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HYDROGEOLOGIC INVESTIGATION
GENERAL ELECTRIC COMPANY
AUBURN, NEW YORK

RESULTS OF PHASE 1

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1.0 CONCLUSIONS

1.1 The entire soil column, from ground-surface to bedrock, is contaminated with synthetic organic chemicals.

1.2 The parameters of major concern are trichloroethylene, total xylenes, acetone, methanol, ethlybenzene, toluene and possibly hydrocarbon oil. Total purgeable organic concentrations within the soil range from 160 to 10,800 ppm.

1.3 The soil beneath the evaporation pit consists of approximately 15 feet of low permeability material; 9 feet of glaciolacustrine silt and clay overlying 6 feet of glacial till.

2.0 RECOMMENDATION

Phase 2 work should be performed to obtain an estimate of the extent of soil and groundwater contamination surrounding the evaporation pit. The scope of Phase 2 should be designed to address soil contamination and groundwater contamination in soil and bedrock.

3.0 INTRODUCTION

This report presents the results of the Phase 1 study of the Hydrogeologic Investigation performed at the General Electric facility in Auburn, New York. This is the first phase of a two phase project to determine the extent of contamination resulting from waste disposal in an evaporation pit located immediately north of GE's fence-enclosed facility.

Dunn Geoscience Corporation (DGC) was authorized to perform this project by GE on December 11, 1985, in response to a DGC proposal dated July 21, 1985. The proposal was preceeded by a meeting on the site on June 21, 1985 attended by representatives from GE and DGC.

4.0 PURPOSE

The purpose of the Phase 1 program is to determine the nature and extent of the chemical contamination within the soil directly underlying the evaporation pit. The resulting information provides the basis for determining the need and scope of additional investigation work.

5.0 SCOPE

The scope of work for phase one involved the following:

1. An evaluation of existing data was performed including geologic maps, reports and publications, shop drawings, and historical aerial photographs. Brief interviews were held with people knowledgeable of General Electric's past operation of the evaporation pit.

2. A limited subsurface investigation program was initiated which included the drilling and soil sampling of two test borings in the evaporative pit. The soil samples were screened using an HNU-101 portable photoionization unit, and sent to an analytical laboratory for chemical analysis.

3. Soil samples were analyzed for the presence of purgeable hydrocarbons using EPA Method 8240 (GC/MS); methanol using ASTM Method D3695; the metals zinc, copper and tin using flame atomic adsorption; and silicone oils using infrared spectroscopy. Librarysearches were performed for unknown peaks observed during the GC/MS and infrared analyses.

4. This report was prepared presenting the results of the Phase 1 work.

6.0 PERSONNEL

The following Dunn Geoscience personnel provided an important contribution to the project.

Rodney W. Sutch, Hydrogeologist, performed project management and on-site direction of field activities. He also conducted the background data search, performed soil screening and prepared this report.

William J. Hall, Vice President, provided overall project direction and review of this final report.

Sander I. Bonvell, Senior Chemist and Edward Fahrenkopf, Chemist, selected the chemical parameters to be analyzed, prepared the chemical analysis results section of the report and contributed suggestions for Phase 2 work.

7.0 BACKGROUND INFORMATION

Past waste disposal took place at an evaporation pit located

immediately north of GE's fence-enclosed facility. The evaporation pit consisted of a circular-shaped depression approximately thirty feet in diameter and one foot deep. From the late 1950's until 1965, the pit received approximately fifty gallons per week of spent solvents and waste oils. The liquid waste was piped from the plant directly to the pit where it was discharged through a pipe network located around the edge of the pit. Signs of vegetative stress exist within the pit but do not extend in any direction away from the pit. Soil sampling and analyses has been conducted within the pit on two occasions. The first sampling (June 1979) indicated the presence of silicone oil and organic ester at unknown concentrations and elevated concentrations of copper, zinc and tin in the top six inches of the soil. The second sampling (June 1985) involved sampling to a depth of three feet rather than one foot as in the first samplilng. Samples taken at 18, 24 and 36 inches in depth indicate the presence of trichloroethylene (TCE) at increasing concentrations with increasing depth. The laboratory report also indicates the suspected existence of other organic solvents such as ketones, toluene and xylene based on odor alone. Copper, zinc and tin concentrations decrease with depth.

8.0 EVALUATION OF EXISTING DATA

Aerial photographs of the area, taken during or within a few years after active use of the evaporation pit, were purchased from or viewed at the Cayuga County Soil Conservation Department, the Cayuga County Assessors Office, the United States Department of Agriculture and the Historical Services Division of the New York State Museum. Due to the poor quality or small scale and insufficient coverage of the photographs, detailed study of the site was not possible. Photo coverage

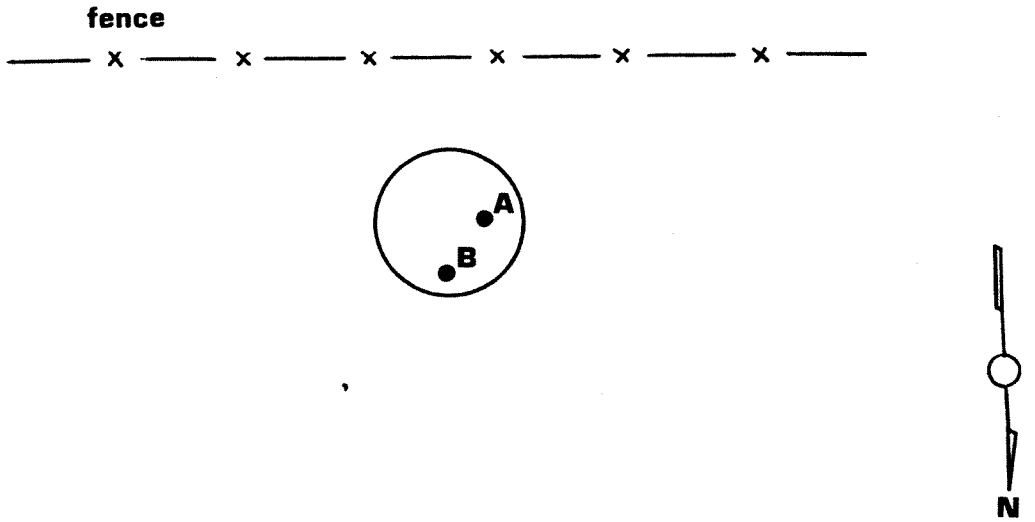
provided by a 1963 flight, at a scale of 1" = 660', showed the evaporation pit area with signs of vegetative stress extending slightly in an east-west orientation.

We were unable to interview any individuals with direct familiarity with the operation of the evaporation pit. Any additional information received will be incorporated into the plans for Phase 2.

Six test pit logs appearing on plans for the plant addition provided by General Electric, show a geologic situation very similar to what was encountered in test borings A and B.

9.0 TEST BORING PROGRAM

Two test borings were drilled within the evaporation pit area on December 5 and 6, 1985. The approximate location of the two borings is shown in Figure 1.



Test Boring Locations

FIGURE 1

CATOH Environmental Companies, Inc. of Weedsport, New York, was contracted to perform the test borings using a CME 55 drilling rig equipped with 7 1/4" O.D. hollow stem augers. Due to adverse field conditions created by recent rainfall, movement of the rig throughout the site required the assistance of a bulldozer. The test boring program was supervised by Rodney Sutch, Dunn Geoscience hydrogeologist.

Soil samples were collected at 2 foot intervals (continuously) at both test borings during drilling, using a 3 inch O.D. split-spoon barrel sampler, following ASTM methods. The test borings were advanced until refusal on apparent bedrock. The split-spoon barrels were washed before obtaining each sample to prevent cross-contamination. Three five gallon buckets with dedicated brushes, the first containing a non-phosphate detergent and the second and third containing clean water, were used. Each split-spoon sample was cut open, using a clean knife and logged, using the Modified Burmister Identification System and the Unified Soil Classification System (see Appendix A for explanation). These soil boring logs, describing subsurface materials encountered in the test borings, are located in Appendix A. Immediately after describing the sample, representative soil samples were placed in two 16 ounce and one 8 ounce glass jars sealed with aluminum foil lined screw top lids as well as two 40 ml "VOA" vials. One 16 ounce jar was used for infrared spectroscopy while the other 16 ounce jar was used for HNU-101 screening. The 8 ounce jar was used for methanol and metals analyses, while the two 40 ml vials were used for purgeable organics analysis. The 8 ounce jars and 40ml vials were placed on ice until they were transported to the laboratory for analysis. Chain of custody forms are located in

Appendix B.

Immediately after completing each boring, the hole was backfilled using the following procedure to prevent contamination of the bedrock aquifer:

1. Approximately 25 pounds of betonite pellets were placed in the bottom of the hole; followed with about 50 pounds of Benseal (granulated bentonite) creating a seal approximately six linear feet. Placement of the betonite seal was performed through the auger flights while slowly retracting them.

2. The augers were completely removed and the remainder of the hole was backfilled with the drill cuttings.

3. The cuttings were compressed about four feet using the auger and the hole backfilled to the surface with additional cuttings.

10.0 GEOLOGY AND HYDROGEOLOGY

10.1 Unconsolidated Deposits

Approximately 15 feet of soil was encountered overlying the bedrock at the evaporation pit. The upper nine feet consisted of layered deposits of silt and clay with occasional seams of the fine sand. These soils were deposited in a glacial lake environment. The layering or varving results from a varying depositional environment often related to seasonal changes.

The groundwater table is estimated from the moisture condition of the soil samples to be relatively high, approximately three to six feet below ground level. The depth of groundwater is likely to fluctuate significantly during the year in response to precipitation variations.

Underlying the glaciolacustrine sediments is approximately six feet of glacial lodgement till. This dark brown dense deposit consists of an unsorted combination of material ranging from clay sized particles to cobbles. The glacial till was deposited as the continental glacier advanced southward scouring older unconsolidated deposits and weathered rock and subsequently depositing the eroded material under pressure of the overlying ice.

Both the glaciolacustrine sediments and the glacial till are expected to exhibit vertical hydraulic conductivities in the range of 10^{-5} to 10^{-6} cm/sec (1 to 10 ft/year). The horizontal hydraulic conductivity of the glaciolacustrine sediments, due to the layered nature of this deposit, is expected to be one or more orders of magnitude greater. The horizontal hydraulic conductivity of the glacial till is likely to be similar to the vertical hydraulic conductivity. Information on the direction of groundwater flow and hydraulic gradients, both horizontal and vertical, will be determined as part of Phase 2 work.

10.2 Bedrock

Test borings A and B were terminated at apparent bedrock and therefore provided no site specific information on the bedrock. According to a bedrock geology map of the area, the site is

expected to overlie a thin (1-2 mile wide) northwest trending strip of Onondaga Limestone of Devonian Age. Additional information on the bedrock will be obtained during Phase 2.

11.0 ANALYTICAL RESULTS

11.1 General

Soil samples collected during the test boring program were split and sent to three laboratories for chemical analyses. Infrared analysis was performed at Laboratory for Materials, Inc. in Burnt Hills, NY; metals and methanol at C.T. Male Associates in Albany, NY; and purgeable organics at CAMO Laboratory in Poughkeepsie, NY (subcontracted by C. T. Male Associates). Analytical results are located in Appendix B. A summary of the results follows.

11.2 Purgeable Organics

Soil samples collected from test borings A and B were analyzed for purgeable (volatile) organics by EPA Method 8240. Tables 1a and 1b summarize the results from borings A and B respectively.

The parameters of major concern are trichloroethylene, total xylenes, acetone, ethylbenzene and toluene. A mass spectral library search tentatively identified unknown peaks in several of the samples although confirmation using pure standards was not performed. These compounds were quantified by assuming a response factor (RF) of 1 and calibrating this to the nearest internal standard to obtain the reported concentration. A more involved and costly method using pure compounds to determine the actual RF values was not warranted considering the low levels of

SUMMARY OF ANALYTICAL RESULTS
Test Boring A
Table 1a

Depth	Sample ID	Zinc	Tin	Copper	Methanol	TCE	PCE	Toluene	Ethylbenzene	Acetone	Xylenes	2 - propanol	Methylene chloride	Propylester formic acid	3 - methyl - 2 - butanone	Total organic values	HNU 5 sec	HNU Max read	Infrared Interpretation
0-2'	S-1 1209 85 B 01	56	-	23	-	37	-	-	4	61	53	-	-			160	-	300	Hydrocarbon Oil - major component Ester - minor component Silicone - minor component
2-4'	S-2 B 02	63	22	21	54	960	2	5	190	660	1600	-	-			3422	220	380	Hydrocarbon Oil - major component Ester - minor component Silicone - minor component
4-6'	S-3 B 03	57	26	22	757	185	-	1	7	51	190	36	-			475	180	360	Hydrocarbon Oil - major component Ester - minor component Silicone - minor component
6-8'	S-4 B 04	48	10	22	827	29	-	-	1	1200	10	140	-			1385	320	340	Not Tested
8-9'	S-5 B 05	59	20	23	751	62	-	1	2	2100	15	-	-			2185	220	320	Hydrocarbon Oil - major component
9-10'	S-6 B 06	44	23	14	410	1	-	-	-	1600	2	135	1	1	1	1745	120	300	Not Tested
10-12'	S-7 B 07	39	26	14	267	47	-	1	-	1500	3	-	2			1558	300	300	Not Tested
12-13'	S-8 B 08	39	35	12	164	19	-	1	1	610	15	-	-			651	300	380	Not Tested
	TOTAL	405	162	151	3230	1340	2	9	205	7782	1888	311				11,581			
	MEAN	51	20	19	404	168	0.25	1	26	973	236	39				1,448			

NOTES: 1) Results are based on soil samples
2) Values are rounded to the nearest ppm
3) All results are in ppm or ug/g (dry) for metals

SUMMARY OF ANALYTICAL RESULTS
Test Boring B
Table 1b

Depth	Sample ID	Zinc	Tin	Copper	Methanol	TCE	PCE	Toluene	Ethybenzene	Acetone	Xylenes	2 - propanol	Methylene chloride	Propylester formic acid	3 - methyl - 2 - butanone	Trichlorofluoromethane	Trans - 1,2-dichloroethylene	1,1,1-trichloroethane	Carbon tetrachloride	1,1,2,2-tetrachloroethane	Methyl silane	Isopropanol	Hexane	2 - propenol	2 - propenal	Total Organic Values	HNU Value 5 sec	HNU max value	Infrared Interpretation
0-2'	S-1 1209 85 B 09	74	22	30	23	3700	1	10	370	14	6700		1	-	-	-	-	-	1	1	1	-	-	-	10,804	360	420	Not Tested
2-4'	S-2 B 10	550	101	127	105	2600	-	9	138	120	1400		9	-	-	-	-	-	-	-	-	43	38	8	4,370	80	160	Not Tested
4-6'	S-3 B 11	94	17	35	491	3400	-	21	172	170	110		2	21	-	-	-	-	-	-	4	-	-	-	3,905	20	400	Hydrocarbon Oil - major component Ester - minor component Silicone - minor component
6-8'	S-4 B 12	62	19	23	333	4400	3	96	133	570	1700		1	30	2	7	2	-	-	-	-	-	-	-	6,949	100	300	Not Tested
8-8.6'	S-5 B 13	62	24	26	331	584	-	7.1	26	2	302		2	8								11			947	100	180	Not Tested
8.6-10'	S-6 B 14	55	30	20	523	38	-	-	2	1800	16		1	-								3			1,865	90	420	Not Tested
10-12'	S-7 B 15	49	31	23	373	109	-	2	9	2800	112		-	-								2			3,039	10	300	Not Tested
13-14.5'	S-8 B 16	52	38	15	160	130	-	-	16	220	140		-	-								-			511	180	340	Not Tested
	TOTAL	998	282	299	2339	14,961	4	145	866	5,696	10,480	-	16	59								59	38	8	32,390			
	MEAN	125	35	37	292	1,870	0.5	18	108	712	1,310	-	2	7								7	5	1	4,049			

Notes: 1) Results are based on soil samples
2) All results in ppm or ug/g (dry) for metals
3) Values are rounded to the nearest ppm

these compounds in relation to the aforementioned major contaminants.

Organic contamination was observed in all soil samples. Trichloroethylene, ethylbenzene, xylenes and toluene appear to generally decrease in concentration with depth while the highest concentrations of acetone are found from 6 to 12 feet.

11.3 Methanol

Methanol was analyzed using ASTM Method D3695 (soil extraction with distilled water and subsequent gas chromatographic analysis). Concentrations in test boring A ranged from less than 1 to 827 ppm (actually ug/g dry weight) and from 23 to 523 in test boring B. Highest concentrations were observed from 4 to 12 feet in depth.

11.4 Metals

Soil samples were analyzed for total matrix zinc, tin and copper by flame atomic adsorption. Zinc levels in boring A ranged from 39 to 63 ppm; levels in boring B ranged from 49 to 94 ppm with a single anomalously high concentration of 550 ppm noted in sample B, S-2 (2-4 feet).

Copper levels ranged from 12 to 23 ppm in boring A and from 15 to 127 ppm in boring B.

Tin concentrations in both borings varied from 10 to 38 ppm with an exceptional single concentration of 101 ppm in B, S-2 (2-4 feet).

Highest levels for all three metals were observed in sample B, S-2. Previous analyses performed by the General Electric laboratory in January 1979 (Appendix B) revealed high levels of zinc (449 ppm) and copper (150 ppm) in the top six inches of soil. Analyses performed by Jans laboratory in May 1985 (Appendix B) exhibited zinc levels of 305, 147 and 68 ppm for soil depths of 18, 24 and 36 inches respectively. Copper concentration at corresponding depths were 90, 43 and 28 ppm.

11.5 Infrared Analysis

All soil samples from test boring A and sample S-3 from test boring B were analyzed using infrared spectroscopy (IR). Details of the results and analytical procedure are located in Appendix B. Both quantitative and qualitative analysis by IR is best suited to working with pure "unknowns"; therefore, analyzation of the remaining samples from test boring B was postponed pending a decision on the usefulness of the technique.

The soil samples chosen to undergo IR were extracted with chloroform to remove any chloroform soluable compounds from the soil matrix. An IR scan on the resulting residue generated a spectrum representing several different components. The identification of one functional group out of such a spectrum and subsequently qualifying this as a specific compound at a specific concentration is somewhat suspect in the absence of known standards.

Laboratory for Materials, Inc., reports roughly 1% silicone in the chloroform extract. This is based on the functional silicone methlyl stretch at the 1260 cm^{-1} peak. This peak,

although identified in all sample spectra, is relatively minor.

The major component of most samples appears to be a non-volatile hydrocarbon (oil?) based on several alkane stretching frequencies and sample heating. The silicone and ester compounds reported by the previous GE findings (Appendix B) were also detected but only as minor contributions to the IR scan results.

Quantitation of the hydrocarbon fraction was not reported by the laboratory due to lack of a standards for comparison. Comparison with reference curves of known solutions of silicones in hydrocarbon oil lead the laboratory to report that the (chloroform) soil extracts contain roughly 1% silicone. However, we do not feel there is sufficient evidence to confidently support these estimated concentrations.

11.6 HNU Screening Procedure and Results

Representative portions of all split-spoon samples obtained from test borings A and B were collected as described in section 5.2. HNU-101 screening was performed at Dunn Geoscience Corporation Laboratory, Latham, NY on December 9, 1985. Each jar was allowed to reach room temperature prior to screening. The screw on lid was removed, and the aluminum foil pierced with the eight inch extension to the photoioniztion probe. The head space was tested for the presence of organic vapors and the results recorded after five seconds (manufacturers suggestion) and again after a maximum value was observed (generally less than 15 seconds).

The HNU-101 operates on the principle of photoionization. The

sample molecule absorbs a photon of ultraviolet radiation with energy sufficient to ionize the molecule. For this process to be successful, the energy (electron voltage [eV]) of the ultraviolet lamp must be greater than the ionization potential of the sample.

The HNU-101 is not an appropriate screening technique for the detection of methanol which has an ionization potential of 12.98 eV compared to the 10.2 eV provided by the HNU ultraviolet lamp.

Table 2 compares the gas chromatagram derived total organic values for each sample with both the five second and maximum HNU responses. Table 2 is a reorganization of data presented in Tables 1a and 1b for easier visual correlation of laboratory and HNU results.

Comparison Between Laboratory Data
and
HNU-101 Photoionization Readings

Table 2

Sample	Laboratory Total Purgeable Organic Values	HNU-5 sec	HNU-Maximum
A S-1	160	--	300
A S-3	475	180	360
B S-8	511	180	340
A S-8	651	300	380
B S-5	947	100	180
A S-4	1,385	320	340
A S-7	1,558	300	300
A S-6	1,745	120	300
B S-6	1,865	90	420
A S-5	2,185	220	320
B S-7	3,039	10	300
A S-2	3,422	220	380
B S-3	3,905	20	400
B S-2	4,370	80	160
B S-4	6,949	100	300
B S-1	10,804	360	420

Notes: 1.) All values in ppm.
2.) Samples were screened on December 9, 1985

12.0 DISCUSSION

12.1 Analytical Results

Although very few synthetic organic chemicals are regulated in soil, an unofficial guideline has been to use a factor of 10 to 100 times the allowed maximum contaminant level in water. In most cases, this still remains at or below the 1 ppm level. The results of the laboratory analysis show soil contamination a few orders of magnitude beyond this limit, and these soils may require some form of remedial action.

The question of silicone compounds/esters/hydrocarbon oils has only been partially answered. Their presence is based on the infrared analyses but the amounts of these non-specifically identified compounds are questionable. We suggest no further testing for silicone compounds or esters unless the apparent nature of these compounds increases in importance or more information is required to fit them into a remedial action/treatment plan. A duplicate of the previously collected soil sample B, S-3, should be analyzed for base/neutral extractable compounds by EPA Method 8270 to gain knowledge on the potential existence and levels of hydrocarbon oil within the pit. Results of this analysis will play a role in selecting sampling parameters for Phase 2.

Except for what appears to be a high metals concentration in test boring B between 2' and 4', there is nothing exceptional about the geotechnical stratification encountered during Phase I studies. Soil sample B, S-2, showing higher than average concentrations of all three metals, may be the result of

earlier site activity in that area of the pit without further migration due to highly adsorptive and/or low hydraulic conductivity soil conditions.

Methanol concentrations vary from less than 1 ppm to a maximum of 827 ppm. Although the alcohol is not of concern at the same level as the synthetic organics, its properties for future remediation/treatment may require separate handling than the other organics. Because the distribution of methanol into the groundwater system is presently unknown, and therefore its impact to the environment is unclear, we recommend continued surveillance of this chemical.

Results from the HNU-101 screening did not demonstrate a direct correlation to the purgeable organic levels identified in the laboratory analysis. Water vapor has been implicated in similar instances as an interfering agent and may play a role in this case. Despite receiving less than perfect results, we feel that additional HNU screening is warranted for the following reason. The technique itself is relatively inexpensive and by increasing our data base future qualitative screening indicating either the presence or "absence" of purgeable organics may be possible.

Preliminary results obtained from the mass spectral library search for purgeable organics do not indicate that further study of this type is required at this time. Both the nature of the compounds and relative concentrations (compared to the purgeable organics) are only of minor concern.

12.2 Proposed Phase 2 Work

The results of Phase 1 work show that the entire soil column underlying the evaporation pit is contaminated with synthetic organic chemicals. Based on this knowledge, contamination of the unconsolidated aquifer is expected, as well as a strong possibility of bedrock contamination. Phase 2 work will provide a preliminary estimate of the extent of soil and potential groundwater contamination of both the unconsolidated and bedrock aquifers.

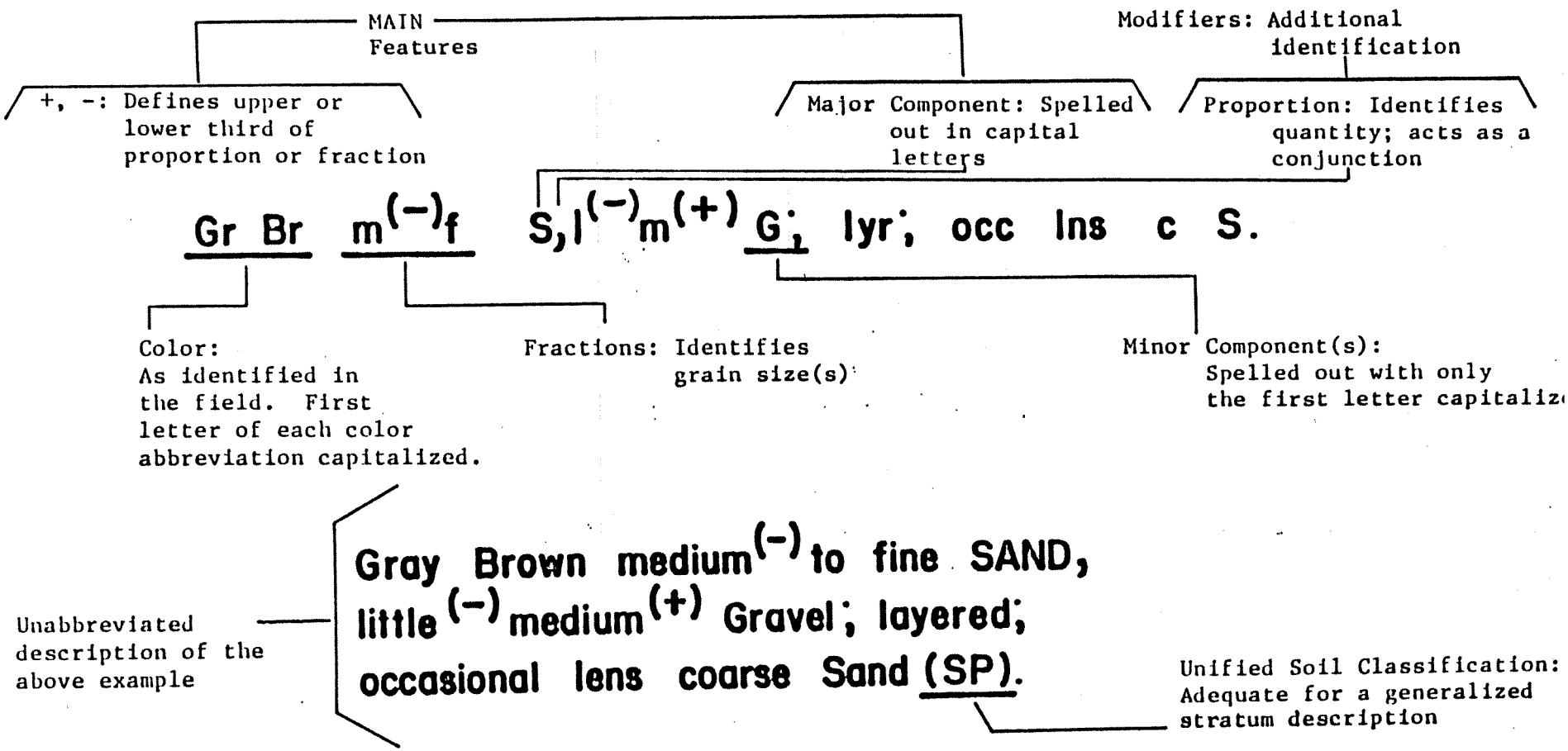
To meet these objectives, the following approach is suggested:

1.) Four monitoring well pairs will be installed, each consisting of an overburden well and a bedrock well, evenly spaced around the evaporation pit at a radius of several hundred feet. Geohydrologic data obtained during and after the the installation of of these wells will include hydraulic conductivity values, groundwater gradients and the direction and rate of groundwater flow in both aquifers. This information is critical when considering the movement of contaminants from the evaporation pit area. Groundwater samples will be collected and analyzed from each monitoring well. Based on the analytical results and the geohydrologic properties of both aquifers, the need for a monitoring well design and sampling program will be discussed.

2.) After determining the direction of groundwater flow within the unconsolidated aquifer, a ring of eight soil borings will be installed surrounding the evaporation pit at a distance of approximately 30 feet. The borings will be concentrated on the down gradient (lower water table) side of the pit as contamination is expected to extend in this direction. Soil samples will be composited according to the boring location to reduce analytical costs. The analytical results will help to delineate the extent of soil contamination and provide the basis for additional soil sampling, if required.

APPENDIX A

MODIFIED BURMISTER SYSTEM



Dunn Geoscience Corporation uses a modified Burmister System for detailed identification of soil components, fractions, and proportions. The Unified Soil Classification is also presented in an unabbreviated form and is based upon the Burmister System collected field data.

VISUAL IDENTIFICATION OF SAMPLES

The samples were identified in accordance with the American Society for Engineering Education System of Definition.

I. Definition of Soil Components and Fractions

Material	Symbol	Fraction	Sieve Size	Definition
Boulders	Bldr	—	9" +	Material retained on 9" sieve.
Cobbles	Cbl	—	3" to 9"	Material passing the 9" sieve and retained on the 3" sieve.
Gravel	G	coarse (c) medium (m) fine (f)	1" to 3" ⅜" to 1" No. 10 to ⅜"	Material passing the 3" sieve and retained on the No. 10 sieve.
Sand	S	coarse (c) medium (m) fine (f)	No. 30 to No. 10 No. 60 to No. 30 No. 200 to No. 60	Material passing the No. 10 sieve and retained on the No. 200 sieve.
Silt	$	—	Passing No. 200 (0.074 mm)	Material passing the No. 200 sieve that is non-plastic in character and exhibits little or no strength when air dried.

Organic Silt (O$)
Material passing the No. 200 sieve which exhibits plastic properties within a certain range of moisture content, and exhibits fine granular and organic characteristics.

		Plasticity	Plasticity Index
Clayey SILT	Cy$	Slight (Sl)	1 to 5
SILT & CLAY	$&C	Low (L)	5 to 10
CLAY & SILT	C&$	Medium (M)	10 to 20
Silty CLAY	$yC	High (H)	20 to 40
CLAY	C	Very High (VH)	40 plus

Clay-Soil
Material passing the No. 200 sieve which can be made to exhibit plasticity and clay qualities within a certain range of moisture content, and which exhibits considerable strength when air-dried.

II. Definition of Component Proportions

Component	Written	Proportions	Symbol	Percentage Range by Weight *
Principal	CAPITALS	—		50 or more
Minor	Lower Case	and	a.	35 to 50
		some	s.	20 to 35
		little	l.	10 to 20
		trace	t.	1 to 10

* Minus sign (—) lower limit, plus sign (+) upper limit, no sign middle range.

III. Glossary of Modifying Abbreviations

Category	Symbol	Term	Symbol	Term	Symbol	Term
A. Borings	U/D	Undisturbed	B	Exploratory	A	Auger
B. Samples	C	Casing	L	Lost	U	Undisturbed
	D	Denison	S	Spoon	W	Wash
	O.E.	Open End				
C. Colors	bk	black	gn	green	wh	white
	bl	blue	or	orange	yw	yellow
	br	brown	rd	red	dk	dark
	gr	gray	tn	tan	lt	light
D. Organic Soils	dec	decayed	o	organic	veg	vegetation
	dec'g	decaying	rts	roots	pt	peat
	lig	lignite	ts	topsoil		
E. Rocks	LS	Limestone	rk	rock	Shst	Schist
	Gns	Gneiss	SS	Sandstone	Sh	Shale
F. Fill and Miscellaneous Materials	bldr (s)	boulder (s)	cbl (s)	cobble(s)	gls	glass
	brk (s)	brick (s)	wd	wood	misc	miscellaneous
	cndr (s)	cinder (s)	dbr	debris	rbl	rubble
G. Miscellaneous Terms	do	ditto	pp	pocket penetrometer	ref	refusal
	el, El	elevation			sm	small
	fgmt (s)	fragment(s)	P. I.	Plasticity Index	W. L.	water level
	frqt	frequent			W. H.	weight of hammer
	lrg	large	P	pushed pressed	W. R.	weight of rods
	mtld	mottled				
	no rec	no recovery	pc (s)	piece (s)		
	pen	penetration	rec or R	recovered		
H. Stratified Soils	alt	alternating				
	thk	thick				
	thn	thin				
	w	with				
	prt	parting	— 0 to 1/16" thickness			
	seam	seam	— 1/16 to ½" thickness			
	lyr	layer	— ½ to 12" thickness			
	stra	stratum	— greater than 12" thickness			
	vvd c	varved Clay	— alternating seams or layers of sand, silt and clay			
	pkt	pocket	— small, erratic deposit, usually less than 1 foot			
	lns	lens	— lenticular deposit			
	occ	occasional	— one or less per foot of thickness			
	freq	frequent	— more than one per foot of thickness			

UNIFIED SOIL CLASSIFICATION SYSTEM. (ASTM D-2487)

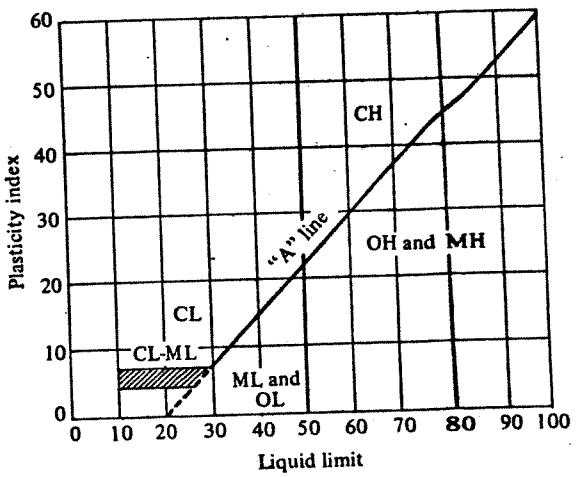
Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravels with fines (Appreciable amount of fines)	GM[a] d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits below "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM[a] d / u	Silty sands, sand-silt mixtures	Atterberg limits above "A" line or P.I. less than 4
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
Fine-grained soils (More than half material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
- Less than 5 per cent: GW, GP, SW, SP
- More than 12 per cent: GM, GC, SM, SC
- 5 to 12 per cent: *Borderline* cases requiring dual symbols[b]

Atterberg limits below "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols

Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols

Plasticity Chart



[a] Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

[b] Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

DUNN GEOSCIENCE CORPORATION LATHAM, NEW YORK (518) 783-8102	TEST BORING LOG	BORING NO. A
PROJECT G. E. Auburn		SHEET 1 OF 2
CLIENT G. E. Auburn		JOB NO. 2092-1-4494
DRILLING CONTRACTOR CATOH		ELEVATION
PURPOSE Test Boring		DATUM Ground Surface

GROUNDWATER					CASING	SAMPLE	CORE
DATE	TIME	DEPTH	CASING	TYPE	H.S. Auger	SS	-
				DIAMETER	7 1/4"OD	3" OD	-
				WEIGHT	-	140 lb	-
				FALL	-	30"	-

DATE STARTED 12/5/85
DATE FINISHED 12/5/85
DRILLER Art Utter
INSPECTOR Rodney Sutch

DEPTH FT.	CASING BLOWS	SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	IDENTIFICATION	REMARKS
		S-1	1 1 3 7	CH		Or Br $yC; mtld, rts top 6" strong chemical odor	Rec=1.3' WET
		S-2	7 16 20 35	CH		Or Br $&C, t mf G; Rd & Gr alt C Seam (3.4-3.5'), increasing $ w/depth, strong chemical odor	Rec=1.6' WET to 3.4' Moist below 3.5'
		S-3	11 14 17 19	CH		Alternating Layers- Orange Brown and Red Brown Silty CLAY, trace medium to fine Gravel; strong chemical odor. GLACIOLACUSTRINE	Rec=1.4' Moist-WET (?)
5						Alt lyrs (≈ 4") Br $ & Rd Br $y C, t mf G; chemical odor	
		S-4	6 9 8 13	CH		Rd Br $y C; .4' wash material on top, extra VOA vial taken of bottom section only	Rec=1.9' WET
		S-5	3 14	CH		Rd Br $y C	
						9.0'	Rec=1.2'
		S-6	45 45	GM		Br f S, a $, a cmf(+)G	
10							

DUNN GEOSCIENCE CORPORATION LATHAM, NEW YORK	TEST BORING LOG	BORING NO. A
PROJECT G. E. Auburn		SHEET 2 OF 2
CLIENT G. E. Auburn		JOB NO. 2092-1-4494

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	IDENTIFICATION	REMARKS
10		S-7	10 21 25 42	GM		Dk Br f S, a $, a cmf G GLACIAL TILL	Rec=1.4' Moist
		S-8	22 23	GM		Same	Rec=.8' Moist
						driller thought we were at bedrock, turned out to be a cobble drilled to 15' to sample 15-17'	
15			0/100			15' ——— BEDROCK ———	
						End of Boring Backfilled boring as follows: 1. 25 lb bentonite pellets (∿ 4') 2. 50 lb Benseal (granulated bentonite) 3. backfilled w/cuttings to surface 4. tamped down 4' and backfilled again to surface	

DUNN GEOSCIENCE CORPORATION LATHAM, NEW YORK (518) 783-8102	TEST BORING LOG	BORING NO. B
PROJECT G. E. Auburn		SHEET 1 OF 2
CLIENT G. E. Auburn		JOB NO. 2092-1-4494
DRILLING CONTRACTOR CATOH		ELEVATION
PURPOSE Test Boring		DATUM Ground Surface

GROUNDWATER			CASING		CASING	SAMPLE	CORE
DATE	TIME	DEPTH	CASING	TYPE	hollow stem auger	SS	
				DIAMETER	7 1/4"OD	3" OD	
				WEIGHT		140#	
				FALL		30"	

DATE STARTED 12/6/85
DATE FINISHED 12/6/85
DRILLER Art Utter
INSPECTOR Rodney Sutch

DEPTH FT.	CASING BLOWS	SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSI-FICATION	GRAPHIC LOG	IDENTIFICATION	REMARKS
		S-1	0 1 1 4	CH		Br $y C w/freq Or $yC pkts, mtld, rts top 6", strong chemical odor	Rec=1.0' WET
		S-2	7 12 11 7	CH		2-2.6' Same w/ t mf G 2.6-2.85' Rd Br $y C, t mf G; lt gr & pink seams (stiff, pp=1.3) 2.85-3.4' Br $ & C; $ increase w/depth strong chemical odor	Rec=1.4' Moist
		S-3	3 5 7 6	CH		Alternating layers Brown SILT and Pink Red Silty CLAY, trace medium to fine Gravel; strong chemical odor GLACIOLACUSTRINE Alt lyrs Br $ & Pink Br $ & C, t mf G occ Or $pkts, faint chemical odor (took an extra 16 oz sample)	Rec=1.6' WET
5		S-4	3 3 6 6	CH		6-6.5' Br $ w/ occ pk rd $yC lyr (∿½") 6.5-8' Pink Rd $y C; freq bk seams (∿1/32") occ tn fs seam, chemical odor	Rec=2.0' WET
		S-5	1 7	CH		8-8.6' Pink Rd $yC, freq br $ seam (∿½") chemical odor 8.6'	Rec=1.5' WET
		S-6	17 8	CL		8.6-9.5' Br-Pink Cy$ ℓ, fs, a mf G chemical odor	
10							

DUNN GEOSCIENCE CORPORATION LATHAM, NEW YORK	TEST BORING LOG	BORING NO. B
PROJECT G. E. Auburn		SHEET 2 OF 2
CLIENT G. E. Auburn		JOB NO. 2092-1-4494

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON SAMPLE SPOON, PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	IDENTIFICATION	REMARKS
10		S-7	17 13 12 10	GM		Dark Brown, fine SAND, and Silt, and medium to fine Gravel; chemical odor GLACIAL TILL	Rec=1.4' Moist
		S-8	18 31 48 30/0	GM		Dk Br cmf G &, fS, a $; Dk Gr limestone G, faint chemical odor	Rec=0.8' Moist
14.5'						BEDROCK End of Boring	
15						Backfilled Boring as follows: 1. 25 lb bentonite pellets (∿ 4') 2. 50 lb Benseal (granulated bentonite) 3. backfilled w/cuttings to surface 4. tamped down 4' and backfilled again to the surface	

APPENDIX B

CAMO LABORATORIES

A DIVISION OF CAMO POLLUTION CONTROL, INC.

POUGHKEEPSIE AREA FACILITY:
CAMO LABORATORY
367 VIOLET AVENUE
POUGHKEEPSIE, N.Y. 12601
(914) 473-9200

January 28, 1986

C.T. Male
50 Century Hill Drive
Box 727
Latham, New York 12110

Attn: Mrs. Frey

RE: Corrected Analytical Report
Project No.: 85.1989
CAMO Job No.: 008
CAMO Log No.: 85-12-2246

Dear Mrs. Frey:

CAMO Laboratories received sixteen (16) soil samples labeled "120985B01" through "120985B16" on December 11, 1985, with a request to analyze for Priority Pollutant Volatiles.

All analyses were performed in accordance with EPA "Test Methods for Evaluating Solid Waste", 1984 SW846 Method 5030 and 8240.

Please note the corrected results for 2-chloroethylvinyl ether.

If you have any further questions, please feel free to call. Thank you.

Sincerely,

John F. Eisenhardt
Director
Measurement Services

JFE/sas
Enclosure

PARAMETERS	SAMPLE IDENTIFICATION A 120985B01	B 120985B02	C 120985B03	D 120985B04
chloromethane	<0.5	<0.5	<0.5	<0.5
bromomethane	<0.5	<0.5	<0.5	<0.5
vinyl chloride	<0.5	<0.5	<0.5	<0.5
chloroethane	<0.5	<0.5	<0.5	<0.5
methylene chloride	<0.5	<0.5	<0.5	<0.5
trichlorofluoromethane	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethylene	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethylene	<0.5	<0.5	<0.5	<0.5
dichlorodifluoromethane	<0.5	<0.5	<0.5	<0.5
chloroform	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	<0.5	<0.5	<0.5	<0.5
carbon tetrachloride	<0.5	<0.5	<0.5	<0.5
bromodichloromethane	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	<0.5	<0.5	<0.5	<0.5
Trans-1,3-dichloropropene	<0.5	<0.5	<0.5	<0.5
trichloroethylene	37	960	185	29
dibromochloromethane	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	<0.5	<0.5	<0.5	<0.5
1,1,2-trichloroethane	<0.5	<0.5	<0.5	<0.5
benzene	<0.5	<0.5	<0.5	<0.5
2-chloroethylvinyl ether	<5.0	<5.0	<5.0	<5.0
bromoform	<0.5	<0.5	<0.5	<0.5
tetrachloroethylene	<0.5	2.2	<0.5	<0.5
1,1,2,2-tetrachloroethane	<0.5	<0.5	<0.5	<0.5
toluene	<0.5	4.8	1.4	<0.5
chlorobenzene	<0.5	<0.5	<0.5	<0.5
ethylbenzene	4.4	190	7	0.6
acrolein	<0.5	<0.5	<0.5	<0.5
acrylonitrile	<0.5	<0.5	<0.5	<0.5
acetone	61	660	51	1,200
xylenes	53	1,600	190	10
2-propanol			36	140

NOTE: All results expressed in ppm unless noted otherwise.

PARAMETERS	SAMPLE IDENTIFICATION E 120985B05	F 120985B06	G 120985B07	H 120985B08
chloromethane	<0.5	<0.4	<0.4	<0.5
bromomethane	<0.5	<0.4	<0.4	<0.5
vinyl chloride	<0.5	<0.4	<0.4	<0.5
chloroethane	<0.5	<0.4	<0.4	<0.5
methylene chloride	<0.5	0.7	2.2	<0.05
trichlorofluoromethane	<0.5	<0.4	<0.4	<0.5
1,1-dichloroethylene	<0.5	<0.4	<0.4	<0.5
1,1-dichloroethane	<0.5	<0.4	<0.4	<0.5
trans-1,2-dichloroethylene	<0.5	<0.4	<0.4	<0.5
dichlorodifluoromethane	<0.5	<0.4	<0.4	<0.5
chloroform	<0.5	<0.4	<0.4	<0.5
1,2-dichloroethane	<0.5	<0.4	<0.4	<0.5
1,1,1-trichloroethane	<0.5	<0.4	<0.4	<0.5
carbon tetrachloride	<0.5	<0.4	<0.4	<0.5
bromodichloromethane	<0.5	<0.4	<0.4	<0.5
1,2-dichloropropane	<0.5	<0.4	<0.4	<0.5
Trans-1,3-dichloropropene	<0.5	<0.4	<0.4	<0.5
trichloroethylene	62	0.8	47	19
dibromochloromethane	<0.5	<0.4	<0.4	<0.5
cis-1,3-dichloropropene	<0.5	<0.4	<0.4	<0.5
1,1,2-trichloroethane	<0.5	<0.4	<0.4	<0.5
benzene	<0.5	<0.4	<0.4	<0.5
2-chloroethylvinyl ether	<5.0	<5.0	<5.0	<5.0
bromoform	<0.5	<0.4	<0.4	<0.5
tetrachloroethylene	<0.5	<0.4	<0.4	<0.5
1,1,2,2-tetrachloroethane	<0.5	<0.4	<0.4	<0.5
toluene	0.61	<0.4	1.2	0.6
chlorobenzene	<0.5	<0.4	<0.4	<0.5
ethylbenzene	2.1	<0.4	<0.4	1.1
acrolein	<0.5	<0.4	<0.4	<0.5
acrylonitrile	<0.5	<0.4	<0.4	<0.5
acetone	2,100	1,600	1,500	610
xylenes	15	2.2	2.6	15
2-propanol*		135		
propylester formic acid*		1.2		
3-methyl-2-butanone		1.2		

NOTE: All results expressed in ppm unless noted otherwise.

PARAMETERS	SAMPLE IDENTIFICATION I 120985B09	J 120985B10	K 120985B11	L 120985B12	
chloromethane	<0.5	<0.5	<0.5	<0.5	
bromomethane	<0.5	<0.5	<0.5	<0.5	
vinyl chloride	<0.5	<0.5	<0.5	<0.5	
chloroethane	<0.5	<0.5	<0.5	<0.5	
methylene chloride	0.8	9.0	1.5	0.7	
trichlorofluoromethane	<0.5	<0.5	21.2	30.0	
1,1-dichloroethylene	<0.5	<0.5	<0.5	<0.5	
1,1-dichloroethane	<0.5	<0.5	<0.5	<0.5	
trans-1,2-dichloroethylene	<0.5	<0.5	<0.5	1.6	
dichlorodifluoromethane	<0.5	<0.5	<0.5	<0.5	
chloroform	<0.5	<0.5	<0.5	<0.5	
1,2-dichloroethane	<0.5	<0.5	<0.5	<0.5	
1,1,1-trichloroethane	<0.5	<0.5	<0.5	6.9	
carbon tetrachloride	0.66	<0.5	<0.5	1.5	
bromodichloromethane	<0.5	<0.5	<0.5	<0.5	
1,2-dichloropropane	<0.5	<0.5	<0.5	<0.5	
Trans-1,3-dichloropropene	<0.5	<0.5	<0.5	<0.5	
trichloroethylene	3,700	2,600	3,400	4,400	
dibromochloromethane	<0.5	<0.5	<0.5	<0.5	
cis-1,3-dichloropropene	<0.5	<0.5	<0.5	<0.5	
1,1,2-trichloroethane	0.97	<0.5	<0.5	<0.5	
benzene	<0.5	<0.5	<0.5	<0.5	
2-chloroethylvinyl ether	<5.0	<5.0	<5.0	<5.0	
bromoform	<0.5	<0.5	<0.5	<0.5	
tetrachloroethylene	0.95	<0.5	<0.5	2.8	
1,1,2,2-tetrachloroethane	0.99	<0.5	<0.5	<0.5	
toluene	10	9	20.8	96	
chlorobenzene	<0.5	<0.5	<0.5	<0.5	
ethylbenzene	370	138	172	133	
acrolein	<0.5	<0.5	<0.5	<0.5	
acrylonitrile	<0.5	<0.5	<0.5	<0.5	
See Attached Sheet					

NOTE: All results expressed in ppm unless noted otherwise.

PARAMETERS	SAMPLE IDENTIFICATION M 120985B13	N 120985B14	O 120985B15	P 120985B16	
chloromethane	<0.5	<0.5	<0.4	<0.5	
bromomethane	<0.5	<0.5	<0.4	<0.5	
vinyl chloride	<0.5	<0.5	<0.4	<0.5	
chloroethane	<0.5	<0.5	<0.4	<0.5	
methylene chloride	2	0.9	<0.4	<0.5	
trichlorofluoromethane	7.6	<0.5	<0.4	<0.5	
1,1-dichloroethylene	<0.5	<0.5	<0.4	<0.5	
1,1-dichloroethane	<0.5	<0.5	<0.4	<0.5	
trans-1,2-dichloroethylene	<0.5	<0.5	<0.4	<0.5	
dichlorodifluoromethane	<0.5	<0.5	<0.4	<0.5	
chloroform	<0.5	<0.5	<0.4	<0.5	
1,2-dichloroethane	<0.5	<0.5	<0.4	<0.5	
1,1,1-trichloroethane	<0.5	<0.5	<0.4	<0.5	
carbon tetrachloride	<0.5	<0.5	<0.4	<0.5	
bromodichloromethane	<0.5	<0.5	<0.4	<0.5	
1,2-dichloropropane	<0.5	<0.5	<0.4	<0.5	
Trans-1,3-dichloropropene	<0.5	<0.5	<0.4	<0.5	
trichloroethylene	584	38	109	130	
dibromochloromethane	<0.5	<0.5	<0.4	<0.5	
cis-1,3-dichloropropene	<0.5	<0.5	<0.4	<0.5	
1,1,2-trichloroethane	<0.5	<0.5	<0.4	<0.5	
benzene	<0.5	<0.5	<0.4	<0.5	
2-chloroethylvinyl ether	<5.0	<5.0	<5.0	<5.0	
bromoform	<0.5	<0.5	<0.4	<0.5	
tetrachloroethylene	<0.5	<0.5	<0.4	<0.5	
1,1,2,2-tetrachloroethane	<0.5	<0.5	<0.4	<0.5	
toluene	7.1	<0.5	1.5	<0.5	
chlorobenzene	<0.5	<0.5	<0.4	<0.5	
ethylbenzene	26	1.8	8.6	16	
acrolein	<0.5	<0.5	<0.4	<0.5	
acrylonitrile	<0.5	<0.5	<0.4	<0.5	
acetone	1.3	1,800	2,800	220	
xylenes	302	16	112	140	
hexane*	11	2.6	2.1		

NOTE: All results expressed in ppm unless noted otherwise.

Additioanl Peaks
(Attached Table)

	SAMPLE IDENTIFICATION				
PARAMETERS	I 120985B09	J 120985B10	K 120985B11	L 120985B12	
acetone	14	120	170	570	
xylenes	6,700	1,400	110	1,700	
methyl silane	1				
isopropanol	1.2		4.2		
Scan #743 4-methyl	2.1				
cyclopentane*					
Scan #887 1-methylene	4.6				
-4-(1-M cyclohexane)*					
Scan #1031 1-ethyl-4-	7.0				
methyl cyclohexane*					
Scan #1108 1-ethyl-2-	8.9				
methyl cyclohexane*					
Scan #1153 1,2,3-	9.4				
trimethyl cyclohexane*					
Scan #1082 3-ethyl,4-	6.6				
methyl 3-Penten-2-one*					
hexane*		43			
2-propenol*		38			
2-propenal*		7.7			
Scan #1107 3-ethyl-4-			1.3		
methyl 3-Penten-2-one*					
Scan #1141 N,N-difluoro			1.2		
methanamine*					
Scan #1180 undecanal*			1.4		
Scan #1376 4,8-dimethyl-			6.4		
1-nonanol*					

NOTE: All results expressed in ppm unless noted otherwise.

CAMO LOG NO.: 85-12-2246

VOLATILES

EPA 624 (Revised 1982)

SAMPLE IDENTIFICATI(

PARAMETERS	F 120985B06 Spike	P 120985B16 Spike			
chloromethane	—	—			
bromomethane	—	—			
vinyl chloride	—	—			
chloroethane	—	—			
methylene chloride	78%	116%			
chlorobenzene	97%	84%			
1,1-dichloroethylene	71%	57%			
1,1-dichloroethane	82%	71%			
trans-1,2-dichloroethylene	80%	66%			
ethylbenzene	104%	—			
chloroform	87%	81%			
1,2-dichloroethane	93%	86%			
1,1,1-trichloroethane	86%	72%			
carbon tetrachloride	77%	63%			
bromodichloromethane	80%	68%			
1,2-dichloropropane	84%	73%			
trans-1,3-dichloropropene	92%	84%			
trichloroethylene	91%	—			
dibromochloromethane	81%	68%			
cis-1,3-dichloropropene	93%	85%			
1,1,2-trichloroethane	97%	87%			
benzene	88%	73%			
2-chloroethylvinyl ether	—	—			
bromoform	85%	69%			
tetrachloroethylene	109%	94%			
1,1,2,2-tetrachloroethane	101%	85%			
Toluene	94%	44%			

NOTE: All results expressed in ug/L unless otherwise noted.

C.T. Male Associates, P.C.
Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.81989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: A.S-1 CTM sample #: 1209 85B 01 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/05/85 Time: 10:20 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	56	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	<1.0	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	23	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	<1	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMG 1/14

Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: A, S-2 CTM sample #: 1209 85B 02 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/05/85 Time: 10:28 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	63	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	21.8	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	21	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	54.2	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMO 1/14

Laboratory Analysis Report
JANUARY 24, 1986

D&NN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: A, S-3 CTM sample #: 1209 85B 03 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/05/85 Time: 10:50 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	57	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	26.4	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	22	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	757	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979,624	SEE ATTACHED		CAMD 1/14

C.T. Male Associates, P.C.
Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: A, S-4 CTM sample #: 1209 85B 04 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/05/85 Time: 11:10 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	48	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	10.2	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS. 1979.220.1	22	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	827	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMD 1/14

Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: A, S-5 CTM sample #: 1209 85B 05 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/05/85 Time: 11:30 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4R		SM 12/12
ZINC	EPA METHODS, 1797,289.1	59	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979,282.1	20.0	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979,220.1	23	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979,D3695	751	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979,624	SEE ATTACHED		CAMG 1/14

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: A, S-6 CTM sample #: 1209 85B 06 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH. R Date sampled: 12/05/85 Time: 11:30 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	44	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	22.8	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	14	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	410	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMO 1/14

C.T. Male Associates, P.C.
Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 B5R

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: A, S-7 CTM sample #: 1209 B5B 07 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/05/85 Time: 1:13 PM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	39	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	25.6	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	14	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	267	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMO 1/14

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JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: A, S-8 CTM sample #: 1209 85B 08 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/05/85 Time: 1:40 PM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	39	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	34.9	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	12	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	164	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMO 1/14

Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: B, S-1 CTM sample #: 1209 85B 09 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/06/85 Time: 8:20 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	74	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	21.8	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	38	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	22.6	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMD 1/14

C.T. Male Associates, P.C.
Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: B, S-2 CTM sample #: 1209 85B 10 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/06/85 Time: 8:28 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	550	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	101	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	127	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	105	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMG 1/14

C.T. Male Associates, P.C.
Laboratory Analysis Report
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DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: B, S-3 CTM sample #: 1209 85B 11 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/06/85 Time: 8:50 PM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	94	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	16.7	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	35	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	491	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMD 1/14

C.T. Male Associates, P.C.
Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 B5B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: B, S-4 CTM sample #: 1209 85B 12 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/06/85 Time: 9:07 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	62	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	19.4	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	23	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	333	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER.DEC 3, 1979.624	SEE ATTACHED		CAMO 1/14

C.T. Male Associates, P.C.
Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 858

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: B, S-5 CTM sample #: 1209 858 13 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/06/85 Time: 9:35 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	62	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	23.9	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	26	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	331	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979,624	SEE ATTACHED		CAMD 1/14

C.T. Male Associates, P.C.
Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: B, S-6 CTM sample #: 1209 85B 14 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/06/85 Time: 9:35 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	55	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	29.7	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	20	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	523	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMO 1/14

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JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: B, S-7 CTM sample #: 1209 85B 15 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/06/85 Time: 10:05 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	49	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	31.1	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	23	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	373	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979,624	SEE ATTACHED		CAMO 1/14

C.T. Male Associates, P.C.
Laboratory Analysis Report
JANUARY 24, 1986

DUNN GEOSCIENCE CORPORATION
5 NORTHWAY LANE NORTH
LATHAM NY 12110

CTM PROJECT #: 85.01989
No. samples analyzed: 16

CTM Task #: 851209 85B

Attention: MR. RODNEY SUTCH

Your purchase order #: 2092-1-4494
Your sample id: B, S-8 CTM sample #: 1209 85B 16 Matrix: SOIL Composite or Grab: G
Date sample recd: 12/09/85 Sample taken by: SUTCH, R Date sampled: 12/06/85 Time: 10:21 AM
Location: 2092-1-4494 GE AUBURN

Parameters and Standard Methodology Used		Results		Analyst Reference
SLUDGE DIGEST HCL REFLUX	SW-846 EPA 3050	MP4B		SM 12/12
ZINC	EPA METHODS, 1797.289.1	52	UG/G DRY	MG 0:66 12/18
TIN	EPA METHODS, 1979.282.1	37.8	UG/G DRY	MG 0:127 1/23
COPPER	EPA METHODS, 1979.220.1	15	UG/G DRY	MG 0:64-66 12/18
METHANOL	ASTM PART 31,1979.D3695	160	UG/G	RK A:62 12/24
PRIORITY POLLUTANT(VOLATILES)	FEDERAL REGISTER,DEC 3, 1979.624	SEE ATTACHED		CAMD 1/14

AUTHORIZED FOR RELEASE: Tom Mulcahy

PHONE: 518-785-0976

PARAMETERS	SAMPLE IDENTIFICATION A 120985B01	B 120985B02	C 120985B03	D 120985B04
chloromethane	<0.5	<0.5	<0.5	<0.5
bromomethane	<0.5	<0.5	<0.5	<0.5
vinyl chloride	<0.5	<0.5	<0.5	<0.5
chloroethane	<0.5	<0.5	<0.5	<0.5
methylene chloride	<0.5	<0.5	<0.5	<0.5
trichlorofluoromethane	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethylene	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethylene	<0.5	<0.5	<0.5	<0.5
dichlorodifluoromethane	<0.5	<0.5	<0.5	<0.5
chloroform	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	<0.5	<0.5	<0.5	<0.5
carbon tetrachloride	<0.5	<0.5	<0.5	<0.5
bromodichloromethane	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	<0.5	<0.5	<0.5	<0.5
Trans-1,3-dichloropropene	<0.5	<0.5	<0.5	<0.5
trichloroethylene	37	960	185	29
dibromochloromethane	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	<0.5	<0.5	<0.5	<0.5
1,1,2-trichloroethane	<0.5	<0.5	<0.5	<0.5
benzene	<0.5	<0.5	<0.5	<0.5
2-chloroethylvinyl ether	5.0	5.0	5.0	5.0
bromoform	<0.5	<0.5	<0.5	<0.5
tetrachloroethylene	<0.5	2.2	<0.5	<0.5
1,1,2,2-tetrachloroethane	<0.5	<0.5	<0.5	<0.5
toluene	<0.5	4.8	1.4	<0.5
chlorobenzene	<0.5	<0.5	<0.5	<0.5
ethylbenzene	4.4	190	7	0.6
acrolein	<0.5	<0.5	<0.5	<0.5
acrylonitrile	<0.5	<0.5	<0.5	<0.5
acetone	61	660	51	1,200
xylenes	53	1,600	190	10
2-propanol			36	140

NOTE: All results expressed in ppm unless noted otherwise.

PARAMETERS	SAMPLE IDENTIFICATION E 120985B05	F 120985B06	G 120985B07	H 120985B08	
chloromethane	<0.5	<0.4	<0.4	<0.5	
bromomethane	<0.5	<0.4	<0.4	<0.5	
vinyl chloride	<0.5	<0.4	<0.4	<0.5	
chloroethane	<0.5	<0.4	<0.4	<0.5	
methylene chloride	<0.5	0.7	2.2	<0.05	
trichlorofluoromethane	<0.5	<0.4	<0.4	<0.5	
1,1-dichloroethylene	<0.5	<0.4	<0.4	<0.5	
1,1-dichloroethane	<0.5	<0.4	<0.4	<0.5	
trans-1,2-dichloroethylene	<0.5	<0.4	<0.4	<0.5	
dichlorodifluoromethane	<0.5	<0.4	<0.4	<0.5	
chloroform	<0.5	<0.4	<0.4	<0.5	
1,2-dichloroethane	<0.5	<0.4	<0.4	<0.5	
1,1,1-trichloroethane	<0.5	<0.4	<0.4	<0.5	
carbon tetrachloride	<0.5	<0.4	<0.4	<0.5	
bromodichloromethane	<0.5	<0.4	<0.4	<0.5	
1,2-dichloropropane	<0.5	<0.4	<0.4	<0.5	
Trans-1,3-dichloropropene	<0.5	<0.4	<0.4	<0.5	
trichloroethylene	62	0.8	47	19	
dibromochloromethane	<0.5	<0.4	<0.4	<0.5	
cis-1,3-dichloropropene	<0.5	<0.4	<0.4	<0.5	
1,1,2-trichloroethane	<0.5	<0.4	<0.4	<0.5	
benzene	<0.5	<0.4	<0.4	<0.5	
2-chloroethylvinyl ether	5.0	5.0	5.0	5.0	
bromoform	<0.5	<0.4	<0.4	<0.5	
tetrachloroethylene	<0.5	<0.4	<0.4	<0.5	
1,1,2,2-tetrachloroethane	<0.5	<0.4	<0.4	<0.5	
toluene	0.61	<0.4	1.2	0.6	
chlorobenzene	<0.5	<0.4	<0.4	<0.5	
ethylbenzene	2.1	<0.4	<0.4	1.1	
acrolein	<0.5	<0.4	<0.4	<0.5	
acrylonitrile	<0.5	<0.4	<0.4	<0.5	
acetone	2,100	1,600	1,500	610	
xylenes	15	2.2	2.6	15	
2-propanol*		135			
propylester formic acid*		1.2			
3-methyl-2-butanone		1.2			

NOTE: All results expressed in ppm unless noted otherwise.

PARAMETERS	SAMPLE IDENTIFICATION I 120985B09	J 120985B10	K 120985B11	L 120985B12	
chloromethane	<0.5	<0.5	<0.5	<0.5	
bromomethane	<0.5	<0.5	<0.5	<0.5	
vinyl chloride	<0.5	<0.5	<0.5	<0.5	
chloroethane	<0.5	<0.5	<0.5	<0.5	
methylene chloride	0.8	9.0	1.5	0.7	
trichlorofluoromethane	<0.5	<0.5	21.2	30.0	
1,1-dichloroethylene	<0.5	<0.5	<0.5	<0.5	
1,1-dichloroethane	<0.5	<0.5	<0.5	<0.5	
trans-1,2-dichloroethylene	<0.5	<0.5	<0.5	1.6	
dichlorodifluoromethane	<0.5	<0.5	<0.5	<0.5	
chloroform	<0.5	<0.5	<0.5	<0.5	
1,2-dichloroethane	<0.5	<0.5	<0.5	<0.5	
1,1,1-trichloroethane	<0.5	<0.5	<0.5	6.9	
carbon tetrachloride	0.66	<0.5	<0.5	1.5	
bromodichloromethane	<0.5	<0.5	<0.5	<0.5	
1,2-dichloropropane	<0.5	<0.5	<0.5	<0.5	
Trans-1,3-dichloropropene	<0.5	<0.5	<0.5	<0.5	
trichloroethylene	3,700	2,600	3,400	4,400	
dibromochloromethane	<0.5	<0.5	<0.5	<0.5	
cis-1,3-dichloropropene	<0.5	<0.5	<0.5	<0.5	
1,1,2-trichloroethane	0.97	<0.5	<0.5	<0.5	
benzene	<0.5	<0.5	<0.5	<0.5	
2-chloroethylvinyl ether	5.0	5.0	5.0	5.0	
bromoform	<0.5	<0.5	<0.5	<0.5	
tetrachloroethylene	0.95	<0.5	<0.5	2.8	
1,1,2,2-tetrachloroethane	0.99	<0.5	<0.5	<0.5	
toluene	10	9	20.8	96	
chlorobenzene	<0.5	<0.5	<0.5	<0.5	
ethylbenzene	370	138	172	133	
acrolein	<0.5	<0.5	<0.5	<0.5	
acrylonitrile	<0.5	<0.5	<0.5	<0.5	
See Attached Sheet					

NOTE: All results expressed in ppm unless noted otherwise.

Additioanl Peaks
(Attached Table)

PARAMETERS	SAMPLE IDENTIFICATION I 120985B09	J 120985B10	K 120985B11	L 120985B12	
acetone	14	120	170	570	
xylenes	6,700	1,400	110	1,700	
methyl silane	1				
isopropanol	1.2		4.2		
Scan #743 4-methyl cyclopentane*	2.1				
Scan #887 1-methylene -4-(1-M cyclohexane)*	4.6				
Scan #1031 1-ethyl-4- methyl cyclohexane*	7.0				
Scan #1108 1-ethyl-2- methyl cyclohexane*	8.9				
Scan #1153 1,2,3- trimethyl cyclohexane*	9.4				
Scan #1082 3-ethyl,4- methyl 3-Penten-2-one*	6.6				
hexane*		43			
2-propenol*		38			
2-propenal*		7.7			
Scan #1107 3-ethyl-4- methyl 3-Penten-2-one*			1.3		
Scan #1141 N,N-difluoro methanamine*			1.2		
Scan #1180 undecanal*			1.4		
Scan #1376 4,8-dimethyl- 1-nonanol*			6.4		

NOTE: All results expressed in ppm unless noted otherwise.

PARAMETERS	SAMPLE IDENTIFICATION M 120985B13	N 120985B14	O 120985B15	P 120985B16	
chloromethane	<0.5	<0.5	<0.4	<0.5	
bromomethane	<0.5	<0.5	<0.4	<0.5	
vinyl chloride	<0.5	<0.5	<0.4	<0.5	
chloroethane	<0.5	<0.5	<0.4	<0.5	
methylene chloride	2	0.9	<0.4	<0.5	
trichlorofluoromethane	7.6	<0.5	<0.4	<0.5	
1,1-dichloroethylene	<0.5	<0.5	<0.4	<0.5	
1,1-dichloroethane	<0.5	<0.5	<0.4	<0.5	
trans-1,2-dichloroethylene	<0.5	<0.5	<0.4	<0.5	
dichlorodifluoromethane	<0.5	<0.5	<0.4	<0.5	
chloroform	<0.5	<0.5	<0.4	<0.5	
1,2-dichloroethane	<0.5	<0.5	<0.4	<0.5	
1,1,1-trichloroethane	<0.5	<0.5	<0.4	<0.5	
carbon tetrachloride	<0.5	<0.5	<0.4	<0.5	
bromodichloromethane	<0.5	<0.5	<0.4	<0.5	
1,2-dichloropropane	<0.5	<0.5	<0.4	<0.5	
Trans-1,3-dichloropropene	<0.5	<0.5	<0.4	<0.5	
trichloroethylene	584	38	109	130	
dibromochloromethane	<0.5	<0.5	<0.4	<0.5	
cis-1,3-dichloropropene	<0.5	<0.5	<0.4	<0.5	
1,1,2-trichloroethane	<0.5	<0.5	<0.4	<0.5	
benzene	<0.5	<0.5	<0.4	<0.5	
2-chloroethylvinyl ether	5.0	5.0	5.0	5.0	
bromoform	<0.5	<0.5	<0.4	<0.5	
tetrachloroethylene	<0.5	<0.5	<0.4	<0.5	
1,1,2,2-tetrachloroethane	<0.5	<0.5	<0.4	<0.5	
toluene	7.1	<0.5	1.5	<0.5	
chlorobenzene	<0.5	<0.5	<0.4	<0.5	
ethylbenzene	26	1.8	8.6	16	
acrolein	<0.5	<0.5	<0.4	<0.5	
acrylonitrile	<0.5	<0.5	<0.4	<0.5	
acetone	1.3	1,800	2,800	220	
xylenes	302	16	112	140	
hexane *	11	2.6	2.1		

NOTE: All results expressed in ppm unless noted otherwise.

CAMO LOG NO.: 85-12-2246

VOLATILES

EPA 624 (Revised 1982)

SAMPLE IDENTIFICATION

PARAMETERS	F 120985B06 Spike	P 120985B16 Spike			
chloromethane	--	--			
bromomethane	--	--			
vinyl chloride	--	--			
chloroethane	--	--			
methylene chloride	78%	116%			
chlorobenzene	97%	84%			
1,1-dichloroethylene	71%	57%			
1,1-dichloroethane	82%	71%			
trans-1,2-dichloroethylene	80%	66%			
ethylbenzene	104%	--			
chloroform	87%	81%			
1,2-dichloroethane	93%	86%			
1,1,1-trichloroethane	86%	72%			
carbon tetrachloride	77%	63%			
bromodichloromethane	80%	68%			
1,2-dichloropropane	84%	73%			
trans-1,3-dichloropropene	92%	84%			
trichloroethylene	91%	--			
dibromochloromethane	81%	68%			
cis-1,3-dichloropropene	93%	85%			
1,1,2-trichloroethane	97%	87%			
benzene	88%	73%			
2-chloroethylvinyl ether	--	--			
bromoform	85%	69%			
tetrachloroethylene	109%	94%			
1,1,2,2-tetrachloroethane	101%	85%			
Toluene	94%	44%			

NOTE: All results expressed in ug/L unless otherwise noted.

C.T. MALE

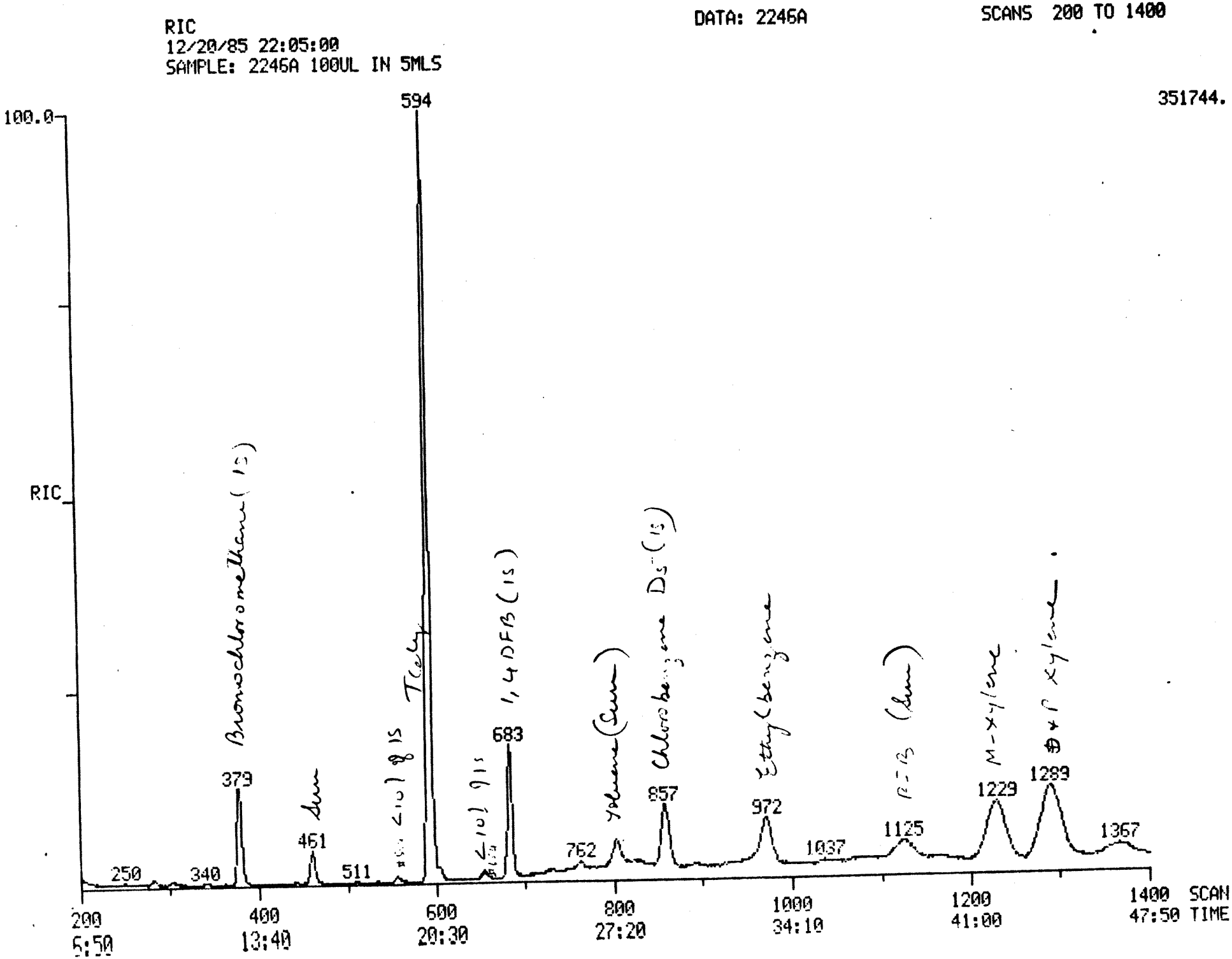
Analytical Report

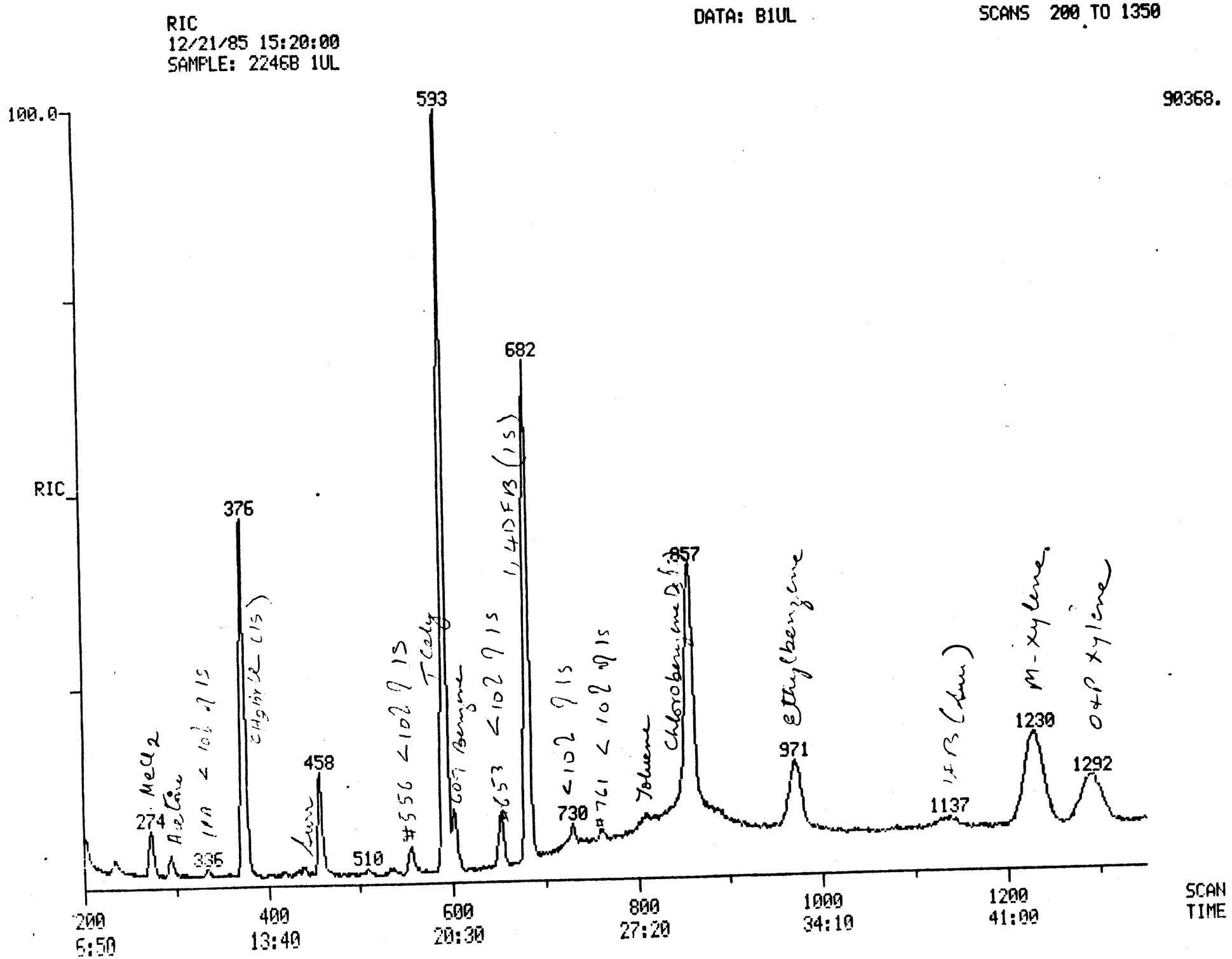
Samples Received: December 11, 1985
CAMO Job No.: 008
CAMO Log No.: 85-12-2246

Table II

SAMPLE IDENTIFICATIONS	PARAMETERS
	% Solids
120985B01	82
120985B02	83
120985B03	84
120985B04	78
120985B05	79
120985B06	90
120985B07	92
120985B08	91
120985B09	77
120985B010	76
120985B011	79
120985B012	82
120985B013	79
120985B014	82
120985B015	93
120985B016	92

NOTE: All results expressed in mg/l unless noted otherwise.


RIC
12/20/85 22:05:00
SAMPLE: 2246A 100UL IN 5ML5
DATA: 2246A
SCANS 200 TO 1400
351744.
100.0
RIC
594
379
461
511
683
762
857
972
1037
1125
1229
1289
1367
250
340
Bromochloromethane (IS)
Dun
Toluene (Surr)
Chlorobenzene D5 (IS)
Ethylbenzene
M-Xylene
200
5:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400 SCAN
47:50 TIME

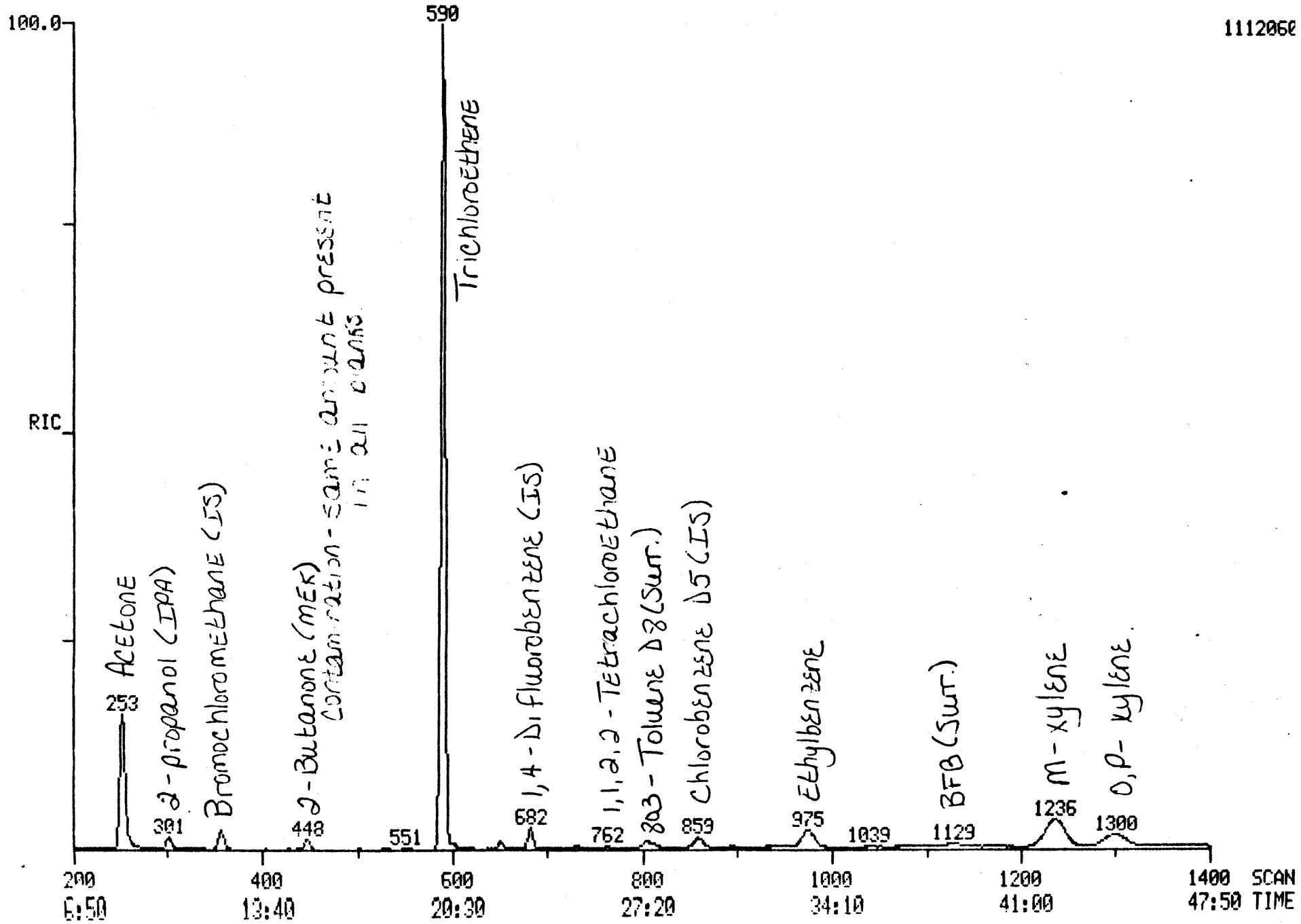

RIC
12/21/85 15:20:00
SAMPLE: 2246B 1UL
DATA: B1UL
SCANS 200 TO 1350
90368.
100.0
RIC
593
682
376
458
510
274
336
971
1137
1230
1292
857
730
200
5:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
SCAN
TIME

UL

RIC
12/22/85 13:08:00
SAMPLE: 2246C = 100 UL EXTRACT

DATA: 2246C100UL

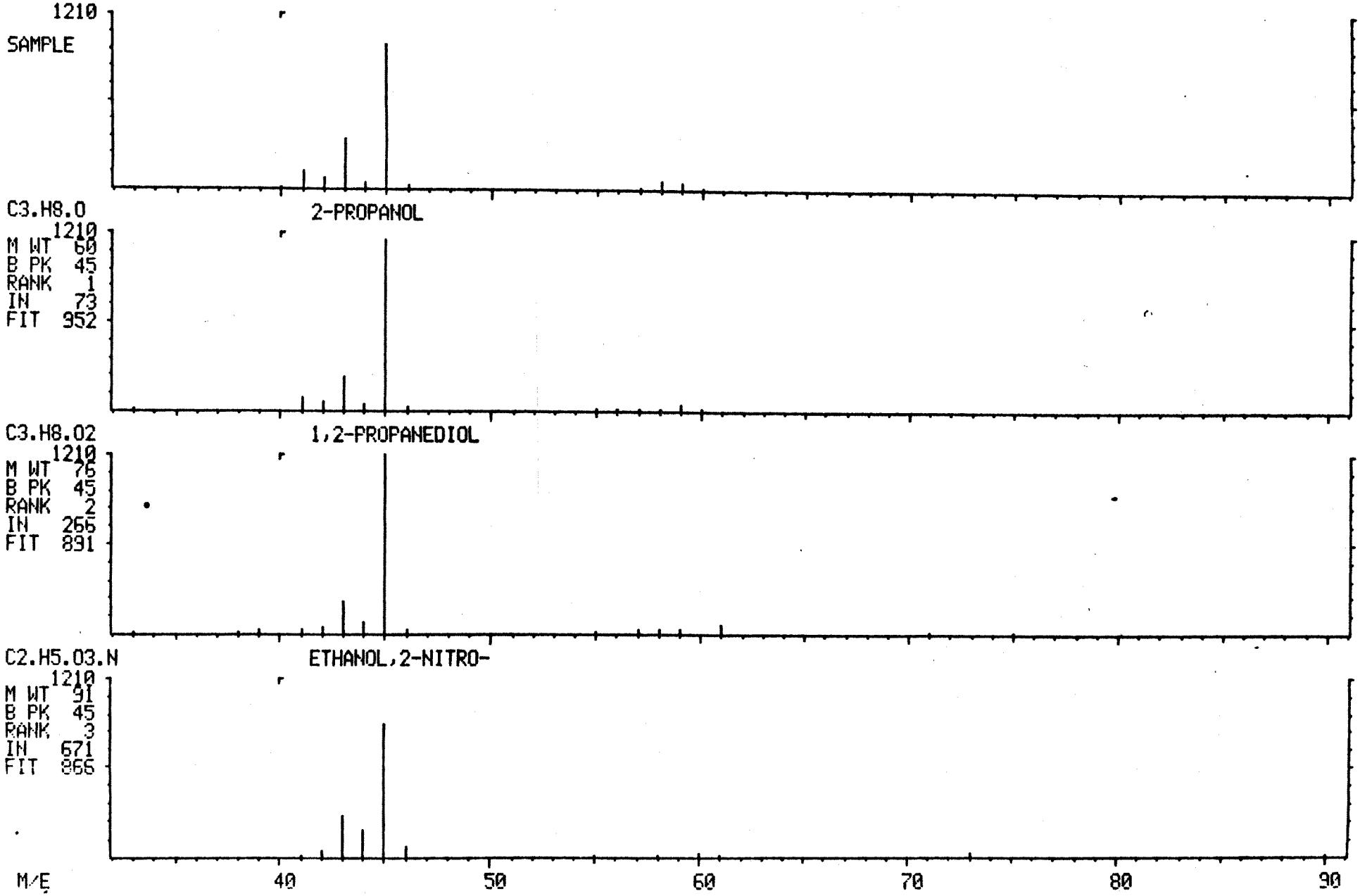
SCANS . 200 TO 1400



LIBRARY SEARCH
12/22/85 13:08:00 + 10:17
SAMPLE: 2246C = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

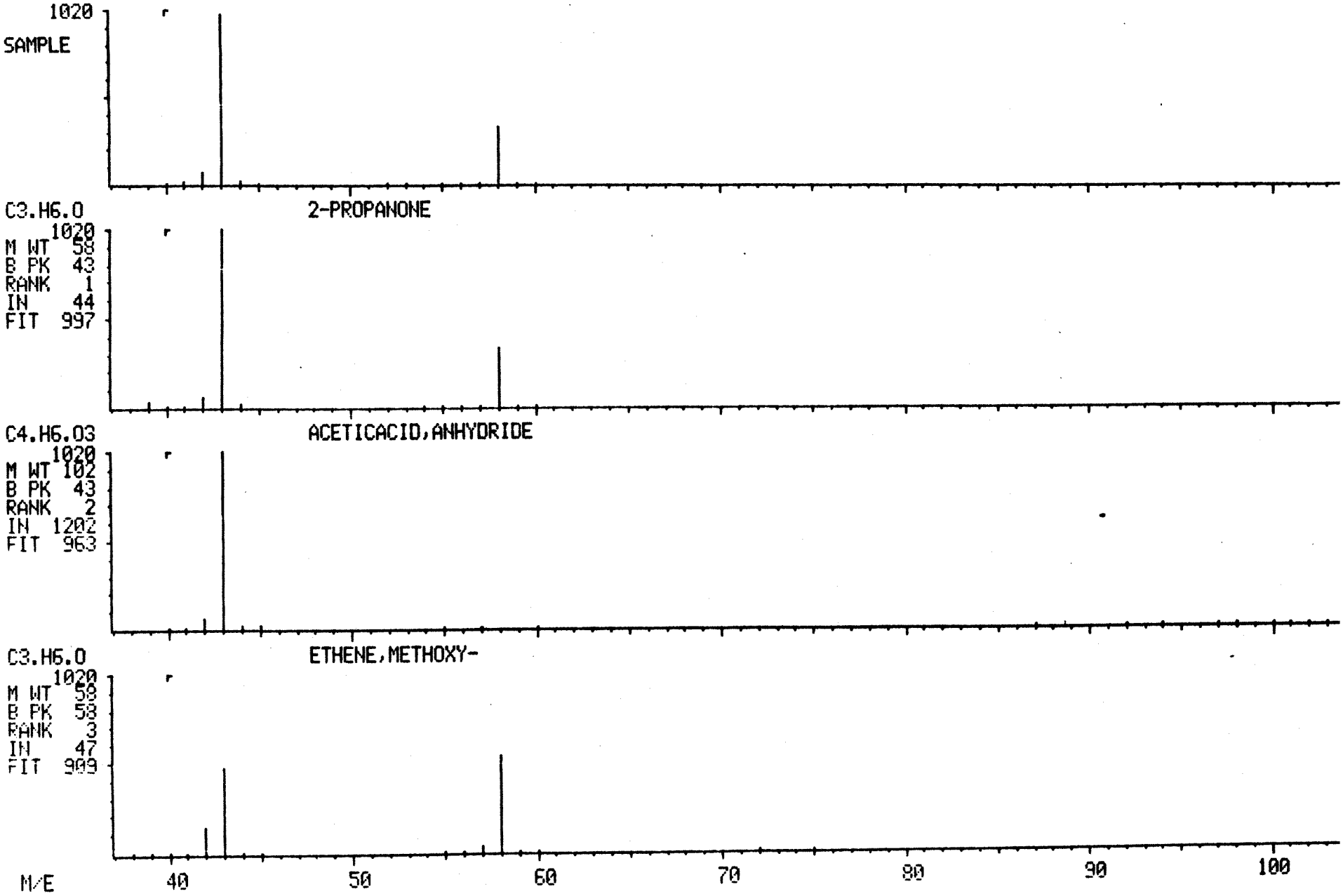
DATA: 2246C100UL # 301

BASE M/E: 45
RIC: 13231.



LIBRARY SEARCH
12/22/85 13:08:00 + 8:39
SAMPLE: 2246C = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

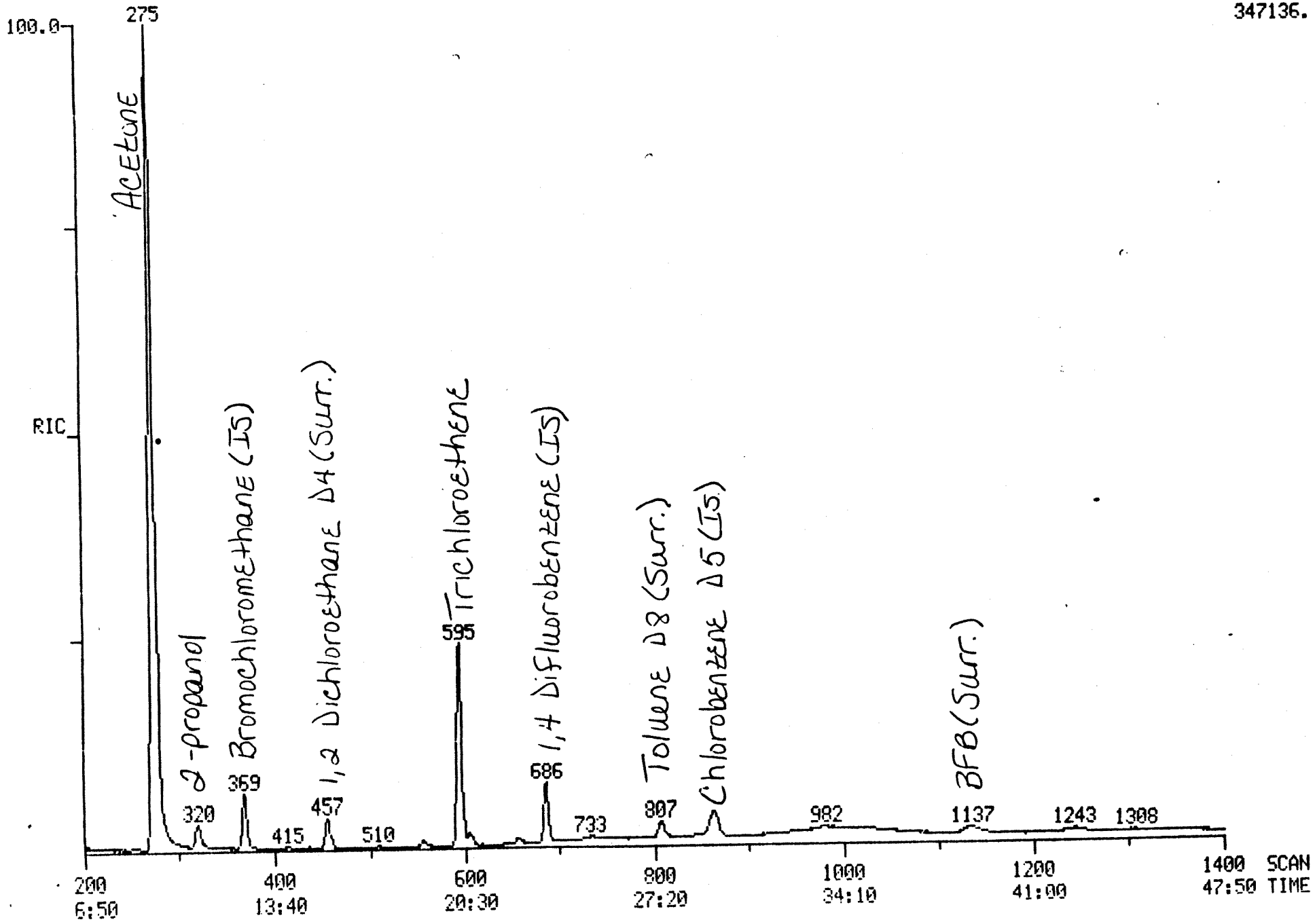
DATA: 2246C100UL # 253 BASE M/E: 43
RIC: 166399.



RIC
12/22/85 15:54:00
SAMPLE: 2246D = 100 UL EXTRACT

DATA: 2246D100UL

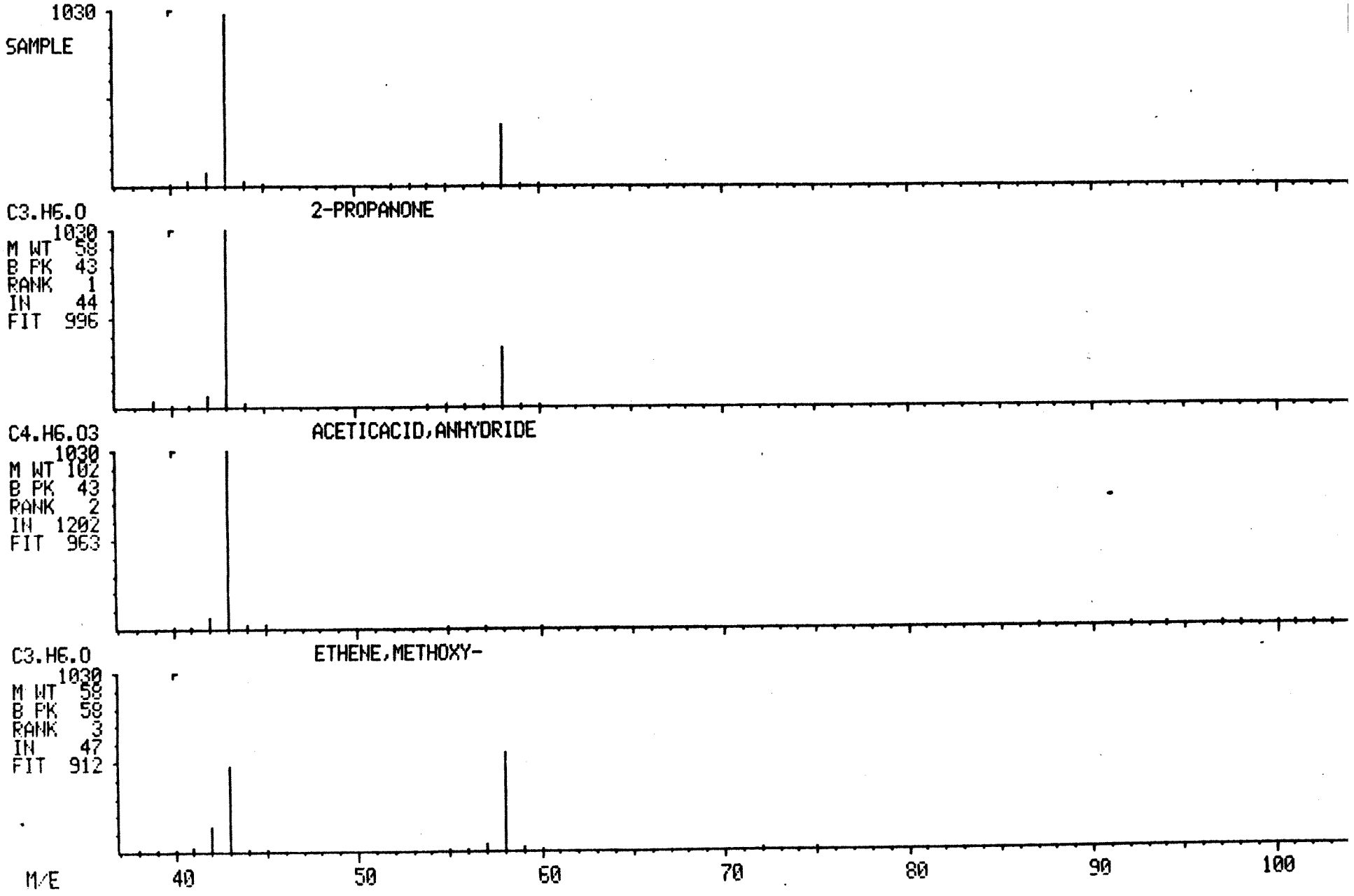
SCANS 200 TO 1400



LIBRARY SEARCH
12/22/85 15:54:00 + 9:24
SAMPLE: 2246D = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246D100UL # 275

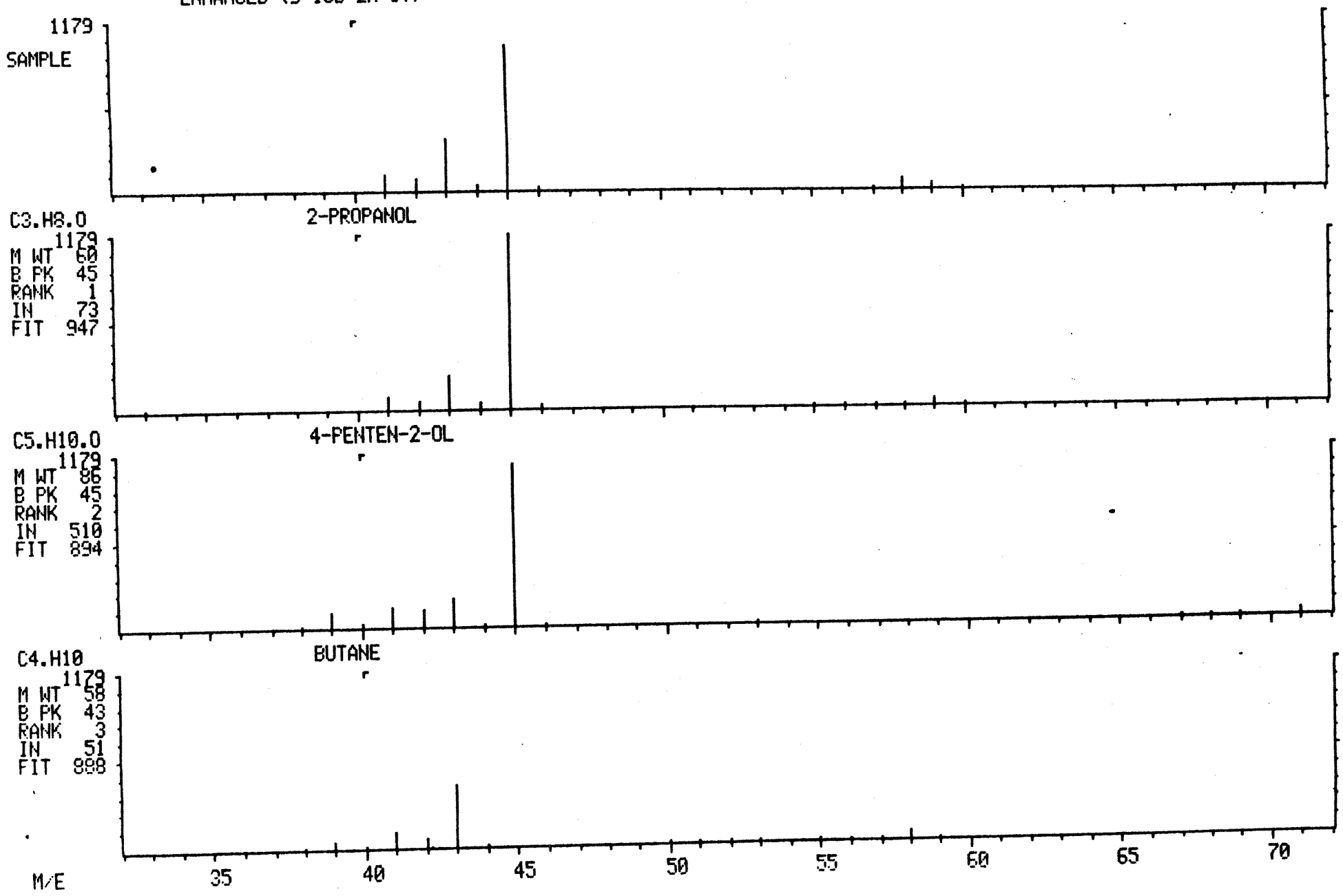
BASE M/E: 43
RIC: 328703.



LIBRARY SEARCH
12/22/85 15:54:00 + 10:56
SAMPLE: 2246D = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

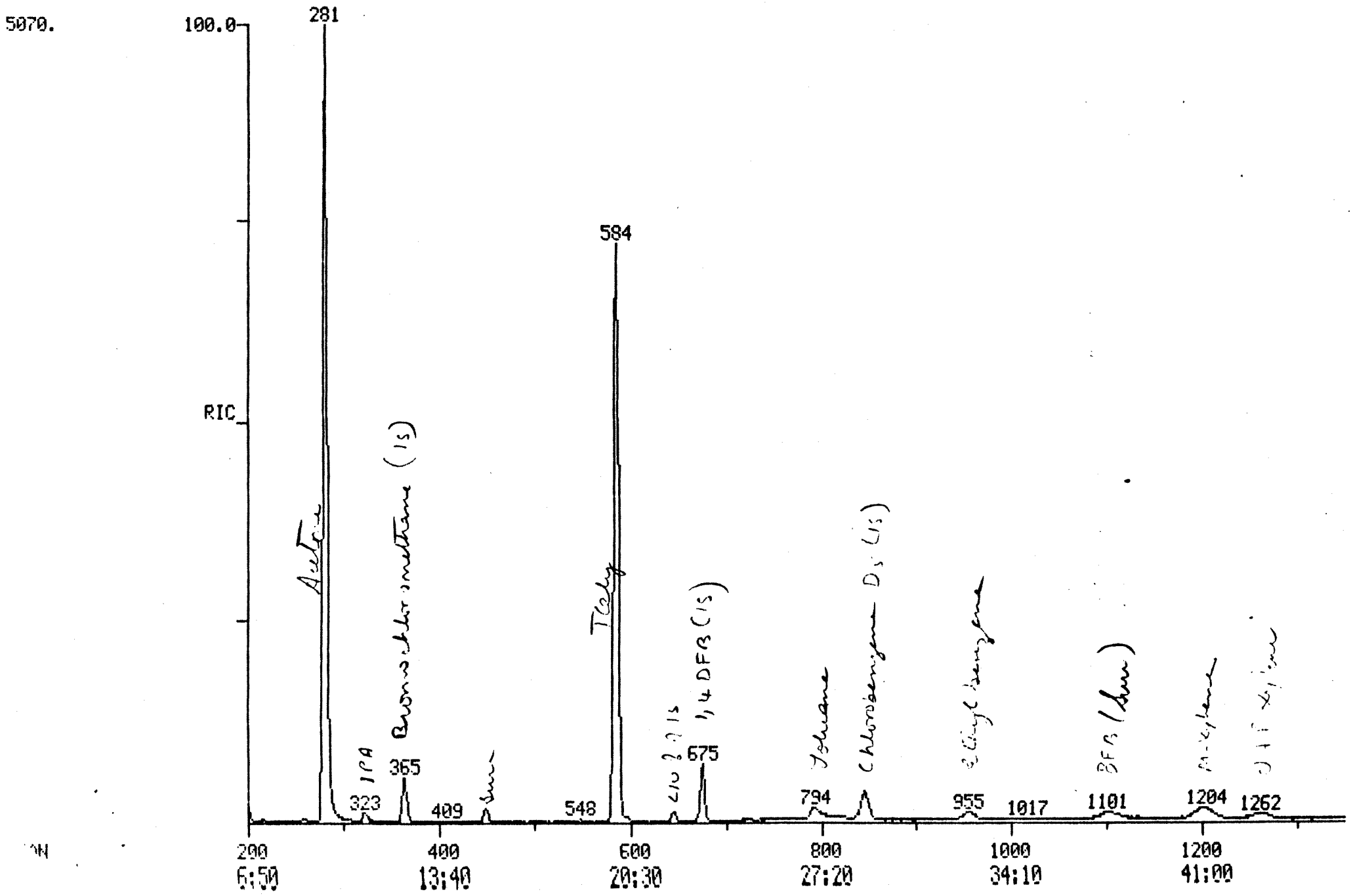
DATA: 2246D100UL # 320

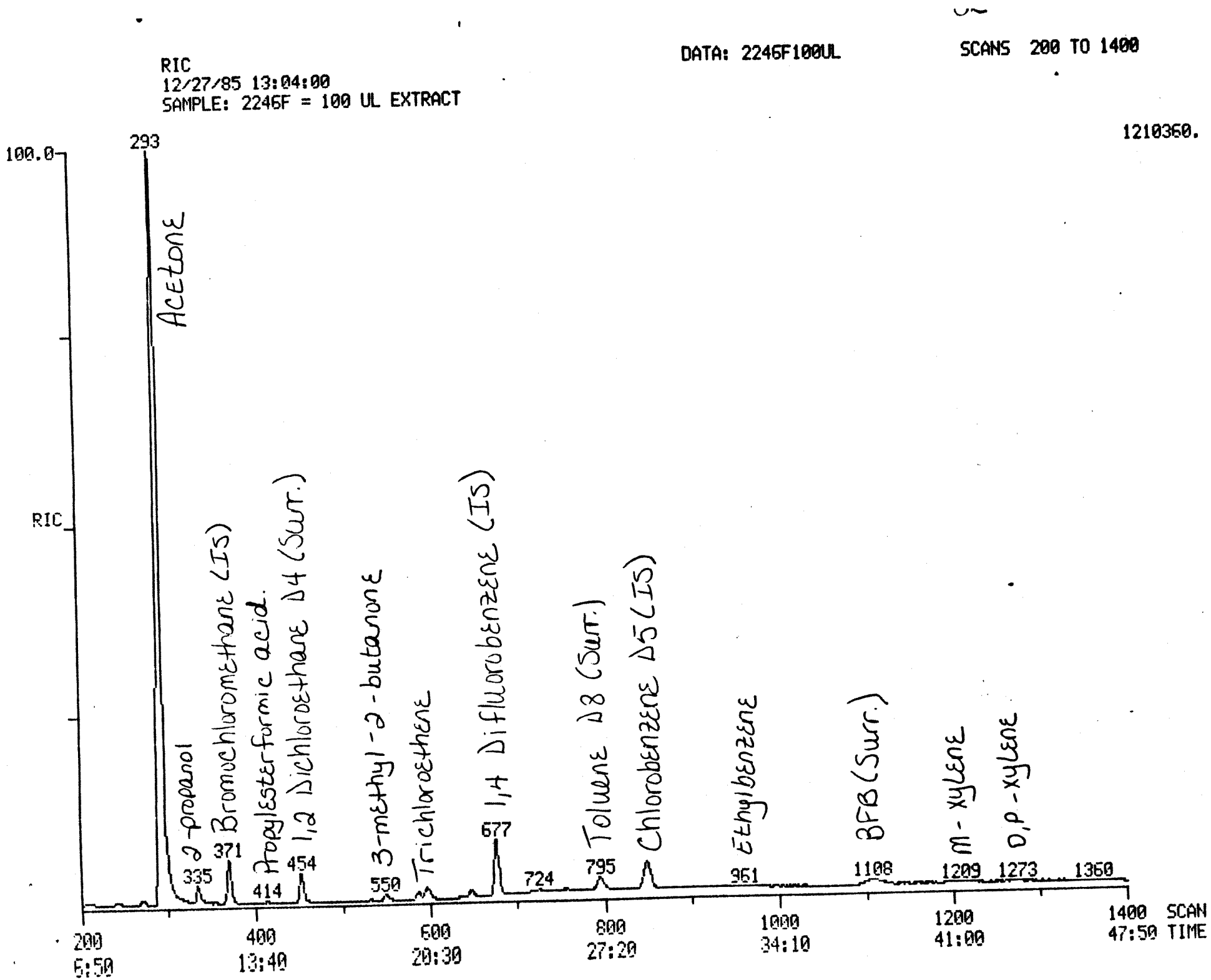
BASE M/E: 45
RIC: 8175.



RIC
12/23/85 21:36:00
SAMPLE: 2246E 100UL

DATA: 2246E100UL . SCANS 200 TO 13

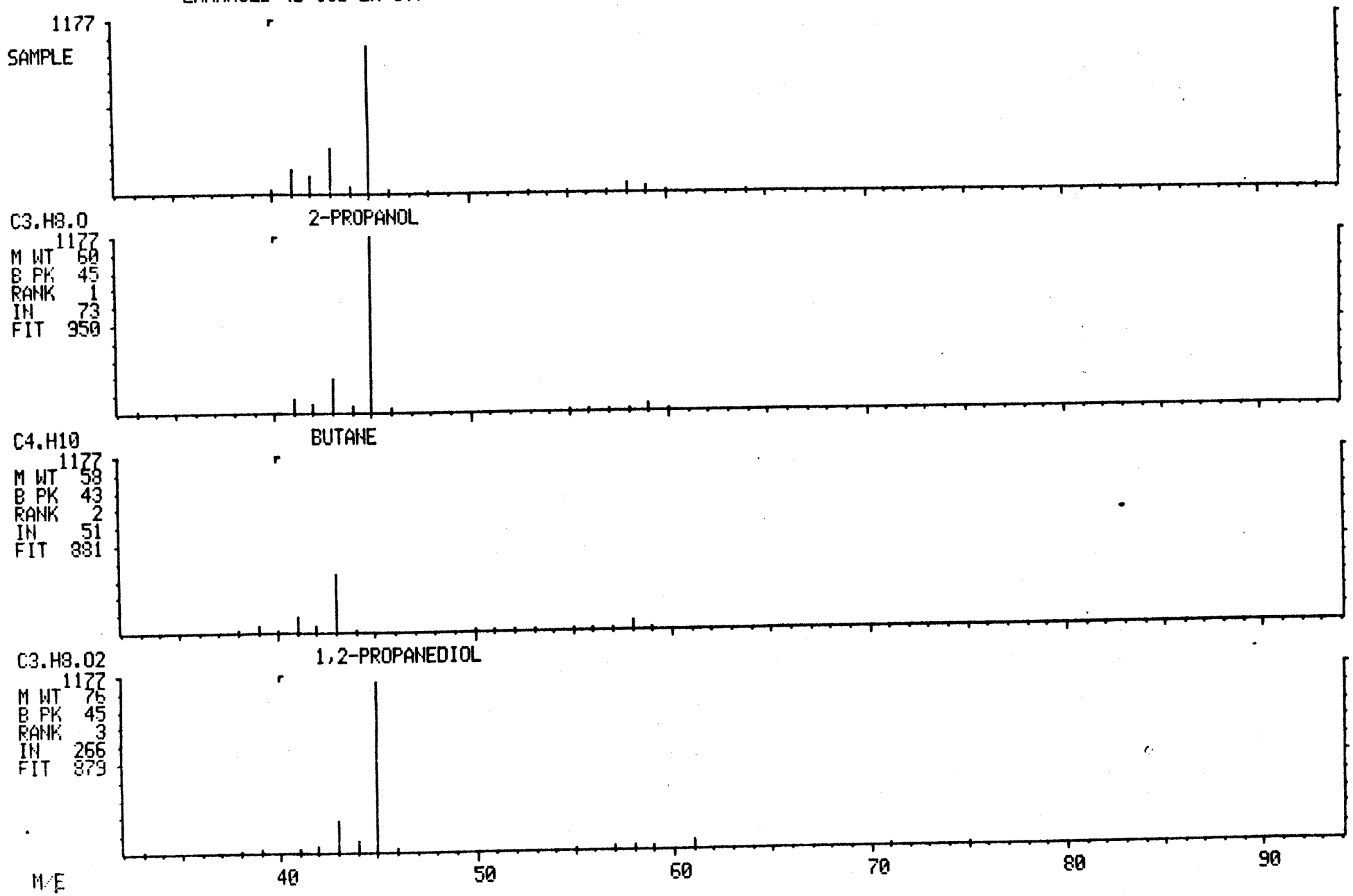



RIC
12/27/85 13:04:00
SAMPLE: 2246F = 100 UL EXTRACT
DATA: 2246F100UL
SCANS 200 TO 1400
1210360.
100.0
RIC
293
Acetone
335
2-propanol
371
Bromochloromethane (IS)
414
Propylesterformic acid.
454
1,2 Dichloroethane D4 (Surr.)
550
3-methyl-2-butanone
Trichloroethene
677
1,4 Difluorobenzene (IS)
724
795
Toluene D8 (Surr.)
Chlorobenzene D5 (IS)
961
Ethylbenzene
1108
BFB (Surr.)
1209
m-xylene
1273
o,p-xylene
1360
200
5:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400 SCAN
47:50 TIME

LIBRARY SEARCH
12/27/85 13:04:00 + 11:27
SAMPLE: 2246F = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246F100UL # 335

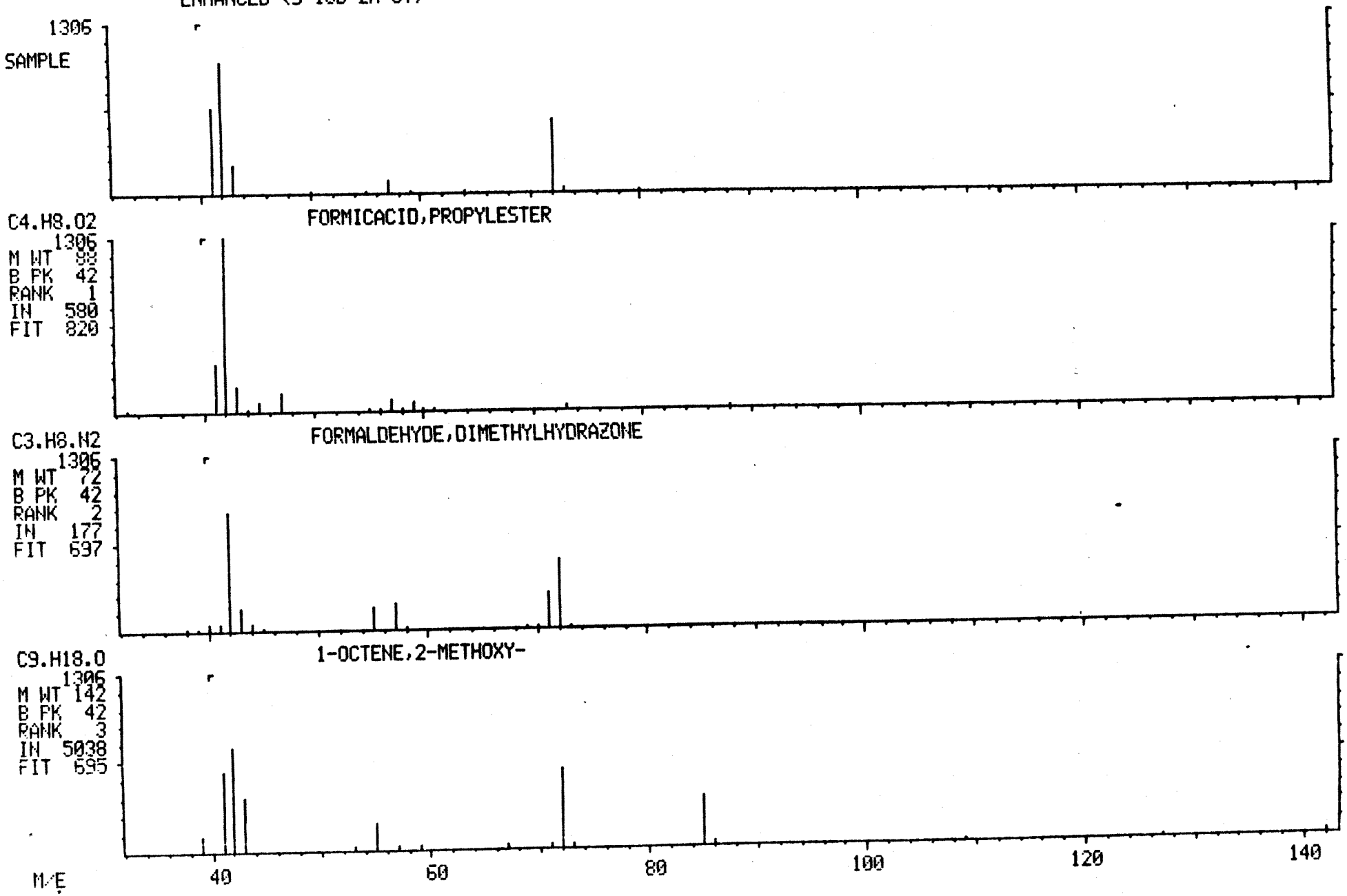
BASE M/E: 45
RIC: 23903.



LIBRARY SEARCH
12/27/85 13:04:00 + 14:09
SAMPLE: 2246F = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246F100UL # 414

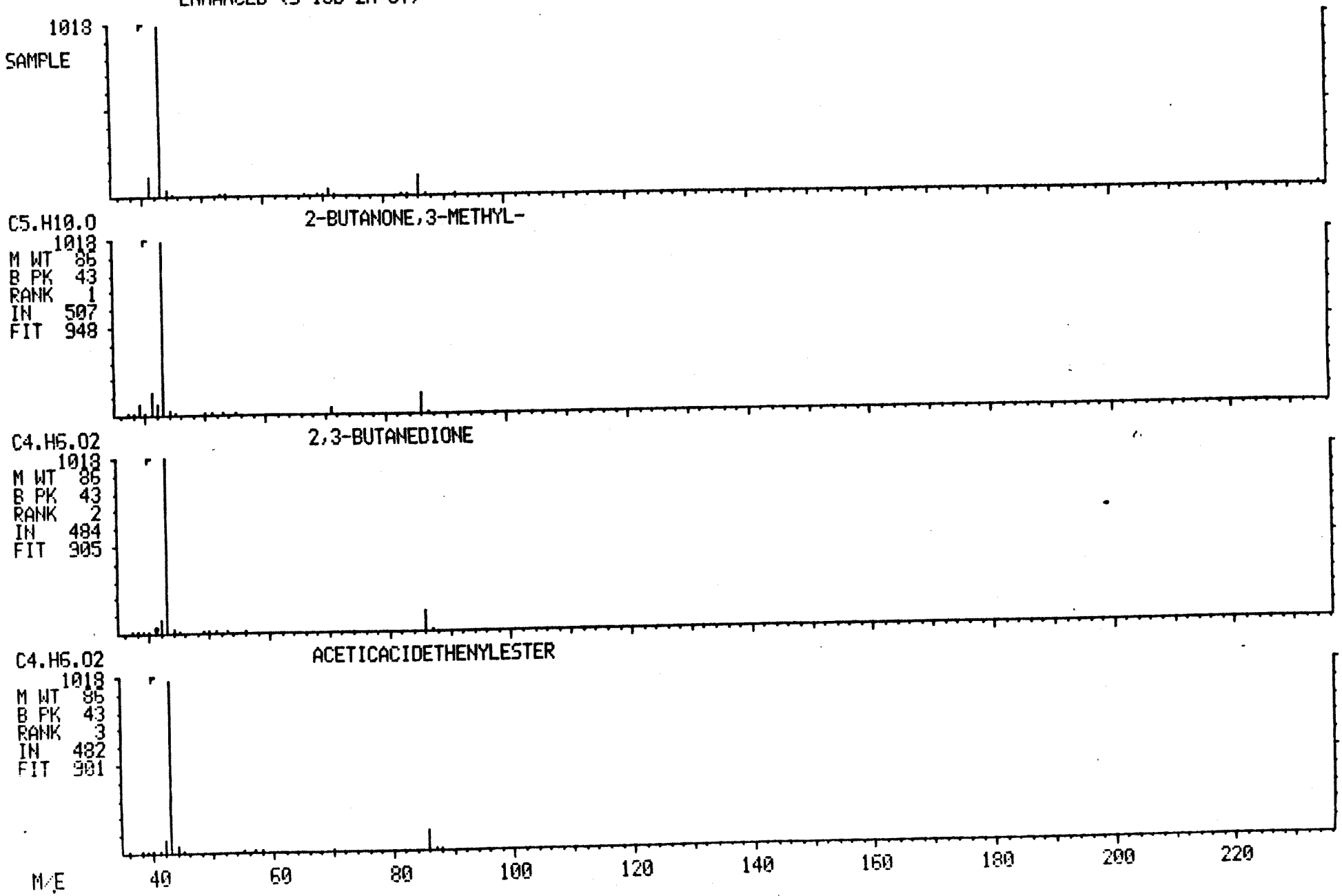
BASE M/E: 42
RIC: 2015.

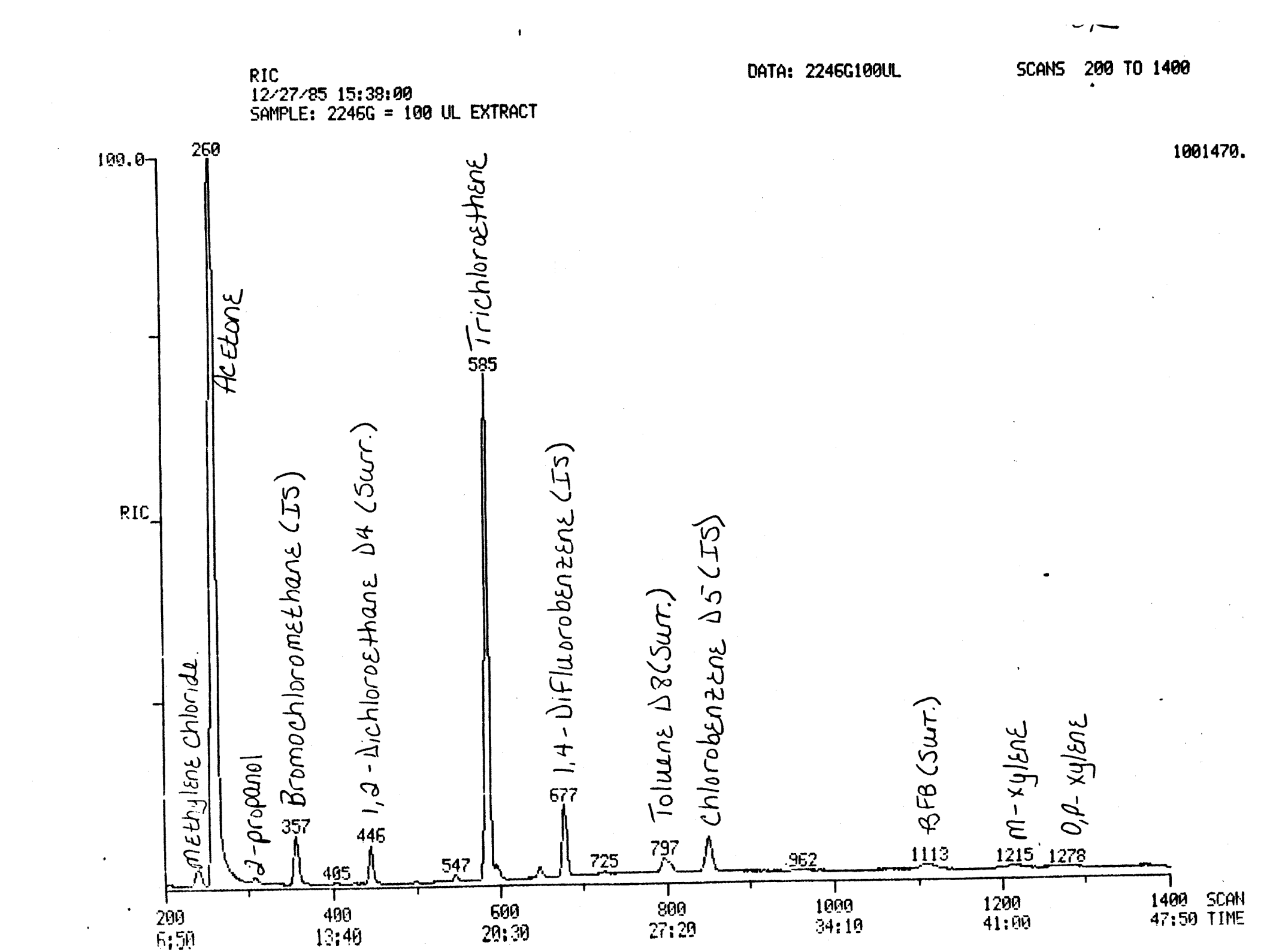


LIBRARY SEARCH
12/27/85 13:04:00 + 18:47
SAMPLE: 2246F = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246F100UL # 550

BASE M/E: 43
RIC: 8335.

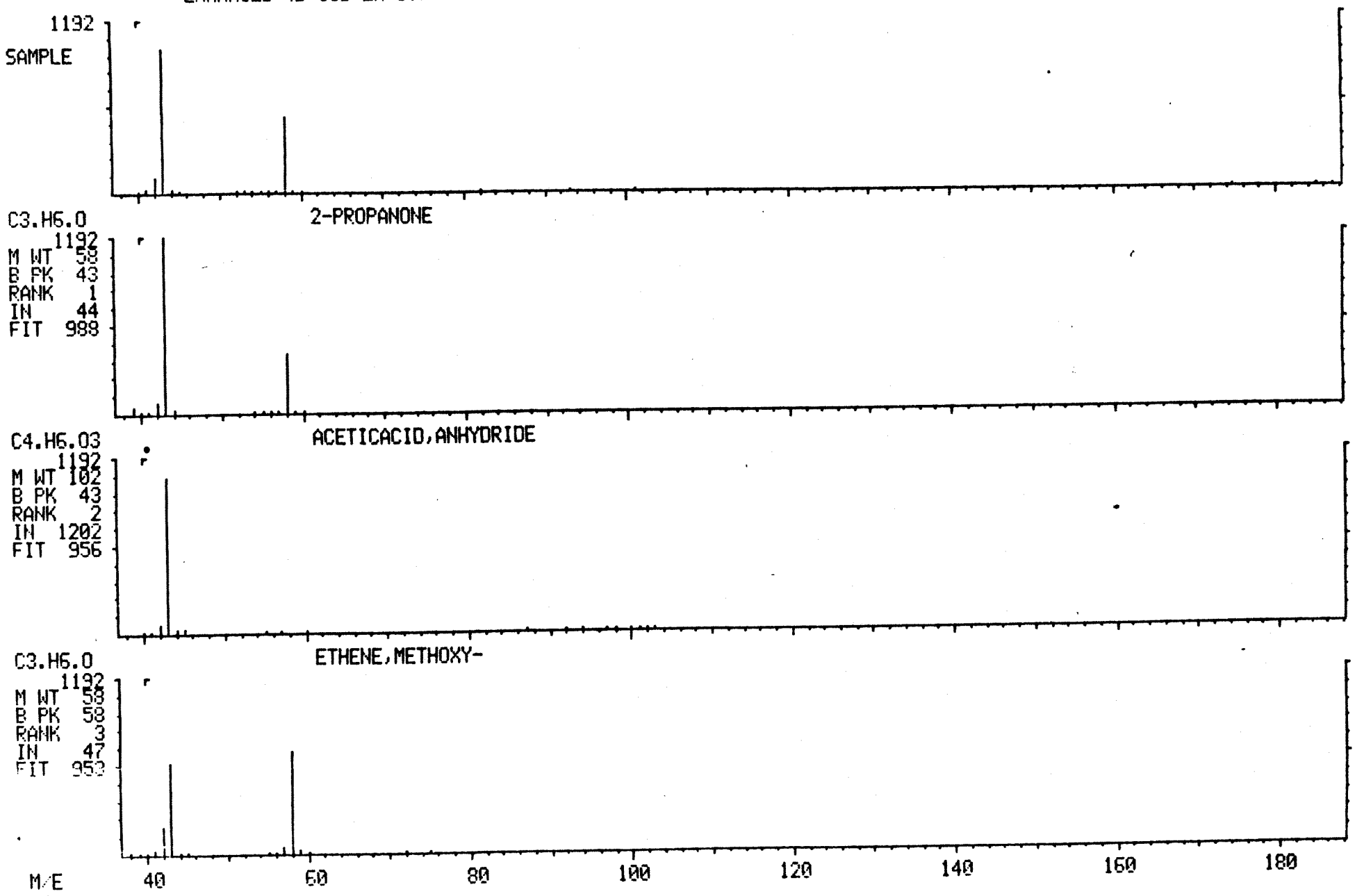


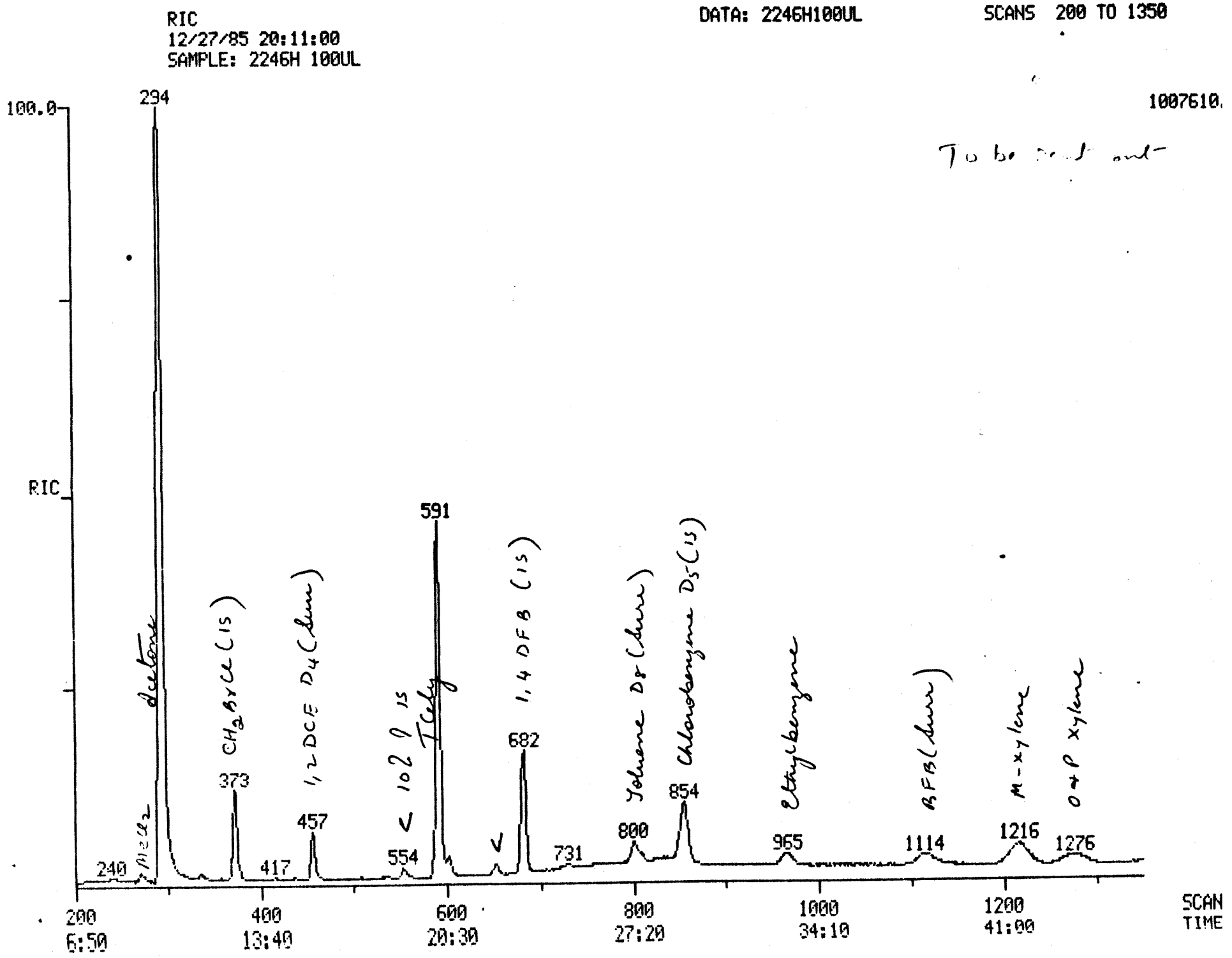

RIC
12/27/85 15:38:00
SAMPLE: 2246G = 100 UL EXTRACT
DATA: 2246G100UL
SCANS 200 TO 1400
1001470.
100.0
RIC
260
Acetone
585
Trichloroethene
Methylene Chloride
2-propanol
357
Bromochloromethane (IS)
405
446
1,2-Dichloroethane D4 (Surr.)
547
677
1,4-Difluorobenzene (IS)
725
797
Toluene D8 (Surr.)
Chlorobenzene D5 (IS)
962
1113
BFB (Surr.)
1215
m-xylene
1278
o,p-xylene
200
5:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400
47:50
SCAN
TIME

LIBRARY SEARCH
12/27/85 15:38:00 + 8:53
SAMPLE: 2246G = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246G100UL # 260

BASE M/E: 43
RIC: 929791.

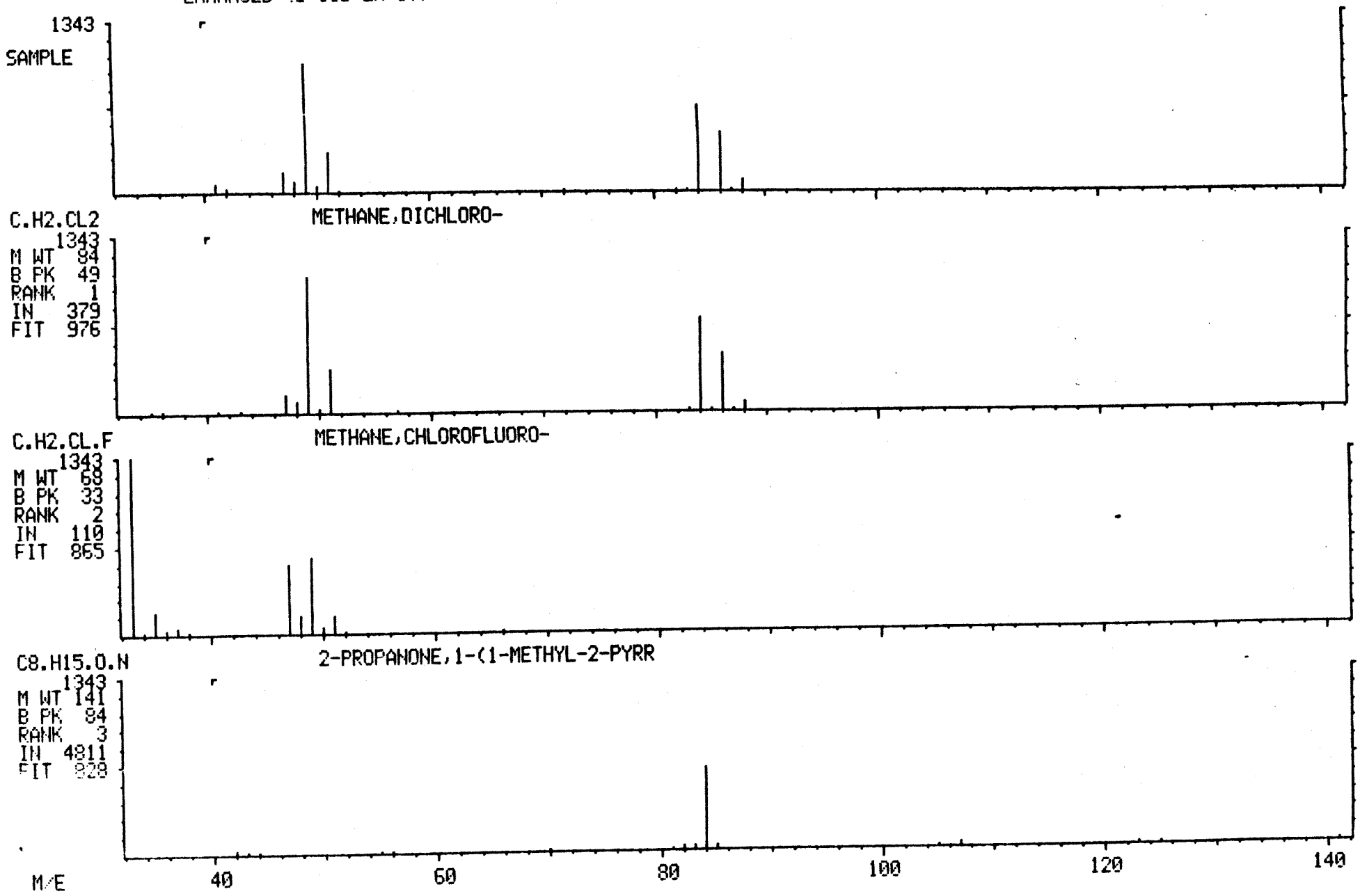


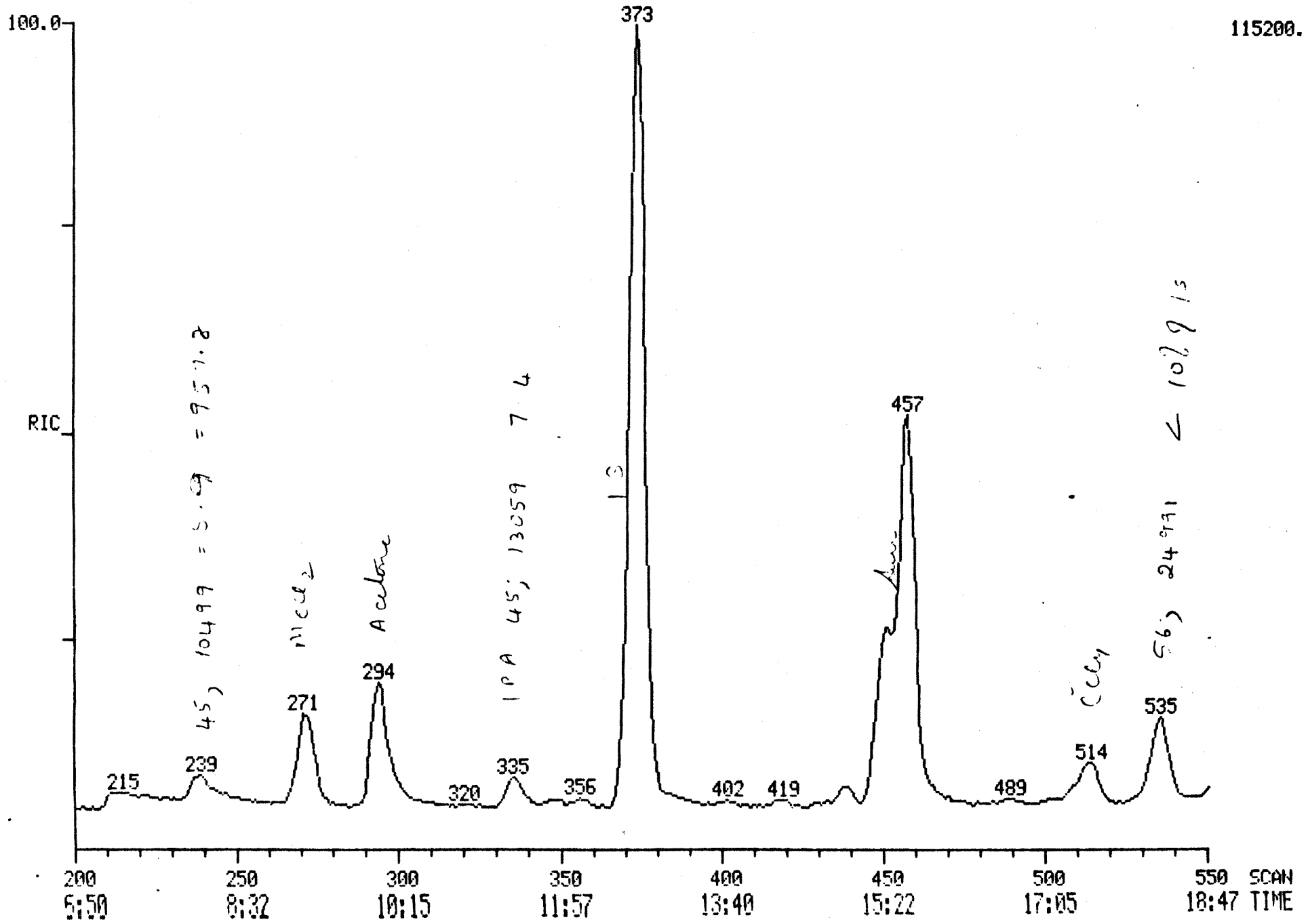

RIC
12/27/85 20:11:00
SAMPLE: 2246H 100UL
DATA: 2246H100UL
SCANS 200 TO 1350
1007610.
To be
100.0
RIC
294
Acetone
240
373
CH2BrCl (IS)
417
457
1,2 DCE D4 (Surr)
554
591
1,4 DFB (IS)
682
731
800
Toluene D8 (Surr)
854
Chlorobenzene D5 (IS)
965
Ethylbenzene
1114
BFB (Surr)
1216
M-xylene
1276
O+P xylene
200
6:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
SCAN
TIME

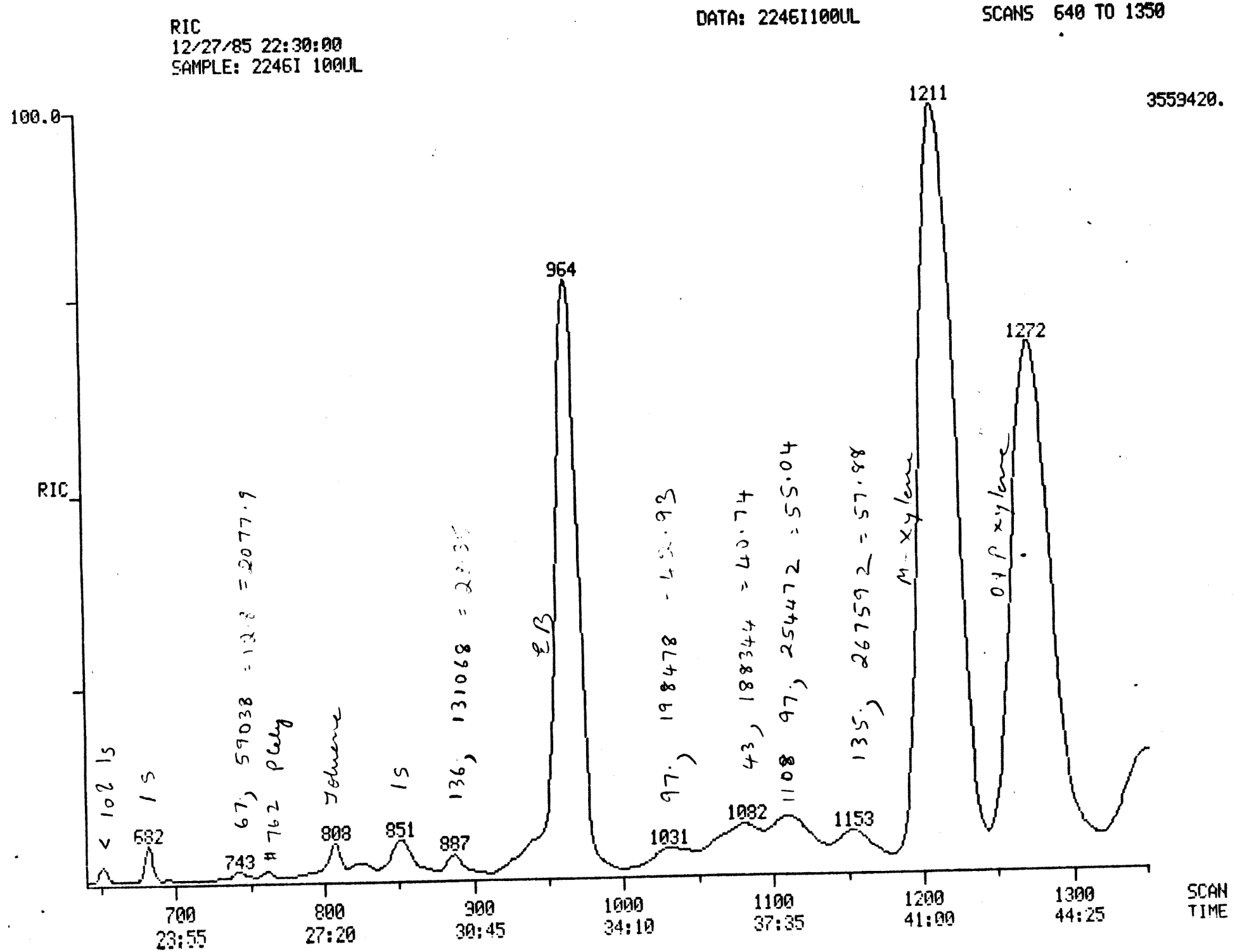
LIBRARY SEARCH
12/27/85 15:38:00 + 8:12
SAMPLE: 2246G = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246G100UL # 240

BASE M/E: 49
RIC: 21631.



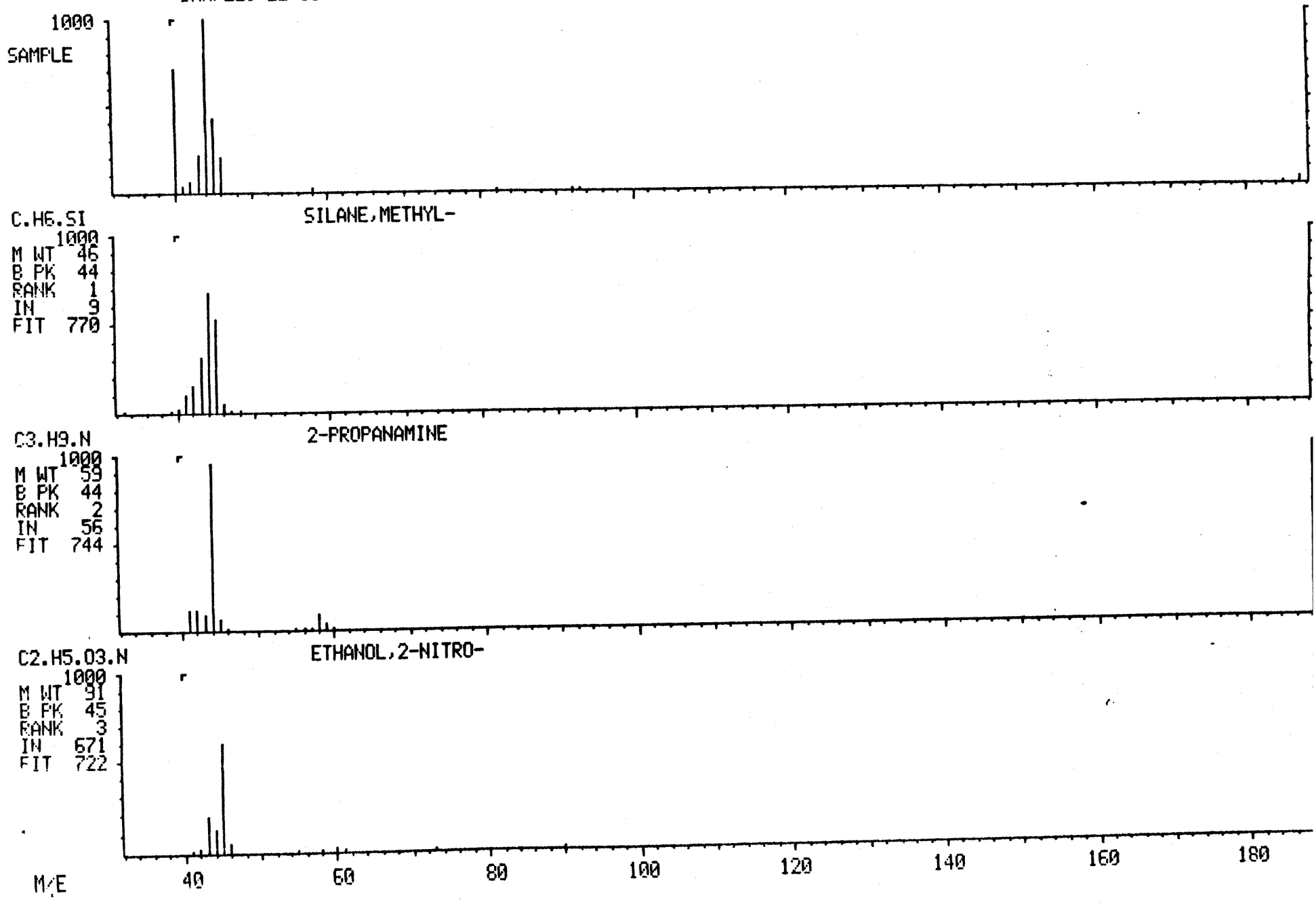

RIC
12/27/85 22:30:00
SAMPLE: 2246I 100UL
DATA: 2246I100UL
SCANS 200 TO 550
100.0
115200.
RIC
373
457
294
271
239
215
320
335
356
402
419
489
514
535
200
250
300
350
400
450
500
550 SCAN
5:50
8:32
10:15
11:57
13:40
15:22
17:05
18:47 TIME


RIC
12/27/85 22:30:00
SAMPLE: 2246I 100UL
DATA: 2246I100UL
SCANS 640 TO 1350
3559420.
100.0
RIC
682
743
808
851
887
964
1031
1082
1153
1211
1272
700
23:55
800
27:20
900
30:45
1000
34:10
1100
37:35
1200
41:00
1300
44:25
SCAN
TIME

LIBRARY SEARCH
12/27/85 22:30:00 + 8:10
SAMPLE: 2246I 100UL

DATA: 2246I100UL # 239

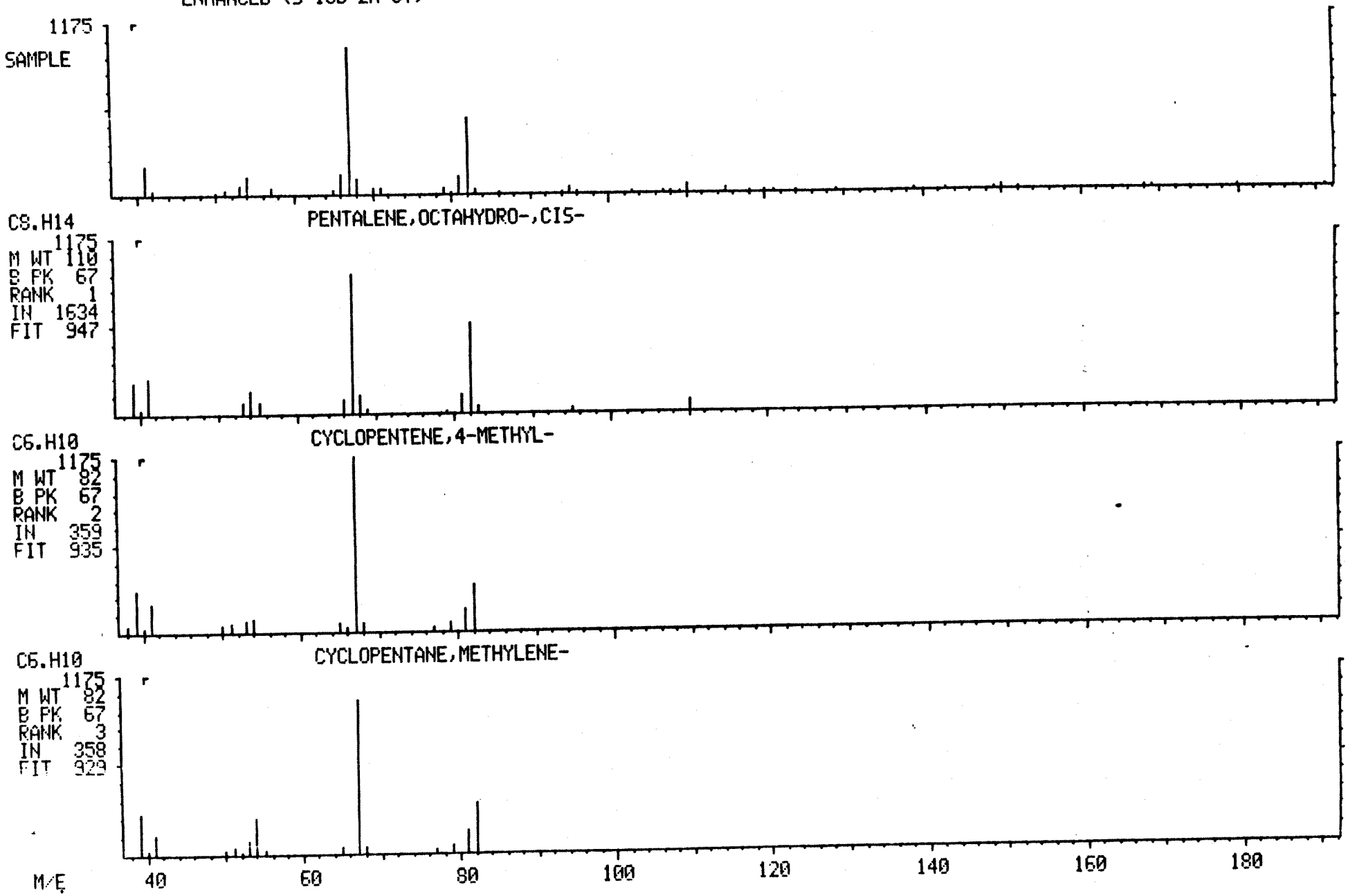
BASE M/E: 44
RIC: 10191.



LIBRARY SEARCH
12/27/85 22:30:00 + 25:23
SAMPLE: 2246I 100UL
ENHANCED (S 15B 2N 0T)

DATA: 2246I100UL # 743

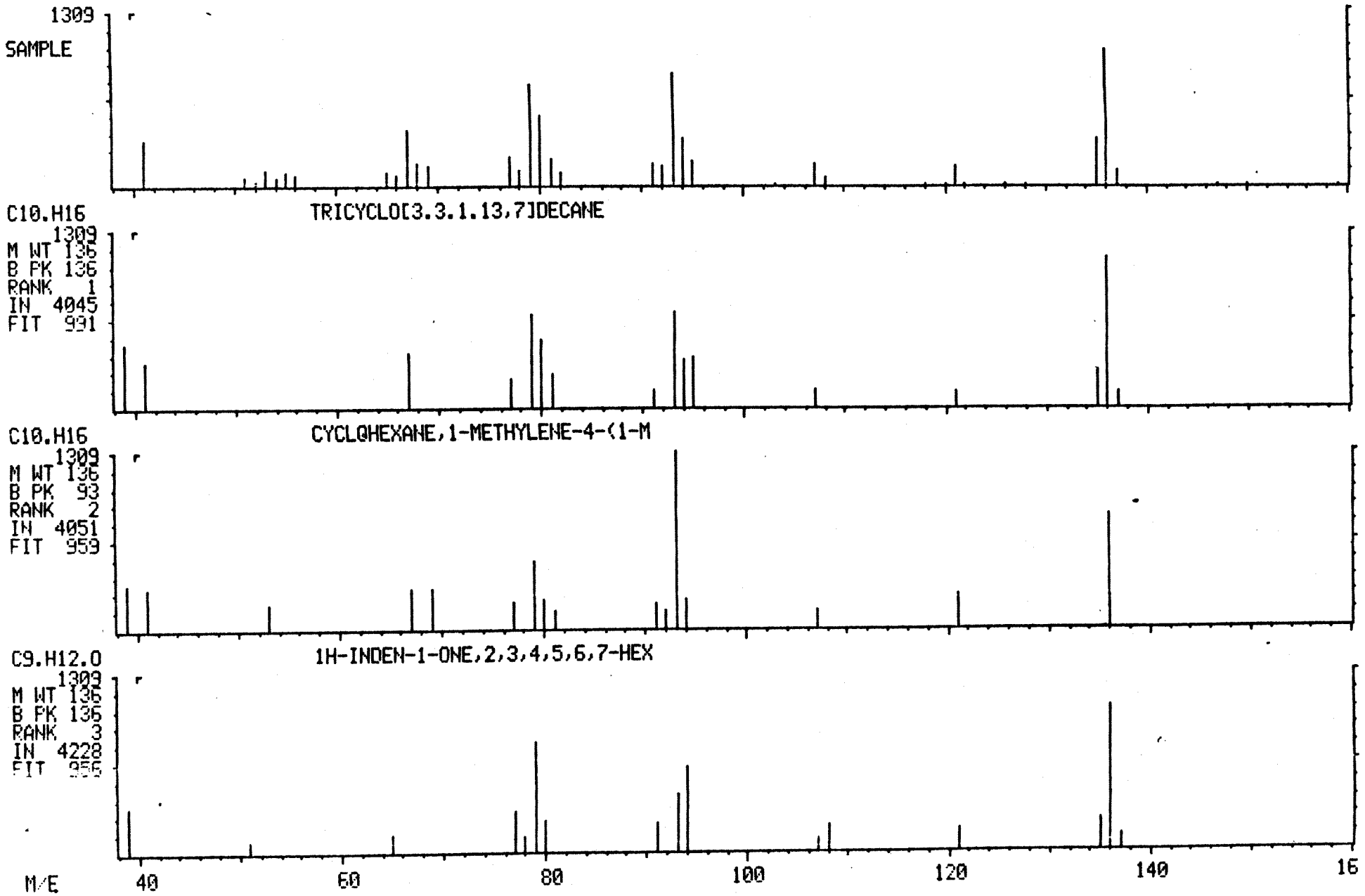
BASE M/E: 67
RIC: 21631.



LIBRARY SEARCH
12/27/85 22:30:00 + 30:18
SAMPLE: 2246I 100UL
ENHANCED (S 15B 2N 0T)

DATA: 2246I100UL # 887

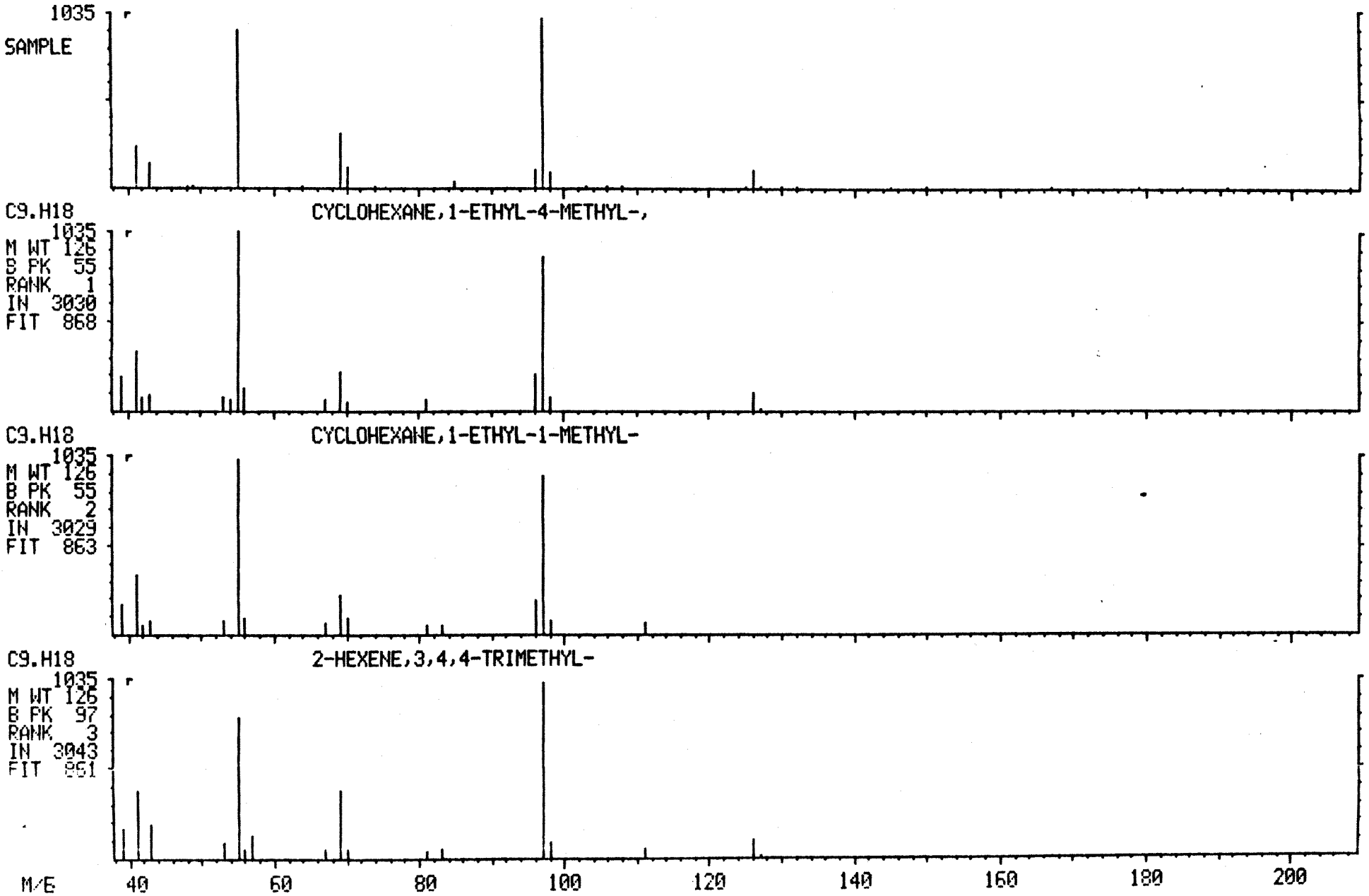
BASE M/E: 136
RIC: 56447.



LIBRARY SEARCH
12/27/85 22:30:00 + 35:14
SAMPLE: 2246I 100UL
ENHANCED (S 15B 2N 0T)

DATA: 2246I100UL #1031

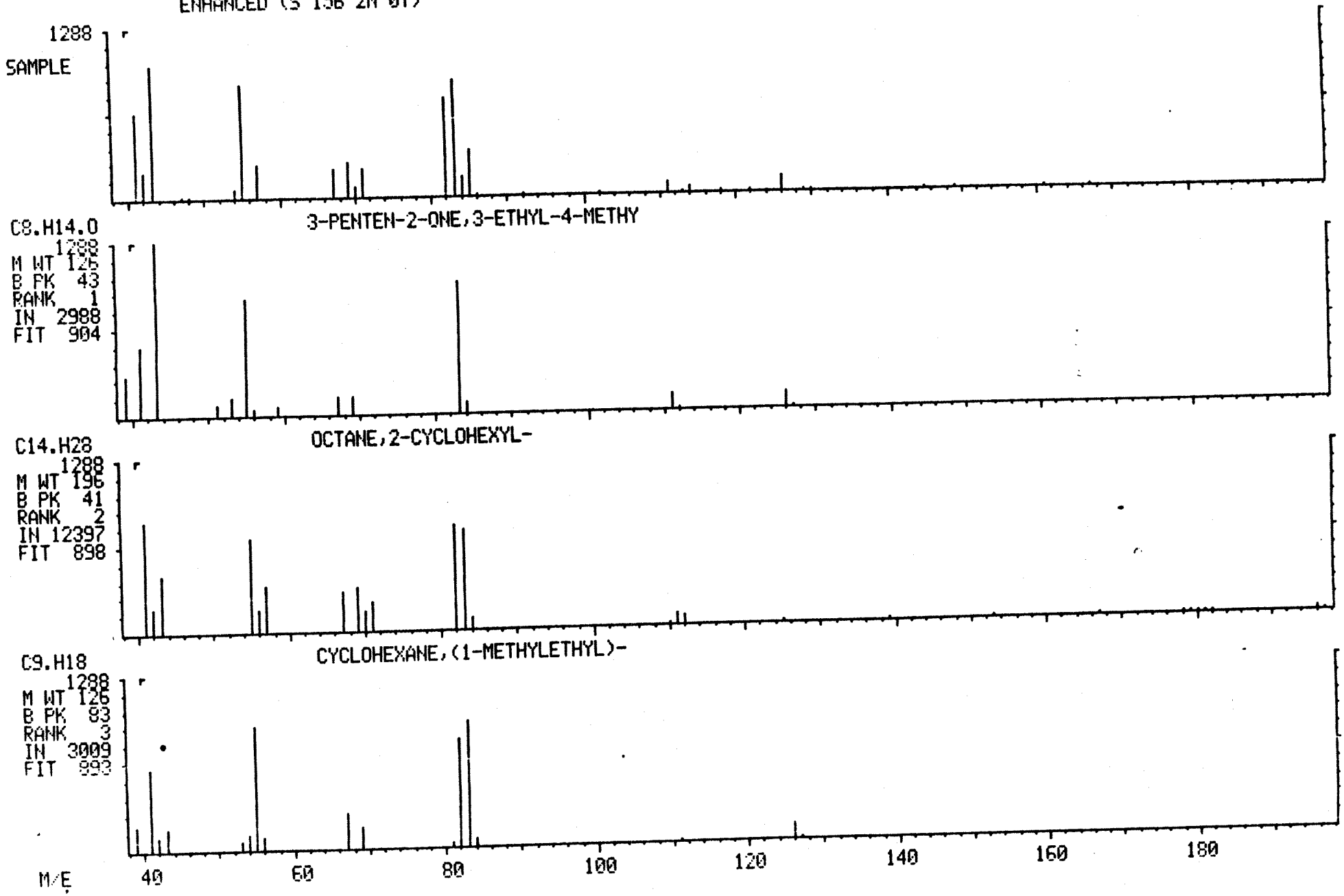
BASE M/E: 97
RIC: 16223.



LIBRARY SEARCH
12/27/85 22:30:00 + 36:58
SAMPLE: 2246I 100UL
ENHANCED (S 15B 2N 0T)

DATA: 2246I100UL #1082

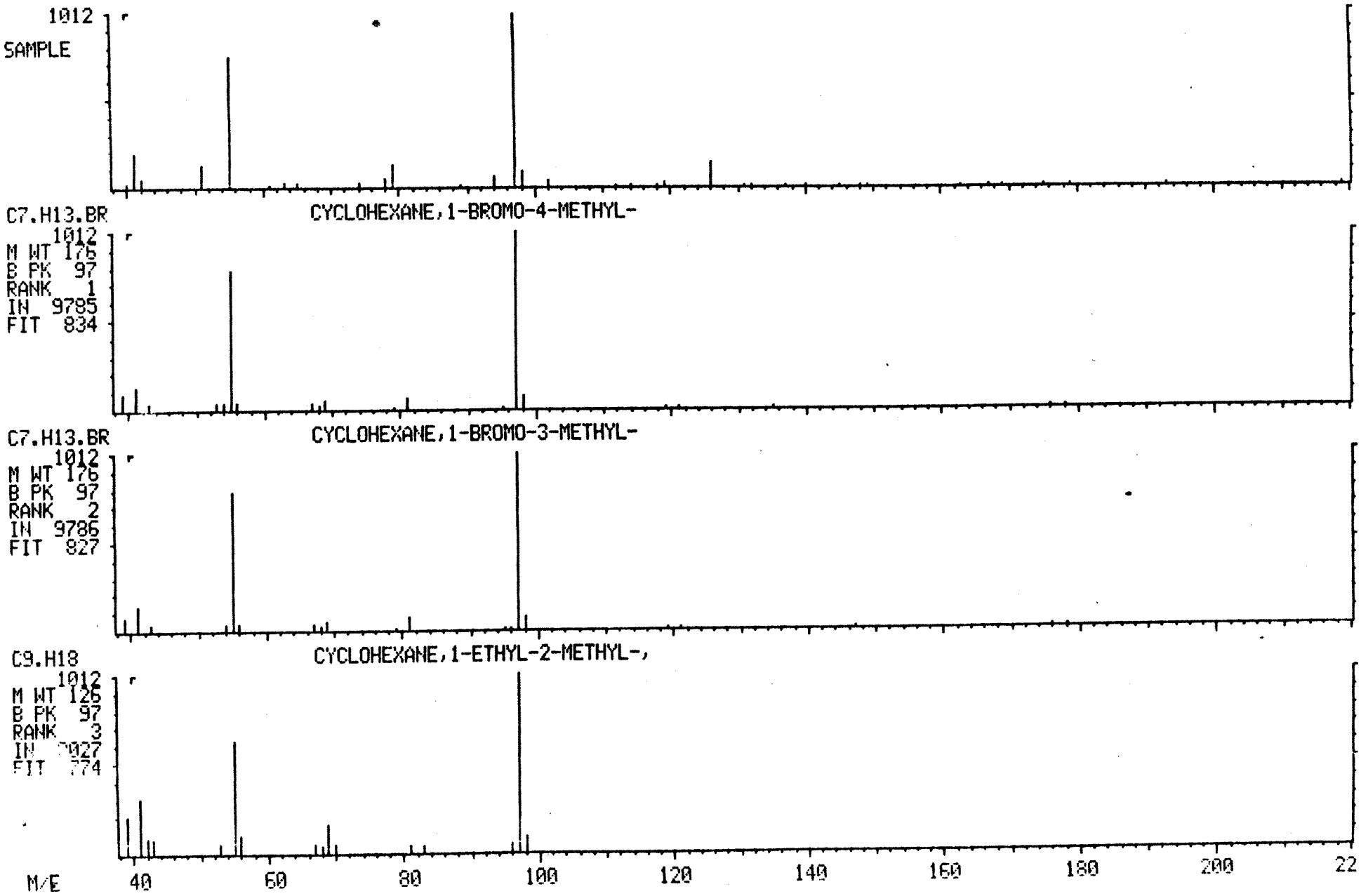
BASE M/E: 43
RIC: 29343.



LIBRARY SEARCH
12/27/85 22:30:00 + 37:51
SAMPLE: 2246I 100UL
ENHANCED (S 15B 2N 0T)

DATA: 2246I100UL #1108

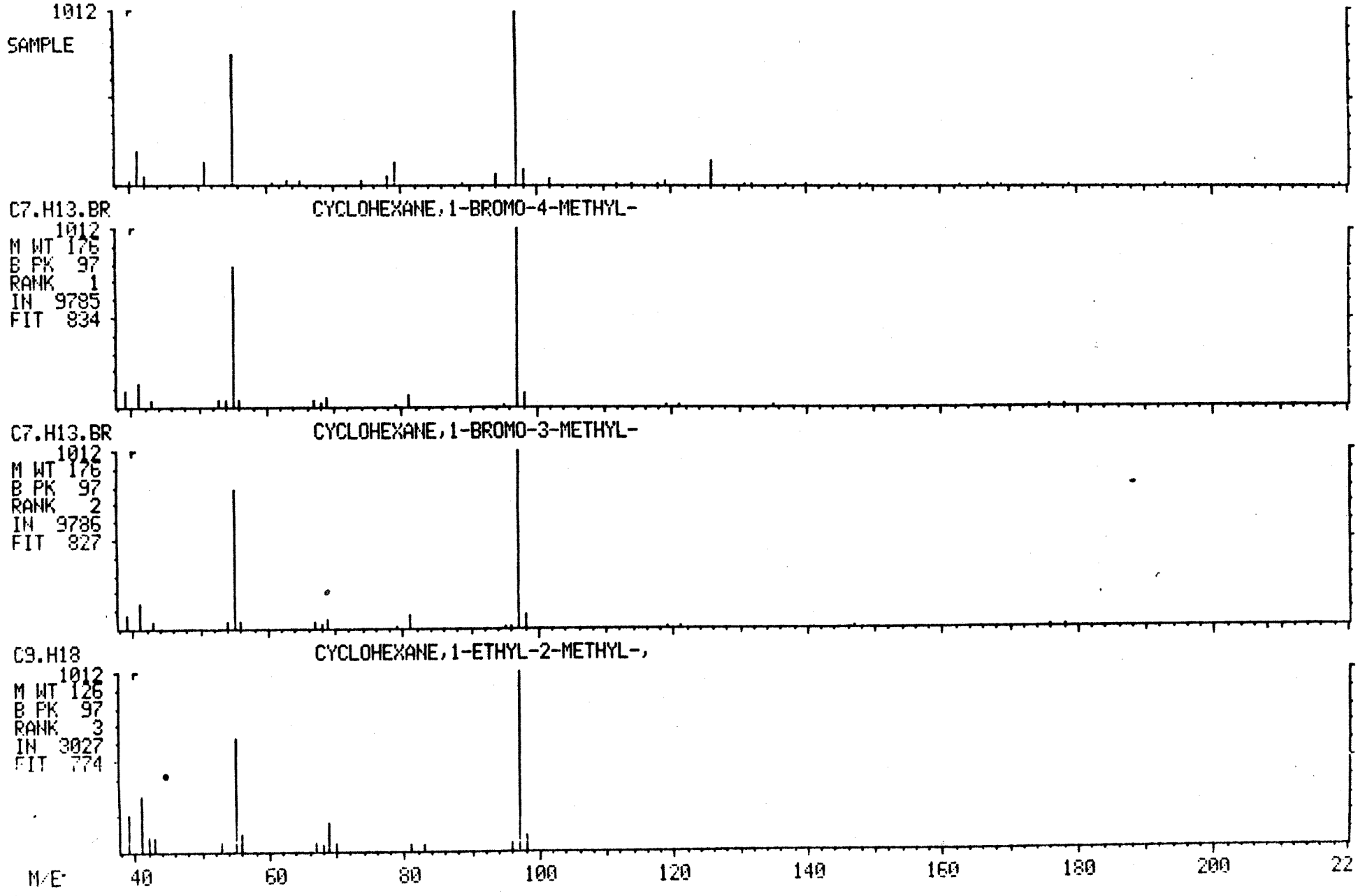
BASE M/E: 97
RIC: 15519.



LIBRARY SEARCH
12/27/85 22:30:00 + 37:51
SAMPLE: 2246I 100UL
ENHANCED (S 15B 2N 0T)

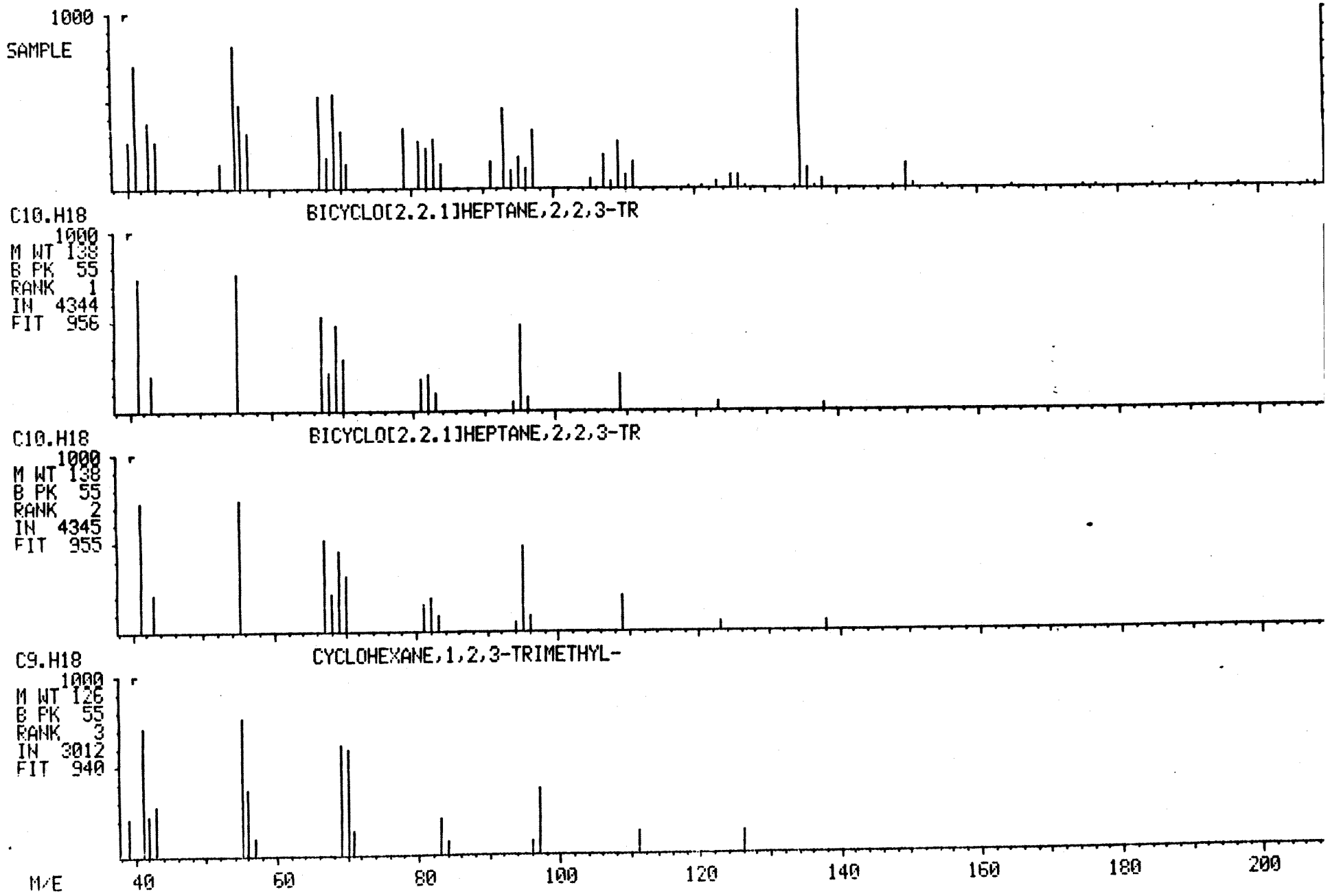
DATA: 2246I100UL #1108

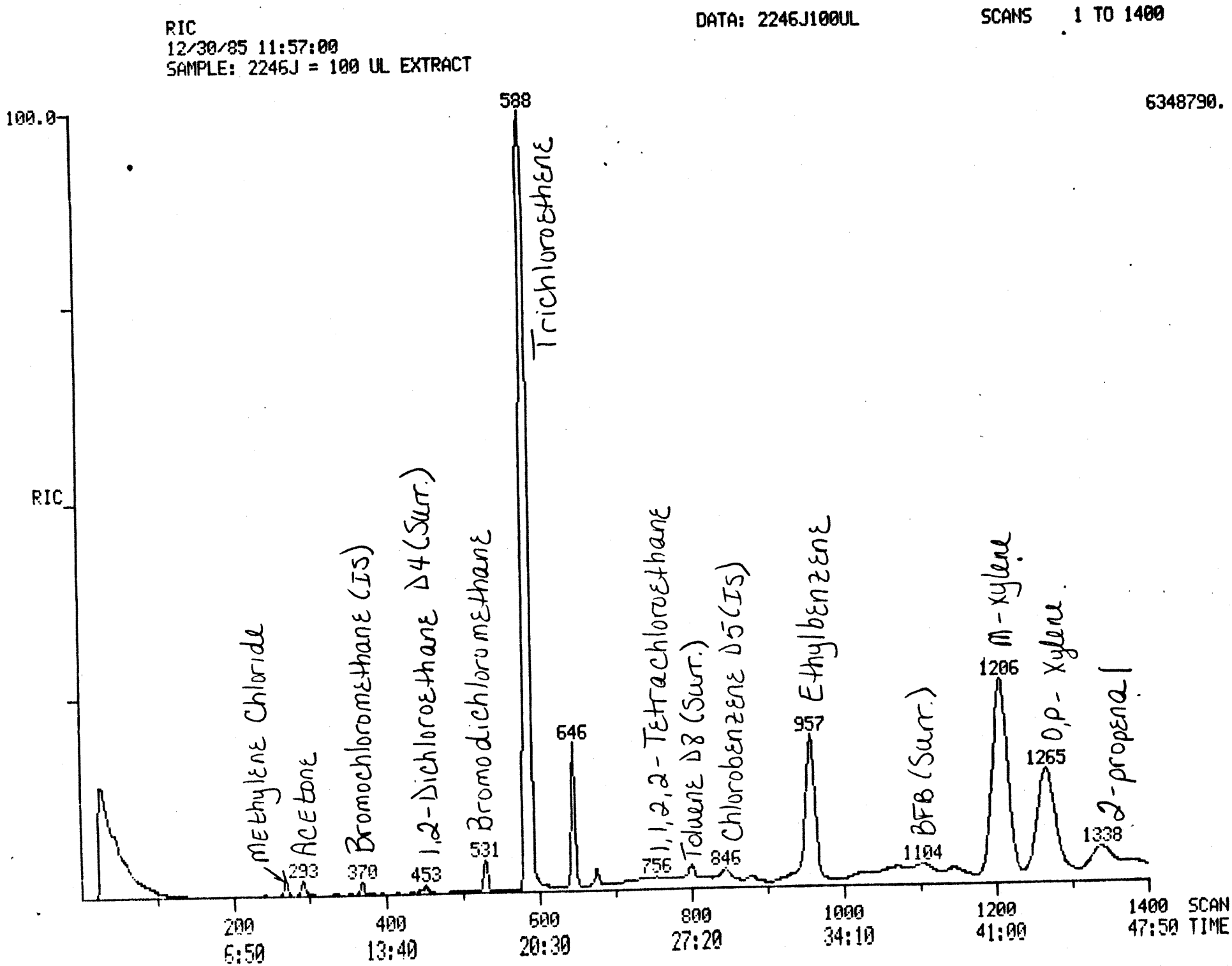
BASE M/E: 97
RIC: 15519.



LIBRARY SEARCH
12/27/85 22:30:00 + 39:24
SAMPLE: 2246I 100UL

DATA: 2246I100UL #1153
BASE M/E: 135
RIC: 179711.

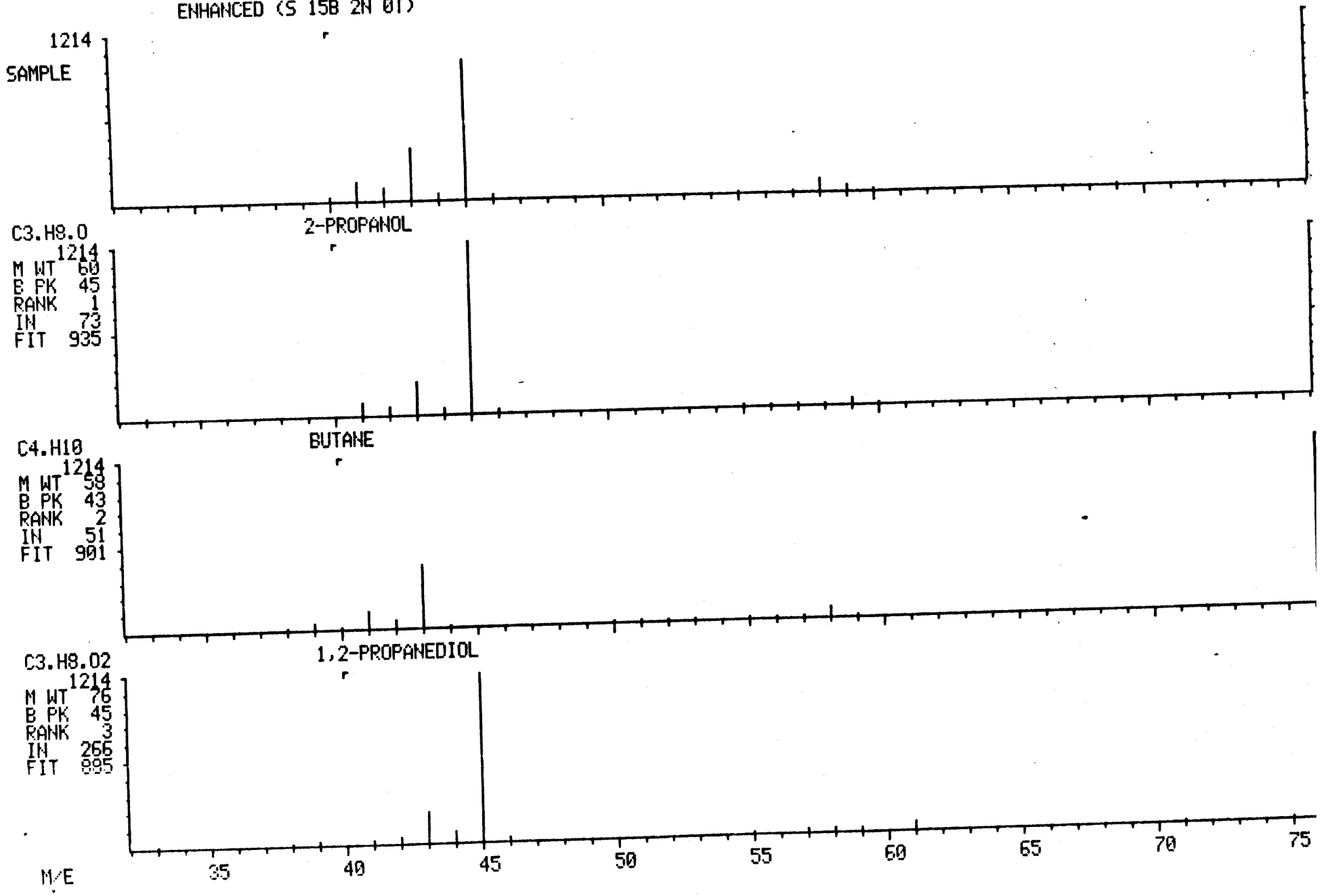



RIC
12/30/85 11:57:00
SAMPLE: 2246J = 100 UL EXTRACT
DATA: 2246J100UL
SCANS 1 TO 1400
6348790.
100.0
RIC
588
Trichloroethene
Methylene Chloride
Acetone
Bromochloromethane (IS)
1,2-Dichloroethane D4 (Surr.)
Bromodichloromethane
646
1,1,2,2-Tetrachloroethane
Toluene D8 (Surr.)
Chlorobenzene D5 (IS)
957 Ethylbenzene
BFB (Surr.)
1206 m-xylene
1265 o,p- Xylene
1338 2-propenal
293
370
453
531
756
845
1104
200
6:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400 SCAN
47:50 TIME

LIBRARY SEARCH
12/30/85 11:57:00 + 11:27
SAMPLE: 2246J = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246J100UL # 335

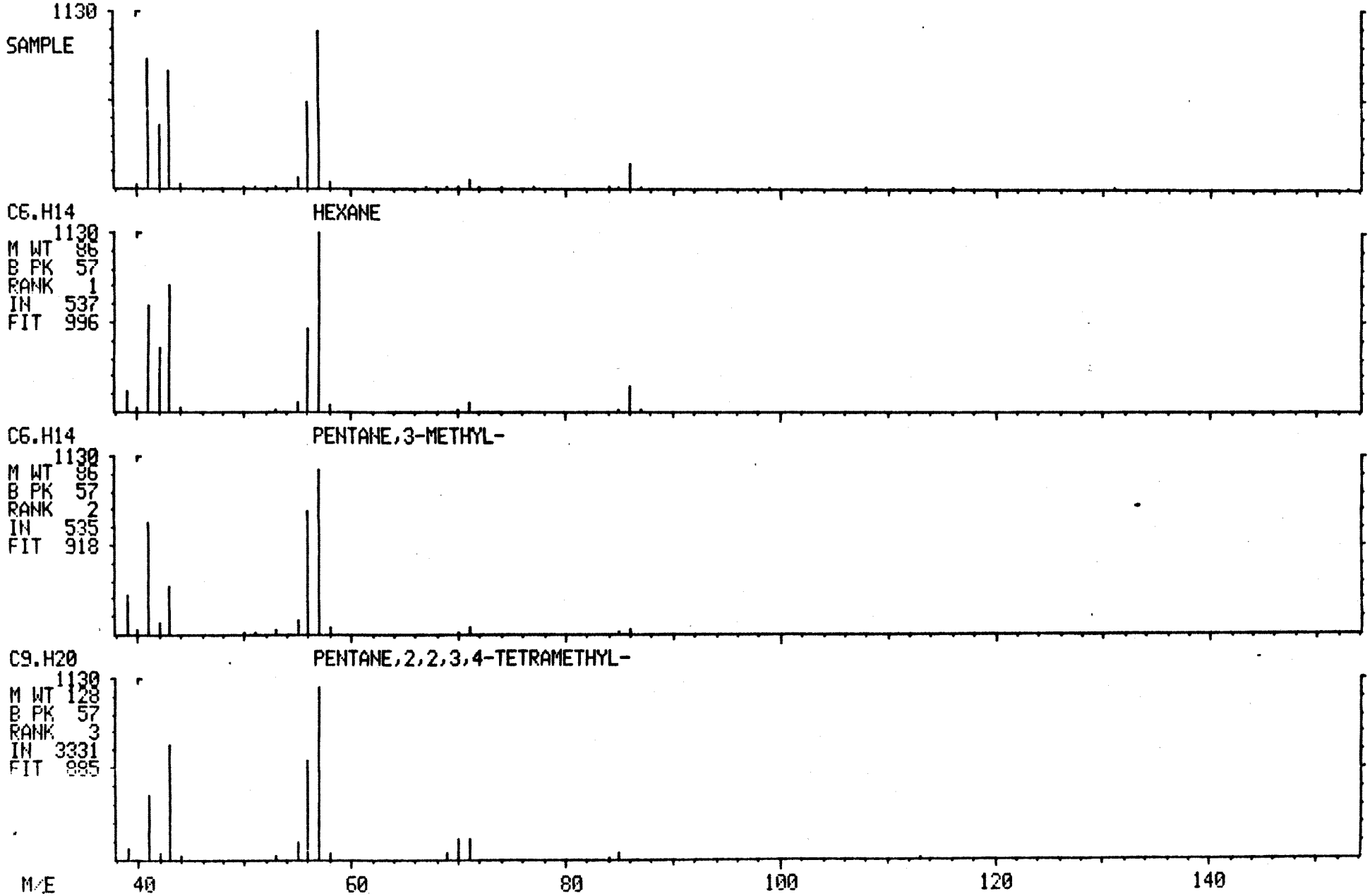
BASE M/E: 45
RIC: 9615.



• LIBRARY SEARCH
12/30/85 11:57:00 + 22:04
SAMPLE: 2246J = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

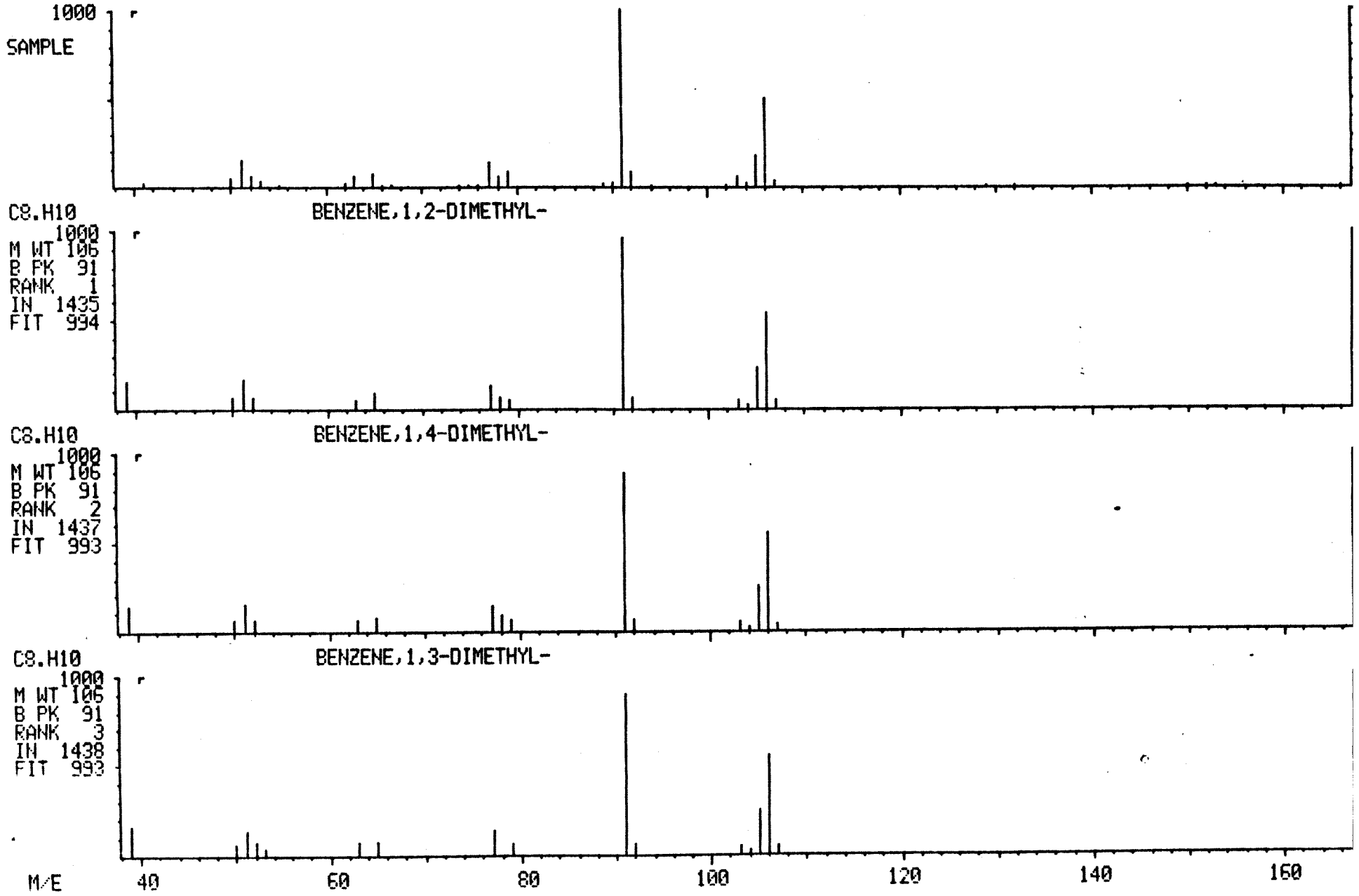
DATA: 2246J100UL # 646

BASE M/E: 57
RIC: 1146870.



LIBRARY SEARCH
12/30/85 11:57:00 + 43:13
SAMPLE: 2246J = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

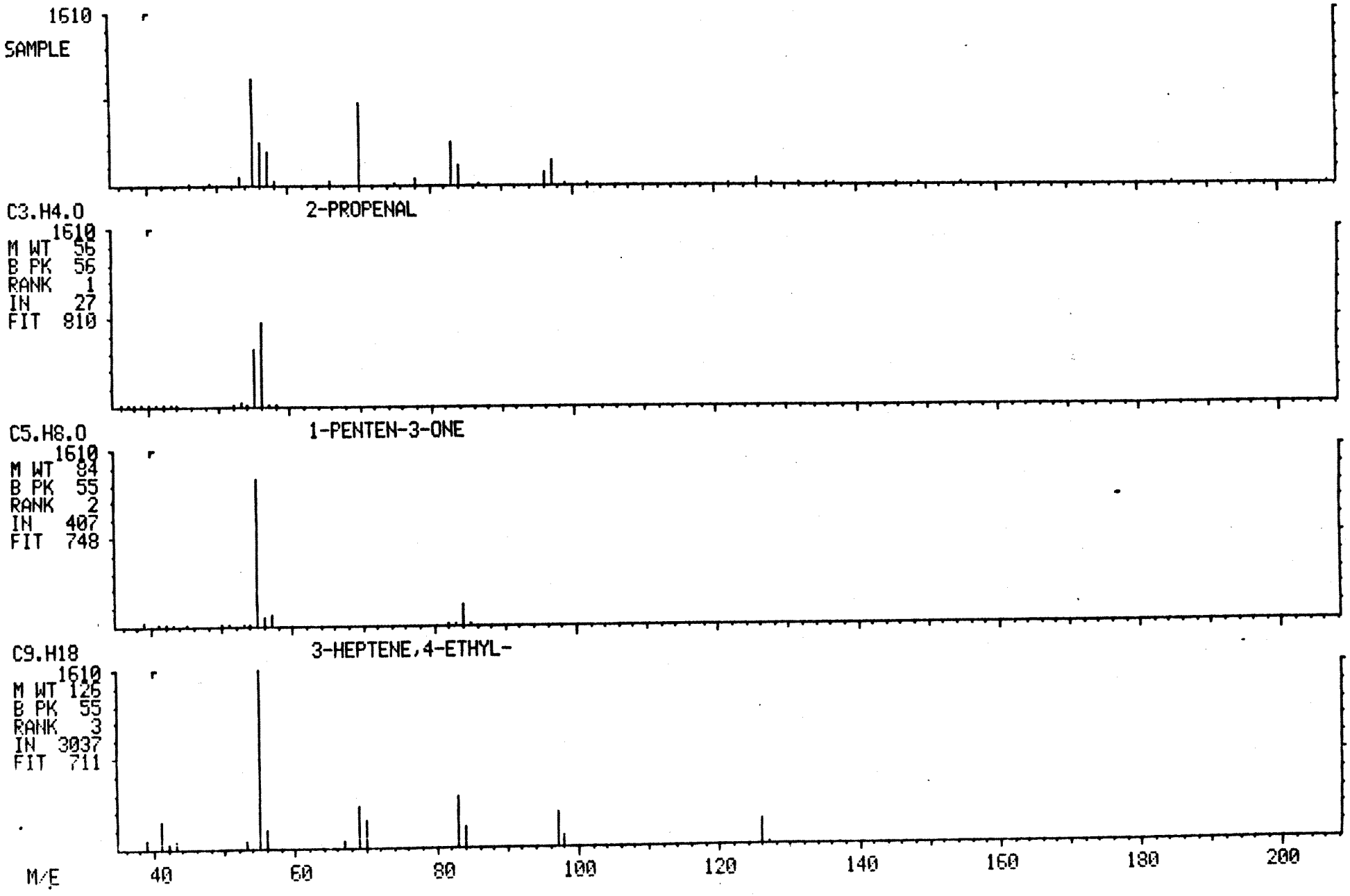
DATA: 2246J100UL #1265 BASE M/E: 91
RIC: 153599.

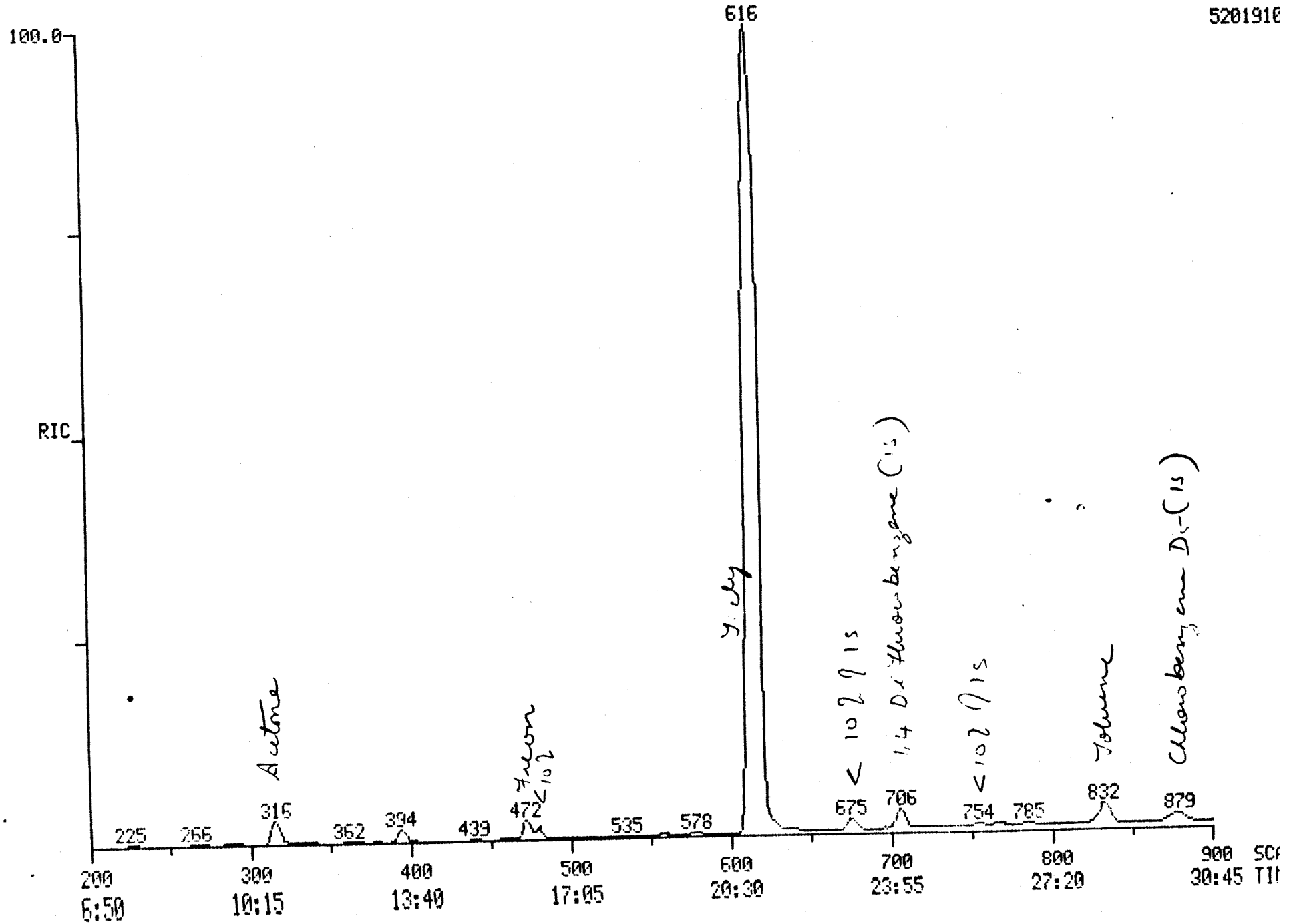


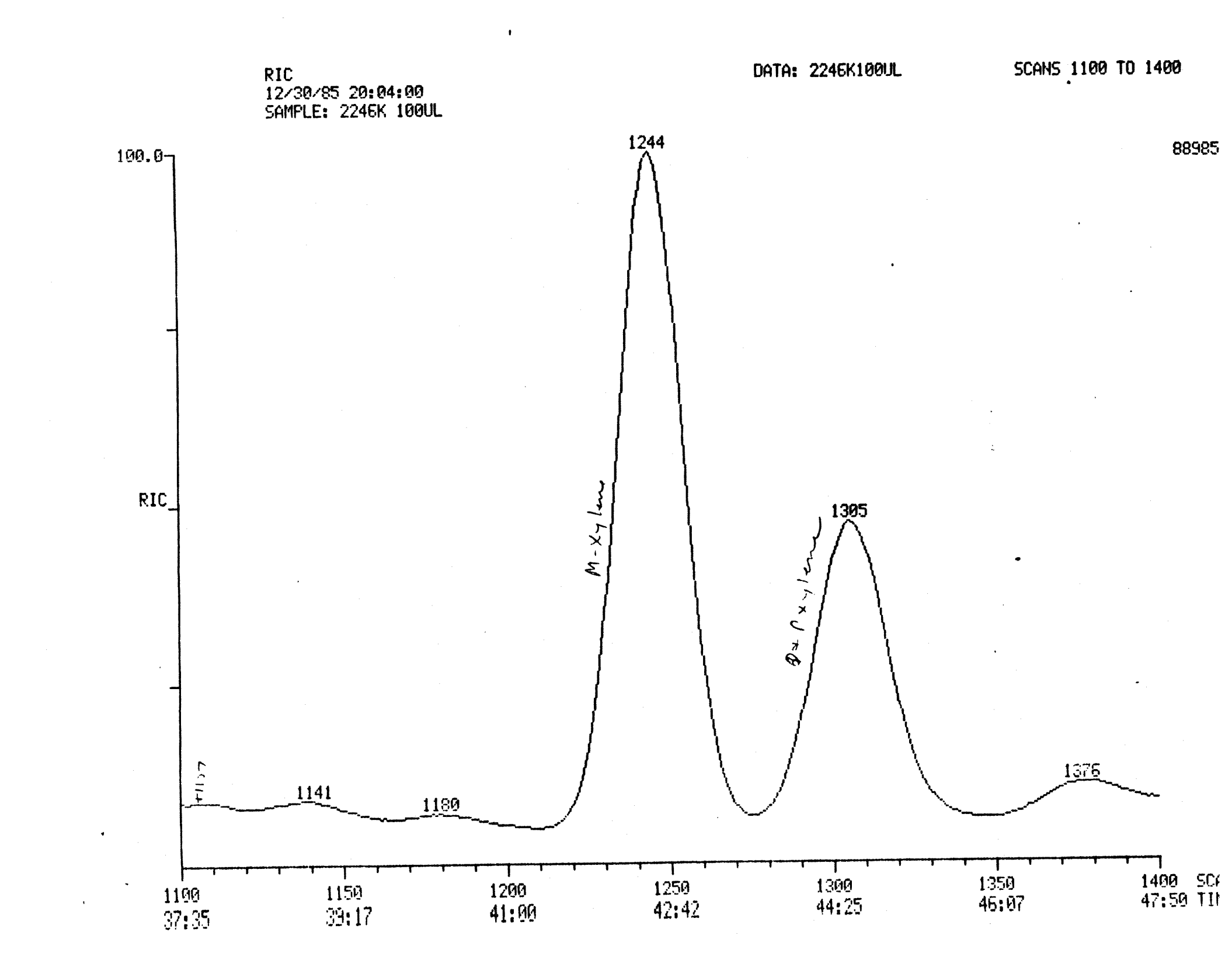
LIBRARY SEARCH
12/30/85 11:57:00 + 45:43
SAMPLE: 2246J = 100 UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246J100UL #1338

BASE M/E: 55
RIC: 12367.



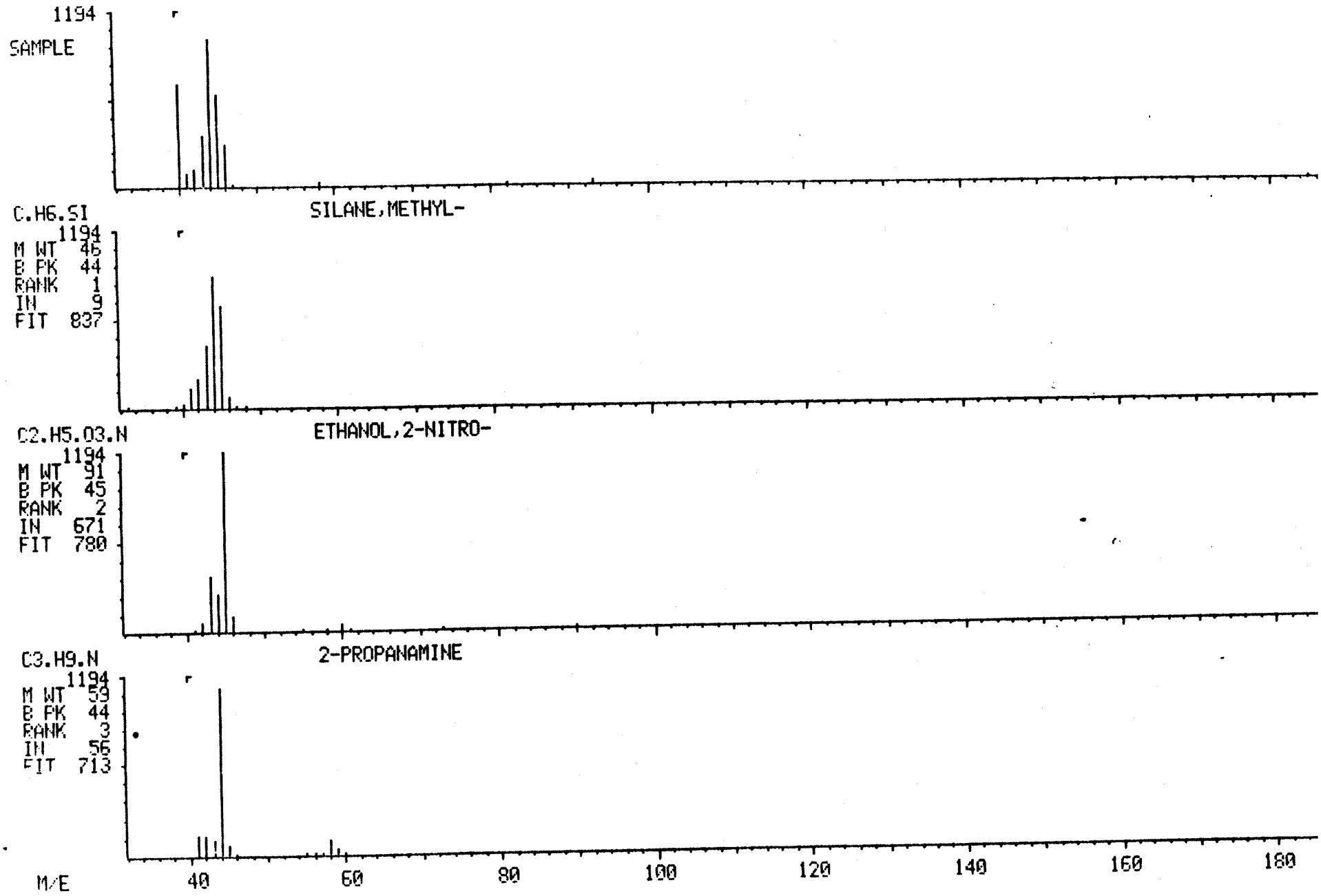

RIC
12/30/85 20:04:00
SAMPLE: 2246K 100UL
DATA: 2246K100UL
SCANS 200 TO 900
5201910
100.0
RIC
616
225
266
316
362
394
439
472
535
578
675
706
754
785
832
879
Acetone
Freon 102
y cly
< 10 2 0 1 s
1,4 Dichlorobenzene (IS)
< 10 2 0 1 s
Toluene
Chlorobenzene D5-(IS)
200
6:50
300
10:15
400
13:40
500
17:05
600
20:30
700
23:55
800
27:20
900
30:45
SCA
TIM


RIC
12/30/85 20:04:00
SAMPLE: 2246K 100UL
DATA: 2246K100UL
SCANS 1100 TO 1400
88985
100.0
RIC
1244
1305
1376
1141
1180
M-Xylene
P-Xylene
1100
37:35
1150
39:17
1200
41:00
1250
42:42
1300
44:25
1350
46:07
1400
47:50

LIBRARY SEARCH
12/30/85 20:04:00 + 9:05
SAMPLE: 2246K 100UL

DATA: 2246K100UL # 266

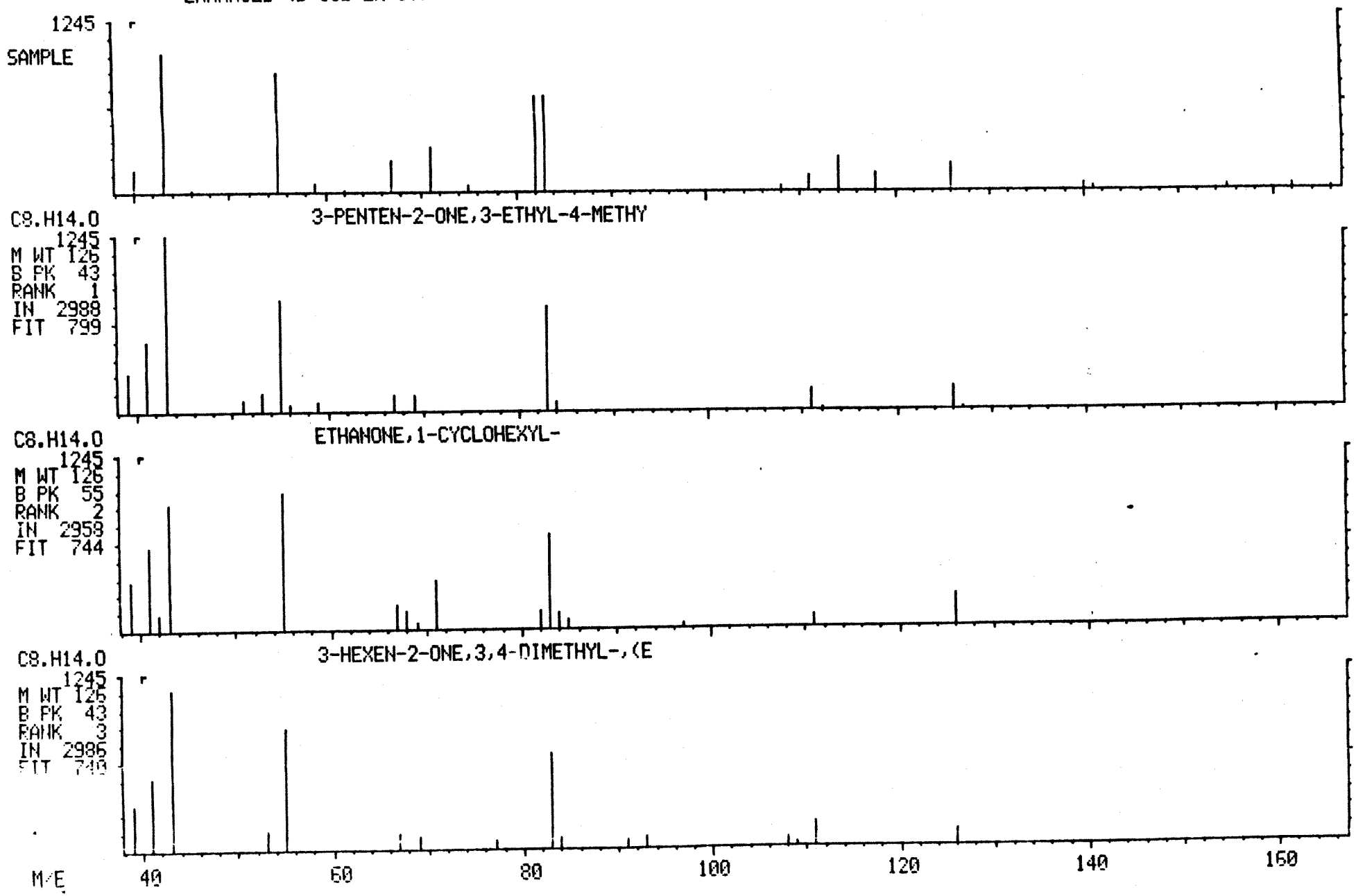
BASE M/E: 44
RIC: .10287.



LIBRARY SEARCH
12/30/85 20:04:00 + 37:49
SAMPLE: 2246K 100UL
ENHANCED (S 15B 2N 0T)

DATA: 2246K100UL #1107

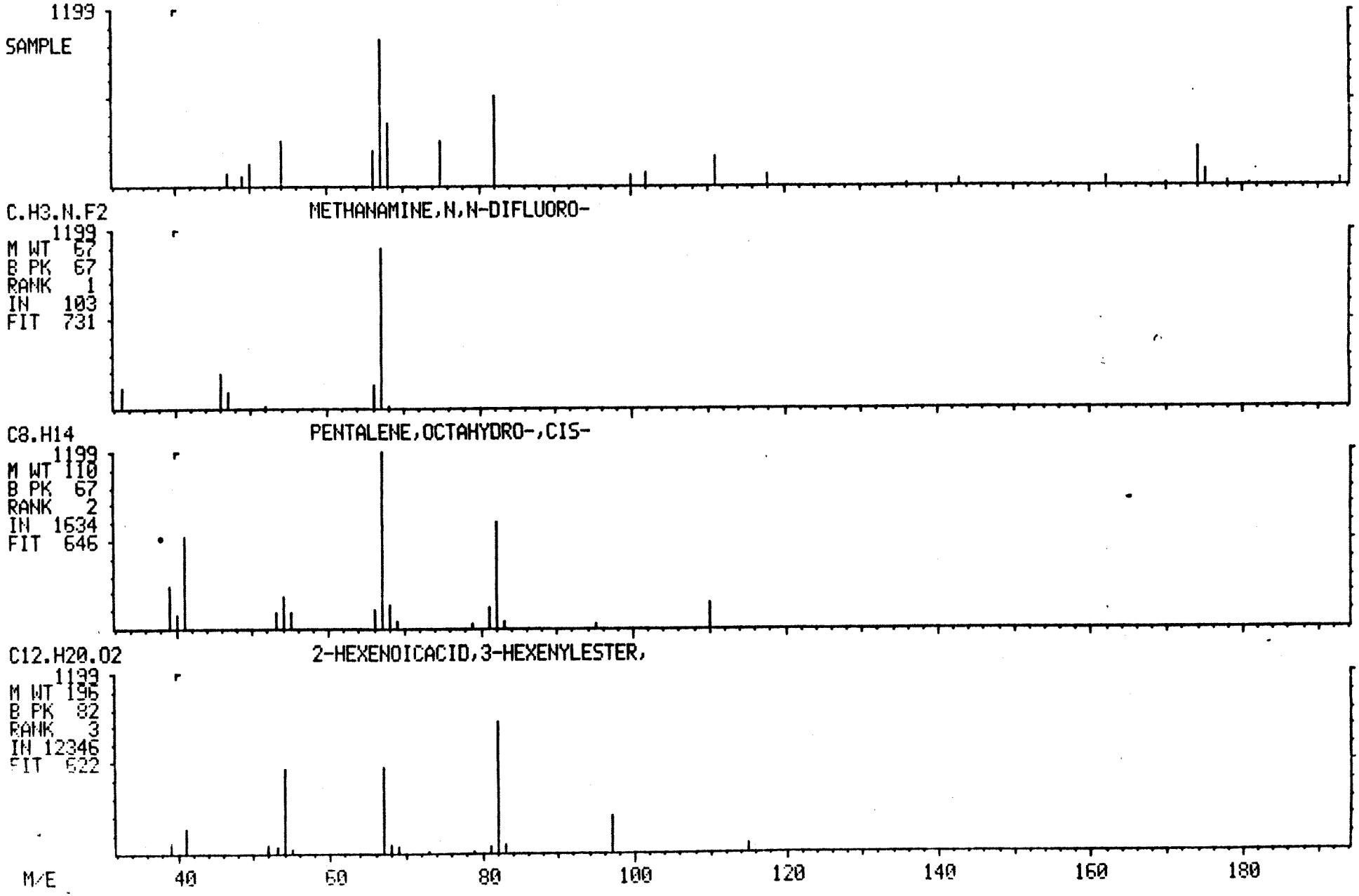
BASE M/E: 43
RIC: 3227.



LIBRARY SEARCH
12/30/85 20:04:00 + 38:59
SAMPLE: 2246K 100UL
ENHANCED (S 15B 2N 0T)

DATA: 2246K100UL #1141

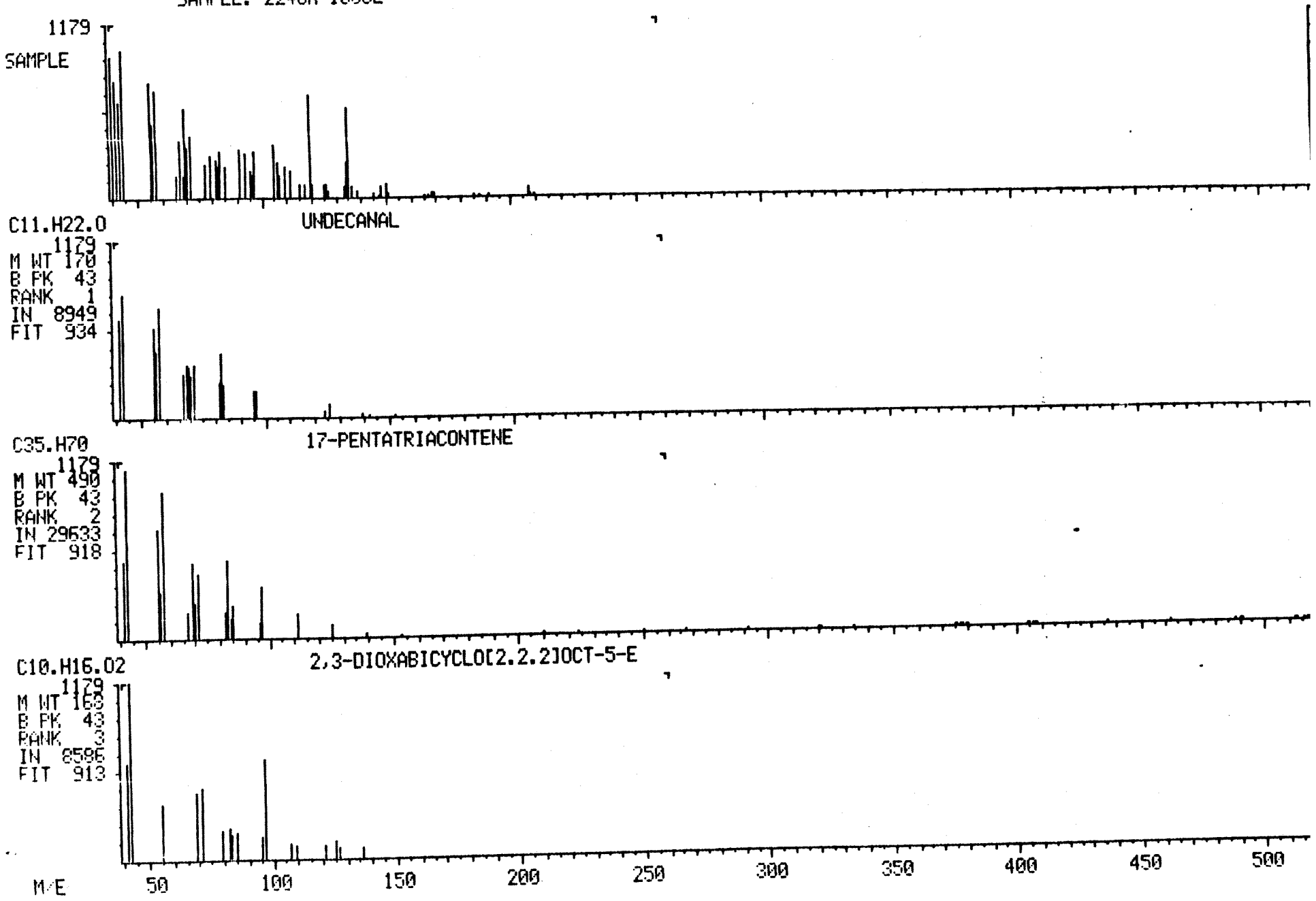
BASE M/E: 67
RIC: 1655.



LIBRARY SEARCH
12/30/85 20:04:00 + 40:19
SAMPLE: 2246K 100UL

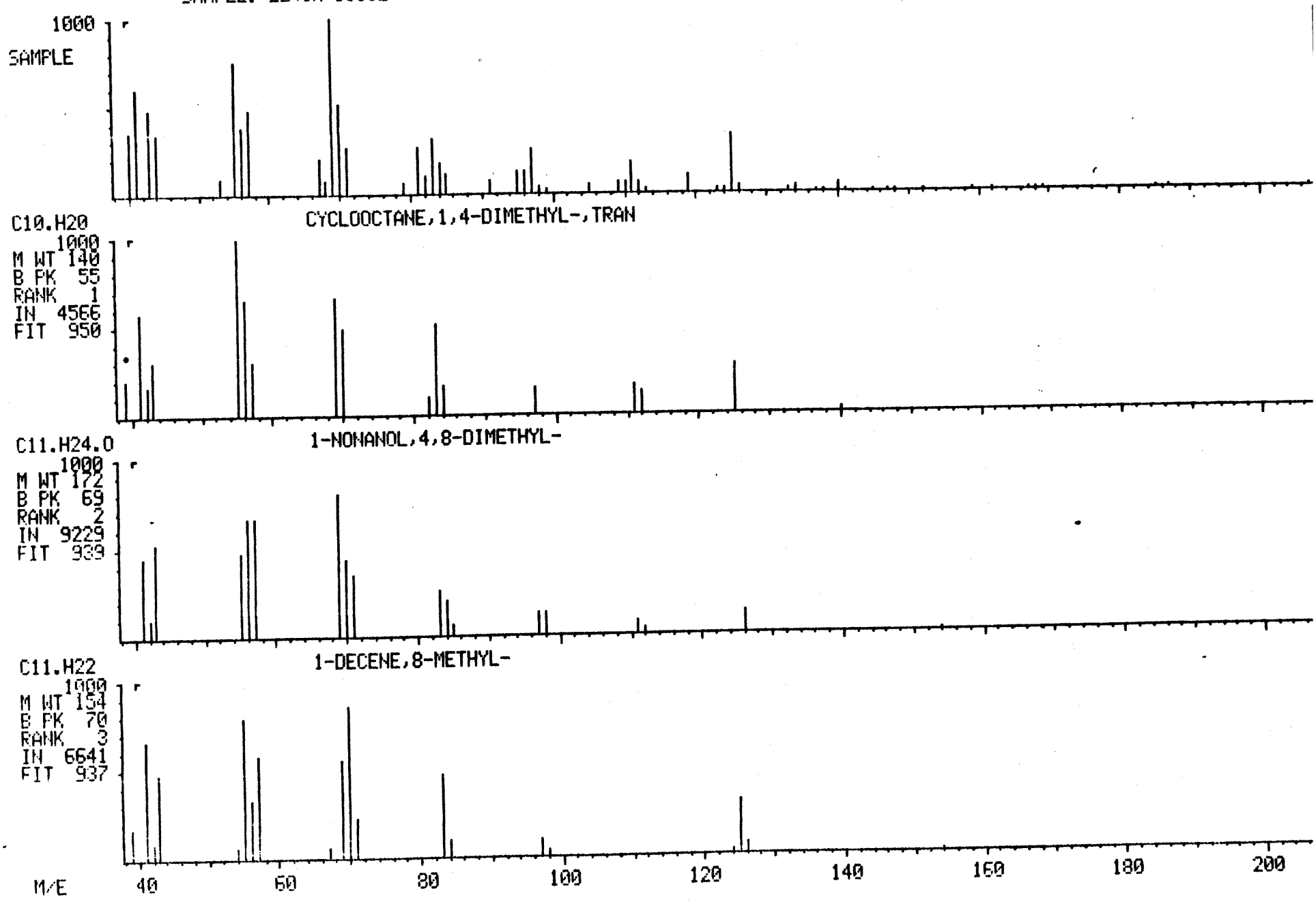
DATA: 2246K100UL #1180

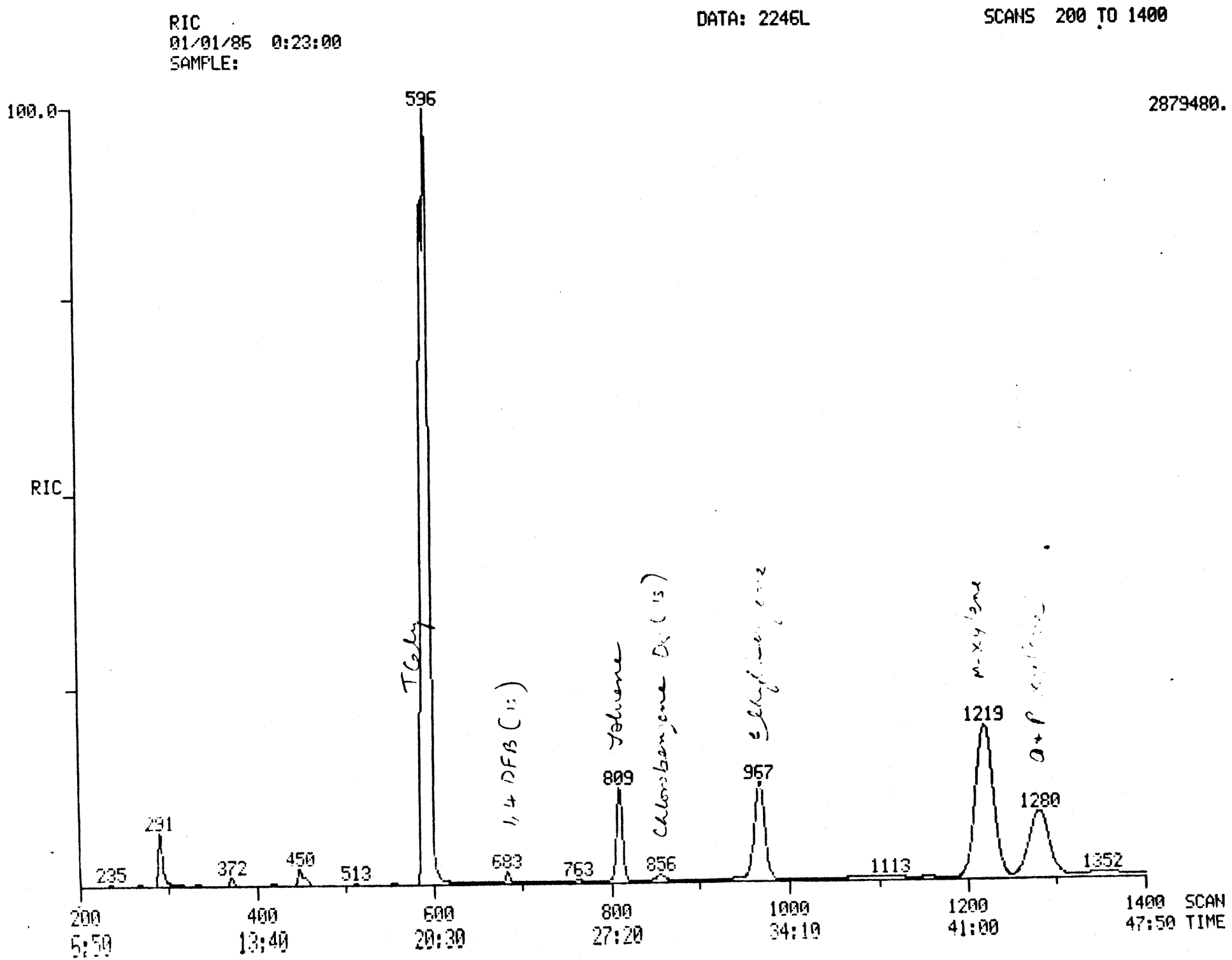
BASE M/E: 44
RIC: 52159.

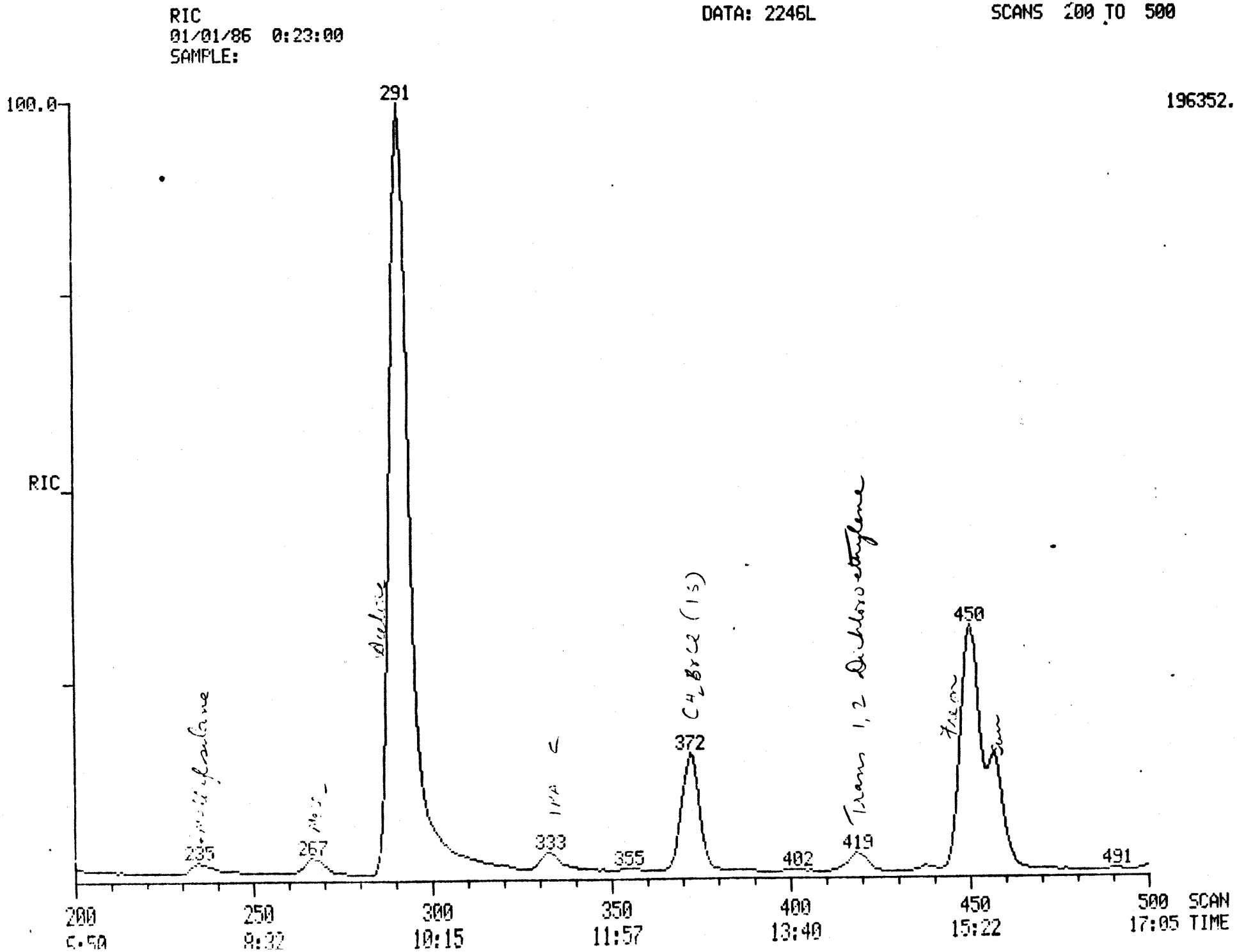


LIBRARY SEARCH
12/30/85 20:04:00 + 47:01
SAMPLE: 2246K 100UL

DATA: 2246K100UL #1376 BASE M/E: 69
RIC: .88575.



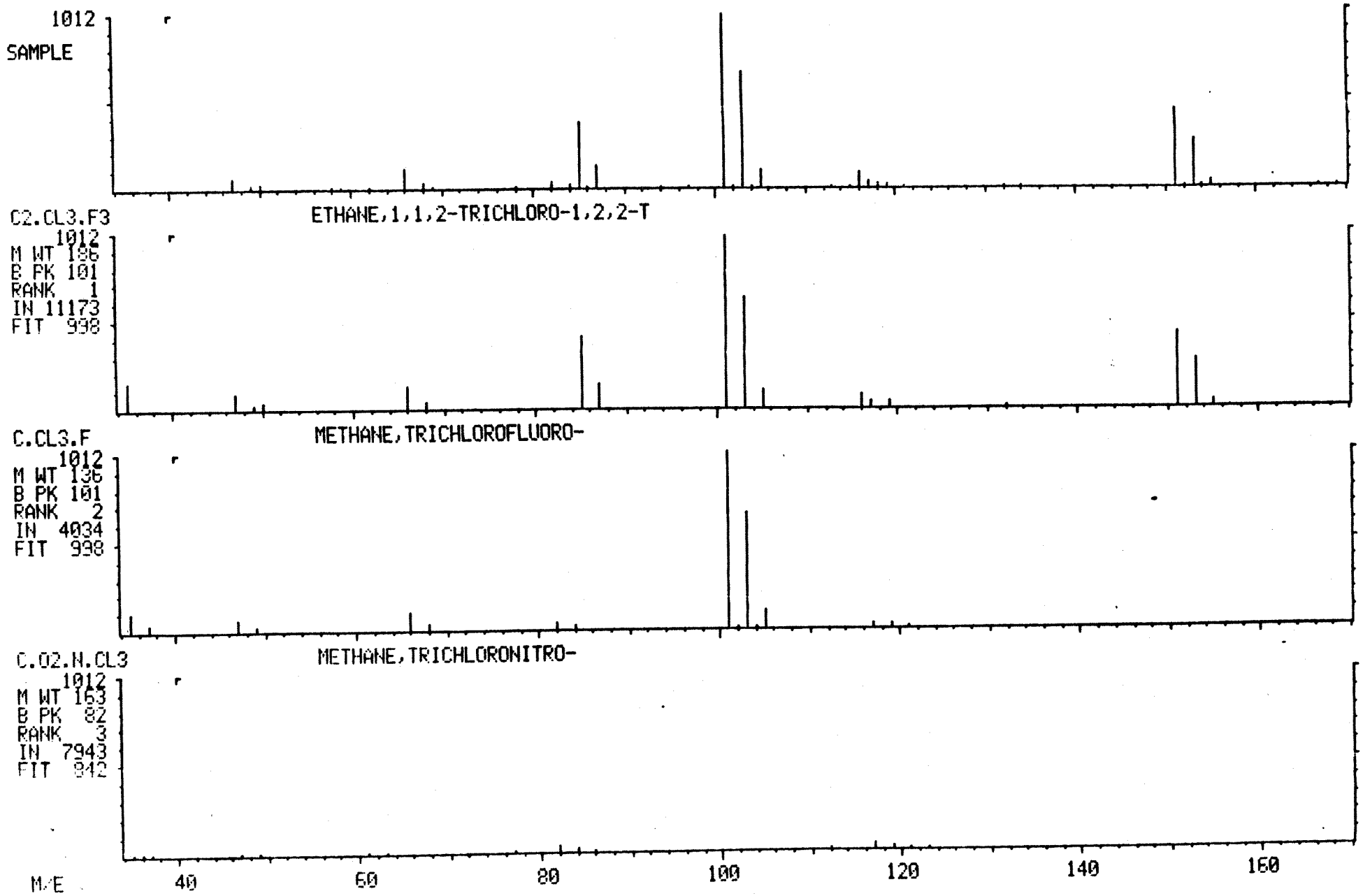

RIC
01/01/86 0:23:00
SAMPLE:
DATA: 2246L
SCANS 200 TO 1400
2879480.
100.0
RIC
596
291
235
372
450
513
683
763
809
856
967
1113
1213
1280
1352
Toluene
1,4 DFB (IS)
Chlorobenzene D5 (IS)
Ethylbenzene
m-Xylene
o+p Xylene
200
5:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400
47:50
SCAN
TIME


RIC
01/01/86 0:23:00
SAMPLE:
DATA: 2246L
SCANS 200 TO 500
100.0
196352.
RIC
291
235
267
333
355
372
402
419
450
491
200
5:50
250
8:32
300
10:15
350
11:57
400
13:40
450
15:22
500 SCAN
17:05 TIME

LIBRARY SEARCH
01/01/86 0:23:00 + 15:22
SAMPLE:
ENHANCED (S 15B 2N 0T)

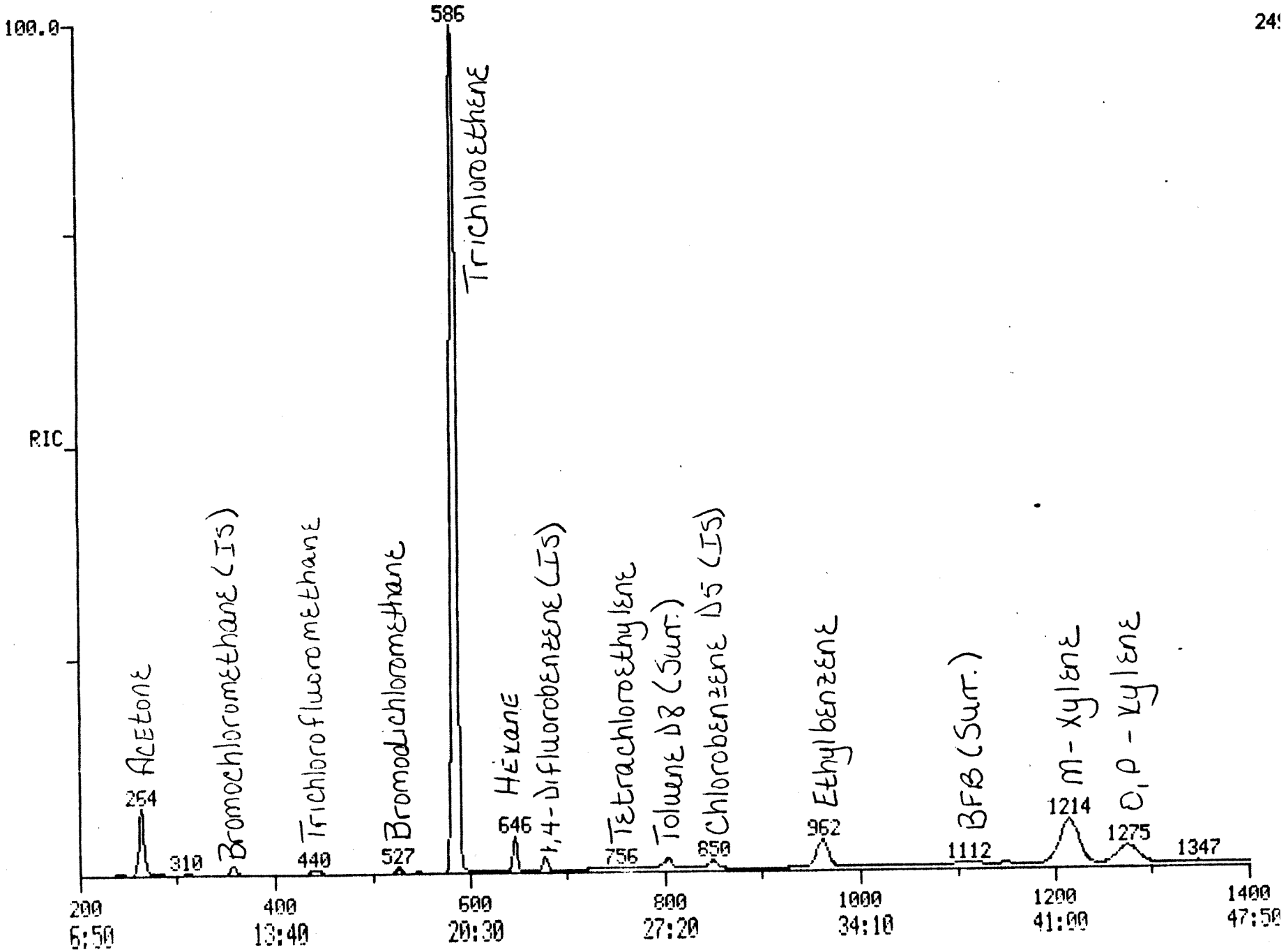
DATA: 2246L # 450

BASE M/E: 101
RIC: 58943.



RIC
12/31/85 10:09:00
SAMPLE: 2246M = 100UL EXTRACT

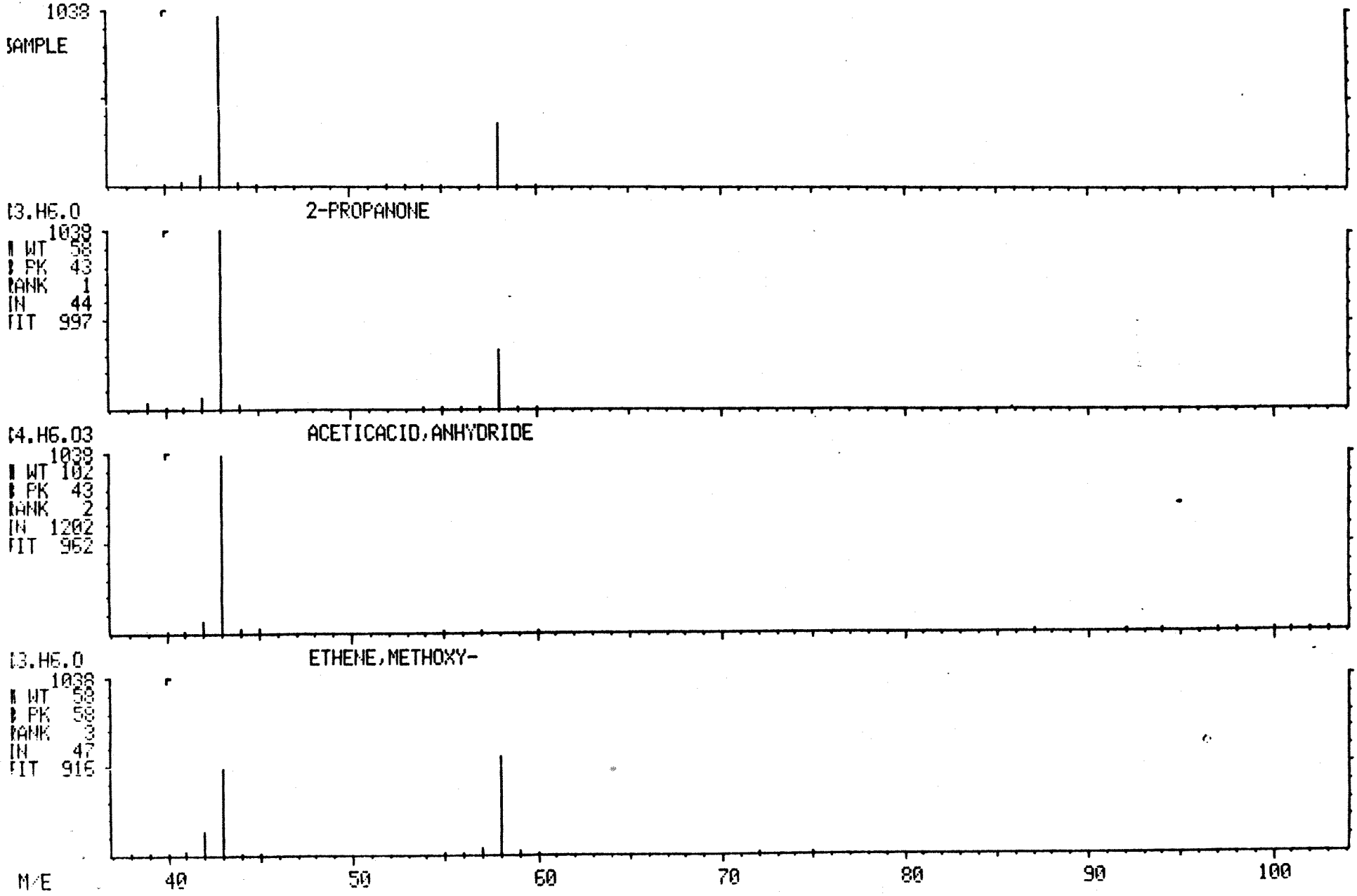
DATA: 2246M100UL SCANS 200 TO 1400



LIBRARY SEARCH
12/31/85 10:09:00 + 9:01
SAMPLE: 2246M = 100UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246M100UL # 264

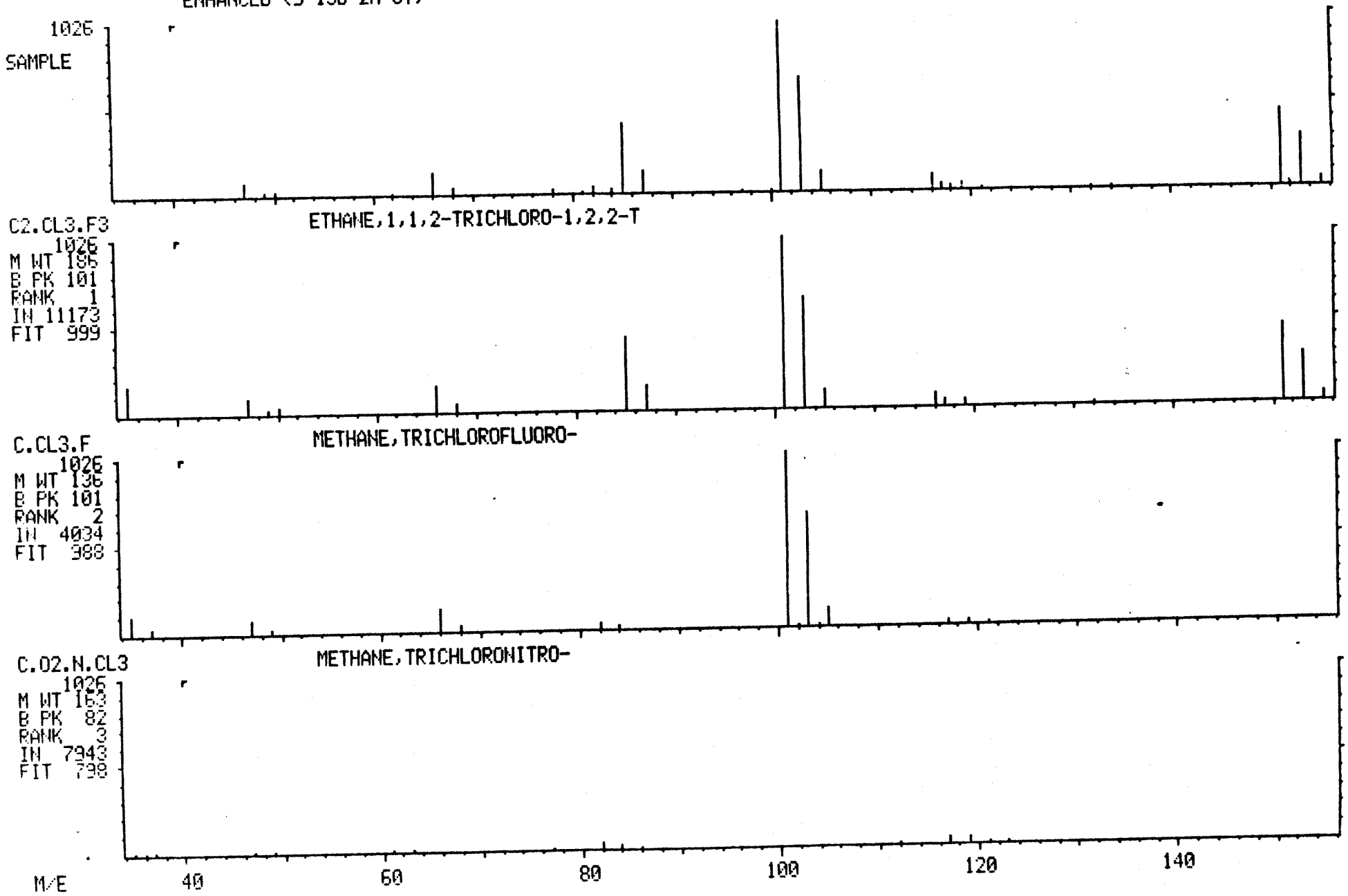
BASE M/E: 43
RIC: 183807.



LIBRARY SEARCH
12/31/85 10:09:00 + 15:02
SAMPLE: 2246M = 100UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246M100UL # 440

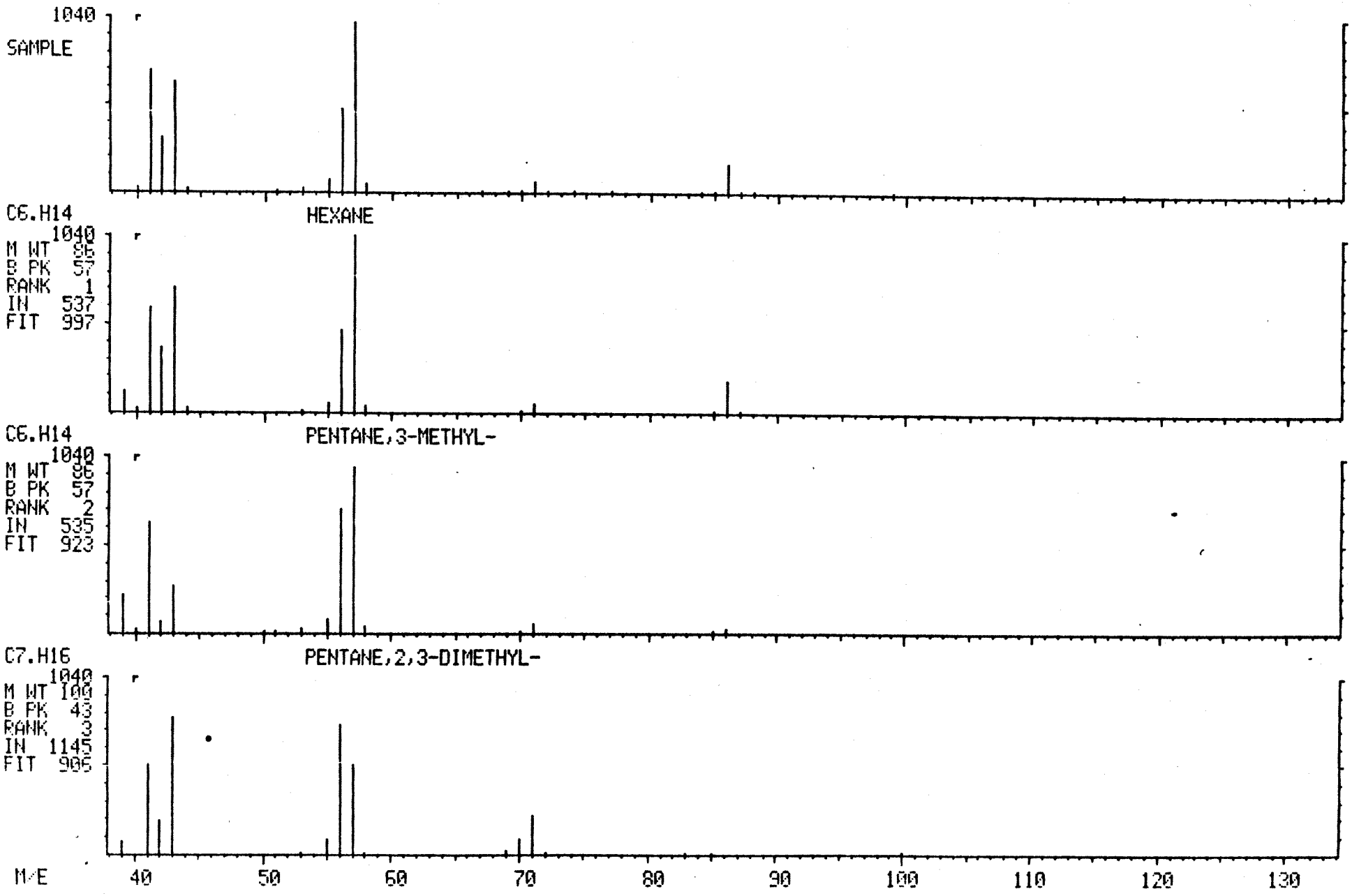
BASE M/E: 101
RIC: 13535.

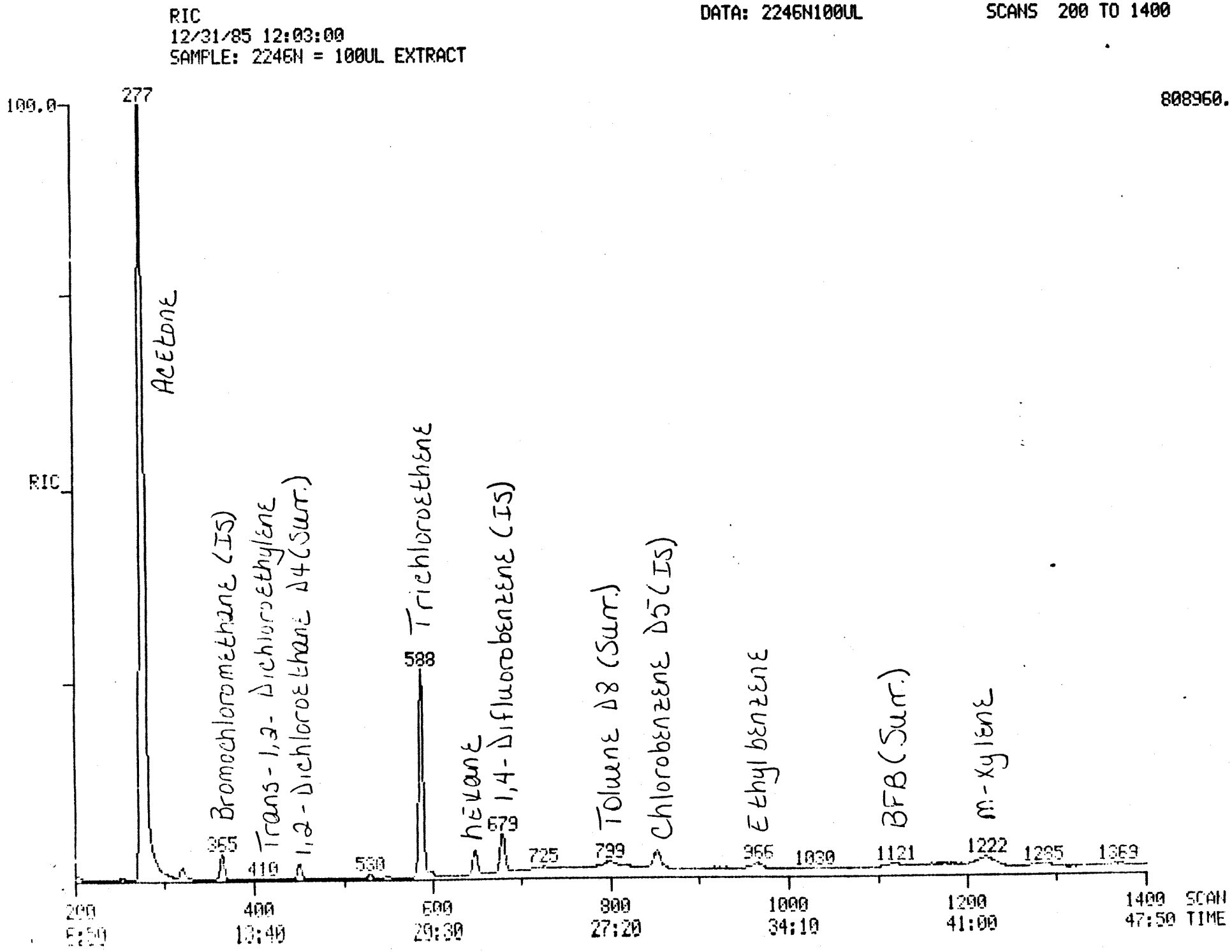


LIBRARY SEARCH
12/31/85 10:09:00 + 22:04
SAMPLE: 2246M = 100UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246M100UL # 646

BASE M/E: 57
RIC: 97151.

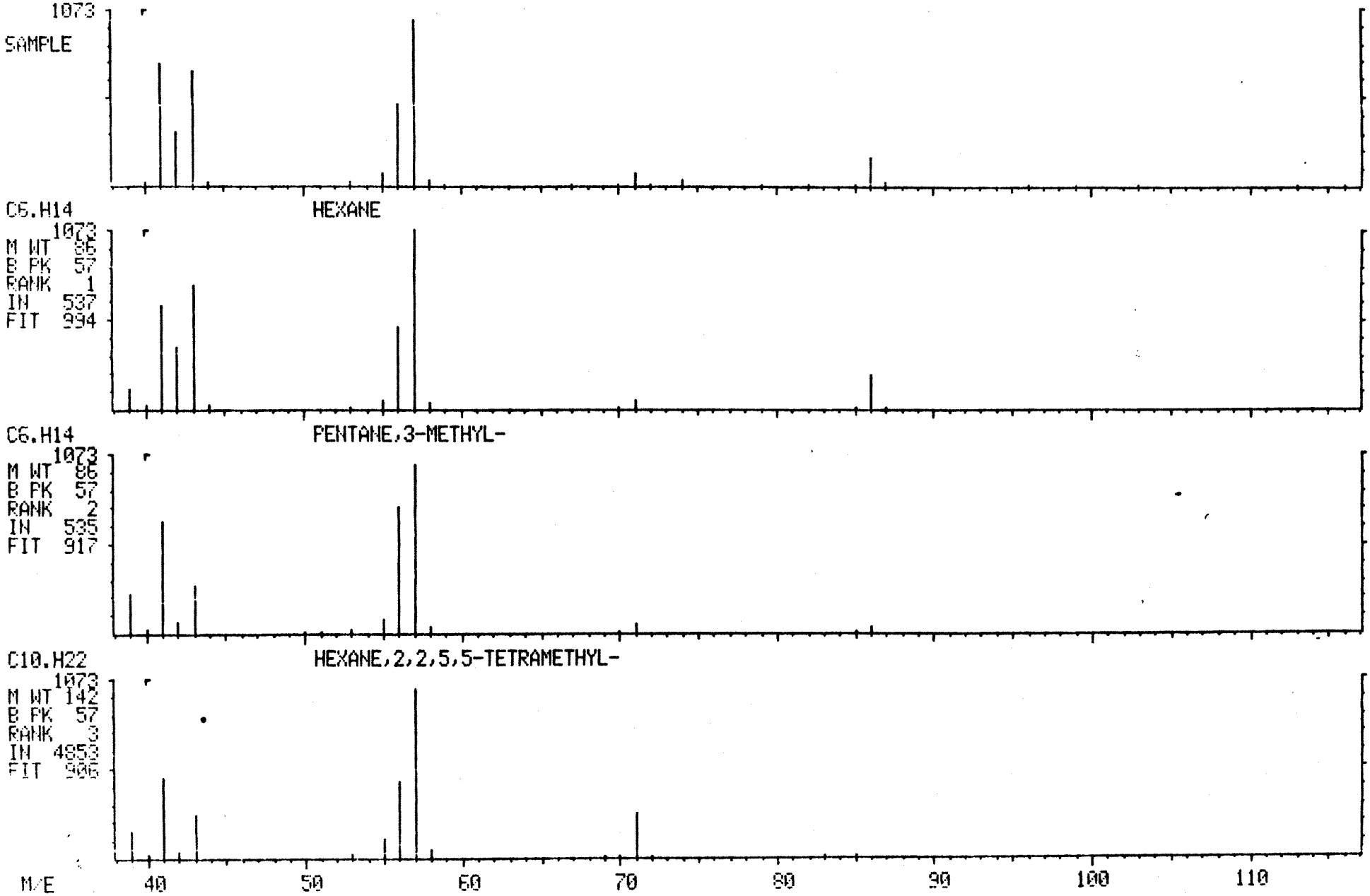


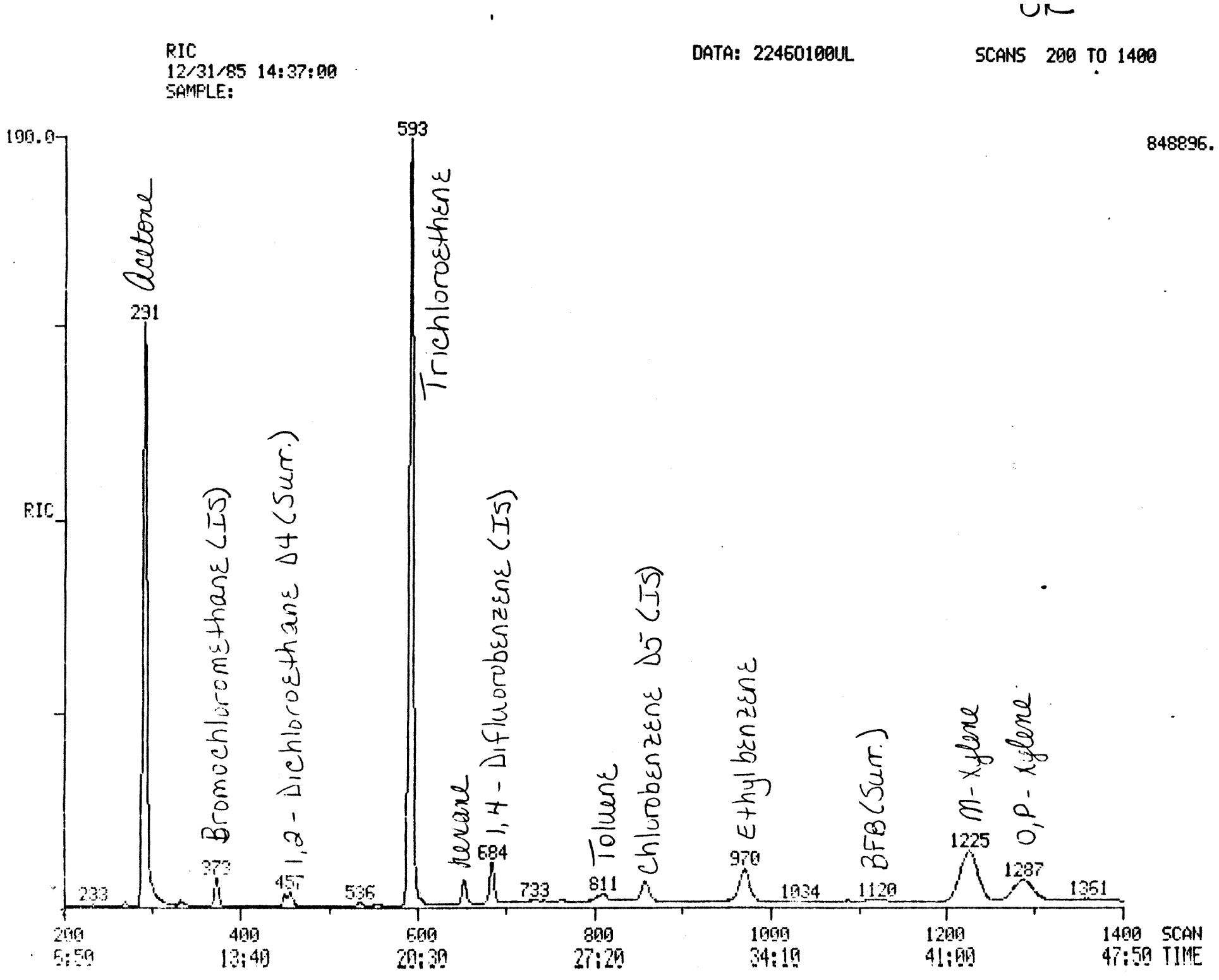

RIC
12/31/85 12:03:00
SAMPLE: 2246N = 100UL EXTRACT
DATA: 2246N100UL
SCANS 200 TO 1400
808960.
100.0
RIC
277
Acetone
355
Bromochloromethane (IS)
410
Trans-1,2-Dichloroethylene
1,2-Dichloroethane d4 (Surr.)
588
Trichloroethene
679
Hexane
1,4-Difluorobenzene (IS)
725
799
Toluene d8 (Surr.)
Chlorobenzene d5 (IS)
966
1030
Ethylbenzene
1121
BFB (Surr.)
1222
m-Xylene
1285
1369
200
5:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400 SCAN
47:50 TIME

LIBRARY SEARCH
12/31/85 12:03:00 + 22:08
SAMPLE: 2246N = 100UL EXTRACT
ENHANCED (S 15B 2N 0T)

DATA: 2246N100UL # 648

BASE M/E: 57
RIC: 23615.

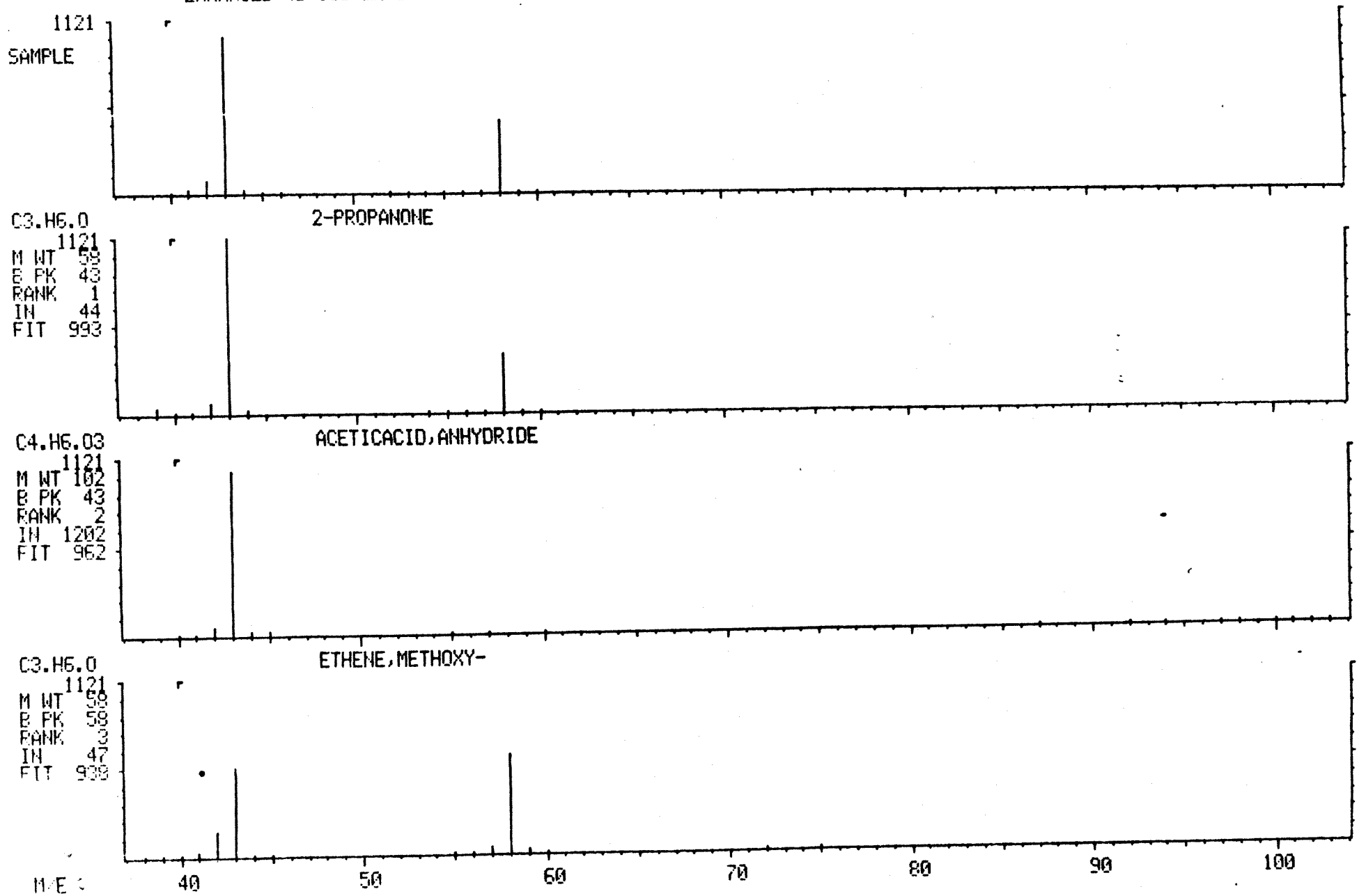



RIC
12/31/85 14:37:00
SAMPLE:
DATA: 22460100UL
SCANS 200 TO 1400
100.0
848896.
RIC
Acetone
231
Bromochloromethane (IS)
373
1,2 - Dichloroethane D4 (Surr.)
459
536
Trichloroethene
593
Hexane
684
1,4 - Difluorobenzene (IS)
733
Toluene
811
Chlorobenzene D5 (IS)
Ethylbenzene
970
1034
BFB (Surr.)
1120
M-Xylene
1225
O,P - Xylene
1287
1361
200
5:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400
47:50
SCAN
TIME

LIBRARY SEARCH
12/31/85 14:37:00 + 9:57
SAMPLE:
ENHANCED (S 15B 2N 0T)

DATA: 22460100UL # 291

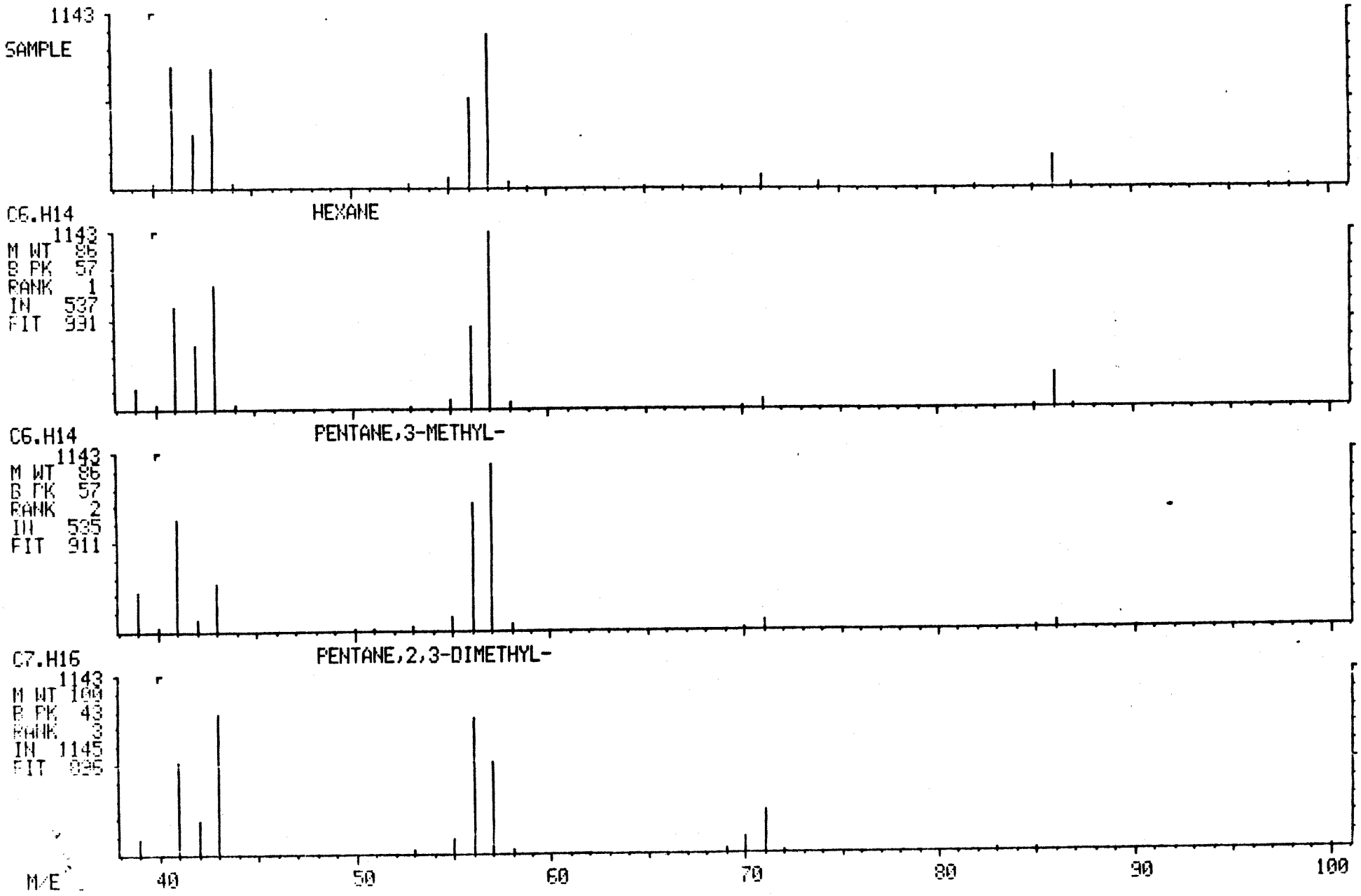
BASE M/E: 43
RIC: 624639.

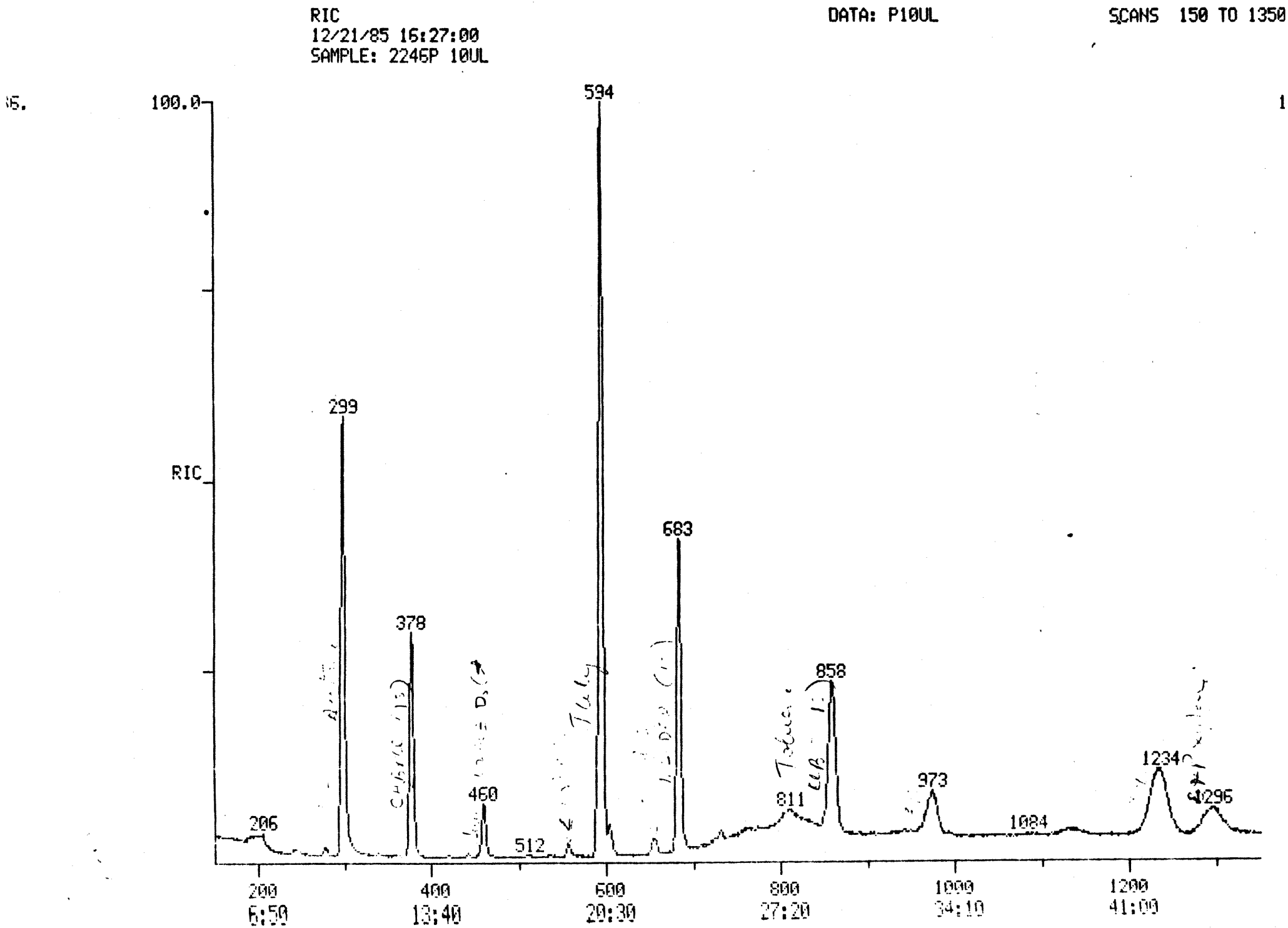


LIBRARY SEARCH
12/31/85 14:37:00 + 22:19
SAMPLE:
ENHANCED (S 15B 2N 0T)

DATA: 22460100UL # 653

BASE M/E: 57
RIC: 26495.




RIC
12/21/85 16:27:00
SAMPLE: 2246P 10UL
DATA: P10UL
SCANS 150 TO 1350
100.0
RIC
206
299
378
460
512
594
683
811
858
973
1084
1234
1296
200
6:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00

LABORATORY FOR MATERIALS, INC.

POST OFFICE BOX 14

BURNT HILLS, NEW YORK 12027

TELEPHONE (518) 399-3815

December 30, 1985

Mr. Rodney W. Sutch
Dunn Geoscience Corporation
5 Northway Lane North
Latham, New York 12110

Dear Mr. Sutch:

Infrared analysis of soil samples from Project No. 2092-1-4494: Test hole A, S-1 to S-8; Test hole B, S-3

We have analyzed all eight samples from test hole A and one sample from test hole B. The results are shown in the table below. The analytical method used was described in our December 27, 1985, letter.

Non-volatile, chloroform-extractable organic material in 2092-1-4494 soil samples

Sample	Weight of residue from the 20 ml. aliquot	Wt. % organic material (ppm)		Infrared spectrum no.
A, S-1	0.8 mg.	0.006%	(60 ppm)	B2354
A, S-2	0.7	0.005	(50)	B2355
A, S-3	0.8	0.006	(60)	B2356
A, S-4	0.3	0.002	(20)	
A, S-5	0.2	0.001	(10)†	B2357-60
A, S-6	0.2	0.001	(10)†	B2361
A, S-7	0.0	0.000	(0)	
A, S-8	0.0	0.000	(0)	
B, S-3	1.5	0.010	(100)	B2353

† At or near limit of detection by this method.

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TELEPHONE (518) 399-3815

Interpretation of the infrared spectra - Here is our interpretation of the infrared spectra:

A, S-1 and A, S-2
Hydrocarbon oil - the major component
Ester - minor component
Silicone - minor component
Unidentified material - minor component

A, S-3
Hydrocarbon oil - the major component
Ester - minor component
Silicone - minor component

A, S-5
Hydrocarbon oil - the major component
[Note: The amount of sample is so small that only the major component can be identified. We surmise that if we had succeeded in getting a spectrum of A, S-4, it would show the same story.]

B, S-3
Hydrocarbon oil - the major component
Ester - minor component
Silicone - minor component
Unidentified material - minor component

The hydrocarbon oil is characterized by the following infrared bands: 2953, 2925, 2855, 1463, 1379, and 723 cm^{-1}. In all the spectra of the chloroform extracts, the strongest band, at 2925 cm^{-1}, is due to a C-H stretching vibration of $-CH_2-$ groups. Some of the possible sources of the hydrocarbon oil in these soil samples: lubricating oil, fuel oil, cutting fluid, heat-transfer oil, vacuum pump oil.

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The ester is characterized by a C=O band in the range 1750-1720 cm^{-1}. The weakness of this band in the spectra of the chloroform extracts clearly shows that ester is a minor component of the chloroform-soluble material. Our library has many reference curves of commercial esters. These curves show that the 1750-1720 cm^{-1} ester C=O band is strong. In nearly all commercial esters, this band is as strong or stronger than the $-CH_2-$ band at 2925 cm^{-1}.

Most commercial silicones contain $Si-CH_3$ groups. The $Si-CH_3$ group is characterized by a very strong band at 1260 cm^{-1}. The weak 1260 cm^{-1} bands seen in the chloroform extracts indicate low concentrations of silicone. Comparison with reference curves of known solutions of silicones in hydrocarbon oil shows that the soil extracts contain roughly 1% silicone.

Bands due to unidentified material appear in A, S-1 and A, S-2. The bands also can be detected in B, S-3. Bands believed to be due to unidentified material are at: 1580, 1297, 1246, 1186, 1160, and 822 cm^{-1}.

The analysis of a single sample from test hole B suggests that (1) the same kind of organic material is present in test holes A and B; (2) there is more organic material in B than in A.

Comparison with 1979 analytical results - You have furnished us with a copy of the 1979 analytical report. This report gives a qualitative analysis of 1,2-dichloroethane extracts of the soil samples. It is difficult to do much with this sort of qualitative analysis. It seems to us that for a meaningful analysis of extractable organics in soil, the following things need to be known:

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amount of soil extracted, was soil oven-dried or as received?, amount of extracting solvent used, amount of residue obtained by evaporation of solvent extract, amount of "blank" obtained by evaporation of a known amount of pure solvent.

Despite not knowing any of these quantitative data, we have studied the 1979 report with particular attention to its Fig. 1 - Infrared spectrum of the extract of the top 6" sample. The 1979 report states that the spectrum shows a mixture of silicone and ester, and the report implies that silicone and ester are the two major components of the extract. We disagree with this interpretation. It is our interpretation that Figure 1 shows that silicone and ester are minor components of the mixture. Hydrocarbon oil is the major component. If ester and silicone were major components, then the ester C=O band at 1720 cm^{-1} and the $Si-CH_3$ band at 1260 cm^{-1} would be as strong or stronger than the $-CH_2-$ band at 2925 cm^{-1}.

Odor of soil samples - All the soil samples have an odor. In S-1 to S-3 the odor is strong and rather sweet. Odor decreases through the remaining samples, but some odor is detected even in S-8. The samples we dried 4 hours at 125°C. had no detectable odor. Thus we expect GC/MS analysis to show relatively high concentrations of volatile organic compounds in the S-1 to S-4 range.

Weight loss on drying - For possible future reference, we checked the weights of two of the 75.0 g. samples after drying 4 hours at 125°C. Here are the results:

Sample	Weight after drying	% weight loss
A, S-5	58.6 g.	21.9
B, S-3	59.5 g.	20.7

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Stones in samples - In the test hole A samples we encountered stones in -6, -7, and -8. In taking the 25.0 g. sample we discarded a couple of the largest stones but retained the small and medium-size stones.

Appearance of organic material extracted by chloroform - In A, S-1 to S-3 and in B, S-3 -- where there was enough material to see -- the organic material was a clear, yellow liquid.

Please phone or write if you have any questions or comments about this report or the enclosed copies of the infrared spectra.

Please let us know if you want us to analyze the remaining seven samples from test hole B.

The enclosed invoice covers all the work done thus far.

Very truly yours,

Philip J. Launer

Philip J. Launer

PJL:AEL

Encls. - Copies of infrared spectra B2353-B2361

- Invoice

LABORATORY FOR MATERIALS, INC.

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BURNT HILLS, NEW YORK 12027

TELEPHONE (518) 399-3815

December 27, 1985

Mr. Rodney W. Sutch
Dunn Geoscience Corporation
5 Northway Lane North
Latham, New York 12110

Dear Mr. Sutch:

Analytical method for infrared analysis of soil samples
2092-1-4494: Test hole A, S-1 to S-8; Test hole B, S-1 to S-8

This letter describes the analytical method we used to analyze the non-volatile, extractable organic compounds in the 2092-1-4494 soil samples.

---

1. Take a 75 g. sample of soil from the jar. (The soil samples were received in 1-pint jars sealed with screw tops lined with aluminum foil.) To get a representative sample, take portions of soil from the top, bottom, center, and sides of the mass of soil in the jar.

2. Dry the 75 g. soil sample for 4 hours in a 125°C. oven. (For drying the soil samples, we used large Pyrex dishes, Corning no. 3180).

3. Pulverize the lumps of dried soil using a mortar and pestle.

4. Weigh 25.0 g. of dried, powdered soil in a 50 ml. Pyrex centrifuge tube equipped with a screw cap.

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5. Put 35.0 ml. of chloroform in the centrifuge tube, and tightly seal the tube using an aluminum-foil-lined screw cap. It is very important to use chloroform that contains a low residue on evaporation. The chloroform we used was MCB's CX1054 "OmniSolv". It is described as glass-distilled, filtered for particulate matter, and "suitable for spectrophotometry, liquid chromatography, gas chromatography, residue analysis." The two lots we used had evaporation residues of 0.7 ppm and 3 ppm.

6. Shake the soil-chloroform mixture for 15 minutes, then centrifuge. We used a GT-2 centrifuge. The mixture was centrifuged at speed 8 for 25 minutes.

7. Draw off 20.0 ml. of the clear, upper, chloroform layer. Take care to avoid any particles (leaves, roots, etc.) that are floating on the surface of the chloroform.

8. Put the 20.0 ml. of chloroform extract in a pre-weighed porcelain evaporating dish (Coors no. 60197). Heat in 80°C. oven to remove the chloroform.

9. Weigh the evaporating dish + residue on an analytical balance. We used a Sartorius balance, model 2443, capable of being read to $\pm$ 0.0001 g. ($\pm$ 0.1 mg.).

10. Multiply the weight of the residue (in grams) by 35/20. Divide the result by 25.0, then multiply by 100 to get wt. % chloroform-extractable material in the dried soil. Also express the result in ppm. (Note: 0.01% = 100 ppm.)

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11. The limit of detection by this method is estimated to be ca. 10 ppm extractable organic material in soil.

12. Using a sharp-edged stainless steel spatula, scrape the residue from the evaporating dish and note its appearance (color? liquid? solid? grease-like? waxy? etc.).

13. Record the infrared spectrum of the residue. We used a Perkin-Elmer Model 1320 infrared spectrometer, which works together with a computer, the Perkin-Elmer Model 3600 Infrared Data Station. If the amount of chloroform-extractable material is small, a beam condenser should be used to reduce the size of the sample beam. We used a Perkin-Elmer refracting beam condenser having KBr lenses.

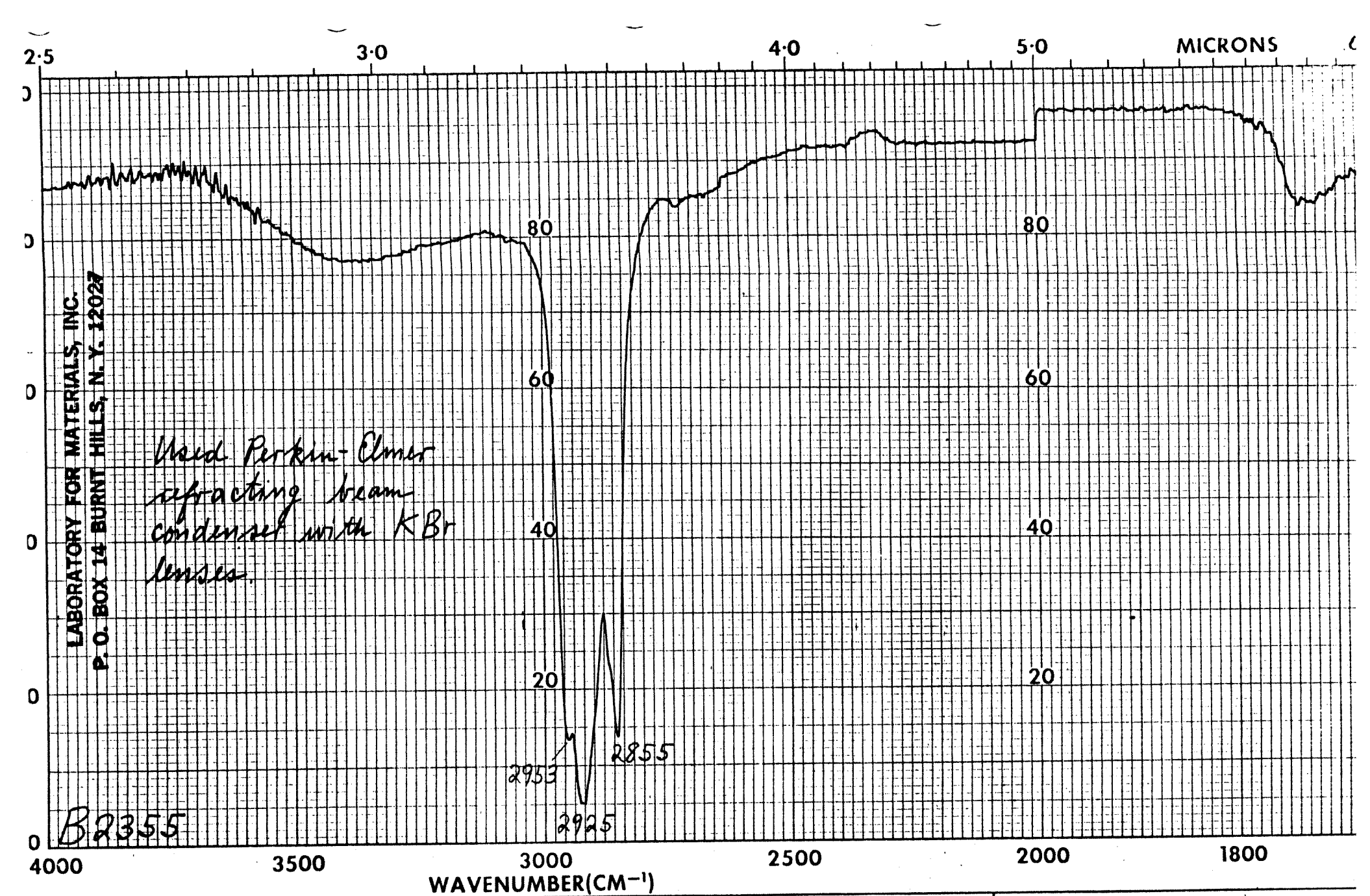
Our next letter will give the analytical results obtained on the soil samples you submitted.

Very truly yours,

Philip J. Launer

Philip J. Launer

PJL:AEL



SAMPLE Project No. 2092-1-4494
Chloroform extract of
soil sample A, S-2
Rodney W. Sutch

ORIGIN Fluid Geoscience Corporation

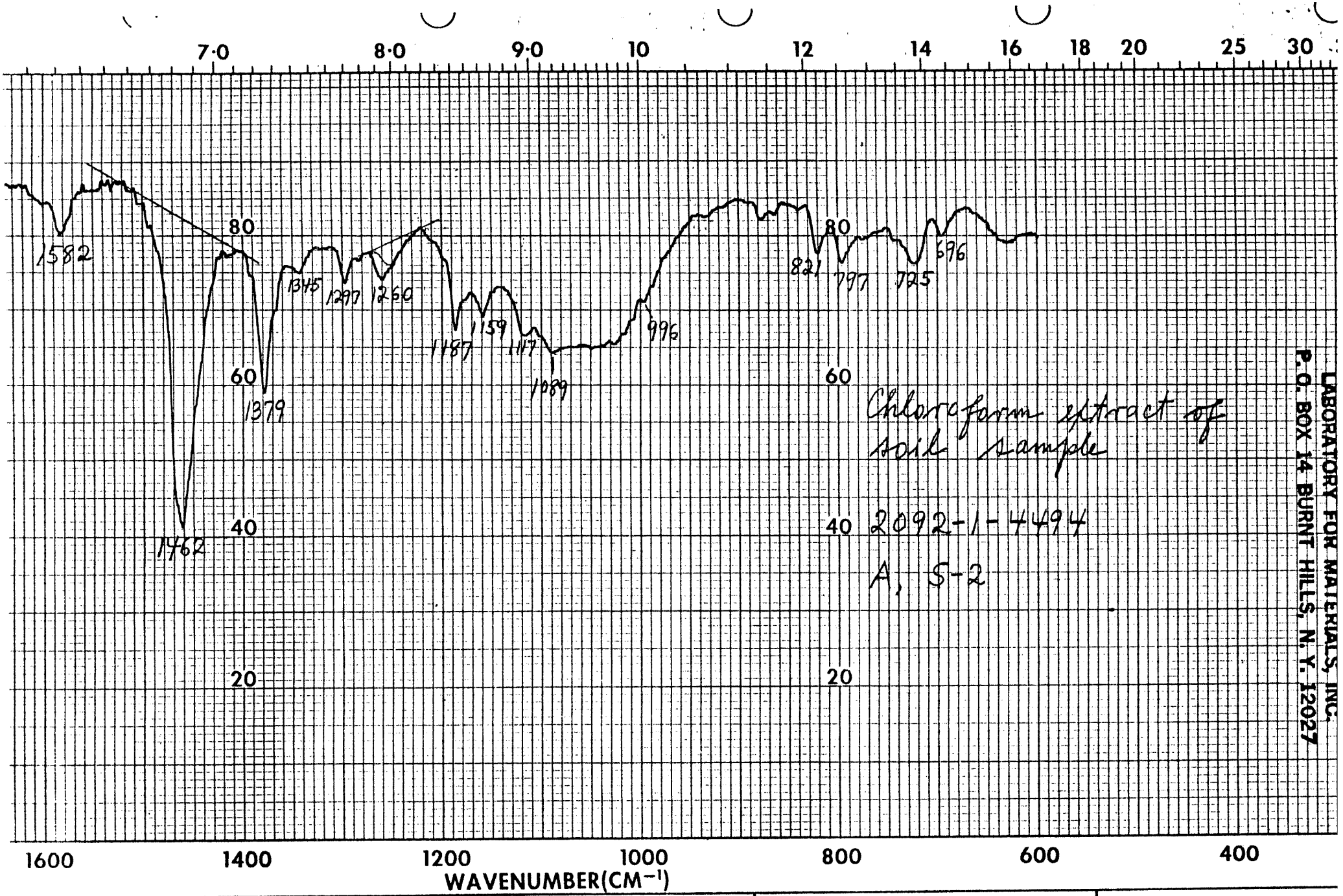
~~SOLVENT~~ liquid

CONCENTRATION

CELL PATH film between KCl plates

REFERENCE

REMARKS



SLIT PROGRAM narrow
SCAN TIME 12
~~MULTIPLIER~~ gain 120

T ____ A ____ SB ____

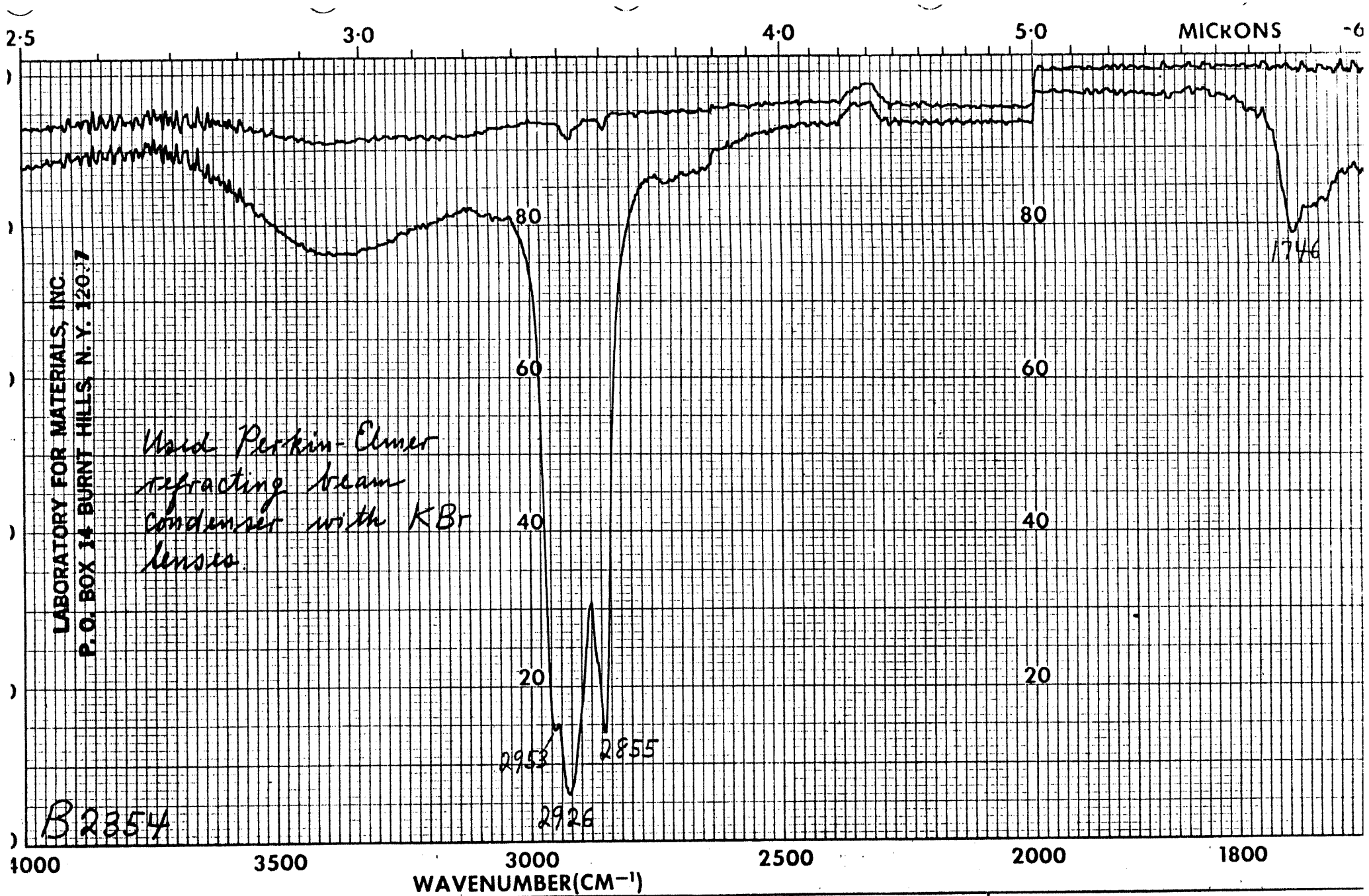
ORDINATE EXP ____

ABSCISSA EXP ____
TIME DRIVE ____ cm/min

OPERATOR PJL DATE 12/16/85

PERKIN-ELMI
CHART NO. 5100-436

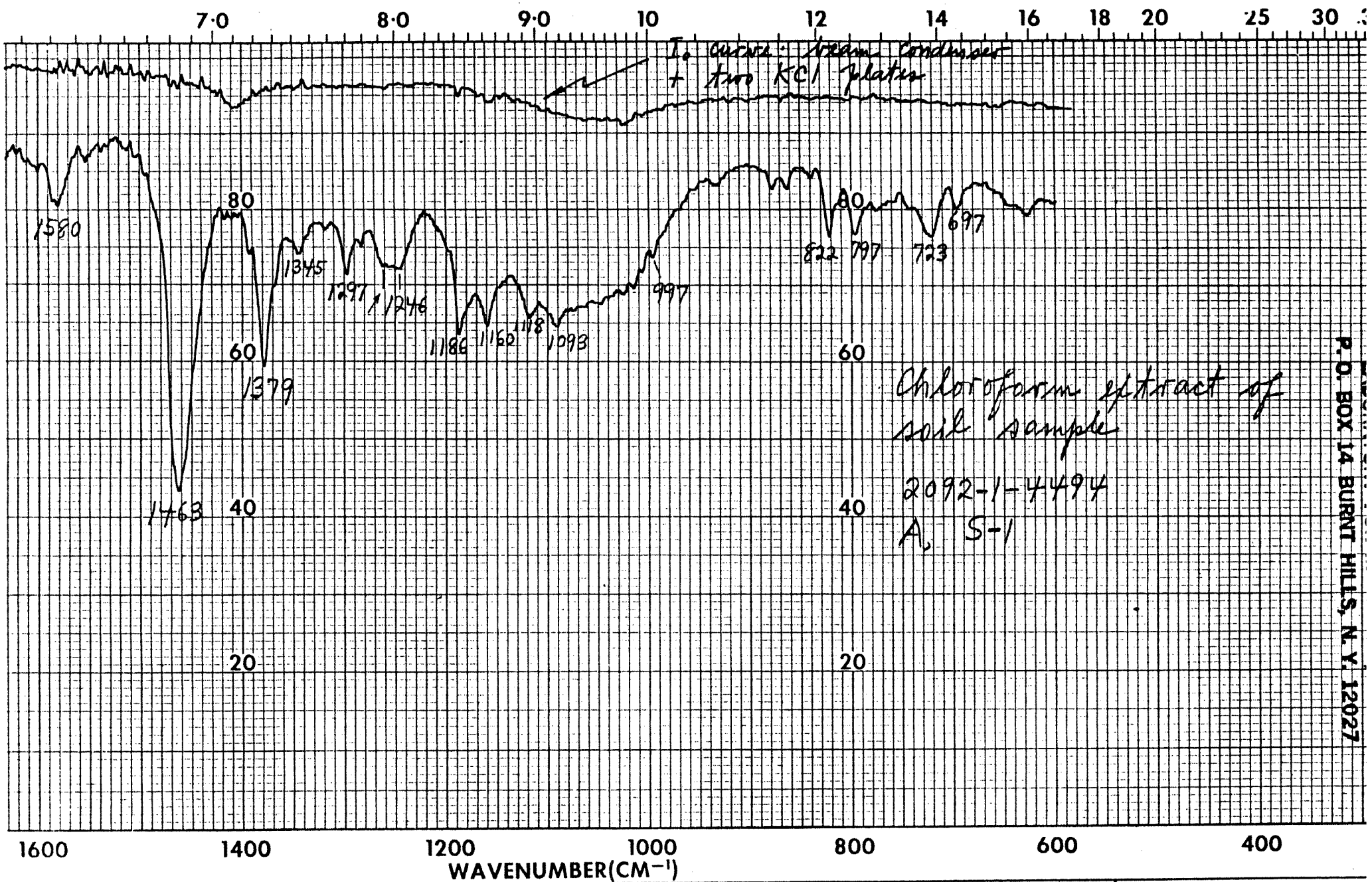
REF. NO. B2355



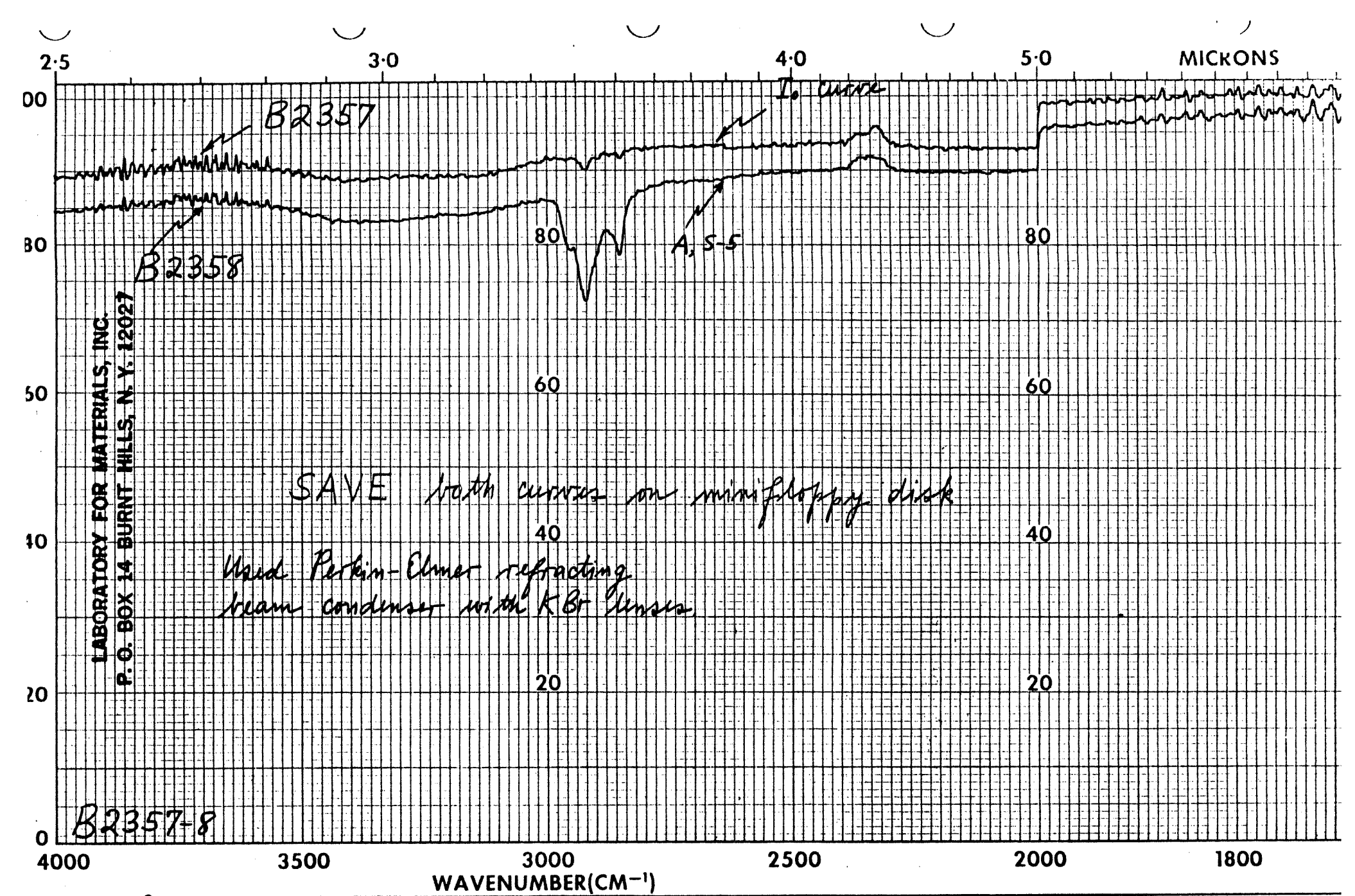
SAMPLE Project no. 2092-1-4494
Chloroform extract of soil
sample A, S-1
Rodney W. Sutch
ORIGIN [illegible]

SOLVENT liquid
CONCENTRATION
CELL PATH film between KCl plates
REFERENCE

REMARKS



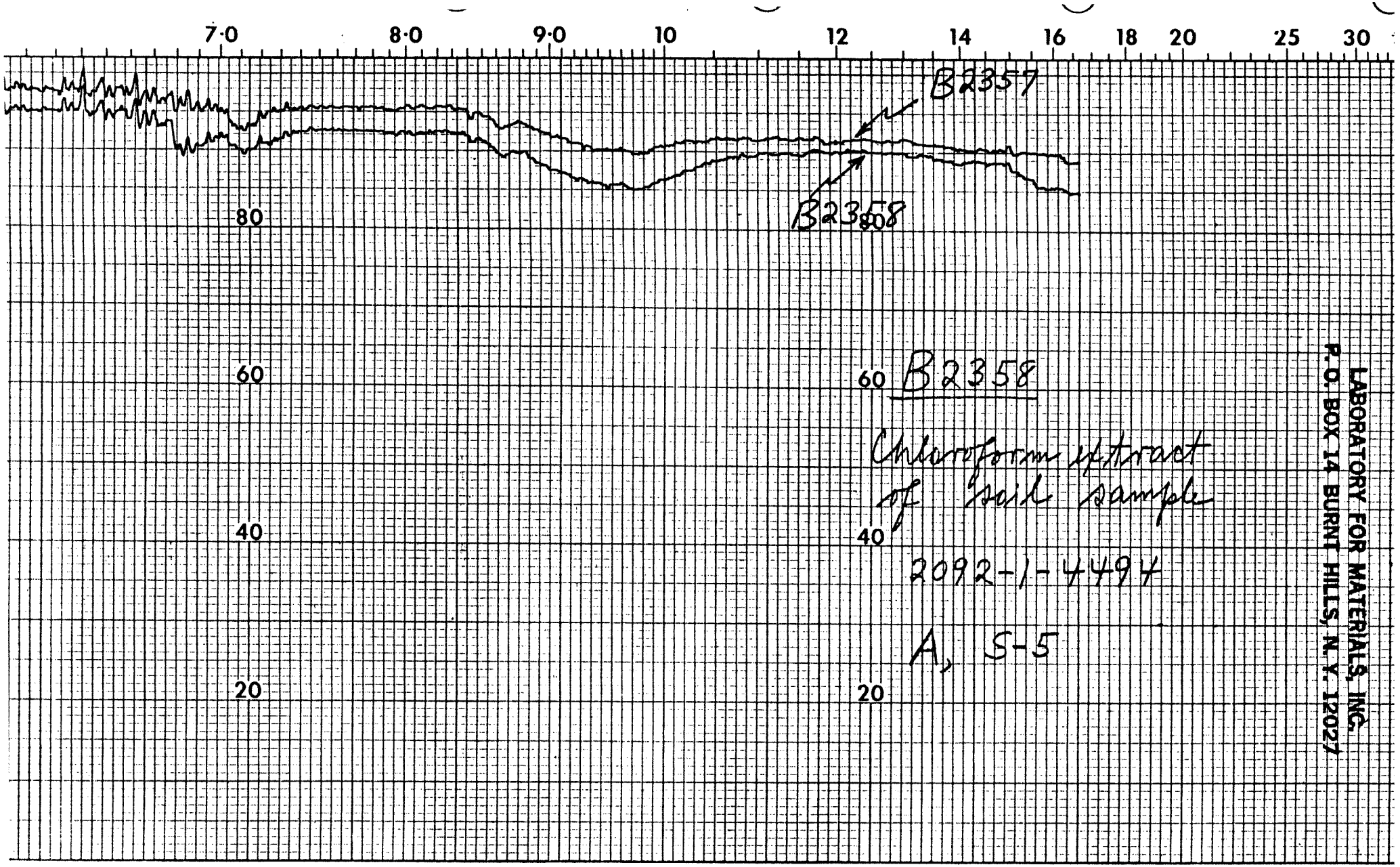
SLIT PROGRAM narrow	T ____ A ____ SB ____	ABSCISSA EXP ____	PERKIN-ELMER
SCAN TIME 12		TIME DRIVE ____ cm/min	CHART NO. 5100-436
~~MULTIPLIER~~ gain 120	~~ORDINATE EXP~~ Model 1320		
TIME CONSTANT ____	infrared spectrometer	OPERATOR PJZ DATE 12/16/85	REF. NO. B2354



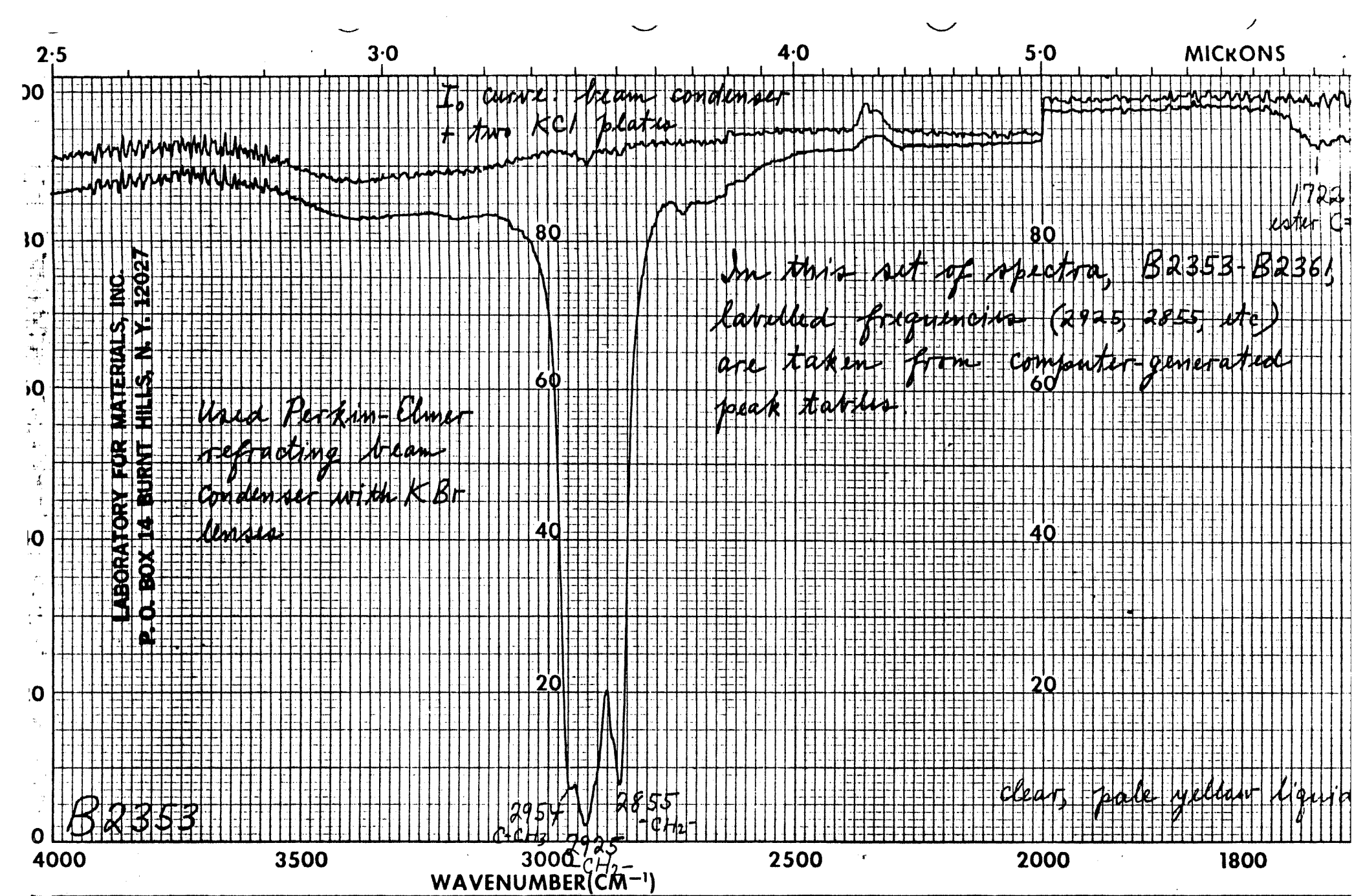
SAMPLE Project no. 2092-1-4494
Chloroform extract of soil sample A, S-5
Rodney W. Sutch
ORIGIN [illegible] Corporation

~~SOLVENT~~ liquid
CONCENTRATION
CELL PATH film between KCl plates
REFERENCE

REMARKS



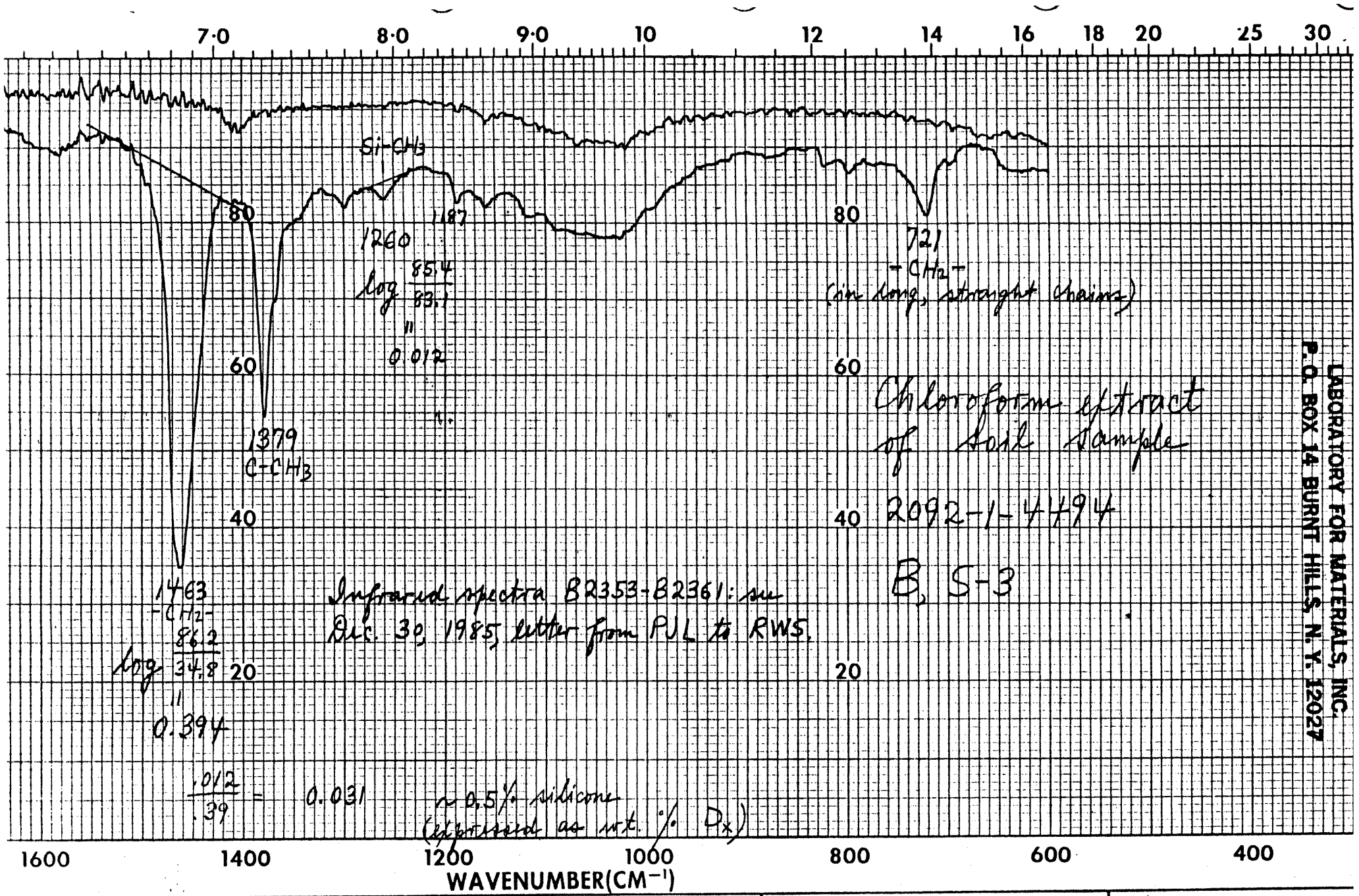
SLIT PROGRAM narrow	T ____ A ____ SB ____	ABSCISSA EXP ____	PERKIN-ELME
SCAN TIME 12		TIME DRIVE ____ cm/min	CHART NO. 5100-436
~~MULTIPLIER~~ gain 120	ORDINATE EXP ____		
TIME CONSTANT ____		OPERATOR PJL DATE 12/20/85	REF. NO. B2357-8



SAMPLE Project No. 2092-1-4494
Chloroform extract of soil sample B, S43
Rodney W. Sutch
ORIGIN Dunn Geoscience Corporation

~~SOLVENT~~ liquid
CONCENTRATION
CELL PATH film between KCl plates
REFERENCE

REMARKS See 12/27/85 and 12/30/85 letters from PJL to RWS.



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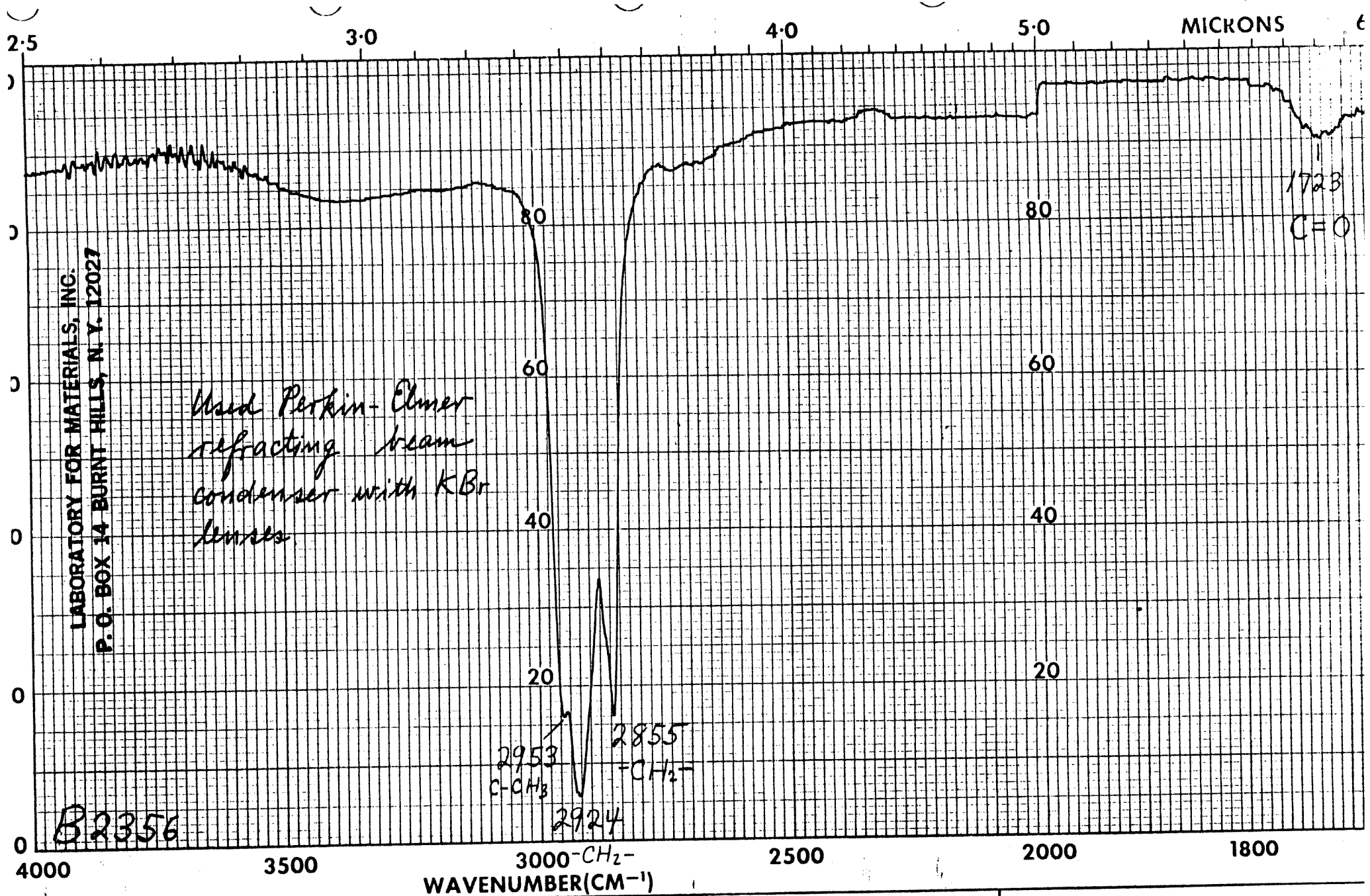
SLIT PROGRAM narrow
SCAN TIME 12
~~MULTIPLIER~~ gain 115
TIME CONSTANT

T ____ A ____ SB ____
~~ORDINATE EXP~~ Model 1320
infrared spectrometer

ABSCISSA EXP ____
TIME DRIVE ____ cm/min
OPERATOR PJL DATE 12/13/85

PERKIN-ELMER
CHART NO. 5100-436
REF. NO. B2353



SAMPLE Project No. 2092-1-4494
Chloroform extract of
soil sample A, S-3
Rodney W. Sutch

ORIGIN Dunn Geoscience Corporation

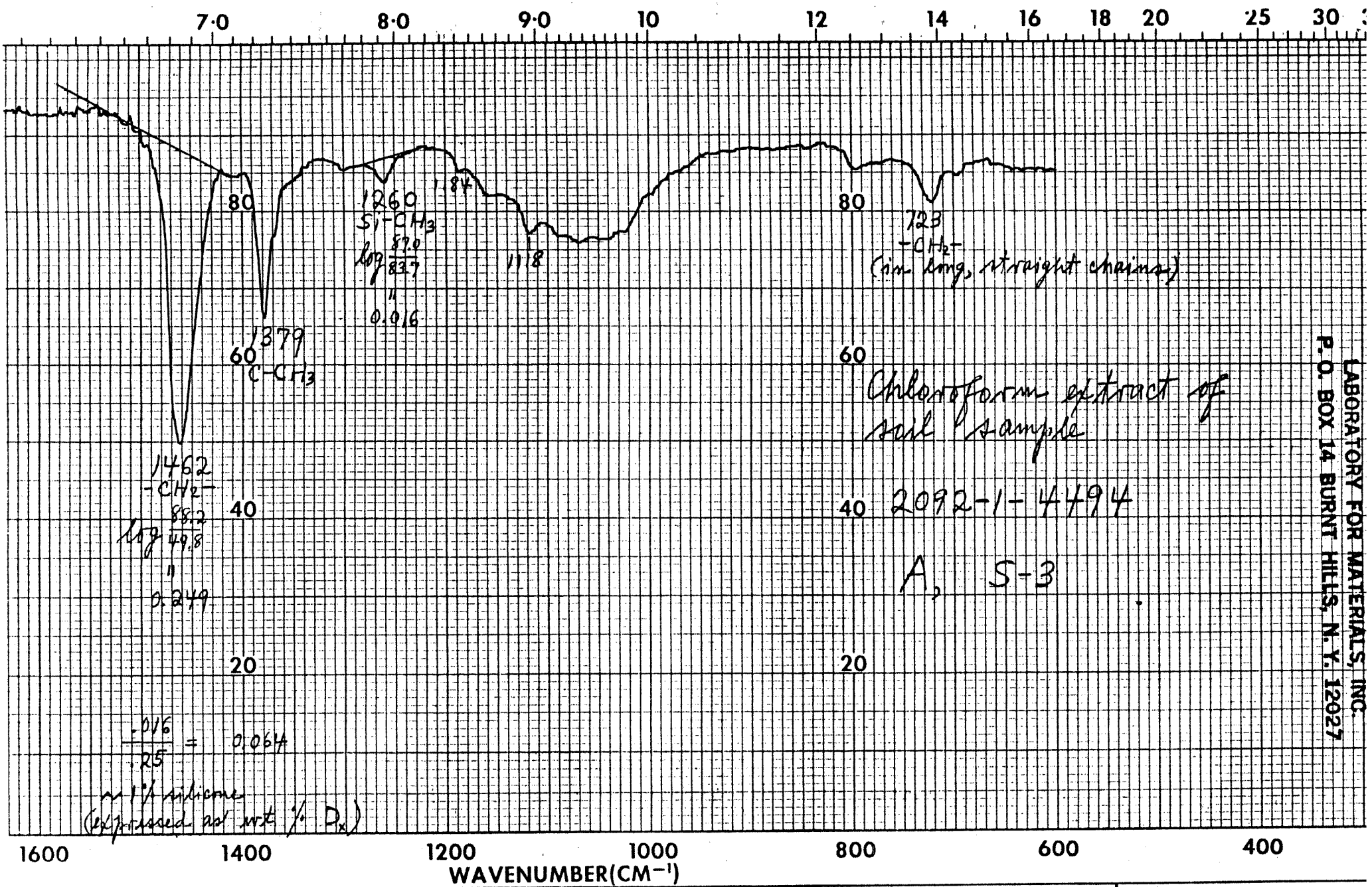
~~SOLVENT~~ liquid

CONCENTRATION

CELL PATH film between KCl plates

REFERENCE

REMARKS

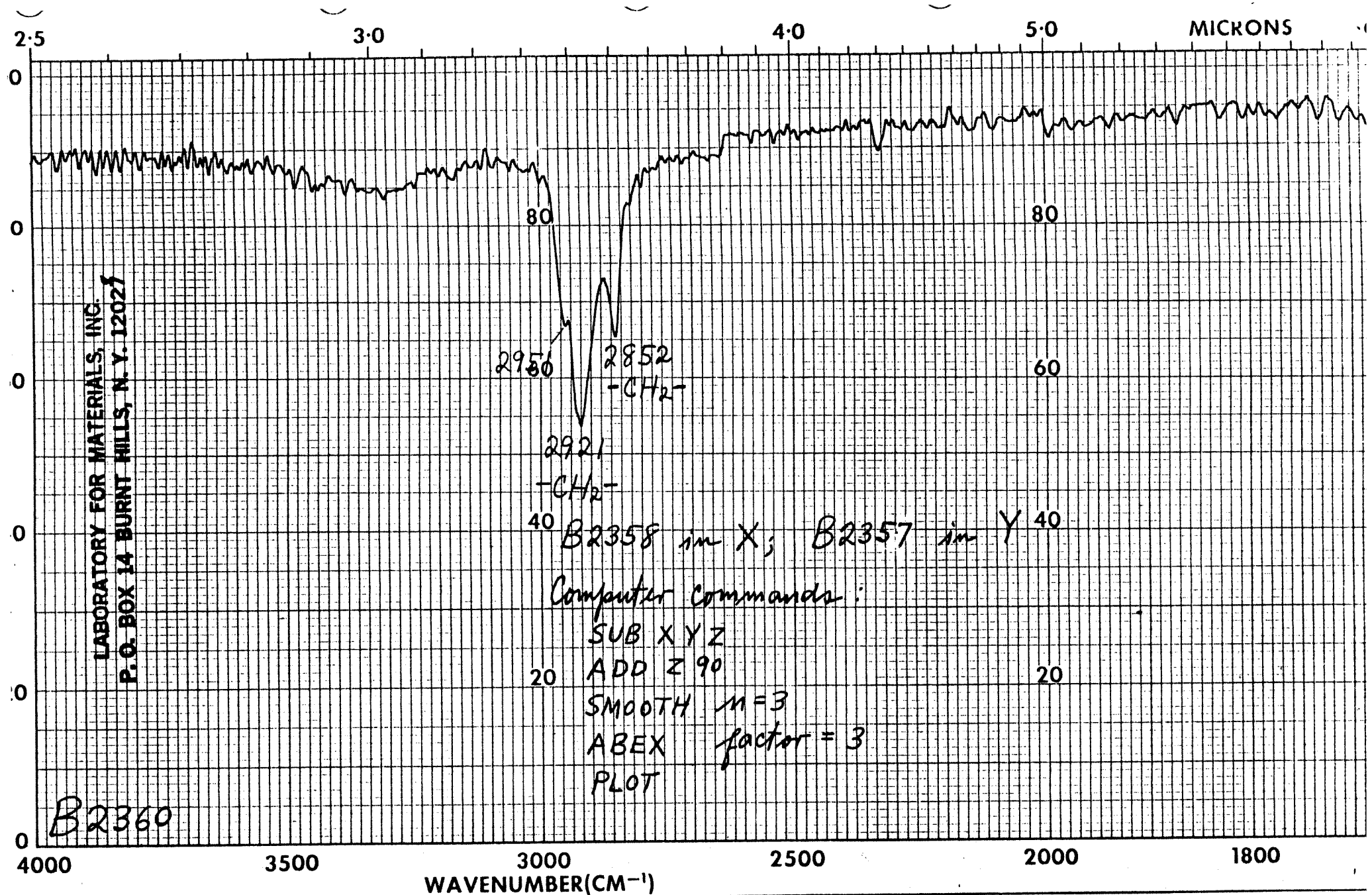


SLIT PROGRAM narrow
SCAN TIME 12
~~MULTIPLIER~~ gain 120
TIME CONSTANT

T A SB
ORDINATE EXP

ABSCISSA EXP
TIME DRIVE cm/min
OPERATOR PJL DATE 12/17/85

PERKIN-ELMER
CHART NO. 5100-436
REF. NO. B2356



SAMPLE Expanded difference spectrum (B2358 minus B2357)

Rodney W. Sutch

ORIGIN Lumb Bioscience Corporation

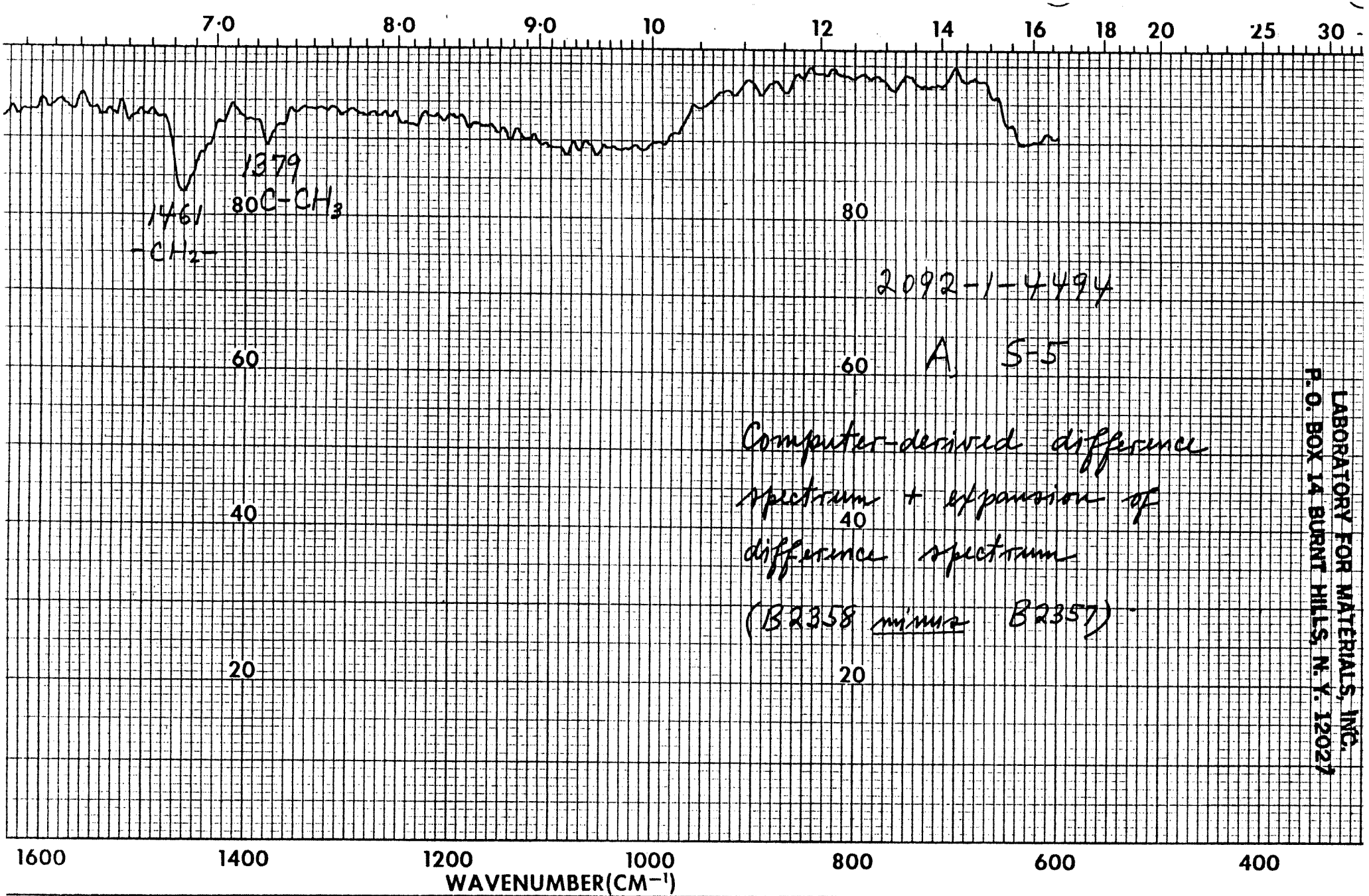
SOLVENT

CONCENTRATION

CELL PATH

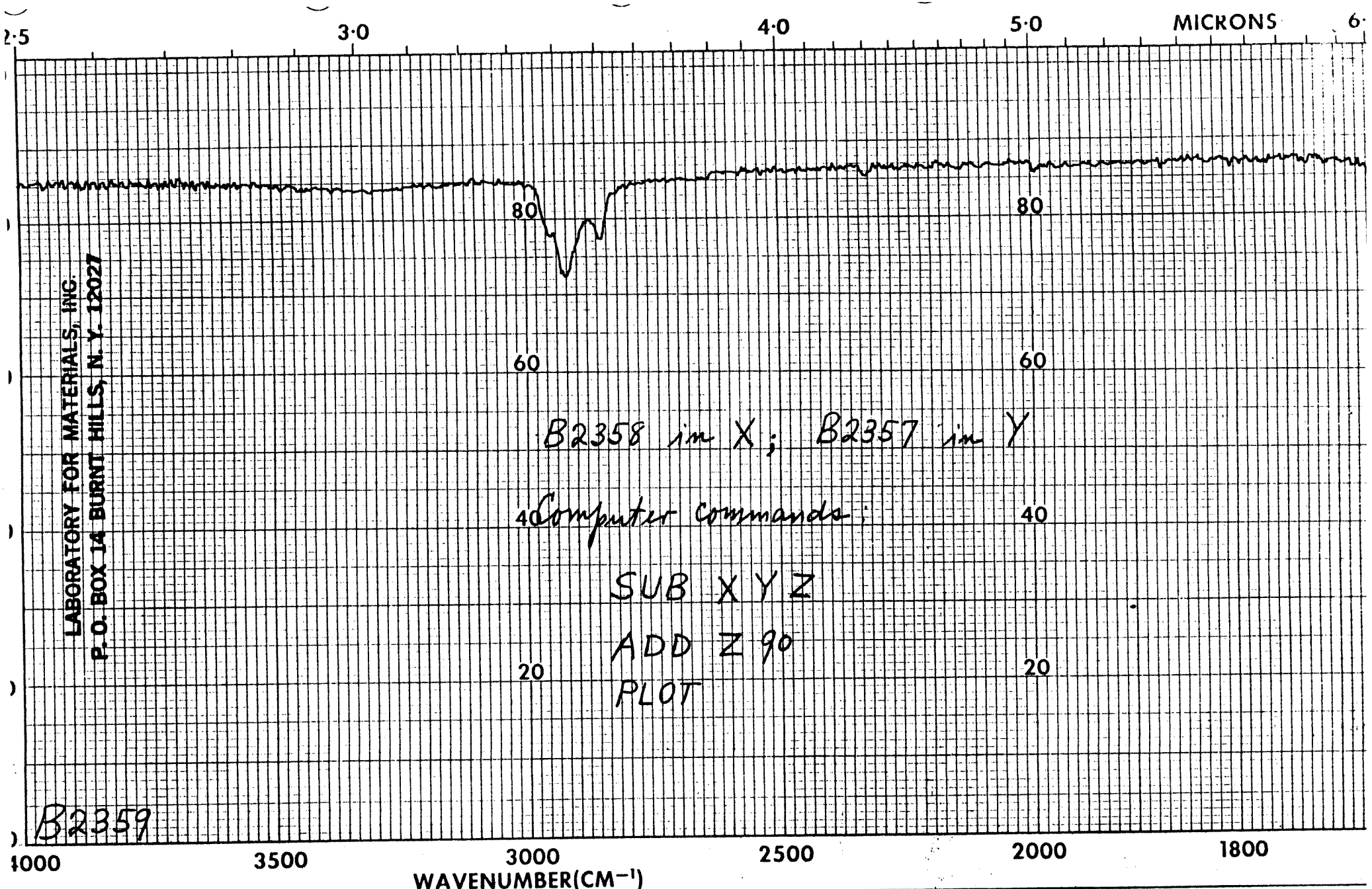
REFERENCE

REMARKS



LABORATORY FOR MATERIALS, INC.
P.O. BOX 14 BURNT HILLS, N.Y. 12027

SLIT PROGRAM	T A SB	ABSCISSA EXP	PERKIN-ELME
SCAN TIME		TIME DRIVE cm/min	CHART NO. 5100-436
MULTIPLIER	ORDINATE EXP		
TIME CONSTANT		OPERATOR PJL DATE 12/20/85	REF. NO. B2360



SAMPLE Difference spectrum (B2358 minus B2357)

ORIGIN Rodney W. Sutch Burnt Hills Geoscience Corporation

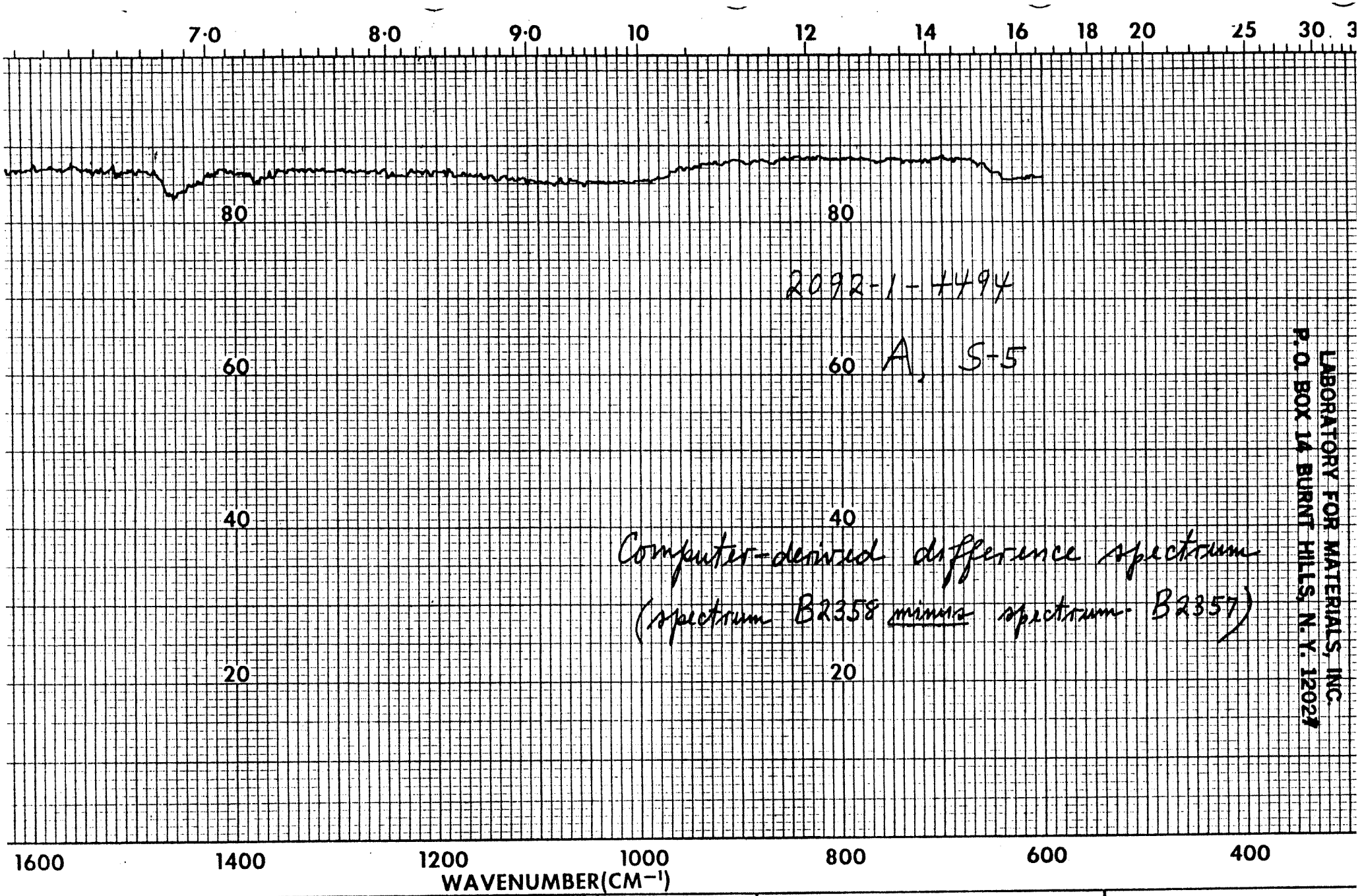
SOLVENT

CONCENTRATION

CELL PATH

REFERENCE

REMARKS Plotted from the computer using the recorder of the spectrometer



SLIT PROGRAM
SCAN TIME
MULTIPLIER
TIME CONSTANT

T A SB

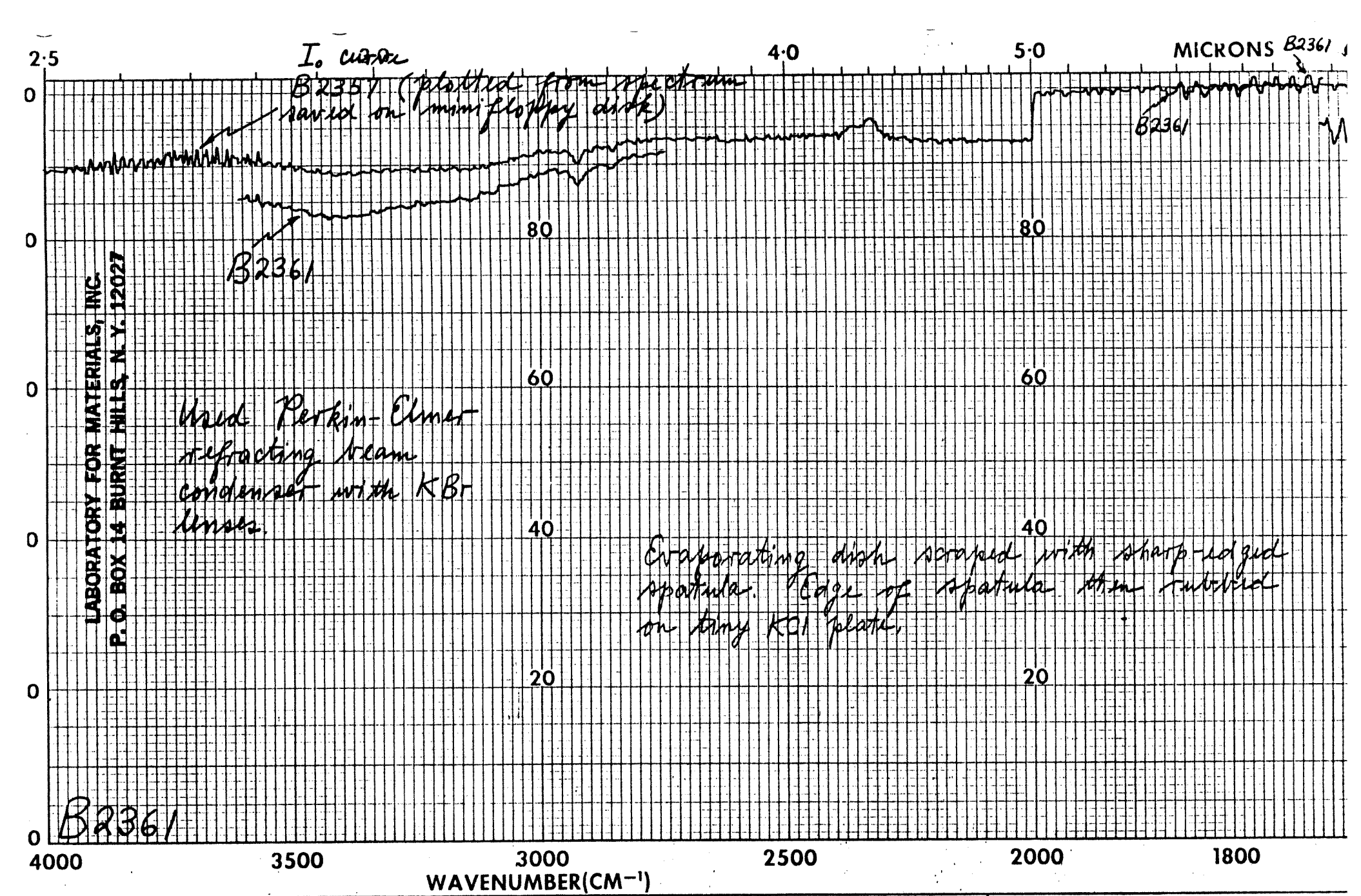
ORDINATE EXP

ABSCISSA EXP
TIME DRIVE cm/min

OPERATOR PJL DATE 12/20/85

PERKIN-ELME
CHART NO. 5100-436

REF. NO. B2359



SAMPLE Project No. 2092-1-4494
Chloroform extract of soil sample A, S-6
Rodney W. Lutch

ORIGIN Dunn Geoscience Corporation

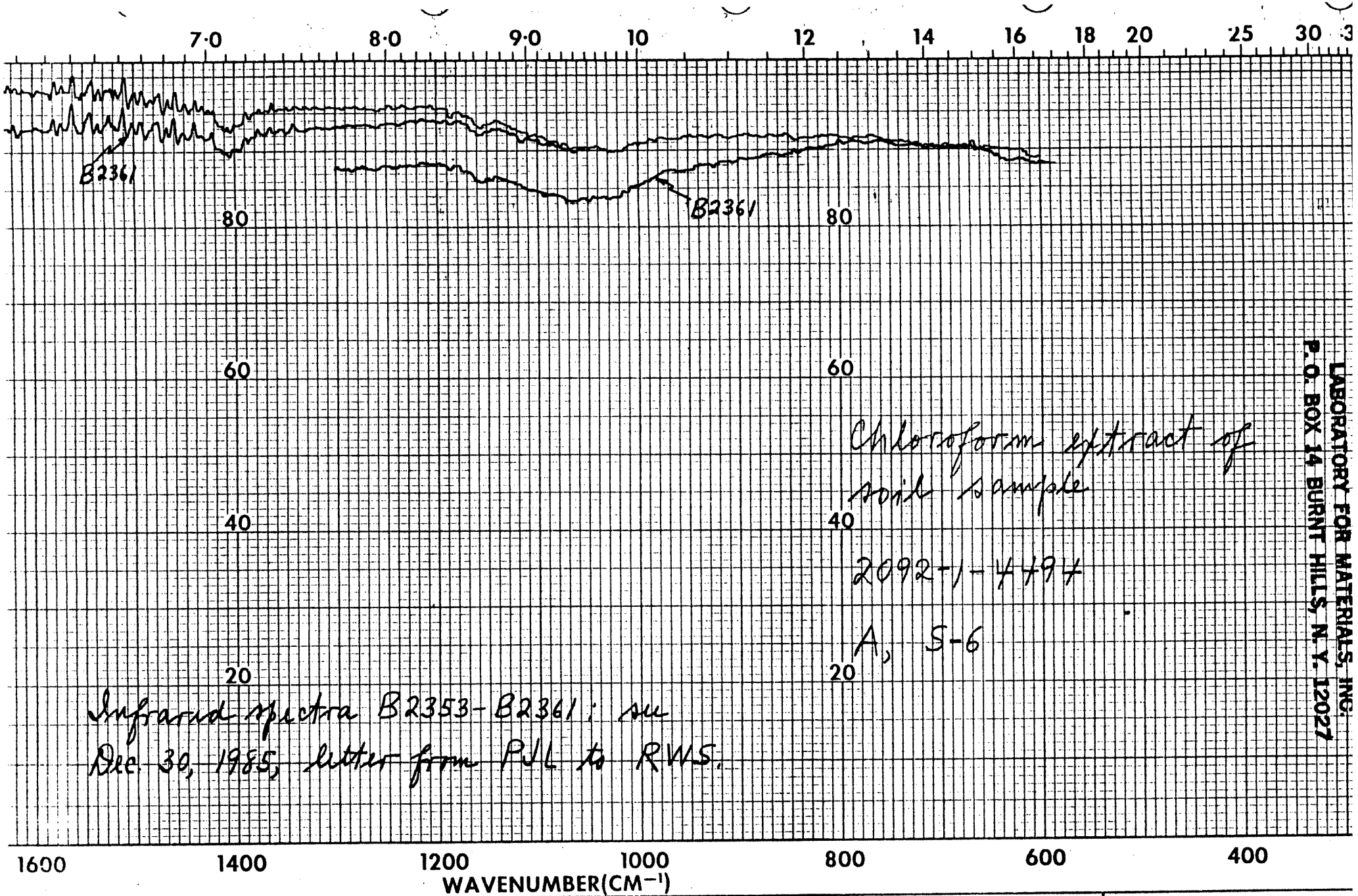
~~SOLVENT~~ --

CONCENTRATION

CELL PATH --

REFERENCE

REMARKS No infrared band of organic material were detected.



Infrared spectra B2353-B2361; see Dec. 30, 1985, letter from PJL to RWS.

SLIT PROGRAM narrow	T ____ A ____ SB ____	ABSCISSA EXP ____	PERKIN-ELMER
SCAN TIME 12		TIME DRIVE ____ cm/min	CHART NO. 5100-436
~~MULTIPLIER~~ gain 120	~~ORDINATE EXP~~ Model 1320		
TIME CONSTANT ____	infrared spectrometer	OPERATOR PJL DATE 12/20/85	REF. NO. B2361

2092-

PROJ. NO.	PROJECT NAME
1-4494	GE Auburn

SAMPLERS: (Signature) Rodney Dutch

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	total metals Cu Sn Zn	methanol in soil	* EPA 624 purgeables	* EPA 624 purgeables	REMARKS
A.S-1	12/5/85	1020		✓		3	✓	✓	✓	✓	* soil analysis equivalent of EPA 624
A.S-2		1028		✓		3	✓	✓	✓	✓	
A.S-3		1030		✓		3	✓	✓	✓	✓	
A.S-4		1110		✓		3	✓	✓	✓	✓	
A.S-5		1130		✓		3	✓	✓	✓	✓	
A.S-6		~~1130~~		✓		3	✓	✓	✓	✓	
A.S-7		1313		✓		3	✓	✓	✓	✓	
A.S-8	↓	1340		✓		3	✓	✓	✓	✓	
									✓	✓	
B.S-1	12/6/85	820		✓		3	✓	✓	✓	✓	
B.S-2		828		✓		3	✓	✓	✓	✓	
B.S-3		850		✓		3	✓	✓	✓	✓	
B.S-4		907		✓		3	✓	✓	✓	✓	
B.S-5		935		✓		3	✓	✓	✓	✓	
B.S-6	↓	~~935~~		✓		3	✓	✓	✓	✓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Rodney Dutch	12/9/85 1255				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		Kim Grau	12/9/85 12:55 pm		

Original Accompanies Shipment.

Chain-of-Custody Record

2092-1-4494

PROJ. NO.	PROJECT NAME
2092-1-4494	GE Auburn

SAMPLERS: (Signature) Rodney W. Sinkot

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Total metals Cu Sn Zn	methanol - soil	* EPA 624 purgables	* EPA 624 purgables	REMARKS
BS-7	12/6/85	1005		✓		2	✓	✓		✓	* soil analysis equivalent of EPA 624
BS-8	12/6/85	1021		✓		2	✓	✓		✓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Rodney Sinkot	12/9/85 1253				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		Kim Evans	12/9/85 12:55pm		

Original Accompanies Shipment.

Chain-of-Custody Record

2092-1-4494

PROJ. NO. 2092-1-4494 | PROJECT NAME

SAMPLERS: (Signature) Rodney W. Sutch

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	½ Pint jar	1 Pint jar	Soil sample	REMARKS
A,S-1	12/5/85			✓		2	✓		✓	
A,S-2				✓		2	✓		✓	
A,S-3				✓		2	✓		✓	Infra-red analysis with library search as previously discussed.
A,S-4				✓		2	✓		✓	
A,S-5				✓		2	✓		✓	
A,S-6				✓		2	✓		✓	
A,S-7				✓		1		✓	✓	
A,S-8	✓			✓		1		✓	✓	
B,S-1	12/6/85			✓		1		✓	✓	
B,S-2				✓		1		✓	✓	
B,S-3				✓		2		✓	✓	
B,S-4				✓		2		✓	✓	
B,S-5				✓		1		✓	✓	
B,S-6	✓			✓		1		✓	✓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Rodney Sutch	12/9/85 1343				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) Philip J. Launer	Date / Time 12/9/85 1343	Remarks	

Original Accompanies Shipment.

2092

PROJ. NO.	PROJECT NAME
2092-1-4494	

SAMPLERS: (Signature) Rodney W. Stutch

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	½ Pint Jar	1 Pint Jar	Soil Sample	REMARKS
B.S-7	12/6/85			✓		1	✓	✓		Infra-red analysis search with library as previously discussed
B.S-8	↓			✓		1	✓	✓		

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Rodney Stutch	12/9/85 1343				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) Philip J. Launer	Date / Time 12/9/85 1343	Remarks	

Original Accompanies Shipment.

Chain-of-Custody Record

JANS LABORATORY, Inc.
69 SOUTH STREET, AUBURN, N. Y. 13021 315-253-4433
SAMPLING • TESTING • ANALYSIS • REPORTS

June 11, 1985

Mr. Gary Sheldon
General Electric Company
West Genesee Street
Auburn, New York 13021

Re: Soil Samples of May 13, 1985
JANS No. 0078-L

Dear Mr. Sheldon:

The enclosed reports on soil samples from 18 inches, 24 inches and 36 inches indicate that the zinc, copper and TCE have penetrated the soil column.

The zinc and copper concentrations at 36 inches are above the background concentrations of 5 or 6 years ago, as reported to us by your company. However, the zinc concentration at 36" and copper at 24" are below the maximum allowable concentrations indicated in the NYSDEC guidelines for land application of sludge. These NYSDEC guidelines do not contain standards for tin or organic chemicals.

The TCE has penetrated the soil column and concentrates with depth. The depth and extent of TCE contamination cannot be predicted without more information on the site's soils.

The samples contain organic solvents other than TCE. Based on the odor of the soil samples, they may contain ketones, toluene and xylene. The odor was strongest for the 24 inch sample.

Tin was not detected in any of the samples, but the detection limit of the analytical method used is 70 mg/kg.

Our recommendation is that soil pits be excavated to examine the soil structure and collect additional samples. These additional samples should be analyzed for zinc, copper, TCE, ketones, xylene, and toluene. Additional research and consultation will be necessary before deciding the location and depth for excavations.

If you have any questions, please call.

Very truly yours,

JANS LABORATORY, INC.

Harriet C. Barone

Harriet C. Barone
Acting Laboratory Director

PICKARD AND ANDERSON

Bruce R. Natale

Bruce R. Natale, P.E.
Project Engineer

Enclosures

JANS LABORATORY

69 South Street, Auburn, N.Y. 13021 (315) 253-4433

SAMPLING * TESTING * ANALYSIS * REPORTS

Lab. No. 0585-1918 Date: 6/11/85
Project No. 0013-L Analysis by: BARONE

Project: GENERAL ELECTRIC COMPANY
Location: WEST GENESEE STREET County: CAYUGA STATE: NY

Sample Source: 18 INCH SOIL SAMPLE

Sample Collected:

By: KEVIN DELANEY Time: 1:30 P.M. Grab: ___
Date: 5/13/85 Composite: ___

Weather: CLEAR/SUNNY
Comments:

ANALYSIS	RESULTS		DETECTION LIMIT
METAL			
Copper	89.9	mg/kg	50 ug/L
Tin	LT 70	mg/kg	500 ug/L
Zinc	305.4	mg/kg	50 ug/L
Trichloroethylene	LT 0.01	PPM	

David C. Brown
Approved for Release

Methodology conforms to 40 CFR, Part 136, December 3, 1979

JANS LABORATORY

69 South Street, Auburn, N.Y. 13021 (315) 253-4433

SAMPLING * TESTING * ANALYSIS * REPORTS

Lab. No. __0585-1919_____ Date: __6/11/85_____
Project No. __0013-L_____ Analysis by: __BARONE_____

Project: __GENERAL ELECTRIC COMPANY_____
Location: __WEST GENESEE STREET_____ County: __CAYUGA_____ STATE: __NY____

Sample Source: __24 INCH SOIL SAMPLE_____

Sample Collected:

By: __KEVIN DELANEY_____ Time: __1:45 P.M._ Grab: ___
Date: __5/13/85_____ Composite: ___

Weather: __CLEAR/SUNNY_____
Comments: _____

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ANALYSIS	RESULTS		DETECTION LIMIT
METAL			
Copper	42.7	mg/kg	50 ug/L
Tin	LT 70	mg/kg	500 ug/L
Zinc	147.0	mg/kg	50 ug/L
Trichloroethylene	0.05	PPM	

Approved for Release

Methodology conforms to 40 CFR, Part 136, December 3, 1979

JANS LABORATORY

69 South Street, Auburn, N.Y. 13021 (315) 253-4433

SAMPLING * TESTING * ANALYSIS * REPORTS

Lab. No. 0585-1920 Date: 6/11/85
Project No. 0013-L Analysis by: BARONE

Project: GENERAL ELECTRIC COMPANY
Location: WEST GENESEE STREET County: CAYUGA STATE: NY

Sample Source: 36 INCH SOIL SAMPLE

Sample Collected:

By: KEVIN DELANEY Time: 2:00 PM Grab: ___
Date: 5/13/85 Composite: ___

Weather: CLEAR/SUNNY
Comments: _____

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ANALYSIS	RESULTS		DETECTION LIMIT
METAL			
Copper	27.6	mg/kg	50 ug/L
Tin	LT 70	mg/kg	500 ug/L
Zinc	67.9	mg/kg	50 ug/L
Trichloroethylene	20	PPM	

Approved for Release

Methodology conforms to 40 CFR, Part 136, December 3, 1979

GENERAL ELECTRIC

E-LAB TECHNICAL SERVICES | ANALYTICAL CHEMISTRY REPORT

SUBJECT: Soil Analysis

Report Number AC-105-79

Requested by G. Sheldon Dept. SPD - Auburn

Date June 25, 1979

Chg. No.

Copy to: G. Sheldon
J. S. Mills
D. E. Uren
E. D. Hall
R. N. Roberts
D. Hildebrand

Tests by E. Hall, and R. N. Roberts, D. Hildebrand

Signed Richard N Roberts

Analytical Chemistry - EP3, Rm. 23, 8-256-2732

TESTS & DATA:

Three samples of soil were received for comparative analysis. The samples were identified as: top 6", bottom 6-12", and control top 6".

Portions of each sample were dried at 100°C for 48 hours and pulverized in a mortar. These dried samples were utilized for analysis of metallic elements according to a procedure established by H. F. Perkins (Soil Science and Plant Analysis 1, 35, 1970), which involved digestion of the soil with a dilute sulfuric - hydrochloric acid mixture with the aid of a mechanical shaker. The soluble materials (after filtration) were analyzed by standard techniques utilizing a model 403 Perkin-Elmer atomic absorption spectrophotometer with the following results:

Sample	Copper	Zinc	Tin
Top 6"	150	449	28
Bottom 6-12"	10	38	8
Control top 6"	11	43	7

These numbers are µg/g dry soil. No heavy metals were detected.

Portions of each sample were also examined for extractable organic compounds by treatment with 1,2-dichloroethane and analysis of the extracts with the aid of a model IR-9 Beckman infrared spectrophotometer. These data are shown in Figures 1 through 3. It may be seen from these data that each extract produced a somewhat different organic mixture. The top 6" extract consisted of a mixture of a silicone oil similar to Dow Corning 705 diffusion pump oil and an organic ester. The bottom 6-12" extract contained the same materials but in different proportions (the organic ester was greater than the silicone oil), and the control top 6" contained a different organic compound. The material present on this control soil may have been a sebacate oil similar to the vacuum pump oils of the "Octoil" series, however, the purity is such that absolute identity cannot be assigned.

:ljc

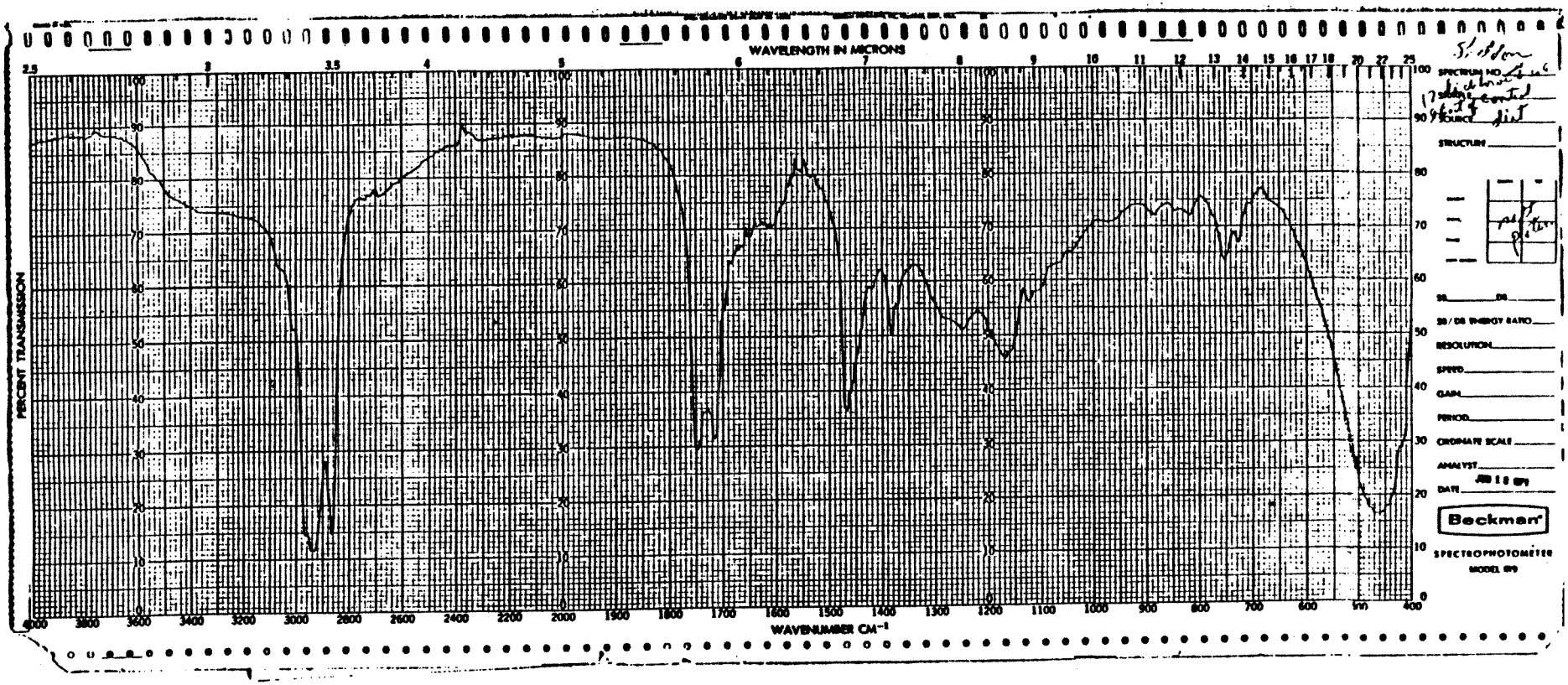

Figure 3
Infrared spectrum of the extract
of the control top 6" sample

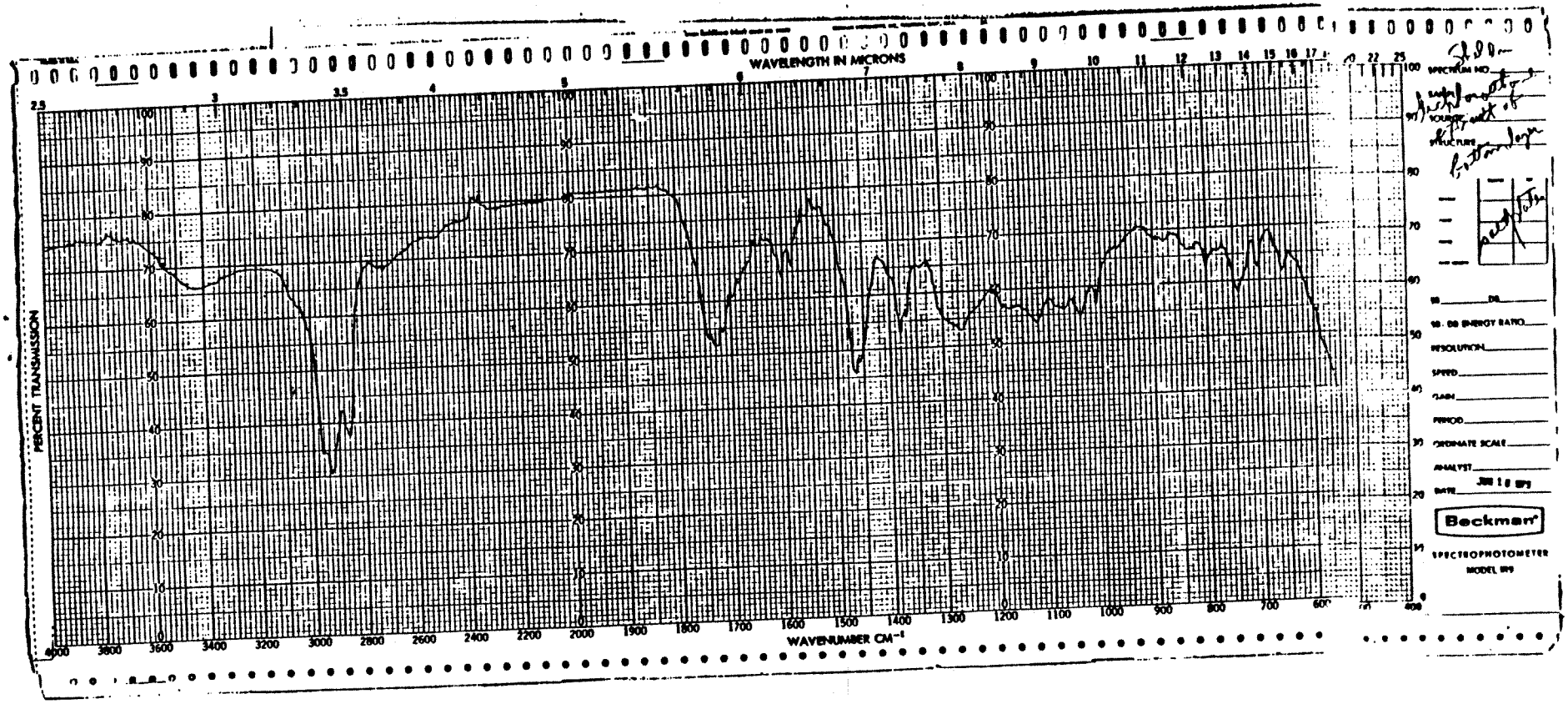

Figure 2
Infrared Spectrum of the Extract
of the Bottom 6-12" Sample

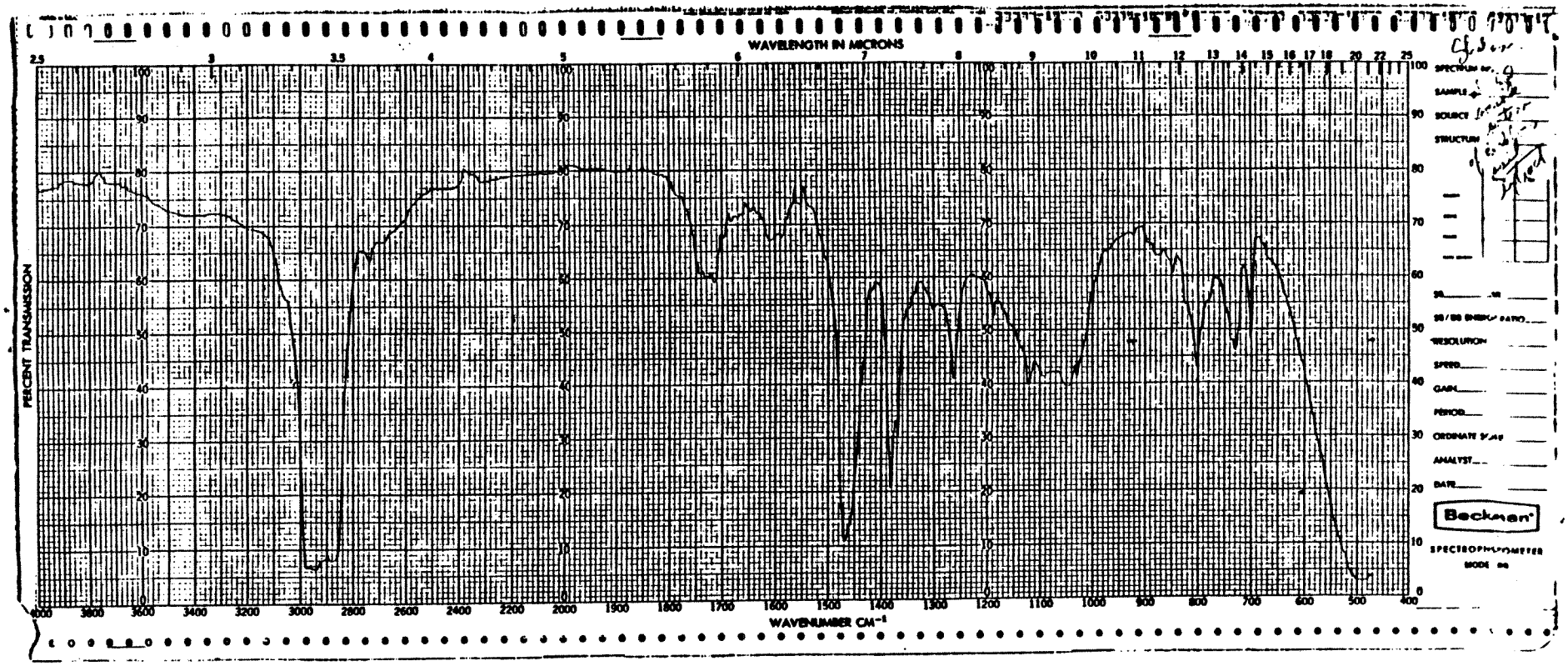

FIGURE 1
Infrared spectrum of the extract
of the top 6" sample