Rcd 3/10/93
J Barnes

VOLUMETRIC TECHNIQUES, Ltd.

SANDER R. STERNIG
Director of Laboratories

317 BERNICE DRIVE • BAYPORT, NEW YORK 11705 • (516) 472-4848
FAX: (516) 472-4991

January 19, 1993

Mr. D. Brayack
Halliburton NUS Corporation
661 Anderson Drive
Pittsburgh, PA 15220

Re: Contract No. GCPP-92-067-1298 under CLEAN Contract
No. N62472-90-D-1298

Dear Mr. Brayack:

We submit herewith our final report in accordance with Item 4, Reporting of the Statement of Work.

The services we have provided under the above-referenced subcontract are now completed.

Sincerely,

Jonas Gottlieb
Client Services

JG/lc

VOLUMETRIC TECHNIQUES, Ltd.

SANDER R. STERNIG
Director of Laboratories

FAX: (516) 472-4991

317 BERNICE DRIVE • BAYPORT, NEW YORK 11705 • (516) 472-4848

FINAL REPORT

TEST PROGRAM AT NWIRP

BETHPAGE, NY

PREPARED FOR:

HALLIBURTON NUS

CONTRACT NO. GCPP-92-067-1298

Date: January 19, 1993

NYS ELAP ID NO. 10058

CONSULTING CHEMISTS • COMPLETE LABORATORY TESTING

Prepared:

Tatiana Rothlisberger
Chemist

Reviewed:

Marek Frak, PhD.
Director, GC/MS Lab

Approved:

Sander R. Sternig
Laboratory Director

TABLE OF CONTENTS

INTERNAL QC DATA

INTRODUCTION

This report summarizes the results of the test program at the Naval Weapons Industrial Reserve Plant (NWIRP) at Bethpage, NY. This document, required by Item 4, Reporting, of the Statement of Work includes an overview of procedures and specific test results generated. Also included are daily logs, calibration data and QA/QC results. Test results from each of the twenty three runs include chromatography for data traceability.

The test program commenced on 12/4/92 and the last sample was collected on 12/16/92. A total of 26 samples were collected with 23 resulting scans. The remaining three samples were held, by direction, and ultimately discarded at the end of their shelf life.

Each sample was tested for the following compounds:

1,1-Dichloroethene
Trans 1,2-Dichloroethene
1,1-Dichloroethane
1,1,1-Trichloroethane
Trichloroethene
Tetrachloroethene
Vinyl Chloride
Cis-1,2-Dichloroethene

A full QA/QC program was run to ensure the accuracy of the results. Obtained recoveries of the daily calibration standards, matrix spikes and matrix spike duplicates fall within the permitted working ranges. Tested blanks ensure that no interference due to contamination occurred.

METHODOLOGY: EPA METHOD 601 - PURGEABLE HALOCARBONS

Summary of method: An inert gas (Nitrogen) is bubbled through a 5-ml water sample contained in a specially-designed purging chamber at ambient temperature (+ 26'C). The halocarbons are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent trap where the halocarbons are trapped. After purging is completed , the trap is heated and backflushed with the inert gas to desorb the halocarbons onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the halocarbons which are then detected with a halide-specific detector.

INSTRUMENTATION LIST:

1. Tracor 540 Gas Cromatograph.
2. Tracor 560/700A HALL Electrolytic Conductivity Detector.
3. Perkin Elmer LSC-2 Liquid Sample Concentrator.
4. Tekmar ALS model Automatic Lab. Sampler.
5. VOCOL Glass Capillary Column, 60 m, 0.75 mm ID, 1.50 um film thickness.

STANDARD QC 12/07/92

	AREA/100	RF	CONC	TARGET	% REC.
1,1-DICHLOROETHENE.....	22411.52	22569	19.9	20.0	99.30
trans-1,2-DICHLOROETHENE...	37327.05	33573	22.2	20.0	111.18
1,1-DICHLOROETHANE.....	29797.47	27983	21.3	20.0	106.48
1,1,1-TRICHLOROETHANE.....	21452.3	18949	22.6	20.0	113.21
1,2-DICHLOROETHANE.....	35566.16	31423	22.6	20.0	113.19
TRICHLOROETHENE.....	28205.52	25562	22.1	20.0	110.34
TETRACHLOROETHENE.....	23085.62	20437	22.6	20.0	112.96

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STANDARD 12/08/92

	AREA/100	RF	CONC	TARGET	% REC.
1,1-DICHLOROETHENE.....		22569	ERR	20.0	ERR
trans-1,2-DICHLOROETHENE...	33737	33573	20.1	20.0	100.49
1,1-DICHLOROETHANE.....	27542	27983	19.7	20.0	98.42
1,1,1-TRICHLOROETHANE.....	24728	18949	26.1	20.0	130.50
1,2-DICHLOROETHANE.....	31409	31423	20.0	20.0	99.96
TRICHLOROETHENE.....	26437	25562	20.7	20.0	103.42
TETRACHLOROETHENE.....	22799	20437	22.3	20.0	111.56

STANDARD 12/09/92

	AREA/100	RF	CONC	TARGET	% REC.
1,1-DICHLOROETHENE.....	27019	32864	16.4	20.0	82.21
trans-1,2-DICHLOROETHENE...	33556	33737	19.9	20.0	99.46
1,1-DICHLOROETHANE.....	26934	27542	19.6	20.0	97.79
1,1,1-TRICHLOROETHANE.....	20140	24728	16.3	20.0	81.45
1,2-DICHLOROETHANE.....	32343	31409	20.6	20.0	102.97
TRICHLOROETHENE.....	26476	26437	20.0	20.0	100.15
TETRACHLOROETHENE.....	22505	22799	19.7	20.0	98.71

STANDARD 12/10/92

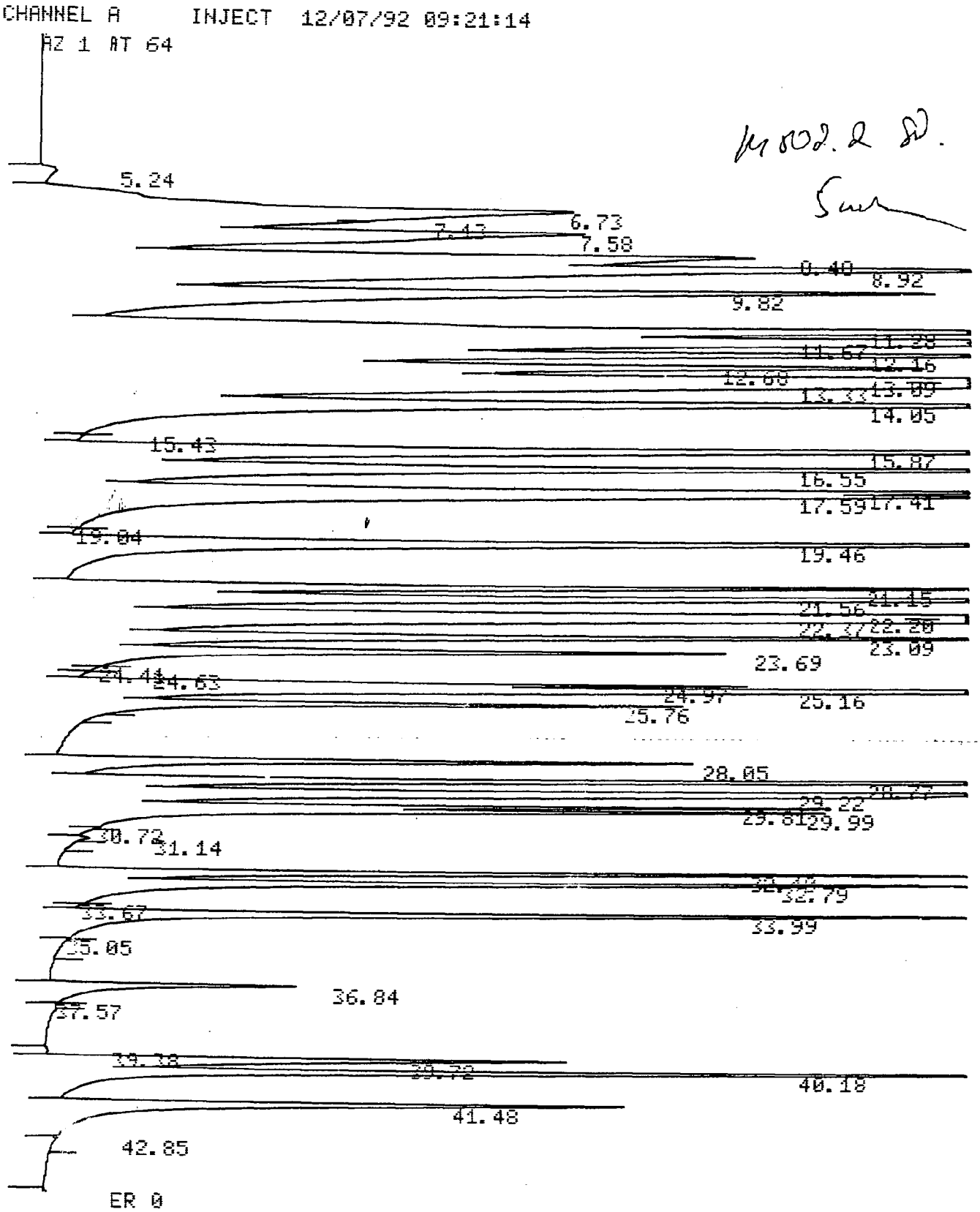
	AREA/100	RF	CONC	TARGET	% REC.
1,1-DICHLOROETHENE.....	21255	27019	15.7	20.0	78.67
trans-1,2-DICHLOROETHENE...	32532	33556	19.4	20.0	96.95
1,1-DICHLOROETHANE.....	26762	26934	19.9	20.0	99.36
1,1,1-TRICHLOROETHANE.....	20528	20140	20.4	20.0	101.92
1,2-DICHLOROETHANE.....	32133	32343	19.9	20.0	99.35
TRICHLOROETHENE.....	25561	26476	19.3	20.0	96.54
TETRACHLOROETHENE.....	20685	22505	18.4	20.0	91.91

STANDARD 12/16/92

	AREA/100	RF	CONC	TARGET	% REC.
1,1-DICHLOROETHENE.....	23074	21255	21.7	20.0	108.56
trans-1,2-DICHLOROETHENE...	37754	32532	23.2	20.0	116.05
1,1-DICHLOROETHANE.....	29417	26762	22.0	20.0	109.92
1,1,1-TRICHLOROETHANE.....	22599	20528	22.0	20.0	110.09
1,2-DICHLOROETHANE.....	34589	32133	21.5	20.0	107.64
TRICHLOROETHENE.....	27598	25561	21.6	20.0	107.97
TETRACHLOROETHENE.....	23691	20685	22.9	20.0	114.53

STANDARD 12/17/92

	AREA/100	RF	CONC	TARGET	% REC.
1,1-DICHLOROETHENE.....	21371	23074	18.5	20.0	92.62
trans-1,2-DICHLOROETHENE...	34782	37754	18.4	20.0	92.13
1,1-DICHLOROETHANE.....	27684	29417	18.8	20.0	94.11
1,1,1-TRICHLOROETHANE.....	22077	22599	19.5	20.0	97.69
1,2-DICHLOROETHANE.....	32625	34589	18.9	20.0	94.32
TRICHLOROETHENE.....	27844	27598	20.2	20.0	100.89
TETRACHLOROETHENE.....	23564	23691	19.9	20.0	99.47



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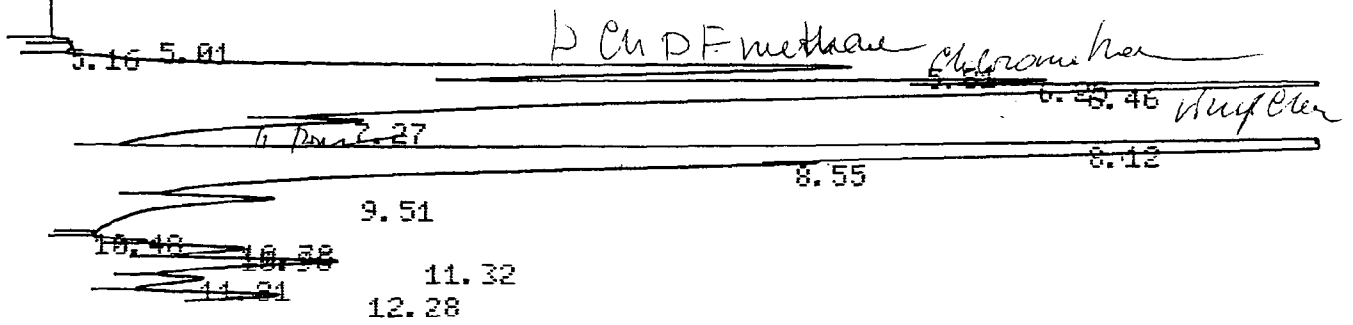
AZ 1 AT 64



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FILE 1. METHOD 0. RUN 702 INDEX 702

PEAK#	AREA%	RT	AREA	BC
1	0.07	5.01	10109	02
2	0.182	5.16	26418	02
3	12.191	5.81	1767810	02
4	8.364	6.25	1212826	02
5	24.154	6.46	3502543	02
6	4.647	7.27	673776	02
7	31.823	8.12	4614587	02
8	9.839	8.55	1426757	02
9	3.064	9.51	444371	02
10	0.015	10.48	2212	02
11	0.255	10.78	36937	02
12	1.473	10.96	213581	02
13	2.48	11.32	359685	02
14	0.712	11.81	103172	02
15	0.73	12.28	105837	03
TOTAL	100.		14500621	

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PT EVAL:
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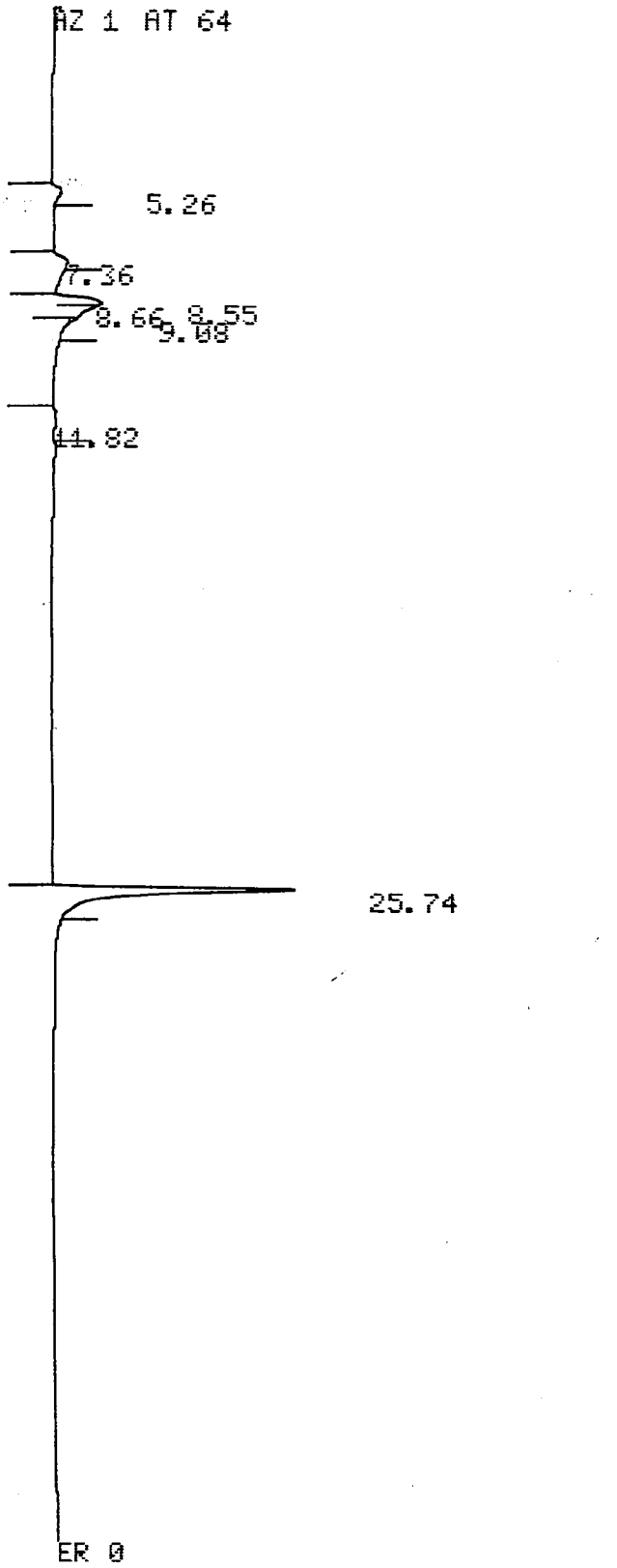

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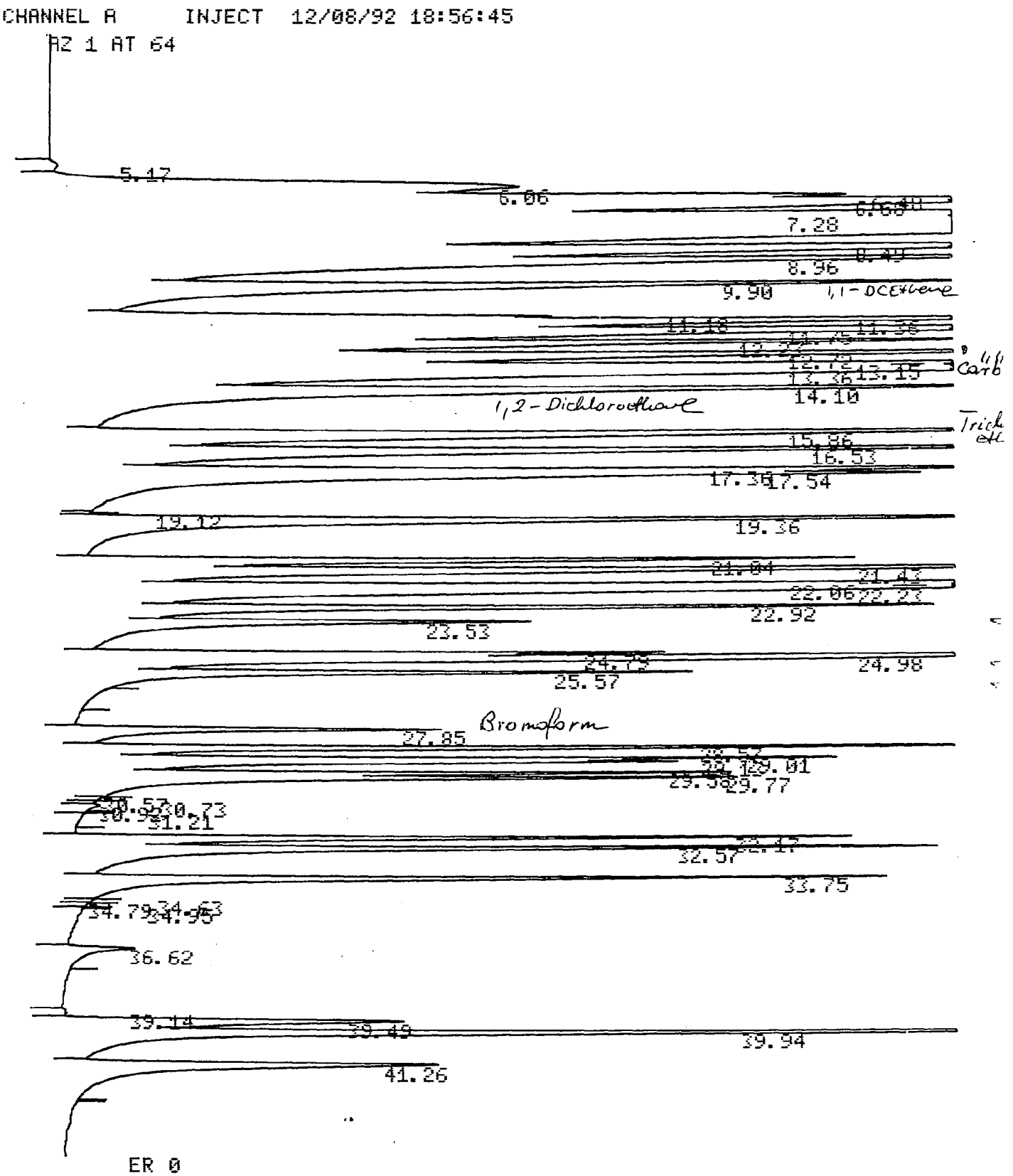

601 13 12/08/92 18:56:45 CH= "A" PS= 1.

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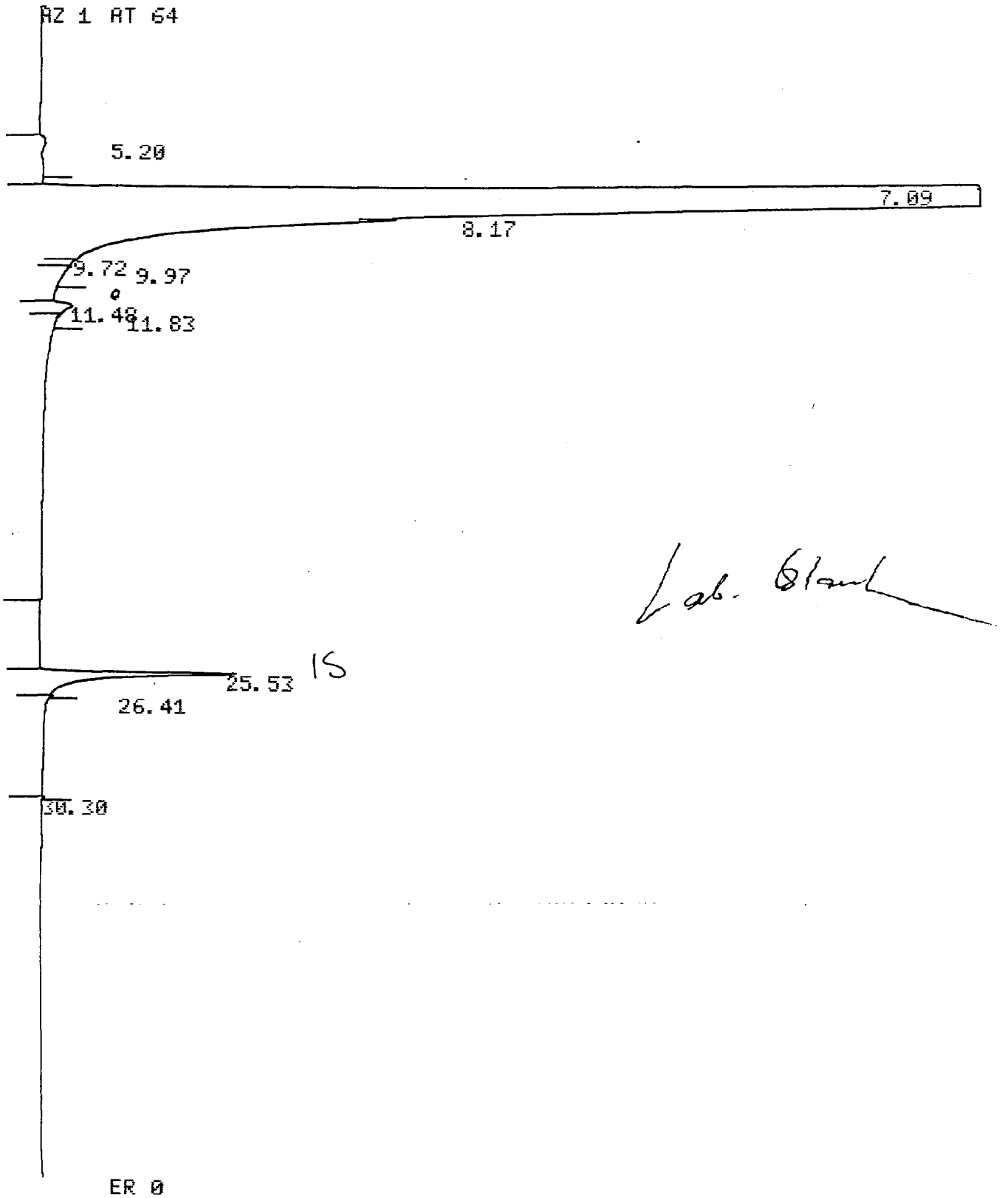

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601 12/08/92 19:53:06 CH= "A" PS= 1.

FILE 1. METHOD 0. ·RUN 705 INDEX 705

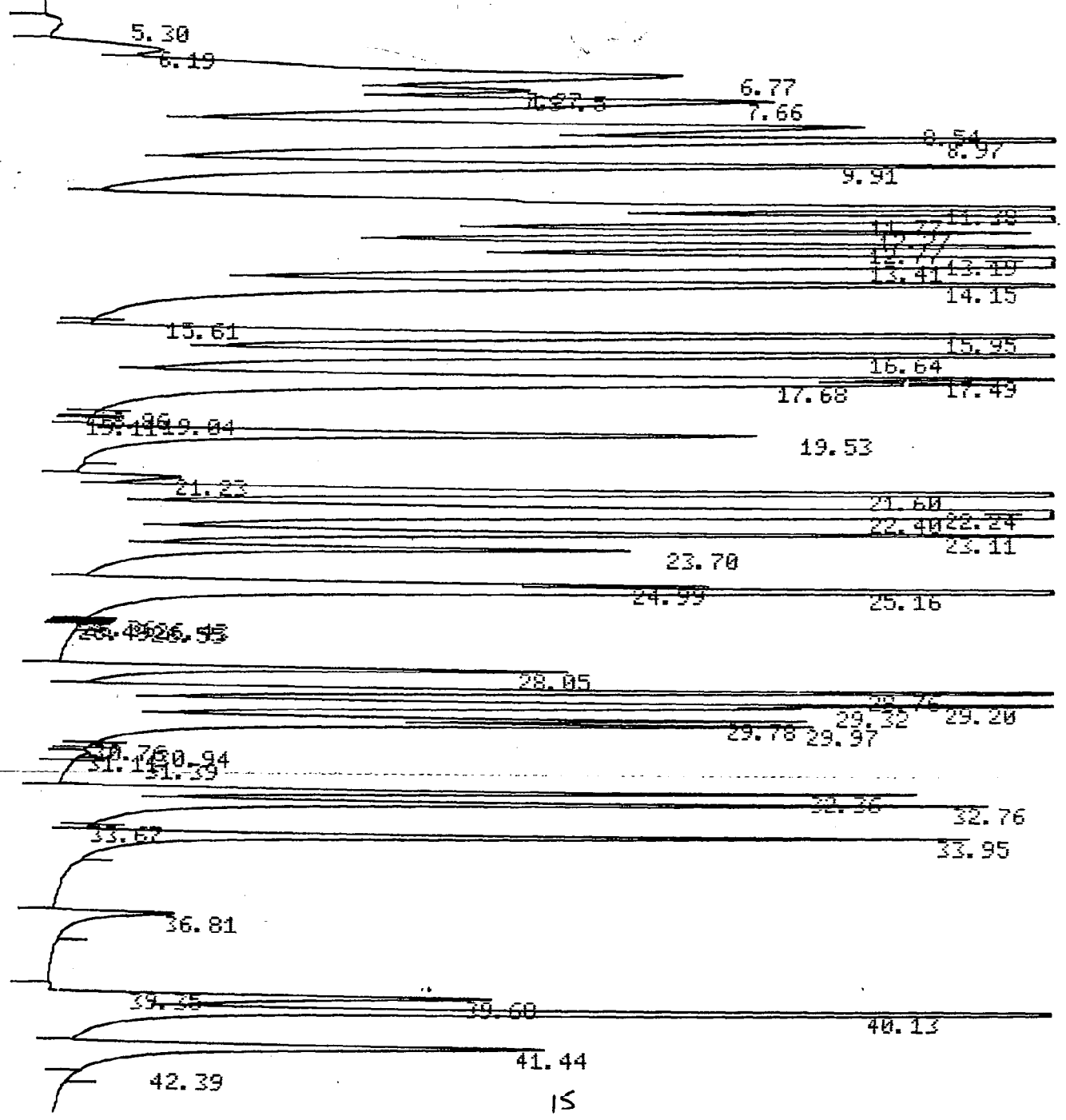
PEAK#	AREA%	RT	AREA	BC
1	0.13	5.2	25743	01
2	89.451	7.09	17722949	02

14

1393

CHANNEL A INJECT 12/09/92 11:13:39
AZ 1 AT 64

M502 Sul



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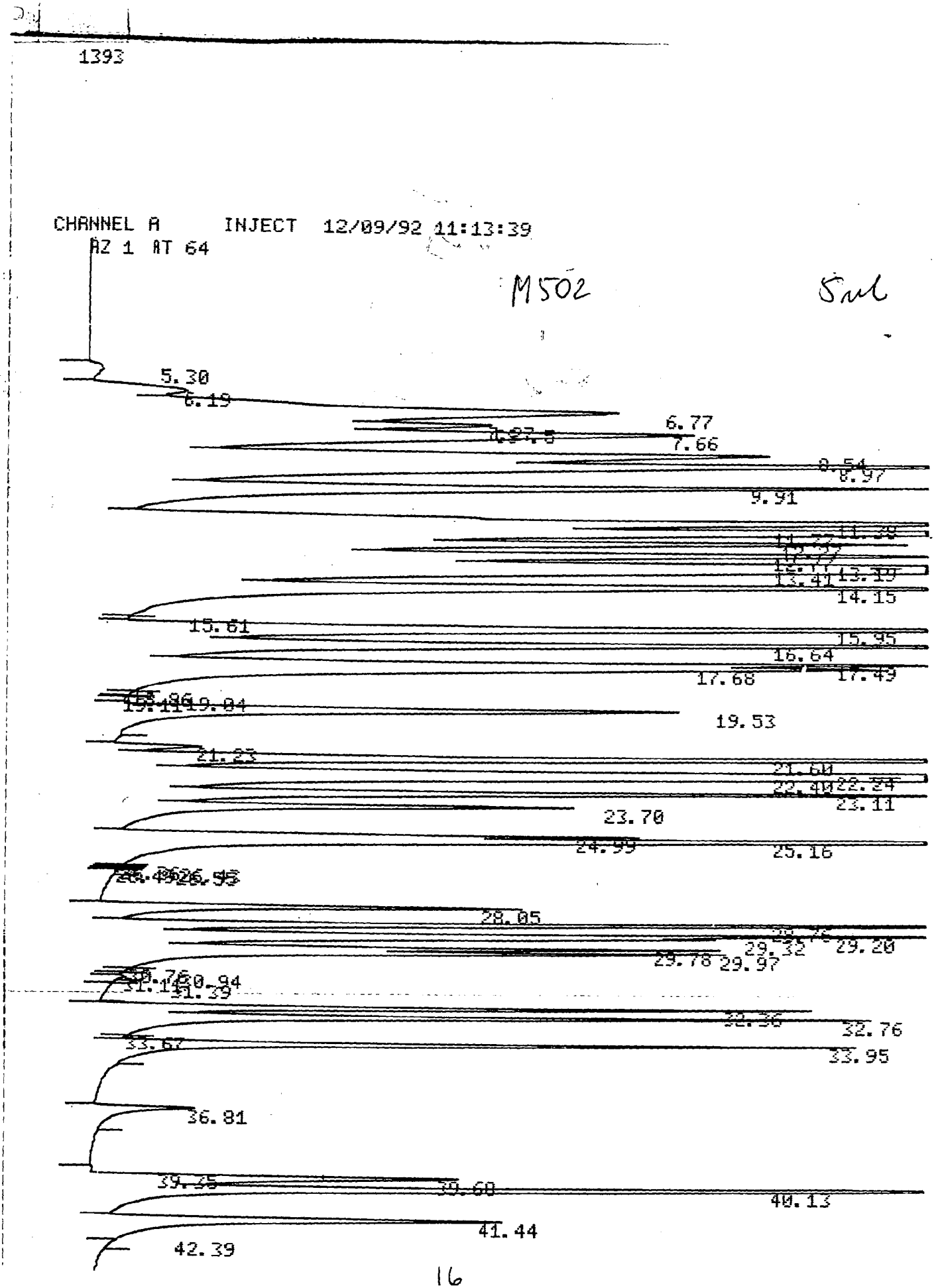

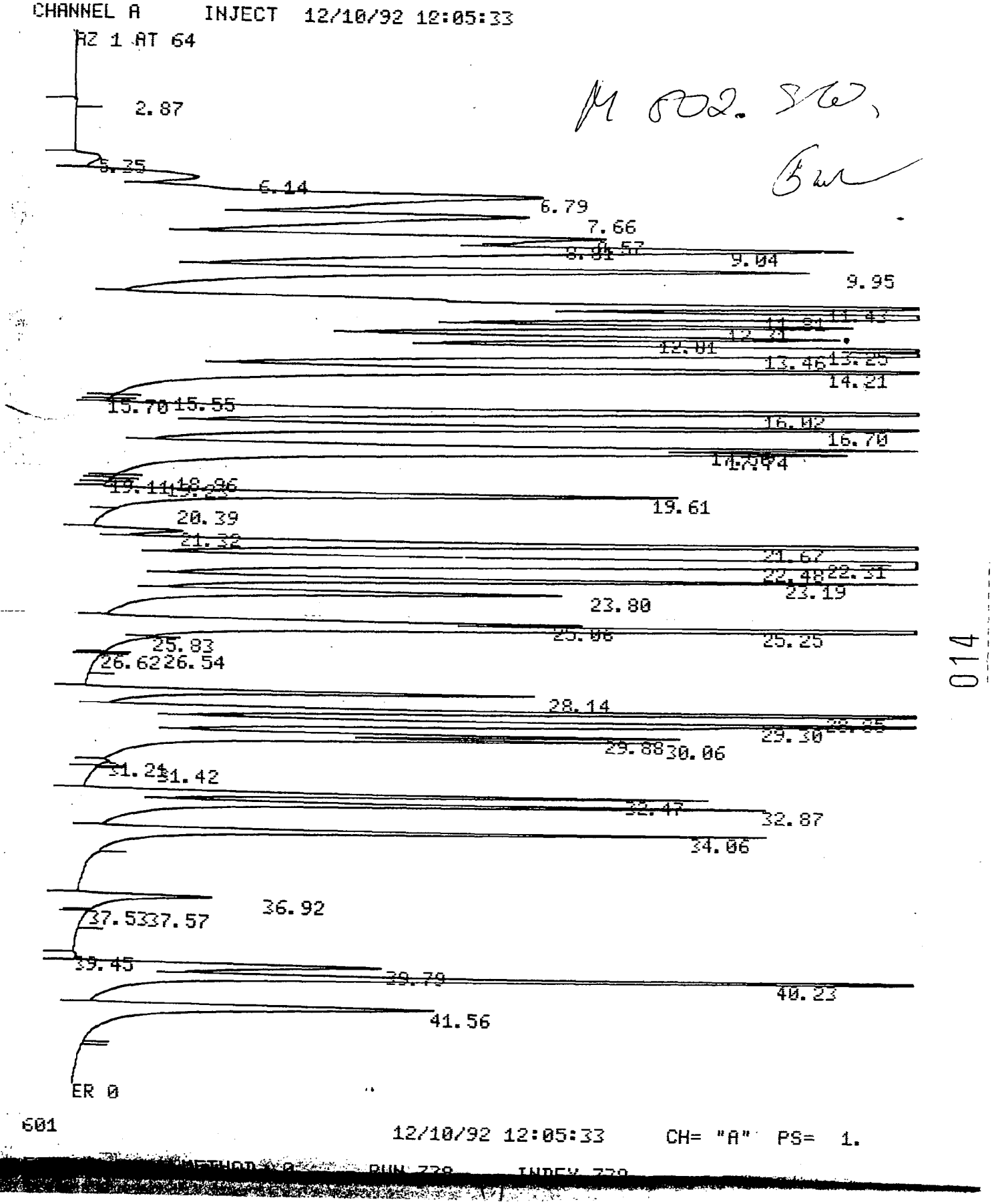

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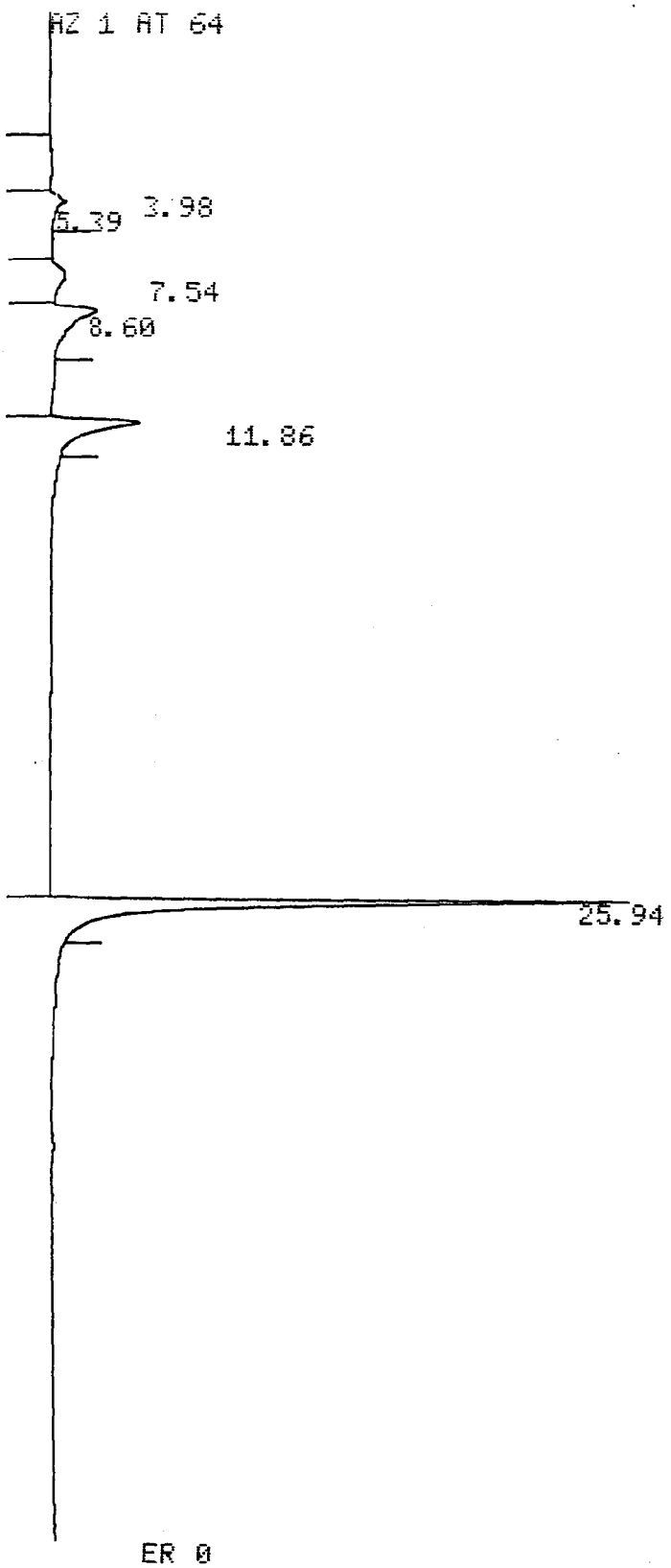
NYSDEC 033078



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016

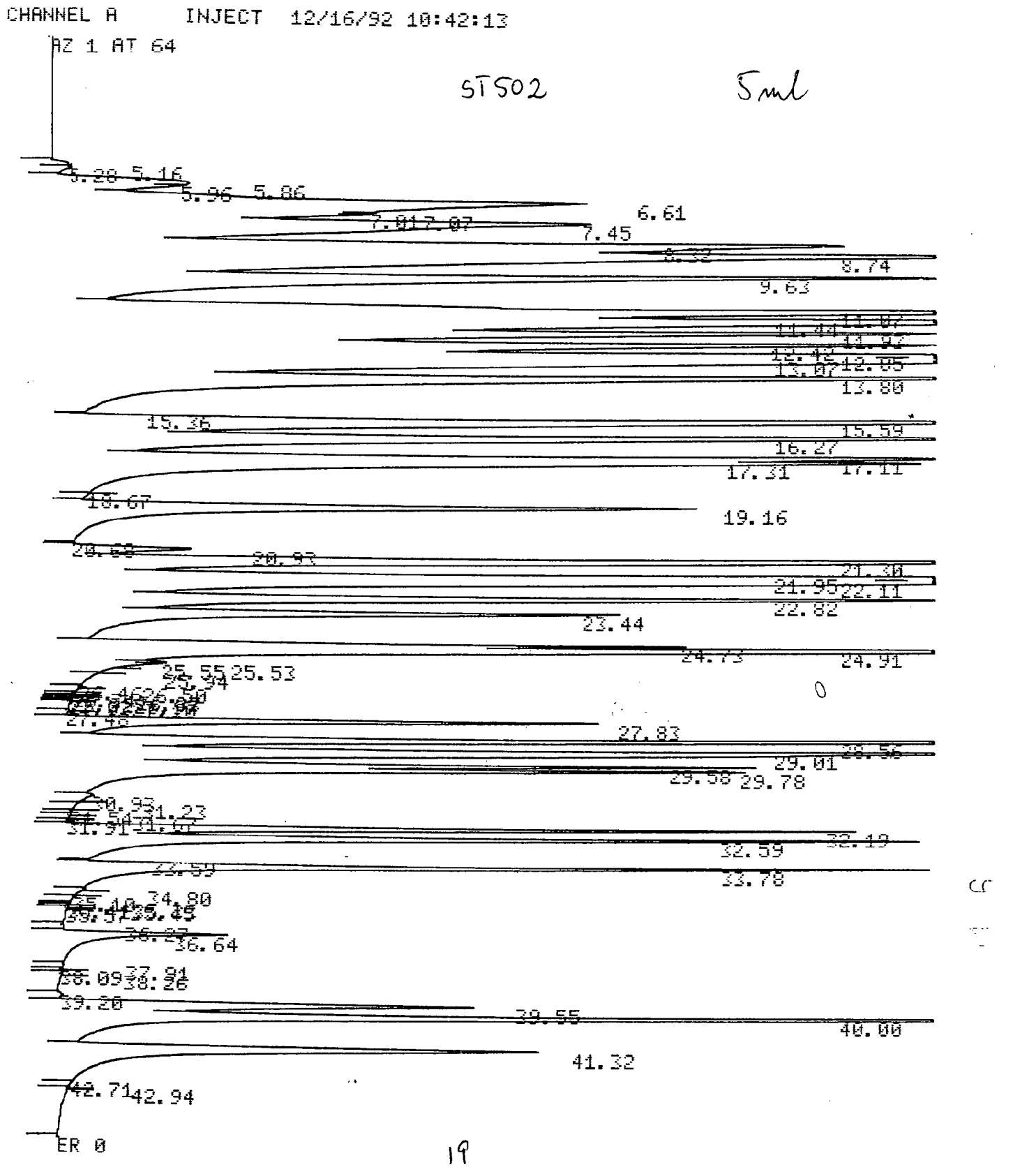
ER 0

601 12/10/92 12:57:57 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 739 INDEX 739

PEAK#	AREA%	RT	AREA BC
1	0.621	3.98	7934 02
2	2.597	5.39	33193 03
3	3.844	7.54	49127 02

18



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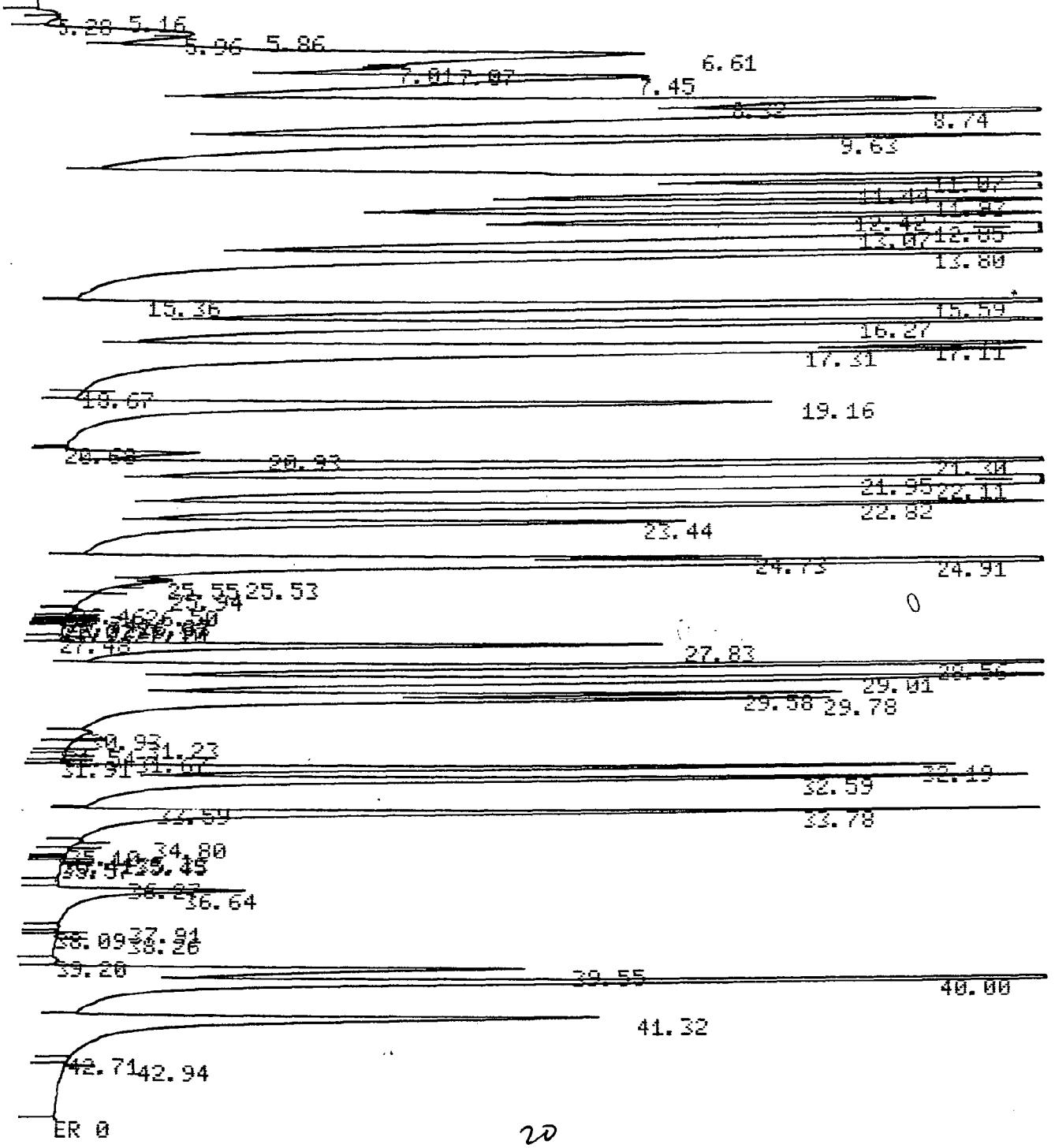


20

601 12/16/92 10:42:13 CH= "A" PS= 1.

INITIAL CALIBRATION

(IT WAS DONE USING M502.2 STANDARD,

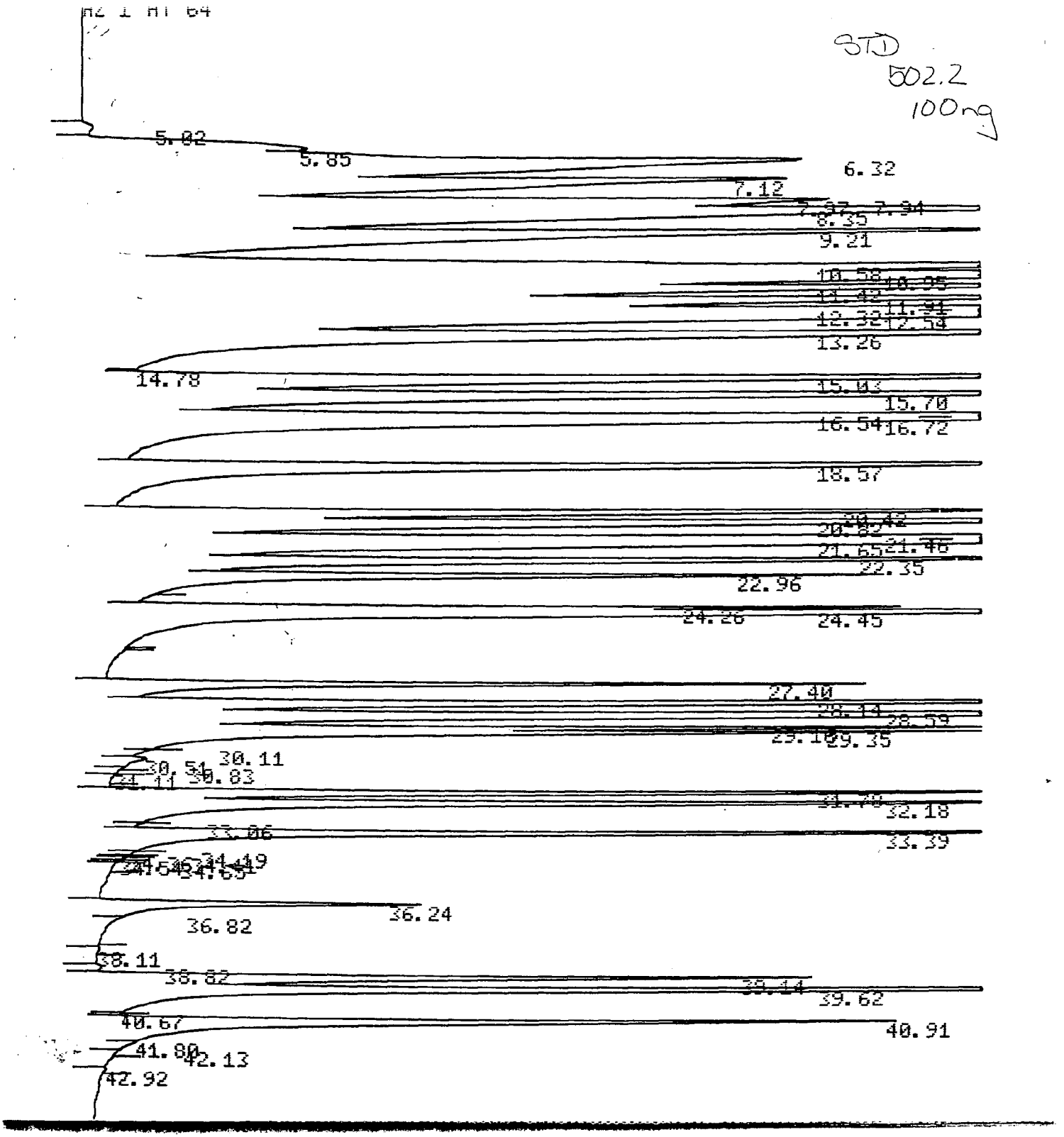
WHICH INCLUDES THE ANALYTES TESTED)

12/03/92
05:05:00 AM

QC EPA 502.2

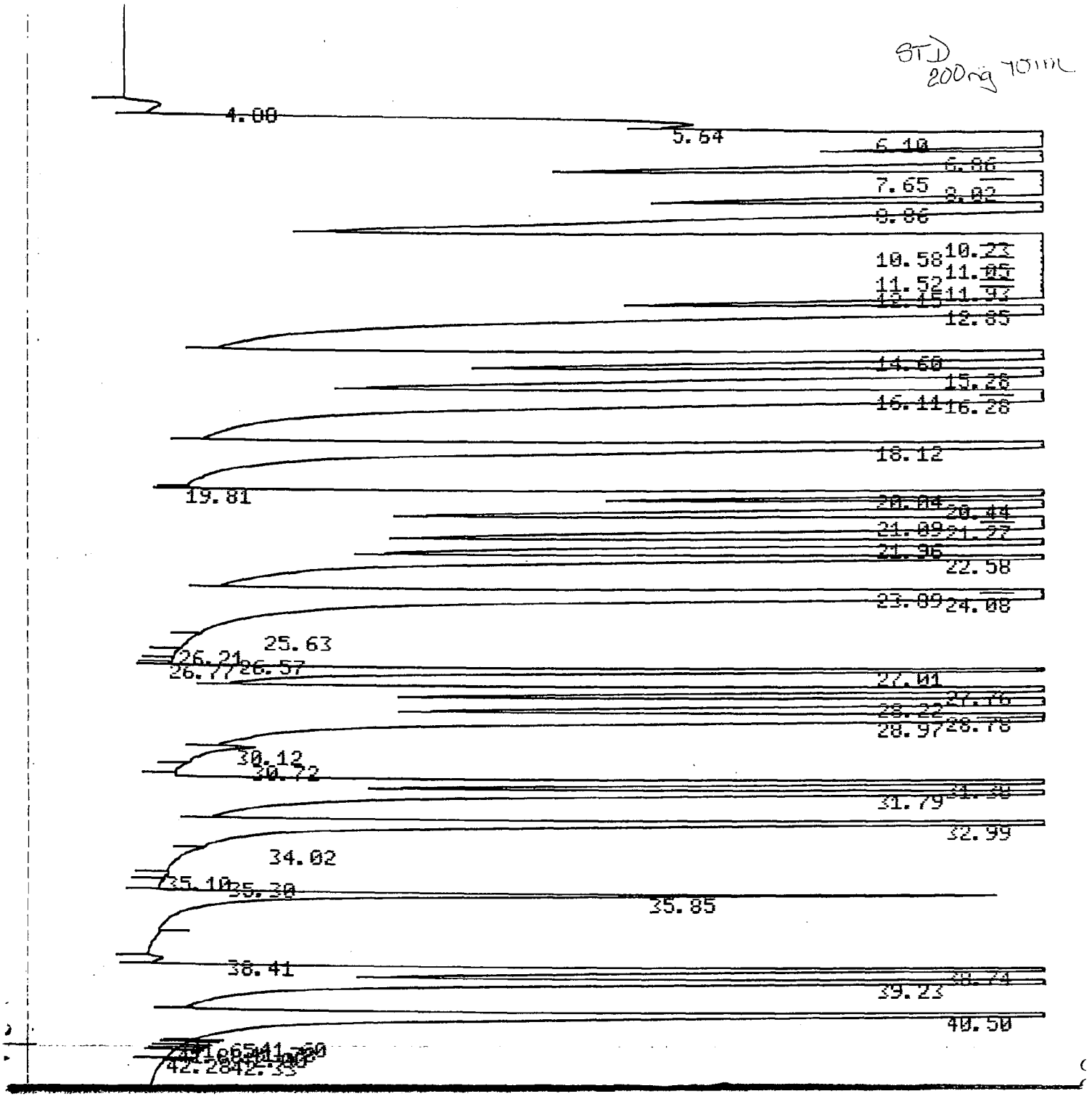
QC EPA 502.2

		RF8	RF2	RF4	RF6	RF10	AVG	SDEV
6	TRICHLOROFLUOROMETHANE	43740	38458	40817	156	52314	44097	5275.
7	1,1-DICHLOROETHENE	8348		9108	351	8407	6882.	ERR
8	METHYLENE CHLORIDE	19910	20161	29353	30919	30719	26212	5671.
9	trans-1,2-DICHLOROETHENE	28201	28715	19358	21052	24982	24461	4183.
10	1,1-DICHLOROETHANE	45652	45469	48210	49349	44064	46548	2164.
11	2,2-DICHLOROPROPANE	36275	36038	37485	37325	45303	38485	3863.
12	cis-1,2-DICHLOROETHENE	37711	35616	37435	33[illegible]	32635	35459	2202.
13	CHLOROFORM	49490	48201	48365	47	42019	47194	2955.
14	BROMOCHLOROMETHANE	27179	28477	29286	30[illegible]	27402	28631	1485.
15	1,1,1-TRICHLOROETHANE	29999	28551	28833	29610	25258	28450	1876.
16	1,1-DICHLOROPROPENE	19600	22714	23151	23383	19710	21711	1893.
17	CARBON TETRACHLORIDE	53081	46825	46966	44820	42188	46776	4020.
18	BENZENE	140.6	139	146	146.6	140.6	142.	3.482
19	1,2-DICHLOROETHANE	39025	44201	72891	84069	37530	555[illegible]	21451
20	TRICHLOROETHENE	32308	34922	33343	34146	30210	32985	1829.
21	1,2-DICHLOROPROPANE	31838	33800	31595	32932	30229	32078	1360.
22	BROMODICHLOROMETHANE	15207	17782	17853	19436	18228	17701	1544.
23	DIBROMOMETHANE	25900	32709	30431	32326	29995	30272	2709.
24	cis-1,3-DICHLOROPROPENE	26335	30516	30056	31083	28457	29289	1919.
25	TOLUENE	145.1	158	159.9	145.6	145.1	150.7	7.527
26	trans-1,3-DICHLOROPROPEN	13874	17839	19994	21116	19505	18465	2824.
27	TETRACHLOROETHENE	27780	30239	31698	31206	25922	29369	2447.
28	1,3-DICHLOROPROPANE	39650	54379	42005	42637	38694	43473	6309.
29	DIBROMOCHLOROMETHANE	18941	16447	23680	25334	23409	21562	3713.
30	1,2-DIBROMOETHANE	11535	11612	19967	20873	18867	16570	4616.
31	CHLOROBENZENE	122.5	132	136	138.3	122.5	130.2	7.433
32	1,1,1,2-TETRACHLOROETHAN	43204	44770	47769	47568	41119	44886	2852.
33	ETHYLBENZENE	137.6	179	169	163.8	137.6	157.4	18.88
34	m-XYLENE	170.7	228	212	204	170.7	197.0	25.58
35	p-XYLENE	170.7	228	212	204	170.7	197.0	25.58
36	o-XYLENE	138.9	160	159	160	138.9	151.3	11.38
37	STYRENE	209.8	242	238	242	209.8	228.3	16.98
38	BROMOFRORM	7195	11825	13642	15559	14479	12540	3285.
39	1,2,3-TRICHLOROPROPANE	11398	16500	17245	37015	31190	22669	10873
40	ISOPROPYLBENZENE	119.4	141	137	132	115.5	128.9	11.08
41	1,1,2,2-TETRACHLOROETHAN	43204	27032	28058	30938	26521	31150	6951.
42	BROMOBENZENE	11398	16500	17245	37015	31190	22669	10873
43	1,2,3-TRIMETHYLBENZENE	173.2	218	207	197	173.5	193.7	20.04
44	n-PROPYLBENZENE	137.3	165	182	158	137.3	155.9	19.10
45	2-CHLOROTOLUENE	9121	10302	10687	10704	9461	10055	725.7
46	1,3,5-TRIMETHYLBENZENE	173.2	218	207	197	173.2	193.6	20.11
47	4-CHLOROTOLUENE	17808	18730	16713	16580	13721	16710	1886.
48	tetr-BUTYLBENZENE	91.4	110	105	96.2	91.4	98.8	8.368
49	1,2,4-TRIMETHYLBENZENE	167	206	199	192.9	167	186.3	18.28
50	sec-BUTYLBENZENE	107.7	131	123	112.8	107.7	116.4	10.25
51	p-ISOPROPYLTOLUENE	119.4	147	135	125	119.4	129.1	11.83
52	[illegible],3-DICHLOROBENZENE	12145	14414	15116	15711	14284	14334	1351.
53	[illegible],4-DICHLOROBENZENE	19526	21089	21076	21231	18394	20263	1256.
54	n-BUTYLBENZENE	107.9	132	120	110.6	107.9	115.6	10.39
55	1,2-DICHLOROBENZENE	16265	18957	19286	20163	17911	18516	1494.
56	1,2-DIBROMO-3-CHLOROPROP	1740	5724	6713	8740	7016	5986.	2611.
57	1,2,4-TRICHLOROBENZENE	63.4	60	61.5	67.4	63.4	62.74	2.061
58	HEXACHLOROBUTADIENE	33451	28664	23417	20.34	19974	25138	5824.
59	NAPHTHALENE	157.3	156	154	188.6	157.3	162.6	14.57
60	1,2,3-TRICHLOROBENZENE	12303	16035	17513	17660	16974	16097	2214.



FILE 1. METHOD 0. RUN 633 INDEX 633

PEAK#	AREA%	RT	AREA BC		RT
1	0.03	5.02	30194 02		
2	0.671	5.85	686662 02		
3	3.759	6.32	3845753 02	TRICHLOROFLUOROMETHANE	38458
4	2.807	7.12	2871488 02	1,1 DICHLOROMETHANE	28715
5	0.89	7.94	910642 02	(meth	
6	1.169	7.97	1195551 02	TRANS 1,2-DICHLOROETHENE	
7	4.444	8.35	4546907 02	1,1-DICHLOROETHANE	45469
8	3.522	9.21	3603754 02	2,2-DICHLOROPROPANE	36038
9	3.481	10.58	3561635 02	CIS 1,2-DICHLOROETHENE	35616
10	4.711	10.95	4820135 02	CHLOROFORM	48201
11	2.783	11.42	2847743 02	BROMOCHLOROMETHANE	28477
12	2.791	11.91	2855144 02	1,1,1-TRICHLOROETHANE	28551
13	2.22	12.32	2271446 02	1,1-DICHLOROPROPENE	22714
14	4.577	12.54	4682505 02	CARBON TETRACHLORIDE	46825
15	4.32	13.26	4420108 08	1,2 DICHLOROETHANE	44201
16	0.	14.78	61 06		
17	3.413	15.03	3492168 02	TRICHLOROETHENE	34922
18	3.304	15.7	3379965 02	~~TRICHLOROETHENE~~ 1,2-DICHLOROPROPANE	~~33808~~ 33808
19	1.738	16.54	1778181 02	BROMODICHLOROMETHANE	17782
20	3.197	16.72	3270899 02	DIBROMOMETHANE	32709
21	2.983	18.57	3051455 02	CIS 1,3 DICHLOROPROPENE	30516
22	1.744	20.42	1783858 02	TRANS-1,3-DICHLOROPROPENE	17839
23	3.891	20.82	3981038 02	1,1,2 TRICHLOROETHANE	39810
24	2.956	21.46	3023949 02	TETRACHLOROETHENE	30239
25	5.315	21.65	5437936 08	1,3 DICHLOROPROPANE	54379
26	1.608	22.35	1644666 06	DIBROMOCHLOROMETHANE	16447
27	1.135	22.96	1161159 07	1,2 DIBROMOETHANE	11612
28	0.697	24.26	713308 06	CHLOROBENZENE	7133
29	4.376	24.45	4476953 07	1,1,1,2-TETRACHLOROETHANE	44770
30	1.156	27.4	1182468 02	BROMOFORM	11825
31	2.642	28.14	2703189 02	1,1,2,2 TETRACHLOROETHANE	27032
32	3.226	28.59	3300188 02	BROMOBENZENE/1,2,3 TRICHLOROPROPANE	16500
33	1.007	29.16	1030229 02	2-CHLOROTOLUENE	10303
34	1.831	29.35	1872966 08	4-CHLOROTOLUENE	18736
35	0.	30.11	15 05		
36	0.023	30.51	23599 06		
37	0.001	30.83	977 07		
38	0.	31.11	72 05		
39	1.409	31.78	1441438 02	1,3-DICHLOROBENZENE	14414
40	2.061	32.18	2108894 08	1,4-DICHLOROBENZENE	21089
41	0.	33.06	50 05		
42	1.853	33.39	1895693 08	1,2 DICHLOROBENZENE	18957
43	0.	34.19	151 05		
44	0.	34.36	42 05		
45	0.	34.41	69 05		
46	0.	34.54	63 05		
47	0.	34.65	124 05		
48	0.559	36.24	572416 02	1,2 DIBROMO-3-CHLOROPROPANE	5724
49	0.071	36.82	72920 03		
50	0.003	38.11	2851 01		
51	0.008	38.82	7790 02		
52	1.198	39.14	1225266 02	1,2,4 TRICHLOROBENZENE	12253
53	2.802	39.62	2866428 08	HEXACHLOROBUTADIENE	28664
54	0.	40.67	70 05		
55	1.567	40.91	1603477 06	1,2,3 TRICHLOROBENZENE	16035
56	0.041	41.8	41460 06		
57	0.007	42.13	7479 07		
58	0.003	42.92	3197 01		
TOTAL	100.		102308844		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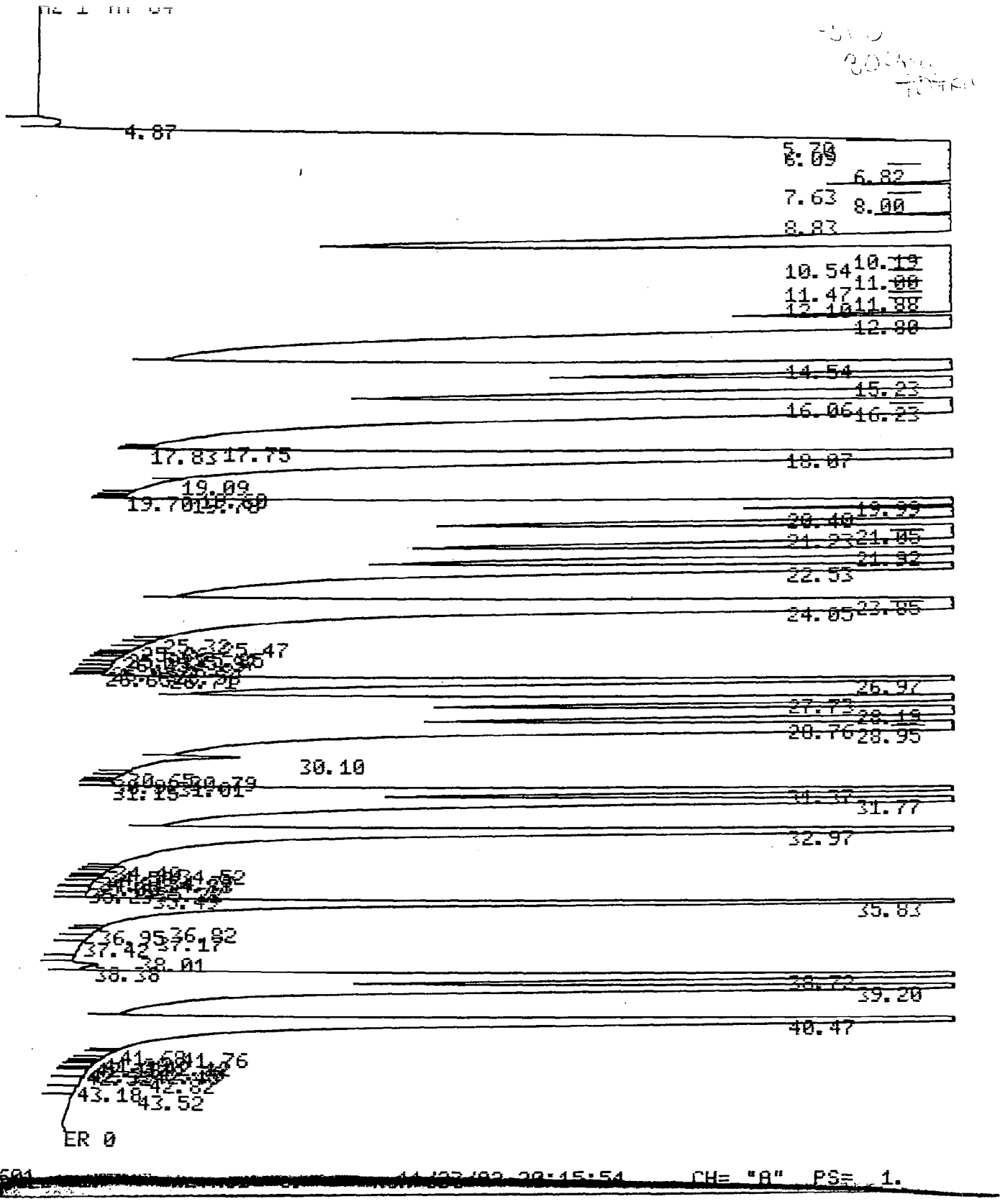
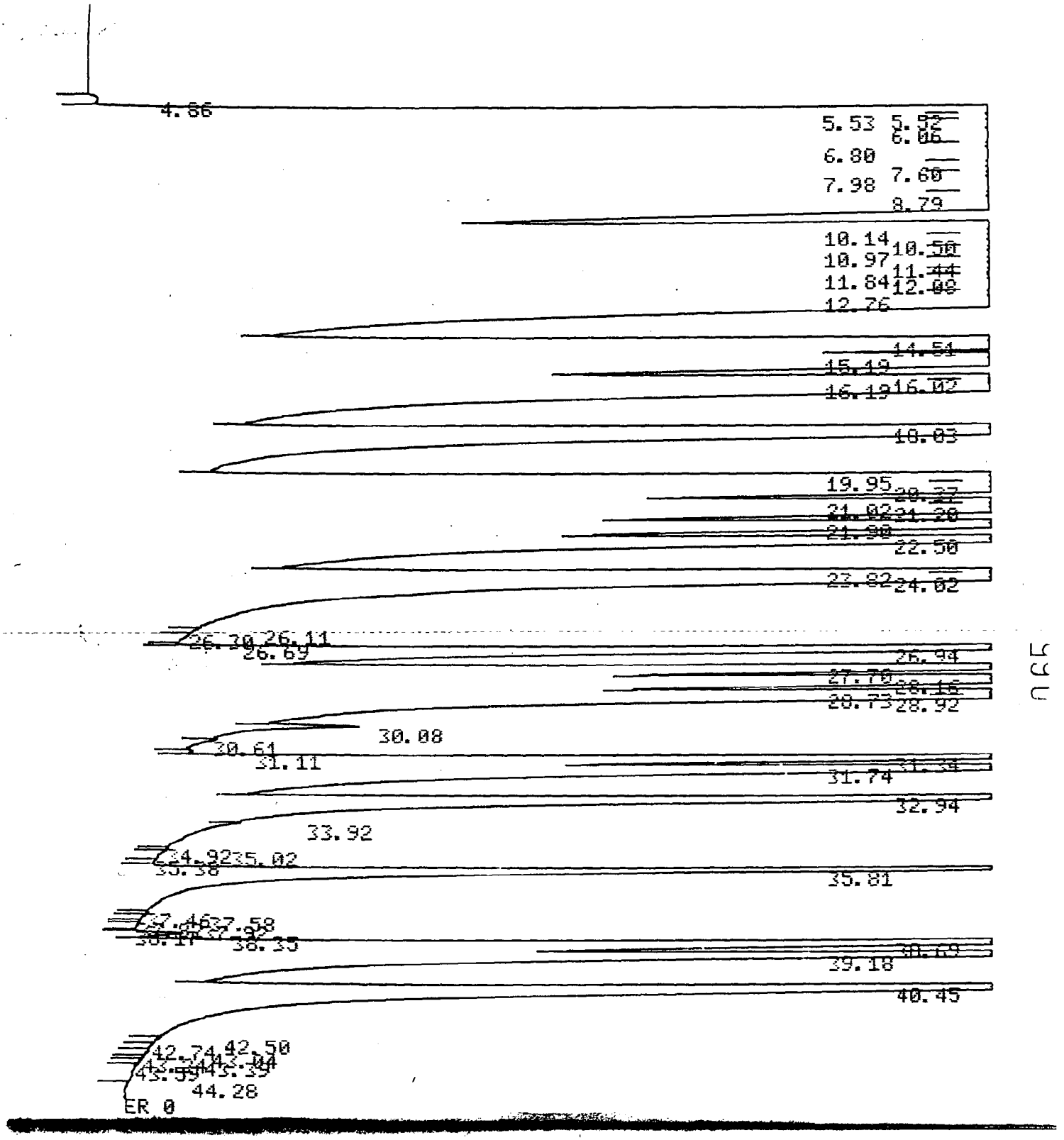
200ng 10mL
4.00
5.64
6.10
6.86
7.65
8.02
8.86
10.58
10.23
11.52
11.05
11.97
12.85
14.60
15.26
16.11
16.28
18.12
19.81
20.04
20.44
21.09
21.27
21.96
22.58
23.09
24.08
25.63
26.21
26.57
26.77
27.01
28.22
28.78
28.97
30.12
30.72
31.79
32.99
34.02
35.10
35.30
35.85
38.41
39.23
40.50
42.28

PEAK#	AREA%	RT	AREA BC	
1	0.052	4.88	110706 02	
2	0.851	5.64	1821592 02	Trichlorofluoromethane 9108
3	3.816	6.1	8163449 02	~~Trichlorofluoromethane~~ 4587 1,1-Dichloroethane
4	2.744	6.86	5870634 02	~~1,1 Dichloroethane~~ 29353 methylene Chloride
5	1.805	7.65	3861660 02	1 TRANS 1,2 Dichloroethene 19358
6	4.507	8.02	9642140 02	1,1-Dichloroethane 48210
7	3.504	8.86	7497180 02	2,2 Dichloropropane 37485
8	3.406	10.23	7287046 02	CIS 1,2 Dichloroethene 37485
9	4.521	10.58	9673030 02	Chloroform 48365
10	2.738	11.05	5857313 02	Bromochloromethane 29286
11	2.696	11.52	5766750 02	1,1,1 Trichloroethane 28833
12	2.164	11.93	4630353 02	1,1 Dichloropropene 23151
13	4.391	12.15	9393236 02	Carbon Tetrachloride 46966
14	6.814	12.85	14578312 08	1,2 Dichloroethane 72891
15	3.117	14.6	6668638 06	Trichloroethene 33343
16	2.954	15.28	6319009 06	1,2 Dichloropropane 91595
17	1.669	16.11	3570622 06	Bromodichloromethane 17853
18	2.845	16.28	6086268 06	Dibromomethane 30431
19	2.81	18.12	6011327 06	CIS 1,3-Dichloropropene 80056
20	0.001	19.81	1137 06	
21	1.822	20.04	3898847 06	TRANS 1,3 Dichloropropene 19904
22	3.818	20.44	8167535 06	1,1,2 Trichloroethane 40837
23	2.963	21.09	6339645 06	Tetrachloroethene 31698
24	3.927	21.27	8401030 06	1,3 Dichloropropane 42005
25	2.214	21.96	4736183 06	#2 Dibromochloromethane 23680
26	1.82	22.58	3893567 06	1,2 Dibromoethane 19967
27	0.82	23.89	1754565 06	Chlorobenzene 8771
28	4.466	24.08	9553864 06	1,1,1,2 Tetrachloroethane 48769
29	0.042	25.63	90058 06	
30	0.009	26.21	19572 06	
31	0.002	26.57	3482 06	
32	0.001	26.77	1505 06	
33	1.275	27.01	2728438 06	Bromoform B042
34	2.623	27.76	5611661 06	1,1,2,2 Tetrachloroethane 28058
35	3.224	28.22	6898328 06	Bromobenzene 1,2,3 Trichloropropane ~~34461~~ 1/2
36	0.999	28.78	2137485 06	2 Chlorotoluene 10687
37	1.563	28.97	3342774 06	4 Chlorotoluene 16713
38	0.123	30.12	263703 06	
39	0.025	30.72	53930 06	
40	1.413	31.38	3023261 06	1,3 Dichlorobenzene 15116
41	1.97	31.79	4215361 06	1,4 Dichlorobenzene 21076
42	1.803	32.99	3857364 06	1,2 Dichlorobenzene 19286
43	0.078	34.02	165851 06	
44	0.009	35.1	18593 06	
45	0.004	35.3	8992 06	
46	0.628	35.85	1342681 07	1,2-Dibromo 3 Chloropropane 6713
47	0.009	38.41	19314 02	
48	1.164	38.74	2490839 02	1,2,4 Trichlorobenzene 12454
49	2.189	39.23	4683558 02	Hexachlorobutadiene 23417
50	1.591	40.5	3402714 08	1,2,3 Trichlorobenzene 17513
51	0.	41.6	55 05	
52	0.	41.65	109 05	
53	0.	41.78	120 05	
54	0.	41.88	30 05	
55	0.	42.	161 05	
56	0.	42.28	88 05	
57	0.	42.33	115 05	

061



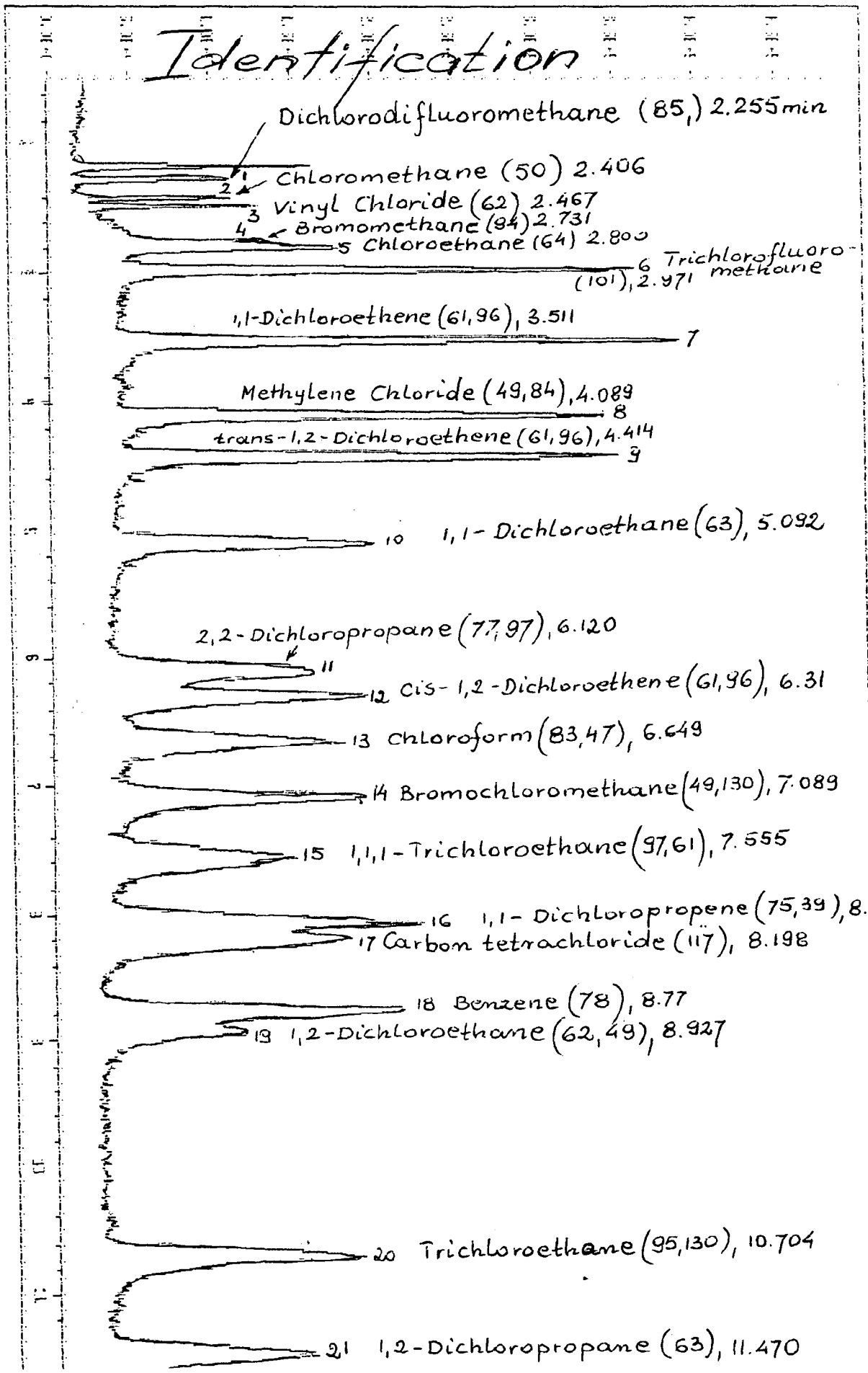
PEAK#	AREA%	RT	AREA	BC	
1	0.016	4.87	52741	02	
2	0.769	5.7	2565326	02	Trichlorofluoromethane 5911
3	4.062	6.09	13546813	02	1,1 Dichloromethane 18[illegible]
4	2.781	6.82	9275799	02	methylene chloride 30419
5	1.894	7.63	6315475	02	trans 1,2-Dichloroethene 21552
6	4.439	8.	14804822	02	1,1-Dichloroethane 49219
7	3.357	8.83	11197392	02	2,2 Dichloropropane 37325
8	3.049	10.19	10169654	02	cis 1,2 Dichloroethene 3[illegible]
9	4.308	10.54	14369021	02	Chloroform [illegible]
10	2.771	11.	9243453	02	Bromochloromethane 28912
11	2.663	11.47	8882882	02	1,1,1-Trichloroethane 29610
12	2.103	11.88	7015007	02	1,1-Dichloropropene [illegible]
13	4.031	12.1	13446112	02	CARBON Tetrachloride 44820
14	7.562	12.8	25220847	08	1,2 Dichloroethane 84069
15	3.071	14.54	10243650	06	Trichloroethene 34196
16	2.962	15.23	9879549	06	1,2 Dichloropropane 82932
17	1.748	16.06	5830886	06	Bromodichloromethane 1[illegible]
18	2.908	16.23	9697896	06	DiBromomethane 32326
19	0.003	17.75	10530	06	
20	0.002	17.83	6217	06	
21	2.796	18.07	9324910	06	cis 1,3 Dichloropropene 31083
22	0.035	19.09	117408	06	~~trans #3~~
23	0.002	19.6	6615	06	
24	0.001	19.7	2429	06	
25	0.	19.78	490	06	
26	1.899	19.99	6334886	06	trans 1,3 Dichloropropene 21116
27	3.89	20.4	12974921	06	1,1,2 Trichloroethane 43250
28	2.807	21.05	9361355	06	Tetrachloroethene 31206
29	3.835	21.23	12790964	06	1,3 Dichloropropane 42637
30	2.279	21.92	7600087	06	Dibromochloromethane 25334
31	1.877	22.53	6261792	06	1,2 Dibromomethane 20873
32	0.874	23.85	2913549	06	Chlorobenzene 9712
33	4.279	24.05	14270539	06	1,1,1,2 Tetrachloroethane 41568
34	0.018	25.32	58745	06	
35	0.02	25.47	68159	06	
36	0.017	25.66	55996	06	
37	0.003	25.85	10074	06	
38	0.003	25.91	10349	06	
39	0.004	25.97	13341	06	
40	0.008	26.05	27550	06	
41	0.004	26.27	13471	06	
42	0.003	26.43	9778	06	
43	0.	26.56	1461	06	
44	0.001	26.65	3519	06	
45	0.	26.71	1204	06	
46	1.4	26.97	4667842	06	Bromoform 15559
47	2.783	27.73	9281391	06	~~1,1,2,2-Tetrachloroethane~~ 30928
48	3.329	28.19	11104603	06	Bromobenzene 1,2,3 Trichloropropane 37015
49	0.963	28.76	3211233	06	2-Chlorotoluene [illegible] 10704
50	1.487	28.95	4958958	06	4-chlorotoluene 16580
51	0.118	30.1	393188	06	~~4-chlorotoluene~~
52	0.013	30.65	43650	06	
53	0.011	30.79	35730	06	
54	0.004	30.92	14577	06	
55	0.003	31.01	10449	06	
56	0.009	31.15	29443	06	
57	1.413	31.37	4713427	06	1,3 Dichlorobenzene 15711
58	1.91	31.77	6369283	06	1,4 21231
59	1.814	32.97	6048847	06	1,2 20163
60	0.008	34.4	25706	06	
61	0.007	34.52	22570	06	
62	0.011	34.58	37967	06	

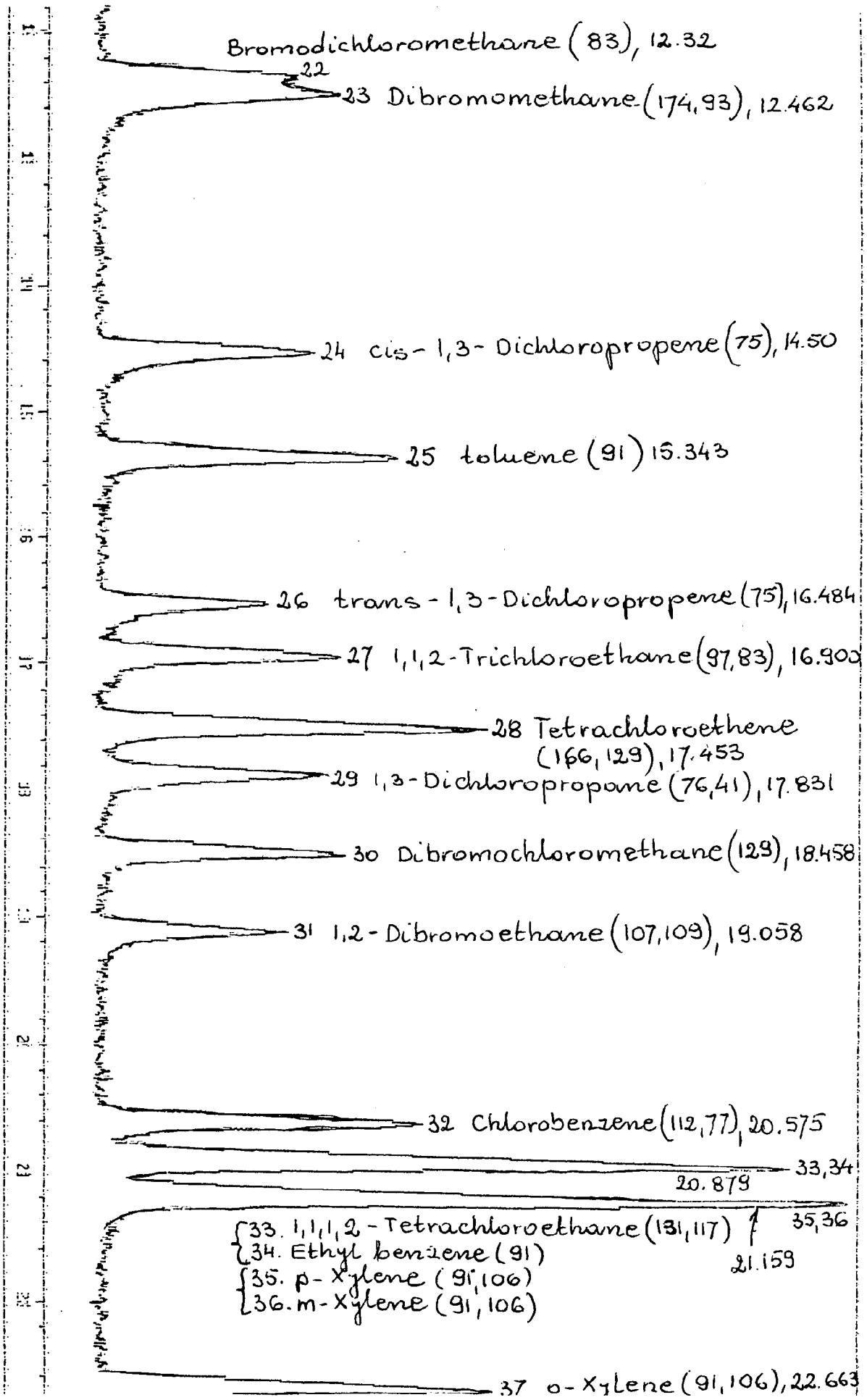


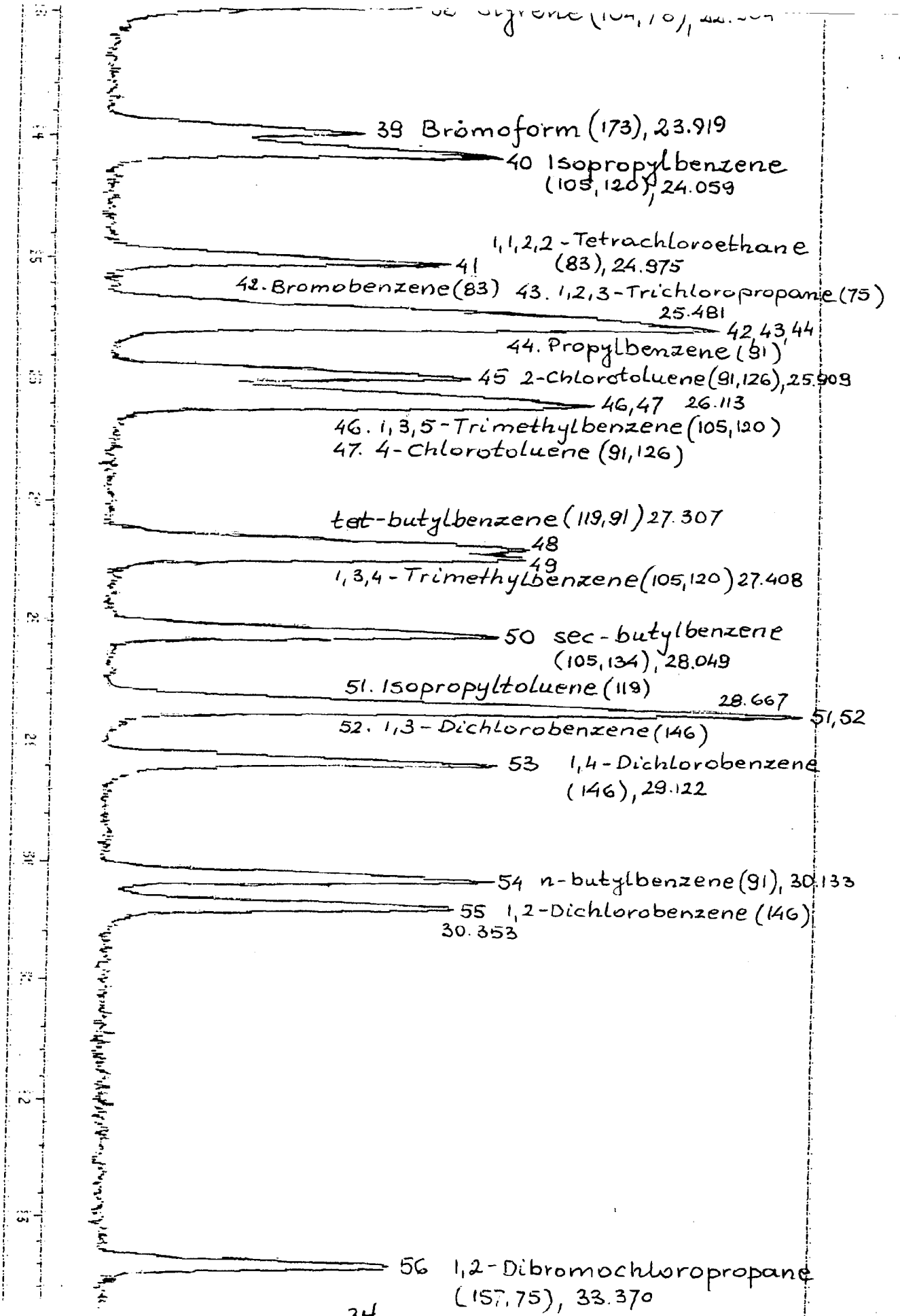
2	1.105	5.32	3760926	06		
3	0.803	5.53	4203567	02	Trichlorofluoromethane	19968
4	4.998	6.06	26156947	02	1,1 Dichloroethane	52314
5	2.935	6.8	15359625	02	methylene chloride	90119
6	2.387	7.6	12490835	02	trans 1,2 Dichloroethane	21932
7	4.21	7.98	22031846	02	1,1 Dichloroethane	44064
8	8.657	8.79	45303167	08	2,2 Dichloropropane	93550
9	3.118	10.14	16317690	06	cis 1,2 Dichloroethene	91622
10	4.014	10.5	21009308	06	chloroform	42019
11	2.618	10.97	13701158	06	Bromochloromethane	27402
12	2.413	11.44	12629171	06	1,1,1 Trichloroethane	25258
13	1.883	11.84	9854972	06	1,1 Dichloropropene	19700
14	4.031	12.08	21094095	06	carbon tetrachloride	42188
15	3.586	12.76	18764781	06	1,2 Dichloroethane	37580
16	2.886	14.51	15105210	06	Trichloroethene	30210
17	2.888	15.19	15114743	06	1,2 Dichloropropane	30229
18	1.742	16.02	9114107	06	Bromodichloromethane	18228
19	2.866	16.19	14997474	06	Dibromomethane	29995
20	2.719	18.03	14228463	06	cis 1,3 Dichloropropene	28457
21	1.864	19.95	9752696	06	trans 1,3 Dichloropropene	19505
22	3.719	20.37	19462213	06	1,1,2 Trichloroethane	39424
23	2.477	21.02	12960976	06	Tetrachloroethene	25922
24	3.697	21.2	19347199	06	1,3 Dichloropropane	38694
25	2.236	21.9	11704256	06	Dibromochloromethane	23409
26	1.803	22.5	9433351	06	1,2 Dibromoethane	18867
27	0.834	23.82	4366218	06	chlorobenzene	8732
28	3.929	24.02	20559635	06	1,1,1,2 Tetrachloroethane	41119
29	0.006	26.11	33958	06		
30	0.006	26.3	30730	06		
31	0.	26.69	1821	06		
32	1.383	26.94	7239516	06	Bromoform	14479
33	2.534	27.7	13260611	06	1,1,2,2 Tetrachloroethane	26521
34	2.98	28.16	15595208	06	Bromobenzene / 1,2,3 Trichloropropane	31190
35	0.904	28.73	4730421	06	2 chlorotoluene	9461
36	1.311	28.92	6860391	06	4 chlorotoluene	13721
37	[illegible]	[illegible]	[illegible]	[illegible]		
38	0.028	30.61	147459	06		
39	0.008	31.11	41956	06		
40	1.365	31.34	7141720	06	1,3 Dichlorobenzene	14284
41	1.757	31.74	9197138	06	1,4	18394
42	1.636	32.94	8562259	06		
43	0.075	33.92	393070	06	1,2	17911
44	0.005	34.92	23687	06		
45	0.009	35.02	47370	06		
46	0.003	35.38	17119	06		
47	0.67	35.81	3507968	06	1,2 Dibromo 3 chloropropane	7016
48	0.002	37.46	9881	06		
49	0.002	37.58	11240	06		
50	0.001	37.82	3996	06		
51	0.001	37.92	5518	06		
52	0.	38.17	128	06		
53	0.012	38.35	64844	06		
54	1.209	38.69	6327221	06	1,2,4 Trichlorobenzene	12654
55	1.908	39.18	9987114	06	Hexachlorobutadiene	19974
56	1.622	40.45	8487235	06	1,2,3-Trichlorobenzene	16974
57	0.011	42.5	57628	06		
58	0.009	42.74	49479	06		
59	0.009	43.04	44979	06		
60	0.003	43.24	17378	06		
61	0.004	43.39	21853	06		
62	0.008	43.59	44476	06		
63	0.001	44.28	6004	07		
TOTAL	100.		523338413			

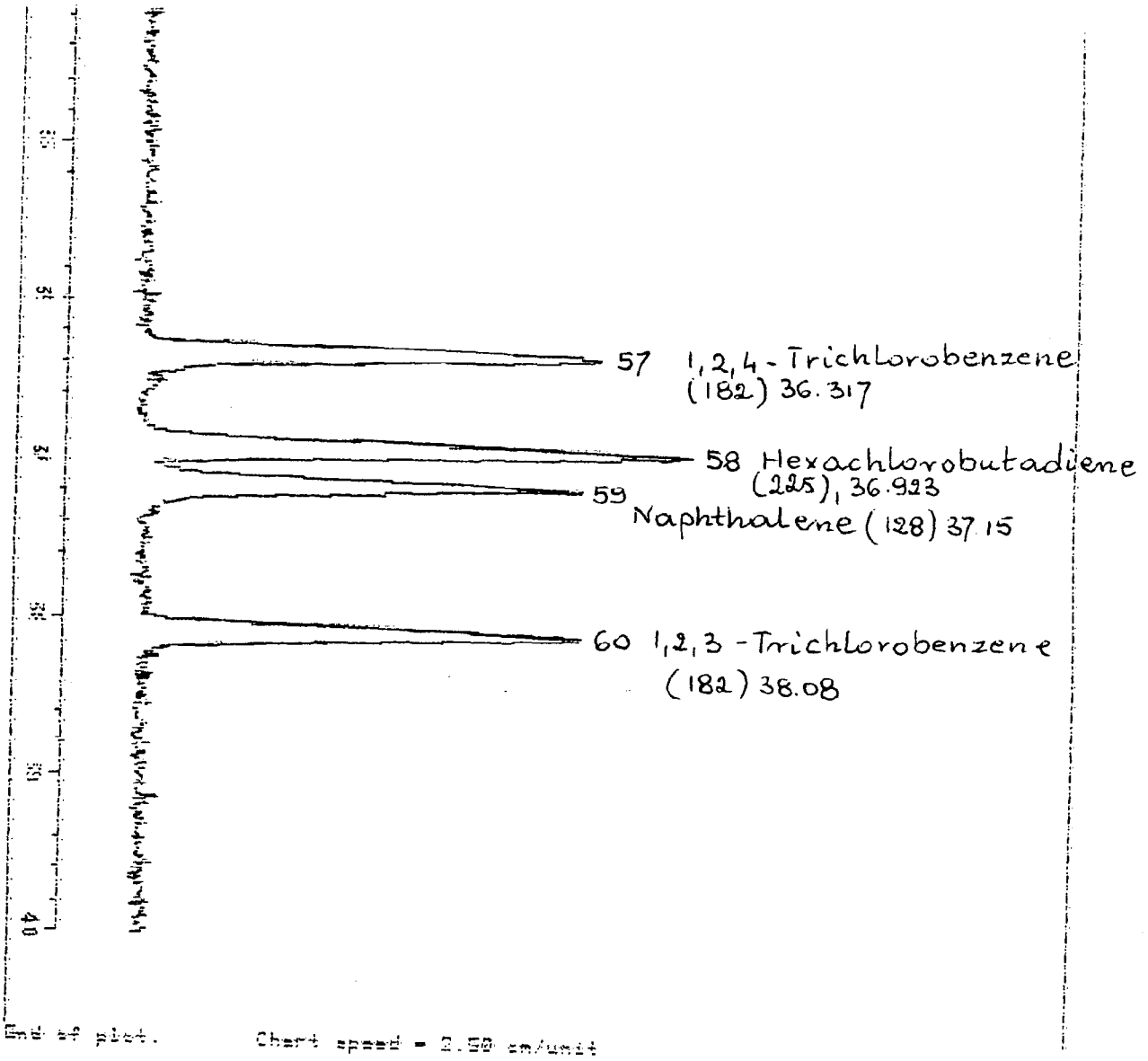
STANDARD IDENTIFICATION

ON GC/MS WITH VOCOL GLASS CAPILLARY COLUMN




Bromodichloromethane (83), 12.32
22
23 Dibromomethane (174, 93), 12.462
24 cis-1,3-Dichloropropene (75), 14.50
25 toluene (91) 15.343
26 trans-1,3-Dichloropropene (75), 16.484
27 1,1,2-Trichloroethane (97,83), 16.902
28 Tetrachloroethene (166, 129), 17.453
29 1,3-Dichloropropane (76,41), 17.831
30 Dibromochloromethane (129), 18.458
31 1,2-Dibromoethane (107,109), 19.058
32 Chlorobenzene (112,77), 20.575
33,34
20.879
35,36
21.159
33. 1,1,1,2-Tetrachloroethane (131,117)
34. Ethyl benzene (91)
35. p-Xylene (91,106)
36. m-Xylene (91,106)
37 o-Xylene (91,106), 22.663





TESTING RESULTS

Volumetric Techniques, LTD.

317 Bernice Drive • Bayport, New York 11705 • (516) 472-4848

To: Halliburton N U S
910 Clopper Rd.,P.O.Box 6032
Gaithersburg NY 20877-0962

Time Of Login : 14:35:00
Date:
Collected:12/04/92
Received :12/04/92
Completed:12/07/92
Reported By:

N.Y.S. Lab I.D. #10008

Sample Taken By
Client

Sample : Haliburton Nus
Project #1953
Hnp1-1
LIQUID

Sample Number 79489212

Analysis : E P A 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	141.33		
1,1-Dichloroethylene	3.39		
1,1-Dichloroethane	6.31		
Trans-1,2-Dichloroethylene	8.77		
Tetrachloroethylene	637.06		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	113.04		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	22.51		

Comments
‡ Indicates less than 1 part per billion or below detection limit.

12/08/92

79489212 (GROUNDWATER SAMPLES)

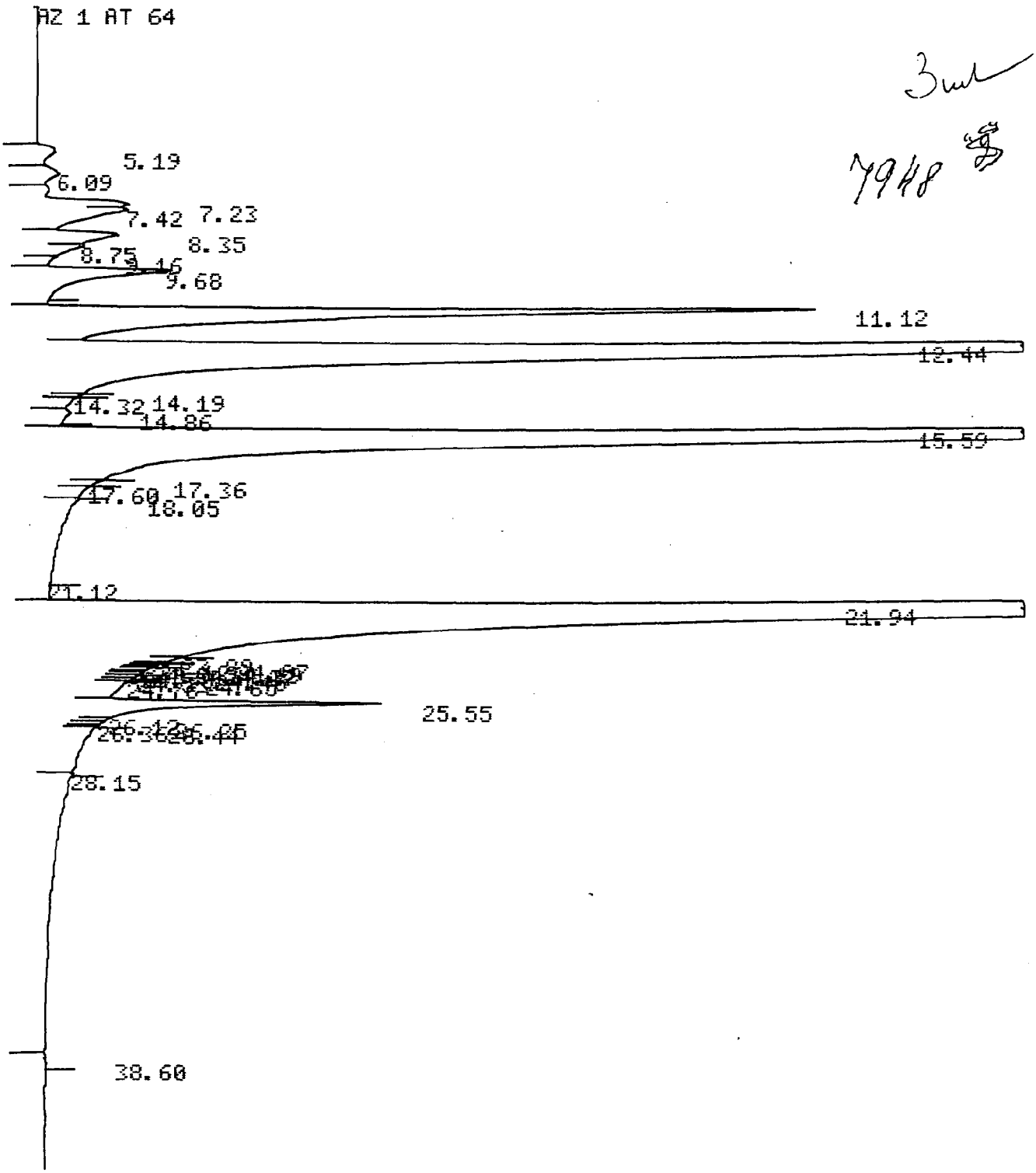
ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				3.39	0.13
1,1-DICHLOROETHANE				6.31	0.07
1,2-DICHLOROETHANE				<	0.03
cis 1,2-DICHLOROETHENE				22.51	0.34
trans1,2-DICHLOROETHENE				8.77	0.10
1,1,1-TRICHLOROETHANE				113.04	0.03
TRICHLOROETHENE				141.33	0.12
TETRACHLOROETHENE				637.06	0.03

REPORTED.....

APPROVED.....

CHANNEL A INJECT 12/07/92 14:51:46

AZ 1 AT 64



3ml

7948 g

601 12/07/92 14:51:46 CH= "A" PS= 1.

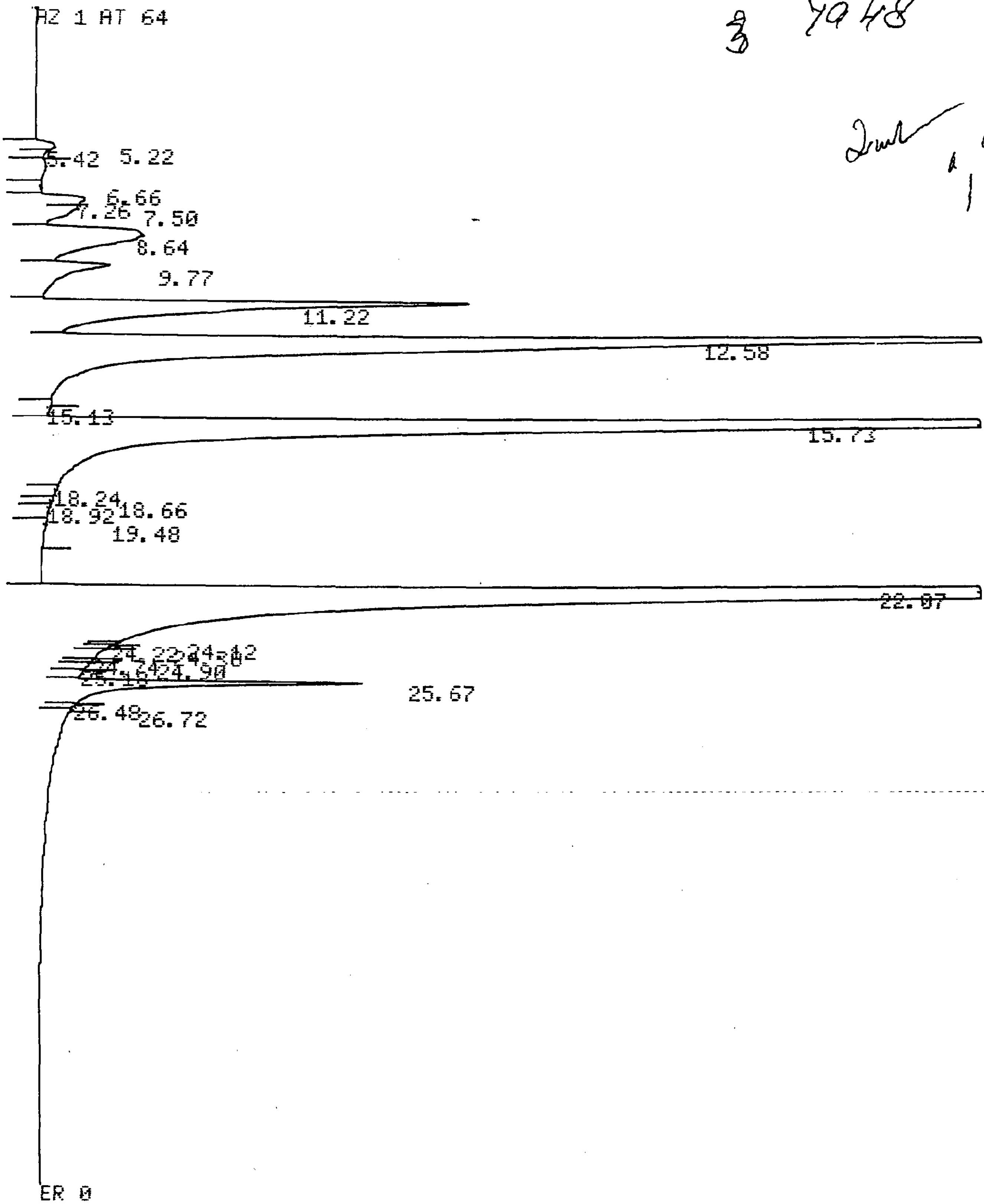
FILE 1. METHOD 0. RUN 699 INDEX 699

PEAK#	AREA%	RT	AREA BC
1	0.102	5.19	62515 02
2	0.115	6.09	70656 02
3	0.321	7.23	196641 02
4	0.493	7.42	302516 02

D e = 6,78 ppb.

TOTAL 100. 545755

CHANNEL A INJECT 12/07/92 12:19:20



601 12/07/92 12:19:20 CH= "A" PS= 1.

Volumetric Techniques, LTD.

317 Bernice Drive • Bayport, New York 11705 • (516) 472-4848

To: Halliburton N U S
910 Clopper Rd.,P.O.Box 6032
Gaithersburg NY 20877-0962

Time Of Login : 14:42:59
Date:
Collected:12/04/92
Received :12/04/92
Completed:12/07/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10058

Sample : Haliburton Nus
Project #1953
Hnp2-1
LIQUID

Sample Number 79509212

Analysis : E P A 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	9.82		
1,1-Dichloroethylene	0.82		
1,1-Dichloroethane	1.91		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	22.15		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	18.89		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	0.86		

Comments
‡ Indicates less than 1 part per billion or below detection limit.

• CONSULTING CHEMISTS • COMPLETE LABORATORY TESTING •
• Sander R. Sternig • Director of Laboratories •

12/08/92

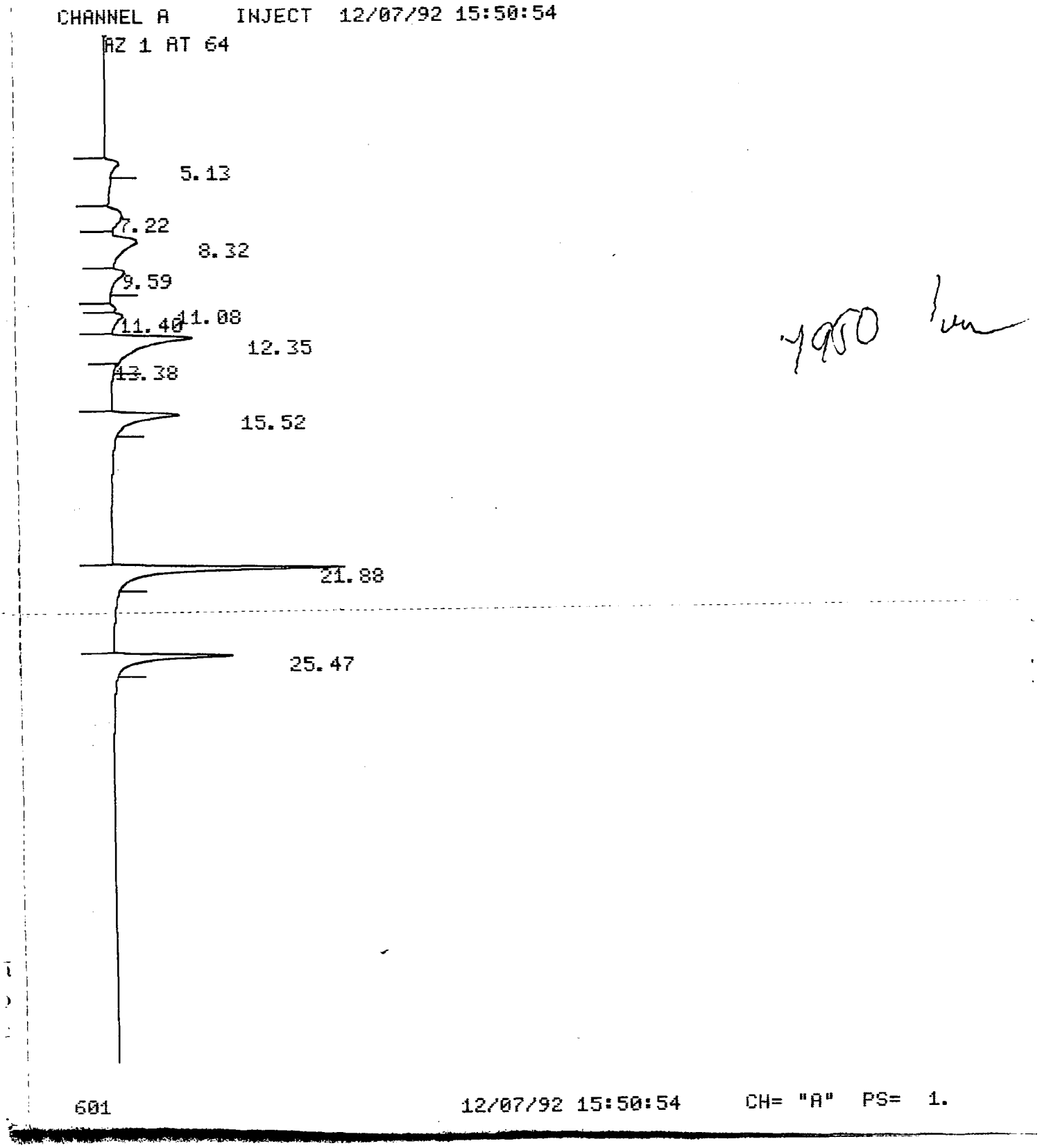
79509212 (GROUNDWATER SAMPLE)

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				0.82	0.13
1,1-DICHLOROETHANE				1.90	0.07
1,2-DICHLOROETHANE				<	0.03
cis 1,2-DICHLOROETHENE				0.86	0.34
trans1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				18.89	0.03
TRICHLORDETHENE				9.82	0.12
TETRACHLOROETHENE				22.15	0.03

REPORTED.....

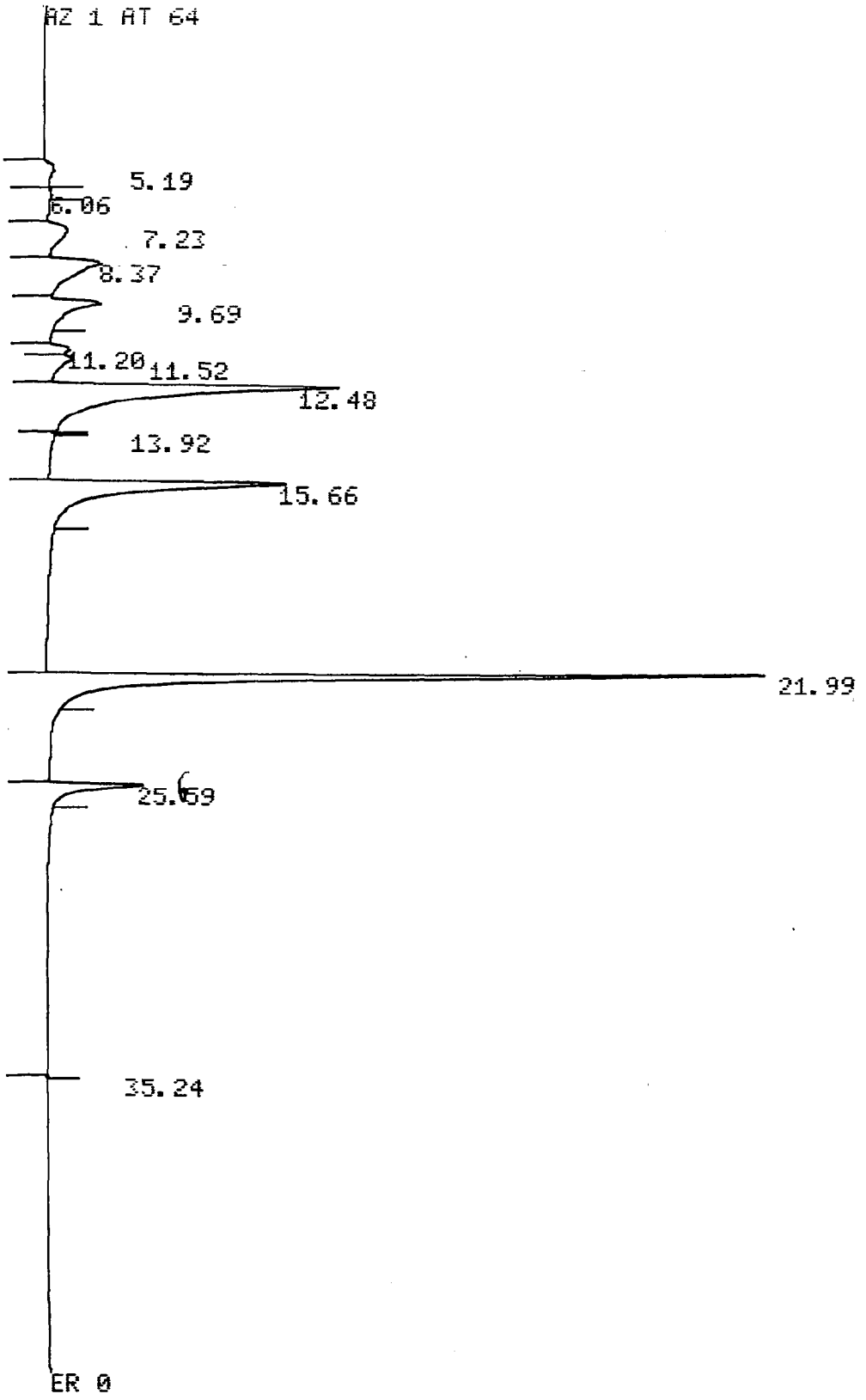
APPROVED.....

42


CHANNEL A INJECT 12/07/92 15:50:54
RZ 1 RT 64
5.13
7.22
8.32
9.59
11.08
11.40
12.35
13.38
15.52
21.88
25.47
601
12/07/92 15:50:54 CH= "A" PS= 1.

~950 lbs

43



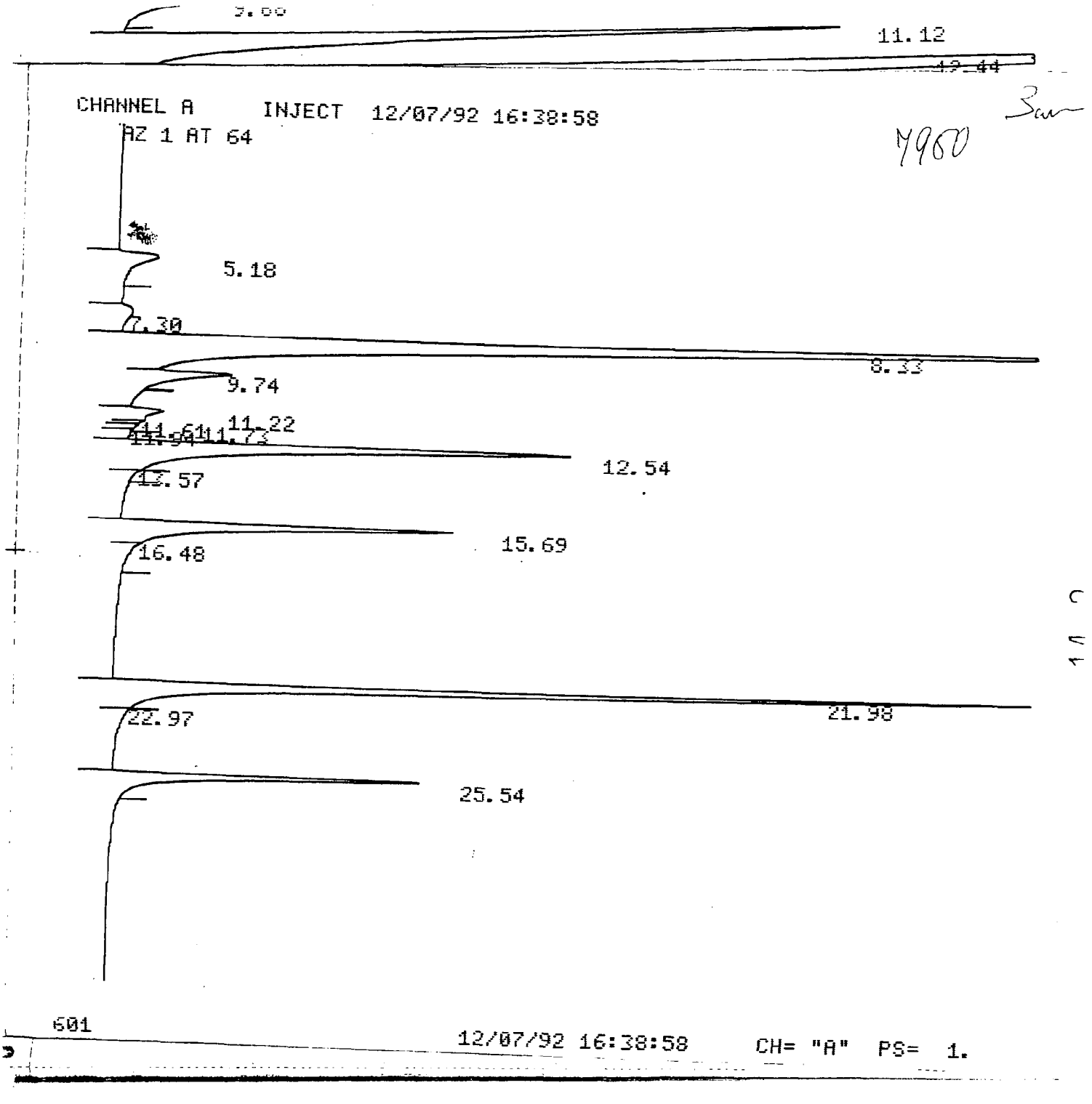
7980 2m

2m (2")

601 12/07/92 13:15:51 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 698 INDEX 698

PEAK#	AREA%	RT	AREA BC
1	0.768	5.19	23736 01
2	0.434	6.06	4139 01



Volumetric Techniques, LTD.

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To: Halliburton N U S
910 Clopper Rd.,P.O.Box 6032
Gaithersburg NY 20877-0962

Time Of Login : 10:24:37
Date:
Collected:12/07/92
Received :12/07/92
Completed:12/07/92

Reported By:

N.Y.S. Lab I.D. 10958

Sample Taken By
Client

Sample : Haliburton Nus
Project #1953
Bp-G-R-01 Bethpage Nwirp
LIQUID

Sample Number 79719212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	1.27		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	<0.03		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	<0.03		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
* Indicates less than 1 part per billion or below detection limit.

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12/10/92

79719212

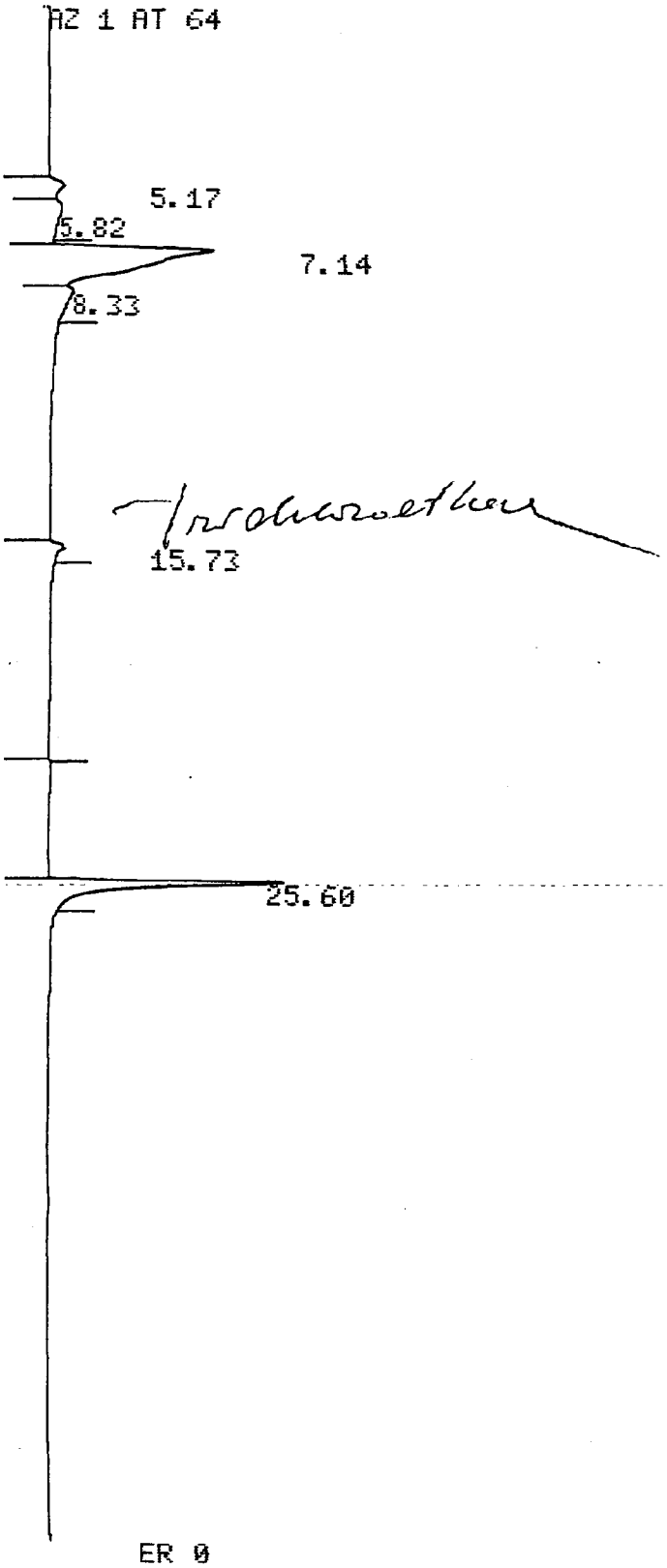
ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.03
TRICHLOROETHENE				1.27	0.12
TETRACHLOROETHENE				<	0.03

REPORTED.....

APPROVED.....

CHANNEL A INJECT 12/08/92 20:49:29

AZ 1 AT 64



4971

Isobutanol

Dark

ER 0

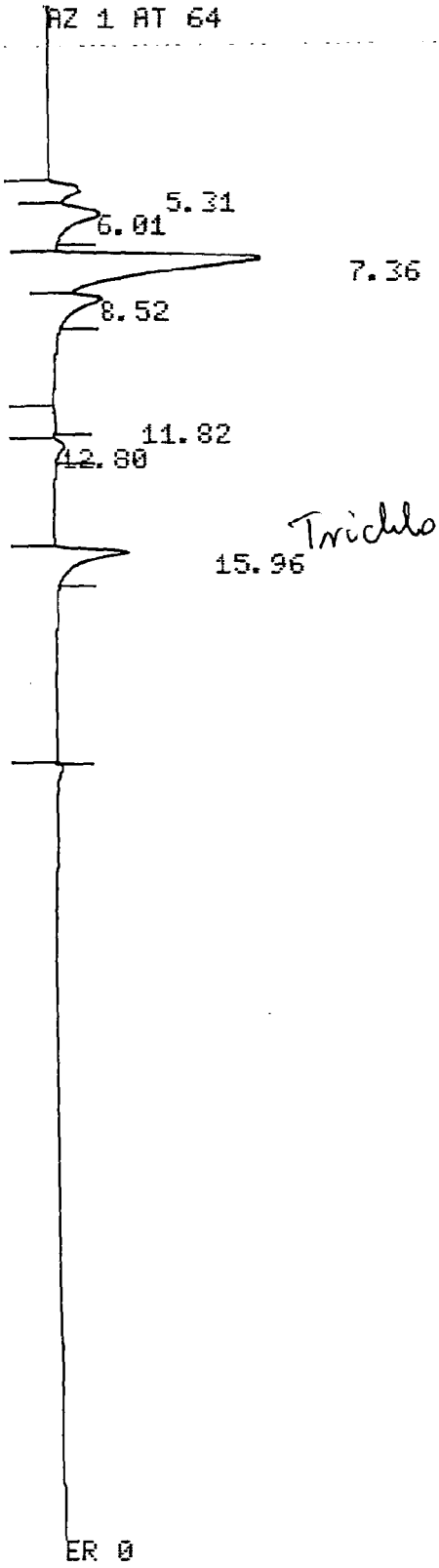
601 12/08/92 20:49:29 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 706 INDEX 706

PEAK#	AREA%	RT	AREA BC
1	3.116	5.17	33973 02

CHANNEL A INJECT 12/09/92 00:45:04

AZ 1 AT 64



7171 5ml

Trichloroethene C = 1.27 ppb

ER 0

601 12/09/92 00:45:04 CH= "A" PS= 1.

FILE 4 METHOD 0 RUN 240 INDEX 240

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Time Of Login : 10:27:05
Date:
Collected:12/07/92
Received :12/07/92
Completed:12/09/92
Reported By:

N.Y.S. Lab I.D. #11088

Sample Taken By
Client

Sample : Haliburton Nus
Project #1953
Bp-G-R-Rb1 Bethpage Nwirp
LIQUID

Sample Number 79729212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	<0.12		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	<0.03		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	<0.03		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
* Indicates less than 1 part per billion or below detection limit.

12/10/92

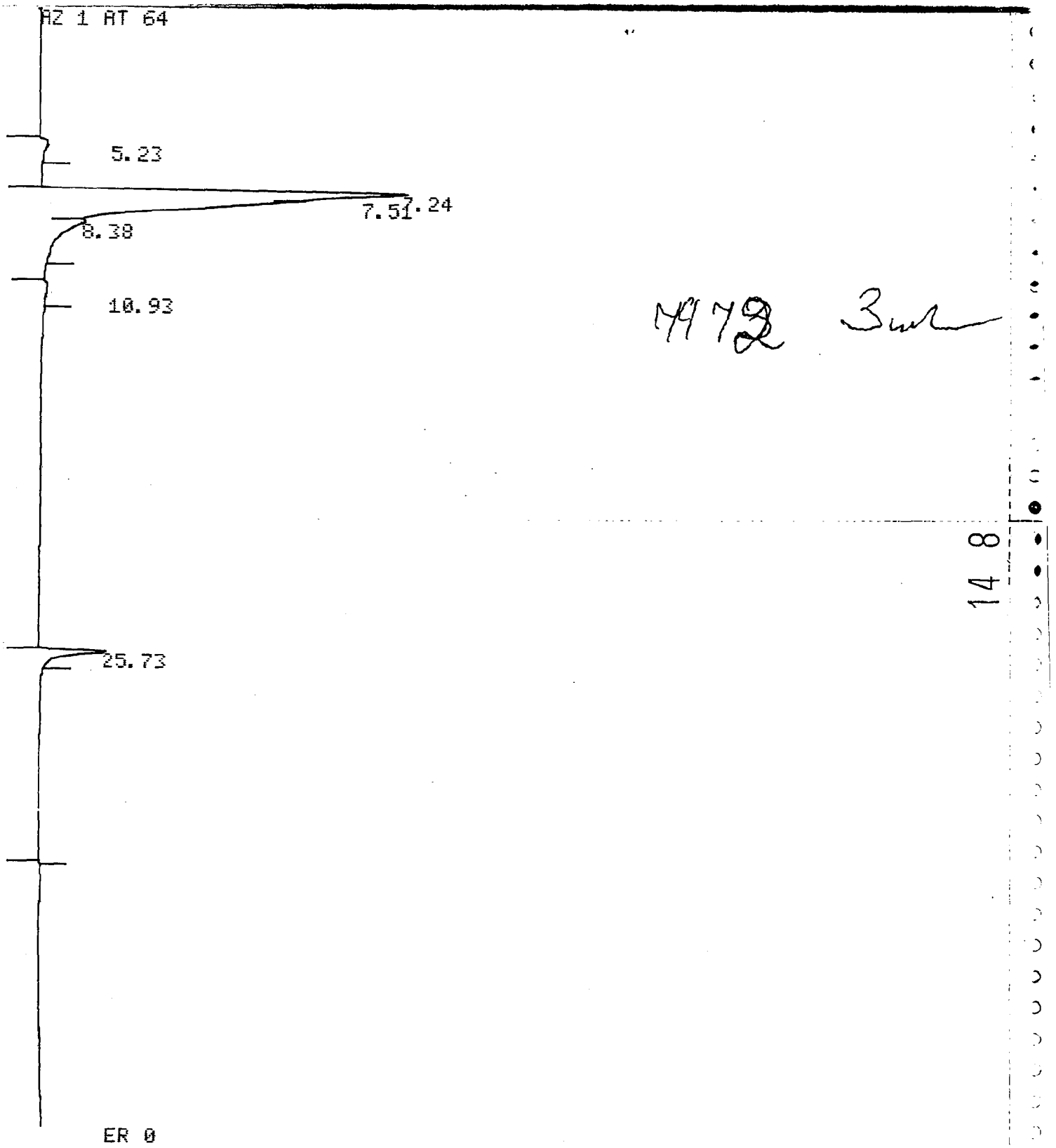
79729212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.03
TRICHLOROETHENE				<	0.12
TETRACHLOROETHENE				<	0.03

REPORTED.....

APPROVED.....

51



1992 3rd

14 8

01 12/08/92 21:45:31 CH= "A" PS= 1.

ILE 1. METHOD 0. RUN 707 INDEX 707

EAK# AREA% RT AREA BC

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Time Of Login : 11:21:50
Date:
Collected:12/07/92
Received :12/07/92
Completed:12/[illegible]/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10[illegible]58

Sample : Haliburton Nus
Project #1953
Bp-G-R-R-02 Bethpage Nwirp
LIQUID

Sample Number 79739212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	2.07		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	<0.03		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	<0.03		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments

12/10/92

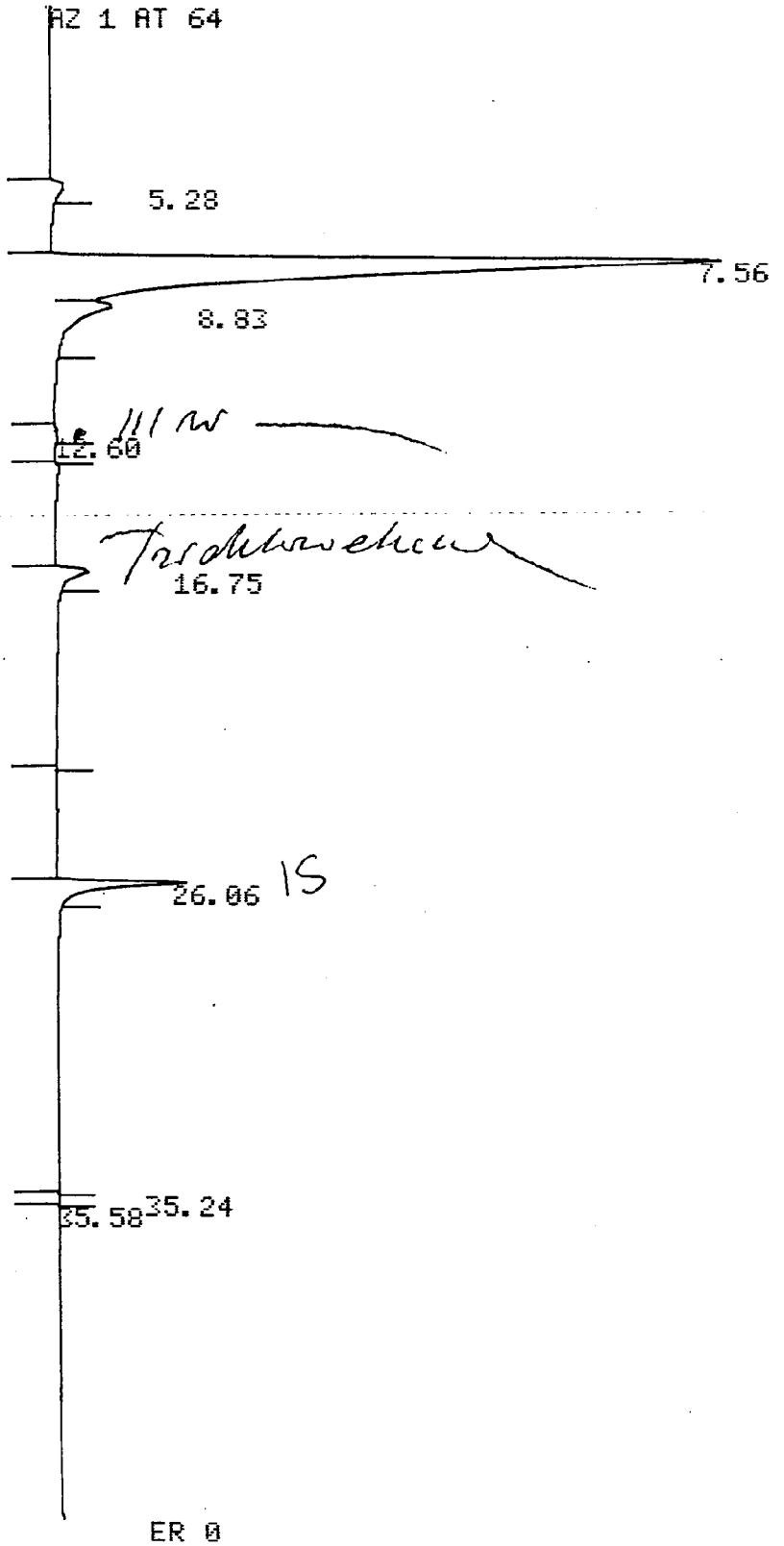
79739212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.03
TRICHLOROETHENE				2.07	0.12
TETRACHLOROETHENE				<	0.03

REPORTED.....

APPROVED.....

CHANNEL A INJECT 12/08/92 22:36:42



111 W

Trichloroethene

7173

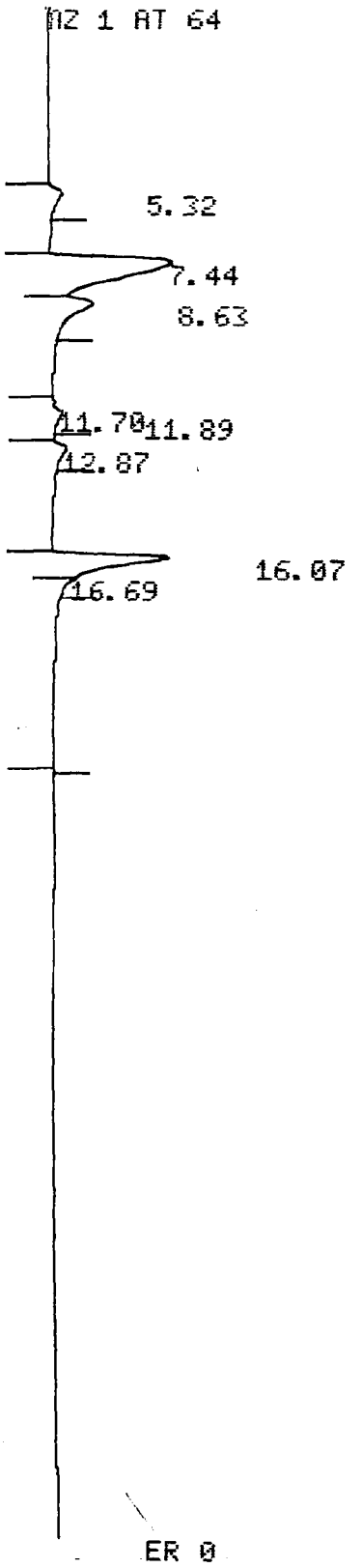
2nd

IS

601 12/08/92 22:36:42 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 708 INDEX 708

PEAK#	AREA%	RT	AREA BC
1	1.036		



7173

5ml

Trichloroethene c = 2.07 ppb

601 12/09/92 02:36:28 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 712 INDEX 712

PEAK#	AREA%	RT	AREA	BC
1	3.57	5.32	37376	01
2	49.52	7.44	518484	02
3	13.003	8.63	136147	03

15 4

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Time Of Login : 09:02:39
Date:
Collected:12/08/92
Received :12/08/92
Completed:12/08/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #12358

Sample : Haliburton Nus Project #1953
Bp-G-R-D1
Duplicate Sample Of Bp-G-R-04
LIQUID

Sample Number 79939212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	0.22		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	0.09		
Vinyl Chloride	<0.10		
1,1,1-Trichloroethane	0.29		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
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57

12/9/92

79939212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				0.29	0.18
TRICHLOROETHENE				0.22	0.12
TETRACHLOROETHENE				0.09	0.05

REPORTED.....

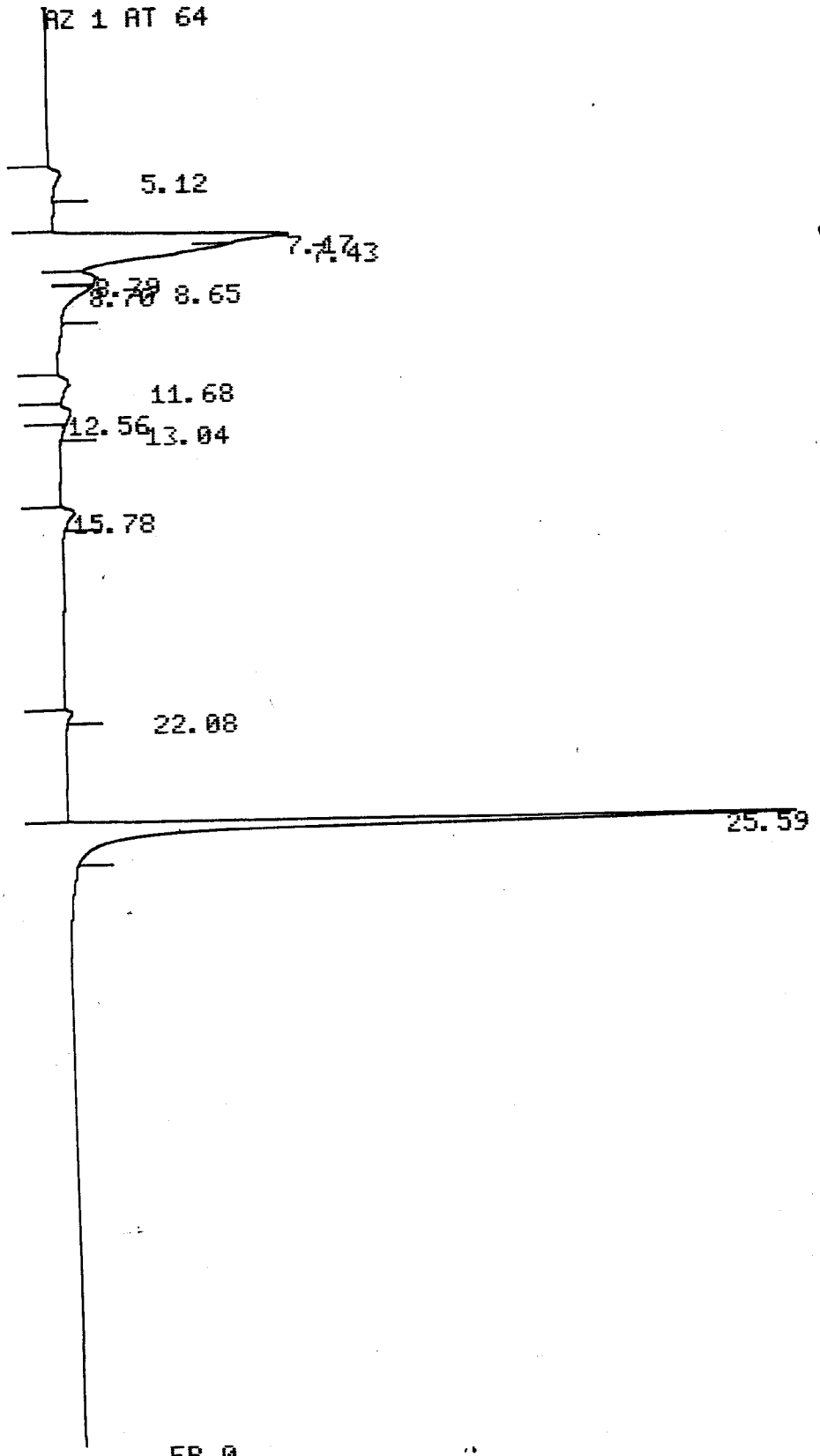
APPROVED.....

58

TOTAL 100. 2164631

CHANNEL A INJECT 12/09/92 16:41:31

AZ 1 AT 64



7993 6w

ER 0

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To: Halliburton N U S
910 Clopper Rd.,P.O.Box 6032
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Time Of Login : 09:17:3)
Date:
Collected:12/05/92
Received :12/08/92
Completed:12/09/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10358

Sample : Haliburton Nus Project #1953
Bp-G-R-04
LIQUID

Sample Number 79949212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	0.24		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	0.11		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	0.31		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
* Indicates less than 1 part per billion or below detection limit.

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12/9/92

79949212 (dup.)

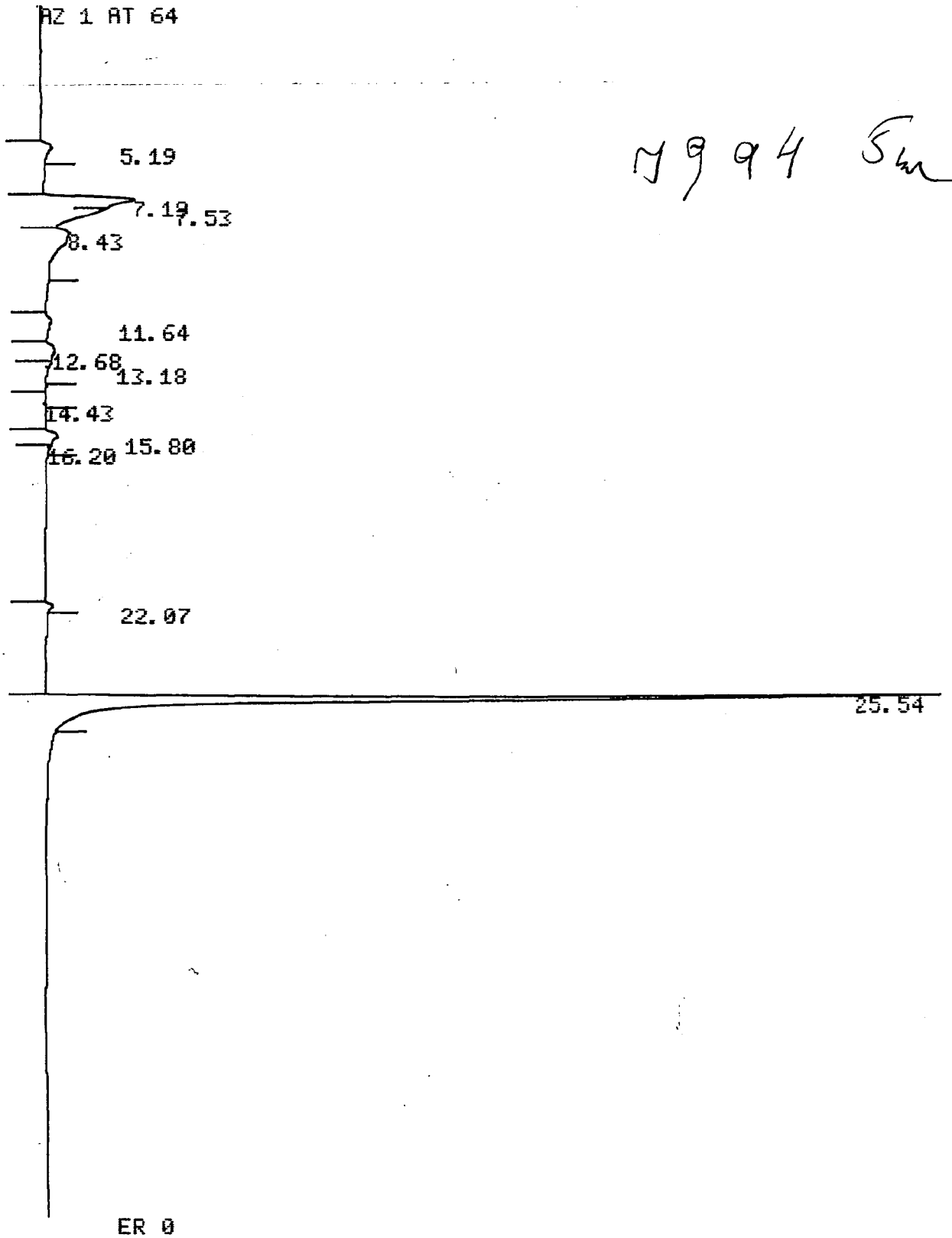
ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				0.31	0.18
TRICHLOROETHENE				0.24	0.12
TETRACHLOROETHENE				0.105	0.05

REPORTED.....

APPROVED.....

TOTAL 100. 430830

CHANNEL A INJECT 12/09/92 15:45:38



NY 994 Sw 160

601 12/09/92 15:45:38 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 718 INDEX 718

PEAK#	AREA%	RT	AREA BC

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Time Of Login : 09:15:17
Date:
Collected:12/08/92
Received :12/08/92
Completed:12/10/92

Sample Taken By
Halliburton N U S

Reported By: [signature]

N.Y.S. Lab I.D. #10058

Sample : Haliburton Nus Project #:953
Bo-G-P- Med1

Matrix Spike Duplicate
LIQUID

Sample Number 79959212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene*	105.59		
Trans-1,2-Dichloroethene	103.44		
1,1-Dichloroethane	92.40		
1,1,1-Trichloroethane	112.11		
1,2-Dichloroethane	110.69		
Trichloroethene	104.14		
Tetrachloroethene	110.85		

Comments

63

* Indicates less than 1 part per billion or below detection limit.

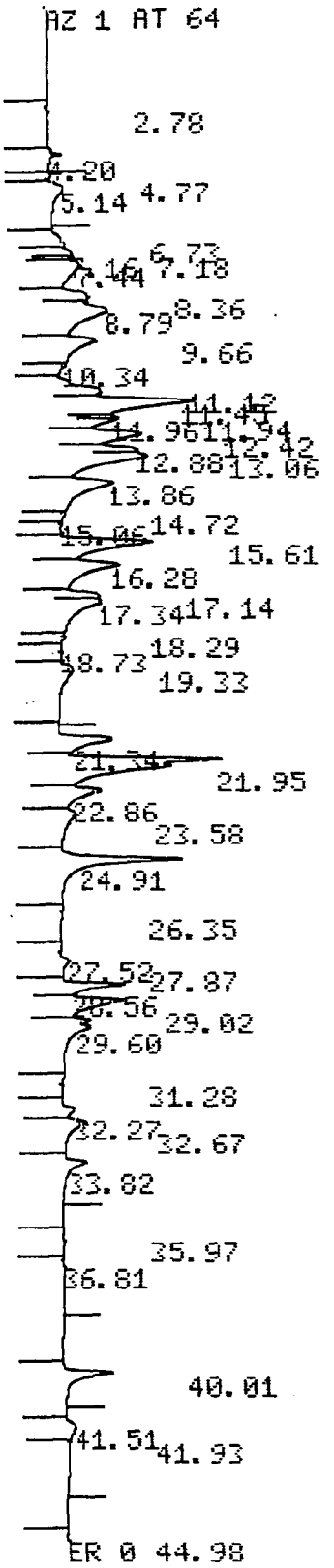
NYSDEC 033124

QC

MSD 79959212

	AREA MS	RF	CON. MS	TARGET	% REC.
1,1-DICHLOROETHENE.....	112203	21255	1.1	1.0	105.58
trans-1,2-DICHLOROETHENE...	168248	32532	1.0	1.0	103.44
1,1-DICHLOROETHANE.....	123640	26762	0.9	1.0	92.40
1,1,1-TRICHLOROETHANE.....	149582	20528	1.5	1.3	112.11
1,2-DICHLOROETHANE.....	177845	32133	1.1	1.0	110.69
TRICHLOROETHENE.....	165042	25561	1.3	1.2	104.14
TETRACHLOROETHENE.....	126313	20685	1.2	1.1	110.53

CHANNEL A INJECT 12/10/92 23:54:57



3) 7995 MSD 1ppb 5ml

601 12/10/92 23:54:57 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 750 INDEX 750

PEAK#	AREA%	RT	AREA BC
1	0.085	2.78	3382 02
2	0.309	4.2	12269 03

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Time Of Login : 09:24:32
Date:
Collected:12/08/92
Received :12/08/92
Completed:12/18/92

Sample Taken By
Client

Reported By:_____

N.Y.S. Lab I.D. #10088

Sample : Haliburton Nus Project #1953
Bp-G-Rb2

Rinsate Blank
LIQUID

Sample Number 79969212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene:	<0.13		
Trans-1,2-Dichloroethene	<0.1		
1,1-Dichloroethane	<0.07		
1,1,1-Trichloroethane	<0.18		
1,2-Dichloroethane	<0.03		
Trichloroethene	<0.12		
Tetrachloroethene	<0.05		
Vinyl Chloride	<0.18		
Cis-1,2-Dichloroethene	<0.34		

Comments

* Indicates less than 1 part per billion or below detection limit.

12/18/92

79969212 (BLANK)

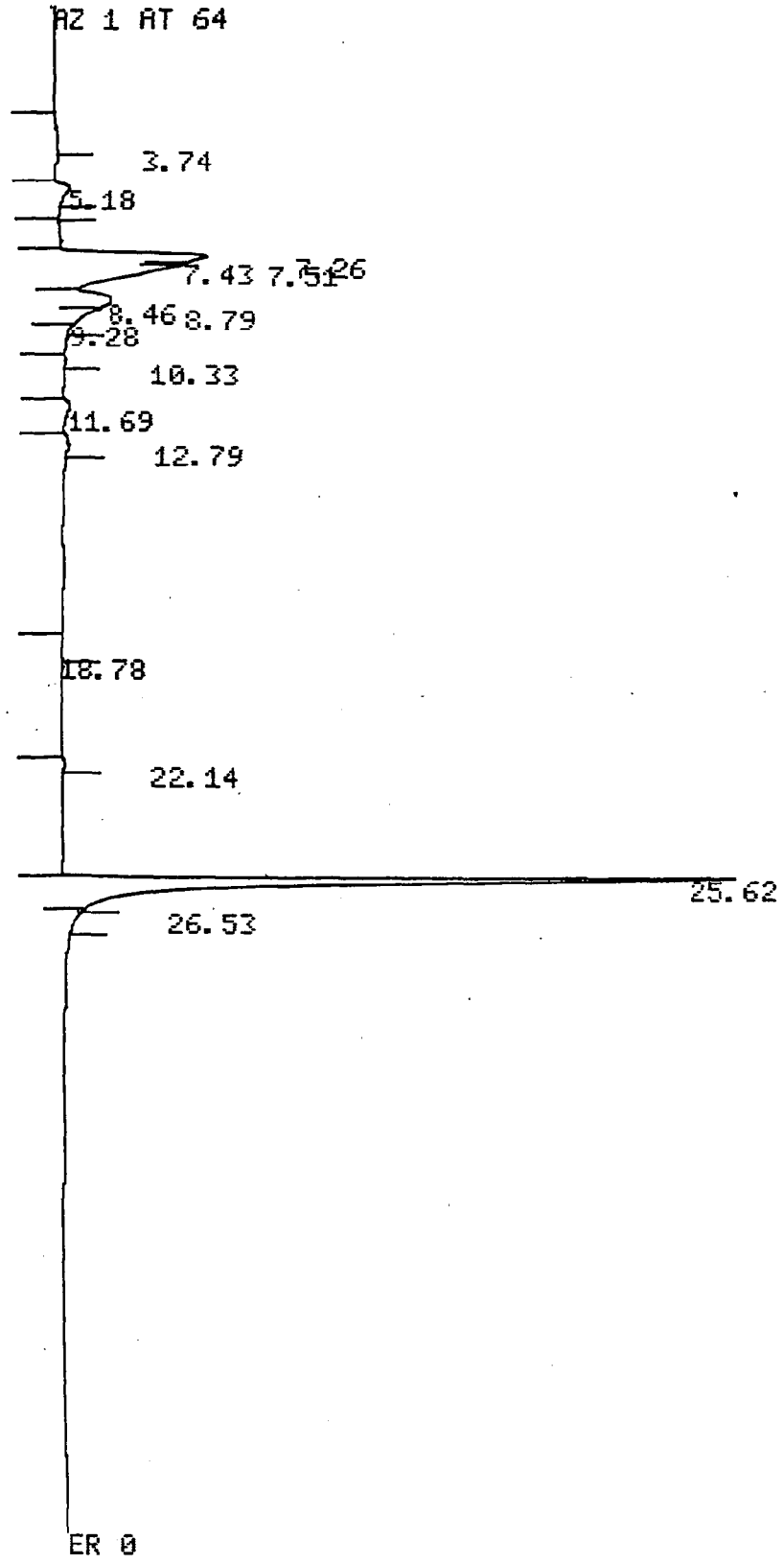
VINYL CHLORIDE	<	0.18
1,1-DICHLOROETHENE	<	0.13
1,1-DICHLOROETHANE	<	0.07
1,2-DICHLOROETHANE	<	0.03
cis-1,2-DICHLOROETHENE	<	0.34
trans-1,2-DICHLOROETHENE	<	0.10
1,1,1-TRICHLOROETHANE	<	0.18
TRICHLOROETHENE	<	0.12
TETRACHLOROETHENE	<	0.05

REPORTED.....

APPROVED.....

67

CHANNEL A INJECT 12/09/92 13:56:20



7996 B1

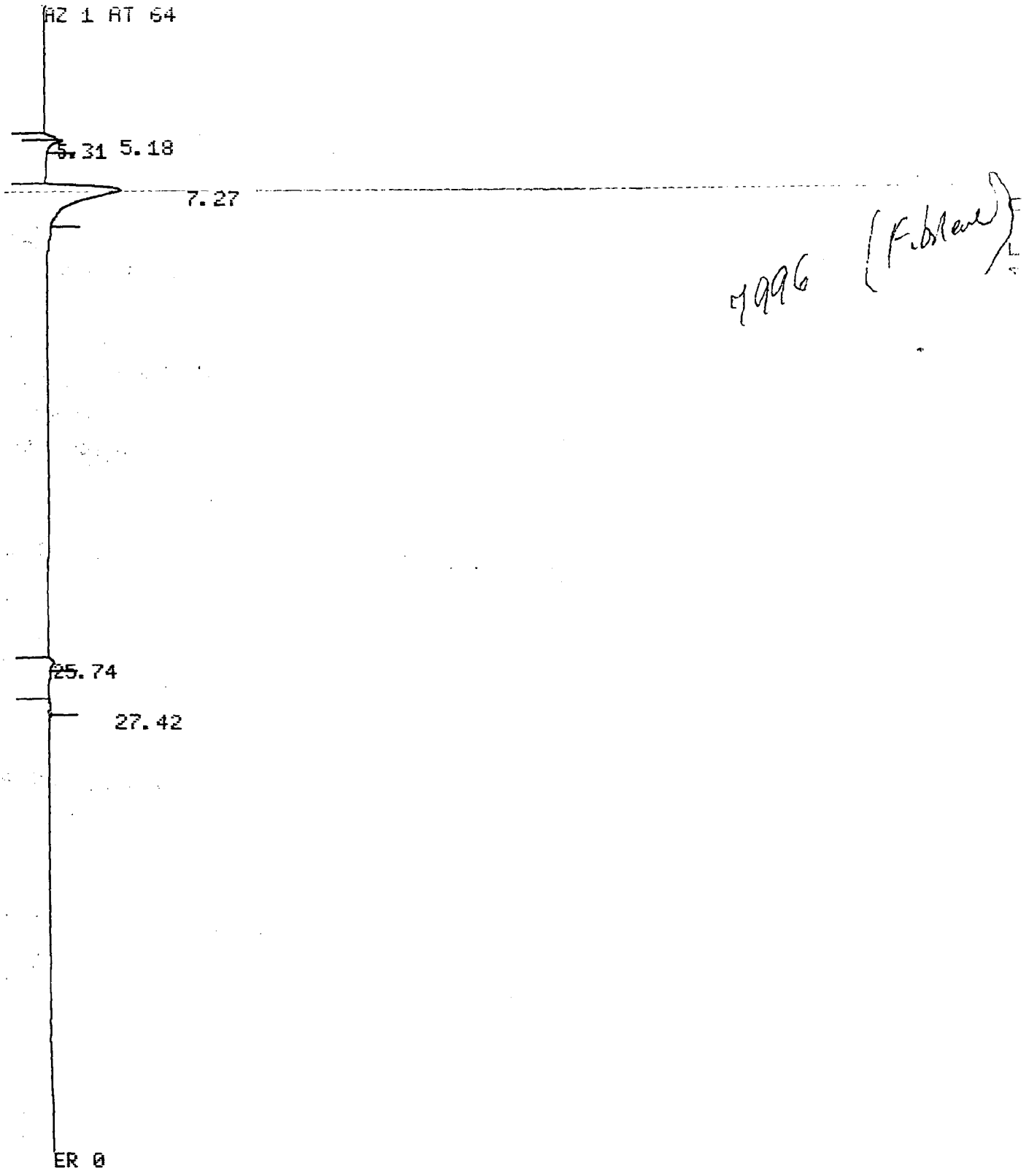
5 ml

158

601 12/09/92 13:56:20 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 716 INDEX 716

PEAK#	AREA%	RT	AREA BC
1	0.423	3.74	7677.01



4996 (F. Stevens)

601 12/09/92 14:52:23 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 717 INDEX 717

PEAK#	AREA%	RT	AREA BC
1	3.001	5.18	12929 02
2	6.179	5.31	26619 03
3	88.241	7.27	380168 01
4	1.933	25.74	8328 01

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Time Of Login : 05:27:50
Date:
Collected:12/08/92
Received :12/08/92
Completed:12/11/92

Sample Taken By
Halliburton N U S

Reported By: _____

N.Y.S. Lab I.D. #10025

Sample : Halliburton Nus Project #1953
Wp-G-S-M S 1

Sample Number 79979212

Matrix Spike
LIQUID

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene	113.60		
Trans-1,2-Dichloroethene	100.95		
1,1-Dichloroethane	87.90		
1,1,1-Trichloroethane	112.21		
1,2-Dichloroethane	98.64		
Trichloroethene	97.92		
Tetrachloroethene	113.28		

Comments

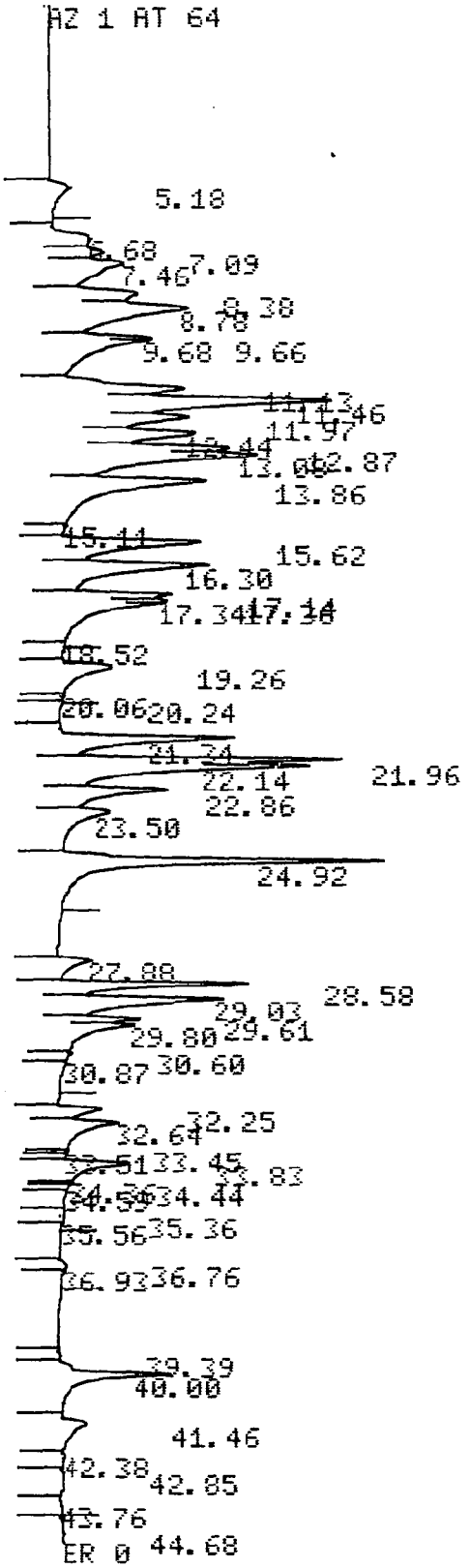
70

* Indicates less than 1 part per billion or below detection limit.

QC

MS 79979212

	AREA MS	RF	CON. MS	TARGET	% REC.
1,1-DICHLOROETHENE.....	241247	21255	2.3	2.0	113.50
trans-1,2-DICHLOROETHENE...	328417	32532	2.0	2.0	100.95
1,1-DICHLOROETHANE.....	235454	26762	1.8	2.0	87.98
1,1,1-TRICHLOROETHANE.....	264897	20528	2.6	2.3	112.21
1,2-DICHLOROETHANE.....	316974	32133	2.0	2.0	98.64
TRICHLOROETHENE.....	275328	25561	2.2	2.2	97.92
TETRACHLOROETHENE.....	256895	20685	2.5	2.1	118.28



3) 7937 4ppb 5ppb 100µl

601 12/10/92 22:58:09 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 749 INDEX 749

PEAK#	AREA%	RT	AREA BC
1	0.643	5.18	52551 01
2	1.109	6.68	90595 02
3	1.12	7.09	91479 02

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Time Of Login : 09:29:42
Date:
Collected:12/08/92
Received :12/08/92
Completed:12/09/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #11058

Sample : Haliburton Nus Project #1953
Bp-G-R-03
LIQUID

Sample Number 79989212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	<0.18		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	<0.05		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	0.18		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
* Indicates less than 1 part per billion or below detection limit.

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12/09/92

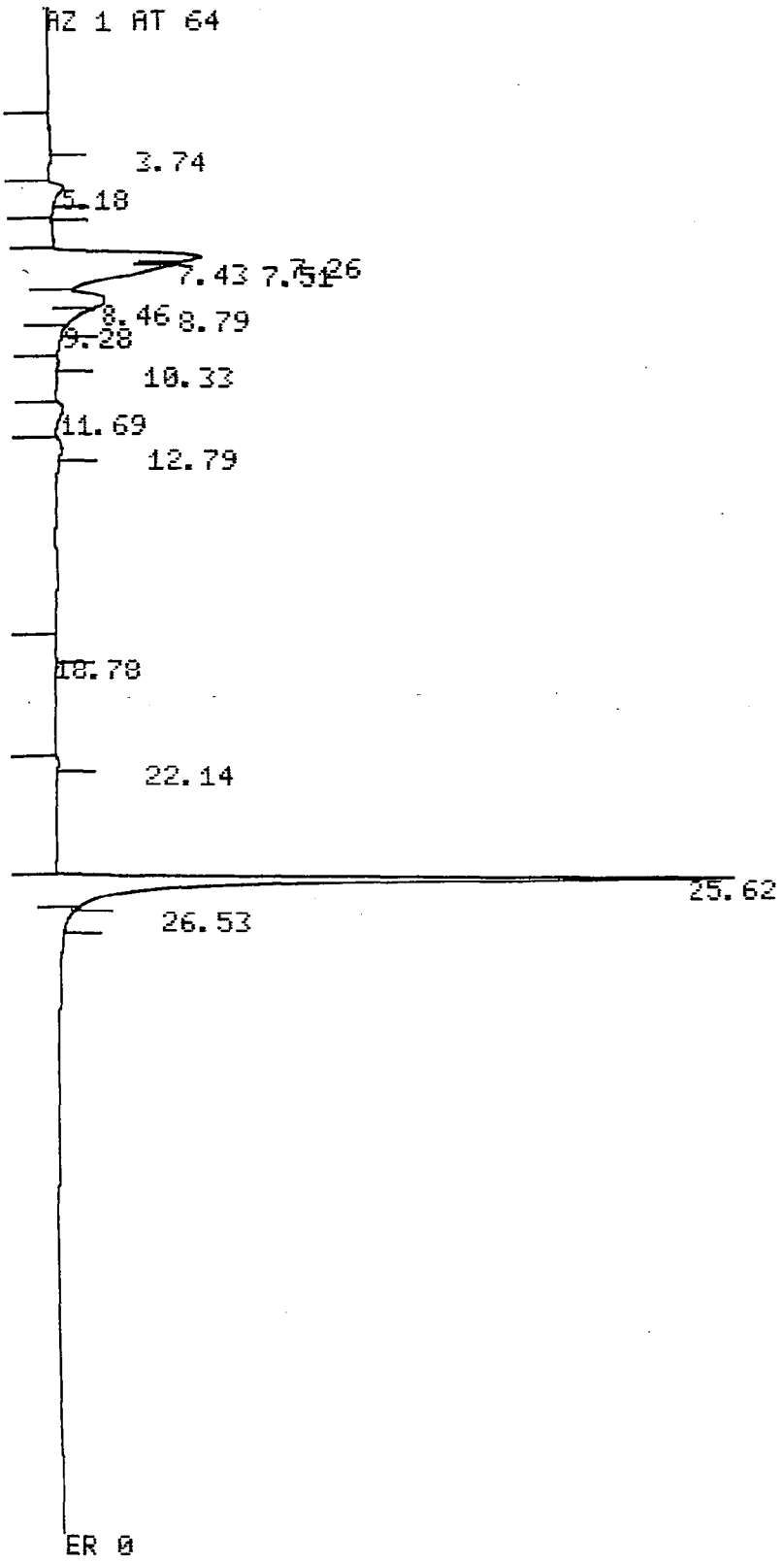
79989212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.18
TRICHLOROETHENE				<	0.12
TETRACHLOROETHENE				<	0.05

REPORTED.....

APPROVED.....

CHANNEL A INJECT 12/09/92 13:56:20



7998

601 12/09/92 13:56:20 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 716 INDEX 716

PEAK#	AREA%	RT	AREA BC
1	0.423	3.74	7677 01
2	1.617	5.18	29349 01

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Time Of Login : 08:58:49
Date:
Collected:12/09/92
Received :12/09/92
Completed:12/10/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10044

Sample : Haliburton Nus Project #1953
Bp-G-R-07
LIQUID

Sample Number 80199212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	7.24		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	1.34		
Vinyl Chloride	<0.10		
1,1,1-Trichloroethane	1.76		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
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12/10/92

80199212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE			1.76ppb		0.18
TRICHLOROETHENE			7.24ppb		0.12
TETRACHLOROETHENE			1.34ppb		0.05

REPORTED.....

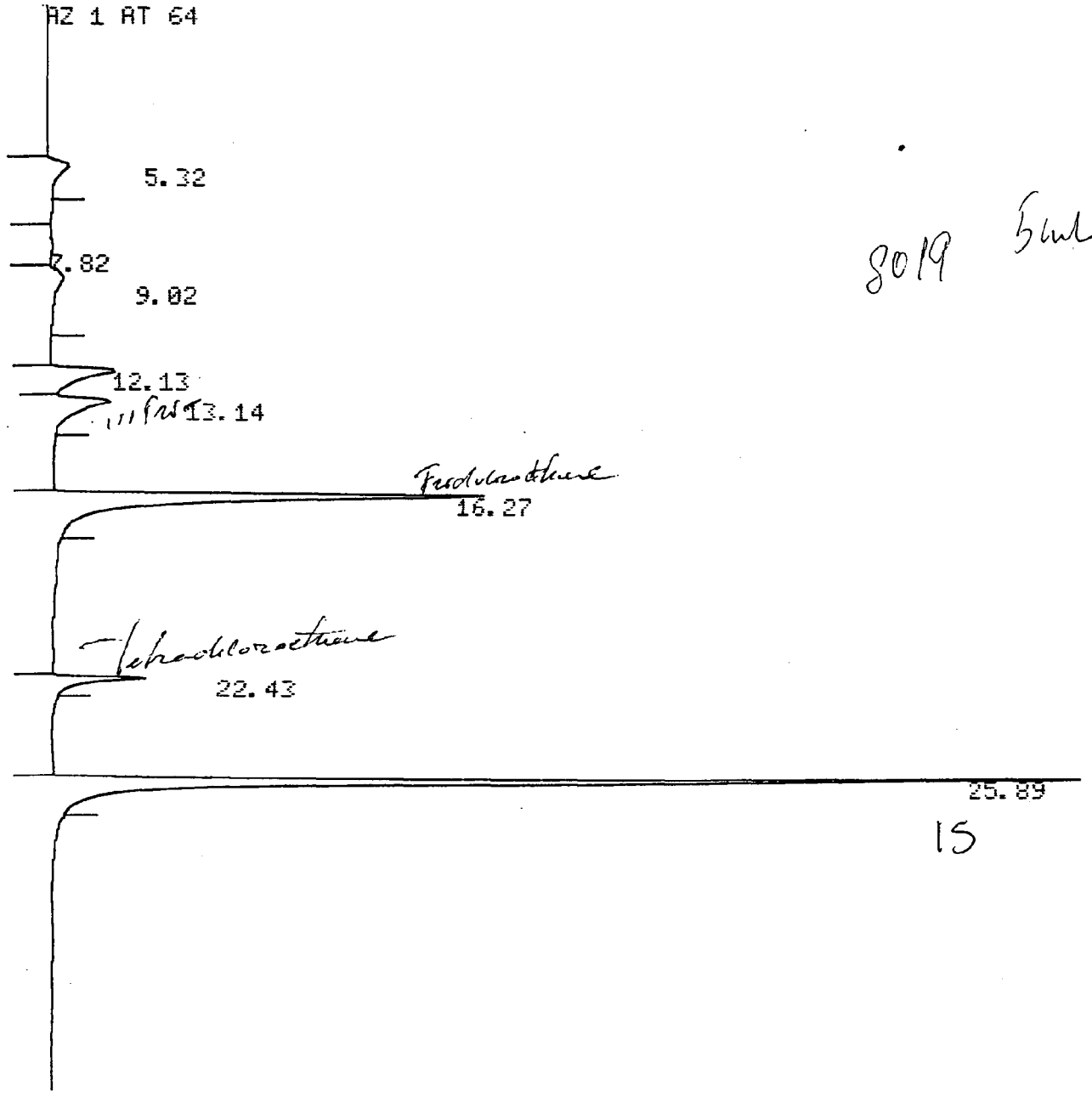
APPROVED.....

77

4	11.025	8.6	140900 03
5	16.532	11.86	211278 01
6	65.381	25.94	835569 01

TOTAL 100. 1278001

CHANNEL A INJECT 12/10/92 13:50:00



8019 Blank

15

601 12/10/92 13:50:00 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 740 INDEX 740

PEAK#	AREA%	RT	AREA BC
1	2.687	5.32	79262 01
2	0.364	7.82	10734 02
3	2.439	9.02	71929 03
4	5.926	12.13	174782 02
5	6.133	13.14	180898 03

= 1,764 ppb

C = 180898 / 20627.5 × 5

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Time Of Login : 08:59:30
Date:
Collected:12/09/92
Received :12/09/92
Completed:12/10/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10358

Sample : Haliburton Nus Project #1953
Bp-G-R-08
LIQUID

Sample Number 80209212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	<0.18		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	<0.05		
Vinyl Chloride	<0.10		
1,1,1-Trichloroethane	0.18		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
< Indicates less than 1 part per billion or below detection limit.

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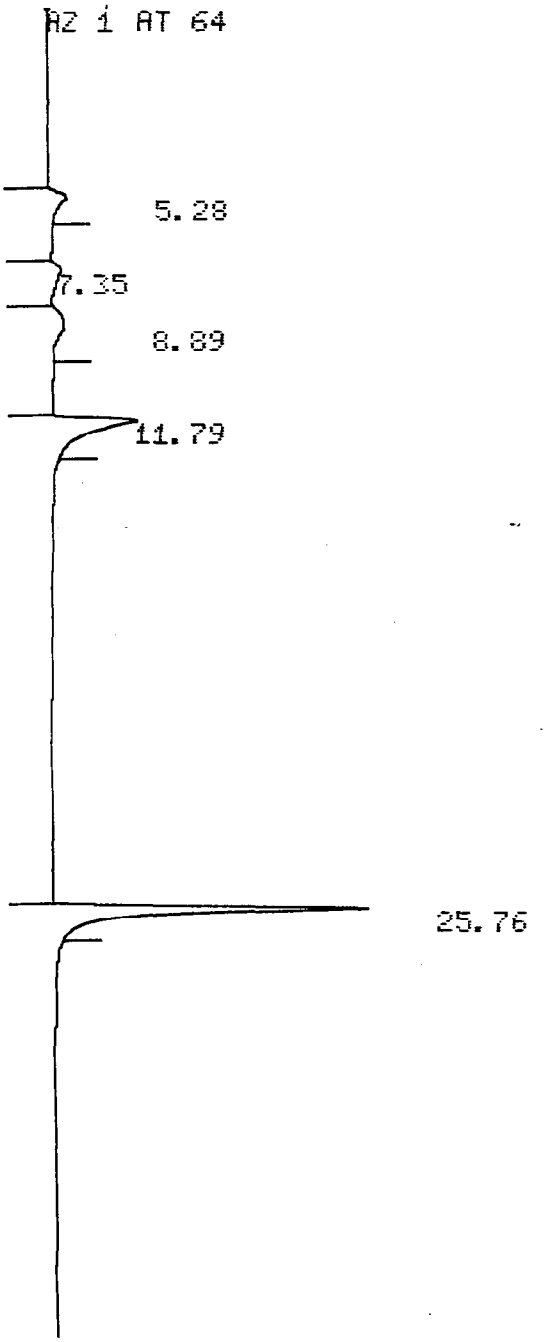
80209212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.18
TRICHLOROETHENE				<	0.12
TETRACHLOROETHENE				<	0.05

REPORTED.....

APPROVED.....



8020 5 wk

Clean

601 12/10/92 14:32:08 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 741 INDEX 741

PEAK#	AREA%	RT	AREA	BC
1	5.781	5.28	44504	01
2	4.111	7.35	31644	02
3	8.17	8.89	62889	03
4	28.135	11.79	216581	01
5	53.803	25.76	414166	01
TOTAL	100.		769784	

CHANNEL A INJECT 12/10/92 15:15:38

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Time Of Login : 09:00:33
Date:
Collected:12/09/92
Received :12/09/92
Completed:12/10/92

Sample Taken By
Client

Reported By:

N.Y.S. Lab I.D. #10058

Sample : Haliburton Nus Project #1953
Bp-G-R-Rb3
Rinsate Blank
LIQUID

Sample Number 80219212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l
Trichloroethylene	<0.18		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	<0.05		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	<0.18		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
< Indicates less than 1 part per billion or below detection limit.

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80219212

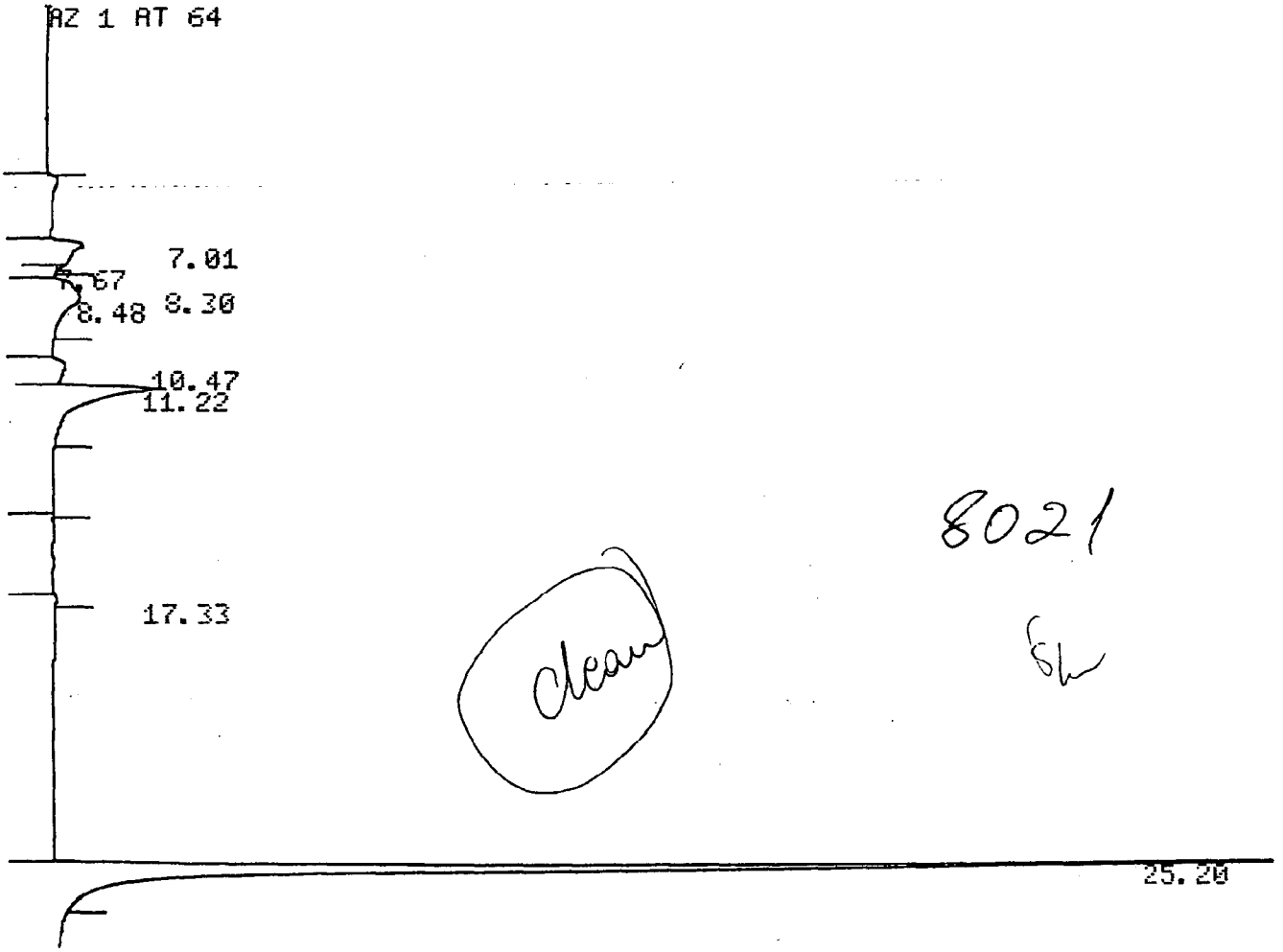
ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.18
TRICHLOROETHENE				<	0.12
TETRACHLOROETHENE				<	0.05

REPORTED.....

APPROVED.....

CHANNEL A INJECT 12/10/92 17:11:13

AZ 1 AT 64



8021

clear

601 12/10/92 17:11:13 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 744 INDEX 744

PEAK#	AREA%	RT	AREA BC
1	4.295	7.01	93170 02
2	0.468	7.67	10145 03
3	1.448	8.3	31397 02
4	4.688	8.48	101683 03
5	2.112	10.47	45801 02
6	13.663	11.22	296364 03
7	0.14	17.33	3030 01
8	73.187	25.2	1587458 01
TOTAL	100.		2169048

84

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Time Of Login : 09:01:0[illegible]
Date:
Collected:12/09/92
Received :12/09/92
Completed:12/10/92

Sample Taken By
Client

Reported By: [illegible]

N.Y.S. Lab I.D. #10[illegible]

Sample : Haliburton Nus Project #1953
Bp-G-R-Fb1
Field Blank
LIQUID

Sample Number 8022[illegible]212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l
Trichloroethylene	<0.18		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	<0.05		
Vinyl Chloride	<0.18		
1,1,1-Trichloroethane	0.18		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
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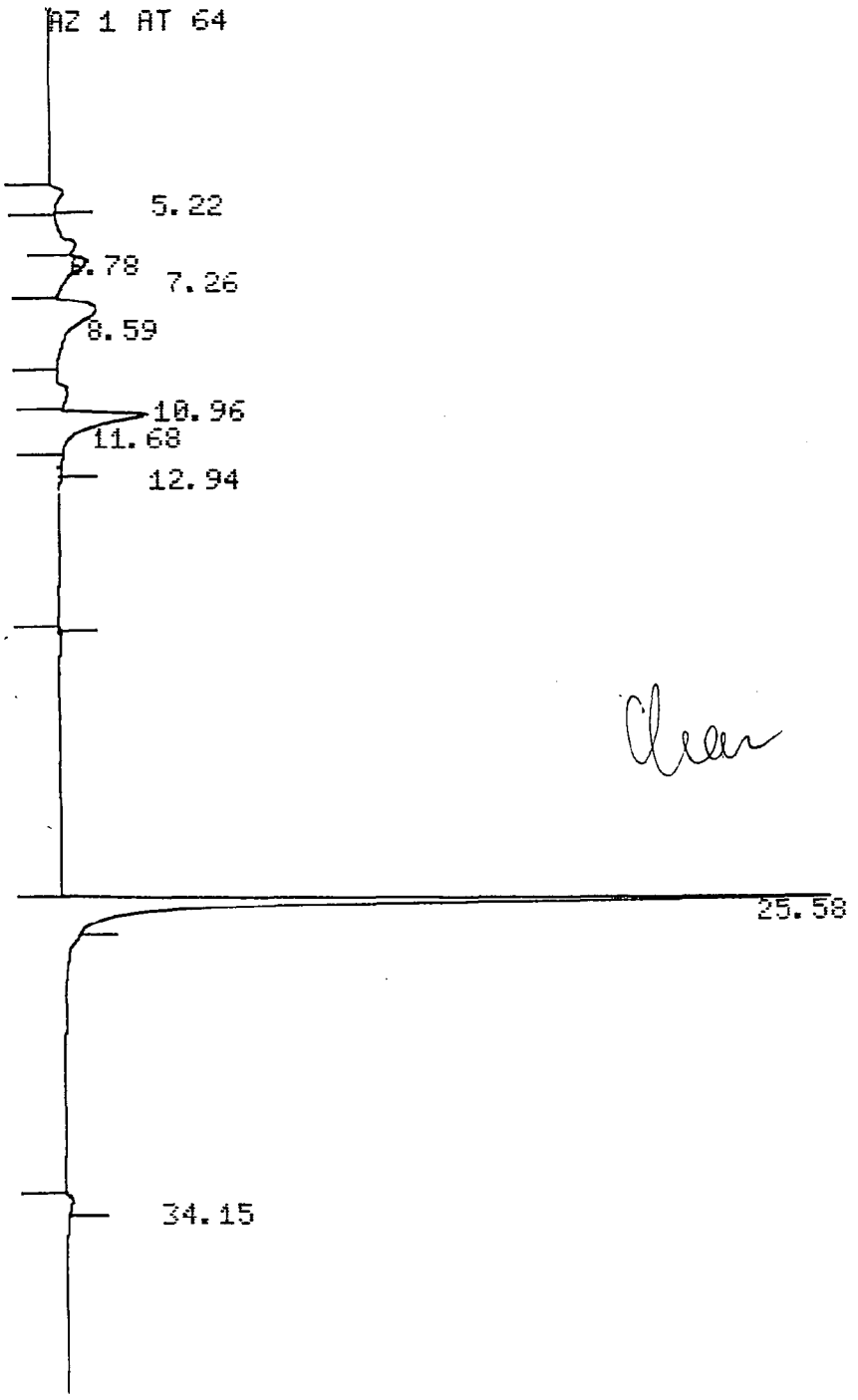
80229212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.18
TRICHLOROETHENE				<	0.12
TETRACHLOROETHENE				<	0.05

REPORTED.....

APPROVED.....

CHANNEL A INJECT 12/10/92 16:06:03



Clear 8022 6m

601 12/10/92 16:06:03 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 743 INDEX 743

PEAK#	AREA%	RT	AREA	BC
1	1.569	5.22	24598	01
2	4.46	6.78	69926	02
3	7.759	7.26	121660	02
4	11.731	8.59	183938	02
5	2.112	10.96	33121	02
6	13.756	11.68	215680	02
7	0.413	12.94	6471	03
8	57.372	25.58	899539	01

67

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Date:
Collected:12/10/92
Received :12/10/92
Completed:12/11/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10058

Sample : Haliburton Nus Project #1953
Bp-G-R-13

Sample Number 80289212

LIQUID

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene:	<0.13		
Trans-1,2-Dichloroethene	<0.1		
1,1-Dichloroethane	<0.07		
1,1,1-Trichloroethane	<0.18		
1,2-Dichloroethane	<0.03		
Trichloroethene	<0.12		
Tetrachloroethene	<0.05		
Vinyl Chloride	<0.18		
Cis-1,2-Dichloroethene	<0.34		

Comments

* Indicates less than 1 part per billion or below detection limit.

12/11/92

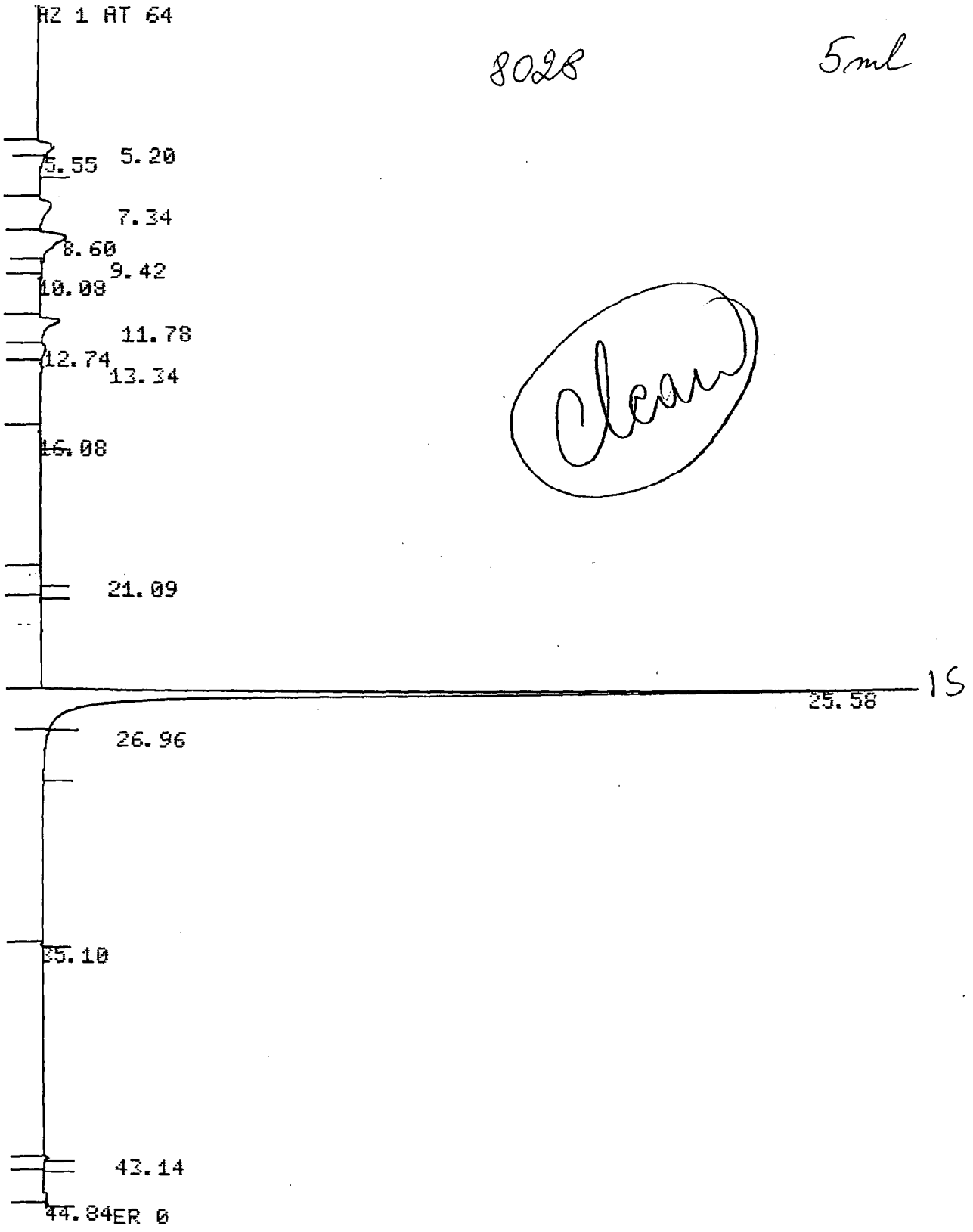
80289212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.18
TRICHLOROETHENE				<	0.12
TETRACHLOROETHENE				<	0.05

REPORTED.....

APPROVED.....

89



042

601 12/11/92 11:31:10 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 760 INDEX 760

PEAK#	AREA%	RT	AREA BC
1	2.489	5.2	45209 02
2	0.919	5.55	16682 03
3	3.088	7.34	56073 02

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Time Of Login : 08:34:18
Date:
Collected:12/10/92
Received :12/10/92
Completed:12/11/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10058

Sample : Haliburton Nus Project #1953
Bp-G-R-12

Sample Number 80299212

LIQUID

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene:	<0.13		
Trans-1,2-Dichloroethene	<0.1		
1,1-Dichloroethane	<0.07		
1,1,1-Trichloroethane	<0.18		
1,2-Dichloroethane	<0.03		
Trichloroethene	<0.12		
Tetrachloroethene	<0.05		
Vinyl Chloride	<0.18		
Cis-1,2-Dichloroethene	<0.34		

Comments

* Indicates less than 1 part per billion or below detection limit.

12/11/92

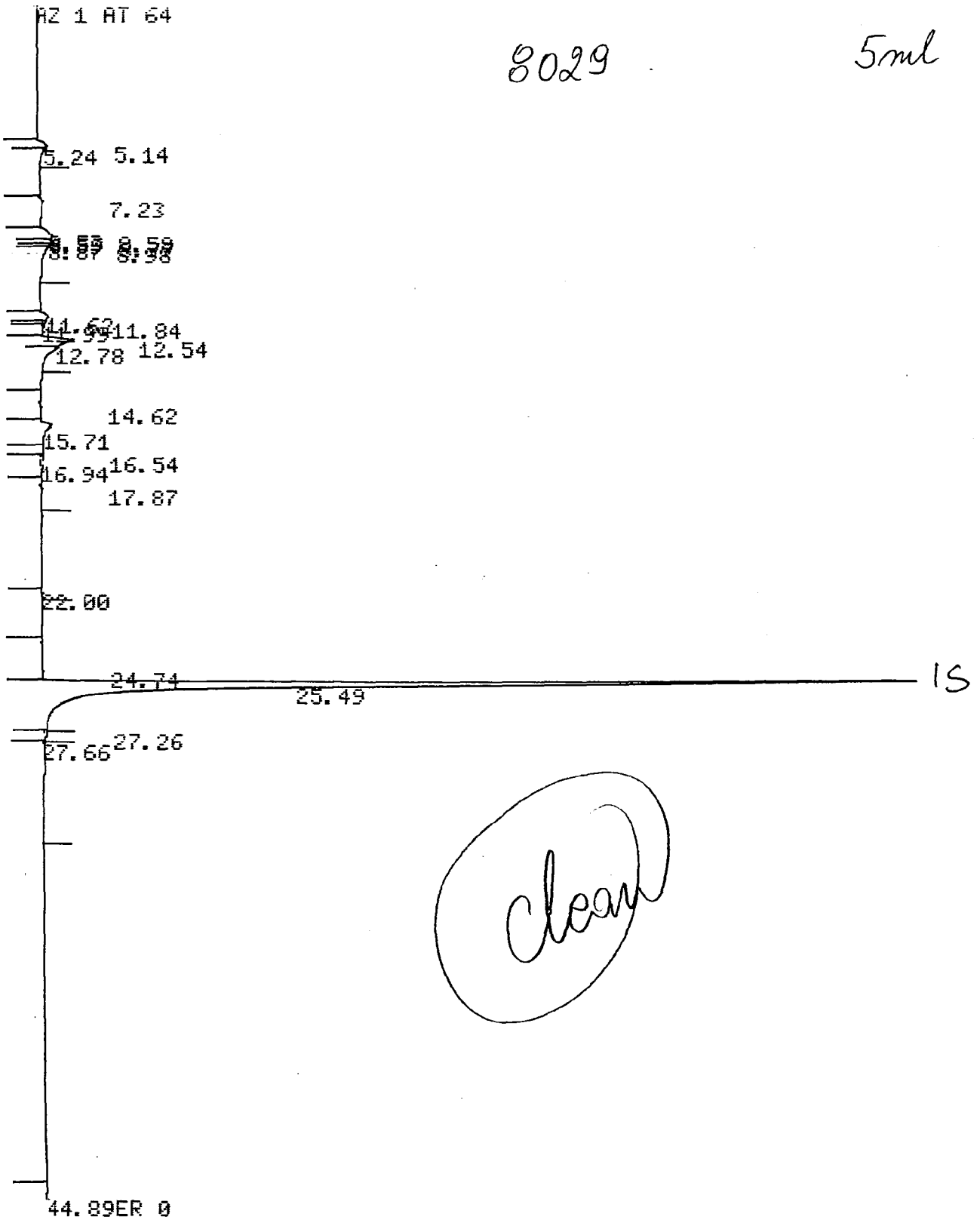
80299212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.18
TRICHLOROETHENE				<	0.12
TETRACHLOROETHENE				<	0.05

REPORTED.....

APPROVED.....

92



601 12/11/92 12:22:38 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 761 INDEX 761

PEAK#	AREA%	RT	AREA BC
1	0.837	5.14	14399 02
2	0.877	5.24	15090 03
3	0.89	7.23	15322 02
4	0.908	8.53	15619 02

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Time Of Login : 08:36:06
Date:
Collected:12/15/92
Received :12/15/92
Completed:12/16/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10052

Sample : Haliburton Nus Project #1953
Bp-G-R-16
LIQUID

Sample Number 80819212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Trichloroethylene	<0.10		
1,1-Dichloroethylene	<0.13		
1,1-Dichloroethane	<0.07		
Trans-1,2-Dichloroethylene	<0.10		
Tetrachloroethylene	<0.05		
Vinyl Chloride	<0.10		
1,1,1-Trichloroethane	<0.10		
1,2 Dichloroethane	<0.03		
Cis 1,2 Dichloroethylene	<0.34		

Comments
< Indicates less than 1 part per billion or below detection limit.

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12/16/92

80819212

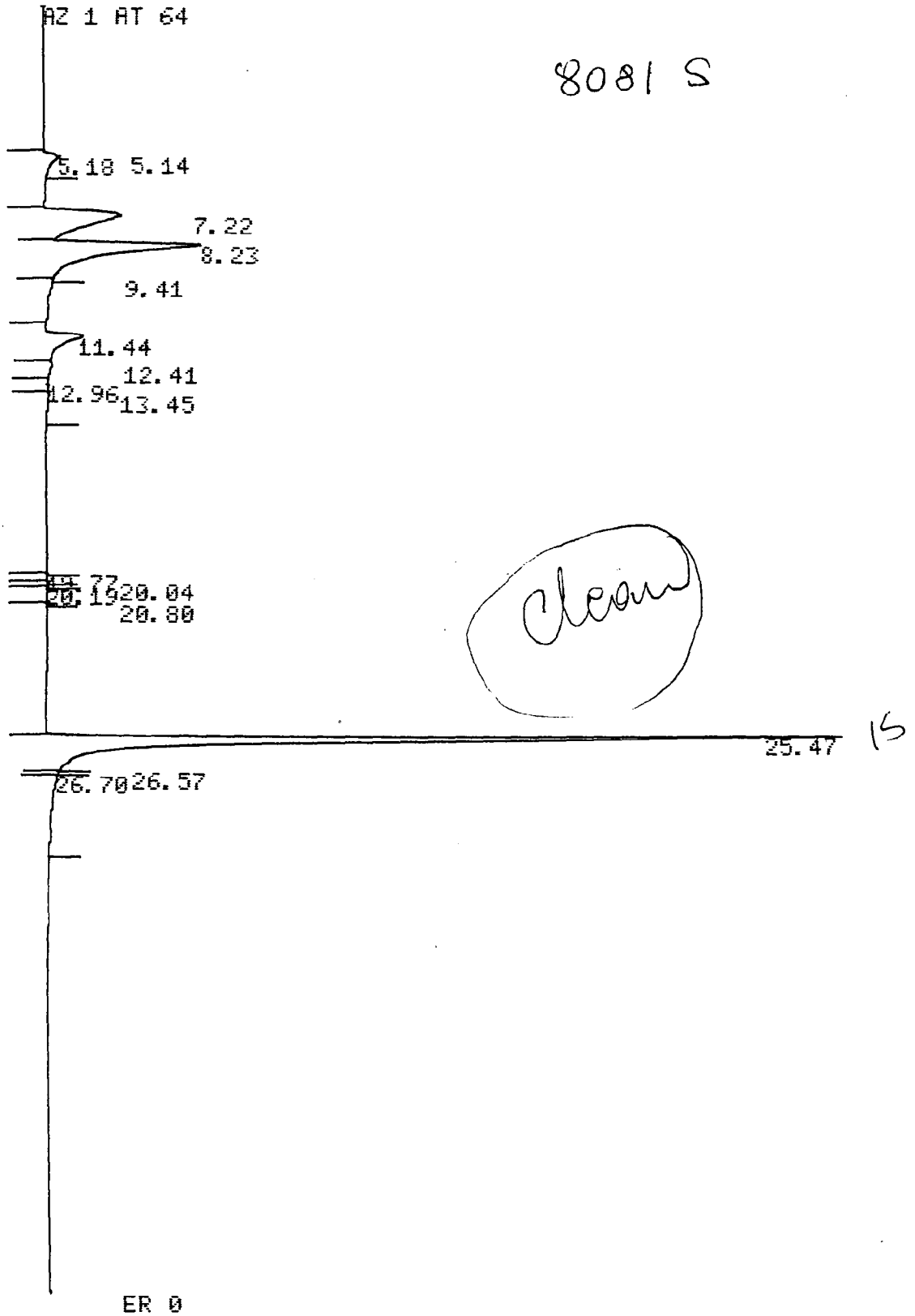
ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				<	0.03
TRICHLOROETHENE				26.43 ppb (85.0 % rec.)	
TETRACHLOROETHENE				3.71 ppb (90.03% rec.)	

REPORTED.....

APPROVED.....

95

CHANNEL A INJECT 12/16/92 13:24:08



601 12/16/92 13:24:08 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 821 INDEX 821

PEAK#	AREA%	RT	AREA BC
1	0.325	5.14	7493 02
2	1.462	5.18	[illegible]

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Time Of Login : 10:03:11
Date:
Collected:12/16/92
Received :12/16/92
Completed:12/17/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10058

Sample : Haliburton Nus Project #1953
Bp-G-R-11

Sample Number 81399212

LIQUID

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene:	<0.13		
Trans-1,2-Dichloroethene	<0.1		
1,1-Dichloroethane	<0.07		
1,1,1-Trichloroethane	0.94		
1,2-Dichloroethane	<0.03		
Trichloroethene	6.08		
Tetrachloroethene	0.33		
Vinyl Chloride	<0.18		
Cis-1,2-Dichloroethene	<0.34		

Comments

* Indicates less than 1 part per billion or below detection limit.

12/17/92

81399212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE		0.94ppb			0.18
TRICHLOROETHENE		6.08ppb			0.12
TETRACHLOROETHENE		0.33ppb			0.05

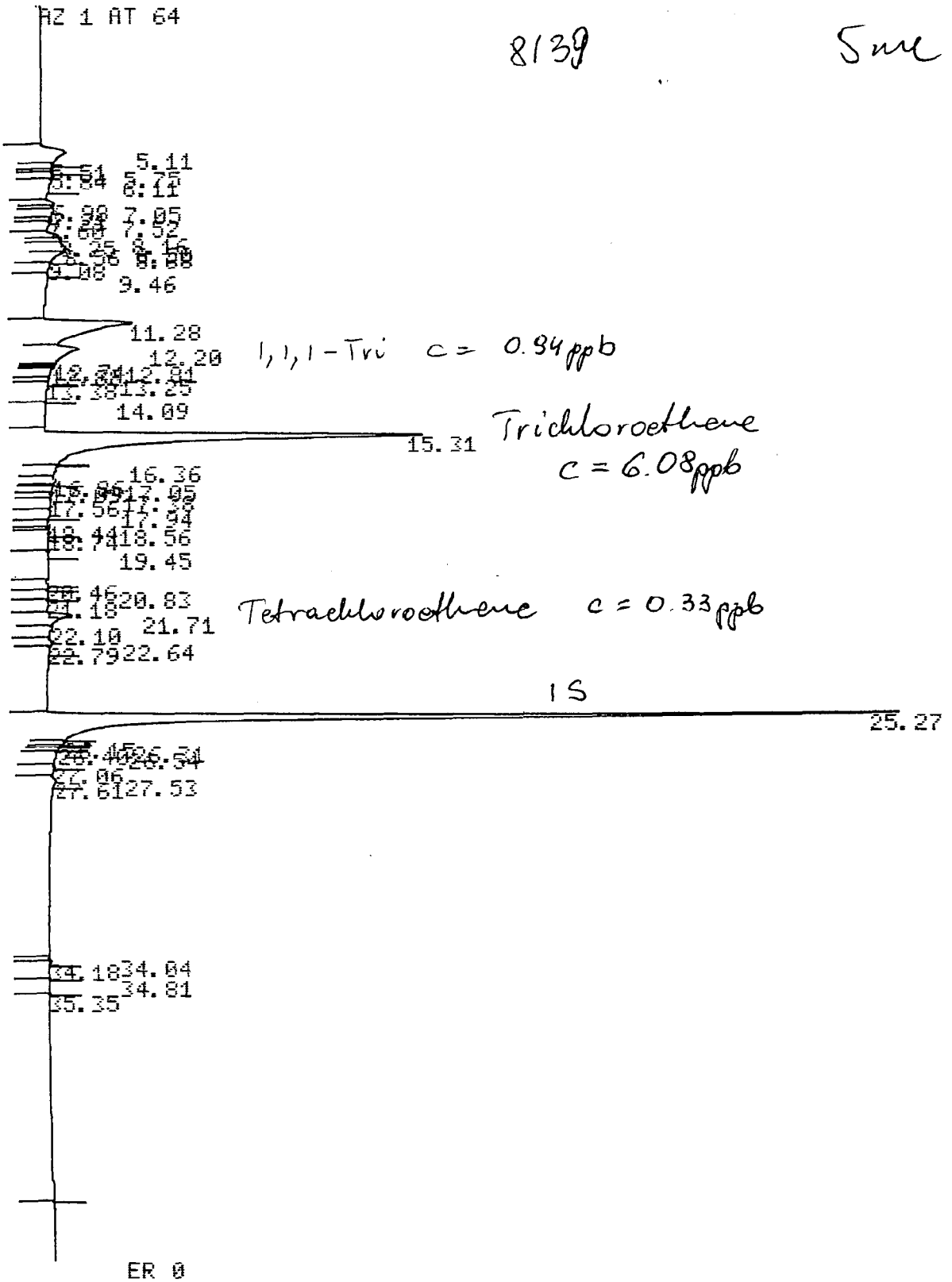
REPORTED.....

APPROVED.....

CHANNEL A INJECT 12/17/92 14:25:34

AZ 1 AT 64

8139 5ml



ER 0

601 12/17/92 14:25:34 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 839 INDEX 839

PEAK#	AREA%	RT	AREA BC
1	1.989	5.11	54972 02

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Time Of Login : 10:03:46
Date:
Collected:12/16/92
Received :12/16/92
Completed:12/17/92

Sample Taken By
Client

Reported By: _____

N.Y.S. Lab I.D. #10858

Sample : Haliburton Nus Project #1953
Bp-G-R-5

Sample Number B1409212

LIQUID

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene:	<0.13		
Trans-1,2-Dichloroethene	<0.1		
1,1-Dichloroethane	<0.07		
1,1,1-Trichloroethane	3.73		
1,2-Dichloroethane	<0.03		
Trichloroethene	22.49		
Tetrachloroethene	4.11		
Vinyl Chloride	<0.18		
Cis-1,2-Dichloroethene	<0.34		

Comments

* Indicates less than 1 part per billion or below detection limit.

100

12/17/92

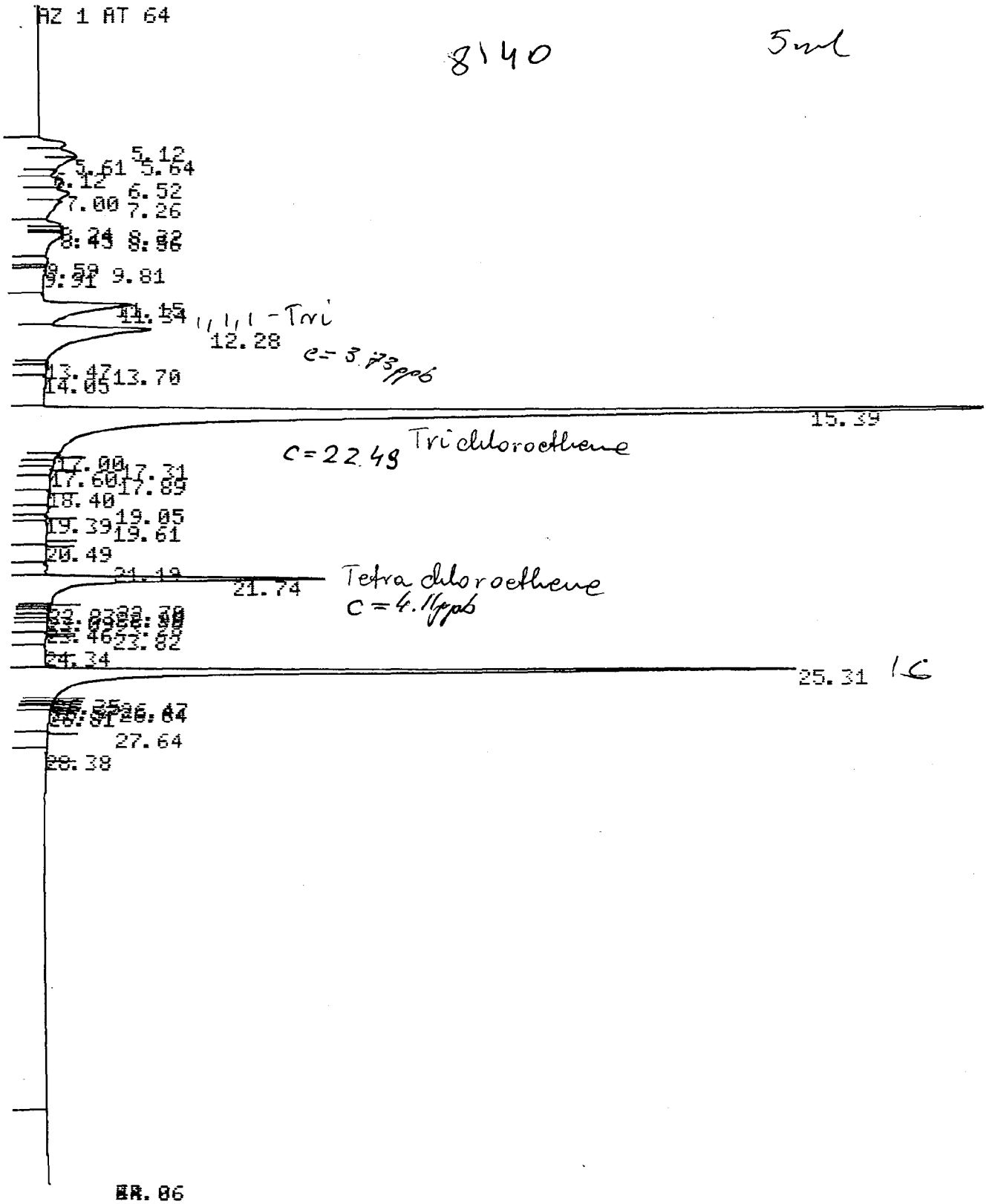
81409212

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLORODETHENE				<	0.10
1,1,1-TRICHLOROETHANE		3.73ppb			0.18
TRICHLOROETHENE		22.49ppb			0.12
TETRACHLOROETHENE		4.11ppb			0.05

REPORTED.....

APPROVED.....

CHANNEL A INJECT 12/17/92 15:16:35



601 12/17/92 15:16:35 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 840 INDEX 840

PEAK#	AREA%	RT	AREA BC
1	0.948	5.12	58805 02
2	1.442	5.61	89451 02
3	1.567	5.64	97215 02

Volumetric Techniques, LTD.

317 Bernice Drive • Bayport, New York 11705 • (516) 472-4848

To: Halliburton N U S
910 Clopper Rd., P.O.Box 6872
Gaithersburg MY 20877-0762

Time Of Login : 10:13:0
Date:
Collected: 12/11/92
Received: 12/12/92
Completed: 12/28/92

Sample Taken By
Halliburton N U S

Reported By: _____
N.Y.S. Lab I.D. #[illegible]

Sample : Halliburton Nus Project #1953
Bp-G-R-Dup02

Sample Number 81419212

For Qa/Qc (Bp-G-R-Dup)
LIQUID

Analysis : Epa 8010

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
	MDL		
Vinyl Chloride	0.12		
1,1-Dichloroethene	2.13		
1,1-Dichloroethane	0.07		
1,2-Dichloroethane	5.07		
Cis-1,2-Dichloroethene	0.34		
Trans-1,2-Dichloroethene	0.10		
1,1,1-Trichloroethane	1.97		
Trichloroethene	26.43		
Tetrachloroethene	3.71		

Comments

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* Indicates less than 1 part per billion or below detection limit.

12/18/92

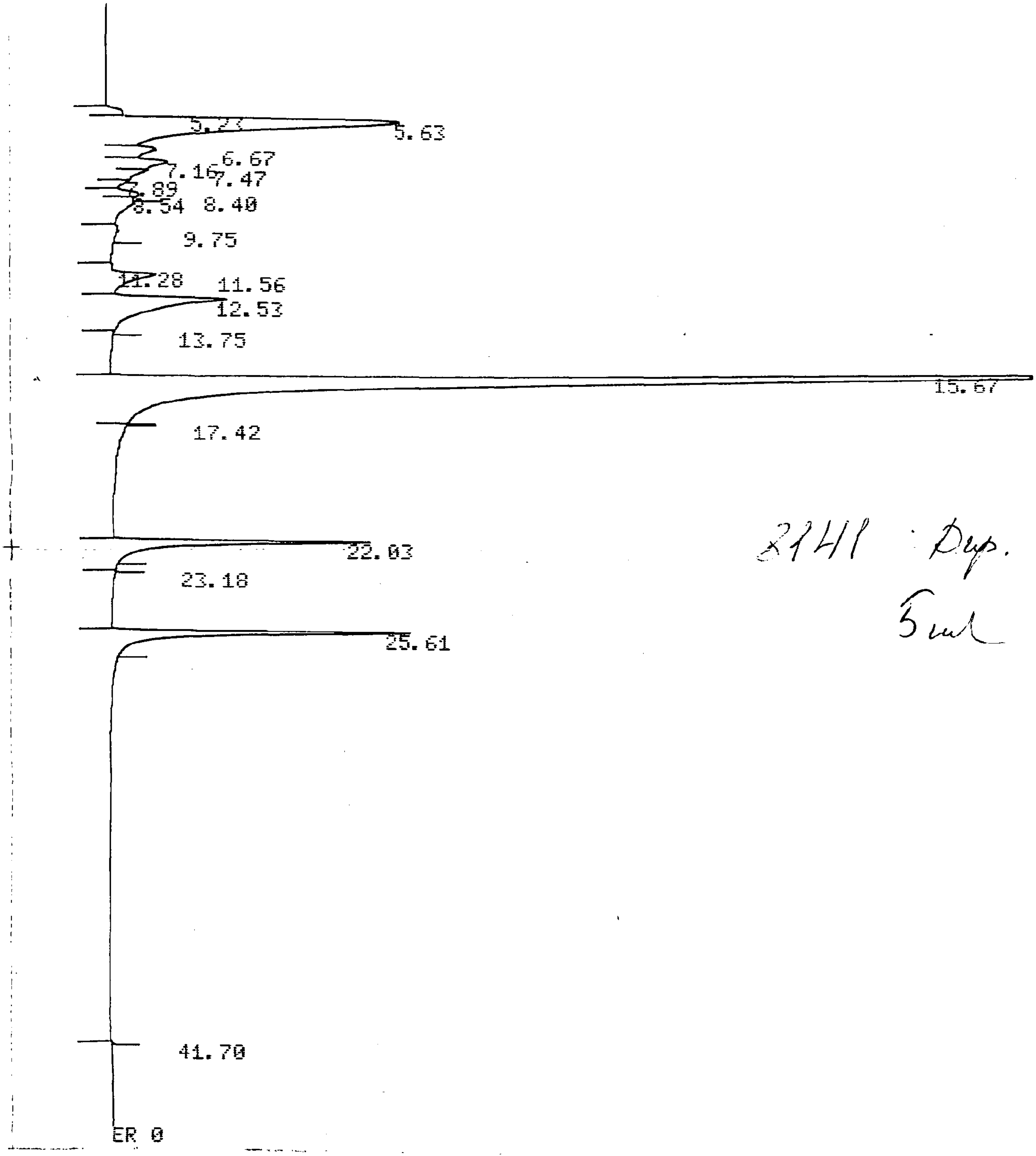
81419212 (DUP.)

ANALYTES	RT	RF	DF	CONC. ppb	MDL ppb
VINYL CHLORIDE				<	0.18
1,1-DICHLOROETHENE				<	0.13
1,1-DICHLOROETHANE				<	0.07
1,2-DICHLOROETHANE				<	0.03
cis-1,2-DICHLOROETHENE				<	0.34
trans-1,2-DICHLOROETHENE				<	0.10
1,1,1-TRICHLOROETHANE				3.97 ppb	(93.95% rec.)
TRICHLOROETHENE				26.43 ppb	(85.0 % rec.)
TETRACHLOROETHENE				3.71 ppb	(90.03% rec.)

REPORTED.....

APPROVED.....

104



2141 Dup.
5ml

105

Volumetric Techniques, LTD.

317 Bernice Drive • Bayport, New York 11705 • (516) 472-4848

To: Halliburton N U S
910 Clopper Rd.,P.O.Box 6033
Gaithersburg MY 20877-0960

Time Of Login : 10:12:40
Date:
Collected:12/15/92
Received :12/16/92
Completed:12/21/92

Sample Taken By
Halliburton N U S

Reported By: _____
N.Y.S. Lab I.D. #10033

Sample : Halliburton Nus Project #1953
Bp-B-P-Ms@2

Sample Number 81429212

Per Qa/Qc (Bp-B-P-Ms)
LIQUID

Analysis : Soa 8260

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene	58.50		
Trans-1,2-Dichloroethene	100.27		
1,1-Dichloroethane	106.62		
1,1,1-Trichloroethene	107.12		
1,2-Dichloroethane	100.67		
Trichloroethene	102.34		
Tetrachloroethene	125.31		

Comments

* Indicates less than 1 part per billion or below detection limit.

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QC

MSD 81429212

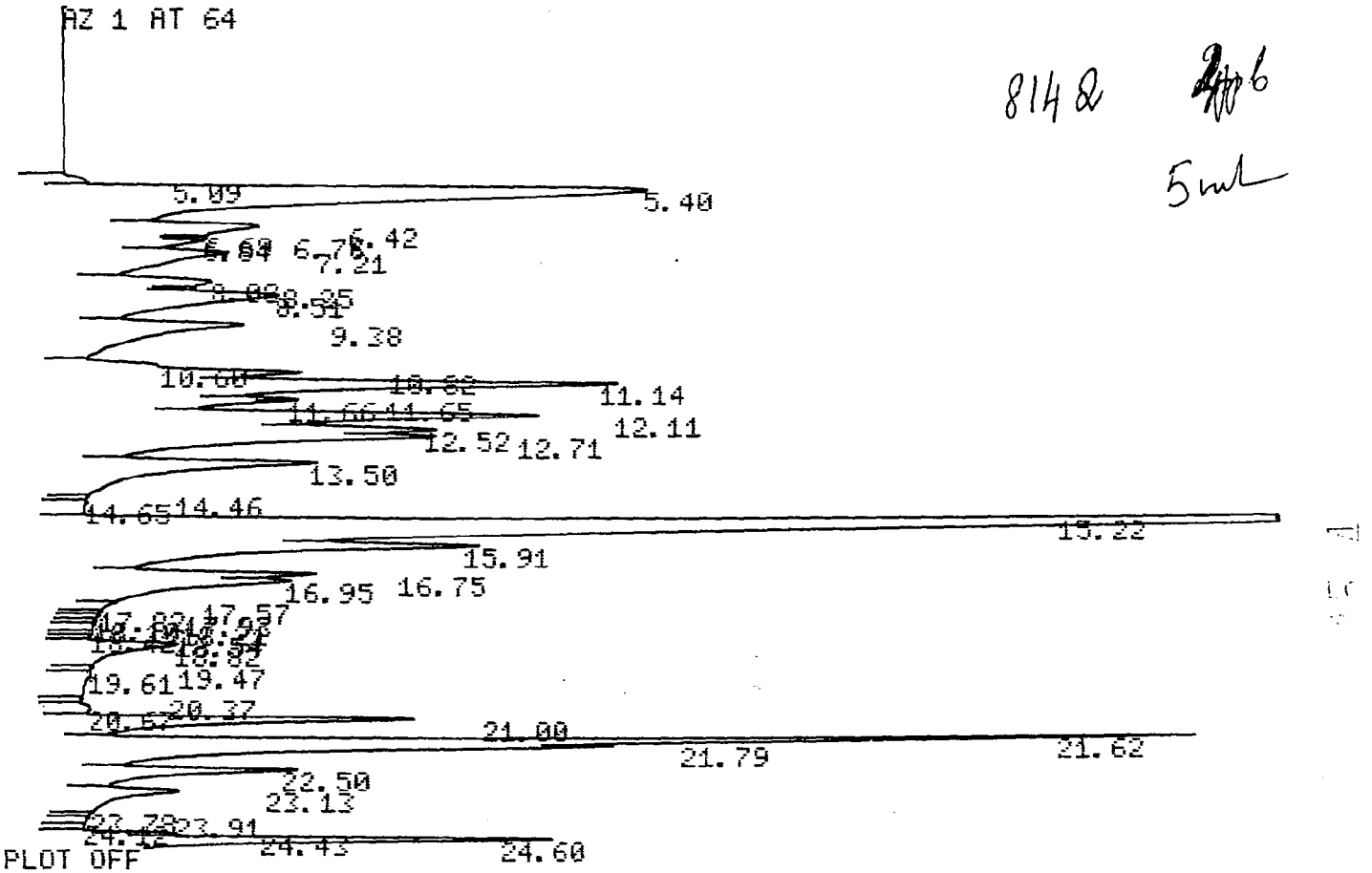
	AREA MS	RF	CON. MS	TARGET	% REC.
1,1-DICHLOROETHENE.....	539214	27371	3.9	4.0	98.50
trans-1,2-DICHLOROETHENE...	697213	34782	4.0	4.0	100.23
1,1-DICHLOROETHANE.....	590354	27684	4.3	4.0	106.62
1,1,1-TRICHLOROETHANE.....	910514	22077	8.2	7.7	107.12
1,2-DICHLOROETHANE.....	656224	32625	4.0	4.0	100.57
TRICHLOROETHENE.....	4512791	27844	32.4	26.5	122.32
TETRACHLOROETHENE.....	1005048	23564	8.5	8.1	105.31

CHANNEL H INJECT 12/17/92 17:23:01

AZ 1 AT 64

8142 2406

5ml



PLOT OFF

501 12/17/92 17:23:01 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 842 INDEX 842

PEAK#	AREA%	RT	AREA BC
1	0.121	5.09	27352 02
2	8.794	5.4	1985959 02
3	1.868	6.42	421745 02
4	0.219	6.69	49522 02
5	0.191	6.76	43200 02
6	0.966	6.84	218238 02
7	2.388	7.21	539214 02
8	1.106	8.08	249803 02
9	0.338	8.25	76248 02
10	3.087	8.51	697213 02
11	2.614	9.38	590354 02
12	0.385	10.6	86983 02
13	1.71	10.82	386258 02
14	4.959	11.14	1119876 02
15	0.707	11.65	159758 02
16	1.213	11.66	273897 02
17	4.032	12.11	910514 02
18	2.054	12.52	463723 02
19	3.622	12.71	817837 02
20	2.906	13.5	656224 02
21	0.065	14.46	14663 02
22	0.179	14.65	40527 02
23	19.984	15.22	4512791 02
24	4.236	15.91	956555 02
25	1.359	16.75	306935 02

Volumetric Techniques, LTD.

317 Bernice Drive • Bayport. New York 11705 • (516) 472-4848

To: Halliburton N U S
910 Clopper Rd.,P.O.Box 6032
Gaithersburg MD 20877-0962

Time Of Login : 10:13:10
Date:
Collected:12/14/92
Received :12/14/92
Completed:12/15/92

Sample Taken By
Halliburton N U S

Reported By: ______

N.Y.S. Lab I.D. #10058

Sample : Halliburton Nus Project #1953
Bp-G-R-Ms02

For Qa/Qc(Bp-Gr-Msd)
LIQUID

Sample Number 81439212

Analysis : Epa 8020

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
1,1-Dichloroethene*	125.51		
Trans-1,2-Dichloroethene	99.39		
1,1-Dichloroethane	129.99		
1,1,1-Trichloroethane	99.79		
1,2-Dichloroethane	96.32		
Trichloroethene	121.25		
Tetrachloroethene	121.24		

Comments

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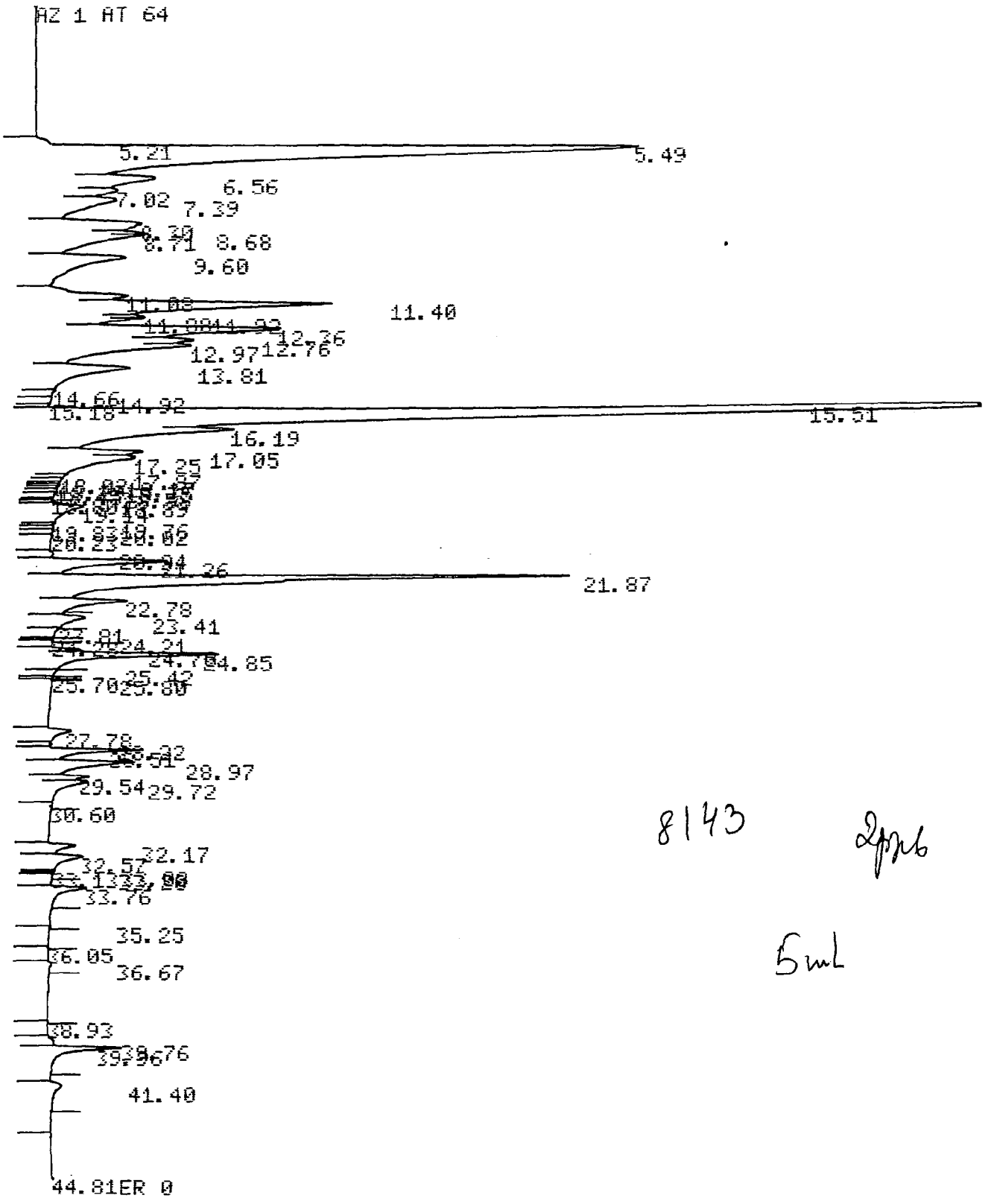
* Indicates less than 1 part per billion or below detection limit.

QC

MS 81439212

	AREA MS	RF	CON. MS	TARGET	% REC.
1,1-DICHLOROETHENE.....	336486	26789	2.5	2.0	125.61
trans-1,2-DICHLOROETHENE...	333502	33556	2.0	2.0	99.39
1,1-DICHLOROETHANE.....	359857	27684	2.6	2.0	129.99
1,1,1-TRICHLOROETHANE.....	631205	22077	5.7	5.7	99.79
1,2-DICHLOROETHANE.....	314242	32625	1.9	2.0	96.32
TRICHLOROETHENE.....	3453604	27844	24.8	24.5	101.25
TETRACHLOROETHENE.....	728792	23564	6.2	6.11	101.24



8143 2pm6

5mL

601 12/18/92 02:51:02 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 855 INDEX 855

PEAK#	AREA%	RT	AREA BC
1	0.113	5.21	16885 02
2	16.859	5.49	2526303 02
3	2.578	6.56	386351 02
4	1.278	7.02	185400 02

DAILY OPERATING LOGS

RUN #	PURGE TUBE	Sample #	VOLUME	COMMENTS
671	1	std 502.2	5ul→5ul	
	2	BLANK	5ml	
	3)	7480	0.5ml	
	4)	7844 0.5/5	0.1→2	
	6)	7845 7.5/5	0.1→2	
	7)	7480	0.6ml	
	1)	7878 [illegible]		
	2)	[illegible]		
	3)	[illegible]		
	[illegible]	— (empty)		
	4)	7910 [illegible]		
	2)	[illegible]		
	3)	7[illegible]		
	[illegible]	[illegible]		
	2)	7[illegible] B		
	7)	7[illegible]		
	8)	[illegible]		
	1)	[illegible]	5ml	
	2)	[illegible]	[illegible]	
	3)	7927 S	5ml	
	4)	7926 Bl	5ml	
	(	7926 S	5ml	

Date	Purge Tube	RUN #	Sample #	VOLUME	COMMENTS
12/07			1) M502.2 SD	5ml	
			2) Lab bl.	5ml	
			3) 7948	2ml	
			4) 7950	2ml	
			6) 7948	3ml	
			7) 7950	3ml	
			8) 7950	3ml	
			1) M502 (gas) std	5ml	
12/08			1) M502.2 SD	5ml	
			2) Lab blank	5ml	
			3) 7971	2ml	
			4) 7972	3ml	
			6) 7973	2ml	
			7) 7973 D.	1ml	
			2) 7971	5ml	
			3) 7972	5ml	
			4) 7973	5ml	
12/19/92			1) M502.2	5ml	
			2) Lab blank	5ml	
			3) 7998	5ml	
			4) 7996	5ml	

113

NYSDEC 033174

	6 7994	5ml			2) 7997 2ppb	5ml	
	7 7993	5ml			3) 7995 2ppb	5ml	
	8 7995	5ml			5) 7997 2ppb	5ml	
	2) 7997	5ml			3) 7995 2ppb	5ml	
	3) 7894 5/25	0.1→2			1) 7975 5g/3ml	100µl	
	4) 7895 5/25	0.1→2			2) 7976 5g/3ml	100µl	
	6) 7930 BL	5ml			3) 7977 5g/3ml	100µl	
	7) 7930 S	5ml			4) 8025 BL	5ml	502
	8) 7892 S	0.5→6ml			5) –		
					6) 8025 S	5ml	
411	1) 7995 D1	5ml			7) 7937 BL	5ml	
	2) 7995 S	5ml			8) 7937 S	5ml	
	3) 7889 S	5ml			1) 8030 BL	5ml	
	4) 7927 S	5ml			2) 8028	5ml	
	6) 7935 BL	5ml			3) 8029	5ml	
	7) 7935 S	5ml					
				12/11/92	1) ST502	5ml	
2 ✓	1) ST502	5ml			2) Lab blank	5ml	
	2) Lab blank	5ml			3) 8033	5ml	
	3) 8018	5ml			4) 7981 BL	5ml	
	4) 8020	5ml			5) –		
	6) 8021	5ml			6) 7981 S	5ml	
	7) 8022	5ml			7) 8025 BL	5ml	
	8) 7986 BL	5ml			8) 8025 S	5ml	

		1) 7825 BL	5ml		
		2) 7825 S	5ml		
		3) 8004 BL	5ml		
		4) 8004 S	5ml		
		5) 8002 BL	5ml		
		6) 8002 S	5ml		
		7) 7836 BL	5ml		
		8) 7836 S	2ml		
		1)			
		2) 8001 BL	5ml		
11		3) 8001 S	5ml		
		4) 8008 S	2ml		
		1)			
22	✓	1) ST502	5ml		
		2) Extract Blank	1ml		
		3) 7654	1ml		
		4) 7655	1ml		
		6) 7653	1ml		
		7) 7656	1ml		
		8) 7650	1ml		
		1) 7657	1ml		
		2) 7660	1ml		
		3) 7652	1ml		
		4) 7565	1ml		
		6) Blank Me	5ml		
		7) 7881 5g/2ml	100µl		
		8) 7882 5g/2ml	100µl		
12/15/82	✓	1) ST502	5ml		
		2) 7647	1ml		
		3) 7661	1ml		
		4) 7662	1ml		
		6) 7663	1ml		
		7) 8065 5g/2ml	100µl		
		8) 8064 5g/2ml	100µl		
		1) 8052 BL	5ml		
		2) 8052 S	5ml		
		3) 8053 BL	5ml		
		4) 8053 S	5ml		
		5) —			
		6) 7648	1ml		
		7) 7648	1ml		
		8) 7651	1ml		
12/16/82		1) ST502	5ml		
		2) 8083 BL	5ml		
		3) 8083 S	5ml R		
		4) 8080 S	5ml		

911

32

6) 7983 5g/2ml	100μl	
7) 7384 5g/2ml	100μl	
8) 8066	5ml	
1) 8067	5ml	
2) ~~8025 Bl~~		
3) ~~8025 S~~		
1) 8052 BL	5ml	
2) 8052 S	5ml	
3) 8025 S	5ml	
4) 7365 S	1ml	
5) —		
6) 8080 BL	5ml	
7) 8080 S	5ml	
8) 8038 S	5ml	
1) ST502	5ml	
2) Lab blank	5ml	
3) 8138	5ml	
4) 8140	5ml	
6) 8141 4ppb	5ml	
7) 8142 4ppb	5ml	
8) 8143 4ppb	5ml	
1) 8144 B	5ml	
2) 8144 S	[illegible]	

3) 8147 BL	5ml	
4) 8147 S	5ml	
6) 8108	5ml	
7) 8111	2ml	
8) 8143 2ppb	5ml	
1) M502 std	5ml	
2) Lab Blank	5ml	
3) 8105 Bl	5ml	
4) 8105 S	5ml	
5) 8206 S	5ml	
1) 8175 S	5ml	
1) 8207 S	5ml	502
2) 8108 S	3ml	
3) 8110 S	3ml	
4) 8088 S	5ml	
6) 8114	3ml	
7) 8113	3ml	
8) 8112	3ml	
1) 8153 BL	5ml	
2) 8153 S	5ml	
3) 8148 BL	5ml	
4) 8148 S	5ml	

Date	Run #		Sample #	Volume
11/19		1)	M502.2 STD.	5ml
		2)	Lab. Blank	5ml
	7438	1)	5ml →	
	7439	2)	5ml →	
		7) 8)	7529	5ml
		9)	7538	5ml
		6)	7597	5ml
			M502DRD	
11/20		6)	Cardwell Bl	5ml
		7)	7536	
			7538	
		9)	7613	5ml
11/23	632	1	STD	40ppb TOTAL
	633	2		100ppb TOTAL 5ml
	634		68NB	
	635	3		200ppb TOTAL
	636	4		300ppb TOTAL
	637	5	AIR BLANK	—
	638	6	STD	500ppb TOTAL
11/24/92	639	9)	M502 STD 20ppb	5ml
	640	7)	Lab Blank	5ml
	641	8)	7719 S	5ml
	642	9)	7719	

Dates	Run #		Sample #	Volume
	643	1)	7699 Bl	5ml
	a ~~644~~	2)	7699 S	5ml
	a 645	3)	7719 S	5ml
	a 646	4)	7529 S	5ml
	a 647 648	5) 6)	7610 S	5ml
	a ~~650~~ 649	7)	7621 S	5ml
	650	8		
11/25/92	651	1)	502 STD 20ppb	5ml
	652	2)	BLK	5ml
	653	3)	7723	5ml
	654	4)	7724	5ml
	a ~~655~~	6)	7767 7.5ml/6ml	0.1→2ml
	a 656	7)	7768 7.5ml/6ml	0.1→2ml
	657	8)	7760	5ml
11/30		1)	M502 STD	5ml
		2)	Lab Blank	5ml
		3)	7723	5ml
		8)	7814 01	5ml
		1)	7814 S	5ml
		8)	7480 6x blank	1ml
12/01		1)	M502 2	5ml
		2)	Lab blk	5ml
		3)	7884	5ml