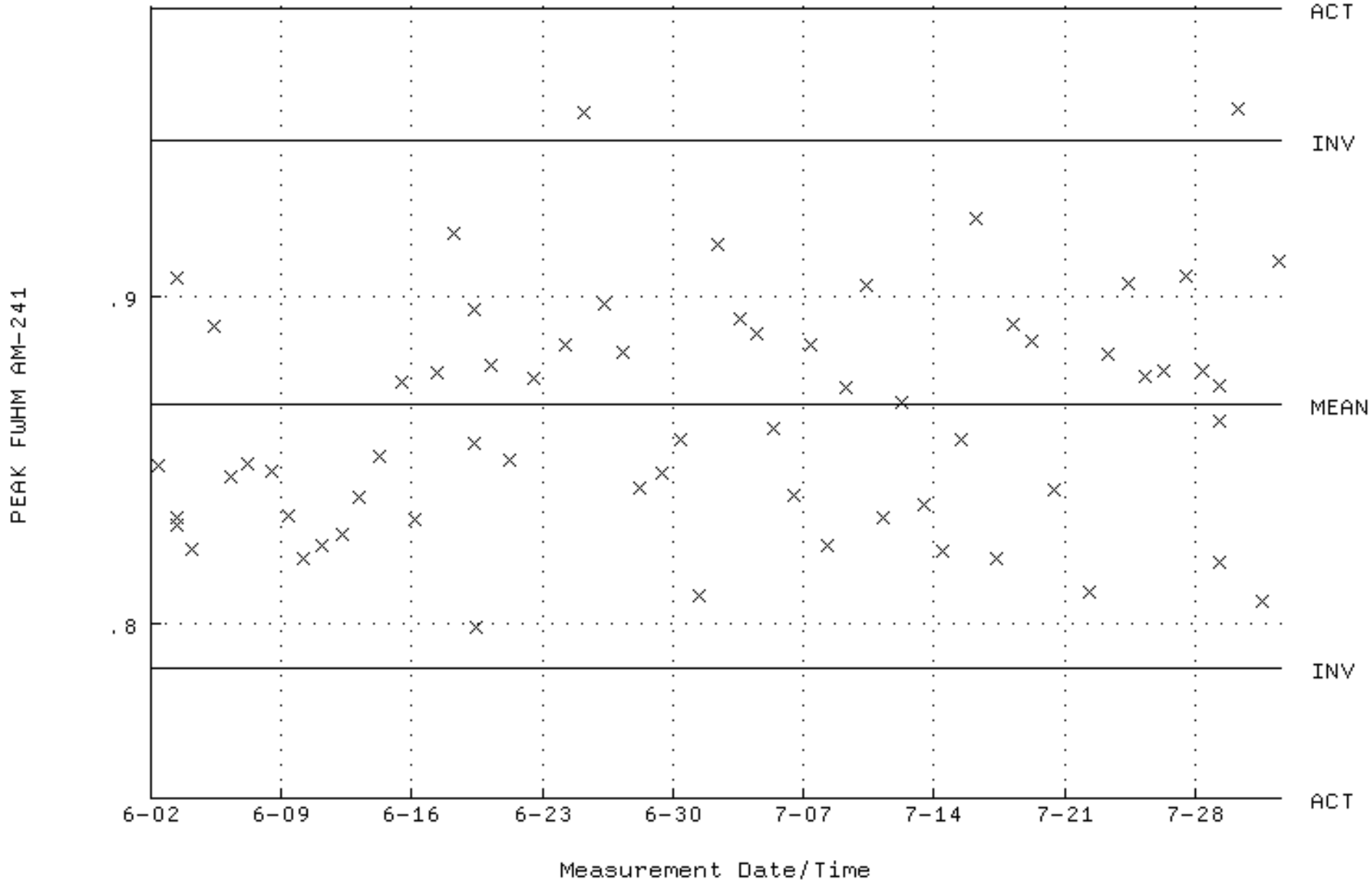
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM02.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 2-JUN-2024 15:22:49 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 1.90144 +- 3.309586E-02 (1.74 %)



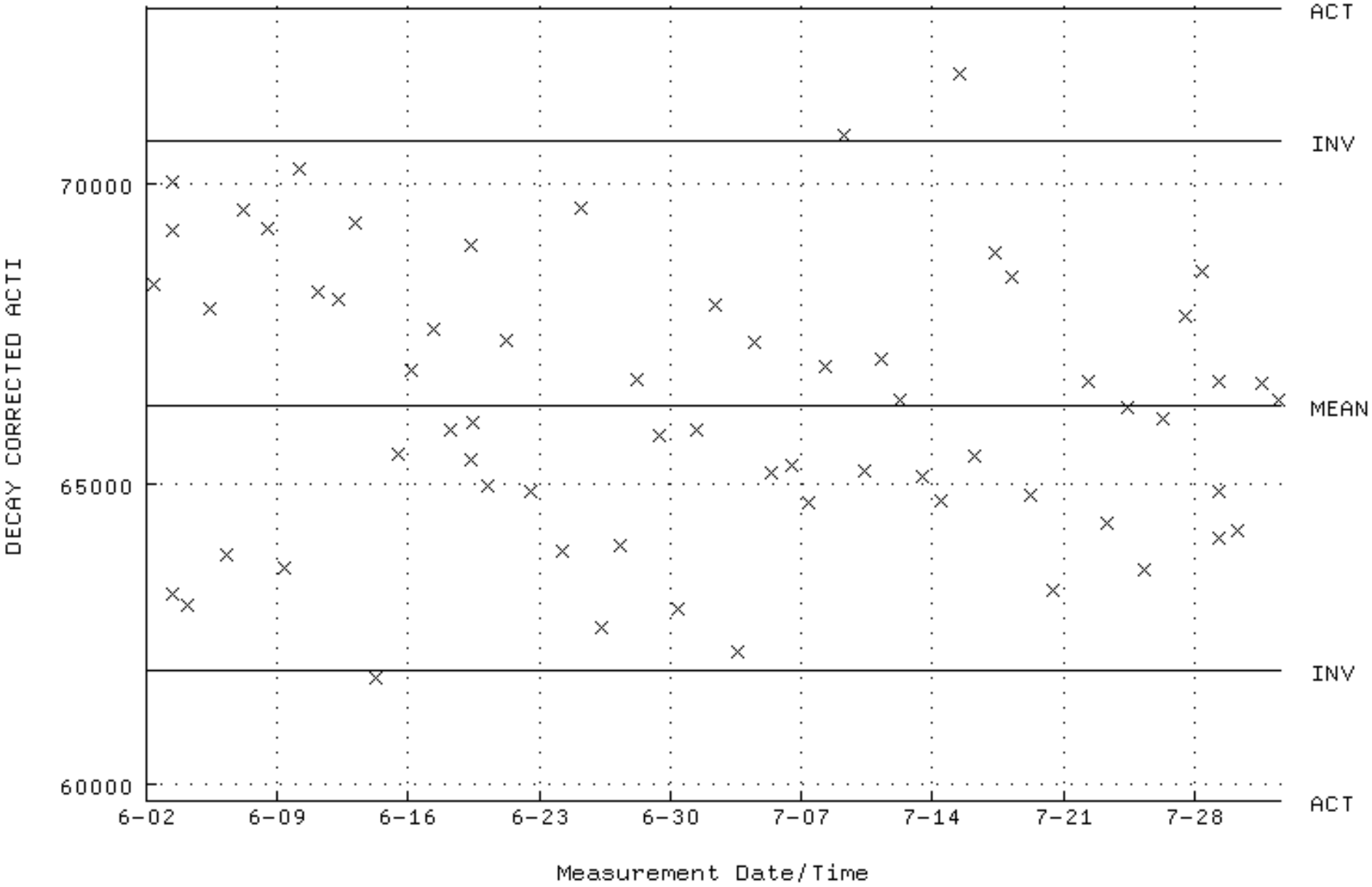
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM04_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-JUN-2024 09:05:02 through 1-AUG-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



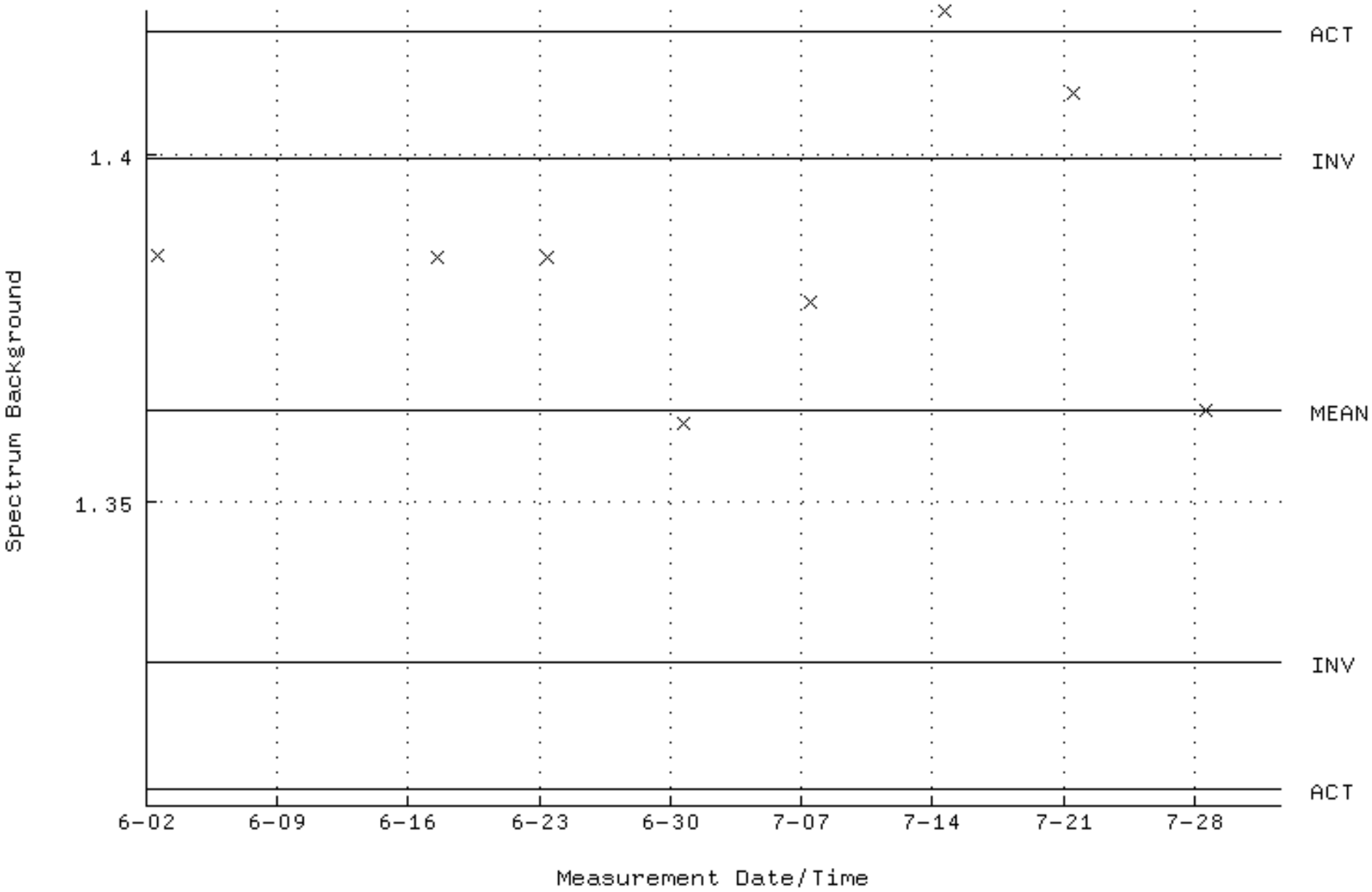
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM04_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-JUN-2024 09:05:02 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 0.867350 +- 4.018420E-02 (4.63 %)



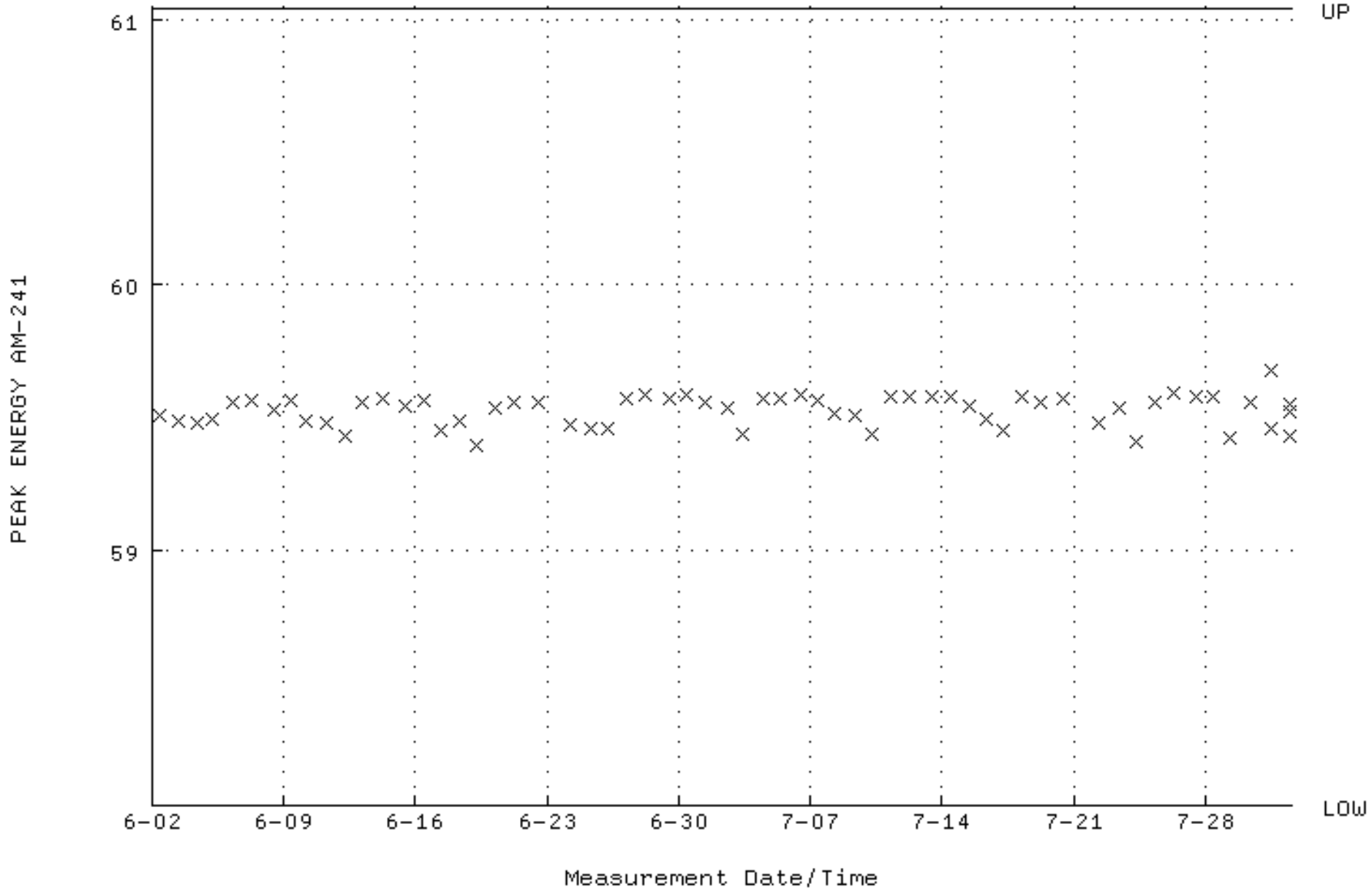
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM04_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-JUN-2024 09:05:02 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 66328.3 +- 2203.49 (3.32 %)



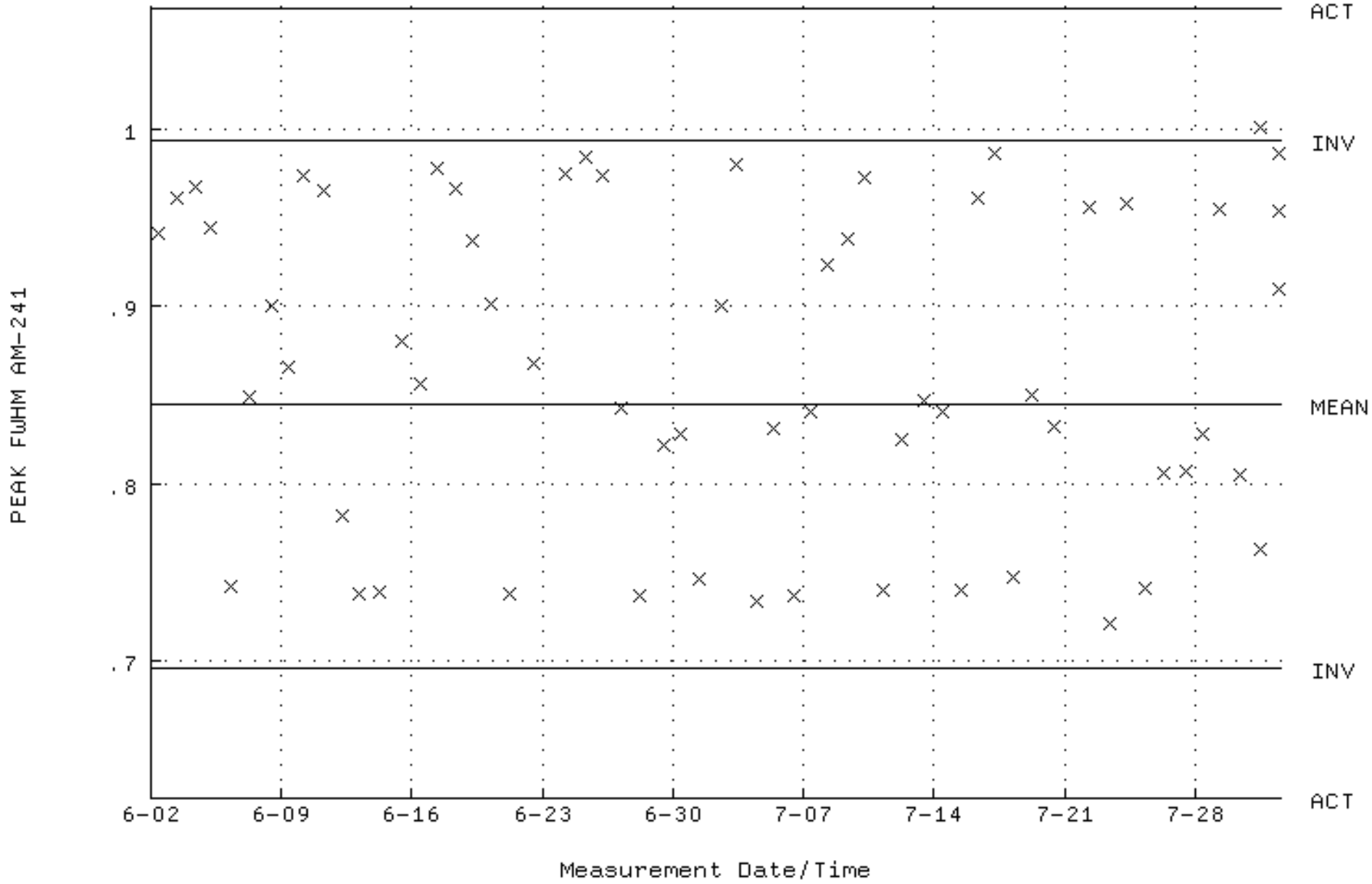
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM04.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 2-JUN-2024 15:22:55 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 1.36338 +- 1.819350E-02 (1.33 %)



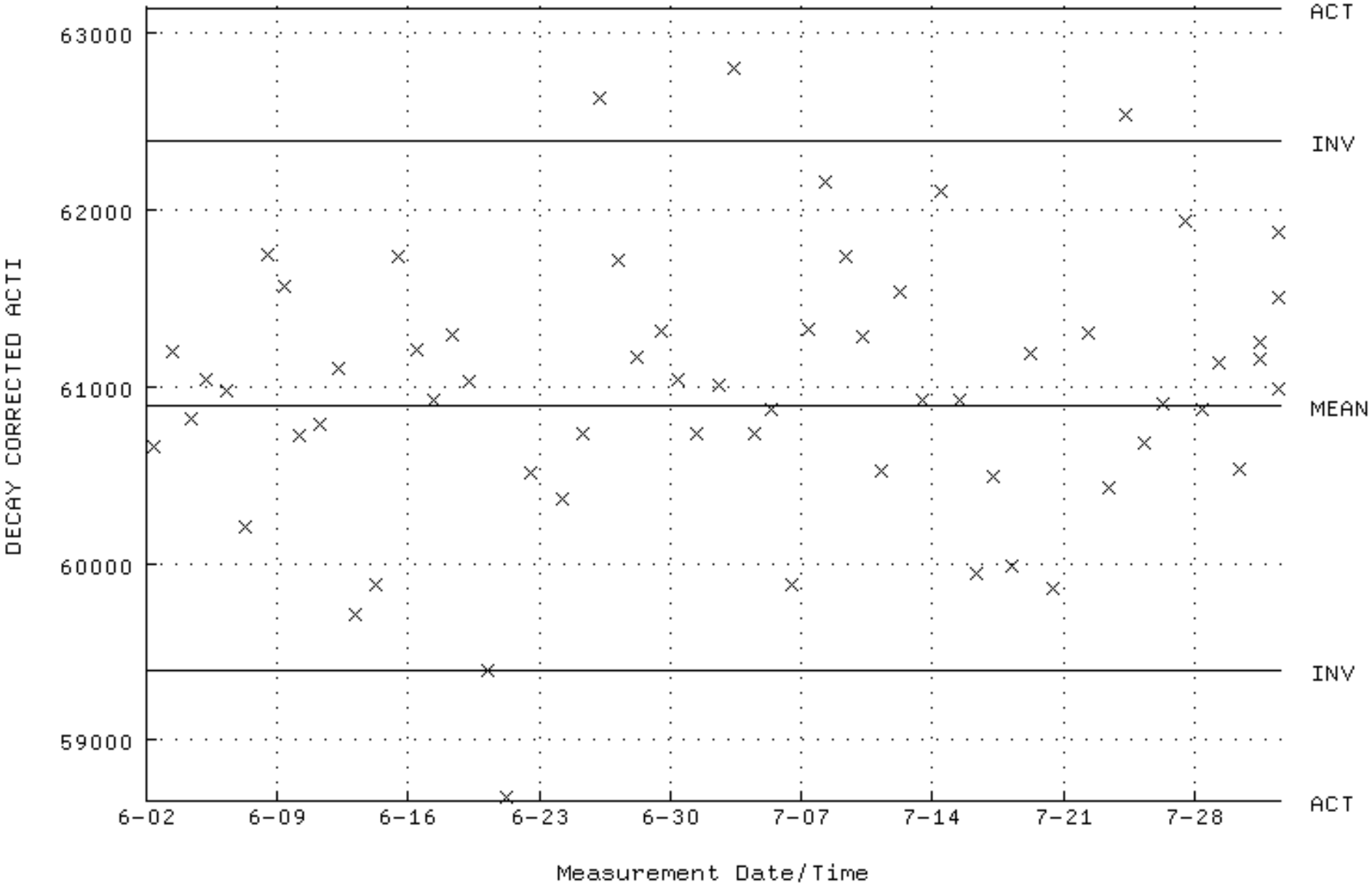
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM05_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-JUN-2024 09:23:03 through 1-AUG-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



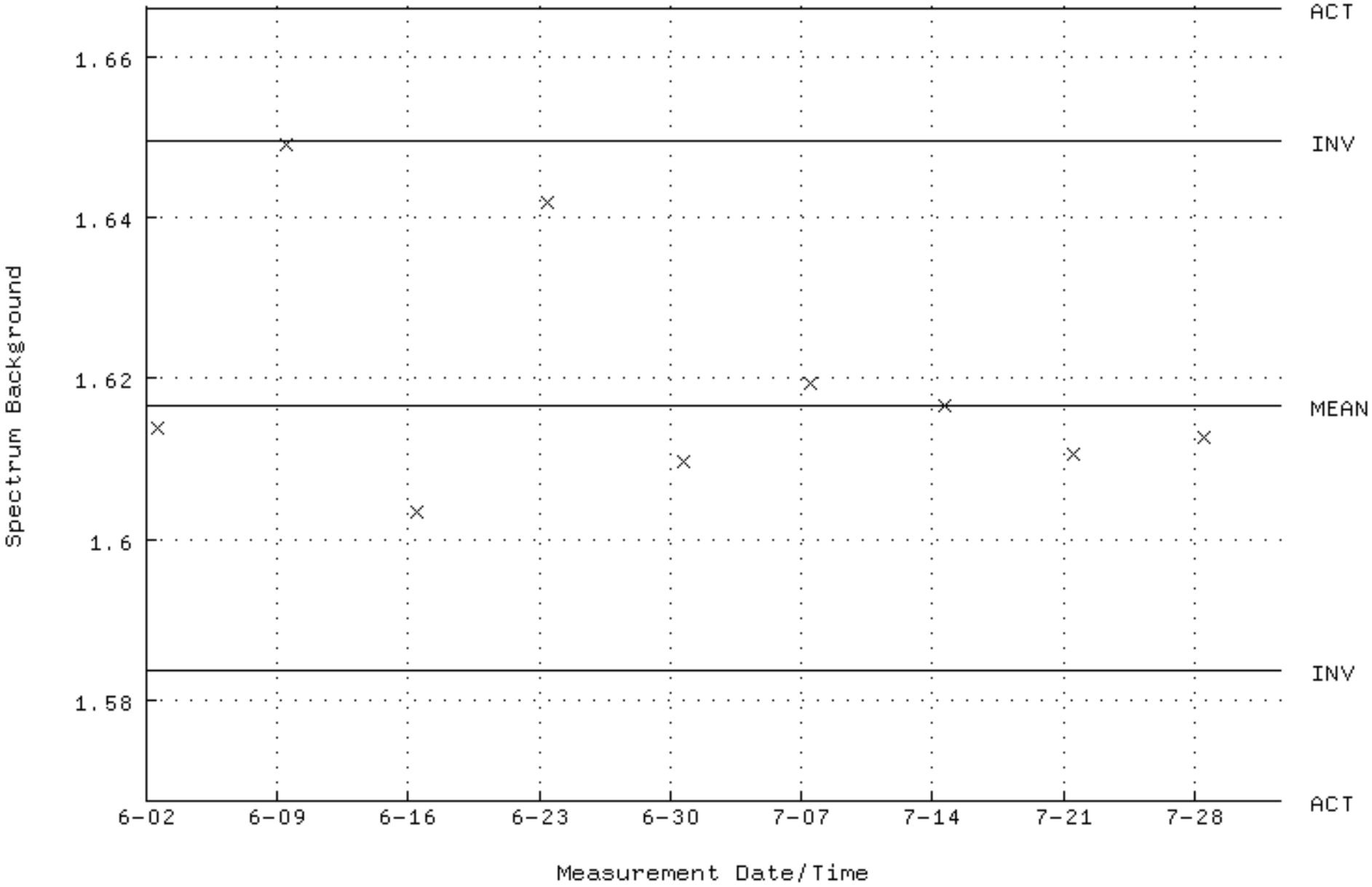
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM05_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-JUN-2024 09:23:03 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 0.845264 +- 7.424816E-02 (8.78 %)



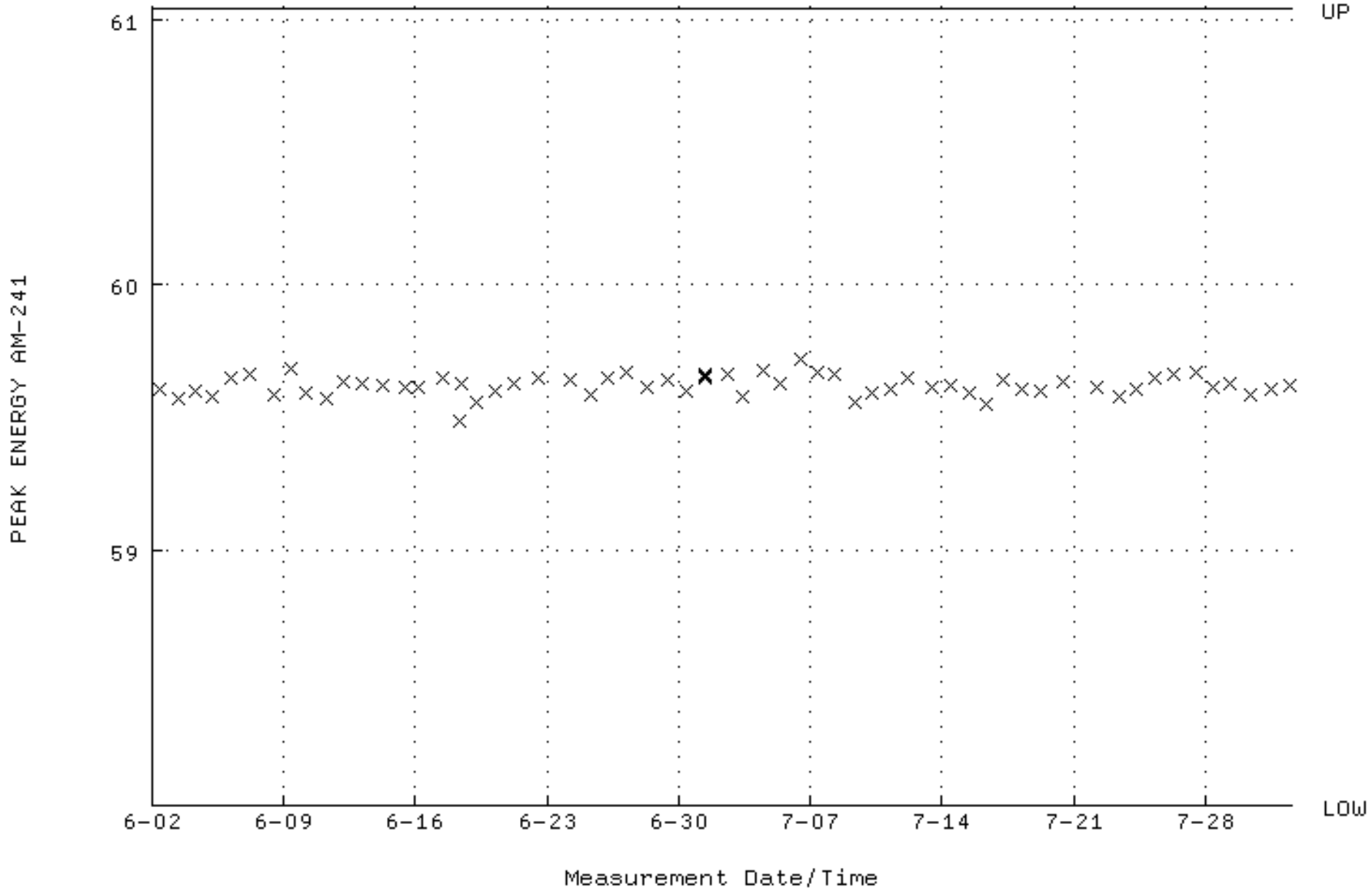
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM05_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-JUN-2024 09:23:03 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 60897.9 +- 747.003 (1.23 %)



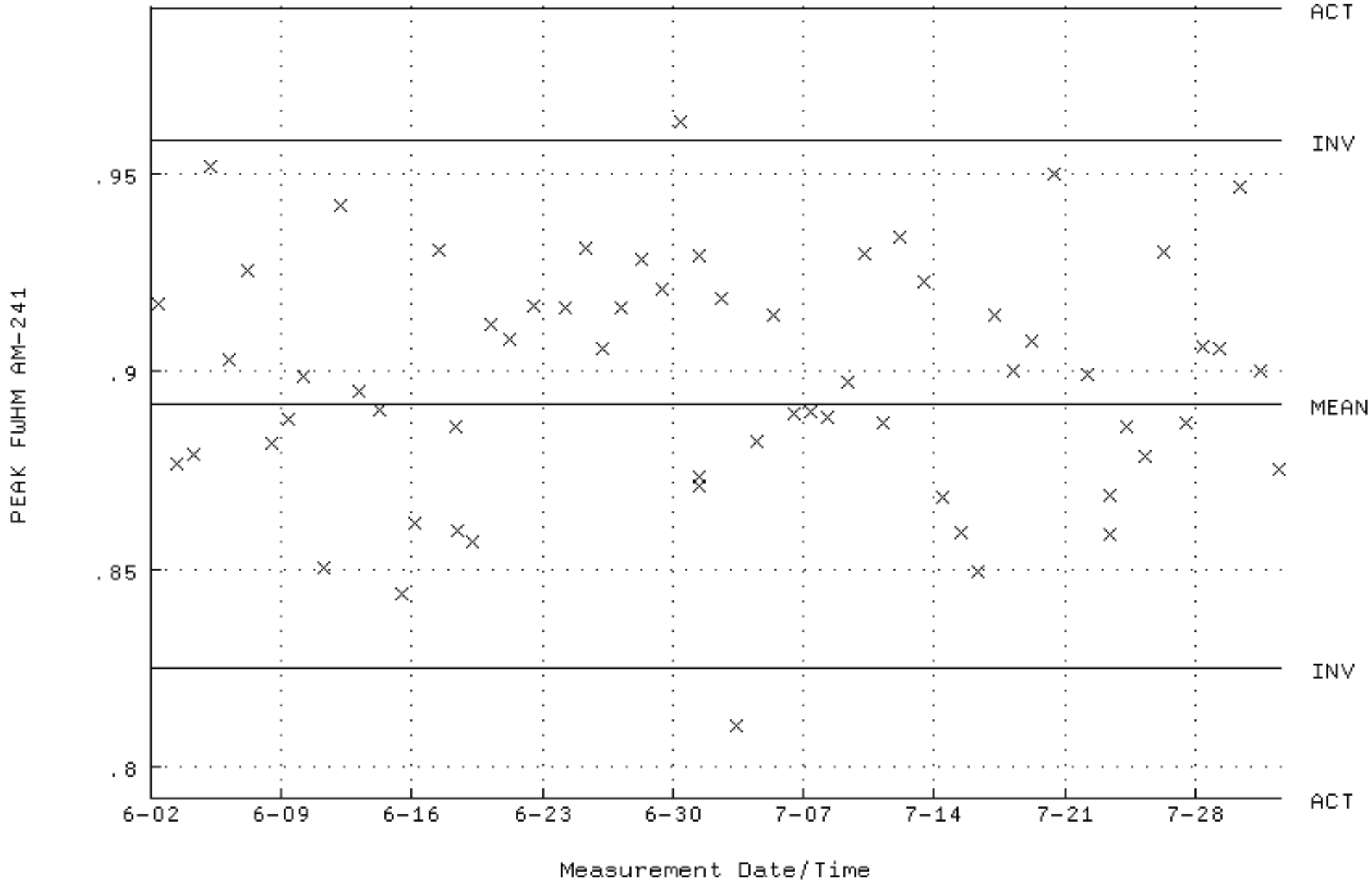
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM05.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 2-JUN-2024 14:09:51 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 1.61674 +- 1.640617E-02 (1.01 %)



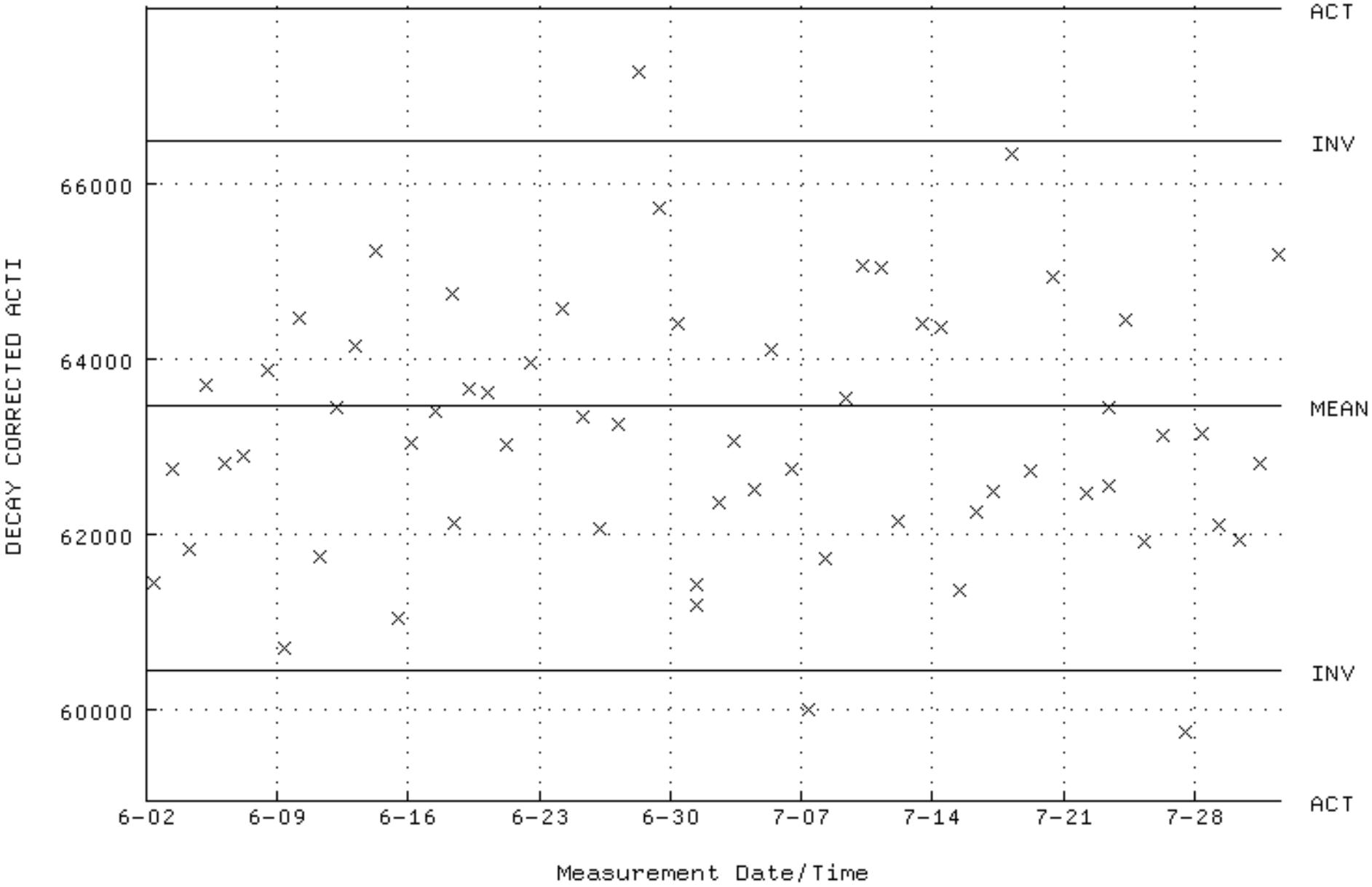
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM06_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-JUN-2024 09:05:06 through 1-AUG-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



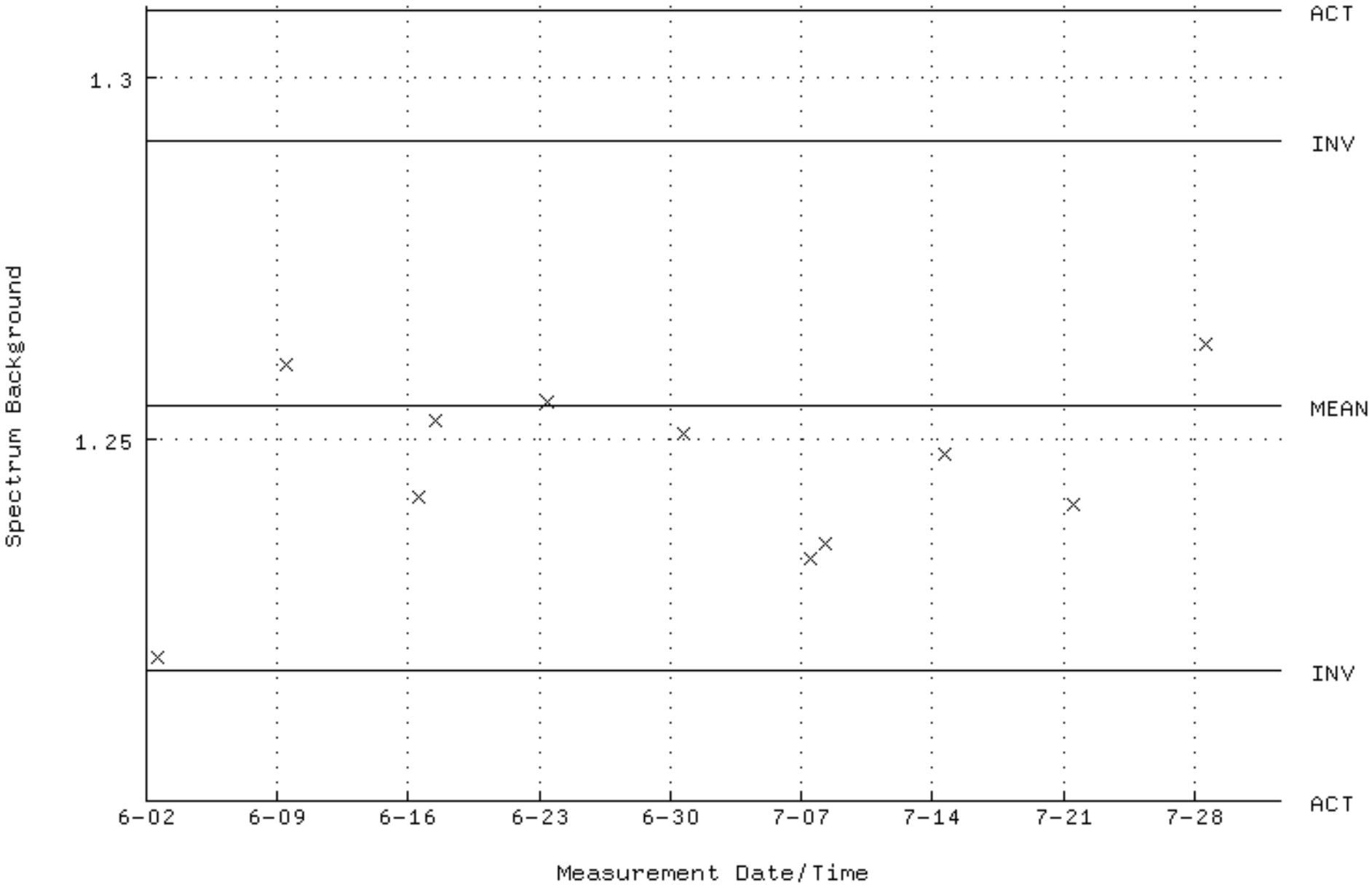
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM06_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-JUN-2024 09:05:06 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 0.891957 +- 3.327383E-02 (3.73 %)



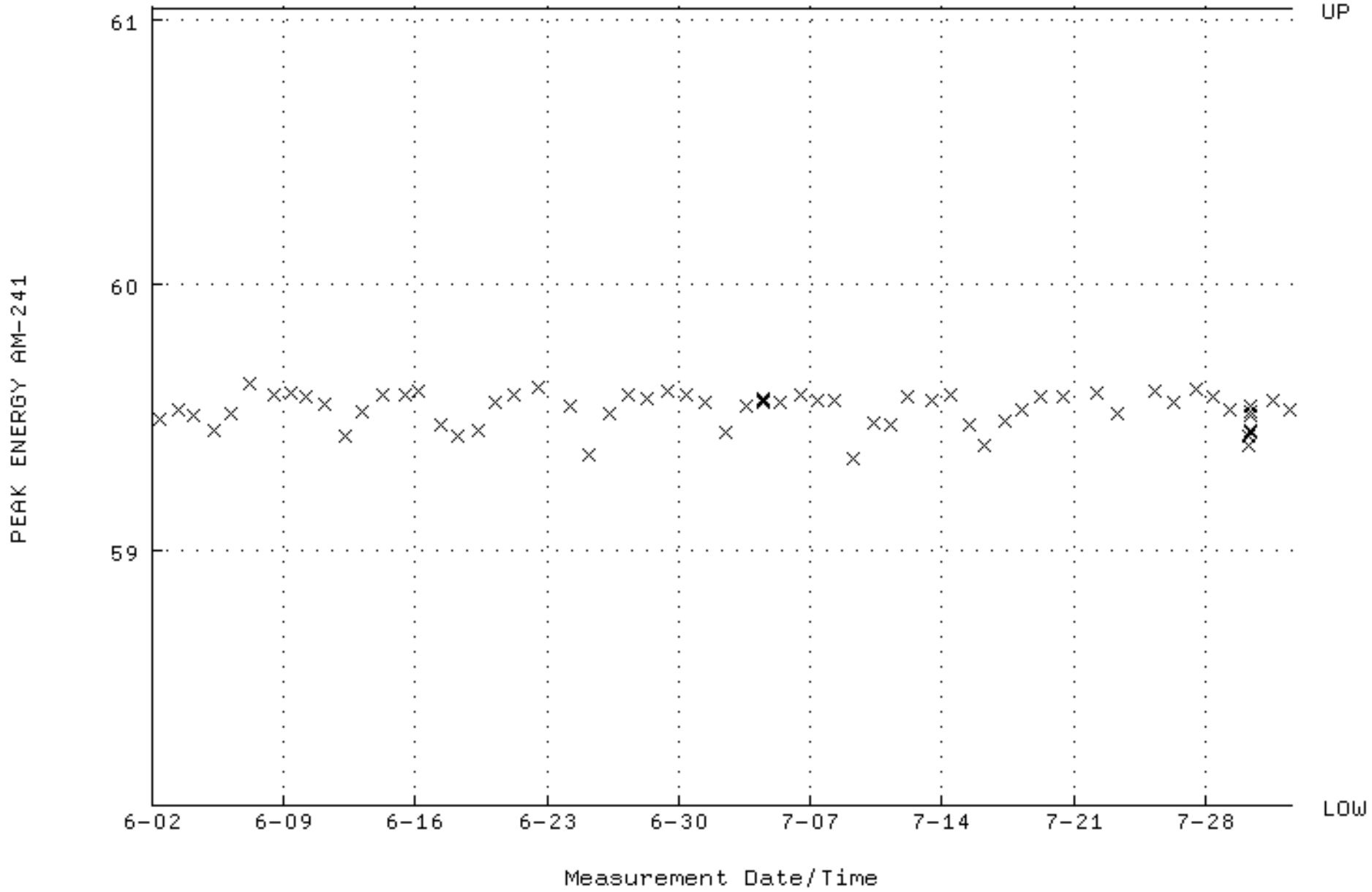
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM06_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-JUN-2024 09:05:06 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 63473.8 +- 1503.81 (2.37 %)



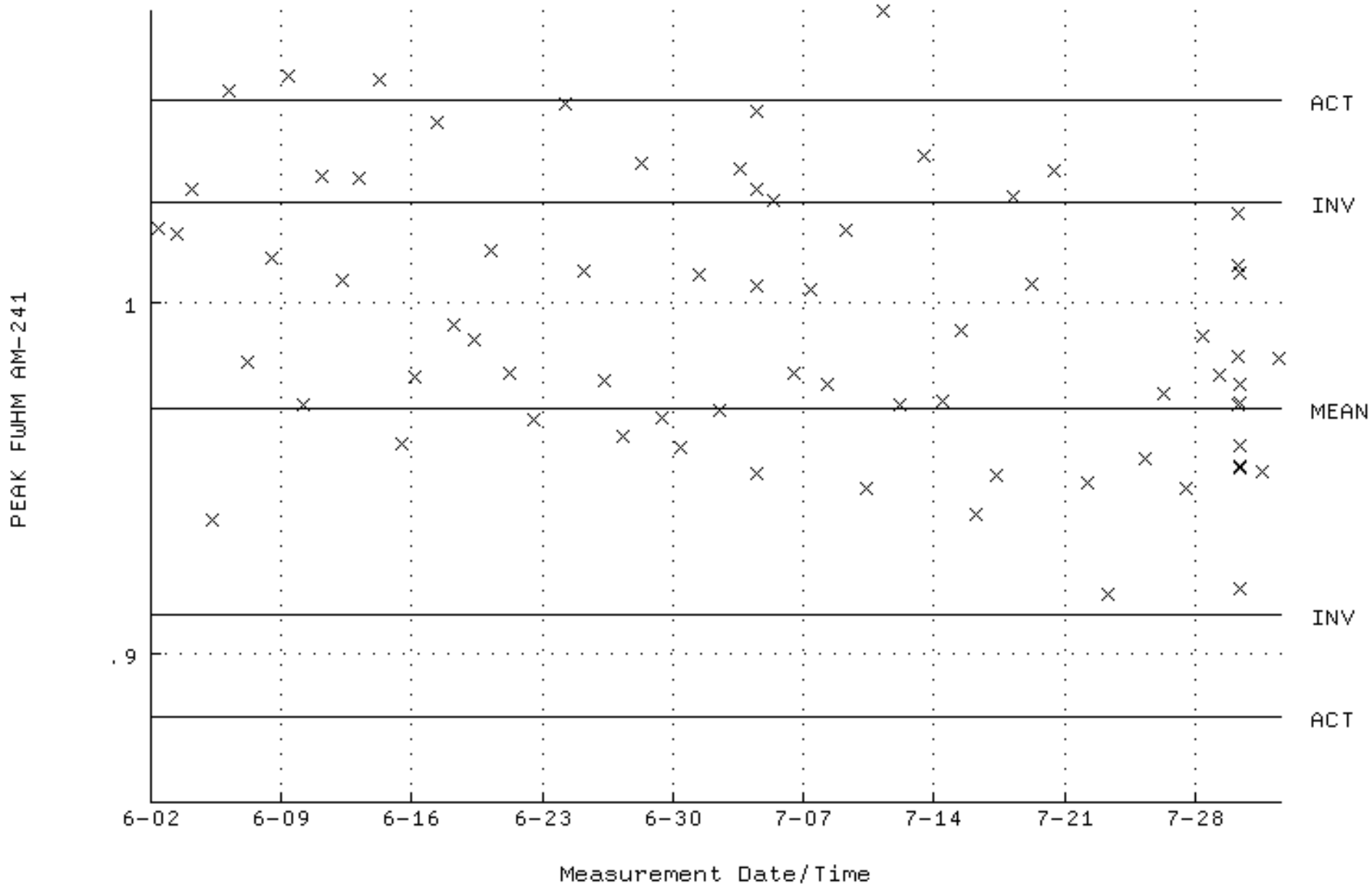
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM06.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 2-JUN-2024 15:22:59 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 1.25484 +- 1.824749E-02 (1.45 %)



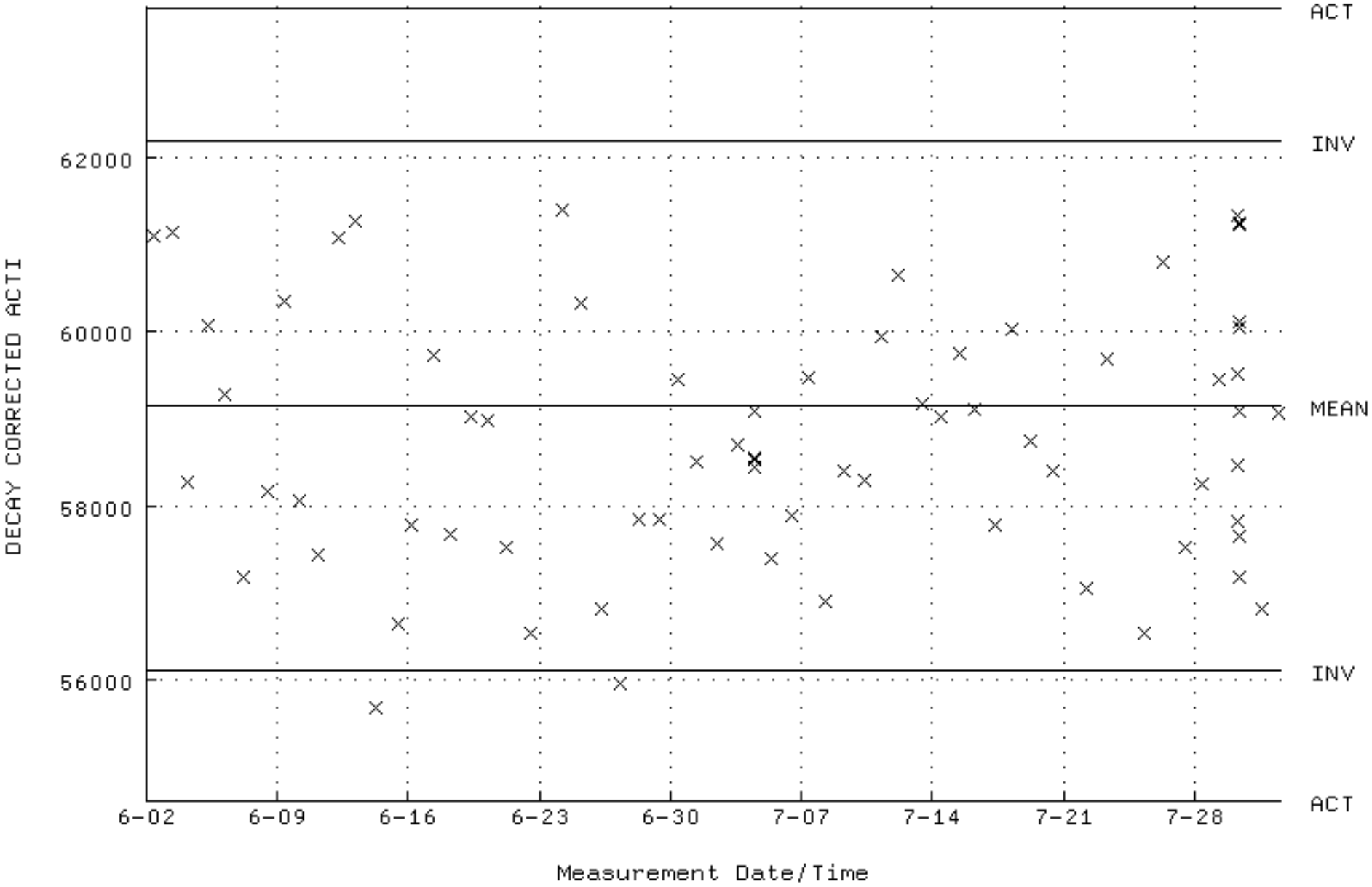
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM07_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-JUN-2024 09:05:11 through 1-AUG-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



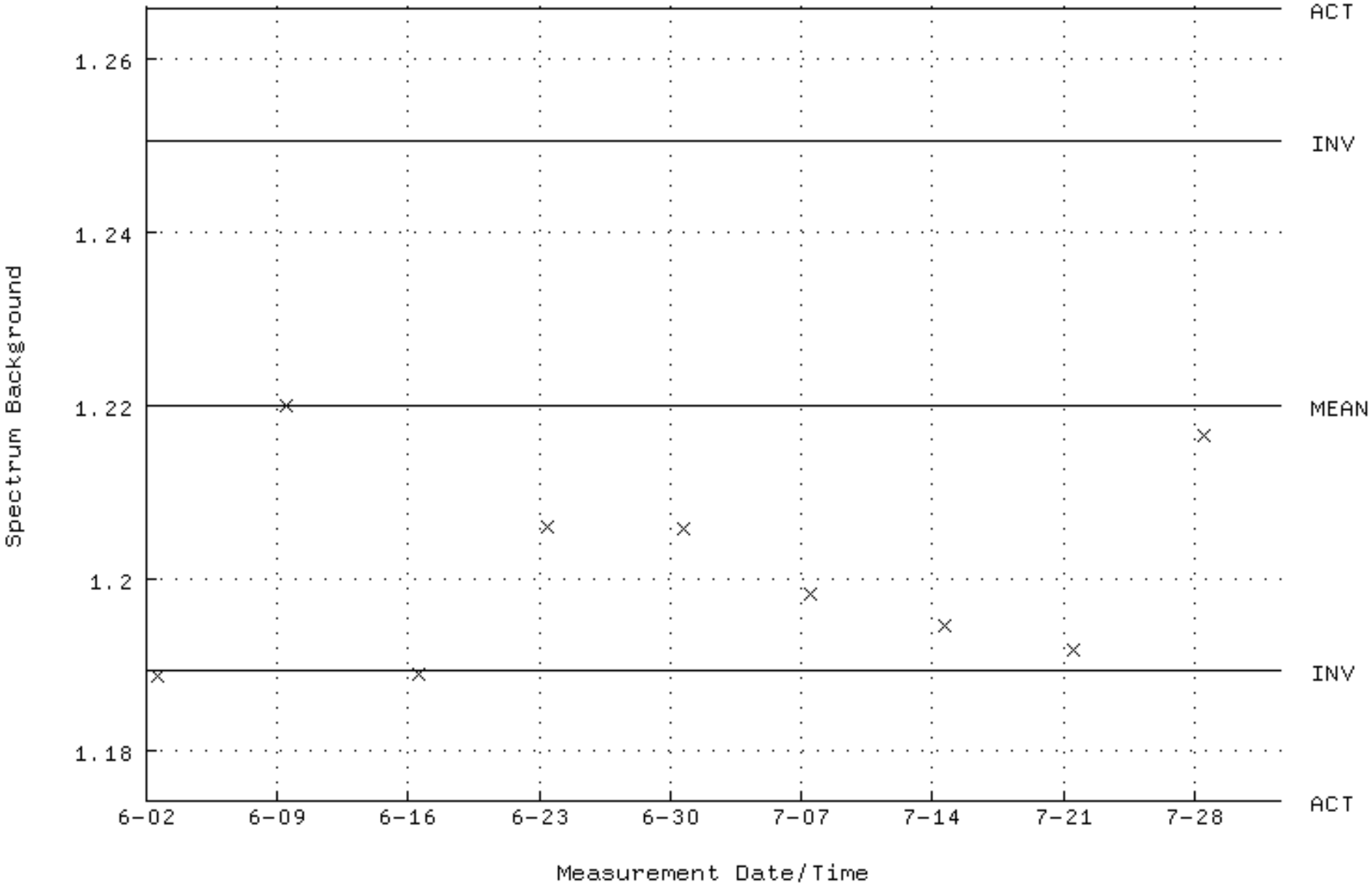
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM07_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-JUN-2024 09:05:11 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 0.970170 +- 2.928150E-02 (3.02 %)



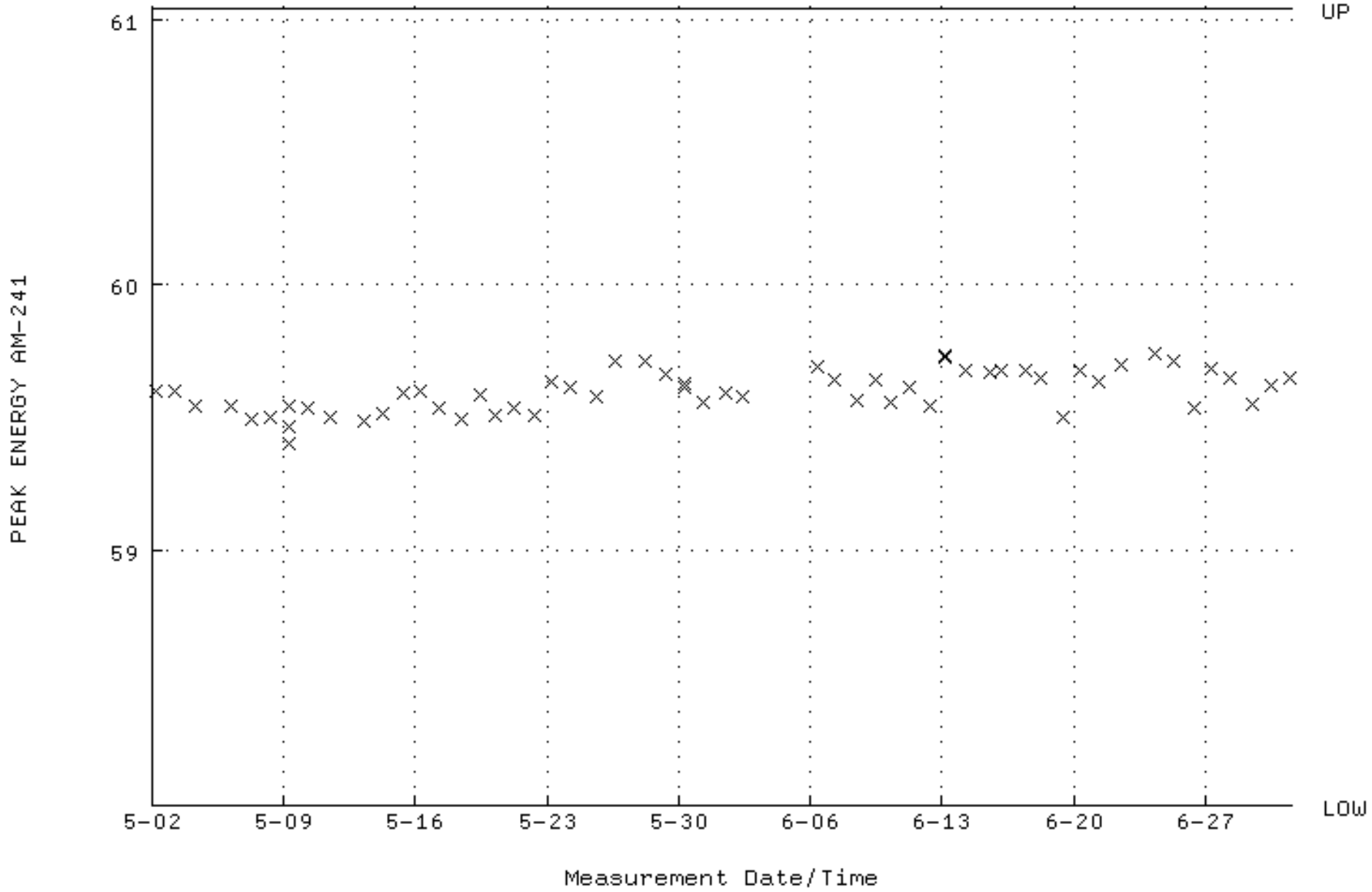
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM07_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-JUN-2024 09:05:11 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 59158.0 +- 1515.59 (2.56 %)



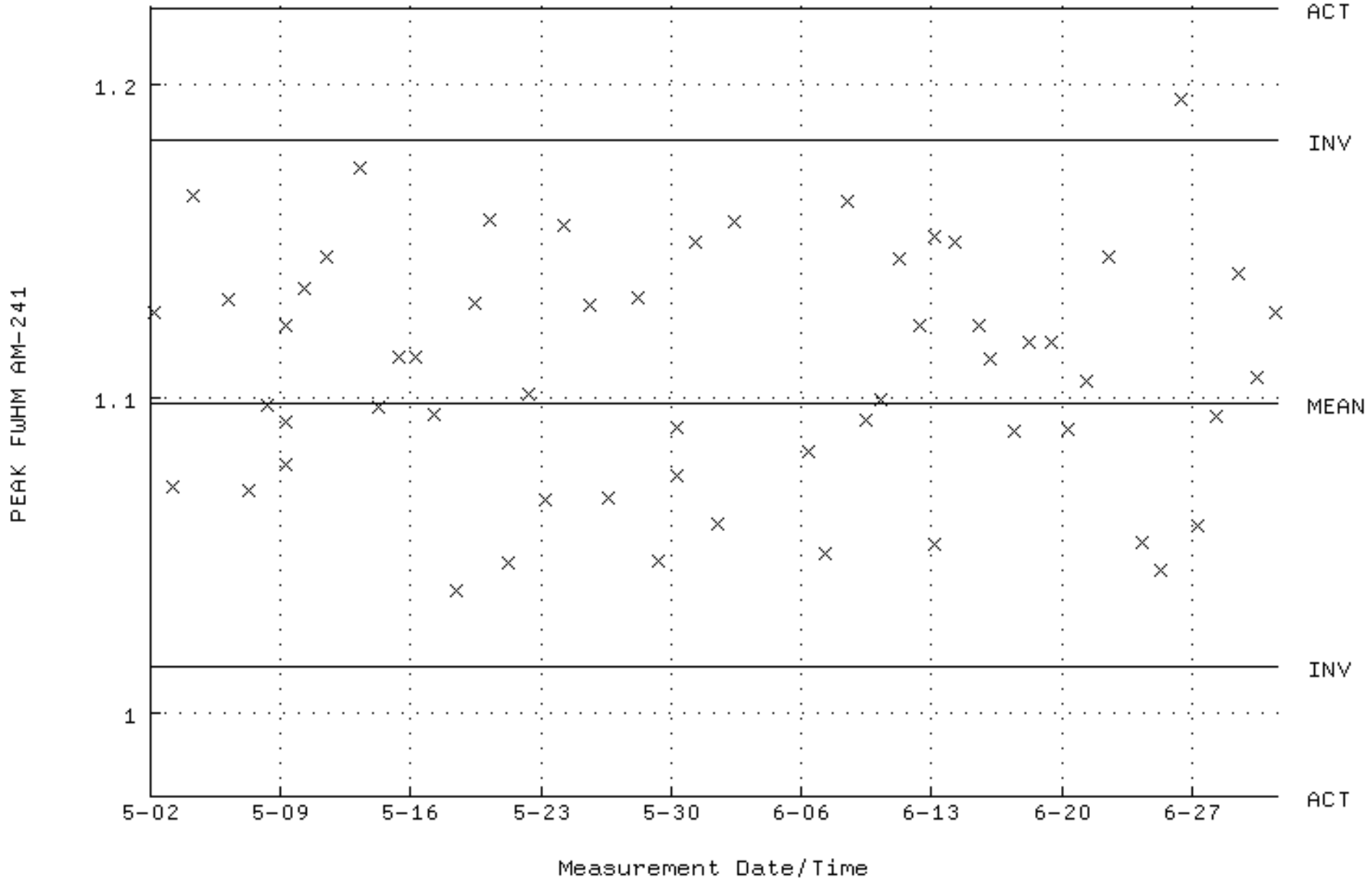
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM07.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 2-JUN-2024 15:23:04 through 1-AUG-2024 12:00:00
Mean +- Std Dev : 1.22007 +- 1.528499E-02 (1.25 %)



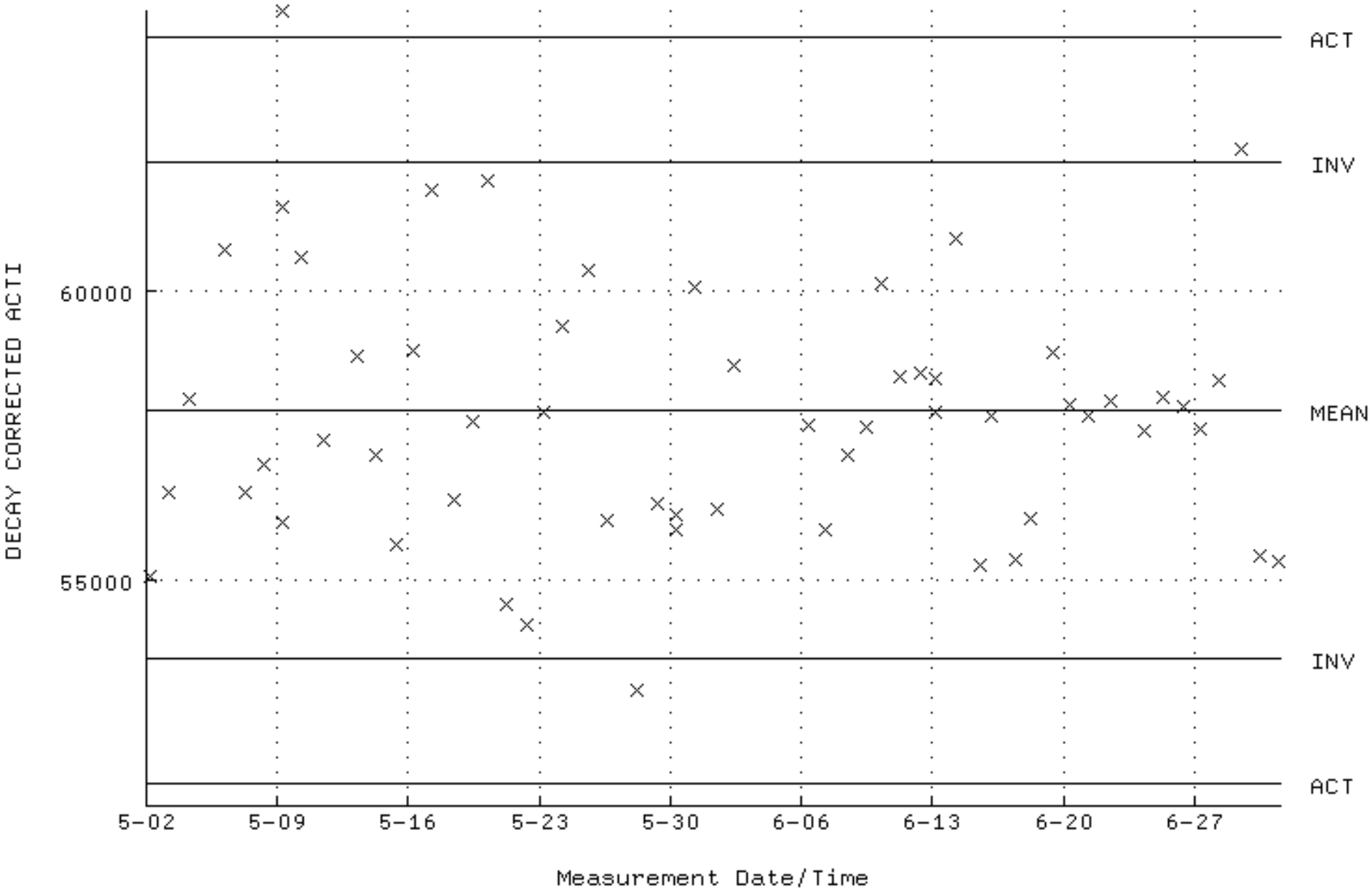
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM08_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 05:19:33 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



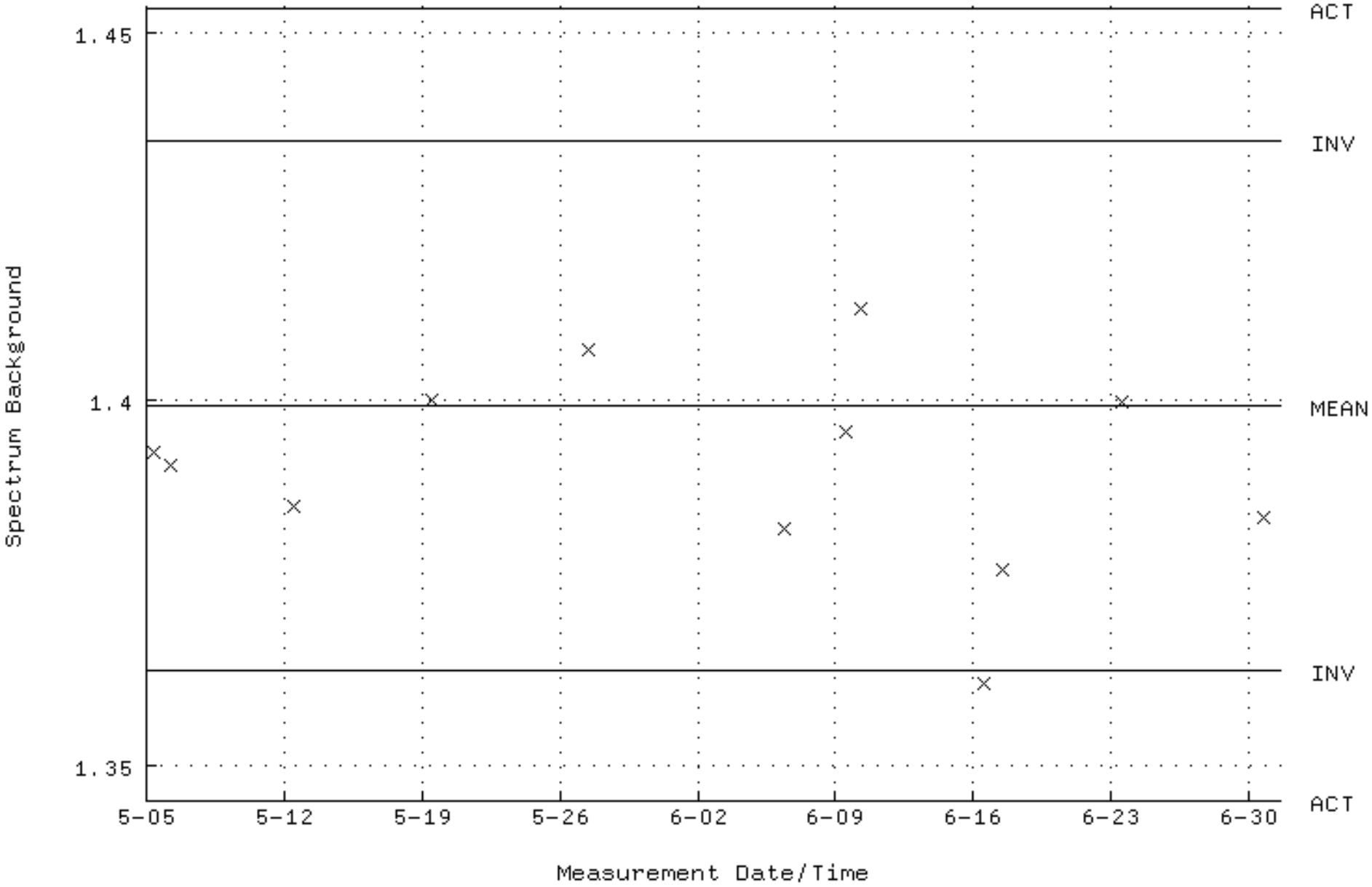
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM08_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 05:19:33 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.09881 +- 4.174436E-02 (3.80 %)



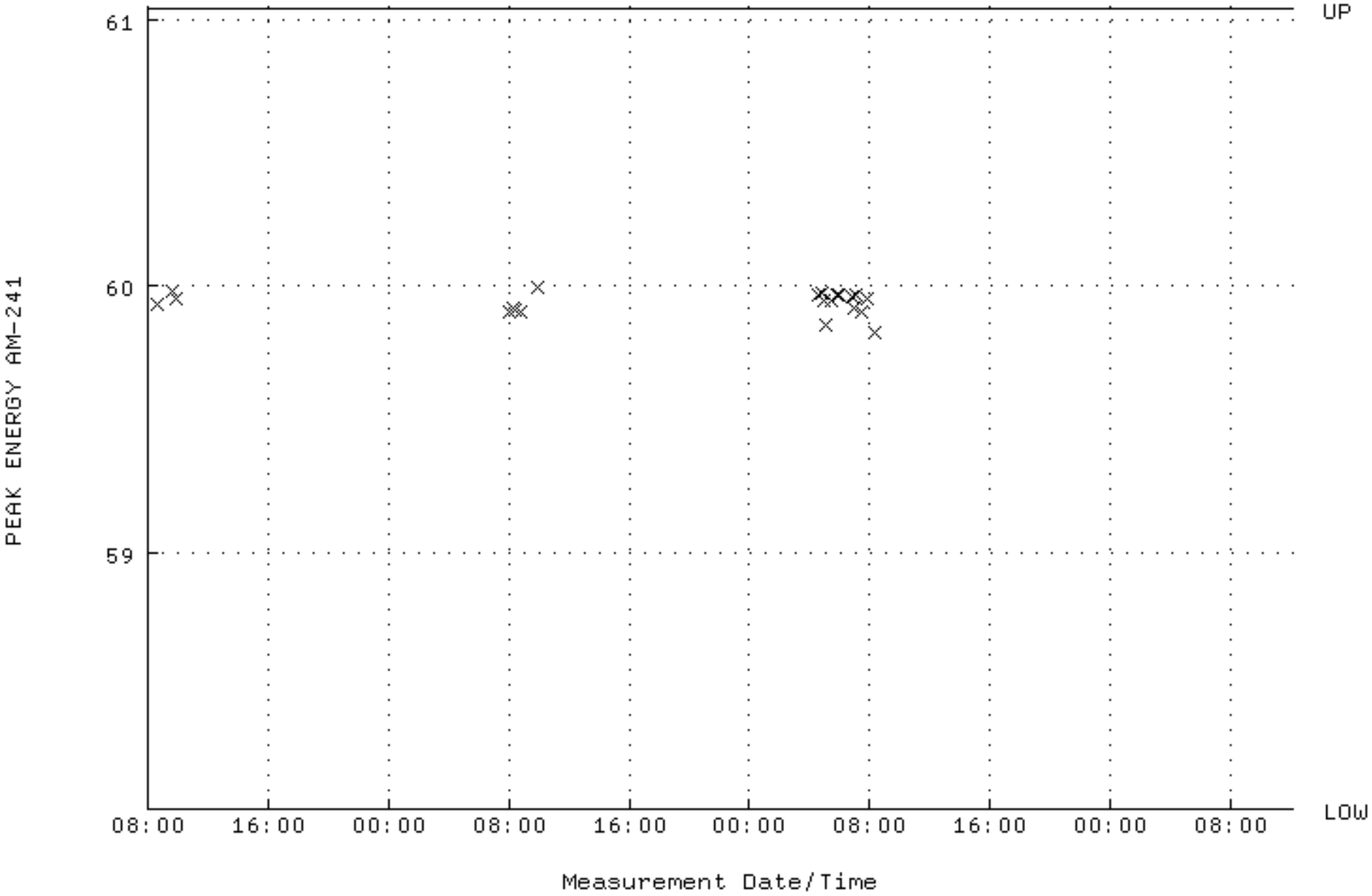
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM08_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 05:19:33 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 57948.3 +- 2156.30 (3.72 %)



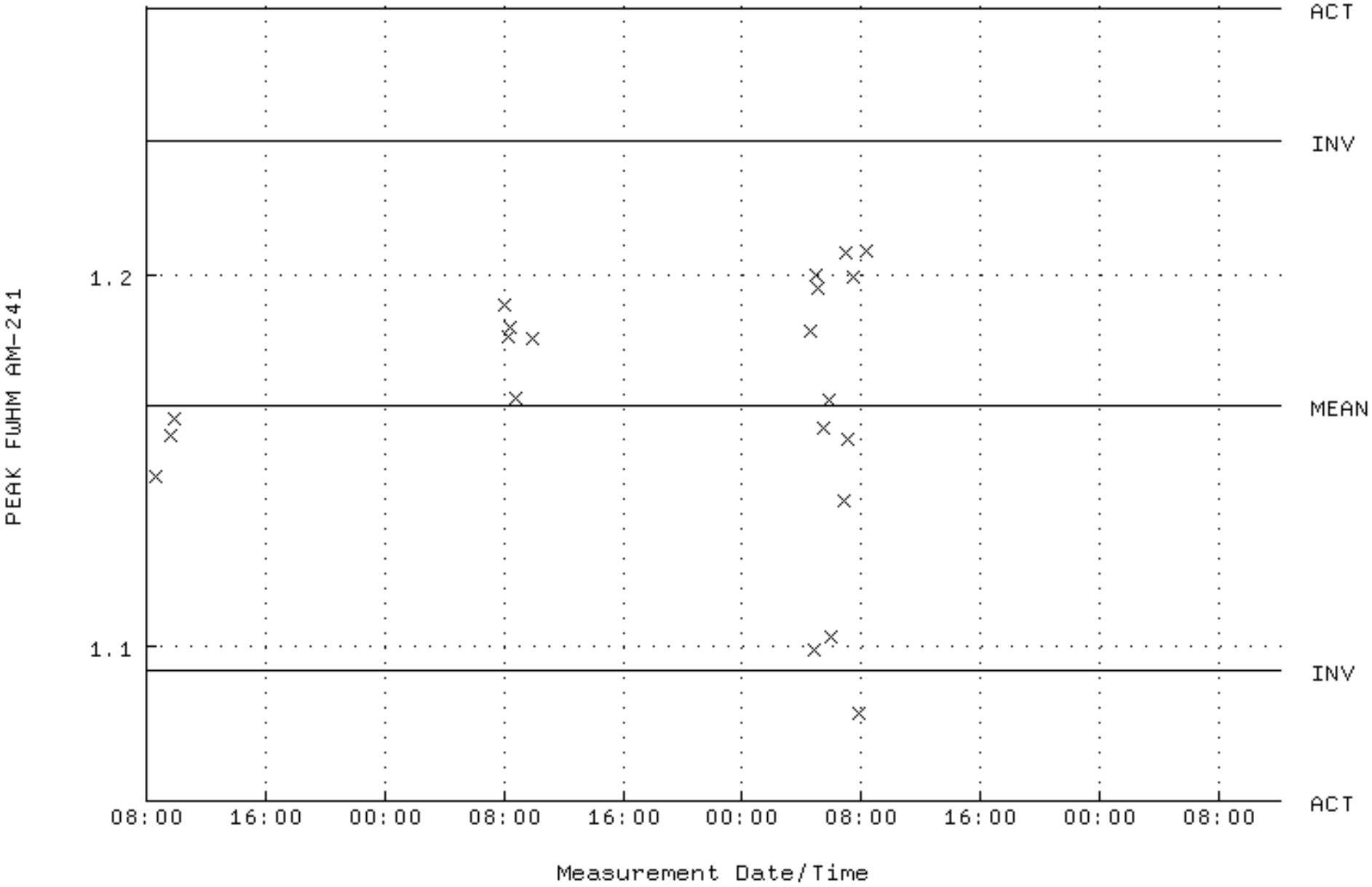
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM08.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:14:24 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.39925 +- 1.803552E-02 (1.29 %)



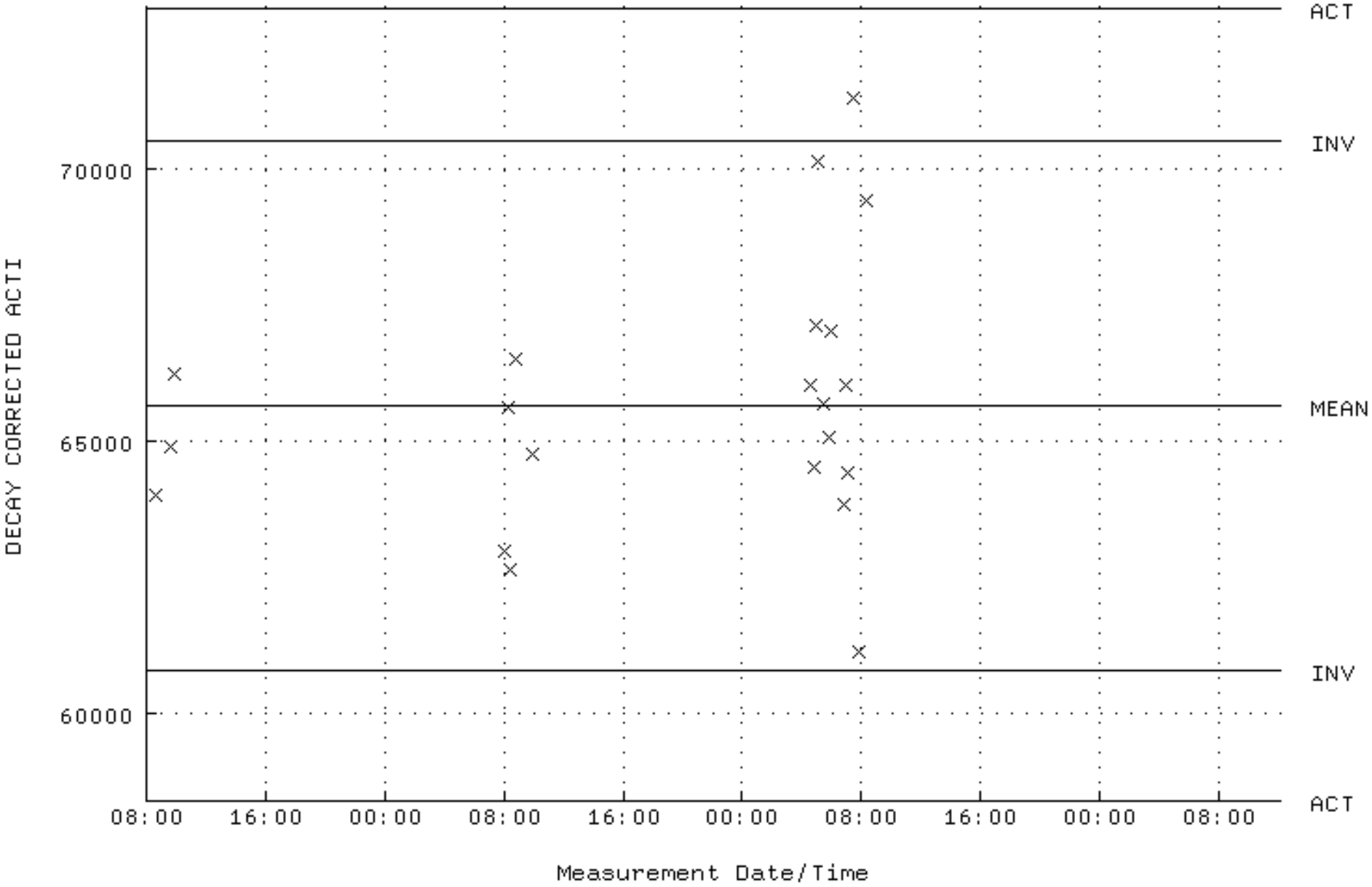
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM10_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 17-JUL-2024 08:36:24 through 20-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



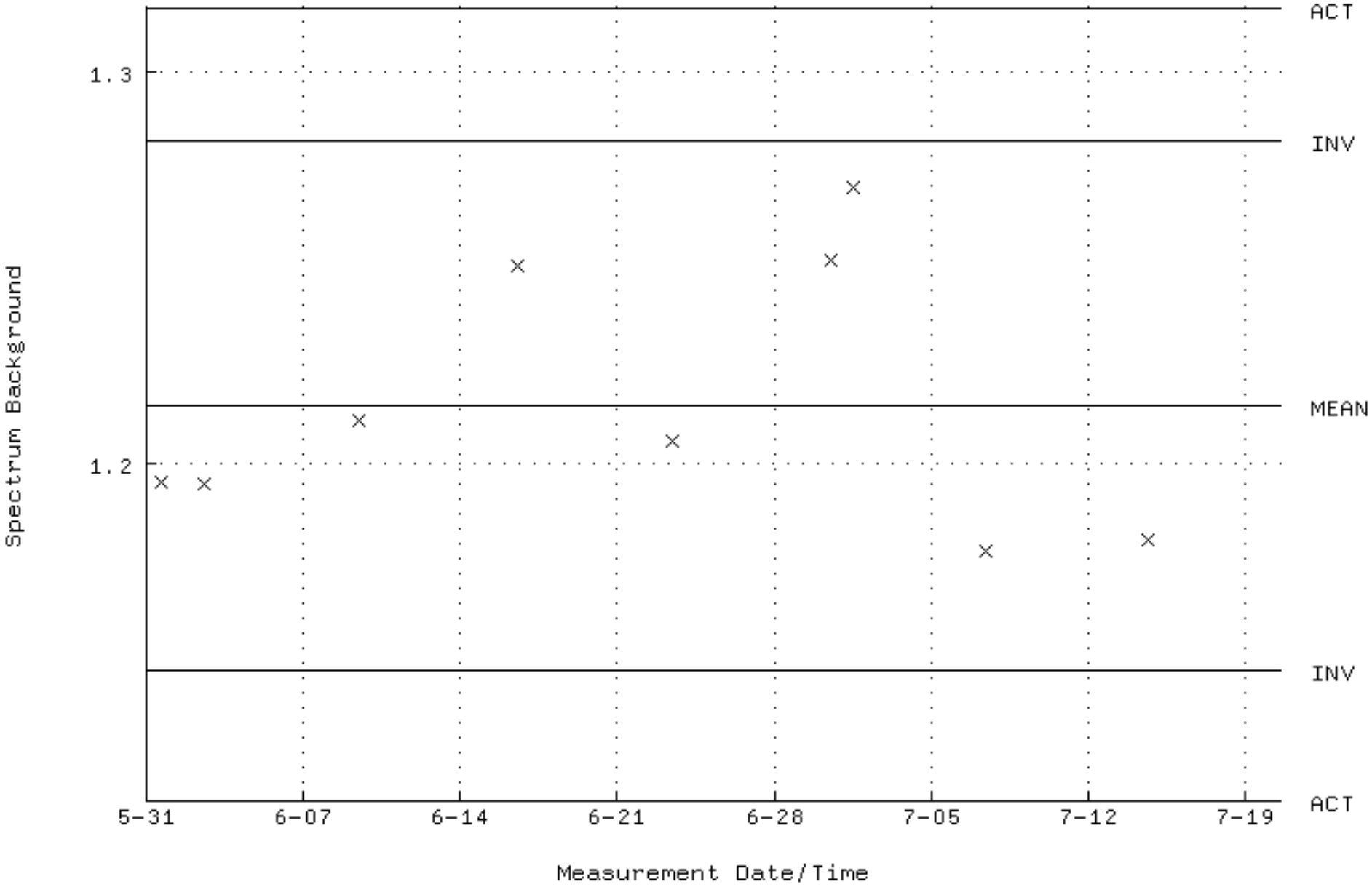
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM10_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 17-JUL-2024 08:36:24 through 20-JUL-2024 12:00:00
Mean +- Std Dev : 1.16515 +- 3.570547E-02 (3.06 %)



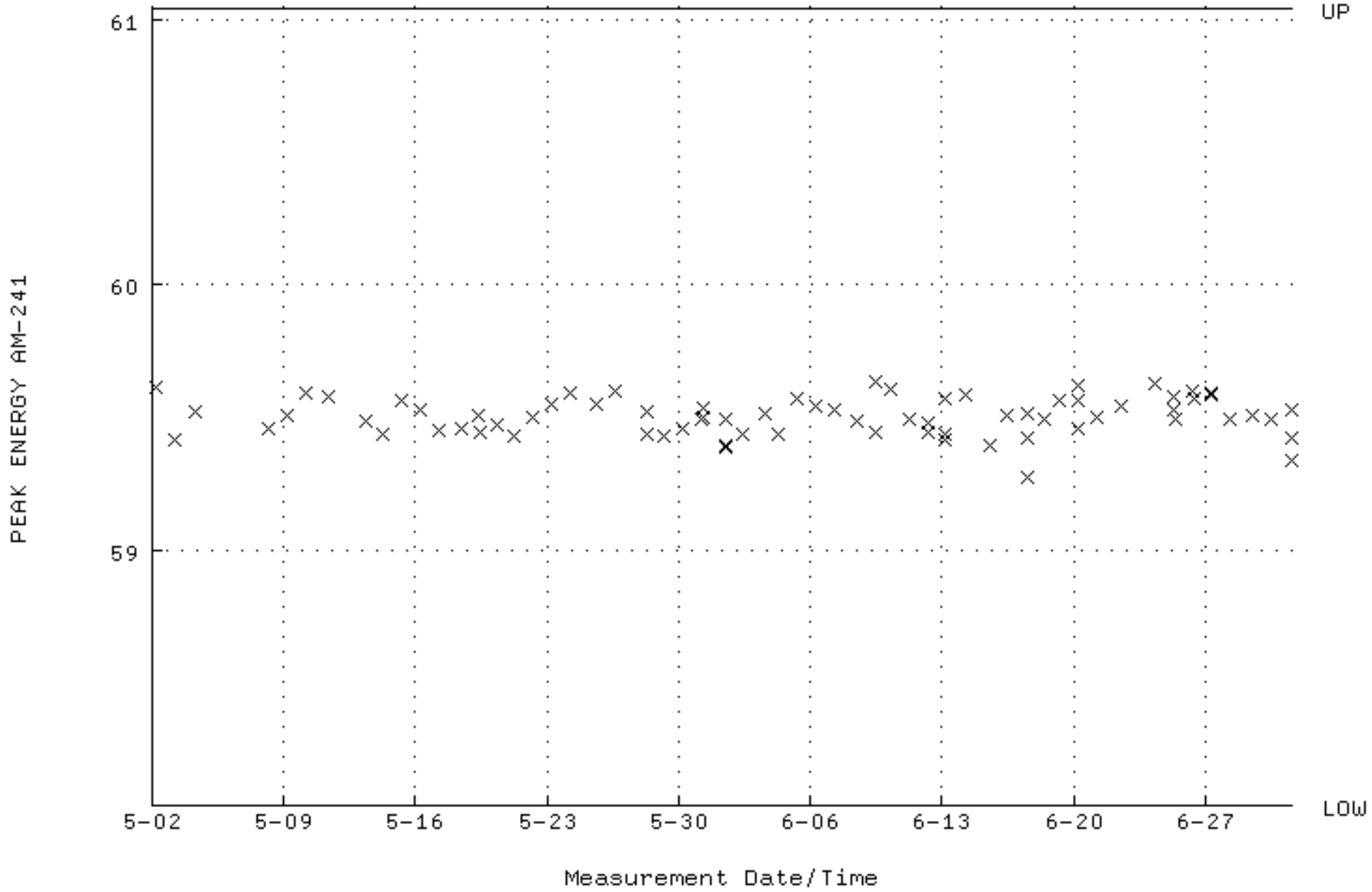
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM10_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 17-JUL-2024 08:36:24 through 20-JUL-2024 12:00:00
Mean +- Std Dev : 65664.5 +- 2426.36 (3.70 %)



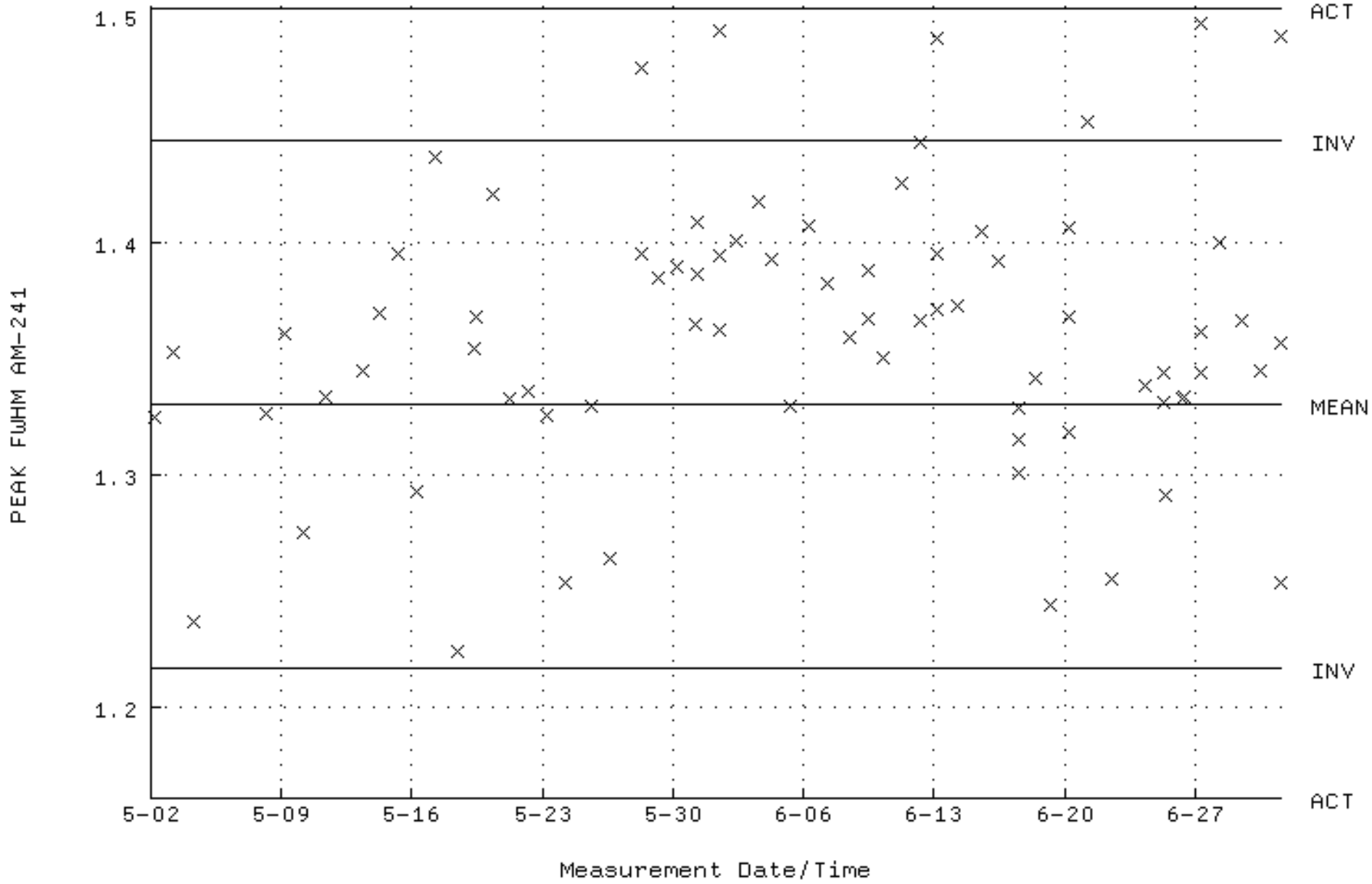
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM10.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 31-MAY-2024 16:49:37 through 20-JUL-2024 12:00:00
Mean +- Std Dev : 1.21518 +- 3.366010E-02 (2.77 %)



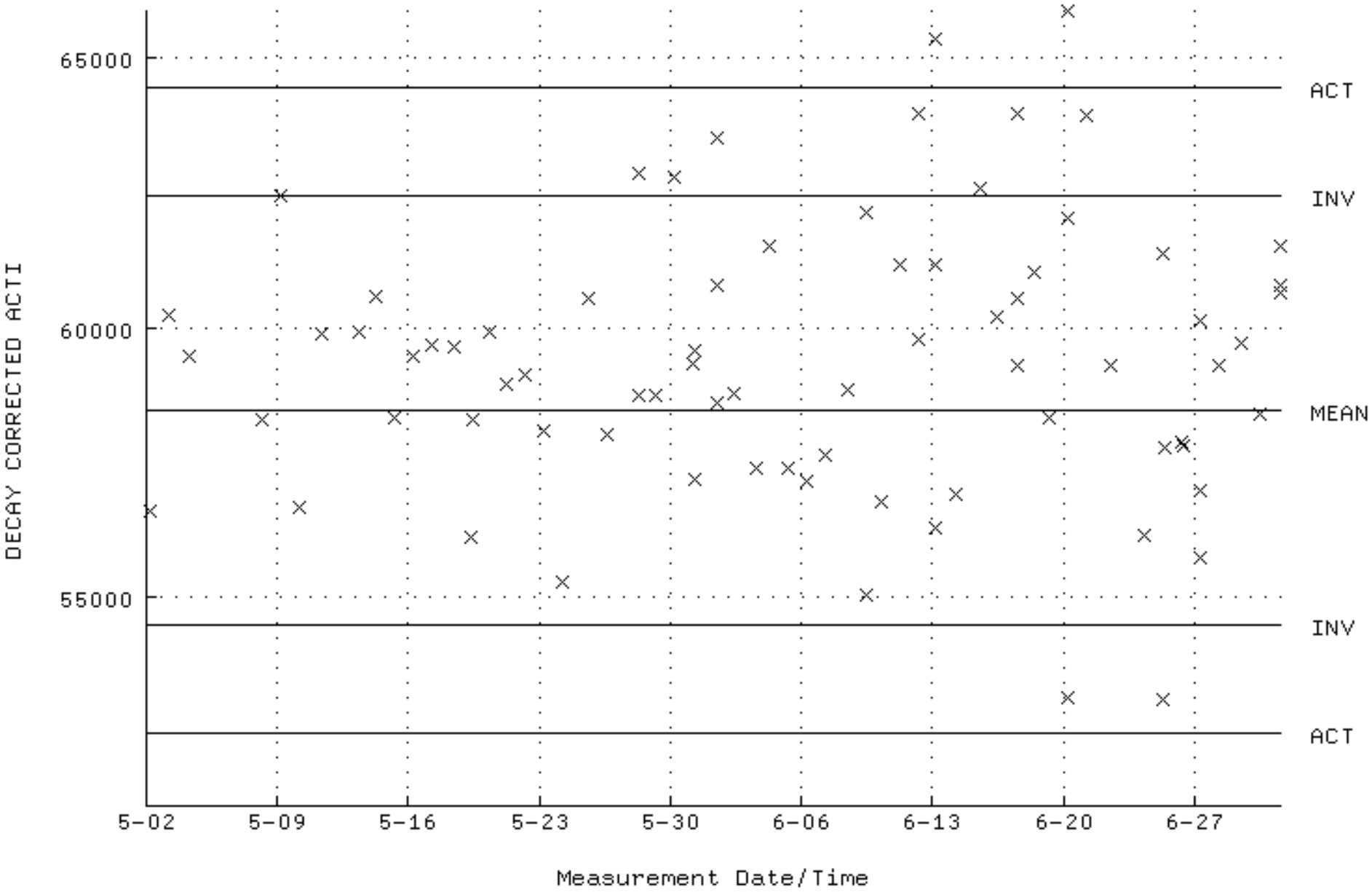
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM12_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:46:56 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



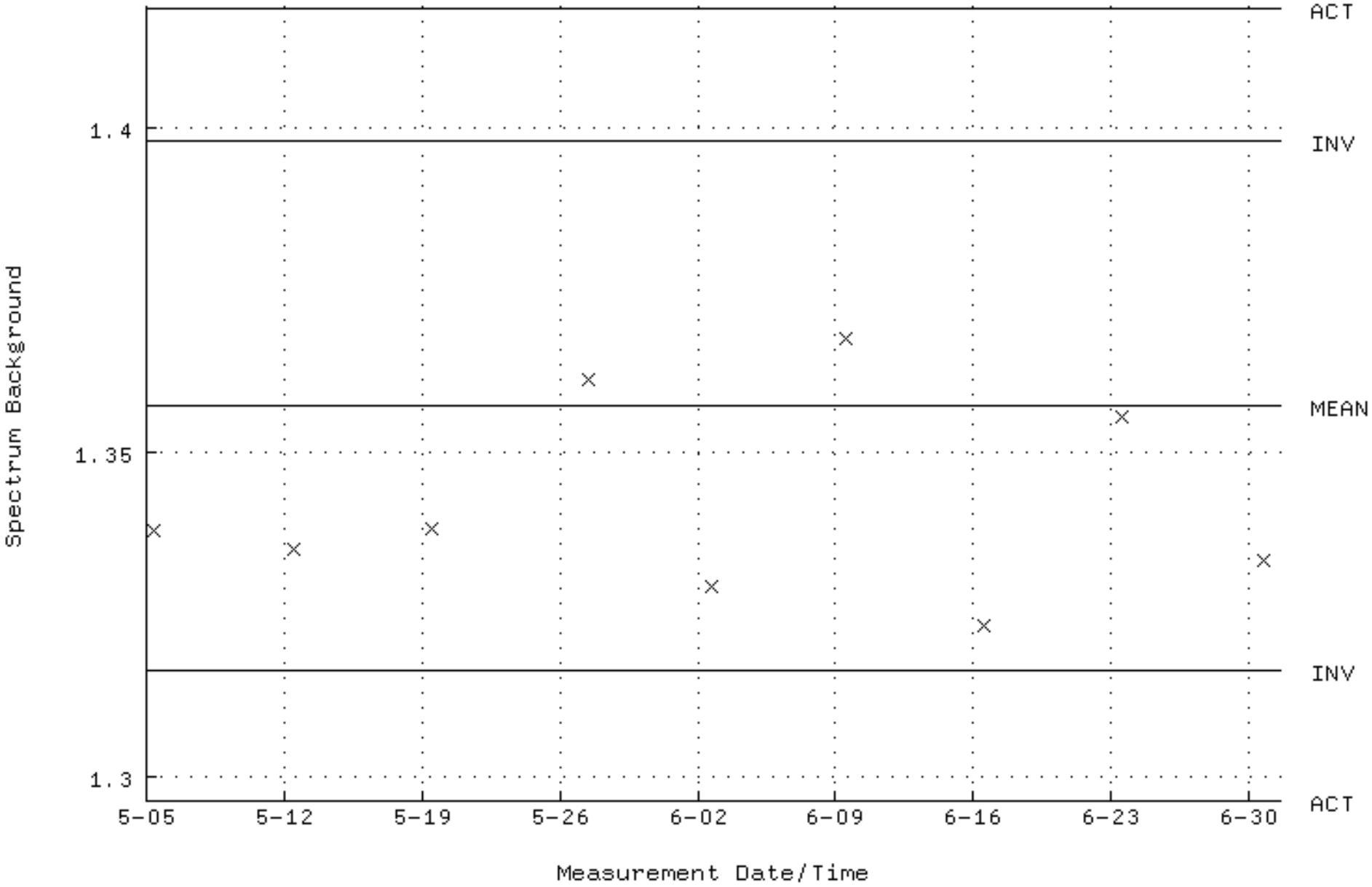
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM12_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:46:56 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.33054 +- 5.660002E-02 (4.25 %)



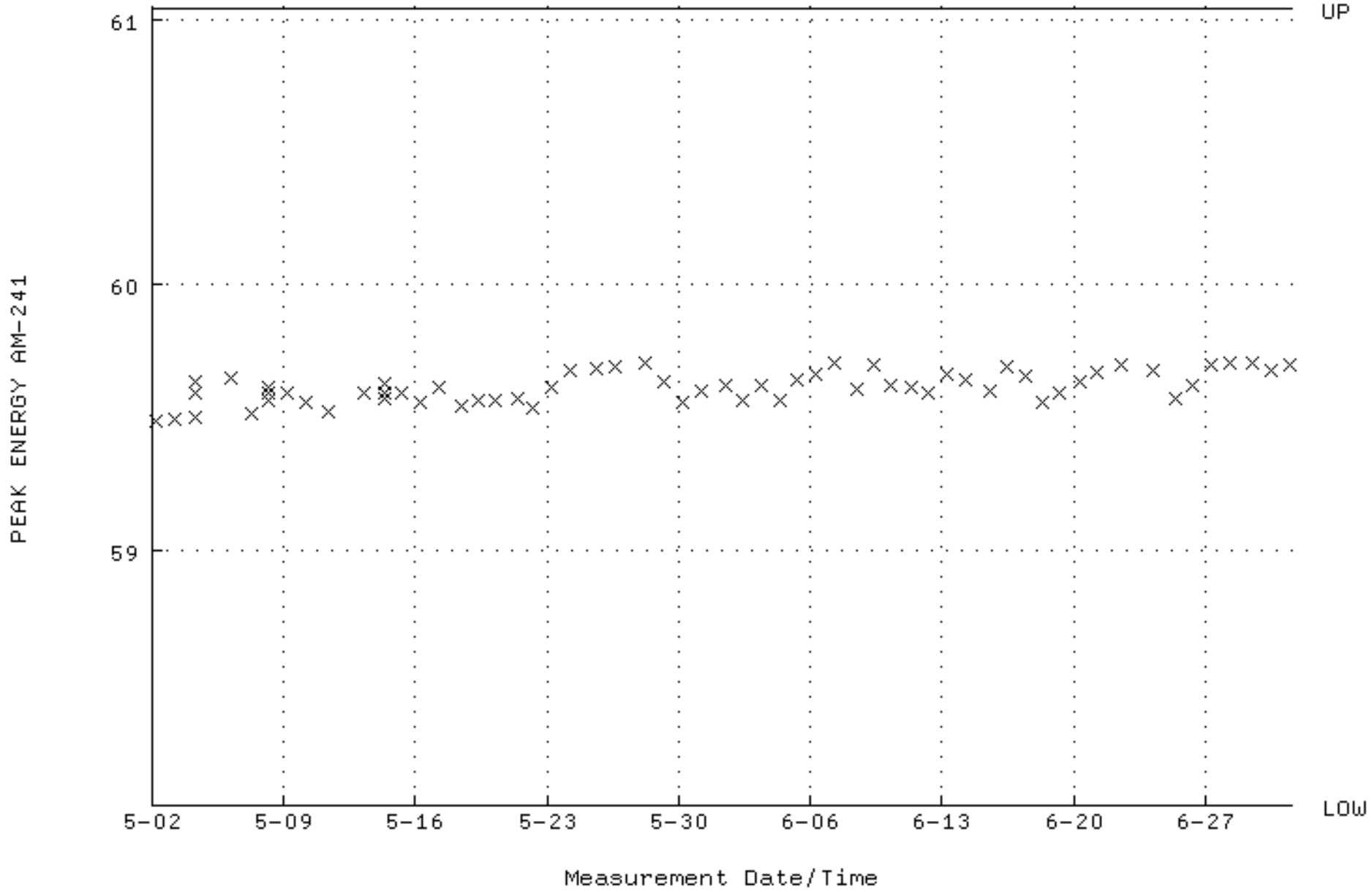
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM12_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:46:56 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 58481.1 +- 1995.94 (3.41 %)



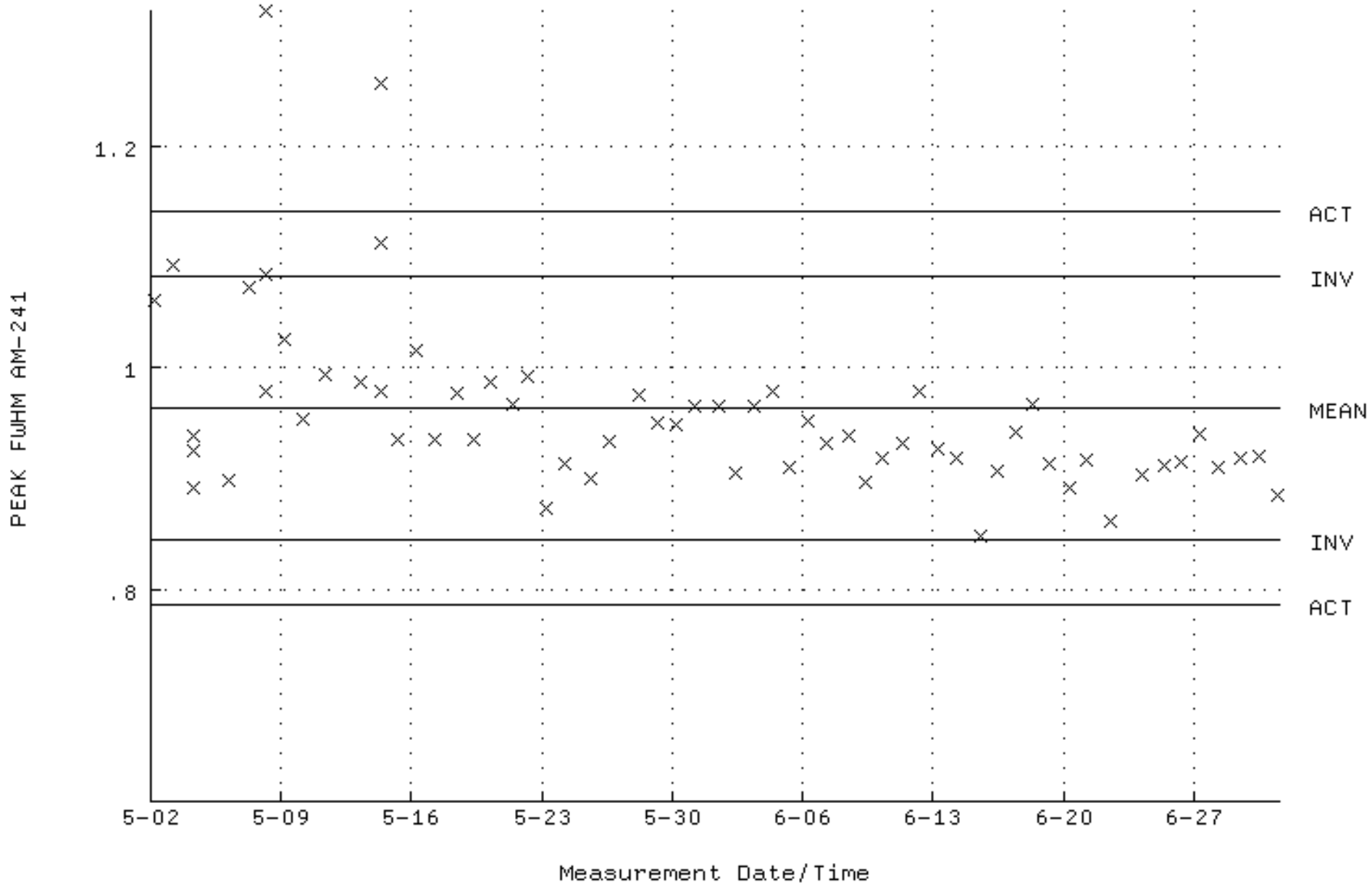
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM12.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:08:38 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.35724 +- 2.036170E-02 (1.50 %)



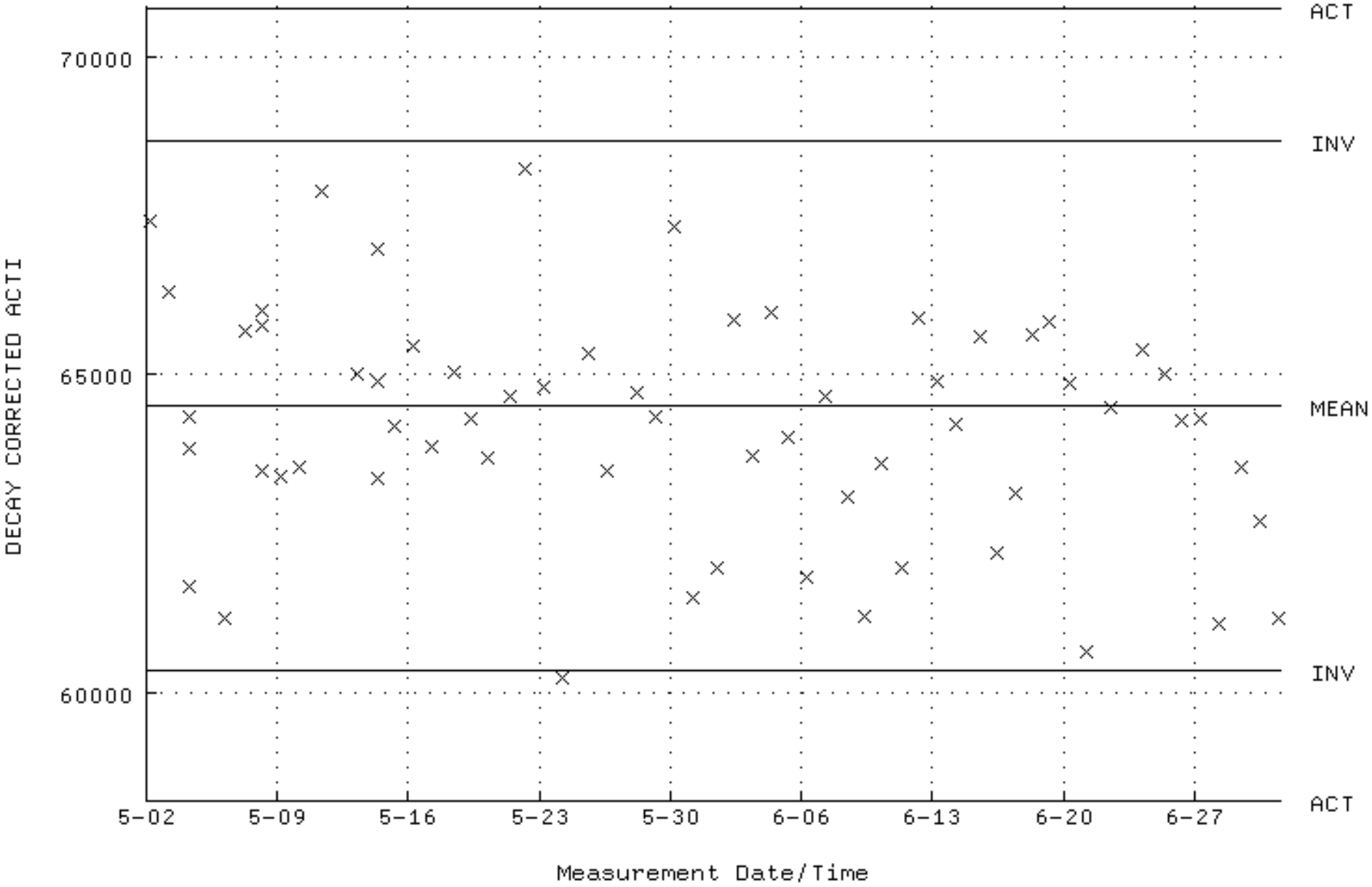
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM16_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 05:19:38 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



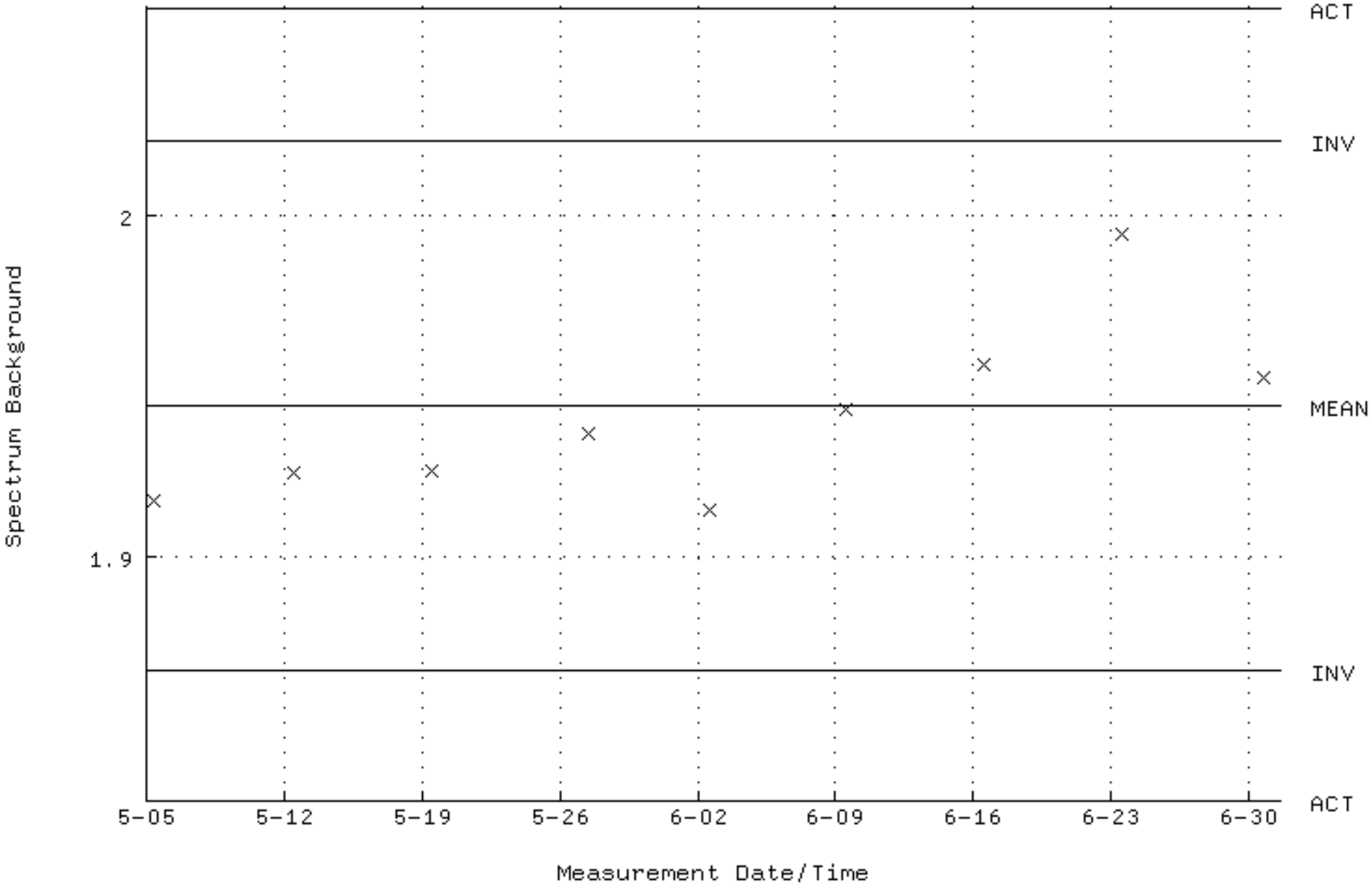
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM16_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 05:19:38 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 0.964423 +- 5.930935E-02 (6.15 %)



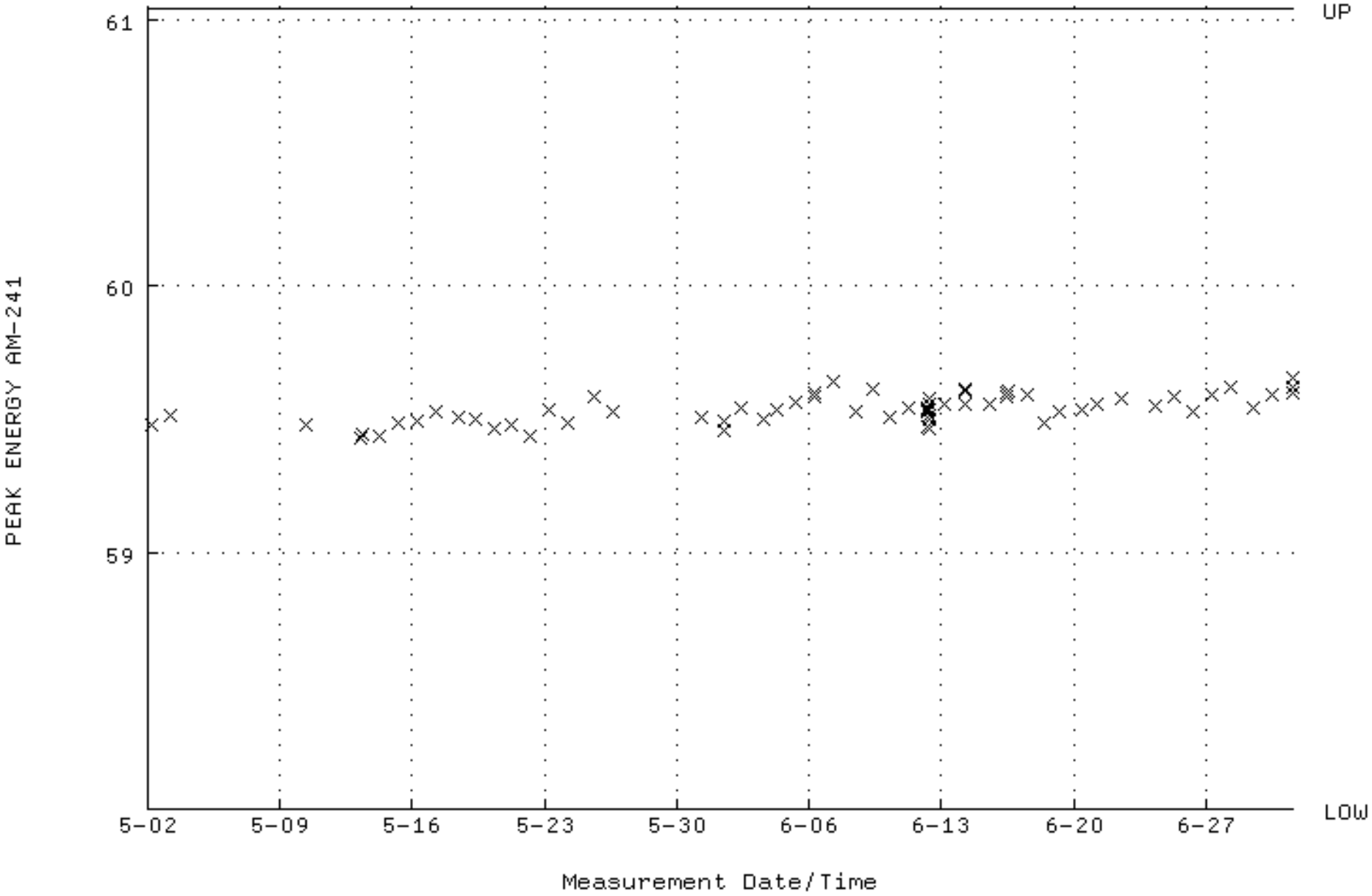
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM16_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 05:19:38 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 64519.8 +- 2077.16 (3.22 %)



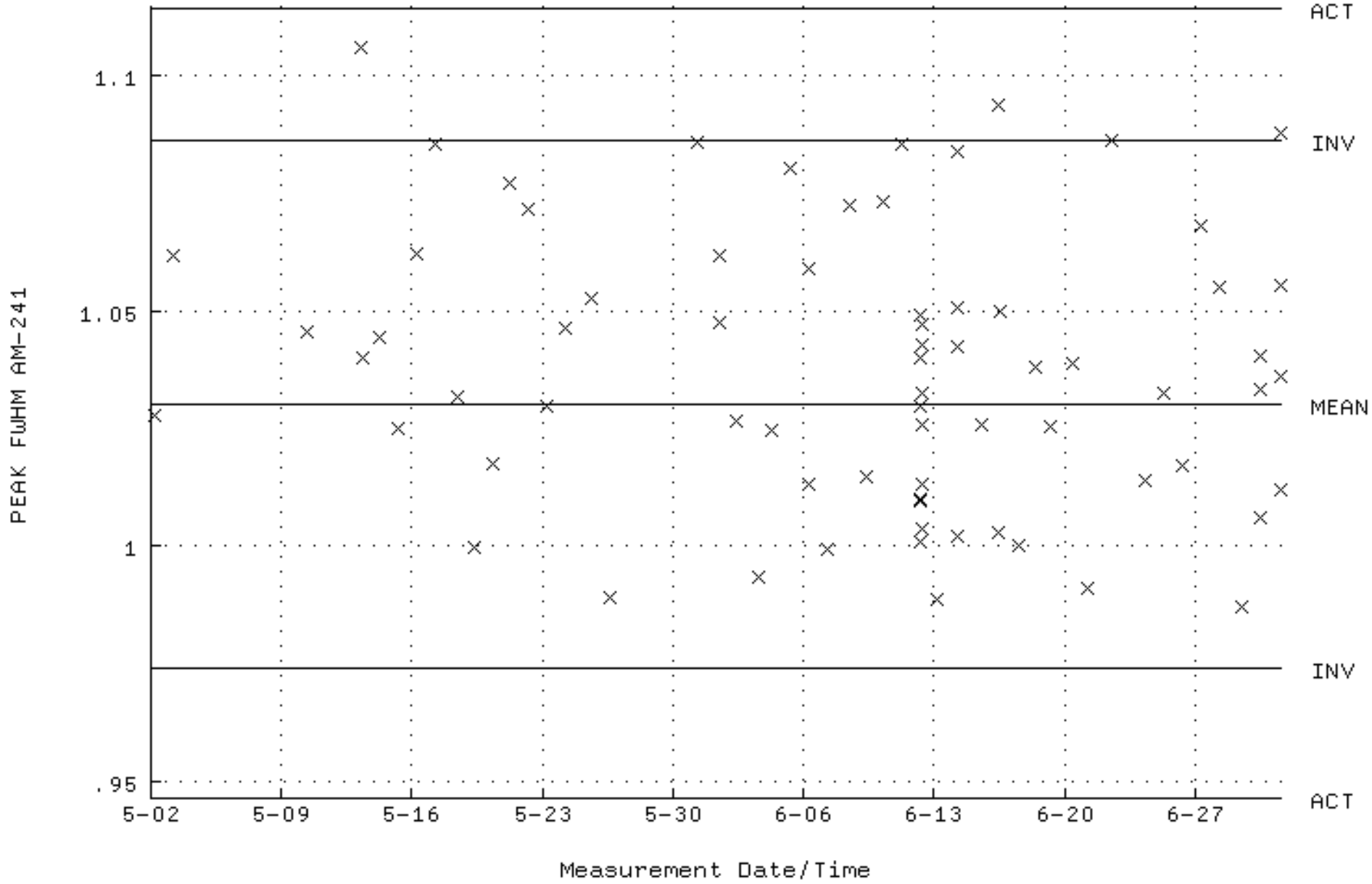
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM16.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:10:19 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.94453 +- 3.864294E-02 (1.99 %)



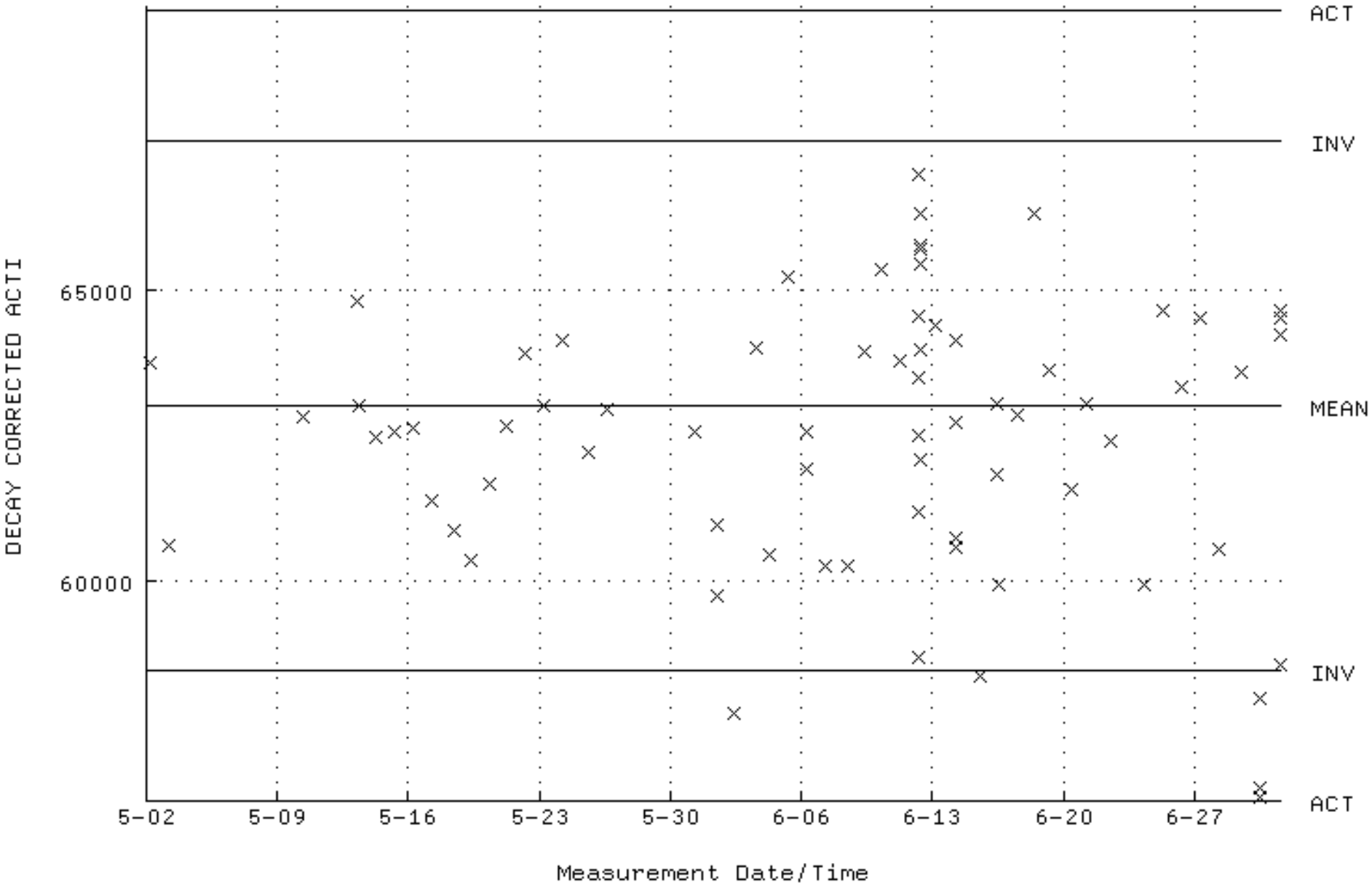
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM18_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:43:22 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



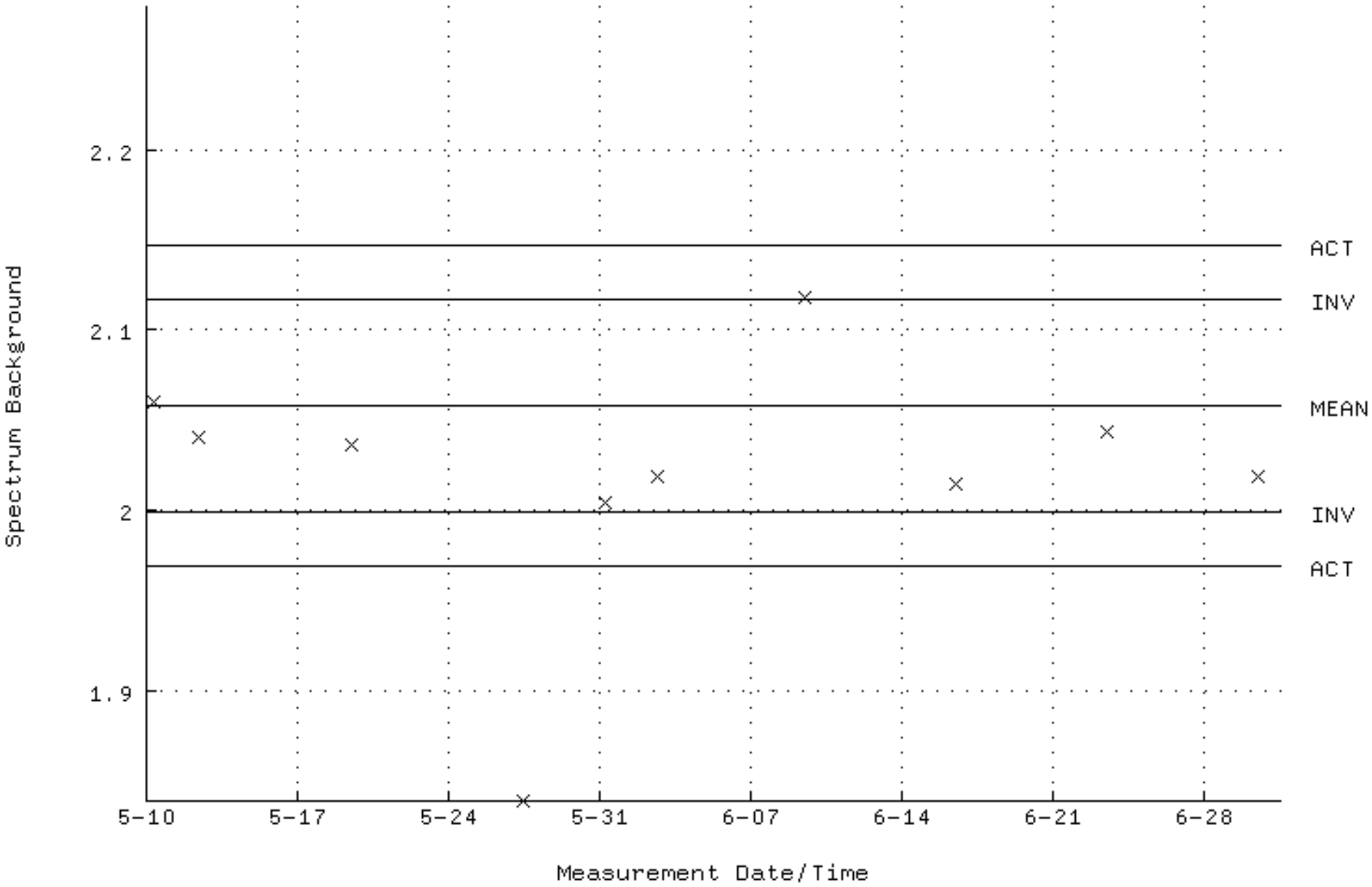
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM18_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:43:22 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.03028 +- 2.793404E-02 (2.71 %)



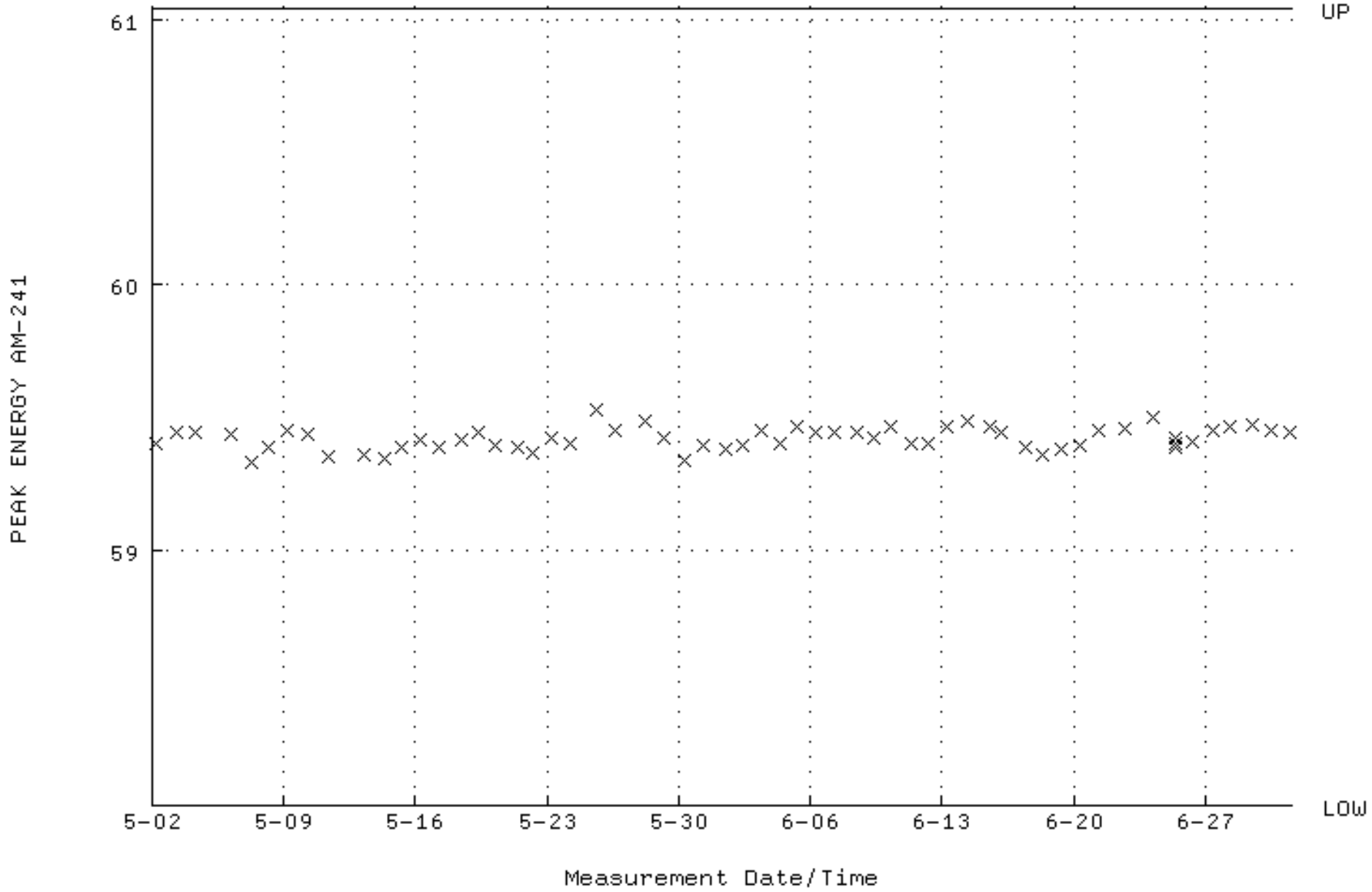
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM18_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:43:22 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 63034.2 +- 2266.86 (3.60 %)



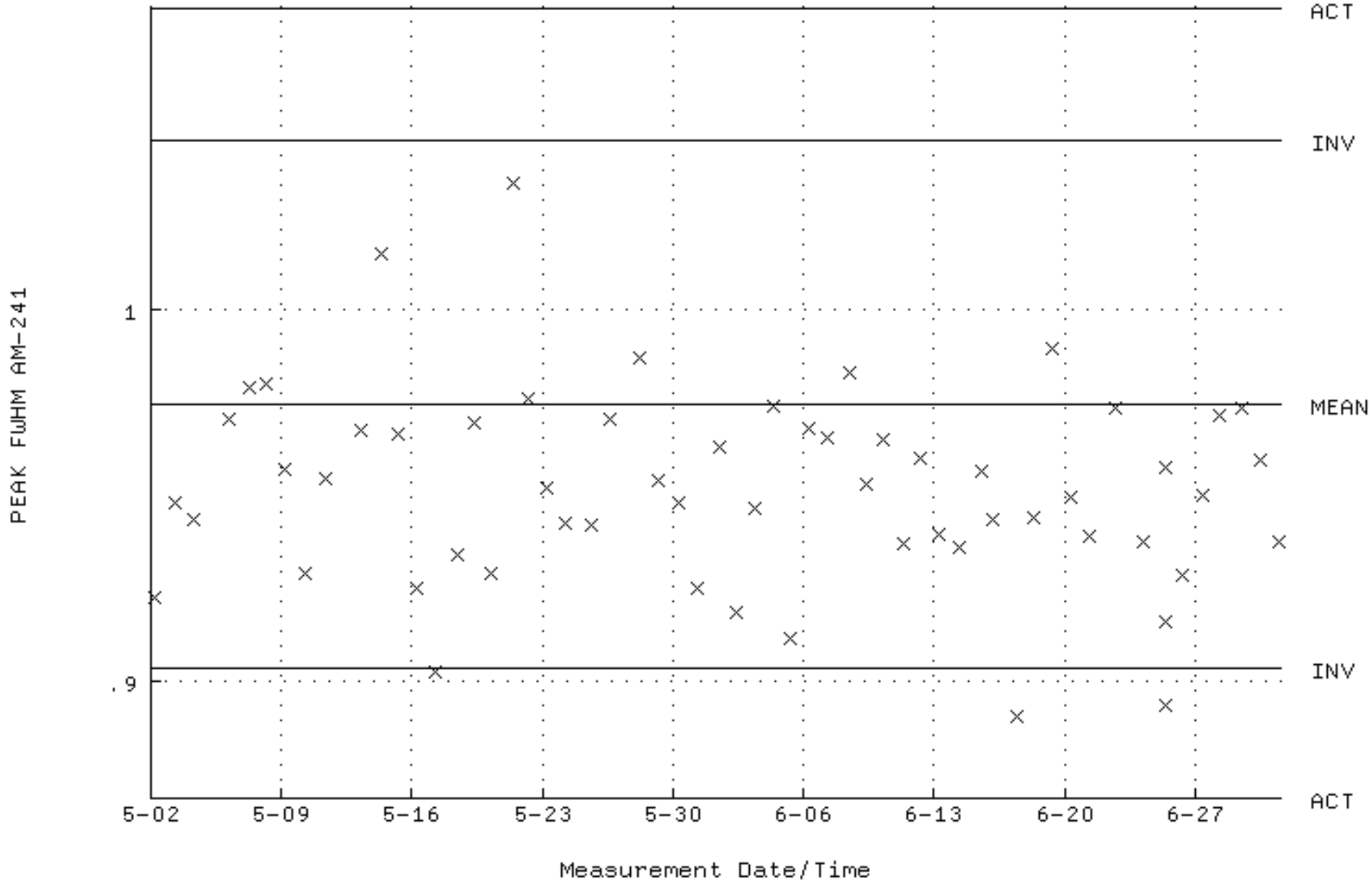
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM18.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 10-MAY-2024 09:01:42 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 2.05854 +- 2.951148E-02 (1.43 %)



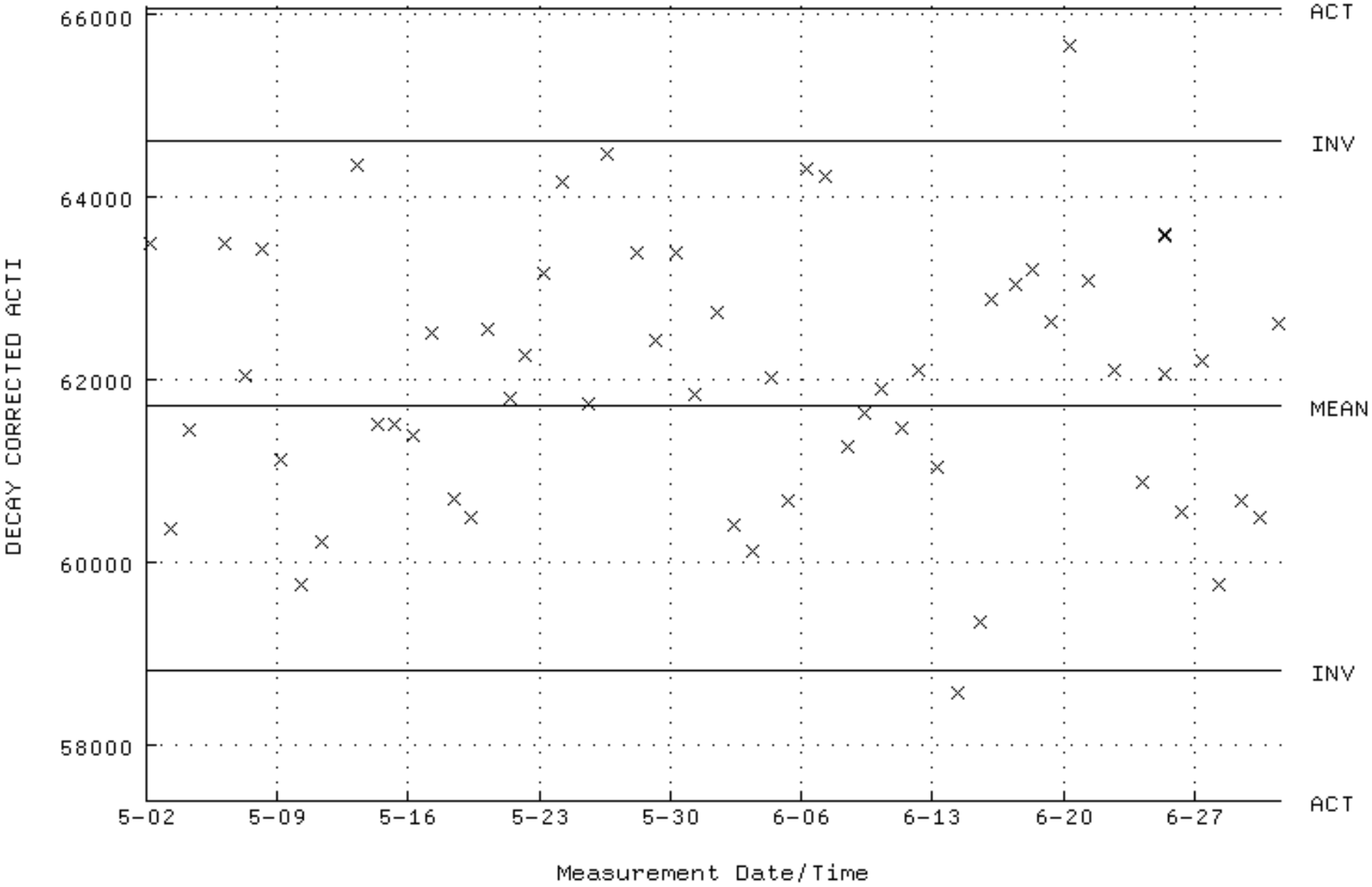
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM19_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 05:19:43 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



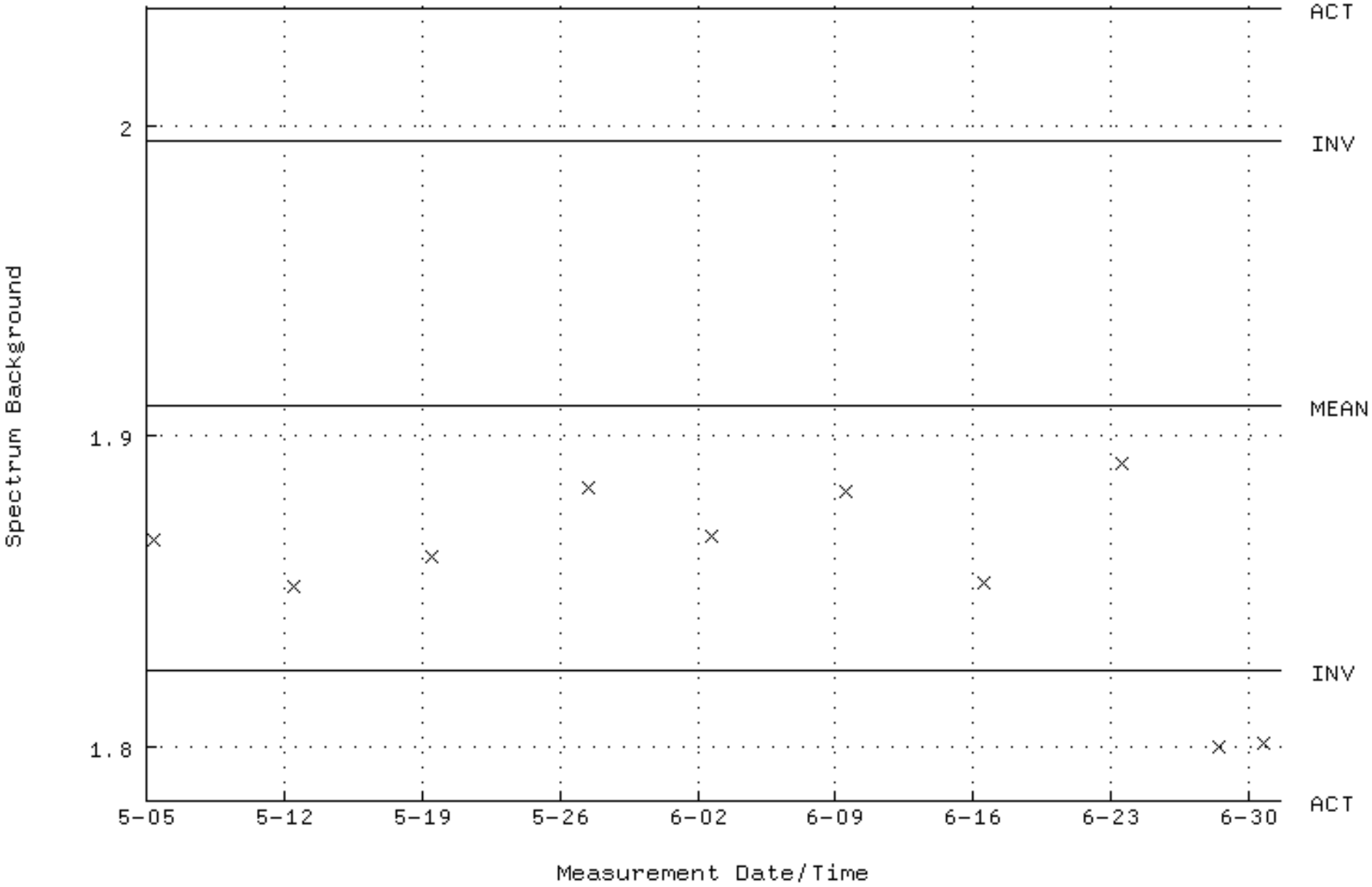
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM19_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 05:19:43 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 0.974798 +- 3.549832E-02 (3.64 %)



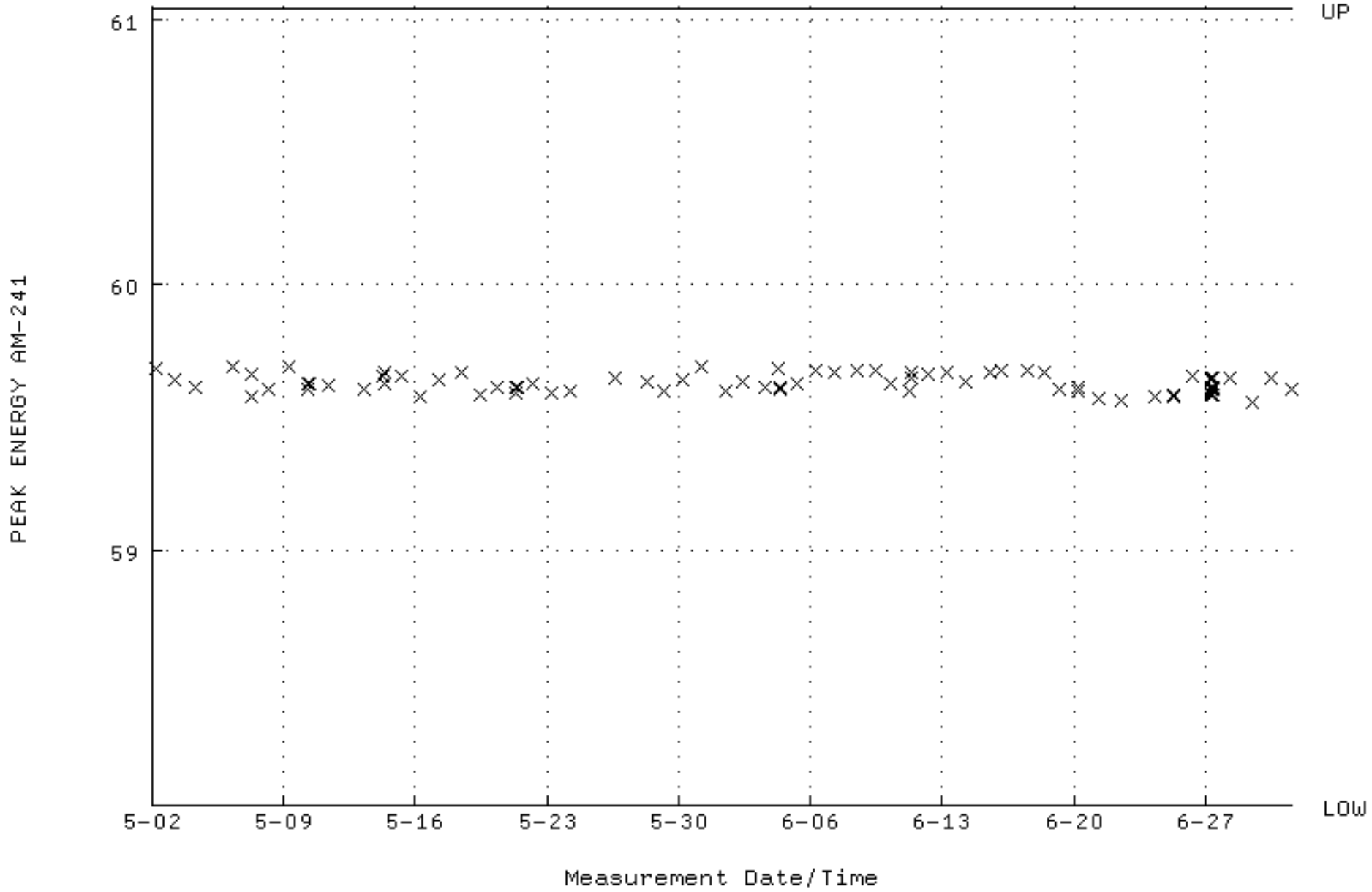
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM19_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 05:19:43 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 61718.1 +- 1444.35 (2.34 %)



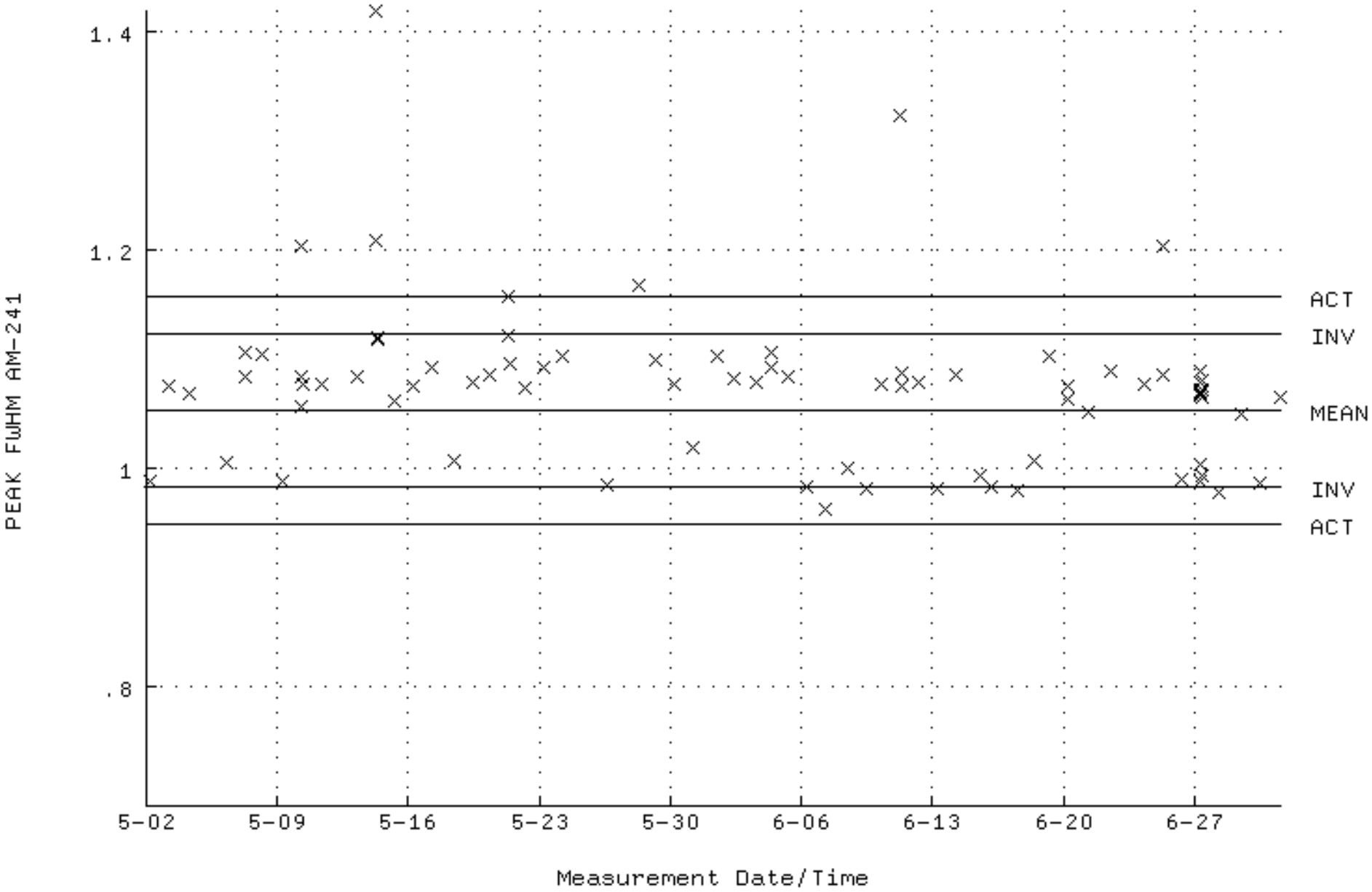
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM19.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:10:24 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.91013 +- 4.261043E-02 (2.23 %)



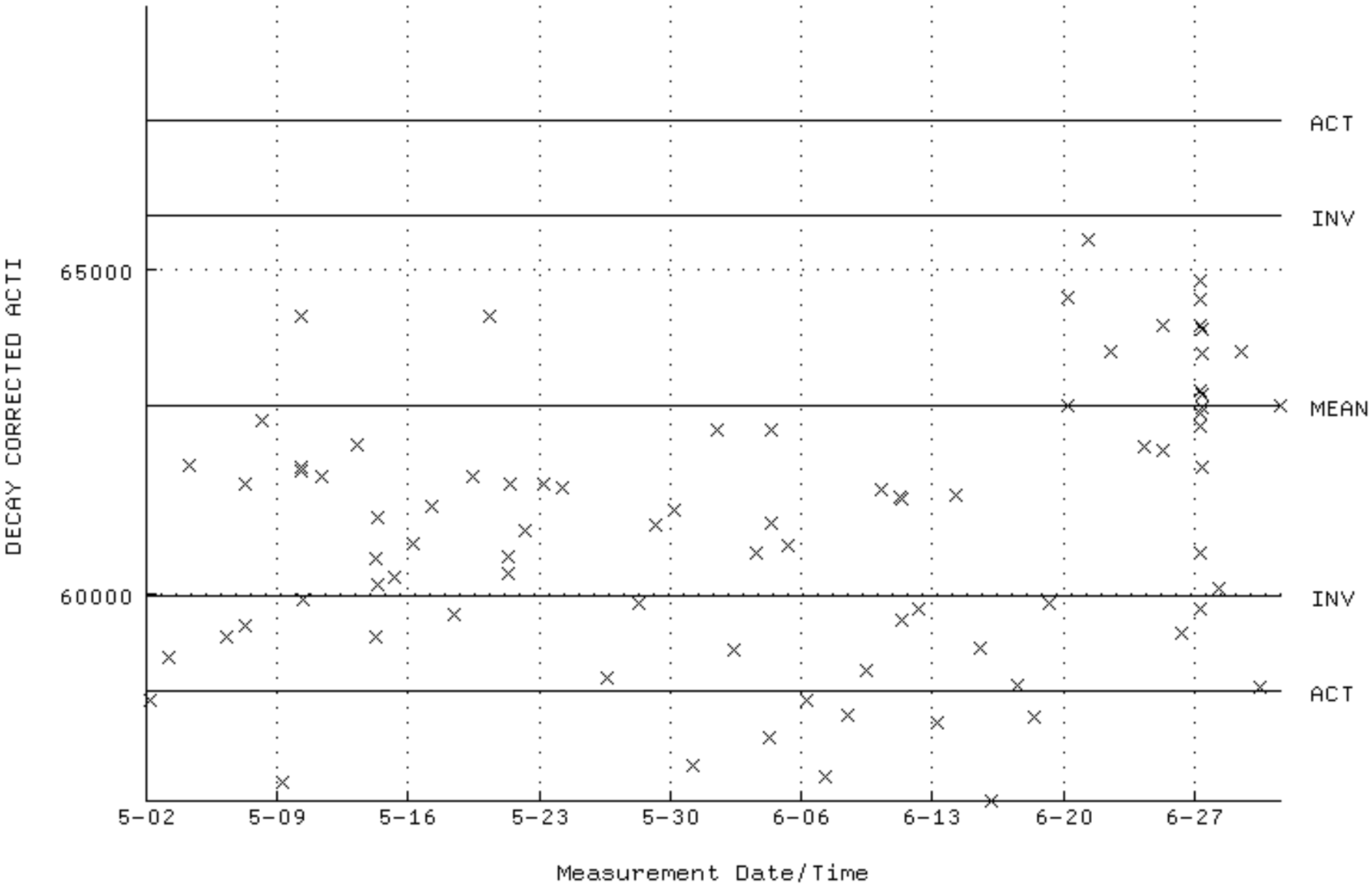
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM20_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:45:02 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



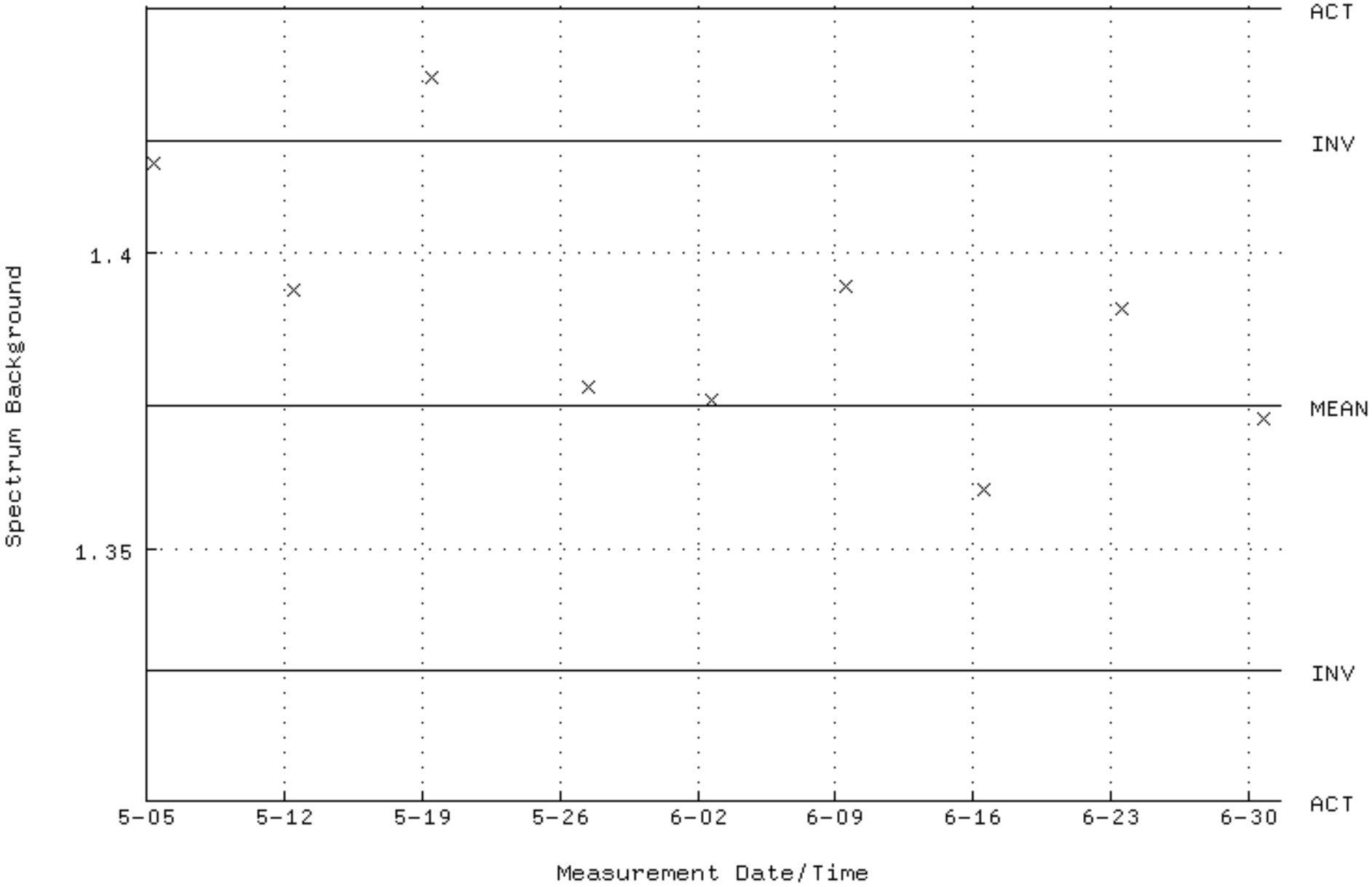
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM20_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:45:02 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.05422 +- 3.462778E-02 (3.28 %)



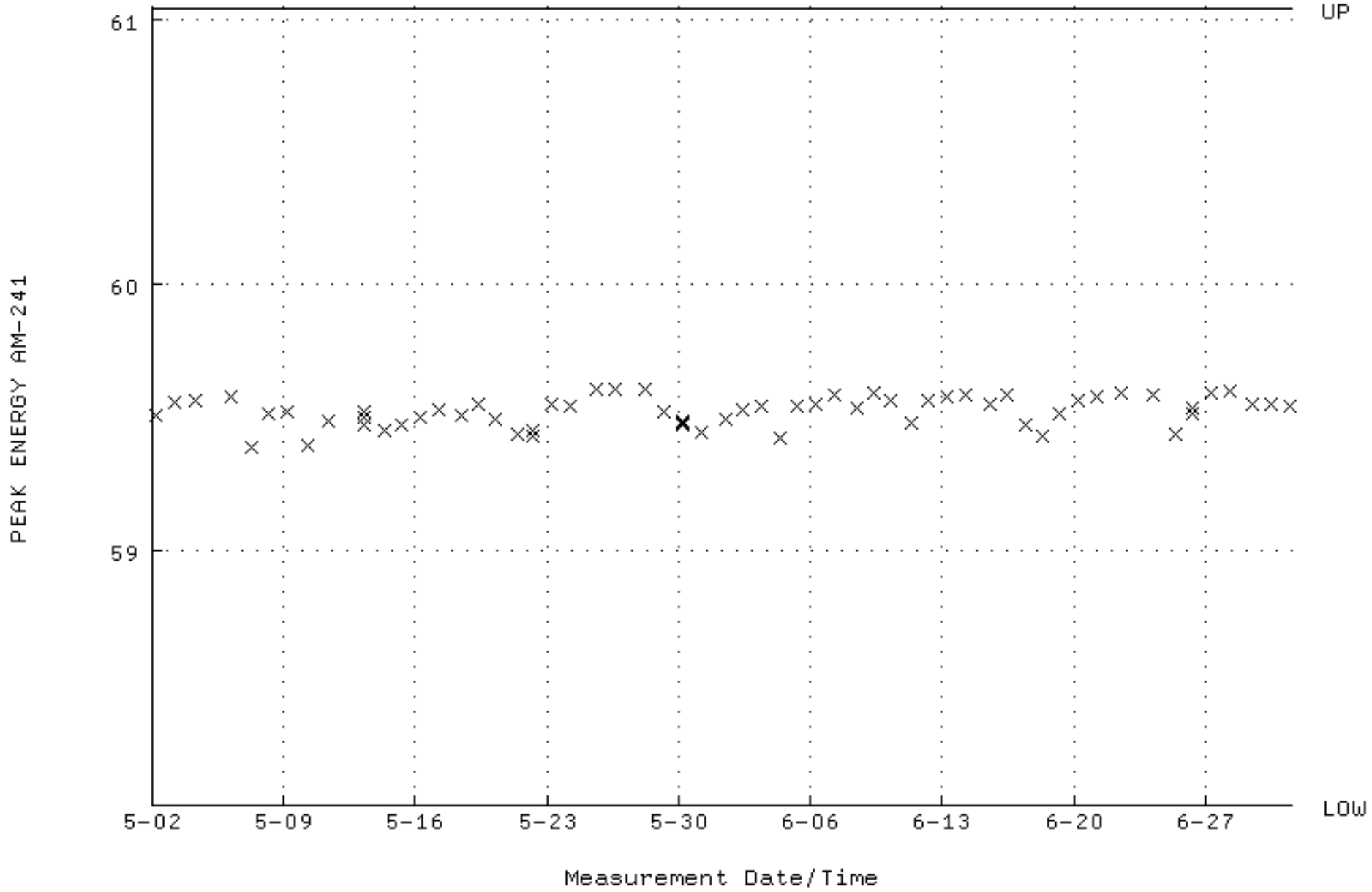
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM20_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:45:02 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 62920.7 +- 1475.47 (2.34 %)



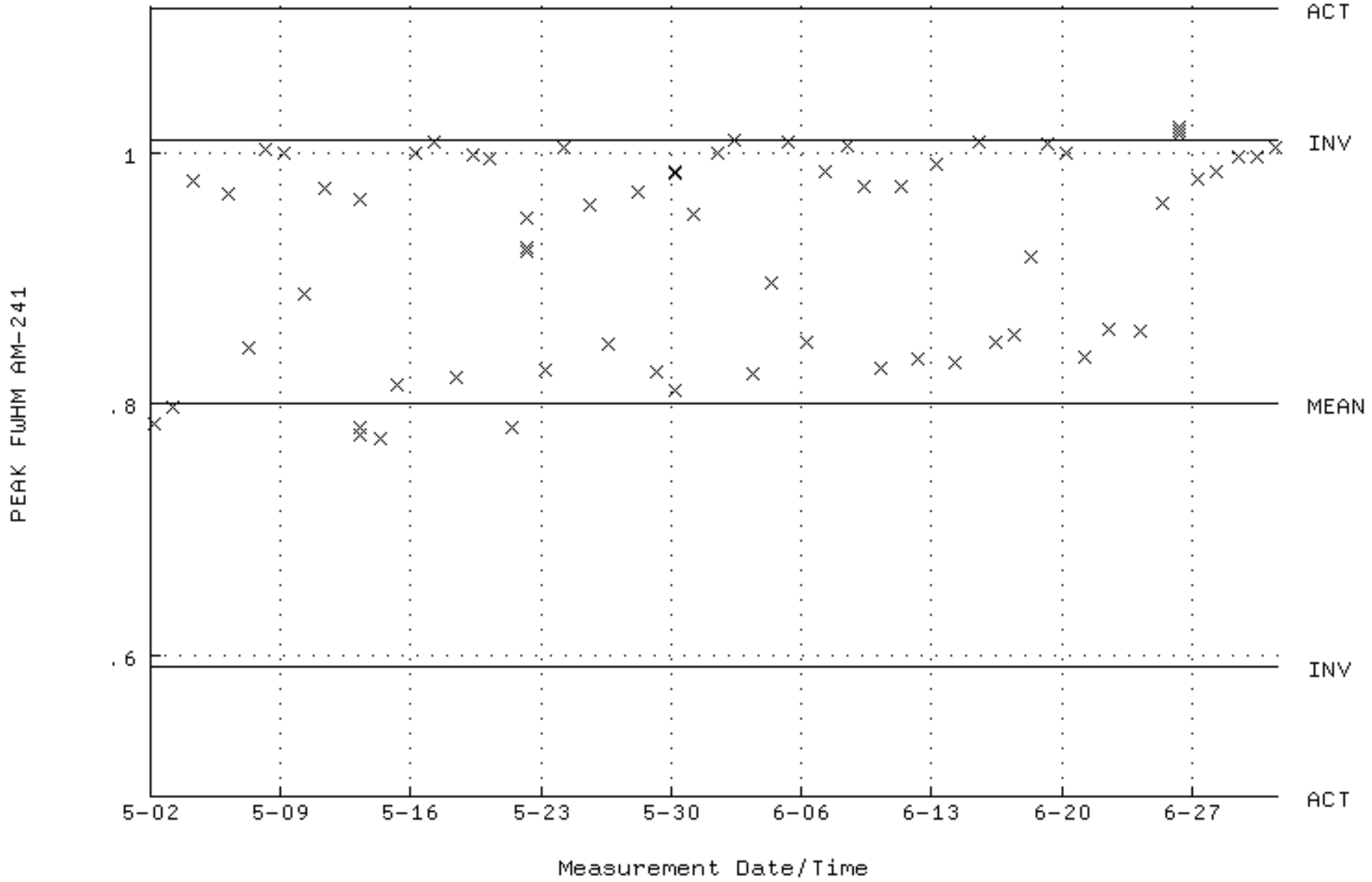
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM20.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:07:39 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.37440 +- 2.217929E-02 (1.61 %)



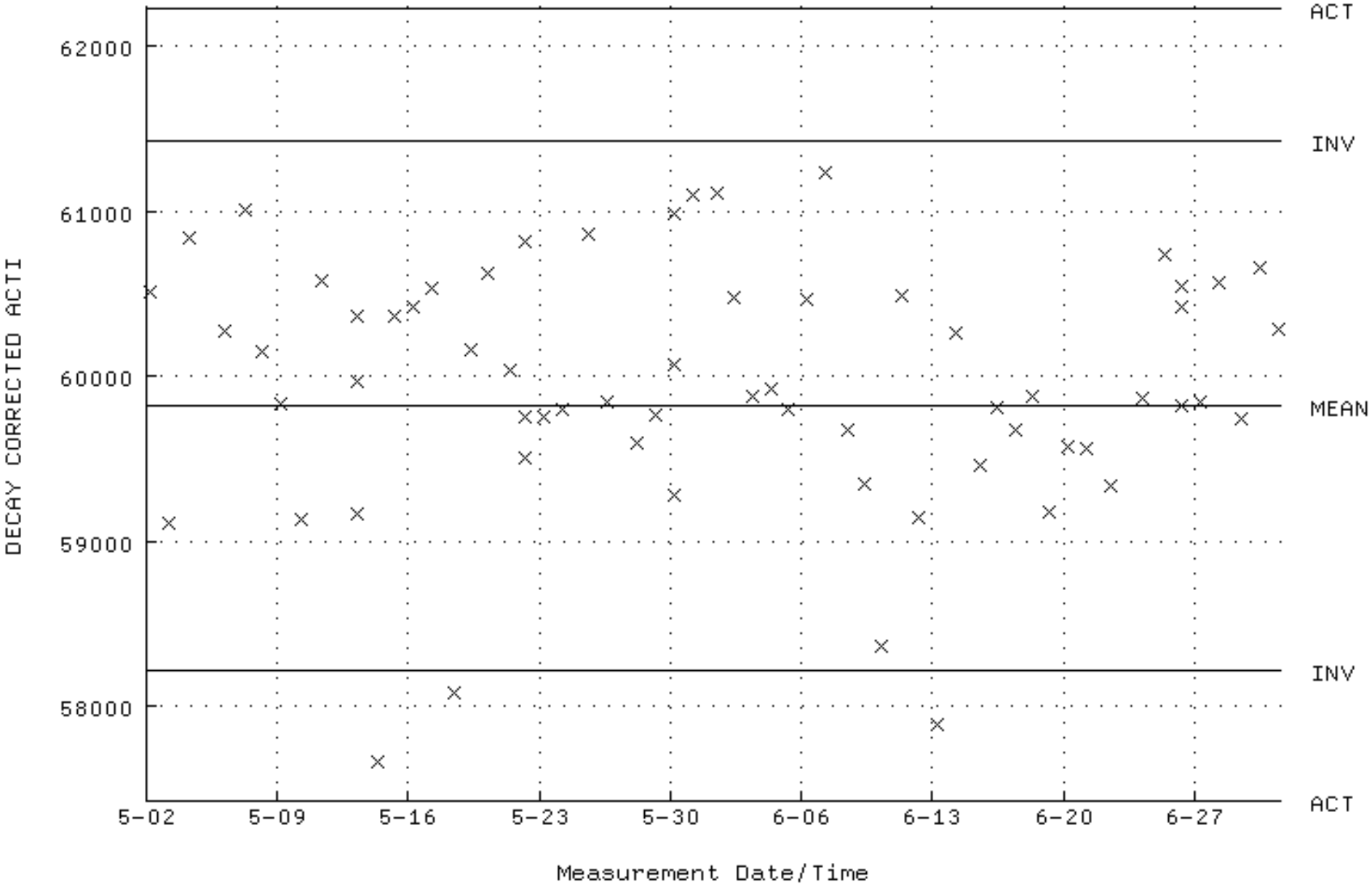
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM21_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:43:27 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



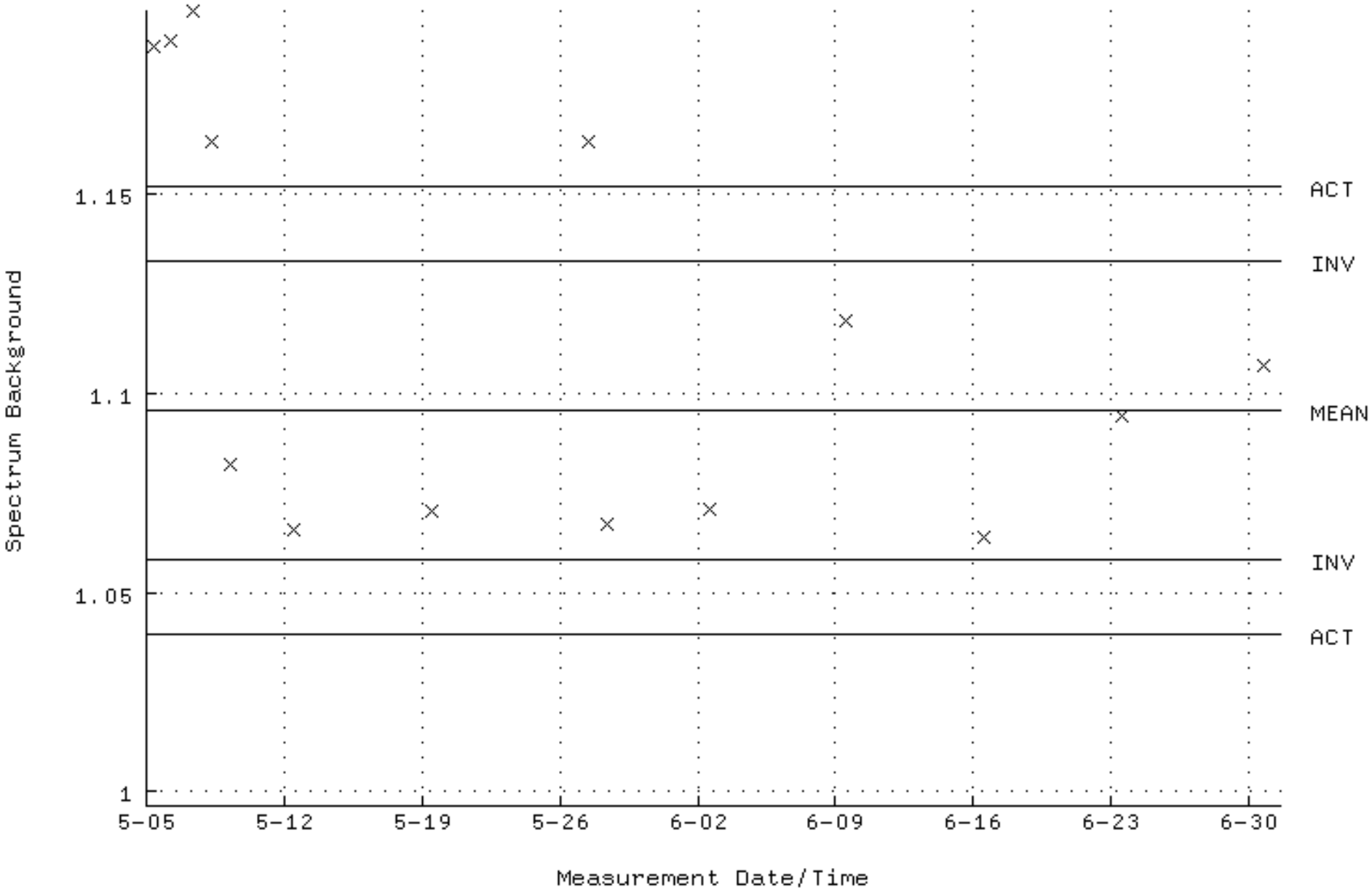
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM21_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:43:27 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 0.801117 +- 0.104588 (13.06 %)



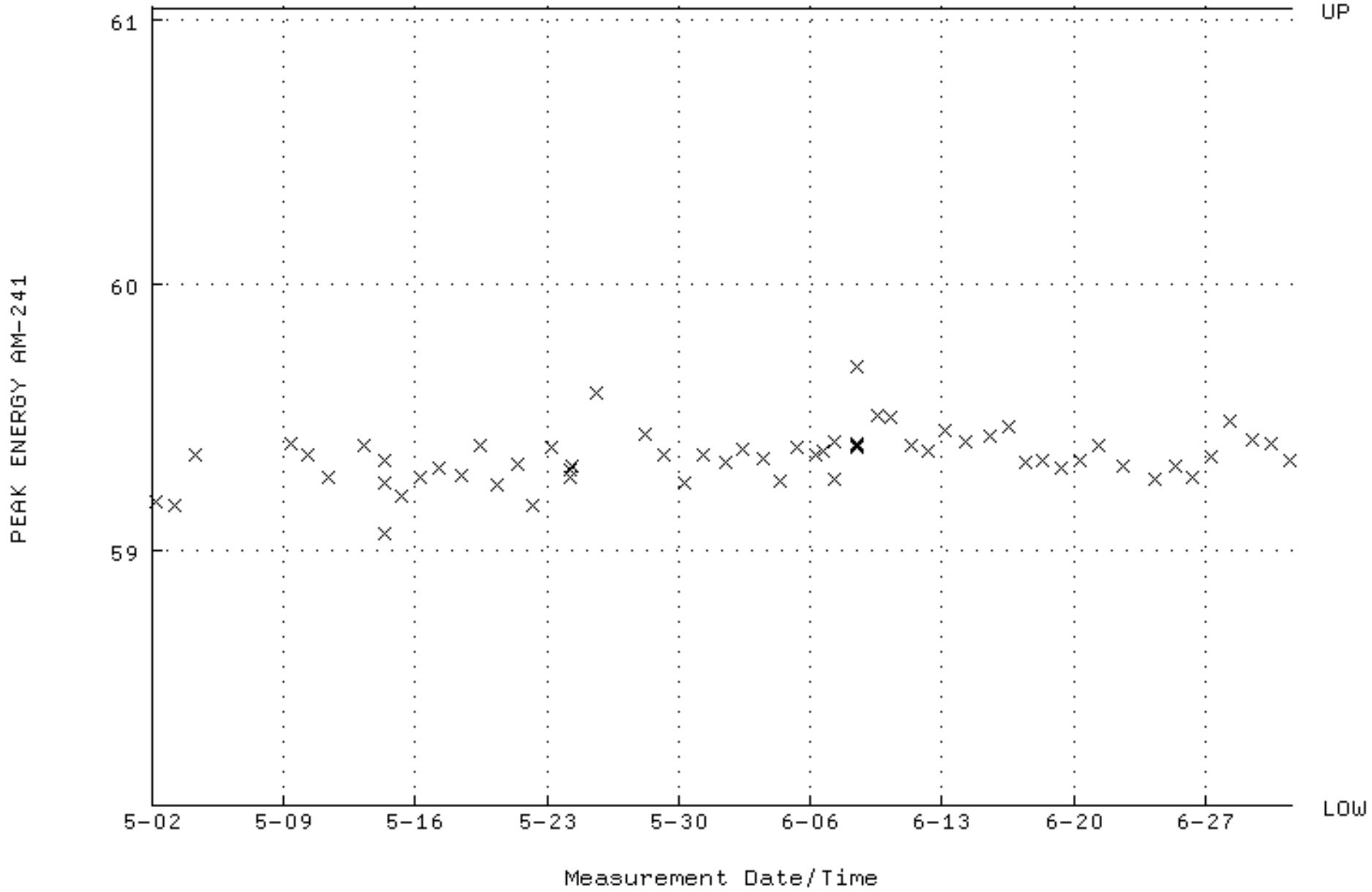
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM21_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:43:27 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 59826.6 +- 800.256 (1.34 %)



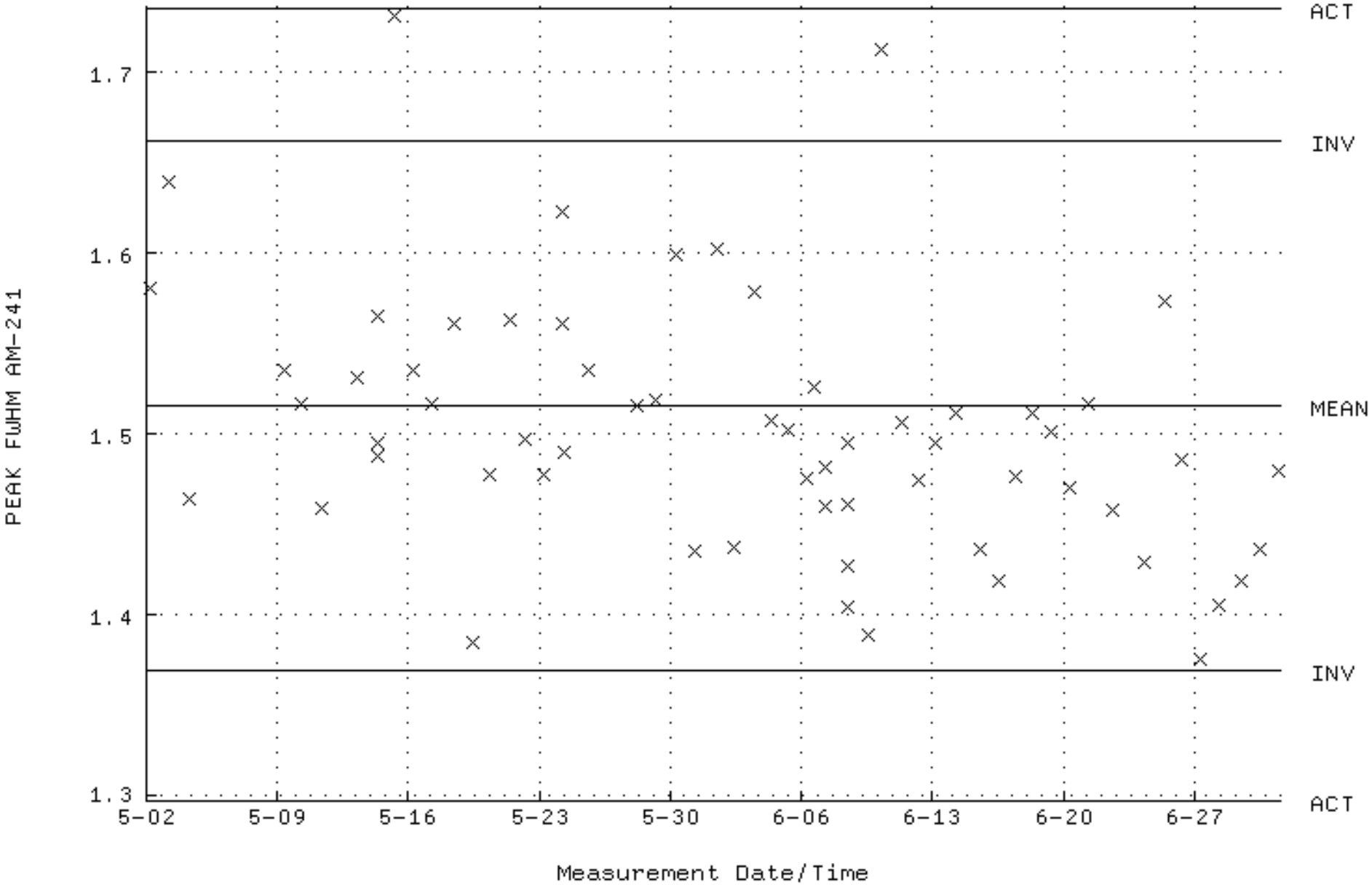
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM21.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:13:07 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.09599 +- 1.869267E-02 (1.71 %)



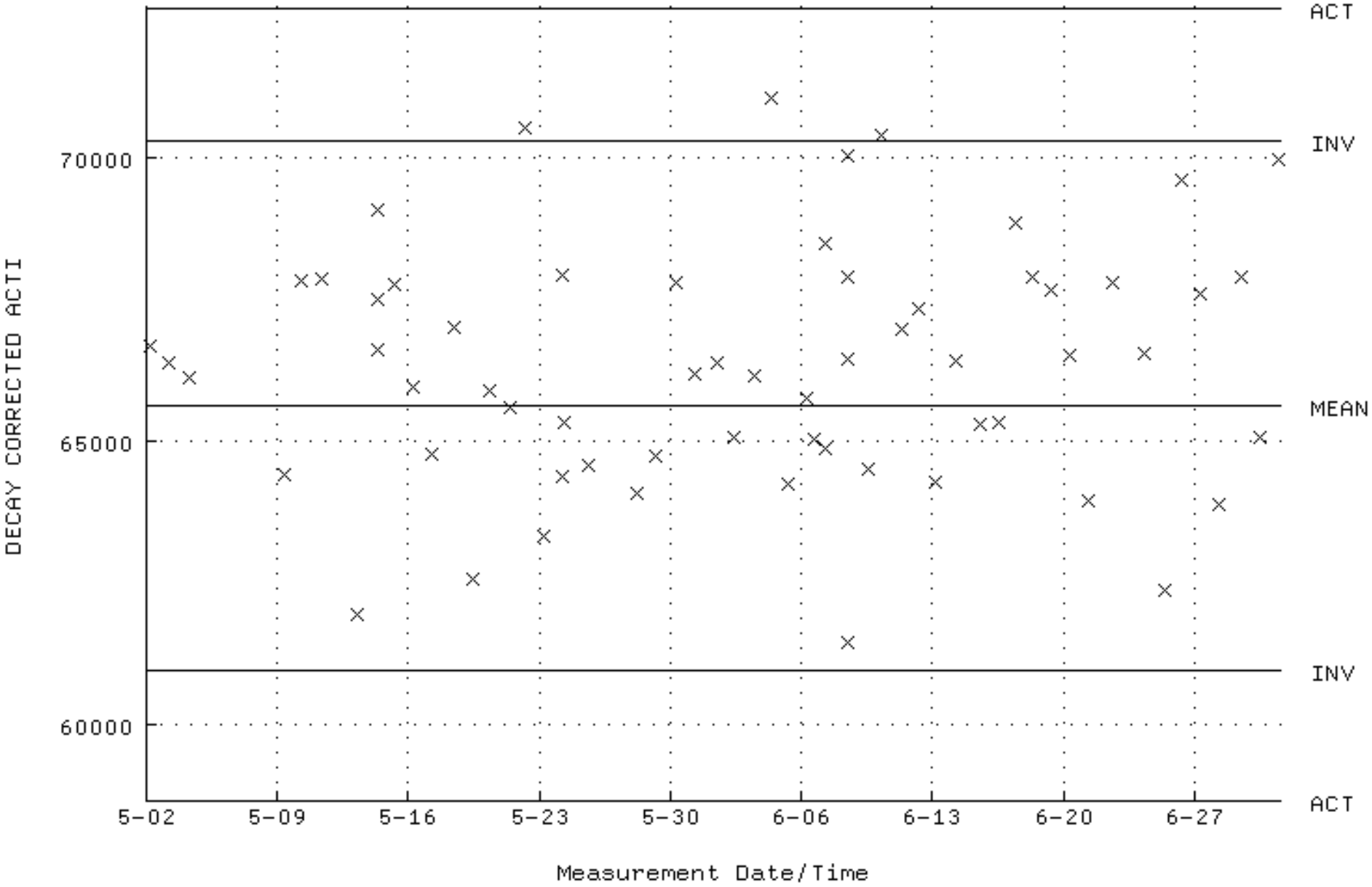
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM22_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 05:19:48 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



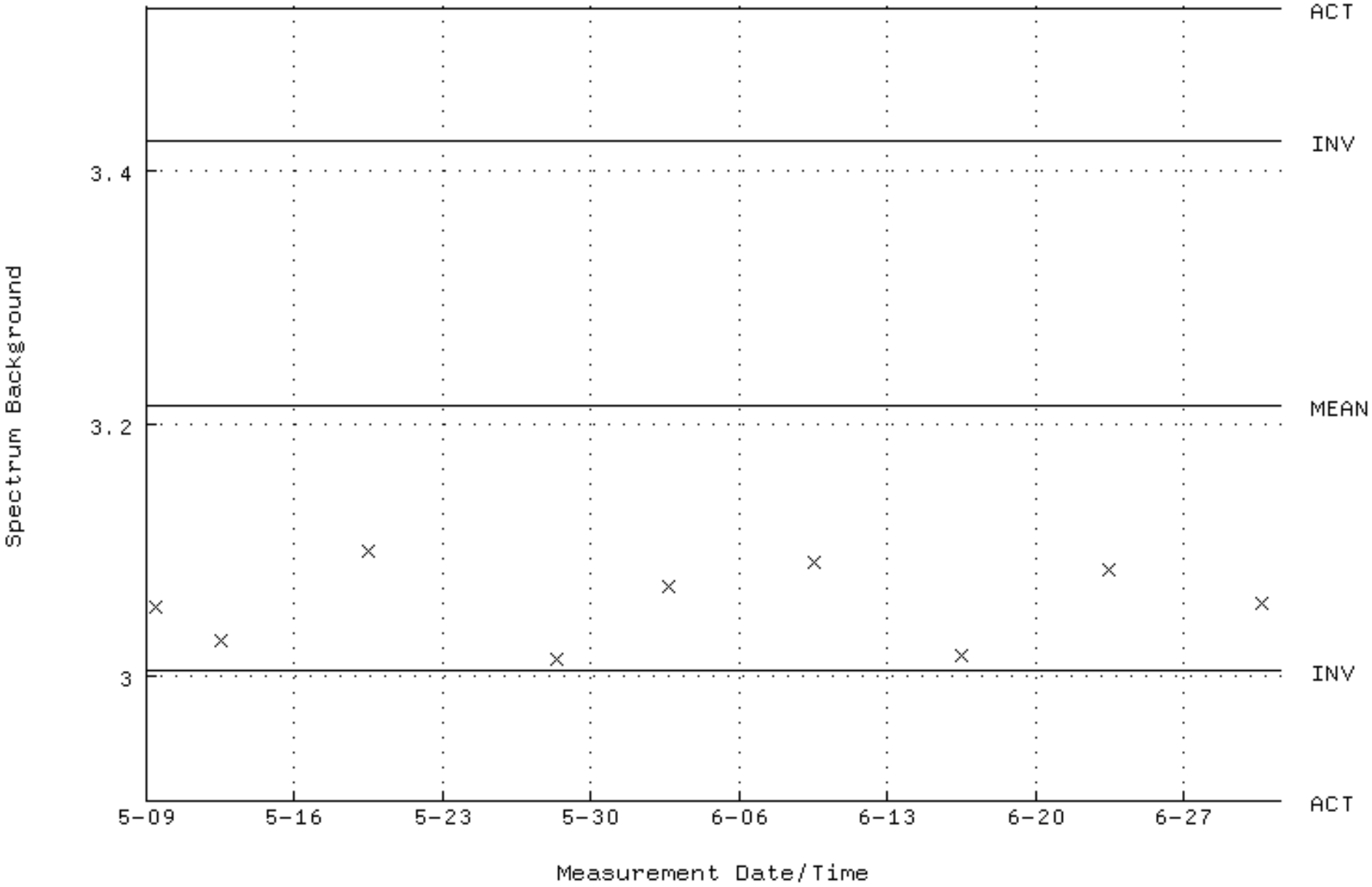
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM22_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 05:19:48 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.51606 +- 7.310749E-02 (4.82 %)



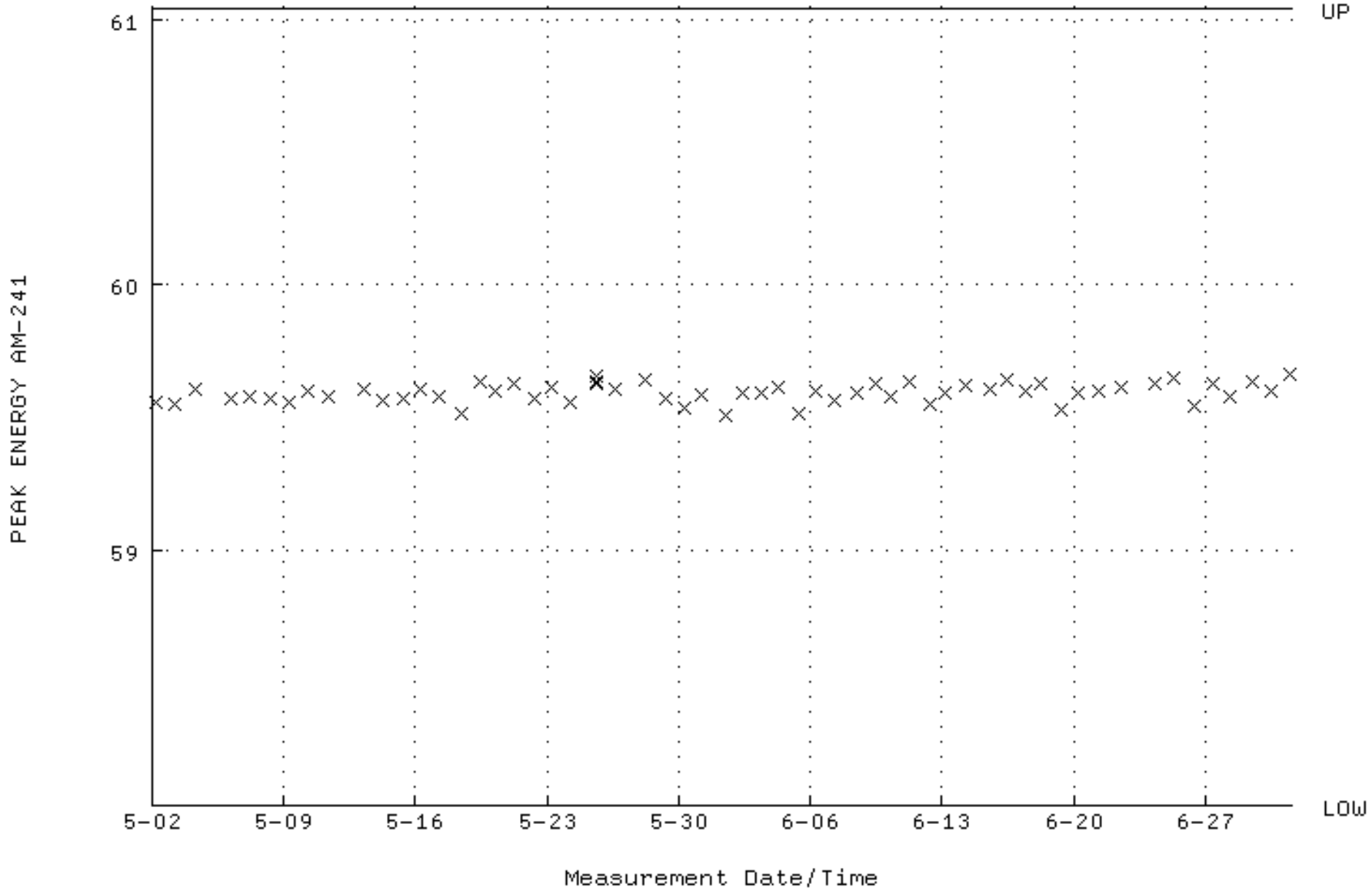
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM22_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 05:19:48 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 65639.4 +- 2326.22 (3.54 %)



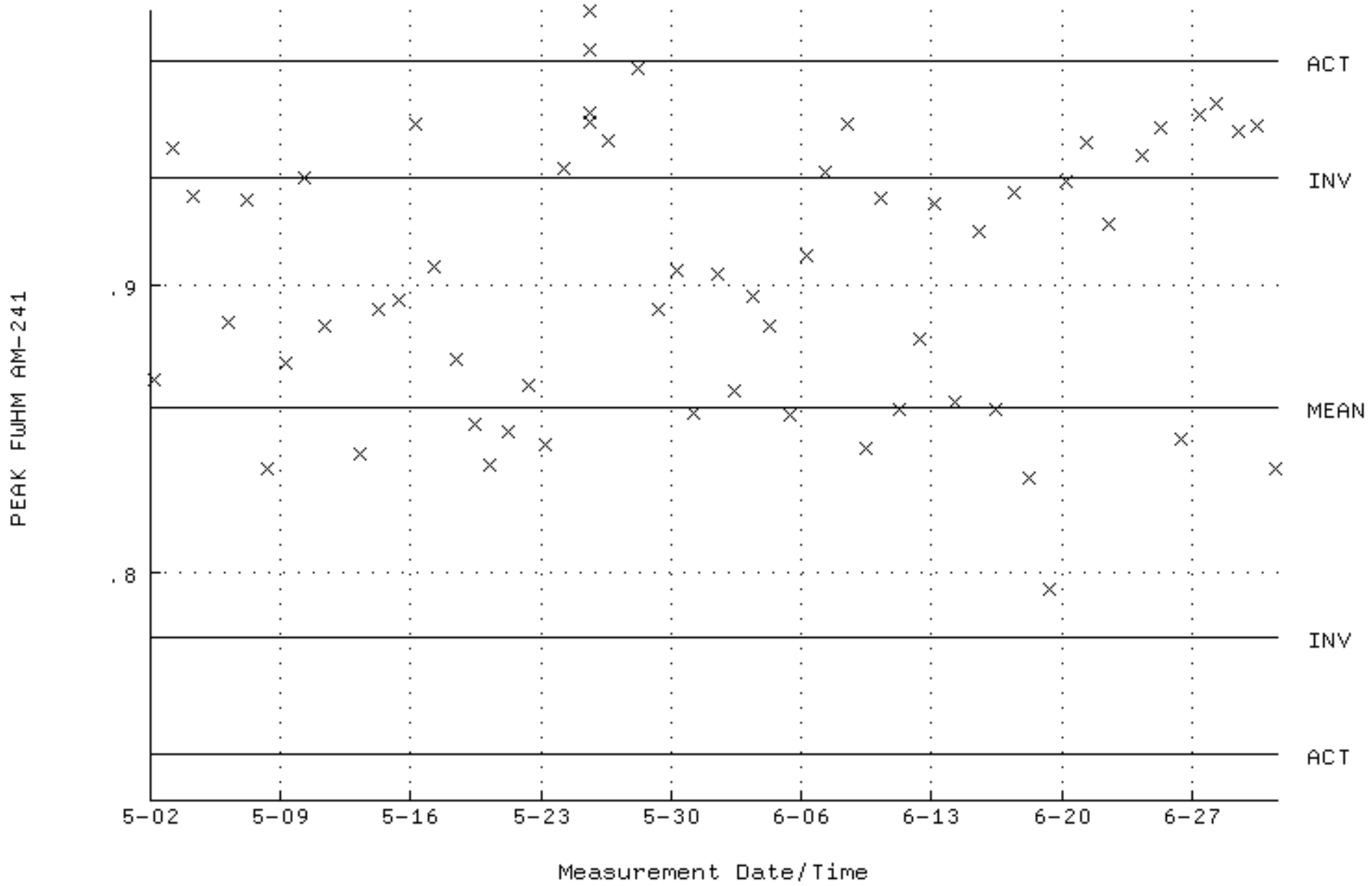
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM22.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 9-MAY-2024 10:22:04 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 3.21480 +- 0.104398 (3.25 %)



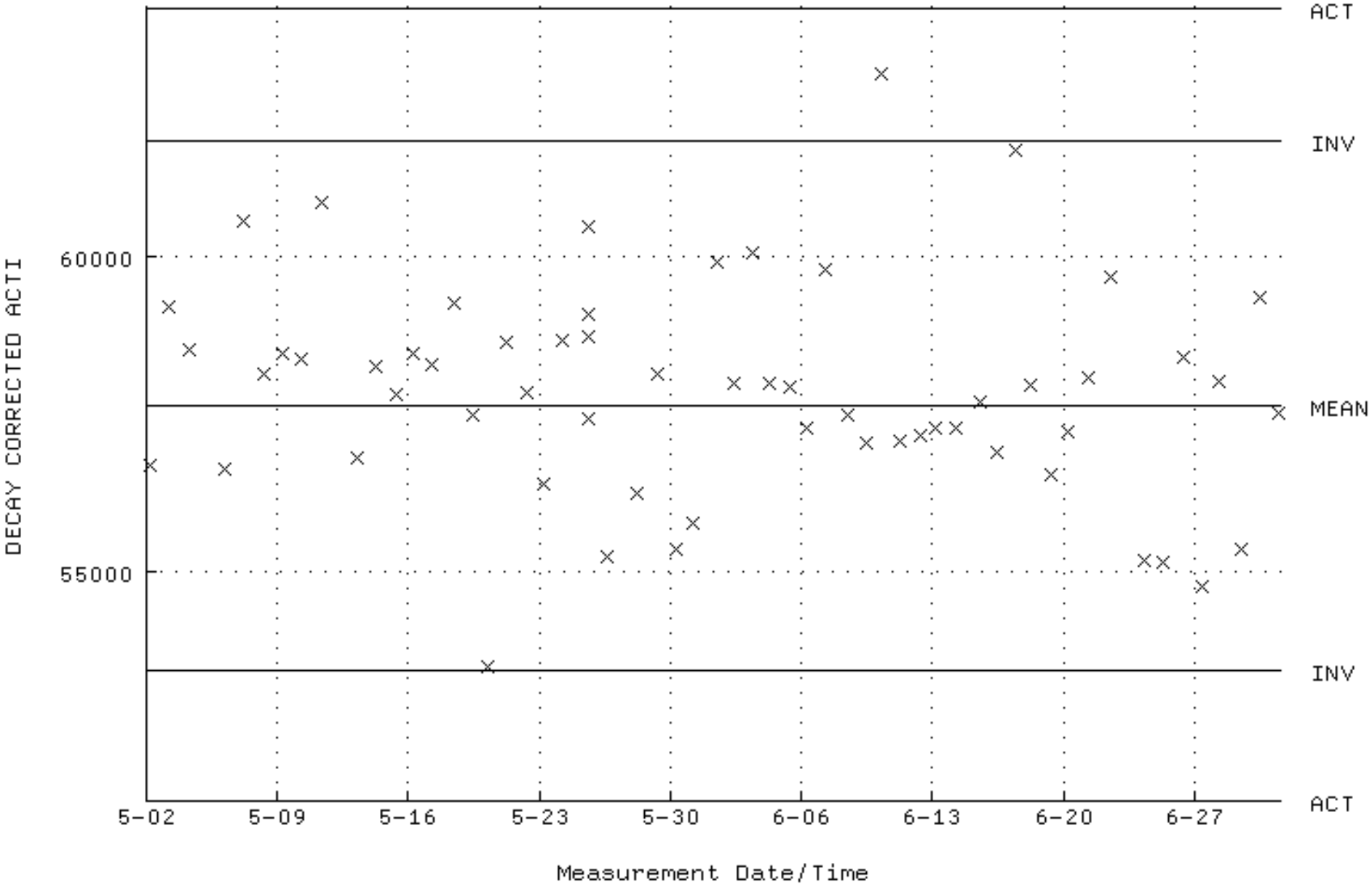
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM23_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:43:31 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



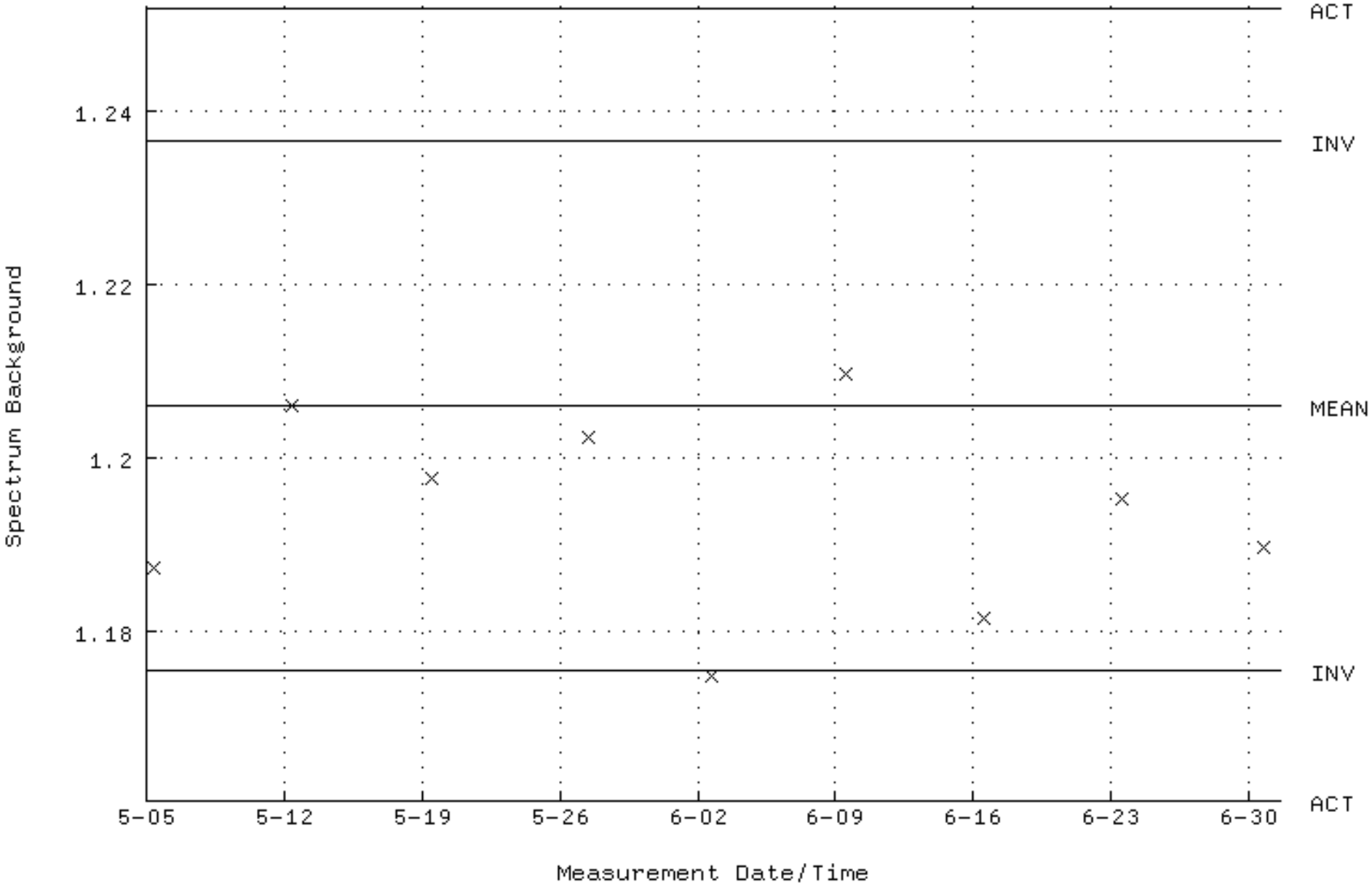
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM23_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:43:31 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 0.857576 +- 4.018595E-02 (4.69 %)



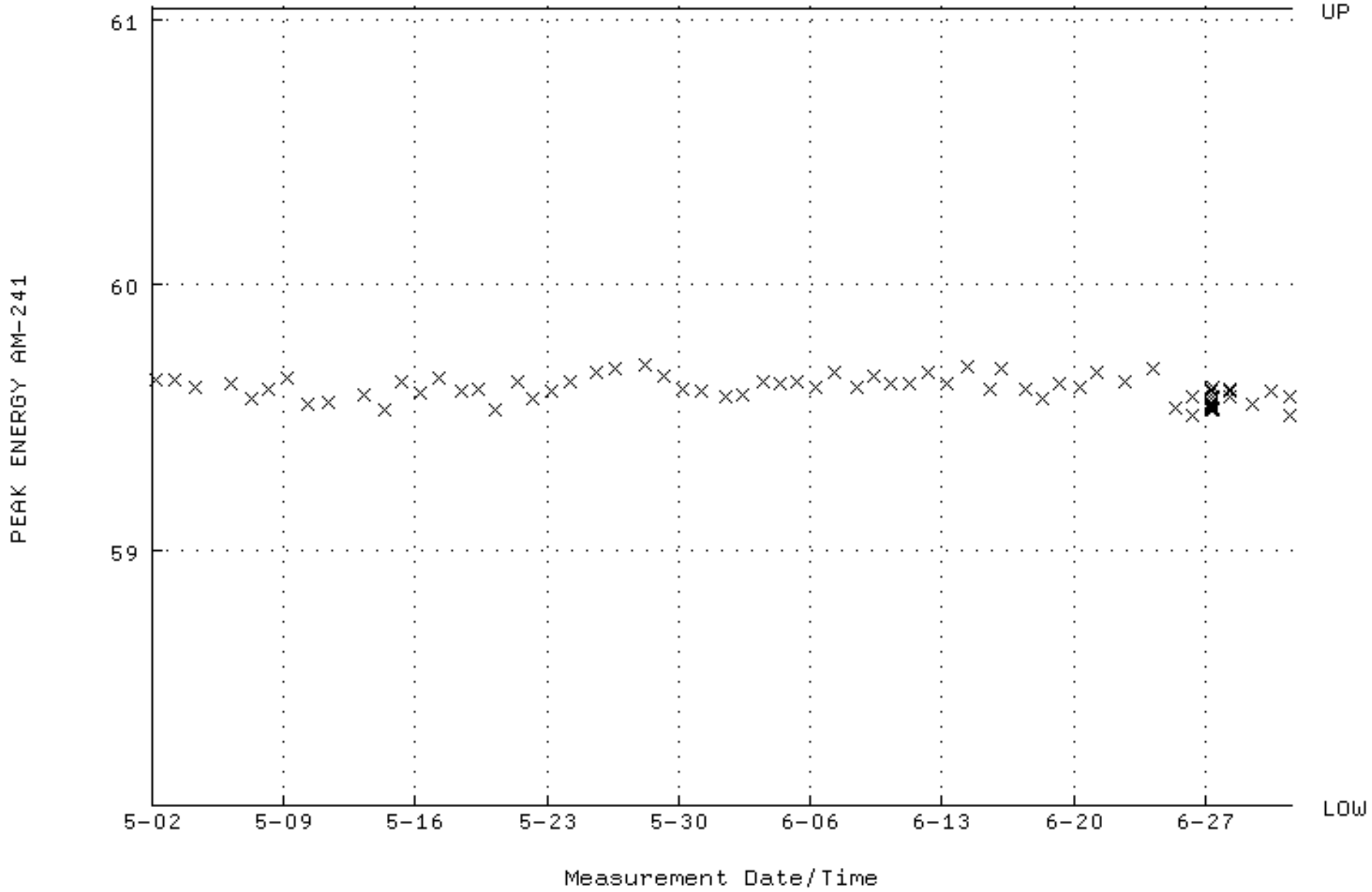
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM23_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:43:31 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 57639.9 +- 2100.85 (3.64 %)



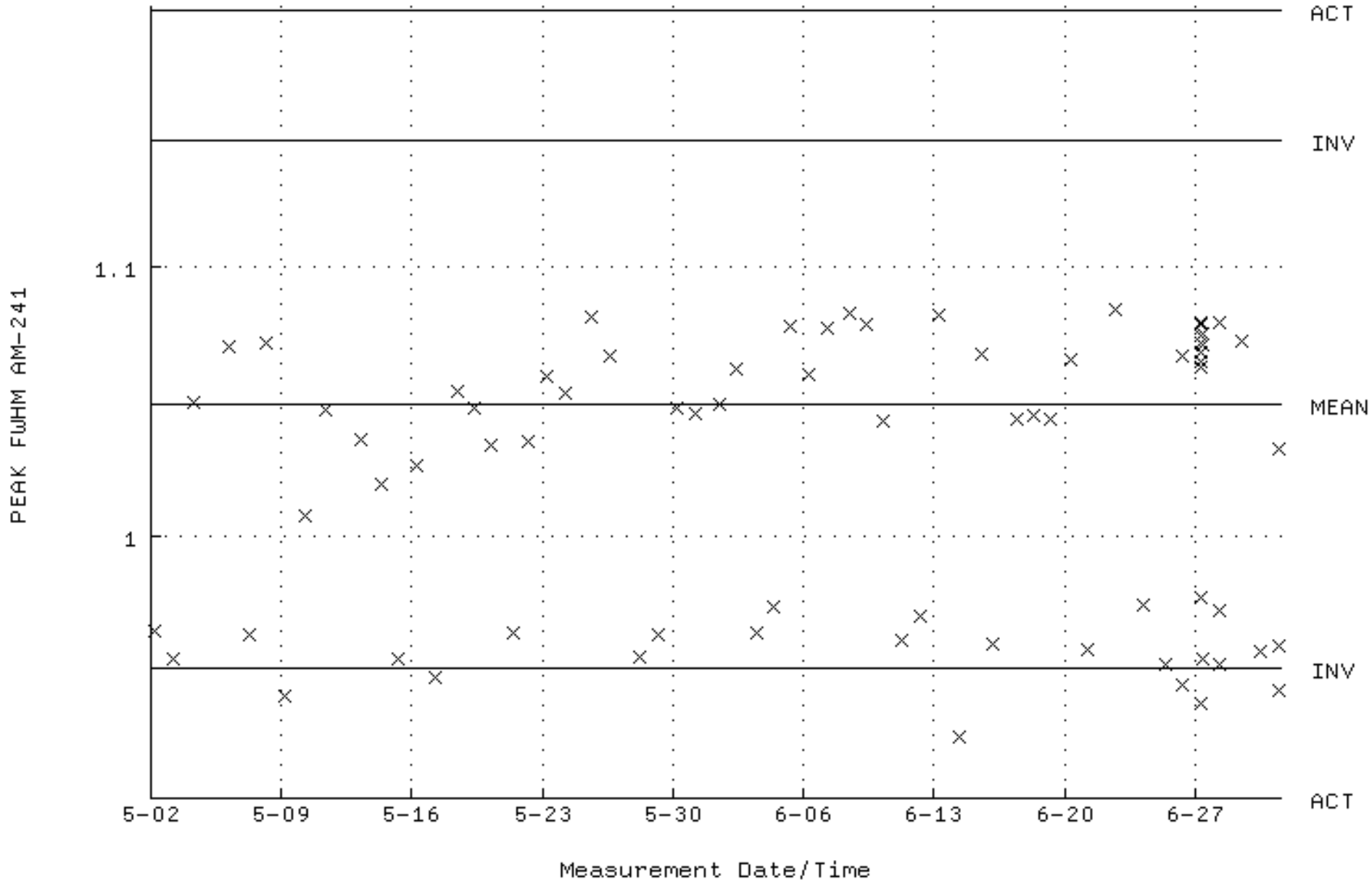
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM23.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:16:41 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.20621 +- 1.524024E-02 (1.26 %)



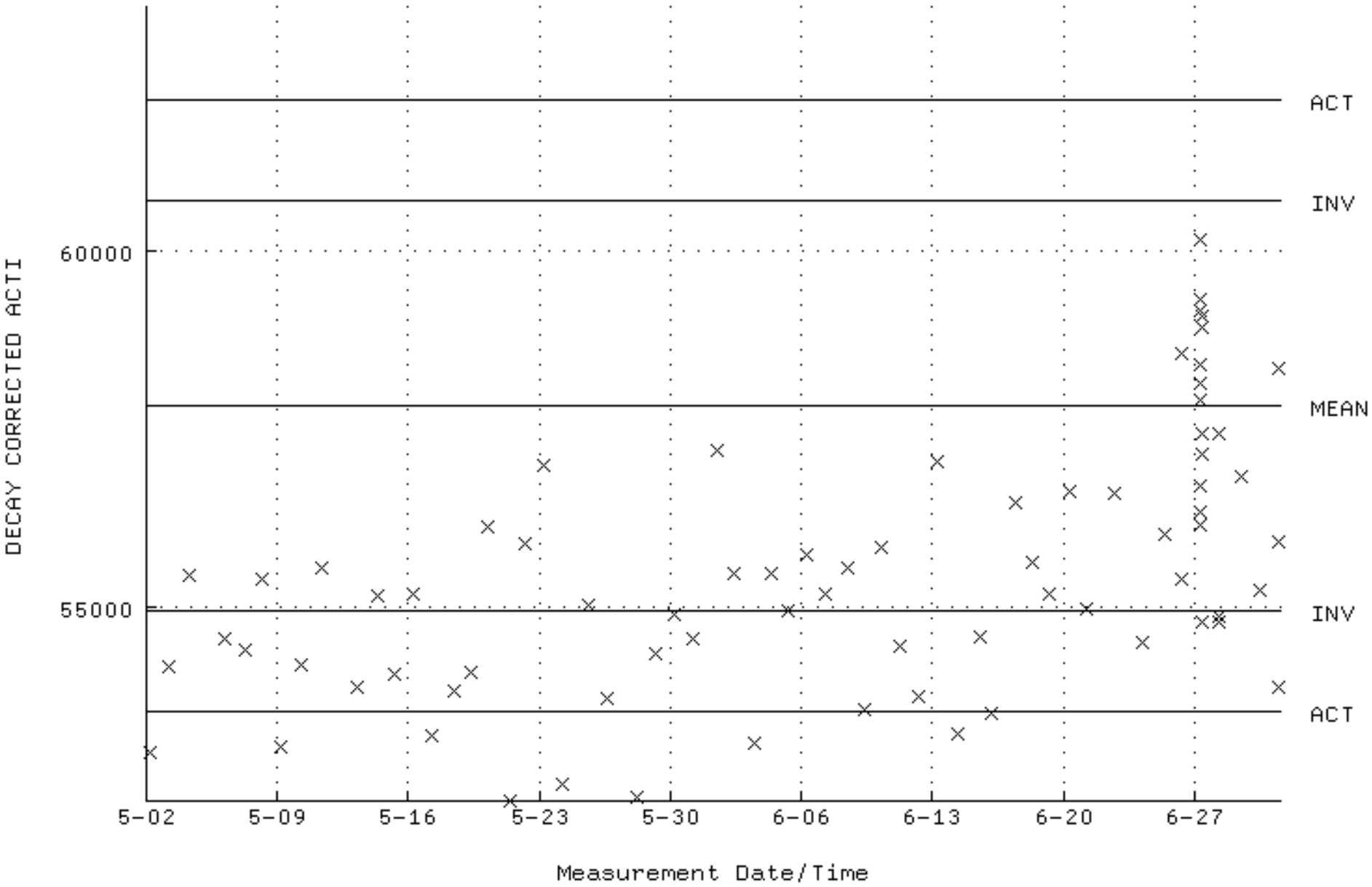
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM24_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 05:19:53 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



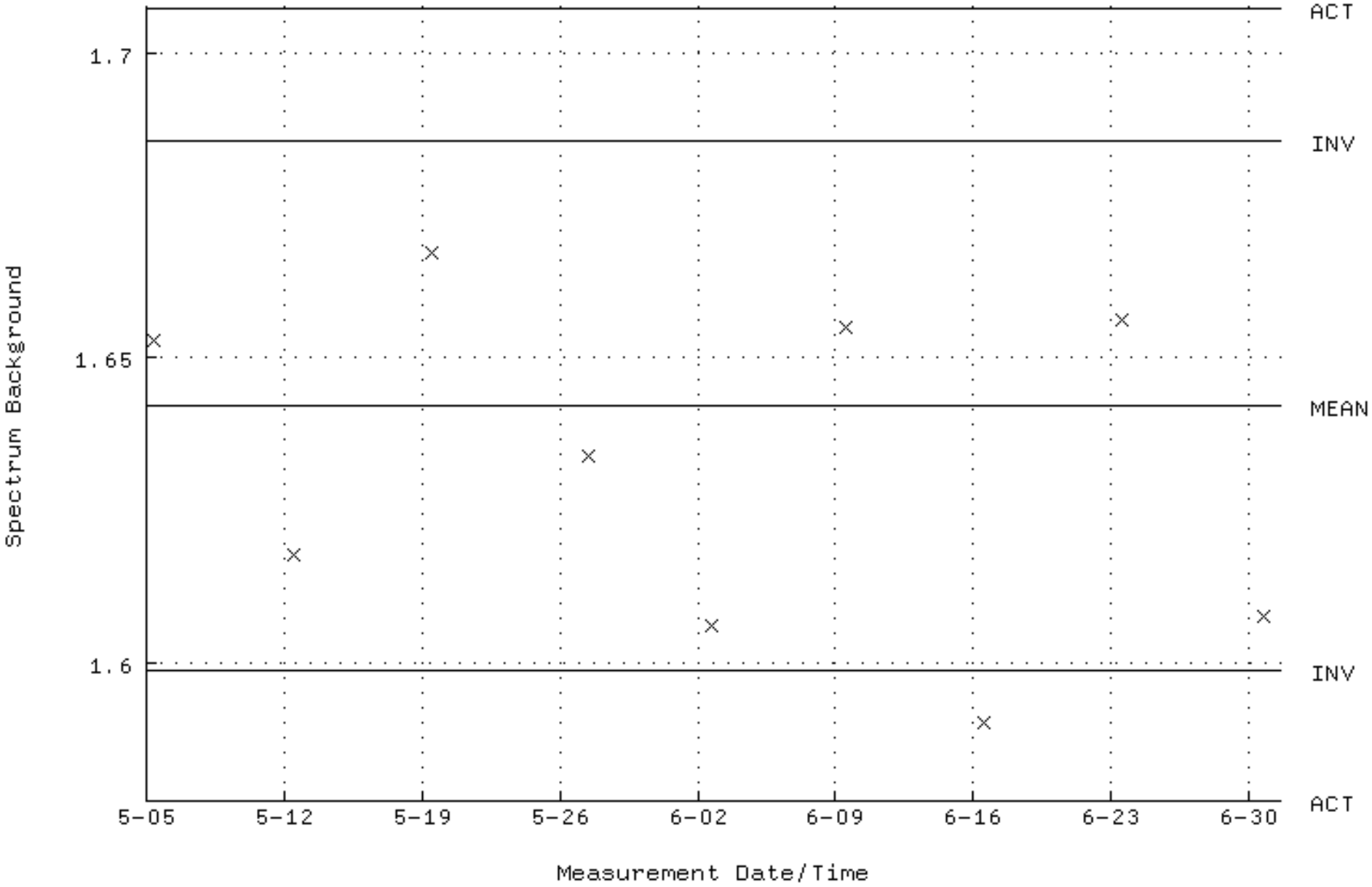
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM24_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 05:19:53 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.04914 +- 4.873889E-02 (4.65 %)



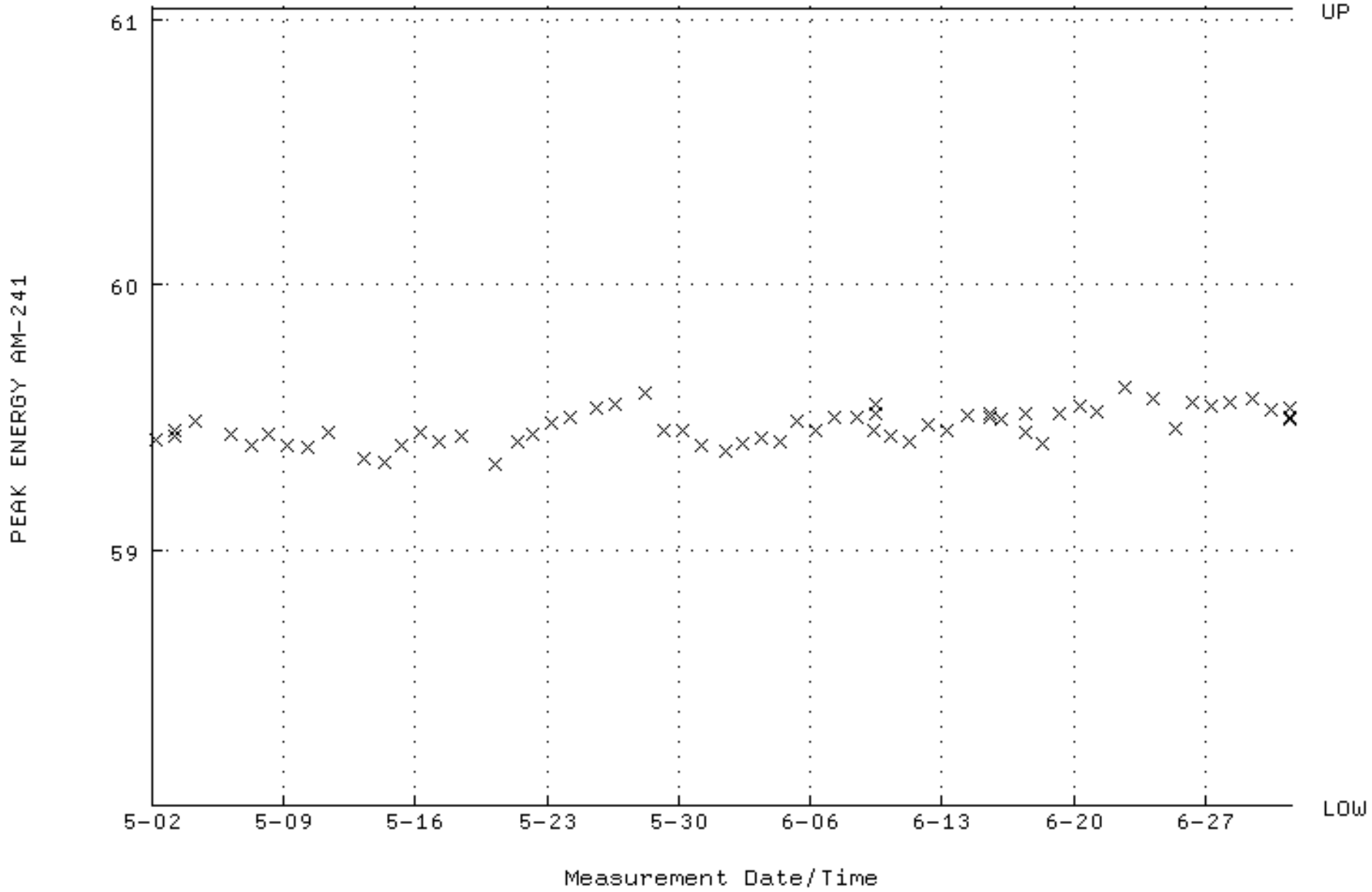
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM24_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 05:19:53 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 57841.3 +- 1436.50 (2.48 %)



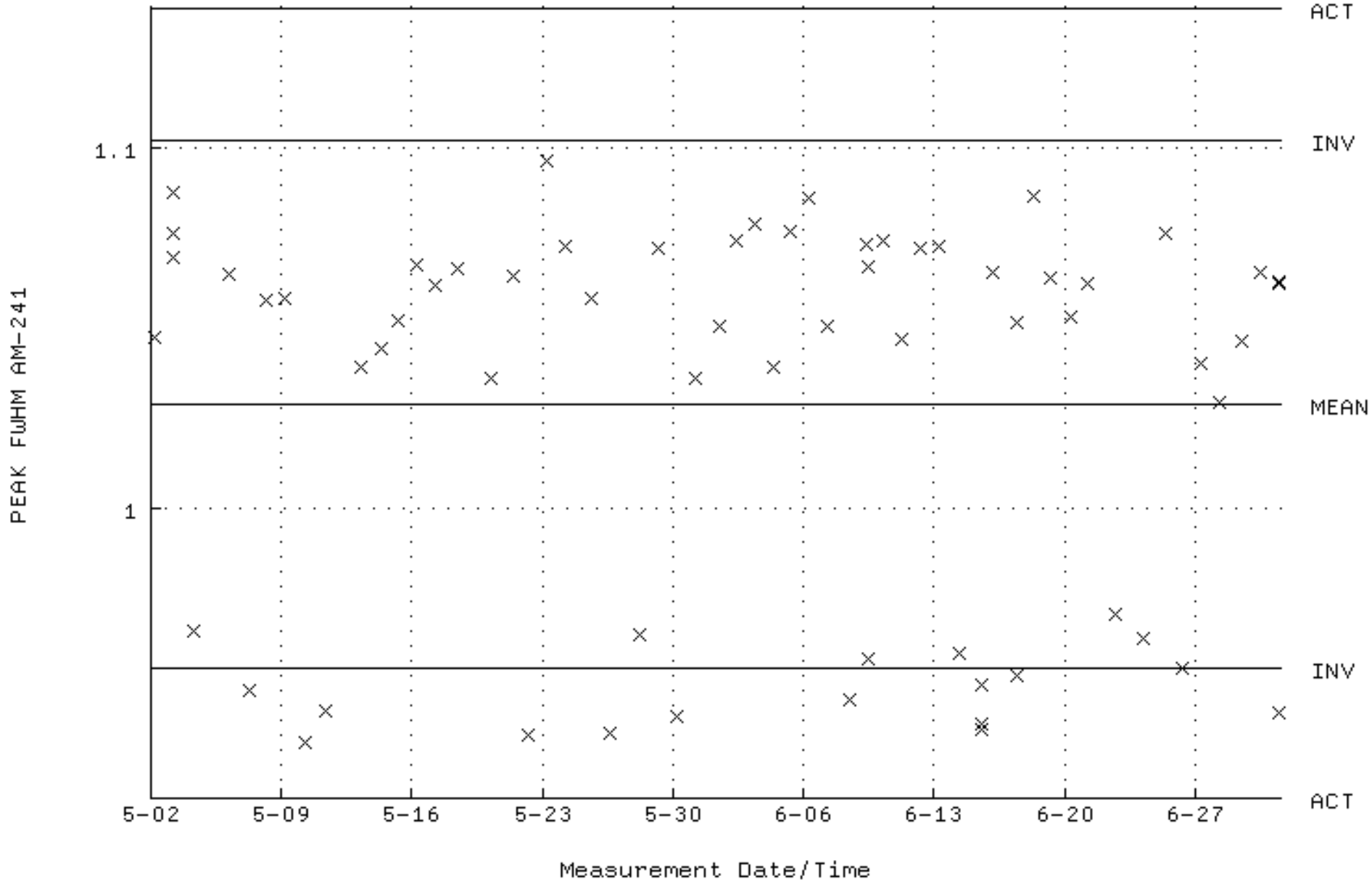
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM24.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:11:10 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.64232 +- 2.167035E-02 (1.32 %)



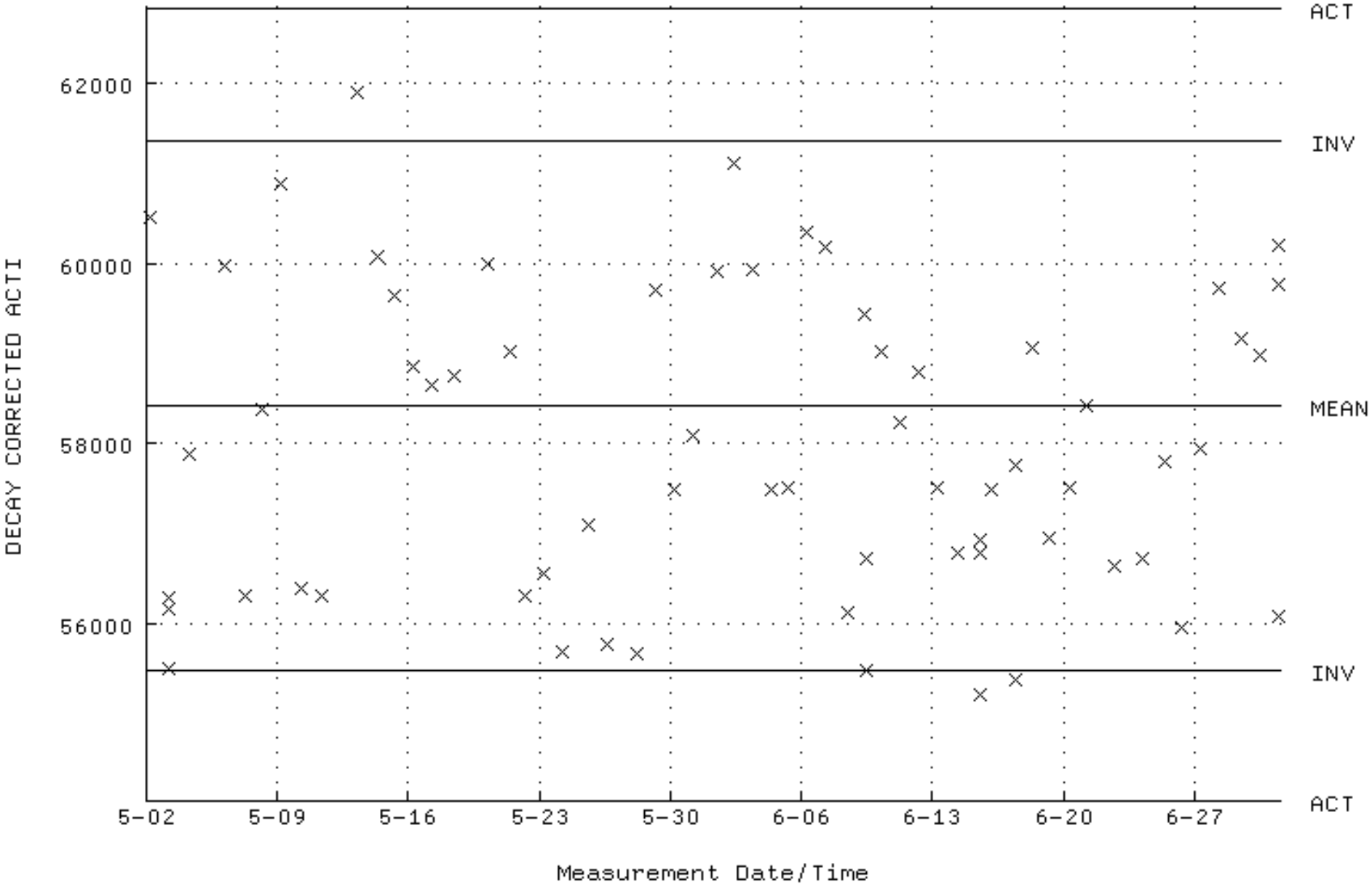
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM27_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:43:37 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



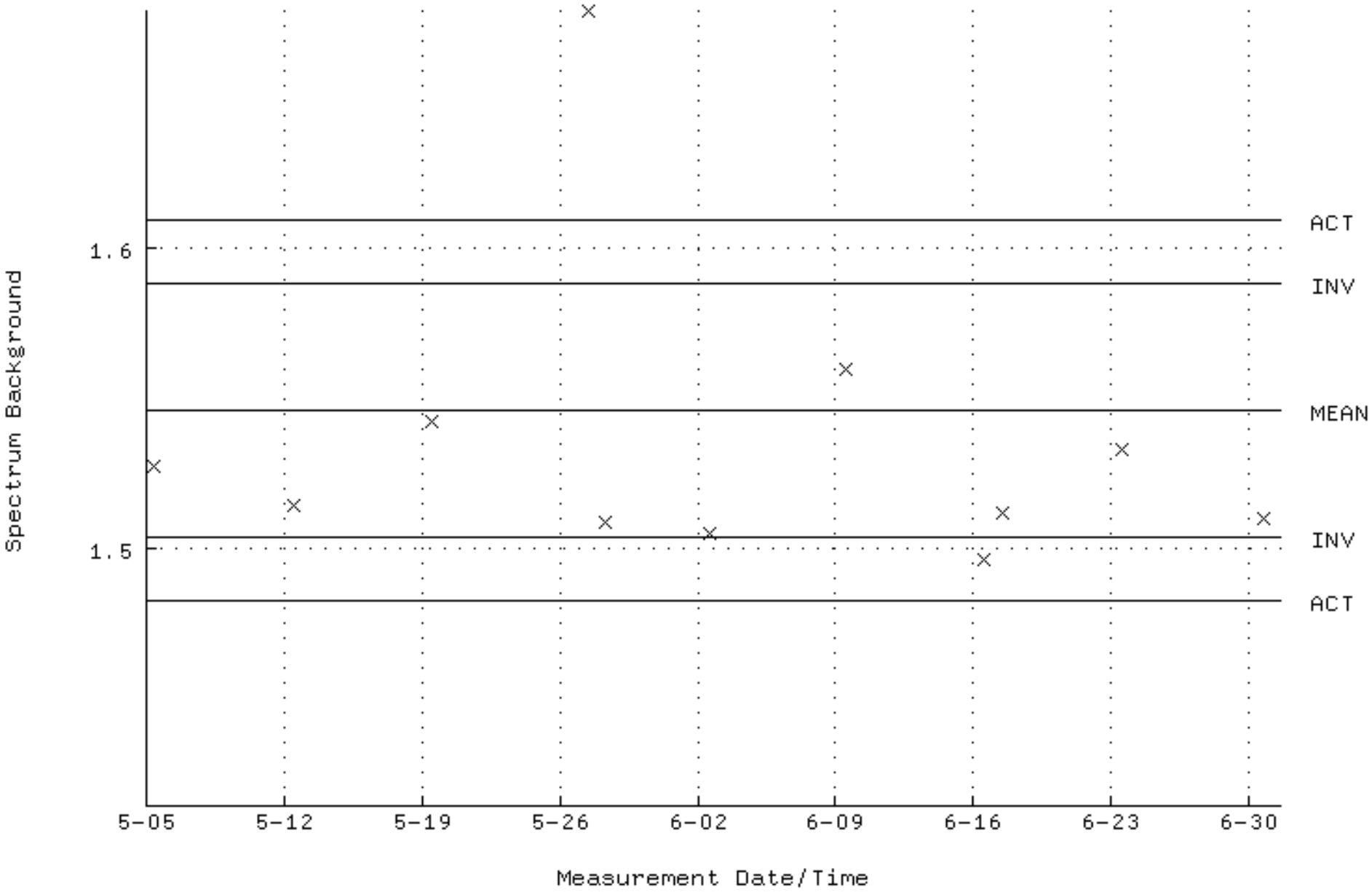
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM27_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:43:37 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.02893 +- 3.657177E-02 (3.55 %)



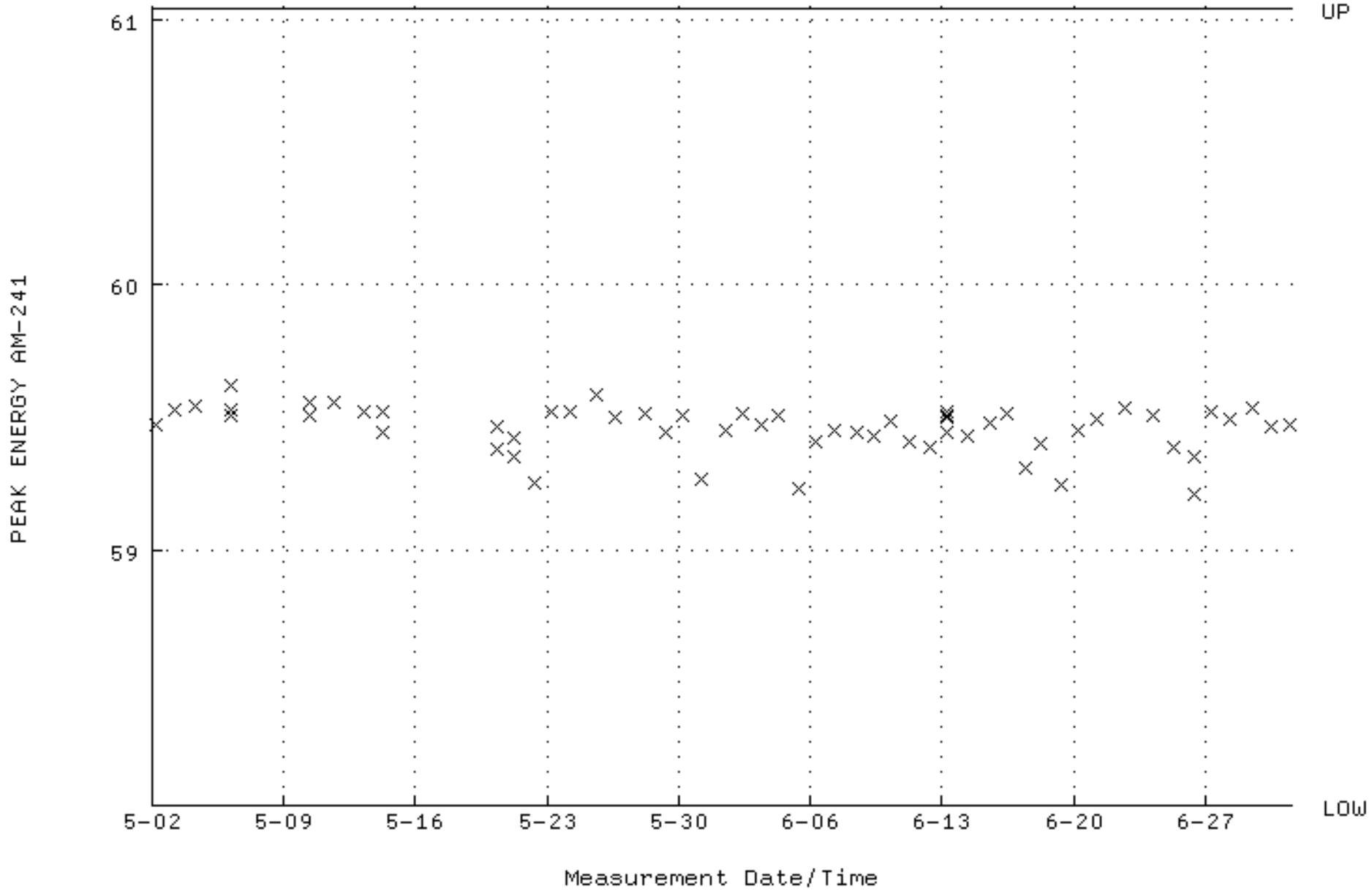
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM27_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:43:37 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 58429.9 +- 1469.88 (2.52 %)



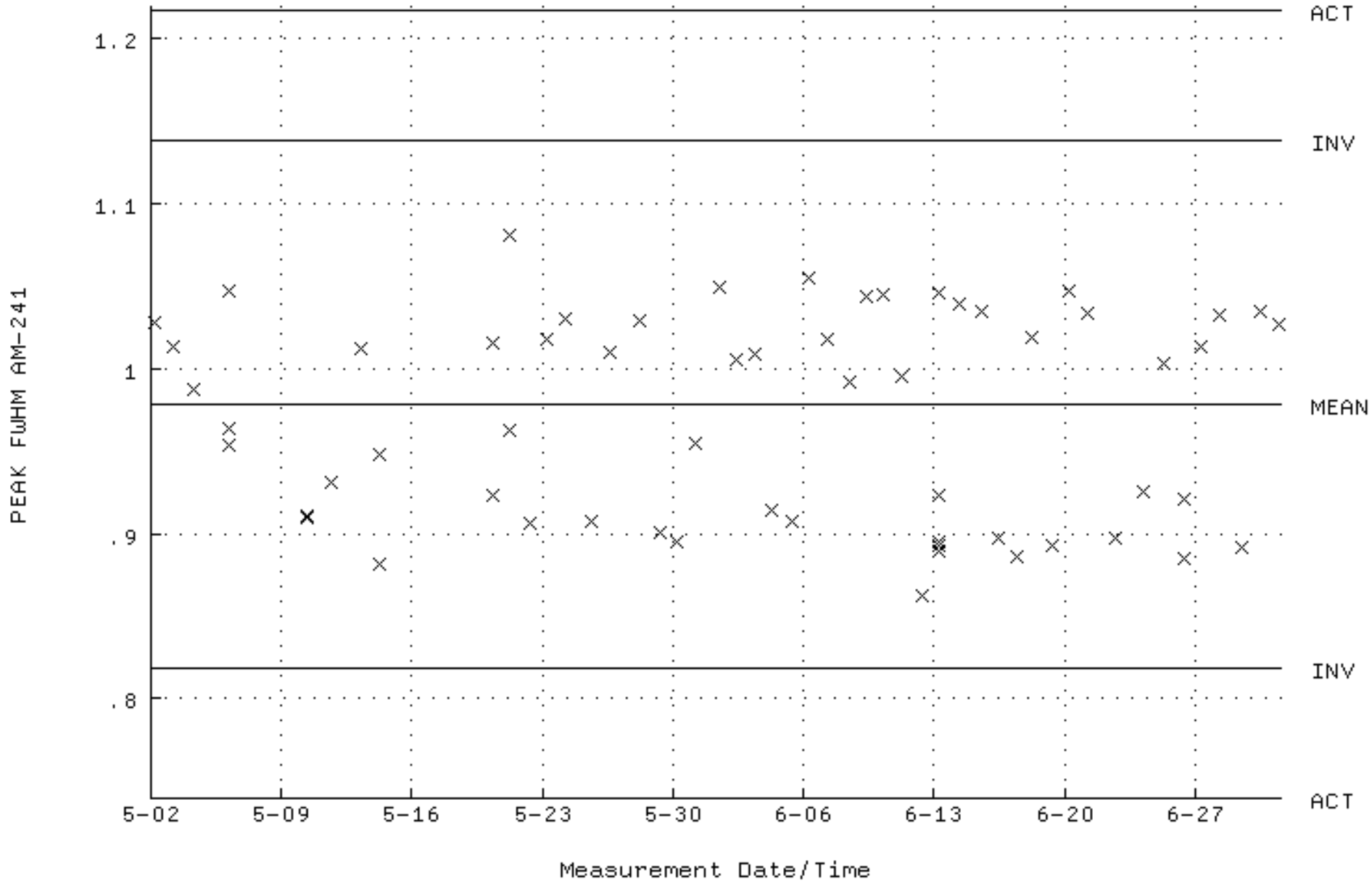
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM27.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:11:15 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.54603 +- 2.114653E-02 (1.37 %)



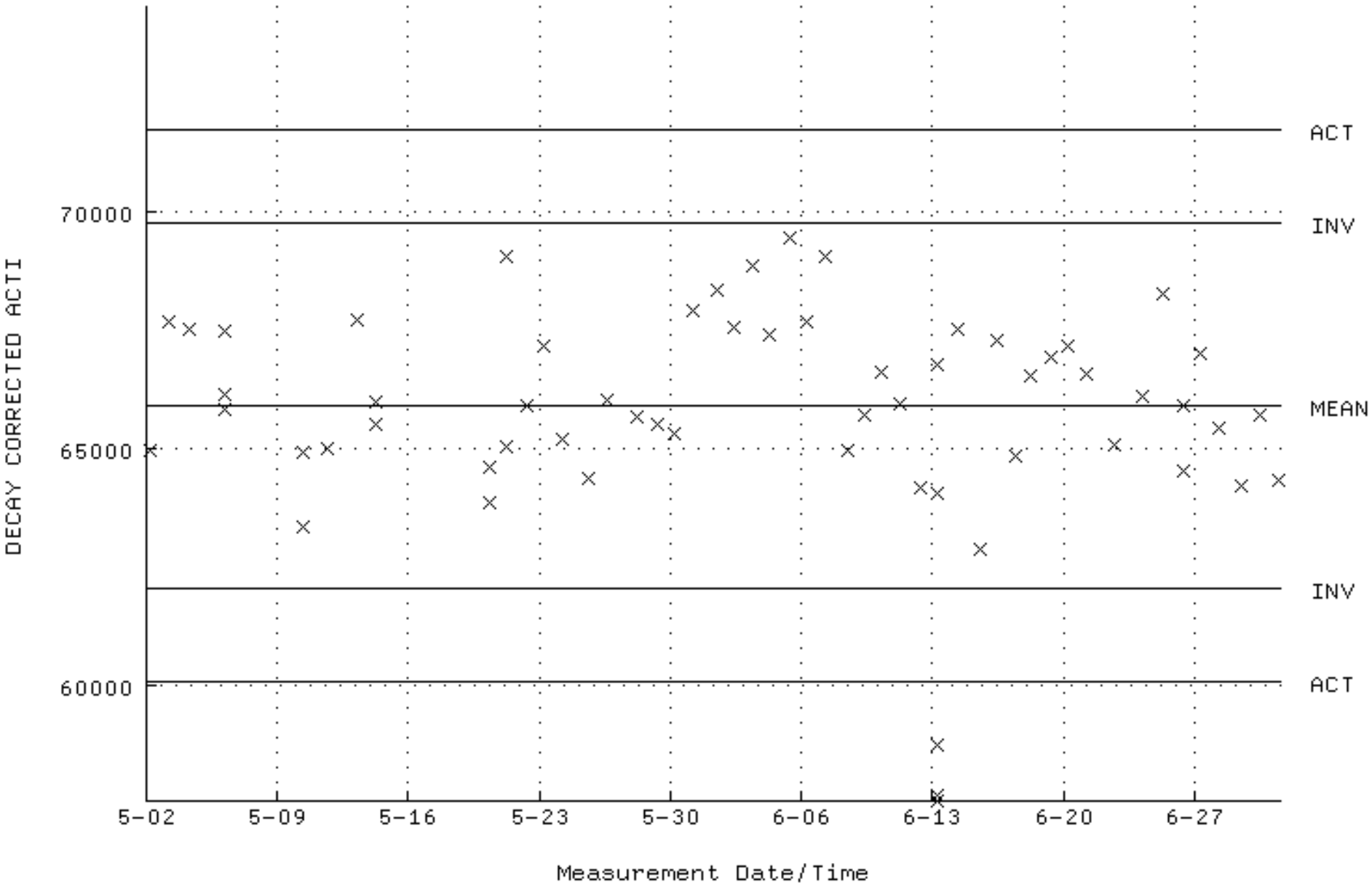
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM28_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:47:06 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



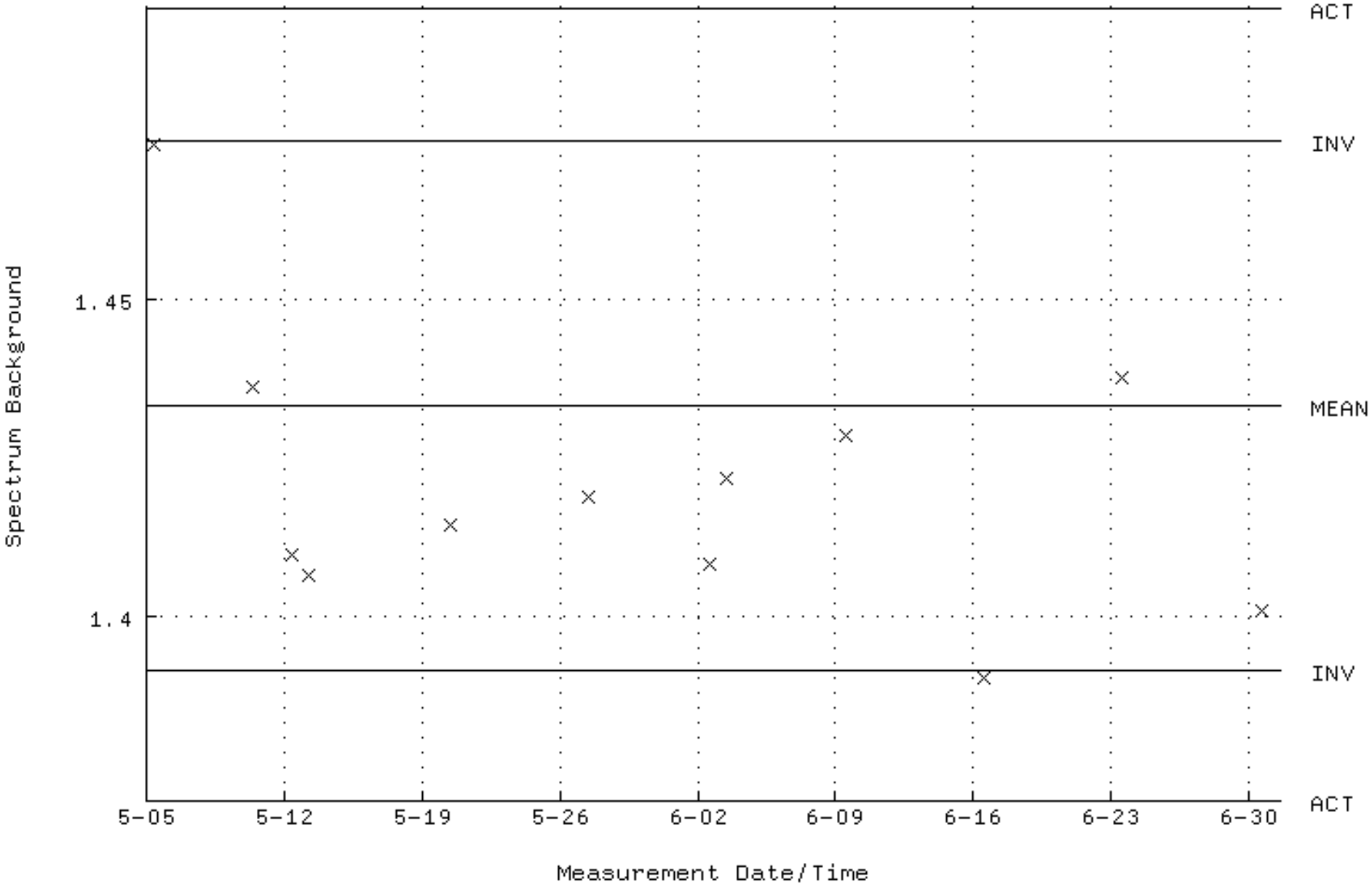
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM28_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:47:06 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 0.978822 +- 7.967980E-02 (8.14 %)



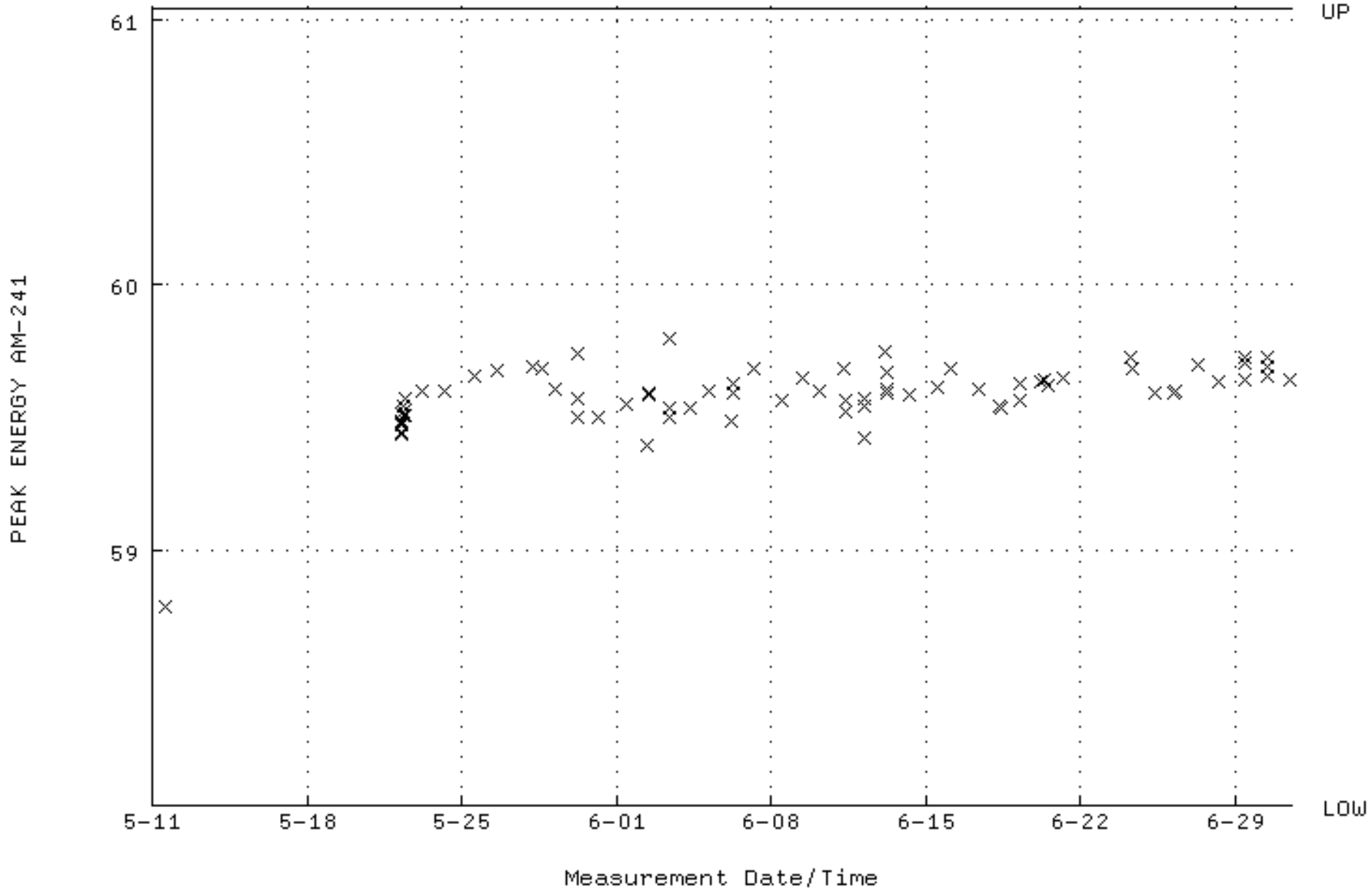
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM28_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:47:06 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 65938.8 +- 1938.67 (2.94 %)



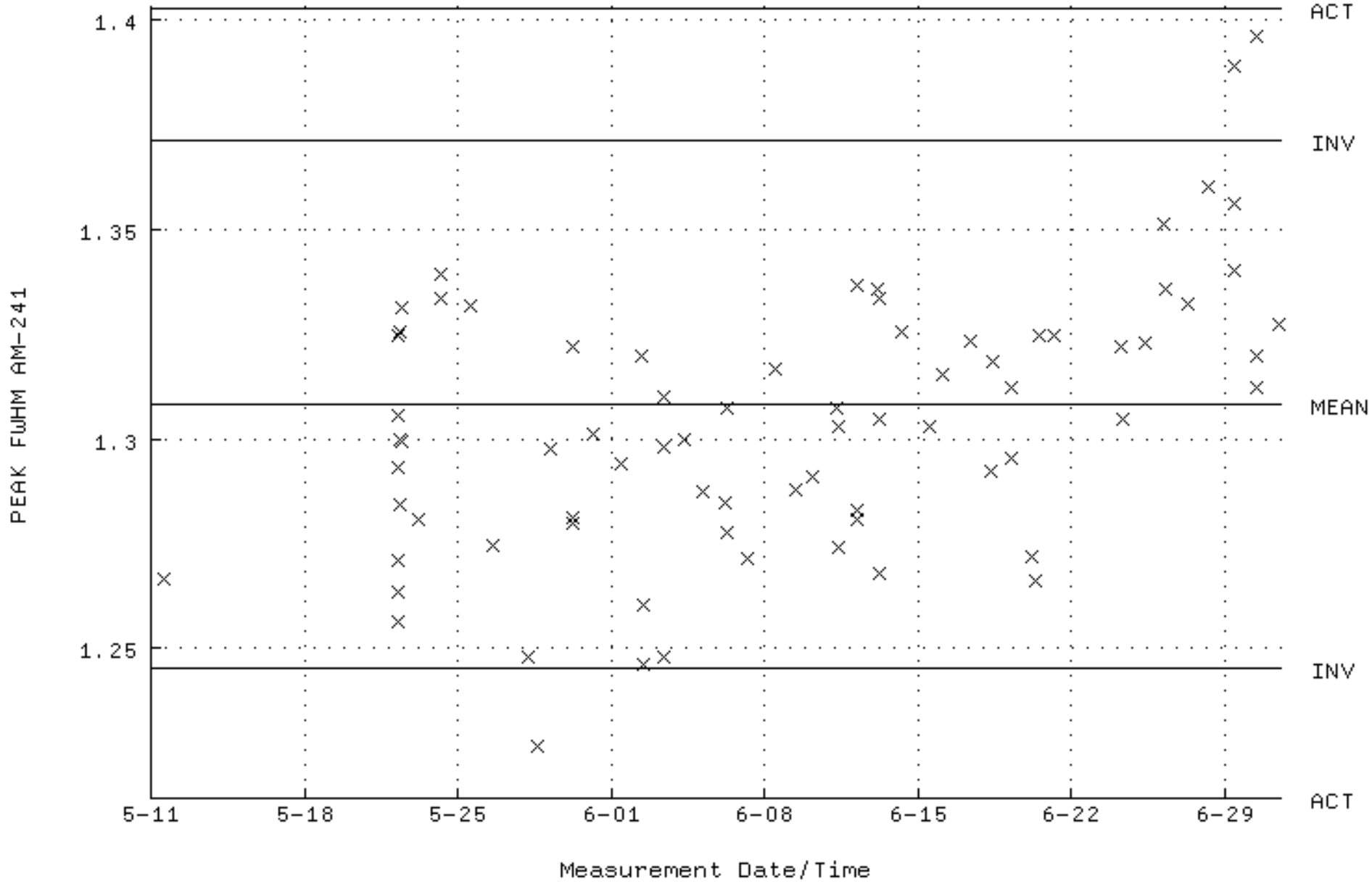
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM28.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:13:12 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.43343 +- 2.079300E-02 (1.45 %)



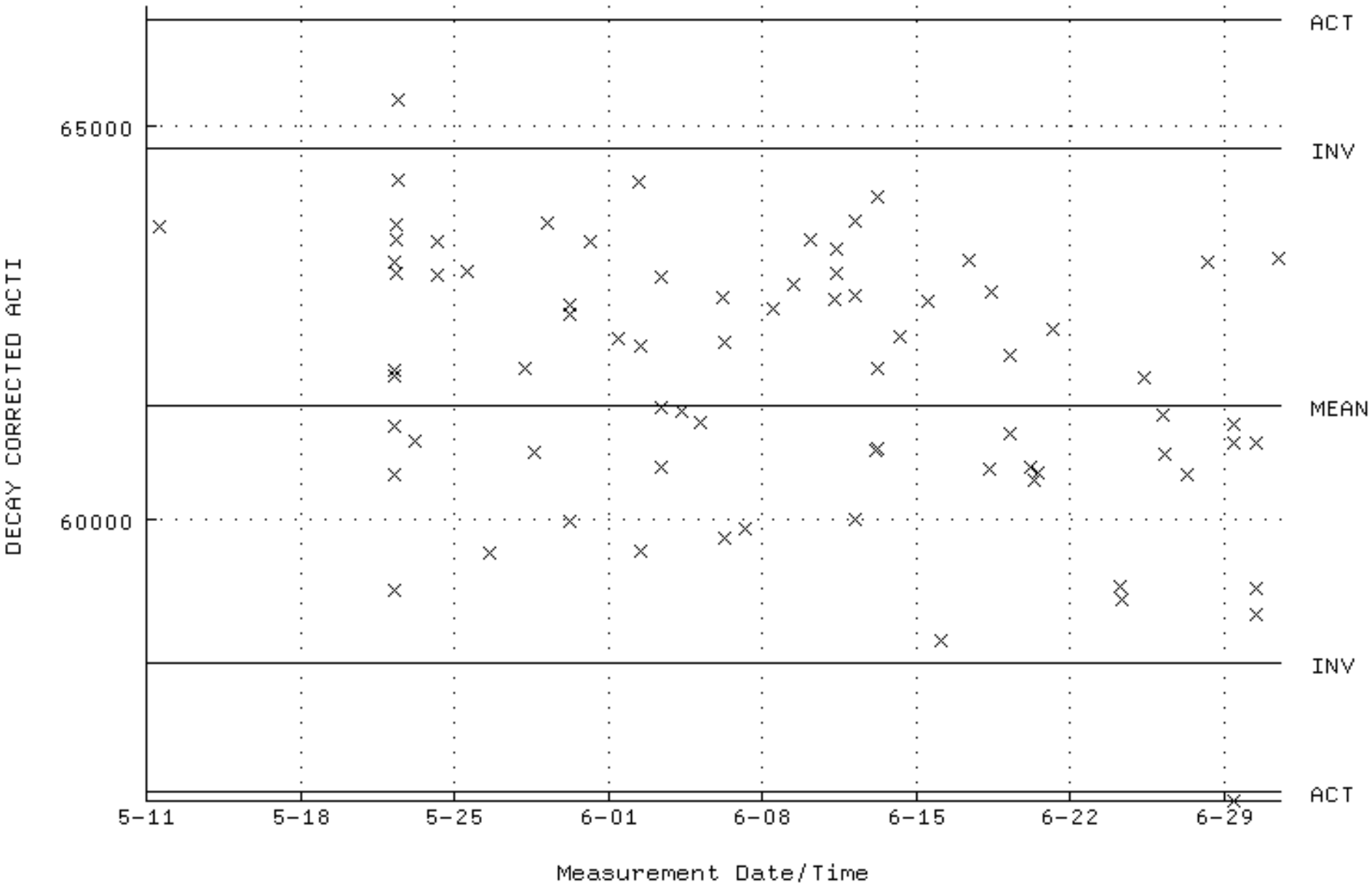
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM30_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 11-MAY-2024 15:05:41 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



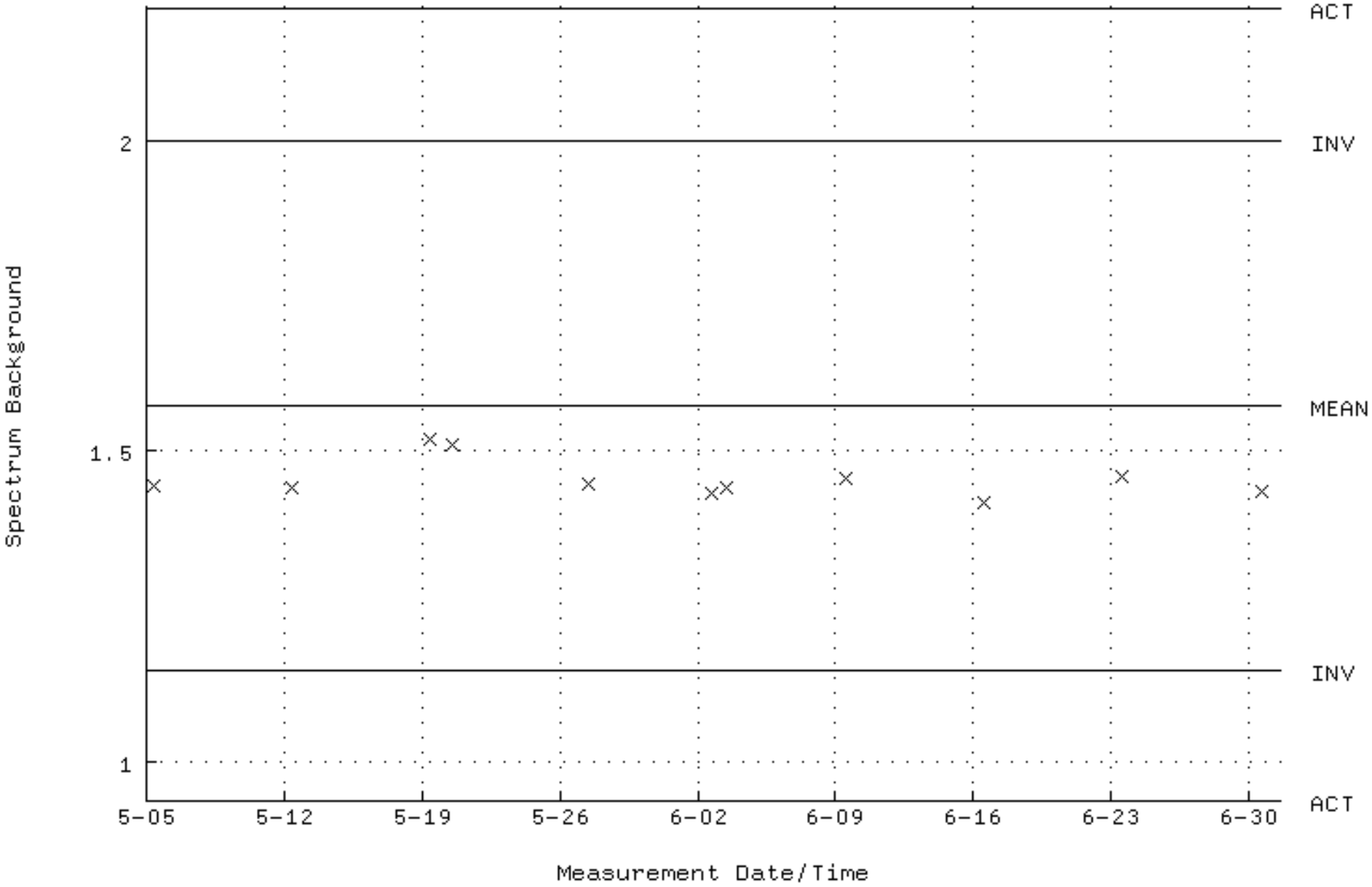
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM30_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 11-MAY-2024 15:05:41 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.30847 +- 3.145364E-02 (2.40 %)



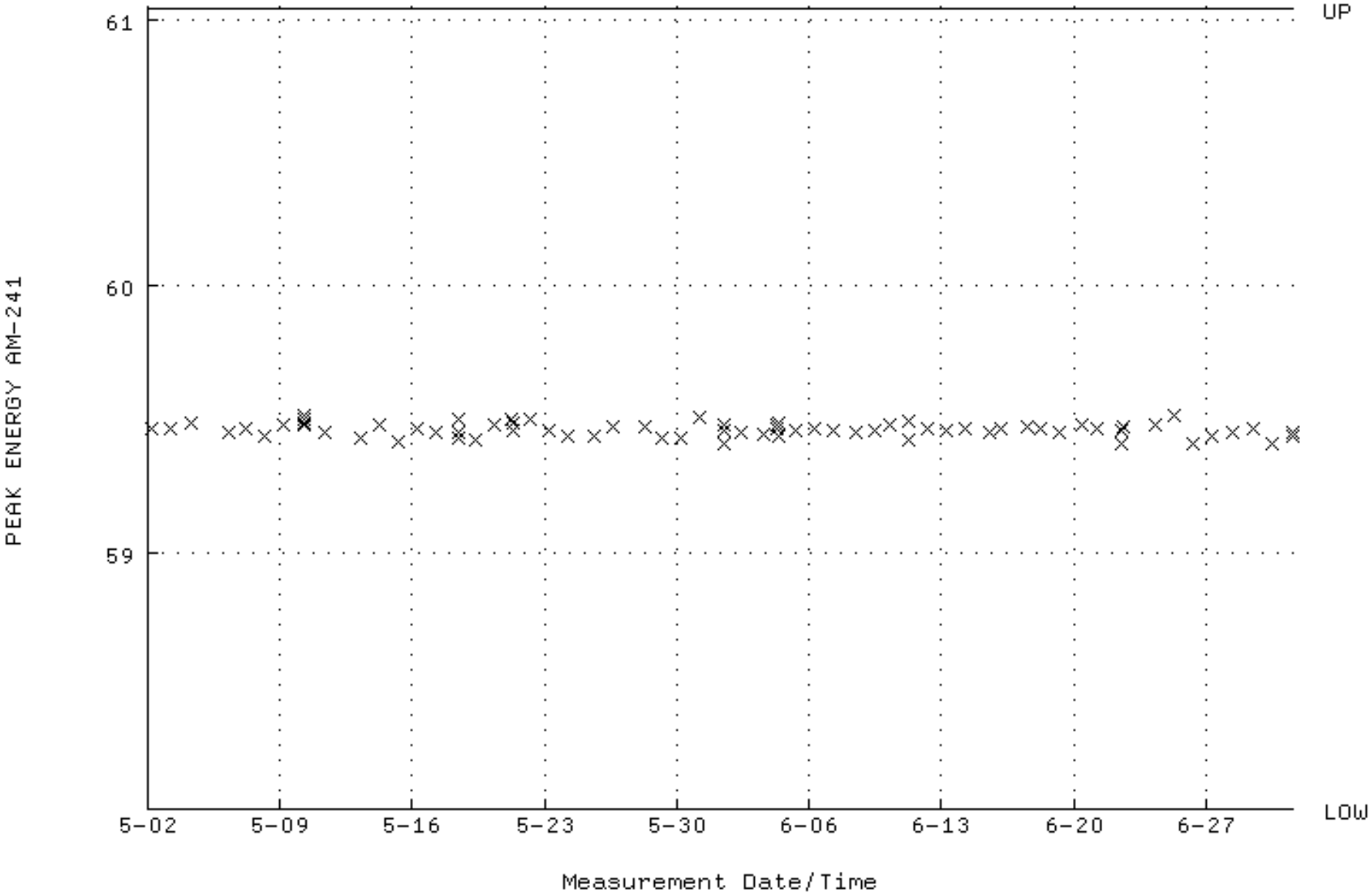
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM30_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 11-MAY-2024 15:05:41 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 61454.9 +- 1633.92 (2.66 %)



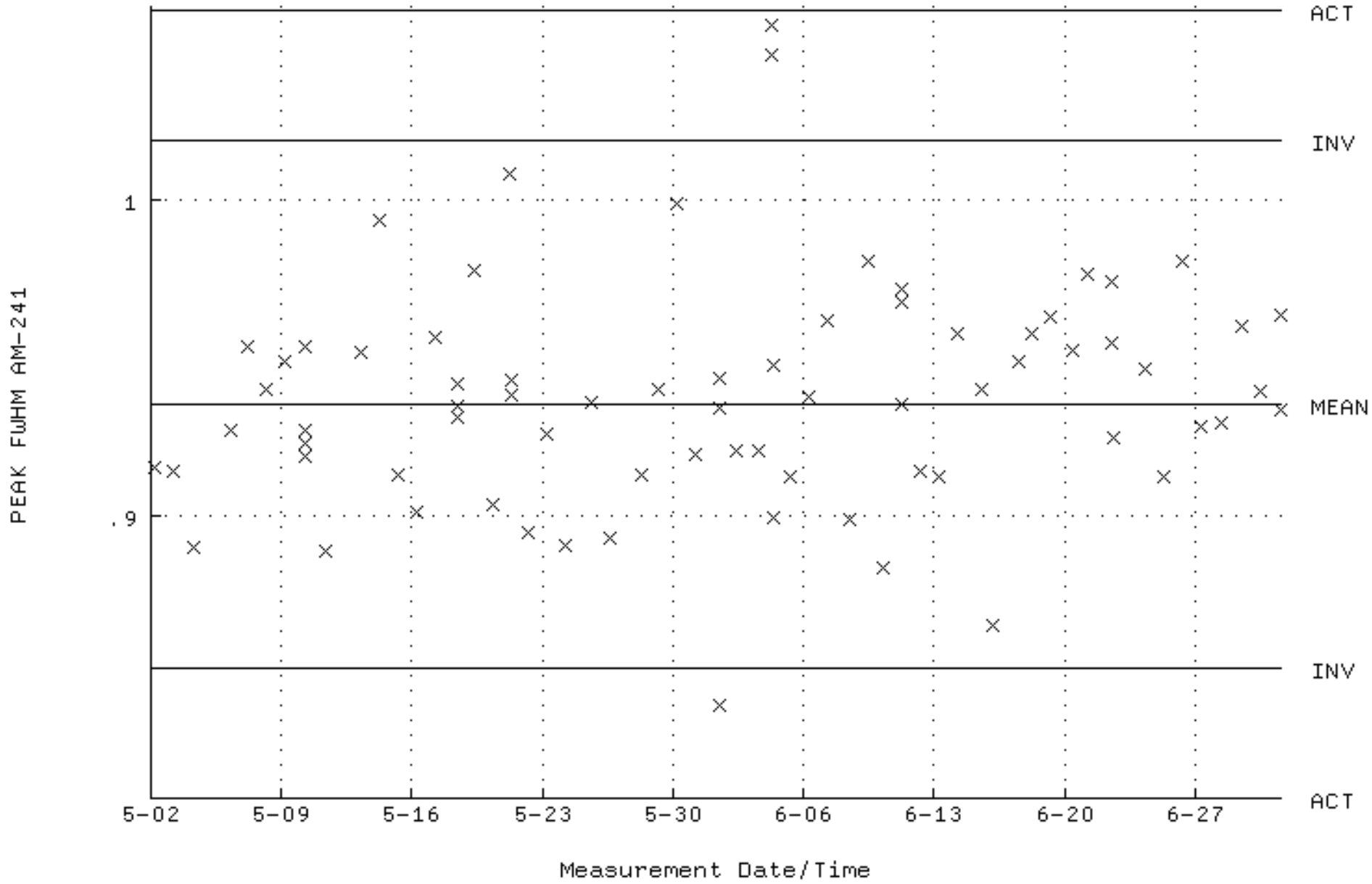
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM30.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:09:32 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.57494 +- 0.212506 (13.49 %)



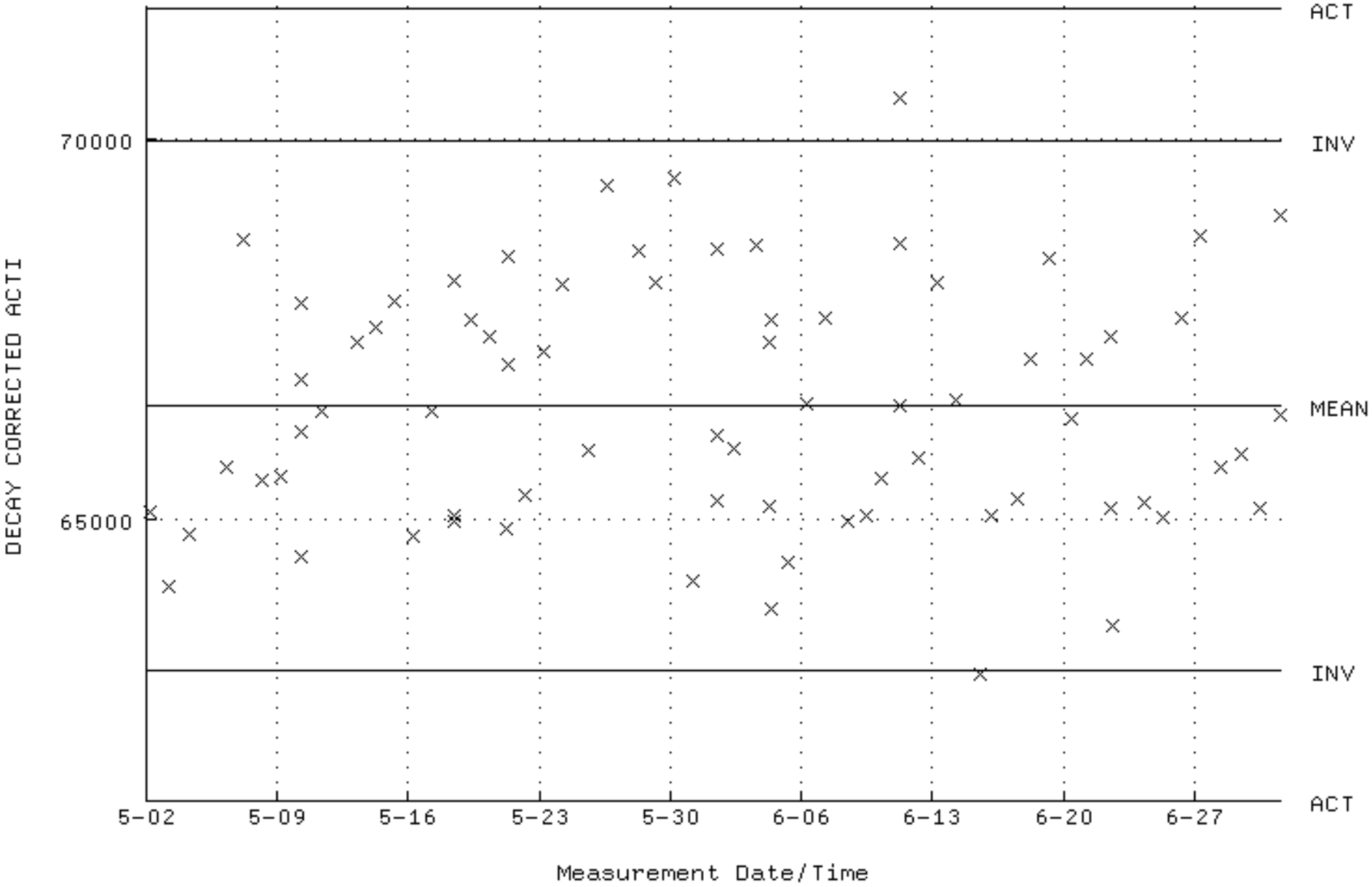
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM40_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:45:07 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



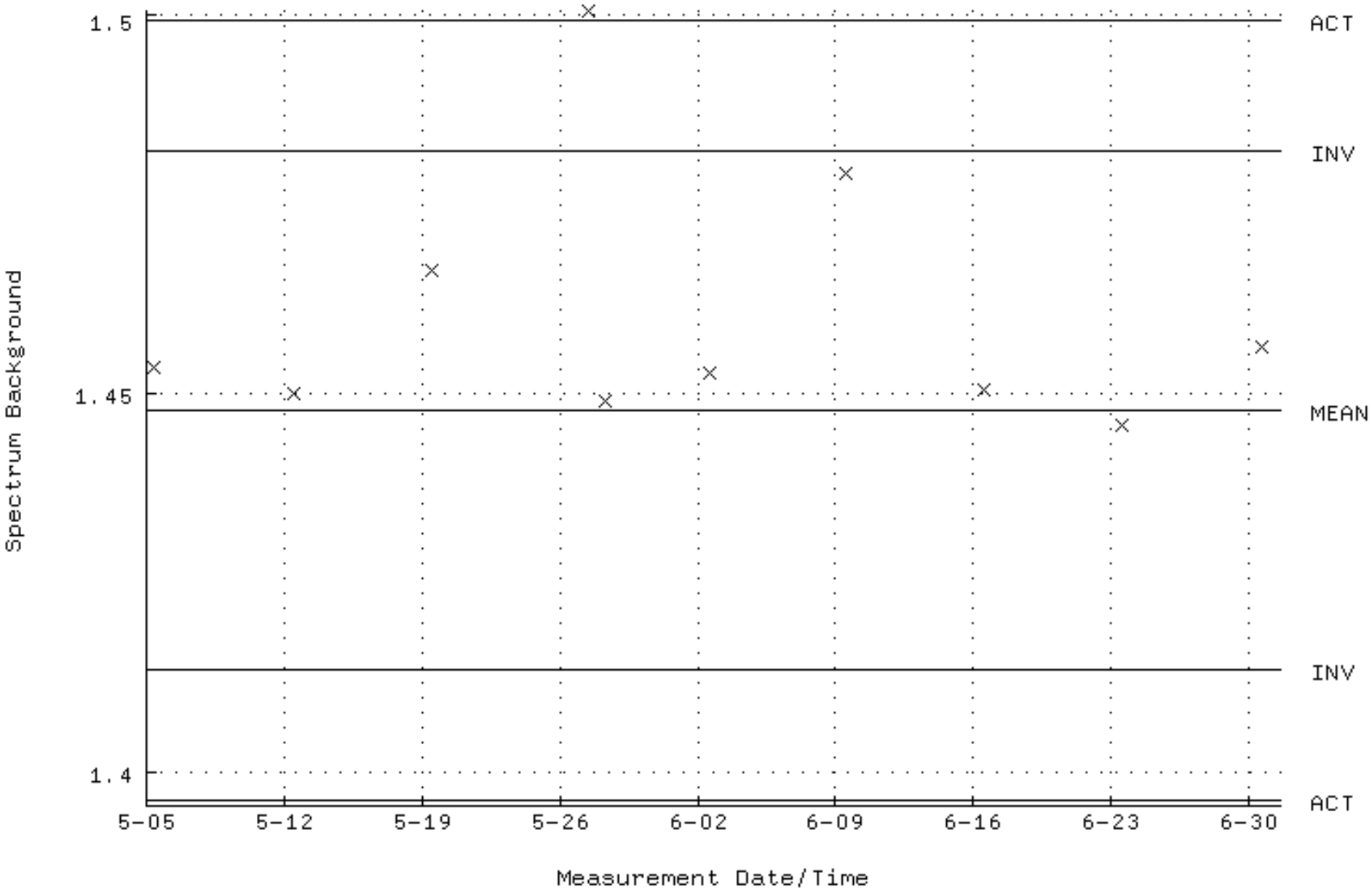
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM40_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:45:07 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 0.935558 +- 4.161524E-02 (4.45 %)



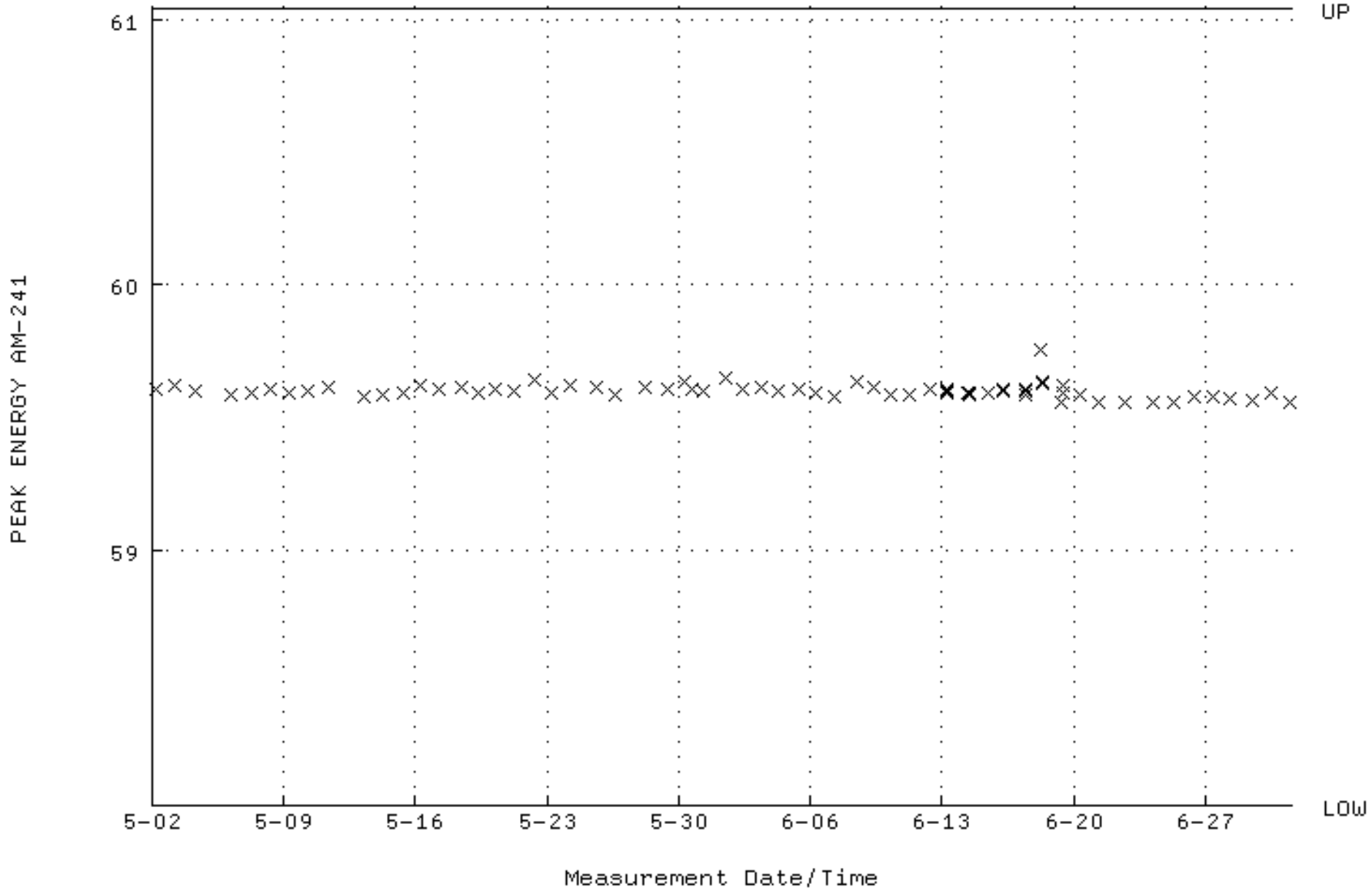
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM40_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:45:07 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 66517.3 +- 1734.83 (2.61 %)



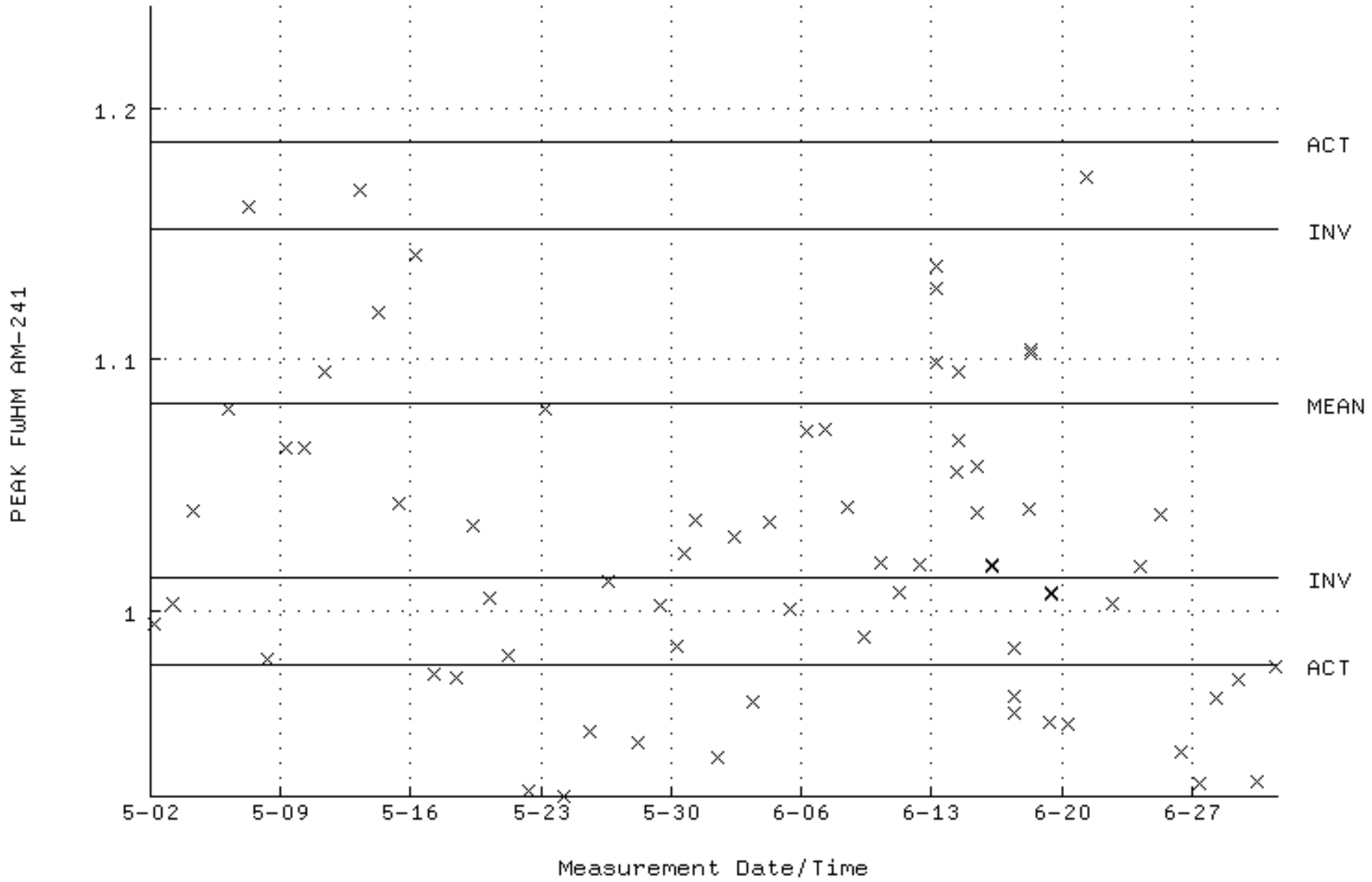
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM40.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:07:17 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.44790 +- 1.717641E-02 (1.19 %)



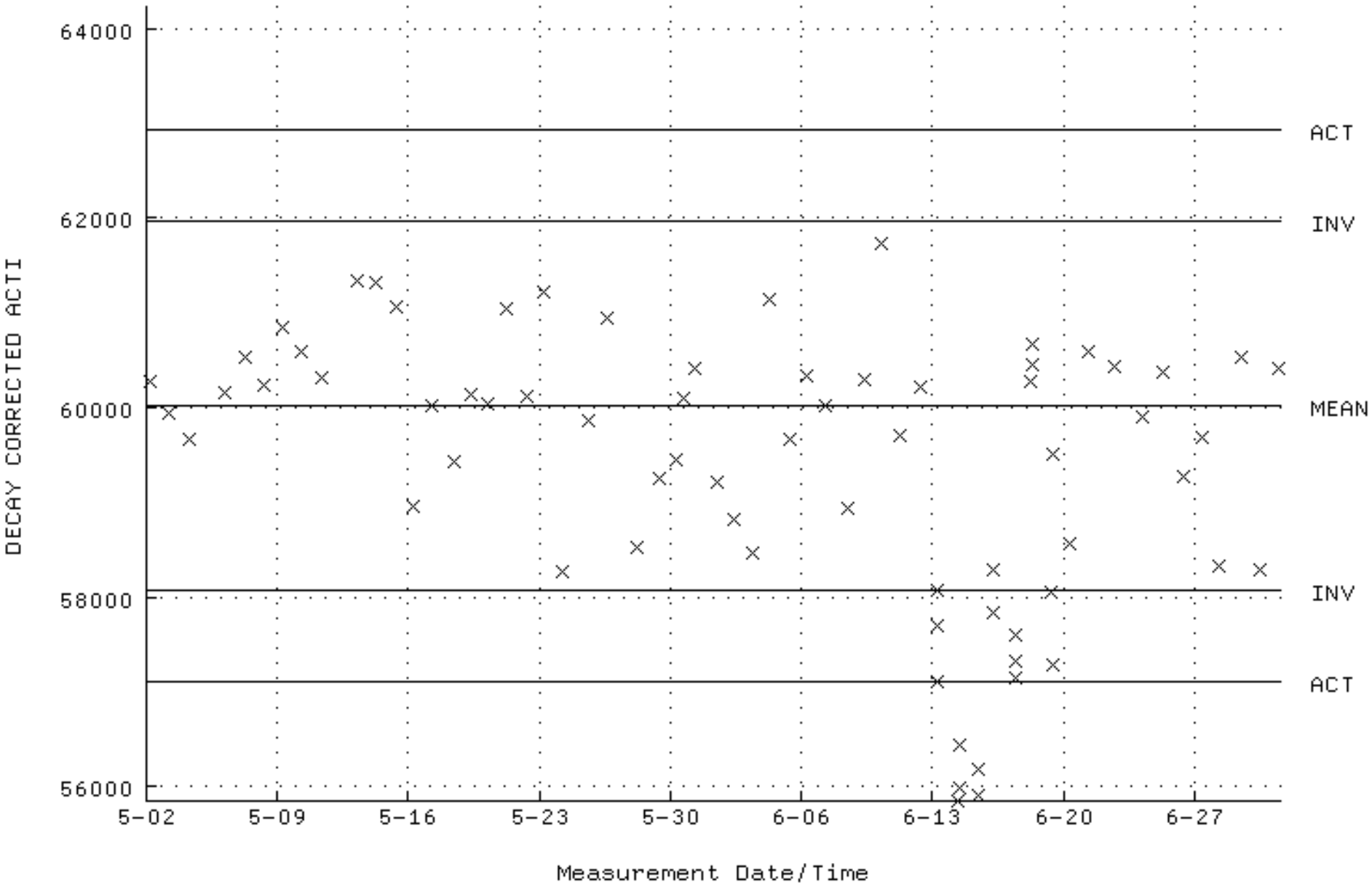
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM46_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 05:20:02 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



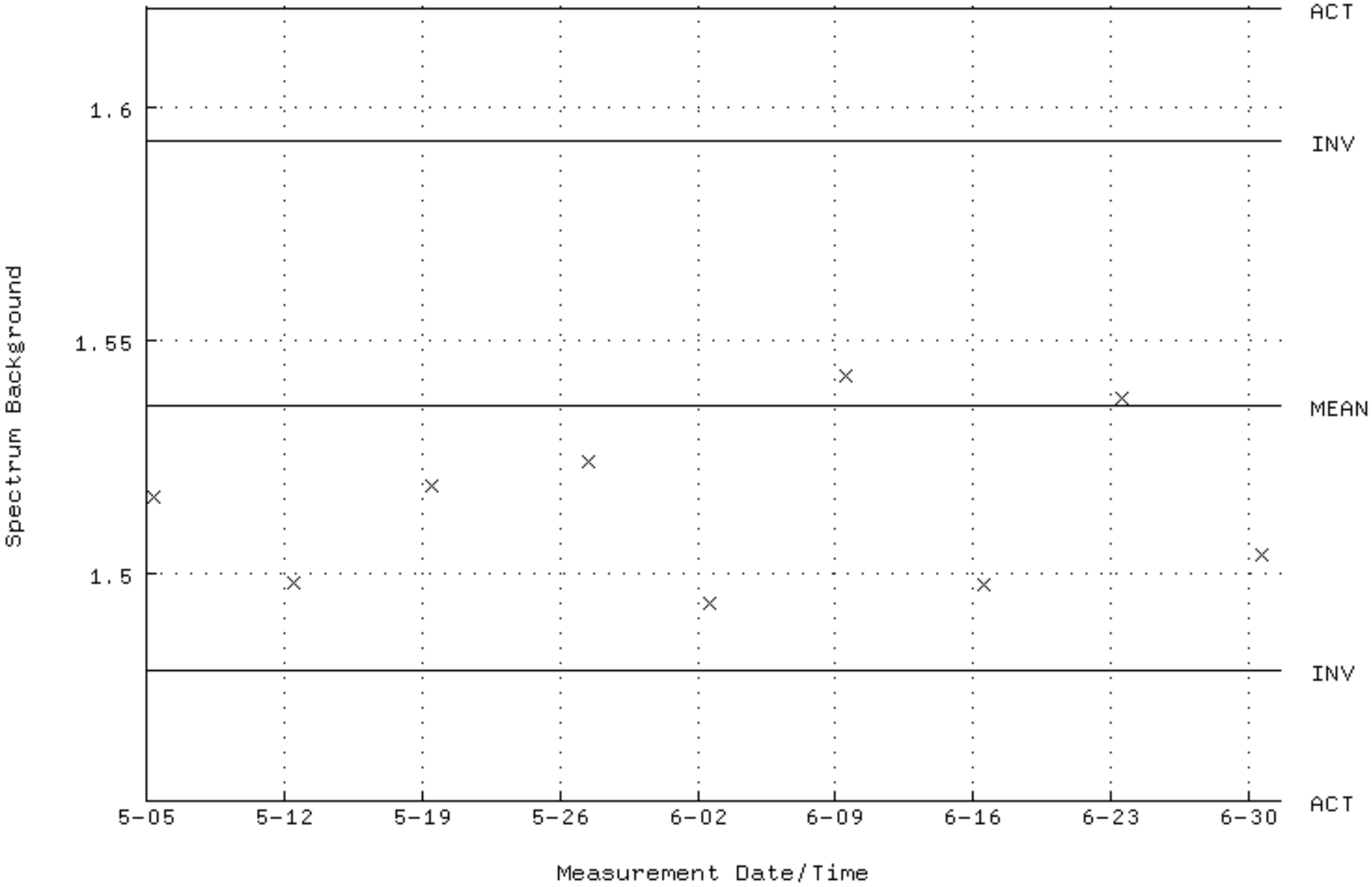
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM46_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 05:20:02 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.08306 +- 3.448753E-02 (3.18 %)



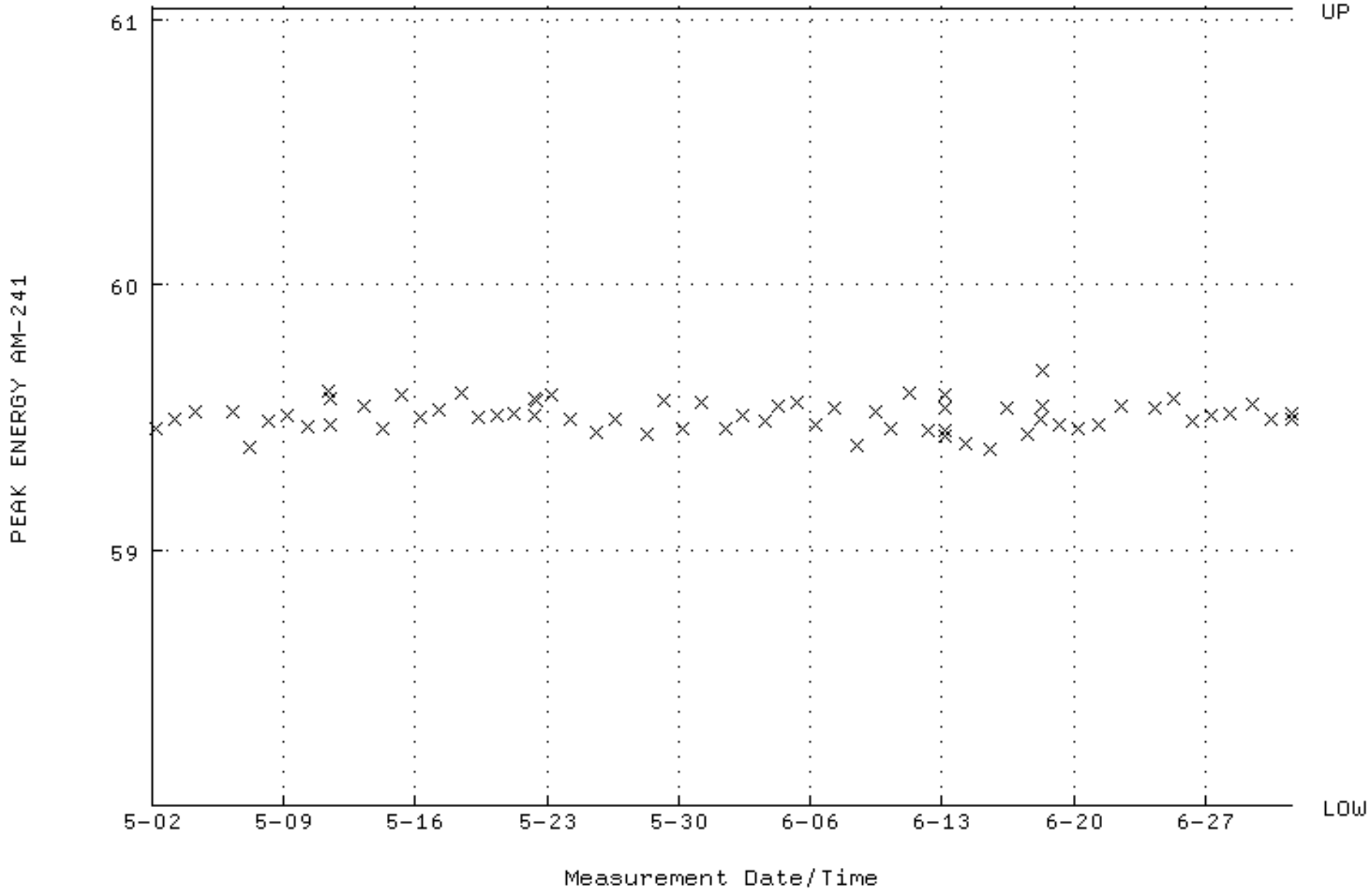
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM46_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 05:20:02 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 60029.4 +- 972.942 (1.62 %)



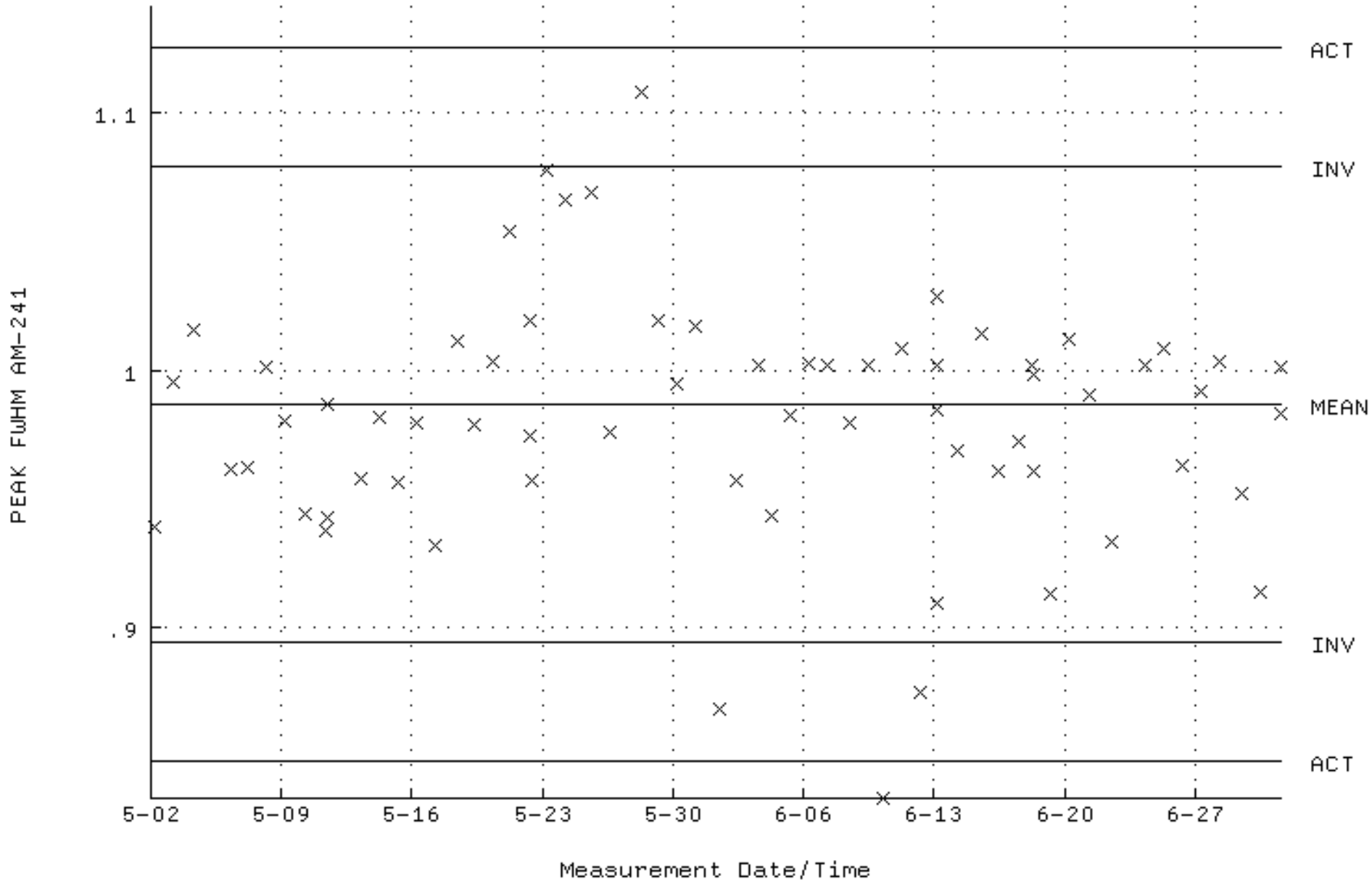
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM46.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:15:35 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.53619 +- 2.830773E-02 (1.84 %)



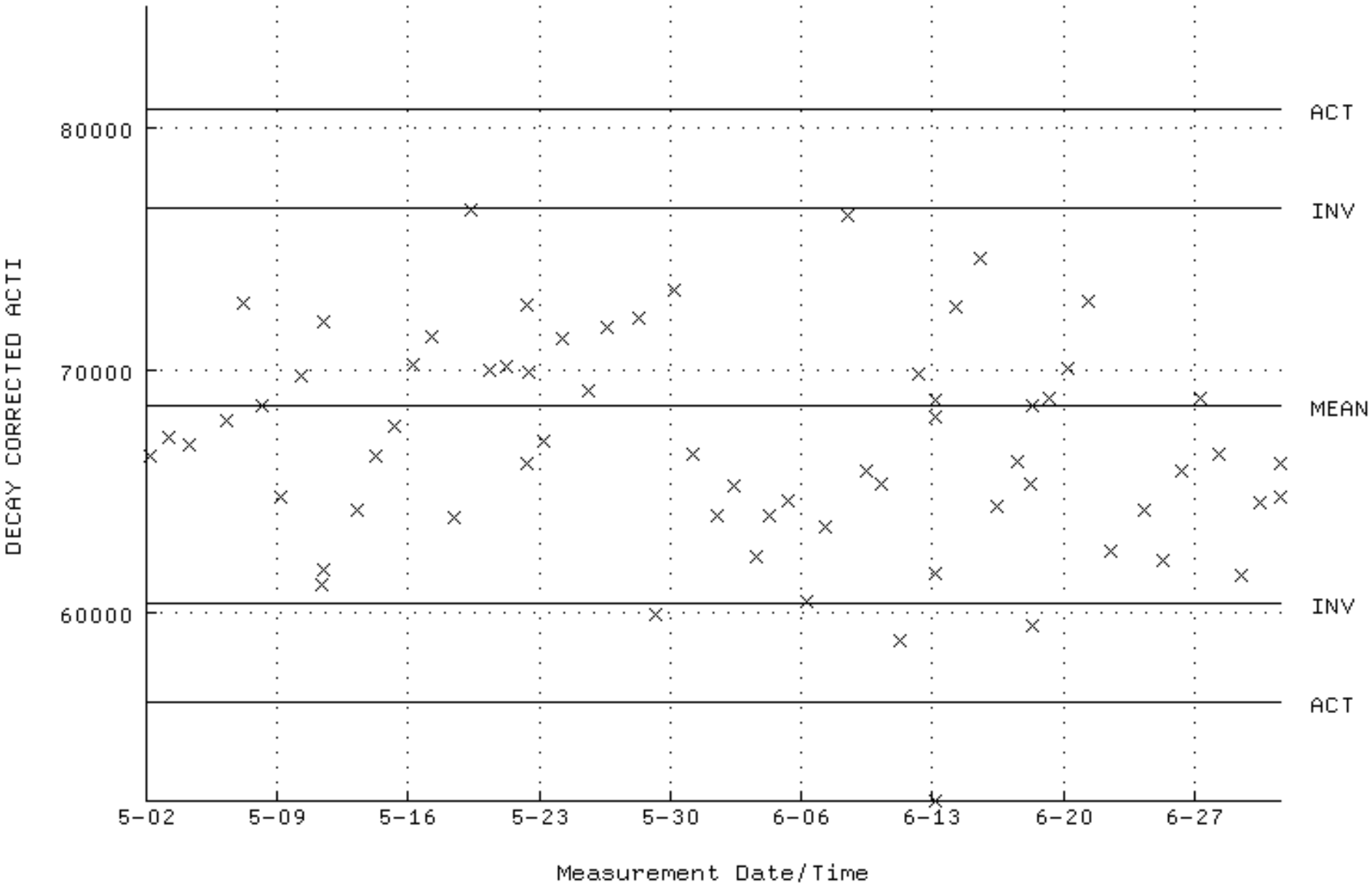
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM50_400JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 04:57:37 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



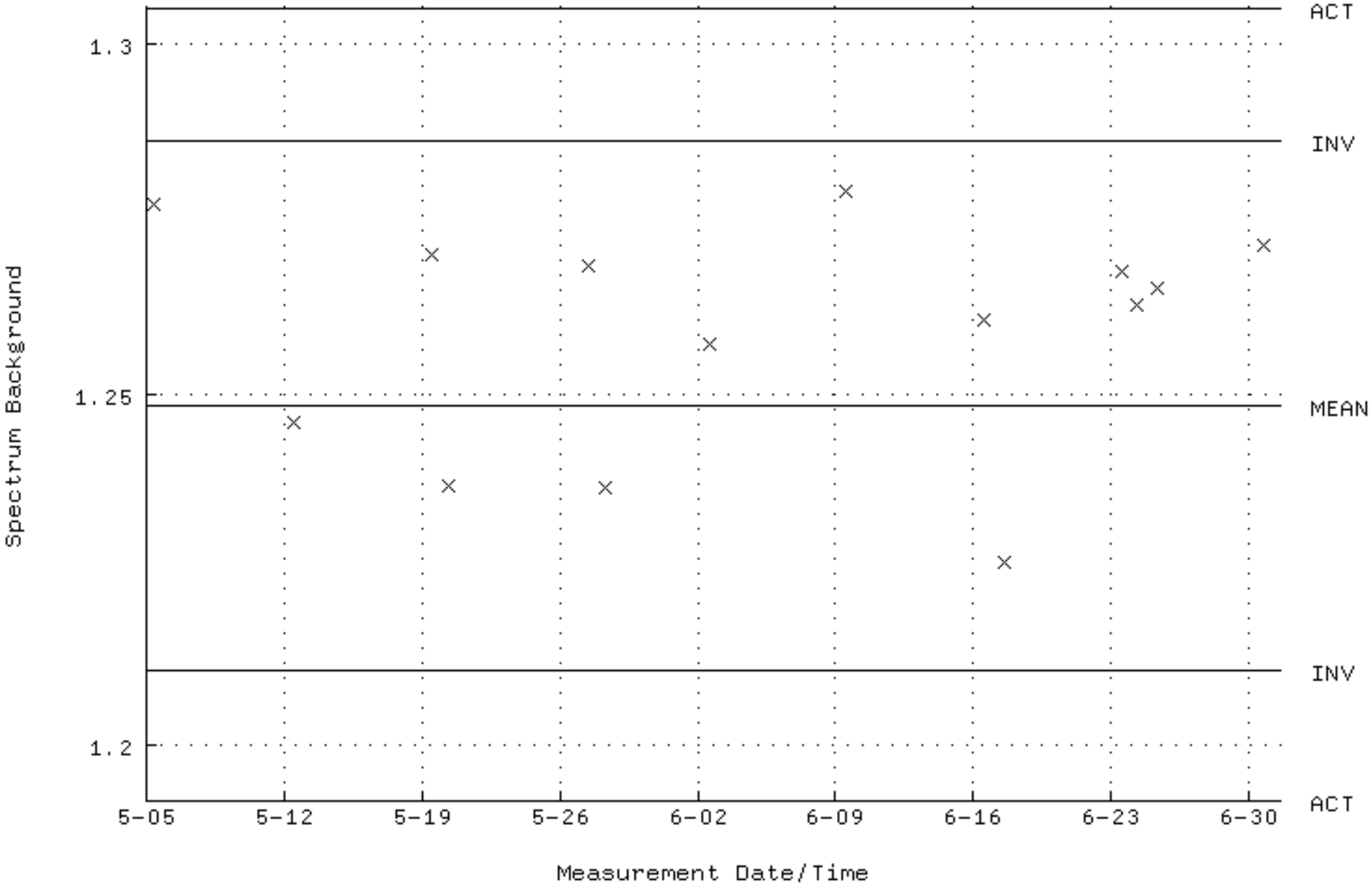
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM50_400JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 04:57:37 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 0.987067 +- 4.609920E-02 (4.67 %)



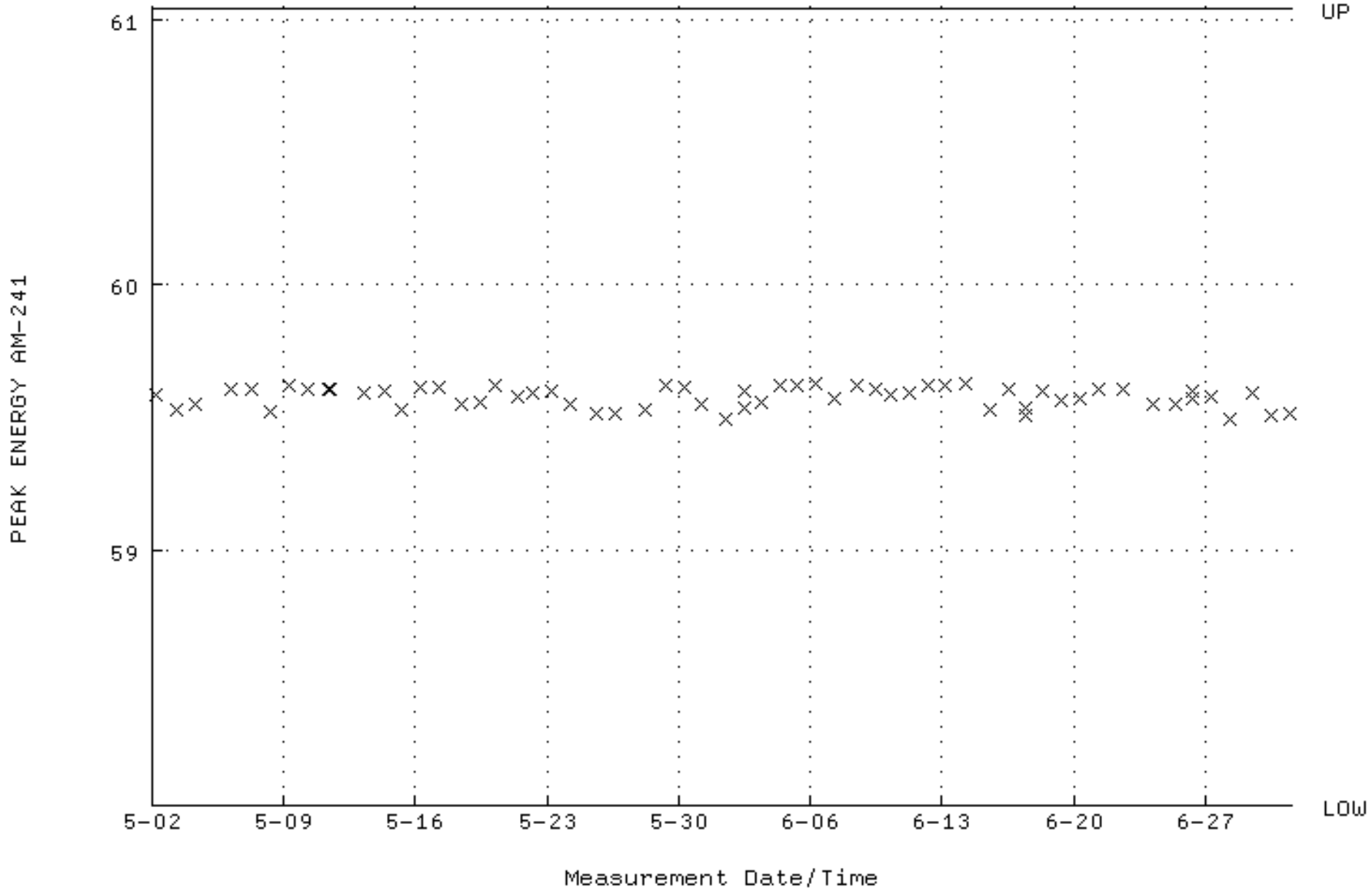
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM50_400JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 04:57:37 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 68610.4 +- 4085.11 (5.95 %)



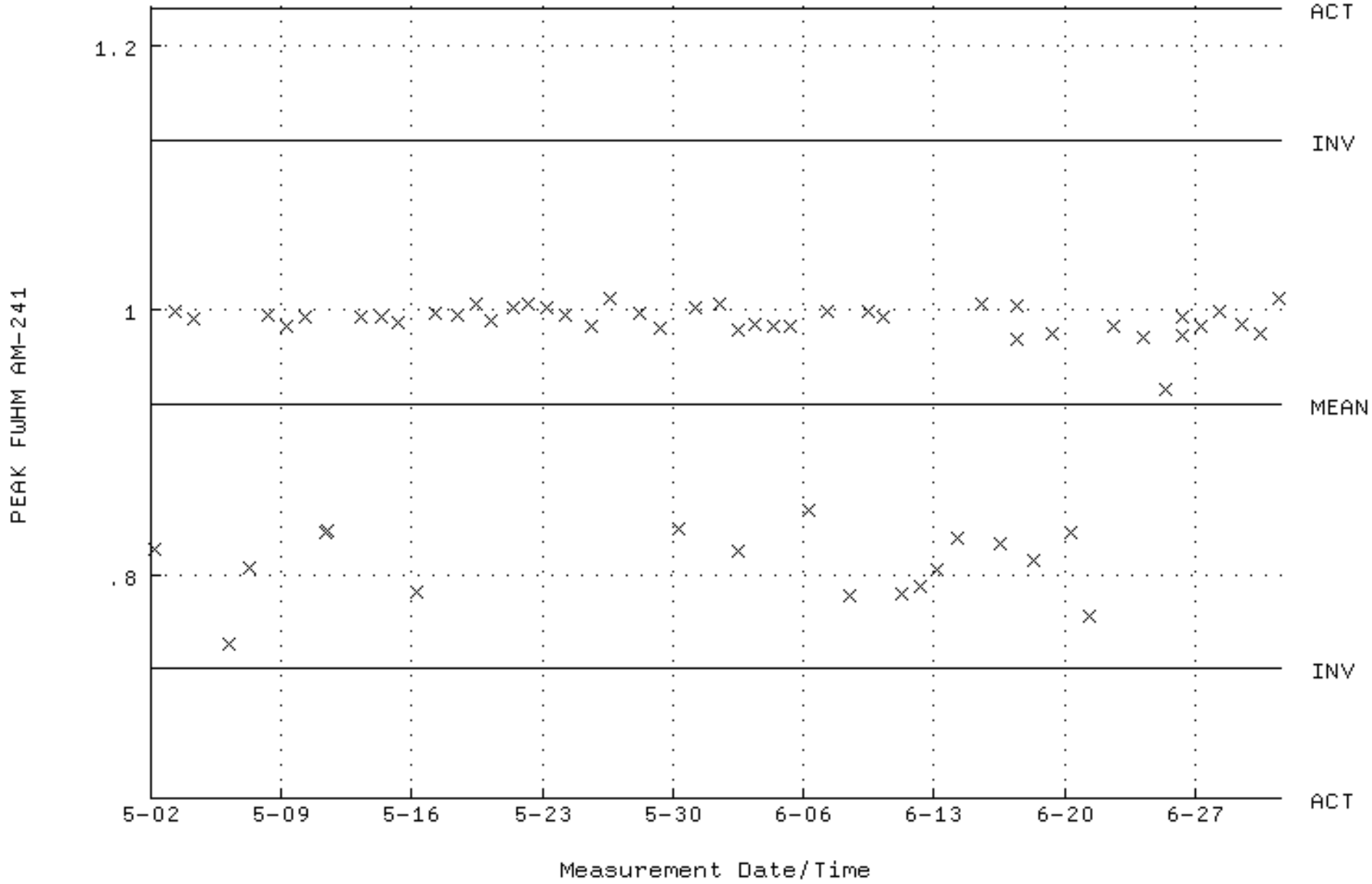
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM50.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:07:23 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.24858 +- 1.883305E-02 (1.51 %)



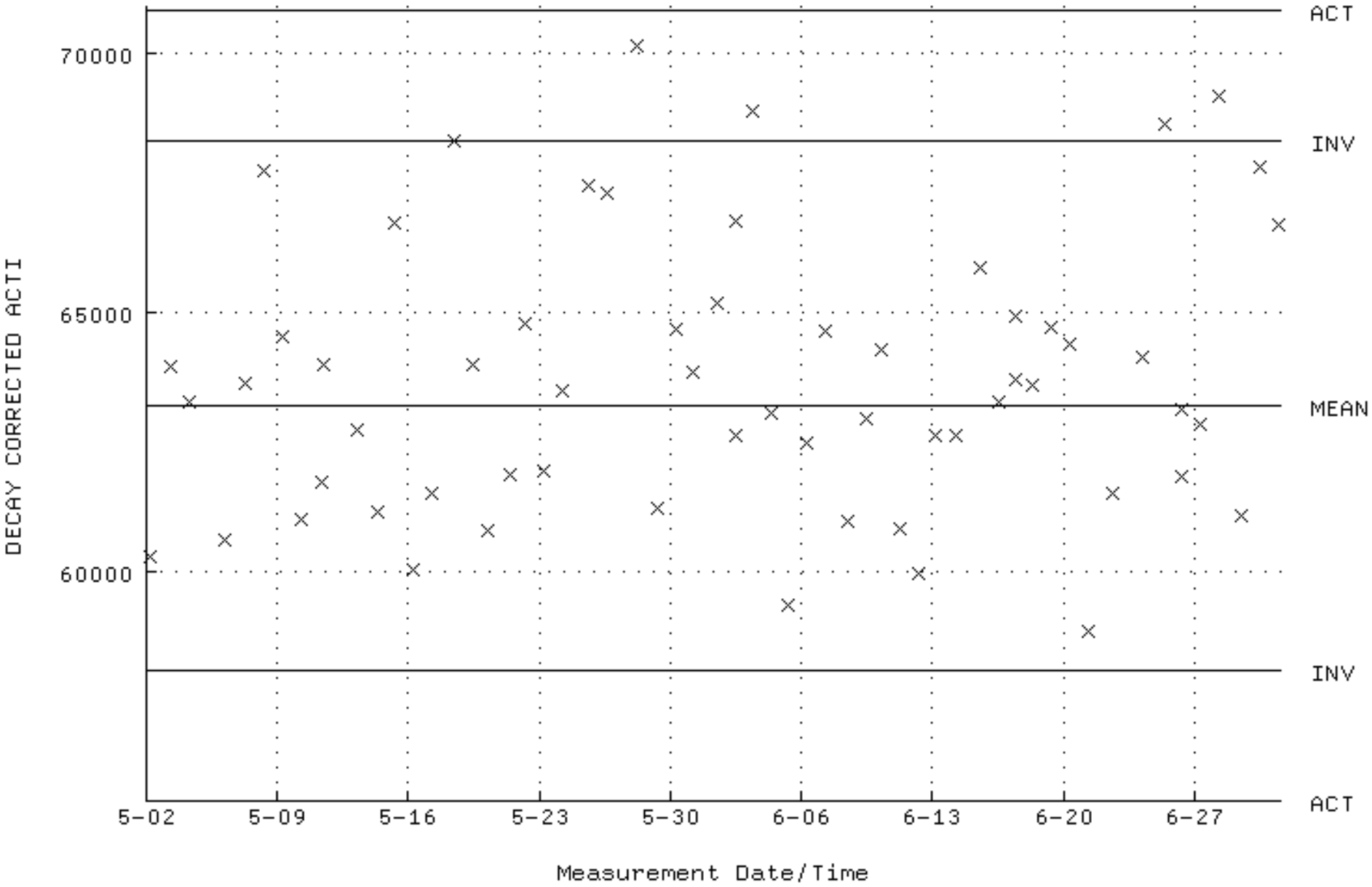
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM52_400JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAY-2024 05:20:07 through 1-JUL-2024 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



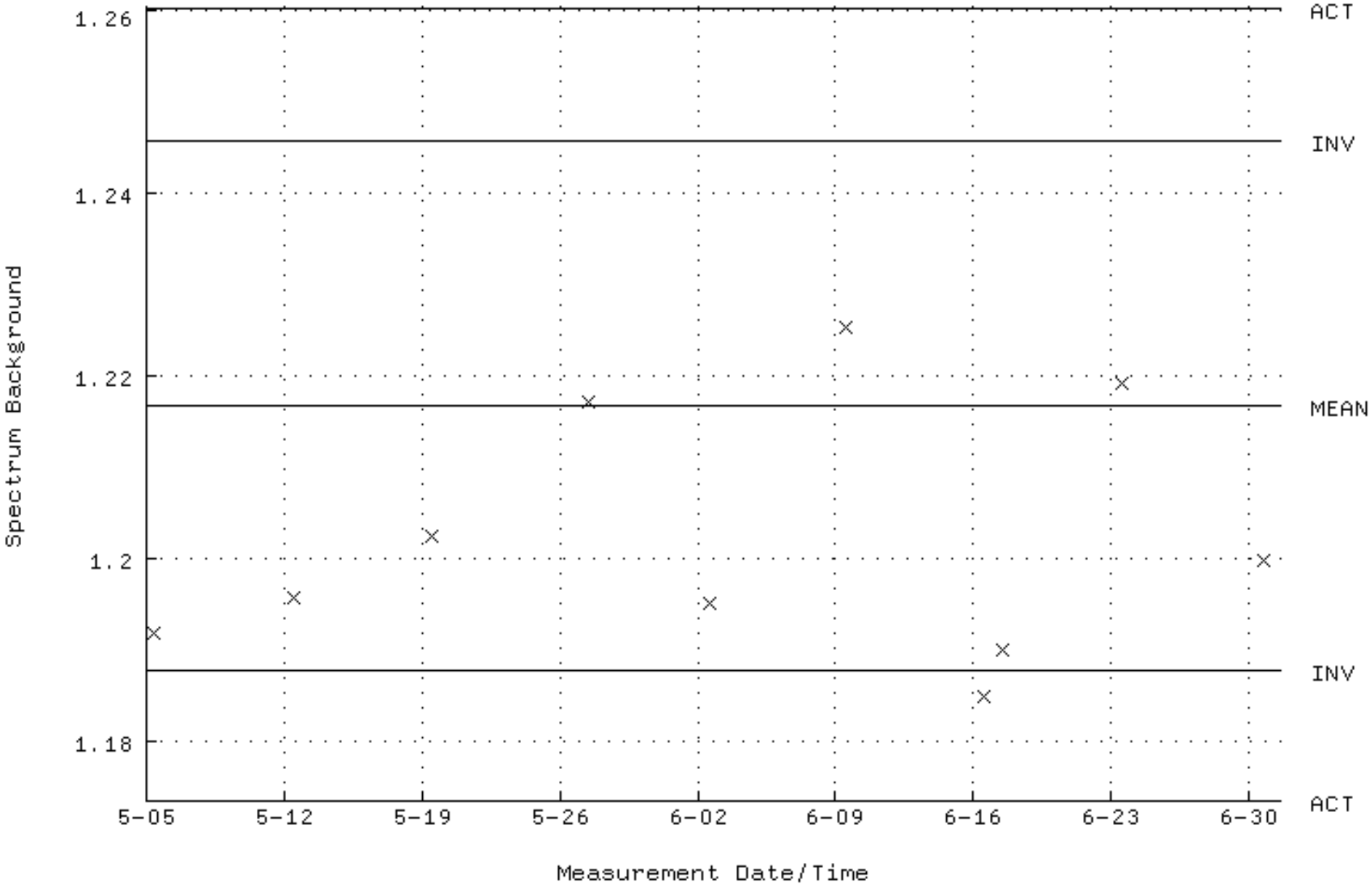
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM52_400JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAY-2024 05:20:07 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 0.929940 +- 9.916964E-02 (10.66 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM52_400JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAY-2024 05:20:07 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 63224.7 +- 2544.67 (4.02 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM52.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 5-MAY-2024 09:11:20 through 1-JUL-2024 12:00:00
Mean +- Std Dev : 1.21684 +- 1.447294E-02 (1.19 %)



RAD Standards Traceability

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

1556

Standard Radionuclide Source

84680-278

100 mL Solid in Aluminum Can

Customer: GEL Labs
P.O. No.: 489884RD, Item 3
Reference Date: 01-Apr-2011 12:00 PM EST **Grams of Master Source:** 0.0066498

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101. Density of solid matrix 1.15 g/cc.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Pb-210	46.5	8.120E+03	———	1.129E+03	0.1	2.1	4.1	4π LS
Am-241	59.5	1.580E+05	———	7.538E+02	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.659E+05	1.103E+03	0.6	2.3	4.8	HPGe
Co-57	122.1	2.718E+02	8.949E+04	5.951E+02	0.6	2.0	4.2	HPGe
Ce-139	165.9	1.376E+02	1.247E+05	8.292E+02	0.6	1.9	4.0	HPGe
Hg-203	279.2	4.661E+01	2.899E+05	1.928E+03	0.6	1.9	4.0	HPGe
Sn-113	391.7	1.151E+02	1.739E+05	1.156E+03	0.6	1.9	4.0	HPGe
Cs-137	661.7	1.098E+04	1.107E+05	7.361E+02	0.8	1.9	4.1	HPGe
Y-88	898.0	1.066E+02	4.246E+05	2.824E+03	0.6	1.9	4.0	HPGe
Zn-65	1115.6	2.441E+02	———	1.445E+03	0.1	1.7	3.5	IC
Co-60	1173.2	1.925E+03	2.118E+05	1.408E+03	0.7	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.118E+05	1.408E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.495E+05	2.989E+03	0.7	1.9	4.0	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1968

RC-S-060-101

Corporate Office
24937 Avenue Tibbitts
Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

ANA Form005 Rev. —

This standard will expire one year after the reference date.

Source Prepared by: _____
M. Williford, Radiochemist

QA Approved: _____ Date: 6/27/11
J. D. McCorvey, QA Manager Alternate

Standard Logbook

Serial ID:	1556	**Open/Reference Date:**	01-APR-11	**Aliquot :**	1 mL
Name:	Mixed Gamma LCS CAN	**Received:**	01-APR-11	**Density :**	Hand Calculated
Type:	Source Material	**Expires:**	01-APR-37	**Lot Number :**	84680-278
Employee:	Maggie Stamps	**Verified:**	14-JUL-11		
Supplier:	Eckert & Zeigler Analytics				
Description:	84680-278				
Comments:	None				

Analyte	Concentration	Analyte	Concentration
Americium-241	125983.3 dpm/mL	Cesium-137	51898.9 dpm/mL
Cobalt-60	84496.9 dpm/mL		

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Pb-210	**pCi/L**
Mixed Gamma N1	722900
Mixed Gamma N2	752300
Mixed Gamma N3	692100

Isotopic Abundance: 0.0425
Certificate Value (dps): 1129

Mean Value (Counting) =	722433.33	pCi/L	**100.622**	**Pass**
Stdev =	30102.713	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	717965.0	pCi/L		
Lower Limit =	662227.9072	pCi/L		
Upper Limit =	782638.7594	pCi/L		
Rule 1 Pass/Fail	**Pass**			
Two sigma =	60205.42611			
10 % of Mean =	72243.33333			
Rule 2 (Pass/Fail)	**Pass**			

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

mgH 7/20/11

H.Stamper 7/20/11

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Am-241	**pCi/L**
Mixed Gamma N1	58390
Mixed Gamma N2	60740
Mixed Gamma N3	57770

Isotopic Abundance: 0.359
Certificate Value (dps): 753.8

Mean Value (Counting) =	58966.67	pCi/L	**103.9074**	**Pass**
Stdev =	1566.727	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	56749.2	pCi/L		
Lower Limit =	55833.21277	pCi/L		
Upper Limit =	62100.12057	pCi/L		
Rule 1 Pass/Fail	**Pass**			
Two sigma =	3133.453898			
10 % of Mean =	5896.666667			
Rule 2 (Pass/Fail)	**Pass**			

MGH
7/20/11

M. Stamps
7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
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Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Cd-109	**pCi/L**
Mixed Gamma N1	818400
Mixed Gamma N2	798000
Mixed Gamma N3	764700

Isotopic Abundance: 0.037
Certificate Value (dps): 1103

Mean Value (Counting) =	793700.00	pCi/L	**98.51091**	**Pass**
Stdev =	27107.010	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	805697.6	pCi/L		
Lower Limit =	739485.9797	pCi/L		
Upper Limit =	847914.0203	pCi/L		
Rule 1 Pass/Fail	**Pass**			
Two sigma =	54214.02033			
10 % of Mean =	79370			
Rule 2 (Pass/Fail)	**Pass**			

mgH 7/20/11

HStampf 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
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Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Co-57**	**pCi/L**			
	Mixed Gamma N1	19090		Isotopic Abundance:	0.856
	Mixed Gamma N2	18820		Certificate Value (dps):	595.1
	Mixed Gamma N3	18830			
Mean Value (Counting) =	18913.33	pCi/L	**100.6592**	**Pass**	
Stdev =	153.080	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	18789.5	pCi/L			
Lower Limit =	18607.17433	pCi/L			
Upper Limit =	19219.49233	pCi/L			
Rule 1 Pass/Fail	**Pass**				
Two sigma =	306.1590001				
10 % of Mean =	1891.333333				
Rule 2 (Pass/Fail)	**Pass**				

mgh 7/20/11

MLstampt 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
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Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Ce-139	**pCi/L**
Mixed Gamma N1	28740
Mixed Gamma N2	29410
Mixed Gamma N3	27560

Isotopic Abundance: 0.8
Certificate Value (dps): 829.2

Mean Value (Counting) =	28570.00	pCi/L	**101.9865**	**Pass**
Stdev =	936.643	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	28013.5	pCi/L		
Lower Limit =	26696.71412	pCi/L		
Upper Limit =	30443.28588	pCi/L		
Rule 1 Pass/Fail	**Pass**			
Two sigma =	1873.285883			
10 % of Mean =	2857			
Rule 2 (Pass/Fail)	**Pass**			

MGH 7/20/11

Verification Rules

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MHStampt 7/20/11

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Hg-203	**pCi/L**
Mixed Gamma N1	66300
Mixed Gamma N2	68180
Mixed Gamma N3	64480

Isotopic Abundance: 0.8156
Certificate Value (dps): 1928

Mean Value (Counting) =	66320.00	pCi/L	**103.8046**	**Pass**
Stdev =	1850.081	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	63889.3	pCi/L		
Lower Limit =	62619.83784	pCi/L		
Upper Limit =	70020.16216	pCi/L		
Rule 1 Pass/Fail	**Pass**			
Two sigma =	3700.162159			
10 % of Mean =	6632			
Rule 2 (Pass/Fail)	**Pass**			

mgH 7/20/11

MStanopt 7/20/11

Verification Rules

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Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Sn-113	**pCi/L**
Mixed Gamma N1	49560
Mixed Gamma N2	49620
Mixed Gamma N3	48300

Isotopic Abundance: 0.6497
Certificate Value (dps): 1156

Mean Value (Counting) =	49160.00	pCi/L	**102.2277**	**Pass**
Stdev =	745.386	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	48088.7	pCi/L		
Lower Limit =	47669.22839	pCi/L		
Upper Limit =	50650.77161	pCi/L		
Rule 1 Pass/Fail	**Pass**			
Two sigma =	1490.771612			
10 % of Mean =	4916			
Rule 2 (Pass/Fail)	**Pass**			

mgH 7/20/11

Hoffamp 7/20/11

Verification Rules

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Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Cs-137**	**pCi/L**			
	Mixed Gamma N1	23710		Isotopic Abundance:	0.851
	Mixed Gamma N2	23950		Certificate Value (dps):	736.1
	Mixed Gamma N3	24040			
Mean Value (Counting) =	23900.00	pCi/L	**102.2333**	**Pass**	
Stdev =	170.587	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	23377.9	pCi/L			
Lower Limit =	23558.82556	pCi/L			
Upper Limit =	24241.17444	pCi/L			
Rule 1 Pass/Fail	**Fail**	***exception taken due to full recovery of standard**			
Two sigma =	341.1744422				
10 % of Mean =	2390				
Rule 2 (Pass/Fail)	**Pass**				

MJH 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
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Rule 3 = The determined mean value shall be within 5% of the certificate value.

MJ Stampf 7/20/11

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Y-88 (898)**	**pCi/L**			
	Mixed Gamma N1	82690		Isotopic Abundance:	0.937
	Mixed Gamma N2	81320		Certificate Value (dps):	2824
	Mixed Gamma N3	80940			
Mean Value (Counting) =	81650.00	pCi/L	**100.2381**	**Pass**	
Stdev =	920.489	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	81456.1	pCi/L			
Lower Limit =	79809.022	pCi/L			
Upper Limit =	83490.978	pCi/L			
Rule 1 Pass/Fail	**Pass**				
Two sigma =	1840.978001				
10 % of Mean =	8165				
Rule 2 (Pass/Fail)	**Pass**				

MGH 7/20/11

MLHampton 7/20/11

Verification Rules

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Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Co-60 (1173)	pCi/L
Mixed Gamma N1	38910
Mixed Gamma N2	39750
Mixed Gamma N3	38840

Isotopic Abundance: 0.9985
Certificate Value (dps): 1408

Mean Value (Counting) =	39166.67	pCi/L	**102.7694**	**Pass**
Stdev =	506.392	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	38111.2	pCi/L		
Lower Limit =	38153.88173	pCi/L		
Upper Limit =	40179.45161	pCi/L		
Rule 1 Pass/Fail	**Fail**	***exception taken due to full recovery of standard**		
Two sigma =	1012.784939			
10 % of Mean =	3916.666667			
Rule 2 (Pass/Fail)	**Pass**			

mgH
7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

MJStamper
7/20/11

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Co-60 (1332.50)	**pCi/L**
Mixed Gamma N1	38940
Mixed Gamma N2	40200
Mixed Gamma N3	39150

Isotopic Abundance: 0.9998
Certificate Value (dps): 1408

Mean Value (Counting) =	39430.00	pCi/L	**103.595**	**Pass**
Stdev =	675.056	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	38061.7	pCi/L		
Lower Limit =	38079.88889	pCi/L		
Upper Limit =	40780.11111	pCi/L		
Rule 1 Pass/Fail	**Fail**	***exception taken due to full recovery of standard**		
Two sigma =	1350.111107			
10 % of Mean =	3943			
Rule 2 (Pass/Fail)	**Pass**			

mgh
7/20/11

M Stamps
7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Y-88 (1836.1)	pCi/L
Mixed Gamma N1	82870
Mixed Gamma N2	83080
Mixed Gamma N3	84640

Isotopic Abundance: 0.992
Certificate Value (dps): 2989

Mean Value (Counting) =	83530.00	pCi/L	102.5723	**Pass**
Stdev =	967.006	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	81435.3	pCi/L		
Lower Limit =	81595.98862	pCi/L		
Upper Limit =	85464.01138	pCi/L		
Rule 1 Pass/Fail	**Fail**	***exception taken due to full recovery of standard**		
Two sigma =	1934.011375			
10 % of Mean =	8353			
Rule 2 (Pass/Fail)	**Pass**			

mgH 7/20/11

MHampr 7/20/11

Verification Rules

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Rule 3 = The determined mean value shall be within 5% of the certificate value.

Standard Logbook

Serial ID:	1556	**Open/Reference Date:**	01-APR-11	**Aliquot :**	1 mL
Name:	Mixed Gamma LCS CAN	**Received:**	01-APR-11	**Density :**	Hand Calculated
Type:	Source Material	**Expires:**	01-APR-37	**Lot Number :**	84680-278
Employee:	Maggie Stamps	**Verified:**	14-JUL-11		
Supplier:	Eckert & Zeigler Analytics				
Description:	84680-278				
Comments:	None				

Analyte	Concentration	Analyte	Concentration
Americium-241	125983.3 dpm/mL	Cesium-137	51898.9 dpm/mL
Cobalt-60	84496.9 dpm/mL		

Runlogs

Instrument Run Log

Instrument Type: GAMMA SPECTROMETER **Batch ID: 2636542**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
674299001	SAMPLE	RXF2	GAM07	JUL-30-24 11:13:06	DONE	CAN	23-JUL-24 00:00
674299002	SAMPLE	RXF2	GAM08	JUL-30-24 11:13:34	DONE	CAN	13-FEB-24 00:00
674299003	SAMPLE	RXF2	GAM10	JUL-30-24 11:14:02	DONE	CAN	14-JUN-24 00:00
674299004	SAMPLE	RXF2	GAM12	JUL-30-24 11:14:26	DONE	CAN	11-OCT-23 00:00
674299005	SAMPLE	RXF2	GAM16	JUL-30-24 11:14:57	DONE	CAN	14-NOV-23 00:00
674299006	SAMPLE	RXF2	GAM19	JUL-30-24 11:15:37	DONE	CAN	04-DEC-23 00:00
674299007	SAMPLE	RXF2	GAM20	JUL-30-24 11:16:04	DONE	CAN	19-JUN-24 00:00
674299008	SAMPLE	RXF2	GAM21	JUL-30-24 11:16:32	DONE	CAN	08-JUL-24 00:00
674299009	SAMPLE	RXF2	GAM22	JUL-30-24 11:17:17	DONE	CAN	25-JAN-24 00:00
674299010	SAMPLE	RXF2	GAM23	JUL-30-24 11:17:40	DONE	CAN	06-SEP-23 00:00
674299011	SAMPLE	RXF2	GAM24	JUL-30-24 11:18:49	DONE	CAN	24-JUN-24 00:00
674299012	SAMPLE	RXF2	GAM27	JUL-30-24 11:19:15	DONE	CAN	09-JUL-24 00:00
674299013	SAMPLE	RXF2	GAM28	JUL-30-24 11:19:43	DONE	CAN	19-MAR-24 00:00
674299014	SAMPLE	RXF2	GAM30	JUL-30-24 11:20:20	DONE	CAN	21-MAY-24 00:00
674299015	SAMPLE	RXF2	GAM40	JUL-30-24 11:20:47	DONE	CAN	31-OCT-23 00:00
674299016	SAMPLE	RXF2	GAM46	JUL-30-24 11:21:37	DONE	CAN	26-SEP-23 00:00
674299017	SAMPLE	RXF2	GAM50	JUL-30-24 11:22:06	DONE	CAN	09-JUL-24 00:00
674299018	SAMPLE	RXF2	GAM52	JUL-30-24 11:22:31	DONE	CAN	01-SEP-23 00:00
674299019	SAMPLE	RXF2	GAM05	JUL-30-24 13:37:44	DONE	CAN	16-AUG-23 00:00
674299020	SAMPLE	RXF2	GAM06	JUL-30-24 13:38:07	DONE	CAN	25-SEP-23 00:00
1205781343	MB	RXF2	GAM07	JUL-30-24 13:38:47	DONE	CAN	23-JUL-24 00:00
1205781344	DUP	RXF2	GAM08	JUL-30-24 13:39:20	DONE	CAN	13-FEB-24 00:00
1205781345	LCS	RXF2	GAM10	JUL-30-24 13:39:53	DONE	CAN	14-JUN-24 00:00

Instrument Run Log

Instrument Type: GAMMA SPECTROMETER **Batch ID: 2636543**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
674299021	SAMPLE	MXR1	GAM22	JUL-31-24 14:30:48	DONE	CAN	25-JAN-24 00:00
674299022	SAMPLE	MXR1	GAM01	JUL-31-24 15:04:33	DONE	CAN	05-JUN-24 00:00
674299023	SAMPLE	MXR1	GAM02	JUL-31-24 15:04:59	DONE	CAN	13-SEP-23 00:00
674299024	SAMPLE	MXR1	GAM04	JUL-31-24 16:09:00	DONE	CAN	13-DEC-23 00:00
674299025	SAMPLE	MXR1	GAM05	JUL-31-24 16:09:27	DUSE	CAN	16-AUG-23 00:00
674299026	SAMPLE	MXR1	GAM06	JUL-31-24 16:09:56	DONE	CAN	25-SEP-23 00:00
674299027	SAMPLE	MXR1	GAM08	JUL-31-24 16:10:20	DONE	CAN	13-FEB-24 00:00
674299028	SAMPLE	MXR1	GAM10	JUL-31-24 16:10:48	DONE	CAN	14-JUN-24 00:00
674299029	SAMPLE	MXR1	GAM12	JUL-31-24 16:11:11	DONE	CAN	11-OCT-23 00:00
674299030	SAMPLE	MXR1	GAM16	JUL-31-24 16:11:34	DONE	CAN	14-NOV-23 00:00
674299031	SAMPLE	MXR1	GAM18	JUL-31-24 16:12:14	DONE	CAN	11-JUN-24 00:00
674299032	SAMPLE	MXR1	GAM19	JUL-31-24 16:12:36	DONE	CAN	04-DEC-23 00:00
674299033	SAMPLE	MXR1	GAM20	JUL-31-24 16:12:58	DONE	CAN	19-JUN-24 00:00
674299034	SAMPLE	MXR1	GAM21	JUL-31-24 16:13:25	DONE	CAN	08-JUL-24 00:00
674299035	SAMPLE	MXR1	GAM22	JUL-31-24 16:13:52	DONE	CAN	25-JAN-24 00:00
674299036	SAMPLE	MXR1	GAM23	JUL-31-24 16:14:14	DONE	CAN	06-SEP-23 00:00
674299037	SAMPLE	MXR1	GAM24	JUL-31-24 16:14:36	DONE	CAN	24-JUN-24 00:00
1205781346	MB	MXR1	GAM27	JUL-31-24 16:15:08	DONE	CAN	09-JUL-24 00:00
1205781347	DUP	MXR1	GAM28	JUL-31-24 16:15:47	DONE	CAN	19-MAR-24 00:00
1205781348	LCS	MXR1	GAM30	JUL-31-24 16:16:29	DUSE	CAN	21-MAY-24 00:00
674299025	SAMPLE	MXR1	GAM06	AUG-01-24 10:04:51	DONE	CAN	25-SEP-23 00:00
1205781348	LCS	MXR1	GAM07	AUG-01-24 10:05:23	DONE	CAN	23-JUL-24 00:00

THE MJW COMPANIES

Radiological Consulting Professionals and Expert Technical Services

Gamma Walkover Survey And Associated Sampling Report

For

3821 RIVER ROAD, Inc.
3821 River Road
TONAWANDA, NEW YORK 14150

Prepared for:

INVENTUM ENGINEERING
441 CARLISLE DRIVE
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By:

MJW CORPORATION
RADIATION CONSULTING PROFESSIONALS

15 Hazelwood Dr., Suite 112
Amherst, NY, 14228

May 29, 2025

MJW Project No. 25.1007.2

1.0 Introduction

Following the New York State Department of Environmental Conservation (NYSDEC) approval of the Radiological Work Plan (RWP) on February 11, 2025, (Attachment 6) MJW was contracted to perform additional investigation activities in accordance with the approved RWP at the 3821 River Road Property, henceforth referred to as the Site.

The Brownfield Cleanup Program (BCP) Site is located at 3821 River Road, Tonawanda, New York 14150 and was operated as a polyethylene research and development and manufacturing facility from the 1950s through 1982, before becoming an administrative and storage facility for the Tonawanda Coke Corporation until 2018. MJW mobilized to the site in October 2023 and conducted a GPS-enabled Gamma Walkover Survey after the identification of potential TENORM Slag on adjacent properties. In accordance with the February 11, 2025, approval letter, NYSDEC was notified 5 days in advance of the start of field activities and attended portions of the sampling effort

The Site is defined by the structures being decommissioned and the various fills used as subgrade and grade for past industrial activities. Areas of native soils are present on the site, with a small native wetland serving as an inaccessible area.

Under the directive of Inventum Engineering P.C. (Inventum) and in compliance with the NYSDEC-approved RWP, MJW was instructed to provide a GPS-based overland gamma survey "walkover" of the Site to assess surface and near-surface radiological conditions. MJW performed these activities over two days, on March 31 and April 1, 2025. Immediately following the tabulation of walkover results, sampling activities were conducted on April 08, 2025.

2.0 Methodology

A GPS-assisted gamma walkover of the Site was performed with a Bluetooth-enabled Ludlum model 3000 paired with a 44-10 (2"x2") NaI gamma detector (Attachment 2). The instrument and a sub-meter GPS unit were paired with a mobile data collection device. The meter, detector, and other electronics were mounted on a cart to ensure consistent and reproducible survey geometry and data.

Data was collected along transects that ran north to south and east to west throughout the Site. The transects were spaced out at varying distances of 5-15 meters. These transects were generated prior to fieldwork using QGIS. Transects were displayed in the data collection device to aid in consistency. Physical barriers on the Site included buildings, concrete piles, fencing, and wetlands. These obstructions contributed to any missing data or transects that were collected off-line. The data collection device recorded a gamma

measurement every second, and each measurement was spaced one meter from the previous measurement.

Local area background data had previously been collected at the nearby Erie County Water Authority property at 3750 River Road in Tonawanda, NY. The background scan location is west of the Site, adjacent to the Niagara River, and has similar soils and geology with no known radiological impacts.

Nine (9) soil samples were collected using the gamma walkover data. The RWP stated that fourteen (14) samples would be collected; the reduction in sample number was made after reviewing the gamma walkover data. Five (5) biased samples were collected, and two (2) unbiased samples were collected in and around the biased areas but randomly selected. Two (2) completely random unbiased samples were collected, and three (3) field duplicates were generated.

Samples were collected from test pits. Before excavation commenced at each test pit, a 1-minute scaler count was taken utilizing a Ludlum 44-10 (NaI 2x2) paired with a Ludlum 2241-2 ratemeter. Following the scan, the test pit would be excavated from between 1-4 feet, depending on subsurface conditions. Following the removal of soil and subsurface materials, a 500-gram sample was pulled and placed within a sample jar. The sample jar was then scanned by placing the Ludlum 44-10 on top of the jar with no cover, and a scaler 1-minute count was recorded. All of this information is recorded in Attachment 1, Field Sample Log Sheets. The sheets record the sample ID (pre-determined), time at which the sample was placed in the jar, the relevant sample information for consistency with Attachment 3 (the lab Chain-of-Custody), the gross surface reading (1-min on ground scaler count) and then the notes section provides a more in-depth description of the sample material and the on-jar scaler count.

All 12 collected samples were analyzed with gamma-spectroscopy (DOE HASL 300, 4.5.2.3/Ga-01-R). Three (3) field duplicates were collected; three (3) lab duplicates were also analyzed. Four (4) samples were analyzed by alpha-spectroscopy for isotopic Uranium and Thorium (DOE EML HASL-300, U-02-RC Modified, DOE EML HASL-300, Th-01-RC Modified). This additional analysis provides confirmatory results for the broader gamma-spectroscopy performed on all samples. All samples were sent to GEL Labs facilities in Charleston, South Carolina, under a valid Chain of Custody (COC).

3.0 Data Analysis

3.1 Gamma Walkover

The area background and survey data were statistically analyzed with QGIS, software designed to assist in spatial data analysis. MJW compiled Table 1 below, which highlights

the statistical summary of data, and Figures 2 and 3, which map the GPS-collected survey data with sample locations.

Table 1: Gamma Walkover Statistics

Area Background Gamma Data	
Number of Data Points	614
Area Background Mean	8393
1.5x Area Background Mean	12,589
Site Gamma Data	
Number of Data Points	23,432
# > 1.5x ABKG	122
% > 1.5x ABKG	0.52%

For area background data, a total of 614 data points were considered, exhibiting a mean count rate of 8393 +/- 400 CPM. For the survey area data, a total of 23,432 points were reviewed and categorized according to relevant area background data.

The 122 data points exceeding the 1.5x area background mean are primarily clustered around 2 slightly elevated field readings area (marked green in Figure 3). The first of these is characterized by a tarp covering some rubble/debris to the west, this was the site of a previous test-pitting investigation where elevated readings were expected. Due to the removability of this spot, MJW coordinated with Inventum staff to cordon off the area with orange fencing to limit any possible spreading of radioactive material (Figures 1A - 1B). Administrative controls in the form of site-wide notifications were also issued. The second of these slightly elevated field reading areas is found within the ground beneath a circular concrete slab to the east. The second of these is unable to be easily accessed by workers, and site management is aware of the location.

3.2 Samples:

Twelve (12) collected samples were sent to GEL Labs for analysis. One (1) sample was recounted due to low carrier/tracer yield while one (1) other sample along with its duplicate were recounted due to high relative error ratio. There are no other recounts or issues with QA/QC.

4.0 Results

4.1 Gamma Walkover Results

The data collected from the Site walkover are color-coded to indicate recorded measurements as:

Blue	< 1.5x ABKG
Green	> 1.5x ABKG

The segregation criteria used for the various measurements align with the DMM-5 policy for screening surveys to verify the presence of potential radiological contamination.

4.2 Sample Results

Table 2 below summarizes relevant information from the sample results. The average concentrations for Ra-226 in all samples is below the 5.0 pCi/g limit identified within DMM-5 for TENORM (Background-comparable) material. No samples exceeded or had the potential to exceed the 5.0 pCi/g DMM-5 limit for TENORM Background-Comparable. The maximum reported Ra-226 concentration is 2.67 pCi/g for sample 040825-3821INV-007. Thus, no samples met the criteria within DMM-5 for TENORM Fill (greater than 5.0 pCi/g of Ra-226) or TENORM Waste (greater than 15.0 pCi/g of Ra-226).

4.3 Sample and Gamma Count Association

Of the 23,432 gamma data points collected from the GPS walkover, only 0.52% of these values were greater than the 1.5x area background mean. Samples were taken at and around those areas (Figure 4) with counts above 1.5x ABKG, but none of the sample results exceeded the DEC's (DMM-5) Ra-226 concentration limit of 5.0pCi/g for TENORM (Background-comparable).

Historical site conditions and previous radiological investigations support the results of these surveys and sampling events. The majority of the site shows no indication of TENORM in any form, but two (2) areas on the Site are documented as containing slag. The presence of slag, TENORM, or other radiologically elevated materials can be delineated from the background using field instrumentation.

Table 2: Nuclide Information Table

Nuclide Information Table										
Sample ID[1] ↓							GS[3]		AS[3]	
Sample Concentration (pCi/g) →	[Ac-228]	UNC[2]	[K-40]	UNC	[Ra-226]	UNC	[U-238]	UNC	[U-238]	UNC
040825-3821INV-001	1.17	0.361	16.1	1.96	1.46	0.241	U	U	NA	NA
040825-3821INV-002	0.974	0.282	15.8	1.65	1.11	0.163	U	U	0.983	0.524
040825-3821INV-003	UI	UI	10.8	1.86	0.97	0.179	U	U	NA	NA
040825-3821INV-004	0.659	0.269	7.01	1.23	0.742	0.146	U	U	NA	NA
040825-3821INV-005	0.928	0.246	5.56	1.01	0.765	0.137	1.79	2.24	NA	NA
040825-3821INV-006	0.929	0.303	6.02	1.29	1.00	0.228	U	U	NA	NA
040825-3821INV-007	1.69	0.485	6.11	1.21	2.67	0.321	4.90	2.71	1.95	0.712
040825-3821INV-001 Ran	0.886	0.371	7.45	1.37	0.726	0.197	U	U	NA	NA
040825-3821INV-002 Ran	0.592	0.345	5.49	1.57	1.59	0.285	U	U	0.862	0.427
040825-3821INV-002 Dup	0.935	0.426	16.8	2.39	1.26	0.213	UI	UI	NA	NA
040825-3821INV-007 Dup	1.54	0.408	5.77	1.27	2.51	0.324	U	U	NA	NA
040825-3821INV-004 Dup	0.292	0.240	5.14	1.18	0.555	0.172	UI	UI	NA	NA
Average Concentrations	**0.963**	**0.340**	**9.00**	**1.50**	**1.28**	**0.217**	**3.35**	**2.48**	**1.27**	**0.554**
1. Sample ID - Date(mmddyy) - Address(3821 River Rd) INV(Inventum) - Sample Number - Ran(Random Sample) - Dup(Field Duplicate)										
2. UNC - Counting Uncertainty										
3. GS - Y Spec, AS - α Spec										
4. U - Unidentified, UI - Gamma Spec Uncertain Identification										
5. NA - Not Analyzed										

5.0 Material Disposition and Future Use

No sample results were above the 5.0 pCi/g of Ra-226 limit for on-site material reuse. The average Ra-226 concentration of all Table 2 samples was 1.28 pCi/g with the highest sample result at 2.67 pCi/g. Gamma survey results indicate no material exceeding the 5.0 pCi/g limit, identifying a small amount of TENORM material where samples were taken.

Material below 5.0 pCi/g can be returned to the excavation/area of contamination following the NYSDEC representatives' approval of the proposed use and handling. An NYSDEC-approved TENORM Management Plan must govern reuse activities. If this material needs to be disposed of off-site, it must be disposed of out of state. If the material is not disturbed for site development or remediation of other contaminants, there is no requirement for remediation. MJW can assist with planning for future reuse and/or disposal of the subject material.

6.0 List of Attachments

Attachment 1. Field Sample Log Sheets
Attachment 2. Instrument Calibration Sheets
Attachment 3. GEL Chain of Custody Form
Attachment 4. GEL Lab Report SDG 719378
Attachment 5. NYSDEC DMM-5 DEC Program Policy
Attachment 6. Radiological Work Plan for 3821 River Road

Figures

Figure 1A. Western Elevated Area

Figure 1B. Western Elevated Area Fenced

Figure 2:

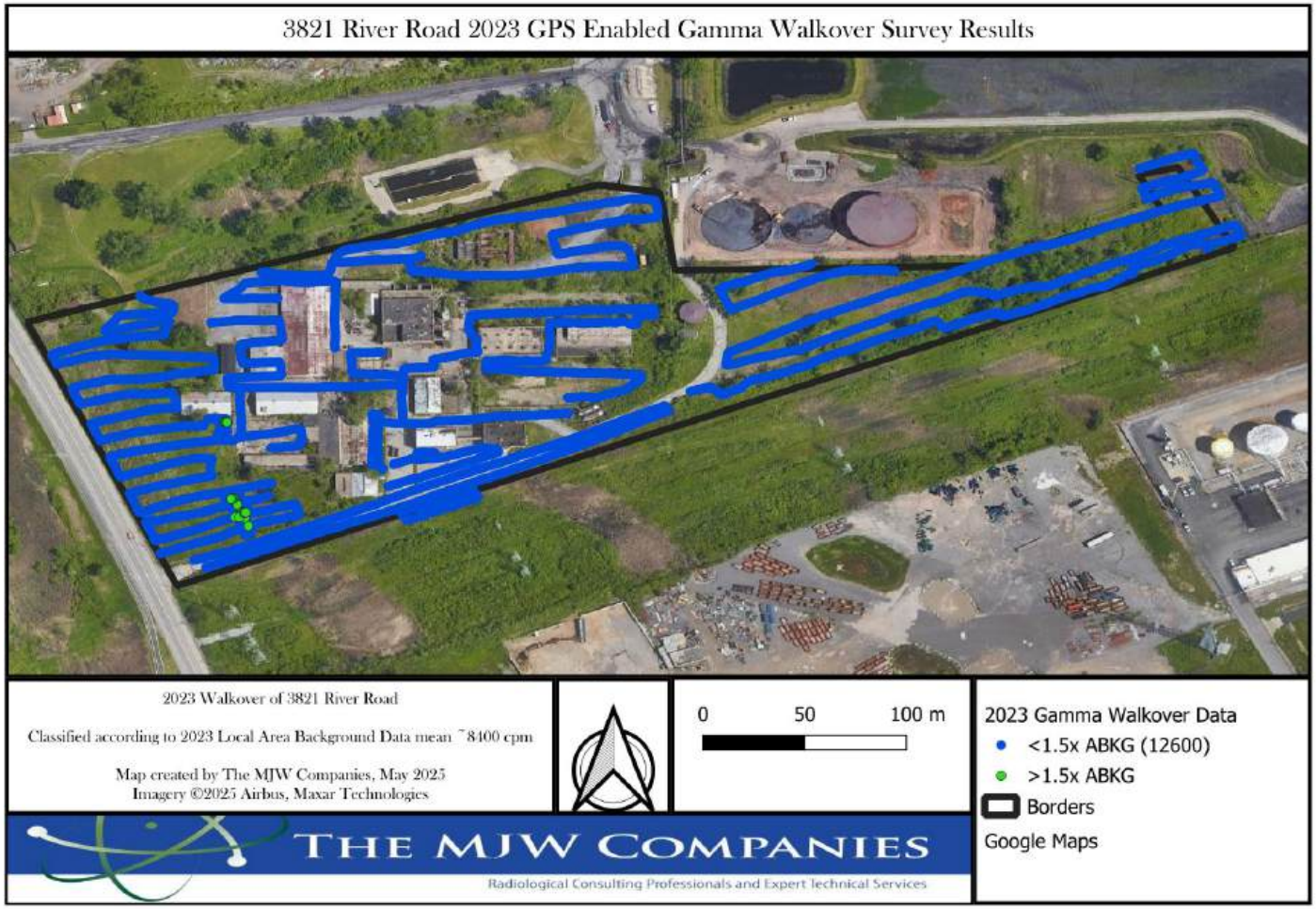

3821 River Road 2023 GPS Enabled Gamma Walkover Survey Results
2023 Walkover of 3821 River Road
Classified according to 2023 Local Area Background Data mean ~8400 cpm
Map created by The MJW Companies, May 2025
Imagery ©2025 Airbus, Maxar Technologies
0
50
100 m
2023 Gamma Walkover Data
<1.5x ABKG (12600)
>1.5x ABKG
Borders
Google Maps
THE MJW COMPANIES
Radiological Consulting Professionals and Expert technical Services

Figure 3:

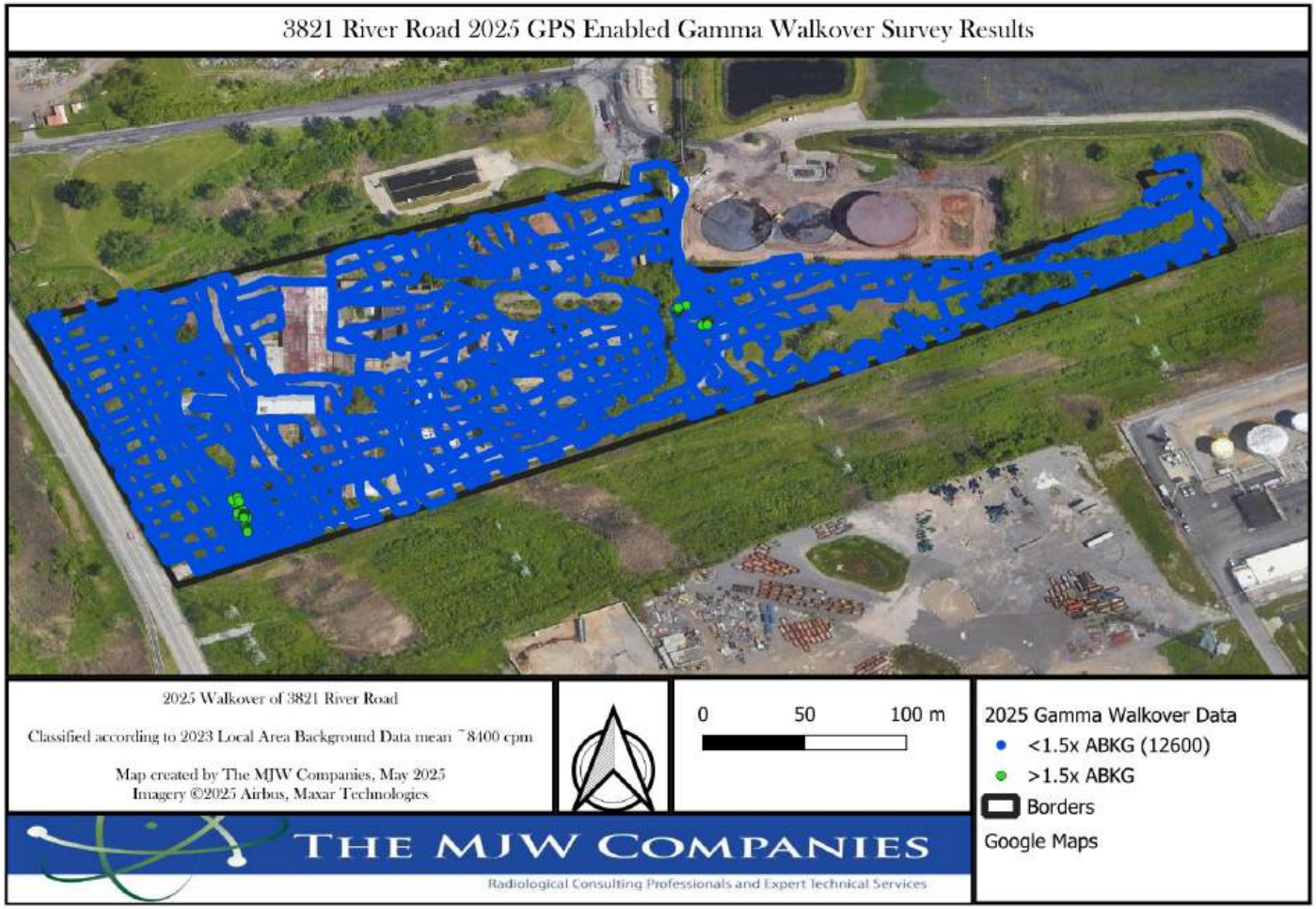
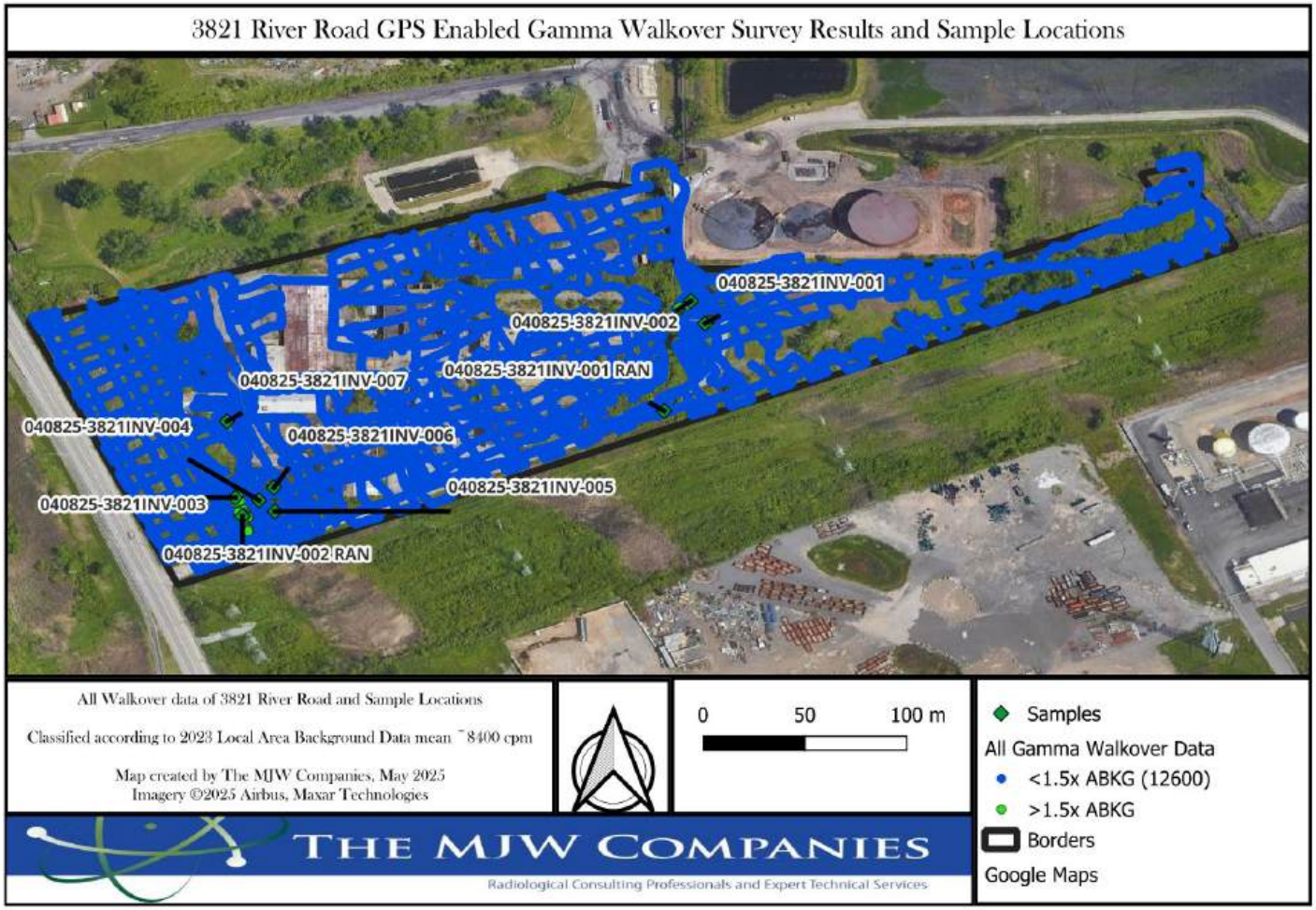

3821 River Road 2025 GPS Enabled Gamma Walkover Survey Results
2025 Walkover of 3821 River Road
Classified according to 2023 Local Area Background Data mean ~8400 cpm
Map created by The MJW Companies, May 2025
Imagery ©2025 Airbus, Maxar Technologies
0
50
100 m
2025 Gamma Walkover Data
<1.5x ABKG (12600)
>1.5x ABKG
Borders
Google Maps
THE MJW COMPANIES
Radiological Consulting Professionals and Expert Technical Services

Figure 4:


3821 River Road GPS Enabled Gamma Walkover Survey Results and Sample Locations
040825-3821INV-001
040825-3821INV-002
040825-3821INV-001 RAN
040825-3821INV-007
040825-3821INV-004
040825-3821INV-006
040825-3821INV-005
040825-3821INV-003
040825-3821INV-002 RAN
All Walkover data of 3821 River Road and Sample Locations
Classified according to 2023 Local Area Background Data mean ~8400 cpm
Map created by The MJW Companies, May 2025
Imagery ©2025 Airbus, Maxar Technologies
0
50
100 m
Samples
All Gamma Walkover Data
<1.5x ABKG (12600)
>1.5x ABKG
Borders
Google Maps
THE MJW COMPANIES
Radiological Consulting Professionals and Expert Technical Services

Attachment 1. Field Sample Log Sheets

Sample Log

Sample location/description: 3821 River Road Sampling						Location Coords: OSC logged				
Survey Date: 4/08/25			Weather Conditions: Cloudy			Surveyed By: PK & LA				Page: 1 of 1
Inst./Detector Model #			**Inst./Detector Serial #**			**Background**	**Units/Type**	**% Eff.**	**Nuclide**	**Cal. Due Date**
2241-2/44-10			262712/PR288422			5780	cpm γ	-	-	8/14/2025
N/A	N/A	N/A	N/A	N/A	N/A	N/A	µRem / hr γ	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	cpm α	N/A	N/A	N/A
Sample ID		**Time**	**Depth (feet)**		**Voume (oz.)**	**Sample Media (Soil/Sediment)**		**Sample Type (Comp/Grab)**		**2"x2" NaI Reading (gross cpm)**
040825-3821INV-001		09:10	1-2		16	Soil		Composite		11,000
										COC #:
040825-3821INV-002		09:18	1-2		16	Soil		Composite		11,800
										COC #:
040825-3821INV-003		09:25	1-2		16	Soil		Composite		9,600
										COC #:
040825-3821INV-004		09:35	1-2		16	Soil		Composite		5,800
										COC #:
040825-3821INV-005		09:45	1-2		16	Soil		Composite		5,800
										COC #:
040825-3821INV-006		09:58	1-2		16	Soil		Composite		7,000
										COC #:
040825-3821INV-007		10:08	1-2		16	Soil		Composite		13,000
										COC #:
040825-3821INV-001 Ran		10:14	1-2		16	Soil		Composite		11,000
										COC #:
040825-3821INV-002 Ran		10:20	1-2		16	Soil		Composite		12,000
										COC #:
040825-3821INV-002 Dup		09:18	1-2		16	Soil		Composite		11,800
										COC #:
040825-3821INV-007 Dup		10:08	1-2		16	Soil		Composite		13,000
										COC #:
040825-3821INV-004 Dup		09:35	1-2		16	Soil		Composite		5,800
										COC #:
Reviewed By: ___FS___Forest Shotak___ Date:__5/12/2025____										

Attachment 2. Instrument Calibration Sheets

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ACCREDITED
CERT # 4084.01

Customer: ENVIRONMENTAL RESTORATION GROUP — ORDER NO. 20490333/570477

Mfg. Ludlum Measurements, Inc. Model 3000 Serial No. 25020045

Mfg. Ludlum Measurements, Inc. Model 44-10 Serial No. PR357752

Cal. Date 12-Mar-25 Cal Due Date 12-Mar-26 Cal. Interval 1 Year Meterface 44-10 R

Check mark ✓ applies to applicable instr. and/or detector IAW mfg. spec. T. 74 °F RH 22 % Alt 699.8 mm Hg

☐ New Instrument Instrument Received ☐ Within Toler. +-10% ☐ 10-20% ☑ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☐ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☐ Geotropism
☑ Audio ck. ☑ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 4.4 VDC

☑ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 1000 V Input Sens. 10 mV Det. Oper. 1000 V at 10 mV Threshold Dial Ratio = mV

☑ HV Readout (2 points) Ref./Inst. 500 / 495 V Ref./Inst. 1500 / 1506 V

COMMENTS:

```
        Deadtime: 9 µSec   Firmware: 5LC-N44.4994
Calibration Constant: 537 e+8  Overload checked but not set.
     Primary Units: cpm    Pulser calibration performed without deadtime.
   Secondary Units: R/hr   Pulser calibration SCALER READOUT reflects 6 second count.
                           Alarms disabled.
                           Calibrated using 5' cable.
```

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING	RANGE MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Digital	5 mR/hr	OFF-SCALE	4.99 mR/hr				
Digital	1 mR/hr	|	1.02 |				
	800 µR/hr		831 µR/hr				
	200 µR/hr	3.91 mR/hr	193 |				

Range(s) Calibrated Electronically

Multimeter uncertainty within 1.4% of reading. Gamma uncertainty within 5.6% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.2% of reading

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING		REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Digital Readout	800K cpm	799 kcpm	799 kcpm	Scaler	800K cpm	79.9K	79.9K
	200K cpm	200 |	200 |		200K cpm	20.0K	20.0K
	80K cpm	79.9 |	79.9 |		80K cpm	7.99K	7.99K
	20K cpm	20.0 |	20.0 |		20K cpm	2.00K	2.00K
	8K cpm	8.00 |	8.00 |		8K cpm	800	800
	2K cpm	2.01 |	2.01 |		2K cpm	201	201
	800 cpm	797 cpm	797 cpm		800 cpm	80	80
	200 cpm	201 |	201 |		200 cpm	20	20

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521 ☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☑ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982 ☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N ☐ Beta S/N ☑ Other Am241(~0.66µCi)

☑ m 500 S/N 251106 ☐ Oscilloscope S/N ☑ Multimeter S/N 15060230

Calibrator James McBeth James McBeth Title Calibrator Date 12 MAR 25

QC'd By [signature] Title Final QC Date 13 Mar 25

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

FORM C3000 10/30/2024 Page 1 of 2

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

Order #: 20490333/570477

Customer: ENVIRONMENTAL RESTORATION GROUP

Detector: 44-10 **Serial No.:** PR357752

Instrument: Model 3000 **Serial No.:** 25020045

BKG Time: 6

Distance: Surface

Selected HV: 1,000

Date: 12 MAR25

Notes: Performed using 5' cable.

Signature: James Mitchell

Channel(s)

Name	Threshold
Channel 1	10 mV

Source(s)

Name	ID	Activity	Time	Type
Am241		0.66 µCi	6	γ

High Voltage	Background	Am241
	Reading	Reading
700	262	10,281
750	274	12,141
800	277	12,548
850	330	12,641
900	291	12,491
950	326	12,462
- 1,000	409	12,464
1,050	378	12,541
1,100	492	12,344
1,150	504	12,771
1,200	542	12,880
1,250	877	13,740
1,300	927	14,780
1,350	2,266	20,233

Dev

SN	25020045
Mdl	Model 3000
Aud Lvl	Single
Sleep	0
Setup Prtct	Normal
Rate Reset Btn	Off
Temp	54
LB	0
Conv R To Sv	0.0106
Fw	5LC-N44.4994
V Bat	6.322

RTC

Day	12
Mo	3
Hr	11
Mins	25
Sec	16
Yr	2025

Ext 1

Meas

Cur	19.5859

Cnt

Adj Result	0
Audio Mode	Off
Display Mode	Timer
Raw Result	0

Btn

Handle

Cnt Map 1	Take Log
Cnt Map 2	Do Nothing
Cnt Map 3	Do Nothing
Rate Map 1	Take Log
Rate Map 2	Do Nothing
Rate Map 3	Do Nothing

BklThr

Sensitivity	Low

High

Light Turn Off	0
Light Turn On	0

Low

Light Turn Off	0
Light Turn On	0

AuxCom

Crypto En	Off
Enable	On
Mode	LMI Direct
Write Prtct	Off

AutoMode

Interval	1

Pwr

Auto Off Tm	0
Mode	On At Boot

DetMem 1

Mdl	44-10
SN	PR357752
Aud Sigma	Off
Count Tm	60
HV	1000
Op Mode	Rate/Max/Count
Over Cur	500

Ch 1

CPS Offset	0
DTC 1	9E-06
DTC 2	0
Eff	15
LO Cnt Tm	60
R Cal Const	5.37E+10
Thr	0.01

Response

Rate	Fast
Time	4

Unit 1

Count

Alrm 1	0
Alrm 2	0
Min Exp	000E0
Unit	counts

Rate

Alrm 1	0
Alrm 2	0
Max Val	999000
Min Exp	000E-2
Unit	cpm

Unit 2

Count

Alrm 1	0
Alrm 2	0
Min Exp	000E0
Unit	counts

Rate

Alrm 1	0
Alrm 2	0
Max Val	0.007
Min Exp	000E-8
Unit	R/h

LOG

ENABLE	0
MODE	1
NOTES	
USER	

AUTO

TM	60

NUM

MAX	1000
REC	0

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 795[illegible]

ilac-MRA ACCREDITED
CERT # 4084.01

Customer MJW TECHNICAL SERVICES ORDER NO. 20475709/560565

Mfg. Ludlum Measurements, Inc. Model 2241-2 Serial No. 262712

Mfg. Ludlum Measurements, Inc. Model 44-10 Serial No. PR 288422

Cal. Date 14-Aug-24 Cal Due Date 14-Aug-25 Cal. Interval 1 Year Meterface 44-10

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 74 °F RH 40 % Alt 706.6 mm Hg

☐ New Instrument Instrument Received ☒ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☒ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation
☑ Audio ck. ☑ Alarm Setting ck. ☑ Batt. ck.
☒ Calibrated in accordance with LMI SOP 14.8 ☒ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set Comments V Input Sens. Comments mV Det. Oper. Comments V at Comments mV Threshold Dial Ratio = mV

COMMENTS:

	Det 1 [44-10]	Det 2	
Deadtime:	0 µSec	0 µSec	Firmware: P-0910
Calibration Constant:	100e-2	100e-2	Instrument readings reflect Det 1
Ratemeter Alarm:	300K cpm	300K cpm	Overload checked but not set
Ratemeter Alert:	200K cpm	200K cpm	Ratemeter & Scaler Readouts performed without deadtime
High Voltage:	800 V	900 V	Calibrated using 5' cable
Input Sensitivity:	10 mV	36 mV	

Efficiencies: [Background 6320 cpm]	Size	Count	4π Efficiency
Am241 [S# 1895-65-1]	23,781 dpm	9066 cpm	11.54%
Cs137 [S# 2500754]	129,358 dpm	33,185 cpm	20.76%

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
Digital			
Digital			

All Range(s) Calibrated Electronically

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Ratemeter Readout	800K cpm	799 K cpm	799 K cpm
	200K cpm	199	199
	80K cpm	79.9	79.9
	20K cpm	19.9	19.9
	8K cpm	8.00	8.00
	2K cpm	1.99 K	1.99 K
	800 cpm	800	800
	200 cpm	200	200
	80 cpm	80.0	80.0
	20 cpm	20.0	20.0

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Scaler Readout	800K cpm	79960 (0)	79960 (0)
	200K cpm	19983	19983
	80K cpm	7996	7996
	20K cpm	1998	1998
	8K cpm	800	800
	2K cpm	200	200
	800 cpm	80	80
	200 cpm	20	20
	80 cpm	8	8
	20 cpm	2	2

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521 ☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ G112 ☐ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982 ☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N ☐ Beta S/N ☐ Other

☑ m 500 S/N 352881 ☐ Oscilloscope S/N ☑ Multimeter S/N 57940402

Calibrator Chad D. Aaron Title Calibrator Date 14 APR 24

QC'd By Title Final QC Date 14 Apr 24

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

www.ludlums.com

Designer and Manufacturer
of
Scientific and Industrial
Instruments

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

Bench Test Data For Detector

Detector 44-10 Serial No. PR 288422

Customer MJW TECHNICAL SERVICES ORDER NO. 20475709/560565

Counter 2241-2 Serial No. 262712 Counter Input Sensitivity ~~Comments~~ CDA 10 mV

Count Time 6 SECOND Distance Source to Detector SURFACE

Other

High Voltage	Background	Isotope Am 241 Size 0.72 µCi	Isotope Size	Isotope Size	Isotope Size
700	616	13239			
750	574	13576			
800 *	632	13536			
850	683	13621			
900	734	13860			

Signature Chad D. Aaron CDA Date 14 AUG 24

• *Serving The Nuclear Industry Since 1962* •

Attachment 3. GEL Chain of Custody Form

Page: 1 of 2
Project #
GEL Quote #:
COC Number [1]:
PO Number:

GEL Laboratories LLC
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

Chain of Custody and Analytical Request

GEL Work Order Number: **GEL Project Manager:**

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: MJW FOR INVENTUM Phone # 716-631-8291
Project/Site Name: 3821 RIVER RD. TONAWANDA, NY 14150 Fax #
Address: 15 HAZELWOOD DR. SUITE 12 AMHERST, NY 14228
Collected By: LUKE ALEXANDER Send Results To: abartels@mjwcorp.com

Sample Analysis Requested [5] (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date/time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code [2]	Field Filtered [3]	Sample Matrix [4]	Radioactive (If yes, please supply isotopic info.)	(7) Known or possible Hazards	Total number of containers	GAMMA SPEC	ALPHA SPEC U	ALPHA SPEC Th							<-- Preservative Type (6) Comments Note: extra sample is required for sample specific QC
040825-3821INV-001	04-08-25	0910	N	N	SO	N		1	x									ALPHA SPEC FOR
040825-3821INV-002	04-08-25	0918	N	N	SO	N		1	x	x	x							U-238, U-235
040825-3821INV-003	04-08-25	0925	N	N	SO	N		1	x									Th-232 AND Th-230
040825-3821INV-004	04-08-25	0935	N	N	SO	N		1	x									
040825-3821INV-005	04-08-25	0945	N	N	SO	N		1	x									
040825-3821INV-006	04-08-25	0958	N	N	SO	N		1	x									
040825-3821INV-007	04-08-25	1008	N	N	SO	N		1	x	x	x							
040825-3821INV-001RAN	04-08-25	1014	N	N	SO	N		1	x									
040825-3821INV-002 RAN	04-08-25	1020	N	N	SO	N		1	x	x	x							
040825-3821INV-002-DUP	04-08-25	0918	N	N	SO	N		1	x									

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1	4/9/25	1235	1		
2			2		
3			3		

TAT Requested: Normal: X Rush: ____ Specify: _____ (Subject to Surcharge)

Fax Results: [ ] Yes [ ] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [ ] Level 4

Additional Remarks:

For Lab Receiving Use Only: *Custody Seal Intact?* [ ] *Yes* [ ] *No* ***Cooler Temp:*** ____ °C

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

Sample Collection Time Zone: [X] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other:

1.) Chain of Custody Number = Client Determined

2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite

3.) Field Filtered: For liquid matrices, indicate with a **- Y -** for yes the sample was field filtered or **- N -** for sample was not field filtered

4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, **SS**=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* - **3**, *6010B/7470A* - **1**)

6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

7.) **KNOWN OR POSSIBLE HAZARDS**

RCRA Metals
As = Arsenic **Hg**= Mercury
Ba = Barium **Se**= Selenium
Cd = Cadmium **Ag**= Silver
Cr = Chromium **MR**= Misc. RCRA metals
Pb = Lead

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

TSCA Regulated
PCB = Polychlorinated biphenyls

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

Please provide any additional details below regarding handling and/or disposal concerns. *(i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)*

Page: 2 of 2
Project #
GEL Quote #:
COC Number (1):
PO Number:

GEL Laboratories LLC
gel.com
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

Chain of Custody and Analytical Request

GEL Work Order Number: **GEL Project Manager:**

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: MJW FOR INVENTUM Phone # 716-631-8291
Project/Site Name: 3821 RIVER RD. TONAWANDA, NY 14150 Fax #
Address: 15 HAZELWOOD DR. SUITE 112 AMHERST, NY 14228
Collected By: LUKE ALEXANDER Send Results To: abartels@mjwcorp.com

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID * For composites - indicate start and stop date/time	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Radioactive (If yes, please supply isotopic info.)	(7) Known or possible Hazards	Total number of containers	GAMMA SPEC	ALPHA SPEC U	ALPHA SPEC Th							<-- Preservative Type (6)
040825-3821INV-007-DUP	04-08-25	1008	N	N	SO	N		1	x									ALPHA SPEC FOR
040825-3821INV-004-DUP	04-08-25	0935	N	N	SO	N		1	x									U-238, U-235, Th-232 +
																		AND Th-230

Comments
Note: extra sample is required for sample specific QC

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 [signature]	4/9/25	1235	1		
2			2		
3			3		

TAT Requested: Normal: X Rush: ____ Specify: _____ (Subject to Surcharge)

Fax Results: [ ] Yes [ ] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [ ] Level 4

Additional Remarks:

For Lab Receiving Use Only: *Custody Seal Intact?* [ ] *Yes* [ ] *No* ***Cooler Temp:*** ____ °C

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

***Sample Collection Time Zone*:** [X] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other:

1.) Chain of Custody Number = Client Determined

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Pb = Lead

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

TSCA Regulated
PCB = Polychlorinated biphenyls

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

Please provide any additional details below regarding handling and/or disposal concerns. *(i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)*

Attachment 4. GEL Lab Report SDG 719378

GEL Laboratories LLC
a member of The GEL Group INC

2040 Savage Road | Charleston, SC 29407
843.556.8171

gel.com

May 12, 2025

Alex Bartels
MJW Technical Services
15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Re: Routine Analytical
Work Order: 719378

Dear Alex Bartels:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 14, 2025. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4422.

Sincerely,

A. Melendrez

Adrian Melendrez for
Jacob Crook
Project Manager

Purchase Order: GELP24-1624
Enclosures

MJW Technical Services
Routine Analytical
SDG: 719378

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RAD Standards Traceability.....557

Runlogs.....574

Case Narrative

Case Narrative
for
MJW Technical Services
SDG: 719378

May 12, 2025

Laboratory Identification:

GEL Laboratories, LLC.

Summary

Sample Receipt The samples arrived at GEL Laboratories, LLC., Charleston, South Carolina on April 14, 2025 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

Laboratory ID	Client ID
719378001	040825-3821INV-001
719378002	040825-3821INV-002
719378003	040825-3821INV-003
719378004	040825-3821INV-004
719378005	040825-3821INV-005
719378006	040825-3821INV-006
719378007	040825-3821INV-007
719378008	040825-3821INV-001 RAN
719378009	040825-3821INV-002 RAN
719378010	040825-3821INV-002 DUP
719378011	040825-3821INV-007 DUP
719378012	040825-3821INV-004 DUP

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Radiochemistry.

A. Melendrez

Adrian Melendrez for
Jacob Crook
Project Manager

List of current GEL Certifications as of 12 May 2025

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-00651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	525-24-281-19660
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	KY90129
Kentucky Wastewater	KY90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2023019
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	NV-C24-00175
New Hampshire NELAP	205424
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2023-152
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235
Utah NELAP	SC000122024-45
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Chain of Custody and Supporting Documentation

Page: 1 of 2
Project #
GEL Quote #:
COC Number (1):
PO Number:

GEL Laboratories LLC
gel.com
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

Chain of Custody and Analytical Request

GEL Work Order Number: **GEL Project Manager:**

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

719378

Client Name: MJW FOR INVENTUM Phone # 716-631-8291
Project/Site Name: 3821 RIVER RD. TONAWANDA, NY 14150 Fax #
Address: 15 HAZELWOOD DR. SUITE 12 AMHERST, NY 14228
Collected By: LUKE ALEXANDER Send Results To: abartels@mjwcorp.com

SDG: 719378

Page 1 of 2

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date/time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Radioactive (If yes, please supply isotopic info.)	(7) Known or possible Hazards	Total number of containers	GAMMA SPEC	ALPHA SPEC U	ALPHA SPEC Th								<-- Preservative Type (6)
040825-3821INV-001	04-08-25	0910	N	N	SO	N		1	x										ALPHA SPEC FOR
040825-3821INV-002	04-08-25	0918	N	N	SO	N		1	x	x	x								U-238, U-235
040825-3821INV-003	04-08-25	0925	N	N	SO	N		1	x										Th-232 AND Th-230
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040825-3821INV-005	04-05-25	0945	N	N	SO	N		1	x										
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040825-3821INV-007	04-08-25	1008	N	N	SO	N		1	x	x	x								
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040825-3821INV-002 RAN	04-08-25	1020	N	N	SO	N		1	x	x	x								
040825-3821INV-002-DUP	04-08-25	0918	N	N	SO	N		1	x										

Comments
Note: extra sample is required for sample specific QC

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 [signature]	4/9/25	1235	1 Thyasia Tutu	4/14/25	1330
2			2		
3			3		

TAT Requested: Normal: X **Rush:** ____ **Specify:** ____ **(Subject to Surcharge)**

Fax Results: [ ] Yes [ ] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [ ] Level 4

Additional Remarks:

For Lab Receiving Use Only: *Custody Seal Intact?* [ ] *Yes* [ ] *No* ***Cooler Temp:*** 1.6 °C

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

***Sample Collection Time Zone*:** [X] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other:

1.) Chain of Custody Number = Client Determined

2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite

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5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* - **3**, *6010B/7470A* - **1**).

6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

7.) **KNOWN OR POSSIBLE HAZARDS**

RCRA Metals
As = Arsenic **Hg**= Mercury
Ba = Barium **Se**= Selenium
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Cr = Chromium **MR**= Misc. RCRA metals
Pb = Lead

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RE = Reactive

TSCA Regulated
PCB = Polychlorinated biphenyls

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

Please provide any additional details below regarding handling and/or disposal concerns. *(i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)*

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gel.com
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

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Project/Site Name: 3821 RIVER RD. TONAWANDA, NY 14150 Fax #
Address: 15 HAZELWOOD DR. SUITE 112 AMHERST, NY 14228
Collected By: LUKE ALEXANDER Send Results To: abartels@mjwcorp.com

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date/time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Radioactive (If yes, please supply isotopic info.)	(7) Known or possible Hazards	Total number of containers	GAMMA SPEC	ALPHA SPEC U	ALPHA SPEC Th	<-- Preservative Type (6)
240825-3821INV-007-DUP	04-08-25	1008	N	N	SO	N		1	x			ALPHA SPEC FOR
240825-3821INV-004-DUP	04-08-25	0935	N	N	SO	N		1	x			U-238, U-235, Th-232
												AND Th-230

Comments
Note: extra sample is required for sample specific QC

SDG: 7293378

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 [signature]	4/9/25	1235	1 [signature]	4/9/25	13:30
2			2		
3			3		

TAT Requested: Normal: ✓ **Rush:** ____ **Specify:** ____ **(Subject to Surcharge)**

Fax Results: [ ] Yes [ ] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [ ] Level 4

Additional Remarks:

For Lab Receiving Use Only: *Custody Seal Intact?* [ ] *Yes* [ ] *No* ***Cooler Temp:*** 1.6 °C

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5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* - **3**, *6010B/7470A* - **1**).

6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

7.) **KNOWN OR POSSIBLE HAZARDS**

RCRA Metals
As = Arsenic **Hg**= Mercury
Ba = Barium **Se**= Selenium
Cd = Cadmium **Ag**= Silver
Cr = Chromium **MR**= Misc. RCRA metals
Pb = Lead

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

TSCA Regulated
PCB = Polychlorinated biphenyls

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

Please provide any additional details below regarding handling and/or disposal concerns. *(i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)*

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: MJWC | SDG/AR/COC/Work Order: 719378 | GEL PM: JC.

Received By: Thyasia Tatum | Date Received at GEL: 4/14/25

Carrier (Circle Applicable): FedEx Express FedEx Ground UPS Field Services Courier Client Other:

IR Temp gun # IR2-23 Daily Calibration Performed? Y/N

Tracking Number	Temp (C)	If over 6 °C, check if samples do not require cold preservation (ie radiochem only).	Tracking Number	Temp (C)	If over 6 °C, check if samples do not require cold preservation (ie radiochem only).
8804 3522 7577	16C	✓			

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#: If UN2910, Is the Radioactive Shipment Survey Compliant? Yes___ No___
B) Did the client designate the samples are to be received as radioactive?		✓	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM/ mR/Hr Classified as: Rad 1 Rad 2 Rad 3
D) Are there any sample hazards to document?		✓	If yes, select Hazards below. PCBs Flammable Foreign Soil RCRA Asbestos Beryllium Corrosive Other:
E) Was a SDS received and reviewed by Lab Safety?		✓	Circle Applicable: See additional Comments below. No additional comments needed after review.

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Direct client dropoff Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	If there are samples requiring cold preservation, did they arrive within (0 < 6 °C)?		✓		Preservation Method: Wet Ice Ice Packs Dry Ice None Other: *all temperatures recorded next to tracking numbers are in Celcius
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		✓		Preserved per COC request or list Sample IDs and Containers Affected: If Preservation added, Lot#:
6	Do any samples require Volatile Analysis? (If yes, answer all three additional questions.)			✓	If Yes, are Encores or Soil Kits present? Yes___ No___ (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes___ No___ NA___ (If unknown, select No) Are liquid VOA vials free of headspace? Yes___ No___ NA___ Sample IDs and containers affected:
7	Samples received within holding time?	✓			IDs and tests affected:
8	Sample IDs on COC match IDs on bottles?	✓			IDs and containers affected:
9	Date & time on COC match date & time on bottles?	✓			Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
10	Number of containers received match number indicated on COC?	✓			Circle Applicable: No container count on COC Missing Container (provide details) Other (describe)
11	Are sample containers identifiable as GEL provided by use of GEL labels?			✓	
12	COC form is properly signed in relinquished/received sections?	✓			Circle Applicable: Not relinquished Other (describe)

Comments:

PM (or PMA) review: Initials AM Date 4/15/25

☐ Continuation Form Required when selected

GL-CHL-SR-001 Rev 8

Data Review Qualifier Definitions

Data Review Qualifier Definitions

Qualifier	Explanation
*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.
P	Organics-The concentrations between the primary and confirmation columns/detectors is >40% difference.

For HPLC, the difference is >70%.

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
MJW Technical Services
SDG #: 719378

Product: **Alphaspec U, Solid**
Analytical Method: DOE EML HASL-300, U-02-RC Modified
Analytical Procedure: GL-RAD-A-011 REV# 29
Analytical Batch: 2786436

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2781503

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
719378002	040825-3821INV-002
719378007	040825-3821INV-007
719378009	040825-3821INV-002 RAN
1206081462	Method Blank (MB)
1206081463	719378002(040825-3821INV-002) Sample Duplicate (DUP)
1206081464	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
Sample 719378007 (040825-3821INV-007) was recounted due to low carrier/tracer yield. The recount is reported. Samples 1206081463 (040825-3821INV-002DUP) and 719378002 (040825-3821INV-002) were recounted due to high relative percent difference/relative error ratio. The recounts are reported.

Product: **Alphaspec Th, Solid**
Analytical Method: DOE EML HASL-300, Th-01-RC Modified
Analytical Procedure: GL-RAD-A-038 REV# 19
Analytical Batch: 2786437

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2781503

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
719378002	040825-3821INV-002
719378009	040825-3821INV-002 RAN
1206081465	Method Blank (MB)
1206081466	719378002(040825-3821INV-002) Sample Duplicate (DUP)
1206081467	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Alphaspec Th, Solid**
Analytical Method: DOE EML HASL-300, Th-01-RC Modified
Analytical Procedure: GL-RAD-A-038 REV# 19
Analytical Batch: 2792485

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2781503

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
719378007	040825-3821INV-007
1206094649	Method Blank (MB)
1206094650	719378007(040825-3821INV-007) Sample Duplicate (DUP)
1206094651	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Sample Re-prep/Re-analysis
Sample 719378007 (040825-3821INV-007) was reprepped due to low carrier/tracer yield. The re-analysis is being reported.

Product: **Dry Weight**
Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2781503

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
719378001	040825-3821INV-001
719378002	040825-3821INV-002
719378003	040825-3821INV-003
719378004	040825-3821INV-004
719378005	040825-3821INV-005
719378006	040825-3821INV-006
719378007	040825-3821INV-007
719378008	040825-3821INV-001 RAN
719378009	040825-3821INV-002 RAN
719378010	040825-3821INV-002 DUP
719378011	040825-3821INV-007 DUP
719378012	040825-3821INV-004 DUP

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Gammaspec, Gamma, Solid (Standard List)**
Analytical Method: DOE HASL 300, 4.5.2.3/Ga-01-R
Analytical Procedure: GL-RAD-A-013 REV# 29
Analytical Batch: 2781510

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 25
Preparation Batch: 2781503

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
719378001	040825-3821INV-001
719378002	040825-3821INV-002
719378003	040825-3821INV-003
719378004	040825-3821INV-004
719378005	040825-3821INV-005
719378006	040825-3821INV-006
719378007	040825-3821INV-007
719378008	040825-3821INV-001 RAN
719378009	040825-3821INV-002 RAN
719378010	040825-3821INV-002 DUP
719378011	040825-3821INV-007 DUP

719378012	040825-3821INV-004 DUP
1206070202	Method Blank (MB)
1206070203	719378001(040825-3821INV-001) Sample Duplicate (DUP)
1206070204	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
UI	Results are considered a false positive due to high peak-width.	Bismuth-212	719378012	040825-3821INV-004 DUP
UI	Results are considered a false positive due to low abundance.	Actinium-228	719378003	040825-3821INV-003
		Niobium-94	719378007	040825-3821INV-007
		Radium-228	719378003	040825-3821INV-003
UI	Results are considered a false positive due to no valid peak.	Thorium-234	719378010	040825-3821INV-002 DUP
		Thorium-234	719378012	040825-3821INV-004 DUP
		Thorium-234	1206070203	040825-3821INV-001(719378001DUP)
		Uranium-238	719378010	040825-3821INV-002 DUP
		Uranium-238	719378012	040825-3821INV-004 DUP
		Uranium-238	1206070203	040825-3821INV-001(719378001DUP)
		Zinc-65	719378008	040825-3821INV-001 RAN

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Moisture LogBook

Batch: 2781503
Analyst: CXC1
Date/Time: 15-APR-2025
Procedure Code:___PREPD
Procedure Description: Dry Soil Prep GL-RAD-A-021
Lab Sop: GL-RAD-A-021

Sample St	Sample Id	Rpd(%)

Sample Id	Sample Type	Original Hsn	Balance	Run Time	Container Wt	Initial Wt	Final Wt (g)	Net Initial Wt (g)	Net Final Wt (g)	Moisture (%)
719378001	SAMPLE		SP-C234673837	13:58	75.23	316.11	262.67	240.88	187.44	22.185
719378002	SAMPLE		SP-C234673837	13:58	75.61	383.69	338.23	308.08	262.62	14.755
719378003	SAMPLE		SP-C234673837	13:58	75.89	322.77	287.66	246.88	211.77	14.221
719378004	SAMPLE		SP-C234673837	13:58	75.67	426.3	391.01	350.63	315.34	10.064
719378005	SAMPLE		SP-C234673837	13:58	75.7	325.98	285.88	250.28	210.18	16.022
719378006	SAMPLE		SP-C234673837	13:58	75.81	367.48	329.56	291.67	253.75	13
719378007	SAMPLE		SP-C234673837	13:58	75.57	432.09	398.33	356.52	322.76	9.469
719378008	SAMPLE		SP-C234673837	13:58	76.16	429.36	382.27	353.2	306.11	13.332
719378009	SAMPLE		SP-C234673837	13:58	76.04	378.74	344.12	302.7	268.08	11.437
719378010	SAMPLE		SP-C234673837	13:58	76.24	385.85	334.43	309.61	258.19	16.607
719378011	SAMPLE		SP-C234673837	13:58	76.17	410.46	376.23	334.29	300.06	10.239
719378012	SAMPLE		SP-C234673837	13:58	76.56	469.06	436	392.5	359.44	8.422

Comments:

A) Result = (Net Initial - Net Final) /Net Initial * 100

Note: Aliquot is used for the determination of the effective MDL and PQL in LIMS

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

MJWC001 MJW Technical Services

Client SDG: 719378 GEL Work Order: 719378

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a Tracer compound
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI Gamma Spectroscopy--Uncertain identification

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: **Name: Theresa Austin**

Date: 12 MAY 2025 **Title: Analyst III - Data Validator Group - Rad Data Validatior**

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-001
Sample ID: 719378001
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 22.2%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.17	+/-0.361	0.349	+/-0.388		pCi/g			RXF2	05/10/25	1023	2781510	1
Americium-241	U	-0.137	+/-0.165	0.299	+/-0.177		pCi/g							
Antimony-124	U	0.111	+/-0.133	0.339	+/-0.143		pCi/g							
Antimony-125	U	0.0983	+/-0.113	0.234	+/-0.122		pCi/g							
Barium-133	U	-0.0211	+/-0.0466	0.0748	+/-0.0475		pCi/g							
Barium-140	U	0.267	+/-0.805	1.58	+/-0.814		pCi/g							
Beryllium-7	U	0.157	+/-0.486	0.952	+/-0.491		pCi/g							
Bismuth-212		1.85	+/-0.929	0.929	+/-0.946		pCi/g							
Bismuth-214		1.04	+/-0.270	0.165	+/-0.284		pCi/g							
Cerium-139	U	-0.0311	+/-0.0345	0.0567	+/-0.0378		pCi/g							
Cerium-141	U	-0.0476	+/-0.104	0.180	+/-0.106		pCi/g							
Cerium-144	U	0.106	+/-0.232	0.438	+/-0.237		pCi/g							
Cesium-134	U	0.0549	+/-0.0481	0.110	+/-0.0544		pCi/g							
Cesium-136	U	0.0899	+/-0.329	0.615	+/-0.331		pCi/g							
Cesium-137	U	0.0381	+/-0.0541	0.108	+/-0.0568	0.100	pCi/g							
Chromium-51	U	0.0924	+/-0.580	1.14	+/-0.581		pCi/g							
Cobalt-56	U	0.0128	+/-0.0567	0.115	+/-0.0570		pCi/g							
Cobalt-57	U	-0.0173	+/-0.0290	0.0502	+/-0.0300		pCi/g							
Cobalt-58	U	-0.0155	+/-0.0498	0.0949	+/-0.0504		pCi/g							
Cobalt-60	U	0.00236	+/-0.0438	0.0897	+/-0.0438		pCi/g							
Europium-152	U	-0.0359	+/-0.115	0.190	+/-0.116		pCi/g							
Europium-154	U	0.125	+/-0.181	0.382	+/-0.190		pCi/g							
Europium-155	U	0.0606	+/-0.106	0.206	+/-0.109		pCi/g							
Iridium-192	U	-0.00435	+/-0.0434	0.0829	+/-0.0434		pCi/g							
Iron-59	U	-0.0678	+/-0.138	0.245	+/-0.142		pCi/g							
Lead-210	U	-0.476	+/-5.05	9.81	+/-5.05		pCi/g							
Lead-212		1.12	+/-0.140	0.120	+/-0.172		pCi/g							
Lead-214		1.46	+/-0.241	0.143	+/-0.272		pCi/g							
Manganese-54	U	0.00898	+/-0.0461	0.0931	+/-0.0462		pCi/g							
Mercury-203	U	0.0325	+/-0.0518	0.106	+/-0.0539		pCi/g							
Neodymium-147	U	1.36	+/-2.21	4.41	+/-2.30		pCi/g							
Neptunium-239	U	-0.168	+/-0.277	0.484	+/-0.287		pCi/g							
Niobium-94	U	0.0312	+/-0.0411	0.0848	+/-0.0436		pCi/g							
Niobium-95	U	-0.00751	+/-0.0669	0.128	+/-0.0670		pCi/g							
Potassium-40		16.1	+/-1.96	0.744	+/-2.72		pCi/g							
Promethium-144	U	0.0153	+/-0.0404	0.0802	+/-0.0411		pCi/g							
Promethium-146	U	0.0631	+/-0.105	0.105	+/-0.109		pCi/g							
Radium-226		1.46	+/-0.241	0.143	+/-0.272		pCi/g							

GEL LABORATORIES LLC

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-001
Sample ID: 719378001

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Radium-228		1.17	+/-0.361	0.349	+/-0.388		pCi/g							
Ruthenium-106	U	0.0727	+/-0.397	0.762	+/-0.399		pCi/g							
Silver-110m	U	0.0198	+/-0.0563	0.120	+/-0.0570		pCi/g							
Sodium-22	U	0.0432	+/-0.0642	0.135	+/-0.0673		pCi/g							
Thallium-208		0.369	+/-0.0998	0.0721	+/-0.105		pCi/g							
Thorium-234	U	1.20	+/-2.70	2.78	+/-2.72		pCi/g							
Tin-113	U	-0.0274	+/-0.0598	0.107	+/-0.0611		pCi/g							
Uranium-235	U	0.0371	+/-0.234	0.427	+/-0.235		pCi/g							
Uranium-238	U	1.20	+/-2.70	2.78	+/-2.72		pCi/g							
Yttrium-88	U	0.00884	+/-0.0576	0.127	+/-0.0577		pCi/g							
Zinc-65	U	-0.113	+/-0.143	0.190	+/-0.152		pCi/g							
Zirconium-95	U	0.0752	+/-0.109	0.234	+/-0.115		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-002
Sample ID: 719378002
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 14.8%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-230		0.733	+/-0.533	0.669	+/-0.545	1.00	pCi/g			RM3	04/27/25	1146	2786437	1
Thorium-232		0.977	+/-0.544	0.478	+/-0.559	1.00	pCi/g							
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	-0.0593	+/-0.179	0.503	+/-0.179	1.00	pCi/g			RM3	05/03/25	0804	2786436	2
Uranium-238		0.983	+/-0.524	0.319	+/-0.541	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.974	+/-0.282	0.263	+/-0.303		pCi/g			RXF2	05/10/25	1024	2781510	3
Americium-241	U	0.0750	+/-0.118	0.197	+/-0.123		pCi/g							
Antimony-124	U	-0.0236	+/-0.0998	0.191	+/-0.100		pCi/g							
Antimony-125	U	0.0178	+/-0.0943	0.168	+/-0.0947		pCi/g							
Barium-133	U	0.0323	+/-0.0397	0.0729	+/-0.0424		pCi/g							
Barium-140	U	-0.178	+/-0.727	1.27	+/-0.731		pCi/g							
Beryllium-7	U	-0.0388	+/-0.402	0.721	+/-0.402		pCi/g							
Bismuth-212		1.20	+/-0.703	0.983	+/-0.713		pCi/g							
Bismuth-214		1.08	+/-0.165	0.112	+/-0.191		pCi/g							
Cerium-139	U	-0.000956	+/-0.0331	0.0508	+/-0.0331		pCi/g							
Cerium-141	U	-0.0819	+/-0.0850	0.130	+/-0.0929		pCi/g							
Cerium-144	U	0.101	+/-0.205	0.357	+/-0.210		pCi/g							
Cesium-134	U	0.0154	+/-0.0398	0.0765	+/-0.0404		pCi/g							
Cesium-136	U	-0.0772	+/-0.288	0.527	+/-0.290		pCi/g							
Cesium-137		0.158	+/-0.0983	0.0604	+/-0.0993	0.100	pCi/g							
Chromium-51	U	0.00733	+/-0.532	0.973	+/-0.532		pCi/g							
Cobalt-56	U	0.0159	+/-0.0424	0.0867	+/-0.0431		pCi/g							
Cobalt-57	U	-0.00102	+/-0.0268	0.0449	+/-0.0268		pCi/g							
Cobalt-58	U	0.0110	+/-0.0453	0.0854	+/-0.0456		pCi/g							
Cobalt-60	U	0.0111	+/-0.0401	0.0819	+/-0.0404		pCi/g							
Europium-152	U	0.0137	+/-0.0923	0.171	+/-0.0925		pCi/g							
Europium-154	U	0.00925	+/-0.124	0.241	+/-0.124		pCi/g							
Europium-155	U	0.0414	+/-0.0954	0.167	+/-0.0972		pCi/g							
Iridium-192	U	0.00188	+/-0.0358	0.0662	+/-0.0358		pCi/g							
Iron-59	U	-0.0194	+/-0.124	0.231	+/-0.124		pCi/g							
Lead-210	U	0.434	+/-2.22	3.82	+/-2.23		pCi/g							
Lead-212		1.03	+/-0.115	0.0939	+/-0.146		pCi/g							
Lead-214		1.11	+/-0.163	0.121	+/-0.186		pCi/g							
Manganese-54	U	0.0210	+/-0.0392	0.0796	+/-0.0404		pCi/g							
Mercury-203	U	-0.0324	+/-0.0549	0.0841	+/-0.0569		pCi/g							
Neodymium-147	U	0.471	+/-1.48	2.82	+/-1.49		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-002
Sample ID: 719378002

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Neptunium-239	U	-0.0391	+/-0.234	0.391	+/-0.235		pCi/g							
Niobium-94	U	-0.0123	+/-0.0373	0.0636	+/-0.0378		pCi/g							
Niobium-95	U	0.00953	+/-0.0534	0.0974	+/-0.0536		pCi/g							
Potassium-40		15.8	+/-1.65	0.714	+/-2.27		pCi/g							
Promethium-144	U	0.00146	+/-0.0364	0.0657	+/-0.0364		pCi/g							
Promethium-146	U	0.0380	+/-0.0388	0.0788	+/-0.0426		pCi/g							
Radium-226		1.11	+/-0.163	0.121	+/-0.186		pCi/g							
Radium-228		0.974	+/-0.282	0.263	+/-0.303		pCi/g							
Ruthenium-106	U	-0.108	+/-0.336	0.580	+/-0.340		pCi/g							
Silver-110m	U	0.0371	+/-0.0422	0.0902	+/-0.0456		pCi/g							
Sodium-22	U	0.00241	+/-0.0441	0.0853	+/-0.0441		pCi/g							
Thallium-208		0.250	+/-0.0721	0.0663	+/-0.0754		pCi/g							
Thorium-234	U	1.01	+/-1.74	1.85	+/-1.75		pCi/g							
Tin-113	U	0.0494	+/-0.0484	0.0784	+/-0.0486		pCi/g							
Uranium-235	U	0.127	+/-0.212	0.340	+/-0.212		pCi/g							
Uranium-238	U	1.01	+/-1.74	1.85	+/-1.75		pCi/g							
Yttrium-88	U	0.0311	+/-0.0461	0.107	+/-0.0483		pCi/g							
Zinc-65	U	-0.0448	+/-0.0979	0.148	+/-0.100		pCi/g							
Zirconium-95	U	0.143	+/-0.113	0.175	+/-0.131		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2786437	88.2	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2786436	85.8	(15%-125%)

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Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-002
Sample ID: 719378002

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-003
Sample ID: 719378003
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 14.2%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228	UI	0.000	+/-0.393	0.747	+/-0.586		pCi/g			RXF2	05/10/25	1024	2781510	1
Americium-241	U	-0.0139	+/-0.0577	0.0984	+/-0.0580		pCi/g							
Antimony-124	U	0.0228	+/-0.146	0.338	+/-0.147		pCi/g							
Antimony-125	U	0.0432	+/-0.111	0.226	+/-0.112		pCi/g							
Barium-133	U	-0.0142	+/-0.0385	0.0643	+/-0.0391		pCi/g							
Barium-140	U	0.766	+/-0.939	1.60	+/-1.00		pCi/g							
Beryllium-7	U	-0.00196	+/-0.578	0.997	+/-0.578		pCi/g							
Bismuth-212	U	0.497	+/-0.785	1.62	+/-0.818		pCi/g							
Bismuth-214		0.699	+/-0.229	0.178	+/-0.237		pCi/g							
Cerium-139	U	-0.00554	+/-0.0305	0.0540	+/-0.0306		pCi/g							
Cerium-141	U	-0.0203	+/-0.0799	0.141	+/-0.0804		pCi/g							
Cerium-144	U	-0.0115	+/-0.180	0.328	+/-0.180		pCi/g							
Cesium-134	U	0.122	+/-0.0964	0.149	+/-0.112		pCi/g							
Cesium-136	U	-0.0641	+/-0.331	0.655	+/-0.333		pCi/g							
Cesium-137	U	-0.0315	+/-0.0447	0.0599	+/-0.0470	0.100	pCi/g							
Chromium-51	U	0.282	+/-0.567	1.19	+/-0.582		pCi/g							
Cobalt-56	U	-0.0387	+/-0.0698	0.116	+/-0.0720		pCi/g							
Cobalt-57	U	-0.00660	+/-0.0228	0.0406	+/-0.0230		pCi/g							
Cobalt-58	U	-0.0184	+/-0.0604	0.109	+/-0.0610		pCi/g							
Cobalt-60	U	0.0270	+/-0.0518	0.122	+/-0.0533		pCi/g							
Europium-152	U	0.0869	+/-0.104	0.212	+/-0.111		pCi/g							
Europium-154	U	0.0469	+/-0.147	0.330	+/-0.149		pCi/g							
Europium-155	U	0.0250	+/-0.0864	0.164	+/-0.0872		pCi/g							
Iridium-192	U	0.00344	+/-0.0445	0.0875	+/-0.0445		pCi/g							
Iron-59	U	-0.104	+/-0.181	0.320	+/-0.187		pCi/g							
Lead-210	U	0.689	+/-0.788	0.764	+/-0.791		pCi/g							
Lead-212		0.700	+/-0.138	0.120	+/-0.160		pCi/g							
Lead-214		0.970	+/-0.179	0.108	+/-0.199		pCi/g							
Manganese-54	U	-0.00437	+/-0.0545	0.102	+/-0.0545		pCi/g							
Mercury-203	U	-0.000879	+/-0.0601	0.105	+/-0.0601		pCi/g							
Neodymium-147	U	-1.12	+/-2.43	3.75	+/-2.49		pCi/g							
Neptunium-239	U	-0.114	+/-0.240	0.419	+/-0.246		pCi/g							
Niobium-94	U	0.00268	+/-0.0448	0.0864	+/-0.0448		pCi/g							
Niobium-95	U	-0.0482	+/-0.0878	0.146	+/-0.0905		pCi/g							
Potassium-40		10.8	+/-1.86	0.645	+/-2.10		pCi/g							
Promethium-144	U	-0.0278	+/-0.0543	0.0926	+/-0.0558		pCi/g							
Promethium-146	U	-0.0164	+/-0.0577	0.106	+/-0.0582		pCi/g							
Radium-226		0.970	+/-0.179	0.108	+/-0.199		pCi/g							
Radium-228	UI	0.000	+/-0.393	0.747	+/-0.586		pCi/g							

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-003
Sample ID: 719378003

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.0268	+/-0.401	0.770	+/-0.401		pCi/g							
Silver-110m	U	0.0191	+/-0.0717	0.153	+/-0.0723		pCi/g							
Sodium-22	U	0.0167	+/-0.0524	0.118	+/-0.0529		pCi/g							
Thallium-208		0.267	+/-0.125	0.0843	+/-0.127		pCi/g							
Thorium-234	U	0.978	+/-1.34	1.03	+/-1.36		pCi/g							
Tin-113	U	0.0250	+/-0.0581	0.119	+/-0.0592		pCi/g							
Uranium-235	U	-0.144	+/-0.198	0.337	+/-0.209		pCi/g							
Uranium-238	U	0.978	+/-1.34	1.03	+/-1.36		pCi/g							
Yttrium-88	U	-0.0516	+/-0.0506	0.0374	+/-0.0558		pCi/g							
Zinc-65	U	-0.0456	+/-0.126	0.201	+/-0.128		pCi/g							
Zirconium-95	U	0.0183	+/-0.116	0.231	+/-0.117		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-004
Sample ID: 719378004
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 10.1%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.659	+/-0.269	0.213	+/-0.282		pCi/g			RXF2	05/10/25	1025	2781510	1
Americium-241	U	-0.119	+/-0.0837	0.143	+/-0.100		pCi/g							
Antimony-124	U	-0.0332	+/-0.0936	0.183	+/-0.0949		pCi/g							
Antimony-125	U	-0.0317	+/-0.0773	0.144	+/-0.0787		pCi/g							
Barium-133	U	0.00987	+/-0.0306	0.0612	+/-0.0309		pCi/g							
Barium-140	U	-0.164	+/-0.461	0.876	+/-0.467		pCi/g							
Beryllium-7	U	0.118	+/-0.293	0.618	+/-0.298		pCi/g							
Bismuth-212	U	0.497	+/-0.422	0.747	+/-0.425		pCi/g							
Bismuth-214		0.621	+/-0.139	0.0910	+/-0.149		pCi/g							
Cerium-139	U	0.00363	+/-0.0212	0.0403	+/-0.0212		pCi/g							
Cerium-141	U	0.00804	+/-0.0601	0.114	+/-0.0602		pCi/g							
Cerium-144	U	0.0735	+/-0.134	0.267	+/-0.138		pCi/g							
Cesium-134	U	0.0397	+/-0.0383	0.0657	+/-0.0425		pCi/g							
Cesium-136	U	0.0764	+/-0.241	0.493	+/-0.243		pCi/g							
Cesium-137	U	-0.00255	+/-0.0286	0.0556	+/-0.0286	0.100	pCi/g							
Chromium-51	U	-0.0357	+/-0.438	0.784	+/-0.438		pCi/g							
Cobalt-56	U	-0.00536	+/-0.0372	0.0710	+/-0.0372		pCi/g							
Cobalt-57	U	0.00677	+/-0.0173	0.0340	+/-0.0176		pCi/g							
Cobalt-58	U	-0.0224	+/-0.0346	0.0586	+/-0.0361		pCi/g							
Cobalt-60	U	0.0111	+/-0.0278	0.0672	+/-0.0283		pCi/g							
Europium-152	U	0.0218	+/-0.0635	0.130	+/-0.0643		pCi/g							
Europium-154	U	-0.00455	+/-0.103	0.212	+/-0.103		pCi/g							
Europium-155	U	0.0376	+/-0.0739	0.146	+/-0.0759		pCi/g							
Iridium-192	U	0.0381	+/-0.0275	0.0612	+/-0.0326		pCi/g							
Iron-59	U	-0.0538	+/-0.0953	0.177	+/-0.0986		pCi/g							
Lead-210	U	0.328	+/-1.65	3.27	+/-1.66		pCi/g							
Lead-212		0.704	+/-0.105	0.0832	+/-0.126		pCi/g							
Lead-214		0.742	+/-0.146	0.0930	+/-0.159		pCi/g							
Manganese-54	U	-0.00173	+/-0.0316	0.0610	+/-0.0316		pCi/g							
Mercury-203	U	-0.00661	+/-0.0384	0.0679	+/-0.0385		pCi/g							
Neodymium-147	U	0.135	+/-1.31	2.63	+/-1.31		pCi/g							
Neptunium-239	U	-0.0768	+/-0.171	0.310	+/-0.175		pCi/g							
Niobium-94	U	0.00753	+/-0.0300	0.0600	+/-0.0302		pCi/g							
Niobium-95	U	0.0198	+/-0.0375	0.0763	+/-0.0386		pCi/g							
Potassium-40		7.01	+/-1.23	0.612	+/-1.45		pCi/g							
Promethium-144	U	-0.0558	+/-0.0337	0.0484	+/-0.0424		pCi/g							
Promethium-146	U	0.0192	+/-0.0283	0.0627	+/-0.0297		pCi/g							
Radium-226		0.742	+/-0.146	0.0930	+/-0.159		pCi/g							
Radium-228		0.659	+/-0.269	0.213	+/-0.282		pCi/g							

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Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-004
Sample ID: 719378004

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.123	+/-0.220	0.394	+/-0.227		pCi/g							
Silver-110m	U	-0.00914	+/-0.0462	0.0862	+/-0.0464		pCi/g							
Sodium-22	U	-0.000623	+/-0.0369	0.0762	+/-0.0369		pCi/g							
Thallium-208		0.156	+/-0.0667	0.0503	+/-0.0681		pCi/g							
Thorium-234	U	-0.384	+/-0.806	1.55	+/-0.829		pCi/g							
Tin-113	U	-0.0347	+/-0.0388	0.0580	+/-0.0419		pCi/g							
Uranium-235	U	0.101	+/-0.138	0.276	+/-0.138		pCi/g							
Uranium-238	U	-0.384	+/-0.806	1.55	+/-0.829		pCi/g							
Yttrium-88	U	-0.0327	+/-0.0337	0.0359	+/-0.0369		pCi/g							
Zinc-65	U	0.00858	+/-0.0609	0.124	+/-0.0611		pCi/g							
Zirconium-95	U	-0.0295	+/-0.0901	0.163	+/-0.0911		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-005
Sample ID: 719378005
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 16%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.928	+/-0.246	0.213	+/-0.275		pCi/g			RXF2	05/10/25	1025	2781510	1
Americium-241	U	0.0230	+/-0.109	0.201	+/-0.109		pCi/g							
Antimony-124	U	-0.00202	+/-0.0756	0.165	+/-0.0756		pCi/g							
Antimony-125	U	0.0701	+/-0.0798	0.168	+/-0.0860		pCi/g							
Barium-133	U	0.0261	+/-0.0324	0.0649	+/-0.0346		pCi/g							
Barium-140	U	0.406	+/-0.471	1.04	+/-0.506		pCi/g							
Beryllium-7	U	0.0936	+/-0.279	0.577	+/-0.282		pCi/g							
Bismuth-212		1.43	+/-0.540	0.620	+/-0.558		pCi/g							
Bismuth-214		0.713	+/-0.161	0.0980	+/-0.172		pCi/g							
Cerium-139	U	-0.0164	+/-0.0253	0.0433	+/-0.0266		pCi/g							
Cerium-141	U	0.0519	+/-0.0661	0.132	+/-0.0702		pCi/g							
Cerium-144	U	-0.122	+/-0.143	0.244	+/-0.154		pCi/g							
Cesium-134	U	0.0523	+/-0.0414	0.0752	+/-0.0479		pCi/g							
Cesium-136	U	-0.129	+/-0.176	0.248	+/-0.186		pCi/g							
Cesium-137		0.0639	+/-0.0652	0.0568	+/-0.0654	0.100	pCi/g							
Chromium-51	U	-0.0611	+/-0.384	0.754	+/-0.385		pCi/g							
Cobalt-56	U	-0.00516	+/-0.0340	0.0639	+/-0.0340		pCi/g							
Cobalt-57	U	0.00724	+/-0.0189	0.0367	+/-0.0191		pCi/g							
Cobalt-58	U	-0.0210	+/-0.0398	0.0687	+/-0.0410		pCi/g							
Cobalt-60	U	0.0132	+/-0.0250	0.0607	+/-0.0258		pCi/g							
Europium-152	U	0.0292	+/-0.0695	0.144	+/-0.0708		pCi/g							
Europium-154	U	-0.0190	+/-0.0899	0.177	+/-0.0903		pCi/g							
Europium-155	U	0.00522	+/-0.0783	0.148	+/-0.0783		pCi/g							
Iridium-192	U	0.0158	+/-0.0304	0.0634	+/-0.0313		pCi/g							
Iron-59	U	-0.0417	+/-0.0742	0.137	+/-0.0768		pCi/g							
Lead-210	U	0.267	+/-3.07	6.13	+/-3.07		pCi/g							
Lead-212		0.846	+/-0.115	0.0809	+/-0.142		pCi/g							
Lead-214		0.765	+/-0.137	0.107	+/-0.154		pCi/g							
Manganese-54	U	-0.00221	+/-0.0312	0.0586	+/-0.0312		pCi/g							
Mercury-203	U	-0.00598	+/-0.0444	0.0715	+/-0.0445		pCi/g							
Neodymium-147	U	0.0819	+/-1.09	2.20	+/-1.10		pCi/g							
Neptunium-239	U	0.0458	+/-0.202	0.386	+/-0.204		pCi/g							
Niobium-94	U	0.0191	+/-0.0273	0.0577	+/-0.0287		pCi/g							
Niobium-95	U	0.00154	+/-0.0383	0.0671	+/-0.0383		pCi/g							
Potassium-40		5.56	+/-1.01	0.564	+/-1.22		pCi/g							
Promethium-144	U	0.0180	+/-0.0259	0.0556	+/-0.0272		pCi/g							
Promethium-146	U	0.00445	+/-0.0276	0.0564	+/-0.0277		pCi/g							
Radium-226		0.765	+/-0.137	0.107	+/-0.154		pCi/g							
Radium-228		0.928	+/-0.246	0.213	+/-0.275		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-005
Sample ID: 719378005

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.0368	+/-0.220	0.378	+/-0.221		pCi/g							
Silver-110m	U	0.00750	+/-0.0410	0.0817	+/-0.0411		pCi/g							
Sodium-22	U	-0.00743	+/-0.0318	0.0624	+/-0.0320		pCi/g							
Thallium-208		0.241	+/-0.0602	0.0490	+/-0.0636		pCi/g							
Thorium-234		1.79	+/-2.24	1.70	+/-2.28		pCi/g							
Tin-113	U	-0.0168	+/-0.0398	0.0656	+/-0.0405		pCi/g							
Uranium-235	U	-0.166	+/-0.168	0.285	+/-0.185		pCi/g							
Uranium-238		1.79	+/-2.24	1.70	+/-2.28		pCi/g							
Yttrium-88	U	-0.00381	+/-0.0368	0.0753	+/-0.0368		pCi/g							
Zinc-65	U	0.0453	+/-0.0551	0.129	+/-0.0590		pCi/g							
Zirconium-95	U	0.0134	+/-0.0461	0.100	+/-0.0465		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-006
Sample ID: 719378006
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 13%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.929	+/-0.303	0.239	+/-0.328		pCi/g			RXF2	05/10/25	1026	2781510	1
Americium-241	U	-0.149	+/-0.161	0.253	+/-0.175		pCi/g							
Antimony-124	U	0.0205	+/-0.0896	0.218	+/-0.0901		pCi/g							
Antimony-125	U	0.0347	+/-0.0920	0.187	+/-0.0934		pCi/g							
Barium-133	U	-0.00476	+/-0.0455	0.0790	+/-0.0456		pCi/g							
Barium-140	U	-0.337	+/-0.610	1.09	+/-0.630		pCi/g							
Beryllium-7	U	-0.0279	+/-0.375	0.660	+/-0.375		pCi/g							
Bismuth-212		1.07	+/-0.749	0.970	+/-0.756		pCi/g							
Bismuth-214		0.679	+/-0.172	0.130	+/-0.182		pCi/g							
Cerium-139	U	-0.0178	+/-0.0298	0.0505	+/-0.0311		pCi/g							
Cerium-141	U	-0.0420	+/-0.0864	0.149	+/-0.0885		pCi/g							
Cerium-144	U	0.0343	+/-0.206	0.381	+/-0.207		pCi/g							
Cesium-134	U	0.0426	+/-0.0416	0.0933	+/-0.0461		pCi/g							
Cesium-136	U	-0.0278	+/-0.259	0.488	+/-0.259		pCi/g							
Cesium-137	U	0.0160	+/-0.0394	0.0800	+/-0.0401	0.100	pCi/g							
Chromium-51	U	0.104	+/-0.598	1.09	+/-0.600		pCi/g							
Cobalt-56	U	-0.00388	+/-0.0448	0.0856	+/-0.0449		pCi/g							
Cobalt-57	U	0.0204	+/-0.0242	0.0480	+/-0.0259		pCi/g							
Cobalt-58	U	-0.0678	+/-0.0416	0.0455	+/-0.0522		pCi/g							
Cobalt-60	U	0.0167	+/-0.0285	0.0730	+/-0.0295		pCi/g							
Europium-152	U	0.0567	+/-0.0959	0.186	+/-0.0994		pCi/g							
Europium-154	U	-0.0517	+/-0.107	0.201	+/-0.110		pCi/g							
Europium-155	U	0.0898	+/-0.103	0.203	+/-0.111		pCi/g							
Iridium-192	U	0.0140	+/-0.0477	0.0869	+/-0.0482		pCi/g							
Iron-59	U	0.00162	+/-0.0961	0.192	+/-0.0961		pCi/g							
Lead-210		7.96	+/-9.30	7.92	+/-9.33		pCi/g							
Lead-212		0.797	+/-0.127	0.103	+/-0.148		pCi/g							
Lead-214		1.00	+/-0.228	0.144	+/-0.246		pCi/g							
Manganese-54	U	-0.00991	+/-0.0320	0.0591	+/-0.0324		pCi/g							
Mercury-203	U	-0.00946	+/-0.0539	0.0932	+/-0.0541		pCi/g							
Neodymium-147	U	0.276	+/-1.34	2.77	+/-1.34		pCi/g							
Neptunium-239	U	-0.120	+/-0.257	0.414	+/-0.263		pCi/g							
Niobium-94	U	0.0307	+/-0.0328	0.0721	+/-0.0357		pCi/g							
Niobium-95	U	-0.0246	+/-0.0555	0.0851	+/-0.0567		pCi/g							
Potassium-40		6.02	+/-1.29	0.881	+/-1.47		pCi/g							
Promethium-144	U	-0.0159	+/-0.0404	0.0720	+/-0.0410		pCi/g							
Promethium-146	U	0.0225	+/-0.0334	0.0738	+/-0.0350		pCi/g							
Radium-226		1.00	+/-0.228	0.144	+/-0.246		pCi/g							
Radium-228		0.929	+/-0.303	0.239	+/-0.328		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-006
Sample ID: 719378006

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.0543	+/-0.301	0.572	+/-0.302		pCi/g							
Silver-110m	U	-0.00996	+/-0.0491	0.0919	+/-0.0493		pCi/g							
Sodium-22	U	-0.0173	+/-0.0386	0.0728	+/-0.0394		pCi/g							
Thallium-208		0.193	+/-0.0655	0.0704	+/-0.0676		pCi/g							
Thorium-234	U	1.51	+/-2.33	3.22	+/-2.45		pCi/g							
Tin-113	U	0.0141	+/-0.0488	0.0983	+/-0.0492		pCi/g							
Uranium-235	U	0.000520	+/-0.199	0.366	+/-0.199		pCi/g							
Uranium-238	U	1.51	+/-2.33	3.22	+/-2.45		pCi/g							
Yttrium-88	U	-0.000485	+/-0.0345	0.0799	+/-0.0345		pCi/g							
Zinc-65	U	0.00940	+/-0.102	0.177	+/-0.102		pCi/g							
Zirconium-95	U	0.0340	+/-0.0819	0.171	+/-0.0834		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-007
Sample ID: 719378007
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 9.47%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-230		3.41	+/-0.948	0.548	+/-1.05	1.00	pCi/g			RM3	05/08/25	0855	2792485	1
Thorium-232		2.53	+/-0.801	0.329	+/-0.863	1.00	pCi/g							
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.159	+/-0.316	0.513	+/-0.317	1.00	pCi/g			RM3	05/03/25	0804	2786436	2
Uranium-238		1.95	+/-0.712	0.415	+/-0.759	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.69	+/-0.485	0.320	+/-0.524		pCi/g			RXF2	05/10/25	1026	2781510	3
Americium-241	U	0.0439	+/-0.240	0.394	+/-0.241		pCi/g							
Antimony-124	U	-0.0387	+/-0.104	0.200	+/-0.106		pCi/g							
Antimony-125	U	-0.0151	+/-0.131	0.238	+/-0.131		pCi/g							
Barium-133	U	0.00946	+/-0.0580	0.0989	+/-0.0582		pCi/g							
Barium-140	U	-0.0595	+/-0.846	1.40	+/-0.846		pCi/g							
Beryllium-7	U	-0.283	+/-0.504	0.874	+/-0.521		pCi/g							
Bismuth-212		1.96	+/-1.02	0.952	+/-1.04		pCi/g							
Bismuth-214		2.57	+/-0.287	0.163	+/-0.368		pCi/g							
Cerium-139	U	0.0487	+/-0.0669	0.0792	+/-0.0677		pCi/g							
Cerium-141	U	0.00672	+/-0.125	0.198	+/-0.125		pCi/g							
Cerium-144	U	-0.105	+/-0.292	0.486	+/-0.296		pCi/g							
Cesium-134	U	0.0199	+/-0.0607	0.116	+/-0.0614		pCi/g							
Cesium-136	U	0.175	+/-0.254	0.555	+/-0.267		pCi/g							
Cesium-137		0.353	+/-0.0924	0.0794	+/-0.0976	0.100	pCi/g							
Chromium-51	U	0.179	+/-0.654	1.26	+/-0.660		pCi/g							
Cobalt-56	U	0.0106	+/-0.0607	0.114	+/-0.0609		pCi/g							
Cobalt-57	U	0.0267	+/-0.0343	0.0627	+/-0.0364		pCi/g							
Cobalt-58	U	-0.0236	+/-0.0540	0.0927	+/-0.0551		pCi/g							
Cobalt-60	U	0.0405	+/-0.0530	0.117	+/-0.0562		pCi/g							
Europium-152	U	-0.0335	+/-0.141	0.254	+/-0.142		pCi/g							
Europium-154	U	-0.0426	+/-0.151	0.246	+/-0.152		pCi/g							
Europium-155	U	0.177	+/-0.140	0.265	+/-0.162		pCi/g							
Iridium-192	U	-0.000549	+/-0.0493	0.0919	+/-0.0493		pCi/g							
Iron-59	U	-0.0118	+/-0.132	0.259	+/-0.132		pCi/g							
Lead-210	U	-2.64	+/-5.81	10.1	+/-5.94		pCi/g							
Lead-212		1.77	+/-0.178	0.141	+/-0.228		pCi/g							
Lead-214		2.67	+/-0.321	0.187	+/-0.386		pCi/g							
Manganese-54	U	0.0124	+/-0.0502	0.0951	+/-0.0506		pCi/g							
Mercury-203	U	-0.0811	+/-0.0705	0.119	+/-0.0796		pCi/g							
Neodymium-147	U	0.282	+/-1.72	3.33	+/-1.73		pCi/g							

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-007
Sample ID: 719378007

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Neptunium-239	U	0.152	+/-0.358	0.635	+/-0.364		pCi/g							
Niobium-94	UI	0.000	+/-0.135	0.0694	+/-0.152		pCi/g							
Niobium-95	U	0.118	+/-0.0812	0.159	+/-0.0978		pCi/g							
Potassium-40		6.11	+/-1.21	0.799	+/-1.34		pCi/g							
Promethium-144	U	0.0183	+/-0.0425	0.0832	+/-0.0433		pCi/g							
Promethium-146	U	0.0459	+/-0.0567	0.113	+/-0.0605		pCi/g							
Radium-226		2.67	+/-0.321	0.187	+/-0.386		pCi/g							
Radium-228		1.69	+/-0.485	0.320	+/-0.524		pCi/g							
Ruthenium-106	U	-0.398	+/-0.362	0.554	+/-0.406		pCi/g							
Silver-110m	U	-0.0118	+/-0.0603	0.109	+/-0.0605		pCi/g							
Sodium-22	U	-0.0141	+/-0.0540	0.0884	+/-0.0544		pCi/g							
Thallium-208		0.486	+/-0.126	0.0837	+/-0.133		pCi/g							
Thorium-234		4.90	+/-2.71	3.04	+/-2.92		pCi/g							
Tin-113	U	-0.00317	+/-0.0632	0.117	+/-0.0632		pCi/g							
Uranium-235	U	0.329	+/-0.349	0.475	+/-0.350		pCi/g							
Uranium-238		4.90	+/-2.71	3.04	+/-2.92		pCi/g							
Yttrium-88	U	0.0205	+/-0.0519	0.120	+/-0.0528		pCi/g							
Zinc-65	U	0.0452	+/-0.124	0.230	+/-0.126		pCi/g							
Zirconium-95	U	0.0246	+/-0.106	0.203	+/-0.106		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2792485	82	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2786436	88.8	(15%-125%)

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Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-007
Sample ID: 719378007

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-001 RAN
Sample ID: 719378008
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 13.3%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.886	+/-0.371	0.209	+/-0.391		pCi/g			RXF2	05/10/25	1027	2781510	1
Americium-241	U	-0.0980	+/-0.190	0.350	+/-0.196		pCi/g							
Antimony-124	U	0.107	+/-0.0859	0.177	+/-0.0866		pCi/g							
Antimony-125	U	-0.0142	+/-0.0799	0.154	+/-0.0802		pCi/g							
Barium-133	U	0.00156	+/-0.0470	0.0679	+/-0.0470		pCi/g							
Barium-140	U	0.00700	+/-0.647	1.26	+/-0.647		pCi/g							
Beryllium-7	U	0.242	+/-0.372	0.785	+/-0.388		pCi/g							
Bismuth-212		0.786	+/-1.01	0.757	+/-1.01		pCi/g							
Bismuth-214		0.773	+/-0.179	0.0936	+/-0.191		pCi/g							
Cerium-139	U	0.00754	+/-0.0305	0.0569	+/-0.0308		pCi/g							
Cerium-141	U	-0.00398	+/-0.0746	0.137	+/-0.0746		pCi/g							
Cerium-144	U	-0.0842	+/-0.194	0.343	+/-0.198		pCi/g							
Cesium-134	U	0.0498	+/-0.0726	0.0837	+/-0.0762		pCi/g							
Cesium-136	U	0.118	+/-0.190	0.442	+/-0.198		pCi/g							
Cesium-137	U	-0.0475	+/-0.0320	0.0436	+/-0.0387	0.100	pCi/g							
Chromium-51	U	0.0878	+/-0.534	1.06	+/-0.535		pCi/g							
Cobalt-56	U	0.00958	+/-0.0391	0.0747	+/-0.0394		pCi/g							
Cobalt-57	U	-0.000683	+/-0.0257	0.0474	+/-0.0257		pCi/g							
Cobalt-58	U	-0.0179	+/-0.0400	0.0711	+/-0.0408		pCi/g							
Cobalt-60	U	0.00658	+/-0.0305	0.0697	+/-0.0306		pCi/g							
Europium-152	U	-0.0216	+/-0.0942	0.162	+/-0.0947		pCi/g							
Europium-154	U	0.0383	+/-0.0806	0.197	+/-0.0825		pCi/g							
Europium-155	U	-0.0611	+/-0.100	0.176	+/-0.104		pCi/g							
Iridium-192	U	0.00453	+/-0.0392	0.0776	+/-0.0392		pCi/g							
Iron-59	U	-0.0474	+/-0.0629	0.110	+/-0.0667		pCi/g							
Lead-210	U	-8.08	+/-8.11	14.3	+/-8.95		pCi/g							
Lead-212		0.991	+/-0.126	0.0926	+/-0.158		pCi/g							
Lead-214		0.726	+/-0.197	0.119	+/-0.209		pCi/g							
Manganese-54	U	0.0103	+/-0.0341	0.0697	+/-0.0344		pCi/g							
Mercury-203	U	0.0118	+/-0.0639	0.0811	+/-0.0640		pCi/g							
Neodymium-147	U	0.508	+/-1.54	3.13	+/-1.56		pCi/g							
Neptunium-239	U	-0.157	+/-0.236	0.411	+/-0.247		pCi/g							
Niobium-94	U	0.00647	+/-0.0378	0.0727	+/-0.0379		pCi/g							
Niobium-95	U	-0.0577	+/-0.0609	0.0981	+/-0.0665		pCi/g							
Potassium-40		7.45	+/-1.37	0.833	+/-1.67		pCi/g							
Promethium-144	U	-0.0126	+/-0.0334	0.0604	+/-0.0339		pCi/g							
Promethium-146	U	-0.0300	+/-0.0399	0.0708	+/-0.0422		pCi/g							
Radium-226		0.726	+/-0.197	0.119	+/-0.209		pCi/g							
Radium-228		0.886	+/-0.371	0.209	+/-0.391		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-001 RAN
Sample ID: 719378008

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.0556	+/-0.316	0.625	+/-0.317		pCi/g							
Silver-110m	U	0.00263	+/-0.0484	0.0950	+/-0.0484		pCi/g							
Sodium-22	U	0.0136	+/-0.0287	0.0700	+/-0.0294		pCi/g							
Thallium-208		0.225	+/-0.0778	0.0664	+/-0.0800		pCi/g							
Thorium-234	U	0.0784	+/-1.66	3.23	+/-1.66		pCi/g							
Tin-113	U	-0.0316	+/-0.0459	0.0826	+/-0.0482		pCi/g							
Uranium-235	U	0.0730	+/-0.164	0.315	+/-0.168		pCi/g							
Uranium-238	U	0.0784	+/-1.66	3.23	+/-1.66		pCi/g							
Yttrium-88	U	0.0319	+/-0.0390	0.105	+/-0.0417		pCi/g							
Zinc-65	UI	0.000	+/-0.0772	0.102	+/-0.0780		pCi/g							
Zirconium-95	U	0.0280	+/-0.0938	0.186	+/-0.0947		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-002 RAN
Sample ID: 719378009
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 11.4%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Th, Solid "Dry Weight Corrected"														
Thorium-230		1.41	+/-0.618	0.582	+/-0.646	1.00	pCi/g			RM3	04/27/25	1146	2786437	1
Thorium-232		0.717	+/-0.418	0.294	+/-0.428	1.00	pCi/g							
Alphaspec U, Solid "Dry Weight Corrected"														
Uranium-235/236	U	0.0465	+/-0.208	0.408	+/-0.209	1.00	pCi/g			RM3	04/28/25	1016	2786436	2
Uranium-238		0.862	+/-0.427	0.364	+/-0.440	1.00	pCi/g							
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.592	+/-0.345	0.288	+/-0.354		pCi/g			RXF2	05/10/25	1027	2781510	3
Americium-241	U	0.0415	+/-0.372	0.603	+/-0.372		pCi/g							
Antimony-124	U	0.0433	+/-0.0899	0.240	+/-0.0921		pCi/g							
Antimony-125	U	-0.107	+/-0.137	0.223	+/-0.145		pCi/g							
Barium-133	U	0.0303	+/-0.0716	0.118	+/-0.0729		pCi/g							
Barium-140	U	-1.07	+/-1.03	1.38	+/-1.14		pCi/g							
Beryllium-7	U	0.376	+/-0.554	1.09	+/-0.580		pCi/g							
Bismuth-212		1.75	+/-0.797	1.26	+/-0.815		pCi/g							
Bismuth-214		1.35	+/-0.283	0.175	+/-0.306		pCi/g							
Cerium-139	U	-0.00658	+/-0.0460	0.0815	+/-0.0461		pCi/g							
Cerium-141	U	-0.122	+/-0.135	0.226	+/-0.146		pCi/g							
Cerium-144	U	0.103	+/-0.288	0.531	+/-0.292		pCi/g							
Cesium-134	U	0.0878	+/-0.0567	0.128	+/-0.0698		pCi/g							
Cesium-136	U	-0.0789	+/-0.317	0.593	+/-0.319		pCi/g							
Cesium-137	U	-0.0205	+/-0.0401	0.0726	+/-0.0412	0.100	pCi/g							
Chromium-51	U	0.329	+/-0.789	1.48	+/-0.803		pCi/g							
Cobalt-56	U	0.00806	+/-0.0595	0.117	+/-0.0596		pCi/g							
Cobalt-57	U	0.00513	+/-0.0362	0.0660	+/-0.0362		pCi/g							
Cobalt-58	U	-0.0174	+/-0.0595	0.110	+/-0.0600		pCi/g							
Cobalt-60	U	-0.00918	+/-0.0514	0.0981	+/-0.0516		pCi/g							
Europium-152	U	-0.0544	+/-0.192	0.265	+/-0.193		pCi/g							
Europium-154	U	0.00628	+/-0.155	0.305	+/-0.155		pCi/g							
Europium-155	U	-0.0880	+/-0.150	0.261	+/-0.156		pCi/g							
Iridium-192	U	-0.00681	+/-0.0585	0.104	+/-0.0586		pCi/g							
Iron-59	U	0.0252	+/-0.145	0.262	+/-0.145		pCi/g							
Lead-210	U	2.44	+/-13.6	25.2	+/-13.6		pCi/g							
Lead-212		0.651	+/-0.192	0.156	+/-0.201		pCi/g							
Lead-214		1.59	+/-0.285	0.191	+/-0.322		pCi/g							
Manganese-54	U	0.0102	+/-0.0519	0.102	+/-0.0521		pCi/g							
Mercury-203	U	0.0628	+/-0.0730	0.140	+/-0.0785		pCi/g							
Neodymium-147	U	1.04	+/-2.13	4.30	+/-2.18		pCi/g							

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Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-002 RAN
Sample ID: 719378009

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Neptunium-239	U	-0.223	+/-0.385	0.666	+/-0.399		pCi/g							
Niobium-94	U	0.0213	+/-0.0388	0.0808	+/-0.0400		pCi/g							
Niobium-95	U	0.0501	+/-0.0685	0.141	+/-0.0723		pCi/g							
Potassium-40		5.49	+/-1.57	1.01	+/-1.70		pCi/g							
Promethium-144	U	0.0308	+/-0.0413	0.0879	+/-0.0437		pCi/g							
Promethium-146	U	-0.0432	+/-0.0565	0.0919	+/-0.0600		pCi/g							
Radium-226		1.59	+/-0.285	0.191	+/-0.322		pCi/g							
Radium-228		0.592	+/-0.345	0.288	+/-0.354		pCi/g							
Ruthenium-106	U	0.269	+/-0.351	0.760	+/-0.372		pCi/g							
Silver-110m	U	-0.000822	+/-0.0662	0.128	+/-0.0662		pCi/g							
Sodium-22	U	0.00346	+/-0.0553	0.109	+/-0.0553		pCi/g							
Thallium-208		0.0867	+/-0.109	0.0811	+/-0.110		pCi/g							
Thorium-234	U	-0.302	+/-2.83	5.09	+/-2.84		pCi/g							
Tin-113	U	-0.00244	+/-0.0689	0.124	+/-0.0689		pCi/g							
Uranium-235	U	0.00881	+/-0.302	0.540	+/-0.302		pCi/g							
Uranium-238	U	-0.302	+/-2.83	5.09	+/-2.84		pCi/g							
Yttrium-88	U	-0.0235	+/-0.0560	0.102	+/-0.0570		pCi/g							
Zinc-65	U	0.0418	+/-0.140	0.248	+/-0.141		pCi/g							
Zirconium-95	U	0.0438	+/-0.0994	0.207	+/-0.101		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300, U-02-RC Modified
3	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"	2786437	95.5	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight Corrected"	2786436	89.1	(15%-125%)

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Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-002 RAN
Sample ID: 719378009

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Company : MJW Technical Services
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Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-002 DUP
Sample ID: 719378010
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 16.6%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.935	+/-0.426	0.383	+/-0.436		pCi/g			RXF2	05/10/25	1028	2781510	1
Americium-241	U	0.00412	+/-0.0644	0.103	+/-0.0644		pCi/g							
Antimony-124	U	0.103	+/-0.165	0.391	+/-0.172		pCi/g							
Antimony-125	U	0.0804	+/-0.131	0.249	+/-0.136		pCi/g							
Barium-133	U	-0.0109	+/-0.0621	0.0968	+/-0.0623		pCi/g							
Barium-140	U	0.479	+/-0.998	1.88	+/-1.02		pCi/g							
Beryllium-7	U	0.508	+/-0.547	1.09	+/-0.595		pCi/g							
Bismuth-212	U	1.02	+/-0.966	1.42	+/-0.971		pCi/g							
Bismuth-214		0.926	+/-0.204	0.200	+/-0.220		pCi/g							
Cerium-139	U	0.00702	+/-0.0374	0.0630	+/-0.0376		pCi/g							
Cerium-141	U	0.0148	+/-0.105	0.176	+/-0.105		pCi/g							
Cerium-144	U	-0.259	+/-0.265	0.365	+/-0.291		pCi/g							
Cesium-134	U	-0.0236	+/-0.0679	0.104	+/-0.0688		pCi/g							
Cesium-136	U	-0.0476	+/-0.440	0.800	+/-0.440		pCi/g							
Cesium-137		0.151	+/-0.0936	0.103	+/-0.0945	0.100	pCi/g							
Chromium-51	U	-0.360	+/-0.760	1.28	+/-0.778		pCi/g							
Cobalt-56	U	0.0957	+/-0.0676	0.153	+/-0.0807		pCi/g							
Cobalt-57	U	-0.0315	+/-0.0271	0.0408	+/-0.0307		pCi/g							
Cobalt-58	U	-0.0185	+/-0.0716	0.130	+/-0.0721		pCi/g							
Cobalt-60	U	0.0659	+/-0.0653	0.149	+/-0.0720		pCi/g							
Europium-152	U	0.00606	+/-0.136	0.221	+/-0.137		pCi/g							
Europium-154	U	-0.0531	+/-0.253	0.405	+/-0.255		pCi/g							
Europium-155	U	0.0915	+/-0.104	0.188	+/-0.113		pCi/g							
Iridium-192	U	0.0236	+/-0.0497	0.0939	+/-0.0509		pCi/g							
Iron-59	U	0.0208	+/-0.195	0.366	+/-0.195		pCi/g							
Lead-210		1.45	+/-0.919	0.829	+/-0.929		pCi/g							
Lead-212		1.11	+/-0.133	0.108	+/-0.174		pCi/g							
Lead-214		1.26	+/-0.213	0.133	+/-0.236		pCi/g							
Manganese-54	U	-0.0166	+/-0.0473	0.0854	+/-0.0479		pCi/g							
Mercury-203	U	0.0248	+/-0.0648	0.110	+/-0.0658		pCi/g							
Neodymium-147	U	-0.833	+/-2.68	3.98	+/-2.71		pCi/g							
Neptunium-239	U	0.0392	+/-0.259	0.442	+/-0.259		pCi/g							
Niobium-94	U	0.00865	+/-0.0492	0.0945	+/-0.0493		pCi/g							
Niobium-95	U	-0.0298	+/-0.0741	0.131	+/-0.0754		pCi/g							
Potassium-40		16.8	+/-2.39	1.36	+/-2.84		pCi/g							
Promethium-144	U	0.0571	+/-0.0608	0.119	+/-0.0662		pCi/g							
Promethium-146	U	-0.00296	+/-0.0640	0.113	+/-0.0640		pCi/g							
Radium-226		1.26	+/-0.213	0.133	+/-0.236		pCi/g							
Radium-228		0.935	+/-0.426	0.383	+/-0.436		pCi/g							

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Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-002 DUP
Sample ID: 719378010

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.123	+/-0.470	0.862	+/-0.473		pCi/g							
Silver-110m	U	-0.0290	+/-0.0811	0.144	+/-0.0822		pCi/g							
Sodium-22	U	-0.0308	+/-0.0924	0.143	+/-0.0935		pCi/g							
Thallium-208		0.243	+/-0.133	0.0973	+/-0.135		pCi/g							
Thorium-234	UI	0.000	+/-1.28	0.966	+/-1.33		pCi/g							
Tin-113	U	0.0122	+/-0.0692	0.114	+/-0.0694		pCi/g							
Uranium-235	U	-0.0863	+/-0.242	0.388	+/-0.242		pCi/g							
Uranium-238	UI	0.000	+/-1.28	0.966	+/-1.33		pCi/g							
Yttrium-88	U	0.00862	+/-0.0515	0.121	+/-0.0516		pCi/g							
Zinc-65	U	-0.0272	+/-0.164	0.254	+/-0.164		pCi/g							
Zirconium-95	U	0.138	+/-0.144	0.260	+/-0.157		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-007 DUP
Sample ID: 719378011
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 10.2%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		1.54	+/-0.408	0.341	+/-0.453		pCi/g			RXF2	05/10/25	1028	2781510	1
Americium-241	U	0.189	+/-0.353	0.673	+/-0.364		pCi/g							
Antimony-124	U	0.0208	+/-0.130	0.293	+/-0.130		pCi/g							
Antimony-125	U	-0.0295	+/-0.125	0.231	+/-0.126		pCi/g							
Barium-133	U	-0.00278	+/-0.0634	0.108	+/-0.0634		pCi/g							
Barium-140	U	-0.734	+/-0.807	1.33	+/-0.874		pCi/g							
Beryllium-7	U	-0.358	+/-0.560	0.977	+/-0.584		pCi/g							
Bismuth-212		1.69	+/-1.03	1.25	+/-1.04		pCi/g							
Bismuth-214		1.76	+/-0.266	0.153	+/-0.305		pCi/g							
Cerium-139	U	-0.00104	+/-0.0515	0.0829	+/-0.0515		pCi/g							
Cerium-141	U	-0.00682	+/-0.126	0.220	+/-0.126		pCi/g							
Cerium-144	U	0.205	+/-0.276	0.520	+/-0.292		pCi/g							
Cesium-134	U	0.0841	+/-0.0729	0.123	+/-0.0827		pCi/g							
Cesium-136	U	0.00545	+/-0.336	0.678	+/-0.336		pCi/g							
Cesium-137		0.383	+/-0.115	0.100	+/-0.119	0.100	pCi/g							
Chromium-51	U	-0.140	+/-0.767	1.44	+/-0.769		pCi/g							
Cobalt-56	U	0.00714	+/-0.0570	0.111	+/-0.0571		pCi/g							
Cobalt-57	U	-0.0322	+/-0.0355	0.0584	+/-0.0385		pCi/g							
Cobalt-58	U	-0.00808	+/-0.0499	0.0938	+/-0.0500		pCi/g							
Cobalt-60	U	-0.00143	+/-0.0592	0.106	+/-0.0592		pCi/g							
Europium-152	U	-0.00591	+/-0.118	0.225	+/-0.118		pCi/g							
Europium-154	U	0.0406	+/-0.124	0.279	+/-0.126		pCi/g							
Europium-155	U	-0.0807	+/-0.154	0.265	+/-0.159		pCi/g							
Iridium-192	U	-0.0121	+/-0.0555	0.104	+/-0.0558		pCi/g							
Iron-59	U	-0.0161	+/-0.110	0.219	+/-0.111		pCi/g							
Lead-210	U	-9.80	+/-15.3	26.6	+/-16.0		pCi/g							
Lead-212		1.35	+/-0.165	0.140	+/-0.212		pCi/g							
Lead-214		2.51	+/-0.324	0.170	+/-0.400		pCi/g							
Manganese-54	U	0.00223	+/-0.0625	0.115	+/-0.0625		pCi/g							
Mercury-203	U	0.00212	+/-0.0730	0.126	+/-0.0730		pCi/g							
Neodymium-147	U	0.221	+/-1.92	3.76	+/-1.93		pCi/g							
Neptunium-239	U	-0.150	+/-0.360	0.621	+/-0.367		pCi/g							
Niobium-94	U	0.0594	+/-0.0508	0.112	+/-0.0577		pCi/g							
Niobium-95	U	0.0786	+/-0.0713	0.134	+/-0.0800		pCi/g							
Potassium-40		5.77	+/-1.27	0.634	+/-1.44		pCi/g							
Promethium-144	U	0.0229	+/-0.0473	0.0949	+/-0.0485		pCi/g							
Promethium-146	U	0.00411	+/-0.0614	0.116	+/-0.0615		pCi/g							
Radium-226		2.51	+/-0.324	0.170	+/-0.400		pCi/g							
Radium-228		1.54	+/-0.408	0.341	+/-0.453		pCi/g							

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-007 DUP
Sample ID: 719378011

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	-0.101	+/-0.430	0.785	+/-0.432		pCi/g							
Silver-110m	U	-0.0134	+/-0.0666	0.122	+/-0.0669		pCi/g							
Sodium-22	U	0.0158	+/-0.0446	0.101	+/-0.0452		pCi/g							
Thallium-208		0.419	+/-0.139	0.0787	+/-0.143		pCi/g							
Thorium-234	U	0.679	+/-2.61	4.94	+/-2.63		pCi/g							
Tin-113	U	0.0514	+/-0.0675	0.137	+/-0.0715		pCi/g							
Uranium-235	U	0.181	+/-0.265	0.498	+/-0.266		pCi/g							
Uranium-238	U	0.679	+/-2.61	4.94	+/-2.63		pCi/g							
Yttrium-88	U	-0.0287	+/-0.0503	0.0873	+/-0.0520		pCi/g							
Zinc-65	U	0.0322	+/-0.110	0.214	+/-0.111		pCi/g							
Zirconium-95	U	0.00951	+/-0.0922	0.183	+/-0.0923		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-004 DUP
Sample ID: 719378012
Matrix: Soil
Collect Date: 08-APR-25
Receive Date: 14-APR-25
Collector: Client
Moisture: 8.42%

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Actinium-228		0.292	+/-0.240	0.290	+/-0.242		pCi/g			RXF2	05/10/25	1135	2781510	1
Americium-241	U	0.00358	+/-0.131	0.246	+/-0.131		pCi/g							
Antimony-124	U	-0.0140	+/-0.0971	0.212	+/-0.0973		pCi/g							
Antimony-125	U	-0.0425	+/-0.0852	0.154	+/-0.0874		pCi/g							
Barium-133	U	0.0343	+/-0.0363	0.0758	+/-0.0396		pCi/g							
Barium-140	U	0.169	+/-0.563	1.17	+/-0.568		pCi/g							
Beryllium-7	U	0.174	+/-0.338	0.721	+/-0.348		pCi/g							
Bismuth-212	UI	0.000	+/-0.821	0.627	+/-0.837		pCi/g							
Bismuth-214		0.441	+/-0.170	0.138	+/-0.174		pCi/g							
Cerium-139	U	0.0160	+/-0.0272	0.0534	+/-0.0283		pCi/g							
Cerium-141	U	-0.0428	+/-0.0749	0.131	+/-0.0774		pCi/g							
Cerium-144	U	-0.0316	+/-0.157	0.289	+/-0.157		pCi/g							
Cesium-134	U	0.0716	+/-0.0426	0.0936	+/-0.0539		pCi/g							
Cesium-136	U	0.129	+/-0.222	0.518	+/-0.230		pCi/g							
Cesium-137	U	0.00513	+/-0.0346	0.0683	+/-0.0346	0.100	pCi/g							
Chromium-51	U	-0.0879	+/-0.424	0.826	+/-0.426		pCi/g							
Cobalt-56	U	-0.0407	+/-0.0508	0.0872	+/-0.0542		pCi/g							
Cobalt-57	U	0.00303	+/-0.0200	0.0383	+/-0.0201		pCi/g							
Cobalt-58	U	0.0103	+/-0.0406	0.0877	+/-0.0409		pCi/g							
Cobalt-60	U	0.0404	+/-0.0402	0.101	+/-0.0444		pCi/g							
Europium-152	U	-0.0144	+/-0.0898	0.172	+/-0.0901		pCi/g							
Europium-154	U	0.0270	+/-0.0949	0.216	+/-0.0958		pCi/g							
Europium-155	U	0.0183	+/-0.0801	0.157	+/-0.0806		pCi/g							
Iridium-192	U	0.00651	+/-0.0333	0.0678	+/-0.0335		pCi/g							
Iron-59	U	-0.0530	+/-0.104	0.187	+/-0.107		pCi/g							
Lead-210	U	-0.0786	+/-3.60	7.26	+/-3.60		pCi/g							
Lead-212		0.659	+/-0.114	0.0900	+/-0.128		pCi/g							
Lead-214		0.555	+/-0.172	0.134	+/-0.178		pCi/g							
Manganese-54	U	-0.0148	+/-0.0376	0.0706	+/-0.0383		pCi/g							
Mercury-203	U	0.0263	+/-0.0631	0.0779	+/-0.0632		pCi/g							
Neodymium-147	U	0.603	+/-1.54	3.16	+/-1.56		pCi/g							
Neptunium-239	U	-0.159	+/-0.196	0.339	+/-0.209		pCi/g							
Niobium-94	U	0.0518	+/-0.0587	0.0829	+/-0.0633		pCi/g							
Niobium-95	U	-0.0444	+/-0.0462	0.0776	+/-0.0506		pCi/g							
Potassium-40		5.14	+/-1.18	0.659	+/-1.32		pCi/g							
Promethium-144	U	0.000865	+/-0.0280	0.0531	+/-0.0280		pCi/g							
Promethium-146	U	0.00376	+/-0.0382	0.0756	+/-0.0382		pCi/g							
Radium-226		0.555	+/-0.172	0.134	+/-0.178		pCi/g							
Radium-228		0.292	+/-0.240	0.290	+/-0.242		pCi/g							

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Amherst, New York 14228

Report Date: May 12, 2025

Contact: Alex Bartels
Project: Routine Analytical

Client Sample ID: 040825-3821INV-004 DUP
Sample ID: 719378012

Project: MJWC01325
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected"														
Ruthenium-106	U	0.153	+/-0.268	0.586	+/-0.277		pCi/g							
Silver-110m	U	0.0390	+/-0.0373	0.112	+/-0.0415		pCi/g							
Sodium-22	U	0.00723	+/-0.0330	0.0744	+/-0.0332		pCi/g							
Thallium-208		0.164	+/-0.0691	0.0642	+/-0.0705		pCi/g							
Thorium-234	UI	0.000	+/-2.09	1.61	+/-2.15		pCi/g							
Tin-113	U	0.0146	+/-0.0459	0.0930	+/-0.0464		pCi/g							
Uranium-235	U	0.117	+/-0.170	0.335	+/-0.170		pCi/g							
Uranium-238	UI	0.000	+/-2.09	1.61	+/-2.15		pCi/g							
Yttrium-88	U	-0.000370	+/-0.0447	0.0989	+/-0.0447		pCi/g							
Zinc-65	U	-0.0296	+/-0.0704	0.108	+/-0.0717		pCi/g							
Zirconium-95	U	-0.0625	+/-0.0776	0.137	+/-0.0828		pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	04/15/25	1358	2781503

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
Lc/LC: Critical Level
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Mtd.: Method
PF: Prep Factor
RL: Reporting Limit
TPU: Total Propagated Uncertainty

Quality Control Data

GEL LABORATORIES LLC

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QC Summary

Report Date: May 12, 2025

Client : **MJW Technical Services**
15 Hazelwood Drive
Suite 112
Amherst, New York

Contact: **Alex Bartels**

Workorder: **719378**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 2786436										
QC1206081463 719378002 DUP										
Uranium-235/236	U	-0.0593	U	0.0972	pCi/g	0		N/A	RM3	05/03/2508:04
	Uncert:	+/-0.179		+/-0.223						
	TPU:	+/-0.179		+/-0.224						
Uranium-238		0.983		0.623	pCi/g	44.9		(0% - 100%)		
	Uncert:	+/-0.524		+/-0.383						
	TPU:	+/-0.541		+/-0.392						
QC1206081464 LCS										
Uranium-235/236				1.17	pCi/g				RM3	04/28/2510:14
	Uncert:			+/-0.623						
	TPU:			+/-0.644						
Uranium-238	24.4			24.2	pCi/g		99.1	(75%-125%)		
	Uncert:			+/-2.41						
	TPU:			+/-4.12						
QC1206081462 MB										
Uranium-235/236			U	-0.0683	pCi/g				RM3	04/28/2510:16
	Uncert:			+/-0.158						
	TPU:			+/-0.159						
Uranium-238			U	-0.0253	pCi/g					
	Uncert:			+/-0.175						
	TPU:			+/-0.175						
Batch 2786437										
QC1206081466 719378002 DUP										
Thorium-230		0.733		1.94	pCi/g	90.1		(0% - 100%)	RM3	04/27/2511:46
	Uncert:	+/-0.533		+/-0.724						
	TPU:	+/-0.545		+/-0.767						
Thorium-232		0.977		0.741	pCi/g	27.5		(0% - 100%)		
	Uncert:	+/-0.544		+/-0.452						
	TPU:	+/-0.559		+/-0.461						
QC1206081467 LCS										
Thorium-230				1.72	pCi/g			(75%-125%)	RM3	04/27/2511:46
	Uncert:			+/-0.738						
	TPU:			+/-0.779						
Thorium-232	18.4			18.4	pCi/g		100	(75%-125%)		
	Uncert:			+/-2.29						
	TPU:			+/-3.39						
QC1206081465 MB										
Thorium-230			U	0.325	pCi/g				RM3	04/27/2511:46
	Uncert:			+/-0.384						
	TPU:			+/-0.388						
Thorium-232			U	-0.0245	pCi/g					

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 2786437										
	Uncert:			+/-0.141						
	TPU:			+/-0.142						
Batch 2792485										
QC1206094650 719378007 DUP										
Thorium-230		3.41		3.22	pCi/g	5.87		(0%-20%)	RM3	05/08/2508:55
	Uncert:	+/-0.948		+/-1.01						
	TPU:	+/-1.05		+/-1.10						
Thorium-232		2.53		2.78	pCi/g	9.41		(0%-20%)		
	Uncert:	+/-0.801		+/-0.924						
	TPU:	+/-0.863		+/-0.995						
QC1206094651 LCS										
Thorium-230				1.87	pCi/g			(75%-125%)	RM3	05/08/2508:55
	Uncert:			+/-0.719						
	TPU:			+/-0.762						
Thorium-232	19.1			20.3	pCi/g		106	(75%-125%)		
	Uncert:			+/-2.22						
	TPU:			+/-3.39						
QC1206094649 MB										
Thorium-230			U	0.237	pCi/g				RM3	05/08/2508:55
	Uncert:			+/-0.339						
	TPU:			+/-0.342						
Thorium-232			U	-0.0515	pCi/g					
	Uncert:			+/-0.130						
	TPU:			+/-0.131						
Rad Gamma Spec										
Batch 2781510										
QC1206070203 719378001 DUP										
Actinium-228		1.17		1.33	pCi/g	13		(0%-20%)	RXF2	05/10/2511:40
	Uncert:	+/-0.361		+/-0.314						
	TPU:	+/-0.388		+/-0.362						
Americium-241	U	-0.137	U	-0.0422	pCi/g	0		N/A		
	Uncert:	+/-0.165		+/-0.167						
	TPU:	+/-0.177		+/-0.168						
Antimony-124	U	0.111	U	-0.0597	pCi/g	0		N/A		
	Uncert:	+/-0.133		+/-0.133						
	TPU:	+/-0.143		+/-0.136						
Antimony-125	U	0.0983	U	-0.115	pCi/g	0		N/A		
	Uncert:	+/-0.113		+/-0.0836						
	TPU:	+/-0.122		+/-0.0988						
Barium-133	U	-0.0211	U	0.0122	pCi/g	0		N/A		
	Uncert:	+/-0.0466		+/-0.0463						
	TPU:	+/-0.0475		+/-0.0466						
Barium-140	U	0.267	U	0.149	pCi/g	0		N/A		
	Uncert:	+/-0.805		+/-0.756						
	TPU:	+/-0.814		+/-0.759						

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
Beryllium-7	U	0.157	U	0.107	pCi/g	0			N/A	
	Uncert:	+/-0.486		+/-0.391						
	TPU:	+/-0.491		+/-0.394						
Bismuth-212		1.85		1.15	pCi/g	47.1		(0% - 100%)		
	Uncert:	+/-0.929		+/-0.993						
	TPU:	+/-0.946		+/-1.00						
Bismuth-214		1.04		1.05	pCi/g	.864		(0%-20%)		
	Uncert:	+/-0.270		+/-0.233						
	TPU:	+/-0.284		+/-0.249						
Cerium-139	U	-0.0311	U	0.0376	pCi/g	0			N/A	
	Uncert:	+/-0.0345		+/-0.0566						
	TPU:	+/-0.0378		+/-0.0572						
Cerium-141	U	-0.0476	U	0.0321	pCi/g	0			N/A	
	Uncert:	+/-0.104		+/-0.182						
	TPU:	+/-0.106		+/-0.182						
Cerium-144	U	0.106	U	0.188	pCi/g	0			N/A	
	Uncert:	+/-0.232		+/-0.216						
	TPU:	+/-0.237		+/-0.233						
Cesium-134	U	0.0549	U	0.0342	pCi/g	0			N/A	
	Uncert:	+/-0.0481		+/-0.0479						
	TPU:	+/-0.0544		+/-0.0504						
Cesium-136	U	0.0899	U	-0.0583	pCi/g	0			N/A	
	Uncert:	+/-0.329		+/-0.278						
	TPU:	+/-0.331		+/-0.279						
Cesium-137	U	0.0381	U	-0.0101	pCi/g	0			N/A	
	Uncert:	+/-0.0541		+/-0.0449						
	TPU:	+/-0.0568		+/-0.0451						
Chromium-51	U	0.0924	U	0.618	pCi/g	0			N/A	
	Uncert:	+/-0.580		+/-0.582						
	TPU:	+/-0.581		+/-0.648						
Cobalt-56	U	0.0128	U	-0.0417	pCi/g	0			N/A	
	Uncert:	+/-0.0567		+/-0.0480						
	TPU:	+/-0.0570		+/-0.0518						
Cobalt-57	U	-0.0173	U	0.0113	pCi/g	0			N/A	
	Uncert:	+/-0.0290		+/-0.0266						
	TPU:	+/-0.0300		+/-0.0271						
Cobalt-58	U	-0.0155	U	0.0255	pCi/g	0			N/A	
	Uncert:	+/-0.0498		+/-0.0466						
	TPU:	+/-0.0504		+/-0.0481						
Cobalt-60	U	0.00236	U	0.0207	pCi/g	0			N/A	
	Uncert:	+/-0.0438		+/-0.0371						
	TPU:	+/-0.0438		+/-0.0383						
Europium-152	U	-0.0359	U	-0.0463	pCi/g	0			N/A	
	Uncert:	+/-0.115		+/-0.111						
	TPU:	+/-0.116		+/-0.113						
Europium-154	U	0.125	U	-0.122	pCi/g	0			N/A	

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
	Uncert:	+/-0.181		+/-0.138						
	TPU:	+/-0.190		+/-0.149						
Europium-155	U	0.0606	U	0.0685	pCi/g	0			N/A	
	Uncert:	+/-0.106		+/-0.105						
	TPU:	+/-0.109		+/-0.110						
Iridium-192	U	-0.00435	U	0.0121	pCi/g	0			N/A	
	Uncert:	+/-0.0434		+/-0.0490						
	TPU:	+/-0.0434		+/-0.0493						
Iron-59	U	-0.0678	U	-0.0877	pCi/g	0			N/A	
	Uncert:	+/-0.138		+/-0.139						
	TPU:	+/-0.142		+/-0.145						
Lead-210	U	-0.476	U	0.0616	pCi/g	0			N/A	
	Uncert:	+/-5.05		+/-5.32						
	TPU:	+/-5.05		+/-5.32						
Lead-212		1.12		1.31	pCi/g	16		(0%-20%)		
	Uncert:	+/-0.140		+/-0.152						
	TPU:	+/-0.172		+/-0.197						
Lead-214		1.46		1.30	pCi/g	11.6		(0%-20%)		
	Uncert:	+/-0.241		+/-0.222						
	TPU:	+/-0.272		+/-0.253						
Manganese-54	U	0.00898	U	0.0424	pCi/g	0			N/A	
	Uncert:	+/-0.0461		+/-0.0453						
	TPU:	+/-0.0462		+/-0.0494						
Mercury-203	U	0.0325	U	0.0484	pCi/g	0			N/A	
	Uncert:	+/-0.0518		+/-0.0821						
	TPU:	+/-0.0539		+/-0.0823						
Neodymium-147	U	1.36	U	0.747	pCi/g	0			N/A	
	Uncert:	+/-2.21		+/-1.87						
	TPU:	+/-2.30		+/-1.90						
Neptunium-239	U	-0.168	U	-0.0646	pCi/g	0			N/A	
	Uncert:	+/-0.277		+/-0.260						
	TPU:	+/-0.287		+/-0.261						
Niobium-94	U	0.0312	U	0.0104	pCi/g	0			N/A	
	Uncert:	+/-0.0411		+/-0.0303						
	TPU:	+/-0.0436		+/-0.0307						
Niobium-95	U	-0.00751	U	0.000394	pCi/g	0			N/A	
	Uncert:	+/-0.0669		+/-0.0523						
	TPU:	+/-0.0670		+/-0.0523						
Potassium-40		16.1		17.2	pCi/g	6.42		(0%-20%)		
	Uncert:	+/-1.96		+/-1.92						
	TPU:	+/-2.72		+/-2.78						
Promethium-144	U	0.0153	U	-0.00999	pCi/g	0			N/A	
	Uncert:	+/-0.0404		+/-0.0361						
	TPU:	+/-0.0411		+/-0.0364						
Promethium-146	U	0.0631	U	0.00678	pCi/g	0			N/A	
	Uncert:	+/-0.105		+/-0.0366						

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
	TPU:	+/-0.109		+/-0.0367						
Radium-226		1.46		1.30	pCi/g	11.6		(0%-20%)		
	Uncert:	+/-0.241		+/-0.222						
	TPU:	+/-0.272		+/-0.253						
Radium-228		1.17		1.33	pCi/g	13		(0%-20%)		
	Uncert:	+/-0.361		+/-0.314						
	TPU:	+/-0.388		+/-0.362						
Ruthenium-106	U	0.0727	U	-0.280	pCi/g	0		N/A		
	Uncert:	+/-0.397		+/-0.265						
	TPU:	+/-0.399		+/-0.295						
Silver-110m	U	0.0198	U	0.0263	pCi/g	0		N/A		
	Uncert:	+/-0.0563		+/-0.0505						
	TPU:	+/-0.0570		+/-0.0520						
Sodium-22	U	0.0432	U	-0.0422	pCi/g	0		N/A		
	Uncert:	+/-0.0642		+/-0.0494						
	TPU:	+/-0.0673		+/-0.0531						
Thallium-208		0.369		0.399	pCi/g	7.9		(0%-20%)		
	Uncert:	+/-0.0998		+/-0.102						
	TPU:	+/-0.105		+/-0.107						
Thorium-234	U	1.20	UI	0.000	pCi/g	0		N/A		
	Uncert:	+/-2.70		+/-2.56						
	TPU:	+/-2.72		+/-2.70						
Tin-113	U	-0.0274	U	-0.0352	pCi/g	0		N/A		
	Uncert:	+/-0.0598		+/-0.0496						
	TPU:	+/-0.0611		+/-0.0522						
Uranium-235	U	0.0371	U	-0.110	pCi/g	0		N/A		
	Uncert:	+/-0.234		+/-0.223						
	TPU:	+/-0.235		+/-0.223						
Uranium-238	U	1.20	UI	0.000	pCi/g	0		N/A		
	Uncert:	+/-2.70		+/-2.56						
	TPU:	+/-2.72		+/-2.70						
Yttrium-88	U	0.00884	U	0.0199	pCi/g	0		N/A		
	Uncert:	+/-0.0576		+/-0.0406						
	TPU:	+/-0.0577		+/-0.0416						
Zinc-65	U	-0.113	U	0.0936	pCi/g	0		N/A		
	Uncert:	+/-0.143		+/-0.0884						
	TPU:	+/-0.152		+/-0.0889						
Zirconium-95	U	0.0752	U	0.0159	pCi/g	0		N/A		
	Uncert:	+/-0.109		+/-0.0919						
	TPU:	+/-0.115		+/-0.0922						
QC1206070204 LCS										
Actinium-228			U	-0.266	pCi/g				RXF2	05/10/2511:42
	Uncert:			+/-1.57						
	TPU:			+/-1.58						
Americium-241	482			549	pCi/g		114	(75%-125%)		
	Uncert:			+/-10.6						

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
	TPU:			+/-44.3						
Antimony-124			U	-0.0513	pCi/g					
	Uncert:			+/-0.423						
	TPU:			+/-0.423						
Antimony-125			U	0.603	pCi/g					
	Uncert:			+/-1.14						
	TPU:			+/-1.17						
Barium-133			U	0.365	pCi/g					
	Uncert:			+/-0.422						
	TPU:			+/-0.454						
Barium-140			U	-1.93	pCi/g					
	Uncert:			+/-4.93						
	TPU:			+/-5.00						
Beryllium-7			U	2.43	pCi/g					
	Uncert:			+/-4.67						
	TPU:			+/-4.80						
Bismuth-212			U	2.28	pCi/g					
	Uncert:			+/-3.87						
	TPU:			+/-4.01						
Bismuth-214			U	-0.0924	pCi/g					
	Uncert:			+/-0.613						
	TPU:			+/-0.615						
Cerium-139			U	0.0433	pCi/g					
	Uncert:			+/-0.292						
	TPU:			+/-0.292						
Cerium-141			U	-0.307	pCi/g					
	Uncert:			+/-0.628						
	TPU:			+/-0.643						
Cerium-144			U	0.645	pCi/g					
	Uncert:			+/-1.73						
	TPU:			+/-1.76						
Cesium-134			U	-0.331	pCi/g					
	Uncert:			+/-0.343						
	TPU:			+/-0.376						
Cesium-136			U	0.210	pCi/g					
	Uncert:			+/-1.69						
	TPU:			+/-1.69						
Cesium-137	147			142	pCi/g		96.6	(75%-125%)		
	Uncert:			+/-2.64						
	TPU:			+/-13.0						
Chromium-51			U	0.382	pCi/g					
	Uncert:			+/-5.08						
	TPU:			+/-5.09						
Cobalt-56			U	0.177	pCi/g					
	Uncert:			+/-0.406						
	TPU:			+/-0.415						

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
Cobalt-57			U	-0.0572	pCi/g					
	Uncert:			+/-0.230						
	TPU:			+/-0.232						
Cobalt-58			U	-0.322	pCi/g					
	Uncert:			+/-0.392						
	TPU:			+/-0.420						
Cobalt-60	52.2			51.1	pCi/g		97.9	(75%-125%)		
	Uncert:			+/-1.91						
	TPU:			+/-4.76						
Europium-152			U	-1.42	pCi/g					
	Uncert:			+/-0.961						
	TPU:			+/-1.16						
Europium-154			U	0.278	pCi/g					
	Uncert:			+/-0.584						
	TPU:			+/-0.598						
Europium-155			U	0.00375	pCi/g					
	Uncert:			+/-1.06						
	TPU:			+/-1.06						
Iridium-192			U	-0.402	pCi/g					
	Uncert:			+/-0.353						
	TPU:			+/-0.398						
Iron-59			U	-0.627	pCi/g					
	Uncert:			+/-1.01						
	TPU:			+/-1.06						
Lead-210				4400	pCi/g					
	Uncert:			+/-215						
	TPU:			+/-487						
Lead-212			U	0.435	pCi/g					
	Uncert:			+/-0.494						
	TPU:			+/-0.533						
Lead-214			U	0.321	pCi/g					
	Uncert:			+/-0.745						
	TPU:			+/-0.760						
Manganese-54			U	-0.153	pCi/g					
	Uncert:			+/-0.337						
	TPU:			+/-0.345						
Mercury-203			U	0.198	pCi/g					
	Uncert:			+/-0.399						
	TPU:			+/-0.409						
Neodymium-147			U	4.96	pCi/g					
	Uncert:			+/-11.2						
	TPU:			+/-11.4						
Neptunium-239			U	-0.240	pCi/g					
	Uncert:			+/-2.27						
	TPU:			+/-2.28						
Niobium-94			U	-0.226	pCi/g					

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
	Uncert:			+/-0.232						
	TPU:			+/-0.254						
Niobium-95			U	-0.291	pCi/g					
	Uncert:			+/-0.340						
	TPU:			+/-0.366						
Potassium-40			U	0.175	pCi/g					
	Uncert:			+/-1.29						
	TPU:			+/-1.29						
Promethium-144			U	-0.106	pCi/g					
	Uncert:			+/-0.253						
	TPU:			+/-0.257						
Promethium-146			U	0.372	pCi/g					
	Uncert:			+/-0.563						
	TPU:			+/-0.588						
Radium-226			U	0.321	pCi/g					
	Uncert:			+/-0.745						
	TPU:			+/-0.760						
Radium-228			U	-0.266	pCi/g					
	Uncert:			+/-1.57						
	TPU:			+/-1.58						
Ruthenium-106			U	-3.01	pCi/g					
	Uncert:			+/-3.04						
	TPU:			+/-3.35						
Silver-110m			U	-0.0414	pCi/g					
	Uncert:			+/-0.534						
	TPU:			+/-0.535						
Sodium-22			U	0.0986	pCi/g					
	Uncert:			+/-0.207						
	TPU:			+/-0.212						
Thallium-208			U	-0.0120	pCi/g					
	Uncert:			+/-0.343						
	TPU:			+/-0.343						
Thorium-234			U	-4.86	pCi/g					
	Uncert:			+/-11.5						
	TPU:			+/-11.7						
Tin-113			U	-0.260	pCi/g					
	Uncert:			+/-0.507						
	TPU:			+/-0.521						
Uranium-235			U	-0.0853	pCi/g					
	Uncert:			+/-1.58						
	TPU:			+/-1.58						
Uranium-238			U	-4.86	pCi/g					
	Uncert:			+/-11.5						
	TPU:			+/-11.7						
Yttrium-88			U	-0.0941	pCi/g					
	Uncert:			+/-0.171						

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
	TPU:			+/-0.176						
Zinc-65			U	0.370	pCi/g					
	Uncert:			+/-0.824						
	TPU:			+/-0.841						
Zirconium-95			U	-0.0465	pCi/g					
	Uncert:			+/-0.656						
	TPU:			+/-0.656						
QC1206070202 MB										
Actinium-228			U	-0.0626	pCi/g				RXF2	05/10/2511:36
	Uncert:			+/-0.0660						
	TPU:			+/-0.0722						
Americium-241			U	0.00859	pCi/g					
	Uncert:			+/-0.0459						
	TPU:			+/-0.0461						
Antimony-124			U	-0.0502	pCi/g					
	Uncert:			+/-0.0724						
	TPU:			+/-0.0760						
Antimony-125			U	0.0232	pCi/g					
	Uncert:			+/-0.0439						
	TPU:			+/-0.0452						
Barium-133			U	-0.0161	pCi/g					
	Uncert:			+/-0.0192						
	TPU:			+/-0.0206						
Barium-140			U	-0.201	pCi/g					
	Uncert:			+/-0.226						
	TPU:			+/-0.244						
Beryllium-7			U	-0.166	pCi/g					
	Uncert:			+/-0.164						
	TPU:			+/-0.181						
Bismuth-212			U	0.0685	pCi/g					
	Uncert:			+/-0.272						
	TPU:			+/-0.274						
Bismuth-214			U	-0.0277	pCi/g					
	Uncert:			+/-0.0489						
	TPU:			+/-0.0505						
Cerium-139			U	-0.00377	pCi/g					
	Uncert:			+/-0.0131						
	TPU:			+/-0.0133						
Cerium-141			U	-0.00427	pCi/g					
	Uncert:			+/-0.0285						
	TPU:			+/-0.0286						
Cerium-144			U	0.0287	pCi/g					
	Uncert:			+/-0.0821						
	TPU:			+/-0.0831						
Cesium-134			U	0.0106	pCi/g					
	Uncert:			+/-0.0254						

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
	TPU:			+/-0.0259						
Cesium-136			U	0.0515	pCi/g					
	Uncert:			+/-0.0584						
	TPU:			+/-0.0632						
Cesium-137			U	0.00747	pCi/g					
	Uncert:			+/-0.0178						
	TPU:			+/-0.0182						
Chromium-51			U	-0.131	pCi/g					
	Uncert:			+/-0.226						
	TPU:			+/-0.234						
Cobalt-56			U	-0.0297	pCi/g					
	Uncert:			+/-0.0267						
	TPU:			+/-0.0300						
Cobalt-57			U	-0.00350	pCi/g					
	Uncert:			+/-0.0110						
	TPU:			+/-0.0111						
Cobalt-58			U	0.00383	pCi/g					
	Uncert:			+/-0.0232						
	TPU:			+/-0.0232						
Cobalt-60			U	-0.0162	pCi/g					
	Uncert:			+/-0.0262						
	TPU:			+/-0.0273						
Europium-152			U	0.00408	pCi/g					
	Uncert:			+/-0.0533						
	TPU:			+/-0.0533						
Europium-154			U	-0.00616	pCi/g					
	Uncert:			+/-0.0574						
	TPU:			+/-0.0575						
Europium-155			U	0.0229	pCi/g					
	Uncert:			+/-0.0394						
	TPU:			+/-0.0407						
Iridium-192			U	0.0106	pCi/g					
	Uncert:			+/-0.0169						
	TPU:			+/-0.0176						
Iron-59			U	0.00982	pCi/g					
	Uncert:			+/-0.0328						
	TPU:			+/-0.0331						
Lead-210			U	0.0597	pCi/g					
	Uncert:			+/-1.08						
	TPU:			+/-1.08						
Lead-212			U	0.0375	pCi/g					
	Uncert:			+/-0.0461						
	TPU:			+/-0.0492						
Lead-214			U	0.00363	pCi/g					
	Uncert:			+/-0.0442						
	TPU:			+/-0.0442						

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
Manganese-54			U	0.00587	pCi/g					
	Uncert:			+/-0.0245						
	TPU:			+/-0.0247						
Mercury-203			U	-0.00831	pCi/g					
	Uncert:			+/-0.0236						
	TPU:			+/-0.0239						
Neodymium-147			U	-0.0633	pCi/g					
	Uncert:			+/-0.517						
	TPU:			+/-0.518						
Neptunium-239			U	0.0725	pCi/g					
	Uncert:			+/-0.103						
	TPU:			+/-0.109						
Niobium-94			U	-0.00281	pCi/g					
	Uncert:			+/-0.0198						
	TPU:			+/-0.0198						
Niobium-95			U	-0.00535	pCi/g					
	Uncert:			+/-0.0263						
	TPU:			+/-0.0264						
Potassium-40			U	0.0997	pCi/g					
	Uncert:			+/-0.283						
	TPU:			+/-0.287						
Promethium-144			U	-0.0350	pCi/g					
	Uncert:			+/-0.0277						
	TPU:			+/-0.0320						
Promethium-146			U	0.00901	pCi/g					
	Uncert:			+/-0.0189						
	TPU:			+/-0.0194						
Radium-226			U	0.00363	pCi/g					
	Uncert:			+/-0.0442						
	TPU:			+/-0.0442						
Radium-228			U	-0.0626	pCi/g					
	Uncert:			+/-0.0660						
	TPU:			+/-0.0722						
Ruthenium-106			U	-0.0694	pCi/g					
	Uncert:			+/-0.215						
	TPU:			+/-0.217						
Silver-110m			U	0.0123	pCi/g					
	Uncert:			+/-0.0205						
	TPU:			+/-0.0213						
Sodium-22			U	-0.00312	pCi/g					
	Uncert:			+/-0.0199						
	TPU:			+/-0.0200						
Thallium-208			U	0.0129	pCi/g					
	Uncert:			+/-0.0228						
	TPU:			+/-0.0228						
Thorium-234			U	-0.399	pCi/g					

QC Summary

Workorder: **719378**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 2781510										
	Uncert:			+/-0.427						
	TPU:			+/-0.472						
Tin-113			U	0.00643	pCi/g					
	Uncert:			+/-0.0187						
	TPU:			+/-0.0189						
Uranium-235			U	-0.0268	pCi/g					
	Uncert:			+/-0.0730						
	TPU:			+/-0.0740						
Uranium-238			U	-0.399	pCi/g					
	Uncert:			+/-0.427						
	TPU:			+/-0.472						
Yttrium-88			U	0.0234	pCi/g					
	Uncert:			+/-0.0329						
	TPU:			+/-0.0346						
Zinc-65			U	0.00441	pCi/g					
	Uncert:			+/-0.0452						
	TPU:			+/-0.0452						
Zirconium-95			U	-0.00691	pCi/g					
	Uncert:			+/-0.0483						
	TPU:			+/-0.0484						

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

U	Analyte was analyzed for, but not detected above the Lc.
J	Value is estimated
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
H	Analytical holding time was exceeded
<	Result is less than value reported
>	Result is greater than value reported
UI	Gamma Spectroscopy--Uncertain identification
BD	Results are either below the MDC or tracer recovery is low
h	Preparation or preservation holding time was exceeded
R	Sample results are rejected
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
N/A	RPD or %Recovery limits do not apply.
ND	Analyte concentration is not detected above the detection limit
M	M if above MDC and less than LLD
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
FA	Failed analysis.
M	REMP Result > MDC/CL and < RDL
UJ	Gamma Spectroscopy--Uncertain identification
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.

QC Summary

Workorder: 719378

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time

K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N1	See case narrative
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
**	Analyte is a Tracer compound
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
** Indicates analyte is a surrogate/tracer compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Alpha Spectroscopy
Raw Data

Batch 2786436 Check-list

This check-list was completed on 05-MAY-25 by Melanie Aycock

This batch was reviewed by Melanie Aycock on 05-MAY-25 and Jessica Davis on 07-MAY-25.

Batch ID: 2786436 **Product:** ASP__UUS **Description:** Alpha Spec Uranium GL-RAD-A-011

#	Criteria	Yes	No	Comments
Preparation Information				
1	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
2	Are instrument source checks within limits?	Yes		
3	Have samples been blank corrected?		No	
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were all tracer/carrier recoveries within the required acceptance limits?	Yes		
10	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Were manual integrations performed on any sample or QC data files in this batch?		No	
14	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Uranium

Batch ID: **2786436**
Analyst: Ryan Monroe (RM3)
Method: DOE EML HASL-300, U-02-RC Modified
Lab SOP: GL-RAD-A-011 REV# 29
Instrument: BAL-C409669499

Due Dates for Lab: 10-MAY-2025 **Package: 11-MAY-2025** **SDG: 12-MAY-2025**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1206081464	Uranium-238 AS SPIKE	1600-R	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)
1	719378002	23-APR-2025	1	Dry to Dry	0.097	0.097
2	719378007	23-APR-2025	1	Dry to Dry	0.097	0.097
3	719378009	23-APR-2025	1	Dry to Dry	0.105	0.105
4	1206081462 MB	23-APR-2025	1	Dry to Wet		0.11
5	1206081463 DUP (719378002)	23-APR-2025	1	Dry to Dry	0.11	0.11
6	1206081464 LCS	23-APR-2025	1	Dry to Wet		0.11

Reagent/Solvent Lot ID	Description	Amount
WORK 1564-LL	Uranium-232 AS TRACER	.1 ml
REGNT 4496287.1	Acetone	1 mL
REGNT 4436453	Hydrogen Peroxide 30% ACS Reagent	.1 mL
REGNT 6104999	0.1M HCl	15 mL
REGNT 6102651	5% Saturated Boric Acid	1 mL
REGNT 6103545	6M Hydrochloric Acid/0.52M Hydrofluoric Acid	15 mL
REGNT 4498163	RASP-6M Hydrochloric Acid	5 mL
REGNT 4492356	Anion Exchange Resin 1x8 100-200 Mesh Resin	3 mL
REGNT 6105189	RASP- Ethyl Alcohol (80%)	5 mL
REGNT 6106161	Iron Carrier	2 mL
REGNT 6104051.8	RASP-Hydrochloric Acid	20 mL
REGNT 6106615	Neodymium 500 MG/L in 4% HNO3	.1 mL
REGNT 6106240	RASP-Neodymium Substrate	5 mL
REGNT 3944467.5	RASP-Titanium Chloride	.5 mL
REGNT 6107016	9M Hydrochloric Acid	30 mL
REGNT 6101764.6	Ammonium Hydroxide	10 mL
REGNT 6101787.5	RASP-Hydrofluoric Acid	30 mL
REGNT 6104985.16	Nitric Acid	20 mL

Comments:

Pipet Id: RAD-ASP-184002Z
Pu-236 Tracer Used: No
Analyzed With: N/A
Data Entry Date2: 23-APR-2025 00:00

GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2786436	CHAMBER : 015	LIB FILE : UU
SAMPLE ID : S0719378002_UU	DETECTOR S/N : 80055	BKG FILE : B015.CNF;2773
SAMPLE QTY : 0.097 G +/-1.031 %	AVERAGE %EFFICIENCY : 33.8371	BKG DATE : 25-Apr-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.6540	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 03-May-2025 08:04:17	EFF FILE : W015.CNF;786
% YIELD : 85.8 +/-6.629 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 01-May-2025

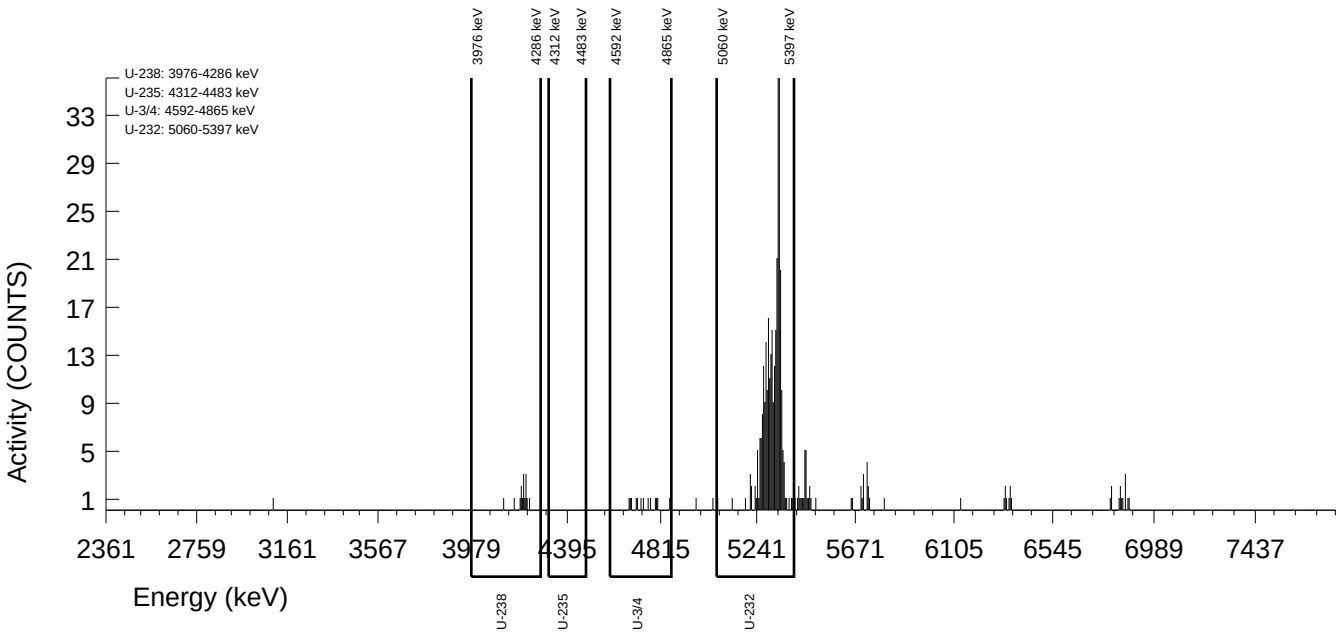
TRACER
ID : 1564-LL
NUCLIDE : U-232
NOMINAL : 4.3475E+00 dpm
RESULTS : 3.7313E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5306.96	18.264	310.000	302.800	7.200	2.6833	100.000	2.02E+01	3.60E+00	8.55E-01	3.28E-01	2.31E+00
U-3/4	4763.02	4743.75	172.765	13.000	9.798	2.160	1.4697	100.000	6.53E-01	5.08E-01	6.23E-01	2.11E-01	4.99E-01
U-235	4391.00	4397.17	0.000	0.000	-0.720	0.720	0.8485	80.900	-5.93E-02	1.79E-01	5.03E-01	1.28E-01	1.79E-01
U-238	4184.73	4200.58	25.915	15.000	14.760	0.240	0.4899	100.000	9.83E-01	5.41E-01	3.19E-01	5.98E-02	5.24E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.042 +/-0.031)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2786436	CHAMBER : 016	LIB FILE : UU
SAMPLE ID : S0719378007_UU	DETECTOR S/N : 78774	BKG FILE : B016.CNF;2756
SAMPLE QTY : 0.097 G +/-1.031 %	AVERAGE %EFFICIENCY : 34.6087	BKG DATE : 25-Apr-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.6686	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 03-May-2025 08:04:17	EFF FILE : W016.CNF;728
% YIELD : 88.8 +/-6.529 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 01-May-2025

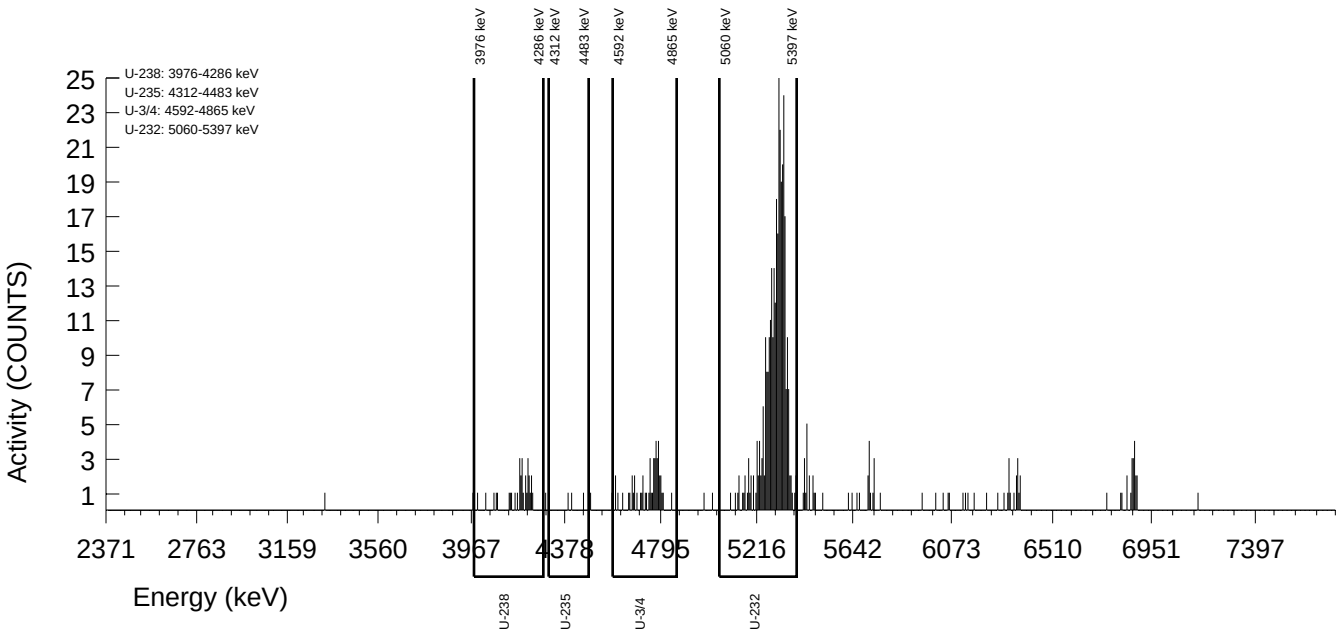
TRACER
ID : 1564-LL
NUCLIDE : U-232
NOMINAL : 4.3475E+00 dpm
RESULTS : 3.8616E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5300.82	58.092	333.000	320.520	12.480	3.5327	100.000	2.02E+01	3.54E+00	1.00E+00	4.08E-01	2.27E+00
U-3/4	4763.02	4742.19	41.321	48.000	43.297	3.600	1.8974	100.000	2.73E+00	9.50E-01	6.77E-01	2.44E-01	8.72E-01
U-235	4391.00	4421.30	68.058	3.000	2.040	0.960	0.9798	80.900	1.59E-01	3.17E-01	5.13E-01	1.40E-01	3.16E-01
U-238	4184.73	4167.37	53.474	32.000	31.040	0.960	0.9798	100.000	1.95E+00	7.59E-01	4.15E-01	1.13E-01	7.12E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.103 +/-0.033)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2786436	CHAMBER : 139	LIB FILE : UU
SAMPLE ID : S0719378009_UU	DETECTOR S/N : 76231	BKG FILE : B139.CNF;2033
SAMPLE QTY : 0.105 G +/-0.952 %	AVERAGE %EFFICIENCY : 42.6574	BKG DATE : 25-Apr-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.8205	BKG LIVE TIME(SEC) : 60000.00
ANALYST : RM3	COUNT DATE : 28-Apr-2025 10:16:32	EFF FILE : W139.CNF;576
% YIELD : 89.1 +/-5.941 %	ELAPSED LIVE TIME(SEC) : 14400.10	CAL DATE : 22-Apr-2025

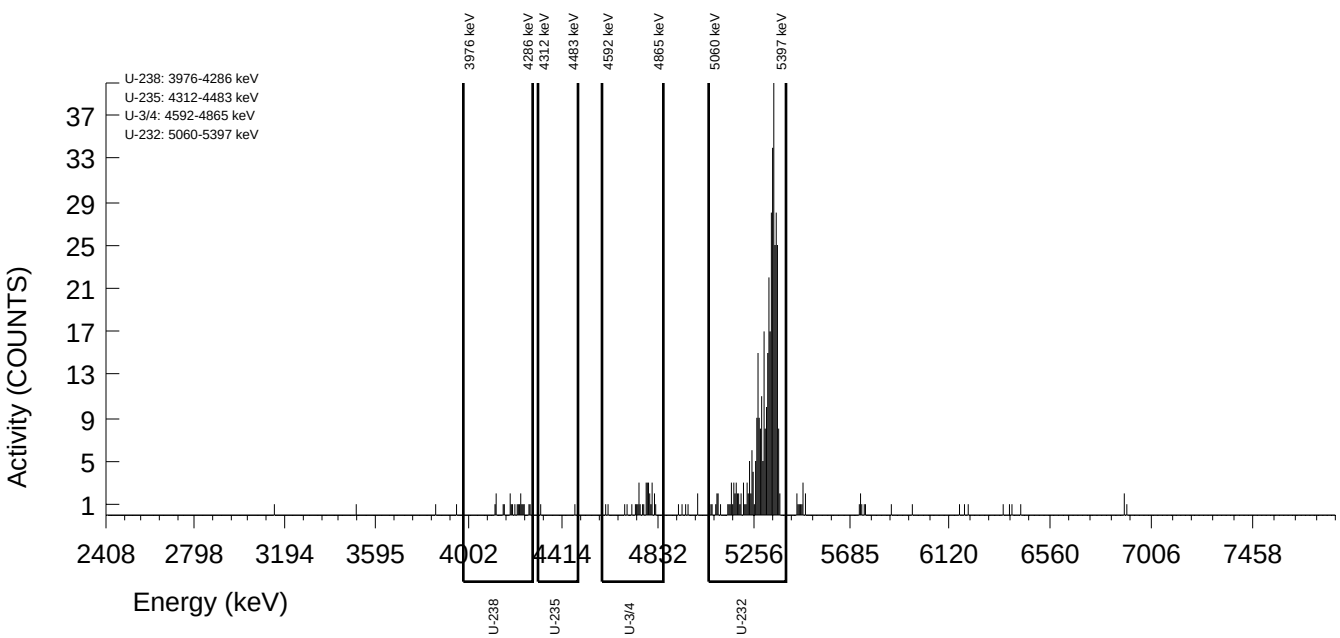
TRACER
ID : 1564-LL
NUCLIDE : U-232
NOMINAL : 4.3475E+00 dpm
RESULTS : 3.8737E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5309.43	36.675	399.000	396.360	2.640	1.6248	100.000	1.87E+01	2.96E+00	4.21E-01	1.40E-01	1.85E+00
U-3/4	4763.02	4766.91	68.948	32.000	26.796	3.840	1.9596	100.000	1.26E+00	5.62E-01	5.24E-01	1.91E-01	5.37E-01
U-235	4391.00	4395.78	145.154	2.000	0.800	1.200	1.0954	80.900	4.65E-02	2.09E-01	4.08E-01	1.17E-01	2.08E-01
U-238	4184.73	4202.92	111.285	20.000	18.320	1.680	1.2962	100.000	8.62E-01	4.40E-01	3.64E-01	1.12E-01	4.27E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.364 +/-0.041)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2786436	CHAMBER : 140	LIB FILE : UU
SAMPLE ID : S1206081462_UU	DETECTOR S/N : 147901	BKG FILE : B140.CNF;2025
SAMPLE QTY : 0.110 G +/-0.909 %	AVERAGE %EFFICIENCY : 42.4482	BKG DATE : 25-Apr-2025
SAMPLE DATE : 23-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.8165	BKG LIVE TIME(SEC) : 60000.00
ANALYST : RM3	COUNT DATE : 28-Apr-2025 10:16:34	EFF FILE : W140.CNF;540
% YIELD : 69.8 +/-6.519 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 22-Apr-2025

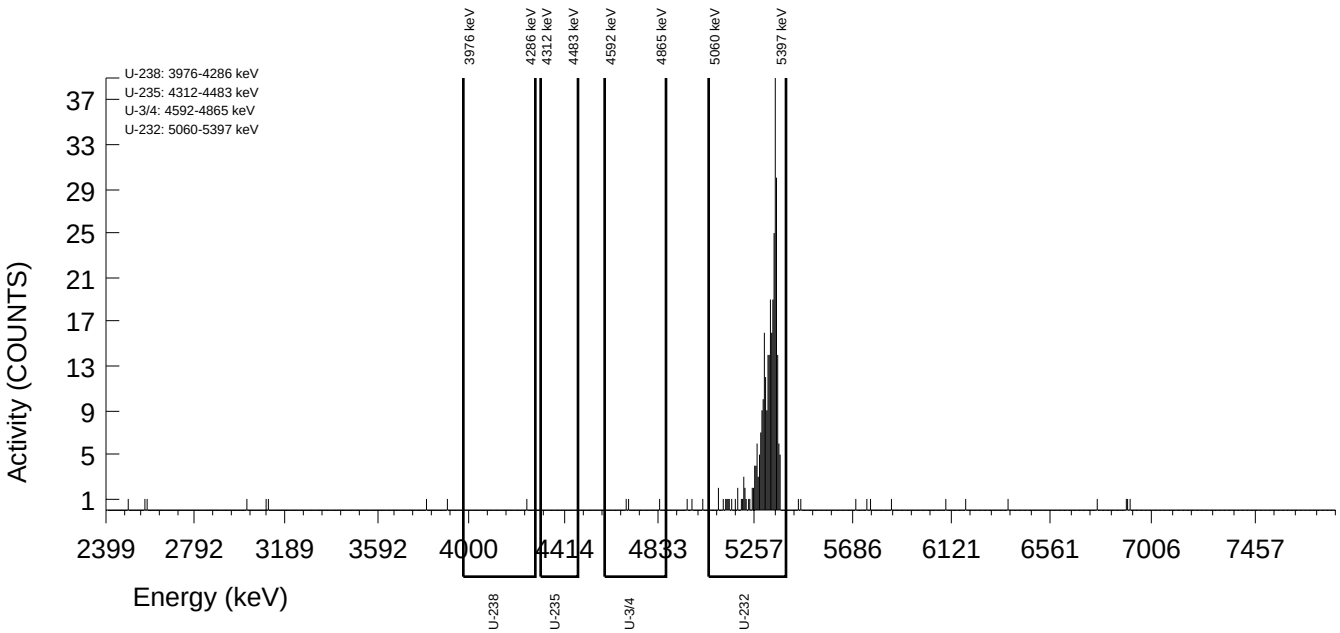
TRACER
ID : 1564-LL
NUCLIDE : U-232
NOMINAL : 4.3457E+00 dpm
RESULTS : 3.0344E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5314.79	17.401	311.000	309.080	1.920	1.3856	100.000	1.78E+01	3.11E+00	4.65E-01	1.46E-01	1.99E+00
U-3/4	4763.02	4743.31	141.237	3.000	0.017	1.920	1.3856	100.000	9.53E-04	2.40E-01	5.24E-01	1.76E-01	2.40E-01
U-235	4391.00	4397.16	0.000	0.000	-0.960	0.960	0.9798	80.900	-6.83E-02	1.59E-01	4.69E-01	1.28E-01	1.58E-01
U-238	4184.73	4253.10	4.870	1.000	-0.440	1.440	1.2000	100.000	-2.53E-02	1.75E-01	4.26E-01	1.27E-01	1.75E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.063 +/-0.032)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2786436	CHAMBER : 017	LIB FILE : UU
SAMPLE ID : S1206081463_UU	DETECTOR S/N : 158179	BKG FILE : B017.CNF;3586
SAMPLE QTY : 0.110 G +/-0.909 %	AVERAGE %EFFICIENCY : 30.1692	BKG DATE : 25-Apr-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.5847	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 03-May-2025 08:04:17	EFF FILE : W017.CNF;1674
% YIELD : 109 +/-6.322 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 01-May-2025

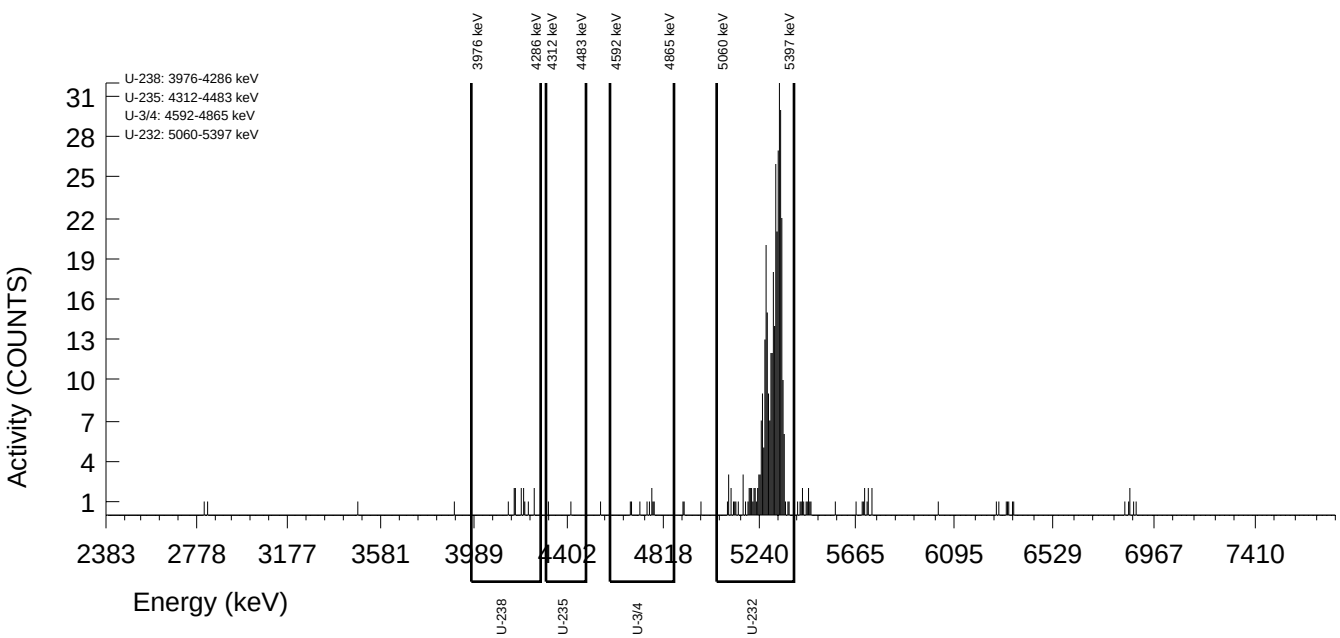
TRACER
ID : 1564-LL
NUCLIDE : U-232
NOMINAL : 4.3475E+00 dpm
RESULTS : 4.7527E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5296.53	69.095	353.000	343.880	9.120	3.0199	100.000	1.78E+01	3.02E+00	7.28E-01	2.86E-01	1.92E+00
U-3/4	4763.02	4743.40	7.365	9.000	1.097	6.720	2.5923	100.000	5.67E-02	3.47E-01	6.80E-01	2.63E-01	3.46E-01
U-235	4391.00	4367.94	98.206	2.000	1.520	0.480	0.6928	80.900	9.72E-02	2.24E-01	3.54E-01	8.12E-02	2.23E-01
U-238	4184.73	4200.80	88.385	13.000	12.040	0.960	0.9798	100.000	6.23E-01	3.92E-01	3.41E-01	9.29E-02	3.83E-01

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (1.183 +/-0.036)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-011

BATCH NUMBER : 2786436	CHAMBER : 136	LIB FILE : UU
SAMPLE ID : S1206081464_UU	DETECTOR S/N : 140243	BKG FILE : B136.CNF;683
SAMPLE QTY : 0.110 G +/-0.909 %	AVERAGE %EFFICIENCY : 25.5473	BKG DATE : 25-Apr-2025
SAMPLE DATE : 23-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.4975	BKG LIVE TIME(SEC) : 60000.00
ANALYST : RM3	COUNT DATE : 28-Apr-2025 10:14:03	EFF FILE : W136.CNF;158
% YIELD : 108 +/-6.728 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 21-Apr-2025

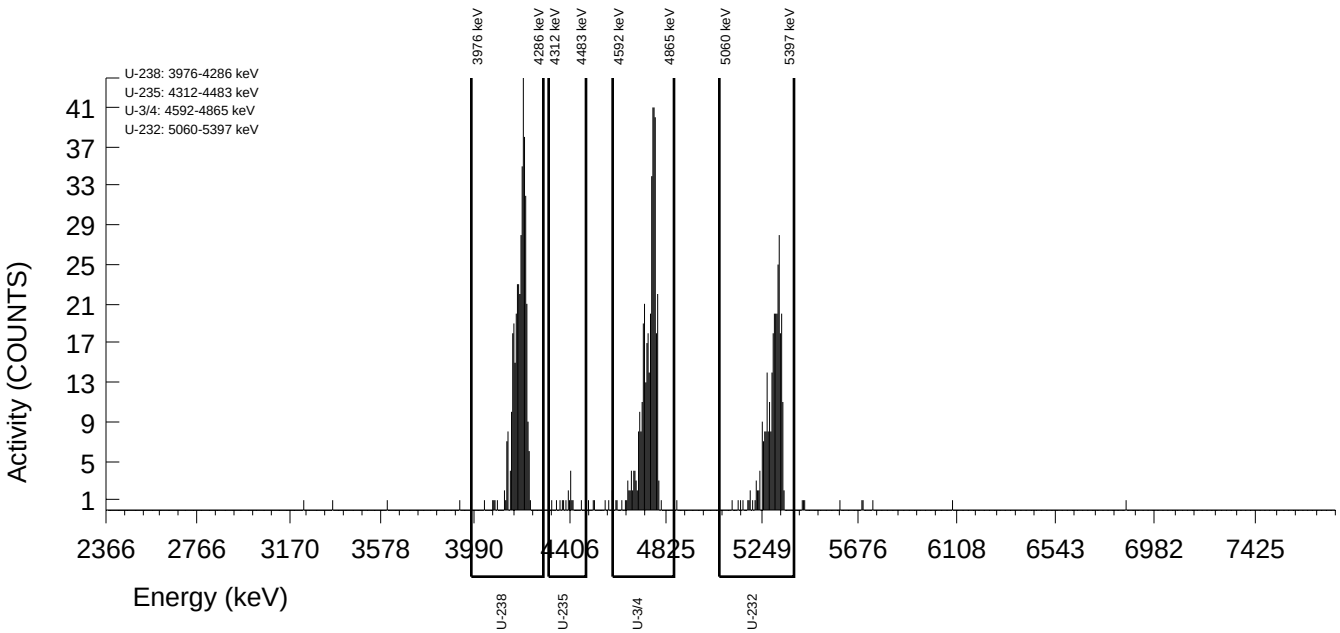
TRACER		LCS	
ID	1564-LL	ID	1600-R
NUCLIDE	U-232	NUCLIDE	U-238
NOMINAL	4.3457E+00 dpm	NOMINAL (pCi/G)	2.4386E+01
RESULTS	4.6835E+00 dpm	% RECOVERY	99.055

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
U-232	5302.10	5301.13	43.135	290.000	287.120	2.880	1.6971	100.000	1.78E+01	3.22E+00	5.71E-01	1.93E-01	2.07E+00
U-3/4	4763.02	4754.08	56.386	392.000	388.372	2.640	1.6248	100.000	2.41E+01	4.12E+00	6.07E-01	2.10E-01	2.41E+00
U-235	4391.00	4395.66	6.636	16.000	15.280	0.720	0.8485	80.900	1.17E+00	6.44E-01	4.68E-01	1.19E-01	6.23E-01
U-238	4184.73	4186.82	41.024	391.000	389.800	1.200	1.0954	100.000	2.42E+01	4.12E+00	4.35E-01	1.24E-01	2.41E+00

NOTES:

* Correction made to the following net area due to tracer impurity:
U-3/4 (0.988 +/-0.030)



Batch 2792485 Check-list

This check-list was completed on 08-MAY-25 by Melanie Aycock

This batch was reviewed by Jessica Davis on 08-MAY-25 and Melanie Aycock on 08-MAY-25.

Batch ID: 2792485 **Product:** ASP__THS **Description:** Alpha Spec Thorium GL-RAD-A-038

#	Criteria	Yes	No	Comments
Preparation Information				
1	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
2	Are instrument source checks within limits?	Yes		
3	Have samples been blank corrected?		No	
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were all tracer/carrier recoveries within the required acceptance limits?	Yes		
10	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Were manual integrations performed on any sample or QC data files in this batch?		No	
14	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Thorium

Batch ID: **2792485**
Analyst: Ryan Monroe (RM3)
Method: DOE EML HASL-300, Th-01-RC Modified
Lab SOP: GL-RAD-A-038 REV# 19
Instrument: BAL-C409669499

Due Dates for Lab: 10-MAY-2025 **Package: 11-MAY-2025** **SDG: 12-MAY-2025**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1206094651	Thorium-232 AS SPIKE	1513-L	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)
1	719378007 - 2	06-MAY-2025	1	Dry to Dry	0.104	0.104
2	1206094649 MB	06-MAY-2025	1	Dry to Wet		0.104
3	1206094650 - 2 DUP (719378007)	06-MAY-2025	1	Dry to Dry	0.099	0.099
4	1206094651 LCS	06-MAY-2025	1	Dry to Wet		0.104

Reagent/Solvent Lot ID	Description	Amount
WORK 1845-K	Thorium-229 AS TRACER, RASP	.1 mL
REGNT 4496287.1	Acetone	1 mL
REGNT 4436453	Hydrogen Peroxide 30% ACS Reagent	3 mL
REGNT 4497605	RASP-2M Hydrochloric Acid	4 mL
REGNT 6111838	5% Saturated Boric Acid	1 mL
REGNT 4492356	Anion Exchange Resin 1x8 100-200 Mesh Resin	3 mL
REGNT 6105189	RASP- Ethyl Alcohol (80%)	5 mL
REGNT 6111833	Iron Carrier	2 mL
REGNT 6106615	Neodymium 500 MG/L in 4% HNO3	.1 mL
REGNT 6106240	RASP-Neodymium Substrate	5 mL
REGNT 6109215	8M Nitric Acid	30 mL
REGNT 6111187	9M Hydrochloric Acid	20 mL
REGNT 6101756.2	Ammonium Hydroxide	10 mL
REGNT 6108926.30	RASP-Hydrochloric Acid	20 mL
REGNT 6108160.2	RASP-Hydrofluoric Acid	30 mL
REGNT 6102808.7	Nitric Acid	20 mL

Comments:

Pipet ID: RAD-ASP-184002Z
Data Entry Date2: 06-MAY-2025 00:00

GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2792485	CHAMBER : 025	LIB FILE : TH
SAMPLE ID : S0719378007_TH	DETECTOR S/N : 140215	BKG FILE : B025.CNF;2763
SAMPLE QTY : 0.104 G +/-0.962 %	AVERAGE %EFFICIENCY : 34.5245	BKG DATE : 03-May-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.6670	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 08-May-2025 08:55:47	EFF FILE : W025.CNF;803
% YIELD : 82.0 +/-6.092 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 06-May-2025

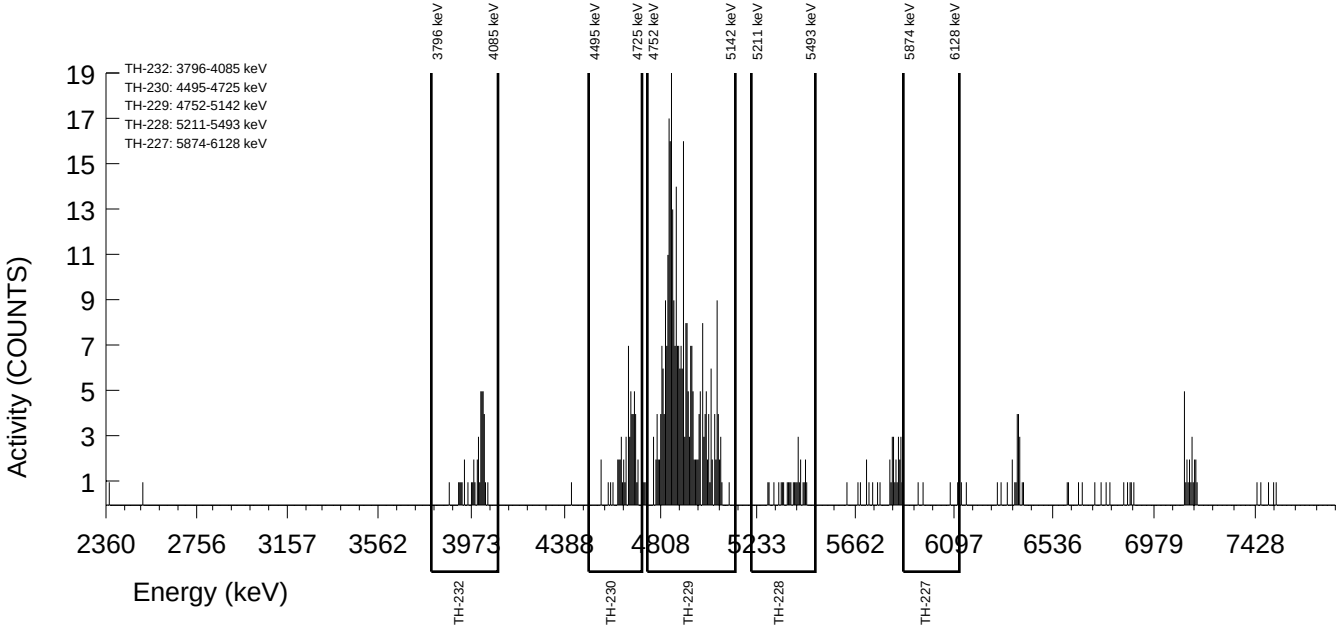
TRACER
ID : 1845-K
NUCLIDE : TH-229
NOMINAL : 4.8390E+00 dpm
RESULTS : 3.9665E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5977.51	0.000	6.000	-2.880	8.880	2.9799	57.440	-9.89E-01	2.04E+00	4.78E+00	1.87E+00	2.04E+00
TH-228	5363.00	5387.63	35.675	26.000	24.793	1.200	1.0954	99.940	1.63E+00	7.05E-01	4.62E-01	1.32E-01	6.74E-01
TH-229	4900.00	4905.39	68.274	329.000	327.080	1.920	1.3856	99.520	2.10E+01	3.50E+00	5.18E-01	1.63E-01	2.28E+00
TH-230	4671.39	4659.46	32.805	56.000	53.312	0.720	0.8485	99.700	3.41E+00	1.05E+00	5.48E-01	1.78E-01	9.48E-01
TH-232	3972.00	3995.47	29.524	40.000	39.628	0.240	0.4899	100.000	2.53E+00	8.63E-01	3.29E-01	6.87E-02	8.01E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.968 +/-0.031)
TH-232 (0.132 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2792485	CHAMBER : 026	LIB FILE : TH
SAMPLE ID : S1206094649_TH	DETECTOR S/N : 82217	BKG FILE : B026.CNF;2750
SAMPLE QTY : 0.104 G +/-0.962 %	AVERAGE %EFFICIENCY : 34.0351	BKG DATE : 03-May-2025
SAMPLE DATE : 06-May-2025 00:00:00	AVERAGE %EFF ERROR : 0.6577	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 08-May-2025 08:55:47	EFF FILE : W026.CNF;735
% YIELD : 88.5 +/-5.928 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 06-May-2025

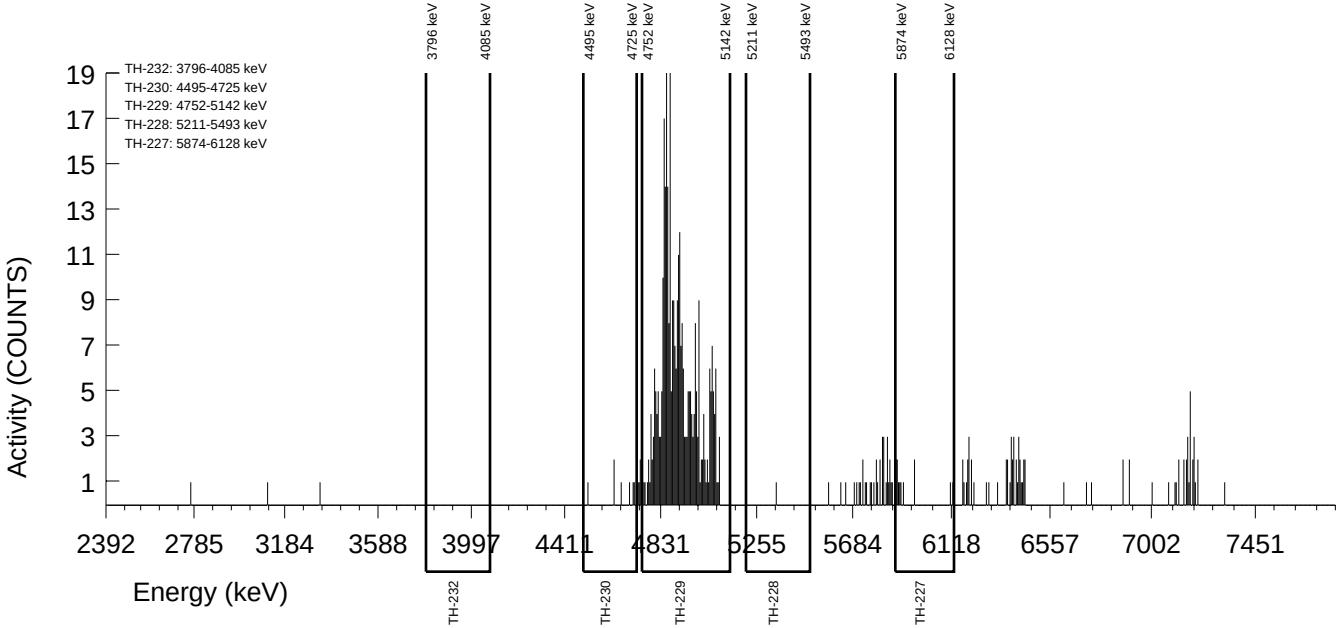
TRACER
ID : 1845-K
NUCLIDE : TH-229
NOMINAL : 4.8390E+00 dpm
RESULTS : 4.2813E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5935.24	0.000	12.000	5.280	6.720	2.5923	57.440	6.03E-01	8.61E-01	1.43E+00	5.43E-01	8.58E-01
TH-228	5363.00	5345.47	4.891	1.000	-1.888	2.880	1.6971	99.940	-1.13E-01	1.95E-01	5.54E-01	1.87E-01	1.95E-01
TH-229	4900.00	4917.41	71.411	349.000	348.040	0.960	0.9798	99.520	2.10E+01	3.41E+00	3.97E-01	1.08E-01	2.21E+00
TH-230	4671.39	4653.27	4.891	7.000	3.946	0.960	0.9798	99.700	2.37E-01	3.42E-01	5.39E-01	1.79E-01	3.39E-01
TH-232	3972.00	3940.37	0.000	0.000	-0.860	0.720	0.8485	100.000	-5.15E-02	1.31E-01	3.80E-01	1.00E-01	1.30E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (2.094 +/-0.032)
TH-232 (0.140 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2792485	CHAMBER : 027	LIB FILE : TH
SAMPLE ID : S1206094650_TH	DETECTOR S/N : 140238	BKG FILE : B027.CNF;2773
SAMPLE QTY : 0.099 G +/-1.010 %	AVERAGE %EFFICIENCY : 33.3552	BKG DATE : 03-May-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.6449	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 08-May-2025 08:55:47	EFF FILE : W027.CNF;807
% YIELD : 74.5 +/-6.424 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 06-May-2025

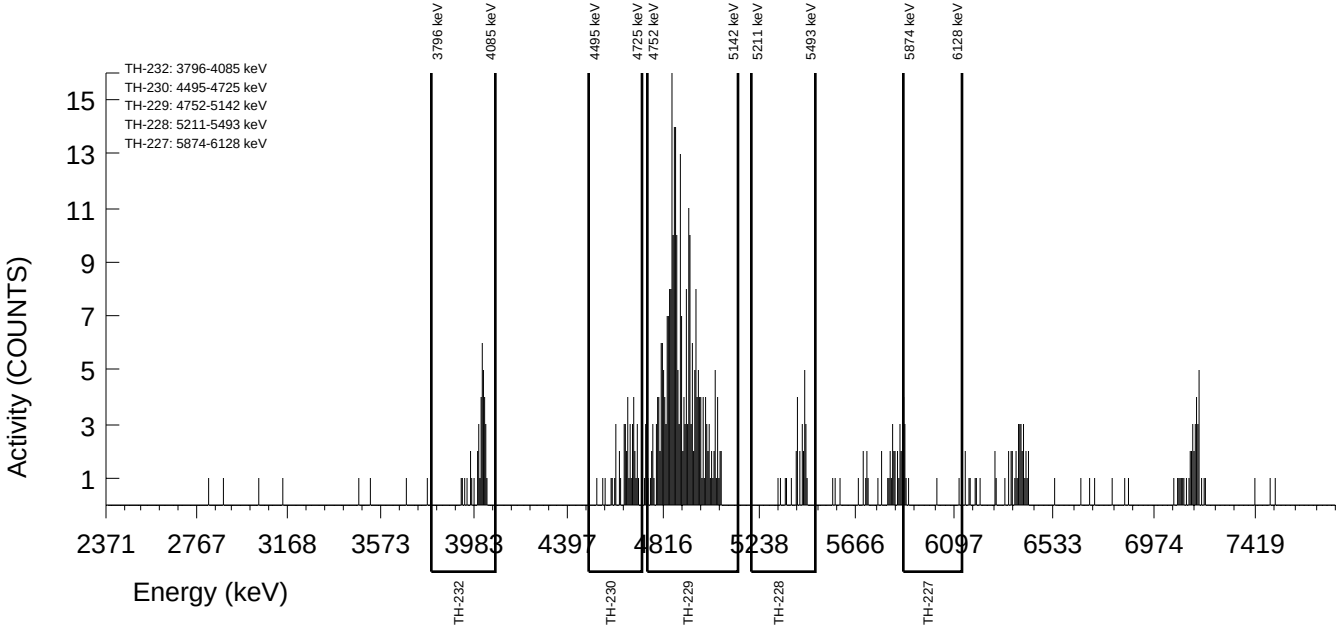
TRACER
ID : 1845-K
NUCLIDE : TH-229
NOMINAL : 4.8390E+00 dpm
RESULTS : 3.6060E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5915.26	0.000	11.000	4.760	6.240	2.4980	57.440	1.95E+00	2.97E+00	4.99E+00	1.88E+00	2.96E+00
TH-228	5363.00	5414.49	39.427	27.000	25.794	1.200	1.0954	99.940	2.03E+00	8.64E-01	5.52E-01	1.58E-01	8.21E-01
TH-229	4900.00	4901.64	80.263	288.000	287.280	0.720	0.8485	99.520	2.20E+01	3.89E+00	4.68E-01	1.19E-01	2.55E+00
TH-230	4671.39	4655.58	93.640	44.000	42.031	0.240	0.4899	99.700	3.22E+00	1.10E+00	5.88E-01	1.79E-01	1.01E+00
TH-232	3972.00	4010.80	21.357	37.000	36.404	0.480	0.6928	100.000	2.78E+00	9.95E-01	4.40E-01	1.06E-01	9.24E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.006 +/-0.000)
TH-230 (1.729 +/-0.027)
TH-232 (0.116 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2792485	CHAMBER : 028	LIB FILE : TH
SAMPLE ID : S1206094651_TH	DETECTOR S/N : 78792	BKG FILE : B028.CNF;2755
SAMPLE QTY : 0.104 G +/-0.962 %	AVERAGE %EFFICIENCY : 31.6296	BKG DATE : 03-May-2025
SAMPLE DATE : 06-May-2025 00:00:00	AVERAGE %EFF ERROR : 0.6123	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 08-May-2025 08:55:47	EFF FILE : W028.CNF;739
% YIELD : 91.4 +/-6.048 %	ELAPSED LIVE TIME(SEC) : 14399.99	CAL DATE : 06-May-2025

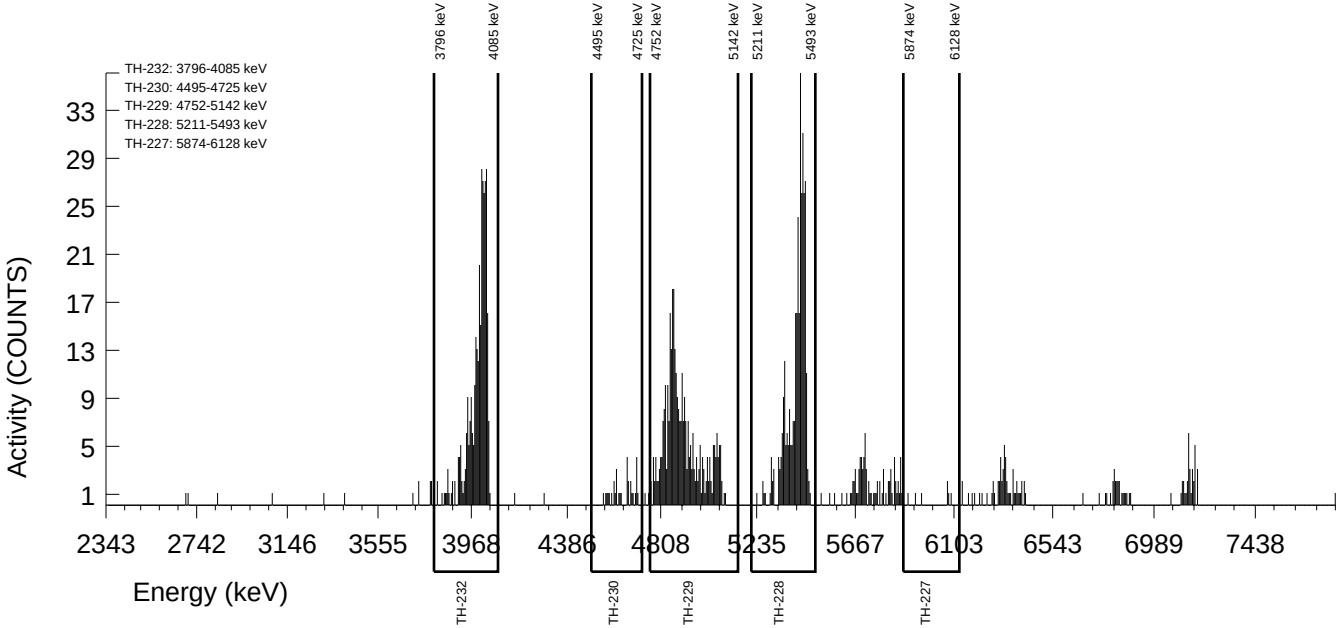
TRACER		LCS	
ID	1845-K	ID	1513-L
NUCLIDE	TH-229	NUCLIDE	TH-232
NOMINAL	4.8390E+00 dpm	NOMINAL (pCi/G)	1.9106E+01
RESULTS	4.4227E+00 dpm	% RECOVERY	106.488

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5999.44	7.448	10.000	7.120	2.880	1.6971	57.440	8.48E-01	8.07E-01	1.10E+00	3.70E-01	8.00E-01
TH-228	5363.00	5405.04	36.307	336.000	332.873	3.120	1.7664	99.940	2.08E+01	3.46E+00	5.93E-01	2.03E-01	2.26E+00
TH-229	4900.00	4900.40	74.475	337.000	334.120	2.880	1.6971	99.520	2.10E+01	3.48E+00	5.78E-01	1.95E-01	2.26E+00
TH-230	4671.39	4634.34	90.198	33.000	29.789	1.200	1.0954	99.700	1.87E+00	7.62E-01	5.73E-01	1.93E-01	7.19E-01
TH-232	3972.00	3991.56	39.582	327.000	325.906	0.960	0.9798	100.000	2.03E+01	3.39E+00	4.24E-01	1.18E-01	2.22E+00

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (2.011 +/-0.031)
TH-232 (0.134 +/-0.002)



Batch 2786437 Check-list

This check-list was completed on 05-MAY-25 by Melanie Aycock

This batch was reviewed by Melanie Aycock on 01-MAY-25, Melanie Aycock on 05-MAY-25 and Jessica Davis on 07-MAY-25.

Batch ID: 2786437 **Product:** ASP__THS **Description:** Alpha Spec Thorium GL-RAD-A-038

#	Criteria	Yes	No	Comments
Preparation Information				
1	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
2	Are instrument source checks within limits?	Yes		
3	Have samples been blank corrected?		No	
4	Has an Aliquot Correction been completed for this batch?		No	
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were all the samples prepared/analyzed within the required holding time period?	Yes		
7	Are any sample results more negative than 3xTPU?		No	
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were all tracer/carrier recoveries within the required acceptance limits?	Yes		
10	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
11	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
12	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
13	Were manual integrations performed on any sample or QC data files in this batch?		No	
14	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Thorium

Batch ID: **2786437**
Analyst: Ryan Monroe (RM3)
Method: DOE EML HASL-300, Th-01-RC Modified
Lab SOP: GL-RAD-A-038 REV# 19
Instrument: BAL-C409669499

Due Dates for Lab: 10-MAY-2025 **Package: 11-MAY-2025** **SDG: 12-MAY-2025**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1206081467	Thorium-232 AS SPIKE	1513-L	.1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)
1	719378002	23-APR-2025	1	Dry to Dry	0.105	0.105
3	719378009	23-APR-2025	1	Dry to Dry	0.108	0.108
4	1206081465 MB	23-APR-2025	1	Dry to Wet		0.108
5	1206081466 DUP (719378002)	23-APR-2025	1	Dry to Dry	0.096	0.096
6	1206081467 LCS	23-APR-2025	1	Dry to Wet		0.108

Reagent/Solvent Lot ID	Description	Amount
WORK 1845-K	Thorium-229 AS TRACER, RASP	.1 mL
REGNT 4496287.1	Acetone	1 mL
REGNT 4436453	Hydrogen Peroxide 30% ACS Reagent	3 mL
REGNT 4497605	RASP-2M Hydrochloric Acid	4 mL
REGNT 6102651	5% Saturated Boric Acid	1 mL
REGNT 4492356	Anion Exchange Resin 1x8 100-200 Mesh Resin	3 mL
REGNT 6105189	RASP- Ethyl Alcohol (80%)	5 mL
REGNT 6106161	Iron Carrier	2 mL
REGNT 6104051.8	RASP-Hydrochloric Acid	20 mL
REGNT 6106615	Neodymium 500 MG/L in 4% HNO3	.1 mL
REGNT 6106240	RASP-Neodymium Substrate	5 mL
REGNT 6107031	8M Nitric Acid	30 mL
REGNT 6107016	9M Hydrochloric Acid	20 mL
REGNT 6101762.5	Ammonium Hydroxide	10 mL
REGNT 6101787.5	RASP-Hydrofluoric Acid	30 mL
REGNT 6104985.16	Nitric Acid	20 mL

Comments:

Pipet ID: RAD-ASP-184002Z
Data Entry Date2: 23-APR-2025 00:00

GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2786437	CHAMBER : 035	LIB FILE : TH
SAMPLE ID : S0719378002_TH	DETECTOR S/N : 147877	BKG FILE : B035.CNF;2738
SAMPLE QTY : 0.105 G +/-0.952 %	AVERAGE %EFFICIENCY : 30.4381	BKG DATE : 25-Apr-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.5899	BKG LIVE TIME(SEC) : 60000.00
ANALYST : RM3	COUNT DATE : 27-Apr-2025 11:46:55	EFF FILE : W035.CNF;781
% YIELD : 88.2 +/-6.262 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 05-Apr-2025

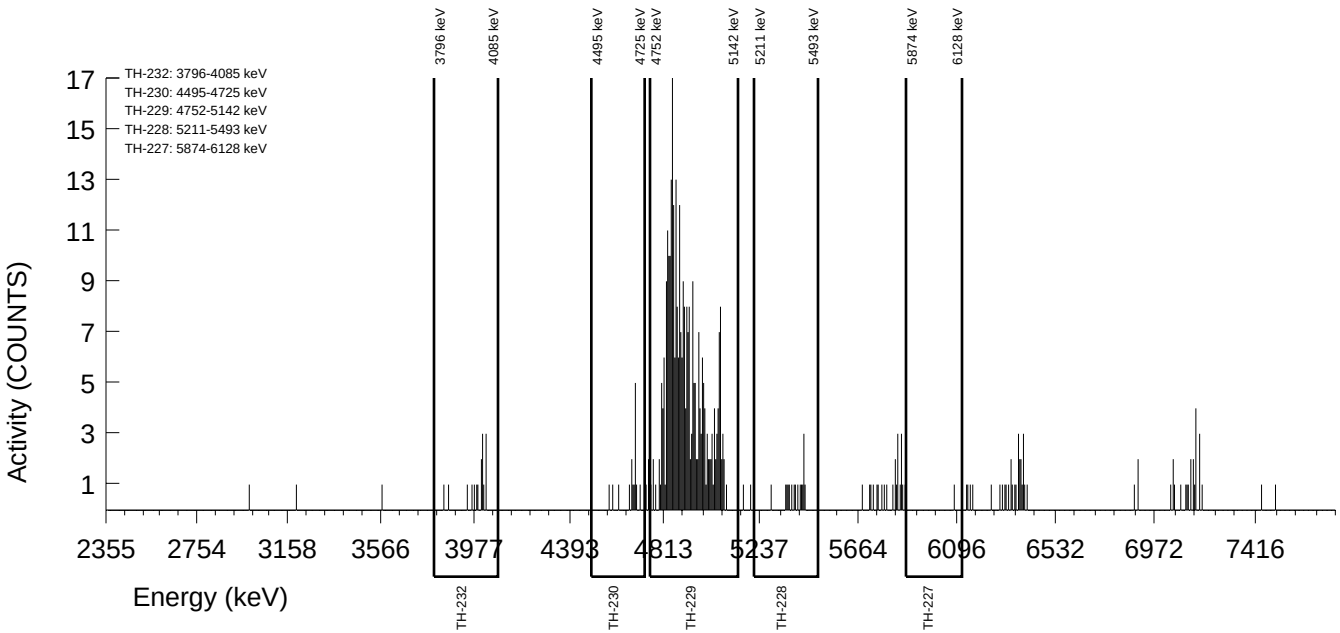
TRACER
ID : 1845-K
NUCLIDE : TH-229
NOMINAL : 4.8390E+00 dpm
RESULTS : 4.2668E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5982.48	0.000	2.000	-1.360	3.360	1.8330	57.440	-3.26E-01	9.24E-01	2.33E+00	8.04E-01	9.23E-01
TH-228	5363.00	5389.80	7.452	16.000	14.553	1.440	1.2000	99.940	9.89E-01	5.70E-01	5.03E-01	1.50E-01	5.56E-01
TH-229	4900.00	4907.48	110.227	315.000	310.200	4.800	2.1909	99.520	2.08E+01	3.57E+00	7.38E-01	2.69E-01	2.34E+00
TH-230	4671.39	4663.94	6.210	15.000	10.973	2.160	1.4697	99.700	7.33E-01	5.45E-01	6.69E-01	2.34E-01	5.33E-01
TH-232	3972.00	3983.74	23.598	16.000	14.675	1.200	1.0954	100.000	9.77E-01	5.59E-01	4.78E-01	1.39E-01	5.44E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.867 +/-0.029)
TH-232 (0.125 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2786437	CHAMBER : 045	LIB FILE : TH
SAMPLE ID : S0719378009_TH	DETECTOR S/N : 148021	BKG FILE : B045.CNF;2753
SAMPLE QTY : 0.108 G +/-0.926 %	AVERAGE %EFFICIENCY : 32.0177	BKG DATE : 25-Apr-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.6196	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 27-Apr-2025 11:46:57	EFF FILE : W045.CNF;728
% YIELD : 95.5 +/-5.894 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 05-Apr-2025

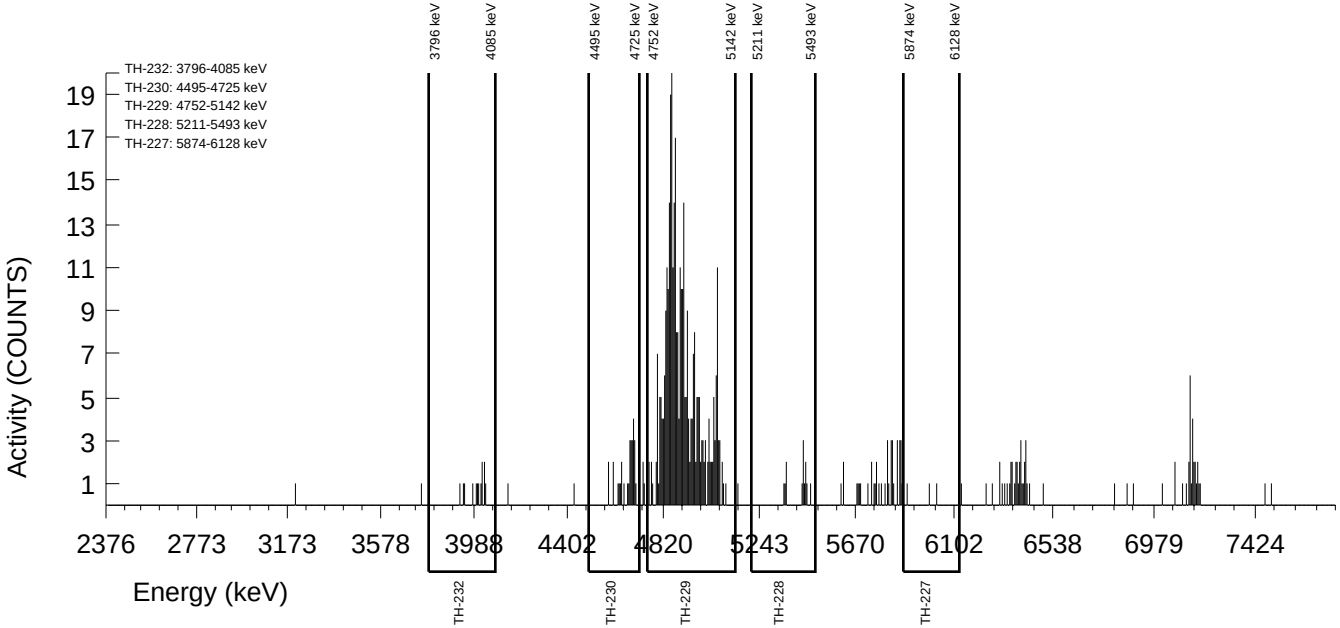
TRACER
ID : 1845-K
NUCLIDE : TH-229
NOMINAL : 4.8390E+00 dpm
RESULTS : 4.6233E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5947.85	0.000	4.000	-0.560	4.560	2.1354	57.440	-1.14E-01	9.94E-01	2.21E+00	7.99E-01	9.93E-01
TH-228	5363.00	5421.25	83.701	13.000	12.032	0.960	0.9798	99.940	6.97E-01	4.38E-01	3.83E-01	1.04E-01	4.29E-01
TH-229	4900.00	4908.78	209.868	355.000	353.560	1.440	1.2000	99.520	2.02E+01	3.26E+00	4.22E-01	1.25E-01	2.11E+00
TH-230	4671.39	4664.88	24.618	29.000	24.712	2.160	1.4697	99.700	1.41E+00	6.46E-01	5.82E-01	2.05E-01	6.18E-01
TH-232	3972.00	4003.57	19.694	13.000	12.618	0.240	0.4899	100.000	7.17E-01	4.28E-01	2.94E-01	6.20E-02	4.18E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (2.128 +/-0.033)
TH-232 (0.142 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2786437	CHAMBER : 046	LIB FILE : TH
SAMPLE ID : S1206081465_TH	DETECTOR S/N : 148019	BKG FILE : B046.CNF;2761
SAMPLE QTY : 0.108 G +/-0.926 %	AVERAGE %EFFICIENCY : 33.5309	BKG DATE : 25-Apr-2025
SAMPLE DATE : 23-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.6482	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 27-Apr-2025 11:46:57	EFF FILE : W046.CNF;640
% YIELD : 75.9 +/-6.374 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 05-Apr-2025

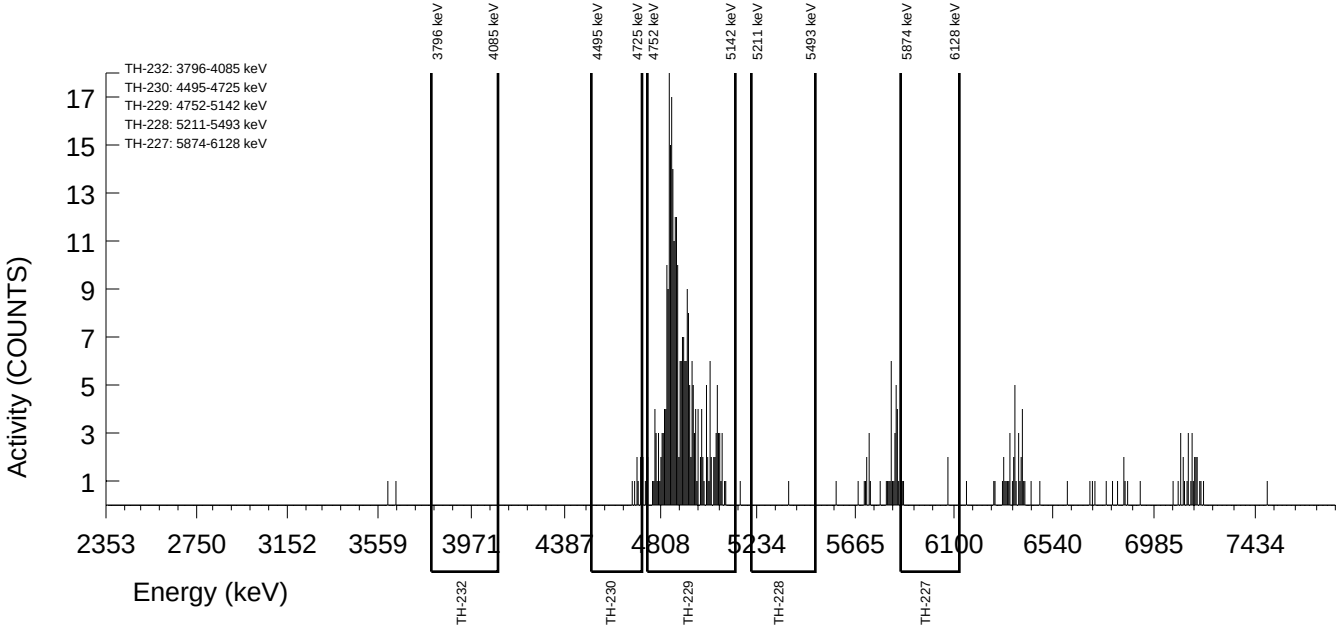
TRACER
ID : 1845-K
NUCLIDE : TH-229
NOMINAL : 4.8390E+00 dpm
RESULTS : 3.6720E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6027.86	0.000	6.000	1.920	4.080	2.0199	57.440	2.70E-01	7.84E-01	1.47E+00	5.21E-01	7.83E-01
TH-228	5363.00	5373.36	4.937	1.000	-0.927	1.920	1.3856	99.940	-6.36E-02	2.14E-01	5.55E-01	1.74E-01	2.14E-01
TH-229	4900.00	4901.07	45.872	296.000	294.080	1.920	1.3856	99.520	2.02E+01	3.53E+00	5.54E-01	1.74E-01	2.32E+00
TH-230	4671.39	4703.14	19.748	7.000	4.750	0.480	0.6928	99.700	3.25E-01	3.88E-01	5.52E-01	1.73E-01	3.84E-01
TH-232	3972.00	3940.40	0.000	0.000	-0.358	0.240	0.4899	100.000	-2.45E-02	1.42E-01	3.50E-01	7.25E-02	1.41E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.007 +/-0.000)
TH-230 (1.770 +/-0.027)
TH-232 (0.118 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2786437	CHAMBER : 047	LIB FILE : TH
SAMPLE ID : S1206081466_TH	DETECTOR S/N : 80064	BKG FILE : B047.CNF;2753
SAMPLE QTY : 0.096 G +/-1.042 %	AVERAGE %EFFICIENCY : 34.5328	BKG DATE : 25-Apr-2025
SAMPLE DATE : 08-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.6671	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 27-Apr-2025 11:46:57	EFF FILE : W047.CNF;722
% YIELD : 92.7 +/-5.783 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 05-Apr-2025

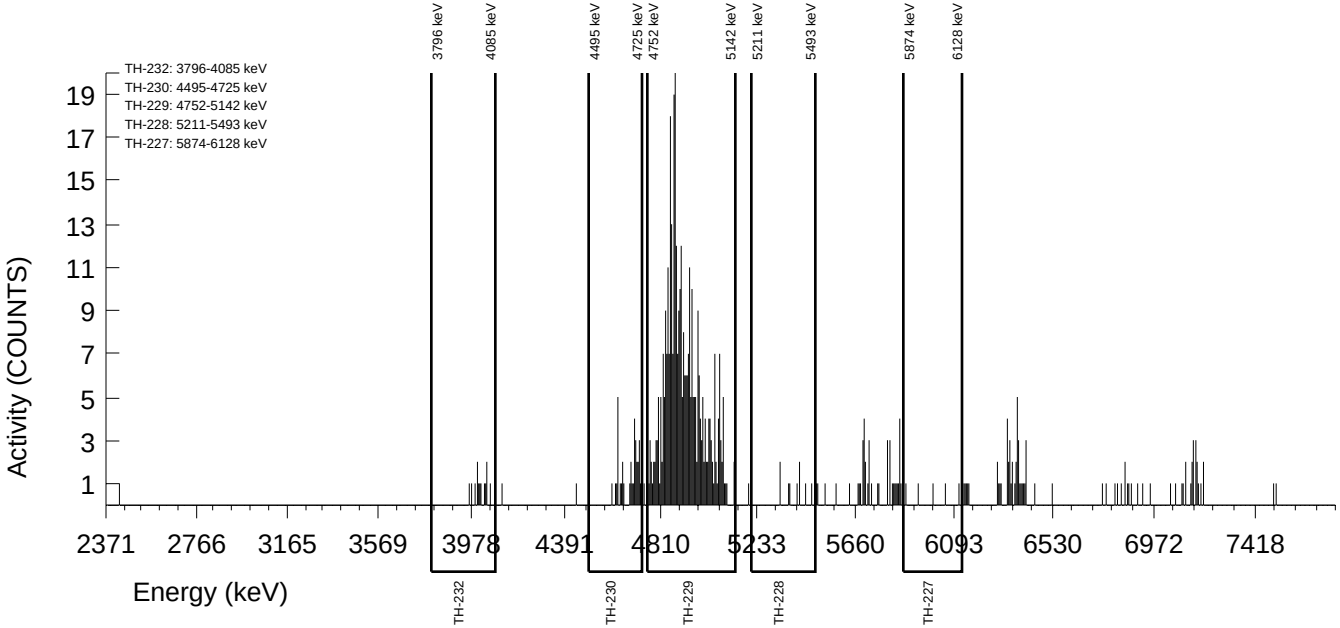
TRACER
ID : 1845-K
NUCLIDE : TH-229
NOMINAL : 4.8390E+00 dpm
RESULTS : 4.4835E+00 dpm

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	5981.46	0.000	6.000	1.200	4.800	2.1909	57.440	2.64E-01	1.23E+00	2.42E+00	8.82E-01	1.23E+00
TH-228	5363.00	5407.36	83.333	10.000	5.432	4.560	2.1354	99.940	3.39E-01	4.28E-01	6.75E-01	2.44E-01	4.26E-01
TH-229	4900.00	4911.26	90.277	371.000	369.800	1.200	1.0954	99.520	2.27E+01	3.60E+00	4.31E-01	1.23E-01	2.32E+00
TH-230	4671.39	4672.69	92.524	35.000	31.575	1.200	1.0954	99.700	1.94E+00	7.67E-01	5.72E-01	1.94E-01	7.24E-01
TH-232	3972.00	4016.19	44.117	13.000	12.131	0.720	0.8485	100.000	7.41E-01	4.61E-01	3.88E-01	1.03E-01	4.52E-01

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.008 +/-0.000)
TH-230 (2.225 +/-0.034)
TH-232 (0.149 +/-0.002)



GEL Laboratories LLC
ALPHA SPECTROSCOPY REPORT

Instrument SOP: GL-RAD-I-009
Analytical SOP: GL-RAD-A-038

BATCH NUMBER : 2786437	CHAMBER : 043	LIB FILE : TH
SAMPLE ID : S1206081467_TH	DETECTOR S/N : 155792	BKG FILE : B043.CNF;2763
SAMPLE QTY : 0.108 G +/-0.926 %	AVERAGE %EFFICIENCY : 35.3666	BKG DATE : 25-Apr-2025
SAMPLE DATE : 23-Apr-2025 00:00:00	AVERAGE %EFF ERROR : 0.6828	BKG LIVE TIME(SEC) : 59999.99
ANALYST : RM3	COUNT DATE : 27-Apr-2025 11:46:57	EFF FILE : W043.CNF;762
% YIELD : 66.8 +/-6.568 %	ELAPSED LIVE TIME(SEC) : 14400.00	CAL DATE : 05-Apr-2025

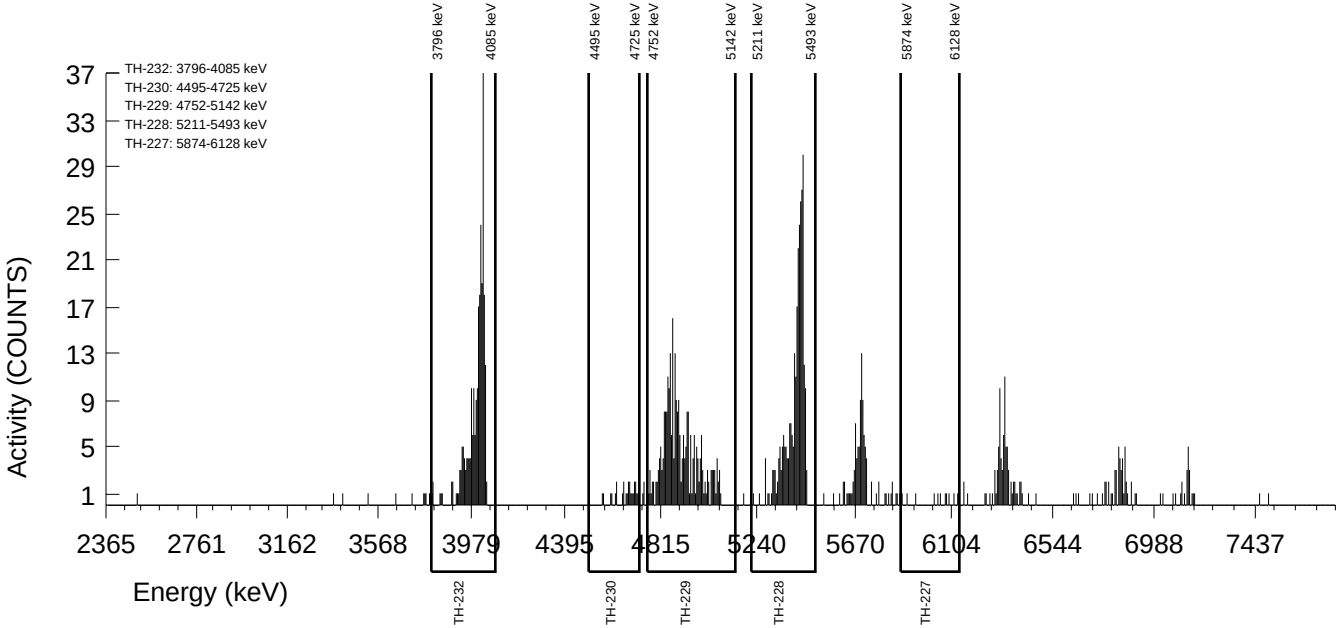
TRACER		LCS	
ID	1845-K	ID	1513-L
NUCLIDE	TH-229	NUCLIDE	TH-232
NOMINAL	4.8390E+00 dpm	NOMINAL (pCi/G)	1.8398E+01
RESULTS	3.2323E+00 dpm	% RECOVERY	100.028

NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG StDev	%ABUN	ACTIVITY pCi/G	1.96-sigma TPU pCi/G	MDA pCi/G	Lc pCi/G	1.96-sigma cnt Unc pCi/G
TH-227	5994.04	6015.26	0.000	12.000	8.160	3.840	1.9596	57.440	1.24E+00	1.12E+00	1.54E+00	5.45E-01	1.11E+00
TH-228	5363.00	5407.32	30.365	282.000	280.794	1.200	1.0954	99.940	2.08E+01	3.72E+00	5.19E-01	1.49E-01	2.44E+00
TH-229	4900.00	4902.85	50.882	274.000	273.040	0.960	0.9798	99.520	2.02E+01	3.64E+00	4.87E-01	1.33E-01	2.40E+00
TH-230	4671.39	4657.54	88.632	25.000	23.357	0.000	1.0000	99.700	1.72E+00	7.79E-01	5.33E-01	2.06E-01	7.38E-01
TH-232	3972.00	3998.29	19.156	251.000	250.170	0.720	0.8485	100.000	1.84E+01	3.39E+00	4.63E-01	1.21E-01	2.29E+00

NOTES:

* Corrections made to the following net areas due to tracer impurity:
TH-228 (0.006 +/-0.000)
TH-230 (1.643 +/-0.025)
TH-232 (0.110 +/-0.002)



Continuing Calibration Data

Review of Alpha Spectrometer QA results (Daily checks) 27-APR-2025 23:00:00.81

Bank 1 through bank 29 (detectors 1 through 256)

DETECTORS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

	Detector	Parameter	Flag
27-APR-2025	103	PSFWHM-5000	Above
28-AUG-2023	115	PSCTSS-5000	Below
28-AUG-2023	116	PSCTSS-5000	Below
27-APR-2025	118	Second Check Required for D	
27-APR-2025	165	PSCTSS-5000	Below
27-APR-2025	169	PSFWHM-5000	Above
27-APR-2025	175	PSCTSS-5000	Below
28-NOV-2020	198	PSFWHM-5000	Below
28-NOV-2020	198	PSCTSS-5000	Below
5-JUL-2024	201	PSCTSS-5000	Below
5-JUL-2024	202	PSCTSS-5000	Below
27-APR-2025	208	PSFWHM-5000	Above
4-OCT-2024	221	PSCTSS-5000	Below
25-FEB-2025	223	PSENERGY-5000	Above
25-FEB-2025	223	PSCENTRD-5000	Above
4-OCT-2024	227	PSFWHM-5000	Below
4-OCT-2024	227	PSCTSS-5000	Below
17-DEC-2024	228	PSCTSS-5000	Below
27-APR-2025	237	PSENERGY-5000	Below
27-APR-2025	252	PSENERGY-5000	Above

The following detectors that may not have properly transfered to the QA file

115 may not have run since 27-APR-2025
116 may not have run since 27-APR-2025
119 may not have run since 27-APR-2025
120 may not have run since 27-APR-2025
121 may not have run since 27-APR-2025
122 may not have run since 27-APR-2025
127 may not have run since 27-APR-2025
128 may not have run since 27-APR-2025

143 may not have run since 27-APR-2025
144 may not have run since 27-APR-2025
173 may not have run since 27-APR-2025
174 may not have run since 27-APR-2025
183 may not have run since 27-APR-2025
184 may not have run since 27-APR-2025
187 may not have run since 27-APR-2025
188 may not have run since 27-APR-2025
198 may not have run since 27-APR-2025
201 may not have run since 27-APR-2025
202 may not have run since 27-APR-2025
209 may not have run since 27-APR-2025
210 may not have run since 27-APR-2025
211 may not have run since 27-APR-2025
212 may not have run since 27-APR-2025
221 may not have run since 27-APR-2025
223 may not have run since 27-APR-2025
227 may not have run since 27-APR-2025
228 may not have run since 27-APR-2025
241 may not have run since 27-APR-2025
242 may not have run since 27-APR-2025
245 may not have run since 27-APR-2025
246 may not have run since 27-APR-2025
247 may not have run since 27-APR-2025

APPROVAL DATE: 4/27/25 APPROVAL TIME: 23:10

APPROVED BY: PROCEDURE # GL-RAD-I-009

Report completed at 27-APR-2025 23:03:08.53

Review of Alpha Spectrometer QA results (Daily checks) 28-APR-2025 10:58:30.22

Bank 1 through bank 29 (detectors 1 through 256)

DETECTORS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

	Detector	Parameter	Flag
28-APR-2025	103	PSFWHM-5000	Above
28-AUG-2023	115	PSCTSS-5000	Below
28-AUG-2023	116	PSCTSS-5000	Below
28-APR-2025	165	Second Check Required for D	
28-APR-2025	169	PSFWHM-5000	Above
28-APR-2025	175	PSCTSS-5000	Below
28-APR-2025	179	PSFWHM-5000	Above
28-NOV-2020	198	PSFWHM-5000	Below
28-NOV-2020	198	PSCTSS-5000	Below
5-JUL-2024	201	PSCTSS-5000	Below
5-JUL-2024	202	PSCTSS-5000	Below
28-APR-2025	208	PSFWHM-5000	Above
4-OCT-2024	221	PSCTSS-5000	Below
25-FEB-2025	223	PSENERGY-5000	Above
25-FEB-2025	223	PSCENTRD-5000	Above
4-OCT-2024	227	PSFWHM-5000	Below
4-OCT-2024	227	PSCTSS-5000	Below
17-DEC-2024	228	PSCTSS-5000	Below
28-APR-2025	237	PSENERGY-5000	Below
28-APR-2025	252	PSENERGY-5000	Above

The following detectors that may not have properly transfered to the QA file

115 may not have run since 28-APR-2025
116 may not have run since 28-APR-2025
119 may not have run since 28-APR-2025
120 may not have run since 28-APR-2025
121 may not have run since 28-APR-2025
122 may not have run since 28-APR-2025
127 may not have run since 28-APR-2025
128 may not have run since 28-APR-2025

143 may not have run since 28-APR-2025
144 may not have run since 28-APR-2025
173 may not have run since 28-APR-2025
174 may not have run since 28-APR-2025
183 may not have run since 28-APR-2025
184 may not have run since 28-APR-2025
198 may not have run since 28-APR-2025
201 may not have run since 28-APR-2025
202 may not have run since 28-APR-2025
211 may not have run since 28-APR-2025
212 may not have run since 28-APR-2025
221 may not have run since 28-APR-2025
223 may not have run since 28-APR-2025
227 may not have run since 28-APR-2025
228 may not have run since 28-APR-2025
241 may not have run since 28-APR-2025
242 may not have run since 28-APR-2025

APPROVAL DATE: 4/28/25

APPROVAL TIME: 1110

APPROVED BY:

PROCEDURE # GL-RAD-I-009

Report completed at 28-APR-2025 11:02:05.89

Review of Alpha Spectrometer QA results (Daily checks) 3-MAY-2025 13:17:09.79

Bank 1 through bank 29 (detectors 1 through 256)

DETECTORS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

	Detector	Parameter	Flag
3-MAY-2025	103	PSFWHM-5000	Above
28-AUG-2023	115	PSCTSS-5000	Below
28-AUG-2023	116	PSCTSS-5000	Below
3-MAY-2025	169	PSFWHM-5000	Above
28-NOV-2020	198	PSFWHM-5000	Below
28-NOV-2020	198	PSCTSS-5000	Below
5-JUL-2024	201	PSCTSS-5000	Below
5-JUL-2024	202	PSCTSS-5000	Below
3-MAY-2025	208	PSFWHM-5000	Above
4-OCT-2024	221	PSCTSS-5000	Below
25-FEB-2025	223	PSENERGY-5000	Above
25-FEB-2025	223	PSCENTRD-5000	Above
4-OCT-2024	227	PSFWHM-5000	Below
4-OCT-2024	227	PSCTSS-5000	Below
17-DEC-2024	228	PSCTSS-5000	Below
3-MAY-2025	237	PSENERGY-5000	Below
3-MAY-2025	252	PSENERGY-5000	Above

The following detectors that may not have properly transfered to the QA file

115 may not have run since 3-MAY-2025
116 may not have run since 3-MAY-2025
119 may not have run since 3-MAY-2025
120 may not have run since 3-MAY-2025
121 may not have run since 3-MAY-2025
122 may not have run since 3-MAY-2025
127 may not have run since 3-MAY-2025
128 may not have run since 3-MAY-2025
143 may not have run since 3-MAY-2025
144 may not have run since 3-MAY-2025
183 may not have run since 3-MAY-2025
184 may not have run since 3-MAY-2025
198 may not have run since 3-MAY-2025
201 may not have run since 3-MAY-2025

202 may not have run since 3-MAY-2025
211 may not have run since 3-MAY-2025
212 may not have run since 3-MAY-2025
221 may not have run since 3-MAY-2025
223 may not have run since 3-MAY-2025
227 may not have run since 3-MAY-2025
228 may not have run since 3-MAY-2025
241 may not have run since 3-MAY-2025
242 may not have run since 3-MAY-2025

APPROVAL DATE: 5/3/25 APPROVAL TIME: 1324

APPROVED BY: PROCEDURE # GL-RAD-I-009

Report completed at 3-MAY-2025 13:21:33.01

Review of Alpha Spectrometer QA results (Daily checks) 8-MAY-2025 12:03:47.86

Bank 1 through bank 29 (detectors 1 through 256)

DETECTORS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

	Detector	Parameter	Flag
8-MAY-2025	103	PSFWHM-5000	Above
28-AUG-2023	115	PSCTSS-5000	Below
28-AUG-2023	116	PSCTSS-5000	Below
8-MAY-2025	169	PSFWHM-5000	Above
28-NOV-2020	198	PSFWHM-5000	Below
28-NOV-2020	198	PSCTSS-5000	Below
5-JUL-2024	201	PSCTSS-5000	Below
5-JUL-2024	202	PSCTSS-5000	Below
8-MAY-2025	214	PSENERGY-5000	Above
8-MAY-2025	216	PSENERGY-5000	Above
4-OCT-2024	221	PSCTSS-5000	Below
25-FEB-2025	223	PSENERGY-5000	Above
25-FEB-2025	223	PSCENTRD-5000	Above
4-OCT-2024	227	PSFWHM-5000	Below
4-OCT-2024	227	PSCTSS-5000	Below
17-DEC-2024	228	PSCTSS-5000	Below
8-MAY-2025	252	PSENERGY-5000	Above

The following detectors that may not have properly transfered to the QA file

115 may not have run since 8-MAY-2025
116 may not have run since 8-MAY-2025
119 may not have run since 8-MAY-2025
120 may not have run since 8-MAY-2025
121 may not have run since 8-MAY-2025
122 may not have run since 8-MAY-2025
127 may not have run since 8-MAY-2025
128 may not have run since 8-MAY-2025
143 may not have run since 8-MAY-2025
144 may not have run since 8-MAY-2025
183 may not have run since 8-MAY-2025
184 may not have run since 8-MAY-2025
198 may not have run since 8-MAY-2025
201 may not have run since 8-MAY-2025

202 may not have run since 8-MAY-2025
211 may not have run since 8-MAY-2025
212 may not have run since 8-MAY-2025
221 may not have run since 8-MAY-2025
223 may not have run since 8-MAY-2025
227 may not have run since 8-MAY-2025
228 may not have run since 8-MAY-2025
241 may not have run since 8-MAY-2025
242 may not have run since 8-MAY-2025

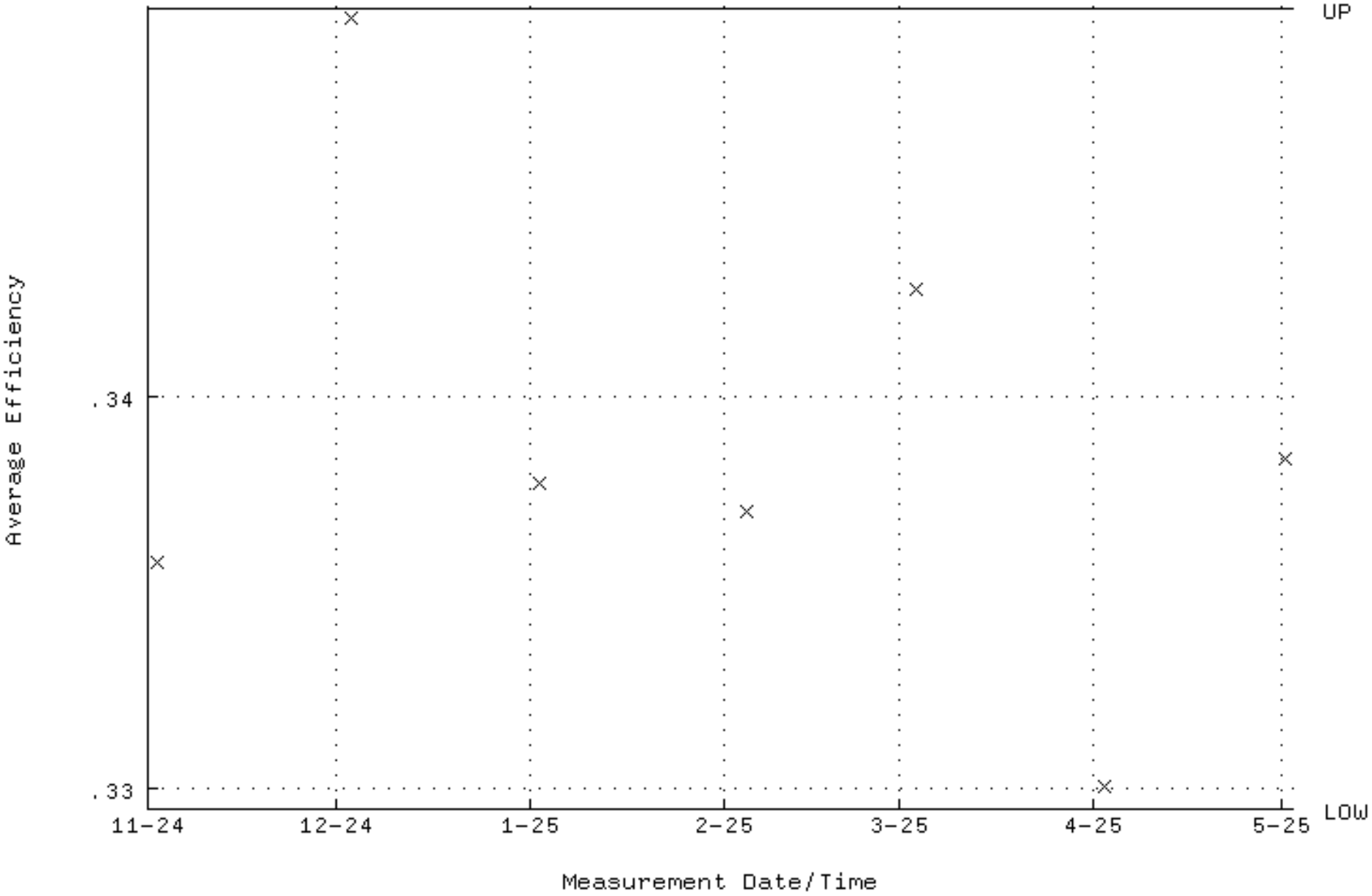
APPROVAL DATE: 5/8/25 APPROVAL TIME: 1438

APPROVED BY: PROCEDURE # GL-RAD-I-009

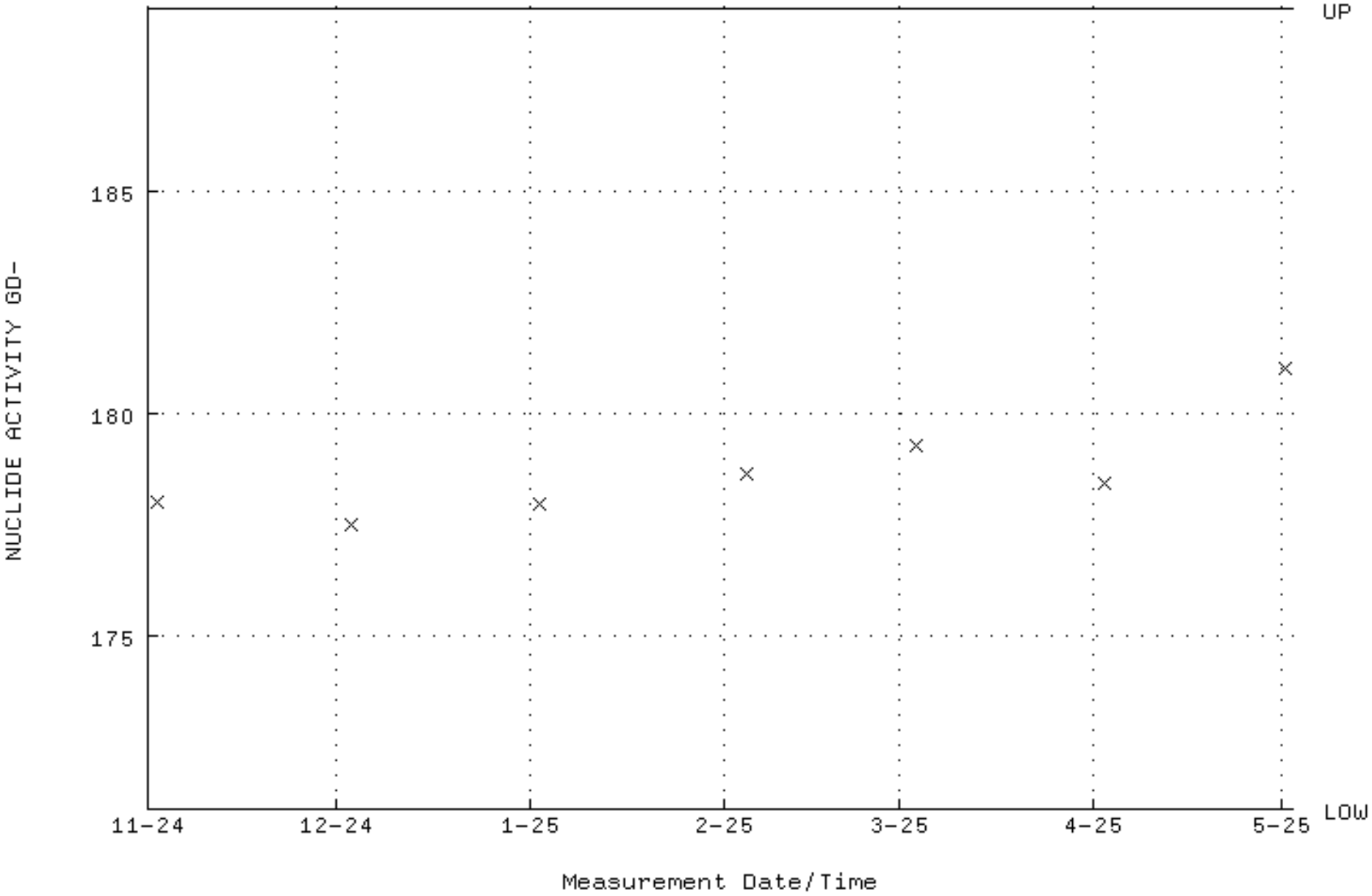
Report completed at 8-MAY-2025 12:07:09.34

Background and Efficiency Data

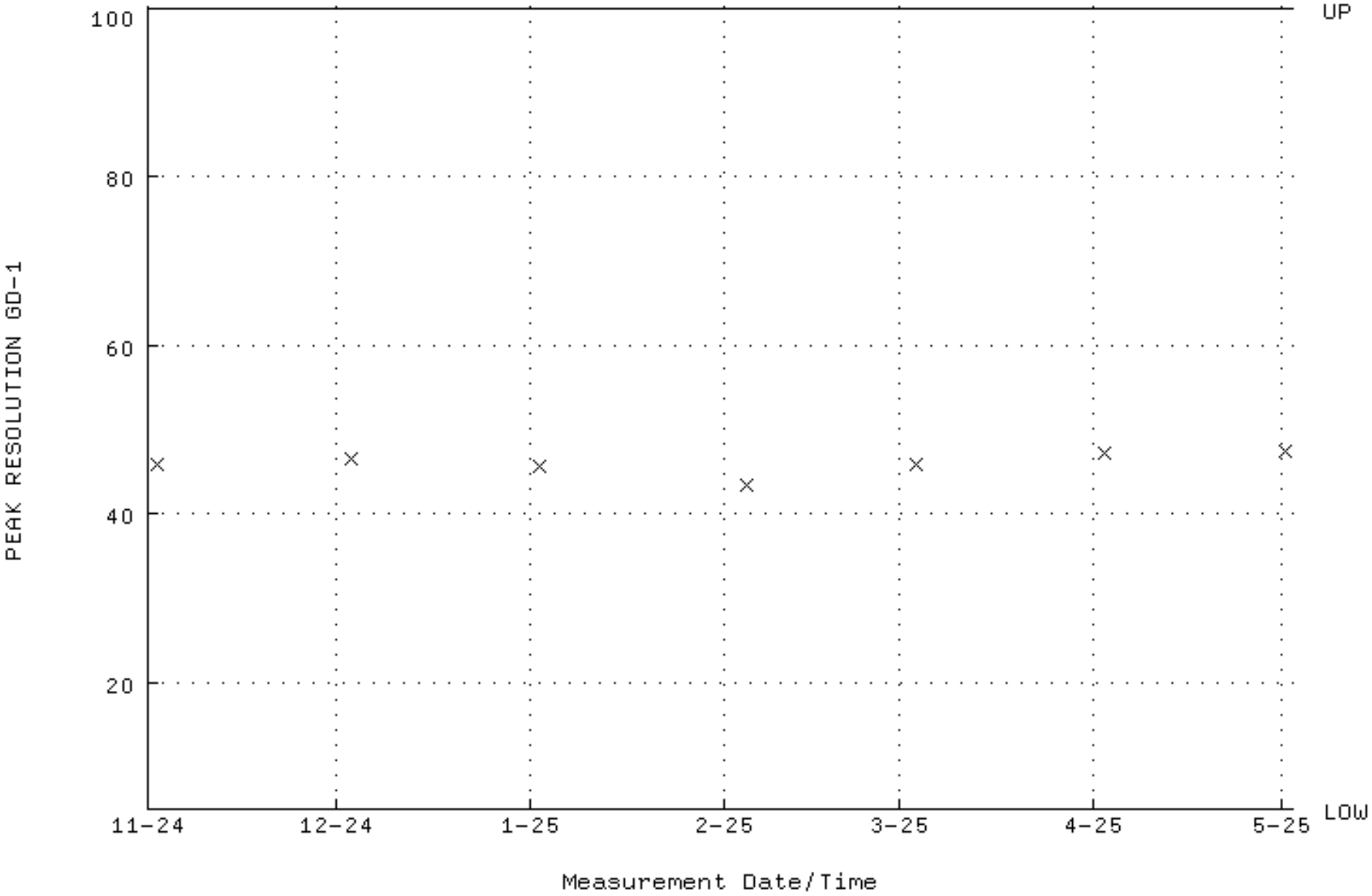
QA filename : DKA100:[ENV_ALPHA.QA.W]W015.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 0.329480 through 0.349860



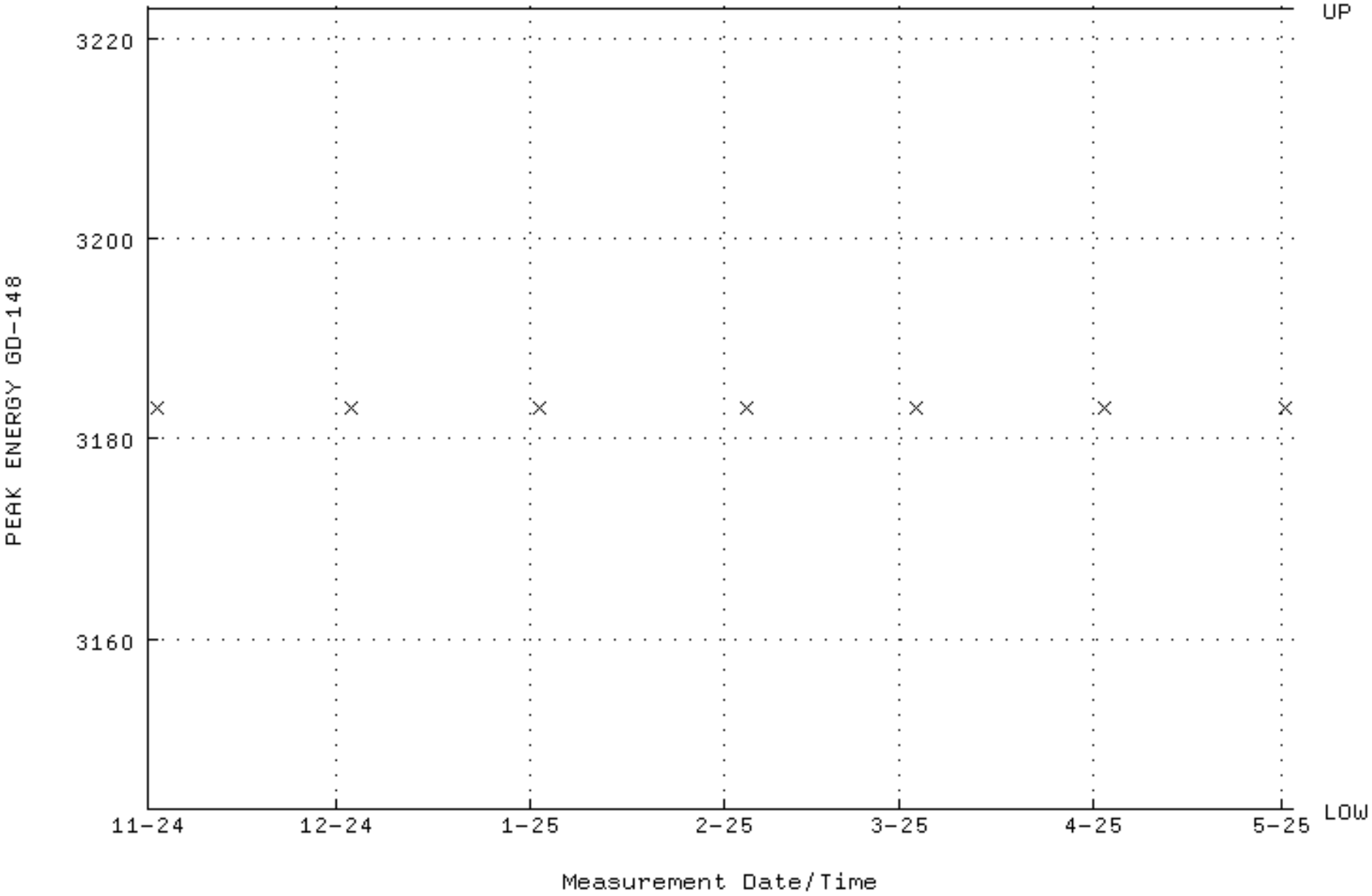
QA filename : DKA100:[ENV_ALPHA.QA.W]W015.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



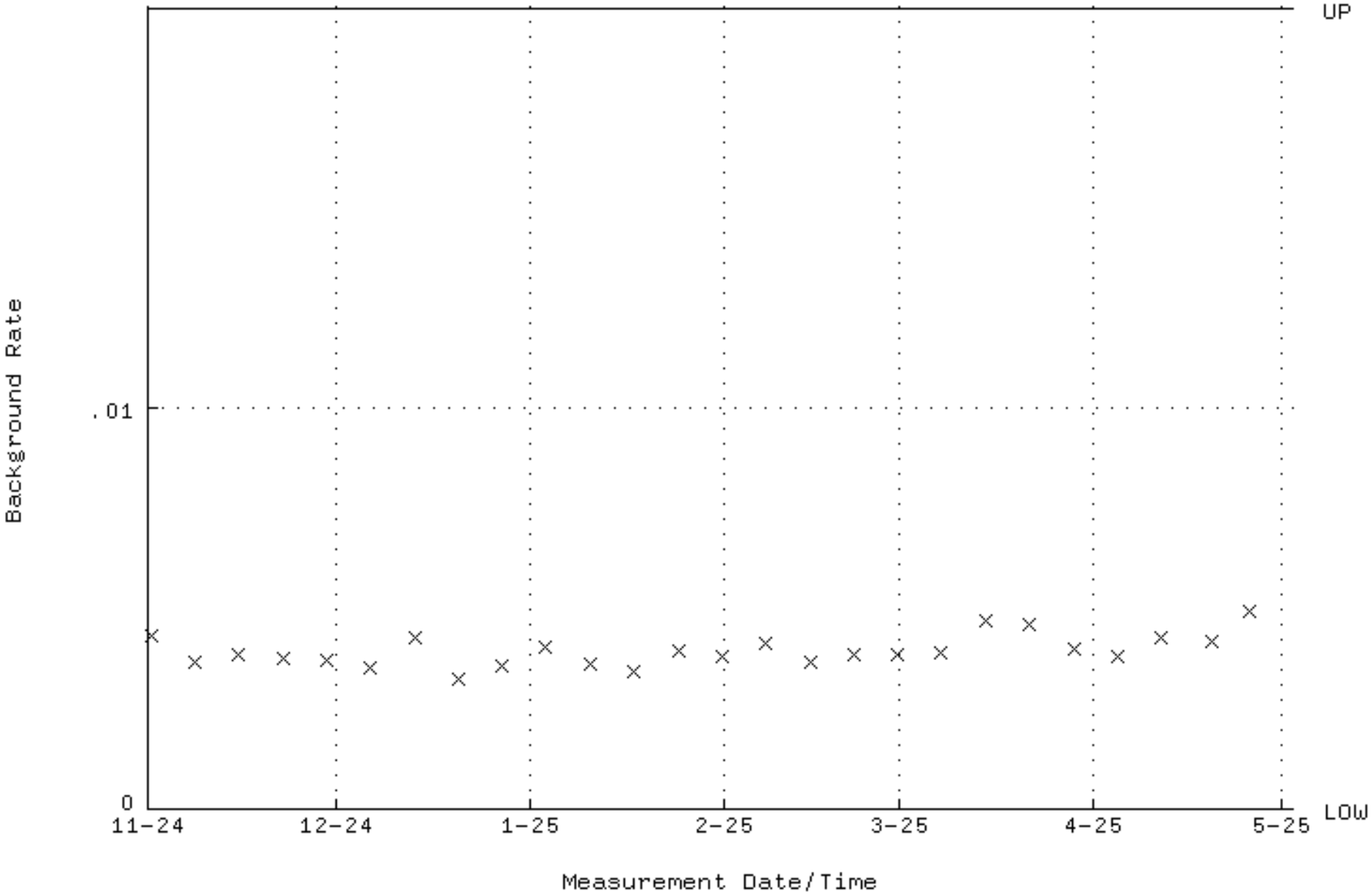
QA filename : DKA100:[ENV_ALPHA.QA.W]W015.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



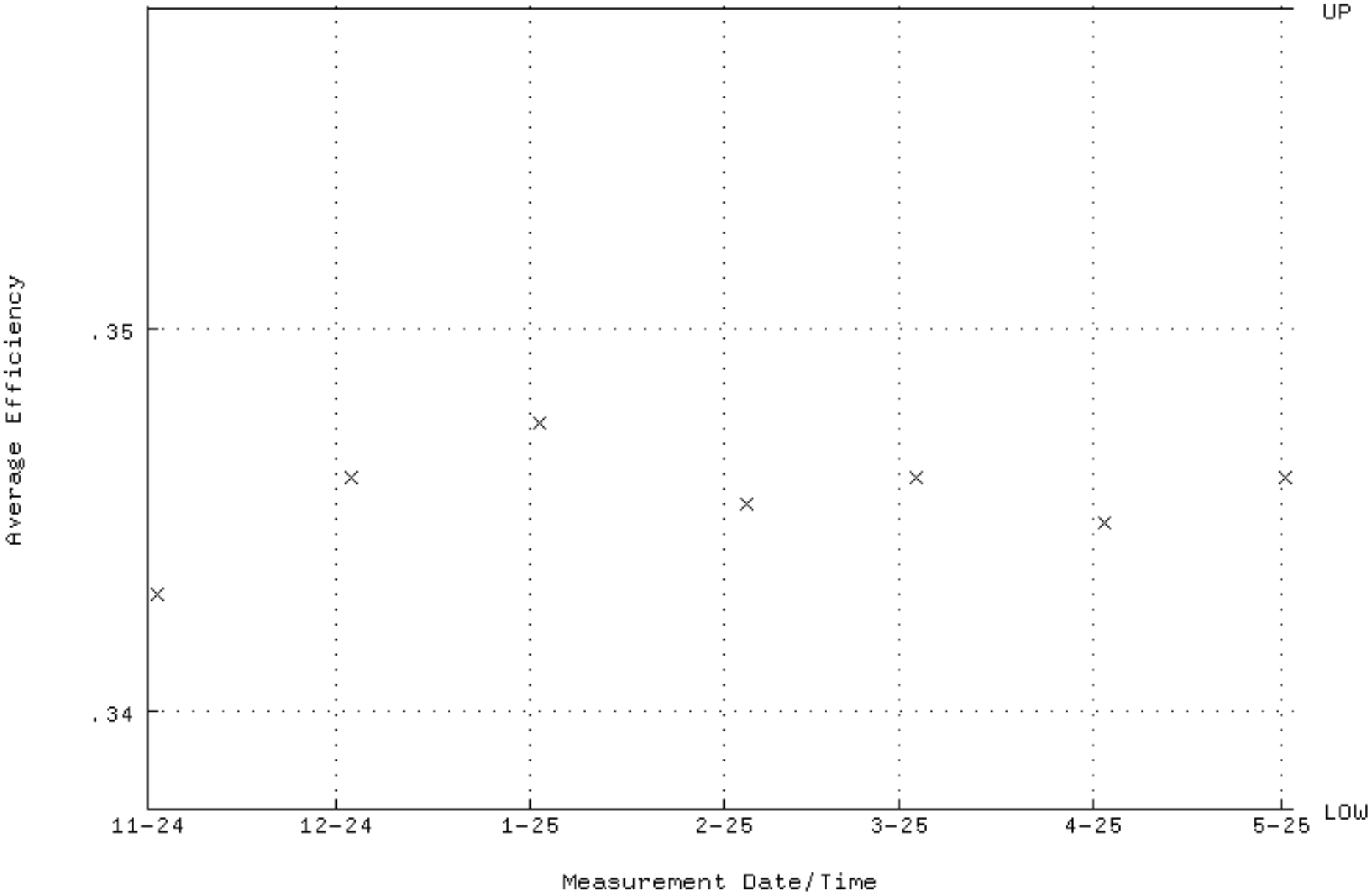
QA filename : DKA100:[ENV_ALPHA.QA.W]W015.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



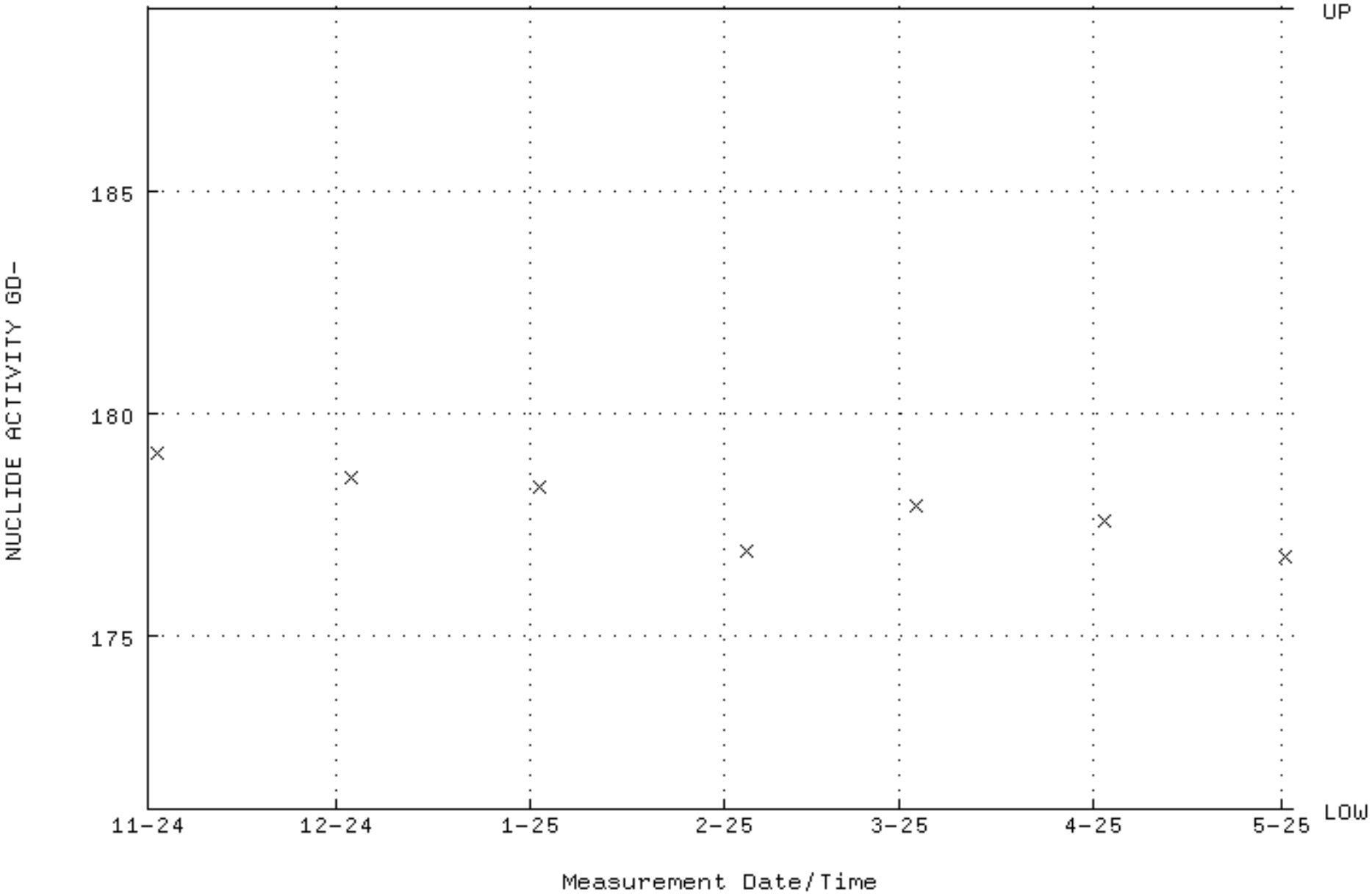
QA filename : DKA100:[ENV_ALPHA.QA.B]B015.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-NOV-2024 12:15:20 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



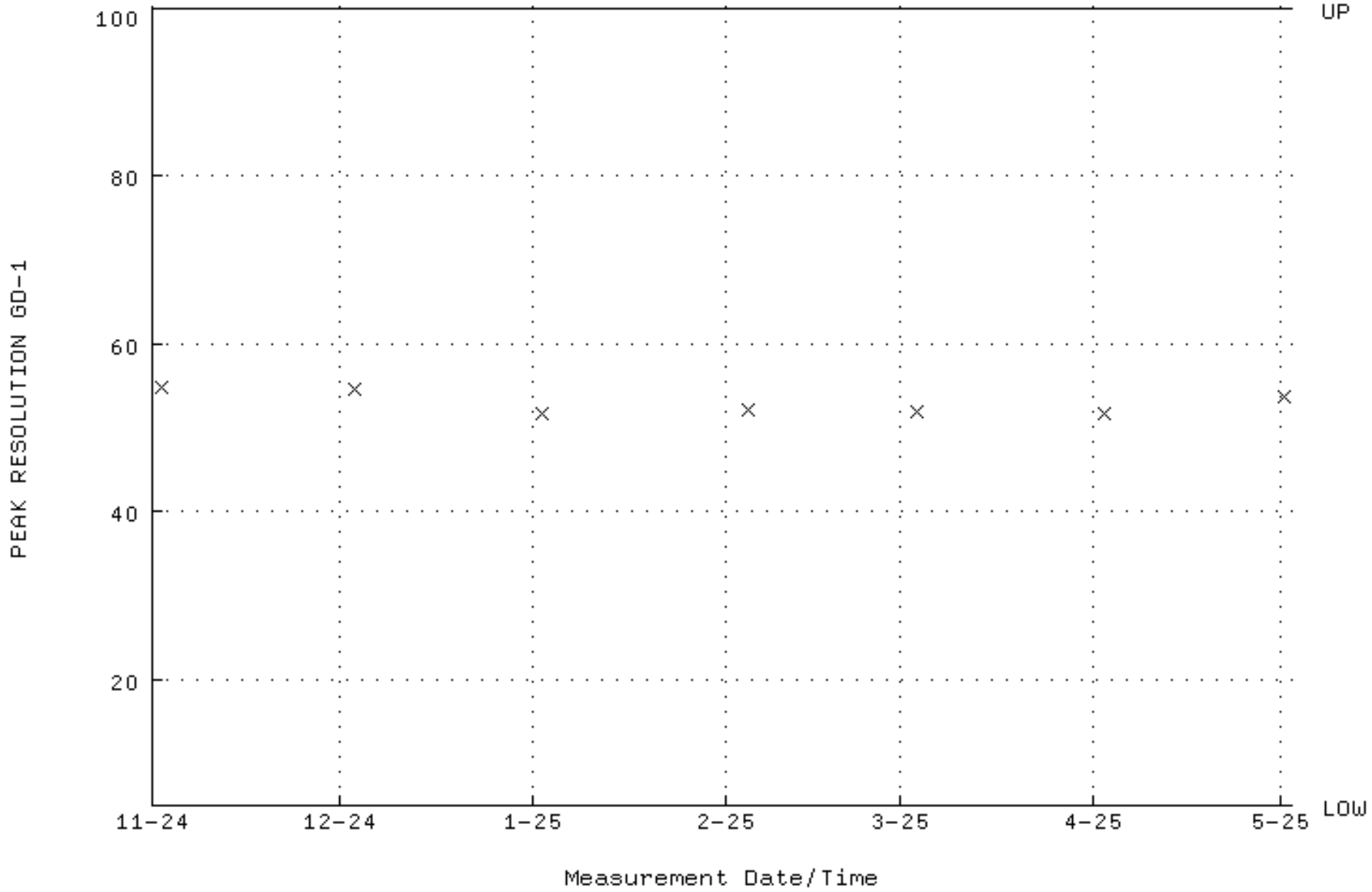
QA filename : DKA100:[ENV_ALPHA.QA.W]W016.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 0.337470 through 0.358340



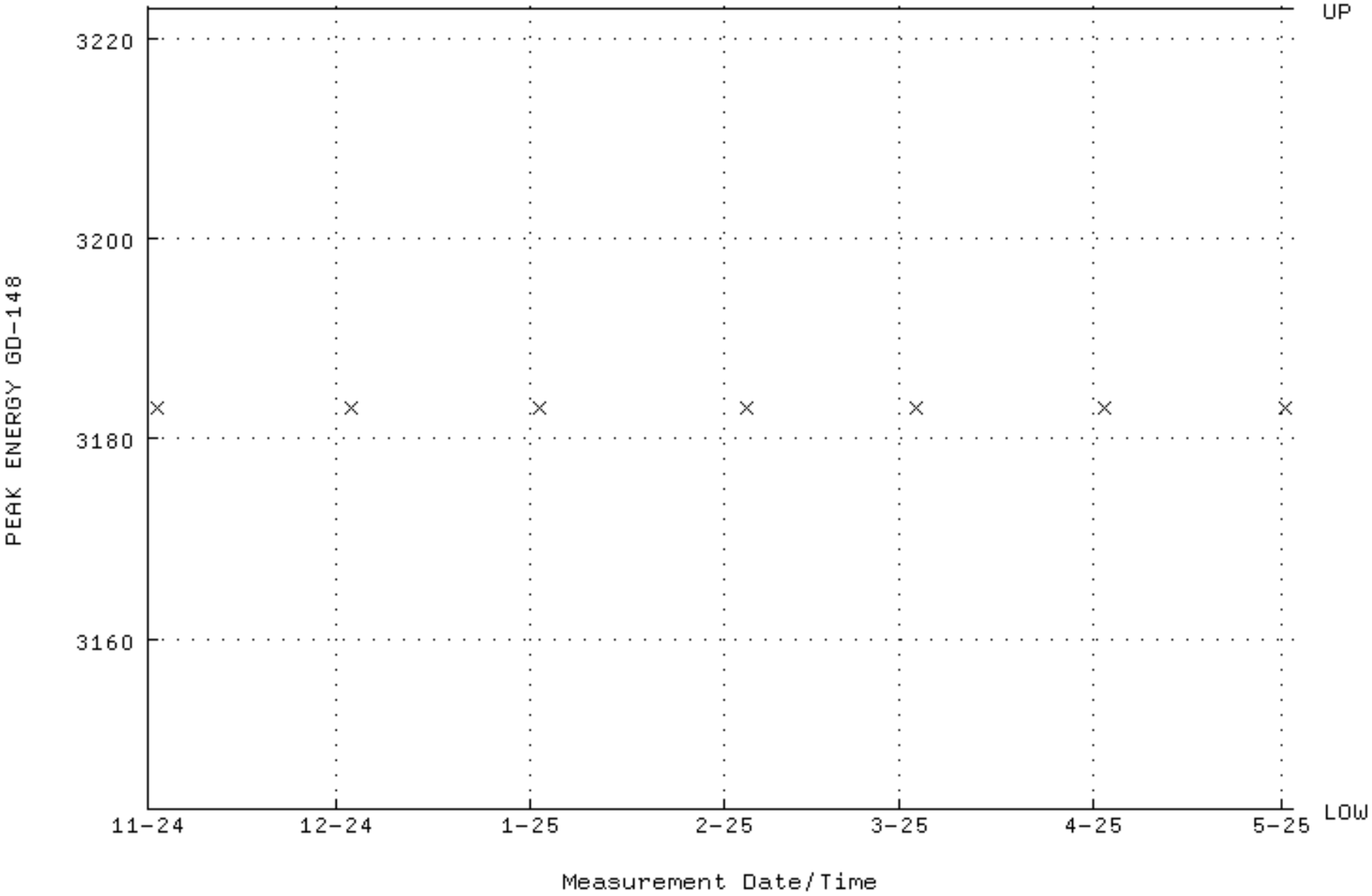
QA filename : DKA100:[ENV_ALPHA.QA.W]W016.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



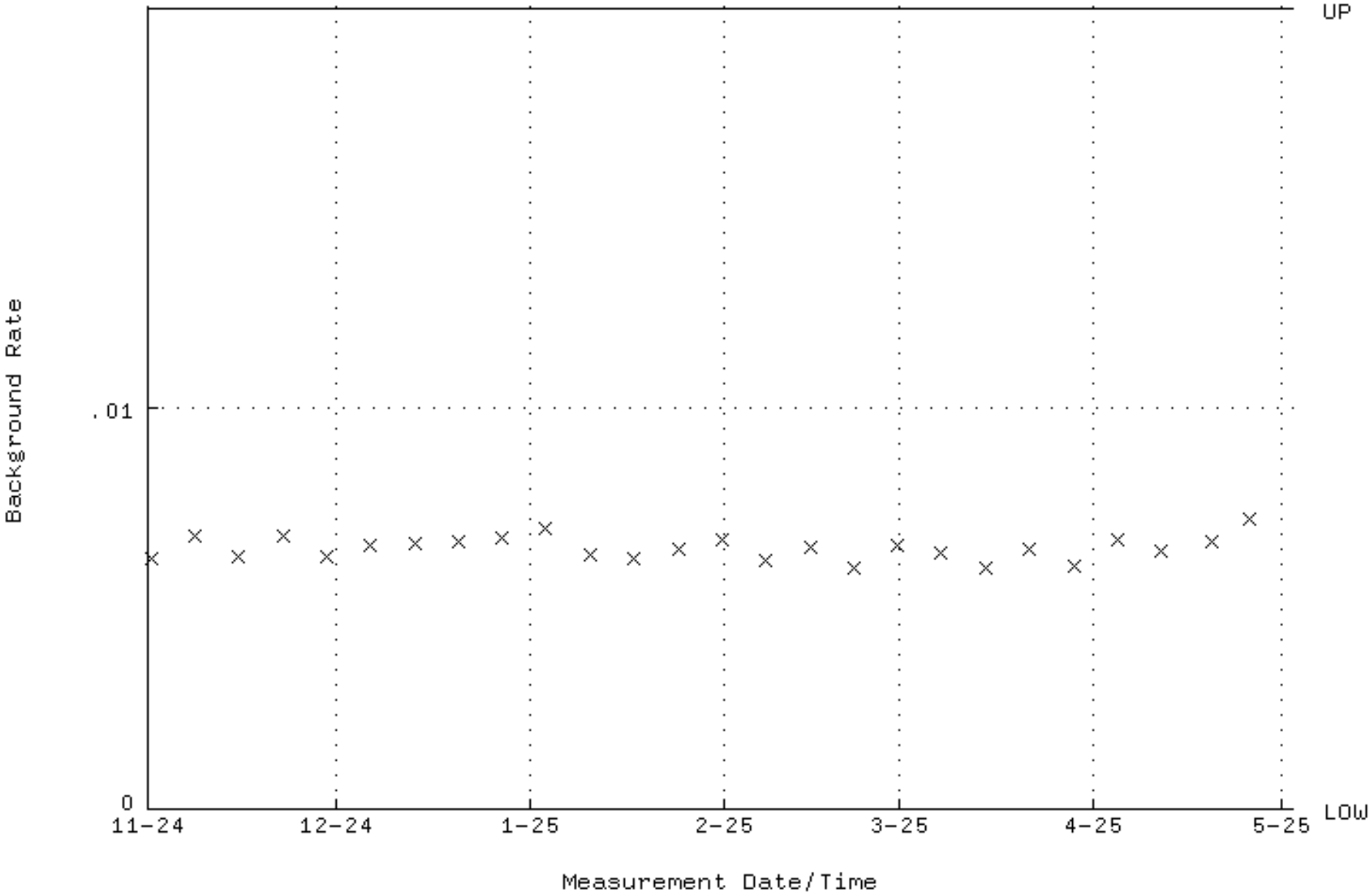
QA filename : DKA100:[ENV_ALPHA.QA.W]W016.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



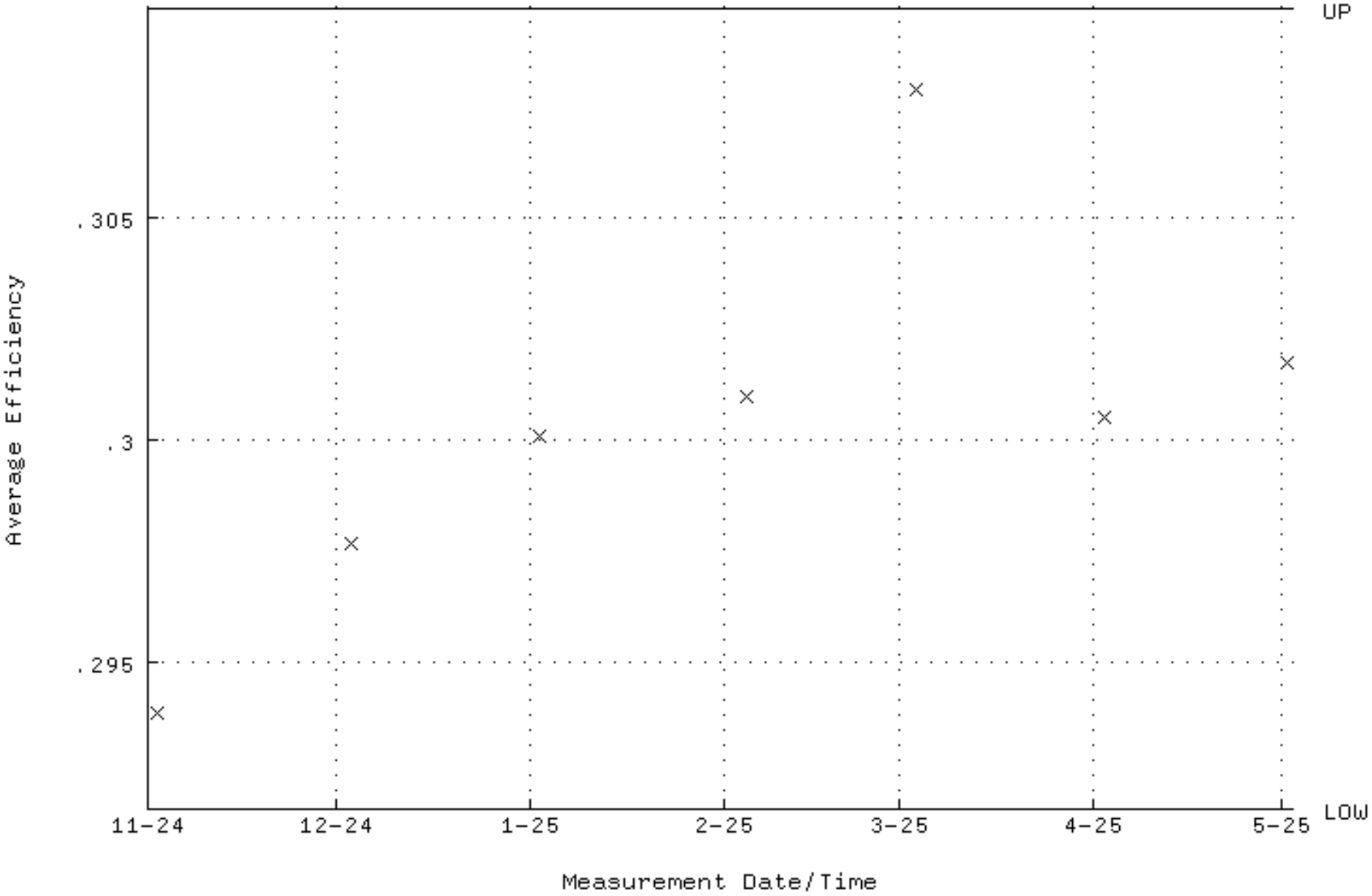
QA filename : DKA100:[ENV_ALPHA.QA.W]W016.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



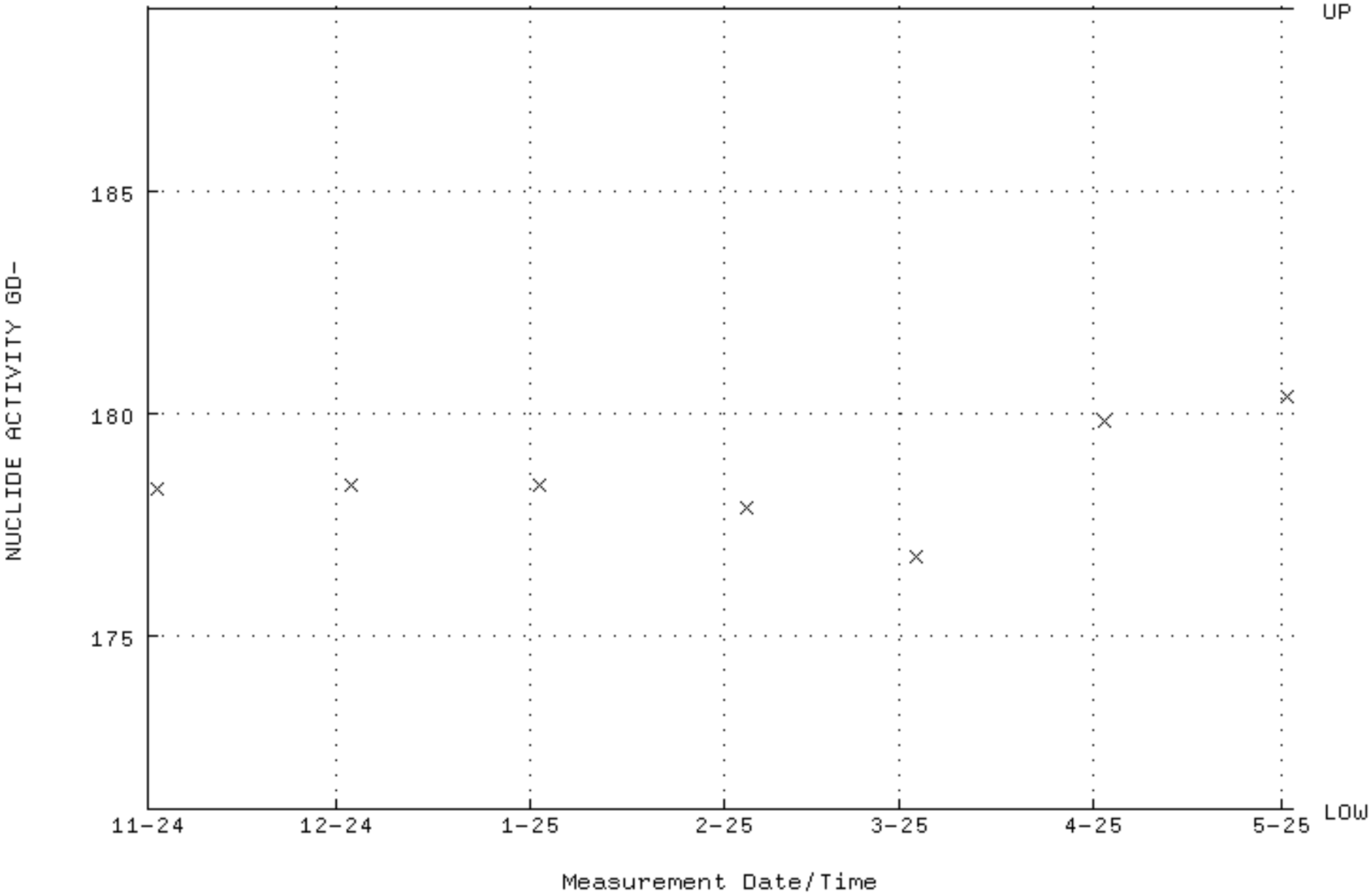
QA filename : DKA100:[ENV_ALPHA.QA.B]B016.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-NOV-2024 12:15:20 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



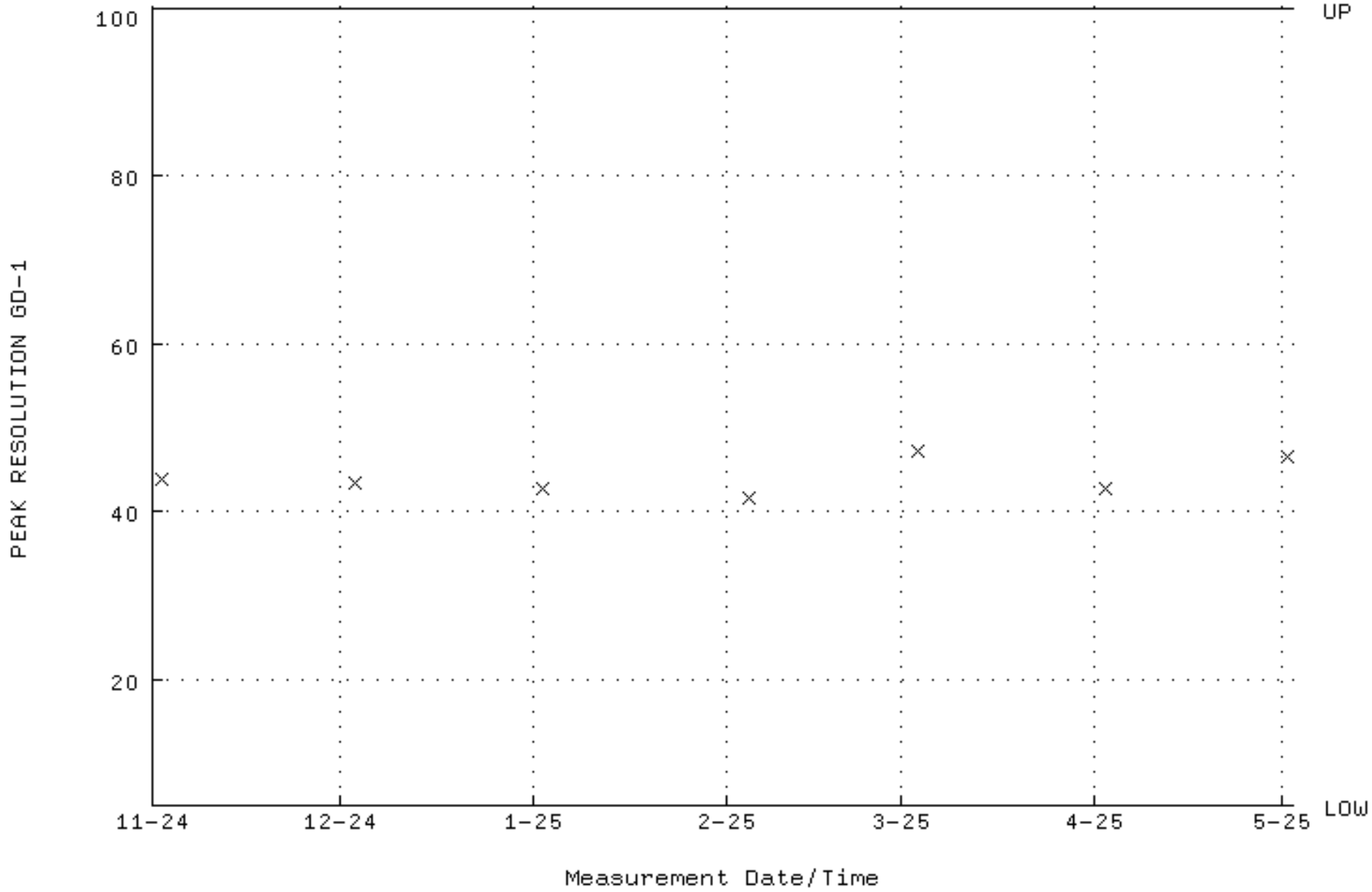
QA filename : DKA100:[ENV_ALPHA.QA.W]W017.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 0.291669 through 0.309711



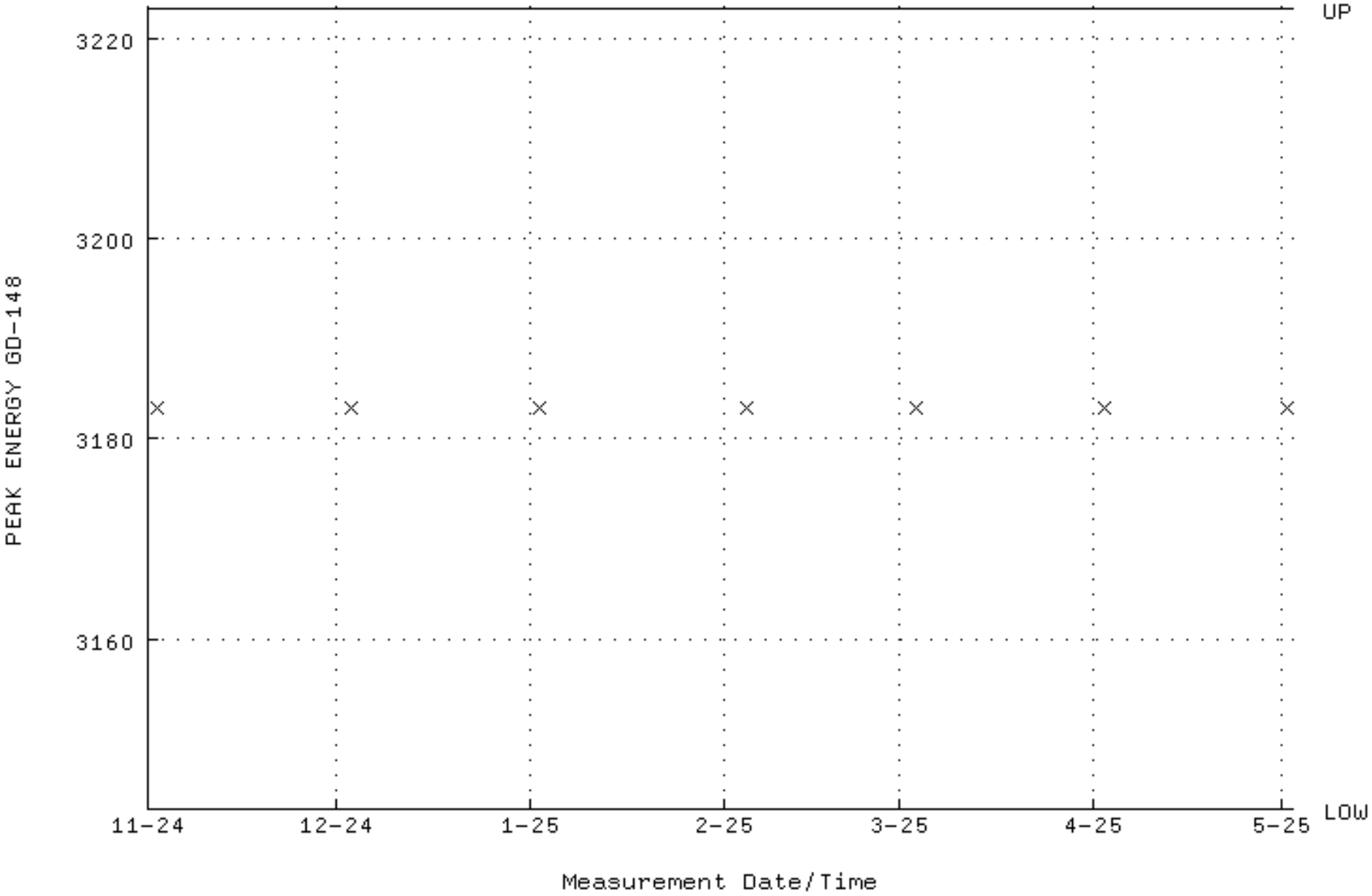
QA filename : DKA100:[ENV_ALPHA.QA.W]W017.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



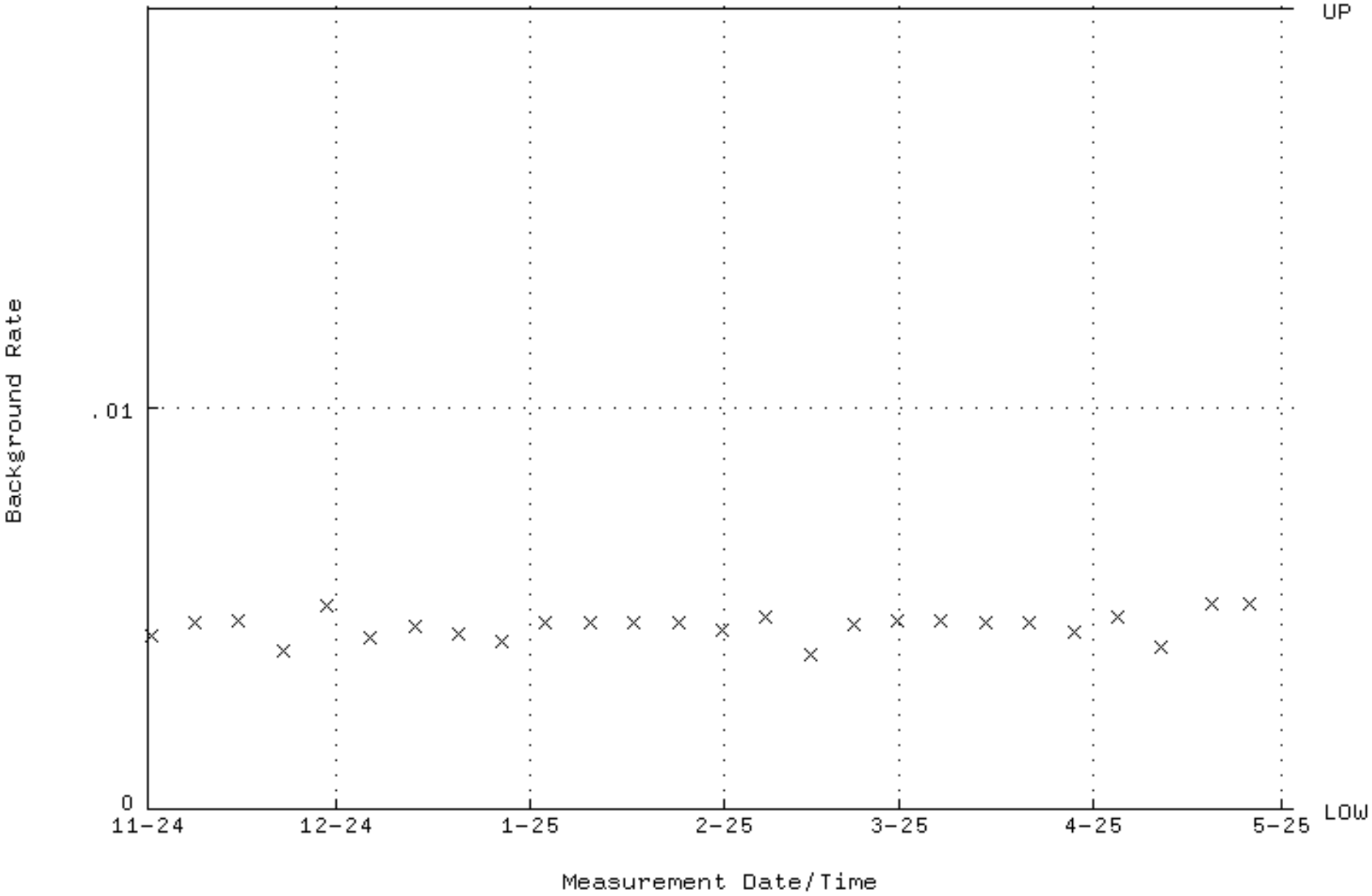
QA filename : DKA100:[ENV_ALPHA.QA.W]W017.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



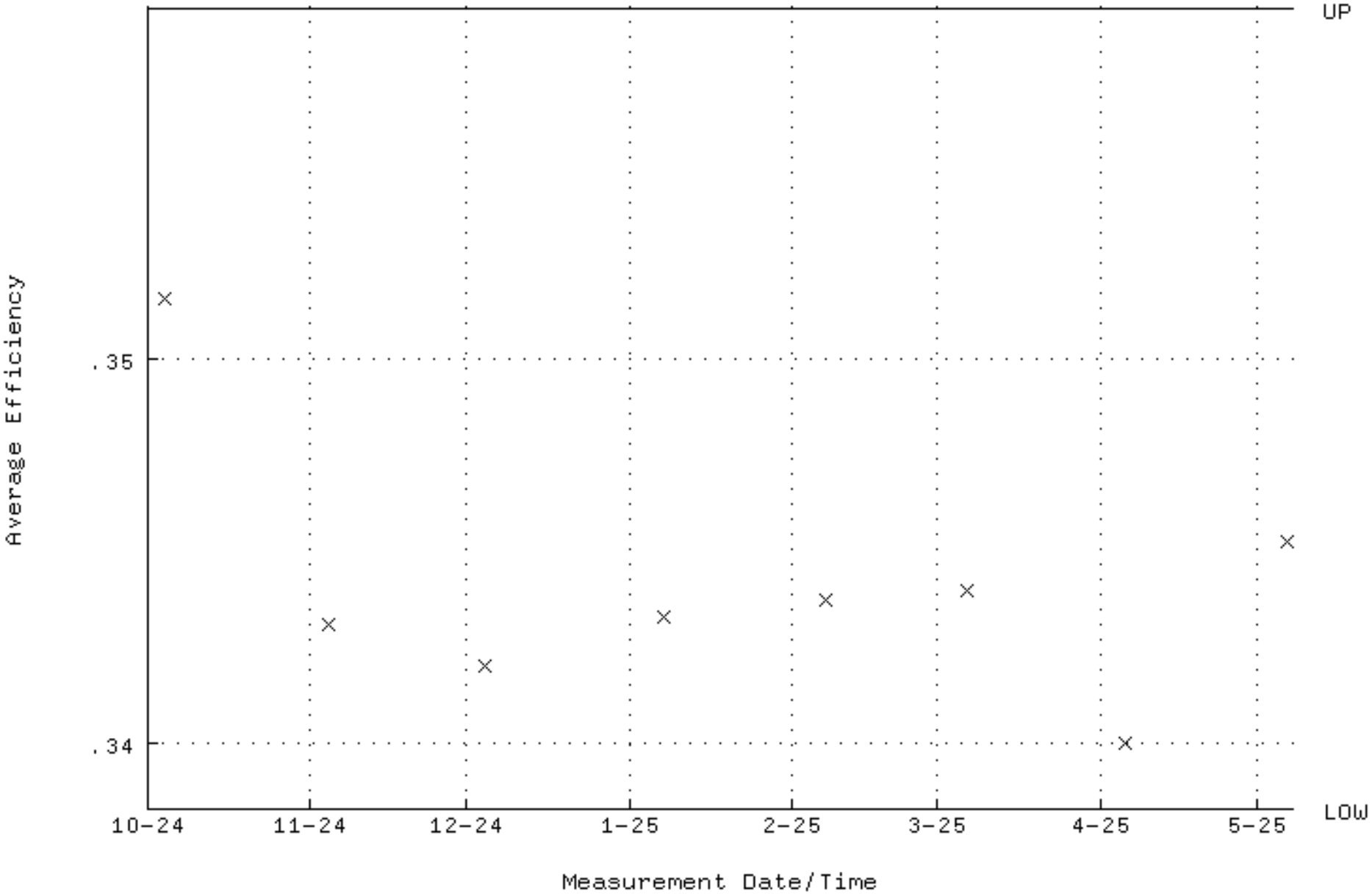
QA filename : DKA100:[ENV_ALPHA.QA.W]W017.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 2-NOV-2024 13:20:24 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



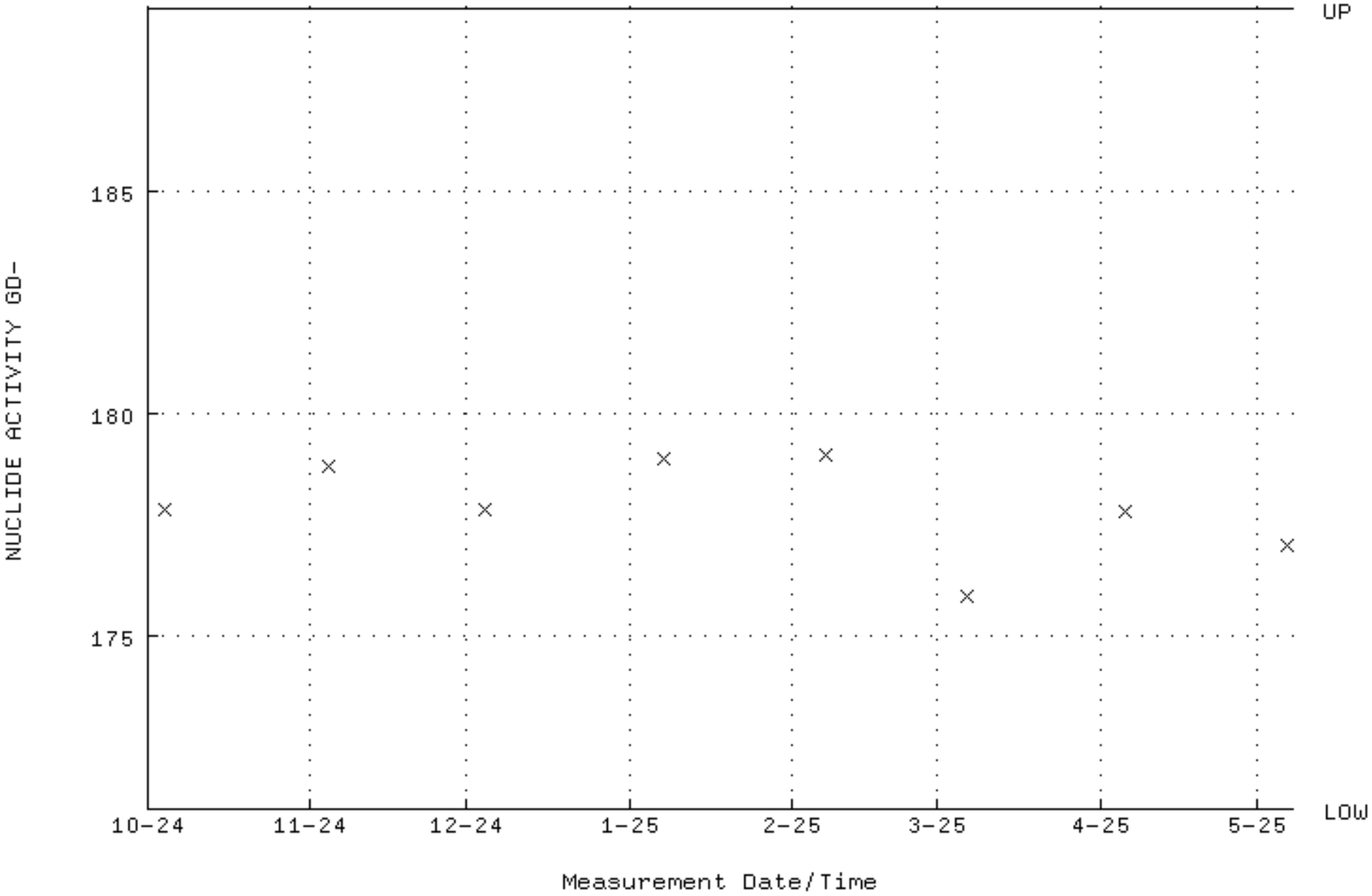
QA filename : DKA100:[ENV_ALPHA.QA.B]B017.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 1-NOV-2024 12:15:20 through 2-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



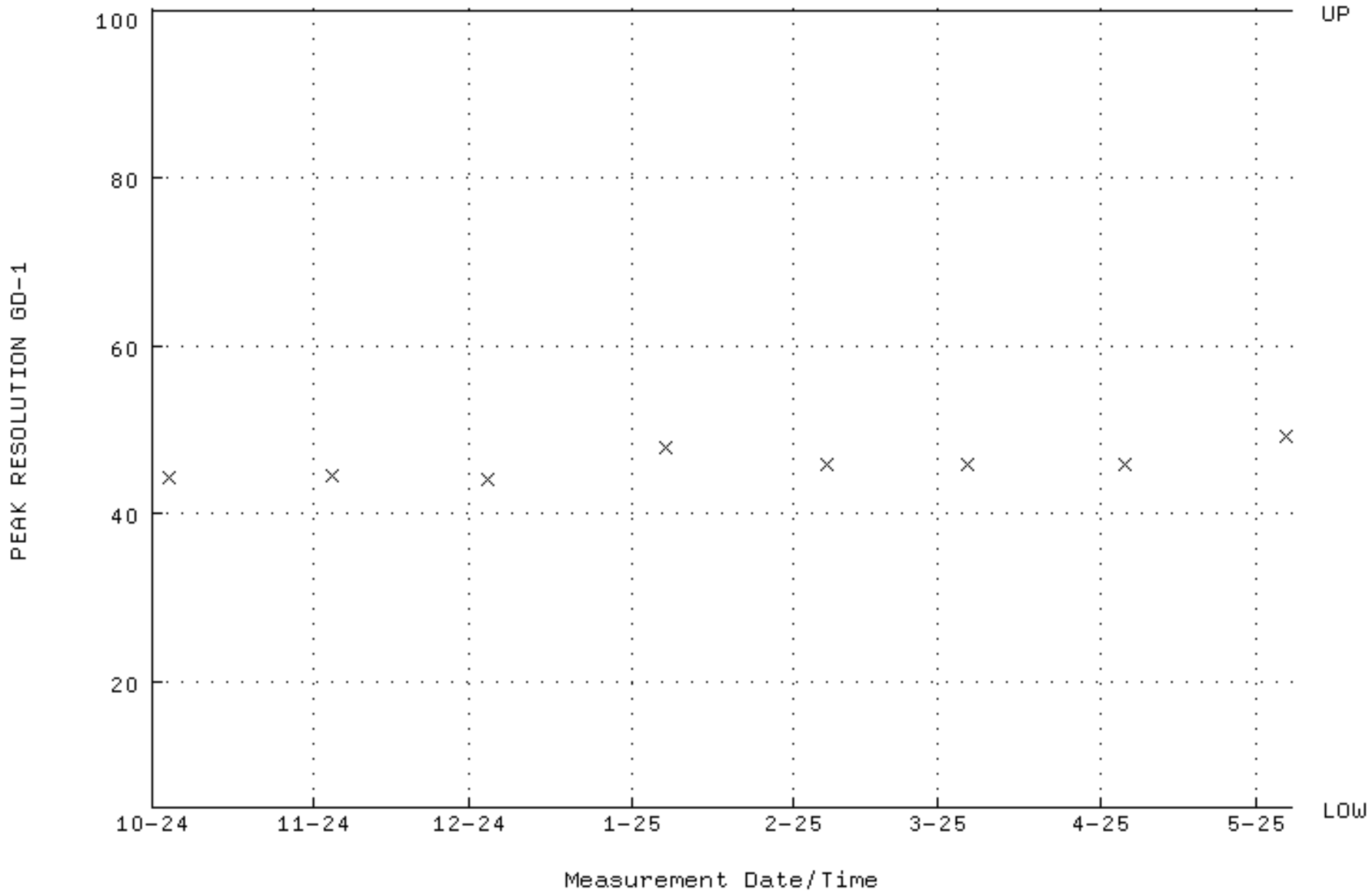
QA filename : DKA100:[ENV_ALPHA.QA.W]W025.QAF;8
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.338256 through 0.359180



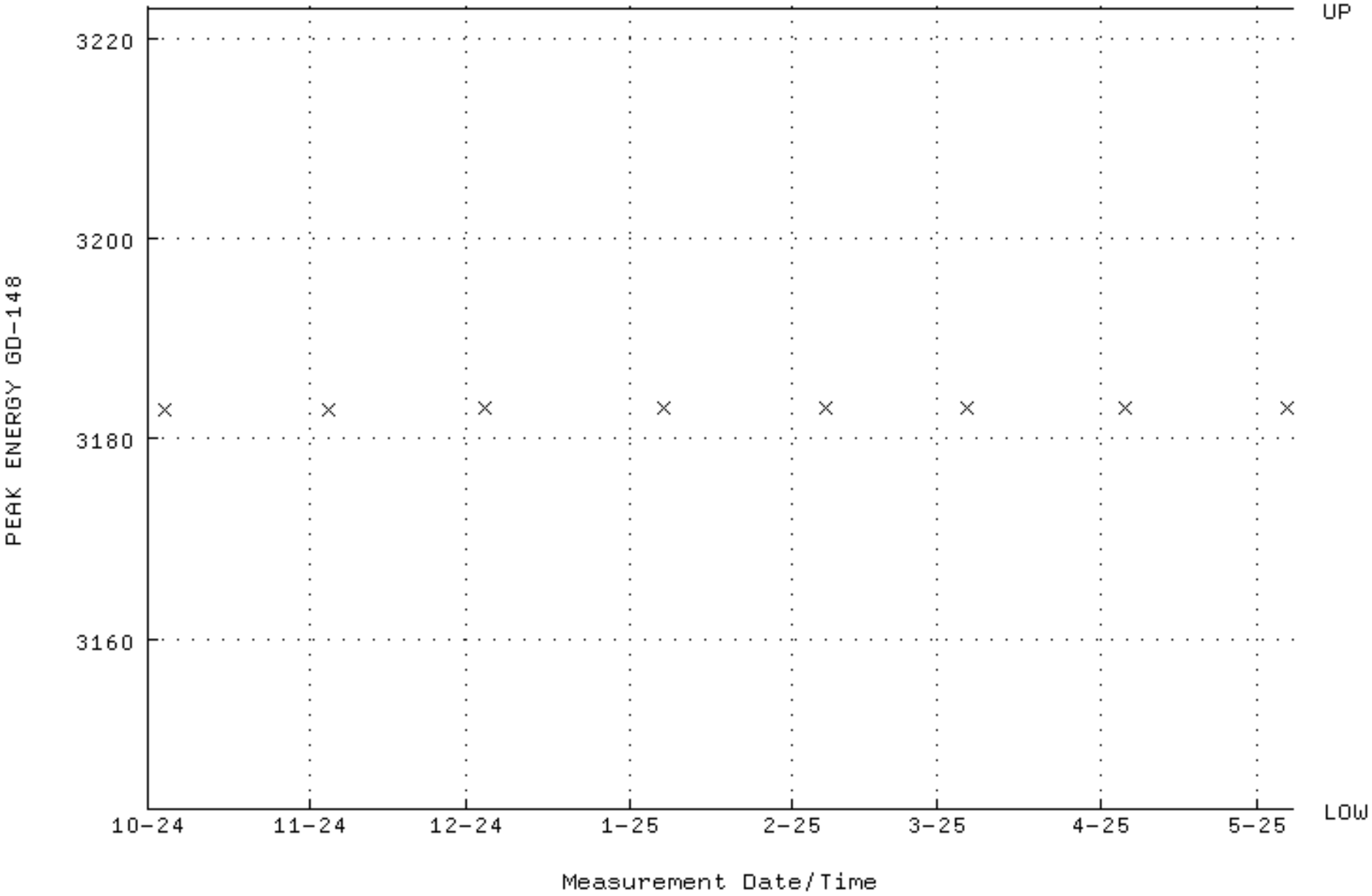
QA filename : DKA100:[ENV_ALPHA.QA.W]W025.QAF;8
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



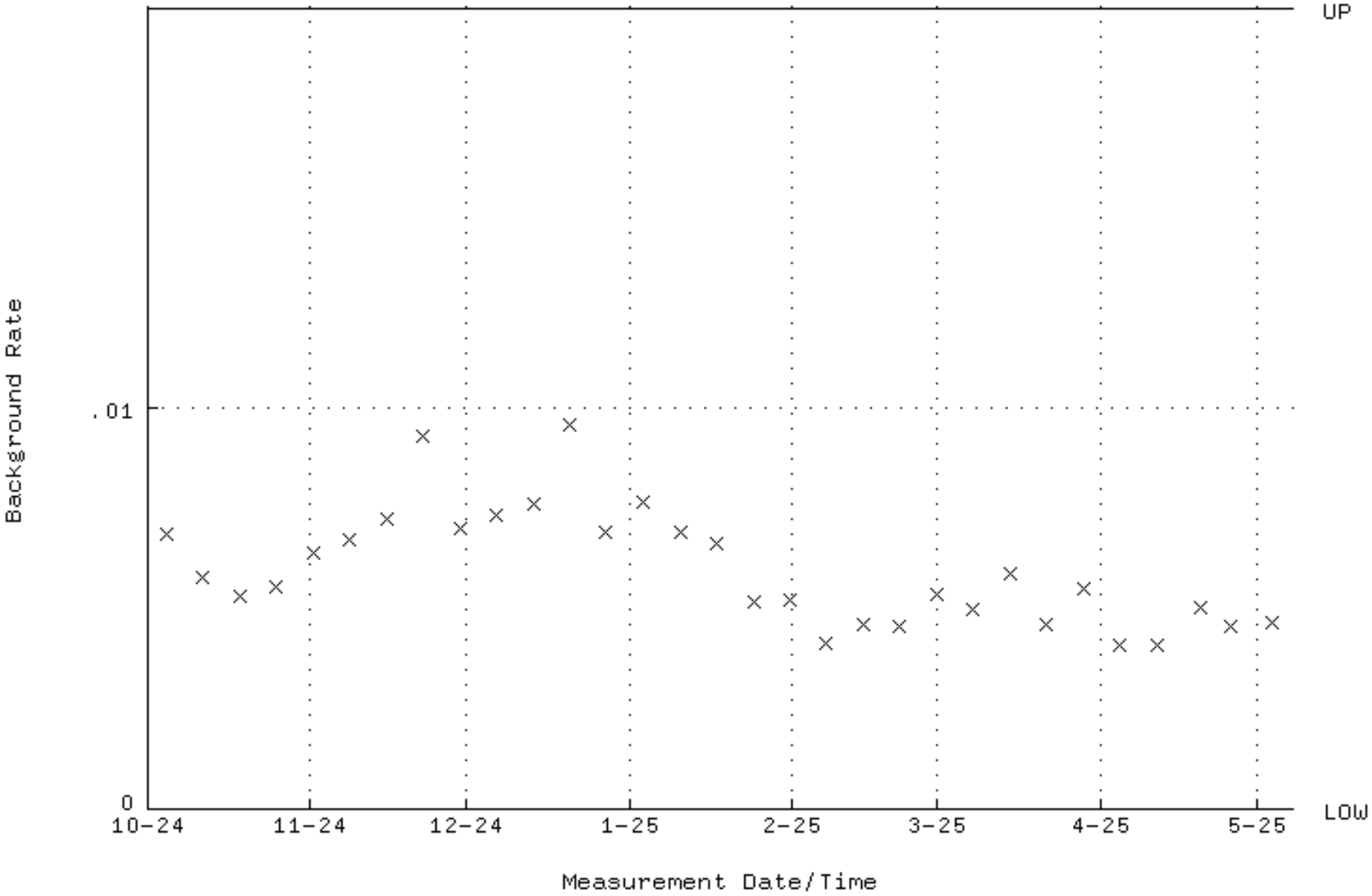
QA filename : DKA100:[ENV_ALPHA.QA.W]W025.QAF;8
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



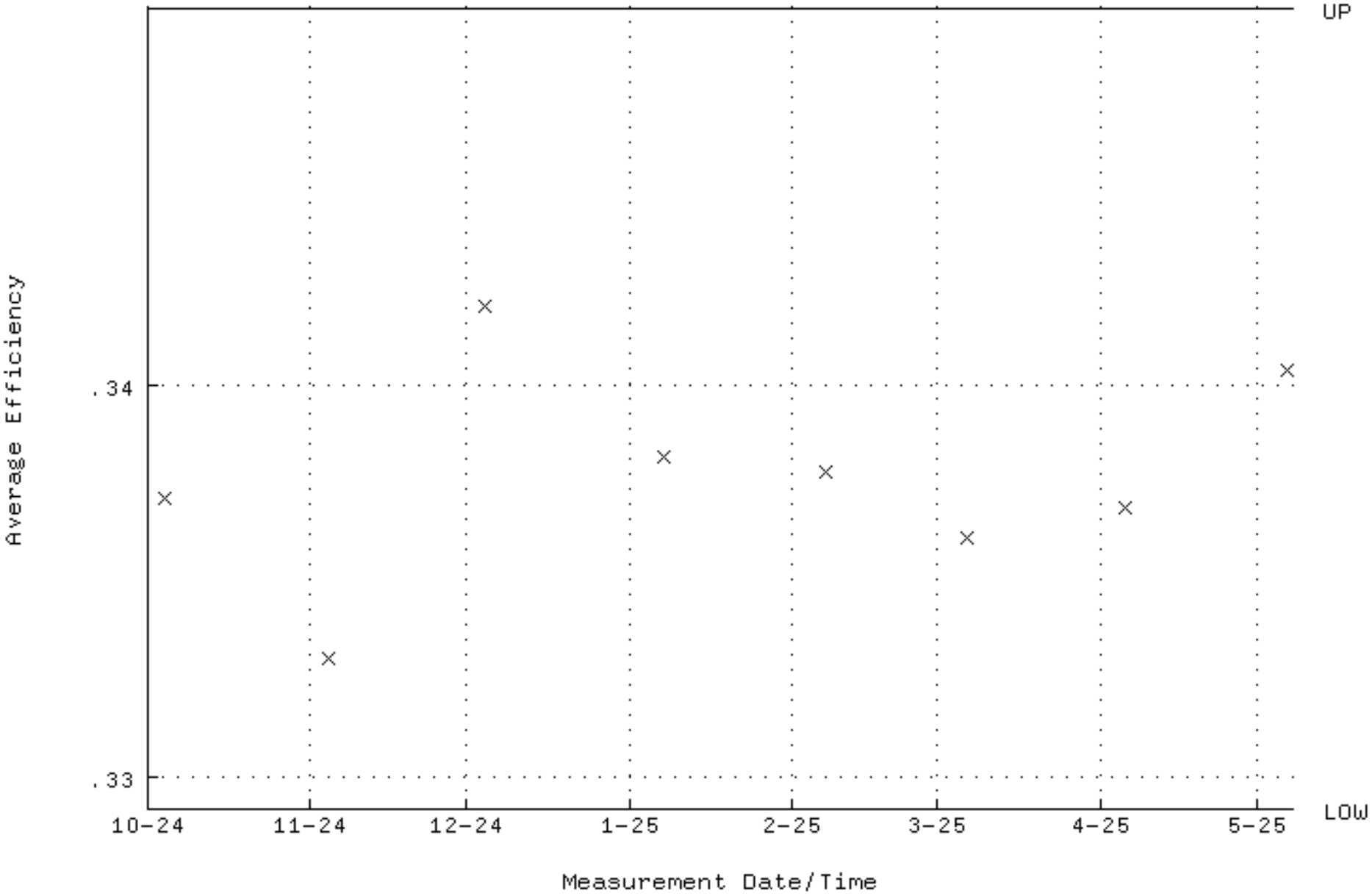
QA filename : DKA100:[ENV_ALPHA.QA.W]W025.QAF;8
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



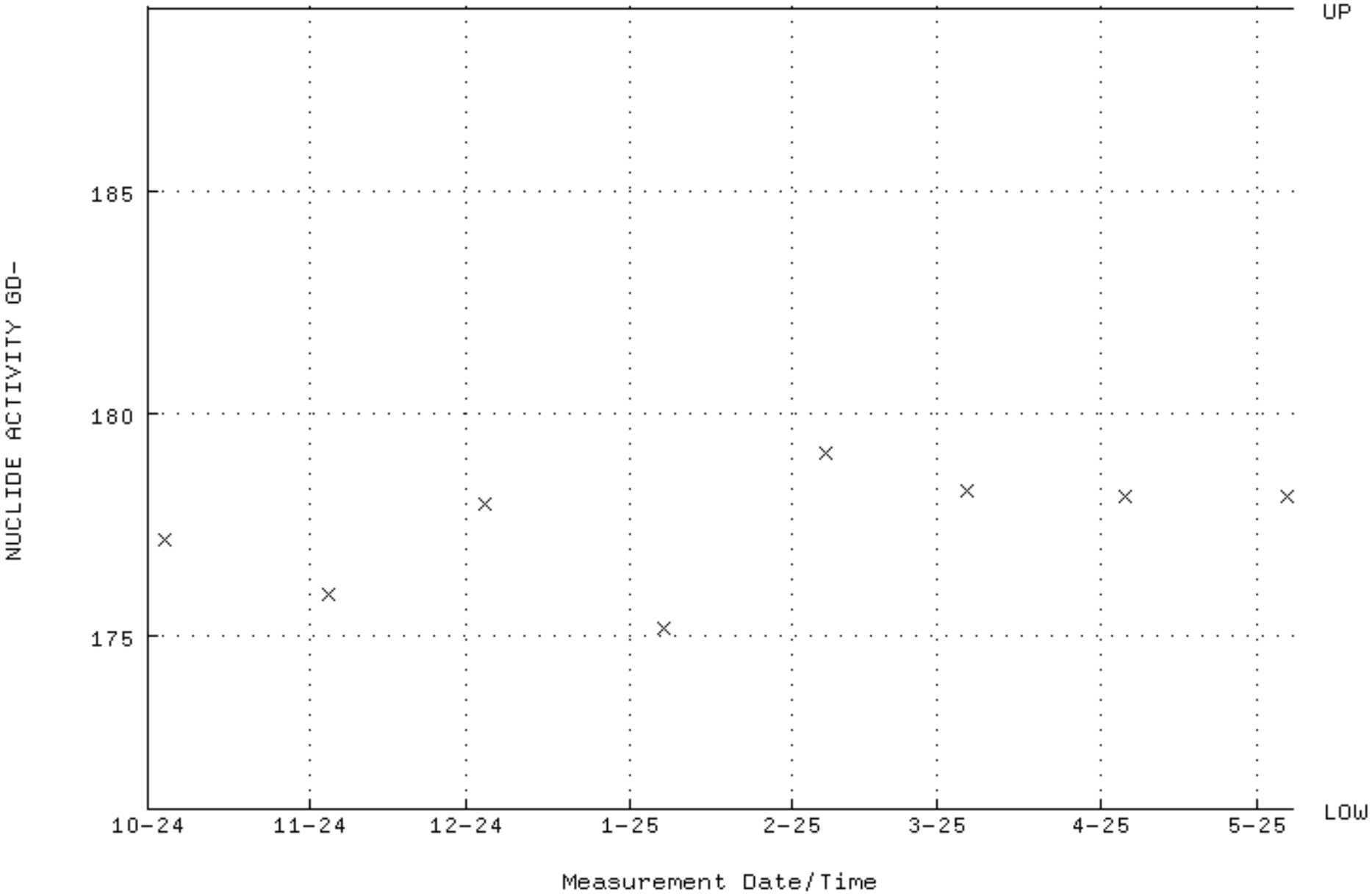
QA filename : DKA100:[ENV_ALPHA.QA.B]B025.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:38 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



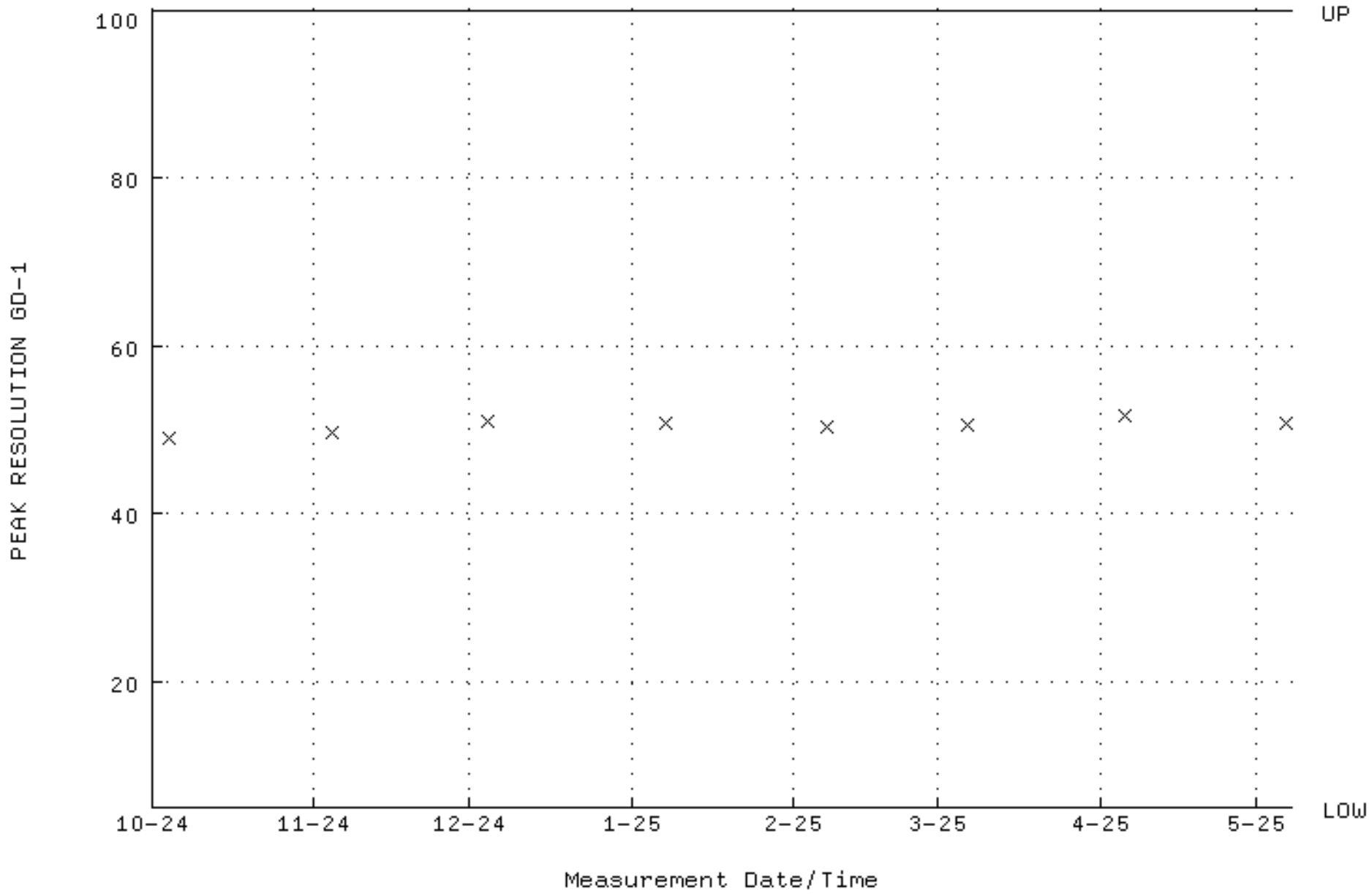
QA filename : DKA100:[ENV_ALPHA.QA.W]W026.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.329204 through 0.349568



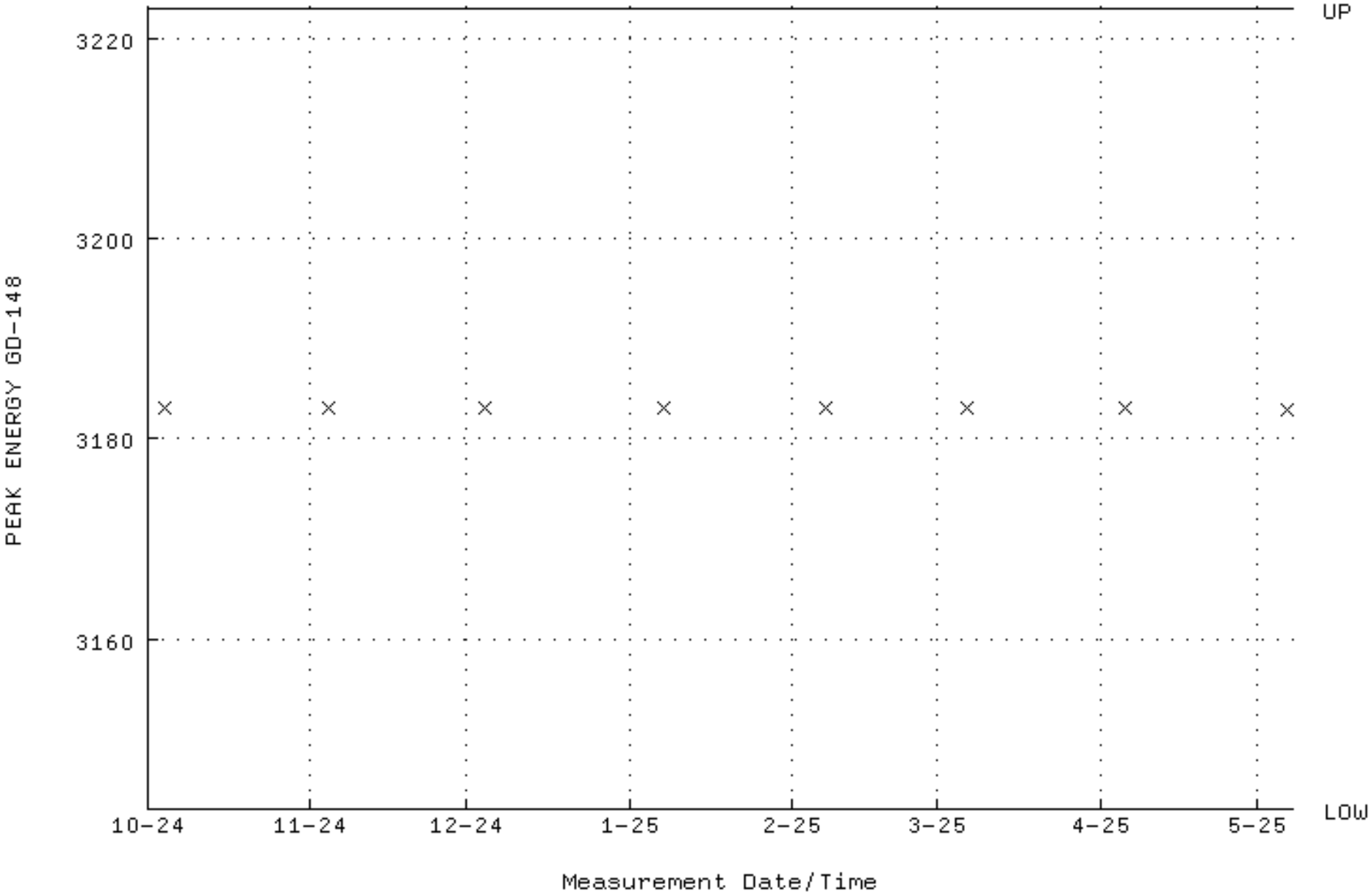
QA filename : DKA100:[ENV_ALPHA.QA.W]W026.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



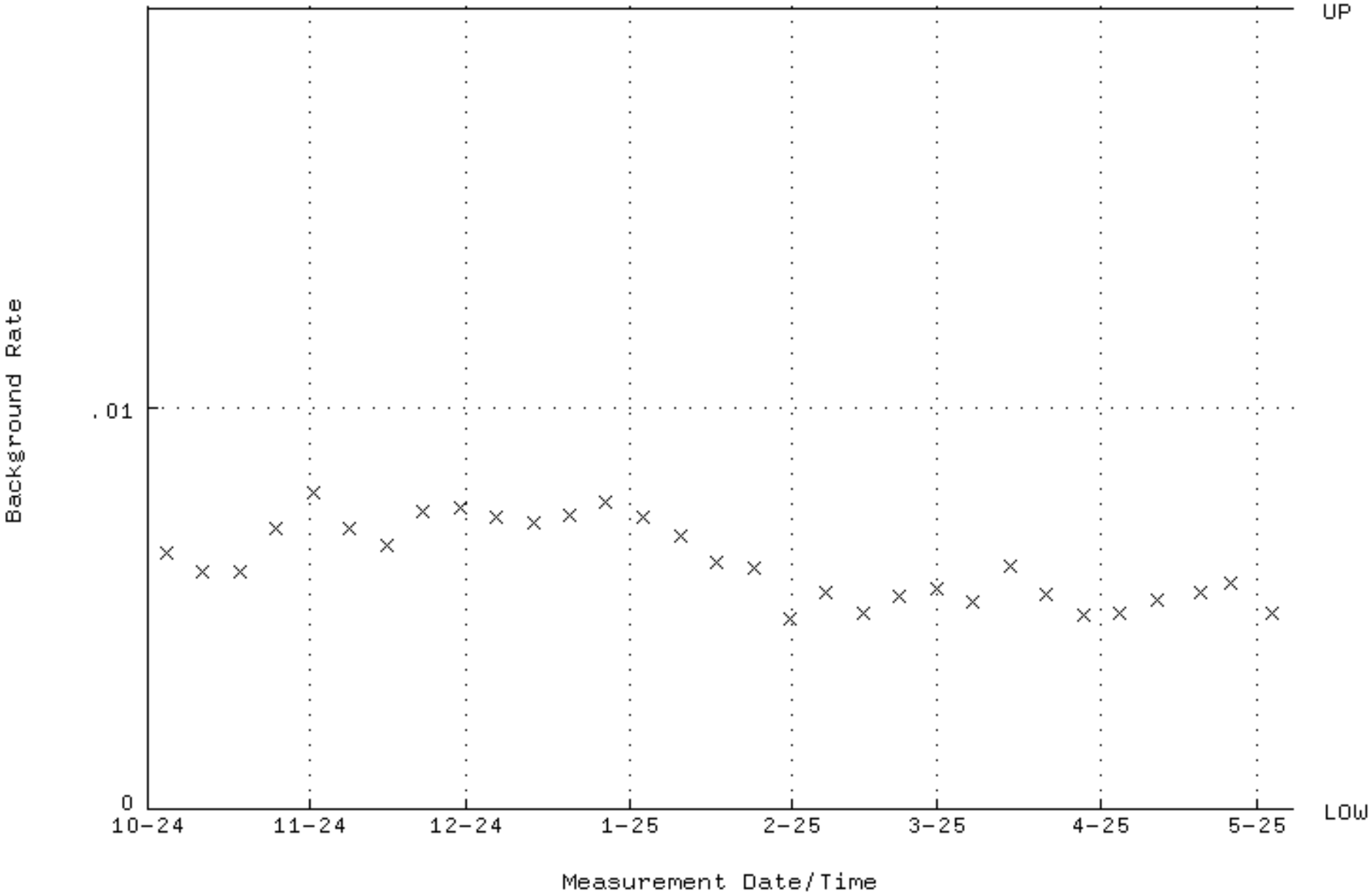
QA filename : DKA100:[ENV_ALPHA.QA.W]W026.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



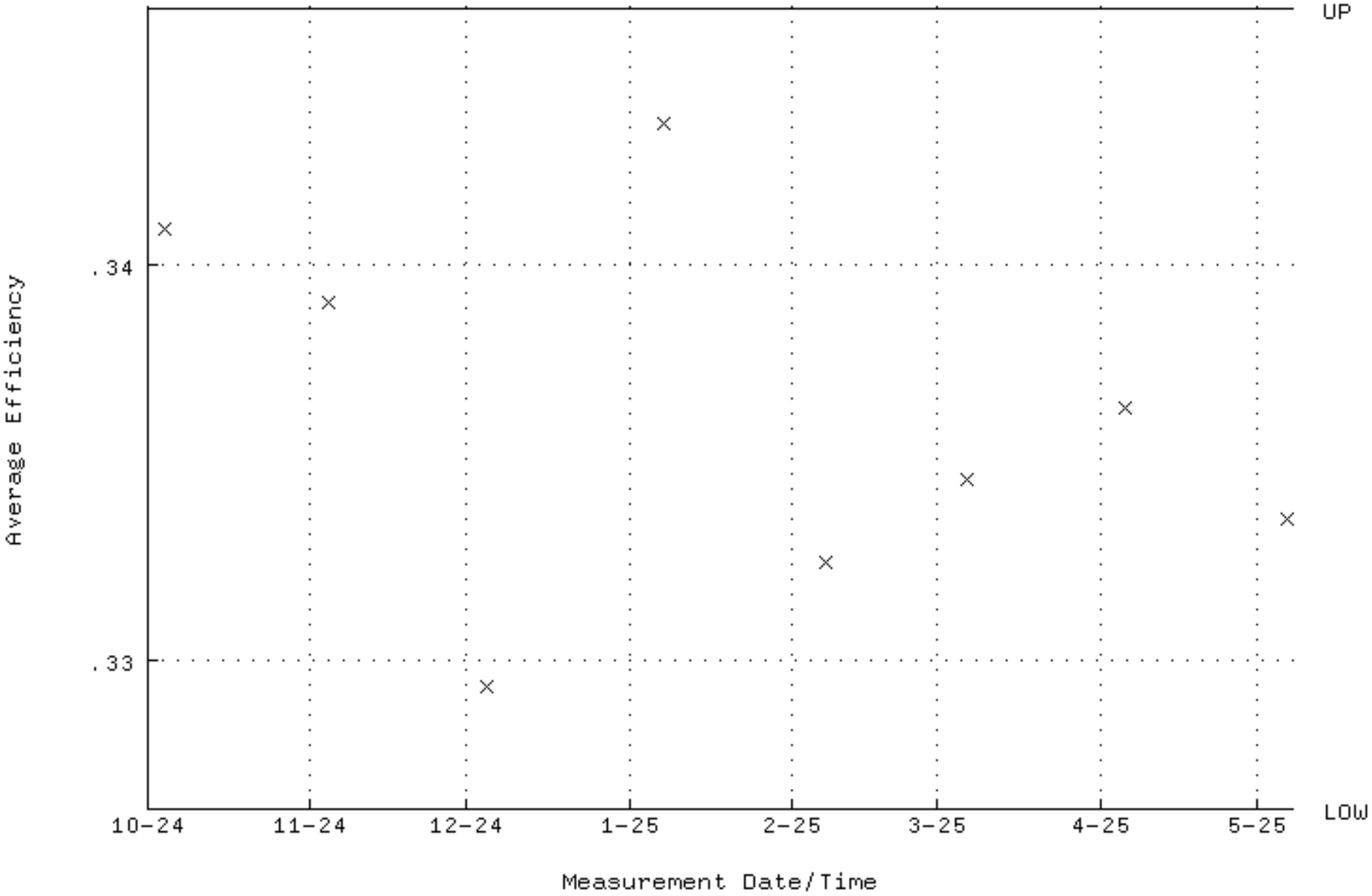
QA filename : DKA100:[ENV_ALPHA.QA.W]W026.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



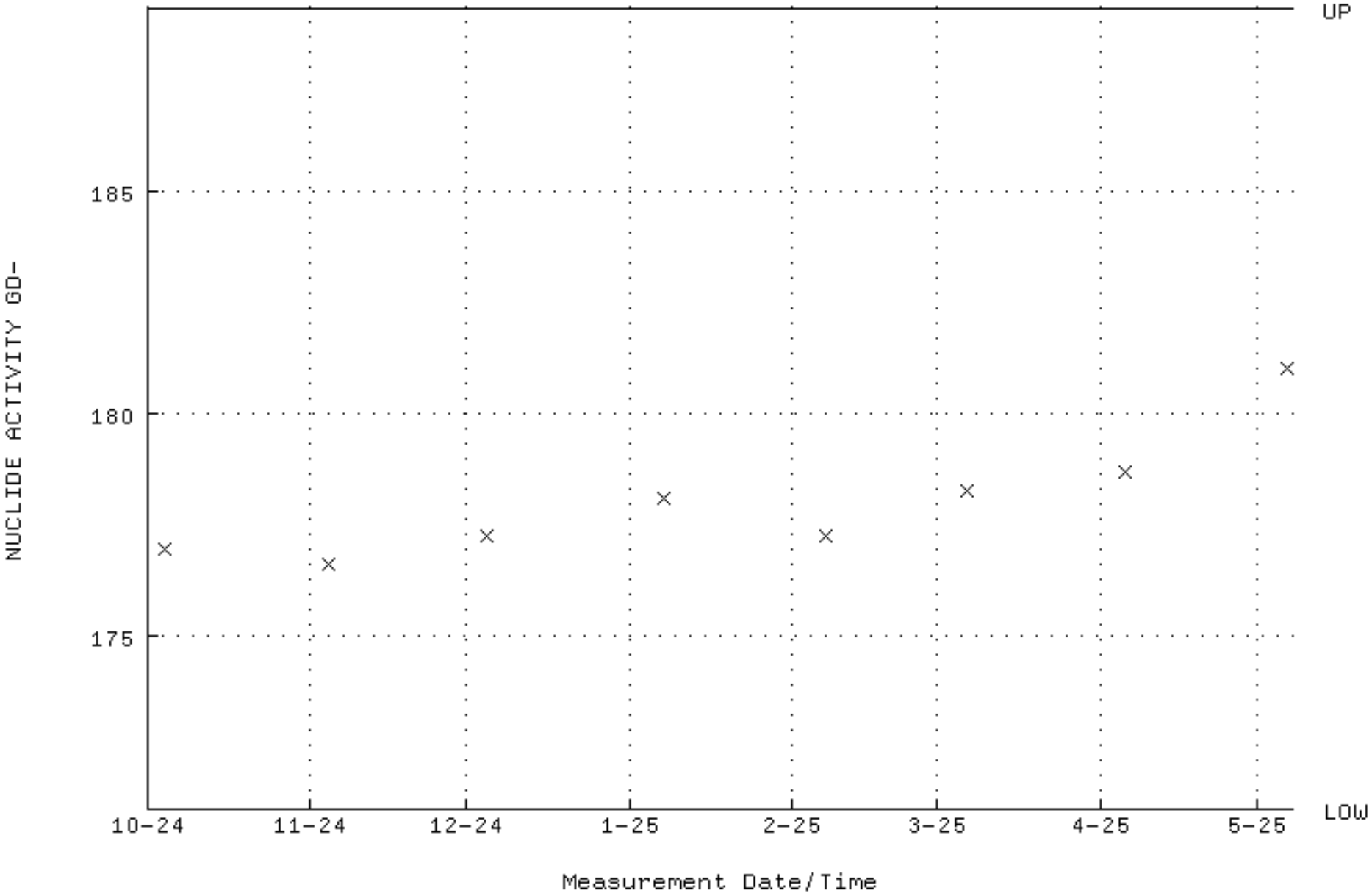
QA filename : DKA100:[ENV_ALPHA.QA.B]B026.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:38 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



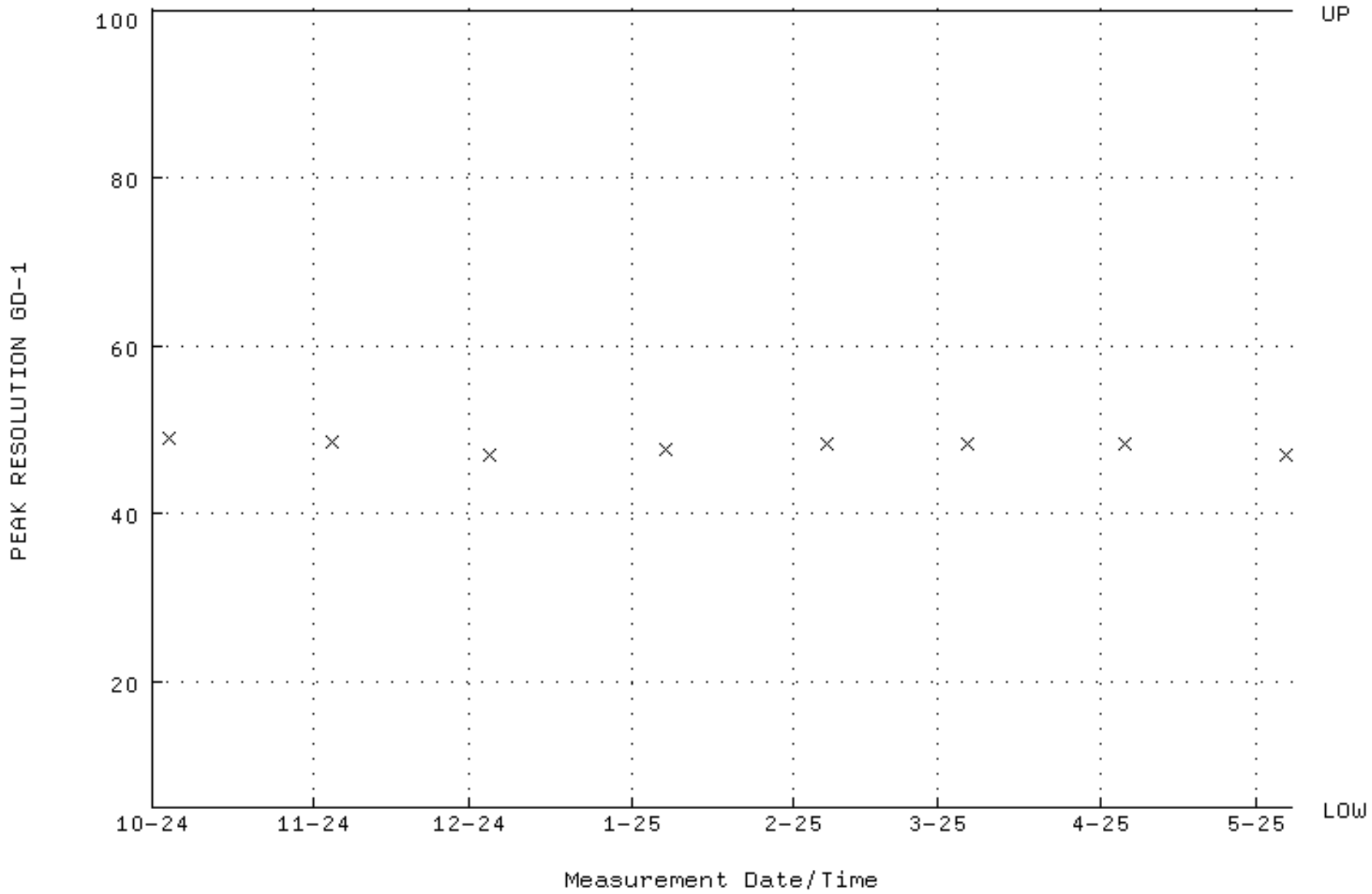
QA filename : DKA100:[ENV_ALPHA.QA.W]W027.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.326260 through 0.346443



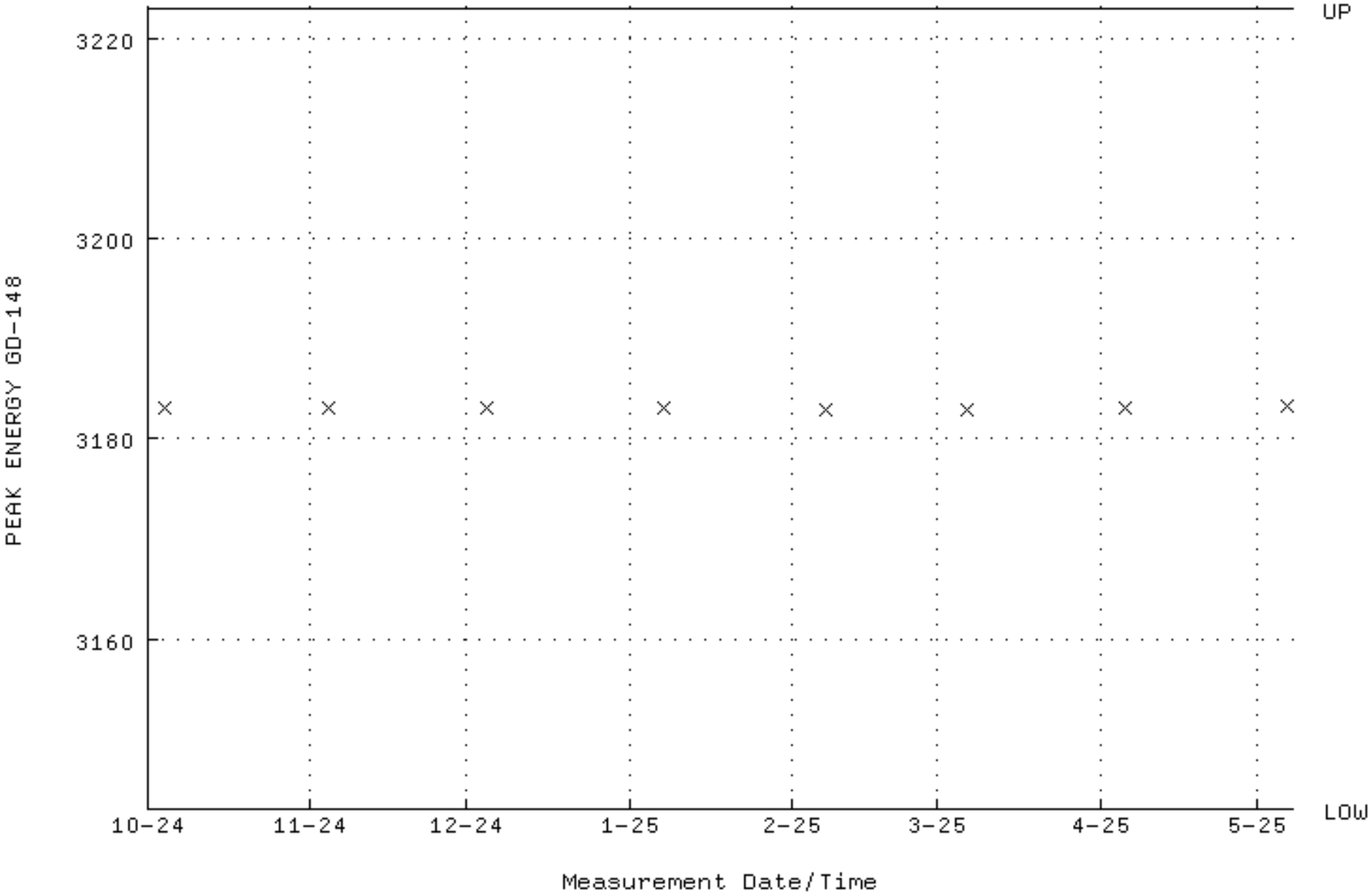
QA filename : DKA100:[ENV_ALPHA.QA.W]W027.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



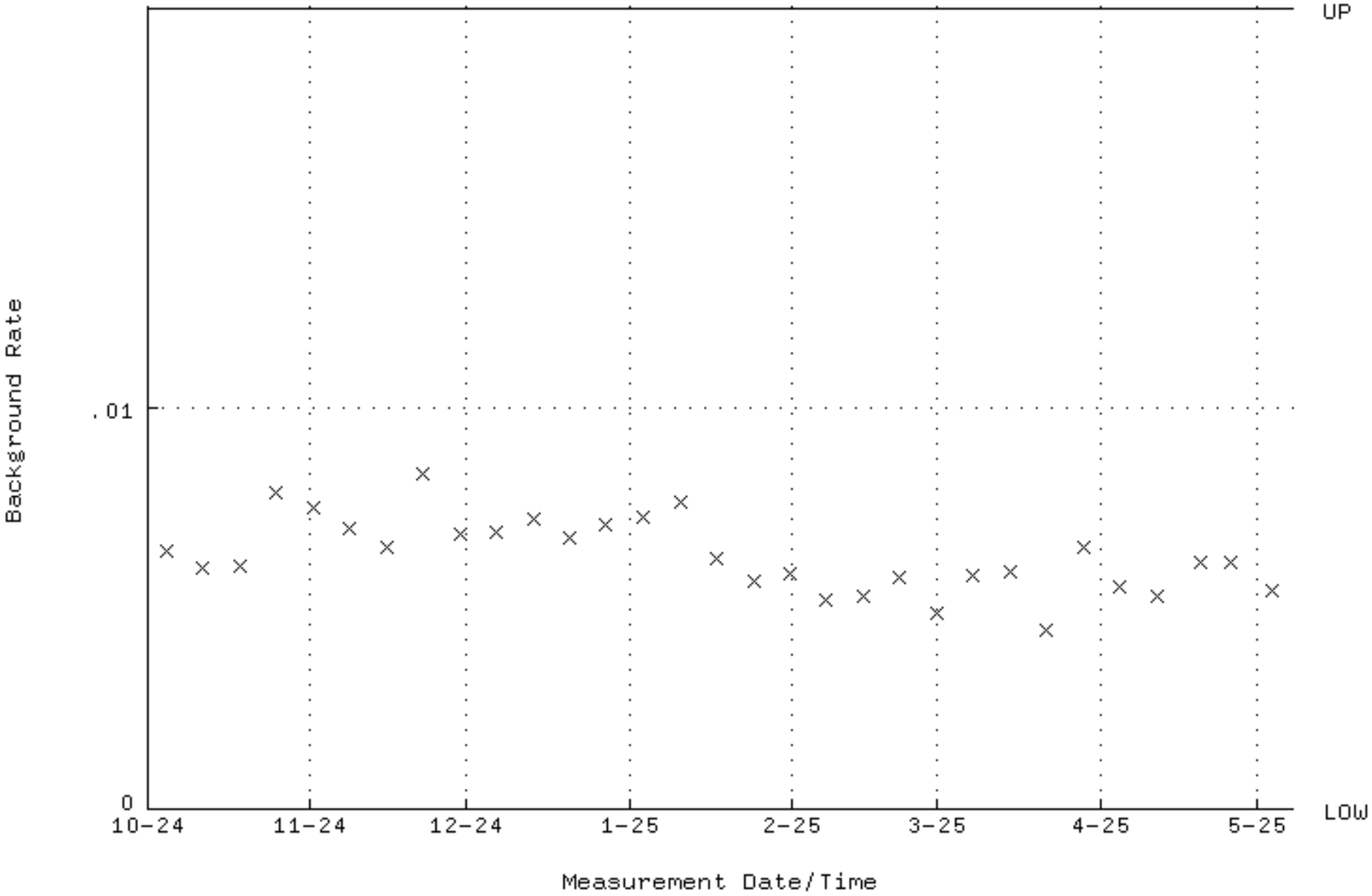
QA filename : DKA100:[ENV_ALPHA.QA.W]W027.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



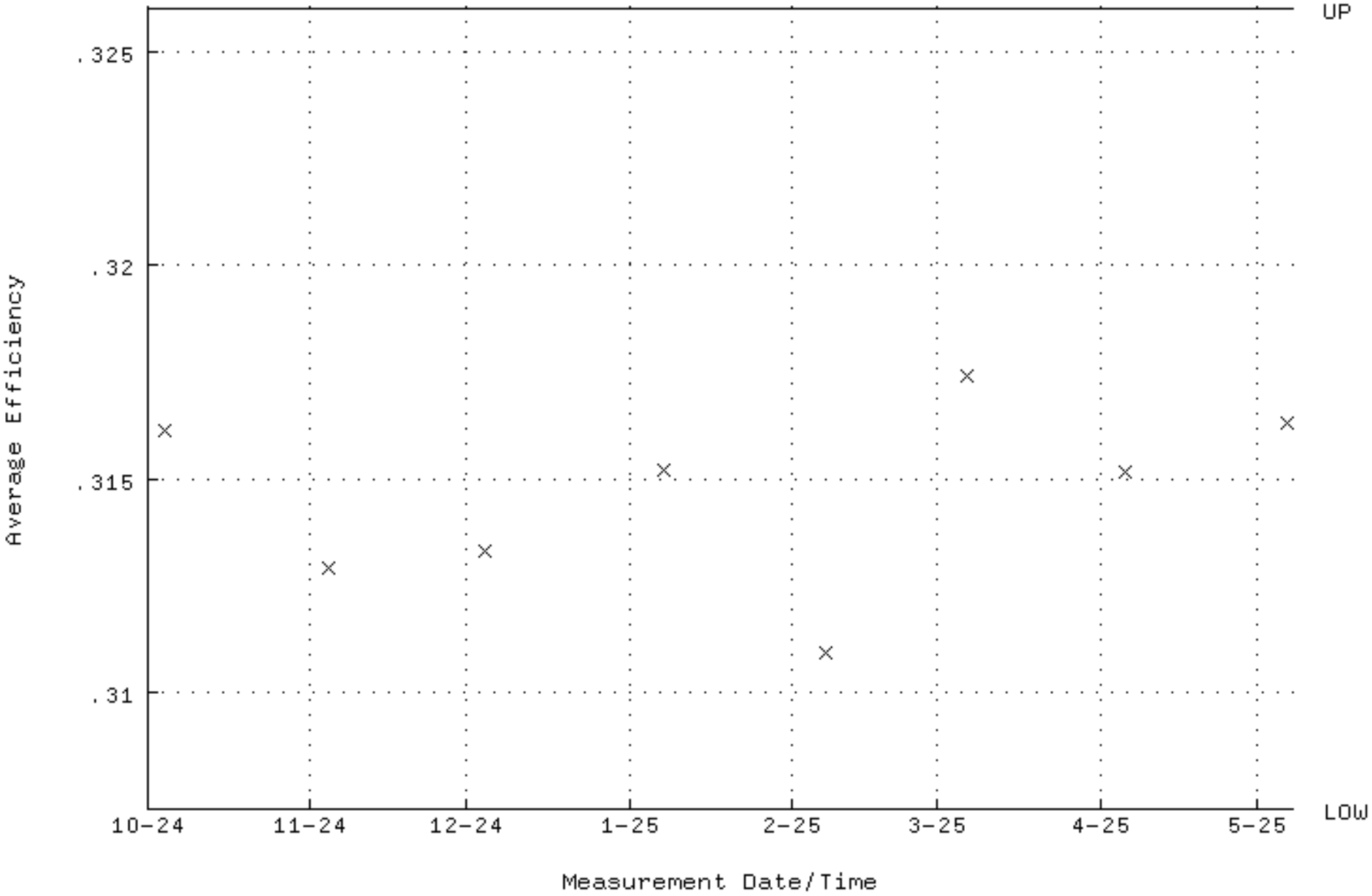
QA filename : DKA100:[ENV_ALPHA.QA.W]W027.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



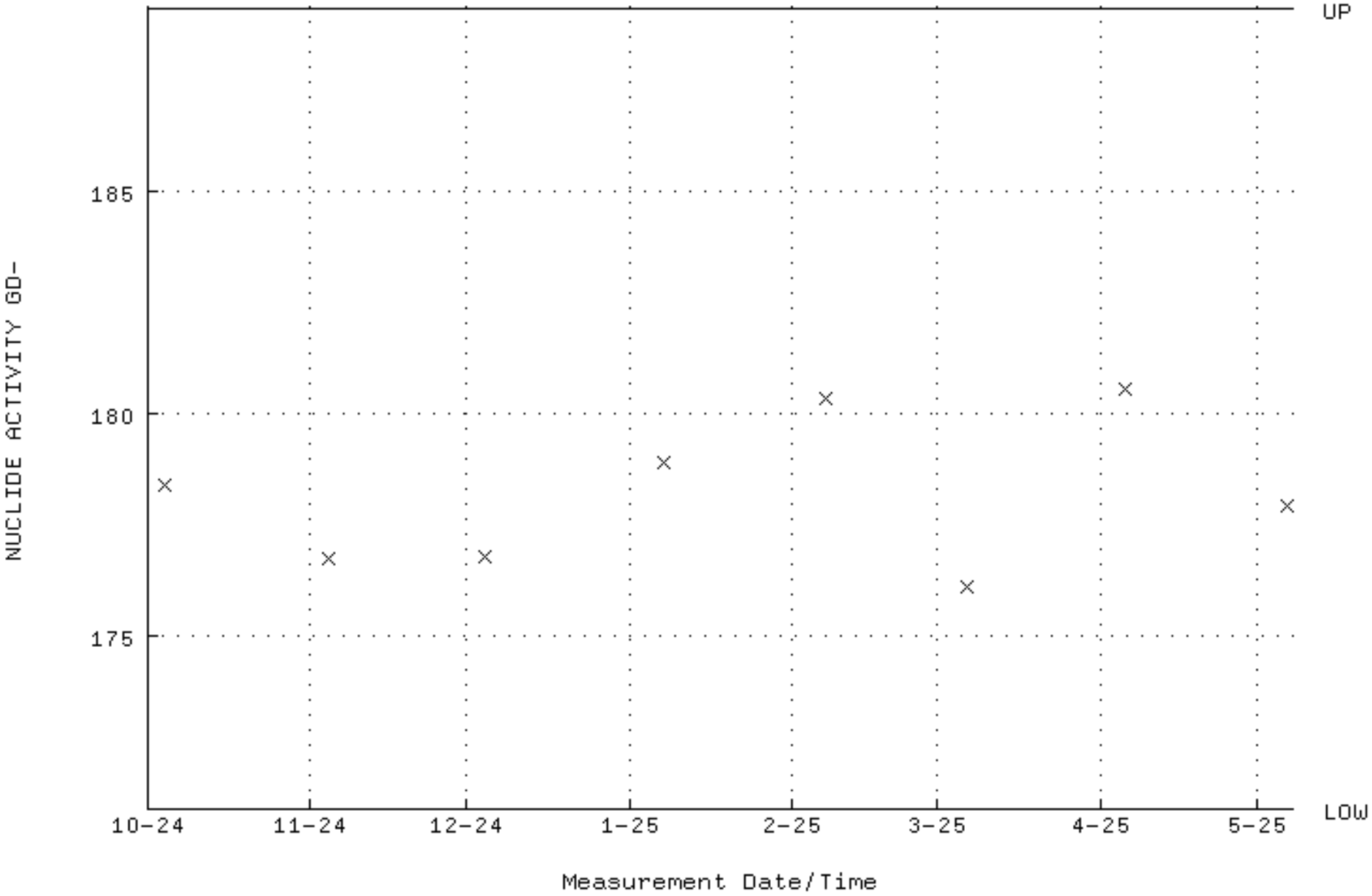
QA filename : DKA100:[ENV_ALPHA.QA.B]B027.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:38 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



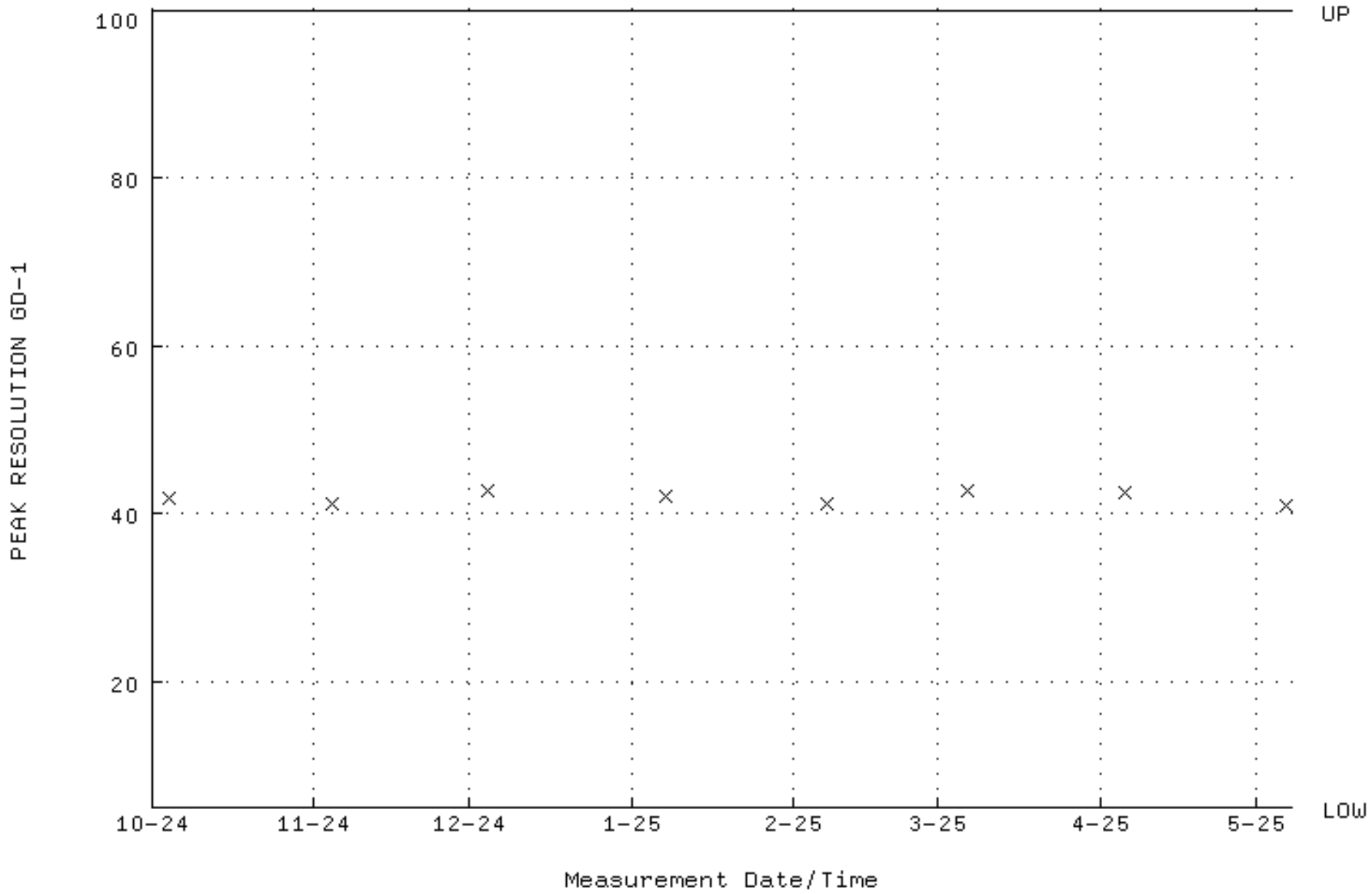
QA filename : DKA100:[ENV_ALPHA.QA.W]W028.QAF;8
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.307287 through 0.326001



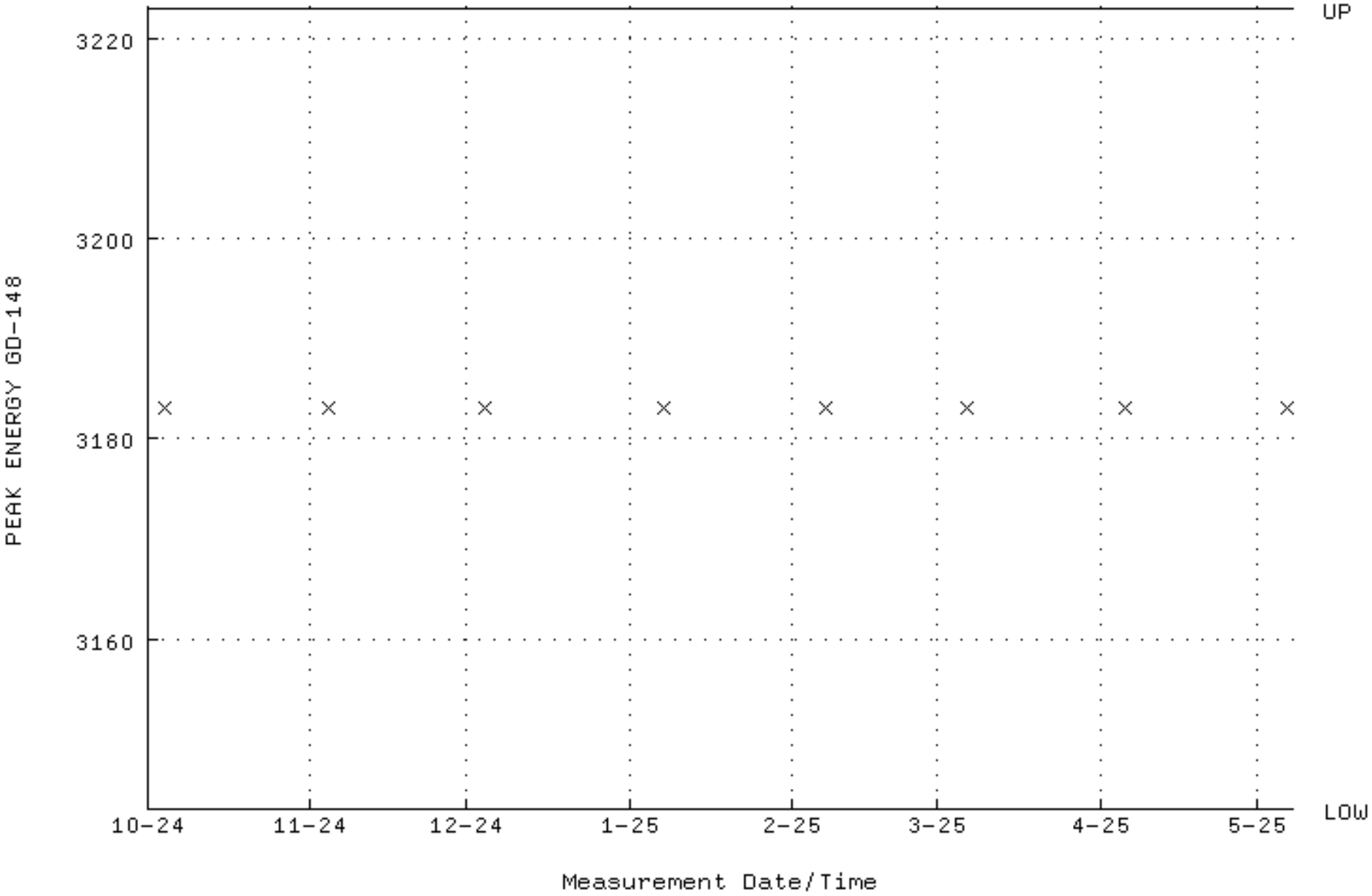
QA filename : DKA100:[ENV_ALPHA.QA.W]W028.QAF;8
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



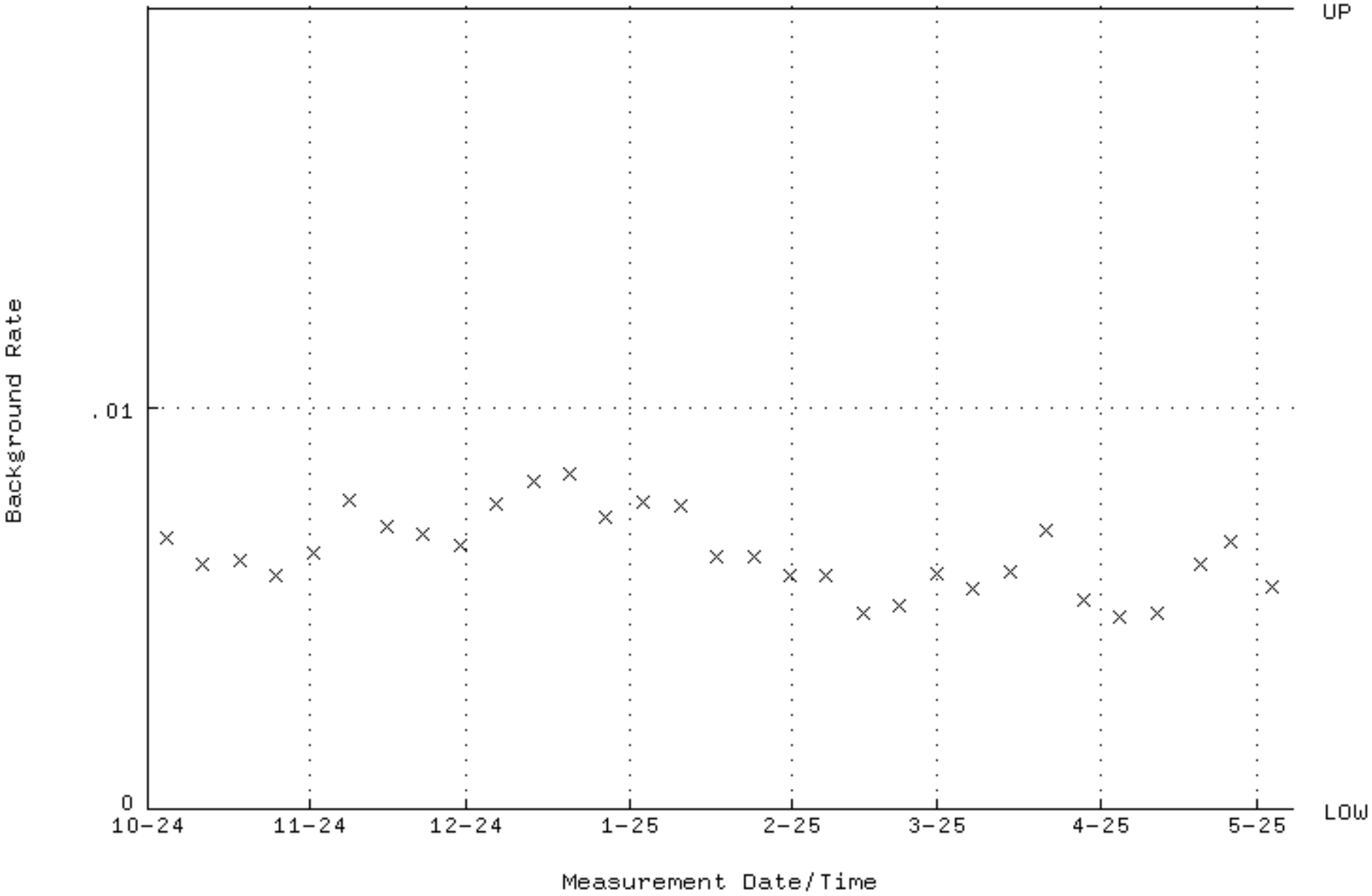
QA filename : DKA100:[ENV_ALPHA.QA.W]W028.QAF;8
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



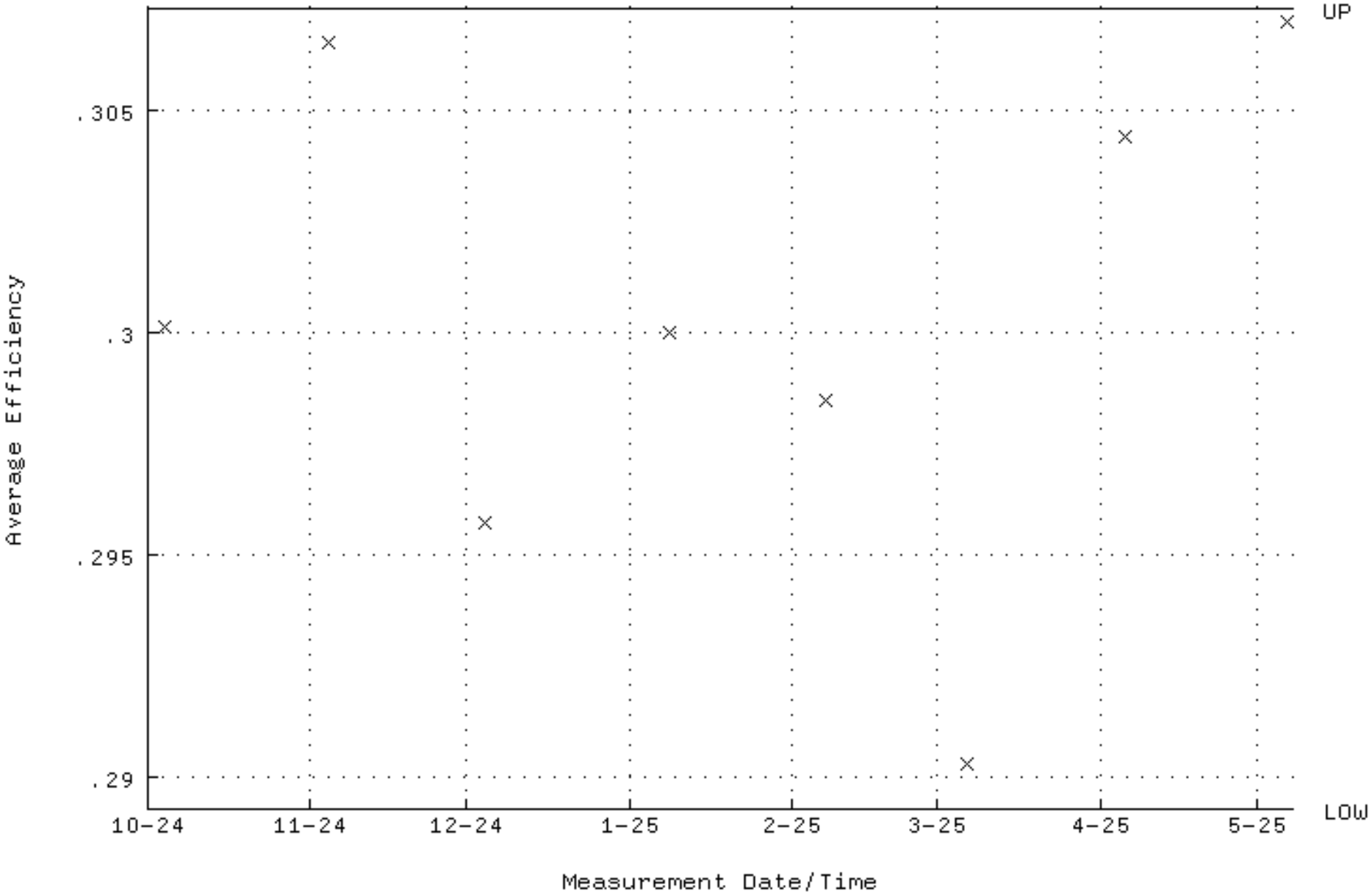
QA filename : DKA100:[ENV_ALPHA.QA.W]W028.QAF;8
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:34:14 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



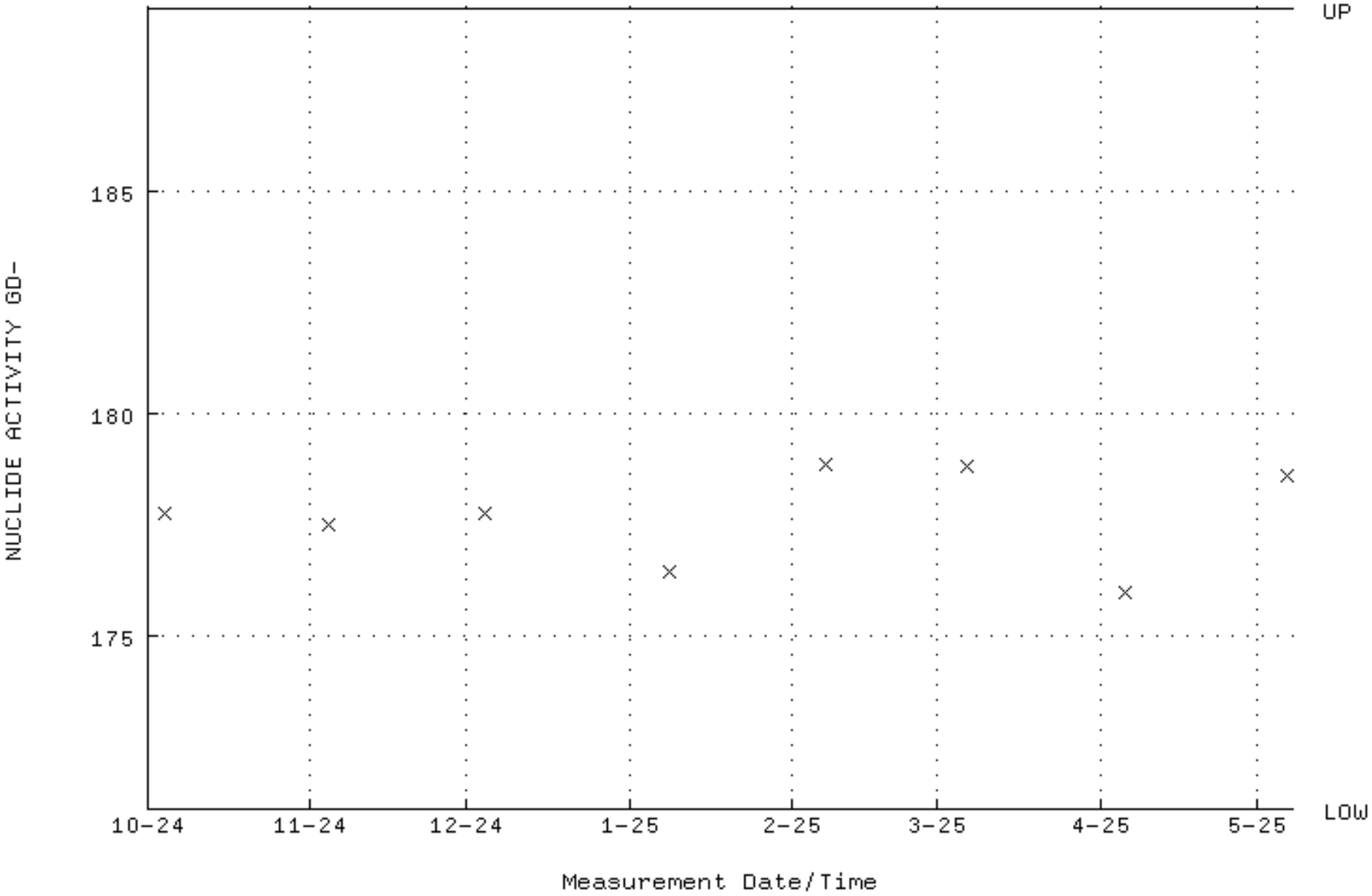
QA filename : DKA100:[ENV_ALPHA.QA.B]B028.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:38 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



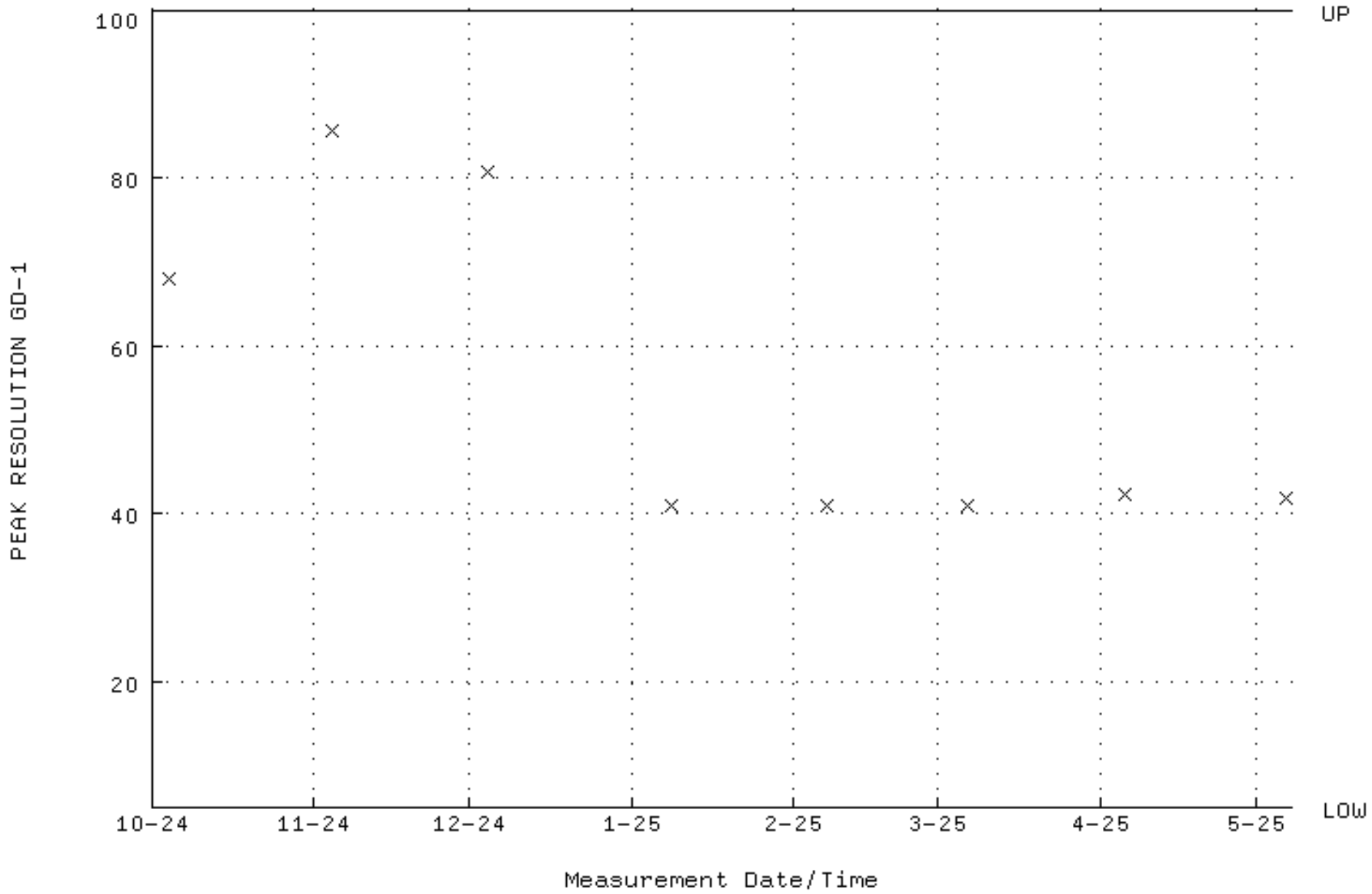
QA filename : DKA100:[ENV_ALPHA.QA.W]W035.QAF;7
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:10:20 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.289300 through 0.307300



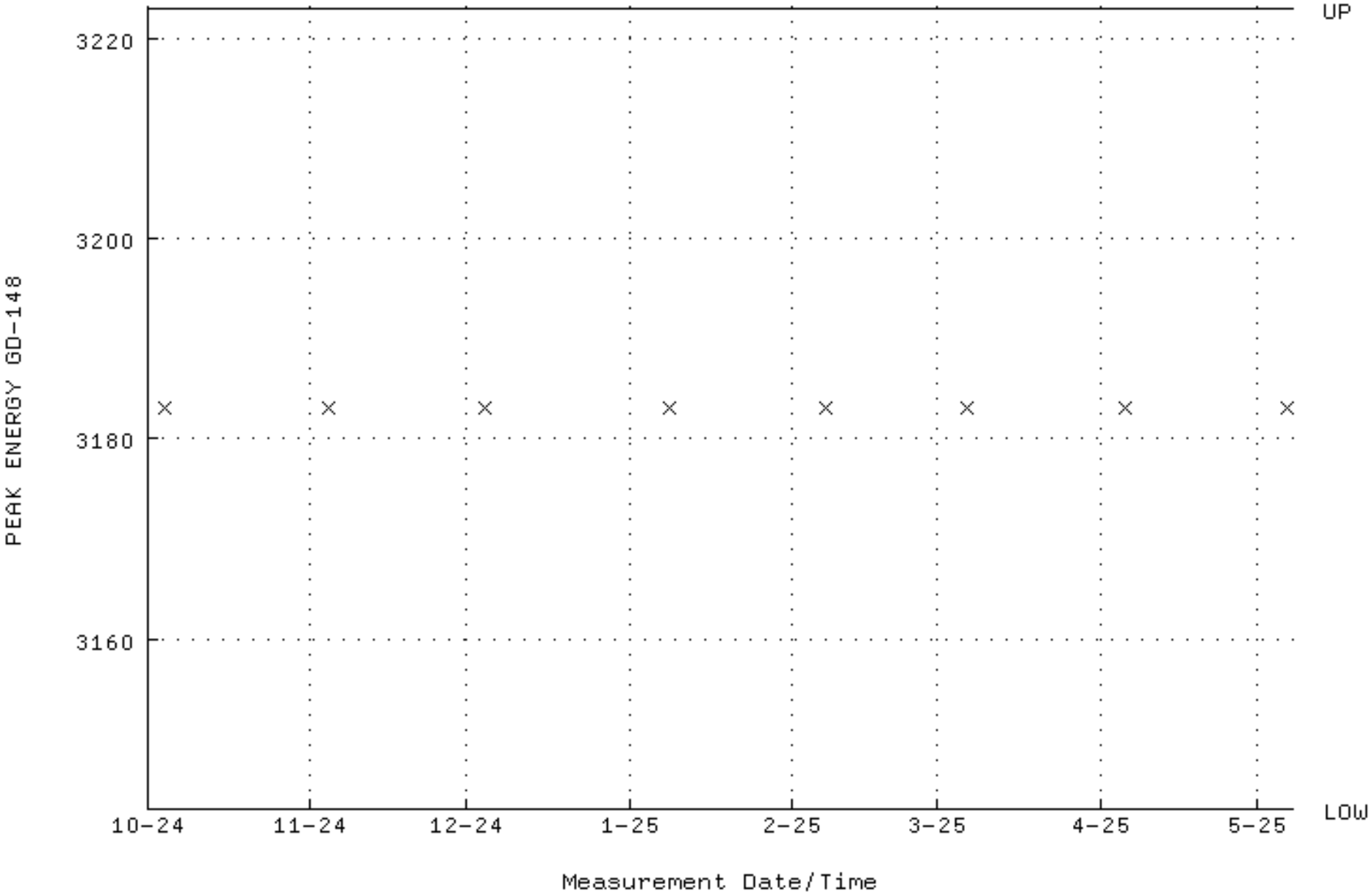
QA filename : DKA100:[ENV_ALPHA.QA.W]W035.QAF;7
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:10:20 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



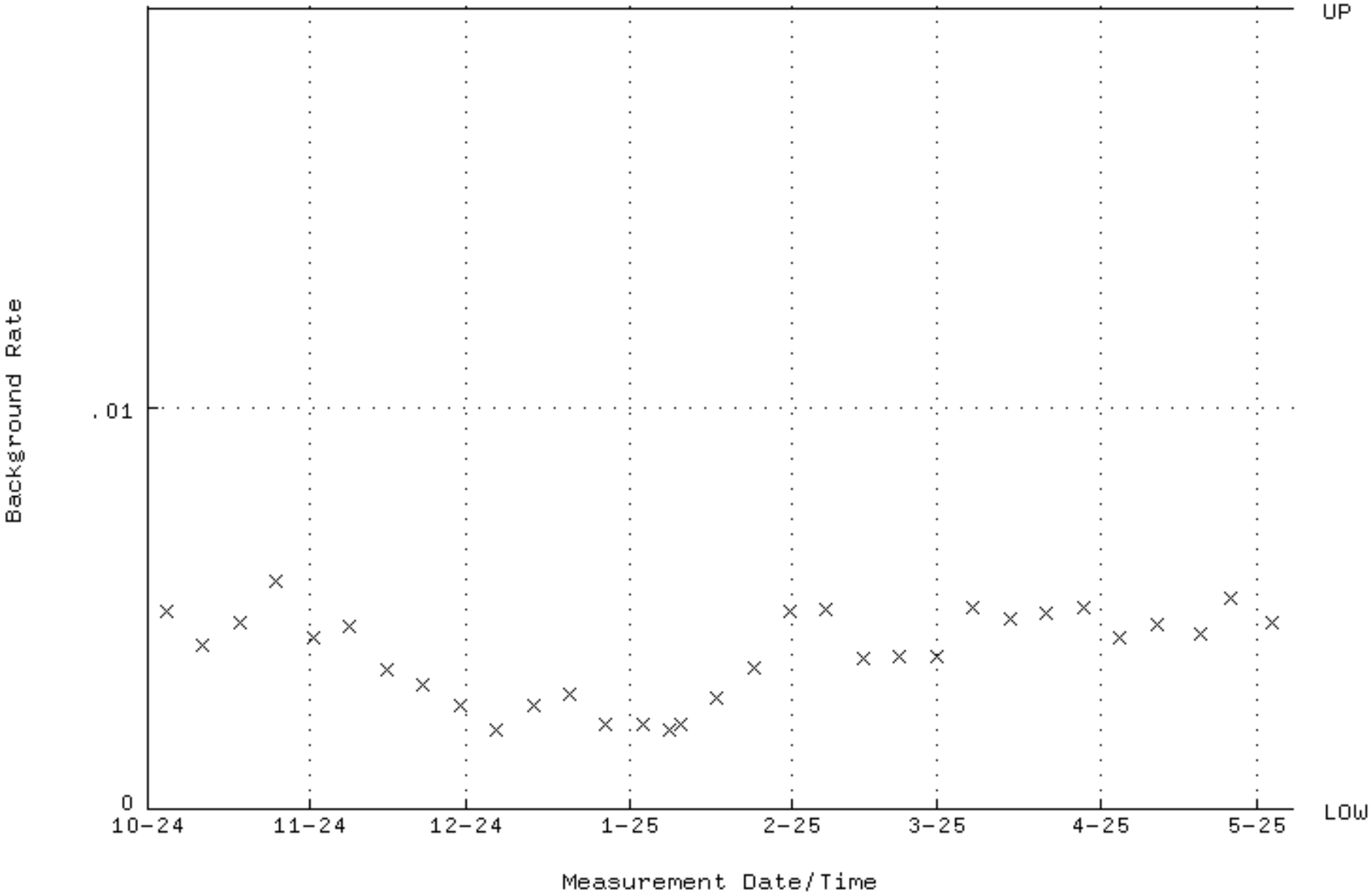
QA filename : DKA100:[ENV_ALPHA.QA.W]W035.QAF;7
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:10:20 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



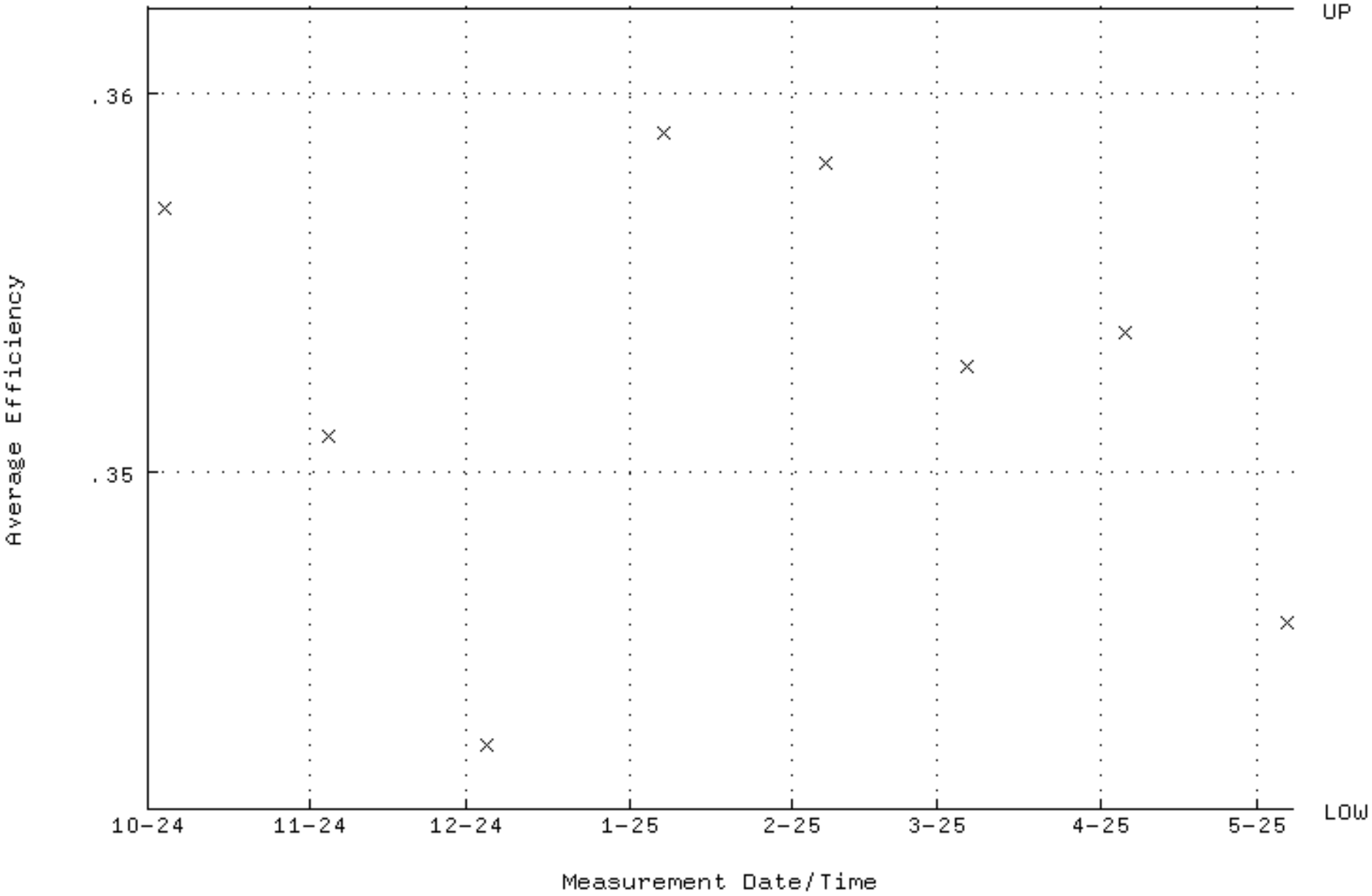
QA filename : DKA100:[ENV_ALPHA.QA.W]W035.QAF;7
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:10:20 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



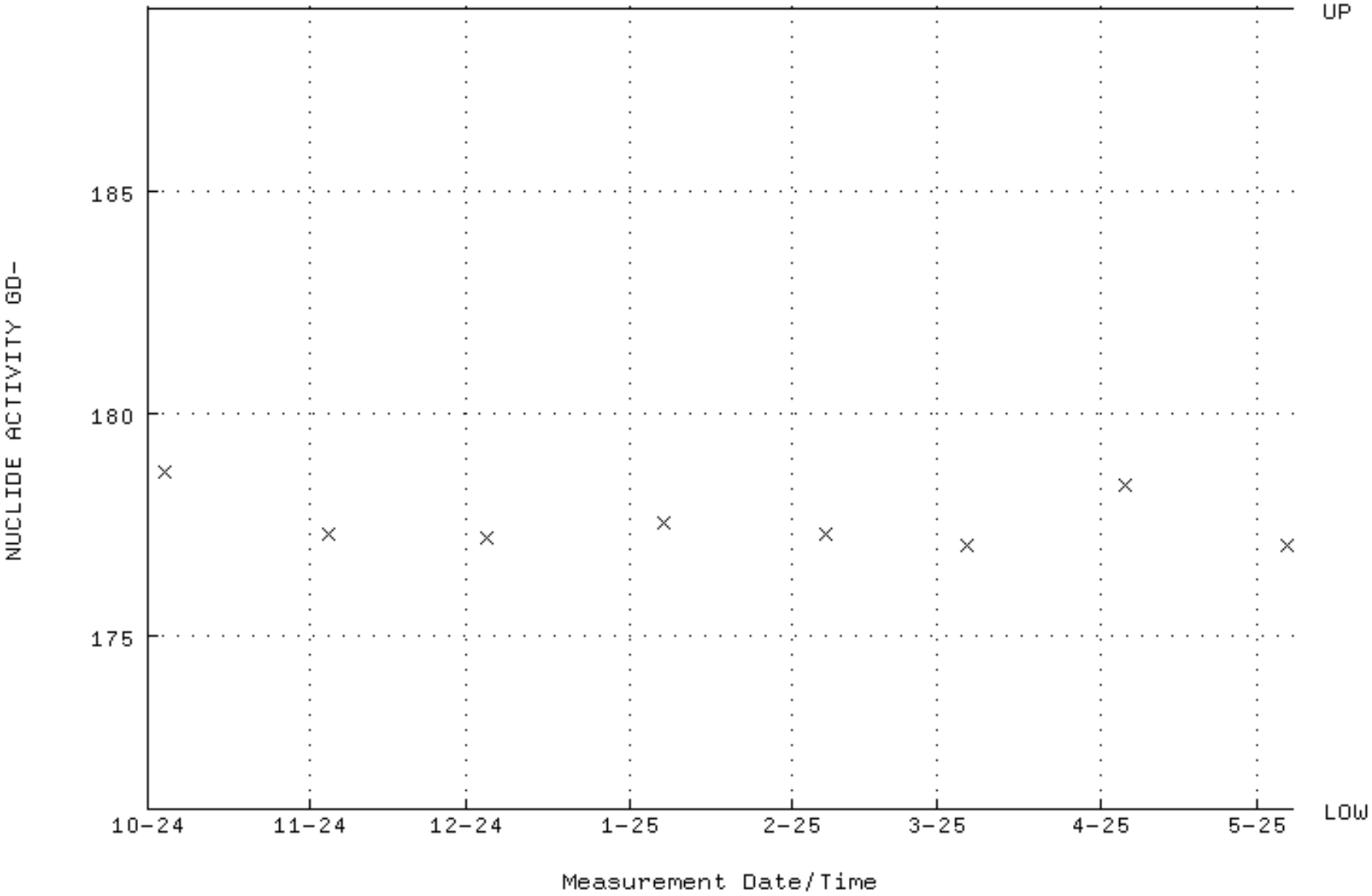
QA filename : DKA100:[ENV_ALPHA.QA.B]B035.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:39 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



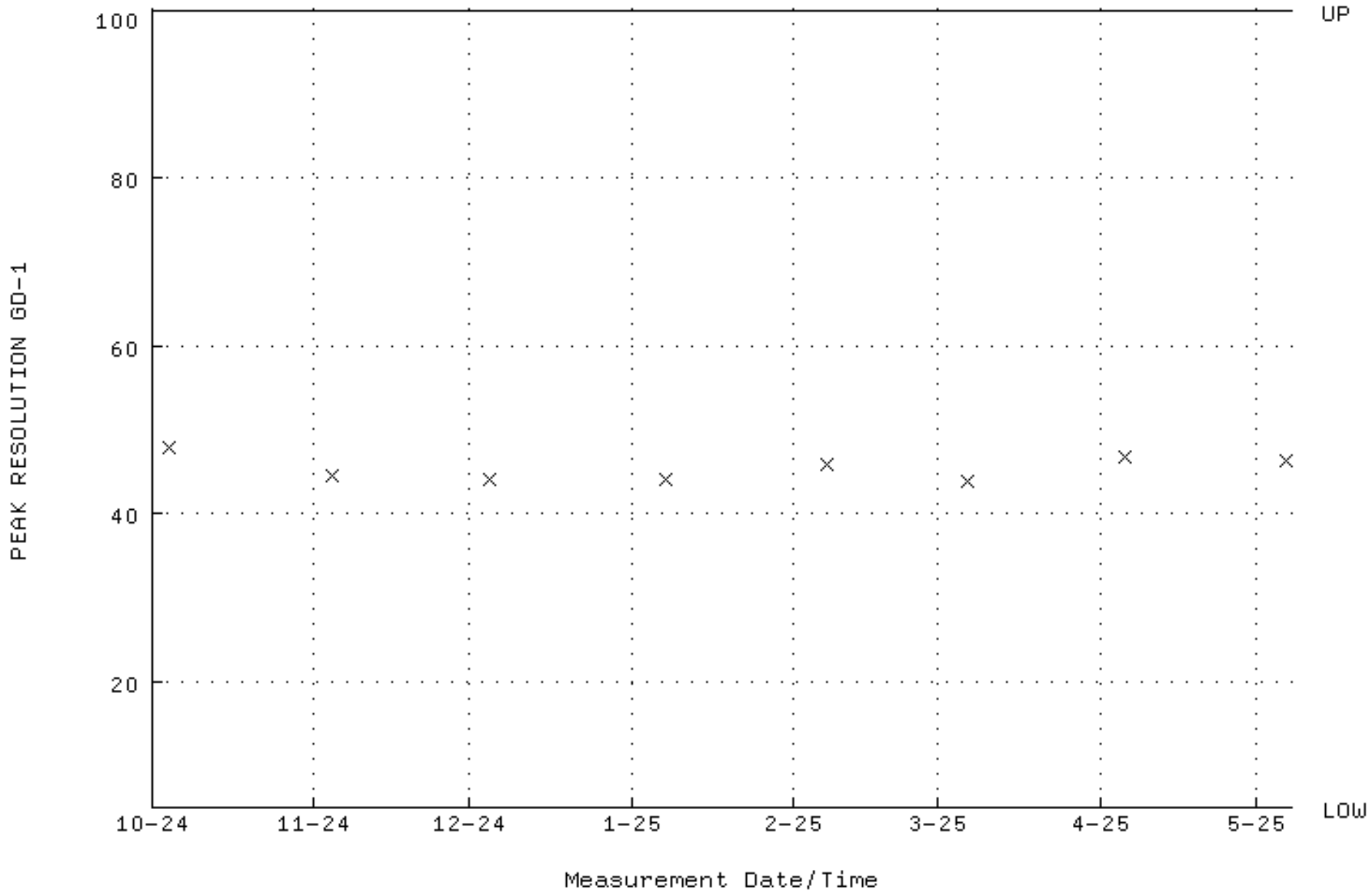
QA filename : DKA100:[ENV_ALPHA.QA.W]W043.QAF;109
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.341115 through 0.362215



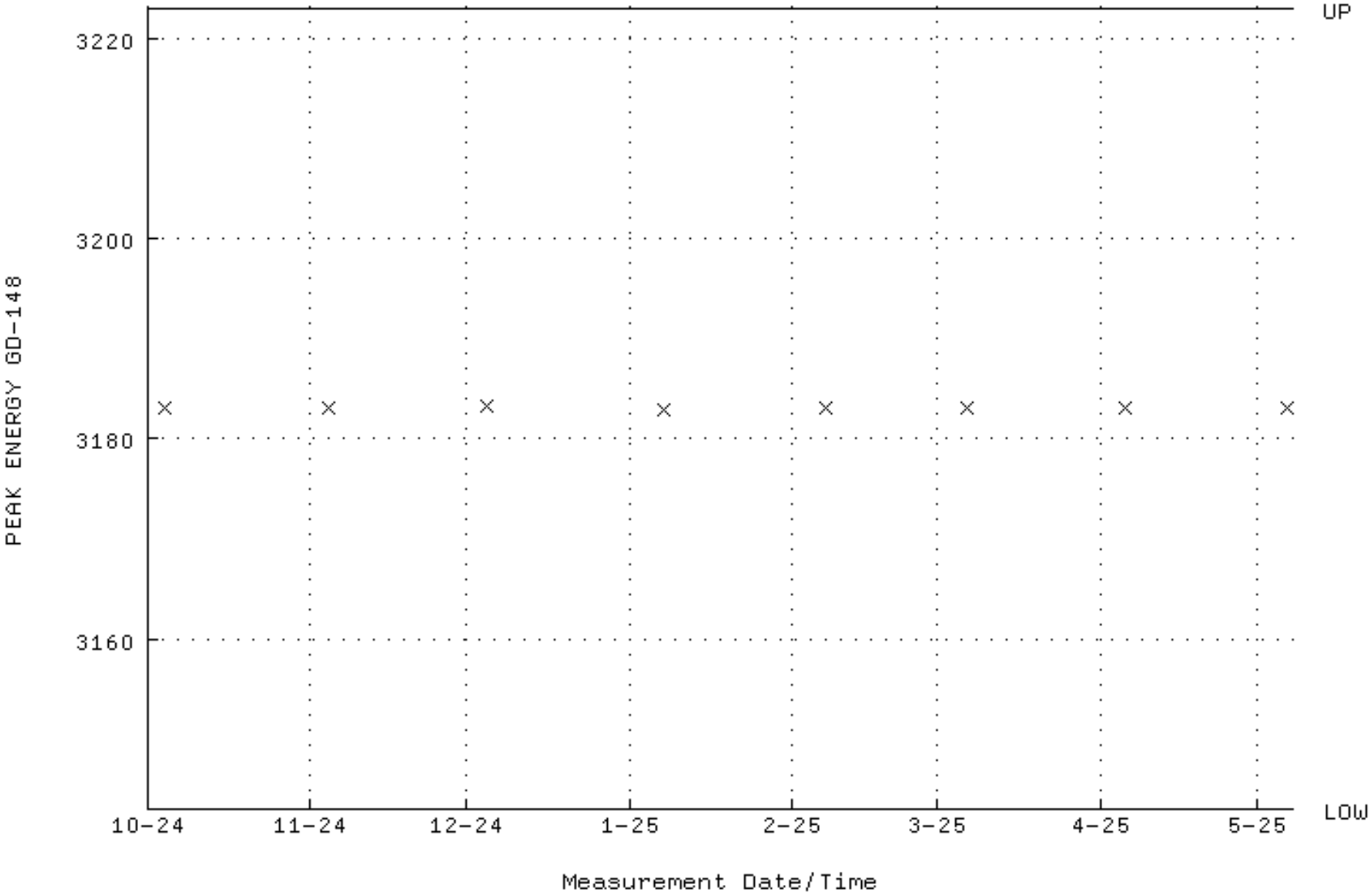
QA filename : DKA100:[ENV_ALPHA.QA.W]W043.QAF;109
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



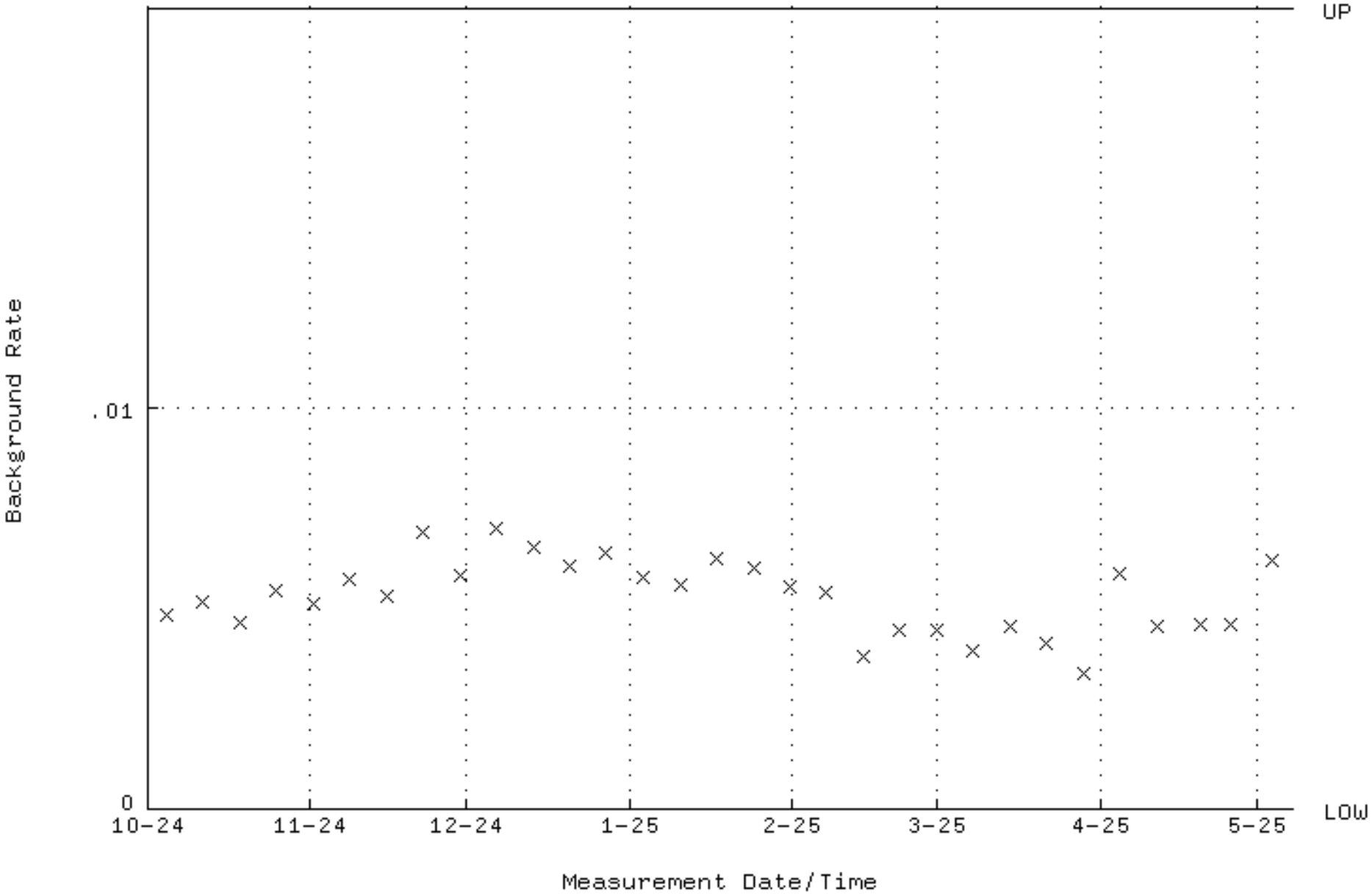
QA filename : DKA100:[ENV_ALPHA.QA.W]W043.QAF;109
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



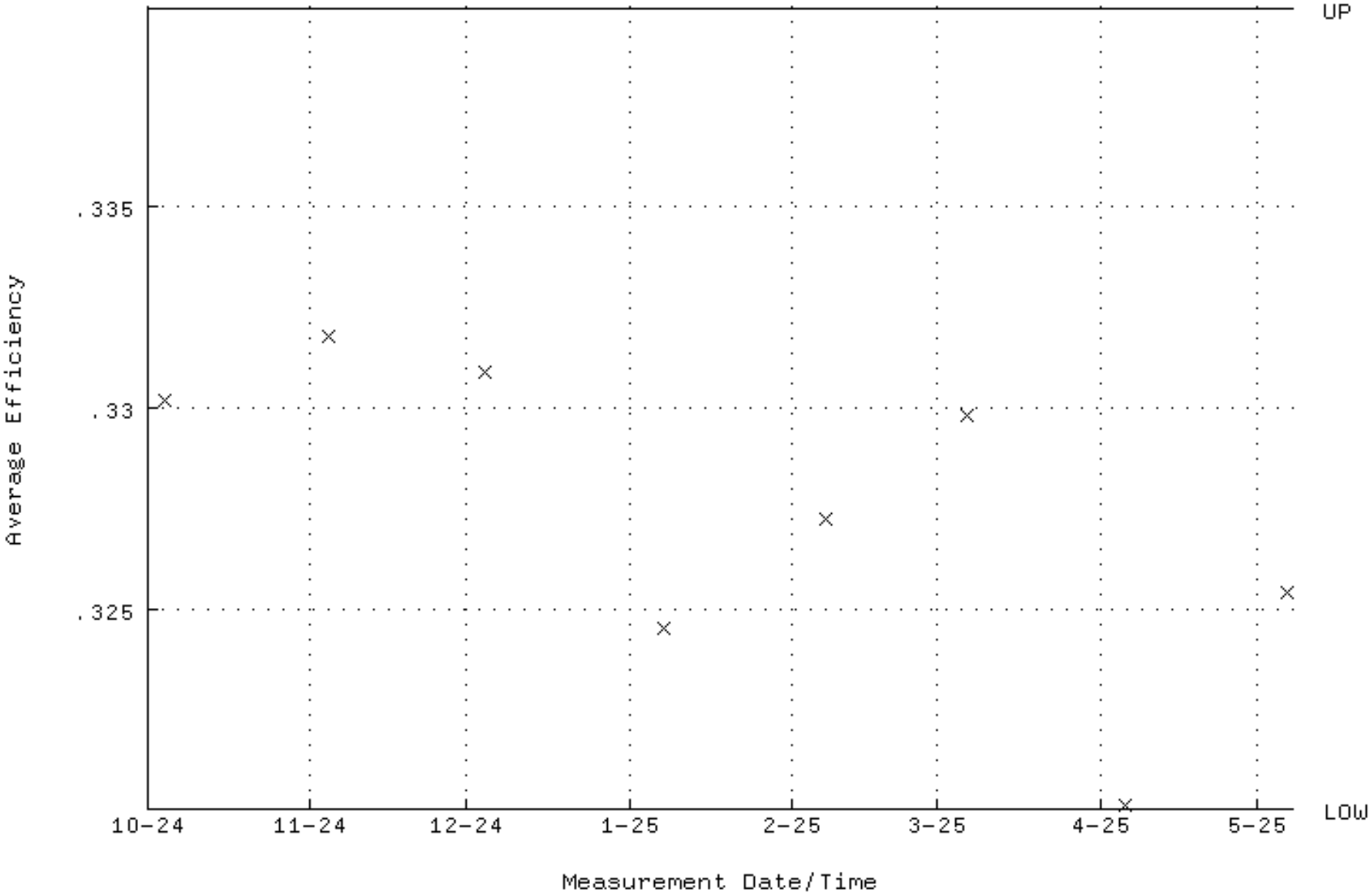
QA filename : DKA100:[ENV_ALPHA.QA.W]W043.QAF;109
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



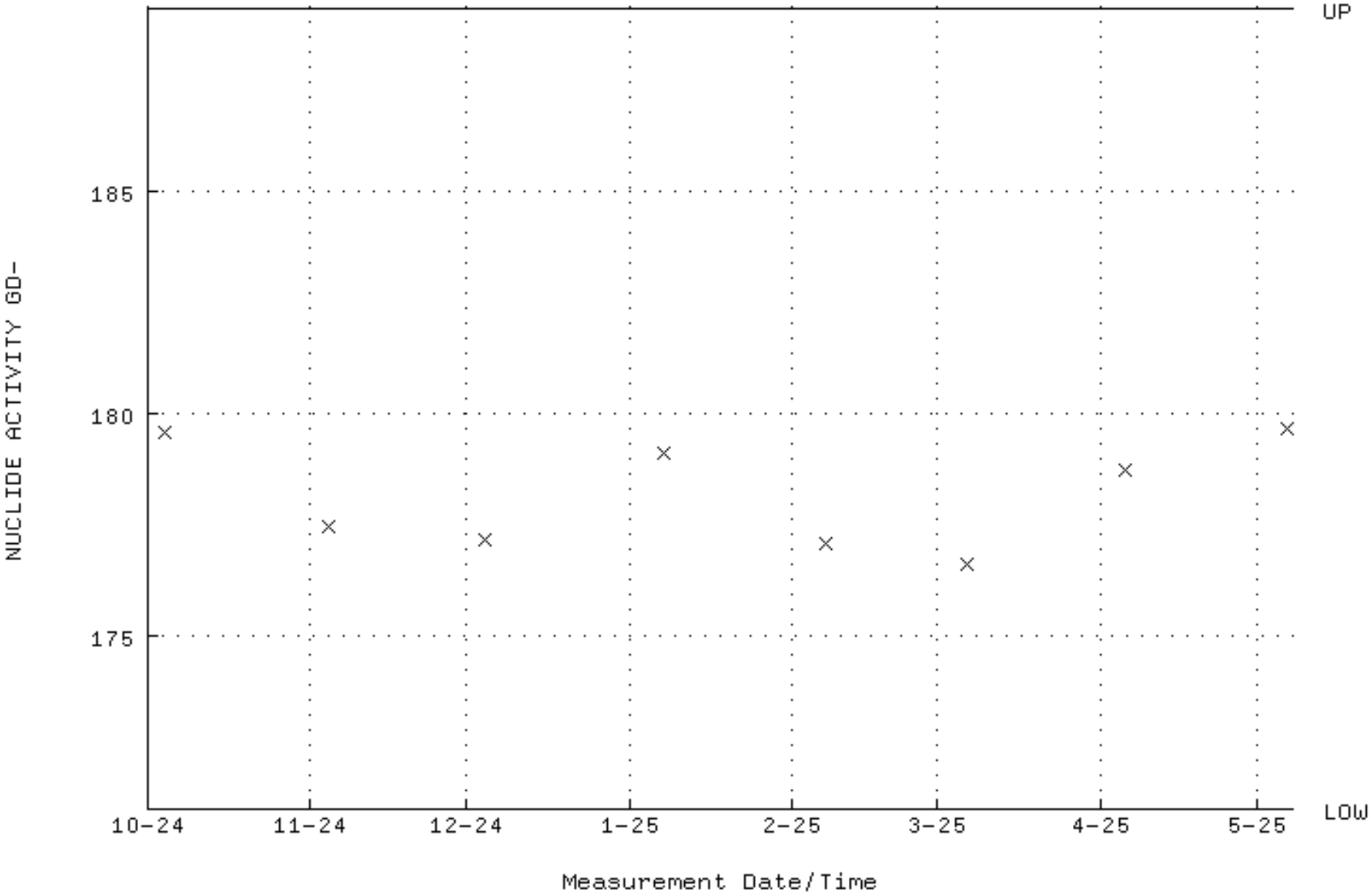
QA filename : DKA100:[ENV_ALPHA.QA.B]B043.QAF;6
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:41 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



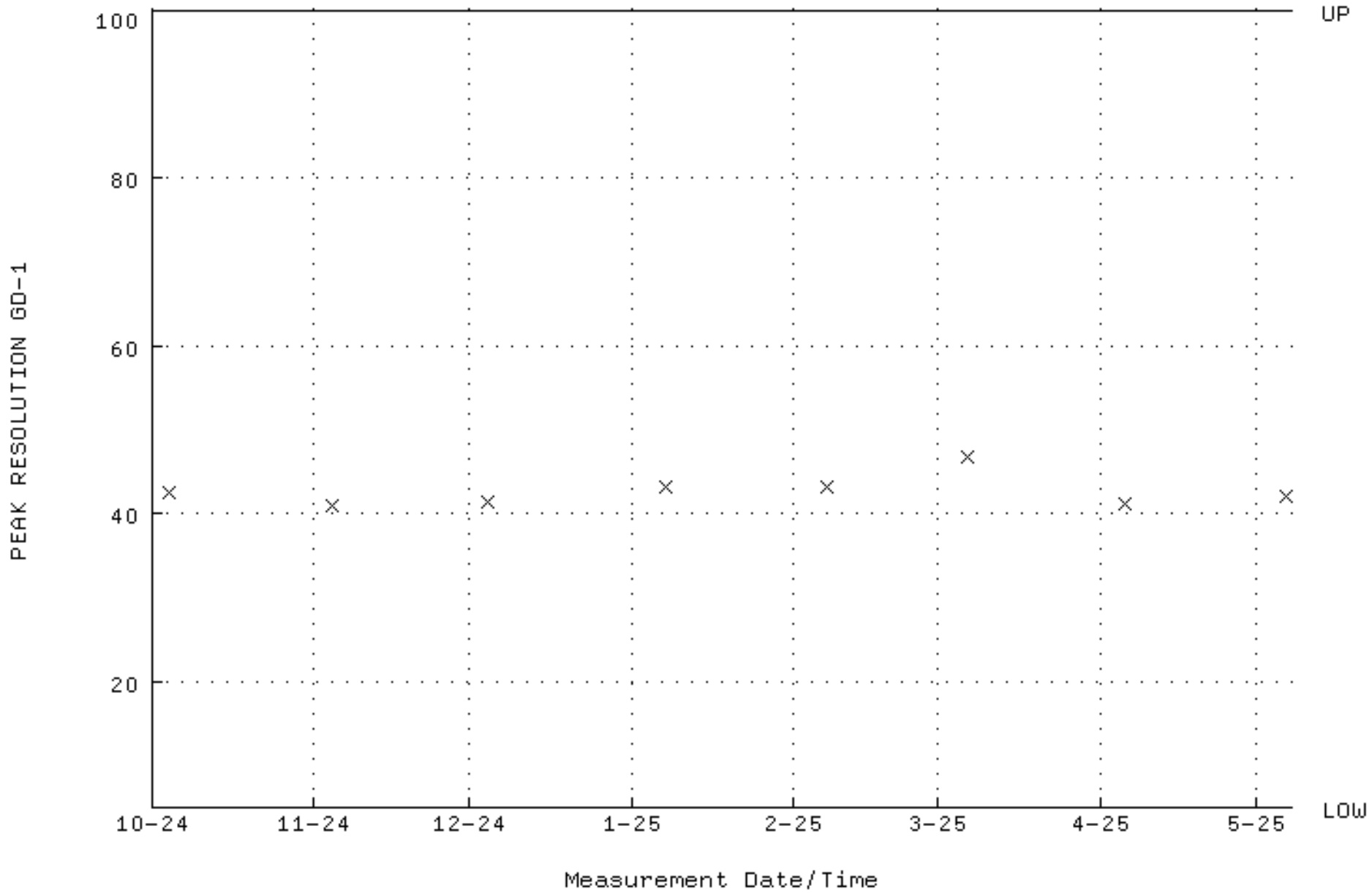
QA filename : DKA100:[ENV_ALPHA.QA.W]W045.QAF;8
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.320072 through 0.339870



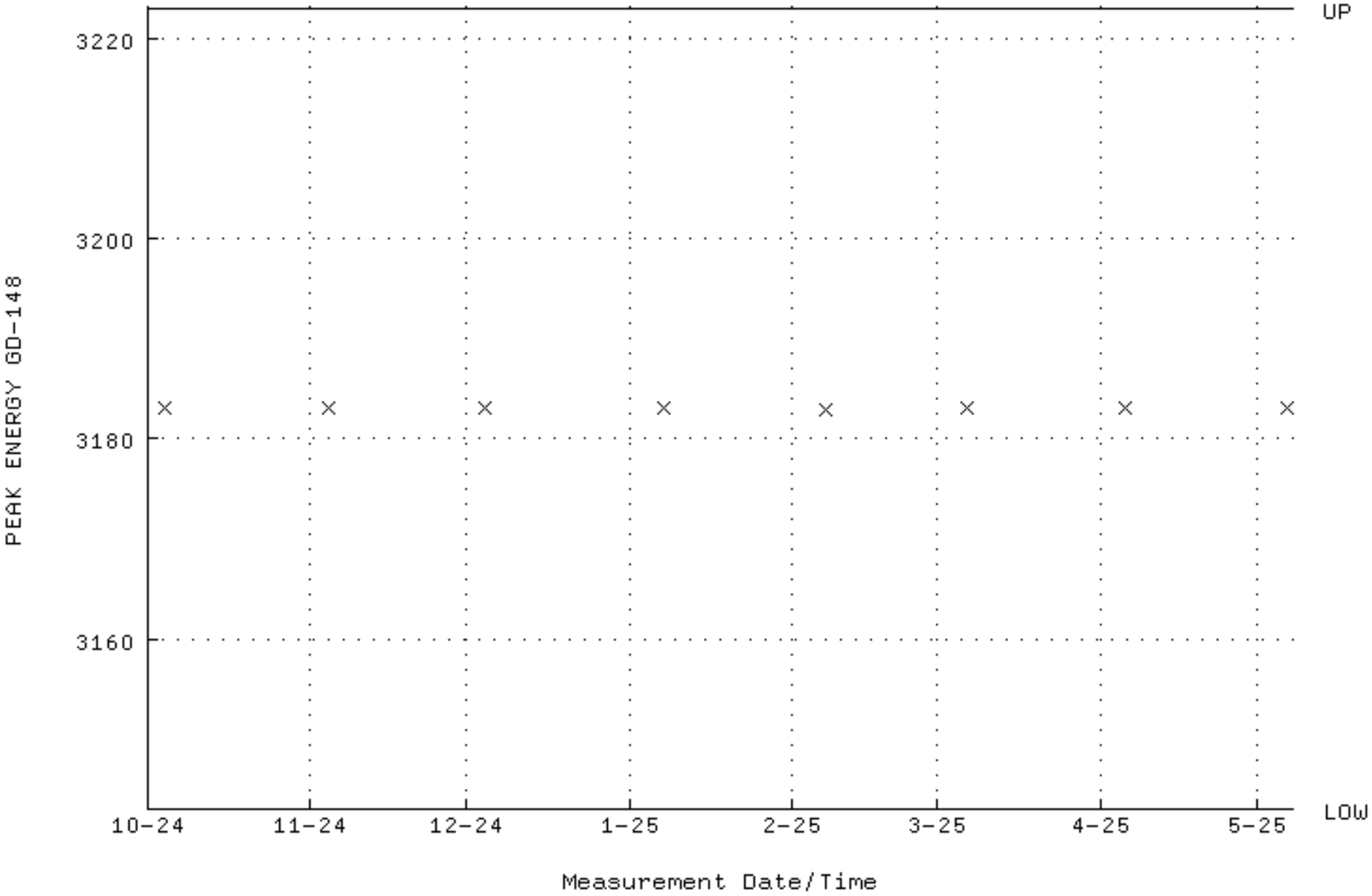
QA filename : DKA100:[ENV_ALPHA.QA.W]W045.QAF;8
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



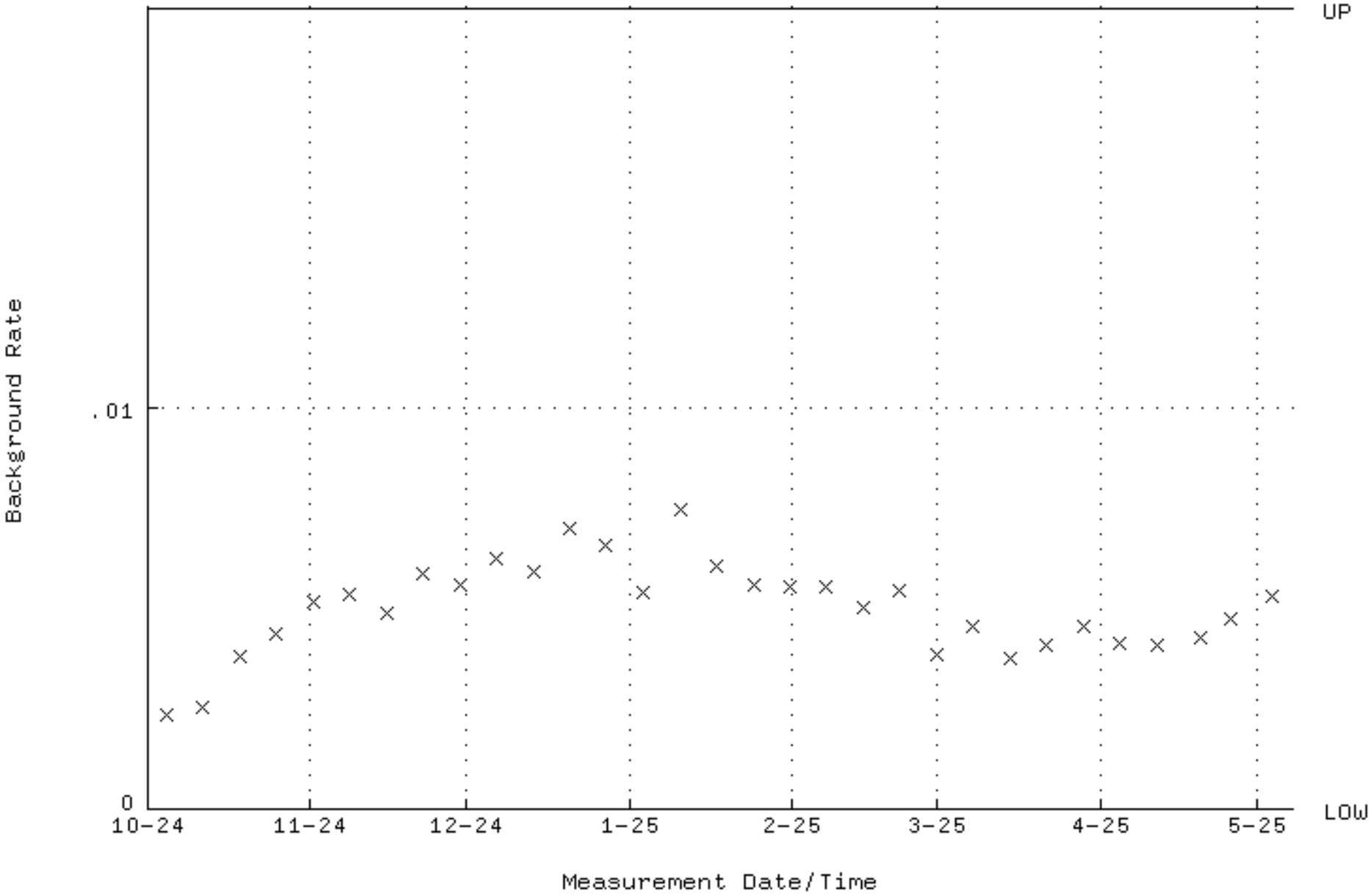
QA filename : DKA100:[ENV_ALPHA.QA.W]W045.QAF;8
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



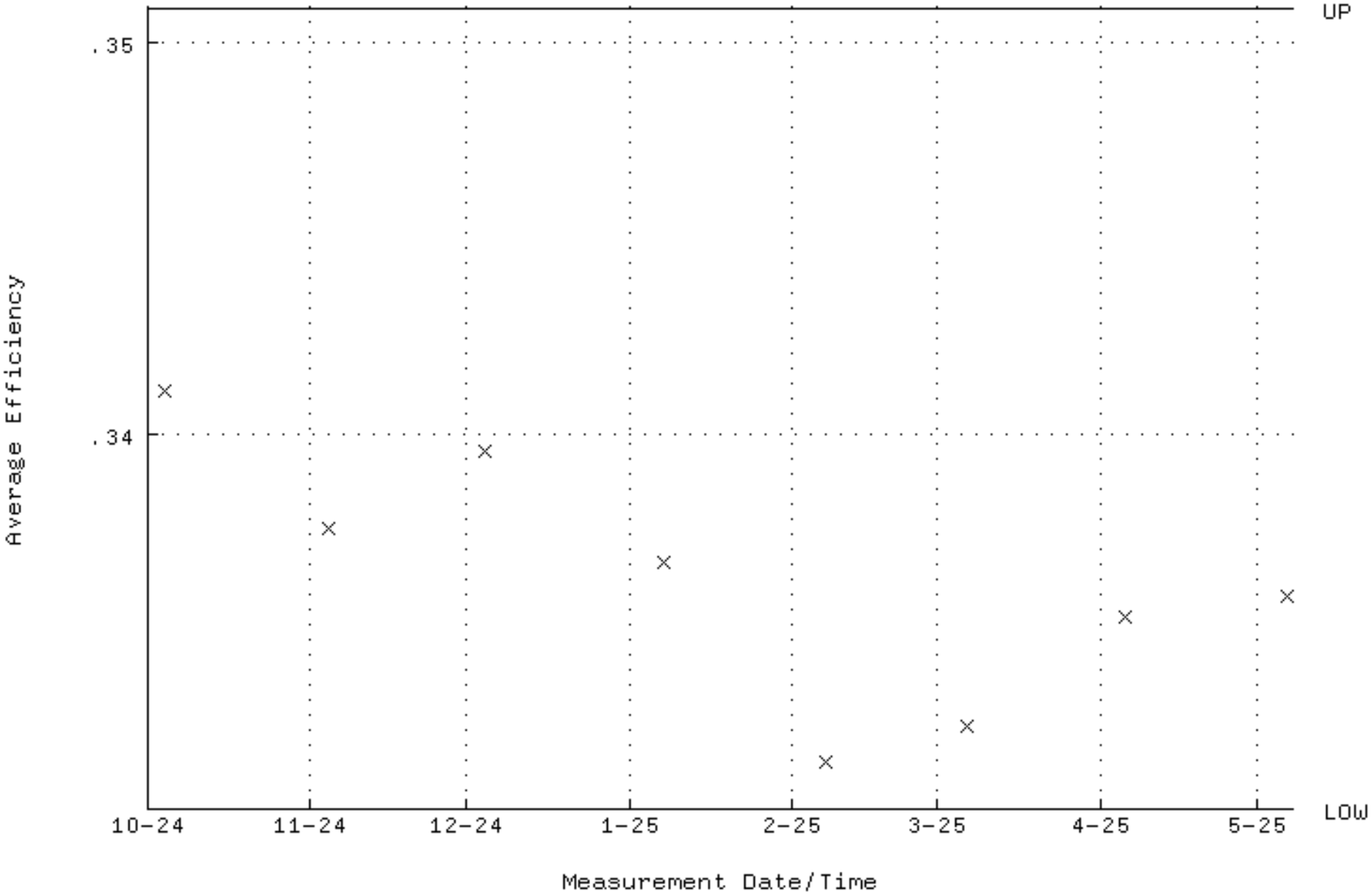
QA filename : DKA100:[ENV_ALPHA.QA.W]W045.QAF;8
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



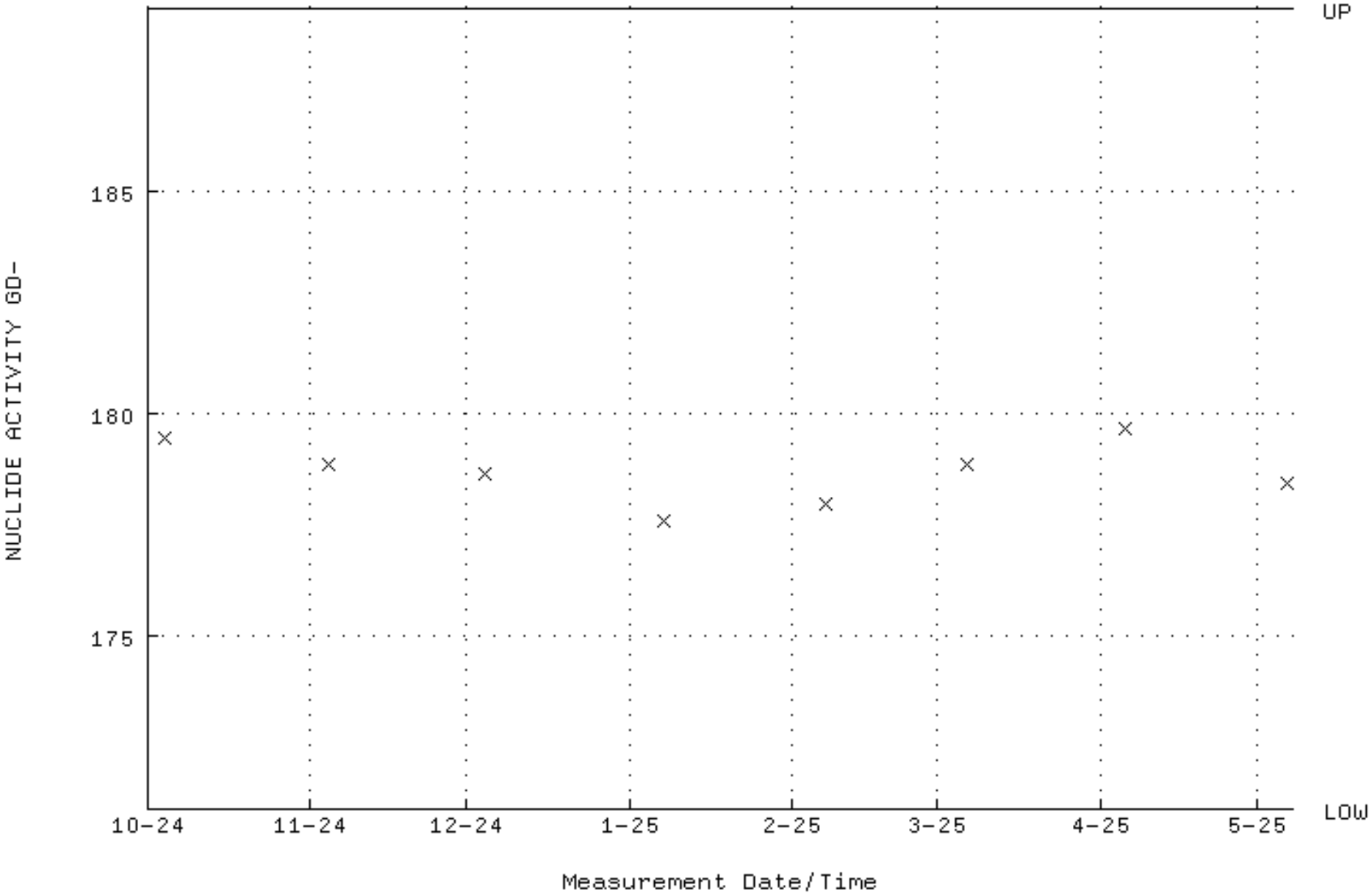
QA filename : DKA100:[ENV_ALPHA.QA.B]B045.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:41 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



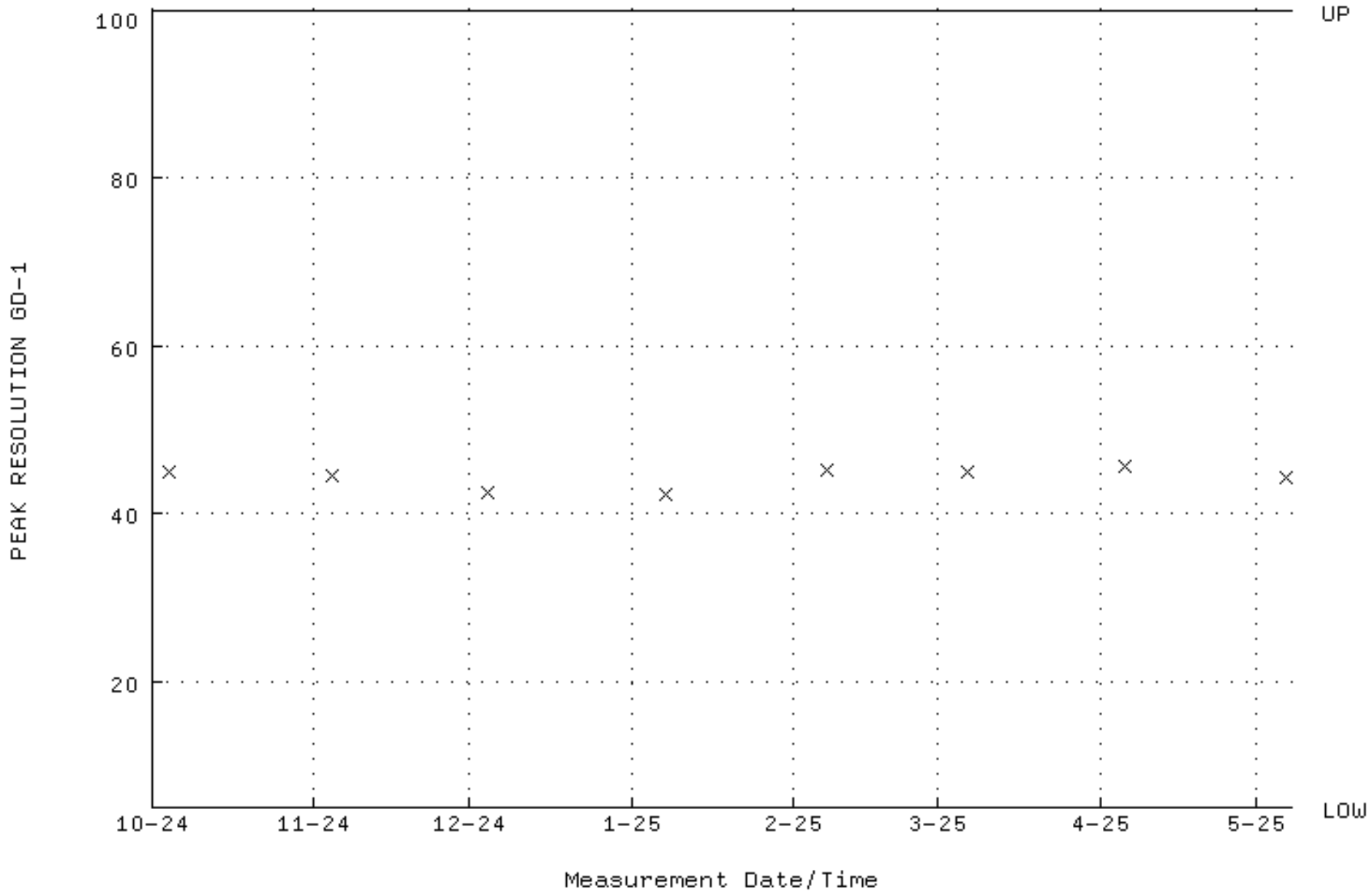
QA filename : DKA100:[ENV_ALPHA.QA.W]W046.QAF;8
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.330425 through 0.350863



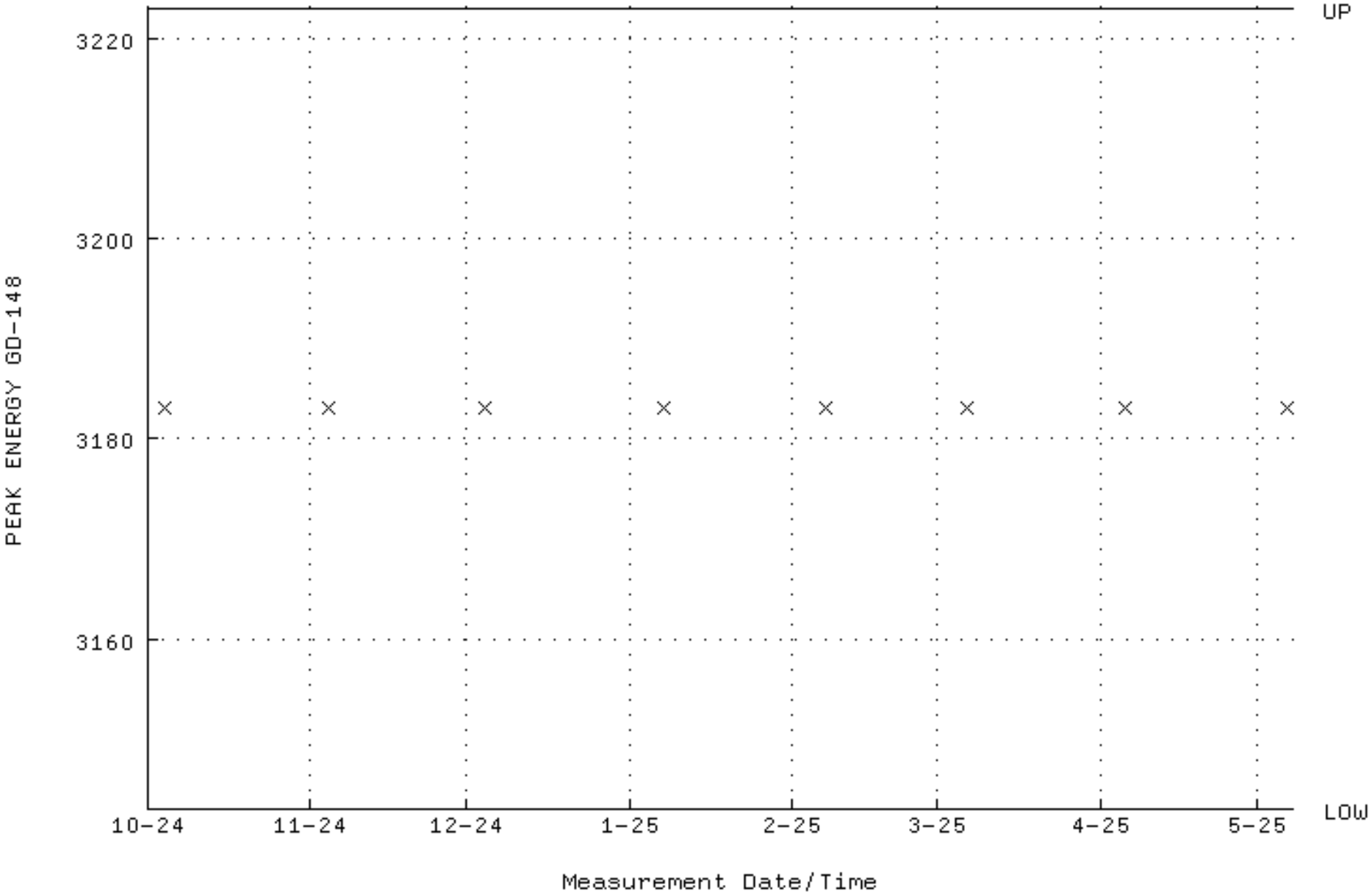
QA filename : DKA100:[ENV_ALPHA.QA.W]W046.QAF;8
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



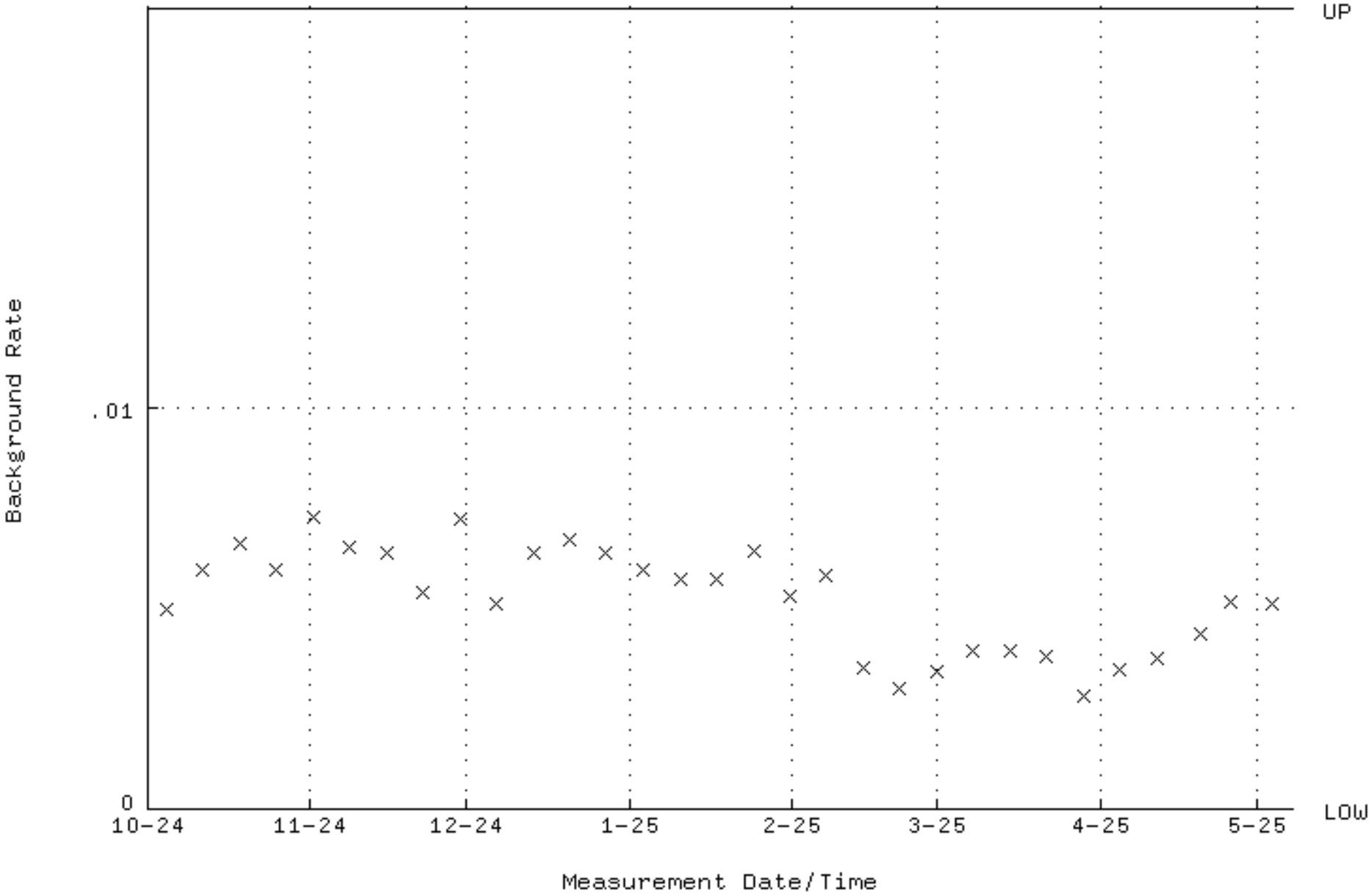
QA filename : DKA100:[ENV_ALPHA.QA.W]W046.QAF;8
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



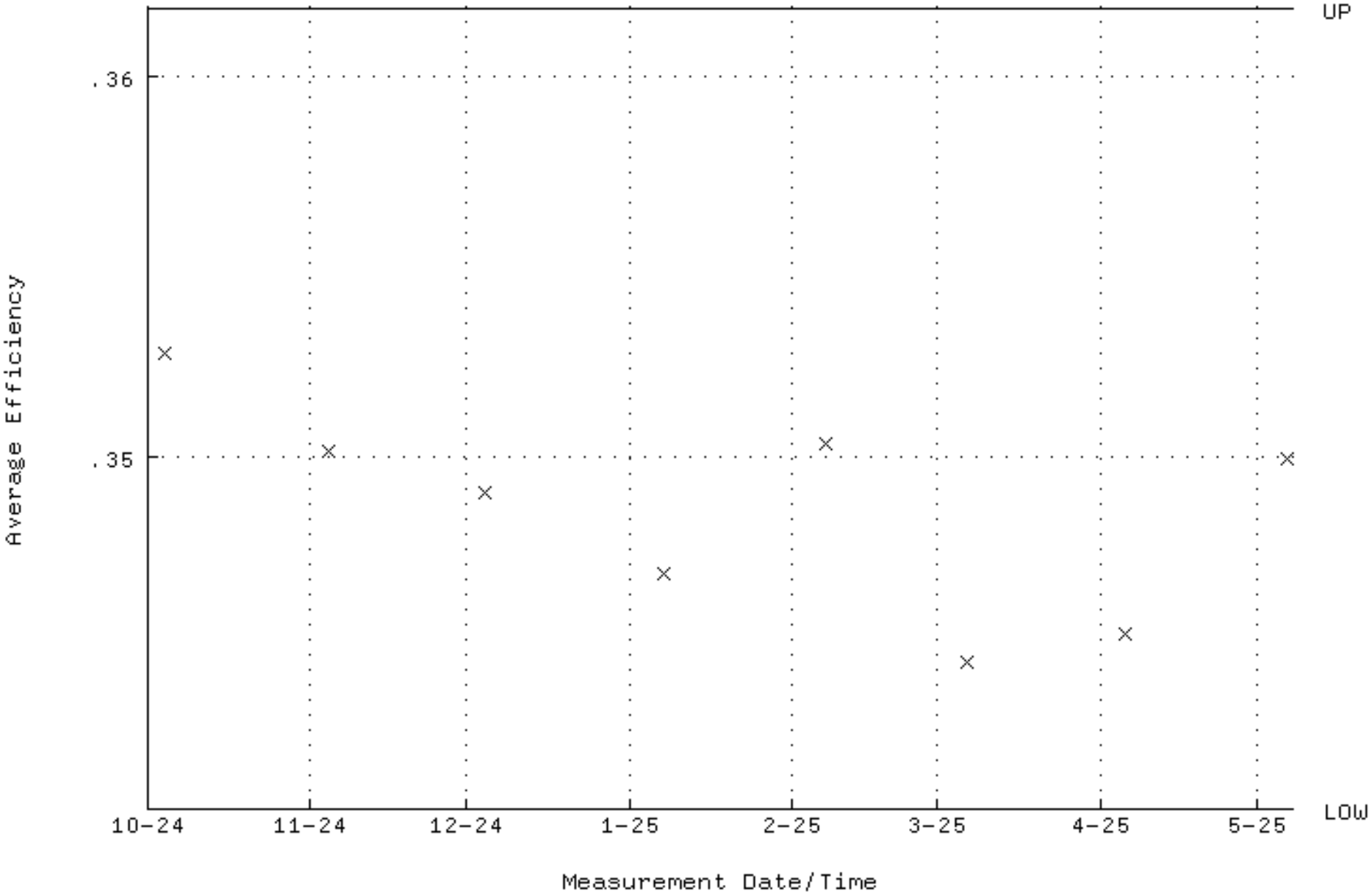
QA filename : DKA100:[ENV_ALPHA.QA.W]W046.QAF;8
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



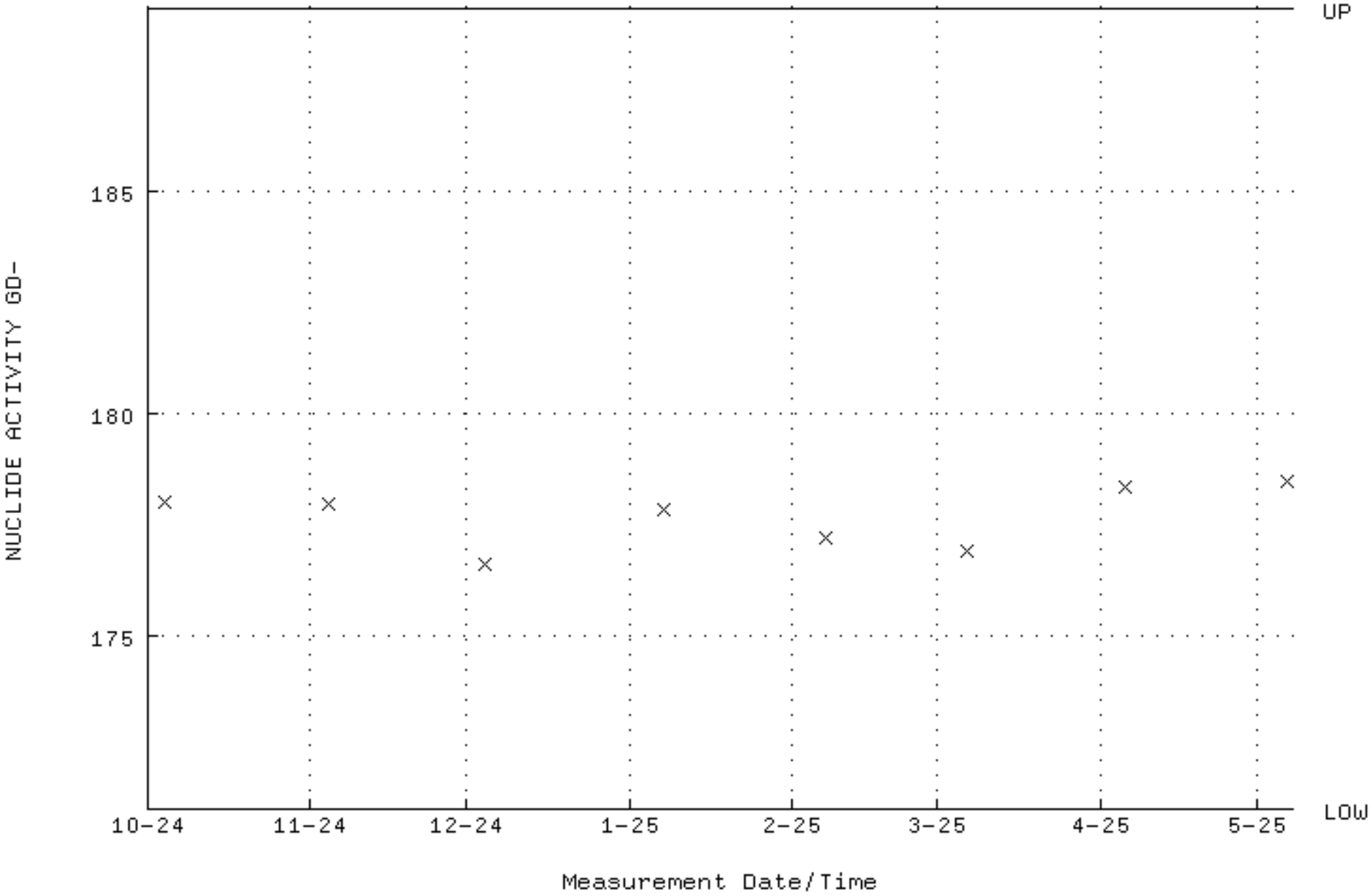
QA filename : DKA100:[ENV_ALPHA.QA.B]B046.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:41 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



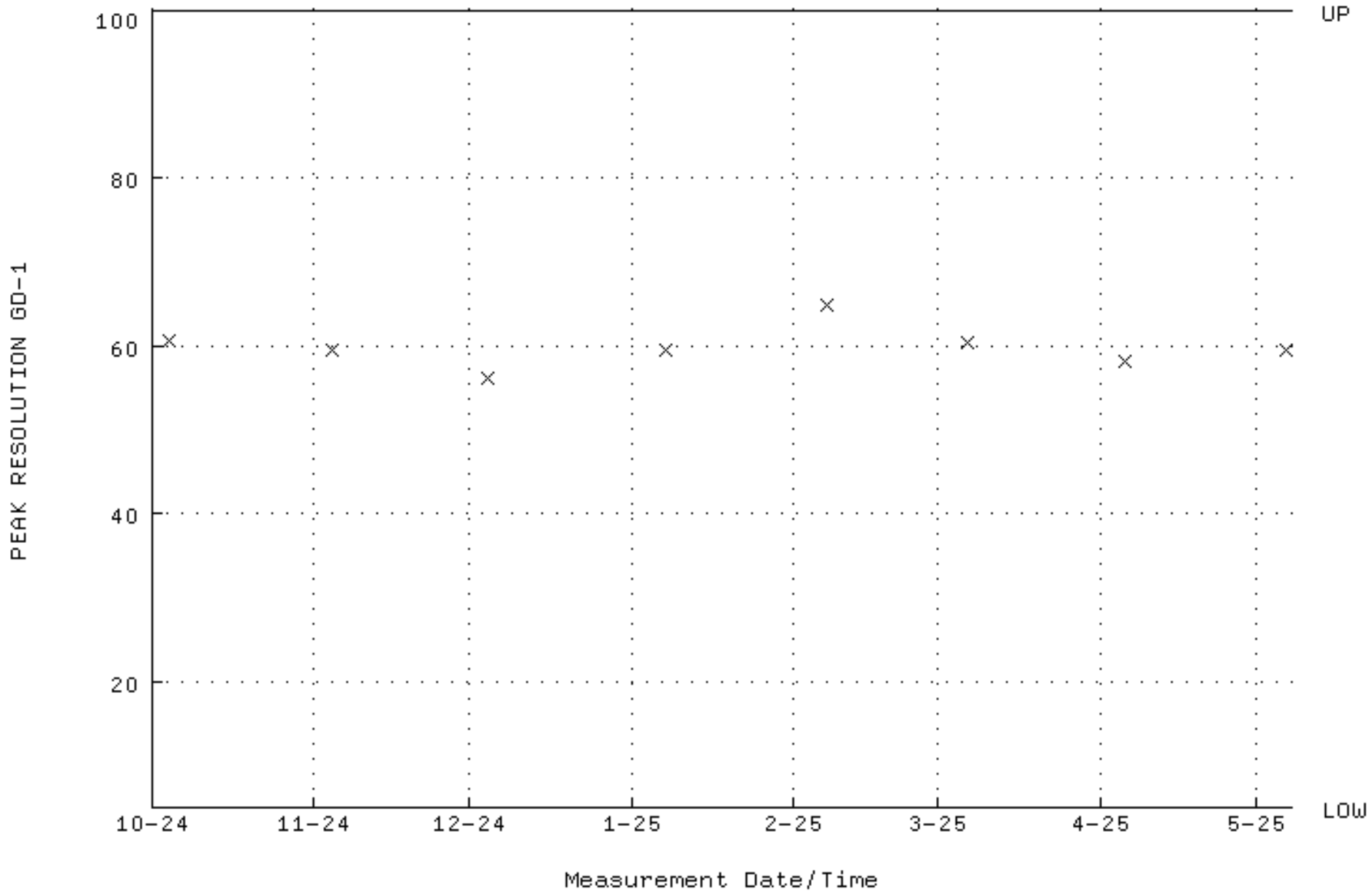
QA filename : DKA100:[ENV_ALPHA.QA.W]W047.QAF;9
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.340710 through 0.361790



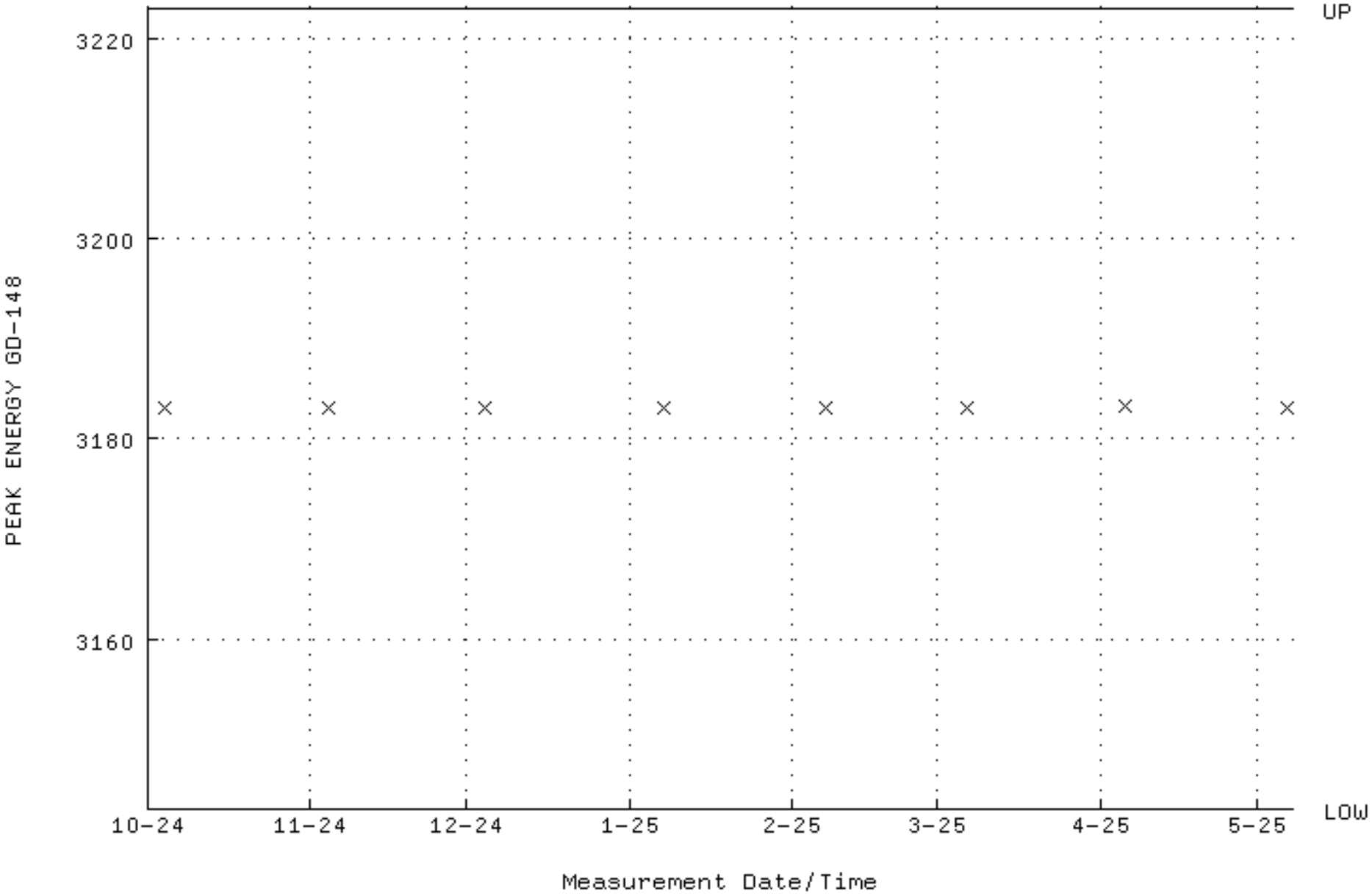
QA filename : DKA100:[ENV_ALPHA.QA.W]W047.QAF;9
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



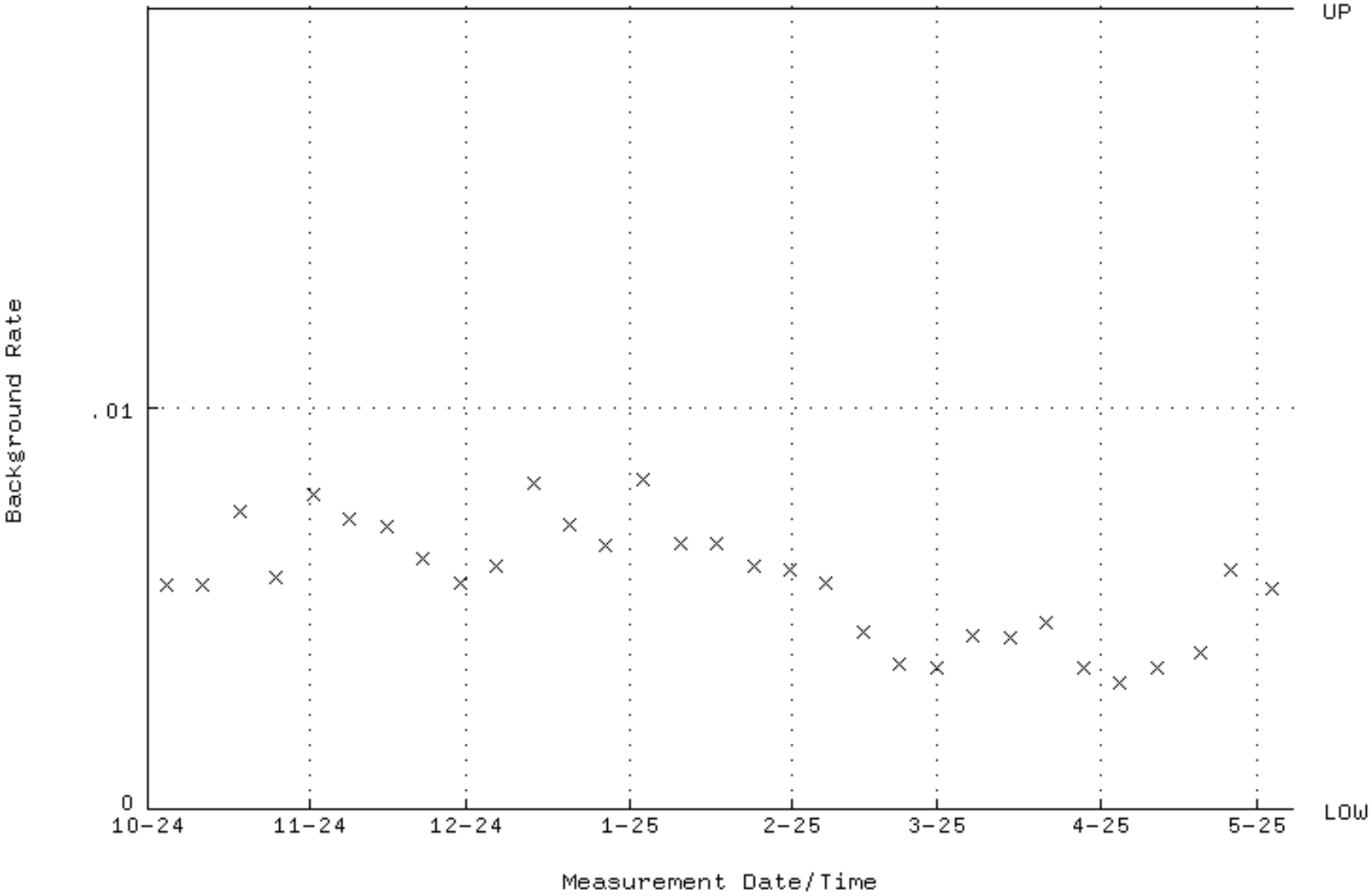
QA filename : DKA100:[ENV_ALPHA.QA.W]W047.QAF;9
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



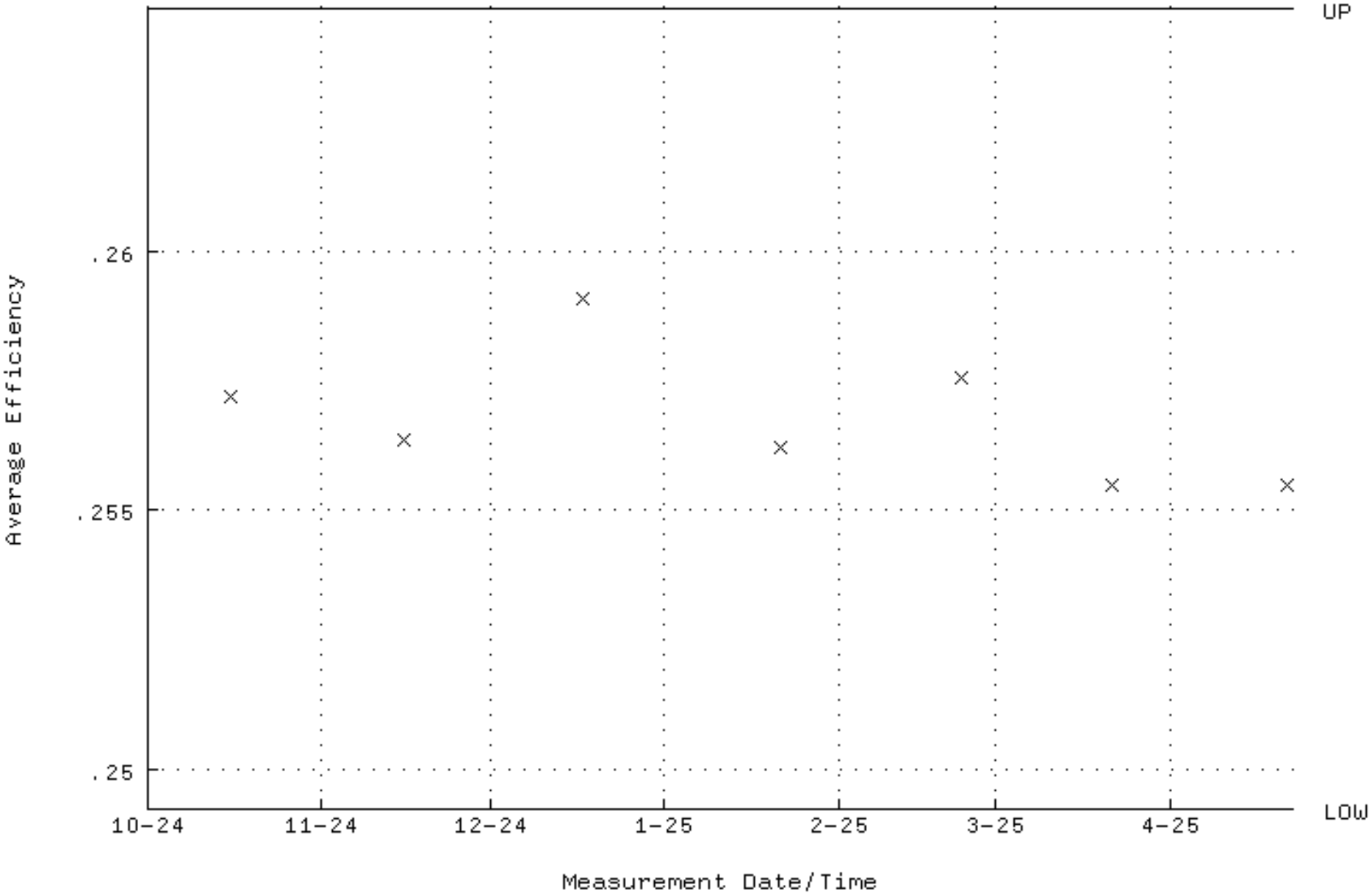
QA filename : DKA100:[ENV_ALPHA.QA.W]W047.QAF;9
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 4-OCT-2024 09:32:05 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



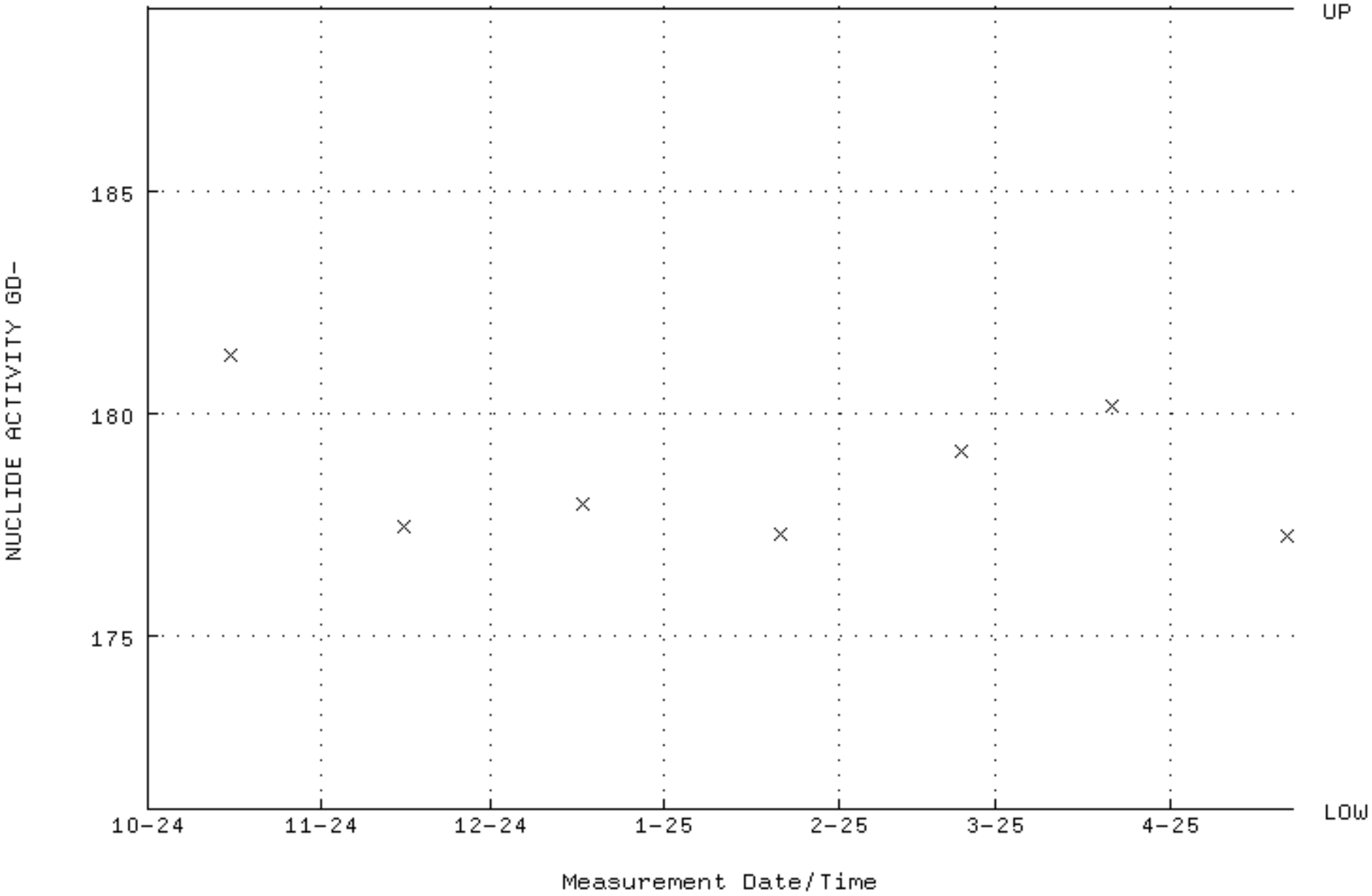
QA filename : DKA100:[ENV_ALPHA.QA.B]B047.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 13:37:41 through 7-MAY-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



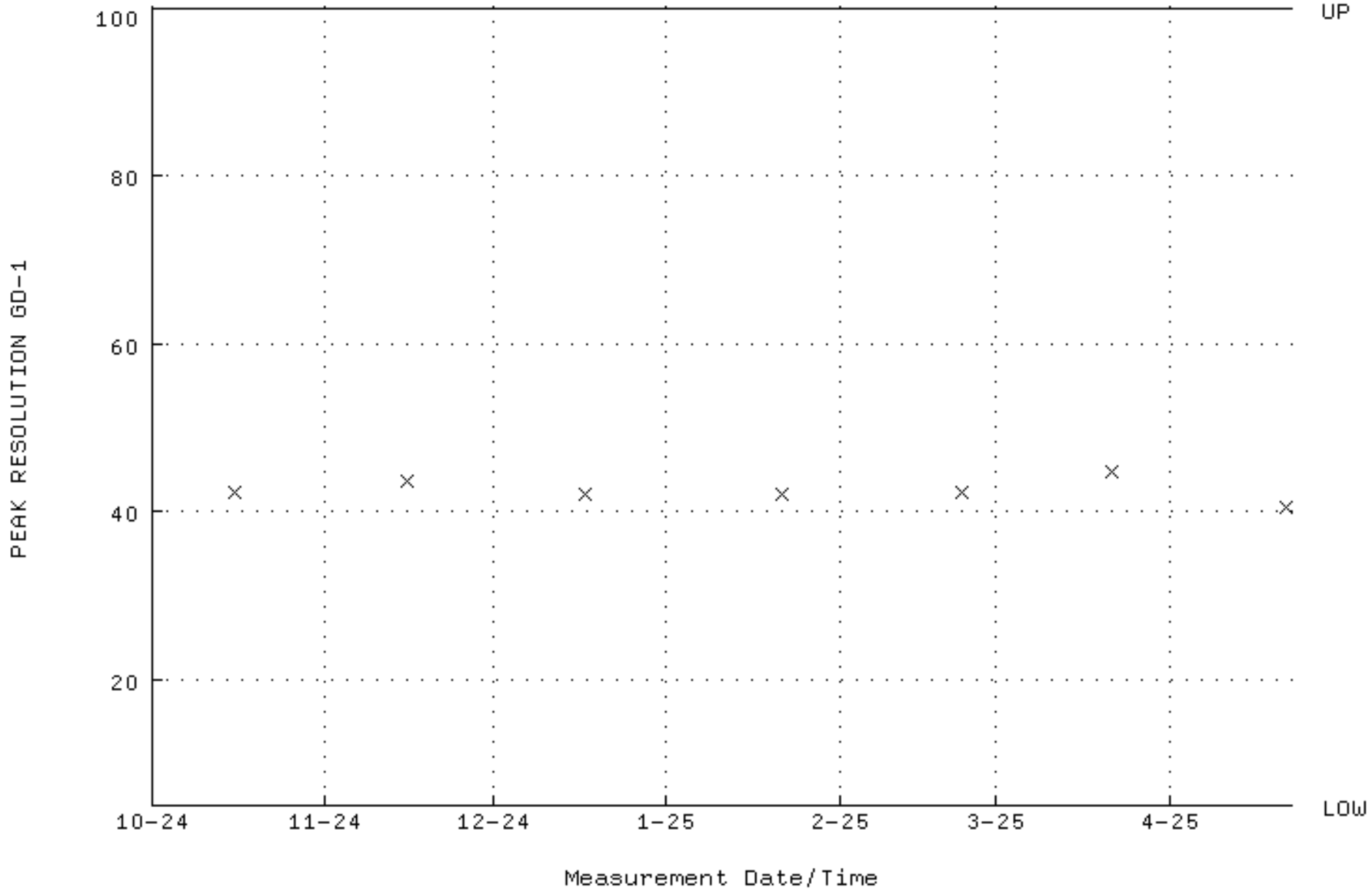
QA filename : DKA100:[ENV_ALPHA.QA.W]W136.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 15-OCT-2024 15:27:55 through 22-APR-2025 12:00:00
Lower/Upper Lmts: 0.249250 through 0.264668



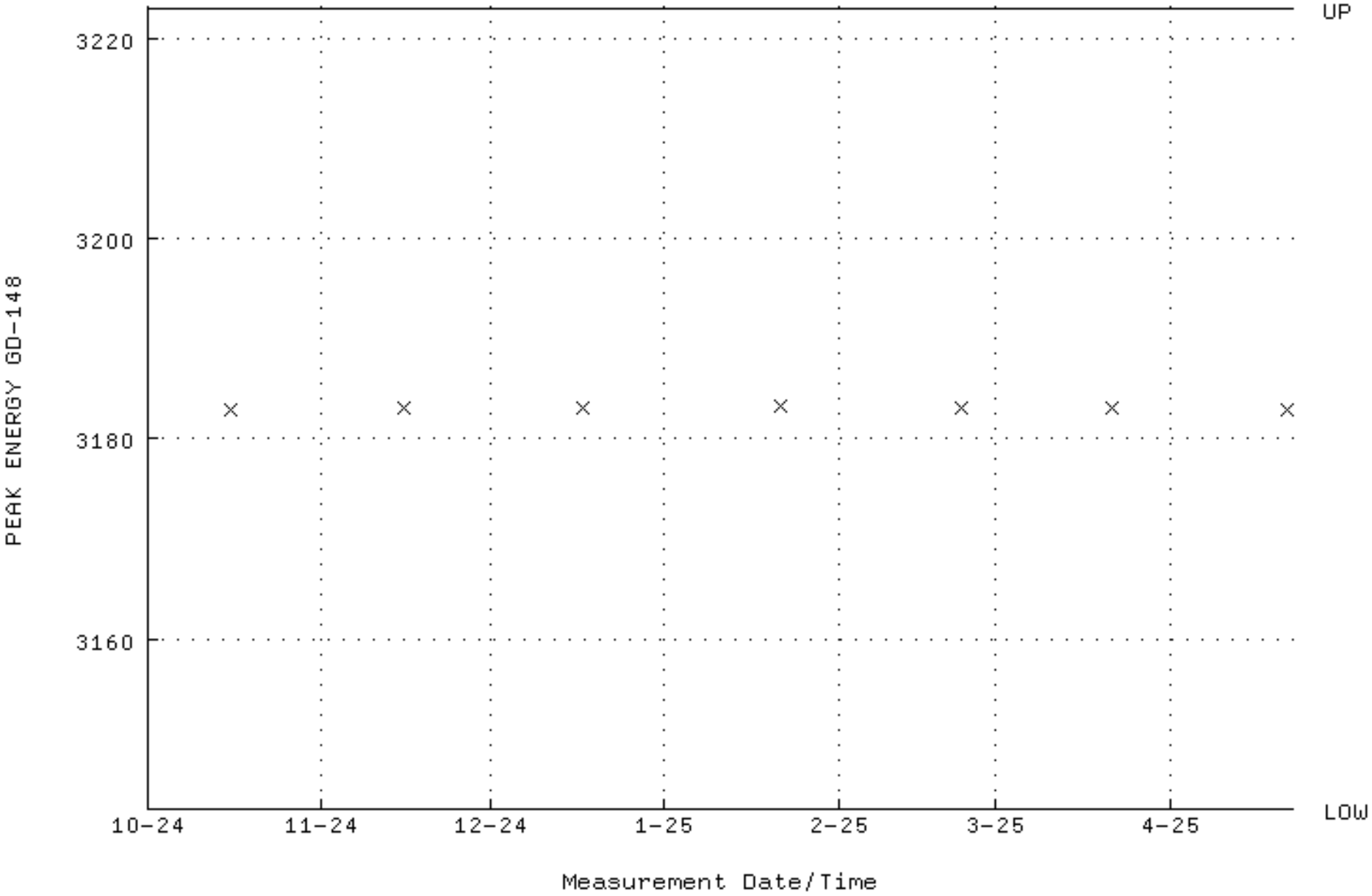
QA filename : DKA100:[ENV_ALPHA.QA.W]W136.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 15-OCT-2024 15:27:55 through 22-APR-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



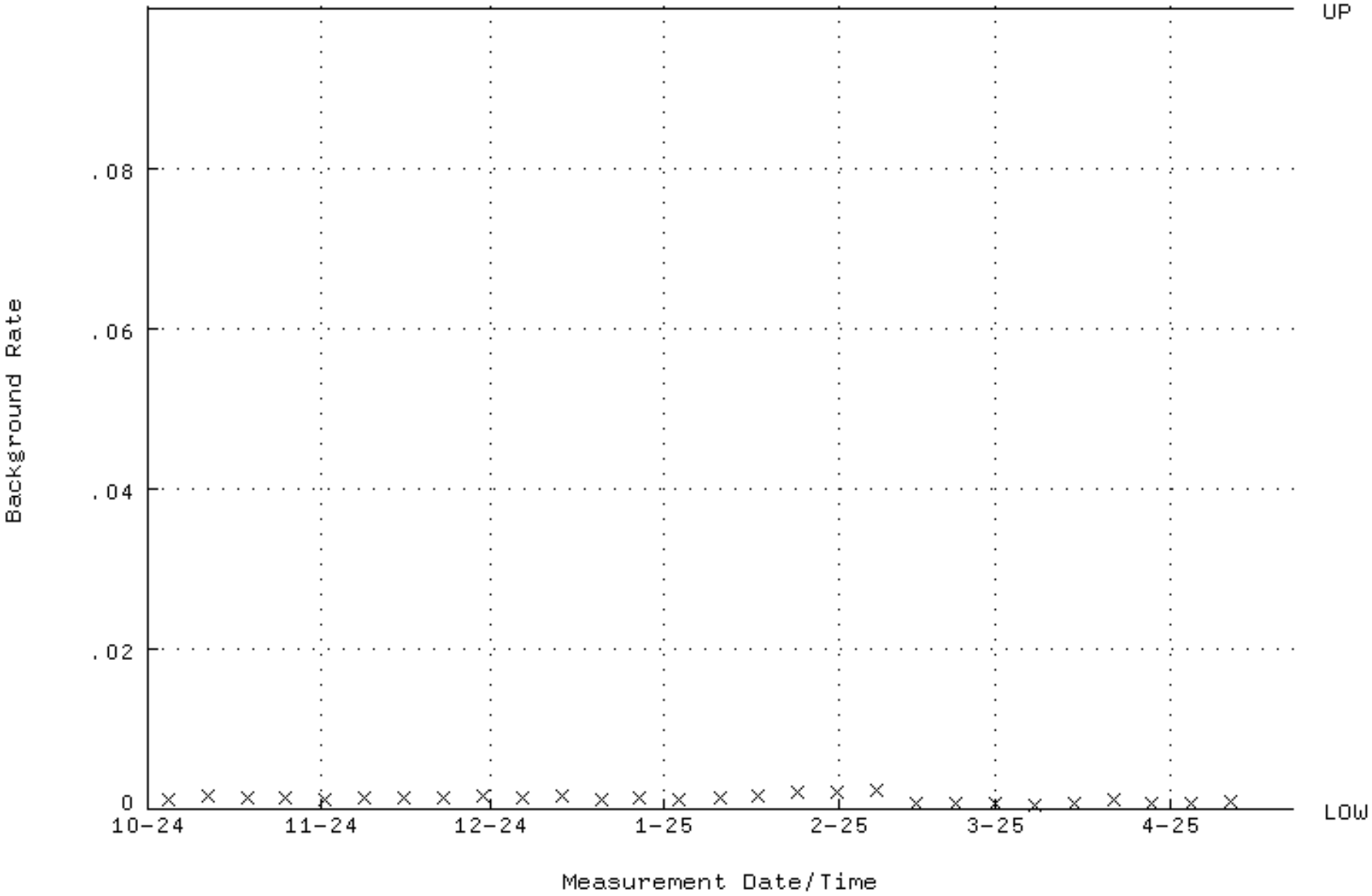
QA filename : DKA100:[ENV_ALPHA.QA.W]W136.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 15-OCT-2024 15:27:55 through 22-APR-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



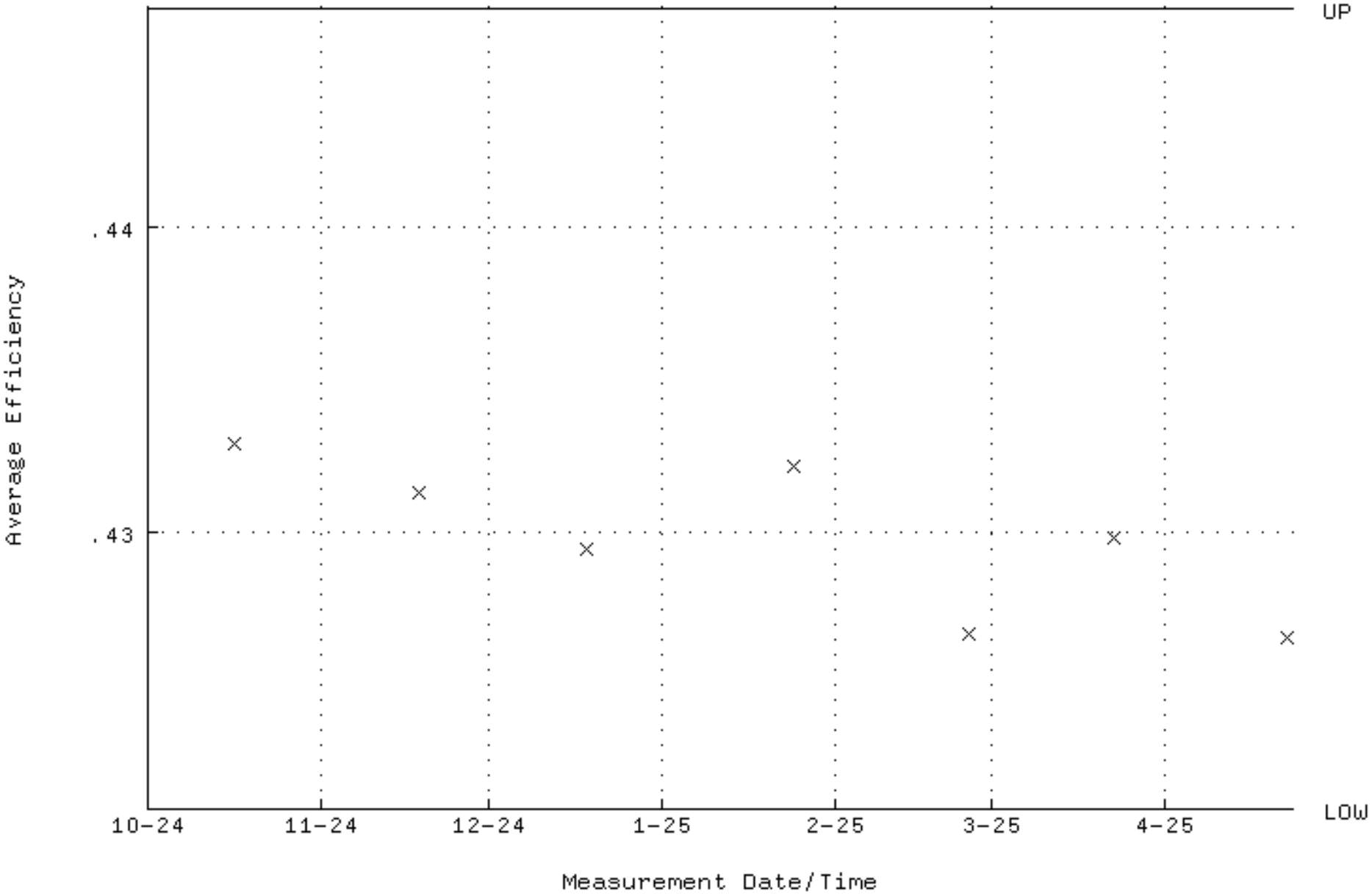
QA filename : DKA100:[ENV_ALPHA.QA.W]W136.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 15-OCT-2024 15:27:55 through 22-APR-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



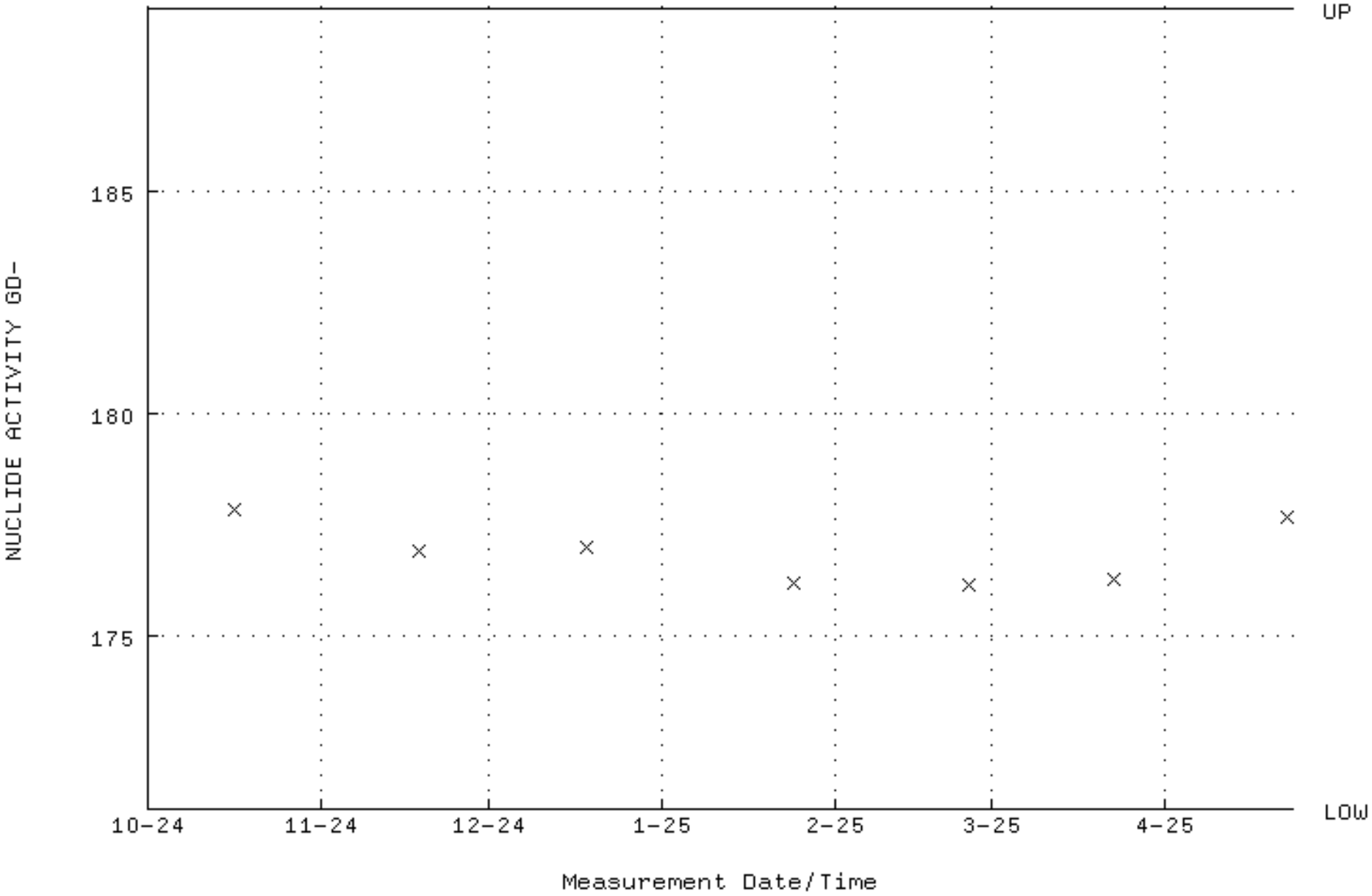
QA filename : DKA100:[ENV_ALPHA.QA.B]B136.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 14:04:21 through 22-APR-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



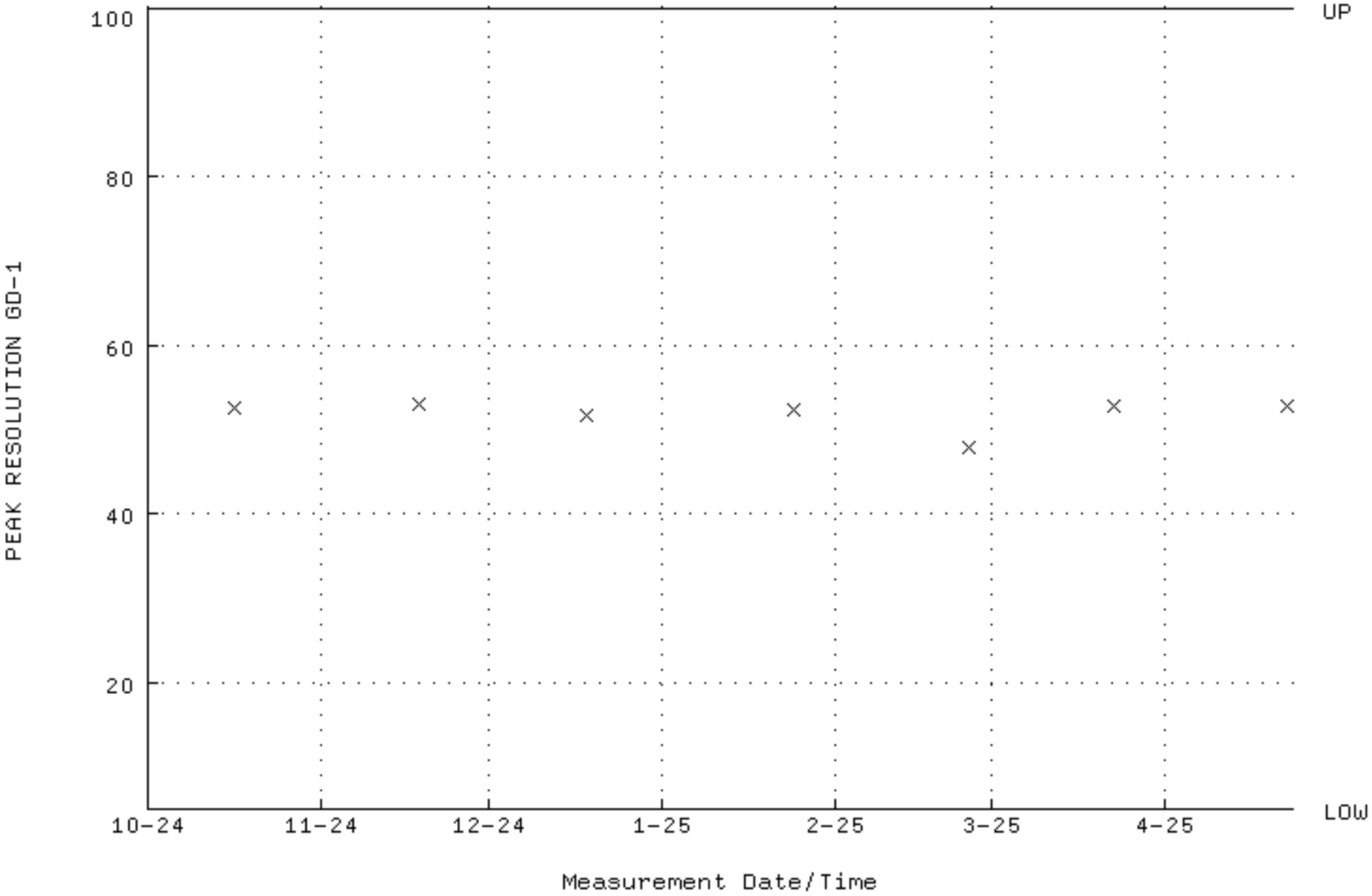
QA filename : DKA100:[ENV_ALPHA.QA.W]W139.QAF;6
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 16-OCT-2024 09:12:18 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 0.421000 through 0.447100



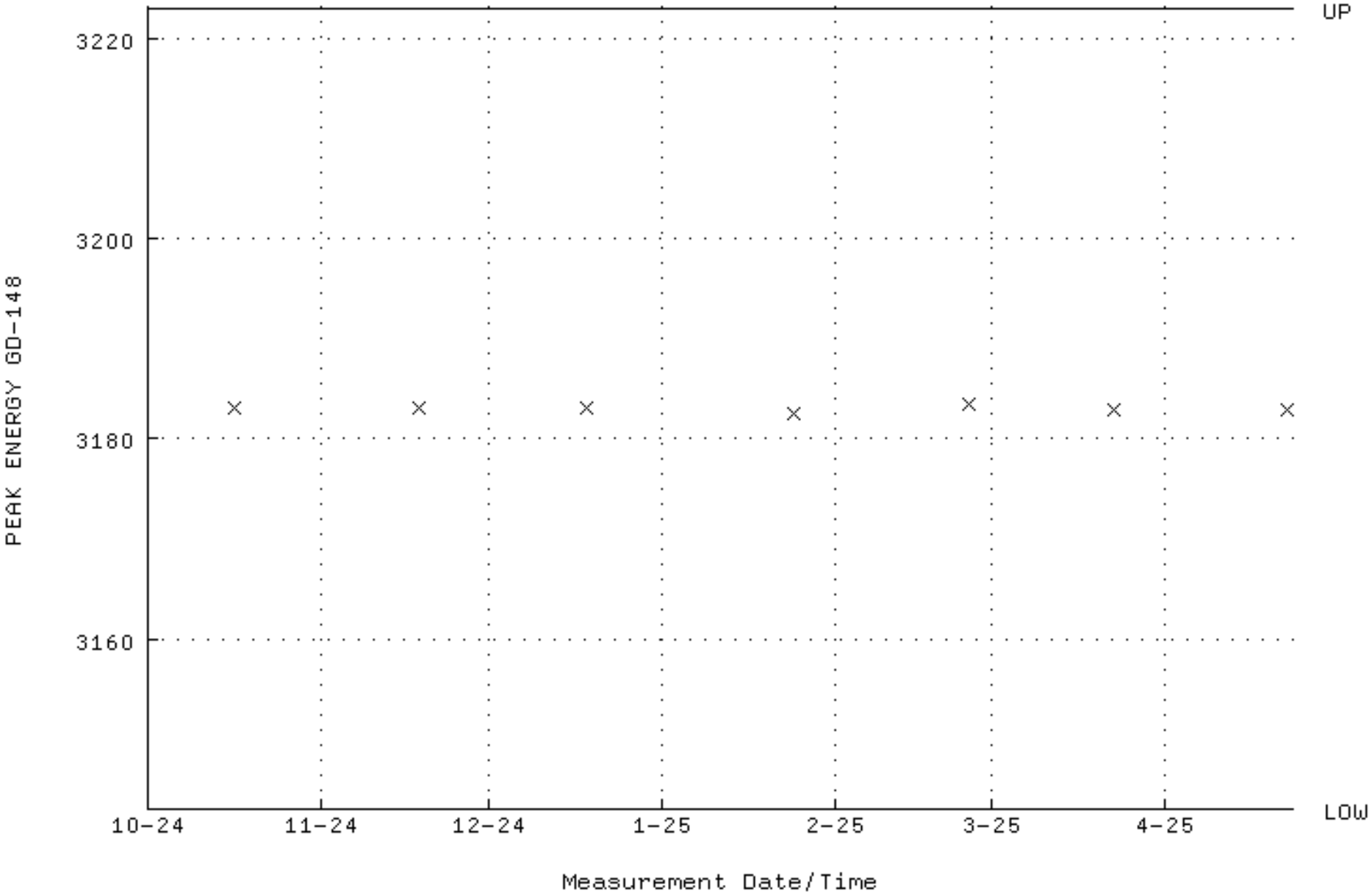
QA filename : DKA100:[ENV_ALPHA.QA.W]W139.QAF;6
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 16-OCT-2024 09:12:18 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



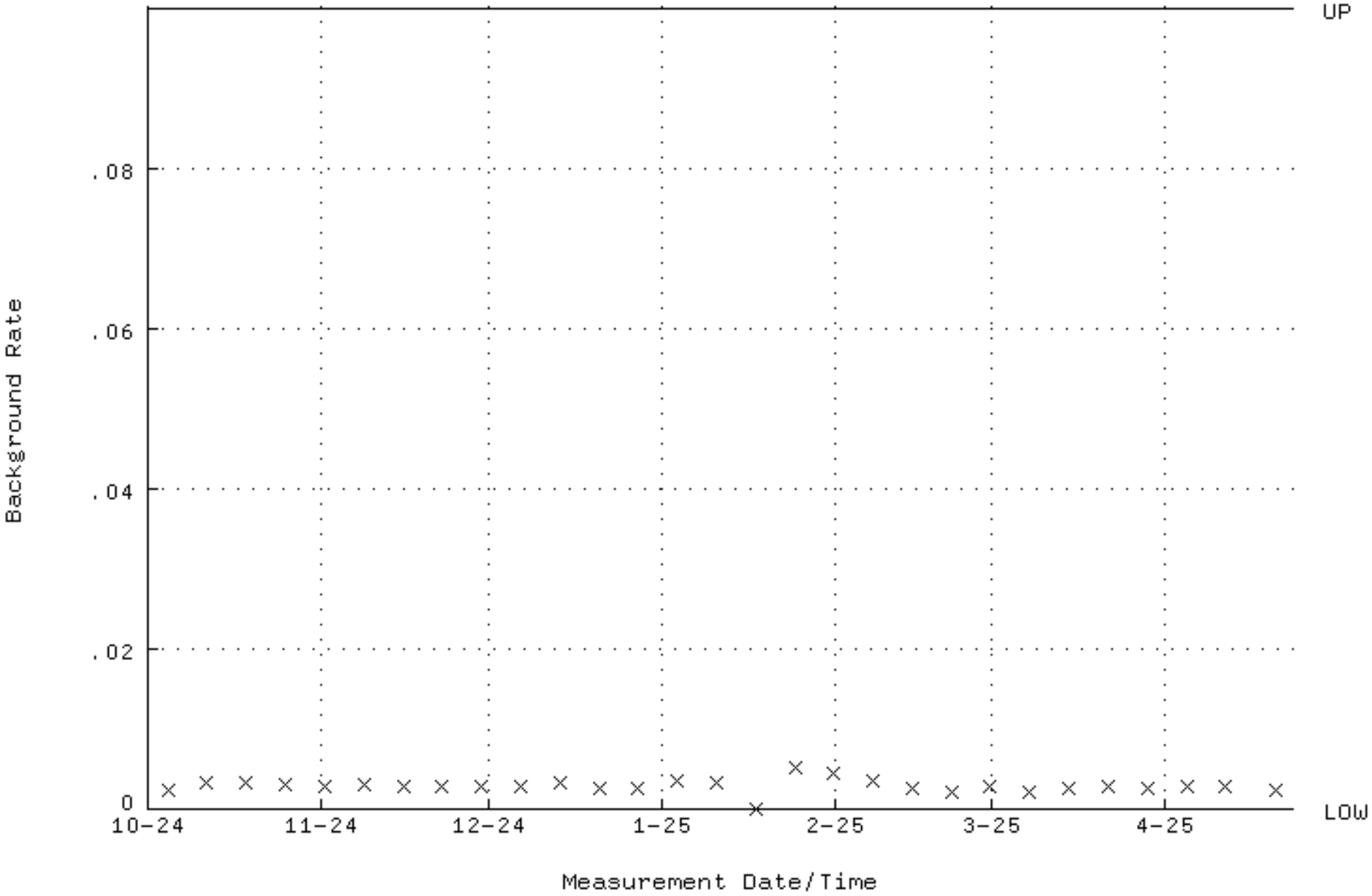
QA filename : DKA100:[ENV_ALPHA.QA.W]W139.QAF;6
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 16-OCT-2024 09:12:18 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



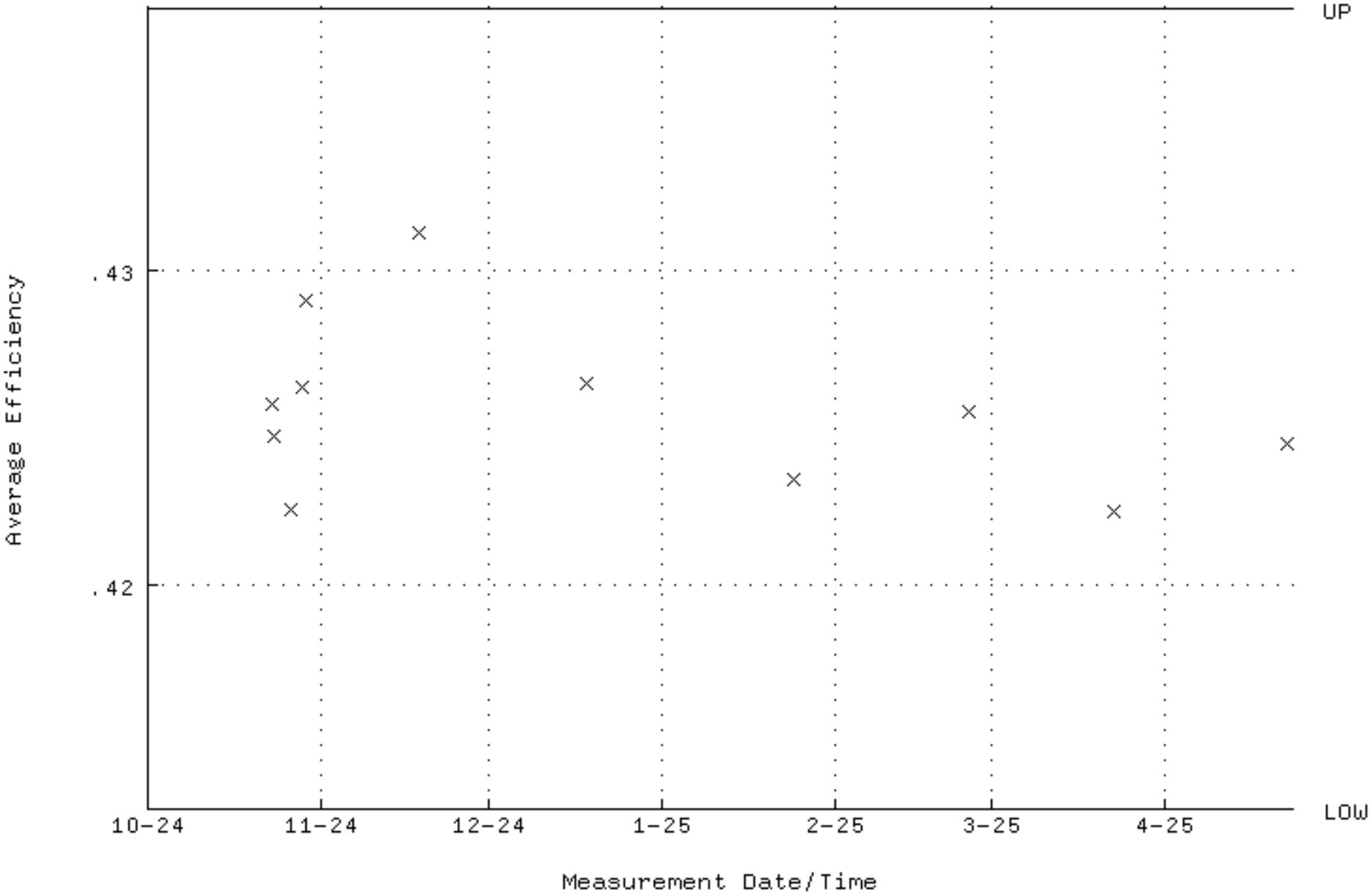
QA filename : DKA100:[ENV_ALPHA.QA.W]W139.QAF;6
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 16-OCT-2024 09:12:18 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



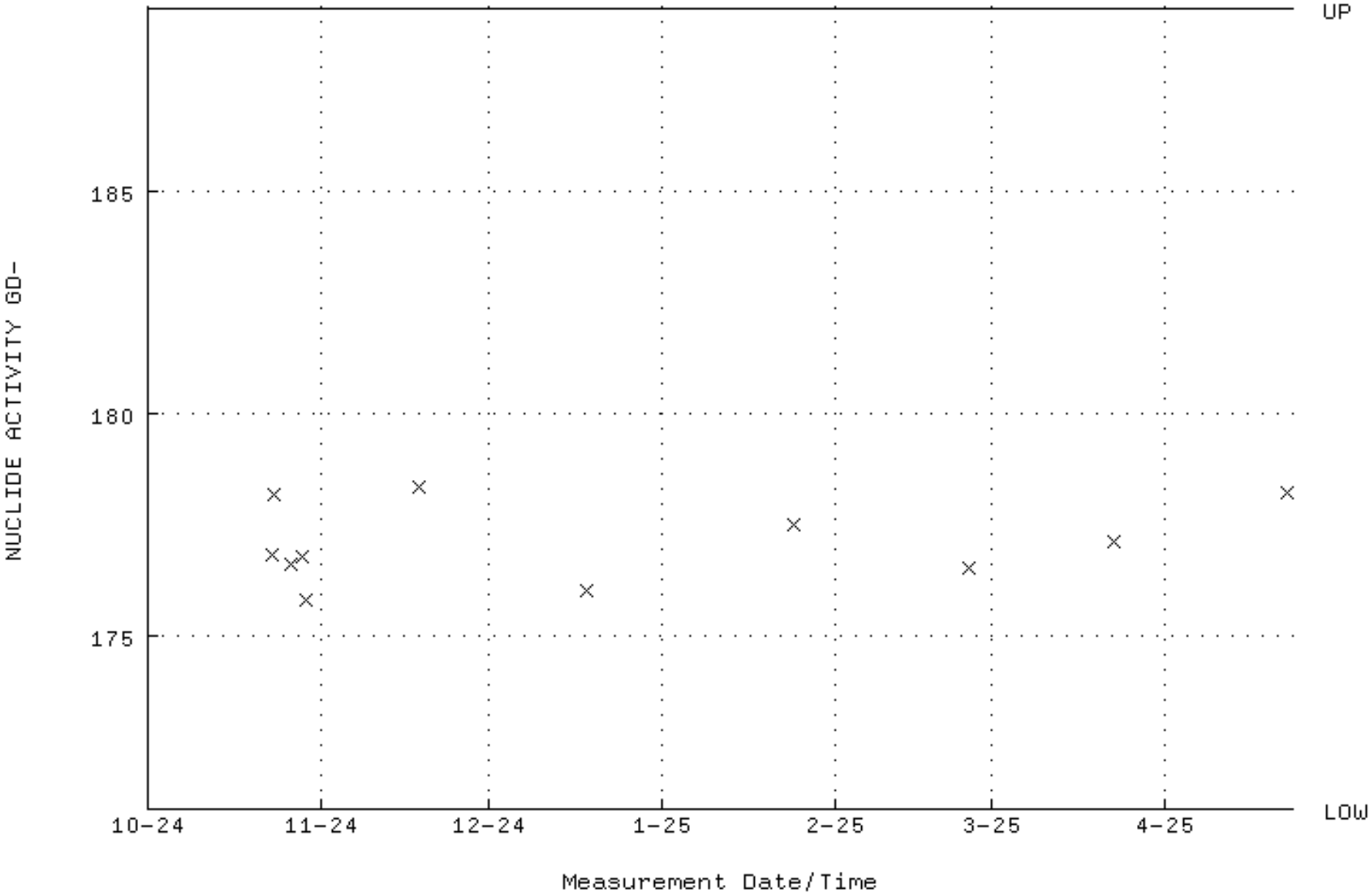
QA filename : DKA100:[ENV_ALPHA.QA.B]B139.QAF;5
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 4-OCT-2024 14:08:47 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



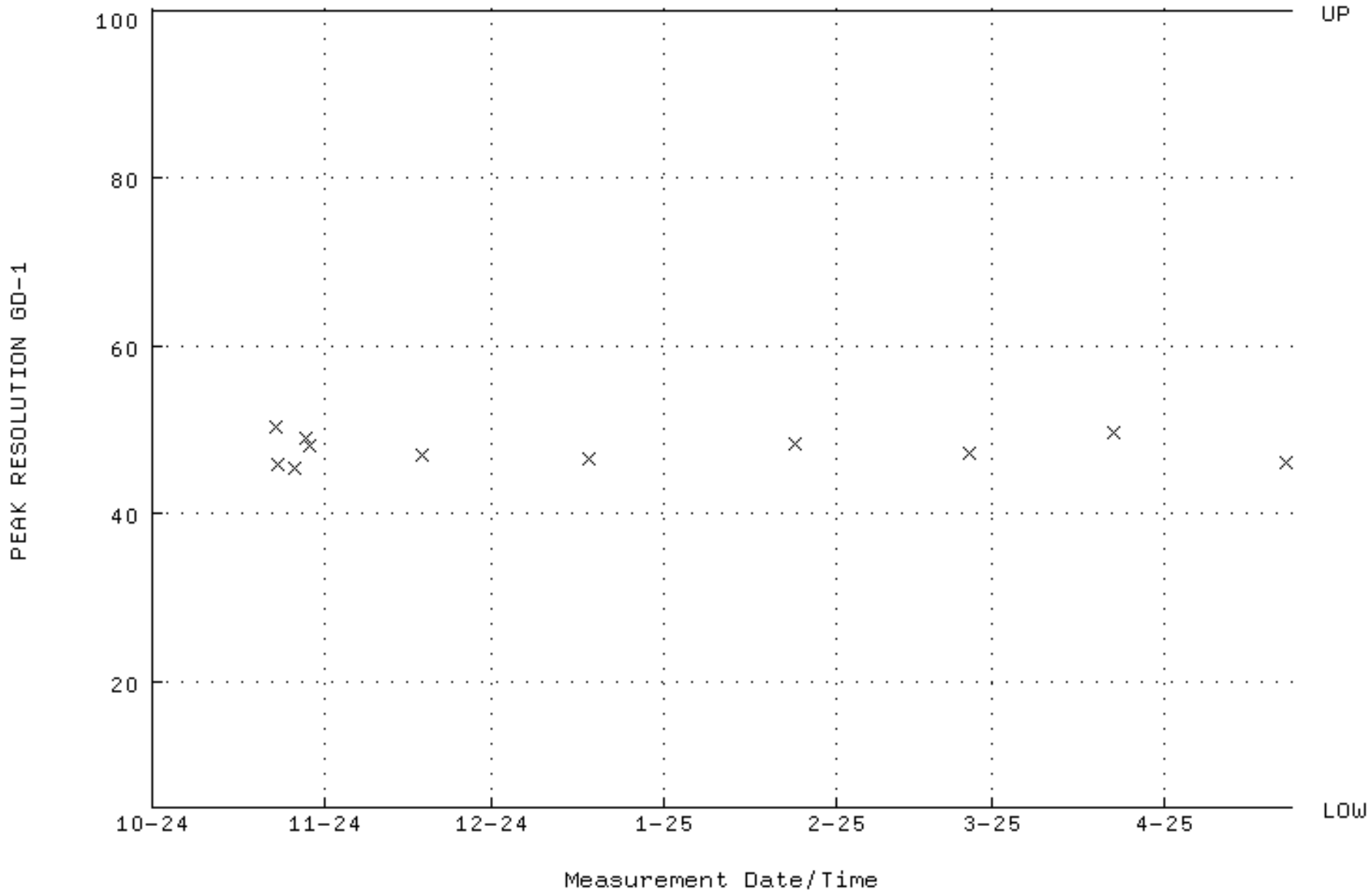
QA filename : DKA100:[ENV_ALPHA.QA.W]W140.QAF;3
Parameter Name : AVRGEFF (Average Efficiency)
Start/End Dates : 23-OCT-2024 08:44:00 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 0.412824 through 0.438360



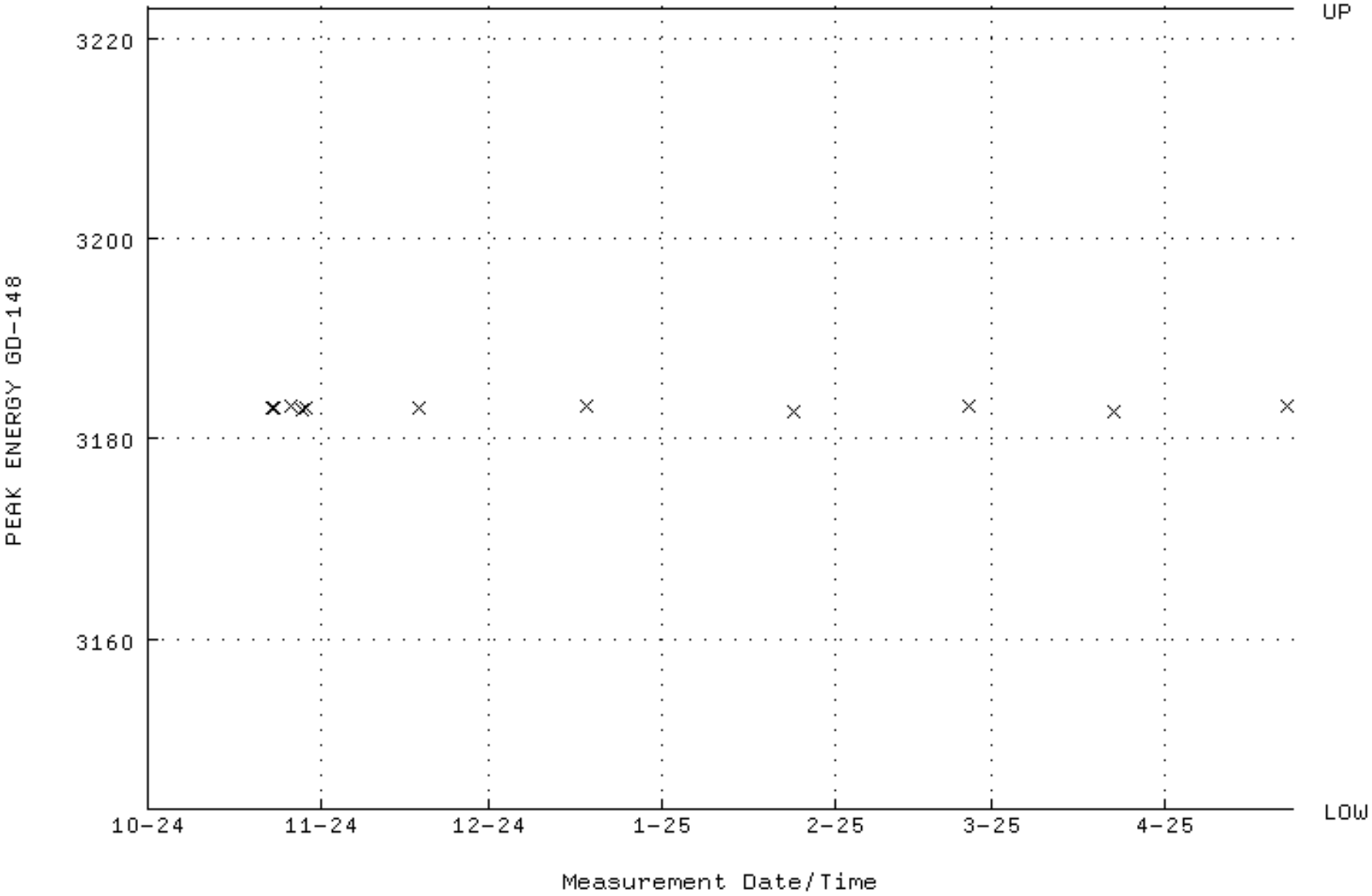
QA filename : DKA100:[ENV_ALPHA.QA.W]W140.QAF;3
Parameter Name : NLACTVTY-GD148 (NUCLIDE ACTIVITY GD-148)
Start/End Dates : 23-OCT-2024 08:44:00 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 171.090 through 189.100



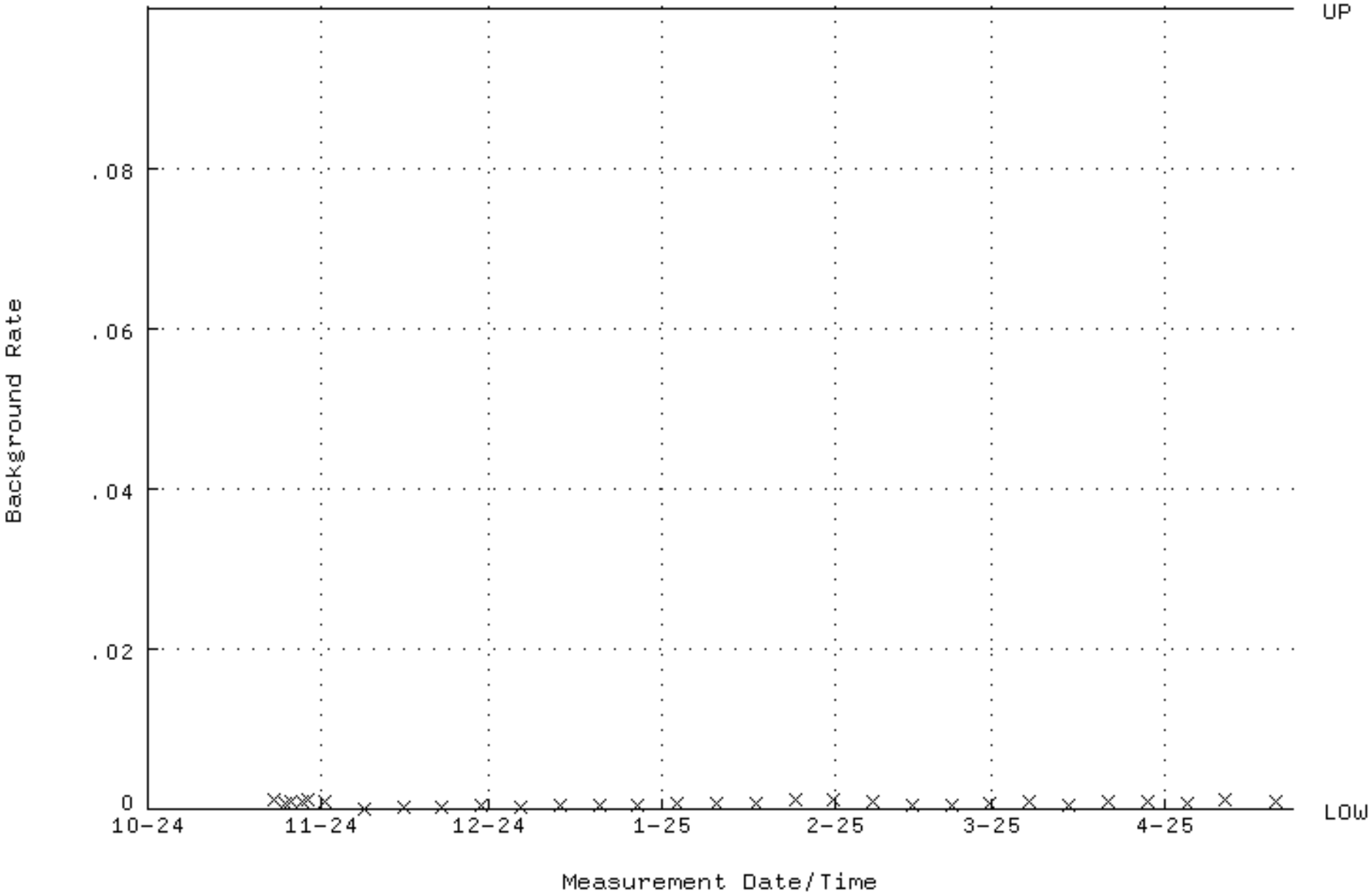
QA filename : DKA100:[ENV_ALPHA.QA.W]W140.QAF;3
Parameter Name : PSFWHM-GD148 (PEAK RESOLUTION GD-148)
Start/End Dates : 23-OCT-2024 08:44:00 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 5.00000 through 100.000



QA filename : DKA100:[ENV_ALPHA.QA.W]W140.QAF;3
Parameter Name : PSENERGY-GD148 (PEAK ENERGY GD-148)
Start/End Dates : 23-OCT-2024 08:44:00 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 3143.00 through 3223.00



QA filename : DKA100:[ENV_ALPHA.QA.B]B140.QAF;4
Parameter Name : BACKRATE (Background Rate)
Start/End Dates : 23-OCT-2024 13:23:46 through 23-APR-2025 12:00:00
Lower/Upper Lmts: 0.000000E+00 through 0.100000



RAD Standards Traceability

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.ezag.com

1845

Received: 12-1-17 12:00

CERTIFICATE OF CALIBRATION
Standard Reference Source

SRS Number: 108018
Source Description: 5 mL Liquid in Flame Sealed Ampoule
Product Code: 8229
Customer: GEL Laboratories LLC
P.O. Number: GEL1718798, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution calibrated by Eckert & Ziegler Analytics (EZA). The master solution was calibrated by liquid scintillation counting. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. EZA maintains traceability to the National Institute of Standards and Technology (NIST) through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Reference Date: 29-November-2017 12:00 PM EST

Isotope	Half-Life, d	Activity, Bq	Uncertainty u_A, %	u_B, %	U, %*	Calibration Method**
Th-229	2.897E+06	1.999E+04	0.5	1.5	3.1	4π LS

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results." ****Calibration Methods:** 4π LS - 4π Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber.

(Certificate continued on reverse side)

SRS Number: 108018

Comments:

5.21561 g of 0.5 M HNO_3 solution, carrier free.

Impurities:

γ-impurities (other than decay products) < 0.1%

α-impurities: Th-228 6.6E+00 Bq, Th-230 1.2E+02 Bq, Th-232 8.0E+00 Bq

This source was wipe tested in its inactive areas with leak test results < 185 Bq (5 nCi) of removable activity per ISO 9978:1992.

Source Prepared by: _____

K. Hardley, Radiochemist

QC Approved by: _____ Date: 27-Nov-17

J. Lahr, Spectroscopist

Standard Logbook

Serial ID:	1845	**Open/Reference Date:**	29-NOV-17	**Aliquot :**	5.21561 g
Name:	Thorium-229	**Received:**	01-DEC-17	**Density :**	Hand Calculated
Type:	Source Material	**Expires:**	01-DEC-18	**Logbook Num :**	GL-CED-297-138
Employee:	Tim Chandler			**Lot Number :**	108018
Supplier:	Eckert & Ziegler			**Solvent :**	0.5M HNO3
				Uncertainty :	1.55 percent

Description: 1 ampoule

Comments: None

Analyte	Concentration	Analyte	Concentration
Thorium-229	19990 Bq		

Standard Traceability Log Rad

Source Material Info	
Parent Code:	1845
Prepared By:	Tim Chandler
Carrier Conc:	0.5M HNO3
Reference Date:	11/29/2017
Ampoule Mass (g):	5.21561 g
Uncertainty:	+/- 1.55 %
LogBook No:	GL-CED-297-138
Supplier:	Eckert & Ziegler

A Solution Material Info			
Isotope:	Thorium-229		
Prepared By:	Tim Chandler		
Prep Date:	06/08/2018		
Verification Date:	10/17/2024		
Expiration Date:	10/17/2025		
Primary Code:	1845-A		
Dilution(mL):	100 mL		
Mass of Parent(g):	5.1906 g		
Density(g/mL):	1.0291	Balance ID:	B733529066

Calculations Converting parent activity to dpm/mL|dpm/g

(Mass of parent(g)) * (Parm Activity (Bq)) * (conversion dpm to Bq) / (Ampoule Mass(g) *(Dilution Vol)) = Parent Activity (dpm/mL)

(Mass of parent(g)) * (Parm Activity (Bq)) * (conversion dpm to Bq) / Density / (Ampoule Mass (g) * (Dilution Vol)) = Parent Activity (dpm/g)

(5.1906 g) * (19990 Bq) * (60 dpm/Bq) / (5.21561 g * 100 mL) = 11936.4861 dpm/mL

(5.1906 g) * (19990 Bq) * (60 dpm/Bq) / (1.0291 g/mL)/ (5.21561 g * 100 mL) = 11598.7987 dpm/g

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
06/08/2018	Tim Chandler	2.0385	1000	1845-B	23.6442 dpm/mL	06/01/2020	06/01/2021
07/10/2019	Tim Chandler	4.0198	1000	1845-C	46.62485 dpm/mL	07/07/2020	07/07/2021
10/26/2020	Tim Chandler	4.0184	1000	1845-D	46.6086 dpm/mL	10/27/2020	10/27/2021
04/23/2021	Tim Chandler	4.2911	1000	1845-E	49.7716 dpm/mL	04/26/2021	04/26/2022
11/10/2021	Matelon DeFreese	4.211	1000	1845-F	48.8425 dpm/mL	11/10/2021	11/10/2022
05/11/2022	Matelon DeFreese	4.1951	1000	1845-G	48.6581 dpm/mL	05/12/2022	05/11/2023
01/11/2023	Matelon DeFreese	4.1664	1000	1845-H	48.3252 dpm/mL	01/11/2023	01/11/2024
06/27/2023	Matelon DeFreese	4.1464	1000	1845-I	48.093259 dpm/mL	06/27/2023	06/27/2024
03/04/2024	Matelon DeFreese	4.1756	1000	1845-J	48.4319439 dpm/mL	03/04/2024	03/04/2025

10/16/2024	Matelon DeFreese	4.1749	1000	1845-K	48.4238247 dpm/mL	10/17/2024	10/17/2025
02/19/2025	Christina Kimball	.09	250	1845-L	4.1756 dpm/ml	02/19/2025	02/19/2026
04/23/2025	Christina Kimball	.14	250	1845-M	6.4953 dpm/ml	04/23/2025	04/23/2026
01/11/2023	Tim Chandler	4.1664	1000	2073-A	48.3252 dpm/mL	01/11/2023	01/11/2024
01/11/2023	Tim Chandler	4.1664	1000	2074-A	48.3252 dpm/mL	01/11/2023	01/11/2024
10/16/2024	Matelon DeFreese	4.1749	1000	2177-A	48.4238247 dpm/mL	10/17/2024	10/17/2025
10/16/2024	Matelon DeFreese	4.1749	1000	2178-A	48.4238247 dpm/mL	10/17/2024	10/17/2025

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for Th-229 Standard 1845-K

v1.2

Analyst	MXS2
Verification Prep Date	10/17/2024

Tracer Information	
Isotope	Th-232
Serial Number	1513-J
Amount of Std. (mL)	0.2
Expiration Date	4/20/2025

Standard Information	
Isotope	Th-229
Serial Number	1845-K
Isotope Halflife	7.3400E+03 Y
Reference Date	11/29/2017
Ref. Act. (dpm/mL)	48.4238247
Amount of Std. (mL)	0.2
Standard Prep Date	10/16/2024

Std #	Count Date	Activity pCi	Standard dpm/mL
1	10/17/2024	4.160	46.18
2	10/17/2024	4.350	48.29
3	10/17/2024	4.430	49.17
	Mean Value =	4.313	47.878
	Stdev =	0.138684294	1.539395661

	pCi	dpm/mL
Certificate Value* =	**4.3597**	**48.3924**
Two sigma =	0.2774	3.0788
10 % of Mean =	0.4313	4.7878
Rule A (Pass/Fail)	**Pass**	**Pass**
% Recovery	98.94%	98.94%
Rule B (Pass/Fail)	**Pass**	**Pass**
Expiration Date	**10/17/2025**	

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule B = The determined mean value shall be within 5% of the certificate value.

*** Certificate Value is decay corrected to Verification Prep Date.**

The analyst prepared three standard verification sources for Th-229 standard 1845-K using 0.2 mL for each source. Each standard was combined with 0.2 mL of Th-232 standard 1513-J and was diluted in a centrifuge tube containing 4 mL 2M HCl, diluted to 40 mL with DI water. 0.1 mL of neodymium carrier and 5 mL of 48% HF was added to precipitate neodymium (and Thorium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for Th-229 were calculated by comparison to Th-232 certified values.

10/18/2024

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

~~1506~~ 1513
BR 11/30/10

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10/14/10 23
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CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	Th-232	**Customer:**	GEL LABORATORIES, LLC
Half-life:	(1.405 ± 0.006)E+10 years	**P.O. No.:**	7347RD
Catalog No.:	7232	**Reference Date:**	1-Nov-10 12:00 PST
Source No.:	1451-62	**Contained Radioactivity: (Th-232 only)**	50.26 **nCi** 1860 **Bq**

Physical Description:

A. Mass of solution: 5.73256 g in 5 mL flame-sealed ampoule
B. Chemical form: $Th(NO_3)_4$ in H_2O
C. Carrier content: None
D. Density: 1.15 g/mL @ 20°C

Radioimpurities:

Not determined

Radionuclide Concentration: 8.767 nCi/g, 324.4 Bq/g

Method of Calibration:

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement:

A. Type A (random) uncertainty: ± 0.0 %
B. Type B (systematic) uncertainty: ± 3.0 %
C. Uncertainty in aliquot weighing: ± 0.0 %
D. Total uncertainty at the 99% confidence level: ± 3.0 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from NCRP Report No. 58, 1985.
- This solution has a working life of 5 years.

Daniel James Van Dalsem
Quality Control

15-OCT-10
Date

EZIP Ref. No.: 1451-62

RC-S-060-058

Standard Logbook

Serial ID:	1513	**Open/Reference Date:**	01-NOV-10	**Aliquot :**	5.73256 g
Name:	Thorium-232	**Received:**	21-OCT-10	**Density :**	Hand Calculated g/mL
Type:	Source Material	**Expires:**	30-NOV-11	**Logbook Num :**	RC-S-060-058
Employee:	Gregory Ramsay	**Verified:**	28-APR-11	**Lot Number :**	1451-62
Supplier:	Eckert & Ziegler			**Solvent :**	DI water
				Uncertainty :	1.172 PERCENT

Description: in water

Comments: None

Analyte	Concentration	Analyte	Concentration
Thorium-232	324.4 Bq/g		

Standard Traceability Log Rad

Source Material Info	
Parent Code:	1513
Prepared By:	Gregory Ramsay
Carrier Conc:	DI water
Reference Date:	11/01/2010
Ampoule Mass (g):	5.73256 g
Uncertainty:	+/- 1.172 %
LogBook No:	RC-S-060-058
Supplier:	Eckert & Ziegler

A Solution Material Info			
Isotope:	Thorium-232		
Prepared By:	Christina Kimball		
Prep Date:	04/19/2011		
Verification Date:	12/13/2024		
Expiration Date:	12/13/2025		
Primary Code:	1513-A		
Dilution(mL):	250 mL		
Mass of Parent(g):	5.672 g		
Density(g/mL):	0.0227	Balance ID:	60108592

Calculations Converting parent activity to dpm/mL|dpm/g

(Mass of parent(g)) * (Parm Activity (Bq/g)) * (conversion dpm to Bq) / (Dilution Vol) = Parent Activity (dpm/mL)
(Mass of parent(g)) * (Parm Activity (Bq/g)) * (conversion dpm to Bq) / Density (g/mL)/ (Dilution Vol) = Parent Activity (dpm/g)
(5.672 g) * (324.4 Bq/g) * (60 dpm/Bq) / (250 mL) = 441.5992 dpm/mL
(5.672 g) * (324.4 Bq/g) * (60 dpm/Bq) / (0.0227 g/mL) / (250 mL) = 19464.0014 dpm/g

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
04/19/2011	Christina Kimball	5.0665	100	1513-B	22.3299 dpm/mL	04/11/2013	04/11/2014
02/26/2014	Matelon DeFreese	100.0316	1000	1513-C	44.08747 dpm/mL	12/14/2022	12/14/2023
04/18/2014	Christina Kimball	5.0477	100	1513-D	22.247 dpm/mL	07/12/2024	07/12/2025
01/04/2016	Christina Kimball	.2487	100	1513-E	1.096117 dpm/mL	02/11/2020	02/11/2021
08/01/2016	Christina Kimball	2.053	250	1513-F	3.61932 dpm/mL	07/12/2024	07/12/2025
02/21/2020	Christina Kimball	.248	100	1513-G	1.093 dpm/mL	02/16/2023	02/16/2024
11/11/2022	Christina Kimball	.3	100	1513-H	1.3222 dpm/mL	11/14/2022	11/14/2023
12/13/2022	Christina Kimball	.23	100	1513-I	1.0137 dpm/mL	12/20/2023	12/20/2024
04/25/2023	Matelon DeFreese	25.022	250	1513-J	44.1123247 dpm/mL	04/20/2024	04/20/2025

06/16/2023	Christina Kimball	5.02	100	1513-K	22.1249 dpm/mL	06/21/2023	06/21/2024
06/10/2024	Matelon DeFreese	25.0217	250	1513-L	44.1117958 dpm/mL	06/14/2024	06/14/2025
12/13/2024	Christina Kimball	.2598	100	1513-M	1.145 dpm/mL	12/13/2024	12/13/2025

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for Th-232 Standard 1513-L

v1.2

Analyst	MXS2
Verification Prep Date	6/14/2024

Tracer Information	
Isotope	Th-229
Serial Number	1845-J
Amount of Std. (mL)	0.1
Expiration Date	3/4/2025

Standard Information	
Isotope	Th-232
Serial Number	1513-L
Isotope Halflife	1.4050E+10 Y
Reference Date	11/1/2010
Ref. Act. (dpm/mL)	44.1117958
Amount of Std. (mL)	0.1
Standard Prep Date	6/10/2024

Std #	Count Date	Activity pCi	Standard dpm/mL
1	6/17/2024	2.030	45.07
2	6/17/2024	1.970	43.73
3	6/17/2024	1.980	43.96
	Mean Value =	1.993	44.252
	Stdev =	0.032145503	0.713630156

	pCi	dpm/mL
Certificate Value* =	**1.9870**	**44.1118**
Two sigma =	0.0643	1.4273
10 % of Mean =	0.1993	4.4252
Rule A (Pass/Fail)	**Pass**	**Pass**
% Recovery	100.32%	100.32%
Rule B (Pass/Fail)	**Pass**	**Pass**
Expiration Date	**6/14/2025**	

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule B = The determined mean value shall be within 5% of the certificate value.

*** Certificate Value is decay corrected to Verification Prep Date.**

The analyst prepared three standard verification sources for Th-232 standard 1513-L using 0.1 mL for each source. Each standard was combined with 0.1 mL of Th-229 standard 1845-J and was diluted in a centrifuge tube containing 4 mL 2M HCl, diluted to 40 mL with DI water. 0.1 mL of neodymium carrier and 5 mL of 48% HF was added to precipitate neodymium (and Thorium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for Th-232 were calculated by comparison to Th-229 certified values.

7/1/24

1564

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

85621-278
5 mL Liquid in Flame Sealed Vial

Customer: General Engineering Labs/Charleston, SC
P.O. No.: 936814RD, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by the Department Des Applications Et De La Metrologie Des Rayonnements Ionisants (DAMRI), Paris, France. Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
U-232	2.517E+04	3.393E+04	0.5	2.4	4.9	09/12/2011

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: γ-impurities (other than decay products) < 0.1 %, U-233 < 1.20E2 Bq, Am-241 < 5.8E1 Bq. 5.06048 grams 2M HNO3 solution.

Source Prepared by: M Taskaeva
M. I. Taskaeva, Radiochemist

QA Approved:
J. D. McCorvey, QA Manager Alternate

Date: 9/12/11

RECEIVED 9/14/11 AM

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

ANA Form005 Rev. ---

Single Isotope Certificate, Rev 1 9/28/2009

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Standard Logbook

Serial ID:	1564	**Open/Reference Date:**	12-SEP-11	**Aliquot :**	5.06048 g
Name:	Uranium-232	**Received:**	14-SEP-11	**Density :**	Hand Calculated
Type:	Source Material	**Expires:**	26-SEP-14	**Logbook Num :**	RC-S-060-109
Employee:	Ashley Drochter			**Lot Number :**	85621-278
Supplier:	Eckert & Ziegler			**Solvent :**	2M HNO3
				Uncertainty :	2.45 percent

Description: Ampoule

Comments: None

Analyte	Concentration	Analyte	Concentration
Uranium-232	33930 Bq		

Standard Traceability Log Rad

Source Material Info	
Parent Code:	1564
Prepared By:	Ashley Drochter
Carrier Conc:	2M HNO3
Reference Date:	09/12/2011
Ampoule Mass (g):	5.06048 g
Uncertainty:	+/- 2.45 %
LogBook No:	RC-S-060-109
Supplier:	Eckert & Ziegler

A Solution Material Info			
Isotope:	Uranium-232		
Prepared By:	Ashley Drochter		
Prep Date:	11/15/2012		
Verification Date:	01/06/2025		
Expiration Date:	01/06/2026		
Primary Code:	1564-A		
Dilution(mL):	100 mL		
Mass of Parent(g):	4.9067 g		
Density(g/mL):	1.0615	Balance ID:	38080204

Calculations Converting parent activity to dpm/mL|dpm/g

(Mass of parent(g)) * (Parm Activity (Bq)) * (conversion dpm to Bq) / (Ampoule Mass(g) *(Dilution Vol)) = Parent Activity (dpm/mL)
(Mass of parent(g)) * (Parm Activity (Bq)) * (conversion dpm to Bq) / Density / (Ampoule Mass (g) * (Dilution Vol)) = Parent Activity (dpm/g)
(4.9067 g) * (33930 Bq) * (60 dpm/Bq) / (5.06048 g * 100 mL) = 19739.3525 dpm/mL
(4.9067 g) * (33930 Bq) * (60 dpm/Bq) / (1.0615 g/mL)/ (5.06048 g * 100 mL) = 18595.7160 dpm/g

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
11/16/2012	Ashley Drochter	2.6179	1000	1564-B	48.6817 dpm/mL	11/13/2013	11/13/2014
07/26/2021	Christina Kimball	.635	500	1564-BB	23.6166 dpm/mL	07/21/2022	07/21/2023
07/26/2021	Christina Kimball	.635	500	1564-BB Spike	23.6166 dpm/mL	07/21/2022	07/21/2023
01/15/2013	Christina Kimball	.265	250	1564-C	19.7115 dpm/mL	01/13/2014	01/13/2015
12/14/2021	Tim Chandler	2.6412	1000	1564-CC	49.115 dpm/mL	12/15/2021	12/15/2022
02/18/2013	Christina Kimball	.116	500	1564-D	4.31421 dpm/mL	02/16/2015	02/13/2016
04/13/2022	Matelon DeFreese	2.7103	1000	1564-DD	50.4 dpm/mL	04/13/2022	04/13/2023
01/02/2014	Gregory Ramsay	2.6936	1000	1564-E	50.08942 dpm/mL	12/10/2014	12/10/2015
09/21/2022	Tim Chandler	2.6897	1000	1564-EE	50.0169 dpm/mL	09/21/2022	09/21/2023

03/17/2014	Christina Kimball	.266	250	1564-F	19.78584 dpm/mL	03/25/2015	03/25/2016
12/27/2022	Christina Kimball	.61	500	1564-FF	22.6868 dpm/mL	12/02/2024	12/02/2025
12/27/2022	Christina Kimball	.61	500	1564-FF Spike	22.6868 dpm/mL	12/02/2024	12/02/2025
12/10/2014	Tim Chandler	2.6312	1000	1564-G	48.929 dpm/mL	12/10/2014	12/10/2015
01/19/2023	Matelon DeFreese	2.689	1000	1564-GG	50.0039 dpm/mL	01/20/2023	01/20/2024
07/20/2015	Christina Kimball	.266	250	1564-H	19.78584 dpm/mL	07/25/2016	07/25/2017
05/19/2023	Matelon DeFreese	2.685	1000	1564-HH	49.9294975 dpm/mL	05/19/2023	05/19/2024
11/23/2015	Tim Chandler	2.6117	1000	1564-I	48.5664 dpm/mL	11/23/2015	11/23/2016
10/09/2023	Matelon DeFreese	2.6864	1000	1564-II	49.9555315 dpm/mL	10/10/2023	10/10/2024
01/05/2016	Christina Kimball	.119	500	1564-J	4.4258 dpm/mL	12/27/2017	12/27/2018
01/05/2016	Christina Kimball	.119	500	1564-J Spike	4.4258 dpm/mL	12/27/2017	12/27/2018
04/03/2024	Matelon DeFreese	2.6968	1000	1564-JJ	50.1489269 dpm/mL	04/03/2024	04/03/2025
09/20/2016	Tim Chandler	2.6389	1000	1564-K	49.0722 dpm/mL	09/18/2017	09/18/2018
08/12/2024	Matelon DeFreese	2.6799	1000	1564-KK	49.8346593 dpm/mL	08/12/2024	08/12/2025
12/20/2016	Christina Kimball	.276	250	1564-L	20.52974 dpm/mL	12/21/2017	12/21/2018
12/18/2024	Matelon DeFreese	2.6914	1000	1564-LL	49.8346593 dpm/mL	12/18/2024	12/18/2025
06/20/2017	Tim Chandler	2.6611	1000	1564-M	49.4851 dpm/mL	06/19/2018	06/19/2019
01/03/2025	Christina Kimball	.65	500	1564-MM	24.1744 dpm/mL	01/06/2025	01/06/2026
01/03/2025	Christina Kimball	.65	500	1564-MM Spike	24.1744 dpm/mL	01/06/2025	01/06/2026
01/18/2018	Tim Chandler	2.6367	1000	1564-N	49.0313 dpm/mL	04/25/2018	04/25/2019
04/25/2018	Tim Chandler	2.6505	1000	1564-O	49.2879 dpm/mL	04/25/2018	04/25/2019
08/06/2018	Christina Kimball	.106	500	1564-P	3.9423 dpm/mL	12/19/2019	12/19/2020
08/06/2018	Christina Kimball	.106	500	1564-P Spike	3.9423 dpm/mL	12/19/2019	12/19/2020

12/13/2018	Tim Chandler	2.6502	1000	1564-Q	49.2824 dpm/mL	12/13/2018	12/13/2019
01/08/2019	Christina Kimball	.29	250	1564-R	21.571 dpm/mL	01/08/2019	01/08/2020
01/08/2019	Christina Kimball	.29	250	1564-R Spike	21.571 dpm/mL	01/08/2019	01/08/2020
10/01/2019	Tim Chandler	2.6957	1000	1564-S	50.1285 dpm/mL	10/01/2019	10/01/2020
12/18/2019	Christina Kimball	.307	250	1564-T	22.83554 dpm/mL	12/19/2019	12/19/2020
12/18/2019	Christina Kimball	.307	250	1564-T Spike	22.83554 dpm/mL	12/19/2019	12/19/2020
03/31/2020	Tim Chandler	2.6645	1000	1564-U	49.5483 dpm/mL	03/31/2020	03/31/2021
08/14/2020	Christina Kimball	.111	500	1564-V	4.1282 dpm/mL	08/14/2020	08/14/2021
08/14/2020	Christina Kimball	.111	500	1564-V Spike	4.1282 dpm/mL	08/14/2020	08/14/2021
10/13/2020	Tim Chandler	2.6983	1000	1564-W	50.1768 dpm/mL	10/13/2020	10/13/2021
11/04/2020	Christina Kimball	.315	250	1564-X	23.4306 dpm/mL	11/04/2020	11/04/2021
11/04/2020	Christina Kimball	.315	250	1564-X Spike	23.4306 dpm/mL	11/04/2020	11/04/2021
03/19/2021	Matelon DeFreese	2.7599	1000	1564-Y	51.32232 dpm/mL	03/19/2021	03/19/2022
03/19/2021	Matelon DeFreese	2.7599	1000	1564-Z	51.32232 dpm/mL	03/20/2021	03/20/2022

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for U-232 Standard 1564-LL

v1.2

Analyst	MXS2
Verification Prep Date	12/18/2024

Tracer Information	
Isotope	U-238
Serial Number	1600-R
Amount of Std. (mL)	0.2
Expiration Date	6/10/2025

Standard Information	
Isotope	U-232
Serial Number	1564-LL
Isotope Halflife	68.9000 Y
Reference Date	9/12/2011
Ref. Act. (dpm/mL)	49.8346593
Amount of Std. (mL)	0.2
Standard Prep Date	12/18/2024

Std #	Count Date	Activity pCi	Standard dpm/mL
1	12/21/2024	3.970	44.07
2	12/19/2024	3.930	43.62
3	12/19/2024	3.830	42.51
Mean Value =		3.910	43.401
Stdev =		0.072111026	0.800432383

	pCi	dpm/mL
Certificate Value* =	**3.9286**	**43.6078**
Two sigma =	0.1442	1.6009
10 % of Mean =	0.3910	4.3401
Rule A (Pass/Fail)	**Pass**	**Pass**
% Recovery	99.53%	99.53%
Rule B (Pass/Fail)	**Pass**	**Pass**
Expiration Date	**12/18/2025**	

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule B = The determined mean value shall be within 5% of the certificate value.

*** Certificate Value is decay corrected to Verification Prep Date.**

The analyst prepared three standard verification sources for U-232 standard 1564-LL using 0.2 mL for each source. Each standard was combined with 0.2 mL of U-238 standard 1600-R and was diluted in a centrifuge tube containing 15 mL 0.1M HCl and 25 mL of DI water. 0.1 mL of neodymium carrier, 0.5 mL of titanium (III) chloride, and 5 mL of 48% HF was added to precipitate neodymium (and Uranium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for U-232 were calculated by comparison to U-238 certified values.

02/21/24

Eckert & Ziegler
Isotope Products

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Fax 661·257·8303

HE 3/26/12 1600

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	U-238 (Nat)	**Customer:**	GENERAL ENGINEERING LABS.
Half-life:	(4.468 ± 0.005)E+09 years	**P.O. No.:**	936823 RD
Catalog No.:	7338	**Reference Date:**	15-Apr-12 12:00 PST
Source No.:	1577-71-2	**Contained Radioactivity: (Total Uranium)**	1.023 µCi 37.85 kBq

Physical Description:

A. Mass of solution: 7.05210 g in 10 mL flame-sealed ampoule
B. Chemical form: $UO_2(NO_3)_2$ in dilute HNO_3
C. Carrier content: None
D. Density: Approximately 1.41 g/mL @ 20°C

Radioimpurities:

See Technical Data Sheet

Radionuclide Concentration: 0.1451 µCi/g, 5.369 kBq/g

Method of Calibration:

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement:

A. Type A (random) uncertainty: ± 0.0 %
B. Type B (systematic) uncertainty: ± 3.0 %
C. Uncertainty in aliquot weighing: ± 0.0 %
D. Total uncertainty at the 99% confidence level: ± 3.0 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- This solution has a working life of 5 years.

Daniel James Van Dalsem
Quality Control

21-Mar-12
Date

EZIP Ref. No.: 1577-71

RC-S-065-030a

ISO 9001 CERTIFIED

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661·309·1010
Fax 661·257·8303

U-238 Natural Technical Data

The U-238 Natural used to prepare your order was taken from Eckert & Ziegler Isotope Products Lot #4550102
It had the following composition as of 9 Feb 10:

Nuclide	Atom %	Activity %
U-234	0.0055	49.086
U-235	0.7200	2.241
U-238	99.274	48.673

Isotopic composition provided by New Brunswick Laboratory.

If you have any question, please contact Eckert & Ziegler Isotope Products Technical Service: (661) 309-1010

ISO 9001 CERTIFIED

Medical Imaging Laboratory
24937 Avenue Tibbitts Valencia, California 91355

Industrial Gauging Laboratory
1800 North Keystone Street Burbank, California 91504

Standard Logbook

Serial ID:	1600	**Open/Reference Date:**	15-APR-12	**Aliquot :**	7.0521 g
Name:	Uranium-238	**Received:**	24-MAR-12	**Density :**	Hand Calculated g/mL
Type:	Source Material	**Expires:**	26-MAR-15	**Logbook Num :**	RC-S-065-030
Employee:	Ashley Drochter			**Lot Number :**	4550102
Supplier:	Eckert & Ziegler			**Solvent :**	UO2(NO3)2 in dilute HNO3
				Uncertainty :	1.17 percent

Description: Ampoule

Comments: None

Analyte	Concentration	Analyte	Concentration
Uranium-238	18.42 kbq		

Standard Traceability Log Rad

Source Material Info	
Parent Code:	1600
Prepared By:	Ashley Drochter
Carrier Conc:	UO2(NO3)2 in dilute HNO3
Reference Date:	04/15/2012
Ampoule Mass (g):	7.0521 g
Uncertainty:	+/- 1.17 %
LogBook No:	RC-S-065-030
Supplier:	Eckert & Ziegler

A Solution Material Info			
Isotope:	Uranium-238		
Prepared By:	Ashley Drochter		
Prep Date:	09/04/2012		
Verification Date:	06/10/2024		
Expiration Date:	06/10/2025		
Primary Code:	1600-A		
Dilution(mL):	100 mL		
Mass of Parent(g):	6.8204 g		
Density(g/mL):	1.0789	Balance ID:	38080204

Calculations Converting parent activity to dpm/mL|dpm/g

(Mass of parent(g)) * (Parm Activity (kbq)) * (conversion dpm to kbq) / (Ampoule Mass(g) *(Dilution Vol)) = Parent Activity (dpm/mL)
(Mass of parent(g)) * (Parm Activity (kbq)) * (conversion dpm to kbq) / Density / (Ampoule Mass (g) * (Dilution Vol)) = Parent Activity (dpm/g)
(6.8204 g) * (18.42 kbq) * (60000 dpm/kbq) / (7.0521 g * 100 mL) = 10688.8814 dpm/mL
(6.8204 g) * (18.42 kbq) * (60000 dpm/kbq) / (1.0789 g/mL)/ (7.0521 g * 100 mL) = 9907.0626 dpm/g

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
09/04/2012	Ashley Drochter	1.4579	500	1600-B	28.8913 dpm/mL	09/04/2012	09/04/2013
09/11/2012	Ashley Drochter	3.0288	500	1600-C	60.0219 dpm/mL	09/04/2013	09/04/2014
03/27/2014	Tim Chandler	3.0445	500	1600-D	60.3241 dpm/mL	03/18/2015	03/18/2016
07/24/2015	Tim Chandler	3.0177	500	1600-E	59.7931 dpm/mL	07/10/2017	07/10/2018
02/16/2017	Tim Chandler	3.0261	500	1600-F	59.9595 dpm/mL	02/06/2018	02/06/2019
10/10/2017	Christina Kimball	.539	250	1600-G	21.3596 dpm/mL	01/06/2025	01/06/2026
04/02/2018	Tim Chandler	3.0544	500	1600-H	60.5203 dpm/mL	03/29/2019	03/29/2020

06/21/2019	Tim Chandler	3.0536	500	1600-I	60.5044 dpm/mL	06/21/2019	06/21/2020
01/30/2020	Tim Chandler	3.0563	500	1600-J	60.5579 dpm/mL	01/26/2021	01/26/2022
03/13/2020	Christina Kimball	.01222	500	1600-K	.24207 dpm/mL	03/15/2022	03/15/2023
04/23/2021	Tim Chandler	3.0507	500	1600-L	60.4469 dpm/mL	04/26/2021	04/26/2022
01/21/2022	Matelon DeFreese	3.1075	500	1600-M	61.5723941 dpm/mL	01/21/2022	01/21/2023
05/19/2022	Christina Kimball	.01275	500	1600-N	.2527 dpm/mL	05/14/2024	05/14/2025
09/06/2022	Matelon DeFreese	3.1499	500	1600-O	62.412513 dpm/mL	09/06/2022	09/06/2023
05/08/2023	Matelon DeFreese	6.0105	1000	1600-P	59.5463998 dpm/mL	05/03/2024	05/03/2025
06/05/2024	Christina Kimball	.012077	500	1600-Q	.2393 dpm/mL	06/05/2024	06/05/2025
06/10/2024	Matelon DeFreese	6.011	1000	1600-R	59.5513533 dpm/mL	06/10/2024	06/10/2025

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for U-238 Standard 1600-R

v1.2

Analyst	MXS2
Verification Prep Date	6/10/2024

Tracer Information	
Isotope	U-232
Serial Number	1564-JJ
Amount of Std. (mL)	0.2
Expiration Date	4/3/2025

Standard Information	
Isotope	U-238
Serial Number	1600-R
Isotope Halflife	4.4680E+09 Y
Reference Date	4/15/2012
Ref. Act. (dpm/mL)	59.5513533
Amount of Std. (mL)	0.2
Standard Prep Date	6/10/2024

Std #	Count Date	Activity pCi	Standard dpm/mL
1	6/12/2024	5.580	61.94
2	6/11/2024	5.280	58.61
3	6/12/2024	5.130	56.94
Mean Value =		5.330	59.163
Stdev =		0.229128785	2.543329511

	pCi	dpm/mL
Certificate Value* =	**5.3650**	**59.5514**
Two sigma =	0.4583	5.0867
10 % of Mean =	0.5330	5.9163
Rule A (Pass/Fail)	**Pass**	**Pass**
% Recovery	99.35%	99.35%
Rule B (Pass/Fail)	**Pass**	**Pass**
Expiration Date	**6/10/2025**	

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule B = The determined mean value shall be within 5% of the certificate value.

*** Certificate Value is decay corrected to Verification Prep Date.**

The analyst prepared three standard verification sources for U-238 standard 1600-R using 0.2 mL for each source. Each standard was combined with 0.2 mL of U-232 standard 1564-JJ and was diluted in a centrifuge tube containing 20 mL of 0.1M HCL diluted to 40 mL with DI water. 0.1 mL of neodymium carrier, 0.5 mL of titanium (III) chloride, and 5 mL of 48% HF was added to precipitate neodymium (and Uranium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for U-238 were calculated by comparison to U-232 certified values.

6/14/24

Runlogs

Instrument Run Log

Instrument Type: ALPHA SPECTROMETER **Batch ID: 2786436**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1206081464	LCS	RM3	1136	APR-28-25 10:14:03	DONE		21-APR-25 15:53
719378009	SAMPLE	RM3	1139	APR-28-25 10:16:32	DONE		22-APR-25 12:17
1206081462	MB	RM3	1140	APR-28-25 10:16:34	DONE		22-APR-25 12:54
719378002	SAMPLE	RM3	1015	MAY-03-25 08:04:17	DONE		01-MAY-25 12:11
719378007	SAMPLE	RM3	1016	MAY-03-25 08:04:17	DONE		01-MAY-25 12:11
1206081463	DUP	RM3	1017	MAY-03-25 08:04:17	DONE		01-MAY-25 14:30

Instrument Run Log

Instrument Type: ALPHA SPECTROMETER **Batch ID: 2786437**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
719378002	SAMPLE	RM3	1035	APR-27-25 11:46:55	DONE		05-APR-25 12:16
719378009	SAMPLE	RM3	1045	APR-27-25 11:46:57	DONE		05-APR-25 12:18
1206081465	MB	RM3	1046	APR-27-25 11:46:57	DONE		05-APR-25 12:18
1206081466	DUP	RM3	1047	APR-27-25 11:46:57	DONE		05-APR-25 12:18
1206081467	LCS	RM3	1043	APR-27-25 11:46:57	DONE		05-APR-25 12:17
719378007	SAMPLE	RM3	1037	MAY-02-25 11:15:28	DUSE		05-APR-25 12:16

Instrument Run Log

Instrument Type: ALPHA SPECTROMETER **Batch ID: 2792485**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
719378007	SAMPLE	RM3	1025	MAY-08-25 08:55:47	DONE		06-MAY-25 11:50
1206094649	MB	RM3	1026	MAY-08-25 08:55:47	DONE		06-MAY-25 11:50
1206094650	DUP	RM3	1027	MAY-08-25 08:55:47	DONE		06-MAY-25 11:51
1206094651	LCS	RM3	1028	MAY-08-25 08:55:47	DONE		06-MAY-25 11:52

Gamma Spectroscopy
Raw Data

Batch 2781510 Check-list

This check-list was completed on 12-MAY-25 by Spencer Collins

This batch was reviewed by Michael Hilton on 12-MAY-25 and Spencer Collins on 12-MAY-25.

Batch ID: 2781510 **Product:** GSCGAMMS **Description:** Gamma Spec Solid RAD A-013

#	Criteria	Yes	No	Comments
Preparation Information				
1	Did any sample(s) require dilution?		No	
2	Were all of the samples homogenous? Include sample description if not homogenous	Yes		
3	Was the preservation correct for this analysis?	Yes		
Internal Checklist Information				
4	Are instrument source checks within limits?	Yes		
5	Have sample historical results been reviewed for this batch?	Yes		
Technical Information				
6	Were any additional radionuclides added that were not requested by the client?		No	
7	Were all the samples prepared/analyzed within the required holding time period?	Yes		
Quality Control (QC) Information				
8	Was the method blank (MB) within the acceptance criteria?	Yes		
9	Were the laboratory control sample (LCS/LCSD) recoveries within the acceptance limits?	Yes		
10	Were the relative percent differences and/or error (RPD/RER) between the sample and its duplicate within acceptable limits?	Yes		
11	Has the method required detection limit been met?	Yes		
Miscellaneous Information				
12	Are sample-specific MDA/MDC calculated and reported?	Yes		

Prep Logbook

Gamma Spectroscopy

Batch ID: **2781510**
Analyst: Rebekah Futch (RXF2)
Method: DOE HASL 300, 4.5.2.3/Ga-01-R
Lab SOP: GL-RAD-A-013 REV# 29
Instrument: No instrument-manual method

Due Dates for Lab: 10-MAY-2025 **Hold: 20-APR-2025** **Package: 11-MAY-2025** **SDG: 12-M**

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units
LCS	1206070204	84680-278	1556	1	mL

#	Sample ID	Prep Date	Min RDL (pCi/g)	Dry or Wet	Unadjusted Aliquot (g)	Aliquot (g)	Adjusted Aliquot (g)
1	719378001	16-APR-2025	.1	Dry to Dry	112.21	112.21	112.21
2	719378002	16-APR-2025	.1	Dry to Dry	82.62	82.62	82.62
3	719378003	16-APR-2025	.1	Dry to Dry	92.31	92.31	92.31
4	719378004	16-APR-2025	.1	Dry to Dry	123.64	123.64	123.64
5	719378005	16-APR-2025	.1	Dry to Dry	130.82	130.82	130.82
6	719378006	16-APR-2025	.1	Dry to Dry	103.83	103.83	103.83
7	719378007	16-APR-2025	.1	Dry to Dry	94.89	94.89	94.89
8	719378008	16-APR-2025	.1	Dry to Dry	120.85	120.85	120.85
9	719378009	16-APR-2025	.1	Dry to Dry	105.45	105.45	105.45
10	719378010	16-APR-2025	.1	Dry to Dry	88.83	88.83	88.83
11	719378011	16-APR-2025	.1	Dry to Dry	105.91	105.91	105.91
12	719378012	16-APR-2025	.1	Dry to Dry	118.43	118.43	118.43
13	1206070202 MB	16-APR-2025	.1	Dry to Wet	130.82	130.82	130.82
14	1206070203 DUP (719378001)	16-APR-2025	.1	Dry to Dry	112.21	112.21	112.21
15	1206070204 LCS	16-APR-2025	.1	Dry to Wet	115	115	115

Reagent/Solvent Lot ID	Description	Amount

Comments:

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:23:43.93

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378001.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM06.CNF;996
                                         Background date  : 4-MAY-2025 09:26:24.
Sample date      : 8-APR-2025 09:10:00. Acquisition date : 10-MAY-2025 10:23:08
Sample ID        : G719378001           Sample quantity  : 1.12210E+02 GRAM
Detector name    : GAM06                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.63  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
*****************************************************************************
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.46*	17	120	0.95	127.30	124	7	4.64E-03	115.5	
2	4	74.79*	121	144	1.12	149.92	144	17	3.37E-02	18.9	1.83E+00
3	4	77.10*	182	124	1.13	154.55	144	17	5.06E-02	13.1	
4	0	84.16	9	146	0.68	168.65	164	6	2.60E-03	205.5	
5	0	88.39	124	179	3.62	177.11	172	11	3.46E-02	22.6	
6	0	92.90*	82	151	1.40	186.12	183	10	2.29E-02	31.1	
7	0	150.81	27	77	1.72	301.81	297	7	7.54E-03	57.3	
8	6	184.11	11	19	1.08	368.36	367	10	3.12E-03	55.0	1.84E+00
9	6	185.91*	64	72	1.25	371.94	367	10	1.78E-02	26.8	
10	0	198.81*	18	56	1.44	397.73	395	7	4.96E-03	78.4	
11	0	209.24	53	86	1.01	418.56	414	11	1.46E-02	37.0	
12	4	238.59*	328	46	1.07	477.21	472	27	9.12E-02	6.4	2.40E+00
13	4	241.49	109	63	1.77	483.01	472	27	3.01E-02	20.9	
14	4	246.56	35	53	1.78	493.13	472	27	9.71E-03	50.0	
15	0	272.89*	84	140	8.28	545.75	536	26	2.33E-02	39.9	
16	0	294.93	167	75	1.15	589.78	583	12	4.63E-02	13.0	
17	1	328.07	24	22	1.47	656.00	650	36	6.66E-03	48.6	1.88E+00
18	1	338.11*	66	32	1.40	676.08	650	36	1.83E-02	19.5	
19	0	351.90*	266	54	1.19	703.64	698	12	7.39E-02	8.4	
20	0	454.89	17	41	1.43	909.46	902	15	4.78E-03	84.7	
21	0	463.51	25	28	2.31	926.67	922	11	6.85E-03	46.0	
22	0	510.65*	33	45	2.02	1020.88	1013	19	9.12E-03	57.9	
23	0	559.66	43	40	8.91	1118.85	1107	23	1.19E-02	41.5	
24	0	582.82*	109	24	1.81	1165.14	1158	14	3.04E-02	13.8	
25	0	590.97	8	21	0.52	1181.43	1177	7	2.33E-03	96.6	
26	0	609.09*	159	58	1.34	1217.64	1211	15	4.41E-02	13.3	
27	0	663.18	22	27	4.47	1325.77	1319	14	6.22E-03	54.2	
28	0	726.31	36	11	2.06	1451.95	1443	14	9.92E-03	25.6	
29	0	743.65	8	9	0.62	1486.63	1482	9	2.10E-03	80.7	
30	0	891.47	16	2	3.15	1782.13	1777	10	4.34E-03	31.5	
31	0	910.82*	71	11	1.71	1820.83	1814	14	1.97E-02	15.8	
32	0	933.58	19	8	0.94	1866.32	1862	10	5.35E-03	35.1	
33	0	968.74*	23	21	1.12	1936.62	1931	12	6.52E-03	45.1	
34	0	1053.11	16	14	0.91	2105.31	2098	17	4.50E-03	56.6	

Sample ID : G719378001 Acquisition date : 10-MAY-2025 10:23:08

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1120.04	48	16	2.07	2239.15	2232	16	1.33E-02	23.6	
36	0	1231.23	15	20	5.45	2461.50	2450	20	4.12E-03	78.4	
37	0	1325.00	6	8	0.55	2649.04	2640	11	1.68E-03	100.4	
38	0	1459.98*	267	0	2.40	2919.02	2911	16	7.42E-02	6.2	
39	0	1763.11	37	0	2.49	3525.43	3517	15	1.03E-02	16.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:23:45

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378001.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 09:10:00	Acquisition date	: 10-MAY-2025 10:23:08
Sample ID	: G719378001	Sample quantity	: 112.21 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA6	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.63 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	251	10.66*	9.781E-01	1.613E+01	1.613E+01	12.38
CD-109	88.03	130	3.70*	5.338E+00	4.411E+00	4.629E+00	45.29
SN-126	64.28	18	9.60	2.674E+00	4.605E-01	4.605E-01	230.99
	86.94	130	8.90	5.338E+00	1.834E+00	1.834E+00	45.29
	87.57	130	37.00*	5.338E+00	4.411E-01	4.411E-01	45.29
TL-208	277.37	------	6.60	4.083E+00	------	Line Not Found	------
	583.19	107	85.00*	2.279E+00	3.686E-01	3.686E-01	27.63
	860.56	------	12.50	1.596E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.894E+00	------	Line Not Found	------
	351.06	265	12.92*	3.416E+00	4.011E+00	4.011E+00	16.88
BI-212	727.33	35	6.67*	1.873E+00	1.850E+00	1.850E+00	51.27
	1620.50	------	1.47	9.084E-01	------	Line Not Found	------
PB-212	74.82	128	10.28	4.116E+00	2.019E+00	2.019E+00	37.70
	77.11	192	17.10	4.368E+00	1.715E+00	1.715E+00	26.28
	238.63	331	43.60*	4.553E+00	1.116E+00	1.116E+00	12.84
	300.09	------	3.30	3.852E+00	------	Line Not Found	------
BI-214	609.32	155	45.49*	2.194E+00	1.037E+00	1.037E+00	26.60
	1120.29	46	14.92	1.237E+00	1.656E+00	1.656E+00	47.14
	1764.49	35	15.30	8.668E-01	1.744E+00	1.744E+00	32.88
PB-214	74.82	128	5.80	4.116E+00	3.578E+00	3.578E+00	37.70
	77.11	192	9.70	4.368E+00	3.024E+00	3.024E+00	26.28
	87.09	130	3.41	5.338E+00	4.786E+00	4.786E+00	45.29
	242.00	109	7.25	4.514E+00	2.237E+00	2.237E+00	41.76
	295.22	167	18.42	3.902E+00	1.555E+00	1.555E+00	25.90
	351.93	265	35.60*	3.416E+00	1.456E+00	1.456E+00	16.88
RN-222	609.32	155	45.49*	2.194E+00	1.037E+00	1.037E+00	26.60
	1120.29	46	14.92	1.237E+00	1.656E+00	1.656E+00	47.14
	1764.49	35	15.30	8.668E-01	1.744E+00	1.744E+00	32.88
RA-224	240.99	109	4.10*	4.514E+00	3.956E+00	3.956E+00	41.76
RA-226	74.82	128	5.80	4.116E+00	3.578E+00	3.578E+00	37.70
	77.11	192	9.70	4.368E+00	3.024E+00	3.024E+00	26.28
	87.09	130	3.41	5.338E+00	4.786E+00	4.786E+00	45.29
	242.00	109	7.25	4.514E+00	2.237E+00	2.237E+00	41.76
	295.22	167	18.42	3.902E+00	1.555E+00	1.555E+00	25.90
	351.93	265	35.60*	3.416E+00	1.456E+00	1.456E+00	16.88
AC-228	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	65	11.27	3.522E+00	1.103E+00	1.103E+00	38.93
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	68	25.80*	1.511E+00	1.168E+00	1.168E+00	31.52
	968.97	22	15.80	1.423E+00	6.684E-01	6.684E-01	90.25
RA-228	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	65	11.27	3.522E+00	1.103E+00	1.103E+00	38.93
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	68	25.80*	1.511E+00	1.168E+00	1.168E+00	31.52
	968.97	22	15.80	1.423E+00	6.684E-01	6.684E-01	90.25
TH-228	74.82	128	10.28	4.116E+00	2.019E+00	2.019E+00	37.70
	77.11	192	17.10	4.368E+00	1.715E+00	1.715E+00	26.28
	238.63	331	43.60*	4.553E+00	1.116E+00	1.116E+00	12.84
	300.09	------	3.30	3.852E+00	------	Line Not Found	------

Sample ID : G719378001 Acquisition date : 10-MAY-2025 10:23:08

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-229	85.43	10	14.70	5.024E+00	8.898E-02	8.898E-02	410.94
	88.47	130	24.00	5.338E+00	6.800E-01	6.800E-01	45.29
	193.51	------	4.41*	5.241E+00	------	Line Not Found	------
	210.85	------	2.80	4.958E+00	------	Line Not Found	------
TH-230	74.82	128	5.80	4.116E+00	3.578E+00	3.578E+00	37.70
	77.11	192	9.70	4.368E+00	3.024E+00	3.024E+00	26.28
	87.09	130	3.41	5.338E+00	4.786E+00	4.786E+00	45.29
	242.00	109	7.25	4.514E+00	2.237E+00	2.237E+00	41.76
	295.22	167	18.42	3.902E+00	1.555E+00	1.555E+00	25.90
	351.93	265	35.60*	3.416E+00	1.456E+00	1.456E+00	16.88
TH-232	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	65	11.27	3.522E+00	1.103E+00	1.103E+00	38.93
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	68	25.80*	1.511E+00	1.168E+00	1.168E+00	31.52
	968.97	22	15.80	1.423E+00	6.684E-01	6.684E-01	90.25
PA-234M	63.29	18	3.70*	2.674E+00	1.195E+00	1.195E+00	230.99
	92.59	86	4.23	5.610E+00	2.423E+00	2.423E+00	62.17
TH-234	63.29	18	3.70*	2.674E+00	1.195E+00	1.195E+00	230.99
	92.59	86	4.23	5.610E+00	2.423E+00	2.423E+00	62.17
U-234	74.82	128	5.80	4.116E+00	3.578E+00	3.578E+00	37.70
	77.11	192	9.70	4.368E+00	3.024E+00	3.024E+00	26.28
	87.09	130	3.41	5.338E+00	4.786E+00	4.786E+00	45.29
	242.00	109	7.25	4.514E+00	2.237E+00	2.237E+00	41.76
	295.22	167	18.42	3.902E+00	1.555E+00	1.555E+00	25.90
	351.93	265	35.60*	3.416E+00	1.456E+00	1.456E+00	16.88
U-238	63.29	18	3.70*	2.674E+00	1.195E+00	1.195E+00	230.99
	92.59	86	4.23	5.610E+00	2.423E+00	2.423E+00	62.17
AM-243	43.53	------	5.90	3.750E-01	------	Line Not Found	------
	74.66	128	67.20*	4.116E+00	3.088E-01	3.088E-01	37.70
ANH-511	511.00	32	100.00*	2.547E+00	8.455E-02	8.455E-02	115.85

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:23:46.26

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378001.CNF;1  *
* Acquisition date : 10-MAY-2025 10:23:08 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:10:00 Analyst initials: RXF2            *
* Sample ID        : G719378001           Sample Quantity : 1.1221E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-SEP-2024 11:03:33 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.613E+01	1.957E+00	7.441E-01
CD-109	4.629E+00	2.054E+00	1.503E+00
SN-126	4.411E-01	1.958E-01	1.440E-01
TL-208	3.686E-01	9.980E-02	7.214E-02
BI-211	4.011E+00	6.634E-01	3.921E-01
BI-212	1.850E+00	9.293E-01	9.293E-01
PB-212	1.116E+00	1.404E-01	1.204E-01
BI-214	1.037E+00	2.702E-01	1.649E-01
PB-214	1.456E+00	2.408E-01	1.426E-01
RN-222	1.037E+00	2.702E-01	1.649E-01
RA-224	3.956E+00	1.619E+00	1.291E+00
RA-226	1.456E+00	2.408E-01	1.426E-01
AC-228	1.168E+00	3.607E-01	3.490E-01
RA-228	1.168E+00	3.607E-01	3.490E-01
TH-228	1.116E+00	1.404E-01	1.204E-01
TH-229	-9.825E-02	5.529E-01	9.709E-01
TH-230	1.456E+00	2.407E-01	1.426E-01
TH-232	1.168E+00	3.607E-01	3.490E-01
PA-234M	1.195E+00	2.704E+00	2.775E+00
TH-234	1.195E+00	2.704E+00	2.775E+00
U-234	1.456E+00	2.407E-01	1.426E-01
U-238	1.195E+00	2.704E+00	2.775E+00
AM-243	3.088E-01	1.141E-01	9.788E-02
ANH-511	8.455E-02	9.598E-02	5.704E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.574E-01	4.856E-01	9.523E-01	NOT IDENT.
NA-22	4.320E-02	6.423E-02	1.353E-01	NOT IDENT.
NA-24	0.000E+00	1.526E+14	0.000E+00	SHORT HLIF
AL-26	4.394E-04	4.376E-02	9.412E-02	NOT IDENT.
SC-46	1.405E-02	5.145E-02	9.855E-02	FAIL ABUN
V-48	3.156E-02	1.567E-01	3.273E-01	NOT IDENT.

CR-51	9.241E-02	5.797E-01	1.142E+00	NOT IDENT.
MN-52	-5.395E-01	2.120E+00	4.301E+00	FAIL ABUN
MN-54	8.983E-03	4.606E-02	9.309E-02	NOT IDENT.
CO-56	1.284E-02	5.667E-02	1.153E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.729E-02	2.897E-02	5.023E-02	NOT IDENT.
CO-58	-1.550E-02	4.984E-02	9.488E-02	NOT IDENT.
FE-59	-6.781E-02	1.384E-01	2.452E-01	NOT IDENT.
CO-60	2.357E-03	4.380E-02	8.971E-02	NOT IDENT.
ZN-65	-1.125E-01	1.426E-01	1.902E-01	NOT IDENT.
GE-68	1.368E+00	1.466E+00	3.403E+00	NOT IDENT.
AS-73	8.407E-01	1.190E+00	2.450E+00	NOT IDENT.
AS-74	-9.741E-03	2.333E-01	4.292E-01	NOT IDENT.
SE-75	5.060E-03	5.833E-02	1.030E-01	NOT IDENT.
BR-77	0.000E+00	3.058E+03	0.000E+00	SHORT HLIF
SR-82	3.842E-01	6.728E-01	1.421E+00	NOT IDENT.
RB-83	6.812E-02	9.595E-02	1.981E-01	NOT IDENT.
RB-84	-2.339E-02	1.080E-01	2.084E-01	NOT IDENT.
KR-85	3.224E+00	7.490E+00	1.501E+01	NOT IDENT.
SR-85	2.023E-02	4.741E-02	9.499E-02	NOT IDENT.
RB-86	2.246E-01	1.819E+00	3.644E+00	NOT IDENT.
Y-88	8.839E-03	5.756E-02	1.266E-01	NOT IDENT.
Y-91	-4.773E+01	3.474E+01	4.799E+01	NOT IDENT.
NB-94	3.121E-02	4.113E-02	8.479E-02	NOT IDENT.
NB-95	-7.514E-03	6.692E-02	1.279E-01	NOT IDENT.
NB-95M	8.133E-03	1.913E-01	3.089E-01	NOT IDENT.
ZR-95	7.521E-02	1.093E-01	2.343E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.237E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.195E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	7.782E+36	0.000E+00	SHORT HLIF
RH-101	-3.307E-02	3.382E-02	5.664E-02	FAIL ABUN
RH-102	-2.900E-02	7.056E-02	1.223E-01	NOT IDENT.
RU-103	-4.502E-03	6.043E-02	1.135E-01	FAIL ABUN
RH-106	7.273E-02	3.973E-01	7.616E-01	NOT IDENT.
RU-106	7.273E-02	3.973E-01	7.616E-01	NOT IDENT.
AG-108M	-1.453E-02	3.178E-02	5.701E-02	NOT IDENT.
AG-110	1.069E+00	9.370E-01	1.946E+00	NOT IDENT.
AG-110M	1.975E-02	5.627E-02	1.199E-01	NOT IDENT.
SN-113	-2.742E-02	5.978E-02	1.074E-01	NOT IDENT.
CD-115	0.000E+00	2.904E+03	0.000E+00	SHORT HLIF
SN-117M	8.834E-02	1.365E-01	2.617E-01	NOT IDENT.
SB-122	0.000E+00	1.930E+02	0.000E+00	SHORT HLIF
TE-123M	2.756E-02	3.190E-02	6.257E-02	NOT IDENT.
SB-124	1.111E-01	1.329E-01	3.387E-01	NOT IDENT.
SB-125	9.827E-02	1.133E-01	2.341E-01	FAIL ABUN
TE-125M	2.427E+00	1.266E+01	2.381E+01	NOT IDENT.
I-126	-3.510E-01	7.323E-01	1.074E+00	NOT IDENT.
SB-126	4.898E-01	5.304E-01	1.061E+00	NOT IDENT.
SB-127	1.507E+01	3.299E+01	6.615E+01	NOT IDENT.
I-131	-2.601E-01	5.146E-01	9.317E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.075E+01	0.000E+00	SHORT HLIF
BA-133	-2.107E-02	4.655E-02	7.482E-02	NOT IDENT.
I-133	0.000E+00	6.156E+09	0.000E+00	SHORT HLIF
CS-134	5.488E-02	4.808E-02	1.100E-01	NOT IDENT.
I-135	0.000E+00	3.218E+34	0.000E+00	SHORT HLIF
CS-136	8.986E-02	3.286E-01	6.146E-01	FAIL ABUN
BA-137M	3.604E-02	5.119E-02	1.019E-01	NOT IDENT.
CS-137	3.807E-02	5.408E-02	1.076E-01	NOT IDENT.
LA-138	7.021E-03	4.930E-02	1.162E-01	NOT IDENT.
CE-139	-3.108E-02	3.450E-02	5.665E-02	NOT IDENT.
BA-140	2.673E-01	8.046E-01	1.582E+00	NOT IDENT.
LA-140	2.603E-01	2.091E-01	6.110E-01	FAIL ABUN
CE-141	-4.758E-02	1.035E-01	1.797E-01	NOT IDENT.
CE-143	0.000E+00	7.817E+05	0.000E+00	SHORT HLIF
CE-144	1.063E-01	2.320E-01	4.383E-01	NOT IDENT.
PM-144	1.526E-02	4.044E-02	8.021E-02	NOT IDENT.
PR-144	1.152E+00	3.054E+00	6.056E+00	NOT IDENT.
PM-146	6.308E-02	1.047E-01	1.051E-01	FAIL ABUN
ND-147	1.364E+00	2.208E+00	4.412E+00	NOT IDENT.
PM-147	-1.618E+02	8.217E+02	1.478E+03	NOT IDENT.
PM-149	0.000E+00	1.910E+04	0.000E+00	SHORT HLIF
EU-150	1.405E-03	2.760E-02	5.361E-02	FAIL ABUN
EU-152	-3.588E-02	1.150E-01	1.896E-01	NOT IDENT.
GD-153	-4.344E-02	9.677E-02	1.603E-01	NOT IDENT.
EU-154	1.249E-01	1.811E-01	3.822E-01	NOT IDENT.
EU-155	6.057E-02	1.057E-01	2.064E-01	NOT IDENT.

TB-160	-5.965E-02	1.570E-01	2.955E-01	NOT IDENT.
HO-166M	-2.705E-02	6.794E-02	1.175E-01	FAIL ABUN
TM-171	-9.116E+00	2.265E+01	4.291E+01	NOT IDENT.
HF-172	-4.413E-02	2.128E-01	3.831E-01	FAIL ABUN
LU-172	6.650E-02	8.022E-02	1.785E-01	FAIL ABUN
LU-176	-1.744E-02	2.718E-02	4.904E-02	FAIL ABUN
HF-181	5.475E-03	5.979E-02	1.163E-01	NOT IDENT.
TA-182	2.497E-02	2.616E-01	4.950E-01	FAIL ABUN
RE-183	2.150E-01	2.599E-01	5.371E-01	NOT IDENT.
RE-184	1.788E-01	2.338E-01	4.993E-01	NOT IDENT.
W-188	1.355E+00	9.675E+00	1.723E+01	FAIL ABUN
IR-192	-4.346E-03	4.338E-02	8.290E-02	FAIL ABUN
HG-203	3.253E-02	5.175E-02	1.058E-01	NOT IDENT.
TL-204	-3.568E+00	5.902E+00	9.868E+00	NOT IDENT.
BI-207	-2.010E-03	6.963E-02	1.341E-01	FAIL ABUN
BI-210	-4.761E-01	5.049E+00	9.805E+00	NOT IDENT.
PB-210	-4.761E-01	5.049E+00	9.805E+00	NOT IDENT.
PB-211	4.613E-02	8.227E-01	1.572E+00	NOT IDENT.
BI-213	6.138E-02	1.112E-01	2.281E-01	NOT IDENT.
RN-219	9.722E-02	4.929E-01	9.518E-01	NOT IDENT.
RA-223	-3.835E-01	6.717E-01	1.076E+00	FAIL ABUN
AC-225	-6.744E-01	2.198E+00	3.757E+00	NOT IDENT.
AC-227	1.640E-02	3.005E-01	5.300E-01	NOT IDENT.
TH-227	1.640E-02	3.005E-01	5.300E-01	NOT IDENT.
PA-231	1.829E-01	5.580E-01	1.097E+00	NOT IDENT.
TH-231	-3.835E-01	6.717E-01	1.076E+00	FAIL ABUN
PA-233	3.004E-02	6.979E-02	1.404E-01	NOT IDENT.
PA-234	1.782E-01	3.948E-01	8.220E-01	NOT IDENT.
U-235	3.713E-02	2.344E-01	4.269E-01	FAIL ABUN
NP-237	3.004E-02	6.979E-02	1.404E-01	NOT IDENT.
NP-238	0.000E+00	5.783E+03	0.000E+00	SHORT HLIF
NP-239	-1.682E-01	2.766E-01	4.843E-01	NOT IDENT.
PU-239	3.185E+02	3.707E+02	7.238E+02	NOT IDENT.
AM-241	-1.371E-01	1.652E-01	2.990E-01	NOT IDENT.
CM-243	-2.122E-02	1.038E-01	1.908E-01	NOT IDENT.
BK-247	4.699E-03	9.487E-02	1.668E-01	FAIL ABUN
CM-247	-1.345E-02	4.596E-02	8.394E-02	NOT IDENT.
CF-249	-5.122E-03	4.944E-02	9.244E-02	NOT IDENT.
CF-251	1.097E-01	1.472E-01	2.811E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:23:44.75

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	251	10.66*	9.781E-01	1.613E+01	1.613E+01	12.38
CD-109	88.03	130	3.70*	5.338E+00	4.411E+00	4.629E+00	45.29
SN-126	64.28	18	9.60	2.674E+00	4.605E-01	4.605E-01	230.99
	86.94	130	8.90	5.338E+00	1.834E+00	1.834E+00	45.29
	87.57	130	37.00*	5.338E+00	4.411E-01	4.411E-01	45.29
TL-208	277.37	------	6.60	4.083E+00	------	Line Not Found	------
	583.19	107	85.00*	2.279E+00	3.686E-01	3.686E-01	27.63
	860.56	------	12.50	1.596E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.894E+00	------	Line Not Found	------
	351.06	265	12.92*	3.416E+00	4.011E+00	4.011E+00	16.88
BI-212	727.33	35	6.67*	1.873E+00	1.850E+00	1.850E+00	51.27
	1620.50	------	1.47	9.084E-01	------	Line Not Found	------
PB-212	74.82	128	10.28	4.116E+00	2.019E+00	2.019E+00	37.70
	77.11	192	17.10	4.368E+00	1.715E+00	1.715E+00	26.28
	238.63	331	43.60*	4.553E+00	1.116E+00	1.116E+00	12.84
	300.09	------	3.30	3.852E+00	------	Line Not Found	------
BI-214	609.32	155	45.49*	2.194E+00	1.037E+00	1.037E+00	26.60
	1120.29	46	14.92	1.237E+00	1.656E+00	1.656E+00	47.14
	1764.49	35	15.30	8.668E-01	1.744E+00	1.744E+00	32.88
PB-214	74.82	128	5.80	4.116E+00	3.578E+00	3.578E+00	37.70
	77.11	192	9.70	4.368E+00	3.024E+00	3.024E+00	26.28
	87.09	130	3.41	5.338E+00	4.786E+00	4.786E+00	45.29
	242.00	109	7.25	4.514E+00	2.237E+00	2.237E+00	41.76
	295.22	167	18.42	3.902E+00	1.555E+00	1.555E+00	25.90
	351.93	265	35.60*	3.416E+00	1.456E+00	1.456E+00	16.88
RN-222	609.32	155	45.49*	2.194E+00	1.037E+00	1.037E+00	26.60
	1120.29	46	14.92	1.237E+00	1.656E+00	1.656E+00	47.14
	1764.49	35	15.30	8.668E-01	1.744E+00	1.744E+00	32.88
RA-224	240.99	109	4.10*	4.514E+00	3.956E+00	3.956E+00	41.76
RA-226	74.82	128	5.80	4.116E+00	3.578E+00	3.578E+00	37.70
	77.11	192	9.70	4.368E+00	3.024E+00	3.024E+00	26.28
	87.09	130	3.41	5.338E+00	4.786E+00	4.786E+00	45.29
	242.00	109	7.25	4.514E+00	2.237E+00	2.237E+00	41.76
	295.22	167	18.42	3.902E+00	1.555E+00	1.555E+00	25.90
	351.93	265	35.60*	3.416E+00	1.456E+00	1.456E+00	16.88
AC-228	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	65	11.27	3.522E+00	1.103E+00	1.103E+00	38.93
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	68	25.80*	1.511E+00	1.168E+00	1.168E+00	31.52
	968.97	22	15.80	1.423E+00	6.684E-01	6.684E-01	90.25
RA-228	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	65	11.27	3.522E+00	1.103E+00	1.103E+00	38.93
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	68	25.80*	1.511E+00	1.168E+00	1.168E+00	31.52
	968.97	22	15.80	1.423E+00	6.684E-01	6.684E-01	90.25
TH-228	74.82	128	10.28	4.116E+00	2.019E+00	2.019E+00	37.70
	77.11	192	17.10	4.368E+00	1.715E+00	1.715E+00	26.28

Sample ID : G719378001 Acquisition date : 10-MAY-2025 10:23:08

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	331	43.60*	4.553E+00	1.116E+00	1.116E+00	12.84
	300.09	------	3.30	3.852E+00	------	Line Not Found	------
TH-229	85.43	10	14.70	5.024E+00	8.898E-02	8.898E-02	410.94
	88.47	130	24.00	5.338E+00	6.800E-01	6.800E-01	45.29
	193.51	------	4.41*	5.241E+00	------	Line Not Found	------
	210.85	------	2.80	4.958E+00	------	Line Not Found	------
TH-230	74.82	128	5.80	4.116E+00	3.578E+00	3.578E+00	37.70
	77.11	192	9.70	4.368E+00	3.024E+00	3.024E+00	26.28
	87.09	130	3.41	5.338E+00	4.786E+00	4.786E+00	45.29
	242.00	109	7.25	4.514E+00	2.237E+00	2.237E+00	41.76
	295.22	167	18.42	3.902E+00	1.555E+00	1.555E+00	25.90
	351.93	265	35.60*	3.416E+00	1.456E+00	1.456E+00	16.88
TH-232	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	65	11.27	3.522E+00	1.103E+00	1.103E+00	38.93
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	68	25.80*	1.511E+00	1.168E+00	1.168E+00	31.52
	968.97	22	15.80	1.423E+00	6.684E-01	6.684E-01	90.25
PA-234M	63.29	18	3.70*	2.674E+00	1.195E+00	1.195E+00	230.99
	92.59	86	4.23	5.610E+00	2.423E+00	2.423E+00	62.17
TH-234	63.29	18	3.70*	2.674E+00	1.195E+00	1.195E+00	230.99
	92.59	86	4.23	5.610E+00	2.423E+00	2.423E+00	62.17
U-234	74.82	128	5.80	4.116E+00	3.578E+00	3.578E+00	37.70
	77.11	192	9.70	4.368E+00	3.024E+00	3.024E+00	26.28
	87.09	130	3.41	5.338E+00	4.786E+00	4.786E+00	45.29
	242.00	109	7.25	4.514E+00	2.237E+00	2.237E+00	41.76
	295.22	167	18.42	3.902E+00	1.555E+00	1.555E+00	25.90
	351.93	265	35.60*	3.416E+00	1.456E+00	1.456E+00	16.88
U-238	63.29	18	3.70*	2.674E+00	1.195E+00	1.195E+00	230.99
	92.59	86	4.23	5.610E+00	2.423E+00	2.423E+00	62.17
AM-243	43.53	------	5.90	3.750E-01	------	Line Not Found	------
	74.66	128	67.20*	4.116E+00	3.088E-01	3.088E-01	37.70
ANH-511	511.00	32	100.00*	2.547E+00	8.455E-02	8.455E-02	115.85

Flag: "*" = Keyline

Sample ID : G719378001 Acquisition date : 10-MAY-2025 10:23:08

Total number of lines in spectrum 39
Number of unidentified lines 9
Number of lines tentatively identified by NID 30 76.92%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.613E+01	1.613E+01	0.200E+01	12.38	
CD-109	461.40D	1.05	4.411E+00	4.629E+00	2.096E+00	45.29	
SN-126	2.30E+05Y	1.00	4.411E-01	4.411E-01	1.998E-01	45.29	
TL-208	1.41E+10Y	1.00	3.686E-01	3.686E-01	1.018E-01	27.63	
BI-211	7.04E+08Y	1.00	4.011E+00	4.011E+00	0.677E+00	16.88	
BI-212	1.41E+10Y	1.00	1.850E+00	1.850E+00	0.948E+00	51.27	
PB-212	1.41E+10Y	1.00	1.116E+00	1.116E+00	0.143E+00	12.84	
BI-214	1600.00Y	1.00	1.037E+00	1.037E+00	0.276E+00	26.60	
PB-214	1600.00Y	1.00	1.456E+00	1.456E+00	0.246E+00	16.88	
RN-222	1600.00Y	1.00	1.037E+00	1.037E+00	0.276E+00	26.60	
RA-224	1.41E+10Y	1.00	3.956E+00	3.956E+00	1.652E+00	41.76	
RA-226	1600.00Y	1.00	1.456E+00	1.456E+00	0.246E+00	16.88	
AC-228	1.41E+10Y	1.00	1.168E+00	1.168E+00	0.368E+00	31.52	
RA-228	1.41E+10Y	1.00	1.168E+00	1.168E+00	0.368E+00	31.52	
TH-228	1.41E+10Y	1.00	1.116E+00	1.116E+00	0.143E+00	12.84	
TH-229	7340.00Y	1.00	6.800E-01	6.800E-01	3.080E-01	45.29	K
TH-230	7.54E+04Y	1.00	1.456E+00	1.456E+00	0.246E+00	16.88	
TH-232	1.41E+10Y	1.00	1.168E+00	1.168E+00	0.368E+00	31.52	
PA-234M	4.47E+09Y	1.00	1.195E+00	1.195E+00	2.760E+00	230.99	
TH-234	4.47E+09Y	1.00	1.195E+00	1.195E+00	2.760E+00	230.99	
U-234	2.45E+05Y	1.00	1.456E+00	1.456E+00	0.246E+00	16.88	
U-238	4.47E+09Y	1.00	1.195E+00	1.195E+00	2.760E+00	230.99	
AM-243	7370.00Y	1.00	3.088E-01	3.088E-01	1.164E-01	37.70	
ANH-511	1.00E+09Y	1.00	8.455E-02	8.455E-02	9.794E-02	115.85	
			---	---			
	Total Activity :		4.946E+01	4.968E+01			

Grand Total Activity : 4.946E+01 4.968E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378001 Acquisition date : 10-MAY-2025 10:23:08

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	150.81	28	79	1.72	301.81	297	7	7.54E-03	****	5.97E+00	
6	184.11	11	20	1.08	368.36	367	10	3.12E-03	****	5.40E+00	T
6	185.91	65	73	1.25	371.94	367	10	1.78E-02	53.5	5.37E+00	T
0	198.81	18	57	1.44	397.73	395	7	4.96E-03	****	5.15E+00	T
0	209.24	53	87	1.01	418.56	414	11	1.46E-02	74.0	4.98E+00	
4	246.56	35	53	1.78	493.13	472	27	9.71E-03	99.9	4.45E+00	
0	272.89	84	141	8.28	545.75	536	26	2.33E-02	79.8	4.13E+00	T
1	328.07	24	22	1.47	656.00	650	36	6.66E-03	97.3	3.60E+00	T
0	454.89	17	40	1.43	909.46	902	15	4.78E-03	****	2.80E+00	T
0	463.51	24	28	2.31	926.67	922	11	6.85E-03	92.0	2.76E+00	T
0	559.66	42	39	8.91	1118.85	1107	23	1.19E-02	83.0	2.36E+00	
0	590.97	8	20	0.52	1181.43	1177	7	2.33E-03	****	2.25E+00	
0	663.18	22	26	4.47	1325.77	1319	14	6.22E-03	****	2.03E+00	T
0	743.65	7	9	0.62	1486.63	1482	9	2.10E-03	****	1.83E+00	T
0	891.47	15	2	3.15	1782.13	1777	10	4.34E-03	63.0	1.54E+00	
0	933.58	18	7	0.94	1866.32	1862	10	5.35E-03	70.2	1.48E+00	
0	1053.11	15	13	0.91	2105.31	2098	17	4.50E-03	****	1.31E+00	
0	1231.23	14	19	5.45	2461.50	2450	20	4.12E-03	****	1.13E+00	T
0	1325.00	6	8	0.55	2649.04	2640	11	1.68E-03	****	1.06E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:23:56.29

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378001.CNF;1  *
* Acquisition date : 10-MAY-2025 10:23:08 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:10:00 Nuclide Library : SOLID           *
* Sample ID        : G719378001           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.1221E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-SEP-2024 11:03:33 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.856E-01
CD-109	7.026E-01
SN-126	6.732E-02
TL-208	3.139E-02
BI-211	1.755E-01
BI-212	3.922E-01
PB-212	5.561E-02
BI-214	7.338E-02
PB-214	6.384E-02
RN-222	7.338E-02
RA-224	5.964E-01
RA-226	6.384E-02
AC-228	1.513E-01
RA-228	1.513E-01
TH-228	5.561E-02
TH-229	4.460E-01
TH-230	6.384E-02
TH-232	1.513E-01
PA-234M	1.294E+00
TH-234	1.294E+00
U-234	6.384E-02
U-238	1.294E+00
AM-243	4.561E-02
ANH-511	2.496E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.272E-01	NOT IDENT.
NA-22	5.927E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.655E-02	NOT IDENT.
SC-46	4.166E-02	FAIL ABUN
V-48	1.377E-01	NOT IDENT.
CR-51	5.152E-01	NOT IDENT.

MN-52	1.666E+00	FAIL ABUN
MN-54	4.064E-02	NOT IDENT.
CO-56	5.024E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.326E-02	NOT IDENT.
CO-58	4.008E-02	NOT IDENT.
FE-59	1.017E-01	NOT IDENT.
CO-60	3.622E-02	NOT IDENT.
ZN-65	7.939E-02	NOT IDENT.
GE-68	1.465E+00	NOT IDENT.
AS-73	1.136E+00	NOT IDENT.
AS-74	1.907E-01	NOT IDENT.
SE-75	4.709E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.287E-01	NOT IDENT.
RB-83	8.865E-02	NOT IDENT.
RB-84	8.763E-02	NOT IDENT.
KR-85	6.679E+00	NOT IDENT.
SR-85	4.225E-02	NOT IDENT.
RB-86	1.554E+00	NOT IDENT.
Y-88	5.018E-02	NOT IDENT.
Y-91	1.961E+01	NOT IDENT.
NB-94	3.771E-02	NOT IDENT.
NB-95	5.679E-02	NOT IDENT.
NB-95M	1.431E-01	NOT IDENT.
ZR-95	1.041E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.613E-02	FAIL ABUN
RH-102	5.344E-02	NOT IDENT.
RU-103	5.002E-02	FAIL ABUN
RH-106	3.359E-01	NOT IDENT.
RU-106	3.359E-01	NOT IDENT.
AG-108M	2.505E-02	NOT IDENT.
AG-110	8.659E-01	NOT IDENT.
AG-110M	5.122E-02	NOT IDENT.
SN-113	4.832E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.216E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.904E-02	NOT IDENT.
SB-124	1.385E-01	NOT IDENT.
SB-125	1.065E-01	FAIL ABUN
TE-125M	1.109E+01	NOT IDENT.
I-126	4.614E-01	NOT IDENT.
SB-126	4.765E-01	NOT IDENT.
SB-127	2.907E+01	NOT IDENT.
I-131	4.124E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.306E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.867E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.610E-01	FAIL ABUN
BA-137M	4.601E-02	NOT IDENT.
CS-137	4.860E-02	NOT IDENT.
LA-138	4.421E-02	NOT IDENT.
CE-139	2.598E-02	NOT IDENT.
BA-140	7.040E-01	NOT IDENT.
LA-140	2.468E-01	FAIL ABUN
CE-141	8.367E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.048E-01	NOT IDENT.
PM-144	3.514E-02	NOT IDENT.
PR-144	2.653E+00	NOT IDENT.
PM-146	4.753E-02	FAIL ABUN
ND-147	1.994E+00	NOT IDENT.
PM-147	6.864E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.414E-02	FAIL ABUN
EU-152	8.493E-02	NOT IDENT.
GD-153	7.422E-02	NOT IDENT.
EU-154	1.675E-01	NOT IDENT.
EU-155	9.600E-02	NOT IDENT.
TB-160	1.217E-01	NOT IDENT.

HO-166M	4.999E-02	FAIL ABUN
TM-171	1.977E+01	NOT IDENT.
HF-172	1.782E-01	FAIL ABUN
LU-172	7.760E-02	FAIL ABUN
LU-176	2.196E-02	FAIL ABUN
HF-181	5.103E-02	NOT IDENT.
TA-182	2.120E-01	FAIL ABUN
RE-183	2.494E-01	NOT IDENT.
RE-184	2.205E-01	NOT IDENT.
W-188	7.827E+00	FAIL ABUN
IR-192	3.744E-02	FAIL ABUN
HG-203	4.849E-02	NOT IDENT.
TL-204	4.610E+00	NOT IDENT.
BI-207	5.773E-02	FAIL ABUN
BI-210	4.541E+00	NOT IDENT.
PB-210	4.541E+00	NOT IDENT.
PB-211	7.079E-01	NOT IDENT.
BI-213	1.019E-01	NOT IDENT.
RN-219	4.314E-01	NOT IDENT.
RA-223	4.756E-01	FAIL ABUN
AC-225	1.726E+00	NOT IDENT.
AC-227	2.429E-01	NOT IDENT.
TH-227	2.429E-01	NOT IDENT.
PA-231	5.045E-01	NOT IDENT.
TH-231	4.756E-01	FAIL ABUN
PA-233	6.387E-02	NOT IDENT.
PA-234	3.594E-01	NOT IDENT.
U-235	1.998E-01	FAIL ABUN
NP-237	6.387E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	2.237E-01	NOT IDENT.
PU-239	3.387E+02	NOT IDENT.
AM-241	1.375E-01	NOT IDENT.
CM-243	8.810E-02	NOT IDENT.
BK-247	7.620E-02	FAIL ABUN
CM-247	3.788E-02	NOT IDENT.
CF-249	4.188E-02	NOT IDENT.
CF-251	1.310E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:24:00.65

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378001.CNF;1  *
* Acquisition date : 10-MAY-2025 10:23:08 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.63     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:10:00 Nuclide Library : SOLID           *
* Sample ID        : G719378001           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.1221E+02 GRAM *
*                                         Quantity Err(%) : 1.7824E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-SEP-2024 11:03:33 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.613E+01	2.723E+00	2.723E+00
CD-109	4.629E+00	2.110E+00	2.110E+00
SN-126	4.411E-01	1.997E-01	1.997E-01
TL-208	3.686E-01	1.047E-01	1.047E-01
BI-211	4.011E+00	7.524E-01	7.524E-01
BI-212	1.850E+00	9.461E-01	9.461E-01
PB-212	1.116E+00	1.721E-01	1.721E-01
BI-214	1.037E+00	2.842E-01	2.842E-01
PB-214	1.456E+00	2.720E-01	2.720E-01
RN-222	1.037E+00	2.842E-01	2.842E-01
RA-224	3.956E+00	1.657E+00	1.657E+00
RA-226	1.456E+00	2.720E-01	2.720E-01
AC-228	1.168E+00	3.882E-01	3.882E-01
RA-228	1.168E+00	3.882E-01	3.882E-01
TH-228	1.116E+00	1.721E-01	1.721E-01
TH-229	-9.825E-02	5.529E-01	5.529E-01
TH-230	1.456E+00	2.720E-01	2.720E-01
TH-232	1.168E+00	3.882E-01	3.882E-01
PA-234M	1.195E+00	2.719E+00	2.719E+00
TH-234	1.195E+00	2.719E+00	2.719E+00
U-234	1.456E+00	2.720E-01	2.720E-01
U-238	1.195E+00	2.719E+00	2.719E+00
AM-243	3.088E-01	1.172E-01	1.172E-01
ANH-511	8.455E-02	9.626E-02	9.626E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.574E-01	4.858E-01	4.910E-01	NOT IDENT.
NA-22	4.320E-02	6.438E-02	6.726E-02	NOT IDENT.
NA-24	-1.009E+14	1.531E+14	1.597E+14	SHORT HLIF
AL-26	4.394E-04	4.376E-02	4.376E-02	NOT IDENT.
SC-46	1.405E-02	5.147E-02	5.186E-02	FAIL ABUN
V-48	3.156E-02	1.567E-01	1.574E-01	NOT IDENT.

CR-51	9.241E-02	5.797E-01	5.812E-01	NOT IDENT.
MN-52	-5.395E-01	2.121E+00	2.135E+00	FAIL ABUN
MN-54	8.983E-03	4.607E-02	4.624E-02	NOT IDENT.
CO-56	1.284E-02	5.669E-02	5.698E-02	NOT IDENT.
MN-56	1.000E+41	4.275E+41	0.000E+00	SHORT HLIF
CO-57	-1.729E-02	2.899E-02	3.002E-02	NOT IDENT.
CO-58	-1.550E-02	4.987E-02	5.035E-02	NOT IDENT.
FE-59	-6.781E-02	1.386E-01	1.420E-01	NOT IDENT.
CO-60	2.357E-03	4.380E-02	4.381E-02	NOT IDENT.
ZN-65	-1.125E-01	1.430E-01	1.517E-01	NOT IDENT.
GE-68	1.368E+00	1.473E+00	1.597E+00	NOT IDENT.
AS-73	8.407E-01	1.204E+00	1.262E+00	NOT IDENT.
AS-74	-9.741E-03	2.333E-01	2.333E-01	NOT IDENT.
SE-75	5.060E-03	5.833E-02	5.838E-02	NOT IDENT.
BR-77	2.431E+04	2.280E+04	2.530E+04	SHORT HLIF
SR-82	3.842E-01	6.739E-01	6.958E-01	NOT IDENT.
RB-83	6.812E-02	9.654E-02	1.013E-01	NOT IDENT.
RB-84	-2.339E-02	1.081E-01	1.086E-01	NOT IDENT.
KR-85	3.224E+00	7.495E+00	7.635E+00	NOT IDENT.
SR-85	2.023E-02	4.744E-02	4.831E-02	NOT IDENT.
RB-86	2.246E-01	1.820E+00	1.822E+00	NOT IDENT.
Y-88	8.839E-03	5.756E-02	5.770E-02	NOT IDENT.
Y-91	-4.773E+01	3.499E+01	4.108E+01	NOT IDENT.
NB-94	3.121E-02	4.122E-02	4.355E-02	NOT IDENT.
NB-95	-7.514E-03	6.692E-02	6.701E-02	NOT IDENT.
NB-95M	8.133E-03	1.913E-01	1.913E-01	NOT IDENT.
ZR-95	7.521E-02	1.095E-01	1.146E-01	NOT IDENT.
NB-97	1.000E+41	2.245E+42	0.000E+00	SHORT HLIF
ZR-97	7.979E+12	3.237E+13	3.257E+13	SHORT HLIF
MO-99	-5.585E+02	1.196E+03	1.222E+03	SHORT HLIF
TC-99M	-2.913E+36	7.789E+36	0.000E+00	SHORT HLIF
RH-101	-3.307E-02	3.438E-02	3.747E-02	FAIL ABUN
RH-102	-2.900E-02	7.063E-02	7.183E-02	NOT IDENT.
RU-103	-4.502E-03	6.043E-02	6.047E-02	FAIL ABUN
RH-106	7.273E-02	3.974E-01	3.987E-01	NOT IDENT.
RU-106	7.273E-02	3.974E-01	3.987E-01	NOT IDENT.
AG-108M	-1.453E-02	3.180E-02	3.247E-02	NOT IDENT.
AG-110	1.069E+00	9.412E-01	1.057E+00	NOT IDENT.
AG-110M	1.975E-02	5.633E-02	5.702E-02	NOT IDENT.
SN-113	-2.742E-02	5.982E-02	6.108E-02	NOT IDENT.
CD-115	3.903E+02	2.905E+03	2.910E+03	SHORT HLIF
SN-117M	8.834E-02	1.367E-01	1.424E-01	NOT IDENT.
SB-122	1.383E+02	1.934E+02	2.032E+02	SHORT HLIF
TE-123M	2.756E-02	3.197E-02	3.430E-02	NOT IDENT.
SB-124	1.111E-01	1.334E-01	1.425E-01	NOT IDENT.
SB-125	9.827E-02	1.136E-01	1.219E-01	FAIL ABUN
TE-125M	2.427E+00	1.266E+01	1.271E+01	NOT IDENT.
I-126	-3.510E-01	7.331E-01	7.500E-01	NOT IDENT.
SB-126	4.898E-01	5.341E-01	5.780E-01	NOT IDENT.
SB-127	1.507E+01	3.309E+01	3.378E+01	NOT IDENT.
I-131	-2.601E-01	5.151E-01	5.283E-01	NOT IDENT.
I-132	1.000E+41	3.243E+41	0.000E+00	SHORT HLIF
TE-132	1.540E+01	3.080E+01	3.157E+01	SHORT HLIF
BA-133	-2.107E-02	4.659E-02	4.754E-02	NOT IDENT.
I-133	3.640E+09	6.206E+09	6.420E+09	SHORT HLIF
CS-134	5.488E-02	4.841E-02	5.436E-02	NOT IDENT.
I-135	-7.797E+33	3.268E+34	0.000E+00	SHORT HLIF
CS-136	8.986E-02	3.288E-01	3.313E-01	FAIL ABUN
BA-137M	3.604E-02	5.128E-02	5.379E-02	NOT IDENT.
CS-137	3.807E-02	5.417E-02	5.683E-02	NOT IDENT.
LA-138	7.021E-03	4.930E-02	4.941E-02	NOT IDENT.
CE-139	-3.108E-02	3.511E-02	3.781E-02	NOT IDENT.
BA-140	2.673E-01	8.050E-01	8.139E-01	NOT IDENT.
LA-140	2.603E-01	2.108E-01	2.412E-01	FAIL ABUN
CE-141	-4.758E-02	1.035E-01	1.057E-01	NOT IDENT.
CE-143	1.389E+06	7.924E+05	1.010E+06	SHORT HLIF
CE-144	1.063E-01	2.321E-01	2.370E-01	NOT IDENT.
PM-144	1.526E-02	4.047E-02	4.105E-02	NOT IDENT.
PR-144	1.152E+00	3.055E+00	3.099E+00	NOT IDENT.
PM-146	6.308E-02	1.049E-01	1.087E-01	FAIL ABUN
ND-147	1.364E+00	2.211E+00	2.295E+00	NOT IDENT.
PM-147	-1.618E+02	8.218E+02	8.250E+02	NOT IDENT.
PM-149	-6.793E+03	1.913E+04	1.938E+04	SHORT HLIF
EU-150	1.405E-03	2.760E-02	2.761E-02	FAIL ABUN
EU-152	-3.588E-02	1.151E-01	1.162E-01	NOT IDENT.
GD-153	-4.344E-02	9.683E-02	9.880E-02	NOT IDENT.
EU-154	1.249E-01	1.815E-01	1.901E-01	NOT IDENT.
EU-155	6.057E-02	1.058E-01	1.093E-01	NOT IDENT.

TB-160	-5.965E-02	1.572E-01	1.595E-01	NOT IDENT.
HO-166M	-2.705E-02	6.799E-02	6.908E-02	FAIL ABUN
TM-171	-9.116E+00	2.267E+01	2.304E+01	NOT IDENT.
HF-172	-4.413E-02	2.129E-01	2.138E-01	FAIL ABUN
LU-172	6.650E-02	8.071E-02	8.610E-02	FAIL ABUN
LU-176	-1.744E-02	2.723E-02	2.834E-02	FAIL ABUN
HF-181	5.475E-03	5.979E-02	5.985E-02	NOT IDENT.
TA-182	2.497E-02	2.616E-01	2.619E-01	FAIL ABUN
RE-183	2.150E-01	2.613E-01	2.787E-01	NOT IDENT.
RE-184	1.788E-01	2.350E-01	2.485E-01	NOT IDENT.
W-188	1.355E+00	9.677E+00	9.696E+00	FAIL ABUN
IR-192	-4.346E-03	4.338E-02	4.343E-02	FAIL ABUN
HG-203	3.253E-02	5.183E-02	5.387E-02	NOT IDENT.
TL-204	-3.568E+00	5.915E+00	6.129E+00	NOT IDENT.
BI-207	-2.010E-03	6.963E-02	6.964E-02	FAIL ABUN
BI-210	-4.761E-01	5.049E+00	5.054E+00	NOT IDENT.
PB-210	-4.761E-01	5.049E+00	5.054E+00	NOT IDENT.
PB-211	4.613E-02	8.227E-01	8.230E-01	NOT IDENT.
BI-213	6.138E-02	1.113E-01	1.147E-01	NOT IDENT.
RN-219	9.722E-02	4.931E-01	4.950E-01	NOT IDENT.
RA-223	-3.835E-01	6.728E-01	6.947E-01	FAIL ABUN
AC-225	-6.744E-01	2.199E+00	2.220E+00	NOT IDENT.
AC-227	1.640E-02	3.005E-01	3.006E-01	NOT IDENT.
TH-227	1.640E-02	3.005E-01	3.006E-01	NOT IDENT.
PA-231	1.829E-01	5.595E-01	5.656E-01	NOT IDENT.
TH-231	-3.835E-01	6.728E-01	6.947E-01	FAIL ABUN
PA-233	3.004E-02	6.985E-02	7.115E-02	NOT IDENT.
PA-234	1.782E-01	4.448E-01	4.520E-01	NOT IDENT.
U-235	3.713E-02	2.344E-01	2.350E-01	FAIL ABUN
NP-237	3.004E-02	6.985E-02	7.115E-02	NOT IDENT.
NP-238	-1.838E+03	5.787E+03	5.846E+03	SHORT HLIF
NP-239	-1.682E-01	2.771E-01	2.873E-01	NOT IDENT.
PU-239	3.185E+02	3.713E+02	3.981E+02	NOT IDENT.
AM-241	-1.371E-01	1.658E-01	1.770E-01	NOT IDENT.
CM-243	-2.122E-02	1.038E-01	1.043E-01	NOT IDENT.
BK-247	4.699E-03	9.487E-02	9.490E-02	FAIL ABUN
CM-247	-1.345E-02	4.602E-02	4.642E-02	NOT IDENT.
CF-249	-5.122E-03	4.944E-02	4.950E-02	NOT IDENT.
CF-251	1.097E-01	1.479E-01	1.560E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	45.5554	85.43	70.2489	131.20	70.5650
45.60	53.0166	86.55	68.6709	133.02	62.7389
46.54	51.6793	86.79	68.7179	133.52	57.7393
49.72	0.0000	86.94	68.7480	136.00	65.1621
51.35	63.1785	87.09	68.7776	136.47	66.2437
51.87	60.9130	87.57	68.8727	140.51	0.0000
52.39	53.8167	88.03	68.9631	143.76	61.0112
52.97	49.1157	88.34	69.0240	144.24	60.0338
53.44	41.9505	88.47	69.0495	145.44	71.5869
54.07	40.4413	89.96	69.3412	152.43	49.0657
57.36	0.0000	1093.63	58.5034	153.25	50.5444
57.53	40.1843	91.11	58.5801	323.87	59.0736
57.98	41.0759	92.59	62.4966	156.02	46.5707
59.27	56.9672	93.35	62.6268	158.56	44.6602
59.32	56.9782	94.56	62.8328	159.00	39.3752
59.54	59.5052	94.65	62.8483	162.33	53.5286
60.96	47.6386	94.67	62.8514	162.66	47.1327
61.17	47.6760	94.87	62.8857	163.33	53.6240
62.93	63.6110	97.43	62.0753	165.86	59.2499
63.29	63.6948	98.43	62.5503	176.31	61.4141
63.58	63.7619	98.44	62.5518	176.60	48.2767
64.28	70.6525	99.53	44.0048	177.52	47.2524
66.73	55.4320	100.11	50.6349	181.07	0.0000
67.24	70.5473	102.03	53.7123	181.52	48.6702
125.81	73.2088	103.18	52.9243	184.41	56.6777
67.75	71.5236	103.37	52.9499	143.76	56.7968
68.89	58.9831	105.21	47.4953	193.51	46.2238
69.67	58.2834	105.31	47.5075	197.03	43.8298
70.82	82.6011	106.12	46.6508	198.01	56.0044
70.83	82.6047	106.47	53.3613	201.83	47.1938
72.81	62.3617	109.28	58.5269	203.43	57.2258
72.87	62.3743	111.00	62.6236	205.31	44.3779
74.66	62.7385	111.76	0.0000	210.85	39.3395
74.82	62.7709	114.06	77.6355	215.65	46.6010
74.97	62.8017	116.30	0.0000	218.12	49.1021
77.11	63.2307	116.74	61.5196	222.11	61.1327
78.74	63.5537	119.76	54.0789	227.09	40.2458
79.69	59.0190	121.12	49.3130	227.38	40.2619
80.03	58.4887	121.22	58.2024	228.16	0.0000
80.12	58.5058	121.78	62.2262	228.18	35.5637
80.19	58.5184	122.06	62.2651	116.74	35.5637
80.57	55.0357	122.92	71.2958	235.69	52.6871
81.00	62.2182	123.07	71.3194	235.96	36.7344
81.07	62.2316	265.00	52.5698	238.63	49.2850
81.75	58.7964	125.81	63.7769	238.98	0.0000
82.47	59.5194	127.23	67.9707	240.99	49.4370
83.79	69.9115	127.91	68.0708	242.00	49.5014
84.00	69.9549	129.30	52.2087	244.70	49.6741

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	40.3728	344.28	29.7666	563.25	18.1856
252.80	45.2891	345.93	36.1385	564.24	0.0000
254.15	0.0000	351.06	24.5132	569.33	21.4771
256.23	39.3362	351.93	24.5336	946.00	17.1836
260.90	0.0000	355.39	0.0000	569.70	18.2596
264.66	34.7744	356.01	25.9969	583.19	15.1650
264.80	34.7804	364.49	26.6627	584.27	15.1752
265.00	34.7889	366.42	0.0000	595.83	21.8327
269.46	32.4762	372.51	25.9327	427.87	14.2325
270.03	32.4976	375.05	27.8491	602.52	0.0000
271.23	30.0410	377.52	22.3286	604.72	16.4630
273.65	30.1260	356.01	29.0038	607.14	18.1355
276.40	30.2227	388.16	32.8709	609.32	22.0109
277.37	30.2571	388.63	33.8240	610.33	22.0239
277.60	30.2651	391.69	33.9141	614.28	19.8684
278.00	30.2791	264.66	21.8353	618.01	18.8061
279.20	30.3208	401.81	28.5089	620.36	19.9395
279.54	34.1241	402.40	33.2768	621.93	16.6315
279.70	34.1307	404.85	26.6767	630.19	0.0000
280.46	32.8951	410.95	32.5591	631.29	21.1817
283.69	30.4768	413.71	27.8353	633.25	10.0448
284.31	32.1924	414.70	29.7790	634.78	20.1072
285.41	37.3219	423.72	25.1616	635.95	22.3568
285.90	0.0000	427.09	28.1415	636.99	13.4219
287.50	28.9075	427.87	21.3622	657.50	8.4866
290.67	30.7170	433.94	23.4180	657.76	13.5806
293.27	0.0000	439.40	20.5796	657.90	0.0000
351.93	32.5867	440.45	16.6735	661.66	19.2806
295.96	32.6137	453.88	16.8482	664.57	0.0000
879.38	42.6055	463.37	19.9650	666.33	18.7626
299.98	36.2048	468.07	19.5345	666.50	15.3523
300.09	29.3121	473.00	21.1145	667.71	0.0000
300.13	29.3135	475.06	16.1120	677.62	27.4600
301.36	37.9853	476.78	28.2313	685.70	12.6409
302.85	46.6941	477.60	21.1863	692.65	0.0000
256.23	29.4519	482.18	16.1963	695.00	16.1687
304.85	22.5305	487.02	14.2216	696.49	12.7138
306.78	33.8655	492.35	0.0000	696.51	12.7143
308.46	22.6172	497.08	19.4403	697.00	11.5613
311.90	27.9382	505.52	12.3513	697.30	11.5633
316.51	30.7048	507.63	0.0000	697.49	17.3462
319.41	29.0368	511.00	16.5314	702.65	12.7555
320.08	26.4154	514.00	16.5658	706.68	23.2414
321.04	22.9161	514.00	16.5658	711.68	15.1460
323.87	25.1920	520.40	15.5988	720.70	14.0464
325.23	21.2437	520.69	0.0000	721.93	0.0000
328.76	26.6492	522.65	0.0000	722.78	25.3107
333.37	26.7725	527.90	0.0000	722.91	28.1250
333.97	26.7883	528.26	24.0454	723.31	28.1309
334.37	26.7993	529.59	21.9741	724.19	18.4692
338.28	26.9025	529.87	0.0000	727.33	9.8660
338.32	26.9037	531.02	20.9481	733.00	13.2518
311.90	26.9604	537.26	17.8806	735.93	18.5801
340.48	26.9604	546.56	0.0000	333.97	10.1193
340.55	26.9623	552.55	12.7485	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	19.9015	667.71	0.0000	1434.09	5.4993
747.24	15.6605	962.31	13.0579	1435.80	2.7510
748.06	18.5155	964.08	15.6802	1457.56	0.0000
752.31	22.3015	966.17	29.8174	1460.82	3.6936
753.82	12.4982	911.20	22.5845	1489.16	3.7223
756.73	12.5162	983.53	7.9009	1505.03	8.4107
756.80	12.5166	984.45	0.0000	1584.12	8.5869
884.68	17.9437	1274.44	7.9402	1596.21	0.0000
765.81	22.4503	1002.74	14.9249	1620.50	3.8518
766.84	17.9694	1004.73	8.9618	1621.92	6.7430
772.60	0.0000	507.63	0.0000	1678.03	0.0000
776.52	13.5402	1025.87	0.0000	1690.97	1.9595
739.50	0.0000	1028.54	0.0000	1750.46	0.0000
778.90	12.6520	1037.84	14.1171	1764.49	0.0000
783.70	12.6815	1038.76	0.0000	1063.66	1.9965
788.74	13.6198	631.29	6.4746	1771.35	1.9971
792.07	16.3696	1048.07	8.0977	1791.20	0.0000
795.86	8.1996	1049.04	9.7207	1808.65	4.0283
810.06	16.5086	1050.41	12.9672	1810.72	0.0000
810.29	16.5108	1063.66	13.2341	1836.06	4.0533
344.28	16.5119	1077.00	10.2295		
810.76	12.8443	1077.34	5.1154		
815.77	13.7938	1085.87	15.3937		
1048.07	13.8112	1093.63	7.2038		
832.01	12.0439	1099.45	12.3750		
834.85	13.9146	1112.07	11.3941		
835.71	16.7042	1112.84	17.9596		
836.80	0.0000	1115.54	18.2531		
846.75	0.0000	1120.29	8.3105		
846.77	13.0571	1120.55	8.3115		
856.80	19.6734	1221.41	8.3135		
860.56	7.5071	1129.67	5.2112		
871.09	13.1981	1131.51	0.0000		
873.19	7.5488	1147.95	0.0000		
875.33	0.0000	1173.23	11.6358		
879.38	10.4075	1177.95	8.4761		
880.51	10.4125	1189.05	9.5707		
881.60	11.3646	1204.77	21.3782		
883.24	9.4772	1221.41	11.0541		
884.68	8.5347	1231.02	15.0929		
889.28	7.6013	1235.36	15.5461		
894.76	9.1430	1238.28	10.3734		
898.04	6.6761	1260.41	0.0000		
900.72	16.2322	1271.87	15.2894		
903.28	9.8315	1274.44	9.8366		
911.20	14.3857	1274.54	9.8372		
912.08	14.3912	1291.59	12.0870		
923.98	0.0000	1298.22	0.0000		
926.50	10.6170	1312.11	7.7400		
929.11	15.4595	1332.49	5.5624		
935.54	15.5005	1362.66	0.0000		
937.49	12.4102	1365.19	8.9863		
944.13	11.6660	1368.63	0.0000		
946.00	11.6752	1384.29	8.1330		
949.00	12.6632	1408.01	6.3687		

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:54:49.78

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378002.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM20.CNF;1011
                                     Background date  : 4-MAY-2025 09:26:40.
Sample date      : 8-APR-2025 09:18:00. Acquisition date : 10-MAY-2025 10:24:02
Sample ID        : G719378002           Sample quantity  : 8.26200E+01 GRAM
Detector name    : GAM20                Detector geometry: CAN
Elapsed live time: 0 01:30:00.00        Elapsed real time: 0 01:30:21.81  0.4%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
*****************************************************************************
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	27.15*	51	96	2.07	54.41	51	10	9.42E-03	40.8	
2	0	63.31*	33	235	0.87	126.66	122	9	6.17E-03	87.8	0.00E+00
3	2	74.90	230	213	1.26	149.82	145	21	4.26E-02	12.8	3.33E+00
4	2	77.28*	296	181	1.27	154.57	145	21	5.49E-02	10.3	
5	0	83.58*	6	143	0.57	167.16	167	6	1.17E-03	314.8	
6	0	87.06	62	209	0.88	174.12	172	7	1.14E-02	40.5	
7	4	89.94	54	105	1.00	179.87	178	13	1.00E-02	29.4	8.90E-01
8	4	92.91*	84	201	1.53	185.81	178	13	1.55E-02	35.9	
9	0	99.93*	8	202	2.12	199.83	192	11	1.48E-03	352.3	
10	0	139.11	14	112	0.93	278.12	277	7	2.63E-03	125.9	
11	0	167.39	16	95	1.30	334.64	333	7	3.01E-03	101.6	
12	0	180.82	25	60	0.83	361.47	359	6	4.61E-03	52.8	
13	0	185.82*	101	144	1.27	371.45	366	12	1.88E-02	27.2	
14	0	209.33	39	110	0.89	418.46	414	9	7.21E-03	51.2	
15	5	238.48*	458	71	1.16	476.71	469	21	8.48E-02	5.7	1.10E+00
16	5	241.47	167	97	2.07	482.69	469	21	3.09E-02	19.3	
17	0	269.72	59	69	1.45	539.15	533	12	1.08E-02	31.3	
18	0	281.53	44	71	3.28	562.75	557	12	8.10E-03	41.6	
19	0	294.92	183	110	1.05	589.52	584	11	3.38E-02	13.4	
20	0	328.99	32	84	1.68	657.60	649	12	5.85E-03	61.4	
21	0	338.09	110	63	1.19	675.80	669	12	2.04E-02	17.3	
22	0	351.71	305	57	1.03	703.01	698	11	5.65E-02	7.5	
23	1	384.72	25	34	1.57	769.00	765	20	4.65E-03	40.0	2.12E+00
24	1	391.08	19	20	1.58	781.71	765	20	3.50E-03	50.0	
25	0	409.86	22	44	0.96	819.26	813	11	4.16E-03	62.0	
26	0	462.65	30	34	1.89	924.80	921	9	5.54E-03	39.5	
27	0	510.93*	17	92	1.77	1021.33	1014	16	3.14E-03	149.3	
28	0	583.08*	110	35	1.23	1165.59	1160	11	2.04E-02	14.7	
29	0	600.17	20	31	1.34	1199.77	1192	13	3.68E-03	62.9	
30	0	609.00*	246	27	1.32	1217.42	1210	13	4.56E-02	7.8	
31	0	662.28	62	56	1.91	1323.98	1316	20	1.15E-02	31.8	
32	0	683.16	29	12	1.61	1365.73	1360	14	5.42E-03	30.1	
33	0	727.20	34	23	1.82	1453.82	1449	8	6.35E-03	29.9	
34	0	756.70	23	12	1.46	1512.81	1505	14	4.21E-03	40.3	

Sample ID : G719378002 Acquisition date : 10-MAY-2025 10:24:02

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	768.84	42	41	3.80	1537.10	1526	21	7.79E-03	41.4	
36	0	785.89	18	17	1.30	1571.20	1567	11	3.24E-03	50.9	
37	0	860.49	24	26	2.34	1720.42	1713	13	4.44E-03	48.3	
38	0	888.89	9	2	0.87	1777.24	1774	7	1.68E-03	41.3	
39	0	892.33	12	4	0.99	1784.13	1781	8	2.22E-03	40.8	
40	0	910.68*	87	12	1.96	1820.83	1813	16	1.62E-02	14.8	
41	6	964.36	24	14	2.48	1928.22	1924	23	4.40E-03	34.8	1.64E+00
42	6	968.68	45	20	2.17	1936.88	1924	23	8.32E-03	26.1	
43	0	975.50	8	15	1.59	1950.51	1946	10	1.55E-03	88.2	
44	0	1119.71	71	19	1.89	2239.09	2230	19	1.31E-02	18.9	
45	0	1237.70	54	12	1.26	2475.22	2469	12	1.00E-02	18.7	
46	0	1377.85	24	12	2.47	2755.78	2747	17	4.38E-03	40.2	
47	0	1408.20	11	5	0.73	2816.55	2812	9	1.97E-03	52.4	
48	0	1460.29*	380	4	2.17	2920.85	2914	15	7.04E-02	5.3	
49	0	1584.13	4	7	1.04	3168.83	3160	10	7.07E-04	142.9	
50	0	1752.64	9	0	1.33	3506.33	3502	9	1.67E-03	33.3	
51	0	1763.56*	51	0	1.85	3528.22	3518	17	9.43E-03	14.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:54:51

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378002.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 09:18:00	Acquisition date	: 10-MAY-2025 10:24:02
Sample ID	: G719378002	Sample quantity	: 82.620 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA20	Detector geometry	: CAN
Elapsed live time	: 0 01:30:00.00	Elapsed real time	: 0 01:30:21.81 0.4%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G719378002 Acquisition date : 10-MAY-2025 10:24:02

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	351	10.66*	1.267E+00	1.575E+01	1.575E+01	10.68
SC-46	889.28	8	99.98*	1.974E+00	2.555E-02	3.331E-02	82.50
	1120.55	65	99.99	1.594E+00	2.477E-01	3.230E-01	37.87
CD-109	88.03	54	3.70*	7.119E+00	1.248E+00	1.310E+00	81.07
SN-113	391.69	17	64.94*	3.903E+00	4.073E-02	4.941E-02	99.96
SN-126	64.28	29	9.60	4.722E+00	3.894E-01	3.894E-01	175.54
	86.94	54	8.90	7.119E+00	5.189E-01	5.189E-01	81.07
	87.57	54	37.00*	7.119E+00	1.248E-01	1.248E-01	81.07
BA-137M	661.66	57	89.90*	2.569E+00	1.488E-01	1.491E-01	63.67
CS-137	661.66	57	85.10*	2.569E+00	1.572E-01	1.575E-01	63.67
TL-208	277.37	------	6.60	4.980E+00	------	Line Not Found	------
	583.19	100	85.00*	2.860E+00	2.495E-01	2.495E-01	29.49
	860.56	22	12.50	2.034E+00	5.233E-01	5.233E-01	96.65
BI-211	72.87	------	1.23	5.985E+00	------	Line Not Found	------
	351.06	275	12.92*	4.216E+00	3.058E+00	3.058E+00	14.96
BI-212	727.33	31	6.67*	2.368E+00	1.199E+00	1.199E+00	59.81
	1620.50	------	1.47	1.174E+00	------	Line Not Found	------
PB-212	74.82	202	10.28	6.199E+00	1.919E+00	1.919E+00	25.60
	77.11	260	17.10	6.427E+00	1.432E+00	1.432E+00	20.62
	238.63	410	43.60*	5.510E+00	1.033E+00	1.033E+00	11.35
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
BI-214	609.32	224	45.49*	2.758E+00	1.082E+00	1.082E+00	15.58
	1120.29	65	14.92	1.594E+00	1.660E+00	1.660E+00	37.87
	1764.49	47	15.30	1.115E+00	1.675E+00	1.675E+00	29.65
PB-214	74.82	202	5.80	6.199E+00	3.401E+00	3.402E+00	25.60
	77.11	260	9.70	6.427E+00	2.525E+00	2.525E+00	20.62
	87.09	54	3.41	7.119E+00	1.354E+00	1.354E+00	81.07
	242.00	149	7.25	5.465E+00	2.284E+00	2.284E+00	38.58
	295.22	164	18.42	4.774E+00	1.131E+00	1.131E+00	26.71
	351.93	275	35.60*	4.216E+00	1.110E+00	1.110E+00	14.96
RN-222	609.32	224	45.49*	2.758E+00	1.082E+00	1.082E+00	15.58
	1120.29	65	14.92	1.594E+00	1.660E+00	1.660E+00	37.87
	1764.49	47	15.30	1.115E+00	1.675E+00	1.675E+00	29.65
RA-224	240.99	149	4.10*	5.465E+00	4.038E+00	4.038E+00	38.58
RA-226	74.82	202	5.80	6.199E+00	3.401E+00	3.402E+00	25.60
	77.11	260	9.70	6.427E+00	2.525E+00	2.525E+00	20.62
	87.09	54	3.41	7.119E+00	1.354E+00	1.354E+00	81.07
	242.00	149	7.25	5.465E+00	2.284E+00	2.284E+00	38.58
	295.22	164	18.42	4.774E+00	1.131E+00	1.131E+00	26.71
	351.93	275	35.60*	4.216E+00	1.110E+00	1.110E+00	14.96
AC-228	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	99	11.27	4.337E+00	1.229E+00	1.229E+00	34.55
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	80	25.80*	1.930E+00	9.738E-01	9.738E-01	29.59
	968.97	41	15.80	1.823E+00	8.661E-01	8.661E-01	52.20
RA-228	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	99	11.27	4.337E+00	1.229E+00	1.229E+00	34.55
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	80	25.80*	1.930E+00	9.738E-01	9.738E-01	29.59

Sample ID : G719378002 Acquisition date : 10-MAY-2025 10:24:02

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	968.97	41	15.80	1.823E+00	8.661E-01	8.661E-01	52.20
TH-228	74.82	202	10.28	6.199E+00	1.919E+00	1.919E+00	25.60
	77.11	260	17.10	6.427E+00	1.432E+00	1.432E+00	20.62
	238.63	410	43.60*	5.510E+00	1.033E+00	1.033E+00	11.35
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
TH-230	74.82	202	5.80	6.199E+00	3.401E+00	3.401E+00	25.60
	77.11	260	9.70	6.427E+00	2.525E+00	2.525E+00	20.62
	87.09	54	3.41	7.119E+00	1.354E+00	1.354E+00	81.07
	242.00	149	7.25	5.465E+00	2.284E+00	2.284E+00	38.58
	295.22	164	18.42	4.774E+00	1.131E+00	1.131E+00	26.71
	351.93	275	35.60*	4.216E+00	1.110E+00	1.110E+00	14.96
TH-232	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	99	11.27	4.337E+00	1.229E+00	1.229E+00	34.55
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	80	25.80*	1.930E+00	9.738E-01	9.738E-01	29.59
	968.97	41	15.80	1.823E+00	8.661E-01	8.661E-01	52.20
PA-234M	63.29	29	3.70*	4.722E+00	1.010E+00	1.010E+00	175.54
	92.59	74	4.23	7.375E+00	1.428E+00	1.428E+00	71.80
TH-234	63.29	29	3.70*	4.722E+00	1.010E+00	1.010E+00	175.54
	92.59	74	4.23	7.375E+00	1.428E+00	1.428E+00	71.80
U-234	74.82	202	5.80	6.199E+00	3.401E+00	3.401E+00	25.60
	77.11	260	9.70	6.427E+00	2.525E+00	2.525E+00	20.62
	87.09	54	3.41	7.119E+00	1.354E+00	1.354E+00	81.07
	242.00	149	7.25	5.465E+00	2.284E+00	2.284E+00	38.58
	295.22	164	18.42	4.774E+00	1.131E+00	1.131E+00	26.71
	351.93	275	35.60*	4.216E+00	1.110E+00	1.110E+00	14.96
U-235	89.96	48	3.47	7.258E+00	1.147E+00	1.147E+00	58.70
	93.35	74	5.60	7.375E+00	1.079E+00	1.079E+00	71.80
	143.76	------	10.96*	7.276E+00	------	Line Not Found	------
	163.33	------	5.08	6.883E+00	------	Line Not Found	------
	185.72	90	57.20	6.427E+00	1.487E-01	1.487E-01	54.43
	205.31	------	5.01	6.059E+00	------	Line Not Found	------
U-238	63.29	29	3.70*	4.722E+00	1.010E+00	1.010E+00	175.54
	92.59	74	4.23	7.375E+00	1.428E+00	1.428E+00	71.80
AM-243	43.53	------	5.90	1.338E+00	------	Line Not Found	------
	74.66	202	67.20*	6.199E+00	2.936E-01	2.936E-01	25.60
ANH-511	511.00	15	100.00*	3.183E+00	2.926E-02	2.926E-02	298.67

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:54:52.15

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378002.CNF;1  *
* Acquisition date : 10-MAY-2025 10:24:02 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:30:21.81     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:18:00 Analyst initials: RXF2            *
* Sample ID        : G719378002           Sample Quantity : 8.2620E+01 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.575E+01	1.648E+00	7.135E-01
SC-46	3.331E-02	2.693E-02	6.857E-02
CD-109	1.310E+00	1.041E+00	1.356E+00
SN-113	4.941E-02	4.840E-02	7.844E-02
SN-126	1.248E-01	9.916E-02	1.296E-01
BA-137M	1.491E-01	9.305E-02	5.716E-02
CS-137	1.575E-01	9.829E-02	6.039E-02
TL-208	2.495E-01	7.209E-02	6.625E-02
BI-211	3.058E+00	4.483E-01	3.338E-01
BI-212	1.199E+00	7.030E-01	9.834E-01
PB-212	1.033E+00	1.149E-01	9.390E-02
BI-214	1.082E+00	1.652E-01	1.122E-01
PB-214	1.110E+00	1.627E-01	1.214E-01
RN-222	1.082E+00	1.652E-01	1.122E-01
RA-224	4.038E+00	1.527E+00	1.006E+00
RA-226	1.110E+00	1.627E-01	1.214E-01
AC-228	9.738E-01	2.824E-01	2.625E-01
RA-228	9.738E-01	2.824E-01	2.625E-01
TH-228	1.033E+00	1.149E-01	9.390E-02
TH-230	1.110E+00	1.627E-01	1.214E-01
TH-232	9.738E-01	2.824E-01	2.625E-01
PA-234M	1.010E+00	1.738E+00	1.853E+00
TH-234	1.010E+00	1.738E+00	1.853E+00
U-234	1.110E+00	1.627E-01	1.214E-01
U-235	1.270E-01	2.119E-01	3.397E-01
U-238	1.010E+00	1.738E+00	1.853E+00
AM-243	2.936E-01	7.366E-02	7.053E-02
ANH-511	2.926E-02	8.563E-02	5.467E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-3.880E-02	4.019E-01	7.212E-01	NOT IDENT.
NA-22	2.413E-03	4.407E-02	8.531E-02	NOT IDENT.

NA-24	0.000E+00	1.048E+14	0.000E+00	SHORT HLIF
AL-26	-1.700E-02	3.201E-02	5.489E-02	NOT IDENT.
V-48	-4.462E-02	1.701E-01	3.118E-01	NOT IDENT.
CR-51	7.331E-03	5.320E-01	9.732E-01	NOT IDENT.
MN-52	2.694E-01	1.826E+00	3.784E+00	NOT IDENT.
MN-54	2.095E-02	3.921E-02	7.961E-02	NOT IDENT.
CO-56	1.585E-02	4.244E-02	8.667E-02	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.023E-03	2.681E-02	4.489E-02	NOT IDENT.
CO-58	1.102E-02	4.528E-02	8.541E-02	NOT IDENT.
FE-59	-1.941E-02	1.238E-01	2.306E-01	NOT IDENT.
CO-60	1.107E-02	4.009E-02	8.193E-02	NOT IDENT.
ZN-65	-4.480E-02	9.794E-02	1.484E-01	NOT IDENT.
GE-68	-2.950E-01	1.423E+00	2.631E+00	NOT IDENT.
AS-73	1.461E-01	6.449E-01	1.132E+00	NOT IDENT.
AS-74	-6.499E-02	2.051E-01	3.069E-01	NOT IDENT.
SE-75	2.713E-02	4.480E-02	7.999E-02	NOT IDENT.
BR-77	0.000E+00	2.507E+03	0.000E+00	SHORT HLIF
SR-82	4.624E-02	5.799E-01	1.006E+00	NOT IDENT.
RB-83	4.404E-02	7.504E-02	1.474E-01	NOT IDENT.
RB-84	-4.774E-02	9.066E-02	1.630E-01	NOT IDENT.
KR-85	2.178E+00	8.446E+00	1.399E+01	NOT IDENT.
SR-85	1.354E-02	5.347E-02	8.850E-02	NOT IDENT.
RB-86	4.822E-01	1.573E+00	3.133E+00	NOT IDENT.
Y-88	3.111E-02	4.613E-02	1.072E-01	NOT IDENT.
Y-91	-3.471E+00	3.068E+01	5.623E+01	NOT IDENT.
NB-94	-1.225E-02	3.734E-02	6.356E-02	NOT IDENT.
NB-95	9.531E-03	5.338E-02	9.744E-02	NOT IDENT.
NB-95M	6.224E-02	1.322E-01	2.492E-01	NOT IDENT.
ZR-95	1.431E-01	1.132E-01	1.748E-01	FAIL ABUN
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.337E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	9.702E+02	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	8.982E+36	0.000E+00	SHORT HLIF
RH-101	-1.936E-02	2.943E-02	4.679E-02	NOT IDENT.
RH-102	-7.938E-03	5.287E-02	9.412E-02	NOT IDENT.
RU-103	1.233E-02	5.318E-02	9.927E-02	FAIL ABUN
RH-106	-1.079E-01	3.359E-01	5.796E-01	NOT IDENT.
RU-106	-1.079E-01	3.359E-01	5.796E-01	NOT IDENT.
AG-108M	4.025E-04	3.086E-02	5.591E-02	NOT IDENT.
AG-110	-3.593E-01	8.547E-01	1.263E+00	NOT IDENT.
AG-110M	3.711E-02	4.218E-02	9.022E-02	NOT IDENT.
CD-115	0.000E+00	2.227E+03	0.000E+00	SHORT HLIF
SN-117M	-4.650E-02	1.332E-01	2.152E-01	NOT IDENT.
SB-122	0.000E+00	1.395E+02	0.000E+00	SHORT HLIF
TE-123M	1.445E-02	3.127E-02	5.415E-02	NOT IDENT.
SB-124	-2.360E-02	9.979E-02	1.911E-01	NOT IDENT.
SB-125	1.780E-02	9.432E-02	1.678E-01	FAIL ABUN
TE-125M	1.191E+01	1.132E+01	2.057E+01	NOT IDENT.
I-126	3.350E-01	5.299E-01	1.041E+00	NOT IDENT.
SB-126	-9.288E-02	3.827E-01	6.635E-01	NOT IDENT.
SB-127	-1.630E+01	2.941E+01	4.189E+01	NOT IDENT.
I-131	-1.439E-01	4.904E-01	8.674E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	2.686E+01	0.000E+00	SHORT HLIF
BA-133	3.226E-02	3.972E-02	7.292E-02	FAIL ABUN
I-133	0.000E+00	4.556E+09	0.000E+00	SHORT HLIF
CS-134	1.535E-02	3.980E-02	7.649E-02	NOT IDENT.
I-135	0.000E+00	2.909E+34	0.000E+00	SHORT HLIF
CS-136	-7.720E-02	2.880E-01	5.274E-01	NOT IDENT.
LA-138	-2.375E-02	5.590E-02	1.003E-01	NOT IDENT.
CE-139	-9.557E-04	3.309E-02	5.076E-02	NOT IDENT.
BA-140	-1.775E-01	7.267E-01	1.270E+00	NOT IDENT.
LA-140	-4.386E-02	2.069E-01	3.957E-01	FAIL ABUN
CE-141	-8.188E-02	8.501E-02	1.303E-01	NOT IDENT.
CE-143	0.000E+00	6.751E+05	0.000E+00	SHORT HLIF
CE-144	1.006E-01	2.053E-01	3.572E-01	NOT IDENT.
PM-144	1.462E-03	3.642E-02	6.574E-02	NOT IDENT.
PR-144	9.451E-02	2.748E+00	4.956E+00	NOT IDENT.
PM-146	3.802E-02	3.875E-02	7.876E-02	NOT IDENT.
ND-147	4.711E-01	1.477E+00	2.824E+00	FAIL ABUN
PM-147	3.718E+02	7.217E+02	1.265E+03	NOT IDENT.
PM-149	0.000E+00	1.581E+04	0.000E+00	SHORT HLIF
EU-150	-5.458E-03	2.662E-02	4.262E-02	FAIL ABUN
EU-152	1.365E-02	9.230E-02	1.707E-01	FAIL ABUN
GD-153	-2.162E-02	8.523E-02	1.322E-01	NOT IDENT.
EU-154	9.247E-03	1.243E-01	2.412E-01	FAIL ABUN
EU-155	4.142E-02	9.536E-02	1.670E-01	FAIL ABUN

TB-160	2.136E-02	1.479E-01	2.930E-01	FAIL ABUN
HO-166M	8.070E-03	5.726E-02	1.062E-01	FAIL ABUN
TM-171	2.831E+00	1.164E+01	2.048E+01	NOT IDENT.
HF-172	-5.874E-02	1.649E-01	2.705E-01	FAIL ABUN
LU-172	1.069E-03	6.531E-02	1.257E-01	FAIL ABUN
LU-176	7.131E-03	2.703E-02	5.016E-02	FAIL ABUN
HF-181	-2.584E-02	5.595E-02	9.613E-02	NOT IDENT.
TA-182	-5.199E-02	2.406E-01	4.356E-01	FAIL ABUN
RE-183	-5.041E-02	1.619E-01	2.726E-01	NOT IDENT.
RE-184	-2.340E-02	1.784E-01	3.142E-01	NOT IDENT.
W-188	5.791E+00	7.929E+00	1.432E+01	FAIL ABUN
IR-192	1.883E-03	3.581E-02	6.617E-02	FAIL ABUN
HG-203	-3.236E-02	5.494E-02	8.412E-02	NOT IDENT.
TL-204	1.677E+00	4.384E+00	7.087E+00	FAIL ABUN
BI-207	-3.955E-02	5.095E-02	8.595E-02	FAIL ABUN
BI-210	4.336E-01	2.216E+00	3.824E+00	NOT IDENT.
PB-210	4.336E-01	2.216E+00	3.824E+00	NOT IDENT.
PB-211	4.289E-01	7.098E-01	1.265E+00	NOT IDENT.
BI-213	5.283E-02	9.837E-02	1.901E-01	NOT IDENT.
RN-219	-4.060E-02	3.775E-01	6.812E-01	NOT IDENT.
RA-223	2.988E-02	7.230E-01	1.184E+00	FAIL ABUN
AC-225	-9.451E-01	1.851E+00	3.259E+00	NOT IDENT.
AC-227	4.619E-02	2.369E-01	4.286E-01	NOT IDENT.
TH-227	4.619E-02	2.369E-01	4.286E-01	NOT IDENT.
TH-229	3.311E-01	5.042E-01	8.894E-01	FAIL ABUN
PA-231	-2.263E-01	4.759E-01	8.299E-01	NOT IDENT.
TH-231	2.988E-02	7.230E-01	1.184E+00	FAIL ABUN
PA-233	-1.704E-02	5.732E-02	1.023E-01	NOT IDENT.
PA-234	1.502E-01	3.223E-01	6.523E-01	FAIL ABUN
NP-237	-1.704E-02	5.732E-02	1.023E-01	FAIL ABUN
NP-238	0.000E+00	5.834E+03	0.000E+00	SHORT HLIF
NP-239	-3.910E-02	2.338E-01	3.906E-01	FAIL ABUN
PU-239	1.813E+02	3.355E+02	5.858E+02	NOT IDENT.
AM-241	7.496E-02	1.177E-01	1.969E-01	NOT IDENT.
CM-243	-1.245E-03	9.934E-02	1.679E-01	FAIL ABUN
BK-247	2.043E-02	7.435E-02	1.277E-01	FAIL ABUN
CM-247	-2.088E-02	3.509E-02	5.982E-02	NOT IDENT.
CF-249	1.664E-02	3.695E-02	7.067E-02	NOT IDENT.
CF-251	-7.869E-02	1.486E-01	2.136E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:54:50.62

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	351	10.66*	1.267E+00	1.575E+01	1.575E+01	10.68
SC-46	889.28	8	99.98*	1.974E+00	2.555E-02	3.331E-02	82.50
	1120.55	65	99.99	1.594E+00	2.477E-01	3.230E-01	37.87
CD-109	88.03	54	3.70*	7.119E+00	1.248E+00	1.310E+00	81.07
SN-113	391.69	17	64.94*	3.903E+00	4.073E-02	4.941E-02	99.96
SN-126	64.28	29	9.60	4.722E+00	3.894E-01	3.894E-01	175.54
	86.94	54	8.90	7.119E+00	5.189E-01	5.189E-01	81.07
	87.57	54	37.00*	7.119E+00	1.248E-01	1.248E-01	81.07
BA-137M	661.66	57	89.90*	2.569E+00	1.488E-01	1.491E-01	63.67
CS-137	661.66	57	85.10*	2.569E+00	1.572E-01	1.575E-01	63.67
TL-208	277.37	------	6.60	4.980E+00	------	Line Not Found	------
	583.19	100	85.00*	2.860E+00	2.495E-01	2.495E-01	29.49
	860.56	22	12.50	2.034E+00	5.233E-01	5.233E-01	96.65
BI-211	72.87	------	1.23	5.985E+00	------	Line Not Found	------
	351.06	275	12.92*	4.216E+00	3.058E+00	3.058E+00	14.96
BI-212	727.33	31	6.67*	2.368E+00	1.199E+00	1.199E+00	59.81
	1620.50	------	1.47	1.174E+00	------	Line Not Found	------
PB-212	74.82	202	10.28	6.199E+00	1.919E+00	1.919E+00	25.60
	77.11	260	17.10	6.427E+00	1.432E+00	1.432E+00	20.62
	238.63	410	43.60*	5.510E+00	1.033E+00	1.033E+00	11.35
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
BI-214	609.32	224	45.49*	2.758E+00	1.082E+00	1.082E+00	15.58
	1120.29	65	14.92	1.594E+00	1.660E+00	1.660E+00	37.87
	1764.49	47	15.30	1.115E+00	1.675E+00	1.675E+00	29.65
PB-214	74.82	202	5.80	6.199E+00	3.401E+00	3.402E+00	25.60
	77.11	260	9.70	6.427E+00	2.525E+00	2.525E+00	20.62
	87.09	54	3.41	7.119E+00	1.354E+00	1.354E+00	81.07
	242.00	149	7.25	5.465E+00	2.284E+00	2.284E+00	38.58
	295.22	164	18.42	4.774E+00	1.131E+00	1.131E+00	26.71
	351.93	275	35.60*	4.216E+00	1.110E+00	1.110E+00	14.96
RN-222	609.32	224	45.49*	2.758E+00	1.082E+00	1.082E+00	15.58
	1120.29	65	14.92	1.594E+00	1.660E+00	1.660E+00	37.87
	1764.49	47	15.30	1.115E+00	1.675E+00	1.675E+00	29.65
RA-224	240.99	149	4.10*	5.465E+00	4.038E+00	4.038E+00	38.58
RA-226	74.82	202	5.80	6.199E+00	3.401E+00	3.402E+00	25.60
	77.11	260	9.70	6.427E+00	2.525E+00	2.525E+00	20.62
	87.09	54	3.41	7.119E+00	1.354E+00	1.354E+00	81.07
	242.00	149	7.25	5.465E+00	2.284E+00	2.284E+00	38.58
	295.22	164	18.42	4.774E+00	1.131E+00	1.131E+00	26.71
	351.93	275	35.60*	4.216E+00	1.110E+00	1.110E+00	14.96
AC-228	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	99	11.27	4.337E+00	1.229E+00	1.229E+00	34.55
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	80	25.80*	1.930E+00	9.738E-01	9.738E-01	29.59
	968.97	41	15.80	1.823E+00	8.661E-01	8.661E-01	52.20
RA-228	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	99	11.27	4.337E+00	1.229E+00	1.229E+00	34.55

Sample ID : G719378002 Acquisition date : 10-MAY-2025 10:24:02

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	80	25.80*	1.930E+00	9.738E-01	9.738E-01	29.59
	968.97	41	15.80	1.823E+00	8.661E-01	8.661E-01	52.20
TH-228	74.82	202	10.28	6.199E+00	1.919E+00	1.919E+00	25.60
	77.11	260	17.10	6.427E+00	1.432E+00	1.432E+00	20.62
	238.63	410	43.60*	5.510E+00	1.033E+00	1.033E+00	11.35
	300.09	------	3.30	4.716E+00	------	Line Not Found	------
TH-230	74.82	202	5.80	6.199E+00	3.401E+00	3.401E+00	25.60
	77.11	260	9.70	6.427E+00	2.525E+00	2.525E+00	20.62
	87.09	54	3.41	7.119E+00	1.354E+00	1.354E+00	81.07
	242.00	149	7.25	5.465E+00	2.284E+00	2.284E+00	38.58
	295.22	164	18.42	4.774E+00	1.131E+00	1.131E+00	26.71
	351.93	275	35.60*	4.216E+00	1.110E+00	1.110E+00	14.96
TH-232	105.21	------	1.10	7.636E+00	------	Line Not Found	------
	338.32	99	11.27	4.337E+00	1.229E+00	1.229E+00	34.55
	835.71	------	1.61	2.089E+00	------	Line Not Found	------
	911.20	80	25.80*	1.930E+00	9.738E-01	9.738E-01	29.59
	968.97	41	15.80	1.823E+00	8.661E-01	8.661E-01	52.20
PA-234M	63.29	29	3.70*	4.722E+00	1.010E+00	1.010E+00	175.54
	92.59	74	4.23	7.375E+00	1.428E+00	1.428E+00	71.80
TH-234	63.29	29	3.70*	4.722E+00	1.010E+00	1.010E+00	175.54
	92.59	74	4.23	7.375E+00	1.428E+00	1.428E+00	71.80
U-234	74.82	202	5.80	6.199E+00	3.401E+00	3.401E+00	25.60
	77.11	260	9.70	6.427E+00	2.525E+00	2.525E+00	20.62
	87.09	54	3.41	7.119E+00	1.354E+00	1.354E+00	81.07
	242.00	149	7.25	5.465E+00	2.284E+00	2.284E+00	38.58
	295.22	164	18.42	4.774E+00	1.131E+00	1.131E+00	26.71
	351.93	275	35.60*	4.216E+00	1.110E+00	1.110E+00	14.96
U-235	89.96	48	3.47	7.258E+00	1.147E+00	1.147E+00	58.70
	93.35	74	5.60	7.375E+00	1.079E+00	1.079E+00	71.80
	143.76	------	10.96*	7.276E+00	------	Line Not Found	------
	163.33	------	5.08	6.883E+00	------	Line Not Found	------
	185.72	90	57.20	6.427E+00	1.487E-01	1.487E-01	54.43
	205.31	------	5.01	6.059E+00	------	Line Not Found	------
U-238	63.29	29	3.70*	4.722E+00	1.010E+00	1.010E+00	175.54
	92.59	74	4.23	7.375E+00	1.428E+00	1.428E+00	71.80
AM-243	43.53	------	5.90	1.338E+00	------	Line Not Found	------
	74.66	202	67.20*	6.199E+00	2.936E-01	2.936E-01	25.60
ANH-511	511.00	15	100.00*	3.183E+00	2.926E-02	2.926E-02	298.67

Flag: "*" = Keyline

Sample ID : G719378002 Acquisition date : 10-MAY-2025 10:24:02

Total number of lines in spectrum	51	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	41	80.39%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.575E+01	1.575E+01	0.168E+01	10.68	
SC-46	83.79D	1.30	2.555E-02	3.331E-02	2.748E-02	82.50	
CD-109	461.40D	1.05	1.248E+00	1.310E+00	1.062E+00	81.07	
SN-113	115.09D	1.21	4.073E-02	4.941E-02	4.939E-02	99.96	
SN-126	2.30E+05Y	1.00	1.248E-01	1.248E-01	1.012E-01	81.07	
BA-137M	30.08Y	1.00	1.488E-01	1.491E-01	0.949E-01	63.67	
CS-137	30.08Y	1.00	1.572E-01	1.575E-01	1.003E-01	63.67	
TL-208	1.41E+10Y	1.00	2.495E-01	2.495E-01	0.736E-01	29.49	
BI-211	7.04E+08Y	1.00	3.058E+00	3.058E+00	0.457E+00	14.96	
BI-212	1.41E+10Y	1.00	1.199E+00	1.199E+00	0.717E+00	59.81	
PB-212	1.41E+10Y	1.00	1.033E+00	1.033E+00	0.117E+00	11.35	
BI-214	1600.00Y	1.00	1.082E+00	1.082E+00	0.169E+00	15.58	
PB-214	1600.00Y	1.00	1.110E+00	1.110E+00	0.166E+00	14.96	
RN-222	1600.00Y	1.00	1.082E+00	1.082E+00	0.169E+00	15.58	
RA-224	1.41E+10Y	1.00	4.038E+00	4.038E+00	1.558E+00	38.58	
RA-226	1600.00Y	1.00	1.110E+00	1.110E+00	0.166E+00	14.96	
AC-228	1.41E+10Y	1.00	9.738E-01	9.738E-01	2.882E-01	29.59	
RA-228	1.41E+10Y	1.00	9.738E-01	9.738E-01	2.882E-01	29.59	
TH-228	1.41E+10Y	1.00	1.033E+00	1.033E+00	0.117E+00	11.35	
TH-230	7.54E+04Y	1.00	1.110E+00	1.110E+00	0.166E+00	14.96	
TH-232	1.41E+10Y	1.00	9.738E-01	9.738E-01	2.882E-01	29.59	
PA-234M	4.47E+09Y	1.00	1.010E+00	1.010E+00	1.773E+00	175.54	
TH-234	4.47E+09Y	1.00	1.010E+00	1.010E+00	1.773E+00	175.54	
U-234	2.45E+05Y	1.00	1.110E+00	1.110E+00	0.166E+00	14.96	
U-235	7.04E+08Y	1.00	1.487E-01	1.487E-01	0.809E-01	54.43	K
U-238	4.47E+09Y	1.00	1.010E+00	1.010E+00	1.773E+00	175.54	
AM-243	7370.00Y	1.00	2.936E-01	2.936E-01	0.752E-01	25.60	
ANH-511	1.00E+09Y	1.00	2.926E-02	2.926E-02	8.738E-02	298.67	
		Total Activity :	4.113E+01	4.121E+01			

Grand Total Activity : 4.113E+01 4.121E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378002 Acquisition date : 10-MAY-2025 10:24:02

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	27.15	44	83	2.07	54.41	51	10	9.42E-03	81.6	3.38E-02	
0	83.58	6	125	0.57	167.16	167	6	1.17E-03	****	6.91E+00	T
0	99.93	7	178	2.12	199.83	192	11	1.48E-03	****	7.56E+00	T
0	139.11	13	99	0.93	278.12	277	7	2.63E-03	****	7.36E+00	T
0	167.39	14	84	1.30	334.64	333	7	3.01E-03	****	6.80E+00	
0	180.82	22	54	0.83	361.47	359	6	4.61E-03	****	6.53E+00	T
0	209.33	35	98	0.89	418.46	414	9	7.21E-03	****	5.99E+00	
0	269.72	53	62	1.45	539.15	533	12	1.08E-02	62.5	5.08E+00	T
0	281.53	39	64	3.28	562.75	557	12	8.10E-03	83.2	4.93E+00	T
0	328.99	28	76	1.68	657.60	649	12	5.85E-03	****	4.42E+00	T
1	384.72	23	31	1.57	769.00	765	20	4.65E-03	80.0	3.95E+00	T
0	409.86	20	39	0.96	819.26	813	11	4.16E-03	****	3.77E+00	T
0	462.65	27	31	1.89	924.80	921	9	5.54E-03	79.1	3.44E+00	T
0	600.17	18	28	1.34	1199.77	1192	13	3.68E-03	****	2.79E+00	T
0	683.16	27	11	1.61	1365.73	1360	14	5.42E-03	60.3	2.50E+00	
0	756.70	21	11	1.46	1512.81	1505	14	4.21E-03	80.7	2.29E+00	T
0	768.84	38	37	3.80	1537.10	1526	21	7.79E-03	82.8	2.25E+00	
0	785.89	16	15	1.30	1571.20	1567	11	3.24E-03	****	2.21E+00	
0	892.33	11	4	0.99	1784.13	1781	8	2.22E-03	81.6	1.97E+00	
6	964.36	22	12	2.48	1928.22	1924	23	4.40E-03	69.6	1.83E+00	T
0	975.50	8	13	1.59	1950.51	1946	10	1.55E-03	****	1.81E+00	
0	1237.70	50	11	1.26	2475.22	2469	12	1.00E-02	37.4	1.46E+00	T
0	1377.85	22	11	2.47	2755.78	2747	17	4.38E-03	80.3	1.33E+00	
0	1408.20	10	5	0.73	2816.55	2812	9	1.97E-03	****	1.30E+00	T
0	1584.13	4	7	1.04	3168.83	3160	10	7.07E-04	****	1.19E+00	T
0	1752.64	8	0	1.33	3506.33	3502	9	1.67E-03	66.7	1.12E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:55:01.83

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378002.CNF;1  *
* Acquisition date : 10-MAY-2025 10:24:02 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:30:21.81     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:18:00 Nuclide Library : SOLID           *
* Sample ID        : G719378002           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 8.2620E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.970E-01
SC-46	2.897E-02
CD-109	6.470E-01
SN-113	3.539E-02
SN-126	6.183E-02
BA-137M	2.510E-02
CS-137	2.652E-02
TL-208	2.983E-02
BI-211	1.523E-01
BI-212	4.409E-01
PB-212	4.364E-02
BI-214	4.972E-02
PB-214	5.539E-02
RN-222	4.972E-02
RA-224	4.676E-01
RA-226	5.539E-02
AC-228	1.151E-01
RA-228	1.151E-01
TH-228	4.364E-02
TH-230	5.539E-02
TH-232	1.151E-01
PA-234M	8.814E-01
TH-234	8.814E-01
U-234	5.539E-02
U-235	1.599E-01
U-238	8.814E-01
AM-243	3.337E-02
ANH-511	2.482E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.260E-01	NOT IDENT.
NA-22	3.684E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF

AL-26	2.007E-02	NOT IDENT.
V-48	1.379E-01	NOT IDENT.
CR-51	4.468E-01	NOT IDENT.
MN-52	1.557E+00	NOT IDENT.
MN-54	3.568E-02	NOT IDENT.
CO-56	3.814E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.113E-02	NOT IDENT.
CO-58	3.756E-02	NOT IDENT.
FE-59	1.008E-01	NOT IDENT.
CO-60	3.499E-02	NOT IDENT.
ZN-65	6.331E-02	NOT IDENT.
GE-68	1.151E+00	NOT IDENT.
AS-73	5.327E-01	NOT IDENT.
AS-74	1.365E-01	NOT IDENT.
SE-75	3.683E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	4.455E-01	NOT IDENT.
RB-83	6.635E-02	NOT IDENT.
RB-84	6.993E-02	NOT IDENT.
KR-85	6.409E+00	NOT IDENT.
SR-85	4.055E-02	NOT IDENT.
RB-86	1.381E+00	NOT IDENT.
Y-88	4.443E-02	NOT IDENT.
Y-91	2.508E+01	NOT IDENT.
NB-94	2.849E-02	NOT IDENT.
NB-95	4.369E-02	NOT IDENT.
NB-95M	1.165E-01	NOT IDENT.
ZR-95	7.825E-02	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.183E-02	NOT IDENT.
RH-102	4.162E-02	NOT IDENT.
RU-103	4.488E-02	FAIL ABUN
RH-106	2.582E-01	NOT IDENT.
RU-106	2.582E-01	NOT IDENT.
AG-108M	2.551E-02	NOT IDENT.
AG-110	5.559E-01	NOT IDENT.
AG-110M	3.901E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.009E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.545E-02	NOT IDENT.
SB-124	7.402E-02	NOT IDENT.
SB-125	7.641E-02	FAIL ABUN
TE-125M	9.721E+00	NOT IDENT.
I-126	4.673E-01	NOT IDENT.
SB-126	2.939E-01	NOT IDENT.
SB-127	1.812E+01	NOT IDENT.
I-131	3.957E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.337E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	3.382E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.316E-01	NOT IDENT.
LA-138	4.054E-02	NOT IDENT.
CE-139	2.368E-02	NOT IDENT.
BA-140	5.738E-01	NOT IDENT.
LA-140	1.570E-01	FAIL ABUN
CE-141	6.066E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.683E-01	NOT IDENT.
PM-144	2.939E-02	NOT IDENT.
PR-144	2.215E+00	NOT IDENT.
PM-146	3.582E-02	NOT IDENT.
ND-147	1.262E+00	FAIL ABUN
PM-147	5.954E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.941E-02	FAIL ABUN
EU-152	7.831E-02	FAIL ABUN
GD-153	6.213E-02	NOT IDENT.
EU-154	1.042E-01	FAIL ABUN
EU-155	7.855E-02	FAIL ABUN
TB-160	1.283E-01	FAIL ABUN

HO-166M	4.696E-02	FAIL ABUN
TM-171	9.637E+00	NOT IDENT.
HF-172	1.257E-01	FAIL ABUN
LU-172	5.477E-02	FAIL ABUN
LU-176	2.325E-02	FAIL ABUN
HF-181	4.302E-02	NOT IDENT.
TA-182	1.933E-01	FAIL ABUN
RE-183	1.281E-01	NOT IDENT.
RE-184	1.368E-01	NOT IDENT.
W-188	6.594E+00	FAIL ABUN
IR-192	3.022E-02	FAIL ABUN
HG-203	3.889E-02	NOT IDENT.
TL-204	3.368E+00	FAIL ABUN
BI-207	3.651E-02	FAIL ABUN
BI-210	1.810E+00	NOT IDENT.
PB-210	1.810E+00	NOT IDENT.
PB-211	5.771E-01	NOT IDENT.
BI-213	8.644E-02	NOT IDENT.
RN-219	3.090E-01	NOT IDENT.
RA-223	5.473E-01	FAIL ABUN
AC-225	1.519E+00	NOT IDENT.
AC-227	1.984E-01	NOT IDENT.
TH-227	1.984E-01	NOT IDENT.
TH-229	4.160E-01	FAIL ABUN
PA-231	3.833E-01	NOT IDENT.
TH-231	5.473E-01	FAIL ABUN
PA-233	4.663E-02	NOT IDENT.
PA-234	2.902E-01	FAIL ABUN
NP-237	4.663E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.823E-01	FAIL ABUN
PU-239	2.763E+02	NOT IDENT.
AM-241	9.312E-02	NOT IDENT.
CM-243	7.896E-02	FAIL ABUN
BK-247	5.869E-02	FAIL ABUN
CM-247	2.701E-02	NOT IDENT.
CF-249	3.225E-02	NOT IDENT.
CF-251	9.987E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:55:05.99

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378002.CNF;1  *
* Acquisition date : 10-MAY-2025 10:24:02 Sensitivity     : 3.000           *
* Detector ID      : GAM20                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:30:21.81     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:18:00 Nuclide Library : SOLID           *
* Sample ID        : G719378002           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 8.2620E+01 GRAM *
*                                         Quantity Err(%) : 1.2104E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 19-JUN-2024 07:41:41 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.575E+01	2.274E+00	2.274E+00
SC-46	3.331E-02	2.717E-02	2.717E-02
CD-109	1.310E+00	1.048E+00	1.048E+00
SN-113	4.941E-02	4.857E-02	4.857E-02
SN-126	1.248E-01	9.969E-02	9.969E-02
BA-137M	1.491E-01	9.395E-02	9.395E-02
CS-137	1.575E-01	9.925E-02	9.925E-02
TL-208	2.495E-01	7.535E-02	7.535E-02
BI-211	3.058E+00	5.159E-01	5.159E-01
BI-212	1.199E+00	7.126E-01	7.126E-01
PB-212	1.033E+00	1.458E-01	1.458E-01
BI-214	1.082E+00	1.906E-01	1.906E-01
PB-214	1.110E+00	1.864E-01	1.864E-01
RN-222	1.082E+00	1.906E-01	1.906E-01
RA-224	4.038E+00	1.567E+00	1.567E+00
RA-226	1.110E+00	1.864E-01	1.864E-01
AC-228	9.738E-01	3.029E-01	3.029E-01
RA-228	9.738E-01	3.029E-01	3.029E-01
TH-228	1.033E+00	1.458E-01	1.458E-01
TH-230	1.110E+00	1.864E-01	1.864E-01
TH-232	9.738E-01	3.029E-01	3.029E-01
PA-234M	1.010E+00	1.753E+00	1.753E+00
TH-234	1.010E+00	1.753E+00	1.753E+00
U-234	1.110E+00	1.864E-01	1.864E-01
U-235	1.270E-01	2.122E-01	2.122E-01
U-238	1.010E+00	1.753E+00	1.753E+00
AM-243	2.936E-01	7.688E-02	7.688E-02
ANH-511	2.926E-02	8.567E-02	8.567E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-3.880E-02	4.020E-01	4.023E-01	NOT IDENT.
NA-22	2.413E-03	4.407E-02	4.409E-02	NOT IDENT.

NA-24	1.278E+13	1.048E+14	1.049E+14	SHORT HLIF
AL-26	-1.700E-02	3.203E-02	3.294E-02	NOT IDENT.
V-48	-4.462E-02	1.702E-01	1.714E-01	NOT IDENT.
CR-51	7.331E-03	5.320E-01	5.320E-01	NOT IDENT.
MN-52	2.694E-01	1.826E+00	1.830E+00	NOT IDENT.
MN-54	2.095E-02	3.927E-02	4.039E-02	NOT IDENT.
CO-56	1.585E-02	4.247E-02	4.307E-02	FAIL ABUN
MN-56	1.000E+41	2.633E+41	0.000E+00	SHORT HLIF
CO-57	-1.023E-03	2.681E-02	2.681E-02	NOT IDENT.
CO-58	1.102E-02	4.530E-02	4.557E-02	NOT IDENT.
FE-59	-1.941E-02	1.238E-01	1.241E-01	NOT IDENT.
CO-60	1.107E-02	4.011E-02	4.042E-02	NOT IDENT.
ZN-65	-4.480E-02	9.802E-02	1.001E-01	NOT IDENT.
GE-68	-2.950E-01	1.423E+00	1.429E+00	NOT IDENT.
AS-73	1.461E-01	6.456E-01	6.490E-01	NOT IDENT.
AS-74	-6.499E-02	2.052E-01	2.073E-01	NOT IDENT.
SE-75	2.713E-02	4.485E-02	4.649E-02	NOT IDENT.
BR-77	2.254E+04	2.110E+04	2.342E+04	SHORT HLIF
SR-82	4.624E-02	5.799E-01	5.803E-01	NOT IDENT.
RB-83	4.404E-02	7.536E-02	7.793E-02	NOT IDENT.
RB-84	-4.774E-02	9.080E-02	9.332E-02	NOT IDENT.
KR-85	2.178E+00	8.448E+00	8.505E+00	NOT IDENT.
SR-85	1.354E-02	5.348E-02	5.383E-02	NOT IDENT.
RB-86	4.822E-01	1.574E+00	1.589E+00	NOT IDENT.
Y-88	3.111E-02	4.619E-02	4.827E-02	NOT IDENT.
Y-91	-3.471E+00	3.069E+01	3.073E+01	NOT IDENT.
NB-94	-1.225E-02	3.736E-02	3.776E-02	NOT IDENT.
NB-95	9.531E-03	5.339E-02	5.356E-02	NOT IDENT.
NB-95M	6.224E-02	1.324E-01	1.353E-01	NOT IDENT.
ZR-95	1.431E-01	1.140E-01	1.310E-01	FAIL ABUN
NB-97	-1.000E+41	3.044E+41	0.000E+00	SHORT HLIF
ZR-97	2.125E+13	3.342E+13	3.476E+13	SHORT HLIF
MO-99	-3.988E+01	9.702E+02	9.704E+02	SHORT HLIF
TC-99M	3.639E+36	8.992E+36	0.000E+00	SHORT HLIF
RH-101	-1.936E-02	2.965E-02	3.091E-02	NOT IDENT.
RH-102	-7.938E-03	5.288E-02	5.300E-02	NOT IDENT.
RU-103	1.233E-02	5.319E-02	5.348E-02	FAIL ABUN
RH-106	-1.079E-01	3.361E-01	3.396E-01	NOT IDENT.
RU-106	-1.079E-01	3.361E-01	3.396E-01	NOT IDENT.
AG-108M	4.025E-04	3.086E-02	3.086E-02	NOT IDENT.
AG-110	-3.593E-01	8.553E-01	8.705E-01	NOT IDENT.
AG-110M	3.711E-02	4.239E-02	4.557E-02	NOT IDENT.
CD-115	-2.748E+03	2.243E+03	2.563E+03	SHORT HLIF
SN-117M	-4.650E-02	1.332E-01	1.349E-01	NOT IDENT.
SB-122	4.372E+01	1.395E+02	1.409E+02	SHORT HLIF
TE-123M	1.445E-02	3.129E-02	3.196E-02	NOT IDENT.
SB-124	-2.360E-02	9.981E-02	1.004E-01	NOT IDENT.
SB-125	1.780E-02	9.433E-02	9.467E-02	FAIL ABUN
TE-125M	1.191E+01	1.135E+01	1.256E+01	NOT IDENT.
I-126	3.350E-01	5.309E-01	5.520E-01	NOT IDENT.
SB-126	-9.288E-02	3.828E-01	3.851E-01	NOT IDENT.
SB-127	-1.630E+01	2.954E+01	3.044E+01	NOT IDENT.
I-131	-1.439E-01	4.906E-01	4.949E-01	NOT IDENT.
I-132	-1.000E+41	2.394E+42	0.000E+00	SHORT HLIF
TE-132	-7.543E+00	2.688E+01	2.709E+01	SHORT HLIF
BA-133	3.226E-02	3.981E-02	4.238E-02	FAIL ABUN
I-133	-2.091E+09	4.579E+09	4.675E+09	SHORT HLIF
CS-134	1.535E-02	3.983E-02	4.043E-02	NOT IDENT.
I-135	-6.630E+33	2.950E+34	0.000E+00	SHORT HLIF
CS-136	-7.720E-02	2.882E-01	2.903E-01	NOT IDENT.
LA-138	-2.375E-02	5.594E-02	5.696E-02	NOT IDENT.
CE-139	-9.557E-04	3.309E-02	3.309E-02	NOT IDENT.
BA-140	-1.775E-01	7.269E-01	7.313E-01	NOT IDENT.
LA-140	-4.386E-02	2.070E-01	2.079E-01	FAIL ABUN
CE-141	-8.188E-02	8.524E-02	9.289E-02	NOT IDENT.
CE-143	1.459E+06	6.861E+05	9.506E+05	SHORT HLIF
CE-144	1.006E-01	2.054E-01	2.104E-01	NOT IDENT.
PM-144	1.462E-03	3.642E-02	3.643E-02	NOT IDENT.
PR-144	9.451E-02	2.748E+00	2.748E+00	NOT IDENT.
PM-146	3.802E-02	3.895E-02	4.255E-02	NOT IDENT.
ND-147	4.711E-01	1.477E+00	1.492E+00	FAIL ABUN
PM-147	3.718E+02	7.222E+02	7.414E+02	NOT IDENT.
PM-149	6.188E+03	1.584E+04	1.608E+04	SHORT HLIF
EU-150	-5.458E-03	2.662E-02	2.674E-02	FAIL ABUN
EU-152	1.365E-02	9.231E-02	9.252E-02	FAIL ABUN
GD-153	-2.162E-02	8.525E-02	8.580E-02	NOT IDENT.
EU-154	9.247E-03	1.243E-01	1.243E-01	FAIL ABUN
EU-155	4.142E-02	9.543E-02	9.724E-02	FAIL ABUN

TB-160	2.136E-02	1.479E-01	1.482E-01	FAIL ABUN
HO-166M	8.070E-03	5.727E-02	5.738E-02	FAIL ABUN
TM-171	2.831E+00	1.165E+01	1.172E+01	NOT IDENT.
HF-172	-5.874E-02	1.652E-01	1.673E-01	FAIL ABUN
LU-172	1.069E-03	6.531E-02	6.531E-02	FAIL ABUN
LU-176	7.131E-03	2.704E-02	2.723E-02	FAIL ABUN
HF-181	-2.584E-02	5.600E-02	5.720E-02	NOT IDENT.
TA-182	-5.199E-02	2.406E-01	2.417E-01	FAIL ABUN
RE-183	-5.041E-02	1.620E-01	1.636E-01	NOT IDENT.
RE-184	-2.340E-02	1.784E-01	1.787E-01	NOT IDENT.
W-188	5.791E+00	7.965E+00	8.382E+00	FAIL ABUN
IR-192	1.883E-03	3.581E-02	3.582E-02	FAIL ABUN
HG-203	-3.236E-02	5.500E-02	5.690E-02	NOT IDENT.
TL-204	1.677E+00	4.387E+00	4.452E+00	FAIL ABUN
BI-207	-3.955E-02	5.109E-02	5.411E-02	FAIL ABUN
BI-210	4.336E-01	2.216E+00	2.225E+00	NOT IDENT.
PB-210	4.336E-01	2.216E+00	2.225E+00	NOT IDENT.
PB-211	4.289E-01	7.107E-01	7.366E-01	NOT IDENT.
BI-213	5.283E-02	9.847E-02	1.013E-01	NOT IDENT.
RN-219	-4.060E-02	3.775E-01	3.780E-01	NOT IDENT.
RA-223	2.988E-02	7.231E-01	7.232E-01	FAIL ABUN
AC-225	-9.451E-01	1.854E+00	1.902E+00	NOT IDENT.
AC-227	4.619E-02	2.370E-01	2.379E-01	NOT IDENT.
TH-227	4.619E-02	2.370E-01	2.379E-01	NOT IDENT.
TH-229	3.311E-01	5.050E-01	5.266E-01	FAIL ABUN
PA-231	-2.263E-01	4.786E-01	4.893E-01	NOT IDENT.
TH-231	2.988E-02	7.231E-01	7.232E-01	FAIL ABUN
PA-233	-1.704E-02	5.734E-02	5.785E-02	NOT IDENT.
PA-234	1.502E-01	3.655E-01	3.718E-01	FAIL ABUN
NP-237	-1.704E-02	5.734E-02	5.785E-02	FAIL ABUN
NP-238	2.287E+03	5.839E+03	5.929E+03	SHORT HLIF
NP-239	-3.910E-02	2.338E-01	2.345E-01	FAIL ABUN
PU-239	1.813E+02	3.357E+02	3.455E+02	NOT IDENT.
AM-241	7.496E-02	1.178E-01	1.226E-01	NOT IDENT.
CM-243	-1.245E-03	9.934E-02	9.934E-02	FAIL ABUN
BK-247	2.043E-02	7.448E-02	7.504E-02	FAIL ABUN
CM-247	-2.088E-02	3.530E-02	3.653E-02	NOT IDENT.
CF-249	1.664E-02	3.700E-02	3.775E-02	NOT IDENT.
CF-251	-7.869E-02	1.489E-01	1.531E-01	NOT IDENT.

GEL Laboratories LLC
2040 Savage Road
Charleston, SC 29407

GAMMA SPECTROSCOPY BACKGROUND REPORT

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	90.2743	85.43	80.8457	131.20	84.4763
45.60	81.9963	86.55	81.0074	133.02	92.6934
46.54	91.0083	86.79	81.0417	133.52	75.5783
49.72	0.0000	86.94	159.9930	136.00	93.0593
51.35	78.2638	87.09	142.9649	136.47	79.7043
51.87	64.4771	87.57	143.0865	140.51	0.0000
52.39	78.4645	88.03	143.2021	143.76	63.4361
52.97	92.5005	88.34	128.3102	144.24	80.1182
53.44	80.6567	88.47	128.3395	145.44	84.8897
54.07	74.7954	89.96	96.5046	152.43	62.1668
57.36	0.0000	1093.63	96.6179	153.25	70.4471
57.53	82.4451	91.11	96.6962	323.87	68.1785
57.98	89.5755	92.59	96.9406	156.02	56.5459
59.27	83.4462	93.35	97.0649	158.56	83.8943
59.32	83.4557	94.56	88.6171	159.00	69.7510
59.54	83.4973	94.65	88.6308	162.33	65.2764
60.96	98.6243	94.67	88.6333	162.66	62.9270
61.17	98.6704	94.87	82.1758	163.33	67.7284
62.93	127.2087	97.43	75.2859	165.86	65.1461
63.29	127.3081	98.43	75.4091	176.31	56.6702
63.58	127.3882	98.44	75.4102	176.60	68.7495
64.28	122.4774	99.53	75.5440	177.52	83.7097
66.73	95.7572	100.11	75.6149	181.07	0.0000
67.24	112.2929	102.03	74.3890	181.52	70.3308
125.81	121.3049	103.18	89.1377	184.41	55.1414
67.75	130.5763	103.37	84.4138	143.76	55.2182
68.89	108.2116	105.21	72.5636	193.51	55.2605
69.67	102.1919	105.31	72.5752	197.03	60.3894
70.82	108.9826	106.12	81.4750	198.01	86.3560
70.83	108.9850	106.47	92.5351	201.83	84.2125
72.81	123.2686	109.28	71.9140	203.43	84.3474
72.87	123.2831	111.00	85.4125	205.31	76.2193
74.66	102.8671	111.76	0.0000	210.85	63.3063
74.82	102.8995	114.06	73.5455	215.65	80.3359
74.97	102.9296	116.30	0.0000	218.12	74.6528
77.11	103.3549	116.74	69.3602	222.11	74.0916
78.74	103.6756	119.76	74.1573	227.09	70.2060
79.69	103.8608	121.12	88.9365	227.38	71.0707
80.03	103.9262	121.22	72.0601	228.16	0.0000
80.12	103.9443	121.78	73.2440	228.18	66.8893
80.19	103.9579	122.06	86.8007	116.74	66.8893
80.57	104.0316	122.92	80.1339	235.69	57.9685
81.00	104.1144	123.07	80.1507	235.96	57.9830
81.07	104.1280	265.00	65.5314	238.63	58.1214
81.75	82.4209	125.81	65.7261	238.98	0.0000
82.47	80.4143	127.23	80.6147	240.99	58.2424
83.79	112.4261	127.91	72.7354	242.00	58.2943
84.00	78.5160	129.30	77.4276	244.70	64.4478

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	46.7117	344.28	38.9597	563.25	24.1287
252.80	52.7849	345.93	46.4325	564.24	0.0000
254.15	0.0000	351.06	36.3427	569.33	26.3021
256.23	44.2600	351.93	36.3641	946.00	31.5649
260.90	0.0000	355.39	0.0000	569.70	35.7764
264.66	34.0853	356.01	25.2438	583.19	27.5298
264.80	38.0218	364.49	41.3691	584.27	25.4248
265.00	38.0289	366.42	0.0000	595.83	23.9612
269.46	38.6065	372.51	28.3527	427.87	25.6133
270.03	38.6244	375.05	35.9721	602.52	0.0000
271.23	46.1308	377.52	24.6517	604.72	12.8306
273.65	60.7470	356.01	32.8421	607.14	20.3367
276.40	50.2936	388.16	29.5898	609.32	20.3560
277.37	54.3067	388.63	29.5986	610.33	19.2935
277.60	54.3167	391.69	28.6981	614.28	23.1926
278.00	50.3574	264.66	27.8949	618.01	33.3411
279.20	63.6709	401.81	33.6898	620.36	19.3792
279.54	63.6885	402.40	38.5164	621.93	26.9338
279.70	63.6958	404.85	26.0370	630.19	0.0000
280.46	44.2596	410.95	36.2953	631.29	21.6349
283.69	37.2729	413.71	23.2676	633.25	23.8181
284.31	37.2909	414.70	27.9375	634.78	24.9176
285.41	34.6574	423.72	29.2566	635.95	23.8459
285.90	0.0000	427.09	35.1768	636.99	30.3630
287.50	42.7246	427.87	29.3274	657.50	24.6112
290.67	32.1226	433.94	36.2969	657.76	21.3321
293.27	0.0000	439.40	25.5858	657.90	0.0000
351.93	42.0841	440.45	25.6012	661.66	17.5319
295.96	42.1080	453.88	19.8421	664.57	0.0000
879.38	59.2472	463.37	31.9134	666.33	17.5658
299.98	39.8997	468.07	31.9954	666.50	18.1160
300.09	43.1387	473.00	21.0530	667.71	0.0000
300.13	43.1396	475.06	28.1020	677.62	11.5814
301.36	58.4725	476.78	29.1322	685.70	21.5789
302.85	50.4321	477.60	31.1551	692.65	0.0000
256.23	41.4779	482.18	31.2308	695.00	15.5506
304.85	45.0958	487.02	24.2407	696.49	23.3396
306.78	48.7738	492.35	0.0000	696.51	23.3405
308.46	47.9299	497.08	26.3988	697.00	24.4564
311.90	40.7986	505.52	24.4746	697.30	27.7944
316.51	36.3875	507.63	0.0000	697.49	26.6846
319.41	41.0220	511.00	32.7240	702.65	30.0817
320.08	41.9533	514.00	35.3339	706.68	24.5504
321.04	40.1570	514.00	35.3339	711.68	17.8900
323.87	49.3835	520.40	19.5219	720.70	23.5635
325.23	53.5500	520.69	0.0000	721.93	0.0000
328.76	42.2135	522.65	0.0000	722.78	23.5831
333.37	30.3816	527.90	0.0000	722.91	20.2148
333.97	38.6837	528.26	29.9133	723.31	13.4785
334.37	41.4587	529.59	21.6759	724.19	20.2251
338.28	38.7991	529.87	0.0000	727.33	25.3125
338.32	38.8008	531.02	19.6254	733.00	18.0391
311.90	31.9191	537.26	33.1549	735.93	24.8315
340.48	31.9191	546.56	0.0000	333.97	20.3284
340.55	31.9205	552.55	28.1810	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	22.6457	667.71	0.0000	1434.09	6.2131
747.24	18.1374	962.31	16.1042	1435.80	9.3230
748.06	17.0093	964.08	17.5781	1457.56	0.0000
752.31	15.3325	966.17	17.5893	1460.82	8.3335
753.82	22.1597	911.20	17.6045	1489.16	5.2408
756.73	12.5142	983.53	23.0255	1505.03	7.3623
756.80	12.5142	984.45	0.0000	1584.12	6.8445
884.68	17.1106	1274.44	13.8684	1596.21	6.4329
765.81	22.8296	1002.74	12.0427	1620.50	6.4647
766.84	22.8385	1004.73	13.9037	1621.92	4.3113
772.60	0.0000	507.63	0.0000	1678.03	0.0000
776.52	19.2534	1025.87	0.0000	1690.97	5.4636
739.50	0.0000	1028.54	0.0000	1750.46	0.0000
778.90	20.6462	1037.84	18.7207	1764.49	7.0930
783.70	32.7479	1038.76	0.0000	1063.66	4.4380
788.74	8.6337	631.29	25.3372	1771.35	6.6581
792.07	23.5120	1048.07	20.6545	1791.20	0.0000
795.86	15.0032	1049.04	15.9645	1808.65	5.5875
810.06	15.0799	1050.41	12.2129	1810.72	0.0000
810.29	13.9209	1063.66	18.8611	1836.06	3.3693
344.28	15.0820	1077.00	15.1465		
810.76	15.0836	1077.34	18.9343		
815.77	11.6235	1085.87	14.2346		
1048.07	22.1056	1093.63	15.2168		
832.01	22.7952	1099.45	18.1001		
834.85	18.4295	1112.07	12.2359		
835.71	16.6795	1112.84	10.7092		
836.80	0.0000	1115.54	16.8405		
846.75	0.0000	1120.29	16.2882		
846.77	14.0996	1120.55	16.2892		
856.80	15.5627	1221.41	16.2924		
860.56	16.8221	1129.67	16.3297		
871.09	13.3278	1131.51	0.0000		
873.19	11.5587	1147.95	0.0000		
875.33	0.0000	1173.23	16.5217		
879.38	15.1469	1177.95	17.5155		
880.51	16.0439	1189.05	17.5660		
881.60	17.8326	1204.77	24.4980		
883.24	12.2348	1221.41	23.6191		
884.68	5.7123	1231.02	13.1535		
889.28	10.0116	1235.36	12.6414		
894.76	17.1938	1238.28	11.8601		
898.04	15.3683	1260.41	0.0000		
900.72	17.9456	1271.87	18.9374		
903.28	16.7629	1274.44	12.9651		
911.20	17.1063	1274.54	12.9659		
912.08	17.1109	1291.59	21.0320		
923.98	0.0000	1298.22	0.0000		
926.50	14.4766	1312.11	17.1110		
929.11	18.1104	1332.49	9.1033		
935.54	19.0550	1362.66	0.0000		
937.49	19.9744	1365.19	13.2507		
944.13	15.4675	1368.63	0.0000		
946.00	16.3867	1384.29	6.5523		
949.00	22.7806	1408.01	9.2648		

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:00.63

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378003.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM41.CNF;702
                                         Background date  : 4-MAY-2025 09:27:36.
Sample date      : 8-APR-2025 09:25:00. Acquisition date : 10-MAY-2025 10:24:35
Sample ID        : G719378003           Sample quantity  : 9.23100E+01 GRAM
Detector name    : GAM41                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.28  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.64*	27	65	0.69	94.03	91	6	7.44E-03	58.4	
2	0	63.28*	37	153	1.02	127.29	123	10	1.03E-02	70.0	
3	2	74.78*	119	103	0.86	150.29	147	13	3.30E-02	15.4	2.25E+00
4	2	77.16*	179	106	1.06	155.03	147	13	4.96E-02	12.0	
5	3	84.40*	41	89	1.18	169.50	165	13	1.15E-02	41.9	9.63E-01
6	3	87.16*	46	57	0.91	175.02	165	13	1.27E-02	29.9	
7	0	93.18*	73	129	1.36	187.06	182	12	2.03E-02	38.5	
8	0	172.04	16	23	0.62	344.69	343	5	4.42E-03	50.9	
9	0	185.85*	44	46	1.10	372.29	368	8	1.21E-02	35.5	
10	0	209.42	21	39	0.77	419.40	416	7	5.88E-03	53.3	
11	0	238.70*	183	44	1.13	477.93	474	8	5.10E-02	10.1	
12	0	241.71	42	35	1.46	483.95	482	7	1.17E-02	28.2	
13	0	295.14	72	32	0.99	590.75	588	7	2.00E-02	17.5	
14	0	330.77	34	49	3.62	661.97	654	18	9.46E-03	51.3	
15	0	338.55*	35	43	0.69	677.52	672	13	9.73E-03	43.0	
16	0	352.07*	149	11	1.54	704.56	701	11	4.15E-02	9.4	
17	0	372.44	28	30	6.26	745.28	736	17	7.78E-03	48.5	
18	0	437.94	27	28	6.27	876.22	866	19	7.56E-03	50.7	
19	0	448.57	17	34	6.34	897.47	884	17	4.72E-03	82.2	
20	1	481.24	12	16	1.57	962.78	959	15	3.29E-03	57.0	3.19E+00
21	1	484.49	15	10	1.58	969.29	959	15	4.22E-03	50.8	
22	0	511.68*	14	44	1.62	1023.65	1017	15	4.03E-03	125.8	
23	0	536.56	10	7	0.85	1073.37	1067	10	2.66E-03	62.6	
24	0	563.38	6	13	1.53	1127.00	1120	8	1.59E-03	120.1	
25	0	583.16*	61	32	1.13	1166.54	1160	14	1.70E-02	23.8	
26	0	599.35	26	26	3.27	1198.92	1189	18	7.10E-03	51.5	
27	0	609.46	82	27	1.63	1219.13	1214	12	2.29E-02	16.7	
28	0	659.31	11	8	2.26	1318.80	1313	9	3.06E-03	57.0	
29	0	744.30	8	11	0.71	1488.71	1481	14	2.33E-03	88.9	
30	0	794.41	20	11	3.13	1588.90	1582	14	5.69E-03	40.2	
31	0	911.26*	43	8	1.46	1822.55	1816	15	1.20E-02	21.3	
32	0	929.35	6	7	1.28	1858.72	1852	10	1.62E-03	96.4	
33	0	1062.25	22	0	3.39	2124.50	2118	14	6.11E-03	21.3	
34	0	1120.08	16	11	1.13	2240.14	2234	11	4.47E-03	47.0	

Sample ID : G719378003 Acquisition date : 10-MAY-2025 10:24:35

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1204.39	6	9	1.43	2408.75	2401	9	1.80E-03	91.8	
36	0	1238.93	14	9	1.48	2477.83	2473	10	3.82E-03	50.4	
37	0	1377.65	8	2	0.68	2755.26	2750	9	2.18E-03	49.4	
38	0	1460.29*	133	0	1.79	2920.56	2913	15	3.70E-02	8.8	
39	0	1508.07	9	0	3.37	3016.11	3011	11	2.50E-03	33.3	
40	0	1764.45	15	5	1.25	3528.97	3524	9	4.03E-03	37.2	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:25:02

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378003.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 09:25:00	Acquisition date	: 10-MAY-2025 10:24:35
Sample ID	: G719378003	Sample quantity	: 92.310 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA41	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.28 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	124	10.66*	8.771E-01	1.075E+01	1.075E+01	17.68
Y-91	1204.77	6	0.26*	1.039E+00	1.810E+01	2.647E+01	183.62
CD-109	88.03	43	3.70*	7.763E+00	1.206E+00	1.265E+00	59.86
SN-126	64.28	35	9.60	7.781E+00	3.768E-01	3.768E-01	139.91
	86.94	43	8.90	7.763E+00	5.012E-01	5.012E-01	59.86
	87.57	43	37.00*	7.763E+00	1.206E-01	1.206E-01	59.86
TL-208	277.37	------	6.60	4.030E+00	------	Line Not Found	------
	583.19	57	85.00*	2.046E+00	2.672E-01	2.672E-01	47.56
	860.56	------	12.50	1.415E+00	------	Line Not Found	------
BI-210	46.54	25	4.25*	6.978E+00	6.868E-01	6.887E-01	116.80
PB-210	46.54	25	4.25*	6.978E+00	6.868E-01	6.887E-01	116.80
BI-211	72.87	------	1.23	7.876E+00	------	Line Not Found	------
	351.06	139	12.92*	3.274E+00	2.674E+00	2.674E+00	18.86
PB-212	74.82	111	10.28	7.876E+00	1.115E+00	1.115E+00	30.84
	77.11	167	17.10	7.867E+00	1.009E+00	1.009E+00	24.10
	238.63	171	43.60*	4.557E+00	7.002E-01	7.002E-01	20.12
	300.09	------	3.30	3.769E+00	------	Line Not Found	------
BI-214	609.32	77	45.49*	1.962E+00	6.994E-01	6.994E-01	33.44
	1120.29	15	14.92	1.109E+00	7.354E-01	7.354E-01	94.04
	1764.49	13	15.30	7.482E-01	9.572E-01	9.572E-01	74.44
PB-214	74.82	111	5.80	7.876E+00	1.976E+00	1.976E+00	30.84
	77.11	167	9.70	7.867E+00	1.778E+00	1.778E+00	24.10
	87.09	43	3.41	7.763E+00	1.308E+00	1.308E+00	59.86
	242.00	39	7.25	4.512E+00	9.770E-01	9.771E-01	56.41
	295.22	67	18.42	3.823E+00	7.753E-01	7.754E-01	35.02
	351.93	139	35.60*	3.274E+00	9.703E-01	9.704E-01	18.86
RN-222	609.32	77	45.49*	1.962E+00	6.994E-01	6.994E-01	33.44
	1120.29	15	14.92	1.109E+00	7.354E-01	7.354E-01	94.04
	1764.49	13	15.30	7.482E-01	9.572E-01	9.572E-01	74.44
RA-224	240.99	39	4.10*	4.512E+00	1.728E+00	1.728E+00	56.41
RA-226	74.82	111	5.80	7.876E+00	1.976E+00	1.976E+00	30.84
	77.11	167	9.70	7.867E+00	1.778E+00	1.778E+00	24.10
	87.09	43	3.41	7.763E+00	1.308E+00	1.308E+00	59.86
	242.00	39	7.25	4.512E+00	9.770E-01	9.771E-01	56.41
	295.22	67	18.42	3.823E+00	7.753E-01	7.754E-01	35.02
	351.93	139	35.60*	3.274E+00	9.703E-01	9.704E-01	18.86
TH-228	74.82	111	10.28	7.876E+00	1.115E+00	1.115E+00	30.84
	77.11	167	17.10	7.867E+00	1.009E+00	1.009E+00	24.10
	238.63	171	43.60*	4.557E+00	7.002E-01	7.002E-01	20.12
	300.09	------	3.30	3.769E+00	------	Line Not Found	------
TH-229	85.43	39	14.70	7.801E+00	2.738E-01	2.738E-01	83.82
	88.47	43	24.00	7.763E+00	1.859E-01	1.859E-01	59.86
	193.51	------	4.41*	5.337E+00	------	Line Not Found	------
	210.85	20	2.80	5.039E+00	1.139E+00	1.139E+00	106.56
TH-230	74.82	111	5.80	7.876E+00	1.976E+00	1.976E+00	30.84
	77.11	167	9.70	7.867E+00	1.778E+00	1.778E+00	24.10
	87.09	43	3.41	7.763E+00	1.308E+00	1.308E+00	59.86
	242.00	39	7.25	4.512E+00	9.770E-01	9.770E-01	56.41
	295.22	67	18.42	3.823E+00	7.753E-01	7.753E-01	35.02

Sample ID : G719378003 Acquisition date : 10-MAY-2025 10:24:35

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	351.93	139	35.60*	3.274E+00	9.703E-01	9.704E-01	18.86
PA-234M	63.29	35	3.70*	7.781E+00	9.777E-01	9.777E-01	139.91
	92.59	68	4.23	7.660E+00	1.710E+00	1.710E+00	76.96
TH-234	63.29	35	3.70*	7.781E+00	9.777E-01	9.777E-01	139.91
	92.59	68	4.23	7.660E+00	1.710E+00	1.710E+00	76.96
U-234	74.82	111	5.80	7.876E+00	1.976E+00	1.976E+00	30.84
	77.11	167	9.70	7.867E+00	1.778E+00	1.778E+00	24.10
	87.09	43	3.41	7.763E+00	1.308E+00	1.308E+00	59.86
	242.00	39	7.25	4.512E+00	9.770E-01	9.770E-01	56.41
	295.22	67	18.42	3.823E+00	7.753E-01	7.753E-01	35.02
	351.93	139	35.60*	3.274E+00	9.704E-01	9.704E-01	18.86
U-238	63.29	35	3.70*	7.781E+00	9.777E-01	9.777E-01	139.91
	92.59	68	4.23	7.660E+00	1.710E+00	1.710E+00	76.96
AM-243	43.53	------	5.90	6.691E+00	------	Line Not Found	------
	74.66	111	67.20*	7.876E+00	1.706E-01	1.706E-01	30.84
ANH-511	511.00	13	100.00*	2.316E+00	4.739E-02	4.739E-02	251.63

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:02.89

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378003.CNF;1  *
* Acquisition date : 10-MAY-2025 10:24:35 Sensitivity     : 3.000           *
* Detector ID      : GAM41                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.28     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:25:00 Analyst initials: RXF2            *
* Sample ID        : G719378003           Sample Quantity : 9.2310E+01 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  5-SEP-2024 06:18:38 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM41_CAN.CNF;12            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.075E+01	1.863E+00	6.448E-01
Y-91	2.647E+01	4.763E+01	6.860E+01
CD-109	1.265E+00	7.422E-01	1.207E+00
SN-126	1.206E-01	7.073E-02	1.139E-01
TL-208	2.672E-01	1.245E-01	8.431E-02
BI-210	6.887E-01	7.883E-01	7.643E-01
PB-210	6.887E-01	7.883E-01	7.643E-01
BI-211	2.674E+00	4.942E-01	3.680E-01
PB-212	7.002E-01	1.381E-01	1.202E-01
BI-214	6.994E-01	2.292E-01	1.776E-01
PB-214	9.704E-01	1.794E-01	1.079E-01
RN-222	6.994E-01	2.292E-01	1.776E-01
RA-224	1.728E+00	9.550E-01	1.178E+00
RA-226	9.704E-01	1.794E-01	1.079E-01
TH-228	7.002E-01	1.381E-01	1.202E-01
TH-229	-5.454E-01	5.928E-01	9.322E-01
TH-230	9.704E-01	1.793E-01	1.079E-01
PA-234M	9.777E-01	1.341E+00	1.031E+00
TH-234	9.777E-01	1.341E+00	1.031E+00
U-234	9.704E-01	1.793E-01	1.079E-01
U-238	9.777E-01	1.341E+00	1.031E+00
AM-243	1.706E-01	5.156E-02	6.311E-02
ANH-511	4.739E-02	1.169E-01	7.675E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.957E-03	5.780E-01	9.973E-01	NOT IDENT.
NA-22	1.669E-02	5.238E-02	1.176E-01	NOT IDENT.
NA-24	0.000E+00	1.303E+14	0.000E+00	SHORT HLIF
AL-26	8.947E-04	2.961E-02	8.095E-02	NOT IDENT.
SC-46	-1.169E-02	5.545E-02	1.107E-01	FAIL ABUN
V-48	1.751E-01	2.232E-01	5.054E-01	NOT IDENT.
CR-51	2.824E-01	5.670E-01	1.186E+00	NOT IDENT.

MN-52	-1.775E+00	2.126E+00	2.970E+00	FAIL ABUN
MN-54	-4.366E-03	5.450E-02	1.015E-01	NOT IDENT.
CO-56	-3.872E-02	6.980E-02	1.157E-01	FAIL ABUN
MN-56	0.000E+00	1.787E+41	0.000E+00	SHORT HLIF
CO-57	-6.595E-03	2.281E-02	4.063E-02	NOT IDENT.
CO-58	-1.835E-02	6.038E-02	1.086E-01	NOT IDENT.
FE-59	-1.040E-01	1.805E-01	3.197E-01	NOT IDENT.
CO-60	2.695E-02	5.182E-02	1.222E-01	NOT IDENT.
ZN-65	-4.557E-02	1.258E-01	2.011E-01	NOT IDENT.
GE-68	-1.246E+00	1.809E+00	3.132E+00	NOT IDENT.
AS-73	4.504E-02	2.558E-01	4.884E-01	NOT IDENT.
AS-74	1.169E-01	2.564E-01	5.210E-01	NOT IDENT.
SE-75	1.662E-02	5.262E-02	9.832E-02	NOT IDENT.
BR-77	0.000E+00	2.999E+03	0.000E+00	SHORT HLIF
SR-82	-5.150E-01	6.823E-01	1.077E+00	NOT IDENT.
RB-83	3.640E-02	8.767E-02	1.864E-01	NOT IDENT.
RB-84	-5.900E-02	1.328E-01	2.496E-01	NOT IDENT.
KR-85	-2.602E-01	9.374E+00	1.776E+01	NOT IDENT.
SR-85	-1.896E-03	5.932E-02	1.123E-01	NOT IDENT.
RB-86	-1.049E+00	2.011E+00	3.645E+00	NOT IDENT.
Y-88	-5.158E-02	5.055E-02	3.737E-02	NOT IDENT.
NB-94	2.678E-03	4.476E-02	8.643E-02	NOT IDENT.
NB-95	-4.821E-02	8.776E-02	1.457E-01	NOT IDENT.
NB-95M	3.307E-02	1.691E-01	2.841E-01	NOT IDENT.
ZR-95	1.830E-02	1.164E-01	2.305E-01	NOT IDENT.
NB-97	0.000E+00	1.116E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	4.614E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.121E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	7.430E+36	0.000E+00	SHORT HLIF
RH-101	-1.283E-02	2.835E-02	4.932E-02	NOT IDENT.
RH-102	1.364E-01	7.119E-02	1.792E-01	NOT IDENT.
RU-103	-1.383E-02	6.640E-02	1.244E-01	FAIL ABUN
RH-106	-2.677E-02	4.013E-01	7.701E-01	NOT IDENT.
RU-106	-2.677E-02	4.013E-01	7.701E-01	NOT IDENT.
AG-108M	1.390E-02	3.969E-02	7.367E-02	NOT IDENT.
AG-110	5.699E-01	1.236E+00	2.301E+00	NOT IDENT.
AG-110M	1.911E-02	7.173E-02	1.531E-01	NOT IDENT.
SN-113	2.501E-02	5.806E-02	1.188E-01	NOT IDENT.
CD-115	0.000E+00	2.662E+03	0.000E+00	SHORT HLIF
SN-117M	1.437E-01	1.325E-01	2.651E-01	NOT IDENT.
SB-122	0.000E+00	2.407E+02	0.000E+00	SHORT HLIF
TE-123M	3.208E-02	3.317E-02	6.532E-02	NOT IDENT.
SB-124	2.277E-02	1.462E-01	3.378E-01	NOT IDENT.
SB-125	4.317E-02	1.105E-01	2.257E-01	FAIL ABUN
TE-125M	-1.269E+00	9.645E+00	1.757E+01	NOT IDENT.
I-126	3.284E-01	7.673E-01	1.562E+00	NOT IDENT.
SB-126	2.602E-01	4.600E-01	9.906E-01	NOT IDENT.
SB-127	1.259E+01	3.815E+01	7.729E+01	NOT IDENT.
I-131	1.297E-02	4.719E-01	9.458E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	2.691E+01	0.000E+00	SHORT HLIF
BA-133	-1.424E-02	3.854E-02	6.432E-02	NOT IDENT.
I-133	0.000E+00	5.793E+09	0.000E+00	SHORT HLIF
CS-134	1.223E-01	9.643E-02	1.485E-01	FAIL ABUN
I-135	0.000E+00	3.297E+34	0.000E+00	SHORT HLIF
CS-136	-6.414E-02	3.312E-01	6.554E-01	NOT IDENT.
BA-137M	-2.982E-02	4.235E-02	5.671E-02	NOT IDENT.
CS-137	-3.150E-02	4.474E-02	5.991E-02	NOT IDENT.
LA-138	4.114E-02	6.179E-02	1.657E-01	NOT IDENT.
CE-139	-5.541E-03	3.046E-02	5.402E-02	NOT IDENT.
BA-140	7.660E-01	9.391E-01	1.596E+00	FAIL ABUN
LA-140	-1.138E-02	2.463E-01	5.503E-01	NOT IDENT.
CE-141	-2.033E-02	7.989E-02	1.414E-01	NOT IDENT.
CE-143	0.000E+00	7.310E+05	0.000E+00	SHORT HLIF
CE-144	-1.147E-02	1.798E-01	3.275E-01	NOT IDENT.
PM-144	-2.778E-02	5.427E-02	9.259E-02	NOT IDENT.
PR-144	-2.067E+00	4.103E+00	7.012E+00	NOT IDENT.
PM-146	-1.635E-02	5.773E-02	1.060E-01	NOT IDENT.
ND-147	-1.117E+00	2.432E+00	3.751E+00	NOT IDENT.
PM-147	-5.289E+01	6.691E+02	1.218E+03	NOT IDENT.
PM-149	0.000E+00	1.835E+04	0.000E+00	SHORT HLIF
EU-150	9.336E-03	3.330E-02	6.092E-02	FAIL ABUN
EU-152	8.690E-02	1.035E-01	2.122E-01	NOT IDENT.
GD-153	-4.109E-02	7.097E-02	1.153E-01	NOT IDENT.
EU-154	4.690E-02	1.471E-01	3.303E-01	NOT IDENT.
EU-155	2.500E-02	8.641E-02	1.640E-01	FAIL ABUN
TB-160	3.251E-03	2.008E-01	4.159E-01	FAIL ABUN
HO-166M	-3.678E-02	6.508E-02	1.108E-01	FAIL ABUN

TM-171	-2.067E+00	4.332E+00	7.861E+00	NOT IDENT.
HF-172	8.759E-03	1.671E-01	3.087E-01	FAIL ABUN
LU-172	-2.054E-04	7.679E-02	1.604E-01	FAIL ABUN
LU-176	-4.780E-03	3.003E-02	5.184E-02	FAIL ABUN
HF-181	7.660E-02	8.557E-02	1.602E-01	FAIL ABUN
TA-182	-2.003E-01	3.122E-01	5.366E-01	FAIL ABUN
RE-183	3.751E-02	7.233E-02	1.426E-01	NOT IDENT.
RE-184	-5.577E-02	2.102E-01	4.146E-01	NOT IDENT.
W-188	5.113E+00	8.240E+00	1.642E+01	FAIL ABUN
IR-192	3.437E-03	4.446E-02	8.753E-02	FAIL ABUN
HG-203	-8.786E-04	6.006E-02	1.052E-01	NOT IDENT.
TL-204	-1.049E+00	2.654E+00	4.758E+00	NOT IDENT.
BI-207	0.000E+00	8.022E-02	1.916E-01	FAIL ABUN
PB-211	2.268E-01	8.297E-01	1.668E+00	NOT IDENT.
BI-212	4.965E-01	7.850E-01	1.618E+00	NOT IDENT.
BI-213	8.689E-02	1.275E-01	2.549E-01	NOT IDENT.
RN-219	-9.149E-02	4.706E-01	8.891E-01	NOT IDENT.
RA-223	-2.323E-01	6.254E-01	1.117E+00	FAIL ABUN
AC-225	-1.891E+00	1.964E+00	3.026E+00	NOT IDENT.
AC-227	1.839E-01	2.544E-01	5.056E-01	NOT IDENT.
TH-227	1.839E-01	2.544E-01	5.056E-01	NOT IDENT.
AC-228	0.000E+00	3.925E-01	7.470E-01	FAIL ABUN
RA-228	0.000E+00	3.925E-01	7.470E-01	FAIL ABUN
PA-231	-3.360E-01	6.016E-01	9.646E-01	NOT IDENT.
TH-231	-2.323E-01	6.254E-01	1.117E+00	FAIL ABUN
TH-232	0.000E+00	3.925E-01	7.470E-01	FAIL ABUN
PA-233	-2.027E-02	8.016E-02	1.351E-01	NOT IDENT.
PA-234	-3.308E-01	4.093E-01	6.983E-01	FAIL ABUN
U-235	-1.442E-01	1.976E-01	3.368E-01	FAIL ABUN
NP-237	-2.027E-02	8.016E-02	1.351E-01	FAIL ABUN
NP-238	0.000E+00	7.020E+03	0.000E+00	SHORT HLIF
NP-239	-1.141E-01	2.403E-01	4.187E-01	NOT IDENT.
PU-239	-1.903E+01	3.212E+02	5.810E+02	NOT IDENT.
AM-241	-1.391E-02	5.769E-02	9.842E-02	NOT IDENT.
CM-243	-2.897E-02	8.803E-02	1.569E-01	NOT IDENT.
BK-247	4.834E-02	8.158E-02	1.596E-01	FAIL ABUN
CM-247	-2.307E-02	4.412E-02	7.919E-02	NOT IDENT.
CF-249	2.546E-02	4.517E-02	9.448E-02	NOT IDENT.
CF-251	-9.480E-02	1.402E-01	2.311E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:01.42

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	124	10.66*	8.771E-01	1.075E+01	1.075E+01	17.68
Y-91	1204.77	6	0.26*	1.039E+00	1.810E+01	2.647E+01	183.62
CD-109	88.03	43	3.70*	7.763E+00	1.206E+00	1.265E+00	59.86
SN-126	64.28	35	9.60	7.781E+00	3.768E-01	3.768E-01	139.91
	86.94	43	8.90	7.763E+00	5.012E-01	5.012E-01	59.86
	87.57	43	37.00*	7.763E+00	1.206E-01	1.206E-01	59.86
TL-208	277.37	------	6.60	4.030E+00	------	Line Not Found	------
	583.19	57	85.00*	2.046E+00	2.672E-01	2.672E-01	47.56
	860.56	------	12.50	1.415E+00	------	Line Not Found	------
BI-210	46.54	25	4.25*	6.978E+00	6.868E-01	6.887E-01	116.80
PB-210	46.54	25	4.25*	6.978E+00	6.868E-01	6.887E-01	116.80
BI-211	72.87	------	1.23	7.876E+00	------	Line Not Found	------
	351.06	139	12.92*	3.274E+00	2.674E+00	2.674E+00	18.86
PB-212	74.82	111	10.28	7.876E+00	1.115E+00	1.115E+00	30.84
	77.11	167	17.10	7.867E+00	1.009E+00	1.009E+00	24.10
	238.63	171	43.60*	4.557E+00	7.002E-01	7.002E-01	20.12
	300.09	------	3.30	3.769E+00	------	Line Not Found	------
BI-214	609.32	77	45.49*	1.962E+00	6.994E-01	6.994E-01	33.44
	1120.29	15	14.92	1.109E+00	7.354E-01	7.354E-01	94.04
	1764.49	13	15.30	7.482E-01	9.572E-01	9.572E-01	74.44
PB-214	74.82	111	5.80	7.876E+00	1.976E+00	1.976E+00	30.84
	77.11	167	9.70	7.867E+00	1.778E+00	1.778E+00	24.10
	87.09	43	3.41	7.763E+00	1.308E+00	1.308E+00	59.86
	242.00	39	7.25	4.512E+00	9.770E-01	9.771E-01	56.41
	295.22	67	18.42	3.823E+00	7.753E-01	7.754E-01	35.02
	351.93	139	35.60*	3.274E+00	9.703E-01	9.704E-01	18.86
RN-222	609.32	77	45.49*	1.962E+00	6.994E-01	6.994E-01	33.44
	1120.29	15	14.92	1.109E+00	7.354E-01	7.354E-01	94.04
	1764.49	13	15.30	7.482E-01	9.572E-01	9.572E-01	74.44
RA-224	240.99	39	4.10*	4.512E+00	1.728E+00	1.728E+00	56.41
RA-226	74.82	111	5.80	7.876E+00	1.976E+00	1.976E+00	30.84
	77.11	167	9.70	7.867E+00	1.778E+00	1.778E+00	24.10
	87.09	43	3.41	7.763E+00	1.308E+00	1.308E+00	59.86
	242.00	39	7.25	4.512E+00	9.770E-01	9.771E-01	56.41
	295.22	67	18.42	3.823E+00	7.753E-01	7.754E-01	35.02
	351.93	139	35.60*	3.274E+00	9.703E-01	9.704E-01	18.86
TH-228	74.82	111	10.28	7.876E+00	1.115E+00	1.115E+00	30.84
	77.11	167	17.10	7.867E+00	1.009E+00	1.009E+00	24.10
	238.63	171	43.60*	4.557E+00	7.002E-01	7.002E-01	20.12
	300.09	------	3.30	3.769E+00	------	Line Not Found	------
TH-229	85.43	39	14.70	7.801E+00	2.738E-01	2.738E-01	83.82
	88.47	43	24.00	7.763E+00	1.859E-01	1.859E-01	59.86
	193.51	------	4.41*	5.337E+00	------	Line Not Found	------
	210.85	20	2.80	5.039E+00	1.139E+00	1.139E+00	106.56
TH-230	74.82	111	5.80	7.876E+00	1.976E+00	1.976E+00	30.84
	77.11	167	9.70	7.867E+00	1.778E+00	1.778E+00	24.10
	87.09	43	3.41	7.763E+00	1.308E+00	1.308E+00	59.86

Sample ID : G719378003 Acquisition date : 10-MAY-2025 10:24:35

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	242.00	39	7.25	4.512E+00	9.770E-01	9.770E-01	56.41
	295.22	67	18.42	3.823E+00	7.753E-01	7.753E-01	35.02
	351.93	139	35.60*	3.274E+00	9.703E-01	9.704E-01	18.86
PA-234M	63.29	35	3.70*	7.781E+00	9.777E-01	9.777E-01	139.91
	92.59	68	4.23	7.660E+00	1.710E+00	1.710E+00	76.96
TH-234	63.29	35	3.70*	7.781E+00	9.777E-01	9.777E-01	139.91
	92.59	68	4.23	7.660E+00	1.710E+00	1.710E+00	76.96
U-234	74.82	111	5.80	7.876E+00	1.976E+00	1.976E+00	30.84
	77.11	167	9.70	7.867E+00	1.778E+00	1.778E+00	24.10
	87.09	43	3.41	7.763E+00	1.308E+00	1.308E+00	59.86
	242.00	39	7.25	4.512E+00	9.770E-01	9.770E-01	56.41
	295.22	67	18.42	3.823E+00	7.753E-01	7.753E-01	35.02
	351.93	139	35.60*	3.274E+00	9.704E-01	9.704E-01	18.86
U-238	63.29	35	3.70*	7.781E+00	9.777E-01	9.777E-01	139.91
	92.59	68	4.23	7.660E+00	1.710E+00	1.710E+00	76.96
AM-243	43.53	------	5.90	6.691E+00	------	Line Not Found	------
	74.66	111	67.20*	7.876E+00	1.706E-01	1.706E-01	30.84
ANH-511	511.00	13	100.00*	2.316E+00	4.739E-02	4.739E-02	251.63

Flag: "*" = Keyline

Sample ID : G719378003 Acquisition date : 10-MAY-2025 10:24:35

Total number of lines in spectrum 40
Number of unidentified lines 6
Number of lines tentatively identified by NID 34 85.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.075E+01	1.075E+01	0.190E+01	17.68	
Y-91	58.51D	1.46	1.810E+01	2.647E+01	4.860E+01	183.62	
CD-109	461.40D	1.05	1.206E+00	1.265E+00	0.757E+00	59.86	
SN-126	2.30E+05Y	1.00	1.206E-01	1.206E-01	0.722E-01	59.86	
TL-208	1.41E+10Y	1.00	2.672E-01	2.672E-01	1.271E-01	47.56	
BI-210	22.20Y	1.00	6.868E-01	6.887E-01	8.044E-01	116.80	
PB-210	22.20Y	1.00	6.868E-01	6.887E-01	8.044E-01	116.80	
BI-211	7.04E+08Y	1.00	2.674E+00	2.674E+00	0.504E+00	18.86	
PB-212	1.41E+10Y	1.00	7.002E-01	7.002E-01	1.409E-01	20.12	
BI-214	1600.00Y	1.00	6.994E-01	6.994E-01	2.339E-01	33.44	
PB-214	1600.00Y	1.00	9.703E-01	9.704E-01	1.830E-01	18.86	
RN-222	1600.00Y	1.00	6.994E-01	6.994E-01	2.339E-01	33.44	
RA-224	1.41E+10Y	1.00	1.728E+00	1.728E+00	0.975E+00	56.41	
RA-226	1600.00Y	1.00	9.703E-01	9.704E-01	1.830E-01	18.86	
TH-228	1.41E+10Y	1.00	7.002E-01	7.002E-01	1.409E-01	20.12	
TH-229	7340.00Y	1.00	1.859E-01	1.859E-01	1.113E-01	59.86	K
TH-230	7.54E+04Y	1.00	9.703E-01	9.704E-01	1.830E-01	18.86	
PA-234M	4.47E+09Y	1.00	9.777E-01	9.777E-01	13.68E-01	139.91	
TH-234	4.47E+09Y	1.00	9.777E-01	9.777E-01	13.68E-01	139.91	
U-234	2.45E+05Y	1.00	9.704E-01	9.704E-01	1.830E-01	18.86	
U-238	4.47E+09Y	1.00	9.777E-01	9.777E-01	13.68E-01	139.91	
AM-243	7370.00Y	1.00	1.706E-01	1.706E-01	0.526E-01	30.84	
ANH-511	1.00E+09Y	1.00	4.739E-02	4.739E-02	11.93E-02	251.63	
			---	---			
	Total Activity :		4.624E+01	5.467E+01			

Grand Total Activity : 4.624E+01 5.467E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378003 Acquisition date : 10-MAY-2025 10:24:35

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	172.04	15	22	0.62	344.69	343	5	4.42E-03	****	5.78E+00	
0	185.85	41	43	1.10	372.29	368	8	1.21E-02	71.1	5.49E+00	T
0	330.77	32	46	3.62	661.97	654	18	9.46E-03	****	3.46E+00	
0	338.55	33	40	0.69	677.52	672	13	9.73E-03	86.0	3.39E+00	T
0	372.44	26	28	6.26	745.28	736	17	7.78E-03	97.0	3.11E+00	T
0	437.94	25	26	6.27	876.22	866	19	7.56E-03	****	2.68E+00	T
0	448.57	16	32	6.34	897.47	884	17	4.72E-03	****	2.62E+00	
1	481.24	11	15	1.57	962.78	959	15	3.29E-03	****	2.45E+00	T
1	484.49	14	9	1.58	969.29	959	15	4.22E-03	****	2.44E+00	
0	536.56	9	7	0.85	1073.37	1067	10	2.66E-03	****	2.21E+00	T
0	563.38	5	12	1.53	1127.00	1120	8	1.59E-03	****	2.11E+00	T
0	599.35	24	25	3.27	1198.92	1189	18	7.10E-03	****	1.99E+00	T
0	659.31	10	7	2.26	1318.80	1313	9	3.06E-03	****	1.82E+00	T
0	744.30	8	10	0.71	1488.71	1481	14	2.33E-03	****	1.62E+00	T
0	794.41	19	10	3.13	1588.90	1582	14	5.69E-03	80.4	1.53E+00	T
0	911.26	40	7	1.46	1822.55	1816	15	1.20E-02	42.6	1.34E+00	T
0	929.35	5	7	1.28	1858.72	1852	10	1.62E-03	****	1.32E+00	T
0	1062.25	20	0	3.39	2124.50	2118	14	6.11E-03	42.6	1.16E+00	T
0	1238.93	13	9	1.48	2477.83	2473	10	3.82E-03	****	1.01E+00	T
0	1377.65	7	2	0.68	2755.26	2750	9	2.18E-03	98.9	9.23E-01	
0	1508.07	8	0	3.37	3016.11	3011	11	2.50E-03	66.7	8.53E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:12.93

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378003.CNF;1  *
* Acquisition date : 10-MAY-2025 10:24:35 Sensitivity     : 3.000           *
* Detector ID      : GAM41                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.28     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:25:00 Nuclide Library : SOLID           *
* Sample ID        : G719378003           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 9.2310E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  5-SEP-2024 06:18:38 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM41_CAN.CNF;12            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.059E-01
Y-91	2.842E+01
CD-109	5.639E-01
SN-126	5.318E-02
TL-208	3.591E-02
BI-210	3.456E-01
PB-210	3.456E-01
BI-211	1.584E-01
PB-212	5.467E-02
BI-214	7.663E-02
PB-214	4.465E-02
RN-222	7.663E-02
RA-224	5.308E-01
RA-226	4.465E-02
TH-228	5.467E-02
TH-229	4.202E-01
TH-230	4.465E-02
PA-234M	4.779E-01
TH-234	4.779E-01
U-234	4.465E-02
U-238	4.779E-01
AM-243	2.952E-02
ANH-511	3.370E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.348E-01	NOT IDENT.
NA-22	4.752E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.559E-02	NOT IDENT.
SC-46	4.501E-02	FAIL ABUN
V-48	2.177E-01	NOT IDENT.
CR-51	5.244E-01	NOT IDENT.
MN-52	8.338E-01	FAIL ABUN

MN-54	4.276E-02	NOT IDENT.
CO-56	4.778E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	1.836E-02	NOT IDENT.
CO-58	4.430E-02	NOT IDENT.
FE-59	1.318E-01	NOT IDENT.
CO-60	4.953E-02	NOT IDENT.
ZN-65	7.944E-02	NOT IDENT.
GE-68	1.247E+00	NOT IDENT.
AS-73	2.256E-01	NOT IDENT.
AS-74	2.285E-01	NOT IDENT.
SE-75	4.388E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	4.274E-01	NOT IDENT.
RB-83	7.949E-02	NOT IDENT.
RB-84	1.024E-01	NOT IDENT.
KR-85	7.789E+00	NOT IDENT.
SR-85	4.925E-02	NOT IDENT.
RB-86	1.462E+00	NOT IDENT.
Y-88	0.000E+00	NOT IDENT.
NB-94	3.687E-02	NOT IDENT.
NB-95	6.311E-02	NOT IDENT.
NB-95M	1.286E-01	NOT IDENT.
ZR-95	9.755E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.230E-02	NOT IDENT.
RH-102	7.921E-02	NOT IDENT.
RU-103	5.340E-02	FAIL ABUN
RH-106	3.247E-01	NOT IDENT.
RU-106	3.247E-01	NOT IDENT.
AG-108M	3.241E-02	NOT IDENT.
AG-110	1.006E+00	NOT IDENT.
AG-110M	6.471E-02	NOT IDENT.
SN-113	5.259E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.220E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.011E-02	NOT IDENT.
SB-124	1.262E-01	NOT IDENT.
SB-125	9.928E-02	FAIL ABUN
TE-125M	7.976E+00	NOT IDENT.
I-126	6.791E-01	NOT IDENT.
SB-126	4.224E-01	NOT IDENT.
SB-127	3.325E+01	NOT IDENT.
I-131	4.061E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.673E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	6.567E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.653E-01	NOT IDENT.
BA-137M	2.168E-02	NOT IDENT.
CS-137	2.290E-02	NOT IDENT.
LA-138	6.419E-02	NOT IDENT.
CE-139	2.433E-02	NOT IDENT.
BA-140	6.832E-01	FAIL ABUN
LA-140	1.950E-01	NOT IDENT.
CE-141	6.380E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.480E-01	NOT IDENT.
PM-144	3.959E-02	NOT IDENT.
PR-144	2.999E+00	NOT IDENT.
PM-146	4.652E-02	NOT IDENT.
ND-147	1.595E+00	NOT IDENT.
PM-147	5.534E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.717E-02	FAIL ABUN
EU-152	9.383E-02	NOT IDENT.
GD-153	5.225E-02	NOT IDENT.
EU-154	1.335E-01	NOT IDENT.
EU-155	7.498E-02	FAIL ABUN
TB-160	1.725E-01	FAIL ABUN
HO-166M	4.353E-02	FAIL ABUN
TM-171	3.609E+00	NOT IDENT.

HF-172	1.400E-01	FAIL ABUN
LU-172	6.449E-02	FAIL ABUN
LU-176	2.279E-02	FAIL ABUN
HF-181	7.083E-02	FAIL ABUN
TA-182	2.207E-01	FAIL ABUN
RE-183	6.562E-02	NOT IDENT.
RE-184	1.678E-01	NOT IDENT.
W-188	7.253E+00	FAIL ABUN
IR-192	3.885E-02	FAIL ABUN
HG-203	4.725E-02	NOT IDENT.
TL-204	2.203E+00	NOT IDENT.
BI-207	8.325E-02	FAIL ABUN
PB-211	7.347E-01	NOT IDENT.
BI-212	7.110E-01	NOT IDENT.
BI-213	1.118E-01	NOT IDENT.
RN-219	3.880E-01	NOT IDENT.
RA-223	4.813E-01	FAIL ABUN
AC-225	1.334E+00	NOT IDENT.
AC-227	2.263E-01	NOT IDENT.
TH-227	2.263E-01	NOT IDENT.
AC-228	3.422E-01	FAIL ABUN
RA-228	3.422E-01	FAIL ABUN
PA-231	4.284E-01	NOT IDENT.
TH-231	4.813E-01	FAIL ABUN
TH-232	3.422E-01	FAIL ABUN
PA-233	5.984E-02	NOT IDENT.
PA-234	2.792E-01	FAIL ABUN
U-235	1.531E-01	FAIL ABUN
NP-237	5.984E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.902E-01	NOT IDENT.
PU-239	2.653E+02	NOT IDENT.
AM-241	4.530E-02	NOT IDENT.
CM-243	7.150E-02	NOT IDENT.
BK-247	7.120E-02	FAIL ABUN
CM-247	3.440E-02	NOT IDENT.
CF-249	4.176E-02	NOT IDENT.
CF-251	1.045E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:17.42

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378003.CNF;1  *
* Acquisition date : 10-MAY-2025 10:24:35 Sensitivity     : 3.000           *
* Detector ID      : GAM41                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.28     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:25:00 Nuclide Library : SOLID           *
* Sample ID        : G719378003           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 9.2310E+01 GRAM *
*                                         Quantity Err(%) : 1.0833E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  5-SEP-2024 06:18:38 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM41_CAN.CNF;12            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.075E+01	2.098E+00	2.098E+00
Y-91	2.647E+01	4.768E+01	4.768E+01
CD-109	1.265E+00	7.530E-01	7.530E-01
SN-126	1.206E-01	7.148E-02	7.148E-02
TL-208	2.672E-01	1.267E-01	1.267E-01
BI-210	6.887E-01	7.908E-01	7.908E-01
PB-210	6.887E-01	7.908E-01	7.908E-01
BI-211	2.674E+00	5.506E-01	5.506E-01
PB-212	7.002E-01	1.599E-01	1.599E-01
BI-214	6.994E-01	2.371E-01	2.371E-01
PB-214	9.704E-01	1.992E-01	1.992E-01
RN-222	6.994E-01	2.371E-01	2.371E-01
RA-224	1.728E+00	9.753E-01	9.753E-01
RA-226	9.704E-01	1.992E-01	1.992E-01
TH-228	7.002E-01	1.599E-01	1.599E-01
TH-229	-5.454E-01	5.967E-01	5.967E-01
TH-230	9.704E-01	1.992E-01	1.992E-01
PA-234M	9.777E-01	1.358E+00	1.358E+00
TH-234	9.777E-01	1.358E+00	1.358E+00
U-234	9.704E-01	1.992E-01	1.992E-01
U-238	9.777E-01	1.358E+00	1.358E+00
AM-243	1.706E-01	5.330E-02	5.330E-02
ANH-511	4.739E-02	1.169E-01	1.169E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.957E-03	5.780E-01	5.780E-01	NOT IDENT.
NA-22	1.669E-02	5.240E-02	5.293E-02	NOT IDENT.
NA-24	-2.204E+13	1.303E+14	1.307E+14	SHORT HLIF
AL-26	8.947E-04	2.961E-02	2.961E-02	NOT IDENT.
SC-46	-1.169E-02	5.546E-02	5.571E-02	FAIL ABUN
V-48	1.751E-01	2.239E-01	2.374E-01	NOT IDENT.
CR-51	2.824E-01	5.676E-01	5.817E-01	NOT IDENT.

MN-52	-1.775E+00	2.131E+00	2.277E+00	FAIL ABUN
MN-54	-4.366E-03	5.450E-02	5.454E-02	NOT IDENT.
CO-56	-3.872E-02	6.990E-02	7.204E-02	FAIL ABUN
MN-56	-1.000E+41	1.790E+41	0.000E+00	SHORT HLIF
CO-57	-6.595E-03	2.281E-02	2.301E-02	NOT IDENT.
CO-58	-1.835E-02	6.041E-02	6.097E-02	NOT IDENT.
FE-59	-1.040E-01	1.809E-01	1.869E-01	NOT IDENT.
CO-60	2.695E-02	5.186E-02	5.327E-02	NOT IDENT.
ZN-65	-4.557E-02	1.259E-01	1.276E-01	NOT IDENT.
GE-68	-1.246E+00	1.813E+00	1.898E+00	NOT IDENT.
AS-73	4.504E-02	2.559E-01	2.567E-01	NOT IDENT.
AS-74	1.169E-01	2.567E-01	2.621E-01	NOT IDENT.
SE-75	1.662E-02	5.265E-02	5.318E-02	NOT IDENT.
BR-77	1.521E+04	1.449E+04	1.603E+04	SHORT HLIF
SR-82	-5.150E-01	6.840E-01	7.223E-01	NOT IDENT.
RB-83	3.640E-02	8.786E-02	8.938E-02	NOT IDENT.
RB-84	-5.900E-02	1.329E-01	1.356E-01	NOT IDENT.
KR-85	-2.602E-01	9.374E+00	9.375E+00	NOT IDENT.
SR-85	-1.896E-03	5.932E-02	5.932E-02	NOT IDENT.
RB-86	-1.049E+00	2.014E+00	2.068E+00	NOT IDENT.
Y-88	-5.158E-02	5.070E-02	5.578E-02	NOT IDENT.
NB-94	2.678E-03	4.476E-02	4.478E-02	NOT IDENT.
NB-95	-4.821E-02	8.788E-02	9.052E-02	NOT IDENT.
NB-95M	3.307E-02	1.691E-01	1.698E-01	NOT IDENT.
ZR-95	1.830E-02	1.164E-01	1.167E-01	NOT IDENT.
NB-97	1.000E+41	1.120E+41	0.000E+00	SHORT HLIF
ZR-97	-1.335E+13	4.616E+13	4.655E+13	SHORT HLIF
MO-99	-1.068E+03	1.126E+03	1.224E+03	SHORT HLIF
TC-99M	-2.454E+36	7.437E+36	0.000E+00	SHORT HLIF
RH-101	-1.283E-02	2.846E-02	2.904E-02	NOT IDENT.
RH-102	1.364E-01	7.278E-02	9.528E-02	NOT IDENT.
RU-103	-1.383E-02	6.642E-02	6.671E-02	FAIL ABUN
RH-106	-2.677E-02	4.013E-01	4.014E-01	NOT IDENT.
RU-106	-2.677E-02	4.013E-01	4.014E-01	NOT IDENT.
AG-108M	1.390E-02	3.970E-02	4.020E-02	NOT IDENT.
AG-110	5.699E-01	1.237E+00	1.263E+00	NOT IDENT.
AG-110M	1.911E-02	7.175E-02	7.227E-02	NOT IDENT.
SN-113	2.501E-02	5.810E-02	5.918E-02	NOT IDENT.
CD-115	2.661E+03	2.675E+03	2.932E+03	SHORT HLIF
SN-117M	1.437E-01	1.336E-01	1.485E-01	NOT IDENT.
SB-122	1.023E+02	2.409E+02	2.453E+02	SHORT HLIF
TE-123M	3.208E-02	3.339E-02	3.639E-02	NOT IDENT.
SB-124	2.277E-02	1.462E-01	1.466E-01	NOT IDENT.
SB-125	4.317E-02	1.105E-01	1.122E-01	FAIL ABUN
TE-125M	-1.269E+00	9.646E+00	9.663E+00	NOT IDENT.
I-126	3.284E-01	7.679E-01	7.820E-01	NOT IDENT.
SB-126	2.602E-01	4.611E-01	4.758E-01	NOT IDENT.
SB-127	1.259E+01	3.821E+01	3.862E+01	NOT IDENT.
I-131	1.297E-02	4.719E-01	4.719E-01	NOT IDENT.
I-132	1.000E+41	2.144E+42	0.000E+00	SHORT HLIF
TE-132	1.849E+01	2.704E+01	2.829E+01	SHORT HLIF
BA-133	-1.424E-02	3.856E-02	3.909E-02	NOT IDENT.
I-133	-3.008E+08	5.793E+09	5.795E+09	SHORT HLIF
CS-134	1.223E-01	9.711E-02	1.117E-01	FAIL ABUN
I-135	-1.945E+34	3.592E+34	0.000E+00	SHORT HLIF
CS-136	-6.414E-02	3.313E-01	3.325E-01	NOT IDENT.
BA-137M	-2.982E-02	4.243E-02	4.451E-02	NOT IDENT.
CS-137	-3.150E-02	4.482E-02	4.702E-02	NOT IDENT.
LA-138	4.114E-02	6.188E-02	6.460E-02	NOT IDENT.
CE-139	-5.541E-03	3.049E-02	3.059E-02	NOT IDENT.
BA-140	7.660E-01	9.415E-01	1.003E+00	FAIL ABUN
LA-140	-1.138E-02	2.463E-01	2.463E-01	NOT IDENT.
CE-141	-2.033E-02	7.992E-02	8.044E-02	NOT IDENT.
CE-143	5.635E+05	7.331E+05	7.759E+05	SHORT HLIF
CE-144	-1.147E-02	1.798E-01	1.799E-01	NOT IDENT.
PM-144	-2.778E-02	5.433E-02	5.575E-02	NOT IDENT.
PR-144	-2.067E+00	4.107E+00	4.212E+00	NOT IDENT.
PM-146	-1.635E-02	5.775E-02	5.822E-02	NOT IDENT.
ND-147	-1.117E+00	2.434E+00	2.485E+00	NOT IDENT.
PM-147	-5.289E+01	6.691E+02	6.696E+02	NOT IDENT.
PM-149	2.674E+03	1.835E+04	1.839E+04	SHORT HLIF
EU-150	9.336E-03	3.331E-02	3.358E-02	FAIL ABUN
EU-152	8.690E-02	1.038E-01	1.110E-01	NOT IDENT.
GD-153	-4.109E-02	7.106E-02	7.343E-02	NOT IDENT.
EU-154	4.690E-02	1.472E-01	1.487E-01	NOT IDENT.
EU-155	2.500E-02	8.645E-02	8.718E-02	FAIL ABUN
TB-160	3.251E-03	2.008E-01	2.008E-01	FAIL ABUN
HO-166M	-3.678E-02	6.517E-02	6.725E-02	FAIL ABUN

TM-171	-2.067E+00	4.336E+00	4.435E+00	NOT IDENT.
HF-172	8.759E-03	1.671E-01	1.671E-01	FAIL ABUN
LU-172	-2.054E-04	7.679E-02	7.679E-02	FAIL ABUN
LU-176	-4.780E-03	3.003E-02	3.011E-02	FAIL ABUN
HF-181	7.660E-02	8.583E-02	9.251E-02	FAIL ABUN
TA-182	-2.003E-01	3.127E-01	3.255E-01	FAIL ABUN
RE-183	3.751E-02	7.244E-02	7.439E-02	NOT IDENT.
RE-184	-5.577E-02	2.103E-01	2.118E-01	NOT IDENT.
W-188	5.113E+00	8.271E+00	8.587E+00	FAIL ABUN
IR-192	3.437E-03	4.446E-02	4.449E-02	FAIL ABUN
HG-203	-8.786E-04	6.006E-02	6.006E-02	NOT IDENT.
TL-204	-1.049E+00	2.656E+00	2.697E+00	NOT IDENT.
BI-207	1.920E-01	8.220E-02	1.194E-01	FAIL ABUN
PB-211	2.268E-01	8.299E-01	8.362E-01	NOT IDENT.
BI-212	4.965E-01	7.863E-01	8.176E-01	NOT IDENT.
BI-213	8.689E-02	1.277E-01	1.336E-01	NOT IDENT.
RN-219	-9.149E-02	4.708E-01	4.726E-01	NOT IDENT.
RA-223	-2.323E-01	6.258E-01	6.345E-01	FAIL ABUN
AC-225	-1.891E+00	1.981E+00	2.157E+00	NOT IDENT.
AC-227	1.839E-01	2.562E-01	2.693E-01	NOT IDENT.
TH-227	1.839E-01	2.562E-01	2.693E-01	NOT IDENT.
AC-228	9.407E-01	4.044E-01	5.860E-01	FAIL ABUN
RA-228	9.407E-01	4.044E-01	5.860E-01	FAIL ABUN
PA-231	-3.360E-01	6.065E-01	6.251E-01	NOT IDENT.
TH-231	-2.323E-01	6.258E-01	6.345E-01	FAIL ABUN
TH-232	9.407E-01	4.044E-01	5.860E-01	FAIL ABUN
PA-233	-2.027E-02	8.018E-02	8.070E-02	NOT IDENT.
PA-234	-3.308E-01	5.583E-01	5.779E-01	FAIL ABUN
U-235	-1.442E-01	1.982E-01	2.086E-01	FAIL ABUN
NP-237	-2.027E-02	8.018E-02	8.070E-02	FAIL ABUN
NP-238	4.204E+03	7.031E+03	7.282E+03	SHORT HLIF
NP-239	-1.141E-01	2.406E-01	2.461E-01	NOT IDENT.
PU-239	-1.903E+01	3.212E+02	3.213E+02	NOT IDENT.
AM-241	-1.391E-02	5.770E-02	5.804E-02	NOT IDENT.
CM-243	-2.897E-02	8.809E-02	8.905E-02	NOT IDENT.
BK-247	4.834E-02	8.228E-02	8.511E-02	FAIL ABUN
CM-247	-2.307E-02	4.432E-02	4.553E-02	NOT IDENT.
CF-249	2.546E-02	4.526E-02	4.669E-02	NOT IDENT.
CF-251	-9.480E-02	1.411E-01	1.474E-01	NOT IDENT.

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*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	28.0812	85.43	55.2944	131.20	30.5450
45.60	31.4636	86.55	55.4524	133.02	35.5919
46.54	30.0016	86.79	55.4860	133.52	30.6769
49.72	0.0000	86.94	55.5073	136.00	30.8169
51.35	42.6147	87.09	55.5286	136.47	39.7980
51.87	52.3627	87.57	66.9540	140.51	0.0000
52.39	50.8474	88.03	68.2285	143.76	34.2708
52.97	42.0572	88.34	68.2818	144.24	35.3082
53.44	46.1788	88.47	68.3039	145.44	32.3496
54.07	43.8464	89.96	61.3407	152.43	26.5987
57.36	0.0000	1093.63	65.0577	153.25	36.8795
57.53	46.0189	91.11	77.1947	323.87	29.7558
57.98	36.2126	92.59	52.6572	156.02	34.9904
59.27	49.5943	93.35	52.7541	158.56	26.8688
59.32	49.6026	94.56	52.9072	159.00	29.9903
59.54	49.6387	94.65	52.9183	162.33	25.9926
60.96	45.4379	94.67	52.9209	162.66	21.8453
61.17	45.4689	94.87	52.9462	163.33	32.2824
62.93	54.3707	97.43	34.2862	165.86	30.3204
63.29	54.4329	98.43	29.4565	176.31	30.8103
63.58	54.4827	98.44	29.4573	176.60	29.7607
64.28	54.6031	99.53	33.2227	177.52	41.5095
66.73	41.7579	100.11	47.1281	181.07	0.0000
67.24	39.5623	102.03	32.4841	181.52	32.8332
125.81	45.2743	103.18	33.4984	184.41	25.8040
67.75	46.6991	103.37	40.9600	143.76	28.0070
68.89	56.2313	105.21	33.6500	193.51	40.2988
69.67	50.3844	105.31	33.6574	197.03	40.4958
70.82	59.9805	106.12	34.6539	198.01	42.7419
70.83	59.9827	106.47	32.8058	201.83	28.6434
72.81	62.0519	109.28	34.8919	203.43	29.8089
72.87	62.0629	111.00	42.5919	205.31	24.3502
74.66	70.1773	111.76	0.0000	210.85	32.7046
74.82	70.2088	114.06	38.1036	215.65	23.5596
74.97	70.2385	116.30	0.0000	218.12	32.6374
77.11	70.6587	116.74	41.1881	222.11	30.5402
78.74	53.7425	119.76	29.8756	227.09	31.8679
79.69	58.5658	121.12	34.7885	227.38	31.8792
80.03	66.8253	121.22	34.7953	228.16	0.0000
80.12	66.8427	121.78	34.8341	228.18	17.0950
80.19	66.8549	122.06	33.8852	116.74	17.0950
80.57	36.9839	122.92	32.0032	235.69	27.6021
81.00	56.4209	123.07	36.8629	235.96	27.6108
81.07	67.0126	265.00	29.1371	238.63	33.8540
81.75	62.4226	125.81	31.2087	238.98	0.0000
82.47	46.0213	127.23	37.1614	240.99	27.7760
83.79	55.0608	127.91	34.2725	242.00	23.1743
84.00	55.0906	129.30	38.2901	244.70	29.4467

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	15.2451	344.28	10.2837	563.25	9.0260
252.80	17.5985	345.93	12.8732	564.24	0.0000
254.15	0.0000	351.06	12.9315	569.33	18.1168
256.23	15.3109	351.93	7.7648	946.00	18.1187
260.90	0.0000	355.39	0.0000	569.70	18.1208
264.66	19.0210	356.01	11.6884	583.19	11.1607
264.80	16.6459	364.49	12.2093	584.27	11.1678
265.00	15.4601	366.42	0.0000	595.83	12.2637
269.46	26.2902	372.51	14.9258	427.87	12.2964
270.03	22.7191	375.05	21.1162	602.52	0.0000
271.23	40.7081	377.52	11.9020	604.72	9.2435
273.65	26.4083	356.01	21.2690	607.14	23.1400
276.40	26.4855	388.16	13.3395	609.32	13.3861
277.37	25.3079	388.63	21.3511	610.33	13.3936
277.60	25.3137	391.69	15.1607	614.28	10.8414
278.00	19.2949	264.66	13.4723	618.01	13.4502
279.20	26.5641	401.81	17.9793	620.36	12.4316
279.54	19.3262	402.40	20.6861	621.93	10.3687
279.70	19.3291	404.85	15.3187	630.19	0.0000
280.46	27.8080	410.95	20.8232	631.29	2.0842
283.69	12.1310	413.71	15.4235	633.25	18.7778
284.31	23.0641	414.70	17.2512	634.78	13.5734
285.41	15.7985	423.72	14.6266	635.95	14.6266
285.90	0.0000	427.09	11.9140	636.99	7.3173
287.50	17.0501	427.87	13.7549	657.50	11.0952
290.67	12.2180	433.94	13.8168	657.76	6.3411
293.27	0.0000	439.40	9.7104	657.90	0.0000
351.93	19.6387	440.45	9.7179	661.66	9.5306
295.96	26.2044	453.88	20.5579	664.57	0.0000
879.38	18.0625	463.37	14.1104	666.33	10.6152
299.98	23.4317	468.07	12.2690	666.50	10.6160
300.09	23.4346	473.00	14.2047	667.71	0.0000
300.13	23.4352	475.06	9.4830	677.62	9.6090
301.36	27.1690	476.78	19.9379	685.70	9.6482
302.85	19.7881	477.60	15.6742	692.65	0.0000
256.23	12.3877	482.18	10.4817	695.00	14.0008
304.85	16.1092	487.02	20.0759	696.49	17.2448
306.78	19.8643	492.35	0.0000	696.51	17.2448
308.46	17.4094	497.08	14.4357	697.00	11.8589
311.90	23.7054	505.52	26.7083	697.30	11.8607
316.51	20.0508	507.63	0.0000	697.49	11.8616
319.41	17.5923	511.00	17.4800	702.65	10.8110
320.08	14.2504	514.00	17.5137	706.68	9.7489
321.04	15.9412	514.00	17.5137	711.68	8.6868
323.87	17.1610	520.40	7.8154	720.70	6.5437
325.23	7.5807	520.69	0.0000	721.93	0.0000
328.76	19.0137	522.65	0.0000	722.78	14.1923
333.37	19.0938	527.90	0.0000	722.91	13.1011
333.97	19.1043	528.26	6.8724	723.31	12.0120
334.37	12.7408	529.59	13.7562	724.19	16.3867
338.28	17.9003	529.87	0.0000	727.33	10.9408
338.32	17.9008	531.02	16.2274	733.00	12.0675
311.90	17.9358	537.26	13.3281	735.93	3.2957
340.48	17.9358	546.56	0.0000	333.97	6.5962
340.55	17.9366	552.55	14.9475	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	4.4115	667.71	0.0000	1434.09	4.2039
747.24	8.2831	962.31	13.5928	1435.80	1.0514
748.06	8.2864	964.08	17.2292	1457.56	0.0000
752.31	5.5351	966.17	20.8732	1460.82	1.0583
753.82	8.8623	911.20	15.4441	1489.16	4.2646
756.73	8.8743	983.53	6.3937	1505.03	0.0000
756.80	8.8747	984.45	0.0000	1584.12	4.3669
884.68	13.3560	1274.44	9.1766	1596.21	2.1899
765.81	18.9368	1002.74	11.0380	1620.50	2.2028
766.84	10.0302	1004.73	2.7615	1621.92	3.3052
772.60	0.0000	507.63	0.0000	1678.03	0.0000
776.52	11.1934	1025.87	0.0000	1690.97	2.2394
739.50	0.0000	1028.54	0.0000	1750.46	0.0000
778.90	6.7234	1037.84	6.5202	1764.49	3.6428
783.70	12.3531	1038.76	0.0000	1063.66	2.2797
788.74	18.5712	631.29	5.6060	1771.35	1.8241
792.07	10.1448	1048.07	7.4785	1791.20	0.0000
795.86	11.2907	1049.04	11.2214	1808.65	0.9195
810.06	12.4976	1050.41	8.4199	1810.72	0.0000
810.29	12.4990	1063.66	7.5190	1836.06	3.6998
344.28	10.2272	1077.00	9.4415		
810.76	9.0918	1077.34	10.3870		
815.77	14.8064	1085.87	3.7881		
1048.07	9.1224	1093.63	5.6971		
832.01	6.8816	1099.45	12.3676		
834.85	10.3348	1112.07	7.6431		
835.71	13.7847	1112.84	4.7781		
836.80	0.0000	1115.54	7.6519		
846.75	0.0000	1120.29	5.7477		
846.77	12.6955	1120.55	7.6646		
856.80	13.9077	1221.41	7.6665		
860.56	9.2861	1129.67	7.6875		
871.09	6.9949	1131.51	0.0000		
873.19	6.1259	1147.95	0.0000		
875.33	0.0000	1173.23	4.8724		
879.38	7.8959	1177.95	7.8076		
880.51	11.4103	1189.05	5.8762		
881.60	10.5374	1204.77	7.8735		
883.24	7.0295	1221.41	12.8596		
884.68	7.9129	1231.02	6.9449		
889.28	7.9275	1235.36	14.3051		
894.76	7.9450	1238.28	10.9376		
898.04	9.7234	1260.41	0.0000		
900.72	8.8489	1271.87	9.0390		
903.28	7.9720	1274.44	4.0203		
911.20	7.1084	1274.54	4.0205		
912.08	7.1108	1291.59	6.0608		
923.98	0.0000	1298.22	0.0000		
926.50	10.0116	1312.11	1.0162		
929.11	10.0218	1332.49	3.0663		
935.54	7.1763	1362.66	0.0000		
937.49	12.5679	1365.19	3.0945		
944.13	12.5999	1368.63	0.0000		
946.00	11.7083	1384.29	2.0739		
949.00	4.5082	1408.01	1.0436		

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:44.38

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378004.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM52.CNF;106
                                         Background date  : 4-MAY-2025 09:27:56.
Sample date      : 8-APR-2025 09:35:00. Acquisition date : 10-MAY-2025 10:25:05
Sample ID        : G719378004           Sample quantity  : 1.23640E+02 GRAM
Detector name    : GAM52                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.51  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.70*	85	88	1.04	149.66	145	14	2.36E-02	20.9	1.19E+00
2	2	77.23*	127	69	0.87	154.72	145	14	3.53E-02	13.3	
3	0	84.33*	22	52	0.76	168.94	167	5	6.06E-03	56.5	
4	0	87.09	54	97	0.99	174.45	172	7	1.51E-02	32.8	
5	5	90.08	30	59	1.40	180.44	178	14	8.42E-03	38.9	1.26E+00
6	5	92.90*	57	115	1.43	186.08	178	14	1.59E-02	38.3	
7	0	128.86	34	60	1.50	258.02	254	9	9.31E-03	45.3	
8	0	186.44*	47	85	0.97	373.21	368	11	1.30E-02	43.2	
9	0	199.10	21	32	1.25	398.53	395	6	5.78E-03	48.7	
10	0	209.48	33	57	1.42	419.29	415	9	9.24E-03	44.7	
11	0	225.03	13	23	1.17	450.41	448	5	3.48E-03	64.7	
12	0	229.94	34	44	3.00	460.23	454	11	9.58E-03	40.9	
13	3	238.61*	262	51	1.00	477.58	473	15	7.28E-02	7.6	1.65E+00
14	3	241.68	64	49	1.54	483.71	473	15	1.78E-02	27.7	
15	0	259.14	14	33	0.97	518.66	516	6	4.00E-03	69.8	
16	0	270.73	27	55	1.44	541.83	536	11	7.62E-03	55.7	
17	0	295.18*	123	34	1.46	590.75	586	11	3.41E-02	13.0	
18	0	299.99	26	25	1.47	600.38	597	8	7.28E-03	38.7	
19	0	338.39	47	41	0.93	677.19	674	10	1.30E-02	29.4	
20	0	351.86*	172	32	1.19	704.14	697	11	4.79E-02	10.0	
21	0	389.88	10	24	1.02	780.20	775	8	2.78E-03	90.6	
22	0	402.28	6	23	3.21	805.00	798	8	1.62E-03	150.6	
23	0	463.79	18	29	1.34	928.07	920	13	4.95E-03	66.8	
24	0	470.57	11	22	0.54	941.63	935	10	3.13E-03	83.8	
25	0	505.56	16	20	3.54	1011.62	1003	13	4.32E-03	67.5	
26	0	510.85*	15	22	1.50	1022.20	1016	14	4.06E-03	95.9	
27	0	583.60*	58	23	1.31	1167.75	1161	13	1.62E-02	21.8	
28	0	609.43*	119	13	1.33	1219.44	1213	13	3.32E-02	11.4	
29	0	727.76	12	6	0.60	1456.17	1453	6	3.33E-03	43.3	
30	0	769.55	28	15	5.72	1539.78	1532	19	7.80E-03	37.5	
31	0	794.71	11	6	2.27	1590.11	1586	7	3.06E-03	49.2	
32	0	799.18	7	6	1.25	1599.05	1594	9	1.84E-03	80.3	
33	0	911.06*	50	11	1.50	1822.88	1816	15	1.39E-02	20.8	
34	0	964.56	14	3	1.65	1929.92	1923	12	4.00E-03	35.5	

Sample ID : G719378004 Acquisition date : 10-MAY-2025 10:25:05

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	968.95	23	2	1.17	1938.71	1935	8	6.45E-03	23.2	
36	0	977.53	8	3	1.46	1955.87	1952	7	2.17E-03	52.9	
37	0	1120.93	30	2	1.32	2242.78	2238	12	8.25E-03	21.6	
38	0	1211.56	11	14	3.74	2424.09	2416	14	3.06E-03	78.2	
39	0	1238.44	10	7	1.49	2477.86	2474	7	2.90E-03	51.8	
40	0	1461.18*	143	4	1.96	2923.51	2916	13	3.98E-02	8.9	
41	0	1764.68*	16	2	2.61	3530.75	3525	10	4.54E-03	32.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:25:46

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378004.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 09:35:00	Acquisition date	: 10-MAY-2025 10:25:05
Sample ID	: G719378004	Sample quantity	: 123.64 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA52	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.51 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	136	10.66*	1.105E+00	7.011E+00	7.011E+00	17.89
CD-109	88.03	60	3.70*	7.097E+00	1.392E+00	1.461E+00	65.66
SN-126	64.28	------	9.60	4.742E+00	------	Line Not Found	------
	86.94	60	8.90	7.097E+00	5.788E-01	5.788E-01	65.66
	87.57	60	37.00*	7.097E+00	1.392E-01	1.392E-01	65.66
TL-208	277.37	------	6.60	4.896E+00	------	Line Not Found	------
	583.19	58	85.00*	2.669E+00	1.564E-01	1.564E-01	43.54
	860.56	------	12.50	1.842E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	5.896E+00	------	Line Not Found	------
	351.06	178	12.92*	4.083E+00	2.044E+00	2.044E+00	20.01
BI-212	727.33	12	6.67*	2.172E+00	4.974E-01	4.974E-01	86.60
	1620.50	------	1.47	1.018E+00	------	Line Not Found	------
PB-212	74.82	95	10.28	6.098E+00	9.229E-01	9.229E-01	41.76
	77.11	142	17.10	6.354E+00	7.944E-01	7.944E-01	26.64
	238.63	276	43.60*	5.458E+00	7.043E-01	7.043E-01	15.19
	300.09	27	3.30	4.617E+00	1.086E+00	1.086E+00	77.46
BI-214	609.32	119	45.49*	2.566E+00	6.205E-01	6.205E-01	22.87
	1120.29	29	14.92	1.414E+00	8.237E-01	8.237E-01	43.11
	1764.49	15	15.30	9.610E-01	6.324E-01	6.324E-01	64.55
PB-214	74.82	95	5.80	6.098E+00	1.636E+00	1.636E+00	41.76
	77.11	142	9.70	6.354E+00	1.401E+00	1.401E+00	26.64
	87.09	60	3.41	7.097E+00	1.511E+00	1.511E+00	65.66
	242.00	68	7.25	5.409E+00	1.046E+00	1.046E+00	55.31
	295.22	128	18.42	4.674E+00	9.022E-01	9.022E-01	25.92
	351.93	178	35.60*	4.083E+00	7.417E-01	7.417E-01	20.01
RN-219	271.23	29	10.80	4.984E+00	3.237E-01	3.237E-01	111.32
	401.81	6	6.60*	3.669E+00	1.495E-01	1.495E-01	301.15
RN-222	609.32	119	45.49*	2.566E+00	6.205E-01	6.205E-01	22.87
	1120.29	29	14.92	1.414E+00	8.237E-01	8.237E-01	43.11
	1764.49	15	15.30	9.610E-01	6.324E-01	6.324E-01	64.55
RA-224	240.99	68	4.10*	5.409E+00	1.849E+00	1.849E+00	55.31
RA-226	74.82	95	5.80	6.098E+00	1.636E+00	1.636E+00	41.76
	77.11	142	9.70	6.354E+00	1.401E+00	1.401E+00	26.64
	87.09	60	3.41	7.097E+00	1.511E+00	1.511E+00	65.66
	242.00	68	7.25	5.409E+00	1.046E+00	1.046E+00	55.31
	295.22	128	18.42	4.674E+00	9.022E-01	9.022E-01	25.92
	351.93	178	35.60*	4.083E+00	7.417E-01	7.417E-01	20.01
AC-228	105.21	------	1.10	7.666E+00	------	Line Not Found	------
	338.32	48	11.27	4.210E+00	6.168E-01	6.168E-01	58.77
	835.71	------	1.61	1.897E+00	------	Line Not Found	------
	911.20	49	25.80*	1.740E+00	6.594E-01	6.594E-01	41.67
	968.97	23	15.80	1.636E+00	5.302E-01	5.302E-01	46.38
RA-228	105.21	------	1.10	7.666E+00	------	Line Not Found	------
	338.32	48	11.27	4.210E+00	6.168E-01	6.168E-01	58.77
	835.71	------	1.61	1.897E+00	------	Line Not Found	------
	911.20	49	25.80*	1.740E+00	6.594E-01	6.594E-01	41.67
	968.97	23	15.80	1.636E+00	5.302E-01	5.302E-01	46.38
TH-228	74.82	95	10.28	6.098E+00	9.229E-01	9.229E-01	41.76
	77.11	142	17.10	6.354E+00	7.944E-01	7.944E-01	26.64

Sample ID : G719378004 Acquisition date : 10-MAY-2025 10:25:05

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	276	43.60*	5.458E+00	7.043E-01	7.043E-01	15.19
	300.09	27	3.30	4.617E+00	1.086E+00	1.086E+00	77.46
TH-229	85.43	24	14.70	6.927E+00	1.449E-01	1.449E-01	113.09
	88.47	60	24.00	7.097E+00	2.146E-01	2.146E-01	65.66
	193.51	------	4.41*	6.276E+00	------	Line Not Found	------
	210.85	35	2.80	5.965E+00	1.283E+00	1.283E+00	89.47
TH-230	74.82	95	5.80	6.098E+00	1.636E+00	1.636E+00	41.76
	77.11	142	9.70	6.354E+00	1.401E+00	1.401E+00	26.64
	87.09	60	3.41	7.097E+00	1.511E+00	1.511E+00	65.66
	242.00	68	7.25	5.409E+00	1.046E+00	1.046E+00	55.31
	295.22	128	18.42	4.674E+00	9.022E-01	9.022E-01	25.92
	351.93	178	35.60*	4.083E+00	7.417E-01	7.417E-01	20.01
PA-231	283.69	------	1.70	4.815E+00	------	Line Not Found	------
	301.36	27	5.35*	4.617E+00	6.698E-01	6.698E-01	77.46
TH-232	105.21	------	1.10	7.666E+00	------	Line Not Found	------
	338.32	48	11.27	4.210E+00	6.168E-01	6.168E-01	58.77
	835.71	------	1.61	1.897E+00	------	Line Not Found	------
	911.20	49	25.80*	1.740E+00	6.594E-01	6.594E-01	41.67
	968.97	23	15.80	1.636E+00	5.302E-01	5.302E-01	46.38
U-234	74.82	95	5.80	6.098E+00	1.636E+00	1.636E+00	41.76
	77.11	142	9.70	6.354E+00	1.401E+00	1.401E+00	26.64
	87.09	60	3.41	7.097E+00	1.511E+00	1.511E+00	65.66
	242.00	68	7.25	5.409E+00	1.046E+00	1.046E+00	55.31
	295.22	128	18.42	4.674E+00	9.022E-01	9.022E-01	25.92
	351.93	178	35.60*	4.083E+00	7.417E-01	7.417E-01	20.01
U-235	89.96	34	3.47	7.252E+00	8.116E-01	8.116E-01	77.77
	93.35	64	5.60	7.373E+00	9.349E-01	9.349E-01	76.52
	143.76	------	10.96*	7.322E+00	------	Line Not Found	------
	163.33	------	5.08	6.913E+00	------	Line Not Found	------
	185.72	50	57.20	6.421E+00	8.258E-02	8.258E-02	86.35
	205.31	------	5.01	6.044E+00	------	Line Not Found	------
AM-243	43.53	------	5.90	1.233E+00	------	Line Not Found	------
	74.66	95	67.20*	6.098E+00	1.412E-01	1.412E-01	41.76
CM-247	278.00	------	3.40	4.888E+00	------	Line Not Found	------
	287.50	------	2.00	4.767E+00	------	Line Not Found	------
	402.40	6	72.00*	3.669E+00	1.370E-02	1.370E-02	301.15
ANH-511	511.00	15	100.00*	3.003E+00	2.985E-02	2.985E-02	191.71

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:46.90

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378004.CNF;1  *
* Acquisition date : 10-MAY-2025 10:25:05 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:35:00 Analyst initials: RXF2            *
* Sample ID        : G719378004           Sample Quantity : 1.2364E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  3-SEP-2024 08:39:54 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	7.011E+00	1.229E+00	6.123E-01
CD-109	1.461E+00	9.400E-01	8.654E-01
SN-126	1.392E-01	8.958E-02	8.273E-02
TL-208	1.564E-01	6.672E-02	5.030E-02
BI-211	2.044E+00	4.008E-01	2.555E-01
BI-212	4.974E-01	4.221E-01	7.474E-01
PB-212	7.043E-01	1.048E-01	8.318E-02
BI-214	6.205E-01	1.391E-01	9.097E-02
PB-214	7.417E-01	1.455E-01	9.295E-02
RN-219	1.495E-01	4.411E-01	5.394E-01
RN-222	6.205E-01	1.391E-01	9.097E-02
RA-224	1.849E+00	1.002E+00	8.915E-01
RA-226	7.417E-01	1.455E-01	9.295E-02
AC-228	6.594E-01	2.693E-01	2.133E-01
RA-228	6.594E-01	2.693E-01	2.133E-01
TH-228	7.043E-01	1.048E-01	8.318E-02
TH-229	3.323E-01	3.371E-01	6.994E-01
TH-230	7.417E-01	1.455E-01	9.294E-02
PA-231	6.698E-01	5.085E-01	5.636E-01
TH-232	6.594E-01	2.693E-01	2.133E-01
U-234	7.417E-01	1.455E-01	9.294E-02
U-235	1.007E-01	1.377E-01	2.760E-01
AM-243	1.412E-01	5.777E-02	5.643E-02
CM-247	1.370E-02	4.043E-02	4.767E-02
ANH-511	2.985E-02	5.608E-02	4.127E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.183E-01	2.927E-01	6.178E-01	NOT IDENT.
NA-22	-6.225E-04	3.685E-02	7.619E-02	NOT IDENT.
NA-24	0.000E+00	5.535E+13	0.000E+00	SHORT HLIF
AL-26	2.538E-02	3.111E-02	8.386E-02	NOT IDENT.
SC-46	-1.610E-02	4.286E-02	7.651E-02	FAIL ABUN

V-48	4.897E-02	1.070E-01	2.387E-01	NOT IDENT.
CR-51	-3.574E-02	4.381E-01	7.838E-01	NOT IDENT.
MN-52	-1.254E-01	1.514E+00	3.261E+00	NOT IDENT.
MN-54	-1.726E-03	3.161E-02	6.101E-02	NOT IDENT.
CO-56	-5.356E-03	3.716E-02	7.099E-02	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	6.774E-03	1.728E-02	3.401E-02	NOT IDENT.
CO-58	-2.235E-02	3.456E-02	5.859E-02	NOT IDENT.
FE-59	-5.384E-02	9.532E-02	1.765E-01	NOT IDENT.
CO-60	1.110E-02	2.784E-02	6.720E-02	NOT IDENT.
ZN-65	8.584E-03	6.092E-02	1.235E-01	NOT IDENT.
GE-68	-1.727E-02	8.541E-01	1.852E+00	NOT IDENT.
AS-73	-1.085E-01	4.627E-01	8.935E-01	NOT IDENT.
AS-74	-1.750E-02	1.367E-01	2.649E-01	NOT IDENT.
SE-75	6.863E-03	3.788E-02	7.056E-02	NOT IDENT.
BR-77	0.000E+00	2.272E+03	0.000E+00	SHORT HLIF
SR-82	2.810E-01	3.497E-01	7.999E-01	NOT IDENT.
RB-83	-1.428E-02	6.200E-02	1.188E-01	NOT IDENT.
RB-84	-4.809E-03	8.993E-02	1.725E-01	NOT IDENT.
KR-85	1.995E+00	5.701E+00	1.079E+01	NOT IDENT.
SR-85	1.258E-02	3.609E-02	6.828E-02	NOT IDENT.
RB-86	-3.561E-01	9.414E-01	1.876E+00	NOT IDENT.
Y-88	-3.270E-02	3.374E-02	3.589E-02	NOT IDENT.
Y-91	1.008E+01	2.563E+01	4.995E+01	NOT IDENT.
NB-94	7.534E-03	3.001E-02	6.004E-02	NOT IDENT.
NB-95	1.977E-02	3.747E-02	7.629E-02	NOT IDENT.
NB-95M	7.171E-02	1.309E-01	2.320E-01	NOT IDENT.
ZR-95	-2.950E-02	9.010E-02	1.625E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.707E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	6.379E+02	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	4.883E+36	0.000E+00	SHORT HLIF
RH-101	2.244E-03	2.068E-02	3.693E-02	FAIL ABUN
RH-102	2.512E-02	4.037E-02	8.908E-02	NOT IDENT.
RU-103	7.141E-04	3.189E-02	6.596E-02	FAIL ABUN
RH-106	-1.226E-01	2.197E-01	3.940E-01	NOT IDENT.
RU-106	-1.226E-01	2.197E-01	3.940E-01	NOT IDENT.
AG-108M	2.190E-02	2.086E-02	4.756E-02	NOT IDENT.
AG-110	1.234E-01	6.195E-01	1.255E+00	NOT IDENT.
AG-110M	-9.142E-03	4.617E-02	8.624E-02	NOT IDENT.
SN-113	-3.474E-02	3.878E-02	5.795E-02	NOT IDENT.
CD-115	0.000E+00	1.462E+03	0.000E+00	SHORT HLIF
SN-117M	-4.533E-02	9.006E-02	1.584E-01	NOT IDENT.
SB-122	0.000E+00	1.169E+02	0.000E+00	SHORT HLIF
TE-123M	-1.012E-02	2.250E-02	3.978E-02	NOT IDENT.
SB-124	-3.320E-02	9.362E-02	1.826E-01	NOT IDENT.
SB-125	-3.165E-02	7.731E-02	1.443E-01	FAIL ABUN
TE-125M	-1.588E+00	8.324E+00	1.544E+01	NOT IDENT.
I-126	1.657E-01	3.417E-01	7.618E-01	FAIL ABUN
SB-126	2.061E-01	2.956E-01	6.484E-01	NOT IDENT.
SB-127	2.287E-01	1.721E+01	3.538E+01	NOT IDENT.
I-131	1.422E-02	3.320E-01	6.745E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	2.095E+01	0.000E+00	SHORT HLIF
BA-133	9.869E-03	3.058E-02	6.123E-02	NOT IDENT.
I-133	0.000E+00	3.317E+09	0.000E+00	SHORT HLIF
CS-134	3.971E-02	3.827E-02	6.570E-02	FAIL ABUN
I-135	0.000E+00	1.855E+34	0.000E+00	SHORT HLIF
CS-136	7.637E-02	2.406E-01	4.932E-01	NOT IDENT.
BA-137M	-2.414E-03	2.704E-02	5.264E-02	NOT IDENT.
CS-137	-2.550E-03	2.856E-02	5.560E-02	NOT IDENT.
LA-138	6.561E-03	5.209E-02	1.136E-01	NOT IDENT.
CE-139	3.626E-03	2.115E-02	4.029E-02	NOT IDENT.
BA-140	-1.644E-01	4.607E-01	8.763E-01	NOT IDENT.
LA-140	-6.426E-02	1.730E-01	3.386E-01	NOT IDENT.
CE-141	8.039E-03	6.011E-02	1.140E-01	NOT IDENT.
CE-143	0.000E+00	4.080E+05	0.000E+00	SHORT HLIF
CE-144	7.349E-02	1.340E-01	2.669E-01	NOT IDENT.
PM-144	-5.581E-02	3.374E-02	4.841E-02	NOT IDENT.
PR-144	-4.222E+00	2.546E+00	3.648E+00	NOT IDENT.
PM-146	1.923E-02	2.829E-02	6.270E-02	NOT IDENT.
ND-147	1.350E-01	1.310E+00	2.625E+00	FAIL ABUN
PM-147	3.018E+02	4.882E+02	9.816E+02	NOT IDENT.
PM-149	0.000E+00	1.358E+04	0.000E+00	SHORT HLIF
EU-150	-1.035E-02	1.782E-02	3.155E-02	FAIL ABUN
EU-152	2.181E-02	6.351E-02	1.295E-01	FAIL ABUN
GD-153	-1.699E-02	6.062E-02	1.037E-01	NOT IDENT.
EU-154	-4.549E-03	1.028E-01	2.116E-01	NOT IDENT.

EU-155	3.759E-02	7.392E-02	1.459E-01	FAIL ABUN
TB-160	-1.205E-02	1.409E-01	2.688E-01	FAIL ABUN
HO-166M	-5.577E-04	4.293E-02	8.568E-02	NOT IDENT.
TM-171	1.208E+00	8.818E+00	1.756E+01	NOT IDENT.
HF-172	4.687E-02	1.217E-01	2.262E-01	FAIL ABUN
LU-172	-3.651E-02	5.447E-02	9.834E-02	FAIL ABUN
LU-176	-1.624E-02	2.165E-02	3.468E-02	FAIL ABUN
HF-181	-3.353E-03	4.409E-02	8.664E-02	NOT IDENT.
TA-182	-6.906E-02	1.458E-01	2.749E-01	FAIL ABUN
RE-183	-2.468E-02	1.226E-01	2.354E-01	NOT IDENT.
RE-184	9.117E-02	1.468E-01	3.219E-01	NOT IDENT.
W-188	-5.508E-01	6.053E+00	1.009E+01	NOT IDENT.
IR-192	3.810E-02	2.745E-02	6.123E-02	FAIL ABUN
HG-203	-6.614E-03	3.838E-02	6.789E-02	NOT IDENT.
TL-204	2.106E+00	2.692E+00	5.253E+00	NOT IDENT.
BI-207	-3.435E-02	4.392E-02	7.740E-02	FAIL ABUN
BI-210	3.282E-01	1.653E+00	3.270E+00	NOT IDENT.
PB-210	3.282E-01	1.653E+00	3.270E+00	NOT IDENT.
PB-211	2.164E-01	4.625E-01	9.664E-01	NOT IDENT.
BI-213	-2.541E-02	6.306E-02	1.204E-01	NOT IDENT.
RA-223	-8.465E-03	4.844E-01	8.760E-01	FAIL ABUN
AC-225	3.385E-01	1.472E+00	2.755E+00	NOT IDENT.
AC-227	1.344E-01	1.919E-01	3.617E-01	FAIL ABUN
TH-227	1.344E-01	1.919E-01	3.617E-01	FAIL ABUN
TH-231	-8.465E-03	4.844E-01	8.760E-01	FAIL ABUN
PA-233	5.769E-02	5.599E-02	1.133E-01	FAIL ABUN
PA-234	-1.425E-01	2.751E-01	4.727E-01	NOT IDENT.
PA-234M	-3.842E-01	8.062E-01	1.550E+00	FAIL ABUN
TH-234	-3.842E-01	8.062E-01	1.550E+00	FAIL ABUN
NP-237	5.769E-02	5.599E-02	1.133E-01	FAIL ABUN
NP-238	0.000E+00	3.818E+03	0.000E+00	SHORT HLIF
U-238	-3.842E-01	8.062E-01	1.550E+00	FAIL ABUN
NP-239	-7.681E-02	1.714E-01	3.102E-01	NOT IDENT.
PU-239	4.635E+02	4.115E+02	4.698E+02	FAIL ABUN
AM-241	-1.194E-01	8.367E-02	1.427E-01	NOT IDENT.
CM-243	-3.936E-02	6.977E-02	1.254E-01	NOT IDENT.
BK-247	-2.690E-02	6.352E-02	1.088E-01	FAIL ABUN
CF-249	2.466E-02	3.137E-02	6.369E-02	NOT IDENT.
CF-251	-6.488E-02	8.915E-02	1.511E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:45.37

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	136	10.66*	1.105E+00	7.011E+00	7.011E+00	17.89
CD-109	88.03	60	3.70*	7.097E+00	1.392E+00	1.461E+00	65.66
SN-126	64.28	------	9.60	4.742E+00	------	Line Not Found	------
	86.94	60	8.90	7.097E+00	5.788E-01	5.788E-01	65.66
	87.57	60	37.00*	7.097E+00	1.392E-01	1.392E-01	65.66
TL-208	277.37	------	6.60	4.896E+00	------	Line Not Found	------
	583.19	58	85.00*	2.669E+00	1.564E-01	1.564E-01	43.54
	860.56	------	12.50	1.842E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	5.896E+00	------	Line Not Found	------
	351.06	178	12.92*	4.083E+00	2.044E+00	2.044E+00	20.01
BI-212	727.33	12	6.67*	2.172E+00	4.974E-01	4.974E-01	86.60
	1620.50	------	1.47	1.018E+00	------	Line Not Found	------
PB-212	74.82	95	10.28	6.098E+00	9.229E-01	9.229E-01	41.76
	77.11	142	17.10	6.354E+00	7.944E-01	7.944E-01	26.64
	238.63	276	43.60*	5.458E+00	7.043E-01	7.043E-01	15.19
	300.09	27	3.30	4.617E+00	1.086E+00	1.086E+00	77.46
BI-214	609.32	119	45.49*	2.566E+00	6.205E-01	6.205E-01	22.87
	1120.29	29	14.92	1.414E+00	8.237E-01	8.237E-01	43.11
	1764.49	15	15.30	9.610E-01	6.324E-01	6.324E-01	64.55
PB-214	74.82	95	5.80	6.098E+00	1.636E+00	1.636E+00	41.76
	77.11	142	9.70	6.354E+00	1.401E+00	1.401E+00	26.64
	87.09	60	3.41	7.097E+00	1.511E+00	1.511E+00	65.66
	242.00	68	7.25	5.409E+00	1.046E+00	1.046E+00	55.31
	295.22	128	18.42	4.674E+00	9.022E-01	9.022E-01	25.92
	351.93	178	35.60*	4.083E+00	7.417E-01	7.417E-01	20.01
RN-219	271.23	29	10.80	4.984E+00	3.237E-01	3.237E-01	111.32
	401.81	6	6.60*	3.669E+00	1.495E-01	1.495E-01	301.15
RN-222	609.32	119	45.49*	2.566E+00	6.205E-01	6.205E-01	22.87
	1120.29	29	14.92	1.414E+00	8.237E-01	8.237E-01	43.11
	1764.49	15	15.30	9.610E-01	6.324E-01	6.324E-01	64.55
RA-224	240.99	68	4.10*	5.409E+00	1.849E+00	1.849E+00	55.31
RA-226	74.82	95	5.80	6.098E+00	1.636E+00	1.636E+00	41.76
	77.11	142	9.70	6.354E+00	1.401E+00	1.401E+00	26.64
	87.09	60	3.41	7.097E+00	1.511E+00	1.511E+00	65.66
	242.00	68	7.25	5.409E+00	1.046E+00	1.046E+00	55.31
	295.22	128	18.42	4.674E+00	9.022E-01	9.022E-01	25.92
	351.93	178	35.60*	4.083E+00	7.417E-01	7.417E-01	20.01
AC-228	105.21	------	1.10	7.666E+00	------	Line Not Found	------
	338.32	48	11.27	4.210E+00	6.168E-01	6.168E-01	58.77
	835.71	------	1.61	1.897E+00	------	Line Not Found	------
	911.20	49	25.80*	1.740E+00	6.594E-01	6.594E-01	41.67
	968.97	23	15.80	1.636E+00	5.302E-01	5.302E-01	46.38
RA-228	105.21	------	1.10	7.666E+00	------	Line Not Found	------
	338.32	48	11.27	4.210E+00	6.168E-01	6.168E-01	58.77
	835.71	------	1.61	1.897E+00	------	Line Not Found	------
	911.20	49	25.80*	1.740E+00	6.594E-01	6.594E-01	41.67
	968.97	23	15.80	1.636E+00	5.302E-01	5.302E-01	46.38

Sample ID : G719378004 Acquisition date : 10-MAY-2025 10:25:05

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	95	10.28	6.098E+00	9.229E-01	9.229E-01	41.76
	77.11	142	17.10	6.354E+00	7.944E-01	7.944E-01	26.64
	238.63	276	43.60*	5.458E+00	7.043E-01	7.043E-01	15.19
	300.09	27	3.30	4.617E+00	1.086E+00	1.086E+00	77.46
TH-229	85.43	24	14.70	6.927E+00	1.449E-01	1.449E-01	113.09
	88.47	60	24.00	7.097E+00	2.146E-01	2.146E-01	65.66
	193.51	------	4.41*	6.276E+00	------	Line Not Found	------
	210.85	35	2.80	5.965E+00	1.283E+00	1.283E+00	89.47
TH-230	74.82	95	5.80	6.098E+00	1.636E+00	1.636E+00	41.76
	77.11	142	9.70	6.354E+00	1.401E+00	1.401E+00	26.64
	87.09	60	3.41	7.097E+00	1.511E+00	1.511E+00	65.66
	242.00	68	7.25	5.409E+00	1.046E+00	1.046E+00	55.31
	295.22	128	18.42	4.674E+00	9.022E-01	9.022E-01	25.92
	351.93	178	35.60*	4.083E+00	7.417E-01	7.417E-01	20.01
PA-231	283.69	------	1.70	4.815E+00	------	Line Not Found	------
	301.36	27	5.35*	4.617E+00	6.698E-01	6.698E-01	77.46
TH-232	105.21	------	1.10	7.666E+00	------	Line Not Found	------
	338.32	48	11.27	4.210E+00	6.168E-01	6.168E-01	58.77
	835.71	------	1.61	1.897E+00	------	Line Not Found	------
	911.20	49	25.80*	1.740E+00	6.594E-01	6.594E-01	41.67
	968.97	23	15.80	1.636E+00	5.302E-01	5.302E-01	46.38
U-234	74.82	95	5.80	6.098E+00	1.636E+00	1.636E+00	41.76
	77.11	142	9.70	6.354E+00	1.401E+00	1.401E+00	26.64
	87.09	60	3.41	7.097E+00	1.511E+00	1.511E+00	65.66
	242.00	68	7.25	5.409E+00	1.046E+00	1.046E+00	55.31
	295.22	128	18.42	4.674E+00	9.022E-01	9.022E-01	25.92
	351.93	178	35.60*	4.083E+00	7.417E-01	7.417E-01	20.01
U-235	89.96	34	3.47	7.252E+00	8.116E-01	8.116E-01	77.77
	93.35	64	5.60	7.373E+00	9.349E-01	9.349E-01	76.52
	143.76	------	10.96*	7.322E+00	------	Line Not Found	------
	163.33	------	5.08	6.913E+00	------	Line Not Found	------
	185.72	50	57.20	6.421E+00	8.258E-02	8.258E-02	86.35
	205.31	------	5.01	6.044E+00	------	Line Not Found	------
AM-243	43.53	------	5.90	1.233E+00	------	Line Not Found	------
	74.66	95	67.20*	6.098E+00	1.412E-01	1.412E-01	41.76
CM-247	278.00	------	3.40	4.888E+00	------	Line Not Found	------
	287.50	------	2.00	4.767E+00	------	Line Not Found	------
	402.40	6	72.00*	3.669E+00	1.370E-02	1.370E-02	301.15
ANH-511	511.00	15	100.00*	3.003E+00	2.985E-02	2.985E-02	191.71

Flag: "*" = Keyline

Sample ID : G719378004 Acquisition date : 10-MAY-2025 10:25:05

Total number of lines in spectrum 41
Number of unidentified lines 8
Number of lines tentatively identified by NID 33 80.49%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	7.011E+00	7.011E+00	1.254E+00	17.89	
CD-109	461.40D	1.05	1.392E+00	1.461E+00	0.959E+00	65.66	
SN-126	2.30E+05Y	1.00	1.392E-01	1.392E-01	0.914E-01	65.66	
TL-208	1.41E+10Y	1.00	1.564E-01	1.564E-01	0.681E-01	43.54	
BI-211	7.04E+08Y	1.00	2.044E+00	2.044E+00	0.409E+00	20.01	
BI-212	1.41E+10Y	1.00	4.974E-01	4.974E-01	4.307E-01	86.60	
PB-212	1.41E+10Y	1.00	7.043E-01	7.043E-01	1.070E-01	15.19	
BI-214	1600.00Y	1.00	6.205E-01	6.205E-01	1.419E-01	22.87	
PB-214	1600.00Y	1.00	7.417E-01	7.417E-01	1.484E-01	20.01	
RN-219	7.04E+08Y	1.00	1.495E-01	1.495E-01	4.501E-01	301.15	
RN-222	1600.00Y	1.00	6.205E-01	6.205E-01	1.419E-01	22.87	
RA-224	1.41E+10Y	1.00	1.849E+00	1.849E+00	1.023E+00	55.31	
RA-226	1600.00Y	1.00	7.417E-01	7.417E-01	1.484E-01	20.01	
AC-228	1.41E+10Y	1.00	6.594E-01	6.594E-01	2.747E-01	41.67	
RA-228	1.41E+10Y	1.00	6.594E-01	6.594E-01	2.747E-01	41.67	
TH-228	1.41E+10Y	1.00	7.043E-01	7.043E-01	1.070E-01	15.19	
TH-229	7340.00Y	1.00	2.146E-01	2.146E-01	1.409E-01	65.66	K
TH-230	7.54E+04Y	1.00	7.417E-01	7.417E-01	1.484E-01	20.01	
PA-231	7.04E+08Y	1.00	6.698E-01	6.698E-01	5.188E-01	77.46	
TH-232	1.41E+10Y	1.00	6.594E-01	6.594E-01	2.747E-01	41.67	
U-234	2.45E+05Y	1.00	7.417E-01	7.417E-01	1.484E-01	20.01	
U-235	7.04E+08Y	1.00	8.258E-02	8.258E-02	7.131E-02	86.35	K
AM-243	7370.00Y	1.00	1.412E-01	1.412E-01	0.590E-01	41.76	
CM-247	1.56E+07Y	1.00	1.370E-02	1.370E-02	4.126E-02	301.15	
ANH-511	1.00E+09Y	1.00	2.985E-02	2.985E-02	5.722E-02	191.71	
			---	---			
	Total Activity :		2.198E+01	2.205E+01			

Grand Total Activity : 2.198E+01 2.205E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378004 Acquisition date : 10-MAY-2025 10:25:05

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	128.86	36	66	1.50	258.02	254	9	9.31E-03	90.6	7.58E+00	T
0	199.10	22	34	1.25	398.53	395	6	5.78E-03	97.4	6.16E+00	T
0	225.03	13	25	1.17	450.41	448	5	3.48E-03	****	5.68E+00	
0	229.94	36	46	3.00	460.23	454	11	9.58E-03	81.8	5.60E+00	
0	259.14	15	34	0.97	518.66	516	6	4.00E-03	****	5.15E+00	
0	389.88	10	25	1.02	780.20	775	8	2.78E-03	****	3.76E+00	T
0	463.79	18	30	1.34	928.07	920	13	4.95E-03	****	3.26E+00	T
0	470.57	11	22	0.54	941.63	935	10	3.13E-03	****	3.22E+00	
0	505.56	16	21	3.54	1011.62	1003	13	4.32E-03	****	3.03E+00	T
0	769.55	28	15	5.72	1539.78	1532	19	7.80E-03	74.9	2.06E+00	
0	794.71	11	6	2.27	1590.11	1586	7	3.06E-03	98.3	1.99E+00	T
0	799.18	7	6	1.25	1599.05	1594	9	1.84E-03	****	1.98E+00	
0	964.56	14	3	1.65	1929.92	1923	12	4.00E-03	70.9	1.64E+00	T
0	977.53	8	3	1.46	1955.87	1952	7	2.17E-03	****	1.62E+00	
0	1211.56	11	13	3.74	2424.09	2416	14	3.06E-03	****	1.31E+00	
0	1238.44	10	6	1.49	2477.86	2474	7	2.90E-03	****	1.28E+00	T

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:25:57.13

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*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
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*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378004.CNF;1  *
* Acquisition date : 10-MAY-2025 10:25:05 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:35:00 Nuclide Library : SOLID           *
* Sample ID        : G719378004           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.2364E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  3-SEP-2024 08:39:54 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;5             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.365E-01
CD-109	3.991E-01
SN-126	3.815E-02
TL-208	2.150E-02
BI-211	1.120E-01
BI-212	3.166E-01
PB-212	3.807E-02
BI-214	3.839E-02
PB-214	4.073E-02
RN-219	2.353E-01
RN-222	3.839E-02
RA-224	4.081E-01
RA-226	4.073E-02
AC-228	8.827E-02
RA-228	8.827E-02
TH-228	3.807E-02
TH-229	3.194E-01
TH-230	4.073E-02
PA-231	2.478E-01
TH-232	8.827E-02
U-234	4.073E-02
U-235	1.275E-01
AM-243	2.615E-02
CM-247	2.068E-02
ANH-511	1.787E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	2.709E-01	NOT IDENT.
NA-22	3.136E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.328E-02	NOT IDENT.
SC-46	3.222E-02	FAIL ABUN
V-48	9.878E-02	NOT IDENT.

CR-51	3.492E-01	NOT IDENT.
MN-52	1.241E+00	NOT IDENT.
MN-54	2.584E-02	NOT IDENT.
CO-56	2.961E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	1.561E-02	NOT IDENT.
CO-58	2.348E-02	NOT IDENT.
FE-59	7.163E-02	NOT IDENT.
CO-60	2.667E-02	NOT IDENT.
ZN-65	4.920E-02	NOT IDENT.
GE-68	7.373E-01	NOT IDENT.
AS-73	4.091E-01	NOT IDENT.
AS-74	1.137E-01	NOT IDENT.
SE-75	3.191E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	3.354E-01	NOT IDENT.
RB-83	5.133E-02	NOT IDENT.
RB-84	7.315E-02	NOT IDENT.
KR-85	4.750E+00	NOT IDENT.
SR-85	3.006E-02	NOT IDENT.
RB-86	7.246E-01	NOT IDENT.
Y-88	7.125E-03	NOT IDENT.
Y-91	2.147E+01	NOT IDENT.
NB-94	2.634E-02	NOT IDENT.
NB-95	3.248E-02	NOT IDENT.
NB-95M	1.073E-01	NOT IDENT.
ZR-95	7.097E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.680E-02	FAIL ABUN
RH-102	3.849E-02	NOT IDENT.
RU-103	2.775E-02	FAIL ABUN
RH-106	1.618E-01	NOT IDENT.
RU-106	1.618E-01	NOT IDENT.
AG-108M	2.111E-02	NOT IDENT.
AG-110	5.437E-01	NOT IDENT.
AG-110M	3.620E-02	NOT IDENT.
SN-113	2.482E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	7.210E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	1.817E-02	NOT IDENT.
SB-124	6.609E-02	NOT IDENT.
SB-125	6.397E-02	FAIL ABUN
TE-125M	7.119E+00	NOT IDENT.
I-126	3.215E-01	FAIL ABUN
SB-126	2.819E-01	NOT IDENT.
SB-127	1.455E+01	NOT IDENT.
I-131	2.963E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.727E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	2.785E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.098E-01	NOT IDENT.
BA-137M	2.244E-02	NOT IDENT.
CS-137	2.370E-02	NOT IDENT.
LA-138	4.562E-02	NOT IDENT.
CE-139	1.834E-02	NOT IDENT.
BA-140	3.705E-01	NOT IDENT.
LA-140	1.216E-01	NOT IDENT.
CE-141	5.226E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.225E-01	NOT IDENT.
PM-144	2.030E-02	NOT IDENT.
PR-144	1.529E+00	NOT IDENT.
PM-146	2.746E-02	NOT IDENT.
ND-147	1.148E+00	FAIL ABUN
PM-147	4.513E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.373E-02	FAIL ABUN
EU-152	5.718E-02	FAIL ABUN
GD-153	4.757E-02	NOT IDENT.
EU-154	8.689E-02	NOT IDENT.
EU-155	6.767E-02	FAIL ABUN

TB-160	1.137E-01	FAIL ABUN
HO-166M	3.595E-02	NOT IDENT.
TM-171	8.089E+00	NOT IDENT.
HF-172	1.030E-01	FAIL ABUN
LU-172	3.986E-02	FAIL ABUN
LU-176	1.537E-02	FAIL ABUN
HF-181	3.780E-02	NOT IDENT.
TA-182	1.090E-01	FAIL ABUN
RE-183	1.085E-01	NOT IDENT.
RE-184	1.379E-01	NOT IDENT.
W-188	4.441E+00	NOT IDENT.
IR-192	2.754E-02	FAIL ABUN
HG-203	3.056E-02	NOT IDENT.
TL-204	2.433E+00	NOT IDENT.
BI-207	3.128E-02	FAIL ABUN
BI-210	1.516E+00	NOT IDENT.
PB-210	1.516E+00	NOT IDENT.
PB-211	4.228E-01	NOT IDENT.
BI-213	5.078E-02	NOT IDENT.
RA-223	3.900E-01	FAIL ABUN
AC-225	1.261E+00	NOT IDENT.
AC-227	1.639E-01	FAIL ABUN
TH-227	1.639E-01	FAIL ABUN
TH-231	3.900E-01	FAIL ABUN
PA-233	5.184E-02	FAIL ABUN
PA-234	1.954E-01	NOT IDENT.
PA-234M	7.248E-01	FAIL ABUN
TH-234	7.248E-01	FAIL ABUN
NP-237	5.184E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	7.248E-01	FAIL ABUN
NP-239	1.413E-01	NOT IDENT.
PU-239	2.173E+02	FAIL ABUN
AM-241	6.537E-02	NOT IDENT.
CM-243	5.740E-02	NOT IDENT.
BK-247	4.887E-02	FAIL ABUN
CF-249	2.850E-02	NOT IDENT.
CF-251	6.822E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:26:01.26

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378004.CNF;1  *
* Acquisition date : 10-MAY-2025 10:25:05 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:35:00 Nuclide Library : SOLID           *
* Sample ID        : G719378004           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.2364E+02 GRAM *
*                                         Quantity Err(%) : 1.6176E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  3-SEP-2024 08:39:54 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;5             *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	7.011E+00	1.445E+00	1.445E+00
CD-109	1.461E+00	9.522E-01	9.522E-01
SN-126	1.392E-01	9.044E-02	9.044E-02
TL-208	1.564E-01	6.806E-02	6.806E-02
BI-211	2.044E+00	4.399E-01	4.399E-01
BI-212	4.974E-01	4.249E-01	4.249E-01
PB-212	7.043E-01	1.255E-01	1.255E-01
BI-214	6.205E-01	1.489E-01	1.489E-01
PB-214	7.417E-01	1.592E-01	1.592E-01
RN-219	1.495E-01	4.416E-01	4.416E-01
RN-222	6.205E-01	1.489E-01	1.489E-01
RA-224	1.849E+00	1.019E+00	1.019E+00
RA-226	7.417E-01	1.592E-01	1.592E-01
AC-228	6.594E-01	2.818E-01	2.818E-01
RA-228	6.594E-01	2.818E-01	2.818E-01
TH-228	7.043E-01	1.255E-01	1.255E-01
TH-229	3.323E-01	3.387E-01	3.387E-01
TH-230	7.417E-01	1.592E-01	1.592E-01
PA-231	6.698E-01	5.308E-01	5.308E-01
TH-232	6.594E-01	2.818E-01	2.818E-01
U-234	7.417E-01	1.592E-01	1.592E-01
U-235	1.007E-01	1.380E-01	1.380E-01
AM-243	1.412E-01	5.894E-02	5.894E-02
CM-247	1.370E-02	4.051E-02	4.051E-02
ANH-511	2.985E-02	5.614E-02	5.614E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.183E-01	2.929E-01	2.977E-01	NOT IDENT.
NA-22	-6.225E-04	3.685E-02	3.685E-02	NOT IDENT.
NA-24	2.923E+13	5.545E+13	5.699E+13	SHORT HLIF
AL-26	2.538E-02	3.117E-02	3.321E-02	NOT IDENT.
SC-46	-1.610E-02	4.291E-02	4.352E-02	FAIL ABUN

V-48	4.897E-02	1.072E-01	1.094E-01	NOT IDENT.
CR-51	-3.574E-02	4.381E-01	4.384E-01	NOT IDENT.
MN-52	-1.254E-01	1.514E+00	1.515E+00	NOT IDENT.
MN-54	-1.726E-03	3.161E-02	3.162E-02	NOT IDENT.
CO-56	-5.356E-03	3.716E-02	3.724E-02	FAIL ABUN
MN-56	-1.000E+41	6.797E+41	0.000E+00	SHORT HLIF
CO-57	6.774E-03	1.729E-02	1.756E-02	NOT IDENT.
CO-58	-2.235E-02	3.464E-02	3.608E-02	NOT IDENT.
FE-59	-5.384E-02	9.553E-02	9.856E-02	NOT IDENT.
CO-60	1.110E-02	2.787E-02	2.832E-02	NOT IDENT.
ZN-65	8.584E-03	6.093E-02	6.105E-02	NOT IDENT.
GE-68	-1.727E-02	8.541E-01	8.542E-01	NOT IDENT.
AS-73	-1.085E-01	4.632E-01	4.658E-01	NOT IDENT.
AS-74	-1.750E-02	1.367E-01	1.369E-01	NOT IDENT.
SE-75	6.863E-03	3.789E-02	3.801E-02	NOT IDENT.
BR-77	1.527E+04	1.438E+04	1.595E+04	SHORT HLIF
SR-82	2.810E-01	3.509E-01	3.731E-01	NOT IDENT.
RB-83	-1.428E-02	6.204E-02	6.238E-02	NOT IDENT.
RB-84	-4.809E-03	8.993E-02	8.996E-02	NOT IDENT.
KR-85	1.995E+00	5.703E+00	5.774E+00	NOT IDENT.
SR-85	1.258E-02	3.610E-02	3.655E-02	NOT IDENT.
RB-86	-3.561E-01	9.422E-01	9.557E-01	NOT IDENT.
Y-88	-3.270E-02	3.384E-02	3.691E-02	NOT IDENT.
Y-91	1.008E+01	2.564E+01	2.604E+01	NOT IDENT.
NB-94	7.534E-03	3.001E-02	3.020E-02	NOT IDENT.
NB-95	1.977E-02	3.753E-02	3.857E-02	NOT IDENT.
NB-95M	7.171E-02	1.312E-01	1.351E-01	NOT IDENT.
ZR-95	-2.950E-02	9.015E-02	9.113E-02	NOT IDENT.
NB-97	1.000E+41	5.023E+41	0.000E+00	SHORT HLIF
ZR-97	1.908E+13	1.715E+13	1.919E+13	SHORT HLIF
MO-99	9.283E+01	6.380E+02	6.393E+02	SHORT HLIF
TC-99M	2.231E+36	4.891E+36	0.000E+00	SHORT HLIF
RH-101	2.244E-03	2.069E-02	2.071E-02	FAIL ABUN
RH-102	2.512E-02	4.046E-02	4.202E-02	NOT IDENT.
RU-103	7.141E-04	3.189E-02	3.189E-02	FAIL ABUN
RH-106	-1.226E-01	2.200E-01	2.269E-01	NOT IDENT.
RU-106	-1.226E-01	2.200E-01	2.269E-01	NOT IDENT.
AG-108M	2.190E-02	2.095E-02	2.316E-02	NOT IDENT.
AG-110	1.234E-01	6.195E-01	6.220E-01	NOT IDENT.
AG-110M	-9.142E-03	4.618E-02	4.636E-02	NOT IDENT.
SN-113	-3.474E-02	3.888E-02	4.192E-02	NOT IDENT.
CD-115	-1.626E+02	1.462E+03	1.464E+03	SHORT HLIF
SN-117M	-4.533E-02	9.016E-02	9.245E-02	NOT IDENT.
SB-122	9.342E+01	1.172E+02	1.245E+02	SHORT HLIF
TE-123M	-1.012E-02	2.252E-02	2.298E-02	NOT IDENT.
SB-124	-3.320E-02	9.367E-02	9.486E-02	NOT IDENT.
SB-125	-3.165E-02	7.736E-02	7.866E-02	FAIL ABUN
TE-125M	-1.588E+00	8.325E+00	8.355E+00	NOT IDENT.
I-126	1.657E-01	3.420E-01	3.501E-01	FAIL ABUN
SB-126	2.061E-01	2.967E-01	3.110E-01	NOT IDENT.
SB-127	2.287E-01	1.721E+01	1.721E+01	NOT IDENT.
I-131	1.422E-02	3.320E-01	3.320E-01	NOT IDENT.
I-132	1.000E+41	7.784E+41	0.000E+00	SHORT HLIF
TE-132	6.833E+00	2.096E+01	2.119E+01	SHORT HLIF
BA-133	9.869E-03	3.059E-02	3.091E-02	NOT IDENT.
I-133	9.351E+08	3.323E+09	3.350E+09	SHORT HLIF
CS-134	3.971E-02	3.850E-02	4.246E-02	FAIL ABUN
I-135	-3.639E+33	1.875E+34	0.000E+00	SHORT HLIF
CS-136	7.637E-02	2.408E-01	2.433E-01	NOT IDENT.
BA-137M	-2.414E-03	2.704E-02	2.706E-02	NOT IDENT.
CS-137	-2.550E-03	2.856E-02	2.859E-02	NOT IDENT.
LA-138	6.561E-03	5.209E-02	5.218E-02	NOT IDENT.
CE-139	3.626E-03	2.117E-02	2.123E-02	NOT IDENT.
BA-140	-1.644E-01	4.610E-01	4.669E-01	NOT IDENT.
LA-140	-6.426E-02	1.731E-01	1.755E-01	NOT IDENT.
CE-141	8.039E-03	6.011E-02	6.022E-02	NOT IDENT.
CE-143	4.874E+05	4.104E+05	4.655E+05	SHORT HLIF
CE-144	7.349E-02	1.342E-01	1.382E-01	NOT IDENT.
PM-144	-5.581E-02	3.410E-02	4.238E-02	NOT IDENT.
PR-144	-4.222E+00	2.573E+00	3.201E+00	NOT IDENT.
PM-146	1.923E-02	2.836E-02	2.966E-02	NOT IDENT.
ND-147	1.350E-01	1.310E+00	1.311E+00	FAIL ABUN
PM-147	3.018E+02	4.888E+02	5.073E+02	NOT IDENT.
PM-149	6.145E+02	1.358E+04	1.359E+04	SHORT HLIF
EU-150	-1.035E-02	1.785E-02	1.845E-02	FAIL ABUN
EU-152	2.181E-02	6.354E-02	6.430E-02	FAIL ABUN
GD-153	-1.699E-02	6.064E-02	6.112E-02	NOT IDENT.
EU-154	-4.549E-03	1.028E-01	1.028E-01	NOT IDENT.

EU-155	3.759E-02	7.401E-02	7.592E-02	FAIL ABUN
TB-160	-1.205E-02	1.409E-01	1.410E-01	FAIL ABUN
HO-166M	-5.577E-04	4.293E-02	4.293E-02	NOT IDENT.
TM-171	1.208E+00	8.818E+00	8.835E+00	NOT IDENT.
HF-172	4.687E-02	1.220E-01	1.238E-01	FAIL ABUN
LU-172	-3.651E-02	5.470E-02	5.713E-02	FAIL ABUN
LU-176	-1.624E-02	2.170E-02	2.290E-02	FAIL ABUN
HF-181	-3.353E-03	4.409E-02	4.412E-02	NOT IDENT.
TA-182	-6.906E-02	1.459E-01	1.492E-01	FAIL ABUN
RE-183	-2.468E-02	1.226E-01	1.231E-01	NOT IDENT.
RE-184	9.117E-02	1.474E-01	1.530E-01	NOT IDENT.
W-188	-5.508E-01	6.053E+00	6.058E+00	NOT IDENT.
IR-192	3.810E-02	2.766E-02	3.256E-02	FAIL ABUN
HG-203	-6.614E-03	3.838E-02	3.850E-02	NOT IDENT.
TL-204	2.106E+00	2.701E+00	2.863E+00	NOT IDENT.
BI-207	-3.435E-02	4.407E-02	4.671E-02	FAIL ABUN
BI-210	3.282E-01	1.653E+00	1.660E+00	NOT IDENT.
PB-210	3.282E-01	1.653E+00	1.660E+00	NOT IDENT.
PB-211	2.164E-01	4.629E-01	4.731E-01	NOT IDENT.
BI-213	-2.541E-02	6.309E-02	6.413E-02	NOT IDENT.
RA-223	-8.465E-03	4.844E-01	4.844E-01	FAIL ABUN
AC-225	3.385E-01	1.473E+00	1.481E+00	NOT IDENT.
AC-227	1.344E-01	1.931E-01	2.023E-01	FAIL ABUN
TH-227	1.344E-01	1.931E-01	2.023E-01	FAIL ABUN
TH-231	-8.465E-03	4.844E-01	4.844E-01	FAIL ABUN
PA-233	5.769E-02	5.624E-02	6.196E-02	FAIL ABUN
PA-234	-1.425E-01	3.202E-01	3.266E-01	NOT IDENT.
PA-234M	-3.842E-01	8.110E-01	8.293E-01	FAIL ABUN
TH-234	-3.842E-01	8.110E-01	8.293E-01	FAIL ABUN
NP-237	5.769E-02	5.624E-02	6.196E-02	FAIL ABUN
NP-238	6.082E+02	3.819E+03	3.829E+03	SHORT HLIF
U-238	-3.842E-01	8.110E-01	8.293E-01	FAIL ABUN
NP-239	-7.681E-02	1.716E-01	1.750E-01	NOT IDENT.
PU-239	4.635E+02	4.132E+02	4.630E+02	FAIL ABUN
AM-241	-1.194E-01	8.436E-02	1.001E-01	NOT IDENT.
CM-243	-3.936E-02	6.991E-02	7.212E-02	NOT IDENT.
BK-247	-2.690E-02	6.379E-02	6.493E-02	FAIL ABUN
CF-249	2.466E-02	3.149E-02	3.339E-02	NOT IDENT.
CF-251	-6.488E-02	8.961E-02	9.427E-02	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	50.8134	85.43	43.1987	131.20	43.3581
45.60	55.3992	86.55	43.2956	133.02	27.1724
46.54	43.5902	86.79	47.0829	133.52	32.6309
49.72	0.0000	86.94	47.0970	136.00	31.7266
51.35	47.6682	87.09	47.1111	136.47	35.8449
51.87	41.6620	87.57	47.1558	140.51	0.0000
52.39	43.4607	88.03	47.1985	143.76	31.0464
52.97	42.6597	88.34	64.2294	144.24	39.3516
53.44	43.5865	88.47	64.2455	145.44	38.3804
54.07	43.6613	89.96	41.6918	152.43	42.9394
57.36	0.0000	1093.63	41.7465	153.25	25.1627
57.53	44.9466	91.11	41.7844	323.87	31.4941
57.98	50.2931	92.59	41.9029	156.02	39.9888
59.27	65.5102	93.35	41.9633	158.56	43.2904
59.32	65.5184	94.56	42.0590	159.00	45.4283
59.54	68.2130	94.65	42.0661	162.33	41.3810
60.96	45.3427	94.67	40.7930	162.66	41.3988
61.17	50.7039	94.87	40.8083	163.33	38.2473
62.93	67.9012	97.43	47.4089	165.86	31.9757
63.29	65.2785	98.43	34.6591	176.31	37.7926
63.58	51.9018	98.44	34.6597	176.60	39.9663
64.28	60.9542	99.53	41.4814	177.52	41.0923
66.73	43.2799	100.11	54.0787	181.07	0.0000
67.24	41.5264	102.03	34.8849	181.52	46.3607
125.81	50.6060	103.18	49.5210	184.41	55.2419
67.75	51.5184	103.37	49.5378	143.76	41.4952
68.89	56.1866	105.21	44.8254	193.51	22.0367
69.67	49.9331	105.31	44.8334	197.03	35.3994
70.82	37.6239	106.12	52.7047	198.01	32.4853
70.83	37.6248	106.47	50.7832	201.83	20.7602
72.81	60.9568	109.28	51.0284	203.43	36.7660
72.87	60.9650	111.00	42.3196	205.31	23.8167
74.66	53.2502	111.76	0.0000	210.85	34.4420
74.82	53.2692	114.06	38.5790	215.65	28.2207
74.97	53.2864	116.30	0.0000	218.12	35.0845
77.11	53.5347	116.74	42.7228	222.11	33.3357
78.74	55.5739	119.76	40.9340	227.09	27.4138
79.69	61.8729	121.12	33.0183	227.38	20.5664
80.03	61.9161	121.22	33.0234	228.16	0.0000
80.12	56.9745	121.78	35.0558	228.18	25.9192
80.19	50.7887	122.06	35.0713	116.74	25.9192
80.57	55.7881	122.92	38.1290	235.69	39.9389
81.00	40.9482	123.07	38.1380	235.96	39.9500
81.07	41.8847	265.00	39.1788	238.63	39.2845
81.75	42.2548	125.81	28.2215	238.98	0.0000
82.47	46.0516	127.23	32.3234	240.99	39.3748
83.79	46.1758	127.91	30.3347	242.00	39.4131
84.00	46.1954	129.30	30.3987	244.70	21.6950

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	31.6101	344.28	15.1648	563.25	12.5170
252.80	32.7928	345.93	22.7752	564.24	0.0000
254.15	0.0000	351.06	16.9344	569.33	12.5557
256.23	20.3654	351.93	16.9450	946.00	11.5908
260.90	0.0000	355.39	0.0000	569.70	11.5918
264.66	27.2325	356.01	18.3551	583.19	11.6704
264.80	30.7885	364.49	17.0996	584.27	11.6763
265.00	33.1628	366.42	0.0000	595.83	13.6998
269.46	30.9178	372.51	17.1965	427.87	16.6742
270.03	30.9337	375.05	19.8110	602.52	0.0000
271.23	30.9670	377.52	19.8452	604.72	13.2676
273.65	15.9143	356.01	20.7983	607.14	11.8071
276.40	17.9471	388.16	14.3412	609.32	9.8494
277.37	17.9622	388.63	14.7802	610.33	9.8543
277.60	17.9659	391.69	23.5234	614.28	16.2905
278.00	22.7649	264.66	14.8999	618.01	11.8682
279.20	29.9850	401.81	15.7885	620.36	8.9110
279.54	35.9930	402.40	14.4785	621.93	11.8901
279.70	35.9976	404.85	11.6013	630.19	0.0000
280.46	19.2114	410.95	21.1777	631.29	7.9616
283.69	18.0611	413.71	22.0998	633.25	8.9648
284.31	25.2990	414.70	22.9981	634.78	10.9651
285.41	27.7343	423.72	25.8004	635.95	7.9788
285.90	0.0000	427.09	23.1806	636.99	16.9633
287.50	16.9121	427.87	25.8682	657.50	12.0864
290.67	19.3799	433.94	9.8495	657.76	12.0879
293.27	0.0000	439.40	15.2734	657.90	0.0000
351.93	21.0753	440.45	13.4854	661.66	12.1089
295.96	21.0885	453.88	9.9703	664.57	0.0000
879.38	19.5083	463.37	12.0326	666.33	6.0671
299.98	22.7865	468.07	16.4535	666.50	7.0789
300.09	22.7882	473.00	9.6256	667.71	0.0000
300.13	22.7893	475.06	20.1922	677.62	11.1790
301.36	17.9238	476.78	10.1062	685.70	7.1390
302.85	29.3657	477.60	12.8684	692.65	0.0000
256.23	25.7296	482.18	16.5890	695.00	12.2876
304.85	26.9629	487.02	14.7865	696.49	19.4677
306.78	31.9152	492.35	0.0000	696.51	19.4677
308.46	27.0414	497.08	9.2942	697.00	14.3481
311.90	22.1863	505.52	8.4044	697.30	14.3498
316.51	9.8967	507.63	0.0000	697.49	14.3509
319.41	27.2784	511.00	14.0495	702.65	14.3828
320.08	23.5714	514.00	14.0729	706.68	12.3491
321.04	29.7964	514.00	14.0729	711.68	9.2816
323.87	22.3967	520.40	16.0046	720.70	8.2816
325.23	31.1394	520.69	0.0000	721.93	0.0000
328.76	26.2289	522.65	0.0000	722.78	13.4692
333.37	19.2191	527.90	0.0000	722.91	16.1637
333.97	22.0698	528.26	15.1270	723.31	16.1668
334.37	15.0524	529.59	12.2991	724.19	7.7753
338.28	17.6132	529.87	0.0000	727.33	10.3805
338.32	17.6136	531.02	15.1491	733.00	12.4858
311.90	18.9024	537.26	11.3994	735.93	5.2087
340.48	18.9024	546.56	0.0000	333.97	11.4664
340.55	18.9034	552.55	7.6605	739.50	0.0000

ENERGY	MDA COUNTS
744.23	8.3623
747.24	15.6989
748.06	10.4692
752.31	15.7312
753.82	16.7897
756.73	19.9610
756.80	19.9618
884.68	7.9022
765.81	6.3264
766.84	11.0759
772.60	0.0000
776.52	3.1768
739.50	0.0000
778.90	9.5391
783.70	13.8046
788.74	12.7676
792.07	11.1862
795.86	0.0000
810.06	9.6548
810.29	9.6555
344.28	11.8021
810.76	10.7304
815.77	7.5255
1048.07	6.4570
832.01	9.7350
834.85	10.8280
835.71	9.7482
836.80	0.0000
846.75	0.0000
846.77	9.7881
856.80	14.1902
860.56	10.9306
871.09	7.6805
873.19	8.7842
875.33	0.0000
879.38	11.0046
880.51	9.9082
881.60	11.0132
883.24	9.9177
884.68	11.0254
889.28	13.2520
894.76	12.1713
898.04	11.0775
900.72	15.5227
903.28	6.6587
911.20	7.7898
912.08	7.7921
923.98	0.0000
926.50	4.4748
929.11	6.7180
935.54	7.8551
937.49	11.2288
944.13	6.7524
946.00	12.3871
949.00	6.7634

ENERGY	MDA COUNTS
667.71	0.0000
962.31	6.7935
964.08	6.7974
966.17	3.4010
911.20	1.7021
983.53	4.5605
984.45	0.0000
1274.44	6.8691
1002.74	6.8833
1004.73	13.7754
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	8.1200
1038.76	0.0000
631.29	10.4685
1048.07	8.1456
1049.04	9.3118
1050.41	8.1519
1063.66	12.2773
1077.00	6.1635
1077.34	5.2833
1085.87	7.9453
1093.63	11.5035
1099.45	10.6370
1112.07	9.7868
1112.84	4.4498
1115.54	4.2750
1120.29	5.3511
1120.55	5.3518
1221.41	5.3529
1129.67	5.3657
1131.51	0.0000
1147.95	0.0000
1173.23	9.9607
1177.95	7.2534
1189.05	3.6379
1204.77	8.7691
1221.41	8.2590
1231.02	10.1205
1235.36	5.8949
1238.28	9.2181
1260.41	0.0000
1271.87	6.5108
1274.44	7.4458
1274.54	7.4458
1291.59	5.6093
1298.22	0.0000
1312.11	11.2778
1332.49	2.8343
1362.66	0.0000
1365.19	4.7626
1368.63	0.0000
1384.29	1.9139
1408.01	2.8876

ENERGY	MDA COUNTS
1434.09	3.8743
1435.80	4.8447
1457.56	0.0000
1460.82	3.8987
1489.16	0.9811
1505.03	5.9081
1584.12	6.0132
1596.21	4.0195
1620.50	1.0101
1621.92	4.0417
1678.03	0.0000
1690.97	4.1008
1750.46	0.0000
1764.49	3.3301
1063.66	3.1256
1771.35	5.2103
1791.20	0.0000
1808.65	1.0497
1810.72	0.0000
1836.06	4.2214

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:26:28.46

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378005.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM27.CNF;778
                                         Background date  : 4-MAY-2025 09:27:00.
Sample date      : 8-APR-2025 09:45:00. Acquisition date : 10-MAY-2025 10:25:39
Sample ID        : G719378005           Sample quantity  : 1.30820E+02 GRAM
Detector name    : GAM27                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.69  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	62.91*	37	138	2.07	126.65	122	10	1.03E-02	63.6	
2	2	75.09*	82	91	0.83	151.00	147	15	2.27E-02	21.4	2.24E-01
3	2	77.27*	142	107	1.01	155.35	147	15	3.95E-02	15.0	
4	0	87.14	62	107	1.12	175.08	173	7	1.73E-02	30.1	
5	0	93.05*	47	129	1.09	186.89	183	9	1.32E-02	49.8	
6	0	186.51*	54	98	1.18	373.75	368	11	1.51E-02	40.9	
7	0	209.30	38	84	0.78	419.32	415	9	1.06E-02	46.1	
8	2	238.86*	318	55	1.21	478.42	474	16	8.85E-02	6.9	1.89E+00
9	2	241.90	75	68	1.45	484.50	474	16	2.07E-02	25.0	
10	0	270.86	49	58	1.03	542.39	538	11	1.36E-02	33.4	
11	0	277.70	13	37	1.59	556.06	551	7	3.58E-03	82.9	
12	0	295.49	130	30	1.50	591.64	588	9	3.60E-02	11.6	
13	0	300.64	32	48	1.66	601.94	597	12	8.89E-03	46.8	
14	0	329.10	55	46	1.40	658.83	651	16	1.53E-02	31.2	
15	0	338.00	76	49	1.08	676.64	669	13	2.11E-02	22.2	
16	0	352.13*	188	32	1.20	704.87	701	8	5.22E-02	9.1	
17	0	371.15	22	39	2.46	742.92	737	12	6.03E-03	61.5	
18	0	388.11	16	33	1.00	776.81	771	11	4.44E-03	73.9	
19	0	511.28*	70	18	2.55	1023.09	1014	23	1.95E-02	24.3	
20	0	583.46*	102	13	1.22	1167.42	1161	13	2.83E-02	12.8	
21	0	609.67*	156	35	1.30	1219.82	1212	14	4.34E-02	11.5	
22	0	627.05	19	5	1.72	1254.57	1249	10	5.29E-03	31.7	
23	0	662.60	25	33	1.15	1325.65	1320	13	6.81E-03	52.1	
24	0	727.91	40	4	1.10	1456.25	1452	11	1.11E-02	19.2	
25	0	769.00	24	35	0.53	1538.41	1531	17	6.75E-03	58.7	
26	0	795.22	17	9	1.09	1590.86	1585	9	4.68E-03	40.4	
27	0	911.38*	82	8	1.45	1823.14	1815	15	2.29E-02	13.5	
28	2	965.00	19	11	2.12	1930.38	1923	21	5.25E-03	45.4	7.18E-01
29	2	969.37*	45	6	2.06	1939.10	1923	21	1.25E-02	19.4	
30	0	983.37	9	0	1.61	1967.11	1962	9	2.50E-03	33.3	
31	0	1051.49	6	4	1.42	2103.33	2099	8	1.67E-03	70.7	
32	0	1120.92	35	0	1.07	2242.17	2235	14	9.72E-03	16.9	
33	0	1161.10	10	2	0.65	2322.55	2319	7	2.88E-03	37.4	
34	0	1219.97	10	7	1.93	2440.27	2435	9	2.88E-03	54.6	

Sample ID : G719378005 Acquisition date : 10-MAY-2025 10:25:39

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1238.63	15	7	2.35	2477.58	2473	9	4.20E-03	40.3	
36	0	1250.15	6	2	0.54	2500.62	2497	6	1.79E-03	49.7	
37	0	1378.16	20	7	2.30	2756.64	2750	13	5.42E-03	35.2	
38	0	1461.19*	136	3	2.13	2922.71	2916	13	3.78E-02	9.3	
39	0	1508.66	15	0	1.58	3017.67	3010	14	4.17E-03	25.8	
40	1	1762.80	14	0	2.14	3526.00	3523	13	3.76E-03	27.6	1.70E+00
41	1	1765.80*	10	0	2.14	3532.00	3523	13	2.75E-03	50.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:26:29

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378005.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 09:45:00	Acquisition date	: 10-MAY-2025 10:25:39
Sample ID	: G719378005	Sample quantity	: 130.82 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA27	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.69 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G719378005 Acquisition date : 10-MAY-2025 10:25:39

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	130	10.66*	1.253E+00	5.564E+00	5.564E+00	18.60
CD-109	88.03	72	3.70*	6.721E+00	1.660E+00	1.741E+00	60.17
SN-126	64.28	44	9.60	3.775E+00	6.913E-01	6.913E-01	127.28
	86.94	72	8.90	6.721E+00	6.899E-01	6.899E-01	60.17
	87.57	72	37.00*	6.721E+00	1.660E-01	1.660E-01	60.17
BA-137M	661.66	25	89.90*	2.615E+00	6.032E-02	6.045E-02	104.10
CS-137	661.66	25	85.10*	2.615E+00	6.373E-02	6.386E-02	104.10
TL-208	277.37	14	6.60	4.868E+00	2.463E-01	2.463E-01	165.89
	583.19	104	85.00*	2.907E+00	2.407E-01	2.407E-01	25.53
	860.56	------	12.50	2.058E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	5.308E+00	------	Line Not Found	------
	351.06	198	12.92*	4.175E+00	2.107E+00	2.107E+00	18.23
BI-212	727.33	40	6.67*	2.407E+00	1.431E+00	1.431E+00	38.49
	1620.50	------	1.47	1.168E+00	------	Line Not Found	------
PB-212	74.82	95	10.28	5.591E+00	9.481E-01	9.481E-01	42.87
	77.11	165	17.10	5.844E+00	9.463E-01	9.463E-01	29.91
	238.63	344	43.60*	5.358E+00	8.455E-01	8.455E-01	13.89
	300.09	34	3.30	4.627E+00	1.280E+00	1.280E+00	93.54
BI-214	609.32	159	45.49*	2.805E+00	7.132E-01	7.133E-01	23.01
	1120.29	34	14.92	1.588E+00	8.236E-01	8.236E-01	33.81
	1764.49	9	15.30	1.120E+00	3.113E-01	3.113E-01	101.44
PB-214	74.82	95	5.80	5.591E+00	1.681E+00	1.681E+00	42.87
	77.11	165	9.70	5.844E+00	1.668E+00	1.668E+00	29.91
	87.09	72	3.41	6.721E+00	1.801E+00	1.801E+00	60.17
	242.00	80	7.25	5.315E+00	1.199E+00	1.199E+00	49.97
	295.22	138	18.42	4.678E+00	9.193E-01	9.193E-01	23.20
	351.93	198	35.60*	4.175E+00	7.646E-01	7.647E-01	18.23
RN-222	609.32	159	45.49*	2.805E+00	7.132E-01	7.133E-01	23.01
	1120.29	34	14.92	1.588E+00	8.236E-01	8.236E-01	33.81
	1764.49	9	15.30	1.120E+00	3.113E-01	3.113E-01	101.44
RA-224	240.99	80	4.10*	5.315E+00	2.120E+00	2.120E+00	49.97
RA-226	74.82	95	5.80	5.591E+00	1.681E+00	1.681E+00	42.87
	77.11	165	9.70	5.844E+00	1.668E+00	1.668E+00	29.91
	87.09	72	3.41	6.721E+00	1.801E+00	1.801E+00	60.17
	242.00	80	7.25	5.315E+00	1.199E+00	1.199E+00	49.97
	295.22	138	18.42	4.678E+00	9.193E-01	9.193E-01	23.20
	351.93	198	35.60*	4.175E+00	7.646E-01	7.647E-01	18.23
AC-228	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	80	11.27	4.289E+00	9.527E-01	9.527E-01	44.32
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	81	25.80*	1.947E+00	9.276E-01	9.276E-01	27.07
	968.97	44	15.80	1.832E+00	8.761E-01	8.761E-01	38.77
RA-228	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	80	11.27	4.289E+00	9.527E-01	9.527E-01	44.32
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	81	25.80*	1.947E+00	9.276E-01	9.276E-01	27.07
	968.97	44	15.80	1.832E+00	8.761E-01	8.761E-01	38.77
TH-228	74.82	95	10.28	5.591E+00	9.481E-01	9.481E-01	42.87
	77.11	165	17.10	5.844E+00	9.463E-01	9.463E-01	29.91

Sample ID : G719378005 Acquisition date : 10-MAY-2025 10:25:39

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	344	43.60*	5.358E+00	8.455E-01	8.455E-01	13.89
	300.09	34	3.30	4.627E+00	1.280E+00	1.280E+00	93.54
TH-230	74.82	95	5.80	5.591E+00	1.681E+00	1.681E+00	42.87
	77.11	165	9.70	5.844E+00	1.668E+00	1.668E+00	29.91
	87.09	72	3.41	6.721E+00	1.801E+00	1.801E+00	60.17
	242.00	80	7.25	5.315E+00	1.199E+00	1.199E+00	49.97
	295.22	138	18.42	4.678E+00	9.193E-01	9.193E-01	23.20
	351.93	198	35.60*	4.175E+00	7.646E-01	7.646E-01	18.23
PA-231	283.69	------	1.70	4.802E+00	------	Line Not Found	------
	301.36	34	5.35*	4.627E+00	7.897E-01	7.897E-01	93.54
TH-232	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	80	11.27	4.289E+00	9.527E-01	9.527E-01	44.32
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	81	25.80*	1.947E+00	9.276E-01	9.276E-01	27.07
	968.97	44	15.80	1.832E+00	8.761E-01	8.761E-01	38.77
PA-234M	63.29	44	3.70*	3.775E+00	1.794E+00	1.794E+00	127.28
	92.59	54	4.23	7.055E+00	1.047E+00	1.047E+00	99.53
TH-234	63.29	44	3.70*	3.775E+00	1.794E+00	1.794E+00	127.28
	92.59	54	4.23	7.055E+00	1.047E+00	1.047E+00	99.53
U-234	74.82	95	5.80	5.591E+00	1.681E+00	1.681E+00	42.87
	77.11	165	9.70	5.844E+00	1.668E+00	1.668E+00	29.91
	87.09	72	3.41	6.721E+00	1.801E+00	1.801E+00	60.17
	242.00	80	7.25	5.315E+00	1.199E+00	1.199E+00	49.97
	295.22	138	18.42	4.678E+00	9.193E-01	9.193E-01	23.20
	351.93	198	35.60*	4.175E+00	7.646E-01	7.646E-01	18.23
U-238	63.29	44	3.70*	3.775E+00	1.794E+00	1.794E+00	127.28
	92.59	54	4.23	7.055E+00	1.047E+00	1.047E+00	99.53
AM-243	43.53	------	5.90	6.688E-01	------	Line Not Found	------
	74.66	95	67.20*	5.591E+00	1.450E-01	1.450E-01	42.87
CF-249	252.80	------	2.50	5.169E+00	------	Line Not Found	------
	333.37	------	14.60	4.328E+00	------	Line Not Found	------
	388.16	17	66.00*	3.914E+00	3.719E-02	3.720E-02	147.77
ANH-511	511.00	72	100.00*	3.221E+00	1.282E-01	1.282E-01	48.58

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:26:30.79

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378005.CNF;1  *
* Acquisition date : 10-MAY-2025 10:25:39 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.69     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:45:00 Analyst initials: RXF2            *
* Sample ID        : G719378005           Sample Quantity : 1.3082E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	5.564E+00	1.014E+00	5.640E-01
CD-109	1.741E+00	1.027E+00	1.098E+00
SN-126	1.660E-01	9.785E-02	1.051E-01
BA-137M	6.045E-02	6.167E-02	5.374E-02
CS-137	6.386E-02	6.515E-02	5.678E-02
TL-208	2.407E-01	6.023E-02	4.897E-02
BI-211	2.107E+00	3.765E-01	3.076E-01
BI-212	1.431E+00	5.398E-01	6.202E-01
PB-212	8.455E-01	1.151E-01	8.085E-02
BI-214	7.133E-01	1.608E-01	9.800E-02
PB-214	7.647E-01	1.366E-01	1.066E-01
RN-222	7.133E-01	1.608E-01	9.800E-02
RA-224	2.120E+00	1.038E+00	8.659E-01
RA-226	7.647E-01	1.366E-01	1.066E-01
AC-228	9.276E-01	2.461E-01	2.127E-01
RA-228	9.276E-01	2.461E-01	2.127E-01
TH-228	8.455E-01	1.151E-01	8.085E-02
TH-230	7.646E-01	1.366E-01	1.066E-01
PA-231	7.897E-01	7.239E-01	5.636E-01
TH-232	9.276E-01	2.461E-01	2.127E-01
PA-234M	1.794E+00	2.237E+00	1.700E+00
TH-234	1.794E+00	2.237E+00	1.700E+00
U-234	7.646E-01	1.366E-01	1.066E-01
U-238	1.794E+00	2.237E+00	1.700E+00
AM-243	1.450E-01	6.094E-02	6.898E-02
CF-249	3.720E-02	5.387E-02	5.317E-02
ANH-511	1.282E-01	6.102E-02	3.596E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	9.363E-02	2.791E-01	5.772E-01	NOT IDENT.
NA-22	-7.426E-03	3.183E-02	6.237E-02	NOT IDENT.
NA-24	0.000E+00	7.978E+13	0.000E+00	SHORT HLIF

AL-26	-1.677E-02	1.898E-02	1.400E-02	NOT IDENT.
SC-46	-2.561E-02	3.663E-02	5.999E-02	FAIL ABUN
V-48	1.127E-01	7.365E-02	2.144E-01	FAIL ABUN
CR-51	-6.108E-02	3.842E-01	7.542E-01	NOT IDENT.
MN-52	-4.088E-03	1.148E+00	2.578E+00	NOT IDENT.
MN-54	-2.213E-03	3.119E-02	5.864E-02	NOT IDENT.
CO-56	-5.156E-03	3.395E-02	6.389E-02	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	7.244E-03	1.885E-02	3.669E-02	NOT IDENT.
CO-58	-2.104E-02	3.984E-02	6.867E-02	NOT IDENT.
FE-59	-4.174E-02	7.424E-02	1.373E-01	NOT IDENT.
CO-60	1.324E-02	2.502E-02	6.071E-02	NOT IDENT.
ZN-65	4.525E-02	5.513E-02	1.289E-01	NOT IDENT.
GE-68	-3.436E-01	1.059E+00	2.032E+00	NOT IDENT.
AS-73	-4.815E-01	7.399E-01	1.367E+00	NOT IDENT.
AS-74	-3.744E-02	1.425E-01	2.645E-01	NOT IDENT.
SE-75	4.919E-03	3.446E-02	6.423E-02	NOT IDENT.
BR-77	0.000E+00	2.491E+03	0.000E+00	SHORT HLIF
SR-82	-1.532E-02	3.855E-01	7.129E-01	NOT IDENT.
RB-83	5.045E-02	5.349E-02	1.157E-01	NOT IDENT.
RB-84	4.540E-03	6.687E-02	1.339E-01	NOT IDENT.
KR-85	5.783E+00	5.180E+00	1.144E+01	NOT IDENT.
SR-85	3.657E-02	3.279E-02	7.243E-02	NOT IDENT.
RB-86	-5.395E-01	1.306E+00	2.448E+00	NOT IDENT.
Y-88	-3.807E-03	3.675E-02	7.529E-02	NOT IDENT.
Y-91	-1.202E+00	1.700E+01	3.452E+01	NOT IDENT.
NB-94	1.907E-02	2.728E-02	5.767E-02	NOT IDENT.
NB-95	1.542E-03	3.829E-02	6.705E-02	NOT IDENT.
NB-95M	-5.468E-02	1.336E-01	2.108E-01	NOT IDENT.
ZR-95	1.339E-02	4.605E-02	1.004E-01	NOT IDENT.
NB-97	0.000E+00	1.011E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.136E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	6.677E+02	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	5.414E+36	0.000E+00	SHORT HLIF
RH-101	-1.196E-02	2.510E-02	4.466E-02	NOT IDENT.
RH-102	2.391E-02	3.807E-02	7.793E-02	NOT IDENT.
RU-103	-8.493E-03	3.704E-02	7.079E-02	FAIL ABUN
RH-106	-3.675E-02	2.203E-01	3.776E-01	FAIL ABUN
RU-106	-3.675E-02	2.203E-01	3.776E-01	FAIL ABUN
AG-108M	-2.185E-03	2.111E-02	4.115E-02	NOT IDENT.
AG-110	2.420E-01	5.915E-01	1.128E+00	NOT IDENT.
AG-110M	7.499E-03	4.098E-02	8.170E-02	NOT IDENT.
SN-113	-1.680E-02	3.976E-02	6.563E-02	NOT IDENT.
CD-115	0.000E+00	1.430E+03	0.000E+00	SHORT HLIF
SN-117M	6.657E-02	1.005E-01	1.966E-01	NOT IDENT.
SB-122	0.000E+00	1.241E+02	0.000E+00	SHORT HLIF
TE-123M	2.056E-02	2.371E-02	4.735E-02	NOT IDENT.
SB-124	-2.023E-03	7.558E-02	1.649E-01	NOT IDENT.
SB-125	7.006E-02	7.976E-02	1.683E-01	NOT IDENT.
TE-125M	1.697E+00	8.988E+00	1.713E+01	NOT IDENT.
I-126	2.127E-01	4.734E-01	8.862E-01	FAIL ABUN
SB-126	-4.358E-02	3.018E-01	5.640E-01	NOT IDENT.
SB-127	-1.309E+00	2.174E+01	4.150E+01	NOT IDENT.
I-131	-2.718E-01	3.331E-01	5.943E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	2.506E+01	0.000E+00	SHORT HLIF
BA-133	2.611E-02	3.244E-02	6.488E-02	FAIL ABUN
I-133	0.000E+00	3.089E+09	0.000E+00	SHORT HLIF
CS-134	5.229E-02	4.137E-02	7.523E-02	FAIL ABUN
I-135	0.000E+00	1.432E+34	0.000E+00	SHORT HLIF
CS-136	-1.287E-01	1.760E-01	2.478E-01	NOT IDENT.
LA-138	-3.740E-02	3.943E-02	5.873E-02	NOT IDENT.
CE-139	-1.644E-02	2.526E-02	4.334E-02	NOT IDENT.
BA-140	4.064E-01	4.707E-01	1.040E+00	NOT IDENT.
LA-140	-3.401E-02	1.746E-01	3.498E-01	FAIL ABUN
CE-141	5.186E-02	6.613E-02	1.315E-01	NOT IDENT.
CE-143	0.000E+00	4.391E+05	0.000E+00	SHORT HLIF
CE-144	-1.224E-01	1.434E-01	2.444E-01	NOT IDENT.
PM-144	1.801E-02	2.589E-02	5.559E-02	NOT IDENT.
PR-144	1.353E+00	1.954E+00	4.194E+00	NOT IDENT.
PM-146	4.450E-03	2.761E-02	5.635E-02	NOT IDENT.
ND-147	8.190E-02	1.094E+00	2.197E+00	NOT IDENT.
PM-147	1.329E+02	5.375E+02	1.033E+03	NOT IDENT.
PM-149	0.000E+00	1.387E+04	0.000E+00	SHORT HLIF
EU-150	9.361E-03	2.448E-02	3.851E-02	FAIL ABUN
EU-152	2.920E-02	6.951E-02	1.441E-01	FAIL ABUN
GD-153	-1.053E-02	6.065E-02	1.127E-01	NOT IDENT.
EU-154	-1.903E-02	8.988E-02	1.768E-01	NOT IDENT.

EU-155	5.216E-03	7.828E-02	1.482E-01	FAIL ABUN
TB-160	1.448E-02	1.071E-01	2.170E-01	FAIL ABUN
HO-166M	2.570E-02	4.644E-02	9.734E-02	NOT IDENT.
TM-171	-9.832E+00	1.292E+01	2.367E+01	NOT IDENT.
HF-172	1.161E-01	1.405E-01	2.824E-01	FAIL ABUN
LU-172	-1.950E-02	3.977E-02	7.523E-02	FAIL ABUN
LU-176	8.512E-03	1.920E-02	3.986E-02	FAIL ABUN
HF-181	9.699E-03	4.217E-02	8.549E-02	NOT IDENT.
TA-182	1.767E-01	1.892E-01	3.226E-01	FAIL ABUN
RE-183	8.574E-03	1.602E-01	3.133E-01	NOT IDENT.
RE-184	1.010E-01	1.237E-01	2.800E-01	NOT IDENT.
W-188	-1.660E+00	6.208E+00	1.148E+01	FAIL ABUN
IR-192	1.584E-02	3.044E-02	6.340E-02	FAIL ABUN
HG-203	-5.979E-03	4.441E-02	7.154E-02	NOT IDENT.
TL-204	1.519E+00	3.446E+00	6.788E+00	NOT IDENT.
BI-207	2.677E-02	3.628E-02	8.485E-02	FAIL ABUN
BI-210	2.668E-01	3.065E+00	6.134E+00	NOT IDENT.
PB-210	2.668E-01	3.065E+00	6.134E+00	NOT IDENT.
PB-211	-3.478E-01	5.348E-01	9.667E-01	NOT IDENT.
BI-213	-3.525E-03	7.869E-02	1.535E-01	NOT IDENT.
RN-219	-1.166E-01	2.872E-01	5.387E-01	FAIL ABUN
RA-223	-2.608E-01	4.939E-01	8.142E-01	FAIL ABUN
AC-225	-9.229E-01	1.368E+00	2.287E+00	NOT IDENT.
AC-227	-1.405E-01	1.880E-01	3.058E-01	FAIL ABUN
TH-227	-1.405E-01	1.880E-01	3.058E-01	FAIL ABUN
TH-229	1.169E-01	4.096E-01	7.691E-01	FAIL ABUN
TH-231	-2.608E-01	4.939E-01	8.142E-01	FAIL ABUN
PA-233	-6.972E-03	4.489E-02	8.808E-02	FAIL ABUN
PA-234	8.235E-02	2.276E-01	4.722E-01	NOT IDENT.
U-235	-1.659E-01	1.683E-01	2.849E-01	FAIL ABUN
NP-237	-6.972E-03	4.489E-02	8.808E-02	FAIL ABUN
NP-238	0.000E+00	2.585E+03	0.000E+00	SHORT HLIF
NP-239	4.583E-02	2.023E-01	3.863E-01	FAIL ABUN
PU-239	1.432E+01	2.533E+02	4.744E+02	NOT IDENT.
AM-241	2.303E-02	1.089E-01	2.009E-01	NOT IDENT.
CM-243	-7.495E-02	7.287E-02	1.243E-01	FAIL ABUN
BK-247	2.953E-03	5.696E-02	1.047E-01	NOT IDENT.
CM-247	-1.869E-02	2.732E-02	4.921E-02	FAIL ABUN
CF-251	3.870E-02	9.138E-02	1.766E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:26:29.28

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	130	10.66*	1.253E+00	5.564E+00	5.564E+00	18.60
CD-109	88.03	72	3.70*	6.721E+00	1.660E+00	1.741E+00	60.17
SN-126	64.28	44	9.60	3.775E+00	6.913E-01	6.913E-01	127.28
	86.94	72	8.90	6.721E+00	6.899E-01	6.899E-01	60.17
	87.57	72	37.00*	6.721E+00	1.660E-01	1.660E-01	60.17
BA-137M	661.66	25	89.90*	2.615E+00	6.032E-02	6.045E-02	104.10
CS-137	661.66	25	85.10*	2.615E+00	6.373E-02	6.386E-02	104.10
TL-208	277.37	14	6.60	4.868E+00	2.463E-01	2.463E-01	165.89
	583.19	104	85.00*	2.907E+00	2.407E-01	2.407E-01	25.53
	860.56	------	12.50	2.058E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	5.308E+00	------	Line Not Found	------
	351.06	198	12.92*	4.175E+00	2.107E+00	2.107E+00	18.23
BI-212	727.33	40	6.67*	2.407E+00	1.431E+00	1.431E+00	38.49
	1620.50	------	1.47	1.168E+00	------	Line Not Found	------
PB-212	74.82	95	10.28	5.591E+00	9.481E-01	9.481E-01	42.87
	77.11	165	17.10	5.844E+00	9.463E-01	9.463E-01	29.91
	238.63	344	43.60*	5.358E+00	8.455E-01	8.455E-01	13.89
	300.09	34	3.30	4.627E+00	1.280E+00	1.280E+00	93.54
BI-214	609.32	159	45.49*	2.805E+00	7.132E-01	7.133E-01	23.01
	1120.29	34	14.92	1.588E+00	8.236E-01	8.236E-01	33.81
	1764.49	9	15.30	1.120E+00	3.113E-01	3.113E-01	101.44
PB-214	74.82	95	5.80	5.591E+00	1.681E+00	1.681E+00	42.87
	77.11	165	9.70	5.844E+00	1.668E+00	1.668E+00	29.91
	87.09	72	3.41	6.721E+00	1.801E+00	1.801E+00	60.17
	242.00	80	7.25	5.315E+00	1.199E+00	1.199E+00	49.97
	295.22	138	18.42	4.678E+00	9.193E-01	9.193E-01	23.20
	351.93	198	35.60*	4.175E+00	7.646E-01	7.647E-01	18.23
RN-222	609.32	159	45.49*	2.805E+00	7.132E-01	7.133E-01	23.01
	1120.29	34	14.92	1.588E+00	8.236E-01	8.236E-01	33.81
	1764.49	9	15.30	1.120E+00	3.113E-01	3.113E-01	101.44
RA-224	240.99	80	4.10*	5.315E+00	2.120E+00	2.120E+00	49.97
RA-226	74.82	95	5.80	5.591E+00	1.681E+00	1.681E+00	42.87
	77.11	165	9.70	5.844E+00	1.668E+00	1.668E+00	29.91
	87.09	72	3.41	6.721E+00	1.801E+00	1.801E+00	60.17
	242.00	80	7.25	5.315E+00	1.199E+00	1.199E+00	49.97
	295.22	138	18.42	4.678E+00	9.193E-01	9.193E-01	23.20
	351.93	198	35.60*	4.175E+00	7.646E-01	7.647E-01	18.23
AC-228	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	80	11.27	4.289E+00	9.527E-01	9.527E-01	44.32
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	81	25.80*	1.947E+00	9.276E-01	9.276E-01	27.07
	968.97	44	15.80	1.832E+00	8.761E-01	8.761E-01	38.77
RA-228	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	80	11.27	4.289E+00	9.527E-01	9.527E-01	44.32
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	81	25.80*	1.947E+00	9.276E-01	9.276E-01	27.07
	968.97	44	15.80	1.832E+00	8.761E-01	8.761E-01	38.77

Sample ID : G719378005 Acquisition date : 10-MAY-2025 10:25:39

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	95	10.28	5.591E+00	9.481E-01	9.481E-01	42.87
	77.11	165	17.10	5.844E+00	9.463E-01	9.463E-01	29.91
	238.63	344	43.60*	5.358E+00	8.455E-01	8.455E-01	13.89
	300.09	34	3.30	4.627E+00	1.280E+00	1.280E+00	93.54
TH-230	74.82	95	5.80	5.591E+00	1.681E+00	1.681E+00	42.87
	77.11	165	9.70	5.844E+00	1.668E+00	1.668E+00	29.91
	87.09	72	3.41	6.721E+00	1.801E+00	1.801E+00	60.17
	242.00	80	7.25	5.315E+00	1.199E+00	1.199E+00	49.97
	295.22	138	18.42	4.678E+00	9.193E-01	9.193E-01	23.20
	351.93	198	35.60*	4.175E+00	7.646E-01	7.646E-01	18.23
PA-231	283.69	------	1.70	4.802E+00	------	Line Not Found	------
	301.36	34	5.35*	4.627E+00	7.897E-01	7.897E-01	93.54
TH-232	105.21	------	1.10	7.409E+00	------	Line Not Found	------
	338.32	80	11.27	4.289E+00	9.527E-01	9.527E-01	44.32
	835.71	------	1.61	2.117E+00	------	Line Not Found	------
	911.20	81	25.80*	1.947E+00	9.276E-01	9.276E-01	27.07
	968.97	44	15.80	1.832E+00	8.761E-01	8.761E-01	38.77
PA-234M	63.29	44	3.70*	3.775E+00	1.794E+00	1.794E+00	127.28
	92.59	54	4.23	7.055E+00	1.047E+00	1.047E+00	99.53
TH-234	63.29	44	3.70*	3.775E+00	1.794E+00	1.794E+00	127.28
	92.59	54	4.23	7.055E+00	1.047E+00	1.047E+00	99.53
U-234	74.82	95	5.80	5.591E+00	1.681E+00	1.681E+00	42.87
	77.11	165	9.70	5.844E+00	1.668E+00	1.668E+00	29.91
	87.09	72	3.41	6.721E+00	1.801E+00	1.801E+00	60.17
	242.00	80	7.25	5.315E+00	1.199E+00	1.199E+00	49.97
	295.22	138	18.42	4.678E+00	9.193E-01	9.193E-01	23.20
	351.93	198	35.60*	4.175E+00	7.646E-01	7.646E-01	18.23
U-238	63.29	44	3.70*	3.775E+00	1.794E+00	1.794E+00	127.28
	92.59	54	4.23	7.055E+00	1.047E+00	1.047E+00	99.53
AM-243	43.53	------	5.90	6.688E-01	------	Line Not Found	------
	74.66	95	67.20*	5.591E+00	1.450E-01	1.450E-01	42.87
CF-249	252.80	------	2.50	5.169E+00	------	Line Not Found	------
	333.37	------	14.60	4.328E+00	------	Line Not Found	------
	388.16	17	66.00*	3.914E+00	3.719E-02	3.720E-02	147.77
ANH-511	511.00	72	100.00*	3.221E+00	1.282E-01	1.282E-01	48.58

Flag: "*" = Keyline

Sample ID : G719378005 Acquisition date : 10-MAY-2025 10:25:39

Total number of lines in spectrum 41
Number of unidentified lines 8
Number of lines tentatively identified by NID 33 80.49%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	5.564E+00	5.564E+00	1.035E+00	18.60	
CD-109	461.40D	1.05	1.660E+00	1.741E+00	1.048E+00	60.17	
SN-126	2.30E+05Y	1.00	1.660E-01	1.660E-01	0.998E-01	60.17	
BA-137M	30.08Y	1.00	6.032E-02	6.045E-02	6.293E-02	104.10	
CS-137	30.08Y	1.00	6.373E-02	6.386E-02	6.648E-02	104.10	
TL-208	1.41E+10Y	1.00	2.407E-01	2.407E-01	0.615E-01	25.53	
BI-211	7.04E+08Y	1.00	2.107E+00	2.107E+00	0.384E+00	18.23	
BI-212	1.41E+10Y	1.00	1.431E+00	1.431E+00	0.551E+00	38.49	
PB-212	1.41E+10Y	1.00	8.455E-01	8.455E-01	1.175E-01	13.89	
BI-214	1600.00Y	1.00	7.132E-01	7.133E-01	1.641E-01	23.01	
PB-214	1600.00Y	1.00	7.646E-01	7.647E-01	1.394E-01	18.23	
RN-222	1600.00Y	1.00	7.132E-01	7.133E-01	1.641E-01	23.01	
RA-224	1.41E+10Y	1.00	2.120E+00	2.120E+00	1.059E+00	49.97	
RA-226	1600.00Y	1.00	7.646E-01	7.647E-01	1.394E-01	18.23	
AC-228	1.41E+10Y	1.00	9.276E-01	9.276E-01	2.511E-01	27.07	
RA-228	1.41E+10Y	1.00	9.276E-01	9.276E-01	2.511E-01	27.07	
TH-228	1.41E+10Y	1.00	8.455E-01	8.455E-01	1.175E-01	13.89	
TH-230	7.54E+04Y	1.00	7.646E-01	7.646E-01	1.394E-01	18.23	
PA-231	7.04E+08Y	1.00	7.897E-01	7.897E-01	7.387E-01	93.54	
TH-232	1.41E+10Y	1.00	9.276E-01	9.276E-01	2.511E-01	27.07	
PA-234M	4.47E+09Y	1.00	1.794E+00	1.794E+00	2.283E+00	127.28	
TH-234	4.47E+09Y	1.00	1.794E+00	1.794E+00	2.283E+00	127.28	
U-234	2.45E+05Y	1.00	7.646E-01	7.646E-01	1.394E-01	18.23	
U-238	4.47E+09Y	1.00	1.794E+00	1.794E+00	2.283E+00	127.28	
AM-243	7370.00Y	1.00	1.450E-01	1.450E-01	0.622E-01	42.87	
CF-249	351.00Y	1.00	3.719E-02	3.720E-02	5.497E-02	147.77	
ANH-511	1.00E+09Y	1.00	1.282E-01	1.282E-01	0.623E-01	48.58	
			---	---			
	Total Activity :		2.885E+01	2.893E+01			

Grand Total Activity : 2.885E+01 2.893E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378005 Acquisition date : 10-MAY-2025 10:25:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	186.51	60	107	1.18	373.75	368	11	1.51E-02	81.7	6.23E+00	T
0	209.30	42	91	0.78	419.32	415	9	1.06E-02	92.2	5.82E+00	
0	270.86	52	62	1.03	542.39	538	11	1.36E-02	66.7	4.95E+00	T
0	329.10	58	49	1.40	658.83	651	16	1.53E-02	62.3	4.36E+00	T
0	371.15	23	41	2.46	742.92	737	12	6.03E-03	****	4.03E+00	T
0	627.05	19	5	1.72	1254.57	1249	10	5.29E-03	63.5	2.74E+00	
0	769.00	24	35	0.53	1538.41	1531	17	6.75E-03	****	2.29E+00	
0	795.22	17	9	1.09	1590.86	1585	9	4.68E-03	80.7	2.22E+00	T
2	965.00	19	11	2.12	1930.38	1923	21	5.25E-03	90.9	1.84E+00	T
0	983.37	9	0	1.61	1967.11	1962	9	2.50E-03	66.7	1.81E+00	T
0	1051.49	6	4	1.42	2103.33	2099	8	1.67E-03	****	1.69E+00	T
0	1161.10	10	2	0.65	2322.55	2319	7	2.88E-03	74.8	1.53E+00	
0	1219.97	10	6	1.93	2440.27	2435	9	2.88E-03	****	1.46E+00	T
0	1238.63	15	7	2.35	2477.58	2473	9	4.20E-03	80.7	1.44E+00	T
0	1250.15	6	2	0.54	2500.62	2497	6	1.79E-03	99.5	1.43E+00	
0	1378.16	19	6	2.30	2756.64	2750	13	5.42E-03	70.4	1.31E+00	
0	1508.66	14	0	1.58	3017.67	3010	14	4.17E-03	51.6	1.22E+00	
1	1762.80	13	0	2.14	3526.00	3523	13	3.76E-03	55.2	1.12E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:26:41.38

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378005.CNF;1  *
* Acquisition date : 10-MAY-2025 10:25:39 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.69     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:45:00 Nuclide Library : SOLID           *
* Sample ID        : G719378005           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.3082E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.239E-01
CD-109	5.151E-01
SN-126	4.929E-02
BA-137M	2.353E-02
CS-137	2.485E-02
TL-208	2.130E-02
BI-211	1.391E-01
BI-212	2.612E-01
PB-212	3.701E-02
BI-214	4.284E-02
PB-214	4.796E-02
RN-222	4.284E-02
RA-224	3.965E-01
RA-226	4.796E-02
AC-228	9.080E-02
RA-228	9.080E-02
TH-228	3.701E-02
TH-230	4.795E-02
PA-231	2.496E-01
TH-232	9.080E-02
PA-234M	7.927E-01
TH-234	7.927E-01
U-234	4.795E-02
U-238	7.927E-01
AM-243	3.231E-02
CF-249	2.352E-02
ANH-511	1.553E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	2.547E-01	NOT IDENT.
NA-22	2.552E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	0.000E+00	NOT IDENT.

SC-46	2.488E-02	FAIL ABUN
V-48	8.983E-02	FAIL ABUN
CR-51	3.369E-01	NOT IDENT.
MN-52	9.640E-01	NOT IDENT.
MN-54	2.535E-02	NOT IDENT.
CO-56	2.695E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	1.697E-02	NOT IDENT.
CO-58	2.939E-02	NOT IDENT.
FE-59	5.458E-02	NOT IDENT.
CO-60	2.454E-02	NOT IDENT.
ZN-65	5.386E-02	NOT IDENT.
GE-68	8.569E-01	NOT IDENT.
AS-73	6.338E-01	NOT IDENT.
AS-74	1.159E-01	NOT IDENT.
SE-75	2.887E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	3.014E-01	NOT IDENT.
RB-83	5.073E-02	NOT IDENT.
RB-84	5.582E-02	NOT IDENT.
KR-85	5.152E+00	NOT IDENT.
SR-85	3.261E-02	NOT IDENT.
RB-86	1.044E+00	NOT IDENT.
Y-88	2.895E-02	NOT IDENT.
Y-91	1.431E+01	NOT IDENT.
NB-94	2.567E-02	NOT IDENT.
NB-95	2.869E-02	NOT IDENT.
NB-95M	9.698E-02	NOT IDENT.
ZR-95	4.144E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.070E-02	NOT IDENT.
RH-102	3.373E-02	NOT IDENT.
RU-103	3.075E-02	FAIL ABUN
RH-106	1.583E-01	FAIL ABUN
RU-106	1.583E-01	FAIL ABUN
AG-108M	1.816E-02	NOT IDENT.
AG-110	4.917E-01	NOT IDENT.
AG-110M	3.498E-02	NOT IDENT.
SN-113	2.901E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	9.129E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.198E-02	NOT IDENT.
SB-124	6.180E-02	NOT IDENT.
SB-125	7.674E-02	NOT IDENT.
TE-125M	7.976E+00	NOT IDENT.
I-126	3.920E-01	FAIL ABUN
SB-126	2.457E-01	NOT IDENT.
SB-127	1.806E+01	NOT IDENT.
I-131	2.592E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.934E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	3.336E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	9.278E-02	NOT IDENT.
LA-138	2.002E-02	NOT IDENT.
CE-139	1.990E-02	NOT IDENT.
BA-140	4.607E-01	NOT IDENT.
LA-140	1.355E-01	FAIL ABUN
CE-141	6.109E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.114E-01	NOT IDENT.
PM-144	2.445E-02	NOT IDENT.
PR-144	1.844E+00	NOT IDENT.
PM-146	2.468E-02	NOT IDENT.
ND-147	9.532E-01	NOT IDENT.
PM-147	4.776E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.734E-02	FAIL ABUN
EU-152	6.496E-02	FAIL ABUN
GD-153	5.211E-02	NOT IDENT.
EU-154	7.250E-02	NOT IDENT.
EU-155	6.887E-02	FAIL ABUN

TB-160	9.094E-02	FAIL ABUN
HO-166M	4.277E-02	NOT IDENT.
TM-171	1.090E+01	NOT IDENT.
HF-172	1.312E-01	FAIL ABUN
LU-172	2.975E-02	FAIL ABUN
LU-176	1.807E-02	FAIL ABUN
HF-181	3.782E-02	NOT IDENT.
TA-182	1.374E-01	FAIL ABUN
RE-183	1.455E-01	NOT IDENT.
RE-184	1.204E-01	NOT IDENT.
W-188	5.167E+00	FAIL ABUN
IR-192	2.880E-02	FAIL ABUN
HG-203	3.253E-02	NOT IDENT.
TL-204	3.186E+00	NOT IDENT.
BI-207	3.616E-02	FAIL ABUN
BI-210	2.880E+00	NOT IDENT.
PB-210	2.880E+00	NOT IDENT.
PB-211	4.283E-01	NOT IDENT.
BI-213	6.825E-02	NOT IDENT.
RN-219	2.380E-01	FAIL ABUN
RA-223	3.620E-01	FAIL ABUN
AC-225	1.030E+00	NOT IDENT.
AC-227	1.365E-01	FAIL ABUN
TH-227	1.365E-01	FAIL ABUN
TH-229	3.549E-01	FAIL ABUN
TH-231	3.620E-01	FAIL ABUN
PA-233	3.947E-02	FAIL ABUN
PA-234	2.014E-01	NOT IDENT.
U-235	1.321E-01	FAIL ABUN
NP-237	3.947E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.796E-01	FAIL ABUN
PU-239	2.199E+02	NOT IDENT.
AM-241	9.333E-02	NOT IDENT.
CM-243	5.692E-02	FAIL ABUN
BK-247	4.704E-02	NOT IDENT.
CM-247	2.173E-02	FAIL ABUN
CF-251	8.108E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:26:45.75

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378005.CNF;1  *
* Acquisition date : 10-MAY-2025 10:25:39 Sensitivity     : 3.000           *
* Detector ID      : GAM27                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.69     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:45:00 Nuclide Library : SOLID           *
* Sample ID        : G719378005           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.3082E+02 GRAM *
*                                         Quantity Err(%) : 1.5288E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  9-JUL-2024 08:43:14 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM27_CAN.CNF;22            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	5.564E+00	1.220E+00	1.220E+00
CD-109	1.741E+00	1.050E+00	1.050E+00
SN-126	1.660E-01	9.968E-02	9.968E-02
BA-137M	6.045E-02	6.187E-02	6.187E-02
CS-137	6.386E-02	6.535E-02	6.535E-02
TL-208	2.407E-01	6.355E-02	6.355E-02
BI-211	2.107E+00	4.260E-01	4.260E-01
BI-212	1.431E+00	5.575E-01	5.575E-01
PB-212	8.455E-01	1.416E-01	1.416E-01
BI-214	7.133E-01	1.716E-01	1.716E-01
PB-214	7.647E-01	1.541E-01	1.541E-01
RN-222	7.133E-01	1.716E-01	1.716E-01
RA-224	2.120E+00	1.059E+00	1.059E+00
RA-226	7.647E-01	1.541E-01	1.541E-01
AC-228	9.276E-01	2.746E-01	2.746E-01
RA-228	9.276E-01	2.746E-01	2.746E-01
TH-228	8.455E-01	1.416E-01	1.416E-01
TH-230	7.646E-01	1.541E-01	1.541E-01
PA-231	7.897E-01	7.469E-01	7.469E-01
TH-232	9.276E-01	2.746E-01	2.746E-01
PA-234M	1.794E+00	2.282E+00	2.282E+00
TH-234	1.794E+00	2.282E+00	2.282E+00
U-234	7.646E-01	1.541E-01	1.541E-01
U-238	1.794E+00	2.282E+00	2.282E+00
AM-243	1.450E-01	6.315E-02	6.315E-02
CF-249	3.720E-02	5.402E-02	5.402E-02
ANH-511	1.282E-01	6.197E-02	6.197E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	9.363E-02	2.792E-01	2.823E-01	NOT IDENT.
NA-22	-7.426E-03	3.184E-02	3.202E-02	NOT IDENT.
NA-24	1.360E+12	7.978E+13	7.978E+13	SHORT HLIF

AL-26	-1.677E-02	1.903E-02	2.048E-02	NOT IDENT.
SC-46	-2.561E-02	3.678E-02	3.855E-02	FAIL ABUN
V-48	1.127E-01	7.490E-02	9.051E-02	FAIL ABUN
CR-51	-6.108E-02	3.843E-01	3.853E-01	NOT IDENT.
MN-52	-4.088E-03	1.148E+00	1.148E+00	NOT IDENT.
MN-54	-2.213E-03	3.120E-02	3.121E-02	NOT IDENT.
CO-56	-5.156E-03	3.395E-02	3.403E-02	FAIL ABUN
MN-56	-1.000E+41	6.398E+41	0.000E+00	SHORT HLIF
CO-57	7.244E-03	1.886E-02	1.914E-02	NOT IDENT.
CO-58	-2.104E-02	3.991E-02	4.102E-02	NOT IDENT.
FE-59	-4.174E-02	7.442E-02	7.676E-02	NOT IDENT.
CO-60	1.324E-02	2.508E-02	2.578E-02	NOT IDENT.
ZN-65	4.525E-02	5.532E-02	5.897E-02	NOT IDENT.
GE-68	-3.436E-01	1.060E+00	1.071E+00	NOT IDENT.
AS-73	-4.815E-01	7.489E-01	7.797E-01	NOT IDENT.
AS-74	-3.744E-02	1.425E-01	1.435E-01	NOT IDENT.
SE-75	4.919E-03	3.446E-02	3.454E-02	NOT IDENT.
BR-77	1.830E+04	1.719E+04	1.907E+04	SHORT HLIF
SR-82	-1.532E-02	3.855E-01	3.856E-01	NOT IDENT.
RB-83	5.045E-02	5.406E-02	5.865E-02	NOT IDENT.
RB-84	4.540E-03	6.687E-02	6.690E-02	NOT IDENT.
KR-85	5.783E+00	5.203E+00	5.819E+00	NOT IDENT.
SR-85	3.657E-02	3.293E-02	3.683E-02	NOT IDENT.
RB-86	-5.395E-01	1.307E+00	1.330E+00	NOT IDENT.
Y-88	-3.807E-03	3.675E-02	3.679E-02	NOT IDENT.
Y-91	-1.202E+00	1.700E+01	1.701E+01	NOT IDENT.
NB-94	1.907E-02	2.733E-02	2.865E-02	NOT IDENT.
NB-95	1.542E-03	3.829E-02	3.830E-02	NOT IDENT.
NB-95M	-5.468E-02	1.337E-01	1.360E-01	NOT IDENT.
ZR-95	1.339E-02	4.607E-02	4.646E-02	NOT IDENT.
NB-97	1.000E+41	1.014E+41	0.000E+00	SHORT HLIF
ZR-97	2.314E+13	2.145E+13	2.385E+13	SHORT HLIF
MO-99	2.026E+02	6.680E+02	6.743E+02	SHORT HLIF
TC-99M	-4.211E+36	5.436E+36	0.000E+00	SHORT HLIF
RH-101	-1.196E-02	2.520E-02	2.577E-02	NOT IDENT.
RH-102	2.391E-02	3.815E-02	3.965E-02	NOT IDENT.
RU-103	-8.493E-03	3.705E-02	3.724E-02	FAIL ABUN
RH-106	-3.675E-02	2.203E-01	2.209E-01	FAIL ABUN
RU-106	-3.675E-02	2.203E-01	2.209E-01	FAIL ABUN
AG-108M	-2.185E-03	2.111E-02	2.113E-02	NOT IDENT.
AG-110	2.420E-01	5.918E-01	6.018E-01	NOT IDENT.
AG-110M	7.499E-03	4.100E-02	4.113E-02	NOT IDENT.
SN-113	-1.680E-02	3.979E-02	4.050E-02	NOT IDENT.
CD-115	1.751E+02	1.430E+03	1.432E+03	SHORT HLIF
SN-117M	6.657E-02	1.006E-01	1.050E-01	NOT IDENT.
SB-122	-7.562E+01	1.243E+02	1.289E+02	SHORT HLIF
TE-123M	2.056E-02	2.375E-02	2.550E-02	NOT IDENT.
SB-124	-2.023E-03	7.558E-02	7.559E-02	NOT IDENT.
SB-125	7.006E-02	7.997E-02	8.598E-02	NOT IDENT.
TE-125M	1.697E+00	8.989E+00	9.021E+00	NOT IDENT.
I-126	2.127E-01	4.739E-01	4.835E-01	FAIL ABUN
SB-126	-4.358E-02	3.019E-01	3.025E-01	NOT IDENT.
SB-127	-1.309E+00	2.174E+01	2.175E+01	NOT IDENT.
I-131	-2.718E-01	3.340E-01	3.558E-01	NOT IDENT.
I-132	-1.000E+41	6.257E+41	0.000E+00	SHORT HLIF
TE-132	-2.476E+00	2.507E+01	2.509E+01	SHORT HLIF
BA-133	2.611E-02	3.253E-02	3.459E-02	FAIL ABUN
I-133	-1.196E+09	3.100E+09	3.147E+09	SHORT HLIF
CS-134	5.229E-02	4.175E-02	4.794E-02	FAIL ABUN
I-135	-7.906E+33	1.546E+34	0.000E+00	SHORT HLIF
CS-136	-1.287E-01	1.768E-01	1.861E-01	NOT IDENT.
LA-138	-3.740E-02	3.968E-02	4.311E-02	NOT IDENT.
CE-139	-1.644E-02	2.549E-02	2.655E-02	NOT IDENT.
BA-140	4.064E-01	4.720E-01	5.063E-01	NOT IDENT.
LA-140	-3.401E-02	1.746E-01	1.753E-01	FAIL ABUN
CE-141	5.186E-02	6.624E-02	7.024E-02	NOT IDENT.
CE-143	-6.614E+02	4.391E+05	4.391E+05	SHORT HLIF
CE-144	-1.224E-01	1.437E-01	1.540E-01	NOT IDENT.
PM-144	1.801E-02	2.594E-02	2.718E-02	NOT IDENT.
PR-144	1.353E+00	1.957E+00	2.050E+00	NOT IDENT.
PM-146	4.450E-03	2.762E-02	2.769E-02	NOT IDENT.
ND-147	8.190E-02	1.094E+00	1.095E+00	NOT IDENT.
PM-147	1.329E+02	5.376E+02	5.409E+02	NOT IDENT.
PM-149	1.065E+03	1.387E+04	1.388E+04	SHORT HLIF
EU-150	9.361E-03	2.450E-02	2.486E-02	FAIL ABUN
EU-152	2.920E-02	6.957E-02	7.080E-02	FAIL ABUN
GD-153	-1.053E-02	6.066E-02	6.085E-02	NOT IDENT.
EU-154	-1.903E-02	8.991E-02	9.032E-02	NOT IDENT.

EU-155	5.216E-03	7.828E-02	7.831E-02	FAIL ABUN
TB-160	1.448E-02	1.072E-01	1.074E-01	FAIL ABUN
HO-166M	2.570E-02	4.650E-02	4.792E-02	NOT IDENT.
TM-171	-9.832E+00	1.300E+01	1.374E+01	NOT IDENT.
HF-172	1.161E-01	1.419E-01	1.512E-01	FAIL ABUN
LU-172	-1.950E-02	3.986E-02	4.082E-02	FAIL ABUN
LU-176	8.512E-03	1.922E-02	1.960E-02	FAIL ABUN
HF-181	9.699E-03	4.218E-02	4.241E-02	NOT IDENT.
TA-182	1.767E-01	1.901E-01	2.061E-01	FAIL ABUN
RE-183	8.574E-03	1.602E-01	1.602E-01	NOT IDENT.
RE-184	1.010E-01	1.245E-01	1.326E-01	NOT IDENT.
W-188	-1.660E+00	6.213E+00	6.258E+00	FAIL ABUN
IR-192	1.584E-02	3.048E-02	3.130E-02	FAIL ABUN
HG-203	-5.979E-03	4.442E-02	4.450E-02	NOT IDENT.
TL-204	1.519E+00	3.452E+00	3.519E+00	NOT IDENT.
BI-207	2.677E-02	3.640E-02	3.834E-02	FAIL ABUN
BI-210	2.668E-01	3.066E+00	3.068E+00	NOT IDENT.
PB-210	2.668E-01	3.066E+00	3.068E+00	NOT IDENT.
PB-211	-3.478E-01	5.357E-01	5.581E-01	NOT IDENT.
BI-213	-3.525E-03	7.869E-02	7.870E-02	NOT IDENT.
RN-219	-1.166E-01	2.877E-01	2.925E-01	FAIL ABUN
RA-223	-2.608E-01	4.947E-01	5.085E-01	FAIL ABUN
AC-225	-9.229E-01	1.372E+00	1.434E+00	NOT IDENT.
AC-227	-1.405E-01	1.893E-01	1.997E-01	FAIL ABUN
TH-227	-1.405E-01	1.893E-01	1.997E-01	FAIL ABUN
TH-229	1.169E-01	4.097E-01	4.131E-01	FAIL ABUN
TH-231	-2.608E-01	4.947E-01	5.085E-01	FAIL ABUN
PA-233	-6.972E-03	4.489E-02	4.500E-02	FAIL ABUN
PA-234	8.235E-02	2.466E-01	2.493E-01	NOT IDENT.
U-235	-1.659E-01	1.688E-01	1.846E-01	FAIL ABUN
NP-237	-6.972E-03	4.489E-02	4.500E-02	FAIL ABUN
NP-238	3.957E+03	2.629E+03	3.178E+03	SHORT HLIF
NP-239	4.583E-02	2.024E-01	2.035E-01	FAIL ABUN
PU-239	1.432E+01	2.533E+02	2.534E+02	NOT IDENT.
AM-241	2.303E-02	1.089E-01	1.094E-01	NOT IDENT.
CM-243	-7.495E-02	7.341E-02	8.081E-02	FAIL ABUN
BK-247	2.953E-03	5.696E-02	5.698E-02	NOT IDENT.
CM-247	-1.869E-02	2.754E-02	2.880E-02	FAIL ABUN
CF-251	3.870E-02	9.151E-02	9.316E-02	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	38.7934	85.43	80.6541	131.20	49.5488
45.60	62.1024	86.55	83.4388	133.02	49.6815
46.54	57.8264	86.79	83.4779	133.52	51.8330
49.72	0.0000	86.94	77.3051	136.00	47.7727
51.35	34.2705	87.09	77.3274	136.47	56.3036
51.87	44.2539	87.57	77.3998	140.51	0.0000
52.39	54.2653	88.03	77.4685	143.76	68.6895
52.97	47.1038	88.34	77.5149	144.24	61.2166
53.44	61.6751	88.47	92.9102	145.44	41.9540
54.07	51.7852	89.96	86.6143	152.43	58.6398
57.36	0.0000	1093.63	67.0153	153.25	53.2685
57.53	57.7551	91.11	86.8029	323.87	45.7164
57.98	55.0676	92.59	77.1532	156.02	62.1907
59.27	51.5641	93.35	77.2621	158.56	43.7866
59.32	51.5705	94.56	50.2998	159.00	39.4299
59.54	52.8275	94.65	50.3079	162.33	50.5975
60.96	57.9453	94.67	50.3099	162.66	45.1165
61.17	57.9752	94.87	50.3284	163.33	38.5472
62.93	64.1084	97.43	48.9002	165.86	55.2422
63.29	64.1638	98.43	44.9890	176.31	53.7136
63.58	64.2085	98.44	44.9900	176.60	50.3744
64.28	64.3158	99.53	48.0828	177.52	34.7402
66.73	57.4995	100.11	53.1460	181.07	0.0000
67.24	60.0703	102.03	37.2275	181.52	58.5500
125.81	65.7687	103.18	55.4490	184.41	52.7222
67.75	65.7788	103.37	59.5014	143.76	45.2588
68.89	81.9674	105.21	56.6550	193.51	42.2364
69.67	73.6183	105.31	56.6648	197.03	50.4238
70.82	68.1301	106.12	41.5440	198.01	35.5642
70.83	68.1317	106.47	62.8600	201.83	48.3856
72.81	68.4308	109.28	57.0459	203.43	36.9292
72.87	68.4399	111.00	59.2523	205.31	41.6294
74.66	73.4776	111.76	0.0000	210.85	44.9768
74.82	73.5028	114.06	61.6031	215.65	36.2401
74.97	73.5269	116.30	0.0000	218.12	38.6764
77.11	73.8624	116.74	53.6198	222.11	43.5412
78.74	74.1150	119.76	41.4435	227.09	44.9424
79.69	69.4391	121.12	45.6845	227.38	31.9418
80.03	60.4793	121.22	45.6916	228.16	0.0000
80.12	60.4913	121.78	54.0463	228.18	50.9109
80.19	60.4999	122.06	43.6717	116.74	50.9109
80.57	63.1237	122.92	47.8944	235.69	50.8900
81.00	63.1790	123.07	47.9053	235.96	50.9036
81.07	63.1880	265.00	62.5438	238.63	39.4720
81.75	77.4805	125.81	41.8314	238.98	0.0000
82.47	89.2324	127.23	63.9292	240.99	39.5616
83.79	58.3493	127.91	49.3077	242.00	39.5999
84.00	62.2651	129.30	52.5635	244.70	24.0613

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	30.2937	344.28	22.6463	563.25	24.8423
252.80	33.9413	345.93	34.0107	564.24	0.0000
254.15	0.0000	351.06	30.1987	569.33	16.9440
256.23	35.2641	351.93	27.1521	946.00	15.9486
260.90	0.0000	355.39	0.0000	569.70	15.9505
264.66	24.5056	356.01	18.4472	583.19	15.0531
264.80	25.7341	364.49	25.6287	584.27	15.0610
265.00	25.7386	366.42	0.0000	595.83	20.1945
269.46	26.2507	372.51	25.7721	427.87	22.2650
270.03	19.6982	375.05	26.7072	602.52	0.0000
271.23	19.7188	377.52	20.5101	604.72	19.7729
273.65	17.2902	356.01	25.5243	607.14	16.2428
276.40	25.9975	388.16	19.7603	609.32	16.2598
277.37	37.9964	388.63	19.7665	610.33	16.2676
277.60	38.0039	391.69	25.6588	614.28	4.5837
278.00	41.3228	264.66	13.5846	618.01	13.2650
279.20	36.4017	401.81	24.4709	620.36	9.1934
279.54	36.4124	402.40	28.1070	621.93	10.7337
279.70	16.5531	404.85	29.0599	630.19	0.0000
280.46	23.1898	410.95	22.7926	631.29	7.6999
283.69	26.1603	413.71	17.3529	633.25	14.3862
284.31	17.4492	414.70	18.2776	634.78	16.4531
285.41	21.2080	423.72	22.9777	635.95	9.2596
285.90	0.0000	427.09	27.6312	636.99	12.3521
287.50	27.4940	427.87	23.0372	657.50	10.9084
290.67	31.0749	433.94	20.3488	657.76	7.7927
293.27	0.0000	439.40	25.0571	657.90	0.0000
351.93	30.1860	440.45	22.2871	661.66	16.6530
295.96	30.2043	453.88	14.9785	664.57	0.0000
879.38	20.1797	463.37	17.8867	666.33	14.0801
299.98	20.2026	468.07	18.8798	666.50	17.2103
300.09	20.2041	473.00	16.0935	667.71	0.0000
300.13	20.2051	475.06	22.7471	677.62	13.6258
301.36	20.2251	476.78	15.1797	685.70	15.7770
302.85	21.5151	477.60	15.1868	692.65	0.0000
256.23	32.9491	482.18	17.1299	695.00	14.7839
304.85	30.4233	487.02	20.9938	696.49	10.5664
306.78	25.3918	492.35	0.0000	696.51	10.5668
308.46	23.7310	497.08	17.2734	697.00	12.6826
311.90	27.1947	505.52	20.2459	697.30	13.7411
316.51	25.5878	507.63	0.0000	697.49	13.7421
319.41	29.9200	511.00	13.5376	702.65	11.6535
320.08	25.6586	514.00	13.5597	706.68	13.7956
321.04	18.8306	514.00	13.5597	711.68	11.6978
323.87	29.5937	520.40	7.2891	720.70	17.0788
325.23	21.8964	520.69	0.0000	721.93	0.0000
328.76	25.8301	522.65	0.0000	722.78	12.8203
333.37	20.7358	527.90	0.0000	722.91	12.8208
333.97	20.7456	528.26	13.6633	723.31	9.6171
334.37	15.5636	529.59	17.5796	724.19	17.6380
338.28	21.8526	529.87	0.0000	727.33	9.6332
338.32	21.8536	531.02	13.6833	733.00	11.2648
311.90	24.7549	537.26	10.7861	735.93	12.8892
340.48	24.7549	546.56	0.0000	333.97	23.6453
340.55	24.7560	552.55	16.8015	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	16.1658	667.71	0.0000	1434.09	2.9892
747.24	6.4741	962.31	8.7476	1435.80	6.9778
748.06	9.7145	964.08	9.6277	1457.56	0.0000
752.31	6.4873	966.17	9.6344	1460.82	5.0134
753.82	11.9006	911.20	9.6431	1489.16	3.0276
756.73	5.4156	983.53	11.2742	1505.03	4.8618
756.80	5.4159	984.45	0.0000	1584.12	6.1846
884.68	8.1467	1274.44	12.3816	1596.21	5.1672
765.81	11.4139	1002.74	6.2034	1620.50	2.0776
766.84	9.7874	1004.73	7.0940	1621.92	5.1956
772.60	0.0000	507.63	0.0000	1678.03	0.0000
776.52	10.4793	1025.87	0.0000	1690.97	3.1626
739.50	0.0000	1028.54	0.0000	1750.46	0.0000
778.90	12.0187	1037.84	7.1680	1764.49	1.0699
783.70	17.5143	1038.76	0.0000	1063.66	6.4266
788.74	13.1611	631.29	11.4992	1771.35	1.0714
792.07	11.5309	1048.07	8.6285	1791.20	0.0000
795.86	14.8469	1049.04	4.3154	1808.65	3.2375
810.06	14.3743	1050.41	4.3172	1810.72	0.0000
810.29	17.6927	1063.66	5.4181	1836.06	4.3396
344.28	19.9058	1077.00	15.4135		
810.76	17.6960	1077.34	12.6943		
815.77	8.8646	1085.87	4.5453		
1048.07	11.0921	1093.63	8.2002		
832.01	13.3774	1099.45	9.1272		
834.85	14.5070	1112.07	10.0768		
835.71	15.6281	1112.84	12.8276		
836.80	0.0000	1115.54	2.9344		
846.75	0.0000	1120.29	6.4279		
846.77	11.2081	1120.55	6.4283		
856.80	20.2478	1221.41	6.4296		
860.56	12.3902	1129.67	11.0493		
871.09	5.6531	1131.51	0.0000		
873.19	6.7888	1147.95	0.0000		
875.33	0.0000	1173.23	12.1177		
879.38	7.9377	1177.95	9.3335		
880.51	10.2096	1189.05	8.4260		
881.60	7.9439	1204.77	8.4628		
883.24	12.4905	1221.41	9.0674		
884.68	10.2246	1231.02	11.3635		
889.28	14.7927	1235.36	4.5507		
894.76	12.5406	1238.28	8.5391		
898.04	4.5654	1260.41	0.0000		
900.72	14.8514	1271.87	11.4866		
903.28	5.7172	1274.44	8.6210		
911.20	11.4657	1274.54	8.6210		
912.08	11.4689	1291.59	6.7347		
923.98	0.0000	1298.22	0.0000		
926.50	5.7627	1312.11	5.8030		
929.11	9.2282	1332.49	2.9165		
935.54	10.4044	1362.66	0.0000		
937.49	8.0975	1365.19	5.8802		
944.13	9.2747	1368.63	0.0000		
946.00	8.1205	1384.29	9.1898		
949.00	10.4509	1408.01	1.9806		

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:27:12.57

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378006.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM28.CNF;696
                                         Background date  : 4-MAY-2025 09:27:05.
Sample date      : 8-APR-2025 09:58:00. Acquisition date : 10-MAY-2025 10:26:11
Sample ID        : G719378006           Sample quantity  : 1.03830E+02 GRAM
Detector name    : GAM28                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.40  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.89*	29	71	2.75	93.97	89	10	8.01E-03	59.6	
2	0	63.40*	22	93	0.75	126.97	123	7	6.09E-03	79.0	
3	4	75.06*	59	98	1.01	150.28	146	12	1.65E-02	29.0	1.15E+00
4	4	77.29*	133	85	0.92	154.73	146	12	3.70E-02	14.3	
5	3	84.17	25	77	1.24	168.50	165	29	6.89E-03	62.9	4.94E+00
6	3	87.54	51	78	1.25	175.24	165	29	1.42E-02	32.8	
7	3	89.93	23	90	1.25	180.00	165	29	6.33E-03	79.0	
8	3	94.93	21	69	0.95	190.00	165	29	5.90E-03	70.7	
9	0	113.74	35	107	2.59	227.60	222	12	9.79E-03	60.7	
10	0	139.92*	30	35	1.06	279.94	277	6	8.36E-03	37.8	
11	0	186.02*	67	66	1.50	372.10	368	8	1.85E-02	26.2	
12	0	195.31	44	52	1.12	390.66	384	10	1.21E-02	34.6	
13	0	209.61	19	34	1.04	419.26	416	6	5.31E-03	53.5	
14	4	238.81*	241	45	1.12	477.61	473	16	6.69E-02	8.1	2.05E+00
15	4	241.91	69	49	1.68	483.81	473	16	1.90E-02	26.1	
16	0	295.63	110	55	0.84	591.21	587	9	3.05E-02	15.6	
17	0	299.68	35	32	0.94	599.32	596	8	9.73E-03	33.2	
18	0	329.05	35	35	3.30	658.02	652	12	9.70E-03	38.2	
19	0	338.53*	75	34	0.84	676.98	672	10	2.08E-02	19.5	
20	0	352.19*	192	68	1.21	704.29	698	13	5.34E-02	11.6	
21	0	382.51	21	75	6.41	764.91	749	23	5.88E-03	108.3	
22	0	442.36	13	12	1.18	884.56	881	7	3.61E-03	52.5	
23	0	462.64	20	14	1.25	925.11	921	9	5.66E-03	39.4	
24	0	480.94	17	20	3.44	961.69	954	12	4.78E-03	58.1	
25	0	525.97	10	14	1.46	1051.72	1047	8	2.68E-03	74.8	
26	0	557.92	14	11	0.97	1115.60	1111	8	3.92E-03	49.6	
27	0	562.33*	13	12	1.29	1124.42	1119	12	3.51E-03	63.8	
28	0	583.39*	63	16	1.19	1166.52	1162	8	1.74E-02	17.3	
29	1	609.49*	114	30	1.44	1218.71	1213	21	3.18E-02	12.9	2.27E+00
30	1	612.78	18	11	1.60	1225.29	1213	21	5.06E-03	62.6	
31	0	637.47	7	15	0.84	1274.66	1267	12	1.81E-03	125.5	
32	0	724.50	9	14	1.03	1448.68	1443	8	2.57E-03	77.1	
33	0	727.59	23	14	1.21	1454.85	1451	9	6.37E-03	35.8	
34	0	769.66	5	11	1.31	1538.98	1534	6	1.42E-03	113.8	

Sample ID : G719378006 Acquisition date : 10-MAY-2025 10:26:11

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	786.32	24	0	1.14	1572.29	1568	10	6.67E-03	20.4	
36	0	841.44	12	3	1.17	1682.51	1679	7	3.31E-03	38.5	
37	0	861.24	8	13	0.79	1722.11	1716	9	2.24E-03	89.1	
38	0	911.24*	64	10	1.48	1822.10	1815	13	1.77E-02	16.7	
39	0	948.75	7	4	2.75	1897.10	1894	6	1.84E-03	67.4	
40	0	964.96	14	8	1.91	1929.53	1924	8	3.84E-03	44.6	
41	0	969.49*	21	16	1.57	1938.58	1934	10	5.94E-03	41.7	
42	0	1120.73*	31	6	3.80	2241.03	2235	15	8.71E-03	26.4	
43	0	1155.41	12	5	3.57	2310.40	2304	12	3.28E-03	50.0	
44	0	1187.64	10	3	0.79	2374.86	2369	10	2.91E-03	41.9	
45	0	1238.40*	13	2	1.04	2476.39	2473	8	3.53E-03	35.9	
46	0	1251.02	8	7	0.83	2501.63	2498	7	2.22E-03	65.3	
47	0	1377.03	16	2	0.69	2753.66	2748	10	4.38E-03	31.2	
48	0	1460.84*	113	8	1.76	2921.30	2916	11	3.13E-02	10.9	
49	0	1764.48*	26	0	2.50	3528.72	3522	13	7.30E-03	20.8	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:27:14

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378006.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 09:58:00	Acquisition date	: 10-MAY-2025 10:26:11
Sample ID	: G719378006	Sample quantity	: 103.83 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA28	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.40 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	105	10.66*	1.187E+00	6.023E+00	6.023E+00	21.78
CD-109	88.03	51	3.70*	5.761E+00	1.733E+00	1.818E+00	65.55
SN-126	64.28	22	9.60	2.861E+00	5.808E-01	5.808E-01	157.90
	86.94	51	8.90	5.761E+00	7.203E-01	7.203E-01	65.55
	87.57	51	37.00*	5.761E+00	1.733E-01	1.733E-01	65.55
TL-208	277.37	------	6.60	4.426E+00	------	Line Not Found	------
	583.19	60	85.00*	2.648E+00	1.929E-01	1.929E-01	34.67
	860.56	8	12.50	1.912E+00	2.308E-01	2.308E-01	178.13
BI-210	46.54	29	4.25*	6.260E-01	7.941E+00	7.963E+00	119.13
PB-210	46.54	29	4.25*	6.260E-01	7.941E+00	7.963E+00	119.13
BI-211	72.87	------	1.23	4.235E+00	------	Line Not Found	------
	351.06	186	12.92*	3.773E+00	2.762E+00	2.762E+00	23.16
BI-212	727.33	22	6.67*	2.217E+00	1.067E+00	1.067E+00	71.63
	1620.50	------	1.47	1.103E+00	------	Line Not Found	------
PB-212	74.82	60	10.28	4.516E+00	9.284E-01	9.284E-01	57.94
	77.11	134	17.10	4.783E+00	1.181E+00	1.181E+00	28.61
	238.63	235	43.60*	4.891E+00	7.970E-01	7.970E-01	16.20
	300.09	34	3.30	4.203E+00	1.774E+00	1.774E+00	66.37
BI-214	609.32	109	45.49*	2.560E+00	6.789E-01	6.789E-01	25.88
	1120.29	30	14.92	1.497E+00	9.560E-01	9.560E-01	52.80
	1764.49	25	15.30	1.052E+00	1.101E+00	1.101E+00	41.51
PB-214	74.82	60	5.80	4.516E+00	1.646E+00	1.646E+00	57.94
	77.11	134	9.70	4.783E+00	2.081E+00	2.081E+00	28.61
	87.09	51	3.41	5.761E+00	1.880E+00	1.880E+00	65.55
	242.00	67	7.25	4.849E+00	1.376E+00	1.376E+00	52.29
	295.22	107	18.42	4.241E+00	9.867E-01	9.868E-01	31.13
	351.93	186	35.60*	3.773E+00	1.002E+00	1.002E+00	23.16
RN-222	609.32	109	45.49*	2.560E+00	6.789E-01	6.789E-01	25.88
	1120.29	30	14.92	1.497E+00	9.560E-01	9.560E-01	52.80
	1764.49	25	15.30	1.052E+00	1.101E+00	1.101E+00	41.51
RA-224	240.99	67	4.10*	4.849E+00	2.433E+00	2.433E+00	52.29
RA-226	74.82	60	5.80	4.516E+00	1.646E+00	1.646E+00	57.94
	77.11	134	9.70	4.783E+00	2.081E+00	2.081E+00	28.61
	87.09	51	3.41	5.761E+00	1.880E+00	1.880E+00	65.55
	242.00	67	7.25	4.849E+00	1.376E+00	1.376E+00	52.29
	295.22	107	18.42	4.241E+00	9.867E-01	9.868E-01	31.13
	351.93	186	35.60*	3.773E+00	1.002E+00	1.002E+00	23.16
AC-228	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	73	11.27	3.874E+00	1.201E+00	1.201E+00	38.91
	835.71	------	1.61	1.965E+00	------	Line Not Found	------
	911.20	60	25.80*	1.816E+00	9.285E-01	9.285E-01	33.31
	968.97	20	15.80	1.715E+00	5.397E-01	5.397E-01	83.34
RA-228	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	73	11.27	3.874E+00	1.201E+00	1.201E+00	38.91
	835.71	------	1.61	1.965E+00	------	Line Not Found	------
	911.20	60	25.80*	1.816E+00	9.285E-01	9.285E-01	33.31
	968.97	20	15.80	1.715E+00	5.397E-01	5.397E-01	83.34
TH-228	74.82	60	10.28	4.516E+00	9.284E-01	9.284E-01	57.94
	77.11	134	17.10	4.783E+00	1.181E+00	1.181E+00	28.61

Sample ID : G719378006 Acquisition date : 10-MAY-2025 10:26:11

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	235	43.60*	4.891E+00	7.970E-01	7.970E-01	16.20
	300.09	34	3.30	4.203E+00	1.774E+00	1.774E+00	66.37
TH-229	85.43	25	14.70	5.485E+00	2.224E-01	2.224E-01	125.88
	88.47	51	24.00	5.761E+00	2.671E-01	2.671E-01	65.55
	193.51	------	4.41*	5.601E+00	------	Line Not Found	------
	210.85	19	2.80	5.326E+00	9.081E-01	9.081E-01	107.04
TH-230	74.82	60	5.80	4.516E+00	1.646E+00	1.646E+00	57.94
	77.11	134	9.70	4.783E+00	2.081E+00	2.081E+00	28.61
	87.09	51	3.41	5.761E+00	1.880E+00	1.880E+00	65.55
	242.00	67	7.25	4.849E+00	1.376E+00	1.376E+00	52.29
	295.22	107	18.42	4.241E+00	9.867E-01	9.867E-01	31.13
	351.93	186	35.60*	3.773E+00	1.002E+00	1.002E+00	23.16
TH-232	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	73	11.27	3.874E+00	1.201E+00	1.201E+00	38.91
	835.71	------	1.61	1.965E+00	------	Line Not Found	------
	911.20	60	25.80*	1.816E+00	9.285E-01	9.285E-01	33.31
	968.97	20	15.80	1.715E+00	5.397E-01	5.397E-01	83.34
U-234	74.82	60	5.80	4.516E+00	1.646E+00	1.646E+00	57.94
	77.11	134	9.70	4.783E+00	2.081E+00	2.081E+00	28.61
	87.09	51	3.41	5.761E+00	1.880E+00	1.880E+00	65.55
	242.00	67	7.25	4.849E+00	1.376E+00	1.376E+00	52.29
	295.22	107	18.42	4.241E+00	9.867E-01	9.867E-01	31.13
	351.93	186	35.60*	3.773E+00	1.002E+00	1.002E+00	23.16
AM-243	43.53	------	5.90	3.587E-01	------	Line Not Found	------
	74.66	60	67.20*	4.516E+00	1.420E-01	1.420E-01	57.94

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:27:15.01

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378006.CNF;1  *
* Acquisition date : 10-MAY-2025 10:26:11 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.40     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:58:00 Analyst initials: RXF2            *
* Sample ID        : G719378006           Sample Quantity : 1.0383E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 10-MAR-2025 08:48:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	6.023E+00	1.285E+00	8.810E-01
CD-109	1.818E+00	1.168E+00	1.228E+00
SN-126	1.733E-01	1.113E-01	1.177E-01
TL-208	1.929E-01	6.554E-02	7.037E-02
BI-210	7.963E+00	9.297E+00	7.922E+00
PB-210	7.963E+00	9.297E+00	7.922E+00
BI-211	2.762E+00	6.269E-01	3.952E-01
BI-212	1.067E+00	7.488E-01	9.704E-01
PB-212	7.970E-01	1.265E-01	1.030E-01
BI-214	6.789E-01	1.722E-01	1.299E-01
PB-214	1.002E+00	2.275E-01	1.437E-01
RN-222	6.789E-01	1.722E-01	1.299E-01
RA-224	2.433E+00	1.247E+00	1.103E+00
RA-226	1.002E+00	2.275E-01	1.437E-01
AC-228	9.285E-01	3.031E-01	2.386E-01
RA-228	9.285E-01	3.031E-01	2.386E-01
TH-228	7.970E-01	1.265E-01	1.030E-01
TH-229	6.546E-02	4.973E-01	9.099E-01
TH-230	1.002E+00	2.275E-01	1.437E-01
TH-232	9.285E-01	3.031E-01	2.386E-01
U-234	1.002E+00	2.275E-01	1.437E-01
AM-243	1.420E-01	8.065E-02	9.795E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-2.785E-02	3.749E-01	6.604E-01	NOT IDENT.
NA-22	-1.729E-02	3.856E-02	7.283E-02	NOT IDENT.
NA-24	0.000E+00	5.917E+13	0.000E+00	SHORT HLIF
AL-26	-1.087E-02	2.943E-02	5.816E-02	NOT IDENT.
SC-46	1.055E-02	3.925E-02	8.237E-02	FAIL ABUN
V-48	1.894E-01	1.911E-01	4.106E-01	NOT IDENT.
CR-51	1.044E-01	5.982E-01	1.087E+00	NOT IDENT.
MN-52	-3.542E-01	1.969E+00	4.002E+00	NOT IDENT.

MN-54	-9.906E-03	3.204E-02	5.909E-02	NOT IDENT.
CO-56	-3.876E-03	4.483E-02	8.557E-02	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	2.043E-02	2.418E-02	4.800E-02	NOT IDENT.
CO-58	-6.780E-02	4.161E-02	4.553E-02	NOT IDENT.
FE-59	1.623E-03	9.606E-02	1.924E-01	NOT IDENT.
CO-60	1.668E-02	2.848E-02	7.296E-02	NOT IDENT.
ZN-65	9.404E-03	1.015E-01	1.771E-01	NOT IDENT.
GE-68	4.433E-01	1.095E+00	2.397E+00	NOT IDENT.
AS-73	6.551E-01	1.073E+00	2.175E+00	NOT IDENT.
AS-74	-1.326E-01	2.057E-01	3.569E-01	NOT IDENT.
SE-75	-3.512E-02	4.812E-02	7.722E-02	NOT IDENT.
BR-77	0.000E+00	2.731E+03	0.000E+00	SHORT HLIF
SR-82	6.979E-02	4.314E-01	8.905E-01	NOT IDENT.
RB-83	-3.874E-03	6.979E-02	1.373E-01	NOT IDENT.
RB-84	3.533E-02	1.045E-01	2.130E-01	NOT IDENT.
KR-85	-2.425E+01	9.648E+00	1.283E+01	NOT IDENT.
SR-85	-1.538E-01	6.106E-02	8.109E-02	NOT IDENT.
RB-86	5.896E-01	1.137E+00	2.609E+00	NOT IDENT.
Y-88	-4.852E-04	3.450E-02	7.991E-02	NOT IDENT.
Y-91	-3.045E+01	2.062E+01	2.677E+01	NOT IDENT.
NB-94	3.066E-02	3.282E-02	7.214E-02	NOT IDENT.
NB-95	-2.462E-02	5.551E-02	8.509E-02	NOT IDENT.
NB-95M	-1.327E-02	1.522E-01	2.471E-01	NOT IDENT.
ZR-95	3.397E-02	8.187E-02	1.708E-01	FAIL ABUN
NB-97	0.000E+00	1.942E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.491E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	9.464E+02	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	7.719E+36	0.000E+00	SHORT HLIF
RH-101	-2.782E-03	3.105E-02	5.613E-02	NOT IDENT.
RH-102	-2.314E-02	5.815E-02	9.239E-02	NOT IDENT.
RU-103	-1.141E-02	5.247E-02	9.933E-02	FAIL ABUN
RH-106	-5.429E-02	3.010E-01	5.718E-01	NOT IDENT.
RU-106	-5.429E-02	3.010E-01	5.718E-01	NOT IDENT.
AG-108M	1.062E-03	2.700E-02	5.348E-02	NOT IDENT.
AG-110	-3.499E-01	6.800E-01	1.210E+00	NOT IDENT.
AG-110M	-9.963E-03	4.907E-02	9.191E-02	NOT IDENT.
SN-113	1.411E-02	4.877E-02	9.827E-02	NOT IDENT.
CD-115	0.000E+00	1.898E+03	0.000E+00	SHORT HLIF
SN-117M	-1.668E-02	1.037E-01	1.872E-01	NOT IDENT.
SB-122	0.000E+00	1.268E+02	0.000E+00	SHORT HLIF
TE-123M	1.691E-03	2.496E-02	4.638E-02	NOT IDENT.
SB-124	2.048E-02	8.958E-02	2.183E-01	NOT IDENT.
SB-125	3.473E-02	9.203E-02	1.873E-01	FAIL ABUN
TE-125M	4.119E+00	1.027E+01	1.864E+01	NOT IDENT.
I-126	-5.178E-02	4.580E-01	8.867E-01	NOT IDENT.
SB-126	3.372E-02	4.003E-01	7.066E-01	NOT IDENT.
SB-127	-6.488E+00	2.779E+01	5.164E+01	NOT IDENT.
I-131	8.041E-02	4.699E-01	9.420E-01	FAIL ABUN
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	2.923E+01	0.000E+00	SHORT HLIF
BA-133	-4.757E-03	4.553E-02	7.904E-02	FAIL ABUN
I-133	0.000E+00	3.881E+09	0.000E+00	SHORT HLIF
CS-134	4.256E-02	4.159E-02	9.327E-02	FAIL ABUN
I-135	0.000E+00	1.936E+34	0.000E+00	SHORT HLIF
CS-136	-2.780E-02	2.587E-01	4.880E-01	NOT IDENT.
BA-137M	1.518E-02	3.730E-02	7.577E-02	NOT IDENT.
CS-137	1.603E-02	3.940E-02	8.004E-02	NOT IDENT.
LA-138	-9.217E-04	5.422E-02	1.157E-01	NOT IDENT.
CE-139	-1.784E-02	2.977E-02	5.045E-02	NOT IDENT.
BA-140	-3.366E-01	6.103E-01	1.094E+00	NOT IDENT.
LA-140	2.117E-01	3.147E-01	7.077E-01	FAIL ABUN
CE-141	-4.204E-02	8.636E-02	1.491E-01	NOT IDENT.
CE-143	0.000E+00	8.139E+05	0.000E+00	SHORT HLIF
CE-144	3.425E-02	2.062E-01	3.805E-01	NOT IDENT.
PM-144	-1.585E-02	4.035E-02	7.201E-02	NOT IDENT.
PR-144	-1.238E+00	3.040E+00	5.414E+00	NOT IDENT.
PM-146	2.254E-02	3.344E-02	7.377E-02	NOT IDENT.
ND-147	2.763E-01	1.338E+00	2.766E+00	FAIL ABUN
PM-147	7.994E+01	6.880E+02	1.279E+03	NOT IDENT.
PM-149	0.000E+00	1.712E+04	0.000E+00	SHORT HLIF
EU-150	3.576E-03	3.363E-02	4.923E-02	FAIL ABUN
EU-152	5.669E-02	9.586E-02	1.861E-01	FAIL ABUN
GD-153	-3.764E-02	9.094E-02	1.484E-01	NOT IDENT.
EU-154	-5.169E-02	1.074E-01	2.014E-01	FAIL ABUN
EU-155	8.984E-02	1.026E-01	2.025E-01	FAIL ABUN
TB-160	-6.497E-02	1.473E-01	2.605E-01	FAIL ABUN
HO-166M	8.109E-03	6.546E-02	1.274E-01	NOT IDENT.

TM-171	1.862E+01	1.966E+01	4.123E+01	NOT IDENT.
HF-172	4.841E-02	1.710E-01	3.234E-01	FAIL ABUN
LU-172	-6.555E-03	5.158E-02	1.002E-01	FAIL ABUN
LU-176	7.535E-03	2.710E-02	5.017E-02	FAIL ABUN
HF-181	8.228E-02	9.367E-02	9.562E-02	FAIL ABUN
TA-182	9.850E-02	1.848E-01	4.145E-01	FAIL ABUN
RE-183	1.880E-02	2.351E-01	4.517E-01	NOT IDENT.
RE-184	2.737E-02	1.681E-01	3.376E-01	NOT IDENT.
W-188	1.059E+00	9.970E+00	1.775E+01	FAIL ABUN
IR-192	1.401E-02	4.771E-02	8.694E-02	FAIL ABUN
HG-203	-9.462E-03	5.390E-02	9.320E-02	NOT IDENT.
TL-204	-2.248E+00	4.791E+00	7.911E+00	NOT IDENT.
BI-207	1.853E-02	5.091E-02	1.062E-01	FAIL ABUN
PB-211	-2.420E-01	6.089E-01	1.141E+00	NOT IDENT.
BI-213	-5.231E-02	1.068E-01	1.714E-01	NOT IDENT.
RN-219	1.154E-01	3.803E-01	7.728E-01	NOT IDENT.
RA-223	1.534E-01	6.606E-01	1.135E+00	FAIL ABUN
AC-225	-4.101E-01	1.905E+00	3.328E+00	NOT IDENT.
AC-227	2.757E-01	2.617E-01	5.245E-01	FAIL ABUN
TH-227	2.757E-01	2.617E-01	5.245E-01	FAIL ABUN
PA-231	-2.518E-01	5.664E-01	8.514E-01	NOT IDENT.
TH-231	1.534E-01	6.606E-01	1.135E+00	FAIL ABUN
PA-233	-1.036E-02	6.627E-02	1.153E-01	FAIL ABUN
PA-234	3.242E-01	3.199E-01	6.951E-01	FAIL ABUN
PA-234M	1.507E+00	2.332E+00	3.217E+00	FAIL ABUN
TH-234	1.507E+00	2.332E+00	3.217E+00	FAIL ABUN
U-235	5.200E-04	1.994E-01	3.662E-01	FAIL ABUN
NP-237	-1.036E-02	6.627E-02	1.153E-01	FAIL ABUN
NP-238	0.000E+00	6.553E+03	0.000E+00	SHORT HLIF
U-238	1.507E+00	2.332E+00	3.217E+00	FAIL ABUN
NP-239	-1.201E-01	2.574E-01	4.138E-01	NOT IDENT.
PU-239	5.923E+01	3.388E+02	6.255E+02	NOT IDENT.
AM-241	-1.491E-01	1.613E-01	2.532E-01	NOT IDENT.
CM-243	-3.765E-02	9.819E-02	1.748E-01	NOT IDENT.
BK-247	-5.118E-02	7.764E-02	1.261E-01	FAIL ABUN
CM-247	4.410E-03	3.312E-02	6.644E-02	NOT IDENT.
CF-249	7.019E-03	4.025E-02	7.710E-02	NOT IDENT.
CF-251	6.252E-02	1.188E-01	2.278E-01	NOT IDENT.
ANH-511	-4.453E-02	5.482E-02	1.169E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:27:13.52

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	105	10.66*	1.187E+00	6.023E+00	6.023E+00	21.78
CD-109	88.03	51	3.70*	5.761E+00	1.733E+00	1.818E+00	65.55
SN-126	64.28	22	9.60	2.861E+00	5.808E-01	5.808E-01	157.90
	86.94	51	8.90	5.761E+00	7.203E-01	7.203E-01	65.55
	87.57	51	37.00*	5.761E+00	1.733E-01	1.733E-01	65.55
TL-208	277.37	------	6.60	4.426E+00	------	Line Not Found	------
	583.19	60	85.00*	2.648E+00	1.929E-01	1.929E-01	34.67
	860.56	8	12.50	1.912E+00	2.308E-01	2.308E-01	178.13
BI-210	46.54	29	4.25*	6.260E-01	7.941E+00	7.963E+00	119.13
PB-210	46.54	29	4.25*	6.260E-01	7.941E+00	7.963E+00	119.13
BI-211	72.87	------	1.23	4.235E+00	------	Line Not Found	------
	351.06	186	12.92*	3.773E+00	2.762E+00	2.762E+00	23.16
BI-212	727.33	22	6.67*	2.217E+00	1.067E+00	1.067E+00	71.63
	1620.50	------	1.47	1.103E+00	------	Line Not Found	------
PB-212	74.82	60	10.28	4.516E+00	9.284E-01	9.284E-01	57.94
	77.11	134	17.10	4.783E+00	1.181E+00	1.181E+00	28.61
	238.63	235	43.60*	4.891E+00	7.970E-01	7.970E-01	16.20
	300.09	34	3.30	4.203E+00	1.774E+00	1.774E+00	66.37
BI-214	609.32	109	45.49*	2.560E+00	6.789E-01	6.789E-01	25.88
	1120.29	30	14.92	1.497E+00	9.560E-01	9.560E-01	52.80
	1764.49	25	15.30	1.052E+00	1.101E+00	1.101E+00	41.51
PB-214	74.82	60	5.80	4.516E+00	1.646E+00	1.646E+00	57.94
	77.11	134	9.70	4.783E+00	2.081E+00	2.081E+00	28.61
	87.09	51	3.41	5.761E+00	1.880E+00	1.880E+00	65.55
	242.00	67	7.25	4.849E+00	1.376E+00	1.376E+00	52.29
	295.22	107	18.42	4.241E+00	9.867E-01	9.868E-01	31.13
	351.93	186	35.60*	3.773E+00	1.002E+00	1.002E+00	23.16
RN-222	609.32	109	45.49*	2.560E+00	6.789E-01	6.789E-01	25.88
	1120.29	30	14.92	1.497E+00	9.560E-01	9.560E-01	52.80
	1764.49	25	15.30	1.052E+00	1.101E+00	1.101E+00	41.51
RA-224	240.99	67	4.10*	4.849E+00	2.433E+00	2.433E+00	52.29
RA-226	74.82	60	5.80	4.516E+00	1.646E+00	1.646E+00	57.94
	77.11	134	9.70	4.783E+00	2.081E+00	2.081E+00	28.61
	87.09	51	3.41	5.761E+00	1.880E+00	1.880E+00	65.55
	242.00	67	7.25	4.849E+00	1.376E+00	1.376E+00	52.29
	295.22	107	18.42	4.241E+00	9.867E-01	9.868E-01	31.13
	351.93	186	35.60*	3.773E+00	1.002E+00	1.002E+00	23.16
AC-228	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	73	11.27	3.874E+00	1.201E+00	1.201E+00	38.91
	835.71	------	1.61	1.965E+00	------	Line Not Found	------
	911.20	60	25.80*	1.816E+00	9.285E-01	9.285E-01	33.31
	968.97	20	15.80	1.715E+00	5.397E-01	5.397E-01	83.34
RA-228	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	73	11.27	3.874E+00	1.201E+00	1.201E+00	38.91
	835.71	------	1.61	1.965E+00	------	Line Not Found	------
	911.20	60	25.80*	1.816E+00	9.285E-01	9.285E-01	33.31
	968.97	20	15.80	1.715E+00	5.397E-01	5.397E-01	83.34

Sample ID : G719378006 Acquisition date : 10-MAY-2025 10:26:11

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	60	10.28	4.516E+00	9.284E-01	9.284E-01	57.94
	77.11	134	17.10	4.783E+00	1.181E+00	1.181E+00	28.61
	238.63	235	43.60*	4.891E+00	7.970E-01	7.970E-01	16.20
	300.09	34	3.30	4.203E+00	1.774E+00	1.774E+00	66.37
TH-229	85.43	25	14.70	5.485E+00	2.224E-01	2.224E-01	125.88
	88.47	51	24.00	5.761E+00	2.671E-01	2.671E-01	65.55
	193.51	------	4.41*	5.601E+00	------	Line Not Found	------
	210.85	19	2.80	5.326E+00	9.081E-01	9.081E-01	107.04
TH-230	74.82	60	5.80	4.516E+00	1.646E+00	1.646E+00	57.94
	77.11	134	9.70	4.783E+00	2.081E+00	2.081E+00	28.61
	87.09	51	3.41	5.761E+00	1.880E+00	1.880E+00	65.55
	242.00	67	7.25	4.849E+00	1.376E+00	1.376E+00	52.29
	295.22	107	18.42	4.241E+00	9.867E-01	9.867E-01	31.13
	351.93	186	35.60*	3.773E+00	1.002E+00	1.002E+00	23.16
TH-232	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	73	11.27	3.874E+00	1.201E+00	1.201E+00	38.91
	835.71	------	1.61	1.965E+00	------	Line Not Found	------
	911.20	60	25.80*	1.816E+00	9.285E-01	9.285E-01	33.31
	968.97	20	15.80	1.715E+00	5.397E-01	5.397E-01	83.34
U-234	74.82	60	5.80	4.516E+00	1.646E+00	1.646E+00	57.94
	77.11	134	9.70	4.783E+00	2.081E+00	2.081E+00	28.61
	87.09	51	3.41	5.761E+00	1.880E+00	1.880E+00	65.55
	242.00	67	7.25	4.849E+00	1.376E+00	1.376E+00	52.29
	295.22	107	18.42	4.241E+00	9.867E-01	9.867E-01	31.13
	351.93	186	35.60*	3.773E+00	1.002E+00	1.002E+00	23.16
AM-243	43.53	------	5.90	3.587E-01	------	Line Not Found	------
	74.66	60	67.20*	4.516E+00	1.420E-01	1.420E-01	57.94

Flag: "*" = Keyline

Sample ID : G719378006 Acquisition date : 10-MAY-2025 10:26:11

Total number of lines in spectrum 49
Number of unidentified lines 11
Number of lines tentatively identified by NID 38 77.55%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	6.023E+00	6.023E+00	1.312E+00	21.78	
CD-109	461.40D	1.05	1.733E+00	1.818E+00	1.192E+00	65.55	
SN-126	2.30E+05Y	1.00	1.733E-01	1.733E-01	1.136E-01	65.55	
TL-208	1.41E+10Y	1.00	1.929E-01	1.929E-01	0.669E-01	34.67	
BI-210	22.20Y	1.00	7.941E+00	7.963E+00	9.487E+00	119.13	
PB-210	22.20Y	1.00	7.941E+00	7.963E+00	9.487E+00	119.13	
BI-211	7.04E+08Y	1.00	2.762E+00	2.762E+00	0.640E+00	23.16	
BI-212	1.41E+10Y	1.00	1.067E+00	1.067E+00	0.764E+00	71.63	
PB-212	1.41E+10Y	1.00	7.970E-01	7.970E-01	1.291E-01	16.20	
BI-214	1600.00Y	1.00	6.789E-01	6.789E-01	1.757E-01	25.88	
PB-214	1600.00Y	1.00	1.002E+00	1.002E+00	0.232E+00	23.16	
RN-222	1600.00Y	1.00	6.789E-01	6.789E-01	1.757E-01	25.88	
RA-224	1.41E+10Y	1.00	2.433E+00	2.433E+00	1.272E+00	52.29	
RA-226	1600.00Y	1.00	1.002E+00	1.002E+00	0.232E+00	23.16	
AC-228	1.41E+10Y	1.00	9.285E-01	9.285E-01	3.092E-01	33.31	
RA-228	1.41E+10Y	1.00	9.285E-01	9.285E-01	3.092E-01	33.31	
TH-228	1.41E+10Y	1.00	7.970E-01	7.970E-01	1.291E-01	16.20	
TH-229	7340.00Y	1.00	2.671E-01	2.671E-01	1.751E-01	65.55	K
TH-230	7.54E+04Y	1.00	1.002E+00	1.002E+00	0.232E+00	23.16	
TH-232	1.41E+10Y	1.00	9.285E-01	9.285E-01	3.092E-01	33.31	
U-234	2.45E+05Y	1.00	1.002E+00	1.002E+00	0.232E+00	23.16	
AM-243	7370.00Y	1.00	1.420E-01	1.420E-01	0.823E-01	57.94	
			---	---			
	Total Activity :		4.042E+01	4.055E+01			

Grand Total Activity : 4.042E+01 4.055E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378006 Acquisition date : 10-MAY-2025 10:26:11

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	89.93	23	90	1.25	180.00	165	29	6.33E-03	****	5.93E+00	T
3	94.93	21	69	0.95	190.00	165	29	5.90E-03	****	6.22E+00	T
0	113.74	35	106	2.59	227.60	222	12	9.79E-03	****	6.73E+00	T
0	139.92	30	34	1.06	279.94	277	6	8.36E-03	75.7	6.57E+00	T
0	186.02	66	64	1.50	372.10	368	8	1.85E-02	52.4	5.74E+00	T
0	195.31	43	51	1.12	390.66	384	10	1.21E-02	69.3	5.57E+00	
0	329.05	34	34	3.30	658.02	652	12	9.70E-03	76.4	3.95E+00	T
0	382.51	20	72	6.41	764.91	749	23	5.88E-03	****	3.57E+00	T
0	442.36	12	12	1.18	884.56	881	7	3.61E-03	****	3.23E+00	
0	462.64	20	13	1.25	925.11	921	9	5.66E-03	78.7	3.13E+00	T
0	480.94	17	19	3.44	961.69	954	12	4.78E-03	****	3.05E+00	T
0	525.97	9	14	1.46	1051.72	1047	8	2.68E-03	****	2.86E+00	
0	557.92	14	10	0.97	1115.60	1111	8	3.92E-03	99.2	2.74E+00	
0	562.33	12	12	1.29	1124.42	1119	12	3.51E-03	****	2.72E+00	T
1	612.78	17	11	1.60	1225.29	1213	21	5.06E-03	****	2.55E+00	
0	637.47	6	15	0.84	1274.66	1267	12	1.81E-03	****	2.47E+00	T
0	724.50	9	13	1.03	1448.68	1443	8	2.57E-03	****	2.23E+00	T
0	769.66	5	10	1.31	1538.98	1534	6	1.42E-03	****	2.11E+00	
0	786.32	23	0	1.14	1572.29	1568	10	6.67E-03	40.8	2.07E+00	
0	841.44	11	3	1.17	1682.51	1679	7	3.31E-03	77.0	1.95E+00	
0	948.75	6	4	2.75	1897.10	1894	6	1.84E-03	****	1.75E+00	T
0	964.96	13	8	1.91	1929.53	1924	8	3.84E-03	89.2	1.72E+00	T
0	1155.41	11	5	3.57	2310.40	2304	12	3.28E-03	****	1.46E+00	
0	1187.64	10	2	0.79	2374.86	2369	10	2.91E-03	83.9	1.42E+00	T
0	1238.40	12	1	1.04	2476.39	2473	8	3.53E-03	71.7	1.37E+00	T
0	1251.02	8	7	0.83	2501.63	2498	7	2.22E-03	****	1.35E+00	
0	1377.03	15	2	0.69	2753.66	2748	10	4.38E-03	62.4	1.25E+00	

Flags: "T" = Tentatively associated

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378006.CNF;1  *
* Acquisition date : 10-MAY-2025 10:26:11 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.40     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:58:00 Nuclide Library : SOLID           *
* Sample ID        : G719378006           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.0383E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 10-MAR-2025 08:48:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;21            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.639E-01
CD-109	5.664E-01
SN-126	5.428E-02
TL-208	3.086E-02
BI-210	3.571E+00
PB-210	3.571E+00
BI-211	1.777E-01
BI-212	4.195E-01
PB-212	4.692E-02
BI-214	5.658E-02
PB-214	6.461E-02
RN-222	5.658E-02
RA-224	5.027E-01
RA-226	6.461E-02
AC-228	9.856E-02
RA-228	9.856E-02
TH-228	4.692E-02
TH-229	4.155E-01
TH-230	6.461E-02
TH-232	9.856E-02
U-234	6.461E-02
AM-243	4.572E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	2.840E-01	NOT IDENT.
NA-22	2.895E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.973E-02	NOT IDENT.
SC-46	3.437E-02	FAIL ABUN
V-48	1.823E-01	NOT IDENT.
CR-51	4.889E-01	NOT IDENT.
MN-52	1.573E+00	NOT IDENT.
MN-54	2.424E-02	NOT IDENT.

CO-56	3.611E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.217E-02	NOT IDENT.
CO-58	1.613E-02	NOT IDENT.
FE-59	7.760E-02	NOT IDENT.
CO-60	2.881E-02	NOT IDENT.
ZN-65	7.457E-02	NOT IDENT.
GE-68	9.877E-01	NOT IDENT.
AS-73	9.963E-01	NOT IDENT.
AS-74	1.564E-01	NOT IDENT.
SE-75	3.424E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	3.714E-01	NOT IDENT.
RB-83	5.893E-02	NOT IDENT.
RB-84	9.167E-02	NOT IDENT.
KR-85	5.640E+00	NOT IDENT.
SR-85	3.564E-02	NOT IDENT.
RB-86	1.066E+00	NOT IDENT.
Y-88	2.831E-02	NOT IDENT.
Y-91	9.486E+00	NOT IDENT.
NB-94	3.181E-02	NOT IDENT.
NB-95	3.605E-02	NOT IDENT.
NB-95M	1.123E-01	NOT IDENT.
ZR-95	7.363E-02	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.589E-02	NOT IDENT.
RH-102	3.911E-02	NOT IDENT.
RU-103	4.335E-02	FAIL ABUN
RH-106	2.446E-01	NOT IDENT.
RU-106	2.446E-01	NOT IDENT.
AG-108M	2.346E-02	NOT IDENT.
AG-110	5.071E-01	NOT IDENT.
AG-110M	3.813E-02	NOT IDENT.
SN-113	4.396E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	8.436E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.095E-02	NOT IDENT.
SB-124	8.171E-02	NOT IDENT.
SB-125	8.357E-02	FAIL ABUN
TE-125M	8.521E+00	NOT IDENT.
I-126	3.743E-01	NOT IDENT.
SB-126	3.045E-01	NOT IDENT.
SB-127	2.219E+01	NOT IDENT.
I-131	4.195E-01	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.531E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	4.093E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.029E-01	NOT IDENT.
BA-137M	3.337E-02	NOT IDENT.
CS-137	3.525E-02	NOT IDENT.
LA-138	4.556E-02	NOT IDENT.
CE-139	2.288E-02	NOT IDENT.
BA-140	4.661E-01	NOT IDENT.
LA-140	3.018E-01	FAIL ABUN
CE-141	6.840E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.760E-01	NOT IDENT.
PM-144	3.149E-02	NOT IDENT.
PR-144	2.366E+00	NOT IDENT.
PM-146	3.212E-02	NOT IDENT.
ND-147	1.185E+00	FAIL ABUN
PM-147	5.876E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.201E-02	FAIL ABUN
EU-152	8.345E-02	FAIL ABUN
GD-153	6.836E-02	NOT IDENT.
EU-154	7.969E-02	FAIL ABUN
EU-155	9.413E-02	FAIL ABUN
TB-160	1.068E-01	FAIL ABUN
HO-166M	5.573E-02	NOT IDENT.
TM-171	1.888E+01	NOT IDENT.

HF-172	1.485E-01	FAIL ABUN
LU-172	3.968E-02	FAIL ABUN
LU-176	2.257E-02	FAIL ABUN
HF-181	4.110E-02	FAIL ABUN
TA-182	1.757E-01	FAIL ABUN
RE-183	2.065E-01	NOT IDENT.
RE-184	1.427E-01	NOT IDENT.
W-188	8.097E+00	FAIL ABUN
IR-192	3.955E-02	FAIL ABUN
HG-203	4.223E-02	NOT IDENT.
TL-204	3.637E+00	NOT IDENT.
BI-207	4.483E-02	FAIL ABUN
PB-211	4.954E-01	NOT IDENT.
BI-213	7.413E-02	NOT IDENT.
RN-219	3.437E-01	NOT IDENT.
RA-223	5.062E-01	FAIL ABUN
AC-225	1.512E+00	NOT IDENT.
AC-227	2.403E-01	FAIL ABUN
TH-227	2.403E-01	FAIL ABUN
PA-231	3.822E-01	NOT IDENT.
TH-231	5.062E-01	FAIL ABUN
PA-233	5.146E-02	FAIL ABUN
PA-234	3.015E-01	FAIL ABUN
PA-234M	1.516E+00	FAIL ABUN
TH-234	1.516E+00	FAIL ABUN
U-235	1.695E-01	FAIL ABUN
NP-237	5.146E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	1.516E+00	FAIL ABUN
NP-239	1.887E-01	NOT IDENT.
PU-239	2.897E+02	NOT IDENT.
AM-241	1.145E-01	NOT IDENT.
CM-243	8.022E-02	NOT IDENT.
BK-247	5.591E-02	FAIL ABUN
CM-247	2.930E-02	NOT IDENT.
CF-249	3.438E-02	NOT IDENT.
CF-251	1.043E-01	NOT IDENT.
ANH-511	5.515E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:27:29.25

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378006.CNF;1  *
* Acquisition date : 10-MAY-2025 10:26:11 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.40     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:58:00 Nuclide Library : SOLID           *
* Sample ID        : G719378006           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.0383E+02 GRAM *
*                                         Quantity Err(%) : 1.9262E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 10-MAR-2025 08:48:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;21            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	6.023E+00	1.465E+00	1.465E+00
CD-109	1.818E+00	1.183E+00	1.183E+00
SN-126	1.733E-01	1.123E-01	1.123E-01
TL-208	1.929E-01	6.763E-02	6.763E-02
BI-210	7.963E+00	9.334E+00	9.334E+00
PB-210	7.963E+00	9.334E+00	9.334E+00
BI-211	2.762E+00	6.797E-01	6.797E-01
BI-212	1.067E+00	7.562E-01	7.562E-01
PB-212	7.970E-01	1.478E-01	1.478E-01
BI-214	6.789E-01	1.817E-01	1.817E-01
PB-214	1.002E+00	2.462E-01	2.462E-01
RN-222	6.789E-01	1.817E-01	1.817E-01
RA-224	2.433E+00	1.269E+00	1.269E+00
RA-226	1.002E+00	2.462E-01	2.462E-01
AC-228	9.285E-01	3.282E-01	3.282E-01
RA-228	9.285E-01	3.282E-01	3.282E-01
TH-228	7.970E-01	1.478E-01	1.478E-01
TH-229	6.546E-02	4.973E-01	4.973E-01
TH-230	1.002E+00	2.461E-01	2.461E-01
TH-232	9.285E-01	3.282E-01	3.282E-01
U-234	1.002E+00	2.461E-01	2.461E-01
AM-243	1.420E-01	8.156E-02	8.156E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-2.785E-02	3.749E-01	3.751E-01	NOT IDENT.
NA-22	-1.729E-02	3.860E-02	3.938E-02	NOT IDENT.
NA-24	2.181E+12	5.917E+13	5.918E+13	SHORT HLIF
AL-26	-1.087E-02	2.944E-02	2.984E-02	NOT IDENT.
SC-46	1.055E-02	3.927E-02	3.956E-02	FAIL ABUN
V-48	1.894E-01	1.925E-01	2.106E-01	NOT IDENT.
CR-51	1.044E-01	5.983E-01	6.001E-01	NOT IDENT.
MN-52	-3.542E-01	1.969E+00	1.976E+00	NOT IDENT.

MN-54	-9.906E-03	3.207E-02	3.238E-02	NOT IDENT.
CO-56	-3.876E-03	4.483E-02	4.486E-02	FAIL ABUN
MN-56	-1.000E+41	1.099E+42	0.000E+00	SHORT HLIF
CO-57	2.043E-02	2.424E-02	2.593E-02	NOT IDENT.
CO-58	-6.780E-02	4.231E-02	5.220E-02	NOT IDENT.
FE-59	1.623E-03	9.606E-02	9.606E-02	NOT IDENT.
CO-60	1.668E-02	2.854E-02	2.952E-02	NOT IDENT.
ZN-65	9.404E-03	1.015E-01	1.016E-01	NOT IDENT.
GE-68	4.433E-01	1.096E+00	1.114E+00	NOT IDENT.
AS-73	6.551E-01	1.083E+00	1.123E+00	NOT IDENT.
AS-74	-1.326E-01	2.062E-01	2.147E-01	NOT IDENT.
SE-75	-3.512E-02	4.824E-02	5.078E-02	NOT IDENT.
BR-77	1.720E+04	1.622E+04	1.798E+04	SHORT HLIF
SR-82	6.979E-02	4.315E-01	4.326E-01	NOT IDENT.
RB-83	-3.874E-03	6.980E-02	6.982E-02	NOT IDENT.
RB-84	3.533E-02	1.046E-01	1.058E-01	NOT IDENT.
KR-85	-2.425E+01	9.878E+00	1.473E+01	NOT IDENT.
SR-85	-1.538E-01	6.252E-02	9.334E-02	NOT IDENT.
RB-86	5.896E-01	1.139E+00	1.170E+00	NOT IDENT.
Y-88	-4.852E-04	3.450E-02	3.450E-02	NOT IDENT.
Y-91	-3.045E+01	2.081E+01	2.493E+01	NOT IDENT.
NB-94	3.066E-02	3.294E-02	3.572E-02	NOT IDENT.
NB-95	-2.462E-02	5.557E-02	5.667E-02	NOT IDENT.
NB-95M	-1.327E-02	1.522E-01	1.523E-01	NOT IDENT.
ZR-95	3.397E-02	8.194E-02	8.336E-02	FAIL ABUN
NB-97	-1.000E+41	1.944E+41	0.000E+00	SHORT HLIF
ZR-97	-6.278E+13	3.534E+13	4.527E+13	SHORT HLIF
MO-99	-4.631E+02	9.477E+02	9.704E+02	SHORT HLIF
TC-99M	1.041E+37	7.813E+36	0.000E+00	SHORT HLIF
RH-101	-2.782E-03	3.105E-02	3.108E-02	NOT IDENT.
RH-102	-2.314E-02	5.820E-02	5.913E-02	NOT IDENT.
RU-103	-1.141E-02	5.248E-02	5.274E-02	FAIL ABUN
RH-106	-5.429E-02	3.011E-01	3.021E-01	NOT IDENT.
RU-106	-5.429E-02	3.011E-01	3.021E-01	NOT IDENT.
AG-108M	1.062E-03	2.700E-02	2.700E-02	NOT IDENT.
AG-110	-3.499E-01	6.806E-01	6.987E-01	NOT IDENT.
AG-110M	-9.963E-03	4.909E-02	4.930E-02	NOT IDENT.
SN-113	1.411E-02	4.878E-02	4.919E-02	NOT IDENT.
CD-115	1.621E+02	1.898E+03	1.899E+03	SHORT HLIF
SN-117M	-1.668E-02	1.037E-01	1.039E-01	NOT IDENT.
SB-122	3.326E+01	1.268E+02	1.277E+02	SHORT HLIF
TE-123M	1.691E-03	2.496E-02	2.498E-02	NOT IDENT.
SB-124	2.048E-02	8.960E-02	9.007E-02	NOT IDENT.
SB-125	3.473E-02	9.208E-02	9.340E-02	FAIL ABUN
TE-125M	4.119E+00	1.027E+01	1.044E+01	NOT IDENT.
I-126	-5.178E-02	4.580E-01	4.586E-01	NOT IDENT.
SB-126	3.372E-02	4.003E-01	4.006E-01	NOT IDENT.
SB-127	-6.488E+00	2.781E+01	2.796E+01	NOT IDENT.
I-131	8.041E-02	4.700E-01	4.714E-01	FAIL ABUN
I-132	-1.000E+41	2.352E+42	0.000E+00	SHORT HLIF
TE-132	-5.754E+00	2.923E+01	2.935E+01	SHORT HLIF
BA-133	-4.757E-03	4.553E-02	4.558E-02	FAIL ABUN
I-133	-3.008E+09	3.936E+09	4.163E+09	SHORT HLIF
CS-134	4.256E-02	4.186E-02	4.605E-02	FAIL ABUN
I-135	-1.444E+34	2.207E+34	0.000E+00	SHORT HLIF
CS-136	-2.780E-02	2.587E-01	2.590E-01	NOT IDENT.
BA-137M	1.518E-02	3.732E-02	3.794E-02	NOT IDENT.
CS-137	1.603E-02	3.943E-02	4.008E-02	NOT IDENT.
LA-138	-9.217E-04	5.422E-02	5.422E-02	NOT IDENT.
CE-139	-1.784E-02	3.001E-02	3.106E-02	NOT IDENT.
BA-140	-3.366E-01	6.110E-01	6.295E-01	NOT IDENT.
LA-140	2.117E-01	3.155E-01	3.296E-01	FAIL ABUN
CE-141	-4.204E-02	8.642E-02	8.848E-02	NOT IDENT.
CE-143	-3.718E+05	8.148E+05	8.319E+05	SHORT HLIF
CE-144	3.425E-02	2.063E-01	2.068E-01	NOT IDENT.
PM-144	-1.585E-02	4.038E-02	4.101E-02	NOT IDENT.
PR-144	-1.238E+00	3.042E+00	3.093E+00	NOT IDENT.
PM-146	2.254E-02	3.352E-02	3.503E-02	NOT IDENT.
ND-147	2.763E-01	1.339E+00	1.344E+00	FAIL ABUN
PM-147	7.994E+01	6.880E+02	6.890E+02	NOT IDENT.
PM-149	7.078E+03	1.716E+04	1.745E+04	SHORT HLIF
EU-150	3.576E-03	3.363E-02	3.367E-02	FAIL ABUN
EU-152	5.669E-02	9.603E-02	9.937E-02	FAIL ABUN
GD-153	-3.764E-02	9.099E-02	9.256E-02	NOT IDENT.
EU-154	-5.169E-02	1.076E-01	1.101E-01	FAIL ABUN
EU-155	8.984E-02	1.029E-01	1.106E-01	FAIL ABUN
TB-160	-6.497E-02	1.475E-01	1.504E-01	FAIL ABUN
HO-166M	8.109E-03	6.546E-02	6.557E-02	NOT IDENT.

TM-171	1.862E+01	1.979E+01	2.149E+01	NOT IDENT.
HF-172	4.841E-02	1.712E-01	1.726E-01	FAIL ABUN
LU-172	-6.555E-03	5.159E-02	5.168E-02	FAIL ABUN
LU-176	7.535E-03	2.711E-02	2.733E-02	FAIL ABUN
HF-181	8.228E-02	9.395E-02	1.010E-01	FAIL ABUN
TA-182	9.850E-02	1.850E-01	1.903E-01	FAIL ABUN
RE-183	1.880E-02	2.351E-01	2.352E-01	NOT IDENT.
RE-184	2.737E-02	1.682E-01	1.686E-01	NOT IDENT.
W-188	1.059E+00	9.972E+00	9.983E+00	FAIL ABUN
IR-192	1.401E-02	4.773E-02	4.815E-02	FAIL ABUN
HG-203	-9.462E-03	5.391E-02	5.407E-02	NOT IDENT.
TL-204	-2.248E+00	4.797E+00	4.903E+00	NOT IDENT.
BI-207	1.853E-02	5.095E-02	5.163E-02	FAIL ABUN
PB-211	-2.420E-01	6.093E-01	6.190E-01	NOT IDENT.
BI-213	-5.231E-02	1.069E-01	1.095E-01	NOT IDENT.
RN-219	1.154E-01	3.807E-01	3.842E-01	NOT IDENT.
RA-223	1.534E-01	6.608E-01	6.644E-01	FAIL ABUN
AC-225	-4.101E-01	1.906E+00	1.915E+00	NOT IDENT.
AC-227	2.757E-01	2.652E-01	2.929E-01	FAIL ABUN
TH-227	2.757E-01	2.652E-01	2.929E-01	FAIL ABUN
PA-231	-2.518E-01	5.694E-01	5.806E-01	NOT IDENT.
TH-231	1.534E-01	6.608E-01	6.644E-01	FAIL ABUN
PA-233	-1.036E-02	6.627E-02	6.644E-02	FAIL ABUN
PA-234	3.242E-01	4.914E-01	5.127E-01	FAIL ABUN
PA-234M	1.507E+00	2.358E+00	2.454E+00	FAIL ABUN
TH-234	1.507E+00	2.358E+00	2.454E+00	FAIL ABUN
U-235	5.200E-04	1.994E-01	1.994E-01	FAIL ABUN
NP-237	-1.036E-02	6.627E-02	6.644E-02	FAIL ABUN
NP-238	4.375E+03	6.575E+03	6.864E+03	SHORT HLIF
U-238	1.507E+00	2.358E+00	2.454E+00	FAIL ABUN
NP-239	-1.201E-01	2.577E-01	2.633E-01	NOT IDENT.
PU-239	5.923E+01	3.388E+02	3.398E+02	NOT IDENT.
AM-241	-1.491E-01	1.621E-01	1.754E-01	NOT IDENT.
CM-243	-3.765E-02	9.828E-02	9.973E-02	NOT IDENT.
BK-247	-5.118E-02	7.845E-02	8.177E-02	FAIL ABUN
CM-247	4.410E-03	3.313E-02	3.319E-02	NOT IDENT.
CF-249	7.019E-03	4.025E-02	4.038E-02	NOT IDENT.
CF-251	6.252E-02	1.191E-01	1.224E-01	NOT IDENT.
ANH-511	-4.453E-02	5.495E-02	5.851E-02	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	32.7044	85.43	46.7049	131.20	56.4435
45.60	28.0823	86.55	46.8060	133.02	51.5385
46.54	28.1586	86.79	46.8273	133.52	47.5307
49.72	0.0000	86.94	46.8407	136.00	45.6681
51.35	37.1851	87.09	46.8540	136.47	44.6828
51.87	36.3711	87.57	46.8971	140.51	0.0000
52.39	25.1482	88.03	46.9379	143.76	38.9805
52.97	24.3184	88.34	46.9654	144.24	39.0060
53.44	30.4357	88.47	46.9772	145.44	50.3787
54.07	40.9382	89.96	47.1088	152.43	45.6583
57.36	0.0000	1093.63	47.1684	153.25	50.9014
57.53	38.6655	91.11	47.2095	323.87	40.5639
57.98	36.9493	92.59	47.3385	156.02	38.5735
59.27	44.1278	93.35	47.4041	158.56	30.3311
59.32	47.0754	94.56	47.5086	159.00	28.2549
59.54	47.1008	94.65	47.5163	162.33	40.9840
60.96	42.5372	94.67	47.5178	162.66	41.0007
61.17	37.8301	94.87	47.5349	163.33	22.0956
62.93	48.9705	97.43	54.7565	165.86	42.2186
63.29	49.0121	98.43	47.1992	176.31	45.9585
63.58	49.0454	98.44	47.2004	176.60	45.9742
64.28	61.9283	99.53	44.0950	177.52	31.0395
66.73	53.8948	100.11	43.1800	181.07	0.0000
67.24	51.2596	102.03	41.3981	181.52	33.3344
125.81	56.7116	103.18	46.3026	184.41	53.2244
67.75	56.7203	103.37	49.2125	143.76	41.0580
68.89	46.0339	105.21	35.8147	193.51	34.8774
69.67	47.0183	105.31	41.6293	197.03	40.8476
70.82	53.1801	106.12	43.6246	198.01	13.1435
70.83	53.1814	106.47	46.5604	201.83	28.5946
72.81	47.3408	109.28	31.1846	203.43	46.2701
72.87	47.3472	111.00	36.4843	205.31	44.1547
74.66	65.8076	111.76	0.0000	210.85	29.6073
74.82	65.8301	114.06	40.2649	215.65	29.0100
74.97	65.8510	116.30	0.0000	218.12	36.9125
77.11	66.1459	116.74	44.7094	222.11	34.8149
78.74	54.0775	119.76	39.6347	227.09	48.5298
79.69	52.9504	121.12	51.6326	227.38	33.8676
80.03	45.5928	121.22	40.7166	228.16	0.0000
80.12	48.0664	121.78	33.7938	228.18	32.7644
80.19	48.0736	122.06	33.8083	116.74	32.7644
80.57	44.4093	122.92	34.8481	235.69	34.8996
81.00	61.7330	123.07	34.8561	235.96	34.9090
81.07	61.7416	265.00	38.8753	238.63	35.3778
81.75	49.4604	125.81	36.9994	238.98	0.0000
82.47	49.5313	127.23	49.1021	240.99	35.4568
83.79	46.5561	127.91	45.1394	242.00	35.4904
84.00	46.5755	129.30	49.2520	244.70	35.1972

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	21.9621	344.28	17.4291	563.25	4.2534
252.80	23.1262	345.93	26.1750	564.24	0.0000
254.15	0.0000	351.06	26.6882	569.33	8.5323
256.23	23.1981	351.93	26.7051	946.00	5.6887
260.90	0.0000	355.39	0.0000	569.70	5.6892
264.66	31.5525	356.01	25.1080	583.19	17.1804
264.80	31.5566	364.49	20.2061	584.27	11.4595
265.00	30.3934	366.42	0.0000	595.83	24.9664
269.46	36.3792	372.51	19.0475	427.87	20.2113
270.03	38.7454	375.05	15.2644	602.52	0.0000
271.23	28.2078	377.52	18.6878	604.72	23.1426
273.65	40.0440	356.01	18.7670	607.14	18.8248
276.40	28.3330	388.16	20.5317	609.32	15.4622
277.37	34.2640	388.63	20.5381	610.33	15.4694
277.60	33.0885	391.69	20.5796	614.28	15.4974
278.00	31.9175	264.66	20.6997	618.01	8.7323
279.20	34.3171	401.81	18.1259	620.36	16.5123
279.54	34.3269	402.40	17.2693	621.93	13.6086
279.70	39.0667	404.85	19.0258	630.19	0.0000
280.46	24.8766	410.95	18.2319	631.29	14.6429
283.69	21.3805	413.71	14.7847	633.25	11.7246
284.31	19.0146	414.70	20.8853	634.78	5.8665
285.41	28.5483	423.72	17.5024	635.95	6.8476
285.90	0.0000	427.09	17.5391	636.99	6.8510
287.50	29.7890	427.87	18.4246	657.50	13.8274
290.67	34.6455	433.94	16.7317	657.76	13.8291
293.27	0.0000	439.40	19.8793	657.90	0.0000
351.93	43.1686	440.45	19.8921	661.66	13.8525
295.96	43.1938	453.88	8.9115	664.57	0.0000
879.38	26.4520	463.37	12.5451	666.33	10.9065
299.98	14.4448	468.07	17.9700	666.50	10.9073
300.09	14.4459	473.00	17.1198	667.71	0.0000
300.13	14.4463	475.06	10.8252	677.62	16.9377
301.36	33.7413	476.78	13.5446	685.70	14.9969
302.85	16.0864	477.60	13.5507	692.65	0.0000
256.23	32.6179	482.18	5.4343	695.00	14.0524
304.85	27.7933	487.02	10.8979	696.49	21.0914
306.78	22.9945	492.35	0.0000	696.51	21.0914
308.46	31.5078	497.08	18.2642	697.00	20.0911
311.90	25.5168	505.52	15.5958	697.30	20.0936
316.51	29.2668	507.63	0.0000	697.49	16.0762
319.41	31.7764	511.00	19.3220	702.65	9.0626
320.08	24.4556	514.00	59.9034	706.68	15.1294
321.04	24.4733	514.00	59.9034	711.68	15.1611
323.87	19.6211	520.40	12.9461	720.70	12.1738
325.23	22.9146	520.69	0.0000	721.93	0.0000
328.76	27.0784	522.65	0.0000	722.78	13.7071
333.37	16.4673	527.90	0.0000	722.91	13.7076
333.97	22.2407	528.26	13.9282	723.31	10.6632
334.37	32.9590	529.59	15.3311	724.19	9.1432
338.28	18.5930	529.87	0.0000	727.33	13.7324
338.32	18.5934	531.02	10.2284	733.00	14.2734
311.90	11.5875	537.26	16.7915	735.93	12.2490
340.48	11.5875	546.56	0.0000	333.97	12.2563
340.55	11.5881	552.55	16.9226	739.50	0.0000

ENERGY	MDA COUNTS
744.23	11.2654
747.24	7.1777
748.06	15.3857
752.31	8.2194
753.82	16.4486
756.73	9.2629
756.80	9.2633
884.68	18.5786
765.81	15.4932
766.84	10.8495
772.60	0.0000
776.52	7.2603
739.50	0.0000
778.90	10.3813
783.70	4.6802
788.74	4.6891
792.07	15.6506
795.86	7.3139
810.06	11.5546
810.29	11.5559
344.28	14.7081
810.76	15.7605
815.77	9.4739
1048.07	6.3223
832.01	8.4717
834.85	9.5405
835.71	6.3623
836.80	0.0000
846.75	0.0000
846.77	10.6462
856.80	11.2186
860.56	10.6986
871.09	6.4431
873.19	6.4478
875.33	0.0000
879.38	10.7699
880.51	10.7739
881.60	9.7002
883.24	7.5489
884.68	9.7104
889.28	6.4841
894.76	10.8272
898.04	9.7555
900.72	9.7643
903.28	8.6872
911.20	7.6216
912.08	7.6238
923.98	0.0000
926.50	5.4722
929.11	6.5723
935.54	6.5864
937.49	7.6890
944.13	10.5680
946.00	4.9568
949.00	9.9232

ENERGY	MDA COUNTS
667.71	0.0000
962.31	11.6275
964.08	9.3075
966.17	6.6526
911.20	7.9904
983.53	10.0345
984.45	0.0000
1274.44	6.7168
1002.74	11.2174
1004.73	6.7346
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	2.2679
1038.76	0.0000
631.29	10.2327
1048.07	9.1003
1049.04	5.6893
1050.41	5.6913
1063.66	6.8569
1077.00	3.4421
1077.34	4.5898
1085.87	4.6016
1093.63	5.7650
1099.45	5.7747
1112.07	8.1143
1112.84	9.2754
1115.54	8.7024
1120.29	3.4856
1120.55	3.4861
1221.41	3.4868
1129.67	3.4951
1131.51	0.0000
1147.95	0.0000
1173.23	9.7291
1177.95	5.3137
1189.05	2.8426
1204.77	12.4893
1221.41	6.2728
1231.02	8.9838
1235.36	8.6344
1238.28	8.1008
1260.41	0.0000
1271.87	7.2642
1274.44	8.1777
1274.54	8.1777
1291.59	3.6504
1298.22	0.0000
1312.11	3.6694
1332.49	1.8441
1362.66	0.0000
1365.19	3.7178
1368.63	0.0000
1384.29	5.6027
1408.01	5.6345

ENERGY	MDA COUNTS
1434.09	5.6689
1435.80	4.7260
1457.56	0.0000
1460.82	7.6055
1489.16	4.7842
1505.03	2.8808
1584.12	6.8398
1596.21	5.8777
1620.50	4.9234
1621.92	6.8949
1678.03	0.0000
1690.97	1.9983
1750.46	0.0000
1764.49	0.0000
1063.66	4.0601
1771.35	1.0153
1791.20	0.0000
1808.65	3.0677
1810.72	0.0000
1836.06	2.0559

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:27:55.88

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378007.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM29.CNF;816
                                         Background date  : 4-MAY-2025 09:27:11.
Sample date      : 8-APR-2025 10:08:00. Acquisition date : 10-MAY-2025 10:26:44
Sample ID        : G719378007           Sample quantity  : 9.48900E+01 GRAM
Detector name    : GAM29                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.51  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.11*	83	158	0.71	126.62	123	7	2.30E-02	28.2	
2	2	73.02	90	127	1.25	146.43	144	15	2.49E-02	21.0	4.25E+00
3	2	74.85*	217	203	1.25	150.10	144	15	6.01E-02	14.2	
4	2	77.09	377	151	1.07	154.57	144	15	1.05E-01	7.6	
5	0	83.91*	26	167	1.25	168.21	166	6	7.32E-03	81.3	
6	0	87.01	85	227	1.15	174.40	172	7	2.36E-02	31.2	
7	2	89.91	81	128	1.09	180.20	178	13	2.26E-02	23.0	8.51E-01
8	2	92.82*	99	181	1.28	186.03	178	13	2.76E-02	27.3	
9	0	129.26	22	134	1.32	258.86	256	7	6.03E-03	90.9	
10	0	143.72*	34	106	1.77	287.76	285	7	9.55E-03	54.1	
11	0	167.26	30	125	0.80	334.83	330	9	8.30E-03	70.1	
12	0	185.63*	179	234	1.46	371.54	365	15	4.96E-02	20.5	
13	0	208.92*	59	145	1.38	418.09	414	10	1.65E-02	40.4	
14	0	217.05	20	101	1.51	434.35	432	9	5.60E-03	92.7	
15	6	238.54*	568	98	1.14	477.31	473	18	1.58E-01	5.1	1.33E+00
16	6	241.77*	204	127	1.78	483.76	473	18	5.67E-02	15.3	
17	0	269.90*	82	85	3.15	539.99	534	11	2.27E-02	24.8	
18	0	295.06*	339	94	1.24	590.29	583	13	9.41E-02	8.1	
19	0	301.61	83	133	8.18	603.40	596	19	2.31E-02	35.1	
20	0	327.88	43	57	1.90	655.91	652	9	1.18E-02	35.3	
21	0	338.47*	65	108	1.60	677.08	670	10	1.81E-02	32.5	
22	0	351.80*	537	127	1.32	703.72	697	13	1.49E-01	6.1	
23	5	459.43	14	15	1.27	918.88	917	14	3.94E-03	47.2	3.66E+00
24	5	462.69*	27	59	2.33	925.41	917	14	7.42E-03	61.3	
25	0	511.24*	47	85	1.74	1022.48	1015	17	1.31E-02	52.9	
26	0	540.74	14	32	1.74	1081.45	1074	10	3.92E-03	79.9	
27	0	582.99*	161	63	1.18	1165.91	1159	14	4.46E-02	13.2	
28	0	609.07	438	39	1.43	1218.06	1212	14	1.22E-01	5.7	
29	1	660.99*	105	21	1.67	1321.86	1315	20	2.92E-02	13.4	8.23E-01
30	1	664.40	20	27	1.74	1328.68	1315	20	5.69E-03	59.5	
31	0	702.60	51	54	11.27	1405.04	1389	31	1.41E-02	45.1	
32	0	727.31	42	23	1.77	1454.44	1447	11	1.17E-02	26.5	
33	0	768.02	49	19	1.91	1535.84	1531	10	1.35E-02	22.9	
34	0	772.31	13	15	1.03	1544.43	1541	9	3.67E-03	57.8	

Sample ID : G719378007 Acquisition date : 10-MAY-2025 10:26:44

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	777.58	10	25	1.34	1554.95	1550	10	2.78E-03	98.7	
36	0	786.72	24	23	1.10	1573.24	1567	12	6.62E-03	45.8	
37	0	860.13	25	33	1.61	1720.02	1713	16	7.01E-03	54.0	
38	0	869.26	7	19	1.41	1738.26	1732	11	1.98E-03	124.5	
39	0	875.15	14	15	1.46	1750.04	1744	10	3.89E-03	58.2	
40	0	910.79*	116	29	1.98	1821.31	1813	19	3.22E-02	14.6	
41	0	934.56	17	14	0.61	1868.82	1863	11	4.63E-03	52.5	
42	0	968.97*	53	48	1.75	1937.63	1929	19	1.47E-02	36.5	
43	0	983.00*	5	3	1.20	1965.68	1962	6	1.42E-03	74.2	
44	0	1000.95*	35	11	3.15	2001.58	1993	21	9.59E-03	29.9	
45	0	1015.63	9	7	0.65	2030.93	2024	11	2.54E-03	67.9	
46	0	1020.36	5	15	1.05	2040.39	2035	9	1.51E-03	130.2	
47	0	1045.73	7	8	3.91	2091.12	2082	11	1.94E-03	88.1	
48	0	1048.61	6	5	0.90	2096.87	2093	7	1.68E-03	74.3	
49	0	1062.94*	4	5	0.99	2125.53	2121	9	1.20E-03	132.2	
50	0	1119.87	66	28	1.91	2239.37	2234	12	1.83E-02	20.6	
51	0	1153.37	17	15	0.58	2306.36	2299	15	4.67E-03	55.9	
52	0	1192.78	6	8	0.67	2385.16	2377	11	1.60E-03	105.3	
53	0	1237.19	35	8	1.53	2473.96	2468	10	9.59E-03	21.6	
54	0	1253.66	9	9	1.48	2506.90	2502	8	2.48E-03	69.1	
55	0	1256.89	12	2	1.37	2513.36	2510	7	3.45E-03	33.2	
56	0	1279.22	25	0	5.40	2558.00	2551	14	6.94E-03	20.0	
57	0	1376.93	31	12	1.59	2753.40	2744	15	8.73E-03	29.4	
58	0	1460.08*	114	3	2.04	2919.70	2913	13	3.17E-02	10.1	
59	0	1587.20	22	7	2.18	3173.91	3166	14	6.11E-03	33.2	
60	0	1591.82*	5	8	0.88	3183.14	3179	8	1.32E-03	118.6	
61	0	1660.41	12	0	1.58	3320.33	3316	9	3.33E-03	28.9	
62	0	1728.37	30	0	1.96	3456.23	3449	13	8.33E-03	18.3	
63	0	1763.13	79	0	1.86	3525.77	3519	14	2.19E-02	11.3	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:27:57

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378007.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 10:08:00	Acquisition date	: 10-MAY-2025 10:26:44
Sample ID	: G719378007	Sample quantity	: 94.890 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA29	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.51 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G719378007 Acquisition date : 10-MAY-2025 10:26:44

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	106	10.66*	1.291E+00	6.112E+00	6.112E+00	20.27
SR-82	776.52	9	15.08*	2.262E+00	2.169E-01	5.207E-01	197.48
CD-109	88.03	81	3.70*	6.250E+00	2.760E+00	2.896E+00	62.39
SN-126	64.28	79	9.60	3.430E+00	1.888E+00	1.888E+00	56.44
	86.94	81	8.90	6.250E+00	1.147E+00	1.147E+00	62.39
	87.57	81	37.00*	6.250E+00	2.760E-01	2.760E-01	62.39
BA-137M	661.66	98	89.90*	2.599E+00	3.334E-01	3.340E-01	26.71
CS-137	661.66	98	85.10*	2.599E+00	3.522E-01	3.529E-01	26.71
CE-139	165.86	28	80.00*	6.734E+00	4.143E-02	4.869E-02	140.21
TL-208	277.37	------	6.60	4.970E+00	------	Line Not Found	------
	583.19	150	85.00*	2.881E+00	4.858E-01	4.858E-01	26.43
	860.56	24	12.50	2.068E+00	7.217E-01	7.217E-01	108.06
BI-211	72.87	85	1.23	4.843E+00	1.130E+01	1.130E+01	41.91
	351.06	505	12.92*	4.211E+00	7.343E+00	7.343E+00	12.28
BI-212	727.33	40	6.67*	2.397E+00	1.955E+00	1.955E+00	53.04
	1620.50	------	1.47	1.193E+00	------	Line Not Found	------
PB-212	74.82	206	10.28	5.069E+00	3.121E+00	3.121E+00	28.38
	77.11	358	17.10	5.328E+00	3.108E+00	3.108E+00	15.26
	238.63	535	43.60*	5.496E+00	1.767E+00	1.767E+00	10.25
	300.09	------	3.30	4.709E+00	------	Line Not Found	------
BI-214	609.32	410	45.49*	2.781E+00	2.567E+00	2.567E+00	11.40
	1120.29	62	14.92	1.626E+00	2.007E+00	2.007E+00	41.12
	1764.49	73	15.30	1.130E+00	3.362E+00	3.362E+00	22.50
PB-214	74.82	206	5.80	5.069E+00	5.531E+00	5.532E+00	28.38
	77.11	358	9.70	5.328E+00	5.479E+00	5.479E+00	15.26
	87.09	81	3.41	6.250E+00	2.995E+00	2.995E+00	62.39
	242.00	192	7.25	5.448E+00	3.849E+00	3.849E+00	30.70
	295.22	319	18.42	4.764E+00	2.872E+00	2.872E+00	16.15
	351.93	505	35.60*	4.211E+00	2.665E+00	2.665E+00	12.28
RN-222	609.32	410	45.49*	2.781E+00	2.567E+00	2.567E+00	11.40
	1120.29	62	14.92	1.626E+00	2.007E+00	2.007E+00	41.12
	1764.49	73	15.30	1.130E+00	3.362E+00	3.362E+00	22.50
RA-224	240.99	192	4.10*	5.448E+00	6.806E+00	6.806E+00	30.70
AC-225	218.12	19	11.40*	5.836E+00	2.260E-01	2.081E+00	185.35
RA-226	74.82	206	5.80	5.069E+00	5.531E+00	5.532E+00	28.38
	77.11	358	9.70	5.328E+00	5.479E+00	5.479E+00	15.26
	87.09	81	3.41	6.250E+00	2.995E+00	2.995E+00	62.39
	242.00	192	7.25	5.448E+00	3.849E+00	3.849E+00	30.70
	295.22	319	18.42	4.764E+00	2.872E+00	2.872E+00	16.15
	351.93	505	35.60*	4.211E+00	2.665E+00	2.665E+00	12.28
AC-228	105.21	------	1.10	7.119E+00	------	Line Not Found	------
	338.32	61	11.27	4.328E+00	9.932E-01	9.932E-01	65.06
	835.71	------	1.61	2.122E+00	------	Line Not Found	------
	911.20	108	25.80*	1.964E+00	1.691E+00	1.691E+00	29.29
	968.97	50	15.80	1.856E+00	1.337E+00	1.337E+00	73.08
RA-228	105.21	------	1.10	7.119E+00	------	Line Not Found	------
	338.32	61	11.27	4.328E+00	9.932E-01	9.932E-01	65.06
	835.71	------	1.61	2.122E+00	------	Line Not Found	------
	911.20	108	25.80*	1.964E+00	1.691E+00	1.691E+00	29.29

Sample ID : G719378007 Acquisition date : 10-MAY-2025 10:26:44

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	968.97	50	15.80	1.856E+00	1.337E+00	1.337E+00	73.08
TH-228	74.82	206	10.28	5.069E+00	3.121E+00	3.121E+00	28.38
	77.11	358	17.10	5.328E+00	3.108E+00	3.108E+00	15.26
	238.63	535	43.60*	5.496E+00	1.767E+00	1.767E+00	10.25
	300.09	------	3.30	4.709E+00	------	Line Not Found	------
TH-230	74.82	206	5.80	5.069E+00	5.531E+00	5.531E+00	28.38
	77.11	358	9.70	5.328E+00	5.479E+00	5.479E+00	15.26
	87.09	81	3.41	6.250E+00	2.995E+00	2.995E+00	62.39
	242.00	192	7.25	5.448E+00	3.849E+00	3.849E+00	30.70
	295.22	319	18.42	4.764E+00	2.872E+00	2.872E+00	16.15
	351.93	505	35.60*	4.211E+00	2.665E+00	2.665E+00	12.28
PA-231	283.69	------	1.70	4.895E+00	------	Line Not Found	------
	301.36	78	5.35*	4.692E+00	2.461E+00	2.461E+00	70.16
TH-232	105.21	------	1.10	7.119E+00	------	Line Not Found	------
	338.32	61	11.27	4.328E+00	9.932E-01	9.932E-01	65.06
	835.71	------	1.61	2.122E+00	------	Line Not Found	------
	911.20	108	25.80*	1.964E+00	1.691E+00	1.691E+00	29.29
	968.97	50	15.80	1.856E+00	1.337E+00	1.337E+00	73.08
PA-234M	63.29	79	3.70*	3.430E+00	4.898E+00	4.898E+00	56.44
	92.59	94	4.23	6.629E+00	2.654E+00	2.654E+00	54.55
TH-234	63.29	79	3.70*	3.430E+00	4.898E+00	4.898E+00	56.44
	92.59	94	4.23	6.629E+00	2.654E+00	2.654E+00	54.55
U-234	74.82	206	5.80	5.069E+00	5.531E+00	5.531E+00	28.38
	77.11	358	9.70	5.328E+00	5.479E+00	5.479E+00	15.26
	87.09	81	3.41	6.250E+00	2.995E+00	2.995E+00	62.39
	242.00	192	7.25	5.448E+00	3.849E+00	3.849E+00	30.70
	295.22	319	18.42	4.764E+00	2.872E+00	2.872E+00	16.15
	351.93	505	35.60*	4.211E+00	2.665E+00	2.665E+00	12.28
U-235	89.96	77	3.47	6.453E+00	2.723E+00	2.723E+00	46.08
	93.35	94	5.60	6.629E+00	2.005E+00	2.005E+00	54.55
	143.76	33	10.96*	7.129E+00	3.291E-01	3.291E-01	108.21
	163.33	------	5.08	6.806E+00	------	Line Not Found	------
	185.72	169	57.20	6.392E+00	3.647E-01	3.647E-01	40.98
	205.31	------	5.01	6.036E+00	------	Line Not Found	------
U-238	63.29	79	3.70*	3.430E+00	4.898E+00	4.898E+00	56.44
	92.59	94	4.23	6.629E+00	2.654E+00	2.654E+00	54.55
AM-243	43.53	------	5.90	6.496E-01	------	Line Not Found	------
	74.66	206	67.20*	5.069E+00	4.774E-01	4.774E-01	28.38
ANH-511	511.00	44	100.00*	3.195E+00	1.097E-01	1.097E-01	105.71

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:27:58.34

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378007.CNF;1  *
* Acquisition date : 10-MAY-2025 10:26:44 Sensitivity     : 3.000           *
* Detector ID      : GAM29                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:08:00 Analyst initials: RXF2            *
* Sample ID        : G719378007           Sample Quantity : 9.4890E+01 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 09:02:37 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	6.112E+00	1.214E+00	7.989E-01
SR-82	5.207E-01	1.008E+00	1.018E+00
CD-109	2.896E+00	1.771E+00	1.775E+00
SN-126	2.760E-01	1.688E-01	2.022E-01
BA-137M	3.340E-01	8.743E-02	7.519E-02
CS-137	3.529E-01	9.236E-02	7.943E-02
CE-139	4.869E-02	6.689E-02	7.922E-02
TL-208	4.858E-01	1.259E-01	8.373E-02
BI-211	7.343E+00	8.834E-01	5.145E-01
BI-212	1.955E+00	1.016E+00	9.521E-01
PB-212	1.767E+00	1.776E-01	1.406E-01
BI-214	2.567E+00	2.868E-01	1.629E-01
PB-214	2.665E+00	3.206E-01	1.871E-01
RN-222	2.567E+00	2.868E-01	1.629E-01
RA-224	6.806E+00	2.048E+00	1.506E+00
AC-225	2.081E+00	3.780E+00	4.781E+00
RA-226	2.665E+00	3.206E-01	1.871E-01
AC-228	1.691E+00	4.853E-01	3.195E-01
RA-228	1.691E+00	4.853E-01	3.195E-01
TH-228	1.767E+00	1.776E-01	1.406E-01
TH-230	2.665E+00	3.206E-01	1.871E-01
PA-231	2.461E+00	1.692E+00	1.095E+00
TH-232	1.691E+00	4.853E-01	3.195E-01
PA-234M	4.898E+00	2.709E+00	3.044E+00
TH-234	4.898E+00	2.709E+00	3.044E+00
U-234	2.665E+00	3.206E-01	1.871E-01
U-235	3.291E-01	3.490E-01	4.753E-01
U-238	4.898E+00	2.709E+00	3.044E+00
AM-243	4.774E-01	1.328E-01	1.229E-01
ANH-511	1.097E-01	1.137E-01	6.433E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)

BE-7	-2.826E-01	5.044E-01	8.737E-01	NOT IDENT.
NA-22	-1.405E-02	5.399E-02	8.838E-02	NOT IDENT.
NA-24	0.000E+00	1.257E+14	0.000E+00	SHORT HLIF
AL-26	2.728E-02	4.490E-02	1.058E-01	NOT IDENT.
SC-46	-4.199E-03	5.134E-02	9.473E-02	FAIL ABUN
V-48	8.269E-02	1.203E-01	3.589E-01	FAIL ABUN
CR-51	1.789E-01	6.544E-01	1.256E+00	NOT IDENT.
MN-52	3.794E+00	3.049E+00	7.076E+00	FAIL ABUN
MN-54	1.239E-02	5.023E-02	9.512E-02	NOT IDENT.
CO-56	1.063E-02	6.072E-02	1.144E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	2.668E-02	3.429E-02	6.270E-02	NOT IDENT.
CO-58	-2.362E-02	5.396E-02	9.273E-02	NOT IDENT.
FE-59	-1.183E-02	1.322E-01	2.585E-01	NOT IDENT.
CO-60	4.054E-02	5.299E-02	1.170E-01	NOT IDENT.
ZN-65	4.523E-02	1.244E-01	2.298E-01	NOT IDENT.
GE-68	5.749E-01	1.580E+00	3.280E+00	NOT IDENT.
AS-73	6.753E-01	1.435E+00	2.581E+00	NOT IDENT.
AS-74	-7.027E-02	2.376E-01	4.202E-01	NOT IDENT.
SE-75	3.846E-02	6.068E-02	1.102E-01	NOT IDENT.
BR-77	0.000E+00	3.826E+03	0.000E+00	SHORT HLIF
RB-83	-6.707E-02	9.377E-02	1.582E-01	NOT IDENT.
RB-84	-3.003E-02	1.017E-01	1.813E-01	NOT IDENT.
KR-85	9.471E+00	9.276E+00	1.876E+01	NOT IDENT.
SR-85	5.985E-02	5.871E-02	1.187E-01	NOT IDENT.
RB-86	7.922E-01	1.753E+00	3.695E+00	NOT IDENT.
Y-88	2.051E-02	5.191E-02	1.197E-01	NOT IDENT.
Y-91	1.872E+01	2.830E+01	6.118E+01	NOT IDENT.
NB-94	0.000E+00	1.349E-01	6.944E-02	FAIL ABUN
NB-95	1.181E-01	8.122E-02	1.594E-01	NOT IDENT.
NB-95M	9.594E-02	2.296E-01	3.676E-01	NOT IDENT.
ZR-95	2.464E-02	1.058E-01	2.027E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.980E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.277E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.047E+37	0.000E+00	SHORT HLIF
RH-101	-3.215E-02	4.936E-02	7.316E-02	NOT IDENT.
RH-102	-1.966E-02	6.658E-02	1.185E-01	FAIL ABUN
RU-103	6.050E-02	5.526E-02	1.197E-01	FAIL ABUN
RH-106	-3.979E-01	3.618E-01	5.542E-01	NOT IDENT.
RU-106	-3.979E-01	3.618E-01	5.542E-01	NOT IDENT.
AG-108M	-1.502E-02	3.791E-02	6.727E-02	NOT IDENT.
AG-110	-2.063E-01	1.019E+00	1.622E+00	NOT IDENT.
AG-110M	-1.180E-02	6.027E-02	1.085E-01	NOT IDENT.
SN-113	-3.167E-03	6.317E-02	1.165E-01	NOT IDENT.
CD-115	0.000E+00	2.476E+03	0.000E+00	SHORT HLIF
SN-117M	9.986E-02	1.886E-01	3.322E-01	NOT IDENT.
SB-122	0.000E+00	1.931E+02	0.000E+00	SHORT HLIF
TE-123M	-7.997E-03	4.607E-02	7.701E-02	NOT IDENT.
SB-124	-3.867E-02	1.040E-01	1.995E-01	NOT IDENT.
SB-125	-1.510E-02	1.308E-01	2.375E-01	FAIL ABUN
TE-125M	1.368E+00	1.557E+01	2.707E+01	NOT IDENT.
I-126	2.399E-01	8.248E-01	1.410E+00	NOT IDENT.
SB-126	1.403E-02	4.656E-01	8.252E-01	NOT IDENT.
SB-127	-4.106E+00	3.094E+01	5.670E+01	NOT IDENT.
I-131	-6.030E-03	6.288E-01	1.168E+00	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	4.130E+01	0.000E+00	SHORT HLIF
BA-133	9.460E-03	5.803E-02	9.894E-02	FAIL ABUN
I-133	0.000E+00	4.801E+09	0.000E+00	SHORT HLIF
CS-134	1.991E-02	6.073E-02	1.163E-01	NOT IDENT.
I-135	0.000E+00	2.696E+34	0.000E+00	SHORT HLIF
CS-136	1.746E-01	2.544E-01	5.553E-01	FAIL ABUN
LA-138	3.404E-03	8.820E-02	1.730E-01	NOT IDENT.
BA-140	-5.948E-02	8.457E-01	1.400E+00	NOT IDENT.
LA-140	9.779E-03	2.777E-01	5.140E-01	FAIL ABUN
CE-141	6.721E-03	1.246E-01	1.975E-01	NOT IDENT.
CE-143	0.000E+00	9.644E+05	0.000E+00	SHORT HLIF
CE-144	-1.051E-01	2.921E-01	4.855E-01	NOT IDENT.
PM-144	1.831E-02	4.246E-02	8.323E-02	NOT IDENT.
PR-144	1.434E+00	3.214E+00	6.309E+00	NOT IDENT.
PM-146	4.591E-02	5.665E-02	1.130E-01	NOT IDENT.
ND-147	2.817E-01	1.722E+00	3.333E+00	FAIL ABUN
PM-147	4.591E+02	9.829E+02	1.755E+03	NOT IDENT.
PM-149	0.000E+00	2.242E+04	0.000E+00	SHORT HLIF
EU-150	-1.194E-02	4.351E-02	6.978E-02	FAIL ABUN
EU-152	-3.345E-02	1.412E-01	2.544E-01	FAIL ABUN
GD-153	-5.297E-02	1.181E-01	1.960E-01	NOT IDENT.

EU-154	-4.261E-02	1.510E-01	2.457E-01	NOT IDENT.
EU-155	1.774E-01	1.404E-01	2.645E-01	FAIL ABUN
TB-160	-8.096E-02	1.961E-01	2.911E-01	FAIL ABUN
HO-166M	1.049E-03	7.988E-02	1.326E-01	FAIL ABUN
TM-171	-9.286E+00	2.688E+01	4.579E+01	NOT IDENT.
HF-172	2.330E-01	2.927E-01	4.949E-01	FAIL ABUN
LU-172	-4.863E-02	7.080E-02	1.243E-01	FAIL ABUN
LU-176	-1.144E-02	4.089E-02	6.596E-02	FAIL ABUN
HF-181	2.730E-02	6.855E-02	1.340E-01	NOT IDENT.
TA-182	-3.604E-02	1.890E-01	3.684E-01	FAIL ABUN
RE-183	2.403E-01	3.419E-01	6.266E-01	NOT IDENT.
RE-184	5.629E-02	2.185E-01	4.055E-01	NOT IDENT.
W-188	8.574E-01	1.120E+01	1.902E+01	FAIL ABUN
IR-192	-5.494E-04	4.931E-02	9.193E-02	FAIL ABUN
HG-203	-8.109E-02	7.047E-02	1.190E-01	FAIL ABUN
TL-204	-6.769E-01	7.241E+00	1.157E+01	FAIL ABUN
BI-207	2.518E-02	6.525E-02	1.457E-01	FAIL ABUN
BI-210	-2.639E+00	5.813E+00	1.005E+01	NOT IDENT.
PB-210	-2.639E+00	5.813E+00	1.005E+01	NOT IDENT.
PB-211	-8.008E-02	9.405E-01	1.722E+00	NOT IDENT.
BI-213	9.541E-03	1.359E-01	2.532E-01	NOT IDENT.
RN-219	-1.085E-01	5.342E-01	9.674E-01	FAIL ABUN
RA-223	6.617E-01	9.179E-01	1.652E+00	FAIL ABUN
AC-227	-8.623E-02	3.149E-01	5.746E-01	NOT IDENT.
TH-227	-8.623E-02	3.149E-01	5.746E-01	NOT IDENT.
TH-229	1.552E-01	6.976E-01	1.204E+00	FAIL ABUN
TH-231	6.617E-01	9.179E-01	1.652E+00	FAIL ABUN
PA-233	-1.090E-03	8.823E-02	1.630E-01	FAIL ABUN
PA-234	6.942E-02	3.540E-01	6.827E-01	NOT IDENT.
NP-237	-1.090E-03	8.823E-02	1.630E-01	FAIL ABUN
NP-238	0.000E+00	4.206E+03	0.000E+00	SHORT HLIF
NP-239	1.516E-01	3.575E-01	6.353E-01	NOT IDENT.
PU-239	3.533E+02	6.294E+02	8.837E+02	FAIL ABUN
AM-241	4.389E-02	2.397E-01	3.942E-01	NOT IDENT.
CM-243	-1.969E-01	1.463E-01	2.266E-01	NOT IDENT.
BK-247	2.658E-02	1.014E-01	1.767E-01	FAIL ABUN
CM-247	-1.629E-02	4.949E-02	8.842E-02	NOT IDENT.
CF-249	-9.097E-03	5.009E-02	9.131E-02	NOT IDENT.
CF-251	-1.297E-02	1.961E-01	3.288E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:27:56.68

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	106	10.66*	1.291E+00	6.112E+00	6.112E+00	20.27
SR-82	776.52	9	15.08*	2.262E+00	2.169E-01	5.207E-01	197.48
CD-109	88.03	81	3.70*	6.250E+00	2.760E+00	2.896E+00	62.39
SN-126	64.28	79	9.60	3.430E+00	1.888E+00	1.888E+00	56.44
	86.94	81	8.90	6.250E+00	1.147E+00	1.147E+00	62.39
	87.57	81	37.00*	6.250E+00	2.760E-01	2.760E-01	62.39
BA-137M	661.66	98	89.90*	2.599E+00	3.334E-01	3.340E-01	26.71
CS-137	661.66	98	85.10*	2.599E+00	3.522E-01	3.529E-01	26.71
CE-139	165.86	28	80.00*	6.734E+00	4.143E-02	4.869E-02	140.21
TL-208	277.37	------	6.60	4.970E+00	------	Line Not Found	------
	583.19	150	85.00*	2.881E+00	4.858E-01	4.858E-01	26.43
	860.56	24	12.50	2.068E+00	7.217E-01	7.217E-01	108.06
BI-211	72.87	85	1.23	4.843E+00	1.130E+01	1.130E+01	41.91
	351.06	505	12.92*	4.211E+00	7.343E+00	7.343E+00	12.28
BI-212	727.33	40	6.67*	2.397E+00	1.955E+00	1.955E+00	53.04
	1620.50	------	1.47	1.193E+00	------	Line Not Found	------
PB-212	74.82	206	10.28	5.069E+00	3.121E+00	3.121E+00	28.38
	77.11	358	17.10	5.328E+00	3.108E+00	3.108E+00	15.26
	238.63	535	43.60*	5.496E+00	1.767E+00	1.767E+00	10.25
	300.09	------	3.30	4.709E+00	------	Line Not Found	------
BI-214	609.32	410	45.49*	2.781E+00	2.567E+00	2.567E+00	11.40
	1120.29	62	14.92	1.626E+00	2.007E+00	2.007E+00	41.12
	1764.49	73	15.30	1.130E+00	3.362E+00	3.362E+00	22.50
PB-214	74.82	206	5.80	5.069E+00	5.531E+00	5.532E+00	28.38
	77.11	358	9.70	5.328E+00	5.479E+00	5.479E+00	15.26
	87.09	81	3.41	6.250E+00	2.995E+00	2.995E+00	62.39
	242.00	192	7.25	5.448E+00	3.849E+00	3.849E+00	30.70
	295.22	319	18.42	4.764E+00	2.872E+00	2.872E+00	16.15
	351.93	505	35.60*	4.211E+00	2.665E+00	2.665E+00	12.28
RN-222	609.32	410	45.49*	2.781E+00	2.567E+00	2.567E+00	11.40
	1120.29	62	14.92	1.626E+00	2.007E+00	2.007E+00	41.12
	1764.49	73	15.30	1.130E+00	3.362E+00	3.362E+00	22.50
RA-224	240.99	192	4.10*	5.448E+00	6.806E+00	6.806E+00	30.70
AC-225	218.12	19	11.40*	5.836E+00	2.260E-01	2.081E+00	185.35
RA-226	74.82	206	5.80	5.069E+00	5.531E+00	5.532E+00	28.38
	77.11	358	9.70	5.328E+00	5.479E+00	5.479E+00	15.26
	87.09	81	3.41	6.250E+00	2.995E+00	2.995E+00	62.39
	242.00	192	7.25	5.448E+00	3.849E+00	3.849E+00	30.70
	295.22	319	18.42	4.764E+00	2.872E+00	2.872E+00	16.15
	351.93	505	35.60*	4.211E+00	2.665E+00	2.665E+00	12.28
AC-228	105.21	------	1.10	7.119E+00	------	Line Not Found	------
	338.32	61	11.27	4.328E+00	9.932E-01	9.932E-01	65.06
	835.71	------	1.61	2.122E+00	------	Line Not Found	------
	911.20	108	25.80*	1.964E+00	1.691E+00	1.691E+00	29.29
	968.97	50	15.80	1.856E+00	1.337E+00	1.337E+00	73.08
RA-228	105.21	------	1.10	7.119E+00	------	Line Not Found	------
	338.32	61	11.27	4.328E+00	9.932E-01	9.932E-01	65.06

Sample ID : G719378007 Acquisition date : 10-MAY-2025 10:26:44

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	835.71	------	1.61	2.122E+00	------	Line Not Found	------
	911.20	108	25.80*	1.964E+00	1.691E+00	1.691E+00	29.29
	968.97	50	15.80	1.856E+00	1.337E+00	1.337E+00	73.08
TH-228	74.82	206	10.28	5.069E+00	3.121E+00	3.121E+00	28.38
	77.11	358	17.10	5.328E+00	3.108E+00	3.108E+00	15.26
	238.63	535	43.60*	5.496E+00	1.767E+00	1.767E+00	10.25
	300.09	------	3.30	4.709E+00	------	Line Not Found	------
TH-230	74.82	206	5.80	5.069E+00	5.531E+00	5.531E+00	28.38
	77.11	358	9.70	5.328E+00	5.479E+00	5.479E+00	15.26
	87.09	81	3.41	6.250E+00	2.995E+00	2.995E+00	62.39
	242.00	192	7.25	5.448E+00	3.849E+00	3.849E+00	30.70
	295.22	319	18.42	4.764E+00	2.872E+00	2.872E+00	16.15
	351.93	505	35.60*	4.211E+00	2.665E+00	2.665E+00	12.28
PA-231	283.69	------	1.70	4.895E+00	------	Line Not Found	------
	301.36	78	5.35*	4.692E+00	2.461E+00	2.461E+00	70.16
TH-232	105.21	------	1.10	7.119E+00	------	Line Not Found	------
	338.32	61	11.27	4.328E+00	9.932E-01	9.932E-01	65.06
	835.71	------	1.61	2.122E+00	------	Line Not Found	------
	911.20	108	25.80*	1.964E+00	1.691E+00	1.691E+00	29.29
	968.97	50	15.80	1.856E+00	1.337E+00	1.337E+00	73.08
PA-234M	63.29	79	3.70*	3.430E+00	4.898E+00	4.898E+00	56.44
	92.59	94	4.23	6.629E+00	2.654E+00	2.654E+00	54.55
TH-234	63.29	79	3.70*	3.430E+00	4.898E+00	4.898E+00	56.44
	92.59	94	4.23	6.629E+00	2.654E+00	2.654E+00	54.55
U-234	74.82	206	5.80	5.069E+00	5.531E+00	5.531E+00	28.38
	77.11	358	9.70	5.328E+00	5.479E+00	5.479E+00	15.26
	87.09	81	3.41	6.250E+00	2.995E+00	2.995E+00	62.39
	242.00	192	7.25	5.448E+00	3.849E+00	3.849E+00	30.70
	295.22	319	18.42	4.764E+00	2.872E+00	2.872E+00	16.15
	351.93	505	35.60*	4.211E+00	2.665E+00	2.665E+00	12.28
U-235	89.96	77	3.47	6.453E+00	2.723E+00	2.723E+00	46.08
	93.35	94	5.60	6.629E+00	2.005E+00	2.005E+00	54.55
	143.76	33	10.96*	7.129E+00	3.291E-01	3.291E-01	108.21
	163.33	------	5.08	6.806E+00	------	Line Not Found	------
	185.72	169	57.20	6.392E+00	3.647E-01	3.647E-01	40.98
	205.31	------	5.01	6.036E+00	------	Line Not Found	------
U-238	63.29	79	3.70*	3.430E+00	4.898E+00	4.898E+00	56.44
	92.59	94	4.23	6.629E+00	2.654E+00	2.654E+00	54.55
AM-243	43.53	------	5.90	6.496E-01	------	Line Not Found	------
	74.66	206	67.20*	5.069E+00	4.774E-01	4.774E-01	28.38
ANH-511	511.00	44	100.00*	3.195E+00	1.097E-01	1.097E-01	105.71

Flag: "*" = Keyline

Sample ID : G719378007 Acquisition date : 10-MAY-2025 10:26:44

Total number of lines in spectrum	63	
Number of unidentified lines	17	
Number of lines tentatively identified by NID	46	73.02%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	6.112E+00	6.112E+00	1.239E+00	20.27	
SR-82	25.35D	2.40	2.169E-01	5.207E-01	10.28E-01	197.48	
CD-109	461.40D	1.05	2.760E+00	2.896E+00	1.807E+00	62.39	
SN-126	2.30E+05Y	1.00	2.760E-01	2.760E-01	1.722E-01	62.39	
BA-137M	30.08Y	1.00	3.334E-01	3.340E-01	0.892E-01	26.71	
CS-137	30.08Y	1.00	3.522E-01	3.529E-01	0.942E-01	26.71	
CE-139	137.64D	1.18	4.143E-02	4.869E-02	6.826E-02	140.21	
TL-208	1.41E+10Y	1.00	4.858E-01	4.858E-01	1.284E-01	26.43	
BI-211	7.04E+08Y	1.00	7.343E+00	7.343E+00	0.901E+00	12.28	
BI-212	1.41E+10Y	1.00	1.955E+00	1.955E+00	1.037E+00	53.04	
PB-212	1.41E+10Y	1.00	1.767E+00	1.767E+00	0.181E+00	10.25	
BI-214	1600.00Y	1.00	2.567E+00	2.567E+00	0.293E+00	11.40	
PB-214	1600.00Y	1.00	2.665E+00	2.665E+00	0.327E+00	12.28	
RN-222	1600.00Y	1.00	2.567E+00	2.567E+00	0.293E+00	11.40	
RA-224	1.41E+10Y	1.00	6.806E+00	6.806E+00	2.089E+00	30.70	
AC-225	10.00D	9.21	2.260E-01	2.081E+00	3.858E+00	185.35	
RA-226	1600.00Y	1.00	2.665E+00	2.665E+00	0.327E+00	12.28	
AC-228	1.41E+10Y	1.00	1.691E+00	1.691E+00	0.495E+00	29.29	
RA-228	1.41E+10Y	1.00	1.691E+00	1.691E+00	0.495E+00	29.29	
TH-228	1.41E+10Y	1.00	1.767E+00	1.767E+00	0.181E+00	10.25	
TH-230	7.54E+04Y	1.00	2.665E+00	2.665E+00	0.327E+00	12.28	
PA-231	7.04E+08Y	1.00	2.461E+00	2.461E+00	1.727E+00	70.16	
TH-232	1.41E+10Y	1.00	1.691E+00	1.691E+00	0.495E+00	29.29	
PA-234M	4.47E+09Y	1.00	4.898E+00	4.898E+00	2.765E+00	56.44	
TH-234	4.47E+09Y	1.00	4.898E+00	4.898E+00	2.765E+00	56.44	
U-234	2.45E+05Y	1.00	2.665E+00	2.665E+00	0.327E+00	12.28	
U-235	7.04E+08Y	1.00	3.291E-01	3.291E-01	3.561E-01	108.21	
U-238	4.47E+09Y	1.00	4.898E+00	4.898E+00	2.765E+00	56.44	
AM-243	7370.00Y	1.00	4.774E-01	4.774E-01	1.355E-01	28.38	
ANH-511	1.00E+09Y	1.00	1.097E-01	1.097E-01	1.160E-01	105.71	
			---	---			
		Total Activity :	6.938E+01	7.168E+01			

Grand Total Activity : 6.938E+01 7.168E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378007 Acquisition date : 10-MAY-2025 10:26:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	83.91	25	158	1.25	168.21	166	6	7.32E-03	****	6.00E+00	T
0	129.26	21	127	1.32	258.86	256	7	6.03E-03	****	7.28E+00	T
0	208.92	56	136	1.38	418.09	414	10	1.65E-02	80.7	5.97E+00	
0	269.90	77	80	3.15	539.99	534	11	2.27E-02	49.5	5.06E+00	T
0	327.88	40	53	1.90	655.91	652	9	1.18E-02	70.7	4.43E+00	T
5	459.43	13	14	1.27	918.88	917	14	3.94E-03	94.5	3.47E+00	
5	462.69	25	56	2.33	925.41	917	14	7.42E-03	****	3.45E+00	T
0	540.74	13	30	1.74	1081.45	1074	10	3.92E-03	****	3.06E+00	
1	664.40	19	26	1.74	1328.68	1315	20	5.69E-03	****	2.59E+00	T
0	702.60	48	51	11.27	1405.04	1389	31	1.41E-02	90.2	2.47E+00	T
0	768.02	45	18	1.91	1535.84	1531	10	1.35E-02	45.9	2.29E+00	T
0	772.31	12	14	1.03	1544.43	1541	9	3.67E-03	****	2.28E+00	T
0	786.72	22	22	1.10	1573.24	1567	12	6.62E-03	91.6	2.24E+00	
0	869.26	7	18	1.41	1738.26	1732	11	1.98E-03	****	2.05E+00	
0	875.15	13	14	1.46	1750.04	1744	10	3.89E-03	****	2.04E+00	T
0	934.56	16	13	0.61	1868.82	1863	11	4.63E-03	****	1.92E+00	T
0	983.00	5	3	1.20	1965.68	1962	6	1.42E-03	****	1.83E+00	T
0	1000.95	32	10	3.15	2001.58	1993	21	9.59E-03	59.8	1.80E+00	
0	1015.63	9	6	0.65	2030.93	2024	11	2.54E-03	****	1.78E+00	
0	1020.36	5	14	1.05	2040.39	2035	9	1.51E-03	****	1.77E+00	T
0	1045.73	7	7	3.91	2091.12	2082	11	1.94E-03	****	1.73E+00	T
0	1048.61	6	5	0.90	2096.87	2093	7	1.68E-03	****	1.73E+00	T
0	1062.94	4	4	0.99	2125.53	2121	9	1.20E-03	****	1.71E+00	T
0	1153.37	16	14	0.58	2306.36	2299	15	4.67E-03	****	1.58E+00	
0	1192.78	5	8	0.67	2385.16	2377	11	1.60E-03	****	1.54E+00	
0	1237.19	32	8	1.53	2473.96	2468	10	9.59E-03	43.1	1.49E+00	T
0	1253.66	8	8	1.48	2506.90	2502	8	2.48E-03	****	1.47E+00	
0	1256.89	12	1	1.37	2513.36	2510	7	3.45E-03	66.5	1.47E+00	
0	1279.22	23	0	5.40	2558.00	2551	14	6.94E-03	40.0	1.44E+00	
0	1376.93	29	11	1.59	2753.40	2744	15	8.73E-03	58.8	1.35E+00	
0	1587.20	20	7	2.18	3173.91	3166	14	6.11E-03	66.5	1.21E+00	
0	1591.82	4	7	0.88	3183.14	3179	8	1.32E-03	****	1.21E+00	
0	1660.41	11	0	1.58	3320.33	3316	9	3.33E-03	57.7	1.17E+00	
0	1728.37	28	0	1.96	3456.23	3449	13	8.33E-03	36.5	1.14E+00	

Flags: "T" = Tentatively associated

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378007.CNF;1  *
* Acquisition date : 10-MAY-2025 10:26:44 Sensitivity     : 3.000           *
* Detector ID      : GAM29                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:08:00 Nuclide Library : SOLID           *
* Sample ID        : G719378007           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 9.4890E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 09:02:37 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;19            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.225E-01
SR-82	4.348E-01
CD-109	8.405E-01
SN-126	9.660E-02
BA-137M	3.306E-02
CS-137	3.493E-02
CE-139	3.733E-02
TL-208	3.755E-02
BI-211	2.379E-01
BI-212	4.099E-01
PB-212	6.589E-02
BI-214	7.311E-02
PB-214	8.652E-02
RN-222	7.311E-02
RA-224	7.059E-01
AC-225	2.245E+00
RA-226	8.652E-02
AC-228	1.389E-01
RA-228	1.389E-01
TH-228	6.589E-02
TH-230	8.651E-02
PA-231	5.054E-01
TH-232	1.389E-01
PA-234M	1.440E+00
TH-234	1.440E+00
U-234	8.651E-02
U-235	2.242E-01
U-238	1.440E+00
AM-243	5.836E-02
ANH-511	2.886E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.912E-01	NOT IDENT.

NA-22	3.670E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	4.338E-02	NOT IDENT.
SC-46	4.050E-02	FAIL ABUN
V-48	1.562E-01	FAIL ABUN
CR-51	5.755E-01	NOT IDENT.
MN-52	3.109E+00	FAIL ABUN
MN-54	4.222E-02	NOT IDENT.
CO-56	5.046E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.953E-02	NOT IDENT.
CO-58	3.969E-02	NOT IDENT.
FE-59	1.106E-01	NOT IDENT.
CO-60	5.081E-02	NOT IDENT.
ZN-65	1.009E-01	NOT IDENT.
GE-68	1.429E+00	NOT IDENT.
AS-73	1.220E+00	NOT IDENT.
AS-74	1.881E-01	NOT IDENT.
SE-75	5.092E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
RB-83	6.943E-02	NOT IDENT.
RB-84	7.572E-02	NOT IDENT.
KR-85	8.611E+00	NOT IDENT.
SR-85	5.450E-02	NOT IDENT.
RB-86	1.608E+00	NOT IDENT.
Y-88	4.797E-02	NOT IDENT.
Y-91	2.669E+01	NOT IDENT.
NB-94	3.043E-02	FAIL ABUN
NB-95	7.316E-02	NOT IDENT.
NB-95M	1.730E-01	NOT IDENT.
ZR-95	8.946E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.442E-02	NOT IDENT.
RH-102	5.214E-02	FAIL ABUN
RU-103	5.361E-02	FAIL ABUN
RH-106	2.358E-01	NOT IDENT.
RU-106	2.358E-01	NOT IDENT.
AG-108M	3.041E-02	NOT IDENT.
AG-110	7.125E-01	NOT IDENT.
AG-110M	4.636E-02	NOT IDENT.
SN-113	5.320E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.570E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.632E-02	NOT IDENT.
SB-124	7.199E-02	NOT IDENT.
SB-125	1.089E-01	FAIL ABUN
TE-125M	1.274E+01	NOT IDENT.
I-126	6.358E-01	NOT IDENT.
SB-126	3.635E-01	NOT IDENT.
SB-127	2.471E+01	NOT IDENT.
I-131	5.339E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.538E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	5.240E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.363E-01	FAIL ABUN
LA-138	7.414E-02	NOT IDENT.
BA-140	6.197E-01	NOT IDENT.
LA-140	2.045E-01	FAIL ABUN
CE-141	9.268E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.286E-01	NOT IDENT.
PM-144	3.708E-02	NOT IDENT.
PR-144	2.812E+00	NOT IDENT.
PM-146	5.179E-02	NOT IDENT.
ND-147	1.470E+00	FAIL ABUN
PM-147	8.260E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.238E-02	FAIL ABUN
EU-152	1.179E-01	FAIL ABUN
GD-153	9.219E-02	NOT IDENT.
EU-154	1.018E-01	NOT IDENT.

EU-155	1.252E-01	FAIL ABUN
TB-160	1.220E-01	FAIL ABUN
HO-166M	5.829E-02	FAIL ABUN
TM-171	2.158E+01	NOT IDENT.
HF-172	2.343E-01	FAIL ABUN
LU-172	5.170E-02	FAIL ABUN
LU-176	3.056E-02	FAIL ABUN
HF-181	6.037E-02	NOT IDENT.
TA-182	1.526E-01	FAIL ABUN
RE-183	2.973E-01	NOT IDENT.
RE-184	1.765E-01	NOT IDENT.
W-188	8.759E+00	FAIL ABUN
IR-192	4.217E-02	FAIL ABUN
HG-203	5.529E-02	FAIL ABUN
TL-204	5.486E+00	FAIL ABUN
BI-207	6.451E-02	FAIL ABUN
BI-210	4.770E+00	NOT IDENT.
PB-210	4.770E+00	NOT IDENT.
PB-211	7.877E-01	NOT IDENT.
BI-213	1.152E-01	NOT IDENT.
RN-219	4.419E-01	FAIL ABUN
RA-223	7.667E-01	FAIL ABUN
AC-227	2.661E-01	NOT IDENT.
TH-227	2.661E-01	NOT IDENT.
TH-229	5.640E-01	FAIL ABUN
TH-231	7.667E-01	FAIL ABUN
PA-233	7.551E-02	FAIL ABUN
PA-234	2.949E-01	NOT IDENT.
NP-237	7.551E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.995E-01	NOT IDENT.
PU-239	4.190E+02	FAIL ABUN
AM-241	1.869E-01	NOT IDENT.
CM-243	1.062E-01	NOT IDENT.
BK-247	8.150E-02	FAIL ABUN
CM-247	4.038E-02	NOT IDENT.
CF-249	4.158E-02	NOT IDENT.
CF-251	1.551E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:28:14.42

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378007.CNF;1  *
* Acquisition date : 10-MAY-2025 10:26:44 Sensitivity     : 3.000           *
* Detector ID      : GAM29                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:08:00 Nuclide Library : SOLID           *
* Sample ID        : G719378007           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 9.4890E+01 GRAM *
*                                         Quantity Err(%) : 1.0539E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 09:02:37 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;19            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	6.112E+00	1.335E+00	1.335E+00
SR-82	5.207E-01	1.009E+00	1.009E+00
CD-109	2.896E+00	1.793E+00	1.793E+00
SN-126	2.760E-01	1.703E-01	1.703E-01
BA-137M	3.340E-01	9.236E-02	9.236E-02
CS-137	3.529E-01	9.756E-02	9.756E-02
CE-139	4.869E-02	6.768E-02	6.768E-02
TL-208	4.858E-01	1.332E-01	1.332E-01
BI-211	7.343E+00	1.069E+00	1.069E+00
BI-212	1.955E+00	1.035E+00	1.035E+00
PB-212	1.767E+00	2.281E-01	2.281E-01
BI-214	2.567E+00	3.677E-01	3.677E-01
PB-214	2.665E+00	3.856E-01	3.856E-01
RN-222	2.567E+00	3.677E-01	3.677E-01
RA-224	6.806E+00	2.121E+00	2.121E+00
AC-225	2.081E+00	3.787E+00	3.787E+00
RA-226	2.665E+00	3.856E-01	3.856E-01
AC-228	1.691E+00	5.241E-01	5.241E-01
RA-228	1.691E+00	5.241E-01	5.241E-01
TH-228	1.767E+00	2.281E-01	2.281E-01
TH-230	2.665E+00	3.856E-01	3.856E-01
PA-231	2.461E+00	1.779E+00	1.779E+00
TH-232	1.691E+00	5.241E-01	5.241E-01
PA-234M	4.898E+00	2.924E+00	2.924E+00
TH-234	4.898E+00	2.924E+00	2.924E+00
U-234	2.665E+00	3.856E-01	3.856E-01
U-235	3.291E-01	3.499E-01	3.499E-01
U-238	4.898E+00	2.924E+00	2.924E+00
AM-243	4.774E-01	1.376E-01	1.376E-01
ANH-511	1.097E-01	1.141E-01	1.141E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)

BE-7	-2.826E-01	5.050E-01	5.208E-01	NOT IDENT.
NA-22	-1.405E-02	5.400E-02	5.437E-02	NOT IDENT.
NA-24	3.250E+13	1.257E+14	1.266E+14	SHORT HLIF
AL-26	2.728E-02	4.495E-02	4.660E-02	NOT IDENT.
SC-46	-4.199E-03	5.134E-02	5.138E-02	FAIL ABUN
V-48	8.269E-02	1.207E-01	1.263E-01	FAIL ABUN
CR-51	1.789E-01	6.546E-01	6.595E-01	NOT IDENT.
MN-52	3.794E+00	3.066E+00	3.511E+00	FAIL ABUN
MN-54	1.239E-02	5.025E-02	5.056E-02	NOT IDENT.
CO-56	1.063E-02	6.073E-02	6.092E-02	FAIL ABUN
MN-56	1.000E+41	5.714E+41	0.000E+00	SHORT HLIF
CO-57	2.668E-02	3.435E-02	3.639E-02	NOT IDENT.
CO-58	-2.362E-02	5.402E-02	5.506E-02	NOT IDENT.
FE-59	-1.183E-02	1.322E-01	1.323E-01	NOT IDENT.
CO-60	4.054E-02	5.310E-02	5.616E-02	NOT IDENT.
ZN-65	4.523E-02	1.245E-01	1.261E-01	NOT IDENT.
GE-68	5.749E-01	1.581E+00	1.603E+00	NOT IDENT.
AS-73	6.753E-01	1.442E+00	1.474E+00	NOT IDENT.
AS-74	-7.027E-02	2.377E-01	2.398E-01	NOT IDENT.
SE-75	3.846E-02	6.075E-02	6.318E-02	NOT IDENT.
BR-77	3.807E+04	3.553E+04	3.946E+04	SHORT HLIF
RB-83	-6.707E-02	9.436E-02	9.909E-02	NOT IDENT.
RB-84	-3.003E-02	1.017E-01	1.026E-01	NOT IDENT.
KR-85	9.471E+00	9.314E+00	1.025E+01	NOT IDENT.
SR-85	5.985E-02	5.895E-02	6.483E-02	NOT IDENT.
RB-86	7.922E-01	1.755E+00	1.791E+00	NOT IDENT.
Y-88	2.051E-02	5.193E-02	5.275E-02	NOT IDENT.
Y-91	1.872E+01	2.835E+01	2.958E+01	NOT IDENT.
NB-94	1.526E-01	1.357E-01	1.521E-01	FAIL ABUN
NB-95	1.181E-01	8.207E-02	9.783E-02	NOT IDENT.
NB-95M	9.594E-02	2.298E-01	2.338E-01	NOT IDENT.
ZR-95	2.464E-02	1.059E-01	1.064E-01	NOT IDENT.
NB-97	-1.000E+41	2.393E+41	0.000E+00	SHORT HLIF
ZR-97	2.799E+13	3.987E+13	4.182E+13	SHORT HLIF
MO-99	-8.841E+02	1.280E+03	1.341E+03	SHORT HLIF
TC-99M	2.045E+36	1.047E+37	0.000E+00	SHORT HLIF
RH-101	-3.215E-02	4.972E-02	5.179E-02	NOT IDENT.
RH-102	-1.966E-02	6.662E-02	6.720E-02	FAIL ABUN
RU-103	6.050E-02	5.554E-02	6.187E-02	FAIL ABUN
RH-106	-3.979E-01	3.640E-01	4.058E-01	NOT IDENT.
RU-106	-3.979E-01	3.640E-01	4.058E-01	NOT IDENT.
AG-108M	-1.502E-02	3.793E-02	3.853E-02	NOT IDENT.
AG-110	-2.063E-01	1.020E+00	1.024E+00	NOT IDENT.
AG-110M	-1.180E-02	6.028E-02	6.052E-02	NOT IDENT.
SN-113	-3.167E-03	6.317E-02	6.319E-02	NOT IDENT.
CD-115	6.856E+02	2.477E+03	2.496E+03	SHORT HLIF
SN-117M	9.986E-02	1.887E-01	1.940E-01	NOT IDENT.
SB-122	2.898E+01	1.931E+02	1.936E+02	SHORT HLIF
TE-123M	-7.997E-03	4.607E-02	4.621E-02	NOT IDENT.
SB-124	-3.867E-02	1.041E-01	1.055E-01	NOT IDENT.
SB-125	-1.510E-02	1.308E-01	1.310E-01	FAIL ABUN
TE-125M	1.368E+00	1.557E+01	1.558E+01	NOT IDENT.
I-126	2.399E-01	8.252E-01	8.322E-01	NOT IDENT.
SB-126	1.403E-02	4.656E-01	4.656E-01	NOT IDENT.
SB-127	-4.106E+00	3.095E+01	3.101E+01	NOT IDENT.
I-131	-6.030E-03	6.288E-01	6.288E-01	NOT IDENT.
I-132	-1.000E+41	3.220E+41	0.000E+00	SHORT HLIF
TE-132	-7.012E+00	4.131E+01	4.143E+01	SHORT HLIF
BA-133	9.460E-03	5.804E-02	5.819E-02	FAIL ABUN
I-133	1.323E+09	4.810E+09	4.847E+09	SHORT HLIF
CS-134	1.991E-02	6.077E-02	6.143E-02	NOT IDENT.
I-135	3.588E+33	2.709E+34	0.000E+00	SHORT HLIF
CS-136	1.746E-01	2.554E-01	2.672E-01	FAIL ABUN
LA-138	3.404E-03	8.820E-02	8.821E-02	NOT IDENT.
BA-140	-5.948E-02	8.457E-01	8.461E-01	NOT IDENT.
LA-140	9.779E-03	2.777E-01	2.778E-01	FAIL ABUN
CE-141	6.721E-03	1.246E-01	1.246E-01	NOT IDENT.
CE-143	2.252E+06	9.807E+05	1.411E+06	SHORT HLIF
CE-144	-1.051E-01	2.922E-01	2.961E-01	NOT IDENT.
PM-144	1.831E-02	4.250E-02	4.329E-02	NOT IDENT.
PR-144	1.434E+00	3.217E+00	3.281E+00	NOT IDENT.
PM-146	4.591E-02	5.686E-02	6.051E-02	NOT IDENT.
ND-147	2.817E-01	1.722E+00	1.727E+00	FAIL ABUN
PM-147	4.591E+02	9.834E+02	1.005E+03	NOT IDENT.
PM-149	-5.430E+03	2.243E+04	2.256E+04	SHORT HLIF
EU-150	-1.194E-02	4.352E-02	4.386E-02	FAIL ABUN
EU-152	-3.345E-02	1.412E-01	1.421E-01	FAIL ABUN
GD-153	-5.297E-02	1.182E-01	1.206E-01	NOT IDENT.

EU-154	-4.261E-02	1.511E-01	1.523E-01	NOT IDENT.
EU-155	1.774E-01	1.413E-01	1.623E-01	FAIL ABUN
TB-160	-8.096E-02	1.964E-01	1.997E-01	FAIL ABUN
HO-166M	1.049E-03	7.988E-02	7.989E-02	FAIL ABUN
TM-171	-9.286E+00	2.690E+01	2.722E+01	NOT IDENT.
HF-172	2.330E-01	2.954E-01	3.135E-01	FAIL ABUN
LU-172	-4.863E-02	7.111E-02	7.442E-02	FAIL ABUN
LU-176	-1.144E-02	4.090E-02	4.122E-02	FAIL ABUN
HF-181	2.730E-02	6.859E-02	6.969E-02	NOT IDENT.
TA-182	-3.604E-02	1.890E-01	1.897E-01	FAIL ABUN
RE-183	2.403E-01	3.428E-01	3.595E-01	NOT IDENT.
RE-184	5.629E-02	2.186E-01	2.201E-01	NOT IDENT.
W-188	8.574E-01	1.120E+01	1.121E+01	FAIL ABUN
IR-192	-5.494E-04	4.931E-02	4.931E-02	FAIL ABUN
HG-203	-8.109E-02	7.073E-02	7.962E-02	FAIL ABUN
TL-204	-6.769E-01	7.241E+00	7.248E+00	FAIL ABUN
BI-207	2.518E-02	6.530E-02	6.628E-02	FAIL ABUN
BI-210	-2.639E+00	5.819E+00	5.939E+00	NOT IDENT.
PB-210	-2.639E+00	5.819E+00	5.939E+00	NOT IDENT.
PB-211	-8.008E-02	9.405E-01	9.412E-01	NOT IDENT.
BI-213	9.541E-03	1.359E-01	1.360E-01	NOT IDENT.
RN-219	-1.085E-01	5.345E-01	5.367E-01	FAIL ABUN
RA-223	6.617E-01	9.199E-01	9.670E-01	FAIL ABUN
AC-227	-8.623E-02	3.151E-01	3.175E-01	NOT IDENT.
TH-227	-8.623E-02	3.151E-01	3.175E-01	NOT IDENT.
TH-229	1.552E-01	6.977E-01	7.012E-01	FAIL ABUN
TH-231	6.617E-01	9.199E-01	9.670E-01	FAIL ABUN
PA-233	-1.090E-03	8.823E-02	8.823E-02	FAIL ABUN
PA-234	6.942E-02	3.629E-01	3.642E-01	NOT IDENT.
NP-237	-1.090E-03	8.823E-02	8.823E-02	FAIL ABUN
NP-238	2.891E+03	4.218E+03	4.414E+03	SHORT HLIF
NP-239	1.516E-01	3.578E-01	3.643E-01	NOT IDENT.
PU-239	3.533E+02	6.299E+02	6.497E+02	FAIL ABUN
AM-241	4.389E-02	2.397E-01	2.405E-01	NOT IDENT.
CM-243	-1.969E-01	1.477E-01	1.723E-01	NOT IDENT.
BK-247	2.658E-02	1.016E-01	1.023E-01	FAIL ABUN
CM-247	-1.629E-02	4.958E-02	5.012E-02	NOT IDENT.
CF-249	-9.097E-03	5.010E-02	5.026E-02	NOT IDENT.
CF-251	-1.297E-02	1.961E-01	1.962E-01	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	107.5876	85.43	124.3055	131.20	98.8953
45.60	105.2129	86.55	124.5323	133.02	88.6044
46.54	116.1910	86.79	152.0299	133.52	96.9245
49.72	0.0000	86.94	152.0673	136.00	84.7813
51.35	95.7719	87.09	152.1046	136.47	89.3536
51.87	92.9182	87.57	152.2222	140.51	0.0000
52.39	94.0154	88.03	105.7877	143.76	92.4104
52.97	93.1455	88.34	105.8403	144.24	92.4611
53.44	82.3304	88.47	105.8624	145.44	76.2054
54.07	93.3703	89.96	99.0392	152.43	95.6331
57.36	0.0000	1093.63	99.1453	153.25	81.8814
57.53	88.0594	91.11	99.2187	323.87	79.6591
57.98	94.1517	92.59	99.4479	156.02	105.2687
59.27	104.4467	93.35	99.5654	158.56	85.8414
59.32	104.4574	94.56	105.4506	159.00	96.3284
59.54	105.8444	94.65	105.4649	162.33	81.5335
60.96	95.4016	94.67	105.4679	162.66	80.7856
61.17	98.1305	94.87	105.5003	163.33	83.9520
62.93	102.1863	97.43	92.3139	165.86	88.8549
63.29	102.2591	98.43	112.8779	176.31	69.7294
63.58	116.1626	98.44	112.8795	176.60	82.7544
64.28	112.2647	99.53	83.9890	177.52	94.6643
66.73	113.1375	100.11	86.2164	181.07	0.0000
67.24	124.4703	102.03	91.8637	181.52	101.3802
125.81	116.4057	103.18	110.4201	184.41	77.4444
67.75	116.4205	103.37	110.4505	143.76	77.5446
68.89	125.8819	105.21	70.5716	193.51	67.3118
69.67	124.3576	105.31	70.5817	197.03	90.4495
70.82	116.4046	106.12	80.4474	198.01	79.6691
70.83	116.4072	106.47	94.6272	201.83	82.3759
72.81	117.5164	109.28	82.9899	203.43	84.9237
72.87	117.5286	111.00	88.6611	205.31	89.1210
74.66	117.9069	111.76	0.0000	210.85	86.3126
74.82	117.9408	114.06	94.5284	215.65	83.4104
74.97	117.9722	116.30	0.0000	218.12	78.6748
77.11	118.4175	116.74	79.4262	222.11	85.5283
78.74	129.1692	119.76	77.5291	227.09	71.8539
79.69	116.8586	121.12	79.8860	227.38	70.6325
80.03	115.5333	121.22	73.2384	228.16	0.0000
80.12	98.8463	121.78	65.5184	228.18	75.6413
80.19	98.8579	122.06	67.7640	116.74	75.6413
80.57	102.4046	122.92	94.5303	235.69	73.2080
81.00	127.5763	123.07	104.5595	235.96	79.8809
81.07	108.7663	265.00	102.4156	238.63	75.0540
81.75	114.4750	125.81	81.8583	238.98	0.0000
82.47	128.5917	127.23	104.3702	240.99	75.1996
83.79	116.2662	127.91	101.4757	242.00	75.2618
84.00	116.3067	129.30	87.4501	244.70	55.3129

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	51.4390	344.28	58.4910	563.25	35.3404
252.80	59.0468	345.93	55.3990	564.24	0.0000
254.15	0.0000	351.06	50.6076	569.33	30.3723
256.23	58.3605	351.93	50.6349	946.00	30.3748
260.90	0.0000	355.39	0.0000	569.70	30.3772
264.66	37.0332	356.01	38.0736	583.19	25.4639
264.80	37.0377	364.49	38.2727	584.27	25.4761
265.00	42.1523	366.42	0.0000	595.83	28.6745
269.46	46.9960	372.51	41.2051	427.87	24.6270
270.03	47.0161	375.05	35.7659	602.52	0.0000
271.23	48.7698	377.52	36.7367	604.72	24.6699
273.65	52.7152	356.01	36.8742	607.14	30.8691
276.40	55.8303	388.16	37.8920	609.32	25.7477
277.37	51.5723	388.63	33.2798	610.33	25.7589
277.60	55.8792	391.69	37.9695	614.28	21.6725
278.00	59.3362	264.66	33.5112	618.01	13.4369
279.20	83.4876	401.81	40.9850	620.36	14.4848
279.54	77.4829	402.40	42.8620	621.93	23.8114
279.70	77.4921	404.85	40.1227	630.19	0.0000
280.46	55.9969	410.95	42.1326	631.29	21.8246
283.69	57.8576	413.71	32.8203	633.25	13.5210
284.31	53.5638	414.70	38.4684	634.78	22.8961
285.41	47.5543	423.72	42.4310	635.95	26.0305
285.90	0.0000	427.09	41.5642	636.99	23.9583
287.50	51.0896	427.87	42.5272	657.50	20.4791
290.67	44.2629	433.94	36.0301	657.76	20.4815
293.27	0.0000	439.40	40.8899	657.90	0.0000
351.93	40.4888	440.45	33.3010	661.66	17.8826
295.96	40.5106	453.88	27.7875	664.57	0.0000
879.38	36.6577	463.37	31.7754	666.33	23.7122
299.98	48.4880	468.07	28.9563	666.50	23.7131
300.09	48.4914	473.00	27.0931	667.71	0.0000
300.13	48.4925	475.06	24.2157	677.62	11.6432
301.36	48.5343	476.78	26.1755	685.70	16.9883
302.85	48.5851	477.60	32.9749	692.65	0.0000
256.23	48.6415	482.18	22.3575	695.00	11.1879
304.85	48.6528	487.02	24.3601	696.49	17.0579
306.78	59.2520	492.35	0.0000	696.51	17.0579
308.46	50.0919	497.08	11.7505	697.00	17.0612
311.90	53.7337	505.52	29.4965	697.30	17.0632
316.51	41.5314	507.63	0.0000	697.49	17.0645
319.41	33.6443	511.00	25.6305	702.65	17.0970
320.08	35.4305	514.00	25.6667	706.68	17.1230
321.04	46.0893	514.00	25.6667	711.68	17.6910
323.87	41.2920	520.40	26.7352	720.70	18.0729
325.23	38.6634	520.69	0.0000	721.93	0.0000
328.76	45.4354	522.65	0.0000	722.78	24.2230
333.37	49.5934	527.90	0.0000	722.91	24.2239
333.97	61.6805	528.26	16.8949	723.31	22.6124
334.37	63.0372	529.59	21.8774	724.19	21.0044
338.28	51.9914	529.87	0.0000	727.33	12.9404
338.32	51.9926	531.02	16.9163	733.00	14.0479
311.90	49.8215	537.26	20.9573	735.93	19.4714
340.48	49.8215	546.56	0.0000	333.97	18.4001
340.55	49.8238	552.55	31.1526	739.50	0.0000

ENERGY	MDA COUNTS
744.23	23.8700
747.24	15.2060
748.06	18.4699
752.31	21.7627
753.82	17.4193
756.73	16.3477
756.80	16.3477
884.68	24.5837
765.81	18.0395
766.84	22.9679
772.60	0.0000
776.52	11.5228
739.50	0.0000
778.90	14.8271
783.70	16.5021
788.74	21.4900
792.07	33.0994
795.86	19.8853
810.06	12.2103
810.29	14.4314
344.28	14.4325
810.76	16.6547
815.77	14.4584
1048.07	14.4716
832.01	20.1270
834.85	17.9076
835.71	16.7926
836.80	0.0000
846.75	0.0000
846.77	16.8536
856.80	11.8356
860.56	21.4430
871.09	13.5884
873.19	10.1982
875.33	0.0000
879.38	13.6240
880.51	11.3574
881.60	11.3615
883.24	9.0938
884.68	13.6470
889.28	12.5276
894.76	10.2675
898.04	13.7036
900.72	16.0012
903.28	12.3535
911.20	14.9064
912.08	14.9101
923.98	0.0000
926.50	16.1277
929.11	17.2931
935.54	10.3960
937.49	13.8696
944.13	16.2131
946.00	11.5873
949.00	15.0773

ENERGY	MDA COUNTS
667.71	0.0000
962.31	15.7187
964.08	22.7167
966.17	25.6443
911.20	25.6658
983.53	11.2469
984.45	0.0000
1274.44	4.2331
1002.74	8.8351
1004.73	8.8403
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	7.1382
1038.76	0.0000
631.29	7.1553
1048.07	5.7266
1049.04	7.1602
1050.41	10.0283
1063.66	8.6268
1077.00	10.8223
1077.34	11.7249
1085.87	12.6559
1093.63	14.4941
1099.45	12.7020
1112.07	11.8336
1112.84	17.2988
1115.54	13.1203
1120.29	16.4202
1120.55	16.4213
1221.41	10.2197
1129.67	14.6318
1131.51	0.0000
1147.95	0.0000
1173.23	8.3221
1177.95	9.2578
1189.05	7.4268
1204.77	9.3195
1221.41	9.3573
1231.02	5.0023
1235.36	6.0090
1238.28	9.0199
1260.41	0.0000
1271.87	4.3298
1274.44	10.6142
1274.54	10.6142
1291.59	5.7089
1298.22	0.0000
1312.11	12.4287
1332.49	7.6841
1362.66	0.0000
1365.19	6.7731
1368.63	0.0000
1384.29	4.8584
1408.01	13.6744

ENERGY	MDA COUNTS
1434.09	5.8934
1435.80	11.7913
1457.56	0.0000
1460.82	5.9268
1489.16	9.9371
1505.03	15.9512
1584.12	12.9656
1596.21	4.8738
1620.50	4.0808
1621.92	6.1227
1678.03	0.0000
1690.97	4.1360
1750.46	0.0000
1764.49	1.6769
1063.66	2.0983
1771.35	2.0986
1791.20	0.0000
1808.65	3.1690
1810.72	0.0000
1836.06	3.1844

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:28:41.49

```
*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378008.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM32.CNF;687
                                         Background date  : 5-MAY-2025 11:23:26.
Sample date      : 8-APR-2025 10:14:00. Acquisition date : 10-MAY-2025 10:27:17
Sample ID        : G719378008           Sample quantity  : 1.20850E+02 GRAM
Detector name    : GAM32                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.60  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	67.89	19	108	1.28	136.30	132	8	5.18E-03	99.2	
2	2	74.69*	86	81	1.15	149.90	146	13	2.39E-02	21.2	1.85E+00
3	2	77.05*	133	81	1.16	154.62	146	13	3.71E-02	14.9	
4	0	87.11	59	89	1.22	174.74	172	6	1.64E-02	28.6	
5	0	93.13*	79	124	1.53	186.77	183	11	2.20E-02	30.6	
6	0	154.86	26	70	0.67	310.24	307	8	7.31E-03	58.3	
7	0	186.09*	85	107	1.65	372.69	367	13	2.36E-02	28.6	
8	4	238.67*	318	40	1.06	477.86	473	16	8.85E-02	6.5	1.89E+00
9	4	241.81	83	52	1.52	484.14	473	16	2.31E-02	20.2	
10	0	270.96	21	60	0.80	542.43	539	9	5.93E-03	68.4	
11	0	278.11	14	38	0.94	556.73	553	7	3.93E-03	77.2	
12	0	295.36	124	36	0.99	591.23	587	8	3.45E-02	12.3	
13	0	338.74*	44	59	1.25	677.98	671	14	1.22E-02	40.5	
14	0	352.00	149	76	1.02	704.51	699	11	4.15E-02	13.9	
15	0	359.83	10	21	0.80	720.16	715	8	2.70E-03	89.0	
16	1	373.30	14	14	1.44	747.11	744	14	3.80E-03	51.9	1.55E+00
17	1	376.75	16	10	1.31	754.00	744	14	4.51E-03	45.3	
18	0	445.55	19	5	1.58	891.61	889	6	5.19E-03	30.8	
19	0	462.93	25	20	1.21	926.36	923	8	6.94E-03	36.9	
20	0	489.20	17	14	3.06	978.90	973	10	4.75E-03	48.4	
21	0	511.35*	47	24	2.09	1023.21	1017	15	1.30E-02	34.1	
22	0	518.10	24	11	1.74	1036.71	1032	11	6.67E-03	33.7	
23	0	583.18*	78	29	1.30	1166.86	1162	11	2.18E-02	17.6	
24	0	609.32*	139	31	1.43	1219.14	1214	13	3.87E-02	11.8	
25	0	685.70	30	48	9.31	1371.90	1351	32	8.33E-03	71.6	
26	0	728.37	18	24	1.76	1457.25	1450	16	5.00E-03	65.3	
27	0	796.54	13	19	2.73	1593.59	1583	13	3.65E-03	74.4	
28	0	819.16	11	3	1.42	1638.83	1635	8	3.00E-03	43.5	
29	0	844.00	10	3	0.83	1688.51	1685	7	2.78E-03	43.7	
30	0	861.28	15	18	1.02	1723.08	1717	11	4.12E-03	62.6	
31	0	911.59*	64	20	1.71	1823.71	1814	20	1.79E-02	21.4	
32	0	964.80	18	2	1.53	1930.12	1925	10	4.90E-03	29.1	
33	0	969.04	38	17	1.09	1938.61	1934	11	1.05E-02	26.5	
34	0	987.52	21	0	4.64	1975.57	1970	12	5.83E-03	21.8	

Sample ID : G719378008 Acquisition date : 10-MAY-2025 10:27:17

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1000.83	17	6	1.72	2002.18	1995	11	4.58E-03	36.9	
36	0	1116.40	11	2	1.44	2233.34	2228	9	3.08E-03	38.4	
37	0	1120.72*	26	12	1.36	2241.99	2237	11	7.17E-03	33.2	
38	0	1142.06	8	4	0.65	2284.65	2280	8	2.34E-03	53.1	
39	0	1237.63*	33	3	3.08	2475.82	2469	13	9.09E-03	21.2	
40	0	1280.87	6	2	1.19	2562.30	2558	7	1.53E-03	57.7	
41	0	1460.81*	148	10	1.92	2922.20	2916	13	4.10E-02	9.4	
42	0	1692.10	6	0	0.99	3384.83	3379	10	1.67E-03	40.8	
43	0	1764.33*	26	0	2.00	3529.31	3523	12	7.24E-03	21.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:28:42

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378008.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : RXF2
Sample date : 8-APR-2025 10:14:00 Acquisition date : 10-MAY-2025 10:27:17
Sample ID : G719378008 Sample quantity : 120.85 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA32 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.60 0.0%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
TL-208	277.37	HG-203	279.20

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.094E+00	7.450E+00	7.450E+00	18.83	OK
ZN-65	1115.54	50.60*	1.395E+00	9.370E-02	1.026E-01	76.74	OK
CD-109	88.03	3.70*	4.843E+00	2.237E+00	2.347E+00	57.12	OK
SB-124	722.78	10.76	2.111E+00	-----	Line Not Found	-----	Absent
	1690.97	47.57*	9.911E-01	7.424E-02	1.074E-01	81.65	OK
SN-126	64.28	9.60	2.142E+00	-----	Line Not Found	-----	Absent
	86.94	8.90	4.843E+00	9.299E-01	9.299E-01	57.12	OK
	87.57	37.00*	4.843E+00	2.237E-01	2.237E-01	57.12	OK
HG-203	70.83	3.69	3.019E+00	-----	Line Not Found	-----	Absent
	72.87	6.19	3.285E+00	-----	Line Not Found	-----	Absent
	279.20	81.56*	4.308E+00	7.329E-03	1.180E-02	552.03	OK
TL-208	277.37	6.60	4.316E+00	-----	Line Not Found	-----	<<INT Reject
	583.19	85.00*	2.532E+00	2.250E-01	2.250E-01	35.27	OK
	860.56	12.50	1.796E+00	3.997E-01	3.997E-01	125.12	OK
BI-211	72.87	1.23	3.285E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	3.667E+00	2.001E+00	2.001E+00	27.74	OK
BI-212	727.33	6.67*	2.097E+00	7.863E-01	7.863E-01	130.53	OK
	1620.50	1.47	1.016E+00	-----	Line Not Found	-----	Absent
PB-212	74.82	10.28	3.515E+00	1.636E+00	1.636E+00	42.47	OK
	77.11	17.10	3.802E+00	1.405E+00	1.405E+00	29.73	OK
	238.63	43.60*	4.771E+00	9.913E-01	9.913E-01	12.94	OK
	300.09	3.30	4.091E+00	-----	Line Not Found	-----	Absent
BI-214	609.32	45.49*	2.443E+00	7.730E-01	7.731E-01	23.68	OK
	1120.29	14.92	1.389E+00	7.432E-01	7.432E-01	66.35	OK
	1764.49	15.30	9.712E-01	1.021E+00	1.021E+00	42.18	OK
PB-214	74.82	5.80	3.515E+00	2.899E+00	2.899E+00	42.47	OK
	77.11	9.70	3.802E+00	2.477E+00	2.477E+00	29.73	OK
	87.09	3.41	4.843E+00	2.427E+00	2.427E+00	57.12	OK
	242.00	7.25	4.731E+00	1.570E+00	1.570E+00	40.41	OK
	295.22	18.42	4.136E+00	1.044E+00	1.044E+00	24.53	OK
	351.93	35.60*	3.667E+00	7.263E-01	7.263E-01	27.74	OK
RN-222	609.32	45.49*	2.443E+00	7.730E-01	7.731E-01	23.68	OK
	1120.29	14.92	1.389E+00	7.432E-01	7.432E-01	66.35	OK
	1764.49	15.30	9.712E-01	1.021E+00	1.021E+00	42.18	OK
RA-224	240.99	4.10*	4.731E+00	2.776E+00	2.776E+00	40.41	OK
RA-226	74.82	5.80	3.515E+00	2.899E+00	2.899E+00	42.47	OK
	77.11	9.70	3.802E+00	2.477E+00	2.477E+00	29.73	OK
	87.09	3.41	4.843E+00	2.427E+00	2.427E+00	57.12	OK
	242.00	7.25	4.731E+00	1.570E+00	1.570E+00	40.41	OK
	295.22	18.42	4.136E+00	1.044E+00	1.044E+00	24.53	OK
	351.93	35.60*	3.667E+00	7.263E-01	7.263E-01	27.74	OK
AC-228	105.21	1.10	5.932E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.765E+00	6.587E-01	6.587E-01	81.10	OK
	835.71	1.61	1.848E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.700E+00	8.862E-01	8.862E-01	42.72	OK
	968.97	15.80	1.602E+00	8.974E-01	8.974E-01	53.06	OK
RA-228	105.21	1.10	5.932E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.765E+00	6.587E-01	6.587E-01	81.10	OK
	835.71	1.61	1.848E+00	-----	Line Not Found	-----	Absent

Sample ID : G719378008 Acquisition date : 10-MAY-2025 10:27:17

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	911.20	25.80*	1.700E+00	8.862E-01	8.862E-01	42.72	OK
	968.97	15.80	1.602E+00	8.974E-01	8.974E-01	53.06	OK
TH-228	74.82	10.28	3.515E+00	1.636E+00	1.636E+00	42.47	OK
	77.11	17.10	3.802E+00	1.405E+00	1.405E+00	29.73	OK
	238.63	43.60*	4.771E+00	9.913E-01	9.913E-01	12.94	OK
	300.09	3.30	4.091E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	3.515E+00	2.899E+00	2.899E+00	42.47	OK
	77.11	9.70	3.802E+00	2.477E+00	2.477E+00	29.73	OK
	87.09	3.41	4.843E+00	2.427E+00	2.427E+00	57.12	OK
	242.00	7.25	4.731E+00	1.570E+00	1.570E+00	40.41	OK
	295.22	18.42	4.136E+00	1.044E+00	1.044E+00	24.53	OK
	351.93	35.60*	3.667E+00	7.263E-01	7.263E-01	27.74	OK
TH-232	105.21	1.10	5.932E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.765E+00	6.587E-01	6.587E-01	81.10	OK
	835.71	1.61	1.848E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.700E+00	8.862E-01	8.862E-01	42.72	OK
	968.97	15.80	1.602E+00	8.974E-01	8.974E-01	53.06	OK
U-234	74.82	5.80	3.515E+00	2.899E+00	2.899E+00	42.47	OK
	77.11	9.70	3.802E+00	2.477E+00	2.477E+00	29.73	OK
	87.09	3.41	4.843E+00	2.427E+00	2.427E+00	57.12	OK
	242.00	7.25	4.731E+00	1.570E+00	1.570E+00	40.41	OK
	295.22	18.42	4.136E+00	1.044E+00	1.044E+00	24.53	OK
	351.93	35.60*	3.667E+00	7.263E-01	7.263E-01	27.74	OK
AM-243	43.53	5.90	1.705E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	3.515E+00	2.502E-01	2.502E-01	42.47	OK
ANH-511	511.00	100.00*	2.805E+00	1.042E-01	1.042E-01	68.21	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:28:43.99

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378008.CNF;1  *
* Acquisition date : 10-MAY-2025 10:27:17 Sensitivity     : 3.000           *
* Detector ID      : GAM32                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.60     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:14:00 Analyst initials: RXF2            *
* Sample ID        : G719378008           Sample Quantity : 1.2085E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 17-JUL-2024 09:18:46 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM32_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	7.450E+00	1.374E+00	8.326E-01
ZN-65	1.026E-01	7.717E-02	1.018E-01
CD-109	2.347E+00	1.314E+00	1.582E+00
SB-124	1.074E-01	8.590E-02	1.773E-01
SN-126	2.237E-01	1.252E-01	1.531E-01
HG-203	1.180E-02	6.385E-02	8.110E-02
TL-208	2.250E-01	7.775E-02	6.636E-02
BI-211	2.001E+00	5.440E-01	3.282E-01
BI-212	7.863E-01	1.006E+00	7.570E-01
PB-212	9.913E-01	1.257E-01	9.255E-02
BI-214	7.731E-01	1.794E-01	9.362E-02
PB-214	7.263E-01	1.974E-01	1.194E-01
RN-222	7.731E-01	1.794E-01	9.362E-02
RA-224	2.776E+00	1.099E+00	9.914E-01
RA-226	7.263E-01	1.974E-01	1.194E-01
AC-228	8.862E-01	3.710E-01	2.093E-01
RA-228	8.862E-01	3.710E-01	2.093E-01
TH-228	9.913E-01	1.257E-01	9.255E-02
TH-230	7.263E-01	1.974E-01	1.194E-01
TH-232	8.862E-01	3.710E-01	2.093E-01
U-234	7.263E-01	1.974E-01	1.194E-01
AM-243	2.502E-01	1.041E-01	1.024E-01
ANH-511	1.042E-01	6.965E-02	4.525E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	2.423E-01	3.715E-01	7.846E-01	NOT IDENT.
NA-22	1.364E-02	2.868E-02	7.000E-02	NOT IDENT.
NA-24	0.000E+00	6.795E+13	0.000E+00	SHORT HLIF
AL-26	-5.312E-04	2.591E-02	5.985E-02	NOT IDENT.
SC-46	-5.378E-03	3.263E-02	6.347E-02	FAIL ABUN
V-48	-4.784E-02	1.390E-01	2.161E-01	NOT IDENT.
CR-51	8.775E-02	5.338E-01	1.064E+00	NOT IDENT.

MN-52	1.793E+00	1.639E+00	4.451E+00	NOT IDENT.
MN-54	1.030E-02	3.407E-02	6.970E-02	NOT IDENT.
CO-56	9.583E-03	3.914E-02	7.474E-02	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-6.831E-04	2.570E-02	4.735E-02	NOT IDENT.
CO-58	-1.793E-02	3.997E-02	7.109E-02	NOT IDENT.
FE-59	-4.742E-02	6.294E-02	1.101E-01	NOT IDENT.
CO-60	6.582E-03	3.048E-02	6.967E-02	NOT IDENT.
GE-68	-2.178E-01	1.271E+00	2.522E+00	NOT IDENT.
AS-73	-3.175E-01	1.764E+00	3.348E+00	NOT IDENT.
AS-74	5.697E-02	1.618E-01	3.314E-01	NOT IDENT.
SE-75	-1.085E-02	4.522E-02	7.881E-02	FAIL ABUN
BR-77	0.000E+00	2.705E+03	0.000E+00	SHORT HLIF
SR-82	1.854E-01	4.743E-01	9.878E-01	NOT IDENT.
RB-83	-4.353E-03	6.979E-02	1.234E-01	NOT IDENT.
RB-84	5.140E-02	1.095E-01	2.232E-01	NOT IDENT.
KR-85	3.965E+00	6.552E+00	1.275E+01	NOT IDENT.
SR-85	2.500E-02	4.146E-02	8.063E-02	NOT IDENT.
RB-86	-1.554E-01	1.455E+00	2.914E+00	NOT IDENT.
Y-88	3.188E-02	3.901E-02	1.051E-01	NOT IDENT.
Y-91	8.232E+00	1.940E+01	4.388E+01	NOT IDENT.
NB-94	6.469E-03	3.783E-02	7.269E-02	NOT IDENT.
NB-95	-5.770E-02	6.091E-02	9.807E-02	NOT IDENT.
NB-95M	8.933E-02	1.421E-01	2.550E-01	NOT IDENT.
ZR-95	2.797E-02	9.381E-02	1.858E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	2.593E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	7.701E+02	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	5.793E+36	0.000E+00	SHORT HLIF
RH-101	-1.529E-02	3.114E-02	5.472E-02	NOT IDENT.
RH-102	2.193E-02	4.811E-02	1.011E-01	NOT IDENT.
RU-103	8.632E-03	4.851E-02	9.734E-02	FAIL ABUN
RH-106	5.555E-02	3.155E-01	6.251E-01	NOT IDENT.
RU-106	5.555E-02	3.155E-01	6.251E-01	NOT IDENT.
AG-108M	5.596E-03	2.708E-02	5.442E-02	NOT IDENT.
AG-110	-6.535E-02	6.773E-01	1.300E+00	NOT IDENT.
AG-110M	2.626E-03	4.839E-02	9.498E-02	NOT IDENT.
SN-113	-3.157E-02	4.594E-02	8.261E-02	NOT IDENT.
CD-115	0.000E+00	1.940E+03	0.000E+00	SHORT HLIF
SN-117M	-4.123E-02	1.219E-01	1.974E-01	FAIL ABUN
SB-122	0.000E+00	1.386E+02	0.000E+00	SHORT HLIF
TE-123M	4.740E-04	2.854E-02	4.859E-02	NOT IDENT.
SB-125	-1.420E-02	7.989E-02	1.538E-01	FAIL ABUN
TE-125M	2.321E+00	1.108E+01	2.101E+01	NOT IDENT.
I-126	-3.305E-01	4.609E-01	7.840E-01	NOT IDENT.
SB-126	1.759E-01	3.049E-01	6.595E-01	NOT IDENT.
SB-127	0.000E+00	1.014E+02	4.879E+01	FAIL ABUN
I-131	1.472E-01	4.192E-01	8.656E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	2.504E+01	0.000E+00	SHORT HLIF
BA-133	1.558E-03	4.695E-02	6.788E-02	NOT IDENT.
I-133	0.000E+00	4.013E+09	0.000E+00	SHORT HLIF
CS-134	4.975E-02	7.256E-02	8.370E-02	FAIL ABUN
I-135	0.000E+00	2.019E+34	0.000E+00	SHORT HLIF
CS-136	1.180E-01	1.897E-01	4.415E-01	FAIL ABUN
BA-137M	-4.500E-02	3.032E-02	4.127E-02	NOT IDENT.
CS-137	-4.754E-02	3.203E-02	4.359E-02	NOT IDENT.
LA-138	3.851E-03	4.150E-02	9.570E-02	NOT IDENT.
CE-139	7.538E-03	3.054E-02	5.692E-02	NOT IDENT.
BA-140	6.996E-03	6.473E-01	1.258E+00	NOT IDENT.
LA-140	-1.687E-02	1.945E-01	4.130E-01	NOT IDENT.
CE-141	-3.981E-03	7.456E-02	1.369E-01	NOT IDENT.
CE-143	0.000E+00	6.312E+05	0.000E+00	SHORT HLIF
CE-144	-8.421E-02	1.943E-01	3.428E-01	NOT IDENT.
PM-144	-1.263E-02	3.342E-02	6.038E-02	NOT IDENT.
PR-144	-9.534E-01	2.523E+00	4.559E+00	NOT IDENT.
PM-146	-3.002E-02	3.985E-02	7.075E-02	NOT IDENT.
ND-147	5.081E-01	1.538E+00	3.129E+00	NOT IDENT.
PM-147	3.472E+02	7.343E+02	1.412E+03	NOT IDENT.
PM-149	0.000E+00	1.816E+04	0.000E+00	SHORT HLIF
EU-150	-1.626E-02	2.940E-02	4.784E-02	FAIL ABUN
EU-152	-2.157E-02	9.418E-02	1.617E-01	FAIL ABUN
GD-153	-5.655E-02	9.359E-02	1.511E-01	NOT IDENT.
EU-154	3.833E-02	8.058E-02	1.966E-01	NOT IDENT.
EU-155	-6.110E-02	1.000E-01	1.760E-01	FAIL ABUN
TB-160	1.481E-02	1.534E-01	3.006E-01	FAIL ABUN
HO-166M	-1.145E-02	6.108E-02	1.135E-01	NOT IDENT.
TM-171	-6.692E+00	3.111E+01	5.943E+01	FAIL ABUN

HF-172	-8.552E-02	1.779E-01	3.137E-01	FAIL ABUN
LU-172	5.147E-02	6.090E-02	1.413E-01	FAIL ABUN
LU-176	1.193E-02	2.514E-02	4.790E-02	FAIL ABUN
HF-181	6.057E-03	4.007E-02	8.341E-02	NOT IDENT.
TA-182	-3.437E-02	1.709E-01	3.386E-01	FAIL ABUN
RE-183	1.533E-02	3.197E-01	6.229E-01	FAIL ABUN
RE-184	7.202E-02	1.578E-01	3.340E-01	NOT IDENT.
W-188	9.712E-01	7.149E+00	1.321E+01	NOT IDENT.
IR-192	4.530E-03	3.918E-02	7.761E-02	FAIL ABUN
TL-204	3.406E+00	6.588E+00	1.095E+01	FAIL ABUN
BI-207	9.288E-03	3.509E-02	8.063E-02	FAIL ABUN
BI-210	-8.081E+00	8.105E+00	1.433E+01	NOT IDENT.
PB-210	-8.081E+00	8.105E+00	1.433E+01	NOT IDENT.
PB-211	2.925E-01	6.223E-01	1.292E+00	NOT IDENT.
BI-213	-8.564E-02	9.988E-02	1.734E-01	NOT IDENT.
RN-219	1.054E-01	3.931E-01	7.874E-01	FAIL ABUN
RA-223	-1.959E-01	5.355E-01	1.018E+00	FAIL ABUN
AC-225	-1.243E+00	1.819E+00	3.014E+00	NOT IDENT.
AC-227	1.634E-02	2.481E-01	4.477E-01	NOT IDENT.
TH-227	1.634E-02	2.481E-01	4.477E-01	NOT IDENT.
TH-229	-6.955E-02	5.095E-01	9.061E-01	FAIL ABUN
PA-231	-1.997E-01	4.614E-01	7.727E-01	NOT IDENT.
TH-231	-1.959E-01	5.355E-01	1.018E+00	FAIL ABUN
PA-233	4.830E-02	5.963E-02	1.263E-01	NOT IDENT.
PA-234	5.040E-02	2.472E-01	5.114E-01	NOT IDENT.
PA-234M	7.836E-02	1.659E+00	3.233E+00	FAIL ABUN
TH-234	7.836E-02	1.659E+00	3.233E+00	FAIL ABUN
U-235	7.299E-02	1.642E-01	3.152E-01	FAIL ABUN
NP-237	4.830E-02	5.963E-02	1.263E-01	NOT IDENT.
NP-238	0.000E+00	4.544E+03	0.000E+00	SHORT HLIF
U-238	7.836E-02	1.659E+00	3.233E+00	FAIL ABUN
NP-239	-1.573E-01	2.361E-01	4.105E-01	FAIL ABUN
PU-239	1.066E+02	3.303E+02	6.238E+02	NOT IDENT.
AM-241	-9.795E-02	1.900E-01	3.500E-01	NOT IDENT.
CM-243	2.452E-02	9.731E-02	1.864E-01	FAIL ABUN
BK-247	-1.715E-02	7.540E-02	1.314E-01	NOT IDENT.
CM-247	-1.829E-02	3.700E-02	6.790E-02	FAIL ABUN
CF-249	1.296E-02	3.090E-02	6.507E-02	NOT IDENT.
CF-251	1.273E-02	1.208E-01	2.217E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:28:42.32

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	140	10.66*	1.094E+00	7.450E+00	7.450E+00	18.83
ZN-65	1115.54	11	50.60*	1.395E+00	9.370E-02	1.026E-01	76.74
CD-109	88.03	65	3.70*	4.843E+00	2.237E+00	2.347E+00	57.12
SB-124	722.78	------	10.76	2.111E+00	------	Line Not Found	------
	1690.97	6	47.57*	9.911E-01	7.424E-02	1.074E-01	81.65
SN-126	64.28	------	9.60	2.142E+00	------	Line Not Found	------
	86.94	65	8.90	4.843E+00	9.299E-01	9.299E-01	57.12
	87.57	65	37.00*	4.843E+00	2.237E-01	2.237E-01	57.12
HG-203	70.83	------	3.69	3.019E+00	------	Line Not Found	------
	72.87	------	6.19	3.285E+00	------	Line Not Found	------
	279.20	15	81.56*	4.308E+00	2.588E-02	4.168E-02	154.39
TL-208	277.37	15	6.60	4.308E+00	3.198E-01	3.198E-01	154.39
	583.19	78	85.00*	2.532E+00	2.250E-01	2.250E-01	35.27
	860.56	14	12.50	1.796E+00	3.997E-01	3.997E-01	125.12
BI-211	72.87	------	1.23	3.285E+00	------	Line Not Found	------
	351.06	153	12.92*	3.667E+00	2.001E+00	2.001E+00	27.74
BI-212	727.33	18	6.67*	2.097E+00	7.863E-01	7.863E-01	130.53
	1620.50	------	1.47	1.016E+00	------	Line Not Found	------
PB-212	74.82	95	10.28	3.515E+00	1.636E+00	1.636E+00	42.47
	77.11	147	17.10	3.802E+00	1.405E+00	1.405E+00	29.73
	238.63	332	43.60*	4.771E+00	9.913E-01	9.913E-01	12.94
	300.09	------	3.30	4.091E+00	------	Line Not Found	------
BI-214	609.32	138	45.49*	2.443E+00	7.730E-01	7.731E-01	23.68
	1120.29	25	14.92	1.389E+00	7.432E-01	7.432E-01	66.35
	1764.49	24	15.30	9.712E-01	1.021E+00	1.021E+00	42.18
PB-214	74.82	95	5.80	3.515E+00	2.899E+00	2.899E+00	42.47
	77.11	147	9.70	3.802E+00	2.477E+00	2.477E+00	29.73
	87.09	65	3.41	4.843E+00	2.427E+00	2.427E+00	57.12
	242.00	87	7.25	4.731E+00	1.570E+00	1.570E+00	40.41
	295.22	128	18.42	4.136E+00	1.044E+00	1.044E+00	24.53
	351.93	153	35.60*	3.667E+00	7.263E-01	7.263E-01	27.74
RN-222	609.32	138	45.49*	2.443E+00	7.730E-01	7.731E-01	23.68
	1120.29	25	14.92	1.389E+00	7.432E-01	7.432E-01	66.35
	1764.49	24	15.30	9.712E-01	1.021E+00	1.021E+00	42.18
RA-224	240.99	87	4.10*	4.731E+00	2.776E+00	2.776E+00	40.41
RA-226	74.82	95	5.80	3.515E+00	2.899E+00	2.899E+00	42.47
	77.11	147	9.70	3.802E+00	2.477E+00	2.477E+00	29.73
	87.09	65	3.41	4.843E+00	2.427E+00	2.427E+00	57.12
	242.00	87	7.25	4.731E+00	1.570E+00	1.570E+00	40.41
	295.22	128	18.42	4.136E+00	1.044E+00	1.044E+00	24.53
	351.93	153	35.60*	3.667E+00	7.263E-01	7.263E-01	27.74
AC-228	105.21	------	1.10	5.932E+00	------	Line Not Found	------
	338.32	45	11.27	3.765E+00	6.587E-01	6.587E-01	81.10
	835.71	------	1.61	1.848E+00	------	Line Not Found	------
	911.20	63	25.80*	1.700E+00	8.862E-01	8.862E-01	42.72
	968.97	37	15.80	1.602E+00	8.974E-01	8.974E-01	53.06
RA-228	105.21	------	1.10	5.932E+00	------	Line Not Found	------

Sample ID : G719378008 Acquisition date : 10-MAY-2025 10:27:17

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	338.32	45	11.27	3.765E+00	6.587E-01	6.587E-01	81.10
	835.71	------	1.61	1.848E+00	------	Line Not Found	------
	911.20	63	25.80*	1.700E+00	8.862E-01	8.862E-01	42.72
	968.97	37	15.80	1.602E+00	8.974E-01	8.974E-01	53.06
TH-228	74.82	95	10.28	3.515E+00	1.636E+00	1.636E+00	42.47
	77.11	147	17.10	3.802E+00	1.405E+00	1.405E+00	29.73
	238.63	332	43.60*	4.771E+00	9.913E-01	9.913E-01	12.94
	300.09	------	3.30	4.091E+00	------	Line Not Found	------
TH-230	74.82	95	5.80	3.515E+00	2.899E+00	2.899E+00	42.47
	77.11	147	9.70	3.802E+00	2.477E+00	2.477E+00	29.73
	87.09	65	3.41	4.843E+00	2.427E+00	2.427E+00	57.12
	242.00	87	7.25	4.731E+00	1.570E+00	1.570E+00	40.41
	295.22	128	18.42	4.136E+00	1.044E+00	1.044E+00	24.53
	351.93	153	35.60*	3.667E+00	7.263E-01	7.263E-01	27.74
TH-232	105.21	------	1.10	5.932E+00	------	Line Not Found	------
	338.32	45	11.27	3.765E+00	6.587E-01	6.587E-01	81.10
	835.71	------	1.61	1.848E+00	------	Line Not Found	------
	911.20	63	25.80*	1.700E+00	8.862E-01	8.862E-01	42.72
	968.97	37	15.80	1.602E+00	8.974E-01	8.974E-01	53.06
U-234	74.82	95	5.80	3.515E+00	2.899E+00	2.899E+00	42.47
	77.11	147	9.70	3.802E+00	2.477E+00	2.477E+00	29.73
	87.09	65	3.41	4.843E+00	2.427E+00	2.427E+00	57.12
	242.00	87	7.25	4.731E+00	1.570E+00	1.570E+00	40.41
	295.22	128	18.42	4.136E+00	1.044E+00	1.044E+00	24.53
	351.93	153	35.60*	3.667E+00	7.263E-01	7.263E-01	27.74
AM-243	43.53	------	5.90	1.705E-01	------	Line Not Found	------
	74.66	95	67.20*	3.515E+00	2.502E-01	2.502E-01	42.47
ANH-511	511.00	47	100.00*	2.805E+00	1.042E-01	1.042E-01	68.21

Flag: "*" = Keyline

Sample ID : G719378008 Acquisition date : 10-MAY-2025 10:27:17

Total number of lines in spectrum 43
Number of unidentified lines 9
Number of lines tentatively identified by NID 34 79.07%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	7.450E+00	7.450E+00	1.402E+00	18.83	
ZN-65	244.06D	1.10	9.370E-02	1.026E-01	0.787E-01	76.74	
CD-109	461.40D	1.05	2.237E+00	2.347E+00	1.341E+00	57.12	
SB-124	60.20D	1.45	7.424E-02	1.074E-01	0.877E-01	81.65	
SN-126	2.30E+05Y	1.00	2.237E-01	2.237E-01	1.278E-01	57.12	
HG-203	46.59D	1.61	2.588E-02	4.168E-02	6.435E-02	154.39	
TL-208	1.41E+10Y	1.00	2.250E-01	2.250E-01	0.793E-01	35.27	
BI-211	7.04E+08Y	1.00	2.001E+00	2.001E+00	0.555E+00	27.74	
BI-212	1.41E+10Y	1.00	7.863E-01	7.863E-01	10.26E-01	130.53	
PB-212	1.41E+10Y	1.00	9.913E-01	9.913E-01	1.283E-01	12.94	
BI-214	1600.00Y	1.00	7.730E-01	7.731E-01	1.830E-01	23.68	
PB-214	1600.00Y	1.00	7.263E-01	7.263E-01	2.015E-01	27.74	
RN-222	1600.00Y	1.00	7.730E-01	7.731E-01	1.830E-01	23.68	
RA-224	1.41E+10Y	1.00	2.776E+00	2.776E+00	1.122E+00	40.41	
RA-226	1600.00Y	1.00	7.263E-01	7.263E-01	2.015E-01	27.74	
AC-228	1.41E+10Y	1.00	8.862E-01	8.862E-01	3.786E-01	42.72	
RA-228	1.41E+10Y	1.00	8.862E-01	8.862E-01	3.786E-01	42.72	
TH-228	1.41E+10Y	1.00	9.913E-01	9.913E-01	1.283E-01	12.94	
TH-230	7.54E+04Y	1.00	7.263E-01	7.263E-01	2.015E-01	27.74	
TH-232	1.41E+10Y	1.00	8.862E-01	8.862E-01	3.786E-01	42.72	
U-234	2.45E+05Y	1.00	7.263E-01	7.263E-01	2.015E-01	27.74	
AM-243	7370.00Y	1.00	2.502E-01	2.502E-01	1.063E-01	42.47	
ANH-511	1.00E+09Y	1.00	1.042E-01	1.042E-01	0.711E-01	68.21	
			---	---			
	Total Activity :		2.534E+01	2.551E+01			

Grand Total Activity : 2.534E+01 2.551E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378008 Acquisition date : 10-MAY-2025 10:27:17

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	67.89	21	120	1.28	136.30	132	8	5.18E-03	****	2.63E+00	T
0	93.13	87	136	1.53	186.77	183	11	2.20E-02	61.1	5.31E+00	T
0	154.86	28	74	0.67	310.24	307	8	7.31E-03	****	6.06E+00	T
0	186.09	90	113	1.65	372.69	367	13	2.36E-02	57.2	5.56E+00	T
0	270.96	22	62	0.80	542.43	539	9	5.93E-03	****	4.38E+00	T
0	359.83	10	22	0.80	720.16	715	8	2.70E-03	****	3.61E+00	
1	373.30	14	14	1.44	747.11	744	14	3.80E-03	****	3.52E+00	T
1	376.75	17	10	1.31	754.00	744	14	4.51E-03	90.6	3.50E+00	T
0	445.55	19	5	1.58	891.61	889	6	5.19E-03	61.5	3.11E+00	
0	462.93	25	20	1.21	926.36	923	8	6.94E-03	73.8	3.02E+00	T
0	489.20	17	14	3.06	978.90	973	10	4.75E-03	96.8	2.90E+00	
0	518.10	24	11	1.74	1036.71	1032	11	6.67E-03	67.3	2.78E+00	
0	685.70	30	47	9.31	1371.90	1351	32	8.33E-03	****	2.21E+00	T
0	796.54	13	18	2.73	1593.59	1583	13	3.65E-03	****	1.93E+00	T
0	819.16	11	3	1.42	1638.83	1635	8	3.00E-03	87.0	1.88E+00	T
0	844.00	10	3	0.83	1688.51	1685	7	2.78E-03	87.5	1.83E+00	
0	964.80	17	2	1.53	1930.12	1925	10	4.90E-03	58.1	1.61E+00	T
0	987.52	20	0	4.64	1975.57	1970	12	5.83E-03	43.6	1.57E+00	
0	1000.83	16	5	1.72	2002.18	1995	11	4.58E-03	73.9	1.55E+00	
0	1142.06	8	3	0.65	2284.65	2280	8	2.34E-03	****	1.36E+00	
0	1237.63	31	3	3.08	2475.82	2469	13	9.09E-03	42.3	1.26E+00	T
0	1280.87	5	1	1.19	2562.30	2558	7	1.53E-03	****	1.22E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:28:53.93

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378008.CNF;1  *
* Acquisition date : 10-MAY-2025 10:27:17 Sensitivity     : 3.000           *
* Detector ID      : GAM32                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.60     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:14:00 Nuclide Library : SOLID           *
* Sample ID        : G719378008           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.2085E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 17-JUL-2024 09:18:46 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM32_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.445E-01
ZN-65	3.785E-02
CD-109	7.412E-01
SB-124	6.296E-02
SN-126	7.181E-02
HG-203	3.663E-02
TL-208	2.925E-02
BI-211	1.462E-01
BI-212	3.182E-01
PB-212	4.217E-02
BI-214	3.919E-02
PB-214	5.317E-02
RN-222	3.919E-02
RA-224	4.518E-01
RA-226	5.317E-02
AC-228	8.545E-02
RA-228	8.545E-02
TH-228	4.217E-02
TH-230	5.316E-02
TH-232	8.545E-02
U-234	5.316E-02
AM-243	4.753E-02
ANH-511	1.961E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.506E-01	NOT IDENT.
NA-22	2.801E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.120E-02	NOT IDENT.
SC-46	2.542E-02	FAIL ABUN
V-48	8.663E-02	NOT IDENT.
CR-51	4.830E-01	NOT IDENT.
MN-52	1.825E+00	NOT IDENT.

MN-54	2.996E-02	NOT IDENT.
CO-56	3.121E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.193E-02	NOT IDENT.
CO-58	2.944E-02	NOT IDENT.
FE-59	3.773E-02	NOT IDENT.
CO-60	2.765E-02	NOT IDENT.
GE-68	1.065E+00	NOT IDENT.
AS-73	1.542E+00	NOT IDENT.
AS-74	1.456E-01	NOT IDENT.
SE-75	3.549E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	4.260E-01	NOT IDENT.
RB-83	5.289E-02	NOT IDENT.
RB-84	9.790E-02	NOT IDENT.
KR-85	5.670E+00	NOT IDENT.
SR-85	3.587E-02	NOT IDENT.
RB-86	1.236E+00	NOT IDENT.
Y-88	4.173E-02	NOT IDENT.
Y-91	1.830E+01	NOT IDENT.
NB-94	3.244E-02	NOT IDENT.
NB-95	4.307E-02	NOT IDENT.
NB-95M	1.174E-01	NOT IDENT.
ZR-95	8.206E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.531E-02	NOT IDENT.
RH-102	4.407E-02	NOT IDENT.
RU-103	4.295E-02	FAIL ABUN
RH-106	2.749E-01	NOT IDENT.
RU-106	2.749E-01	NOT IDENT.
AG-108M	2.425E-02	NOT IDENT.
AG-110	5.604E-01	NOT IDENT.
AG-110M	4.025E-02	NOT IDENT.
SN-113	3.664E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	9.024E-02	FAIL ABUN
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.224E-02	NOT IDENT.
SB-125	6.781E-02	FAIL ABUN
TE-125M	9.733E+00	NOT IDENT.
I-126	3.288E-01	NOT IDENT.
SB-126	2.850E-01	NOT IDENT.
SB-127	2.108E+01	FAIL ABUN
I-131	3.866E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.015E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	3.660E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	1.825E-01	FAIL ABUN
BA-137M	1.650E-02	NOT IDENT.
CS-137	1.743E-02	NOT IDENT.
LA-138	3.631E-02	NOT IDENT.
CE-139	2.633E-02	NOT IDENT.
BA-140	5.555E-01	NOT IDENT.
LA-140	1.577E-01	NOT IDENT.
CE-141	6.277E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.581E-01	NOT IDENT.
PM-144	2.605E-02	NOT IDENT.
PR-144	1.967E+00	NOT IDENT.
PM-146	3.107E-02	NOT IDENT.
ND-147	1.385E+00	NOT IDENT.
PM-147	6.566E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.159E-02	FAIL ABUN
EU-152	7.223E-02	FAIL ABUN
GD-153	6.969E-02	NOT IDENT.
EU-154	7.868E-02	NOT IDENT.
EU-155	8.102E-02	FAIL ABUN
TB-160	1.287E-01	FAIL ABUN
HO-166M	4.944E-02	NOT IDENT.
TM-171	2.714E+01	FAIL ABUN
HF-172	1.444E-01	FAIL ABUN

LU-172	6.099E-02	FAIL ABUN
LU-176	2.169E-02	FAIL ABUN
HF-181	3.564E-02	NOT IDENT.
TA-182	1.398E-01	FAIL ABUN
RE-183	2.855E-01	FAIL ABUN
RE-184	1.429E-01	NOT IDENT.
W-188	5.908E+00	NOT IDENT.
IR-192	3.528E-02	FAIL ABUN
TL-204	5.105E+00	FAIL ABUN
BI-207	3.259E-02	FAIL ABUN
BI-210	6.502E+00	NOT IDENT.
PB-210	6.502E+00	NOT IDENT.
PB-211	5.782E-01	NOT IDENT.
BI-213	7.625E-02	NOT IDENT.
RN-219	3.553E-01	FAIL ABUN
RA-223	4.542E-01	FAIL ABUN
AC-225	1.370E+00	NOT IDENT.
AC-227	2.041E-01	NOT IDENT.
TH-227	2.041E-01	NOT IDENT.
TH-229	4.174E-01	FAIL ABUN
PA-231	3.473E-01	NOT IDENT.
TH-231	4.542E-01	FAIL ABUN
PA-233	5.762E-02	NOT IDENT.
PA-234	2.129E-01	NOT IDENT.
PA-234M	1.500E+00	FAIL ABUN
TH-234	1.500E+00	FAIL ABUN
U-235	1.449E-01	FAIL ABUN
NP-237	5.762E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	1.500E+00	FAIL ABUN
NP-239	1.878E-01	FAIL ABUN
PU-239	2.903E+02	NOT IDENT.
AM-241	1.591E-01	NOT IDENT.
CM-243	8.615E-02	FAIL ABUN
BK-247	5.933E-02	NOT IDENT.
CM-247	3.042E-02	FAIL ABUN
CF-249	2.878E-02	NOT IDENT.
CF-251	1.022E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:28:58.25

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378008.CNF;1  *
* Acquisition date : 10-MAY-2025 10:27:17 Sensitivity     : 3.000           *
* Detector ID      : GAM32                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.60     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:14:00 Nuclide Library : SOLID           *
* Sample ID        : G719378008           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.2085E+02 GRAM *
*                                         Quantity Err(%) : 1.6549E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 17-JUL-2024 09:18:46 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM32_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	7.450E+00	1.666E+00	1.666E+00
ZN-65	1.026E-01	7.795E-02	7.795E-02
CD-109	2.347E+00	1.336E+00	1.336E+00
SB-124	1.074E-01	8.657E-02	8.657E-02
SN-126	2.237E-01	1.267E-01	1.267E-01
HG-203	1.178E-02	6.404E-02	6.404E-02
TL-208	2.250E-01	8.001E-02	8.001E-02
BI-211	2.001E+00	5.758E-01	5.758E-01
BI-212	7.863E-01	1.009E+00	1.009E+00
PB-212	9.913E-01	1.581E-01	1.581E-01
BI-214	7.731E-01	1.906E-01	1.906E-01
PB-214	7.263E-01	2.086E-01	2.086E-01
RN-222	7.731E-01	1.906E-01	1.906E-01
RA-224	2.776E+00	1.132E+00	1.132E+00
RA-226	7.263E-01	2.086E-01	2.086E-01
AC-228	8.862E-01	3.914E-01	3.914E-01
RA-228	8.862E-01	3.914E-01	3.914E-01
TH-228	9.913E-01	1.581E-01	1.581E-01
TH-230	7.263E-01	2.086E-01	2.086E-01
TH-232	8.862E-01	3.914E-01	3.914E-01
U-234	7.263E-01	2.086E-01	2.086E-01
AM-243	2.502E-01	1.066E-01	1.066E-01
ANH-511	1.042E-01	7.020E-02	7.020E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	2.423E-01	3.720E-01	3.877E-01	NOT IDENT.
NA-22	1.364E-02	2.873E-02	2.938E-02	NOT IDENT.
NA-24	3.026E+13	6.808E+13	6.943E+13	SHORT HLIF
AL-26	-5.312E-04	2.591E-02	2.591E-02	NOT IDENT.
SC-46	-5.378E-03	3.264E-02	3.273E-02	FAIL ABUN
V-48	-4.784E-02	1.392E-01	1.408E-01	NOT IDENT.
CR-51	8.775E-02	5.339E-01	5.353E-01	NOT IDENT.

MN-52	1.793E+00	1.654E+00	1.841E+00	NOT IDENT.
MN-54	1.030E-02	3.410E-02	3.441E-02	NOT IDENT.
CO-56	9.583E-03	3.916E-02	3.939E-02	FAIL ABUN
MN-56	1.000E+41	4.238E+41	0.000E+00	SHORT HLIF
CO-57	-6.831E-04	2.570E-02	2.570E-02	NOT IDENT.
CO-58	-1.793E-02	4.002E-02	4.083E-02	NOT IDENT.
FE-59	-4.742E-02	6.323E-02	6.674E-02	NOT IDENT.
CO-60	6.582E-03	3.049E-02	3.063E-02	NOT IDENT.
GE-68	-2.178E-01	1.271E+00	1.275E+00	NOT IDENT.
AS-73	-3.175E-01	1.765E+00	1.771E+00	NOT IDENT.
AS-74	5.697E-02	1.619E-01	1.639E-01	NOT IDENT.
SE-75	-1.085E-02	4.523E-02	4.550E-02	FAIL ABUN
BR-77	2.133E+04	2.000E+04	2.220E+04	SHORT HLIF
SR-82	1.854E-01	4.747E-01	4.820E-01	NOT IDENT.
RB-83	-4.353E-03	6.979E-02	6.982E-02	NOT IDENT.
RB-84	5.140E-02	1.097E-01	1.121E-01	NOT IDENT.
KR-85	3.965E+00	6.561E+00	6.800E+00	NOT IDENT.
SR-85	2.500E-02	4.152E-02	4.302E-02	NOT IDENT.
RB-86	-1.554E-01	1.455E+00	1.457E+00	NOT IDENT.
Y-88	3.188E-02	3.910E-02	4.165E-02	NOT IDENT.
Y-91	8.232E+00	1.942E+01	1.977E+01	NOT IDENT.
NB-94	6.469E-03	3.783E-02	3.794E-02	NOT IDENT.
NB-95	-5.770E-02	6.121E-02	6.650E-02	NOT IDENT.
NB-95M	8.933E-02	1.424E-01	1.480E-01	NOT IDENT.
ZR-95	2.797E-02	9.386E-02	9.470E-02	NOT IDENT.
NB-97	-1.000E+41	8.329E+41	0.000E+00	SHORT HLIF
ZR-97	1.363E+12	2.593E+13	2.594E+13	SHORT HLIF
MO-99	-8.168E+02	7.748E+02	8.578E+02	SHORT HLIF
TC-99M	2.343E+36	5.800E+36	0.000E+00	SHORT HLIF
RH-101	-1.529E-02	3.128E-02	3.203E-02	NOT IDENT.
RH-102	2.193E-02	4.816E-02	4.917E-02	NOT IDENT.
RU-103	8.632E-03	4.851E-02	4.867E-02	FAIL ABUN
RH-106	5.555E-02	3.155E-01	3.165E-01	NOT IDENT.
RU-106	5.555E-02	3.155E-01	3.165E-01	NOT IDENT.
AG-108M	5.596E-03	2.709E-02	2.721E-02	NOT IDENT.
AG-110	-6.535E-02	6.773E-01	6.779E-01	NOT IDENT.
AG-110M	2.626E-03	4.839E-02	4.840E-02	NOT IDENT.
SN-113	-3.157E-02	4.601E-02	4.816E-02	NOT IDENT.
CD-115	-6.573E+02	1.941E+03	1.964E+03	SHORT HLIF
SN-117M	-4.123E-02	1.220E-01	1.234E-01	FAIL ABUN
SB-122	3.561E+01	1.386E+02	1.396E+02	SHORT HLIF
TE-123M	4.740E-04	2.854E-02	2.854E-02	NOT IDENT.
SB-125	-1.420E-02	7.990E-02	8.015E-02	FAIL ABUN
TE-125M	2.321E+00	1.108E+01	1.113E+01	NOT IDENT.
I-126	-3.305E-01	4.619E-01	4.853E-01	NOT IDENT.
SB-126	1.759E-01	3.057E-01	3.158E-01	NOT IDENT.
SB-127	7.218E+01	1.021E+02	1.072E+02	FAIL ABUN
I-131	1.472E-01	4.194E-01	4.246E-01	NOT IDENT.
I-132	-1.000E+41	9.782E+41	0.000E+00	SHORT HLIF
TE-132	-6.192E+00	2.505E+01	2.521E+01	SHORT HLIF
BA-133	1.558E-03	4.695E-02	4.695E-02	NOT IDENT.
I-133	-3.759E+08	4.014E+09	4.018E+09	SHORT HLIF
CS-134	4.975E-02	7.277E-02	7.615E-02	FAIL ABUN
I-135	-4.278E+33	2.044E+34	0.000E+00	SHORT HLIF
CS-136	1.180E-01	1.905E-01	1.977E-01	FAIL ABUN
BA-137M	-4.500E-02	3.054E-02	3.666E-02	NOT IDENT.
CS-137	-4.754E-02	3.226E-02	3.873E-02	NOT IDENT.
LA-138	3.851E-03	4.151E-02	4.154E-02	NOT IDENT.
CE-139	7.538E-03	3.058E-02	3.077E-02	NOT IDENT.
BA-140	6.996E-03	6.473E-01	6.473E-01	NOT IDENT.
LA-140	-1.687E-02	1.945E-01	1.947E-01	NOT IDENT.
CE-141	-3.981E-03	7.456E-02	7.458E-02	NOT IDENT.
CE-143	-1.350E+05	6.313E+05	6.343E+05	SHORT HLIF
CE-144	-8.421E-02	1.945E-01	1.981E-01	NOT IDENT.
PM-144	-1.263E-02	3.343E-02	3.391E-02	NOT IDENT.
PR-144	-9.534E-01	2.524E+00	2.561E+00	NOT IDENT.
PM-146	-3.002E-02	3.997E-02	4.220E-02	NOT IDENT.
ND-147	5.081E-01	1.538E+00	1.555E+00	NOT IDENT.
PM-147	3.472E+02	7.349E+02	7.514E+02	NOT IDENT.
PM-149	1.072E+04	1.824E+04	1.887E+04	SHORT HLIF
EU-150	-1.626E-02	2.945E-02	3.035E-02	FAIL ABUN
EU-152	-2.157E-02	9.420E-02	9.470E-02	FAIL ABUN
GD-153	-5.655E-02	9.371E-02	9.712E-02	NOT IDENT.
EU-154	3.833E-02	8.070E-02	8.253E-02	NOT IDENT.
EU-155	-6.110E-02	1.002E-01	1.039E-01	FAIL ABUN
TB-160	1.481E-02	1.534E-01	1.535E-01	FAIL ABUN
HO-166M	-1.145E-02	6.109E-02	6.130E-02	NOT IDENT.
TM-171	-6.692E+00	3.112E+01	3.127E+01	FAIL ABUN

HF-172	-8.552E-02	1.785E-01	1.826E-01	FAIL ABUN
LU-172	5.147E-02	6.136E-02	6.560E-02	FAIL ABUN
LU-176	1.193E-02	2.517E-02	2.574E-02	FAIL ABUN
HF-181	6.057E-03	4.007E-02	4.016E-02	NOT IDENT.
TA-182	-3.437E-02	1.709E-01	1.716E-01	FAIL ABUN
RE-183	1.533E-02	3.197E-01	3.198E-01	FAIL ABUN
RE-184	7.202E-02	1.582E-01	1.615E-01	NOT IDENT.
W-188	9.712E-01	7.150E+00	7.163E+00	NOT IDENT.
IR-192	4.530E-03	3.918E-02	3.923E-02	FAIL ABUN
TL-204	3.406E+00	6.600E+00	6.776E+00	FAIL ABUN
BI-207	9.288E-03	3.510E-02	3.535E-02	FAIL ABUN
BI-210	-8.081E+00	8.174E+00	8.949E+00	NOT IDENT.
PB-210	-8.081E+00	8.174E+00	8.949E+00	NOT IDENT.
PB-211	2.925E-01	6.228E-01	6.366E-01	NOT IDENT.
BI-213	-8.564E-02	1.001E-01	1.073E-01	NOT IDENT.
RN-219	1.054E-01	3.934E-01	3.963E-01	FAIL ABUN
RA-223	-1.959E-01	5.360E-01	5.432E-01	FAIL ABUN
AC-225	-1.243E+00	1.824E+00	1.908E+00	NOT IDENT.
AC-227	1.634E-02	2.481E-01	2.482E-01	NOT IDENT.
TH-227	1.634E-02	2.481E-01	2.482E-01	NOT IDENT.
TH-229	-6.955E-02	5.095E-01	5.105E-01	FAIL ABUN
PA-231	-1.997E-01	4.637E-01	4.724E-01	NOT IDENT.
TH-231	-1.959E-01	5.360E-01	5.432E-01	FAIL ABUN
PA-233	4.830E-02	5.984E-02	6.368E-02	NOT IDENT.
PA-234	5.040E-02	2.540E-01	2.550E-01	NOT IDENT.
PA-234M	7.836E-02	1.659E+00	1.660E+00	FAIL ABUN
TH-234	7.836E-02	1.659E+00	1.660E+00	FAIL ABUN
U-235	7.299E-02	1.643E-01	1.676E-01	FAIL ABUN
NP-237	4.830E-02	5.984E-02	6.368E-02	NOT IDENT.
NP-238	2.049E+03	4.551E+03	4.644E+03	SHORT HLIF
U-238	7.836E-02	1.659E+00	1.660E+00	FAIL ABUN
NP-239	-1.573E-01	2.367E-01	2.471E-01	FAIL ABUN
PU-239	1.066E+02	3.304E+02	3.339E+02	NOT IDENT.
AM-241	-9.795E-02	1.904E-01	1.955E-01	NOT IDENT.
CM-243	2.452E-02	9.735E-02	9.797E-02	FAIL ABUN
BK-247	-1.715E-02	7.550E-02	7.589E-02	NOT IDENT.
CM-247	-1.829E-02	3.715E-02	3.806E-02	FAIL ABUN
CF-249	1.296E-02	3.093E-02	3.148E-02	NOT IDENT.
CF-251	1.273E-02	1.208E-01	1.209E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	41.6446	85.43	70.1351	131.20	54.4803
45.60	41.8872	86.55	74.1845	133.02	54.6176
46.54	49.1436	86.79	74.2164	133.52	55.7060
49.72	0.0000	86.94	74.2373	136.00	47.4575
51.35	46.1534	87.09	74.2576	136.47	49.5983
51.87	48.9334	87.57	75.6264	140.51	0.0000
52.39	40.8317	88.03	74.3846	143.76	31.9661
52.97	40.8915	88.34	74.4263	144.24	35.1849
53.44	42.7594	88.47	74.4437	145.44	41.6467
54.07	46.4713	89.96	39.2859	152.43	40.2227
57.36	0.0000	1093.63	60.3114	153.25	56.0823
57.53	34.9189	91.11	70.8596	323.87	35.6330
57.98	39.5557	92.59	49.3366	156.02	30.3020
59.27	40.5989	93.35	49.4022	158.56	44.8709
59.32	40.6036	94.56	49.5060	159.00	39.1020
59.54	42.4712	94.65	49.5136	162.33	42.5307
60.96	44.4639	94.67	49.5155	162.66	53.4569
61.17	46.3388	94.87	49.5327	163.33	53.5003
62.93	47.4552	97.43	61.0264	165.86	45.9952
63.29	45.6312	98.43	59.8009	176.31	55.4207
63.58	53.4264	98.44	59.8018	176.60	56.5478
64.28	55.9987	99.53	48.9275	177.52	44.3970
66.73	48.7944	100.11	56.9704	181.07	0.0000
67.24	48.8480	102.03	51.1358	181.52	56.4882
125.81	48.8944	103.18	45.2046	184.41	46.9751
67.75	48.9019	103.37	45.2187	143.76	47.0424
68.89	56.5631	105.21	57.4479	193.51	48.5672
69.67	62.9522	105.31	57.4575	197.03	45.3467
70.82	51.1140	106.12	47.4389	198.01	51.0672
70.83	51.1153	106.47	47.4654	201.83	51.2698
72.81	60.8301	109.28	48.6914	203.43	36.5181
72.87	60.8374	111.00	58.9934	205.31	41.1619
74.66	56.2893	111.76	0.0000	210.85	58.6380
74.82	56.3073	114.06	50.0748	215.65	36.9678
74.97	56.3244	116.30	0.0000	218.12	46.3214
77.11	56.5652	116.74	51.3042	222.11	41.8502
78.74	60.2733	119.76	57.7197	227.09	44.3857
79.69	59.0999	121.12	49.5729	227.38	43.2295
80.03	57.8526	121.22	49.5802	228.16	0.0000
80.12	48.8622	121.78	52.7222	228.18	33.9078
80.19	48.8688	122.06	53.7777	116.74	33.9078
80.57	55.3391	122.92	51.7738	235.69	32.9684
81.00	57.9611	123.07	50.7496	235.96	32.9770
81.07	62.7996	265.00	51.8311	238.63	35.4190
81.75	62.8810	125.81	54.0693	238.98	0.0000
82.47	79.4356	127.23	61.4715	240.99	35.4950
83.79	60.8575	127.91	58.4020	242.00	35.5275
84.00	66.0628	129.30	53.2918	244.70	39.5706

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	27.4908	344.28	26.9652	563.25	14.5642
252.80	34.6747	345.93	17.1403	564.24	0.0000
254.15	0.0000	351.06	22.3617	569.33	16.5538
256.23	34.7782	351.93	22.3750	946.00	17.5291
260.90	0.0000	355.39	0.0000	569.70	14.6094
264.66	31.4066	356.01	20.7119	583.19	18.6235
264.80	32.6187	364.49	19.0947	584.27	18.6328
265.00	32.6236	366.42	0.0000	595.83	13.8035
269.46	33.9592	372.51	19.6330	427.87	15.8099
270.03	35.5933	375.05	14.8587	602.52	0.0000
271.23	31.5804	377.52	17.0712	604.72	14.8499
273.65	32.4552	356.01	21.9762	607.14	5.9463
276.40	30.9021	388.16	14.9853	609.32	8.9286
277.37	29.2991	388.63	17.6351	610.33	8.9326
277.60	29.3049	391.69	30.0378	614.28	17.8967
278.00	29.3145	264.66	18.6578	618.01	17.9268
279.20	29.3430	401.81	24.8948	620.36	18.9428
279.54	35.8735	402.40	32.0193	621.93	15.9629
279.70	35.8780	404.85	18.7065	630.19	0.0000
280.46	26.1094	410.95	25.9302	631.29	11.0201
283.69	42.9478	413.71	24.1826	633.25	15.0403
284.31	25.7815	414.70	22.4045	634.78	17.0574
285.41	31.9478	423.72	28.8340	635.95	12.0469
285.90	0.0000	427.09	21.6694	636.99	15.0653
287.50	34.4634	427.87	20.7759	657.50	14.1863
290.67	22.2105	433.94	19.9442	657.76	15.2008
293.27	0.0000	439.40	20.9172	657.90	0.0000
351.93	27.2435	440.45	29.1198	661.66	17.2566
295.96	26.4336	453.88	24.7604	664.57	0.0000
879.38	29.7986	463.37	19.3611	666.33	16.2734
299.98	21.1302	468.07	17.5632	666.50	15.2576
300.09	21.1317	473.00	17.6111	667.71	0.0000
300.13	21.1328	475.06	23.1990	677.62	13.2851
301.36	33.5951	476.78	13.9325	685.70	13.3295
302.85	29.8967	477.60	15.7971	692.65	0.0000
256.23	27.4402	482.18	10.2472	695.00	17.4980
304.85	33.6857	487.02	9.8070	696.49	17.5084
306.78	23.7396	492.35	0.0000	696.51	17.5091
308.46	35.8631	497.08	16.9025	697.00	18.5427
311.90	24.2499	505.52	12.4505	697.30	19.5752
316.51	31.8847	507.63	0.0000	697.49	16.4857
319.41	37.8397	511.00	14.1887	702.65	18.5852
320.08	30.2864	514.00	14.2108	706.68	25.8545
321.04	30.3083	514.00	14.2108	711.68	17.6163
323.87	27.8404	520.40	12.8320	720.70	8.3200
325.23	26.1790	520.69	0.0000	721.93	0.0000
328.76	22.0126	522.65	0.0000	722.78	9.3677
333.37	28.0317	527.90	0.0000	722.91	9.3684
333.97	38.2416	528.26	16.2232	723.31	18.7397
334.37	34.4273	529.59	18.1442	724.19	14.0598
338.28	24.7207	529.87	0.0000	727.33	9.3849
338.32	24.7213	531.02	16.2460	733.00	10.9734
311.90	24.7590	537.26	19.1732	735.93	6.2776
340.48	24.7590	546.56	0.0000	333.97	9.4222
340.55	24.7602	552.55	16.4203	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	13.6453	667.71	0.0000	1434.09	0.9634
747.24	15.7629	962.31	3.3979	1435.80	2.8916
748.06	17.8709	964.08	6.7998	1457.56	0.0000
752.31	14.7411	966.17	0.0000	1460.82	7.7544
753.82	16.8568	911.20	11.9180	1489.16	0.9755
756.73	15.8209	983.53	8.5516	1505.03	7.8311
756.80	15.8215	984.45	0.0000	1584.12	9.9561
884.68	15.8643	1274.44	6.8682	1596.21	3.9927
765.81	30.6933	1002.74	8.6023	1620.50	2.0063
766.84	14.8232	1004.73	5.1645	1621.92	3.0104
772.60	0.0000	507.63	0.0000	1678.03	0.0000
776.52	9.5640	1025.87	0.0000	1690.97	2.0352
739.50	0.0000	1028.54	0.0000	1750.46	0.0000
778.90	15.9540	1037.84	8.1143	1764.49	2.0646
783.70	14.9172	1038.76	0.0000	1063.66	6.2007
788.74	16.0126	631.29	3.4866	1771.35	3.1011
792.07	11.2225	1048.07	3.4880	1791.20	0.0000
795.86	6.4219	1049.04	4.6520	1808.65	2.0820
810.06	10.7585	1050.41	13.9619	1810.72	0.0000
810.29	10.7597	1063.66	4.3799	1836.06	1.0463
344.28	11.8361	1077.00	11.4321		
810.76	11.8374	1077.34	11.4329		
815.77	9.7028	1085.87	5.2899		
1048.07	9.7123	1093.63	6.1852		
832.01	10.8435	1099.45	5.3104		
834.85	9.7690	1112.07	8.5271		
835.71	11.9435	1112.84	8.5289		
836.80	0.0000	1115.54	2.8451		
846.75	0.0000	1120.29	11.3953		
846.77	6.5400	1120.55	11.3961		
856.80	9.8445	1221.41	11.3984		
860.56	13.1431	1129.67	6.2480		
871.09	12.0917	1131.51	0.0000		
873.19	5.5001	1147.95	0.0000		
875.33	0.0000	1173.23	9.9359		
879.38	11.0234	1177.95	6.3309		
880.51	16.5411	1189.05	6.3497		
881.60	12.1346	1204.77	5.4653		
883.24	12.1414	1221.41	9.1486		
884.68	9.9390	1231.02	8.5597		
889.28	6.6362	1235.36	7.3452		
894.76	8.8646	1238.28	6.4322		
898.04	5.5465	1260.41	0.0000		
900.72	9.9924	1271.87	6.4873		
903.28	7.7784	1274.44	2.7821		
911.20	6.6848	1274.54	2.7821		
912.08	6.6868	1291.59	6.5193		
923.98	0.0000	1298.22	0.0000		
926.50	7.8383	1312.11	4.6805		
929.11	4.4827	1332.49	3.7629		
935.54	6.7380	1362.66	0.0000		
937.49	7.8662	1365.19	6.6368		
944.13	7.8830	1368.63	0.0000		
946.00	6.7607	1384.29	7.6196		
949.00	3.3837	1408.01	1.9154		

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:29:25.71

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378009.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM33.CNF;634
                                         Background date  : 4-MAY-2025 09:27:21.
Sample date      : 8-APR-2025 10:20:00. Acquisition date : 10-MAY-2025 10:27:47
Sample ID        : G719378009           Sample quantity  : 1.05450E+02 GRAM
Detector name    : GAM33                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.41  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	65.04*	66	163	3.51	130.50	122	18	1.84E-02	48.5	
2	1	74.29	95	122	1.90	149.00	144	20	2.63E-02	23.2	2.03E+00
3	1	77.29	131	149	1.91	155.00	144	20	3.65E-02	20.9	
4	0	93.01*	42	220	2.33	186.44	180	13	1.18E-02	77.9	
5	0	186.42*	43	137	2.07	373.19	366	12	1.18E-02	60.6	
6	0	199.11*	17	121	3.80	398.57	390	13	4.79E-03	138.9	
7	3	238.73*	186	130	2.19	477.76	470	20	5.18E-02	15.0	2.03E+00
8	3	241.84	57	100	2.07	484.00	470	20	1.57E-02	44.8	
9	0	295.16*	192	41	1.88	590.60	585	11	5.34E-02	9.8	
10	0	338.79	46	74	1.85	677.84	671	15	1.29E-02	42.4	
11	0	351.94	287	81	1.74	704.13	697	16	7.98E-02	9.1	
12	0	480.49	10	41	3.00	961.15	947	16	2.86E-03	140.8	
13	2	513.42	20	25	2.24	1027.00	1013	21	5.46E-03	73.3	1.25E+00
14	0	543.45	16	16	2.27	1087.05	1079	13	4.44E-03	57.6	
15	0	584.28*	26	49	2.03	1168.68	1158	15	7.25E-03	64.3	
16	0	609.35*	211	44	2.32	1218.80	1207	22	5.86E-02	10.7	
17	0	714.84	19	16	0.91	1429.74	1420	16	5.28E-03	52.4	
18	0	727.67	35	7	2.97	1455.40	1450	11	9.62E-03	23.2	
19	0	849.58	6	14	0.67	1699.17	1687	14	1.67E-03	138.4	
20	0	911.47*	37	17	2.00	1822.93	1813	14	1.03E-02	29.8	
21	0	921.70	20	11	2.56	1843.38	1832	22	5.56E-03	47.8	
22	0	934.20	14	8	1.03	1868.37	1862	11	4.01E-03	46.3	
23	0	969.88	21	27	2.05	1939.72	1933	13	5.76E-03	57.6	
24	0	1103.15	18	4	4.02	2206.22	2198	15	4.86E-03	33.8	
25	0	1120.53	40	23	2.10	2240.97	2229	18	1.11E-02	32.0	
26	0	1175.44	5	6	0.70	2350.78	2340	12	1.39E-03	107.7	
27	0	1377.62	11	5	0.88	2755.09	2750	10	3.06E-03	48.5	
28	0	1386.41	9	0	0.66	2772.67	2768	9	2.50E-03	33.3	
29	0	1460.92*	93	18	1.46	2921.68	2914	14	2.59E-02	14.6	
30	0	1498.19	10	0	4.85	2996.20	2990	13	2.78E-03	31.6	
31	0	1764.69*	20	9	1.83	3529.18	3522	12	5.49E-03	38.5	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:29:27

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378009.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 10:20:00	Acquisition date	: 10-MAY-2025 10:27:47
Sample ID	: G719378009	Sample quantity	: 105.45 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA33	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.41 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G719378009 Acquisition date : 10-MAY-2025 10:27:47

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	87	10.66*	1.061E+00	5.492E+00	5.492E+00	29.11
KR-85	514.00	19	0.43*	2.678E+00	1.162E+01	1.168E+01	146.64
SR-85	514.00	19	96.00*	2.678E+00	5.251E-02	7.395E-02	146.64
TL-208	277.37	------	6.60	4.146E+00	------	Line Not Found	------
	583.19	25	85.00*	2.423E+00	8.671E-02	8.671E-02	128.53
	860.56	------	12.50	1.732E+00	------	Line Not Found	------
BI-211	72.87	96	1.23	3.508E+00	1.582E+01	1.582E+01	46.47
	351.06	280	12.92*	3.513E+00	4.385E+00	4.385E+00	18.26
BI-212	727.33	33	6.67*	2.017E+00	1.751E+00	1.751E+00	46.43
	1620.50	------	1.47	9.858E-01	------	Line Not Found	------
PB-212	74.82	96	10.28	3.508E+00	1.893E+00	1.893E+00	46.47
	77.11	133	17.10	3.867E+00	1.430E+00	1.430E+00	41.78
	238.63	183	43.60*	4.596E+00	6.506E-01	6.506E-01	30.04
	300.09	------	3.30	3.926E+00	------	Line Not Found	------
BI-214	609.32	203	45.49*	2.342E+00	1.353E+00	1.353E+00	21.35
	1120.29	38	14.92	1.345E+00	1.340E+00	1.340E+00	64.09
	1764.49	18	15.30	9.413E-01	9.110E-01	9.110E-01	77.00
PB-214	74.82	96	5.80	3.508E+00	3.355E+00	3.356E+00	46.47
	77.11	133	9.70	3.867E+00	2.522E+00	2.522E+00	41.78
	87.09	------	3.41	4.851E+00	------	Line Not Found	------
	242.00	56	7.25	4.556E+00	1.201E+00	1.201E+00	89.60
	295.22	188	18.42	3.971E+00	1.830E+00	1.830E+00	19.67
	351.93	280	35.60*	3.513E+00	1.591E+00	1.591E+00	18.26
RN-222	609.32	203	45.49*	2.342E+00	1.353E+00	1.353E+00	21.35
	1120.29	38	14.92	1.345E+00	1.340E+00	1.340E+00	64.09
	1764.49	18	15.30	9.413E-01	9.110E-01	9.110E-01	77.00
RA-224	240.99	56	4.10*	4.556E+00	2.123E+00	2.123E+00	89.60
RA-226	74.82	96	5.80	3.508E+00	3.355E+00	3.356E+00	46.47
	77.11	133	9.70	3.867E+00	2.522E+00	2.522E+00	41.78
	87.09	------	3.41	4.851E+00	------	Line Not Found	------
	242.00	56	7.25	4.556E+00	1.201E+00	1.201E+00	89.60
	295.22	188	18.42	3.971E+00	1.830E+00	1.830E+00	19.67
	351.93	280	35.60*	3.513E+00	1.591E+00	1.591E+00	18.26
AC-228	105.21	------	1.10	5.882E+00	------	Line Not Found	------
	338.32	45	11.27	3.608E+00	7.923E-01	7.923E-01	84.73
	835.71	------	1.61	1.780E+00	------	Line Not Found	------
	911.20	35	25.80*	1.640E+00	5.916E-01	5.916E-01	59.52
	968.97	20	15.80	1.546E+00	5.733E-01	5.733E-01	115.29
RA-228	105.21	------	1.10	5.882E+00	------	Line Not Found	------
	338.32	45	11.27	3.608E+00	7.923E-01	7.923E-01	84.73
	835.71	------	1.61	1.780E+00	------	Line Not Found	------
	911.20	35	25.80*	1.640E+00	5.916E-01	5.916E-01	59.52
	968.97	20	15.80	1.546E+00	5.733E-01	5.733E-01	115.29
TH-228	74.82	96	10.28	3.508E+00	1.893E+00	1.893E+00	46.47
	77.11	133	17.10	3.867E+00	1.430E+00	1.430E+00	41.78
	238.63	183	43.60*	4.596E+00	6.506E-01	6.506E-01	30.04
	300.09	------	3.30	3.926E+00	------	Line Not Found	------
TH-230	74.82	96	5.80	3.508E+00	3.355E+00	3.355E+00	46.47
	77.11	133	9.70	3.867E+00	2.522E+00	2.522E+00	41.78

Sample ID : G719378009 Acquisition date : 10-MAY-2025 10:27:47

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	87.09	------	3.41	4.851E+00	------	Line Not Found	------
	242.00	56	7.25	4.556E+00	1.201E+00	1.201E+00	89.60
	295.22	188	18.42	3.971E+00	1.830E+00	1.830E+00	19.67
	351.93	280	35.60*	3.513E+00	1.591E+00	1.591E+00	18.26
TH-232	105.21	------	1.10	5.882E+00	------	Line Not Found	------
	338.32	45	11.27	3.608E+00	7.923E-01	7.923E-01	84.73
	835.71	------	1.61	1.780E+00	------	Line Not Found	------
	911.20	35	25.80*	1.640E+00	5.916E-01	5.916E-01	59.52
	968.97	20	15.80	1.546E+00	5.733E-01	5.733E-01	115.29
U-234	74.82	96	5.80	3.508E+00	3.355E+00	3.355E+00	46.47
	77.11	133	9.70	3.867E+00	2.522E+00	2.522E+00	41.78
	87.09	------	3.41	4.851E+00	------	Line Not Found	------
	242.00	56	7.25	4.556E+00	1.201E+00	1.201E+00	89.60
	295.22	188	18.42	3.971E+00	1.830E+00	1.830E+00	19.67
	351.93	280	35.60*	3.513E+00	1.591E+00	1.591E+00	18.26
AM-243	43.53	------	5.90	1.821E-01	------	Line Not Found	------
	74.66	96	67.20*	3.508E+00	2.896E-01	2.896E-01	46.47

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:29:28.12

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378009.CNF;1  *
* Acquisition date : 10-MAY-2025 10:27:47 Sensitivity     : 3.000           *
* Detector ID      : GAM33                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.41     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:20:00 Analyst initials: RXF2            *
* Sample ID        : G719378009           Sample Quantity : 1.0545E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-NOV-2024 09:05:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM33_CAN.CNF;17            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	5.492E+00	1.567E+00	1.011E+00
KR-85	1.168E+01	1.679E+01	1.556E+01
SR-85	7.395E-02	1.063E-01	9.852E-02
TL-208	8.671E-02	1.092E-01	8.106E-02
BI-211	4.385E+00	7.848E-01	5.258E-01
BI-212	1.751E+00	7.967E-01	1.257E+00
PB-212	6.506E-01	1.916E-01	1.564E-01
BI-214	1.353E+00	2.832E-01	1.751E-01
PB-214	1.591E+00	2.848E-01	1.912E-01
RN-222	1.353E+00	2.832E-01	1.751E-01
RA-224	2.123E+00	1.864E+00	1.675E+00
RA-226	1.591E+00	2.848E-01	1.912E-01
AC-228	5.916E-01	3.451E-01	2.878E-01
RA-228	5.916E-01	3.451E-01	2.878E-01
TH-228	6.506E-01	1.916E-01	1.564E-01
TH-230	1.591E+00	2.848E-01	1.912E-01
TH-232	5.916E-01	3.451E-01	2.878E-01
U-234	1.591E+00	2.848E-01	1.912E-01
AM-243	2.896E-01	1.319E-01	1.570E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	3.759E-01	5.540E-01	1.085E+00	NOT IDENT.
NA-22	3.459E-03	5.529E-02	1.094E-01	NOT IDENT.
NA-24	0.000E+00	1.261E+14	0.000E+00	SHORT HLIF
AL-26	-9.021E-03	2.757E-02	5.592E-02	NOT IDENT.
SC-46	5.838E-02	5.292E-02	1.214E-01	FAIL ABUN
V-48	6.122E-02	1.674E-01	3.522E-01	NOT IDENT.
CR-51	3.289E-01	7.886E-01	1.478E+00	NOT IDENT.
MN-52	7.915E-01	2.471E+00	5.372E+00	FAIL ABUN
MN-54	1.023E-02	5.185E-02	1.017E-01	NOT IDENT.
CO-56	8.056E-03	5.948E-02	1.172E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF

CO-57	5.132E-03	3.616E-02	6.595E-02	NOT IDENT.
CO-58	-1.735E-02	5.945E-02	1.100E-01	NOT IDENT.
FE-59	2.521E-02	1.450E-01	2.622E-01	NOT IDENT.
CO-60	-9.184E-03	5.137E-02	9.814E-02	NOT IDENT.
ZN-65	4.180E-02	1.401E-01	2.483E-01	NOT IDENT.
GE-68	-6.629E-01	1.578E+00	2.857E+00	NOT IDENT.
AS-73	-6.298E-01	2.756E+00	4.956E+00	NOT IDENT.
AS-74	1.724E-01	2.222E-01	4.669E-01	NOT IDENT.
SE-75	-5.111E-02	6.595E-02	1.097E-01	NOT IDENT.
BR-77	0.000E+00	4.118E+03	0.000E+00	SHORT HLIF
SR-82	-1.030E-01	7.275E-01	1.367E+00	NOT IDENT.
RB-83	-1.074E-01	1.252E-01	1.773E-01	NOT IDENT.
RB-84	-1.086E-02	1.235E-01	2.371E-01	NOT IDENT.
RB-86	-6.661E-01	1.799E+00	3.290E+00	NOT IDENT.
Y-88	-2.346E-02	5.597E-02	1.018E-01	NOT IDENT.
Y-91	-6.331E+00	2.528E+01	4.793E+01	NOT IDENT.
NB-94	2.130E-02	3.881E-02	8.078E-02	NOT IDENT.
NB-95	5.011E-02	6.846E-02	1.414E-01	NOT IDENT.
NB-95M	2.584E-01	2.561E-01	4.366E-01	NOT IDENT.
ZR-95	4.379E-02	9.940E-02	2.066E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	4.470E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.093E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	9.934E+36	0.000E+00	SHORT HLIF
RH-101	2.536E-02	4.243E-02	7.980E-02	FAIL ABUN
RH-102	-3.553E-02	6.696E-02	1.202E-01	NOT IDENT.
RU-103	-6.756E-03	7.004E-02	1.259E-01	FAIL ABUN
RH-106	2.690E-01	3.506E-01	7.603E-01	NOT IDENT.
RU-106	2.690E-01	3.506E-01	7.603E-01	NOT IDENT.
AG-108M	4.260E-02	4.172E-02	8.391E-02	NOT IDENT.
CD-109	5.014E-02	1.557E+00	2.454E+00	NOT IDENT.
AG-110	-4.890E-02	8.643E-01	1.672E+00	NOT IDENT.
AG-110M	-8.223E-04	6.618E-02	1.284E-01	NOT IDENT.
SN-113	-2.435E-03	6.890E-02	1.237E-01	NOT IDENT.
CD-115	0.000E+00	2.849E+03	0.000E+00	SHORT HLIF
SN-117M	1.295E-01	1.873E-01	3.510E-01	NOT IDENT.
SB-122	0.000E+00	1.842E+02	0.000E+00	SHORT HLIF
TE-123M	4.425E-03	4.653E-02	8.369E-02	NOT IDENT.
SB-124	4.332E-02	8.993E-02	2.404E-01	NOT IDENT.
SB-125	-1.066E-01	1.367E-01	2.228E-01	NOT IDENT.
TE-125M	-2.176E+00	1.745E+01	3.061E+01	NOT IDENT.
I-126	3.624E-01	6.597E-01	1.362E+00	NOT IDENT.
SB-126	-2.268E-01	6.557E-01	8.709E-01	NOT IDENT.
SN-126	-3.232E-03	1.496E-01	2.351E-01	FAIL ABUN
SB-127	1.884E+01	3.470E+01	7.155E+01	NOT IDENT.
I-131	-2.877E-01	7.104E-01	1.222E+00	NOT IDENT.
I-132	0.000E+00	1.617E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.673E+01	0.000E+00	SHORT HLIF
BA-133	3.025E-02	7.156E-02	1.184E-01	NOT IDENT.
I-133	0.000E+00	5.663E+09	0.000E+00	SHORT HLIF
CS-134	8.775E-02	5.673E-02	1.284E-01	NOT IDENT.
I-135	0.000E+00	2.317E+34	0.000E+00	SHORT HLIF
CS-136	-7.894E-02	3.171E-01	5.934E-01	NOT IDENT.
BA-137M	-1.937E-02	3.800E-02	6.868E-02	NOT IDENT.
CS-137	-2.047E-02	4.014E-02	7.255E-02	NOT IDENT.
LA-138	5.364E-02	6.777E-02	1.627E-01	NOT IDENT.
CE-139	-6.581E-03	4.596E-02	8.148E-02	NOT IDENT.
BA-140	-1.074E+00	1.026E+00	1.384E+00	NOT IDENT.
LA-140	1.769E-01	3.702E-01	7.868E-01	NOT IDENT.
CE-141	-1.219E-01	1.349E-01	2.263E-01	NOT IDENT.
CE-143	0.000E+00	1.302E+06	0.000E+00	SHORT HLIF
CE-144	1.027E-01	2.882E-01	5.311E-01	NOT IDENT.
PM-144	3.079E-02	4.134E-02	8.794E-02	NOT IDENT.
PR-144	2.336E+00	3.123E+00	6.645E+00	NOT IDENT.
PM-146	-4.323E-02	5.652E-02	9.194E-02	NOT IDENT.
ND-147	1.039E+00	2.129E+00	4.304E+00	NOT IDENT.
PM-147	7.093E+02	1.025E+03	1.940E+03	NOT IDENT.
PM-149	0.000E+00	2.598E+04	0.000E+00	SHORT HLIF
EU-150	4.279E-03	4.075E-02	6.530E-02	FAIL ABUN
EU-152	-5.443E-02	1.915E-01	2.647E-01	NOT IDENT.
GD-153	4.679E-02	1.538E-01	2.499E-01	NOT IDENT.
EU-154	6.276E-03	1.546E-01	3.047E-01	NOT IDENT.
EU-155	-8.804E-02	1.504E-01	2.606E-01	NOT IDENT.
TB-160	-8.938E-02	2.014E-01	3.631E-01	NOT IDENT.
HO-166M	1.459E-02	7.339E-02	1.313E-01	NOT IDENT.
TM-171	4.400E+01	5.224E+01	1.006E+02	NOT IDENT.
HF-172	1.392E-01	2.527E-01	4.750E-01	NOT IDENT.
LU-172	-5.569E-03	8.675E-02	1.659E-01	FAIL ABUN

LU-176	2.012E-02	3.678E-02	6.973E-02	NOT IDENT.
HF-181	-1.079E-02	8.556E-02	1.327E-01	NOT IDENT.
TA-182	1.455E-02	2.737E-01	5.285E-01	FAIL ABUN
RE-183	1.471E-01	6.026E-01	9.904E-01	NOT IDENT.
RE-184	-3.474E-02	2.498E-01	4.084E-01	NOT IDENT.
W-188	-2.756E+00	1.362E+01	2.081E+01	FAIL ABUN
IR-192	-6.805E-03	5.848E-02	1.038E-01	FAIL ABUN
HG-203	6.276E-02	7.299E-02	1.398E-01	FAIL ABUN
TL-204	2.451E+00	1.237E+01	1.480E+01	NOT IDENT.
BI-207	3.372E-02	6.047E-02	1.307E-01	FAIL ABUN
BI-210	2.435E+00	1.360E+01	2.515E+01	NOT IDENT.
PB-210	2.435E+00	1.360E+01	2.515E+01	NOT IDENT.
PB-211	1.231E-01	9.416E-01	1.731E+00	NOT IDENT.
BI-213	6.594E-02	1.368E-01	2.633E-01	NOT IDENT.
RN-219	9.815E-02	5.207E-01	9.671E-01	NOT IDENT.
RA-223	1.279E-01	9.160E-01	1.666E+00	FAIL ABUN
AC-225	-5.467E-01	2.395E+00	4.233E+00	NOT IDENT.
AC-227	4.692E-02	3.890E-01	7.006E-01	NOT IDENT.
TH-227	4.692E-02	3.890E-01	7.006E-01	NOT IDENT.
TH-229	2.588E-02	8.880E-01	1.392E+00	NOT IDENT.
PA-231	1.161E-01	7.079E-01	1.244E+00	NOT IDENT.
TH-231	1.279E-01	9.160E-01	1.666E+00	FAIL ABUN
PA-233	-3.559E-02	9.051E-02	1.563E-01	NOT IDENT.
PA-234	-9.429E-02	3.486E-01	6.540E-01	NOT IDENT.
PA-234M	-3.023E-01	2.832E+00	5.090E+00	FAIL ABUN
TH-234	-3.023E-01	2.832E+00	5.090E+00	FAIL ABUN
U-235	8.805E-03	3.023E-01	5.403E-01	FAIL ABUN
NP-237	-3.559E-02	9.051E-02	1.563E-01	NOT IDENT.
NP-238	0.000E+00	5.747E+03	0.000E+00	SHORT HLIF
U-238	-3.023E-01	2.832E+00	5.090E+00	FAIL ABUN
NP-239	-2.226E-01	3.851E-01	6.658E-01	NOT IDENT.
PU-239	3.091E+01	4.588E+02	8.305E+02	NOT IDENT.
AM-241	4.154E-02	3.715E-01	6.026E-01	NOT IDENT.
CM-243	-4.899E-02	1.523E-01	2.690E-01	NOT IDENT.
BK-247	-6.056E-02	1.076E-01	1.832E-01	NOT IDENT.
CM-247	-3.746E-02	5.068E-02	8.326E-02	NOT IDENT.
CF-249	3.580E-02	5.966E-02	1.134E-01	NOT IDENT.
CF-251	6.566E-02	1.848E-01	3.392E-01	NOT IDENT.
ANH-511	-5.837E-03	6.332E-02	1.335E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:29:26.68

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	87	10.66*	1.061E+00	5.492E+00	5.492E+00	29.11
KR-85	514.00	19	0.43*	2.678E+00	1.162E+01	1.168E+01	146.64
SR-85	514.00	19	96.00*	2.678E+00	5.251E-02	7.395E-02	146.64
TL-208	277.37	------	6.60	4.146E+00	------	Line Not Found	------
	583.19	25	85.00*	2.423E+00	8.671E-02	8.671E-02	128.53
	860.56	------	12.50	1.732E+00	------	Line Not Found	------
BI-211	72.87	96	1.23	3.508E+00	1.582E+01	1.582E+01	46.47
	351.06	280	12.92*	3.513E+00	4.385E+00	4.385E+00	18.26
BI-212	727.33	33	6.67*	2.017E+00	1.751E+00	1.751E+00	46.43
	1620.50	------	1.47	9.858E-01	------	Line Not Found	------
PB-212	74.82	96	10.28	3.508E+00	1.893E+00	1.893E+00	46.47
	77.11	133	17.10	3.867E+00	1.430E+00	1.430E+00	41.78
	238.63	183	43.60*	4.596E+00	6.506E-01	6.506E-01	30.04
	300.09	------	3.30	3.926E+00	------	Line Not Found	------
BI-214	609.32	203	45.49*	2.342E+00	1.353E+00	1.353E+00	21.35
	1120.29	38	14.92	1.345E+00	1.340E+00	1.340E+00	64.09
	1764.49	18	15.30	9.413E-01	9.110E-01	9.110E-01	77.00
PB-214	74.82	96	5.80	3.508E+00	3.355E+00	3.356E+00	46.47
	77.11	133	9.70	3.867E+00	2.522E+00	2.522E+00	41.78
	87.09	------	3.41	4.851E+00	------	Line Not Found	------
	242.00	56	7.25	4.556E+00	1.201E+00	1.201E+00	89.60
	295.22	188	18.42	3.971E+00	1.830E+00	1.830E+00	19.67
	351.93	280	35.60*	3.513E+00	1.591E+00	1.591E+00	18.26
RN-222	609.32	203	45.49*	2.342E+00	1.353E+00	1.353E+00	21.35
	1120.29	38	14.92	1.345E+00	1.340E+00	1.340E+00	64.09
	1764.49	18	15.30	9.413E-01	9.110E-01	9.110E-01	77.00
RA-224	240.99	56	4.10*	4.556E+00	2.123E+00	2.123E+00	89.60
RA-226	74.82	96	5.80	3.508E+00	3.355E+00	3.356E+00	46.47
	77.11	133	9.70	3.867E+00	2.522E+00	2.522E+00	41.78
	87.09	------	3.41	4.851E+00	------	Line Not Found	------
	242.00	56	7.25	4.556E+00	1.201E+00	1.201E+00	89.60
	295.22	188	18.42	3.971E+00	1.830E+00	1.830E+00	19.67
	351.93	280	35.60*	3.513E+00	1.591E+00	1.591E+00	18.26
AC-228	105.21	------	1.10	5.882E+00	------	Line Not Found	------
	338.32	45	11.27	3.608E+00	7.923E-01	7.923E-01	84.73
	835.71	------	1.61	1.780E+00	------	Line Not Found	------
	911.20	35	25.80*	1.640E+00	5.916E-01	5.916E-01	59.52
	968.97	20	15.80	1.546E+00	5.733E-01	5.733E-01	115.29
RA-228	105.21	------	1.10	5.882E+00	------	Line Not Found	------
	338.32	45	11.27	3.608E+00	7.923E-01	7.923E-01	84.73
	835.71	------	1.61	1.780E+00	------	Line Not Found	------
	911.20	35	25.80*	1.640E+00	5.916E-01	5.916E-01	59.52
	968.97	20	15.80	1.546E+00	5.733E-01	5.733E-01	115.29
TH-228	74.82	96	10.28	3.508E+00	1.893E+00	1.893E+00	46.47
	77.11	133	17.10	3.867E+00	1.430E+00	1.430E+00	41.78
	238.63	183	43.60*	4.596E+00	6.506E-01	6.506E-01	30.04
	300.09	------	3.30	3.926E+00	------	Line Not Found	------

Sample ID : G719378009 Acquisition date : 10-MAY-2025 10:27:47

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-230	74.82	96	5.80	3.508E+00	3.355E+00	3.355E+00	46.47
	77.11	133	9.70	3.867E+00	2.522E+00	2.522E+00	41.78
	87.09	------	3.41	4.851E+00	------	Line Not Found	------
	242.00	56	7.25	4.556E+00	1.201E+00	1.201E+00	89.60
	295.22	188	18.42	3.971E+00	1.830E+00	1.830E+00	19.67
	351.93	280	35.60*	3.513E+00	1.591E+00	1.591E+00	18.26
TH-232	105.21	------	1.10	5.882E+00	------	Line Not Found	------
	338.32	45	11.27	3.608E+00	7.923E-01	7.923E-01	84.73
	835.71	------	1.61	1.780E+00	------	Line Not Found	------
	911.20	35	25.80*	1.640E+00	5.916E-01	5.916E-01	59.52
	968.97	20	15.80	1.546E+00	5.733E-01	5.733E-01	115.29
U-234	74.82	96	5.80	3.508E+00	3.355E+00	3.355E+00	46.47
	77.11	133	9.70	3.867E+00	2.522E+00	2.522E+00	41.78
	87.09	------	3.41	4.851E+00	------	Line Not Found	------
	242.00	56	7.25	4.556E+00	1.201E+00	1.201E+00	89.60
	295.22	188	18.42	3.971E+00	1.830E+00	1.830E+00	19.67
	351.93	280	35.60*	3.513E+00	1.591E+00	1.591E+00	18.26
AM-243	43.53	------	5.90	1.821E-01	------	Line Not Found	------
	74.66	96	67.20*	3.508E+00	2.896E-01	2.896E-01	46.47

Flag: "*" = Keyline

Sample ID : G719378009 Acquisition date : 10-MAY-2025 10:27:47

Total number of lines in spectrum	31	
Number of unidentified lines	10	
Number of lines tentatively identified by NID	21	67.74%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	5.492E+00	5.492E+00	1.599E+00	29.11	
KR-85	10.56Y	1.01	1.162E+01	1.168E+01	1.713E+01	146.64	
SR-85	64.84D	1.41	5.251E-02	7.395E-02	10.84E-02	146.64	
TL-208	1.41E+10Y	1.00	8.671E-02	8.671E-02	11.14E-02	128.53	
BI-211	7.04E+08Y	1.00	4.385E+00	4.385E+00	0.801E+00	18.26	
BI-212	1.41E+10Y	1.00	1.751E+00	1.751E+00	0.813E+00	46.43	
PB-212	1.41E+10Y	1.00	6.506E-01	6.506E-01	1.955E-01	30.04	
BI-214	1600.00Y	1.00	1.353E+00	1.353E+00	0.289E+00	21.35	
PB-214	1600.00Y	1.00	1.591E+00	1.591E+00	0.291E+00	18.26	
RN-222	1600.00Y	1.00	1.353E+00	1.353E+00	0.289E+00	21.35	
RA-224	1.41E+10Y	1.00	2.123E+00	2.123E+00	1.902E+00	89.60	
RA-226	1600.00Y	1.00	1.591E+00	1.591E+00	0.291E+00	18.26	
AC-228	1.41E+10Y	1.00	5.916E-01	5.916E-01	3.521E-01	59.52	
RA-228	1.41E+10Y	1.00	5.916E-01	5.916E-01	3.521E-01	59.52	
TH-228	1.41E+10Y	1.00	6.506E-01	6.506E-01	1.955E-01	30.04	
TH-230	7.54E+04Y	1.00	1.591E+00	1.591E+00	0.291E+00	18.26	
TH-232	1.41E+10Y	1.00	5.916E-01	5.916E-01	3.521E-01	59.52	
U-234	2.45E+05Y	1.00	1.591E+00	1.591E+00	0.291E+00	18.26	
AM-243	7370.00Y	1.00	2.896E-01	2.896E-01	1.346E-01	46.47	
			---	---			
	Total Activity :		3.794E+01	3.803E+01			

Grand Total Activity : 3.794E+01 3.803E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378009 Acquisition date : 10-MAY-2025 10:27:47

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	65.04	67	166	3.51	130.50	122	18	1.84E-02	97.0	2.29E+00	T
0	93.01	43	221	2.33	186.44	180	13	1.18E-02	****	5.29E+00	T
0	186.42	42	136	2.07	373.19	366	12	1.18E-02	****	5.39E+00	T
0	199.11	17	120	3.80	398.57	390	13	4.79E-03	****	5.18E+00	T
0	480.49	10	39	3.00	961.15	947	16	2.86E-03	****	2.81E+00	
0	543.45	15	15	2.27	1087.05	1079	13	4.44E-03	****	2.56E+00	
0	714.84	18	15	0.91	1429.74	1420	16	5.28E-03	****	2.05E+00	
0	849.58	6	13	0.67	1699.17	1687	14	1.67E-03	****	1.75E+00	
0	921.70	19	10	2.56	1843.38	1832	22	5.56E-03	95.7	1.62E+00	
0	934.20	14	7	1.03	1868.37	1862	11	4.01E-03	92.6	1.60E+00	T
0	1103.15	17	3	4.02	2206.22	2198	15	4.86E-03	67.7	1.37E+00	
0	1175.44	5	6	0.70	2350.78	2340	12	1.39E-03	****	1.29E+00	
0	1377.62	10	5	0.88	2755.09	2750	10	3.06E-03	97.1	1.11E+00	
0	1386.41	8	0	0.66	2772.67	2768	9	2.50E-03	66.7	1.11E+00	
0	1498.19	9	0	4.85	2996.20	2990	13	2.78E-03	63.2	1.04E+00	

Flags: "T" = Tentatively associated

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378009.CNF;1  *
* Acquisition date : 10-MAY-2025 10:27:47 Sensitivity     : 3.000           *
* Detector ID      : GAM33                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.41     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:20:00 Nuclide Library : SOLID           *
* Sample ID        : G719378009           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.0545E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-NOV-2024 09:05:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM33_CAN.CNF;17            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	4.208E-01
KR-85	6.952E+00
SR-85	4.401E-02
TL-208	3.589E-02
BI-211	2.418E-01
BI-212	5.575E-01
PB-212	7.344E-02
BI-214	7.856E-02
PB-214	8.793E-02
RN-222	7.856E-02
RA-224	7.865E-01
RA-226	8.793E-02
AC-228	1.213E-01
RA-228	1.213E-01
TH-228	7.344E-02
TH-230	8.793E-02
TH-232	1.213E-01
U-234	8.793E-02
AM-243	7.445E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.933E-01	NOT IDENT.
NA-22	4.647E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.768E-02	NOT IDENT.
SC-46	5.329E-02	FAIL ABUN
V-48	1.509E-01	NOT IDENT.
CR-51	6.815E-01	NOT IDENT.
MN-52	2.216E+00	FAIL ABUN
MN-54	4.511E-02	NOT IDENT.
CO-56	5.135E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	3.100E-02	NOT IDENT.

CO-58	4.781E-02	NOT IDENT.
FE-59	1.108E-01	NOT IDENT.
CO-60	4.063E-02	NOT IDENT.
ZN-65	1.088E-01	NOT IDENT.
GE-68	1.198E+00	NOT IDENT.
AS-73	2.337E+00	NOT IDENT.
AS-74	2.097E-01	NOT IDENT.
SE-75	5.026E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	6.033E-01	NOT IDENT.
RB-83	7.827E-02	NOT IDENT.
RB-84	1.024E-01	NOT IDENT.
RB-86	1.384E+00	NOT IDENT.
Y-88	3.812E-02	NOT IDENT.
Y-91	1.969E+01	NOT IDENT.
NB-94	3.578E-02	NOT IDENT.
NB-95	6.367E-02	NOT IDENT.
NB-95M	2.065E-01	NOT IDENT.
ZR-95	9.053E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.757E-02	FAIL ABUN
RH-102	5.245E-02	NOT IDENT.
RU-103	5.621E-02	FAIL ABUN
RH-106	3.357E-01	NOT IDENT.
RU-106	3.357E-01	NOT IDENT.
AG-108M	3.846E-02	NOT IDENT.
CD-109	1.172E+00	NOT IDENT.
AG-110	7.303E-01	NOT IDENT.
AG-110M	5.566E-02	NOT IDENT.
SN-113	5.636E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.658E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.949E-02	NOT IDENT.
SB-124	8.999E-02	NOT IDENT.
SB-125	1.007E-01	NOT IDENT.
TE-125M	1.443E+01	NOT IDENT.
I-126	6.068E-01	NOT IDENT.
SB-126	3.826E-01	NOT IDENT.
SN-126	1.123E-01	FAIL ABUN
SB-127	3.186E+01	NOT IDENT.
I-131	5.563E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	5.473E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.801E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.517E-01	NOT IDENT.
BA-137M	2.946E-02	NOT IDENT.
CS-137	3.112E-02	NOT IDENT.
LA-138	6.782E-02	NOT IDENT.
CE-139	3.828E-02	NOT IDENT.
BA-140	6.051E-01	NOT IDENT.
LA-140	3.361E-01	NOT IDENT.
CE-141	1.066E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.503E-01	NOT IDENT.
PM-144	3.909E-02	NOT IDENT.
PR-144	2.954E+00	NOT IDENT.
PM-146	4.088E-02	NOT IDENT.
ND-147	1.940E+00	NOT IDENT.
PM-147	9.139E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.991E-02	FAIL ABUN
EU-152	1.222E-01	NOT IDENT.
GD-153	1.184E-01	NOT IDENT.
EU-154	1.293E-01	NOT IDENT.
EU-155	1.224E-01	NOT IDENT.
TB-160	1.561E-01	NOT IDENT.
HO-166M	5.702E-02	NOT IDENT.
TM-171	4.758E+01	NOT IDENT.
HF-172	2.233E-01	NOT IDENT.
LU-172	7.157E-02	FAIL ABUN
LU-176	3.222E-02	NOT IDENT.

HF-181	5.917E-02	NOT IDENT.
TA-182	2.296E-01	FAIL ABUN
RE-183	4.672E-01	NOT IDENT.
RE-184	1.758E-01	NOT IDENT.
W-188	9.587E+00	FAIL ABUN
IR-192	4.777E-02	FAIL ABUN
HG-203	6.533E-02	FAIL ABUN
TL-204	6.995E+00	NOT IDENT.
BI-207	5.626E-02	FAIL ABUN
BI-210	1.188E+01	NOT IDENT.
PB-210	1.188E+01	NOT IDENT.
PB-211	7.859E-01	NOT IDENT.
BI-213	1.193E-01	NOT IDENT.
RN-219	4.382E-01	NOT IDENT.
RA-223	7.684E-01	FAIL ABUN
AC-225	1.958E+00	NOT IDENT.
AC-227	3.272E-01	NOT IDENT.
TH-227	3.272E-01	NOT IDENT.
TH-229	6.548E-01	NOT IDENT.
PA-231	5.763E-01	NOT IDENT.
TH-231	7.684E-01	FAIL ABUN
PA-233	7.162E-02	NOT IDENT.
PA-234	2.766E-01	NOT IDENT.
PA-234M	2.419E+00	FAIL ABUN
TH-234	2.419E+00	FAIL ABUN
U-235	2.557E-01	FAIL ABUN
NP-237	7.162E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	2.419E+00	FAIL ABUN
NP-239	3.132E-01	NOT IDENT.
PU-239	3.906E+02	NOT IDENT.
AM-241	2.842E-01	NOT IDENT.
CM-243	1.266E-01	NOT IDENT.
BK-247	8.412E-02	NOT IDENT.
CM-247	3.746E-02	NOT IDENT.
CF-249	5.230E-02	NOT IDENT.
CF-251	1.596E-01	NOT IDENT.
ANH-511	6.319E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:29:41.79

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378009.CNF;1  *
* Acquisition date : 10-MAY-2025 10:27:47 Sensitivity     : 3.000           *
* Detector ID      : GAM33                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.41     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:20:00 Nuclide Library : SOLID           *
* Sample ID        : G719378009           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.0545E+02 GRAM *
*                                         Quantity Err(%) : 1.8966E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 25-NOV-2024 09:05:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM33_CAN.CNF;17            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	5.492E+00	1.696E+00	1.696E+00
KR-85	1.168E+01	1.682E+01	1.682E+01
SR-85	7.395E-02	1.065E-01	1.065E-01
TL-208	8.671E-02	1.095E-01	1.095E-01
BI-211	4.385E+00	8.892E-01	8.892E-01
BI-212	1.751E+00	8.148E-01	8.148E-01
PB-212	6.506E-01	2.010E-01	2.010E-01
BI-214	1.353E+00	3.055E-01	3.055E-01
PB-214	1.591E+00	3.217E-01	3.217E-01
RN-222	1.353E+00	3.055E-01	3.055E-01
RA-224	2.123E+00	1.875E+00	1.875E+00
RA-226	1.591E+00	3.217E-01	3.217E-01
AC-228	5.916E-01	3.542E-01	3.542E-01
RA-228	5.916E-01	3.542E-01	3.542E-01
TH-228	6.506E-01	2.010E-01	2.010E-01
TH-230	1.591E+00	3.217E-01	3.217E-01
TH-232	5.916E-01	3.542E-01	3.542E-01
U-234	1.591E+00	3.217E-01	3.217E-01
AM-243	2.896E-01	1.350E-01	1.350E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	3.759E-01	5.550E-01	5.803E-01	NOT IDENT.
NA-22	3.459E-03	5.529E-02	5.531E-02	NOT IDENT.
NA-24	-7.674E+13	1.265E+14	1.311E+14	SHORT HLIF
AL-26	-9.021E-03	2.758E-02	2.787E-02	NOT IDENT.
SC-46	5.838E-02	5.346E-02	5.959E-02	FAIL ABUN
V-48	6.122E-02	1.676E-01	1.698E-01	NOT IDENT.
CR-51	3.289E-01	7.892E-01	8.031E-01	NOT IDENT.
MN-52	7.915E-01	2.473E+00	2.499E+00	FAIL ABUN
MN-54	1.023E-02	5.186E-02	5.207E-02	NOT IDENT.
CO-56	8.056E-03	5.949E-02	5.960E-02	NOT IDENT.
MN-56	1.000E+41	7.583E+41	0.000E+00	SHORT HLIF

CO-57	5.132E-03	3.616E-02	3.624E-02	NOT IDENT.
CO-58	-1.735E-02	5.948E-02	6.000E-02	NOT IDENT.
FE-59	2.521E-02	1.450E-01	1.454E-01	NOT IDENT.
CO-60	-9.184E-03	5.139E-02	5.155E-02	NOT IDENT.
ZN-65	4.180E-02	1.402E-01	1.414E-01	NOT IDENT.
GE-68	-6.629E-01	1.580E+00	1.608E+00	NOT IDENT.
AS-73	-6.298E-01	2.760E+00	2.774E+00	NOT IDENT.
AS-74	1.724E-01	2.229E-01	2.361E-01	NOT IDENT.
SE-75	-5.111E-02	6.614E-02	7.004E-02	NOT IDENT.
BR-77	1.399E+04	1.363E+04	1.501E+04	SHORT HLIF
SR-82	-1.030E-01	7.276E-01	7.291E-01	NOT IDENT.
RB-83	-1.074E-01	1.263E-01	1.353E-01	NOT IDENT.
RB-84	-1.086E-02	1.235E-01	1.236E-01	NOT IDENT.
RB-86	-6.661E-01	1.801E+00	1.826E+00	NOT IDENT.
Y-88	-2.346E-02	5.600E-02	5.699E-02	NOT IDENT.
Y-91	-6.331E+00	2.529E+01	2.545E+01	NOT IDENT.
NB-94	2.130E-02	3.886E-02	4.003E-02	NOT IDENT.
NB-95	5.011E-02	6.865E-02	7.227E-02	NOT IDENT.
NB-95M	2.584E-01	2.576E-01	2.827E-01	NOT IDENT.
ZR-95	4.379E-02	9.950E-02	1.014E-01	NOT IDENT.
NB-97	-1.000E+41	2.300E+41	0.000E+00	SHORT HLIF
ZR-97	6.628E+13	4.508E+13	5.408E+13	SHORT HLIF
MO-99	8.239E+02	1.096E+03	1.157E+03	SHORT HLIF
TC-99M	3.551E+36	9.942E+36	0.000E+00	SHORT HLIF
RH-101	2.536E-02	4.270E-02	4.420E-02	FAIL ABUN
RH-102	-3.553E-02	6.708E-02	6.896E-02	NOT IDENT.
RU-103	-6.756E-03	7.005E-02	7.011E-02	FAIL ABUN
RH-106	2.690E-01	3.515E-01	3.718E-01	NOT IDENT.
RU-106	2.690E-01	3.515E-01	3.718E-01	NOT IDENT.
AG-108M	4.260E-02	4.189E-02	4.608E-02	NOT IDENT.
CD-109	5.014E-02	1.557E+00	1.557E+00	NOT IDENT.
AG-110	-4.890E-02	8.643E-01	8.646E-01	NOT IDENT.
AG-110M	-8.223E-04	6.618E-02	6.618E-02	NOT IDENT.
SN-113	-2.435E-03	6.891E-02	6.891E-02	NOT IDENT.
CD-115	-1.818E+03	2.854E+03	2.970E+03	SHORT HLIF
SN-117M	1.295E-01	1.876E-01	1.964E-01	NOT IDENT.
SB-122	9.490E+00	1.842E+02	1.842E+02	SHORT HLIF
TE-123M	4.425E-03	4.653E-02	4.657E-02	NOT IDENT.
SB-124	4.332E-02	9.003E-02	9.212E-02	NOT IDENT.
SB-125	-1.066E-01	1.371E-01	1.452E-01	NOT IDENT.
TE-125M	-2.176E+00	1.745E+01	1.748E+01	NOT IDENT.
I-126	3.624E-01	6.605E-01	6.804E-01	NOT IDENT.
SB-126	-2.268E-01	6.564E-01	6.643E-01	NOT IDENT.
SN-126	-3.232E-03	1.496E-01	1.496E-01	FAIL ABUN
SB-127	1.884E+01	3.485E+01	3.587E+01	NOT IDENT.
I-131	-2.877E-01	7.109E-01	7.226E-01	NOT IDENT.
I-132	1.000E+41	2.553E+41	0.000E+00	SHORT HLIF
TE-132	1.060E+00	3.673E+01	3.673E+01	SHORT HLIF
BA-133	3.025E-02	7.161E-02	7.290E-02	NOT IDENT.
I-133	-1.346E+09	5.671E+09	5.703E+09	SHORT HLIF
CS-134	8.775E-02	5.752E-02	6.981E-02	NOT IDENT.
I-135	-2.174E+34	2.813E+34	0.000E+00	SHORT HLIF
CS-136	-7.894E-02	3.172E-01	3.192E-01	NOT IDENT.
BA-137M	-1.937E-02	3.803E-02	3.902E-02	NOT IDENT.
CS-137	-2.047E-02	4.017E-02	4.122E-02	NOT IDENT.
LA-138	5.364E-02	6.805E-02	7.222E-02	NOT IDENT.
CE-139	-6.581E-03	4.598E-02	4.608E-02	NOT IDENT.
BA-140	-1.074E+00	1.030E+00	1.138E+00	NOT IDENT.
LA-140	1.769E-01	3.707E-01	3.791E-01	NOT IDENT.
CE-141	-1.219E-01	1.352E-01	1.460E-01	NOT IDENT.
CE-143	4.522E+06	1.381E+06	2.462E+06	SHORT HLIF
CE-144	1.027E-01	2.884E-01	2.921E-01	NOT IDENT.
PM-144	3.079E-02	4.143E-02	4.369E-02	NOT IDENT.
PR-144	2.336E+00	3.130E+00	3.302E+00	NOT IDENT.
PM-146	-4.323E-02	5.671E-02	5.997E-02	NOT IDENT.
ND-147	1.039E+00	2.131E+00	2.182E+00	NOT IDENT.
PM-147	7.093E+02	1.026E+03	1.075E+03	NOT IDENT.
PM-149	1.018E+04	2.603E+04	2.643E+04	SHORT HLIF
EU-150	4.279E-03	4.075E-02	4.080E-02	FAIL ABUN
EU-152	-5.443E-02	1.916E-01	1.931E-01	NOT IDENT.
GD-153	4.679E-02	1.539E-01	1.553E-01	NOT IDENT.
EU-154	6.276E-03	1.546E-01	1.546E-01	NOT IDENT.
EU-155	-8.804E-02	1.506E-01	1.558E-01	NOT IDENT.
TB-160	-8.938E-02	2.017E-01	2.057E-01	NOT IDENT.
HO-166M	1.459E-02	7.340E-02	7.370E-02	NOT IDENT.
TM-171	4.400E+01	5.266E+01	5.627E+01	NOT IDENT.
HF-172	1.392E-01	2.538E-01	2.615E-01	NOT IDENT.
LU-172	-5.569E-03	8.675E-02	8.679E-02	FAIL ABUN

LU-176	2.012E-02	3.683E-02	3.793E-02	NOT IDENT.
HF-181	-1.079E-02	8.556E-02	8.570E-02	NOT IDENT.
TA-182	1.455E-02	2.737E-01	2.737E-01	FAIL ABUN
RE-183	1.471E-01	6.030E-01	6.066E-01	NOT IDENT.
RE-184	-3.474E-02	2.499E-01	2.504E-01	NOT IDENT.
W-188	-2.756E+00	1.363E+01	1.369E+01	FAIL ABUN
IR-192	-6.805E-03	5.849E-02	5.857E-02	FAIL ABUN
HG-203	6.276E-02	7.326E-02	7.854E-02	FAIL ABUN
TL-204	2.451E+00	1.238E+01	1.243E+01	NOT IDENT.
BI-207	3.372E-02	6.059E-02	6.247E-02	FAIL ABUN
BI-210	2.435E+00	1.360E+01	1.364E+01	NOT IDENT.
PB-210	2.435E+00	1.360E+01	1.364E+01	NOT IDENT.
PB-211	1.231E-01	9.417E-01	9.433E-01	NOT IDENT.
BI-213	6.594E-02	1.369E-01	1.401E-01	NOT IDENT.
RN-219	9.815E-02	5.209E-01	5.228E-01	NOT IDENT.
RA-223	1.279E-01	9.161E-01	9.179E-01	FAIL ABUN
AC-225	-5.467E-01	2.396E+00	2.408E+00	NOT IDENT.
AC-227	4.692E-02	3.891E-01	3.897E-01	NOT IDENT.
TH-227	4.692E-02	3.891E-01	3.897E-01	NOT IDENT.
TH-229	2.588E-02	8.880E-01	8.881E-01	NOT IDENT.
PA-231	1.161E-01	7.084E-01	7.104E-01	NOT IDENT.
TH-231	1.279E-01	9.161E-01	9.179E-01	FAIL ABUN
PA-233	-3.559E-02	9.058E-02	9.199E-02	NOT IDENT.
PA-234	-9.429E-02	3.651E-01	3.676E-01	NOT IDENT.
PA-234M	-3.023E-01	2.833E+00	2.837E+00	FAIL ABUN
TH-234	-3.023E-01	2.833E+00	2.837E+00	FAIL ABUN
U-235	8.805E-03	3.023E-01	3.023E-01	FAIL ABUN
NP-237	-3.559E-02	9.058E-02	9.199E-02	NOT IDENT.
NP-238	6.776E+03	5.808E+03	6.562E+03	SHORT HLIF
U-238	-3.023E-01	2.833E+00	2.837E+00	FAIL ABUN
NP-239	-2.226E-01	3.858E-01	3.986E-01	NOT IDENT.
PU-239	3.091E+01	4.588E+02	4.590E+02	NOT IDENT.
AM-241	4.154E-02	3.715E-01	3.720E-01	NOT IDENT.
CM-243	-4.899E-02	1.524E-01	1.540E-01	NOT IDENT.
BK-247	-6.056E-02	1.084E-01	1.118E-01	NOT IDENT.
CM-247	-3.746E-02	5.116E-02	5.387E-02	NOT IDENT.
CF-249	3.580E-02	5.980E-02	6.194E-02	NOT IDENT.
CF-251	6.566E-02	1.850E-01	1.873E-01	NOT IDENT.
ANH-511	-5.837E-03	6.332E-02	6.338E-02	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	116.8931	85.43	140.3795	131.20	93.6983
45.60	96.6776	86.55	135.7300	133.02	76.0183
46.54	92.1123	86.79	132.1662	133.52	80.9765
49.72	0.0000	86.94	132.1793	136.00	90.9700
51.35	81.3081	87.09	135.2672	136.47	99.8935
51.87	78.5411	87.57	144.5365	140.51	0.0000
52.39	78.5774	88.03	147.6574	143.76	92.3267
52.97	94.5288	88.34	147.6879	144.24	103.2724
53.44	97.3770	88.47	140.0080	145.44	103.3351
54.07	101.1782	89.96	143.2265	152.43	89.7350
57.36	0.0000	1093.63	157.1574	153.25	84.7840
57.53	95.2159	91.11	157.2060	323.87	83.8257
57.98	85.7267	92.59	126.3106	156.02	103.8754
59.27	88.8306	93.35	126.3730	158.56	79.0018
59.32	88.8344	94.56	106.5836	159.00	91.0215
59.54	88.8506	94.65	117.4034	162.33	87.1580
60.96	88.9546	94.67	117.4048	162.66	91.1798
61.17	88.9699	94.87	117.4201	163.33	88.2014
62.93	95.3265	97.43	99.0410	165.86	84.2922
63.29	95.3541	98.43	96.0065	176.31	73.6060
63.58	95.3763	98.44	96.0073	176.60	69.5817
64.28	95.4296	99.53	94.0805	177.52	75.6638
66.73	95.6141	100.11	93.0073	181.07	0.0000
67.24	95.6519	102.03	91.1780	181.52	88.9373
125.81	104.2110	103.18	93.1835	184.41	77.7164
67.75	104.2164	103.37	93.1945	143.76	86.0642
68.89	91.0323	105.21	96.2144	193.51	82.8999
69.67	91.0869	105.31	96.2201	197.03	77.3261
70.82	91.1660	106.12	93.3501	198.01	77.3580
70.83	91.1667	106.47	93.3695	201.83	88.0849
72.81	103.9831	109.28	83.7839	203.43	81.6138
72.87	103.9877	111.00	94.5963	205.31	87.8030
74.66	113.3311	111.76	0.0000	210.85	83.9094
74.82	113.3443	114.06	84.0185	215.65	62.5414
74.97	113.3570	116.30	0.0000	218.12	55.4189
77.11	113.5331	116.74	98.8247	222.11	49.3392
78.74	113.6656	119.76	70.5700	227.09	62.8243
79.69	122.3445	121.12	71.6046	227.38	56.6512
80.03	122.3735	121.22	71.6087	228.16	0.0000
80.12	122.3818	121.78	77.5185	228.18	55.6385
80.19	122.3877	122.06	78.5120	116.74	55.6385
80.57	122.4204	122.92	88.3682	235.69	72.7456
81.00	125.5190	123.07	91.3212	235.96	72.7525
81.07	125.5250	265.00	99.2104	238.63	78.6191
81.75	137.8367	125.81	68.8403	238.98	0.0000
82.47	130.2444	127.23	71.8459	240.99	78.6893
83.79	142.6322	127.91	70.8880	242.00	78.7188
84.00	138.0515	129.30	81.7793	244.70	68.0154

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	65.5052	344.28	55.7411	563.25	21.7805
252.80	71.7543	345.93	60.0588	564.24	0.0000
254.15	0.0000	351.06	44.0392	569.33	24.5360
256.23	64.5553	351.93	44.0511	946.00	23.6285
260.90	0.0000	355.39	0.0000	569.70	23.6292
264.66	55.3509	356.01	41.3080	583.19	20.0541
264.80	53.2653	364.49	42.0582	584.27	24.3132
265.00	53.2692	366.42	0.0000	595.83	16.4527
269.46	43.9380	372.51	38.9136	427.87	28.9747
270.03	55.4561	375.05	28.1249	602.52	0.0000
271.23	54.4327	377.52	34.6396	604.72	24.4212
273.65	72.2891	356.01	42.2938	607.14	25.6560
276.40	61.8719	388.16	35.8304	609.32	25.6676
277.37	57.6965	388.63	41.2650	610.33	25.6730
277.60	54.5533	391.69	35.8661	614.28	12.2357
278.00	50.3643	264.66	34.8662	618.01	21.8116
279.20	49.3351	401.81	28.3379	620.36	15.6204
279.54	52.4902	402.40	39.2434	621.93	11.0297
279.70	52.4933	404.85	30.5434	630.19	0.0000
280.46	59.8580	410.95	29.5016	631.29	22.1027
283.69	57.8215	413.71	29.5238	633.25	18.4268
284.31	58.8848	414.70	26.2504	634.78	12.9028
285.41	50.4917	423.72	33.9890	635.95	10.1404
285.90	0.0000	427.09	30.7275	636.99	12.9086
287.50	49.4749	427.87	42.8080	657.50	16.6667
290.67	50.5818	433.94	24.1867	657.76	16.6676
293.27	0.0000	439.40	34.1300	657.90	0.0000
351.93	52.7695	440.45	24.2280	661.66	17.6075
295.96	52.3602	453.88	33.1531	664.57	0.0000
879.38	28.7386	463.37	27.6943	666.33	15.7690
299.98	35.5170	468.07	34.3816	666.50	16.6970
300.09	43.9747	473.00	10.6604	667.71	0.0000
300.13	43.9753	475.06	17.7766	677.62	18.5938
301.36	49.5526	476.78	23.3417	685.70	15.8300
302.85	58.1924	477.60	23.3465	692.65	0.0000
256.23	58.2235	482.18	24.9310	695.00	14.9262
304.85	48.7016	487.02	17.8291	696.49	13.0645
306.78	39.1979	492.35	0.0000	696.51	13.0645
308.46	39.2193	497.08	24.5751	697.00	13.0655
311.90	47.7521	505.52	30.4456	697.30	14.9332
316.51	46.7601	507.63	0.0000	697.49	16.8003
319.41	56.3764	511.00	23.5369	702.65	14.0145
320.08	39.3656	514.00	23.5534	706.68	18.7007
321.04	32.9919	514.00	23.5534	711.68	12.4792
323.87	44.7384	520.40	32.9499	720.70	23.4387
325.23	58.6112	520.69	0.0000	721.93	0.0000
328.76	37.3392	522.65	0.0000	722.78	14.0691
333.37	49.5722	527.90	0.0000	722.91	14.0693
333.97	37.6132	528.26	27.9091	723.31	14.0702
334.37	41.0379	529.59	27.0168	724.19	15.6364
338.28	53.4988	529.87	0.0000	727.33	20.6524
338.32	53.4996	531.02	21.6211	733.00	15.6624
311.90	53.5355	537.26	33.0797	735.93	18.8057
340.48	53.5355	546.56	0.0000	333.97	21.6327
340.55	59.9606	552.55	18.1064	739.50	0.0000

ENERGY	MDA COUNTS
744.23	21.6602
747.24	16.9611
748.06	17.9062
752.31	16.9770
753.82	14.1515
756.73	12.2713
756.80	12.2716
884.68	27.4112
765.81	17.9651
766.84	15.1316
772.60	0.0000
776.52	20.8425
739.50	0.0000
778.90	18.9561
783.70	18.0240
788.74	18.9902
792.07	19.0015
795.86	10.4581
810.06	19.0630
810.29	19.0635
344.28	17.1580
810.76	18.1122
815.77	17.1738
1048.07	9.5457
832.01	18.1799
834.85	18.1892
835.71	23.9368
836.80	0.0000
846.75	0.0000
846.77	15.3488
856.80	23.0631
860.56	23.0777
871.09	17.3395
873.19	17.3457
875.33	0.0000
879.38	17.3637
880.51	17.3672
881.60	14.4752
883.24	8.6875
884.68	14.4829
889.28	6.7638
894.76	19.3428
898.04	10.6444
900.72	17.4261
903.28	14.5276
911.20	9.6978
912.08	16.1654
923.98	0.0000
926.50	4.8611
929.11	4.8632
935.54	11.3593
937.49	11.3628
944.13	11.7000
946.00	12.6788
949.00	6.8303

ENERGY	MDA COUNTS
667.71	0.0000
962.31	13.4452
964.08	14.6719
966.17	17.9381
911.20	19.5776
983.53	8.8302
984.45	0.0000
1274.44	16.7124
1002.74	10.8246
1004.73	13.7813
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	13.8510
1038.76	0.0000
631.29	11.8881
1048.07	12.8819
1049.04	11.8928
1050.41	6.9388
1063.66	7.9457
1077.00	12.9372
1077.34	12.9378
1085.87	15.9438
1093.63	13.9665
1099.45	8.3203
1112.07	11.6701
1112.84	13.3385
1115.54	13.3438
1120.29	15.0220
1120.55	15.0227
1221.41	13.3548
1129.67	10.0283
1131.51	0.0000
1147.95	0.0000
1173.23	8.0723
1177.95	8.4139
1189.05	10.1123
1204.77	9.1208
1221.41	14.2201
1231.02	12.2045
1235.36	21.3712
1238.28	7.1265
1260.41	0.0000
1271.87	8.1813
1274.44	10.2300
1274.54	10.2300
1291.59	9.2276
1298.22	0.0000
1312.11	7.1962
1332.49	9.2769
1362.66	0.0000
1365.19	7.2454
1368.63	0.0000
1384.29	7.7813
1408.01	6.2435

ENERGY	MDA COUNTS
1434.09	5.2197
1435.80	3.1324
1457.56	0.0000
1460.82	8.3785
1489.16	5.2544
1505.03	10.5283
1584.12	5.3127
1596.21	7.4481
1620.50	3.2008
1621.92	4.2686
1678.03	0.0000
1690.97	1.0753
1750.46	0.0000
1764.49	7.2256
1063.66	14.0981
1771.35	9.7616
1791.20	0.0000
1808.65	2.1777
1810.72	0.0000
1836.06	5.4600

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:59:11.75

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378010.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM38.CNF;185
                                         Background date  : 4-MAY-2025 09:27:26.
Sample date      : 8-APR-2025 09:18:00. Acquisition date : 10-MAY-2025 10:28:22
Sample ID        : G719378010           Sample quantity  : 8.88300E+01 GRAM
Detector name    : GAM38                Detector geometry: CAN
Elapsed live time: 0 01:30:00.00        Elapsed real time: 0 01:30:00.48  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	42.49	40	119	1.64	85.30	83	7	7.41E-03	47.9	
2	0	46.63*	82	161	0.97	93.57	90	9	1.51E-02	32.3	
3	0	63.72*	88	272	0.96	127.79	122	12	1.63E-02	40.3	
4	1	74.82*	262	199	1.16	150.00	144	17	4.86E-02	11.1	7.57E+00
5	1	77.21	476	171	1.18	154.78	144	17	8.82E-02	6.6	
6	0	86.72*	73	224	1.00	173.82	172	7	1.35E-02	36.2	
7	2	89.93	94	120	1.13	180.24	178	17	1.73E-02	19.4	2.07E+00
8	2	92.88*	96	145	1.35	186.15	178	17	1.77E-02	26.7	
9	0	130.01	38	148	0.90	260.47	255	10	7.05E-03	61.9	
10	0	163.62	25	84	1.26	327.72	326	7	4.66E-03	62.8	
11	0	186.04*	82	83	1.21	372.61	369	8	1.51E-02	24.1	
12	0	202.25	33	53	1.94	405.05	402	7	6.11E-03	40.8	
13	0	209.12	51	136	1.60	418.79	412	12	9.53E-03	47.6	
14	2	238.63*	385	72	1.18	477.85	473	19	7.12E-02	6.1	5.09E+00
15	2	241.70	161	69	1.68	484.00	473	19	2.98E-02	14.3	
16	1	270.04	37	44	1.57	540.71	535	16	6.80E-03	37.4	9.25E-01
17	1	273.54	21	30	1.58	547.71	535	16	3.85E-03	49.6	
18	0	277.30	24	50	1.43	555.25	552	8	4.44E-03	54.3	
19	0	295.43*	125	103	1.44	591.53	584	13	2.31E-02	19.2	
20	0	300.42	38	82	1.10	601.50	597	12	7.13E-03	49.5	
21	0	328.20	19	34	0.89	657.11	654	6	3.56E-03	52.6	
22	0	338.98*	65	96	1.17	678.67	673	13	1.20E-02	34.2	
23	0	351.91*	250	48	1.13	704.54	699	13	4.63E-02	8.6	
24	0	388.62	27	45	1.82	778.01	772	12	5.01E-03	53.2	
25	0	462.82	44	22	1.95	926.48	921	11	8.15E-03	25.6	
26	0	510.72*	36	26	2.32	1022.34	1015	15	6.58E-03	46.1	
27	0	529.24	15	15	0.92	1059.38	1056	8	2.79E-03	50.6	
28	0	583.34*	71	64	1.41	1167.63	1160	15	1.31E-02	27.8	
29	8	609.08*	138	30	1.26	1219.14	1212	19	2.55E-02	11.2	5.73E+00
30	8	612.48	17	22	3.68	1225.94	1212	19	3.22E-03	68.7	
31	0	660.94	39	26	1.65	1322.88	1315	13	7.17E-03	31.6	
32	0	697.22	15	18	0.71	1395.47	1391	8	2.83E-03	54.3	
33	0	727.25*	19	15	1.18	1455.54	1450	10	3.45E-03	48.5	
34	0	739.58	15	17	1.37	1480.21	1476	11	2.71E-03	60.0	

Sample ID : G719378010 Acquisition date : 10-MAY-2025 10:28:22

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	757.65	14	11	1.71	1516.36	1510	11	2.59E-03	53.1	
36	0	784.06	29	10	4.99	1569.20	1562	14	5.30E-03	30.4	
37	0	790.64	19	15	0.62	1582.36	1577	12	3.59E-03	45.8	
38	0	861.08	24	18	2.29	1723.27	1714	15	4.38E-03	44.8	
39	0	911.42*	53	21	1.27	1823.97	1817	12	9.86E-03	23.3	
40	1	965.01	18	28	2.33	1931.17	1923	28	3.29E-03	69.7	1.02E+00
41	1	968.71	49	28	2.33	1938.58	1923	28	9.06E-03	27.0	
42	0	1120.35	36	22	1.85	2241.88	2234	15	6.59E-03	33.5	
43	0	1156.52	22	6	5.56	2314.21	2307	14	4.01E-03	33.4	
44	0	1167.97	18	0	5.43	2337.11	2330	14	3.33E-03	23.6	
45	0	1179.74	14	8	1.67	2360.64	2354	11	2.56E-03	48.3	
46	0	1281.07	12	16	1.62	2563.29	2556	11	2.21E-03	71.8	
47	0	1303.27	5	11	0.61	2607.69	2597	12	9.72E-04	137.4	
48	0	1306.09	15	2	3.92	2613.32	2608	11	2.70E-03	34.0	
49	0	1460.71*	254	17	2.25	2922.53	2916	14	4.70E-02	7.3	
50	0	1764.50*	21	3	2.08	3529.90	3523	13	3.97E-03	30.7	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:59:13

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378010.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 09:18:00	Acquisition date	: 10-MAY-2025 10:28:22
Sample ID	: G719378010	Sample quantity	: 88.830 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA38	Detector geometry	: CAN
Elapsed live time	: 0 01:30:00.00	Elapsed real time	: 0 01:30:00.48 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G719378010 Acquisition date : 10-MAY-2025 10:28:22

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	235	10.66*	7.422E-01	1.676E+01	1.676E+01	14.57
CD-109	88.03	66	3.70*	7.419E+00	1.363E+00	1.430E+00	72.34
SN-126	64.28	80	9.60	7.514E+00	6.262E-01	6.262E-01	80.58
	86.94	66	8.90	7.419E+00	5.666E-01	5.666E-01	72.34
	87.57	66	37.00*	7.419E+00	1.363E-01	1.363E-01	72.34
BA-137M	661.66	36	89.90*	1.569E+00	1.428E-01	1.431E-01	63.18
CS-137	661.66	36	85.10*	1.569E+00	1.509E-01	1.512E-01	63.18
PR-144	696.51	14	1.34*	1.489E+00	3.988E+00	4.312E+00	108.67
	1489.16	------	0.28	7.294E-01	------	Line Not Found	------
TL-208	277.37	22	6.60	3.619E+00	5.207E-01	5.207E-01	108.65
	583.19	65	85.00*	1.773E+00	2.434E-01	2.434E-01	55.69
	860.56	22	12.50	1.214E+00	8.130E-01	8.130E-01	89.51
BI-210	46.54	74	4.25*	6.795E+00	1.449E+00	1.453E+00	64.56
PB-210	46.54	74	4.25*	6.795E+00	1.449E+00	1.453E+00	64.56
BI-211	72.87	------	1.23	7.566E+00	------	Line Not Found	------
	351.06	230	12.92*	2.901E+00	3.461E+00	3.461E+00	17.28
BI-212	727.33	17	6.67*	1.429E+00	1.017E+00	1.017E+00	96.92
	1620.50	------	1.47	6.759E-01	------	Line Not Found	------
PB-212	74.82	240	10.28	7.559E+00	1.738E+00	1.738E+00	22.14
	77.11	435	17.10	7.543E+00	1.902E+00	1.902E+00	13.24
	238.63	353	43.60*	4.128E+00	1.107E+00	1.107E+00	12.22
	300.09	35	3.30	3.364E+00	1.797E+00	1.797E+00	99.01
BI-214	609.32	127	45.49*	1.700E+00	9.263E-01	9.264E-01	22.41
	1120.29	33	14.92	9.468E-01	1.314E+00	1.314E+00	67.06
	1764.49	20	15.30	6.264E-01	1.169E+00	1.169E+00	61.44
PB-214	74.82	240	5.80	7.559E+00	3.080E+00	3.080E+00	22.14
	77.11	435	9.70	7.543E+00	3.352E+00	3.352E+00	13.24
	87.09	66	3.41	7.419E+00	1.479E+00	1.479E+00	72.34
	242.00	148	7.25	4.083E+00	2.815E+00	2.815E+00	28.63
	295.22	115	18.42	3.416E+00	1.030E+00	1.030E+00	38.47
	351.93	230	35.60*	2.901E+00	1.256E+00	1.256E+00	17.28
RN-222	609.32	127	45.49*	1.700E+00	9.263E-01	9.264E-01	22.41
	1120.29	33	14.92	9.468E-01	1.314E+00	1.314E+00	67.06
	1764.49	20	15.30	6.264E-01	1.169E+00	1.169E+00	61.44
RA-224	240.99	148	4.10*	4.083E+00	4.978E+00	4.978E+00	28.63
RA-226	74.82	240	5.80	7.559E+00	3.080E+00	3.080E+00	22.14
	77.11	435	9.70	7.543E+00	3.352E+00	3.352E+00	13.24
	87.09	66	3.41	7.419E+00	1.479E+00	1.479E+00	72.34
	242.00	148	7.25	4.083E+00	2.815E+00	2.815E+00	28.63
	295.22	115	18.42	3.416E+00	1.030E+00	1.030E+00	38.47
	351.93	230	35.60*	2.901E+00	1.256E+00	1.256E+00	17.28
AC-228	105.21	------	1.10	7.016E+00	------	Line Not Found	------
	338.32	60	11.27	3.006E+00	9.945E-01	9.945E-01	68.32
	835.71	------	1.61	1.250E+00	------	Line Not Found	------
	911.20	49	25.80*	1.150E+00	9.351E-01	9.351E-01	46.51
	968.97	45	15.80	1.085E+00	1.487E+00	1.487E+00	54.10
RA-228	105.21	------	1.10	7.016E+00	------	Line Not Found	------
	338.32	60	11.27	3.006E+00	9.945E-01	9.945E-01	68.32
	835.71	------	1.61	1.250E+00	------	Line Not Found	------

Sample ID : G719378010 Acquisition date : 10-MAY-2025 10:28:22

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	49	25.80*	1.150E+00	9.351E-01	9.351E-01	46.51
	968.97	45	15.80	1.085E+00	1.487E+00	1.487E+00	54.10
TH-228	74.82	240	10.28	7.559E+00	1.738E+00	1.738E+00	22.14
	77.11	435	17.10	7.543E+00	1.902E+00	1.902E+00	13.24
	238.63	353	43.60*	4.128E+00	1.107E+00	1.107E+00	12.22
	300.09	35	3.30	3.364E+00	1.797E+00	1.797E+00	99.01
TH-229	85.43	66	14.70	7.419E+00	3.430E-01	3.430E-01	72.34
	88.47	86	24.00	7.361E+00	2.728E-01	2.728E-01	38.90
	193.51	------	4.41*	4.895E+00	------	Line Not Found	------
	210.85	------	2.80	4.575E+00	------	Line Not Found	------
TH-230	74.82	240	5.80	7.559E+00	3.080E+00	3.080E+00	22.14
	77.11	435	9.70	7.543E+00	3.352E+00	3.352E+00	13.24
	87.09	66	3.41	7.419E+00	1.479E+00	1.479E+00	72.34
	242.00	148	7.25	4.083E+00	2.815E+00	2.815E+00	28.63
	295.22	115	18.42	3.416E+00	1.030E+00	1.030E+00	38.47
	351.93	230	35.60*	2.901E+00	1.256E+00	1.256E+00	17.28
PA-231	283.69	------	1.70	3.545E+00	------	Line Not Found	------
	301.36	35	5.35*	3.364E+00	1.108E+00	1.108E+00	99.01
TH-232	105.21	------	1.10	7.016E+00	------	Line Not Found	------
	338.32	60	11.27	3.006E+00	9.945E-01	9.945E-01	68.32
	835.71	------	1.61	1.250E+00	------	Line Not Found	------
	911.20	49	25.80*	1.150E+00	9.351E-01	9.351E-01	46.51
	968.97	45	15.80	1.085E+00	1.487E+00	1.487E+00	54.10
PA-234M	63.29	80	3.70*	7.514E+00	1.625E+00	1.625E+00	80.58
	92.59	87	4.23	7.302E+00	1.595E+00	1.595E+00	53.47
TH-234	63.29	80	3.70*	7.514E+00	1.625E+00	1.625E+00	80.58
	92.59	87	4.23	7.302E+00	1.595E+00	1.595E+00	53.47
U-234	74.82	240	5.80	7.559E+00	3.080E+00	3.080E+00	22.14
	77.11	435	9.70	7.543E+00	3.352E+00	3.352E+00	13.24
	87.09	66	3.41	7.419E+00	1.479E+00	1.479E+00	72.34
	242.00	148	7.25	4.083E+00	2.815E+00	2.815E+00	28.63
	295.22	115	18.42	3.416E+00	1.030E+00	1.030E+00	38.47
	351.93	230	35.60*	2.901E+00	1.256E+00	1.256E+00	17.28
U-235	89.96	86	3.47	7.361E+00	1.886E+00	1.886E+00	38.90
	93.35	87	5.60	7.302E+00	1.205E+00	1.205E+00	53.47
	143.76	------	10.96*	6.011E+00	------	Line Not Found	------
	163.33	23	5.08	5.530E+00	4.629E-01	4.629E-01	125.61
	185.72	75	57.20	5.044E+00	1.461E-01	1.461E-01	48.26
	205.31	------	5.01	4.674E+00	------	Line Not Found	------
U-238	63.29	80	3.70*	7.514E+00	1.625E+00	1.625E+00	80.58
	92.59	87	4.23	7.302E+00	1.595E+00	1.595E+00	53.47
AM-243	43.53	36	5.90	6.433E+00	5.409E-01	5.409E-01	95.82
	74.66	240	67.20*	7.559E+00	2.659E-01	2.659E-01	22.14
CF-249	252.80	------	2.50	3.928E+00	------	Line Not Found	------
	333.37	------	14.60	3.054E+00	------	Line Not Found	------
	388.16	25	66.00*	2.638E+00	8.069E-02	8.070E-02	106.30
ANH-511	511.00	33	100.00*	2.021E+00	9.142E-02	9.142E-02	92.20

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:59:14.13

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378010.CNF;1  *
* Acquisition date : 10-MAY-2025 10:28:22 Sensitivity     : 3.000           *
* Detector ID      : GAM38                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:30:00.48     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:18:00 Analyst initials: RXF2            *
* Sample ID        : G719378010           Sample Quantity : 8.8830E+01 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 10:22:36 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM38_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.676E+01	2.393E+00	1.358E+00
CD-109	1.430E+00	1.014E+00	1.092E+00
SN-126	1.363E-01	9.662E-02	1.246E-01
BA-137M	1.431E-01	8.860E-02	9.761E-02
CS-137	1.512E-01	9.359E-02	1.031E-01
PR-144	4.312E+00	4.592E+00	6.904E+00
TL-208	2.434E-01	1.328E-01	9.727E-02
BI-210	1.453E+00	9.193E-01	8.290E-01
PB-210	1.453E+00	9.193E-01	8.290E-01
BI-211	3.461E+00	5.860E-01	3.661E-01
BI-212	1.017E+00	9.662E-01	1.416E+00
PB-212	1.107E+00	1.325E-01	1.075E-01
BI-214	9.264E-01	2.035E-01	1.996E-01
PB-214	1.256E+00	2.127E-01	1.332E-01
RN-222	9.264E-01	2.035E-01	1.996E-01
RA-224	4.978E+00	1.397E+00	1.154E+00
RA-226	1.256E+00	2.127E-01	1.332E-01
AC-228	9.351E-01	4.262E-01	3.826E-01
RA-228	9.351E-01	4.262E-01	3.826E-01
TH-228	1.107E+00	1.325E-01	1.075E-01
TH-229	-2.101E-01	5.909E-01	1.048E+00
TH-230	1.256E+00	2.127E-01	1.332E-01
PA-231	1.108E+00	1.075E+00	8.637E-01
TH-232	9.351E-01	4.262E-01	3.826E-01
PA-234M	1.625E+00	1.283E+00	9.657E-01
TH-234	1.625E+00	1.283E+00	9.657E-01
U-234	1.256E+00	2.127E-01	1.332E-01
U-235	-8.628E-02	2.418E-01	3.876E-01
U-238	1.625E+00	1.283E+00	9.657E-01
AM-243	2.659E-01	5.768E-02	6.111E-02
CF-249	8.070E-02	8.407E-02	8.156E-02
ANH-511	9.142E-02	8.261E-02	7.307E-02

---- Non-Identified Nuclides ----

	Key-Line Activity	K.L. Cnt Uncert	MDA

Nuclide	(pCi/GRAM)	(1.96-sigma)	(pCi/GRAM)	
BE-7	5.080E-01	5.467E-01	1.092E+00	NOT IDENT.
NA-22	-3.076E-02	9.242E-02	1.434E-01	NOT IDENT.
NA-24	0.000E+00	1.340E+14	0.000E+00	SHORT HLIF
AL-26	-2.066E-02	4.605E-02	8.461E-02	NOT IDENT.
SC-46	2.363E-02	6.802E-02	1.353E-01	FAIL ABUN
V-48	4.848E-02	2.225E-01	4.342E-01	NOT IDENT.
CR-51	-3.601E-01	7.601E-01	1.279E+00	NOT IDENT.
MN-52	-8.697E-01	2.388E+00	4.570E+00	NOT IDENT.
MN-54	-1.662E-02	4.729E-02	8.539E-02	NOT IDENT.
CO-56	9.568E-02	6.755E-02	1.526E-01	NOT IDENT.
MN-56	0.000E+00	7.033E+40	0.000E+00	SHORT HLIF
CO-57	-3.148E-02	2.707E-02	4.075E-02	NOT IDENT.
CO-58	-1.850E-02	7.163E-02	1.297E-01	NOT IDENT.
FE-59	2.082E-02	1.945E-01	3.657E-01	NOT IDENT.
CO-60	6.586E-02	6.531E-02	1.485E-01	NOT IDENT.
ZN-65	-2.719E-02	1.638E-01	2.539E-01	NOT IDENT.
GE-68	6.681E-01	2.266E+00	4.370E+00	NOT IDENT.
AS-73	7.958E-02	2.741E-01	4.825E-01	NOT IDENT.
AS-74	9.510E-02	2.145E-01	4.390E-01	NOT IDENT.
SE-75	-8.139E-03	6.602E-02	1.055E-01	NOT IDENT.
BR-77	0.000E+00	2.894E+03	0.000E+00	SHORT HLIF
SR-82	-8.331E-01	8.307E-01	1.255E+00	NOT IDENT.
RB-83	5.049E-02	1.114E-01	2.118E-01	FAIL ABUN
RB-84	6.592E-02	1.641E-01	3.232E-01	NOT IDENT.
KR-85	6.787E+00	8.829E+00	1.639E+01	NOT IDENT.
SR-85	4.281E-02	5.590E-02	1.038E-01	NOT IDENT.
RB-86	9.048E-01	2.589E+00	5.023E+00	NOT IDENT.
Y-88	8.624E-03	5.149E-02	1.212E-01	NOT IDENT.
Y-91	-1.126E+00	3.919E+01	7.562E+01	NOT IDENT.
NB-94	8.645E-03	4.915E-02	9.453E-02	NOT IDENT.
NB-95	-2.978E-02	7.412E-02	1.313E-01	NOT IDENT.
NB-95M	-6.511E-02	1.743E-01	2.720E-01	NOT IDENT.
ZR-95	1.381E-01	1.437E-01	2.601E-01	FAIL ABUN
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	4.998E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.722E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	8.428E+36	0.000E+00	SHORT HLIF
RH-101	-7.851E-03	3.438E-02	5.188E-02	NOT IDENT.
RH-102	4.236E-02	8.248E-02	1.651E-01	FAIL ABUN
RU-103	-2.419E-02	8.208E-02	1.397E-01	FAIL ABUN
RH-106	-1.225E-01	4.698E-01	8.619E-01	NOT IDENT.
RU-106	-1.225E-01	4.698E-01	8.619E-01	NOT IDENT.
AG-108M	-5.710E-03	4.047E-02	7.109E-02	NOT IDENT.
AG-110	1.370E-01	1.368E+00	2.295E+00	NOT IDENT.
AG-110M	-2.903E-02	8.112E-02	1.439E-01	NOT IDENT.
SN-113	1.224E-02	6.920E-02	1.142E-01	NOT IDENT.
CD-115	0.000E+00	3.130E+03	0.000E+00	SHORT HLIF
SN-117M	5.483E-02	1.364E-01	2.567E-01	NOT IDENT.
SB-122	0.000E+00	1.948E+02	0.000E+00	SHORT HLIF
TE-123M	2.715E-02	3.235E-02	6.264E-02	NOT IDENT.
SB-124	1.027E-01	1.649E-01	3.907E-01	NOT IDENT.
SB-125	8.035E-02	1.310E-01	2.492E-01	FAIL ABUN
TE-125M	3.265E+00	1.116E+01	1.932E+01	NOT IDENT.
I-126	9.498E-02	7.419E-01	1.350E+00	FAIL ABUN
SB-126	1.757E-01	5.182E-01	1.004E+00	FAIL ABUN
SB-127	-1.774E+01	4.244E+01	7.563E+01	FAIL ABUN
I-131	1.091E-01	5.959E-01	1.102E+00	NOT IDENT.
I-132	0.000E+00	1.646E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.228E+01	0.000E+00	SHORT HLIF
BA-133	-1.094E-02	6.205E-02	9.679E-02	FAIL ABUN
I-133	0.000E+00	6.349E+09	0.000E+00	SHORT HLIF
CS-134	-2.364E-02	6.789E-02	1.043E-01	NOT IDENT.
I-135	0.000E+00	4.237E+34	0.000E+00	SHORT HLIF
CS-136	-4.755E-02	4.398E-01	7.998E-01	FAIL ABUN
LA-138	2.402E-02	6.998E-02	1.589E-01	NOT IDENT.
CE-139	7.017E-03	3.742E-02	6.297E-02	NOT IDENT.
BA-140	4.792E-01	9.980E-01	1.882E+00	FAIL ABUN
LA-140	-3.399E-01	3.547E-01	5.391E-01	FAIL ABUN
CE-141	1.483E-02	1.046E-01	1.755E-01	NOT IDENT.
CE-143	0.000E+00	9.608E+05	0.000E+00	SHORT HLIF
CE-144	-2.591E-01	2.649E-01	3.650E-01	NOT IDENT.
PM-144	5.710E-02	6.081E-02	1.190E-01	FAIL ABUN
PM-146	-2.960E-03	6.403E-02	1.127E-01	NOT IDENT.
ND-147	-8.328E-01	2.681E+00	3.977E+00	FAIL ABUN
PM-147	4.515E+02	6.996E+02	1.253E+03	NOT IDENT.
PM-149	0.000E+00	2.165E+04	0.000E+00	SHORT HLIF

EU-150	-1.779E-02	4.284E-02	6.461E-02	FAIL ABUN
EU-152	6.055E-03	1.364E-01	2.207E-01	FAIL ABUN
GD-153	-2.647E-02	7.941E-02	1.195E-01	NOT IDENT.
EU-154	-5.307E-02	2.534E-01	4.048E-01	FAIL ABUN
EU-155	9.151E-02	1.044E-01	1.875E-01	FAIL ABUN
TB-160	1.445E-01	2.435E-01	4.969E-01	FAIL ABUN
HO-166M	-3.571E-02	8.402E-02	1.500E-01	NOT IDENT.
TM-171	1.879E+00	4.661E+00	8.279E+00	NOT IDENT.
HF-172	-7.099E-02	2.182E-01	3.254E-01	FAIL ABUN
LU-172	1.365E-02	1.127E-01	2.113E-01	FAIL ABUN
LU-176	8.839E-03	3.400E-02	6.020E-02	FAIL ABUN
HF-181	7.191E-02	7.948E-02	1.584E-01	NOT IDENT.
TA-182	-1.512E-01	3.924E-01	7.070E-01	FAIL ABUN
RE-183	4.827E-02	8.372E-02	1.504E-01	FAIL ABUN
RE-184	3.232E-01	3.070E-01	6.439E-01	FAIL ABUN
W-188	-1.358E+00	1.228E+01	1.949E+01	FAIL ABUN
IR-192	2.359E-02	4.969E-02	9.391E-02	FAIL ABUN
HG-203	2.483E-02	6.481E-02	1.097E-01	NOT IDENT.
TL-204	-1.704E+00	3.480E+00	5.269E+00	NOT IDENT.
BI-207	-1.144E-02	8.847E-02	1.601E-01	FAIL ABUN
PB-211	7.481E-01	8.699E-01	1.728E+00	NOT IDENT.
BI-213	-7.311E-03	1.453E-01	2.576E-01	NOT IDENT.
RN-219	-2.022E-03	5.147E-01	9.245E-01	FAIL ABUN
RA-223	5.959E-01	8.975E-01	1.635E+00	FAIL ABUN
AC-225	-4.916E-01	2.225E+00	3.966E+00	NOT IDENT.
AC-227	-7.055E-02	3.175E-01	5.617E-01	FAIL ABUN
TH-227	-7.055E-02	3.175E-01	5.617E-01	FAIL ABUN
TH-231	5.959E-01	8.975E-01	1.635E+00	FAIL ABUN
PA-233	3.109E-02	7.502E-02	1.418E-01	FAIL ABUN
PA-234	1.871E-01	4.721E-01	9.383E-01	FAIL ABUN
NP-237	3.109E-02	7.502E-02	1.418E-01	FAIL ABUN
NP-238	0.000E+00	7.800E+03	0.000E+00	SHORT HLIF
NP-239	3.920E-02	2.586E-01	4.422E-01	FAIL ABUN
PU-239	4.887E+02	5.931E+02	6.677E+02	FAIL ABUN
AM-241	4.116E-03	6.437E-02	1.033E-01	NOT IDENT.
CM-243	-1.154E-01	1.005E-01	1.539E-01	FAIL ABUN
BK-247	-3.592E-02	1.073E-01	1.670E-01	NOT IDENT.
CM-247	-6.945E-03	4.726E-02	8.341E-02	FAIL ABUN
CF-251	-4.678E-03	1.394E-01	2.543E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:59:12.57

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	235	10.66*	7.422E-01	1.676E+01	1.676E+01	14.57
CD-109	88.03	66	3.70*	7.419E+00	1.363E+00	1.430E+00	72.34
SN-126	64.28	80	9.60	7.514E+00	6.262E-01	6.262E-01	80.58
	86.94	66	8.90	7.419E+00	5.666E-01	5.666E-01	72.34
	87.57	66	37.00*	7.419E+00	1.363E-01	1.363E-01	72.34
BA-137M	661.66	36	89.90*	1.569E+00	1.428E-01	1.431E-01	63.18
CS-137	661.66	36	85.10*	1.569E+00	1.509E-01	1.512E-01	63.18
PR-144	696.51	14	1.34*	1.489E+00	3.988E+00	4.312E+00	108.67
	1489.16	------	0.28	7.294E-01	------	Line Not Found	------
TL-208	277.37	22	6.60	3.619E+00	5.207E-01	5.207E-01	108.65
	583.19	65	85.00*	1.773E+00	2.434E-01	2.434E-01	55.69
	860.56	22	12.50	1.214E+00	8.130E-01	8.130E-01	89.51
BI-210	46.54	74	4.25*	6.795E+00	1.449E+00	1.453E+00	64.56
PB-210	46.54	74	4.25*	6.795E+00	1.449E+00	1.453E+00	64.56
BI-211	72.87	------	1.23	7.566E+00	------	Line Not Found	------
	351.06	230	12.92*	2.901E+00	3.461E+00	3.461E+00	17.28
BI-212	727.33	17	6.67*	1.429E+00	1.017E+00	1.017E+00	96.92
	1620.50	------	1.47	6.759E-01	------	Line Not Found	------
PB-212	74.82	240	10.28	7.559E+00	1.738E+00	1.738E+00	22.14
	77.11	435	17.10	7.543E+00	1.902E+00	1.902E+00	13.24
	238.63	353	43.60*	4.128E+00	1.107E+00	1.107E+00	12.22
	300.09	35	3.30	3.364E+00	1.797E+00	1.797E+00	99.01
BI-214	609.32	127	45.49*	1.700E+00	9.263E-01	9.264E-01	22.41
	1120.29	33	14.92	9.468E-01	1.314E+00	1.314E+00	67.06
	1764.49	20	15.30	6.264E-01	1.169E+00	1.169E+00	61.44
PB-214	74.82	240	5.80	7.559E+00	3.080E+00	3.080E+00	22.14
	77.11	435	9.70	7.543E+00	3.352E+00	3.352E+00	13.24
	87.09	66	3.41	7.419E+00	1.479E+00	1.479E+00	72.34
	242.00	148	7.25	4.083E+00	2.815E+00	2.815E+00	28.63
	295.22	115	18.42	3.416E+00	1.030E+00	1.030E+00	38.47
	351.93	230	35.60*	2.901E+00	1.256E+00	1.256E+00	17.28
RN-222	609.32	127	45.49*	1.700E+00	9.263E-01	9.264E-01	22.41
	1120.29	33	14.92	9.468E-01	1.314E+00	1.314E+00	67.06
	1764.49	20	15.30	6.264E-01	1.169E+00	1.169E+00	61.44
RA-224	240.99	148	4.10*	4.083E+00	4.978E+00	4.978E+00	28.63
RA-226	74.82	240	5.80	7.559E+00	3.080E+00	3.080E+00	22.14
	77.11	435	9.70	7.543E+00	3.352E+00	3.352E+00	13.24
	87.09	66	3.41	7.419E+00	1.479E+00	1.479E+00	72.34
	242.00	148	7.25	4.083E+00	2.815E+00	2.815E+00	28.63
	295.22	115	18.42	3.416E+00	1.030E+00	1.030E+00	38.47
	351.93	230	35.60*	2.901E+00	1.256E+00	1.256E+00	17.28
AC-228	105.21	------	1.10	7.016E+00	------	Line Not Found	------
	338.32	60	11.27	3.006E+00	9.945E-01	9.945E-01	68.32
	835.71	------	1.61	1.250E+00	------	Line Not Found	------
	911.20	49	25.80*	1.150E+00	9.351E-01	9.351E-01	46.51
	968.97	45	15.80	1.085E+00	1.487E+00	1.487E+00	54.10
RA-228	105.21	------	1.10	7.016E+00	------	Line Not Found	------

Sample ID : G719378010 Acquisition date : 10-MAY-2025 10:28:22

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	338.32	60	11.27	3.006E+00	9.945E-01	9.945E-01	68.32
	835.71	------	1.61	1.250E+00	------	Line Not Found	------
	911.20	49	25.80*	1.150E+00	9.351E-01	9.351E-01	46.51
	968.97	45	15.80	1.085E+00	1.487E+00	1.487E+00	54.10
TH-228	74.82	240	10.28	7.559E+00	1.738E+00	1.738E+00	22.14
	77.11	435	17.10	7.543E+00	1.902E+00	1.902E+00	13.24
	238.63	353	43.60*	4.128E+00	1.107E+00	1.107E+00	12.22
	300.09	35	3.30	3.364E+00	1.797E+00	1.797E+00	99.01
TH-229	85.43	66	14.70	7.419E+00	3.430E-01	3.430E-01	72.34
	88.47	86	24.00	7.361E+00	2.728E-01	2.728E-01	38.90
	193.51	------	4.41*	4.895E+00	------	Line Not Found	------
	210.85	------	2.80	4.575E+00	------	Line Not Found	------
TH-230	74.82	240	5.80	7.559E+00	3.080E+00	3.080E+00	22.14
	77.11	435	9.70	7.543E+00	3.352E+00	3.352E+00	13.24
	87.09	66	3.41	7.419E+00	1.479E+00	1.479E+00	72.34
	242.00	148	7.25	4.083E+00	2.815E+00	2.815E+00	28.63
	295.22	115	18.42	3.416E+00	1.030E+00	1.030E+00	38.47
	351.93	230	35.60*	2.901E+00	1.256E+00	1.256E+00	17.28
PA-231	283.69	------	1.70	3.545E+00	------	Line Not Found	------
	301.36	35	5.35*	3.364E+00	1.108E+00	1.108E+00	99.01
TH-232	105.21	------	1.10	7.016E+00	------	Line Not Found	------
	338.32	60	11.27	3.006E+00	9.945E-01	9.945E-01	68.32
	835.71	------	1.61	1.250E+00	------	Line Not Found	------
	911.20	49	25.80*	1.150E+00	9.351E-01	9.351E-01	46.51
	968.97	45	15.80	1.085E+00	1.487E+00	1.487E+00	54.10
PA-234M	63.29	80	3.70*	7.514E+00	1.625E+00	1.625E+00	80.58
	92.59	87	4.23	7.302E+00	1.595E+00	1.595E+00	53.47
TH-234	63.29	80	3.70*	7.514E+00	1.625E+00	1.625E+00	80.58
	92.59	87	4.23	7.302E+00	1.595E+00	1.595E+00	53.47
U-234	74.82	240	5.80	7.559E+00	3.080E+00	3.080E+00	22.14
	77.11	435	9.70	7.543E+00	3.352E+00	3.352E+00	13.24
	87.09	66	3.41	7.419E+00	1.479E+00	1.479E+00	72.34
	242.00	148	7.25	4.083E+00	2.815E+00	2.815E+00	28.63
	295.22	115	18.42	3.416E+00	1.030E+00	1.030E+00	38.47
	351.93	230	35.60*	2.901E+00	1.256E+00	1.256E+00	17.28
U-235	89.96	86	3.47	7.361E+00	1.886E+00	1.886E+00	38.90
	93.35	87	5.60	7.302E+00	1.205E+00	1.205E+00	53.47
	143.76	------	10.96*	6.011E+00	------	Line Not Found	------
	163.33	23	5.08	5.530E+00	4.629E-01	4.629E-01	125.61
	185.72	75	57.20	5.044E+00	1.461E-01	1.461E-01	48.26
	205.31	------	5.01	4.674E+00	------	Line Not Found	------
U-238	63.29	80	3.70*	7.514E+00	1.625E+00	1.625E+00	80.58
	92.59	87	4.23	7.302E+00	1.595E+00	1.595E+00	53.47
AM-243	43.53	36	5.90	6.433E+00	5.409E-01	5.409E-01	95.82
	74.66	240	67.20*	7.559E+00	2.659E-01	2.659E-01	22.14
CF-249	252.80	------	2.50	3.928E+00	------	Line Not Found	------
	333.37	------	14.60	3.054E+00	------	Line Not Found	------
	388.16	25	66.00*	2.638E+00	8.069E-02	8.070E-02	106.30
ANH-511	511.00	33	100.00*	2.021E+00	9.142E-02	9.142E-02	92.20

Flag: "*" = Keyline

Sample ID : G719378010 Acquisition date : 10-MAY-2025 10:28:22

Total number of lines in spectrum 50
Number of unidentified lines 8
Number of lines tentatively identified by NID 42 84.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.676E+01	1.676E+01	0.244E+01	14.57	
CD-109	461.40D	1.05	1.363E+00	1.430E+00	1.035E+00	72.34	
SN-126	2.30E+05Y	1.00	1.363E-01	1.363E-01	0.986E-01	72.34	
BA-137M	30.08Y	1.00	1.428E-01	1.431E-01	0.904E-01	63.18	
CS-137	30.08Y	1.00	1.509E-01	1.512E-01	0.955E-01	63.18	
PR-144	284.91D	1.08	3.988E+00	4.312E+00	4.685E+00	108.67	
TL-208	1.41E+10Y	1.00	2.434E-01	2.434E-01	1.355E-01	55.69	
BI-210	22.20Y	1.00	1.449E+00	1.453E+00	0.938E+00	64.56	
PB-210	22.20Y	1.00	1.449E+00	1.453E+00	0.938E+00	64.56	
BI-211	7.04E+08Y	1.00	3.461E+00	3.461E+00	0.598E+00	17.28	
BI-212	1.41E+10Y	1.00	1.017E+00	1.017E+00	0.986E+00	96.92	
PB-212	1.41E+10Y	1.00	1.107E+00	1.107E+00	0.135E+00	12.22	
BI-214	1600.00Y	1.00	9.263E-01	9.264E-01	2.076E-01	22.41	
PB-214	1600.00Y	1.00	1.256E+00	1.256E+00	0.217E+00	17.28	
RN-222	1600.00Y	1.00	9.263E-01	9.264E-01	2.076E-01	22.41	
RA-224	1.41E+10Y	1.00	4.978E+00	4.978E+00	1.425E+00	28.63	
RA-226	1600.00Y	1.00	1.256E+00	1.256E+00	0.217E+00	17.28	
AC-228	1.41E+10Y	1.00	9.351E-01	9.351E-01	4.349E-01	46.51	
RA-228	1.41E+10Y	1.00	9.351E-01	9.351E-01	4.349E-01	46.51	
TH-228	1.41E+10Y	1.00	1.107E+00	1.107E+00	0.135E+00	12.22	
TH-229	7340.00Y	1.00	2.728E-01	2.728E-01	1.061E-01	38.90	K
TH-230	7.54E+04Y	1.00	1.256E+00	1.256E+00	0.217E+00	17.28	
PA-231	7.04E+08Y	1.00	1.108E+00	1.108E+00	1.097E+00	99.01	
TH-232	1.41E+10Y	1.00	9.351E-01	9.351E-01	4.349E-01	46.51	
PA-234M	4.47E+09Y	1.00	1.625E+00	1.625E+00	1.309E+00	80.58	
TH-234	4.47E+09Y	1.00	1.625E+00	1.625E+00	1.309E+00	80.58	
U-234	2.45E+05Y	1.00	1.256E+00	1.256E+00	0.217E+00	17.28	
U-235	7.04E+08Y	1.00	1.461E-01	1.461E-01	0.705E-01	48.26	K
U-238	4.47E+09Y	1.00	1.625E+00	1.625E+00	1.309E+00	80.58	
AM-243	7370.00Y	1.00	2.659E-01	2.659E-01	0.589E-01	22.14	
CF-249	351.00Y	1.00	8.069E-02	8.070E-02	8.579E-02	106.30	
ANH-511	1.00E+09Y	1.00	9.142E-02	9.142E-02	8.429E-02	92.20	
			---	---			
	Total Activity :		5.387E+01	5.427E+01			

Grand Total Activity : 5.387E+01 5.427E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378010 Acquisition date : 10-MAY-2025 10:28:22

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	130.01	35	136	0.90	260.47	255	10	7.05E-03	****	6.37E+00	T
0	202.25	30	49	1.94	405.05	402	7	6.11E-03	81.5	4.73E+00	T
0	209.12	47	124	1.60	418.79	412	12	9.53E-03	95.2	4.61E+00	
1	270.04	34	41	1.57	540.71	535	16	6.80E-03	74.7	3.71E+00	T
1	273.54	19	27	1.58	547.71	535	16	3.85E-03	99.2	3.66E+00	T
0	328.20	18	31	0.89	657.11	654	6	3.56E-03	****	3.10E+00	T
0	462.82	41	20	1.95	926.48	921	11	8.15E-03	51.1	2.23E+00	T
0	529.24	14	14	0.92	1059.38	1056	8	2.79E-03	****	1.95E+00	T
8	612.48	16	20	3.68	1225.94	1212	19	3.22E-03	****	1.69E+00	
0	739.58	14	16	1.37	1480.21	1476	11	2.71E-03	****	1.41E+00	T
0	757.65	13	10	1.71	1516.36	1510	11	2.59E-03	****	1.37E+00	T
0	784.06	26	10	4.99	1569.20	1562	14	5.30E-03	60.8	1.33E+00	T
0	790.64	18	13	0.62	1582.36	1577	12	3.59E-03	91.6	1.32E+00	T
1	965.01	16	26	2.33	1931.17	1923	28	3.29E-03	****	1.09E+00	T
0	1156.52	20	6	5.56	2314.21	2307	14	4.01E-03	66.8	9.19E-01	
0	1167.97	17	0	5.43	2337.11	2330	14	3.33E-03	47.1	9.11E-01	
0	1179.74	13	8	1.67	2360.64	2354	11	2.56E-03	96.6	9.02E-01	
0	1281.07	11	15	1.62	2563.29	2556	11	2.21E-03	****	8.36E-01	
0	1303.27	5	10	0.61	2607.69	2597	12	9.72E-04	****	8.23E-01	
0	1306.09	13	2	3.92	2613.32	2608	11	2.70E-03	68.1	8.22E-01	

Flags: "T" = Tentatively associated

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378010.CNF;1  *
* Acquisition date : 10-MAY-2025 10:28:22 Sensitivity     : 3.000           *
* Detector ID      : GAM38                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:30:00.48     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:18:00 Nuclide Library : SOLID           *
* Sample ID        : G719378010           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 8.8830E+01 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 10:22:36 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM38_CAN.CNF;5             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	5.841E-01
CD-109	5.175E-01
SN-126	5.962E-02
BA-137M	4.348E-02
CS-137	4.593E-02
PR-144	3.046E+00
TL-208	4.367E-02
BI-210	3.888E-01
PB-210	3.888E-01
BI-211	1.631E-01
BI-212	6.294E-01
PB-212	4.962E-02
BI-214	9.013E-02
PB-214	5.937E-02
RN-222	9.013E-02
RA-224	5.328E-01
RA-226	5.937E-02
AC-228	1.660E-01
RA-228	1.660E-01
TH-228	4.962E-02
TH-229	4.894E-01
TH-230	5.937E-02
PA-231	3.902E-01
TH-232	1.660E-01
PA-234M	4.562E-01
TH-234	4.562E-01
U-234	5.937E-02
U-235	1.825E-01
U-238	4.562E-01
AM-243	2.910E-02
CF-249	3.649E-02
ANH-511	3.283E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)

BE-7	4.958E-01	NOT IDENT.
NA-22	6.257E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.998E-02	NOT IDENT.
SC-46	5.933E-02	FAIL ABUN
V-48	1.889E-01	NOT IDENT.
CR-51	5.867E-01	NOT IDENT.
MN-52	1.752E+00	NOT IDENT.
MN-54	3.625E-02	NOT IDENT.
CO-56	6.821E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.894E-02	NOT IDENT.
CO-58	5.680E-02	NOT IDENT.
FE-59	1.601E-01	NOT IDENT.
CO-60	6.484E-02	NOT IDENT.
ZN-65	1.098E-01	NOT IDENT.
GE-68	1.928E+00	NOT IDENT.
AS-73	2.281E-01	NOT IDENT.
AS-74	1.940E-01	NOT IDENT.
SE-75	4.869E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.383E-01	NOT IDENT.
RB-83	9.506E-02	FAIL ABUN
RB-84	1.436E-01	NOT IDENT.
KR-85	7.333E+00	NOT IDENT.
SR-85	4.641E-02	NOT IDENT.
RB-86	2.220E+00	NOT IDENT.
Y-88	4.515E-02	NOT IDENT.
Y-91	3.304E+01	NOT IDENT.
NB-94	4.219E-02	NOT IDENT.
NB-95	5.786E-02	NOT IDENT.
NB-95M	1.258E-01	NOT IDENT.
ZR-95	1.159E-01	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.421E-02	NOT IDENT.
RH-102	7.426E-02	FAIL ABUN
RU-103	6.287E-02	FAIL ABUN
RH-106	3.828E-01	NOT IDENT.
RU-106	3.828E-01	NOT IDENT.
AG-108M	3.206E-02	NOT IDENT.
AG-110	1.032E+00	NOT IDENT.
AG-110M	6.242E-02	NOT IDENT.
SN-113	5.179E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.205E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.943E-02	NOT IDENT.
SB-124	1.602E-01	NOT IDENT.
SB-125	1.139E-01	FAIL ABUN
TE-125M	9.075E+00	NOT IDENT.
I-126	5.935E-01	FAIL ABUN
SB-126	4.435E-01	FAIL ABUN
SB-127	3.348E+01	FAIL ABUN
I-131	4.991E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.418E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	4.524E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	3.494E-01	FAIL ABUN
LA-138	6.423E-02	NOT IDENT.
CE-139	2.949E-02	NOT IDENT.
BA-140	8.497E-01	FAIL ABUN
LA-140	2.036E-01	FAIL ABUN
CE-141	8.267E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.710E-01	NOT IDENT.
PM-144	5.412E-02	FAIL ABUN
PM-146	5.125E-02	NOT IDENT.
ND-147	1.766E+00	FAIL ABUN
PM-147	5.860E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.975E-02	FAIL ABUN

EU-152	1.008E-01	FAIL ABUN
GD-153	5.588E-02	NOT IDENT.
EU-154	1.767E-01	FAIL ABUN
EU-155	8.866E-02	FAIL ABUN
TB-160	2.200E-01	FAIL ABUN
HO-166M	6.548E-02	NOT IDENT.
TM-171	3.913E+00	NOT IDENT.
HF-172	1.522E-01	FAIL ABUN
LU-172	9.295E-02	FAIL ABUN
LU-176	2.769E-02	FAIL ABUN
HF-181	7.186E-02	NOT IDENT.
TA-182	3.149E-01	FAIL ABUN
RE-183	7.120E-02	FAIL ABUN
RE-184	2.902E-01	FAIL ABUN
W-188	9.007E+00	FAIL ABUN
IR-192	4.315E-02	FAIL ABUN
HG-203	5.076E-02	NOT IDENT.
TL-204	2.509E+00	NOT IDENT.
BI-207	6.992E-02	FAIL ABUN
PB-211	7.863E-01	NOT IDENT.
BI-213	1.165E-01	NOT IDENT.
RN-219	4.179E-01	FAIL ABUN
RA-223	7.582E-01	FAIL ABUN
AC-225	1.848E+00	NOT IDENT.
AC-227	2.607E-01	FAIL ABUN
TH-227	2.607E-01	FAIL ABUN
TH-231	7.582E-01	FAIL ABUN
PA-233	6.491E-02	FAIL ABUN
PA-234	4.128E-01	FAIL ABUN
NP-237	6.491E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.072E-01	FAIL ABUN
PU-239	3.155E+02	FAIL ABUN
AM-241	4.888E-02	NOT IDENT.
CM-243	7.191E-02	FAIL ABUN
BK-247	7.692E-02	NOT IDENT.
CM-247	3.764E-02	FAIL ABUN
CF-251	1.189E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:59:28.67

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378010.CNF;1  *
* Acquisition date : 10-MAY-2025 10:28:22 Sensitivity     : 3.000           *
* Detector ID      : GAM38                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:30:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:30:00.48     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:18:00 Nuclide Library : SOLID           *
* Sample ID        : G719378010           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 8.8830E+01 GRAM *
*                                         Quantity Err(%) : 1.1257E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 10:22:36 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM38_CAN.CNF;5             *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.676E+01	2.835E+00	2.835E+00
CD-109	1.430E+00	1.024E+00	1.024E+00
SN-126	1.363E-01	9.729E-02	9.729E-02
BA-137M	1.431E-01	8.950E-02	8.950E-02
CS-137	1.512E-01	9.454E-02	9.454E-02
PR-144	4.312E+00	4.608E+00	4.608E+00
TL-208	2.434E-01	1.347E-01	1.347E-01
BI-210	1.453E+00	9.292E-01	9.292E-01
PB-210	1.453E+00	9.292E-01	9.292E-01
BI-211	3.461E+00	6.533E-01	6.533E-01
BI-212	1.017E+00	9.711E-01	9.711E-01
PB-212	1.107E+00	1.743E-01	1.743E-01
BI-214	9.264E-01	2.202E-01	2.202E-01
PB-214	1.256E+00	2.362E-01	2.362E-01
RN-222	9.264E-01	2.202E-01	2.202E-01
RA-224	4.978E+00	1.485E+00	1.485E+00
RA-226	1.256E+00	2.362E-01	2.362E-01
AC-228	9.351E-01	4.361E-01	4.361E-01
RA-228	9.351E-01	4.361E-01	4.361E-01
TH-228	1.107E+00	1.743E-01	1.743E-01
TH-229	-2.101E-01	5.914E-01	5.914E-01
TH-230	1.256E+00	2.362E-01	2.362E-01
PA-231	1.108E+00	1.103E+00	1.103E+00
TH-232	9.351E-01	4.361E-01	4.361E-01
PA-234M	1.625E+00	1.334E+00	1.334E+00
TH-234	1.625E+00	1.334E+00	1.334E+00
U-234	1.256E+00	2.362E-01	2.362E-01
U-235	-8.628E-02	2.420E-01	2.420E-01
U-238	1.625E+00	1.334E+00	1.334E+00
AM-243	2.659E-01	6.145E-02	6.145E-02
CF-249	8.070E-02	8.454E-02	8.454E-02
ANH-511	9.142E-02	8.302E-02	8.302E-02

---- Non-Identified Nuclides ----

	Key-Line Activity	K.L Act error	TPU

Nuclide	(pCi/GRAM)	(1.96-sigma)	(1.96-sigma)	
BE-7	5.080E-01	5.486E-01	5.945E-01	NOT IDENT.
NA-22	-3.076E-02	9.246E-02	9.349E-02	NOT IDENT.
NA-24	1.175E+14	1.345E+14	1.445E+14	SHORT HLIF
AL-26	-2.066E-02	4.608E-02	4.701E-02	NOT IDENT.
SC-46	2.363E-02	6.806E-02	6.888E-02	FAIL ABUN
V-48	4.848E-02	2.225E-01	2.236E-01	NOT IDENT.
CR-51	-3.601E-01	7.606E-01	7.777E-01	NOT IDENT.
MN-52	-8.697E-01	2.390E+00	2.422E+00	NOT IDENT.
MN-54	-1.662E-02	4.731E-02	4.790E-02	NOT IDENT.
CO-56	9.568E-02	6.815E-02	8.065E-02	NOT IDENT.
MN-56	1.000E+41	7.095E+40	0.000E+00	SHORT HLIF
CO-57	-3.148E-02	2.725E-02	3.072E-02	NOT IDENT.
CO-58	-1.850E-02	7.165E-02	7.214E-02	NOT IDENT.
FE-59	2.082E-02	1.945E-01	1.948E-01	NOT IDENT.
CO-60	6.586E-02	6.555E-02	7.196E-02	NOT IDENT.
ZN-65	-2.719E-02	1.638E-01	1.642E-01	NOT IDENT.
GE-68	6.681E-01	2.267E+00	2.287E+00	NOT IDENT.
AS-73	7.958E-02	2.746E-01	2.769E-01	NOT IDENT.
AS-74	9.510E-02	2.147E-01	2.190E-01	NOT IDENT.
SE-75	-8.139E-03	6.602E-02	6.612E-02	NOT IDENT.
BR-77	2.416E+04	2.269E+04	2.517E+04	SHORT HLIF
SR-82	-8.331E-01	8.343E-01	9.149E-01	NOT IDENT.
RB-83	5.049E-02	1.117E-01	1.140E-01	FAIL ABUN
RB-84	6.592E-02	1.642E-01	1.669E-01	NOT IDENT.
KR-85	6.787E+00	8.851E+00	9.365E+00	NOT IDENT.
SR-85	4.281E-02	5.603E-02	5.926E-02	NOT IDENT.
RB-86	9.048E-01	2.590E+00	2.622E+00	NOT IDENT.
Y-88	8.624E-03	5.149E-02	5.164E-02	NOT IDENT.
Y-91	-1.126E+00	3.919E+01	3.919E+01	NOT IDENT.
NB-94	8.645E-03	4.916E-02	4.931E-02	NOT IDENT.
NB-95	-2.978E-02	7.417E-02	7.537E-02	NOT IDENT.
NB-95M	-6.511E-02	1.745E-01	1.769E-01	NOT IDENT.
ZR-95	1.381E-01	1.443E-01	1.572E-01	FAIL ABUN
NB-97	1.000E+41	6.467E+41	0.000E+00	SHORT HLIF
ZR-97	1.739E+11	4.998E+13	4.999E+13	SHORT HLIF
MO-99	1.464E+03	1.728E+03	1.850E+03	SHORT HLIF
TC-99M	1.029E+37	8.550E+36	0.000E+00	SHORT HLIF
RH-101	-7.851E-03	3.442E-02	3.460E-02	NOT IDENT.
RH-102	4.236E-02	8.262E-02	8.480E-02	FAIL ABUN
RU-103	-2.419E-02	8.212E-02	8.284E-02	FAIL ABUN
RH-106	-1.225E-01	4.700E-01	4.732E-01	NOT IDENT.
RU-106	-1.225E-01	4.700E-01	4.732E-01	NOT IDENT.
AG-108M	-5.710E-03	4.047E-02	4.055E-02	NOT IDENT.
AG-110	1.370E-01	1.368E+00	1.369E+00	NOT IDENT.
AG-110M	-2.903E-02	8.117E-02	8.222E-02	NOT IDENT.
SN-113	1.224E-02	6.920E-02	6.942E-02	NOT IDENT.
CD-115	3.156E+03	3.147E+03	3.453E+03	SHORT HLIF
SN-117M	5.483E-02	1.365E-01	1.388E-01	NOT IDENT.
SB-122	1.811E+01	1.948E+02	1.949E+02	SHORT HLIF
TE-123M	2.715E-02	3.250E-02	3.473E-02	NOT IDENT.
SB-124	1.027E-01	1.651E-01	1.715E-01	NOT IDENT.
SB-125	8.035E-02	1.311E-01	1.360E-01	FAIL ABUN
TE-125M	3.265E+00	1.116E+01	1.126E+01	NOT IDENT.
I-126	9.498E-02	7.419E-01	7.432E-01	FAIL ABUN
SB-126	1.757E-01	5.187E-01	5.247E-01	FAIL ABUN
SB-127	-1.774E+01	4.255E+01	4.330E+01	FAIL ABUN
I-131	1.091E-01	5.960E-01	5.980E-01	NOT IDENT.
I-132	-1.000E+41	2.574E+41	0.000E+00	SHORT HLIF
TE-132	-2.537E+00	3.228E+01	3.230E+01	SHORT HLIF
BA-133	-1.094E-02	6.206E-02	6.225E-02	FAIL ABUN
I-133	6.401E+09	6.503E+09	7.115E+09	SHORT HLIF
CS-134	-2.364E-02	6.793E-02	6.876E-02	NOT IDENT.
I-135	1.014E+34	4.301E+34	0.000E+00	SHORT HLIF
CS-136	-4.755E-02	4.398E-01	4.403E-01	FAIL ABUN
LA-138	2.402E-02	7.001E-02	7.085E-02	NOT IDENT.
CE-139	7.017E-03	3.745E-02	3.759E-02	NOT IDENT.
BA-140	4.792E-01	9.990E-01	1.022E+00	FAIL ABUN
LA-140	-3.399E-01	3.558E-01	3.874E-01	FAIL ABUN
CE-141	1.483E-02	1.047E-01	1.049E-01	NOT IDENT.
CE-143	1.492E+06	9.682E+05	1.179E+06	SHORT HLIF
CE-144	-2.591E-01	2.664E-01	2.909E-01	NOT IDENT.
PM-144	5.710E-02	6.103E-02	6.624E-02	FAIL ABUN
PM-146	-2.960E-03	6.403E-02	6.404E-02	NOT IDENT.
ND-147	-8.328E-01	2.682E+00	2.708E+00	FAIL ABUN
PM-147	4.515E+02	7.010E+02	7.300E+02	NOT IDENT.
PM-149	-8.420E+03	2.169E+04	2.202E+04	SHORT HLIF

EU-150	-1.779E-02	4.287E-02	4.361E-02	FAIL ABUN
EU-152	6.055E-03	1.364E-01	1.365E-01	FAIL ABUN
GD-153	-2.647E-02	7.944E-02	8.033E-02	NOT IDENT.
EU-154	-5.307E-02	2.534E-01	2.545E-01	FAIL ABUN
EU-155	9.151E-02	1.048E-01	1.126E-01	FAIL ABUN
TB-160	1.445E-01	2.440E-01	2.525E-01	FAIL ABUN
HO-166M	-3.571E-02	8.409E-02	8.562E-02	NOT IDENT.
TM-171	1.879E+00	4.664E+00	4.741E+00	NOT IDENT.
HF-172	-7.099E-02	2.186E-01	2.209E-01	FAIL ABUN
LU-172	1.365E-02	1.127E-01	1.129E-01	FAIL ABUN
LU-176	8.839E-03	3.401E-02	3.424E-02	FAIL ABUN
HF-181	7.191E-02	7.975E-02	8.608E-02	NOT IDENT.
TA-182	-1.512E-01	3.926E-01	3.985E-01	FAIL ABUN
RE-183	4.827E-02	8.389E-02	8.666E-02	FAIL ABUN
RE-184	3.232E-01	3.093E-01	3.419E-01	FAIL ABUN
W-188	-1.358E+00	1.228E+01	1.230E+01	FAIL ABUN
IR-192	2.359E-02	4.973E-02	5.085E-02	FAIL ABUN
HG-203	2.483E-02	6.483E-02	6.579E-02	NOT IDENT.
TL-204	-1.704E+00	3.484E+00	3.568E+00	NOT IDENT.
BI-207	-1.144E-02	8.847E-02	8.862E-02	FAIL ABUN
PB-211	7.481E-01	8.725E-01	9.354E-01	NOT IDENT.
BI-213	-7.311E-03	1.453E-01	1.454E-01	NOT IDENT.
RN-219	-2.022E-03	5.147E-01	5.147E-01	FAIL ABUN
RA-223	5.959E-01	8.992E-01	9.384E-01	FAIL ABUN
AC-225	-4.916E-01	2.226E+00	2.237E+00	NOT IDENT.
AC-227	-7.055E-02	3.177E-01	3.193E-01	FAIL ABUN
TH-227	-7.055E-02	3.177E-01	3.193E-01	FAIL ABUN
TH-231	5.959E-01	8.992E-01	9.384E-01	FAIL ABUN
PA-233	3.109E-02	7.506E-02	7.636E-02	FAIL ABUN
PA-234	1.871E-01	5.186E-01	5.255E-01	FAIL ABUN
NP-237	3.109E-02	7.506E-02	7.636E-02	FAIL ABUN
NP-238	4.551E+03	7.811E+03	8.076E+03	SHORT HLIF
NP-239	3.920E-02	2.586E-01	2.592E-01	FAIL ABUN
PU-239	4.887E+02	5.952E+02	6.347E+02	FAIL ABUN
AM-241	4.116E-03	6.437E-02	6.440E-02	NOT IDENT.
CM-243	-1.154E-01	1.014E-01	1.140E-01	FAIL ABUN
BK-247	-3.592E-02	1.076E-01	1.088E-01	NOT IDENT.
CM-247	-6.945E-03	4.728E-02	4.738E-02	FAIL ABUN
CF-251	-4.678E-03	1.394E-01	1.394E-01	NOT IDENT.

GEL Laboratories LLC
2040 Savage Road
Charleston, SC 29407

GAMMA SPECTROSCOPY BACKGROUND REPORT

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	81.7688	85.43	147.7180	131.20	73.6092
45.60	75.8391	86.55	145.1656	133.02	77.0459
46.54	76.0890	86.79	161.3824	133.52	102.8138
49.72	0.0000	86.94	161.4383	136.00	66.5411
51.35	94.9964	87.09	161.4931	136.47	65.3824
51.87	100.1652	87.57	161.6688	140.51	0.0000
52.39	79.2634	88.03	110.3432	143.76	86.9863
52.97	79.4108	88.34	110.4202	144.24	96.8611
53.44	83.5563	88.47	110.4523	145.44	83.5328
54.07	95.8274	89.96	81.2686	152.43	83.2000
57.36	0.0000	1093.63	81.3911	153.25	70.8699
57.53	99.9137	91.11	81.4756	323.87	75.9540
57.98	88.8184	92.59	81.7397	156.02	83.6519
59.27	101.1169	93.35	81.8745	158.56	70.1829
59.32	101.1320	94.56	82.0882	159.00	61.8677
59.54	101.1978	94.65	82.1044	162.33	73.0921
60.96	108.4852	94.67	82.1078	162.66	73.1275
61.17	100.3067	94.87	82.1431	163.33	50.4816
62.93	97.3621	97.43	72.0781	165.86	68.3990
63.29	97.4612	98.43	88.7821	176.31	75.4039
63.58	97.5414	98.44	88.7839	176.60	75.4334
64.28	97.7334	99.53	72.3945	177.52	70.3787
66.73	117.2397	100.11	74.7462	181.07	0.0000
67.24	127.1856	102.03	76.1775	181.52	72.4857
125.81	123.1395	103.18	113.9626	184.41	67.5668
67.75	123.1628	103.37	98.0452	143.76	73.7585
68.89	109.5018	105.21	77.8105	193.51	75.3830
69.67	135.0527	105.31	77.8255	197.03	78.3612
70.82	149.5714	106.12	68.7799	198.01	61.3560
70.83	149.5758	106.47	89.4758	201.83	79.7177
72.81	131.9080	109.28	72.6669	203.43	69.2252
72.87	131.9288	111.00	98.3675	205.31	48.0361
74.66	132.5314	111.76	0.0000	210.85	64.4780
74.82	132.5854	114.06	61.6921	215.65	62.1445
74.97	132.6355	116.30	0.0000	218.12	66.8404
77.11	133.3460	116.74	70.1894	222.11	70.7803
78.74	133.8805	119.76	74.1074	227.09	67.5330
79.69	118.3171	121.12	48.3472	227.38	63.9032
80.03	98.1962	121.22	55.4324	228.16	0.0000
80.12	98.2183	121.78	75.5581	228.18	59.3929
80.19	98.2349	122.06	87.4081	116.74	59.3929
80.57	105.5546	122.92	67.4309	235.69	59.4308
81.00	124.4797	123.07	67.4492	235.96	51.1533
81.07	124.5007	265.00	65.1530	238.63	48.0676
81.75	142.1032	125.81	79.2699	238.98	0.0000
82.47	137.2626	127.23	71.5194	240.99	48.1909
83.79	103.4478	127.91	70.0131	242.00	48.2432
84.00	109.3292	129.30	74.1680	244.70	32.1005

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	48.7786	344.28	36.7588	563.25	25.7131
252.80	47.8607	345.93	33.1277	564.24	0.0000
254.15	0.0000	351.06	22.5881	569.33	24.0205
256.23	60.2747	351.93	22.6038	946.00	24.0230
260.90	0.0000	355.39	0.0000	569.70	19.5763
264.66	51.2952	356.01	40.2021	583.19	25.9954
264.80	51.3029	364.49	28.0201	584.27	26.0104
265.00	52.7381	366.42	0.0000	595.83	14.4395
269.46	37.2250	372.51	34.4609	427.87	30.7606
270.03	37.2465	375.05	52.3163	602.52	0.0000
271.23	37.2901	377.52	39.8354	604.72	30.4654
273.65	23.0024	356.01	37.9204	607.14	29.0508
276.40	23.0645	388.16	24.3055	609.32	29.0840
277.37	46.1729	388.63	24.3144	610.33	29.0996
277.60	46.1826	391.69	28.6078	614.28	29.1592
278.00	53.4201	264.66	34.1302	618.01	19.4766
279.20	43.3640	401.81	29.8890	620.36	28.3359
279.54	39.0399	402.40	30.9694	621.93	24.6995
279.70	39.0465	404.85	21.3961	630.19	0.0000
280.46	39.0745	410.95	37.6076	631.29	20.2215
283.69	43.5507	413.71	37.6817	633.25	22.0818
284.31	39.7037	414.70	33.3992	634.78	24.8610
285.41	43.6221	423.72	43.3691	635.95	23.9545
285.90	0.0000	427.09	22.8222	636.99	19.3581
287.50	42.7378	427.87	28.2714	657.50	25.3290
290.67	52.6080	433.94	30.5737	657.76	23.8422
293.27	0.0000	439.40	27.3997	657.90	0.0000
351.93	46.9609	440.45	30.7093	661.66	22.3945
295.96	46.9932	453.88	34.3061	664.57	0.0000
879.38	38.2740	463.37	25.6116	666.33	16.2103
299.98	29.4794	468.07	37.5286	666.50	22.4473
300.09	29.4824	473.00	39.2162	667.71	0.0000
300.13	29.4833	475.06	31.4140	677.62	23.5077
301.36	29.5166	476.78	25.8329	685.70	25.4855
302.85	36.9453	477.60	19.1036	692.65	0.0000
256.23	42.9212	482.18	19.1589	695.00	21.2365
304.85	42.9345	487.02	27.1304	696.49	18.9740
306.78	39.1529	492.35	0.0000	696.51	18.9746
308.46	42.5792	497.08	31.8492	697.00	17.0810
311.90	32.7771	505.52	24.0104	697.30	16.7036
316.51	34.9053	507.63	0.0000	697.49	19.7425
319.41	47.9912	511.00	26.3839	702.65	20.9312
320.08	46.0187	514.00	13.7900	706.68	20.9701
321.04	45.0558	514.00	13.7900	711.68	21.0184
323.87	40.9511	520.40	19.6106	720.70	15.3491
325.23	46.7261	520.69	0.0000	721.93	0.0000
328.76	65.0105	522.65	0.0000	722.78	18.4365
333.37	55.8536	527.90	0.0000	722.91	18.4377
333.97	54.6680	528.26	20.8601	723.31	18.4406
334.37	54.6855	529.59	22.6159	724.19	16.9109
338.28	46.7365	529.87	0.0000	727.33	21.5530
338.32	46.7384	531.02	26.1172	733.00	20.9469
311.90	46.8226	537.26	22.1342	735.93	26.2728
340.48	46.8226	546.56	0.0000	333.97	17.0113
340.55	46.8254	552.55	21.1531	739.50	0.0000

ENERGY	MDA COUNTS
744.23	23.2676
747.24	26.2106
748.06	28.1619
752.31	20.2370
753.82	23.3657
756.73	21.4454
756.80	21.4461
884.68	20.5347
765.81	23.4873
766.84	17.6232
772.60	0.0000
776.52	24.7185
739.50	0.0000
778.90	12.5969
783.70	22.0896
788.74	7.9058
792.07	19.0008
795.86	19.0307
810.06	19.9408
810.29	15.9541
344.28	15.9551
810.76	19.9463
815.77	14.9904
1048.07	14.0068
832.01	9.0538
834.85	14.0995
835.71	13.0972
836.80	0.0000
846.75	0.0000
846.77	8.0955
856.80	21.1313
860.56	17.2962
871.09	10.2161
873.19	15.3365
875.33	0.0000
879.38	13.3233
880.51	12.3040
881.60	16.4121
883.24	20.5280
884.68	18.4850
889.28	13.3737
894.76	22.6801
898.04	16.5146
900.72	23.7644
903.28	14.4789
911.20	14.5221
912.08	9.9612
923.98	0.0000
926.50	9.3886
929.11	14.6187
935.54	8.3730
937.49	18.8525
944.13	11.5489
946.00	13.6582
949.00	14.7246

ENERGY	MDA COUNTS
667.71	0.0000
962.31	13.5266
964.08	14.8041
966.17	14.8152
911.20	14.8297
983.53	12.7767
984.45	0.0000
1274.44	22.4580
1002.74	17.1494
1004.73	24.6691
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	8.6772
1038.76	0.0000
631.29	8.7026
1048.07	17.4141
1049.04	16.3303
1050.41	19.6051
1063.66	17.5029
1077.00	15.3817
1077.34	15.3834
1085.87	16.5280
1093.63	16.5692
1099.45	15.4928
1112.07	17.7773
1112.84	20.7448
1115.54	16.0172
1120.29	14.4814
1120.55	14.4822
1221.41	14.4861
1129.67	17.8750
1131.51	0.0000
1147.95	0.0000
1173.23	9.0576
1177.95	10.5820
1189.05	13.6509
1204.77	16.4575
1221.41	27.5625
1231.02	17.5054
1235.36	18.4492
1238.28	19.3881
1260.41	0.0000
1271.87	12.1170
1274.44	18.6553
1274.54	20.2109
1291.59	12.1843
1298.22	0.0000
1312.11	6.7324
1332.49	6.6346
1362.66	0.0000
1365.19	11.4732
1368.63	0.0000
1384.29	8.6480
1408.01	4.8342

ENERGY	MDA COUNTS
1434.09	5.8397
1435.80	3.8949
1457.56	0.0000
1460.82	12.7378
1489.16	3.9471
1505.03	6.9340
1584.12	6.0563
1596.21	10.1221
1620.50	2.0357
1621.92	5.0908
1678.03	0.0000
1690.97	3.1021
1750.46	0.0000
1764.49	4.2021
1063.66	15.7771
1771.35	3.1562
1791.20	0.0000
1808.65	4.2412
1810.72	0.0000
1836.06	2.1325

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:30:09.63

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378011.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM40.CNF;566
                                        Background date  : 4-MAY-2025 09:27:31.
Sample date      : 8-APR-2025 10:08:00. Acquisition date : 10-MAY-2025 10:28:55
Sample ID        : G719378011           Sample quantity  : 1.05910E+02 GRAM
Detector name    : GAM40                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.41  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	74.68	95	129	0.98	150.41	143	16	2.64E-02	21.0	1.01E+00
2	3	77.03*	197	127	1.23	155.13	143	16	5.46E-02	12.7	
3	0	83.99*	44	143	1.43	169.07	166	7	1.23E-02	47.4	
4	0	86.54	40	183	1.03	174.17	173	7	1.12E-02	57.5	
5	6	89.87	48	75	0.98	180.83	179	14	1.34E-02	28.4	6.99E-01
6	6	92.73*	115	182	1.79	186.56	179	14	3.19E-02	25.9	
7	0	112.32	38	128	1.39	225.78	220	10	1.07E-02	57.8	
8	0	163.28	42	90	1.08	327.81	325	8	1.17E-02	41.6	
9	0	186.54*	130	151	1.34	374.39	369	12	3.62E-02	21.5	
10	0	210.23	10	120	1.33	421.82	415	9	2.91E-03	190.8	
11	6	238.57*	366	56	1.06	478.56	475	15	1.02E-01	6.3	1.02E+00
12	6	241.55	165	91	1.96	484.51	475	15	4.59E-02	14.0	
13	0	295.18*	236	54	1.20	591.88	588	8	6.55E-02	8.6	
14	0	338.73	73	69	1.29	679.06	672	10	2.03E-02	24.1	
15	0	351.83	427	80	1.27	705.29	698	14	1.19E-01	6.6	
16	0	417.15	50	38	5.91	836.02	829	15	1.39E-02	30.2	
17	0	436.44	24	41	1.30	874.64	871	11	6.80E-03	54.6	
18	0	462.11	32	42	1.45	926.01	921	11	9.02E-03	42.2	
19	0	471.01	11	42	1.40	943.83	938	10	3.18E-03	110.4	
20	0	490.57	29	27	3.96	982.97	976	14	8.05E-03	42.8	
21	0	511.16*	36	51	1.44	1024.18	1018	14	9.89E-03	51.3	
22	0	583.15*	118	57	1.39	1168.25	1161	15	3.27E-02	16.9	
23	0	609.25*	255	29	1.56	1220.49	1214	13	7.10E-02	7.7	
24	0	645.68	11	17	0.88	1293.38	1286	11	2.92E-03	81.0	
25	0	661.58	97	33	0.91	1325.20	1319	11	2.69E-02	15.3	
26	0	703.60	17	14	0.79	1409.27	1406	6	4.66E-03	43.6	
27	0	727.91*	31	12	1.01	1457.92	1452	12	8.62E-03	31.0	
28	0	763.59	12	11	1.12	1529.31	1524	9	3.32E-03	58.1	
29	0	767.72	29	21	2.17	1537.56	1533	10	8.10E-03	34.3	
30	0	782.80	5	21	0.71	1567.73	1561	9	1.45E-03	161.7	
31	0	794.71	18	13	0.97	1591.57	1586	9	4.92E-03	44.2	
32	0	860.43	28	10	1.62	1723.03	1718	13	7.66E-03	30.3	
33	0	905.67	14	7	4.15	1813.54	1805	14	3.89E-03	48.2	
34	0	911.15*	88	11	1.67	1824.51	1819	14	2.46E-02	13.5	

Sample ID : G719378011 Acquisition date : 10-MAY-2025 10:28:55

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	934.49	27	13	0.72	1871.18	1864	14	7.42E-03	35.3	
36	0	949.92	14	3	0.99	1902.06	1895	12	3.86E-03	36.7	
37	0	966.38	10	19	0.79	1934.97	1926	11	2.79E-03	90.1	
38	0	968.61	47	2	1.85	1939.43	1936	9	1.31E-02	15.5	
39	0	1001.64	13	3	1.39	2005.50	2002	7	3.59E-03	36.4	
40	0	1076.26	16	0	2.40	2154.75	2151	8	4.44E-03	25.0	
41	0	1106.32	16	7	2.23	2214.86	2209	10	4.34E-03	41.3	
42	0	1120.16*	60	15	0.93	2242.55	2236	15	1.66E-02	19.5	
43	0	1154.78	10	6	1.34	2311.77	2308	8	2.70E-03	54.4	
44	0	1237.90	35	3	1.03	2477.99	2471	13	9.63E-03	20.1	
45	0	1299.16	17	0	1.04	2600.47	2596	11	4.72E-03	24.3	
46	0	1336.49	8	3	0.66	2675.11	2672	7	2.32E-03	49.5	
47	0	1377.16	29	3	1.05	2756.43	2752	10	8.12E-03	21.2	
48	0	1399.00	5	5	0.82	2800.09	2796	7	1.40E-03	86.7	
49	0	1407.21	15	3	1.09	2816.50	2811	12	4.10E-03	35.2	
50	0	1460.55*	89	0	2.29	2923.13	2917	13	2.47E-02	11.2	
51	0	1512.03	6	3	0.47	3026.04	3022	6	1.70E-03	60.1	
52	0	1729.61	12	4	2.32	3460.91	3452	12	3.44E-03	40.4	
53	0	1764.19*	41	10	2.06	3530.02	3523	13	1.13E-02	23.1	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:30:11

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378011.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 10:08:00	Acquisition date	: 10-MAY-2025 10:28:55
Sample ID	: G719378011	Sample quantity	: 105.91 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA40	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.41 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	83	10.66*	9.619E-01	5.765E+00	5.765E+00	22.49
GE-68	1077.34	15	3.22*	1.274E+00	2.613E+00	2.837E+00	50.00
RB-86	1077.00	15	8.64*	1.274E+00	9.740E-01	3.206E+00	50.00
CD-109	88.03	41	3.70*	4.328E+00	1.801E+00	1.889E+00	115.01
SN-126	64.28	------	9.60	1.868E+00	------	Line Not Found	------
	86.94	41	8.90	4.328E+00	7.486E-01	7.486E-01	115.01
	87.57	41	37.00*	4.328E+00	1.801E-01	1.801E-01	115.01
BA-137M	661.66	93	89.90*	2.025E+00	3.619E-01	3.626E-01	30.63
CS-137	661.66	93	85.10*	2.025E+00	3.823E-01	3.831E-01	30.63
TL-208	277.37	------	6.60	3.910E+00	------	Line Not Found	------
	583.19	113	85.00*	2.254E+00	4.188E-01	4.188E-01	33.77
	860.56	26	12.50	1.590E+00	9.366E-01	9.366E-01	60.51
BI-211	72.87	------	1.23	2.916E+00	------	Line Not Found	------
	351.06	417	12.92*	3.303E+00	6.921E+00	6.921E+00	13.14
BI-212	727.33	30	6.67*	1.860E+00	1.694E+00	1.694E+00	62.00
	1620.50	------	1.47	8.933E-01	------	Line Not Found	------
PB-212	74.82	96	10.28	3.128E+00	2.124E+00	2.124E+00	42.03
	77.11	199	17.10	3.395E+00	2.434E+00	2.434E+00	25.31
	238.63	360	43.60*	4.340E+00	1.349E+00	1.349E+00	12.51
	300.09	------	3.30	3.698E+00	------	Line Not Found	------
BI-214	609.32	245	45.49*	2.173E+00	1.759E+00	1.759E+00	15.43
	1120.29	57	14.92	1.225E+00	2.195E+00	2.196E+00	38.99
	1764.49	38	15.30	8.539E-01	2.053E+00	2.053E+00	46.22
PB-214	74.82	96	5.80	3.128E+00	3.764E+00	3.764E+00	42.03
	77.11	199	9.70	3.395E+00	4.290E+00	4.290E+00	25.31
	87.09	41	3.41	4.328E+00	1.954E+00	1.954E+00	115.01
	242.00	163	7.25	4.304E+00	3.692E+00	3.692E+00	27.95
	295.22	231	18.42	3.742E+00	2.376E+00	2.376E+00	17.14
	351.93	417	35.60*	3.303E+00	2.512E+00	2.512E+00	13.14
RN-222	609.32	245	45.49*	2.173E+00	1.759E+00	1.759E+00	15.43
	1120.29	57	14.92	1.225E+00	2.195E+00	2.196E+00	38.99
	1764.49	38	15.30	8.539E-01	2.053E+00	2.053E+00	46.22
RA-224	240.99	163	4.10*	4.304E+00	6.529E+00	6.529E+00	27.95
RA-226	74.82	96	5.80	3.128E+00	3.764E+00	3.764E+00	42.03
	77.11	199	9.70	3.395E+00	4.290E+00	4.290E+00	25.31
	87.09	41	3.41	4.328E+00	1.954E+00	1.954E+00	115.01
	242.00	163	7.25	4.304E+00	3.692E+00	3.692E+00	27.95
	295.22	231	18.42	3.742E+00	2.376E+00	2.376E+00	17.14
	351.93	417	35.60*	3.303E+00	2.512E+00	2.512E+00	13.14
AC-228	105.21	------	1.10	5.415E+00	------	Line Not Found	------
	338.32	71	11.27	3.393E+00	1.322E+00	1.322E+00	48.23
	835.71	------	1.61	1.635E+00	------	Line Not Found	------
	911.20	84	25.80*	1.503E+00	1.535E+00	1.535E+00	27.10
	968.97	45	15.80	1.415E+00	1.423E+00	1.423E+00	31.08
RA-228	105.21	------	1.10	5.415E+00	------	Line Not Found	------
	338.32	71	11.27	3.393E+00	1.322E+00	1.322E+00	48.23
	835.71	------	1.61	1.635E+00	------	Line Not Found	------
	911.20	84	25.80*	1.503E+00	1.535E+00	1.535E+00	27.10
	968.97	45	15.80	1.415E+00	1.423E+00	1.423E+00	31.08

Sample ID : G719378011 Acquisition date : 10-MAY-2025 10:28:55

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	96	10.28	3.128E+00	2.124E+00	2.124E+00	42.03
	77.11	199	17.10	3.395E+00	2.434E+00	2.434E+00	25.31
	238.63	360	43.60*	4.340E+00	1.349E+00	1.349E+00	12.51
	300.09	------	3.30	3.698E+00	------	Line Not Found	------
TH-229	85.43	41	14.70	4.328E+00	4.532E-01	4.532E-01	115.01
	88.47	49	24.00	4.593E+00	3.134E-01	3.134E-01	56.83
	193.51	------	4.41*	4.970E+00	------	Line Not Found	------
	210.85	10	2.80	4.721E+00	5.543E-01	5.543E-01	381.55
TH-230	74.82	96	5.80	3.128E+00	3.764E+00	3.764E+00	42.03
	77.11	199	9.70	3.395E+00	4.290E+00	4.290E+00	25.31
	87.09	41	3.41	4.328E+00	1.954E+00	1.954E+00	115.01
	242.00	163	7.25	4.304E+00	3.692E+00	3.692E+00	27.95
	295.22	231	18.42	3.742E+00	2.376E+00	2.376E+00	17.14
	351.93	417	35.60*	3.303E+00	2.512E+00	2.512E+00	13.14
TH-232	105.21	------	1.10	5.415E+00	------	Line Not Found	------
	338.32	71	11.27	3.393E+00	1.322E+00	1.322E+00	48.23
	835.71	------	1.61	1.635E+00	------	Line Not Found	------
	911.20	84	25.80*	1.503E+00	1.535E+00	1.535E+00	27.10
	968.97	45	15.80	1.415E+00	1.423E+00	1.423E+00	31.08
U-234	74.82	96	5.80	3.128E+00	3.764E+00	3.764E+00	42.03
	77.11	199	9.70	3.395E+00	4.290E+00	4.290E+00	25.31
	87.09	41	3.41	4.328E+00	1.954E+00	1.954E+00	115.01
	242.00	163	7.25	4.304E+00	3.692E+00	3.692E+00	27.95
	295.22	231	18.42	3.742E+00	2.376E+00	2.376E+00	17.14
	351.93	417	35.60*	3.303E+00	2.512E+00	2.512E+00	13.14
U-235	89.96	49	3.47	4.593E+00	2.168E+00	2.168E+00	56.83
	93.35	116	5.60	4.794E+00	3.064E+00	3.064E+00	51.78
	143.76	------	10.96*	5.683E+00	------	Line Not Found	------
	163.33	42	5.08	5.436E+00	1.078E+00	1.078E+00	83.12
	185.72	129	57.20	5.078E+00	3.155E-01	3.155E-01	43.05
	205.31	------	5.01	4.792E+00	------	Line Not Found	------
AM-243	43.53	------	5.90	1.348E-01	------	Line Not Found	------
	74.66	96	67.20*	3.128E+00	3.249E-01	3.249E-01	42.03
ANH-511	511.00	34	100.00*	2.504E+00	9.723E-02	9.723E-02	102.69

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:30:12.01

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378011.CNF;1  *
* Acquisition date : 10-MAY-2025 10:28:55 Sensitivity     : 3.000           *
* Detector ID      : GAM40                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.41     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:08:00 Analyst initials: RXF2            *
* Sample ID        : G719378011           Sample Quantity : 1.0591E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-OCT-2024 05:10:19 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM40_CAN.CNF;15            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	5.765E+00	1.270E+00	6.344E-01
GE-68	2.837E+00	1.390E+00	1.975E+00
RB-86	3.206E+00	1.571E+00	2.231E+00
CD-109	1.889E+00	2.130E+00	2.503E+00
SN-126	1.801E-01	2.030E-01	2.405E-01
BA-137M	3.626E-01	1.089E-01	9.487E-02
CS-137	3.831E-01	1.150E-01	1.002E-01
TL-208	4.188E-01	1.386E-01	7.867E-02
BI-211	6.921E+00	8.913E-01	4.667E-01
BI-212	1.694E+00	1.029E+00	1.245E+00
PB-212	1.349E+00	1.653E-01	1.403E-01
BI-214	1.759E+00	2.660E-01	1.532E-01
PB-214	2.512E+00	3.235E-01	1.697E-01
RN-222	1.759E+00	2.660E-01	1.532E-01
RA-224	6.529E+00	1.788E+00	1.504E+00
RA-226	2.512E+00	3.235E-01	1.697E-01
AC-228	1.535E+00	4.078E-01	3.414E-01
RA-228	1.535E+00	4.078E-01	3.414E-01
TH-228	1.349E+00	1.653E-01	1.403E-01
TH-229	9.356E-01	7.114E-01	1.386E+00
TH-230	2.512E+00	3.235E-01	1.697E-01
TH-232	1.535E+00	4.078E-01	3.414E-01
U-234	2.512E+00	3.235E-01	1.697E-01
U-235	1.811E-01	2.651E-01	4.976E-01
AM-243	3.249E-01	1.338E-01	1.535E-01
ANH-511	9.723E-02	9.784E-02	6.820E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-3.577E-01	5.603E-01	9.770E-01	NOT IDENT.
NA-22	1.579E-02	4.462E-02	1.005E-01	NOT IDENT.
NA-24	0.000E+00	1.185E+14	0.000E+00	SHORT HLIF
AL-26	-2.182E-02	5.199E-02	9.608E-02	NOT IDENT.

SC-46	-3.764E-03	6.237E-02	1.160E-01	FAIL ABUN
V-48	-4.164E-02	1.444E-01	2.649E-01	NOT IDENT.
CR-51	-1.395E-01	7.667E-01	1.435E+00	NOT IDENT.
MN-52	2.366E+00	3.356E+00	7.459E+00	FAIL ABUN
MN-54	2.230E-03	6.252E-02	1.150E-01	NOT IDENT.
CO-56	7.143E-03	5.698E-02	1.110E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-3.224E-02	3.552E-02	5.836E-02	NOT IDENT.
CO-58	-8.078E-03	4.986E-02	9.377E-02	NOT IDENT.
FE-59	-1.608E-02	1.103E-01	2.194E-01	NOT IDENT.
CO-60	-1.429E-03	5.920E-02	1.056E-01	NOT IDENT.
ZN-65	3.217E-02	1.101E-01	2.143E-01	NOT IDENT.
AS-73	-1.924E+00	2.658E+00	4.639E+00	NOT IDENT.
AS-74	1.658E-01	2.376E-01	4.891E-01	NOT IDENT.
SE-75	-1.298E-02	7.256E-02	1.227E-01	NOT IDENT.
BR-77	0.000E+00	3.564E+03	0.000E+00	SHORT HLIF
SR-82	9.000E-02	7.056E-01	1.306E+00	NOT IDENT.
RB-83	3.954E-02	1.083E-01	2.145E-01	NOT IDENT.
RB-84	4.736E-02	1.147E-01	2.354E-01	NOT IDENT.
KR-85	2.878E+00	1.147E+01	1.983E+01	NOT IDENT.
SR-85	1.814E-02	7.258E-02	1.255E-01	NOT IDENT.
Y-88	-2.874E-02	5.034E-02	8.734E-02	NOT IDENT.
Y-91	6.133E+00	3.165E+01	6.520E+01	NOT IDENT.
NB-94	5.942E-02	5.078E-02	1.119E-01	FAIL ABUN
NB-95	7.860E-02	7.125E-02	1.336E-01	NOT IDENT.
NB-95M	1.444E-01	2.149E-01	3.691E-01	NOT IDENT.
ZR-95	9.513E-03	9.221E-02	1.827E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.514E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	1.119E+03	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	9.008E+36	0.000E+00	SHORT HLIF
RH-101	1.350E-02	4.744E-02	8.557E-02	NOT IDENT.
RH-102	-1.703E-02	6.793E-02	1.245E-01	FAIL ABUN
RU-103	4.149E-02	6.289E-02	1.315E-01	FAIL ABUN
RH-106	-1.006E-01	4.296E-01	7.845E-01	NOT IDENT.
RU-106	-1.006E-01	4.296E-01	7.845E-01	NOT IDENT.
AG-108M	2.947E-03	4.441E-02	7.641E-02	NOT IDENT.
AG-110	-3.679E-01	1.182E+00	1.861E+00	NOT IDENT.
AG-110M	-1.340E-02	6.658E-02	1.216E-01	FAIL ABUN
SN-113	5.138E-02	6.752E-02	1.374E-01	NOT IDENT.
CD-115	0.000E+00	2.773E+03	0.000E+00	SHORT HLIF
SN-117M	6.936E-02	1.872E-01	3.378E-01	NOT IDENT.
SB-122	0.000E+00	1.942E+02	0.000E+00	SHORT HLIF
TE-123M	1.419E-02	4.518E-02	8.120E-02	NOT IDENT.
SB-124	2.075E-02	1.296E-01	2.930E-01	NOT IDENT.
SB-125	-2.947E-02	1.253E-01	2.312E-01	FAIL ABUN
TE-125M	-1.249E+01	1.768E+01	2.714E+01	NOT IDENT.
I-126	5.124E-01	6.497E-01	1.352E+00	NOT IDENT.
SB-126	3.745E-01	4.915E-01	1.027E+00	NOT IDENT.
SB-127	-8.704E+00	3.562E+01	6.482E+01	FAIL ABUN
I-131	-4.241E-02	6.908E-01	1.303E+00	NOT IDENT.
I-132	0.000E+00	1.156E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	4.044E+01	0.000E+00	SHORT HLIF
BA-133	-2.775E-03	6.342E-02	1.078E-01	NOT IDENT.
I-133	0.000E+00	5.306E+09	0.000E+00	SHORT HLIF
CS-134	8.411E-02	7.293E-02	1.234E-01	FAIL ABUN
I-135	0.000E+00	2.043E+34	0.000E+00	SHORT HLIF
CS-136	5.449E-03	3.358E-01	6.775E-01	NOT IDENT.
LA-138	7.989E-03	9.757E-02	1.961E-01	NOT IDENT.
CE-139	-1.040E-03	5.151E-02	8.285E-02	NOT IDENT.
BA-140	-7.344E-01	8.066E-01	1.330E+00	FAIL ABUN
LA-140	-1.326E-01	2.506E-01	4.521E-01	NOT IDENT.
CE-141	-6.816E-03	1.257E-01	2.204E-01	NOT IDENT.
CE-143	0.000E+00	9.426E+05	0.000E+00	SHORT HLIF
CE-144	2.048E-01	2.761E-01	5.196E-01	NOT IDENT.
PM-144	2.290E-02	4.734E-02	9.489E-02	NOT IDENT.
PR-144	1.729E+00	3.575E+00	7.164E+00	NOT IDENT.
PM-146	4.113E-03	6.142E-02	1.164E-01	NOT IDENT.
ND-147	2.210E-01	1.923E+00	3.758E+00	FAIL ABUN
PM-147	5.339E+01	9.982E+02	1.791E+03	NOT IDENT.
PM-149	0.000E+00	2.533E+04	0.000E+00	SHORT HLIF
EU-150	-3.570E-02	4.358E-02	6.678E-02	FAIL ABUN
EU-152	-5.912E-03	1.176E-01	2.245E-01	FAIL ABUN
GD-153	4.206E-03	1.314E-01	2.196E-01	NOT IDENT.
EU-154	4.060E-02	1.243E-01	2.790E-01	NOT IDENT.
EU-155	-8.070E-02	1.542E-01	2.645E-01	FAIL ABUN
TB-160	-1.196E-01	1.924E-01	3.191E-01	FAIL ABUN
HO-166M	1.032E-02	6.813E-02	1.345E-01	NOT IDENT.

TM-171	6.246E+01	4.979E+01	1.021E+02	NOT IDENT.
HF-172	1.243E-01	2.793E-01	5.115E-01	NOT IDENT.
LU-172	3.051E-02	7.844E-02	1.696E-01	FAIL ABUN
LU-176	-1.908E-02	3.694E-02	6.702E-02	NOT IDENT.
HF-181	-2.781E-02	7.316E-02	1.327E-01	NOT IDENT.
TA-182	4.402E-02	2.213E-01	4.687E-01	FAIL ABUN
RE-183	5.301E-02	5.750E-01	1.064E+00	FAIL ABUN
RE-184	8.985E-02	1.891E-01	3.812E-01	NOT IDENT.
W-188	-6.016E+00	1.293E+01	2.244E+01	NOT IDENT.
IR-192	-1.210E-02	5.547E-02	1.035E-01	FAIL ABUN
HG-203	2.123E-03	7.302E-02	1.259E-01	NOT IDENT.
TL-204	-3.872E+00	9.808E+00	1.591E+01	NOT IDENT.
BI-207	3.003E-02	6.881E-02	1.471E-01	FAIL ABUN
BI-210	-9.802E+00	1.532E+01	2.661E+01	NOT IDENT.
PB-210	-9.802E+00	1.532E+01	2.661E+01	NOT IDENT.
PB-211	-1.028E+00	9.809E-01	1.644E+00	NOT IDENT.
BI-213	6.113E-02	1.299E-01	2.435E-01	NOT IDENT.
RN-219	4.917E-01	6.116E-01	1.231E+00	NOT IDENT.
RA-223	-3.813E-02	8.765E-01	1.657E+00	FAIL ABUN
AC-225	-1.501E+00	2.805E+00	4.606E+00	NOT IDENT.
AC-227	2.949E-02	3.630E-01	6.333E-01	NOT IDENT.
TH-227	2.949E-02	3.630E-01	6.333E-01	NOT IDENT.
PA-231	2.464E-01	7.068E-01	1.369E+00	NOT IDENT.
TH-231	-3.813E-02	8.765E-01	1.657E+00	FAIL ABUN
PA-233	-6.054E-02	8.966E-02	1.601E-01	NOT IDENT.
PA-234	-3.266E-01	3.976E-01	4.890E-01	FAIL ABUN
PA-234M	6.790E-01	2.608E+00	4.940E+00	FAIL ABUN
TH-234	6.790E-01	2.608E+00	4.940E+00	FAIL ABUN
NP-237	-6.054E-02	8.966E-02	1.601E-01	NOT IDENT.
NP-238	0.000E+00	5.694E+03	0.000E+00	SHORT HLIF
U-238	6.790E-01	2.608E+00	4.940E+00	FAIL ABUN
NP-239	-1.499E-01	3.599E-01	6.208E-01	NOT IDENT.
PU-239	2.864E+02	4.776E+02	8.846E+02	NOT IDENT.
AM-241	1.893E-01	3.531E-01	6.726E-01	NOT IDENT.
CM-243	-3.949E-02	1.429E-01	2.512E-01	NOT IDENT.
BK-247	-1.479E-02	1.160E-01	1.976E-01	FAIL ABUN
CM-247	7.057E-02	5.516E-02	1.155E-01	NOT IDENT.
CF-249	1.435E-02	5.470E-02	1.063E-01	NOT IDENT.
CF-251	2.371E-02	1.875E-01	3.306E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:30:10.48

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	83	10.66*	9.619E-01	5.765E+00	5.765E+00	22.49
GE-68	1077.34	15	3.22*	1.274E+00	2.613E+00	2.837E+00	50.00
RB-86	1077.00	15	8.64*	1.274E+00	9.740E-01	3.206E+00	50.00
CD-109	88.03	41	3.70*	4.328E+00	1.801E+00	1.889E+00	115.01
SN-126	64.28	------	9.60	1.868E+00	------	Line Not Found	------
	86.94	41	8.90	4.328E+00	7.486E-01	7.486E-01	115.01
	87.57	41	37.00*	4.328E+00	1.801E-01	1.801E-01	115.01
BA-137M	661.66	93	89.90*	2.025E+00	3.619E-01	3.626E-01	30.63
CS-137	661.66	93	85.10*	2.025E+00	3.823E-01	3.831E-01	30.63
TL-208	277.37	------	6.60	3.910E+00	------	Line Not Found	------
	583.19	113	85.00*	2.254E+00	4.188E-01	4.188E-01	33.77
	860.56	26	12.50	1.590E+00	9.366E-01	9.366E-01	60.51
BI-211	72.87	------	1.23	2.916E+00	------	Line Not Found	------
	351.06	417	12.92*	3.303E+00	6.921E+00	6.921E+00	13.14
BI-212	727.33	30	6.67*	1.860E+00	1.694E+00	1.694E+00	62.00
	1620.50	------	1.47	8.933E-01	------	Line Not Found	------
PB-212	74.82	96	10.28	3.128E+00	2.124E+00	2.124E+00	42.03
	77.11	199	17.10	3.395E+00	2.434E+00	2.434E+00	25.31
	238.63	360	43.60*	4.340E+00	1.349E+00	1.349E+00	12.51
	300.09	------	3.30	3.698E+00	------	Line Not Found	------
BI-214	609.32	245	45.49*	2.173E+00	1.759E+00	1.759E+00	15.43
	1120.29	57	14.92	1.225E+00	2.195E+00	2.196E+00	38.99
	1764.49	38	15.30	8.539E-01	2.053E+00	2.053E+00	46.22
PB-214	74.82	96	5.80	3.128E+00	3.764E+00	3.764E+00	42.03
	77.11	199	9.70	3.395E+00	4.290E+00	4.290E+00	25.31
	87.09	41	3.41	4.328E+00	1.954E+00	1.954E+00	115.01
	242.00	163	7.25	4.304E+00	3.692E+00	3.692E+00	27.95
	295.22	231	18.42	3.742E+00	2.376E+00	2.376E+00	17.14
	351.93	417	35.60*	3.303E+00	2.512E+00	2.512E+00	13.14
RN-222	609.32	245	45.49*	2.173E+00	1.759E+00	1.759E+00	15.43
	1120.29	57	14.92	1.225E+00	2.195E+00	2.196E+00	38.99
	1764.49	38	15.30	8.539E-01	2.053E+00	2.053E+00	46.22
RA-224	240.99	163	4.10*	4.304E+00	6.529E+00	6.529E+00	27.95
RA-226	74.82	96	5.80	3.128E+00	3.764E+00	3.764E+00	42.03
	77.11	199	9.70	3.395E+00	4.290E+00	4.290E+00	25.31
	87.09	41	3.41	4.328E+00	1.954E+00	1.954E+00	115.01
	242.00	163	7.25	4.304E+00	3.692E+00	3.692E+00	27.95
	295.22	231	18.42	3.742E+00	2.376E+00	2.376E+00	17.14
	351.93	417	35.60*	3.303E+00	2.512E+00	2.512E+00	13.14
AC-228	105.21	------	1.10	5.415E+00	------	Line Not Found	------
	338.32	71	11.27	3.393E+00	1.322E+00	1.322E+00	48.23
	835.71	------	1.61	1.635E+00	------	Line Not Found	------
	911.20	84	25.80*	1.503E+00	1.535E+00	1.535E+00	27.10
	968.97	45	15.80	1.415E+00	1.423E+00	1.423E+00	31.08
RA-228	105.21	------	1.10	5.415E+00	------	Line Not Found	------
	338.32	71	11.27	3.393E+00	1.322E+00	1.322E+00	48.23
	835.71	------	1.61	1.635E+00	------	Line Not Found	------

Sample ID : G719378011 Acquisition date : 10-MAY-2025 10:28:55

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	84	25.80*	1.503E+00	1.535E+00	1.535E+00	27.10
	968.97	45	15.80	1.415E+00	1.423E+00	1.423E+00	31.08
TH-228	74.82	96	10.28	3.128E+00	2.124E+00	2.124E+00	42.03
	77.11	199	17.10	3.395E+00	2.434E+00	2.434E+00	25.31
	238.63	360	43.60*	4.340E+00	1.349E+00	1.349E+00	12.51
	300.09	------	3.30	3.698E+00	------	Line Not Found	------
TH-229	85.43	41	14.70	4.328E+00	4.532E-01	4.532E-01	115.01
	88.47	49	24.00	4.593E+00	3.134E-01	3.134E-01	56.83
	193.51	------	4.41*	4.970E+00	------	Line Not Found	------
	210.85	10	2.80	4.721E+00	5.543E-01	5.543E-01	381.55
TH-230	74.82	96	5.80	3.128E+00	3.764E+00	3.764E+00	42.03
	77.11	199	9.70	3.395E+00	4.290E+00	4.290E+00	25.31
	87.09	41	3.41	4.328E+00	1.954E+00	1.954E+00	115.01
	242.00	163	7.25	4.304E+00	3.692E+00	3.692E+00	27.95
	295.22	231	18.42	3.742E+00	2.376E+00	2.376E+00	17.14
	351.93	417	35.60*	3.303E+00	2.512E+00	2.512E+00	13.14
TH-232	105.21	------	1.10	5.415E+00	------	Line Not Found	------
	338.32	71	11.27	3.393E+00	1.322E+00	1.322E+00	48.23
	835.71	------	1.61	1.635E+00	------	Line Not Found	------
	911.20	84	25.80*	1.503E+00	1.535E+00	1.535E+00	27.10
	968.97	45	15.80	1.415E+00	1.423E+00	1.423E+00	31.08
U-234	74.82	96	5.80	3.128E+00	3.764E+00	3.764E+00	42.03
	77.11	199	9.70	3.395E+00	4.290E+00	4.290E+00	25.31
	87.09	41	3.41	4.328E+00	1.954E+00	1.954E+00	115.01
	242.00	163	7.25	4.304E+00	3.692E+00	3.692E+00	27.95
	295.22	231	18.42	3.742E+00	2.376E+00	2.376E+00	17.14
	351.93	417	35.60*	3.303E+00	2.512E+00	2.512E+00	13.14
U-235	89.96	49	3.47	4.593E+00	2.168E+00	2.168E+00	56.83
	93.35	116	5.60	4.794E+00	3.064E+00	3.064E+00	51.78
	143.76	------	10.96*	5.683E+00	------	Line Not Found	------
	163.33	42	5.08	5.436E+00	1.078E+00	1.078E+00	83.12
	185.72	129	57.20	5.078E+00	3.155E-01	3.155E-01	43.05
	205.31	------	5.01	4.792E+00	------	Line Not Found	------
AM-243	43.53	------	5.90	1.348E-01	------	Line Not Found	------
	74.66	96	67.20*	3.128E+00	3.249E-01	3.249E-01	42.03
ANH-511	511.00	34	100.00*	2.504E+00	9.723E-02	9.723E-02	102.69

Flag: "*" = Keyline

Sample ID : G719378011 Acquisition date : 10-MAY-2025 10:28:55

Total number of lines in spectrum	53	
Number of unidentified lines	13	
Number of lines tentatively identified by NID	40	75.47%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	5.765E+00	5.765E+00	1.296E+00	22.49	
GE-68	270.95D	1.09	2.613E+00	2.837E+00	1.418E+00	50.00	
RB-86	18.64D	3.29	9.740E-01	3.206E+00	1.603E+00	50.00	
CD-109	461.40D	1.05	1.801E+00	1.889E+00	2.173E+00	115.01	
SN-126	2.30E+05Y	1.00	1.801E-01	1.801E-01	2.071E-01	115.01	
BA-137M	30.08Y	1.00	3.619E-01	3.626E-01	1.111E-01	30.63	
CS-137	30.08Y	1.00	3.823E-01	3.831E-01	1.173E-01	30.63	
TL-208	1.41E+10Y	1.00	4.188E-01	4.188E-01	1.414E-01	33.77	
BI-211	7.04E+08Y	1.00	6.921E+00	6.921E+00	0.909E+00	13.14	
BI-212	1.41E+10Y	1.00	1.694E+00	1.694E+00	1.050E+00	62.00	
PB-212	1.41E+10Y	1.00	1.349E+00	1.349E+00	0.169E+00	12.51	
BI-214	1600.00Y	1.00	1.759E+00	1.759E+00	0.271E+00	15.43	
PB-214	1600.00Y	1.00	2.512E+00	2.512E+00	0.330E+00	13.14	
RN-222	1600.00Y	1.00	1.759E+00	1.759E+00	0.271E+00	15.43	
RA-224	1.41E+10Y	1.00	6.529E+00	6.529E+00	1.825E+00	27.95	
RA-226	1600.00Y	1.00	2.512E+00	2.512E+00	0.330E+00	13.14	
AC-228	1.41E+10Y	1.00	1.535E+00	1.535E+00	0.416E+00	27.10	
RA-228	1.41E+10Y	1.00	1.535E+00	1.535E+00	0.416E+00	27.10	
TH-228	1.41E+10Y	1.00	1.349E+00	1.349E+00	0.169E+00	12.51	
TH-229	7340.00Y	1.00	3.134E-01	3.134E-01	1.781E-01	56.83	K
TH-230	7.54E+04Y	1.00	2.512E+00	2.512E+00	0.330E+00	13.14	
TH-232	1.41E+10Y	1.00	1.535E+00	1.535E+00	0.416E+00	27.10	
U-234	2.45E+05Y	1.00	2.512E+00	2.512E+00	0.330E+00	13.14	
U-235	7.04E+08Y	1.00	3.155E-01	3.155E-01	1.358E-01	43.05	K
AM-243	7370.00Y	1.00	3.249E-01	3.249E-01	1.365E-01	42.03	
ANH-511	1.00E+09Y	1.00	9.723E-02	9.723E-02	9.984E-02	102.69	
		Total Activity :	4.956E+01	5.211E+01			

Grand Total Activity : 4.956E+01 5.211E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378011 Acquisition date : 10-MAY-2025 10:28:55

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	83.99	45	145	1.43	169.07	166	7	1.23E-02	94.8	4.10E+00	T
0	112.32	39	128	1.39	225.78	220	10	1.07E-02	****	5.61E+00	T
0	417.15	49	37	5.91	836.02	829	15	1.39E-02	60.4	2.92E+00	
0	436.44	24	39	1.30	874.64	871	11	6.80E-03	****	2.82E+00	
0	462.11	31	40	1.45	926.01	921	11	9.02E-03	84.3	2.71E+00	T
0	471.01	11	40	1.40	943.83	938	10	3.18E-03	****	2.67E+00	
0	490.57	28	26	3.96	982.97	976	14	8.05E-03	85.7	2.59E+00	
0	645.68	10	16	0.88	1293.38	1286	11	2.92E-03	****	2.07E+00	
0	703.60	16	14	0.79	1409.27	1406	6	4.66E-03	87.2	1.92E+00	T
0	763.59	11	11	1.12	1529.31	1524	9	3.32E-03	****	1.78E+00	T
0	767.72	28	20	2.17	1537.56	1533	10	8.10E-03	68.6	1.77E+00	T
0	782.80	5	20	0.71	1567.73	1561	9	1.45E-03	****	1.74E+00	T
0	794.71	17	13	0.97	1591.57	1586	9	4.92E-03	88.5	1.71E+00	T
0	905.67	13	7	4.15	1813.54	1805	14	3.89E-03	96.4	1.51E+00	
0	934.49	25	13	0.72	1871.18	1864	14	7.42E-03	70.6	1.47E+00	T
0	949.92	13	3	0.99	1902.06	1895	12	3.86E-03	73.5	1.44E+00	T
0	966.38	10	18	0.79	1934.97	1926	11	2.79E-03	****	1.42E+00	T
0	1001.64	12	3	1.39	2005.50	2002	7	3.59E-03	72.7	1.37E+00	T
0	1106.32	15	7	2.23	2214.86	2209	10	4.34E-03	82.7	1.24E+00	
0	1154.78	9	6	1.34	2311.77	2308	8	2.70E-03	****	1.19E+00	
0	1237.90	33	3	1.03	2477.99	2471	13	9.63E-03	40.2	1.11E+00	T
0	1299.16	16	0	1.04	2600.47	2596	11	4.72E-03	48.5	1.06E+00	T
0	1336.49	8	2	0.66	2675.11	2672	7	2.32E-03	99.0	1.04E+00	
0	1377.16	27	3	1.05	2756.43	2752	10	8.12E-03	42.3	1.01E+00	
0	1399.00	5	5	0.82	2800.09	2796	7	1.40E-03	****	9.96E-01	
0	1407.21	14	3	1.09	2816.50	2811	12	4.10E-03	70.3	9.91E-01	T
0	1512.03	6	3	0.47	3026.04	3022	6	1.70E-03	****	9.37E-01	
0	1729.61	12	3	2.32	3460.91	3452	12	3.44E-03	80.8	8.62E-01	

Flags: "T" = Tentatively associated

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378011.CNF;1  *
* Acquisition date : 10-MAY-2025 10:28:55 Sensitivity     : 3.000           *
* Detector ID      : GAM40                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.41     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:08:00 Nuclide Library : SOLID           *
* Sample ID        : G719378011           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.0591E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-OCT-2024 05:10:19 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM40_CAN.CNF;15            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.243E-01
GE-68	7.349E-01
RB-86	8.302E-01
CD-109	1.191E+00
SN-126	1.144E-01
BA-137M	4.219E-02
CS-137	4.457E-02
TL-208	3.435E-02
BI-211	2.110E-01
BI-212	5.458E-01
PB-212	6.511E-02
BI-214	6.695E-02
PB-214	7.673E-02
RN-222	6.695E-02
RA-224	6.977E-01
RA-226	7.673E-02
AC-228	1.461E-01
RA-228	1.461E-01
TH-228	6.511E-02
TH-229	6.496E-01
TH-230	7.672E-02
TH-232	1.461E-01
U-234	7.672E-02
U-235	2.334E-01
AM-243	7.220E-02
ANH-511	3.029E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.359E-01	NOT IDENT.
NA-22	4.124E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.677E-02	NOT IDENT.
SC-46	4.992E-02	FAIL ABUN

V-48	1.050E-01	NOT IDENT.
CR-51	6.565E-01	NOT IDENT.
MN-52	3.212E+00	FAIL ABUN
MN-54	5.124E-02	NOT IDENT.
CO-56	4.764E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.706E-02	NOT IDENT.
CO-58	3.908E-02	NOT IDENT.
FE-59	8.741E-02	NOT IDENT.
CO-60	4.352E-02	NOT IDENT.
ZN-65	9.042E-02	NOT IDENT.
AS-73	2.145E+00	NOT IDENT.
AS-74	2.191E-01	NOT IDENT.
SE-75	5.654E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	5.663E-01	NOT IDENT.
RB-83	9.614E-02	NOT IDENT.
RB-84	1.002E-01	NOT IDENT.
KR-85	9.029E+00	NOT IDENT.
SR-85	5.714E-02	NOT IDENT.
Y-88	2.962E-02	NOT IDENT.
Y-91	2.791E+01	NOT IDENT.
NB-94	5.098E-02	FAIL ABUN
NB-95	5.920E-02	NOT IDENT.
NB-95M	1.721E-01	NOT IDENT.
ZR-95	7.752E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	4.030E-02	NOT IDENT.
RH-102	5.404E-02	FAIL ABUN
RU-103	5.855E-02	FAIL ABUN
RH-106	3.445E-01	NOT IDENT.
RU-106	3.445E-01	NOT IDENT.
AG-108M	3.448E-02	NOT IDENT.
AG-110	8.167E-01	NOT IDENT.
AG-110M	5.151E-02	FAIL ABUN
SN-113	6.286E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.586E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	3.810E-02	NOT IDENT.
SB-124	1.133E-01	NOT IDENT.
SB-125	1.042E-01	FAIL ABUN
TE-125M	1.263E+01	NOT IDENT.
I-126	5.957E-01	NOT IDENT.
SB-126	4.563E-01	NOT IDENT.
SB-127	2.818E+01	FAIL ABUN
I-131	5.936E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.915E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.500E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.896E-01	NOT IDENT.
LA-138	8.317E-02	NOT IDENT.
CE-139	3.882E-02	NOT IDENT.
BA-140	5.721E-01	FAIL ABUN
LA-140	1.629E-01	NOT IDENT.
CE-141	1.033E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.436E-01	NOT IDENT.
PM-144	4.218E-02	NOT IDENT.
PR-144	3.185E+00	NOT IDENT.
PM-146	5.279E-02	NOT IDENT.
ND-147	1.652E+00	FAIL ABUN
PM-147	8.354E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.048E-02	FAIL ABUN
EU-152	1.015E-01	FAIL ABUN
GD-153	1.026E-01	NOT IDENT.
EU-154	1.142E-01	NOT IDENT.
EU-155	1.238E-01	FAIL ABUN
TB-160	1.319E-01	FAIL ABUN
HO-166M	5.796E-02	NOT IDENT.
TM-171	4.762E+01	NOT IDENT.

HF-172	2.405E-01	NOT IDENT.
LU-172	7.235E-02	FAIL ABUN
LU-176	3.071E-02	NOT IDENT.
HF-181	5.869E-02	NOT IDENT.
TA-182	1.963E-01	FAIL ABUN
RE-183	4.983E-01	FAIL ABUN
RE-184	1.597E-01	NOT IDENT.
W-188	1.035E+01	NOT IDENT.
IR-192	4.736E-02	FAIL ABUN
HG-203	5.812E-02	NOT IDENT.
TL-204	7.489E+00	NOT IDENT.
BI-207	6.364E-02	FAIL ABUN
BI-210	1.239E+01	NOT IDENT.
PB-210	1.239E+01	NOT IDENT.
PB-211	7.375E-01	NOT IDENT.
BI-213	1.086E-01	NOT IDENT.
RN-219	5.672E-01	NOT IDENT.
RA-223	7.604E-01	FAIL ABUN
AC-225	2.136E+00	NOT IDENT.
AC-227	2.923E-01	NOT IDENT.
TH-227	2.923E-01	NOT IDENT.
PA-231	6.359E-01	NOT IDENT.
TH-231	7.604E-01	FAIL ABUN
PA-233	7.317E-02	NOT IDENT.
PA-234	1.896E-01	FAIL ABUN
PA-234M	2.322E+00	FAIL ABUN
TH-234	2.322E+00	FAIL ABUN
NP-237	7.317E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	2.322E+00	FAIL ABUN
NP-239	2.892E-01	NOT IDENT.
PU-239	4.160E+02	NOT IDENT.
AM-241	3.159E-01	NOT IDENT.
CM-243	1.170E-01	NOT IDENT.
BK-247	9.092E-02	FAIL ABUN
CM-247	5.333E-02	NOT IDENT.
CF-249	4.846E-02	NOT IDENT.
CF-251	1.547E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:30:26.06

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378011.CNF;1  *
* Acquisition date : 10-MAY-2025 10:28:55 Sensitivity     : 3.000           *
* Detector ID      : GAM40                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.41     Half life ratio : *****           *
* Sample date      :  8-APR-2025 10:08:00 Nuclide Library : SOLID           *
* Sample ID        : G719378011           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.0591E+02 GRAM *
*                                         Quantity Err(%) : 1.8884E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  8-OCT-2024 05:10:19 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM40_CAN.CNF;15            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	5.765E+00	1.439E+00	1.439E+00
GE-68	2.837E+00	1.425E+00	1.425E+00
RB-86	3.206E+00	1.610E+00	1.610E+00
CD-109	1.889E+00	2.140E+00	2.140E+00
SN-126	1.801E-01	2.037E-01	2.037E-01
BA-137M	3.626E-01	1.129E-01	1.129E-01
CS-137	3.831E-01	1.193E-01	1.193E-01
TL-208	4.188E-01	1.431E-01	1.431E-01
BI-211	6.921E+00	1.107E+00	1.107E+00
BI-212	1.694E+00	1.042E+00	1.042E+00
PB-212	1.349E+00	2.115E-01	2.115E-01
BI-214	1.759E+00	3.048E-01	3.048E-01
PB-214	2.512E+00	3.997E-01	3.997E-01
RN-222	1.759E+00	3.048E-01	3.048E-01
RA-224	6.529E+00	1.901E+00	1.901E+00
RA-226	2.512E+00	3.997E-01	3.997E-01
AC-228	1.535E+00	4.532E-01	4.532E-01
RA-228	1.535E+00	4.532E-01	4.532E-01
TH-228	1.349E+00	2.115E-01	2.115E-01
TH-229	9.356E-01	7.154E-01	7.154E-01
TH-230	2.512E+00	3.997E-01	3.997E-01
TH-232	1.535E+00	4.532E-01	4.532E-01
U-234	2.512E+00	3.997E-01	3.997E-01
U-235	1.811E-01	2.656E-01	2.656E-01
AM-243	3.249E-01	1.378E-01	1.378E-01
ANH-511	9.723E-02	9.819E-02	9.819E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-3.577E-01	5.611E-01	5.838E-01	NOT IDENT.
NA-22	1.579E-02	4.465E-02	4.522E-02	NOT IDENT.
NA-24	1.652E+13	1.185E+14	1.187E+14	SHORT HLIF
AL-26	-2.182E-02	5.202E-02	5.295E-02	NOT IDENT.

SC-46	-3.764E-03	6.237E-02	6.239E-02	FAIL ABUN
V-48	-4.164E-02	1.445E-01	1.457E-01	NOT IDENT.
CR-51	-1.395E-01	7.668E-01	7.694E-01	NOT IDENT.
MN-52	2.366E+00	3.367E+00	3.532E+00	FAIL ABUN
MN-54	2.230E-03	6.252E-02	6.253E-02	NOT IDENT.
CO-56	7.143E-03	5.699E-02	5.708E-02	FAIL ABUN
MN-56	1.000E+41	7.978E+41	0.000E+00	SHORT HLIF
CO-57	-3.224E-02	3.564E-02	3.849E-02	NOT IDENT.
CO-58	-8.078E-03	4.987E-02	5.000E-02	NOT IDENT.
FE-59	-1.608E-02	1.104E-01	1.106E-01	NOT IDENT.
CO-60	-1.429E-03	5.920E-02	5.920E-02	NOT IDENT.
ZN-65	3.217E-02	1.102E-01	1.111E-01	NOT IDENT.
AS-73	-1.924E+00	2.701E+00	2.836E+00	NOT IDENT.
AS-74	1.658E-01	2.382E-01	2.497E-01	NOT IDENT.
SE-75	-1.298E-02	7.257E-02	7.281E-02	NOT IDENT.
BR-77	2.908E+04	2.726E+04	3.025E+04	SHORT HLIF
SR-82	9.000E-02	7.057E-01	7.068E-01	NOT IDENT.
RB-83	3.954E-02	1.085E-01	1.100E-01	NOT IDENT.
RB-84	4.736E-02	1.148E-01	1.168E-01	NOT IDENT.
KR-85	2.878E+00	1.147E+01	1.154E+01	NOT IDENT.
SR-85	1.814E-02	7.260E-02	7.306E-02	NOT IDENT.
Y-88	-2.874E-02	5.040E-02	5.204E-02	NOT IDENT.
Y-91	6.133E+00	3.165E+01	3.178E+01	NOT IDENT.
NB-94	5.942E-02	5.106E-02	5.766E-02	FAIL ABUN
NB-95	7.860E-02	7.168E-02	7.996E-02	NOT IDENT.
NB-95M	1.444E-01	2.156E-01	2.252E-01	NOT IDENT.
ZR-95	9.513E-03	9.221E-02	9.231E-02	NOT IDENT.
NB-97	1.000E+41	7.265E+41	0.000E+00	SHORT HLIF
ZR-97	-1.719E+13	3.517E+13	3.601E+13	SHORT HLIF
MO-99	-1.163E+03	1.125E+03	1.241E+03	SHORT HLIF
TC-99M	-2.392E+35	9.008E+36	0.000E+00	SHORT HLIF
RH-101	1.350E-02	4.751E-02	4.790E-02	NOT IDENT.
RH-102	-1.703E-02	6.796E-02	6.839E-02	FAIL ABUN
RU-103	4.149E-02	6.299E-02	6.571E-02	FAIL ABUN
RH-106	-1.006E-01	4.297E-01	4.321E-01	NOT IDENT.
RU-106	-1.006E-01	4.297E-01	4.321E-01	NOT IDENT.
AG-108M	2.947E-03	4.441E-02	4.443E-02	NOT IDENT.
AG-110	-3.679E-01	1.183E+00	1.194E+00	NOT IDENT.
AG-110M	-1.340E-02	6.660E-02	6.688E-02	FAIL ABUN
SN-113	5.138E-02	6.765E-02	7.150E-02	NOT IDENT.
CD-115	6.682E+02	2.774E+03	2.790E+03	SHORT HLIF
SN-117M	6.936E-02	1.873E-01	1.899E-01	NOT IDENT.
SB-122	-1.338E+02	1.945E+02	2.037E+02	SHORT HLIF
TE-123M	1.419E-02	4.520E-02	4.565E-02	NOT IDENT.
SB-124	2.075E-02	1.296E-01	1.299E-01	NOT IDENT.
SB-125	-2.947E-02	1.253E-01	1.260E-01	FAIL ABUN
TE-125M	-1.249E+01	1.771E+01	1.858E+01	NOT IDENT.
I-126	5.124E-01	6.515E-01	6.912E-01	NOT IDENT.
SB-126	3.745E-01	4.939E-01	5.219E-01	NOT IDENT.
SB-127	-8.704E+00	3.565E+01	3.587E+01	FAIL ABUN
I-131	-4.241E-02	6.908E-01	6.911E-01	NOT IDENT.
I-132	-1.000E+41	2.290E+41	0.000E+00	SHORT HLIF
TE-132	1.962E+01	4.051E+01	4.146E+01	SHORT HLIF
BA-133	-2.775E-03	6.342E-02	6.344E-02	NOT IDENT.
I-133	-3.798E+07	5.306E+09	5.306E+09	SHORT HLIF
CS-134	8.411E-02	7.347E-02	8.268E-02	FAIL ABUN
I-135	-4.654E+33	2.072E+34	0.000E+00	SHORT HLIF
CS-136	5.449E-03	3.358E-01	3.359E-01	NOT IDENT.
LA-138	7.989E-03	9.758E-02	9.764E-02	NOT IDENT.
CE-139	-1.040E-03	5.151E-02	5.151E-02	NOT IDENT.
BA-140	-7.344E-01	8.090E-01	8.741E-01	FAIL ABUN
LA-140	-1.326E-01	2.510E-01	2.580E-01	NOT IDENT.
CE-141	-6.816E-03	1.257E-01	1.258E-01	NOT IDENT.
CE-143	6.486E+05	9.452E+05	9.894E+05	SHORT HLIF
CE-144	2.048E-01	2.767E-01	2.917E-01	NOT IDENT.
PM-144	2.290E-02	4.739E-02	4.850E-02	NOT IDENT.
PR-144	1.729E+00	3.578E+00	3.662E+00	NOT IDENT.
PM-146	4.113E-03	6.142E-02	6.145E-02	NOT IDENT.
ND-147	2.210E-01	1.923E+00	1.925E+00	FAIL ABUN
PM-147	5.339E+01	9.982E+02	9.985E+02	NOT IDENT.
PM-149	-2.337E+04	2.563E+04	2.771E+04	SHORT HLIF
EU-150	-3.570E-02	4.372E-02	4.659E-02	FAIL ABUN
EU-152	-5.912E-03	1.176E-01	1.177E-01	FAIL ABUN
GD-153	4.206E-03	1.314E-01	1.314E-01	NOT IDENT.
EU-154	4.060E-02	1.243E-01	1.257E-01	NOT IDENT.
EU-155	-8.070E-02	1.544E-01	1.587E-01	FAIL ABUN
TB-160	-1.196E-01	1.930E-01	2.004E-01	FAIL ABUN
HO-166M	1.032E-02	6.813E-02	6.829E-02	NOT IDENT.

TM-171	6.246E+01	5.090E+01	5.817E+01	NOT IDENT.
HF-172	1.243E-01	2.802E-01	2.857E-01	NOT IDENT.
LU-172	3.051E-02	7.857E-02	7.976E-02	FAIL ABUN
LU-176	-1.908E-02	3.699E-02	3.798E-02	NOT IDENT.
HF-181	-2.781E-02	7.320E-02	7.426E-02	NOT IDENT.
TA-182	4.402E-02	2.214E-01	2.223E-01	FAIL ABUN
RE-183	5.301E-02	5.751E-01	5.756E-01	FAIL ABUN
RE-184	8.985E-02	1.896E-01	1.939E-01	NOT IDENT.
W-188	-6.016E+00	1.296E+01	1.324E+01	NOT IDENT.
IR-192	-1.210E-02	5.548E-02	5.575E-02	FAIL ABUN
HG-203	2.123E-03	7.302E-02	7.303E-02	NOT IDENT.
TL-204	-3.872E+00	9.819E+00	9.973E+00	NOT IDENT.
BI-207	3.003E-02	6.889E-02	7.021E-02	FAIL ABUN
BI-210	-9.802E+00	1.537E+01	1.599E+01	NOT IDENT.
PB-210	-9.802E+00	1.537E+01	1.599E+01	NOT IDENT.
PB-211	-1.028E+00	9.850E-01	1.089E+00	NOT IDENT.
BI-213	6.113E-02	1.300E-01	1.328E-01	NOT IDENT.
RN-219	4.917E-01	6.157E-01	6.544E-01	NOT IDENT.
RA-223	-3.813E-02	8.765E-01	8.767E-01	FAIL ABUN
AC-225	-1.501E+00	2.810E+00	2.890E+00	NOT IDENT.
AC-227	2.949E-02	3.630E-01	3.633E-01	NOT IDENT.
TH-227	2.949E-02	3.630E-01	3.633E-01	NOT IDENT.
PA-231	2.464E-01	7.091E-01	7.177E-01	NOT IDENT.
TH-231	-3.813E-02	8.765E-01	8.767E-01	FAIL ABUN
PA-233	-6.054E-02	8.989E-02	9.394E-02	NOT IDENT.
PA-234	-3.266E-01	5.470E-01	5.664E-01	FAIL ABUN
PA-234M	6.790E-01	2.613E+00	2.631E+00	FAIL ABUN
TH-234	6.790E-01	2.613E+00	2.631E+00	FAIL ABUN
NP-237	-6.054E-02	8.989E-02	9.394E-02	NOT IDENT.
NP-238	-2.545E+03	5.702E+03	5.817E+03	SHORT HLIF
U-238	6.790E-01	2.613E+00	2.631E+00	FAIL ABUN
NP-239	-1.499E-01	3.603E-01	3.666E-01	NOT IDENT.
PU-239	2.864E+02	4.782E+02	4.954E+02	NOT IDENT.
AM-241	1.893E-01	3.542E-01	3.643E-01	NOT IDENT.
CM-243	-3.949E-02	1.429E-01	1.440E-01	NOT IDENT.
BK-247	-1.479E-02	1.161E-01	1.163E-01	FAIL ABUN
CM-247	7.057E-02	5.664E-02	6.496E-02	NOT IDENT.
CF-249	1.435E-02	5.472E-02	5.510E-02	NOT IDENT.
CF-251	2.371E-02	1.875E-01	1.878E-01	NOT IDENT.

```
*******************************************************************************
*                              GEL Laboratories LLC                           *
*                                2040 Savage Road                             *
*                              Charleston, SC 29407                           *
*                        GAMMA SPECTROSCOPY BACKGROUND REPORT                 *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	59.9887	85.43	89.7974	131.20	70.7534
45.60	55.7618	86.55	91.9796	133.02	63.4059
46.54	73.3163	86.79	126.0260	133.52	58.0721
49.72	0.0000	86.94	126.0606	136.00	78.7666
51.35	51.0401	87.09	126.0952	136.47	63.7003
51.87	40.8856	87.57	126.2038	140.51	0.0000
52.39	40.0084	88.03	126.3076	143.76	53.4106
52.97	59.6333	88.34	76.2273	144.24	76.3478
53.44	65.2995	88.47	76.2453	145.44	75.3729
54.07	66.3347	89.96	68.3995	152.43	57.3027
57.36	0.0000	1093.63	68.4814	153.25	73.9069
57.53	75.3662	91.11	68.5375	323.87	56.3237
57.98	70.7299	92.59	68.7139	156.02	58.6618
59.27	69.0504	93.35	68.8036	158.56	69.9445
59.32	67.1662	94.56	68.9463	159.00	69.9810
59.54	67.2003	94.65	68.9567	162.33	57.9914
60.96	92.1068	94.67	68.9593	162.66	58.0144
61.17	92.1506	94.87	56.8092	163.33	66.9928
62.93	54.3643	97.43	67.9225	165.86	74.6572
63.29	62.9983	98.43	55.1087	176.31	78.1956
63.58	63.0387	98.44	55.1095	176.60	72.5527
64.28	82.2678	99.53	73.6122	177.52	68.0878
66.73	65.3946	100.11	69.5886	181.07	0.0000
67.24	73.1675	102.03	62.6210	181.52	75.9877
125.81	75.1632	103.18	61.7084	184.41	76.2268
67.75	79.0290	103.37	67.9004	143.76	62.9761
68.89	96.6087	105.21	71.1952	193.51	45.0259
69.67	94.1862	105.31	83.5906	197.03	66.0480
70.82	98.2896	106.12	86.7974	198.01	63.7952
70.83	98.2919	106.47	74.4390	201.83	71.0311
72.81	82.7821	109.28	77.5349	203.43	66.4812
72.87	82.7925	111.00	57.2643	205.31	63.8807
74.66	83.0895	111.76	0.0000	210.85	62.6668
74.82	83.1161	114.06	52.9980	215.65	44.8594
74.97	83.1408	116.30	0.0000	218.12	66.2667
77.11	83.4909	116.74	71.4137	222.11	59.3925
78.74	68.3177	119.76	55.9077	227.09	69.2184
79.69	78.9716	121.12	63.4167	227.38	59.6878
80.03	67.1684	121.22	63.4259	228.16	0.0000
80.12	67.1808	121.78	75.1147	228.18	51.3696
80.19	67.1896	122.06	75.1450	116.74	51.3696
80.57	67.2379	122.92	67.8198	235.69	48.1171
81.00	76.5286	123.07	67.8340	235.96	59.3587
81.07	76.5386	265.00	56.2239	238.63	55.4820
81.75	60.7807	125.81	72.3543	238.98	0.0000
82.47	63.5093	127.23	79.9610	240.99	55.5992
83.79	78.2543	127.91	82.1717	242.00	55.6498
84.00	78.2843	129.30	68.4297	244.70	43.6564

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	43.9519	344.28	30.5780	563.25	19.7917
252.80	42.7460	345.93	28.8629	564.24	0.0000
254.15	0.0000	351.06	29.8427	569.33	19.8486
256.23	46.5468	351.93	29.8600	946.00	19.8503
260.90	0.0000	355.39	0.0000	569.70	19.8519
264.66	49.3481	356.01	36.9875	583.19	15.9824
264.80	46.8854	364.49	36.3121	584.27	15.9902
265.00	46.8935	366.42	0.0000	595.83	16.0755
269.46	39.6357	372.51	34.7233	427.87	24.1660
270.03	47.0895	375.05	31.2139	602.52	0.0000
271.23	43.4146	377.52	29.4772	604.72	27.2373
273.65	41.0154	356.01	26.0093	607.14	19.6928
276.40	46.0897	388.16	31.4766	609.32	16.1738
277.37	43.6325	388.63	33.2851	610.33	16.1816
277.60	43.6411	391.69	27.0398	614.28	18.2366
278.00	48.6441	264.66	33.5358	618.01	18.2666
279.20	47.4432	401.81	32.6528	620.36	22.3491
279.54	53.7001	402.40	27.2205	621.93	20.3312
279.70	53.7067	404.85	41.8007	630.19	0.0000
280.46	43.7415	410.95	33.9297	631.29	17.3528
283.69	43.4370	413.71	26.0380	633.25	19.4113
284.31	37.6080	414.70	31.5387	634.78	12.2676
285.41	56.8797	423.72	28.6755	635.95	18.4109
285.90	0.0000	427.09	30.3903	636.99	19.4422
287.50	46.9196	427.87	31.3258	657.50	21.6785
290.67	57.4523	433.94	27.7386	657.76	21.6810
293.27	0.0000	439.40	16.6956	657.90	0.0000
351.93	47.2033	440.45	16.7058	661.66	21.7169
295.96	41.7485	453.88	30.8616	664.57	0.0000
879.38	55.7761	463.37	26.3246	666.33	9.9473
299.98	47.3765	468.07	26.8643	666.50	9.9477
300.09	47.3799	473.00	26.9368	667.71	0.0000
300.13	47.3810	475.06	21.2897	677.62	20.8203
301.36	50.8130	476.78	27.4660	685.70	17.7568
302.85	59.3502	477.60	32.2153	692.65	0.0000
256.23	42.4459	482.18	24.6961	695.00	17.8239
304.85	46.7028	487.02	19.9985	696.49	15.7361
306.78	49.3210	492.35	0.0000	696.51	15.7367
308.46	38.3148	497.08	14.3610	697.00	14.6904
311.90	49.5110	505.52	20.1938	697.30	17.8405
316.51	42.8274	507.63	0.0000	697.49	17.8418
319.41	45.4930	511.00	21.2151	702.65	21.0343
320.08	42.0805	514.00	30.4233	706.68	9.4805
321.04	40.3906	514.00	30.4233	711.68	11.6105
323.87	42.1961	520.40	20.3480	720.70	12.7114
325.23	55.1680	520.69	0.0000	721.93	0.0000
328.76	56.1715	522.65	0.0000	722.78	25.4434
333.37	49.4193	527.90	0.0000	722.91	20.6735
333.97	53.3445	528.26	18.4836	723.31	20.6767
334.37	52.0581	529.59	19.4694	724.19	15.9106
338.28	36.5406	529.87	0.0000	727.33	16.9922
338.32	36.5415	531.02	16.5607	733.00	14.3690
311.90	27.4478	537.26	23.4521	735.93	5.3280
340.48	27.4478	546.56	0.0000	333.97	17.0592
340.55	27.4491	552.55	18.7054	739.50	0.0000

ENERGY	MDA COUNTS
744.23	14.9661
747.24	10.7023
748.06	12.8467
752.31	6.4338
753.82	8.5833
756.73	9.6669
756.80	9.6672
884.68	6.4622
765.81	6.4668
766.84	19.4077
772.60	0.0000
776.52	12.9854
739.50	0.0000
778.90	14.6217
783.70	22.7850
788.74	27.3923
792.07	21.2226
795.86	8.1738
810.06	8.7637
810.29	8.7643
344.28	9.8602
810.76	9.8613
815.77	9.8793
1048.07	12.0863
832.01	19.8721
834.85	22.1029
835.71	23.2148
836.80	0.0000
846.75	0.0000
846.77	11.0974
856.80	6.6814
860.56	10.0349
871.09	11.1902
873.19	12.3177
875.33	0.0000
879.38	13.4658
880.51	6.7354
881.60	6.7380
883.24	10.1125
884.68	12.3656
889.28	13.5107
894.76	10.1514
898.04	13.5498
900.72	11.8668
903.28	5.0900
911.20	11.9078
912.08	11.9112
923.98	0.0000
926.50	10.2572
929.11	10.2660
935.54	14.8593
937.49	8.5779
944.13	5.1577
946.00	12.0419
949.00	3.4438

ENERGY	MDA COUNTS
667.71	0.0000
962.31	10.3748
964.08	19.0311
966.17	45.0112
911.20	1.7327
983.53	6.9622
984.45	0.0000
1274.44	9.3190
1002.74	8.4038
1004.73	7.0073
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	12.3850
1038.76	0.0000
631.29	12.4166
1048.07	11.5345
1049.04	8.8751
1050.41	9.7667
1063.66	9.8043
1077.00	2.8631
1077.34	2.8635
1085.87	8.9697
1093.63	8.0909
1099.45	6.1745
1112.07	10.8435
1112.84	8.2634
1115.54	7.2358
1120.29	9.9627
1120.55	9.9634
1221.41	9.9654
1129.67	9.9882
1131.51	0.0000
1147.95	0.0000
1173.23	9.1882
1177.95	11.9598
1189.05	9.2267
1204.77	10.1917
1221.41	7.4443
1231.02	4.9749
1235.36	5.9766
1238.28	5.6074
1260.41	0.0000
1271.87	6.5975
1274.44	4.7156
1274.54	4.7156
1291.59	7.5771
1298.22	0.0000
1312.11	11.4229
1332.49	7.6528
1362.66	0.0000
1365.19	3.8564
1368.63	0.0000
1384.29	6.7791
1408.01	6.8163

ENERGY	MDA COUNTS
1434.09	6.8569
1435.80	9.7992
1457.56	0.0000
1460.82	1.9709
1489.16	1.9833
1505.03	7.9609
1584.12	6.0718
1596.21	5.0726
1620.50	3.0588
1621.92	6.1194
1678.03	0.0000
1690.97	3.1025
1750.46	0.0000
1764.49	6.2941
1063.66	4.2007
1771.35	4.2014
1791.20	0.0000
1808.65	5.2890
1810.72	0.0000
1836.06	4.2527

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:35:32.18

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378012.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM06.CNF;996
                                         Background date  : 4-MAY-2025 09:26:24.
Sample date      : 8-APR-2025 09:35:00. Acquisition date : 10-MAY-2025 11:35:01
Sample ID        : G719378012           Sample quantity  : 1.18430E+02 GRAM
Detector name    : GAM06                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.49  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
*****************************************************************************
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.30*	31	58	0.93	126.97	123	8	8.56E-03	48.7	
2	0	66.43*	22	41	1.61	133.22	131	6	6.04E-03	53.4	
3	3	74.85*	32	90	1.16	150.05	146	13	8.97E-03	52.1	1.06E+00
4	3	77.11*	78	72	0.95	154.56	146	13	2.18E-02	20.8	
5	0	84.56	22	46	0.86	169.44	167	6	6.22E-03	52.0	
6	4	87.32	39	55	1.33	174.96	172	21	1.07E-02	32.9	3.09E+00
7	4	92.77*	41	61	1.35	185.85	172	21	1.15E-02	41.7	
8	0	170.89	14	40	0.66	341.94	340	6	3.95E-03	74.6	
9	0	177.23	25	52	4.08	354.61	348	11	6.92E-03	59.7	
10	0	186.01*	21	47	1.10	372.15	368	7	5.79E-03	64.2	
11	0	204.90	11	34	1.30	409.88	407	7	3.00E-03	94.1	
12	2	238.60*	200	34	1.22	477.22	473	17	5.55E-02	8.8	6.47E-01
13	2	241.53	40	38	1.46	483.09	473	17	1.11E-02	35.1	
14	0	261.05	11	32	1.02	522.09	518	8	3.06E-03	94.0	
15	0	269.80	23	34	1.26	539.58	536	8	6.32E-03	49.2	
16	0	278.44	15	26	0.66	556.83	551	9	4.19E-03	66.8	
17	0	295.76	50	49	1.21	591.45	585	11	1.39E-02	30.6	
18	0	299.54	17	37	1.61	599.01	596	9	4.79E-03	67.3	
19	0	327.62	28	18	1.28	655.11	650	9	7.78E-03	33.2	
20	0	338.11*	35	40	1.44	676.08	670	13	9.73E-03	41.1	
21	0	351.91*	105	39	1.19	703.65	697	12	2.91E-02	15.8	
22	0	464.03	12	32	1.84	927.73	919	17	3.41E-03	106.5	
23	0	510.58*	43	9	2.62	1020.75	1013	17	1.20E-02	30.0	
24	0	570.82	13	27	2.49	1141.15	1133	14	3.53E-03	92.3	
25	0	583.01*	51	14	1.87	1165.52	1161	12	1.40E-02	21.5	
26	0	609.33*	70	22	0.89	1218.12	1213	12	1.95E-02	19.7	
27	0	615.76*	6	10	1.06	1230.98	1228	8	1.78E-03	102.3	
28	0	703.10	16	16	3.68	1405.56	1399	12	4.46E-03	57.7	
29	0	726.73	34	10	3.39	1452.79	1445	12	9.40E-03	24.9	
30	0	790.08	5	4	0.63	1579.43	1574	8	1.51E-03	75.7	
31	0	794.43	17	2	2.13	1588.13	1583	10	4.60E-03	30.4	
32	0	884.07	7	1	1.41	1767.34	1764	6	1.82E-03	48.8	
33	0	910.76*	19	10	0.84	1820.70	1817	10	5.16E-03	41.8	
34	0	933.94	6	3	1.00	1867.05	1860	9	1.74E-03	59.7	

Sample ID : G719378012 Acquisition date : 10-MAY-2025 11:35:01

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	964.77	10	10	1.77	1928.69	1924	7	2.69E-03	63.9	
36	0	968.63*	22	2	1.75	1936.39	1933	7	6.17E-03	25.2	
37	0	1119.80	25	4	2.39	2238.67	2232	14	7.05E-03	25.3	
38	0	1162.79	9	9	0.63	2324.63	2317	12	2.55E-03	73.2	
39	0	1238.16	12	7	1.41	2475.37	2471	10	3.31E-03	51.5	
40	0	1246.40	5	9	1.19	2491.84	2480	13	1.27E-03	147.9	
41	0	1377.11	15	0	1.75	2753.27	2746	12	4.17E-03	25.8	
42	0	1459.84*	89	3	2.55	2918.74	2911	13	2.48E-02	11.7	
43	0	1493.55	6	3	0.97	2986.16	2979	11	1.53E-03	71.7	
44	0	1763.02	13	2	0.81	3525.25	3520	10	3.50E-03	36.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 12:35:33

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378012.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title : RXF2
Sample date : 8-APR-2025 09:35:00 Acquisition date : 10-MAY-2025 11:35:01
Sample ID : G719378012 Sample quantity : 118.43 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA6 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.49 0.0%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
TL-208	277.37	HG-203	279.20

Sample ID : G719378012 Acquisition date : 10-MAY-2025 11:35:01

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.781E-01	5.136E+00	5.136E+00	23.34	OK
CD-109	88.03	3.70*	5.264E+00	1.361E+00	1.428E+00	65.71	OK
SN-126	64.28	9.60	2.651E+00	8.417E-01	8.417E-01	97.46	OK
	86.94	8.90	5.264E+00	5.656E-01	5.656E-01	65.71	OK
	87.57	37.00*	5.264E+00	1.361E-01	1.361E-01	65.71	OK
HG-203	70.83	3.69	3.647E+00	----- Line Not Found		-----	Absent
	72.87	6.19	3.894E+00	----- Line Not Found		-----	Absent
	279.20	81.56*	4.072E+00	1.631E-02	2.629E-02	244.71	OK
TL-208	277.37	6.60	4.083E+00	----- Line Not Found		-----	<<INT Reject
	583.19	85.00*	2.278E+00	1.637E-01	1.637E-01	43.09	OK
	860.56	12.50	1.596E+00	----- Line Not Found		-----	Absent
BI-211	72.87	1.23	3.894E+00	----- Line Not Found		-----	Absent
	351.06	12.92*	3.416E+00	1.528E+00	1.528E+00	31.56	OK
BI-212	727.33	6.67*	1.872E+00	1.682E+00	1.682E+00	49.80	OK
	1620.50	1.47	9.084E-01	----- Line Not Found		-----	Absent
PB-212	74.82	10.28	4.123E+00	5.262E-01	5.262E-01	104.24	OK
	77.11	17.10	4.368E+00	7.232E-01	7.232E-01	41.69	OK
	238.63	43.60*	4.553E+00	6.590E-01	6.590E-01	17.57	OK
	300.09	3.30	3.857E+00	8.784E-01	8.784E-01	134.64	OK
BI-214	609.32	45.49*	2.193E+00	4.405E-01	4.405E-01	39.44	OK
	1120.29	14.92	1.237E+00	8.357E-01	8.357E-01	50.58	OK
	1764.49	15.30	8.668E-01	5.638E-01	5.639E-01	73.17	OK
PB-214	74.82	5.80	4.123E+00	9.326E-01	9.327E-01	104.24	OK
	77.11	9.70	4.368E+00	1.275E+00	1.275E+00	41.69	OK
	87.09	3.41	5.264E+00	1.476E+00	1.476E+00	65.71	OK
	242.00	7.25	4.513E+00	8.010E-01	8.011E-01	70.30	OK
	295.22	18.42	3.894E+00	4.529E-01	4.530E-01	61.19	OK
	351.93	35.60*	3.416E+00	5.546E-01	5.546E-01	31.56	OK
RN-222	609.32	45.49*	2.193E+00	4.405E-01	4.405E-01	39.44	OK
	1120.29	14.92	1.237E+00	8.357E-01	8.357E-01	50.58	OK
	1764.49	15.30	8.668E-01	5.638E-01	5.639E-01	73.17	OK
RA-224	240.99	4.10*	4.513E+00	1.416E+00	1.416E+00	70.30	OK
RA-226	74.82	5.80	4.123E+00	9.326E-01	9.327E-01	104.24	OK
	77.11	9.70	4.368E+00	1.275E+00	1.275E+00	41.69	OK
	87.09	3.41	5.264E+00	1.476E+00	1.476E+00	65.71	OK
	242.00	7.25	4.513E+00	8.010E-01	8.011E-01	70.30	OK
	295.22	18.42	3.894E+00	4.529E-01	4.530E-01	61.19	OK
	351.93	35.60*	3.416E+00	5.546E-01	5.546E-01	31.56	OK
AC-228	105.21	1.10	6.076E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.522E+00	5.684E-01	5.684E-01	82.24	OK
	835.71	1.61	1.642E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.511E+00	2.923E-01	2.923E-01	83.63	OK
	968.97	15.80	1.424E+00	6.041E-01	6.041E-01	50.41	OK
RA-228	105.21	1.10	6.076E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.522E+00	5.684E-01	5.684E-01	82.24	OK
	835.71	1.61	1.642E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.511E+00	2.923E-01	2.923E-01	83.63	OK
	968.97	15.80	1.424E+00	6.041E-01	6.041E-01	50.41	OK
TH-228	74.82	10.28	4.123E+00	5.262E-01	5.262E-01	104.24	OK

Sample ID : G719378012 Acquisition date : 10-MAY-2025 11:35:01

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	77.11	17.10	4.368E+00	7.232E-01	7.232E-01	41.69	OK
	238.63	43.60*	4.553E+00	6.590E-01	6.590E-01	17.57	OK
	300.09	3.30	3.857E+00	8.784E-01	8.784E-01	134.64	OK
TH-229	85.43	14.70	5.056E+00	2.068E-01	2.068E-01	104.01	OK
	88.47	24.00	5.264E+00	2.098E-01	2.098E-01	65.71	OK
	193.51	4.41*	5.241E+00	----- Line Not Found		-----	Absent
	210.85	2.80	4.958E+00	----- Line Not Found		-----	Absent
TH-230	74.82	5.80	4.123E+00	9.326E-01	9.326E-01	104.24	OK
	77.11	9.70	4.368E+00	1.275E+00	1.275E+00	41.69	OK
	87.09	3.41	5.264E+00	1.476E+00	1.476E+00	65.71	OK
	242.00	7.25	4.513E+00	8.010E-01	8.010E-01	70.30	OK
	295.22	18.42	3.894E+00	4.529E-01	4.529E-01	61.19	OK
	351.93	35.60*	3.416E+00	5.546E-01	5.546E-01	31.56	OK
TH-232	105.21	1.10	6.076E+00	----- Line Not Found		-----	Absent
	338.32	11.27	3.522E+00	5.684E-01	5.684E-01	82.24	OK
	835.71	1.61	1.642E+00	----- Line Not Found		-----	Absent
	911.20	25.80*	1.511E+00	2.923E-01	2.923E-01	83.63	OK
	968.97	15.80	1.424E+00	6.041E-01	6.041E-01	50.41	OK
PA-234M	63.29	3.70*	2.651E+00	2.184E+00	2.184E+00	97.46	OK
	92.59	4.23	5.603E+00	1.191E+00	1.191E+00	83.47	OK
TH-234	63.29	3.70*	2.651E+00	2.184E+00	2.184E+00	97.46	OK
	92.59	4.23	5.603E+00	1.191E+00	1.191E+00	83.47	OK
U-234	74.82	5.80	4.123E+00	9.326E-01	9.326E-01	104.24	OK
	77.11	9.70	4.368E+00	1.275E+00	1.275E+00	41.69	OK
	87.09	3.41	5.264E+00	1.476E+00	1.476E+00	65.71	OK
	242.00	7.25	4.513E+00	8.010E-01	8.010E-01	70.30	OK
	295.22	18.42	3.894E+00	4.529E-01	4.529E-01	61.19	OK
	351.93	35.60*	3.416E+00	5.546E-01	5.546E-01	31.56	OK
U-235	89.96	3.47	5.440E+00	----- Line Not Found		-----	Absent
	93.35	5.60	5.603E+00	8.993E-01	8.993E-01	83.47	OK
	143.76	10.96*	6.075E+00	----- Line Not Found		-----	Absent
	163.33	5.08	5.765E+00	----- Line Not Found		-----	Absent
	185.72	57.20	5.369E+00	4.498E-02	4.498E-02	128.31	OK
	205.31	5.01	5.053E+00	2.814E-01	2.814E-01	188.11	OK
U-238	63.29	3.70*	2.651E+00	2.184E+00	2.184E+00	97.46	OK
	92.59	4.23	5.603E+00	1.191E+00	1.191E+00	83.47	OK
AM-243	43.53	5.90	3.750E-01	----- Line Not Found		-----	Absent
	74.66	67.20*	4.123E+00	8.049E-02	8.049E-02	104.24	OK
ANH-511	511.00	100.00*	2.547E+00	1.073E-01	1.073E-01	59.98	OK

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:35:34.51

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378012.CNF;1  *
* Acquisition date : 10-MAY-2025 11:35:01 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.49     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:35:00 Analyst initials: RXF2            *
* Sample ID        : G719378012           Sample Quantity : 1.1843E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-SEP-2024 11:03:33 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	5.136E+00	1.175E+00	6.591E-01
CD-109	1.428E+00	9.194E-01	1.036E+00
SN-126	1.361E-01	8.762E-02	9.927E-02
HG-203	2.629E-02	6.305E-02	7.794E-02
TL-208	1.637E-01	6.914E-02	6.424E-02
BI-211	1.528E+00	4.726E-01	3.675E-01
BI-212	1.682E+00	8.208E-01	6.265E-01
PB-212	6.590E-01	1.135E-01	8.996E-02
BI-214	4.405E-01	1.702E-01	1.382E-01
PB-214	5.546E-01	1.715E-01	1.337E-01
RN-222	4.405E-01	1.702E-01	1.382E-01
RA-224	1.416E+00	9.758E-01	9.646E-01
RA-226	5.546E-01	1.715E-01	1.337E-01
AC-228	2.923E-01	2.396E-01	2.904E-01
RA-228	2.923E-01	2.396E-01	2.904E-01
TH-228	6.590E-01	1.135E-01	8.996E-02
TH-229	-9.572E-02	4.822E-01	8.558E-01
TH-230	5.546E-01	1.715E-01	1.337E-01
TH-232	2.923E-01	2.396E-01	2.904E-01
PA-234M	2.184E+00	2.086E+00	1.610E+00
TH-234	2.184E+00	2.086E+00	1.610E+00
U-234	5.546E-01	1.715E-01	1.337E-01
U-235	1.170E-01	1.700E-01	3.351E-01
U-238	2.184E+00	2.086E+00	1.610E+00
AM-243	8.049E-02	8.223E-02	8.058E-02
ANH-511	1.073E-01	6.307E-02	4.436E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	1.739E-01	3.383E-01	7.206E-01	NOT IDENT.
NA-22	7.234E-03	3.299E-02	7.435E-02	NOT IDENT.
NA-24	0.000E+00	1.014E+14	0.000E+00	SHORT HLIF
AL-26	-7.519E-03	2.529E-02	5.428E-02	NOT IDENT.

SC-46	-4.589E-03	4.168E-02	8.367E-02	FAIL ABUN
V-48	-4.961E-02	1.185E-01	2.230E-01	NOT IDENT.
CR-51	-8.787E-02	4.237E-01	8.260E-01	NOT IDENT.
MN-52	-4.280E-01	2.230E+00	4.533E+00	NOT IDENT.
MN-54	-1.477E-02	3.763E-02	7.060E-02	NOT IDENT.
CO-56	-4.067E-02	5.079E-02	8.721E-02	FAIL ABUN
MN-56	0.000E+00	1.234E+41	0.000E+00	SHORT HLIF
CO-57	3.031E-03	2.000E-02	3.832E-02	NOT IDENT.
CO-58	1.033E-02	4.058E-02	8.770E-02	NOT IDENT.
FE-59	-5.296E-02	1.044E-01	1.871E-01	NOT IDENT.
CO-60	4.042E-02	4.015E-02	1.005E-01	NOT IDENT.
ZN-65	-2.964E-02	7.039E-02	1.079E-01	NOT IDENT.
GE-68	-9.503E-01	1.347E+00	2.275E+00	NOT IDENT.
AS-73	-1.533E-01	9.167E-01	1.815E+00	NOT IDENT.
AS-74	4.413E-02	1.735E-01	3.470E-01	NOT IDENT.
SE-75	-1.973E-02	5.301E-02	8.152E-02	FAIL ABUN
BR-77	0.000E+00	2.495E+03	0.000E+00	SHORT HLIF
SR-82	1.304E-01	5.585E-01	1.160E+00	NOT IDENT.
RB-83	1.308E-02	7.146E-02	1.440E-01	NOT IDENT.
RB-84	2.888E-02	9.592E-02	1.900E-01	NOT IDENT.
KR-85	2.773E+00	5.638E+00	1.122E+01	NOT IDENT.
SR-85	1.746E-02	3.570E-02	7.102E-02	NOT IDENT.
RB-86	-7.959E-01	1.499E+00	2.661E+00	NOT IDENT.
Y-88	-3.696E-04	4.467E-02	9.893E-02	NOT IDENT.
Y-91	-8.282E+00	1.970E+01	3.609E+01	NOT IDENT.
NB-94	5.184E-02	5.866E-02	8.294E-02	FAIL ABUN
NB-95	-4.444E-02	4.621E-02	7.756E-02	NOT IDENT.
NB-95M	-6.088E-03	1.400E-01	2.298E-01	NOT IDENT.
ZR-95	-6.245E-02	7.760E-02	1.367E-01	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.022E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	8.519E+02	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	5.819E+36	0.000E+00	SHORT HLIF
RH-101	2.742E-03	2.664E-02	5.053E-02	NOT IDENT.
RH-102	-1.393E-02	5.127E-02	9.361E-02	NOT IDENT.
RU-103	7.379E-03	4.559E-02	9.212E-02	FAIL ABUN
RH-106	1.530E-01	2.681E-01	5.857E-01	NOT IDENT.
RU-106	1.530E-01	2.681E-01	5.857E-01	NOT IDENT.
AG-108M	-1.245E-02	2.484E-02	4.493E-02	FAIL ABUN
AG-110	-7.600E-02	7.076E-01	1.333E+00	NOT IDENT.
AG-110M	3.900E-02	3.729E-02	1.115E-01	FAIL ABUN
SN-113	1.464E-02	4.587E-02	9.299E-02	NOT IDENT.
CD-115	0.000E+00	1.971E+03	0.000E+00	SHORT HLIF
SN-117M	6.060E-02	1.112E-01	2.172E-01	NOT IDENT.
SB-122	0.000E+00	1.697E+02	0.000E+00	SHORT HLIF
TE-123M	1.349E-02	2.597E-02	5.085E-02	NOT IDENT.
SB-124	-1.398E-02	9.711E-02	2.115E-01	NOT IDENT.
SB-125	-4.250E-02	8.519E-02	1.535E-01	FAIL ABUN
TE-125M	-1.403E+00	8.630E+00	1.627E+01	NOT IDENT.
I-126	1.289E-01	5.387E-01	1.069E+00	NOT IDENT.
SB-126	-5.104E-02	3.999E-01	6.976E-01	NOT IDENT.
SB-127	2.014E+01	2.283E+01	5.292E+01	NOT IDENT.
I-131	7.540E-02	4.144E-01	8.418E-01	NOT IDENT.
I-132	0.000E+00	1.667E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	2.643E+01	0.000E+00	SHORT HLIF
BA-133	3.432E-02	3.629E-02	7.576E-02	NOT IDENT.
I-133	0.000E+00	4.473E+09	0.000E+00	SHORT HLIF
CS-134	7.155E-02	4.257E-02	9.357E-02	FAIL ABUN
I-135	0.000E+00	2.029E+34	0.000E+00	SHORT HLIF
CS-136	1.288E-01	2.222E-01	5.175E-01	FAIL ABUN
BA-137M	4.860E-03	3.271E-02	6.468E-02	NOT IDENT.
CS-137	5.134E-03	3.455E-02	6.833E-02	NOT IDENT.
LA-138	-5.697E-02	7.477E-02	1.294E-01	FAIL ABUN
CE-139	1.604E-02	2.717E-02	5.342E-02	NOT IDENT.
BA-140	1.689E-01	5.629E-01	1.167E+00	NOT IDENT.
LA-140	-1.571E-01	1.921E-01	3.042E-01	FAIL ABUN
CE-141	-4.280E-02	7.485E-02	1.305E-01	NOT IDENT.
CE-143	0.000E+00	5.876E+05	0.000E+00	SHORT HLIF
CE-144	-3.157E-02	1.566E-01	2.890E-01	NOT IDENT.
PM-144	8.654E-04	2.796E-02	5.309E-02	NOT IDENT.
PR-144	7.596E-02	2.114E+00	4.018E+00	NOT IDENT.
PM-146	3.755E-03	3.819E-02	7.561E-02	NOT IDENT.
ND-147	6.028E-01	1.535E+00	3.163E+00	NOT IDENT.
PM-147	-3.253E+02	5.767E+02	1.015E+03	NOT IDENT.
PM-149	0.000E+00	1.495E+04	0.000E+00	SHORT HLIF
EU-150	-2.313E-02	2.585E-02	3.834E-02	FAIL ABUN
EU-152	-1.440E-02	8.984E-02	1.721E-01	FAIL ABUN
GD-153	-2.396E-03	7.096E-02	1.264E-01	NOT IDENT.

EU-154	2.697E-02	9.494E-02	2.160E-01	NOT IDENT.
EU-155	1.833E-02	8.012E-02	1.572E-01	FAIL ABUN
TB-160	-2.774E-02	1.659E-01	2.849E-01	FAIL ABUN
HO-166M	3.114E-02	6.047E-02	1.256E-01	NOT IDENT.
TM-171	2.560E+00	1.672E+01	3.427E+01	FAIL ABUN
HF-172	-1.942E-04	1.496E-01	2.831E-01	FAIL ABUN
LU-172	-1.465E-02	7.036E-02	1.337E-01	FAIL ABUN
LU-176	1.215E-02	2.054E-02	4.407E-02	FAIL ABUN
HF-181	-4.075E-02	4.409E-02	7.098E-02	NOT IDENT.
TA-182	1.111E-01	1.636E-01	3.895E-01	FAIL ABUN
RE-183	-7.077E-02	2.017E-01	3.897E-01	FAIL ABUN
RE-184	9.723E-02	1.854E-01	4.074E-01	NOT IDENT.
W-188	-7.138E-01	8.348E+00	1.464E+01	FAIL ABUN
IR-192	6.509E-03	3.333E-02	6.782E-02	FAIL ABUN
TL-204	-1.149E+00	4.243E+00	7.480E+00	NOT IDENT.
BI-207	3.986E-02	4.855E-02	1.149E-01	FAIL ABUN
BI-210	-7.863E-02	3.600E+00	7.257E+00	NOT IDENT.
PB-210	-7.863E-02	3.600E+00	7.257E+00	NOT IDENT.
PB-211	-1.291E-01	7.122E-01	1.341E+00	NOT IDENT.
BI-213	1.904E-02	9.910E-02	1.973E-01	NOT IDENT.
RN-219	1.942E-01	3.840E-01	7.929E-01	FAIL ABUN
RA-223	-6.998E-02	6.396E-01	1.117E+00	FAIL ABUN
AC-225	-3.155E-01	1.652E+00	2.927E+00	NOT IDENT.
AC-227	3.756E-02	2.117E-01	3.947E-01	FAIL ABUN
TH-227	3.756E-02	2.117E-01	3.947E-01	FAIL ABUN
PA-231	-3.731E-02	4.732E-01	8.271E-01	NOT IDENT.
TH-231	-6.998E-02	6.396E-01	1.117E+00	FAIL ABUN
PA-233	9.362E-03	5.762E-02	1.155E-01	FAIL ABUN
PA-234	-3.430E-02	3.037E-01	5.993E-01	FAIL ABUN
NP-237	9.362E-03	5.762E-02	1.155E-01	FAIL ABUN
NP-238	0.000E+00	4.645E+03	0.000E+00	SHORT HLIF
NP-239	-1.593E-01	1.958E-01	3.386E-01	FAIL ABUN
PU-239	1.289E+02	2.871E+02	5.610E+02	NOT IDENT.
AM-241	3.581E-03	1.312E-01	2.456E-01	NOT IDENT.
CM-243	-6.888E-02	7.881E-02	1.369E-01	FAIL ABUN
BK-247	-1.524E-02	8.841E-02	1.408E-01	FAIL ABUN
CM-247	-2.584E-03	3.538E-02	6.796E-02	FAIL ABUN
CF-249	-1.016E-02	3.859E-02	7.232E-02	NOT IDENT.
CF-251	1.730E-01	2.024E-01	2.180E-01	FAIL ABUN

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:35:32.99

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	84	10.66*	9.781E-01	5.136E+00	5.136E+00	23.34
CD-109	88.03	42	3.70*	5.264E+00	1.361E+00	1.428E+00	65.71
SN-126	64.28	34	9.60	2.651E+00	8.417E-01	8.417E-01	97.46
	86.94	42	8.90	5.264E+00	5.656E-01	5.656E-01	65.71
	87.57	42	37.00*	5.264E+00	1.361E-01	1.361E-01	65.71
HG-203	70.83	------	3.69	3.647E+00	------	Line Not Found	------
	72.87	------	6.19	3.894E+00	------	Line Not Found	------
	279.20	15	81.56*	4.072E+00	2.955E-02	4.765E-02	133.63
TL-208	277.37	15	6.60	4.072E+00	3.652E-01	3.652E-01	133.63
	583.19	50	85.00*	2.278E+00	1.637E-01	1.637E-01	43.09
	860.56	------	12.50	1.596E+00	------	Line Not Found	------
BI-211	72.87	------	1.23	3.894E+00	------	Line Not Found	------
	351.06	106	12.92*	3.416E+00	1.528E+00	1.528E+00	31.56
BI-212	727.33	33	6.67*	1.872E+00	1.682E+00	1.682E+00	49.80
	1620.50	------	1.47	9.084E-01	------	Line Not Found	------
PB-212	74.82	35	10.28	4.123E+00	5.262E-01	5.262E-01	104.24
	77.11	85	17.10	4.368E+00	7.232E-01	7.232E-01	41.69
	238.63	206	43.60*	4.553E+00	6.590E-01	6.590E-01	17.57
	300.09	18	3.30	3.857E+00	8.784E-01	8.784E-01	134.64
BI-214	609.32	69	45.49*	2.193E+00	4.405E-01	4.405E-01	39.44
	1120.29	24	14.92	1.237E+00	8.357E-01	8.357E-01	50.58
	1764.49	12	15.30	8.668E-01	5.638E-01	5.639E-01	73.17
PB-214	74.82	35	5.80	4.123E+00	9.326E-01	9.327E-01	104.24
	77.11	85	9.70	4.368E+00	1.275E+00	1.275E+00	41.69
	87.09	42	3.41	5.264E+00	1.476E+00	1.476E+00	65.71
	242.00	41	7.25	4.513E+00	8.010E-01	8.011E-01	70.30
	295.22	51	18.42	3.894E+00	4.529E-01	4.530E-01	61.19
	351.93	106	35.60*	3.416E+00	5.546E-01	5.546E-01	31.56
RN-222	609.32	69	45.49*	2.193E+00	4.405E-01	4.405E-01	39.44
	1120.29	24	14.92	1.237E+00	8.357E-01	8.357E-01	50.58
	1764.49	12	15.30	8.668E-01	5.638E-01	5.639E-01	73.17
RA-224	240.99	41	4.10*	4.513E+00	1.416E+00	1.416E+00	70.30
RA-226	74.82	35	5.80	4.123E+00	9.326E-01	9.327E-01	104.24
	77.11	85	9.70	4.368E+00	1.275E+00	1.275E+00	41.69
	87.09	42	3.41	5.264E+00	1.476E+00	1.476E+00	65.71
	242.00	41	7.25	4.513E+00	8.010E-01	8.011E-01	70.30
	295.22	51	18.42	3.894E+00	4.529E-01	4.530E-01	61.19
	351.93	106	35.60*	3.416E+00	5.546E-01	5.546E-01	31.56
AC-228	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	36	11.27	3.522E+00	5.684E-01	5.684E-01	82.24
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	18	25.80*	1.511E+00	2.923E-01	2.923E-01	83.63
	968.97	21	15.80	1.424E+00	6.041E-01	6.041E-01	50.41
RA-228	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	36	11.27	3.522E+00	5.684E-01	5.684E-01	82.24
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	18	25.80*	1.511E+00	2.923E-01	2.923E-01	83.63

Sample ID : G719378012 Acquisition date : 10-MAY-2025 11:35:01

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	968.97	21	15.80	1.424E+00	6.041E-01	6.041E-01	50.41
TH-228	74.82	35	10.28	4.123E+00	5.262E-01	5.262E-01	104.24
	77.11	85	17.10	4.368E+00	7.232E-01	7.232E-01	41.69
	238.63	206	43.60*	4.553E+00	6.590E-01	6.590E-01	17.57
	300.09	18	3.30	3.857E+00	8.784E-01	8.784E-01	134.64
TH-229	85.43	24	14.70	5.056E+00	2.068E-01	2.068E-01	104.01
	88.47	42	24.00	5.264E+00	2.098E-01	2.098E-01	65.71
	193.51	------	4.41*	5.241E+00	------	Line Not Found	------
	210.85	------	2.80	4.958E+00	------	Line Not Found	------
TH-230	74.82	35	5.80	4.123E+00	9.326E-01	9.326E-01	104.24
	77.11	85	9.70	4.368E+00	1.275E+00	1.275E+00	41.69
	87.09	42	3.41	5.264E+00	1.476E+00	1.476E+00	65.71
	242.00	41	7.25	4.513E+00	8.010E-01	8.010E-01	70.30
	295.22	51	18.42	3.894E+00	4.529E-01	4.529E-01	61.19
	351.93	106	35.60*	3.416E+00	5.546E-01	5.546E-01	31.56
TH-232	105.21	------	1.10	6.076E+00	------	Line Not Found	------
	338.32	36	11.27	3.522E+00	5.684E-01	5.684E-01	82.24
	835.71	------	1.61	1.642E+00	------	Line Not Found	------
	911.20	18	25.80*	1.511E+00	2.923E-01	2.923E-01	83.63
	968.97	21	15.80	1.424E+00	6.041E-01	6.041E-01	50.41
PA-234M	63.29	34	3.70*	2.651E+00	2.184E+00	2.184E+00	97.46
	92.59	45	4.23	5.603E+00	1.191E+00	1.191E+00	83.47
TH-234	63.29	34	3.70*	2.651E+00	2.184E+00	2.184E+00	97.46
	92.59	45	4.23	5.603E+00	1.191E+00	1.191E+00	83.47
U-234	74.82	35	5.80	4.123E+00	9.326E-01	9.326E-01	104.24
	77.11	85	9.70	4.368E+00	1.275E+00	1.275E+00	41.69
	87.09	42	3.41	5.264E+00	1.476E+00	1.476E+00	65.71
	242.00	41	7.25	4.513E+00	8.010E-01	8.010E-01	70.30
	295.22	51	18.42	3.894E+00	4.529E-01	4.529E-01	61.19
	351.93	106	35.60*	3.416E+00	5.546E-01	5.546E-01	31.56
U-235	89.96	------	3.47	5.440E+00	------	Line Not Found	------
	93.35	45	5.60	5.603E+00	8.993E-01	8.993E-01	83.47
	143.76	------	10.96*	6.075E+00	------	Line Not Found	------
	163.33	------	5.08	5.765E+00	------	Line Not Found	------
	185.72	22	57.20	5.369E+00	4.498E-02	4.498E-02	128.31
	205.31	11	5.01	5.053E+00	2.814E-01	2.814E-01	188.11
U-238	63.29	34	3.70*	2.651E+00	2.184E+00	2.184E+00	97.46
	92.59	45	4.23	5.603E+00	1.191E+00	1.191E+00	83.47
AM-243	43.53	------	5.90	3.750E-01	------	Line Not Found	------
	74.66	35	67.20*	4.123E+00	8.049E-02	8.049E-02	104.24
ANH-511	511.00	43	100.00*	2.547E+00	1.073E-01	1.073E-01	59.98

Flag: "*" = Keyline

Sample ID : G719378012 Acquisition date : 10-MAY-2025 11:35:01

Total number of lines in spectrum 44
Number of unidentified lines 6
Number of lines tentatively identified by NID 38 86.36%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	5.136E+00	5.136E+00	1.199E+00	23.34	
CD-109	461.40D	1.05	1.361E+00	1.428E+00	0.938E+00	65.71	
SN-126	2.30E+05Y	1.00	1.361E-01	1.361E-01	0.894E-01	65.71	
HG-203	46.59D	1.61	2.955E-02	4.765E-02	6.367E-02	133.63	
TL-208	1.41E+10Y	1.00	1.637E-01	1.637E-01	0.706E-01	43.09	
BI-211	7.04E+08Y	1.00	1.528E+00	1.528E+00	0.482E+00	31.56	
BI-212	1.41E+10Y	1.00	1.682E+00	1.682E+00	0.838E+00	49.80	
PB-212	1.41E+10Y	1.00	6.590E-01	6.590E-01	1.158E-01	17.57	
BI-214	1600.00Y	1.00	4.405E-01	4.405E-01	1.737E-01	39.44	
PB-214	1600.00Y	1.00	5.546E-01	5.546E-01	1.750E-01	31.56	
RN-222	1600.00Y	1.00	4.405E-01	4.405E-01	1.737E-01	39.44	
RA-224	1.41E+10Y	1.00	1.416E+00	1.416E+00	0.996E+00	70.30	
RA-226	1600.00Y	1.00	5.546E-01	5.546E-01	1.750E-01	31.56	
AC-228	1.41E+10Y	1.00	2.923E-01	2.923E-01	2.445E-01	83.63	
RA-228	1.41E+10Y	1.00	2.923E-01	2.923E-01	2.445E-01	83.63	
TH-228	1.41E+10Y	1.00	6.590E-01	6.590E-01	1.158E-01	17.57	
TH-229	7340.00Y	1.00	2.098E-01	2.098E-01	1.378E-01	65.71	K
TH-230	7.54E+04Y	1.00	5.546E-01	5.546E-01	1.750E-01	31.56	
TH-232	1.41E+10Y	1.00	2.923E-01	2.923E-01	2.445E-01	83.63	
PA-234M	4.47E+09Y	1.00	2.184E+00	2.184E+00	2.128E+00	97.46	
TH-234	4.47E+09Y	1.00	2.184E+00	2.184E+00	2.128E+00	97.46	
U-234	2.45E+05Y	1.00	5.546E-01	5.546E-01	1.750E-01	31.56	
U-235	7.04E+08Y	1.00	4.498E-02	4.498E-02	5.771E-02	128.31	K
U-238	4.47E+09Y	1.00	2.184E+00	2.184E+00	2.128E+00	97.46	
AM-243	7370.00Y	1.00	8.049E-02	8.049E-02	8.391E-02	104.24	
ANH-511	1.00E+09Y	1.00	1.073E-01	1.073E-01	0.644E-01	59.98	
		Total Activity :	2.374E+01	2.383E+01			

Grand Total Activity : 2.374E+01 2.383E+01

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G719378012 Acquisition date : 10-MAY-2025 11:35:01

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	66.43	24	45	1.61	133.22	131	6	6.04E-03	****	3.08E+00	T
0	170.89	15	42	0.66	341.94	340	6	3.95E-03	****	5.63E+00	
0	177.23	26	55	4.08	354.61	348	11	6.92E-03	****	5.52E+00	T
0	261.05	11	33	1.02	522.09	518	8	3.06E-03	****	4.27E+00	T
0	269.80	23	35	1.26	539.58	536	8	6.32E-03	98.3	4.17E+00	T
0	327.62	28	18	1.28	655.11	650	9	7.78E-03	66.4	3.61E+00	T
0	464.03	12	32	1.84	927.73	919	17	3.41E-03	****	2.75E+00	T
0	570.82	13	27	2.49	1141.15	1133	14	3.53E-03	****	2.32E+00	T
0	615.76	6	10	1.06	1230.98	1228	8	1.78E-03	****	2.17E+00	T
0	703.10	16	16	3.68	1405.56	1399	12	4.46E-03	****	1.93E+00	T
0	790.08	5	3	0.63	1579.43	1574	8	1.51E-03	****	1.73E+00	T
0	794.43	16	2	2.13	1588.13	1583	10	4.60E-03	60.7	1.72E+00	T
0	884.07	6	1	1.41	1767.34	1764	6	1.82E-03	97.6	1.56E+00	T
0	933.94	6	3	1.00	1867.05	1860	9	1.74E-03	****	1.47E+00	
0	964.77	9	10	1.77	1928.69	1924	7	2.69E-03	****	1.43E+00	T
0	1162.79	9	8	0.63	2324.63	2317	12	2.55E-03	****	1.19E+00	
0	1238.16	11	7	1.41	2475.37	2471	10	3.31E-03	****	1.13E+00	T
0	1246.40	4	9	1.19	2491.84	2480	13	1.27E-03	****	1.12E+00	
0	1377.11	14	0	1.75	2753.27	2746	12	4.17E-03	51.6	1.03E+00	
0	1493.55	5	2	0.97	2986.16	2979	11	1.53E-03	****	9.61E-01	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:35:44.67

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378012.CNF;1  *
* Acquisition date : 10-MAY-2025 11:35:01 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.49     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:35:00 Nuclide Library : SOLID           *
* Sample ID        : G719378012           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.1843E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-SEP-2024 11:03:33 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;23            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.475E-01
CD-109	4.712E-01
SN-126	4.514E-02
HG-203	3.475E-02
TL-208	2.767E-02
BI-211	1.642E-01
BI-212	2.442E-01
PB-212	4.060E-02
BI-214	6.048E-02
PB-214	5.971E-02
RN-222	6.048E-02
RA-224	4.354E-01
RA-226	5.971E-02
AC-228	1.232E-01
RA-228	1.232E-01
TH-228	4.060E-02
TH-229	3.902E-01
TH-230	5.971E-02
TH-232	1.232E-01
PA-234M	7.152E-01
TH-234	7.152E-01
U-234	5.971E-02
U-235	1.545E-01
U-238	7.152E-01
AM-243	3.710E-02
ANH-511	1.879E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.136E-01	NOT IDENT.
NA-22	2.918E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.716E-02	NOT IDENT.
SC-46	3.459E-02	FAIL ABUN

V-48	8.686E-02	NOT IDENT.
CR-51	3.597E-01	NOT IDENT.
MN-52	1.805E+00	NOT IDENT.
MN-54	2.969E-02	NOT IDENT.
CO-56	3.653E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	1.738E-02	NOT IDENT.
CO-58	3.685E-02	NOT IDENT.
FE-59	7.369E-02	NOT IDENT.
CO-60	4.206E-02	NOT IDENT.
ZN-65	3.897E-02	NOT IDENT.
GE-68	9.123E-01	NOT IDENT.
AS-73	8.223E-01	NOT IDENT.
AS-74	1.507E-01	NOT IDENT.
SE-75	3.656E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	5.023E-01	NOT IDENT.
RB-83	6.209E-02	NOT IDENT.
RB-84	7.926E-02	NOT IDENT.
KR-85	4.821E+00	NOT IDENT.
SR-85	3.050E-02	NOT IDENT.
RB-86	1.075E+00	NOT IDENT.
Y-88	3.703E-02	NOT IDENT.
Y-91	1.387E+01	NOT IDENT.
NB-94	3.701E-02	FAIL ABUN
NB-95	3.194E-02	NOT IDENT.
NB-95M	1.041E-01	NOT IDENT.
ZR-95	5.594E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.317E-02	NOT IDENT.
RH-102	3.945E-02	NOT IDENT.
RU-103	3.964E-02	FAIL ABUN
RH-106	2.501E-01	NOT IDENT.
RU-106	2.501E-01	NOT IDENT.
AG-108M	1.917E-02	FAIL ABUN
AG-110	5.642E-01	NOT IDENT.
AG-110M	4.745E-02	FAIL ABUN
SN-113	4.136E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	9.974E-02	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.328E-02	NOT IDENT.
SB-124	7.643E-02	NOT IDENT.
SB-125	6.666E-02	FAIL ABUN
TE-125M	7.360E+00	NOT IDENT.
I-126	4.621E-01	NOT IDENT.
SB-126	2.974E-01	NOT IDENT.
SB-127	2.263E+01	NOT IDENT.
I-131	3.698E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.373E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.077E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	2.147E-01	FAIL ABUN
BA-137M	2.763E-02	NOT IDENT.
CS-137	2.919E-02	NOT IDENT.
LA-138	5.152E-02	FAIL ABUN
CE-139	2.447E-02	NOT IDENT.
BA-140	5.003E-01	NOT IDENT.
LA-140	9.615E-02	FAIL ABUN
CE-141	5.935E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.308E-01	NOT IDENT.
PM-144	2.182E-02	NOT IDENT.
PR-144	1.652E+00	NOT IDENT.
PM-146	3.301E-02	NOT IDENT.
ND-147	1.379E+00	NOT IDENT.
PM-147	4.572E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.663E-02	FAIL ABUN
EU-152	7.666E-02	FAIL ABUN
GD-153	5.752E-02	NOT IDENT.
EU-154	8.553E-02	NOT IDENT.

EU-155	7.170E-02	FAIL ABUN
TB-160	1.176E-01	FAIL ABUN
HO-166M	5.447E-02	NOT IDENT.
TM-171	1.553E+01	FAIL ABUN
HF-172	1.287E-01	FAIL ABUN
LU-172	5.576E-02	FAIL ABUN
LU-176	1.959E-02	FAIL ABUN
HF-181	2.869E-02	NOT IDENT.
TA-182	1.610E-01	FAIL ABUN
RE-183	1.764E-01	FAIL ABUN
RE-184	1.760E-01	NOT IDENT.
W-188	6.569E+00	FAIL ABUN
IR-192	3.008E-02	FAIL ABUN
TL-204	3.429E+00	NOT IDENT.
BI-207	4.859E-02	FAIL ABUN
BI-210	3.281E+00	NOT IDENT.
PB-210	3.281E+00	NOT IDENT.
PB-211	5.961E-01	NOT IDENT.
BI-213	8.704E-02	NOT IDENT.
RN-219	3.540E-01	FAIL ABUN
RA-223	4.987E-01	FAIL ABUN
AC-225	1.318E+00	NOT IDENT.
AC-227	1.762E-01	FAIL ABUN
TH-227	1.762E-01	FAIL ABUN
PA-231	3.714E-01	NOT IDENT.
TH-231	4.987E-01	FAIL ABUN
PA-233	5.174E-02	FAIL ABUN
PA-234	2.505E-01	FAIL ABUN
NP-237	5.174E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.516E-01	FAIL ABUN
PU-239	2.583E+02	NOT IDENT.
AM-241	1.113E-01	NOT IDENT.
CM-243	6.146E-02	FAIL ABUN
BK-247	6.353E-02	FAIL ABUN
CM-247	3.008E-02	FAIL ABUN
CF-249	3.202E-02	NOT IDENT.
CF-251	9.988E-02	FAIL ABUN

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:35:48.86

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G719378012.CNF;1  *
* Acquisition date : 10-MAY-2025 11:35:01 Sensitivity     : 3.000           *
* Detector ID      : GAM06                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.49     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:35:00 Nuclide Library : SOLID           *
* Sample ID        : G719378012           Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.1843E+02 GRAM *
*                                         Quantity Err(%) : 1.6888E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 23-SEP-2024 11:03:33 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;23            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	5.136E+00	1.320E+00	1.320E+00
CD-109	1.428E+00	9.314E-01	9.314E-01
SN-126	1.361E-01	8.846E-02	8.846E-02
HG-203	2.629E-02	6.318E-02	6.318E-02
TL-208	1.637E-01	7.054E-02	7.054E-02
BI-211	1.528E+00	4.916E-01	4.916E-01
BI-212	1.682E+00	8.366E-01	8.366E-01
PB-212	6.590E-01	1.278E-01	1.278E-01
BI-214	4.405E-01	1.743E-01	1.743E-01
PB-214	5.546E-01	1.782E-01	1.782E-01
RN-222	4.405E-01	1.743E-01	1.743E-01
RA-224	1.416E+00	9.841E-01	9.841E-01
RA-226	5.546E-01	1.782E-01	1.782E-01
AC-228	2.923E-01	2.422E-01	2.422E-01
RA-228	2.923E-01	2.422E-01	2.422E-01
TH-228	6.590E-01	1.278E-01	1.278E-01
TH-229	-9.572E-02	4.823E-01	4.823E-01
TH-230	5.546E-01	1.782E-01	1.782E-01
TH-232	2.923E-01	2.422E-01	2.422E-01
PA-234M	2.184E+00	2.147E+00	2.147E+00
TH-234	2.184E+00	2.147E+00	2.147E+00
U-234	5.546E-01	1.782E-01	1.782E-01
U-235	1.170E-01	1.702E-01	1.702E-01
U-238	2.184E+00	2.147E+00	2.147E+00
AM-243	8.049E-02	8.253E-02	8.253E-02
ANH-511	1.073E-01	6.373E-02	6.373E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	1.739E-01	3.386E-01	3.476E-01	NOT IDENT.
NA-22	7.234E-03	3.300E-02	3.316E-02	NOT IDENT.
NA-24	2.192E+13	1.014E+14	1.019E+14	SHORT HLIF
AL-26	-7.519E-03	2.530E-02	2.552E-02	NOT IDENT.

SC-46	-4.589E-03	4.168E-02	4.173E-02	FAIL ABUN
V-48	-4.961E-02	1.186E-01	1.207E-01	NOT IDENT.
CR-51	-8.787E-02	4.238E-01	4.257E-01	NOT IDENT.
MN-52	-4.280E-01	2.230E+00	2.239E+00	NOT IDENT.
MN-54	-1.477E-02	3.766E-02	3.825E-02	NOT IDENT.
CO-56	-4.067E-02	5.099E-02	5.419E-02	FAIL ABUN
MN-56	-1.000E+41	1.239E+41	0.000E+00	SHORT HLIF
CO-57	3.031E-03	2.000E-02	2.005E-02	NOT IDENT.
CO-58	1.033E-02	4.059E-02	4.086E-02	NOT IDENT.
FE-59	-5.296E-02	1.046E-01	1.073E-01	NOT IDENT.
CO-60	4.042E-02	4.044E-02	4.435E-02	NOT IDENT.
ZN-65	-2.964E-02	7.044E-02	7.170E-02	NOT IDENT.
GE-68	-9.503E-01	1.351E+00	1.417E+00	NOT IDENT.
AS-73	-1.533E-01	9.173E-01	9.199E-01	NOT IDENT.
AS-74	4.413E-02	1.736E-01	1.747E-01	NOT IDENT.
SE-75	-1.973E-02	5.304E-02	5.378E-02	FAIL ABUN
BR-77	1.449E+04	1.371E+04	1.519E+04	SHORT HLIF
SR-82	1.304E-01	5.586E-01	5.617E-01	NOT IDENT.
RB-83	1.308E-02	7.149E-02	7.173E-02	NOT IDENT.
RB-84	2.888E-02	9.598E-02	9.686E-02	NOT IDENT.
KR-85	2.773E+00	5.643E+00	5.780E+00	NOT IDENT.
SR-85	1.746E-02	3.573E-02	3.658E-02	NOT IDENT.
RB-86	-7.959E-01	1.502E+00	1.544E+00	NOT IDENT.
Y-88	-3.696E-04	4.467E-02	4.467E-02	NOT IDENT.
Y-91	-8.282E+00	1.971E+01	2.006E+01	NOT IDENT.
NB-94	5.184E-02	5.884E-02	6.331E-02	FAIL ABUN
NB-95	-4.444E-02	4.641E-02	5.055E-02	NOT IDENT.
NB-95M	-6.088E-03	1.400E-01	1.400E-01	NOT IDENT.
ZR-95	-6.245E-02	7.783E-02	8.277E-02	NOT IDENT.
NB-97	1.000E+41	5.858E+41	0.000E+00	SHORT HLIF
ZR-97	2.764E+13	3.031E+13	3.277E+13	SHORT HLIF
MO-99	-7.194E+00	8.519E+02	8.519E+02	SHORT HLIF
TC-99M	-1.594E+36	5.822E+36	0.000E+00	SHORT HLIF
RH-101	2.742E-03	2.665E-02	2.668E-02	NOT IDENT.
RH-102	-1.393E-02	5.129E-02	5.168E-02	NOT IDENT.
RU-103	7.379E-03	4.560E-02	4.572E-02	FAIL ABUN
RH-106	1.530E-01	2.685E-01	2.772E-01	NOT IDENT.
RU-106	1.530E-01	2.685E-01	2.772E-01	NOT IDENT.
AG-108M	-1.245E-02	2.487E-02	2.549E-02	FAIL ABUN
AG-110	-7.600E-02	7.076E-01	7.085E-01	NOT IDENT.
AG-110M	3.900E-02	3.759E-02	4.150E-02	FAIL ABUN
SN-113	1.464E-02	4.588E-02	4.635E-02	NOT IDENT.
CD-115	2.121E+02	1.971E+03	1.973E+03	SHORT HLIF
SN-117M	6.060E-02	1.113E-01	1.146E-01	NOT IDENT.
SB-122	3.276E+01	1.697E+02	1.703E+02	SHORT HLIF
TE-123M	1.349E-02	2.599E-02	2.670E-02	NOT IDENT.
SB-124	-1.398E-02	9.712E-02	9.732E-02	NOT IDENT.
SB-125	-4.250E-02	8.527E-02	8.739E-02	FAIL ABUN
TE-125M	-1.403E+00	8.631E+00	8.654E+00	NOT IDENT.
I-126	1.289E-01	5.388E-01	5.419E-01	NOT IDENT.
SB-126	-5.104E-02	3.999E-01	4.006E-01	NOT IDENT.
SB-127	2.014E+01	2.309E+01	2.481E+01	NOT IDENT.
I-131	7.540E-02	4.145E-01	4.159E-01	NOT IDENT.
I-132	1.000E+41	2.588E+41	0.000E+00	SHORT HLIF
TE-132	1.752E+01	2.651E+01	2.766E+01	SHORT HLIF
BA-133	3.432E-02	3.641E-02	3.956E-02	NOT IDENT.
I-133	-2.743E+09	4.513E+09	4.679E+09	SHORT HLIF
CS-134	7.155E-02	4.320E-02	5.391E-02	FAIL ABUN
I-135	6.113E+33	2.078E+34	0.000E+00	SHORT HLIF
CS-136	1.288E-01	2.228E-01	2.303E-01	FAIL ABUN
BA-137M	4.860E-03	3.271E-02	3.278E-02	NOT IDENT.
CS-137	5.134E-03	3.455E-02	3.463E-02	NOT IDENT.
LA-138	-5.697E-02	7.506E-02	7.933E-02	FAIL ABUN
CE-139	1.604E-02	2.738E-02	2.832E-02	NOT IDENT.
BA-140	1.689E-01	5.631E-01	5.683E-01	NOT IDENT.
LA-140	-1.571E-01	1.928E-01	2.054E-01	FAIL ABUN
CE-141	-4.280E-02	7.491E-02	7.736E-02	NOT IDENT.
CE-143	6.515E+04	5.876E+05	5.883E+05	SHORT HLIF
CE-144	-3.157E-02	1.566E-01	1.573E-01	NOT IDENT.
PM-144	8.654E-04	2.796E-02	2.796E-02	NOT IDENT.
PR-144	7.596E-02	2.114E+00	2.114E+00	NOT IDENT.
PM-146	3.755E-03	3.819E-02	3.823E-02	NOT IDENT.
ND-147	6.028E-01	1.535E+00	1.559E+00	NOT IDENT.
PM-147	-3.253E+02	5.772E+02	5.955E+02	NOT IDENT.
PM-149	-4.730E+02	1.495E+04	1.495E+04	SHORT HLIF
EU-150	-2.313E-02	2.593E-02	2.795E-02	FAIL ABUN
EU-152	-1.440E-02	8.985E-02	9.008E-02	FAIL ABUN
GD-153	-2.396E-03	7.096E-02	7.097E-02	NOT IDENT.

EU-154	2.697E-02	9.499E-02	9.576E-02	NOT IDENT.
EU-155	1.833E-02	8.014E-02	8.056E-02	FAIL ABUN
TB-160	-2.774E-02	1.659E-01	1.664E-01	FAIL ABUN
HO-166M	3.114E-02	6.054E-02	6.215E-02	NOT IDENT.
TM-171	2.560E+00	1.672E+01	1.676E+01	FAIL ABUN
HF-172	-1.942E-04	1.496E-01	1.496E-01	FAIL ABUN
LU-172	-1.465E-02	7.039E-02	7.070E-02	FAIL ABUN
LU-176	1.215E-02	2.057E-02	2.129E-02	FAIL ABUN
HF-181	-4.075E-02	4.422E-02	4.789E-02	NOT IDENT.
TA-182	1.111E-01	1.639E-01	1.714E-01	FAIL ABUN
RE-183	-7.077E-02	2.019E-01	2.044E-01	FAIL ABUN
RE-184	9.723E-02	1.859E-01	1.910E-01	NOT IDENT.
W-188	-7.138E-01	8.349E+00	8.355E+00	FAIL ABUN
IR-192	6.509E-03	3.334E-02	3.346E-02	FAIL ABUN
TL-204	-1.149E+00	4.245E+00	4.276E+00	NOT IDENT.
BI-207	3.986E-02	4.872E-02	5.192E-02	FAIL ABUN
BI-210	-7.863E-02	3.600E+00	3.600E+00	NOT IDENT.
PB-210	-7.863E-02	3.600E+00	3.600E+00	NOT IDENT.
PB-211	-1.291E-01	7.123E-01	7.146E-01	NOT IDENT.
BI-213	1.904E-02	9.911E-02	9.948E-02	NOT IDENT.
RN-219	1.942E-01	3.850E-01	3.949E-01	FAIL ABUN
RA-223	-6.998E-02	6.397E-01	6.404E-01	FAIL ABUN
AC-225	-3.155E-01	1.652E+00	1.658E+00	NOT IDENT.
AC-227	3.756E-02	2.117E-01	2.124E-01	FAIL ABUN
TH-227	3.756E-02	2.117E-01	2.124E-01	FAIL ABUN
PA-231	-3.731E-02	4.732E-01	4.735E-01	NOT IDENT.
TH-231	-6.998E-02	6.397E-01	6.404E-01	FAIL ABUN
PA-233	9.362E-03	5.763E-02	5.778E-02	FAIL ABUN
PA-234	-3.430E-02	3.062E-01	3.066E-01	FAIL ABUN
NP-237	9.362E-03	5.763E-02	5.778E-02	FAIL ABUN
NP-238	-1.572E+03	4.649E+03	4.702E+03	SHORT HLIF
NP-239	-1.593E-01	1.964E-01	2.091E-01	FAIL ABUN
PU-239	1.289E+02	2.873E+02	2.931E+02	NOT IDENT.
AM-241	3.581E-03	1.312E-01	1.312E-01	NOT IDENT.
CM-243	-6.888E-02	7.915E-02	8.503E-02	FAIL ABUN
BK-247	-1.524E-02	8.847E-02	8.874E-02	FAIL ABUN
CM-247	-2.584E-03	3.538E-02	3.540E-02	FAIL ABUN
CF-249	-1.016E-02	3.861E-02	3.888E-02	NOT IDENT.
CF-251	1.730E-01	2.036E-01	2.180E-01	FAIL ABUN

```
*******************************************************************************
*                          GEL Laboratories LLC                               *
*                            2040 Savage Road                                 *
*                          Charleston, SC 29407                               *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                    *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	36.2899	85.43	21.6151	131.20	38.3067
45.60	31.1862	86.55	30.1188	133.02	36.4290
46.54	27.4057	86.79	30.1394	133.52	33.4280
49.72	0.0000	86.94	30.1526	136.00	29.5266
51.35	22.3924	87.09	33.7855	136.47	33.6314
51.87	28.8535	87.57	33.8322	140.51	0.0000
52.39	28.9164	88.03	33.8766	143.76	27.9204
52.97	29.7915	88.34	33.9065	144.24	36.2273
53.44	33.8831	88.47	33.9191	145.44	43.5746
54.07	29.9266	89.96	34.0623	152.43	30.4908
57.36	0.0000	1093.63	34.1270	153.25	30.5373
57.53	33.6236	91.11	34.1717	323.87	39.0308
57.98	36.1468	92.59	34.3118	156.02	35.9865
59.27	24.2179	93.35	34.3833	158.56	32.9635
59.32	24.2226	94.56	34.4964	159.00	30.8616
59.54	30.8546	94.65	34.5050	162.33	31.0466
60.96	34.3441	94.67	34.5067	162.66	26.7799
61.17	34.3711	94.87	34.5255	163.33	36.4643
62.93	21.2037	97.43	34.7622	165.86	30.1636
63.29	21.2316	98.43	28.0076	176.31	37.2871
63.58	21.2540	98.44	28.0083	176.60	37.3047
64.28	25.2330	99.53	32.7695	177.52	37.3623
66.73	31.3926	100.11	43.1334	181.07	0.0000
67.24	38.5319	102.03	29.2120	181.52	39.8210
125.81	38.5907	103.18	39.6932	184.41	35.5625
67.75	40.8706	103.37	39.7124	143.76	33.4099
68.89	33.0533	105.21	32.2968	193.51	39.4594
69.67	31.9987	105.31	32.3051	197.03	35.1394
70.82	45.8895	106.12	31.4179	198.01	42.0033
70.83	45.8915	106.47	28.5864	201.83	27.4028
72.81	39.2648	109.28	32.6216	203.43	33.5725
72.87	39.2727	111.00	26.9763	205.31	27.5449
74.66	45.3112	111.76	0.0000	210.85	49.7529
74.82	45.3346	114.06	30.0838	215.65	23.3005
74.97	45.3568	116.30	0.0000	218.12	30.3965
77.11	45.6666	116.74	37.1071	222.11	35.2689
78.74	54.1383	119.76	30.4809	227.09	31.9599
79.69	51.9367	121.12	37.4779	227.38	31.9727
80.03	35.4477	121.22	33.5403	228.16	0.0000
80.12	35.4581	121.78	26.6684	228.18	27.2655
80.19	35.4657	122.06	26.6850	116.74	27.2655
80.57	37.8740	122.92	29.7066	235.69	31.9316
81.00	39.1086	123.07	29.7164	235.96	27.1515
81.07	39.1170	265.00	32.7321	238.63	28.8497
81.75	36.8220	125.81	33.8815	238.98	0.0000
82.47	47.6156	127.23	38.9832	240.99	28.9387
83.79	31.0718	127.91	42.0437	242.00	28.9764
84.00	29.8953	129.30	37.1485	244.70	32.3083

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	30.5855	344.28	24.3545	563.25	12.8369
252.80	29.3767	345.93	16.2623	564.24	0.0000
254.15	0.0000	351.06	23.6053	569.33	10.7385
256.23	20.8973	351.93	23.6249	946.00	10.7397
260.90	0.0000	355.39	0.0000	569.70	10.7410
264.66	29.8066	356.01	10.9460	583.19	12.9985
264.80	29.8118	364.49	15.6299	584.27	13.0073
265.00	29.8191	366.42	0.0000	595.83	12.0080
269.46	28.7289	372.51	14.8187	427.87	7.6637
270.03	28.7479	375.05	12.0680	602.52	0.0000
271.23	22.5308	377.52	12.0947	604.72	18.1093
273.65	22.5945	356.01	23.3902	607.14	11.5408
276.40	22.6670	388.16	23.4792	609.32	16.5082
277.37	17.6500	388.63	20.6702	610.33	16.5179
277.60	17.6547	391.69	17.8991	614.28	0.0000
278.00	17.6628	264.66	13.2911	618.01	9.9562
279.20	22.7406	401.81	17.1053	620.36	9.9697
279.54	17.6940	402.40	20.9168	621.93	6.6526
279.70	17.6974	404.85	23.8185	630.19	0.0000
280.46	16.4476	410.95	20.1100	631.29	12.2631
283.69	23.7042	413.71	10.5582	633.25	14.5092
284.31	19.4849	414.70	10.5667	634.78	15.6389
285.41	18.6610	423.72	25.1616	635.95	7.8249
285.90	0.0000	427.09	14.5560	636.99	11.1849
287.50	22.1057	427.87	20.3912	657.50	11.3155
290.67	26.8774	433.94	16.5877	657.76	10.1854
293.27	0.0000	439.40	21.5596	657.90	0.0000
351.93	25.7263	440.45	16.6735	661.66	10.2074
295.96	25.7477	453.88	14.8660	664.57	0.0000
879.38	18.0751	463.37	9.9825	666.33	11.3713
299.98	25.8606	468.07	18.0319	666.50	11.3721
300.09	25.8636	473.00	13.0709	667.71	0.0000
300.13	25.8649	475.06	21.1470	677.62	13.7300
301.36	27.1940	476.78	14.1156	685.70	4.5967
302.85	12.9706	477.60	10.0887	692.65	0.0000
256.23	19.4902	482.18	14.1718	695.00	12.7040
304.85	18.7176	487.02	12.1899	696.49	6.9348
306.78	14.7619	492.35	0.0000	696.51	6.9351
308.46	18.2678	497.08	11.2549	697.00	8.6710
311.90	22.6997	505.52	13.8952	697.30	8.6725
316.51	18.4229	507.63	0.0000	697.49	8.6731
319.41	21.9976	511.00	10.3321	702.65	15.0746
320.08	17.6103	514.00	7.7652	706.68	8.7155
321.04	20.2719	514.00	7.7652	711.68	9.3206
323.87	22.5403	520.40	11.4391	720.70	12.6417
325.23	22.5714	520.69	0.0000	721.93	0.0000
328.76	26.6492	522.65	0.0000	722.78	8.4369
333.37	24.0952	527.90	0.0000	722.91	8.4375
333.97	26.7883	528.26	11.5000	723.31	8.4393
334.37	24.1194	529.59	17.7886	724.19	12.6646
338.28	18.8317	529.87	0.0000	727.33	4.2283
338.32	18.8326	531.02	11.5214	733.00	10.6014
311.90	14.8282	537.26	9.4662	735.93	7.9629
340.48	14.8282	546.56	0.0000	333.97	5.3126
340.55	14.8293	552.55	15.9357	739.50	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
744.23	5.3307	667.71	0.0000	1434.09	6.4159
747.24	8.8980	962.31	4.7008	1435.80	11.0039
748.06	6.2312	964.08	6.2721	1457.56	0.0000
752.31	7.1365	966.17	19.6167	1460.82	3.0780
753.82	8.9273	911.20	13.0924	1489.16	3.1019
756.73	12.5162	983.53	6.9133	1505.03	5.6071
756.80	12.5166	984.45	0.0000	1584.12	4.7705
884.68	9.8690	1274.44	7.9402	1596.21	4.7852
765.81	16.1642	1002.74	9.9500	1620.50	1.9259
766.84	9.8831	1004.73	5.9745	1621.92	1.9266
772.60	0.0000	507.63	0.0000	1678.03	0.0000
776.52	11.7348	1025.87	0.0000	1690.97	2.9392
739.50	0.0000	1028.54	0.0000	1750.46	0.0000
778.90	12.6520	1037.84	5.0418	1764.49	1.6615
783.70	7.2466	1038.76	0.0000	1063.66	2.9947
788.74	7.2639	631.29	10.1166	1771.35	0.9985
792.07	0.0000	1048.07	4.0488	1791.20	0.0000
795.86	4.3731	1049.04	5.0629	1808.65	2.0142
810.06	10.0886	1050.41	6.0784	1810.72	0.0000
810.29	9.1727	1063.66	4.0720	1836.06	3.0400
344.28	9.1733	1077.00	10.2295		
810.76	7.3396	1077.34	11.2538		
815.77	2.7588	1085.87	8.2100		
1048.07	4.6037	1093.63	10.2911		
832.01	12.9703	1099.45	8.2500		
834.85	12.9870	1112.07	5.1791		
835.71	10.2081	1112.84	2.7630		
836.80	0.0000	1115.54	4.9781		
846.75	0.0000	1120.29	2.0776		
846.77	16.7877	1120.55	2.0779		
856.80	13.1156	1221.41	3.3254		
860.56	10.3222	1129.67	3.1267		
871.09	5.6563	1131.51	0.0000		
873.19	7.5488	1147.95	0.0000		
875.33	0.0000	1173.23	8.4624		
879.38	9.0829	1177.95	4.2380		
880.51	10.6019	1189.05	9.5707		
881.60	6.0611	1204.77	6.4135		
883.24	8.5295	1221.41	3.2241		
884.68	9.1037	1231.02	7.5464		
889.28	8.5515	1235.36	10.3641		
894.76	6.6667	1238.28	10.3734		
898.04	8.5836	1260.41	0.0000		
900.72	9.5483	1271.87	4.3684		
903.28	7.6467	1274.44	3.2789		
911.20	10.5495	1274.54	3.2791		
912.08	7.6753	1291.59	6.5929		
923.98	0.0000	1298.22	0.0000		
926.50	5.5153	1312.11	7.7400		
929.11	6.1838	1332.49	2.2250		
935.54	4.6501	1362.66	0.0000		
937.49	4.6538	1365.19	3.3699		
944.13	6.8052	1368.63	0.0000		
946.00	9.7293	1384.29	7.2293		
949.00	7.7927	1408.01	2.7294		

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:37:20.07

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070202.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM52.CNF;106
                                         Background date  : 4-MAY-2025 09:27:56.
Sample date      : 16-APR-2025 00:00:00  Acquisition date : 10-MAY-2025 11:36:48
Sample ID        : G1206070202           Sample quantity  : 1.30820E+02 GRAM
Detector name    : GAM52                 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.30  0.0%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2781510               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	93.72*	6	40	1.00	187.73	182	12	1.59E-03	255.0	
2	0	98.79	16	22	1.44	197.87	195	8	4.35E-03	57.8	
3	0	160.63	11	8	0.72	321.57	319	5	3.13E-03	47.3	
4	7	236.96	7	4	1.41	474.28	473	12	1.98E-03	45.9	4.34E+00
5	7	238.70*	14	16	1.54	477.76	473	12	3.99E-03	62.7	
6	0	277.49	10	18	3.21	555.36	549	10	2.89E-03	81.4	
7	0	405.23	11	6	0.64	810.91	807	8	2.98E-03	50.2	
8	0	456.62	15	6	1.14	913.72	907	11	4.25E-03	39.3	
9	0	563.15	6	4	0.78	1126.84	1120	9	1.56E-03	80.1	
10	0	583.59*	5	3	1.02	1167.73	1164	7	1.39E-03	90.3	
11	0	659.25	12	2	2.34	1319.11	1314	10	3.25E-03	38.4	
12	0	1045.91	6	0	0.50	2092.67	2089	6	1.67E-03	40.8	
13	0	1155.72	8	0	0.83	2312.38	2308	8	2.22E-03	35.4	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 12:37:21

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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070202.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 16-APR-2025 00:00:00 Acquisition date : 10-MAY-2025 11:36:48
Sample ID        : G1206070202          Sample quantity  : 130.82 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA52              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.30   0.0%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Sample ID : G1206070202 Acquisition date : 10-MAY-2025 11:36:48

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
NB-95M	235.69	8	24.80*	5.485E+00	3.258E-02	4.248E-02	91.80
SB-122	564.24	6	70.67*	2.756E+00	1.683E-02	8.673E+00	160.22
	692.65	------	3.85	2.277E+00	------	Line Not Found	------
TL-208	277.37	11	6.60	4.894E+00	1.979E-01	1.979E-01	162.73
	583.19	5	85.00*	2.669E+00	1.289E-02	1.289E-02	180.59
	860.56	------	12.50	1.842E+00	------	Line Not Found	------

Flag: "*" = Keyline

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070202.CNF;1  *
* Acquisition date : 10-MAY-2025 11:36:48 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.30     Half life ratio : *****           *
* Sample date      : 16-APR-2025 00:00:00 Analyst initials: RXF2            *
* Sample ID        : G1206070202          Sample Quantity : 1.3082E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  3-SEP-2024 08:39:54 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;5             *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
NB-95M	4.248E-02	3.822E-02	1.184E-01
SB-122	8.673E+00	1.362E+01	2.149E+01
TL-208	1.289E-02	2.281E-02	3.332E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.660E-01	1.642E-01	2.652E-01	NOT IDENT.
NA-22	-3.123E-03	1.994E-02	4.456E-02	NOT IDENT.
NA-24	0.000E+00	1.041E+10	0.000E+00	SHORT HLIF
AL-26	5.572E-03	2.085E-02	5.591E-02	NOT IDENT.
K-40	9.969E-02	2.834E-01	7.322E-01	NOT IDENT.
SC-46	4.501E-03	1.438E-02	3.852E-02	NOT IDENT.
V-48	-5.977E-02	6.014E-02	7.763E-02	NOT IDENT.
CR-51	-1.307E-01	2.258E-01	3.757E-01	NOT IDENT.
MN-52	-4.073E-01	4.084E-01	4.094E-01	NOT IDENT.
MN-54	5.865E-03	2.453E-02	5.204E-02	NOT IDENT.
CO-56	-2.967E-02	2.666E-02	3.600E-02	NOT IDENT.
MN-56	0.000E+00	9.874E+40	0.000E+00	SHORT HLIF
CO-57	-3.498E-03	1.102E-02	2.087E-02	NOT IDENT.
CO-58	3.833E-03	2.316E-02	5.094E-02	NOT IDENT.
FE-59	9.823E-03	3.276E-02	9.356E-02	NOT IDENT.
CO-60	-1.618E-02	2.624E-02	4.744E-02	NOT IDENT.
ZN-65	4.411E-03	4.515E-02	1.041E-01	NOT IDENT.
GE-68	-1.601E-02	7.918E-01	1.722E+00	NOT IDENT.
AS-73	-1.428E-01	2.473E-01	4.766E-01	NOT IDENT.
AS-74	1.212E-02	7.747E-02	1.642E-01	NOT IDENT.
SE-75	-8.776E-03	2.563E-02	4.559E-02	NOT IDENT.
BR-77	0.000E+00	1.104E+02	0.000E+00	SHORT HLIF
SR-82	1.552E-01	1.813E-01	4.955E-01	NOT IDENT.
RB-83	1.726E-02	3.889E-02	8.890E-02	NOT IDENT.
RB-84	1.013E-02	4.373E-02	9.955E-02	NOT IDENT.
KR-85	-5.423E+00	5.793E+00	9.883E+00	NOT IDENT.
SR-85	-3.186E-02	3.386E-02	5.773E-02	NOT IDENT.

RB-86	6.353E-02	5.899E-01	1.368E+00	NOT IDENT.
Y-88	2.340E-02	3.292E-02	8.890E-02	NOT IDENT.
Y-91	-4.461E+00	9.811E+00	1.957E+01	NOT IDENT.
NB-94	-2.810E-03	1.980E-02	3.922E-02	NOT IDENT.
NB-95	-5.350E-03	2.630E-02	5.142E-02	NOT IDENT.
ZR-95	-6.913E-03	4.831E-02	9.580E-02	NOT IDENT.
NB-97	0.000E+00	7.529E+40	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.378E+10	0.000E+00	SHORT HLIF
MO-99	9.782E+00	4.776E+01	1.167E+02	NOT IDENT.
TC-99M	0.000E+00	2.520E+27	0.000E+00	SHORT HLIF
RH-101	1.135E-02	1.295E-02	2.889E-02	NOT IDENT.
RH-102	6.815E-03	2.534E-02	5.821E-02	FAIL ABUN
RU-103	1.324E-02	2.668E-02	5.982E-02	NOT IDENT.
RH-106	-6.943E-02	2.146E-01	4.064E-01	NOT IDENT.
RU-106	-6.943E-02	2.146E-01	4.064E-01	NOT IDENT.
AG-108M	-4.082E-03	1.302E-02	2.620E-02	NOT IDENT.
CD-109	-9.004E-02	2.792E-01	5.377E-01	NOT IDENT.
AG-110	-3.848E-02	4.260E-01	7.809E-01	NOT IDENT.
AG-110M	1.225E-02	2.049E-02	5.546E-02	FAIL ABUN
SN-113	6.433E-03	1.865E-02	4.337E-02	NOT IDENT.
CD-115	0.000E+00	9.732E+01	0.000E+00	SHORT HLIF
SN-117M	5.671E-03	3.264E-02	6.350E-02	NOT IDENT.
TE-123M	-2.411E-03	1.102E-02	1.956E-02	NOT IDENT.
SB-124	-5.022E-02	7.242E-02	1.190E-01	NOT IDENT.
SB-125	2.322E-02	4.394E-02	1.015E-01	NOT IDENT.
TE-125M	1.344E-01	3.954E+00	8.052E+00	NOT IDENT.
I-126	7.218E-02	1.767E-01	4.102E-01	NOT IDENT.
SB-126	-6.047E-02	8.676E-02	1.435E-01	NOT IDENT.
SN-126	-1.477E-02	2.848E-02	5.319E-02	NOT IDENT.
SB-127	2.762E+00	3.655E+00	8.992E+00	NOT IDENT.
I-131	3.984E-02	8.670E-02	2.142E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	-1.918E+00	2.342E+00	3.790E+00	NOT IDENT.
BA-133	-1.605E-02	1.918E-02	3.450E-02	FAIL ABUN
I-133	0.000E+00	4.786E+06	0.000E+00	SHORT HLIF
CS-134	1.058E-02	2.539E-02	5.648E-02	FAIL ABUN
I-135	0.000E+00	3.441E+25	0.000E+00	SHORT HLIF
CS-136	5.152E-02	5.842E-02	1.866E-01	NOT IDENT.
BA-137M	7.074E-03	1.687E-02	3.757E-02	NOT IDENT.
CS-137	7.473E-03	1.782E-02	3.969E-02	NOT IDENT.
LA-138	-6.686E-03	1.571E-02	3.345E-02	NOT IDENT.
CE-139	-3.774E-03	1.313E-02	2.458E-02	NOT IDENT.
BA-140	-2.009E-01	2.263E-01	3.829E-01	NOT IDENT.
LA-140	1.846E-02	7.327E-02	1.996E-01	NOT IDENT.
CE-141	-4.270E-03	2.853E-02	5.561E-02	NOT IDENT.
CE-143	0.000E+00	7.379E+03	0.000E+00	SHORT HLIF
CE-144	2.867E-02	8.207E-02	1.717E-01	NOT IDENT.
PM-144	-3.504E-02	2.765E-02	4.356E-02	NOT IDENT.
PR-144	-2.635E+00	2.079E+00	3.276E+00	NOT IDENT.
PM-146	9.006E-03	1.893E-02	4.211E-02	NOT IDENT.
ND-147	-6.334E-02	5.171E-01	1.063E+00	NOT IDENT.
PM-147	1.131E+02	2.977E+02	6.292E+02	NOT IDENT.
PM-149	0.000E+00	8.783E+02	0.000E+00	SHORT HLIF
EU-150	3.697E-03	1.265E-02	2.780E-02	FAIL ABUN
EU-152	4.075E-03	5.325E-02	1.111E-01	NOT IDENT.
GD-153	5.030E-02	5.702E-02	6.188E-02	FAIL ABUN
EU-154	-6.164E-03	5.741E-02	1.298E-01	NOT IDENT.
EU-155	2.290E-02	3.935E-02	8.615E-02	NOT IDENT.
TB-160	-1.296E-03	7.928E-02	1.669E-01	NOT IDENT.
HO-166M	1.953E-02	3.018E-02	7.348E-02	NOT IDENT.
TM-171	2.352E+00	4.333E+00	9.997E+00	NOT IDENT.
HF-172	-2.785E-02	8.083E-02	1.521E-01	NOT IDENT.
LU-172	-4.960E-03	2.023E-02	4.770E-02	NOT IDENT.
LU-176	-7.612E-03	1.233E-02	2.038E-02	NOT IDENT.
HF-181	-4.430E-03	2.370E-02	4.868E-02	NOT IDENT.
TA-182	3.167E-02	1.097E-01	2.561E-01	FAIL ABUN
RE-183	9.048E-03	6.157E-02	1.313E-01	NOT IDENT.
RE-184	-4.892E-02	7.771E-02	1.304E-01	NOT IDENT.
W-188	-3.602E+00	3.810E+00	5.730E+00	NOT IDENT.
IR-192	1.059E-02	1.693E-02	3.747E-02	NOT IDENT.
HG-203	-8.309E-03	2.356E-02	3.788E-02	NOT IDENT.
TL-204	2.160E-01	1.648E+00	3.400E+00	NOT IDENT.
BI-207	-2.248E-03	2.150E-02	4.995E-02	NOT IDENT.
BI-210	5.973E-02	1.078E+00	2.191E+00	NOT IDENT.
PB-210	5.973E-02	1.078E+00	2.191E+00	NOT IDENT.
BI-211	-2.274E-02	1.217E-01	2.446E-01	NOT IDENT.
PB-211	4.662E-01	4.584E-01	8.696E-01	FAIL ABUN
BI-212	6.847E-02	2.723E-01	5.992E-01	NOT IDENT.

PB-212	3.748E-02	4.608E-02	6.469E-02	FAIL ABUN
BI-213	2.215E-02	4.990E-02	1.141E-01	NOT IDENT.
BI-214	-2.774E-02	4.888E-02	9.337E-02	NOT IDENT.
PB-214	3.630E-03	4.418E-02	9.189E-02	NOT IDENT.
RN-219	-4.884E-02	1.476E-01	2.670E-01	NOT IDENT.
RN-222	-2.774E-02	4.888E-02	9.337E-02	NOT IDENT.
RA-223	-2.018E-01	3.557E-01	5.919E-01	FAIL ABUN
RA-224	-6.909E-02	2.893E-01	4.870E-01	NOT IDENT.
AC-225	1.594E-01	3.024E-01	7.244E-01	NOT IDENT.
RA-226	3.630E-03	4.418E-02	9.189E-02	NOT IDENT.
AC-227	-6.993E-03	1.251E-01	2.375E-01	FAIL ABUN
TH-227	-6.993E-03	1.251E-01	2.375E-01	FAIL ABUN
AC-228	-6.264E-02	6.602E-02	1.199E-01	NOT IDENT.
RA-228	-6.264E-02	6.602E-02	1.199E-01	NOT IDENT.
TH-228	3.748E-02	4.608E-02	6.469E-02	FAIL ABUN
TH-229	7.141E-02	2.096E-01	4.376E-01	NOT IDENT.
TH-230	3.630E-03	4.418E-02	9.189E-02	NOT IDENT.
PA-231	-1.685E-02	2.349E-01	4.426E-01	NOT IDENT.
TH-231	-2.018E-01	3.557E-01	5.919E-01	FAIL ABUN
TH-232	-6.264E-02	6.602E-02	1.199E-01	NOT IDENT.
PA-233	-1.586E-02	2.915E-02	4.919E-02	NOT IDENT.
PA-234	-8.560E-02	1.885E-01	3.373E-01	FAIL ABUN
PA-234M	-3.990E-01	4.265E-01	8.654E-01	FAIL ABUN
TH-234	-3.990E-01	4.265E-01	8.654E-01	FAIL ABUN
U-234	3.630E-03	4.418E-02	9.189E-02	NOT IDENT.
U-235	-2.678E-02	7.296E-02	1.385E-01	FAIL ABUN
NP-237	-1.586E-02	2.915E-02	4.919E-02	FAIL ABUN
NP-238	0.000E+00	2.482E+02	0.000E+00	SHORT HLIF
U-238	-3.990E-01	4.265E-01	8.654E-01	FAIL ABUN
NP-239	7.247E-02	1.033E-01	2.285E-01	FAIL ABUN
PU-239	-3.509E+01	1.284E+02	2.460E+02	NOT IDENT.
AM-241	8.586E-03	4.589E-02	9.737E-02	NOT IDENT.
AM-243	5.901E-03	1.836E-02	3.775E-02	NOT IDENT.
CM-243	9.730E-03	4.073E-02	8.491E-02	FAIL ABUN
BK-247	-3.002E-02	4.446E-02	7.371E-02	NOT IDENT.
CM-247	2.455E-03	1.145E-02	2.607E-02	FAIL ABUN
CF-249	-8.611E-03	1.489E-02	2.853E-02	NOT IDENT.
CF-251	-2.562E-02	5.470E-02	9.860E-02	NOT IDENT.
ANH-511	-8.293E-02	3.559E-02	7.200E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:37:20.83

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
NB-95M	235.69	8	24.80*	5.485E+00	3.258E-02	4.248E-02	91.80
SB-122	564.24	6	70.67*	2.756E+00	1.683E-02	8.673E+00	160.22
	692.65	------	3.85	2.277E+00	------	Line Not Found	------
TL-208	277.37	11	6.60	4.894E+00	1.979E-01	1.979E-01	162.73
	583.19	5	85.00*	2.669E+00	1.289E-02	1.289E-02	180.59
	860.56	------	12.50	1.842E+00	------	Line Not Found	------

Flag: "*" = Keyline

Sample ID : G1206070202 Acquisition date : 10-MAY-2025 11:36:48

Total number of lines in spectrum 13
Number of unidentified lines 3
Number of lines tentatively identified by NID 10 76.92%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
NB-95M	64.03D	1.30	3.258E-02	4.248E-02	3.900E-02	91.80	
SB-122	2.72D	515.	1.683E-02	8.673E+00	13.90E+00	160.22	
TL-208	1.41E+10Y	1.00	1.289E-02	1.289E-02	2.327E-02	180.59	
			---	---			
Total Activity :			6.230E-02	8.729E+00			

Grand Total Activity : 6.230E-02 8.729E+00

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1206070202 Acquisition date : 10-MAY-2025 11:36:48

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	93.72	7	46	1.00	187.73	182	12	1.59E-03	****	7.40E+00	T
0	98.79	18	26	1.44	197.87	195	8	4.35E-03	****	7.56E+00	T
0	160.63	12	9	0.72	321.57	319	5	3.13E-03	94.6	6.97E+00	
7	238.70	16	17	1.54	477.76	473	12	3.99E-03	****	5.46E+00	T
0	405.23	11	7	0.64	810.91	807	8	2.98E-03	****	3.65E+00	T
0	456.62	16	6	1.14	913.72	907	11	4.25E-03	78.6	3.30E+00	
0	659.25	12	2	2.34	1319.11	1314	10	3.25E-03	76.8	2.39E+00	T
0	1045.91	6	0	0.50	2092.67	2089	6	1.67E-03	81.6	1.52E+00	T
0	1155.72	8	0	0.83	2312.38	2308	8	2.22E-03	70.7	1.37E+00	

Flags: "T" = Tentatively associated

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070202.CNF;1  *
* Acquisition date : 10-MAY-2025 11:36:48 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.30     Half life ratio : *****           *
* Sample date      : 16-APR-2025 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1206070202          Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.3082E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  3-SEP-2024 08:39:54 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;5             *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
NB-95M	5.155E-02
SB-122	8.652E+00
TL-208	1.318E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	9.979E-02	NOT IDENT.
NA-22	1.593E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.976E-02	NOT IDENT.
K-40	3.002E-01	NOT IDENT.
SC-46	1.387E-02	NOT IDENT.
V-48	2.475E-02	NOT IDENT.
CR-51	1.541E-01	NOT IDENT.
MN-52	5.993E-02	NOT IDENT.
MN-54	2.166E-02	NOT IDENT.
CO-56	1.278E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	9.122E-03	NOT IDENT.
CO-58	2.034E-02	NOT IDENT.
FE-59	3.274E-02	NOT IDENT.
CO-60	1.716E-02	NOT IDENT.
ZN-65	4.042E-02	NOT IDENT.
GE-68	6.857E-01	NOT IDENT.
AS-73	2.045E-01	NOT IDENT.
AS-74	6.882E-02	NOT IDENT.
SE-75	1.972E-02	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	1.979E-01	NOT IDENT.
RB-83	3.722E-02	NOT IDENT.
RB-84	3.917E-02	NOT IDENT.
KR-85	4.330E+00	NOT IDENT.
SR-85	2.529E-02	NOT IDENT.
RB-86	5.313E-01	NOT IDENT.

Y-88	3.471E-02	NOT IDENT.
Y-91	6.742E+00	NOT IDENT.
NB-94	1.611E-02	NOT IDENT.
NB-95	2.075E-02	NOT IDENT.
ZR-95	3.890E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	4.369E+01	NOT IDENT.
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.286E-02	NOT IDENT.
RH-102	2.337E-02	FAIL ABUN
RU-103	2.556E-02	NOT IDENT.
RH-106	1.702E-01	NOT IDENT.
RU-106	1.702E-01	NOT IDENT.
AG-108M	1.056E-02	NOT IDENT.
CD-109	2.370E-01	NOT IDENT.
AG-110	3.122E-01	NOT IDENT.
AG-110M	2.130E-02	FAIL ABUN
SN-113	1.791E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	2.712E-02	NOT IDENT.
TE-123M	8.204E-03	NOT IDENT.
SB-124	3.762E-02	NOT IDENT.
SB-125	4.299E-02	NOT IDENT.
TE-125M	3.503E+00	NOT IDENT.
I-126	1.675E-01	NOT IDENT.
SB-126	4.537E-02	NOT IDENT.
SN-126	2.352E-02	NOT IDENT.
SB-127	3.730E+00	NOT IDENT.
I-131	8.675E-02	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	1.569E+00	NOT IDENT.
BA-133	1.407E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	2.353E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	6.980E-02	NOT IDENT.
BA-137M	1.510E-02	NOT IDENT.
CS-137	1.595E-02	NOT IDENT.
LA-138	6.126E-03	NOT IDENT.
CE-139	1.063E-02	NOT IDENT.
BA-140	1.487E-01	NOT IDENT.
LA-140	6.983E-02	NOT IDENT.
CE-141	2.395E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	7.559E-02	NOT IDENT.
PM-144	1.812E-02	NOT IDENT.
PR-144	1.363E+00	NOT IDENT.
PM-146	1.736E-02	NOT IDENT.
ND-147	4.339E-01	NOT IDENT.
PM-147	2.770E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.195E-02	FAIL ABUN
EU-152	4.832E-02	NOT IDENT.
GD-153	2.695E-02	FAIL ABUN
EU-154	4.697E-02	NOT IDENT.
EU-155	3.802E-02	NOT IDENT.
TB-160	6.517E-02	NOT IDENT.
HO-166M	3.019E-02	NOT IDENT.
TM-171	4.341E+00	NOT IDENT.
HF-172	6.645E-02	NOT IDENT.
LU-172	1.508E-02	NOT IDENT.
LU-176	8.317E-03	NOT IDENT.
HF-181	1.969E-02	NOT IDENT.
TA-182	1.023E-01	FAIL ABUN
RE-183	5.748E-02	NOT IDENT.
RE-184	4.626E-02	NOT IDENT.
W-188	2.330E+00	NOT IDENT.
IR-192	1.600E-02	NOT IDENT.
HG-203	1.605E-02	NOT IDENT.
TL-204	1.515E+00	NOT IDENT.
BI-207	1.794E-02	NOT IDENT.
BI-210	9.816E-01	NOT IDENT.
PB-210	9.816E-01	NOT IDENT.
BI-211	1.073E-01	NOT IDENT.
PB-211	3.774E-01	FAIL ABUN
BI-212	2.454E-01	NOT IDENT.
PB-212	2.899E-02	FAIL ABUN

BI-213	4.807E-02	NOT IDENT.
BI-214	3.994E-02	NOT IDENT.
PB-214	4.049E-02	NOT IDENT.
RN-219	1.008E-01	NOT IDENT.
RN-222	3.994E-02	NOT IDENT.
RA-223	2.502E-01	FAIL ABUN
RA-224	2.075E-01	NOT IDENT.
AC-225	2.961E-01	NOT IDENT.
RA-226	4.049E-02	NOT IDENT.
AC-227	1.025E-01	FAIL ABUN
TH-227	1.025E-01	FAIL ABUN
AC-228	4.250E-02	NOT IDENT.
RA-228	4.250E-02	NOT IDENT.
TH-228	2.899E-02	FAIL ABUN
TH-229	1.899E-01	NOT IDENT.
TH-230	4.048E-02	NOT IDENT.
PA-231	1.890E-01	NOT IDENT.
TH-231	2.502E-01	FAIL ABUN
TH-232	4.250E-02	NOT IDENT.
PA-233	1.998E-02	NOT IDENT.
PA-234	1.297E-01	FAIL ABUN
PA-234M	3.847E-01	FAIL ABUN
TH-234	3.847E-01	FAIL ABUN
U-234	4.048E-02	NOT IDENT.
U-235	5.923E-02	FAIL ABUN
NP-237	1.998E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	3.847E-01	FAIL ABUN
NP-239	1.010E-01	FAIL ABUN
PU-239	1.061E+02	NOT IDENT.
AM-241	4.297E-02	NOT IDENT.
AM-243	1.689E-02	NOT IDENT.
CM-243	3.738E-02	FAIL ABUN
BK-247	3.160E-02	NOT IDENT.
CM-247	1.003E-02	FAIL ABUN
CF-249	1.108E-02	NOT IDENT.
CF-251	4.227E-02	NOT IDENT.
ANH-511	3.338E-02	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:37:36.49

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070202.CNF;1  *
* Acquisition date : 10-MAY-2025 11:36:48 Sensitivity     : 3.000           *
* Detector ID      : GAM52                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.30     Half life ratio : *****           *
* Sample date      : 16-APR-2025 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1206070202          Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.3082E+02 GRAM *
*                                         Quantity Err(%) : 1.5288E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   :  3-SEP-2024 08:39:54 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM52_CAN.CNF;5             *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
NB-95M	4.248E-02	3.853E-02	3.853E-02
SB-122	8.673E+00	1.364E+01	1.364E+01
TL-208	1.289E-02	2.283E-02	2.283E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.660E-01	1.649E-01	1.810E-01	NOT IDENT.
NA-22	-3.123E-03	1.994E-02	1.999E-02	NOT IDENT.
NA-24	3.260E+09	1.042E+10	1.052E+10	SHORT HLIF
AL-26	5.572E-03	2.086E-02	2.101E-02	NOT IDENT.
K-40	9.969E-02	2.836E-01	2.871E-01	NOT IDENT.
SC-46	4.501E-03	1.439E-02	1.454E-02	NOT IDENT.
V-48	-5.977E-02	6.053E-02	6.626E-02	NOT IDENT.
CR-51	-1.307E-01	2.261E-01	2.337E-01	NOT IDENT.
MN-52	-4.073E-01	4.106E-01	4.498E-01	NOT IDENT.
MN-54	5.865E-03	2.454E-02	2.468E-02	NOT IDENT.
CO-56	-2.967E-02	2.687E-02	3.002E-02	NOT IDENT.
MN-56	-1.000E+41	9.940E+40	0.000E+00	SHORT HLIF
CO-57	-3.498E-03	1.102E-02	1.113E-02	NOT IDENT.
CO-58	3.833E-03	2.316E-02	2.323E-02	NOT IDENT.
FE-59	9.823E-03	3.278E-02	3.308E-02	NOT IDENT.
CO-60	-1.618E-02	2.630E-02	2.729E-02	NOT IDENT.
ZN-65	4.411E-03	4.516E-02	4.520E-02	NOT IDENT.
GE-68	-1.601E-02	7.918E-01	7.919E-01	NOT IDENT.
AS-73	-1.428E-01	2.491E-01	2.573E-01	NOT IDENT.
AS-74	1.212E-02	7.748E-02	7.767E-02	NOT IDENT.
SE-75	-8.776E-03	2.564E-02	2.594E-02	NOT IDENT.
BR-77	8.983E+01	1.277E+02	1.340E+02	SHORT HLIF
SR-82	1.552E-01	1.820E-01	1.950E-01	NOT IDENT.
RB-83	1.726E-02	3.898E-02	3.975E-02	NOT IDENT.
RB-84	1.013E-02	4.375E-02	4.399E-02	NOT IDENT.
KR-85	-5.423E+00	5.812E+00	6.305E+00	NOT IDENT.
SR-85	-3.186E-02	3.397E-02	3.688E-02	NOT IDENT.

RB-86	6.353E-02	5.900E-01	5.907E-01	NOT IDENT.
Y-88	2.340E-02	3.297E-02	3.461E-02	NOT IDENT.
Y-91	-4.461E+00	9.819E+00	1.002E+01	NOT IDENT.
NB-94	-2.810E-03	1.980E-02	1.984E-02	NOT IDENT.
NB-95	-5.350E-03	2.630E-02	2.642E-02	NOT IDENT.
ZR-95	-6.913E-03	4.831E-02	4.841E-02	NOT IDENT.
NB-97	1.000E+41	7.575E+40	0.000E+00	SHORT HLIF
ZR-97	-2.182E+10	1.390E+10	1.703E+10	SHORT HLIF
MO-99	9.782E+00	4.777E+01	4.797E+01	NOT IDENT.
TC-99M	-5.454E+26	2.521E+27	0.000E+00	SHORT HLIF
RH-101	1.135E-02	1.313E-02	1.409E-02	NOT IDENT.
RH-102	6.815E-03	2.535E-02	2.553E-02	FAIL ABUN
RU-103	1.324E-02	2.670E-02	2.736E-02	NOT IDENT.
RH-106	-6.943E-02	2.147E-01	2.170E-01	NOT IDENT.
RU-106	-6.943E-02	2.147E-01	2.170E-01	NOT IDENT.
AG-108M	-4.082E-03	1.303E-02	1.316E-02	NOT IDENT.
CD-109	-9.004E-02	2.793E-01	2.823E-01	NOT IDENT.
AG-110	-3.848E-02	4.260E-01	4.264E-01	NOT IDENT.
AG-110M	1.225E-02	2.054E-02	2.127E-02	FAIL ABUN
SN-113	6.433E-03	1.866E-02	1.889E-02	NOT IDENT.
CD-115	-4.737E+01	9.743E+01	9.975E+01	SHORT HLIF
SN-117M	5.671E-03	3.264E-02	3.274E-02	NOT IDENT.
TE-123M	-2.411E-03	1.102E-02	1.108E-02	NOT IDENT.
SB-124	-5.022E-02	7.256E-02	7.601E-02	NOT IDENT.
SB-125	2.322E-02	4.399E-02	4.521E-02	NOT IDENT.
TE-125M	1.344E-01	3.954E+00	3.954E+00	NOT IDENT.
I-126	7.218E-02	1.768E-01	1.798E-01	NOT IDENT.
SB-126	-6.047E-02	8.711E-02	9.127E-02	NOT IDENT.
SN-126	-1.477E-02	2.851E-02	2.927E-02	NOT IDENT.
SB-127	2.762E+00	3.676E+00	3.881E+00	NOT IDENT.
I-131	3.984E-02	8.678E-02	8.861E-02	NOT IDENT.
I-132	-1.000E+41	3.861E+41	0.000E+00	SHORT HLIF
TE-132	-1.918E+00	2.354E+00	2.508E+00	NOT IDENT.
BA-133	-1.605E-02	1.923E-02	2.055E-02	FAIL ABUN
I-133	5.385E+06	4.882E+06	5.453E+06	SHORT HLIF
CS-134	1.058E-02	2.541E-02	2.585E-02	FAIL ABUN
I-135	1.396E+24	3.441E+25	0.000E+00	SHORT HLIF
CS-136	5.152E-02	5.881E-02	6.323E-02	NOT IDENT.
BA-137M	7.074E-03	1.688E-02	1.718E-02	NOT IDENT.
CS-137	7.473E-03	1.783E-02	1.815E-02	NOT IDENT.
LA-138	-6.686E-03	1.573E-02	1.601E-02	NOT IDENT.
CE-139	-3.774E-03	1.315E-02	1.326E-02	NOT IDENT.
BA-140	-2.009E-01	2.270E-01	2.444E-01	NOT IDENT.
LA-140	1.846E-02	7.329E-02	7.376E-02	NOT IDENT.
CE-141	-4.270E-03	2.853E-02	2.860E-02	NOT IDENT.
CE-143	7.442E+02	7.380E+03	7.387E+03	SHORT HLIF
CE-144	2.867E-02	8.211E-02	8.312E-02	NOT IDENT.
PM-144	-3.504E-02	2.782E-02	3.199E-02	NOT IDENT.
PR-144	-2.635E+00	2.092E+00	2.406E+00	NOT IDENT.
PM-146	9.006E-03	1.895E-02	1.938E-02	NOT IDENT.
ND-147	-6.334E-02	5.171E-01	5.179E-01	NOT IDENT.
PM-147	1.131E+02	2.978E+02	3.021E+02	NOT IDENT.
PM-149	-5.182E+01	8.783E+02	8.786E+02	SHORT HLIF
EU-150	3.697E-03	1.266E-02	1.277E-02	FAIL ABUN
EU-152	4.075E-03	5.325E-02	5.328E-02	NOT IDENT.
GD-153	5.030E-02	5.717E-02	6.150E-02	FAIL ABUN
EU-154	-6.164E-03	5.741E-02	5.748E-02	NOT IDENT.
EU-155	2.290E-02	3.941E-02	4.074E-02	NOT IDENT.
TB-160	-1.296E-03	7.928E-02	7.929E-02	NOT IDENT.
HO-166M	1.953E-02	3.024E-02	3.149E-02	NOT IDENT.
TM-171	2.352E+00	4.340E+00	4.467E+00	NOT IDENT.
HF-172	-2.785E-02	8.097E-02	8.194E-02	NOT IDENT.
LU-172	-4.960E-03	2.024E-02	2.036E-02	NOT IDENT.
LU-176	-7.612E-03	1.235E-02	1.282E-02	NOT IDENT.
HF-181	-4.430E-03	2.370E-02	2.378E-02	NOT IDENT.
TA-182	3.167E-02	1.097E-01	1.106E-01	FAIL ABUN
RE-183	9.048E-03	6.158E-02	6.172E-02	NOT IDENT.
RE-184	-4.892E-02	7.800E-02	8.106E-02	NOT IDENT.
W-188	-3.602E+00	3.841E+00	4.170E+00	NOT IDENT.
IR-192	1.059E-02	1.695E-02	1.761E-02	NOT IDENT.
HG-203	-8.309E-03	2.357E-02	2.387E-02	NOT IDENT.
TL-204	2.160E-01	1.648E+00	1.651E+00	NOT IDENT.
BI-207	-2.248E-03	2.150E-02	2.153E-02	NOT IDENT.
BI-210	5.973E-02	1.078E+00	1.079E+00	NOT IDENT.
PB-210	5.973E-02	1.078E+00	1.079E+00	NOT IDENT.
BI-211	-2.274E-02	1.217E-01	1.221E-01	NOT IDENT.
PB-211	4.662E-01	4.602E-01	5.059E-01	FAIL ABUN
BI-212	6.847E-02	2.724E-01	2.741E-01	NOT IDENT.

PB-212	3.748E-02	4.623E-02	4.922E-02	FAIL ABUN
BI-213	2.215E-02	4.993E-02	5.092E-02	NOT IDENT.
BI-214	-2.774E-02	4.893E-02	5.051E-02	NOT IDENT.
PB-214	3.630E-03	4.418E-02	4.421E-02	NOT IDENT.
RN-219	-4.884E-02	1.478E-01	1.494E-01	NOT IDENT.
RN-222	-2.774E-02	4.893E-02	5.051E-02	NOT IDENT.
RA-223	-2.018E-01	3.562E-01	3.677E-01	FAIL ABUN
RA-224	-6.909E-02	2.894E-01	2.911E-01	NOT IDENT.
AC-225	1.594E-01	3.030E-01	3.114E-01	NOT IDENT.
RA-226	3.630E-03	4.418E-02	4.421E-02	NOT IDENT.
AC-227	-6.993E-03	1.251E-01	1.252E-01	FAIL ABUN
TH-227	-6.993E-03	1.251E-01	1.252E-01	FAIL ABUN
AC-228	-6.264E-02	6.650E-02	7.224E-02	NOT IDENT.
RA-228	-6.264E-02	6.650E-02	7.224E-02	NOT IDENT.
TH-228	3.748E-02	4.623E-02	4.922E-02	FAIL ABUN
TH-229	7.141E-02	2.097E-01	2.122E-01	NOT IDENT.
TH-230	3.630E-03	4.418E-02	4.421E-02	NOT IDENT.
PA-231	-1.685E-02	2.350E-01	2.351E-01	NOT IDENT.
TH-231	-2.018E-01	3.562E-01	3.677E-01	FAIL ABUN
TH-232	-6.264E-02	6.650E-02	7.224E-02	NOT IDENT.
PA-233	-1.586E-02	2.918E-02	3.004E-02	NOT IDENT.
PA-234	-8.560E-02	2.127E-01	2.161E-01	FAIL ABUN
PA-234M	-3.990E-01	4.361E-01	4.717E-01	FAIL ABUN
TH-234	-3.990E-01	4.361E-01	4.717E-01	FAIL ABUN
U-234	3.630E-03	4.418E-02	4.421E-02	NOT IDENT.
U-235	-2.678E-02	7.300E-02	7.399E-02	FAIL ABUN
NP-237	-1.586E-02	2.918E-02	3.004E-02	FAIL ABUN
NP-238	-2.494E+02	2.499E+02	2.740E+02	SHORT HLIF
U-238	-3.990E-01	4.361E-01	4.717E-01	FAIL ABUN
NP-239	7.247E-02	1.036E-01	1.086E-01	FAIL ABUN
PU-239	-3.509E+01	1.284E+02	1.294E+02	NOT IDENT.
AM-241	8.586E-03	4.590E-02	4.606E-02	NOT IDENT.
AM-243	5.901E-03	1.837E-02	1.856E-02	NOT IDENT.
CM-243	9.730E-03	4.074E-02	4.098E-02	FAIL ABUN
BK-247	-3.002E-02	4.493E-02	4.693E-02	NOT IDENT.
CM-247	2.455E-03	1.146E-02	1.151E-02	FAIL ABUN
CF-249	-8.611E-03	1.492E-02	1.541E-02	NOT IDENT.
CF-251	-2.562E-02	5.482E-02	5.603E-02	NOT IDENT.
ANH-511	-8.293E-02	3.630E-02	5.211E-02	NOT IDENT.

```
*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                          Charleston, SC 29407                             *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	17.7847	85.43	26.2949	131.20	14.2269
45.60	17.8982	86.55	17.8829	133.02	17.3224
46.54	17.0942	86.79	16.9498	133.52	14.2760
49.72	17.2540	86.94	16.9549	136.00	20.4688
51.35	17.3339	87.09	14.1333	136.47	17.4104
51.87	14.7553	87.57	26.4072	140.51	17.5121
52.39	9.5613	88.03	22.6553	143.76	10.3488
52.97	16.5415	88.34	15.1128	144.24	10.3557
53.44	18.3063	88.47	15.1166	145.44	14.5223
54.07	13.9716	89.96	10.1071	152.43	17.8041
57.36	0.0000	90.64	26.5659	153.25	15.7267
57.53	14.9822	91.11	21.5253	154.21	12.5977
57.98	14.9997	92.59	10.1583	156.02	19.9944
59.27	13.2791	93.35	10.1729	158.56	9.8547
59.32	13.2808	94.56	10.1961	159.00	11.2690
59.54	16.8318	94.65	10.1978	162.33	15.5621
60.96	18.6705	94.67	10.1982	162.66	14.1534
61.17	18.6804	94.87	10.2021	163.33	11.3325
62.93	17.8687	97.43	11.5319	165.86	17.0537
63.29	17.8845	98.43	12.8367	176.31	14.0372
63.58	18.7920	98.44	12.8369	176.60	10.8017
64.28	19.7205	99.53	11.5762	177.52	17.3020
66.73	15.3283	100.11	11.5883	181.07	7.6020
67.24	20.7632	102.03	11.6283	181.52	9.7792
67.68	23.4957	103.18	15.5360	184.41	16.3545
67.75	26.2111	103.37	15.5413	185.72	6.5519
68.89	19.0309	105.21	12.6680	193.51	11.0184
69.67	18.1575	105.31	12.6703	197.03	6.6374
70.82	20.9359	106.12	22.4483	198.01	9.9671
70.83	20.9364	106.47	22.4618	201.83	8.8972
72.81	22.8588	109.28	14.7197	203.43	20.0542
72.87	22.8619	111.00	19.6835	205.31	15.6297
74.66	16.5259	111.76	12.8106	210.85	19.0928
74.82	22.0424	114.06	13.8489	215.65	6.7730
74.97	22.0496	116.30	13.8998	218.12	3.3953
77.11	23.9983	116.74	11.9226	222.11	13.6373
78.74	25.0082	119.76	16.9726	227.09	11.4224
79.69	15.7776	121.12	14.0077	227.38	11.4258
80.03	15.7886	121.22	14.0099	228.16	16.0087
80.12	21.3654	121.78	20.0319	228.18	16.0089
80.19	20.4394	122.06	20.0407	235.69	15.3611
80.57	17.6662	122.92	14.0475	235.96	13.8289
81.00	14.8903	123.07	14.0508	238.63	17.3314
81.07	13.9616	123.68	17.0779	238.98	0.0000
81.75	19.5739	125.81	20.1582	240.99	13.8970
82.47	21.4700	127.23	12.1213	242.00	12.3649
83.79	16.8479	127.91	15.1674	244.70	16.2712
84.00	16.8551	129.30	16.2126	252.40	16.3904

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.80	17.5676	351.06	13.5475	569.33	6.7607
254.15	0.0000	351.93	11.8615	569.50	5.7954
256.23	14.0991	355.39	0.0000	569.70	5.7959
260.90	0.0000	356.01	13.5964	583.19	4.8627
264.66	17.7603	364.49	3.4199	584.27	2.9191
264.80	21.3151	366.42	9.4175	595.83	7.8285
265.00	20.1346	372.51	13.7572	600.60	8.8275
269.46	14.2698	375.05	8.6135	602.52	0.0000
270.03	9.5181	377.52	11.2168	604.72	10.8107
271.23	11.9104	383.85	11.2658	607.14	13.7750
273.65	11.1400	388.16	7.8224	609.32	9.8494
276.40	13.1612	388.63	9.5637	610.33	11.8252
277.37	13.1723	391.69	5.2274	614.28	6.9111
277.60	13.1750	400.66	4.2070	618.01	6.9231
278.00	7.9877	401.81	5.2628	620.36	6.9308
279.20	14.3928	402.40	2.6324	621.93	11.8901
279.54	12.7975	404.85	6.1522	630.19	0.0000
279.70	12.7992	410.95	7.0592	631.29	3.9808
280.46	6.4038	413.71	10.6079	633.25	6.9727
283.69	16.8570	414.70	7.9609	634.78	3.9873
284.31	8.4330	423.72	8.0070	635.95	5.9841
285.41	13.2643	427.09	4.4578	636.99	7.9827
285.90	0.0000	427.87	6.2441	657.50	6.0432
287.50	16.9121	433.94	8.0587	657.76	6.0439
290.67	15.7462	439.40	6.2891	657.90	0.0000
293.27	0.0000	440.45	6.2932	661.66	3.0272
295.22	13.3747	453.88	4.0788	664.57	0.0000
295.96	13.3831	463.37	5.4694	666.33	4.0448
298.58	10.9734	468.07	6.3986	666.50	4.0451
299.98	10.9863	473.00	7.3338	667.71	0.0000
300.09	10.9872	475.06	4.5891	677.62	5.0814
300.13	10.9877	476.78	10.1062	685.70	3.0596
301.36	12.2208	477.60	10.1109	692.65	10.2293
302.85	12.2357	482.18	7.3729	695.00	7.1678
304.50	4.9009	487.02	6.4691	696.49	12.2954
304.85	8.5791	492.35	0.0000	696.51	12.2954
306.78	12.2751	497.08	7.4354	697.00	10.2486
308.46	6.1458	505.52	11.2058	697.30	10.2498
311.90	11.0932	507.63	0.0000	697.49	10.2507
316.51	6.1855	511.00	24.3525	702.65	8.2188
319.41	11.1594	514.00	29.0839	706.68	5.1455
320.08	12.4060	514.00	29.0839	711.68	3.0939
321.04	6.2076	520.40	5.6487	720.70	4.1408
323.87	16.1754	520.69	0.0000	721.93	0.0000
325.23	7.4734	522.65	0.0000	722.78	0.0000
328.76	12.4899	527.90	0.0000	722.91	0.0000
333.37	10.0273	528.26	8.5089	723.31	0.0000
333.97	10.0317	529.59	1.8922	724.19	5.1835
334.37	9.1987	529.87	0.0000	727.33	5.1902
338.28	11.7421	531.02	7.5745	733.00	4.1619
338.32	13.4199	537.26	8.5496	735.93	3.1252
340.48	16.8022	546.56	0.0000	737.46	3.1272
340.55	16.8030	552.55	5.7454	739.50	2.0866
344.28	14.3223	563.25	5.7771	744.23	6.2717
345.93	11.8094	564.24	5.7800	747.24	2.0932

ENERGY	MDA COUNTS
748.06	6.2815
752.31	3.1462
753.82	5.2468
756.73	7.3540
756.80	7.3543
763.94	6.3218
765.81	7.3808
766.84	5.2743
772.60	0.0000
776.52	1.0589
777.92	5.2974
778.90	3.1797
783.70	3.1857
788.74	2.1279
792.07	6.3921
795.86	5.3347
801.95	3.2083
810.06	6.4365
810.29	6.4370
810.45	3.2188
810.76	4.2922
815.77	5.3754
818.51	3.2285
832.01	6.4900
834.85	6.4968
835.71	6.4988
836.80	0.0000
846.75	0.0000
846.77	9.7881
856.80	2.1831
860.56	3.2792
871.09	4.3888
873.19	2.1960
875.33	0.0000
879.38	4.4019
880.51	4.4036
881.60	3.3040
883.24	5.5098
884.68	1.1025
889.28	1.1043
894.76	1.1065
898.04	5.5387
900.72	2.2175
903.28	5.5489
911.20	3.3385
912.08	3.3395
923.98	0.0000
926.50	2.2374
929.11	7.8377
935.54	3.3665
937.49	6.7373
944.13	5.6270
946.00	6.7566
949.00	1.1272
954.55	0.0000

ENERGY	MDA COUNTS
962.31	4.5290
964.08	3.3987
966.17	9.0693
968.97	2.2694
983.53	6.8408
984.45	0.0000
996.26	3.4346
1002.74	0.0000
1004.73	2.2959
1021.30	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	4.6400
1038.76	0.0000
1046.59	1.7448
1048.07	0.0000
1049.04	1.7460
1050.41	2.3291
1063.66	2.6309
1077.00	3.5220
1077.34	5.2833
1085.87	4.4141
1093.63	1.7698
1099.45	0.8864
1112.07	3.5588
1112.84	2.6699
1115.54	3.5625
1120.29	6.2429
1120.55	7.1357
1121.30	2.6765
1129.67	2.6829
1131.51	0.0000
1147.95	0.0000
1173.23	1.8110
1177.95	5.4401
1189.05	4.5474
1204.77	3.6538
1221.41	3.6707
1231.02	2.7601
1235.36	0.0000
1238.28	2.7654
1260.41	0.0000
1271.87	0.9301
1274.44	2.7922
1274.54	2.7922
1291.59	3.7395
1298.22	0.0000
1312.11	3.7593
1332.49	5.6686
1362.66	0.0000
1365.19	0.9525
1368.63	0.0000
1384.29	0.9570
1408.01	0.9625
1434.09	3.8743

ENERGY	MDA COUNTS
1435.80	0.9689
1457.56	0.0000
1460.82	0.0000
1489.16	1.9622
1505.03	0.9847
1584.12	1.0022
1596.21	1.0049
1620.50	3.0304
1621.92	4.0417
1678.03	0.0000
1690.97	4.1008
1750.46	0.0000
1764.49	1.0406
1770.23	2.0837
1771.35	2.0841
1791.20	0.0000
1808.65	1.0497
1810.72	0.0000
1836.06	1.0554

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:41:04.07

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*****************************************************************************
*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
*****************************************************************************
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070203.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM28.CNF;696
                                        Background date  : 4-MAY-2025 09:27:05.
Sample date      : 8-APR-2025 09:10:00. Acquisition date : 10-MAY-2025 11:40:33
Sample ID        : G1206070203          Sample quantity  : 1.12210E+02 GRAM
Detector name    : GAM28                Detector geometry: CAN
Elapsed live time: 0 01:00:00.00        Elapsed real time: 0 01:00:00.51  0.0%
Energy tolerance : 1.50000 keV          Analyst Initials : RXF2
Abundance limit  : 75.00000             Sensitivity      : 3.00000
Batch ID         : 2781510              Detector SN#     :
Matrix Spike ID  :                      LCS ID           :
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.18*	53	108	1.09	126.53	123	7	1.47E-02	36.6	
2	3	75.04*	150	121	1.04	150.25	146	16	4.17E-02	14.0	9.92E-01
3	3	77.22*	209	97	0.96	154.61	146	16	5.81E-02	10.5	
4	0	84.05	43	99	1.50	168.26	166	6	1.19E-02	39.7	
5	0	87.19	73	152	1.13	174.54	172	7	2.02E-02	30.2	
6	10	90.00	44	86	0.98	180.15	178	13	1.22E-02	32.1	1.52E+00
7	10	93.03*	61	174	1.58	186.21	178	13	1.70E-02	45.7	
8	0	111.94	52	90	1.26	224.00	221	9	1.44E-02	35.5	
9	0	129.50	46	114	1.11	259.10	256	9	1.28E-02	44.0	
10	0	145.42	7	137	1.35	290.94	284	9	2.05E-03	288.1	
11	0	165.72	23	94	1.42	331.51	326	8	6.36E-03	76.8	
12	0	185.88*	81	154	1.12	371.80	366	12	2.24E-02	33.6	
13	0	210.16	15	80	0.59	420.36	416	7	4.24E-03	101.9	
14	5	238.71*	414	64	1.17	477.43	472	21	1.15E-01	5.9	2.40E+00
15	5	241.89	97	96	1.85	483.77	472	21	2.70E-02	26.9	
16	0	270.54	49	52	1.75	541.06	536	9	1.37E-02	29.9	
17	3	277.48	35	19	0.96	554.94	553	10	9.59E-03	24.8	8.21E-01
18	3	279.41	16	47	1.58	558.78	553	10	4.46E-03	86.6	
19	2	295.32	216	35	1.27	590.59	584	35	6.00E-02	8.3	2.79E+00
20	2	299.77	30	37	1.46	599.49	584	35	8.23E-03	43.6	
21	0	327.42	35	38	2.96	654.78	650	10	9.70E-03	37.0	
22	0	338.45*	81	70	1.07	676.81	672	10	2.24E-02	22.9	
23	0	352.08*	262	67	1.12	704.08	699	11	7.27E-02	8.7	
24	0	413.05	56	52	7.34	825.96	815	23	1.56E-02	36.0	
25	0	462.88	35	28	0.93	925.58	920	11	9.58E-03	34.0	
26	0	511.17*	29	59	1.63	1022.14	1015	16	7.93E-03	73.1	
27	0	583.90*	137	29	1.53	1167.54	1161	16	3.82E-02	13.0	
28	0	609.62*	187	53	1.21	1218.97	1212	14	5.19E-02	11.3	
29	0	651.54	17	11	1.44	1302.79	1298	9	4.61E-03	44.0	
30	0	659.17	11	10	2.31	1318.04	1314	8	2.96E-03	60.2	
31	0	727.89	26	27	0.90	1455.45	1449	12	7.26E-03	44.3	
32	3	768.18	32	10	2.07	1536.03	1531	23	8.86E-03	25.5	1.37E+00
33	3	772.47	16	12	2.07	1544.59	1531	23	4.44E-03	52.0	
34	0	785.04	21	21	2.35	1569.74	1561	12	5.77E-03	49.4	

Sample ID : G1206070203 Acquisition date : 10-MAY-2025 11:40:33

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	836.87	10	25	1.37	1673.37	1666	10	2.80E-03	97.9	
36	0	861.39	14	39	3.65	1722.40	1707	22	3.98E-03	113.6	
37	0	911.45*	97	8	1.33	1822.51	1817	14	2.70E-02	12.0	
38	0	964.96	12	18	3.14	1929.52	1923	12	3.30E-03	77.2	
39	0	969.07*	36	19	1.83	1937.74	1934	9	9.99E-03	27.7	
40	0	1001.83*	12	11	1.04	2003.25	1998	10	3.28E-03	65.2	
41	0	1031.54	29	5	7.09	2062.68	2055	17	8.17E-03	24.5	
42	0	1116.85	10	5	0.56	2233.27	2229	7	2.83E-03	48.2	
43	0	1120.34*	47	8	1.67	2240.26	2236	10	1.30E-02	18.8	
44	0	1140.05	11	4	1.40	2279.68	2276	8	3.06E-03	43.6	
45	0	1237.92*	15	10	0.99	2475.42	2469	10	4.26E-03	47.4	
46	0	1250.44	10	5	0.57	2500.46	2497	7	2.65E-03	51.6	
47	0	1281.14	20	6	0.58	2561.88	2555	12	5.56E-03	33.2	
48	0	1377.60	10	11	1.33	2754.81	2749	9	2.80E-03	67.6	
49	0	1460.92*	346	8	1.69	2921.47	2916	12	9.60E-02	5.7	
50	0	1764.66*	35	0	1.98	3529.08	3523	13	9.80E-03	17.6	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 12:41:05

Configuration	: DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070203.CNF;1		
Analyses by	: PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4		
Sample title	: RXF2		
Sample date	: 8-APR-2025 09:10:00	Acquisition date	: 10-MAY-2025 11:40:33
Sample ID	: G1206070203	Sample quantity	: 112.21 GRAM
Sample type	: SOLID	Sample geometry	:
Detector name	: GAMMA28	Detector geometry	: CAN
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.51 0.0%
Energy tolerance	: 1.50 keV	Half life ratio	: 10.00
Errors propagated	: No	Systematic Error	: 0.00 %
Efficiency type	: Empirical	Efficiencies at	: Peak Energy
Abundance limit	: 75.00		

Interference Report

No interference correction performed

Sample ID : G1206070203 Acquisition date : 10-MAY-2025 11:40:33

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	325	10.66*	1.187E+00	1.720E+01	1.720E+01	11.39
ZN-65	1115.54	10	50.60*	1.502E+00	8.543E-02	9.359E-02	96.43
CD-109	88.03	76	3.70*	5.735E+00	2.405E+00	2.524E+00	60.45
SN-126	64.28	56	9.60	2.827E+00	1.376E+00	1.376E+00	73.27
	86.94	76	8.90	5.735E+00	9.998E-01	9.998E-01	60.45
	87.57	76	37.00*	5.735E+00	2.405E-01	2.405E-01	60.45
CE-139	165.86	23	80.00*	6.119E+00	3.198E-02	3.759E-02	153.65
CE-141	145.44	8	48.29*	6.488E+00	1.620E-02	3.214E-02	576.25
HG-203	70.83	------	3.69	3.959E+00	------	Line Not Found	------
	72.87	------	6.19	4.235E+00	------	Line Not Found	------
	279.20	16	81.56*	4.404E+00	2.998E-02	4.835E-02	173.28
TL-208	277.37	35	6.60	4.425E+00	7.933E-01	7.933E-01	49.52
	583.19	134	85.00*	2.646E+00	3.989E-01	3.989E-01	25.96
	860.56	14	12.50	1.912E+00	3.853E-01	3.853E-01	227.24
BI-211	72.87	------	1.23	4.235E+00	------	Line Not Found	------
	351.06	260	12.92*	3.774E+00	3.572E+00	3.572E+00	17.49
BI-212	727.33	25	6.67*	2.216E+00	1.145E+00	1.145E+00	88.53
	1620.50	------	1.47	1.103E+00	------	Line Not Found	------
PB-212	74.82	158	10.28	4.514E+00	2.279E+00	2.279E+00	27.94
	77.11	220	17.10	4.775E+00	1.802E+00	1.802E+00	20.95
	238.63	418	43.60*	4.892E+00	1.310E+00	1.310E+00	11.83
	300.09	30	3.30	4.202E+00	1.431E+00	1.431E+00	87.22
BI-214	609.32	182	45.49*	2.560E+00	1.046E+00	1.046E+00	22.68
	1120.29	45	14.92	1.498E+00	1.334E+00	1.334E+00	37.50
	1764.49	33	15.30	1.052E+00	1.371E+00	1.371E+00	35.29
PB-214	74.82	158	5.80	4.514E+00	4.039E+00	4.039E+00	27.94
	77.11	220	9.70	4.775E+00	3.177E+00	3.177E+00	20.95
	87.09	76	3.41	5.735E+00	2.609E+00	2.610E+00	60.45
	242.00	98	7.25	4.850E+00	1.866E+00	1.866E+00	53.77
	295.22	216	18.42	4.244E+00	1.850E+00	1.850E+00	16.57
	351.93	260	35.60*	3.774E+00	1.296E+00	1.296E+00	17.49
RN-222	609.32	182	45.49*	2.560E+00	1.046E+00	1.046E+00	22.68
	1120.29	45	14.92	1.498E+00	1.334E+00	1.334E+00	37.50
	1764.49	33	15.30	1.052E+00	1.371E+00	1.371E+00	35.29
RA-224	240.99	98	4.10*	4.850E+00	3.299E+00	3.299E+00	53.77
RA-226	74.82	158	5.80	4.514E+00	4.039E+00	4.039E+00	27.94
	77.11	220	9.70	4.775E+00	3.177E+00	3.177E+00	20.95
	87.09	76	3.41	5.735E+00	2.609E+00	2.610E+00	60.45
	242.00	98	7.25	4.850E+00	1.866E+00	1.866E+00	53.77
	295.22	216	18.42	4.244E+00	1.850E+00	1.850E+00	16.57
	351.93	260	35.60*	3.774E+00	1.296E+00	1.296E+00	17.49
AC-228	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	80	11.27	3.875E+00	1.232E+00	1.232E+00	45.78
	835.71	10	1.61	1.962E+00	2.055E+00	2.055E+00	195.81
	911.20	93	25.80*	1.816E+00	1.331E+00	1.331E+00	24.07
	968.97	34	15.80	1.716E+00	8.491E-01	8.491E-01	55.47
RA-228	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	80	11.27	3.875E+00	1.232E+00	1.232E+00	45.78
	835.71	10	1.61	1.962E+00	2.055E+00	2.055E+00	195.81

Sample ID : G1206070203 Acquisition date : 10-MAY-2025 11:40:33

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	93	25.80*	1.816E+00	1.331E+00	1.331E+00	24.07
	968.97	34	15.80	1.716E+00	8.491E-01	8.491E-01	55.47
TH-228	74.82	158	10.28	4.514E+00	2.279E+00	2.279E+00	27.94
	77.11	220	17.10	4.775E+00	1.802E+00	1.802E+00	20.95
	238.63	418	43.60*	4.892E+00	1.310E+00	1.310E+00	11.83
	300.09	30	3.30	4.202E+00	1.431E+00	1.431E+00	87.22
TH-229	85.43	45	14.70	5.474E+00	3.726E-01	3.726E-01	79.38
	88.47	76	24.00	5.735E+00	3.708E-01	3.708E-01	60.45
	193.51	------	4.41*	5.601E+00	------	Line Not Found	------
	210.85	15	2.80	5.318E+00	6.953E-01	6.953E-01	203.84
TH-230	74.82	158	5.80	4.514E+00	4.039E+00	4.039E+00	27.94
	77.11	220	9.70	4.775E+00	3.177E+00	3.177E+00	20.95
	87.09	76	3.41	5.735E+00	2.609E+00	2.609E+00	60.45
	242.00	98	7.25	4.850E+00	1.866E+00	1.866E+00	53.77
	295.22	216	18.42	4.244E+00	1.850E+00	1.850E+00	16.57
	351.93	260	35.60*	3.774E+00	1.296E+00	1.296E+00	17.49
TH-232	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	80	11.27	3.875E+00	1.232E+00	1.232E+00	45.78
	835.71	10	1.61	1.962E+00	2.055E+00	2.055E+00	195.81
	911.20	93	25.80*	1.816E+00	1.331E+00	1.331E+00	24.07
	968.97	34	15.80	1.716E+00	8.491E-01	8.491E-01	55.47
PA-234M	63.29	56	3.70*	2.827E+00	3.571E+00	3.571E+00	73.27
	92.59	64	4.23	6.123E+00	1.653E+00	1.653E+00	91.46
TH-234	63.29	56	3.70*	2.827E+00	3.571E+00	3.571E+00	73.27
	92.59	64	4.23	6.123E+00	1.653E+00	1.653E+00	91.46
U-234	74.82	158	5.80	4.514E+00	4.039E+00	4.039E+00	27.94
	77.11	220	9.70	4.775E+00	3.177E+00	3.177E+00	20.95
	87.09	76	3.41	5.735E+00	2.609E+00	2.609E+00	60.45
	242.00	98	7.25	4.850E+00	1.866E+00	1.866E+00	53.77
	295.22	216	18.42	4.244E+00	1.850E+00	1.850E+00	16.57
	351.93	260	35.60*	3.774E+00	1.296E+00	1.296E+00	17.49
U-235	89.96	46	3.47	5.936E+00	1.493E+00	1.493E+00	64.30
	93.35	64	5.60	6.123E+00	1.248E+00	1.248E+00	91.46
	143.76	------	10.96*	6.515E+00	------	Line Not Found	------
	163.33	------	5.08	6.164E+00	------	Line Not Found	------
	185.72	82	57.20	5.739E+00	1.673E-01	1.673E-01	67.22
	205.31	------	5.01	5.397E+00	------	Line Not Found	------
U-238	63.29	56	3.70*	2.827E+00	3.571E+00	3.571E+00	73.27
	92.59	64	4.23	6.123E+00	1.653E+00	1.653E+00	91.46
PU-239	129.30	48	0.01*	6.701E+00	7.536E+02	7.536E+02	88.06
	375.05	------	0.00	3.617E+00	------	Line Not Found	------
	413.71	55	0.00	3.389E+00	7.456E+03	7.456E+03	71.91
AM-243	43.53	------	5.90	3.587E-01	------	Line Not Found	------
	74.66	158	67.20*	4.514E+00	3.486E-01	3.486E-01	27.94
ANH-511	511.00	28	100.00*	2.920E+00	6.413E-02	6.413E-02	146.24

Flag: "*" = Keyline

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:41:06.63

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070203.CNF;1  *
* Acquisition date : 10-MAY-2025 11:40:33 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:10:00 Analyst initials: RXF2            *
* Sample ID        : G1206070203          Sample Quantity : 1.1221E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 10-MAR-2025 08:48:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.720E+01	1.921E+00	8.970E-01
ZN-65	9.359E-02	8.844E-02	1.927E-01
CD-109	2.524E+00	1.495E+00	1.531E+00
SN-126	2.405E-01	1.425E-01	1.467E-01
CE-139	3.759E-02	5.661E-02	6.264E-02
CE-141	3.214E-02	1.815E-01	1.650E-01
HG-203	4.835E-02	8.210E-02	8.482E-02
TL-208	3.989E-01	1.015E-01	6.552E-02
BI-211	3.572E+00	6.122E-01	3.738E-01
BI-212	1.145E+00	9.934E-01	9.450E-01
PB-212	1.310E+00	1.519E-01	1.210E-01
BI-214	1.046E+00	2.325E-01	1.645E-01
PB-214	1.296E+00	2.222E-01	1.359E-01
RN-222	1.046E+00	2.325E-01	1.645E-01
RA-224	3.299E+00	1.739E+00	1.296E+00
RA-226	1.296E+00	2.222E-01	1.359E-01
AC-228	1.331E+00	3.140E-01	2.575E-01
RA-228	1.331E+00	3.140E-01	2.575E-01
TH-228	1.310E+00	1.519E-01	1.210E-01
TH-229	-5.362E-01	5.627E-01	9.142E-01
TH-230	1.296E+00	2.222E-01	1.359E-01
TH-232	1.331E+00	3.140E-01	2.575E-01
PA-234M	3.571E+00	2.564E+00	2.593E+00
TH-234	3.571E+00	2.564E+00	2.593E+00
U-234	1.296E+00	2.222E-01	1.359E-01
U-235	-1.097E-01	2.229E-01	3.914E-01
U-238	3.571E+00	2.564E+00	2.593E+00
PU-239	7.536E+02	6.503E+02	6.378E+02
AM-243	3.486E-01	9.546E-02	9.599E-02
ANH-511	6.413E-02	9.191E-02	5.542E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)

BE-7	1.066E-01	3.912E-01	7.876E-01	NOT IDENT.
NA-22	-4.221E-02	4.939E-02	7.396E-02	NOT IDENT.
NA-24	0.000E+00	1.075E+14	0.000E+00	SHORT HLIF
AL-26	-2.007E-02	3.397E-02	5.946E-02	NOT IDENT.
SC-46	2.652E-02	3.785E-02	8.530E-02	FAIL ABUN
V-48	3.867E-02	1.665E-01	3.269E-01	NOT IDENT.
CR-51	6.181E-01	5.820E-01	1.175E+00	NOT IDENT.
MN-52	-1.078E+00	1.778E+00	3.196E+00	NOT IDENT.
MN-54	4.237E-02	4.529E-02	9.548E-02	NOT IDENT.
CO-56	-4.165E-02	4.797E-02	7.676E-02	FAIL ABUN
MN-56	0.000E+00	1.164E+41	0.000E+00	SHORT HLIF
CO-57	1.130E-02	2.655E-02	5.048E-02	NOT IDENT.
CO-58	2.551E-02	4.659E-02	9.750E-02	NOT IDENT.
FE-59	-8.768E-02	1.387E-01	2.270E-01	NOT IDENT.
CO-60	2.071E-02	3.705E-02	8.578E-02	NOT IDENT.
GE-68	3.342E-01	1.088E+00	2.302E+00	NOT IDENT.
AS-73	-9.590E-01	1.197E+00	2.143E+00	NOT IDENT.
AS-74	1.980E-02	1.818E-01	3.555E-01	NOT IDENT.
SE-75	1.996E-02	4.638E-02	8.818E-02	FAIL ABUN
BR-77	0.000E+00	3.361E+03	0.000E+00	SHORT HLIF
SR-82	-1.994E-01	5.273E-01	8.302E-01	NOT IDENT.
RB-83	-1.148E-03	7.179E-02	1.411E-01	NOT IDENT.
RB-84	-8.496E-02	1.051E-01	1.697E-01	NOT IDENT.
KR-85	8.158E+00	7.500E+00	1.519E+01	NOT IDENT.
SR-85	5.161E-02	4.751E-02	9.625E-02	NOT IDENT.
RB-86	-1.080E+00	1.461E+00	2.323E+00	NOT IDENT.
Y-88	1.990E-02	4.060E-02	1.006E-01	NOT IDENT.
Y-91	-2.028E+01	2.783E+01	4.895E+01	NOT IDENT.
NB-94	1.035E-02	3.033E-02	6.198E-02	NOT IDENT.
NB-95	3.942E-04	5.233E-02	9.008E-02	NOT IDENT.
NB-95M	1.458E-01	1.649E-01	2.989E-01	NOT IDENT.
ZR-95	1.586E-02	9.187E-02	1.797E-01	NOT IDENT.
NB-97	0.000E+00	1.179E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	3.722E+13	0.000E+00	SHORT HLIF
MO-99	0.000E+00	9.631E+02	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.009E+37	0.000E+00	SHORT HLIF
RH-101	-1.467E-03	3.452E-02	5.826E-02	NOT IDENT.
RH-102	4.660E-02	5.133E-02	1.131E-01	FAIL ABUN
RU-103	-3.775E-02	4.918E-02	8.577E-02	FAIL ABUN
RH-106	-2.798E-01	2.653E-01	4.188E-01	NOT IDENT.
RU-106	-2.798E-01	2.653E-01	4.188E-01	NOT IDENT.
AG-108M	-6.279E-03	3.285E-02	6.200E-02	NOT IDENT.
AG-110	-3.832E-01	7.791E-01	1.206E+00	NOT IDENT.
AG-110M	2.631E-02	5.048E-02	1.067E-01	FAIL ABUN
SN-113	-3.522E-02	4.963E-02	8.900E-02	NOT IDENT.
CD-115	0.000E+00	2.282E+03	0.000E+00	SHORT HLIF
SN-117M	-1.119E-02	1.404E-01	2.518E-01	NOT IDENT.
SB-122	0.000E+00	1.429E+02	0.000E+00	SHORT HLIF
TE-123M	1.874E-02	3.200E-02	6.098E-02	NOT IDENT.
SB-124	-5.969E-02	1.329E-01	2.436E-01	NOT IDENT.
SB-125	-1.147E-01	8.363E-02	1.332E-01	FAIL ABUN
TE-125M	7.160E+00	1.192E+01	2.173E+01	NOT IDENT.
I-126	5.398E-02	5.018E-01	9.908E-01	NOT IDENT.
SB-126	-6.014E-02	3.915E-01	7.296E-01	NOT IDENT.
SB-127	2.533E+00	2.485E+01	4.946E+01	FAIL ABUN
I-131	7.572E-02	4.714E-01	9.430E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	3.241E+01	0.000E+00	SHORT HLIF
BA-133	1.224E-02	4.628E-02	8.440E-02	FAIL ABUN
I-133	0.000E+00	4.990E+09	0.000E+00	SHORT HLIF
CS-134	3.418E-02	4.785E-02	9.892E-02	NOT IDENT.
I-135	0.000E+00	3.005E+34	0.000E+00	SHORT HLIF
CS-136	-5.830E-02	2.775E-01	5.047E-01	NOT IDENT.
BA-137M	-9.562E-03	4.246E-02	6.938E-02	NOT IDENT.
CS-137	-1.010E-02	4.485E-02	7.329E-02	NOT IDENT.
LA-138	-1.043E-02	4.696E-02	9.637E-02	NOT IDENT.
BA-140	1.485E-01	7.564E-01	1.480E+00	NOT IDENT.
LA-140	-1.968E-01	2.821E-01	4.828E-01	FAIL ABUN
CE-143	0.000E+00	6.486E+05	0.000E+00	SHORT HLIF
CE-144	1.878E-01	2.162E-01	3.997E-01	NOT IDENT.
PM-144	-9.992E-03	3.607E-02	6.611E-02	NOT IDENT.
PR-144	-7.638E-01	2.722E+00	4.986E+00	NOT IDENT.
PM-146	6.783E-03	3.656E-02	7.407E-02	NOT IDENT.
ND-147	7.473E-01	1.866E+00	3.733E+00	FAIL ABUN
PM-147	1.804E+02	7.449E+02	1.397E+03	NOT IDENT.
PM-149	0.000E+00	1.863E+04	0.000E+00	SHORT HLIF
EU-150	-1.148E-02	3.060E-02	4.660E-02	FAIL ABUN
EU-152	-4.629E-02	1.112E-01	1.846E-01	FAIL ABUN

GD-153	-1.340E-02	8.498E-02	1.557E-01	NOT IDENT.
EU-154	-1.215E-01	1.382E-01	2.051E-01	NOT IDENT.
EU-155	6.852E-02	1.048E-01	2.036E-01	FAIL ABUN
TB-160	3.340E-02	1.412E-01	2.885E-01	FAIL ABUN
HO-166M	5.737E-02	5.756E-02	1.276E-01	FAIL ABUN
TM-171	-2.601E+00	2.080E+01	3.977E+01	NOT IDENT.
HF-172	2.429E-01	1.927E-01	3.721E-01	FAIL ABUN
LU-172	6.766E-02	7.599E-02	1.629E-01	FAIL ABUN
LU-176	3.683E-02	2.876E-02	5.863E-02	FAIL ABUN
HF-181	1.034E-02	6.037E-02	1.181E-01	NOT IDENT.
TA-182	-4.480E-02	1.989E-01	3.854E-01	FAIL ABUN
RE-183	1.221E-01	2.367E-01	4.749E-01	NOT IDENT.
RE-184	1.151E-01	1.663E-01	3.614E-01	NOT IDENT.
W-188	-4.145E-01	8.456E+00	1.391E+01	FAIL ABUN
IR-192	1.207E-02	4.896E-02	8.842E-02	FAIL ABUN
TL-204	-5.648E+00	5.634E+00	8.912E+00	NOT IDENT.
BI-207	3.835E-03	4.727E-02	9.352E-02	FAIL ABUN
BI-210	6.161E-02	5.324E+00	1.020E+01	NOT IDENT.
PB-210	6.161E-02	5.324E+00	1.020E+01	NOT IDENT.
PB-211	4.870E-01	6.480E-01	1.346E+00	NOT IDENT.
BI-213	4.200E-03	8.842E-02	1.764E-01	NOT IDENT.
RN-219	-1.042E-01	4.049E-01	7.657E-01	FAIL ABUN
RA-223	-8.238E-02	7.161E-01	1.147E+00	FAIL ABUN
AC-225	-2.967E-01	2.231E+00	3.914E+00	NOT IDENT.
AC-227	7.940E-02	2.813E-01	5.150E-01	FAIL ABUN
TH-227	7.940E-02	2.813E-01	5.150E-01	FAIL ABUN
PA-231	5.508E-01	4.860E-01	9.820E-01	NOT IDENT.
TH-231	-8.238E-02	7.161E-01	1.147E+00	FAIL ABUN
PA-233	2.840E-02	7.159E-02	1.328E-01	FAIL ABUN
PA-234	1.214E-01	2.621E-01	5.626E-01	FAIL ABUN
NP-237	2.840E-02	7.159E-02	1.328E-01	FAIL ABUN
NP-238	0.000E+00	5.863E+03	0.000E+00	SHORT HLIF
NP-239	-6.455E-02	2.596E-01	4.682E-01	FAIL ABUN
AM-241	-4.224E-02	1.672E-01	2.895E-01	NOT IDENT.
CM-243	-1.082E-03	9.881E-02	1.834E-01	FAIL ABUN
BK-247	3.048E-02	7.544E-02	1.430E-01	FAIL ABUN
CM-247	-1.001E-02	3.587E-02	6.784E-02	FAIL ABUN
CF-249	-3.532E-02	3.895E-02	6.813E-02	NOT IDENT.
CF-251	2.954E-02	1.327E-01	2.445E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:41:05.07

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	325	10.66*	1.187E+00	1.720E+01	1.720E+01	11.39
ZN-65	1115.54	10	50.60*	1.502E+00	8.543E-02	9.359E-02	96.43
CD-109	88.03	76	3.70*	5.735E+00	2.405E+00	2.524E+00	60.45
SN-126	64.28	56	9.60	2.827E+00	1.376E+00	1.376E+00	73.27
	86.94	76	8.90	5.735E+00	9.998E-01	9.998E-01	60.45
	87.57	76	37.00*	5.735E+00	2.405E-01	2.405E-01	60.45
CE-139	165.86	23	80.00*	6.119E+00	3.198E-02	3.759E-02	153.65
CE-141	145.44	8	48.29*	6.488E+00	1.620E-02	3.214E-02	576.25
HG-203	70.83	------	3.69	3.959E+00	------	Line Not Found	------
	72.87	------	6.19	4.235E+00	------	Line Not Found	------
	279.20	16	81.56*	4.404E+00	2.998E-02	4.835E-02	173.28
TL-208	277.37	35	6.60	4.425E+00	7.933E-01	7.933E-01	49.52
	583.19	134	85.00*	2.646E+00	3.989E-01	3.989E-01	25.96
	860.56	14	12.50	1.912E+00	3.853E-01	3.853E-01	227.24
BI-211	72.87	------	1.23	4.235E+00	------	Line Not Found	------
	351.06	260	12.92*	3.774E+00	3.572E+00	3.572E+00	17.49
BI-212	727.33	25	6.67*	2.216E+00	1.145E+00	1.145E+00	88.53
	1620.50	------	1.47	1.103E+00	------	Line Not Found	------
PB-212	74.82	158	10.28	4.514E+00	2.279E+00	2.279E+00	27.94
	77.11	220	17.10	4.775E+00	1.802E+00	1.802E+00	20.95
	238.63	418	43.60*	4.892E+00	1.310E+00	1.310E+00	11.83
	300.09	30	3.30	4.202E+00	1.431E+00	1.431E+00	87.22
BI-214	609.32	182	45.49*	2.560E+00	1.046E+00	1.046E+00	22.68
	1120.29	45	14.92	1.498E+00	1.334E+00	1.334E+00	37.50
	1764.49	33	15.30	1.052E+00	1.371E+00	1.371E+00	35.29
PB-214	74.82	158	5.80	4.514E+00	4.039E+00	4.039E+00	27.94
	77.11	220	9.70	4.775E+00	3.177E+00	3.177E+00	20.95
	87.09	76	3.41	5.735E+00	2.609E+00	2.610E+00	60.45
	242.00	98	7.25	4.850E+00	1.866E+00	1.866E+00	53.77
	295.22	216	18.42	4.244E+00	1.850E+00	1.850E+00	16.57
	351.93	260	35.60*	3.774E+00	1.296E+00	1.296E+00	17.49
RN-222	609.32	182	45.49*	2.560E+00	1.046E+00	1.046E+00	22.68
	1120.29	45	14.92	1.498E+00	1.334E+00	1.334E+00	37.50
	1764.49	33	15.30	1.052E+00	1.371E+00	1.371E+00	35.29
RA-224	240.99	98	4.10*	4.850E+00	3.299E+00	3.299E+00	53.77
RA-226	74.82	158	5.80	4.514E+00	4.039E+00	4.039E+00	27.94
	77.11	220	9.70	4.775E+00	3.177E+00	3.177E+00	20.95
	87.09	76	3.41	5.735E+00	2.609E+00	2.610E+00	60.45
	242.00	98	7.25	4.850E+00	1.866E+00	1.866E+00	53.77
	295.22	216	18.42	4.244E+00	1.850E+00	1.850E+00	16.57
	351.93	260	35.60*	3.774E+00	1.296E+00	1.296E+00	17.49
AC-228	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	80	11.27	3.875E+00	1.232E+00	1.232E+00	45.78
	835.71	10	1.61	1.962E+00	2.055E+00	2.055E+00	195.81
	911.20	93	25.80*	1.816E+00	1.331E+00	1.331E+00	24.07
	968.97	34	15.80	1.716E+00	8.491E-01	8.491E-01	55.47
RA-228	105.21	------	1.10	6.597E+00	------	Line Not Found	------

Sample ID : G1206070203 Acquisition date : 10-MAY-2025 11:40:33

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	338.32	80	11.27	3.875E+00	1.232E+00	1.232E+00	45.78
	835.71	10	1.61	1.962E+00	2.055E+00	2.055E+00	195.81
	911.20	93	25.80*	1.816E+00	1.331E+00	1.331E+00	24.07
	968.97	34	15.80	1.716E+00	8.491E-01	8.491E-01	55.47
TH-228	74.82	158	10.28	4.514E+00	2.279E+00	2.279E+00	27.94
	77.11	220	17.10	4.775E+00	1.802E+00	1.802E+00	20.95
	238.63	418	43.60*	4.892E+00	1.310E+00	1.310E+00	11.83
	300.09	30	3.30	4.202E+00	1.431E+00	1.431E+00	87.22
TH-229	85.43	45	14.70	5.474E+00	3.726E-01	3.726E-01	79.38
	88.47	76	24.00	5.735E+00	3.708E-01	3.708E-01	60.45
	193.51	------	4.41*	5.601E+00	------	Line Not Found	------
	210.85	15	2.80	5.318E+00	6.953E-01	6.953E-01	203.84
TH-230	74.82	158	5.80	4.514E+00	4.039E+00	4.039E+00	27.94
	77.11	220	9.70	4.775E+00	3.177E+00	3.177E+00	20.95
	87.09	76	3.41	5.735E+00	2.609E+00	2.609E+00	60.45
	242.00	98	7.25	4.850E+00	1.866E+00	1.866E+00	53.77
	295.22	216	18.42	4.244E+00	1.850E+00	1.850E+00	16.57
	351.93	260	35.60*	3.774E+00	1.296E+00	1.296E+00	17.49
TH-232	105.21	------	1.10	6.597E+00	------	Line Not Found	------
	338.32	80	11.27	3.875E+00	1.232E+00	1.232E+00	45.78
	835.71	10	1.61	1.962E+00	2.055E+00	2.055E+00	195.81
	911.20	93	25.80*	1.816E+00	1.331E+00	1.331E+00	24.07
	968.97	34	15.80	1.716E+00	8.491E-01	8.491E-01	55.47
PA-234M	63.29	56	3.70*	2.827E+00	3.571E+00	3.571E+00	73.27
	92.59	64	4.23	6.123E+00	1.653E+00	1.653E+00	91.46
TH-234	63.29	56	3.70*	2.827E+00	3.571E+00	3.571E+00	73.27
	92.59	64	4.23	6.123E+00	1.653E+00	1.653E+00	91.46
U-234	74.82	158	5.80	4.514E+00	4.039E+00	4.039E+00	27.94
	77.11	220	9.70	4.775E+00	3.177E+00	3.177E+00	20.95
	87.09	76	3.41	5.735E+00	2.609E+00	2.609E+00	60.45
	242.00	98	7.25	4.850E+00	1.866E+00	1.866E+00	53.77
	295.22	216	18.42	4.244E+00	1.850E+00	1.850E+00	16.57
	351.93	260	35.60*	3.774E+00	1.296E+00	1.296E+00	17.49
U-235	89.96	46	3.47	5.936E+00	1.493E+00	1.493E+00	64.30
	93.35	64	5.60	6.123E+00	1.248E+00	1.248E+00	91.46
	143.76	------	10.96*	6.515E+00	------	Line Not Found	------
	163.33	------	5.08	6.164E+00	------	Line Not Found	------
	185.72	82	57.20	5.739E+00	1.673E-01	1.673E-01	67.22
	205.31	------	5.01	5.397E+00	------	Line Not Found	------
U-238	63.29	56	3.70*	2.827E+00	3.571E+00	3.571E+00	73.27
	92.59	64	4.23	6.123E+00	1.653E+00	1.653E+00	91.46
PU-239	129.30	48	0.01*	6.701E+00	7.536E+02	7.536E+02	88.06
	375.05	------	0.00	3.617E+00	------	Line Not Found	------
	413.71	55	0.00	3.389E+00	7.456E+03	7.456E+03	71.91
AM-243	43.53	------	5.90	3.587E-01	------	Line Not Found	------
	74.66	158	67.20*	4.514E+00	3.486E-01	3.486E-01	27.94
ANH-511	511.00	28	100.00*	2.920E+00	6.413E-02	6.413E-02	146.24

Flag: "*" = Keyline

Sample ID : G1206070203 Acquisition date : 10-MAY-2025 11:40:33

Total number of lines in spectrum 50
Number of unidentified lines 6
Number of lines tentatively identified by NID 44 88.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.720E+01	1.720E+01	0.196E+01	11.39	
ZN-65	244.06D	1.10	8.543E-02	9.359E-02	9.025E-02	96.43	
CD-109	461.40D	1.05	2.405E+00	2.524E+00	1.526E+00	60.45	
SN-126	2.30E+05Y	1.00	2.405E-01	2.405E-01	1.454E-01	60.45	
CE-139	137.64D	1.18	3.198E-02	3.759E-02	5.777E-02	153.65	
CE-141	32.51D	1.98	1.620E-02	3.214E-02	18.52E-02	576.25	
HG-203	46.59D	1.61	2.998E-02	4.835E-02	8.377E-02	173.28	
TL-208	1.41E+10Y	1.00	3.989E-01	3.989E-01	1.036E-01	25.96	
BI-211	7.04E+08Y	1.00	3.572E+00	3.572E+00	0.625E+00	17.49	
BI-212	1.41E+10Y	1.00	1.145E+00	1.145E+00	1.014E+00	88.53	
PB-212	1.41E+10Y	1.00	1.310E+00	1.310E+00	0.155E+00	11.83	
BI-214	1600.00Y	1.00	1.046E+00	1.046E+00	0.237E+00	22.68	
PB-214	1600.00Y	1.00	1.296E+00	1.296E+00	0.227E+00	17.49	
RN-222	1600.00Y	1.00	1.046E+00	1.046E+00	0.237E+00	22.68	
RA-224	1.41E+10Y	1.00	3.299E+00	3.299E+00	1.774E+00	53.77	
RA-226	1600.00Y	1.00	1.296E+00	1.296E+00	0.227E+00	17.49	
AC-228	1.41E+10Y	1.00	1.331E+00	1.331E+00	0.320E+00	24.07	
RA-228	1.41E+10Y	1.00	1.331E+00	1.331E+00	0.320E+00	24.07	
TH-228	1.41E+10Y	1.00	1.310E+00	1.310E+00	0.155E+00	11.83	
TH-229	7340.00Y	1.00	3.708E-01	3.708E-01	2.241E-01	60.45	K
TH-230	7.54E+04Y	1.00	1.296E+00	1.296E+00	0.227E+00	17.49	
TH-232	1.41E+10Y	1.00	1.331E+00	1.331E+00	0.320E+00	24.07	
PA-234M	4.47E+09Y	1.00	3.571E+00	3.571E+00	2.616E+00	73.27	
TH-234	4.47E+09Y	1.00	3.571E+00	3.571E+00	2.616E+00	73.27	
U-234	2.45E+05Y	1.00	1.296E+00	1.296E+00	0.227E+00	17.49	
U-235	7.04E+08Y	1.00	1.673E-01	1.673E-01	1.125E-01	67.22	K
U-238	4.47E+09Y	1.00	3.571E+00	3.571E+00	2.616E+00	73.27	
PU-239	24110.00Y	1.00	7.536E+02	7.536E+02	6.636E+02	88.06	
AM-243	7370.00Y	1.00	3.486E-01	3.486E-01	0.974E-01	27.94	
ANH-511	1.00E+09Y	1.00	6.413E-02	6.413E-02	9.378E-02	146.24	
		Total Activity :	8.076E+02	8.077E+02			

Grand Total Activity : 8.076E+02 8.077E+02

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1206070203 Acquisition date : 10-MAY-2025 11:40:33

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	111.94	54	94	1.26	224.00	221	9	1.44E-02	71.1	6.71E+00	T
0	270.54	50	52	1.75	541.06	536	9	1.37E-02	59.7	4.50E+00	T
0	327.42	35	38	2.96	654.78	650	10	9.70E-03	73.9	3.96E+00	T
0	462.88	34	27	0.93	925.58	920	11	9.58E-03	68.0	3.13E+00	T
0	651.54	16	11	1.44	1302.79	1298	9	4.61E-03	88.0	2.43E+00	
0	659.17	10	10	2.31	1318.04	1314	8	2.96E-03	****	2.41E+00	T
3	768.18	31	10	2.07	1536.03	1531	23	8.86E-03	50.9	2.12E+00	T
3	772.47	15	12	2.07	1544.59	1531	23	4.44E-03	****	2.11E+00	T
0	785.04	20	20	2.35	1569.74	1561	12	5.77E-03	98.7	2.08E+00	T
0	964.96	11	17	3.14	1929.52	1923	12	3.30E-03	****	1.72E+00	T
0	1001.83	11	11	1.04	2003.25	1998	10	3.28E-03	****	1.66E+00	T
0	1031.54	28	4	7.09	2062.68	2055	17	8.17E-03	49.0	1.62E+00	
0	1140.05	10	4	1.40	2279.68	2276	8	3.06E-03	87.2	1.47E+00	
0	1237.92	15	9	0.99	2475.42	2469	10	4.26E-03	94.7	1.37E+00	T
0	1250.44	9	5	0.57	2500.46	2497	7	2.65E-03	****	1.35E+00	
0	1281.14	19	6	0.58	2561.88	2555	12	5.56E-03	66.3	1.32E+00	
0	1377.60	10	10	1.33	2754.81	2749	9	2.80E-03	****	1.24E+00	

Flags: "T" = Tentatively associated

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070203.CNF;1  *
* Acquisition date : 10-MAY-2025 11:40:33 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:10:00 Nuclide Library : SOLID           *
* Sample ID        : G1206070203          Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.1221E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 10-MAR-2025 08:48:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;21            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.774E-01
ZN-65	8.340E-02
CD-109	7.206E-01
SN-126	6.905E-02
CE-139	2.913E-02
CE-141	7.674E-02
HG-203	3.833E-02
TL-208	2.874E-02
BI-211	1.683E-01
BI-212	4.114E-01
PB-212	5.623E-02
BI-214	7.449E-02
PB-214	6.121E-02
RN-222	7.449E-02
RA-224	6.024E-01
RA-226	6.121E-02
AC-228	1.095E-01
RA-228	1.095E-01
TH-228	5.623E-02
TH-229	4.202E-01
TH-230	6.121E-02
TH-232	1.095E-01
PA-234M	1.210E+00
TH-234	1.210E+00
U-234	6.121E-02
U-235	1.829E-01
U-238	1.210E+00
PU-239	2.973E+02
AM-243	4.494E-02
ANH-511	2.461E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	3.508E-01	NOT IDENT.

NA-22	3.005E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.107E-02	NOT IDENT.
SC-46	3.631E-02	FAIL ABUN
V-48	1.420E-01	NOT IDENT.
CR-51	5.368E-01	NOT IDENT.
MN-52	1.196E+00	NOT IDENT.
MN-54	4.282E-02	NOT IDENT.
CO-56	3.217E-02	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.353E-02	NOT IDENT.
CO-58	4.259E-02	NOT IDENT.
FE-59	9.626E-02	NOT IDENT.
CO-60	3.577E-02	NOT IDENT.
GE-68	9.554E-01	NOT IDENT.
AS-73	9.863E-01	NOT IDENT.
AS-74	1.571E-01	NOT IDENT.
SE-75	4.002E-02	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	3.462E-01	NOT IDENT.
RB-83	6.149E-02	NOT IDENT.
RB-84	7.103E-02	NOT IDENT.
KR-85	6.876E+00	NOT IDENT.
SR-85	4.355E-02	NOT IDENT.
RB-86	9.398E-01	NOT IDENT.
Y-88	3.953E-02	NOT IDENT.
Y-91	2.085E+01	NOT IDENT.
NB-94	2.702E-02	NOT IDENT.
NB-95	3.900E-02	NOT IDENT.
NB-95M	1.389E-01	NOT IDENT.
ZR-95	7.887E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.709E-02	NOT IDENT.
RH-102	4.997E-02	FAIL ABUN
RU-103	3.699E-02	FAIL ABUN
RH-106	1.709E-01	NOT IDENT.
RU-106	1.709E-01	NOT IDENT.
AG-108M	2.794E-02	NOT IDENT.
AG-110	5.119E-01	NOT IDENT.
AG-110M	4.607E-02	FAIL ABUN
SN-113	3.967E-02	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	1.172E-01	NOT IDENT.
SB-122	0.000E+00	SHORT HLIF
TE-123M	2.839E-02	NOT IDENT.
SB-124	9.634E-02	NOT IDENT.
SB-125	5.719E-02	FAIL ABUN
TE-125M	1.012E+01	NOT IDENT.
I-126	4.309E-01	NOT IDENT.
SB-126	3.192E-01	NOT IDENT.
SB-127	2.130E+01	FAIL ABUN
I-131	4.231E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.827E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	4.416E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.140E-01	NOT IDENT.
BA-137M	3.049E-02	NOT IDENT.
CS-137	3.221E-02	NOT IDENT.
LA-138	3.676E-02	NOT IDENT.
BA-140	6.646E-01	NOT IDENT.
LA-140	1.928E-01	FAIL ABUN
CE-143	0.000E+00	SHORT HLIF
CE-144	1.865E-01	NOT IDENT.
PM-144	2.885E-02	NOT IDENT.
PR-144	2.176E+00	NOT IDENT.
PM-146	3.260E-02	NOT IDENT.
ND-147	1.681E+00	FAIL ABUN
PM-147	6.500E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.087E-02	FAIL ABUN
EU-152	8.334E-02	FAIL ABUN
GD-153	7.240E-02	NOT IDENT.

EU-154	8.306E-02	NOT IDENT.
EU-155	9.515E-02	FAIL ABUN
TB-160	1.225E-01	FAIL ABUN
HO-166M	5.642E-02	FAIL ABUN
TM-171	1.825E+01	NOT IDENT.
HF-172	1.736E-01	FAIL ABUN
LU-172	7.182E-02	FAIL ABUN
LU-176	2.697E-02	FAIL ABUN
HF-181	5.279E-02	NOT IDENT.
TA-182	1.634E-01	FAIL ABUN
RE-183	2.193E-01	NOT IDENT.
RE-184	1.565E-01	NOT IDENT.
W-188	6.227E+00	FAIL ABUN
IR-192	4.055E-02	FAIL ABUN
TL-204	4.157E+00	NOT IDENT.
BI-207	3.906E-02	FAIL ABUN
BI-210	4.734E+00	NOT IDENT.
PB-210	4.734E+00	NOT IDENT.
PB-211	6.030E-01	NOT IDENT.
BI-213	7.740E-02	NOT IDENT.
RN-219	3.430E-01	FAIL ABUN
RA-223	5.163E-01	FAIL ABUN
AC-225	1.815E+00	NOT IDENT.
AC-227	2.370E-01	FAIL ABUN
TH-227	2.370E-01	FAIL ABUN
PA-231	4.504E-01	NOT IDENT.
TH-231	5.163E-01	FAIL ABUN
PA-233	6.063E-02	FAIL ABUN
PA-234	2.384E-01	FAIL ABUN
NP-237	6.063E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.170E-01	FAIL ABUN
AM-241	1.335E-01	NOT IDENT.
CM-243	8.501E-02	FAIL ABUN
BK-247	6.488E-02	FAIL ABUN
CM-247	3.026E-02	FAIL ABUN
CF-249	3.017E-02	NOT IDENT.
CF-251	1.133E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 12:41:21.36

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070203.CNF;1  *
* Acquisition date : 10-MAY-2025 11:40:33 Sensitivity     : 3.000           *
* Detector ID      : GAM28                Energy tolerance: 1.500           *
* Elapsed live time:    0 01:00:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 01:00:00.51     Half life ratio : *****           *
* Sample date      :  8-APR-2025 09:10:00 Nuclide Library : SOLID           *
* Sample ID        : G1206070203          Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.1221E+02 GRAM *
*                                         Quantity Err(%) : 1.7824E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 10-MAR-2025 08:48:04 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;21            *
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.720E+01	2.777E+00	2.777E+00
ZN-65	9.359E-02	8.893E-02	8.893E-02
CD-109	2.524E+00	1.517E+00	1.517E+00
SN-126	2.405E-01	1.440E-01	1.440E-01
CE-139	3.759E-02	5.716E-02	5.716E-02
CE-141	3.214E-02	1.815E-01	1.815E-01
HG-203	4.835E-02	8.225E-02	8.225E-02
TL-208	3.989E-01	1.072E-01	1.072E-01
BI-211	3.572E+00	7.002E-01	7.002E-01
BI-212	1.145E+00	9.999E-01	9.999E-01
PB-212	1.310E+00	1.970E-01	1.970E-01
BI-214	1.046E+00	2.492E-01	2.492E-01
PB-214	1.296E+00	2.533E-01	2.533E-01
RN-222	1.046E+00	2.492E-01	2.492E-01
RA-224	3.299E+00	1.768E+00	1.768E+00
RA-226	1.296E+00	2.533E-01	2.533E-01
AC-228	1.331E+00	3.622E-01	3.622E-01
RA-228	1.331E+00	3.622E-01	3.622E-01
TH-228	1.310E+00	1.970E-01	1.970E-01
TH-229	-5.362E-01	5.644E-01	5.644E-01
TH-230	1.296E+00	2.532E-01	2.532E-01
TH-232	1.331E+00	3.622E-01	3.622E-01
PA-234M	3.571E+00	2.695E+00	2.695E+00
TH-234	3.571E+00	2.695E+00	2.695E+00
U-234	1.296E+00	2.532E-01	2.532E-01
U-235	-1.097E-01	2.231E-01	2.231E-01
U-238	3.571E+00	2.695E+00	2.695E+00
PU-239	7.536E+02	6.530E+02	6.530E+02
AM-243	3.486E-01	1.000E-01	1.000E-01
ANH-511	6.413E-02	9.208E-02	9.208E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)

BE-7	1.066E-01	3.913E-01	3.942E-01	NOT IDENT.
NA-22	-4.221E-02	4.959E-02	5.312E-02	NOT IDENT.
NA-24	7.502E+13	1.079E+14	1.130E+14	SHORT HLIF
AL-26	-2.007E-02	3.401E-02	3.519E-02	NOT IDENT.
SC-46	2.652E-02	3.801E-02	3.985E-02	FAIL ABUN
V-48	3.867E-02	1.665E-01	1.674E-01	NOT IDENT.
CR-51	6.181E-01	5.852E-01	6.481E-01	NOT IDENT.
MN-52	-1.078E+00	1.782E+00	1.848E+00	NOT IDENT.
MN-54	4.237E-02	4.557E-02	4.941E-02	NOT IDENT.
CO-56	-4.165E-02	4.824E-02	5.176E-02	FAIL ABUN
MN-56	-1.000E+41	1.170E+41	0.000E+00	SHORT HLIF
CO-57	1.130E-02	2.657E-02	2.705E-02	NOT IDENT.
CO-58	2.551E-02	4.668E-02	4.808E-02	NOT IDENT.
FE-59	-8.768E-02	1.391E-01	1.446E-01	NOT IDENT.
CO-60	2.071E-02	3.713E-02	3.828E-02	NOT IDENT.
GE-68	3.342E-01	1.089E+00	1.099E+00	NOT IDENT.
AS-73	-9.590E-01	1.216E+00	1.290E+00	NOT IDENT.
AS-74	1.980E-02	1.819E-01	1.821E-01	NOT IDENT.
SE-75	1.996E-02	4.643E-02	4.729E-02	FAIL ABUN
BR-77	2.899E+04	2.722E+04	3.020E+04	SHORT HLIF
SR-82	-1.994E-01	5.277E-01	5.353E-01	NOT IDENT.
RB-83	-1.148E-03	7.179E-02	7.179E-02	NOT IDENT.
RB-84	-8.496E-02	1.057E-01	1.124E-01	NOT IDENT.
KR-85	8.158E+00	7.534E+00	8.383E+00	NOT IDENT.
SR-85	5.161E-02	4.773E-02	5.310E-02	NOT IDENT.
RB-86	-1.080E+00	1.466E+00	1.545E+00	NOT IDENT.
Y-88	1.990E-02	4.063E-02	4.161E-02	NOT IDENT.
Y-91	-2.028E+01	2.790E+01	2.936E+01	NOT IDENT.
NB-94	1.035E-02	3.034E-02	3.070E-02	NOT IDENT.
NB-95	3.942E-04	5.233E-02	5.233E-02	NOT IDENT.
NB-95M	1.458E-01	1.657E-01	1.783E-01	NOT IDENT.
ZR-95	1.586E-02	9.188E-02	9.216E-02	NOT IDENT.
NB-97	1.000E+41	1.182E+41	0.000E+00	SHORT HLIF
ZR-97	-5.332E+12	3.722E+13	3.730E+13	SHORT HLIF
MO-99	-5.595E+02	9.649E+02	9.973E+02	SHORT HLIF
TC-99M	-3.850E+36	1.010E+37	0.000E+00	SHORT HLIF
RH-101	-1.467E-03	3.452E-02	3.453E-02	NOT IDENT.
RH-102	4.660E-02	5.159E-02	5.570E-02	FAIL ABUN
RU-103	-3.775E-02	4.930E-02	5.215E-02	FAIL ABUN
RH-106	-2.798E-01	2.667E-01	2.950E-01	NOT IDENT.
RU-106	-2.798E-01	2.667E-01	2.950E-01	NOT IDENT.
AG-108M	-6.279E-03	3.286E-02	3.298E-02	NOT IDENT.
AG-110	-3.832E-01	7.798E-01	7.987E-01	NOT IDENT.
AG-110M	2.631E-02	5.060E-02	5.198E-02	FAIL ABUN
SN-113	-3.522E-02	4.972E-02	5.219E-02	NOT IDENT.
CD-115	-1.807E+03	2.289E+03	2.430E+03	SHORT HLIF
SN-117M	-1.119E-02	1.404E-01	1.405E-01	NOT IDENT.
SB-122	-6.597E+01	1.430E+02	1.461E+02	SHORT HLIF
TE-123M	1.874E-02	3.204E-02	3.313E-02	NOT IDENT.
SB-124	-5.969E-02	1.331E-01	1.357E-01	NOT IDENT.
SB-125	-1.147E-01	8.421E-02	9.882E-02	FAIL ABUN
TE-125M	7.160E+00	1.194E+01	1.237E+01	NOT IDENT.
I-126	5.398E-02	5.018E-01	5.024E-01	NOT IDENT.
SB-126	-6.014E-02	3.916E-01	3.926E-01	NOT IDENT.
SB-127	2.533E+00	2.486E+01	2.488E+01	FAIL ABUN
I-131	7.572E-02	4.715E-01	4.727E-01	NOT IDENT.
I-132	-1.000E+41	5.565E+41	0.000E+00	SHORT HLIF
TE-132	-1.489E+01	3.246E+01	3.314E+01	SHORT HLIF
BA-133	1.224E-02	4.630E-02	4.662E-02	FAIL ABUN
I-133	1.987E+09	5.009E+09	5.088E+09	SHORT HLIF
CS-134	3.418E-02	4.800E-02	5.041E-02	NOT IDENT.
I-135	-6.192E+33	3.039E+34	0.000E+00	SHORT HLIF
CS-136	-5.830E-02	2.776E-01	2.788E-01	NOT IDENT.
BA-137M	-9.562E-03	4.247E-02	4.268E-02	NOT IDENT.
CS-137	-1.010E-02	4.486E-02	4.509E-02	NOT IDENT.
LA-138	-1.043E-02	4.697E-02	4.721E-02	NOT IDENT.
BA-140	1.485E-01	7.565E-01	7.594E-01	NOT IDENT.
LA-140	-1.968E-01	2.828E-01	2.964E-01	FAIL ABUN
CE-143	8.818E+05	6.550E+05	7.662E+05	SHORT HLIF
CE-144	1.878E-01	2.168E-01	2.327E-01	NOT IDENT.
PM-144	-9.992E-03	3.608E-02	3.636E-02	NOT IDENT.
PR-144	-7.638E-01	2.723E+00	2.745E+00	NOT IDENT.
PM-146	6.783E-03	3.656E-02	3.669E-02	NOT IDENT.
ND-147	7.473E-01	1.867E+00	1.897E+00	FAIL ABUN
PM-147	1.804E+02	7.450E+02	7.495E+02	NOT IDENT.
PM-149	-2.089E+04	1.894E+04	2.115E+04	SHORT HLIF
EU-150	-1.148E-02	3.062E-02	3.105E-02	FAIL ABUN
EU-152	-4.629E-02	1.113E-01	1.133E-01	FAIL ABUN

GD-153	-1.340E-02	8.499E-02	8.520E-02	NOT IDENT.
EU-154	-1.215E-01	1.388E-01	1.492E-01	NOT IDENT.
EU-155	6.852E-02	1.050E-01	1.095E-01	FAIL ABUN
TB-160	3.340E-02	1.412E-01	1.420E-01	FAIL ABUN
HO-166M	5.737E-02	5.784E-02	6.335E-02	FAIL ABUN
TM-171	-2.601E+00	2.080E+01	2.083E+01	NOT IDENT.
HF-172	2.429E-01	1.973E-01	2.256E-01	FAIL ABUN
LU-172	6.766E-02	7.657E-02	8.243E-02	FAIL ABUN
LU-176	3.683E-02	2.900E-02	3.341E-02	FAIL ABUN
HF-181	1.034E-02	6.037E-02	6.055E-02	NOT IDENT.
TA-182	-4.480E-02	1.989E-01	1.999E-01	FAIL ABUN
RE-183	1.221E-01	2.372E-01	2.435E-01	NOT IDENT.
RE-184	1.151E-01	1.672E-01	1.751E-01	NOT IDENT.
W-188	-4.145E-01	8.456E+00	8.458E+00	FAIL ABUN
IR-192	1.207E-02	4.898E-02	4.928E-02	FAIL ABUN
TL-204	-5.648E+00	5.666E+00	6.212E+00	NOT IDENT.
BI-207	3.835E-03	4.727E-02	4.730E-02	FAIL ABUN
BI-210	6.161E-02	5.324E+00	5.324E+00	NOT IDENT.
PB-210	6.161E-02	5.324E+00	5.324E+00	NOT IDENT.
PB-211	4.870E-01	6.495E-01	6.856E-01	NOT IDENT.
BI-213	4.200E-03	8.842E-02	8.844E-02	NOT IDENT.
RN-219	-1.042E-01	4.052E-01	4.079E-01	FAIL ABUN
RA-223	-8.238E-02	7.162E-01	7.171E-01	FAIL ABUN
AC-225	-2.967E-01	2.232E+00	2.236E+00	NOT IDENT.
AC-227	7.940E-02	2.816E-01	2.838E-01	FAIL ABUN
TH-227	7.940E-02	2.816E-01	2.838E-01	FAIL ABUN
PA-231	5.508E-01	5.025E-01	5.605E-01	NOT IDENT.
TH-231	-8.238E-02	7.162E-01	7.171E-01	FAIL ABUN
PA-233	2.840E-02	7.165E-02	7.279E-02	FAIL ABUN
PA-234	1.214E-01	2.970E-01	3.020E-01	FAIL ABUN
NP-237	2.840E-02	7.165E-02	7.279E-02	FAIL ABUN
NP-238	4.824E+03	5.893E+03	6.282E+03	SHORT HLIF
NP-239	-6.455E-02	2.597E-01	2.613E-01	FAIL ABUN
AM-241	-4.224E-02	1.673E-01	1.683E-01	NOT IDENT.
CM-243	-1.082E-03	9.881E-02	9.881E-02	FAIL ABUN
BK-247	3.048E-02	7.574E-02	7.697E-02	FAIL ABUN
CM-247	-1.001E-02	3.592E-02	3.620E-02	FAIL ABUN
CF-249	-3.532E-02	3.915E-02	4.227E-02	NOT IDENT.
CF-251	2.954E-02	1.327E-01	1.334E-01	NOT IDENT.

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*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                           Charleston, SC 29407                            *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	49.9023	85.43	67.2550	131.20	61.8190
45.60	61.2705	86.55	67.4006	133.02	57.9387
46.54	48.6376	86.79	86.1623	133.52	45.8452
49.72	0.0000	86.94	86.1868	136.00	55.8166
51.35	42.3737	87.09	86.2114	136.47	59.9156
51.87	45.0309	87.57	86.2907	140.51	0.0000
52.39	44.2262	88.03	86.3658	143.76	67.7030
52.97	51.2424	88.34	78.9019	144.24	67.7473
53.44	60.0018	88.47	78.9218	145.44	58.9465
54.07	49.6484	89.96	70.3492	152.43	66.4121
57.36	0.0000	1093.63	66.6646	153.25	61.2894
57.53	53.6044	91.11	66.7228	323.87	80.0877
57.98	39.5885	92.59	66.9051	156.02	48.9987
59.27	58.2488	93.35	66.9978	158.56	62.7539
59.32	51.7829	94.56	51.9428	159.00	49.1845
59.54	51.8109	94.65	51.9511	162.33	44.8372
60.96	43.7188	94.67	51.9528	162.66	44.8555
61.17	40.1945	94.87	49.4363	163.33	51.9070
62.93	64.1069	97.43	62.0786	165.86	59.1061
63.29	64.1613	98.43	50.7073	176.31	52.3713
63.58	64.2049	98.44	50.7085	176.60	52.3892
64.28	61.9283	99.53	54.6395	177.52	49.2351
66.73	74.5545	100.11	53.7352	181.07	0.0000
67.24	71.0441	102.03	54.8765	181.52	60.2169
125.81	78.3161	103.18	50.1612	184.41	56.1014
67.75	78.3280	103.37	54.0372	143.76	56.1847
68.89	60.4759	105.21	54.2060	193.51	63.2154
69.67	80.4736	105.31	54.2150	197.03	55.8007
70.82	90.6479	106.12	44.5941	198.01	54.7646
70.83	90.6502	106.47	63.0506	201.83	58.2890
72.81	80.1152	109.28	48.0762	203.43	51.7785
72.87	80.1260	111.00	58.6354	205.31	54.0895
74.66	72.2055	111.76	0.0000	210.85	42.9306
74.82	72.2302	114.06	56.3054	215.65	51.3253
74.97	72.2531	116.30	0.0000	218.12	57.0466
77.11	72.5768	116.74	59.1742	222.11	52.7839
78.74	72.8203	119.76	51.5251	227.09	51.9156
79.69	72.9607	121.12	63.5479	227.38	53.0593
80.03	66.5409	121.22	54.6198	228.16	0.0000
80.12	66.5535	121.78	53.6725	228.18	49.7115
80.19	66.5634	122.06	53.6955	116.74	49.7115
80.57	66.6140	122.92	50.7786	235.69	39.4517
81.00	59.2637	123.07	50.7903	235.96	50.0868
81.07	59.2720	265.00	64.7922	238.63	58.2022
81.75	50.0787	125.81	38.6661	238.98	0.0000
82.47	59.4375	127.23	60.1250	240.99	58.3322
83.79	69.5238	127.91	53.4985	242.00	58.3874
84.00	69.5528	129.30	63.3240	244.70	58.5345

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.40	39.3006	344.28	36.1031	563.25	16.0682
252.80	43.9398	345.93	29.9143	564.24	0.0000
254.15	0.0000	351.06	27.5222	569.33	18.0127
256.23	39.4368	351.93	27.5396	946.00	17.0662
260.90	0.0000	355.39	0.0000	569.70	17.0676
264.66	25.7094	356.01	27.6188	583.19	17.1804
264.80	25.7128	364.49	23.5737	584.27	17.1892
265.00	25.7175	366.42	0.0000	595.83	18.2447
269.46	32.8586	372.51	31.3226	427.87	26.9484
270.03	32.8749	375.05	28.8328	602.52	0.0000
271.23	28.2078	377.52	28.8812	604.72	28.9282
273.65	28.2664	356.01	30.7097	607.14	26.0651
276.40	40.9255	388.16	32.5086	609.32	30.9245
277.37	36.2332	388.63	26.5284	610.33	30.9388
277.60	29.5433	391.69	32.5844	614.28	20.3403
278.00	29.5532	264.66	18.1122	618.01	14.5538
279.20	29.5837	401.81	28.4836	620.36	12.6271
279.54	29.5921	402.40	26.7674	621.93	16.5248
279.70	29.5959	404.85	15.5665	630.19	0.0000
280.46	30.0099	410.95	16.4955	631.29	9.7620
283.69	22.5683	413.71	16.5241	633.25	17.5869
284.31	24.9567	414.70	16.5342	634.78	20.5326
285.41	27.3588	423.72	26.2537	635.95	14.6735
285.90	0.0000	427.09	22.8008	636.99	15.6595
287.50	22.6396	427.87	28.9529	657.50	16.2966
290.67	25.4863	433.94	30.8215	657.76	16.2986
293.27	0.0000	439.40	17.6705	657.90	0.0000
351.93	22.7834	440.45	16.7978	661.66	20.7787
295.96	22.7968	453.88	16.0408	664.57	0.0000
879.38	22.8449	463.37	19.7137	666.33	13.8809
299.98	22.8710	468.07	23.7204	666.50	17.8484
300.09	22.8727	473.00	21.6250	667.71	0.0000
300.13	22.8733	475.06	17.1399	677.62	14.9451
301.36	22.8959	476.78	26.1863	685.70	11.9976
302.85	22.9232	477.60	18.9710	692.65	0.0000
256.23	22.9533	482.18	19.9259	695.00	25.0936
304.85	22.9597	487.02	11.8061	696.49	19.0827
306.78	22.9945	492.35	0.0000	696.51	19.0827
308.46	29.0841	497.08	21.9170	697.00	15.0684
311.90	30.3772	505.52	13.7610	697.30	15.0702
316.51	36.5836	507.63	0.0000	697.49	12.0571
319.41	39.1094	511.00	21.1622	702.65	12.0835
320.08	20.7872	514.00	15.2062	706.68	11.0949
321.04	31.8152	514.00	15.2062	711.68	9.0967
323.87	29.4316	520.40	15.7203	720.70	18.2607
325.23	27.8249	520.69	0.0000	721.93	0.0000
328.76	27.8989	522.65	0.0000	722.78	13.7071
333.37	32.1112	527.90	0.0000	722.91	12.1846
333.97	31.3018	528.26	27.8564	723.31	13.7098
334.37	32.9590	529.59	20.4415	724.19	16.7625
338.28	35.9464	529.87	0.0000	727.33	15.2582
338.32	35.9473	531.02	22.3164	733.00	13.4578
311.90	31.4517	537.26	23.3215	735.93	14.2905
340.48	31.4517	546.56	0.0000	333.97	21.4486
340.55	31.4533	552.55	15.0423	739.50	0.0000

ENERGY	MDA COUNTS
744.23	22.5308
747.24	20.5078
748.06	12.3086
752.31	13.3565
753.82	15.4205
756.73	15.4382
756.80	15.4388
884.68	13.9340
765.81	13.9438
766.84	17.0492
772.60	0.0000
776.52	12.4463
739.50	0.0000
778.90	6.2288
783.70	13.5205
788.74	14.0674
792.07	23.9976
795.86	14.6278
810.06	12.6050
810.29	12.6064
344.28	10.5058
810.76	10.5070
815.77	12.6318
1048.07	11.5908
832.01	15.8844
834.85	13.7808
835.71	13.7850
836.80	0.0000
846.75	0.0000
846.77	18.0985
856.80	11.7528
860.56	11.7685
871.09	9.6647
873.19	10.7463
875.33	0.0000
879.38	8.6159
880.51	9.6965
881.60	17.2448
883.24	9.7057
884.68	8.6315
889.28	5.4034
894.76	15.1581
898.04	14.0913
900.72	19.5286
903.28	7.6013
911.20	10.8881
912.08	10.8911
923.98	0.0000
926.50	10.9444
929.11	12.0492
935.54	13.1729
937.49	20.8702
944.13	11.0083
946.00	6.6091
949.00	11.0258

ENERGY	MDA COUNTS
667.71	0.0000
962.31	11.6275
964.08	13.2964
966.17	6.6526
911.20	19.9761
983.53	12.2644
984.45	0.0000
1274.44	12.0902
1002.74	8.4131
1004.73	6.7346
507.63	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	8.5046
1038.76	0.0000
631.29	7.9587
1048.07	12.5129
1049.04	11.3786
1050.41	5.6913
1063.66	7.9998
1077.00	12.6212
1077.34	5.7373
1085.87	5.7520
1093.63	9.2240
1099.45	17.3242
1112.07	6.9551
1112.84	8.6957
1115.54	13.9238
1120.29	6.9712
1120.55	6.9722
1221.41	10.4604
1129.67	8.1553
1131.51	0.0000
1147.95	0.0000
1173.23	10.6135
1177.95	12.3987
1189.05	11.5480
1204.77	18.7339
1221.41	12.5457
1231.02	17.4542
1235.36	12.9516
1238.28	8.6408
1260.41	0.0000
1271.87	10.8962
1274.44	14.5381
1274.54	14.5381
1291.59	14.6016
1298.22	0.0000
1312.11	7.3389
1332.49	4.6103
1362.66	0.0000
1365.19	8.3650
1368.63	0.0000
1384.29	6.5364
1408.01	3.7563

ENERGY	MDA COUNTS
1434.09	6.6138
1435.80	4.7260
1457.56	0.0000
1460.82	9.5068
1489.16	2.8705
1505.03	6.7219
1584.12	9.7711
1596.21	10.7758
1620.50	2.9540
1621.92	2.9550
1678.03	0.0000
1690.97	7.9932
1750.46	0.0000
1764.49	2.0277
1063.66	8.1201
1771.35	4.0610
1791.20	0.0000
1808.65	5.1129
1810.72	0.0000
1836.06	2.0559

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:58:29.47

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*                              GEL Laboratories LLC                         *
*                                2040 Savage Road                           *
*                              Charleston, SC 29407                         *
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Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070204.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM29.CNF;816
                                         Background date  : 4-MAY-2025 09:27:11.
Sample date      : 16-APR-2025 00:00:00  Acquisition date : 10-MAY-2025 11:42:56
Sample ID        : G1206070204           Sample quantity  : 1.15000E+02 GRAM
Detector name    : GAM29                 Detector geometry: CAN
Elapsed live time: 0 00:15:00.00         Elapsed real time: 0 00:15:02.31  0.3%
Energy tolerance : 1.50000 keV           Analyst Initials : RXF2
Abundance limit  : 75.00000              Sensitivity      : 3.00000
Batch ID         : 2781510               Detector SN#     :
Matrix Spike ID  :                       LCS ID           :
*****************************************************************************
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.40*	6269	5115	1.12	93.22	88	10	6.97E+00	2.5	
2	0	50.02	70	2328	0.87	100.46	99	5	7.75E-02	104.2	
3	0	59.44	19976	4174	1.12	119.30	113	13	2.22E+01	1.0	
4	0	79.31	56	608	0.78	159.02	156	7	6.19E-02	74.5	
5	0	92.64*	28	464	0.58	185.67	184	6	3.11E-02	123.9	
6	0	103.43	90	466	2.20	207.23	204	7	1.00E-01	41.3	
7	0	106.82	57	320	1.34	214.00	212	5	6.28E-02	49.3	
8	0	170.05	32	448	3.23	340.40	334	8	3.57E-02	115.8	
9	0	323.62	44	745	6.86	647.40	641	18	4.91E-02	145.9	
10	0	367.72	57	311	1.70	735.55	732	8	6.35E-02	55.2	
11	0	533.08	43	265	4.32	1066.12	1060	13	4.82E-02	79.0	
12	0	661.22*	12318	249	1.56	1322.31	1314	17	1.37E+01	0.9	
13	0	1008.63	19	83	1.48	2016.93	2014	8	2.13E-02	84.9	
14	0	1172.46	3200	67	1.96	2344.52	2338	17	3.56E+00	1.9	
15	0	1331.56	2854	23	2.09	2662.68	2655	15	3.17E+00	1.9	
16	0	1419.58	7	2	1.45	2838.69	2835	7	8.21E-03	47.0	

Flag: "*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 10-MAY-2025 11:58:30

```
Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070204.CNF;1
Analyses by      : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title     : RXF2
Sample date      : 16-APR-2025 00:00:00 Acquisition date : 10-MAY-2025 11:42:56
Sample ID        : G1206070204          Sample quantity  : 115.00 GRAM
Sample type      : SOLID                Sample geometry  :
Detector name    : GAMMA29              Detector geometry: CAN
Elapsed live time: 0 00:15:00.00        Elapsed real time: 0 00:15:02.31   0.3%
Energy tolerance :     1.50 keV         Half life ratio  :    10.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00
```

Interference Report

No interference correction performed

Sample ID : G1206070204 Acquisition date : 10-MAY-2025 11:42:56

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CO-60	1173.23	3048	99.85	1.559E+00	5.111E+01	5.157E+01	3.74
	1332.49	2703	99.98*	1.393E+00	5.067E+01	5.112E+01	3.81
BA-137M	661.66	12030	89.90*	2.599E+00	1.345E+02	1.347E+02	1.90
CS-137	661.66	12030	85.10*	2.599E+00	1.421E+02	1.423E+02	1.90
BI-210	46.54	6826	4.25*	9.547E-01	4.393E+03	4.403E+03	4.98
PB-210	46.54	6826	4.25*	9.547E-01	4.393E+03	4.403E+03	4.98
AM-241	59.54	21543	35.90*	2.854E+00	5.491E+02	5.492E+02	1.97

Flag: "*" = Keyline

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070204.CNF;1  *
* Acquisition date : 10-MAY-2025 11:42:56 Sensitivity     : 3.000           *
* Detector ID      : GAM29                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:15:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:15:02.31     Half life ratio : *****           *
* Sample date      : 16-APR-2025 00:00:00 Analyst initials: RXF2            *
* Sample ID        : G1206070204          Sample Quantity : 1.1500E+02 GRAM *
* Batch Number     : 2781510              Wet Weight      :    0.00000      *
* Wet wt corr      :    1.00000           Dry Weight      :    0.00000      *
* Nuclide Library  : SOLID.NLB;18                                           *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 09:02:37 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;19            *
*****************************************************************************
```

Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
CO-60	5.112E+01	1.911E+00	4.159E-01
BA-137M	1.347E+02	2.502E+00	5.363E-01
CS-137	1.423E+02	2.643E+00	5.665E-01
BI-210	4.403E+03	2.147E+02	1.423E+02
PB-210	4.403E+03	2.147E+02	1.423E+02
AM-241	5.492E+02	1.062E+01	4.587E+00

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	2.433E+00	4.672E+00	8.397E+00	NOT IDENT.
NA-22	9.862E-02	2.071E-01	4.268E-01	NOT IDENT.
NA-24	0.000E+00	9.089E+10	0.000E+00	SHORT HLIF
AL-26	-3.463E-02	1.707E-01	3.277E-01	NOT IDENT.
K-40	1.751E-01	1.287E+00	2.839E+00	NOT IDENT.
SC-46	-1.106E-01	4.419E-01	7.463E-01	NOT IDENT.
V-48	3.509E-01	1.062E+00	1.991E+00	NOT IDENT.
CR-51	3.817E-01	5.082E+00	8.313E+00	NOT IDENT.
MN-52	4.230E+00	3.056E+00	7.832E+00	NOT IDENT.
MN-54	-1.527E-01	3.372E-01	5.646E-01	NOT IDENT.
CO-56	1.774E-01	4.064E-01	7.280E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-5.716E-02	2.301E-01	3.915E-01	NOT IDENT.
CO-58	-3.216E-01	3.924E-01	6.381E-01	NOT IDENT.
FE-59	-6.269E-01	1.013E+00	1.772E+00	NOT IDENT.
ZN-65	3.695E-01	8.240E-01	1.549E+00	NOT IDENT.
GE-68	4.671E+00	1.298E+01	2.424E+01	NOT IDENT.
AS-73	-3.929E+01	2.257E+01	3.539E+01	NOT IDENT.
AS-74	2.988E-03	1.267E+00	2.234E+00	NOT IDENT.
SE-75	4.086E-02	4.387E-01	8.044E-01	NOT IDENT.
BR-77	0.000E+00	1.186E+03	0.000E+00	SHORT HLIF
SR-82	1.811E+00	3.750E+00	6.807E+00	NOT IDENT.
RB-83	-2.675E-02	7.716E-01	1.364E+00	NOT IDENT.
RB-84	1.284E+00	9.297E-01	1.743E+00	NOT IDENT.

KR-85	-7.422E+00	7.207E+01	1.266E+02	NOT IDENT.
SR-85	-4.367E-02	4.215E-01	7.402E-01	NOT IDENT.
RB-86	2.035E+00	1.143E+01	2.108E+01	NOT IDENT.
Y-88	-9.413E-02	1.711E-01	2.989E-01	NOT IDENT.
Y-91	-1.097E+02	1.139E+02	1.900E+02	NOT IDENT.
NB-94	-2.258E-01	2.318E-01	3.756E-01	NOT IDENT.
NB-95	-2.912E-01	3.402E-01	5.536E-01	NOT IDENT.
NB-95M	-1.110E+00	1.258E+00	1.999E+00	NOT IDENT.
ZR-95	-4.645E-02	6.556E-01	1.145E+00	NOT IDENT.
NB-97	0.000E+00	3.683E+40	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.669E+11	0.000E+00	SHORT HLIF
MO-99	-5.611E+02	1.054E+03	1.775E+03	FAIL ABUN
TC-99M	0.000E+00	4.876E+28	0.000E+00	SHORT HLIF
RH-101	-1.258E-01	2.738E-01	4.610E-01	NOT IDENT.
RH-102	1.745E-01	4.931E-01	8.905E-01	NOT IDENT.
RU-103	6.069E-02	5.218E-01	9.276E-01	NOT IDENT.
RH-106	-3.014E+00	3.042E+00	5.012E+00	NOT IDENT.
RU-106	-3.014E+00	3.042E+00	5.012E+00	NOT IDENT.
AG-108M	8.518E-02	3.662E-01	6.549E-01	NOT IDENT.
CD-109	2.077E+00	6.130E+00	1.083E+01	NOT IDENT.
AG-110	5.530E+00	8.695E+00	1.421E+01	NOT IDENT.
AG-110M	-4.141E-02	5.343E-01	9.143E-01	NOT IDENT.
SN-113	-2.598E-01	5.074E-01	8.885E-01	NOT IDENT.
CD-115	0.000E+00	2.370E+03	0.000E+00	SHORT HLIF
SN-117M	-4.498E-02	7.419E-01	1.257E+00	NOT IDENT.
SB-122	1.042E+02	1.897E+02	3.479E+02	NOT IDENT.
TE-123M	-8.340E-02	2.554E-01	4.274E-01	NOT IDENT.
SB-124	-5.133E-02	4.227E-01	8.430E-01	NOT IDENT.
SB-125	6.028E-01	1.138E+00	2.058E+00	NOT IDENT.
TE-125M	7.904E+00	9.902E+01	1.586E+02	NOT IDENT.
I-126	1.139E+00	2.805E+00	4.672E+00	NOT IDENT.
SB-126	-3.057E-01	1.745E+00	3.050E+00	NOT IDENT.
SN-126	5.264E-01	5.842E-01	1.054E+00	NOT IDENT.
SB-127	5.437E+01	5.146E+01	9.950E+01	NOT IDENT.
I-131	1.674E+00	2.910E+00	4.855E+00	FAIL ABUN
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	8.928E+00	5.281E+01	8.846E+01	FAIL ABUN
BA-133	3.653E-01	4.221E-01	7.860E-01	NOT IDENT.
I-133	0.000E+00	1.178E+08	0.000E+00	SHORT HLIF
CS-134	-3.313E-01	3.432E-01	5.528E-01	NOT IDENT.
I-135	0.000E+00	4.838E+26	0.000E+00	SHORT HLIF
CS-136	2.104E-01	1.688E+00	3.118E+00	NOT IDENT.
LA-138	1.647E-01	2.470E-01	5.568E-01	NOT IDENT.
CE-139	4.329E-02	2.916E-01	4.585E-01	NOT IDENT.
BA-140	-1.926E+00	4.925E+00	7.569E+00	NOT IDENT.
LA-140	-1.285E-01	6.035E-01	1.174E+00	NOT IDENT.
CE-141	-3.072E-01	6.276E-01	1.048E+00	NOT IDENT.
CE-143	0.000E+00	1.213E+05	0.000E+00	SHORT HLIF
CE-144	6.451E-01	1.734E+00	3.015E+00	FAIL ABUN
PM-144	-1.062E-01	2.525E-01	4.321E-01	NOT IDENT.
PR-144	-7.688E+00	1.902E+01	3.259E+01	NOT IDENT.
PM-146	3.721E-01	5.626E-01	1.016E+00	NOT IDENT.
ND-147	4.961E+00	1.120E+01	1.832E+01	NOT IDENT.
PM-147	4.216E+03	6.498E+03	1.147E+04	NOT IDENT.
PM-149	0.000E+00	1.596E+04	0.000E+00	SHORT HLIF
EU-150	5.332E-02	2.689E-01	4.890E-01	NOT IDENT.
EU-152	-1.421E+00	9.609E-01	1.628E+00	NOT IDENT.
GD-153	-6.647E-01	7.389E-01	1.239E+00	FAIL ABUN
EU-154	2.781E-01	5.840E-01	1.204E+00	NOT IDENT.
EU-155	3.751E-03	1.061E+00	1.492E+00	NOT IDENT.
TB-160	-4.854E-02	1.632E+00	2.793E+00	FAIL ABUN
HO-166M	2.638E-01	4.866E-01	8.937E-01	FAIL ABUN
TM-171	-4.114E+01	4.295E+02	6.955E+02	FAIL ABUN
HF-172	4.633E-01	1.642E+00	2.852E+00	NOT IDENT.
LU-172	1.959E-01	6.367E-01	1.185E+00	FAIL ABUN
LU-176	-3.827E-02	2.474E-01	4.469E-01	NOT IDENT.
HF-181	2.094E-01	6.099E-01	1.093E+00	NOT IDENT.
TA-182	1.218E-01	9.825E-01	1.901E+00	NOT IDENT.
RE-183	0.000E+00	1.417E+01	1.278E+01	FAIL ABUN
RE-184	-1.028E+00	1.607E+00	2.626E+00	NOT IDENT.
W-188	-3.690E-02	7.238E+01	1.318E+02	NOT IDENT.
IR-192	-4.022E-01	3.532E-01	6.108E-01	NOT IDENT.
HG-203	1.983E-01	3.990E-01	7.412E-01	NOT IDENT.
TL-204	2.568E+01	3.879E+01	6.991E+01	FAIL ABUN
BI-207	-1.481E-01	4.696E-01	8.510E-01	NOT IDENT.
TL-208	-1.199E-02	3.431E-01	6.044E-01	NOT IDENT.
BI-211	1.054E+00	2.031E+00	3.732E+00	NOT IDENT.
PB-211	-4.305E+00	7.923E+00	1.382E+01	NOT IDENT.

BI-212	2.284E+00	3.871E+00	7.153E+00	NOT IDENT.
PB-212	4.353E-01	4.943E-01	9.368E-01	NOT IDENT.
BI-213	2.236E-01	1.287E+00	2.295E+00	NOT IDENT.
BI-214	-9.243E-02	6.134E-01	1.072E+00	NOT IDENT.
PB-214	3.207E-01	7.452E-01	1.364E+00	NOT IDENT.
RN-219	7.402E-01	4.621E+00	8.289E+00	NOT IDENT.
RN-222	-9.243E-02	6.134E-01	1.072E+00	NOT IDENT.
RA-223	6.514E+00	1.863E+01	1.113E+01	FAIL ABUN
RA-224	-2.526E+00	5.141E+00	9.283E+00	NOT IDENT.
AC-225	-5.436E+00	1.142E+01	1.860E+01	NOT IDENT.
RA-226	3.207E-01	7.452E-01	1.364E+00	NOT IDENT.
AC-227	1.178E+00	2.265E+00	4.228E+00	FAIL ABUN
TH-227	1.178E+00	2.265E+00	4.228E+00	FAIL ABUN
AC-228	-2.664E-01	1.574E+00	2.666E+00	NOT IDENT.
RA-228	-2.664E-01	1.574E+00	2.666E+00	NOT IDENT.
TH-228	4.353E-01	4.943E-01	9.368E-01	NOT IDENT.
TH-229	-2.695E-01	5.182E+00	8.654E+00	NOT IDENT.
TH-230	3.207E-01	7.452E-01	1.364E+00	NOT IDENT.
PA-231	3.060E+00	4.419E+00	8.238E+00	NOT IDENT.
TH-231	6.514E+00	1.863E+01	1.113E+01	FAIL ABUN
TH-232	-2.664E-01	1.574E+00	2.666E+00	NOT IDENT.
PA-233	-3.198E-01	6.145E-01	1.092E+00	NOT IDENT.
PA-234	7.152E-01	3.600E+00	6.206E+00	NOT IDENT.
PA-234M	-4.858E+00	1.147E+01	1.848E+01	FAIL ABUN
TH-234	-4.858E+00	1.147E+01	1.848E+01	FAIL ABUN
U-234	3.207E-01	7.452E-01	1.364E+00	NOT IDENT.
U-235	-8.534E-02	1.575E+00	2.689E+00	FAIL ABUN
NP-237	-3.198E-01	6.145E-01	1.092E+00	NOT IDENT.
NP-238	0.000E+00	4.317E+03	0.000E+00	SHORT HLIF
U-238	-4.858E+00	1.147E+01	1.848E+01	FAIL ABUN
NP-239	-2.399E-01	2.272E+00	3.900E+00	FAIL ABUN
PU-239	2.100E+03	2.892E+03	5.104E+03	NOT IDENT.
AM-243	-3.103E-01	4.123E-01	7.041E-01	NOT IDENT.
CM-243	0.000E+00	1.361E+00	1.677E+00	FAIL ABUN
BK-247	1.881E-01	7.487E-01	1.381E+00	FAIL ABUN
CM-247	-1.157E-01	4.236E-01	7.471E-01	NOT IDENT.
CF-249	2.909E-02	4.344E-01	7.792E-01	NOT IDENT.
CF-251	4.915E-01	1.088E+00	1.878E+00	NOT IDENT.
ANH-511	6.869E-02	3.222E-01	5.876E-01	NOT IDENT.

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:58:30.31

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CO-60	1173.23	3048	99.85	1.559E+00	5.111E+01	5.157E+01	3.74
	1332.49	2703	99.98*	1.393E+00	5.067E+01	5.112E+01	3.81
BA-137M	661.66	12030	89.90*	2.599E+00	1.345E+02	1.347E+02	1.90
CS-137	661.66	12030	85.10*	2.599E+00	1.421E+02	1.423E+02	1.90
BI-210	46.54	6826	4.25*	9.547E-01	4.393E+03	4.403E+03	4.98
PB-210	46.54	6826	4.25*	9.547E-01	4.393E+03	4.403E+03	4.98
AM-241	59.54	21543	35.90*	2.854E+00	5.491E+02	5.492E+02	1.97

Flag: "*" = Keyline

Sample ID : G1206070204 Acquisition date : 10-MAY-2025 11:42:56

Total number of lines in spectrum 16
Number of unidentified lines 4
Number of lines tentatively identified by NID 12 75.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.01	5.067E+01	5.112E+01	0.195E+01	3.81	
BA-137M	30.08Y	1.00	1.345E+02	1.347E+02	0.026E+02	1.90	
CS-137	30.08Y	1.00	1.421E+02	1.423E+02	0.027E+02	1.90	
BI-210	22.20Y	1.00	4.393E+03	4.403E+03	0.219E+03	4.98	
PB-210	22.20Y	1.00	4.393E+03	4.403E+03	0.219E+03	4.98	
AM-241	432.60Y	1.00	5.491E+02	5.492E+02	0.108E+02	1.97	
			---	---			
		Total Activity :	9.663E+03	9.682E+03			
		Grand Total Activity :	9.663E+03	9.682E+03			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : G1206070204 Acquisition date : 10-MAY-2025 11:42:56

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	50.02	76	2528	0.87	100.46	99	5	7.75E-02	****	1.42E+00	T
0	79.31	59	649	0.78	159.02	156	7	6.19E-02	****	5.57E+00	T
0	92.64	30	491	0.58	185.67	184	6	3.11E-02	****	6.62E+00	T
0	103.43	95	491	2.20	207.23	204	7	1.00E-01	82.5	7.07E+00	T
0	106.82	60	338	1.34	214.00	212	5	6.28E-02	98.7	7.16E+00	T
0	170.05	33	463	3.23	340.40	334	8	3.57E-02	****	6.68E+00	
0	323.62	44	750	6.86	647.40	641	18	4.91E-02	****	4.47E+00	T
0	367.72	57	311	1.70	735.55	732	8	6.35E-02	****	4.08E+00	T
0	533.08	43	261	4.32	1066.12	1060	13	4.82E-02	****	3.09E+00	
0	1008.63	18	79	1.48	2016.93	2014	8	2.13E-02	****	1.79E+00	
0	1419.58	7	2	1.45	2838.69	2835	7	8.21E-03	94.0	1.32E+00	

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 10-MAY-2025 11:58:41.85

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*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070204.CNF;1  *
* Acquisition date : 10-MAY-2025 11:42:56 Sensitivity     : 3.000           *
* Detector ID      : GAM29                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:15:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:15:02.31     Half life ratio : *****           *
* Sample date      : 16-APR-2025 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1206070204          Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.1500E+02 GRAM *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 09:02:37 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;19            *
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
CO-60	1.825E-01
BA-137M	2.530E-01
CS-137	2.673E-01
BI-210	7.031E+01
PB-210	7.031E+01
AM-241	2.260E+00

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	4.061E+00	NOT IDENT.
NA-22	1.887E-01	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.323E-01	NOT IDENT.
K-40	1.164E+00	NOT IDENT.
SC-46	3.517E-01	NOT IDENT.
V-48	9.401E-01	NOT IDENT.
CR-51	4.011E+00	NOT IDENT.
MN-52	3.357E+00	NOT IDENT.
MN-54	2.648E-01	NOT IDENT.
CO-56	3.431E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.897E-01	NOT IDENT.
CO-58	2.985E-01	NOT IDENT.
FE-59	8.311E-01	NOT IDENT.
ZN-65	7.289E-01	NOT IDENT.
GE-68	1.143E+01	NOT IDENT.
AS-73	1.748E+01	NOT IDENT.
AS-74	1.062E+00	NOT IDENT.
SE-75	3.888E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	3.202E+00	NOT IDENT.
RB-83	6.518E-01	NOT IDENT.
RB-84	8.291E-01	NOT IDENT.
KR-85	6.074E+01	NOT IDENT.

SR-85	3.552E-01	NOT IDENT.
RB-86	9.944E+00	NOT IDENT.
Y-88	1.119E-01	NOT IDENT.
Y-91	8.310E+01	NOT IDENT.
NB-94	1.735E-01	NOT IDENT.
NB-95	2.567E-01	NOT IDENT.
NB-95M	9.661E-01	NOT IDENT.
ZR-95	5.362E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	8.283E+02	FAIL ABUN
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.232E-01	NOT IDENT.
RH-102	4.217E-01	NOT IDENT.
RU-103	4.456E-01	NOT IDENT.
RH-106	2.370E+00	NOT IDENT.
RU-106	2.370E+00	NOT IDENT.
AG-108M	3.167E-01	NOT IDENT.
CD-109	5.255E+00	NOT IDENT.
AG-110	6.786E+00	NOT IDENT.
AG-110M	4.316E-01	NOT IDENT.
SN-113	4.282E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	6.079E-01	NOT IDENT.
SB-122	1.653E+02	NOT IDENT.
TE-123M	2.066E-01	NOT IDENT.
SB-124	3.371E-01	NOT IDENT.
SB-125	9.962E-01	NOT IDENT.
TE-125M	7.687E+01	NOT IDENT.
I-126	2.182E+00	NOT IDENT.
SB-126	1.418E+00	NOT IDENT.
SN-126	5.116E-01	NOT IDENT.
SB-127	4.663E+01	NOT IDENT.
I-131	2.341E+00	FAIL ABUN
I-132	0.000E+00	SHORT HLIF
TE-132	4.280E+01	FAIL ABUN
BA-133	3.794E-01	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	2.574E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	1.467E+00	NOT IDENT.
LA-138	2.374E-01	NOT IDENT.
CE-139	2.219E-01	NOT IDENT.
BA-140	3.607E+00	NOT IDENT.
LA-140	4.715E-01	NOT IDENT.
CE-141	5.066E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.461E+00	FAIL ABUN
PM-144	2.011E-01	NOT IDENT.
PR-144	1.517E+01	NOT IDENT.
PM-146	4.925E-01	NOT IDENT.
ND-147	8.752E+00	NOT IDENT.
PM-147	5.560E+03	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.361E-01	NOT IDENT.
EU-152	7.828E-01	NOT IDENT.
GD-153	6.002E-01	FAIL ABUN
EU-154	5.321E-01	NOT IDENT.
EU-155	7.220E-01	NOT IDENT.
TB-160	1.324E+00	FAIL ABUN
HO-166M	4.202E-01	FAIL ABUN
TM-171	3.434E+02	FAIL ABUN
HF-172	1.382E+00	NOT IDENT.
LU-172	5.584E-01	FAIL ABUN
LU-176	2.153E-01	NOT IDENT.
HF-181	5.268E-01	NOT IDENT.
TA-182	8.503E-01	NOT IDENT.
RE-183	6.342E+00	FAIL ABUN
RE-184	1.238E+00	NOT IDENT.
W-188	6.359E+01	NOT IDENT.
IR-192	2.936E-01	NOT IDENT.
HG-203	3.580E-01	NOT IDENT.
TL-204	3.395E+01	FAIL ABUN
BI-207	3.979E-01	NOT IDENT.
TL-208	2.878E-01	NOT IDENT.
BI-211	1.802E+00	NOT IDENT.
PB-211	6.666E+00	NOT IDENT.
BI-212	3.356E+00	NOT IDENT.

PB-212	4.537E-01	NOT IDENT.
BI-213	1.110E+00	NOT IDENT.
BI-214	5.081E-01	NOT IDENT.
PB-214	6.587E-01	NOT IDENT.
RN-219	4.005E+00	NOT IDENT.
RN-222	5.081E-01	NOT IDENT.
RA-223	5.370E+00	FAIL ABUN
RA-224	4.484E+00	NOT IDENT.
AC-225	9.008E+00	NOT IDENT.
RA-226	6.587E-01	NOT IDENT.
AC-227	2.043E+00	FAIL ABUN
TH-227	2.043E+00	FAIL ABUN
AC-228	1.264E+00	NOT IDENT.
RA-228	1.264E+00	NOT IDENT.
TH-228	4.537E-01	NOT IDENT.
TH-229	4.199E+00	NOT IDENT.
TH-230	6.587E-01	NOT IDENT.
PA-231	3.979E+00	NOT IDENT.
TH-231	5.370E+00	FAIL ABUN
TH-232	1.264E+00	NOT IDENT.
PA-233	5.261E-01	NOT IDENT.
PA-234	2.949E+00	NOT IDENT.
PA-234M	8.962E+00	FAIL ABUN
TH-234	8.962E+00	FAIL ABUN
U-234	6.587E-01	NOT IDENT.
U-235	1.299E+00	FAIL ABUN
NP-237	5.261E-01	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	8.962E+00	FAIL ABUN
NP-239	1.889E+00	FAIL ABUN
PU-239	2.475E+03	NOT IDENT.
AM-243	3.416E-01	NOT IDENT.
CM-243	8.143E-01	FAIL ABUN
BK-247	6.674E-01	FAIL ABUN
CM-247	3.608E-01	NOT IDENT.
CF-249	3.760E-01	NOT IDENT.
CF-251	9.076E-01	NOT IDENT.
ANH-511	2.828E-01	NOT IDENT.

```
*****************************************************************************
*                            GEL Laboratories LLC                           *
*                              2040 Savage Road                             *
*                            Charleston, SC 29407                           *
*****************************************************************************
*                                                                           *
*                          DETECTOR AND SAMPLE DATA                         *
*                                                                           *
* Configuration    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1206070204.CNF;1  *
* Acquisition date : 10-MAY-2025 11:42:56 Sensitivity     : 3.000           *
* Detector ID      : GAM29                Energy tolerance: 1.500           *
* Elapsed live time:    0 00:15:00.00     Abundance limit : 75.000          *
* Elapsed real time:    0 00:15:02.31     Half life ratio : *****           *
* Sample date      : 16-APR-2025 00:00:00 Nuclide Library : SOLID           *
* Sample ID        : G1206070204          Analyst initials: RXF2            *
* Batch Number     : 2781510              Sample Quantity : 1.1500E+02 GRAM *
*                                         Quantity Err(%) : 1.7391E-03 %    *
* Wet wt corr      :    1.00000           Wet Weight      :    0.00000      *
*                                         Dry Weight      :    0.00000      *
*****************************************************************************
*                                                                           *
*                          CALIBRATION INFORMATION                          *
*                                                                           *
* Eff. Cal. date   : 29-JUL-2024 09:02:37 Eff. Geometry   : CAN             *
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;19            *
*****************************************************************************
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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
CO-60	5.112E+01	4.757E+00	4.757E+00
BA-137M	1.347E+02	1.226E+01	1.226E+01
CS-137	1.423E+02	1.295E+01	1.295E+01
BI-210	4.403E+03	4.867E+02	4.867E+02
PB-210	4.403E+03	4.867E+02	4.867E+02
AM-241	5.492E+02	4.430E+01	4.430E+01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	2.433E+00	4.677E+00	4.804E+00	NOT IDENT.
NA-22	9.862E-02	2.073E-01	2.120E-01	NOT IDENT.
NA-24	6.420E+10	9.109E+10	9.557E+10	SHORT HLIF
AL-26	-3.463E-02	1.707E-01	1.715E-01	NOT IDENT.
K-40	1.751E-01	1.287E+00	1.290E+00	NOT IDENT.
SC-46	-1.106E-01	4.421E-01	4.449E-01	NOT IDENT.
V-48	3.509E-01	1.063E+00	1.075E+00	NOT IDENT.
CR-51	3.817E-01	5.082E+00	5.085E+00	NOT IDENT.
MN-52	4.230E+00	3.078E+00	3.621E+00	NOT IDENT.
MN-54	-1.527E-01	3.376E-01	3.446E-01	NOT IDENT.
CO-56	1.774E-01	4.068E-01	4.146E-01	NOT IDENT.
MN-56	1.000E+41	2.279E+41	0.000E+00	SHORT HLIF
CO-57	-5.716E-02	2.301E-01	2.316E-01	NOT IDENT.
CO-58	-3.216E-01	3.938E-01	4.197E-01	NOT IDENT.
FE-59	-6.269E-01	1.016E+00	1.055E+00	NOT IDENT.
ZN-65	3.695E-01	8.248E-01	8.414E-01	NOT IDENT.
GE-68	4.671E+00	1.299E+01	1.316E+01	NOT IDENT.
AS-73	-3.929E+01	2.400E+01	2.982E+01	NOT IDENT.
AS-74	2.988E-03	1.267E+00	1.267E+00	NOT IDENT.
SE-75	4.086E-02	4.387E-01	4.391E-01	NOT IDENT.
BR-77	5.788E+02	1.256E+03	1.282E+03	SHORT HLIF
SR-82	1.811E+00	3.755E+00	3.842E+00	NOT IDENT.
RB-83	-2.675E-02	7.716E-01	7.717E-01	NOT IDENT.
RB-84	1.284E+00	9.407E-01	1.105E+00	NOT IDENT.

KR-85	-7.422E+00	7.207E+01	7.215E+01	NOT IDENT.
SR-85	-4.367E-02	4.215E-01	4.220E-01	NOT IDENT.
RB-86	2.035E+00	1.143E+01	1.147E+01	NOT IDENT.
Y-88	-9.413E-02	1.712E-01	1.764E-01	NOT IDENT.
Y-91	-1.097E+02	1.143E+02	1.246E+02	NOT IDENT.
NB-94	-2.258E-01	2.328E-01	2.541E-01	NOT IDENT.
NB-95	-2.912E-01	3.414E-01	3.658E-01	NOT IDENT.
NB-95M	-1.110E+00	1.263E+00	1.358E+00	NOT IDENT.
ZR-95	-4.645E-02	6.556E-01	6.559E-01	NOT IDENT.
NB-97	1.000E+41	3.789E+40	0.000E+00	SHORT HLIF
ZR-97	-5.324E+09	1.669E+11	1.669E+11	SHORT HLIF
MO-99	-5.611E+02	1.056E+03	1.086E+03	FAIL ABUN
TC-99M	3.094E+28	4.889E+28	0.000E+00	SHORT HLIF
RH-101	-1.258E-01	2.748E-01	2.806E-01	NOT IDENT.
RH-102	1.745E-01	4.935E-01	4.998E-01	NOT IDENT.
RU-103	6.069E-02	5.219E-01	5.226E-01	NOT IDENT.
RH-106	-3.014E+00	3.057E+00	3.346E+00	NOT IDENT.
RU-106	-3.014E+00	3.057E+00	3.346E+00	NOT IDENT.
AG-108M	8.518E-02	3.663E-01	3.683E-01	NOT IDENT.
CD-109	2.077E+00	6.134E+00	6.205E+00	NOT IDENT.
AG-110	5.530E+00	8.709E+00	9.059E+00	NOT IDENT.
AG-110M	-4.141E-02	5.344E-01	5.347E-01	NOT IDENT.
SN-113	-2.598E-01	5.078E-01	5.211E-01	NOT IDENT.
CD-115	1.708E+02	2.370E+03	2.372E+03	SHORT HLIF
SN-117M	-4.498E-02	7.420E-01	7.422E-01	NOT IDENT.
SB-122	1.042E+02	1.900E+02	1.957E+02	NOT IDENT.
TE-123M	-8.340E-02	2.554E-01	2.582E-01	NOT IDENT.
SB-124	-5.133E-02	4.227E-01	4.233E-01	NOT IDENT.
SB-125	6.028E-01	1.139E+00	1.171E+00	NOT IDENT.
TE-125M	7.904E+00	9.902E+01	9.908E+01	NOT IDENT.
I-126	1.139E+00	2.807E+00	2.854E+00	NOT IDENT.
SB-126	-3.057E-01	1.746E+00	1.751E+00	NOT IDENT.
SN-126	5.264E-01	5.858E-01	6.320E-01	NOT IDENT.
SB-127	5.437E+01	5.206E+01	5.754E+01	NOT IDENT.
I-131	1.674E+00	2.913E+00	3.009E+00	FAIL ABUN
I-132	1.000E+41	5.289E+42	0.000E+00	SHORT HLIF
TE-132	8.928E+00	5.282E+01	5.298E+01	FAIL ABUN
BA-133	3.653E-01	4.232E-01	4.541E-01	NOT IDENT.
I-133	-2.826E+07	1.179E+08	1.186E+08	SHORT HLIF
CS-134	-3.313E-01	3.449E-01	3.758E-01	NOT IDENT.
I-135	1.783E+26	4.941E+26	0.000E+00	SHORT HLIF
CS-136	2.104E-01	1.688E+00	1.691E+00	NOT IDENT.
LA-138	1.647E-01	2.474E-01	2.583E-01	NOT IDENT.
CE-139	4.329E-02	2.918E-01	2.924E-01	NOT IDENT.
BA-140	-1.926E+00	4.928E+00	5.004E+00	NOT IDENT.
LA-140	-1.285E-01	6.036E-01	6.063E-01	NOT IDENT.
CE-141	-3.072E-01	6.280E-01	6.431E-01	NOT IDENT.
CE-143	-5.867E+03	1.213E+05	1.213E+05	SHORT HLIF
CE-144	6.451E-01	1.735E+00	1.759E+00	FAIL ABUN
PM-144	-1.062E-01	2.527E-01	2.572E-01	NOT IDENT.
PR-144	-7.688E+00	1.903E+01	1.934E+01	NOT IDENT.
PM-146	3.721E-01	5.639E-01	5.883E-01	NOT IDENT.
ND-147	4.961E+00	1.121E+01	1.143E+01	NOT IDENT.
PM-147	4.216E+03	6.504E+03	6.776E+03	NOT IDENT.
PM-149	5.599E+03	1.598E+04	1.618E+04	SHORT HLIF
EU-150	5.332E-02	2.689E-01	2.700E-01	NOT IDENT.
EU-152	-1.421E+00	9.690E-01	1.162E+00	NOT IDENT.
GD-153	-6.647E-01	7.406E-01	7.989E-01	FAIL ABUN
EU-154	2.781E-01	5.845E-01	5.978E-01	NOT IDENT.
EU-155	3.751E-03	1.061E+00	1.061E+00	NOT IDENT.
TB-160	-4.854E-02	1.632E+00	1.632E+00	FAIL ABUN
HO-166M	2.638E-01	4.873E-01	5.016E-01	FAIL ABUN
TM-171	-4.114E+01	4.295E+02	4.299E+02	FAIL ABUN
HF-172	4.633E-01	1.644E+00	1.657E+00	NOT IDENT.
LU-172	1.959E-01	6.373E-01	6.434E-01	FAIL ABUN
LU-176	-3.827E-02	2.475E-01	2.481E-01	NOT IDENT.
HF-181	2.094E-01	6.102E-01	6.174E-01	NOT IDENT.
TA-182	1.218E-01	9.825E-01	9.841E-01	NOT IDENT.
RE-183	7.325E+02	7.903E+01	3.395E+02	FAIL ABUN
RE-184	-1.028E+00	1.612E+00	1.677E+00	NOT IDENT.
W-188	-3.690E-02	7.238E+01	7.238E+01	NOT IDENT.
IR-192	-4.022E-01	3.546E-01	3.983E-01	NOT IDENT.
HG-203	1.983E-01	3.993E-01	4.092E-01	NOT IDENT.
TL-204	2.568E+01	3.887E+01	4.055E+01	FAIL ABUN
BI-207	-1.481E-01	4.698E-01	4.745E-01	NOT IDENT.
TL-208	-1.199E-02	3.431E-01	3.431E-01	NOT IDENT.
BI-211	1.054E+00	2.032E+00	2.087E+00	NOT IDENT.
PB-211	-4.305E+00	7.932E+00	8.166E+00	NOT IDENT.

BI-212	2.284E+00	3.878E+00	4.012E+00	NOT IDENT.
PB-212	4.353E-01	4.955E-01	5.330E-01	NOT IDENT.
BI-213	2.236E-01	1.288E+00	1.292E+00	NOT IDENT.
BI-214	-9.243E-02	6.134E-01	6.149E-01	NOT IDENT.
PB-214	3.207E-01	7.457E-01	7.595E-01	NOT IDENT.
RN-219	7.402E-01	4.622E+00	4.634E+00	NOT IDENT.
RN-222	-9.243E-02	6.134E-01	6.149E-01	NOT IDENT.
RA-223	6.514E+00	1.864E+01	1.887E+01	FAIL ABUN
RA-224	-2.526E+00	5.145E+00	5.270E+00	NOT IDENT.
AC-225	-5.436E+00	1.143E+01	1.169E+01	NOT IDENT.
RA-226	3.207E-01	7.457E-01	7.595E-01	NOT IDENT.
AC-227	1.178E+00	2.272E+00	2.333E+00	FAIL ABUN
TH-227	1.178E+00	2.272E+00	2.333E+00	FAIL ABUN
AC-228	-2.664E-01	1.574E+00	1.578E+00	NOT IDENT.
RA-228	-2.664E-01	1.574E+00	1.578E+00	NOT IDENT.
TH-228	4.353E-01	4.955E-01	5.330E-01	NOT IDENT.
TH-229	-2.695E-01	5.182E+00	5.183E+00	NOT IDENT.
TH-230	3.207E-01	7.456E-01	7.595E-01	NOT IDENT.
PA-231	3.060E+00	4.472E+00	4.679E+00	NOT IDENT.
TH-231	6.514E+00	1.864E+01	1.887E+01	FAIL ABUN
TH-232	-2.664E-01	1.574E+00	1.578E+00	NOT IDENT.
PA-233	-3.198E-01	6.150E-01	6.317E-01	NOT IDENT.
PA-234	7.152E-01	3.692E+00	3.706E+00	NOT IDENT.
PA-234M	-4.858E+00	1.152E+01	1.173E+01	FAIL ABUN
TH-234	-4.858E+00	1.152E+01	1.173E+01	FAIL ABUN
U-234	3.207E-01	7.456E-01	7.595E-01	NOT IDENT.
U-235	-8.534E-02	1.575E+00	1.576E+00	FAIL ABUN
NP-237	-3.198E-01	6.150E-01	6.317E-01	NOT IDENT.
NP-238	9.131E+02	4.318E+03	4.337E+03	SHORT HLIF
U-238	-4.858E+00	1.152E+01	1.173E+01	FAIL ABUN
NP-239	-2.399E-01	2.272E+00	2.275E+00	FAIL ABUN
PU-239	2.100E+03	2.896E+03	3.047E+03	NOT IDENT.
AM-243	-3.103E-01	4.130E-01	4.360E-01	NOT IDENT.
CM-243	1.683E+00	1.372E+00	1.568E+00	FAIL ABUN
BK-247	1.881E-01	7.498E-01	7.546E-01	FAIL ABUN
CM-247	-1.157E-01	4.241E-01	4.273E-01	NOT IDENT.
CF-249	2.909E-02	4.344E-01	4.346E-01	NOT IDENT.
CF-251	4.915E-01	1.090E+00	1.112E+00	NOT IDENT.
ANH-511	6.869E-02	3.222E-01	3.237E-01	NOT IDENT.

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*****************************************************************************
*                          GEL Laboratories LLC                             *
*                            2040 Savage Road                               *
*                          Charleston, SC 29407                             *
*                     GAMMA SPECTROSCOPY BACKGROUND REPORT                  *
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ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	2370.1572	85.43	371.8630	131.20	321.4096
45.60	2143.2258	86.55	366.2095	133.02	334.5193
46.54	2148.0684	86.79	370.5729	133.52	300.9169
49.72	1607.3530	86.94	370.6639	136.00	308.6038
51.35	2003.6400	87.09	347.5168	136.47	311.0409
51.87	1954.5764	87.57	320.3008	140.51	265.9458
52.39	1976.6320	88.03	345.9257	143.76	270.3860
52.97	2071.6616	88.34	358.7986	144.24	267.1098
53.44	2233.8306	88.47	358.8736	145.44	301.7736
54.07	2156.1262	89.96	377.7638	152.43	312.2480
57.36	0.0000	90.64	338.5104	153.25	290.6213
57.53	1386.9358	91.11	338.7608	154.21	285.1566
57.98	1388.2365	92.59	373.6401	156.02	289.1998
59.27	1391.9534	93.35	352.0349	158.56	285.3647
59.32	1392.0961	94.56	302.1017	159.00	297.1094
59.54	1392.7253	94.65	302.1427	162.33	292.3559
60.96	1396.7594	94.67	302.1513	162.66	307.6066
61.17	1397.3516	94.87	302.2440	163.33	291.5001
62.93	368.2754	97.43	367.1089	165.86	286.8299
63.29	357.7382	98.43	310.6830	176.31	313.1914
63.58	363.3459	98.44	310.6873	176.60	289.6403
64.28	363.8460	99.53	334.5203	177.52	255.5936
66.73	391.3945	100.11	303.1945	181.07	285.0073
67.24	341.7832	102.03	332.8708	181.52	289.8840
67.68	356.3649	103.18	321.8782	184.41	346.7126
67.75	356.4102	103.37	321.9667	185.72	303.0203
68.89	365.3645	105.21	299.6577	193.51	354.5888
69.67	408.9452	105.31	299.7009	197.03	330.4423
70.82	339.9700	106.12	300.0472	198.01	368.1678
70.83	339.9775	106.47	267.5667	201.83	325.8694
72.81	355.6418	109.28	317.4000	203.43	329.9893
72.87	355.6786	111.00	339.3203	205.31	297.7451
74.66	385.7832	111.76	332.0050	210.85	283.3660
74.82	385.8942	114.06	329.7501	215.65	301.7494
74.97	385.9966	116.30	320.8256	218.12	340.5144
77.11	340.7099	116.74	316.6017	222.11	318.2640
78.74	348.9651	119.76	330.0526	227.09	314.6707
79.69	349.5326	121.12	294.0248	227.38	324.6616
80.03	347.9919	121.22	304.0503	228.16	286.4377
80.12	348.0504	121.78	335.3654	228.18	286.4448
80.19	348.0911	122.06	336.5984	235.69	318.2053
80.57	401.2588	122.92	314.7304	235.96	317.0272
81.00	401.5518	123.07	330.3636	238.63	267.6927
81.07	405.7820	123.68	343.9827	238.98	0.0000
81.75	385.3062	125.81	308.0847	240.99	286.5940
82.47	370.3999	127.23	334.3573	242.00	269.2701
83.79	334.0902	127.91	317.8576	244.70	246.3937
84.00	334.2067	129.30	300.4695	252.40	248.7622

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
252.80	251.3708	351.06	233.1564	569.33	93.1418
254.15	0.0000	351.93	239.6117	569.50	93.1492
256.23	251.2040	355.39	0.0000	569.70	93.1567
260.90	0.0000	356.01	218.4700	583.19	133.4307
264.66	270.7257	364.49	211.8668	584.27	120.2471
264.80	270.7581	366.42	246.3245	595.83	124.9388
265.00	267.3906	372.51	242.8356	600.60	111.8474
269.46	243.5245	375.05	255.8635	602.52	0.0000
270.03	240.2095	377.52	241.5435	604.72	100.7355
271.23	262.6726	383.85	226.7762	607.14	119.3607
273.65	258.8615	388.16	249.5325	609.32	115.3496
276.40	252.5247	388.63	222.7897	610.33	112.3087
277.37	273.3330	391.69	254.6738	614.28	103.2023
277.60	269.0799	400.66	261.5738	618.01	99.2266
278.00	247.6641	401.81	265.4712	620.36	97.2550
279.20	245.2988	402.40	274.8760	621.93	131.4803
279.54	272.0511	404.85	268.7285	630.19	0.0000
279.70	272.0833	410.95	269.6484	631.29	96.6517
280.46	268.7852	413.71	251.3100	633.25	100.8877
283.69	259.9273	414.70	250.5135	634.78	107.1953
284.31	286.8255	423.72	269.6728	635.95	106.2043
285.41	264.5750	427.09	276.7798	636.99	96.8750
285.90	0.0000	427.87	278.7892	657.50	126.0254
287.50	249.3867	433.94	275.9148	657.76	126.0400
290.67	246.4835	439.40	281.4746	657.90	0.0000
293.27	0.0000	440.45	274.9710	661.66	93.6209
295.22	228.1306	453.88	297.0392	664.57	0.0000
295.96	257.0027	463.37	303.3105	666.33	56.9092
298.58	238.2751	468.07	303.0759	666.50	56.9114
299.98	251.6133	473.00	278.6719	667.71	0.0000
300.09	251.6309	475.06	281.8707	677.62	58.2159
300.13	251.6367	476.78	267.5715	685.70	50.9648
301.36	235.2382	477.60	263.7988	692.65	68.1328
302.85	259.9958	482.18	226.4914	695.00	67.1272
304.50	239.2638	487.02	214.3693	696.49	70.3640
304.85	239.3193	492.35	0.0000	696.51	70.3640
306.78	237.8859	497.08	192.9038	697.00	65.0458
308.46	224.9740	505.52	180.9116	697.30	62.9204
311.90	250.1698	507.63	0.0000	697.49	68.2578
316.51	249.1884	511.00	187.2999	702.65	70.5251
319.41	196.5535	514.00	190.5262	706.68	66.3518
320.08	245.7991	514.00	190.5262	711.68	69.6920
321.04	259.2522	520.40	155.4604	720.70	62.3944
323.87	246.8641	520.69	0.0000	721.93	0.0000
325.23	247.0904	522.65	0.0000	722.78	64.5947
328.76	267.2668	527.90	0.0000	722.91	64.5972
333.37	256.4560	528.26	158.0166	723.31	62.4534
333.97	251.1918	529.59	170.0468	724.19	62.4746
334.37	253.9371	529.87	0.0000	727.33	63.6238
338.28	256.3713	531.02	137.3206	733.00	71.3201
338.32	256.3771	537.26	151.1918	735.93	58.4143
340.48	235.1934	546.56	0.0000	737.46	74.6826
340.55	228.0222	552.55	108.5317	739.50	77.9854
344.28	270.8584	563.25	111.0697	744.23	77.0351
345.93	222.4970	564.24	105.0579	747.24	59.7378

ENERGY	MDA COUNTS
748.06	61.9286
752.31	65.2881
753.82	67.4997
756.73	74.1094
756.80	74.1094
763.94	75.3901
765.81	74.3446
766.84	68.9037
772.60	0.0000
776.52	72.4292
777.92	64.7785
778.90	77.9798
783.70	74.8094
788.74	84.8579
792.07	69.5087
795.86	83.9600
801.95	77.4911
1093.63	79.9219
810.29	74.3772
810.45	74.3827
810.76	91.0455
815.77	74.5162
818.51	84.6032
832.01	82.7441
834.85	88.4185
835.71	82.8435
836.80	0.0000
846.75	0.0000
846.77	78.6503
856.80	92.4302
860.56	84.6436
871.09	105.3099
873.19	82.7191
875.33	0.0000
879.38	111.2629
880.51	115.8457
881.60	87.4835
883.24	110.2617
884.68	96.6661
889.28	96.8044
894.76	104.9562
898.04	113.0548
900.72	97.1503
903.28	108.6647
911.20	114.6647
912.08	107.8116
923.98	0.0000
926.50	123.2616
929.11	96.8413
935.54	107.4253
937.49	115.5802
944.13	123.9147
946.00	115.8732
949.00	119.4584
954.55	0.0000

ENERGY	MDA COUNTS
962.31	84.9974
964.08	104.8462
966.17	93.2520
968.97	87.4969
983.53	86.9875
984.45	0.0000
996.26	86.4259
1002.74	89.2350
1004.73	83.4527
1021.30	0.0000
1025.87	0.0000
1028.54	0.0000
1037.84	81.1968
1038.76	0.0000
1046.59	77.8136
1048.07	81.4246
1049.04	85.0269
1050.41	83.2709
1063.66	73.6869
1077.00	87.4800
1077.34	82.9763
1085.87	79.5513
1093.63	80.6237
1099.45	91.6360
1112.07	74.6428
1112.84	90.1357
1115.54	74.7129
1120.29	69.3296
1120.55	69.3342
1121.30	65.6982
1129.67	62.1853
1131.51	0.0000
1147.95	0.0000
1173.23	61.0291
1177.95	39.9938
1189.05	25.9937
1204.77	28.8903
1221.41	22.4575
1231.02	8.4413
1235.36	18.7781
1238.28	9.3958
1260.41	0.0000
1271.87	19.8900
1274.44	14.2154
1274.54	14.2154
1291.59	12.3692
1298.22	0.0000
1312.11	12.4287
1332.49	17.2892
1362.66	0.0000
1365.19	12.5787
1368.63	0.0000
1384.29	6.8018
1408.01	4.8837
1434.09	1.9645

ENERGY	MDA COUNTS
1435.80	5.8956
1457.56	0.0000
1460.82	4.9390
1489.16	2.9811
1505.03	4.9847
1584.12	3.0388
1596.21	7.1077
1620.50	2.0404
1621.92	5.1022
1678.03	0.0000
1690.97	6.2040
1750.46	0.0000
1764.49	1.0480
1770.23	5.2457
1771.35	6.2959
1791.20	0.0000
1808.65	7.3943
1810.72	0.0000
1836.06	6.3688

Continuing Calibration Data

Review of Gamma Spectrometer QA results (Daily calibration & background checks)
10-MAY-2025 13:15:04

Run Date	Detector	Parameter	Flag	Status	Comments
10-MAY-25	GAM01	Cal Check NLACTVTY-1332	Investigate		
10-MAY-25	GAM02	Cal Check NLACTVTY-662	Investigate		
10-MAY-25	GAM04	All Parameters Passed			
10-MAY-25	GAM05	All Parameters Passed			
10-MAY-25	GAM06	All Parameters Passed			
10-MAY-25	GAM07	Cal Check PSFWHM-59	Investigate		
03-DEC-24	GAM08	Cal Check may not have run since 10-MAY-2025			Detector locked out.
01-DEC-24	GAM08	Bkg Check may not have run since 10-MAY-2025			Detector locked out.
10-MAY-25	GAM19	All Parameters Passed			
10-MAY-25	GAM20	All Parameters Passed			
10-MAY-25	GAM21	All Parameters Passed			
30-JAN-25	GAM22	Cal Check may not have run since 10-MAY-2025			Detector locked out.
08-FEB-25	GAM22	Bkg Check may not have run since 10-MAY-2025			Detector locked out.
10-MAY-25	GAM23	All Parameters Passed			
10-MAY-25	GAM24	Cal Check PSFWHM-662	Investigate		
10-MAY-25	GAM27	All Parameters Passed			
10-MAY-25	GAM28	All Parameters Passed			
10-MAY-25	GAM29	All Parameters Passed			
05-MAY-25	GAM31	Cal Check may not have run since 10-MAY-2025			Detector locked out.
05-MAY-25	GAM31	Bkg Check may not have run since 10-MAY-2025			Detector locked out.
10-MAY-25	GAM32	All Parameters Passed			
10-MAY-25	GAM33	All Parameters Passed			
10-MAY-25	GAM38	All Parameters Passed			
10-MAY-25	GAM40	All Parameters Passed			
10-MAY-25	GAM41	All Parameters Passed			
10-MAY-25	GAM43	Cal Check PSFWHM-662	Investigate		
10-MAY-25	GAM46	Bkg Check BACKRATE	Investigate		
10-MAY-25	GAM47	All Parameters Passed			
10-MAY-25	GAM48	All Parameters Passed			
	GAM50	Cal Check may not have run since 10-MAY-2025			Detector locked out.
05-MAY-25	GAM50	Bkg Check may not have run since 10-MAY-2025			Detector locked out.
10-MAY-25	GAM52	All Parameters Passed			
09-MAY-25	GAM53	Cal Check may not have run since 10-MAY-2025			Did not use
02-MAY-25	GAM56	Cal Check may not have run since 10-MAY-2025			Did not use
04-MAY-25	GAM56	Bkg Check may not have run since 10-MAY-2025			Did not use
10-MAY-25	GAM61	All Parameters Passed			
10-MAY-25	XRAY1	All Parameters Passed			
10-MAY-25	XRAY2	Cal Check PSFWHM-29	Action	Lockout	Detector locked out.
10-MAY-25	XRAY2	Cal Check PSFWHM-34	Investigate		

10-MAY-25	XRAY2	Cal Check PSFWHM-40	Action	Lockout	Detector locked out.
10-MAY-25	XRAY2	Cal Check NLACTVTY-29	Investigate		
10-MAY-25	XRAY3	All Parameters Passed			
10-MAY-25	XRAY6	All Parameters Passed			
10-MAY-25	XRAY7	All Parameters Passed			
10-MAY-25	XRAY8	All Parameters Passed			

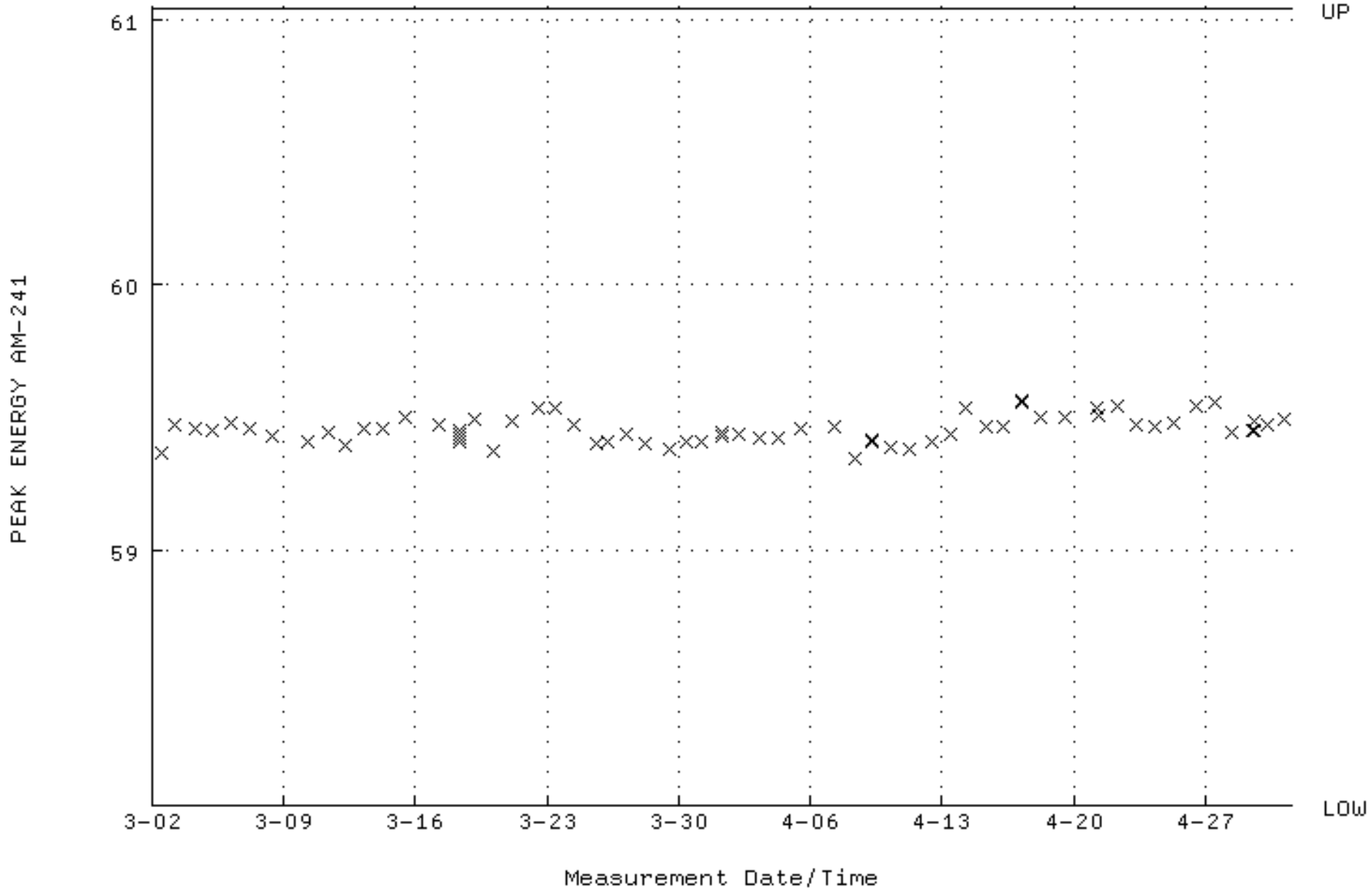
APPROVAL DATE: 10-MAY-2025 APPROVAL TIME: 20:42:47

APPROVED BY: Ronald House PROCEDURE # GL-RAD-I-001

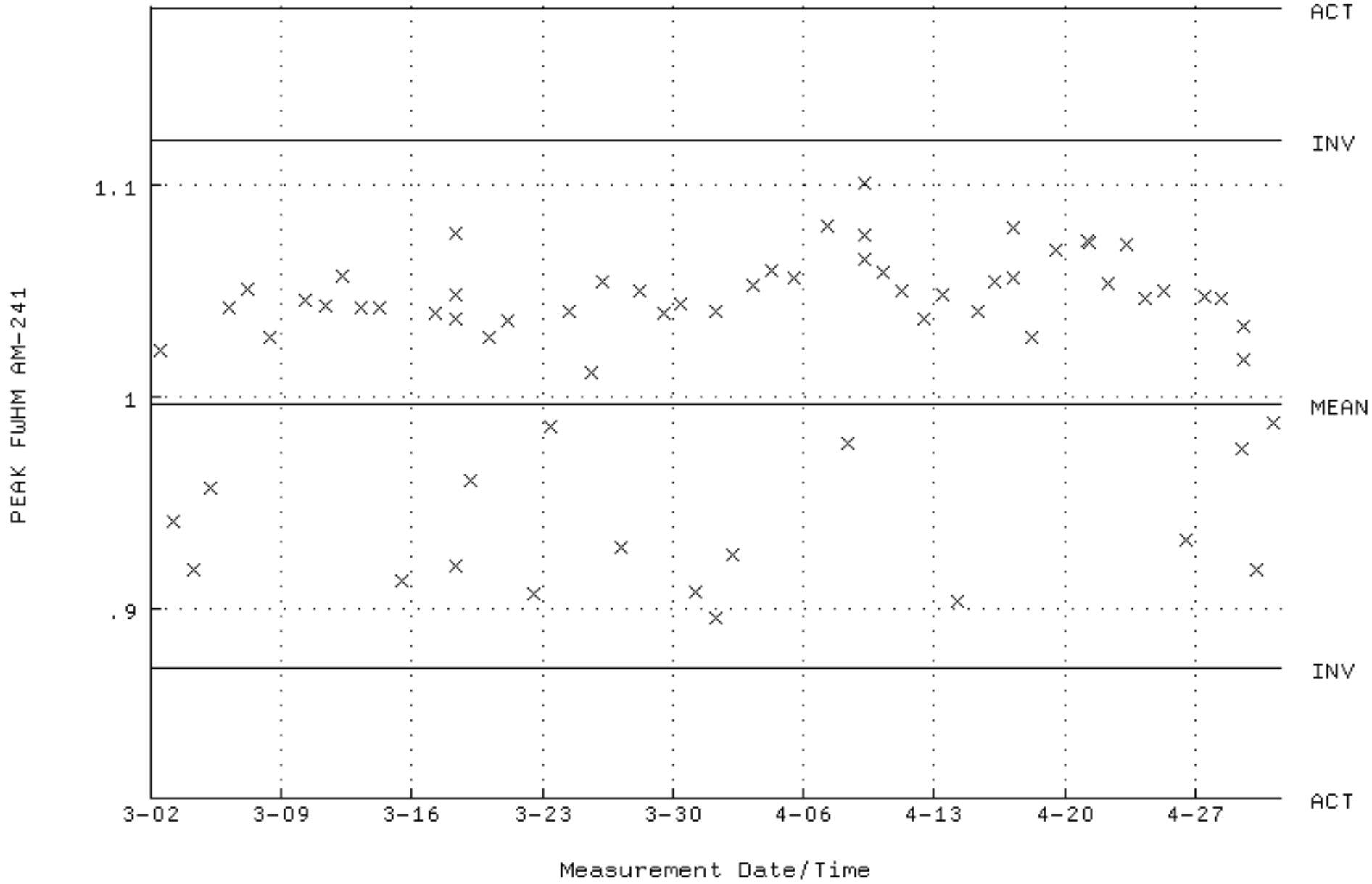
The Investigate flag does not indicate a lockout and is approved for use. Action flags that have not been approved are locked out of service.

Background and Efficiency Data

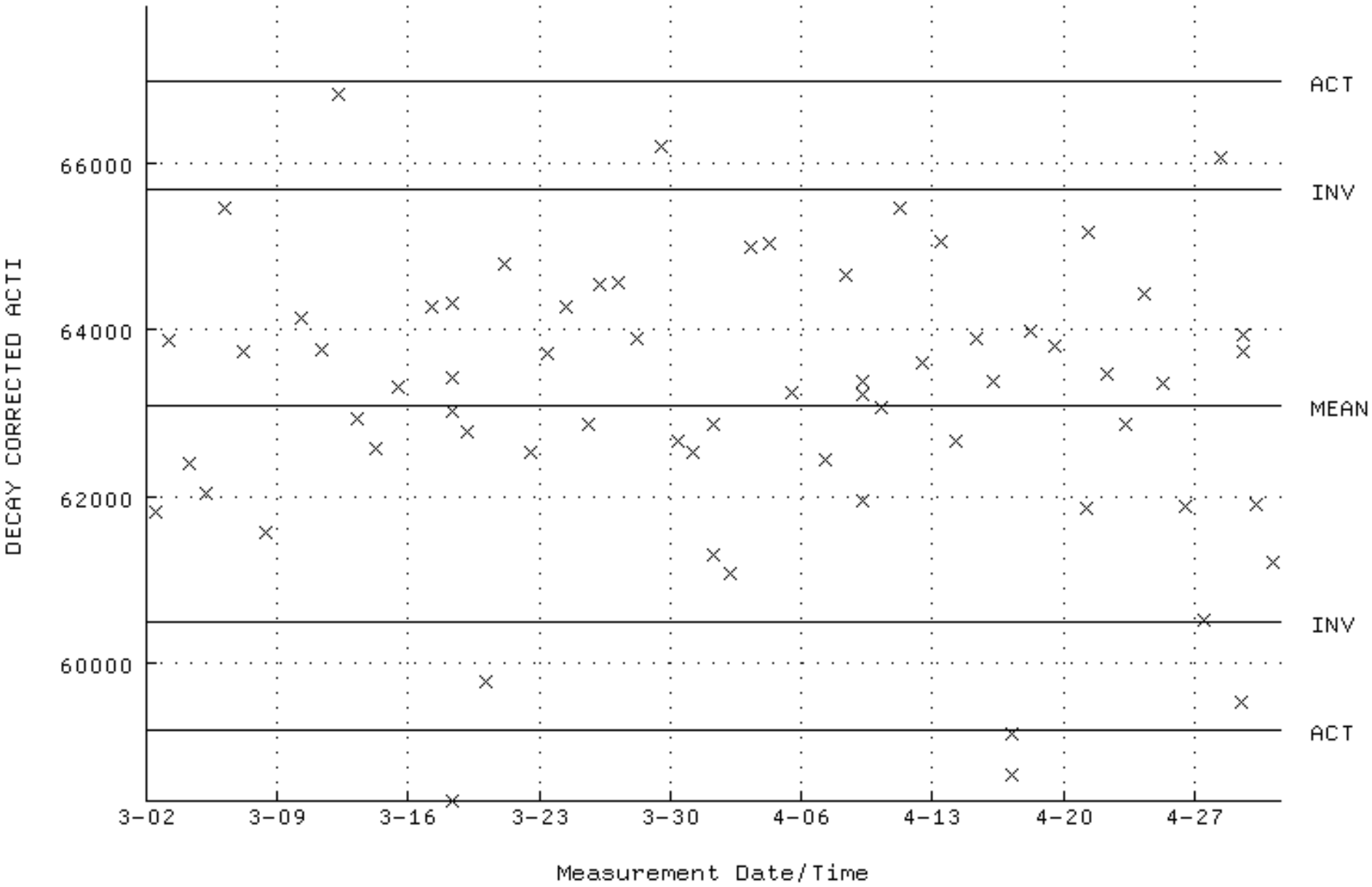
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM06_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 12:43:46 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



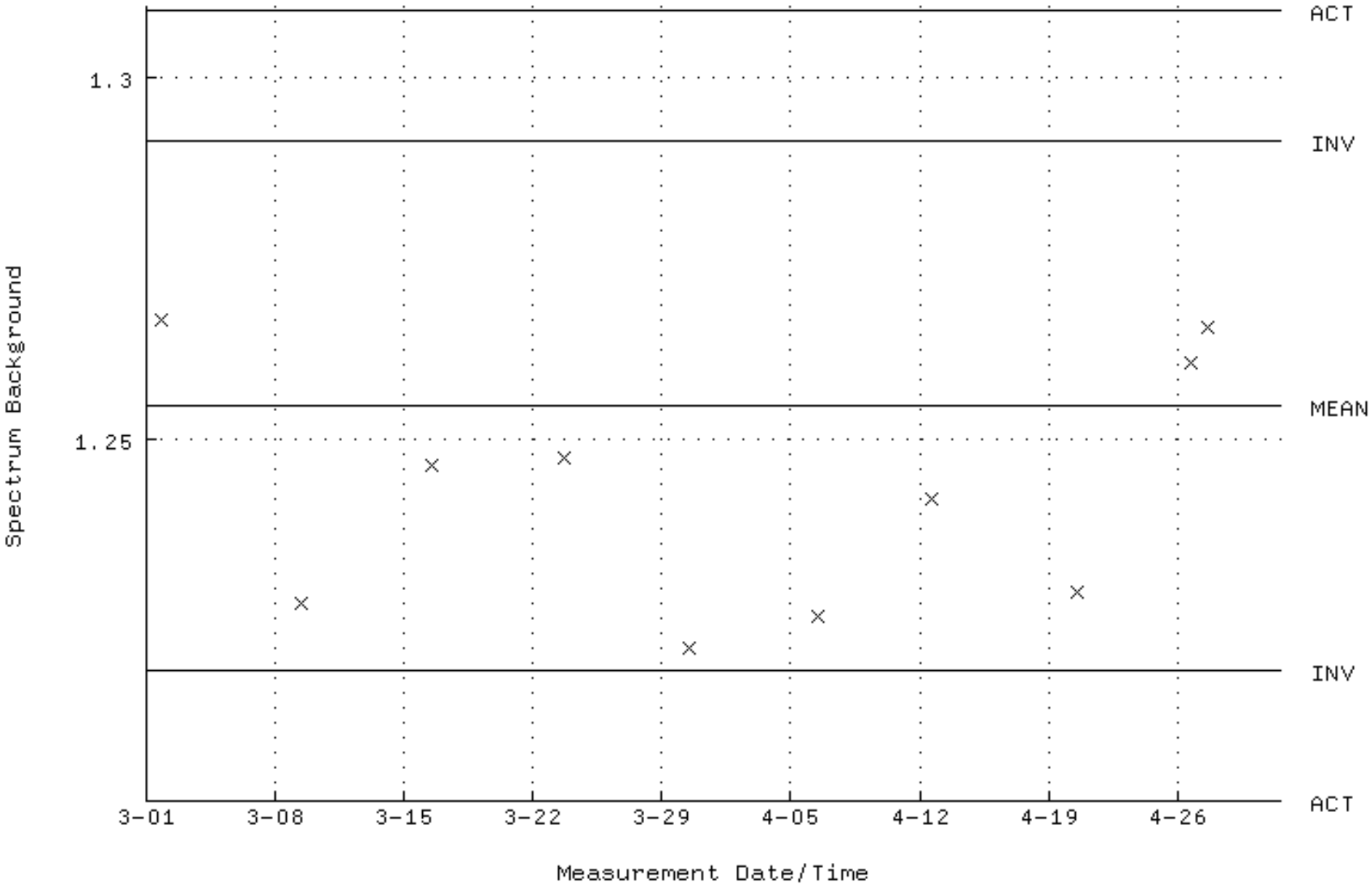
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM06_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 12:43:46 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 0.996804 +- 6.229915E-02 (6.25 %)



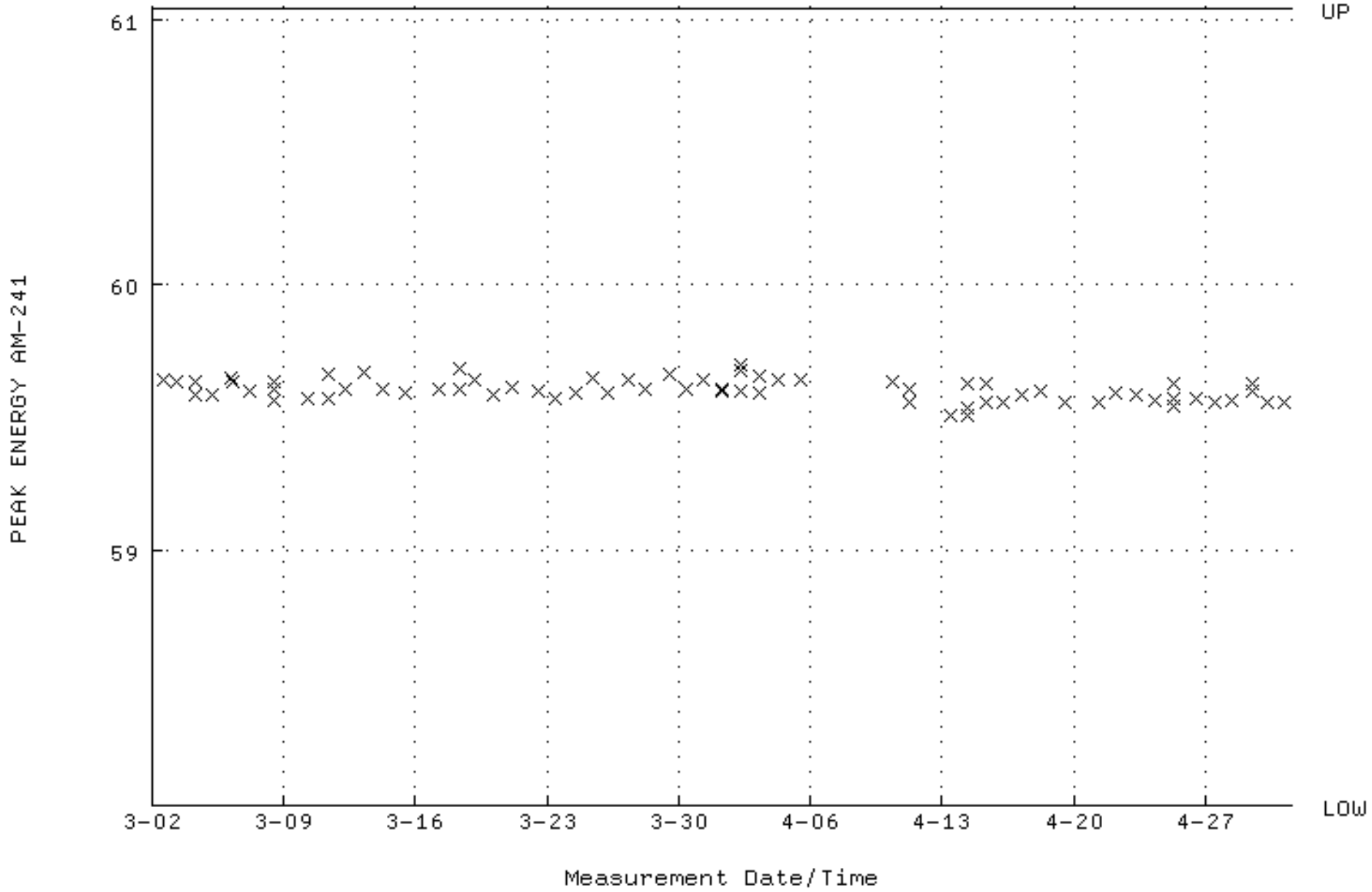
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM06_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 12:43:46 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 63101.3 +- 1296.73 (2.05 %)



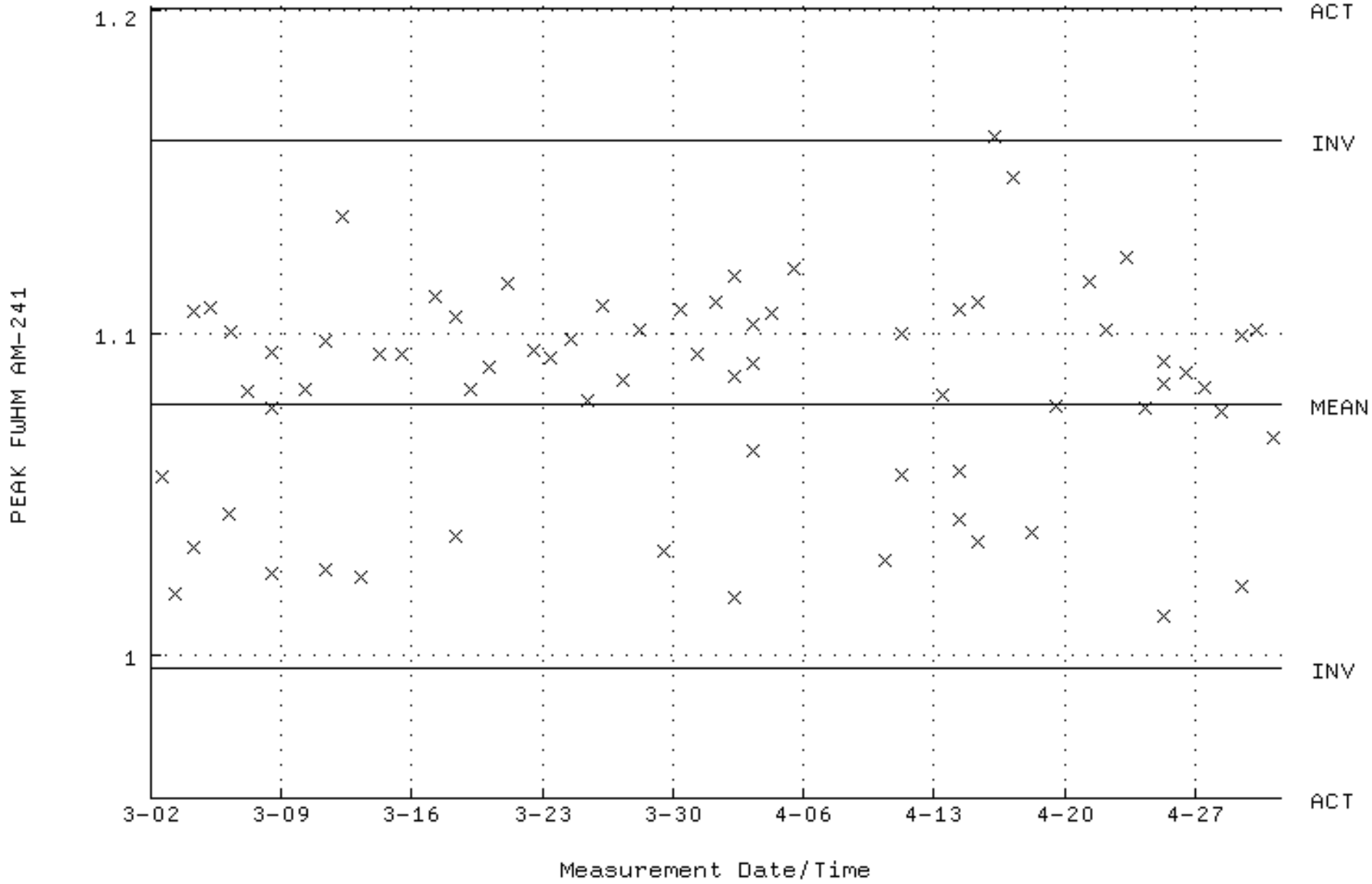
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM06.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 18:33:33 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.25484 +- 1.824749E-02 (1.45 %)



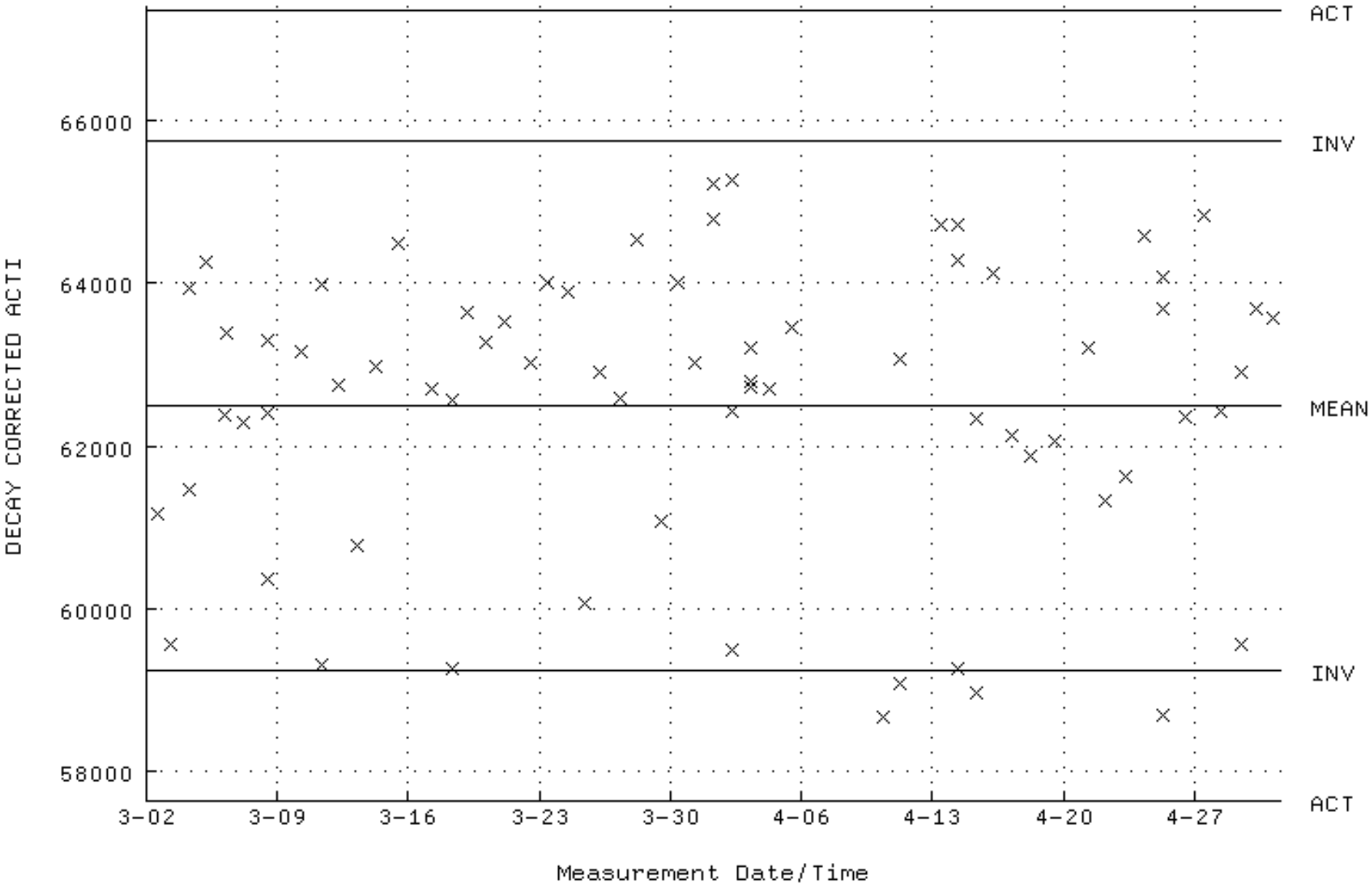
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM20_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 13:12:36 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



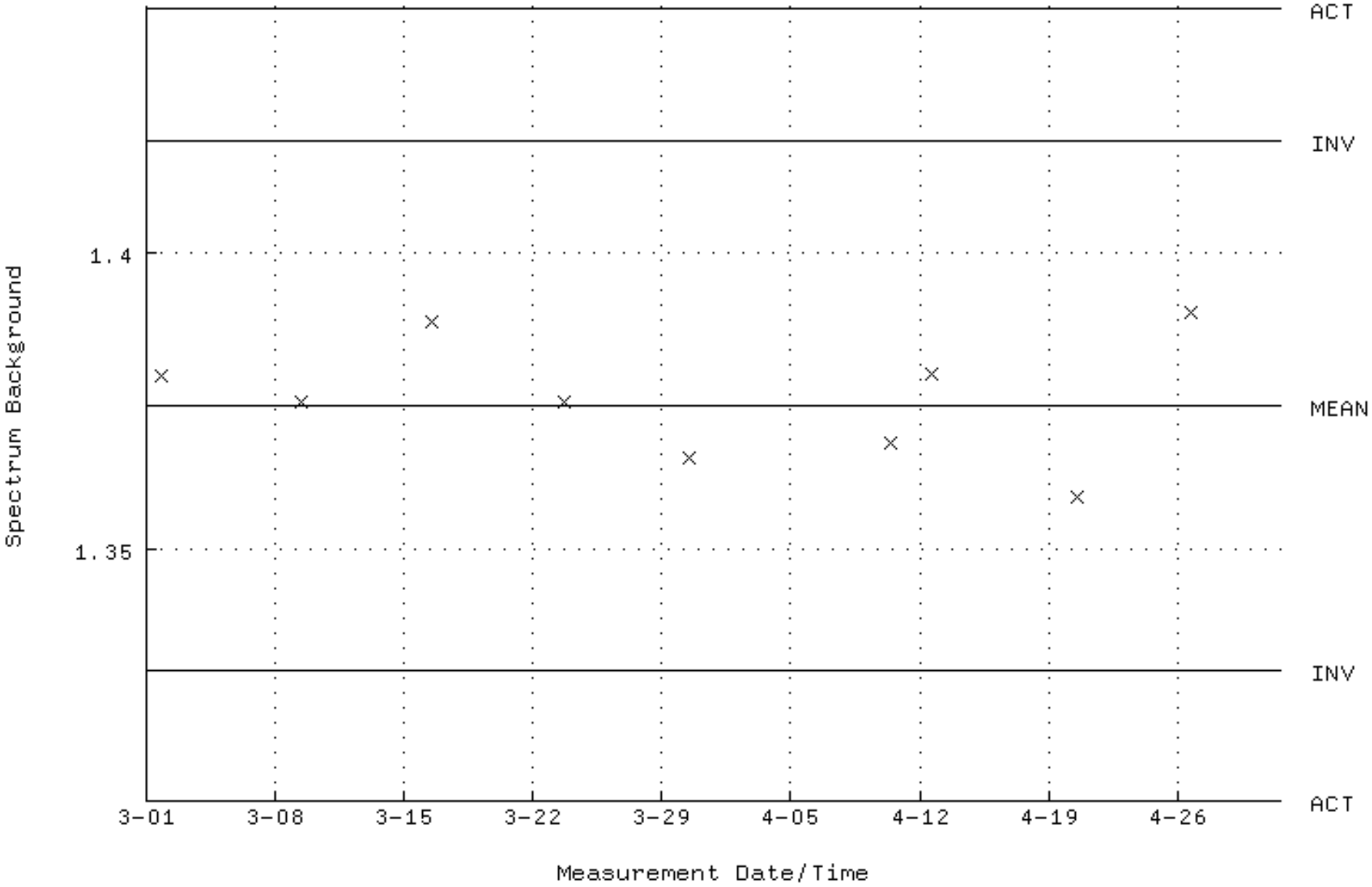
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM20_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 13:12:36 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.07811 +- 4.083620E-02 (3.79 %)



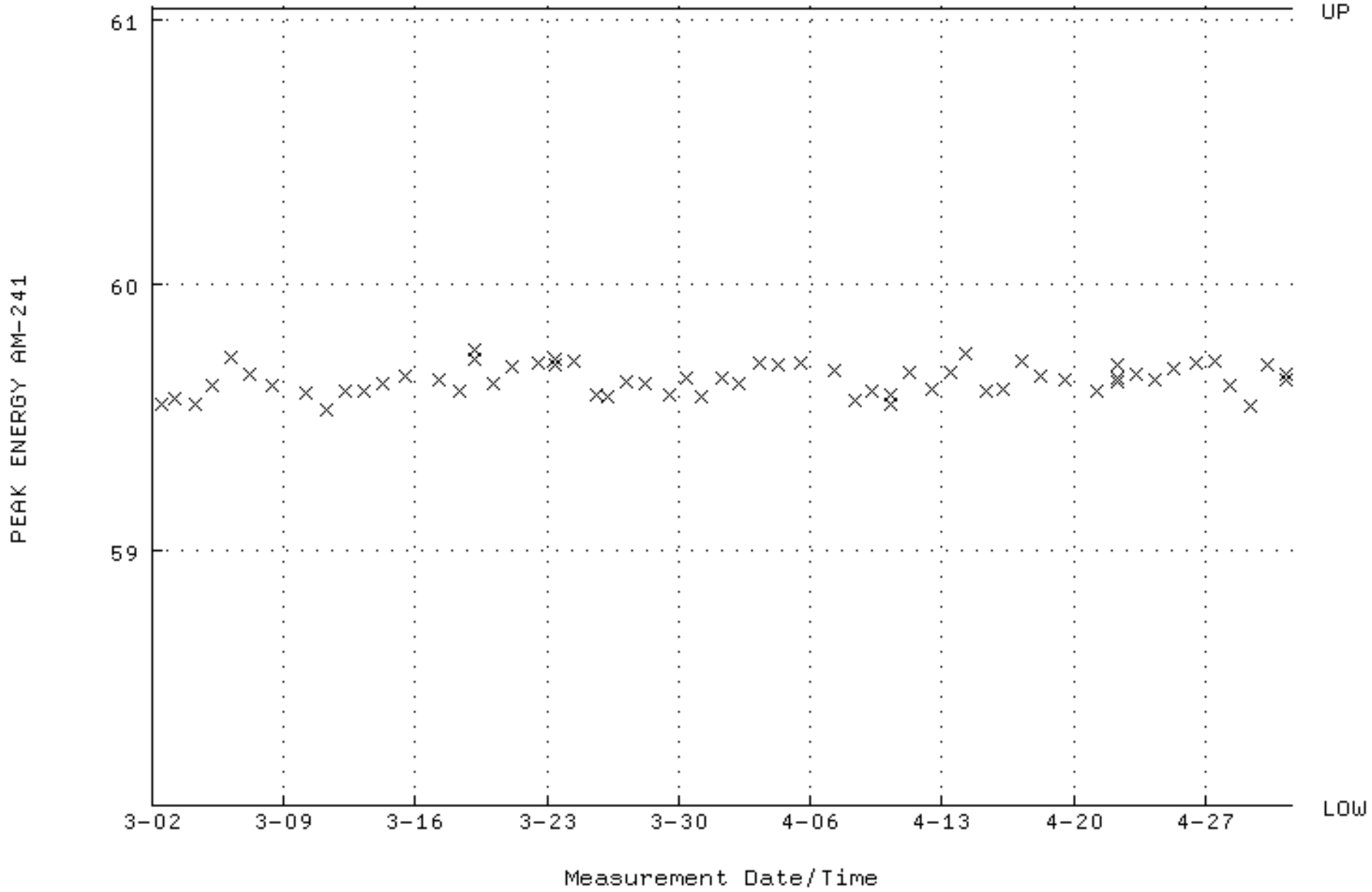
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM20_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 13:12:36 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 62505.4 +- 1625.34 (2.60 %)



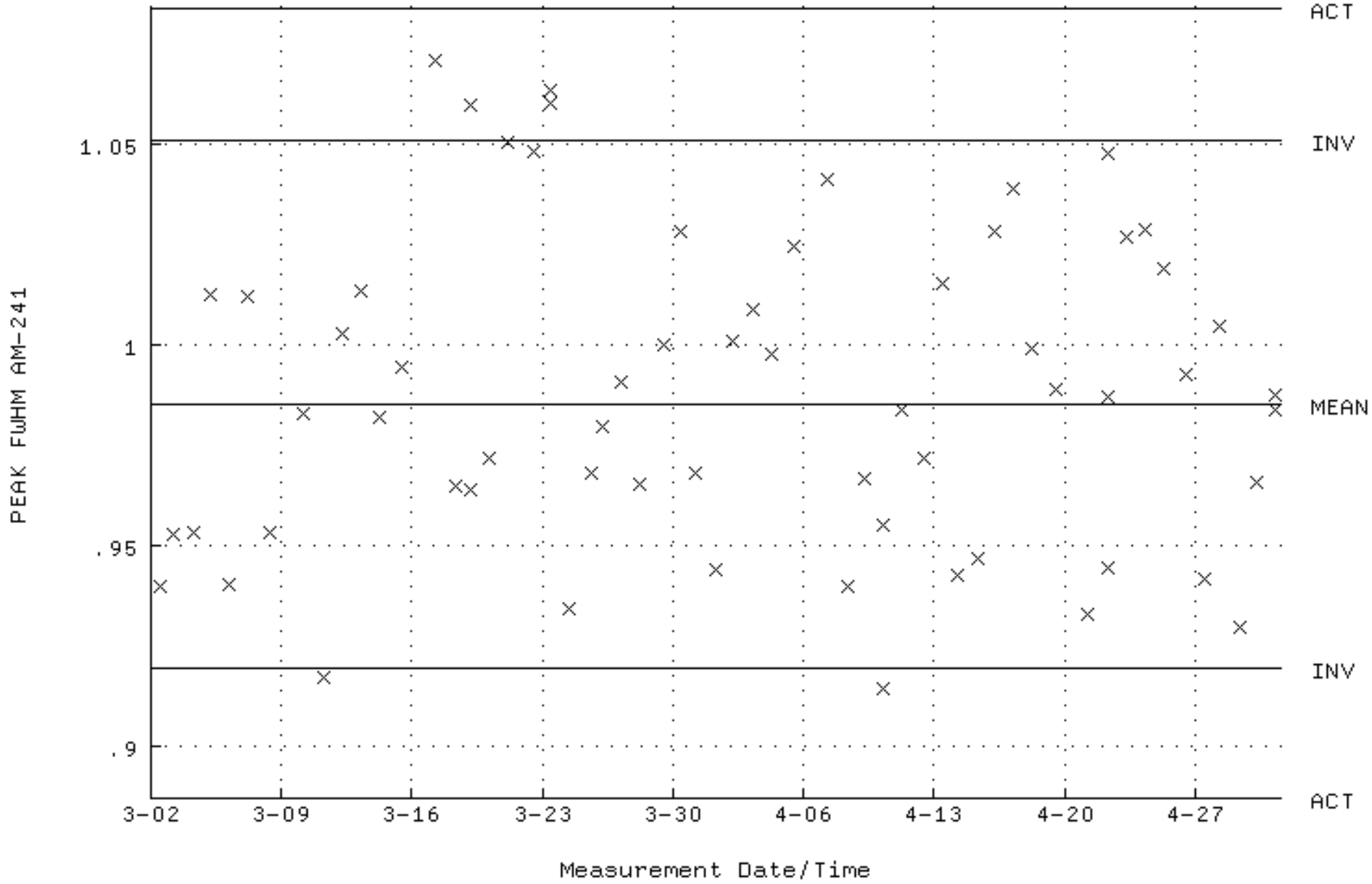
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM20.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 18:49:04 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.37440 +- 2.217929E-02 (1.61 %)



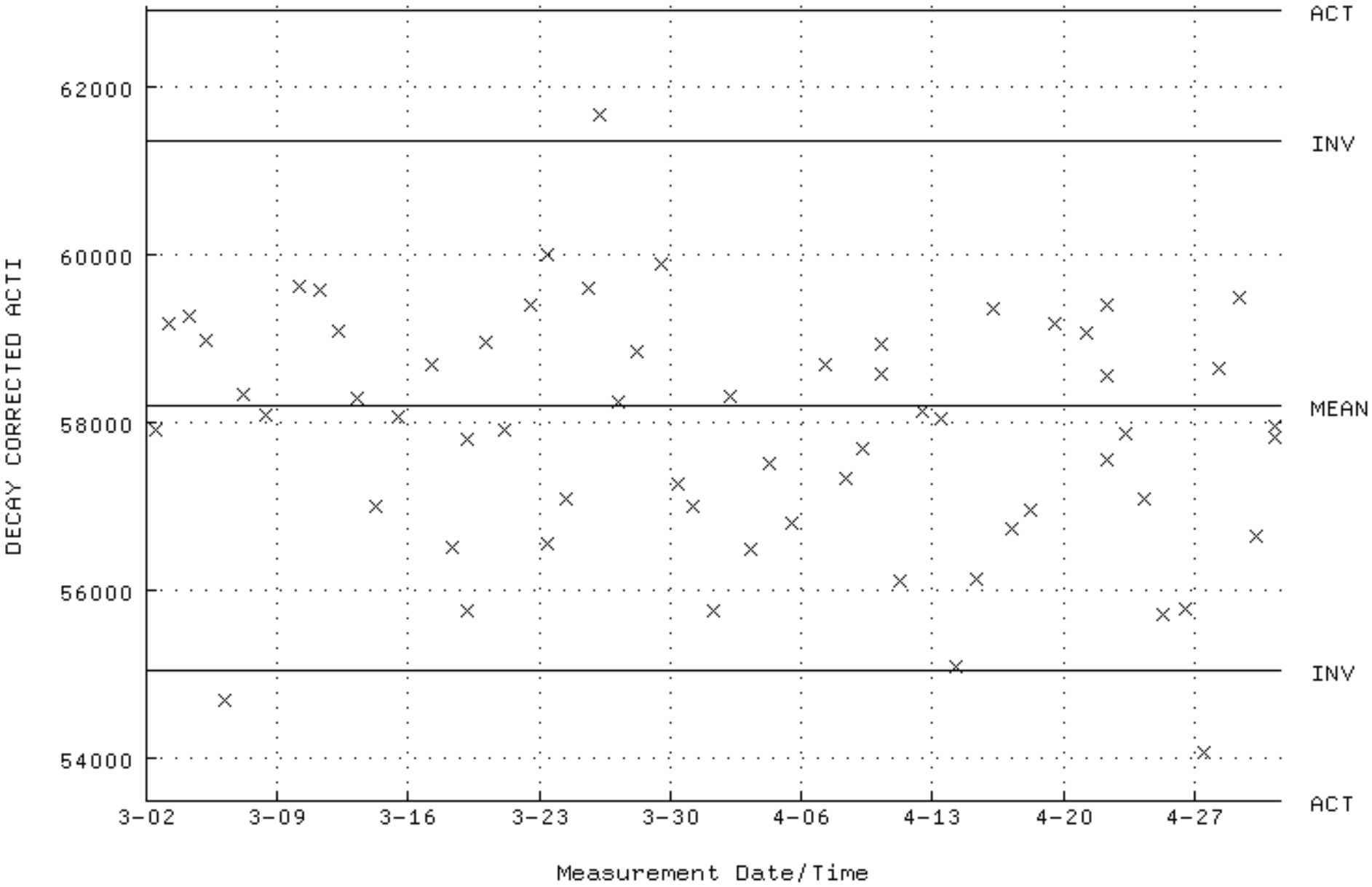
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM27_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 12:44:10 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



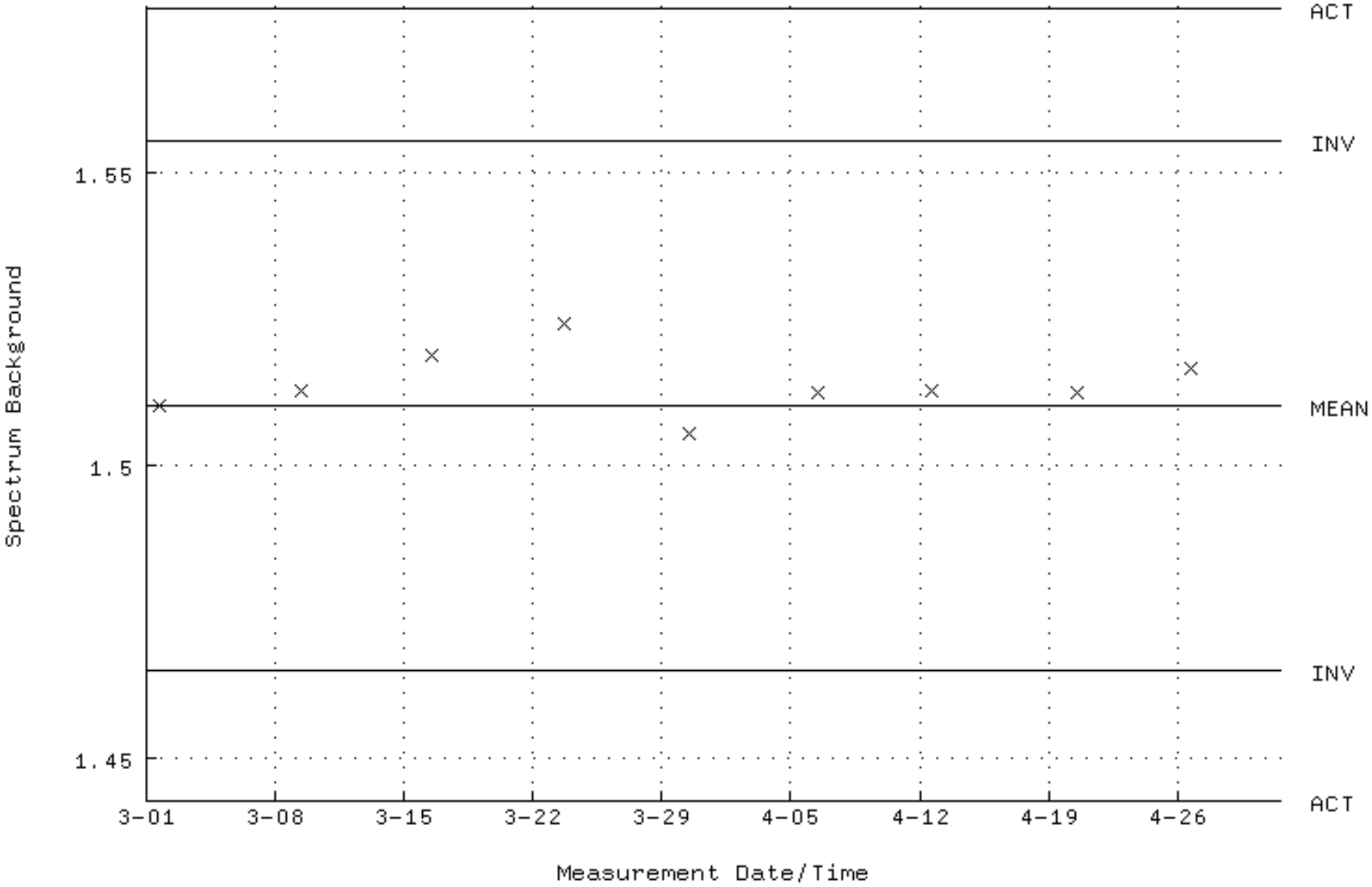
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM27_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 12:44:10 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 0.985452 +- 3.283878E-02 (3.33 %)



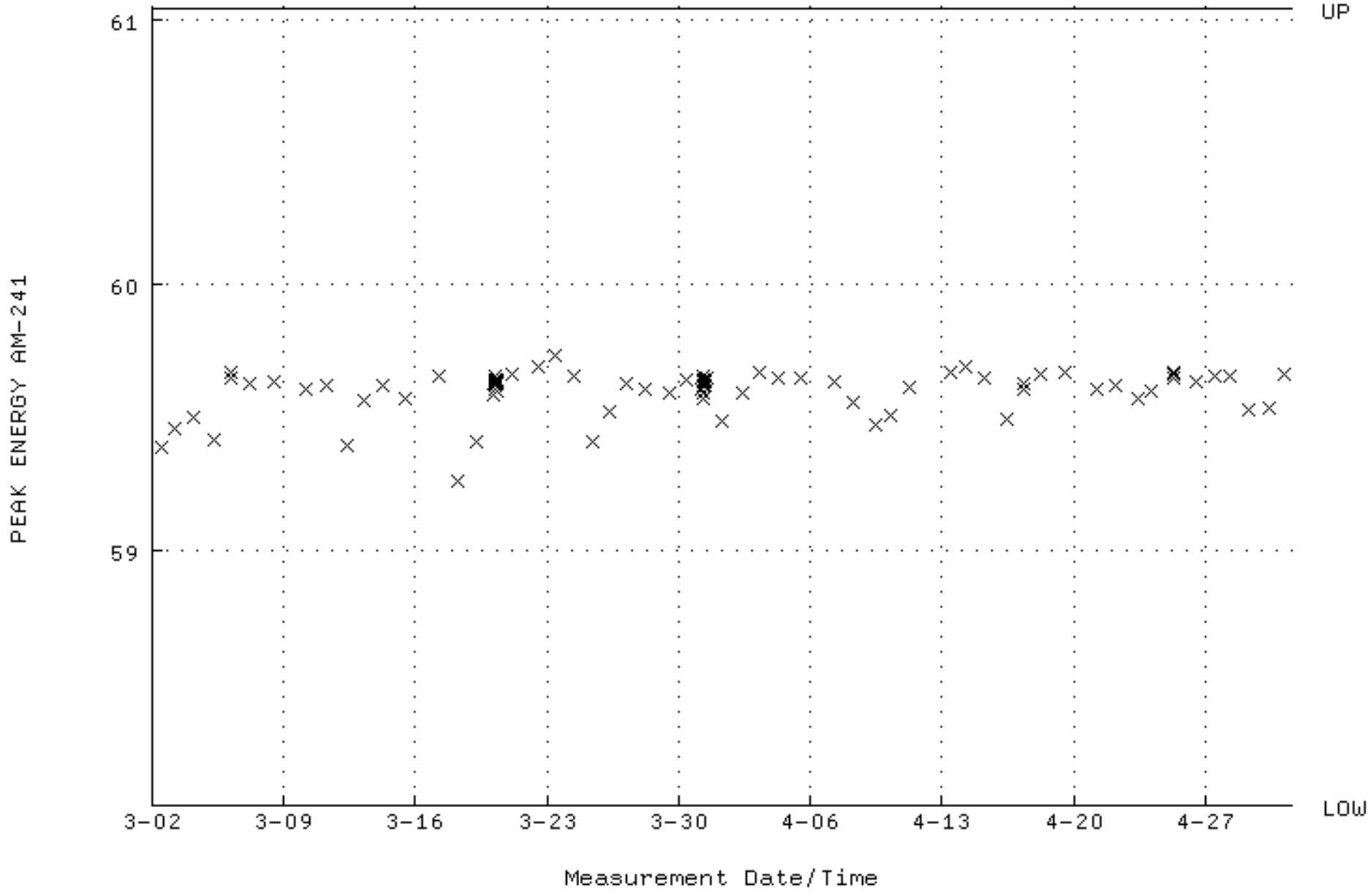
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM27_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 12:44:10 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 58211.9 +- 1570.59 (2.70 %)



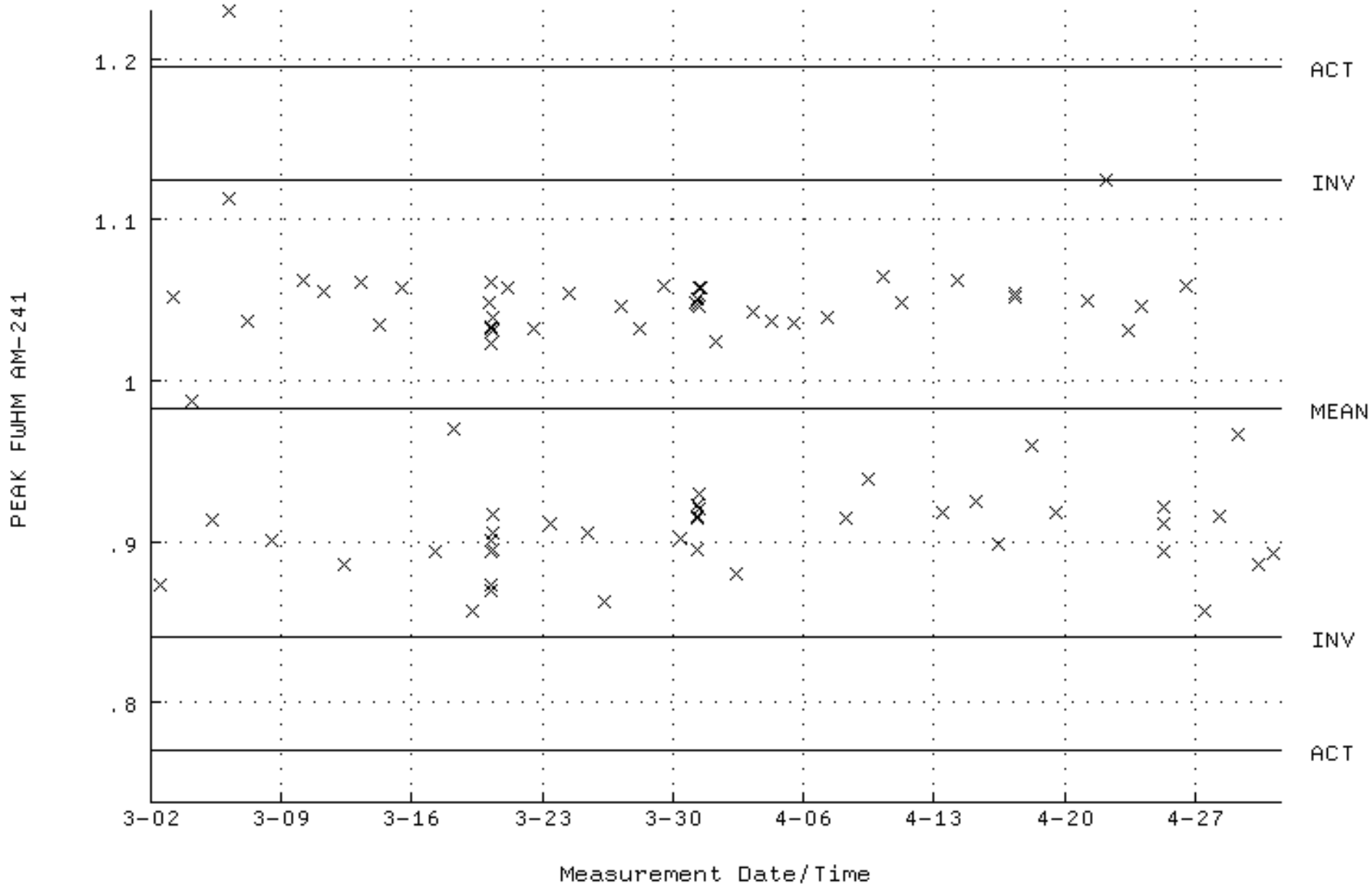
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM27.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 17:48:20 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.51036 +- 2.256303E-02 (1.49 %)



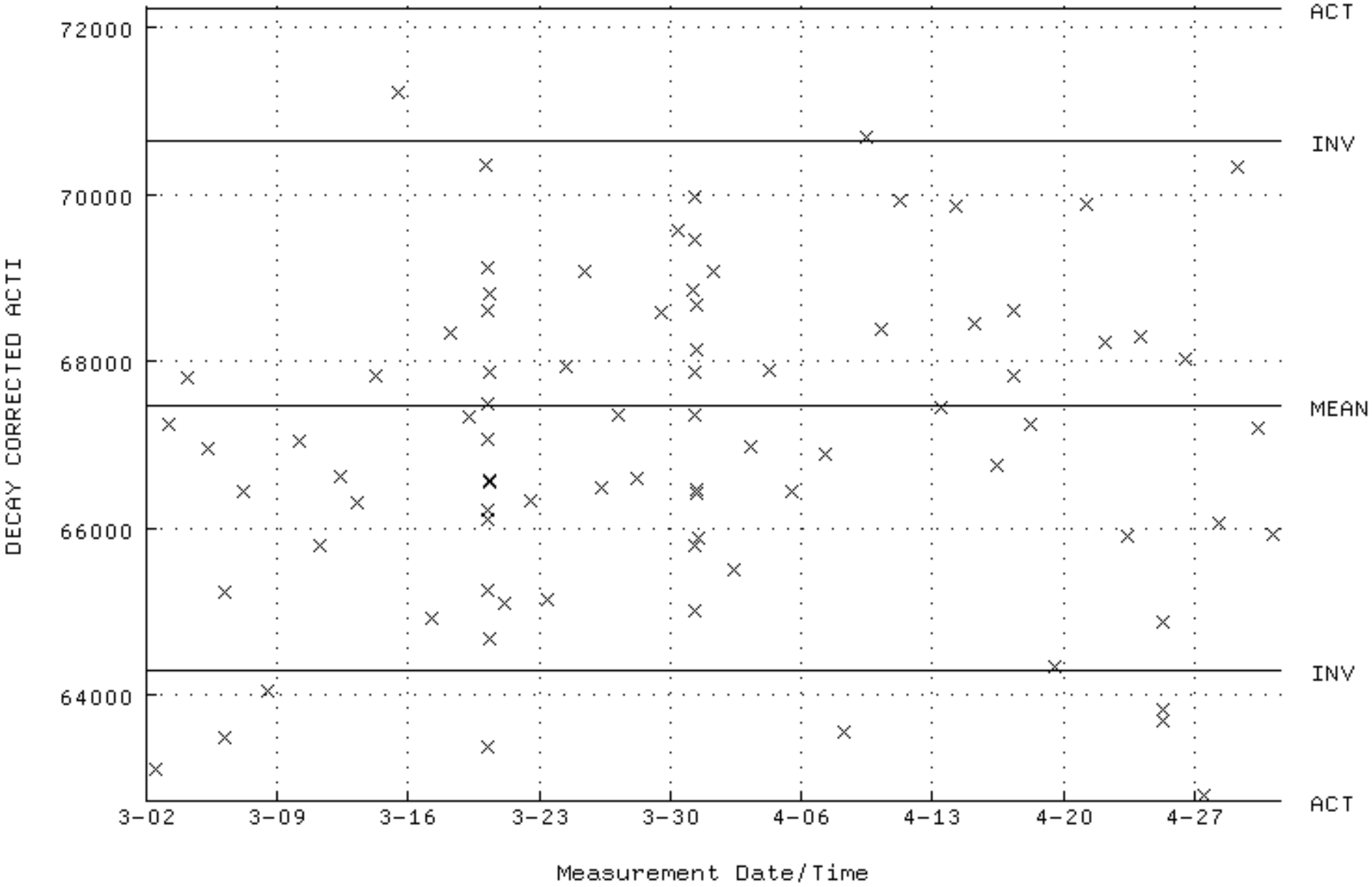
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM28_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 12:44:15 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



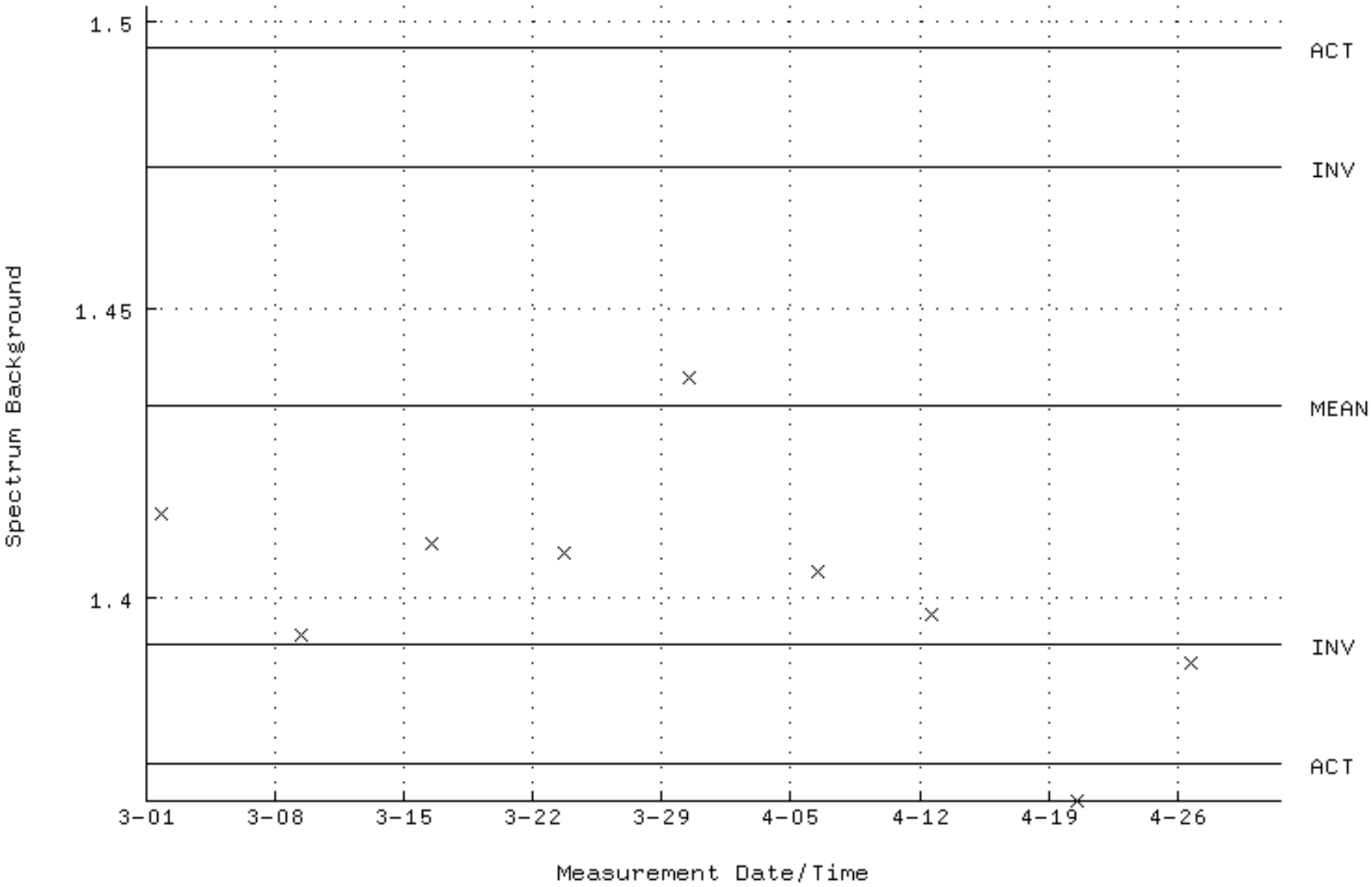
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM28_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 12:44:15 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 0.983377 +- 7.075209E-02 (7.19 %)



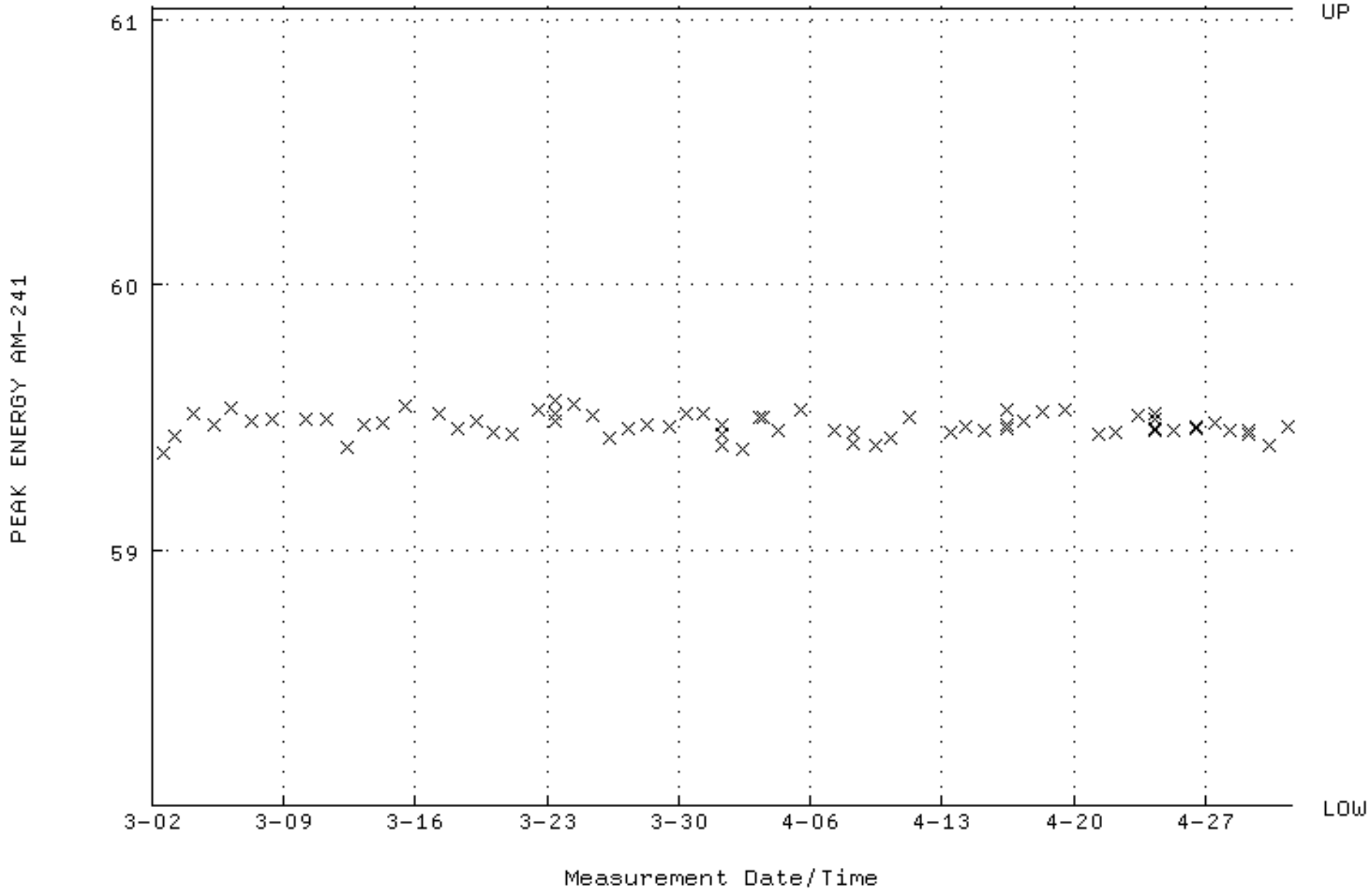
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM28_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 12:44:15 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 67475.7 +- 1583.50 (2.35 %)



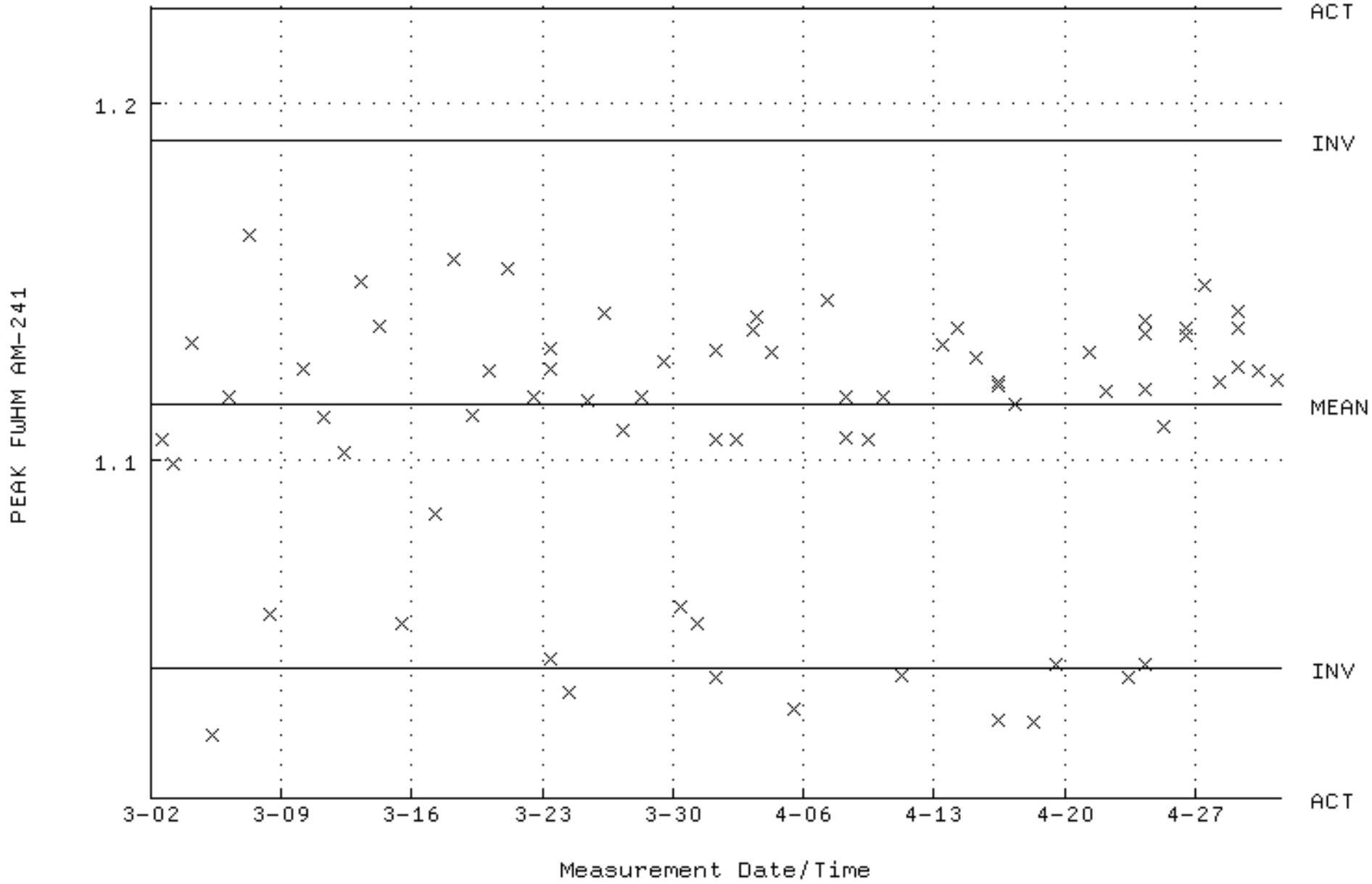
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM28.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 18:49:09 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.43343 +- 2.079300E-02 (1.45 %)



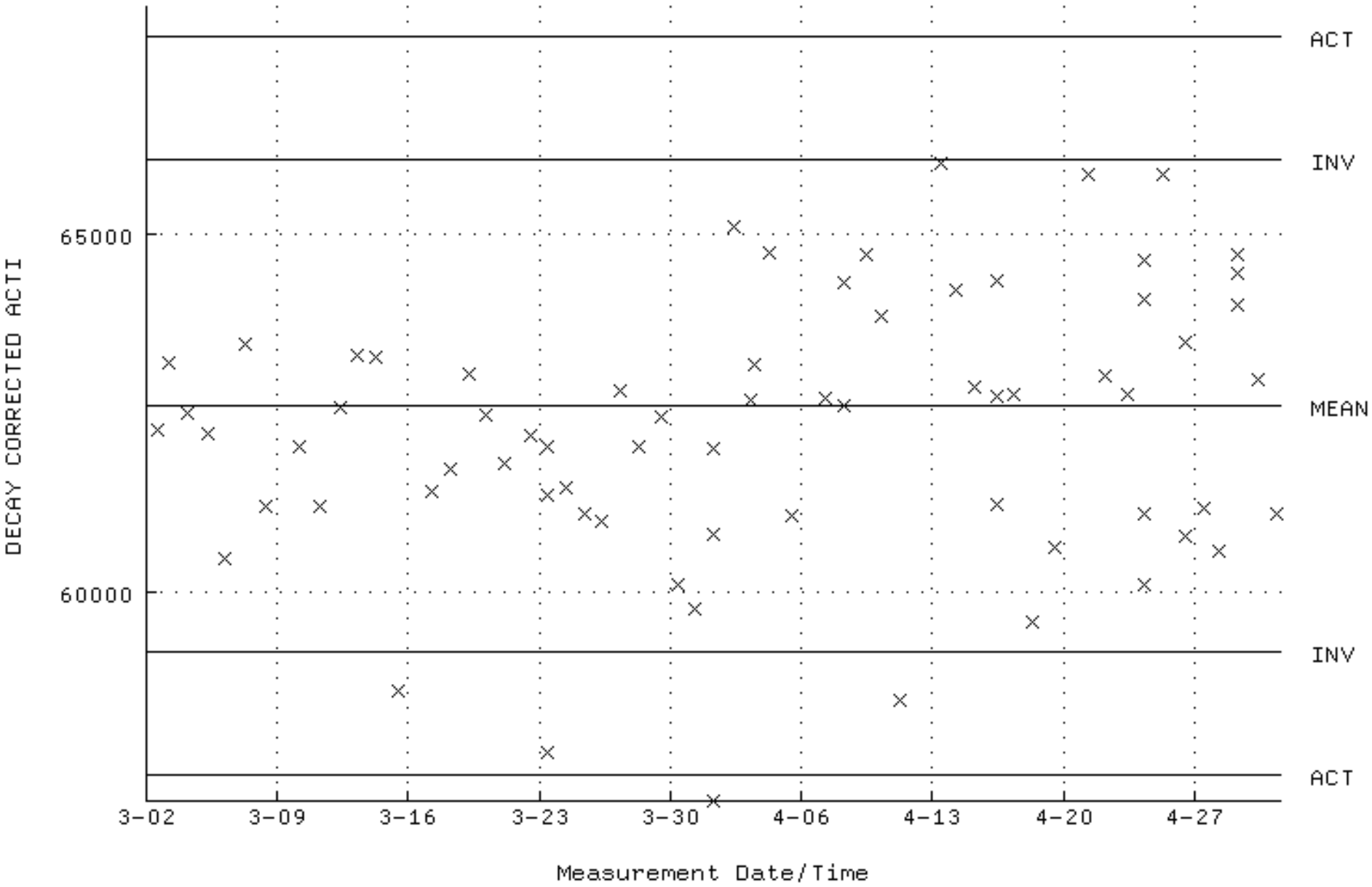
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM29_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 13:12:46 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



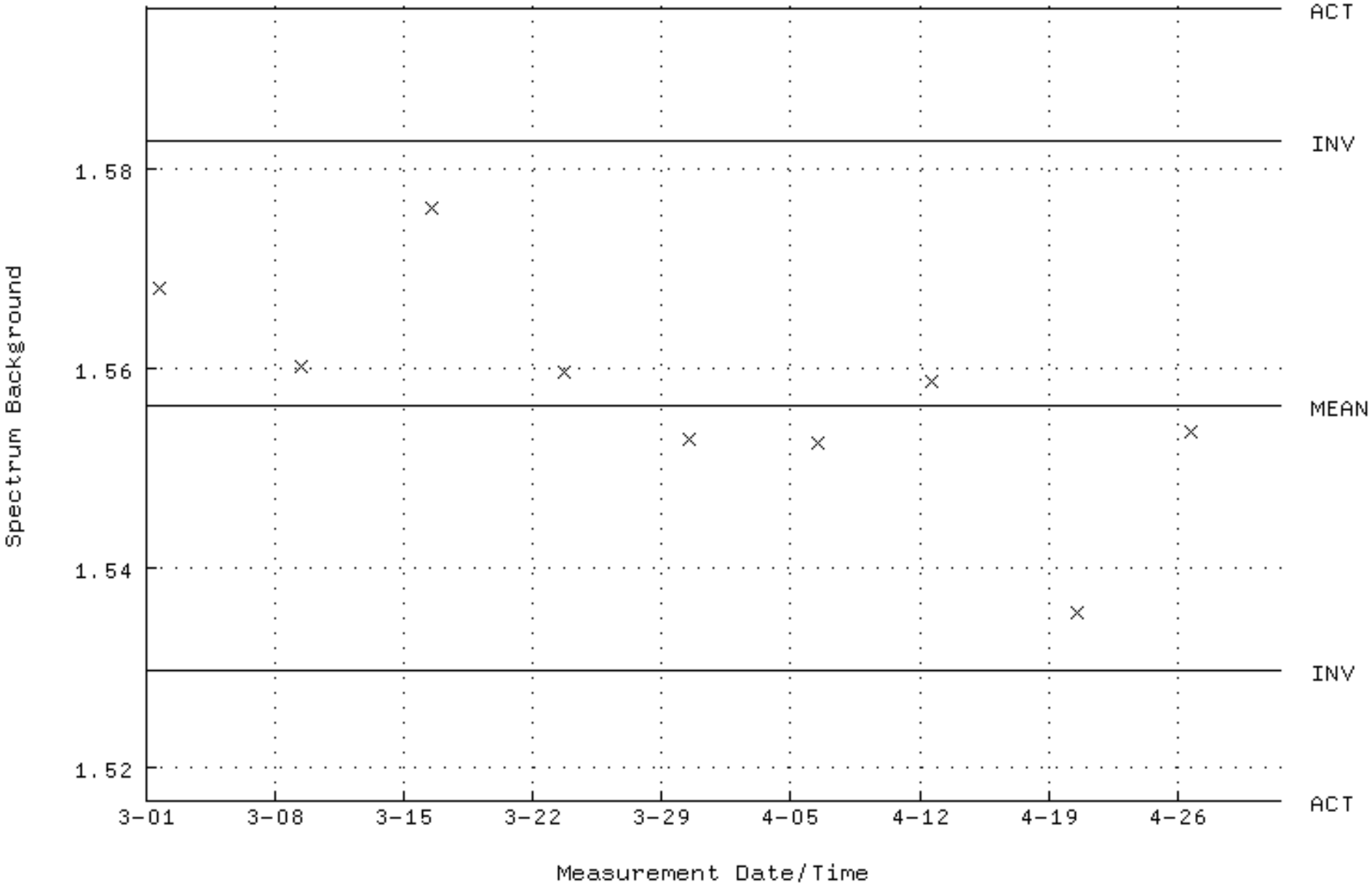
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM29_JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 13:12:46 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.11603 +- 3.692300E-02 (3.31 %)



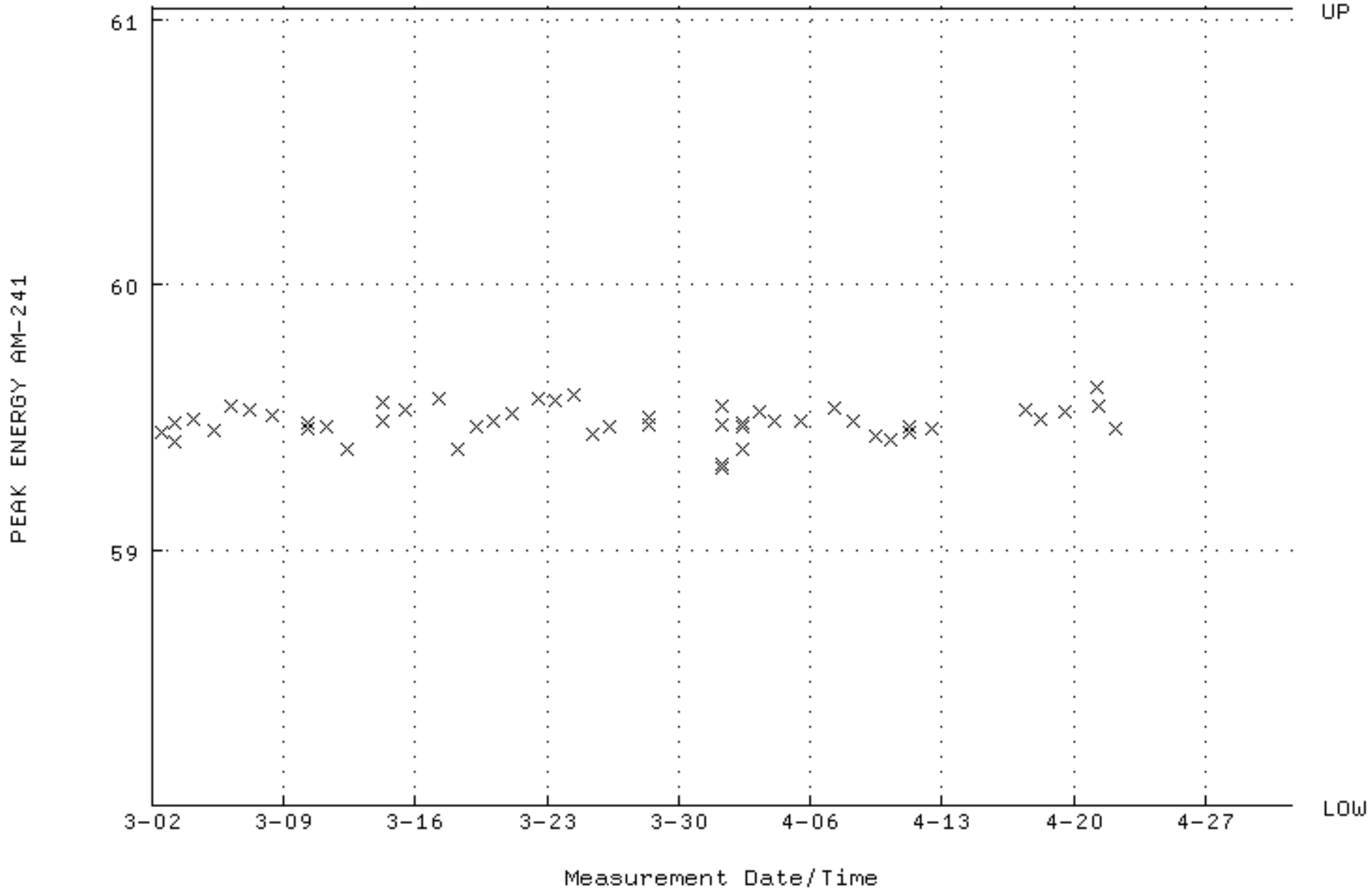
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM29_JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 13:12:46 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 62615.7 +- 1723.14 (2.75 %)



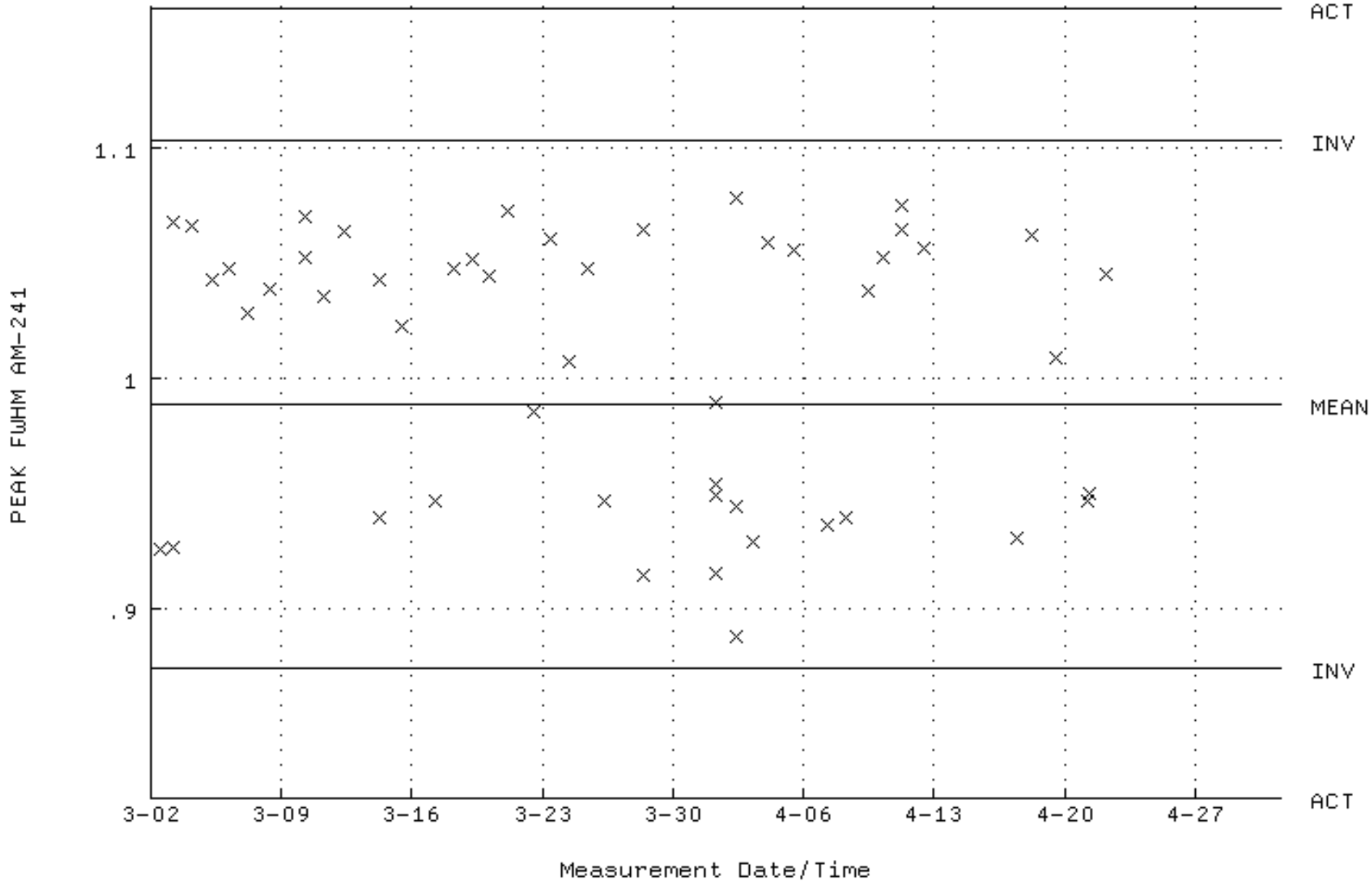
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM29.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 17:50:21 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.55639 +- 1.323348E-02 (0.85 %)



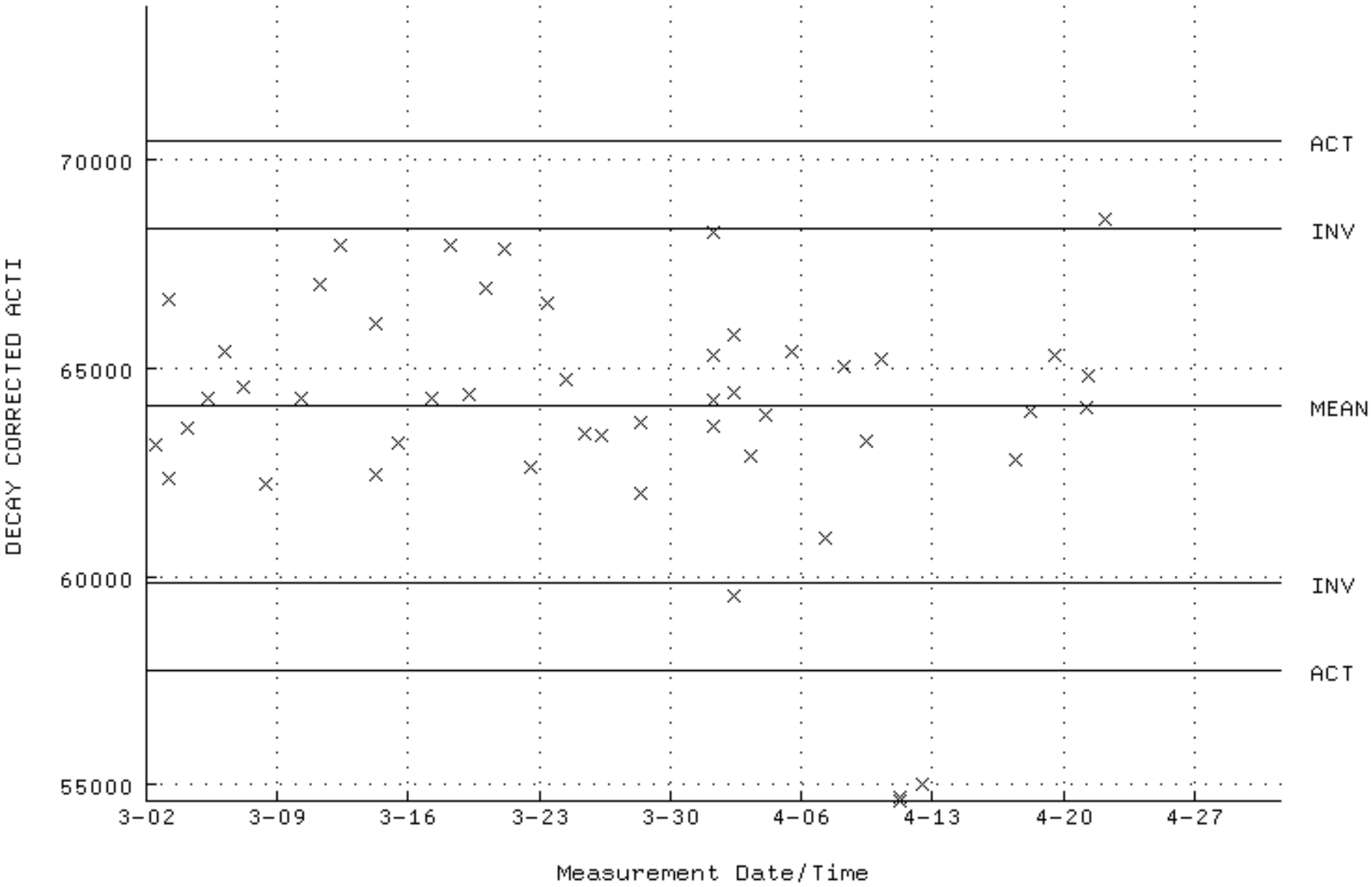
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM32_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 12:44:26 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



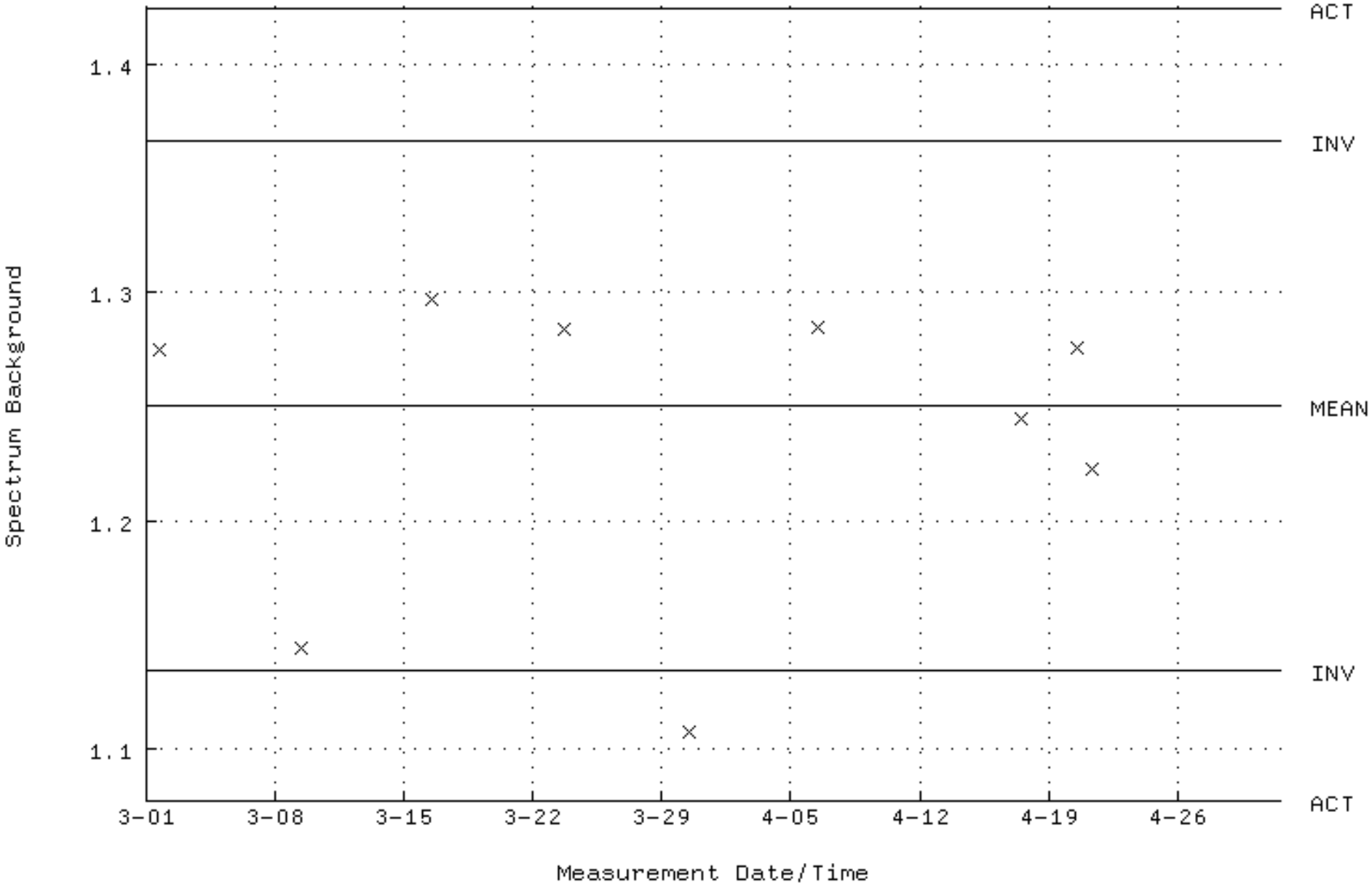
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM32_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 12:44:26 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 0.989093 +- 5.693431E-02 (5.76 %)



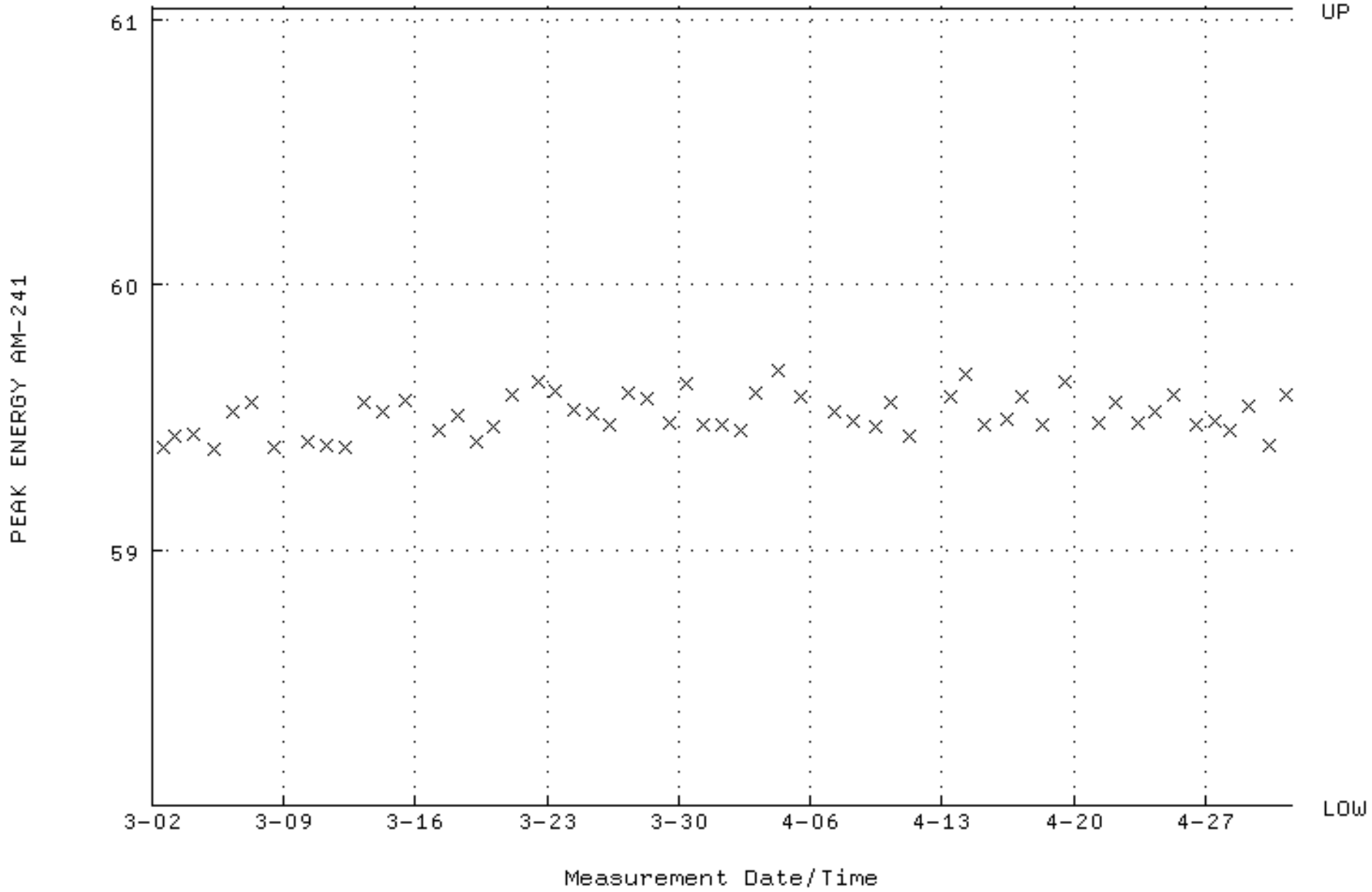
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM32_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 12:44:26 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 64123.1 +- 2120.97 (3.31 %)



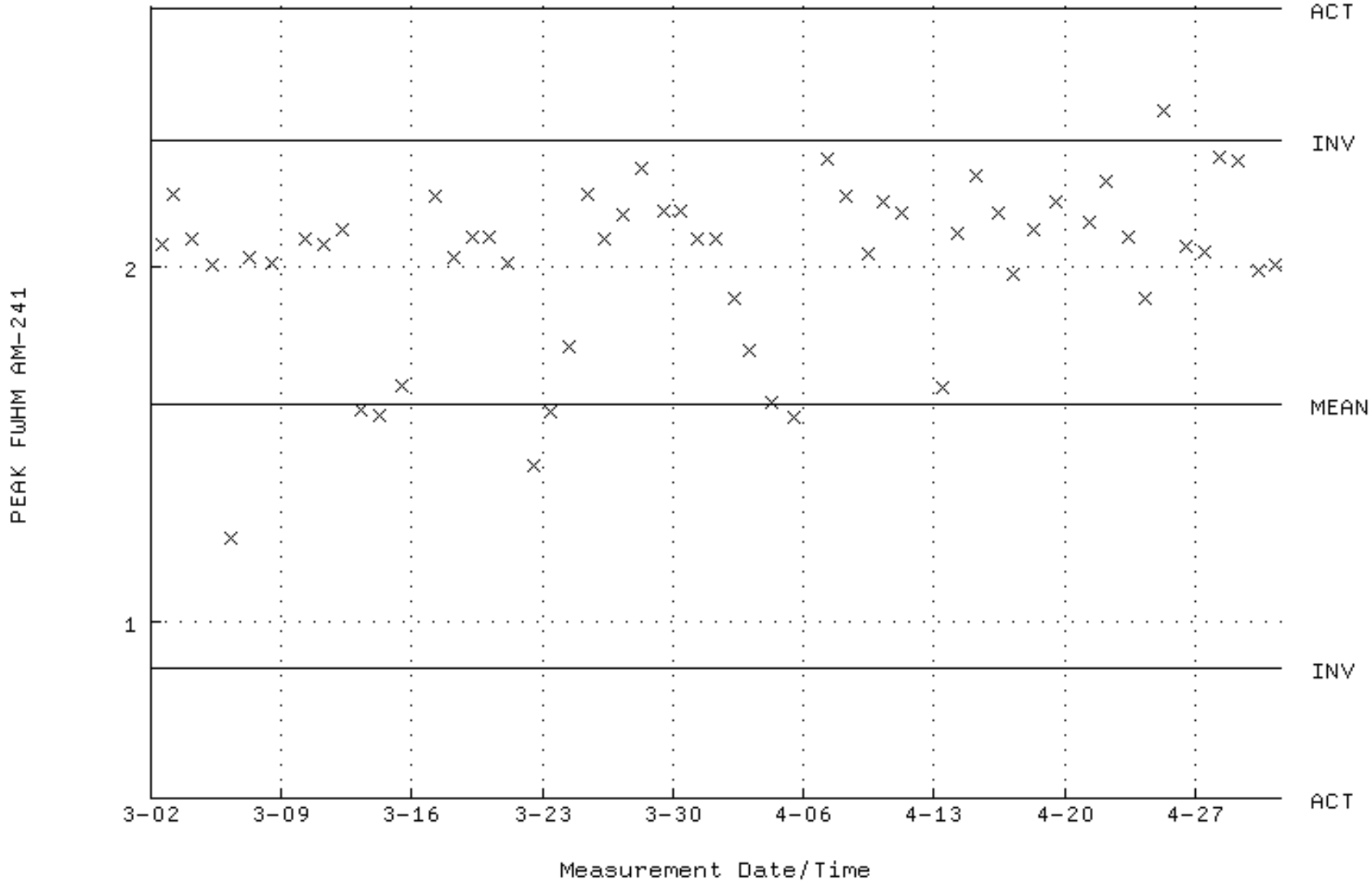
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM32.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 17:50:34 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.25086 +- 5.788443E-02 (4.63 %)



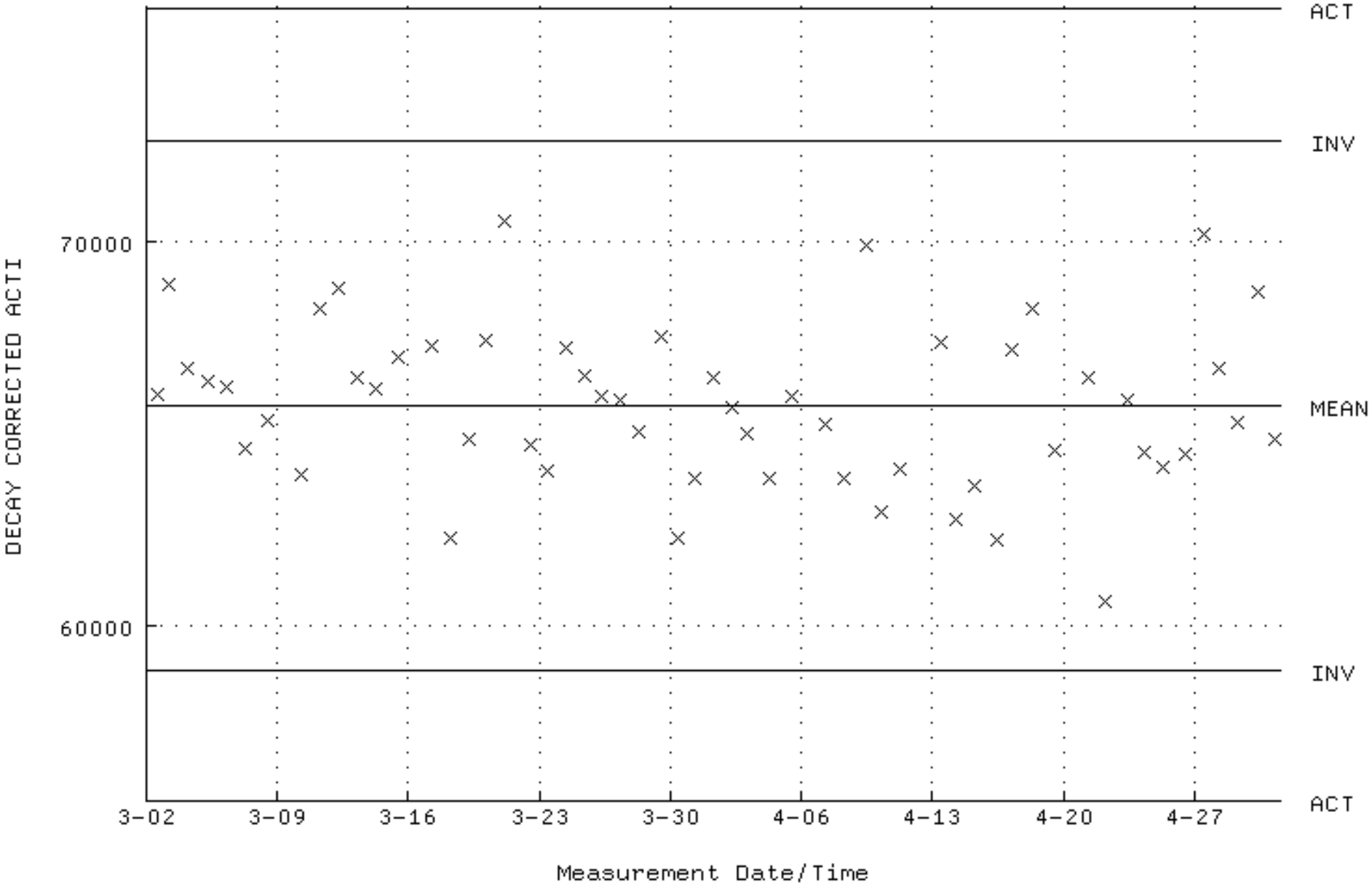
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM33_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 13:12:51 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



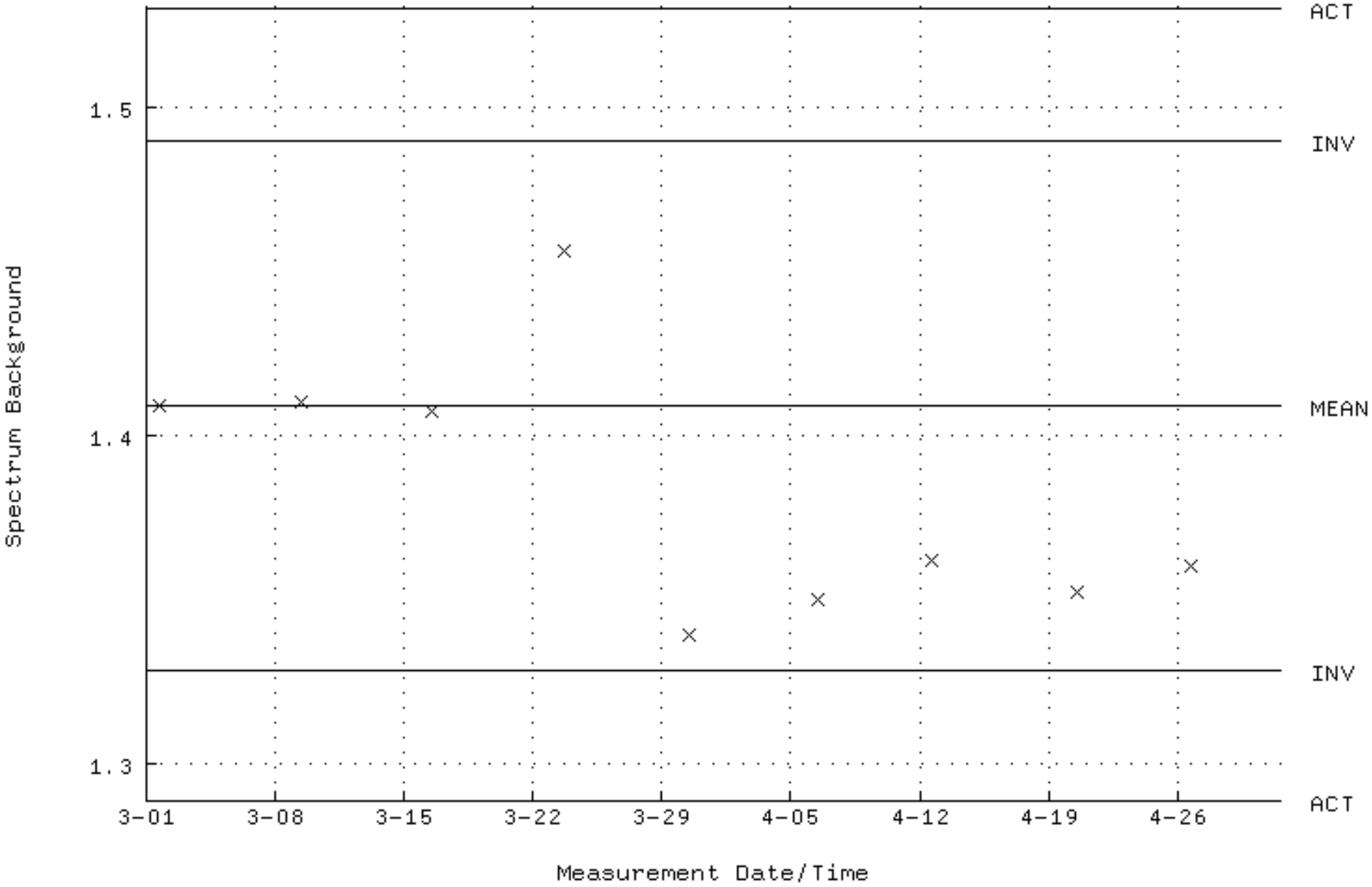
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM33_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 13:12:51 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.61458 +- 0.369176 (22.87 %)



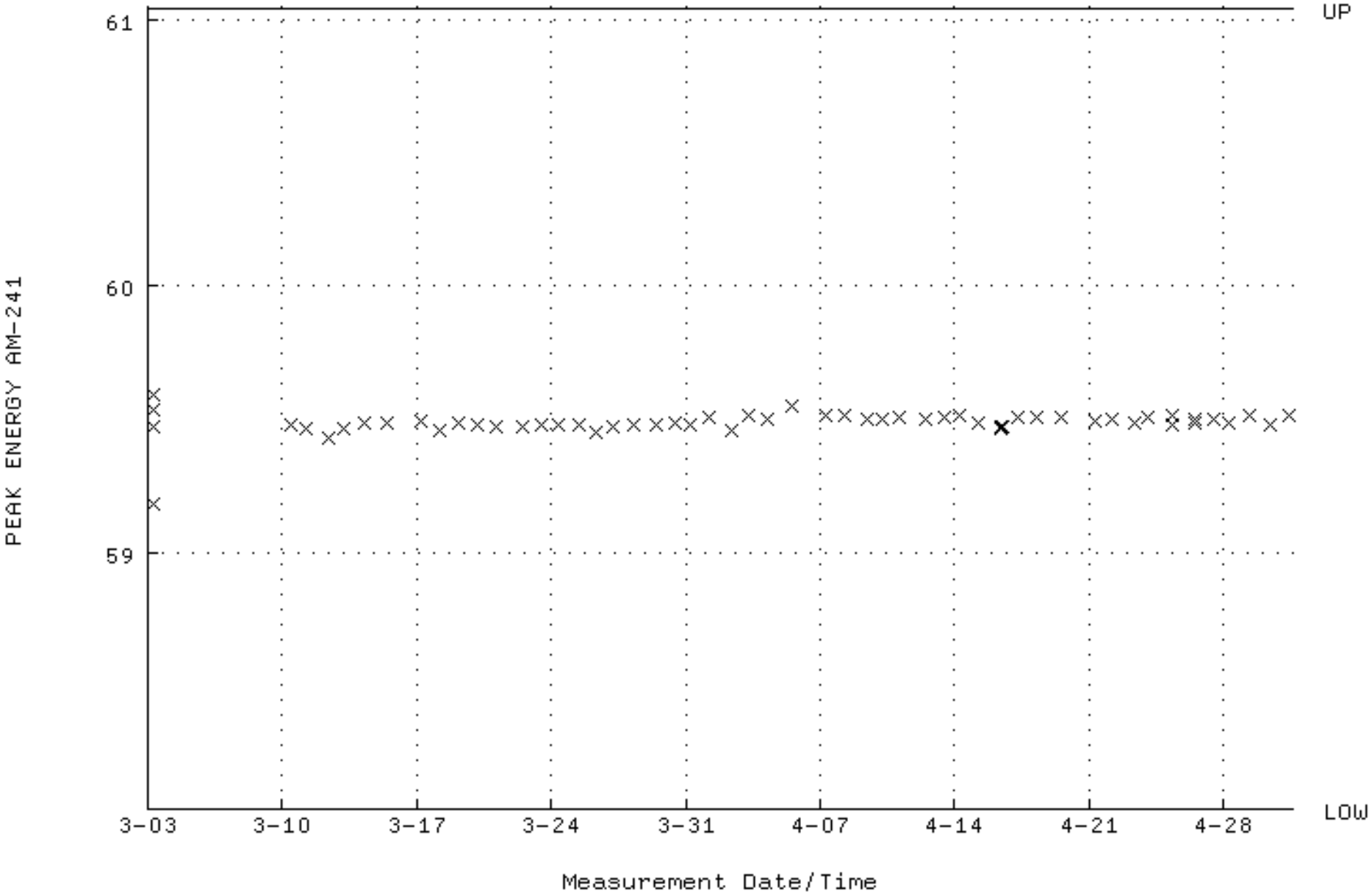
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM33_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 13:12:51 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 65732.7 +- 3437.16 (5.23 %)



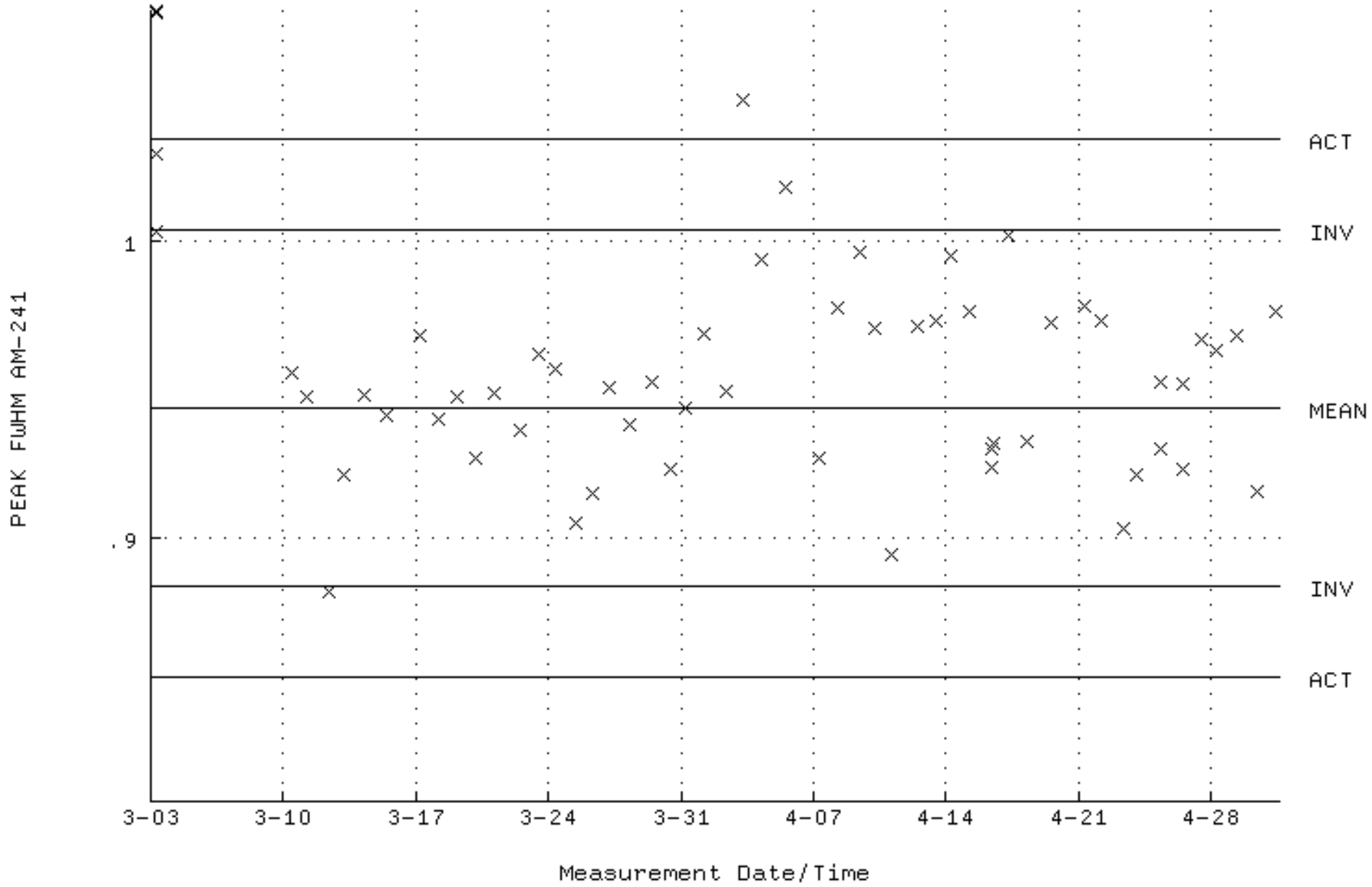
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM33.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 17:50:40 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.40921 +- 4.021728E-02 (2.85 %)



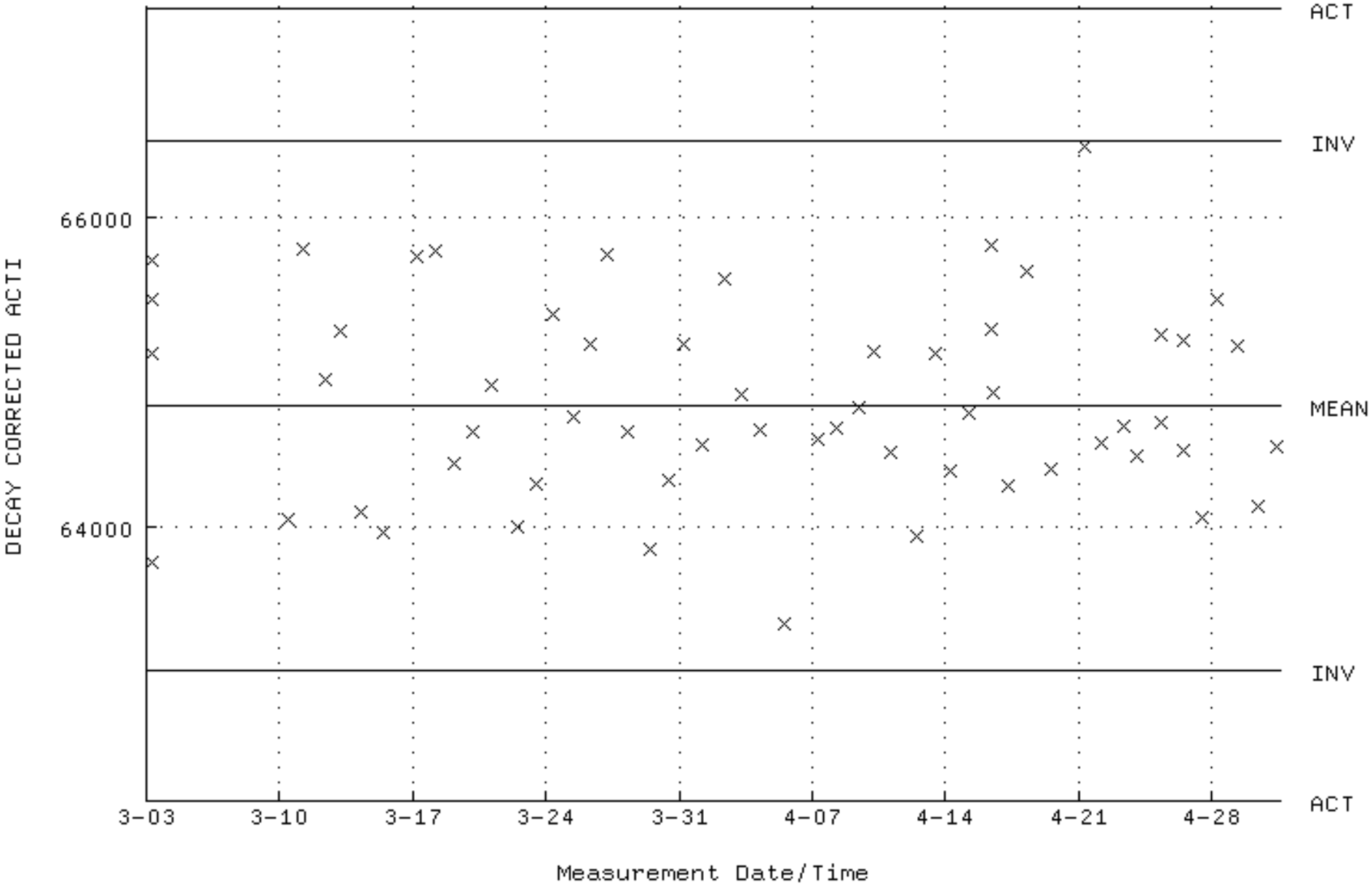
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM38_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 3-MAR-2025 07:00:24 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



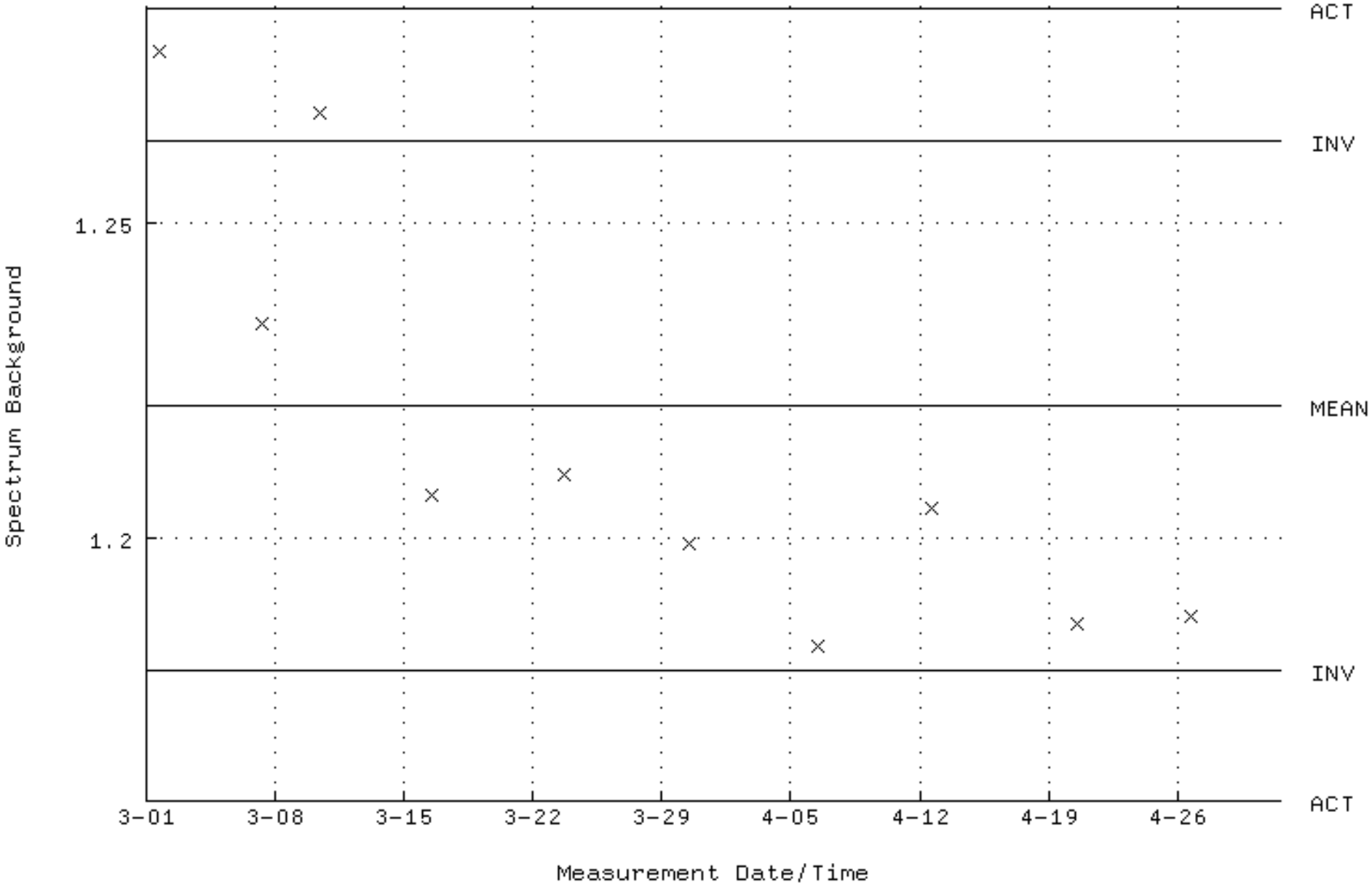
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM38_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 3-MAR-2025 07:00:24 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 0.944191 +- 3.009748E-02 (3.19 %)



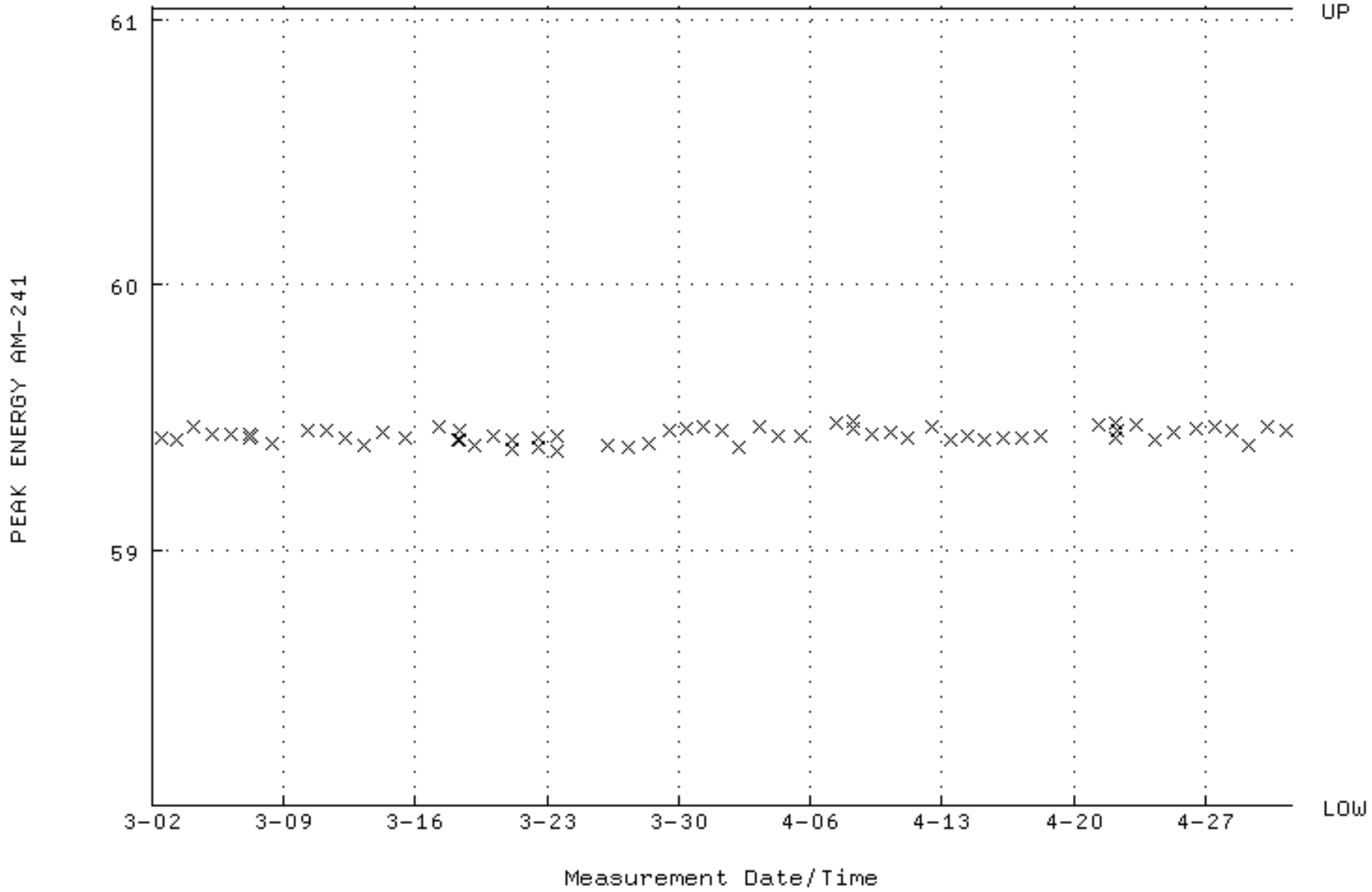
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM38_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 3-MAR-2025 07:00:24 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 64791.4 +- 849.787 (1.31 %)



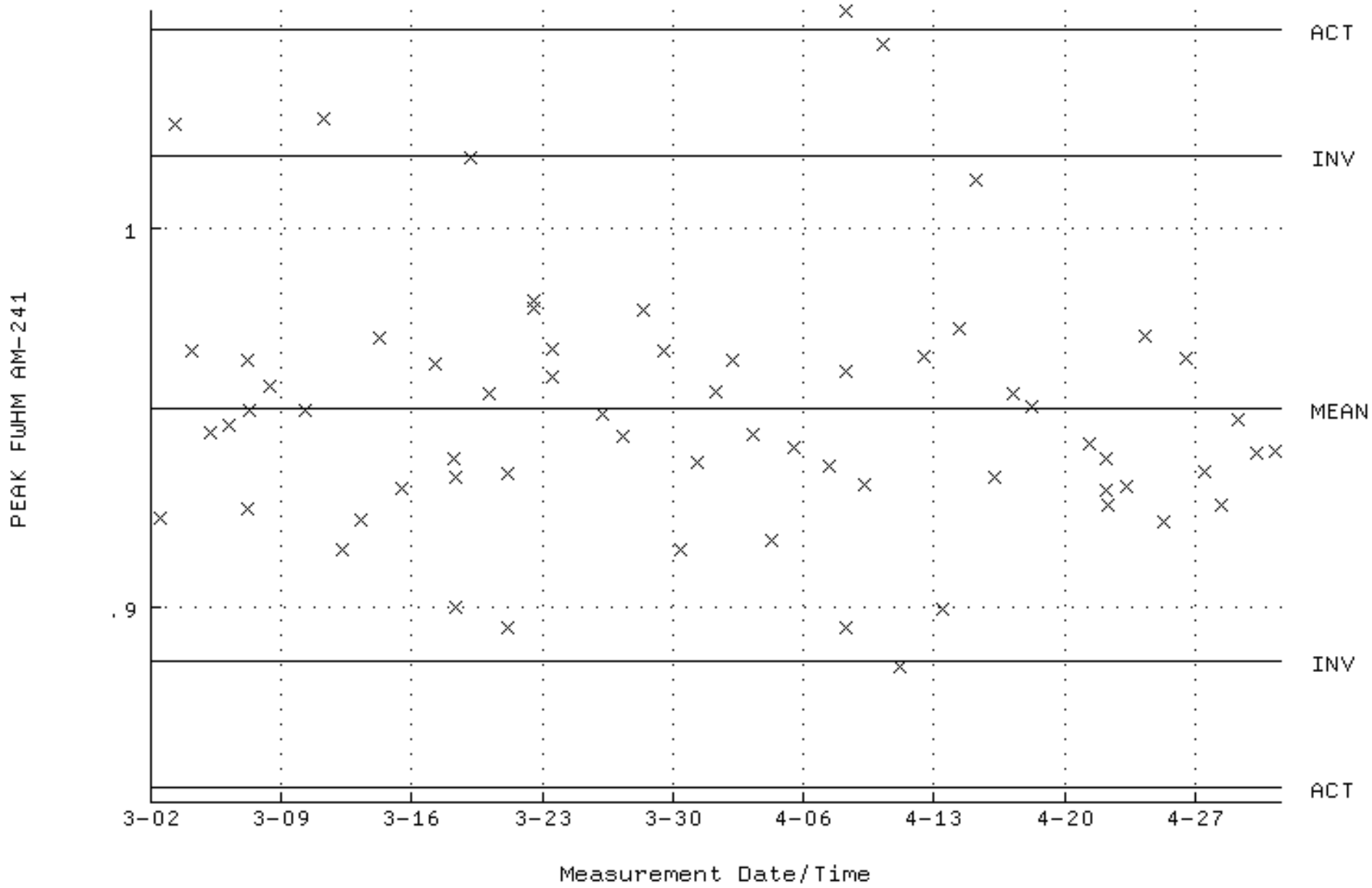
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM38.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 17:50:46 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.22112 +- 2.092609E-02 (1.71 %)



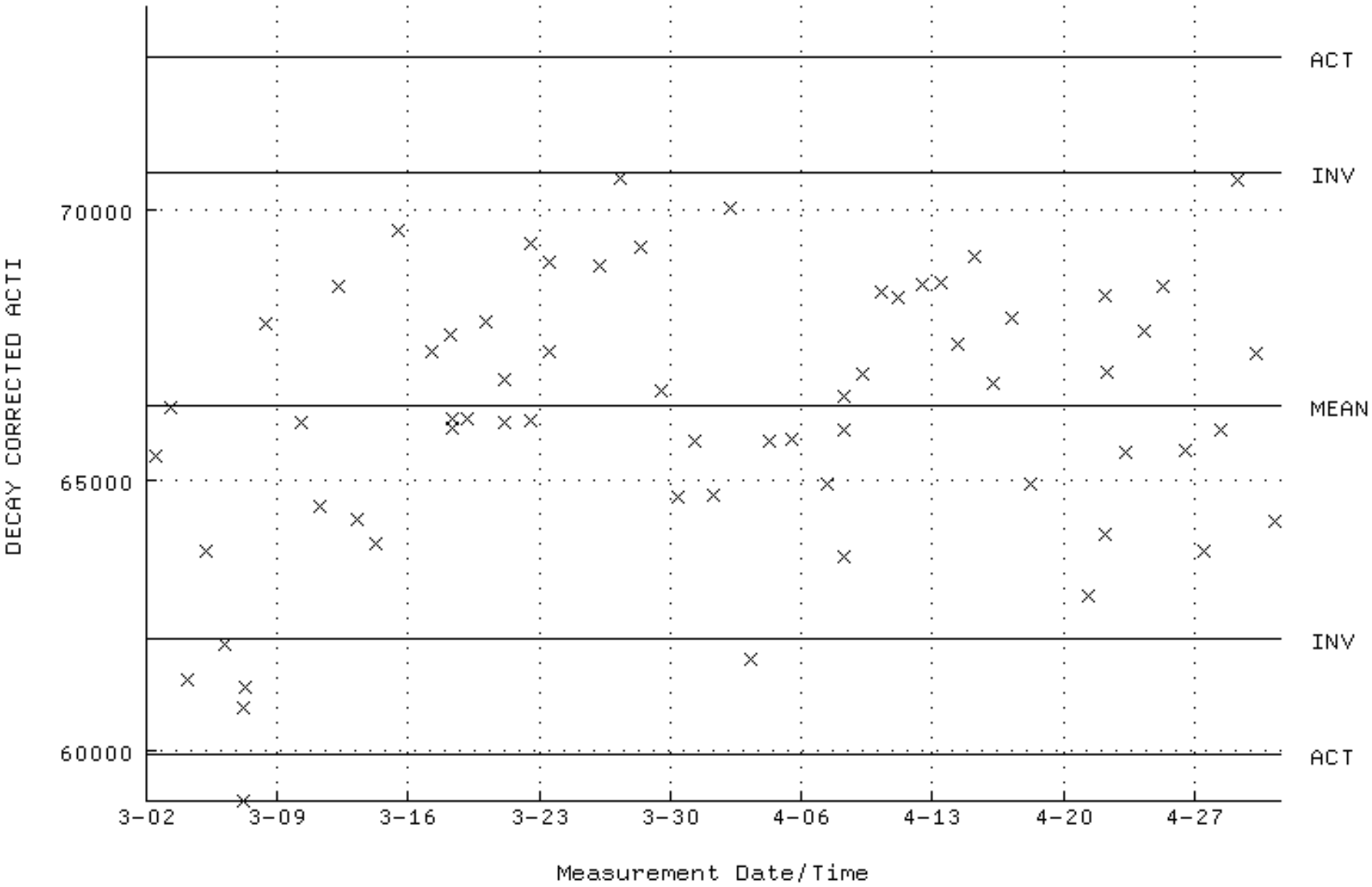
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM40_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 12:44:35 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



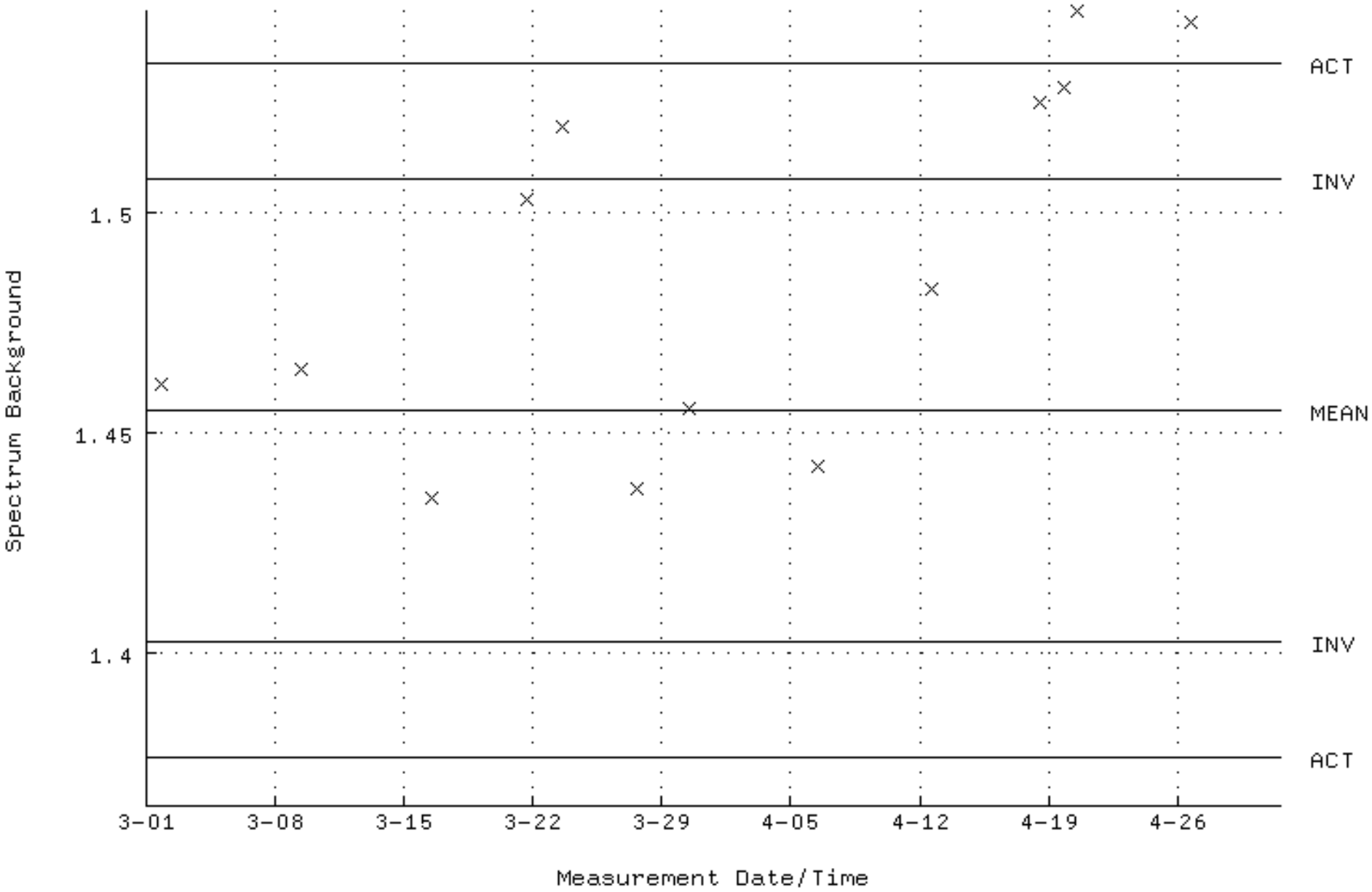
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM40_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 12:44:35 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 0.952717 +- 3.334724E-02 (3.50 %)



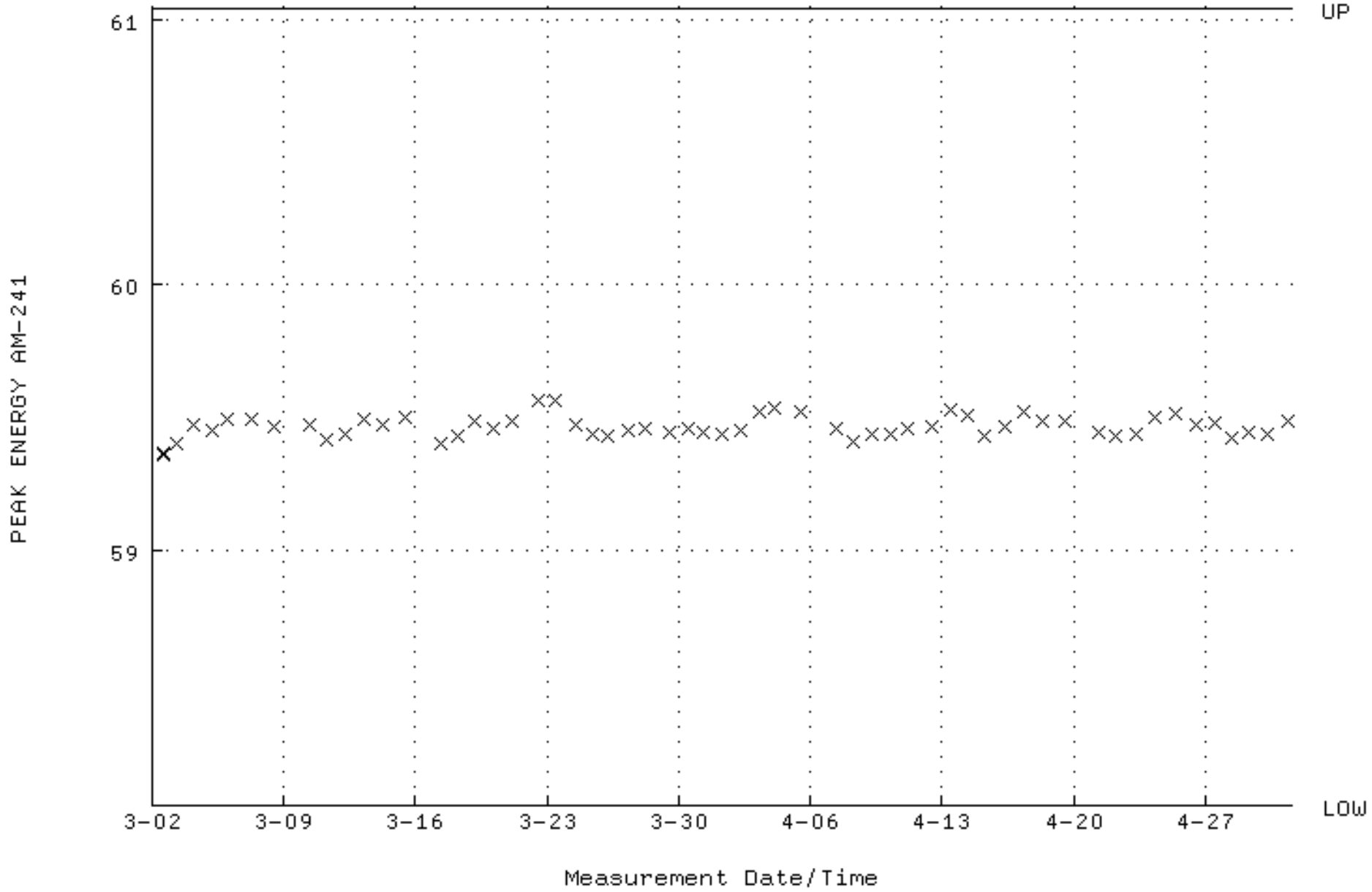
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM40_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 12:44:35 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 66384.8 +- 2147.54 (3.23 %)



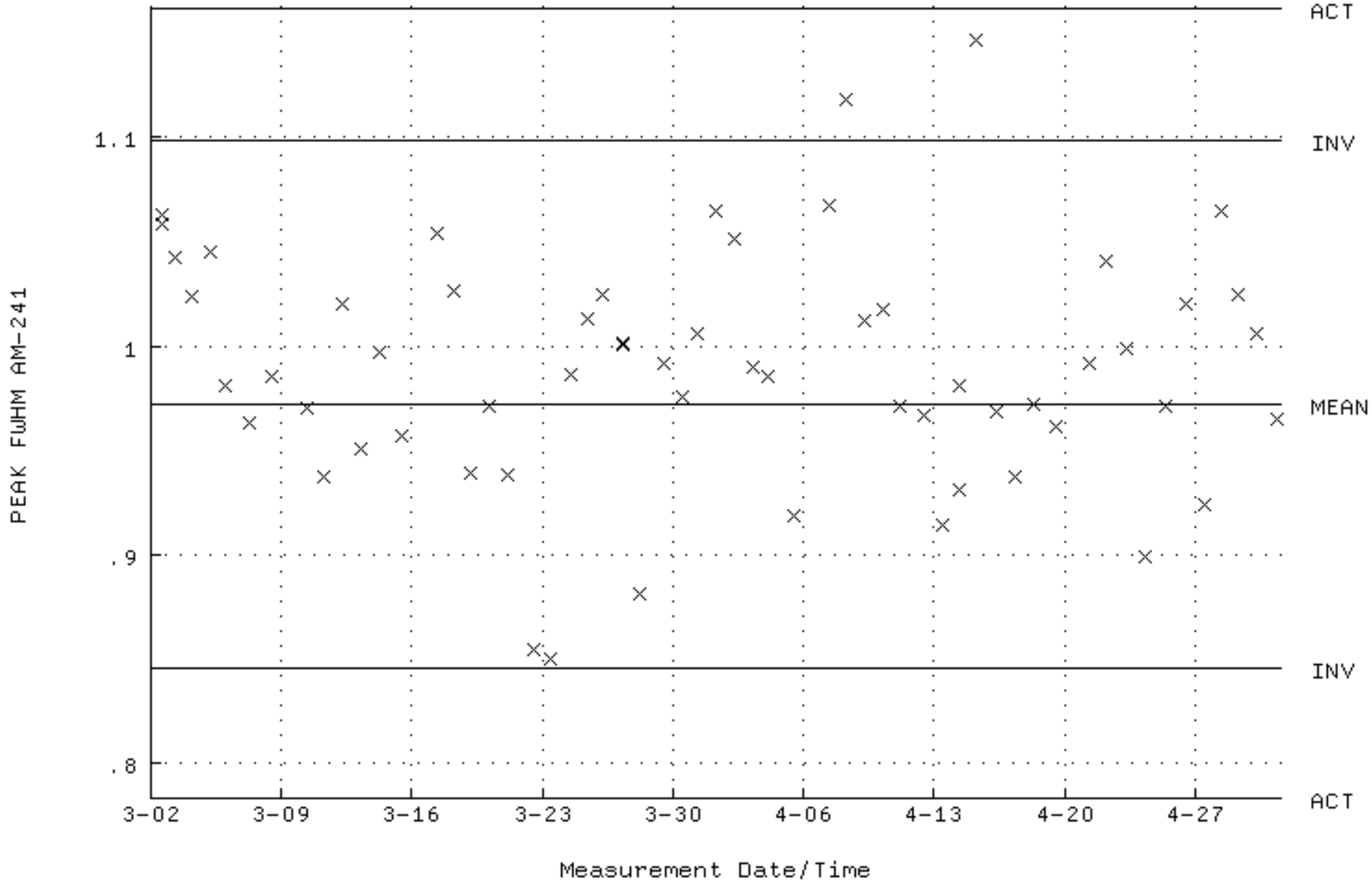
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM40.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 18:49:15 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.45529 +- 2.628771E-02 (1.81 %)



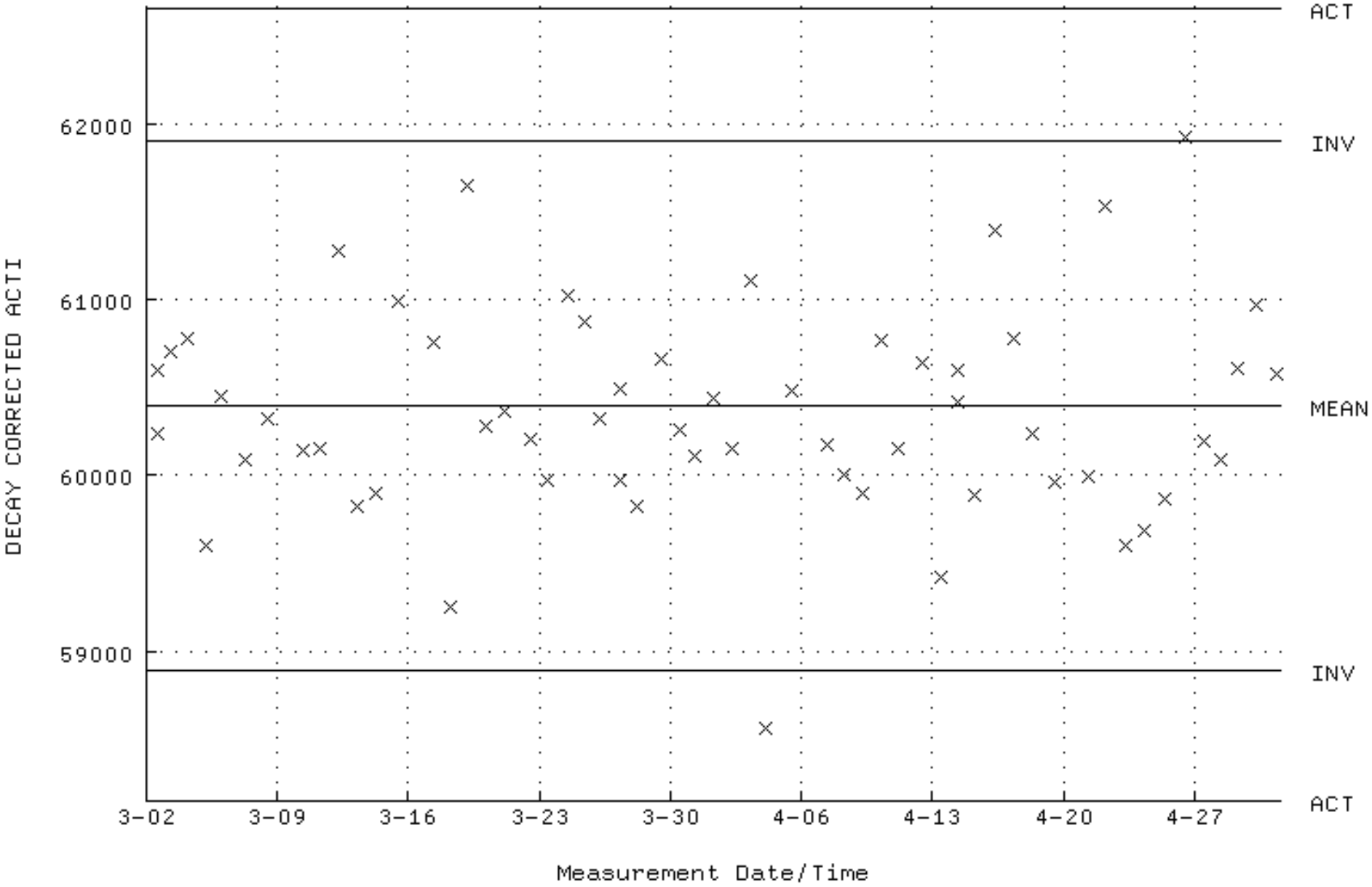
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM41_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 13:12:56 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



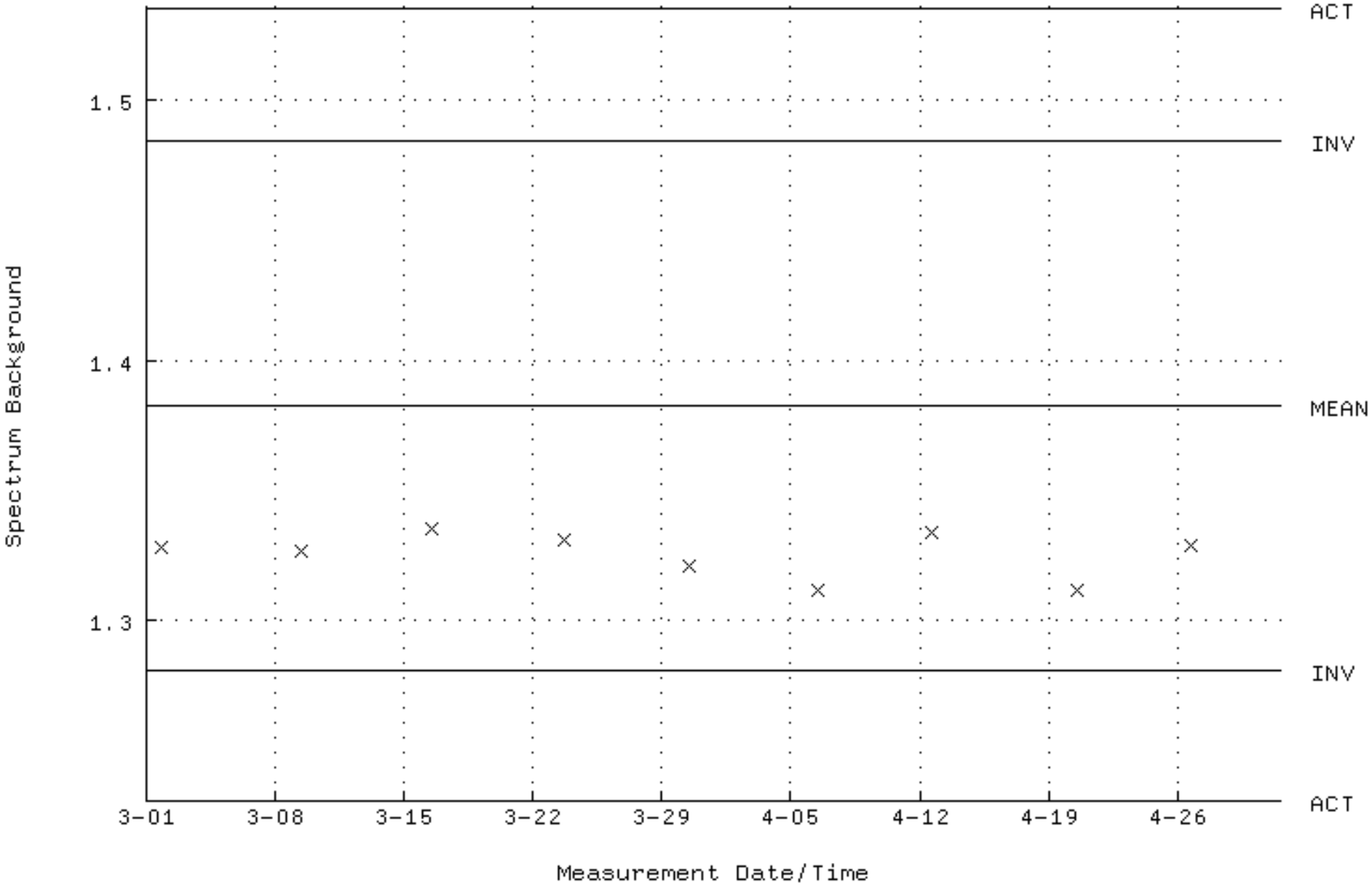
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM41_CAN.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 13:12:56 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 0.972535 +- 6.309706E-02 (6.49 %)



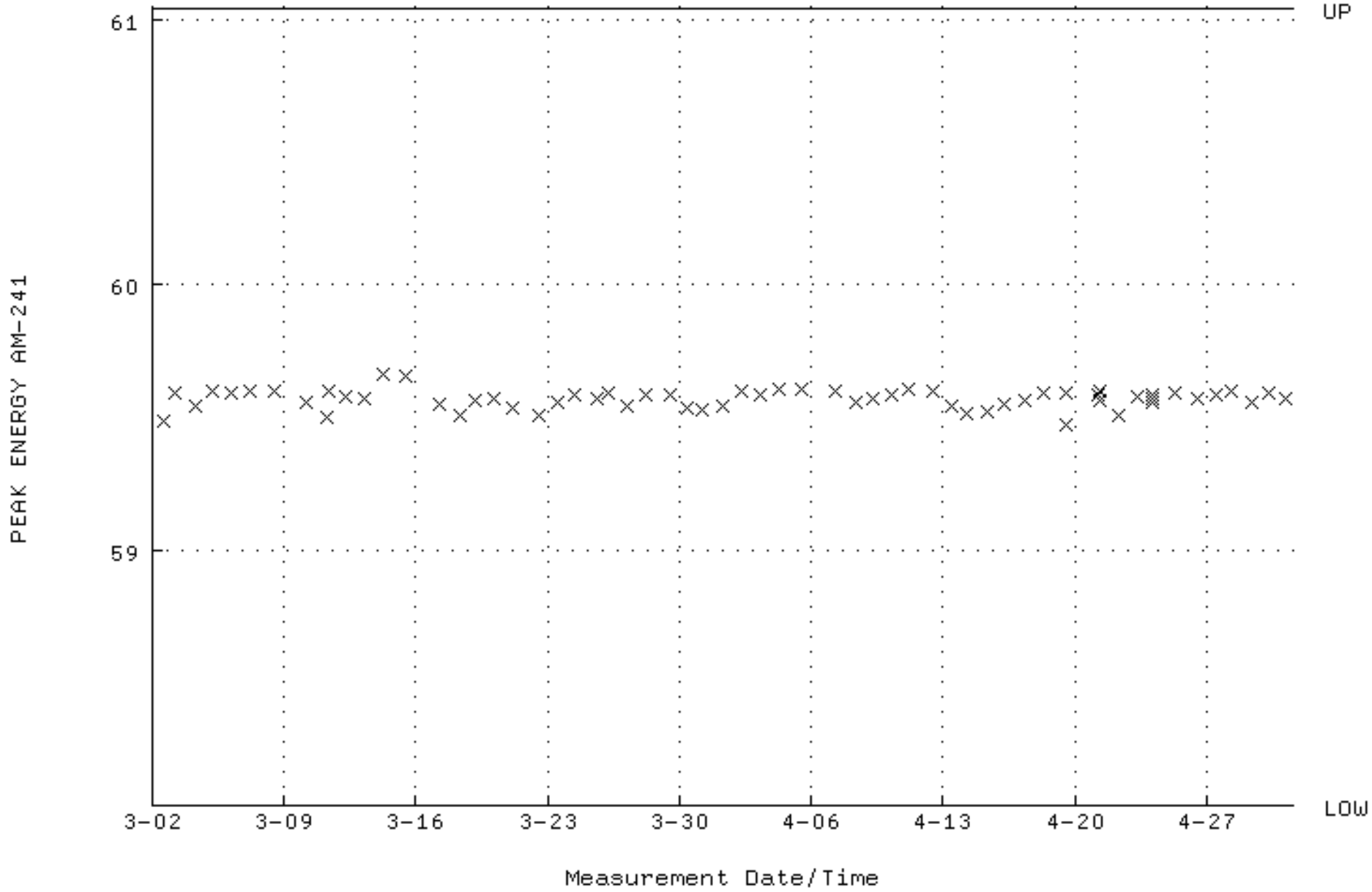
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM41_CAN.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 13:12:56 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 60401.1 +- 751.820 (1.24 %)



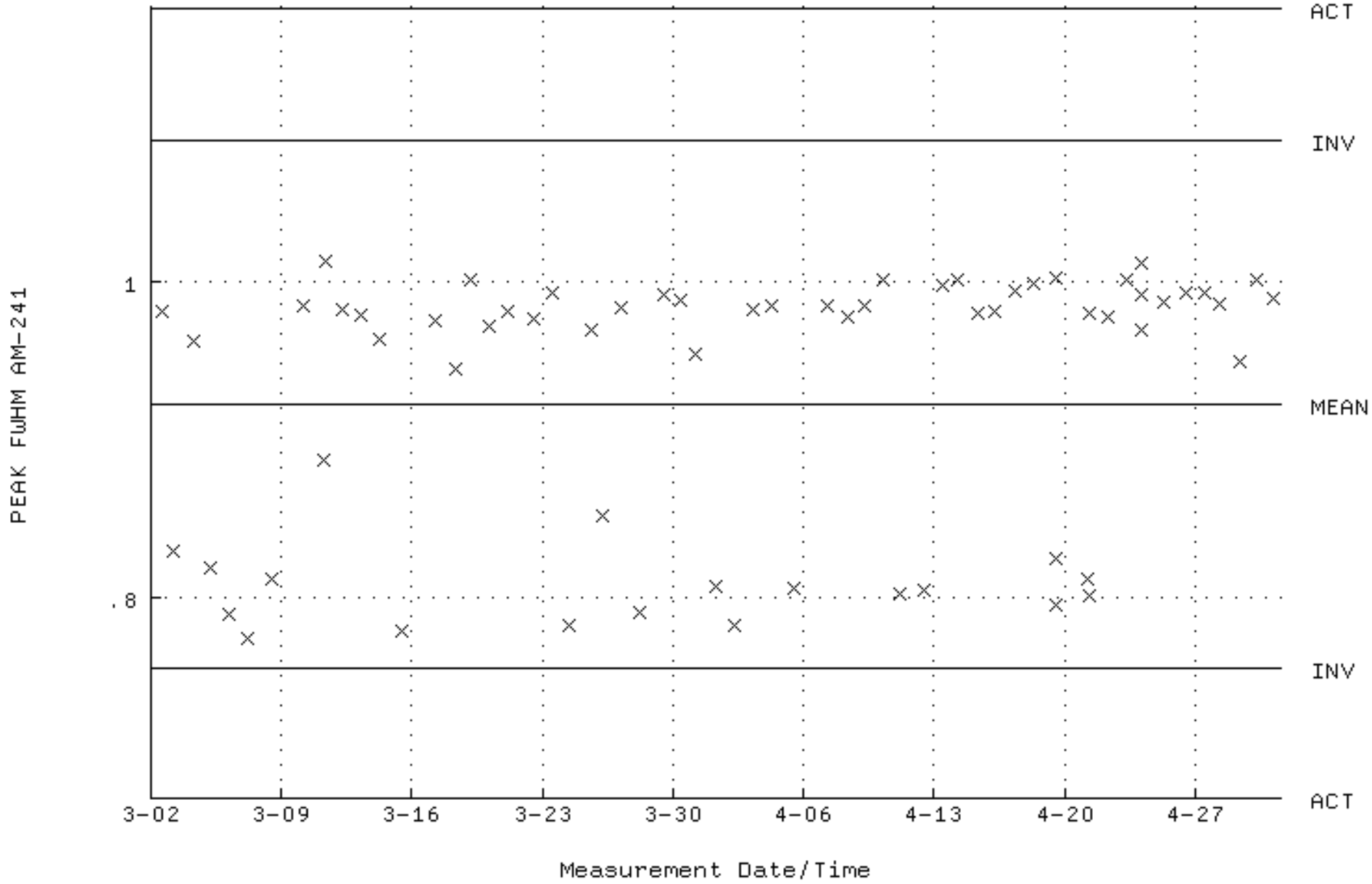
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM41.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 18:49:20 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.38296 +- 5.070877E-02 (3.67 %)



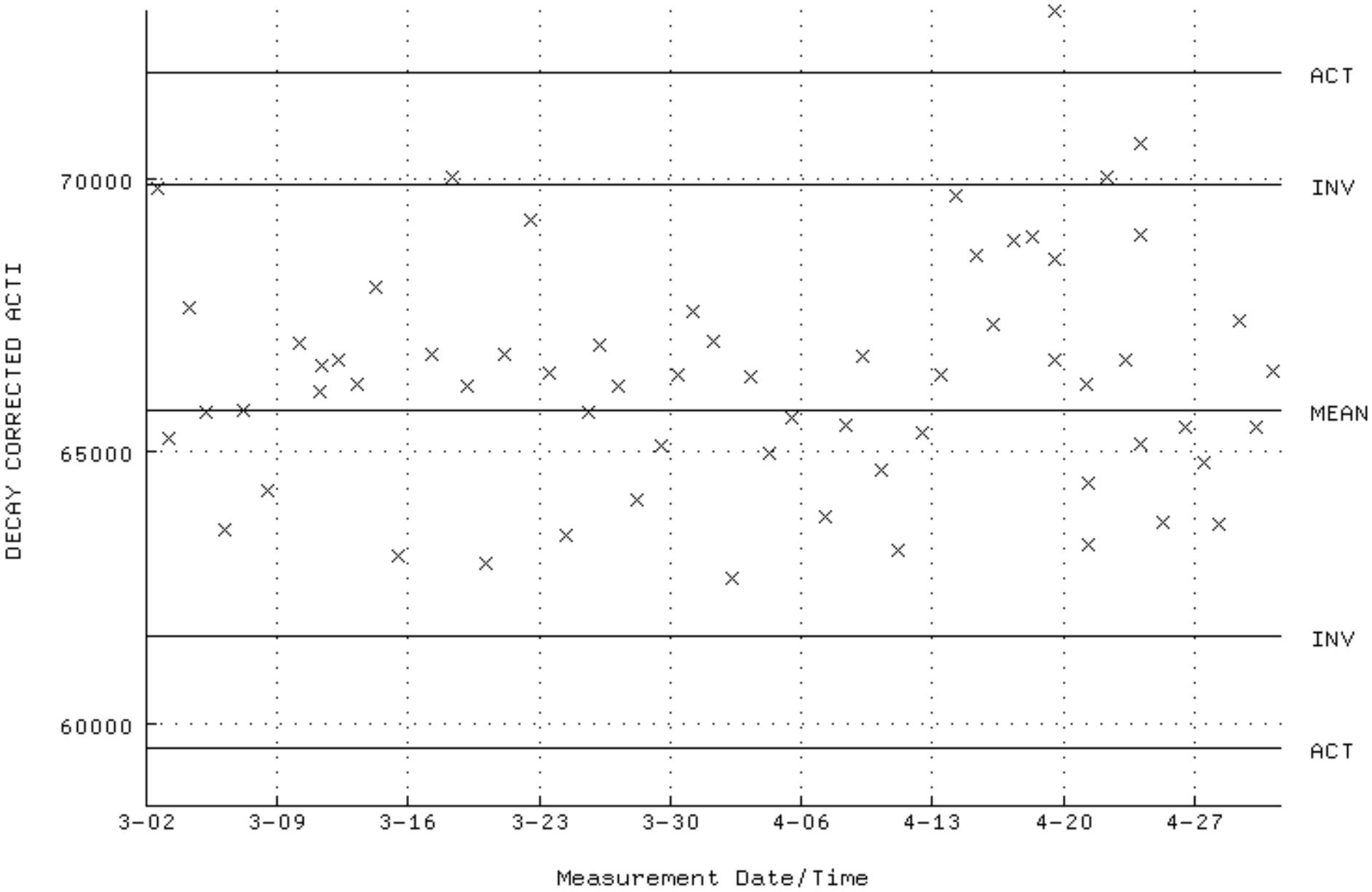
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM52_400JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 2-MAR-2025 13:13:07 through 1-MAY-2025 12:00:00
Lower/Upper Lmts: 58.0400 through 61.0400



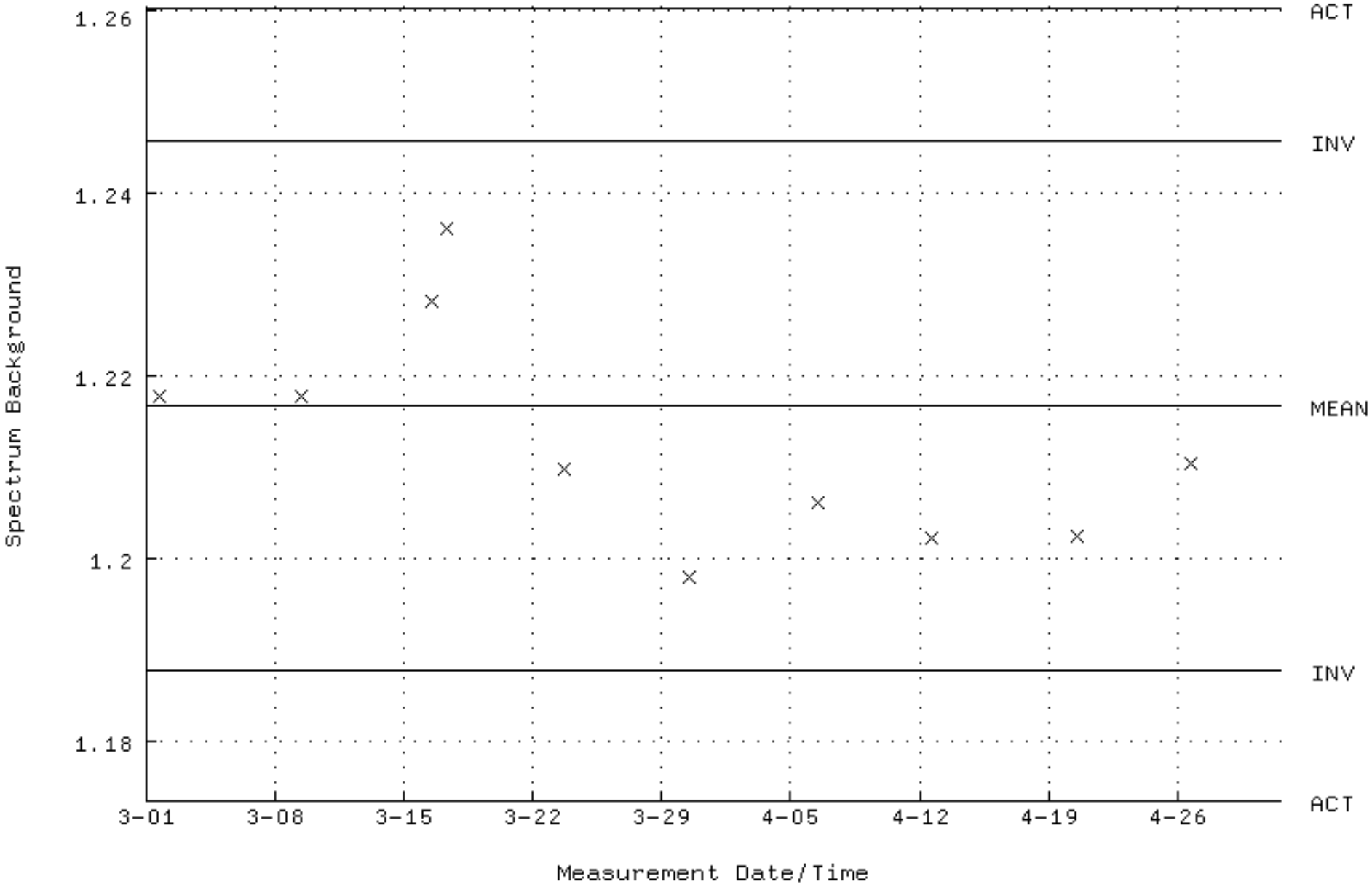
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM52_400JAR.QAF;1
Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
Start/End Dates : 2-MAR-2025 13:13:07 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 0.923439 +- 8.336042E-02 (9.03 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC_GAM52_400JAR.QAF;1
Parameter Name : NLACTVTY-59 (DECAY CORRECTED ACTIVITY AM-241)
Start/End Dates : 2-MAR-2025 13:13:07 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 65786.0 +- 2070.98 (3.15 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM52.QAF;1
Parameter Name : BACKRATE (Spectrum Background Rate)
Start/End Dates : 1-MAR-2025 17:59:30 through 1-MAY-2025 12:00:00
Mean +- Std Dev : 1.21684 +- 1.447294E-02 (1.19 %)



RAD Standards Traceability

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

1556

Standard Radionuclide Source

84680-278

100 mL Solid in Aluminum Can

Customer: GEL Labs
P.O. No.: 489884RD, Item 3
Reference Date: 01-Apr-2011 12:00 PM EST **Grams of Master Source:** 0.0066498

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101. Density of solid matrix 1.15 g/cc.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Pb-210	46.5	8.120E+03	———	1.129E+03	0.1	2.1	4.1	4π LS
Am-241	59.5	1.580E+05	———	7.538E+02	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.659E+05	1.103E+03	0.6	2.3	4.8	HPGe
Co-57	122.1	2.718E+02	8.949E+04	5.951E+02	0.6	2.0	4.2	HPGe
Ce-139	165.9	1.376E+02	1.247E+05	8.292E+02	0.6	1.9	4.0	HPGe
Hg-203	279.2	4.661E+01	2.899E+05	1.928E+03	0.6	1.9	4.0	HPGe
Sn-113	391.7	1.151E+02	1.739E+05	1.156E+03	0.6	1.9	4.0	HPGe
Cs-137	661.7	1.098E+04	1.107E+05	7.361E+02	0.8	1.9	4.1	HPGe
Y-88	898.0	1.066E+02	4.246E+05	2.824E+03	0.6	1.9	4.0	HPGe
Zn-65	1115.6	2.441E+02	———	1.445E+03	0.1	1.7	3.5	IC
Co-60	1173.2	1.925E+03	2.118E+05	1.408E+03	0.7	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.118E+05	1.408E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.495E+05	2.989E+03	0.7	1.9	4.0	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1968

RC-S-060-101

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

ANA Form005 Rev. ---

This standard will expire one year after the reference date.

Source Prepared by: _____
M. Williford, Radiochemist

QA Approved: _____ Date: 6/27/11
J. D. McCorvey, QA Manager Alternate

Standard Logbook

Serial ID:	1556	**Open/Reference Date:**	01-APR-11	**Aliquot :**	1 mL
Name:	Mixed Gamma LCS CAN	**Received:**	01-APR-11	**Density :**	Hand Calculated
Type:	Source Material	**Expires:**	01-APR-37	**Lot Number :**	84680-278
Employee:	Maggie Stamps	**Verified:**	14-JUL-11		
Supplier:	Eckert & Zeigler Analytics				
Description:	84680-278				
Comments:	None				

Analyte	Concentration	Analyte	Concentration
Americium-241	125983.3 dpm/mL	Cesium-137	51898.9 dpm/mL
Cobalt-60	84496.9 dpm/mL		

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Pb-210	**pCi/L**
Mixed Gamma N1	722900
Mixed Gamma N2	752300
Mixed Gamma N3	692100

Isotopic Abundance: 0.0425
Certificate Value (dps): 1129

Mean Value (Counting) =	722433.33	pCi/L	**100.622**	**Pass**
Stdev =	30102.713	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	717965.0	pCi/L		
Lower Limit =	662227.9072	pCi/L		
Upper Limit =	782638.7594	pCi/L		
Rule 1 Pass/Fail	**Pass**			
Two sigma =	60205.42611			
10 % of Mean =	72243.33333			
Rule 2 (Pass/Fail)	**Pass**			

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

mgH 7/20/11

H.Stamper 7/20/11

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Am-241	**pCi/L**
Mixed Gamma N1	58390
Mixed Gamma N2	60740
Mixed Gamma N3	57770

Isotopic Abundance: 0.359
Certificate Value (dps): 753.8

Mean Value (Counting) =	58966.67	pCi/L	**103.9074**	**Pass**
Stdev =	1566.727	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	56749.2	pCi/L		
Lower Limit =	55833.21277	pCi/L		
Upper Limit =	62100.12057	pCi/L		
Rule 1 Pass/Fail	**Pass**			
Two sigma =	3133.453898			
10 % of Mean =	5896.666667			
Rule 2 (Pass/Fail)	**Pass**			

MGH
7/20/11

M. Stamps
7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
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Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Cd-109**	**pCi/L**			
	Mixed Gamma N1	818400		Isotopic Abundance:	0.037
	Mixed Gamma N2	798000		Certificate Value (dps):	1103
	Mixed Gamma N3	764700			
Mean Value (Counting) =	793700.00	pCi/L	**98.51091**	**Pass**	
Stdev =	27107.010	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	805697.6	pCi/L			
Lower Limit =	739485.9797	pCi/L			
Upper Limit =	847914.0203	pCi/L			
Rule 1 Pass/Fail	**Pass**				
Two sigma =	54214.02033				
10 % of Mean =	79370				
Rule 2 (Pass/Fail)	**Pass**				

mgh 7/20/11

M Stamper 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
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Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Co-57**	**pCi/L**			
	Mixed Gamma N1	19090		Isotopic Abundance:	0.856
	Mixed Gamma N2	18820		Certificate Value (dps):	595.1
	Mixed Gamma N3	18830			
Mean Value (Counting) =	18913.33	pCi/L	**100.6592**	**Pass**	
Stdev =	153.080	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	18789.5	pCi/L			
Lower Limit =	18607.17433	pCi/L			
Upper Limit =	19219.49233	pCi/L			
Rule 1 Pass/Fail	**Pass**				
Two sigma =	306.1590001				
10 % of Mean =	1891.333333				
Rule 2 (Pass/Fail)	**Pass**				

mgh 7/20/11

MJStampf 7/20/11

Verification Rules

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Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Ce-139**	**pCi/L**			
	Mixed Gamma N1	28740		Isotopic Abundance:	0.8
	Mixed Gamma N2	29410		Certificate Value (dps):	829.2
	Mixed Gamma N3	27560			
Mean Value (Counting) =	28570.00	pCi/L	**101.9865**	**Pass**	
Stdev =	936.643	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	28013.5	pCi/L			
Lower Limit =	26696.71412	pCi/L			
Upper Limit =	30443.28588	pCi/L			
Rule 1 Pass/Fail	**Pass**				
Two sigma =	1873.285883				
10 % of Mean =	2857				
Rule 2 (Pass/Fail)	**Pass**				

mgH 7/20/11

Verification Rules

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Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

MHampton 7/20/11

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Hg-203**	**pCi/L**			
	Mixed Gamma N1	66300		Isotopic Abundance:	0.8156
	Mixed Gamma N2	68180		Certificate Value (dps):	1928
	Mixed Gamma N3	64480			
Mean Value (Counting) =	66320.00	pCi/L	**103.8046**	**Pass**	
Stdev =	1850.081	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	63889.3	pCi/L			
Lower Limit =	62619.83784	pCi/L			
Upper Limit =	70020.16216	pCi/L			
Rule 1 Pass/Fail	**Pass**				
Two sigma =	3700.162159				
10 % of Mean =	6632				
Rule 2 (Pass/Fail)	**Pass**				

mgH 7/20/11

MStanopt 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton 7/14/2011	**Isotope** **Sn-113**	**Result** **pCi/L**			
	Mixed Gamma N1	49560		Isotopic Abundance:	0.6497
	Mixed Gamma N2	49620		Certificate Value (dps):	1156
	Mixed Gamma N3	48300			
Mean Value (Counting) =	49160.00	pCi/L	**102.2277**	**Pass**	
Stdev =	745.386	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	48088.7	pCi/L			
Lower Limit =	47669.22839	pCi/L			
Upper Limit =	50650.77161	pCi/L			
Rule 1 Pass/Fail	**Pass**				
Two sigma =	1490.771612				
10 % of Mean =	4916				
Rule 2 (Pass/Fail)	**Pass**				

MGH 7/20/11

Hoffamp 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
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Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Cs-137**	**pCi/L**			
	Mixed Gamma N1	23710		Isotopic Abundance:	0.851
	Mixed Gamma N2	23950		Certificate Value (dps):	736.1
	Mixed Gamma N3	24040			
Mean Value (Counting) =	23900.00	pCi/L	**102.2333**	**Pass**	
Stdev =	170.587	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	23377.9	pCi/L			
Lower Limit =	23558.82556	pCi/L			
Upper Limit =	24241.17444	pCi/L			
Rule 1 Pass/Fail	**Fail**	***exception taken due to full recovery of standard**			
Two sigma =	341.1744422				
10 % of Mean =	2390				
Rule 2 (Pass/Fail)	**Pass**				

MHH 7/20/11

Verification Rules

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Rule 3 = The determined mean value shall be within 5% of the certificate value.

MJ Stampf 7/20/11

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Y-88 (898)**	**pCi/L**			
	Mixed Gamma N1	82690		Isotopic Abundance:	0.937
	Mixed Gamma N2	81320		Certificate Value (dps):	2824
	Mixed Gamma N3	80940			
Mean Value (Counting) =	81650.00	pCi/L	**100.2381**	**Pass**	
Stdev =	920.489	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	81456.1	pCi/L			
Lower Limit =	79809.022	pCi/L			
Upper Limit =	83490.978	pCi/L			
Rule 1 Pass/Fail	**Pass**				
Two sigma =	1840.978001				
10 % of Mean =	8165				
Rule 2 (Pass/Fail)	**Pass**				

MGH 7/20/11

MJ Stamper 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
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Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton	**Isotope**	**Result**			
7/14/2011	**Co-60 (1173)**	**pCi/L**			
	Mixed Gamma N1	38910		Isotopic Abundance:	0.9985
	Mixed Gamma N2	39750		Certificate Value (dps):	1408
	Mixed Gamma N3	38840			
Mean Value (Counting) =	39166.67	pCi/L	**102.7694**	**Pass**	
Stdev =	506.392	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	38111.2	pCi/L			
Lower Limit =	38153.88173	pCi/L			
Upper Limit =	40179.45161	pCi/L			
Rule 1 Pass/Fail	**Fail**	***exception taken due to full recovery of standard**			
Two sigma =	1012.784939				
10 % of Mean =	3916.666667				
Rule 2 (Pass/Fail)	**Pass**				

mgH 7/20/11

MJStamper 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton 7/14/2011	**Isotope**	**Result**			
	Co-60 (1332.50)	**pCi/L**			
	Mixed Gamma N1	38940		Isotopic Abundance:	0.9998
	Mixed Gamma N2	40200		Certificate Value (dps):	1408
	Mixed Gamma N3	39150			
Mean Value (Counting) =	39430.00	pCi/L	**103.595**	**Pass**	
Stdev =	675.056	pCi/L		**Rule 3 (Pass/Fail)**	
Certificate Value =	38061.7	pCi/L			
Lower Limit =	38079.88889	pCi/L			
Upper Limit =	40780.11111	pCi/L			
Rule 1 Pass/Fail	**Fail**	***exception taken due to full recovery of standard**			
Two sigma =	1350.111107				
10 % of Mean =	3943				
Rule 2 (Pass/Fail)	**Pass**				

mgh 7/20/11

MHamps 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
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Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Y-88 (1836.1)	**pCi/L**
Mixed Gamma N1	82870
Mixed Gamma N2	83080
Mixed Gamma N3	84640

Isotopic Abundance: 0.992
Certificate Value (dps): 2989

Mean Value (Counting) =	83530.00	pCi/L	**102.5723**	**Pass**
Stdev =	967.006	pCi/L		**Rule 3 (Pass/Fail)**
Certificate Value =	81435.3	pCi/L		
Lower Limit =	81595.98862	pCi/L		
Upper Limit =	85464.01138	pCi/L		
Rule 1 Pass/Fail	**Fail**	***exception taken due to full recovery of standard**		
Two sigma =	1934.011375			
10 % of Mean =	8353			
Rule 2 (Pass/Fail)	**Pass**			

mgH 7/20/11

MHampr 7/20/11

Verification Rules

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule 3 = The determined mean value shall be within 5% of the certificate value.

Standard Logbook

Serial ID:	1556	**Open/Reference Date:**	01-APR-11	**Aliquot :**	1 mL
Name:	Mixed Gamma LCS CAN	**Received:**	01-APR-11	**Density :**	Hand Calculated
Type:	Source Material	**Expires:**	01-APR-37	**Lot Number :**	84680-278
Employee:	Maggie Stamps	**Verified:**	14-JUL-11		
Supplier:	Eckert & Zeigler Analytics				
Description:	84680-278				
Comments:	None				

Analyte	Concentration	Analyte	Concentration
Americium-241	125983.3 dpm/mL	Cesium-137	51898.9 dpm/mL
Cobalt-60	84496.9 dpm/mL		

Runlogs

Instrument Run Log

Instrument Type: GAMMA SPECTROMETER **Batch ID: 2781510**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
719378001	SAMPLE	RXF2	GAM06	MAY-10-25 10:23:08	DONE CAN		23-SEP-24 00:00
719378002	SAMPLE	RXF2	GAM20	MAY-10-25 10:24:02	DONE CAN		19-JUN-24 00:00
719378003	SAMPLE	RXF2	GAM41	MAY-10-25 10:24:35	DONE CAN		05-SEP-24 00:00
719378004	SAMPLE	RXF2	GAM52	MAY-10-25 10:25:05	DONE CAN		03-SEP-24 00:00
719378005	SAMPLE	RXF2	GAM27	MAY-10-25 10:25:39	DONE CAN		09-JUL-24 00:00
719378006	SAMPLE	RXF2	GAM28	MAY-10-25 10:26:11	DONE CAN		10-MAR-25 00:00
719378007	SAMPLE	RXF2	GAM29	MAY-10-25 10:26:44	DONE CAN		29-JUL-24 00:00
719378008	SAMPLE	RXF2	GAM32	MAY-10-25 10:27:17	DONE CAN		17-JUL-24 00:00
719378009	SAMPLE	RXF2	GAM33	MAY-10-25 10:27:47	DONE CAN		25-NOV-24 00:00
719378010	SAMPLE	RXF2	GAM38	MAY-10-25 10:28:22	DONE CAN		29-JUL-24 00:00
719378011	SAMPLE	RXF2	GAM40	MAY-10-25 10:28:55	DONE CAN		08-OCT-24 00:00
719378012	SAMPLE	RXF2	GAM06	MAY-10-25 11:35:01	DONE CAN		23-SEP-24 00:00
1206070202	MB	RXF2	GAM52	MAY-10-25 11:36:48	DONE CAN		03-SEP-24 00:00
1206070203	DUP	RXF2	GAM28	MAY-10-25 11:40:33	DONE CAN		10-MAR-25 00:00
1206070204	LCS	RXF2	GAM29	MAY-10-25 11:42:56	DONE CAN		29-JUL-24 00:00

Attachment 5. NYSDEC DMM-5 DEC Program Policy

DMM-5 / Management of Soils Contaminated with Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM)	
New York State Department of Environmental Conservation **DEC Program Policy**	
Issuing Authority: David Vitale	**Title:** Acting Deputy Commissioner, Office of Remediation and Materials Management
Date Issued: 10/27/2023	**Latest Date Revised: NEW POLICY**

I. Summary:

This policy explains the process and requirements for obtaining a variance under 6 NYCRR 380-3.5 for the management of processed and concentrated naturally occurring radioactive material, also commonly referred to as technologically enhanced naturally occurring radioactive material (TENORM). Additionally, this policy identifies the process and criteria to be used to evaluate TENORM and provides guidelines to Department of Environmental Conservation ("Department") program staff, and property owners, project sponsors, and the public who may be seeking variances, on how to appropriately handle TENORM encountered during construction or earthwork projects, such as clearing, grading, excavation, filling, demolition, or stockpiling. This policy also applies to any project site where the intrusive work conducted has or will likely disturb identified or suspected TENORM. This policy does not apply to activities that disturb naturally occurring radioactive materials.

Part 380 applies to any person who disposes of or releases TENORM. This policy is applicable where a variance application has been submitted pursuant to 6 NYCRR 380-3.5 for on-site management of TENORM fill that was generated, disposed of, or released prior to the implementation of 6 NYCRR Part 380, which was March 24, 1994, and which has been excavated for a project. Once TENORM has been excavated, it is considered radioactive material and may be subject to DEC's regulatory authority as noted in 6 NYCRR 380-1.2(e) and as defined in 6 NYCRR 380-2.1(a)(20). Placing the TENORM back into the area in which it was excavated constitutes deposition or injection into the environment and thus disposal. This policy provides guidance on the variance application that may be submitted pursuant to 6 NYCRR 380-3.5 to allow on-site management of excavated TENORM.

Implementation

This policy is to be implemented at any site, location, or work area where anthropogenic (i.e., “man- made” or “man-modified”) material or fill (frequently observed to be “slag”) has been noted or discovered and is suspected or known to have a potential or definitive TENORM characteristic, (see definition below).

Definitions

As Low As Reasonably Achievable (ALARA) – Means every reasonable effort is made to maintain exposures to radiation as far below the dose limits (or for purposes of this Policy concentration values) in Part 380 as is practical consistent, with the purpose for which the action is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of radioactive materials in the public interest.

Area of Contamination (AOC) – Means a discrete area of generally dispersed contamination.

Excavation – Means any man-made cut, cavity, trench, or depression in the earth surface formed by the removal of soil and rock, or any activity that causes or contributes to the creation of any such cut, cavity, trench, or depression.

Disposal – Means the act of discarding regulated radioactive material. Depositing or injecting radioactive material in the environment is disposal unless the radioactive material is being used in the environment, as authorized by a permit issued under 6 NYCRR 380-3.1.

TENORM Fill – Means slag or other material containing TENORM used as fill, without regard to its radiological content, placed on its present site before March 24, 1994, when 6 NYCRR Part 380 became effective. Such historically placed fill is not a regulated waste if it remains as it was placed at that time.

Licensed Decontamination & Decommissioning (D&D) Contractor – Means a person or company who possesses a radioactive materials license that authorizes them to perform decontamination and decommissioning of radiologically contaminated sites. D&D Contractors must possess a license issued by the New York State Department of Health (DOH). Companies licensed by the US Nuclear Regulatory Commission (NRC), or another state may work under reciprocity with the DOH.

Naturally-Occurring Radioactive Material (NORM) –Means any of the primordial radionuclides (those present since the formation of the earth – Uranium, Thorium, Potassium) or radioactive elements as they occur in nature, and their radioactive decay products, such as radium and radon, that are not concentrated as a result of human activity. (*Note*: NORM produced through interaction of cosmic rays with certain gasses in the upper atmosphere (cosmogenic NORM) such as tritium or carbon-14 are not addressed in this policy.)

Person – Means:

(i) any individual; public, private, or government corporation; joint stock company; industry; partnership; co-partnership; firm; association; trust; estate; public or private institution; agency, department, or bureau of the State, or group, political subdivision of the State, any other State or political subdivision thereof; Federal government agencies other than the U.S. Nuclear Regulatory Commission or Department of Energy; any foreign government or nation or any political subdivision of any such government or nation; and

(ii) any legal subsidiary, successor, representative, agent, or agency of the foregoing, or any other legal entity whatsoever.

Slag – Means a waste product from the pyrometallurgical processing of various ore, both ferrous (e.g., steel and blast furnace Fe) and non-ferrous (e.g., P, Ag, Cu, Ni, Pb, Sn, Zn).

Technologically-enhanced naturally occurring radioactive material (TENORM) – Means naturally occurring radioactive material whose radionuclide concentrations are increased by or as a result of past or present human practices, such as manufacturing or water processing.

TENORM (Background-comparable) – Means TENORM fill that has been disturbed by excavation or other methods and is below 5 pCi/g of radium-226.

TENORM Waste – Means TENORM fill that has been disturbed by excavation or other methods and exceeds 15 pCi/g of radium-226.

TENORM Disposal Plan – Means a TENORM disposal plan must cover management and disposal of TENORM waste (>15 pCi/g of Ra-226) generated for disposal to ensure handling in a manner adequate to protect human health and the environment until such time as it is shipped for disposal.

TENORM Management Plan – Means a plan to appropriately manage in an AOC and/or dispose of TENORM fill containing a concentration of radium-226 between 5 pCi/g and 15pCi/g that must be submitted with an application for a variance to be approved by the Department. (*Note*: for TENORM (Background-comparable), the procedure(s) utilized in determining compliance with the <5 pCi/g criteria will constitute a “Management Plan” for purposes of meeting the management requirements in Section
IV.B. of this policy.)

II. Policy

The Department will allow excavated TENORM to be returned to the excavation area on a project site if the concentration of radium-226 meets certain thresholds (discussed throughout) and the TENORM is handled in accordance with this policy and pursuant to a variance issued under 6 NYCRR 380-3.5. The Department’s position is that handling excavated TENORM in accordance with this policy and a Department-approved TENORM Management Plan will have no significant adverse impact on public health and safety, and the environment. (*Note*: A variance application to allow excavated TENORM below 15 pCi/g of Ra-226 to be returned to the area of excavation on a project site does not need to include the demonstrations required under 6 NYCRR 380-3.5(b)(4) and (5).) This policy utilizes the EPA Uranium Mill Tailings Radiation Control Act standards of 5 and 15 pCi/g of Ra-226, but conservatively applies them only to the excavated TENORM.

Purpose and Background

The purpose of this policy is to address intrusive work on sites containing TENORM fill. A number of industrial processes generated byproducts that contained processed and concentrated NORM, also known as TENORM. Slag and other TENORM-containing byproducts from ore refining were used as backfill beneath roadways and other construction projects. This was done due to their low cost and beneficial physical properties, but without consideration of their inherent radioactivity.

This policy applies to sites containing TENORM that was placed on its present site before March 24, 1994, when 6 NYCRR Part 380 was updated to address the radiological content of TENORM. Since that time, this type of waste is not allowed to be used as fill or disposed of at any site unless the site has regulatory approval to accept it. As of the effective date of this policy, there are no sites approved for the disposal of newly generated TENORM waste in New York. Therefore, such waste must be disposed of in an authorized disposal facility.

When the presence of TENORM at sites first came to light, the New York State Department of Health commissioned a group of outside experts to assess the potential public health risks of the sites. These experts determined that the sites did not pose significant public health or environmental concerns if the TENORM is left in place. If TENORM is disturbed, it must be appropriately handled and the potential impacts to public health and the environment must be taken into consideration.

III. Responsibility

Responsibility for the interpretation and implementation of this policy resides with the Department's assigned Environmental Radiation Specialist (ERS) in coordination with any Department project manager (or other involved Department staff), to ensure that an adequate radiological screening is performed. Additional consultation may occur as determined to be necessary with the Department's Radioactive Materials Management Section (RMMS) staff, in the Bureau of Hazardous Waste and Radiation Management in the Division of Materials Management.

Responsibility for updating of this policy resides with the RMMS in consultation with regional management and staff (e.g., ERS) responsible for implementation of this policy.

IV. Procedure

The first step is to verify whether anything exhibiting elevated radioactivity is present in the materials being handled. This includes a preliminary screening radiation survey to determine if TENORM is present. Prior to conducting the survey, a survey plan must be developed and submitted for Department approval.

Second, if the survey results demonstrate that TENORM is present, then a proper TENORM management plan must be developed and submitted for Department approval. The third step is the TENORM must be managed in accordance with the approved TENORM management plan and if necessary, a variance. Further details of each step are provided below.

A. Radiological Screening

6 NYCRR 380-1.5(c)(1) requires that a variance application include a description of the waste containing radioactive material to be disposed of, including the physical and chemical properties relevant to the risk evaluation. Radiological screening, as described below, may be used to satisfy this requirement.

At sites known or reasonably suspected of being contaminated with TENORM where any development activity or other ground-disturbing activity or excavation is planned, a licensed D&D contractor must be utilized to perform an initial radiological screening survey (the "survey") to identify the presence and concentration of radium-226, as described in Attachment A. If appropriate, the survey may be submitted with the necessary proposed TENORM Management Plan (see Section VI.C. of this policy). For sites where TENORM was not initially known or suspected, but during work the presence of slag fill or other indicators raise a concern for the possible presence of TENORM, a health physics technician or appropriately trained person (as approved by the Department) may perform a preliminary radiological screening survey. Project sponsors must submit a draft of the survey plan to the Department in advance to ensure that the survey will meet the Department's data needs. The Department will review and approve the survey plan prior to implementation.

After the survey plan is approved and an initial survey is conducted, the project sponsor, site owner, or other appropriate person must submit the initial survey results to the assigned ERS (and DEC project manager for sites in a DEC remedial program) for review. The initial radiological screening survey results will assist the ERS in determining the necessity, and scope, of a TENORM Management Plan. Additionally, the initial radiological screening survey results provide the description of the waste containing radioactive material, which includes the physical and chemical properties relevant to risk evaluation, that is a requirement for a variance application under 6 NYCRR 380-3.5(c)(1).

If any radiological screening survey conducted indicates the presence of radium-226 or other NORM isotopes, in potentially elevated concentrations, the site will be deemed to contain potential TENORM. If any material is determined to be TENORM, it must be handled in accordance with the management requirements in Section IV.B of this policy.

B. Management Requirements

This policy utilizes the EPA Uranium Mill Tailings Radiation Control Act standards of 5 and 15 pCi/g of Ra- 226, but conservatively applies them only to the management of the excavated TENORM. This standard is widely used as a remedial goal at sites across the country, and in New York, which contain Ra-226 contamination. The original purpose of these values was to minimize the radiation dose received via radon emanation from Ra-226 and, as such, represents a comparable risk and exposure scenario. The following are the management requirements for the different types of TENORM that could be discovered on a particular site:

> **TENORM (Background-comparable)** (below 5 pCi/g of radium-226) – the Department may either grant a variance to allow the excavated TENORM (Background-comparable) to be returned to the excavation/AOC, or the assigned ERS determines, and approves, that the proposed use and handling in the AOC is acceptable. The Department will also require that appropriate and approved institutional control(s) be put in place (e.g., deed restriction, environmental easement) for each AOC.

TENORM fill (between 5 pCi/g and 15 pCi/g of radium-226) – the Department may grant a variance to allow excavated TENORM fill to be returned to the excavation/AOC if the following conditions are met:

1) the site where the TENORM fill is found contains undisturbed TENORM fill;

2) all excavated TENORM fill is handled in conformance with the submitted and approved TENORM Management plan;

3) an appropriate and approved institutional control(s) is put in place (e.g., deed restriction, environmental easement) for each AOC; and

4) the TENORM fill does not exceed 15 pCi/g of radium-226.

TENORM Waste (above 15 pCi/g of radium-226) – TENORM waste is considered a regulated waste per 6 NYCRR Part 380 and must be disposed of in accordance with appropriate regulatory requirements at an authorized disposal facility.

C. Management Plan Requirements for TENORM fill

Once TENORM fill has been identified on a property where it is being or will be disturbed, a TENORM Management Plan must be submitted to the Department for approval. As discussed previously, the radiological screening survey plan can be incorporated into the TENORM Management Plan. The TENORM Management Plan describes the proposed manner and conditions of waste disposal and the procedures to ensure that doses are maintained ALARA, which are both requirements for a variance application under 6 NYCRR 380-3.5(c)(1), (4). The TENORM Management Plan must demonstrate the following:

1) the site is conducive to the implementation of long-term site controls;

2) a well-defined and documented consolidation location within the AOC (if proposed) will be established;

3) a minimum of two feet of acceptable soil cover material or the equivalent of paving with asphalt or concrete will be placed over the consolidation area;

4) whether substantial TENORM will remain on the site at the completion of any site work;

5) the size of the consolidation area will be based on the known extent of area containing undisturbed TENORM remaining on-site; and will be determined and approved on a case-by- case basis by the Department; and

6) that it is implemented in a manner consistent with the ALARA

concept. For more details on the TENORM Management Plan, see

Attachment B of this policy.

D. Variance Application Requirements

For TENORM to remain onsite per a proposed management plan, an application for a variance must be submitted and approved. The application must comply with the requirements of 6 NYCRR 380-3.5.

However, as previously indicated, the application does not need to include the demonstrations required under 6 NYCRR 380-3.5(b)(4) and (5).

To meet the requirements of 6 NYCRR 380-3.5, the application for a variance for TENORM fill must include the following:

1) an explanation as to why the applicant believes the property contains TENORM;

2) the initial radiological survey results showing the concentration of radium-226 and other NORM isotopes found in the TENORM;

3) a TENORM Management Plan;

4) institutional controls as previously discussed, as determined by the Department to be necessary; and

5) any additional information deemed necessary by the Department.

The application for a variance will be reviewed by the assigned ERS, with recommendations made to appropriate Department management and programmatic areas for determination of approval or rejection (preference is for determination to be made in a regionalized program office, whenever possible).

Any denial of a variance application may result in the applicant or responsible person being required to take further action, including, but not limited to, additional characterization, site definition, and potentially removal and disposal off site of the material in question. Additionally, when a variance application is denied, the Department will issue a notice of denial and the applicant may request a hearing in accordance with the procedures in 6 NYCRR Part 621 as a variance from Part 380 qualifies as a permit.

Additional Requirements and Recommendations

This policy does not address the transportation of TENORM or other radioactive materials.

Regardless of the concentration of radium-226 and other NORM isotopes determined to exist at a site, any new structures built at said location are recommended to utilize radon resistant construction.

V. Related References

49 CFR Part 173 Subpart I Class 7 Radioactive

Materials 10 NYCRR Part 16 Ionizing Radiation

6 NYCRR Part 380 Prevention and Control of Environmental Pollution by Radioactive

Materials 6 NYCRR Part 381 Transporters of Low-Level Radioactive Material

17 NYCRR Part 154 Special Hauling Permits

Attachment A Radiological

Screening Survey Criteria

If a radiological screening survey is needed to verify the presence of TENORM, the following process must be followed:

1) Establish an appropriate background(s) representative for the area(s) to be surveyed, as approved by the Department. It is intended for the background area to be distinct from the area of contamination (AOC), yet representative of background conditions in the vicinity of the AOC. Natural radiological background is preferred, however, in some instances, such as urban areas, background representative of non-natural conditions not impacted by TENORM may be acceptable.

2) At a minimum, survey the portion of the site to be disturbed.

3) If survey readings exceed 1.5 x background, collect a minimum of three representative composite samples of the TENORM (to be analyzed by a DOH Environmental Laboratory Approval Program (ELAP) certified laboratory) including from the area of highest survey readings. Perform fixed one-minute meter readings at each sampling location prior to collection of a sample.

   a) In consultation with the assigned ERS, develop a correlation between meter readings and soil concentrations to guide future survey efforts. Where feasible, the use of a meter reading-to-concentration correlation (backed-up by limited sample analyses) can reduce costs and time delays during site characterization and waste monitoring rather than relying solely on analytical results.

   b) As long as survey results indicate radium-226 levels below 5 pCi/g, no separation of soil and TENORM is required.

4) If no readings in excess of 1.5 times background are noted, no further monitoring during excavation activities is necessary, except as noted below.

   a) In most cases, no other radiological monitoring will be required.

   b) However, certain factors may necessitate limited additional monitoring of excavated materials. Those factors can include:

      i) Whether there are known areas of TENORM in the region or on nearby properties;

      ii) Whether there is evidence that slag is present on-site and if so whether it contains TENORM; or

      ii) If major changes in types of TENORM encountered occur during excavation.

   c) If Department staff or a site consultant see possible TENORM at or from a depth greater than was evaluated by the original survey, it is strongly recommended that a plan to perform limited radiological screening of excavated materials be developed. The goal is to ensure that contaminated materials are

not inadvertently redistributed on the site or moved off site. If such a circumstance arises, ERS staff will work with the consultant to establish an appropriate limited screening plan.

Attachment B

TENORM Management Plan

The TENORM Management Plan must include the following:

1) TENORM Sorting Process:

   a) Unless an alternate plan is approved by the Department as part of previously discussed process regarding granting a Part 380 variance, material removed from the excavation area must be sorted as part of the excavation process and placed into stockpiles using average soil concentrations, based upon waste management needs. Stockpiles should be managed to minimize erosion and the generation of dust.

   b) These stockpiles may include:

      i) A pile for TENORM (Background-comparable) clearly below 5 pCi/g of radium- 226

      ii) A pile for TENORM Waste clearly exceeding 15 pCi/g of radium- 226 for off-site disposal.

      iii) An optional intermediate pile for TENORM fill that cannot readily be identified during excavation as fitting into one of the above categories based on meter readings alone. (below 5 pCi/g or above 15pCi/g for Ra-226.)

         1) If an intermediate concentration pile is proposed by the TENORM Management Plan, the TENORM Management Plan must describe how the fate of this TENORM fill will be resolved, or

         2) If an intermediate concentration pile is not proposed by the TENORM Management Plan, all TENORM fill exceeding 5 pCi/g of radium-226 must be placed in the pile for off-site disposal.

   c) If a correlation between meter readings and soil concentrations to guide future survey efforts has not already been completed and approved by the assigned Department ERS, it must be included as part of this TENORM Management Plan.

2) Survey Process for Soil/TENORM Sorting

   a) In larger excavations, the preferred method is to excavate in six-inch (6”) lifts and perform walkover surveys using the established meter reading-to-concentration correlation to separate out contaminated material. If site characteristics or other restrictions do not allow for this, surveying bucket by bucket, visual screening, or another process may be submitted for consideration as part of the TENORM Management Plan.

   b) In tight areas such as trenches where normal surveying is impractical or dangerous, bucket loads of excavated material should be surveyed as they are removed from the excavation. Due to the change in geometry from a flat plane to a bucket of soil, a separate meter reading-to-concentration ratio would be required

for this survey option. Alternatives to surveying buckets of excavated material during excavation may be submitted to the Department for consideration as part of the TENORM Management Plan.

3) TENORM Management

The following contains information on the management requirements for the different types of TENORM:

a) TENORM Waste (i.e., material with survey levels exceeding 15 pCi/g of radium-226) must be disposed of off-site at facilities permitted to accept such wastes. Representative sampling must be performed following the waste acceptance criteria of the selected disposal site.

b) TENORM (Background-comparable) (i.e., material with survey levels below 5 pCi/g of radium-226) are generally not restricted for radiological purposes and may be reused on-site, dependent upon development of a variance and/or approval by the assigned ERS, and a commitment to utilize radon-resistant construction for any structures built on the property in the future, along with an appropriate land use control.

c) TENORM fill less than 15 pCi/g of radium-226 may be able to be placed back into the excavation area consistent with the criteria in this policy. Reuse of TENORM fill concentrations between 5 pCi/g and 15 pCi/g:

i) TENORM fill must be placed a minimum of two feet below grade.

ii) Appropriate land use controls, as previously discussed, must record the presence of TENORM fill and the known, or suspected, extent of its existence at the site.

4) Undisturbed TENORM

a) TENORM that does not have to be disturbed for site development or for remediation of other contaminants is not required to be remediated as long as the undisturbed TENORM poses no significant risk to public health or the environment in its present state.

b) Radon-resistant construction is strongly encouraged to be utilized for any future buildings.

Attachment 6. Radiological Work Plan for 3821 River Road

RADIOLOGICAL WORK PLAN FOR
3821 RIVER ROAD
TOWN OF TONAWANDA, NEW YORK
NYSDEC SITE #C915003

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September 4, 2024

MJW Job No. 24.1022

Acronyms:

ALARA – as low as reasonably achievable
ASTs – aboveground storage tanks
BCP – Brownfield Cleanup Program
CAMP – Community Air Monitoring Program
COC – chain of custody
CPM – counts per minute
DPM – disintegrations per minute
ECDIA – Erie Country Industrial Development Agency
HASP – Health and Safety Plan
HAZWOPER – Hazardous Waste Operations and Emergency Response
IRM(s) – Interim Remedial Measures
NORM – Normally Occurring Radioactive material
NRC – Nuclear Regulatory Commission
NYS – New York state
NYSDEC – New York State Department of Environmental Conservation
NYSDOH – New York State Department of Health
ORNL – Oak Ridge National Laboratory
OSC – On-site coordinator
pCi/g – picoCuries per gram
PPE – Personal Protective Equipment
RAWP – Remedial Action Work Plan
RCS – Radiological Control Supervisory personnel
RCT – Radiation Protection Technicians/radiological control technicians
RIR – Remedial Investigation Report
RITC – Riverview Innovation and Technology Campus
RIWP – Remedial Investigation Work Plan
RSO – Radiation Safety Officer
RWP – Radiological Work Plan
TCC – Tonawanda Coke Corporation
TENORM – Technologically Enhanced Naturally Occurring Radioactive Material

1.0 Introduction

1.1 General

This Radiological Work Plan (RWP) has been prepared to address the radiological monitoring and safety activities required during site investigation to determine the presence of potential (Technically Enhanced Naturally Occurring Radioactive Material (TENORM). Slag was encountered during the Remedial Investigation of the 3821 River Road Brownfield Cleanup Program (BCP) Site located at 3821 River Road in the Town of Tonawanda, New York. TENORM was also encountered during the Remedial Investigation at the adjoining Riverview Innovation & Technology Campus (RITC) BCP Site located at 3875 River Road, Town of Tonawanda, New York. In accordance with the approved Remedial Investigation Work Plan (RIWP) for the RITC site, the slag was screened by MJW and submitted for radiological analysis. The results of the analyses conducted by MJW were included in the Draft Remedial Investigation Report (RIR) and comments from the New York State Department of Environmental Conservation (NYSDEC) triggered the need for additional testing to define the procedure required for the development of the Remedial Action Work Plan (RAWP). Remediation of TENORM is not a requirement of the BCP, a component of the alternatives analysis process, or a criterion for selection of the remedial actions at the BCP Site. The management of TENORM is a RAWP and Site Management Plan criteria.

The 3821 River Road BCP Site is the plot adjacent to the RITC BCP Site (#C915353), and commonly referred to as the "Plastics" site. Attachment 1 shows the location of the BCP Site with respect to River Road and the RITC site. Industrial properties and the Niagara River are located further west of River Road. In addition to the work described herein, MJW has conducted work for other properties around the BCP Site. For clarity, the following site names are used by MJW:

- BCP Site – The 3821 River Road property or "Plastics" which is entered into the BCP. The site number is #C915003).
- Site 108 – 3800 River Road, a portion of the former Tonawanda Coke Corporation (TCC) State Superfund Site, NYSDEC #915055.
- 4111 River Road Site – Property previously owned by the Erie County Industrial Development Agency (ECIDA), now owned by the Town of Tonawanda. The 4111 Site is north of the BCP Site, separated by a railroad right of way. Work on this Site was conducted for the ECIDA.
- 3875 River Road BCP Site (#C915353) – The adjacent former Tonawanda Coke Facility which is now the Riverview Innovation & Technology Campus and is under investigation and remediation through the BCP program. An approved Radiological Work Plan is in place for the RITC BCP Site and the TENORM investigation is being underway and being conducted by MJW.

This Work Plan is required to provide specific work details, the areal and vertical extent of the BCP Site that may contain TENORM, and provides all existing data available from the project area for development of radiological work precautions. The RIWP[1] is available on the NYSDEC Infolocator: (https://extapps.dec.ny.gov/data/DecDocs/C915003/)

This plan, as with the plan submitted for the RITC site, includes the components of the new policy document DMM-5 issued by NYSDEC regarding management of TENORM (Reference 1). Guidance is

[1] https://extapps.dec.ny.gov/data/DecDocs/C915003/Report.BCP.C915003.2017-10-31.Investigation_Summary.pdf

provided for how to appropriately handle TENORM encountered during construction or earthwork projects, such as clearing, grading, excavation, filling, demolition, or stockpiling.

The MJW Corporation has been performing radiological work in Western New York, New York State and several other sites in the US since 1991. The company has been involved in the characterization and remediation of sites with potential radiological issues across a wide spectrum of nuclides and quantities. Consequently, MJW has developed procedures to perform all of the tasks necessary to characterize the BCP Site and also to provide the expert radiological management and trained technicians to ensure work done on the BCP Site is done safely when TENORM or radioactive source management is required.

1.2 Previous Site Investigative Work

This BCP Site has been the subject of detailed remedial investigation activities since the fourth quarter of 1981.

The BCP Site was originally developed by Allied in the early 1950s and was operated as a manufacturing facility through 1982. After the sale of the BCP Site and adjoining properties, the area was serviced by numerous rail lines to deliver coal and transport coke, tar and other by products of the TCC coking process. The BCP Site was utilized by the TCC for administrative facilities and warehousing. The RITC site was utilized for active industry with the tracks, including those of a central coal stacker reclaimer, were constructed over ballast composed primarily of various types of slag. The samples listed in Table 1 in Section 1.2.1 represent the different slag materials encountered during the RI at the neighboring RITC site (3875 River Road). Although the origin of the slag is unknown, it would have likely been purchased starting in 1917, there was a fully integrated steel mill adjacent to the TCC Site that was known to have produced both blast furnace and open-hearth furnace slags. The steelmaking process may have slightly increased the Naturally Occurring Radioactive Material (NORM) in their raw materials but as previously mentioned the slag tested during the Remedial Investigation were tested and the Ra-226 concentrations averaged about 3 picocuries per gram (pCi/g) as did the U-238 (alpha spec) concentrations. These results are a classic example of NORM as the primordial isotopes are in secular equilibrium and thus have similar and/or identical concentrations. Given 3821 River Road is adjacent to the RITC site it is likely that the soils for that site may also contain NORM as well.

Following the identification of possible TENORM slag on adjacent properties, MJW conducted a GPS-enhanced overland gamma survey at the BCP site to provide for additional environmental characterization and the development of the BCP Site Radiological Work Plan. This initial walkover, conducted in October 2023, did not directly reveal the presence of any elevated measurement locations. Refer to section 1.4 for additional details regarding this survey.

1.2.1 Previous Investigations of Adjacent Sites

At the time the RIWP was prepared, the potential for slag materials was not addressed but there was no direct evidence of the presence of materials until they were subsequently encountered during the field investigations for the adjacent RITC site. Inventum Engineering, P.C. and the NYSDEC observed possible TENORM slag and samples were collected for screening and subsequently submitted for radiological analysis. MJW performed a GPS-enhanced overland gamma survey in response to comments on the Draft RIR and to provide data for the preparation of the RITC site work plan. MJW has completed soil sampling on the RITC site, Site 108 and the 4111 Site beginning in late 2020.

Samples collected on the adjacent site RITC site are included in the report *Analytical Data Quality Assurance Review for Six Soil Samples Collected During a Site Investigation of The Tonawanda Coke River Road Facility in Tonawanda, NY* dated February 10, 2021 (Attachment 2). The samples described in that report were collected between October 30, 2020, and November 18, 2020. The samples were submitted to Eurofins TestAmerica in St. Louis, MO with gamma spectroscopy and alpha spectroscopy analyses performed for U-238 and Th-232. A summary of the radiological analytical results is shown in Table 1 below.

Table 1. RITC site (3875 River Road) Test Pit Soil Analysis (Samples Collected 10/30 to 11/18/2020)

Method→	901.1, Gamma Spec	901.1, Gamma Spec	Alpha Spec	901.1, Gamma Spec	Alpha Spec
Sample Number	**[Ra-226], pCi/g**	**[U-238], pCi/g**	**[U-238], pCi/g**	**[Th-232], pCi/g**	**[Th-232], pCi/g**
TP-BCP-34-A	4.46	5.04	3.12	0.858	1.36
TP-BCP-34-B	3.7	2.73	4.06	0.561	0.737
TP-BCP-32-W45	0.515	0.851	0.474	0.735	1.58
TP-BCP-44A	2.99	2.42	2.31	1.07	0.322
TP-BCP-44B	3.26	3.5	4.35	1.22	0.783
TP-BCP-47	3.79	1.59	3.29	2.58	1.95
Averages:	**3.12**	**2.67**	**2.93**	**1.17**	**1.12**

The gamma spectroscopy analyses for Ra-226 and gamma and alpha spectroscopy analysis for U-238 show that all samples analyzed are in equilibrium, and thus were classified as NORM. Th-232 results show an average of about 1.12 pCi/g which is very near normal Th-232 background concentrations of 1 pCi/g. The sample locations are shown in Attachment 2.

Although policy DMM-5 does not address NORM specifically, it should be pointed out that the Table 1 reported low level concentrations of NORM have no radiological consequences, especially for an industrial/commercial site. This is due to the fact that there are no possible pathways for exposure, i.e., no drinking water wells, no crops being grown in the soil, no potential for inhalation exposures and no possibility for direct radiation exposures above background. Even the most rudimentary risk assessment would demonstrate this to be true.

The development of the BCP Site by Allied in the 1950's may have included slag obtained from the same 1917 source as found on the adjacent RITC site.

1.3 Discussion of Tonawanda Regional Radiological Background in Soils

The initial background sample for the BCP Site was collected from the 4111 River Road site adjacent to and just north of the RITC site. It should be noted that this property lies between a railroad right of way, has former rail lines and is adjacent to a large fly ash landfill (the NRG landfill for the former Huntley station is immediately north of 4111 River Road). Unfortunately, the 4111 River Road background sample analysis did not produce a usable U-238 value as alpha spectroscopy analysis was not requested, only gamma spectroscopy. The Ra-226, Ra-228 and Th-232 values for the 4111 River Road Site sample

were usable and indicated background-comparable levels of Radium (Ra-226) of 2.06 Ci/g, Ra-228 of 1.38 pCi/g and Th-232 of 1.38 pCi/g, respectively. Due to this unusable result for U-238, MJW decided to collect two additional area background samples for analysis. One from the Tonawanda Treatment Plant property near Aqua Lane (GPS coordinates 42°57'54.6"N 78°55'22.3"W) and one in Sheridan Park just north of Sheridan Drive (GPS coordinates 42°58'54.2"N 78°54'04.0"W). These additional sample data are shown in Table 2 below and sample locations in relation to the RITC are shown on Figure 1 below.

Table 2. Results of Additional Background Sampling for the 3821 Site (Samples Collected 12/24/2023)

Method→	901.1, Gamma Spec	901.1, Gamma Spec	901.1, Gamma Spec
Sample Number	**[Ra-226], pCi/g**	**[U-238], pCi/g**	**[Ra-228], pCi/g**
01122024-TWT1	0.822	1.02	0.986
01122024-SB1	0.734	1.48	0
01122024-TWT1(DUP)	0.673	0	1.25
Average (Non-Zero Results)	**0.74**	**1.25**	**1.12**

The sample collected at the Tonawanda Water Treatment Plant (TWT1) is located 1.11 miles south of the BCP Site. The Sheridan Park sample (SB1) is located 1.48 miles east of the BCP Site. The average concentration results are slightly below the other background sample results discussed above. This lower background is utilized as the location history of the TWT1 and SB1 background samples have a low potential for historic radiological impacts. The location of these additional samples in relation to the BCP Site are shown in Figure 1 below.

Figure 1. Location of Additional Background Samples Collected in Relation to the 3821 Site (Red Dots)

It should be noted that in Oak Ridge National Laboratory (ORNL) report number ORNL/TM-7343 (11/1981) titled "State Background Radiation Levels: Results of Measurements Taken During 1975-1979", six surface soil samples were collected in New York State, three collected in the Tonawanda area as follows:

- *NY-1 City of Tonawanda at the city limit on River Rd. across from Consolidated Freightways Terminal (about 1.5 miles north of the BCP Site). Measured soil nuclide concentrations were: Ra-226, 0.97±0.08 pCi/g; Th-232, 0.65±0.06 pCi/g, and U-238, 0.99 pCi/g.*

- *NY-3 West side of River Rd. across from the Allied Chemical Corp. (5 miles north of the BCP site). Measured soil nuclide concentrations were: Ra-226, 1.2±0.04 pCi/g; Th-232, 0.88±0.06 pCi/g, and U-238, 1.2 pCi/g.*

- *NY-4 Intersection of Tonawanda Creek Rd. and Niagara Falls Blvd. in North Tonawanda (5.8 mi northeast of the BCP Site). Measured soil nuclide concentrations were: Ra-226, 0.69±0.04 pCi/g; Th-232, 0.40±0.12 pCi/g, and U-238, 0.76 pCi/g.*

The three other New York sites that were sampled were all in Lockport, NY (approximately 18 miles directly northeast of the BCP Site) and reported similar background values to those above. The three U-238 values were: NY-2, 0.97; NY-5, 0.85, and NY-6, 0.96 pCi/g. The average of all reported U-238 soil samples analyzed is 0.96 pCi/g, for Ra-226 the average is 0.85 pCi/g and for Th-232 the average is 0.71 pCi/g. All reported counting errors were 2 Sigma.

1.4 GPS-Enhanced Gamma Walkover Survey of the BCP Site

A review of the information in Table 1 in Section 1.2.1 shows that for the adjacent RITC site, six slag samples were taken in February of 2021 during the remedial investigation. As a result of the preliminary remedial investigation sample results and comments from the NYSDEC for the RITC site, a gamma walkover survey was then conducted at the BCP Site and the RITC site to provide information to prepare the respective site work plans. Attachment 3 is titled *Gamma Walkover Survey Report for the Riverview Innovation & Technology Campus, Inc. 3875 River Road, Tonawanda, New York 14150. BCP SITE No. C915353*.

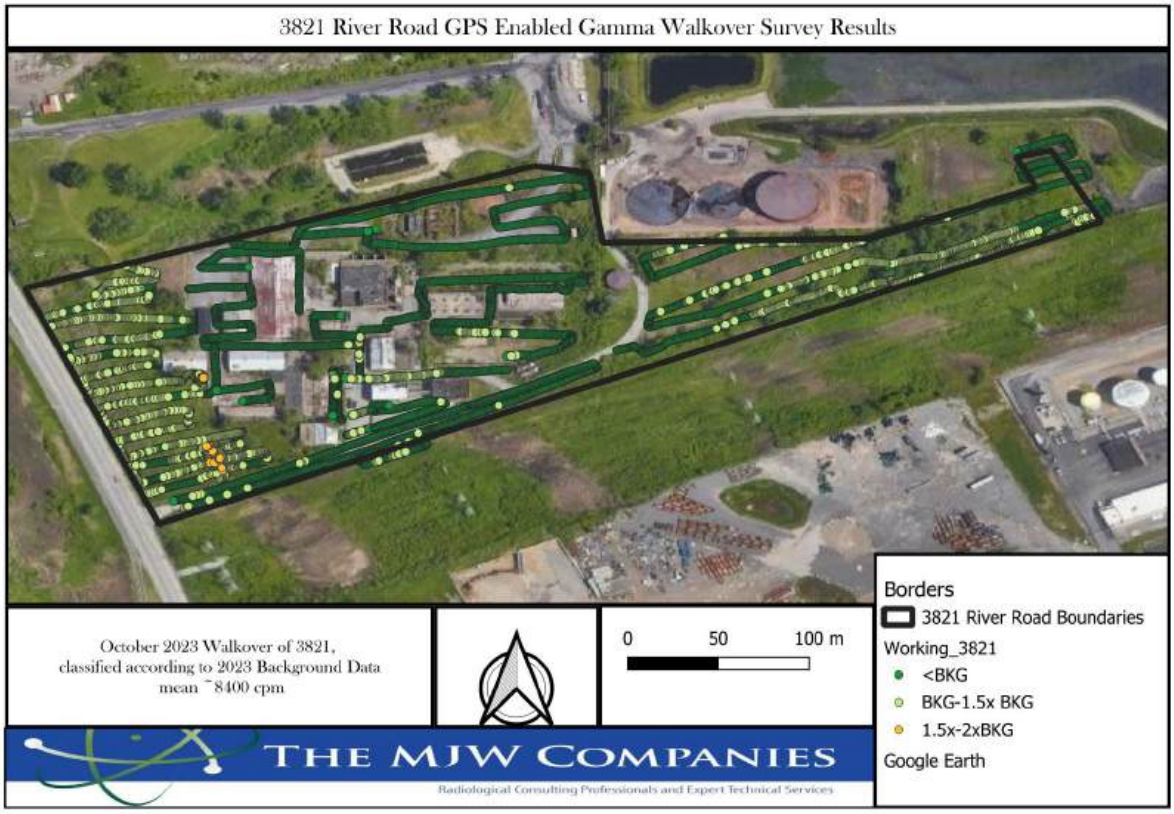
The results of the gamma walkover survey performed in October of 2023 (Figure 2) show a lack of elevated areas of gamma activity. No data points were evaluated as being twice the background level, with only 32 of more than 7000 above the 1.5 times background cutoff. Statistical analysis did indicate gamma rate clustering. Comparison of the 10 nearest-neighbors gamma activity to each data point provided an R^2 value of .921. The ability of each measurement to coincide and predict the surrounding measurements creates a basis for establishing the bounds of potential elevated activity.

The focus of this work plan is to expand upon this preliminary GPS overland gamma information by:

1. Performing additional gamma walkover survey(s) beginning in line with the potential elevated activity areas and scan the property in a north/south direction with a crosshatch pattern applied where elevated activity may be suspected. The additional walkover survey will also improve BCP Site coverage, as the preliminary survey had several inaccessible areas (due to ongoing work, weather conditions, etc.).

2. Following this additional walkover survey, MJW technical staff will collect eight (8) biased soil samples and four (4) unbiased surface and subsurface samples in and around areas of elevated activity. Two (2) unbiased soil samples will be collected unassociated with elevated activity.

Figure 2.



Radiological monitoring and related actions are required for all activities that may be impacted by TENORM materials at the BCP Site to protect public and worker health and safety and to control potential release of materials off-site (i.e., fugitive dust emissions, runoff, etc.) to levels as low as reasonably achievable (ALARA). Attachment 4 is MJWRCP-03, Field Investigation Survey Procedure, dated September 15, 2015. The BCP Site has an ongoing NYSDEC and New York State Department of Health (NYSDOH) approved Community Air Monitoring Program (CAMP) that will be operating throughout all sampling activities.

SITE DESCRIPTION

2.0 Site History

The BCP Site was originally developed by Allied in the early 1950s and was operated as a manufacturing facility through 1982. Site operations included the polymerization of ethylene into low molecular weight polyethylene (trademark: A-C Polyethylene and Co-polymers), which was finished into powder, pelleted and solid forms.

Allied sold the property to Rouse Breihan, Inc. in 1985. After the change in ownership, several of the Site buildings were used for office and laboratory space, vehicle maintenance, and warehousing by the TCC up until the shutdown of TCC operations in October 2018. TCC was the previous property owner and site operator of the adjoining property to the north and east of the Site. The former TCC property is now owned by the RITC. A trucking firm previously leased space at the Site from Rouse-Breihan for offices, truck maintenance and repair. Approximately 27 buildings were present on the Site and 12 aboveground storage tanks (ASTs) with aboveground and below grade piping located in the center portion of the Site. The buildings area being actively abatement for asbestos and demolished at this time. The remaining buildings are unoccupied and unmaintained. The site has been vacant since 2019.

The purchase of the properties by 3821 River Road, Inc. was completed August 2022.

The BCP site is a volunteer under the terms of the BCP Agreement signed on January 24, 2023 (NYSDEC, 2020a). The volunteer status is a recognition that the BCP site never operated any of the plant's equipment that had possibly caused releases to the environment, never disposed any waste on or from the BCP Site and have never conducted any commercial or industrial operations on the BCP Site, and has exercised all appropriate care since acquisition. Additionally, in recognition of the focus of this Radiological Work Plan, 3821 River Road, Inc. did not import any slag materials to the BCP Site. Based on the results of Remedial Investigations at adjacent sites, any slag was used for construction of property's permanent structures, presumably starting in or about 1950.

Since the acquisition, 3821 River Road, Inc. implemented a series of NYSDEC and NYSDOH approved Interim Remedial Measures (IRMs) and associated activities to improve the safety, eliminate potential sources of releases, and improve control of the remaining infrastructure, both within and outside the requirements of the BCP Program. The implemented and ongoing IRMs are eliminating potential exposures and safety hazards on the BCP Site. Descriptions of the Remedial Investigation, alternatives analysis, and IRM scope of work completed under the BCP are provided in the work plans and reports posted on the NYSDEC InfoLocator. Work completed prior to and during the Remedial Investigation that has dramatically improved conditions on the BCP Site include, but are not limited to:

- Site Security – Changed gate access codes and installed security cameras. Cameras are monitored 24/7;
- Secured drums and containers that were stored incorrectly, unstable or unsafe;
- Segregated incompatible laboratory chemicals;
- Moved flammable laboratory chemicals to a flammable materials cabinet;
- Asbestos abatement
- Hazardous Material Management and Waste Management for proper disposal
- Vegetation Management
- Building demolition of condemned structures; and
- Conducts daily perimeter fence and security inspections.

3.0 Work Plan Roles and Responsibilities

The project team for the implementation of this radiological work plan include:

Project Manager – The project manager overseeing this work plan is the president of MJW, David A. Dooley, Ph.D., CHP. Dr. Dooley brings 40 years of experience to this work.

Radiation Safety Officer – Alex Bartels is MJW's Radiation Safety Officer (RSO) for our NYSDOH radioactive materials license and he oversees all of the radiation protection technicians we employee.

Radiation Protection Technicians – MJW's radiation protection technicians are trained according to MJW's Radiological Control Manual and all of the associated implementing procedures. They are also required to have current Hazardous Waste Operations and Emergency Response (HAZWOPER) training.

MJW is not managing the ongoing IRMs on the property and will comply with the On-site Coordinator (OSC) Health and Safety Plan (HASP) and the BCP Site Community Air Monitoring Program (CAMP). MJW will coordinate all onsite activities with OSC.

4.0 Overland GPS Gamma Survey Protocols

As described, MJW will perform additional gamma walkover survey(s) beginning just east of the potential elevated activity areas (Western Edge of permanent structures) and scan the property in a north/south direction and work the survey crosshatch to provide as much information as possible about the extent of potential elevated activity areas. All overland gamma GPS assisted property surveys shall be performed in accordance with MJW Radiological Control Procedure No. 40., Performing a GPS Enhanced Radiation Survey and Data Assessment, Rev.4, dated October 29, 2021. MJWRCP 40 is attached to this work plan as Attachment 5.

5.0 Soil Sample Collection and Analysis

Following the additional walkover survey, MJW technical staff will collect 8 biased surface and subsurface soil samples and 4 unbiased surface and subsurface samples in and around the areas of elevated activity areas. 2 unbiased samples will be collected with no regard for walkover data. The sample locations will be marked in the field with pin flags noting the associated sample numbers. OSC will document the location and elevation using the onsite GPS equipment.

All soil sample collection will be performed in accordance with MJWRCP-66 Soil Sampling Protocols Rev. 0 dated December 4, 2020. This procedure is shown in Attachment 6. Attachment 7 is the Soil Sample Data Sheet which catalogs all of the field data used for the selection of the location including sample type, radiation readings at various distances, analyses requested, etc.

6.0 Laboratory Analysis of Samples

Collected samples will be placed in appropriate containers and shipped to an accredited laboratory for radiological analysis. MJW routinely uses GEL Labs located in Charleston, SC and that is the laboratory proposed for the sampling of this work plan.
For more information about GEL's radiochemistry services see the following link: https://www.gel.com/laboratories/services/radiochemistry-analysis GEL's chain of custody (COC) form is shown in Attachment 8.

7.0 Disposition of On-Site Background-Comparable Material

During the investigation, MJW would seek to return the material from the test pits to the excavation area. In accordance with DMM-5 policy Section B: "TENORM (Background-comparable) (below 5 pCi/g of radium-226) – the Department may either grant a variance to allow the excavated TENORM (Background-comparable) to be returned to the excavation/AOC, or the assigned ERS determines, and approves, that the proposed use and handling in the AOC is acceptable. The Department will also require that appropriate and approved institutional control(s) be put in place (e.g., deed restriction, environmental easement) for each AOC." For purposes of this investigation phase, we initially assume the site soils are "background comparable" if gamma activity data is the same as or lower than that of similar associated sites; of which all samples analyzed have been below the DMM-5 policy value of 5 pCi/g. The range of sample data concentrations collected to date will not significantly increase radiological risk to anyone working on or near the site if it is re-interred. The long-term plan for the site is industrial/commercial allowing any remaining materials to be interred under a building slab or a parking lot as was the case for the 310 Ship Canal site per Part C "Management Plan Requirements for TENORM Fill". The work plan will be revised to change "background level" to "background-comparable". In MJW's experience with this material, Ra-226 concentrations for overland gamma surveys have to typically be at least 2-3 times background levels to be considered statistically significant. Lastly, DMM-5 policy (Reference 1), Sections 3 and 4 discuss survey levels at 1.5 times background as a level above background that should be investigated. MJW has 2 Ph.D. statisticians on staff and their characterization on this issue is that 1.5 times background is extremely difficult to confirm that it is statistically significantly above soil background levels. In the attached Excel file, please find an example of this very issue on a site in the western US. The point of the graph shown is that the average Ra-226 concentration is 1.14+/-0.25 pCi/g while the average gamma count per minute (CPM) is 12,023+/-1,339.4. The graph trendline shows a Coefficient of Correlation or R^2 value of 0.22 which means there is little correlation between these two values. The problem is natural soils have more energetic gamma signals from K-40 and Th-232 daughters than from Ra-226.

8.0 Radiological Controls and Workplace Safety

Radiation Protection Technicians/radiological control technicians (RCT) and radiological control supervisory personnel (RCS) will provide radiological coverage to ensure the radiological safety of MJW, OSC and Inventum Engineering workers during work activities required for any surface and subsurface survey and sampling work.

8.1 Radiological Monitoring Documentation

The RCT and/or RCS will complete daily field notes to identify work activities performed, site conditions, notable events, and radiological findings. The notes will include a site work area map and samples collected. MJW Corporation "*Survey Data Form*" (Attachment 9) will be completed for all walk-over or investigative surveys performed in response to significantly elevated instrument readings or off-normal events (i.e., instrument count rates > 2 times background or personnel contamination. A COC form (Attachment 8) will be initiated in the field for all samples collected.

9.0 Personal Protective Equipment (PPE) and Radiological Hygiene

Workers will follow all requirements for PPE and hygiene actions based on radiological, chemical, and physical hazards as established by MJW safety manuals and procedures and the OSC Health and Safety Plan for the BCP Site. The minimum requirements based upon anticipated radiological and physical conditions will include:

9.1 Required PPE

The required PPE will be worn at all times on the site outside the parking lot or office building.

- Safety glasses or shield,
- Hard hat,
- Ear plugs,
- Hard-toe work boots,
- Work gloves, and
- Safety (high visibility) vest or similar.

More stringent controls may be required if higher levels of radioactivity are encountered.

9.2 Hygiene and Contamination Monitoring

The following precautions shall be observed to promote work-place safety and in accordance with the BCP Site HASP (Appendix C of the RIWP):

- No eating, drinking, smoking, or chewing within any active work area,
- Hand washing required upon exit from any active work area,
- Hand and foot radiological survey meter "frisk" when exiting areas where elevated radioactivity has been detected. Personnel frisks will be performed using the Ludlum 44-10, 2"x2" NaI probe, the Ludlum 44-9, GM probe and/or the Ludlum 44-89, Alpha/beta probe or equivalent instrument combinations.
- Excavator buckets and tires/tracks to be frisked before release to non-restricted use.

When release surveys using field instruments exceed 2 times the instrument background count rate, the RCT and RCS will take measures to confirm results using longer count times or by moving more slowly over the area. If an elevated count rate is confirmed, the RCT may wipe or wash the area, remove debris or soil material and resurvey the area until readings indicate ALARA. Materials or personnel exceeding 3 times instrument backgrounds should not be released without further decontamination efforts and

count rates indicate ALARA. This information will be documented on forms such as those similar to Attachment 9 MJWRCP-04. Rad Contamination Survey Map and Data Sheet.

Materials and equipment released for unrestricted use will not exceed New York State (NYS) and Nuclear Regulatory Commission (NRC) limits as stated in NYSDOH Radiation Guide 10.10, Table 1 (Attachment 10), see Reference 2. It is the responsibility of the RCS to evaluate field instrument counts per minute (CPM) against Table 1 release limits in disintegrations per minute (DPM) using instrument calibration factors for the radionuclides of interest.

9.3 Control of Fugitive Dusts

MJW supported by OSC will take reasonable steps shall be taken to suppress potentially contaminated fugitive dusts such as by misting with water or curtailing intrusive activities. Dust monitoring shall be conducted in accordance with the BCP Site CAMP (Appendix C of the RIWP) by Inventum Engineering. In addition to the perimeter monitoring conducted for the CAMP a potable air monitoring station will be located no more than 50-feet downwind of the subsurface sample locations that involve the use of heavy construction equipment.

10.0 Reports

MJW will prepare a report detailing the activities and the results of the additional GPS overland gamma survey performed and the activities and analytical results for all surface and subsurface soils collected. The report and data will be in a form that will allow Inventum Engineering to incorporate the requirements into the RAWP and the Site Management plans for the BCP Site.

11.0 References

1. NYSDEC, Radioactive Materials Management Section, 2023, DMM-5, Management of Soils Contaminated with Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), October.

2. NYSDOH Radiation Guide 10.10, 1986, Guide for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Radioactive Materials.

3. Inventum, October 20, 2023, Remedial Investigation Work Plan, Riverview Innovation & Technology Campus, Brownfield Cleanup Program, Site No. C915353, 3875 River Road, Tonawanda, NY 14150.

4. Inventum, August 18, 2023, Draft, Remedial Investigation Report, Riverview Innovation & Technology Campus, Brownfield Cleanup Program, Site No. C915353, 3875 River Road, Tonawanda, NY 14150.

Attachment 3 - MJWRCP 40

THE MJW COMPANIES Radiological Consulting Professionals and Expert Technical Services		MJWRCP RCP-40 Rev. 3
Performing a GPS Enhanced Gamma Radiation Survey and Data Assessment		**FIELD PROCEDURE**
Effective Date: 12/15/20	Approved By: *M.J. Willett*	

1.0 PURPOSE/DISSCUSSION

The purpose of this procedure is to establish protocols and data collection requirements necessary to perform reproducible low-level radiation overland gamma surveys.

Overland gamma radiation surveys are often enhanced with the coupling of radiation and satellite geographical location measurements collected from global positioning and radiation instrumentation and software. The use of both instruments simultaneously allows rapidly recorded radiation readings to be precisely located across varied terrain and large areas.

After GPS data has been collected the data are then transferred from the data logging software to a computer running the Trimble Pathfinder Office (PFO) application. PFO is necessary for downloading, exporting, and correcting the gamma survey files. Once downloaded the survey data can be spatially corrected, if need be, and the file exported into a file format usable by geographical mapping software such as ESRI ArcGIS. In most cases the survey data will be collected with the spatial correction (e.g., projection) applied in “real time” and the correction step will not be necessary.

If the survey is performed in a location where projection information is not available, then the user will be required to apply the spatial correction during data evaluation and download.

2.0 SCOPE

This procedure is applicable for general or discrete radiation surveys intended to measure direct radiation and/or contamination levels of areas expected to be at or near background levels. It is also applicable for sites where radiological contamination may be extensive.

This procedure instructs the user on how to prepare for and execute a GPS-enabled overland gamma radiation survey using dedicated Ludlum 2241-2 ratemeter and Ludlum 43-10, 2x2 NaI detector coupled with a Trimble datalogger and GPS unit mounted in either a wheeled cart or backpack. In addition, the following data activities are included: (1) Properly collect and record GPS enhanced gamma radiation survey data followed by, (2) properly downloading survey data from the Trimble datalogger, or equivalent, (3) evaluate and correct the survey data, and (4) export the data into an ArcView shapefile format for use in geographical mapping software (i.e., ESRI ArcGIS, VSP, etc.) or equivalently capable geographical positioning software.

Gamma or alpha/beta survey procedures, including grid layout, coverage and instrument use and

data DQOs will be detailed in job specific work plans. Standard or typical survey methodology is described in MJW Corporation instrument and survey procedures.

3.0 RESPONSIBILITIES

3.1 All survey instruments used to determine direct radiation levels or contamination levels shall have been calibrated within six months prior to performing the survey.

3.2 Surveys shall be performed in accordance with all applicable standards as listed in Section 9.0 (references).

3.3 Persons performing the survey shall be responsible for proper instrument checks and operation, properly recorded measurements, and map per Section 4.0 of this procedure.

4.0 PROCEDURE

4.1 Equipment List

- Surveying and staking materials (subcontract to licensed surveyor)
- Bicron microRem LE (or equivalent)
- Ludlum Model 3 survey meter (or equivalent) with Ludlum 44-10 2”x2” NaI detector (or equivalent)
- Area maps as appropriate (topographic, street, quadrangle, etc.)
- Mason’s line marked at designated intervals (for detailed area surveys)
- Ludlum 44-10 Lead Collimator (Optional)
- Ludlum 2929 with 43-10 and 44-40 smear counters
- Miscellaneous marking and recording equipment
- 100-foot tape measure
- Protective clothing as appropriate
- Smears (1 box)

4.2 MEASUREMENT PROTOCOLS

4.2.1 Perform a battery check, source check and calibration data check prior to use of survey instrument per the requirements of Section 3.1.

4.2.2 At a minimum of three (3) separate locations known to be free of contamination, make several background measurements, recording data, time, survey instrument serial number, surveyor and general survey area location noting any significant landmarks. Record data on Form RCP 40-1.

4.2.3 In consultation with a licensed surveyor establish the primary reference point for the survey and any second reference points required to adequately describe the site and allow for creation and recreation of the survey grid. The reference point shall be designated as point 0, 0 or equivalent with magnetic north indicated clearly in reference to point 0,0. Compass points shall be used such as ON, OE, OS, OW, etc. depending upon the reference point location.

4.2.4 From the primary and any secondary reference points, establish area survey points using stakes, flags and/or marked string lines at the predetermined survey interval. All other grid locations will be designed in alphanumeric sequence from the reference

point (i.e., 5 feet due east of reference point ON, OE would be designated as ON, 5E; 5 feet north and 5 feet east as 5N, 5E etc.). Use Form RCP 40-2 to show survey grid, detailing the primary reference point, any secondary points, landmarks and grid spacing. Use accurate area maps or any available CAD drawing to lay out grids.

NOTE: Grid pattern spacing should be no more than ten (10) meters apart for complete coverage for sites with a known or suspected radiological history. Grid spacing may be increased up to 100 meters for large sites where no radiological involvement is expected.

Minimum detectable activity will be dependent upon background levels and instrument efficiencies. Decreasing the grid spacing will give higher detection probability for low activity or diffuse sources.

For a uniformly distributed Co-60 source the predicted exposure rate at one meter above the surface is 5.79 E-04 Sv/yr per Bg/cm^2 (NUJREG/CR-1918). This translates to ~ 43 microR/hr per uCi/m^2.

4.2.5 Measure the gamma radiation level at the reference location at a distance of one meter (approximately waist height) and at ten centimeters from the ground surface.

CAUTION: Survey instruments must not come into contact with any potentially contaminated surfaces. Precautions must be taken such as bagging the instrument should such potential exist.

4.2.6 Record measurements from designated survey locations on Forms RCP 40-3 and 3A, including alphanumeric survey locations, gamma radiation readings at 1 meter and 10 cm and any remarks for the location. Complete the top of each form with the following data: job number, date, surveyor and relevant instrument data (model, serial number, etc.) as discussed in section 4.2.4.

4.2.7 Proceed at a slow pace (approximately 0.5 m per second) to the next survey point, continually checking the instrument readout for any strong fluctuations.

4.2.8 Once four grid points forming a square have been measured perform an intragrid survey of the square with the meter at a distance of 10cm from the surface. Begin in one corner of the grid and using a zig-zag or cross-crossing pattern at 1m (~ 3') intervals survey the grid on the diagonal at a slow pace ~ 0.5 m per second.

4.2.9 If during the intragrid survey a significant survey meter response is encountered, take readings from a distance of one centimeter to define the area of the increased activity. Use spray paint, flags, string or another method to mark the area(s) of elevated activity. Also mark the location of this/these intragrid area(s) on Form RCP 40-2. The point of the most elevated reading as well as the apparent boundaries of any area(s) of elevated activity should be thoroughly marked and described.

4.2.10 After all initial survey points have been recorded, return to any areas of elevated readings. Perform a detailed survey to define the areas and note the upper limits of the measurements using one of the following methods: (document all results on Forms RCP 40-4 and 4A).

- Using concentric circles, define the center and then the radius of contamination and record this on the survey form, or

- Using a small-spaced grid pattern of 1 meter or less, find the center and general outline of the area of contamination and record this information on the survey form, RCP 40-4 or 4A as appropriate.

NOTE: Per step 4.2.8 use spray paint, string or other suitable medium to define the physical limits of the contamination/radiation. Use standard precautions to avoid personal or equipment contamination during the survey.

4.2.11 Check the survey map for complete coverage. Notify the appropriate client personnel if immediate posting or cleanup actions may be required.

4.2.12 Remove all nonpermanent markers and stakes only after all data has been checked and verified. Grid markers should be maintained if further action is required or if additional surveys are to be performed by regulatory agencies, etc. Monitor all personnel and materials for potential radioactive contamination before they leave any areas of suspected or confirmed contamination.

4.3 INSTRUMENT CALIBATION

4.3.1 All instruments shall be calibrated annually and shall have a valid calibration sticker at the time of sue. Survey instruments used for overland gamma surveys shall be calibrated within six months of the actual survey date.

4.3.2 Instruments will be tagged “out of service” for:

- Failure to properly respond to check sources, or
- Instrument damage, or
- Suspect operation of the instrument

Any instrument tagged “out of service” shall be repaired or replaced and shall be calibrated before use.

4.3.3 All instruments will be operationally checked in the field at the beginning of each workday and each time the meter is turned on.

5.0 PRE-SURVEY PREPARATION

5.1 Instruments and Equipment

5.1.1 GPS instrument case –Trimble GPS datalogger, serial cables, external antenna cable, USB cable, Trimble bottom connector, Trimble battery charger.

5.1.2 Ludlum radiation instrument case – Ludlum 2241-2, 43-10 2x2 NaI detector, cables, check source and batteries. (check to be sure instruments are calibrated and date is current, i.e., within the last year)

5.1.3 Wheeled cart and/or backpack mounting equipment and measuring tape. (Carts are stored on shelves in storage garage)

5.1.4 GPS antenna and cable

5.1.5 Stakes, flagging, markers, field notebooks, etc.

5.2 Check List Items

5.2.1 Check to be sure GPS and radiation instruments, check source, log book, cables, carrier equipment, antenna, tremble software and batteries are available, charged and in good condition and calibrated (green light on battery charger indicates batteries are fully charged) . ***Note: Batteries take 24 hours to fully charge***.

5.2.2 Determine Survey sensitivity and geological coordinate system requirements (i.e.. WGS83, State Plane, NAD83, etc.)

5.2.3 Review terrain conditions from proposal, client contact or via Google Earth or maps to identify accessibility and survey method (cart vs walking/backpack mount)

5.2.4 Identify survey grid coverage and spacing.

5.2.5 Prepare grid marking or line-of sight aids (e.g. cones, paint, rope, etc.) to facilitate walkover coverage and maintain speed.

5.2.6 Prepare map of survey area.

5.3 Trimble Unit Setup and Operability Check

5.3.1 Collect satellite data by activating and setting up the project on the Trimble GPS unit prior to actual survey activities. The GPS unit has to be in a location where satellite reception is available and in the general area of the survey location (i.e, within 50 to 100 miles).

5.3.2 Note: When surveys are located outside NYS, satellite acquisition will have to be performed near the work location. However, GPS operability checks should always be performed prior to leaving for the work site.

5.3.3 Press the **green power button** on the Trimble unit – owner of screen is shown

5.3.4 Tap the screen once to get menu

5.3.5 Select "**start**" with the stylus followed by **Terrasync** – Trimble software will start and "**received almanac**" will display – this step can take up to 45 minutes if satellite reception is difficult to obtain (e.g., cloudy days, remote areas, etc.). Resolution shown on the screen should be in the "cm" range. Poor satellite reception will result in less resolution and the survey should not be performed if readings are outside 1 meter.

5.3.5.1 Select "**skyplot**" – check the satellite information almanac date. The "**almanac**" date should be within a 30-day period. If it is not, continue collecting satellite data until an updated almanac is acquired.

5.3.5.2 Select the **"x"** in the right corner of the screen – question appears – **do you want to Exit?** – select "**yes**". The Trimble screen will return to home screen.

5.3.5.3 Press and hold the *"green" button* until "**option**" screen appears. Select "**shut down**" if you performed the satellite search the day before or "**suspend**" if you will be using the unit to perform the survey in the next few hours.

5.3.5.4 Be sure to "**save"** file before "**suspending**". If things do not seem to be working properly, **press and hold** the green button to reboot the system and start again.

Note: Typical Trimble menu option settings are identified in Attachment 1. When issues arise, check that settings are as described in Attachment 1.

5.4 Preparing the Instruments to Begin GPS Enhanced Gamma Survey

5.4.1 Setting up the Field Equipment

5.4.1.1 Connect the Trimble bottom connector to the Trimble GPS unit

5.4.1.2 Locate and connect ratemeter and the paired survey probe (both will be labeled with either "unit 1" or "unit 2" and will be in similarly labeled cases.

5.4.1.3 Source check the instrument and record background and source check count rate data in the daily source check logbook located in the instrument case. Evaluate the source count rate to ensure instrument sensitivity is within the required range (dpm/cpm =+/- 20% of source calibration dpm count rate).

5.4.1.4 Setup the backpack insuring that the instruments are "off" prior to connecting to the Trimble unit. Connect the ratemeter and survey probe first.

5.4.1.5 Press the button on the GPS antenna pole to adjust to the proper height. The antenna should be adjusted to approximately **2 meters** above the ground surface

5.4.1.6 Connect the antenna cable to the antenna pole being sure to wrap it around the pole and through the clip on the backpack to keep the cable out of the way during the survey.

5.4.1.7 Mount the ratemeter to the pack frame using wingnut mounting screws. If rain is likely, place the ratemeter in a plastic bag prior to mounting.

5.4.1.8 Connect the gray serial cable to the ratemeter and the bottom of the Trimble unit. Put on the backpack.

5.4.1.9 Connect the black antenna cable to the side cable input on the Trimble unit. Be sure that the cable is properly aligned and pushed in all the way.

5.4.1.10 Shoulder the 2x2 NaI probe connected to the ratemeter. The ratemeter should be set on "**ratemeter mode**" and will show "**DUP**" with counts flashing if everything is connected properly.

5.4.2 Trimble Unit Setup and Screen Operation during Surveys

5.4.2.1 Depress the "**green**" button on the Trimble Unit – In "suspend", the unit menu screen will appear quickly. **Tap the screen** and select **"Start"** (left side of screen)

5.4.2.2 Select "**Terra sync**" – main menu screen appears with **"status"** –**skyplot** – "**receiver**" – **antenna external**. A tone indicates data are being recorded. If a tone is not present, stop and wait for satellite reception to be established or check cable connections.

5.4.2.3 If no tone is detected, go to "**Plan**" – not enough satellites detected are indicated. Retry selecting.

5.4.2.4 Check accuracy - should be in the "cm" range. If greater, wait for the unit to identify more satellites and accuracy to improve. Accuracy must be within survey specification.

5.4.3 Trimble Instructions to Start and Finish the Survey,

5.4.3.1 When adequate sensitivity and satellite connections are established, start the survey by selecting "**Status**" – "**Data**" on the Trimble unit

5.4.3.2 Select "**Create**" (in the upper right of the screen). Use the default file name if there is not going to be a lot of different surveys performed. The unit will assign a name based on the date and time. Antenna height is 2 meters

5.4.3.3 Type" **default Tempest**" and click "**Okay**"

5.4.3.4 A tone indicates that data are now being recorded.

5.4.3.5 Select –"***Data*****"** "***Status***"-"***Sensor***"- the last column shows the meter readings.

5.4.3.6 When the survey is complete, select –"**Status**" –"**data**" -"**close**" and "**yes**" in upper right corner. The beeping tone will stop and the display will ask if you want to start a new file – at this point you can create another file for a new survey.

5.4.3.7 Press the "**x**" at the top of the screen if you are finished –select **"yes**" and **press and hold the green power button** – select "**shut down**" if you are finished for the day.

6.0 DOWNLOADING, ANALYZING AND EDITING THE SURVEY DATA

Remove bottom unit from bottom of Trimble and plug the GPS unit base, using the USB cable, into a computer running the Trimble GPS Pathfinder Office software (PFO). Set the GPS unit in the charging base station and press the Green power up button. Note, an orange blinking light on the charging unit indicates that the Trimble unit is charging. The light will turn to green when the battery is fully charged. The Windows mobile software should initiate. When it appears, minimize the window and state the PFO. An internet connection is required to continue downloading and evaluating the Trimble data.

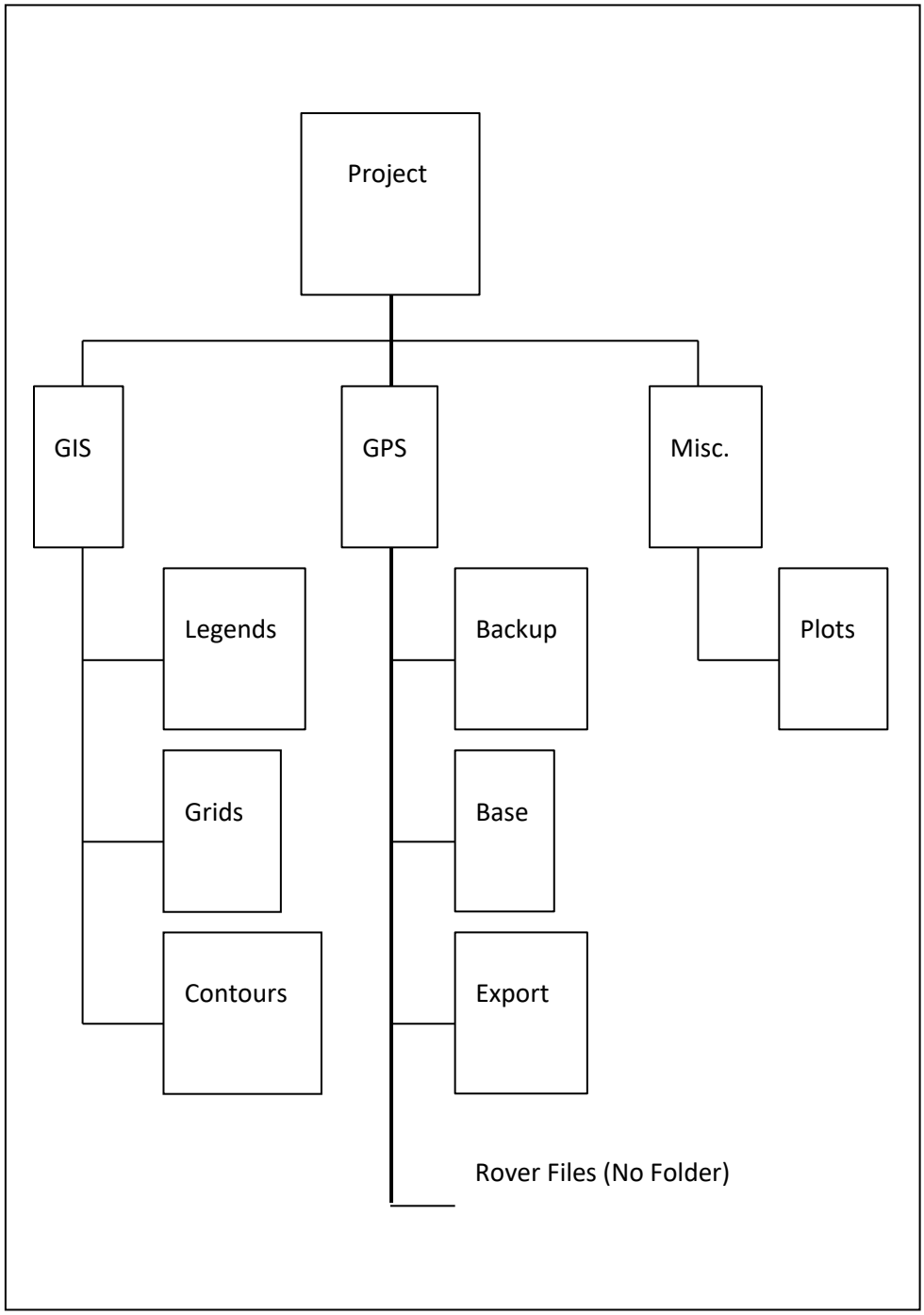
6.1 Creating a New Project or Opening and Existing Project

Note: When a single survey using one GPS unit is being performed, it may not be necessary to create a separate project or setup a new directory. It this case, the Trimble default files, identified by the date name, and a site file name in the GIS client directory can be used. However, it is best practice to setup a separate file directory for each client and survey using the steps outlined below.

6.1.1 Create the Necessary Directories for a New Project

NOTE: When creating a new project, it is necessary to also create a new project folder with subfolders to keep all of the files properly organized. As projects get larger they become very complicated.

6.1.1.1 In Windows Explorer navigate to the project directory folder and create the following folders in the following folder structure. The raw survey files (ssf file format) will be kept in the GPS folder directly. There is no need for a subfolder because each survey file will have its own unique name based on the survey date and time. If using more than one GPS unit in a survey you should change the name of the survey files to reflect this. As an example, you might change the first GPS unit file name to end in the letter A and change the second GPS unit file name to end in a B, and so on.

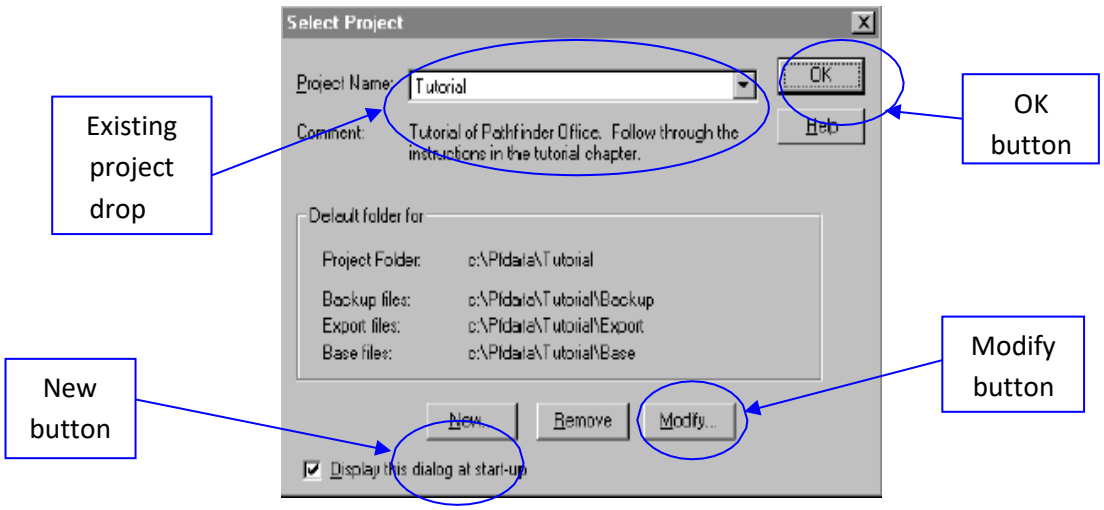


6.1.1.2 Under the Export subdirectory a folder for each day that a survey is performed and exported will be created. Five files will be created when the export utility is used (dbf., shx., shp., txt., and a setup information file).

6.1.2 Create a New PFO Project

6.1.2.1 Open the PFO application by locating and double clicking on the icon on the computer desktop or in the GPS Pathfinder Office folder.

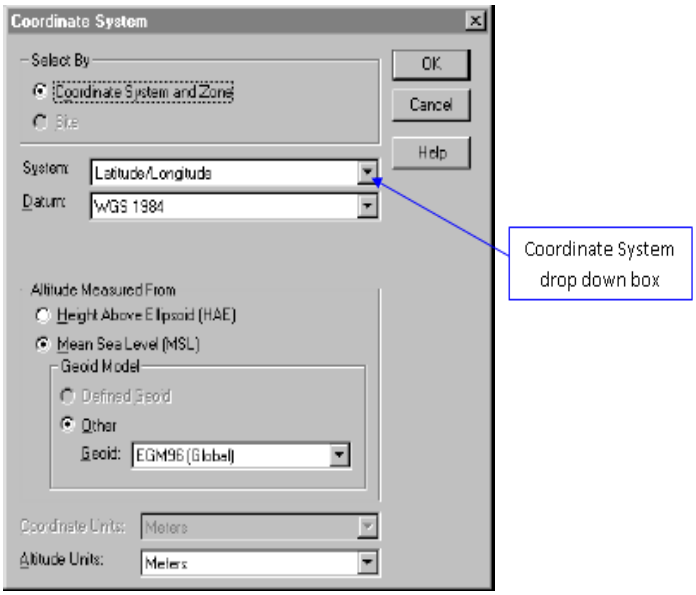
6.1.2.2 If the Select Project window does not appear when the application is started, then open the **File** menu and select the **Projects** option. A new window will appear in the office window titled Select Project shown below.



6.1.2.3 If you are creating a new project select the **New** button. If you are working in an existing project then using the drop down box choose the correct project and select the **OK** button.

6.1.2.4 Select the **modify button** and set the correct locations for the Project folder, Backup Files, Export Files, and Base files.

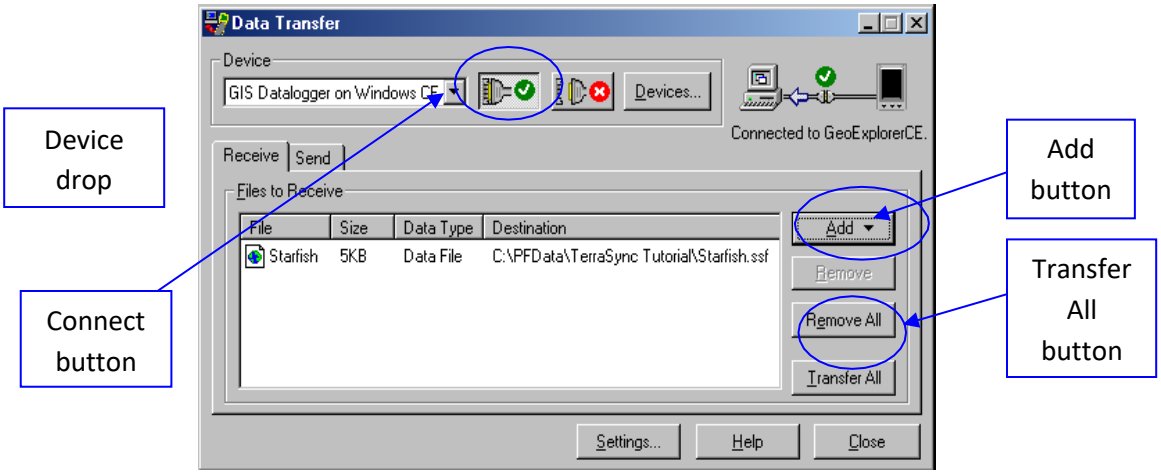
6.1.2.5 It is necessary to choose the project coordinate system when beginning a project. Open the **Options** menu and select **Coordinate System**. Using the drop-down boxes select the correct coordinate system. The standard datum and units for that system will be chosen automatically but you can change them if necessary.



6.2 Accessing and Downloading the Survey Data

6.2.1 Open the Trimble GPS Pathfinder Office software (PFO) application and select the correct project to open.

6.2.2 Open the Data Transfer utility by locating and selecting the icon or from the **Utilities**
menu select the **Data Transfer** option.
The device will default to the windows device software; select the "**add**" button then "**data file**" in the detail view setting.



6.2.3 Select the files generated for the survey – files will be named with the **survey date** unless the surveyor used another name during the survey setup activities. Select "**Transfer All**"

6.2.3.1 The PFO will move the selected files to the designated selected or default destination folder. The PFO will respond when the transfer is complete by showing the number of files transferred.

6.2.3.2 The PFO will create a 'Transfer log" txt file to document any errors incurred during the file transfer operation.

6.2.3.3 Select "**Closeout**" or "**close window**" on PFO software. Survey data are now resident on the computer and off of the Trimble GPS unit. The files are identified with the transfer date which could be different from the survey date.

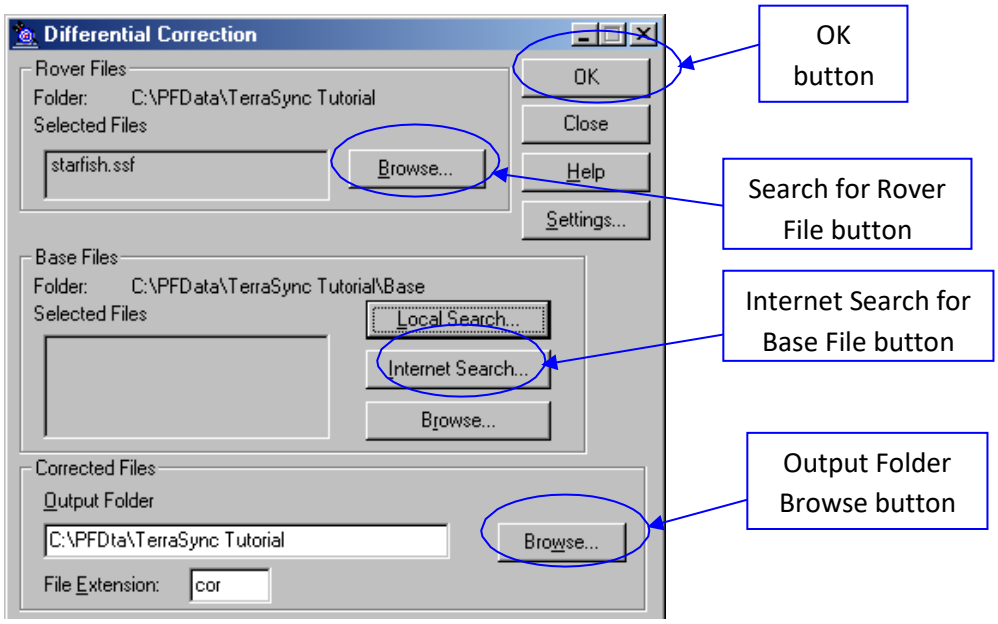
6.3 Editing and Reviewing the Data

Most survey data collected will be collected in "real time", meaning the data is differentially corrected as it is collected. If this is the case, then you will not need to correct the data again. You will know the data are collected in "real time" if you see a satellite image on the Trimble screen while collecting data. The following figures are examples of images you will see on the Trimble screen indicating "real time" corrections are taking place:

DGPS Beacon Service:

DGPS Subscription Service (OmniStar):

WAAS Correction:



6.3.1 Open the Differential Correction utility in PFO by locating and selecting the icon or from the **Utilities** menu select the **Differential Correction** option.

6.3.2 Select the survey files to be corrected from the display window by clicking the "+" button selecting the file and then select "**next**"

6.3.3 Select "***automatic carrier coded processing***"

6.3.4 Select **"next"** to *Correct Settings* window

6.3.5 Select "**next**" *Base Data* window, adjacent to *Base Provider Search*, hit "**select**" Choose the necessary base station location from the Base Data Provider drop down box and select the OK button. The closest base station to the survey location should be chosen. After the base station data has been downloaded it will appear in the 'Base Files: Selected Files' field by default– check that base station information is correct and select the station with the highest *Integrity Index* or if appropriate, select base station data from file option when survey has its own reference file. Hit **Okay** and check to see that the Base Station Data are updated.

6.3.6 Select "**next**" to *Output Folder* window. Use defaults unless you have designated a location and unique file name to output the survey data.

6.3.7 Select "**start**". The window now notifies the user that it found the station data and has output the data to the designated location. The screen shows the *accuracy range of the survey* and records it in the survey log file. This information should be noted and written down.

6.3.8 Select "**close**" to exit the Differential Correction function.

6.3.9 Go to the "File" menu and select "**open**" select the *.ssf and *.cor files. The *.cor is the corrected file. Select "**corrected files** (*.cor)". Be sure to select all the survey files generated to create map overlay

6.3.10 Select the "**Edit**" menu and select the eraser or tools to erase points that do not appear relevant on the point layout (i.e., multiple points at the same location, points outside the survey area, etc.)

6.3.11 When finished, correction can be saved in the project files. Select "**save**" *.cor file. Note: if a correction mistake is made, reload the *ssf file and go through the correction process again.

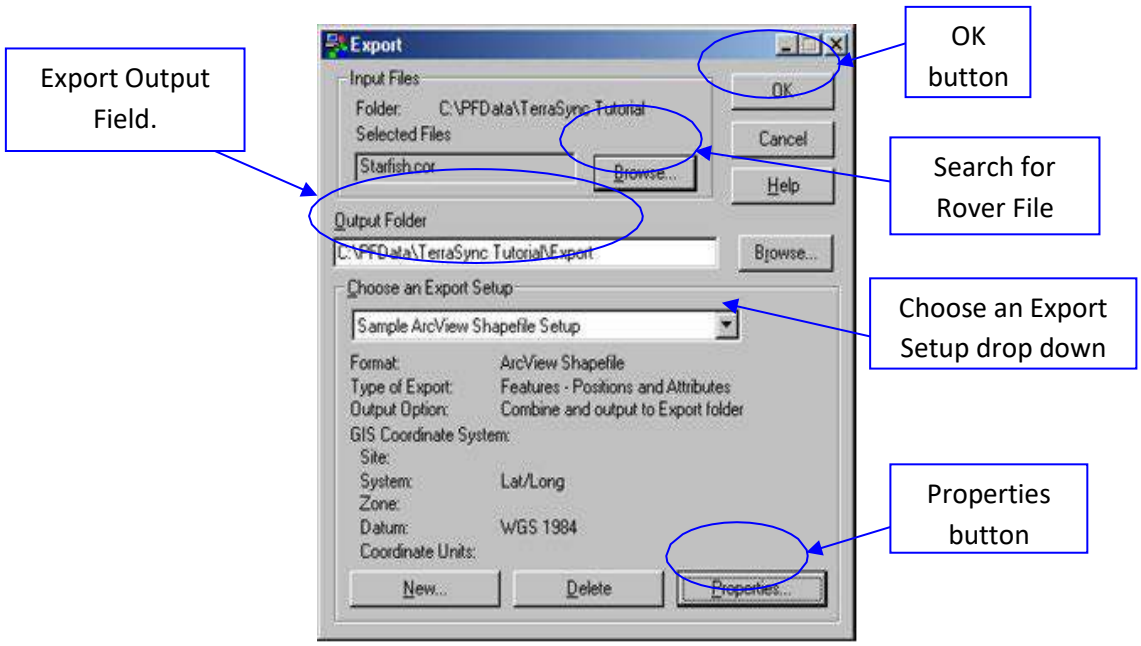
6.4 Exporting the Survey Data into ArcGIS Format

6.4.1 Open the Export utility in PFO by locating and selecting the icon or from the **Utilities** menu select the **Export** option. Select "**Utilities**" then "**Export**" from the main menu. The settings shown are pulled from the "prj" file, the input file is the *.cor file being used and export folder is the location selected outside the PFO software.

6.4.2 If exporting only one file then the last file downloaded using the Data Transfer utility should appear in the 'Input Files: Selected Files' field as default. If that file was differentially corrected then the corrected file will be the default file to export. If multiple files are to be exported then select the browse button and navigate to and select the desired files.

6.4.3 The project export folder should be the default for the Output Folder field. The export files are all named the same during the export process so a subfolder is needed. At the end of the output folder field add the date in MMDDYY format. Example: C:\ERG\Project\ GPS\Export\MMDDYY.

6.4.4 Select 'Sample ArcView Shapefile' Setup from the 'Choose an Export Setup' drop down box.



Note: The coordinate system the files will be exported in is the same as the project coordinate system set in step 4.1.2.5 above. If this needs to be changed it should be done so before exporting

6.4.5 Select "**close**" the window

6.4.6 The corrected files will be exported to a default or selected directory. This is the directory used by ArcGIS or mapping software to create the map files. The default directory currently used is located at "***export/doc/gps prjs/export folder/prj folder/sensor*** files. However, the user can designate any suitable directory path.

Once the files have been corrected and exported, the Trimble GPS Pathfinder Software (PFO) can be closed, and the Map creation will begin in ArcGIS or mapping software.

7.0 Creating ArcGIS Maps with Corrected Survey Data Files (*.cor)

7.1 On the designated computer, Open ArcMap or mapping software

7.1.1 Start with a blank map or setup a map templet

7.1.2 Add data to the map by right clicking, selecting "**add data**" , "**folder**" – select "**GPS Export Folder**"

7.1.3 Drop down in selection list to: "export *.shp file location" - select**, sensor.shp** and **"add**"

7.1.4 The .shp file data are now added.

7.1.5 Acquire the map overlay files of the survey location by selecting "add data" again and navigating to ***www. Orthodhsesny.gov*** for New York State locations. Select the map and click "**add**" – the map should now be loaded.

Note: For locations outside of NYS, the web address of the State Ortho Image archives or Geographical Information repository must be added to ArcGIS directory. Alternatively, Google Map or similar United States or World repository can be added however, imagery will be of much lower resolution.

7.1.6 Select **"editor**" on the ArcMap tool bar

7.1.7 Right click the sensor table

7.1.8 Select "**open attribute table**" and scroll through the data to find "blanks" or other obvious errors. Delete or fix data errors. Note: every line needs a value or the map creation will fail.

7.1.9 Click "**Editor**" again and select "**stop editing**" then **"save**"

7.1.10 Open the attributes table and select "**add field**" type "**cpm**"

7.1.11 Under "type" – select "**integer**", precision should be 5 or 6

7.1.12 Right click on the "**cpm**" field, select " **field calc**"

7.1.13 Select "**txt**" and add (**x 1000**). Select **okay**.

7.1.14 Right click "**sensor**" select "**properties**"

7.1.15 Change "**Layer**" to "**cpm**" select **"display**" and "**cpm**"

7.1.16 Under "symbology select "**quantities, grad color map** (green to red is typically used)

7.1.17 Select "**Value**" **- "cpm**" , "**normalize**" – "**cpm**" You can adjust the scale to the resolution that makes sense for the count rates obtained

7.1.18 Go to "**Layout View**" on the tool bar, select "**print**", "**page layout**" – "l**andscape**" when the map is centered.

7.1.19 Select "**insert"** to add a Title, scale, or legend.

7.1.20 When complete, the map can be saved and exported as a *.pdf using the "File" menu and selecting "**export map**" , assign a *name*.pdf and click

7.2 Modifying Features and Attributes for Map Generation in ArcGIS

On occasion, GPS and gamma data will need to be modified to be displayed accurately on a site map due to feature attributes or data format. These changes can be easily made using the following steps.

7.2.1 Select the Properties button and change the following parameters:

7.2.2 Data tab:

7.2.2.1 Types of Data to Export choose the '**Features - Positions and Attributes**' and from the drop down box select '**Export All Features'**.

7.2.2.2 Create Point Features From: check the box for '**Sensor Records**'.

7.2.3 Attributes tab:

7.2.3.1 Under General Attributes – All Feature Types check the boxes for '**Date Recorded**' and '**Time Recorded'**

7.2.4 Position Filter tab:

7.2.4.1 Select the '**Filter by GPS Position Info'** option.

7.2.4.2 Uncheck the boxes for 'Include Positions That Are – Uncorrected' and 'Include Non-GPS Positions'.

7.2.5 Coordinate System tab:

7.2.5.1 Select the 'Use Current Display Coordinate System' and choose the '**export coordinate** as: XY'. If you choose XYZ and do not have Spatial Analyst installed on ArcView GIS you will not be able to edit the data.

NOTE: If you choose XYZ (point Z) you will not be able to merge data with XY (point) data. If you choose XY you will not be able to merge data with XYZ. It is therefore important to be consistent in this regard.

7.2.6 Select the OK button in the upper right corner of the Export window to complete the export process. The chosen rover file(s) will be exported into the chosen format and saved to the chosen output folder.

NOTE: The data has been exported into an ArcView shapefile but the data are still in string format, not number format. To work with the data you will need to make changes to the survey theme table in ArcView.

7.2.7 Converting String Data Into Number Data

7.2.7.1 With the ArcView application open and the survey shapefile already added to the view, open the theme table.

7.2.7.2 Start editing the theme table and add a new field. The field name should be 'Gamma' and the field type should be a number.

7.2.7.3 Highlight the new field 'Gamma', and under the **Field** menu select the **Calculate** option.

7.2.7.4 Type the following equation into the window below where it says [Gamma] =: [Text].as number. Select the OK button.

NOTE: Sometimes the string data will not convert into number data. If there are any characters other than numbers there will be an error because non numeral string data (any character other than the numbers 0 – 9) cannot be converted into numbers. You will have to scan through and remove these data records before the entire data set can be converted. This tends to happen when there is a poor RS-232 connection due to a loose connection or bad cable.

7.2.7.5 Save the table and close. This new field will be the data used in ArcView GIS.

8..0 DEFINITIONS

None

9.0 REFERENCES

6.1 National Council on Radiation Protection and Measurements, NCRP Report No. 50, "Environmental Radiation Measurements", December 1976.

6.2 National Council on Radiation Protection and Measurements, NCRP Report No. 58, "A Handbook of Radioactivity Measurements Procedures", 2nd Ed., 1985.

6.3 Kocher, D.C., 19;79, "Dose-Rate Conversion Factors for External Exposure to Photons and Electrons", NUREG/CR-1918.

10.0 ATTACHMENTS

Attachment 1 - Typical Trimble Menu Option Settings, RCP 40-1

Attachment 4 - MJWRCP 66

THE MJW COMPANIES Radiological Consulting Professionals and Expert Technical Services		MJWRCP-66 Rev. 0
PROCEDURE FOR SOIL SAMPLING FOR RADIOACTIVE MATERIAL		**FIELD PROCEDURE**
Effective Date: 12/16/20	Approved By: *M.J. Willett*	

1.0 PURPOSE

This procedure describes the general and specific procedures, methods and considerations to be used and observed when collecting soil samples for field screening and/or laboratory analysis.

2.0 SCOPE

The procedures described in this document are to be used by qualified field personnel when collecting and handling soil samples in the field. If MJW field personnel determine if any of the procedural steps may be inappropriate, they will contact their field supervisor immediately to discuss and resolve the issue. Any and all such issues will be recorded in the field logbook.

3.0 SAFETY PRECAUTIONS

Proper safety precautions must be observed when collecting soil samples. Field personnel must refer to the RECON Project Health & Safety Plan Rev 1 for guidelines on safety precautions to be followed for this type of field work.

4.0 PROCEDURAL PRECAUTIONS

Special care must be taken not to contaminate collected samples. This includes but it not limited to storing samples in a secure location to preclude conditions which could alter the properties of the sample. Samples shall be custody sealed during long-term storage or shipment. Collected samples are in the custody of the sampler or sample custodian until the samples are relinquished to another party. If samples are transported by the sampler, they will remain under his/her custody or be secured until they are relinquished.

5.0 FIELD OPERATIONS

5.1 General

These sampling methods are used primarily to collect surface and shallow subsurface soil samples. Surface soils are generally classified as soils between the ground surface and 6 to 12 inches below ground surface (BGS). The most common interval is 0 to 6

inches BGS, however, the data quality objectives of the investigation may dictate another interval, i.e., 0-3 inches BGS, for risk assessment purposes. The shallow subsurface interval may be considered to extend from approximately 12 inches BGS to a site-specific depth at which sample collection using manual collection methods becomes impractical.

5.2 Soil Collection Using Spoons

Stainless steel spoons may be used for surface soil sampling to depths of approximately 6 inches BGS where conditions are generally soft and non-indurated and there is no problematic vegetative layer to penetrate. If the soil being sampled is cohesive and crumbles when removed from the ground surface, consider using a hand auger to collect the sample.

When compositing a sample, make sure each composite location consists of equal volumes, i.e., same number of equal spoonfuls. If a thick matted root zone is present at or near the surface, it should be removed before the sample is collected.

5.3 Soil Collection Using Hand Augers

Hand augers may be used to advance boreholes and collect soil samples in the surface and shallow subsurface intervals. Typically, 4-inch stainless steel auger buckets with cutting heads are used. The bucket is advanced by simultaneously pushing and turning using an attached handle. Auger buckets may be used with a handle alone or with a handle and extensions. The bucket is advanced to the appropriate depth and the contents are transferred to the homogenization container for processing.

The practical depth of investigation using a hand auger depends on the soil properties and depth of investigation. For example, sandy soil may flow out or collapse at depth. Conversely, tight clays and cemented sands may offer too much resistance to sampling and powered equipment may need to be used.

Because of the tendency for the auger bucket to scrap material from the sides of the auger hole while being extracted, the top several inches of soil in the auger bucket should be discarded prior to placing the bucket contents in the homogenization container for processing. The hand auger assembly must be decontaminated between each borehole that is advanced per Section 5.5.

5.4 Sample Collection, Identification and Documentation

A nominal 500-gram (1.1 lb) sample will be collected and placed into a double-lined plastic bag or sealable laboratory containers. When necessary, additional borings will be placed adjacent to the original location to obtain adequate sample volume for laboratory testing. When multiple borings and core samples are required to obtain adequate sample volume, a composite sample from similar materials and at approximately equal depths of the cores used, will be collected for analysis.

All samples will be labeled to include:

- Location ID
- Depth
- Date/time
- Sampler
- Sample number
- Radiation readings (Gross CPM)
- Analyses required

Sample bags or containers will be transported in totes, coolers, or similar to the radiological storage area pending completion of GEL laboratories Chain-of-Custody (COC) forms (Attachment 1), and shipment for analysis. COC forms will be completed as required and will reflect laboratory analysis for gamma spectroscopy using method 901.1 (HASL 300) and/or alpha spectroscopy for U and Th isotopic. All samples will be submitted via contract carrier.

Sample IDs will consist of an alpha-numeric code including the location, boring ID, sample matrix, sample type, sample depth, and an identifier for composite sample.

- Location: This will be site coordinate and map location
- Sample ID: A sample designation starting with SU1 or BRA (survey unit designation) followed by dash and a two-digit number separated by dash for sample ID, followed by depth designation (A =0-6, B=6-12, C=0-12, D=12-18, as appropriate)
- Sample Matrix: So (soil), Con (concrete) or other.
- If the sample is a composite sample, the sample ID will have the letter C at the end.

Example #1: SU1-2-1ASoC. A soil sample (So) collected at soil sampling location (2-1), from 0.0 to 6 inches bgs (A), composite (C).

Samples will be analyzed by a ELAP certified laboratory. Sample custody will be documented, and analysis requirements communicated using laboratory provided Chain of Custody Forms

5.5 Step for Sampling Equipment Decontamination

Decontamination efforts will follow a four-step approach for hand tools and equipment used to collect samples. The four-step approach for sampling equipment decontamination is as follows:

- A detergent and water wash to remove all visible particulate matter and residual oils and grease.

- Tap water rinse.
- Distilled and deionized water rinse (for samples requiring chemical analyses)
- Scan equipment between each use using on-site surface radiation equipment.

Attachment 1. GEL Laboratories Chain of Custody Form

Page: _____ of _____
Project #:
GEL Quote #: _____
COC Number (1): _____
PO Number:

GEL Chain of Custody and Analytical Request
See www.gel.com for GEL's Sample Acceptance SOP
GEL Work Order Number:

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: | Phone #:
Project/Site Name: | Fax #:
Address:
Collected by: | Send Results To:

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID * For composites - indicate start and stop date/time	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive	TSCA Regulated	Number of											<-- Preservative Type (6)
																			Comments Note: extra sample is required for sample specific QC

TAT Requested: Normal: _____ Rush: _____ Specify: _____ (Subject to Surcharge) | Fax Results: Yes / No | Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Sample Collection Time Zone
Eastern Pacific
Central Other _____
Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1			1		
2			2		
3			3		

Sample Shipping and Delivery Details
GEL PM:
Method of Shipment: | Date Shipped:
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.
4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=
5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B/7470A - 1).
6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfite. If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact?
YES *NO*
Cooler Temp:
_____ C

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

Surface and Shallow Subsurface Soil Sampling Check List

Conduct Tailgate Safety Review……._____ _____ _____ _____

(date) (date) (date) (date)

Review sampling parameters ……_____ _____ _____ _____

(date) (date) (date) (date)

Determine required tools based upon sampling desire (hand augurs or spoons etc.) ……. _____ _____ _____ _____

(date) (date) (date) (date)

Verify all required tools, supplies, and equipment available ……._____ _____ _____ _____

(date) (date) (date) (date)

Prepare radiological instruments for use and perform operability checks……. _____ _____ _____ _____

(date) (date) (date) (date)

Collect Digital image(s) including location sign……_____ _____ _____ _____

(date) (date) (date) (date)

Document relevant terrain, location, and other relevant physical features……._____ _____ _____ _____

(date) (date) (date) (date)

Collect and ID samples in accordance with procedure and sampling parameters ……._____ _____ _____ _____

(date) (date) (date) (date)

Document relevant sample features such as clay, sandy, different colors etc. ……_____ _____ _____ _____

(date) (date) (date) (date)

Verify all required samples have been collected and documentation is complete_____ _____ _____ _____

(date) (date) (date) (date)

Pack samples and equipment for transport back to vehicle(s)…… _____ _____ _____ _____

(date) (date) (date) (date)

Transport samples and equipment to Storage facility…….._____ _____ _____ _____

(date) (date) (date) (date)

Decontaminate the tools…….._____ _____ _____ _____

(date) (date) (date) (date)

Fill out appropriate paperwork for sample chain of custody ….……_____ _____ _____ _____

(date) (date) (date) (date)

Attachment 5 - Soil Sample Data Sheet

MJW TECHNICAL SERVICES, INC.

Date: _____ Project: _____ Project No.: _____

RCT Name: _____

1. Sample ID: _____
2. Sample Type: Composite/Grab Sample Vol.: _____ grams
3. Laboratory Analyses Requested: (circle) Gamma Spec Alpha Spec Isotropic-:_____
4. Sample Location:
   Description/Coord: _____
   Land Marks: _____ Depth _____ Location ID: _____
5. Visual Characteristics of Sampled Material
   Texture: _____ Color: _____ Grain Size: _____
   Other: _____
6. Background 2x2 NaI (CPM) and Bicron (uRem/hr):
7. Sample Radiation Readings:

Identifier	2x2 NaI (CPM)			Bicron (uRem/hr)		Notes
Sample No.	Count time (min)	1 cm	1 m	1cm	1m	

8. Sample Information
   a. Sample containers (bags) [all samples will be labeled per PDIWP] Label will include: Location ID, Depth, Type, Date/Time, Sampler, Sample No., Radiation Readings
   b. Sample ID Format

Sample No.	Depth Interval (cm)	Soil Type (slag, soil, etc.)	Sample ID	Comments

Sample Recorded on Laboratory COC form and Container Labeled: (Y) (N)

Attachment 6 - GEL COC

Page: _____ of _____
Project # _____
GEL Quote #: _____
COC Number (1): _____
PO Number:

GEL Laboratories LLC
gel.com
Chemistry | Radiochemistry | Radiobioassay | Specialty Analytics

Chain of Custody and Analytical Request

GEL Work Order Number: ***GEL Project Manager:***

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: Phone #
Project/Site Name: Fax #
Address:
Collected By: Send Results To:

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID ** For composites - indicate start and stop date/time*	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive (If yes, please supply isotopic info.)	(7) Known or possible Hazards	Total number of containers											<-- Preservative Type (6) **Comments** Note: extra sample is required for sample specific QC

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1			1		
2			2		
3			3		

TAT Requested: Normal: _____ Rush: _____ Specify: _____ (Subject to Surcharge)

Fax Results: [ ] Yes [ ] No

Select Deliverable: [ ] C of A [ ] QC Summary [ ] level 1 [ ] Level 2 [ ] Level 3 [ ] Level 4

Additional Remarks:

For Lab Receiving Use Only: *Custody Seal Intact?* [ ] *Yes* [ ] *No* ***Cooler Temp:*** _____ *°C*

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

Sample Collection Time Zone : [X] Eastern [ ] Pacific [ ] Central [ ] Mountain [ ] Other:

1.) Chain of Custody Number = Client Determined

2.) QC Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate Sample, **G** = Grab, **C** = Composite

3.) Field Filtered: For liquid matrices, indicate with a - **Y** - for yes the sample was field filtered or - **N** - for sample was not field filtered.

4.) Matrix Codes: **DW**=Drinking Water, **GW**=Groundwater, **SW**=Surface Water, **WW**=Waste Water, **W**=Water, **ML**=Misc Liquid, **SO**=Soil, **SD**=Sediment, **SL**=Sludge, SS=Solid Waste, **O**=Oil, **F**=Filter, **P**=Wipe, **U**=Urine, **F**=Fecal, **N**=Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B, 6010B/7470A**) and number of containers provided for each (i.e. *8260B* - **3**, *6010B/7470A* - **1**).

6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, If no preservative is added = leave field blank

7.) **KNOWN OR POSSIBLE HAZARDS**

RCRA Metals
As = Arsenic **Hg**= Mercury
Ba = Barium **Se**= Selenium
Cd = Cadmium **Ag**= Silver
Cr = Chromium **MR**= Misc. RCRA metals
Pb = Lead

Characteristic Hazards
FL = Flammable/Ignitable
CO = Corrosive
RE = Reactive

TSCA Regulated
PCB = Polychlorinated biphenyls

Listed Waste
LW= Listed Waste
(F,K,P and U-listed wastes.)
Waste code(s):

Other
OT= Other / Unknown
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
Description:

Please provide any additional details below regarding handling and/or disposal concerns. *(i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)*

Attachment 7 - Survey Data Sheet

MJW Corporation Inc.

Radiation / Contamination Survey Map and Data Sheet

MJW Job #:	Surveyor:	Date:	Time:

Survey Map (Indicate North)

Survey Location (Description)	Instrument Number	Radiation Levels CPM or mR/hr	Physical Form	Remarks

*Note: All Radiation Readings will be made in the same units noted for the instrument, unless noted otherwise in the remarks column.

RCP No. 4 Revision: 0	Date: 05/24/91	Attachment 3

Attachment 8 - NYSDEC DMM-5 Policy

DMM-5 / Management of Soils Contaminated with Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM)	
New York State Department of Environmental Conservation **DEC Program Policy**	
Issuing Authority: David Vitale	**Title:** Acting Deputy Commissioner, Office of Remediation and Materials Management
Date Issued: 10/27/2023	**Latest Date Revised: NEW POLICY**

I. Summary:

This policy explains the process and requirements for obtaining a variance under 6 NYCRR 380-3.5 for the management of processed and concentrated naturally occurring radioactive material, also commonly referred to as technologically enhanced naturally occurring radioactive material (TENORM). Additionally, this policy identifies the process and criteria to be used to evaluate TENORM and provides guidelines to Department of Environmental Conservation ("Department") program staff, and property owners, project sponsors, and the public who may be seeking variances, on how to appropriately handle TENORM encountered during construction or earthwork projects, such as clearing, grading, excavation, filling, demolition, or stockpiling. This policy also applies to any project site where the intrusive work conducted has or will likely disturb identified or suspected TENORM. This policy does not apply to activities that disturb naturally occurring radioactive materials.

Part 380 applies to any person who disposes of or releases TENORM. This policy is applicable where a variance application has been submitted pursuant to 6 NYCRR 380-3.5 for on-site management of TENORM fill that was generated, disposed of, or released prior to the implementation of 6 NYCRR Part 380, which was March 24, 1994, and which has been excavated for a project. Once TENORM has been excavated, it is considered radioactive material and may be subject to DEC's regulatory authority as noted in 6 NYCRR 380-1.2(e) and as defined in 6 NYCRR 380-2.1(a)(20). Placing the TENORM back into the area in which it was excavated constitutes deposition or injection into the environment and thus disposal. This policy provides guidance on the variance application that may be submitted pursuant to 6 NYCRR 380-3.5 to allow on-site management of excavated TENORM.

Implementation

This policy is to be implemented at any site, location, or work area where anthropogenic (i.e., “man- made” or “man-modified”) material or fill (frequently observed to be “slag”) has been noted or discovered and is suspected or known to have a potential or definitive TENORM characteristic, (see definition below).

Definitions

As Low As Reasonably Achievable (ALARA) – Means every reasonable effort is made to maintain exposures to radiation as far below the dose limits (or for purposes of this Policy concentration values) in Part 380 as is practical consistent, with the purpose for which the action is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of radioactive materials in the public interest.

Area of Contamination (AOC) – Means a discrete area of generally dispersed contamination.

Excavation – Means any man-made cut, cavity, trench, or depression in the earth surface formed by the removal of soil and rock, or any activity that causes or contributes to the creation of any such cut, cavity, trench, or depression.

Disposal – Means the act of discarding regulated radioactive material. Depositing or injecting radioactive material in the environment is disposal unless the radioactive material is being used in the environment, as authorized by a permit issued under 6 NYCRR 380-3.1.

TENORM Fill – Means slag or other material containing TENORM used as fill, without regard to its radiological content, placed on its present site before March 24, 1994, when 6 NYCRR Part 380 became effective. Such historically placed fill is not a regulated waste if it remains as it was placed at that time.

Licensed Decontamination & Decommissioning (D&D) Contractor – Means a person or company who possesses a radioactive materials license that authorizes them to perform decontamination and decommissioning of radiologically contaminated sites. D&D Contractors must possess a license issued by the New York State Department of Health (DOH). Companies licensed by the US Nuclear Regulatory Commission (NRC), or another state may work under reciprocity with the DOH.

Naturally-Occurring Radioactive Material (NORM) –Means any of the primordial radionuclides (those present since the formation of the earth – Uranium, Thorium, Potassium) or radioactive elements as they occur in nature, and their radioactive decay products, such as radium and radon, that are not concentrated as a result of human activity. (*Note*: NORM produced through interaction of cosmic rays with certain gasses in the upper atmosphere (cosmogenic NORM) such as tritium or carbon-14 are not addressed in this policy.)

Person – Means:

(i) any individual; public, private, or government corporation; joint stock company; industry; partnership; co-partnership; firm; association; trust; estate; public or private institution; agency, department, or bureau of the State, or group, political subdivision of the State, any other State or political subdivision thereof; Federal government agencies other than the U.S. Nuclear Regulatory Commission or Department of Energy; any foreign government or nation or any political subdivision of any such government or nation; and

(ii) any legal subsidiary, successor, representative, agent, or agency of the foregoing, or any other legal entity whatsoever.

Slag – Means a waste product from the pyrometallurgical processing of various ore, both ferrous (e.g., steel and blast furnace Fe) and non-ferrous (e.g., P, Ag, Cu, Ni, Pb, Sn, Zn).

Technologically-enhanced naturally occurring radioactive material (TENORM) – Means naturally occurring radioactive material whose radionuclide concentrations are increased by or as a result of past or present human practices, such as manufacturing or water processing.

TENORM (Background-comparable) – Means TENORM fill that has been disturbed by excavation or other methods and is below 5 pCi/g of radium-226.

TENORM Waste – Means TENORM fill that has been disturbed by excavation or other methods and exceeds 15 pCi/g of radium-226.

TENORM Disposal Plan – Means a TENORM disposal plan must cover management and disposal of TENORM waste (>15 pCi/g of Ra-226) generated for disposal to ensure handling in a manner adequate to protect human health and the environment until such time as it is shipped for disposal.

TENORM Management Plan – Means a plan to appropriately manage in an AOC and/or dispose of TENORM fill containing a concentration of radium-226 between 5 pCi/g and 15pCi/g that must be submitted with an application for a variance to be approved by the Department. (*Note*: for TENORM (Background-comparable), the procedure(s) utilized in determining compliance with the <5 pCi/g criteria will constitute a “Management Plan” for purposes of meeting the management requirements in Section
IV.B. of this policy.)

II. Policy

The Department will allow excavated TENORM to be returned to the excavation area on a project site if the concentration of radium-226 meets certain thresholds (discussed throughout) and the TENORM is handled in accordance with this policy and pursuant to a variance issued under 6 NYCRR 380-3.5. The Department’s position is that handling excavated TENORM in accordance with this policy and a Department-approved TENORM Management Plan will have no significant adverse impact on public health and safety, and the environment. (*Note*: A variance application to allow excavated TENORM below 15 pCi/g of Ra-226 to be returned to the area of excavation on a project site does not need to include the demonstrations required under 6 NYCRR 380-3.5(b)(4) and (5).) This policy utilizes the EPA Uranium Mill Tailings Radiation Control Act standards of 5 and 15 pCi/g of Ra-226, but conservatively applies them only to the excavated TENORM.

Purpose and Background

The purpose of this policy is to address intrusive work on sites containing TENORM fill. A number of industrial processes generated byproducts that contained processed and concentrated NORM, also known as TENORM. Slag and other TENORM-containing byproducts from ore refining were used as backfill beneath roadways and other construction projects. This was done due to their low cost and beneficial physical properties, but without consideration of their inherent radioactivity.

This policy applies to sites containing TENORM that was placed on its present site before March 24, 1994, when 6 NYCRR Part 380 was updated to address the radiological content of TENORM. Since that time, this type of waste is not allowed to be used as fill or disposed of at any site unless the site has regulatory approval to accept it. As of the effective date of this policy, there are no sites approved for the disposal of newly generated TENORM waste in New York. Therefore, such waste must be disposed of in an authorized disposal facility.

When the presence of TENORM at sites first came to light, the New York State Department of Health commissioned a group of outside experts to assess the potential public health risks of the sites. These experts determined that the sites did not pose significant public health or environmental concerns if the TENORM is left in place. If TENORM is disturbed, it must be appropriately handled and the potential impacts to public health and the environment must be taken into consideration.

III. Responsibility

Responsibility for the interpretation and implementation of this policy resides with the Department's assigned Environmental Radiation Specialist (ERS) in coordination with any Department project manager (or other involved Department staff), to ensure that an adequate radiological screening is performed. Additional consultation may occur as determined to be necessary with the Department's Radioactive Materials Management Section (RMMS) staff, in the Bureau of Hazardous Waste and Radiation Management in the Division of Materials Management.

Responsibility for updating of this policy resides with the RMMS in consultation with regional management and staff (e.g., ERS) responsible for implementation of this policy.

IV. Procedure

The first step is to verify whether anything exhibiting elevated radioactivity is present in the materials being handled. This includes a preliminary screening radiation survey to determine if TENORM is present. Prior to conducting the survey, a survey plan must be developed and submitted for Department approval.

Second, if the survey results demonstrate that TENORM is present, then a proper TENORM management plan must be developed and submitted for Department approval. The third step is the TENORM must be managed in accordance with the approved TENORM management plan and if necessary, a variance. Further details of each step are provided below.

A. Radiological Screening

6 NYCRR 380-1.5(c)(1) requires that a variance application include a description of the waste containing radioactive material to be disposed of, including the physical and chemical properties relevant to the risk evaluation. Radiological screening, as described below, may be used to satisfy this requirement.

At sites known or reasonably suspected of being contaminated with TENORM where any development activity or other ground-disturbing activity or excavation is planned, a licensed D&D contractor must be utilized to perform an initial radiological screening survey (the "survey") to identify the presence and concentration of radium-226, as described in Attachment A. If appropriate, the survey may be submitted with the necessary proposed TENORM Management Plan (see Section VI.C. of this policy). For sites where TENORM was not initially known or suspected, but during work the presence of slag fill or other indicators raise a concern for the possible presence of TENORM, a health physics technician or appropriately trained person (as approved by the Department) may perform a preliminary radiological screening survey. Project sponsors must submit a draft of the survey plan to the Department in advance to ensure that the survey will meet the Department's data needs. The Department will review and approve the survey plan prior to implementation.

After the survey plan is approved and an initial survey is conducted, the project sponsor, site owner, or other appropriate person must submit the initial survey results to the assigned ERS (and DEC project manager for sites in a DEC remedial program) for review. The initial radiological screening survey results will assist the ERS in determining the necessity, and scope, of a TENORM Management Plan. Additionally, the initial radiological screening survey results provide the description of the waste containing radioactive material, which includes the physical and chemical properties relevant to risk evaluation, that is a requirement for a variance application under 6 NYCRR 380-3.5(c)(1).

If any radiological screening survey conducted indicates the presence of radium-226 or other NORM isotopes, in potentially elevated concentrations, the site will be deemed to contain potential TENORM. If any material is determined to be TENORM, it must be handled in accordance with the management requirements in Section IV.B of this policy.

B. Management Requirements

This policy utilizes the EPA Uranium Mill Tailings Radiation Control Act standards of 5 and 15 pCi/g of Ra- 226, but conservatively applies them only to the management of the excavated TENORM. This standard is widely used as a remedial goal at sites across the country, and in New York, which contain Ra-226 contamination. The original purpose of these values was to minimize the radiation dose received via radon emanation from Ra-226 and, as such, represents a comparable risk and exposure scenario. The following are the management requirements for the different types of TENORM that could be discovered on a particular site:

> **TENORM (Background-comparable)** (below 5 pCi/g of radium-226) – the Department may either grant a variance to allow the excavated TENORM (Background-comparable) to be returned to the excavation/AOC, or the assigned ERS determines, and approves, that the proposed use and handling in the AOC is acceptable. The Department will also require that appropriate and approved institutional control(s) be put in place (e.g., deed restriction, environmental easement) for each AOC.

TENORM fill (between 5 pCi/g and 15 pCi/g of radium-226) – the Department may grant a variance to allow excavated TENORM fill to be returned to the excavation/AOC if the following conditions are met:

1) the site where the TENORM fill is found contains undisturbed TENORM fill;

2) all excavated TENORM fill is handled in conformance with the submitted and approved TENORM Management plan;

3) an appropriate and approved institutional control(s) is put in place (e.g., deed restriction, environmental easement) for each AOC; and

4) the TENORM fill does not exceed 15 pCi/g of radium-226.

TENORM Waste (above 15 pCi/g of radium-226) – TENORM waste is considered a regulated waste per 6 NYCRR Part 380 and must be disposed of in accordance with appropriate regulatory requirements at an authorized disposal facility.

C. Management Plan Requirements for TENORM fill

Once TENORM fill has been identified on a property where it is being or will be disturbed, a TENORM Management Plan must be submitted to the Department for approval. As discussed previously, the radiological screening survey plan can be incorporated into the TENORM Management Plan. The TENORM Management Plan describes the proposed manner and conditions of waste disposal and the procedures to ensure that doses are maintained ALARA, which are both requirements for a variance application under 6 NYCRR 380-3.5(c)(1), (4). The TENORM Management Plan must demonstrate the following:

1) the site is conducive to the implementation of long-term site controls;

2) a well-defined and documented consolidation location within the AOC (if proposed) will be established;

3) a minimum of two feet of acceptable soil cover material or the equivalent of paving with asphalt or concrete will be placed over the consolidation area;

4) whether substantial TENORM will remain on the site at the completion of any site work;

5) the size of the consolidation area will be based on the known extent of area containing undisturbed TENORM remaining on-site; and will be determined and approved on a case-by- case basis by the Department; and

6) that it is implemented in a manner consistent with the ALARA

concept. For more details on the TENORM Management Plan, see

Attachment B of this policy.

D. Variance Application Requirements

For TENORM to remain onsite per a proposed management plan, an application for a variance must be submitted and approved. The application must comply with the requirements of 6 NYCRR 380-3.5.

However, as previously indicated, the application does not need to include the demonstrations required under 6 NYCRR 380-3.5(b)(4) and (5).

To meet the requirements of 6 NYCRR 380-3.5, the application for a variance for TENORM fill must include the following:

1) an explanation as to why the applicant believes the property contains TENORM;

2) the initial radiological survey results showing the concentration of radium-226 and other NORM isotopes found in the TENORM;

3) a TENORM Management Plan;

4) institutional controls as previously discussed, as determined by the Department to be necessary; and

5) any additional information deemed necessary by the Department.

The application for a variance will be reviewed by the assigned ERS, with recommendations made to appropriate Department management and programmatic areas for determination of approval or rejection (preference is for determination to be made in a regionalized program office, whenever possible).

Any denial of a variance application may result in the applicant or responsible person being required to take further action, including, but not limited to, additional characterization, site definition, and potentially removal and disposal off site of the material in question. Additionally, when a variance application is denied, the Department will issue a notice of denial and the applicant may request a hearing in accordance with the procedures in 6 NYCRR Part 621 as a variance from Part 380 qualifies as a permit.

Additional Requirements and Recommendations

This policy does not address the transportation of TENORM or other radioactive materials.

Regardless of the concentration of radium-226 and other NORM isotopes determined to exist at a site, any new structures built at said location are recommended to utilize radon resistant construction.

V. Related References

49 CFR Part 173 Subpart I Class 7 Radioactive

Materials 10 NYCRR Part 16 Ionizing Radiation

6 NYCRR Part 380 Prevention and Control of Environmental Pollution by Radioactive

Materials 6 NYCRR Part 381 Transporters of Low-Level Radioactive Material

17 NYCRR Part 154 Special Hauling Permits

Attachment A Radiological

Screening Survey Criteria

If a radiological screening survey is needed to verify the presence of TENORM, the following process must be followed:

1) Establish an appropriate background(s) representative for the area(s) to be surveyed, as approved by the Department. It is intended for the background area to be distinct from the area of contamination (AOC), yet representative of background conditions in the vicinity of the AOC. Natural radiological background is preferred, however, in some instances, such as urban areas, background representative of non-natural conditions not impacted by TENORM may be acceptable.

2) At a minimum, survey the portion of the site to be disturbed.

3) If survey readings exceed 1.5 x background, collect a minimum of three representative composite samples of the TENORM (to be analyzed by a DOH Environmental Laboratory Approval Program (ELAP) certified laboratory) including from the area of highest survey readings. Perform fixed one-minute meter readings at each sampling location prior to collection of a sample.

   a) In consultation with the assigned ERS, develop a correlation between meter readings and soil concentrations to guide future survey efforts. Where feasible, the use of a meter reading-to-concentration correlation (backed-up by limited sample analyses) can reduce costs and time delays during site characterization and waste monitoring rather than relying solely on analytical results.

   b) As long as survey results indicate radium-226 levels below 5 pCi/g, no separation of soil and TENORM is required.

4) If no readings in excess of 1.5 times background are noted, no further monitoring during excavation activities is necessary, except as noted below.

   a) In most cases, no other radiological monitoring will be required.

   b) However, certain factors may necessitate limited additional monitoring of excavated materials. Those factors can include:

      i) Whether there are known areas of TENORM in the region or on nearby properties;

      ii) Whether there is evidence that slag is present on-site and if so whether it contains TENORM; or

      ii) If major changes in types of TENORM encountered occur during excavation.

   c) If Department staff or a site consultant see possible TENORM at or from a depth greater than was evaluated by the original survey, it is strongly recommended that a plan to perform limited radiological screening of excavated materials be developed. The goal is to ensure that contaminated materials are

not inadvertently redistributed on the site or moved off site. If such a circumstance arises, ERS staff will work with the consultant to establish an appropriate limited screening plan.

Attachment B

TENORM Management Plan

The TENORM Management Plan must include the following:

1) TENORM Sorting Process:

   a) Unless an alternate plan is approved by the Department as part of previously discussed process regarding granting a Part 380 variance, material removed from the excavation area must be sorted as part of the excavation process and placed into stockpiles using average soil concentrations, based upon waste management needs. Stockpiles should be managed to minimize erosion and the generation of dust.

   b) These stockpiles may include:

      i) A pile for TENORM (Background-comparable) clearly below 5 pCi/g of radium- 226

      ii) A pile for TENORM Waste clearly exceeding 15 pCi/g of radium- 226 for off-site disposal.

      iii) An optional intermediate pile for TENORM fill that cannot readily be identified during excavation as fitting into one of the above categories based on meter readings alone. (below 5 pCi/g or above 15pCi/g for Ra-226.)

         1) If an intermediate concentration pile is proposed by the TENORM Management Plan, the TENORM Management Plan must describe how the fate of this TENORM fill will be resolved, or

         2) If an intermediate concentration pile is not proposed by the TENORM Management Plan, all TENORM fill exceeding 5 pCi/g of radium-226 must be placed in the pile for off-site disposal.

   c) If a correlation between meter readings and soil concentrations to guide future survey efforts has not already been completed and approved by the assigned Department ERS, it must be included as part of this TENORM Management Plan.

2) Survey Process for Soil/TENORM Sorting

   a) In larger excavations, the preferred method is to excavate in six-inch (6”) lifts and perform walkover surveys using the established meter reading-to-concentration correlation to separate out contaminated material. If site characteristics or other restrictions do not allow for this, surveying bucket by bucket, visual screening, or another process may be submitted for consideration as part of the TENORM Management Plan.

   b) In tight areas such as trenches where normal surveying is impractical or dangerous, bucket loads of excavated material should be surveyed as they are removed from the excavation. Due to the change in geometry from a flat plane to a bucket of soil, a separate meter reading-to-concentration ratio would be required

for this survey option. Alternatives to surveying buckets of excavated material during excavation may be submitted to the Department for consideration as part of the TENORM Management Plan.

3) TENORM Management

The following contains information on the management requirements for the different types of TENORM:

a) TENORM Waste (i.e., material with survey levels exceeding 15 pCi/g of radium-226) must be disposed of off-site at facilities permitted to accept such wastes. Representative sampling must be performed following the waste acceptance criteria of the selected disposal site.

b) TENORM (Background-comparable) (i.e., material with survey levels below 5 pCi/g of radium-226) are generally not restricted for radiological purposes and may be reused on-site, dependent upon development of a variance and/or approval by the assigned ERS, and a commitment to utilize radon-resistant construction for any structures built on the property in the future, along with an appropriate land use control.

c) TENORM fill less than 15 pCi/g of radium-226 may be able to be placed back into the excavation area consistent with the criteria in this policy. Reuse of TENORM fill concentrations between 5 pCi/g and 15 pCi/g:

i) TENORM fill must be placed a minimum of two feet below grade.

ii) Appropriate land use controls, as previously discussed, must record the presence of TENORM fill and the known, or suspected, extent of its existence at the site.

4) Undisturbed TENORM

a) TENORM that does not have to be disturbed for site development or for remediation of other contaminants is not required to be remediated as long as the undisturbed TENORM poses no significant risk to public health or the environment in its present state.

b) Radon-resistant construction is strongly encouraged to be utilized for any future buildings.

Attachment 9 - NYSDOH Radiation Guide 10.10

August 1986

New York State Department of Health
Bureau of Environmental Radiation Protection

RADIATION GUIDE 10.10

GUIDE FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR RADIOACTIVE MATERIALS

INTRODUCTION

A. Purpose of Guide

The instructions in this guide, in conjunction with Table 1, specify the radioactivity and radiation exposure rate limits which should be used in accomplishing the decontamination and survey of surfaces of premises and equipment prior to abandonment or release for unrestricted use. However, no decontamination procedures shall be used which may generate air-borne radioactive material without specific authorization from the New York State Department of Health to do so. The Department may be consulted as to the appropriate equipment performance characteristics to be used in determining that the levels specified in Table 1 are met. The limits in Table 1 do not apply to premises, equipment, or scrap containing induced radioactivity for which the radiological considerations pertinent to their use may be different. The release of such facilities or items from regulatory control will be considered on a case-by-case basis.

B. Applicable Regulations

The regulations pertaining to this use of radioactive material are found in Title 10, Chapter 1, Part 16, New York Code of Rules and Regulations (10 NYCRR 16). Chapter 1 is entitled, "State Sanitary Code" and Part 16 is entitled, "Ionizing Radiation." The statutory authority for the rules and regulations is found in the New York State Public Health Law, Section 225.

PROCEDURES

A. Contamination

The licensee shall make a reasonable effort to eliminate residual contamination.

Radioactivity on equipment or surfaces shall not be covered by paint, plating or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 1 prior to applying the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.

The radioactivity on the interior surfaces of pipes, drain lines, or duct-work shall be determined by making measurements at all traps and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or duct-work. Surfaces of premises, equipment or scrap which are likely to be contaminated, but are of such size, construction or location as to make the surface inaccessible for purposes of measurement, shall be presumed to be contaminated in excess of the limits.

B. Relinquishing Control Above Limits

Upon request, the Department may authorize a licensee to relinquish possession or control of premises, equipment or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but would not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with radioactive materials, or conversion of facilities to a long-term storage or standby status. Such requests must:

1. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature, extent and degree of residual surface contamination.

2. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations, such as prospective use of the premises, equipment or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

C. Reporting

Prior to release of premises for unrestricted use, the licensee shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Table 1. A copy of the survey report shall be filed with the New York State Department of Health, Bureau of Environmental Radiation Protection, 2 University Place, Room 325, Albany, New York 12203, no less than 30 days prior to the planned date of abandonment. A copy of the survey report shall also be provided to the landlord or subsequent tenant, pursuant to Section 16.10 (b), New York State Sanitary Code (10 NYCRR 16).

The survey report shall:

1. Identify the premises and indicate the date of the survey.

2. Show that reasonable effort has been made to eliminate residual contamination.

3. Specify the manufacturer and model number of the survey instrument and the procedures used to calibrate the instrument, and include the last calibration date.

4. Describe the scope of the survey and general procedures followed.

5. State the findings of the survey in units specified in Table 1.

6. Confirm that the radiation levels shown in the survey will not be increased as a result of activities following the performance of the survey.

Following review of the report, the Department will consider visiting the facility to confirm the survey.

Table 1

Radioactive Surface Contamination Limits
(see notes below)

Application	Alpha (dpm/100 cm^2)		Beta/Gamma	
	Total	Removable	Total (mR/hr)	Removable (dpm/100 cm^2)
Controlled Area				
Basic Guide	15,000 max. 5,000 avg.	500	1.0	5,000
Clean Area	1,000	100	0.5	1,000
Non-controlled Area				
Skin, Personal Clothing	500	N.D.	0.1	N.D.
Release of Material or Facilities	2,500 max. 500 avg.	100	0.2	1,000

Notes to be used when using Table 1:

a. Where surface contamination by both alpha- and beta-emitting nuclides exists, the limits established for alpha- and beta-emitting nuclides should apply independently.

b. As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency and geometric factors associated with the instrumentation.

c. Measurements of average contaminant should not be averaged over more than one square meter. For objects of less surface area, the average should be derived for each such object.

d. The maximum contamination level applies to an area of not more than 100 cm^2.

e. The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

f. N.D. means non-detectable.