INDEPENDENT REMEDIAL ACTION REPORT

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12216
U7474

For:

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION RIMROCK MAINTENANCE FACILITY

Prepared by WSDOT - Environmental Service Branch
March 6, 1997

NAME: WSDOT -Rimrock Maintenance Facility

LOCATION: Junction of US Route 12 and State Route 410

OWNER: Washington State Department of Transportation (WSDOT)

SITE REMEDIATION PERFORMED BY:

Norm Payton & Thad Richardson
Washington State Department of Transportation
FOSSC - Environmental Service Branch
PO Box 47358
Olympia, WA 98504-7358
(360) 705-7848

BACKGROUND INFORMATION

The WSDOT - Rimrock Maintenance Facility is located at the Junction of US Route 12 and State Route 410 (see Appendix A). The facility was used as a highway maintenance equipment and material storage area. On May 7, 1991, the Washington State Department of Transportation (WSDOT) and its contractor removed one (1) 500 gallon unleaded underground storage tank (UST) and one (1) 1,500 gallon diesel UST. The unleaded tank had two holes in its north end. Soil and groundwater surrounding the tanks were obviously contaminated. Contaminated soil was removed from the excavation on this date and during three ensuing remediation efforts. Results of soil samples obtained during these remediation efforts showed that contamination still remained under the maintenance building (see Appendix B - Rimrock Cleanup Action Report). It was determined that additional excavation would undermine the foundation of the existing building and jeopardize its structural integrity. At the time of the UST removal a new facility was scheduled for construction. It was decided that this remaining contamination was to be remediated after the maintenance building was vacated and demolished. In a letter dated March 1, 1994, the Department of Ecology informed WSDOT that a hazard ranking of 5 was given to the WSDOT - Rimrock site.

Excavation revealed that, in general, native soil underlying the contaminated part of the subject property consists of poorly graded gravel-sand mixtures (GP). Groundwater within the excavation was encountered at levels between 4 and 5 feet below ground surface.

FIELD ACTIVITIES

On October 23, 1995, Norm Payton, with the WSDOT - Environmental Service Branch, arrived on site to characterize the UST excavation (1991) for possible remaining contamination. The maintenance building had been demolished. All that remained of the building was the concrete foundation. Excavation activities began in the area of the hot spot, adjacent to the northwest

corner of the building foundation. A photoionization detector (PID) and an oil sheen test was used to field screen suspected contaminated soil. Based on petroleum odors, PID readings and the heavy sheen evident in the sheen test, the hot spot was determined to be contaminated with petroleum. The contamination found was fairly extensive. It appears that petroleum floating on top of the groundwater had caused much greater horizontal contamination than was anticipated to be encountered. The groundwater fluctuation caused the soil between about 4 and 7.5 feet to become contaminated. The top 3' of soil was considered clean. This overburden was stockpiled separately from the contaminated material. The material used as back fill for the 1989 excavation (1" minus crushed rock) was field screened, and determined to be contaminated.

Discovery of contaminated soil prompted independent remedial action activities. These activities were performed under the direction of Norm Payton and Thad Richardson of the WSDOT - Environmental Service Branch. The excavation activities were performed in two stages. The first stage took place on October 23, 1995, through October 26, 1995. The second stage took place on April 9, 1996, and April 10, 1996. All of the excavation work was not completed during stage 1, because of concerns about weather and lack of a large excavator.

During Stage 1 of the cleanup, work was conducted using a backhoe. After it was determined that the volume of contaminated soil warranted a larger excavator, the objective changed from excavating contaminated soil to determining the extent of the contamination and removing the top 3' of clean overburden. The western limits of contamination were determined during this stage of the cleanup. Approximately, 80 cubic yards of contaminated soil was excavated during this stage. The contaminated material was stockpiled on the concrete slab that was the floor of the old maintenance building.

During Stage 2 of the cleanup, Norm Payton oversaw the excavation of approximately 1,100 cubic yards of additional material. Eight hundred cubic yards of this material was considered contaminated. The top 3' of the excavation was still considered clean. Contaminated soil was excavated until PID readings and a sheen test indicated that soils were clean. The depth of the excavation ranged from 7.5' to 10' below ground surface. Groundwater was located at 4 feet below ground surface. Therefore, most of the contaminated soil being excavated was underwater. This made contaminated soil removal difficult because the operator could not see if all of the material was being removed to a specific depth. Yet, the objective of the project was met in that the goal was to try to remove as much of the remaining source for continued groundwater degradation, the contaminated soil.

A creosoted wood pipe, thought to be an old storm drain line, was encountered on the west wall (in the vicinity of sample #R5WW.) This creosoted pipe running parallel with SR 410, caused sheen on the water in this area of excavation. At this point the north wall of the excavation was 22' feet south of SR 410. This line is believed to still route storm water from upgradient properties.

Field screening indicated that contaminated soil was present under the foundation of the old maintenance shop foundation (the south side wall of the excavation). The north side of the old shop foundation was demolished to excavate this contaminated soil.

SAMPLING

Thad Richardson performed all soil sampling activities on 10/26/95, while Norm Payton performed all other sampling activities. All samples were obtained by backhoe and hand tool. Due to the heavy oil film on the water, representative samples could not be obtained directly from the excavation. Samples obtained from the excavation itself would have to be lifted through an oil film. Therefore, once field screening showed a side wall to be clean, a hole would be dug directly adjacent to the excavation, leaving a soil dam between the excavation and the test pit. The soil dam would prevent contaminated water from contacting the soil to be sampled. A soil sample would be obtained from the side of the bucket nearest the excavation. The following are the numbers and locations of soil samples obtained on 10/24/95, 4/8/96, and 4/9/96 (See Figure 1):

10/24/96:

- Sample #R1B - was obtained from the bottom of the excavation, 8' north and 7' west of the northwest corner of the building foundation. This sample was obtained at a depth of 7' below ground surface (BGS).

- Sample #R2NW - was obtained from the west wall of the excavation, 9' north and 14' west of the northwest corner of the building foundation. This sample was obtained from a depth of 6' BGS.

- Sample #R3EW - was obtained from the north wall of the excavation, 22' north and 2' west of the northwest corner of the building foundation. This sample was obtained from a depth of 6' BGS slow the water table.

10/26/96:

- Sample #1 - was a obtained from the 80 cubic yard contaminated pile that was stockpiled on the concrete slab of the old maintenance building. This random sample was obtained to provide a base line contamination level.

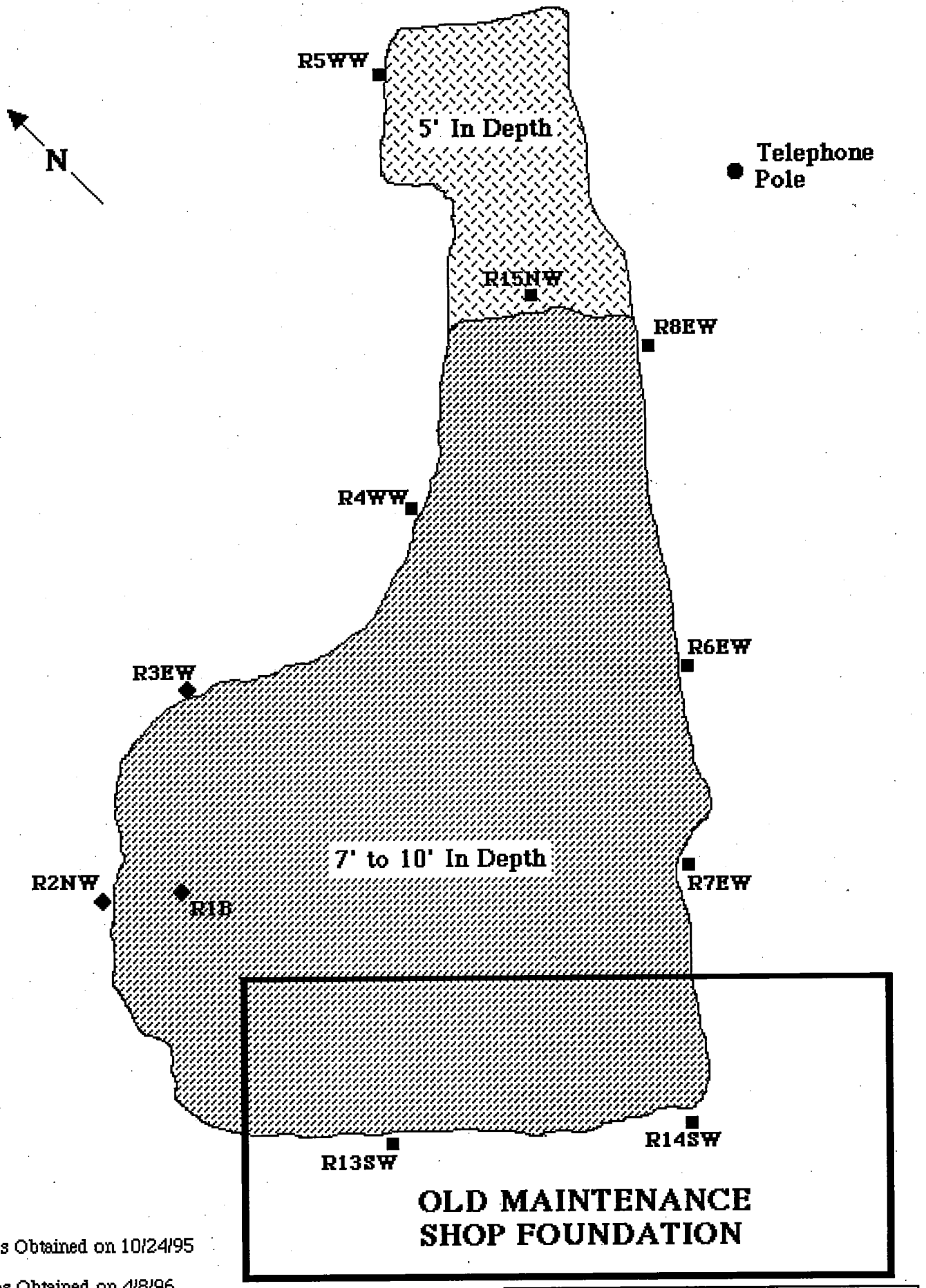
4/9/96:

- Sample #R4WW- was obtained from the west wall of the excavation, approximately 61' south of SR 410. This sample was obtained from a depth of 5.5' BGS.

- Sample #R5WW- was taken on the north end of the west wall, approximately 30 feet from SR 410. This sample was obtained from a depth of 6' BGS.

- Sample #R6EW- was obtained from the east wall of the excavation, approximately 93' south of SR 410. This sample was obtained from a depth of 6.5' BGS.

- Sample #R7EW- was obtained from the east wall of the excavation, approximately 12' north and 18' west of the northeast corner of the building foundation. This sample was obtained from a depth of 6.5' BGS.



Note: All locations are approximate.
Not drawn to scale.

Figure 1.
Sample Locations
WSDOT - Rimrock Maintenance Facility

- Sample #R8EW- was obtained from the east wall of the excavation, approximately 58' south of SR 410. This sample was obtained from a depth of 6.5' BGS

4/10/96:

- Sample #R9-OB - was obtained from the south side, east end of the clean overburden pile.
- Sample #R10-OB - was obtained from the south side, west ends of the clean overburden pile.
- Sample #R11-OB - was obtained from the north side, east ends of the clean overburden pile.
- Sample #R12-OB - was obtained from the north side, west end of the clean overburden pile.
- Sample #R13SW- was obtained from the south wall of the excavation, 10' east and 16' south of the northwest corner of the foundation. This sample was pulled from a depth of 7.5' BGS.
- Sample #R14SW- was obtained from the south wall of the excavation, 18' west, and 16' south of the north east corner of the foundation. This sample was obtained from a depth of 7' BGS.
- Sample #R15NW- was obtained from the north end of the excavation, approximately 52' south of SR 410. This sample was obtained from a depth of 7.5' BGS. This sample was obtained to verify that the north wall of the excavation was clean. The area to the north of this sample was only excavated to a depth of 3' to remove clean overburden. Soils below 3' in the area north of sample #R15NW appeared clean based on PID readings and oil sheen tests

All samples were placed in iced coolers and delivered under chain-of-custody to Sound Analytical Inc., Fife, Washington for analysis.

ANALYTICAL RESULTS

With the exception of Sample #1, all of the samples were analyzed for WTPH-D, and WTPH-G with BTEX. Sample #1 was only analyzed for WTPH-D and WTPH-G. Samples R9-OB and R10-OB, along with samples R11-OB and R12-OB were combined into composite samples at the laboratory. All the sample results as reported by Sound Analytical Inc. were below MTCA method A cleanup levels, except for sample #1. Sample #1 was obtained from the contaminated soil pile to obtain a base line. A summary of the results is shown in Table 1. Complete analytical data as reported by Sound Analytical Inc. can be found in Appendix C.

WSDOT- RIMROCK MAINTENANCE FACILITY
REMEDIAL ACTION
SOIL SAMPLE RESULTS

Sample ID	Date (mo/day/yr)	Depth (ft)	WTPH-G (mg/kg)	WTPH-D (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)
R1B	10/24/95	7	13	28	ND	ND	ND	0.12
R2NW	10/24/95	6	ND	ND	ND	ND	ND	ND
R3EW	10/24/95	6	1.1	ND	ND	ND	ND	ND
1	10/26/95	PCS Pile	960	31	_	_	_	_
E4WW	4/8/96	5.5	ND	ND	ND	ND	ND	ND
R5WW	4/8/96	7.5	ND	ND	ND	ND	ND	ND
R6EW	4/8/96	8.5	ND	ND	ND	ND	ND	ND
R7EW	4/8/96	8.5	9.5	28	ND	ND	ND	ND
R8EW	4/8/96	8	ND	ND	ND	ND	ND	ND
R9-OB & R10-OB	4/9/96	Clean Pile	5.4	46	ND	ND	ND	ND
R11-OB & R12-OB	4/9/96	Clean Pile	ND	ND	ND	ND	ND	ND
R13SW	4/9/96	7	1.2	ND	ND	ND	ND	ND
R14SW	4/9/96	7	1	ND	ND	ND	ND	ND
R15NW	4/9/96	7.5	2.4	ND	ND	ND	ND	ND
MTCA Method A Soil Cleanup Levels			100	200	0.5	40	20	20

B, Benzene; T, Toluene; E, Ethyl Benzene; X, Xylene

ND = Not Detected

_ = Not Analyzed

Table 1.

CONTAMINATED SOIL TREATMENT

The estimated 880 cubic yards of petroleum contaminated soil was screened on site to separate the clean rock from the contaminated soil, and thus reduce the amount of material needing treatment. The contaminated soil was passed through a vibrating screen (Read Screen-All) which separated the rock larger than one inch and also aerated the soil. Screening the rock from the contaminated soil reduced the volume of material requiring treatment to 378 cubic yards.

On May 10, 1996, Thad Richardson and Manuel Flores of the WSDOT - Environmental Service Branch returned to the site to obtain soil samples of the screened soil. These samples were to be used as a base line for future treatment of the pile. Random test holes were dug into the contaminated soil pile. PID readings obtained from these holes were at non detectable levels. No petroleum odors were evident while these holes were dug. Based on the field screening results the soils appeared uniform in contamination, with no apparent hot spots. Five (5) grab soil samples (according to Ecology "Guidance for Remediation of Petroleum Contaminated Soils") were obtained from the 378 cubic yard pile. The samples were obtained from a minimum of 6 inches below the surface of the pile. Samples were immediately placed in a cooler with ice. Samples were then transported under chain of custody to Sound Analytical Services, Inc., Fife, Washington.

These samples were analyzed for WTPH-D, and WTPH-G with BTEX. The sample results as reported by Sound Analytical Inc. showed that the diesel, gasoline and BTEX results were below MTCA method A cleanup levels. Yet, the diesel analysis determined that heavy oil was present in three of the five samples analyzed. Sound Analytical was able to provide WSDOT with results for the heavy oil range using the data already available. Two of these samples had heavy oil above MTCA method A cleanup level at 230 ppm and 300 ppm. A summary of the results is shown in Table 2. Complete analytical data as reported by Sound Analytical Inc. can be found in Appendix C. The source of this heavy oil contamination is unknown. It may have been caused by leaking equipment used by the contractor during the screening process, or historical contamination that was encountered underground.

On May 31, 1996, and June 3, 1996, the 378 cubic yards of heavy oil contaminated soil was transported to the WSDOT - Union Gap Maintenance Facility, located at 2809 Rudkin Rd., Union Gap, Washington. This material was placed on an asphalt pad with other contaminated soils generated from a remediation project at Union Gap. These two projects were kept separate. At this same time, nitrogen and phosphorus were added to the contaminated soil. These nutrients, in a commercially available inorganic fertilizer were mixed into the soil with a front end loader. This mixing also improved soil aeration and evenly distributed soil moisture. In late July 1996, the soil was mixed again. During the July mixing process, the contractor inadvertently combined the Rimrock soil with the 1,280 cubic yards of contaminated soil generated from Union Gap. Both piles had heavy oil contamination at levels below 400 ppm.

On August 12, 1996, Manuel Flores, of the WSDOT-Environmental Service Branch went to the Union Gap facility to obtain soil samples of the Rimrock/Union Gap contaminated pile. Prior testing had shown that both piles were uniform in contamination. Ten (10) grab soil samples

WSDOT - RIMROCK MAINTENANCE FACILITY
SCREENED PETROLEUM CONTAMINATED SOIL
SOIL SAMPLE RESULTS

Sample ID	Date (mo/day/yr)	Depth (ft)	WTPH-G (mg/kg)	WTPH-D EXTENDED		B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)
				DIESEL (mg/kg)	HEAVY OIL (mg/kg)				
1	5/13/96	0.5	3.6	160	ND	ND	ND	ND	ND
2	5/13/96	0.5	1.5	120	300	ND	ND	ND	ND
3	5/13/96	0.5	1.7	55	ND	ND	ND	ND	ND
4	5/13/96	0.5	1.8	100	150	ND	ND	ND	ND
5	5/13/96	0.5	5	130	230	ND	ND	ND	ND
MTCA METHOD A CLEANUP LEVEL			100	200	200	0.5	40	20	20

B, Benzene; T, Toluene; E, Ethyl Benzene; X, Xylene
ND = Not Detected

Table 2.

(according to Ecology "Guidance for Remediation of Petroleum Contaminated Soils") were obtained from the 1650 cubic yard pile. The samples were obtained from a minimum of 2 feet below the surface of the pile. Samples were immediately placed in a cooler with ice. Samples were then transported under chain of custody to Sound Analytical Services, Inc., Fife, Washington.

These ten samples were analyzed for WTPH-D extended with silica gel cleanup. The sample results as reported by Sound Analytical Inc. showed that seven of the ten samples collected contained heavy oil above MTCA method A cleanup levels. A summary of the results is shown in Table 2. Complete analytical data as reported by Sound Analytical Inc. can be found in Appendix C.

In a September 26, 1996, letter to the Yakima Health District, WSDOT requested approval of a proposal to use the 1650 cubic yards of material for WSDOT roadside maintenance projects (See Appendix D). In a letter dated October 1, 1996, the Yakima Health District approved these Class 3 soils for reuse in roadside maintenance projects. (See Appendix E).

CONCLUSION

Based on the lab results received from Sound Analytical Incorporated, the excavated area is now below MTCA method A cleanup levels. The excavation has been back filled with the screened rock and clean material brought in from off site. WSDOT is building a new interchange for SR 410 and US 12.

The estimated 378 cubic yards of petroleum contaminated soil that remained after screening meets Class 3 criteria, and has been approved for use on roadside maintenance projects by the Yakima Health District.

Groundwater monitoring wells will be installed at this site during the spring/summer of 1997 to evaluate potential impacts to site groundwater. Information obtained from these wells will be provided to Ecology in subsequent reports.

Prepared by

Norm Payton
Hazardous Material Specialist
Environmental Service Branch

Reviewed by

Thad Richardson
Environmental Compliance Specialist
Environmental Service Branch

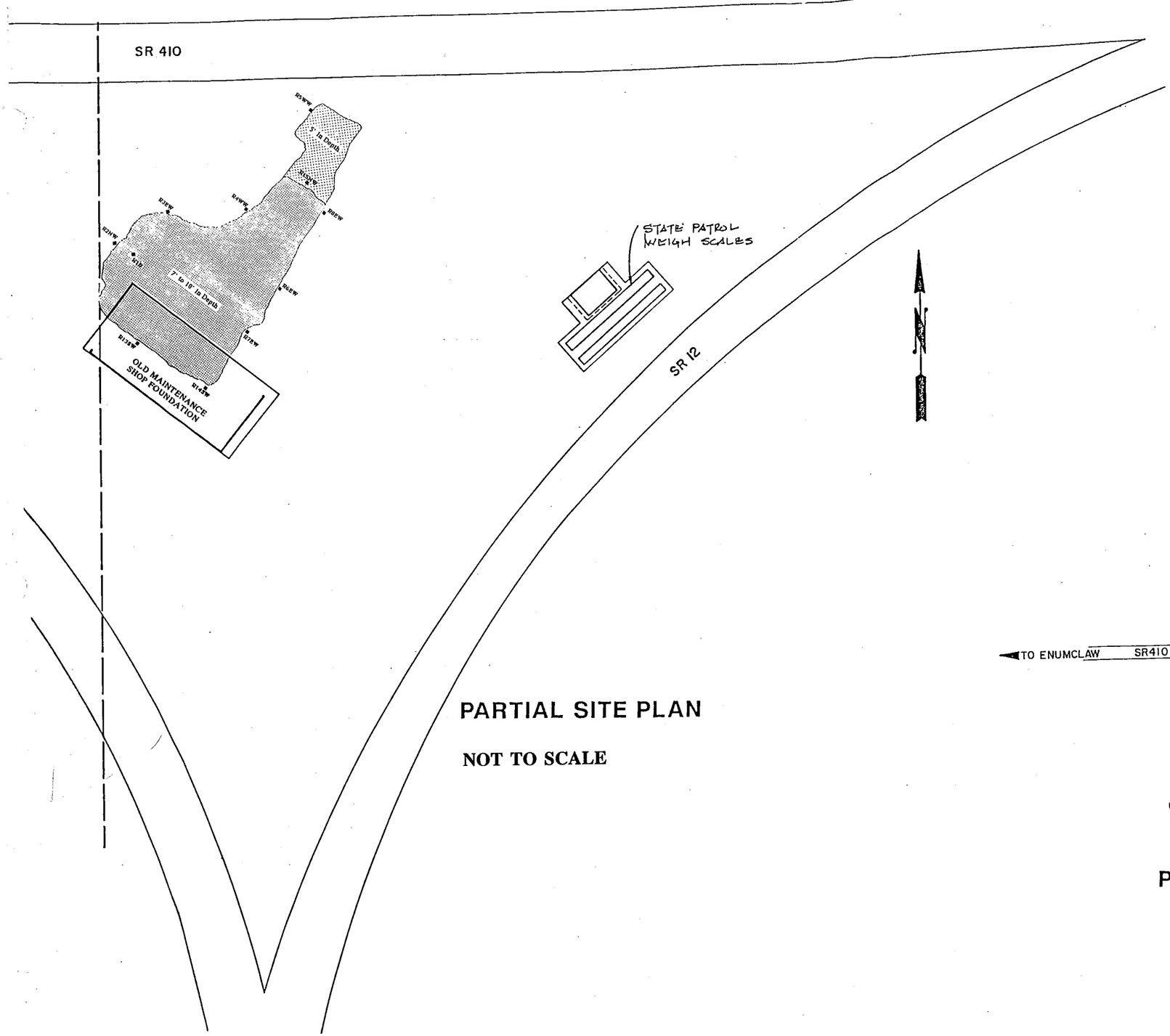
WSDOT - RIMROCK MAINTENANCE FACILITY
TREATED PETROLEUM CONTAMINATED SOIL
FROM RIMROCK UNION GAP
SOIL SAMPLE RESULTS

Sample ID	Date (mo/day/yr)	Depth (ft)	WTPH-D EXTENDED	
			DIESEL (mg/kg)	HEAVY OIL (mg/kg)
UG1	8/12/96	PCS PILE	34	270
UG2	8/12/96	PCS PILE	41	350
UG3	8/12/96	PCS PILE	58	390
UG4	8/12/96	PCS PILE	41	320
UG5	8/12/96	PCS PILE	37	290
UG6	8/12/96	PCS PILE	29	240
UG7	8/12/96	PCS PILE	21	96
UG8	8/12/96	PCS PILE	29	140
UG9	8/12/96	PCS PILE	51	340
UG10	8/12/96	PCS PILE	29	250
MTCA METHOD A CLEANUP LEVELS			200	200

Table 3.

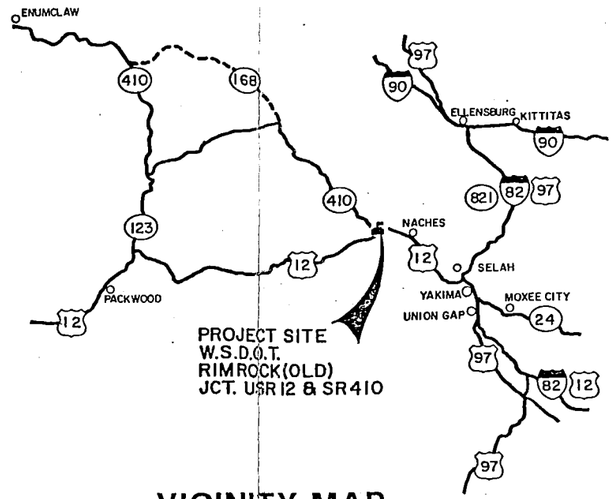
APPENDIX A

VICINITY MAP & SITE PLAN



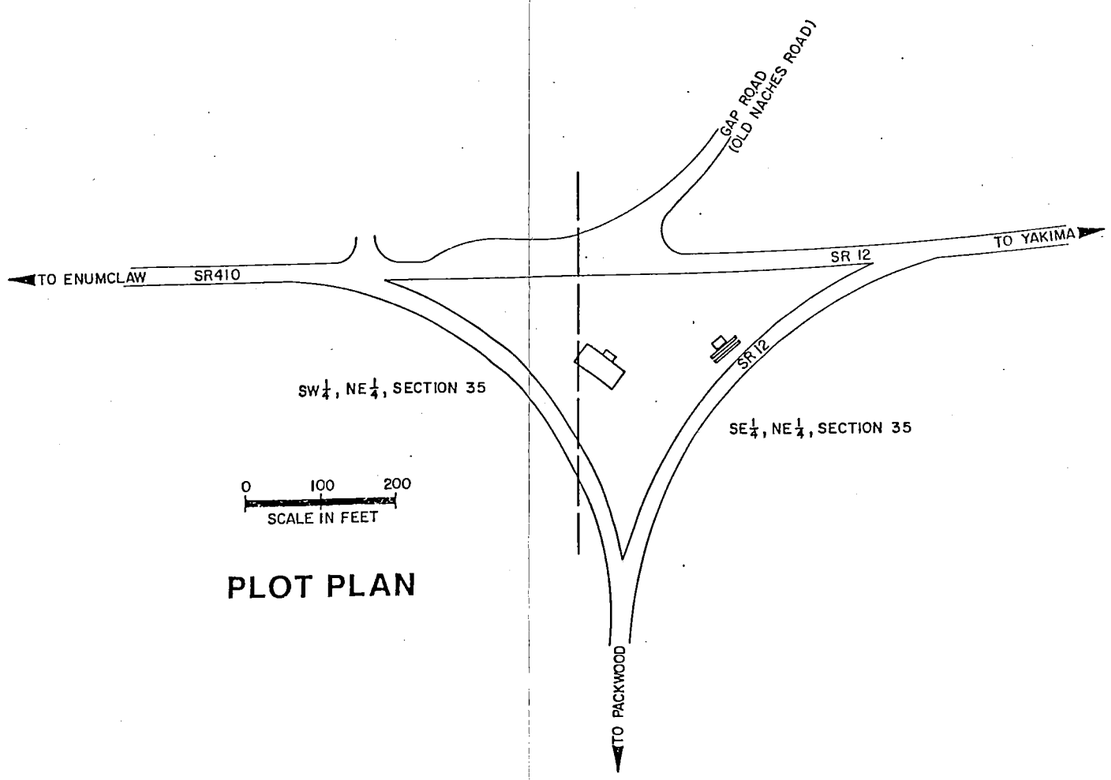
PARTIAL SITE PLAN

NOT TO SCALE



VICINITY MAP

NO SCALE



PLOT PLAN

WSDOT - RIMROCK MAINTENANCE SITE (OLD)

APPENDIX B

RIMROCK CLEANUP ACTION REPORT

WASHINGTON STATE
DEPARTMENT OF TRANSPORTATION
P. O. Box 1709
4200 Main Street
Vancouver, WA 98663
(206) 696-6518

Cleanup Action for the WSDOT Property at

RIMROCK

Junction U.S. 12 & SR 410
Naches, Washington

Fuel Tank Replacement
Phase 3 1990
October 1991

Rimrock DOT Facility
Junction US 12 & SR 410
Naches, Washington

On May 7, 1991, Washington State Department of Transportation (DOT) and its contractor, Stokes Construction, Inc. of Seattle, WA removed a 500 gallon unleaded tank and a 1,500 gallon diesel tank. The unleaded tank had two holes in the north end of the tank.

Because of the odors present during tank removal, additional excavation of contaminated soils was done. The contaminated material was stockpiled on site.

Seven soil samples were taken from the excavation and one water sample was taken from the ponding area to the west of the site. The soil samples yielded results up to 4,800 ppm gas and up to 270 ppm as diesel. High levels of BTEX were also present. No contamination was found in the water sample.

On June 14, 1991, additional excavation of contaminated soils was performed using a DOT backhoe and operator. Soil samples 21, 22, and 23 were taken from the excavated area at the end of the day. Sample 22 yielded 8,400 ppm as aged gas/diesel.

On June 25, 1991, excavation was again performed using a DOT backhoe and operator. The excavated material was stockpiled on site. At the end of the day, samples 41 through 49 were taken. The results of these samples showed that high levels of contamination still existed in the center area and the south end of the excavation.

On July 11, 1991, additional excavation was done using a DOT backhoe and operator. At the end of the day, samples 51 through 55 were taken. The results of these samples showed the high levels of contamination had finally been removed. However, sample 51 was 110 ppm as aged gas/diesel and sample 54 was 340 ppm as aged gas/diesel. These samples were taken adjacent to the shop building. Further excavation in the direction of the remaining contamination would damage the building.

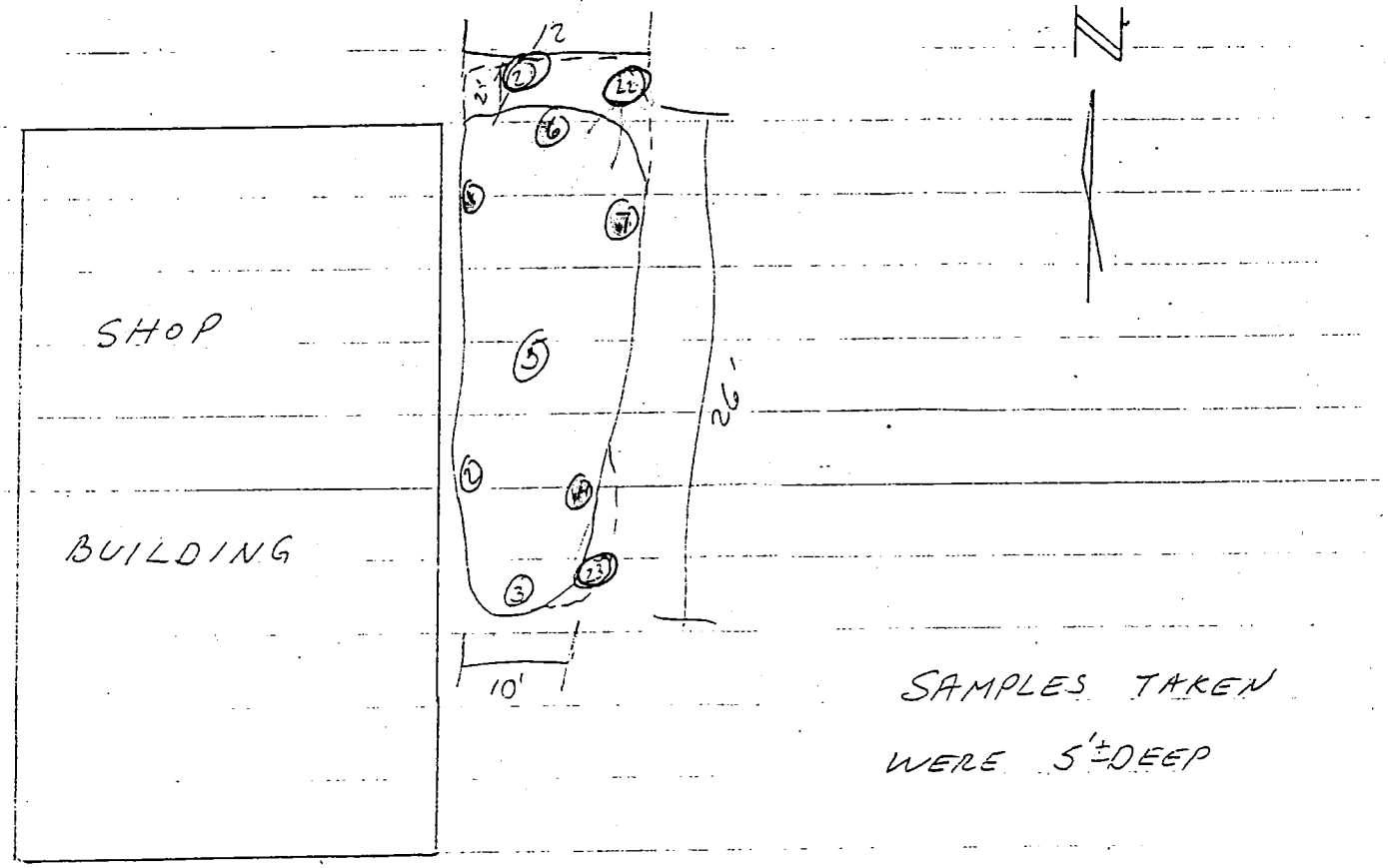
The excavated contaminated soil was placed into a land farm on site. The material was spread out into a layer about 12" thick.

The DOT is requesting a conditional closure of this site due to the contamination extending under the shop building. When the shop building is removed or before the property is sold, the contaminated areas will be re-excavated, tested, and treated in accordance with regulations then in place. A copy of this report shall be kept in the DOT facility file at all times.

Soil samples will be taken from the land farm. When the Total Petroleum Hydrocarbons (TPH) results due to diesel contamination are all below 200 ppm and/or due to gasoline contamination are all below 100 ppm, the land farm will be considered closed and a supplemental report will be prepared.

APPENDIX

RIM ROCK (OLD)



REMOVED:-

1-500 gal unleaded

1-1500 gal diesel

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: WA State Dept. of Transportation

Date: May 17, 1991

Report On: Analysis of Soil & Water

Lab No.: 17508

IDENTIFICATION:
Samples Received on 05-08-91
Project: Rim Rock

ANALYSIS:

Lab Sample No.	1	2	3	4
Client Identification	#1	#2	#3	#4
Matrix/Units	Soil mg/kg	Soil mg/kg	Soil mg/kg	Soil mg/kg
Benzene	5.5	< 0.05	< 0.05	0.41
Toluene	130	< 0.05	0.20	2.7
Ethyl Benzene	32	< 0.05	< 0.05	0.73
Xylenes	340	< 0.05	0.62	6.9
BTEX by EPA SW-846 Method 8020				
Total Petroleum Fuel Hydrocarbons by EPA SW-846 Modified Method 8015	1,500	< 10.0	94	270
TPH as	Aged Gas		Diesel	Diesel

Note - BTEX and TPH 8015 soil results reported on an as received basis.

Continued . . . . .

SOUND ANALYTICAL SERVICES, INC.

WA State Dept. of
Transportation
Project: Rim Rock

Lab No. 17508
May 17, 1991

Lab Sample No.	5	6	7	8
Client Identification	#5	#6	#7	#8
Matrix/Units	Soil mg/kg	Soil mg/kg	Soil mg/kg	Water mg/l
Benzene	0.44	0.51	9.0	< 0.001
Toluene	5.3	14	190	< 0.001
Ethyl Benzene	1.3	3.1	62	< 0.001
Xylenes	15.	62	420	< 0.001
BTEX by EPA SW-846 Method 8020				
Total Petroleum Fuel Hydrocarbons by EPA SW-846 Modified Method 8015	49	380	4,800	< 1.0
TPH as	Aged Gas	Aged Gas	Aged Gas	

Note - BTEX and TPH 8015 soil results reported on an as received basis.

SOUND ANALYTICAL SERVICES

C. LARRY ZURAW

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: WA State Dept. of Transportation

Date: June 18, 1991

Report On: Analysis of Soil

Lab No.: 18155

IDENTIFICATION:
Samples Received on 06-14-91
Project: Rim Rock

ANALYSIS:

Lab Sample No.	Client ID	*Total Petroleum Fuel Hydrocarbons, mg/kg
1	#1 21	< 10
2	#2 22	8,400 as Aged Gas/Diesel
3	#3 23	< 10

*TPH by EPA SW-846 Modified Method 8015

Note - Results reported on an as received basis.

SURROGATE RECOVERY, %

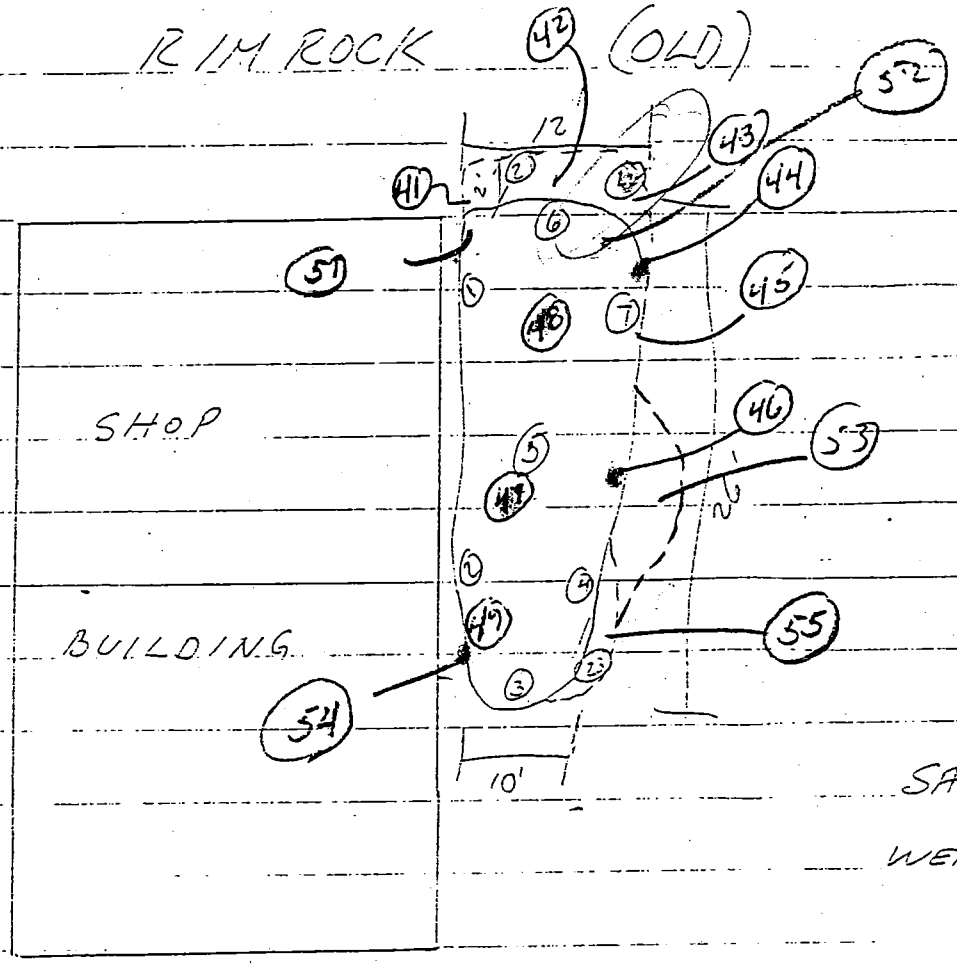
Lab Sample No.	1	2	3
TPH by Mod 8015			
1-Chlorooctane	89	249*	93
Perylene	72	76	75

*Surrogate recovery invalid due to matrix interference.

SOUND ANALYTICAL SERVICES

C. LARRY ZURAW

RIM ROCK (OLD)



SAMPLES TAKEN WERE 5'± DEEP

REMOVED:

1-500 gal unleaded

1-1500 gal diesel

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 · TELEPHONE (206)922-2310 · FAX (206)922-5047

Report To: WA State Dept. of Transportation

Date: July 3, 1991

Report On: Analysis of Soil

Lab No.: 18422

IDENTIFICATION:
Samples Received on 06-28-91
Project: Rim Rock

ANALYSIS:

Lab Sample No.	Client ID	*Total Petroleum Fuel Hydrocarbons, mg/kg
1	41	< 10.0
2	42	22 Aged Gas
3	43	29 Aged Gas/Diesel
4	~~4/4 1210~~	210 Aged Gas/Diesel
5	45	140 Aged Gas/Diesel
6	46	7,600 Aged Gas/Diesel
7	47	7,100 Gas/Diesel
8	48	720 Aged Gas/Diesel
9	49	1,200 Aged Gas/Diesel

*TPH by EPA SW-846 Modified Method 8015

Note - Results reported on an as received basis.

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: WA State Dept. of Transportation

Date: July 15, 1991

Report On: Analysis of Soil

Lab No.: 18642

IDENTIFICATION:
Samples Received on 07-11-91
Project: Rimrock

ANALYSIS:

Lab Sample No.	Client ID	*Total Petroleum Fuel Hydrocarbons, mg/kg
1	51	110 * ? Aged Gas/Diesel
2	52	45 Aged Gas/Diesel
3	53	85 Aged Gas/Diesel
4	54	340 * Aged Gas/Diesel
5	55	58 Aged Gas/Diesel

*TPH by EPA SW-846 Modified Method 8015 * NEXT TO BLDG,

Note - Results reported on an as received basis.

SURROGATE RECOVERY, %

Lab Sample No.	1	2	3	4	5
TPH by Mod 8015	106	86	101	104	84
1-Chlorooctane	84	72	65	73	75
Perylene					

SOUND ANALYTICAL SERVICES

C. LARRY ZURAW

C 12216 JS
U7474

UNDERGROUND STORAGE TANK
Site Check/Site Assessment Checklist

The purpose of this form is to certify the proper investigation of an UST site for the presence of a release. These activities shall be conducted in accordance with Chapter 173.360 WAC. A description of the various situations requiring a site check or site assessment is provided in the guidance document for UST site checks and site assessments.

This Site Check/Site Assessment Checklist shall be completed and signed by a person registered with the Department of Ecology to perform site assessments.

Two copies of the results of the site check or site assessment should be included with this checklist according to the reporting requirements in the guidance document for UST site checks and site assessments.

For further information about completing this form, please contact the Department of Ecology UST Program.

The completed checklist should be mailed to the following address:

Underground Storage Tank Section
Department of Ecology
Mail Stop PV-11
Olympia, WA 98504-8711

RECEIVED
MAR 20 1997
ECOLOGY

RECEIVED
MAR 20 1997
ECOLOGY

1. UST SYSTEM OWNER AND LOCATION

UST Owner/Operator: W.S.D.O.T.

Owners Address: Transportation Bldg KF-01 (Street) P.O. Box

Olympia (City) Wa (State) 98504 (ZIP-Code)

Telephone: (206) 753-7062

Site ID Number (on invoice or available from Ecology if tank is registered): 012216

Site/Business Name: WSDOT- OLD Rimrock Maintenance Site

Site Address: Jct SR 12 & SR 410 (Street) Yakima (County)

Naches (City) Wa (State) (ZIP-Code)

2. SITE CHECK/SITE ASSESSMENT CONDUCTED BY:

Registered Person: Harry Horn

Address: 4200 Main S.T. (Street) 1709 (P.O. Box)

Vancouver (City) Wa (State) 98668 (ZIP-Code)

Telephone: (206) 696-6518

3. TANK INFORMATION

1. Tank ID Number (as registered with Ecology): _____ 2. Year installed: _____

3. Tank capacity in gallons: _____ 4. Last substance stored: _____

4. REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

_____ Investigate suspected release due to on-site environmental contamination

_____ Investigate suspected release due to off-site environmental contamination

_____ Extend temporary closure of UST system for more than 12 months

_____ UST system undergoing change-in-service

_____ UST system permanently closed-in-place

_____ UST system permanently closed with tank removed

_____ Required by Ecology or delegated agency for UST system closed before December 22, 1988

_____ Other (describe): _____

5. CHECKLIST

Each item of the following checklist shall be initialed by the person registered with the Department of Ecology whose signature appears below.

	Yes	No
1. Has the site check/site assessment been conducted according to applicable procedures specified in the UST site check/site assessment guidance issued by the Department of Ecology?	HH	
2. Has a release from the UST system been confirmed? *NOTE: Owners/operators must report all confirmed releases to the Department of Ecology or delegated agency within 24 hours.*	HH	
3. Are the results of the site check/site assessment enclosed with this checklist? *NOTE: Two copies of the site check/site assessment results must be submitted to the Department of Ecology according to the reporting requirements specified in the UST site check/site assessment guidance.*	HH	

I hereby certify that I have been in responsible charge of performing the site check/site assessment described above. Persons submitting false information are subject to penalties under Chapter 173.360 WAC.

11-6-91
Date

Harry Horn
Signature of Person Registered with Ecology

6. OWNER'S SIGNATURE

11-6-91
Date

Harry Horn
Signature of Tank Owner or Authorized Representative

APPENDIX C

ANALYTICAL RESULTS FROM SOUND ANALYTICAL, INC.

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: October 31, 1995

TO: Norm Payton
WSDOT - Operations Olympia

PROJECT: Old Rimrock UST

LABORATORY NUMBER: 52345

Enclosed are the test results for three samples received at Sound Analytical Services on October 26, 1995.

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

Should there be any questions regarding this report, please contact me at (206) 922-2310.

Sincerely,

Andrew J. Riddell

Andrew J. Riddell
Project Manager

AJR:tm

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R1B
Lab ID:	52345-01
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
% Solids	81.62

BTEX by USEPA Method 8020

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	64		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.053	
Toluene	ND	0.053	
Ethylbenzene	ND	0.053	
Total Xylenes	0.12	0.053	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R1B
Lab ID:	52345-01
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
% Solids	81.62

Gasoline by WTPH-G

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	64		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline (Toluene-nC12)	13	1.2	X2

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R2NW
Lab ID:	52345-02
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
% Solids	91.22

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Trifluorotoluene	84		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.045	
Toluene	ND	0.045	
Ethylbenzene	ND	0.045	
Total Xylenes	ND	0.045	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R2NW
Lab ID:	52345-02
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
% Solids	91.22

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Trifluorotoluene	84		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R3EW
Lab ID:	52345-03
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
% Solids	83.15

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Trifluorotoluene	75		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.049	
Toluene	ND	0.049	
Ethylbenzene	ND	0.049	
Total Xylenes	ND	0.049	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R3EW
Lab ID:	52345-03
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
% Solids	83.15

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	75		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	1.1	1.1	J

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R1B
Lab ID:	52345-01
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/26/95
% Solids	81.62

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	100		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	28	30	J

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R2NW
Lab ID:	52345-02
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/27/95
% Solids	91.22

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	116		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	27	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R3EW
Lab ID:	52345-03
Date Received:	10/25/95
Date Prepared:	10/25/95
Date Analyzed:	10/27/95
% Solids	83.15

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	High
o-Terphenyl	113		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	29	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB574
Date Received:	-
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
% Solids	

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Trifluorotoluene	52		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.044	
Toluene	ND	0.044	
Ethylbenzene	ND	0.044	
Total Xylenes	ND	0.044	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB574
Date Received:	-
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
% Solids	

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Trifluorotoluene	52		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB574
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
QC Batch ID:	GB574

BTEX by USEPA Method 8020

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Benzene	0	1	0.91	91	
Toluene	0	1	0.96	96	
Ethylbenzene	0	1	0.96	96	
Total Xylenes	0	3	3.1	105	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB574
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
QC Batch ID:	GB574

Gasoline by WTPH-G

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Gasoline (Toluene-nC12)	0	14	15	103	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	TD9510-16-15
Lab ID:	52302-01
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
QC Batch ID:	GB574

BTEX by USEPA Method 8020

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Benzene	0	0	0.0	
Toluene	0	0	0.0	
Ethylbenzene	0	0	0.0	
Total Xylenes	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	TD9510-16-15
Lab ID:	52302-01
Date Prepared:	10/25/95
Date Analyzed:	10/25/95
QC Batch ID:	GB574

Gasoline by WTPH-G

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Gasoline (Toluene-nC12)	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - DI554
Date Received:	-
Date Prepared:	10/25/95
Date Analyzed:	10/26/95
% Solids	

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	103		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	25	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	DI554
Date Prepared:	10/25/95
Date Analyzed:	10/26/95
QC Batch ID:	DI554

Diesel by WTPH-D

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Diesel (>nC12-nC24)	0	250	230	94	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	R1B
Lab ID:	52345-01
Date Prepared:	10/25/95
Date Analyzed:	10/27/95
QC Batch ID:	DI554

Diesel by WTPH-D

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	28	13	73.0	X4a

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	R1B
Lab ID:	52345-01
Date Prepared:	10/25/95
Date Analyzed:	10/27/95
QC Batch ID:	DI554

Diesel by WTPH-D

Compound Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	MSD Result (mg/kg)	MSD % Rec.	RPD	Flag
Diesel (>nC12-nC24)	28	300	330	101	290	86	16.0	

SOUND ANALYTICAL SERVICES, INC.

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE 206-922-2310 • FAX 206-922-5047

DATA QUALIFIERS AND ABBREVIATIONS

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

B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final exract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and 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 also detected in the associated method blank. However, 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).

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

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

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 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.

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

MCL: Maximum Contaminant Level

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(206) 922-2310 • FAX (206) 922-5047

UST PARAMETERS
CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT
PROJECT NAME: Old Rimrock UST
CONTACT: Norm Payton
PHONE NO: 360-705-7848

ANALYSIS REQUESTED: Specify State WA

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	HCID	TPH-G	TPH-D	TPH 418.1	BTEX	TPH-G / BTEX	TPH 8015M	Total Lead	TCLP Lead	PCB's	PAH's	Phenols	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Volatile Organics EPA 624/8240 GC/MS	Semi-volatiles EPA 625/8270 GC/MS	Metals	Total Halogens				CLOSURE DELIVERABLES
	R1[redacted]B	10/24/95	9:02	Soil	1			✓			✓																
	R2NW	10/24/95	10:27	Soil	1			✓			✓																
	R3EW	10/24/95	2:32	Soil	1			✓			✓									4							

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Norman E. Payton	Norman E. Payton	WSDOT	8:45AM/10-26-95
Received By	Mary Curtiss	Mary Curtiss	SAS	8:45 10/26/95
Relinquished By				
Received By				
Relinquished By				
Received By				

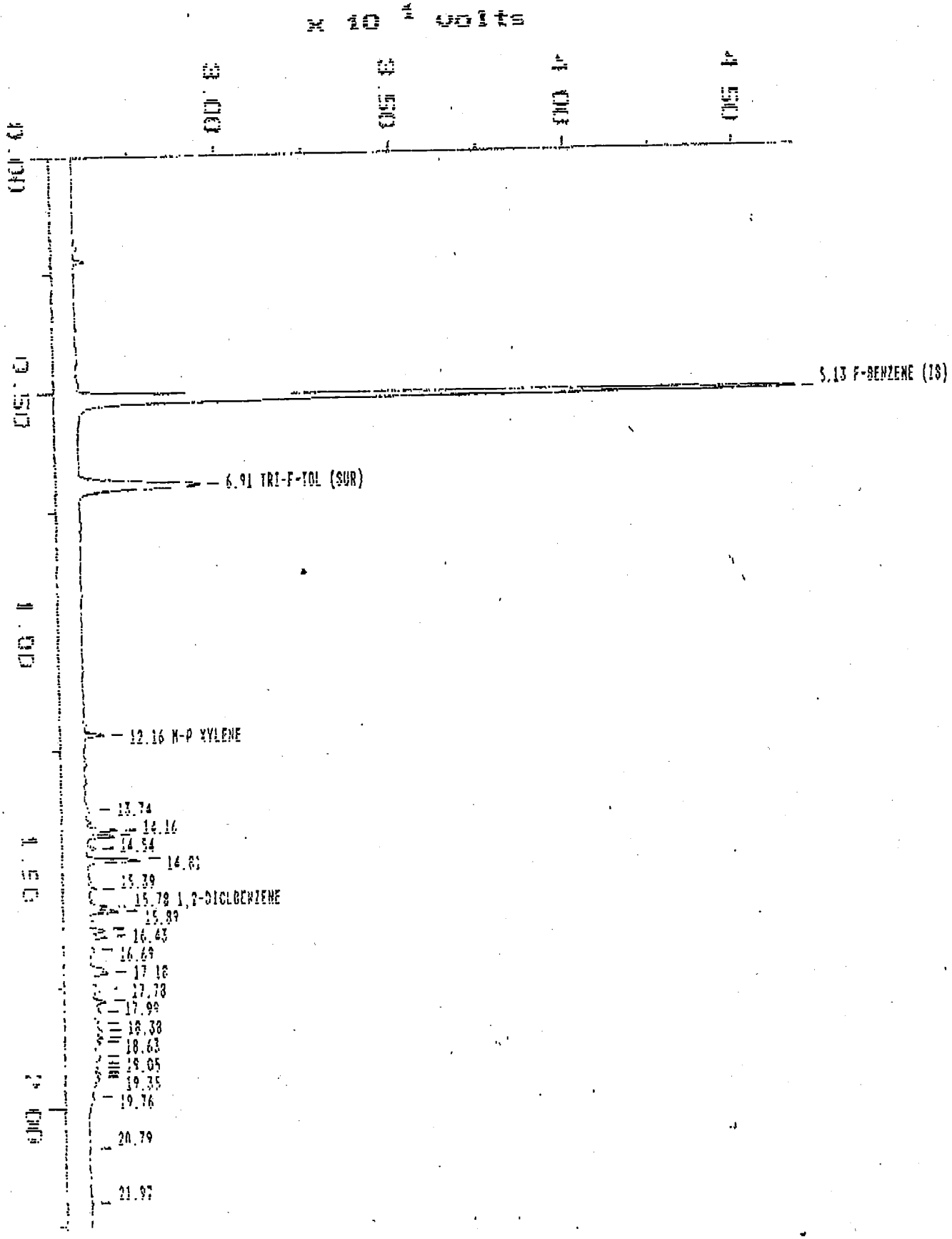
SPECIAL INSTRUCTIONS/COMMENTS:

Rush

Sample: 52345-1
Acquired: 25-OCT-95 16:51
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH1025A
Amount: 10.162

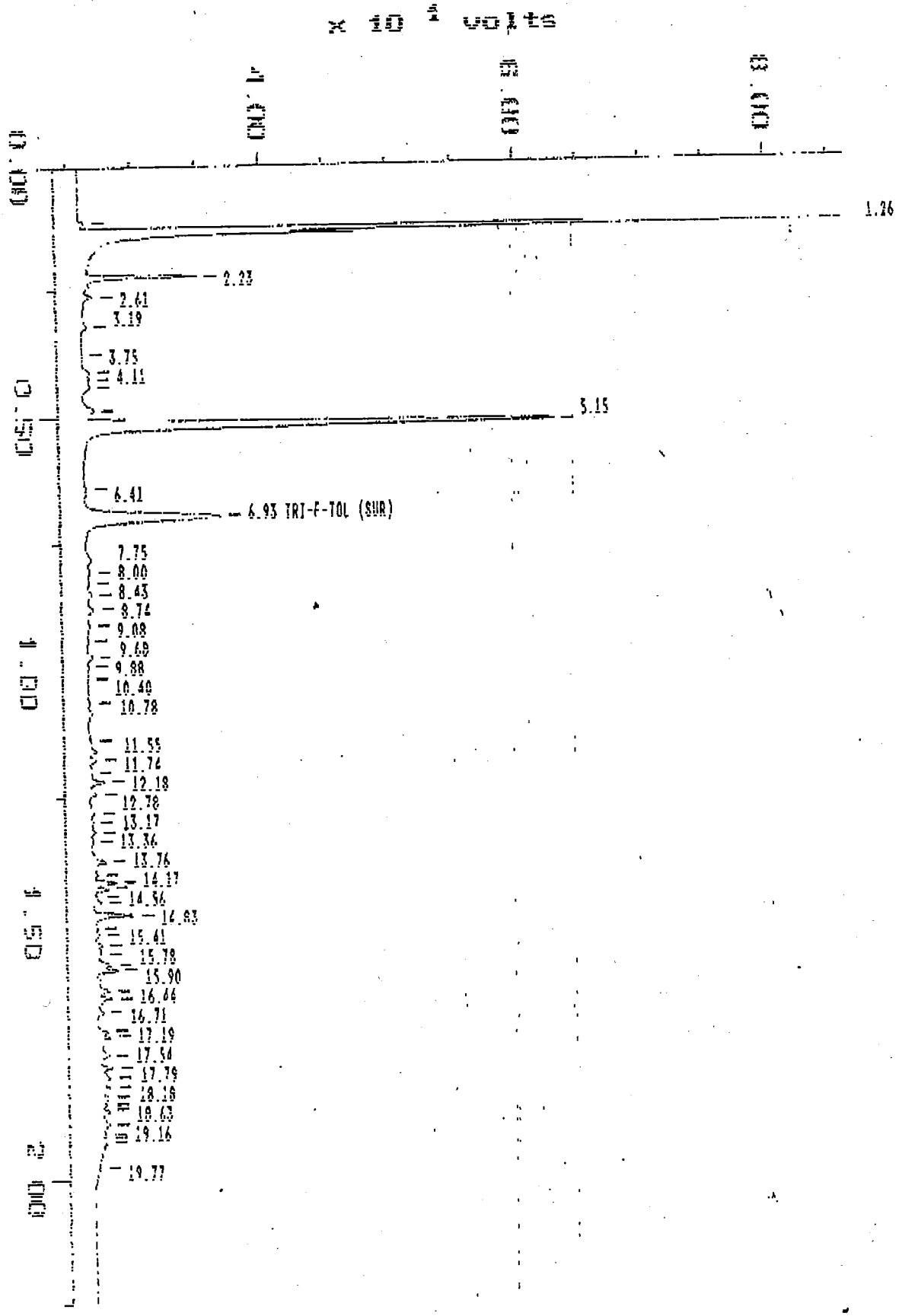
Filename: 95102512
Operator: JMC



Sample: 52345-1
Acquired: 25-OCT-95 16:51
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH1025A
Amount: 10.162

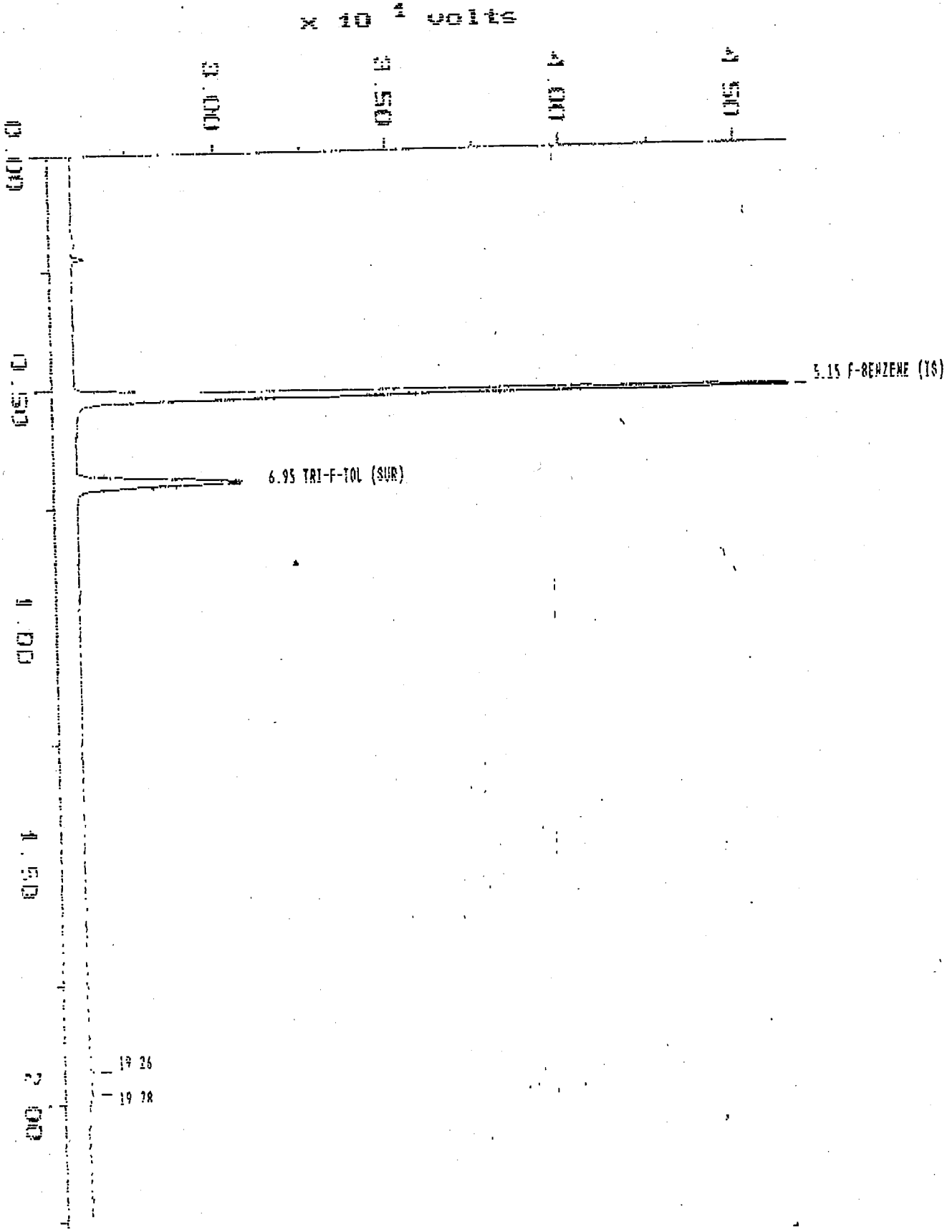
Filename: 95102512
Operator: JHC



Sample: 52345-2
Acquired: 25-OCT-95 17:21
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH1025A
Amount: 10.757

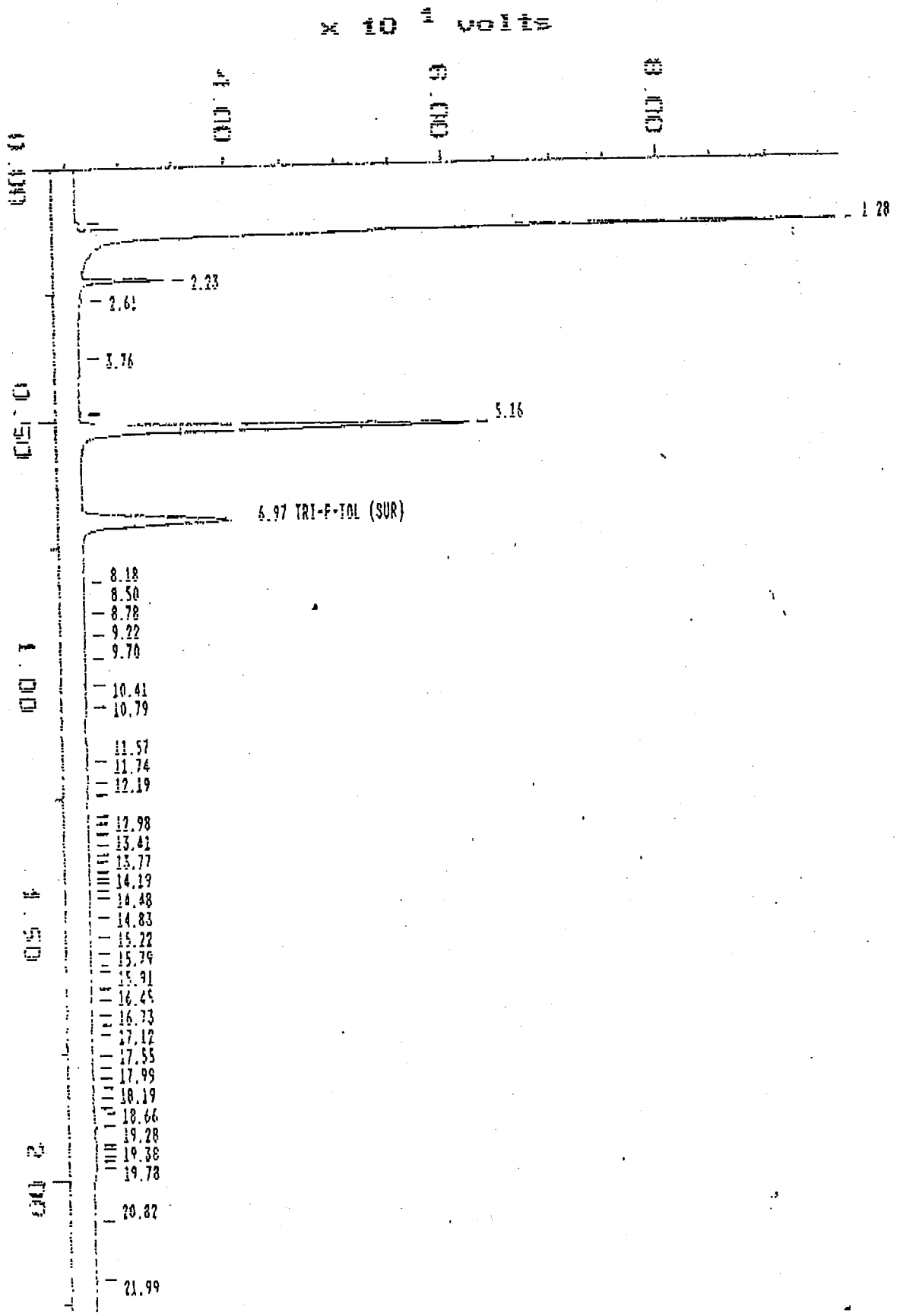
Filename: 95102513
Operator: JMC



Sample: 52345-2
Acquired: 25-OCT-95 17:21
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH1025A
Amount: 10.757

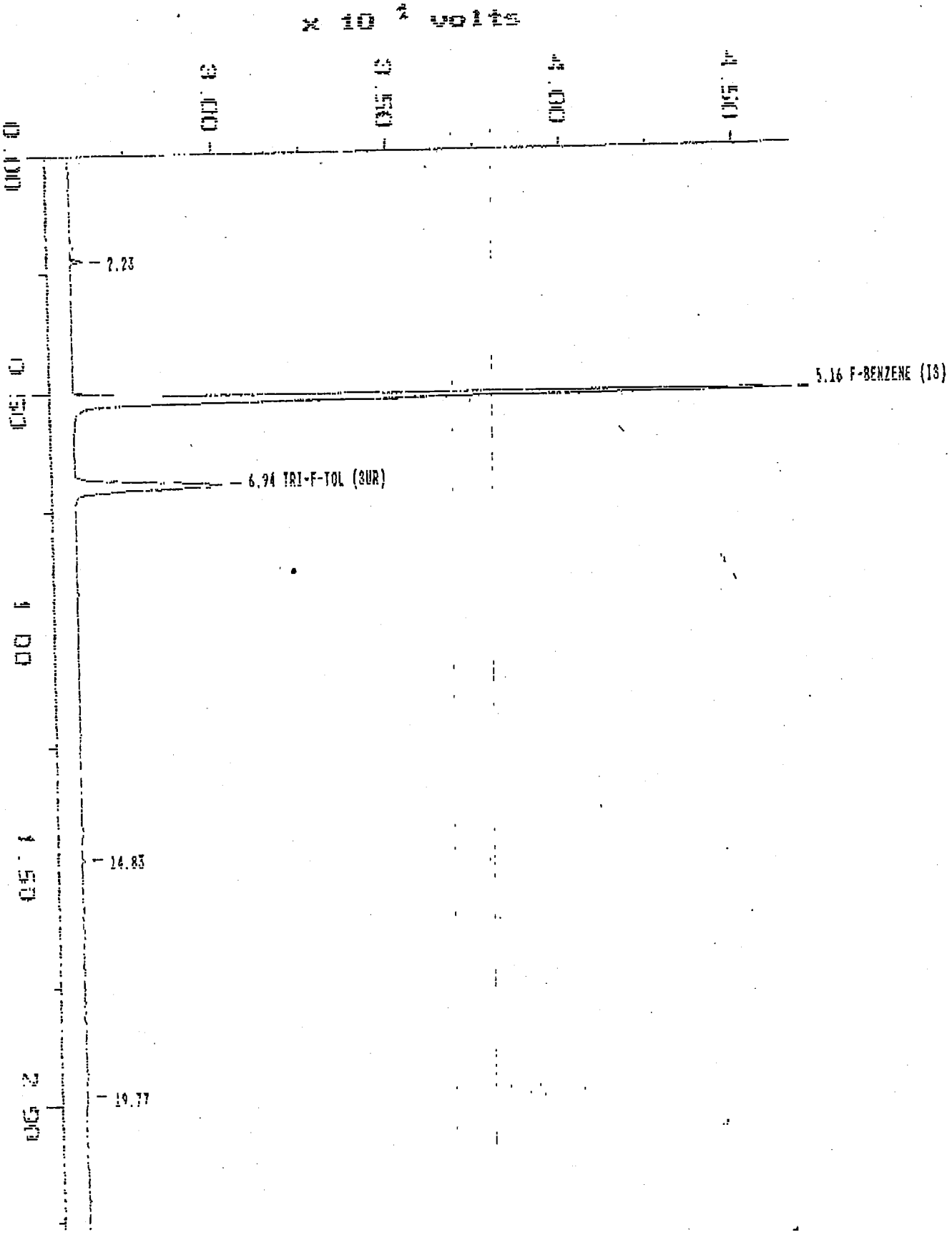
Filename: 95102513
Operator: JMC



Sample: 52345-3
Acquired: 25-OCT-95 17:49
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\IPH1025A
Amount: 10.372

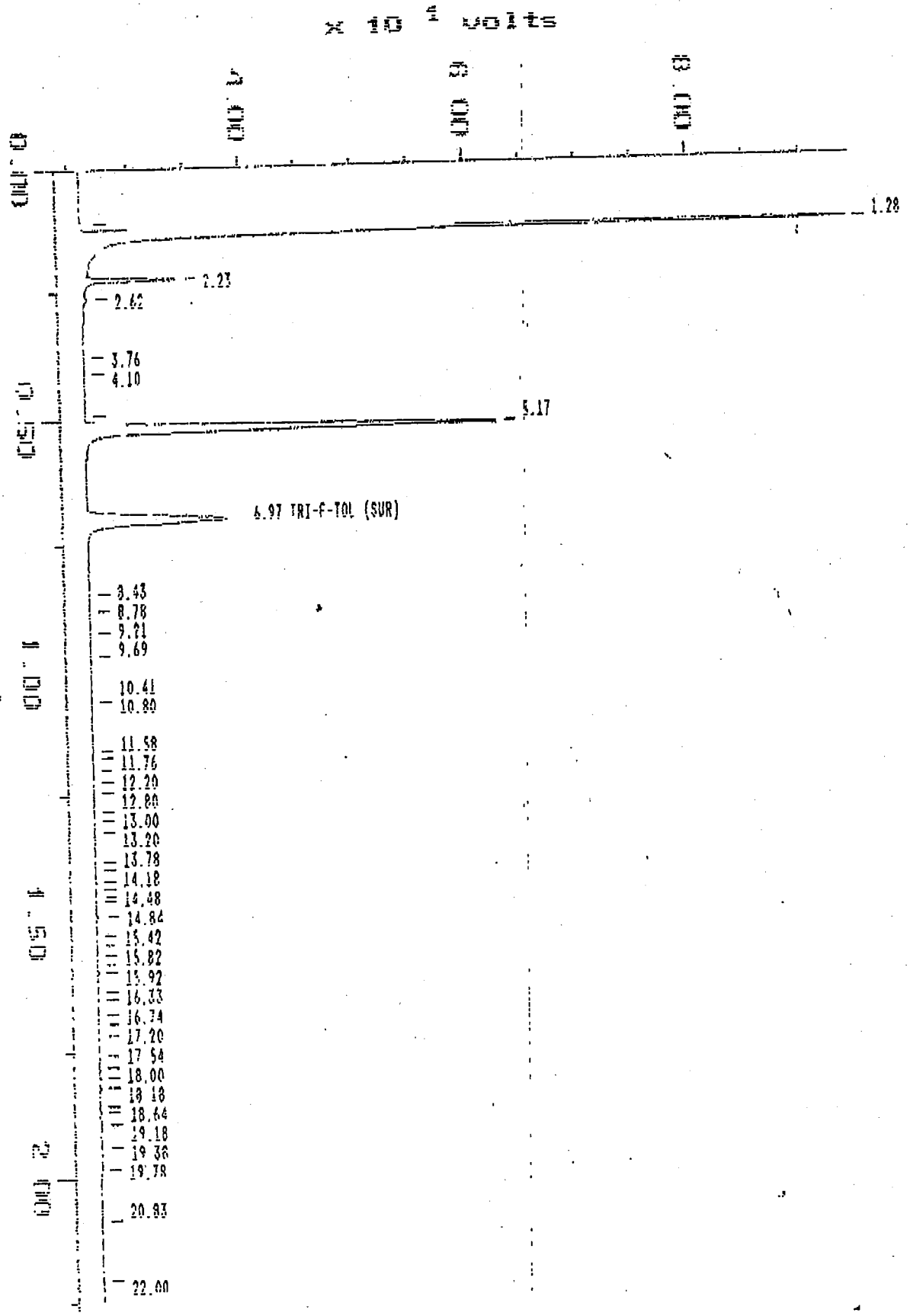
Filename: 95102514
Operator: JHC

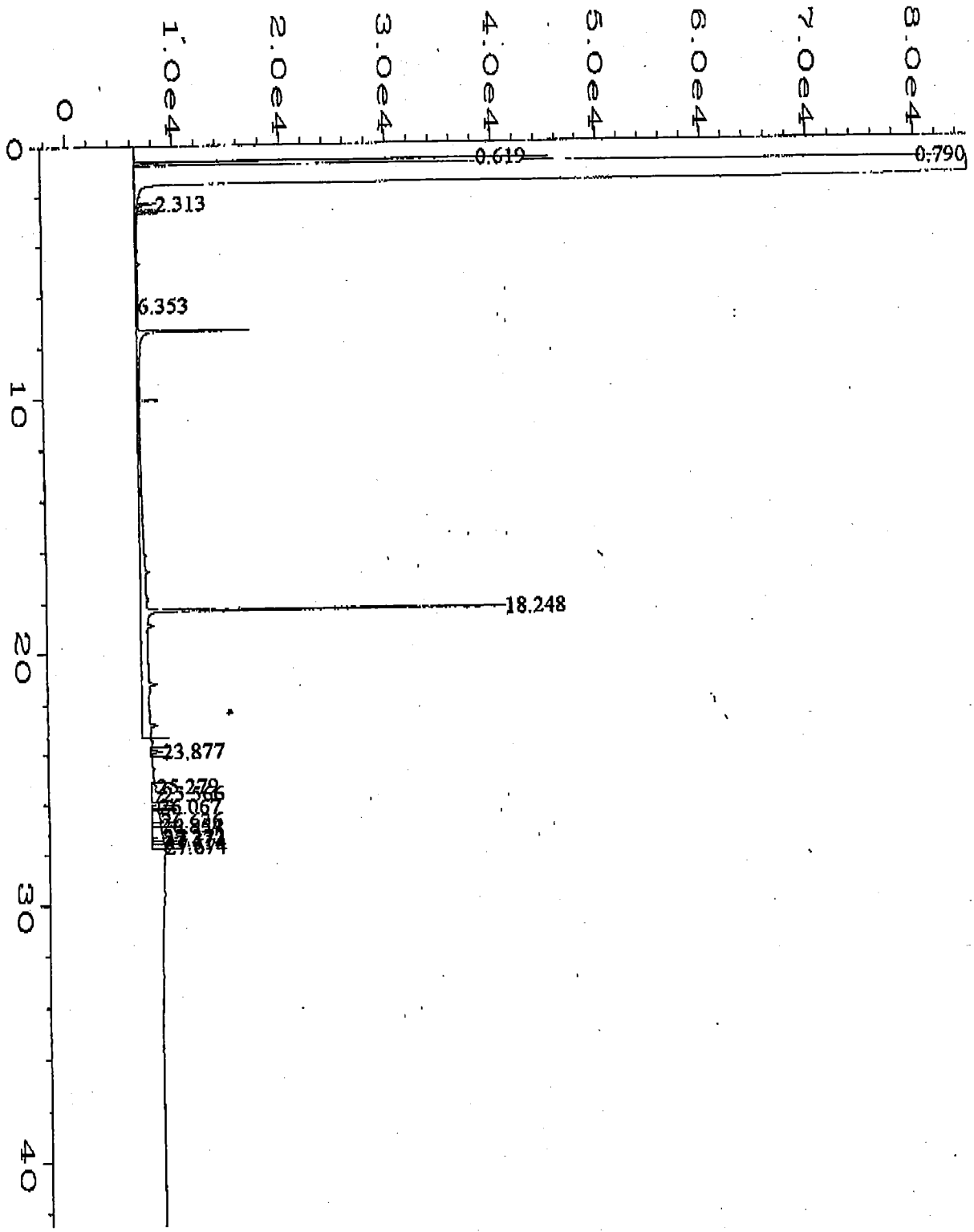


Sample: 52345-3
Acquired: 25-OCT-95 17:49
Dilution: 1 : 44.000
Comments: VARIAN 3400-1

Channel: FID
Method: C:\DATA1\250\TPH1025A
Amount: 10.372

Filename: 95102514
Operator: JHC

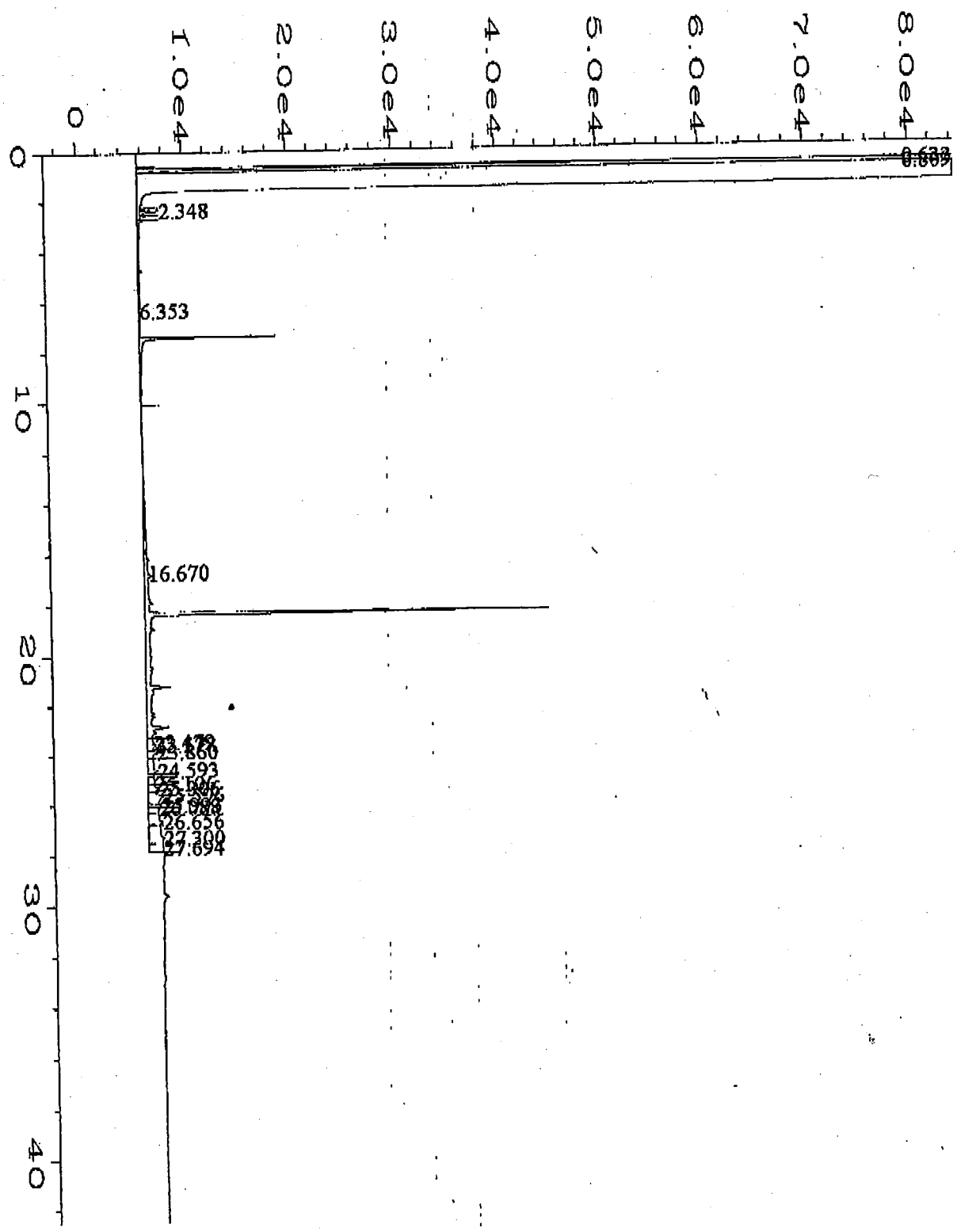




user modified

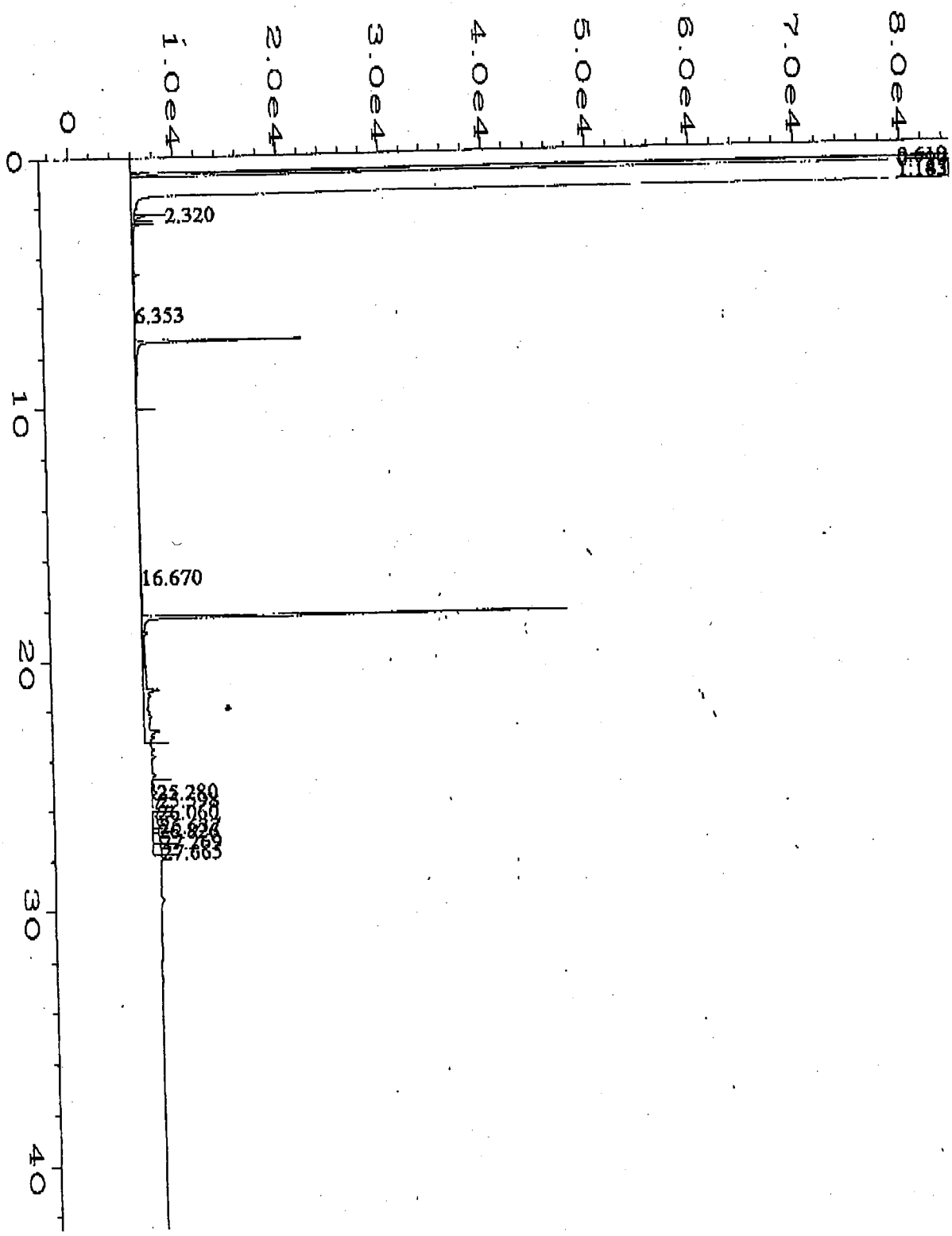
Data File Name : C:\HPCHEM\1\DATA\102695_A\007F0201.D
Operator : DAS/ELG
Instrument : HP 5890
Sample Name : 52345-1
Run Time Bar Code:
Acquired on : 26 Oct 95 05:11 PM
Report Created on: 29 Oct 95 10:54 AM
Last Recalib on : 20 OCT 95 10:31 AM
Multiplier : 1

Page Number : 1
Vial Number : 7
Injection Number : 1
Sequence Line : 2
Instrument Method: SU1019-1.MTH
Analysis Method : 1019-1D.MTH
Sample Amount : 0
ISTD Amount :



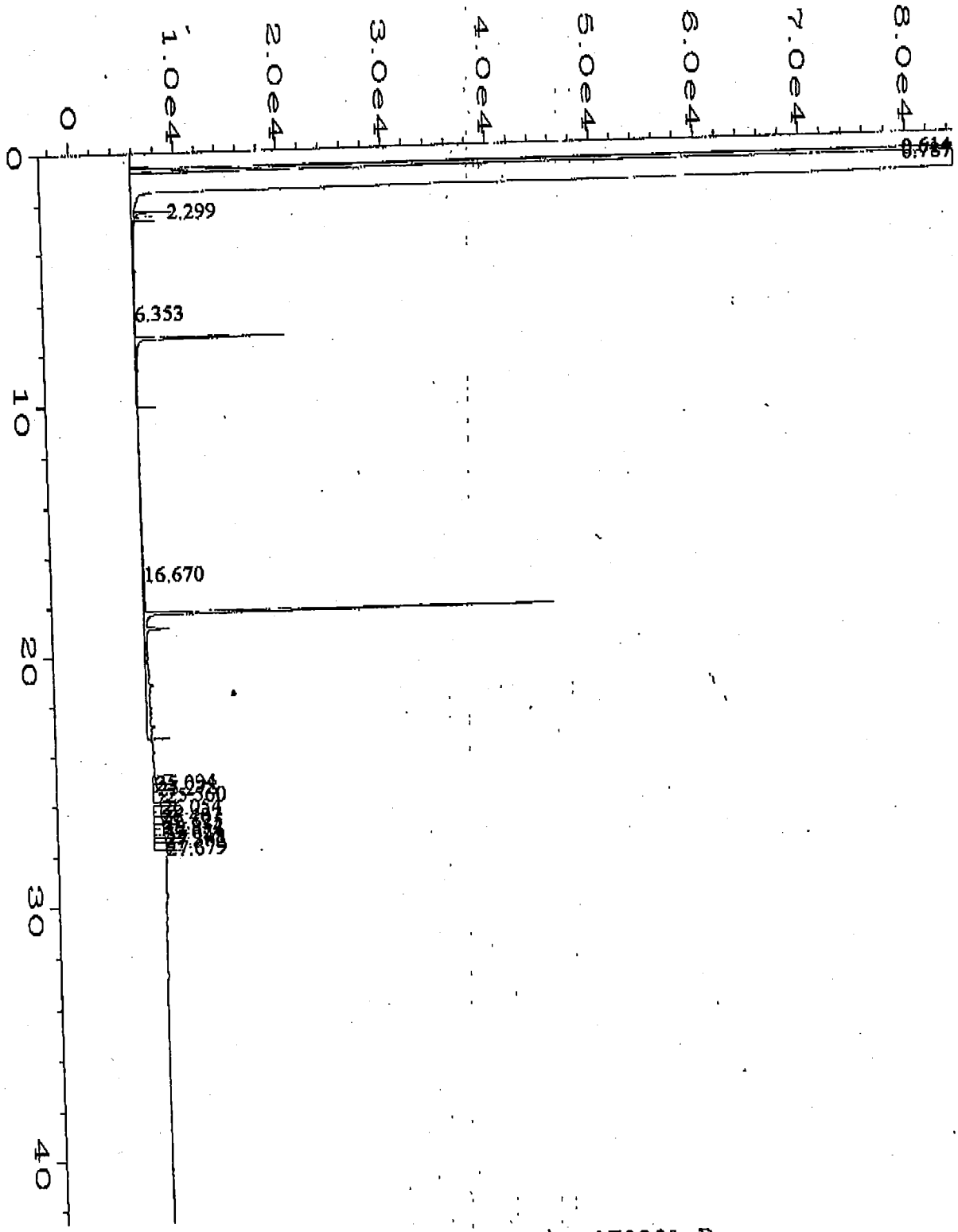
Data File Name : C:\HPCHEM\1\DATA\102695_A\008F0201.D
Operator : DAS/ELG
Instrument : HP 5890
Sample Name : 52345-1d
Run Time Bar Code:
Acquired on : 27 Oct 95 03:13 PM
Report Created on: 29 Oct 95 10:54 AM
Last Recalib on : 20 OCT 95 10:31 AM
Multiplier : 1

Page Number : 1
Vial Number : 8
Injection Number : 1
Sequence Line : 2
Instrument Method: SU1019-1.MTH
Analysis Method : 1019-1D.MTH
Sample Amount : 0
ISTD Amount :



Data File Name : C:\HPCHEM\1\DATA\102695_A\011F0201.D
Operator : DAS/ELG
Instrument : HP 5890
Sample Name : 52345-2
Run Time Bar Code:
Acquired on : 27 Oct 95 05:44 PM
Report Created on: 29 Oct 95 10:56 AM
Last Recalib on : 20 OCT 95 10:31 AM
Multiplier : 1

Page Number : 1
Vial Number : 11
Injection Number : 1
Sequence Line : 2
Instrument Method: SU1019-1.MTH
Analysis Method : 1019-1D.MTH
Sample Amount : 0
ISTD Amount :



Data File Name : C:\HPCHEM\1\DATA\102695_A\012F0201.D
Operator : DAS/ELG
Instrument : HP 5890
Sample Name : 52345-3
Run Time Bar Code:
Acquired on : 27 Oct 95 06:36 PM
Report Created on: 29 Oct 95 10:56 AM
Last Recalib on : 20 OCT 95 10:31 AM
Multiplier : 1

Page Number : 1
Vial Number : 12
Injection Number : 1
Sequence Line : 2
Instrument Method: SU1019-1.MTH
Analysis Method : 1019-1D.MTH
Sample Amount : 0
ISTD Amount :

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: November 1, 1995

TO: Thad Richardson
WSDOT - Operations Olympia

PROJECT: Rimrock 10/26

LABORATORY NUMBER: 52512

Enclosed are the test results for one sample received at Sound Analytical Services on October 30, 1995.

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

Should there be any questions regarding this report, please contact me at (206) 922-2310.

Sincerely,

Andrew J. Riddell
Project Manager

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	1
Lab ID:	52512-01
Date Received:	10/30/95
Date Prepared:	10/31/95
Date Analyzed:	10/31/95
% Solids	78.97

Diesel by WTPH-D

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	31	31	J X2

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	1
Lab ID:	52512-01
Date Received:	10/30/95
Date Prepared:	10/31/95
Date Analyzed:	11/1/95
% Solids	78.97

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	84		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	960	24	X2

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - DI570
Date Received:	-
Date Prepared:	10/31/95
Date Analyzed:	10/31/95
% Solids	

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	109		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	25	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	KT SWB
Lab ID:	52444-11
Date Prepared:	10/31/95
Date Analyzed:	11/1/95
QC Batch ID:	DI570

Diesel by WTPH-D

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	DI570
Date Prepared:	10/31/95
Date Analyzed:	10/31/95
QC Batch ID:	DI570

Diesel by WTPH-D

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Diesel (>nC12-nC24)	0	250	270	107	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	KT SWB
Lab ID:	52444-11
Date Prepared:	10/31/95
Date Analyzed:	11/1/95
QC Batch ID:	DI570

Diesel by WTPH-D

Compound Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	MSD Result (mg/kg)	MSD % Rec.	RPD	Flag
Diesel (>nC12-nC24)	0	310	260	86	320	104	19.0	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB583
Date Received:	-
Date Prepared:	10/31/95
Date Analyzed:	11/1/95
% Solids	

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	93		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	11D-37-NPD
Lab ID:	52462-01
Date Prepared:	10/31/95
Date Analyzed:	11/1/95
QC Batch ID:	GB583

Gasoline by WTPH-G

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Gasoline (Toluene-nC12)	1.6	1.7	6.1	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB583
Date Prepared:	10/31/95
Date Analyzed:	11/1/95
QC Batch ID:	GB583

Gasoline by WTPH-G

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Gasoline (Toluene-nC12)	0	14	14	100	

SOUND ANALYTICAL SERVICES, INC.

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE 206-922-2310 • FAX 206-922-5047

DATA QUALIFIERS AND ABBREVIATIONS

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

B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final exract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and 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 also detected in the associated method blank. However, 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).

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

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

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 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.

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

MCL: Maximum Contaminant Level

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(206) 922-2310 • FAX (206) 922-5047

UST PARAMETERS
CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT OPERATIONS

PROJECT NAME: RUMROCK 10/26

CONTACT: DHAD

PHONE NO: (360) 705-7963

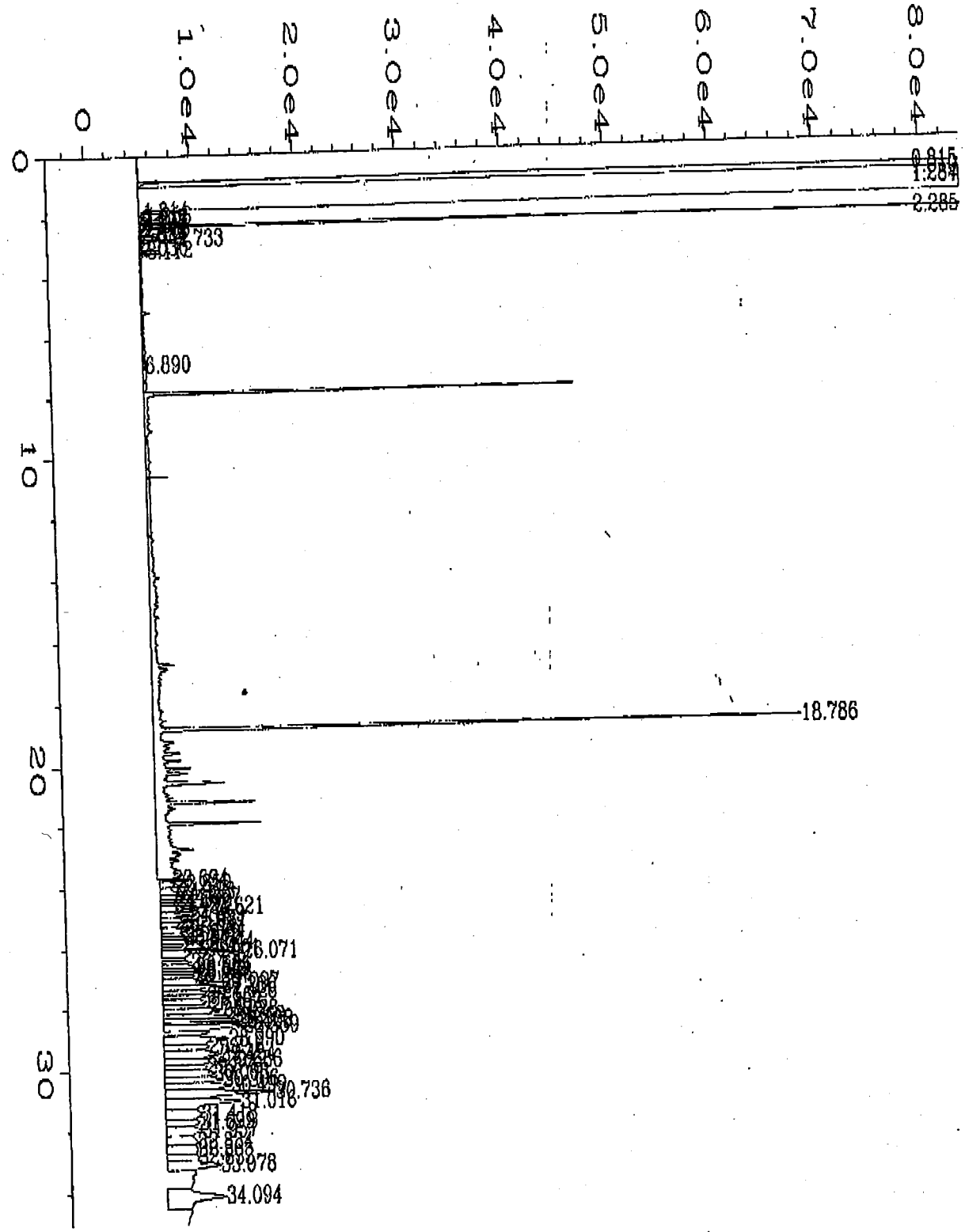
ANALYSIS REQUESTED: Specify State WA

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	HCID	TPH-G	TPH-D	TPH 418.1	BTEX	TPH-G / BTEX	TPH 8015M	Total Lead	TCLP Lead	PCB's	PAH's	Phenols	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Volatile Organics EPA 624/8240 GC/MS	Semi-volatiles EPA 625/8270 GC/MS	Metals	Total Halogens				CLOSURE DELIVERABLES
	1				2		✓	✓																			

	Signature	Printed Name	Firm	Time / Date
Relinquished By		THAD RICHARDSON	WSDOT	10/30 4:10 PM
Received By			SAS	10/30/95 4:10
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:

*RUSH



user modified

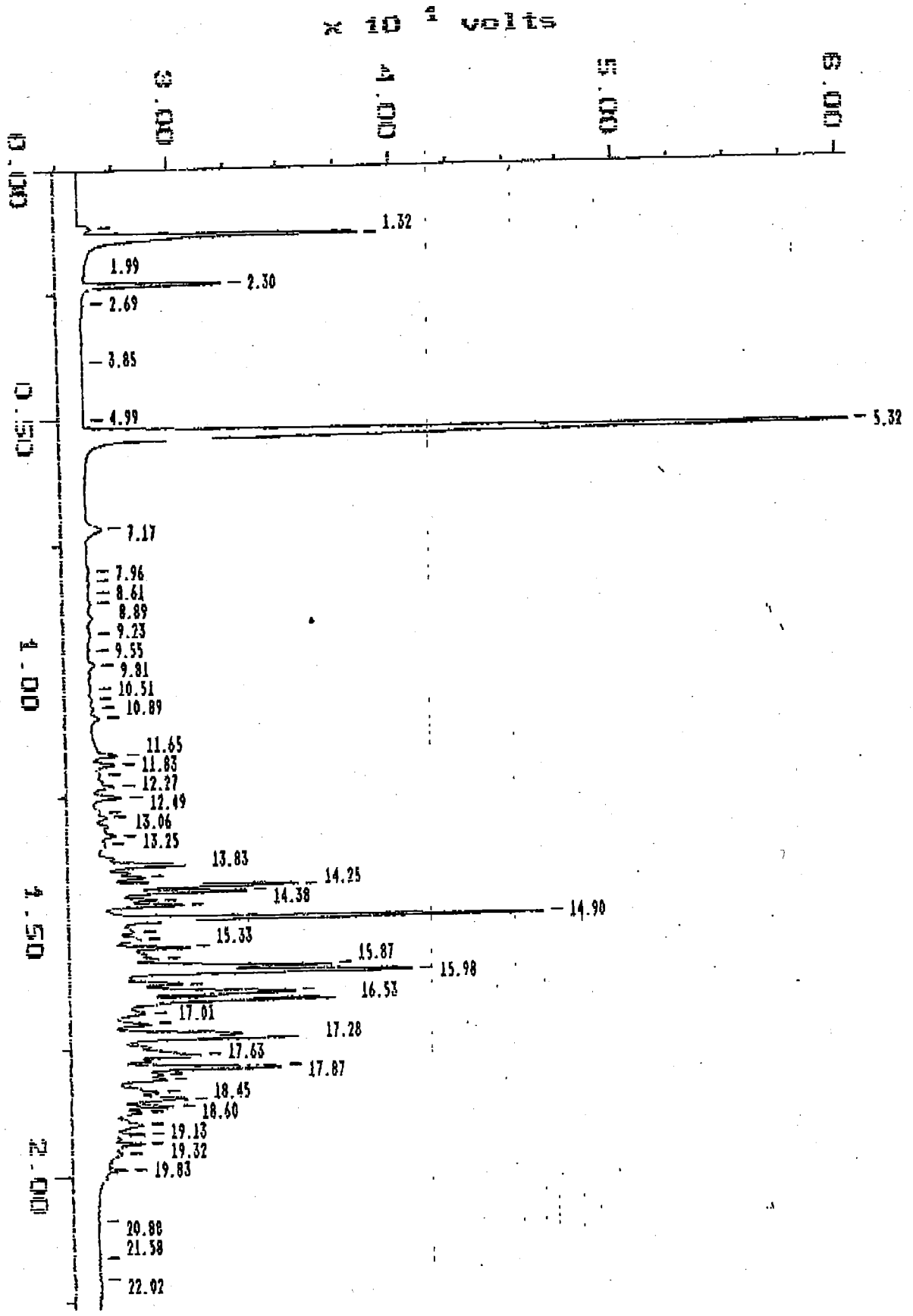
Data File Name : C:\HPCHEM\1\DATA\103195_A\004R0301.D
Operator : DAS/ELG
Instrument : INSTRUMEN
Sample Name : 52512-1
Run Time Bar Code:
Acquired on : 31 Oct 95 08:19 PM
Report Created on: 01 Nov 95 08:17 AM
Last Recalib on : 12 OCT 95 03:26 PM
Multiplier : 1

Page Number : 1
Vial Number : 4
Injection Number : 1
Sequence Line : 3
Instrument Method: SU1011-4.MTH
Analysis Method : WD1011-4.MTH
Sample Amount : 0
ISTD Amount :

Sample: 52512-1 1:880
Acquired: 01-NOV-95 12:31
Dilution: 1 : 880.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\AKG1031A
Amount: 10.344

Filename: 95103138
Operator: JHC



SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: April 16, 1996

TO: Norm Payton
WSDOT - Operations Olympia

PROJECT: Old Rimrock

REPORT NUMBER: 55852

Enclosed are the test results for eight samples received at Sound Analytical Services on April 10, 1996.

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

ANALYTICAL NARRATIVE: X1 flagged gasoline results for samples 55852-4, 55852-6, 55852-7, and 55852-8 indicate that the product is similar to diesel or kerosene.

Should there be any questions regarding this report, please contact me at (206) 922-2310.

Sincerely,

Andrew J. Riddell

Andrew J. Riddell
Project Manager

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R4WW
Lab ID:	55852-01
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	81.75

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	62		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.051	
Toluene	ND	0.051	
Ethylbenzene	ND	0.051	
Total Xylenes	ND	0.051	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R4WW
Lab ID:	55852-01
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	81.75

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	62		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1.2	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R5WW
Lab ID:	55852-02
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	85.84

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	65		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.049	
Toluene	ND	0.049	
Ethylbenzene	ND	0.049	
Total Xylenes	ND	0.049	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R5WW
Lab ID:	55852-02
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	85.84

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	65		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R6EW
Lab ID:	55852-03
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	85.8

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	72		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.048	
Toluene	ND	0.048	
Ethylbenzene	ND	0.048	
Total Xylenes	ND	0.048	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R6EW
Lab ID:	55852-03
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	85.8

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	72		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R7EW
Lab ID:	55852-04
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	82.53

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	63		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.049	
Toluene	ND	0.049	
Ethylbenzene	ND	0.049	
Total Xylenes	ND	0.049	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R7EW
Lab ID:	55852-04
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	82.53

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	63		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	9.5	1.1	X1

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R8EW
Lab ID:	55852-05
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	84.73

BTEX by USEPA Method 8020

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	66		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Benzene	ND	0.05	
Toluene	ND	0.05	
Ethylbenzene	ND	0.05	
Total Xylenes	ND	0.05	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R8EW
Lab ID:	55852-05
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	84.73

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	66		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R13SW
Lab ID:	55852-06
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	84.55

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	69		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.052	
Toluene	ND	0.052	
Ethylbenzene	ND	0.052	
Total Xylenes	ND	0.052	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R13SW
Lab ID:	55852-06
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	84.55

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	69		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	1.2	1.2	X1

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R14SW
Lab ID:	55852-07
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	87.07

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	65		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.048	
Toluene	ND	0.048	
Ethylbenzene	ND	0.048	
Total Xylenes	ND	0.048	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R14SW
Lab ID:	55852-07
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	87.07

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	65		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	1	1.1	J X1

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R15NW
Lab ID:	55852-08
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	85.4

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	52		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.051	
Toluene	ND	0.051	
Ethylbenzene	ND	0.051	
Total Xylenes	ND	0.051	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R15NW
Lab ID:	55852-08
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	85.4

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	52		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	2.4	1.2	X1

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R4WW
Lab ID:	55852-01
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	81.75

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	75		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	30	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R5WW
Lab ID:	55852-02
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	85.84

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	77		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	29	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R6EW
Lab ID:	55852-03
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
% Solids	85.8

Diesel by WTPH-D

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	28	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R6EW - dup
Lab ID:	55852R03
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
% Solids	85.8

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	74		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	29	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R7EW
Lab ID:	55852-04
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
% Solids	82.53

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	69		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	28	29	J

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R8EW
Lab ID:	55852-05
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
% Solids	84.73

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	83		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	28	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R13SW
Lab ID:	55852-06
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
% Solids	84.55

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	60		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	29	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R14SW
Lab ID:	55852-07
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
% Solids	87.07

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	78		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	28	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	R15NW
Lab ID:	55852-08
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/12/96
% Solids	85.4

Diesel by WTPH-D

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	29	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB737
Date Received:	-
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	76		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.044	
Toluene	ND	0.044	
Ethylbenzene	ND	0.044	
Total Xylenes	ND	0.044	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB737
Date Received:	-
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	High
Trifluorotoluene	76		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB737
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

BTEX by USEPA Method 8020

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Benzene	0	1	0.94	94	
Toluene	0	1	0.96	96	
Ethylbenzene	0	1	0.99	99	
Total Xylenes	0	3	3.1	103	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB737
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

Gasoline by WTPH-G

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Gasoline (Toluene-nC12)	0	12	11	96	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	R4WW
Lab ID:	55852-01
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

BTEX by USEPA Method 8020

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Benzene	0	0	0.0	
Toluene	0	0	0.0	
Ethylbenzene	0	0	0.0	
Total Xylenes	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	R4WW
Lab ID:	55852-01
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

Gasoline by WTPH-G

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Gasoline (Toluene-nC12)	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	R4WW
Lab ID:	55852-01
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

Gasoline by WTPH-G

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 (Toluene-nC12)	0	14	12	80	11	83	2.9	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - DI724
Date Received:	-
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	88		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	25	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	DI724
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	DI724

Diesel by WTPH-D

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Diesel (>nC12-nC24)	0	250	240	96	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	R6EW
Lab ID:	55852-03
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
QC Batch ID:	DI724

Diesel by WTPH-D

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	R6EW
Lab ID:	55852-03
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
QC Batch ID:	DI724

Diesel by WTPH-D

Compound Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	MSD Result (mg/kg)	MSD % Rec.	RPD	Flag
Diesel (>nC12-nC24)	0	290	230	80	230	80	0.1	

SOUND ANALYTICAL SERVICES, INC.

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE 206-922-2310 • FAX 206-922-5047

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 dat

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.

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy. East
Tacoma, Washington 98424
(206) 922-2310 • FAX (206) 922-5047

55852

UST PARAMETERS
CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT - Operations Dept
PROJECT NAME: Old Rimrock
CONTACT: Norm Payton
PHONE NO: 360 - 705 - 7848

ANALYSIS REQUESTED: Specify State WA

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	HCID	TPH-G	TPH-D	TPH 418.1	BTEX	TPH-G / BTEX	TPH 8015M	Total Lead	TCLP Lead	PCB's	PAH's	Phenols	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Volatile Organics EPA 624/8240 GC/MS	Semi-volatiles EPA 625/8270 GC/MS	Metals	Total Halogens				CLOSURE DELIVERABLES
1	R4WW	4/8/96	0749	Soil	1			✓			✓																
2	R5WW	4/9/96	0945	Soil	1			✓			✓																
3	R6EW	4/9/96	1400	Soil	1			✓			✓																
4	R7EW	4/9/96	1430	Soil	1			✓			✓																
5	R8EW	4/9/96	1454	Soil	1			✓			✓																
*	R9-OB	4/10/96	1303	Soil	1			✓			✓																
*	R10-OB	4/10/96	1305	Soil	1			✓			✓																
*	R11-OB	4/10/96	1312	Soil	1			✓			✓																
*	R12-OB	4/10/96	1316	Soil	1			✓			✓																
6	R13-SW	4/10/96	1418	Soil	1			✓			✓																
7	R14-SW	4/10/96	1436	Soil	1			✓			✓																
8	R15-NW	4/10/96	1500	Soil	1			✓			✓																

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Norman E. Payton	Norman E. Payton	WSDOT	0805/4-11-96
Received By	Giang	Giang	SAS	0805 4/11/96
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
These samples will be disposed of after _____.
Check this box to have samples returned ☐.

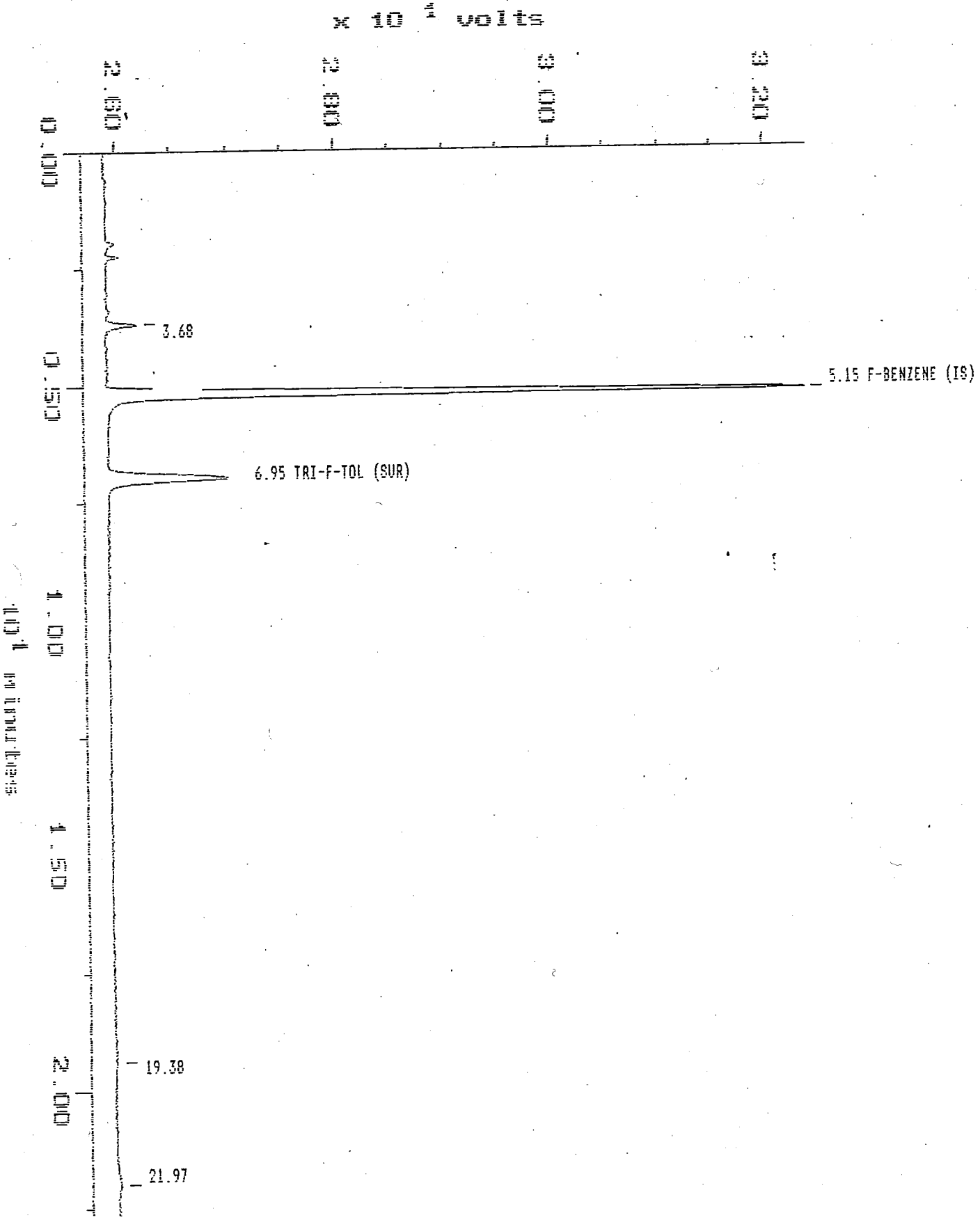
48 hr TAT Rest of Samples
* Composite - R9OB and R10-OB } 5 day TAT.
- R11-OB and R12-OB }

Diskette Def.

Sample: 55852-1
Acquired: 10-APR-96 11:45
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.464

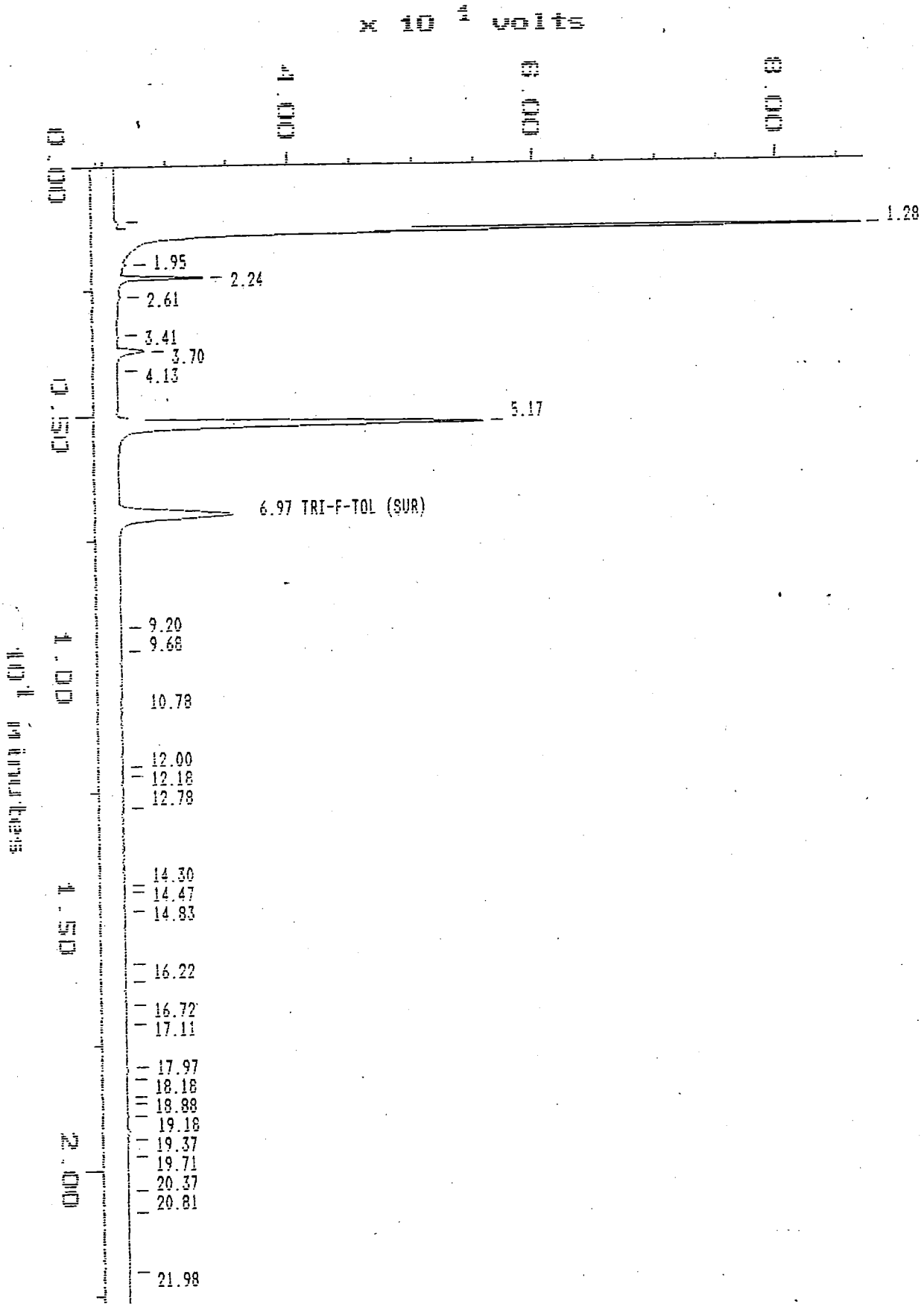
Filename: 96041006
Operator: JMC



Sample: 55852-1
Acquired: 10-APR-96 11:45
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.464

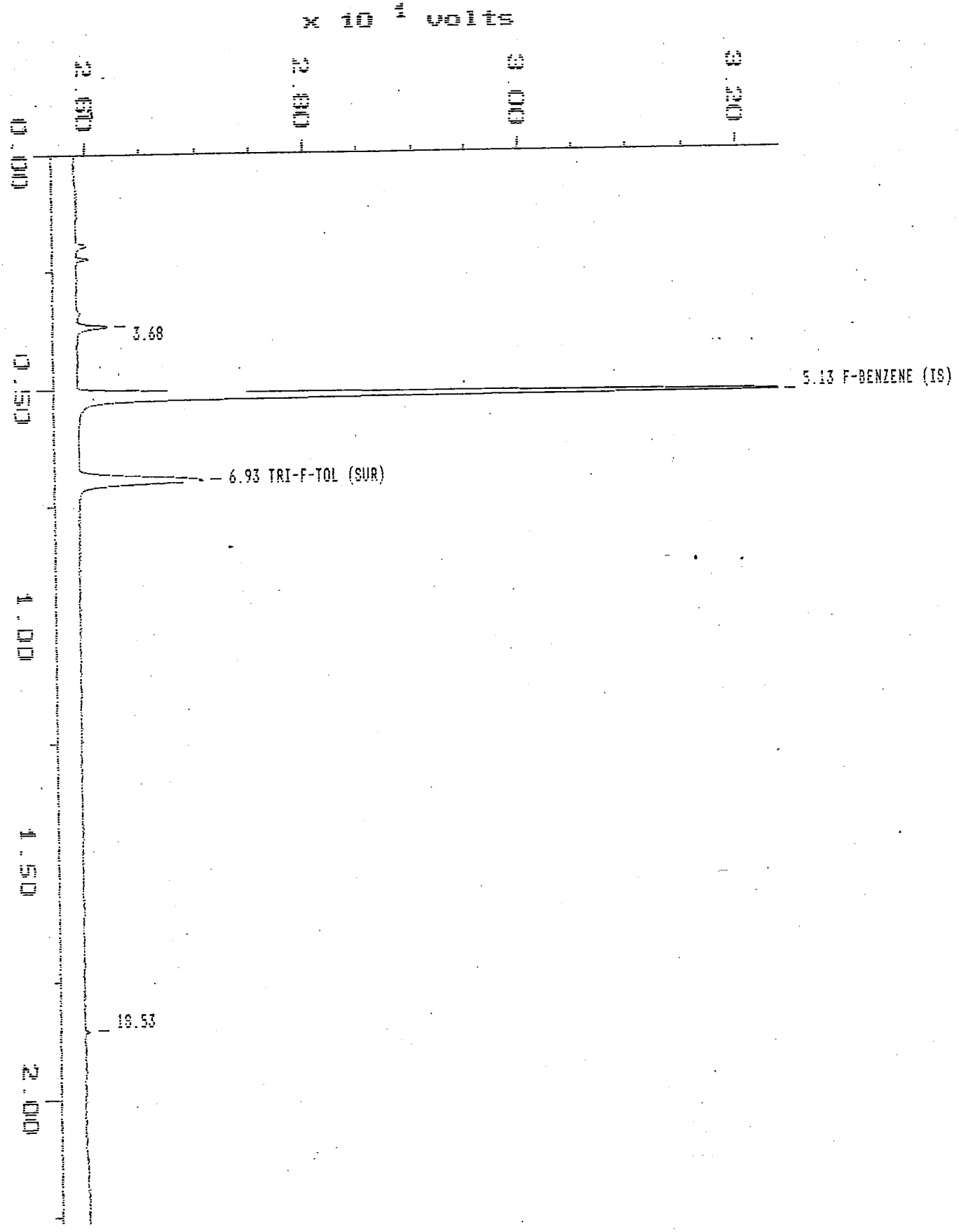
Filename: 96041006
Operator: JMC



Sample: 55852-2
Acquired: 10-APR-96 12:14
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.433

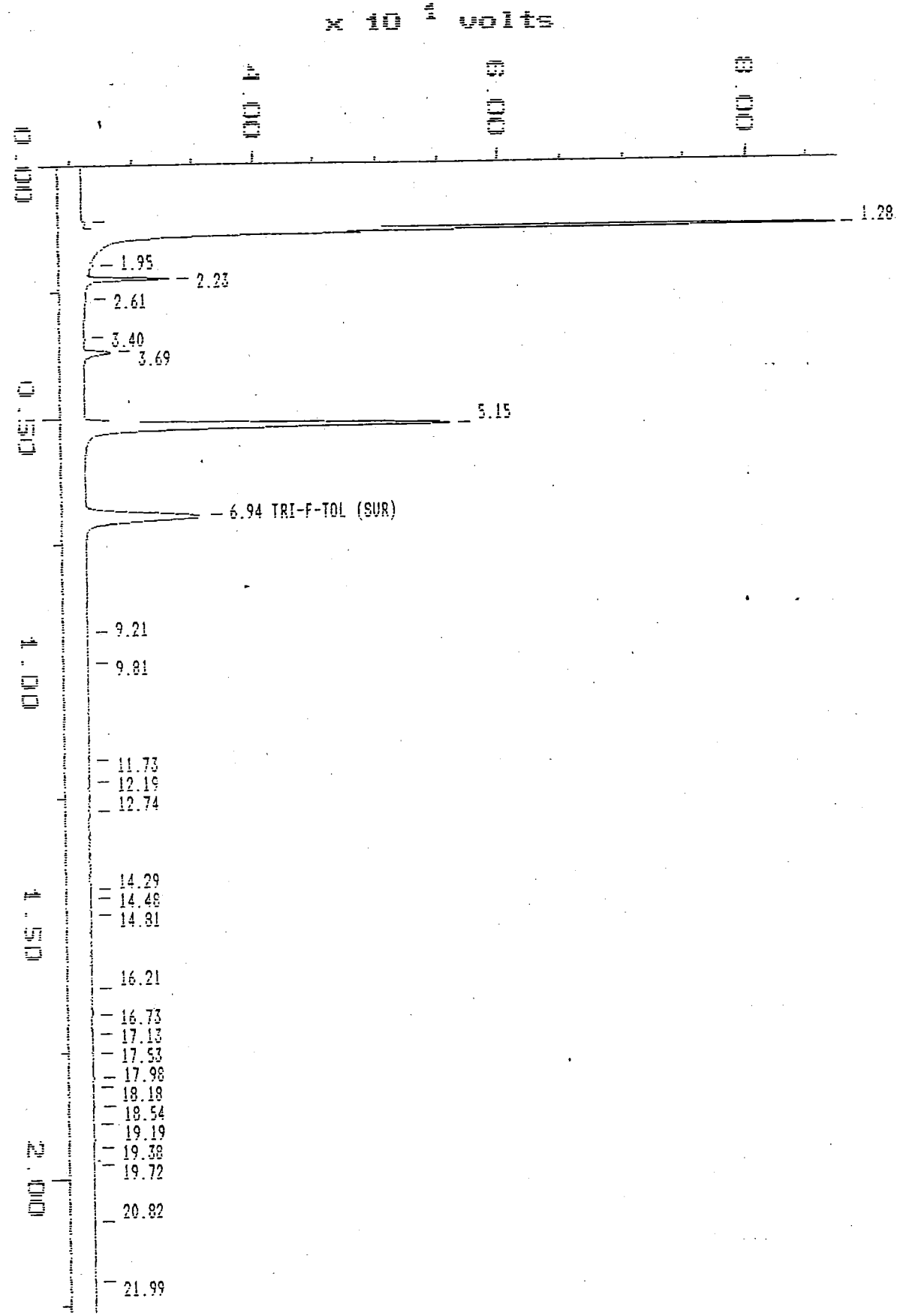
Filename: 96041007
Operator: JMC



Sample: 55852-2
Acquired: 10-APR-96 12:14
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.433

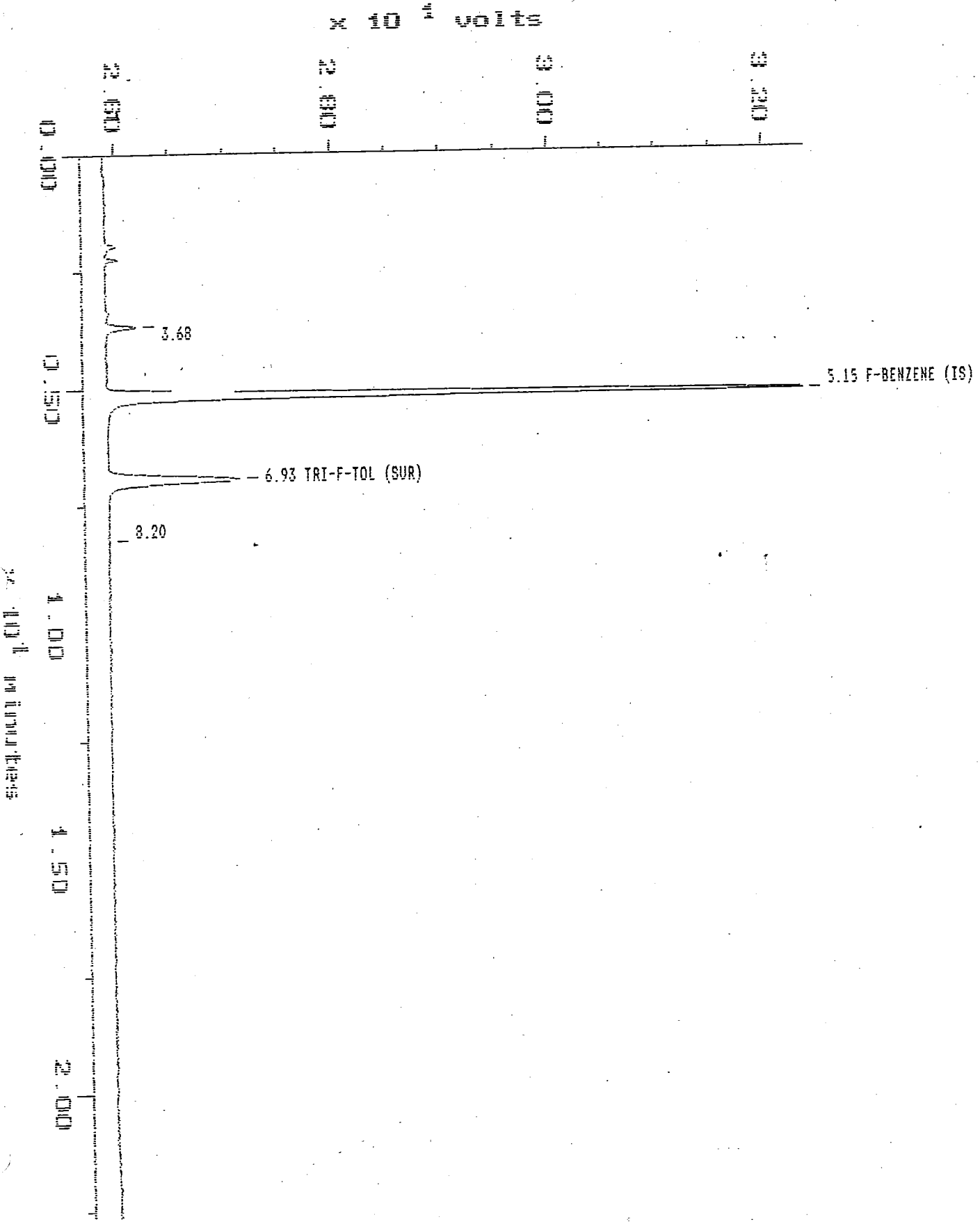
Filename: 96041007
Operator: JMC



Sample: 55852-3
Acquired: 10-APR-96 12:43
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.692

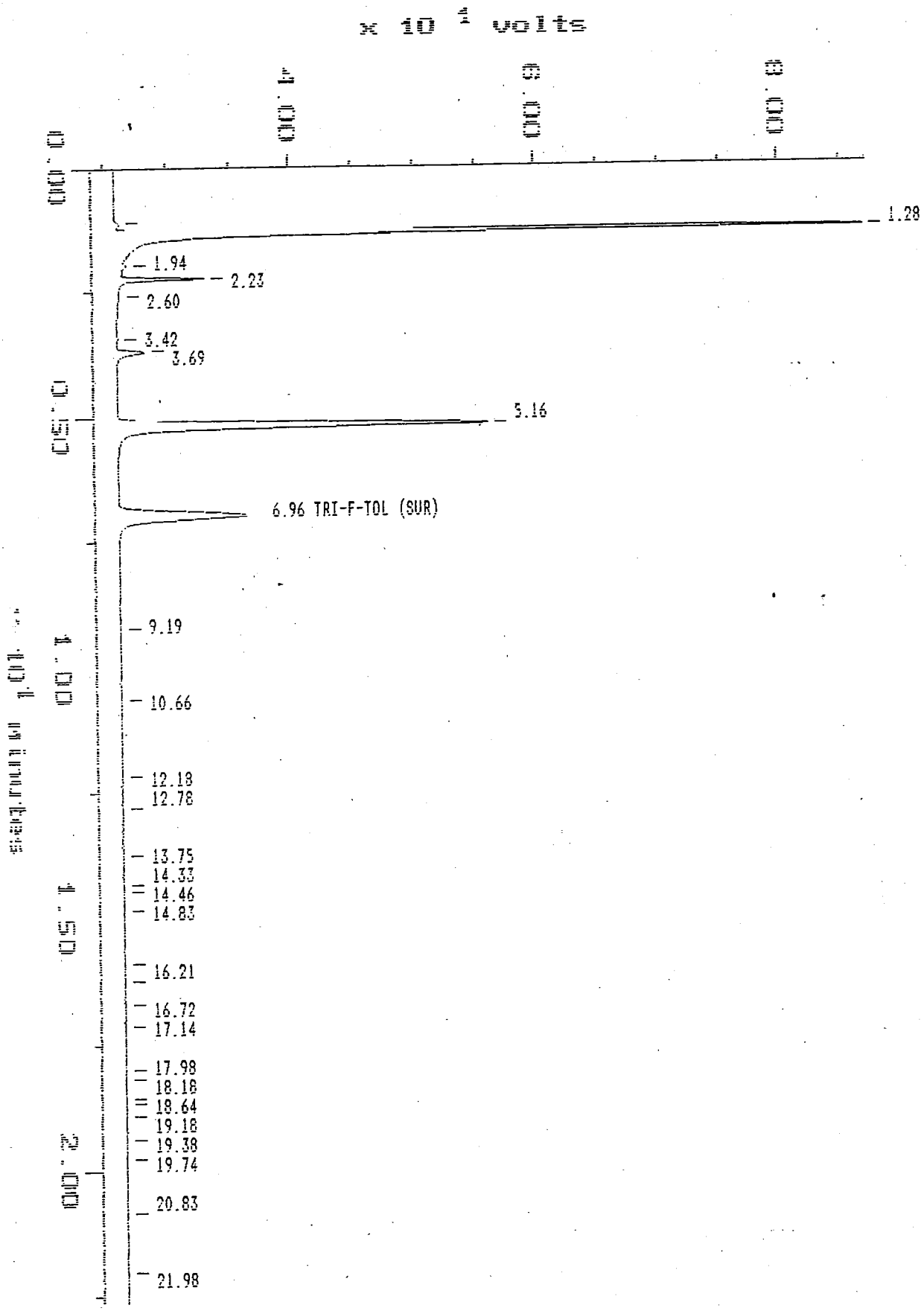
Filename: 96041008
Operator: JMC



Sample: 55852-3
Acquired: 10-APR-96 12:43
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.692

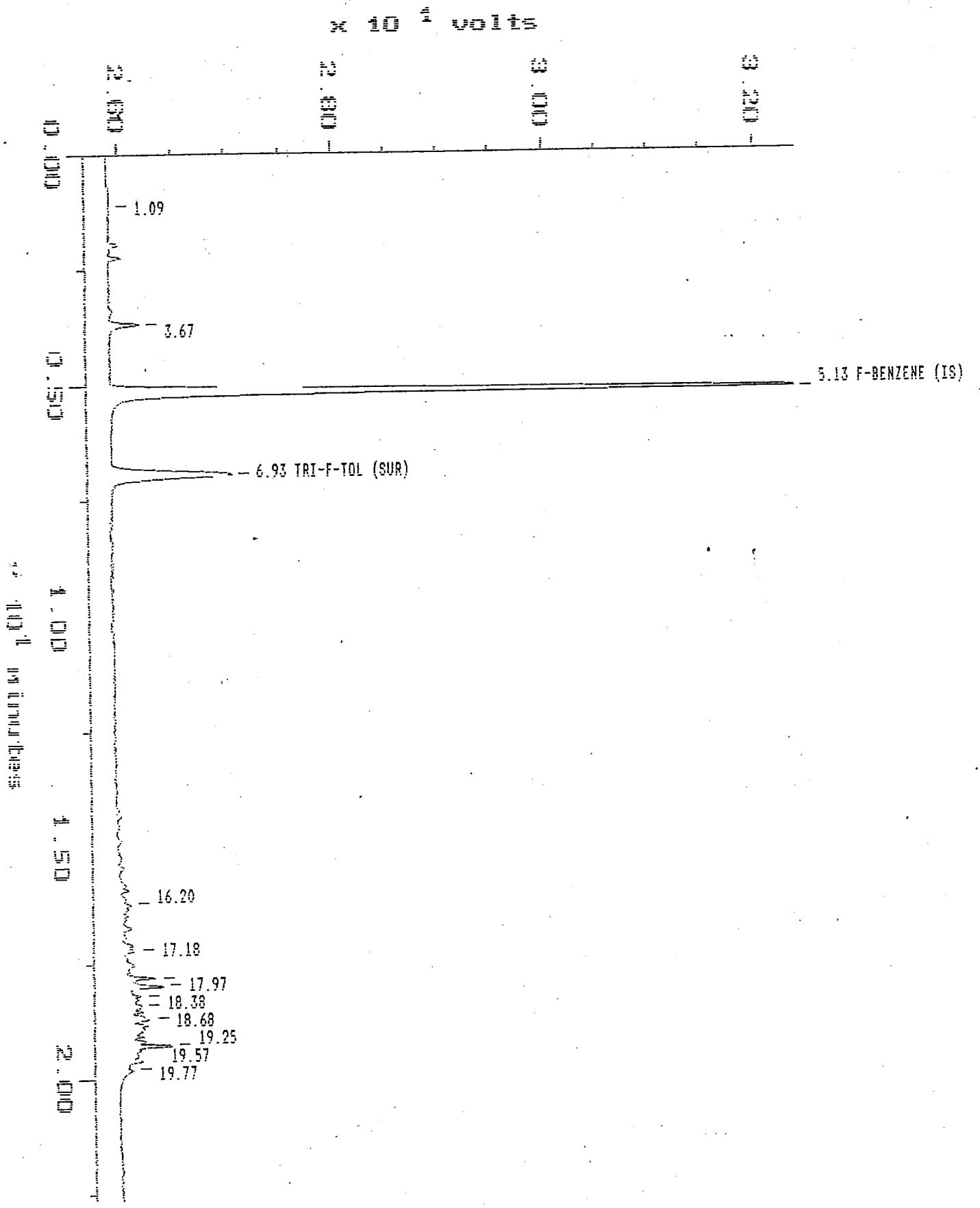
Filename: 96041008
Operator: JMC



Sample: 55852-4
Acquired: 10-APR-96 13:12
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.842

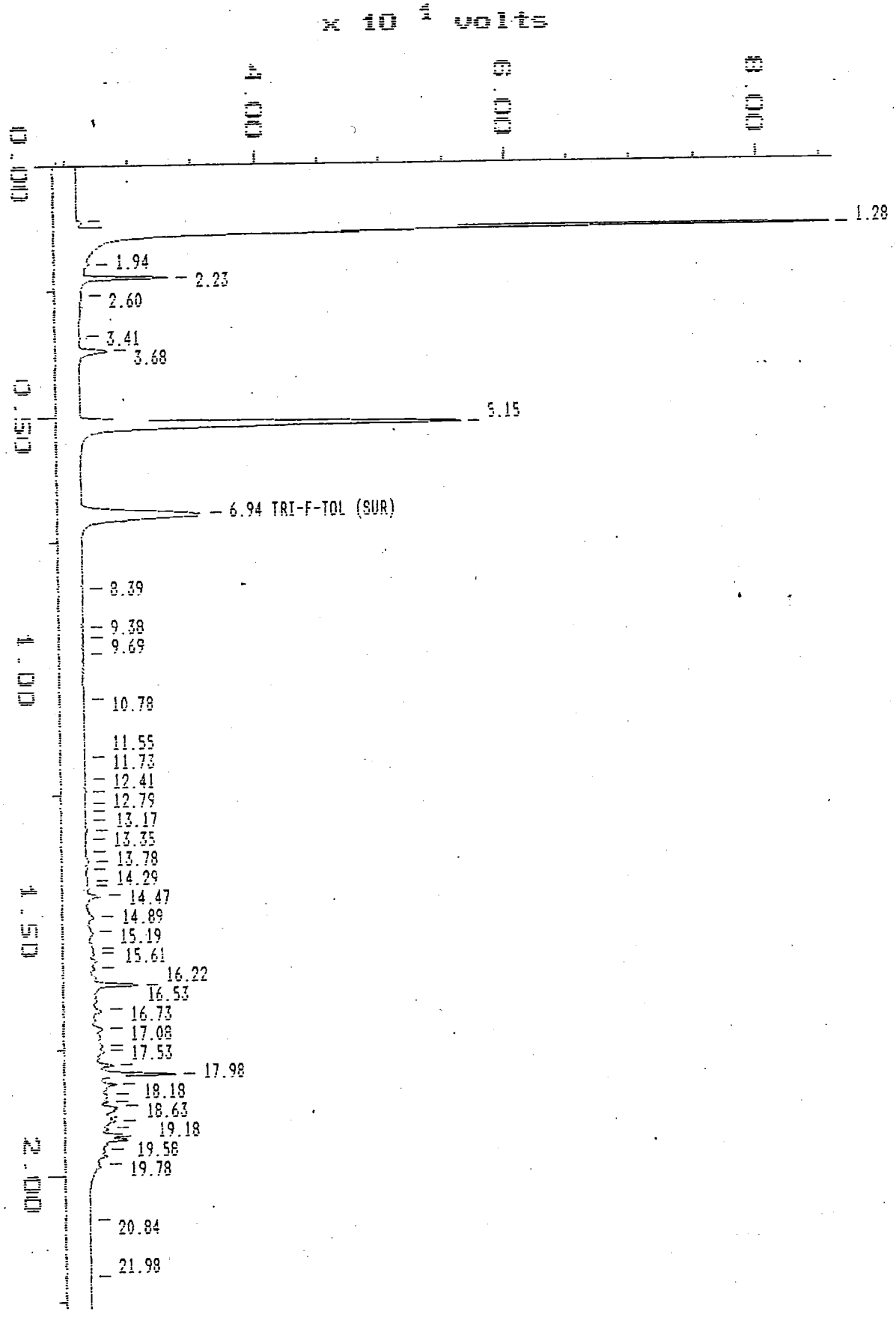
Filename: 96041009
Operator: JMC



Sample: 55852-4
Acquired: 10-APR-96 13:12
Dilution: 1 ; 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.842

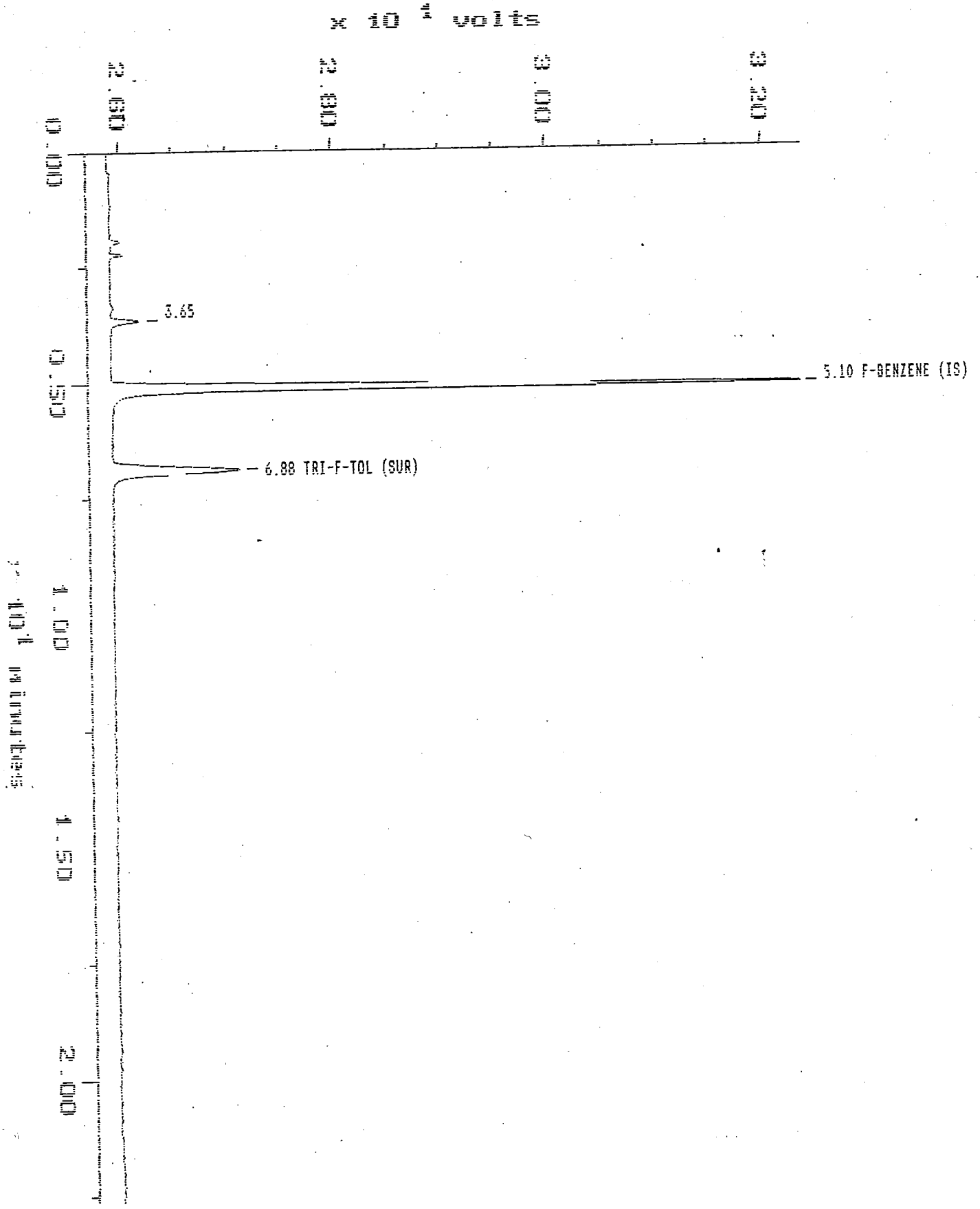
Filename: 96041009
Operator: JMC



Sample: 55852-5
Acquired: 10-APR-96 18:21
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.373

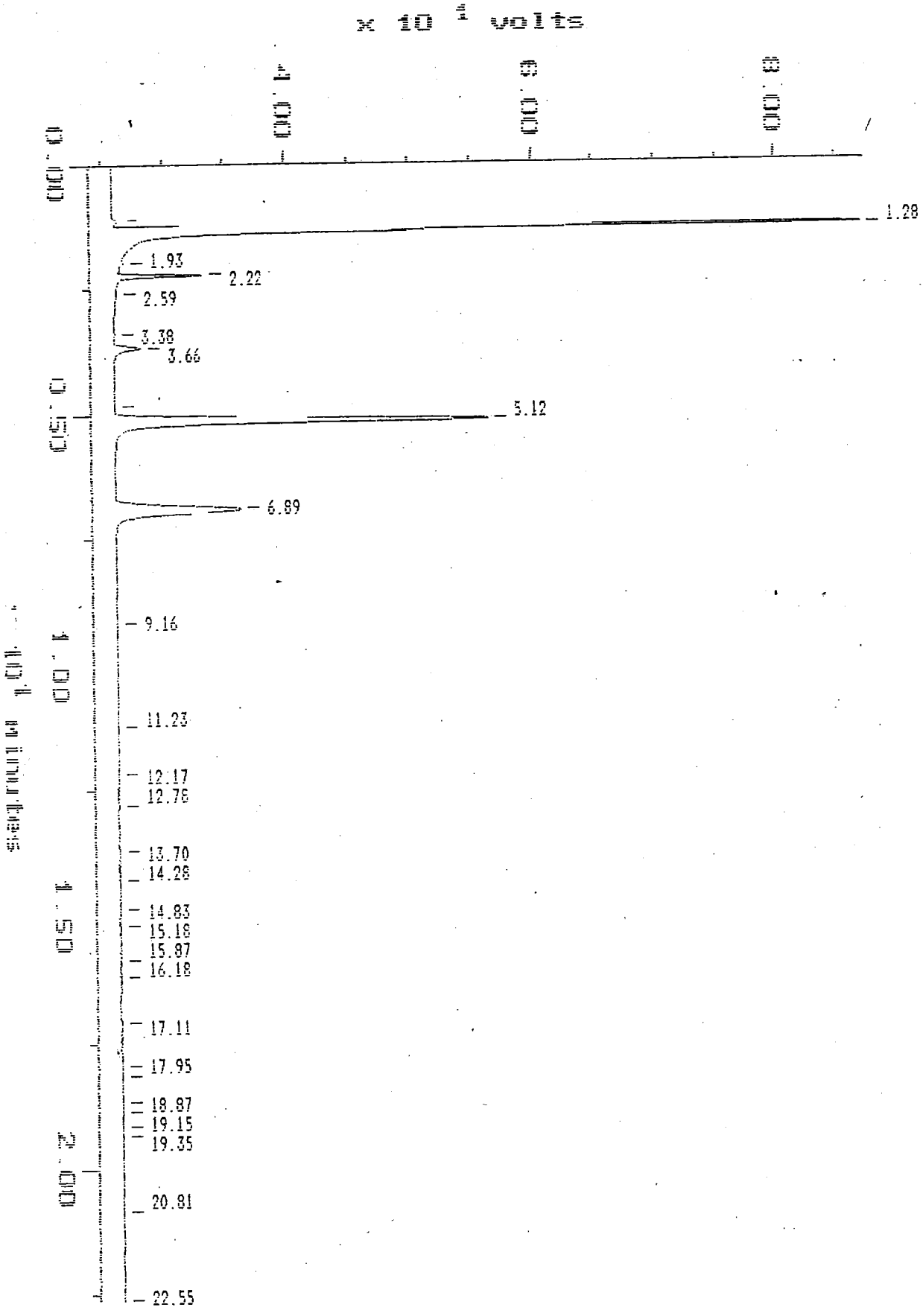
Filename: 96041018
Operator: JMC



Sample: 55852-5
Acquired: 10-APR-96 18:21
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.373

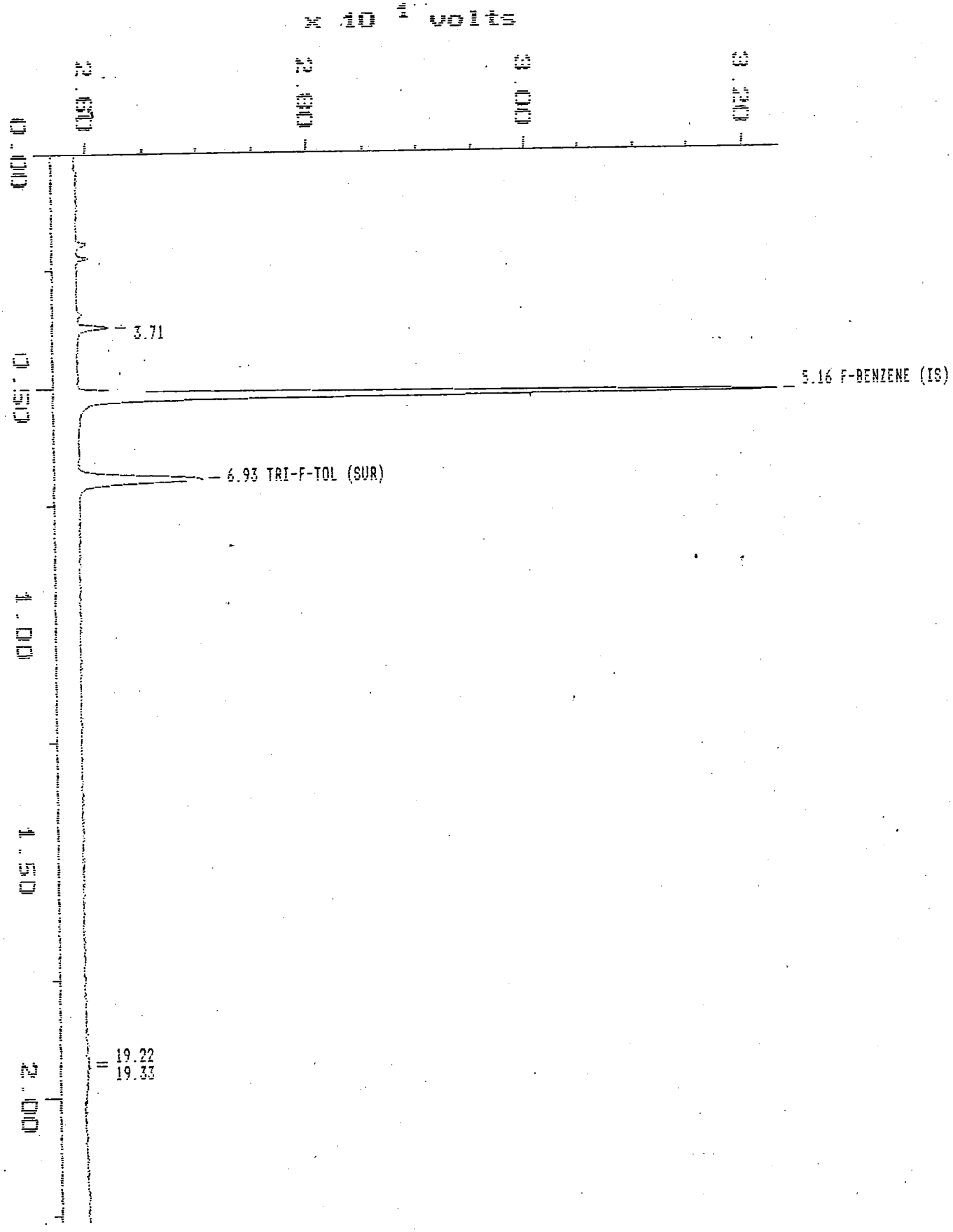
Filename: 96041018
Operator: JMC



Sample: 55852-6
Acquired: 10-APR-96 18:50
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.071

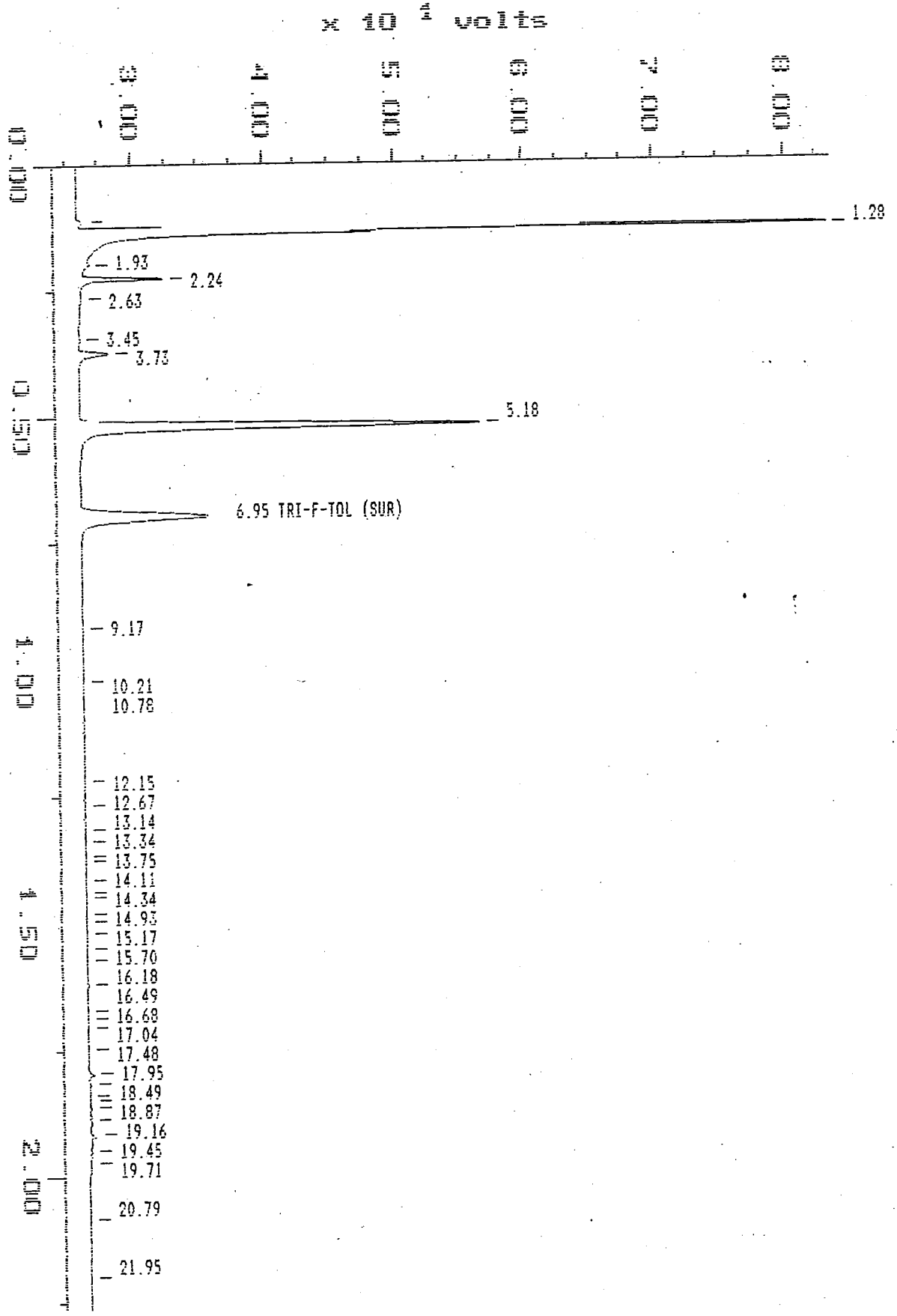
Filename: 96041019
Operator: JMC



Sample: 55852-6
Acquired: 10-APR-96 18:50
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.071

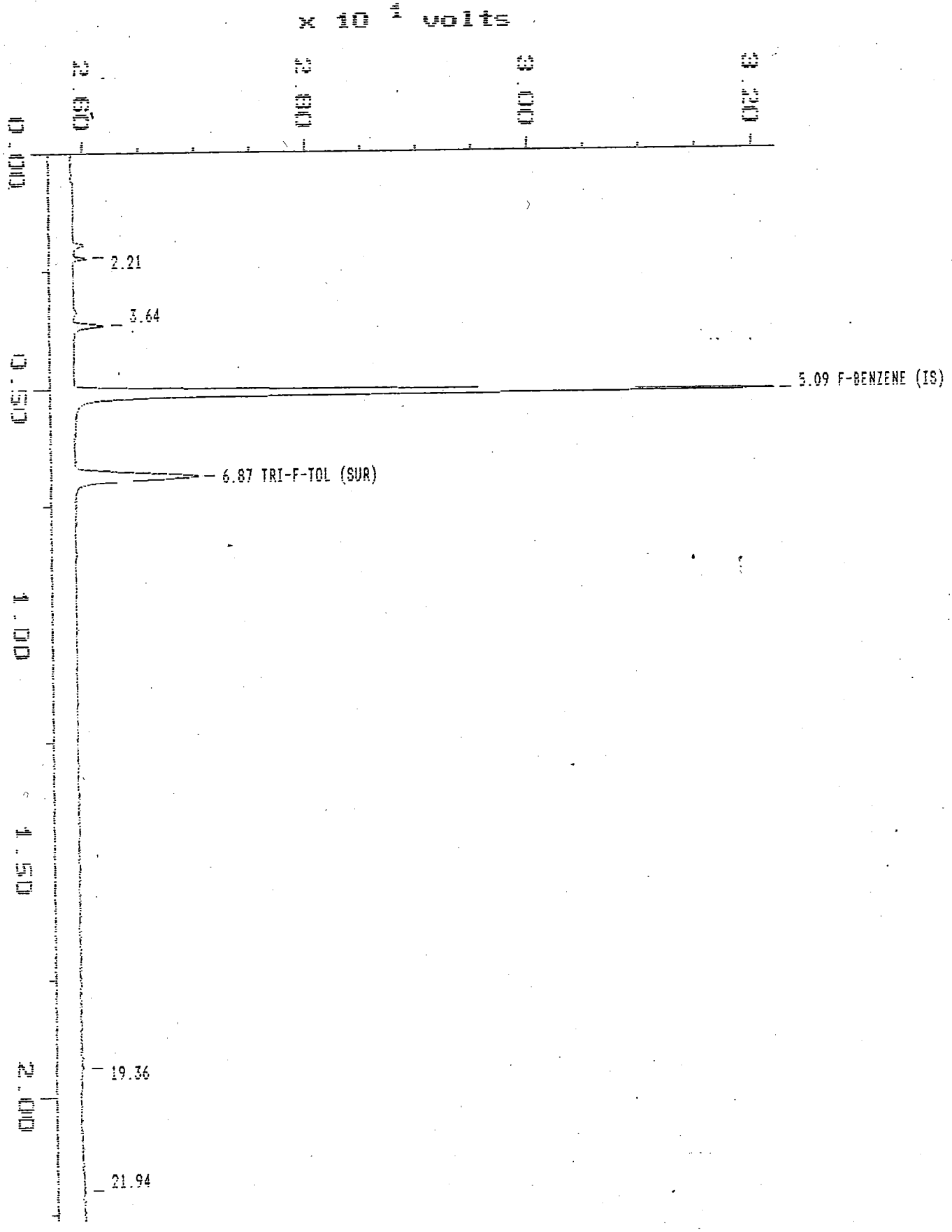
Filename: 96041019
Operator: JMC



Sample: 55852-7
Acquired: 10-APR-96 19:19
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.601

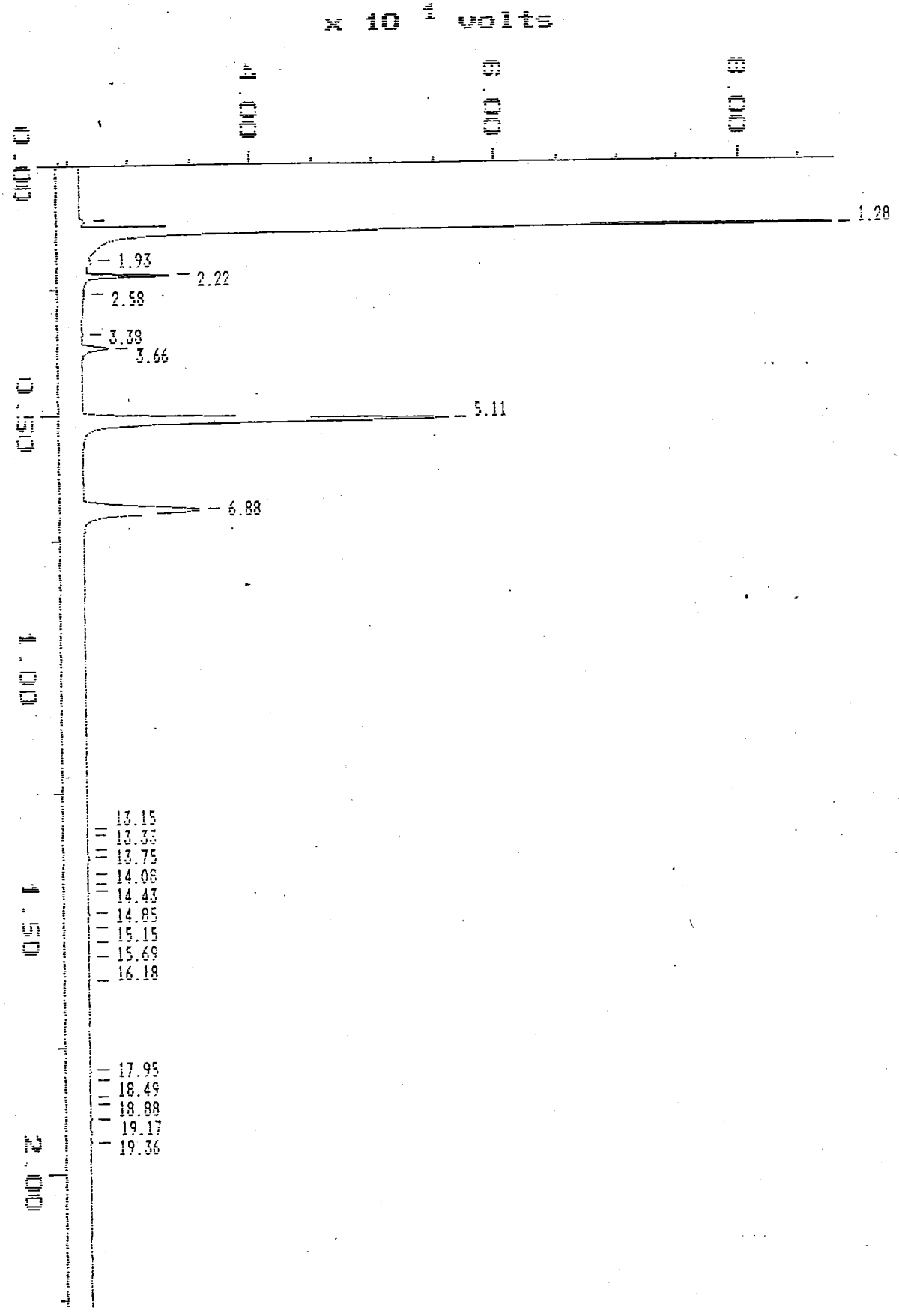
Filename: 96041020
Operator: JMC



Sample: 55852-7
Acquired: 10-APR-96 19:19
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.601

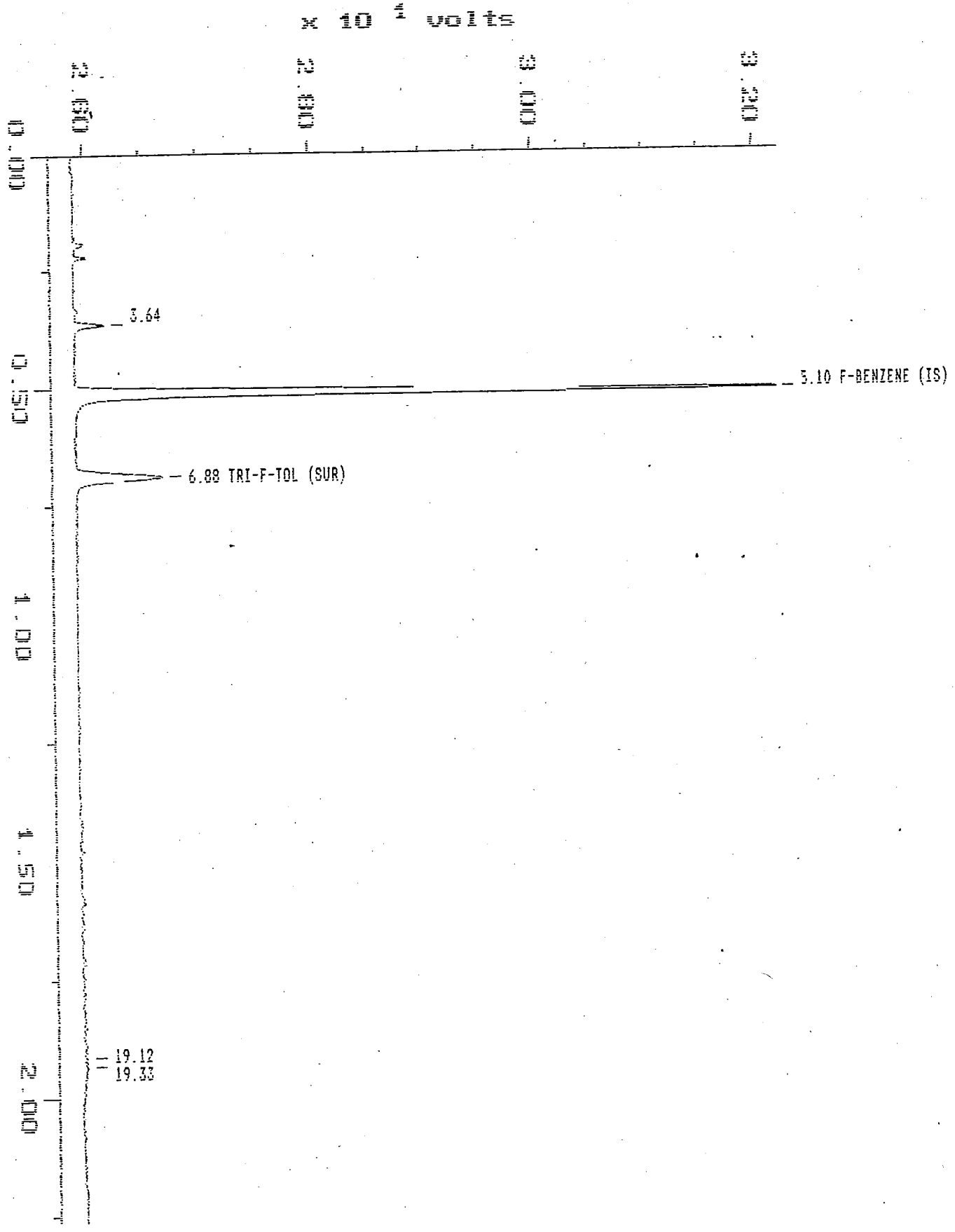
Filename: 96041020
Operator: JMC



Sample: 55852-8
Acquired: 10-APR-96 19:48
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.030

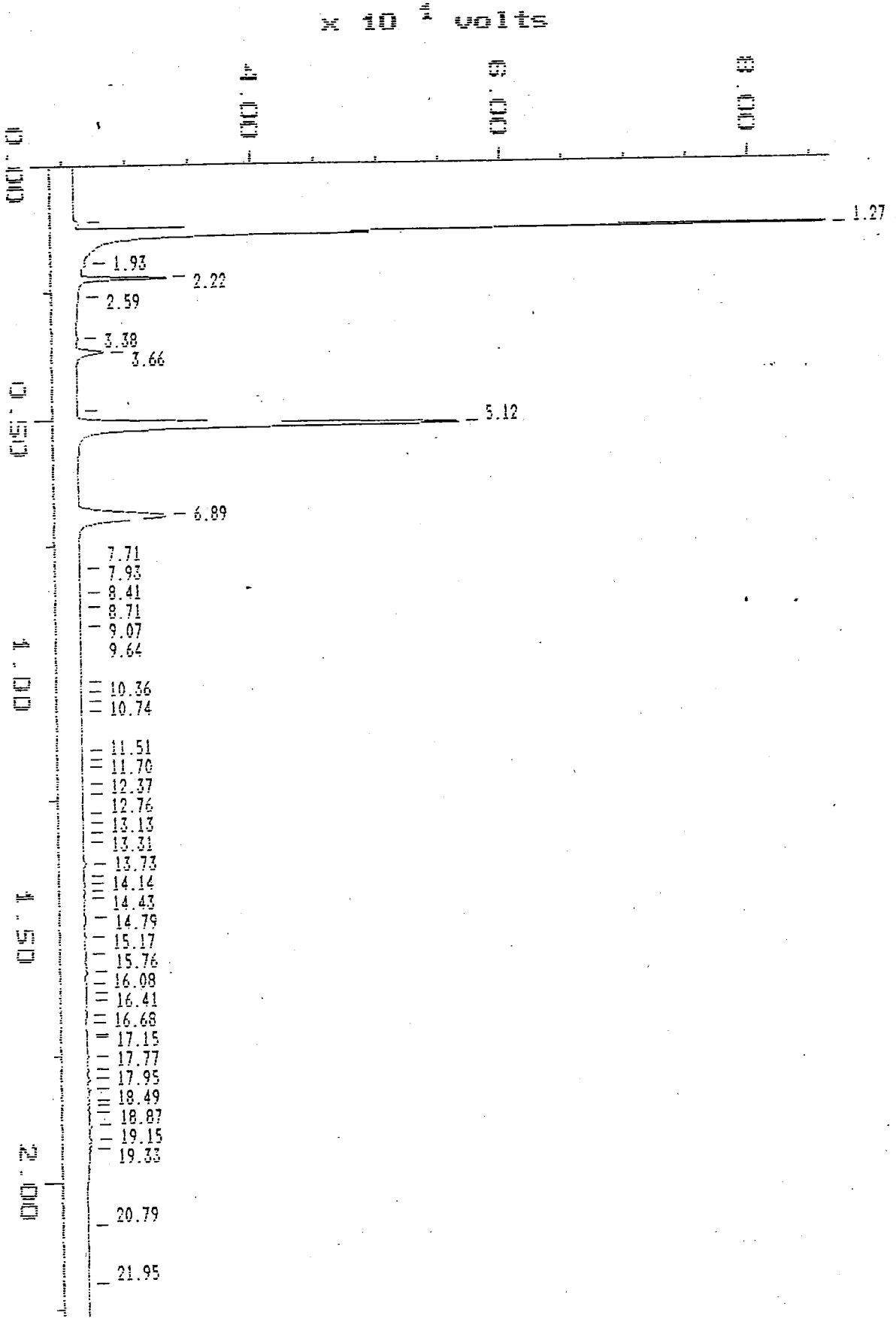
Filename: 96041021
Operator: JMC

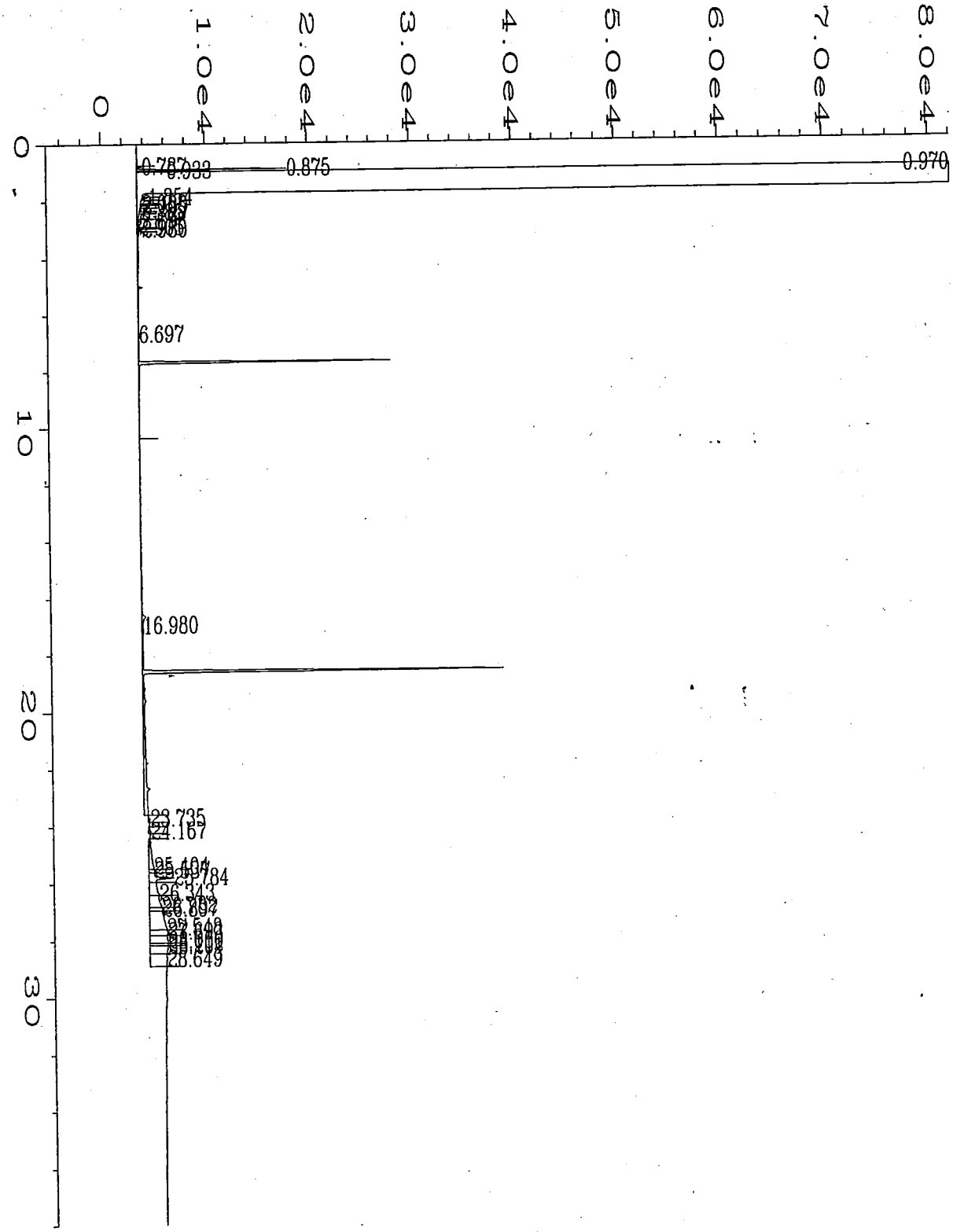


Sample: 55852-8
Acquired: 10-APR-96 19:48
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.030

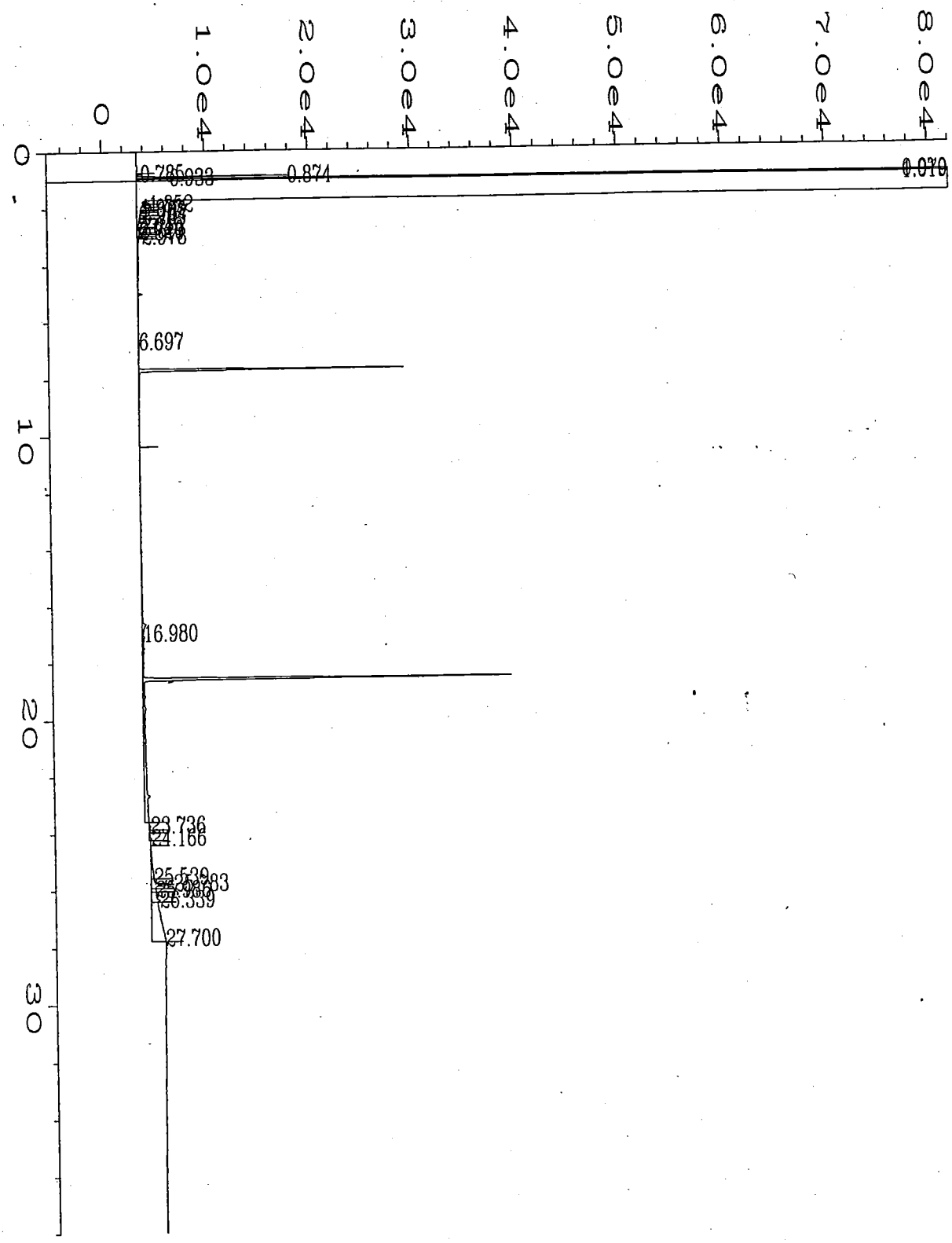
Filename: 96041021
Operator: JMC





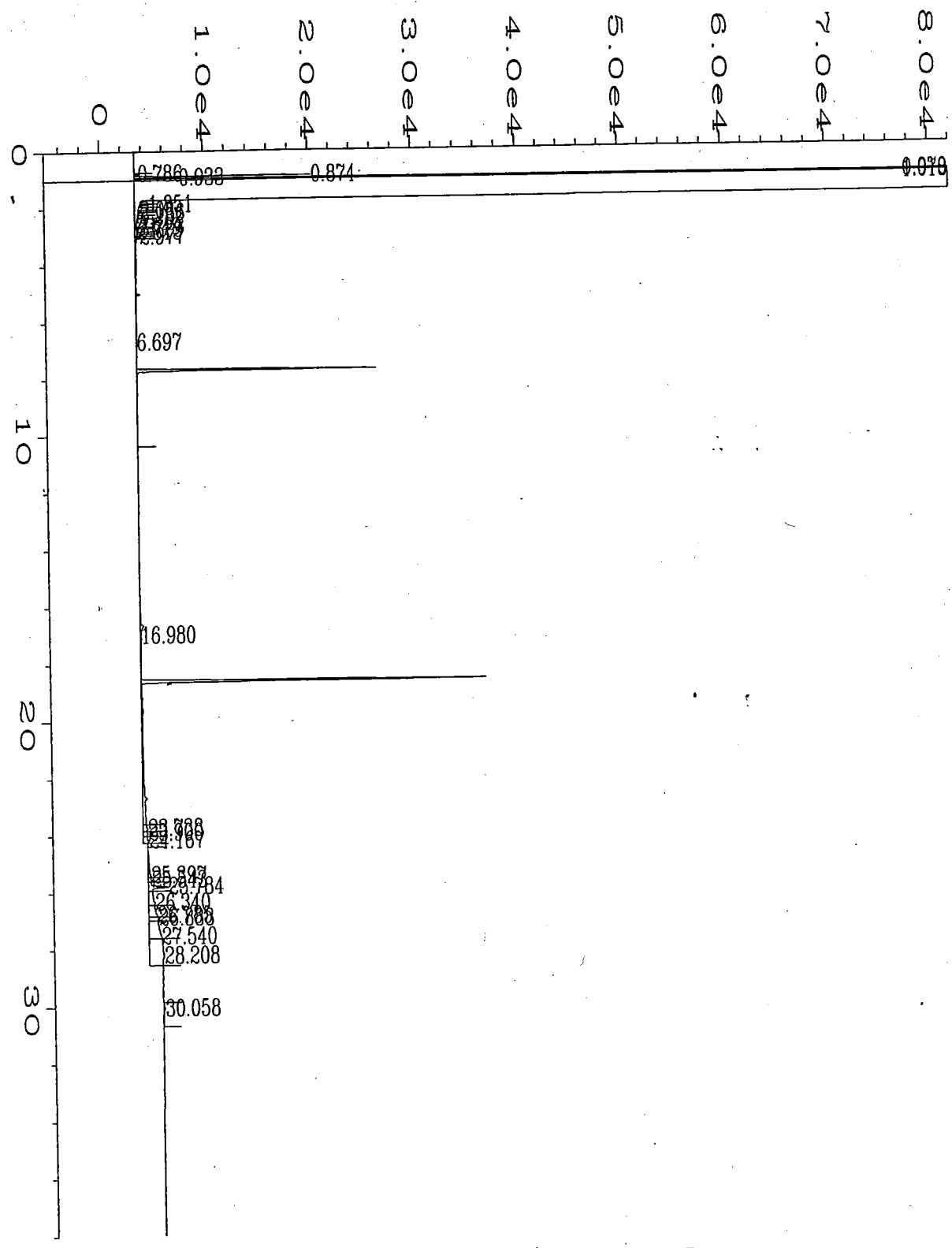
Data File Name : C:\HPCHEM\1\DATA\041096_A\014R0501.D
Operator : DAS/ELG
Instrument : INSTRUMEN
Sample Name : 55852-1 rush
n Time Bar Code:
quired on : 10 Apr 96 11:01 PM
Report Created on: 11 Apr 96 12:37 PM
Last Recalib on : 03 APR 96 02:04 PM
Multiplier : 1

Page Number : 1
Vial Number : 14
Injection Number : 1
Sequence Line : 5
Instrument Method: SU0404-4.MTH
Analysis Method : WD0402-4.MTH
Sample Amount : 0
ISTD Amount :



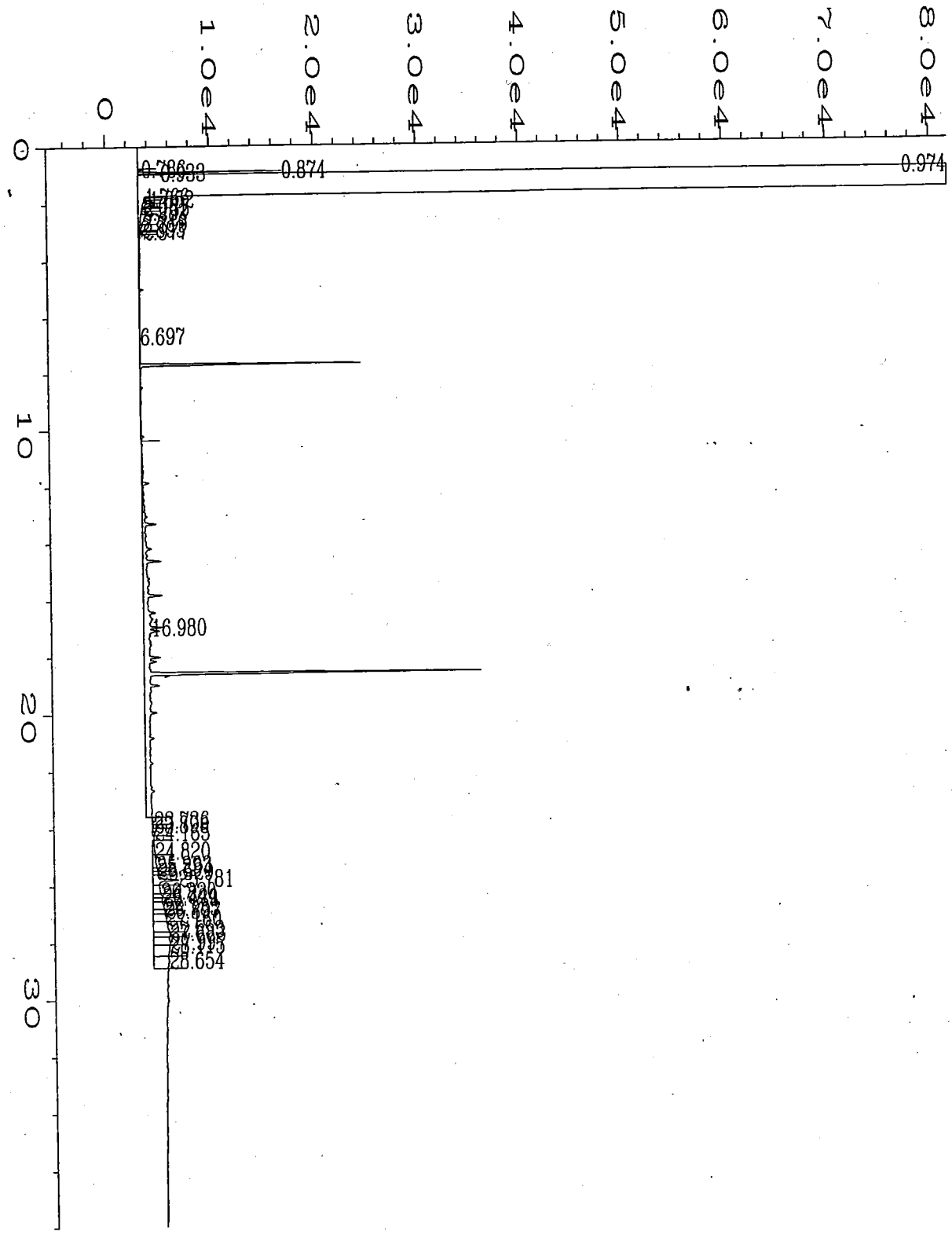
Data File Name : C:\HPCHEM\1\DATA\041096_A\015R0501.D
Operator : DAS/ELG
Instrument : INSTRUMEN
Sample Name : 55852-2 rush
In Time Bar Code:
Acquired on : 10 Apr 96 11:46 PM
Report Created on: 11 Apr 96 12:37 PM
Last Recalib on : 03 APR 96 02:04 PM
Multiplier : 1

Page Number : 1
Vial Number : 15
Injection Number : 1
Sequence Line : 5
Instrument Method: SU0404-4.MTH
Analysis Method : WD0402-4.MTH
Sample Amount : 0
ISTD Amount :



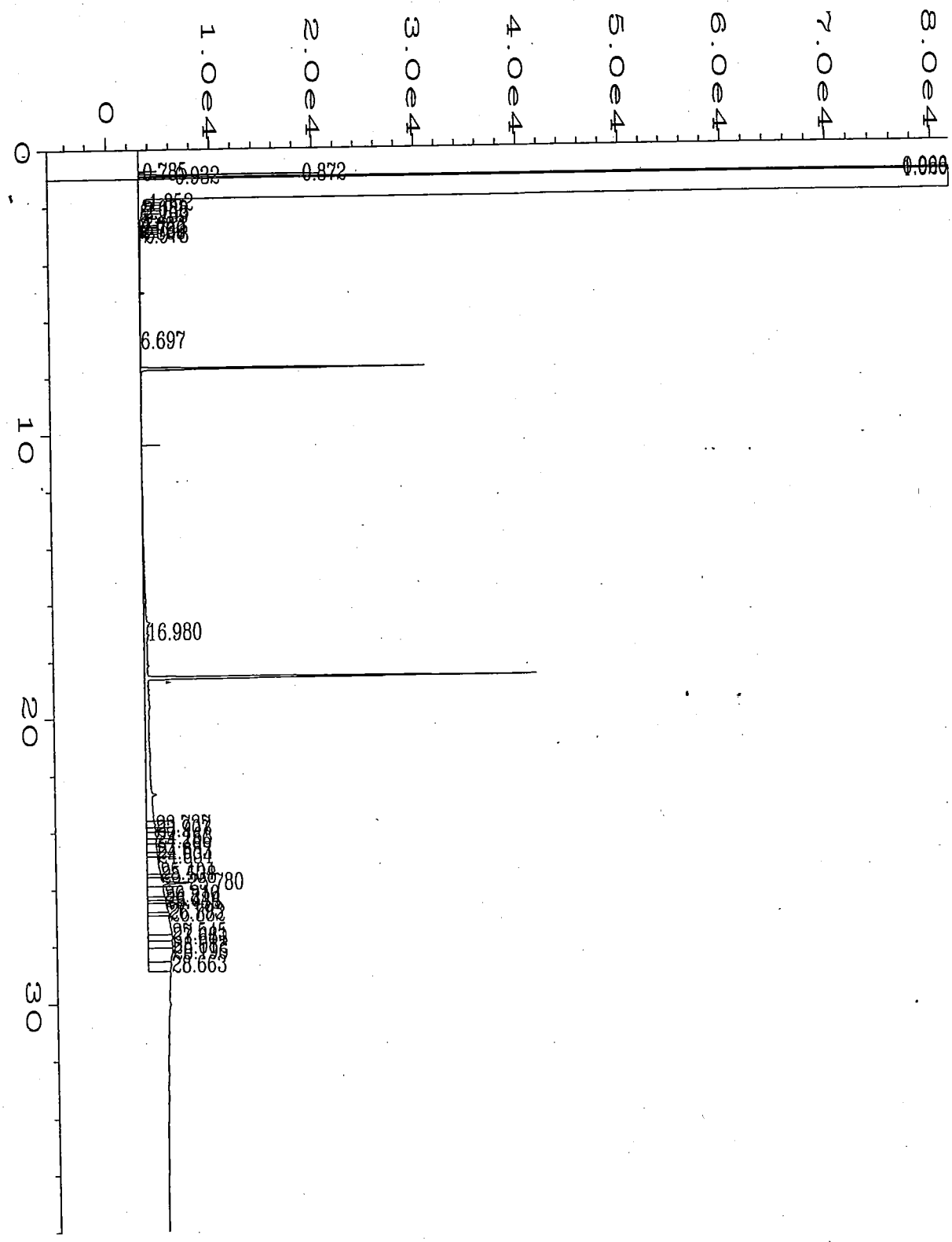
Data File Name : C:\HPCHEM\1\DATA\041096_A\016R0501.D
Operator : DAS/ELG
Instrument : INSTRUMEN
Sample Name : 55852-3 rush
In Time Bar Code:
Acquired on : 11 Apr 96 00:31 AM
Report Created on: 11 Apr 96 12:37 PM
Last Recalib on : 03 APR 96 02:04 PM
Multiplier : 1

Page Number : 1
Vial Number : 16
Injection Number : 1
Sequence Line : 5
Instrument Method: SU0404-4.MTH
Analysis Method : WD0402-4.MTH
Sample Amount : 0
ISTD Amount :



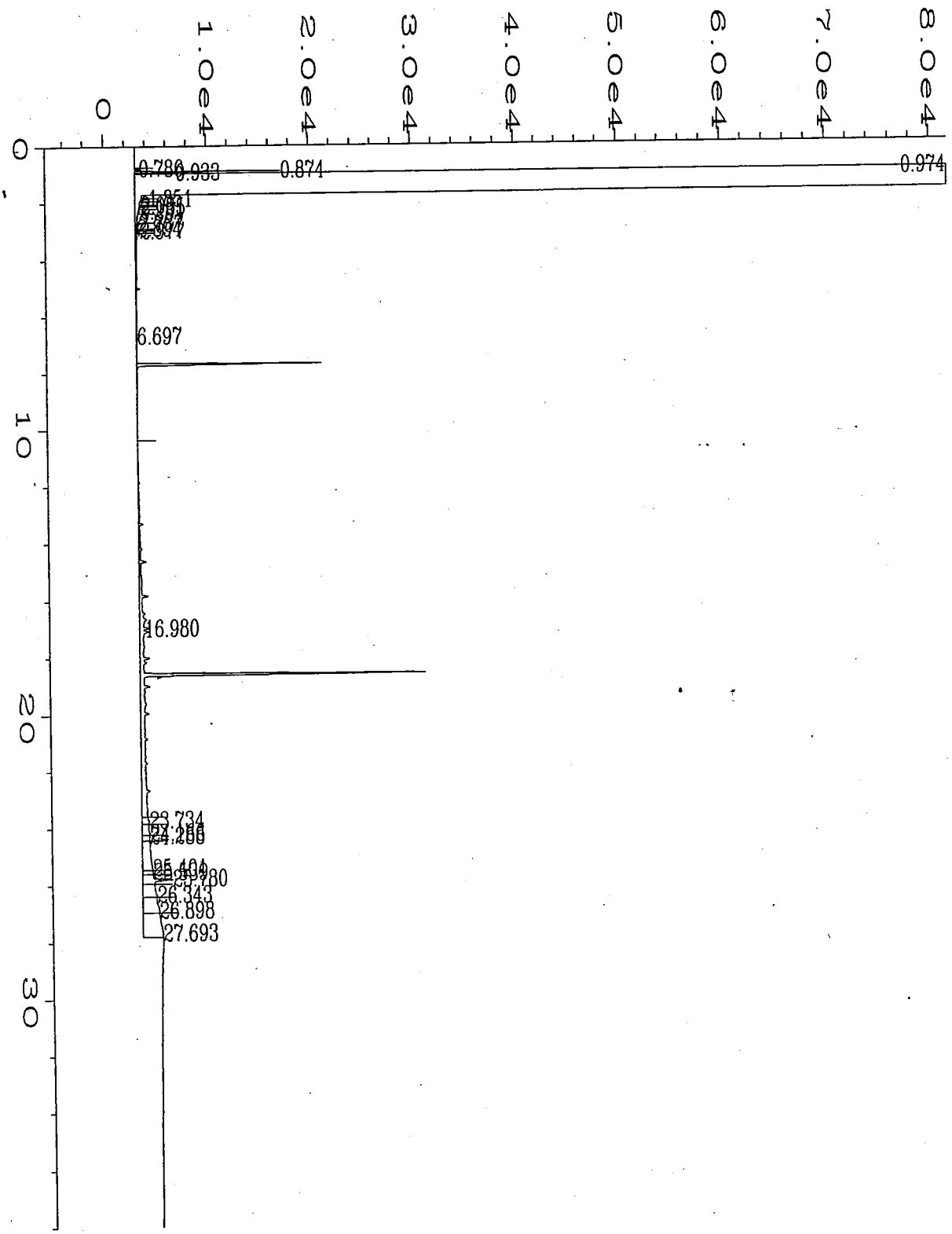
Data File Name : C:\HPCHEM\1\DATA\041096_A\020R0501.D
Operator : DAS/ELG
Instrument : INSTRUMEN
Sample Name : 55852-4 rush
In Time Bar Code:
Acquired on : 11 Apr 96 03:30 AM
Report Created on: 11 Apr 96 12:38 PM
Last Recalib on : 03 APR 96 02:04 PM
Multiplier : 1

Page Number : 1
Vial Number : 20
Injection Number : 1
Sequence Line : 5
Instrument Method: SU0404-4.MTH
Analysis Method : WD0402-4.MTH
Sample Amount : 0
ISTD Amount :

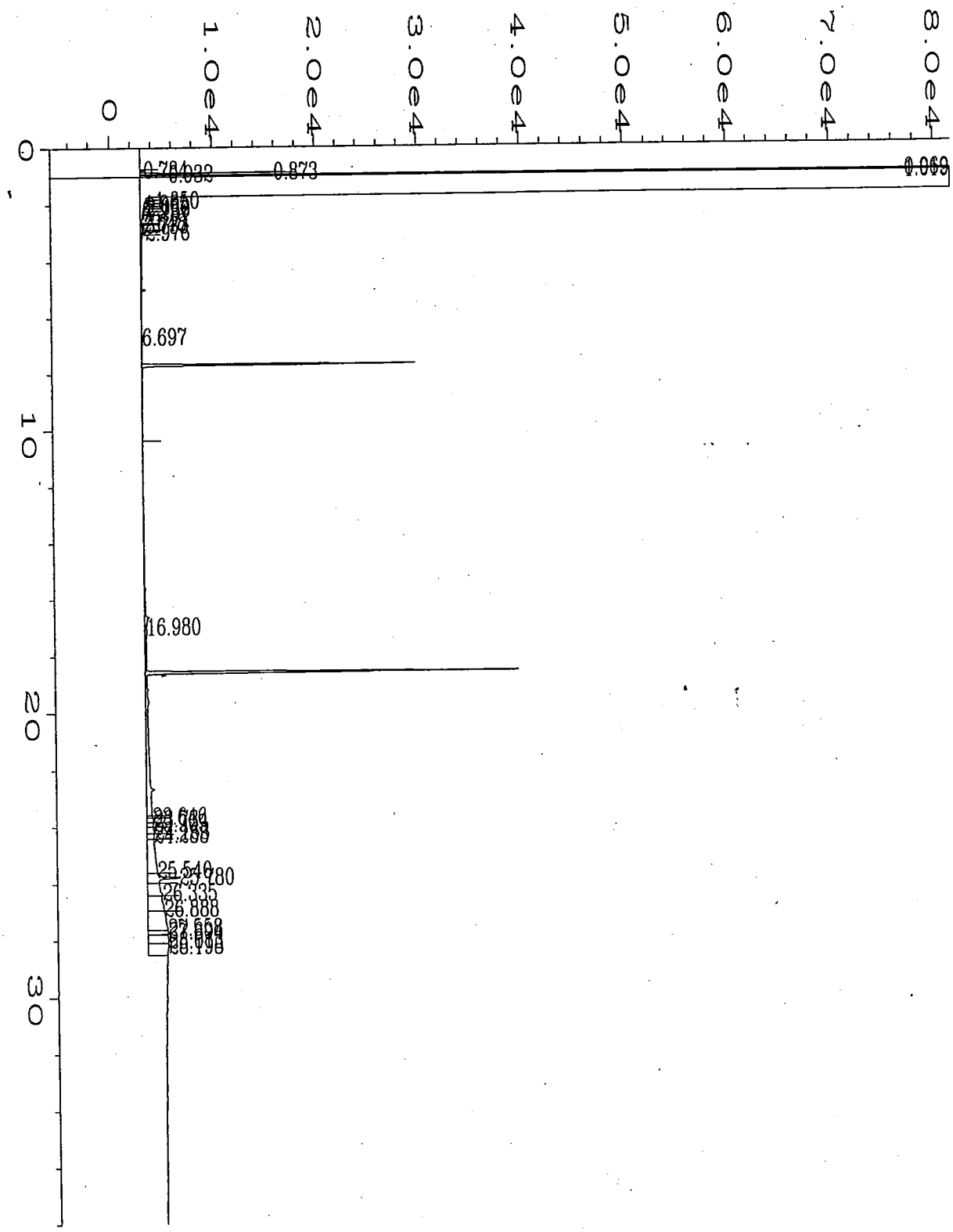


Data File Name : C:\HPCHEM\1\DATA\041096_A\021R0501.D
Operator : DAS/ELG
Instrument : INSTRUMEN
Sample Name : 55852-5 rush
Run Time Bar Code:
Acquired on : 11 Apr 96 04:15 AM
Report Created on: 11 Apr 96 12:38 PM
Last Recalib on : 03 APR 96 02:04 PM
Multiplier : 1

Page Number : 1
Vial Number : 21
Injection Number : 1
Sequence Line : 5
Instrument Method: SU0404-4.MTH
Analysis Method : WD0402-4.MTH
Sample Amount : 0
ISTD Amount :

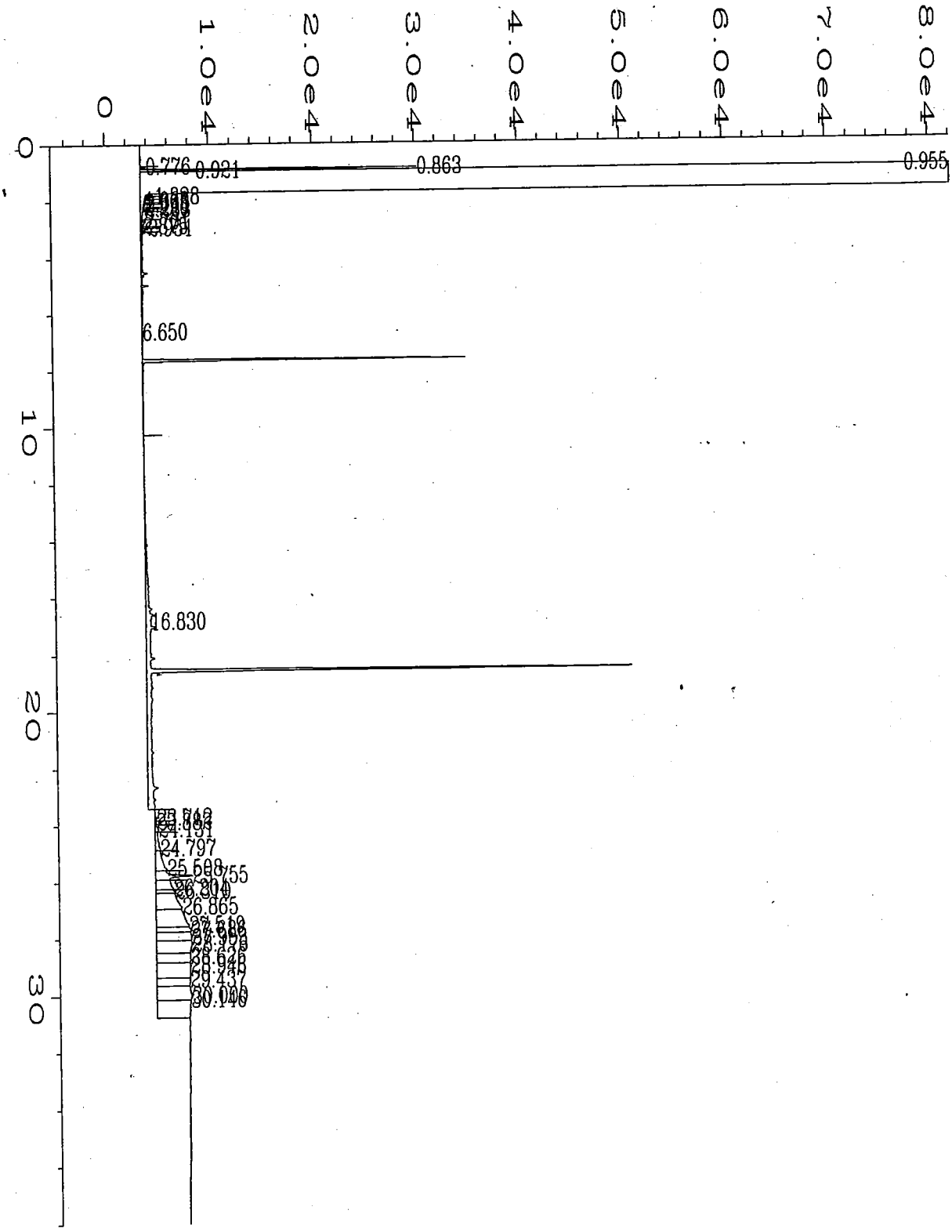


Data File Name	: C:\HPCHEM\1\DATA\041096_A\022R0501.D		
Operator	: DAS/ELG	Page Number	: 1
Instrument	: INSTRUMEN	Vial Number	: 22
Sample Name	: 55852-6 rush	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 5
Acquired on	: 11 Apr 96 05:00 AM	Instrument Method	: SU0404-4.MTH
Report Created on	: 11 Apr 96 12:38 PM	Analysis Method	: WD0402-4.MTH
Last Recalib on	: 03 APR 96 02:04 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



Data File Name : C:\HPCHEM\1\DATA\041096_A\023R0501.D
Operator : DAS/ELG
Instrument : INSTRUMEN
Sample Name : 55852-7 rush
Bun Time Bar Code:
Acquired on : 11 Apr 96 05:45 AM
Report Created on: 11 Apr 96 12:38 PM
Last Recalib on : 03 APR 96 02:04 PM
Multiplier : 1

Page Number : 1
Vial Number : 23
Injection Number : 1
Sequence Line : 5
Instrument Method: SU0404-4.MTH
Analysis Method : WD0402-4.MTH
Sample Amount : 0
ISTD Amount :



Data File Name : C:\HPCHEM\1\DATA\041296_a\005R0101.D
Operator : ELG/JV/DAS
Instrument : INSTRUMEN
Sample Name : 55852-8 rush
Run Time Bar Code:
Acquired on : 12 Apr 96 06:58 PM
Report Created on: 14 Apr 96 01:13 PM
Last Recalib on : 12 APR 96 03:48 PM
Multiplier : 1

Page Number : 1
Vial Number : 5
Injection Number : 1
Sequence Line : 1
Instrument Method: SU0411-4.MTH
Analysis Method : WD0411-4.MTH
Sample Amount : 0
ISTD Amount :

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: April 16, 1996

TO: Norm Payton
WSDOT - Operations Olympia

PROJECT: Old Rimrock

REPORT NUMBER: 55853

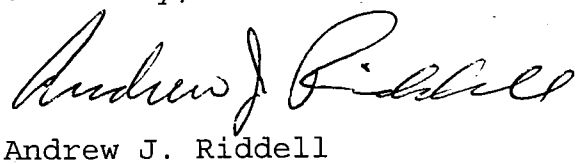
Enclosed are the test results for two samples received at Sound Analytical Services on April 10, 1996.

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

Analytical Narrative: X1 flag = product is similar to diesel or kerosene.

Should there be any questions regarding this report, please contact me at (206) 922-2310.

Sincerely,



Andrew J. Riddell
Project Manager

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	COMPOSITE R9-0B & R10-0B
Lab ID:	55853-01
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	90.03

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	73		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.046	
Toluene	ND	0.046	
Ethylbenzene	ND	0.046	
Total Xylenes	ND	0.046	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	COMPOSITE R9-0B & R10-0B
Lab ID:	55853-01
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	90.03

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	73		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	5.4	1	X1

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	COMPOSITE R11-0B & R12-0B
Lab ID:	55853-02
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	90.13

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	71		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.049	
Toluene	ND	0.049	
Ethylbenzene	ND	0.049	
Total Xylenes	ND	0.049	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	COMPOSITE R11-0B & R12-0B
Lab ID:	55853-02
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	90.13

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	71		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1.1	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	COMPOSITE R9-0B & R10-0B
Lab ID:	55853-01
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/12/96
% Solids	90.03

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	104		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	46	27	X2

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	COMPOSITE R11-0B & R12-0B
Lab ID:	55853-02
Date Received:	4/10/96
Date Prepared:	4/10/96
Date Analyzed:	4/12/96
% Solids	90.13

Diesel by WTPH-D

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	28	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB737
Date Received:	-
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	76		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.044	
Toluene	ND	0.044	
Ethylbenzene	ND	0.044	
Total Xylenes	ND	0.044	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB737
Date Received:	-
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	76		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB737
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

BTEX by USEPA Method 8020

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Benzene	0	1	0.94	94	
Toluene	0	1	0.96	96	
Ethylbenzene	0	1	0.99	99	
Total Xylenes	0	3	3.1	103	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB737
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

Gasoline by WTPH-G

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Gasoline (Toluene-nC12)	0	12	11	96	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	R4WW
Lab ID:	55852-01
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

BTEX by USEPA Method 8020

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Benzene	0	0	0.0	
Toluene	0	0	0.0	
Ethylbenzene	0	0	0.0	
Total Xylenes	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	R4WW
Lab ID:	55852-01
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

Gasoline by WTPH-G

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Gasoline (Toluene-nC12)	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	R4WW
Lab ID:	55852-01
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	GB737

Gasoline by WTPH-G

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 (Toluene-nC12)	0	14	12.00	80	11.00	83	2.9	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - DI724
Date Received:	-
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
% Solids	

Diesel by WTPH-D

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	88		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	25	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	DI724
Date Prepared:	4/10/96
Date Analyzed:	4/10/96
QC Batch ID:	DI724

Diesel by WTPH-D

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Diesel (>nC12-nC24)	0	250	240	96	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	R6EW
Lab ID:	55852-03
Date Prepared:	4/10/96
Date Analyzed:	4/11/96
QC Batch ID:	DI724

Diesel by WTPH-D

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy. East
Tacoma, Washington 98424
(206) 922-2310 • FAX (206) 922-5047

55853

UST PARAMETERS
CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT-Operations Olympic
PROJECT NAME: Old Rimrock
CONTACT: Norm Payton
PHONE NO: 360-705-7848

ANALYSIS REQUESTED: Specify State WA

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	HCID	TPH-G	TPH-D	TPH 418.1	BTEX	TPH-G / BTEX	TPH 8015M	Total Lead	TCLP Lead	PCB's	PAH's	Phenols	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Volatile Organics EPA 624/8240 GC/MS	Semi-volatiles EPA 625/8270 GC/MS	Metals	Total Halogens				CLOSURE DELIVERABLES
	R4WW	4/8/96	0749	Soil	1			✓			✓																
	R5WW	4/9/96	0945	Soil	1			✓			✓																
	R6EW	4/9/96	1400	Soil	1			✓			✓																
	R7EW	4/9/96	1430	Soil	1			✓			✓																
	R8EW	4/9/96	1454	Soil	1			✓			✓																
	R9-OB	4/10/96	1303	Soil	1			✓			✓																
*	R10-OB	4/10/96	1305	Soil	1			✓			✓																
	R11-OB	4/10/96	1312	Soil	1			✓			✓																
*	R12-OB	4/10/96	1316	Soil	1			✓			✓																
	R13-SW	4/10/96	1418	Soil	1			✓			✓																
	R14-SW	4/10/96	1436	Soil	1			✓			✓																
	R15-NW	4/10/96	1500	Soil	1			✓			✓																

	Signature	Printed Name	Firm	Time / Date
Relinquished By	Norman E. Payton	Norman E. Payton	WSDOT	0805/4-11-96
Received By	Giang	Giang	SAS	0805 4/11/96
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
These samples will be disposed of after _____.
Check this box to have samples returned ☐.

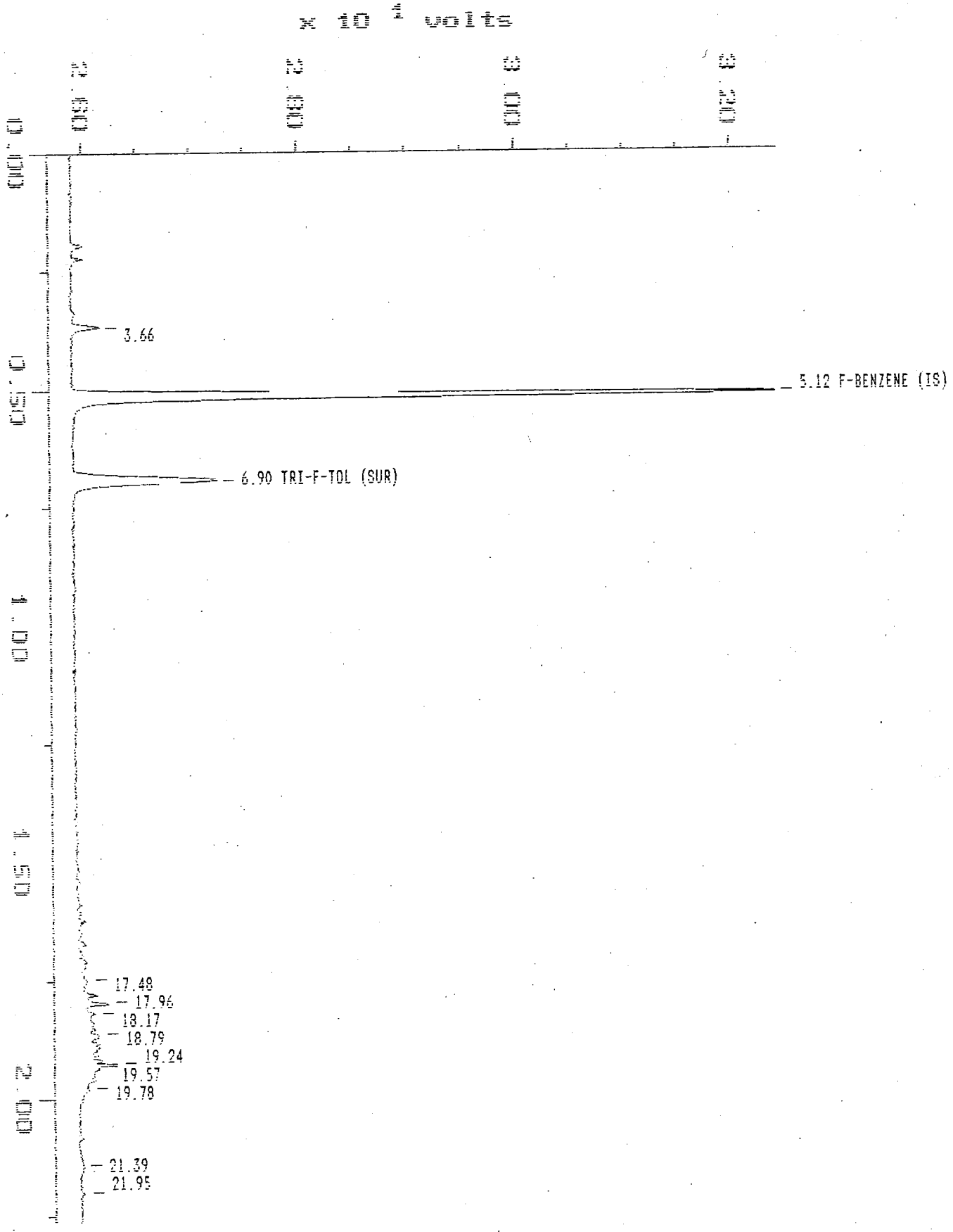
48 hr TAT Rest of Samples
*Composite - R9OB and R10-OB } 5 day TAT.
- R11-OB and R12-OB }

Diskette Del.

Sample: 55853-1
Acquired: 10-APR-96 10:47
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.627

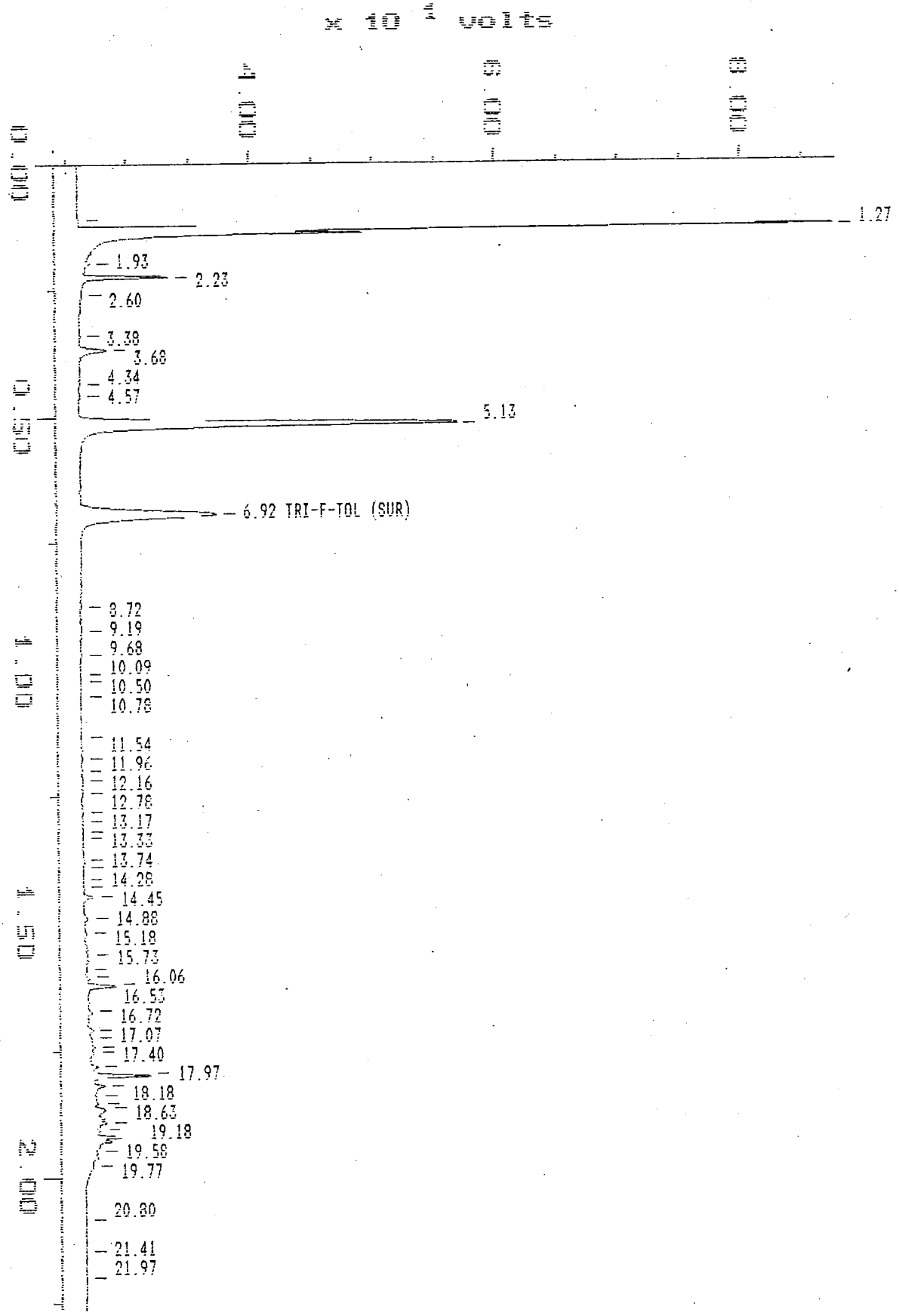
Filename: 96041004
Operator: JMC



Sample: 55853-1
Acquired: 10-APR-96 10:47
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.627

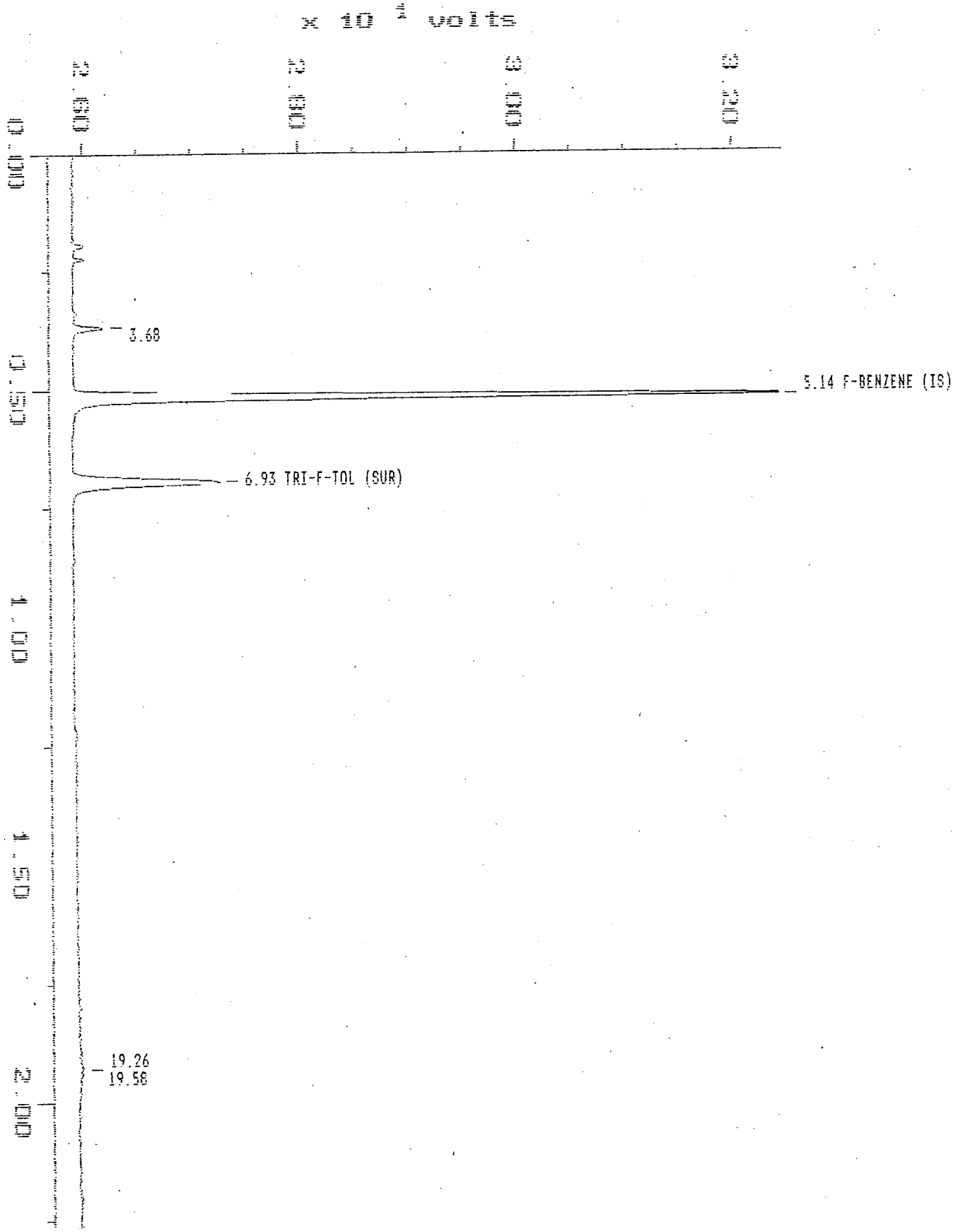
Filename: 96041004
Operator: JMC



Sample: 55853-2
Acquired: 10-APR-96 11:15
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0410
Amount: 10.005

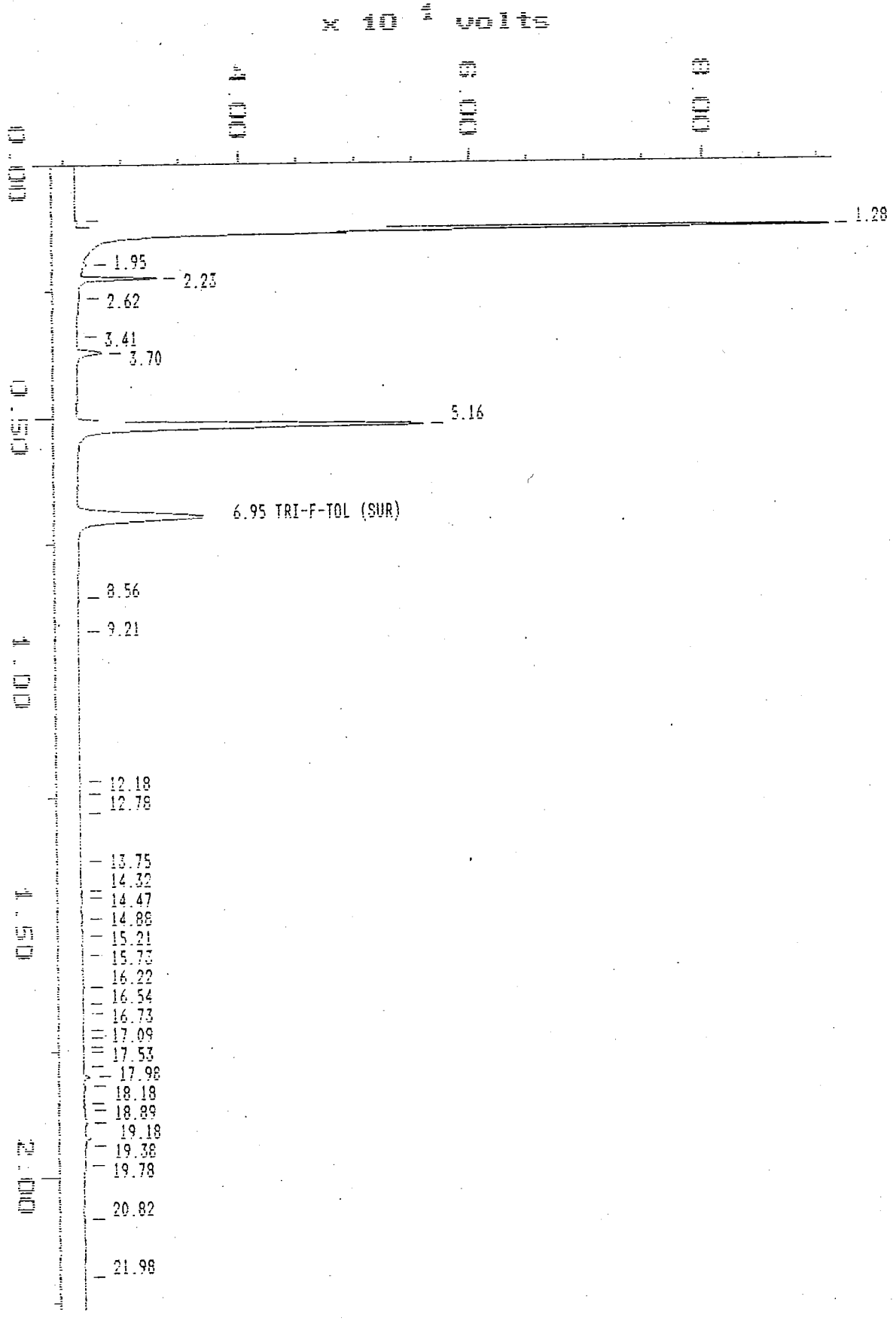
Filename: 96041005
Operator: JMC

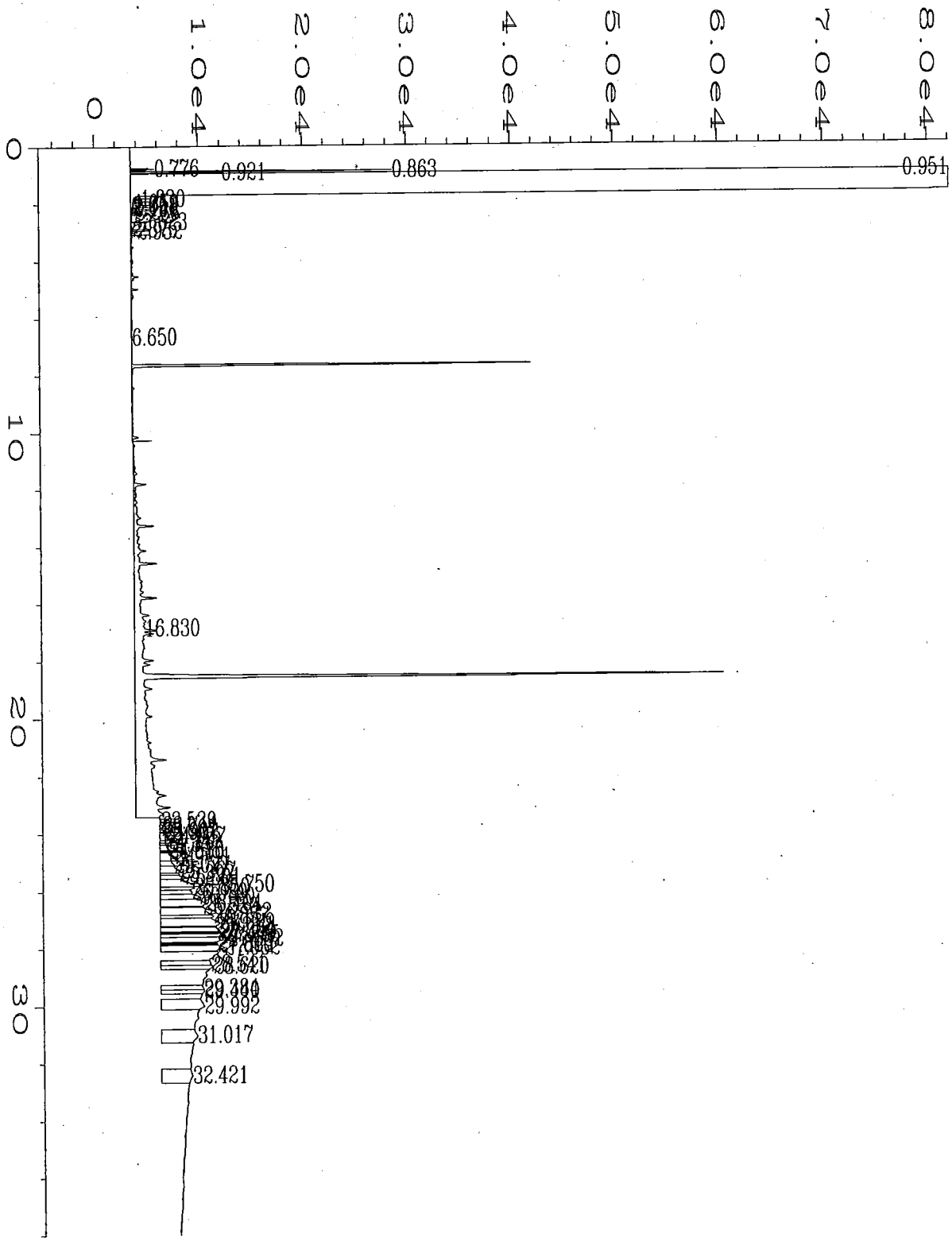


Sample: 55853-2
Acquired: 10-APR-96 11:15
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

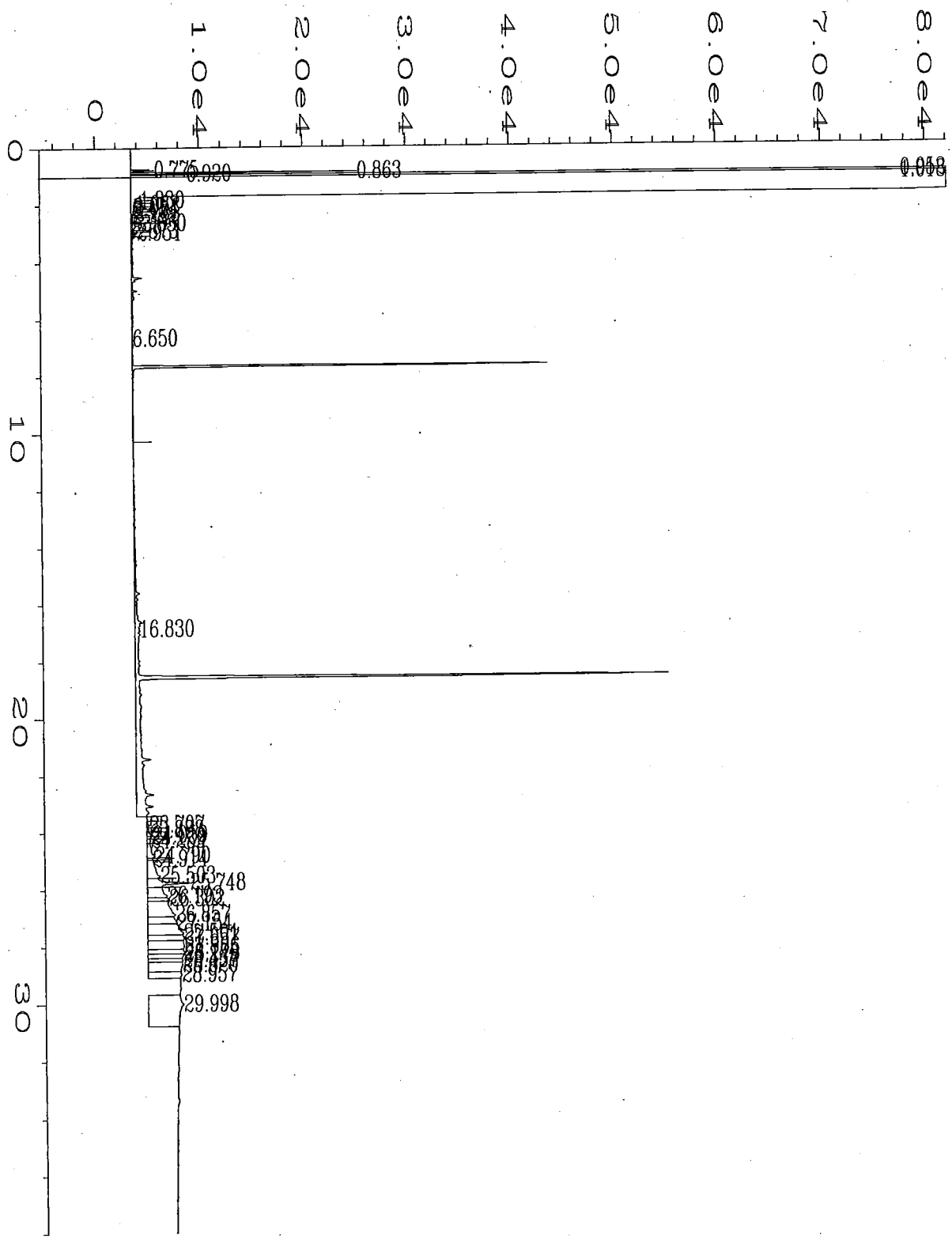
Channel: FID
Method: C:\DATA1\250\TPH0410
Amount: 10.005

Filename: 96041005
Operator: JMC





Data File Name	: C:\HPCHEM\1\DATA\041296_a\006R0101.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: INSTRUMEN	Vial Number	: 6
Sample Name	: 55853-1	Injection Number	: 1
n Time Bar Code:		Sequence Line	: 1
Acquired on	: 12 Apr 96 07:43 PM	Instrument Method	: SU0411-4.MTH
Report Created on	: 14 Apr 96 01:13 PM	Analysis Method	: WD0411-4.MTH
Last Recalib on	: 12 APR 96 03:48 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



Data File Name : C:\HPCHEM\1\DATA\041296_a\007R0101.D
Operator : ELG/JV/DAS
Instrument : INSTRUMEN
Sample Name : 55853-2
n Time Bar Code:
Acquired on : 12 Apr 96 08:28 PM
Report Created on: 14 Apr 96 01:13 PM
Last Recalib on : 12 APR 96 03:48 PM
Multiplier : 1

Page Number : 1
Vial Number : 7
Injection Number : 1
Sequence Line : 1
Instrument Method: SU0411-4.MTH
Analysis Method : WD0411-4.MTH
Sample Amount : 0
ISTD Amount :

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: May 14, 1996

TO: Norm Payton
WSDOT - Operations Olympia

PROJECT: Rayrock Ale

REPORT NUMBER: 56568

Enclosed are the test results for five samples received at Sound Analytical Services on May 13, 1996.

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

Analytical Narrative: X1 flag (gasoline) = Contaminant appears to be kerosene, jet fuel, or similar product. X1 flag (diesel) = Contaminant appears to be aged or degraded diesel with heavy oil present.

Should there be any questions regarding this report, please contact me at (206) 922-2310.

Sincerely,

Andrew J. Riddell

Andrew J. Riddell
Project Manager

AJR:tm

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	1
Lab ID:	56568-01
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	81.44

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	67		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.053	
Toluene	ND	0.053	
Ethylbenzene	ND	0.053	
Total Xylenes	ND	0.053	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	1
Lab ID:	56568-01
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
% Solids	81.44

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	67		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	3.6	1.2	X2

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	2
Lab ID:	56568-02
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	96.82

BTEX by USEPA Method 8020

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.044	
Toluene	ND	0.044	
Ethylbenzene	ND	0.044	
Total Xylenes	ND	0.044	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	2
Lab ID:	56568-02
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
% Solids	96.82

Gasoline by WTPH-G

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	1.5	0.99	X2

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	3
Lab ID:	56568-03
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	87.8

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	79		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.047	
Toluene	ND	0.047	
Ethylbenzene	ND	0.047	
Total Xylenes	ND	0.047	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	3
Lab ID:	56568-03
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	87.8

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	75		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	1.7	1.1	X2

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	4
Lab ID:	56568-04
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	92.06

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	82		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.045	
Toluene	ND	0.045	
Ethylbenzene	ND	0.045	
Total Xylenes	ND	0.045	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	4
Lab ID:	56568-04
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	92.06

Gasoline by WTPH-G

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
Trifluorotoluene	81		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Gasoline (Toluene-nC12)	1.8	1	X2

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	5
Lab ID:	56568-05
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	82.45

BTEX by USEPA Method 8020

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	68		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.05	
Toluene	ND	0.05	
Ethylbenzene	ND	0.05	
Total Xylenes	ND	0.05	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	5
Lab ID:	56568-05
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	82.45

Gasoline by WTPH-G

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
Trifluorotoluene	71		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	5	1.1	X1

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	1
Lab ID:	56568-01
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
% Solids	81.44

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
o-Terphenyl	78		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	160	31	X1
Heavy Oil (>nC24-nC32)	ND	150	
Ext. Diesel (>nC12-nC32)	300	150	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	2
Lab ID:	56568-02
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
% Solids	96.82

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	85		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	120	26	X1
Heavy Oil (>nC24-nC32)	300	130	
Ext. Diesel (>nC12-nC32)	420	130	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	3
Lab ID:	56568-03
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	87.8

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
o-Terphenyl	79		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	55	28	X1
Heavy Oil (>nC24-nC32)	ND	140	
Ext. Diesel (>nC12-nC32)	180	140	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	4
Lab ID:	56568-04
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	92.06

Extended Diesel Range by WTPH-D Modified

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	100	27	X1
Heavy Oil (>nC24-nC32)	150	130	
Ext. Diesel (>nC12-nC32)	250	130	

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	5
Lab ID:	56568-05
Date Received:	5/13/96
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	82.45

Extended Diesel Range by WTPH-D Modified

Surrogate	% Recovery	Flags	Recovery Limits Low	High
o-Terphenyl	77		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	130	30	X1
Heavy Oil (>nC24-nC32)	230	150	
Ext. Diesel (>nC12-nC32)	340	150	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB782
Date Received:	-
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
% Solids	

BTEX by USEPA Method 8020

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

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Benzene	ND	0.044	
Toluene	ND	0.044	
Ethylbenzene	ND	0.044	
Total Xylenes	ND	0.044	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - GB782
Date Received:	-
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
% Solids	

Gasoline by WTPH-G

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

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Gasoline (Toluene-nC12)	ND	1	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB782
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
QC Batch ID:	GB782

BTEX by USEPA Method 8020

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Benzene	0	1	0.95	95	
Toluene	0	1	1	102	
Ethylbenzene	0	1	1	101	
Total Xylenes	0	3	3.1	102	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	GB782
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
QC Batch ID:	GB782

Gasoline by WTPH-G

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Gasoline (Toluene-nC12)	0	12	12	99	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	2
Lab ID:	56568-02
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
QC Batch ID:	GB782

BTEX by USEPA Method 8020

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Benzene	0	0	0.0	
Toluene	0	0	0.0	
Ethylbenzene	0	0	0.0	
Total Xylenes	0	0	0.0	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	2
Lab ID:	56568-02
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
QC Batch ID:	GB782

Gasoline by WTPH-G

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Gasoline (Toluene-nC12)	1.5	0.91	49.0	X4a

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	2
Lab ID:	56568-02
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
QC Batch ID:	GB782

Gasoline by WTPH-G

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 (Toluene-nC12)	1.5	11.3	12.1	94.2	12.2	90.6	3.9	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - DI762
Date Received:	-
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
% Solids	

Diesel by WTPH-D

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

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	25	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	DI762
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
QC Batch ID:	DI762

Diesel by WTPH-D

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Diesel (>nC12-nC24)	0	250	210	86	

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	2
Lab ID:	56568-02
Date Prepared:	5/13/96
Date Analyzed:	5/13/96
QC Batch ID:	DI762

Diesel by WTPH-D

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	120	95	23.0	X4a

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	2
Lab ID:	56568-02
Date Prepared:	5/13/96
Date Analyzed:	5/14/96
QC Batch ID:	DI762

Diesel by WTPH-D

Compound Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	MSD Result (mg/kg)	MSD % Rec.	RPD	Flag
Diesel (>nC12-nC24)	120	256	301	70.8	290	67	5.5	

SOUND ANALYTICAL SERVICES, INC.

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE 206-922-2310 • FAX 206-922-5047

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.

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy. East
Tacoma, Washington 98424
(206) 922-2310 • FAX (206) 922-5047

56568

CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

CLIENT: WSDOT - Operations Dept
PROJECT NAME: RIVEROCK ALE
CONTACT: NORM PAYTON
PHONE NO: (360) 705-7948

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	NWTPH-Gx/BTEX	NWTPH-Dx (with SGCL)
1	1	5/10	7:58	SOIL	1														X	+
2	2	"	9:00	"	1														X	+
3	3	"	9:03	"	1														X	+
4	4	"	9:05	"	1														X	+
5	5	"	8:30	"	1														X	+

	Signature	Printed Name	Firm	Time / Date
Relinquished By		TED RICHARDSON	WSDOT	8/5/13
Received By	Giang	Giang	SAS	815 5/13/13
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 ☐.

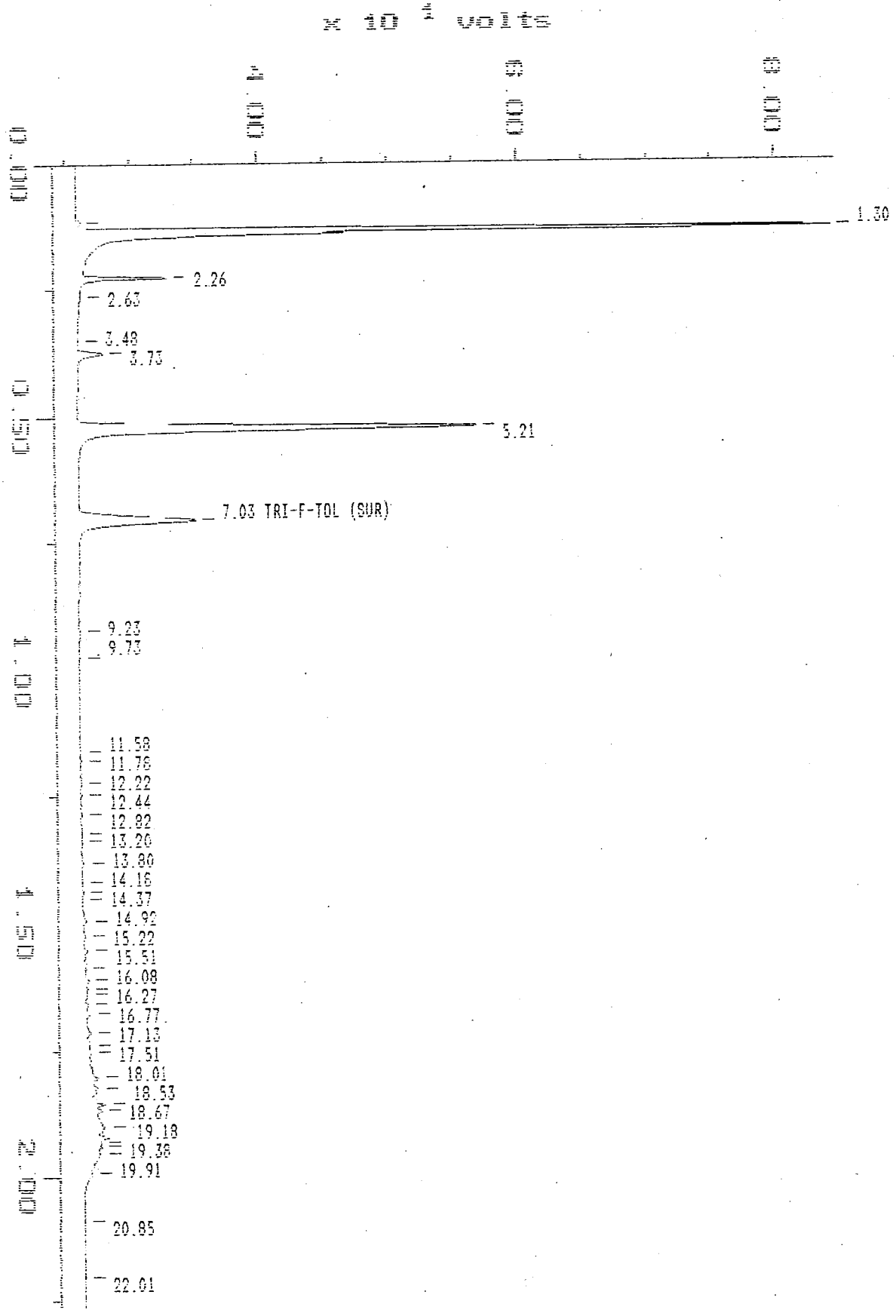
48 HR TAT

62

Sample: 56568-1
Acquired: 13-MAY-96 21:38
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0513W
Amount: 10.151

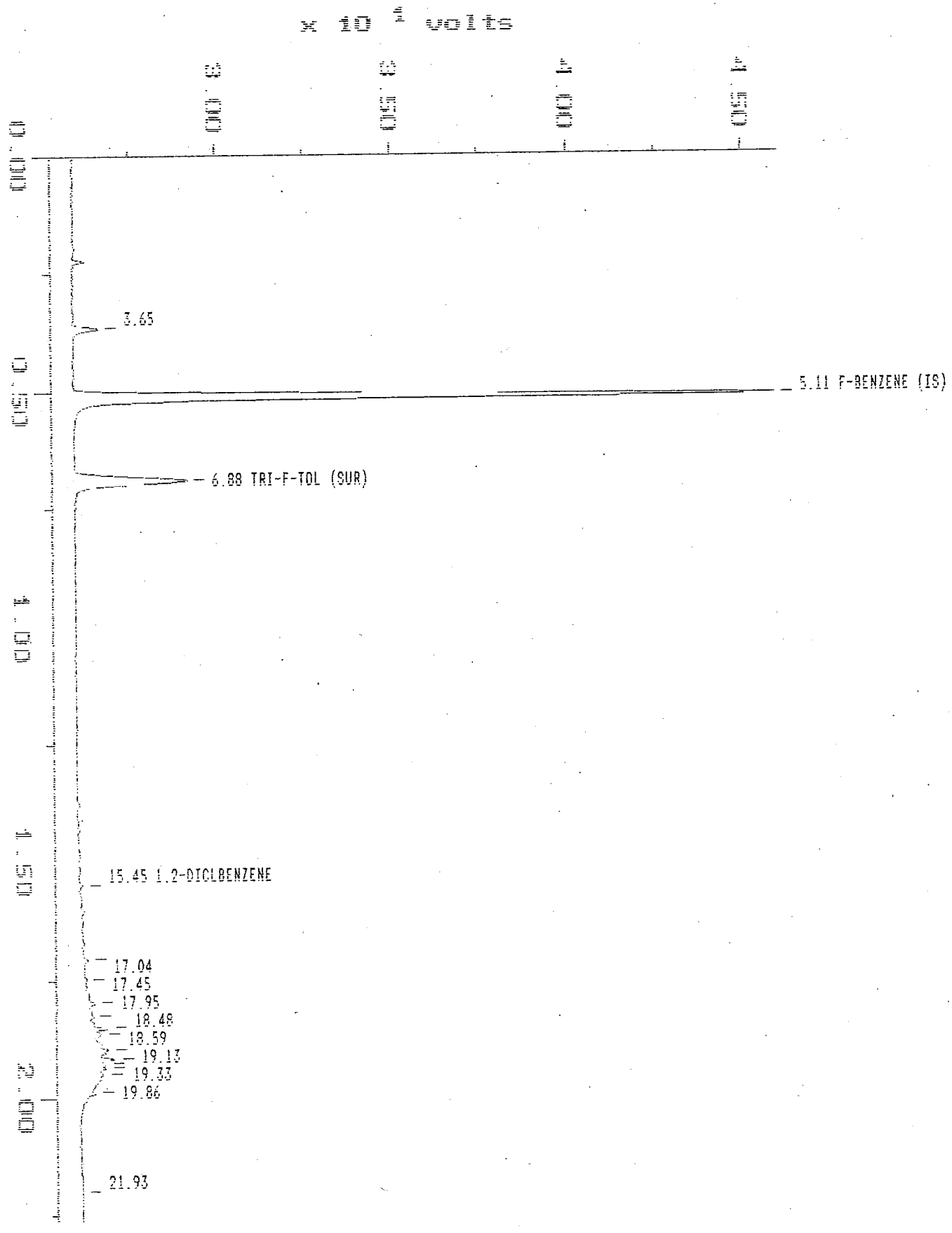
Filename: 96051320
Operator: JMC



Sample: 56568-1 RERUN
Acquired: 14-MAY-96 9:58
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0513W
Amount: 10.151

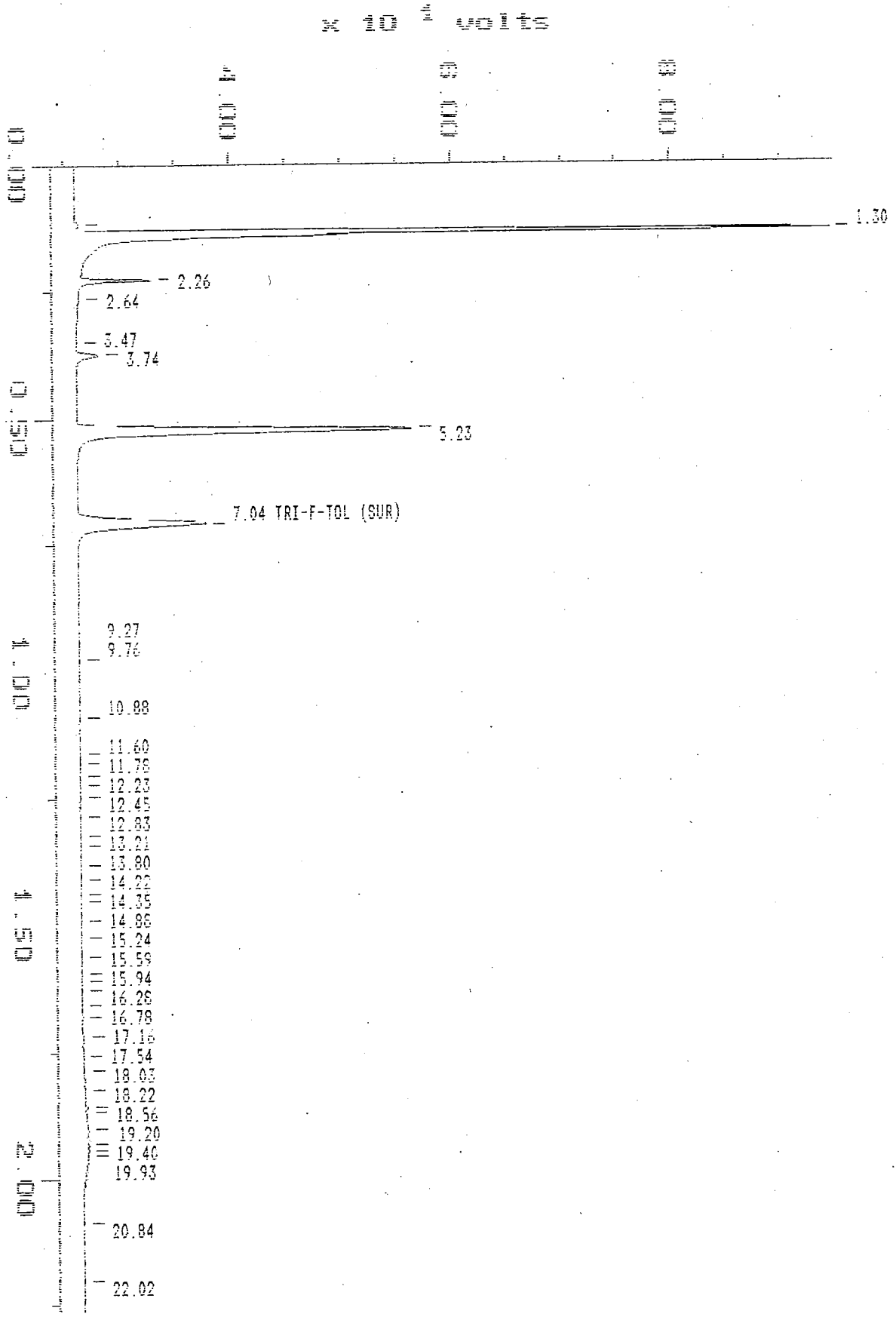
Filename: 96051345
Operator: JMC



Sample: 56568-2
Acquired: 13-MAY-96 22:07
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0513W
Amount: 10.402

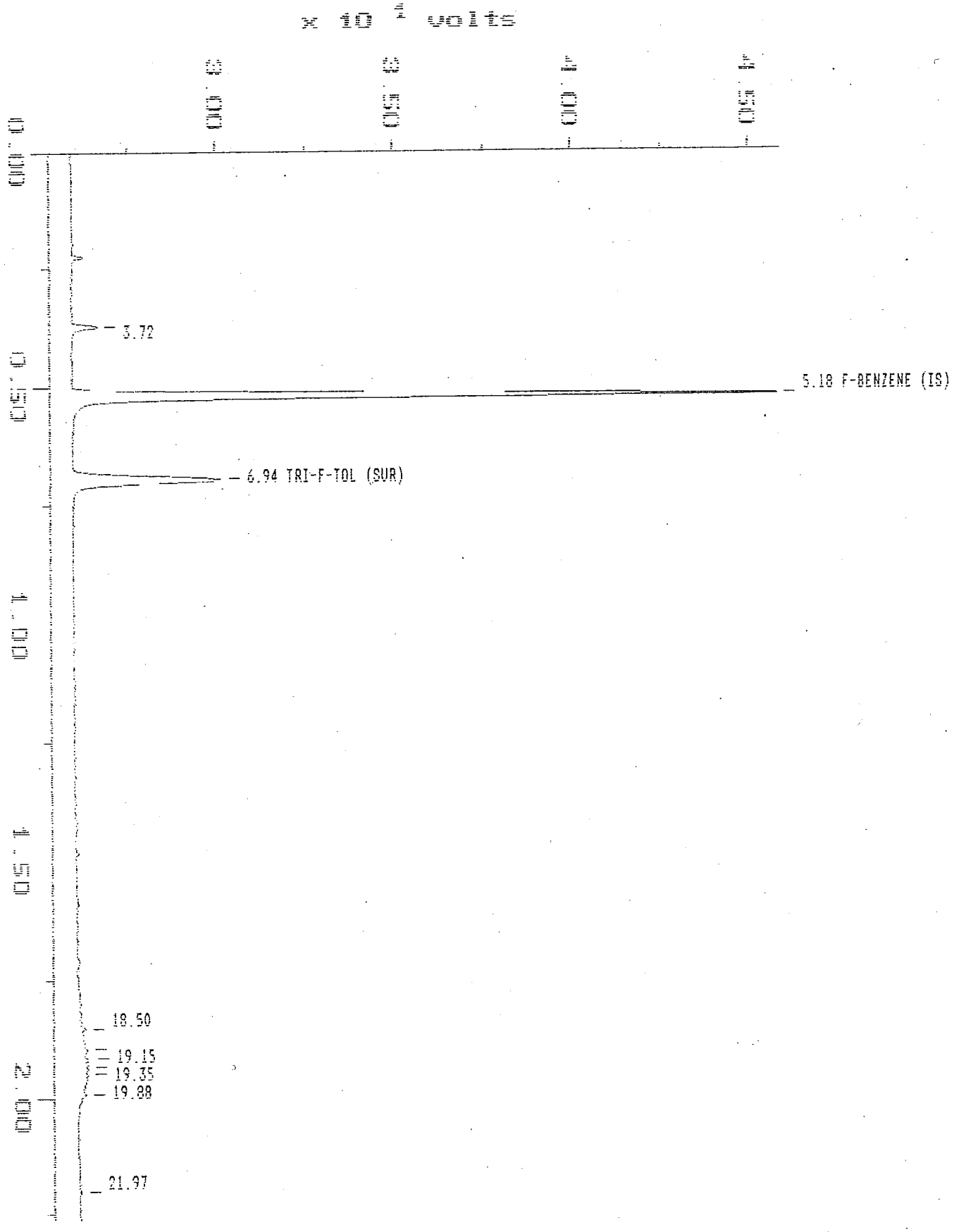
Filename: 96051321
Operator: JMC



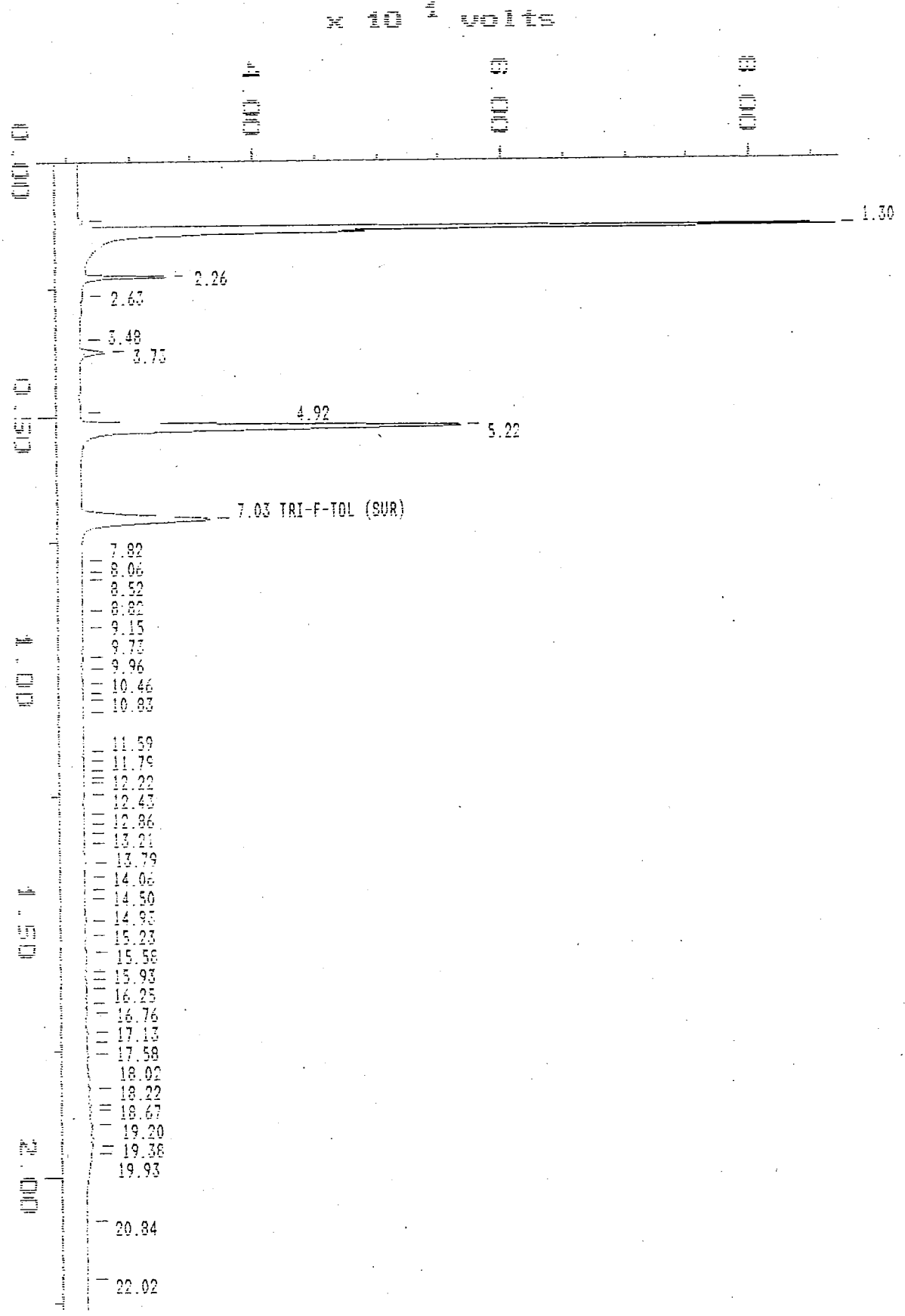
Sample: 56568-2 RERUN
Acquired: 14-MAY-96 10:27
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0513W
Amount: 10.402

Filename: 96051346
Operator: JMC



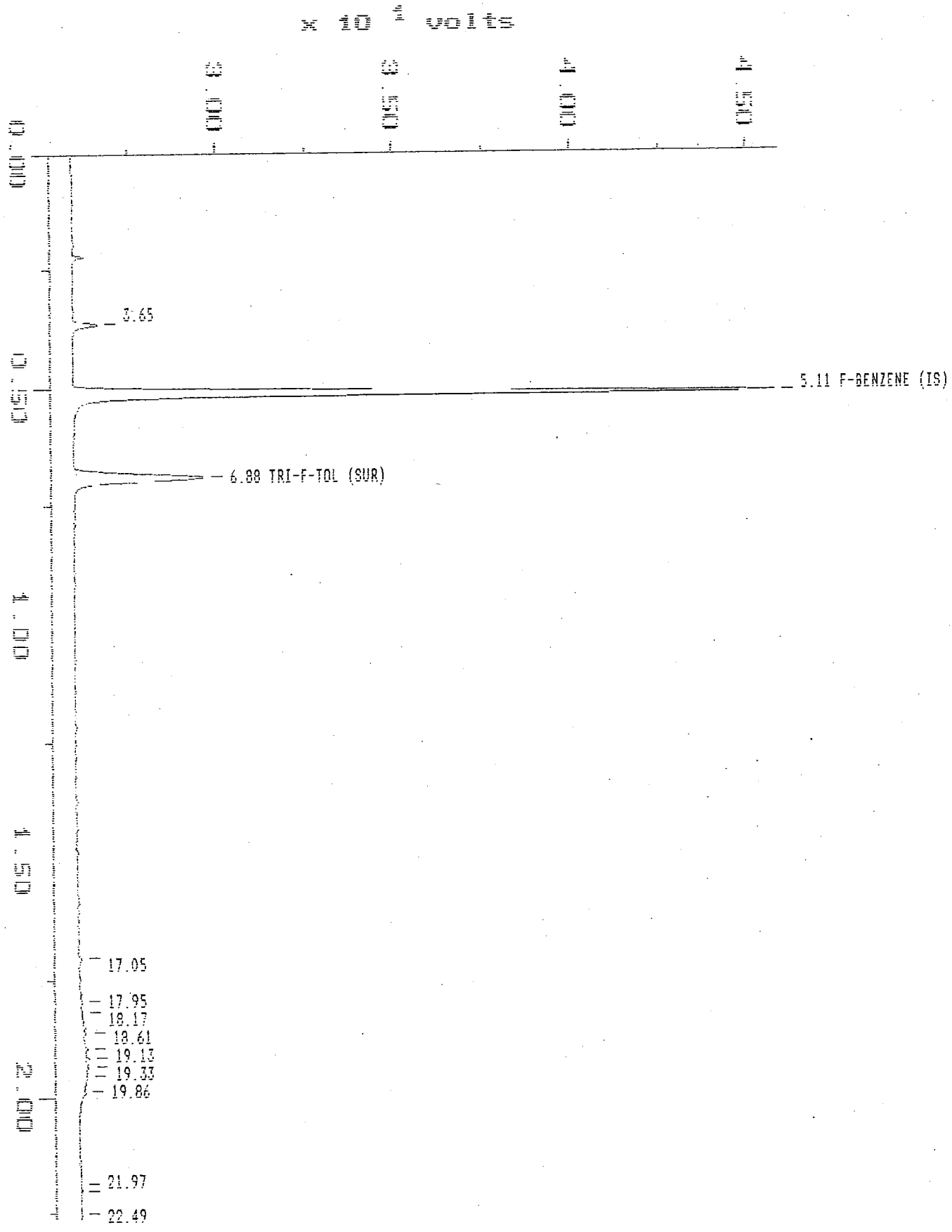
Sample: 56568-3 Channel: FID Filename: 96051327
Acquired: 14-MAY-96 1:00 Method: C:\DATA1\250\TPH0513W Operator: JMC
Dilution: 1 : 44.000 Amount: 10.556
Comments: VARIAN 3400-I



Sample: 56568-3 RERUN
Acquired: 14-MAY-96 11:26
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0513W
Amount: 10.556

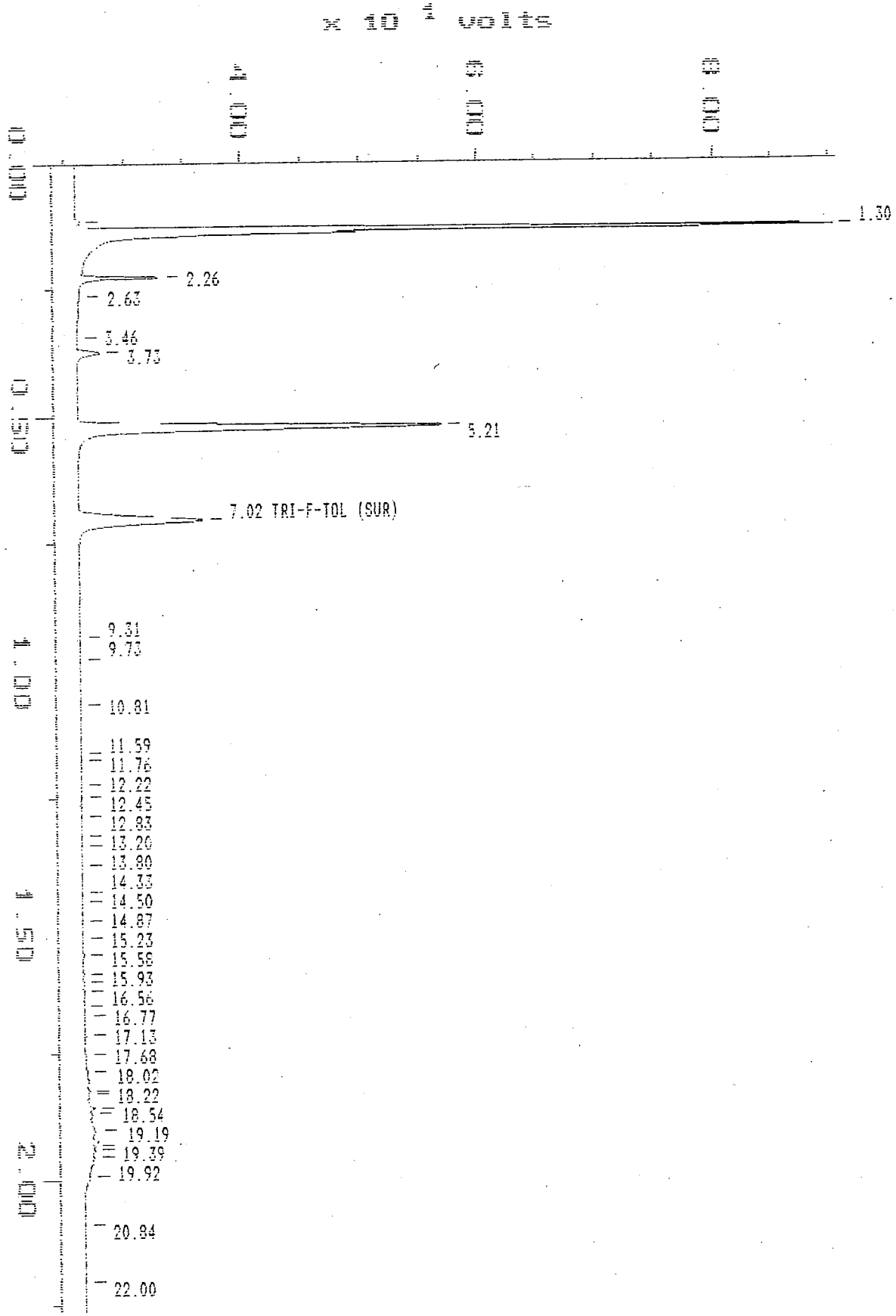
Filename: 96051348
Operator: JMC



Sample: 56568-4
Acquired: 14-MAY-96 1:30
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0513W
Amount: 10.632

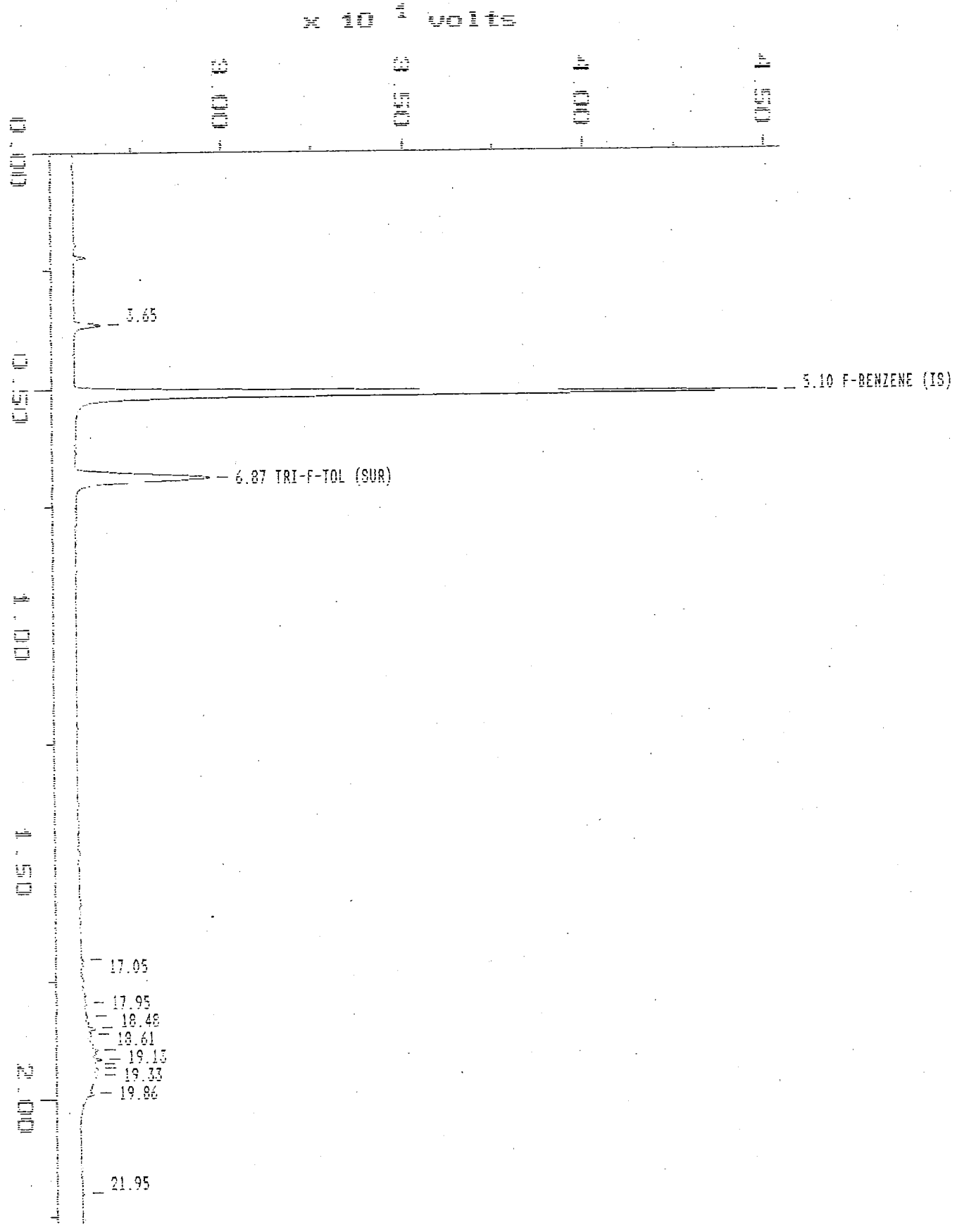
Filename: 96051328
Operator: JMC



Sample: 56568-4 RERUN
Acquired: 14-MAY-96 11:55
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: PID
Method: C:\DATA1\250\TPH0513W
Amount: 10.632

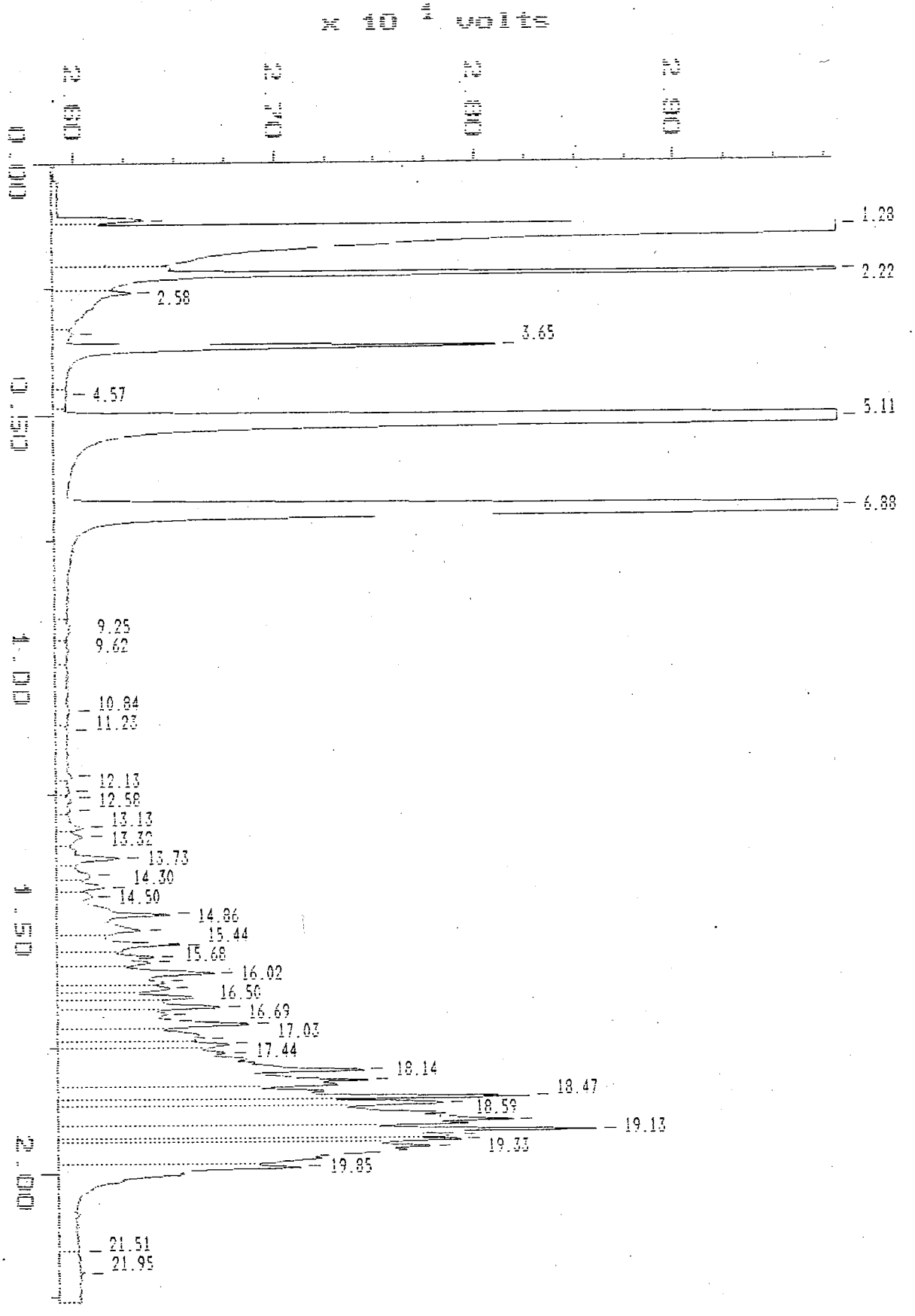
Filename: 96051349
Operator: JMC



Sample: 56568-5 RERUN
Acquired: 14-MAY-96 12:24
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

Channel: FID
Method: C:\DATA1\250\TPH0513W
Amount: 10.597

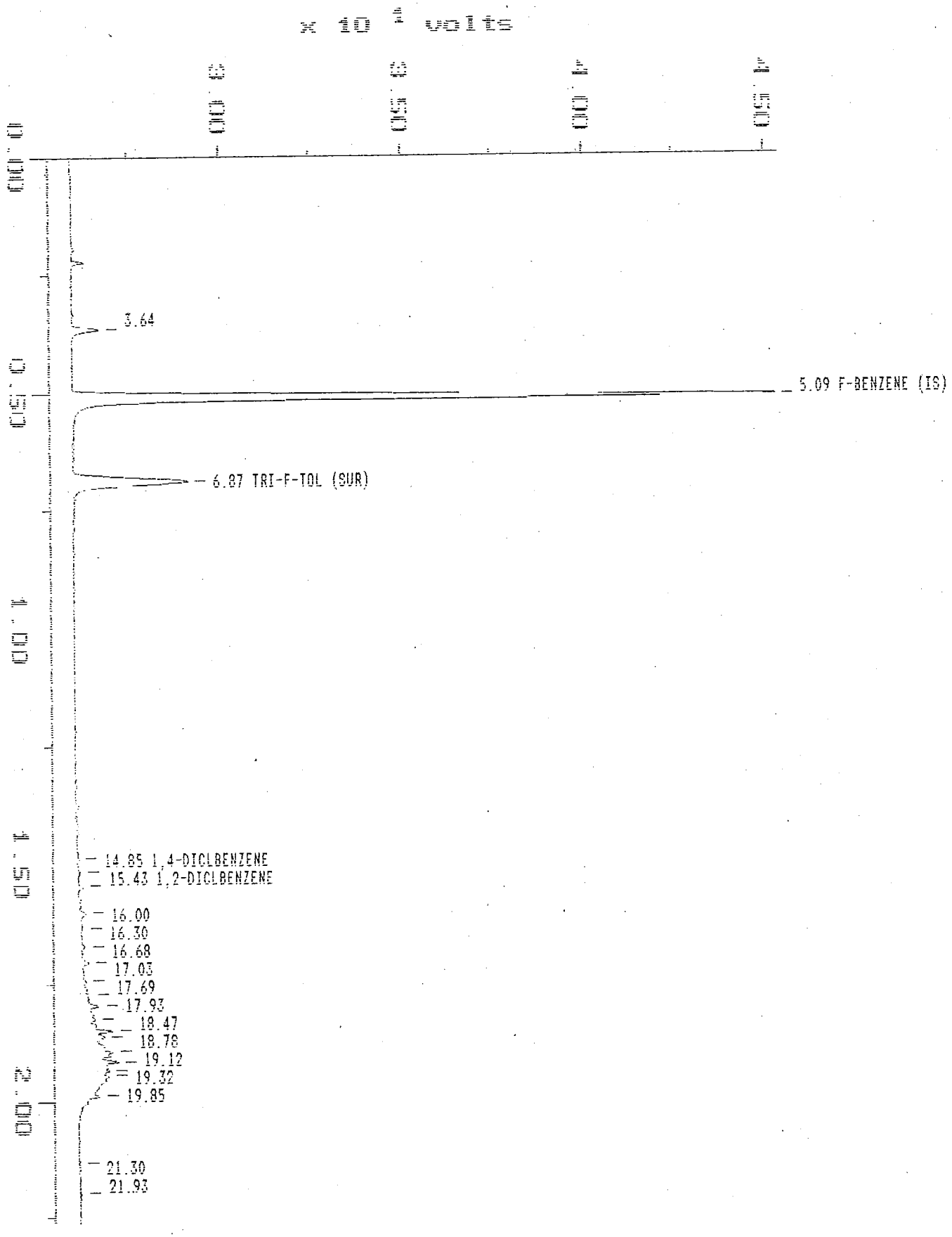
Filename: 96051350
Operator: JMC

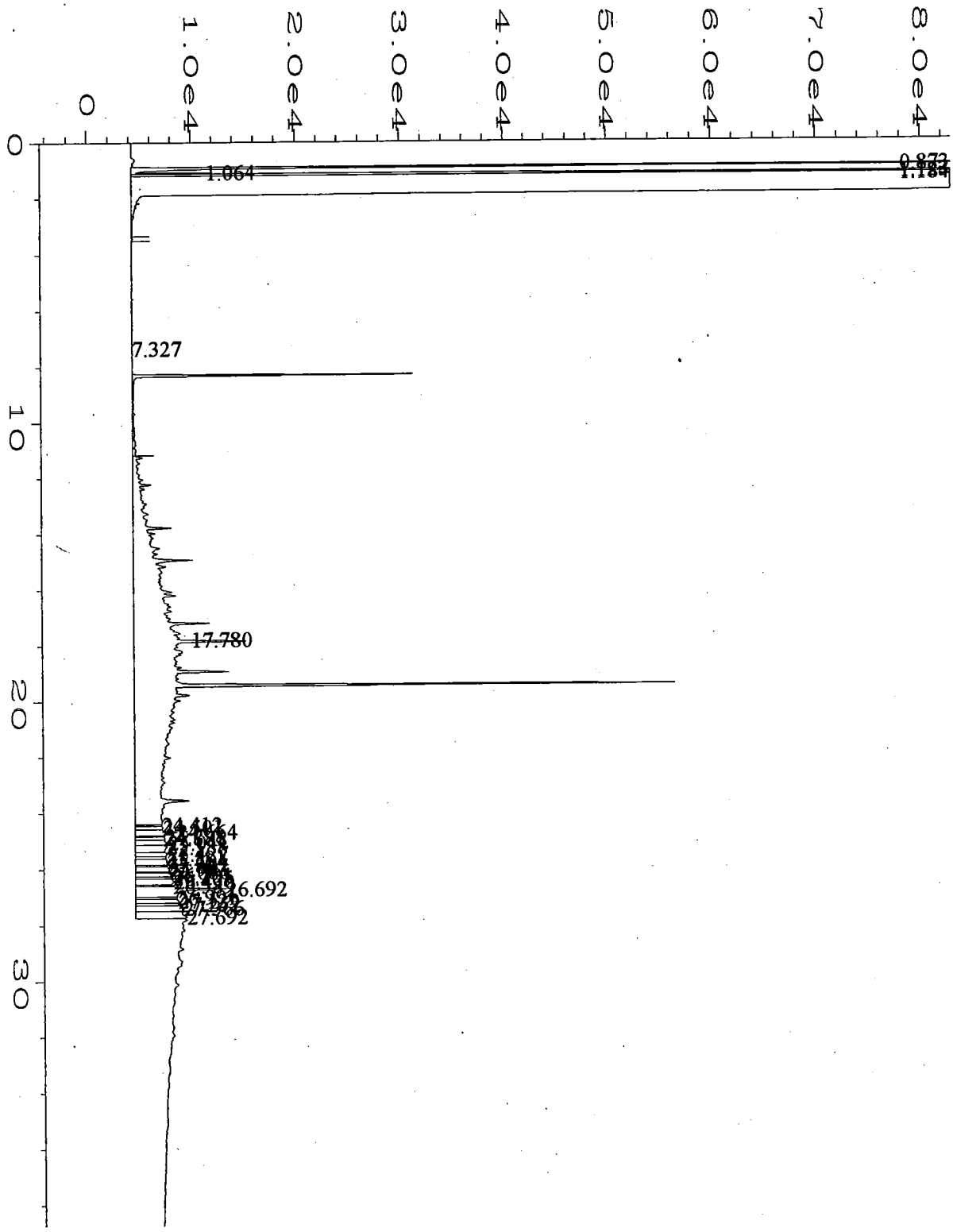


Sample: 56568-5 RERUN
Acquired: 14-MAY-96 12:24
Dilution: 1 : 44.000
Comments: VARIAN 3400-I

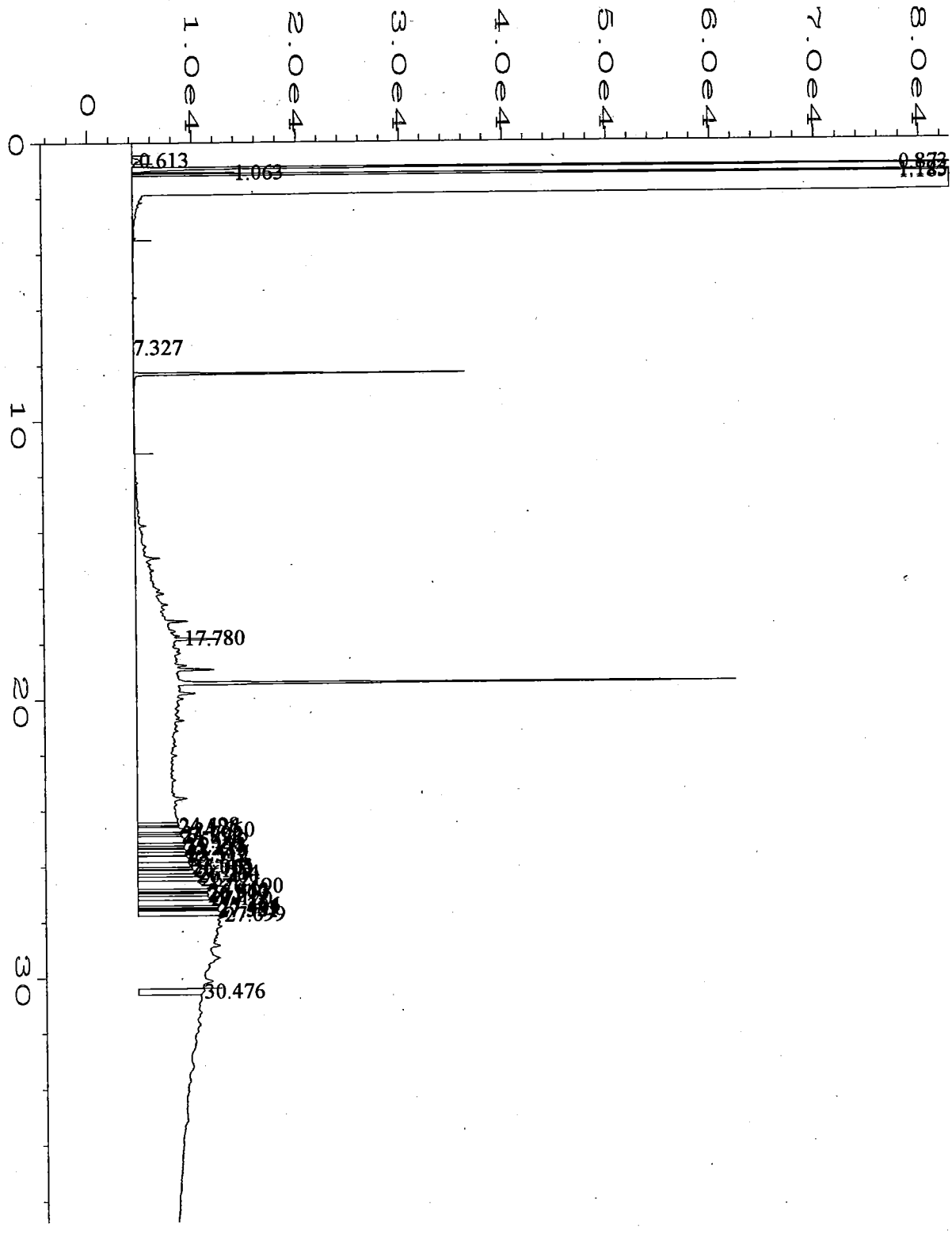
Channel: PID
Method: C:\DATA1\250\TPH0513W
Amount: 10.597

Filename: 96051350
Operator: JMC



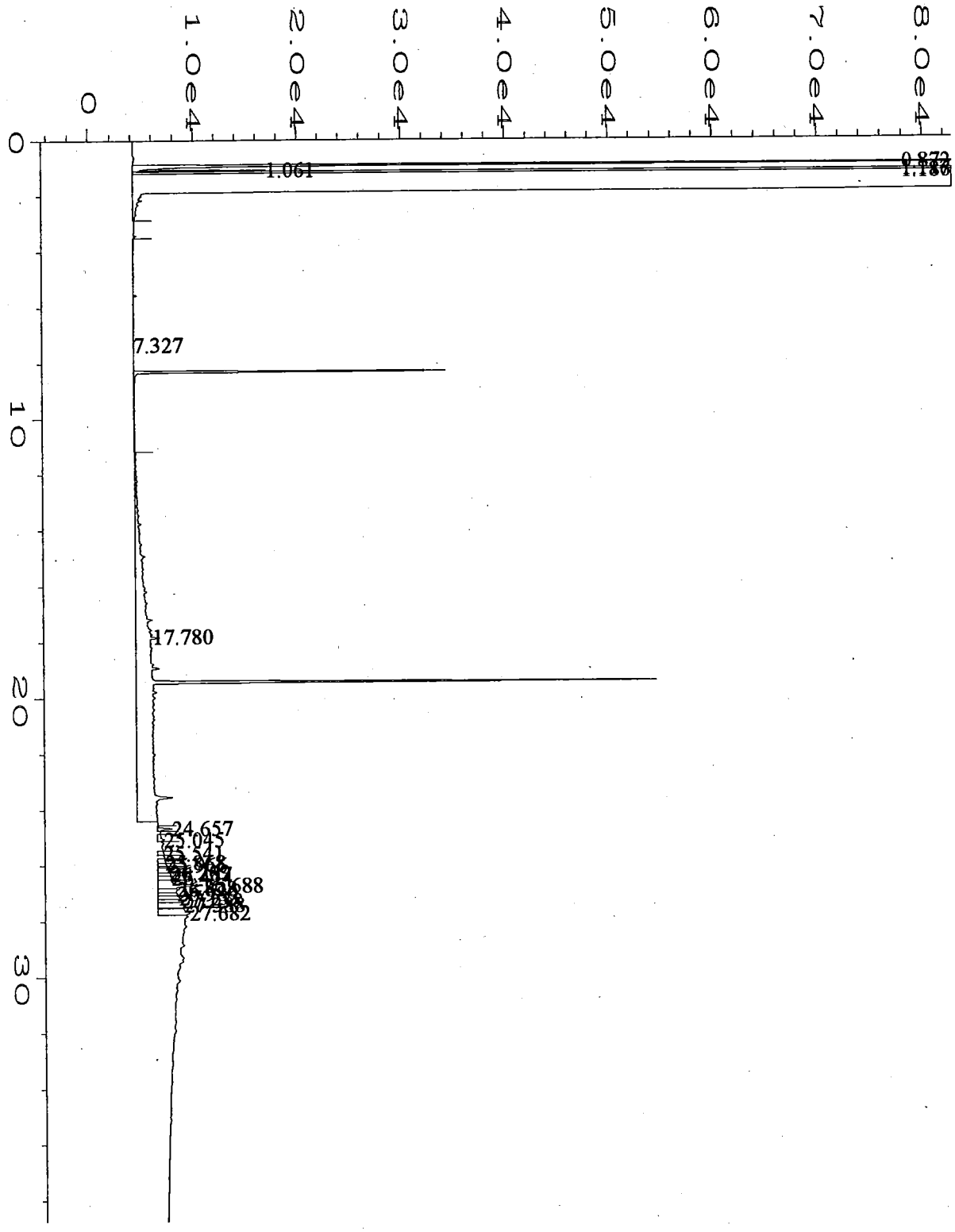


Data File Name	: C:\HPCHEM\1\DATA\051396_A\011F0201.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: HP 5890	Vial Number	: 11
Sample Name	: 56568-1	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 2
Acquired on	: 13 May 96 11:03 PM	Instrument Method	: SU0510-1.MTH
Report Created on	: 14 May 96 07:31 AM	Analysis Method	: 0510-1D.MTH
Last Recalib on	: 13 MAY 96 08:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

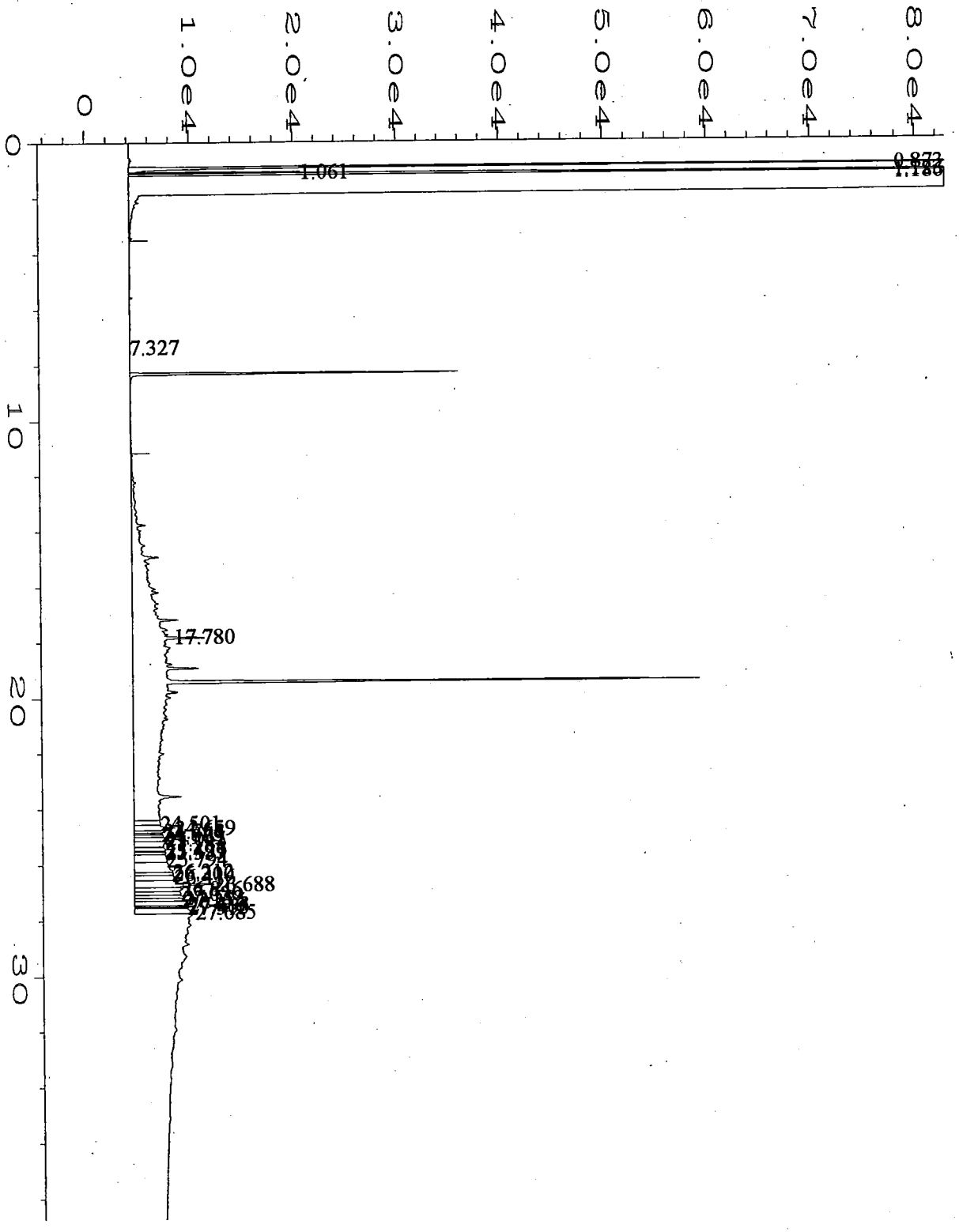


Data File Name : C:\HPCHEM\1\DATA\051396_A\012F0201.D
Operator : ELG/JV/DAS
Instrument : HP 5890
Sample Name : 56568-2
Run Time Bar Code:
Acquired on : 13 May 96 11:51 PM
Report Created on: 14 May 96 07:31 AM
Last Recalib on : 13 MAY 96 08:08 AM
Multiplier : 1

Page Number : 1
Vial Number : 12
Injection Number : 1
Sequence Line : 2
Instrument Method: SU0510-1.MTH
Analysis Method : 0510-1D.MTH
Sample Amount : 0
ISTD Amount :

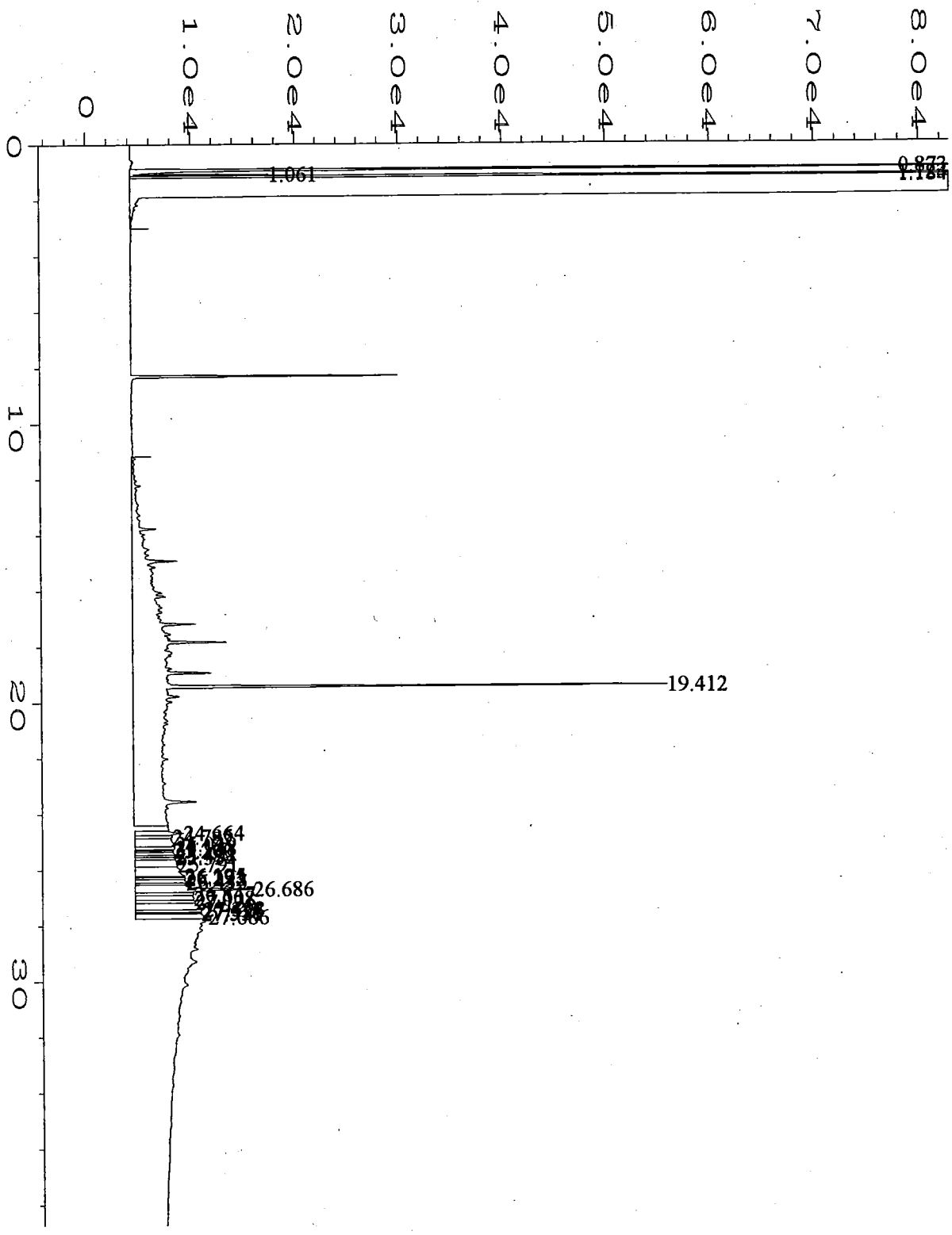


Data File Name	: C:\HPCHEM\1\DATA\051396_A\016F0201.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: HP 5890	Vial Number	: 16
Sample Name	: 56568-3	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 2
Acquired on	: 14 May 96 02:58 AM	Instrument Method	: SU0510-1.MTH
Report Created on	: 14 May 96 07:32 AM	Analysis Method	: 0510-1D.MTH
Last Recalib on	: 13 MAY 96 08:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



Data File Name : C:\HPCHEM\1\DATA\051396_A\017F0201.D
Operator : ELG/JV/DAS
Instrument : HP 5890
Sample Name : 56568-4
Run Time Bar Code:
Acquired on : 14 May 96 03:45 AM
Report Created on: 14 May 96 07:32 AM
Last Recalib on : 13 MAY 96 08:08 AM
Multiplier : 1

Page Number : 1
Vial Number : 17
Injection Number : 1
Sequence Line : 2
Instrument Method: SU0510-1.MTH
Analysis Method : 0510-1D.MTH
Sample Amount : 0
ISTD Amount :



user modified

Data File Name : C:\HPCHEM\1\DATA\051396_A\018F0201.D
Operator : ELG/JV/DAS
Instrument : HP 5890
Sample Name : 56568-5
Run Time Bar Code:
Acquired on : 14 May 96 04:32 AM
Report Created on: 14 May 96 07:47 AM
Last Recalib on : 13 MAY 96 08:08 AM
Multiplier : 1

Page Number : 1
Vial Number : 18
Injection Number : 1
Sequence Line : 2
Instrument Method: SU0510-1.MTH
Analysis Method : 0510-1D.MTH
Sample Amount : 0
ISTD Amount :

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: August 20, 1996

TO: Doug Pierce
WSDOT - Operations Olympia

PROJECT: Union Gap

REPORT NUMBER: 58733

Enclosed are the test results for ten samples received at Sound Analytical Services on August 14, 1996.

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

Analytical Narrative: The relative percent difference (RPD) between the sample and duplicate was outside the advisory Q.C. limits. The RPD between the matrix spike and matrix spike duplicate was with in the advisory limits and no action was taken.

Should there be any questions regarding this report, please contact me at (206) 922-2310.

Sincerely,

Dawn M. Werner

Dawn M. Werner
Project Manager

DMW:tm

WSDOT Co

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG1
Lab ID:	58733-01
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/19/96
% Solids	86

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	92		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	34	14	X2
Heavy Oil (>nC24-nC32)	270	70	
Ext. Diesel (>nC12-nC32)	310	70	

WSDOT Co.

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG2
Lab ID:	58733-02
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/19/96
% Solids	90.24

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

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

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	41	14	X2
Heavy Oil (>nC24-nC32)	350	68	
Ext. Diesel (>nC12-nC32)	390	68	

WSDOT Co

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG3
Lab ID:	58733-03
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/19/96
% Solids	88.19

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	58	14	X2
Heavy Oil (>nC24-nC32)	390	70	
Ext. Diesel (>nC12-nC32)	450	70	

WSDOT Co,

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG4
Lab ID:	58733-04
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/19/96
% Solids	87.1

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	85		50	150

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	41	14	X2
Heavy Oil (>nC24-nC32)	320	70	
Ext. Diesel (>nC12-nC32)	370	70	

WSDOT Co,

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG5
Lab ID:	58733-05
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/20/96
% Solids	88.31

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

			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)	37	14	X2
Heavy Oil (>nC24-nC32)	290	69	
Ext. Diesel (>nC12-nC32)	320	69	

WSDOT Co.

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG6
Lab ID:	58733-06
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/20/96
% Solids	87.75

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

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

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	29	14	X2
Heavy Oil (>nC24-nC32)	240	70	
Ext. Diesel (>nC12-nC32)	270	70	

WSDOT Ca

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG7
Lab ID:	58733-07
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/20/96
% Solids	89.34

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-Terphenyl	73		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	21	14	X2
Heavy Oil (>nC24-nC32)	96	68	
Ext. Diesel (>nC12-nC32)	120	68	

WSDOT C

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG8
Lab ID:	58733-08
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/20/96
% Solids	87.9

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-Terphenyl	79		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	29	14	X2
Heavy Oil (>nC24-nC32)	140	69	
Ext. Diesel (>nC12-nC32)	170	69	

WSDOT Co,

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG9
Lab ID:	58733-09
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/20/96
% Solids	88.93

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

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

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	51	14	X2
Heavy Oil (>nC24-nC32)	340	69	
Ext. Diesel (>nC12-nC32)	390	69	

WSDOT Co.

SOUND ANALYTICAL SERVICES, INC.

Client Name	WSDOT - Operations Olympia
Client ID:	UG10
Lab ID:	58733-10
Date Received:	8/14/96
Date Prepared:	8/19/96
Date Analyzed:	8/20/96
% Solids	88.17

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

			Recovery Limits	
Surrogate	**% Recovery**	**Flags**	**Low**	**High**
o-Terphenyl	76		50	150

Sample results are on a dry weight basis.

Analyte	**Result (mg/kg)**	**PQL**	**Flags**
Diesel (>nC12-nC24)	29	14	X2
Heavy Oil (>nC24-nC32)	250	70	
Ext. Diesel (>nC12-nC32)	280	70	

WSDOT Co

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - DI911
Date Received:	-
Date Prepared:	8/19/96
Date Analyzed:	8/19/96
% Solids	

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

Surrogate	% Recovery	Flags	Recovery Limits Low	Recovery Limits High
o-Terphenyl	95		50	150

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	13	
Heavy Oil (>nC24-nC32)	ND	63	
Ext. Diesel (>nC12-nC32)	ND	63	

WSDOT Co

SOUND ANALYTICAL SERVICES, INC.

Blank Spike Report

Lab ID:	DI911
Date Prepared:	8/19/96
Date Analyzed:	8/19/96
QC Batch ID:	DI911

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

Parameter Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	Flag
Diesel (>nC12-nC24)	0	130	130	101	
Heavy Oil (>nC24-nC32)	0	250	260	104	

WSDOT Co

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	UG10
Lab ID:	58733-10
Date Prepared:	8/19/96
Date Analyzed:	8/20/96
QC Batch ID:	DI911

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	29	37	24.0	N
Heavy Oil (>nC24-nC32)	250	360	36.0	N
Ext. Diesel (>nC12-nC32)	280	400	35.0	N

WSDOT Co.

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike/Matrix Spike Duplicate Report

Client Sample ID:	UG10
Lab ID:	58733-10
Date Prepared:	8/19/96
Date Analyzed:	8/20/96
QC Batch ID:	DI911

Extended Diesel Range by WTPH-D Modified with Silica Gel Cleanup

Compound Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	MSD Result (mg/kg)	MSD % Rec.	RPD	Flag
Diesel (>nC12-nC24)	29	141	190	114	159	93.5	20	

WSDOT Ca

SOUND ANALYTICAL SERVICES, INC.

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE 206-922-2310 • FAX 206-922-5047

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.

WSDOT Co.

SOUND ANALYTICAL SERVICES, INC.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy. East
Tacoma, Washington 98424
(206) 922-2310 • FAX (206) 922-5047

WSDOT Co

58733

UST PARAMETERS
CHAIN OF CUSTODY / REQUEST FOR LABORATORY ANALYSIS

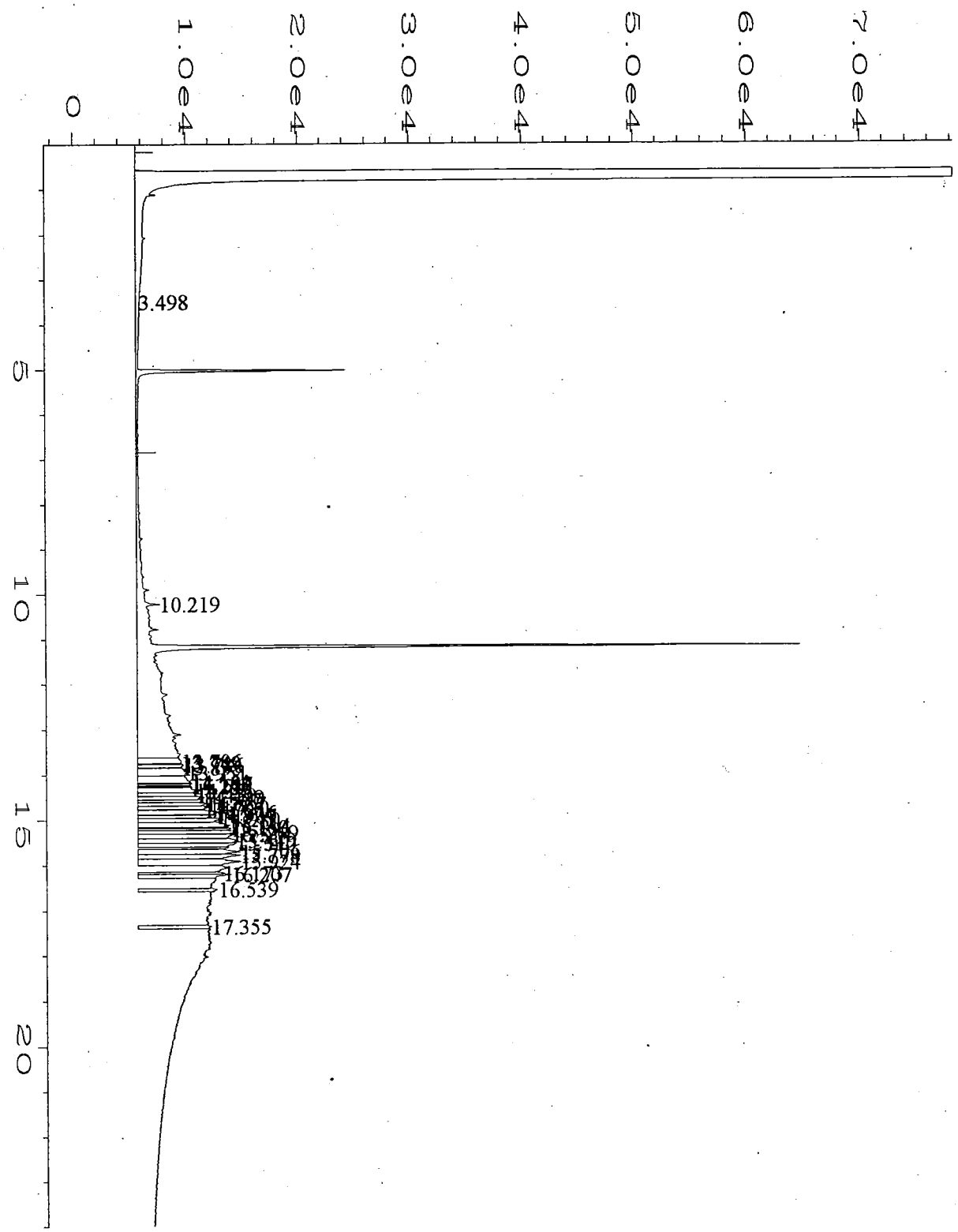
CLIENT: WSDOT Operations
PROJECT NAME: Union Gap
CONTACT: Doug Pierce
PHONE NO: 360 705 7512

ANALYSIS REQUESTED: Specify State ______

LAB #	SAMPLE I.D.	DATE	TIME	MATRIX	# of Containers	HCID	TPH-G	TPH-D	TPH 418.1	BTEX	TPH-G / BTEX	TPH 8015M	Total Lead	TCLP Lead	PCB's	PAH's	Phenols	Halogenated Volatiles EPA 601/8010	Aromatic Volatiles EPA 602/8020	Volatile Organics EPA 624/8240 GC/MS	Semi-volatiles EPA 625/8270 GC/MS	Metals	Total Halogens					CLOSURE DELIVERABLES
1	UG 1	8/12	1:10					Y																				
2	UG 2		1:15					Y																				
3	UG 3		1:20					Y																				
4	UG 4		1:25					Y																				
5	UG 5		1:30					Y																				
6	UG 6		1:35					Y																				
7	UG 7		1:40					Y																				
8	UG 8		1:45					Y																				
9	UG 9		1:50					Y																				
10	UG 10	↓	1:55					Y																				

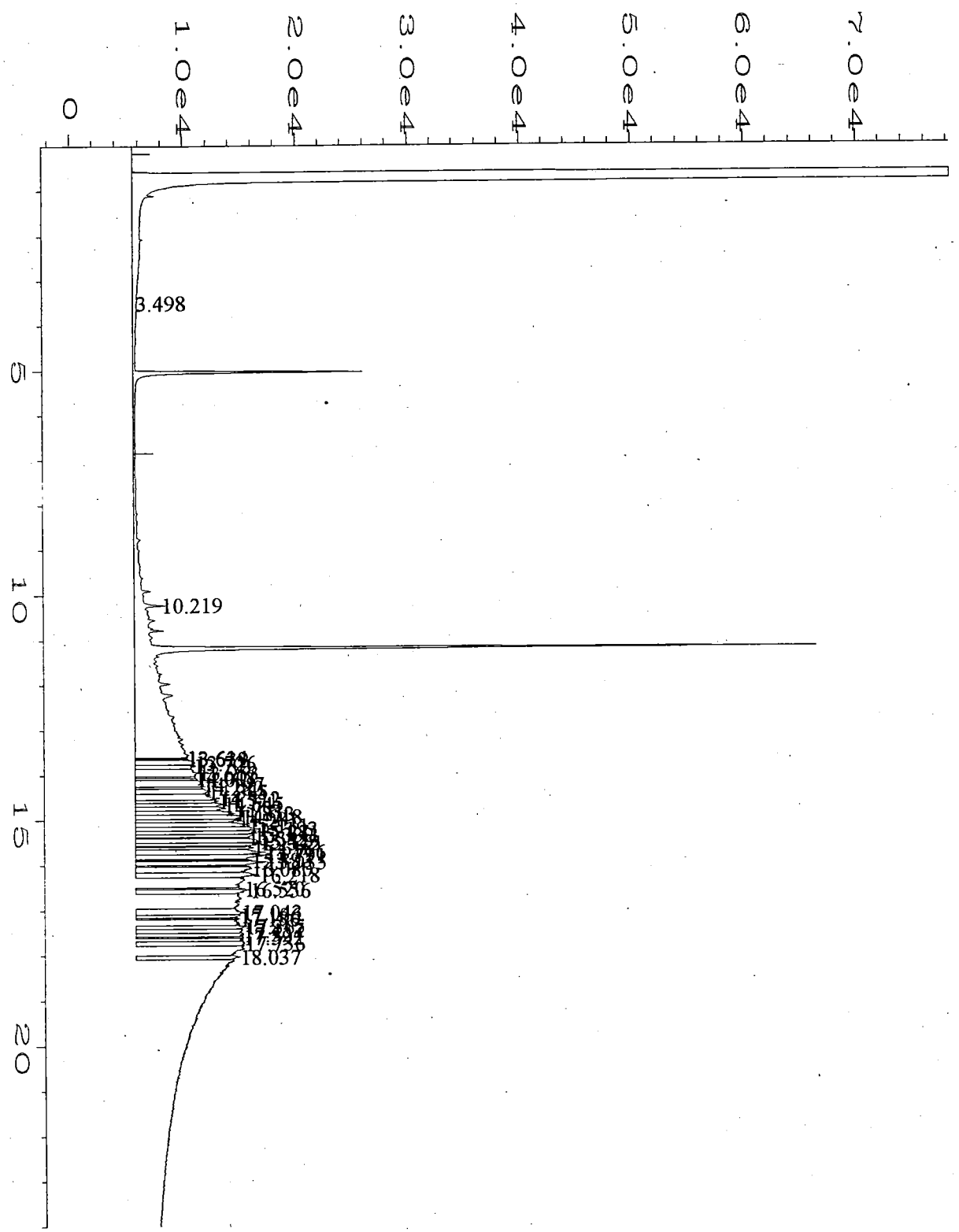
	Signature	Printed Name	Firm	Time / Date
Relinquished By	Manny Llaves	Manny Llaves	WSDOT	3:30 8/14/96
Received By	Duc Nguyen	Duc Nguyen	SAS	3:30 8/14/96
Relinquished By				
Received By				
Relinquished By				
Received By				

SPECIAL INSTRUCTIONS/COMMENTS:
Please run clean Silica Gel cleanup on Extended D
Normal turnaround



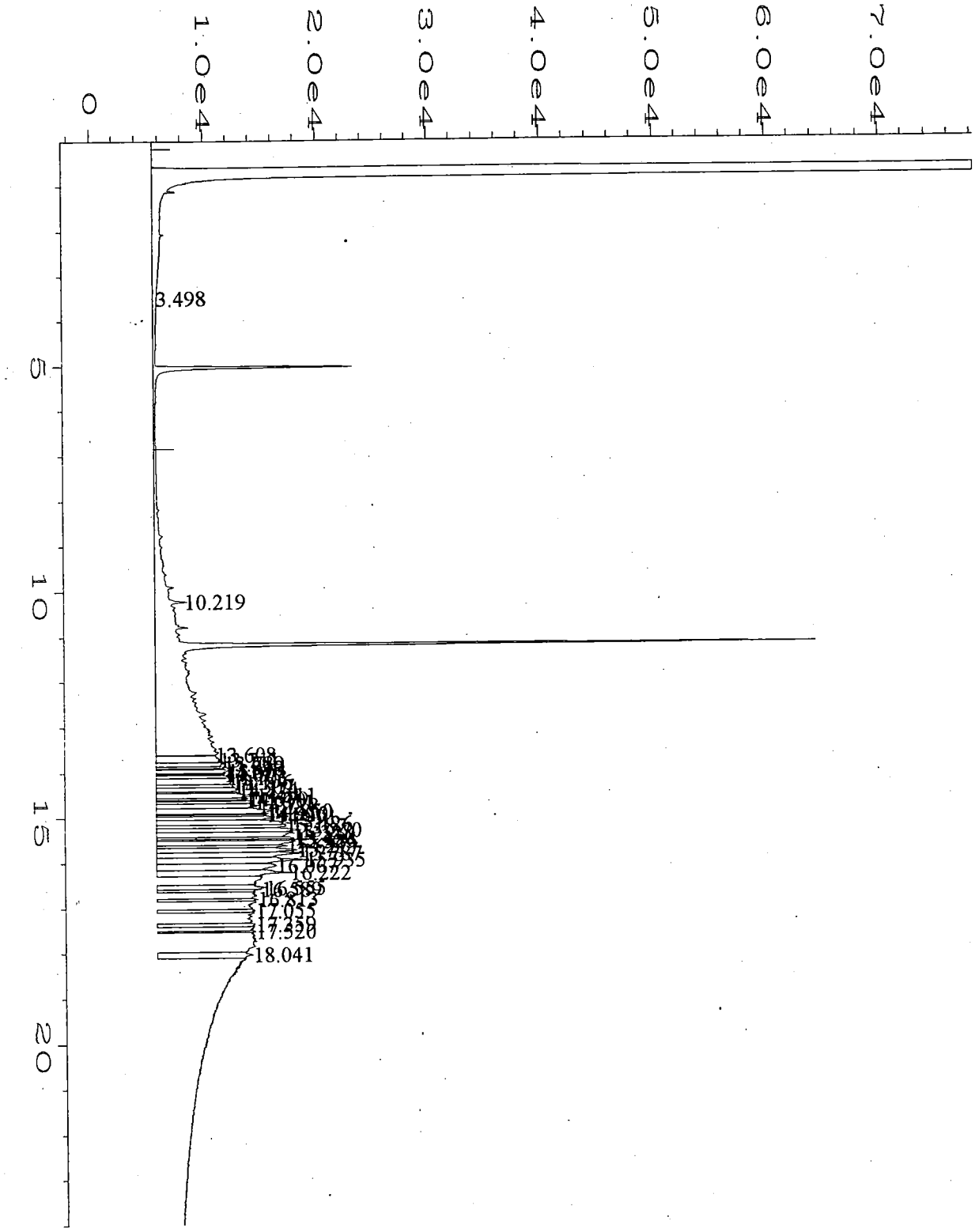
WSDOT Co

Data File Name	: C:\HPCHEM\2\DATA\081996_A\014F0101.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 14
Sample Name	: 58733-1 SiO2	Injection Number	: 1
n Time Bar Code:		Sequence Line	: 1
Acquired on	: 19 Aug 96 09:58 PM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:24 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



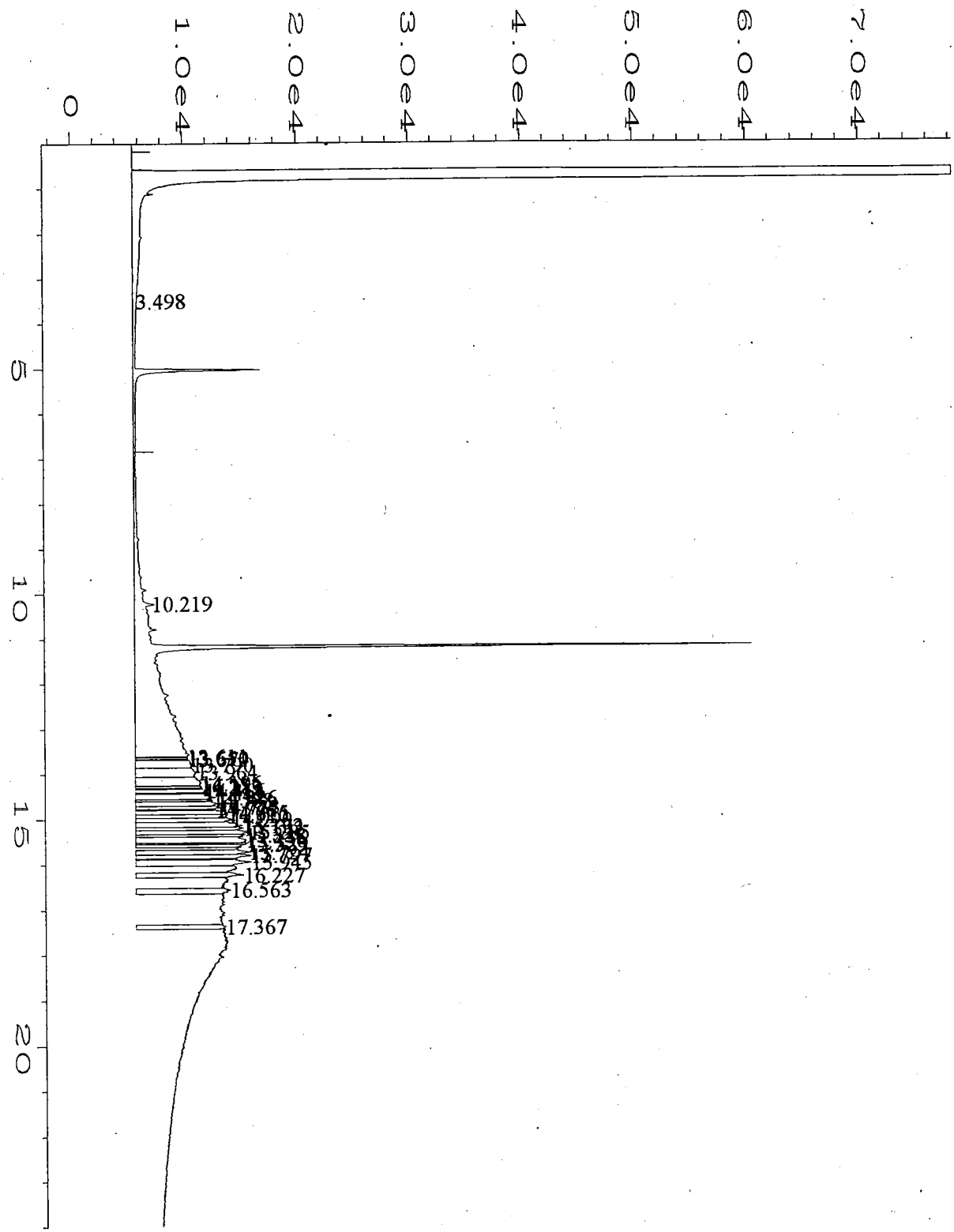
WSDOT Co

Data File Name	: C:\HPCHEM\2\DATA\081996_A\015F0101.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 15
Sample Name	: 58733-2 SiO2	Injection Number	: 1
In Time Bar Code:		Sequence Line	: 1
Acquired on	: 19 Aug 96 10:29 PM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:24 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



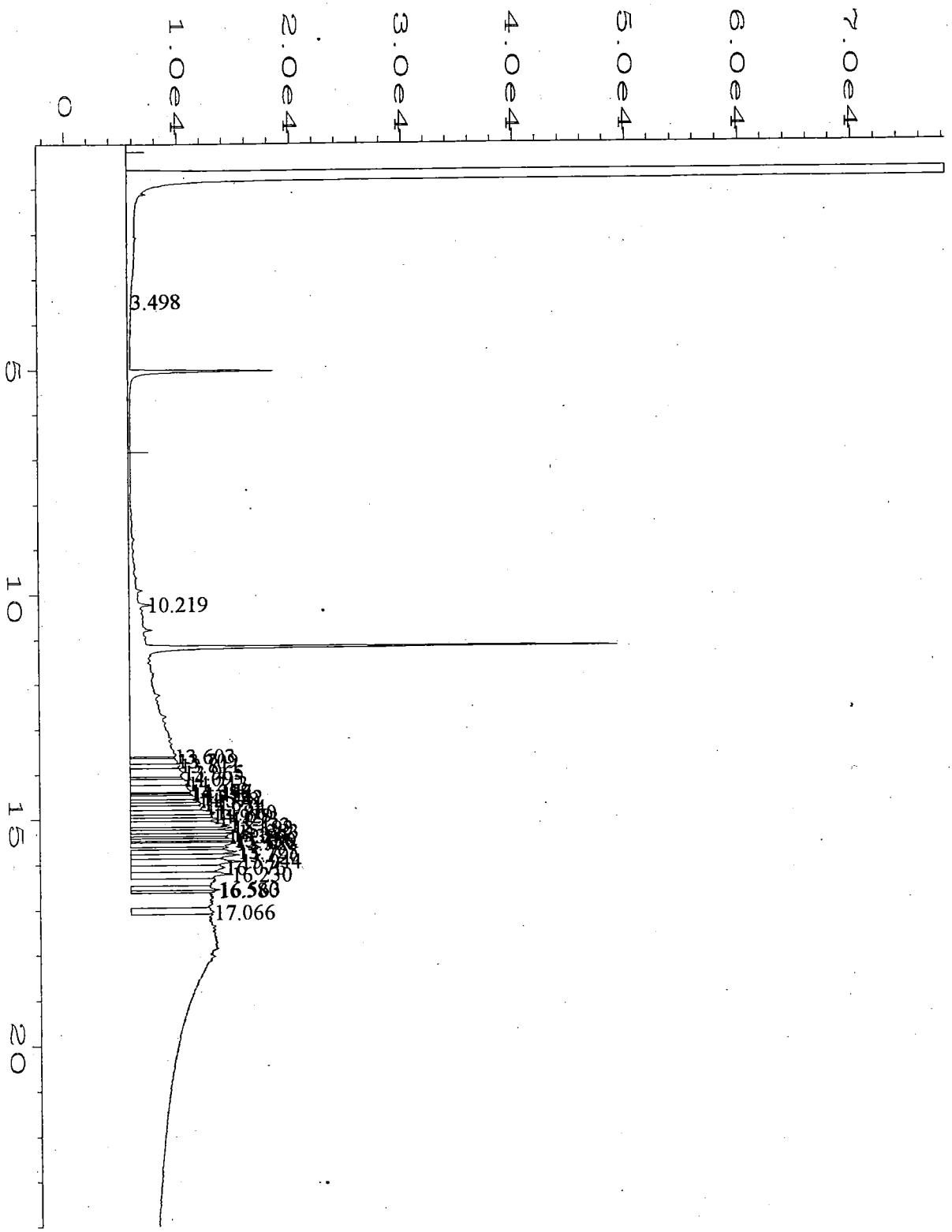
WSDOT Co

Data File Name	: C:\HPCHEM\2\DATA\081996_A\016F0101.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 16
Sample Name	: 58733-3 SiO2	Injection Number	: 1
n Time Bar Code:		Sequence Line	: 1
Acquired on	: 19 Aug 96 11:00 PM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:25 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WSDOT C

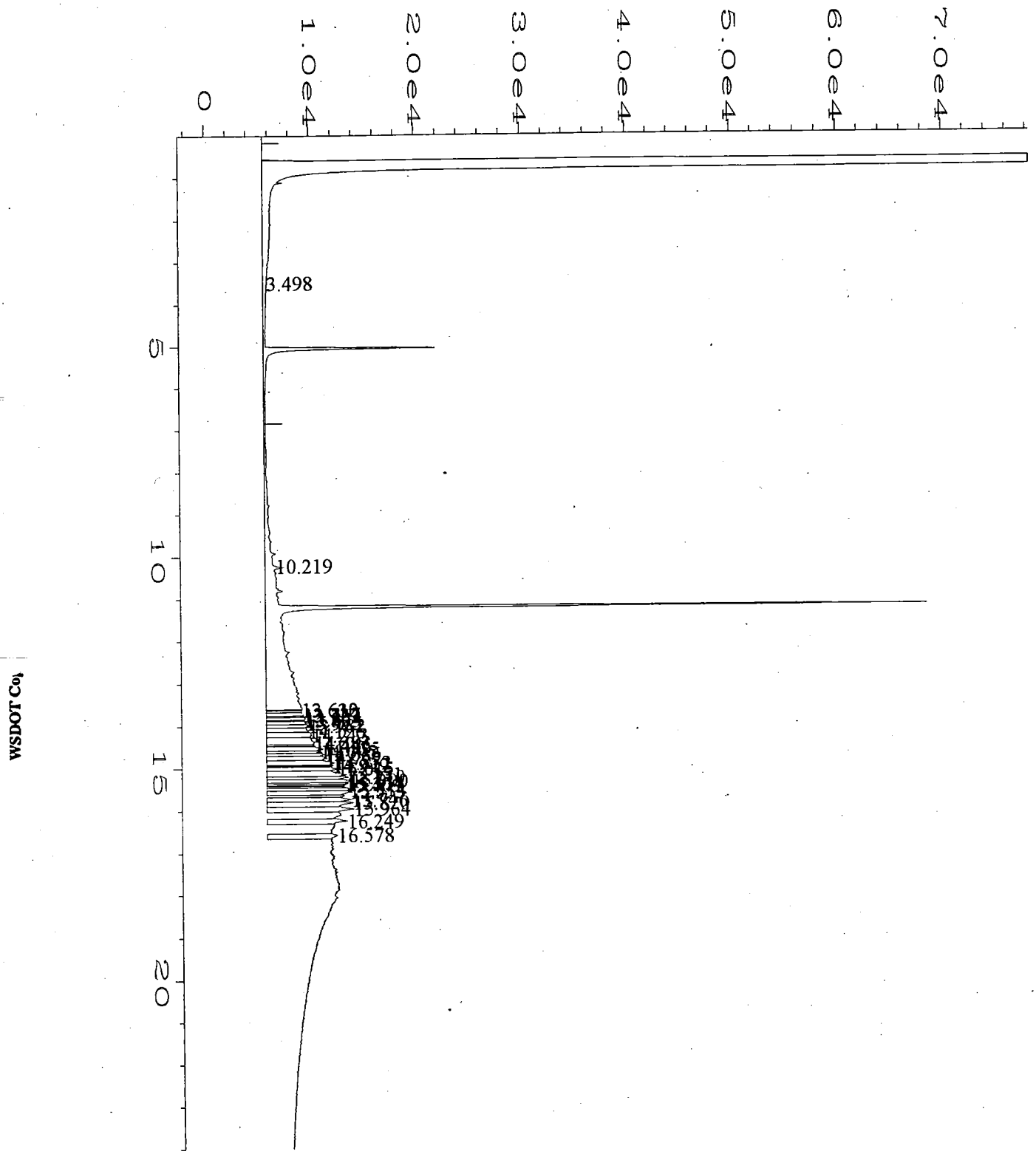
Data File Name	: C:\HPCHEM\2\DATA\081996_A\017F0101.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 17
Sample Name	: 58733-4 SiO2	Injection Number	: 1
n Time Bar Code:		Sequence Line	: 1
Acquired on	: 19 Aug 96 11:31 PM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:25 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WSDOT C

Data File Name : C:\HPCHEM\2\DATA\081996_A\018F0101.D
Operator : ELG/JV/DAS
Instrument : VARIAN 34
Sample Name : 58733-5 SiO2
n Time Bar Code:
Acquired on : 20 Aug 96 00:02 AM
Report Created on: 20 Aug 96 07:25 AM
Last Recalib on : 16 AUG 96 10:08 AM
Multiplier : 1

Page Number : 1
Vial Number : 18
Injection Number : 1
Sequence Line : 1
Instrument Method: SR0815-V.MTH
Analysis Method : 0815-WD.MTH
Sample Amount : 0
ISTD Amount :



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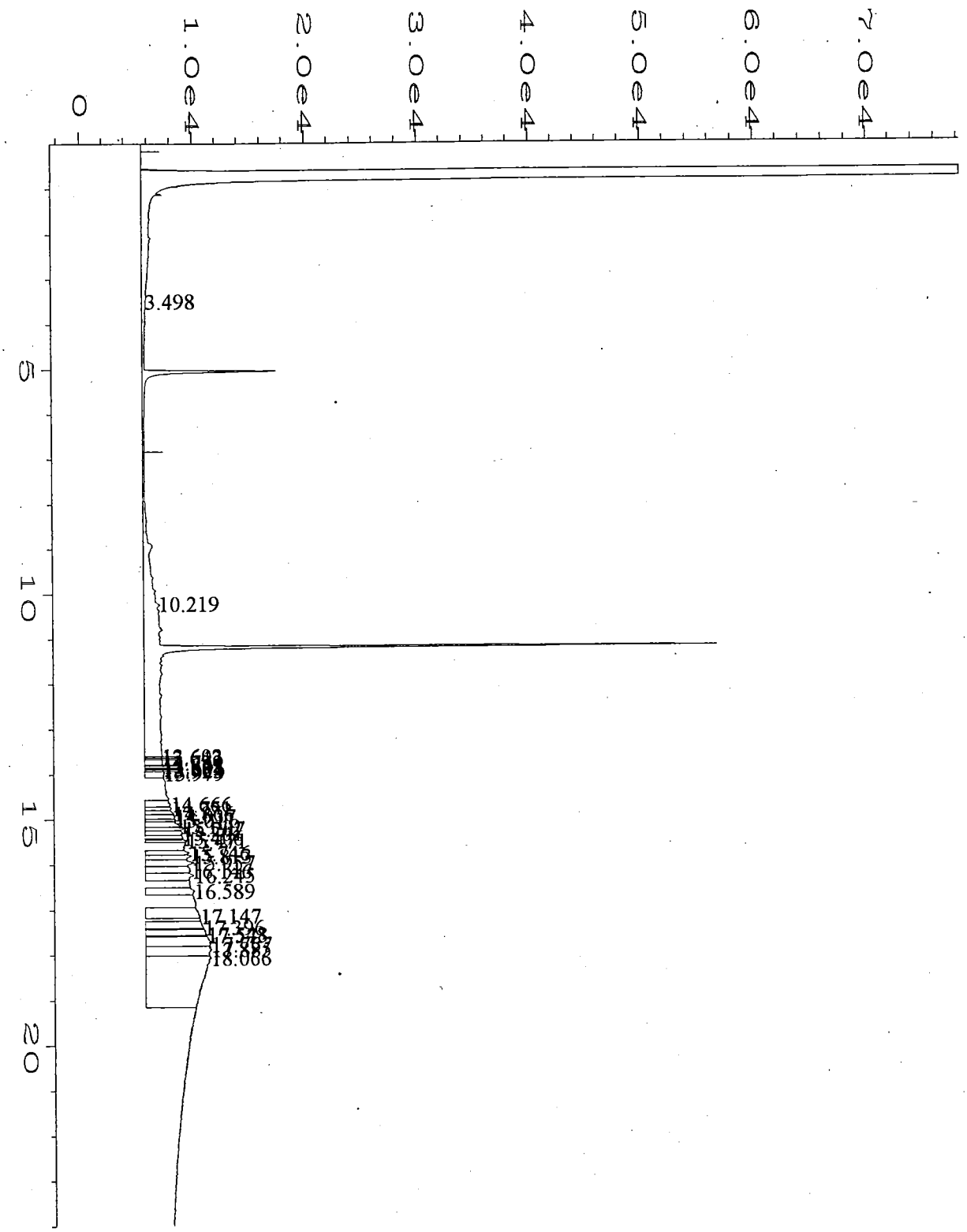
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 19
Sample Name	: 58733-6 SiO2	Injection Number	: 1
In Time Bar Code:		Sequence Line	: 1
Acquired on	: 20 Aug 96 00:34 AM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:25 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WSDOT Cop.

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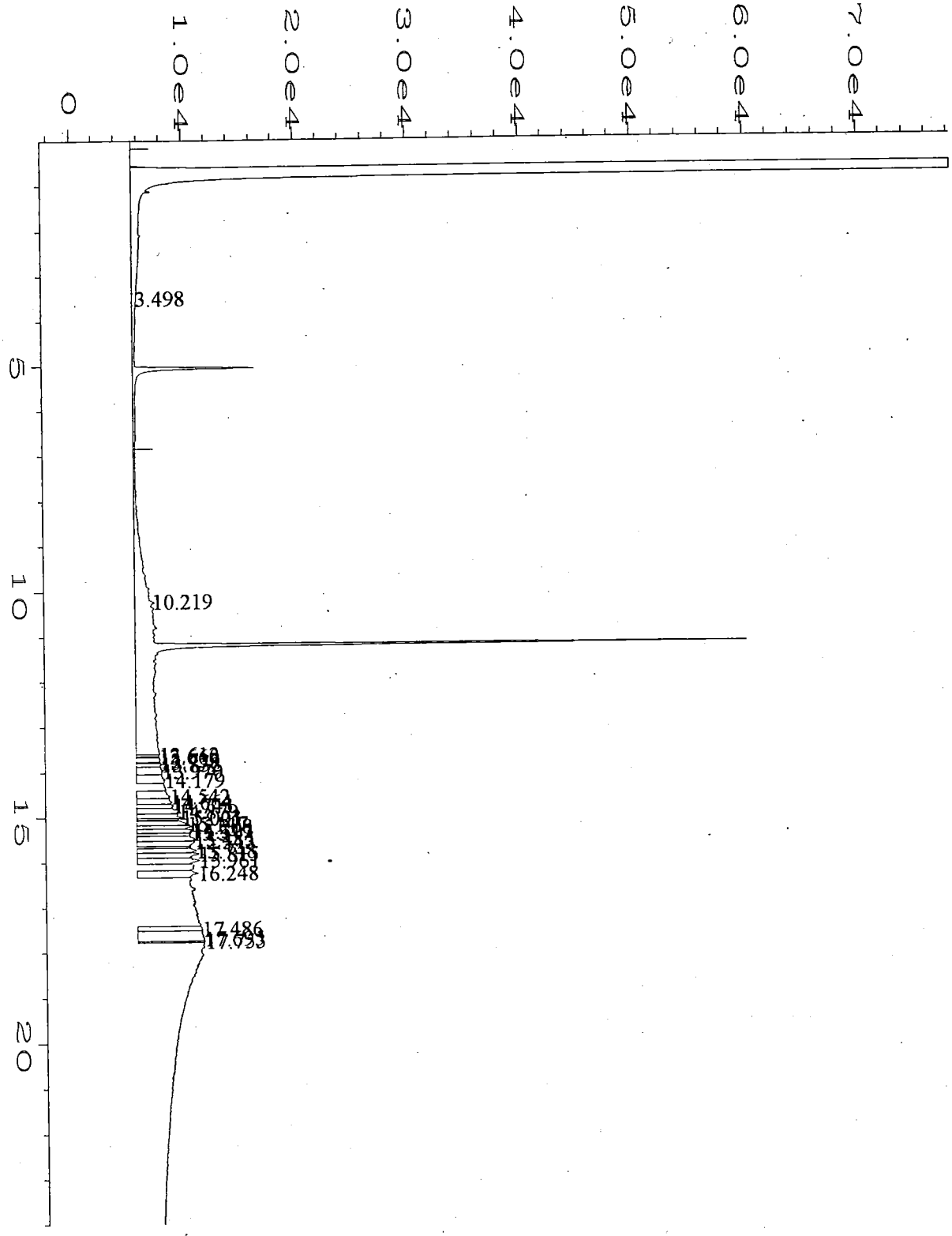
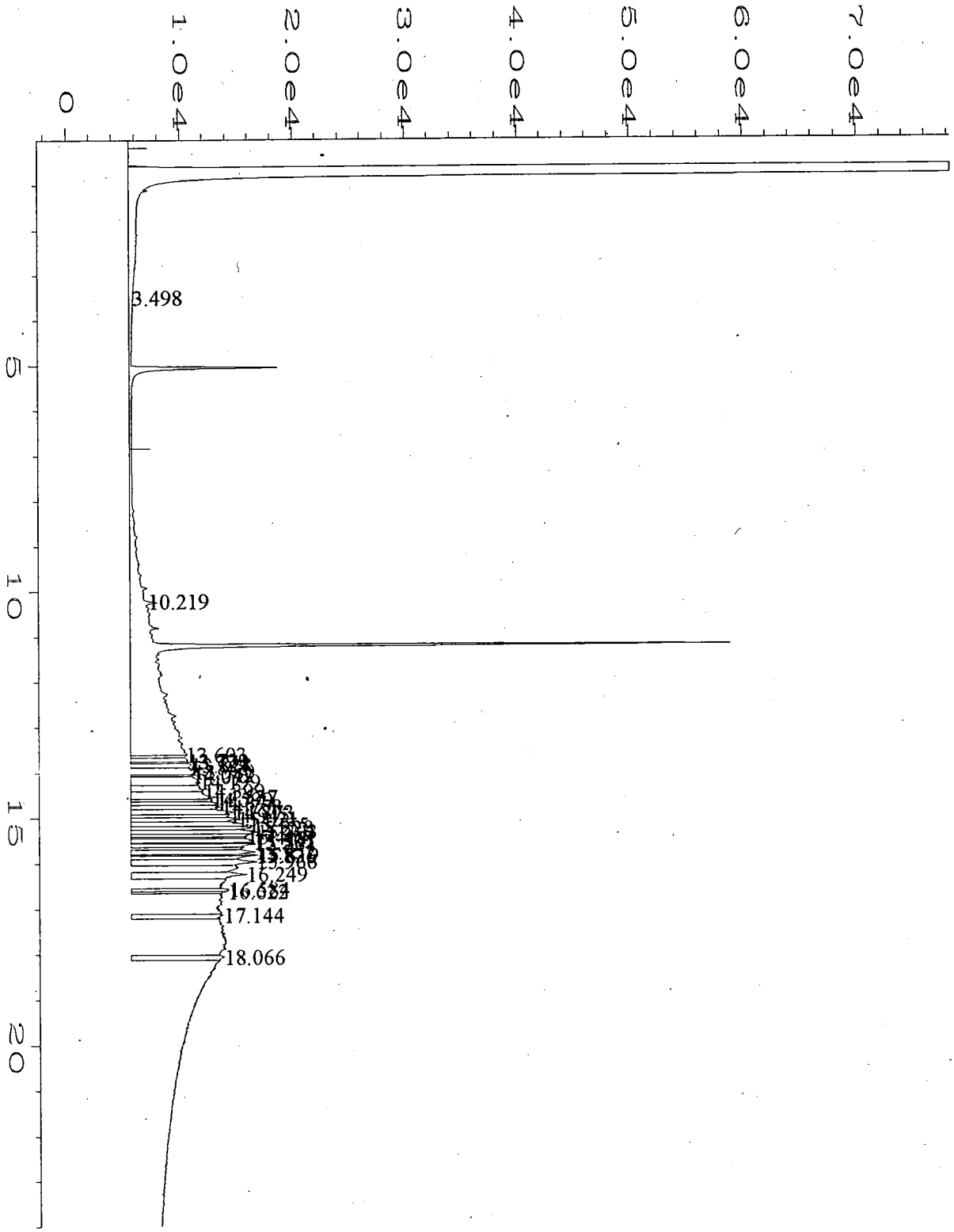
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 20
Sample Name	: 58733-7 SiO2	Injection Number	: 1
In Time Bar Code:		Sequence Line	: 1
Acquired on	: 20 Aug 96 01:05 AM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:26 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



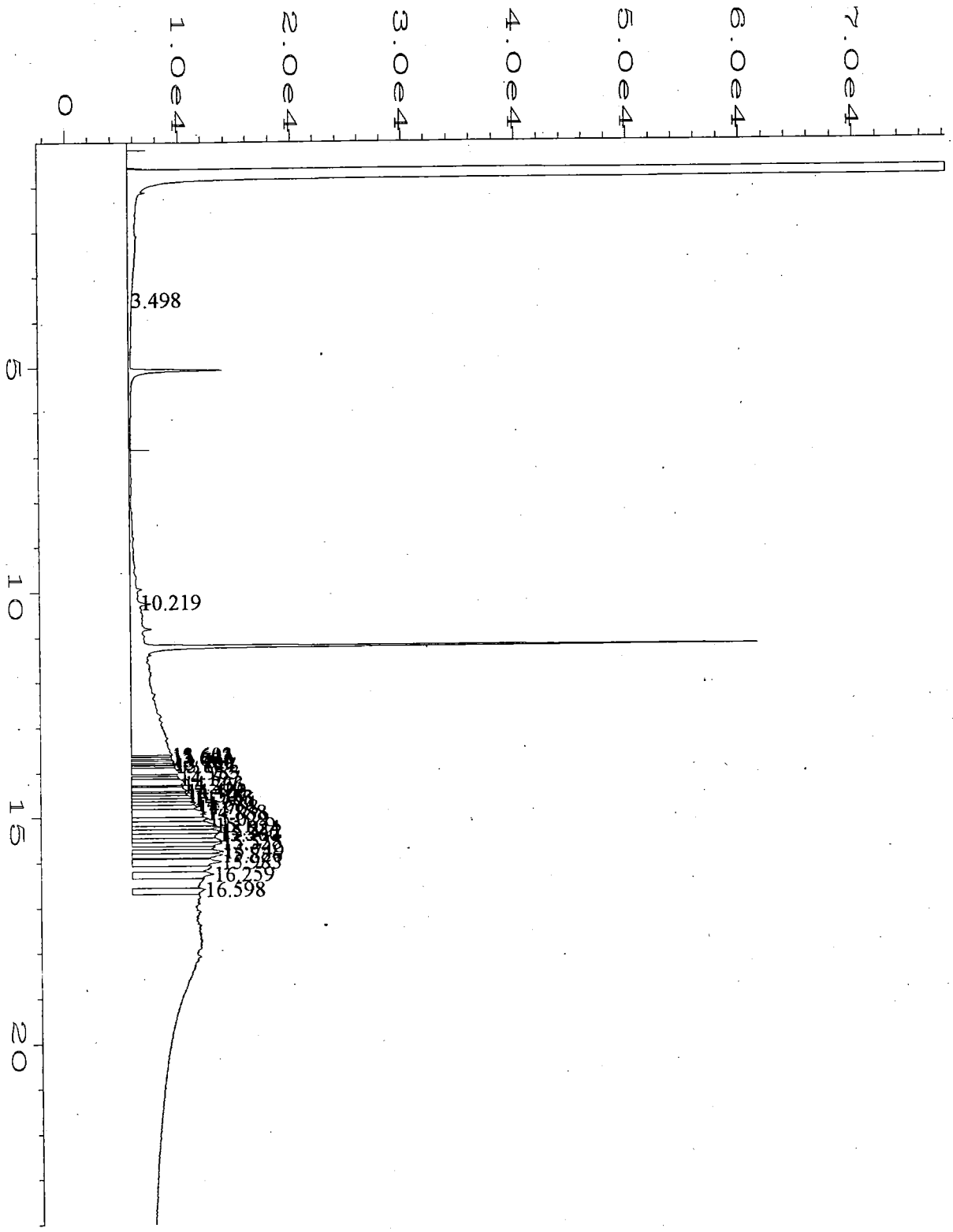
WSDOT Co

Data File Name	: C:\HPCHEM\2\DATA\081996_A\021F0101.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 21
Sample Name	: 58733-8 SiO2	Injection Number	: 1
n Time Bar Code:		Sequence Line	: 1
Acquired on	: 20 Aug 96 01:36 AM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:26 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WSDOT Co

Data File Name	: C:\HPCHEM\2\DATA\081996_A\022F0101.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 22
Sample Name	: 58733-9 SiO2	Injection Number	: 1
In Time Bar Code:		Sequence Line	: 1
Acquired on	: 20 Aug 96 02:07 AM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:26 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WSDOT Co

Data File Name	: C:\HPCHEM\2\DATA\081996_A\026F0101.D		
Operator	: ELG/JV/DAS	Page Number	: 1
Instrument	: VARIAN 34	Vial Number	: 26
Sample Name	: 58733-10 SiO2	Injection Number	: 1
ın Time Bar Code:		Sequence Line	: 1
Acquired on	: 20 Aug 96 04:11 AM	Instrument Method	: SR0815-V.MTH
Report Created on	: 20 Aug 96 07:27 AM	Analysis Method	: 0815-WD.MTH
Last Recalib on	: 16 AUG 96 10:08 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

APPENDIX D

WSDOT LETTER TO YAKIMA HEALTH DISTRICT

September 26, 1996

Mr. Art McQuen
Yakima County Health Department
105 North First Street
Yakima, Washington 98901

Dear Mr McQuen

This is to request the Yakima County Health Department's approval of the Washington Department of Transportation's (WSDOT) proposal to ulilize treated petroleum contaminated soil for roadside maintenance. The approximate 2000 cubic yards of dirt was excavated from WSDOT's Union Gap maintenance facility the Summer of 1994. You will recall that this material was generated during the remediation of a dry well at the facility.

WSDOT has treated the material twice with hydrogen peroxide and three times utilizing bioremediation. After each treatment the petroleum levels declined but we are unable to acheive further petroleum degredation through bioremediation. The level of TPH has decreased to a range of 250ppm-350ppm; (analytical results attached).

Our proposal is to utilize this material, over time, for roadside maintenance, including shoulder rebuilding, median crossover construction and slope reduction in medians. None of the reuse areas would be into or ajacent to watercourses.

We believe long chain hydrocarbon (heavy oil) does not present a risk to the environment or the public. All uses would nevertheless be in low public contact areas. Further treatment of this material is not practical nor economical.

Please advise of your position on this matter and feel free to contact me at 360-705-7812 in additional information is needed.

Sincerely,

DOUG PIERCE
Environmental Manager for Operations

WSDOT Copy

APPENDIX E

YAKIMA HEALTH DISTRICT APPROVAL LETTER

CENTRAL OFFICE — 575-4040 — 104 North First Street — Yakima, Wash. 98901
SUNNYSIDE OFFICE — 837-3411 — 1319 Saul Road — P.O. Box 821 — Sunnyside, Wash. 98944

YAKIMA HEALTH DISTRICT
EST. 1911
PREVENTION IS OUR BUSINESS

October 01, 1996

Doug Pierce
Washington State Department of Transportation
Transportation Building
P.O. Box 47300
Olympia, Wa. 98504-7300

Ref. Union Gap Maintenance Facility: Petroleum Contaminated Soil

WSDOT Copy

Mr. Pierce,

This office has reviewed the post treatment test data on the above mentioned project or projects. Based on the data submitted it has been determined that the soil meets the criteria for Class 3 soil. The soil may be removed from the site and used as indicated in your request for removal.

If you have any questions regarding this letter please contact me.

Sincerely,

Art McEwen
EHS II