WA DOT Bellingham Maint
FS ID: 84242359
Cleanup Site ID: 10729 UST ID: 3790
Bellingham

Washington State Department of Transportation
Sid Morrison
Secretary of Transportation

Transportation Building
P.O. Box 47300
Olympia, WA 98504-7300

March 6, 2001

RECEIVED
MAR - 7 2000
DEPT OF ECOLOGY

Cyma Tupas
Washington State Department of Ecology
Toxics Cleanup Program
3190 160th Ave. SE
Bellevue/WA/98008-5452

RE: Independent Remedial Action Report for the Bellingham Sunset Dr. Maintenance Facility, Bellingham, Washington.

Dear Ms. Tupas:

The purpose of this letter is to transmit a copy of the "Independent Remedial Action Report for the Bellingham Sunset Dr. Maintenance Facility - WSDOT". Petroleum contamination was encountered during excavation activities. The contamination appears to have been caused from past vehicle storage and a underground storage tank. Approximately 1438 cubic yards of contaminated soil was excavated and bioremediated.

If you have any questions, please contact me at 360-705-7814.

Sincerely,

Thanh Nguyen
Environmental Specialist
Environmental Service Branch

INDEPENDENT REMEDIAL ACTION REPORT

For:

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BELLINGHAM SUNSET DR. MAINTENANCE FACILITY

Prepared by WSDOT - FOSSC, Environmental Service Branch

February 22, 2000

GENERAL INFORMATION

SITE NAME: WSDOT - Bellingham Sunset Dr. Maintenance Facility

LOCATION: Sec 19, T 38N, R 3E
SR 542, MP 35.8
412 Sunset Dr
Bellingham, WA 98226
Whatcom County

OWNER: Washington State Department of Transportation
(WSDOT)

SITE ASSESSOR: Doug Pierce
Washington State Department of Transportation
Transportation Building
PO Box 47358
Olympia, WA 98504-7358
(360) 705-7812

CONCTRACTOR: Northwest Cascade, Inc.
PO Box 73399
Puyallup, WA 98373
(253) 848-2371

SITE CHARACTERISTICS

The WSDOT - Sunset Dr. Maintenance facility is situated in the City of Bellingham, Whatcom County, Washington. The site is bounded on the north by State Highway 542, to the south by Illinois Street, to the west by a Greek Orthodox church, and to the east by residential houses (See Appendix A). The site is located within Section 19, Township 38 North, Range 3 East. The parcel is approximately 4.1 acres consisted of the following structures: Building 1 - Storage and Equipment parking, Building 2 - old fuel house which is currently being used for sign storage, one pesticide containment unit, Building 3 - old Washington State Patrol inspection building which was used as a crew room and vehicle storage, Building 4 & 5 - prefabricated modular offices, one 5000 gallon diesel above ground storage tank (AST), one prefabricated storage building, one boxcar storage unit and various maintenance yard staging areas (See Appendix A). The elevation of the subject property is approximately 154 feet above mean sea level (MSL). A detailed description of

the site history can be found in the "Phase I Environmental Site Assessment of the Sunset Dr Maintenance Facility".

PURPOSE

The purpose of the independent remedial action was to excavate in suspected areas of petroleum contamination. These areas include: the old gas house area, hydraulic lift, previously existing 500 gallon above ground heating oil tank, previously existing 5000 gallon above ground diesel tank, and vehicle storage building.

UNDERGROUND STORAGE TANK REMOVAL AND INDEPENDENT REMEDIAL ACTION

On October 18, 1997 Doug Pierce of the WSDOT-Environmental Service Branch arrived at the WSDOT-Sunset Drive Maintenance Facility to perform an independent remedial action. Northwest Cascade Inc. of Tacoma, Washington performed the excavating activities. An excavator was used to excavate in the area of old hydraulic lift located in the maintenance building that was burned down on January 31, 1995. Soils were excavated to a depth of 9' below ground surface and two samples were obtained from the bottom of the excavation. Approximately 30 cubic yards of hydraulic fluid contaminated soil was removed. The excavator was then moved to the area of the gas house to begin excavation of gasoline contaminated soil. Approximately 100 cubic yards of soil was excavated and stockpiled on site. The excavation was approximately 8' bgs and a vein of gasoline was still present on the walls of the excavation.

On October 19, 1997 excavation activities continued in the area of the old gas house. A permit was obtained from the City of Bellingham to allow the excavation of gasoline contaminated soil on the Illinois street right of way. All visible gasoline contamination was excavated from the south wall parallel to the city street and two samples were obtained from the southern wall of the excavation. A sample was also obtained from the east wall at 4' bgs. An additional 700 cubic yards of gasoline contaminated soil was excavated. Gasoline contaminated soil was still present on the north and west wall of the excavation.

On October 20, 1997 additional areas of gasoline contaminated soil on the west and north walls of the excavation were excavated. An additional 300 cubic yards of gasoline contaminated soil was removed. Ten samples were obtained from the excavation to confirm that no further gasoline contamination existed. A sample was also obtained from the gasoline contaminated soil to characterize the level of gasoline contamination.

SAMPLING

Soil samples were obtained to characterize the areas of concern for possible contamination. All samples were taken with hand tools or backhoe. The following are the numbers and locations (see Figure 1 and Figure 2) of soil samples obtained on:

11-18-97 thru 11-20-97

- B1 was a bottom sample obtained from the southeast corner of the hydraulic lift excavation approximately 9' bgs.
- B2 was was a bottom sample obtained from the hydraulic lift excavation directly below where the hydraulic lift piston existed approximately 9' 6" bgs.
- B3 was a bottom sample obtained from the southeast wall of the gasoline excavation approximately 8' bgs.
- B4 was a bottom sample obtained from the southeast corner of the gasoline excavation approximately 8' bgs.
- B5 was a sidewall sample obtained from the east wall of the gasoline excavation approximately 4' bgs.
- B6 was a bottom sample obtained from the northeast corner of the gasoline excavation approximately 8' bgs.
- B7 was a side sample obtained from the northeast corner of the gasoline excavation approximately 4' bgs.
- B8 was a bottom sample obtained from the south wall of the gasoline excavation approximately 8' bgs.
- B9 was a bottom sample obtained from the southwest corner of the gasoline excavation approximately 9' bgs.
- B10 was a bottom sample obtained from the center of the gasoline excavation approximately 10' bgs.
- B11 was a bottom sample obtained from the west side of the gasoline excavation approximately 10' bgs.
- B12 was a bottom sample obtained from the northwest corner of the gasoline excavation approximately 8' bgs.
- B13 was a bottom sample obtained from the north side of the gasoline excavation approximately 10' bgs.

- BG was a sample obtained from the gasoline contaminated soil stockpile.

Samples were placed in an iced cooler and transported under chain of custody to Sound Analytical Services, Inc. in Fife, Washington for laboratory analysis. (see Appendix B)

ANALYTICAL RESULTS

The samples obtained during the underground storage tank removal were to verify that the petroleum contaminated soil was removed. All samples were analyzed using method WTPH-G with BTEX and total lead based on the most likely contaminant in the vicinity. See Table 1 for summary of results.

Table 1

Sample ID	Date (mo/day/yr)	Matrix	WTPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylene (mg/kg)	Lead (mg/kg)
B1	11-18-97	SOIL	ND	ND	ND	ND	ND	ND
B2	11-18-97	SOIL	ND	ND	ND	ND	ND	NA
B3	11-19-97	SOIL	ND	ND	ND	ND	ND	ND
B4	11-19-97	SOIL	ND	ND	ND	ND	ND	NA
B5	11-19-97	SOIL	ND	ND	ND	ND	ND	ND
B6	11-19-97	SOIL	ND	ND	ND	ND	ND	NA
B7	11-19-97	SOIL	4	ND	ND	ND	ND	ND
B8	11-19-97	SOIL	ND	ND	ND	ND	ND	NA
B9	11-19-97	SOIL	ND	ND	ND	ND	ND	ND
B10	11-19-97	SOIL	ND	ND	ND	ND	ND	NA
B11	11-19-97	SOIL	ND	ND	ND	ND	ND	ND
B12	11-20-97	SOIL	ND	ND	ND	ND	ND	NA
B13	11-20-97	SOIL	ND	ND	ND	ND	ND	ND
BG	11-20-97	SOIL	**690**	ND	3.3	ND	8.3	NA
MTCA Method A Cleanup Levels			**100**	**.5**	**40**	**20**	**20**	**250**

ND - Not Detected

NA - Not Analyzed

INDEPENDENT REMEDIAL ACTION (3-10-1998 AND 3-12-1998)

On March 10, 1998 Doug Pierce of the WSDOT-Environmental Service branch return to the site to remove petroleum contaminated soil in Building 1. Northwest Cascade Inc. was the contractor performing the excavation activities using an excavator. The excavation activities began in the vehicle storage bay located at the north end of the building. A 10' x 20' area was excavated to a depth of 4' bgs. Approximately 30 cubic yards of heavy oil contaminated soil was excavated. This contamination was caused by the years of heavy equipment storage. During the excavation of heavy oil, gasoline contamination was discovered. This contamination was determined to be from the gasoline contamination that was excavated the previous year. It was determined that the building be demolished, so that the gasoline contaminated soil below the building could be excavated. On March 11, 1998 Northwest Cascade Inc. began removing the metal roofing and siding with an excavator. The metal was removed and taken to a local metal recycler and the rest of the demolition debris was taken to the local transfer station. On March 12, 1998 Norm Payton of the WSDOT-Environmental Service Branch arrived on site to supervise the excavation of petroleum contaminated soil. Northwest Cascade continued to excavate petroleum contaminated soil inside the perimeter of the foundation of Building 1. The excavation was approximately 20'x 65' and the depths ranged from 3' to 11' bgs. Eleven samples were obtained from the excavation to verify that there was no further petroleum contamination. Approximately 288 cubic yards of gasoline contaminated soil was removed.

SAMPLING

Soil samples were obtained to characterize the areas of concern for possible remaining contamination. All samples were taken with hand tools or excavator. The following are the numbers and locations (see figure 3) of soil samples obtained on:

3-12-98

- Sample SSGNW1 was obtained from the north wall of the excavation approximately 7' bgs.
- Sample SSGB-N2 was a bottom sample obtained from the north side of the excavation at approximately 11' bgs.
- Sample SSGEW-N3 was obtained from the northeast wall of the excavation approximately 9' bgs.
- Sample SSGWW-N4 was obtained from the northwest wall of the excavation approximately 9' bgs.
- Sample SSGB-S5 was a bottom sample obtained from the south side of the excavation approximately 3' bgs.
- Sample SSGSW-6 was obtained from the south wall of the excavation approximately 3' bgs.
- Sample SSGEW-S7 was obtained from the southeast wall of the excavation approximately 3' bgs.

- Sample SSGWW-S8 was obtained from the southwest wall of the excavation approximately 3' bgs.
- Sample SSGEW-C9 was obtained from the east wall of the excavation approximately 4' bgs.
- Sample SSGB-C10 was a bottom sample obtained from the center of the excavation approximately 7' bgs.
- Sample SSBWW-C11 was obtained from the west wall of the excavation approximately 6' bgs.

Samples were placed in an iced cooler and transported under chain of custody to Sound Analytical Services, Inc. in Fife, Washington for laboratory analysis. (see Appendix B)

ANALYTICAL RESULTS

All samples were analyzed using method WTPH-G with BTEX. All sample results were below Model Toxics Control Act Method "A" cleanup levels. The summaries of the sampling results are shown in Table 2.

Table 2

Sample ID	Date	Matrix	WTPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benz (mg/kg)	Xylenes (mg/kg)
SSGNW1	3-12-98	soil	ND	ND	ND	ND	ND
SSGB-N2	3-12-98	soil	ND	ND	ND	ND	ND
SSGEW-N3	3-12-98	soil	ND	ND	ND	ND	ND
SSGWW-N4	3-12-98	soil	ND	ND	ND	ND	ND
SSGB-S5	3-12-98	soil	ND	ND	ND	ND	ND
SSGSW-6	3-12-98	soil	ND	ND	ND	ND	ND
SSGEW-S7	3-12-98	soil	ND	ND	ND	ND	ND
SSGWW-S8	3-12-98	soil	ND	ND	ND	ND	ND
SSGEW-C9	3-12-98	soil	ND	ND	ND	ND	ND
SSGB-C10	3-12-98	soil	ND	ND	ND	ND	ND
SSGWW-C11	3-12-98	soil	ND	ND	ND	ND	ND
MTCA method A cleanup levels			**100**	**.5**	**40**	**20**	**20**

ND - Not detected

PETROLEUM CONTAMINATED SOIL REMEDIATION

The 1388 cubic yards of gasoline contaminated soil was aerated using the front end loader until sample results verified that that levels were below MTCA method A cleanup levels. Ten random samples were obtained using the front end loader and hand tools. The gasoline contaminated soil was used on a local highway right of way project in September of 1998. The 50 cubic yards of heavy oil contaminated soil was added to heavy oil contaminated soil that was excavated from the James St. Storage Site. A front end loader was used to aerate the soil and commercial fertilizer was added to the soil. A soil report was sent to the Department of Ecology on December 29, 1999 stating that the petroleum contaminated soil met the MTCA method B cleanup levels. This report was written upon request from the Department of Ecology. Bioremediation continued to try and meet the MTCA method A cleanup levels. MTCA method A cleanup levels were achieved in June 2000. Six samples were obtained using a front end loader and hand tools. The soil was used on a local highway right of way project. (See Table 3 for summary of results)

TABLE 3

Sample ID	Date	Matrix	WTPH-G (mg/kg)	WTPH-D (mg/kg)	Heavy Oil (mg/kg)
B21	8-19-98	soil	10	NA	NA
B22	8-19-98	soil	4.3	NA	NA
B23	8-19-98	soil	ND	NA	NA
B24	8-19-98	soil	14	NA	NA
B25	8-19-98	soil	3.1	NA	NA
B26	8-19-98	soil	ND	NA	NA
B27	8-19-98	soil	ND	NA	NA
B28	8-19-98	soil	ND	NA	NA
B29	8-19-98	soil	ND	NA	NA
B30	8-19-98	soil	ND	NA	NA
BPCS-1	6-5-00	soil	NA	24	130
BPCS-2	6-5-00	soil	NA	ND	29
BPCS-3	6-5-00	soil	NA	ND	27
BPCS-4	6-5-00	soil	NA	16	48
BPCS-5	6-5-00	soil	NA	ND	ND
BPCS-6	6-5-00	soil	NA	ND	ND
MTCA method A cleanup levels			**100**	**200**	**200**

NA – Not Analyzed
ND – Not Detected

12.0 CONCLUSION

All environmental concerns at the subject property have been addressed. The 1438 cubic yards of petroleum contaminated soils have been remediated and reused on highway projects. No further environmental concerns exist on site.

Prepared by

Thanh Nguyen
Environmental Specialist
WSDOT

Reviewed by

Doug Pierce
Environmental Manager
WSDOT

Gasoline Excavation Sample Locations 11-19-98

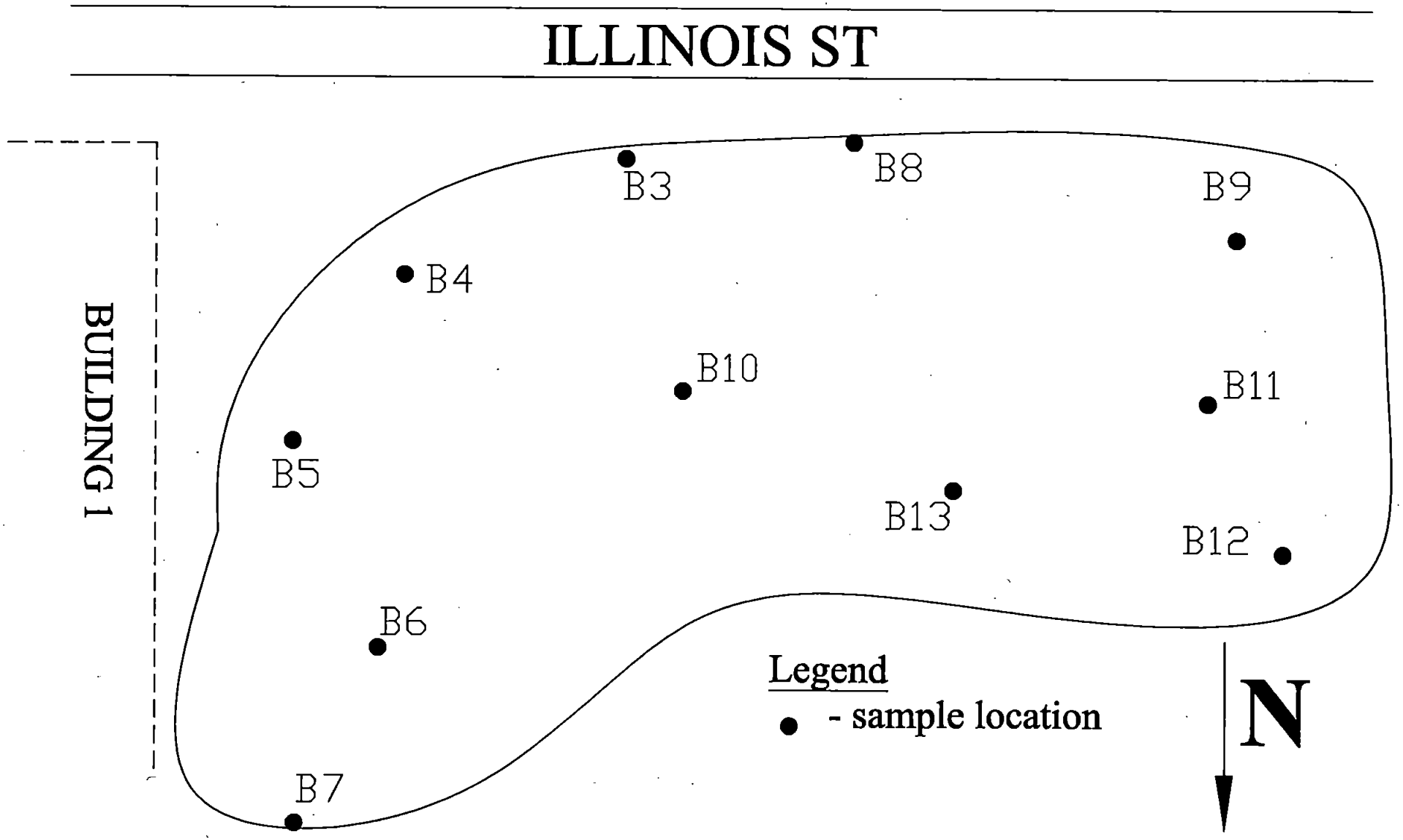
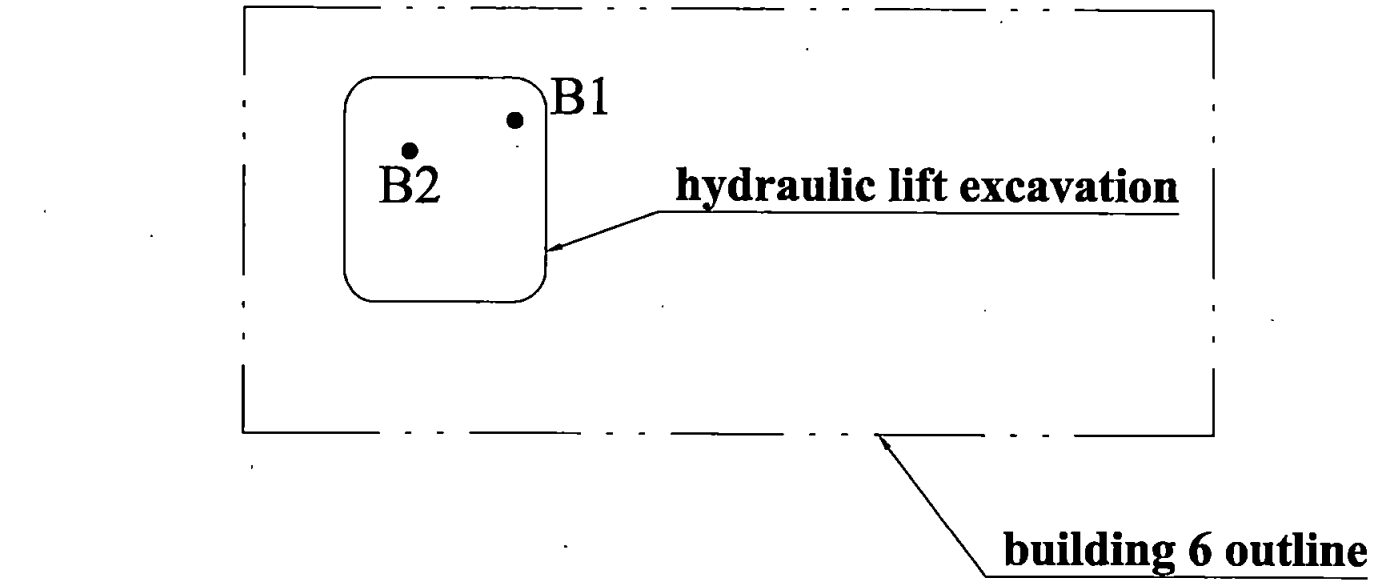


Figure 1

HYDRAULIC LIFT EXCAVATION
SAMPLING 11-18-00



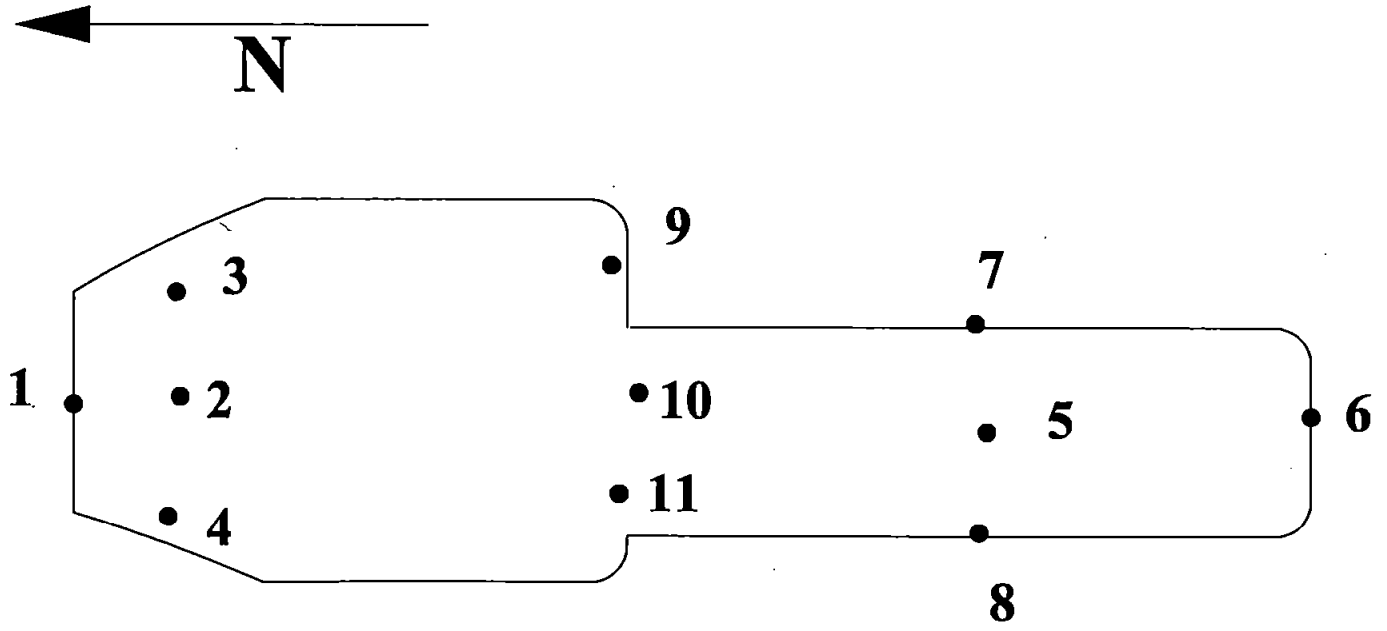
N

Lengend

• - Sample location

Figure 2

BUILDING 1 GASOLINE EXCAVATION SAMPLING 3-12-98

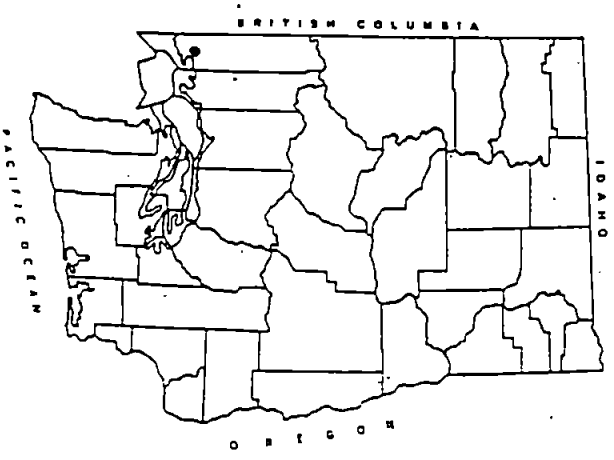


Legend

• - sample location

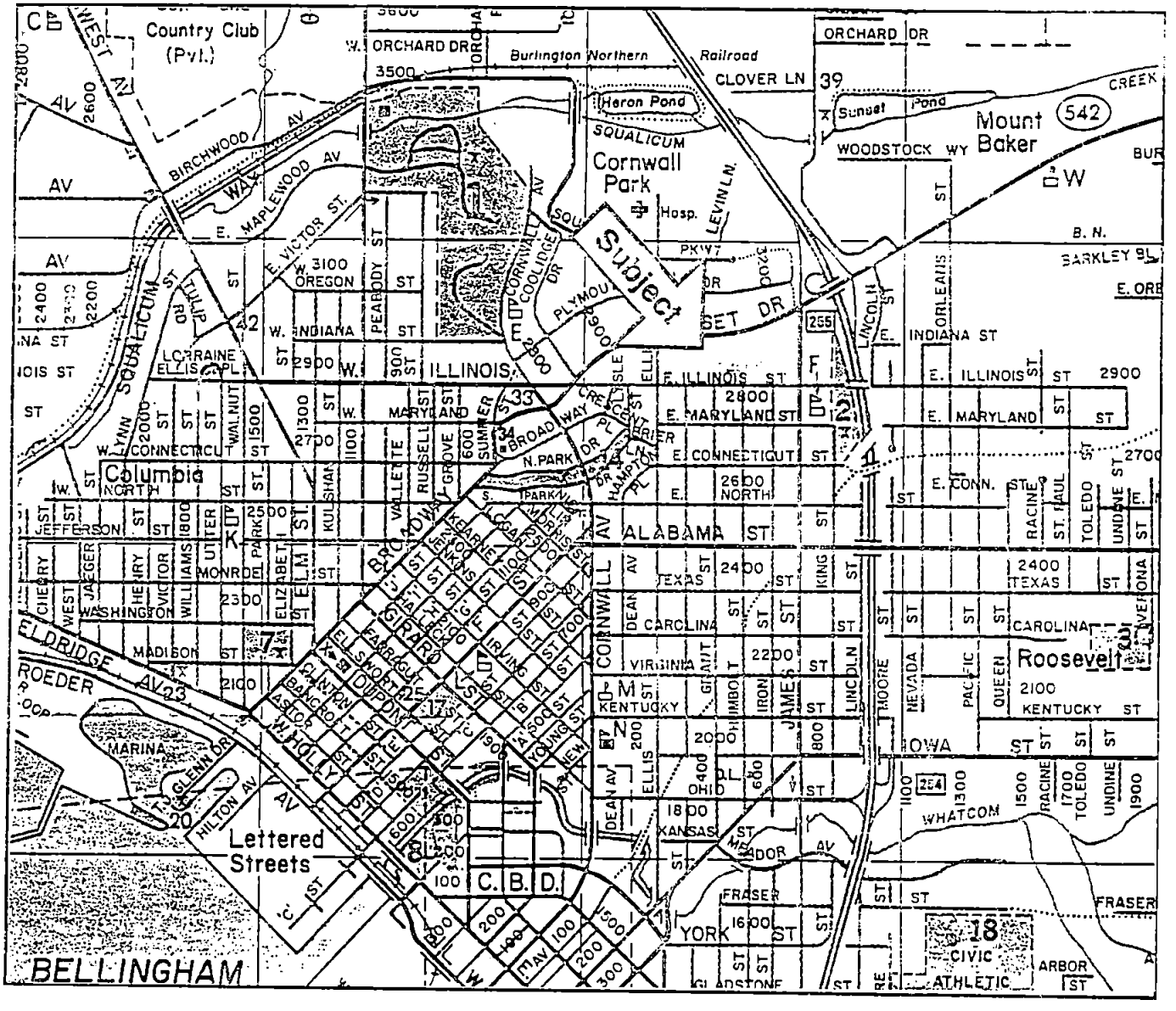
Figure 3

APPENDIX A
VICINITY MAP & SITE PLAN

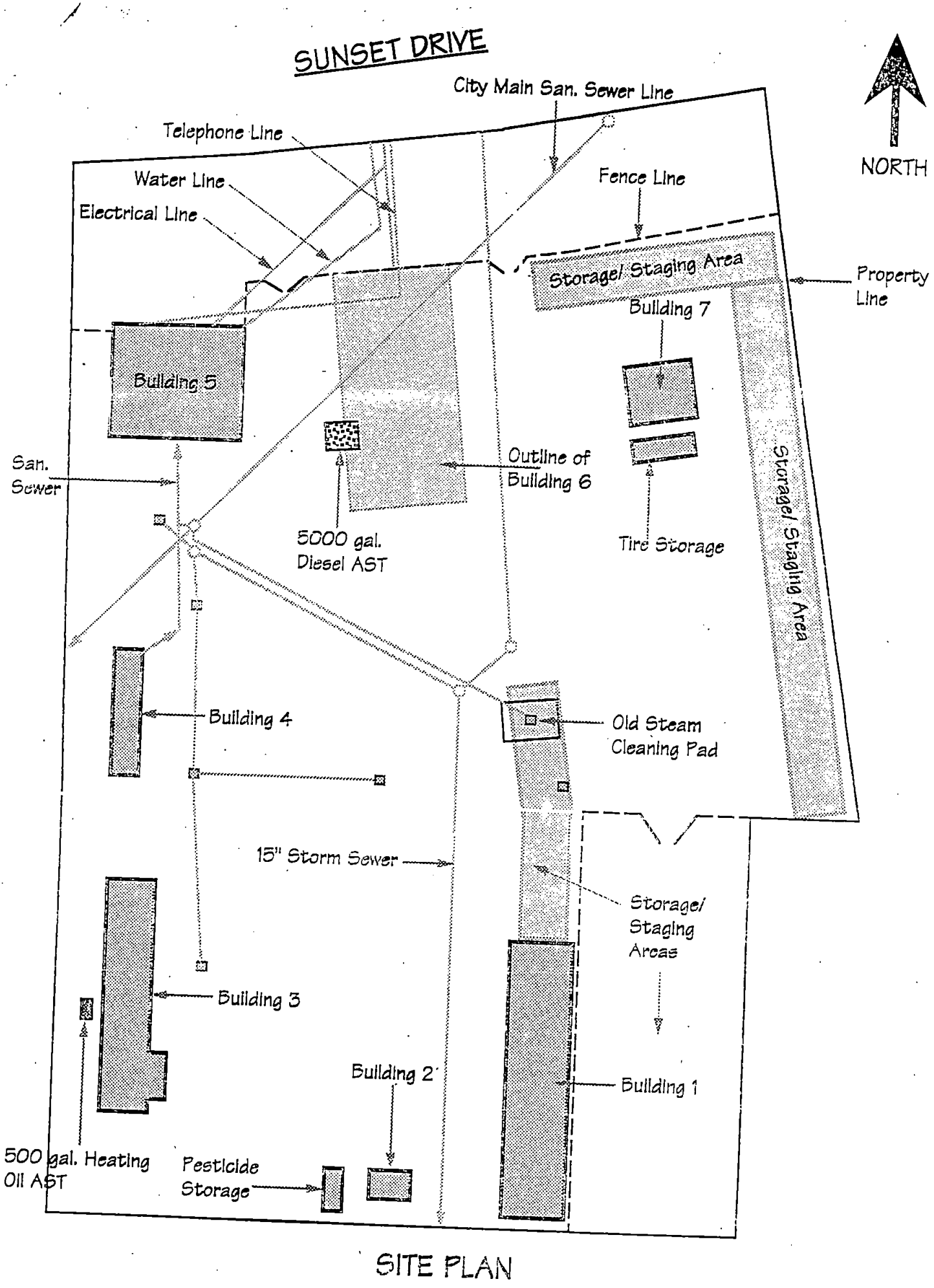


NORTH

Area Map



Vicinity Map


SUNSET DRIVE
City Main San. Sewer Line
Telephone Line
Water Line
Electrical Line
Fence Line
NORTH
Storage/ Staging Area
Property Line
Building 7
Building 5
San. Sewer
Outline of Building 6
5000 gal. Diesel AST
Tire Storage
Storage/ Staging Area
Building 4
Old Steam Cleaning Pad
15" Storm Sewer
Storage/ Staging Areas
Building 3
Building 2
Building 1
500 gal. Heating Oil AST
Pesticide Storage

SITE PLAN

APPENDIX B

ANALYTICAL RESULTS FROM SOUND ANALYTICAL, INC.

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

TRANSMITTAL MEMORANDUM

DATE: December 5, 1997

TO: Doug Pierce
WSDOT - Operations, Olympia
P.O. Box 47358
Olympia, WA 98504-7358

PROJECT: Old Bellingham Maint. Fac.

REPORT NUMBER: 69006

Enclosed are the test results for fourteen samples received at Sound Analytical Services on November 24, 1997. A request for additional analysis was received on November 25, 1997.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Dawn Werner
Project Manager

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B1
Lab ID:	69006-01
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	84.4

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	96		37	125
Trifluorotoluene (FID)	90		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.024	
Toluene	ND	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylene	ND	0.047	
o-Xylene	ND	0.024	
Gasoline	ND	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B2
Lab ID:	69006-02
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	84.91

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	92		37	125
Trifluorotoluene (FID)	90		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.024	
Toluene	ND	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylene	ND	0.047	
o-Xylene	ND	0.024	
Gasoline	ND	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B3
Lab ID:	69006-03
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	84.5

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	94		37	125
Trifluorotoluene (FID)	88		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.024	
Toluene	ND	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylene	ND	0.047	
o-Xylene	ND	0.024	
Gasoline	ND	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B4
Lab ID:	69006-04
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	84.08

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	96		37	125
Trifluorotoluene (FID)	89		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.024	
Toluene	ND	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylene	ND	0.047	
o-Xylene	ND	0.024	
Gasoline	ND	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B5
Lab ID:	69006-05
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	79.39

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	102		37	125
Trifluorotoluene (FID)	91		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.025	
Toluene	ND	0.025	
Ethylbenzene	ND	0.025	
m,p-Xylene	ND	0.05	
o-Xylene	ND	0.025	
Gasoline	ND	2.5	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B6
Lab ID:	69006-06
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	87.62

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	90		37	125
Trifluorotoluene (FID)	86		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.022	
Toluene	ND	0.022	
Ethylbenzene	ND	0.022	
m,p-Xylene	ND	0.045	
o-Xylene	ND	0.022	
Gasoline	ND	2.2	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B7
Lab ID:	69006-07
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	83.33

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	92		37	125
Trifluorotoluene (FID)	87		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.024	
Toluene	ND	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylene	ND	0.048	
o-Xylene	ND	0.024	
Gasoline	4	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B8
Lab ID:	69006-08
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	84.17

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	94		37	125
Trifluorotoluene (FID)	91		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylene	ND	0.047	
o-Xylene	ND	0.023	
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B9
Lab ID:	69006-09
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/3/97
% Solids	81.51

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	90		37	125
Trifluorotoluene (FID)	89		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.024	
Toluene	ND	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylene	ND	0.048	
o-Xylene	ND	0.024	
Gasoline	ND	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B10
Lab ID:	69006-10
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/3/97
% Solids	84.36

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	97		37	125
Trifluorotoluene (FID)	90		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylene	ND	0.047	
o-Xylene	ND	0.023	
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B11
Lab ID:	69006-11
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/3/97
% Solids	86.23

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	97		37	125
Trifluorotoluene (FID)	91		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylene	ND	0.046	
o-Xylene	ND	0.023	
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B12
Lab ID:	69006-12
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/3/97
% Solids	79.6

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	92		37	125
Trifluorotoluene (FID)	87		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.025	
Toluene	ND	0.025	
Ethylbenzene	ND	0.025	
m,p-Xylene	ND	0.05	
o-Xylene	ND	0.025	
Gasoline	ND	2.5	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B13
Lab ID:	69006-13
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/3/97
% Solids	84.89

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	96		37	125
Trifluorotoluene (FID)	90		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylene	ND	0.046	
o-Xylene	ND	0.023	
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	BG
Lab ID:	69006-14
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/3/97
% Solids	79.87

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	94		37	125
Trifluorotoluene (FID)	212	D,X9	50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.024	
Toluene	3.3	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylene	3.5	0.049	
o-Xylene	4.8	0.024	
Gasoline	690	24	D

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B1
Lab ID:	69006-01
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
Dilution Factor	1
% Solids	84.4

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Lead	ND	16	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B3
Lab ID:	69006-03
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
Dilution Factor	1
% Solids	84.5

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Lead	ND	17	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B5
Lab ID:	69006-05
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
Dilution Factor	1
% Solids	79.39

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Lead	ND	17	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B7
Lab ID:	69006-07
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
Dilution Factor	1
% Solids	83.33

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Lead	ND	18	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B9
Lab ID:	69006-09
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
Dilution Factor	1
% Solids	81.51

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Lead	ND	18	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B11
Lab ID:	69006-11
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
Dilution Factor	1
% Solids	86.23

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Lead	ND	17	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B13
Lab ID:	69006-13
Date Received:	11/24/97
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
Dilution Factor	1
% Solids	84.89

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Lead	ND	17	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB1325
Date Received:	-
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
% Solids	

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene (PID)	98		37	125
Trifluorotoluene (FID)	92		50	150

Sample results are on an as received basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.02	
Toluene	ND	0.02	
Ethylbenzene	ND	0.02	
m,p-Xylene	ND	0.04	
o-Xylene	ND	0.02	
Gasoline	ND	2	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	B1
Lab ID:	69006-01
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
QC Batch ID:	GB1325

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Benzene	ND	ND	NC	
Toluene	ND	ND	NC	
Ethylbenzene	ND	ND	NC	
m,p-Xylene	ND	ND	NC	
o-Xylene	ND	ND	NC	
Gasoline	ND	ND	NC	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	B11
Lab ID:	69006-11
Date Prepared:	12/1/97
Date Analyzed:	12/3/97
QC Batch ID:	GB1325

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modifi

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Benzene	ND	ND	NC	
Toluene	ND	ND	NC	
Ethylbenzene	ND	ND	NC	
m,p-Xylene	ND	ND	NC	
o-Xylene	ND	ND	NC	
Gasoline	ND	ND	NC	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	B1
Lab ID:	69006-01
Date Prepared:	12/1/97
Date Analyzed:	12/2/97
QC Batch ID:	GB1325

Volatile Organic Compounds and Gasoline by Methods 8020 Modified/WTPH-G Modified

Compound Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	MSD Result (mg/kg)	MSD % Rec.	RPD	Flag
Benzene	ND	1.18	1.05	88.8	1.06	89.9	1.2	
Toluene	ND	1.18	1.09	92	1.11	94.2	2.4	
Ethylbenzene	ND	1.18	1.14	96.4	1.25	105	8.5	
m,p-Xylene	ND	2.37	2.35	99.1	2.39	101	1.9	
o-Xylene	ND	1.18	1.11	93.8	1.13	95.5	1.8	
Gasoline	ND	31.6	28.1	89	30	94.8	6.3	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - S457
Date Received:	-
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Lead	ND	15	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	B7
Lab ID:	69006-07
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
QC Batch ID:	S457

Metals by ICP - USEPA Method 6010

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Lead	0	0	NC	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike Report

Client Sample ID:	B7
Lab ID:	69006-07
Date Prepared:	12/1/97
Date Analyzed:	12/1/97
QC Batch ID:	S457

Metals by ICP - USEPA Method 6010

Parameter Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	Flag
Lead	0	105	105	100	

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C: Additional confirmation performed.

D: The reported result for this analyte is calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____ .

X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.

X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.

X4: RPD for duplicates outside advisory QC limits. Sample was re-analyzed with similar results.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike was diluted out during analysis.

X6: Recovery of matrix spike was outside advisory QC limits. Sample was re-analyzed with similar results.

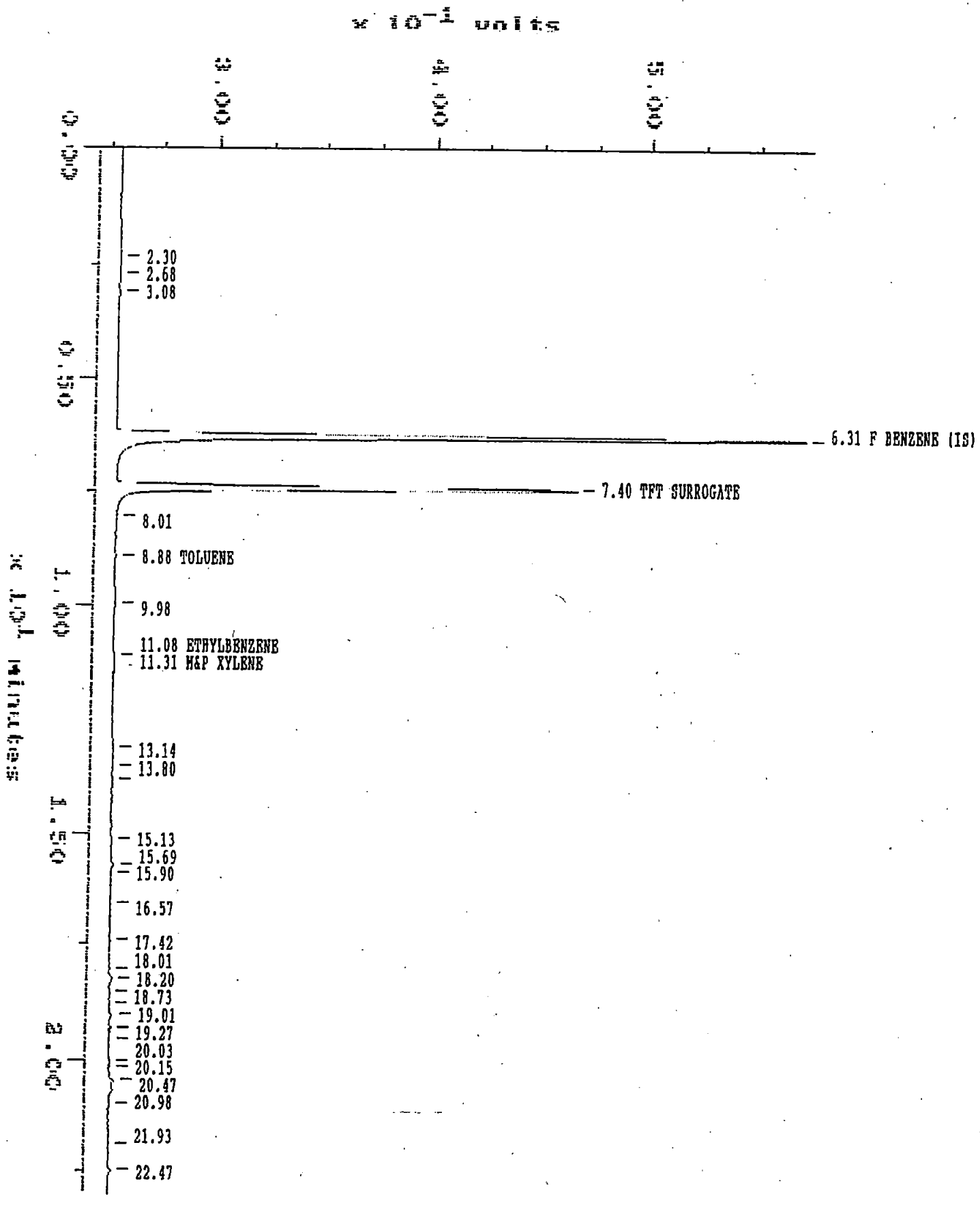
X7: Recovery of matrix spike outside advisory QC limits. Matrix interference is indicated by blank spike recovery data.

X7a: Recovery and/or RPD values for MS/MSD outside advisory QC limits due to high contaminant levels.

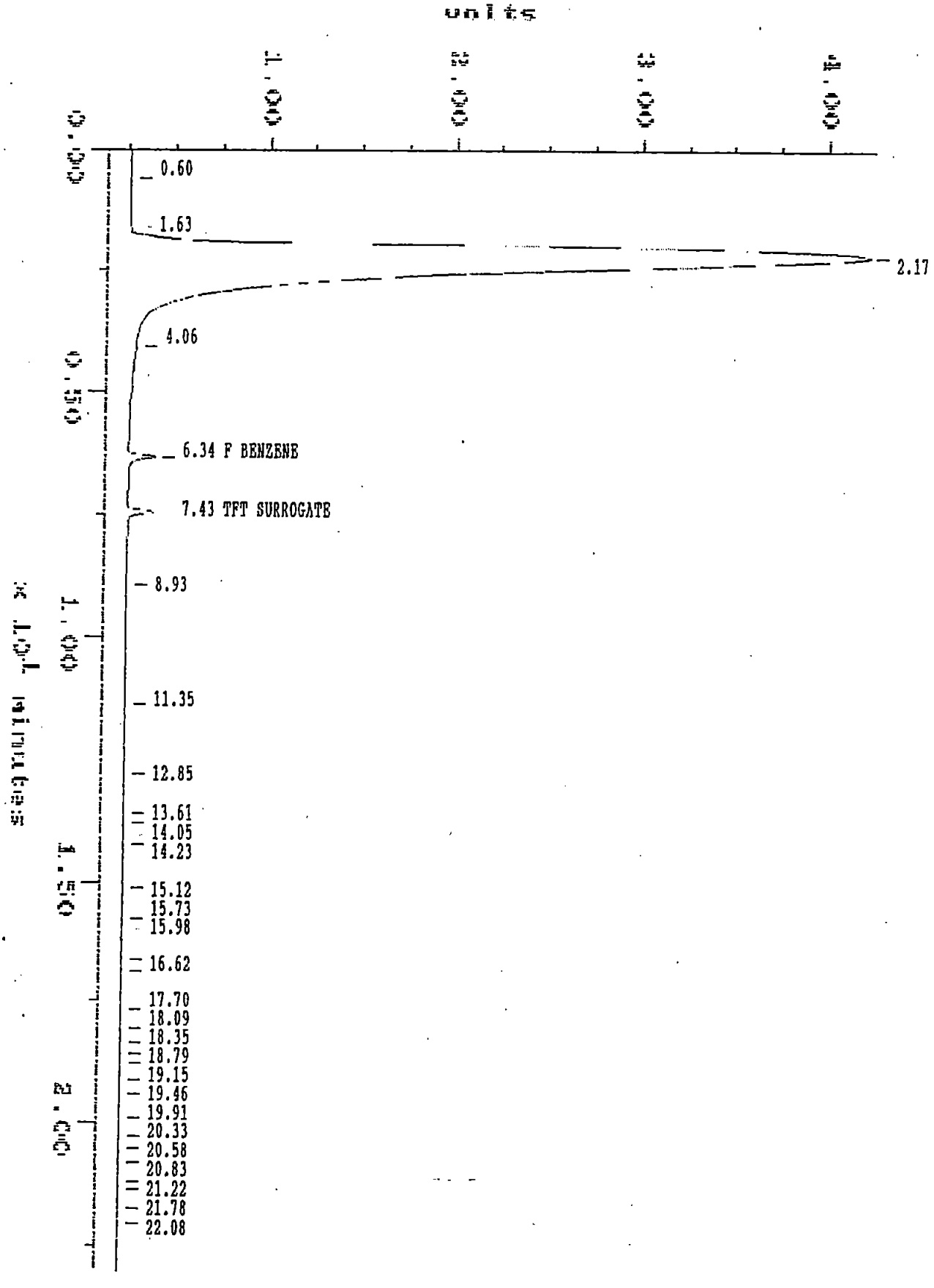
X8: Surrogate was diluted out during analysis.

X9: Surrogate recovery outside advisory QC limits due to matrix composition.

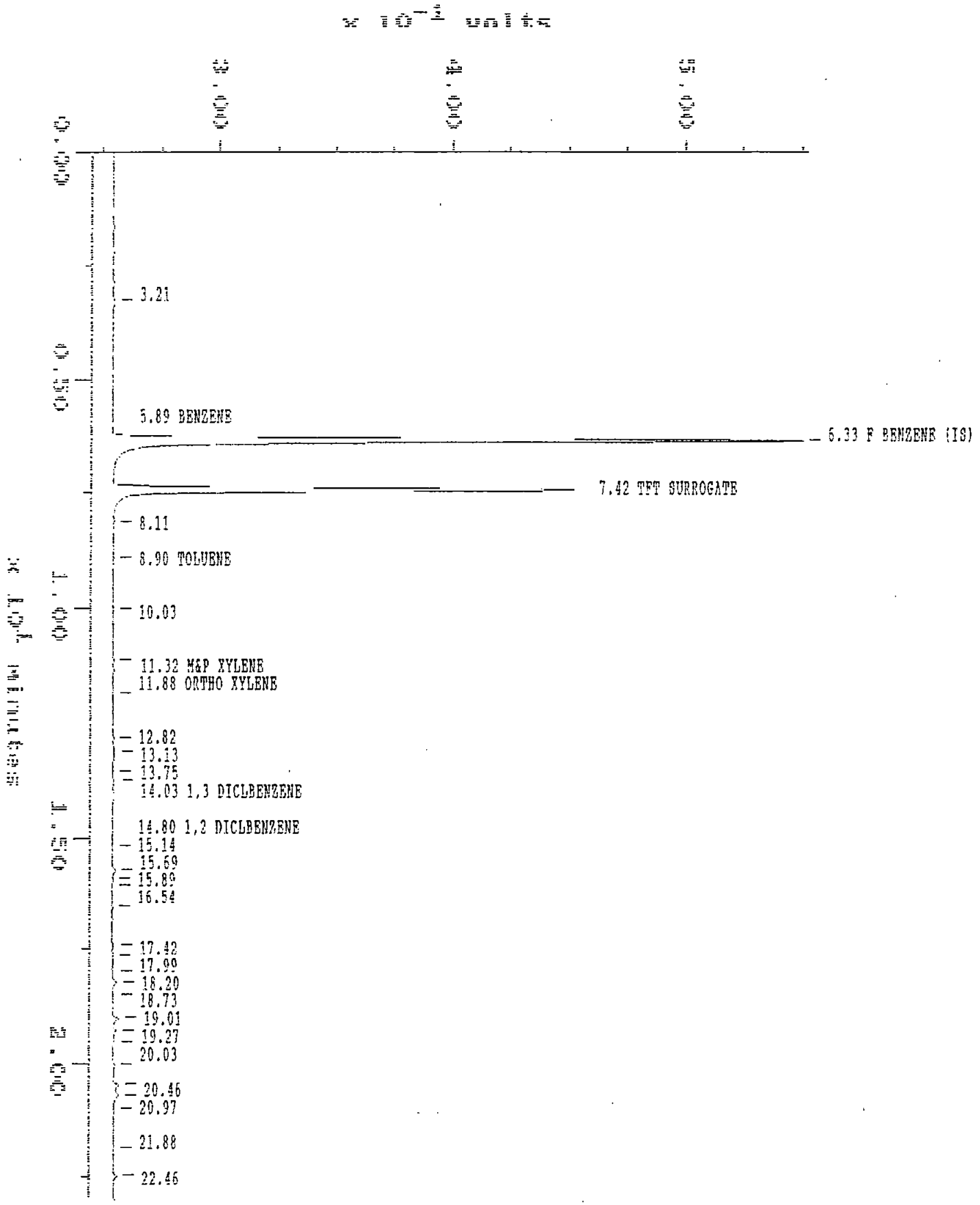
Sample: 69006 1 GB1325 Channel: PID Filename: C2568
Acquired: 02 DEC 97 13:02 Method: C:\MAX\DATA1\971201A Operator: JHC



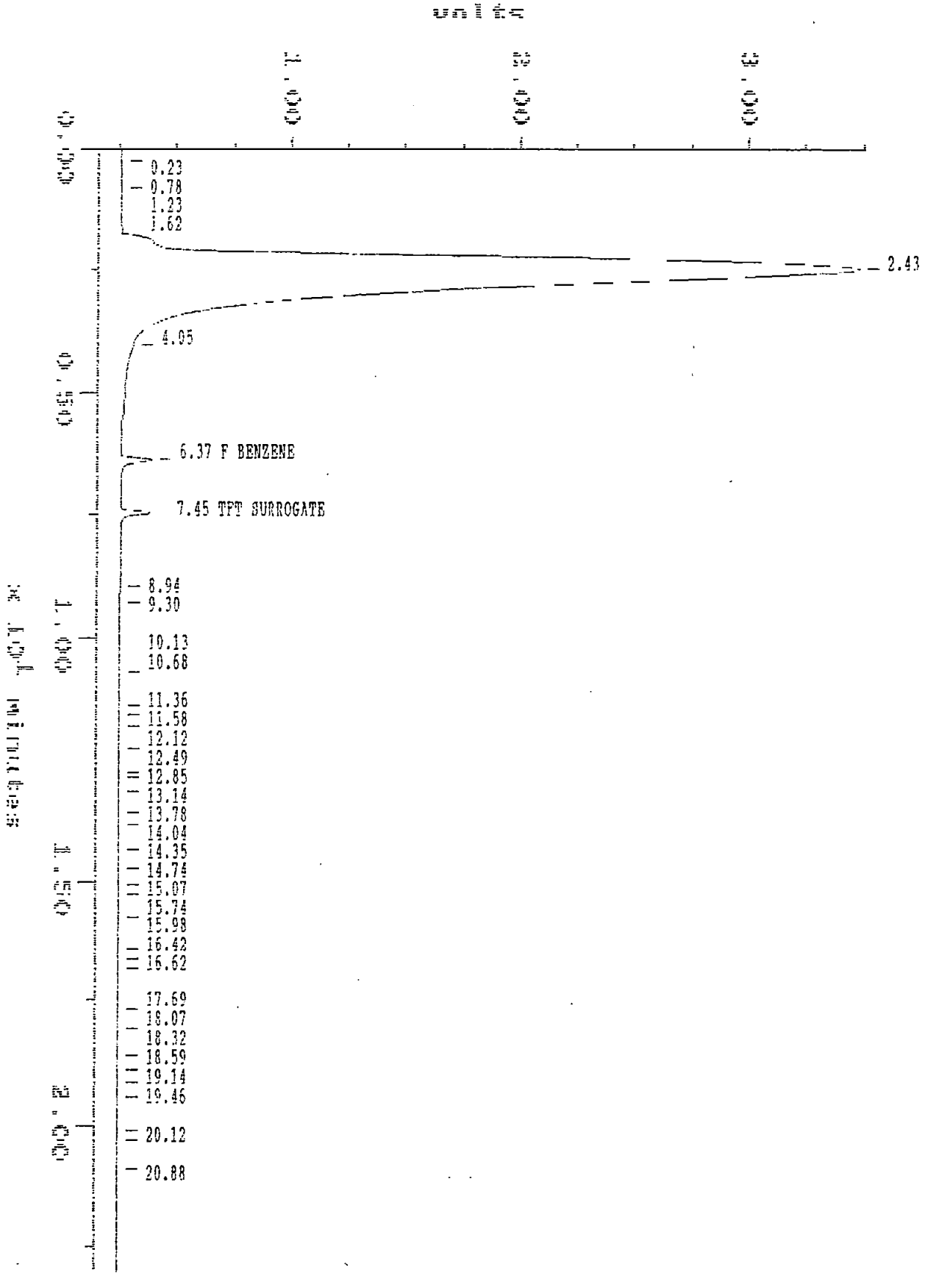
Sample: 69006 1 GB1325 Channel: FID Filename: C2568
Acquired: 02 DEC 97 13:02 Method: C:\MAX\DATA1\971201A Operator: JMC



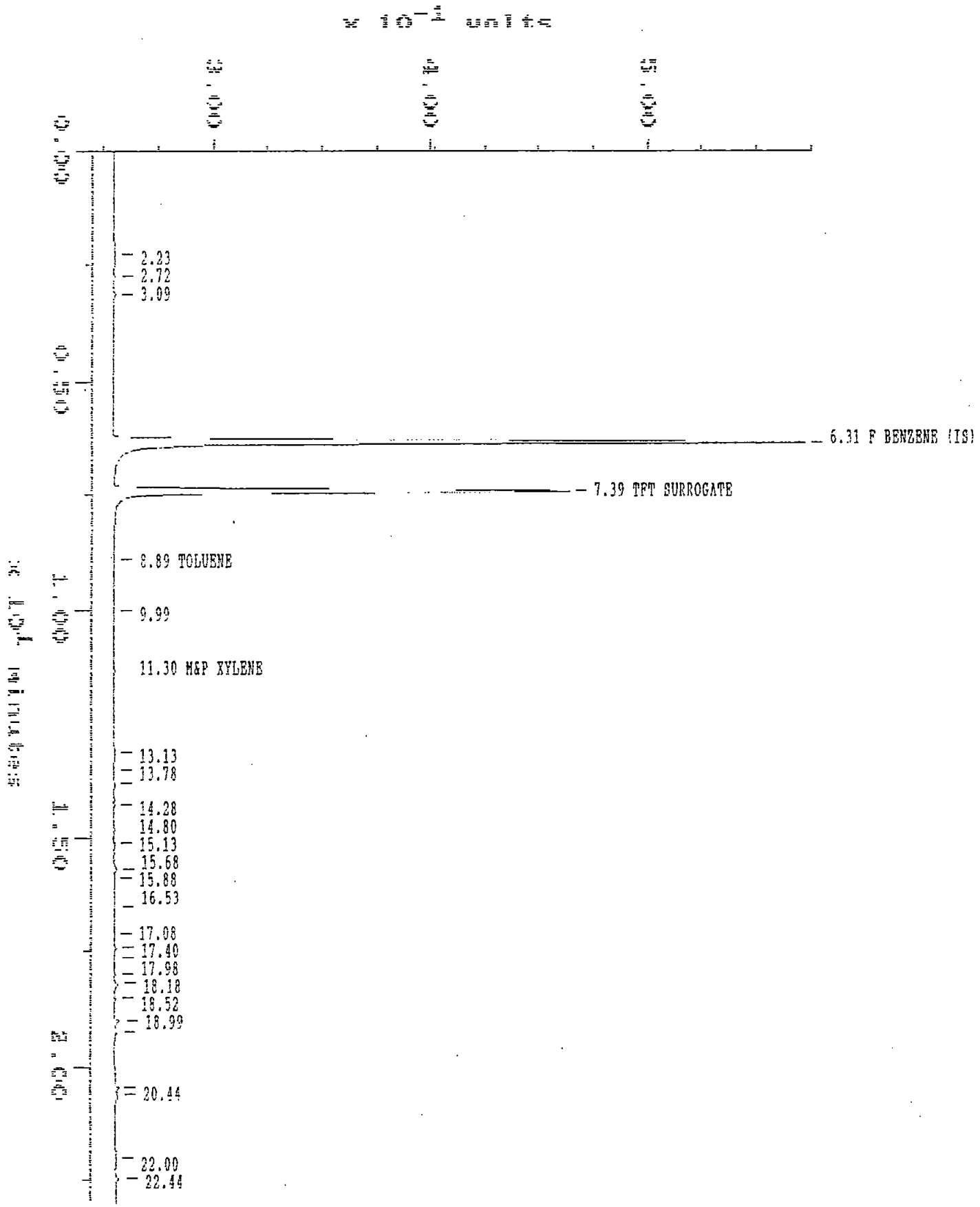
Sample: 69006 2 GB1325 Channel: PID Filename: C2567
Acquired: 02 DEC 97 12:35 Method: C:\MAX\DATA1\971201A Operator: JMC



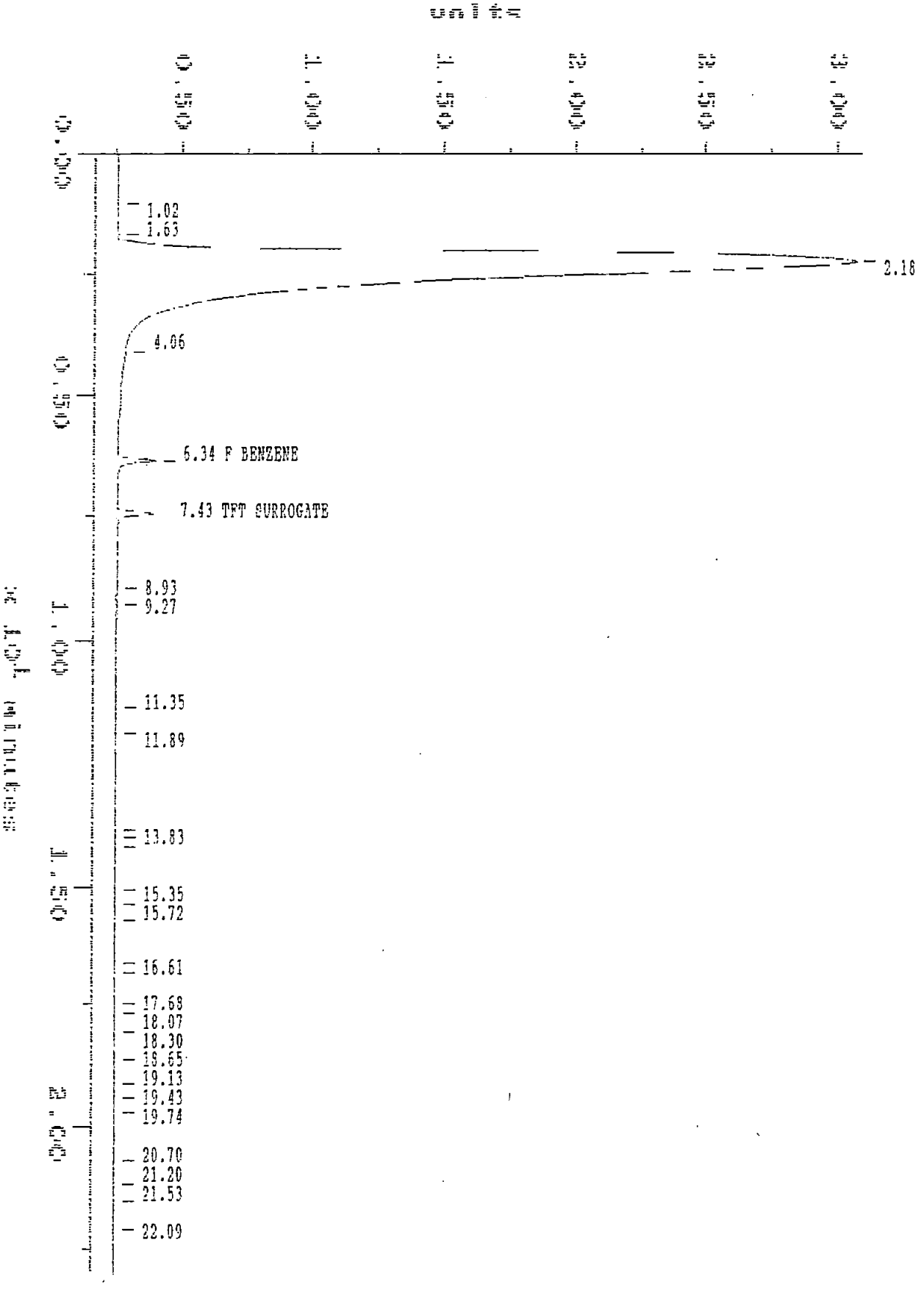
Sample: 69006 2 GB1325 Channel: FID Filename: C2567
Acquired: 02 DEC 97 12:35 Method: C:\MAX\DATA1\971201A Operator: JMC



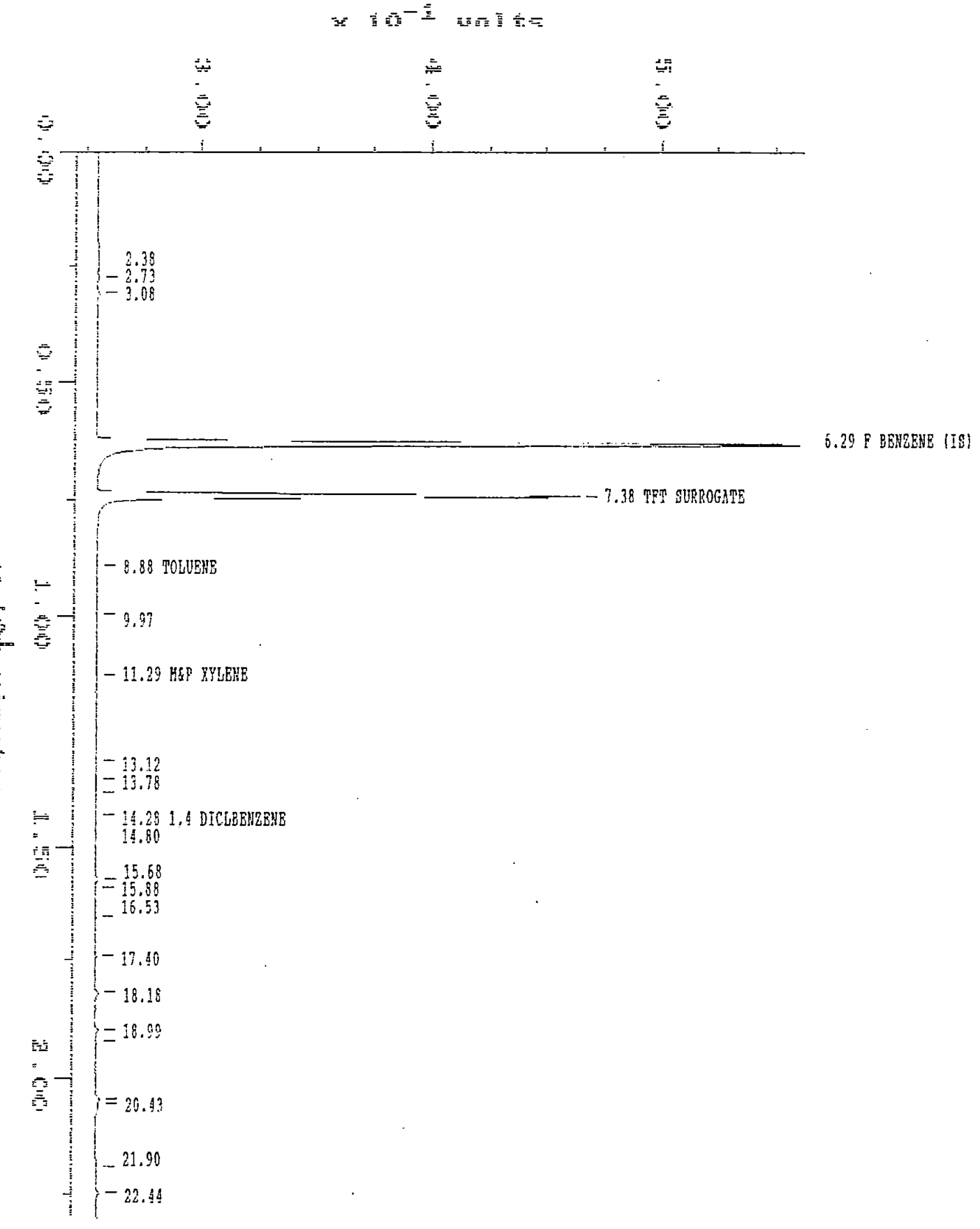
Sample: 69006 3 GB1325 Channel: PID Filename: C2577
Acquired: 02 DEC 97 17:06 Method: C:\MAX\DATA1\971201A Operator: JMC



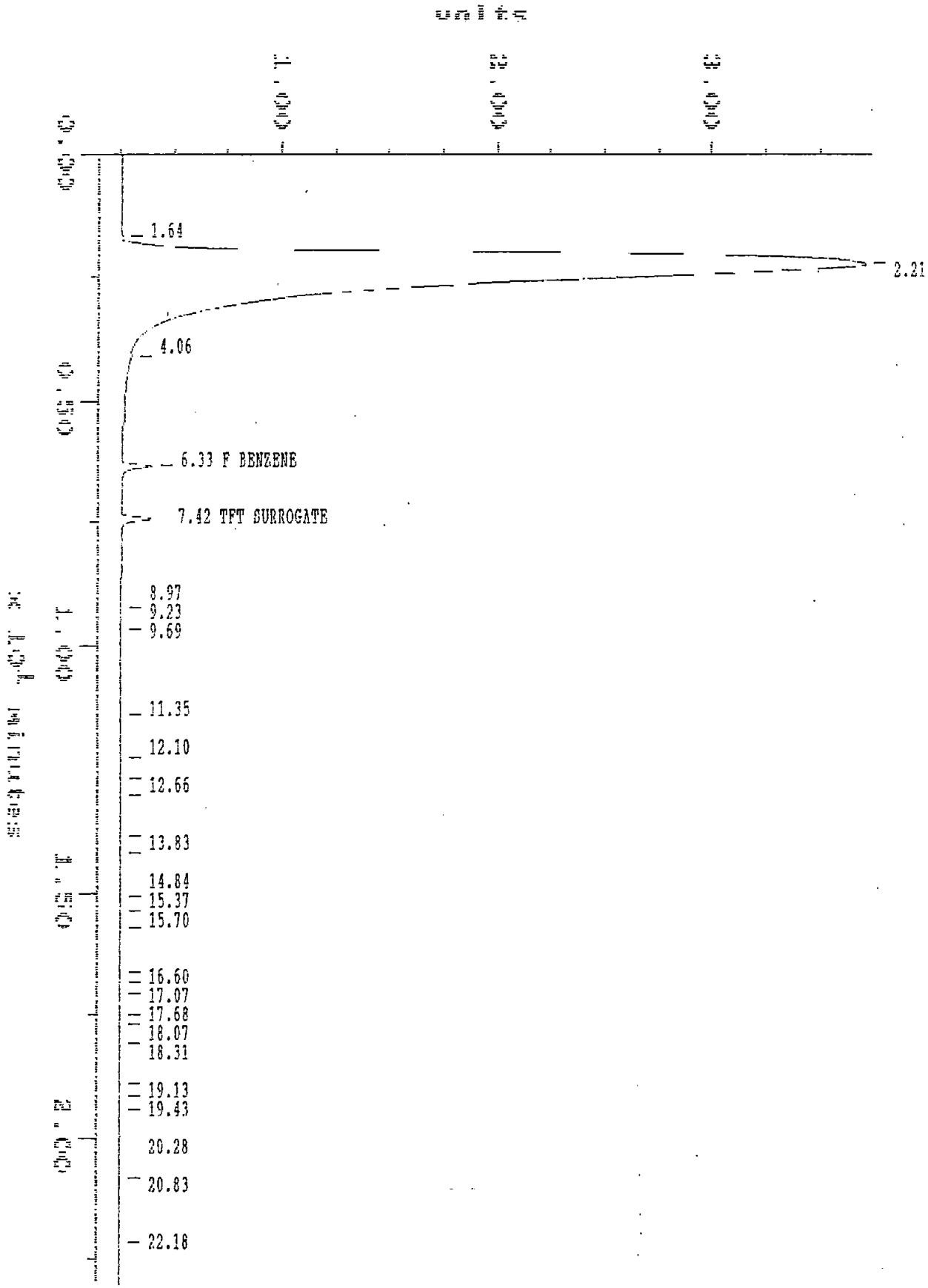
Sample: 69006 3 GB1325 Channel: FID Filename: C2577
Acquired: 02 DEC 97 17:06 Method: C:\MAX\DATA1\971201A Operator: JMC



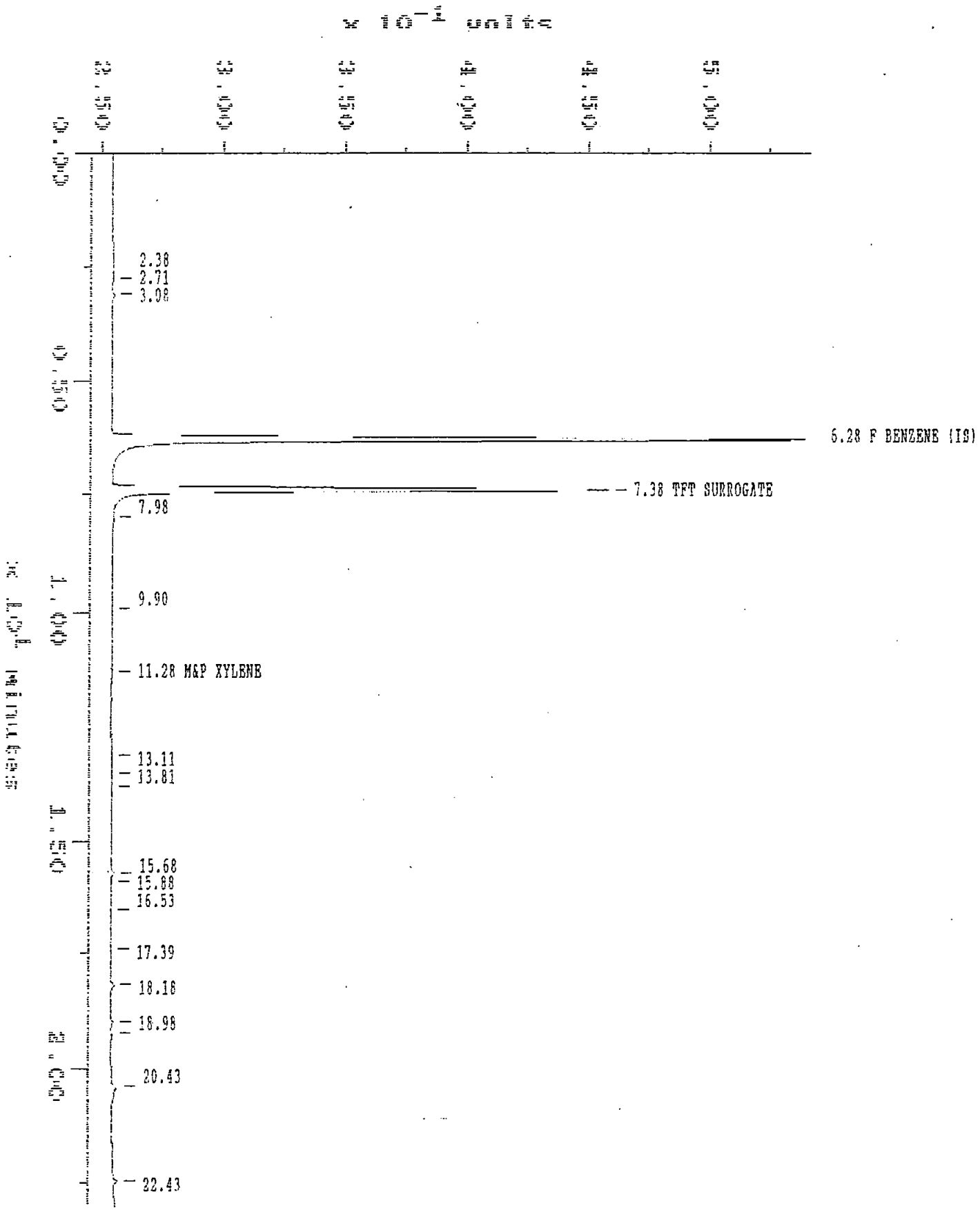
Sample: 69006 4 GB1325 Channel: PID Filename: C2578
Acquired: 02 DEC 97 17:33 Method: C:\MAX\DATA1\971202 Operator: JMC



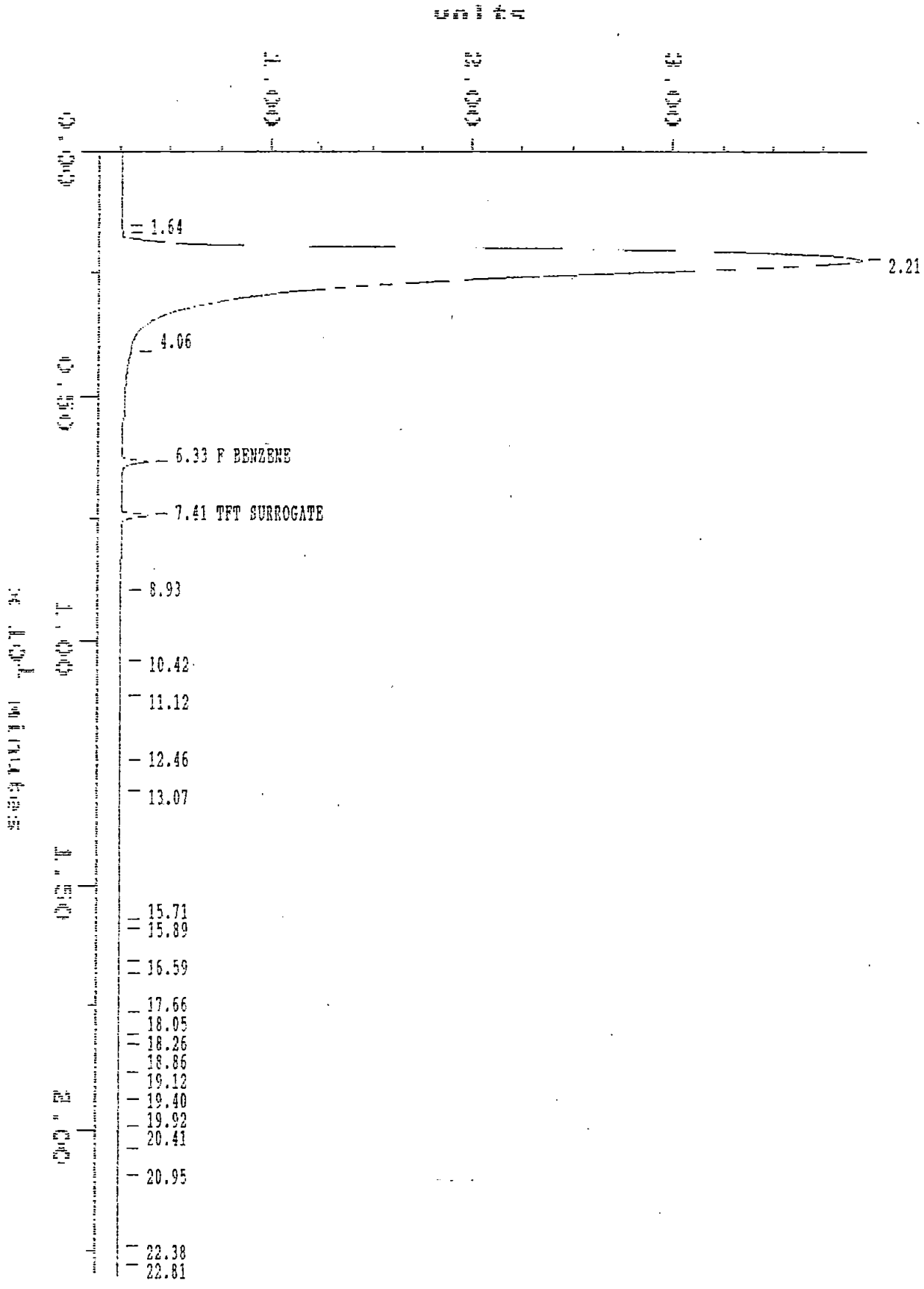
Sample: 69006 4 GB1325 Channel: FID Filename: C2576
Acquired: 02 DEC 97 17:33 Method: C:\MAX\DATA1\971202 Operator: JMC



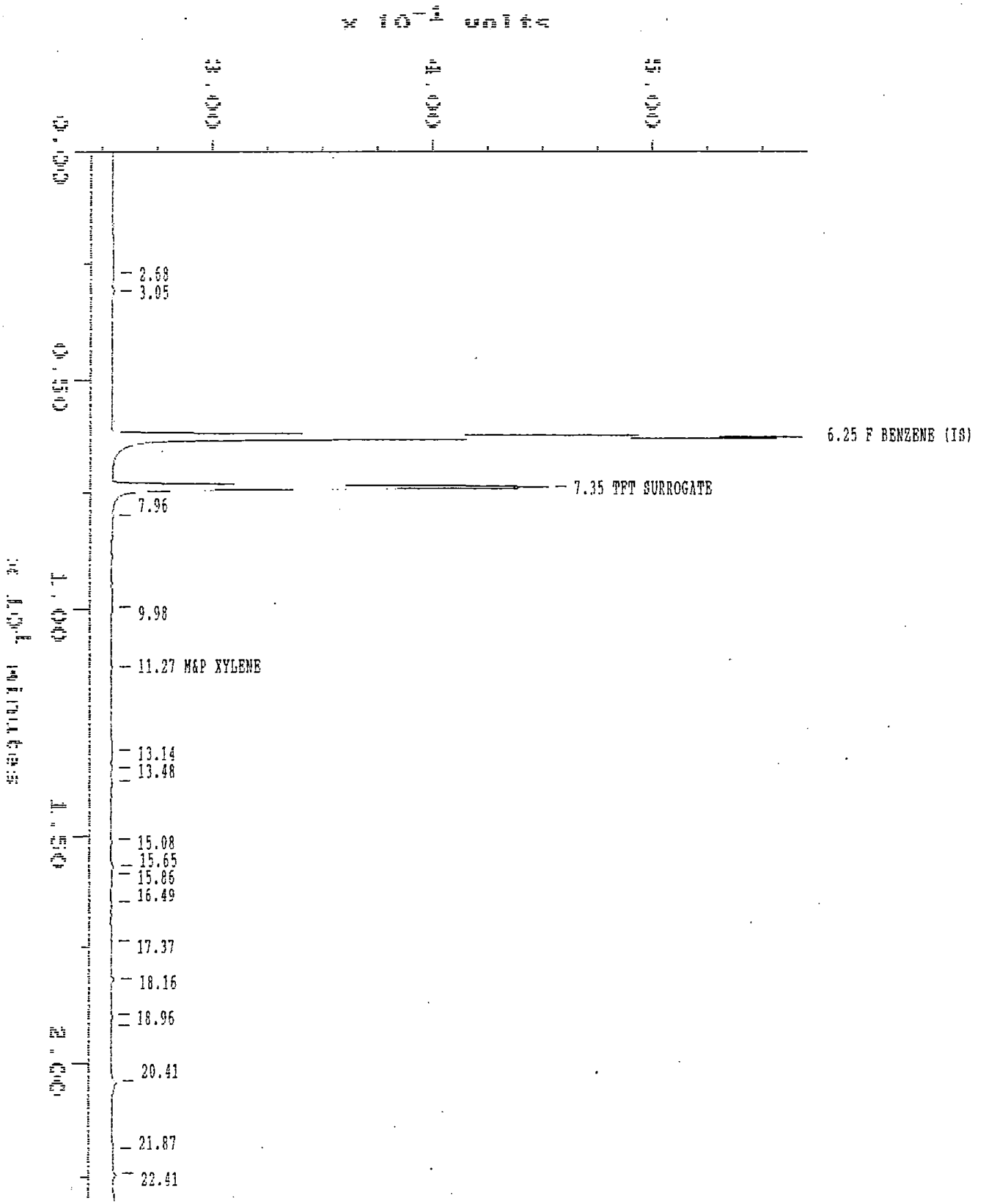
Sample: 69006 5 GB1325 Channel: PID Filename: C2579
Acquired: 02 DEC 97 18:00 Method: C:\MAX\DATA1\971202 Operator: JMC



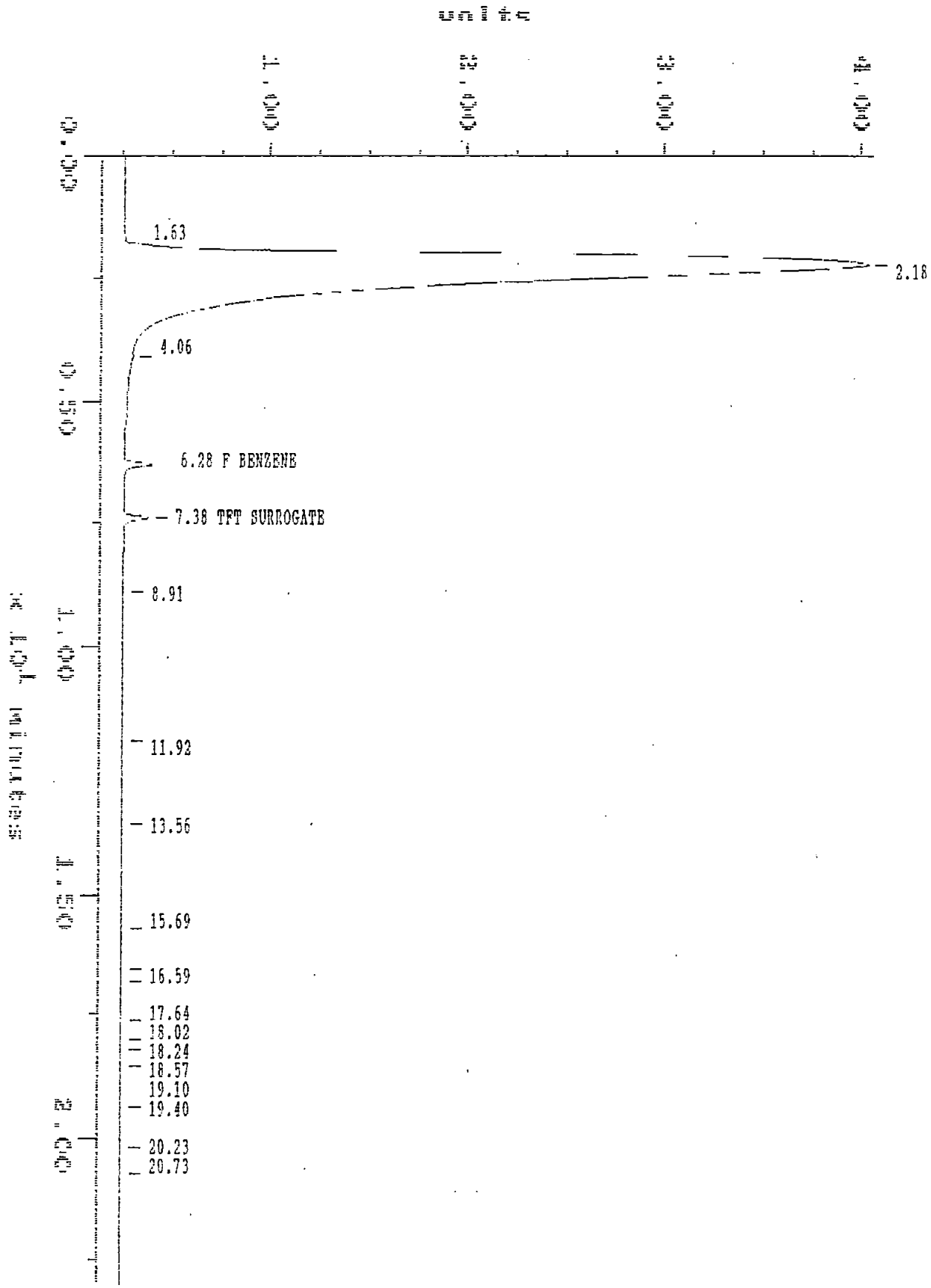
Sample: 69006 5 GB1325 Channel: FID Filename: C2579
Acquired: 02 DEC 97 18:00 Method: C:\MAX\DATA1\971202 Operator: JMC



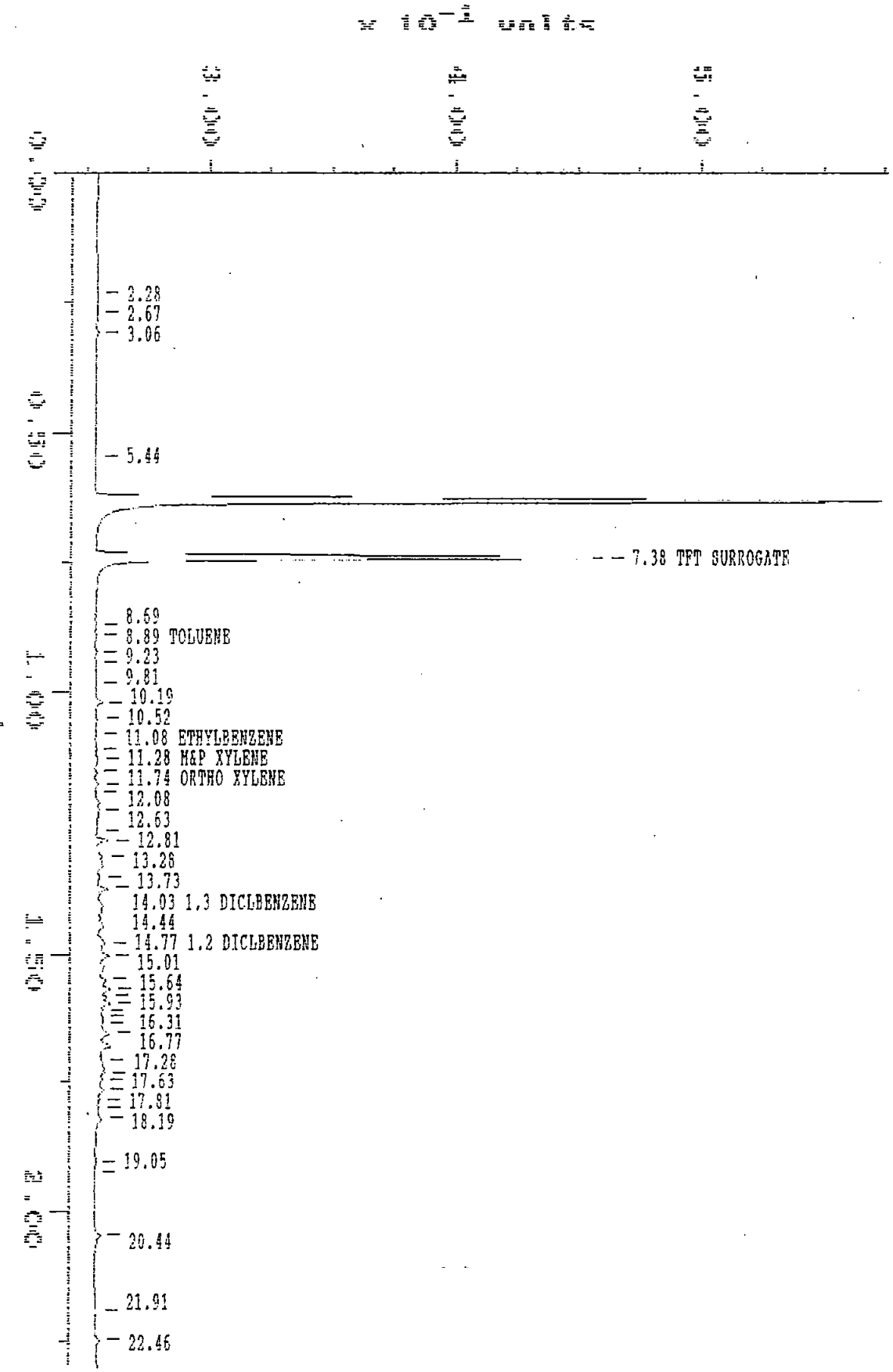
Sample: 69006 6 GB1325 Channel: PID Filename: C2580
Acquired: 02 DEC 97 18:28 Method: C:\HAX\DATA1\971202 Operator: JMC



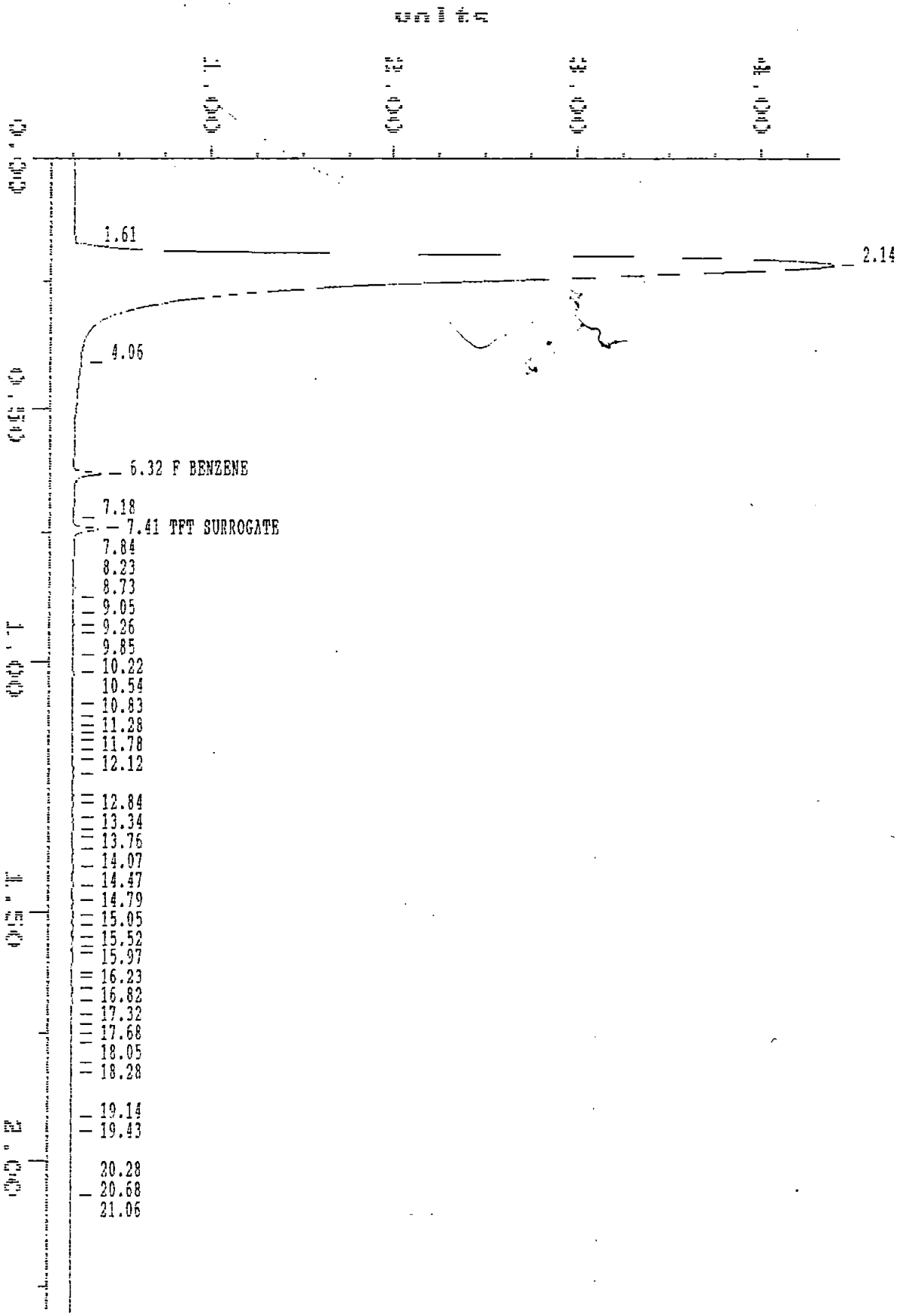
Sample: 69006 6 GB1325 Channel: FID Filename: C2580
Acquired: 02 DEC 97 18:28 Method: C:\MAX\DATA1\971202 Operator: JMC



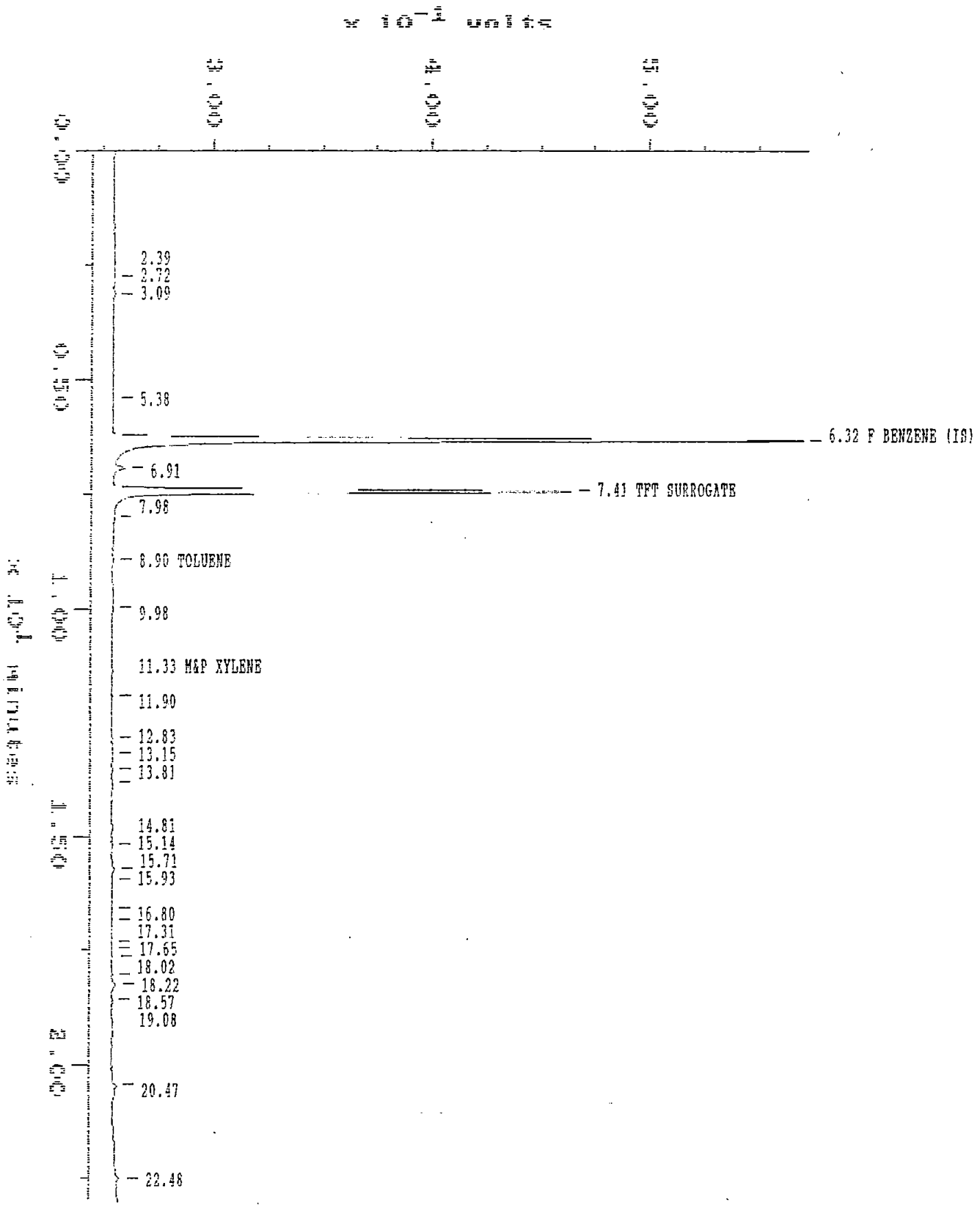
Sample: 69006 7 GB1325 Channel: PID Filename: C2581
Acquired: 02 DEC 97 18:55 Method: C:\MAX\DATA1\971202 Operator: JMC



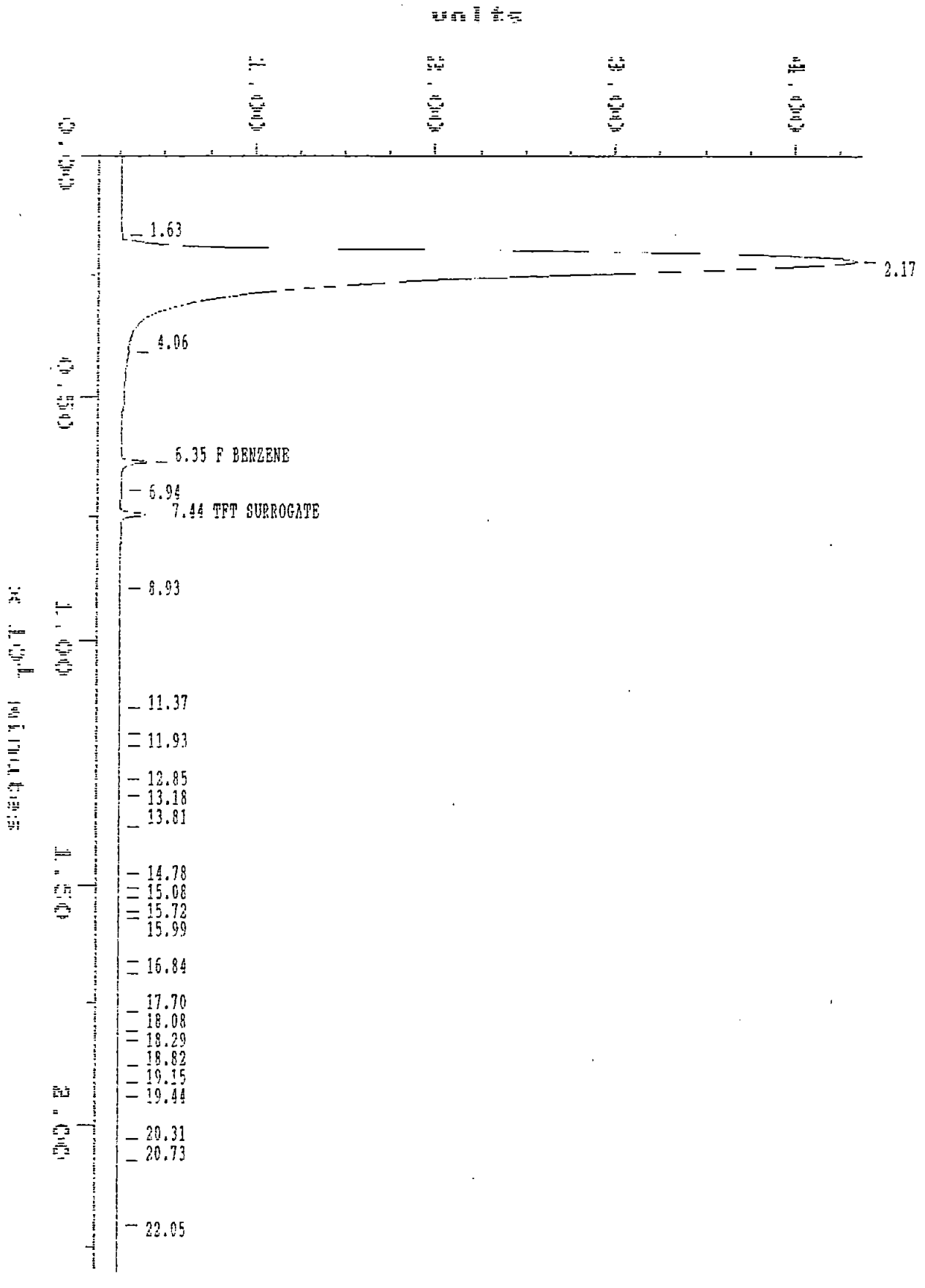
Sample: 69006 7 GB1325 Channel: FID Filename: C2581
Acquired: 02 DEC 97 18:55 Method: C:\MAX\DATA1\971202 Operator: JMC



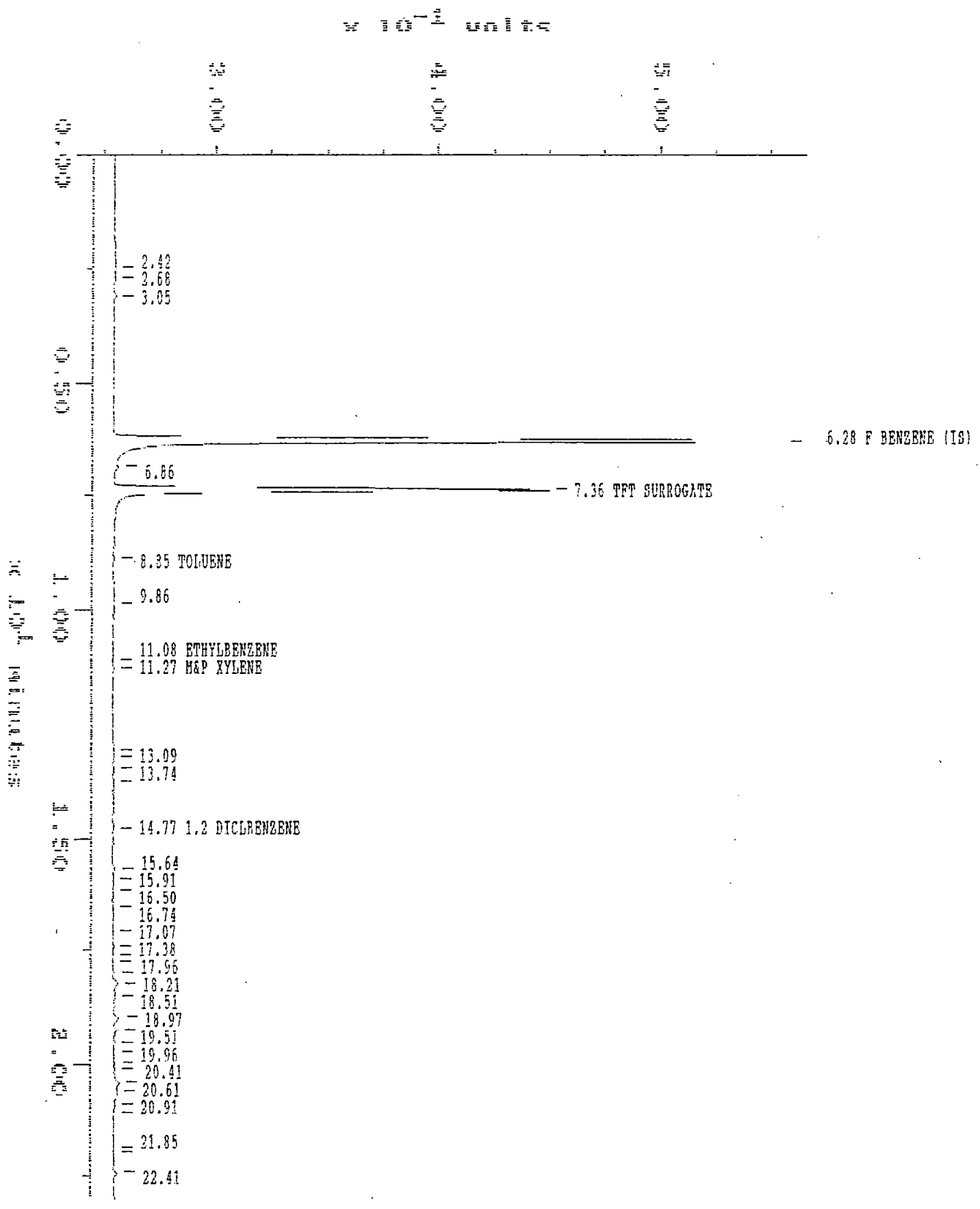
Sample: 69006 8 GB1325 Channel: PID Filename: C2582
Acquired: 02 DEC 97 19:22 Method: C:\MAX\DATA1\971202 Operator: JMC



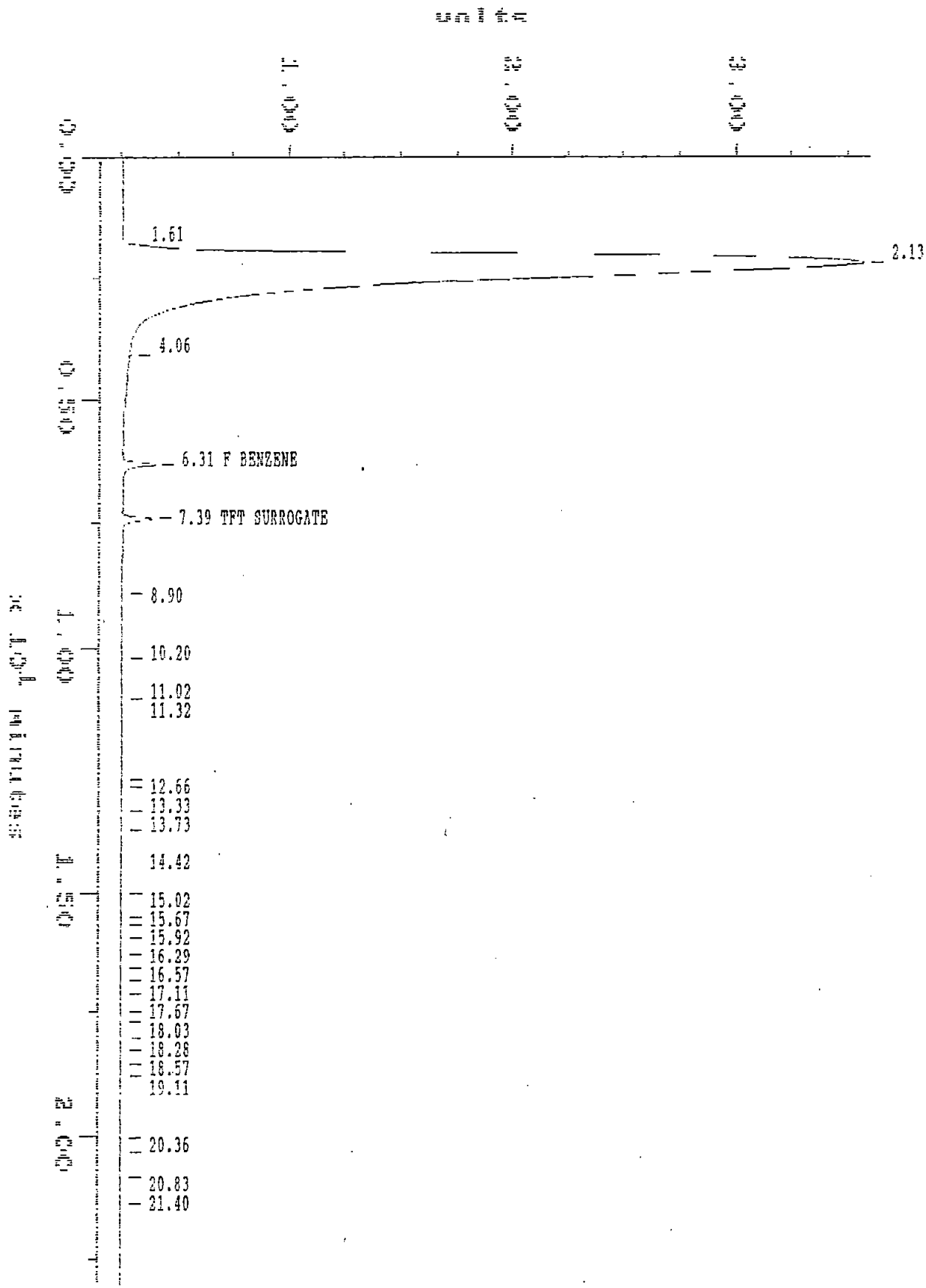
Sample: 69006 8 GB1325 Channel: FID Filename: C2582
Acquired: 02 DEC 97 19:22 Method: C:\MAX\DATA1\971202 Operator: JMC



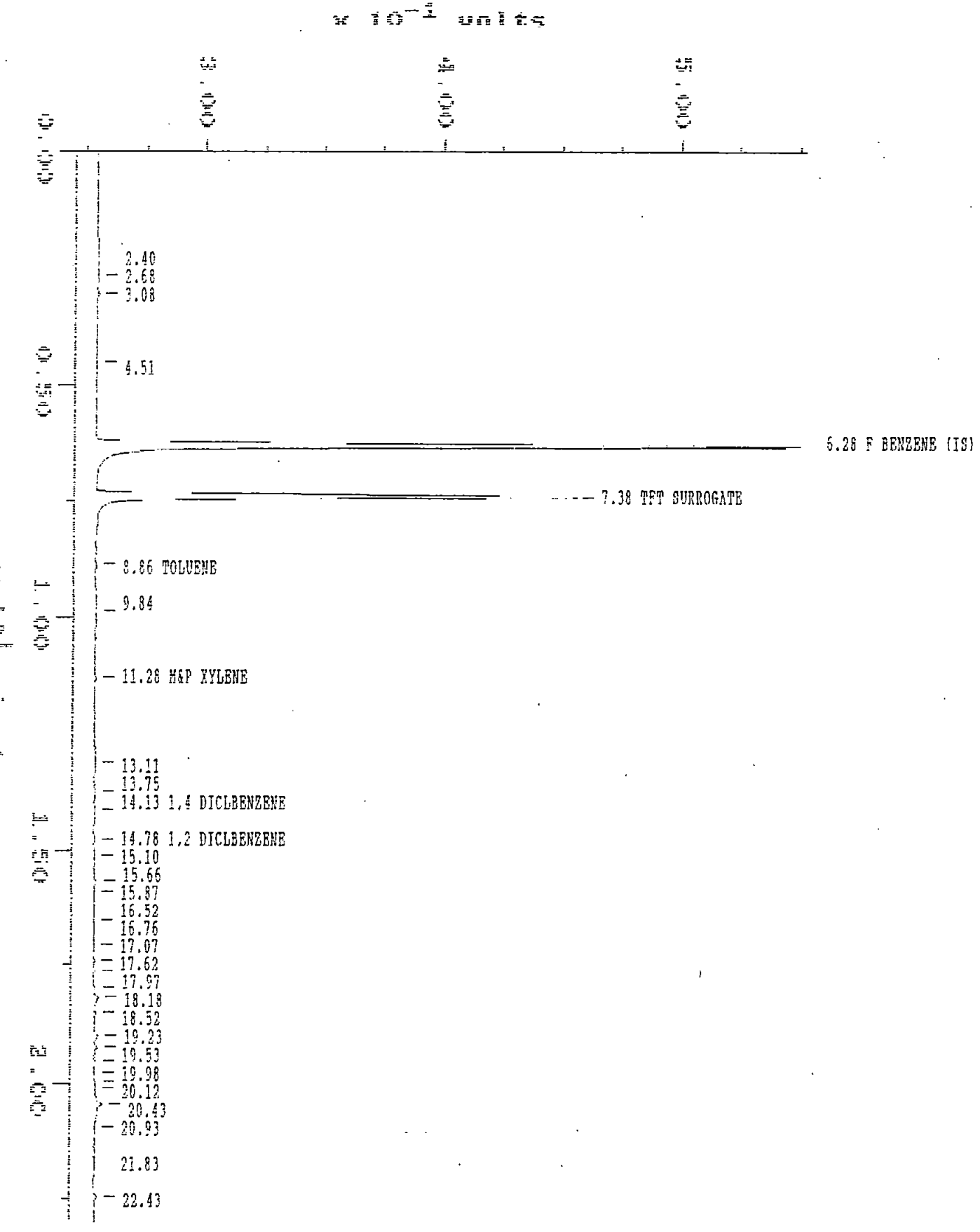
Sample: 69006 9 GB1325 Channel: PID Filename: C2593
Acquired: 03 DEC 97 1:04 Method: C:\MAX\DATA1\971202 Operator: JMC



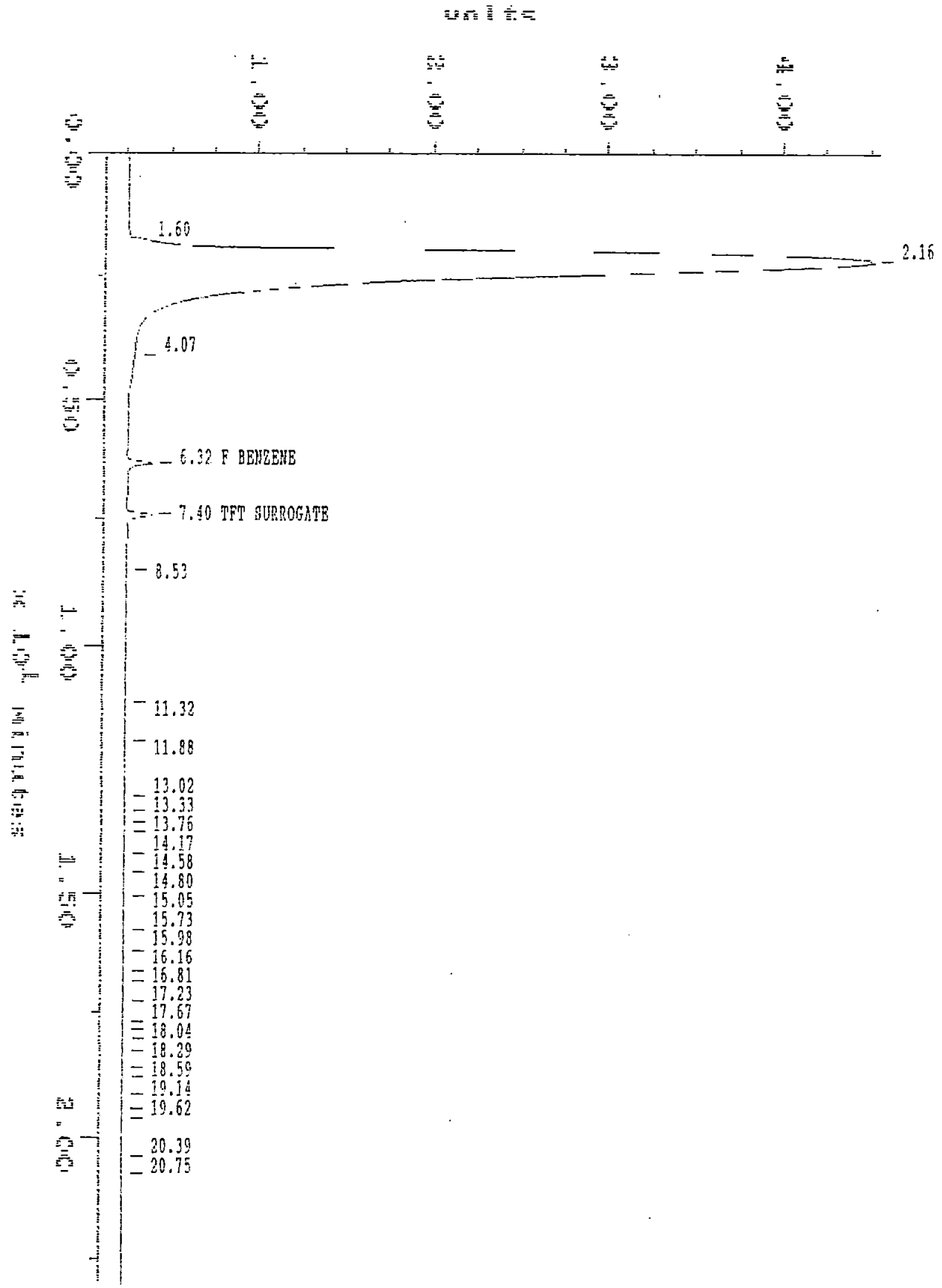
Sample: 69006 9 GB1325 Channel: FID Filename: C2593
Acquired: 03 DEC 97 1:04 Method: C:\MAX\DATA1\971202 Operator: JMC



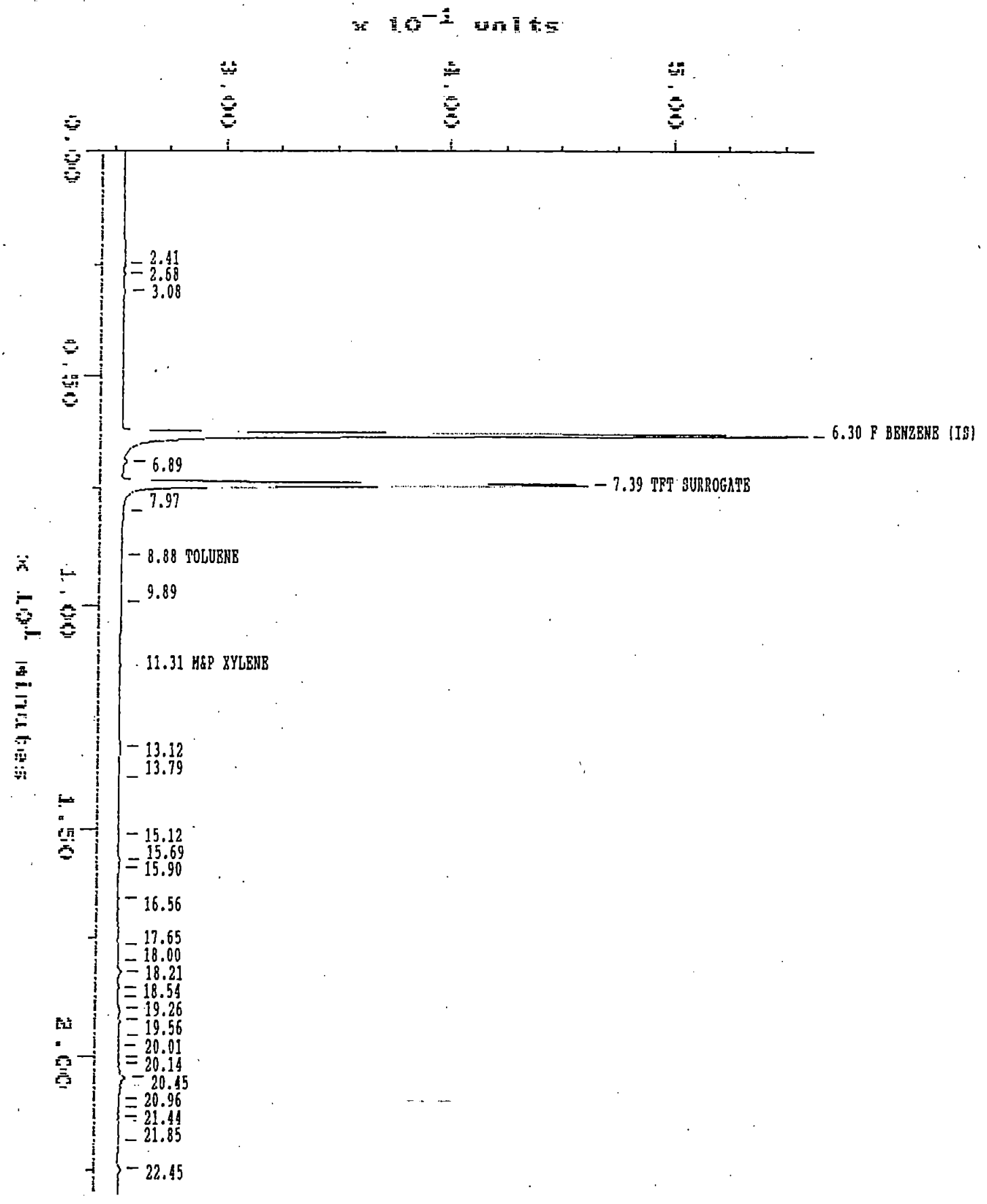
Sample: 69006 10 GB1325 Channel: PID Filename: C2594
Acquired: 03 DEC 97 1:31 Method: C:\MAX\DATA1\971202 Operator: JMC



Sample: 69006 10 GB1325 Channel: FID Filename: C2594
Acquired: 03 DEC 97 1:31 Method: C:\MAX\DATA1\971202 Operator: JMC

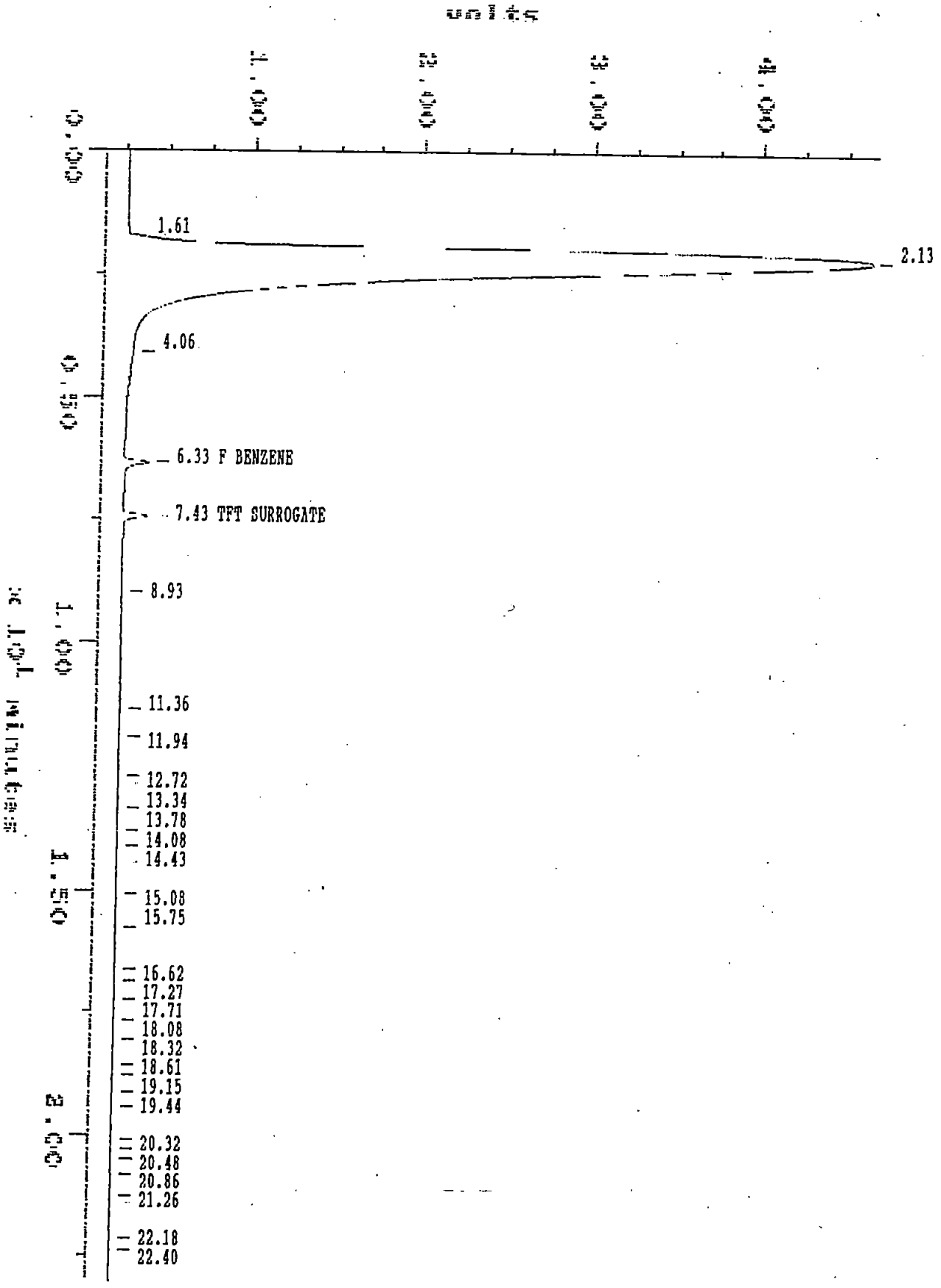


Sample: 69006 11 GB1325 Channel: PID Filename: C2595
Acquired: 03 DEC 97 1:59 Method: C:\MAX\DATA1\971202 Operator: JMC

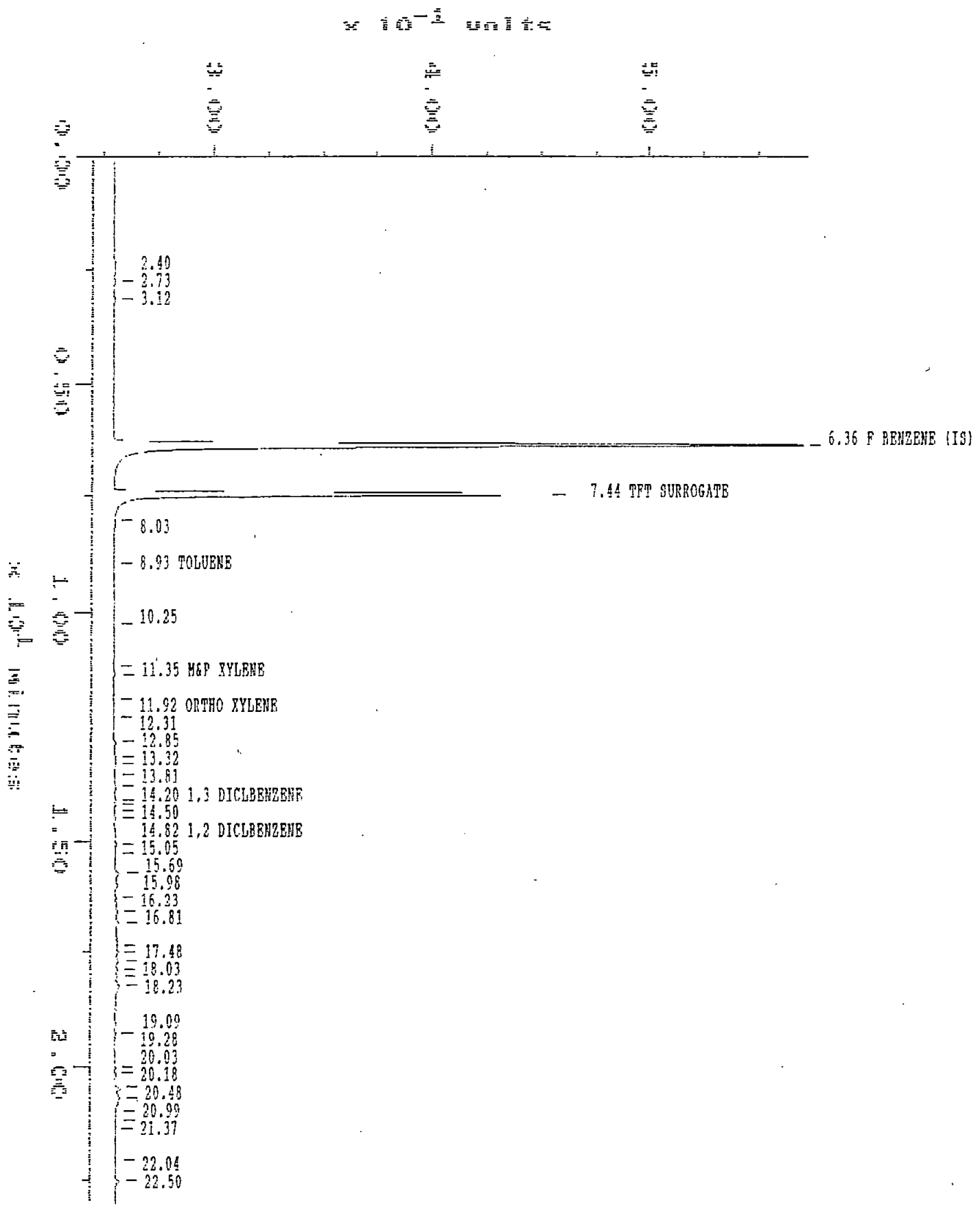


Sample: 69006 11 GB1325 Channel: FID
Acquired: 03 DEC 97 1:59 Method: C:\MAX\DATA1\971202

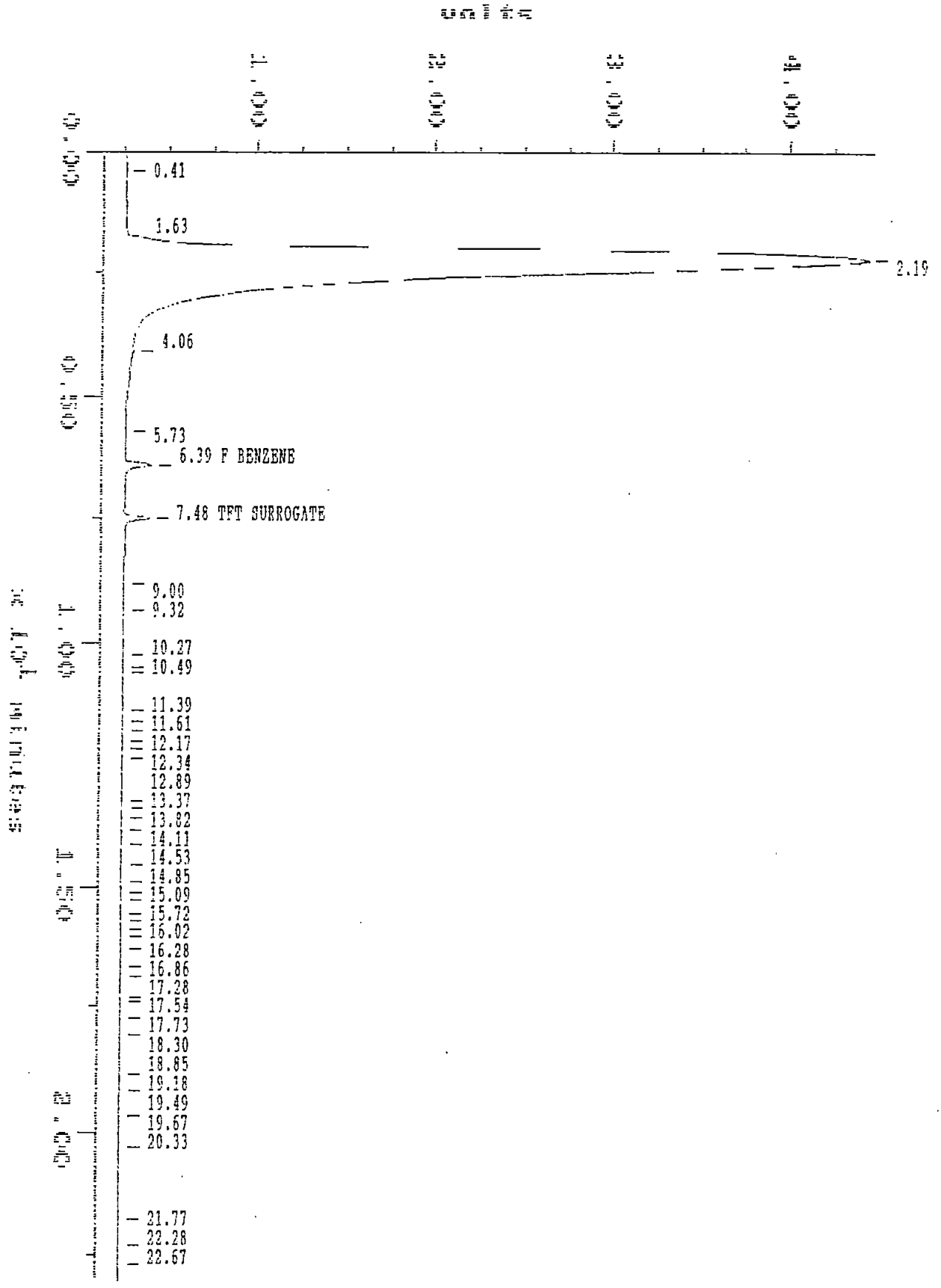
Filename: C2595
Operator: JHC



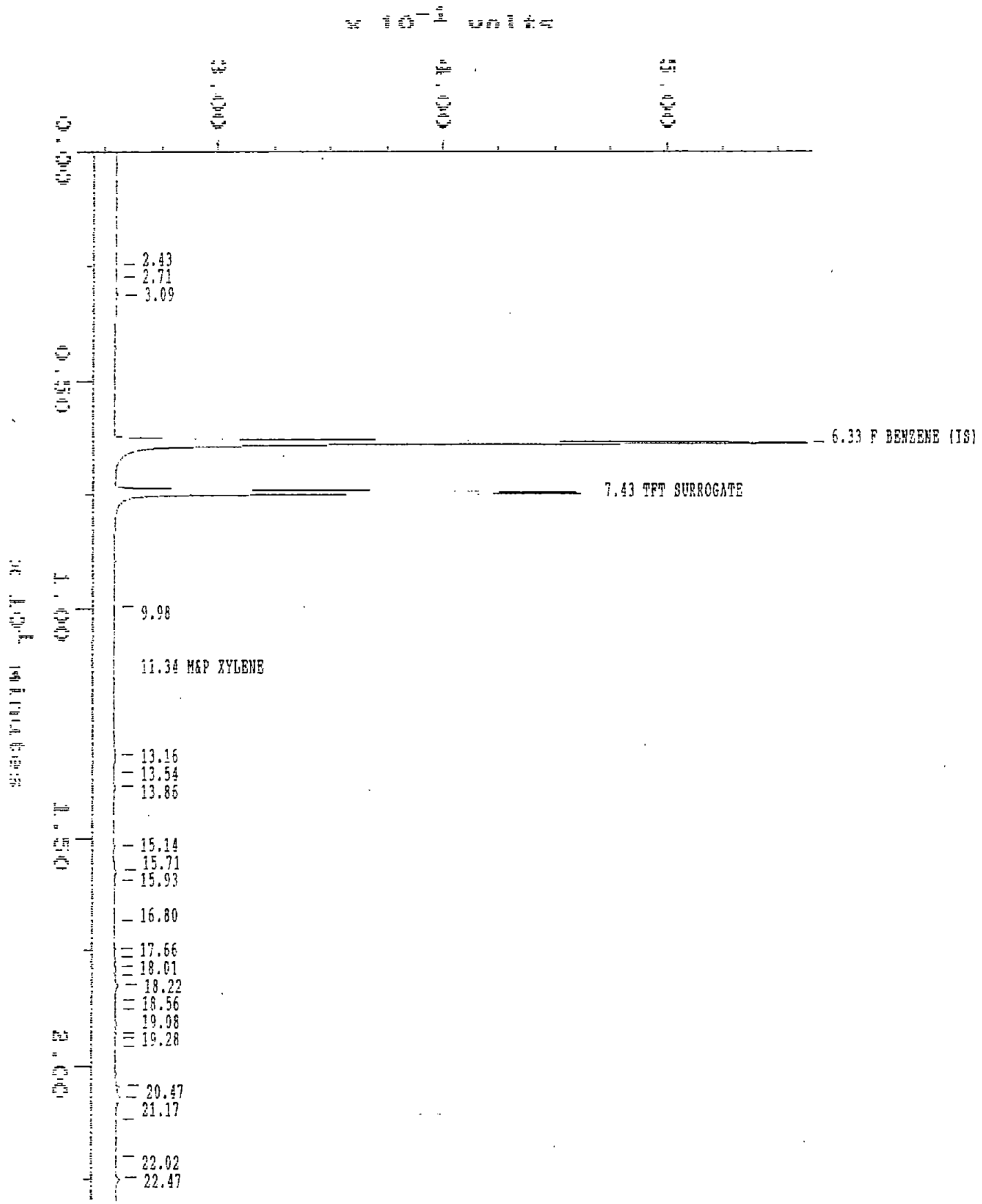
Sample: 69006 12 GB1325 Channel: PID Filename: C2597
Acquired: 03 DEC 97 2:53 Method: C:\MAX\DATA1\971202 Operator: JMC



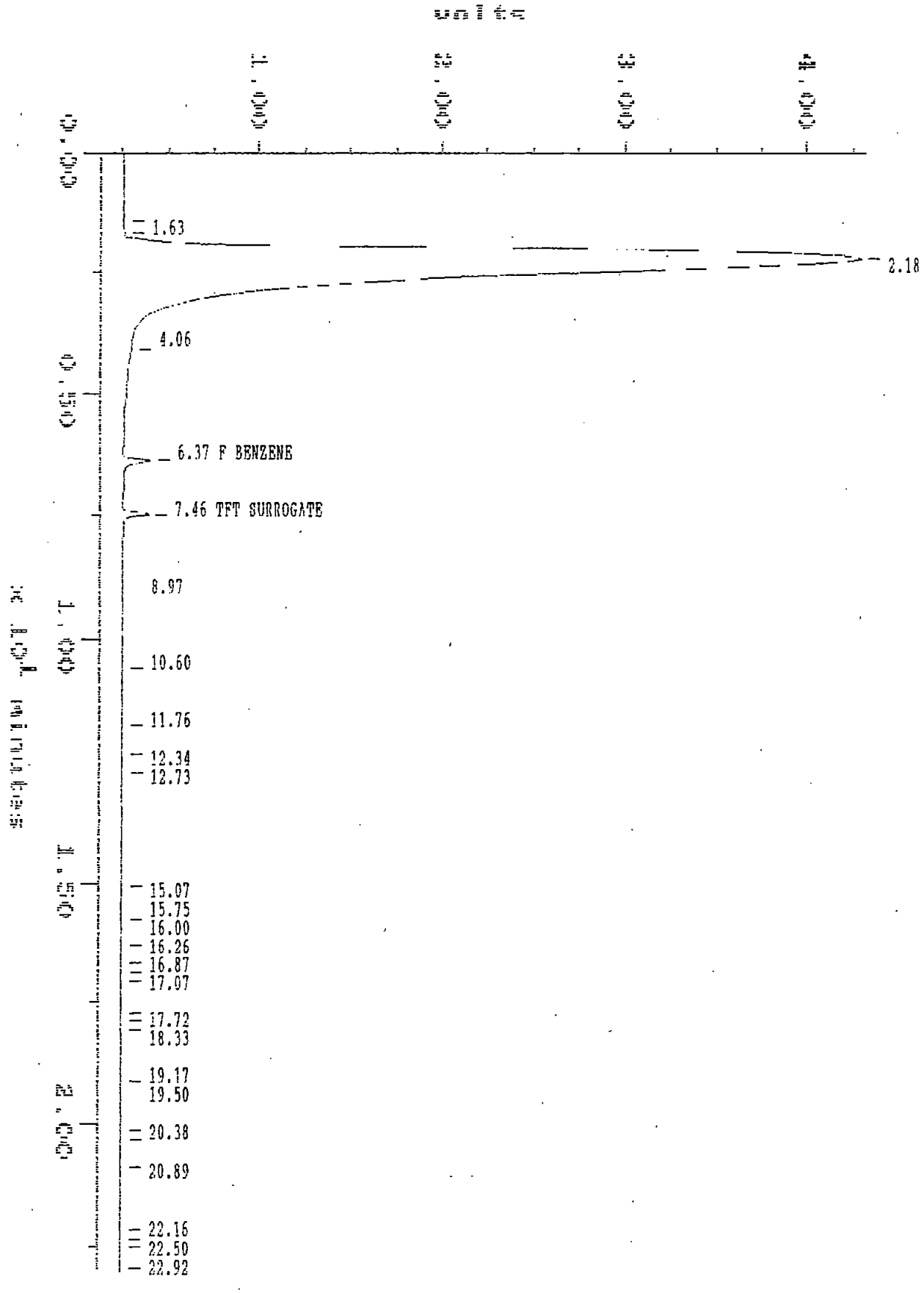
Sample: 69006 12 GB1325 Channel: FID Filename: C2597
Acquired: 03 DEC 97 2:53 Method: C:\MAX\DATA1\971202 Operator: JMC



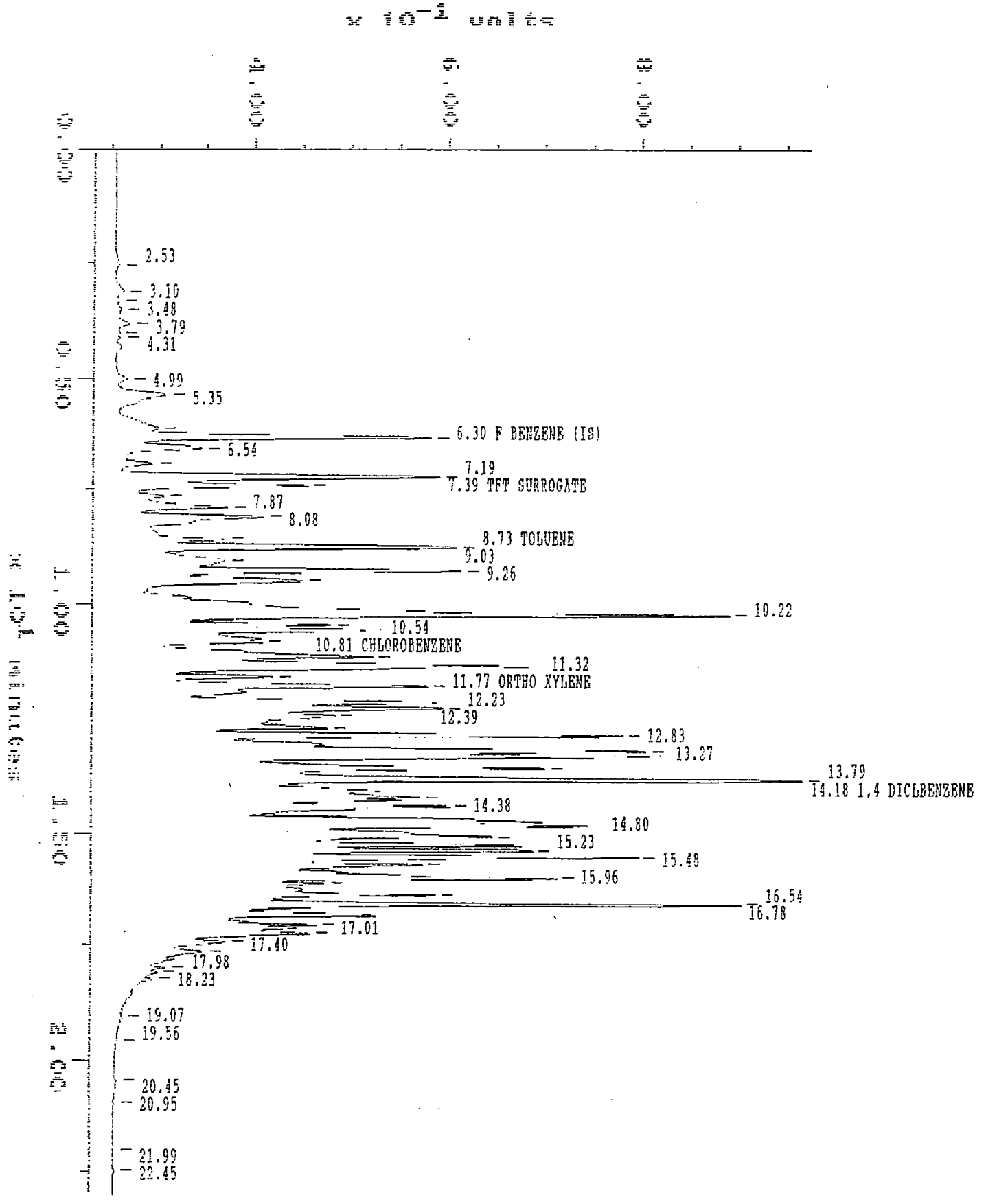
Sample: 69006 13 GB1325 Channel: PID Filename: C2598
Acquired: 03 DEC 97 3:20 Method: C:\MAX\DATA1\971202 Operator: JMC



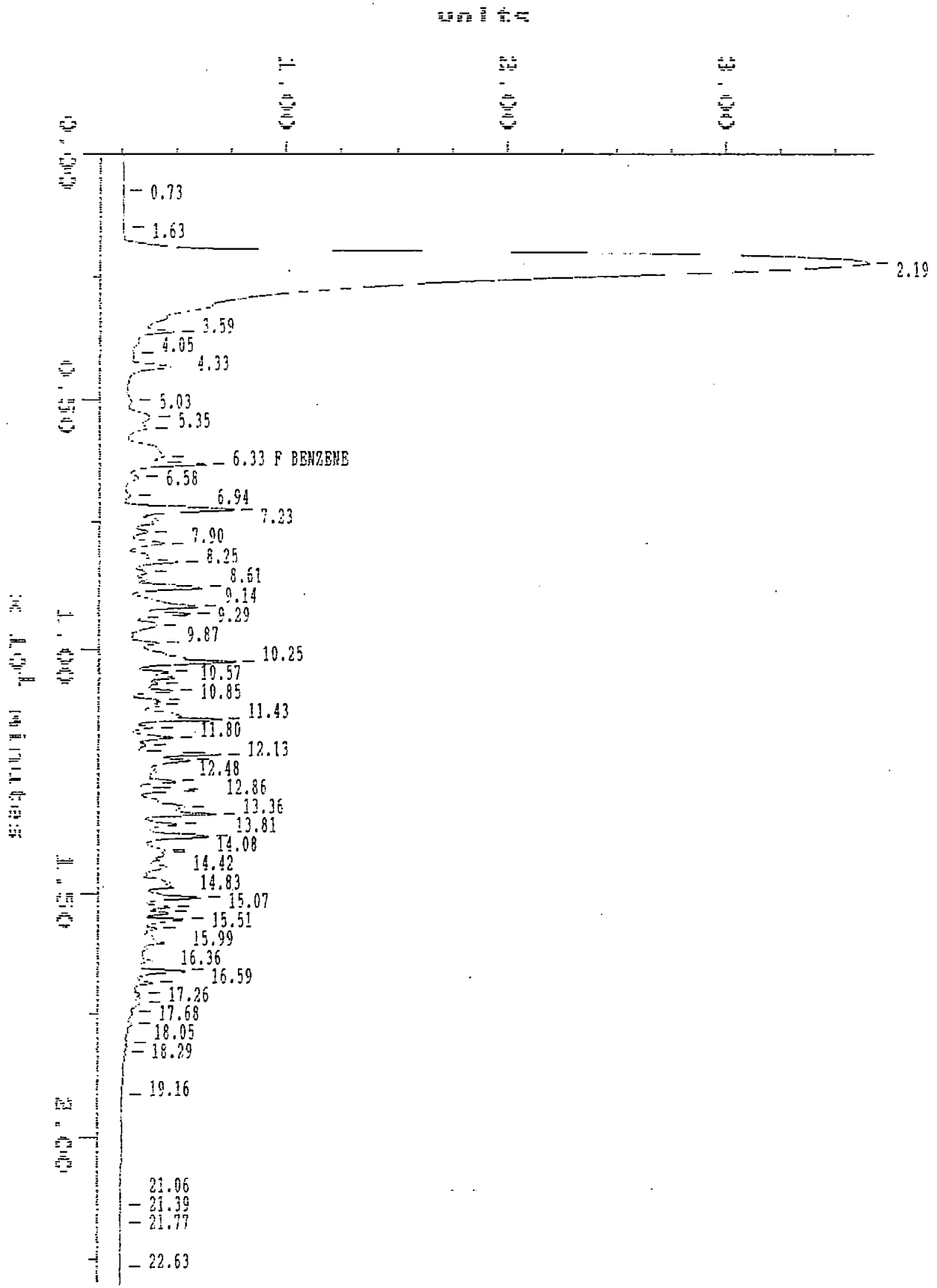
Sample: 69006 13 GB1325 Channel: FID Filename: C2598
Acquired: 03 DEC 97 3:20 Method: C:\MAX\DATA1\971202 Operator: JMC



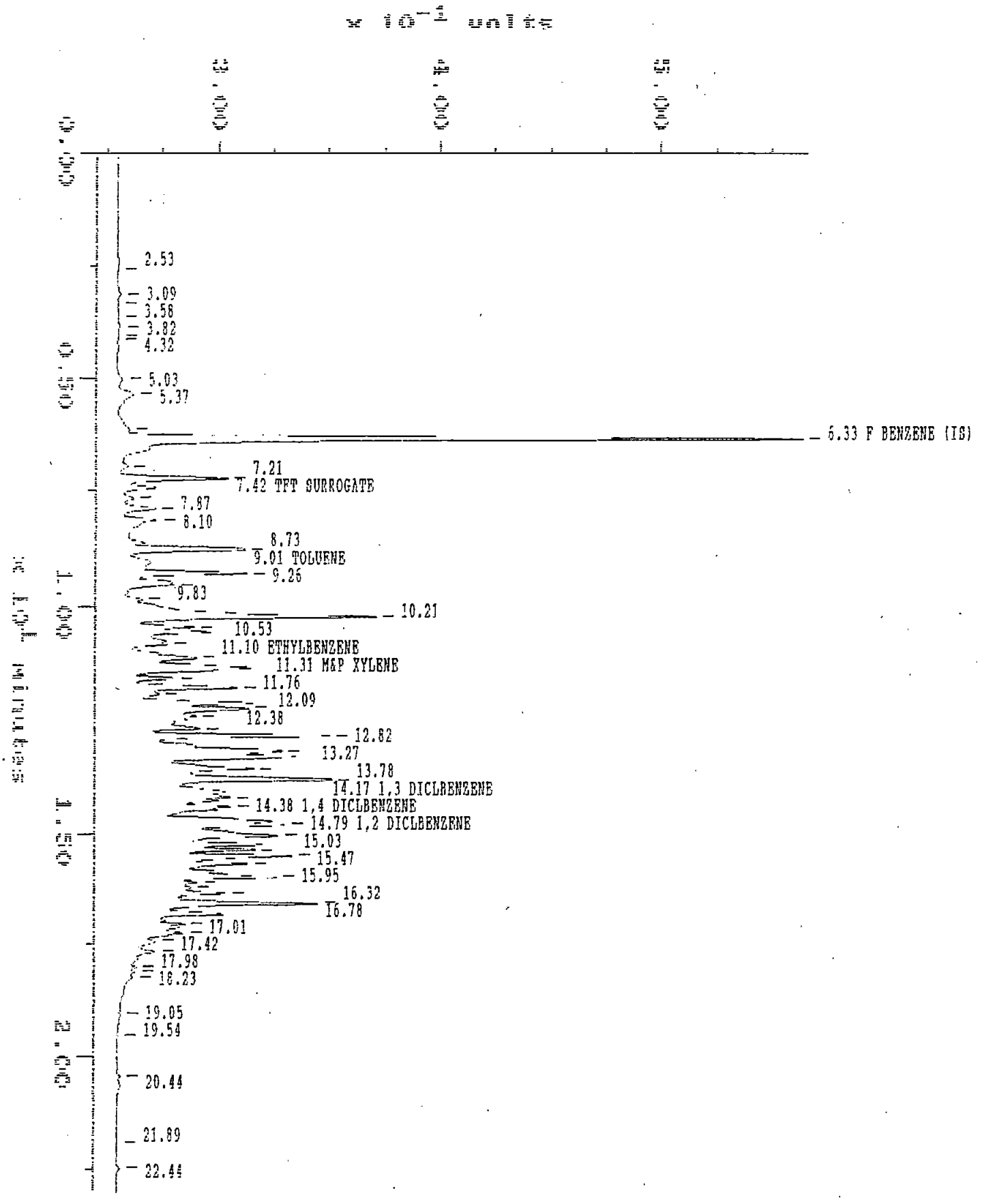
Sample: 69006 14 GB1325 Channel: PID Filename: C2600
Acquired: 03 DEC 97 4:15 Method: C:\MAX\DATA1\971202 Operator: JMC



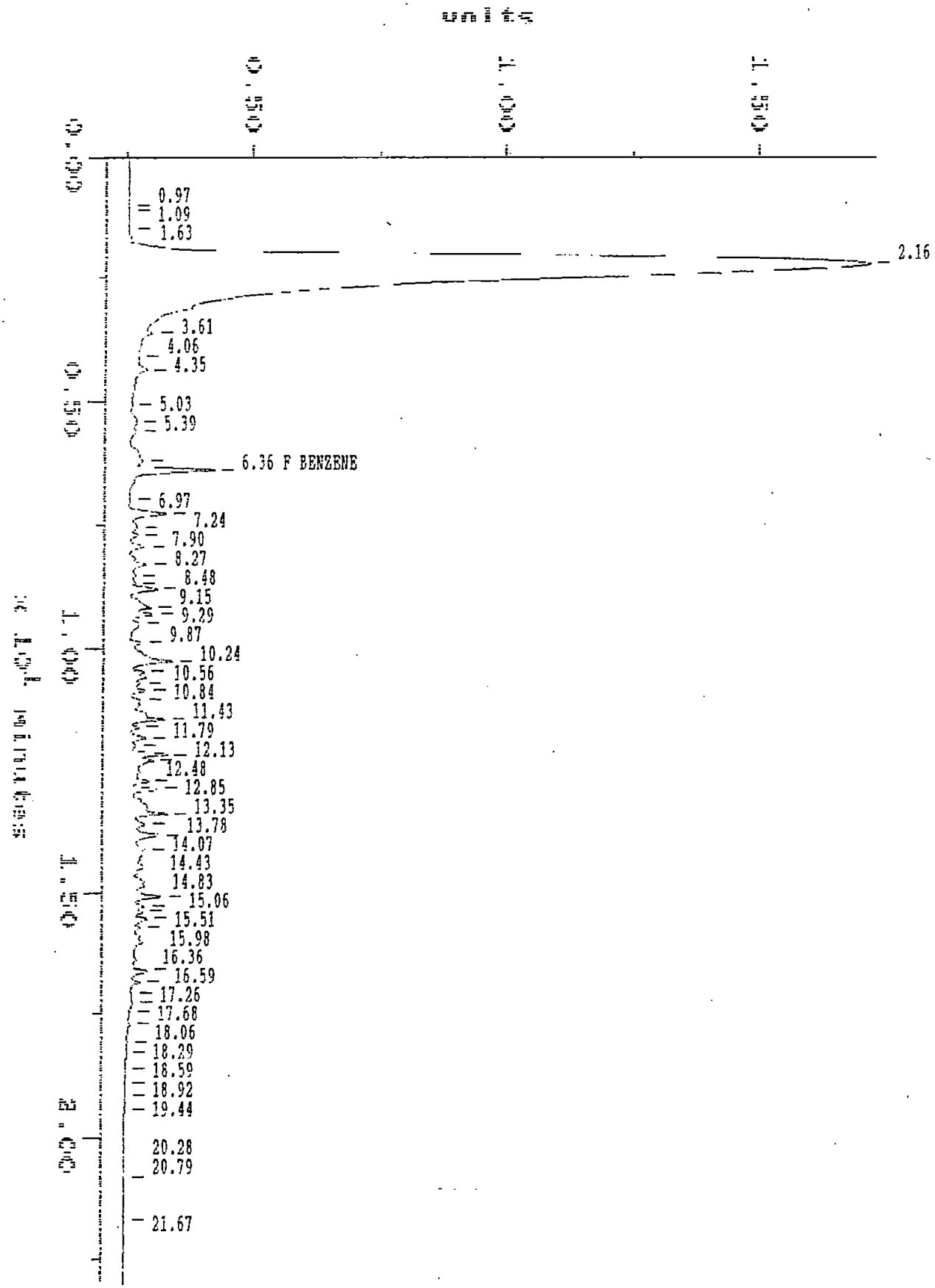
Sample: 69006 14 GB1325 Channel: FID Filename: C2600
Acquired: 03 DEC 97 4:15 Method: C:\MAX\DATA1\971202 Operator: JMC



Sample: 69006 14 1:10 Channel: PID Filename: C2599
Acquired: 03 DEC 97 3:48 Method: C:\MAX\DATA1\971202 Operator: JMC



Sample: 69006 14 1:10 Channel: FID Filename: C2599
Acquired: 03 DEC 97 3:48 Method: C:\MAX\DATA1\971202 Operator: JMC



SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

69006 x01

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT
PROJECT NAME: Old Bellingham Maint. Fac.
CONTACT: Doug Pierce
PHONE NO: 360-705-7812

ANALYSIS REQUESTED: WA.

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	WTPH & BTEX		Lead Added per client contact
1	B1	11-18-97	1:15	Soil															✓		X
2	B2	11-18-97	1:15	Soil															✓		
3	B3	11-19-97	11:45	Soil															✓		X
4	B4	11-15-97	12:15	Soil															✓		
5	B5	11-19-97	12:15	Soil															✓		X
6	B6	11-15-97	1:20	Soil															✓		
7	B7	11-15-97	1:20	Soil															✓		X
8	B8	11-15-97	1:55	Soil															✓		
9	B9	11-15-97	2:15	Soil															✓		X
10	B10	11-15-97	2:25	Soil															✓		
11	B11	11-15-97	3:45	Soil															✓		X
12	B12	11-20-97	8:55	Soil															✓		
13	B13	11-20-97	9:20	Soil															✓		X
14	BG	11-20-97	8:37	Soil															✓		

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Norman E. Payton	Norman E. Payton	WSDOT	11:21 / 11-24-97
Received By	S Giang	Giang	SAS	1121 11/24/97
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt. Check this box to have samples returned ☐.

Normal TAT.
Electronic Deliverables

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com

TRANSMITTAL MEMORANDUM

DATE: March 19, 1998

TO: Norm Payton
WSDOT - Operations, Olympia
P.O. Box 47358
Olympia, WA 98504-7358

PROJECT: Sunset (Bellingham) Gas

REPORT NUMBER: 71256

Enclosed are the test results for eleven samples received at Sound Analytical Services on March 12, 1998.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Dawn Werner
Project Manager

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGNW-1
Lab ID:	71256-01
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	84.15

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	99		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.022	
Toluene	ND	0.022	
Ethylbenzene	ND	0.022	
m,p-Xylenes	ND	0.045	
o-Xylene	ND	0.022	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGB-N2
Lab ID:	71256-02
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	82.29

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	103		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylenes	ND	0.047	
o-Xylene	ND	0.023	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGEW-N3
Lab ID:	71256-03
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	83.05

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	100		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylenes	ND	0.045	
o-Xylene	ND	0.023	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGWW-N4
Lab ID:	71256-04
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	80.98

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	106		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylenes	ND	0.046	
o-Xylene	ND	0.023	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGB-S5
Lab ID:	71256-05
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	79.38

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	109		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.024	
Toluene	ND	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylenes	ND	0.047	
o-Xylene	ND	0.024	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGSW-6
Lab ID:	71256-06
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	82.04

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	105		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylenes	ND	0.045	
o-Xylene	ND	0.023	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGEW-S7
Lab ID:	71256-07
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	82.63

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Trifluorotoluene	104		37	125

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.024	
Toluene	ND	0.024	
Ethylbenzene	ND	0.024	
m,p-Xylenes	ND	0.047	
o-Xylene	ND	0.024	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGWW-S8
Lab ID:	71256-08
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	82.41

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	100		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylenes	ND	0.045	
o-Xylene	ND	0.023	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGEW-C9
Lab ID:	71256-09
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	81.6

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	106		37	125

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylenes	ND	0.045	
o-Xylene	ND	0.023	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGB-C10
Lab ID:	71256-10
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	80.93

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	100		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.023	
Toluene	ND	0.023	
Ethylbenzene	ND	0.023	
m,p-Xylenes	ND	0.046	
o-Xylene	ND	0.023	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGWW-C11
Lab ID:	71256-11
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	83.47

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	93		37	125

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.022	
Toluene	ND	0.022	
Ethylbenzene	ND	0.022	
m,p-Xylenes	ND	0.045	
o-Xylene	ND	0.022	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGNW-1
Lab ID:	71256-01
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	84.15

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	85		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.2	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGB-N2
Lab ID:	71256-02
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	82.29

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	89		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGEW-N3
Lab ID:	71256-03
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	83.05

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	86		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGWW-N4
Lab ID:	71256-04
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	80.98

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	88		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGB-S5
Lab ID:	71256-05
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	79.38

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	91		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGSW-6
Lab ID:	71256-06
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	82.04

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	89		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGEW-S7
Lab ID:	71256-07
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	82.63

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	91		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGWW-S8
Lab ID:	71256-08
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/19/98
% Solids	82.41

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	88		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGEW-C9
Lab ID:	71256-09
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/19/98
% Solids	81.6

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	90		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGB-C10
Lab ID:	71256-10
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/19/98
% Solids	80.93

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	87		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	SSGWW-C11
Lab ID:	71256-11
Date Received:	3/12/98
Date Prepared:	3/16/98
Date Analyzed:	3/19/98
% Solids	83.47

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	83		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2.2	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB1393
Date Received:	-
Date Prepared:	3/16/98
Date Analyzed:	3/17/98
% Solids	

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	110		37	125

Sample results are on an as received basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.02	
Toluene	ND	0.02	
Ethylbenzene	ND	0.02	
m,p-Xylenes	ND	0.04	
o-Xylene	ND	0.02	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	SSGEW-C9
Lab ID:	71256-09
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
QC Batch ID:	GB1393

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Benzene	0	0	NC	
Toluene	0	0	NC	
Ethylbenzene	0	0	NC	
m,p-Xylenes	0	0	NC	
o-Xylene	0	0	NC	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	SP-1
Lab ID:	71294-01
Date Prepared:	3/18/98
Date Analyzed:	3/18/98
QC Batch ID:	GB1393

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Benzene	0	0	NC	
Toluene	0	0	NC	
Ethylbenzene	0	0	NC	
m,p-Xylenes	0.57	0.44	26.0	X4
o-Xylene	1	0.82	20.0	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	SP-1
Lab ID:	71294-01
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
QC Batch ID:	GB1393

Volatile Aromatic Hydrocarbons by USEPA Method 8021 Modified

Compound Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	MSD Result (mg/kg)	MSD % Rec.	RPD	Flag
Benzene	0	1.13	1.1	97.3	1.16	99.8	2.5	
Toluene	0	1.13	1.28	113	1.31	112	0.89	
Ethylbenzene	0	1.13	1.48	130	1.56	134	3	
m,p-Xylenes	0.57	2.27	2.95	105	3.02	106	0.95	
o-Xylene	1	1.13	2.52	131	2.7	143	8.8	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB1393
Date Received:	-
Date Prepared:	3/16/98
Date Analyzed:	3/18/98
% Solids	

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	104		50	150

Sample results are on an as received basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline Range Organics	ND	2	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	SP-1
Lab ID:	71294-01
Date Prepared:	3/18/98
Date Analyzed:	3/18/98
QC Batch ID:	GB1393

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Gasoline Range Organics	140	140	0.0	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	SP-1
Lab ID:	71294-01
Date Prepared:	3/18/98
Date Analyzed:	3/18/98
QC Batch ID:	GB1393

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

Compound Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	MSD Result (mg/kg)	MSD % Rec.	RPD	Flag
Gasoline Range Organics	140	55.7	203	108	192	85.7	23	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	SSGEW-C9
Lab ID:	71256-09
Date Prepared:	3/16/98
Date Analyzed:	3/19/98
QC Batch ID:	GB1393

Gasoline Range Organic Compounds by WSDOE Method WTPH-G Modified

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Gasoline Range Organics	0	0	NC	

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be $\leq 40\%$.

C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be $> 40\%$. The higher result was reported unless anomalies were noted.

M: GC/MS confirmation was performed. The result derived from the original analysis was reported.

D: The reported result for this analyte was calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____ .

X2: Contaminant does not appear to be "typical" product.

X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.

X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike recovery was not determined due to the required dilution.

X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.

X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.

X8: Surrogate recovery was not determined due to the required dilution.

X9: Surrogate recovery outside advisory QC limits due to matrix interference.

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

7/256 √01

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT – Olympia
PROJECT NAME: Sunset (Bellingham) gas
CONTACT: Norm Payton
PHONE NO: 360-705-7848

ANALYSIS REQUESTED: WA

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	WTPH-G/BTEX
1	SSGNW-1	3/12/98	1016	Soil	1														✓
2	SSGB-N2	3/12/98	1020	Soil	1														✓
3	SSGEW-N3	3/12/98	1023	Soil	1														✓
4	SSGWW-N4	3/12/98	1027	Soil	1														✓
5	SSGB-S5	3/12/98	1115	Soil	1														✓
6	SSGSW-6	3/12/98	1120	Soil	1														✓
7	SSGEW-S7	3/12/98	1122	Soil	1														✓
8	SSGWW-S8	3/12/98	1128	Soil	1														✓
9	SSGEW-C9	3/12/98	1143	Soil	1														✓
10	SSGB-C10	3/12/98	1158	Soil	1														✓
11	SSGNW-C11	3/12/98	1205	Soil	1														✓

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Norman E. Payton	Norman E. Payton	WSDOT	3-12-98/3:03PM
Received By	S Giang	Giang	SAS	3/12/98 303pm
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

Normal TAT
Fax results.
Electronic Deliverables

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT - Olympia
PROJECT NAME: Sunset (Bellingham) GAS
CONTACT: Norm Payton
PHONE NO: 360-705-7846

ANALYSIS REQUESTED: WH

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	WTPH-G/BTEX
	SSGNW-1	3/12/98	1016	So.1	1														✓
	SSGB-N2	3/12/98	1020	So.1	1														✓
	SSGEW-N3	3/12/98	1023	So.1	1														✓
	SSGWW-N4	3/12/98	1027	So.1	1														✓
	SSGB-S5	3/12/98	1115	So.1	1														✓
	SSGSW-6	3/12/98	1120	So.1	1														✓
	SSGEW-S7	3/12/98	1122	So.1	1														✓
	SSGWW-S8	3/12/98	1128	So.1	1														✓
	SSGEW-C9	3/12/98	1143	So.1	1														✓
	SSGB-C10	3/12/98	1158	So.1	1														✓
	SSGNW-C11	3/12/98	1205	So.1	1														✓

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Norman E. Payton	Norman E. Payton	WSDOT	3-12-98/3:03PM
Received By	Signature	Signature	SAS	3/12/98 303pm
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

Normal TAT
Fax results.
Electronic Deliverables

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
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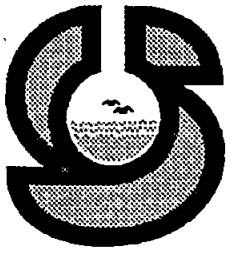
(253) 922-2310 • FAX (253) 922-5047
e-mail: SoundL@aol.com



TRANSMITTAL MEMORANDUM

DATE: September 8, 1998

TO: Doug Pierce
WSDOT - Operations, Olympia
P.O. Box 47358
Olympia, WA 98504-7358

PROJECT: Bellingham

REPORT NUMBER: 75088

Enclosed are the test results for thirty samples received at Sound Analytical Services on August 20, 1998.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Dawn Werner
Project Manager

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B1
Lab ID:	75088-01
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	85.22

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	112		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	49	19	
Motor Oil (>nC24-nC32)	45	38	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B2
Lab ID:	75088-02
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	90.34

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	66		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	38	18	
Motor Oil (>nC24-nC32)	80	35	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B3
Lab ID:	75088-03
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	88.97

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	71		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	67	19	X1
Motor Oil (>nC24-nC32)	190	37	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B4
Lab ID:	75088-04
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	90.53

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	82		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	62	18	X1
Motor Oil (>nC24-nC32)	200	35	X2

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B5
Lab ID:	75088-05
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	92.28

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	82		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	96	17	X1
Motor Oil (>nC24-nC32)	260	34	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B6
Lab ID:	75088-06
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	87.53

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	72		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	47	19	X1
Motor Oil (>nC24-nC32)	110	38	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B7
Lab ID:	75088-07
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	83.18

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
o-terphenyl	90		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	65	19	X1
Motor Oil (>nC24-nC32)	170	38	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B8
Lab ID:	75088-08
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	87.09

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	96		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	56	19	
Motor Oil (>nC24-nC32)	49	37	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B9
Lab ID:	75088-09
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	86.24

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	97		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	97	19	
Motor Oil (>nC24-nC32)	100	37	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B10
Lab ID:	75088-10
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	90.89

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-terphenyl	67		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	59	18	X1
Motor Oil (>nC24-nC32)	200	35	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B11
Lab ID:	75088-11
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	89.59

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	68		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	58	18	X1
Motor Oil (>nC24-nC32)	190	37	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B12
Lab ID:	75088-12
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	85.55

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	51		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	45	18	
Motor Oil (>nC24-nC32)	110	37	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B13
Lab ID:	75088-13
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	87.16

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	66		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	52	19	X1
Motor Oil (>nC24-nC32)	170	38	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B14
Lab ID:	75088-14
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	85.93

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	59		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	34	19	
Motor Oil (>nC24-nC32)	110	38	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B15
Lab ID:	75088-15
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	88.23

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
o-terphenyl	66		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	92	19	X1
Motor Oil (>nC24-nC32)	480	37	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B16
Lab ID:	75088-16
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	90.19

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	63		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	53	17	X1
Motor Oil (>nC24-nC32)	210	35	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B17
Lab ID:	75088-17
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	89.51

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	64		50	150

Sample results are on a dry weight basis.

	Result		
Analyte	**(mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	60	18	X1
Motor Oil (>nC24-nC32)	200	35	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B18
Lab ID:	75088-18
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	91.05

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	66		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	89	18	X1
Motor Oil (>nC24-nC32)	370	35	

X1 - Chromatogram suggests this might be heavy oil

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B19
Lab ID:	75088-19
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	91.29

Extended Diesel Range by WTPH-D Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	65		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	72	17	
Motor Oil (>nC24-nC32)	170	35	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B20
Lab ID:	75088-20
Date Received:	8/20/98
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
% Solids	90.6

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-terphenyl	57		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	46	17	
Motor Oil (>nC24-nC32)	160	34	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B21
Lab ID:	75088-21
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	83.83

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	87		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	10	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B22
Lab ID:	75088-22
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	86.33

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	95		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	4.3	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B23
Lab ID:	75088-23
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	85.7

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	99		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B24
Lab ID:	75088-24
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	83.88

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	97		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	14	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B25
Lab ID:	75088-25
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	84.42

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	97		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	3.1	2.4	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B26
Lab ID:	75088-26
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	87.52

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	97		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B27
Lab ID:	75088-27
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	86.88

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	96		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B28
Lab ID:	75088-28
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	86.33

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	92		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B29
Lab ID:	75088-29
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	85.72

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	95		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	ND	2.3	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	B30
Lab ID:	75088-30
Date Received:	8/20/98
Date Prepared:	8/26/98
Date Analyzed:	8/27/98
% Solids	84.21

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	98		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	ND	2.4	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - DI1677
Date Received:	-
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
% Solids	

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
o-terphenyl	91		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	17	
Motor Oil (>nC24-nC32)	ND	33	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	B16
Lab ID:	75088-16
Date Prepared:	8/25/98
Date Analyzed:	8/31/98
QC Batch ID:	DI1677

Extended Diesel Range by WTPH-D Modified

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	53	50	5.8	
Motor Oil (>nC24-nC32)	210	180	15.0	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	B1
Lab ID:	75088-01
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
QC Batch ID:	DI1677

Extended Diesel Range by WTPH-D Modified

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	49	42	15.0	
Motor Oil (>nC24-nC32)	45	66	-38.0	X4a

SOUND ANALYTICAL SERVICES, INC.

Blank Spike/Blank Spike Duplicate Report

Lab ID:	DI1677
Date Prepared:	8/25/98
Date Analyzed:	8/28/98
QC Batch ID:	DI1677

Extended Diesel Range by WTPH-D Modified

Compound Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	BSD Result (mg/kg)	BSD % Rec.	RPD	Flag
Diesel (>nC12-nC24)	0	417	476	114	498	119	4.3	
Motor Oil (>nC24-nC32)	0	417	398	95.4	414	99.2	3.9	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB1515
Date Received:	-
Date Prepared:	8/26/98
Date Analyzed:	8/26/98
% Solids	

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	101		50	150

Sample results are on an as received basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline	ND	2	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB1515
Date Prepared:	8/26/98
Date Analyzed:	8/26/98
QC Batch ID:	GB1515

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Gasoline	0	40	35	89	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	B21
Lab ID:	75088-21
Date Prepared:	8/26/98
Date Analyzed:	8/26/98
QC Batch ID:	GB1515

Volatile Petroleum Products by WSDOE Method NWTPH-Gx Modified

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Gasoline	10	7.2	33.0	

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be $\leq 40\%$.

C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be $> 40\%$. The higher result was reported unless anomalies were noted.

M: GC/MS confirmation was performed. The result derived from the original analysis was reported.

D: The reported result for this analyte was calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____ .

X2: Contaminant does not appear to be "typical" product.

X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.

X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike recovery was not determined due to the required dilution.

X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.

X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.

X8: Surrogate recovery was not determined due to the required dilution.

X9: Surrogate recovery outside advisory QC limits due to matrix interference.

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

7 5088

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT
PROJECT NAME: Bellingham
CONTACT: Doug Pierce
PHONE NO: 360 705 7812

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	WTPH DEXT								
1	B1	8-19-98	9m	Soil	1														X									
2	B2				1														X									
3	B3				1														X									
4	B4				1														X									
5	B5				1														X									
6	B6				1														X									
7	B7				1														X									
8	B8				1														X									
9	B9				1														X									
10	B10				1														X									
11	B11				1														X									
12	B12				1														X									
13	B13				1														X									
14	B14				1														X									
15	B15				1														X									

	Signature	Printed Name	Firm	Time / Date
Relinquished By		Doug Pierce	WSDOT	2P 8-20-98
Received By	Dan Nguyen	Dan Nguyen	SAS	2P 8-20-98
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

8/4

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(253) 922-2310 • FAX (253) 922-5047

H4152
75088

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT
PROJECT NAME: Bellingham
CONTACT: Dorcy Pierce
PHONE NO: 360 705 7812

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Chlorinated Pest., PCB's EPA 608/8080	PAH's	Volatile Organics EPA 624/8240 (GC/MS)	Semi-volatiles EPA625/8270 (GC/MS)	TPH 418.1	Oil & Grease	Total Metals (Specify below)	TCLP Extraction: 8 Metals	TCLP Extraction: Volatiles	TCLP Extraction: Semi-volatiles	TCLP Extraction: Pesticides & Herbicides	WTPH G EXT	WTPH G (GC)								
16	B16	8-19-98	PM	SOIL	1														X									
17	B17				1														X									
18	B18				1														X									
19	B19				1														X									
20	B20				1														X									
21	B21				1															X								
22	B22				1															X								
23	B23				1															X								
24	B24				1															X								
25	B25				1															X								
26	B26				1															X								
27	B27				1															X								
28	B28				1															X								
29	B29				1															X								
30	B30				1															X								

ANALYSIS REQUESTED:

	Signature	Printed Name	Firm	Time / Date
Relinquished By	D. Cuc Le	Dorcy Pierce	WSDOT	2pm 8-20-98
Received By	Duc Nguyen	Duc Nguyen	SAS	200 8-20-98
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

These samples will be disposed of 45 days after receipt.
Check this box to have samples returned ☐.

8/4

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East o Tacoma, WA 98424
(253) 922-2310 o FAX (253) 922-5047
e-mail: info@saslab.com

TRANSMITTAL MEMORANDUM

DATE: June 9, 2000

TO: Thanh Nguyen
WSDOT - Operations, Olympia
P.O. Box 47358
Olympia, WA 98504-7358

PROJECT: BPCS

REPORT NUMBER: 90186

Enclosed are the test results for six samples received at Sound Analytical Services on June 7, 2000.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Dawn Werner
Project Manager

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	BPCS-1
Lab ID:	90186-01
Date Received:	6/7/00
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
% Solids	85.98
Dilution Factor	4

Diesel and Motor Oil by NWTPH-Dx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	73.6		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**MDL**	**Flags**
#2 Diesel	24	23	14	
Motor Oil	130	45	23	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	BPCS-2
Lab ID:	90186-02
Date Received:	6/7/00
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
% Solids	84.41
Dilution Factor	4

Diesel and Motor Oil by NWTPH-Dx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	74.9		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**MDL**	**Flags**
#2 Diesel	ND	22	14	
Motor Oil	29	44	23	J

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	BPCS-3
Lab ID:	90186-03
Date Received:	6/7/00
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
% Solids	86.1
Dilution Factor	4

Diesel and Motor Oil by NWTPH-Dx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	74.2		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**MDL**	**Flags**
#2 Diesel	ND	22	14	
Motor Oil	76	44	23	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	BPCS-4
Lab ID:	90186-04
Date Received:	6/7/00
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
% Solids	85.1
Dilution Factor	4

Diesel and Motor Oil by NWTPH-Dx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	73.7		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**MDL**	**Flags**
#2 Diesel	ND	22	14	
Motor Oil	27	44	23	J

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	BPCS-5
Lab ID:	90186-05
Date Received:	6/7/00
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
% Solids	83.63
Dilution Factor	4

Diesel and Motor Oil by NWTPH-Dx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	67.9		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**MDL**	**Flags**
#2 Diesel	16	23	14	J
Motor Oil	48	46	24	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations, Olympia
Client ID:	BPCS-6
Lab ID:	90186-06
Date Received:	6/7/00
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
% Solids	83.05
Dilution Factor	4

Diesel and Motor Oil by NWTPH-Dx Modified

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-terphenyl	62.6		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**MDL**	**Flags**
#2 Diesel	ND	23	14	
Motor Oil	ND	46	24	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - DI2637
Date Received:	-
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
% Solids	
Dilution Factor	4

Diesel and Motor Oil by NWTPH-Dx Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
o-terphenyl	94		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
#2 Diesel	ND	20	12	
Motor Oil	ND	40	21	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike/Blank Spike Duplicate Report

Lab ID:	DI2637
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
QC Batch ID:	DI2637

Diesel and Motor Oil by NWTPH-Dx Modified

Compound Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	BSD Result (mg/kg)	BSD % Rec.	RPD	Flag
#2 Diesel	0	500	449	89.8	485	97	7.7	
Motor Oil	0	494	472	95.6	489	99.1	3.6	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	BPCS-6
Lab ID:	90186-06
Date Prepared:	6/7/00
Date Analyzed:	6/7/00
QC Batch ID:	DI2637

Diesel and Motor Oil by NWTPH-Dx Modified

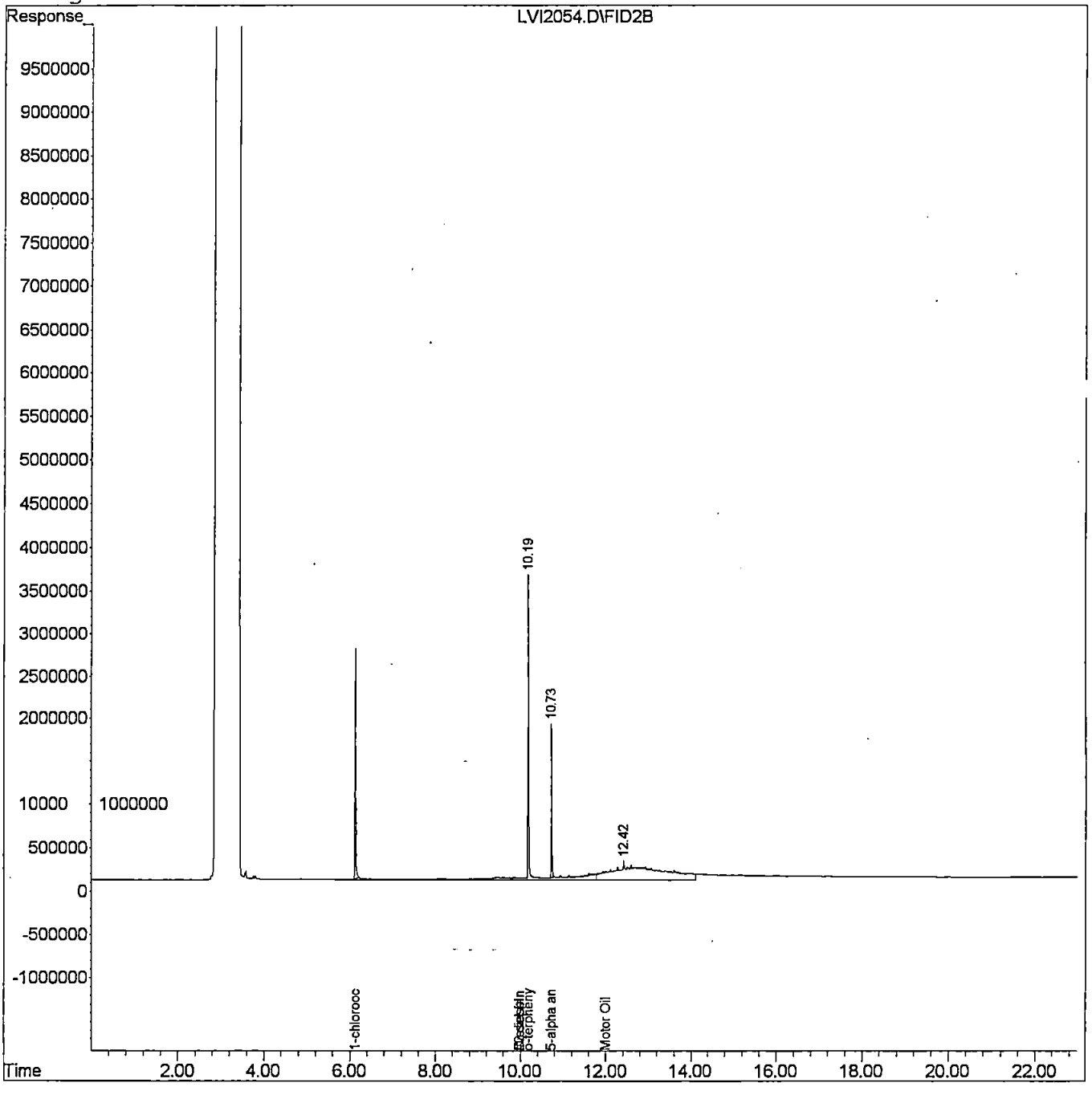
Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
#2 Diesel	0	0	NC	
Motor Oil	0	0	NC	

Quantitation Report

Data File : C:\HPCHEM\2\DATA\060700_A\LVI2054.D Vial: 20
Acq On : 6-7-00 7:06:16 PM Operator: RBF
Sample : 90186-1 solid #10.2669 &4 Inst : HP6890
Misc : Multiplr: 1.00
IntFile : ANDRO.E
Quant Time: Jun 8 7:19 2000 Quant Results File: NWDR0526.RES

Quant Method : C:\HPCHEM\2\METHODS\NWDR0526.M (Chemstation Integrator)
Title : Diesel and Motor Oil Rear 05/26/00
Last Update : Mon Jun 05 09:06:23 2000
Response via : Multiple Level Calibration
DataAcq Meth : EXTRACQ.M

Volume Inj. :
Signal Phase :
Signal Info :

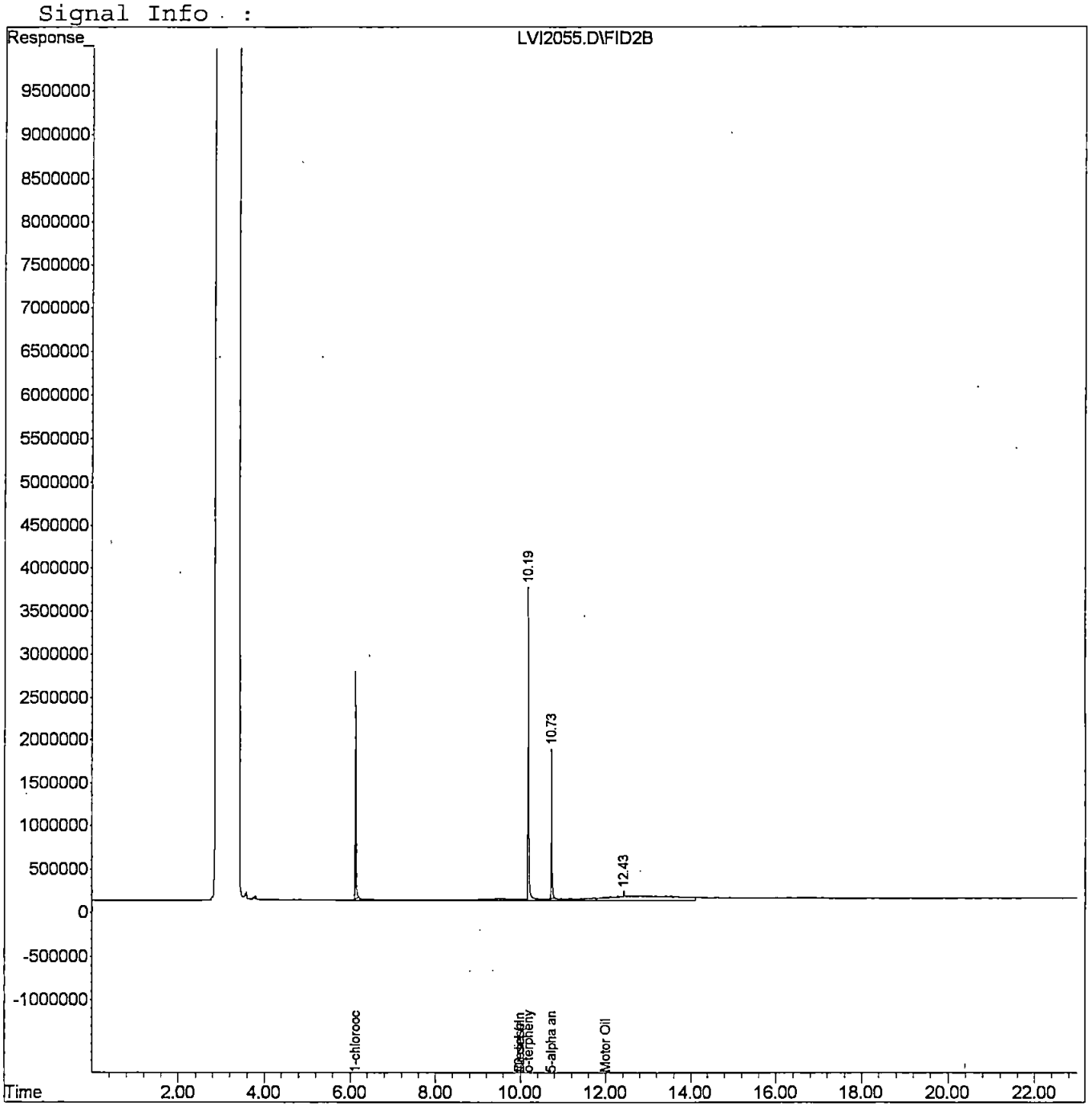


Quantitation Report

Data File : C:\HPCHEM\2\DATA\060700_A\LVI2055.D Vial: 21
Acq On : 6-7-00 7:37:43 PM Operator: RBF
Sample : 90186-2 solid #10.6738 &4 Inst : HP6890
Misc : Multiplr: 1.00
IntFile : ANDRO.E
Quant Time: Jun 8 7:19 2000 Quant Results File: NWDR0526.RES

Quant Method : C:\HPCHEM\2\METHODS\NWDR0526.M (Chemstation Integrator)
Title : Diesel and Motor Oil Rear 05/26/00
Last Update : Mon Jun 05 09:06:23 2000
Response via : Multiple Level Calibration
DataAcq Meth : EXTRACQ.M

Volume Inj. :
Signal Phase :
Signal Info :

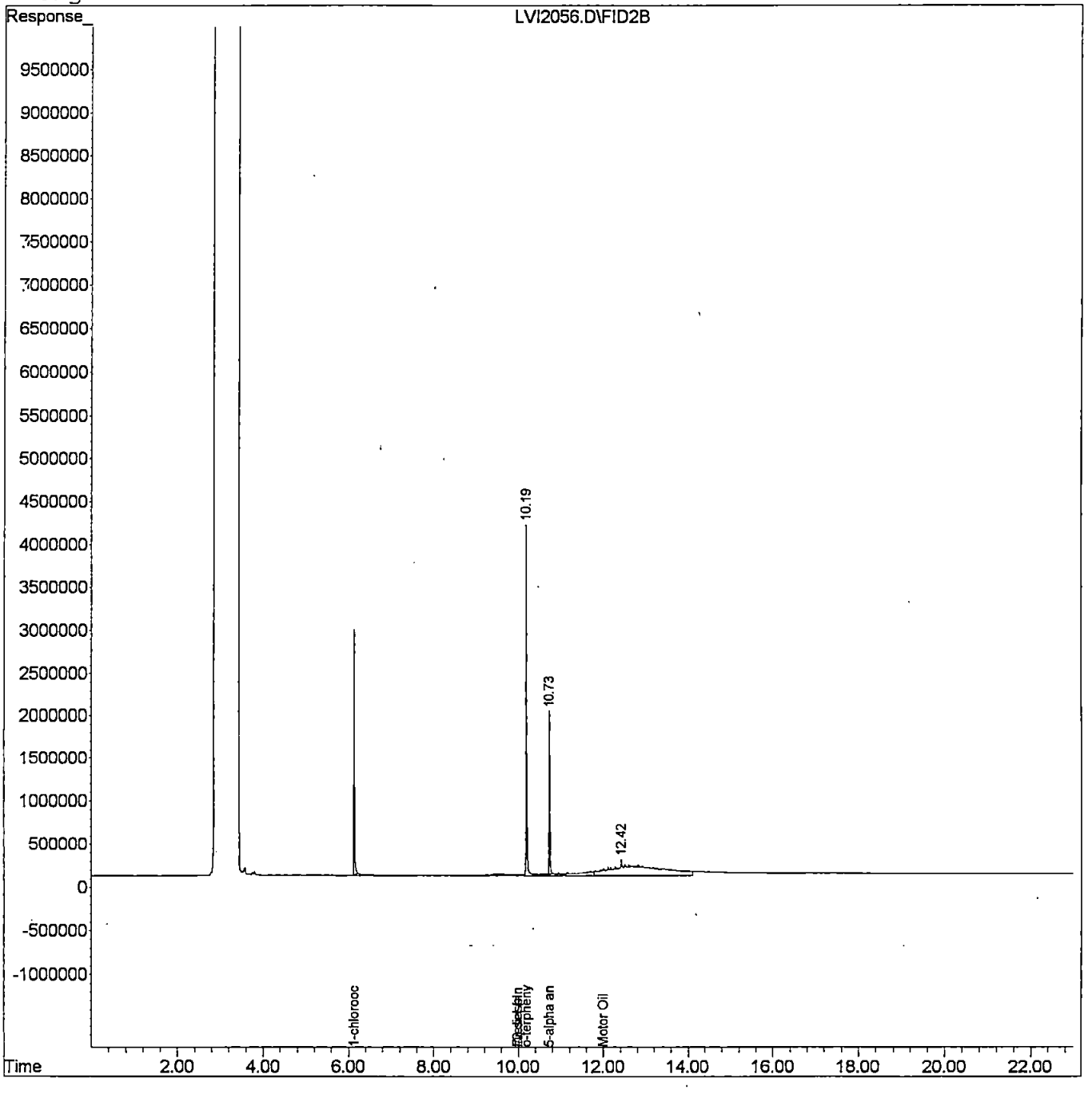


Quantitation Report

Data File : C:\HPCHEM\2\DATA\060700_A\LVI2056.D Vial: 22
Acq On : 6-7-00 8:08:51 PM Operator: RBF
Sample : 90186-3 solid #10.4862 &4 Inst : HP6890
Misc : Multiplr: 1.00
IntFile : ANDRO.E
Quant Time: Jun 8 7:19 2000 Quant Results File: NWDR0526.RES

Quant Method : C:\HPCHEM\2\METHODS\NWDR0526.M (Chemstation Integrator)
Title : Diesel and Motor Oil Rear 05/26/00
Last Update : Mon Jun 05 09:06:23 2000
Response via : Multiple Level Calibration
DataAcq Meth : EXTRACQ.M

Volume Inj. :
Signal Phase :
Signal Info :

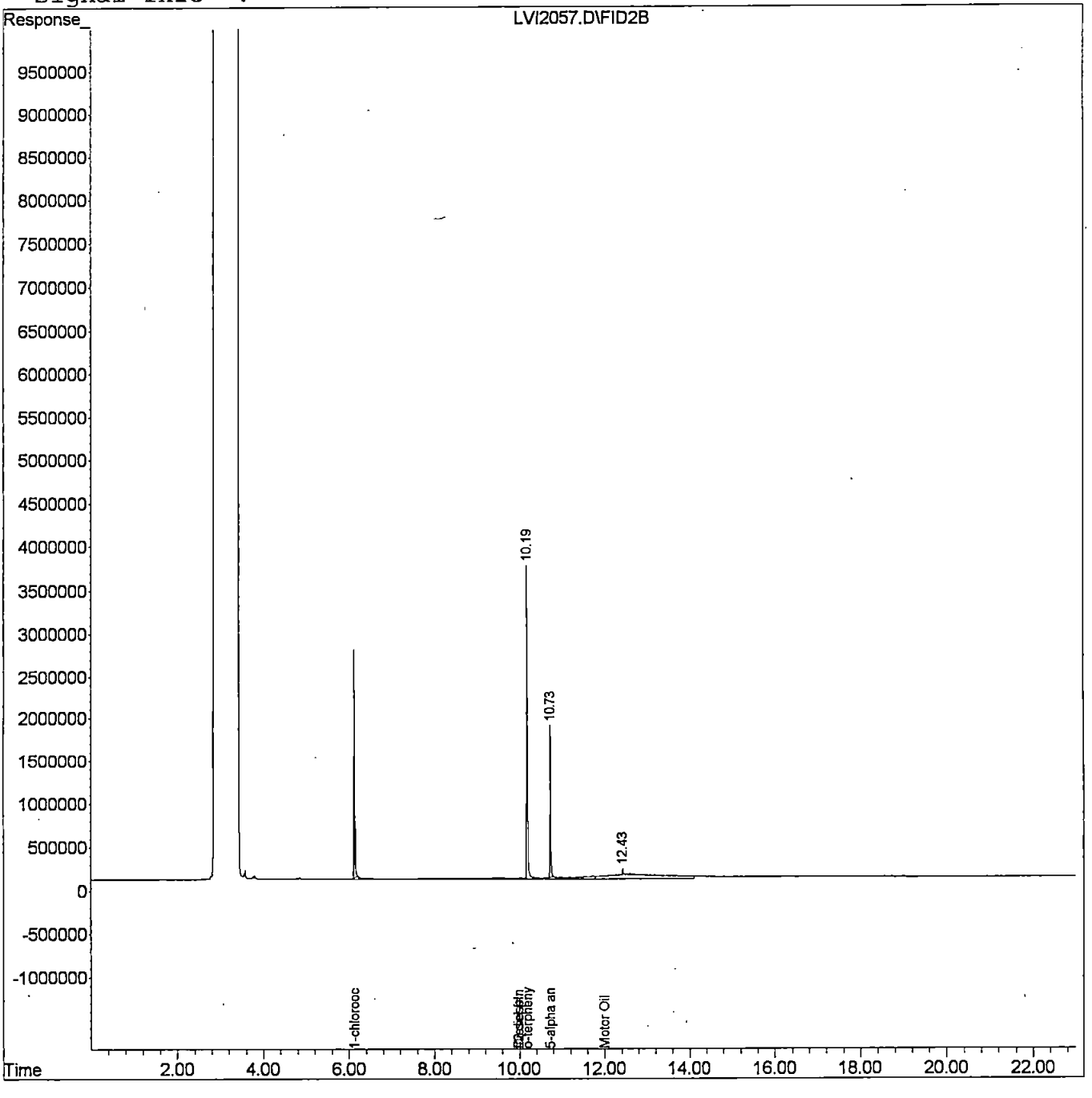


Quantitation Report

Data File : C:\HPCHEM\2\DATA\060700_A\LVI2057.D Vial: 23
Acq On : 6-7-00 8:40:28 PM Operator: RBF
Sample : 90186-4 solid #10.5955 &4 Inst : HP6890
Misc : Multiplr: 1.00
IntFile : ANDRO.E
Quant Time: Jun 8 7:19 2000 Quant Results File: NWDR0526.RES

Quant Method : C:\HPCHEM\2\METHODS\NWDR0526.M (Chemstation Integrator)
Title : Diesel and Motor Oil Rear 05/26/00
Last Update : Mon Jun 05 09:06:23 2000
Response via : Multiple Level Calibration
DataAcq Meth : EXTRACQ.M

Volume Inj. :
Signal Phase :
Signal Info :

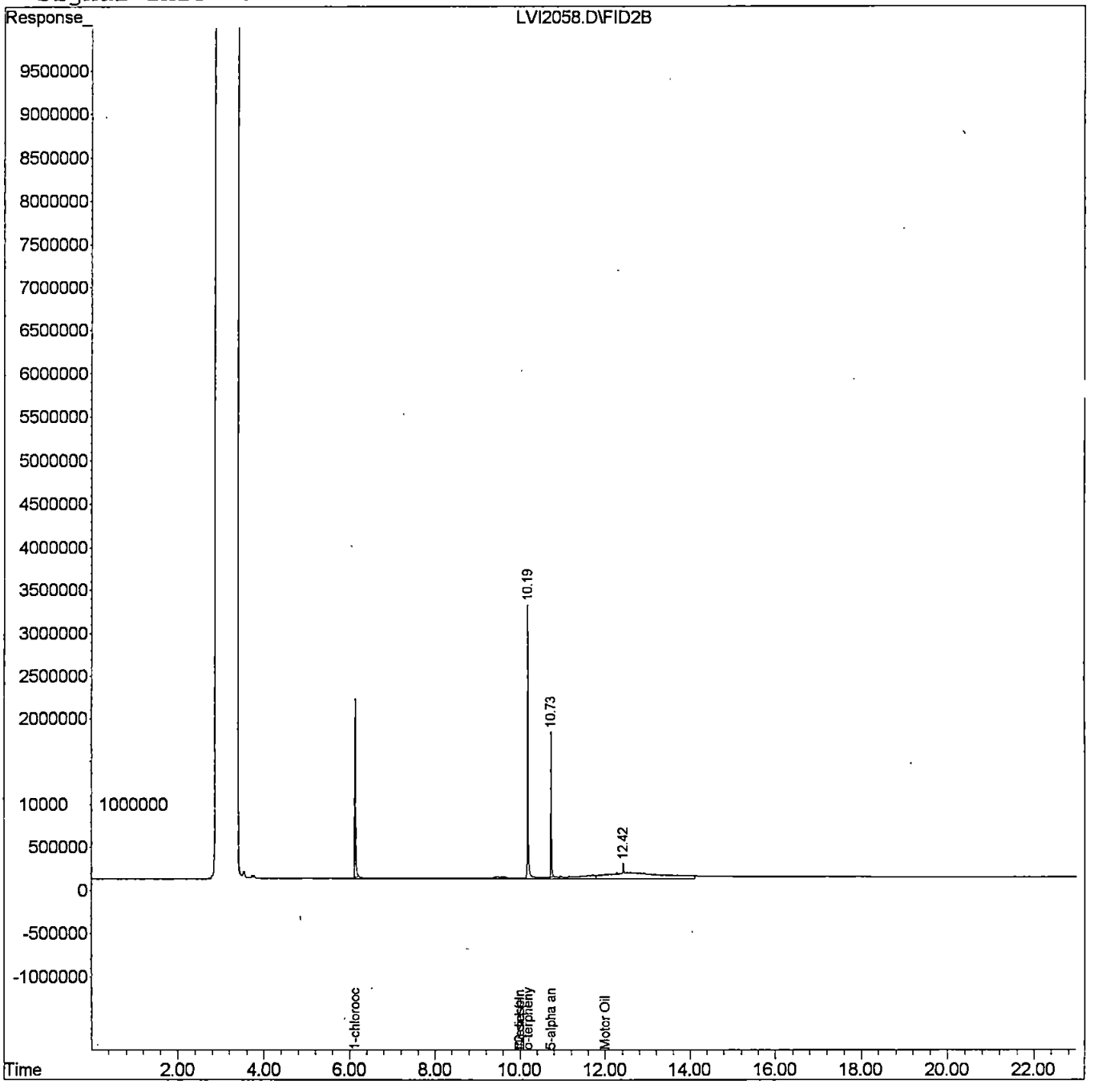


Quantitation Report

Data File : C:\HPCHEM\2\DATA\060700_A\LVI2058.D Vial: 24
Acq On : 6-7-00 9:12:03 PM Operator: RBF
Sample : 90186-5 solid #10.3202 &4 Inst : HP6890
Misc : Multiplr: 1.00
IntFile : ANDRO.E
Quant Time: Jun 8 7:19 2000 Quant Results File: NWDR0526.RES

Quant Method : C:\HPCHEM\2\METHODS\NWDR0526.M (Chemstation Integrator)
Title : Diesel and Motor Oil Rear 05/26/00
Last Update : Mon Jun 05 09:06:23 2000
Response via : Multiple Level Calibration
DataAcq Meth : EXTRACQ.M

Volume Inj. :
Signal Phase :
Signal Info :

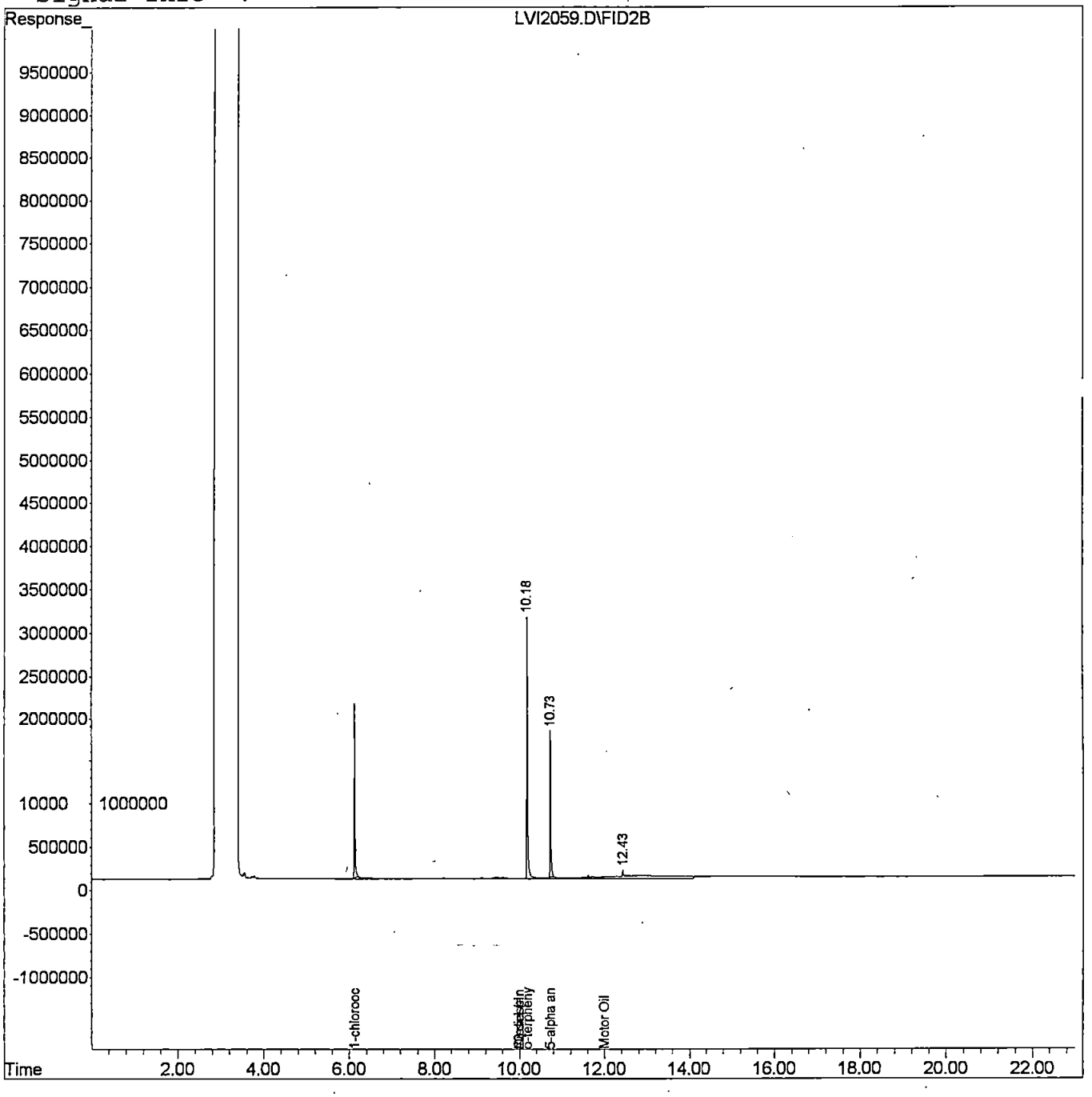


Quantitation Report

Data File : C:\HPCHEM\2\DATA\060700_A\LVI2059.D Vial: 25
Acq On : 6-7-00 9:43:38 PM Operator: RBF
Sample : 90186-6 solid #10.5698 &4 Inst : HP6890
Misc : Multiplr: 1.00
IntFile : ANDRO.E
Quant Time: Jun 8 7:19 2000 Quant Results File: NWDR0526.RES

Quant Method : C:\HPCHEM\2\METHODS\NWDR0526.M (Chemstation Integrator)
Title : Diesel and Motor Oil Rear 05/26/00
Last Update : Mon Jun 05 09:06:23 2000
Response via : Multiple Level Calibration
DataAcq Meth : EXTRACQ.M

Volume Inj. :
Signal Phase :
Signal Info :



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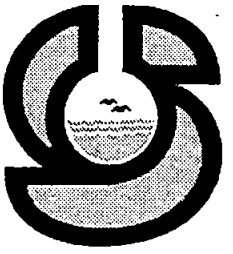

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be $\leq 40\%$.

C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be $> 40\%$. The higher result was reported unless anomalies were noted.

M: GC/MS confirmation was performed. The result derived from the original analysis was reported.

D: The reported result for this analyte was calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____ .

X2: Contaminant does not appear to be "typical" product.

X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.

X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike recovery was not determined due to the required dilution.

X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.

X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.

X8: Surrogate recovery was not determined due to the required dilution.

X9: Surrogate recovery outside advisory QC limits due to matrix interference.

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12\3

SAS Lab No. 90186

TURNAROUND REQUEST (business days)
Standard (10 days) X
RUSH: 24 hrs ___ 48 hrs ___ 5 day ___

CHAIN OF CUSTODY/REQUEST FOR LABORATORY ANALYSIS

Client: WSDOT
Project Name: BPCS
Contact: Thanh Nguyen
Phone No.: (360) 705-7814
Fax No.: (360) 705-6823
Email:

Analyses Requested

Lab Use Only	Sample ID	Date	Time	Matrix	# of Containers	WTPH Dx (ext.)												
	BPCS-1	1-5-??	11:00A	Soil	1	X												
	-2	↓	↓	↓	1	↓												
	-3				1													
	-4				1													
	-5				1													
	-6				1													

	Signature	Printed Name	Firm	Time/Date	Special Instructions
Relinquished By:	[signature]	Phetsavanh Sisouvanh	WSDOT	1/7/00 905	
Received By	AStrom	AStrom	SAS	1/7/00 905	
Relinquished By:					
Received By					
Relinquished By:					
Received By					

COC No. ________

Page ___ of ___