Enseco

ANALYTICAL DATA REPORT
FOR
THE NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION
GEOENGINEERING, INC.

Project Name	Sample Location	Date & Time of Collection	Client Sample No.	Erco Sample No.
L.E. Carpenter	Wharton, NJ	2/27/89 15:05	19054-1	2744-01
L.E. Carpenter	Wharton, NJ	2/27/89 14:00	19054-2	2744-02
L.E. Carpenter	Wharton, NJ	2/27/89 14:24	19054-3	2744-03
L.E. Carpenter	Wharton, NJ	2/27/89 14:47	19054-4	2744-04
L.E. Carpenter	Wharton, NJ	2/27/89 13:47	19054-5	2744-05
L.E. Carpenter	Wharton, NJ	2/27/89 NA	19054-TB	2744-06

NA = Not available.

205 Alewife Brook Parkway
Cambridge, Massachusetts 02138
617/661-3111 Fax: 617/354-5258

345985

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The New Jersey Department of Environmental Protection
Contractor: Enseco - Erco Laboratory
Project Name: L.E. Carpenter

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Client ID	Erco ID	
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The New Jersey Department of Environmental Protection
Contractor: Enseco - Erco Laboratory
Project Name: L.E. Carpenter

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Project Inventory

GeoEngineering, Inc.
Project Name: L.E. Carpenter
Date Sampled: February 27, 1989
Erco Booking Log No.: 2744
Date Samples Received: February 28, 1989

Client ID	Erco ID	Description
19054-1	2744-01	Aqueous/Volatile Organic Analysis + 15 Peaks
19054-2	2744-02	Aqueous/Volatile Organic Analysis + 15 Peaks
19054-3	2744-03	Aqueous/Volatile Organic Analysis + 15 Peaks
19054-4	2744-04	Aqueous/Volatile Organic Analysis + 15 Peaks
19054-5	2744-05	Aqueous/Volatile Organic Analysis + 15 Peaks
19054-TB	2744-06	Aqueous/Volatile Organic Analysis + 15 Peaks

Enseco - Erco Laboratory

Sample Analysis Instrumentation Key for Organics

ID	Manufacturer	Model	Data System
GC/MS #S-1	Finnigan	4530	INCOS
GC/MS #S-2	Finnigan	4615B	INCOS
GC/MS #S-3	Finnigan	4530	INCOS
GC/MS #V1*	Hewlett Packard	5996	RTE-6
GC/MS #V2*	Hewlett Packard	5996	RTE-6
GC/MS #V3*	Hewlett Packard	5996	RTE-6
GC/MS #V4*	Hewlett Packard	5985	RTE-6
GC/MS #V5*	Hewlett Packard	MSD	RTE-6
GC/HECD #1	Perkin-Elmer/Tracor	3920/700	HP-1000
GC/HECD #2	Tracor/Tracor	560/700A	HP-1000
GC/HECD #3	Varian/Tracor	3700/700A	HP-1000
GC/PID #1	Perkin-Elmer/HNU	3920/52-02	HP-1000
GC/PID #3	Varian/HNU	3700/52-02	HP-1000
GC/ECD #2	Hewlett Packard	5840	Beckman/HP-1000
GC/ECD #7	Hewlett Packard	5880	Beckman/HP-1000
GC/ECC #9	Hewlett Packard	5880	Beckman/HP-1000
GC/FPD #10	Hewlett Packard	5890	--
GC/ECD #11	Hewlett Packard	5890	--
GC/ECD #12	Hewlett Packard	5890	--
GC/ECD #13	Hewlett Packard	5890	--
IR1	Perkin-Elmer	701N	--

*Purge-and-trap units manufactured by Tekmar - Model #LSC2/ALS

KEY FOR SURROGATE AND INTERNAL STANDARDS

Acid/Base-Neutral Compounds

a - Fluorophenol	surrogate standard
b - d_5-Phenol	surrogate standard
c - d_4-Dichlorobenzene	internal standard
d - d_5-Nitrobenzene	surrogate standard
e - d_8-Naphthalene	internal standard
f - Fluorobiphenyl	surrogate standard
g - d_{10}-Acenapthene	internal standard
h - Tribromophenol	surrogate standard
i - d_{10}-Phenanthrene	internal standard
j - d_{14}-O-terphenyl	surrogate standard
k - d_{12}-Chrysene	internal standard
l - d_{12}--Perylene	internal standard

Volatile Compounds

1 - Bromochloromethane	internal standard
2 - 1,2-Dichloroethane-d_4	surrogate standard
3 - 1,4-Difluorobenzene	internal standard
4 - Toluene-d_8	surrogate standard
5 - Chlorobenzene-d_5	internal standard
6 - Bromofluorobenzene	surrogate standard

SUMMARY OF METHODS

The analytical EPA Methods 608 (Pesticides/PCBs), 624 (Volatile Organics) and 625 (Base/Neutrals and Acids) are designed to analyze water, sediment, and soil for the organic compounds on the Hazardous Substance List (HSL).

Volatile Organic Compounds

Analyses are conducted using purge and trap gas chromatographic/mass spectrometer (GC/MS) procedure in accordance with EPA Method 624. For sediment/soil samples, the purge device is heated.

Extractable Organic Compounds

Base/Neutrals and Acids (Semivolatiles)

The analyses are conducted in accordance with EPA Method 625. The method involves solvent extraction of the matrix, using a separatory funnel for waters and a sonicator for solids, concentration, and analysis by a GC/MS.

Pesticide/PCBs

The analysis of certain organochloride pesticides and polychlorinated biphenyls is conducted in accordance with EPA Method 608. The method involves solvent extraction of the matrix, concentration, and analysis. The extract is screened on a gas chromatograph/electron capture detector (GC/ECD) using a packed column. The sample is quantitated and confirmed on a GC/ECD using a second packed column.

QUALITY ASSURANCE/QUALITY CONTROL

As an indication of the overall quality of the data generated by Enseco - Erco Laboratory for this report, the following controls have been provided (when applicable).

Reagent or analytical blanks are analyzed to assess the level of contamination which exists in the analytical system. An analytical blank, analyzed with every batch of samples, consists of reagents specific to the method. This blank is carried through every aspect of the procedure, including preparation, cleanup, and analysis.

Laboratory control samples (LCS) are used to monitor the laboratory's day-to-day performance of routine analytical methods. An LCS consists of a standard, control matrix which is spiked with a group of target compounds representative of the method analytes. The LCS is analyzed with environmental samples to provide evidence that the laboratory is performing the method within accepted QC guidelines.

An LCS has been established for most routine analytical methods. Reagent water is used as the control matrix for the analysis of aqueous samples. The LCS compounds are spiked into reagent water and carried through the appropriate steps of the analysis. As stated in SW-846 (third edition), a universal blank matrix does not exist for solid samples and therefore no matrix is used. The LCS for solid samples consists of the LCS compounds spiked into a reagent blank and carried through the appropriate steps of the analysis. The data thus obtained are used to set the LCS control limits. As sufficient laboratory data become available, the control limits are redefined based upon the most recent six months of LCS data. Control limits for accuracy are based on the historical average recovery of the LCS plus or minus three standard deviation units.

Surrogates are organic compounds that are similar to the analytes of interest in chemical behavior but which are not normally found in environmental samples. Enseco routinely adds surrogates to samples requiring GS/MS analysis and reports these surrogate recoveries to the client. These surrogates are added to samples to monitor the effect of the matrix on the accuracy of the analysis. Results are reported in terms of percent recovery.

ANALYTICAL RESULTS

The method number provided on each data report sheet refers to a publication originating from a regulatory or standard-setting organization. In general, the methods employed are those specified by the U.S. Environmental Protection Agency and other state and federal agencies. In cases where an approved regulatory method does not exist, a method developed by Enseco will be employed to meet the specific needs of the client. The methods commonly employed by Enseco are based on methods from the following references.

U.S. Environmental Protection Agency. 1983. Methods for chemical analysis of water and wastes. EPA-600/4-79-020. Cincinnati, OH, March.

U.S. Environmental Protection Agency. 1984. Test methods for evaluating solid waste, physical/chemical methods. (SW-846); Washington, D.C. April.

U.S. Environmental Protection Agency. 1986. Methods for the determination of organic compounds in finished drinking water and raw source water. Cincinnati, OH, September.

"Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act," 40 CFR, Part 136; Federal Register, Vol. 49, No. 209 (1984).

American Public Health Association, American Water Works Association, Water Pollution Control Federation. 1985. Standard methods for the examination of water and wastewater, 16th Edition. Washington, D.C., April.

Current EPA Contract Laboratory Program (CLP) protocols for the analysis of organic and inorganic hazardous substances including chlorinated dioxins and furans.

Two

METHOD BLANK SUMMARY

Case No. GEOENGINEERING Region — Contractor ENSECO-ERCO LABORATORY Contract No. —

FILE ID	DATE OF ANALYSIS	FRACTION	MATRIX	CONC. LEVEL	INST. ID	CAS NUMBER	COMPOUND (MSL.TIC OR UNKNOWN)	CONC.	UNITS	CRQL
03 MAR 89-V2B	3-3-89	VOA	AQUEOUS	LOW	V2	—	NONE DETECTED	—	—	—
02 MAR 89-V3A	3-2-89	VOA	AQUEOUS	LOW	V3	—	NONE DETECTED	—	—	—

Comments:

FORM IV

7/85

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ENSECO-ERCO LABORATORY Contract: GEO ENGINEERING

Lab Code: ENSECO Case No.: 2744 SAS No.: — SDG No.: —

Lab File ID: >6376 BFB Injection Date: 2/26/89

Instrument ID: V2 BFB Injection Time: 10:03

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	23.9
75	30.0 - 60.0% OF MASS 95	57.0
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	86.1
175	5.0 - 9.0% of mass 174	5.7(6.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	82.9(96.2)1
177	5.0 - 9.0% of mass 176	6.8(8.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		BFB	6376	2/26/89	10:03
02	VSTD050	50ppb STD	6378		12:15
03	VSTD020	20ppb STD	6381		15:20
04	VSTD100	100ppb STD	6382		16:12
05	VSTD150	150ppb STD	6383		17:12
06	VSTD200	200ppb STD	6384		18:41
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5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ENSECO-ERCO LABORATORY Contract: GEO ENGINEERING

Lab Code: ENSECO Case No.: 2744 SAS No.: — SDG No.: —

Lab File ID: >W495 BFB Injection Date: 2/27/89

Instrument ID: V3 BFB Injection Time: 09:33

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	20.5
75	30.0 - 60.0% OF MASS 95	47.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	67.8
175	5.0 - 9.0% of mass 174	5.3(7.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	65.0(95.7)1
177	5.0 - 9.0% of mass 176	4.2(6.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		BFB	W495	2/27/89	09:33
02	VSTD050	50ppb STD	W496	↓	10:33
03	VSTD020	20ppb STD	W497		11:24
04	VSTD100	100ppb STD	W498		12:15
05	VSTD150	150ppb STD	W499		13:14
06	VSTD200	200ppb STD	W500		14:04
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5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ENSECO-ERCO LABORATORY Contract: GED ENGINEERING

Lab Code: ENSECO Case No.: 2744 SAS No.: — SDG No.: —

Lab File ID: >6504 BFB Injection Date: 3/03/89

Instrument ID: V2 BFB Injection Time: 19:41

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	27.7
75	30.0 - 60.0% OF MASS 95	58.0
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	76.3
175	5.0 - 9.0% of mass 174	6.5(8.5)1
176	Greater than 95.0%, but less than 101.0% of mass 174	74.7(98.0)1
177	5.0 - 9.0% of mass 176	5.4(7.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		BFB	6504	3/3/89	19:41
02	V5T0050	50 ppb STD	6505		20:24
03	~~V2U502~~	Blank	6506		21:28
04	03MAR89-V2B				
05	19024-3	2744-03	6507	3/3/89	23:11
06	19024-5	2744-05	6508	3/4/89	00:02
07	19024-6	2744-06	6509	3/4/89	00:54
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RC 3-30-89

FORM V VOA

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5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ENSECO-~~ERCO~~ LABORATORY Contract: Geo Engineering

Lab Code: ENSECO Case No.: 2744 SAS No.: — SDG No.: —

Lab File ID: >W568 BFB Injection Date: 3/02/89

Instrument ID: V3 BFB Injection Time: 10:02

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	25.0
75	30.0 - 60.0% OF MASS 95	53.6
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.7
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	60.6
175	5.0 - 9.0% of mass 174	4.7(7.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	58.2(96.0)1
177	5.0 - 9.0% of mass 176	4.1(7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		BFB	W568	3/2/89	10:02
02	V5TD050	50 PPBSTD	W569	↓	10:28
03	~~V5BL01~~	BLANK	W570	↓	11:36
04	02 MAR 89-V3A				
05	19054-1	2744-01	W573	3/2/89	14:36
06	19054-2	2744-02	W574	↓	15:25
07	19054-4	2744-04	W576	↓	17:03
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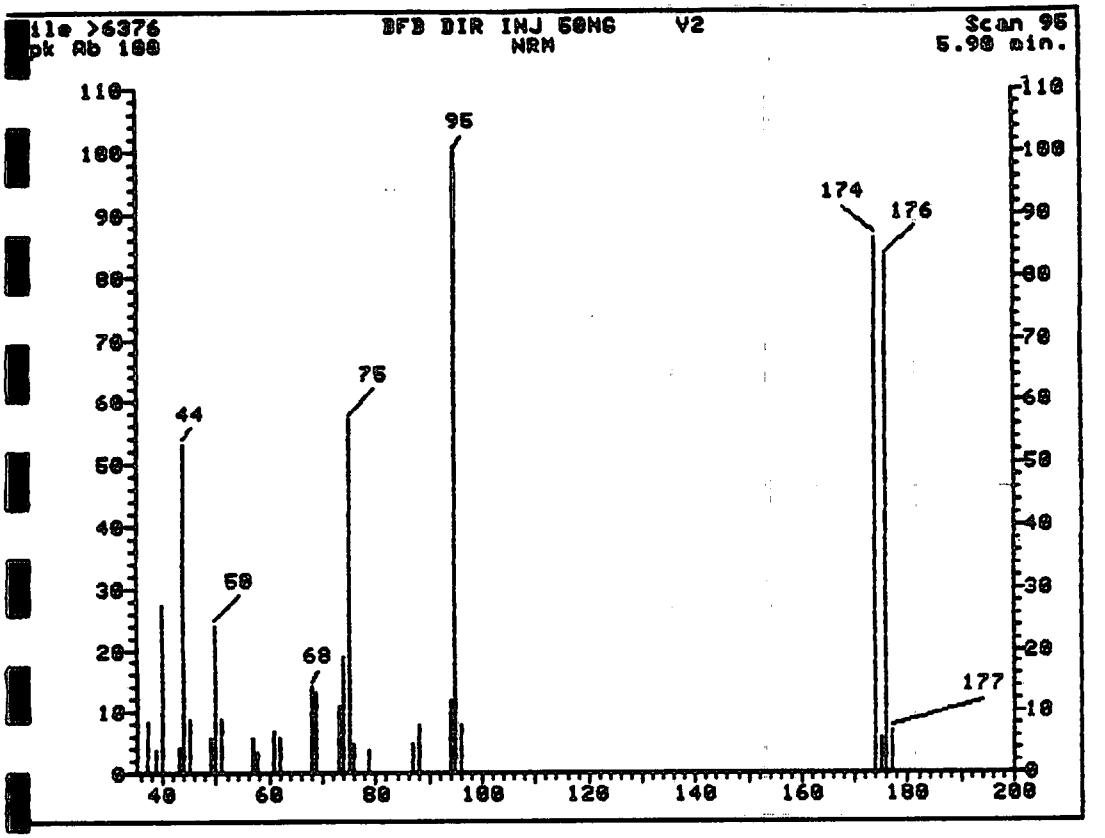


MS data file header from : >6376

Sample: BFB DIR INJ 50NG Operator: NORA MS 2/26/89 10:03
Misc : V2
Sys. #: 2 MS model: 96 SW/HW rev.: IA ALS # : 0
Method file: BFB2 Tuning file: MT7402 No. of extra records: 2
Source temp.: 220 Analyzer temp.: 220 Transfer line temp. : 220

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	1.0	12.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	0.0	0.0

ENSECO-ERCO Laboratory

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

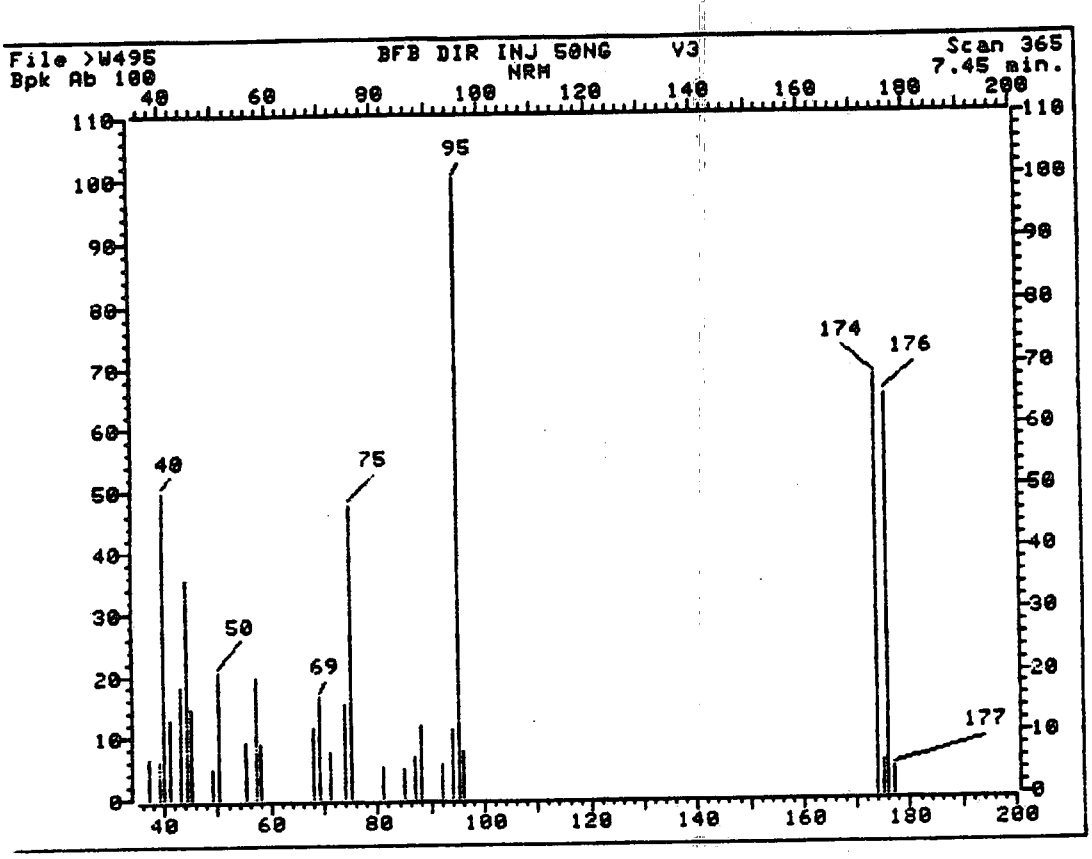
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	23.89	23.89	Ok
75	30-60% of mass 95	56.99	56.99	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	7.68	7.68	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	86.08	86.08	Ok
175	5-9% of mass 174	5.71	6.63	Ok
176	95-101% of mass 174	82.85	96.25	Ok
177	5-9% of mass 176	6.85	8.27	Ok

Injection Date: 02/26/89
Injection Time: 10:03
Data File: >6376
Scan: 95
Name: BFB DIR INJ 50NG
Misc: V2

>6376 BFB DIR INJ 50NG V2
95 NRM

File: >6376 Scan #: 95 Retn. time: 5.90

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.00	8.296	48.85	5.846	60.95	6.709	74.95	56.988	94.95	100.000
38.90	3.731	49.05	5.846	61.95	5.735	75.95	4.705	95.95	7.684
40.00	27.144	49.95	23.886	67.85	14.115	78.75	3.898	173.80	86.080
43.00	4.232	50.95	8.881	68.95	13.001	86.85	4.900	174.90	5.707
44.00	53.174	56.95	5.596	73.05	10.718	87.95	7.879	175.80	82.851
45.10	8.630	57.85	3.452	73.95	18.931	93.95	11.776	176.90	6.849



MS data file header from : >W495

Sample: BFB DIR INJ 50NG Operator: GREG MS 2/27/89 09:33
Misc : V3
Sys. #: 1 MS model: 96 SW/HW rev.: IA ALS # : 0
Method file: BFB3 Tuning file: MT7403 No. of extra records: 2
Source temp.: 220 Analyzer temp.: 220 Transfer line temp. : 220

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	.1	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	.1	0.0	0.0	0.0	0.0

ENSECO-ERCO Laboratory

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

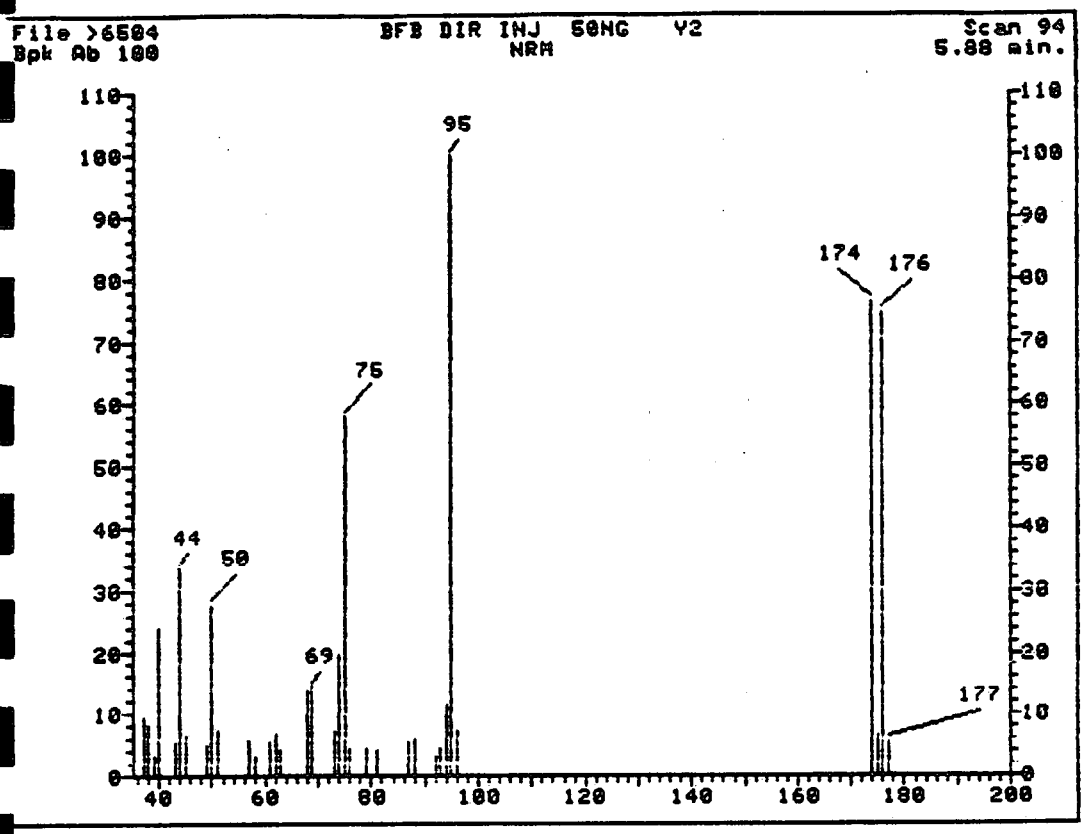
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	20.51	20.51	Ok
75	30-60% of mass 95	47.46	47.46	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	7.43	7.43	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	67.85	67.85	Ok
175	5-9% of mass 174	5.27	7.77	Ok
176	95-101% of mass 174	64.95	95.73	Ok
177	5-9% of mass 176	4.24	6.53	Ok

Injection Date: 02/27/89
Injection Time: 09:33
Data File: >W495
Scan: 365
Name: BFB DIR INJ 50NG
Misc: V3

>W495 BFB DIR INJ 50NG V3
365 NRM

File: >W495 Scan #: 365 Retn. time: 7.45

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.10	6.431	45.20	14.469	68.10	11.543	85.15	4.630	96.05	7.428
39.10	5.981	49.10	4.759	69.10	16.367	87.05	6.720	173.90	67.846
40.10	49.839	50.10	20.514	71.20	7.331	88.05	11.897	174.90	5.273
41.20	12.637	55.20	9.100	74.10	15.016	92.05	5.434	175.90	64.952
43.20	18.135	57.20	19.518	75.10	47.460	94.05	11.125	176.90	4.244
44.10	35.338	58.10	8.650	81.05	5.016	95.05	100.000		



MS data file header from : >6504

Sample: BFB DIR INJ 50NG Operator: NORA MS 3/03/89 19:41
Misc : V2
Sys. #: 2 MS model: 96 SW/HW rev.: IA ALS # : 0
Method file: BFB2 Tuning file: MT7402 No. of extra records: 2
Source temp.: 220 Analyzer temp.: 220 Transfer line temp. : 220

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	1.0	12.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	0.0	0.0

ENSECO-ERCO Laboratory

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

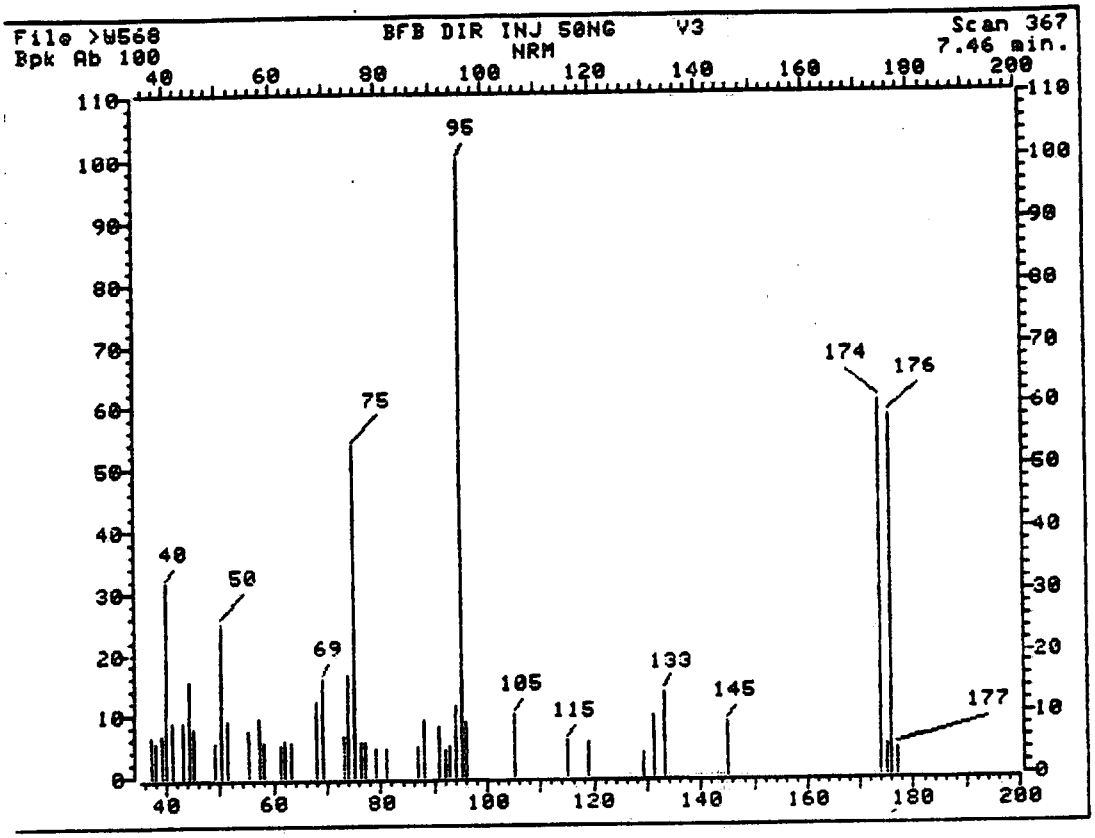
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	27.72	27.72	Ok
75	30-60% of mass 95	58.03	58.03	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	7.44	7.44	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	76.28	76.28	Ok
175	5-9% of mass 174	6.49	8.51	Ok
176	95-101% of mass 174	74.73	97.97	Ok
177	5-9% of mass 176	5.45	7.29	Ok

Injection Date: 03/03/89
Injection Time: 19:41
Data File: >6504
Scan: 94
Name:BFB DIR INJ 50NG
Misc:V2

>6504 BFB DIR INJ 50NG V2
94 NRM

File: >6504 Scan #: 94 Retn. time: 5.88

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.00	9.365	48.95	5.091	62.95	4.002	78.85	4.567	94.95	100.000
38.00	8.192	49.95	27.718	67.85	13.765	80.85	4.044	95.95	7.438
39.00	3.226	50.95	7.501	68.95	14.414	86.95	5.426	173.90	76.283
39.90	23.842	56.95	5.615	72.95	7.165	87.95	6.076	174.90	6.495
43.00	5.468	58.05	3.080	73.95	19.506	91.95	2.954	175.90	74.733
44.00	33.501	60.95	5.426	74.95	58.035	92.95	4.253	177.00	5.447
45.00	6.390	61.95	6.767	75.95	4.442	93.95	11.607		



MS data file header from : >W568

Sample: BFB DIR INJ 50NG Operator: PRINT2 MS 3/02/89 10:02
Misc : V3
Sys. #: 1 MS model: 96 SW/HW rev.: IA ALS # : 0
Method file: BFB3 Tuning file: MT7403 No. of extra records: 2
Source temp.: 220 Analyzer temp.: 220 Transfer line temp. : 220

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	.1	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	.1	0.0	0.0	0.0	0.0

ENSECO-ERCO Laboratory

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
50	15-40% of mass 95	24.99	24.99	Ok
75	30-60% of mass 95	53.61	53.61	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	8.74	8.74	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	60.58	60.58	Ok
175	5-9% of mass 174	4.73	7.81	Ok
176	95-101% of mass 174	58.18	96.04	Ok
177	5-9% of mass 176	4.13	7.09	Ok

Injection Date: 03/02/89
Injection Time: 10:02
Data File: >W568
Scan: 367
Name:BFB DIR INJ 50NG
Misc:V3

>W568 BFB DIR INJ 50NG V3
367 NRM

File: >W568 Scan #: 367 Retn. time: 7.46

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.10	6.410	50.10	24.988	69.10	15.758	88.05	8.951	119.15	5.361
38.10	5.548	51.20	9.114	73.10	6.387	91.05	7.995	129.05	3.613
39.10	6.620	55.20	7.296	74.10	16.573	92.05	4.056	131.15	9.627
40.10	31.562	57.20	9.301	75.10	53.613	93.05	4.569	133.10	13.497
41.20	8.858	58.20	5.478	76.10	5.524	94.05	11.445	145.10	8.625
43.20	8.765	61.10	5.152	77.10	5.245	95.05	100.000	173.90	60.583
44.10	15.594	62.10	5.734	79.10	4.429	96.05	8.741	174.90	4.732
45.20	7.809	63.10	5.291	81.05	4.382	105.15	9.953	175.90	58.182
49.10	5.548	68.10	12.028	87.05	4.895	115.15	5.711	176.90	4.126

Initial Calibration Data
HSL Compounds

Case No: 2744 Instrument ID: V2

Contractor: ENSECO, INC/ERCO LAB Calibration Date: ~~02/27/89~~ 2/24/89

Contract No: Geo Engineering

MC 3-30-89

Minimum $\overline{RF}$ for SPCC is .300 Maximum % RSD for CCC is 30%

Laboratory ID:		>6381 RF 20.00	>6378 RF 50.00	>6382 RF 100.00	>6383 RF 150.00	>6384 RF 200.00	$\overline{RF}$	% RSD	CCC	SPCC	
C010	Chloromethane	2.56491	2.65470	2.89909	2.01428	2.55194	2.53698	12.760		**	
C015	Bromomethane	1.66706	1.53201	1.70232	1.20850	1.73483	1.56894	13.752			
C020	Vinyl Chloride	2.06516	2.06387	2.38665	1.60689	2.08041	2.04060	13.655	*		
C025	Chloroethane	1.16476	1.29265	1.44403	1.01757	.64063	1.11193	27.602			
C030	Methylene Chloride	2.84163	1.97247	2.17391	1.58321	1.77175	2.06859	23.455			
C035	Acetone	.96372	1.02649	.78466	.64104	.69342	.82187	20.412			
C040	Carbon Disulfide	5.66324	6.25387	7.15721	5.85299	6.77887	6.18124	13.671			
C045	1,1-Dichloroethene	1.48232	1.72439	2.06723	1.36279	1.85529	1.69840	16.670	*		
C050	1,1-Dichloroethane	3.57837	3.98528	4.59170	3.33693	4.10148	3.91874	12.404		**	
C053	Trans-1,2-Dichloroethene	1.58380	1.86955	2.09102	1.60268	2.01136	1.83184	12.664			
C060	Chloroform	4.04555	4.53368	5.04849	3.68492	4.38667	4.33985	11.847	*		
C065	1,2-Dichloroethane	3.54334	4.03434	4.07266	3.25328	3.79163	3.73905	9.221			
CS15	D4-1,2-Dichloroethane	2.74899	2.78664	2.93791	2.97567	3.01596	2.89304	4.091			(Conc=50.0,50.0,50.0,50.0,50.0)
C110	2-Butanone	.17579	.23054	.22005	.18232	.20322	.20238	11.629			
C115	1,1,1-Trichloroethane	.60497	.68975	.70437	.52268	.65848	.63604	11.625			
C120	Carbon Tetrachloride	.56436	.67163	.73159	.47471	.62521	.61350	16.123			
C125	Vinyl Acetate	.59486	.73951	.76382	.61059	.72856	.68747	11.433			
C130	Bromodichloromethane	.69428	.82489	.81982	.65504	.77482	.75377	10.093			
C140	1,2-Dichloropropane	.36399	.45889	.49914	.38104	.47052	.43472	13.560	*		
C143	Cis-1,3-Dichloropropene	.64455	.76782	.80109	.64587	.78444	.72875	10.589			(Conc=24.0,60.0,120.0,180.0,240.0
C150	Trichloroethene	.34778	.41627	.46169	.33206	.41611	.39478	13.604			
C155	Dibromochloromethane	.50466	.63736	.67138	.50767	.59660	.58353	12.927			
C160	1,1,2-Trichloroethane	.32429	.41991	.42615	.32439	.37865	.37468	13.196			
C165	Benzene	1.09045	1.25664	1.30597	1.02238	1.24420	1.18393	10.228			
C172	Trans-1,3-Dichloropropen	.49662	.63137	.64847	.52090	.61622	.58272	11.842			(Conc=16.0,40.0,80.0,120.0,160.0)
C175	2-Chloroethylvinylether	.16269	.23848	.26276	.20066	.23594	.22009	17.714			
C180	Bromoform	.39238	.50959	.51779	.42485	.51613	.47199	12.577		**	
C205	4-Methyl-2-Pentanone	.55148	.63898	.64827	.51559	.61165	.58998	9.168			
C210	2-Hexanone	.37701	.44272	.44296	.36212	.41781	.40852	9.149			
C220	Tetrachloroethene	.32225	.40594	.46489	.31886	.42401	.38719	16.654			
C225	1,1,2,2-Tetrachloroethan	.68544	.79202	.79386	.64596	.75953	.73536	9.046		**	
C230	Toluene	.82436	.89957	.93906	.73887	.92058	.86449	9.561	*		

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

20

Initial Calibration Data
HSL Compounds

Case No: 2744 Instrument ID: V2

Contractor: ENSECO,INC/ERCO LAB Calibration Date: ~~02/27/89~~ 2-26-89

Contract No: GEO ENGINEERING

AL 3-30-89

Minimum $\overline{RF}$ for SPCC is .300 Maximum % RSD for CCC is 30%

Laboratory ID:	>6381	>6378	>6382	>6383	>6384					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RF}$	% RSD	CCC	SPCC	
CS05 D8-Toluene	1.19192	1.17200	1.17159	1.17641	1.18201	1.17879	.718			(Conc=50.0,50.0,50.0,50.0,50.0)
C235 Chlorobenzene	.99979	1.12115	1.21464	.89724	1.10853	1.06827	11.444		**	
C240 Ethylbenzene	.42626	.48962	.51659	.40558	.50511	.46863	10.585	*		
CXXX Xylene (m)	.60839	.70299	.72246	.54089	.67371	.64969	11.481			
C245 Styrene	1.08957	1.21441	1.25429	.95827	1.16117	1.13554	10.281			
CXXX Xylenes (o , p)	.67366	.73132	.75802	.57530	.69863	.68739	10.235			(Conc=40.0,100.0,200.0,300.0,400.
CS10 Bromofluorobenzene (BFB)	.65028	.65219	.63690	.63761	.63422	.64224	1.298			(Conc=50.0,50.0,50.0,50.0,50.0)
C250 Xylene (Total)	.65189	.72633	.75067	.56380	.69022	.67658	10.831			(Conc=60.0,150.0,300.0,450.0,600.

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: 2744 Instrument ID: V3

Contractor: ENSECO - Erco lab Calibration Date: 02/27/89

Contract No: GED ENGINEERING

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % RSD for CCC is 30%

	Laboratory ID:	>W497 RF 20.00	>W496 RF 50.00	>W498 RF 100.00	>W499 RF 150.00	>W500 RF 200.00	$\overline{RF}$	% RSD	CCC	SPCC	
C010	Chloromethane	1.60173	1.85949	1.55651	1.44682	1.40339	1.57359	11.362		**	
C015	Bromomethane	1.54165	1.16061	1.43071	1.16320	.99008	1.25725	17.809			
C020	Vinyl Chloride	1.52494	1.38582	1.64341	1.45303	1.46556	1.49455	6.476	*		
C025	Chloroethane	.74281	.80330	.80378	.78613	.74800	.77680	3.809			
C030	Methylene Chloride	1.97065	1.63384	2.07987	1.67076	2.05950	1.88292	11.413			
C035	Acetone	.50858	.53702	.50042	.45894	.46456	.49390	6.561			
C040	Carbon Disulfide	5.68708	6.25218	6.00141	5.18340	5.81585	5.78798	6.897			
C045	1,1-Dichloroethene	1.83734	2.01678	2.05559	1.78350	1.94564	1.92777	6.003	*		
C050	1,1-Dichloroethane	3.49510	3.78751	3.65486	3.29660	3.40052	3.52692	5.569		**	
C053	Trans-1,2-Dichloroethene	1.94517	2.10717	2.07794	1.95480	2.01482	2.01998	3.573			
C060	Chloroform	4.02319	4.18710	4.25262	3.93424	3.99643	4.07871	3.306	*		
C065	1,2-Dichloroethane	3.18036	3.27154	3.33847	3.16393	3.19535	3.22993	2.271			
CS15	D4-1,2-Dichloroethane	2.17346	2.24306	2.36986	2.40072	2.50483	2.33839	5.611			(Conc=50.0,50.0,50.0,50.0,50.0)
C110	2-Butanone	.15802	.17608	.16643	.15803	.15641	.16299	5.096			
C115	1,1,1-Trichloroethane	.49569	.53081	.54148	.50328	.52438	.51913	3.685			
C120	Carbon Tetrachloride	.48009	.51077	.53558	.46789	.52297	.50346	5.686			
C125	Vinyl Acetate	.42967	.48856	.48981	.46658	.48834	.47259	5.475			
C130	Bromodichloromethane	.68357	.72015	.74346	.70974	.72228	.71584	3.046			
C140	1,2-Dichloropropane	.38396	.42809	.40470	.37778	.37631	.39417	5.606	*		
C143	Cis-1,3-Dichloropropene	.66506	.72550	.73193	.70876	.71683	.70962	3.720			(Conc=24.0,60.0,120.0,180.0,240..
C150	Trichloroethene	.41267	.43627	.43135	.40227	.41185	.41888	3.422			
C155	Dibromochloromethane	.52949	.54948	.58366	.56420	.56409	.55818	3.605			
C160	1,1,2-Trichloroethane	.38450	.40138	.40244	.38308	.37562	.38941	3.059			
C165	Benzene	1.14973	1.23271	1.18381	1.13538	1.15072	1.17047	3.337			
C172	Trans-1,3-Dichloropropen	.48574	.52885	.53842	.52545	.52350	.52039	3.882			(Conc=16.0,40.0,80.0,120.0,160.0)
C175	2-Chloroethylvinylether	.00413	.01970	.02517	.02600	.03276	.02155	50.061			
C180	Bromoform	.31978	.34839	.36757	.36929	.37940	.35689	6.607		**	
C205	4-Methyl-2-Pentanone	.44550	.48502	.45648	.43350	.42956	.45001	4.943			
C210	2-Hexanone	.32059	.33866	.31857	.30723	.30414	.31784	4.285			
C220	Tetrachloroethene	.34736	.37707	.37784	.34445	.36580	.36250	4.391			
C225	1,1,2,2-Tetrachloroethan	.68266	.74249	.74545	.72842	.71216	.72224	3.568		**	
C230	Toluene	.94694	1.00348	.96785	.92511	.93058	.95479	3.341	*		

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

22

Initial Calibration Data
HSL Compounds

Case No: 2744 Instrument ID: V3

Contractor: ENSECO - Ercs Lab Calibration Date: 02/27/89

Contract No: GED Engineering

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % RSD for CCC is 30%

Laboratory ID:		>W497	>W496	>W498	>W499	>W500				
		RF	RF	RF	RF	RF				
Compound		20.00	50.00	100.00	150.00	200.00	$\overline{RF}$	% RSD	CCC	SPCC
CS05	D8-Toluene	1.19272	1.21132	1.19230	1.17367	1.15681	1.18537	1.753		
C235	Chlorobenzene	1.13256	1.16438	1.17482	1.12542	1.12369	1.14418	2.074		**
C240	Ethylbenzene	.54191	.56196	.57335	.55173	.55254	.55630	2.136	*	
CXXX	Xylene (m)	.75822	.75830	.77298	.72001	.75378	.75266	2.610		
C245	Styrene	1.26492	1.27539	1.32038	1.25233	1.28682	1.27997	2.027		
CXXX	Xylenes (o , p)	.79090	.79665	.81238	.76359	.79371	.79145	2.230		
CS10	Bromofluorobenzene (BFB)	.63385	.63116	.63904	.63080	.62028	.63103	1.086		
C250	Xylene (Total)	.78132	.78352	.79976	.74950	.78128	.77908	2.342		

(Conc=50.0,50.0,50.0,50.0,50.0)
(Conc=40.0,100.0,200.0,300.0,400.
(Conc=50.0,50.0,50.0,50.0,50.0)
(Conc=60.0,150.0,300.0,450.0,600.

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: 2744

Calibration Date: 03/03/89

Contractor: ENSECO,INC/ERCO LAB

Time: 20:24

Contract No: Geo Engineering

Laboratory ID: >6505

Instrument ID: V2

Initial Calibration Date: 02/27/89

Minimum $\overline{RF}$ for SPCC is .300

Maximum % Diff for CCC is ~~30%~~ 25

ML 3-30-89

	Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
C010	Chloromethane	2.53698	2.40510	5.20		**	
C015	Bromomethane	1.56894	1.85276	18.09			
C020	Vinyl Chloride	2.04060	1.99083	2.44	*		
C025	Chloroethane	1.11193	1.05859	4.80			
C030	Methylene Chloride	2.06859	2.10749	1.88			
C035	Acetone	.82187	.85273	3.75			
C040	Carbon Disulfide	6.18124	5.84637	5.42			
C045	1,1-Dichloroethene	1.69840	1.68786	.62	*		
C050	1,1-Dichloroethane	3.91874	3.80086	3.01		**	
C053	Trans-1,2-Dichloroethene	1.83184	1.71733	6.25			
C060	Chloroform	4.33985	4.31975	.46	*		
C065	1,2-Dichloroethane	3.73905	3.89164	4.08			
CS15	D4-1,2-Dichloroethane	2.89304	2.79554	3.37			
C110	2-Butanone	.20238	.21798	7.71			
C115	1,1,1-Trichloroethane	.63604	.71078	11.75			
C120	Carbon Tetrachloride	.61350	.68031	10.89			
C125	Vinyl Acetate	.68747	.91861	33.62			
C130	Bromodichloromethane	.75377	.85258	13.11			
C140	1,2-Dichloropropane	.43472	.46714	7.46	*		
C143	Cis-1,3-Dichloropropene	.72875	.79834	9.55			(Conc=60.00)
C150	Trichloroethene	.39478	.40826	3.41			
C155	Dibromochloromethane	.58353	.64273	10.14			
C160	1,1,2-Trichloroethane	.37468	.41652	11.17			
C165	Benzene	1.18393	1.26713	7.03			
C172	Trans-1,3-Dichloropropen	.58272	.65214	11.91			(Conc=40.00)
C175	2-Chloroethylvinylether	.22009	.20881	5.13			
C180	Bromoform	.47199	.48816	3.43		**	
C205	4-Methyl-2-Pentanone	.58998	.53841	8.74			
C210	2-Hexanone	.40852	.36432	10.82			
C220	Tetrachloroethene	.38719	.38136	1.51			
C225	1,1,2,2-Tetrachloroethan	.73536	.77912	5.95		**	
C230	Toluene	.86449	.88596	2.48	*		

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

OK Ogw

Continuing Calibration Check
HSL Compounds

Case No: 2744

Calibration Date: 03/03/89

Contractor: ENSECO,INC/ERCO LAB

Time: 20:24

Contract No: Geo Engineering

Laboratory ID: >6505

Instrument ID: V2

Initial Calibration Date: 02/27/89

Minimum $\overline{RF}$ for SPCC is .300

Maximum % Diff for CCC is ~~30%~~ 25

M 3-30-89

	Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
CS05	D8-Toluene	1.17879	1.40338	19.05			
C235	Chlorobenzene	1.06827	1.11182	4.08		**	
C240	Ethylbenzene	.46863	.48281	3.03	*		
CXXX	Xylene (m)	.64969	.70463	8.46			
C245	Styrene	1.13554	1.20197	5.85			
CXXX	Xylenes (o , p)	.68739	.73203	6.50			(Conc=100.00)
CS10	Bromofluorobenzene (BFB)	.64224	.62922	2.03			
C250	Xylene (Total)	.67658	.72281	6.83			(Conc=150.00)

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: 2744

Calibration Date: 03/02/89

Contractor: ENSECO - Erco lab

Time: 10:28

Contract No: Geo Engineering

Laboratory ID: >W569

Instrument ID: V3

Initial Calibration Date: 02/27/89

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % Diff for CCC is 25%%

	Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
C010	Chloromethane	1.57359	1.57417	.04		**	
C015	Bromomethane	1.25725	1.45889	16.04			
C020	Vinyl Chloride	1.49455	1.57013	5.06	*		
C025	Chloroethane	.77680	.83135	7.02			
C030	Methylene Chloride	1.88292	2.35019	24.82			
C035	Acetone	.49390	.55714	12.80			
C040	Carbon Disulfide	5.78798	6.90282	19.26			
C045	1,1-Dichloroethene	1.92777	2.02430	5.01	*		
C050	1,1-Dichloroethane	3.52692	3.75255	6.40		**	
C053	Trans-1,2-Dichloroethene	2.01998	2.13267	5.58			
C060	Chloroform	4.07871	4.29447	5.29	*		
C065	1,2-Dichloroethane	3.22993	3.45833	7.07			
CS15	D4-1,2-Dichloroethane	2.33839	2.32266	.67			
C110	2-Butanone	.16299	.18447	13.18			
C115	1,1,1-Trichloroethane	.51913	.62221	19.86			
C120	Carbon Tetrachloride	.50346	.56385	12.00			
C125	Vinyl Acetate	.47259	.77660	64.33			
C130	Bromodichloromethane	.71584	.80887	13.00			
C140	1,2-Dichloropropane	.39417	.45330	15.00	*		
C143	Cis-1,3-Dichloropropene	.70962	.82056	15.63			(Conc=60.00)
C150	Trichloroethene	.41888	.42846	2.29			
C155	Dibromochloromethane	.55818	.57707	3.38			
C160	1,1,2-Trichloroethane	.38941	.43595	11.95			
C165	Benzene	1.17047	1.33357	13.93			
C172	Trans-1,3-Dichloropropen	.52039	.60979	17.18			(Conc=40.00)
C175	2-Chloroethylvinylether	.02155	.11531	435.05			
C180	Bromoform	.35689	.32932	7.72		**	
C205	4-Methyl-2-Pentanone	.45001	.52348	16.33			
C210	2-Hexanone	.31784	.36987	16.37			
C220	Tetrachloroethene	.36250	.35147	3.04			
C225	1,1,2,2-Tetrachloroethan	.72224	.85698	18.66		**	
C230	Toluene	.95479	1.05102	10.08	*		

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: 2744

Contractor: ENSECO – Ereo lab

Contract No: Geo Engineering

Instrument ID: 43

Calibration Date: 03/02/89

Time: 10:28

Laboratory ID: >W569

Initial Calibration Date: 02/27/89

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % Diff for CCC is 25%%

	Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
CS05	D8-Toluene	1.18537	1.44095	21.56			
C235	Chlorobenzene	1.14418	1.20592	5.40		**	
C240	Ethylbenzene	.55630	.58299	4.80	*		
CXXX	Xylene (m)	.75266	.80578	7.06			
C245	Styrene	1.27997	1.35292	5.70			
CXXX	Xylenes (o , p)	.79145	.84418	6.66			(Conc=100.00)
CS10	Bromofluorobenzene (BFB)	.63103	.63062	.06			
C250	Xylene (Total)	.77908	.83289	6.91			(Conc=150.00)

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

27

Three

HAZARDOUS SUBSTANCE (HSL) LIST
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-1
Lab ID: 002744-0001-SA Enseco ID: 2016163
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 02 MAR 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	5000	
Bromomethane	ND	ug/L	5000	
Vinyl chloride	ND	ug/L	5000	
Chloroethane	ND	ug/L	5000	
Methylene chloride	810	ug/L	12000	J
Acetone	ND	ug/L	12000	
Carbon disulfide	ND	ug/L	2500	
1,1-Dichloroethene	ND	ug/L	2500	
1,1-Dichloroethane	ND	ug/L	2500	
1,2-Dichloroethene (total)	ND	ug/L	2500	
Chloroform	ND	ug/L	2500	
1,2-Dichloroethane	ND	ug/L	2500	
2-Butanone	ND	ug/L	5000	
1,1,1-Trichloroethane	ND	ug/L	2500	
Carbon tetrachloride	ND	ug/L	2500	
Vinyl acetate	ND	ug/L	5000	
Bromodichloromethane	ND	ug/L	2500	
1,2-Dichloropropane	ND	ug/L	2500	
trans-1,3-Dichloropropene	ND	ug/L	2500	
Trichloroethene	ND	ug/L	2500	
Dibromochloromethane	ND	ug/L	2500	
1,1,2-Trichloroethane	ND	ug/L	2500	
Benzene	ND	ug/L	2500	
cis-1,3-Dichloropropene	ND	ug/L	2500	
Bromoform	ND	ug/L	2500	
4-Methyl-2-pentanone	ND	ug/L	5000	
2-Hexanone	ND	ug/L	5000	
1,1,2,2-Tetrachloroethane	ND	ug/L	2500	
Tetrachloroethene	ND	ug/L	2500	
Toluene	ND	ug/L	2500	
Chlorobenzene	ND	ug/L	2500	
Ethyl benzene	8600	ug/L	2500	
Styrene	ND	ug/L	2500	
Xylene (total)	45000	ug/L	2500	
Toluene-d8	101	%	--	
4-Bromofluorobenzene	102	%	--	
1,2-Dichloroethane-d4	104	%	--	

Note J : Result is detected below reporting limit or is an estimated concentration.

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

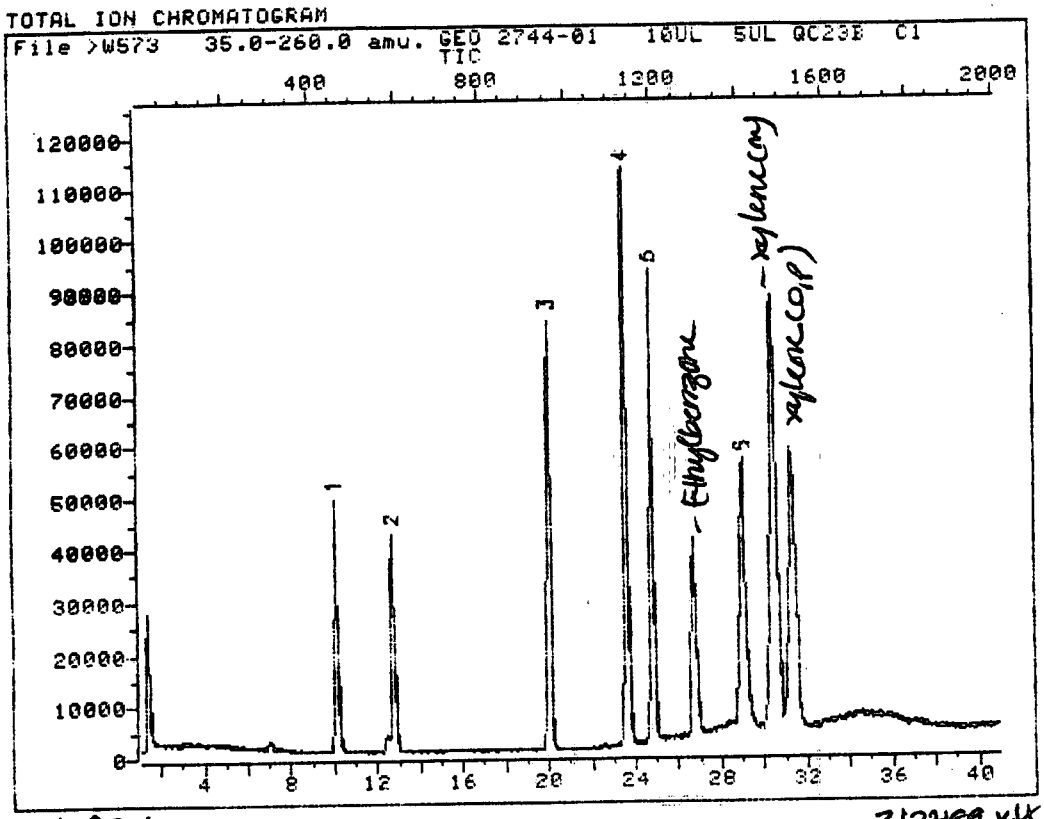
Client Name: GeoEngineering, Inc.
Client ID: 19054-1
Lab ID: 002744-0001-SA Enseco ID: 2016163
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 02 MAR 89

Parameter	Result	Units	Reporting Limit
No unknowns	NA	NA	NA

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

TOTAL ION CHROMATOGRAM



10954-1

3/24/89 KH

Data File: >W573::D9 Quant Output File: ^W573::QD
Name: GEO 2744-01 10UL
Misc: 5UL QC23B C1

Id File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 890302 11:21

Operator ID: GREG
Quant Time: 890302 15:18
Injected at: 890302 14:36

W572 LCSD/A&A
W561 2641-02
X
checked
W570
W571
W572
W570
MR 3/2

30

* Compound is ISTD

QUANT REPORT

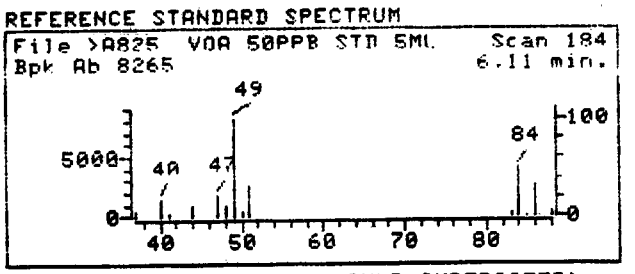
Operator ID: GREG
Output File: ^W573::QO
Data File: >W573::D9
Name: GEO 2744-01 10UL
Misc: 5UL QC23B C1
19054-1
ID File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 890302 11:21

Quant Rev: 6
Quant Time: 890302 15:18
Injected at: 890302 14:36
Dilution Factor: 1.00000

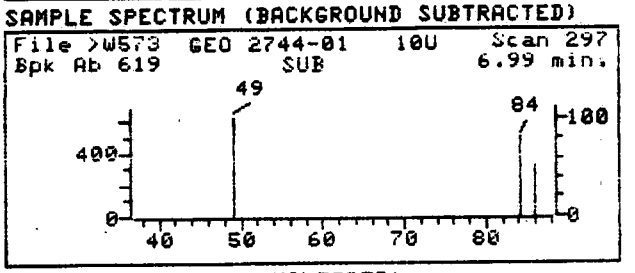
		Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI01	Bromochloromethane	10.07	128.0	73454	50.00	ug/L	80
6)	C030	Methylene Chloride	6.99	84.0	5591	1.62	ug/L	81
14)	CS15	D4-1,2-Dichloroethane	12.73	65.0	177063	51.89	ug/L 104	92
15)	*CI10	1,4-Difluorobenzene	20.03	114.0	373306	50.00	ug/L	100
30)	*CI20	D5-Chlorobenzene	24.77	117.0	314945	50.00	ug/L	76
35)	C230	Toluene	23.76	92.0	1332	.20	ug/L 39	99
36)	CS05	D8-Toluene	23.56	98.0	459330	50.61	ug/L 101	96
38)	C240	Ethylbenzene	26.69	106.0	62872	17.12	ug/L	95
39)	CXXX	Xylene (m)	30.43	106.0	270373	53.23	ug/L	99
40)	C245	Styrene	30.47	104.0	10970	1.28	ug/L r1 off	100
41)	CXXX	Xylenes (o , p)	31.28	106.0	195726	36.81	ug/L	96
42)	CS10	Bromofluorobenzene (BFB)	29.02	95.0	203131	51.14	ug/L 102	55
43)	C250	Xylene (Total)	31.28	106.0	193893	36.96	ug/L	95

* Compound is ISTD

REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



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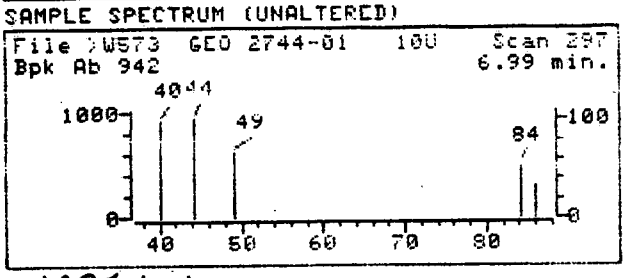
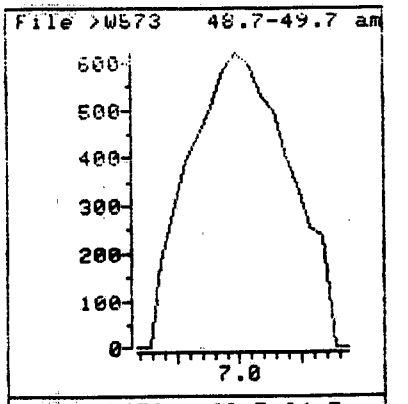
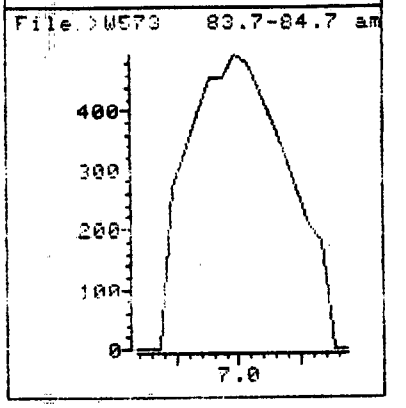




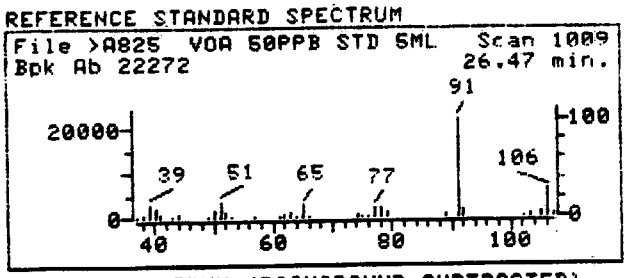


10954-1

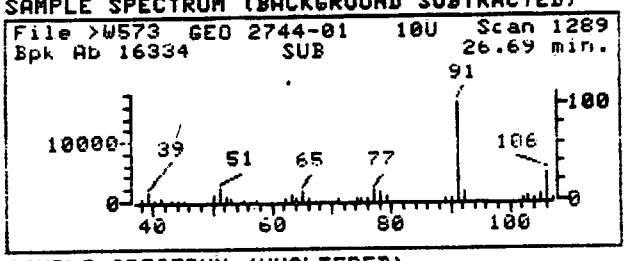
Data File: >W573::D9 Quant Output File: ^W573::00
Name: GEO 2744-01 10UL
Misc: 5UL QC23B C1
Quant Time: 890302 15:18 Quant ID File: VOAID3::$$
Injected at: 890302 14:36 Last Calibration: 890302 11:21

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 297
Retention Time: 6.99 min.
Quant Ion: 84.0
Area: 5591
Concentration: 1.62 ug/L
q-value: 81

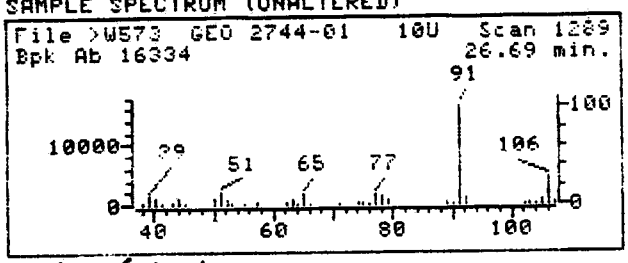
REFERENCE STANDARD SPECTRUM

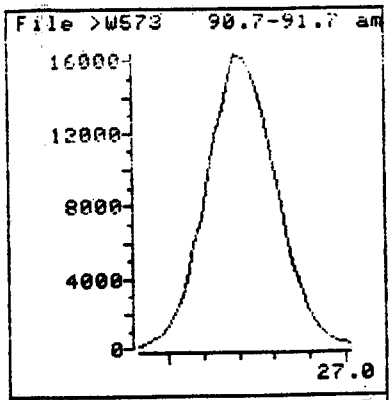


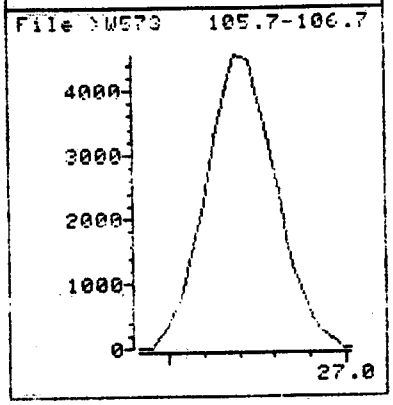
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







10954-1

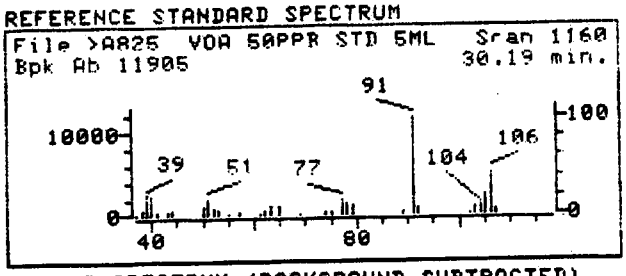
Data File: >W573::D9
Name: GEO 2744-01 10UL
Misc: 5UL OC23B C1
Quant Time: 890302 15:18
Injected at: 890302 14:36

Quant Output File: ^W573::QO

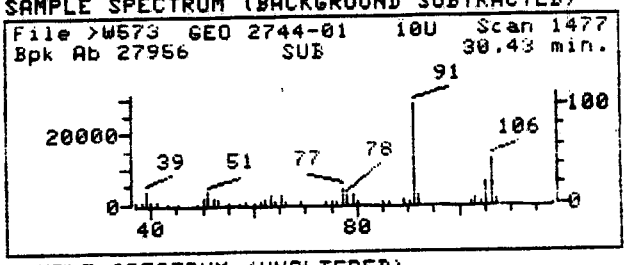
Quant ID File: VOAID3::$$
Last Calibration: 890302 11:21

Compound No: 38
Compound Name: C240 Ethylbenzene
Scan Number: 1289
Retention Time: 26.69 min.
Quant Ion: 106.0
Area: 62872
Concentration: 17.12 ug/L
q-value: 95

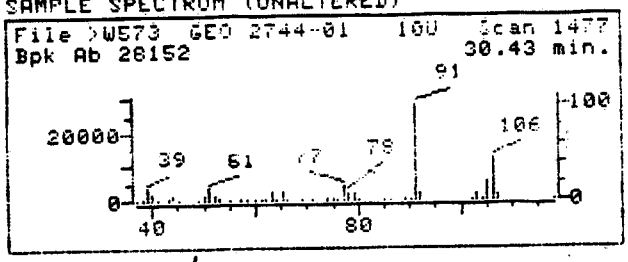
REFERENCE STANDARD SPECTRUM

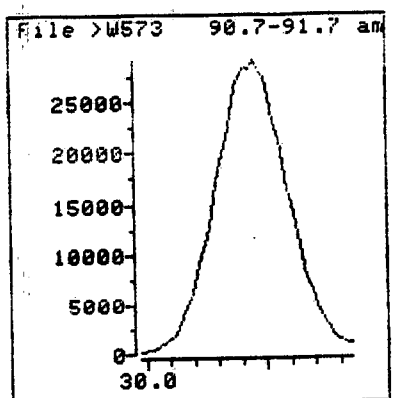


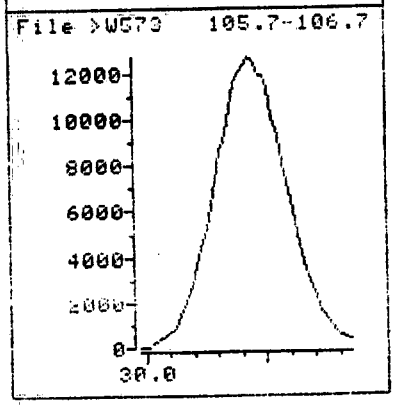
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







10954-1

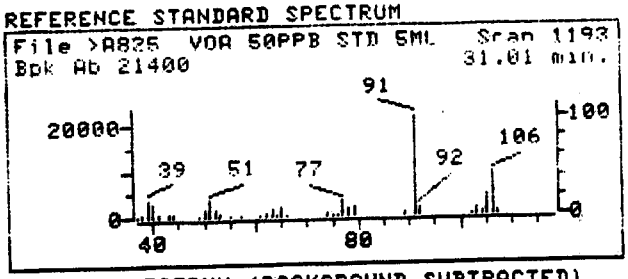
Data File: >W573::D9
Name: GEO 2744-01 10UL
Misc: 5UL QC23B C1
Quant Time: 890302 15:18
Injected at: 890302 14:36

Quant Output File: ^W573::00

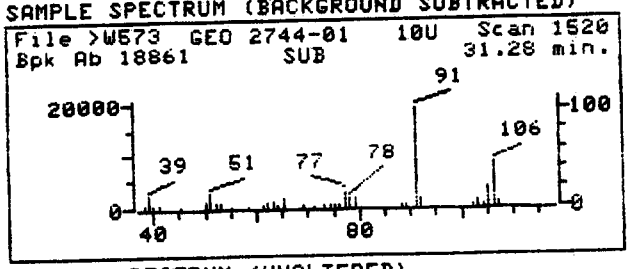
Quant ID File: VOAID3::$$
Last Calibration: 890302 11:21

Compound No: 39
Compound Name: CXXX Xylene (m)
Scan Number: 1477
Retention Time: 30.43 min.
Quant Ion: 106.0
Area: 270373
Concentration: 53.27 ug/L
q-value: 99

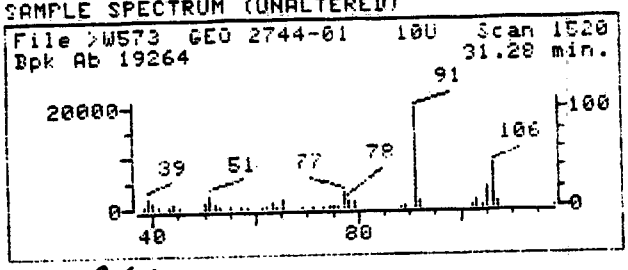
REFERENCE STANDARD SPECTRUM

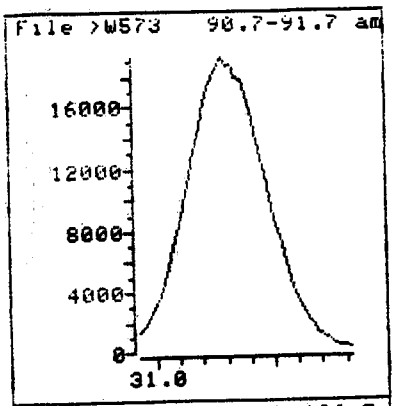


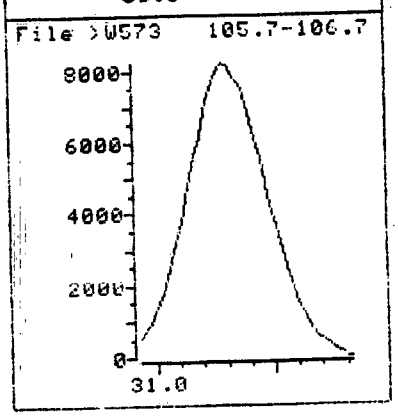
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







10954-1

Data File: >W573::D9
Name: GEO 2744-01 10UL
Misc: 5UL QC23B C1
Quant Time: 890302 15:18
Injected at: 890302 14:36

Quant Output File: ^W573::QO

Quant ID File: VOAID3::$$
Last Calibration: 890302 11:21

Compound No: 41
Compound Name: CXXX Xylenes (o , p)
Scan Number: 1520
Retention Time: 31.28 min.
Quant Ion: 106.0
Area: 195726
Concentration: 36.81 ug/L
q-value: 96

HAZARDOUS SUBSTANCE (HSL) LIST
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-2
Lab ID: 002744-0002-SA Enseco ID: 2016164
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 02 MAR 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	1000	
Bromomethane	ND	ug/L	1000	
Vinyl chloride	ND	ug/L	1000	
Chloroethane	ND	ug/L	1000	
Methylene chloride	190	ug/L	2500	J
Acetone	ND	ug/L	2500	
Carbon disulfide	ND	ug/L	500	
1,1-Dichloroethene	ND	ug/L	500	
1,1-Dichloroethane	ND	ug/L	500	
1,2-Dichloroethene (total)	ND	ug/L	500	
Chloroform	ND	ug/L	500	
1,2-Dichloroethane	ND	ug/L	500	
2-Butanone	ND	ug/L	1000	
1,1,1-Trichloroethane	ND	ug/L	500	
Carbon tetrachloride	ND	ug/L	500	
Vinyl acetate	ND	ug/L	1000	
Bromodichloromethane	ND	ug/L	500	
1,2-Dichloropropane	ND	ug/L	500	
trans-1,3-Dichloropropene	ND	ug/L	500	
Trichloroethene	ND	ug/L	500	
Dibromochloromethane	ND	ug/L	500	
1,1,2-Trichloroethane	ND	ug/L	500	
Benzene	ND	ug/L	500	
cis-1,3-Dichloropropene	ND	ug/L	500	
Bromoform	ND	ug/L	500	
4-Methyl-2-pentanone	ND	ug/L	1000	
2-Hexanone	ND	ug/L	1000	
1,1,2,2-Tetrachloroethane	ND	ug/L	500	
Tetrachloroethene	ND	ug/L	500	
Toluene	ND	ug/L	500	
Chlorobenzene	ND	ug/L	500	
Ethyl benzene	ND	ug/L	500	
Styrene	ND	ug/L	500	
Xylene (total)	2600	ug/L	500	
Toluene-d8	102	%	--	
4-Bromofluorobenzene	103	%	--	
1,2-Dichloroethane-d4	104	%	--	

Note J : Result is detected below reporting limit or is an estimated concentration.

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

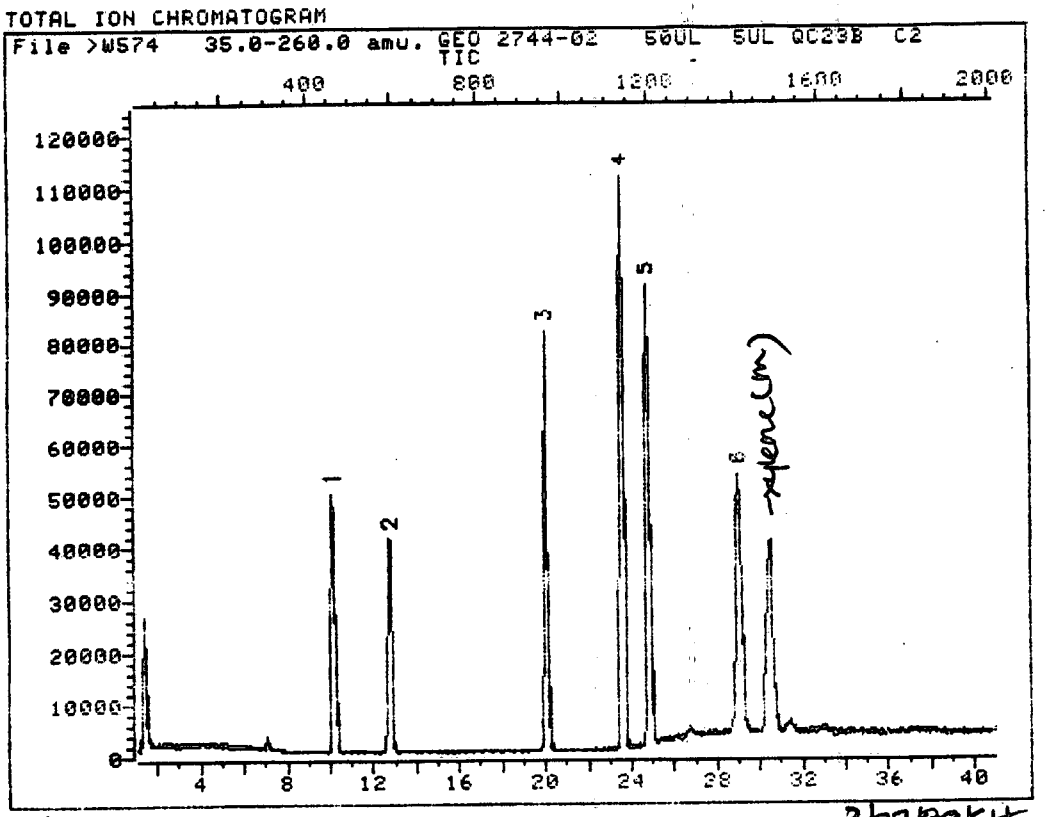
Client Name: GeoEngineering, Inc.
Client ID: 19054-2
Lab ID: 002744-0002-SA Enseco ID: 2016164
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 02 MAR 89

Parameter	Result	Units	Reporting Limit
No unknowns	NA	NA	NA

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

TOTAL ION CHROMATOGRAM



19054-2

3/27/89 KH

Data File: >W574::D9 Quant Output File: ^W574::QO
Name: GEO 2744-02 50UL
Misc: 5UL QC23B C2

Id File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@9/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 890302 11:21

Operator ID: GREG
Quant Time: 890302 16:07
Injected at: 890302 15:25

W573 2744-1

W562 2641-4

Integration
Spectra checked
All peaks
If no. number
Dilution
W571 W572

W570

NR 3/2

38

QUANT REPORT

Operator ID: GREG
Output File: ^W574::Q0
Data File: >W574::D9
Name: GEO 2744-02 50UL
Misc: 5UL QC23B C2
10954-2
ID File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 890302 11:21

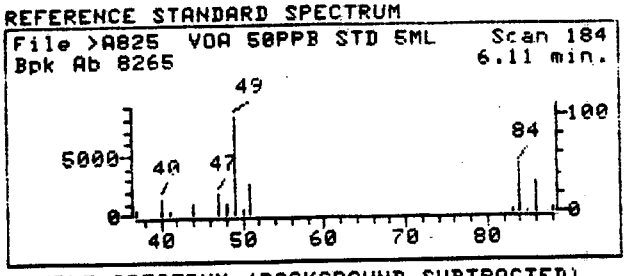
Quant Rev: 6
Quant Time: 890302 16:07
Injected at: 890302 15:25
Dilution Factor: 1.00000

		Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI01	Bromochloromethane	10.12	128.0	73000	50.00	ug/L	79
6)	C030	Methylene Chloride	7.05	84.0	6579	1.92	ug/L	80
14)	CS15	D4-1,2-Dichloroethane	12.76	65.0	176116	51.93	ug/L 104	94
15)	*CI10	1,4-Difluorobenzene	20.02	114.0	366739	50.00	ug/L	100
30)	*CI20	D5-Chlorobenzene	24.77	117.0	309659	50.00	ug/L	77
36)	CS05	D8-Toluene	23.59	98.0	456383	51.14	ug/L 102	93
38)	C240	Ethylbenzene	26.72	106.0	2416	~~.67~~	ug/L 5rg	98
39)	CXXX	Xylene (m)	30.44	106.0	122574	24.56	ug/L	97
40)	C245	Styrene	30.40	104.0	1596	~~.19~~	ug/L 5rg	100
41)	CXXX	Xylenes (o , p)	31.37	106.0	7989	~~1.53~~	ug/L	98
42)	CS10	Bromofluorobenzene (BFB)	29.00	95.0	202018	51.73	ug/L 103	55
43)	C250	Xylene (Total)	31.27	106.0	3148	.61	ug/L	91

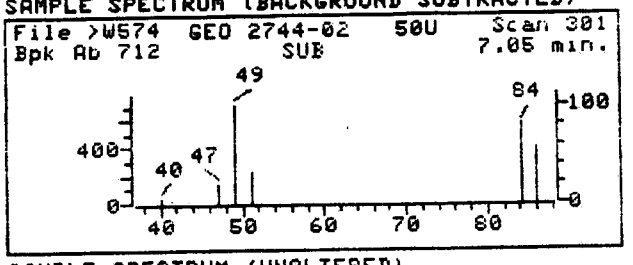
3/27/89 EH

* Compound is ISTD

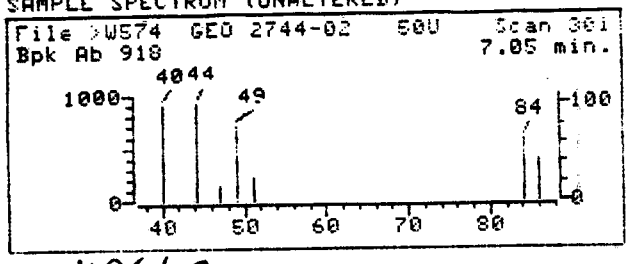
REFERENCE STANDARD SPECTRUM

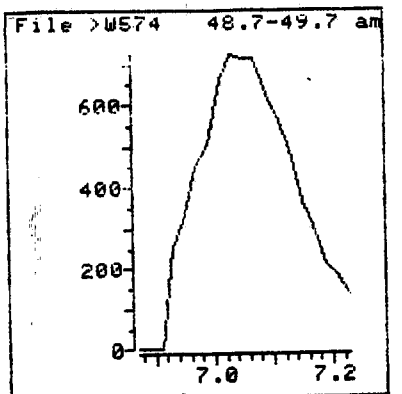


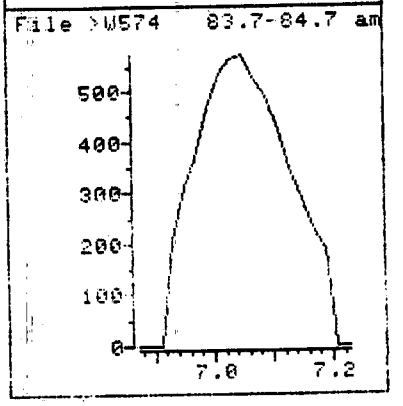
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







W0954-2

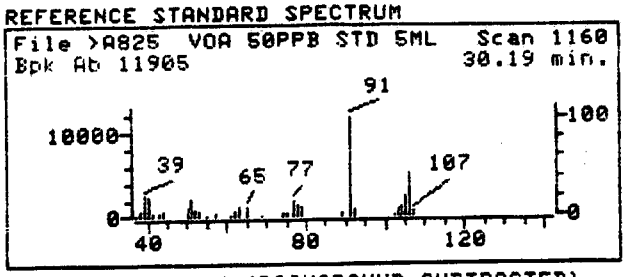
Data File: >W574::D9
Name: GEO 2744-02 50UL
Misc: 5UL QC23B C2
Quant Time: 890302 16:07
Injected at: 890302 15:25

Quant Output File: ^W574::00

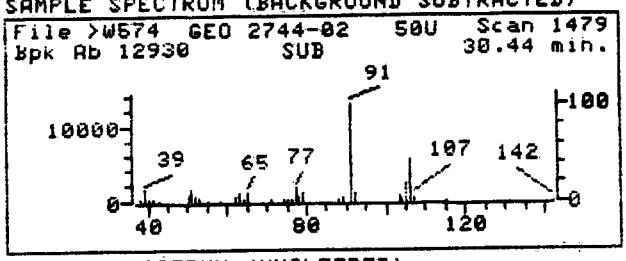
Quant ID File: VOAID3::$$
Last Calibration: 890302 11:21

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 301
Retention Time: 7.05 min.
Quant Ion: 84.0
Area: 6579
Concentration: 1.92 ug/L
q-value: 80

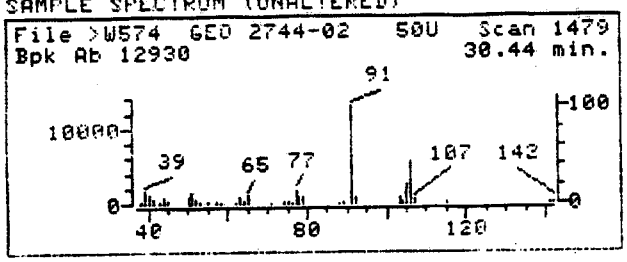
REFERENCE STANDARD SPECTRUM

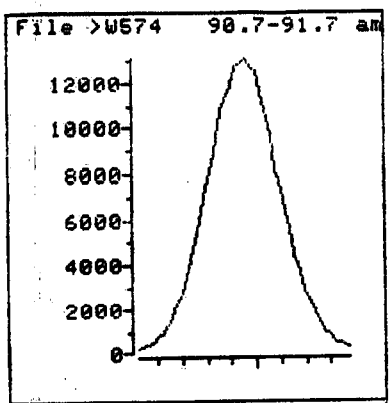


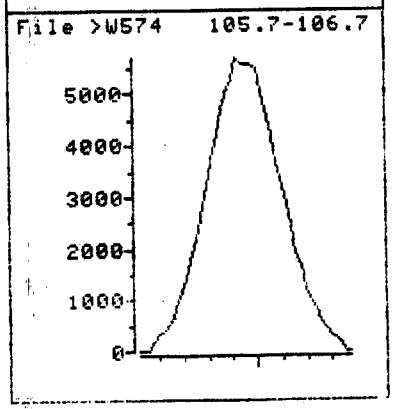
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







10954-2

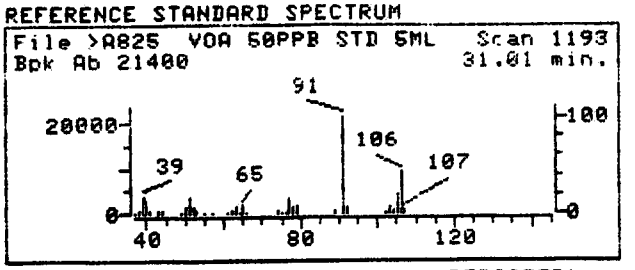
Data File: >W574::D9
Name: GEO 2744-02 50UL
Misc: 5UL QC23B C2
Quant Time: 890302 16:07
Injected at: 890302 15:25

Quant Output File: ^W574::QO

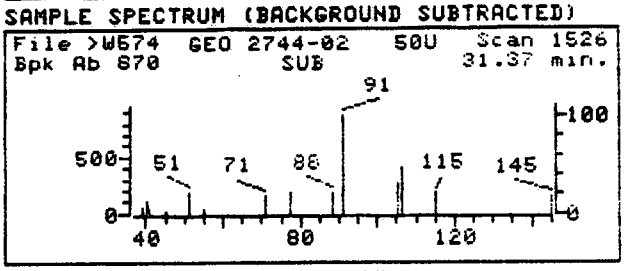
Quant ID File: VOAID3::$$
Last Calibration: 890302 11:21

Compound No: 39
Compound Name: CXXX Xylene (m)
Scan Number: 1479
Retention Time: 30.44 min.
Quant Ion: 106.0
Area: 122574
Concentration: 24.56 ug/L
q-value: 97

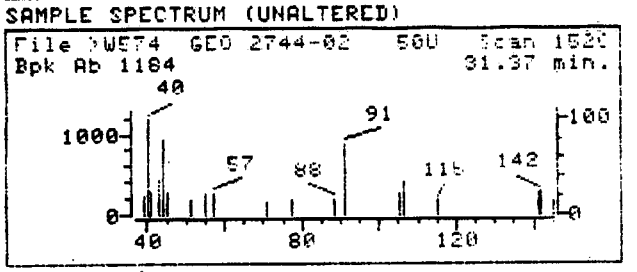
REFERENCE STANDARD SPECTRUM

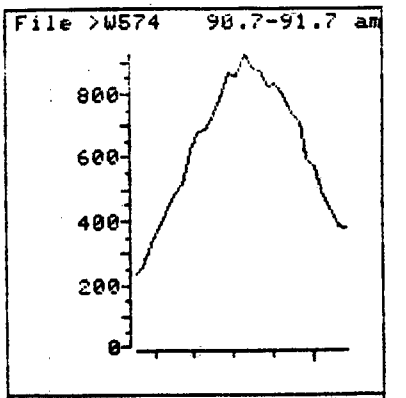


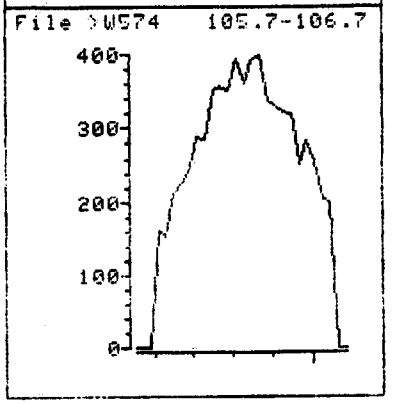
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







109S4-2

Data File: >W574::D9
Name: GEO 2744-02 50UL
Misc: 5UL QC23B C2
Quant Time: 890302 16:07
Injected at: 890302 15:25

Quant Output File: ^W574::QO

Quant ID File: VOAID3::$$
Last Calibration: 890302 11:21

Compound No: 41
Compound Name: CXXX Xylenes (o , p)
Scan Number: 1526
Retention Time: 31.37 min.
Quant Ion: 106.0
Area: 7989
Concentration: 1.53 ug/L
q-value: 98

HAZARDOUS SUBSTANCE (HSL) LIST
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-3
Lab ID: 002744-0003-SA Enseco ID: 2016165
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 03 MAR 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	2500	
Bromomethane	ND	ug/L	2500	
Vinyl chloride	ND	ug/L	2500	
Chloroethane	ND	ug/L	2500	
Methylene chloride	1200	ug/L	6200	J
Acetone	ND	ug/L	6200	
Carbon disulfide	ND	ug/L	1200	
1,1-Dichloroethene	ND	ug/L	1200	
1,1-Dichloroethane	ND	ug/L	1200	
1,2-Dichloroethene (total)	ND	ug/L	1200	
Chloroform	ND	ug/L	1200	
1,2-Dichloroethane	ND	ug/L	1200	
2-Butanone	ND	ug/L	2500	
1,1,1-Trichloroethane	ND	ug/L	1200	
Carbon tetrachloride	ND	ug/L	1200	
Vinyl acetate	ND	ug/L	2500	
Bromodichloromethane	ND	ug/L	1200	
1,2-Dichloropropane	ND	ug/L	1200	
trans-1,3-Dichloropropene	ND	ug/L	1200	
Trichloroethene	ND	ug/L	1200	
Dibromochloromethane	ND	ug/L	1200	
1,1,2-Trichloroethane	ND	ug/L	1200	
Benzene	ND	ug/L	1200	
cis-1,3-Dichloropropene	ND	ug/L	1200	
Bromoform	ND	ug/L	1200	
4-Methyl-2-pentanone	ND	ug/L	2500	
2-Hexanone	ND	ug/L	2500	
1,1,2,2-Tetrachloroethane	ND	ug/L	1200	
Tetrachloroethene	ND	ug/L	1200	
Toluene	ND	ug/L	1200	
Chlorobenzene	ND	ug/L	1200	
Ethyl benzene	5600	ug/L	1200	
Styrene	ND	ug/L	1200	
Xylene (total)	23000	ug/L	1200	
Toluene-d8	101	%	--	
4-Bromofluorobenzene	106	%	--	
1,2-Dichloroethane-d4	95.0	%	--	

Note J : Result is detected below reporting limit or is an estimated concentration.

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

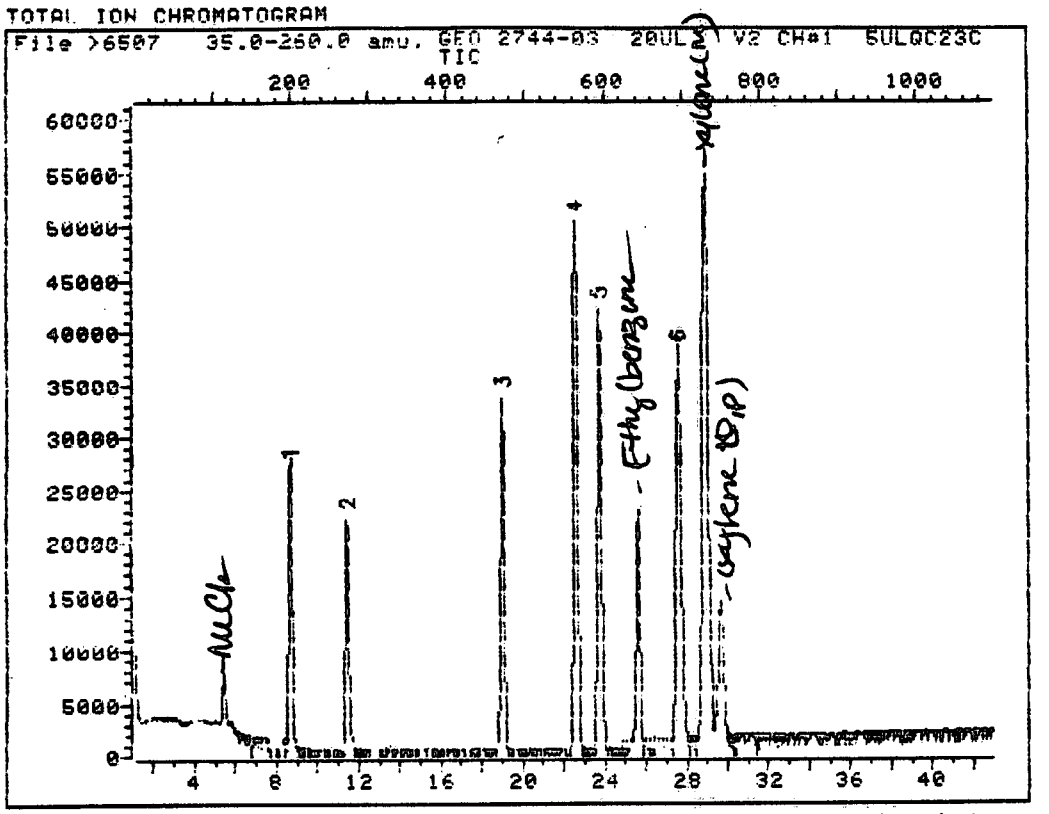
Client Name: GeoEngineering, Inc.
Client ID: 19054-3
Lab ID: 002744-0003-SA Enseco ID: 2016165
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 03 MAR 89

Parameter	Result	Units	Reporting Limit
No unknowns	NA	NA	NA

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

TOTAL ION CHROMATOGRAM



10954-3 3/27/89 KH

Data File: >6507::D1 Quant Output File: ^6507::QT
Name: GEO 2744-03 20UL
Misc: V2 CH#1 5ULQC23C

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT 1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 890303 21:19

Operator ID: NORA
Quant Time: 890303 23:55
Injected at: 890303 23:11

FOR [illegible]
[illegible]

Previous sample [illegible] 6506 [illegible] VBLK
[illegible] 6503 2730-03
[illegible]
All peaks accounted for? Yes___ No___
[illegible]
6506
6497 6498
[illegible]

QUANT REPORT

Operator ID: NORA
Output File: ^6507::QT
Data File: >6507::D1
Name: GEO 2744-03 20UL
Misc: V2 CH#1 5ULQC23C
10954-3
ID File: VOAID2::$$
Title: HSL VOLATILES:8FT 1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 890303 21:19

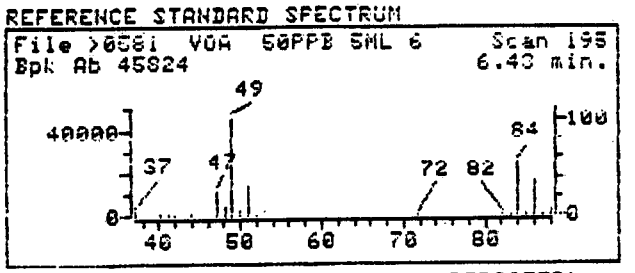
Quant Rev: 6
Quant Time: 890303 23:55
Injected at: 890303 23:11
Dilution Factor: 1.00000

		Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI01	Bromochloromethane	8.66	128.0	49277	50.00	UG/L	80
6)	C030	Methylene Chloride	5.45	84.0	10295	4.96	UG/L	56
14)	CS15	D4-1,2-Dichloroethane	11.44	65.0	130547	47.38	UG/L 95	96
15)	*CI10	1,4-Difluorobenzene	19.04	114.0	200354	50.00	UG/L	100
30)	*CI20	D5-Chlorobenzene	23.77	117.0	178614	50.00	UG/L	80
36)	CS05	D8-Toluene	22.59	98.0	251999	50.27	UG/L 101	98
38)	C240	Ethylbenzene	25.65	106.0	38919	22.52	UG/L	96
39)	CXXX	Xylene (m)	28.93	106.0	175891	69.88	UG/L	98
41)	CXXX	Xylenes (o , p)	29.69	106.0	54752	20.94	UG/L	99
42)	CS10	Bromofluorobenzene (BFB)	27.59	95.0	119034	52.96	UG/L 106	78
43)	C250	Xylene (Total)	29.69	106.0	54752	21.20	UG/L	99

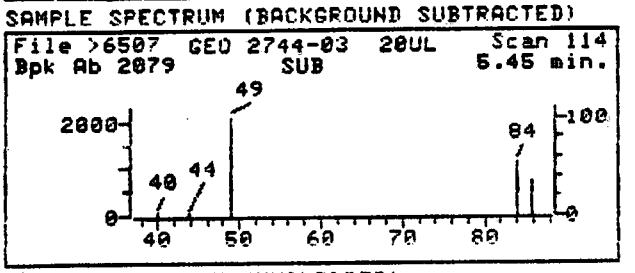
3/27/89 EH

* Compound is ISTD

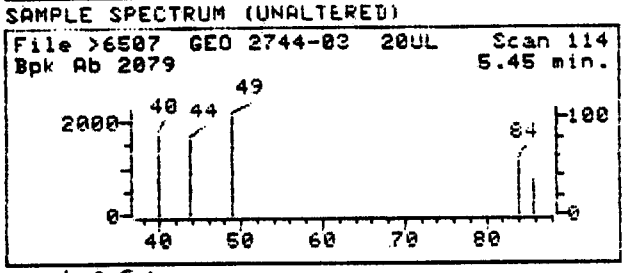
REFERENCE STANDARD SPECTRUM

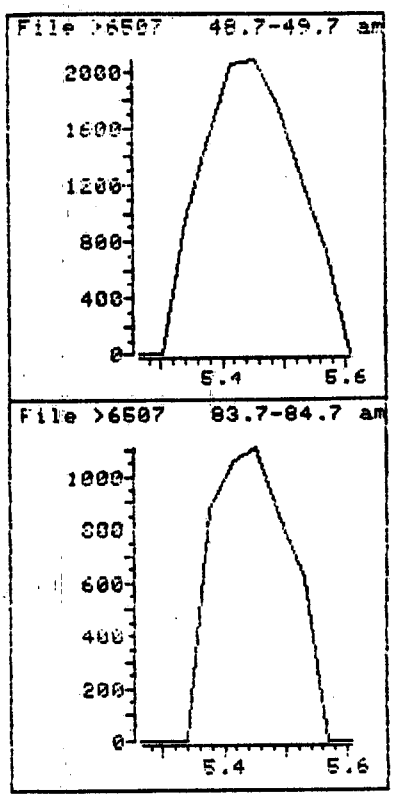


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





10954-3

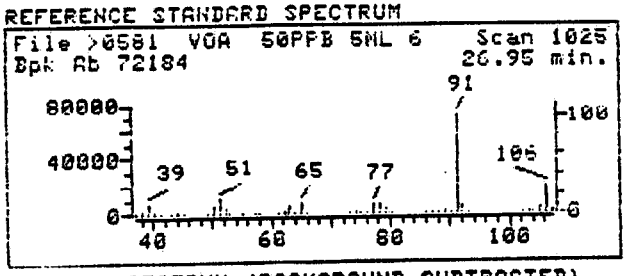
Data File: >6507::D1
Name: GEO 2744-03 20UL
Misc: V2 CH#1 5ULQC23C
Quant Time: 890303 23:55
Injected at: 890303 23:11

Quant Output File: ^6507::QT

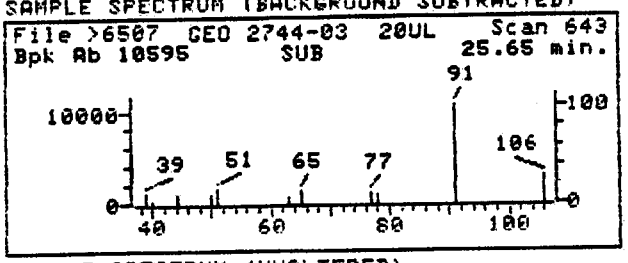
Quant ID File: VOAID2::$$
Last Calibration: 890303 21:19

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 114
Retention Time: 5.45 min.
Quant Ion: 84.0
Area: 10295
Concentration: 4.96 UG/L
q-value: 56

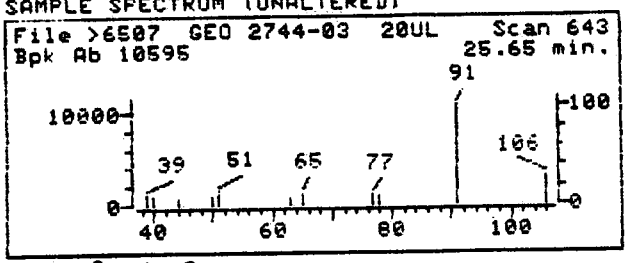
REFERENCE STANDARD SPECTRUM

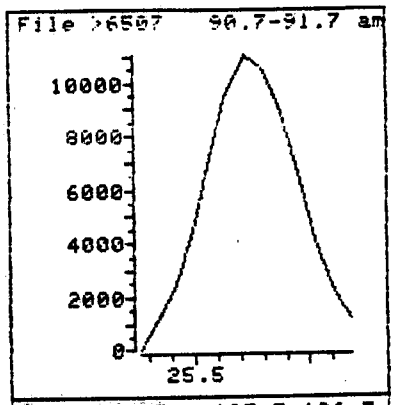


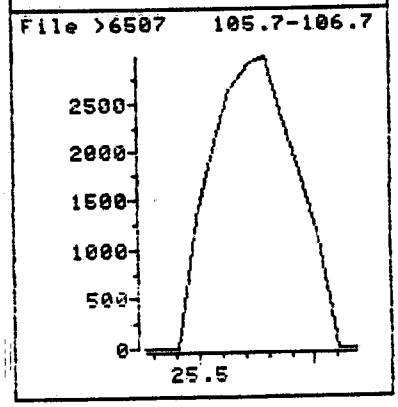
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







10954-3

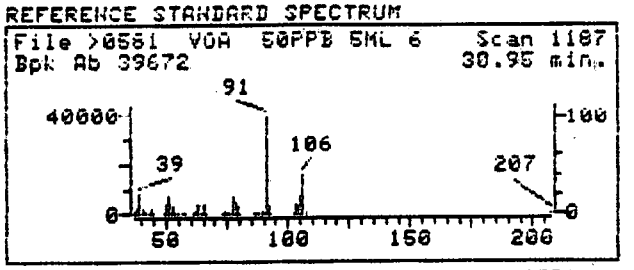
Data File: >6507::D1
Name: GEO 2744-03 20UL
Misc: V2 CH#1 5ULQC23C
Quant Time: 890303 23:59
Injected at: 890303 23:11

Quant Output File: ^6507::QT

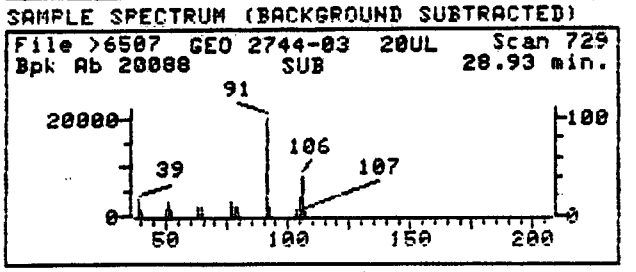
Quant ID File: VOAID2::$$
Last Calibration: 890303 21:19

Compound No: 38
Compound Name: C240 Ethylbenzene
Scan Number: 643
Retention Time: 25.65 min.
Quant Ion: 106.0
Area: 38919
Concentration: 22.57 UG/L
q-value: 96

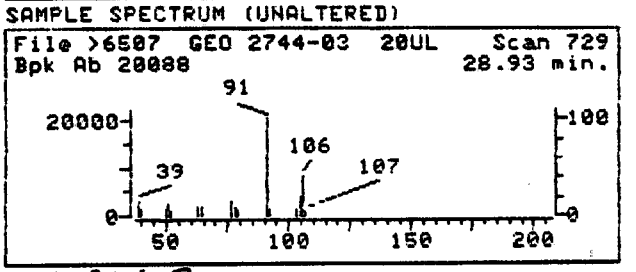
REFERENCE STANDARD SPECTRUM

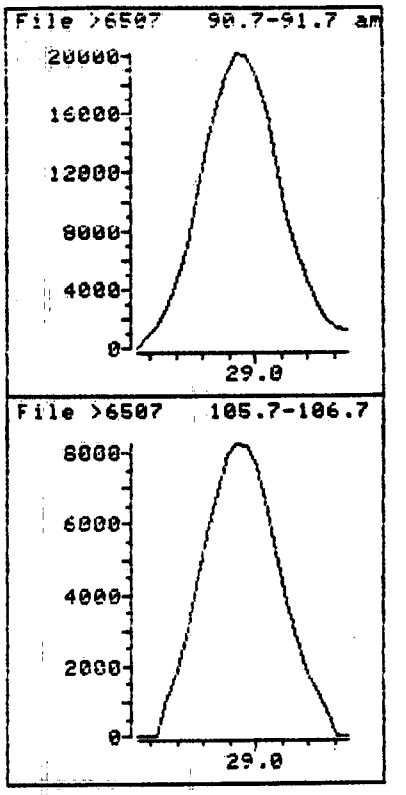


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





✓ 3/4/89

10954-3

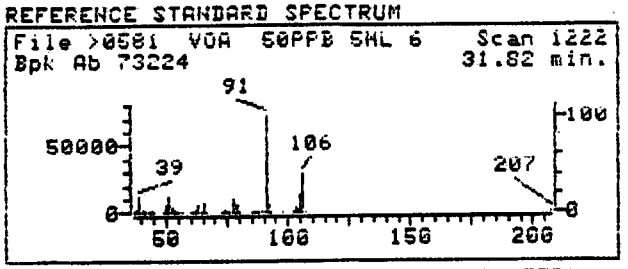
Data File: >6507::D1
Name: GEO 2744-03 20UL
Misc: V2 CH#1 5ULQC23C
Quant Time: 890303 23:55
Injected at: 890303 23:11

Quant Output File: ^6507::QT

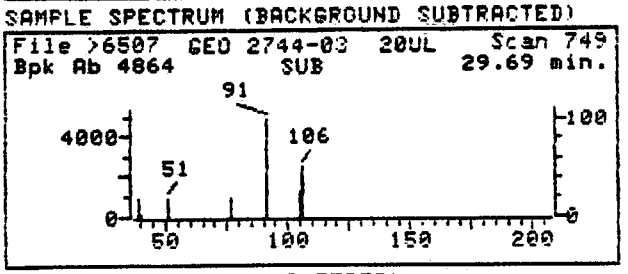
Quant ID File: VOAID2::$$
Last Calibration: 890303 21:19

Compound No: 39
Compound Name: CXXX Xylene (m)
Scan Number: 729
Retention Time: 28.93 min.
Quant Ion: 106.0
Area: 175891
Concentration: 69.88 UG/L
q-value: 98

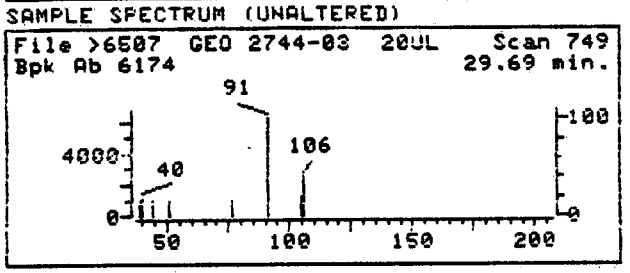
REFERENCE STANDARD SPECTRUM

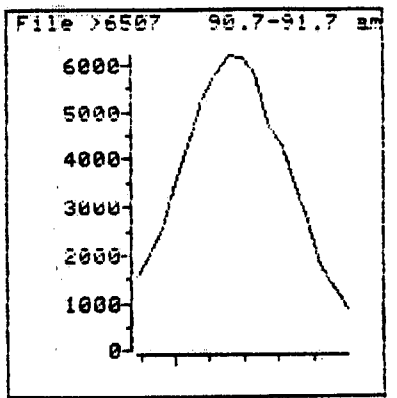


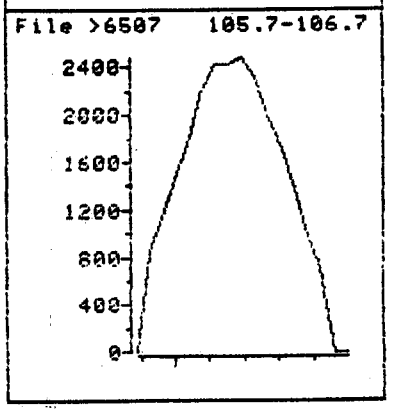
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







10954-3

Data File: >6507::D1
Name: GEO 2744-03 20UL
Misc: V2 CH#1 5ULQC23C
Quant Time: 890303 23:55
Injected at: 890303 23:11

Quant Output File: ^6507::QT

Quant ID File: VOAID2::$$
Last Calibration: 890303 21:19

Compound No: 41
Compound Name: CXXX Xylenes (o , p)
Scan Number: 749
Retention Time: 29.69 min.
Quant Ion: 106.0
Area: 54752
Concentration: 20.94 UG/L
q-value: 99

HAZARDOUS SUBSTANCE (HSL) LIST
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-4
Lab ID: 002744-0004-SA Enseco ID: 2016166
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 02 MAR 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	2.2	ug/L	25	J
Acetone	ND	ug/L	25	
Carbon disulfide	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,1,2-Trichloroethane	ND	ug/L	5.0	
Benzene	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
4-Methyl-2-pentanone	ND	ug/L	10	
2-Hexanone	ND	ug/L	10	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	
Tetrachloroethene	ND	ug/L	5.0	
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethyl benzene	ND	ug/L	5.0	
Styrene	ND	ug/L	5.0	
Xylene (total)	ND	ug/L	5.0	
Toluene-d8	102	%	--	
4-Bromofluorobenzene	108	%	--	
1,2-Dichloroethane-d4	105	%	--	

Note J : Result is detected below reporting limit or is an estimated concentration.

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-4
Lab ID: 002744-0004-SA Enseco ID: 2016166
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 02 MAR 89

Parameter	Result	Units	Reporting Limit
No unknowns	NA	NA	NA

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

HAZARDOUS SUBSTANCE (HSL) LIST
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-5
Lab ID: 002744-0005-SA Enseco ID: 2016167
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 04 MAR 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	5.2	ug/L	25	J
Acetone	ND	ug/L	25	
Carbon disulfide	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,1,2-Trichloroethane	ND	ug/L	5.0	
Benzene	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
4-Methyl-2-pentanone	ND	ug/L	10	
2-Hexanone	ND	ug/L	10	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	
Tetrachloroethene	ND	ug/L	5.0	
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethyl benzene	ND	ug/L	5.0	
Styrene	ND	ug/L	5.0	
Xylene (total)	ND	ug/L	5.0	
Toluene-d8	101	%	--	
4-Bromofluorobenzene	104	%	--	
1,2-Dichloroethane-d4	96.0	%	--	

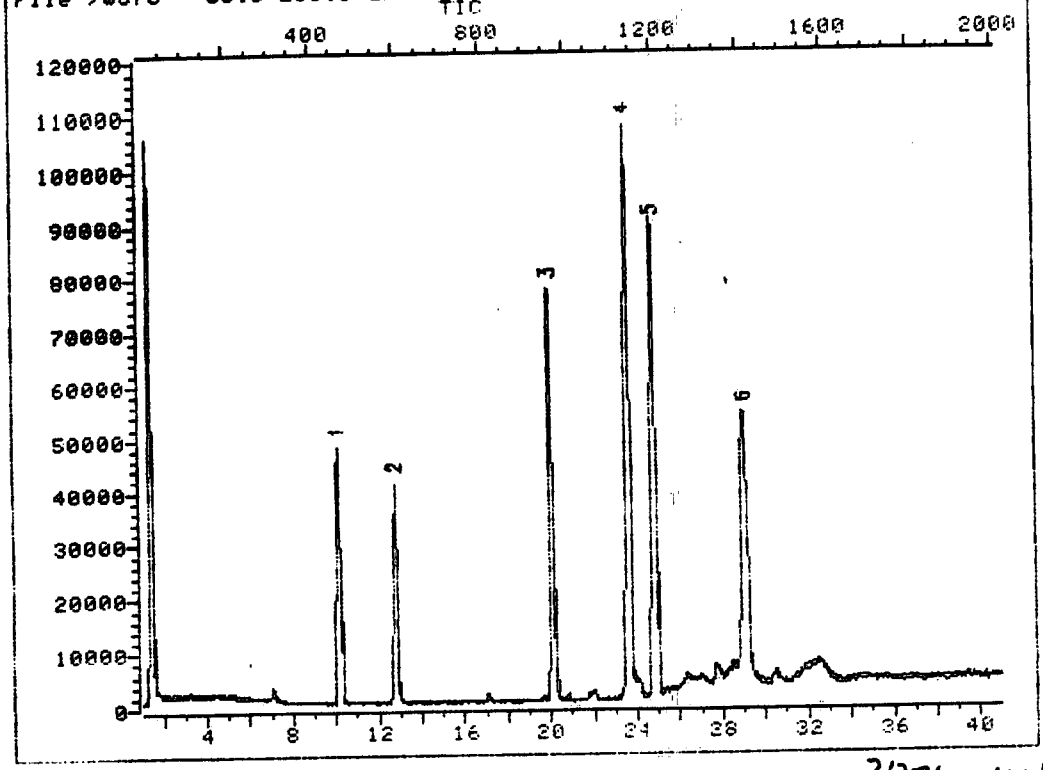
Note J : Result is detected below reporting limit or is an estimated concentration.

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

TOTAL ION CHROMATOGRAM

File >W576 35.0-260.0 amu. GEO 2744-04 5ML 5UL QC23B C4



190SX-4

3/27/89 KH

Data File: >W576::D9

Quant Output File: ^W576::QO

Name: GEO 2744-04 5ML

Misc: 5UL QC23B C4

Id File: VOAID3::$$

Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO

Last Calibration: 890302 11:21

Operator ID: GREG

Quant Time: 890302 17:45

Injected at: 890302 17:03

W575 2744-03

Xylene (m)

W564 2642-09

W570

W571

W572

Initial: RR

QUANT REPORT

Operator ID: GREG
Output File: ^W576::Q0
Data File: >W576::D9
Name: GEO 2744-04 5ML
Misc: 5UL QC23B C4
190524-4
ID File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 890302 11:21

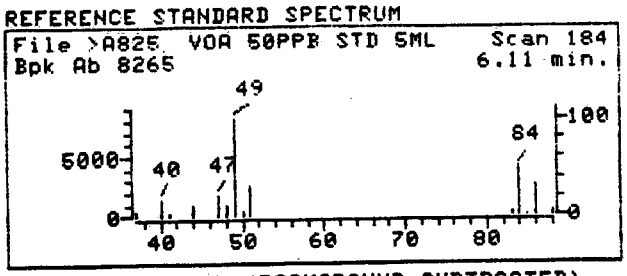
Quant Rev: 6
Quant Time: 890302 17:45
Injected at: 890302 17:03
Dilution Factor: 1.00000

		Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI01	Bromochloromethane	10.12	128.0	71034	50.00	ug/L	80
6)	C030	Methylene Chloride	7.05	84.0	7211	2.16	ug/L	70
14)	CS15	D4-1,2-Dichloroethane	12.76	65.0	173192	52.49	ug/L 105	91
15)	*CI10	1,4-Difluorobenzene	20.02	114.0	349736	50.00	ug/L	100
30)	*CI20	D5-Chlorobenzene	24.80	117.0	294383	50.00	ug/L	73
35)	C230	Toluene	23.75	92.0	1279	.21	ug/L	90
36)	CS05	D8-Toluene	23.59	98.0	434290	51.19	ug/L 102	95
39)	CXXX	Xylene (m)	30.45	106.0	3651	~~.22~~	ug/L sng	93
41)	CXXX	Xylenes (o , p)	30.45	106.0	3651	~~.23~~	ug/L sng	93
42)	CS10	Bromofluorobenzene (BFB)	29.02	95.0	199676	53.78	ug/L 108	55

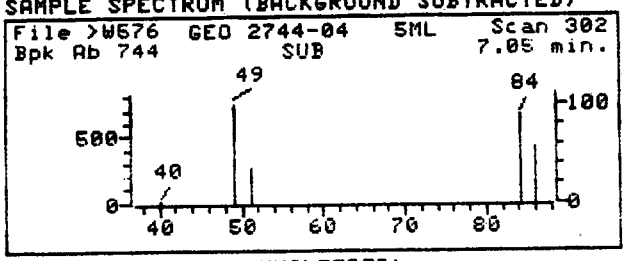
* Compound is ISTD

3/27/89 KH

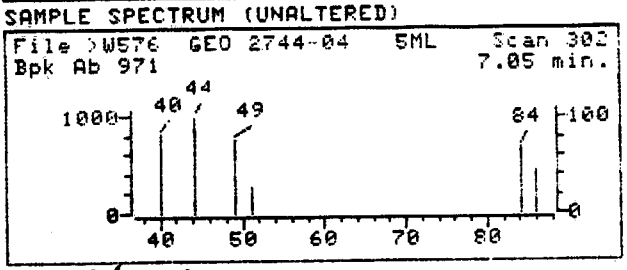
REFERENCE STANDARD SPECTRUM

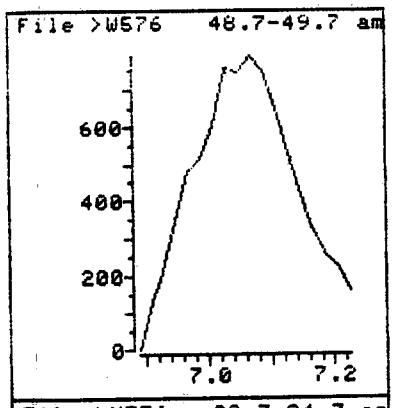


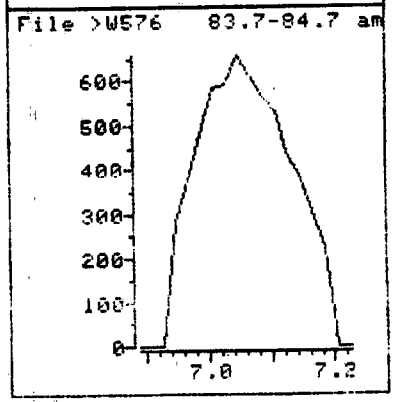
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







10954-4

Data File: >W576::D9
Name: GEO 2744-04 5ML
Misc: 5UL QC23B C4
Quant Time: 890302 17:45
Injected at: 890302 17:03

Quant Output File: ^W576::QO

Quant ID File: VOAID3::$$
Last Calibration: 890302 11:21

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 302
Retention Time: 7.05 min.
Quant Ion: 84.0
Area: 7211
Concentration: 2.16 ug/L
q-value: 70

HAZARDOUS SUBSTANCE (HSL) LIST
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-5
Lab ID: 002744-0005-SA Enseco ID: 2016167
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 04 MAR 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	5.2	ug/L	25	J
Acetone	ND	ug/L	25	
Carbon disulfide	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,1,2-Trichloroethane	ND	ug/L	5.0	
Benzene	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
4-Methyl-2-pentanone	ND	ug/L	10	
2-Hexanone	ND	ug/L	10	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	
Tetrachloroethene	ND	ug/L	5.0	
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethyl benzene	ND	ug/L	5.0	
Styrene	ND	ug/L	5.0	
Xylene (total)	ND	ug/L	5.0	
Toluene-d8	101	%	--	
4-Bromofluorobenzene	104	%	--	
1,2-Dichloroethane-d4	96.0	%	--	

Note J : Result is detected below reporting limit or is an estimated concentration.

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

Enseco

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

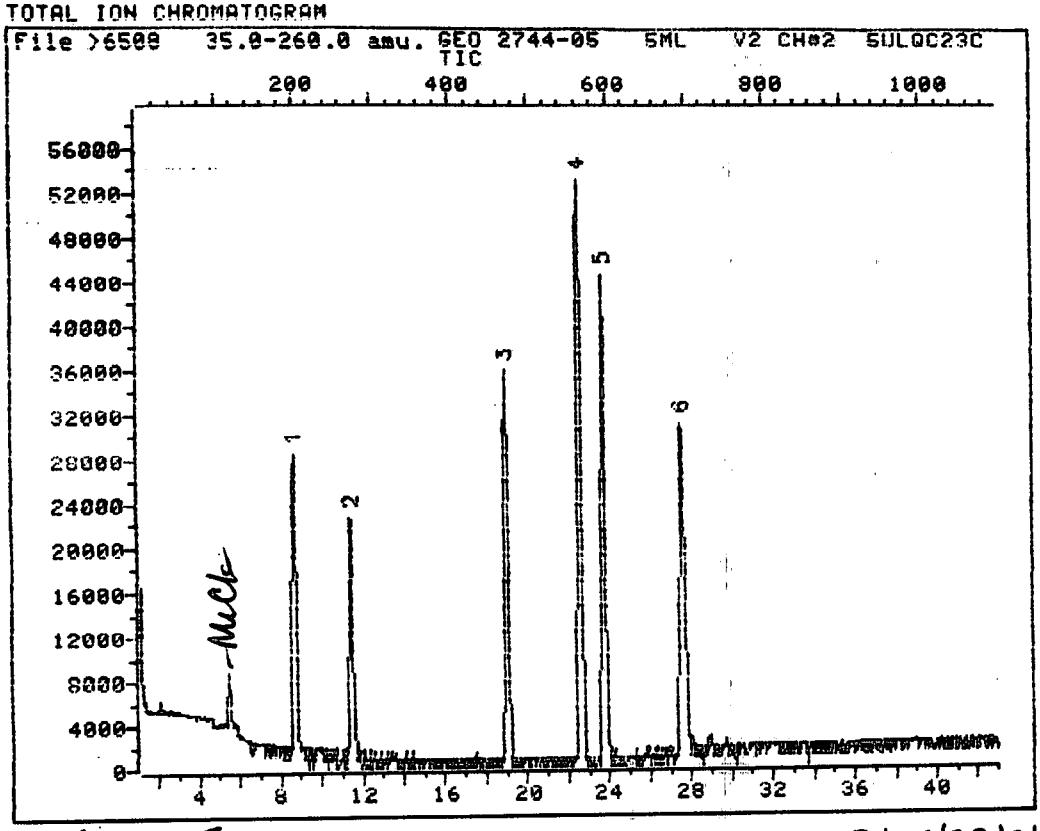
Client Name: GeoEngineering, Inc.
Client ID: 19054-5
Lab ID: 002744-0005-SA Enseco ID: 2016167
Matrix: AQUEOUS Sampled: 27 FEB 89 Received: 28 FEB 89
Authorized: 28 FEB 89 Prepared: NA Analyzed: 04 MAR 89

Parameter	Result	Units	Reporting Limit
No unknowns	NA	NA	NA

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle Approved By: W. Henry Camp

TOTAL ION CHROMATOGRAM



19054-5

3/27/89 KH

Data File: >6508::D1

Quant Output File: ^6508::QT

Name: GEO 2744-05 5ML

Misc: V2 CH#2 5ULQC23C

Id File: VOAID2::$$

Title: HSL VOLATILES:8FT 1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO

Last Calibration: 890303 21:19

Operator ID: NORA

Quant Time: 890304 00:46

Injected at: 890304 00:02

6507 2744-03

6488 2718-01

6506 6497

6498

QUANT REPORT

Operator ID: NORA
Output File: ^6508::QT
Data File: >6508::D1
Name: GEO 2744-05 5ML
Misc: V2 CH#2 5ULQC23C
190544-5
D File: VOAID2::$$
Title: HSL VOLATILES:8FT 1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 890303 21:19

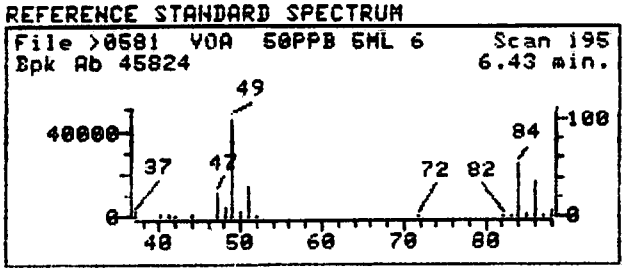
Quant Rev: 6
Quant Time: 890304 00:46
Injected at: 890304 00:02
Dilution Factor: 1.00000

		Compound	R.T.	Q ion	Area	Conc	Units		q
1)	*CI01	Bromochloromethane	8.72	128.0	49322	50.00	UG/L		74
6)	C030	Methylene Chloride	5.47	84.0	10777	5.18	UG/L		56
14)	CS15	D4-1,2-Dichloroethane	11.46	65.0	132496	48.05	UG/L	96	92
15)	*CI10	1,4-Difluorobenzene	19.02	114.0	209187	50.00	UG/L		100
30)	*CI20	D5-Chlorobenzene	23.79	117.0	183608	50.00	UG/L	100	80
56)	CS05	D8-Toluene	22.61	98.0	259190	50.29	UG/L		98
42)	CS10	Bromofluorobenzene (BFB)	27.60	95.0	120181	52.01	UG/L	104	74

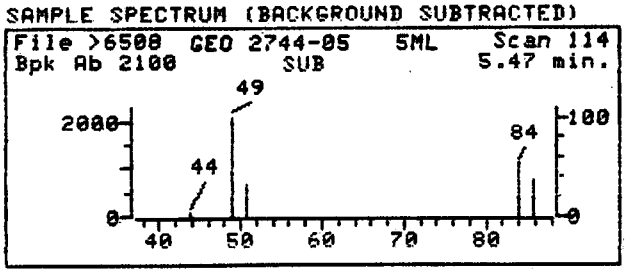
3/27/89 KH

* Compound is ISTD

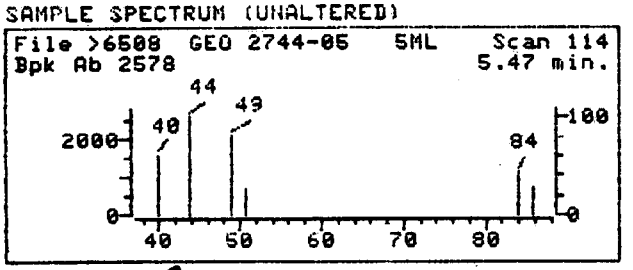
REFERENCE STANDARD SPECTRUM

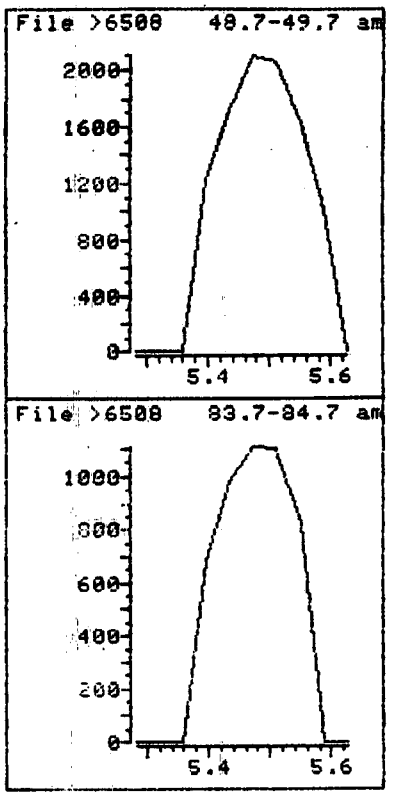


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





19054-5

Data File: >6508::D1
Name: GEO 2744-05 5ML
Misc: V2 CH#2 5ULQC23C
Quant Time: 890304 00:46
Injected at: 890304 00:02

Quant Output File: ^6508::QT

Quant ID File: VOAID2::$$
Last Calibration: 890303 21:19

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 114
Retention Time: 5.47 min.
Quant Ion: 84.0
Area: 10777
Concentration: 5.18 UG/L
q-value: 56

HAZARDOUS SUBSTANCE (HSL) LIST
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-TB
Lab ID: 002744-0006-SA
Enseco ID: 2016168
Matrix: AQUEOUS
Sampled: 28 FEB 89
Received: 28 FEB 89
Authorized: 28 FEB 89
Prepared: NA
Analyzed: 04 MAR 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	5.5	ug/L	25	J
Acetone	ND	ug/L	25	
Carbon disulfide	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,1,2-Trichloroethane	ND	ug/L	5.0	
Benzene	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
4-Methyl-2-pentanone	ND	ug/L	10	
2-Hexanone	ND	ug/L	10	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	
Tetrachloroethene	ND	ug/L	5.0	
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethyl benzene	ND	ug/L	5.0	
Styrene	ND	ug/L	5.0	
Xylene (total)	ND	ug/L	5.0	
Toluene-d8	101	%	--	
4-Bromofluorobenzene	105	%	--	
1,2-Dichloroethane-d4	102	%	--	

Note J : Result is detected below reporting limit or is an estimated concentration.

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle
Approved By: W. Henry Camp

Enseco

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: 19054-TB
Lab ID: 002744-0006-SA
Enseco ID: 2016168
Matrix: AQUEOUS
Sampled: 28 FEB 89
Received: 28 FEB 89
Authorized: 28 FEB 89
Prepared: NA
Analyzed: 04 MAR 89

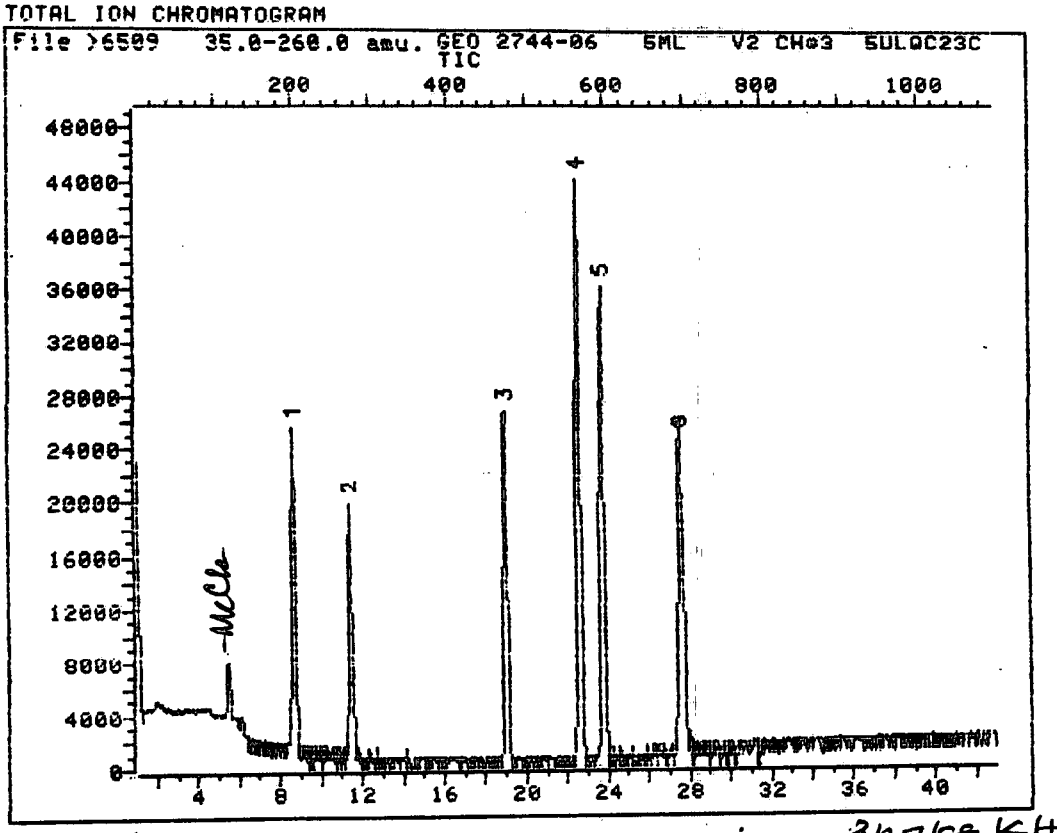
Parameter	Result	Units	Reporting Limit
No unknowns	NA	NA	NA

ND=Not Detected
NA=Not Applicable

Reported By: Kerylynn Hemmerle

Approved By: W. Henry Camp

TOTAL ION CHROMATOGRAM



19054-6

3/27/89 KH

Data File: >6509::D1
Name: GEO 2744-06 5ML
Misc: V2 CH#3 5ULQC23C

Quant Output File: ^6509::QT

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT 1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 890303 21:19

Operator ID: NORA
Quant Time: 890304 01:37
Injected at: 890304 00:54

6508
6489

2744-05
2718-02

6506
6497

6498

* Compound is ISTD

QUANT REPORT

Operator ID: NORA
Output File: ^6509::QT
Data File: >6509::D1
Name: GEO 2744-06 5ML
Misc: V2 CH#3 5ULQC23C
19054-6
ID File: VOAID2::$$
Title: HSL VOLATILES:8FT 1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 890303 21:19

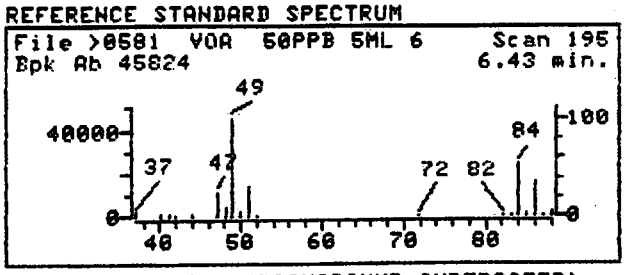
Quant Rev: 6
Quant Time: 890304 01:37
Injected at: 890304 00:54
Dilution Factor: 1.00000

		Compound	R.T.	Q ion	Area	Conc	Units		q
1)	*CI01	Bromochloromethane	8.70	128.0	41178	50.00	UG/L		77
6)	C030	Methylene Chloride	5.46	84.0	9542	5.50	UG/L		61
14)	CS15	D4-1,2-Dichloroethane	11.45	65.0	117563	51.06	UG/L	102	94
15)	*CI10	1,4-Difluorobenzene	19.04	114.0	173959	50.00	UG/L		100
30)	*CI20	D5-Chlorobenzene	23.77	117.0	155800	50.00	UG/L		81
36)	CS05	D8-Toluene	22.59	98.0	220030	50.32	UG/L	101	98
42)	CS10	Bromofluorobenzene (BFB)	27.60	95.0	102472	52.26	UG/L	105	76

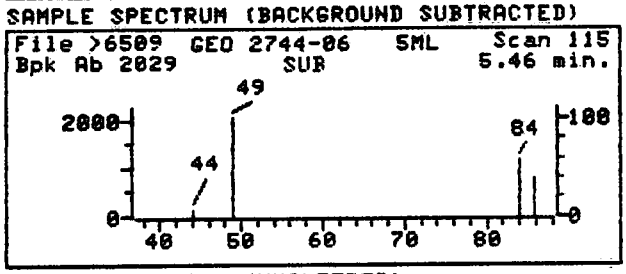
3/27/89

* Compound is ISTD

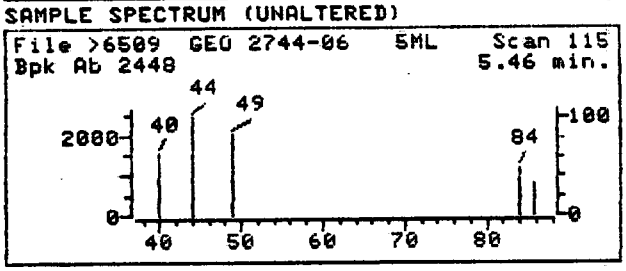
REFERENCE STANDARD SPECTRUM

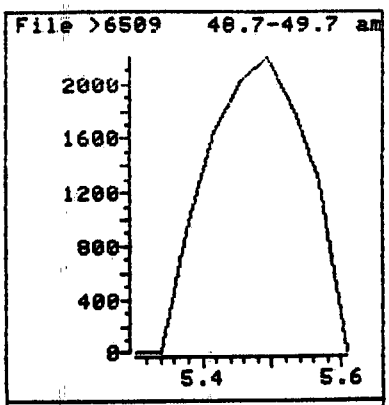


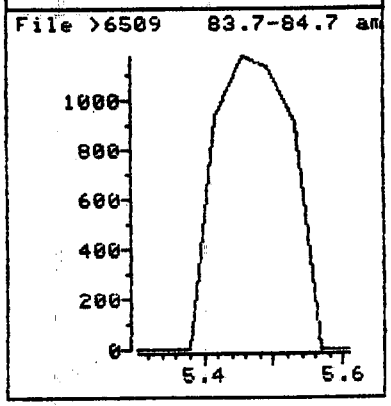
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







19054-6

Data File: >6509::D1
Name: GEO 2744-06 5ML
Misc: V2 CH#3 5ULQC23C
Quant Time: 890304 01:37
Injected at: 890304 00:54

Quant Output File: ^6509::QT

Quant ID File: VOA1D2::$$
Last Calibration: 890303 21:19

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 115
Retention Time: 5.46 min.
Quant Ion: 84.0
Area: 9542
Concentration: 5.50 UG/L
q-value: 61

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	Test	QC Lot Number LCS	SCS
002744-0001-SA	AQUEOUS	624-A	02 MAR 89-V3A	02 MAR 89-V3A
002744-0001-SA	AQUEOUS	624-A	02 MAR 89-V3A	02 MAR 89-V3A
002744-0002-SA	AQUEOUS	624-A	02 MAR 89-V3A	02 MAR 89-V3A
002744-0002-SA	AQUEOUS	624-A	02 MAR 89-V3A	02 MAR 89-V3A
002744-0003-SA	AQUEOUS	624-A	03 MAR 89-V2A	03 MAR 89-V2B
002744-0003-SA	AQUEOUS	624-A	03 MAR 89-V2A	03 MAR 89-V2B
002744-0004-SA	AQUEOUS	624-A	02 MAR 89-V3A	02 MAR 89-V3A
002744-0004-SA	AQUEOUS	624-A	02 MAR 89-V3A	02 MAR 89-V3A
002744-0005-SA	AQUEOUS	624-A	03 MAR 89-V2A	03 MAR 89-V2B
002744-0005-SA	AQUEOUS	624-A	03 MAR 89-V2A	03 MAR 89-V2B
002744-0006-SA	AQUEOUS	624-A	03 MAR 89-V2A	03 MAR 89-V2B
002744-0006-SA	AQUEOUS	624-A	03 MAR 89-V2A	03 MAR 89-V2B

LABORATORY CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Measured LCS1	Measured LCS2	Accuracy(%) LCS1	Accuracy(%) LCS2	Limits	Precision(RPD) LCS	Limits
Category: 624-A Matrix: AQUEOUS QC Lot: 02 MAR 89-V3A Concentration Units: ug/L								
1,1-Dichloroethene	50	62.3	44.0	125	88	61-145	35*	14
Trichloroethene	50	40.7	45.6	81	91	71-120	12	14
Chlorobenzene	50	44.4	45.2	89	90	75-130	1.1	13
Toluene	50	41.6	44.2	83	88	76-125	5.8	13
Benzene	50	40.9	45.5	82	91	76-127	10	11
Category: 624-A Matrix: AQUEOUS QC Lot: 03 MAR 89-V2A Concentration Units: ug/L								
1,1-Dichloroethene	50	43.8	48.2	88	96	61-145	8.7	14
Trichloroethene	50	44.5	46.0	89	92	71-120	3.3	14
Chlorobenzene	50	43.2	45.0	86	90	75-130	4.5	13
Toluene	50	42.2	43.8	84	88	76-125	4.6	13
Benzene	50	43.6	45.0	87	90	76-127	3.4	11

* = RPD outside QC limits.

SURROGATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 624-A				
Matrix AQUEOUS				
LCS Lot: 02 MAR 89-V3A SCS Lot: 02 MAR 89-V3A				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	44.9	90	76-114
Toluene-d8	50.0	51.4	103	61-110
4-Bromofluorobenzene	50.0	49.2	98	74-115
Category: 624-A				
Matrix AQUEOUS				
LCS Lot: 03 MAR 89-V2A SCS Lot: 03 MAR 89-V2B				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	43.2	86	76-114
4-Bromofluorobenzene	50.0	47.7	95	74-115
Toluene-d8	50.0	52.3	105	61-110

BLANK REPORT
Volatile Organics by GC/MS (cont.)

Test: 624-HSL-TI
Matrix: AQUEOUS
LCS Lot: 03 MAR 89-V2A SCS Lot: 03 MAR 89-V2B

Analyte	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	10
Bromomethane	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Chloroethane	ND	ug/L	10
Methylene chloride	ND	ug/L	25
Acetone	ND	ug/L	25
Carbon disulfide	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
Chloroform	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
2-Butanone	ND	ug/L	10
1,1,1-Trichloroethane	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Bromodichloromethane	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Benzene	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
4-Methyl-2-pentanone	ND	ug/L	10
2-Hexanone	ND	ug/L	10
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Ethyl benzene	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
Xylene (total)	ND	ug/L	5.0

Enseco

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

EPA Method 624/8240

Client Name: GeoEngineering, Inc.

Client ID: Erco Procedural Blank - Water

Laboratory ID: 03 MAR 89-V2B

Matrix: Aqueous Sampled: NA Received: NA

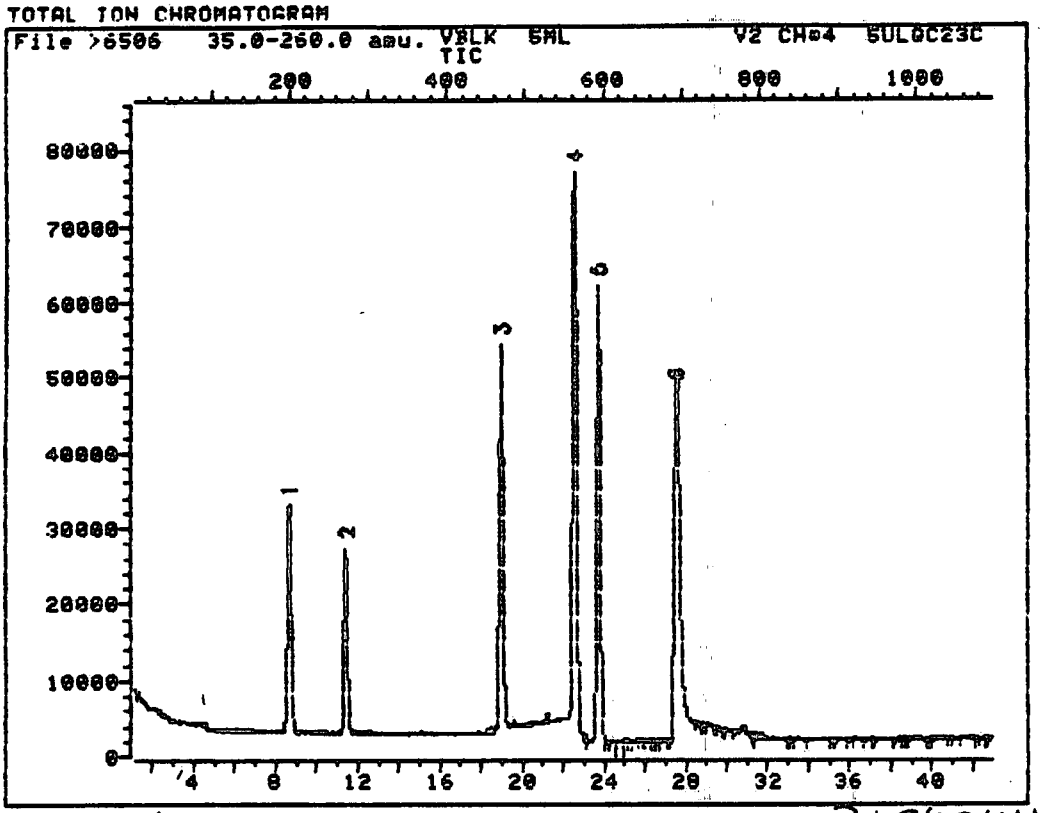
Authorized: NA Prepared: 03/03/89 Analyzed: 03/03/89

Parameter	Scan No.	Estimated concentration	Units
None detected			

NA = Not applicable.

Reported by CL Approved by WHC

TOTAL ION CHROMATOGRAM



~~VBLK02~~ 3/27/89 KH

Data File: >6506::D6 Quant Output File: ^6506::QT
Name: VBLK 5ML
Misc: V2 CH#4 5ULQC23C

Id File: VOAID2::$$
Title: HSL VOLATILES:8FT 1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 890303 21:19

Operator ID: NORA
Quant Time: 890303 22:18
Injected at: 890303 21:28

03 Mar 89 VZB

QUANT REPORT

Operator ID: NORA
Output File: ^6506::QT
Data File: >6506::D6
Name: VBLK 5ML
Misc: V2 CH#4 5ULQC23C

Quant Rev: 6 Quant Time: 890303 22:18
Injected at: 890303 21:28
Dilution Factor: 1.00000

VBLK02
ID File: VOAID2::$$
Title: HSL VOLATILES:8FT 1%SP1000:45-220@8/MIN:GCMS V2:ERCO/ENSECO
Last Calibration: 890303 21:19

		Compound	R.T.	Q ion	Area	Conc	Units		q
1)	*CI01	Bromochloromethane	8.66	128.0	55183	50.00	UG/L		68
14)	CS15	D4-1,2-Dichloroethane	11.45	65.0	133231	43.18	UG/L	86	93
15)	*CI10	1,4-Difluorobenzene	19.00	114.0	277347	50.00	UG/L		100
30)	*CI20	D5-Chlorobenzene	23.74	117.0	251336	50.00	UG/L		78
36)	CS05	D8-Toluene	22.59	98.0	369103	52.32	UG/L	105	98
42)	CS10	Bromofluorobenzene (BFB)	27.56	95.0	150977	47.73	UG/L	95	77

3/27/89 KH

* Compound is ISTD

D3 MAR 89-V2B

BLANK REPORT
Volatile Organics by GC/MS

Test: 624-HSL-TI
Matrix: AQUEOUS
LCS Lot: 02 MAR 89-V3A SCS Lot: 02 MAR 89-V3A

Analyte	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	10
Bromomethane	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Chloroethane	ND	ug/L	10
Methylene chloride	ND	ug/L	25
Acetone	ND	ug/L	25
Carbon disulfide	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
Chloroform	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
2-Butanone	ND	ug/L	10
1,1,1-Trichloroethane	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Bromodichloromethane	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Benzene	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
4-Methyl-2-pentanone	ND	ug/L	10
2-Hexanone	ND	ug/L	10
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Ethyl benzene	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
Xylene (total)	ND	ug/L	5.0

Enseco

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

EPA Method 624/8240

Client Name: GeoEngineering, Inc.

Client ID: Erco Procedural Blank - Water

Laboratory ID: 02 MAR 89-V3A

Matrix: Aqueous Sampled: NA Received: NA

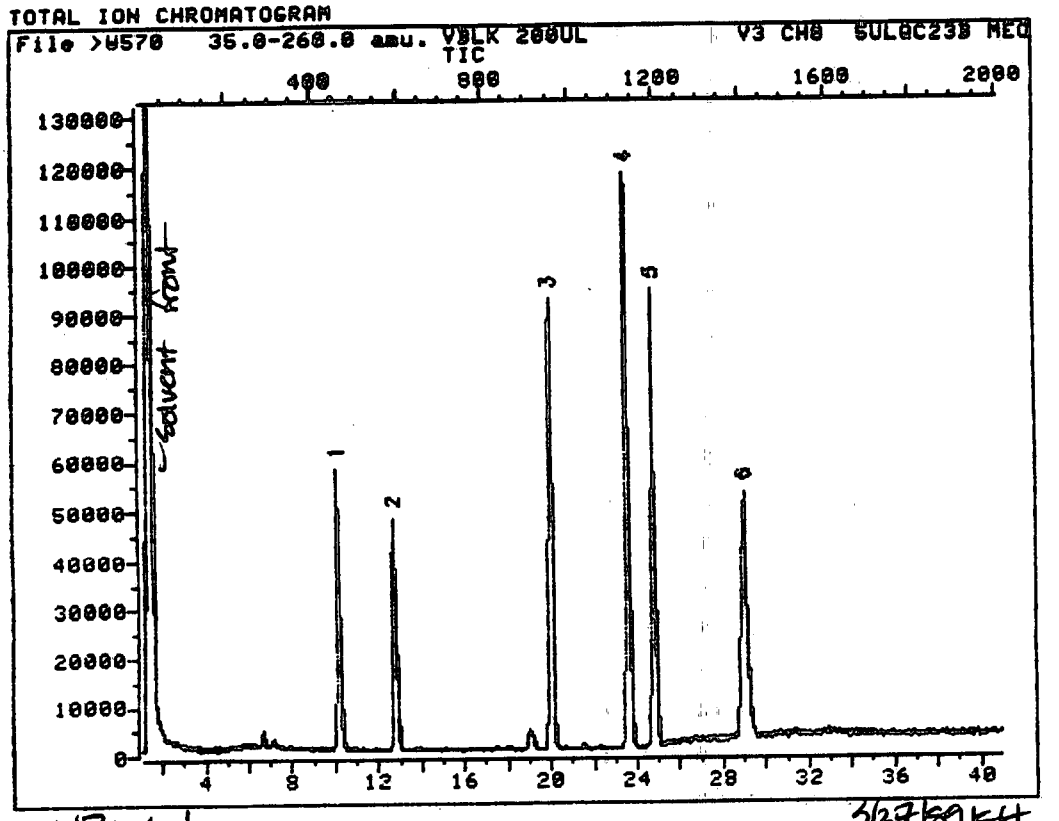
Authorized: NA Prepared: 03/02/89 Analyzed: 03/02/89

Parameter	Scan No.	Estimated concentration	Units
None detected			

NA = Not applicable.

Reported by CC Approved by LJAC

TOTAL ION CHROMATOGRAM



VBLK01

3/27/89 KH

Data File: >W570::D9 Quant Output File: ^W570::QO
Name: VBLK 200UL
Misc: V3 CH8 5ULQC23B MEOH#AT955

Id File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 890302 11:21

Operator ID: PRINT2
Quant Time: 890302 12:18
Injected at: 890302 11:36

02 MAR 89 V3A

QUANT REPORT

Operator ID: PRINT2 Quant Rev: 6 Quant Time: 890302 12:18
Output File: ^W570::Q0 Injected at: 890302 11:36
Data File: >W570::D9 Dilution Factor: 1.00000
Name: VBLK 200UL
Misc: V3 CH8 5ULQC23B MEOH#AT955
VBLK01
ID File: VOAID3::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V3:ERCO/ENSECO
Last Calibration: 890302 11:21

		Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI01	Bromochloromethane	10.13	128.0	88579	50.00	ug/L	84
6)	C030	Methylene Chloride	7.10	84.0	3790	~~.91~~	ug/L 5mg	87
7)	C035	Acetone	7.87	43.0	1637	~~1.66~~	ug/L 5mg	100
14)	CS15	D4-1,2-Dichloroethane	12.73	65.0	184922	44.94	ug/L 90	92
15)	*CI10	1,4-Difluorobenzene	20.01	114.0	425679	50.00	ug/L	100
16)	C110	2-Butanone	12.73	43.0	13907	~~9.86~~	ug/L 5mg	89
30)	*CI20	D5-Chlorobenzene	24.77	117.0	333895	50.00	ug/L	74
36)	CS05	D8-Toluene	23.56	98.0	494857	51.43	ug/L 103	96
42)	CS10	Bromofluorobenzene (BFB)	28.99	95.0	207287	49.22	ug/L 98	58

3/27/89 KH

* Compound is ISTD

02 MAR 89 - V3A

Enseco-Erco Laboratory

205 Alewife Brook Parkway
Cambridge, Massachusetts 02138
617/661-3111 Fax: 617/354-5258

CHAIN OF CUSTODY

No. 05105

Attn:

Enseco Client: GeoEngineering - William Dunnell
Project: Le Carpentier Project No. #5600
Sampling Co.: Aquifer Systems
Sampling Site: Wharton, NJ
Team Leader: Thomas P. Shanahan

SAMPLE SAFE™ CONDITIONS

1. Packed by: Kerry A. Cornette Seal # —
2. Seal Intact Upon Receipt by Sampling Co.: (Yes) No
3. Condition of Contents: good
4. Sealed for Shipping by: Kerry A Cornette
5. Initial Contents Temp.: 2°C °C Seal # —
6. Sampling Status: (Done) Continuing Until
7. Seal Intact Upon Receipt by Laboratory: Yes No
8. Contents Temperature Upon Receipt by Lab: °C
9. Condition of Contents:

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
2/27/89	15:05	19054-1	water	3	624 +15 Tier II	
	14:00	19054-2		3		
	14:24	19054-3		3		
	14:47	19054-4		3		
	13:47	19054-5		3		
		19054 TB		2		
		* No Field blank - field sampling equipment in well dedicated				

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by: (signed)	Received by: (signed)	Date	Time
1	Kerry A Cornette	to Federal Express	2/27/89	16:00
2				
3				

SHIPPING DETAILS

Delivered to Shipper by: Kerry A Cornette (Aquifer)
Method of Shipment: Federal Express Airbill #
Received for Lab: ERCO Signed: [signature] Date/Time 2/28/89 0900
Enseco Project No.

White and Pink Copies to Lab Yellow to Sampler

SS-001 (CM)

Enseco - Erco Laboratory

Erco Project No.: #2744

Client: GeoEngineering

Client Contact:

Program Name: LE Carpenter — New ☐ Existing ☒

Client Project No.: Quarterly Monitoring / E Carpenter 2/28

Duplicate Project No.: — With Group Codes Yes ☐ No ☐

Client P.O. No.:

Report Copy:

1st Client Contact: T Copeland — 2nd

LIMS Codes

Client:

Contact:

Billing:

Program:

Date Received: 2/28/89

Report Date Due: 3/28/89

Date Due To D.C.:

No. TA Days: 28

Surcharge:

Contract Prices:

Reporting Format (Please Circle)

CLP — Tier I A, B — Tier II A, B — ECRA — RCRA

Commercial — HSL — PP — Unknowns — Appendix No.

Other

Paperwork		Samples Rec'd by	Samples Date Rec'd	Paperwork		Samples Rec'd by	Samples Date Rec'd
☒	CSR/TD			☐	Metals		
☐	Prep.			☐	Pest.		
☐	GHQ			☐	GC/MS		
☐	VOA/GC			☐	PHIR		
☒	VOA/MS	06	2/28	☒	D.E.G.		
☐	SEA			☒	D.C.		

Logged by: CMF

Date: 2/28/89 Time: 0950

Approved by TD/CSR: TRC

Date: 2/28 Time: 11:10

Comments:

78

Enseco - Erco Laboratory

Erco Project Number: #2744

ID	Client ID	Coll. Date	Mx.	Code	ID	Client ID	Coll. Date	Mx.	Code
01	119015A1-11	2/27/89	A	A	11				
02	119015A1-12				12				
03	119015A1-13				13				
04	119015A1-14				14				
05	119015A1-15				15				
06	119015A1-1TIB				16				
07					17				
08					18				
09					19				
10					20				

GROUP CODE TEST INFORMATION

Group A				Group __				Group __				Group __			
None	Dump	Return	Hold	None	Dump	Return	Hold	None	Dump	Return	Hold	None	Dump	Return	Hold
624-HSL-TIERII-A															
624-TID15-A															

EXTNAME: form (R)P: (labchron) 02

LABORATORY CHRONICLE

Date

Receipt/Refrigeration 2-28-89

ORGANICS EXTRACTION

1. Acids NA
2. Base/Neutrals NA
3. Pesticides/PCBs NA
4. Dioxin NA

ANALYSIS

1. Volatiles 3-2-89, 3-2-89, 3-3-89, 3-2-89, 3-4-89 + 3-4-89
2. Acids NA
3. Base/Neutrals NA
4. Pesticides/PCBs NA
5. Dioxin NA

Section Supervisor Review & Approval Alice R. Lee 3-30-89 Data Control

INORGANICS

1. Metals NA
2. Cyanides NA
3. Phenol NA

OTHER ANALYTES

Section Supervisor Review & Approval Alice R Lee 3-30-89 Data Control

Quality Control Supervisor Review & Approval Alice R Lee 3-30-89 Data Control

If fractions are reextracted and reanalyzed because initial endeavors did not meet quality control acceptance criteria, include dates for both.

NA = Not Applicable.