

# Report

## Second Semi-Annual 1999 Groundwater Monitoring Report

Union Pacific Railroad  
Motor Freight Railyard  
1750 Ferro Street  
Oakland, California

PREPARED FOR:

Port of Oakland  
530 Water Street  
Oakland, California 94607

November 1999

PREPARED BY:

Camp Dresser & McKee Inc./F.E. Jordan  
Joint Association  
100 Pringle Avenue, Suite 300  
Walnut Creek, California 94596

# Second Semi-Annual 1999 Groundwater Monitoring Report

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Motor Freight Railyard  
1750 Ferro Street  
Oakland, California

PORT OF OAKLAND  
ENVIRONMENTAL DIVISION

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# CDM Camp Dresser & McKee Inc.

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November 5, 1999

Mr. John Prall  
Port of Oakland  
Environmental Health and Safety Compliance Department  
530 Water Street  
Oakland, CA 94607

Subject: *Second Semi-Annual 1999 Groundwater Monitoring Report  
Union Pacific Railroad  
1750 Ferro Street, Oakland, California  
CDM Project No. 10605-25291-GW.UPMF*

Dear Mr. Prall:

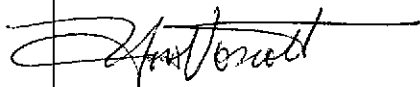
The Camp Dresser & McKee Inc./F.E. Jordan Joint Association (CDM/FEJ) is pleased present the enclosed First Semi-Annual 1999 Groundwater Monitoring Report for the Union Pacific Railroad Motor Freight (UPMF) Railyard located at 1750 Ferro Street in Oakland, California. As required by a written directive from the Alameda County Department of Environmental Health, this report presents the findings of the May and August 1999 sampling events conducted at the railyard.

The results of the second semi-annual monitoring showed that the dissolved BTEX and TPH concentrations in the monitored wells were consistent with historic concentration ranges. Methyl tertiary-butyl ether (MTBE) concentrations, analyzed only in August 1999, were all below laboratory detection limit. The groundwater flow direction was to the south to southeast during the two monitoring events at the railyard and was consistent with previous groundwater monitoring events.

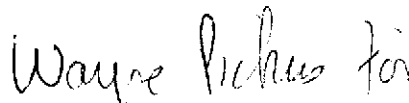
Please contact the undersign at (925) 933-2900 if you have any questions or comments regarding the report.

Very truly yours,

CAMP DRESSER & MCKEE INC.



Hoa Voscott  
Task Manager



Michael G. Gray, C.E.G.  
Senior Project Manager

Enclosure

# Executive Summary

This second semi-annual 1999 groundwater monitoring report presents the findings of the May and August 1999 sampling events conducted at the Union Pacific Railroad Motor Freight (UPMF) railyard at 1750 Ferro Street in Oakland, California. The report was prepared by the Camp Dresser & McKee Inc./F.E. Jordan Joint Association (CDM/FEJ) for the Port of Oakland (Port) in accordance with the directive issued by the Alameda County Department of Environmental Health, Hazardous Materials Division (ACDEH) to Union Pacific Railroad (UPRR) in 1993.

On December 24, 1998, the Port assumed responsibility for the groundwater monitoring at the UPMF and UPRR trailer-on-flat-car (TOFC) railyards. On behalf of the Port, CDM/FEJ has performed the groundwater monitoring at the UPMF railyard since February 1999. Work performed at the UPMF and TOFC railyards was previously performed by Environmental Decision Group, Inc. (formerly Laidlaw Consulting Services) and their subcontractor, Burns & McDonnell, on behalf of UPRR. Groundwater monitoring results for the TOFC railyard will be presented in a separate report.

Presently, seven of the ten groundwater wells are sampled under the monitoring program at the UPMF railyard to determine the lateral extent of petroleum hydrocarbons in the groundwater. Regular quarterly groundwater monitoring, started in January 1993, was performed to monitor the potential migration of the contaminants in the groundwater. On June 1998, ACDEH approved the reporting frequency to be decreased from quarterly to semi-annually (April and October).

On May 4, 1999 and August 12, 1999, groundwater samples were collected from four quarterly and seven semi-annually monitoring wells, respectively. The groundwater samples were analyzed for total petroleum hydrocarbons as diesel (TPH-D) and gasoline (TPH-G) and for purgeable aromatic hydrocarbons. In addition, methyl tertiary-butyl ether (MTBE) was analyzed during the August 1999 monitoring event.

Concentrations of petroleum hydrocarbons and purgeable aromatics in the groundwater samples collected from the monitoring wells were comparable to those obtained from previous sampling events. However in most of the wells, TPH-D concentrations continue to be an order of magnitude less than from samples collected during and before 1998. MTBE concentrations, analyzed during the August 1999 sampling event, were all below laboratory detection limit. Groundwater flow beneath the UPMF railyard was south to southeast towards Oakland Inner Harbor and is consistent with historic groundwater sampling data.

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# Section 1

## Introduction

This report presents the results of the semi-annual groundwater monitoring program conducted at the Union Pacific Railroad Motor Freight (UPMF) railyard at 1750 Ferro Street in Oakland, California (Figure 1). The monitoring program covers the period from April 1, 1999 to September 30, 1999 and consists of the May and August 1999 groundwater monitoring events. The purpose of the program is to evaluate the changes in the distribution of petroleum hydrocarbons in groundwater.

The report was prepared by the Camp Dresser & McKee Inc./F.E. Jordan Joint Association (CDM/FEJ) on behalf of the Port of Oakland (Port). Groundwater monitoring at UPMF is being performed in response to an April 29, 1993, Alameda County Environmental Health Services (ACEHS) request for Union Pacific Railroad (UPRR) to begin a quarterly monitoring program at the UPMF facility. Previous site activities by UPRR have resulted in groundwater contamination by petroleum and aromatic hydrocarbon compounds. In a letter dated June 1, 1998, the ACEHS approved the reporting frequency to be decreased from quarterly to semi-annually (April and October).

On December 24, 1998, the Port assumed responsibility for the groundwater monitoring at the UPMF and UPRR trailer-on-flat-car (TOFC) railyards and for operation, maintenance, and monitoring (OM&M) of the individual groundwater treatment systems at each site. On behalf of the Port, CDM/FEJ has performed the groundwater monitoring at the UPMF railyard (site) since February 1999. Work performed at the UPMF and TOFC railyards was previously performed by Environmental Decision Group, Inc. (formerly Laidlaw Consulting Services) and their subcontractor, Burns & McDonnell, on behalf of UPRR. Groundwater monitoring results for the TOFC railyard will be presented in a separate report.

This report presents the results of fluid-level measurements and analytical results for groundwater samples collected at UPMF by CDM/FEJ in May and August 1999. The groundwater monitoring program is directed towards understanding the hydraulic flow direction and the changes in the concentration of dissolved petroleum hydrocarbons at the UPMF railyard. This report includes a discussion of the background information about the site, field and analytical results for the semi-annual period covering April 1, 1999 through December 30, 1999 and conclusions.

### 1.1 Background

The site is located on the southeastern portion of TOFC railyard, which is adjacent to the Oakland Inner Harbor or Oakland Estuary (Figures 1-1 and 1-2). The area surrounding the site is used for heavy to light commerce. Residential areas are located approximately one-half mile north of the site and across the Oakland Estuary one-half mile south of the site.

Five underground storage tanks (USTs) were removed from the UPMF railyard between 1987 and 1990. As a result of the tank removal activities, a site assessment was performed in two phases to define the extent of petroleum hydrocarbons in the soil and groundwater (Laidlaw, 1993). For brevity, the light non-aqueous phase of these hydrocarbons is referred to as "product."

Groundwater monitoring has been conducted at the site since 1993. A skimming system that removes product only has operated periodically in recovery well RW since May 2, 1994. Due to the limited volume of product recovered and the amount of time the skimmer was inoperable, a request was made in the First Quarter 1998 Monitoring Report dated April 28, 1998, to decrease the frequency of fluid-level measurements in recovery well RW from monthly to quarterly and to discontinue product skimming. This request was approved by ACEHS on July 21, 1998.

The refueling portion of the TOFC railyard, approximately 700 feet northwest and upgradient of the UPMF railyard, is currently undergoing groundwater remediation for recovery of non-aqueous phase liquid as diesel. The extent of contamination at the refueling area was defined during previous investigations (Laidlaw, 1991). On the basis of these investigations and subsequent monitoring, petroleum hydrocarbons from the refueling area do not extend to the UPMF railyard. Therefore, the TOFC railyard is a separate project and will be discussed in a future report, due for presentation to the ACEHS in January 2000. However, the water level data collected from the TOFC railyard in conjunction with the UPMF site are used to contour the local groundwater elevations and are depicted in Figures 2-1 and 2-2.

This report consists of four sections. This Section 1, *Introduction*, provides the regulatory framework for activities at the UPMF site and background information. Section 2, *Completed Activities*, documents the results of the fluid level measurements and analytical tests. Section 3, *Summary of Findings*, presents a summary of the results of the most recent monitoring events. Section 4, *References*, provides the references used in preparation of this report. Following Section 4, the Figures, Tables, and Appendices A and B are presented. Appendix A presents the monitoring well fluid level logs and purge forms and Appendix B presents the analytical reports and chain of custody records.



## Section 2

# Completed Activities

Since submission of the First Semi-Annual 1999 Groundwater Monitoring Report (October 1, 1998 to March 31, 1999), dated April 29, 1999, to the Port by CDM/FEJ, the major activities completed at the site was groundwater monitoring on May 4 and August 12, 1999. Work performed during the monitoring events followed the standard operating procedures previously approved by the ACEHS (Laidlaw, 1994). The scope of work during this semi-annual monitoring period covers April 1, 1999 through September 30, 1999 and consists of the following:

- Measuring fluid-levels in most of the UPMF and TOFC groundwater monitoring wells quarterly in May and August 1999;
- Semi-annual purging and sampling of all groundwater monitoring wells where product is not observed in May 1999. Quarterly purging and sampling of monitoring wells OKUS-W2, OKUS-W3, APL/UP-W1, and APL/UP-W2 in August 1999;
- Analyzing groundwater samples for total petroleum hydrocarbons and volatile aromatic constituents quarterly in May and August 1999 and for methyl tertiary-butyl ether (MTBE) in August 1999; and
- Determining the local groundwater flow direction and hydraulic gradient based on the potentiometric surface elevations.

### 2.1 Field Activities and Procedures

#### *May 1999 Monitoring Event*

On May 4, 1999, CDM/FEJ measured fluid levels (combined water and product) in eight of the ten monitoring wells at the site, except for wells OKUS-W5 and OKUS-W6. These wells contained a product with high viscosity which prohibit the accurate measurement of the fluid levels. In addition, fluid levels were measured from the 17 wells located at the TOFC railyard. CDM/FEJ's fluid level measurements for the UPMF and TOFC railyards are presented in Tables 2-1 and 2-2, respectively.

On May 4, 1999, CDM/FEJ purged and collected groundwater samples from four of the ten wells that are sampled on a quarterly basis at the site. In addition, a blind duplicate sample was collected from well OKUS-W3. This sample was given the identification name of OKUS-W13. Copies of CDM/FEJ's monitoring well purge and sampling forms for the four wells are presented in Appendix A.

For the four monitoring wells at the site, CDM/FEJ purged a minimum of three well volumes from each well using a new, polyethylene disposable bailer. Groundwater samples were collected with the disposable bailer following the removal of three well volumes of water. Samples were contained in the appropriate laboratory supplied bottles. Specifically, samples were contained in three 40-milliliter glass vials preserved with hydrochloric acid (with no headspace) and one 1-liter amber glass bottle. All samples were transported in a cooler chilled with ice and submitted under chain-of-custody protocol to Curtis & Tompkins, Ltd., a state-certified analytical laboratory, in Berkeley, California.

During this monitoring event, groundwater samples were analyzed for the following:

- TPH-D with silica gel cleanup by EPA Method 8015 Modified;
- TPH-G by EPA Method 8015 Modified; and
- BTEX by EPA Method 8020.

### *August 1999 Monitoring Event*

On August 12, 1999, CDM/FEJ measured fluid levels in eight of the ten monitoring wells at the site. In addition, fluid levels were measured from the 17 wells located at the TOFC railyard. CDM/FEJ's fluid level measurements for the UPMF and TOFC railyards are presented in Tables 2-1 and 2-2, respectively.

On August 12, 1999, CDM/FEJ purged and collected groundwater samples from seven of the ten wells at the site. In addition, a blind duplicate sample was collected from well OKUS-W1. This samples was given the identification name of OKUS-W10. CDM/FEJ's monitoring well purge and sampling forms for the seven wells are presented in Appendix A.

Monitoring wells OKUS-W5, OKUS-W6, and RW contained product or sheen and were not sampled during this monitoring event. Specifically, well OKUS-W5 has not been sampled since August 1994, well OKUS-W6 has not been sampled since November 1993, and well RW has never been sampled.

For the seven monitoring wells at the site, CDM/FEJ purged a minimum of three well volumes from each well using a new, polyethylene disposable bailer. Groundwater samples were collected with the disposable bailer following the removal of three well volumes of water. Samples were contained in the appropriate laboratory supplied bottles. Specifically, samples were contained in three 40-milliliter glass vials preserved with hydrochloric acid (with no headspace) and one 1-liter amber glass bottle. All samples were transported in a cooler chilled with ice and submitted under chain-of-custody protocol to Curtis & Tompkins, Ltd.

During this monitoring event, groundwater samples were analyzed for the following:

- TPH-D with silica gel cleanup by EPA Method 8015 Modified;
- TPH-G by EPA Method 8015 Modified;
- BTEX by EPA Method 8020; and
- MTBE by EPA Method 8020.

In accordance with the ACEHS letter to the Port, dated May 28, 1999, MTBE testing was performed during the August 1999 sampling event. According to ACEHS, "the State Water Resources Control Board will not allow closure for a petroleum underground storage tank site unless the site has been tested for MTBE".

## 2.2 Results of Fluid Level Measurements

During the May and August 1999 monitoring events, fluid levels were measured from eight wells at the site. Fluid elevations were calculated by subtracting the depth to fluid/groundwater from the elevation of the top of casing at each location. Groundwater elevations in monitoring wells containing product were corrected by multiplying the specific gravity of (0.84) of diesel by the product thickness and adding this value to the water elevation measurement in the well. The cumulative summaries of fluid level measurement data, including free product thickness, for the UPMF and TOFC railyards are presented in Tables 1 and 2, respectively.

### *May 1999 Potentiometric Surface*

A groundwater potentiometric surface map, created with measurements collected from groundwater monitoring wells at the site and from the adjacent TOFC railyard on May 4, 1998, is presented as Figure 3. In the region of the UPMF railyard, the potentiometric surface results indicate that groundwater flow generally is to the south to southeast. Hydraulic gradient slopes uniformly across the site but steepens notably as groundwater approaches the shoreline near well APL/UP-W2. Groundwater depressions are present from pumping in recovery wells on the TOFC railyard (see Figure 2-1).

Fluid-level measurement data showed that monitoring wells OKUS-W5 and OKUS-W6 continued to contain product. An accurate determination of the product thickness and groundwater level in OKUS-W5 and OKUS-W6 was not possible due to the high viscosity of the product, which prohibited the measurement of product thickness.

### *August 1999 Potentiometric Surface*

A potentiometric surface map, created with measurements collected from groundwater monitoring wells at the site and from the adjacent TOFC railyard on August 12, 1999, is presented as Figure 2-2. In the region of the UPMF railyard, the potentiometric surface results indicate that groundwater flow is generally to the south to southeast. Pumping activity was discontinued on the TOFC railyard (due to system shutdown) during the fluid level measurements, flattening the hydraulic gradient (compare Figure 2-1 to Figure 2-2).

Fluid-level measurement data showed that monitoring wells OKUS-W5 and OKUS-W6 continued to contain product. For well RW, an oil sheen was observed.

## 2.3 Results of Groundwater Sampling

During the May 1999 monitoring event, groundwater samples were collected from monitoring wells OKUS-W2, OKUS-W3, APL/UP-W1, and APL/UP-W2. During the August 1999 monitoring event, samples were collected from wells OKUS-W1, OKUS-W2, OKUS-W3, OKUS-W7, OKUS-W8, APL/UP-W1, and APL/UP-W2. The cumulative summary of analytical data is presented in Table 2-3. Copies of the analytical reports and chain of custody forms for both sampling events are included in Appendix B.

### *May 1999 Monitoring Event*

Dissolved TPH-D, representing diesel fuel, was detected in groundwater samples collected from the four monitoring wells sampled during the May 1999 monitoring event. TPH-D concentrations ranged from 53 micrograms/liter ( $\mu\text{g}/\text{l}$ ) in well APL/UP-W2 to 1,700  $\mu\text{g}/\text{l}$  in well OKUS-W2. TPH-D concentrations were consistent with concentrations from recent monitoring events.

Dissolved TPH-G was detected in samples collected from the four monitoring wells. TPH-G concentrations ranged from 8 µg/l in well APL/UP-W2 to 6,00 µg/l in wells OKUS-W2 and OKUS-W3. TPH-G concentrations were also consistent with concentrations from previous monitoring events. Total BTEX concentrations ranged from 19.7 µg/l in well APL/UP-W2 to 4,020 µg/l in well OKUS-W3.

In summary, well OKUS-W2 contained the highest dissolved concentrations of TPH-D. Wells OKUS-W2 and OKUS-W3 contained the highest TPH-G concentrations. Well OKUS-W3 contained the highest dissolved concentrations of BTEX. The dissolved TPH-D, TPH-G, and BTEX concentrations detected during the May 1999 monitoring events are presented as Figure 2-3.

### *August 1999 Monitoring Event*

Dissolved TPH-D was detected in groundwater samples collected from four of the seven monitoring wells sampled during the August 1999 monitoring event. TPH-D concentrations ranged from below 50 µg/l in wells OKUS-W1, OKUS-W8, and APL/UP-W1 to 1,600 µg/l in well OKUS-W3. TPH-D concentrations were fairly consistent with concentrations from the previous (May 1999) monitoring event.

Dissolved TPH-G was detected in samples collected from all seven monitoring wells. TPH-G concentrations ranged from 52 µg/l in wells OKUS-W7 to 4,800 µg/l in well OKUS-W3. TPH-G concentrations were also consistent with concentrations from previous monitoring events. Total BTEX concentrations ranged from 1.2 µg/l in well OKUS-W7 to 300 µg/l in well OKUS-W2. MTBE concentrations were below laboratory detection limit for the samples.

Overall, well OKUS-W3 contained the highest dissolved concentrations of TPH-D and TPH-G. Well OKUS-W2 contained the highest dissolved concentrations of BTEX. The dissolved TPH-D, TPH-G, and BTEX concentrations detected during August 1999 monitoring events are presented as Figure 2-4.

## 2.4 Field and Laboratory QA/QC

During the May 1999 sampling event, a blind duplicate groundwater sample (OKUS-W13) was collected at well OKUS-W3 and analyzed for TPH-G and BTEX to measure laboratory repeatability. The duplicate sample showed good correlation with its partner sample, particularly for BTEX. In addition, a trip blank sample was collected during the field activities and analyzed for TPH-G and BTEX. Laboratory results for the trip blank sample, collected on May 4, 1999, were all below laboratory detection limits. This indicates that sample handling procedures were adequate.

During the August 1999 sampling event, a blind duplicate groundwater sample (OKUS-W10) was collected at well OKUS-W1 and analyzed for TPH-D, TPH-G and BTEX measure laboratory repeatability. The duplicate sample showed good correlation with its partner sample for all the constituents.

According to the analytical reports, all samples were analyzed within the constituents' respective holding times. Based on the analytical reports' case narratives, no analytical exceedances from the laboratory Quality Assurance/Quality Control (QA/QC) procedures were noted by the laboratory.

## Section 3

# Summary and Conclusions

Based upon the results of the previous and most recent monitoring events in May and August 1999, presented below are the summary of findings and CDM/FEJ's conclusions:

- The groundwater flow direction was to the south to southeast during the two monitoring events. This flow direction is consistent with previous groundwater monitoring events. Groundwater flow and gradient are clearly influenced by groundwater pumping activities of the remedial system on the TOFC site, except during the August 1999 sampling event when the system was non-operational.
- The dissolved BTEX and TPH concentrations in all wells were consistent with historic concentration ranges. TPH-D concentrations continue to be an order of magnitude less than from samples collected in and before 1998.
- MTBE concentrations were below laboratory detection limit for the August 1999 samples. No MTBE analysis was conducted during the May 1999 sampling event.

## Section 4 References

ACEHS. 1993. Letter to Union Pacific Railroad. Alameda County Environmental Health Services (ACEHS). April 29, 1993.

ACEHS. 1998. Letter to Union Pacific Railroad. ACEHS. June 1, 1998.

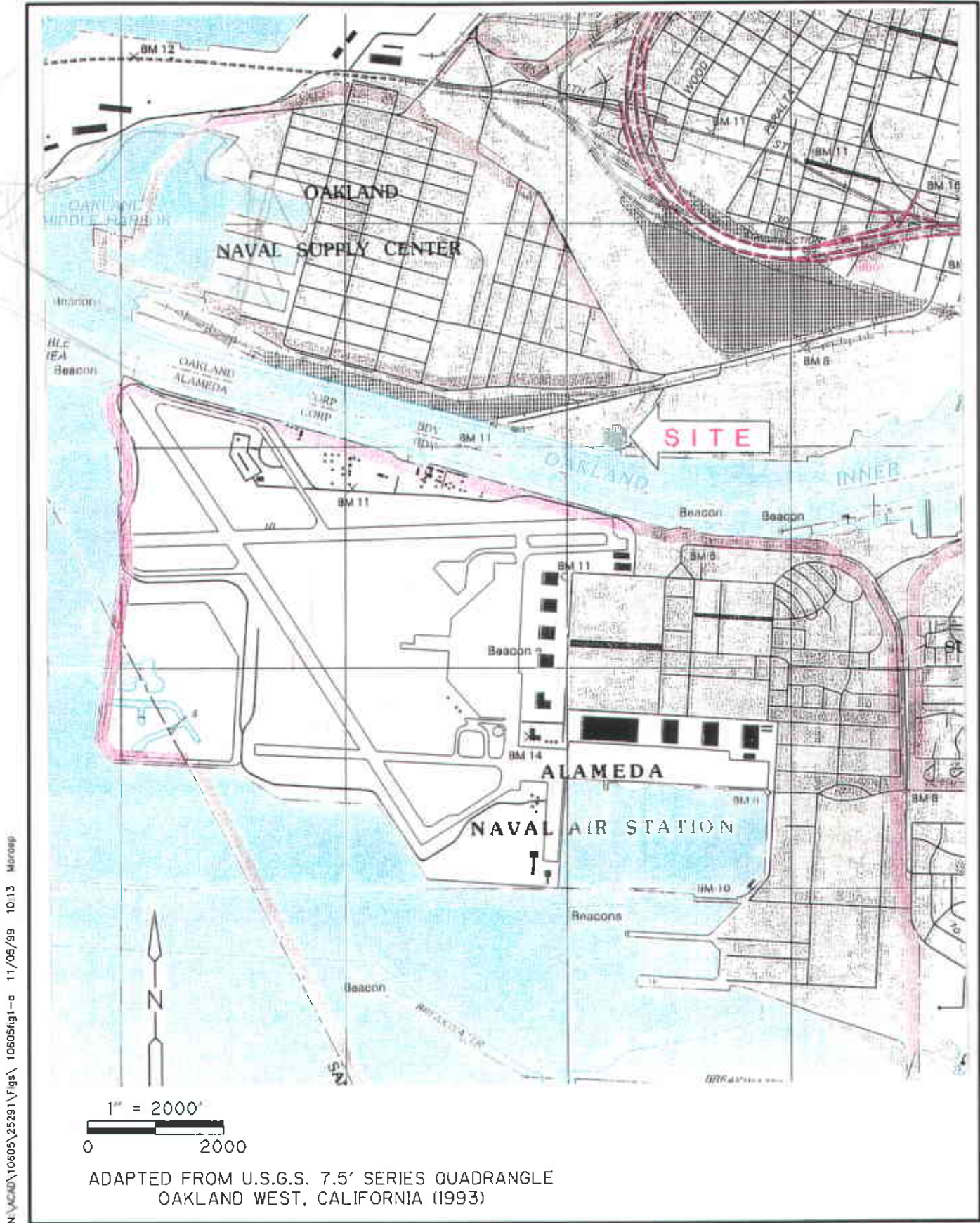
ACEHS. 1998. Letter to Union Pacific Railroad. ACEHS. July 21, 1998.

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Laidlaw. 1991. Hydrocarbon Investigation and Remediation Design. Laidlaw Environmental Services (Laidlaw). June 10, 1991.

Laidlaw. 1993. Phase II Site Assessment Report. Laidlaw. October 1993.

Laidlaw. 1994. Fourth Quarter 1993 Monitoring Event. Laidlaw. October 1993.



**Figure 1-1**  
**Site Location Map**

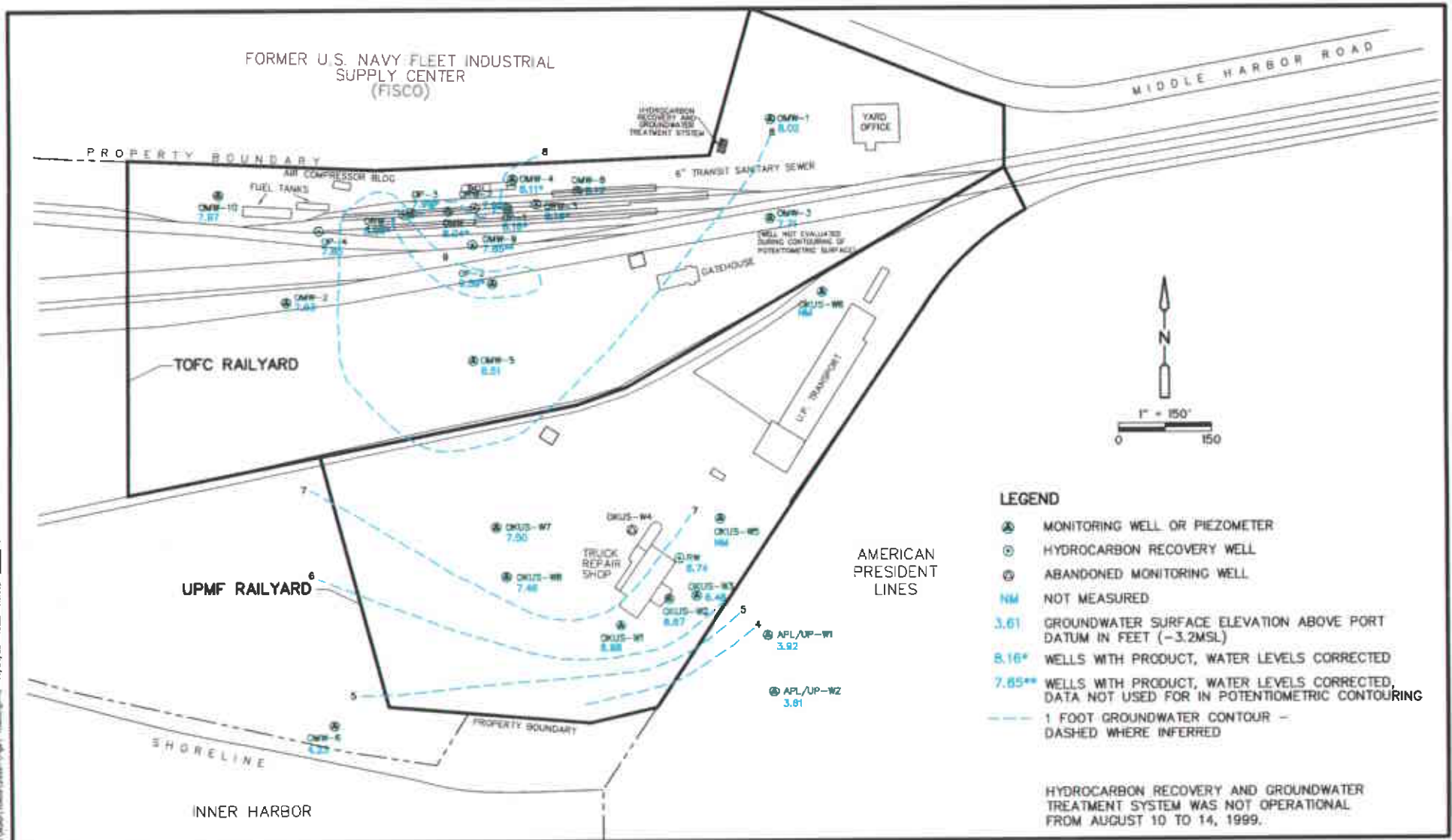
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Groundwater Monitoring Report - UPMF  
Port of Oakland, California









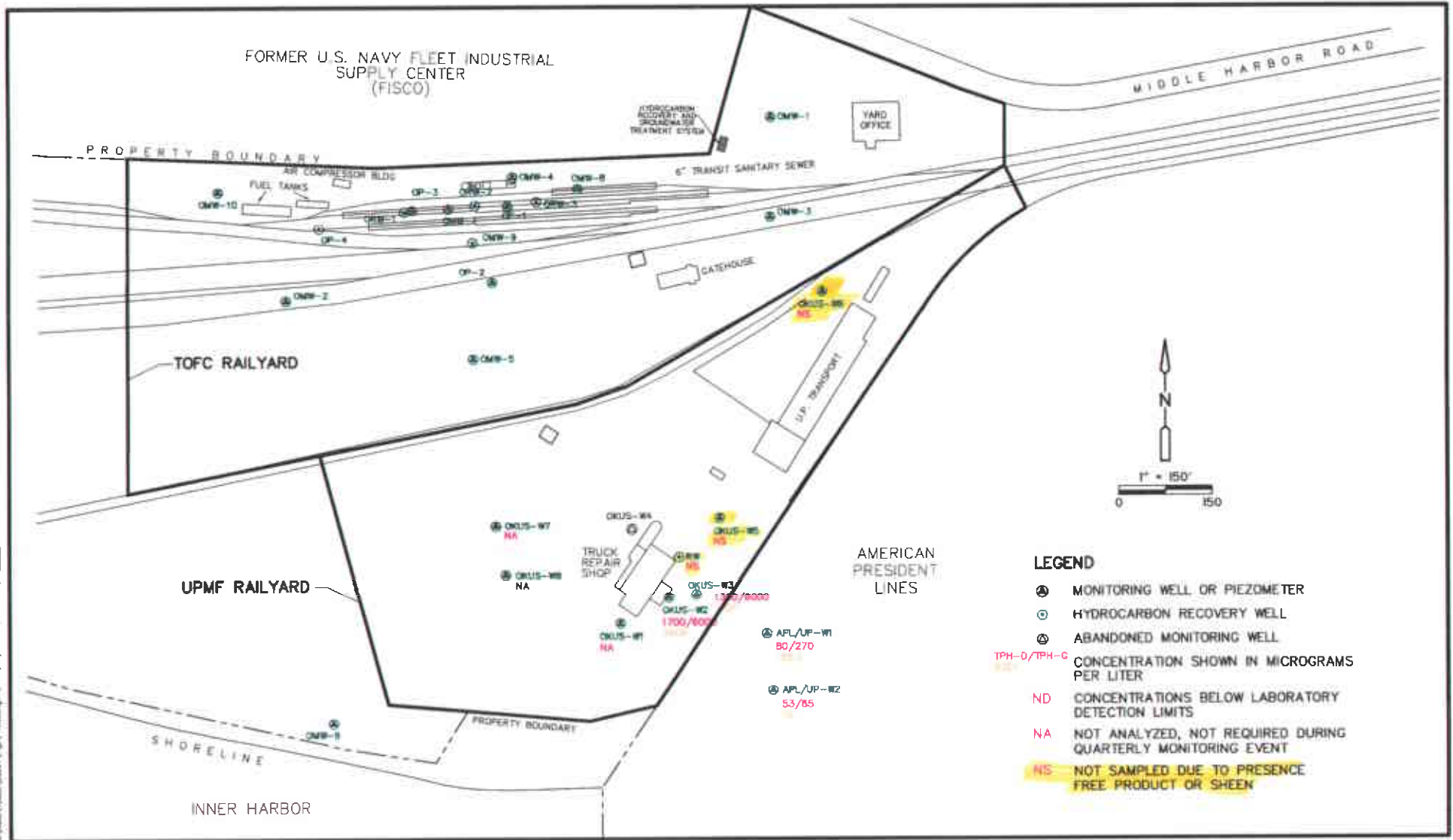


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**Figure 2-2**

**Groundwater Potentiometric Surface Map - August 12, 1999**

Second Semi-Annual 1999  
 Groundwater Monitoring Report - UPMF  
 Port of Oakland, California

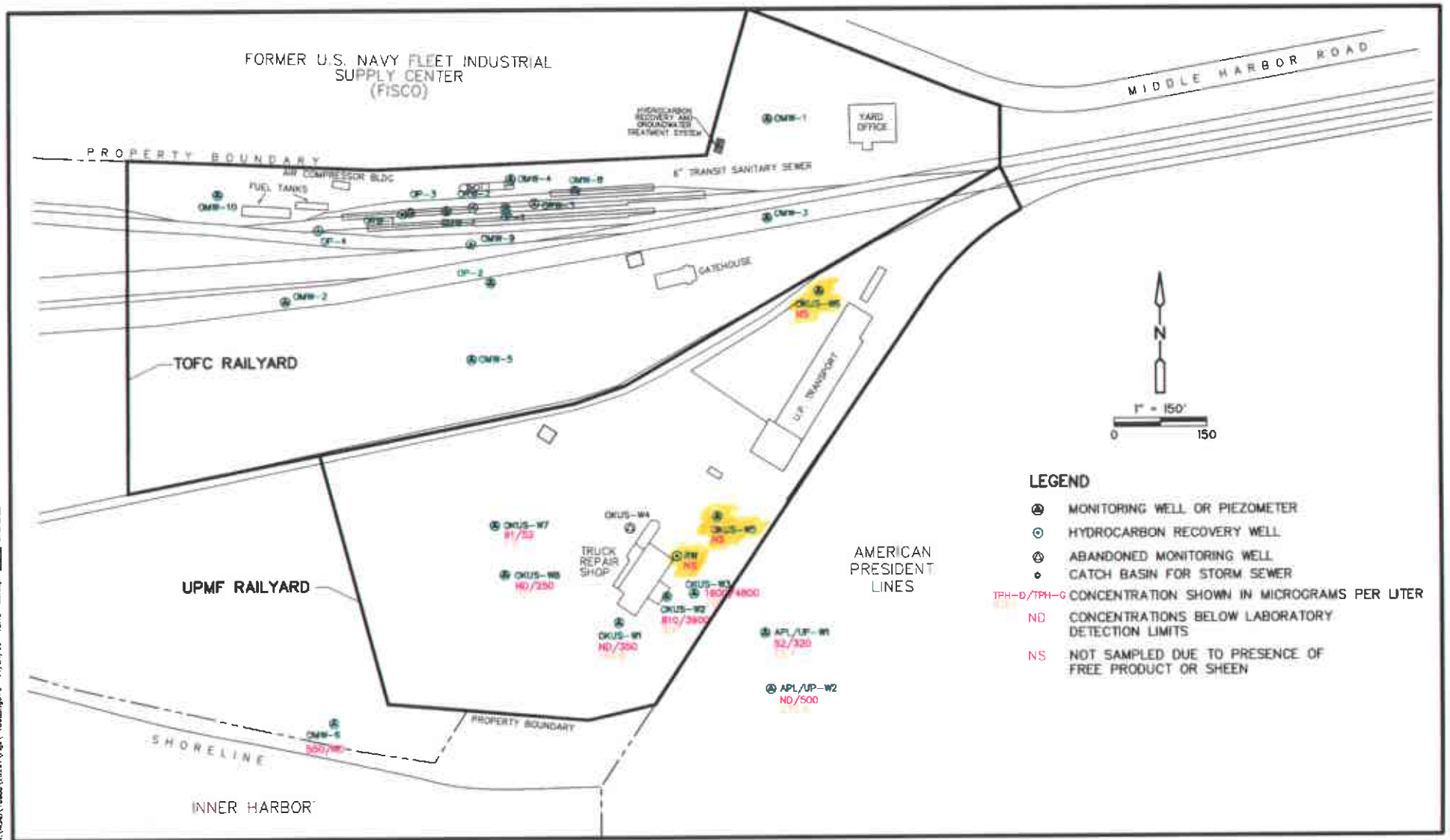


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Figure 2-3

Hydrocarbon Concentrations in Groundwater - May 4, 1999

Second Semi-Annual 1999  
Groundwater Monitoring Report - UPMF  
Port of Oakland, California



N:\VQA\1999\30261\Map\ 080219g.dwg 11/06/99 13:42 MacroMap XREFS: UPMF.DWG

Figure 2-4

Hydrocarbon Concentrations in Groundwater - August 12, 1999

Second Semi-Annual 1999  
 Groundwater Monitoring Report - UPMF  
 Part of Oakland, California



**TABLE 2-1  
CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (UPMF)  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

WELL NO.	ELEV. TOC *	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	GROUNDWATER ELEV. *
OKUS-W1	9.17	05/29/96 S	N/A	NP	7.80	1.37
	9.17	08/27/96 S	N/A	NP	8.34	0.83
	9.17	11/13/96 S	N/A	NP	8.71	0.46
	9.17	02/17/97 S	N/A	NP	7.58	1.59
	9.17	05/21/97 S	N/A	NP	8.24	0.93
	9.17	08/27/97 S	N/A	NP	8.37	0.80
	9.17	11/19/97 S	N/A	NP	8.28	0.89
	9.17	02/04/98 S	N/A	NP	6.95	2.22
	9.17	05/21/98 S	N/A	NP	7.48	1.69
	9.17	08/12/98 S	N/A	NP	7.95	1.22
	15.24	11/30/98 S	N/A	NP	8.00	7.24
	15.24	02/16/99 C	N/A	NP	7.73	7.51
	15.24	05/04/99 C	N/A	NP	7.72	7.52
	15.24	08/12/99 C	N/A	NP	8.26	6.98
OKUS-W2	9.71	05/29/96 S	N/A	NP	8.72	0.99
	9.71	07/25/96 B	N/A	NP	9.03	0.68
	9.71	08/27/96 S	N/A	NP	9.24	0.47
	9.71	09/16/96 B	N/A	NP	9.35	0.36
	9.71	11/13/96 S	N/A	NP	9.62	0.09
	9.71	11/25/96 B	N/A	NP	9.36	0.35
	9.71	01/20/97 B	N/A	NP	8.48	1.23
	9.71	02/17/97 S	N/A	NP	8.41	1.30
	9.71	03/6/97 S	N/A	NP	8.67	1.04
	9.71	05/21/97 S	N/A	NP	9.13	0.58
	9.71	05/27/97 S	N/A	NP	9.10	0.61
	9.71	07/15/97 B	N/A	NP	9.24	0.47
	9.71	08/27/97 S	N/A	NP	9.29	0.42
	9.71	09/15/97 B	N/A	NP	9.42	0.29
	9.71	11/19/97 S	N/A	NP	9.21	0.50
	9.71	02/04/98 S	N/A	NP	7.50	2.21
	9.71	05/21/98 S	N/A	NP	8.33	1.38
	9.71	08/12/98 S	N/A	NP	8.80	0.91
	15.73	11/30/98 S	N/A	NP	8.97	6.76
	15.73	01/27/99 B	N/A	NP	8.97	6.76
15.73	02/16/99 C	N/A	NP	8.52	7.21	
15.73	05/04/99 C	N/A	NP	8.58	7.15	
15.73	08/12/99 C	N/A	NP	9.06	6.67	
OKUS-W3	9.80	05/29/96 S	N/A	NP	8.94	0.86
	9.80	07/25/96 B	N/A	NP	9.32	0.48
	9.80	08/27/96 S	N/A	NP	9.52	0.28
	9.80	09/16/96 B	N/A	NP	9.63	0.17

**TABLE 2-1**  
**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (UPMF)**  
**PORT OF OAKLAND**  
**MOTOR FREIGHT RAILYARD**

WELL NO.	ELEV. TOC *	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	GROUNDWATER ELEV. *
OKUS-W3 cont.	9.80	11/13/96 S	N/A	NP	9.90	-0.10
	9.80	11/25/96 B	N/A	NP	9.65	0.15
	9.80	01/20/97 B	N/A	NP	8.74	1.06
	9.80	02/17/97 S	N/A	NP	8.67	1.13
	9.80	03/6/97 B	N/A	NP	8.92	0.88
	9.80	05/21/97 S	N/A	NP	9.44	0.36
	9.80	05/27/97 B	N/A	NP	9.40	0.40
	9.80	07/15/97 B	N/A	NP	9.53	0.27
	9.80	08/27/97 S	N/A	NP	WELL INACCESSABLE	
	9.80	11/19/97 S	N/A	NP	9.45	0.35
	9.80	02/5/98 B	N/A	NP	7.65	2.15
	9.80	05/21/98 S	N/A	NP	8.63	1.17
	9.80	08/12/98 S	N/A	NP	9.13	0.67
	15.85	11/30/98 S	N/A	NP	9.22	6.63
	15.85	01/27/99 B	N/A	NP	9.25	6.60
	15.85	02/16/99 C	N/A	NP	8.02	7.83
	15.85	05/04/99 C	N/A	NP	8.91	6.94
15.85	08/12/99 C	N/A	NP	9.39	6.46	
OKUS-W4	7.35	08/9/95 B	N/A	NP	6.10	1.25
	7.35	11/29/95 B	N/A	NP	6.70	0.65
		05/13/97 B	WELL DECOMMISSIONED			
OKUS-W5	9.25	05/29/96 S	9.06	P	--	--
	9.25	06/13/96 B	9.11	P	--	--
	9.25	07/25/96 B	9.11	P	--	--
	9.25	8/9/96 B	9.22	P	--	--
	9.25	08/27/96 S	9.44	P	--	--
	9.25	09/16/96 B	N/A	--	--	--
	9.25	10/17/96 B	9.65	P	--	--
	9.25	11/13/96 S	9.87	P	--	--
	9.25	12/16/96 B	N/A	--	--	--
	9.25	01/20/97 B	N/A	--	--	--
	9.25	02/17/97 S	9.09	P	--	--
	9.25	05/21/97 S	9.29	P	--	--
	9.25	08/27/97 S	9.42	P	--	--
	9.25	11/19/97 S	9.87	P	--	--
	9.25	02/5/98 B	7.13	P	--	--
	9.25	05/22/98 S	8.65	P	--	--
	9.25	08/13/98 S	9.03	P	--	--
15.32	11/30/99 S	9.27	P	--	--	
15.32	02/16/99 C	8.00	0.33	--	--	
15.32	05/04/99 C	N/A	P	--	--	

**TABLE 2-1  
CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (UPMF)  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

WELL NO.	ELEV. TOC *	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	GROUNDWATER ELEV. *
OKUS-W5 cont.	15.32	08/12/99 C	N/A	P	--	--
OKUS-W6	7.02	08/9/95 B	5.65	P	--	--
	7.02	09/7/95 B	5.98	P	--	--
	7.02	10/18/95 B	6.38	P	--	--
	7.02	11/10/95 B	6.52	P	--	--
	7.02	12/15/95 B	5.47	P	--	--
	7.02	01/10/96 B	5.58	P	--	--
	7.02	02/16/96 B	4.70	P	--	--
	7.02	03/25/96 B	4.72	P	--	--
	7.02	05/29/96 S	5.02	P	--	--
	7.02	06/13/96 B	4.99	P	--	--
	7.02	07/25/96 B	5.23	P	--	--
	7.02	08/9/96 B	5.66	P	--	--
	7.02	08/27/96 S	5.82	P	--	--
	7.02	09/16/96 B	N/A	--	--	--
	7.02	10/17/96 B	6.50	P	--	--
	7.02	11/13/96 S	6.27	P	--	--
	7.02	12/16/96 B	N/A	--	--	--
	7.02	01/20/97 C	N/A	--	--	--
	7.02	02/17/97 S	4.71	P	--	--
	7.02	05/21/97 S	6.03	P	--	--
	7.02	08/27/97 S	6.00	P	--	--
	7.02	11/19/97 S	5.54	P	--	--
	7.02	02/5/98 B	3.30	P	--	--
	7.02	05/22/98 S	4.48	P	--	--
	7.02	08/13/98 S	5.81	P	--	--
	13.10	11/30/98 S	5.96	P	--	--
	13.10	02/16/99 C	6.00	P	--	--
	13.10	05/04/99 C	N/A	P	--	--
	13.10	08/12/99 C	N/A	P	--	--
OKUS-W7	6.91	05/29/96 S	N/A	NP	5.08	1.83
	6.91	08/27/96 S	N/A	NP	5.68	1.23
	6.91	11/13/96 S	N/A	NP	6.00	0.91
	6.91	02/17/97 S	N/A	NP	4.85	2.06
	6.91	05/21/97 S	N/A	NP	5.53	1.38
	6.91	08/27/97 S	N/A	NP	5.76	1.15
	6.91	11/19/97 S	N/A	NP	5.65	1.26
	6.91	02/04/98 S	N/A	NP	4.45	2.46
	6.91	05/21/98 S	N/A	NP	4.69	2.22
	6.91	08/12/98 S	N/A	NP	5.28	1.63
	12.98	11/30/98 S	N/A	NP	5.47	7.51

**TABLE 2-1  
 CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (UPMF)  
 PORT OF OAKLAND  
 MOTOR FREIGHT RAILYARD**

WELL NO.	ELEV. TOC *	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	GROUNDWATER ELEV. *
OKUS-W7 cont.	12.98	02/19/99 C	N/A	NP	5.11	7.87
	12.98	05/04/99 C	N/A	NP	4.92	8.06
	12.98	08/12/99 C	N/A	NP	5.48	7.50
OKUS-W8	6.75	05/29/96 S	N/A	NP	4.93	1.82
	6.75	08/27/96 S	N/A	NP	5.52	1.23
	6.75	11/13/96 S	N/A	NP	5.90	0.85
	6.75	02/17/97 S	N/A	NP	4.69	2.06
	6.75	05/21/97 S	N/A	NP	5.36	1.39
	6.75	08/27/97 S	N/A	NP	5.59	1.16
	6.75	11/19/97 S	N/A	NP	5.45	1.30
	6.75	02/04/98 S	N/A	NP	4.36	2.39
	6.75	05/21/98 S	N/A	NP	4.45	2.30
	6.75	08/12/98 S	N/A	NP	5.05	1.70
	12.80	11/30/98 S	N/A	NP	5.20	7.60
	12.80	02/16/99 C	N/A	NP	5.00	7.80
	12.80	05/04/99 C	N/A	NP	4.81	7.99
12.80	08/12/99 C	N/A	NP	5.34	7.46	
APL/UP-W1	8.12	05/29/96 S	N/A	NP	WELL INACCESSABLE	
	8.12	08/27/96 S	N/A	NP	WELL INACCESSABLE	
	8.12	11/12/96 B	N/A	NP	WELL INACCESSABLE	
	8.12	02/17/97 S	N/A	NP	10.02	-1.90
	8.12	05/21/97 S	N/A	NP	10.14	-2.02
	8.12	08/27/97 S	N/A	NP	9.91	-1.79
	8.12	11/18/97 B	N/A	NP	9.32	-1.20
	8.12	02/04/98 S	N/A	NP	9.80	-1.68
	8.12	05/21/98 S	N/A	NP	10.21	-2.09
	8.12	08/12/98 S	N/A	NP	9.76	-1.64
	14.19	11/30/98 S	N/A	NP	9.77	4.42
14.19	02/18/99 C	N/A	NP	10.19	4.00	
14.19	05/04/99 C	N/A	NP	10.39	3.80	
14.19	08/12/99 C	N/A	NP	10.27	3.92	
APL/UP-W2	7.31	05/29/96 S	N/A	NP	9.68	-2.37
	7.31	08/27/96 S	N/A	NP	9.53	-2.22
	7.31	11/13/96 S	N/A	NP	9.57	-2.26
	7.31	02/17/97 S	N/A	NP	9.07	-1.76
	7.31	05/21/97 S	N/A	NP	9.42	-2.11
	7.31	08/27/97 S	N/A	NP	9.17	-1.86
	7.31	11/18/97 B	N/A	NP	8.59	-1.28
	7.31	02/04/98 S	N/A	NP	8.80	-1.49
7.31	05/21/98 S	N/A	NP	9.58	-2.27	



**TABLE 2-1  
CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (UPMF)  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

WELL NO.	ELEV. TOC *	DATE	DEPTH TO PRODUCT	PRODUCT THICKNESS	DEPTH TO WATER	GROUNDWATER ELEV. *
APL/UP-W2 cont.	7.31	08/12/98 S	N/A	NP	8.99	-1.68
	13.19	11/30/98 S	N/A	NP	8.76	4.43
	13.19	02/18/99 C	N/A	NP	9.55	3.64
	13.19	05/04/99 C	N/A	NP	9.76	3.43
	13.19	08/12/99 C	N/A	NP	9.58	3.61
RW	--	05/29/96 S	N/A	NP	8.68	--
	--	06/13/96 B	N/A	NP	8.68	--
	--	07/25/96 B	N/A	NP	9.09	--
	--	08/9/96 B	N/A	NP	9.16	--
	--	08/27/96 S	N/A	NP	9.18	--
	--	09/16/96 B	N/A	NP	9.33	--
	--	10/17/97 B	N/A	NP	9.50	--
	--	11/12/96 B	N/A	SHEEN	9.59	--
	--	11/25/96 B	9.43	0.02	9.45	--
	--	12/16/96 B	9.12	0.10	9.22	--
	--	01/20/97 B	N/A	SHEEN	8.50	--
	--	02/11/97 B	N/A	NP	8.33	--
	--	02/17/97 S	8.39	0.01	8.40	--
	--	03/6/97 B	N/A	NP	8.70	--
	--	04/29/97 B	N/A	SHEEN	9.03	--
	--	05/21/97 S	9.10	0.02	9.12	--
	--	05/27/97 B	9.09	0.03	9.12	--
	--	07/15/97 B	N/A	NP	9.22	--
	--	08/15/97 B	N/A	NP	9.17	--
	--	08/27/97 S	N/A	SHEEN	9.29	--
	--	11/19/97 S	N/A	SHEEN	9.29	--
	--	02/6/98 B	N/A	SHEEN	7.24	--
	--	05/22/98 S	N/A	SHEEN	8.21	--
--	08/13/98 S	8.74	0.08	8.82	--	
--	15.84	11/30/98 S	N/A	SHEEN	8.92	6.92
--	15.84	01/27/99 B	8.95	0.05	9.00	6.84
--	15.84	02/16/99 C	N/A	SHEEN	8.41	7.43
--	15.84	05/04/99 C	8.33	0.08	8.41	7.43
--	15.84	08/12/99 C	8.95	0.15	9.10	6.74

-- Depth to water was not measured due to the presence of product in well.

N/A Non Applicable

NP - No Product

P - Product (bunker C) was encountered but the oil/water interface could not be found.

\* Elevation of top of casing, all well casings and groundwater elevations measured to City of Oakland Datum (2.998 Mean Sea Level) from May 1996 through August 1998. In February 1999, the well casings were resurveyed to Port Datum (-3.202 Mean sea Level) by PLS Survey Inc.

**TABLE 2-1  
CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (UPMF)  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

- S = Measurement collected by Safety-Kleen personnel during quarterly sampling.  
B = Measurements collected by Burns & McDonnell Waste Consultant personnel.  
C = Measurements collected by Camp Dresser & McKee Inc. personnel during quarterly sampling.

**TABLE 2-2**  
**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)**  
**PORT OF OAKLAND**  
**TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
OMW-1	01/25/95	8.79		2.52	6.27		6.27
	05/09/95	8.79		5.55	3.24		3.24
	05/17/95	8.79		4.43	4.36		4.36
	07/31/95	8.79		6.43	2.36		2.36
	09/07/95	8.79		6.86	1.93		1.93
	11/30/95	8.79		7.69	1.10		1.10
	01/10/96	8.79		6.48	2.31		2.31
	03/25/96	8.79		5.00	3.79		3.79
	05/17/96	8.79		2.98	5.81		5.81
	07/25/96	8.79		6.29	2.50		2.50
	09/16/96	8.79		7.05	1.74		1.74
	11/12/96	8.79		7.51	1.28		1.28
	01/20/97	8.79		4.26	4.53		4.53
	03/06/97	8.79		4.65	4.14		4.14
	05/20/97	8.79		6.11	2.68		2.68
	07/15/97	8.79		6.66	2.13		2.13
	08/28/97	8.79		6.58	2.21		2.21
	09/15/97	8.79		7.16	1.63		1.63
	11/18/97	8.79		6.58	2.21		2.21
	02/04/98	8.79		1.78	7.01		7.01
	05/21/98	8.79		5.43	3.36		3.36
	07/30/98	8.79		6.41	2.38		2.38
	08/12/98	8.79		6.54	2.25		2.25
	09/28/98	8.79		7.11	1.68		1.68
	11/04/98	8.79		7.32	1.47		1.47
	11/30/98	14.88		7.40	7.48		7.48
	01/27/99	14.88		5.15	9.73		9.73
	02/16/99	14.88		4.63	10.25		10.25
	05/04/99	14.88		4.88	10.00		10.00
	08/12/99	14.88		6.86	8.02		8.02
OMW-2	01/25/95	5.88		3.35	2.53		2.53
	05/09/95	5.88	NOT GAUGED				
	05/17/95	5.88		2.44	3.44		3.44
	07/31/95	5.88	NOT GAUGED				
	09/07/95	5.88		4.35	1.53		1.53
	11/30/95	5.88		5.12	0.76		0.76
	01/10/96	5.88		2.60	3.28		3.28
	03/25/96	5.88		2.35	3.53		3.53
	05/17/96	5.88		1.73	4.15		4.15
	07/25/96	5.88		4.07	1.81		1.81
	09/16/96	5.88		4.60	1.28		1.28
	11/12/96	5.88		4.93	0.95		0.95
	01/20/97	5.88		2.44	3.44		3.44
	03/06/97	5.88		4.26	1.62		1.62
	05/20/97	5.88		4.65	1.23		1.23
	07/15/97	5.88		4.64	1.24		1.24
	08/28/97	5.88		4.58	1.30		1.30
	09/15/97	5.88		4.90	0.98		0.98
	11/18/97	5.88		2.11	3.77		3.77
	02/04/98	5.88		1.72	4.16		4.16
	05/21/98	5.88		2.34	3.54		3.54
	07/30/98	5.88		4.11	1.77		1.77

**TABLE 2-2  
 CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)  
 PORT OF OAKLAND  
 TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)	
OMW-2 cont.	08/12/98	5.88		4.30	1.58		1.58	
	09/28/98	5.88		4.64	1.24		1.24	
	11/04/98	5.88		5.03	0.85		0.85	
	11/30/98	12.07		4.82	7.25		7.25	
	01/27/99	12.07		2.13	9.94		9.94	
	02/16/99	12.07		1.38	10.69		10.69	
	05/04/99	12.07		2.49	9.58		9.58	
	08/12/99	12.07		4.14	7.93		7.93	
OMW-3	01/25/95	7.16		NOT GAUGED - WELL UNDER WATER				
	05/09/95	7.16		4.37	2.79		2.79	
	05/17/95	7.16		4.46	2.70		2.70	
	07/31/95	7.16		5.22	1.94		1.94	
	09/07/95	7.16		5.64	1.52		1.52	
	11/30/95	7.16		6.36	0.80		0.80	
	01/10/96	7.16		5.13	2.03		2.03	
	03/25/96	7.16		4.08	3.08		3.08	
	05/17/96	7.16		2.61	4.55		4.55	
	07/25/96	7.16		5.26	1.90		1.90	
	09/16/96	7.16		5.90	1.26		1.26	
	11/12/96	7.16		6.22	0.94		0.94	
	01/20/97	7.16		3.79	3.37		3.37	
	03/06/97	7.16		4.02	3.14		3.14	
	05/20/97	7.16		5.34	1.82		1.82	
	07/15/97	7.16		5.64	1.52		1.52	
	08/28/97	7.16		5.79	1.37		1.37	
	09/15/97	7.16		5.95	1.21		1.21	
	11/18/97	7.16		5.27	1.89		1.89	
	02/04/98	7.16		0.94	6.22		6.22	
	05/21/98	7.16		4.12	3.04		3.04	
	07/30/98	Well Not Gauged	PVC Damaged					
	08/12/98	Well Not Gauged	PVC Damaged					
	09/28/98	Well Not Gauged	PVC Damaged					
	11/04/98	7.16		5.90	1.26		1.26	
	11/30/98	Well Not Gauged						
	01/27/99	12.99		4.70	8.29		8.29	
02/16/99	12.99		3.61	9.38		9.38		
05/04/99	12.99		4.04	8.95		8.95		
08/12/99	12.99		5.28	7.71		7.71		
OMW-4	01/25/95	7.41	6.23	7.12	0.29	0.89	1.04	
	05/09/95	7.41	4.99	6.38	1.03	1.39	2.20	
	05/17/95	7.41	5.19	6.58	0.83	1.39	2.00	
	07/31/95	7.41	5.78	6.99	0.42	1.21	1.44	
	09/07/95	7.41	6.01	6.92	0.49	0.91	1.25	
	11/30/95	7.41	6.60	7.06	0.35	0.46	0.74	
	01/10/96	7.41	5.73	6.48	0.93	0.75	1.56	
	03/25/96	7.41	5.22	6.19	1.22	0.97	2.03	
	05/17/96	7.41	5.23	6.26	1.15	1.03	2.02	
	07/25/96	7.41	TRACE	5.82	1.59		1.59	
	09/16/96	7.41	6.11	7.55	-0.14	1.44	1.07	
	11/12/96	7.41	6.58	8.12	-0.71	1.54	0.58	
	01/20/97	7.41	4.75	6.45	0.96	1.70	2.39	

**TABLE 2-2**  
**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)**  
**PORT OF OAKLAND**  
**TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
OMW-4 cont.	03/06/97	7.41	5.25	6.24	1.17	0.99	2.00
	05/20/97	7.41	5.83	6.35	1.06	0.52	1.50
	07/15/97	7.41	6.24	6.75	0.66	0.51	1.09
	08/28/97	7.41	6.46	7.05	0.36	0.59	0.86
	09/15/97	7.41	6.40	7.11	0.30	0.71	0.90
	11/18/97	7.41	4.76	5.43	1.98	0.67	2.54
	03/31/98	7.41	3.07	4.00	3.41	0.93	4.18
	05/22/98	7.41	3.52	3.41	4.00	-0.11	3.91
	07/30/98	7.41	6.45	7.00	0.41	0.55	0.87
	08/12/98	7.41	5.68	7.02	0.39	1.34	1.52
	09/28/98	7.41	6.02	7.55	-0.14	1.53	1.15
	11/04/98	7.41	6.17	7.65	-0.24	1.48	1.00
	11/30/98	13.38	6.31	6.31	7.07	0.00	7.07
	01/27/99	13.38	5.15	6.75	6.63	1.60	7.97
	02/16/99	13.38	3.59	4.75	8.63	1.16	9.60
	05/04/99	13.38	4.10	5.62	7.76	1.52	9.04
	08/12/99	13.38	5.00	6.68	6.70	1.68	8.11
OMW-5	01/25/95	7.62	NOT GAUGED				
	05/09/95	7.62	NOT GAUGED				
	05/18/95	7.62		4.84	2.78		2.78
	07/31/95	7.62	NOT GAUGED				
	09/07/95	7.62		5.85	1.77		1.77
	11/30/95	7.62		6.55	1.07		1.07
	01/10/96	7.62		5.46	2.16		2.16
	03/25/96	7.62		4.63	2.99		2.99
	05/17/96	7.62		4.83	2.79		2.79
	07/25/96	7.62		5.66	1.96		1.96
	09/16/96	7.62		6.17	1.45		1.45
	11/12/96	7.62	TRACE	6.59	1.03		1.03
	01/20/97	7.62		3.73	3.89		3.89
	03/06/97	7.62		5.34	2.28		2.28
	05/20/97	7.62		5.59	2.03		2.03
	07/15/97	7.62		6.15	1.47		1.47
	08/28/97	7.62		6.36	1.26		1.26
	09/15/97	7.62		6.58	1.04		1.04
	11/18/97	7.62		5.33	2.29		2.29
	02/04/98	7.62		3.05	4.57		4.57
05/21/98	7.62		3.56	4.06		4.06	
07/30/98	7.62		4.79	2.83		2.83	
08/12/98	7.62		5.00	2.62		2.62	
09/08/98	7.62		5.73	1.89		1.89	
11/04/98	7.62		6.14	1.48		1.48	
11/30/98	13.76		6.01	7.75		7.75	
01/27/99	13.76		5.00	8.76		8.76	
02/18/99	13.76		4.57	9.19		9.19	
05/04/99	13.76		2.79	10.97		10.97	
8/12/1999	13.76		5.25	8.51		8.51	
OMW-6	01/25/95	5.78		6.91	-1.13		-1.13
	05/09/95	5.78		7.19	-1.41		-1.41
	05/17/95	5.78		6.84	-1.06		-1.06
	07/31/95	5.78		5.65	0.13		0.13



**TABLE 2-2**  
**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)**  
**PORT OF OAKLAND**  
**TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
OMW-6 cont.	09/07/95	5.78		5.51	0.27		0.27
	11/30/95	5.78		6.71	-0.93		-0.93
	01/10/96	5.78		6.72	-0.94		-0.94
	03/25/96	5.78		6.73	-0.95		-0.95
	05/17/96	5.78		6.50	-0.72		-0.72
	07/25/96	5.78		6.62	-0.84		-0.84
	09/16/96	5.78		6.44	-0.66		-0.66
	11/12/96	5.78		5.65	0.13		0.13
	01/20/97	5.78		5.52	0.26		0.26
	03/06/97	5.78		7.17	-1.39		-1.39
	05/20/97	5.78		6.39	-0.61		-0.61
	07/15/97	5.78		6.77	-0.99		-0.99
	08/28/97	5.78		6.59	-0.81		-0.81
	09/15/97	5.78		6.02	-0.24		-0.24
	11/18/97	5.78		4.89	0.89		0.89
	02/04/98	5.78		5.85	-0.07		-0.07
	05/21/98	5.78		6.13	-0.35		-0.35
	07/30/98	5.78		6.76	-0.98		-0.98
	08/12/98	5.78		6.88	-1.10		-1.10
	09/28/98	5.78		6.63	-0.85		-0.85
	11/04/98	5.78		5.42	0.36		0.36
	11/30/98	11.67		6.22	5.45		5.45
	01/27/99	11.67		6.65	5.02		5.02
	02/18/99	11.67		5.85	5.82		5.82
	05/04/99	11.67		6.74	4.93		4.93
	08/12/99	11.67		7.44	4.23		4.23
OMW-7	01/25/95	7.03	3.31	9.53	-2.50	6.22	2.72
	05/09/95	7.03	5.22	9.25	-2.22	4.03	1.17
	05/17/95	7.03	5.41	8.38	-1.35	2.97	1.14
	07/31/95	7.03	5.61	8.83	-1.80	3.22	0.90
	09/07/95	7.03	5.80	7.97	-0.94	2.17	0.88
	11/30/95	7.03	6.49	7.54	-0.51	1.05	0.37
	01/10/96	7.03	5.40	8.33	-1.30	2.93	1.16
	03/25/96	7.03	5.46	9.60	-2.57	4.14	0.91
	05/17/96	7.03	5.40	8.79	-1.76	3.39	1.09
	07/25/96	7.03	5.92	9.32	-2.29	3.40	0.57
	09/16/96	7.03	6.18	8.86	-1.83	2.68	0.42
	11/12/96	7.03	6.50	8.79	-1.76	2.29	0.16
	01/20/97	7.03	4.95	10.76	-3.73	5.81	1.15
	03/06/97	7.03	5.26	7.70	-0.67	2.44	1.38
	05/20/97	7.03	5.71	8.26	-1.23	2.55	0.91
	07/15/97	7.03	6.21	9.67	-2.64	3.46	0.27
	08/28/97	7.03	6.39	9.10	-2.07	2.71	0.21
	09/15/97	7.03	6.51	8.03	-1.00	1.52	0.28
	11/18/97	7.03	4.58	5.54	1.49	0.96	2.30
	03/31/98	7.03	3.15	6.75	0.28	3.60	3.30
	05/21/98	7.03	3.68	7.15	-0.12	3.47	2.79
	07/30/98	7.03	5.33	8.70	-1.67	3.37	1.16
	08/12/98	7.03	5.42	8.03	-1.00	2.61	1.19
	09/28/98	7.03	6.11	8.51	-1.48	2.40	0.54
	11/04/98	7.03	6.22	8.22	-1.19	2.00	0.49
	11/30/98	13.17	8.76	8.76	4.41	0.00	4.41

**TABLE 2-2**  
**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)**  
**PORT OF OAKLAND**  
**TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
OMW-7 cont.	01/27/99	13.17	5.15	8.75	4.42	3.60	7.44
	02/16/99	13.17	3.06	7.40	5.77	4.34	9.42
	05/04/99	13.17	3.81	8.43	4.74	4.62	8.62
	08/12/99	13.17	4.70	7.41	5.76	2.71	8.04
OMW-8	01/25/95	7.52	TRACE	3.55	3.97		3.97
	05/09/95	7.52		5.00	2.52		2.52
	05/17/95	7.52		5.16	2.36		2.36
	07/31/95	7.52		5.70	1.82		1.82
	09/07/95	7.52		5.99	1.53		1.53
	11/30/95	7.52		6.53	0.99		0.99
	01/10/96	7.52		5.87	1.65		1.65
	03/25/96	7.52		5.01	2.51		2.51
	05/17/96	7.52		5.18	2.34		2.34
	07/25/96	7.52		5.77	1.75		1.75
	09/16/96	7.52		6.21	1.31		1.31
	11/12/96	7.52		6.69	0.83		0.83
	01/20/97	7.52		4.84	2.68		2.68
	03/06/97	7.52		5.15	2.37		2.37
	05/20/97	7.52		5.81	1.71		1.71
	07/15/97	7.52		6.12	1.40		1.40
	08/28/97	7.52		6.29	1.23		1.23
	09/15/97	7.52		6.40	1.12		1.12
	11/18/97	7.52		5.27	2.25		2.25
	02/04/98	7.52		1.67	5.85		5.85
	05/21/98	7.52		3.97	3.55		3.55
07/30/98	7.52		5.52	2.00		2.00	
08/12/98	7.52		5.73	1.79		1.79	
09/28/98	7.52		6.17	1.35		1.35	
11/04/98	7.52		6.40	1.12		1.12	
11/30/98	13.62		6.29	7.33		7.33	
01/27/99	13.62		5.47	8.15		8.15	
02/16/99	13.62		4.05	9.57		9.57	
05/04/99	13.62		4.63	8.99		8.99	
08/12/99	13.62		5.50	8.12		8.12	
OMW-9	01/25/95	6.64	3.83	6.25	0.39	2.42	2.42
	05/09/95	6.64	4.94	9.02	-2.38	4.08	1.05
	05/17/95	6.64	4.18	8.95	-2.31	4.77	1.70
	07/31/95	6.64	6.07	8.46	-1.82	2.39	0.19
	09/07/95	6.64	5.23	6.89	-0.25	1.66	1.14
	11/30/95	6.64	5.76	7.25	-0.61	1.49	0.64
	01/10/96	6.64	4.45	9.00	-2.36	4.55	1.46
	03/25/96	6.64	4.19	8.96	-2.32	4.77	1.69
	05/17/96	6.64	5.41	7.40	-0.76	1.99	0.91
	07/25/96	6.64	5.16	8.41	-1.77	3.25	0.96
	09/16/96	6.64	5.75	6.19	0.45	0.44	0.82
	11/12/96	6.64	5.84	8.37	-1.73	2.53	0.40
	01/20/97	6.64	4.10	9.42	-2.78	5.32	1.69
	03/06/97	6.64	4.55	7.95	-1.31	3.40	1.55
	05/20/97	6.64	5.09	7.11	-0.47	2.02	1.23
	07/15/97	6.64		* 8.8	6.64		-2.16
08/28/97	6.64		* 8.8	6.64		-2.16	

**TABLE 2-2  
 CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)  
 PORT OF OAKLAND  
 TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
OMW-9 cont.	09/15/97	6.64		7.80	-1.16		-1.16
	11/18/97	6.64		NA	6.64		NA
	02/04/98	6.64		NA	6.64		NA
	05/21/98	6.64		NA	6.64		NA
	07/30/98	6.64	8.40	* 8.5	6.64	0.10	-1.78
	08/12/98	6.64		NA	6.64		NA
	09/28/98	6.64		8.50	-1.86		-1.86
	11/04/98	6.64	TRACE	6.50	0.14		0.14
	OMW-9	01/27/99	12.31	5.90	7.80	4.51	1.90
11/30/98		12.31	8.76	8.76	3.55	0.00	3.55
02/16/99		12.31	NOT GAUGED				
05/04/99		12.31	4.13	7.00	5.31	2.87	7.72
08/12/99		12.31	4.43	4.59	7.72	0.16	7.85
OMW-10	01/25/95	7.56		NOT GAUGED - WELL COVERED			
	05/09/95	7.56		NOT GAUGED - WELL COVERED			
	05/17/95	7.56	TRACE	4.64	2.92		2.92
	07/31/95	7.56		NOT GAUGED - WELL COVERED			
	09/07/95	7.56		6.02	1.54		1.54
	11/30/95	7.56	TRACE	7.78	-0.22		-0.22
	01/10/96	7.56	TRACE	4.68	2.88		2.88
	03/25/96	7.56		4.58	2.98		2.98
	05/17/96	7.56		4.75	2.81		2.81
	07/25/96	7.56		5.79	1.77		1.77
	09/16/96	7.56		6.33	1.23		1.23
	11/12/96	7.56	TRACE	6.50	1.06		1.06
	01/20/97	7.56		4.33	3.23		3.23
	03/06/97	7.56		5.05	2.51		2.51
	05/20/97	7.56		5.69	1.87		1.87
	07/15/97	7.56		6.71	0.85		0.85
	08/28/97	7.56		6.11	1.45	SHEEN	1.45
	09/15/97	7.56		6.75	0.81	SHEEN	0.81
	11/18/97	7.56		4.63	2.93		2.93
	02/04/98	7.56		3.00	4.56		4.56
	05/21/98	7.56		4.13	3.43		3.43
	07/30/98	7.56		5.81	1.75		1.75
	08/12/98	7.56		4.94	2.62		2.62
	09/28/98	7.56		6.32	1.24		1.24
	11/04/98	7.56		6.53	1.03		1.03
	11/30/98	13.71		6.48	7.23		7.23
	01/27/99	13.71	NOT GAUGED				
02/17/99	13.71		3.37	10.34		10.34	
05/04/99	13.71		4.82	8.89		8.89	
08/12/99	13.71		5.74	7.97		7.97	
ORW-1	01/25/95	6.59	NOT GAUGED				
	05/09/95	6.59	NOT GAUGED				
	05/18/95	6.59	8.77	9.76	-3.17	0.99	-2.34
	07/31/95	6.59	8.35	10.55	-3.96	2.20	-2.11
	09/07/95	6.59	8.55	11.03	-4.44	2.48	-2.36
	11/30/95	6.59	5.92	5.98	0.61	0.06	0.66
	01/10/96	6.59	TRACE	11.20	-4.61		-4.61
	03/25/96	6.59		11.20	-4.61		-4.61



**TABLE 2-2  
CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)  
PORT OF OAKLAND  
TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
ORW-1 cont.	05/17/96	6.59		11.40	-4.81		-4.81
	07/25/96	6.59	TRACE	10.90	-4.31		-4.31
	09/16/96	6.59		9.60	-3.01		-3.01
	11/12/96	6.59		9.60	-3.01		-3.01
	01/20/97	6.59	NOT GAUGED				
	03/06/97	6.59	9.55	9.75	-3.16	0.20	-2.99
	05/20/97	6.59	9.75	9.86	-3.27	0.11	-3.18
	07/15/97	6.59		7.98	-1.39	SHEEN	-1.39
	08/28/97	6.59	NOT GAUGED				
	09/15/97	6.59	NOT GAUGED				
	11/18/97	6.59	3.94	3.96	2.63	0.02	2.65
	03/31/98	6.59	2.25	2.88	3.71	0.63	4.24
	05/21/98	6.59	2.66	3.65	2.94	0.99	3.77
	07/30/98	6.59		8.90	-2.31		-2.31
	08/12/98	6.59		10.01	-3.42		-3.42
	09/28/98	6.59		9.72	-3.13		-3.13
	11/04/98	6.59	TRACE	9.45	-2.86		-2.86
	11/30/98	13.29	10.03	10.03	3.26	0.00	3.26
	01/27/99	13.29	9.50	10.00	3.29	0.50	3.71
	02/16/99	13.29	NOT GAUGED	NM			
05/04/99	13.29	4.97	5.63	7.66	0.66	8.21	
08/12/99	13.29	4.33	4.41	8.88	0.08	8.95	
ORW-2	01/25/95	6.79	NOT GAUGED				
	05/09/95	6.79	NOT GAUGED				
	05/18/95	6.79	9.55	9.56	-2.77	0.01	-2.76
	07/31/95	6.79	9.30	9.45	-2.66	0.15	-2.53
	09/07/95	6.79	9.45	9.50	-2.71	0.05	-2.67
	11/30/95	6.79	9.66	9.68	-2.89	0.02	-2.87
	01/10/96	6.79	9.55	9.60	-2.81	0.05	-2.77
	03/25/96	6.79	10.75	11.85	-5.06	1.10	-4.14
	05/17/96	6.79	10.60	11.60	-4.81	1.00	-3.97
	07/25/96	6.79	11.70	12.30	-5.51	0.60	-5.01
	09/16/96	6.79	10.95	12.30	-5.51	1.35	-4.38
	11/12/96	6.79	9.83	10.87	-4.08	1.24	-3.04
	01/20/97	6.79	9.61	11.00	-4.21	1.39	-3.04
	03/06/97	6.79	10.05	11.09	-4.30	1.04	-3.43
	05/20/97	6.79	10.70	11.46	-4.67	0.76	-4.03
	07/15/97	6.79	11.68	12.01	-5.22	0.33	-4.94
	08/28/97	6.79	11.60	11.87	-5.08	0.27	-4.85
	09/15/97	6.79	11.90	12.08	-5.29	0.18	-5.14
	11/18/97	6.79	4.09	5.62	1.17	1.53	2.46
	03/31/98	6.79	2.27	4.05	2.74	1.78	4.24
	05/21/98	6.79	2.77	4.53	2.26	1.76	3.74
	07/30/98	6.79	11.26	11.36	-4.57	0.10	-4.49
	08/12/98	6.79		12.31	-5.52		-5.52
	09/28/98	6.79	11.88	12.00	-5.21	0.12	-5.11
	11/04/98	6.79	11.50	11.85	-5.06	0.35	-4.77
	11/30/98	12.92	12.52	12.52	0.40	0.00	0.40
01/27/99	12.92	12.01	12.10	0.82	0.09	0.90	
02/16/99	12.92	NOT GAUGED					
05/04/99	12.92	3.77	5.28	7.64	1.51	8.91	
08/12/99	12.92	4.33	8.51	4.41	4.18	7.92	

**TABLE 2-2**  
**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)**  
**PORT OF OAKLAND**  
**TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
ORW-3	01/25/95	6.30	NOT GAUGED				
	05/09/95	6.30	NOT GAUGED				
	05/18/95	6.30	9.45	9.48	-3.18	0.03	-3.15
	07/31/95	6.30	TRACE	9.68	-3.38		-3.38
	09/07/95	6.30	9.57	9.60	-3.30	0.03	-3.27
	11/30/95	6.30	TRACE	9.67	-3.37		-3.37
	01/10/96	6.30	TRACE	9.55	-3.25		-3.25
	03/25/96	6.30	11.55	12.05	-5.75	0.50	-5.33
	05/17/96	6.30	11.60	12.10	-5.80	0.50	-5.38
	07/25/96	6.30		11.60	-5.30		-5.30
	09/16/96	6.30	11.40	11.90	-5.60	0.50	-5.18
	11/12/96	6.30	11.63	11.87	-5.57	0.24	-5.37
	01/20/97	6.30	NOT GAUGED		6.30	0.00	6.30
	03/06/97	6.30	11.20	11.50	-5.20	0.30	-4.95
	05/20/97	6.30	8.60	11.49	-5.19	2.89	-2.76
	07/15/97	6.30		11.46	-5.16	SHEEN	-5.16
	08/28/97	6.30		11.55	-5.25		-5.25
	09/15/97	6.30	11.40	11.47	-5.17	0.07	-5.11
	11/18/97	6.30	3.36	3.52	2.78	0.16	2.91
	03/31/98	6.30	2.20	2.69	3.61	0.49	4.02
	05/21/98	6.30	2.31	2.70	3.60	0.39	3.93
	07/30/98	6.30	11.45	11.48	-5.18	0.03	-5.15
	08/12/98	6.30	11.61	11.72	-5.42	0.11	-5.33
09/28/98	6.30		11.61	-5.31		-5.31	
11/04/98	6.30	11.36	11.38	-5.08	0.02	-5.06	
11/30/98	12.46	11.87	11.87	0.59	0.00	0.59	
01/27/99	12.46	11.30	11.34	1.12	0.04	1.15	
02/16/99	12.46	NOT GAUGED					
05/04/99	12.46	6.52	6.52	5.94	0.00	5.94	
08/12/99	12.46	4.25	4.30	8.16	0.00	8.16	
OP-1	05/18/95	6.71	3.84	5.05	1.66	1.21	2.68
	07/31/95	6.71	5.23	5.35	1.36	0.12	1.46
	09/07/95	6.71	5.55	6.13	0.58	0.58	1.07
	11/30/95	6.71	5.81	9.36	-2.65	3.55	0.33
	01/10/96	6.71	TRACE	4.41	2.30		2.30
	03/25/96	6.71		3.78	2.93		2.93
	05/17/96	6.71		2.18	4.53		4.53
	07/25/96	6.71		3.71	3.00		3.00
	09/16/96	6.71		3.15	3.56		3.56
	11/12/96	6.71	TRACE	2.90	3.81		3.81
	01/20/97	6.71	TRACE	3.90	2.81		2.81
	03/06/97	6.71	TRACE	4.19	2.52		2.52
	05/20/97	6.71	4.87	4.94	1.77	0.07	1.83
	07/15/97	6.71	4.91	5.18	1.53	0.27	1.76
	08/28/97	6.71	4.55	4.64	2.07	0.09	2.15
	09/15/97	6.71	4.89	5.03	1.68	0.14	1.80
	11/18/97	6.71	3.33	3.38	3.33	0.05	3.37
	03/31/98	6.71	SHEEN	3.83	2.88		2.88
	05/21/98	6.71		3.82	2.89		2.89
	07/30/98	6.71	3.80	12.03	-5.32	8.23	1.59
08/12/98	6.71	3.90	12.51	-5.80	8.61	1.43	

**TABLE 2-2**  
**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)**  
**PORT OF OAKLAND**  
**TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
OP-1 cont.	09/28/98	6.71	4.81	8.77	-2.06	3.96	1.27
	11/04/98	6.71	4.75	8.25	0.46	1.50	1.72
	11/30/98	12.87	8.99	6.01	6.86	-2.98	4.36
	01/27/99	12.87	4.70	6.01	6.86	1.31	7.96
	02/17/99	12.87	SHEEN	4.79	8.08		8.08
	05/04/99	12.87	SHEEN	3.91	8.96		8.96
	08/12/99	12.87	3.60	10.55	2.32	6.95	8.16
	OP-2	05/18/95	7.80	5.15	6.97	0.83	1.82
07/31/95		7.80	NOT GAUGED				
09/07/95		7.80	6.04	7.85	-0.05	1.81	1.47
11/30/95		7.80	6.85	7.26	0.54	0.41	0.88
01/10/96		7.80	5.70	6.25	1.55	0.55	2.01
03/25/96		7.80	5.00	6.67	1.13	1.67	2.53
05/17/96		7.80	5.30	6.45	1.35	1.15	2.32
07/25/96		7.80	5.97	6.62	1.18	0.65	1.73
09/16/96		7.80	6.25	8.15	-0.35	1.90	1.25
11/12/96		7.80	6.66	8.79	-0.99	2.13	0.80
01/20/97		7.80	4.74	6.35	1.45	1.61	2.80
03/06/97		7.80	5.38	6.40	1.40	1.02	2.26
05/20/97		7.80	5.92	7.26	0.54	1.34	1.67
07/15/97		7.80	6.34	8.37	-0.57	2.03	1.14
08/28/97		7.80	6.55	8.45	-0.65	1.90	0.95
09/15/97		7.80	6.62	8.59	-0.79	1.97	0.86
11/18/97		7.80	5.55	5.87	1.93	0.32	2.20
03/31/98		7.80	3.28	6.18	1.62	2.90	4.06
05/21/98		7.80	NOT GAUGED				
07/30/98		7.80	5.79	7.64	0.16	1.85	1.71
08/12/98		7.80	5.92	8.92	-1.12	3.00	1.40
09/28/98		7.80	6.27	9.05	-1.25	2.78	1.09
11/04/98		7.80	6.42	8.82	-1.02	2.40	1.00
11/30/98	13.95	9.20	9.20	4.75	0.00	4.75	
01/27/99	13.95	5.63	6.20	7.75	0.57	8.23	
02/18/99	13.95	3.87	5.57	8.38	1.70	9.81	
05/04/99	13.95	4.54	6.57	7.38	2.03	9.09	
08/12/99	13.95	4.13	5.54	8.41	1.41	9.59	
OP-3	05/18/95	6.48	4.88	9.86	-3.38	4.98	0.80
	07/31/95	6.48	5.32	8.46	-1.98	3.14	0.66
	09/07/95	6.48	5.16	8.22	-1.74	3.06	0.83
	11/30/95	6.48	5.75	6.52	-0.04	0.77	0.61
	01/10/96	6.48	4.84	10.20	-3.72	5.36	0.78
	03/25/96	6.48	5.12	9.84	-3.36	4.72	0.60
	05/17/96	6.48	5.03	10.29	-3.81	5.26	0.51
	07/25/96	6.48	TRACE	5.61	0.87		0.87
	09/16/96	6.48	5.75	9.29	-2.81	3.54	0.16
	11/12/96	6.48	6.14	8.89	-2.41	2.75	-0.10
	01/20/97	6.48	4.96	8.20	-1.72	3.24	1.00
	03/06/97	6.48	4.75	8.42	-1.94	3.67	1.14
	05/20/97	6.48	6.38	6.95	-0.47	0.57	0.01
	07/15/97	6.48	5.87	7.64	-1.16	1.77	0.33
	08/28/97	6.48	6.89	8.65	-2.17	1.76	-0.69
09/15/97	6.48	6.03	8.03	-1.55	2.00	0.13	

**TABLE 2-2**  
**CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENT DATA (TOFC)**  
**PORT OF OAKLAND**  
**TRAILER-ON-FLAT-CAR SITE**

Well No.	Date	Well Casing Elevation * (Feet)	Depth to Product (Feet)	Depth to Water (Feet)	Water Level Elevation (Feet)	Product Thickness (Feet)	Corrected Water Level Elevation ** (Feet)
OP-3 cont.	11/18/97	6.48	3.89	5.61	0.87	1.72	2.31
	03/31/98	6.48	2.70	6.00	0.48	3.30	3.25
	05/21/98	6.48	3.80	6.77	-0.29	2.97	2.20
	07/30/98	6.48	5.79	7.64	-1.16	1.85	0.39
	08/12/98	6.48	5.20	8.40	-1.92	3.20	0.77
	09/28/98	6.48	5.74	7.49	-1.01	1.75	0.46
	11/04/98	6.48	5.86	7.65	-1.17	1.79	0.83
	11/30/98	12.61	7.59	7.59	5.02	0.00	5.02
	01/27/99	12.61	5.28	6.60	6.01	1.32	7.12
	02/17/99	12.61	2.75	3.55	9.06	0.80	9.73
	05/04/99	12.61	3.65	8.71	3.90	5.06	8.15
	08/12/99	12.61	3.99	7.94	4.67	3.95	7.99
OP-4	05/18/95	6.32	3.28	7.15	-0.83	3.87	2.42
	07/31/95	6.32	NOT GAUGED				
	09/07/95	6.32	4.64	6.17	0.15	1.53	1.44
	11/30/95	6.32	5.56	5.75	0.57	0.19	0.73
	01/10/96	6.32	3.43	6.45	-0.13	3.02	2.41
	03/25/96	6.32	3.11	6.89	-0.57	3.78	2.61
	05/17/96	6.32	3.30	6.43	-0.11	3.13	2.52
	07/25/96	6.32	4.30	7.58	-1.26	3.28	1.50
	09/16/96	6.32	4.71	8.09	-1.77	3.38	1.07
	11/12/96	6.32	5.10	8.56	-2.24	3.46	0.67
	01/20/97	6.32	3.30	6.49	-0.17	3.19	2.51
	03/06/97	6.32	3.80	4.99	1.33	1.19	2.33
	05/20/97	6.32	4.59	5.28	1.04	0.69	1.62
	07/15/97	6.32		* 6.32	-1.68		-1.68
	08/28/97	6.32		* 6.32	-1.68		-1.68
	09/15/97	6.32		9.90	-3.58		-3.58
	11/18/97	6.32		NA	NA		NA
	02/04/98	6.32		NA	NA		NA
	05/22/98	6.32		NA	NA		NA
	07/30/98	6.32		6.85	-0.53		-0.53
08/12/98	6.32		NA	NA		NA	
09/28/98	6.32		10.51	-4.19		-4.19	
11/04/98	6.32		9.59	-3.27		-3.27	
11/30/98	12.22		10.77	1.45		1.45	
01/27/99	12.22		9.50	2.72		2.72	
02/16/99	12.22	NOT GAUGED					
05/04/99	12.22		8.60	3.62		3.62	
08/12/99	12.22		4.37	7.85		7.85	

\* Elevation of top of casing, all well casings and groundwater elevations measured to City of Oakland Datum (2.998 Mean Sea Level) from May 1996 through August 1998. In February 1999, the well casings were resurveyed to Port Datum (-3.202 Mean sea Level) by PLS Survey Inc.

Water and product levels below pump housing - reported value is depth to pump.

\*\* The groundwater elevations in the monitoring wells with product are corrected by multiplying the specific gravity (0.84) of diesel by the diesel thickness and adding this value to the water elevation measurement from the well.

NA = Not Applicable. Wells are not gauged due to pump components blocking casing.



**TABLE 2-3  
CUMULATIVE SUMMARY OF ANALYTICAL DATA  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/D µg/l	TPH/G µg/l	B µg/l	T µg/l	E µg/l	X µg/l	Total BTEX µg/l	MTBE µg/l	As (mg/l)		
OKUS-W1	OKUS-W1	01/14/93	ND	410	20	4	220	ND	240		ND		
		05/12/93	120	ND	ND	ND	ND	ND	ND		ND		
		08/25/93	100	ND	ND	ND	ND	ND	ND		ND		
		11/11/93	160	91	1.1	0.88	21	1.6	24.58		ND		
		02/08/94	92	<50	<0.50	<0.50	<0.50	<0.50		ND		<0.10	
		05/03/94	61	<50	<0.50	<0.50	<0.50	<0.50		ND		<0.10	
		08/24/94	86	<50	<0.50	<0.50	<0.50	<0.50		ND		<0.10	
		11/16/94	51	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		02/22/95	120	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		06/22/95	<50	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		08/09/95	<50	<50	<0.50	<0.50	<0.50	<0.50		ND		0.04	
		11/29/95	480	<50	<0.50	<0.50	<0.50	<0.50		ND		<0.0050	
		02/27/96	330	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		05/30/96	320	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		08/27/96	440	<50	<0.50	<0.50	<0.50	<0.50		ND		<0.10	
		11/13/96	180	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		02/18/97	400	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		05/21/97	190	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		08/27/97	140	<50	<0.50	<0.50	<0.50	<0.50		ND		<0.0050	
		11/19/97	260	<50	<0.50	<0.50	<0.50	<0.50		ND		NA	
		02/05/98			WELL NOT SAMPLED								NA
		08/12/98	230	<50	<0.50	<0.50	<0.50	<0.50		ND		<0.0050	
		02/18/99	<50	<50	<0.5	<0.5	<0.5	<0.5		ND		<0.005	
		08/12/99	<50	350 Y	<1	150	1.6	3.2	154.8	<4		NA	
OKUS-W2	OKUS-W2	01/14/93	5400	14000	480	92	8500	ND	9100		0.036		
		05/12/93	2800	8800	220	47	4600	100	5000		0.093		
		08/25/93	6500	22000	420	92	10000	210	11000		0.089		
		11/11/93	7700	24000	540	150	13000	280	14000		ND		
		02/08/94	2300	4900	150	29	3000	78	3300		<0.10		
		05/03/94	2600	17000	300	<0.50	5800	220	6300		<0.10		
		08/24/94	8200	11000	320	67	7500	250	8100		<0.10		
		11/16/94	5500	10000	290	79	130	160	660		NA		
		02/22/95	2000	3500	100	18	1600	66	1800		NA		
		06/22/95	3200	13000	260	62	<0.50	110	430		NA		
		08/09/95	2900	4800	160	28	<0.50	200	390		0.92		
		11/29/95	5600	7100	240	34	<0.50	58	330		0.049		
		02/27/96	2400	5300	200	42	3400	160	3800		NA		
		05/30/96	1900	7000	210	<0.50	<0.50	180	390		NA		
		08/27/96	3100	6700	240	65	170	180	660		0.17		
		11/12/96	2900	6000	160	34	130	64	390		NA		
		02/18/97	3000	7800	190	44	4000	150	4390		NA		
		05/21/97	2500	3300	120	23	11	31	185		NA		
08/27/97	1800	4600	140	34	76	48	300		0.052				
11/19/97	2200	3300	120	23	2400	67	2600		NA				
02/06/98	1600	1100	72	11	<0.50	18	100		NA				

**TABLE 2-3  
CUMULATIVE SUMMARY OF ANALYTICAL DATA  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/D µg/l	TPH/G µg/l	B µg/l	T µg/l	E µg/l	X µg/l	Total BTEX µg/l	MTBE µg/l	As. (mg/l)	
OKUS-W2 cont.	OKUS-W2	05/22/98	1700	5400	170	41	45	51	310		NA	
		08/12/98	2400	2800	190	39	2600	150	3000		0.12	
		11/30/98	2800	3800	120	24	2800	160	3104		NA	
		02/18/99	1200 YLZ	6200 YL	220	52	5300	128	5700		0.071	
		05/04/99	1700 YLZ	6000	170	40	3600	98	3908		NA	
		08/12/99	810 Z	3900 Y	140	43	<10	117	300	<40	NA	
OKUS-W3	OKUS-W3	01/14/93	4200	4900	230	42	2600	44	2900		NA	
		05/12/93	4400	4600	290	60	3500	72	3900		0.14	
		08/25/93	2700	9400	280	55	4300	41	4700		0.08	
		11/11/93	5000	9500	390	110	5100	130	5700		0.14	
		02/08/94	4400	17000	420	78	9800	160	10000		0.12	
		05/03/94	3000	14000	310	61	6400	210	7000		0.14	
		08/24/94	4500	10000	350	78	7300	170	7900		<0.10	
		11/16/94	4700	9100	260	64	95	<0.50	420		NA	
		02/22/95	2400	7400	250	51	4400	150	4900		NA	
		06/22/95	3300	8100	250	53	<0.50	76	380		NA	
		08/09/95	3100	5200	200	39	<0.50	140	380		1.6	
		11/29/95	4500	5300	220	42	<0.50	44	310		0.18	
		02/27/96	4000	7900	330	75	6400	240	7000		NA	
		05/30/96	2300	8900	200	<0.50	<0.50	61	260		NA	
		08/27/96	2700	3100	170	37	64	36	310		0.20	
		11/12/96	4700	7400	220	60	<0.50	<0.50	280		NA	
		02/18/97	4600	9300	260	62	5800	85	6210		NA	
		05/21/97	2400	6100	190	43	120	41	394		NA	
		08/27/97	WELL INACCESSABLE - NOT SAMPLED									NA
		11/19/97	2800	6800	260	67	5600	280	6200		NA	
	02/06/98	3400	6000	210	<0.50	<0.50	<0.50	210		NA		
	05/22/98	3200	7000	280	67	25	47	420		NA		
	08/12/98	2600	6900	230	58	5400	170	5900		0.093		
	11/30/98	3400	6600	240	61	6600	270	7171		NA		
	02/17/99	610 YLZ	9800 YL	200	<50	2700	<50	2900		0.099		
	05/04/99	1300 YLZ	6000	210	54	3700	56	4020		NA		
	08/12/99	1600 Z	4800 Y	160	55	<20	80	295	<80	NA		
OKUS-W4	OKUS-W4	01/15/93	5400	8900	300	ND	4500	ND	4800		NA	
		05/12/93	2900	6000	320	110	4600	230	5300		0.16	
		08/26/93	2200	6700	350	72	4800	130	5400		0.098	
		11/11/93	2400	5500	250	53	4600	140	5000		0.13	
		02/07/94	2700	9100	250	<0.50	4900	150	5300		<0.10	
		05/03/94	2300	6500	240	34	4200	140	4600		0.12	
		08/24/94	2900	5200	200	41	3600	190	4000		0.11	
		11/16/94	2800	5500	320	52	<0.50	120	490		NA	
		02/22/95	2000	4300	250	47	2900	160	3400		NA	
		06/22/95	2700	4900	280	38	5200	140	5700		NA	
		08/09/95	2900	5300	270	54	<0.50	210	530		1.3	
	11/29/95	3100	4500	200	41	<0.50	46	290		0.14		

**TABLE 2-3  
CUMULATIVE SUMMARY OF ANALYTICAL DATA  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/D µg/l	TPH/G µg/l	B µg/l	T µg/l	E µg/l	X µg/l	Total BTEX µg/l	MTBE µg/l	As (mg/l)
OKUS-W4	OKUS-W4	05/13/97	WELL DECOMMISSIONED								
OKUS-W5	OKUS-W5	01/15/93	2900	550	53	11	180	20	260		NA
		05/12/93	2100	550	81	14	250	37	380		0.56
		08/25/93	PRODUCT IN WELL - NOT SAMPLED								
		11/11/93	1600	590	14	3.1	54	6.2	77		0.53
		02/07/94	1900	760	54	9.4	220	24	310		0.55
		05/03/94	2000	820	57	9.5	240	27	330		0.38
		08/24/94	1700	910	55	14	8.5	18	96		0.45
PRODUCT IN WELL - THE WELL HAS NOT BEEN SAMPLED SINCE 1994											
OKUS-W6	OKUS-W6	07/16/93	BRK	ND	2.5	ND	ND	ND	2.5		0.004
		08/25/93	590	ND	2.6	ND	4.9	1.3	8.8		0.013
		11/12/93	610	ND	3.6	ND	3.7	1.3	8.6		ND
PRODUCT IN WELL - THE WELL HAS NOT BEEN SAMPLED SINCE 1993											
OKUS-W7	OKUS-W7	07/16/93	ND	ND	2.1	ND	ND	ND	2.1		0.009
		08/25/93	930	56	2.9	ND	1.2	ND	4.1		ND
		11/12/93	1100	ND	ND	ND	ND	ND	ND		ND
		02/07/94	1100	ND	0.7	<0.50	<0.50	<0.50	0.7		<0.10
		05/03/94	1300	<50	<0.50	<0.50	<0.50	<0.50	ND		<0.10
		08/24/94	910	<50	2.5	0.54	<0.50	<0.50	3.0		<0.10
		11/16/94	820	<50	0.62	<0.50	<0.50	<0.50	0.6		NA
		02/22/95	830	<50	0.54	<0.50	<0.50	<0.50	0.5		NA
		06/22/95	850	<50	2.4	<0.50	0.52	<0.50	2.9		NA
		08/09/95	640	71	4.2	<0.50	1.2	1.2	6.6		0.074
		11/29/95	1300	64	4.3	<0.50	1.3	0.51	6.1		0.0095
		02/27/96	2600	<50	1.5	<0.50	0.54	<0.50	2.0		NA
		05/30/96	1900	60	2	<0.50	0.54	<0.50	2.0		NA
		08/27/96	1700	70	2.3	<0.50	<0.50	<0.50	2.3		<0.10
		11/12/96	1400	86	4.1	<0.50	<0.50	<0.50	4.1		NA
		02/18/97	2000	<50	0.75	<0.50	<0.50	<0.50	0.7		NA
		05/21/97	1200	<50	2.6	<0.50	0.84	<0.50	3.4		NA
		08/27/97	700	65	4.7	0.53	1.3	1.5	8.0		0.0069
		11/19/97	1600	<50	2.0	<0.50	0.84	<0.50	2.8		NA
		02/05/98	1500	<50	0.79	<0.50	<0.50	<0.50	0.8		NA
		08/12/98	1500	81	3.10	<0.50	1.0	0.11	4.2		<0.0050
		02/19/99	<50	<50	0.73	<0.5	<0.5	<0.5	0.7		<0.005
		08/12/99	91	52 Y	1.20	<0.5	<0.5	<0.5	1.2	<2	NA
OKUS-W8	OKUS-W8	07/16/93	ND	ND	ND	ND	ND	ND	ND		0.012
		08/27/93	1100	120	1.3	ND	ND	0.85	2.2		ND
		11/11/93	1300	190	3.5	1.3	46	4.9	55.7		ND
		02/07/94	1000	120	0.9	<0.50	<0.50	<0.50	0.9		<0.10
		05/03/94	780	79	0.99	<0.50	<0.50	<0.50	1.0		<0.10
		08/24/94	700	100	1.4	<0.50	<0.50	<0.50	1.4		<0.10
		11/16/94	830	110	0.77	<0.50	<0.50	<0.50	0.8		NA

**TABLE 2-3  
CUMULATIVE SUMMARY OF ANALYTICAL DATA  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/D µg/l	TPH/G µg/l	B µg/l	T µg/l	E µg/l	X µg/l	Total BTEX µg/l	MTBE µg/l	As (mg/l)	
OKUS-W8 cont.	OKUS-W8	02/22/95	370	150	0.96	<0.50	<0.50	1.2	2.2		NA	
		06/22/95	870	76	0.92	<0.50	<0.50	<0.50	0.9		NA	
		08/09/95	1100	90	1.1	<0.50	<0.50	1.3	2.4		0.078	
		11/29/95	2400	100	0.73	<0.50	<0.50	0.91	1.6		<0.0050	
		02/27/96	1900	80	<0.50	<0.50	<0.50	1.3	1.3		NA	
		05/30/96	2200	210	<0.50	<0.50	<0.50	0.7	0.7		NA	
		08/27/96	2100	150	0.64	<0.50	<0.50	<0.50	0.64		<0.10	
		11/12/96	1600	170	<0.50	<0.50	<0.50	1.1	1.1		NA	
		02/18/97	1900	140	<0.50	<0.50	<0.50	1.3	1.3		NA	
		05/21/97	1600	100	1.3	<0.50	<0.50	1.1	2.4		NA	
		08/27/97	1100	100	1.5	<0.50	1.1	3.2	5.8		<0.0050	
		11/19/97	1500	94	<0.50	<0.50	<0.50	0.69	0.69		NA	
		02/05/98	1400	56	<0.50	<0.50	<0.50	<0.50	ND		NA	
		08/12/98	2000	79	<0.50	<0.50	<0.50	<0.50	ND		<0.0050	
	02/18/99	110 Y	64 Y	<0.5	<0.5	<0.5	<0.5	ND		<0.005		
	08/12/99	<50	250 Y	<0.5	73	1.1	2.9	77.00	<2	NA		
APL/UP-W1	APL/UP-W1	07/16/93	700	300	25.4	1.7	ND	3.0	30		0.011	
		08/26/93	810	720	47	1.3	360	14	420		0.013	
		11/11/93	530	560	26	ND	220	11	260		ND	
		02/07/94	660	620	25	<0.50	180	10	220		<0.10	
		05/03/94	590	680	48	2.9	260	9.8	320		<0.10	
		08/24/94	420	830	48	4.8	12	3.2	68		<0.10	
		11/15/94	480	470	36	3.6	9.6	12	61		NA	
		02/22/95	510	470	33	2.8	170	9	210		NA	
		06/22/95	320	160	12	0.82	3.5	2.4	19		NA	
		08/09/95	160	69	4.2	<0.50	<0.50	2.3	7		<0.0050	
		11/29/95	920	170	7.4	0.58	66	3.5	78		0.018	
		02/27/96			WELL INACCESSIBLE - NOT SAMPLED							
		05/30/96			WELL INACCESSIBLE - NOT SAMPLED							
		08/27/96			WELL INACCESSIBLE - NOT SAMPLED							
		11/12/96			WELL INACCESSIBLE - NOT SAMPLED							
		02/18/97	1800	620	43	3.3	130	20	196		NA	
		05/21/97	850	260	22	<0.50	13	2.5	38		NA	
		08/27/97	930	310	31	1.2	9.7	8.5	50		0.026	
		11/18/97	1400	740	53	<0.50	370	28	450		NA	
		02/05/98	1000	640	55	<0.50	<0.50	22	77		NA	
	05/22/98	490	270	20	<0.50	5.2	5.4	31		NA		
	08/12/98	500	160	17	0.72	130	11	160		0.027		
	11/30/98	500	85	3.8	<0.50	47	5.8	57		NA		
	02/18/99	<50	140 YL	9.3	<0.5	70	<0.5	79		0.015		
	05/04/99	80 YLZ	270	42	0.85	110	2.45	155		NA		
	08/12/99	52 Z	320 Y	35	3.4	<1	14	52.4	<4	NA		
APL/UP-W2	APL/UP-W2	07/16/93	ND	ND	8.0	ND	ND	ND	8		0.016	
		08/26/93	240	94	ND	ND	35	2.4	37		0.023	
		11/11/93	190	110	5.0	ND	38	2.6	46		ND	



**TABLE 2-3  
CUMULATIVE SUMMARY OF ANALYTICAL DATA  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/D µg/l	TPH/G µg/l	B µg/l	T µg/l	E µg/l	X µg/l	Total BTEX µg/l	MTBE µg/l	As (mg/l)
APL/UP-W2	APL-UP-W2	02/07/94	270	120	6.6	<0.50	38	1.8	46		<0.10
cont.		05/03/94	100	<50	<0.50	<0.50	<0.50	<0.50	ND		<0.10
		08/24/94	330	220	13	0.77	3.5	3.1	20		<0.10
		11/15/94	320	190	11	<0.50	63	5.4	79		NA
		02/22/95	550	320	19	<0.50	100	9.5	130		NA
		06/22/95	300	170	10	62	2.2	2.3	76		NA
		08/09/95	180	62	3.5	<0.50	<0.50	2.3	5.8		0.22
		11/29/95	690	110	7.2	<0.50	49	2.3	59		0.019
		02/27/96	480	100	5.3	<0.50	33	2.9	41		NA
		05/30/96	280	<50	1.9	<0.50	<0.50	1.2	3.1		NA
		08/27/96	320	<50	1.1	<0.50	1.0	<0.50	2.1		<0.10
		11/12/96	470	85	3.2	<0.50	1.7	0.62	5.5		NA
		02/18/97	770	170	12	0.77	81	9.4	103		NA
		05/21/97	430	92	4.8	<0.50	1.1	<0.50	5.9		NA
		08/27/97	450	130	6.4	<0.50	3.8	1.9	12.0		0.017
		11/18/97	640	300	17	<0.50	120	15	150		NA
		02/05/98	730	180	15	<0.50	<0.50	4.9	20		NA
		05/22/98	250	88	4	<0.50	1.7	<0.50	5.7		NA
		08/12/98	360	58	3	<0.50	35	3.2	42		0.012
		11/30/98	400	65	2.1	<0.50	33	3.8	38.9		NA
		02/18/99	<50	130 YL	4	<0.5	37	<0.5	41		0.027
		05/04/99	53 YLZ	85	2.7	<0.5	17	<0.5	19.7		NA
		08/12/99	<50	500 Y	1.9	230	<1	5.5	237.4	<4	NA
<b>DUPLICATES</b>											
OKUS-W5	OKUS-W6	01/15/93	2800	510	50	10	170	19	250		NA
OKUS-W1	OKUS-W6	05/12/93	140	ND	ND	ND	ND	ND	ND		ND
APL/UP-W1	QA/QC-1	07/16/93	ND	0.21	22.4	ND	ND	2.4	25		0.012
OKUS-W4	OKUS-W9	08/26/93	2700	6200	340	78	4500	100	5000		0.10
OKUS-W8	OKUS-W9	11/11/93	1300	120	1.3	ND	4	1.4	7		2.40
OKUS-W3	QA/QC-1	02/08/94	2900	15000	280	64	5800	<0.50	6100		0.12
OKUS-W4	OKUS-QC1	05/03/94	2500	5400	300	41	5200	130	5700		0.12
OKUS-W8	OKUS-QC1	08/24/94	950	92	1.6	<0.50	<0.50	<0.50	2		<0.10
APL/UP-W2	OKUS-QC1	11/16/94	310	190	10	<0.50	62	4.7	77		NA
APL/UP-W2	APL-W12	02/22/95	490	360	20	<0.50	110	6.7	140		NA
APL/UP-W2	APL-W12	08/09/95	160	71	3.4	<0.50	<0.50	2.2	6		0.20
APL/UP-W1	APL-W11	11/29/95	1100	170	7.5	0.57	66	4.4	79		0.02
OKUS-W1	OKUS-W11	02/27/96	330	<50	<0.50	<0.50	<0.50	<0.50	ND		NA
OKUS-W1	OKUS-W11	05/30/96	570	<50	<0.50	<0.50	<0.50	<0.50	ND		NA
OKUS-W1	OKUS-W11	08/27/96	330	<50	<0.50	<0.50	<0.50	<0.50	ND		<0.10
OKUS-W2	OKUS-W12	11/12/96	3000	11000	210	55	26	89	380		NA
APL/UP-W1	APL/UP-W11	02/18/97	1800	370	42	1.4	140	18	201		NA
OKUS-W1	OKUS-W11	05/21/97	220	<50	<0.50	<0.50	<0.50	<0.50	ND		NA
OKUS-W2	OKUS-W12	08/27/97	1500	4800	140	29	70	23	260		0.068
OKUS-W7	OKUS-W17	11/19/97	1400	<50	2.1	<0.50	0.66	<0.50	2.8		NA
OKUS-W2	OKUS-100	05/22/98	1400	<50	<0.50	<0.50	<0.50	<0.50	ND		NA
OKUS-W2	OKUS-W200	08/12/98	2100	<50	<0.50	<0.50	<0.50	<0.50	ND		0.10
APL/UP-W2	ADL/UP-W2	11/30/98	510	54	1.9	<0.50	31	4	37		NA

**TABLE 2-3  
CUMULATIVE SUMMARY OF ANALYTICAL DATA  
PORT OF OAKLAND  
MOTOR FREIGHT RAILYARD**

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/D µg/l	TPH/G µg/l	B µg/l	T µg/l	E µg/l	X µg/l	Total BTEX µg/l	MTBE µg/l	As (mg/l)
OKUS-W3	OKUS-W12	02/17/99	460 YLZ	6700 Y	190	45	2600	<25	2835		0.097
OKUS-W3	OKUS-W13	05/04/99	NA	7000	210	55	3700	62	4027		NA
OKUS-W1	OKUS-W10	08/12/99	<50	290 Y	<0.5	150	1.4	3.27	155	<2	0.097
<b>TRIP BLANKS</b>											
UPMF	OAK-FB 1	07/16/93	NA	NA	ND	ND	ND	ND	ND		NA
UPMF	OAK-TB 2	07/16/93	NA	NA	ND	ND	ND	ND	ND		NA
UPMF	TB-1	08/27/93	NA	NA	ND	ND	ND	ND	ND		NA
UPMF	TB-2	08/27/93	NA	NA	ND	ND	ND	ND	ND		NA
UPMF	TB-1	11/12/93	NA	NA	ND	ND	ND	ND	ND		NA
UPMF	TB-1	08/24/94	NA	NA	ND	ND	ND	ND	ND		NA
UPMF	TB-1	11/16/94	NA	NA	NA	NA	NA	NA	NA		NA
UPMF	TB-1	02/22/95	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TB-1	06/22/95	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TB-1	08/09/95	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	11/29/95	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	02/27/96	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	05/29/96	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	08/27/96	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	11/12/96	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	02/18/97	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	05/21/97	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	08/27/97	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	11/19/97	NA	ND	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	02/02/98	NA	NA	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	08/14/98	NA	NA	ND	ND	ND	ND	ND		NA
UPMF	TRIP BLANK	11/30/98	NA	<50	<0.5	<0.5	<0.5	<0.5	ND		NA
UPMF	TRIP BLANK	02/17/99	NA	<50	<0.5	<0.5	<0.5	<0.5	ND		NA
UPMF	TB2	02/18/99	NA	<50	<0.5	<0.5	<0.5	<0.5	ND		NA
UPMF	TB3	02/19/99	NA	<50	<0.5	<0.5	<0.5	<0.5	ND		NA
UPMF	TRIP BLANK	05/04/99	NA	<50	<0.5	<0.5	<0.5	<0.5	ND		NA

TPH/D - Total Petroleum Hydrocarbons as Diesel analyzed using EPA Method 8015 Mod. with Silicia Gel Cleanup (since 2/99)

TPH/G - Total Petroleum Hydrocarbons as Gasoline analyzed using EPA Method 8015 Mod.

BTEX -Benzene, toluene, ethylbenzene, and xylenes analyzed using EPA Method 8020.

As - Arsenic analyzed using EPA Method 7060.

Samples were analyzed at Curtis & Tompkins Ltd., a state certified analytical laboratory in Berkeley, California (since 2/99).

µg/l - microgram per liter

mg/L - milligram per liter

ND - Not Detected

NA - Not Analyzed


BRK - Bottle broken during shipment

Y - Sample exhibits fuel pattern which does not resemble standard, per Curtis & Tompkins, Ltd.

H - Heavier hydrocarbons than indicated standard, per Curtis & Tompkins, Ltd.

L - Lighter hydrocarbons than indicated standard, per Curtis & Tompkins, Ltd.

Z - Sample exhibits unknown single peak or peaks, per Curtis & Tompkins, Ltd.



Appendix A  
Monitoring Well  
Fluid Level Logs and Purge Forms



Well No.: ADL/UP-W2 Site: ADL Date: 5/4/99

Client: Part of Oakland Project No.:

Well Casing Diameter: 2" 4" 6" Other: Well Casing Material: PVC SS Other:

Well Headspace: PID (ppm): FID (ppm):

Sampler:

Total Depth of Well (feet): 16.98 Reference Point: Datum:

Depth to Water (feet): 9.76

Water Column Height (feet): 7.22 (X) 2" - 0.16 Gal/feet (X) 3 Minimum Purge Volume (Gallons)

4" - 0.65

6" - 1.47

**PURGE METHOD:**

Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Bailor:

PVC   
Teflon   
SS   
Disposable

Pump Make/Model: Purge Equipment Decon'd? Y  N

Depth of Pump Intake (feet): Purge/Decon Water Containerized? Y  N  Container Type/Volume?

Time	Gallons	Temp. (C / F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1359	0	72.1	7.29	3200				
1401	1	68.9	7.25	2870				
1402	2	67.6	7.51	1470				
1403	3	67.4	7.44	1840				
1404	4	67.2	7.47	1860				

**SAMPLE COLLECTION METHOD:**

Pump:  Flow rate: \_\_\_\_\_

Bailor:  Type: \_\_\_\_\_

Others:  Desc.: \_\_\_\_\_

Sample ID: ADL/UP-W2

Dup. ID (if appl.): \_\_\_\_\_

Sample Time: 1410

**SAMPLE ANALYSES:**

Method:	Container Type/Vol.	Preservative
<u>BOISM, B020</u>	<u>340 mL VOA</u>	<u>HCl</u>
<u>BOISM</u>	<u>1 amber, 1L</u>	

Camp Dresser & McKee  
 0100140  
 10/05/94  
 MWPURGE  
 PROJECTS\FORMS\CAD



Well No.: APL/UP-W1 Site: APL Date: 5/4/99  
 Client: Port of Oakland Project No.: \_\_\_\_\_  
 Well Casing Diameter: 2" 4" 6" Others: \_\_\_\_\_ Well Casing Material: PVC SS Others: \_\_\_\_\_  
 Well Headspace: \_\_\_\_\_ PID (ppm): \_\_\_\_\_ FID (ppm): \_\_\_\_\_  
 Sampler: \_\_\_\_\_

Total Depth of Well (feet): 21.85 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Depth to Water (feet): 10.39  
 Water Column Height (feet): 11.46 (X) 2" - 0.16 Gal/feet = 1.8 (X) 3 = 5.5 Minimum Purge Volume (Gallons)  
4" - 0.65  
6" - 1.47

PURGE METHOD: \_\_\_\_\_  
 Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Bailer: PVC   
 Teflon   
 SS   
 Disposable   
 Pump Make/Model: \_\_\_\_\_ Purge Equipment Decon'd? Y  N   
 Depth of Pump Intake (feet): \_\_\_\_\_ Purge/Decon Water Containerized? Y  N  Container Type/Volume? \_\_\_\_\_

Time	Gallons	Temp. (C (F))	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1335	0	72.0	7.08	4160				
↓	2	64.8	7.11	4160				
	4	63.4	7.06	4270				
1350	6	63.4	7.04	4240				

SAMPLE COLLECTION METHOD:

Pump:  Flow rate: \_\_\_\_\_  
 Bailer:  Type: \_\_\_\_\_  
 Other:  Desc.: \_\_\_\_\_  
 Sample ID: APL/UP-W1  
 Dup. ID (if appl.): \_\_\_\_\_  
 Sample Time: 1350

SAMPLE ANALYSES:

Method:	Container Type/Vol.	Preservative
<u>8015M 8010</u>	<u>3 40 ml VDA</u>	<u>HCl</u>
<u>8015M</u>	<u>1 L amber</u>	



environmental engineers, scientists, planners, & management consultants

MONITORING WELL PURGE AND SAMPLING FORM

Camp Dresser & McKee 0100140 10-03734 MWPL/MS/END

Well No.: OKUS-W3 Site: UP Motor Freight Facility Date: 5/4/99

Client: \_\_\_\_\_ Project No.: \_\_\_\_\_

Well Casing Diameter: 2" 4" 6" Other: \_\_\_\_\_ Well Casing Material: PVC SS Other: \_\_\_\_\_

Well Headspace: \_\_\_\_\_ PID (ppm): \_\_\_\_\_ FID (ppm): \_\_\_\_\_

Sampler: \_\_\_\_\_

Total Depth of Well (feet): 22.09 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_

Depth to Water (feet): 8.91

Water Column Height (feet): 13.18 (X) 4" - 0.65 Gal/feet = \_\_\_\_\_ (X) 3" = \_\_\_\_\_ Minimum Purge Volume (Gallons)

2" - 0.16  
6" - 1.47

PURGE METHOD:

Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Bailer: PVC  Teflon  SS  Disposable

Pump Make/Model: \_\_\_\_\_ Purge Equipment Decon'd? Y  N

Depth of Pump Intake (feet): \_\_\_\_\_ Purge/Decon Water Containerized? Y  N  Container Type/Volume? \_\_\_\_\_

Time	Gallons	Temp. (C / F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1426	0	67.7	7.43	1680				
1427	1.5	66.0	7.10	1510				
1429	3	65.5	7.07	1660				
1432	5	64.9	7.04	2120				
1434	6	64.7	7.04	2150				
1435	7	64.3	6.99	2170				

SAMPLE COLLECTION METHOD:

Pump:  Flow rate: \_\_\_\_\_  
 Bailer:  Type: \_\_\_\_\_  
 Other:  Desc.: \_\_\_\_\_

SAMPLE ANALYSES:

Method:	Container Type/Vol.	Preservative

Sample ID: OKUS-W3  
 Dup. ID (if appl.): OKUS-W3 (1335)  
 Sample Time: 1442



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MONITORING WELL PURGE AND SAMPLING FORM

Camp Dresser & McKee 0100140 10/03/94 IMPURAGE PROJECT 5-OKUS-CAD

Well No.: OKUS-W2 Site: \_\_\_\_\_ Date: 5/4/99

Client: \_\_\_\_\_ Project No.: \_\_\_\_\_

Well Casing Diameter: 2" 4" 6" Other: \_\_\_\_\_ Well Casing Material: PVC SS Other: \_\_\_\_\_

Well Headspace: \_\_\_\_\_ PID (ppm): \_\_\_\_\_ FID (ppm): \_\_\_\_\_

Sampler: \_\_\_\_\_

Total Depth of Well (feet): 22.33 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_

Depth to Water (feet): 8.58

Water Column Height (feet): 13.75 (X) 4" - 0.16 Gal/feet = \_\_\_\_\_ (X) 3" - \_\_\_\_\_ Minimum Purge Volume (Gallons)

6" - 1.47

**PURGE METHOD:**

Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Boiler: PVC  Teflon  SS  Disposable

Pump Make/Model: \_\_\_\_\_ Purge Equipment Decon'd? Y  N

Depth of Pump Intake (feet): \_\_\_\_\_ Purge/Decon Water Containerized? Y  N  Container Type/Volume? \_\_\_\_\_

Time	Gallons	Temp (C / F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1452	0	65.5	7.01	1580				
1453	1	65.3	6.92	1590				
1455	2	65.3	6.95	1570				
1456	3	65.2	6.92	2490				
1457	4	65.1	6.91	2730				
1459	5	65.0	6.92	2720				
1501	6	64.9	6.91	2740				
1503	7	64.7	6.89	2780				

**SAMPLE COLLECTION METHOD:**

Pump:  Flow rate: \_\_\_\_\_  
 Boiler:  Type: \_\_\_\_\_  
 Others:  Desc.: \_\_\_\_\_

Sample ID: OKUS-W2  
 Dup. ID (if appl.): \_\_\_\_\_  
 Sample Time: 1505

**SAMPLE ANALYSES:**

Method:	Container Type/Vol.	Preservative
_____	_____	_____
_____	_____	_____
_____	_____	_____



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**MONITORING WELL PURGE AND SAMPLING FORM**

Camp Dresser & McKee

0100740

10/05794

W/PURGE

I:\PROJECTS\FORMS\CAD\

August 12, 1999  
Data





Well No.: APL/UP-W1 Site: UPMF Date: 8-12-99  
 Client: Port of Oakland Project No.: 10605-25291-GW, UPMF  
 Well Casing Diameter: 2" 4" 6" Other: Well Casing Material: PVC SS Other:  
 Well Headspace: PID (ppm): - FID (ppm): -  
 Sampler: Voscott

Total Depth of Well (feet): 21.85 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Depth to Water (feet): 10.27  
 Water Column Height (feet): 11.58 (X) 2" - 0.16 Gal/feet = 1.85 (X) 3 = 5.6 Minimum Purge Volume (Gallons)  
 4" - 0.65  
 6" - 1.47

PURGE METHOD: \_\_\_\_\_  
 Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Bailor:  PVC  
 Teflon  
 SS  
 Disposable  
 Pump Make/Model: \_\_\_\_\_ Purge Equipment Decon'd? Y  N   
 Depth of Pump Intake (feet): \_\_\_\_\_ Purge/Decon Water Containerized? Y  N  Container Type/Volume? \_\_\_\_\_

Time	Gallons	Temp. (C/F)	pH	Conductivity (umhos/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1230	0	-	-	-	-	-	-	light yellow
1235	1	18.4	7.6	2.41	19	1.2	-117	in color
1240	2	18.3	7.6	2.38	58	1.6	-128	↓
1250	3	17.9	7.6	2.35	13	0.9	-132	
1255	4	17.9	7.6	2.32	9	0.9	-127	
1300	5	17.8	7.6	2.33	4	0.9	-129	
1305	6	17.8	7.6	2.32	4	0.9	-128	

SAMPLE COLLECTION METHOD:

Pump:  Flow rate: \_\_\_\_\_  
 Bailor:  Type: \_\_\_\_\_  
 Other:  Desc.: \_\_\_\_\_  
 Sample ID: APL/UP-W1  
 Dup. ID (if appl.): \_\_\_\_\_  
 Sample Time: 1310

SAMPLE ANALYSES:

Method:	Container Type/Vol.	Preservative
<u>8015</u>	<u>1-L Amber</u>	<u>-</u>
<u>8020</u>	<u>4-40ml VOA's</u>	<u>HCl</u>



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MONITORING WELL PURGE AND SAMPLING FORM

Well No.: APL/UP-W2 Site: UPMF Date: 8-12-99  
 Client: Port of Oakland Project No.: 10605-252A-GW-UPMF  
 Well Casing Diameter: 2" 4" 6" Other: \_\_\_\_\_ Well Casing Material: PVC SS Other: \_\_\_\_\_  
 Well Headspace: \_\_\_\_\_ PID (ppm): \_\_\_\_\_ FID (ppm): \_\_\_\_\_  
 Sampler: P. Sharma

Total Depth of Well (feet): 16.98 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Depth to Water (feet): 9.58  
 Water Column Height (feet): 7.4 (X) 2" - 0.16 Gal/feet = 1.2 (X) 3 = 3.6 Minimum Purge Volume (Gallons)  
 4" - 0.65  
 6" - 1.47

PURGE METHOD: \_\_\_\_\_  
 Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Baller: PVC   
 Teflon   
 SS   
 Disposable   
 Pump Make/Model: Geotech Geopump 2 Purge Equipment Decon'd? Y  N   
 Depth of Pump Intake (feet): 10'-11' Purge/Decon Water Containerized? Y  N  Container Type/Volume? 55-gallon drum

Time	Gallons	Temp. (C/F)	pH	Conductivity (umhos/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1230	0	-	-	-	-	-	-	slight yellow tint to groundwater
	0.5	21.6	7.59	1.92	0	1.30	6	
	1.0	21.9	7.59	1.91	0	0.44	15	
	1.5	21.6	7.58	1.91	0	0.47	-37	
	2.0	21.8	7.58	1.91	0	0.38	-34	
	2.5	21.8	7.58	1.91	0	0.28	-48	
	3.0	21.8	7.46	1.91	0	0.85	-31	
	3.5	21.8	7.47	1.91	0	0.43	-37	
1310	4.0	21.9	7.46	1.91	0	0.29	-23	

SAMPLE COLLECTION METHOD:

Pump:  Flow rate: \_\_\_\_\_  
 Baller:  Type: \_\_\_\_\_  
 Other:  Desc.: \_\_\_\_\_  
 Sample ID: APL/UP-W2  
 Dup. ID (if appl.): \_\_\_\_\_  
 Sample Time: 1310

SAMPLE ANALYSES:

Method:	Container Type/Vol.	Preservative
<u>B015</u>	<u>1-L Amber</u>	<u>-</u>
<u>B020</u>	<u>4 40mL-VOAs</u>	<u>HCl</u>



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MONITORING WELL PURGE AND SAMPLING FORM

Well No.: OKUS-W2 Site: UPMF Date: 8-12-99  
 Client: Port of Oakland Project No.: 10605-25291-GW, UPMF  
 Well Casing Diameter: 2" 4" 6" Other: Well Casing Material: PVC SS Other:  
 Well Headspace: PID (ppm): — FID (ppm): —  
 Sampler: Voscoth

Total Depth of Well (feet): 22.33 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Depth to Water (feet): 9.06  
 Water Column Height (feet): 13.27 (X) 2" - 0.16 Gal/feet = 2.12 (X) 3 = 6.4 Minimum Purge Volume (Gallons)  
 4" - 0.65  
 6" - 1.47

PURGE METHOD:  
 Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Bailor:  PVC  Teflon  SS  Disposable   
 Pump Make/Model: \_\_\_\_\_ Purge Equipment Decon'd? Y  N   
 Depth of Pump Intake (feet): \_\_\_\_\_ Purge/Decon Water Containerized? Y  N  Container Type/Volume? \_\_\_\_\_

Time	Gallons	Temp. (C) (F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1345	0	—	—	—	—	—	—	yellow tint
1350	1	21.0	7.8	2.51	1	0.8	-177	in gw
1358	3	21.1	7.8	3.13	4	0.9	-186	
1402	4	20.8	7.8	3.60	5	0.7	-198	
1406	5	20.9	7.8	3.34	7	0.9	-188	
1412	7	20.8	7.8	3.67	7	0.7	-188	

SAMPLE COLLECTION METHOD:

Pump:  Flow rate: \_\_\_\_\_  
 Bailor:  Type: DISPOSABLE  
 Other:  Desc.: \_\_\_\_\_  
 Sample ID: OKUS-W2  
 Dup. ID (if appl.): \_\_\_\_\_  
 Sample Time: 1420

SAMPLE ANALYSES:

Method:	Container Type/Vol.	Preservative
8015	1-L Amber	—
8020	4-40ml VOAs	HCl



MONITORING WELL PURGE AND SAMPLING FORM

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Well No.: OKUS-W1 Site: Port of Oakland (UPMF) Date: 8/12/99  
 Client: Port of Oakland Project No.: 10605-25291 - GW. UPMF  
 Well Casing Diameter: 2" 4" 6" Other: Well Casing Material: PVC SS Other:  
 Well Headspace: PID (ppm): - FID (ppm): -  
 Sampler: P. Sharma

Total Depth of Well (feet): 18.80 Reference Point: - Datum: -  
 Depth to Water (feet): 8.26  
 Water Column Height (feet): 10.54 (X) 2" - 0.16 Gal/feet = 1.68 (X) 3 = 5.1 Minimum Purge Volume (Gallons)  
 4" - 0.65  
 6" - 1.47

PURGE METHOD:  
 Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Baller: PVC  Teflon  SS  Disposable   
 Pump Make/Model: Geotech Geopump 2 Purge Equipment Decon'd? Y  N   
 Depth of Pump Intake (feet): 9'-10' Purge/Decon Water Containerized? Y  N  Container Type/Volume? 55-gallon drum

Time	Gallons	Temp. (F)	pH	Conductivity (micro/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1340	-	-	-	-	-	-	-	slight yellow tint to groundwater;
	0.5	23.2	7.85	0.51	0	1.14	-168	sample particles (leaves) present
	1.0	22.7	7.85	0.57	0	0.55	-182	
	1.5	22.5	7.86	0.61	0	0.26	-199	
	2.0	22.4	7.85	0.63	0	0.26	-211	
	2.5	21.9	7.84	0.63	0	0.14	-218	
	3.0	21.8	7.85	0.64	0	0.24	-222	
	3.5	21.8	7.87	0.64	0	0.12	-225	
	4.0	21.8	7.86	0.64	0	0.30	-225	
	4.5	21.8	7.85	0.64	0	0.27	-224	
1430	5.1	21.8	7.86	0.64	0	0.21	-225	

SAMPLE COLLECTION METHOD:

Pump:  Flow rate: \_\_\_\_\_  
 Baller:  Type: \_\_\_\_\_  
 Other:  Desc.: \_\_\_\_\_  
 Sample ID: OKUS-W1  
 Dup. ID (if appl.): OKUS-W1D (1500)  
 Sample Time: 1430

SAMPLE ANALYSES:

Method:	Container Type/Vol.	Preservative
<u>8015</u>	<u>1-L Amber</u>	
<u>8020</u>	<u>4 40-ML VOA's</u>	<u>HCl</u>



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MONITORING WELL PURGE AND SAMPLING FORM

Well No.: OKUS-W3 Site: UPMF Date: 8-12-99  
 Client: Port of Oakland Project No.: 10605-25291 - GW. UPMF  
 Well Casing Diameter: 2" 4" 6" Other: \_\_\_\_\_ Well Casing Material: PVC SS Other: \_\_\_\_\_  
 Well Headspace: \_\_\_\_\_ PID (ppm): \_\_\_\_\_ FID (ppm): \_\_\_\_\_  
 Sampler: Vo Scott

Total Depth of Well (feet): 22.09 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Depth to Water (feet): 9.39  
 Water Column Height (feet): 12.7 (X) 2" - 0.16 Gal/feet = 2.0 (X) 3 = 6.0 Minimum Purge Volume (Gallons)  
 4" - 0.65  
 6" - 1.47

**PURGE METHOD:** \_\_\_\_\_  
 Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Baller: PVC  Teflon  SS  Disposable   
 Pump Make/Model: \_\_\_\_\_ Purge Equipment Decon'd? Y  N   
 Depth of Pump Intake (feet): \_\_\_\_\_ Purge/Decon Water Containerized? Y  N  Container Type/Volume? \_\_\_\_\_

Time	Gallons	Temp. (C / F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1435	0	-	-	-	-	-	-	
1442	2	20.7	7.8	2.3	20	0.9	10.1	
1446	3	20.4	7.8	2.54	40	0.7	10.5	
1450	4	20.7	7.8	2.72	21	0.4	10.7	
1458	6	20.4	7.8	2.89	15	0.5	10.4	

**SAMPLE COLLECTION METHOD:** Pump:  Flow rate: \_\_\_\_\_ Baller:  Type: DISPOSABLE Other:  Desc.: \_\_\_\_\_  
 Sample ID: OKUS-W3  
 Dup. ID (if appl.): \_\_\_\_\_  
 Sample Time: 1500

**SAMPLE ANALYSES:**

Method:	Container Type/Vol.	Preservative
8015	1-L Amber	-
8020	4-40mL VOAs	HCl



**MONITORING WELL PURGE AND SAMPLING FORM**

Well No.: OKUS-W7 Site: UPMF Date: 8-12-99  
 Client: Port of Oakland Project No.: 10605-25291-6W. UPMF  
 Well Casing Diameter: 2" 4" 6" Other: Well Casing Material: PVC SS Other:  
 Well Headspace: PID (ppm): — FID (ppm): —  
 Sampler: Noscoth

Total Depth of Well (feet): 19.84 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Depth to Water (feet): 5.48 2" - 0.16  
 Water Column Height (feet): 14.39 (X) 4" - 0.65 Gal/feet = 2.3 (X) 3 = 6.9 Minimum Purge Volume (Gallons)  
6" - 1.47

PURGE METHOD:

Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Baller:  PVC   
 Teflon   
 SS   
 Disposable

Pump Make/Model: \_\_\_\_\_ Purge Equipment Decon'd? Y  N   
 Depth of Pump Intake (feet): \_\_\_\_\_ Purge/Decon Water Containerized? Y  N  Container Type/Volume? \_\_\_\_\_

Time	Gallons	Temp. (C) (F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (ppm)	En (mV)	Observations/Comments
1516	0	—	—	—	—	—	—	
1525	2	20.1	7.7	7.42	16	1.0	9.64	
1530	4	20.5	7.6	2.22	27	0.8	-183	
1538	6	20.3	7.6	2.36	28	0.9	-186	
1541	7	20.5	7.6	2.06	57	0.9	-174	

SAMPLE COLLECTION METHOD:

Pump:  Flow rate: \_\_\_\_\_  
 Baller:  Type: \_\_\_\_\_  
 Other:  Desc.: \_\_\_\_\_  
 Sample ID: OKUS-W7  
 Dup. ID (if appl.): \_\_\_\_\_  
 Sample Time: 1550

SAMPLE ANALYSES:

Method:	Container Type/Vol.	Preservative
8015	1-L Amber	—
8020	4-ml VOA	HCl



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MONITORING WELL PURGE AND SAMPLING FORM



Well No.: OKUS-W8 Site: Port of Oakland (UPMF) Date: 8/12/99  
 Client: Port of Oakland Project No.: 10605-25291-GW, UPMF  
 Well Casing Diameter: 2" 4" 6" Other: Well Casing Material: PVC SS Other:  
 Well Headspace: PID (ppm): - FID (ppm): -  
 Sampler: P. Sharma

Total Depth of Well (feet): 14.80 Reference Point: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Depth to Water (feet): 5.34  
 Water Column Height (feet): 9.46 (X) 2" - 0.16 Gal/feet = 1.5 (X) 3 = 4.5 Minimum Purge Volume (Gallons)  
 4" - 0.65  
 6" - 1.47

PURGE METHOD: \_\_\_\_\_  
 Submersible Pump  Bladder Pump  Hand Pump  Peristaltic Pump  Bailor: PVC  Teflon  SS  Disposable   
 Pump Make/Model: Geotech Geopump 2 Purge Equipment Decon'd? Y  N   
 Depth of Pump Intake (feet): 6'-7' Purge/Decon Water Containerized? Y  N  Container Type/Volume? 55-gallon drum

Time	Gallons	Temp. (C/F)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	DO (ppm)	Eh (mV)	Observations/Comments
1520	0	-	-	-	-	-	-	slight dull yellow tint
	0.5	21.7	7.67	2.89	2	0.29	-209	
	1.0	21.4	7.63	2.86	2	0.28	-218	→ brownish yellow
	1.5	21.4	7.63	2.87	2	0.12	-222	
	2.0	21.5	7.63	2.87	2	0.06	-224	
	2.5	21.3	7.62	2.90	2	0.04	-217	
	3.0	21.3	7.62	2.90	2	0.02	-224	
	3.5	21.3	7.62	2.90	2	0.04	-226	
	4.0	21.3	7.61	2.90	2	0.04	-231	
1550	4.5	21.3	7.61	2.91	0	0.02	-231	

SAMPLE COLLECTION METHOD:

Pump:  Flow rate: \_\_\_\_\_  
 Bailor:  Type: \_\_\_\_\_  
 Other:  Desc.: \_\_\_\_\_  
 Sample ID: OKUS-W8  
 Dup. ID (if appl.): \_\_\_\_\_  
 Sample Time: 1550

SAMPLE ANALYSES:

Method:	Container Type/Vol.	Preservative
<u>8015</u>	<u>1-L Amber</u>	<u>-</u>
<u>8020</u>	<u>4 40-ML VOAs</u>	<u>HCl</u>



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MONITORING WELL PURGE AND SAMPLING FORM

Appendix B  
Analytical Reports and  
Chain-of Custody Records



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900, Fax (510) 486-0532

A N A L Y T I C A L   R E P O R T

Prepared for:

Camp, Dresser & McKee  
1 Walnut Creek Center  
100 Pringle Ave, Suite 300  
Walnut Creek, CA 94596

Date: 12-MAY-99  
Lab Job Number: 139231  
Project ID: 10605  
Location: Port Of Oakland


Reviewed by:

Reviewed by:

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# CHAIN OF CUSTODY FORM

Analyses


**Curtis & Tompkins, Ltd.**  
 Analytical Laboratories, Since 1878  
  
 2323 Fifth Street  
 Berkeley, CA 94710  
 (510) 486-0900 Phone  
 (510) 486-0532 Fax

C&T  
 LOGIN # 139231

Project No: 10605-24198  
 Project Name: Port of Oakland  
 Project P.O.:  
 Turnaround Time: Standard

Sampler: Pawan Sharma / Hoa Voscott  
 Report To: Hoa Voscott  
 Company: Camp Dresser & McKee  
 Telephone: 925-933-2400  
 Fax: 925-933-4174

Lab Number	Sample ID.	Sampling Date Time	Matrix			# of Containers	Preservative				Field Notes	TPH-gasoline & BTEX, B015M & B020	TPH-Diesel, B015M
			Soil	Water	Waste		HCl	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE			
	APL/WP-W1	5/4/99 1350		X		4	X				HCl preservative for VOCs only	X	X
	APL/WP-W2	1410		X		4	X					X	X
	OKUS-W3	1442		X		4	X					X	X
	OKUS-W2	1505		X		4	X					X	X
	OKUS-W13	1335		X		3	X					X	X
	TRIP BLANK			X		3	X						

Notes:  
T50 19 Lab costs  


<b>RELINQUISHED BY:</b> <u>Hoa Voscott</u> DATE/TIME: <u>5/4/99 1700</u>	<b>RECEIVED BY:</b> <u>[Signature]</u> DATE/TIME: <u>5/4/99 1700</u>
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

Signature on this form constitutes a firm Purchase Order for the services requested above.

Laboratory Number: **139231**  
Client: **Camp, Dresser, & McKee**  
Project#: **10605**  
Location: **Port of Oakland, UPRR**

Receipt Date: **5/04/99**

TSO#: **19**

### **CASE NARRATIVE**

This hardcopy data package contains sample and QC results for four water samples that were received on May 04, 1999.

**TVH/BTXE:** No analytical problems were encountered.

**Total Extractable Hydrocarbons:** All extracts were cleaned up with silica gel prior to analysis. No analytical problems were encountered.



## TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
139231-001	APL/UP-W1	47873	05/04/99	05/07/99	05/07/99	
139231-002	APL/UP-W2	47873	05/04/99	05/07/99	05/07/99	
139231-003	OKUS-W3	47845	05/04/99	05/06/99	05/06/99	
139231-004	OKUS-W2	47845	05/04/99	05/06/99	05/06/99	

Matrix: Water

Analyte	Units	139231-001	139231-002	139231-003	139231-004
Diln Fac:		1	1	10	10
Gasoline C7-C12	ug/L	270	85	6000	6000
Surrogate					
Trifluorotoluene	%REC	88	83	113	112
Bromofluorobenzene	%REC	85	84	108	107



# GC19 TVH 'X' Data File (FID)

Sample Name : 139231-001,47873

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\126X020.raw

Date : 5/7/99 03:03 AM

Method : TVHBTXE

Time of Injection: 5/7/99 02:36 AM

Start Time : 0.00 min

End Time : 26.80 min

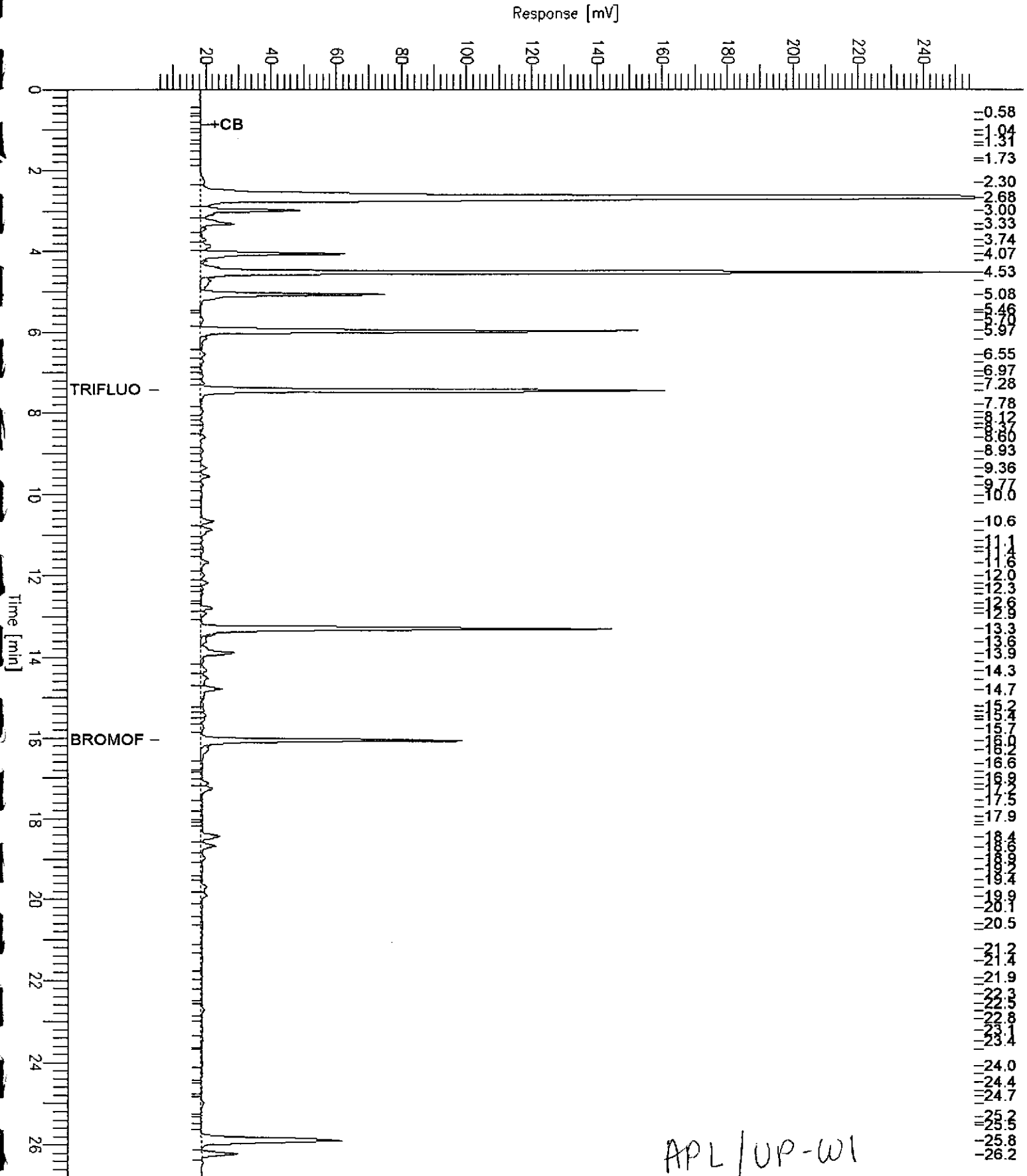
Low Point : 5.55 mV

High Point : 255.55 mV

Scale Factor: -1.0

Plot Offset: 6 mV

Plot Scale: 250.0 mV



APL / UP-W1

# GC19 TVH 'X' Data File (FID)

Sample Name : 139231-002,47873

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\126X021.raw

Date : 5/7/99 03:43 AM

Method : TVHBTXE

Time of Injection: 5/7/99 03:15 AM

Start Time : 0.00 min

End Time : 26.80 min

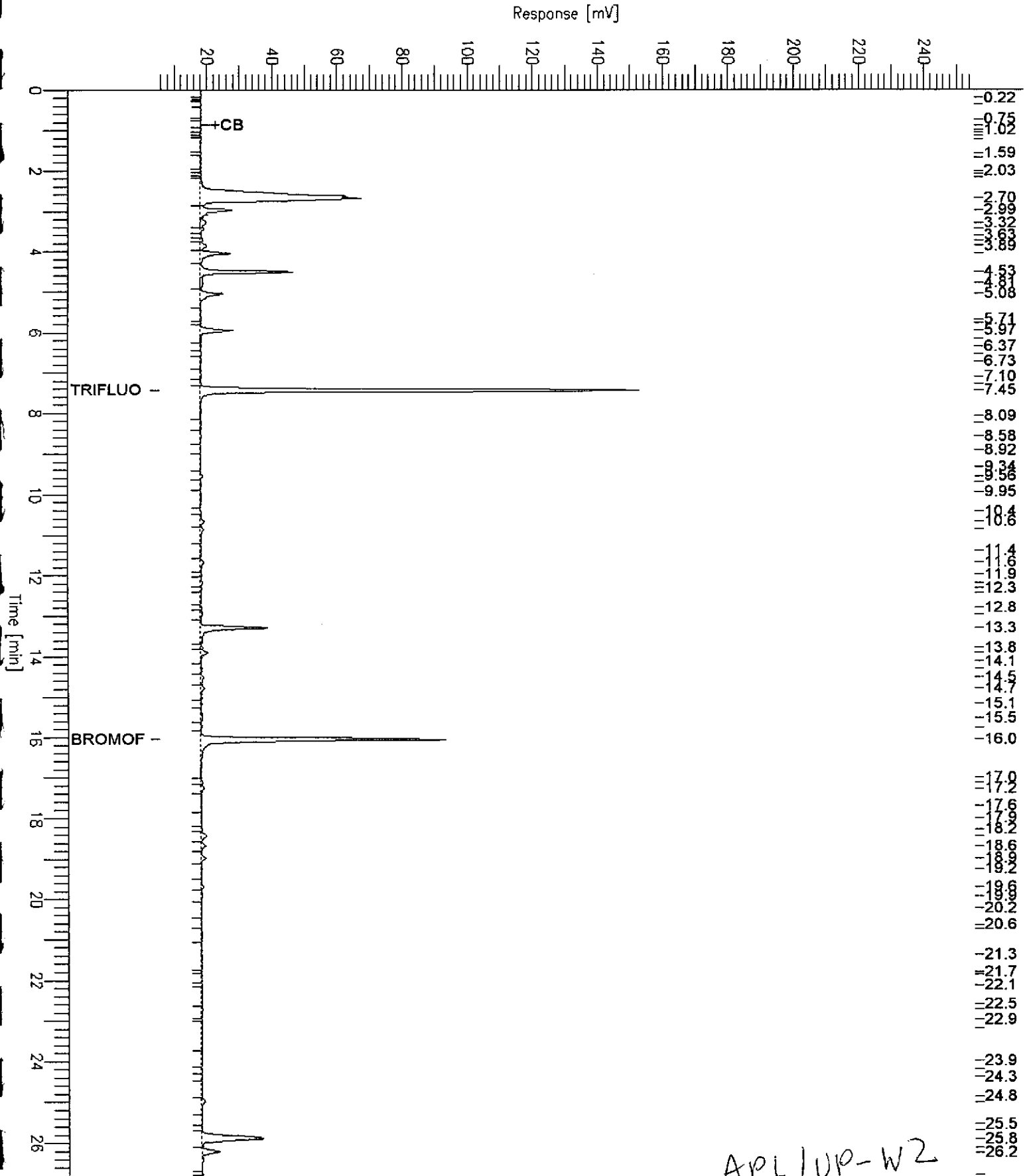
Low Point : 5.47 mV

High Point : 255.47 mV

Scale Factor: -1.0

Plot Offset: 5 mV

Plot Scale: 250.0 mV



APL/UP-W2

# GC19 TVH 'X' Data File (FID)

Sample Name : 139231-003,47845

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\125X022.raw

Date : 5/6/99 04:20 AM

Method : TVHBTXE

Time of Injection: 5/6/99 03:53 AM

Start Time : 0.00 min

End Time : 26.80 min

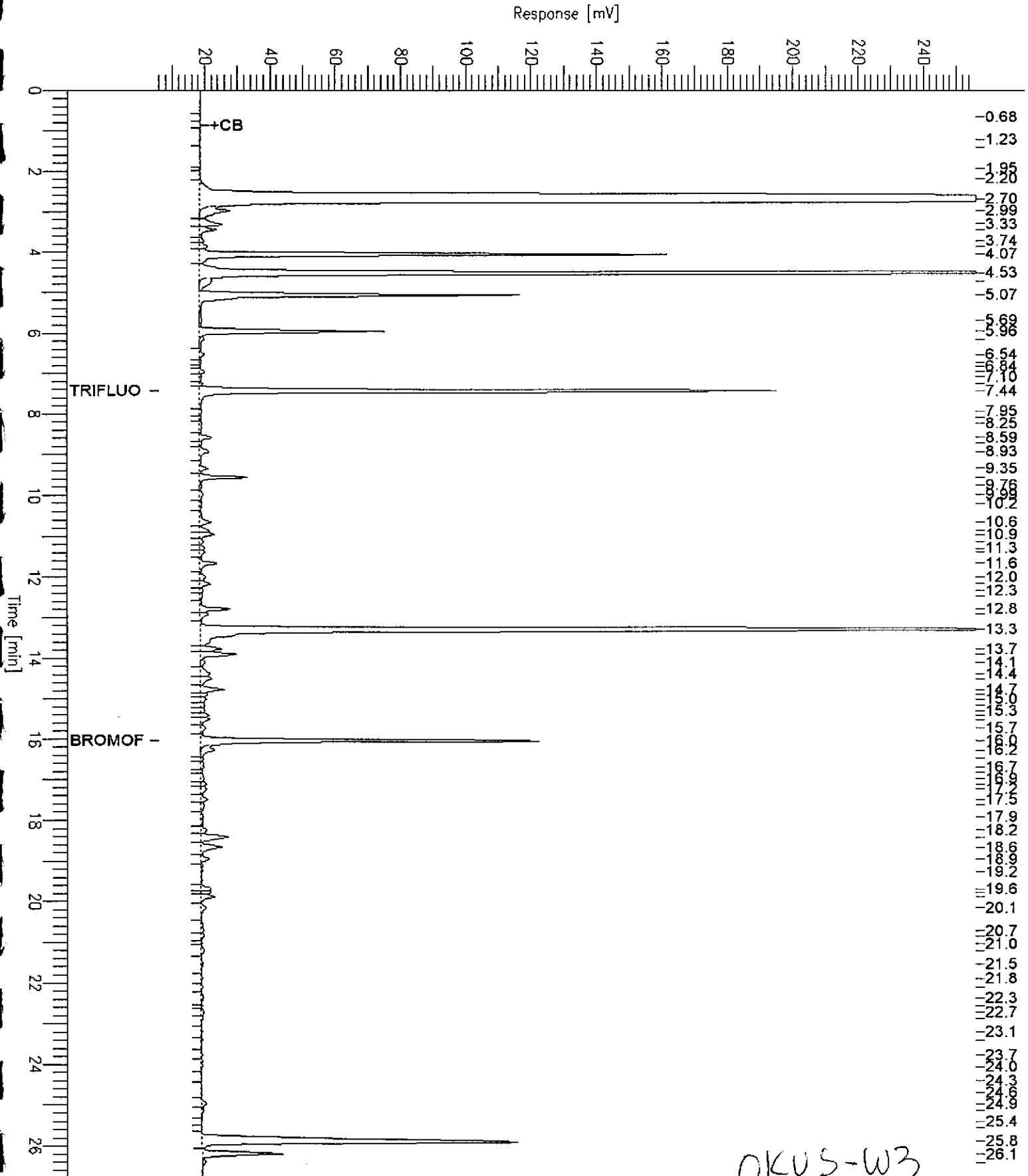
Low Point : 5.94 mV

High Point : 255.94 mV

Scale Factor: -1.0

Plot Offset: 6 mV

Plot Scale: 250.0 mV

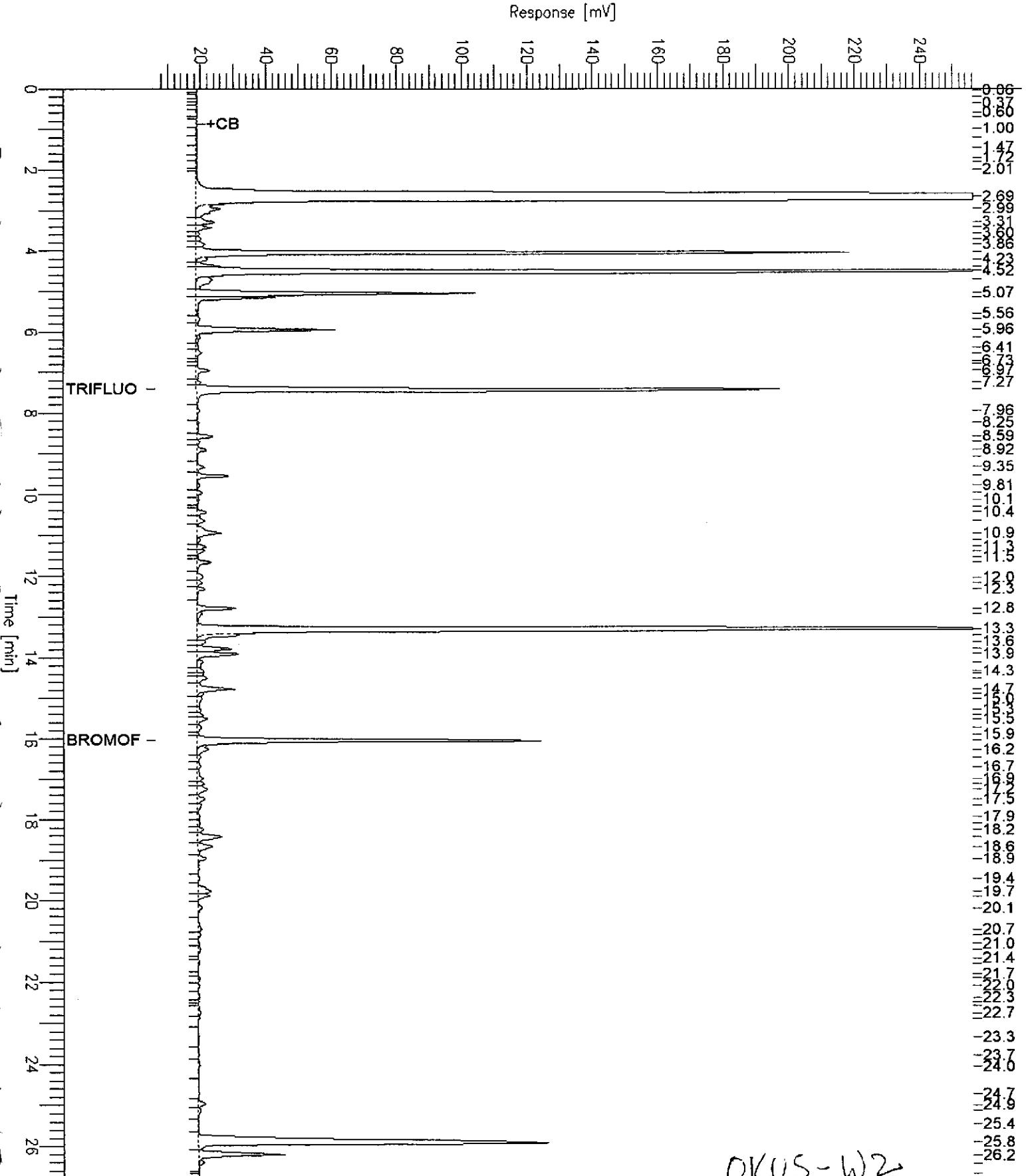


OKUS-W3

# GC19 TVH 'X' Data File (FID)

Sample Name : 139231-004, 47845  
 FileName : G:\GC19\DATA\125X023.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor: -1.0

Sample #: Page 1 of 1  
 Date : 5/6/99 05:00 AM  
 Time of Injection: 5/6/99 04:32 AM  
 Low Point : 6.15 mV High Point : 256.15 mV  
 Plot Scale: 250.0 mV  
 End Time : 26.80 min  
 Plot Offset: 6 mV



OKUS-W2



BTXE

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8021B  
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
139231-001	APL/UP-W1	47873	05/04/99	05/07/99	05/07/99	
139231-002	APL/UP-W2	47873	05/04/99	05/07/99	05/07/99	
139231-003	OKUS-W3	47873	05/04/99	05/07/99	05/07/99	
139231-004	OKUS-W2	47873	05/04/99	05/07/99	05/07/99	

Matrix: Water

Analyte	Units	139231-001	139231-002	139231-003	139231-004
Diln Fac:		1	1	25	25
Benzene	ug/L	42	2.7	210	170
Toluene	ug/L	0.85	<0.5	54	40
Ethylbenzene	ug/L	110	17	3700	3600
m,p-Xylenes	ug/L	0.55C	<0.5	31	55
o-Xylene	ug/L	1.9	<0.5	25	43
Surrogate					
Trifluorotoluene	%REC	77	71	87	86
Bromofluorobenzene	%REC	77	73	86	86

C: Presence of this compound confirmed by second column,  
however, the confirmation concentration differed from the reported  
result by more than a factor of two



TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
139231-005	OKUS-W13	47873	05/04/99	05/07/99	05/07/99	
139231-006	TRIP BLANK	47845	05/04/99	05/06/99	05/06/99	

Matrix: Water

Analyte	Units	139231-005	139231-006
Diln Fac:		40	1
Gasoline C7-C12	ug/L	7000	<50
Surrogate			
Trifluorotoluene	%REC	99	103
Bromofluorobenzene	%REC	98	98



# GC19 TVH 'X' Data File (FID)

Sample Name : 139231-005,47873

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\126X024.raw

Date : 5/7/99 05:41 AM

Method : TVHBTXE

Time of Injection: 5/7/99 05:14 AM

Start Time : 0.00 min

End Time : 26.80 min

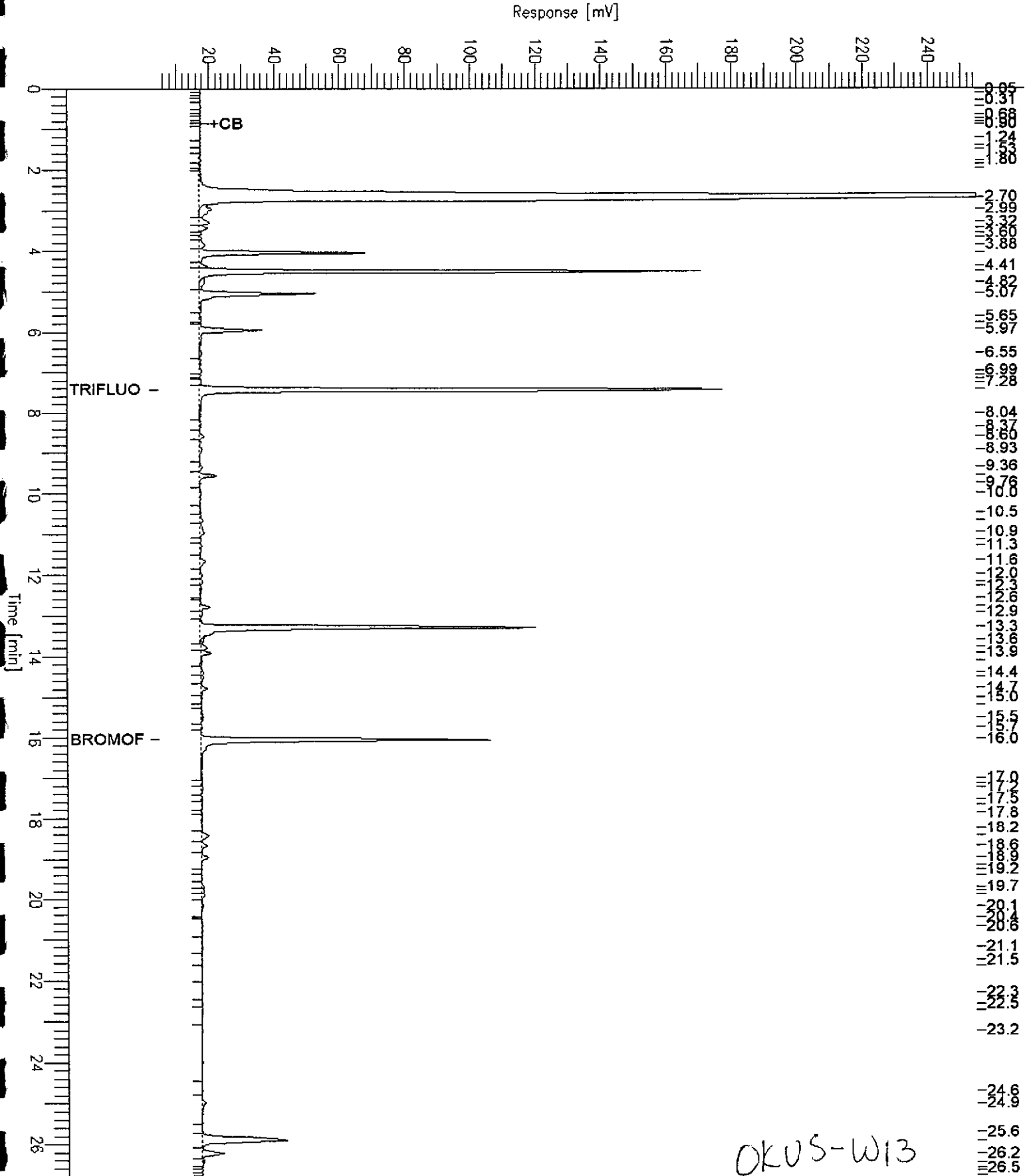
Low Point : 4.63 mV

High Point : 254.63 mV

Scale Factor: -1.0

Plot Offset: 5 mV

Plot Scale: 250.0 mV

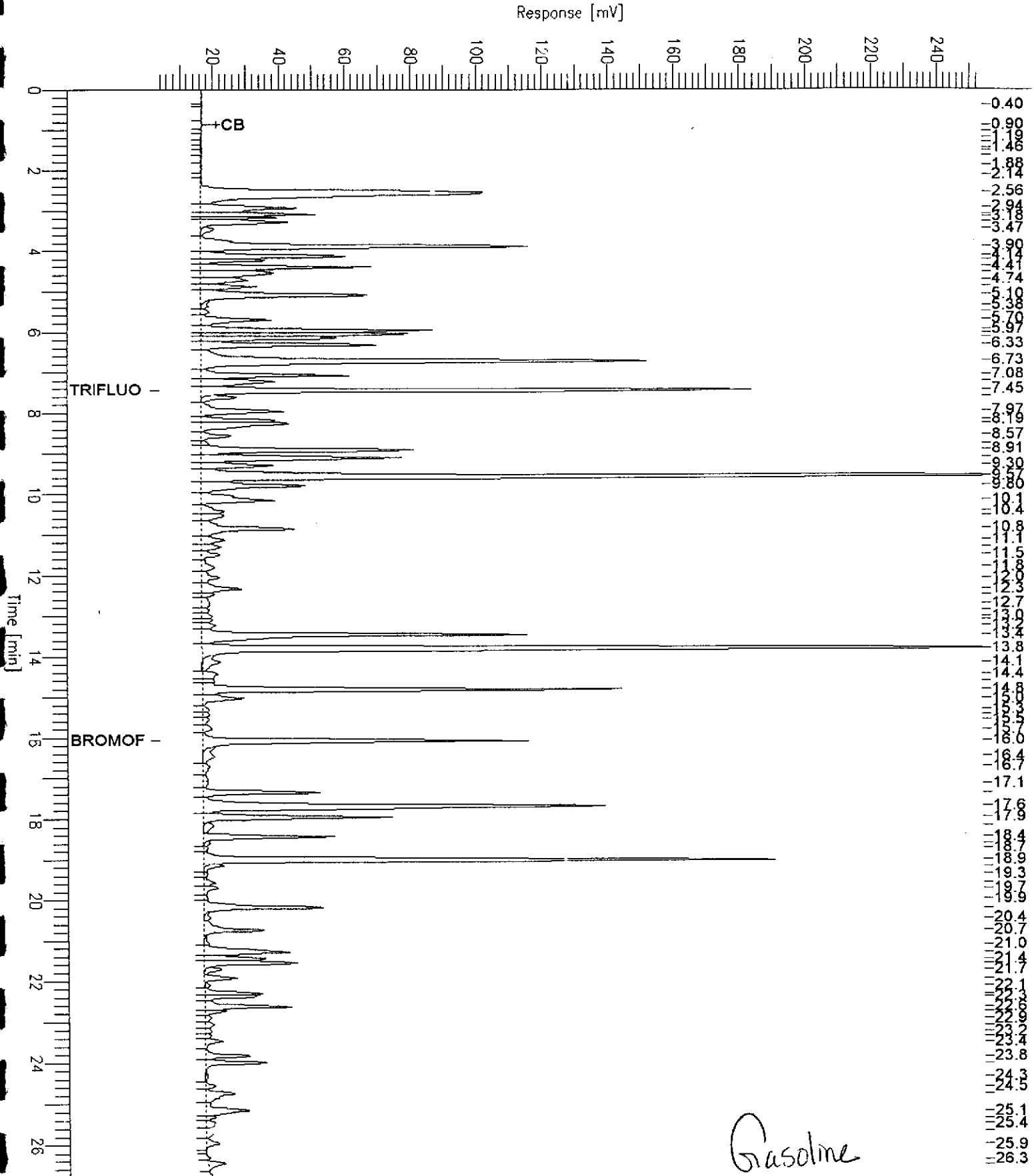


OKUS-W13

# GC19 TVH 'X' Data File (FID)

Sample Name : CCV/LCS, QC96895, 99WS7368, 47873  
 FileName : G:\GC19\DATA\126X001.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor: -1.0

Sample #: GAS  
 Date : 5/6/99 02:19 PM  
 Time of Injection: 5/6/99 01:52 PM  
 Low Point : 3.86 mV  
 High Point : 253.86 mV  
 Plot Scale: 250.0 mV





## BTXE

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8021B  
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
139231-005	OKUS-W13	47873	05/04/99	05/07/99	05/07/99	
139231-006	TRIP BLANK	47845	05/04/99	05/06/99	05/06/99	

Matrix: Water

Analyte	Units	139231-005	139231-006
Diln Fac:		40	1
Benzene	ug/L	210	<0.5
Toluene	ug/L	55	<0.5
Ethylbenzene	ug/L	3700	<0.5
m,p-Xylenes	ug/L	34	<0.5
o-Xylene	ug/L	28	<0.5
Surrogate			
Trifluorotoluene	%REC	86	90
Bromofluorobenzene	%REC	86	89



Lab #: 139231

## BATCH QC REPORT

## TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

## METHOD BLANK

Matrix: Water  
Batch#: 47845  
Units: ug/L  
Diln Fac: 1

Prep Date: 05/05/99  
Analysis Date: 05/05/99

MB Lab ID: QC96791

Analyte	Result	
Gasoline C7-C12	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	98	53-150
Bromofluorobenzene	96	53-149



Lab #: 139231

BATCH QC REPORT

BTXE

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8021B  
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water  
Batch#: 47845  
Units: ug/L  
Diln Fac: 1

Prep Date: 05/05/99  
Analysis Date: 05/05/99

MB Lab ID: QC96791

Analyte	Result
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
m,p-Xylenes	<0.5
o-Xylene	<0.5

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	85	51-143
Bromofluorobenzene	86	37-146



Lab #: 139231

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water  
Batch#: 47873  
Units: ug/L  
Diln Fac: 1

Prep Date: 05/06/99  
Analysis Date: 05/06/99

MB Lab ID: QC96897

Analyte	Result	
Gasoline C7-C12	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	77	53-150
Bromofluorobenzene	75	53-149





Lab #: 139231

BATCH QC REPORT

BTXE			
Client:	Camp, Dresser & McKee	Analysis Method:	EPA 8021B
Project#:	10605	Prep Method:	EPA 5030
Location:	Port Of Oakland		
METHOD BLANK			
Matrix:	Water	Prep Date:	05/06/99
Batch#:	47873	Analysis Date:	05/06/99
Units:	ug/L		
Diln Fac:	1		

MB Lab ID: QC96897

Analyte	Result		
Benzene	<0.5		
Toluene	<0.5		
Ethylbenzene	<0.5		
m,p-Xylenes	<0.5		
o-Xylene	<0.5		
Surrogate	%Rec		Recovery Limits
Trifluorotoluene	65		51-143
Bromofluorobenzene	67		37-146



Lab #: 139231

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
Batch#: 47845  
Units: ug/L  
Diln Fac: 1

Prep Date: 05/05/99  
Analysis Date: 05/05/99

LCS Lab ID: QC96789

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline C7-C12	1905	2000	95	77-117
Surrogate	%Rec	Limits		
Trifluorotoluene	110	53-150		
Bromofluorobenzene	118	53-149		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits



Lab #: 139231

BATCH QC REPORT

BTXE

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8021B  
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
Batch#: 47845  
Units: ug/L  
Diln Fac: 1

Prep Date: 05/05/99  
Analysis Date: 05/05/99

LCS Lab ID: QC96790

Analyte	Result	Spike Added	%Rec #	Limits
Benzene	17.03	20	85	65-111
Toluene	18.63	20	93	76-117
Ethylbenzene	18.76	20	94	71-121
m,p-Xylenes	39.34	40	98	80-123
o-Xylene	18.36	20	92	75-127
Surrogate	%Rec	Limits		
Trifluorotoluene	89	51-143		
Bromofluorobenzene	91	37-146		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits



Lab #: 139231

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
Batch#: 47873  
Units: ug/L  
Diln Fac: 1

Prep Date: 05/06/99  
Analysis Date: 05/06/99

LCS Lab ID: QC96895

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline C7-C12	1871	2000	94	77-117
Surrogate	%Rec	Limits		
Trifluorotoluene	106	53-150		
Bromofluorobenzene	114	53-149		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits



Lab #: 139231

BATCH QC REPORT

BTXE

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8021B  
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
Batch#: 47873  
Units: ug/L  
Diln Fac: 1

Prep Date: 05/06/99  
Analysis Date: 05/06/99

LCS Lab ID: QC96896

Analyte	Result	Spike Added	%Rec #	Limits
Benzene	14.39	20	72	65-111
Toluene	15.6	20	78	76-117
Ethylbenzene	15.84	20	79	71-121
m,p-Xylenes	32.88	40	82	80-123
o-Xylene	15.16	20	76	75-127
Surrogate	%Rec	Limits		
Trifluorotoluene	70	51-143		
Bromofluorobenzene	72	37-146		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits



Lab #: 139231

## BATCH QC REPORT

## TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
 Project#: 10605  
 Location: Port Of Oakland

Analysis Method: EPA 8015M  
 Prep Method: EPA 5030

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ  
 Lab ID: 139188-004  
 Matrix: Water  
 Batch#: 47845  
 Units: ug/L  
 Diln Fac: 1

Sample Date: 04/28/99  
 Received Date: 04/28/99  
 Prep Date: 05/05/99  
 Analysis Date: 05/05/99

MS Lab ID: QC96792

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline C7-C12	2000	<50	1990	100	69-131
Surrogate	%Rec	Limits			
Trifluorotoluene	105	53-150			
Bromofluorobenzene	116	53-149			

MSD Lab ID: QC96793

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline C7-C12	2000	1999	100	69-131	0	13
Surrogate	%Rec	Limits				
Trifluorotoluene	107	53-150				
Bromofluorobenzene	118	53-149				

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits



Lab #: 139231

BATCH QC REPORT

Page 1 of 1

## BTXE

Client: Camp, Dresser & McKee  
 Project#: 10605  
 Location: Port Of Oakland

Analysis Method: EPA 8021B  
 Prep Method: EPA 5030

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ  
 Lab ID: 139235-003  
 Matrix: Water  
 Batch#: 47873  
 Units: ug/L  
 Diln Fac: 1

Sample Date: 05/05/99  
 Received Date: 05/05/99  
 Prep Date: 05/06/99  
 Analysis Date: 05/06/99

MS Lab ID: QC96898

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Benzene	20	0.72	22.79	110	55-122
Toluene	20	0.77	21.88	106	63-139
Ethylbenzene	20	63.02	77	70	61-137
m,p-Xylenes	40	43.82	81.44	94	57-148
o-Xylene	20	<0.5	19.79	99	70-141
Surrogate	%Rec	Limits			
Trifluorotoluene	91	51-143			
Bromofluorobenzene	98	37-146			

MSD Lab ID: QC96899

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Benzene	20	21.99	106	55-122	4	10
Toluene	20	21.84	105	63-139	0	10
Ethylbenzene	20	75.22	61	61-137	2	10
m,p-Xylenes	40	80.14	91	57-148	2	10
o-Xylene	20	19.82	99	70-141	0	10
Surrogate	%Rec	Limits				
Trifluorotoluene	89	51-143				
Bromofluorobenzene	97	37-146				

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits



## TEH-Tot Ext Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 3520

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
139231-001	APL/UP-W1	47860	05/04/99	05/05/99	05/08/99	
139231-002	APL/UP-W2	47860	05/04/99	05/05/99	05/08/99	
139231-003	OKUS-W3	47860	05/04/99	05/05/99	05/08/99	
139231-004	OKUS-W2	47860	05/04/99	05/05/99	05/08/99	

Matrix: Water

Analyte	Units	139231-001	139231-002	139231-003	139231-004
Diln Fac:		1	1	2	2
Diesel C10-C24	ug/L	80 YLZ	53 YLZ	1300 YLZ	1700 YLZ
Motor Oil C24-C36	ug/L	<300	<300	<600	<600
Hydraulic Fluid, C22-50	ug/L	<300	<300	<600	<600
Surrogate					
Hexacosane	%REC	76	80	73	74

Y: Sample exhibits fuel pattern which does not resemble standard

Z: Sample exhibits unknown single peak or peaks

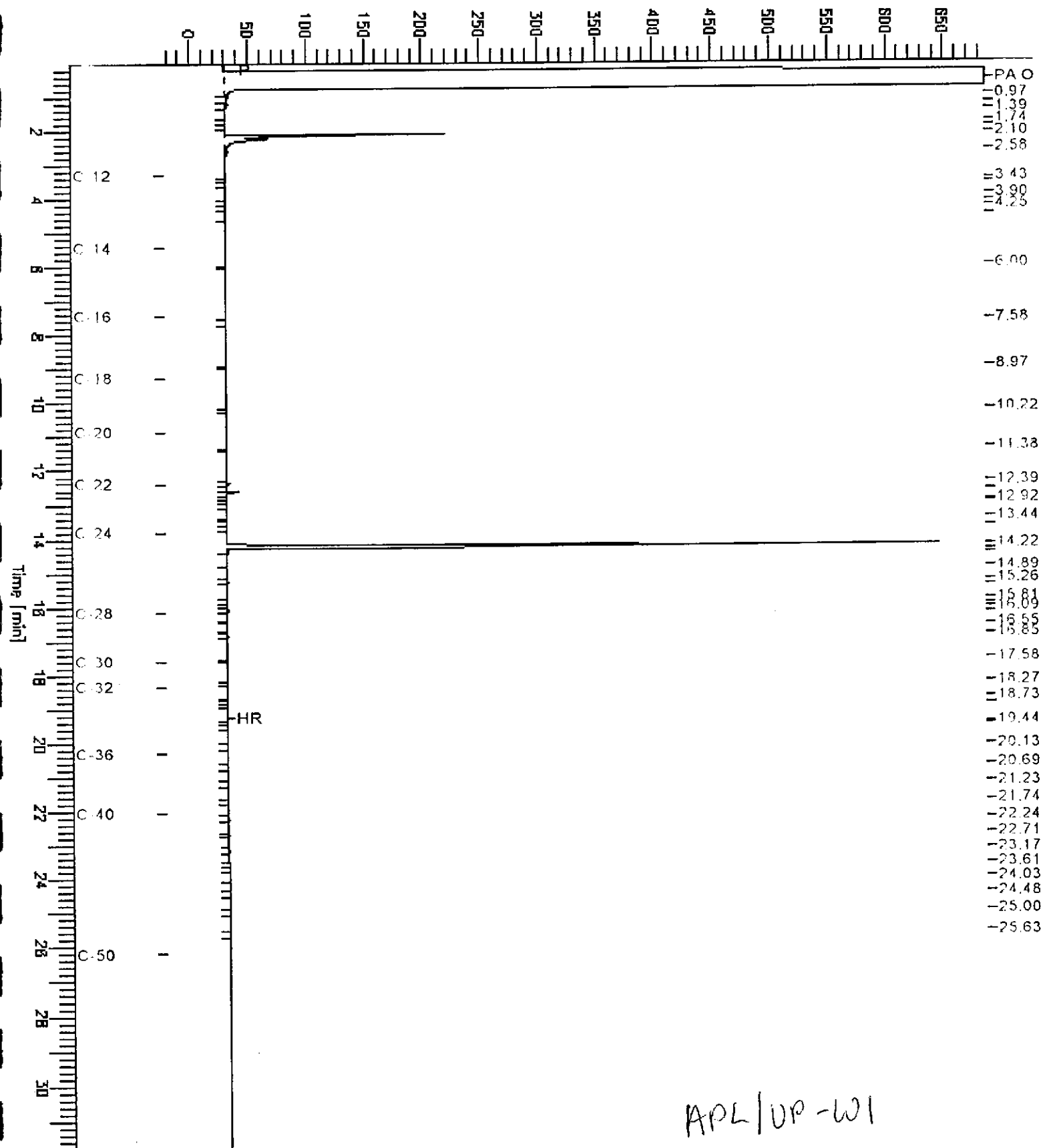
L: Lighter hydrocarbons than indicated standard



# Chromatogram

Sample Name : 139231-001sg,47860  
 FileName : G:\GC13\CHB\128B011.RAW  
 Method : BTEH125X.MTH  
 Start Time : 0.01 min  
 Scale Factor : 0.0

Sample #: 47860  
 Date : 5/8/99 06:54 PM  
 Time of Injection: 5/8/99 12:00 AM  
 Low Point : -22.76 mV  
 Plot Scale: 709.8 mV

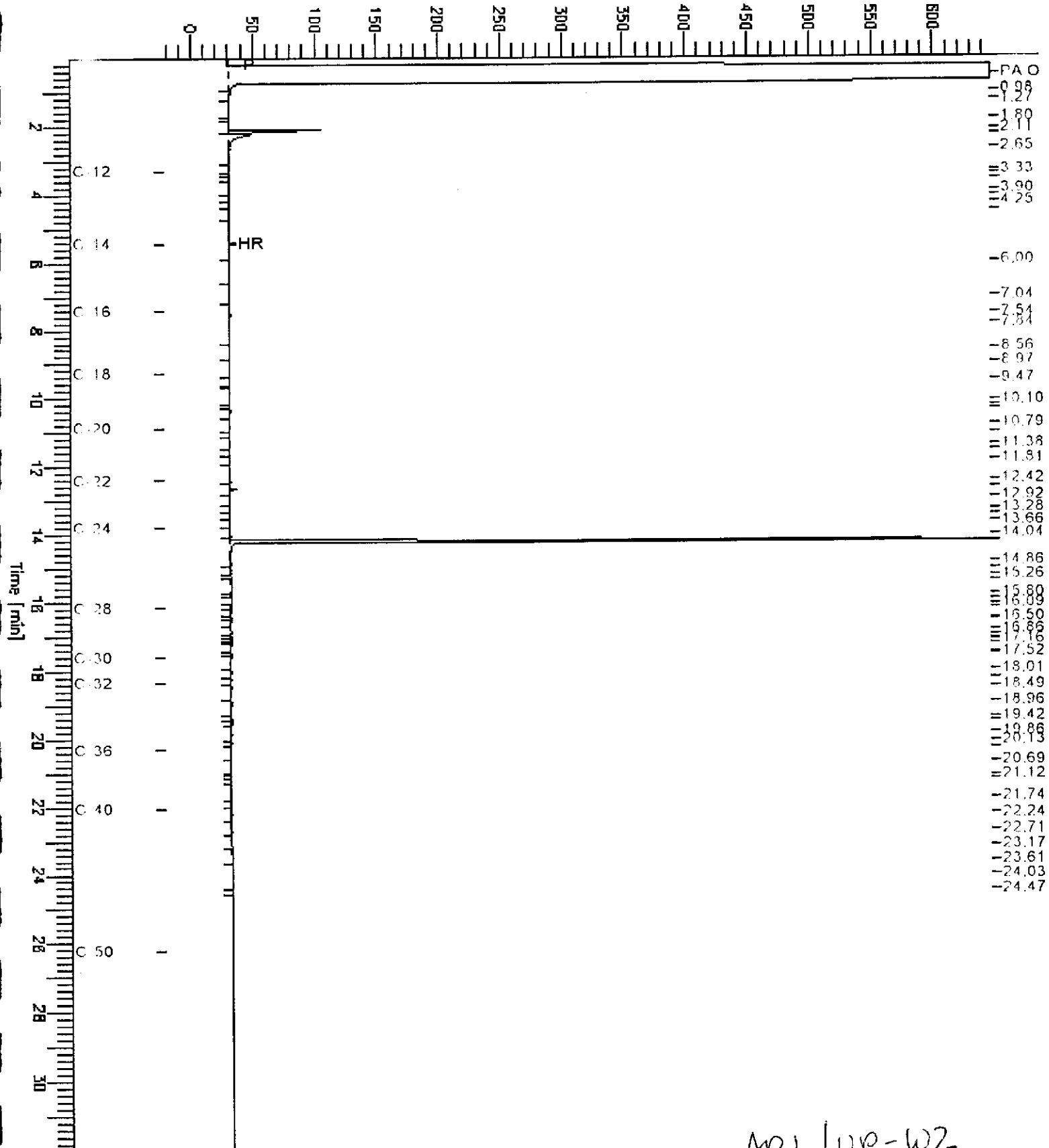


APL/UP-W1

# Chromatogram

Sample Name : 139231-002sg,47860  
 FileName : G:\GC13\CHB\128B012.RAW  
 Method : ETEH125X.MTH  
 Start Time : 0.01 min  
 Scale Factor : 0.0

Sample #: 47860  
 Date : 5/8/99 06:56 PM  
 Time of Injection: 5/8/99 12:42 AM  
 Low Point : -22.52 mV  
 Plot Scale: 669.9 mV



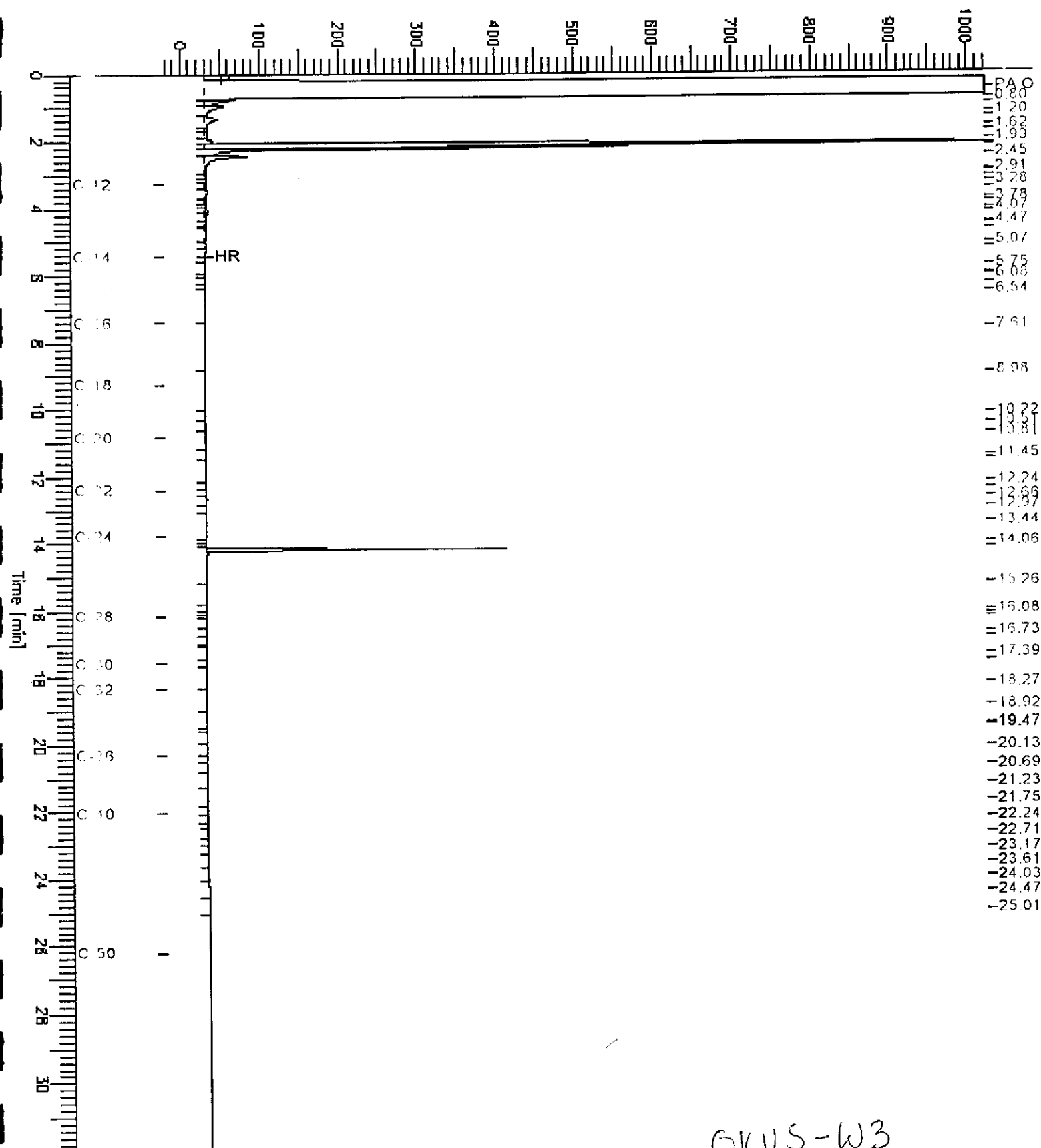
APL / UP-W2

# Chromatogram

Sample Name : 139231-003sg,47860  
 FileName : F:\GC13\CHB\128B013.RAW  
 Method : BTEH125X.MTH  
 Start Time : 0.00 min  
 Scale Factor : 0.0

End Time : 31.90 min  
 Plot Offset : -22 mV

Sample #: 47860  
 Date : 5/8/99 06:58 PM  
 Time of Injection: 5/8/99 01:24 AM  
 Low Point : -21.92 mV  
 High Point : 1024.00 mV  
 Plot Scale: 1045.9 mV

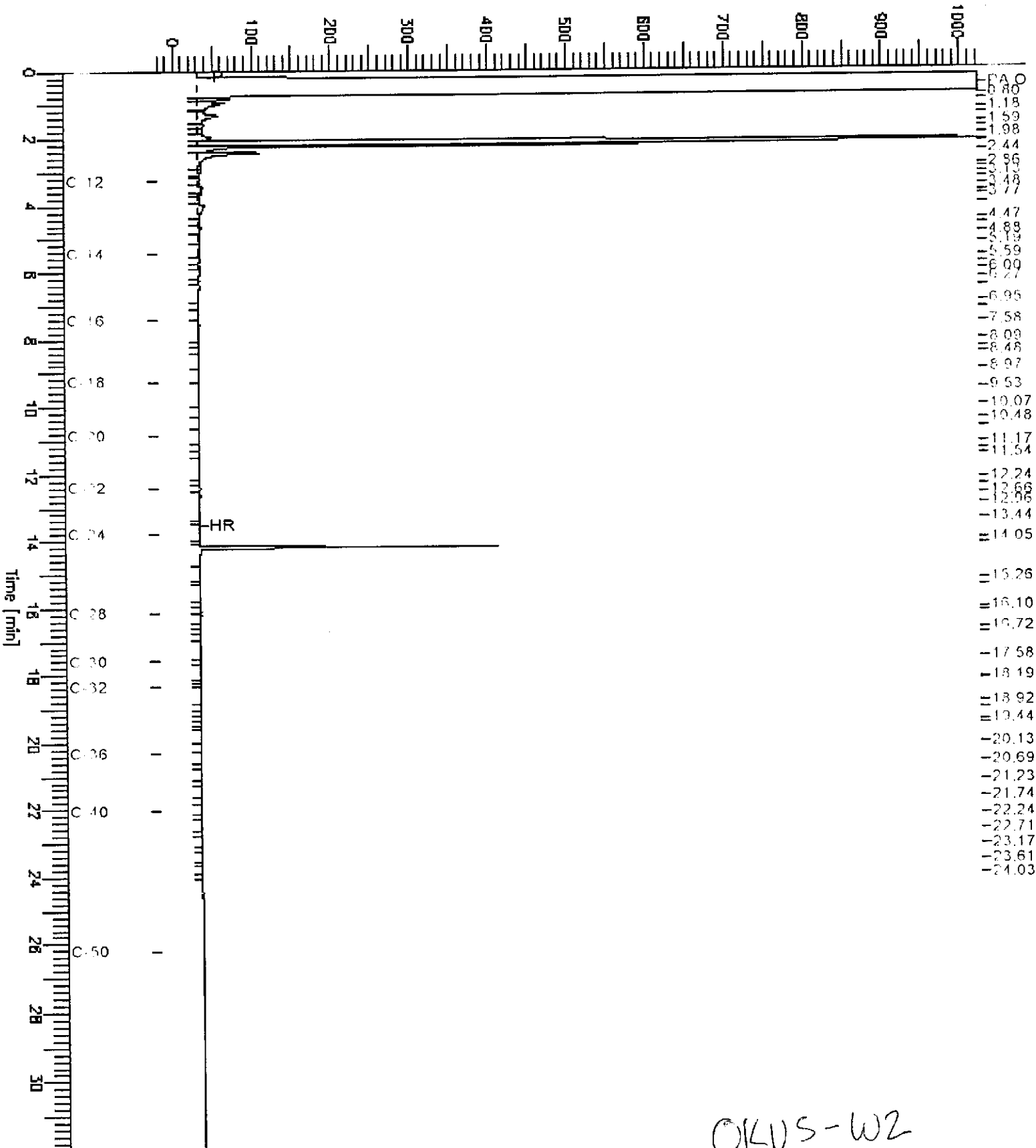


OKUS-W3

# Chromatogram

Sample Name : 139231-004sg,47860  
 FileName : G:\GC13\CHB\128B014.RAW  
 Method : BTEH125X.MTH  
 Start Time : 0.00 min  
 Scale Factor : 0.0

Sample #: 47860  
 Date : 5/8/99 07:01 PM  
 Time of Injection: 5/8/99 02:06 AM  
 Low Point : -21.52 mV  
 Plot Scale: 1045.5 mV



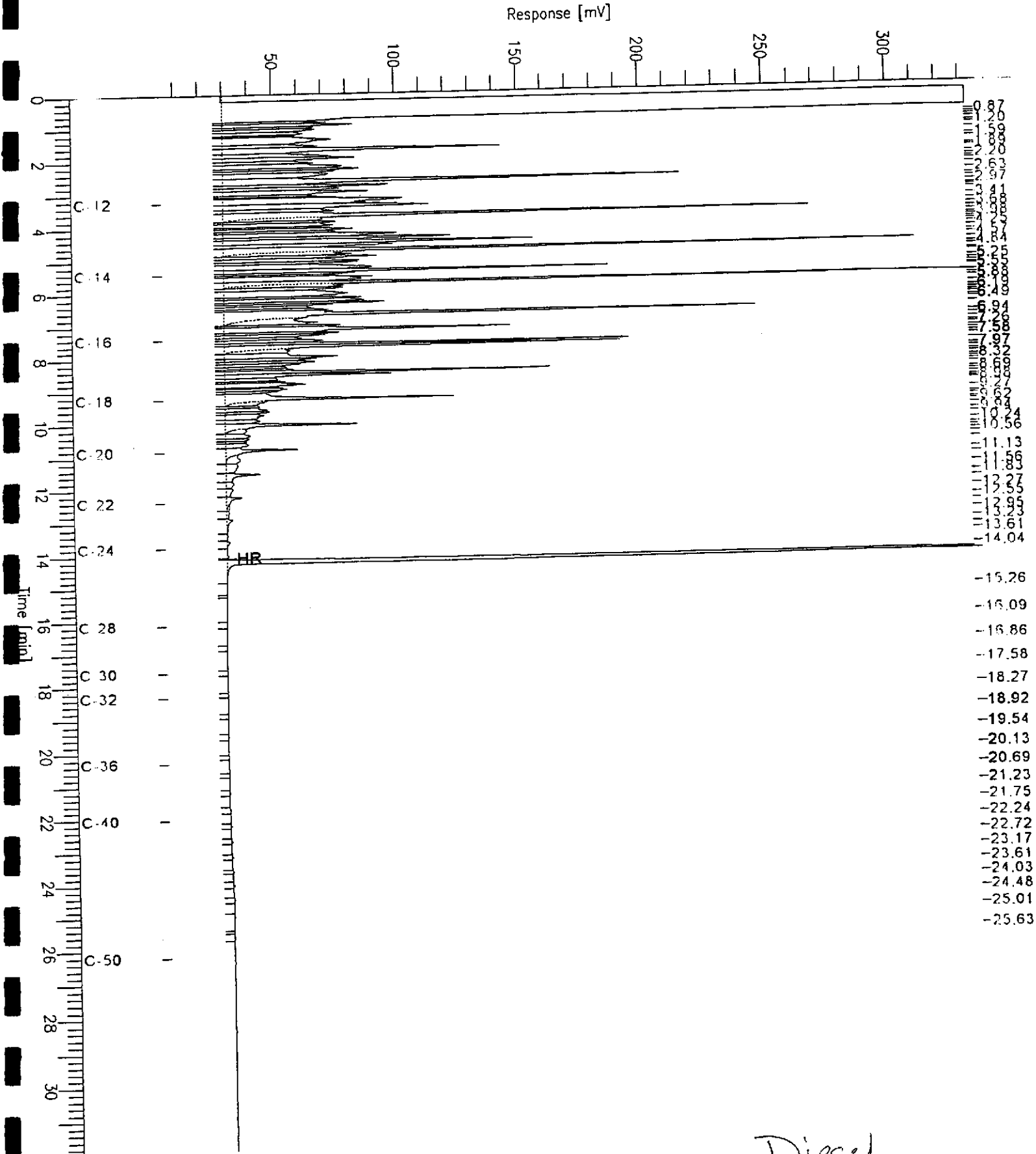
OKUS-WZ

# Chromatogram

Sample Name : cov,99ws7470,ds1  
 File Name : G:\GC13\CHB\128B002.RAW  
 Method : BTEH125X.MTH  
 Start Time : 0.00 min  
 Scale Factor : 0.0

End Time : 31.90 min  
 Plot Offset : 5 mV

Sample #: 500mg/l  
 Date : 5/9/99 03:27 PM  
 Time of Injection: 5/7/99 05:42 PM  
 Low Point : 5.14 mV  
 Plot Scale: 327.6 mV  
 High Point : 332.74 mV



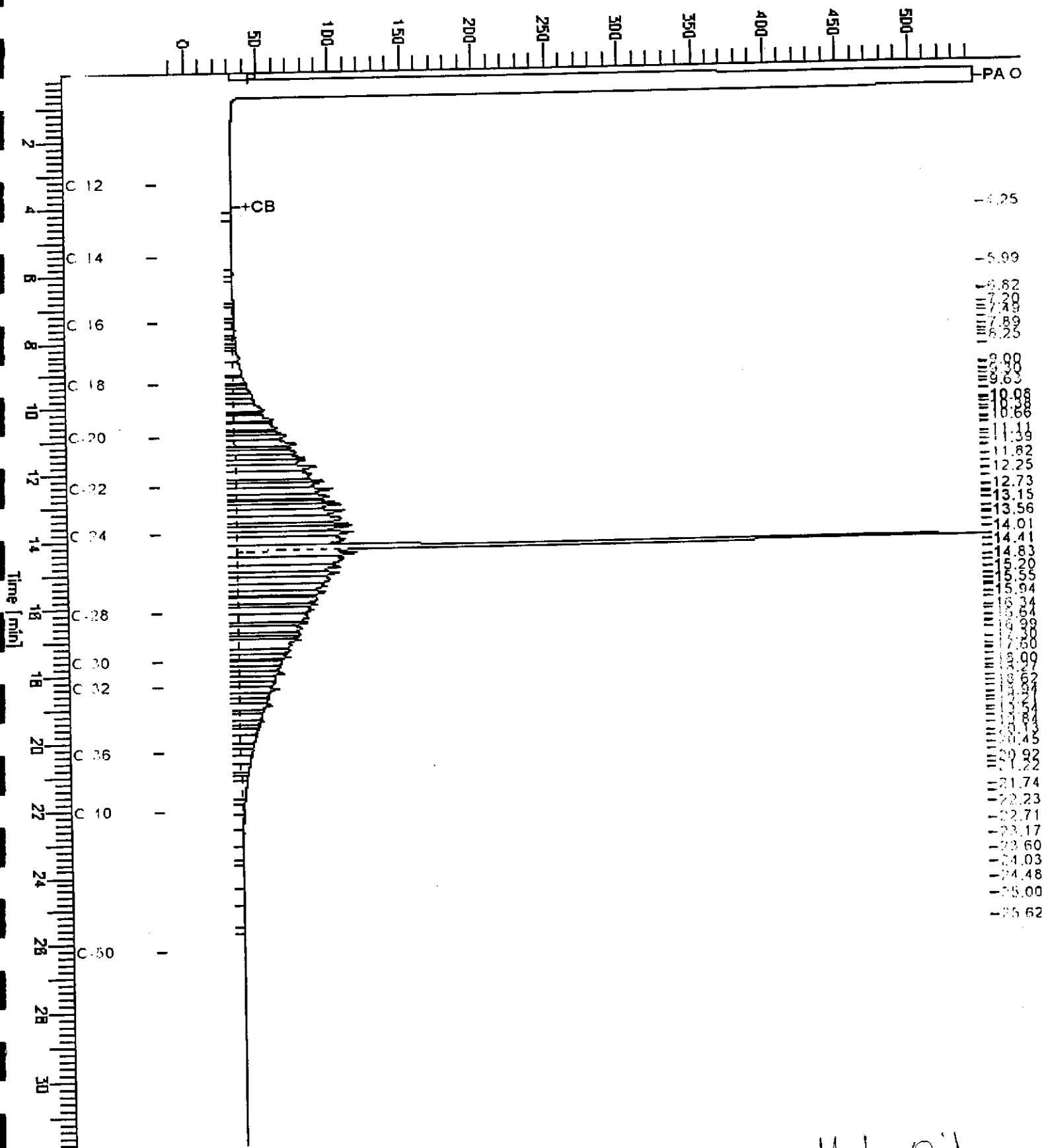
Diesel

# Chromatogram

Sample Name : cov,99ws7423.mo  
 FileName : G:\GC13\CHBA\128B019.RAW  
 Method : RTEH125X.MTH  
 Start Time : 0.01 min  
 Scale Factor : 0.0

End Time : 31.91 min  
 Plot Offset: -20 mV

Sample #: 500mg/l  
 Date : 5/8/99 07:07 PM  
 Time of Injection: 5/8/99 05:37 AM  
 Low Point : -19.83 mV  
 Plot Scale: 565.3 mV  
 High Point : 545.51 mV



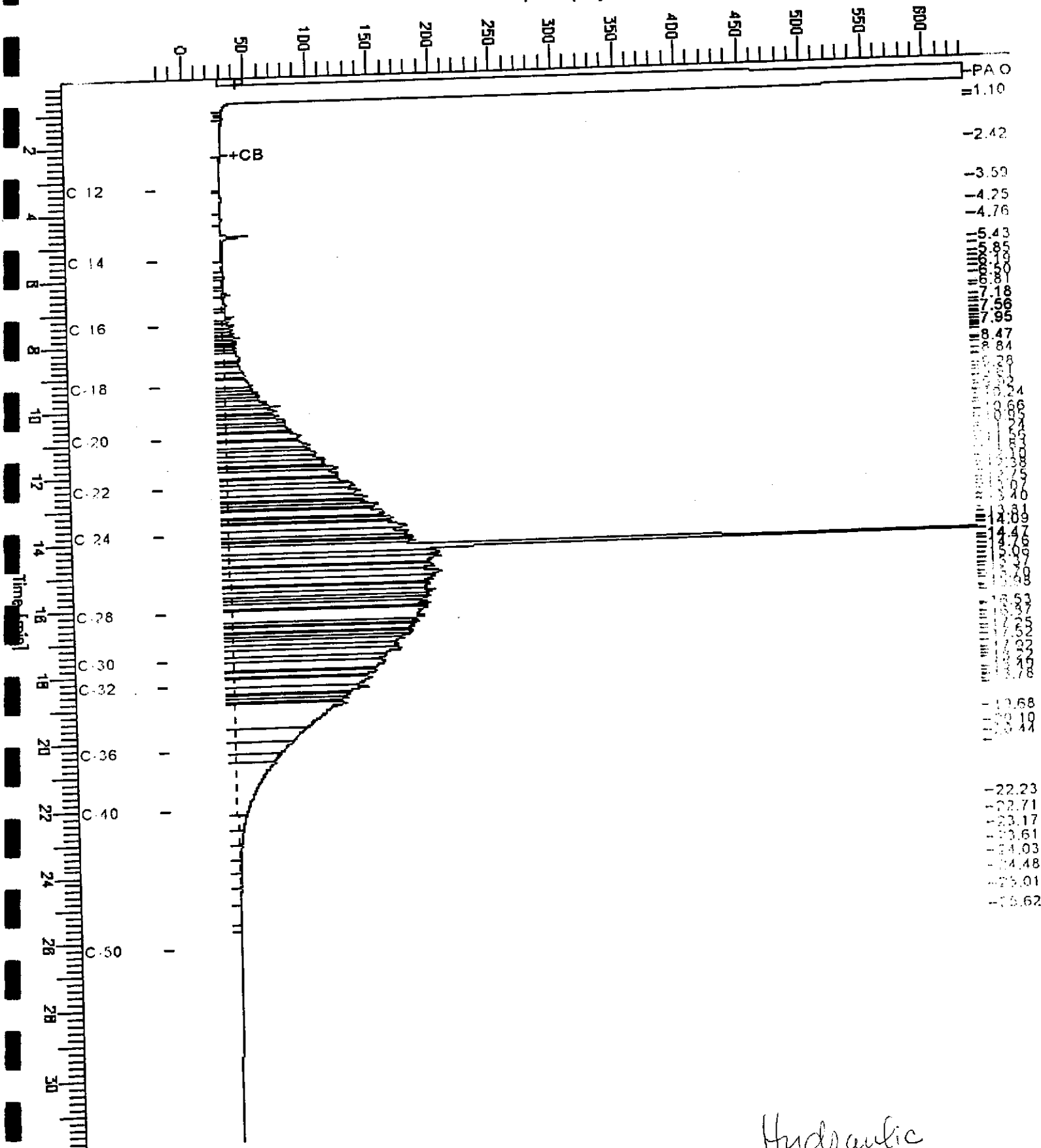
*Motor Oil*

# Chromatogram

Sample Name : ccv\_98ws6798.ho  
File Name : G:\GC13\CHB\128B004.RAW  
Method : BTEH125X.MTH  
Start Time : 0.01 min  
Scale Factor : 0.0

End Time : 31.91 min  
Plot Offset : -23 mV

Sample #: 1250mg/l  
Date : 5/8/99 06:43 PM  
Time of Injection: 5/7/99 07:06 PM  
Low Point : -23.01 mV  
High Point : 632.98 mV  
Plot Scale: 656.0 mV



Hydraulic



Lab #: 139231

## BATCH QC REPORT

## TEH-Tot Ext Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 3520

## METHOD BLANK

Matrix: Water  
Batch#: 47860  
Units: ug/L  
Diln Fac: 1

Prep Date: 05/05/99  
Analysis Date: 05/08/99

MB Lab ID: QC96851

Analyte	Result	
Diesel C10-C24	<50	
Motor Oil C24-C36	<300	
Hydraulic Fluid, C22-50	<300	
Surrogate	%Rec	Recovery Limits
Hexacosane	83	58-128





Lab #: 139231

## BATCH QC REPORT

## TEH-Tot Ext Hydrocarbons

Client: Camp, Dresser & McKee  
 Project#: 10605  
 Location: Port Of Oakland

Analysis Method: EPA 8015M  
 Prep Method: EPA 3520

## BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water  
 Batch#: 47860  
 Units: ug/L  
 Diln Fac: 1

Prep Date: 05/05/99  
 Analysis Date: 05/08/99

BS Lab ID: QC96852

Analyte	Spike Added	BS	%Rec #	Limits
Diesel C10-C24	2475	1853	75	50-114
Surrogate	%Rec	Limits		
Hexacosane	91	58-128		

BSD Lab ID: QC96853

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel C10-C24	2475	1769	71	50-114	5	25
Surrogate	%Rec	Limits				
Hexacosane	88	58-128				

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

August 12, 1999  
Data



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900, Fax (510) 486-0532

A N A L Y T I C A L   R E P O R T

Prepared for:

Camp, Dresser & McKee  
1 Walnut Creek Center  
100 Pringle Ave, Suite 300  
Walnut Creek, CA 94596

Date: 30-AUG-99  
Lab Job Number: 140978  
Project ID: 10605  
Location: Port Of Oakland

Reviewed by:

Reviewed by:

This package may be reproduced only in its entirety.

Laboratory Number: **140978**  
Client: **Camp, Dresser & McKee**  
Project#: **10605**  
Location: **Port of Oakland**

Receipt Date: **8/12/99**

### **CASE NARRATIVE**

This hardcopy data package contains sample and QC results for eight water samples that were received on August 12, 1999. The samples were received cold and intact.

**MTBE/BTXE:** No analytical problems were encountered.

**Total Extractable Hydrocarbons:** All extracts were treated with silica gel, prior to analysis. No analytical problems were encountered.





TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
140978-001	APL/UP-W1	49992	08/12/99	08/18/99	08/18/99	
140978-002	APL/UP-W2	49992	08/12/99	08/18/99	08/18/99	
140978-003	OKUS-W2	49992	08/12/99	08/18/99	08/18/99	
140978-004	OKUS-W1	49992	08/12/99	08/18/99	08/18/99	

Matrix: Water

Analyte	Units	140978-001	140978-002	140978-003	140978-004
Diln Fac:		1	1	10	1
Gasoline C7-C12	ug/L	320 Y	500 Y	3900 Y	350 Y
Surrogate					
Trifluorotoluene	%REC	98	98	93	95
Bromofluorobenzene	%REC	98	104	97	102

Y: Sample exhibits fuel pattern which does not resemble standard



TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee	Analysis Method: EPA 8015M
Project#: 10605	Prep Method: EPA 5030
Location: Port Of Oakland	

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
140978-005	OKUS-W10	49992	08/12/99	08/18/99	08/18/99	
140978-006	OKUS-W3	49992	08/12/99	08/19/99	08/19/99	
140978-007	OKUS-W7	49992	08/12/99	08/18/99	08/18/99	
140978-008	OKUS-W8	49992	08/12/99	08/18/99	08/18/99	

Matrix: Water

Analyte	Units	140978-005	140978-006	140978-007	140978-008
Diln Fac:		1	10	1	1
Gasoline C7-C12	ug/L	290 Y	4800 Y	52 Y	250 Y
Surrogate					
Trifluorotoluene	%REC	89	99	91	91
Bromofluorobenzene	%REC	94	99	92	95

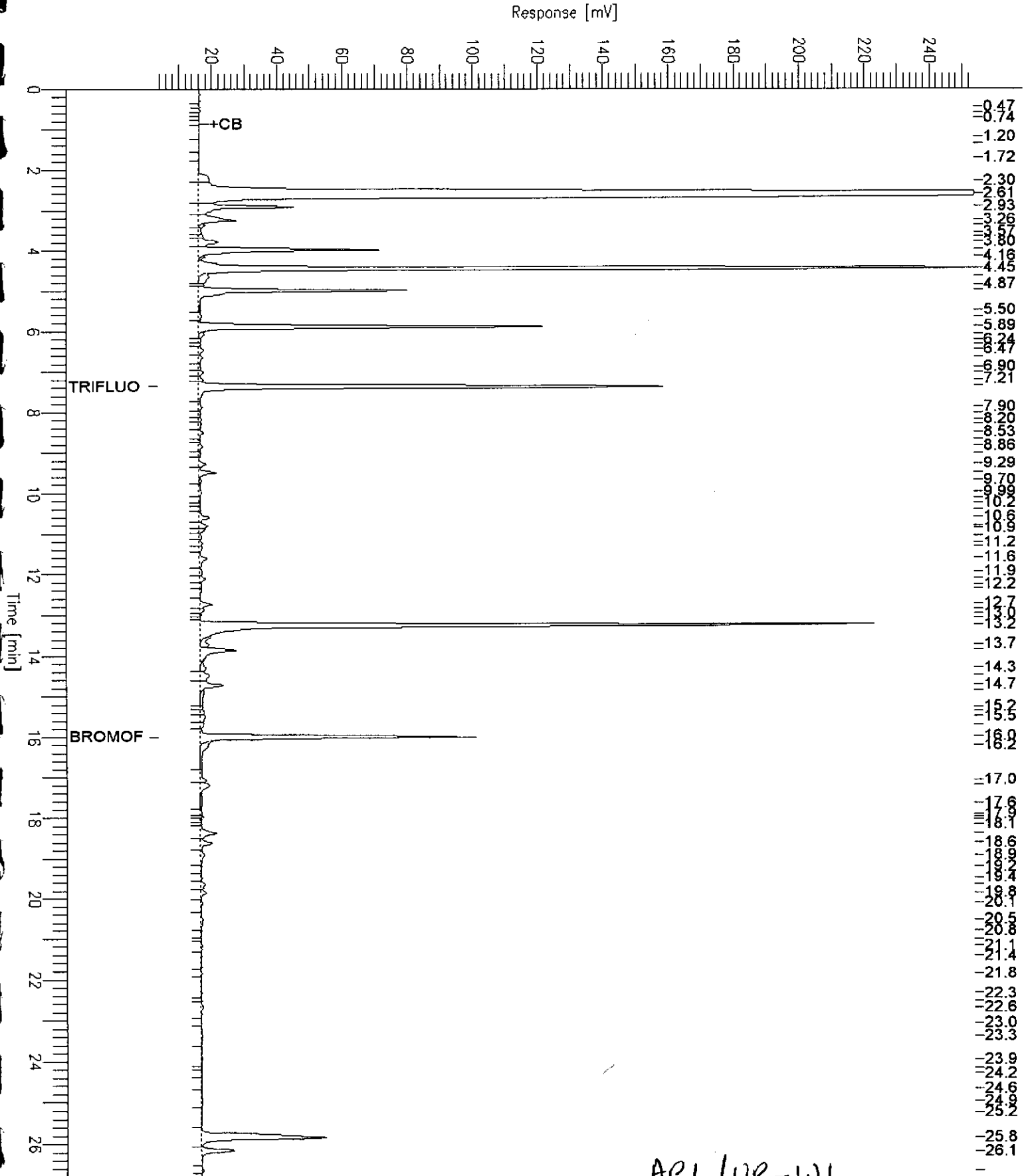
Y: Sample exhibits fuel pattern which does not resemble standard

# GC19 TVH 'X' Data File (FID)

Sample Name : 140978-001,49992  
 FileName : G:\GC19\DATA\230X009.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor : -1.0

End Time : 26.80 min  
 Plot Offset: 4 mV

Sample #: Page 1 of 1  
 Date : 8/18/99 08:07 PM  
 Time of Injection: 8/18/99 07:40 PM  
 Low Point : 3.55 mV  
 High Point : 253.55 mV  
 Plot Scale: 250.0 mV



APL/UP-W1



# GC19 TVH 'X' Data File (FID)

Sample Name : 140978-002,49992

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\230X010.raw

Date : 8/18/99 08:47 PM

Method : TVHBTXE

Time of Injection: 8/18/99 08:20 PM

Start Time : 0.00 min

End Time : 26.80 min

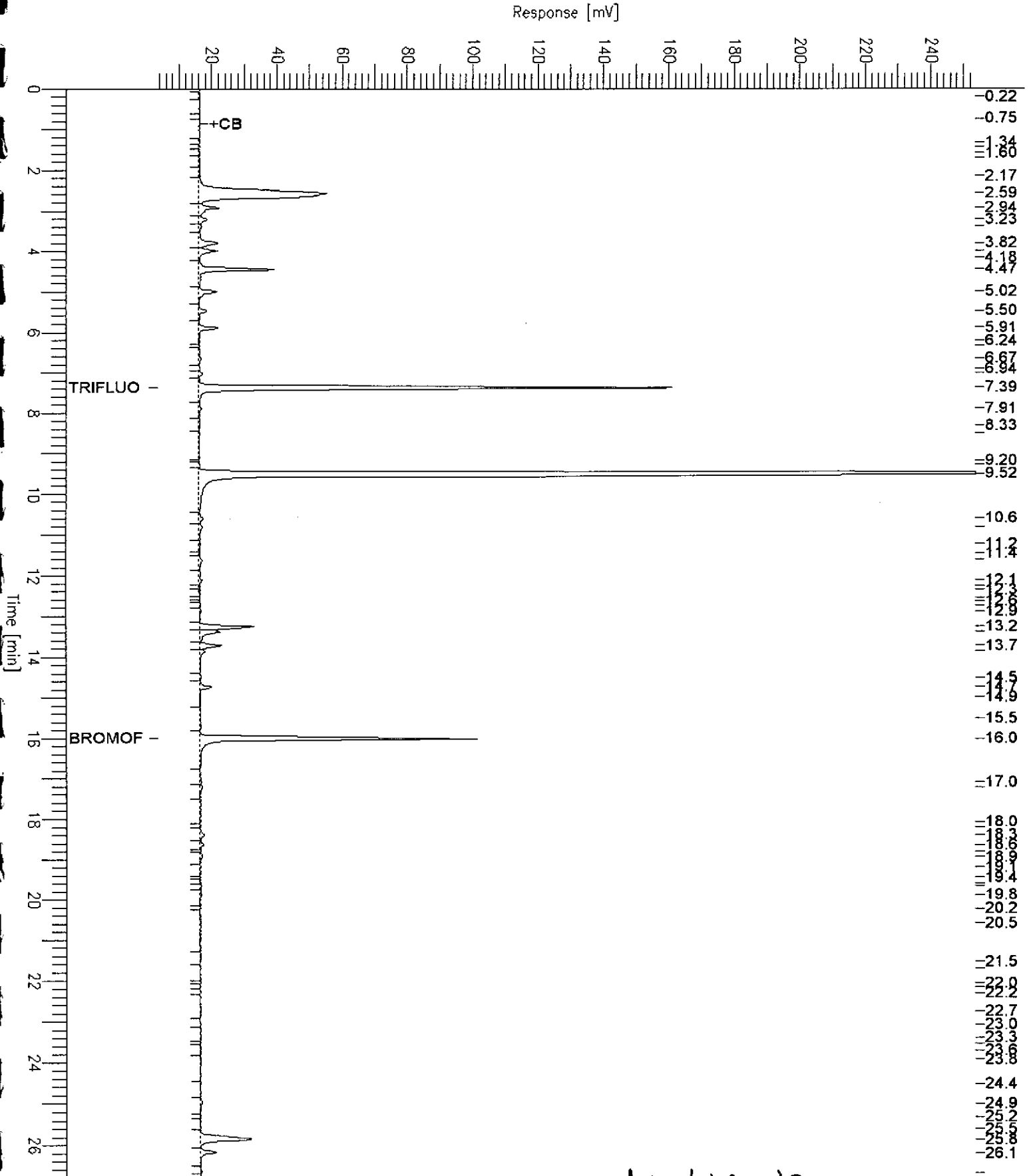
Low Point : 3.54 mV

High Point : 253.54 mV

Scale Factor: -1.0

Plot Offset: 4 mV

Plot Scale: 250.0 mV



APL/UP-W2

# GC19 TVH 'X' Data File (FID)

Sample Name : 140978-003,49992

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\230X015.raw

Date : 8/19/99 11:12 AM

Method : TVHBTXE

Time of Injection: 8/18/99 11:38 PM

Start Time : 0.00 min

End Time : 26.80 min

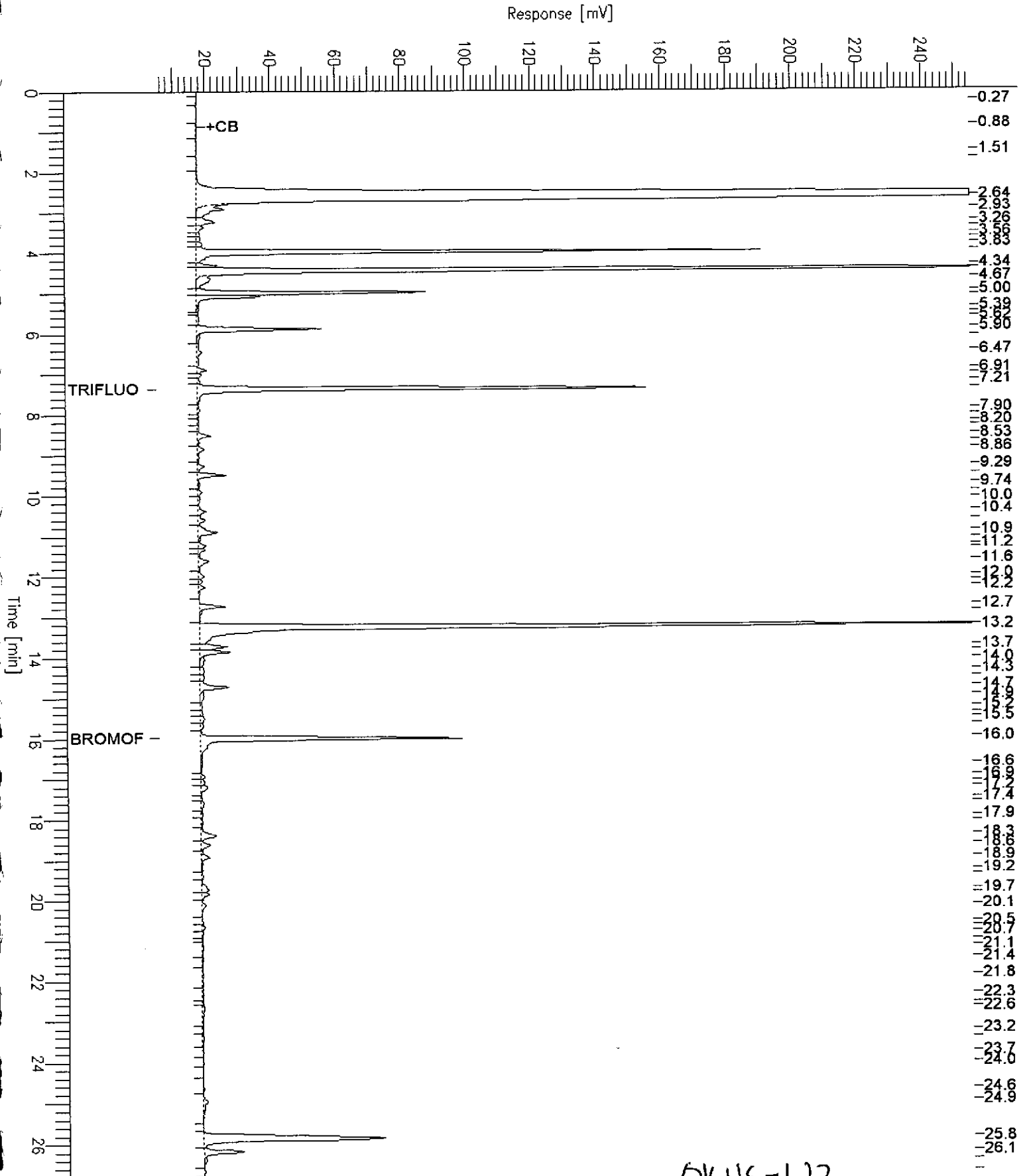
Low Point : 4.83 mV

High Point : 254.83 mV

Scale Factor: -1.0

Plot Offset: 5 mV

Plot Scale: 250.0 mV



OKUS-WZ

# GC19 TVH 'X' Data File (FID)

Sample Name : 140978-004,49992

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\230X011.raw

Date : 8/18/99 09:26 PM

Method : TVHBTXE

Time of Injection: 8/18/99 08:59 PM

Start Time : 0.00 min

End Time : 26.80 min

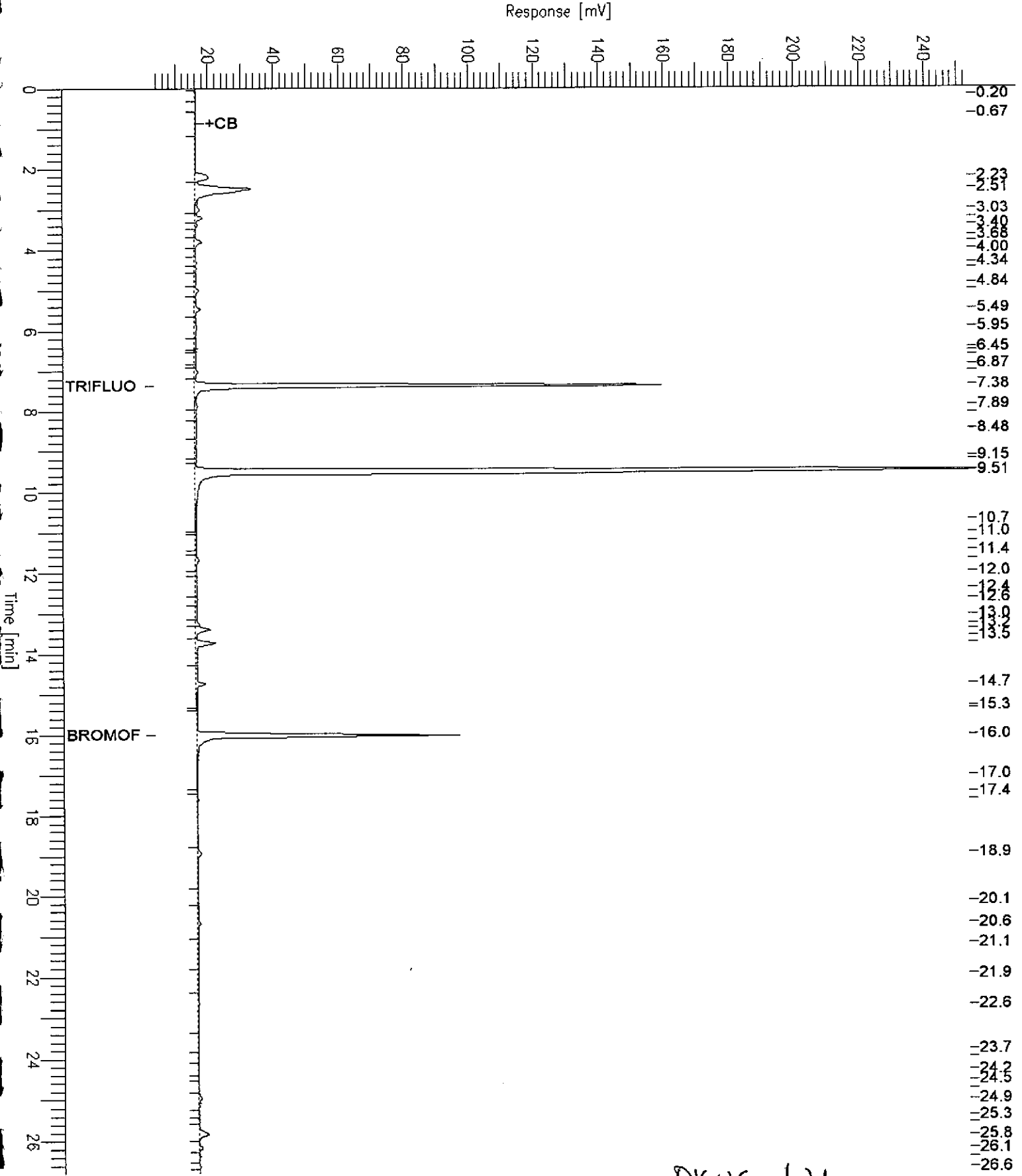
Low Point : 3.30 mV

High Point : 253.30 mV

Scale Factor: -1.0

Plot Offset: 3 mV

Plot Scale: 250.0 mV

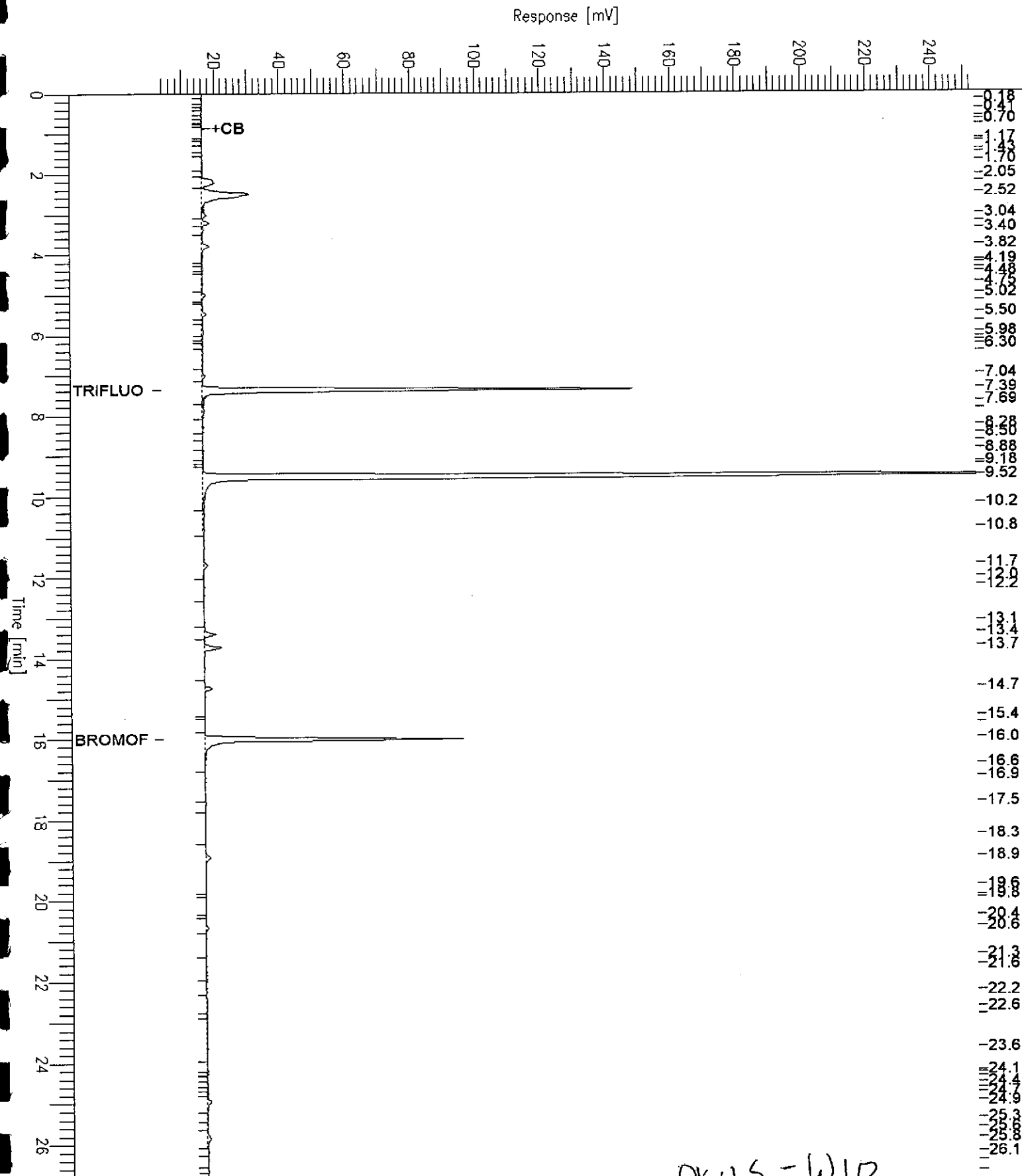


DKUS-W1

# GC19 TVH 'X' Data File (FID)

Sample Name : 140978-005,49992  
 FileName : G:\GC19\DATA\230X012.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor: -1.0  
 End Time : 26.80 min  
 Plot Offset: 4 mV

Sample #: Page 1 of 1  
 Date : 8/18/99 10:06 PM  
 Time of Injection: 8/18/99 09:39 PM  
 Low Point : 3.68 mV  
 High Point : 253.68 mV  
 Plot Scale: 250.0 mV



OKUS-W10

# GC19 TVH 'X' Data File (FID)

Sample Name : 140978-006,49992

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\230X016.raw

Date : 8/19/99 12:45 AM

Method : TVHBTXE

Time of Injection: 8/19/99 12:18 AM

Start Time : 0.00 min

End Time : 26.80 min

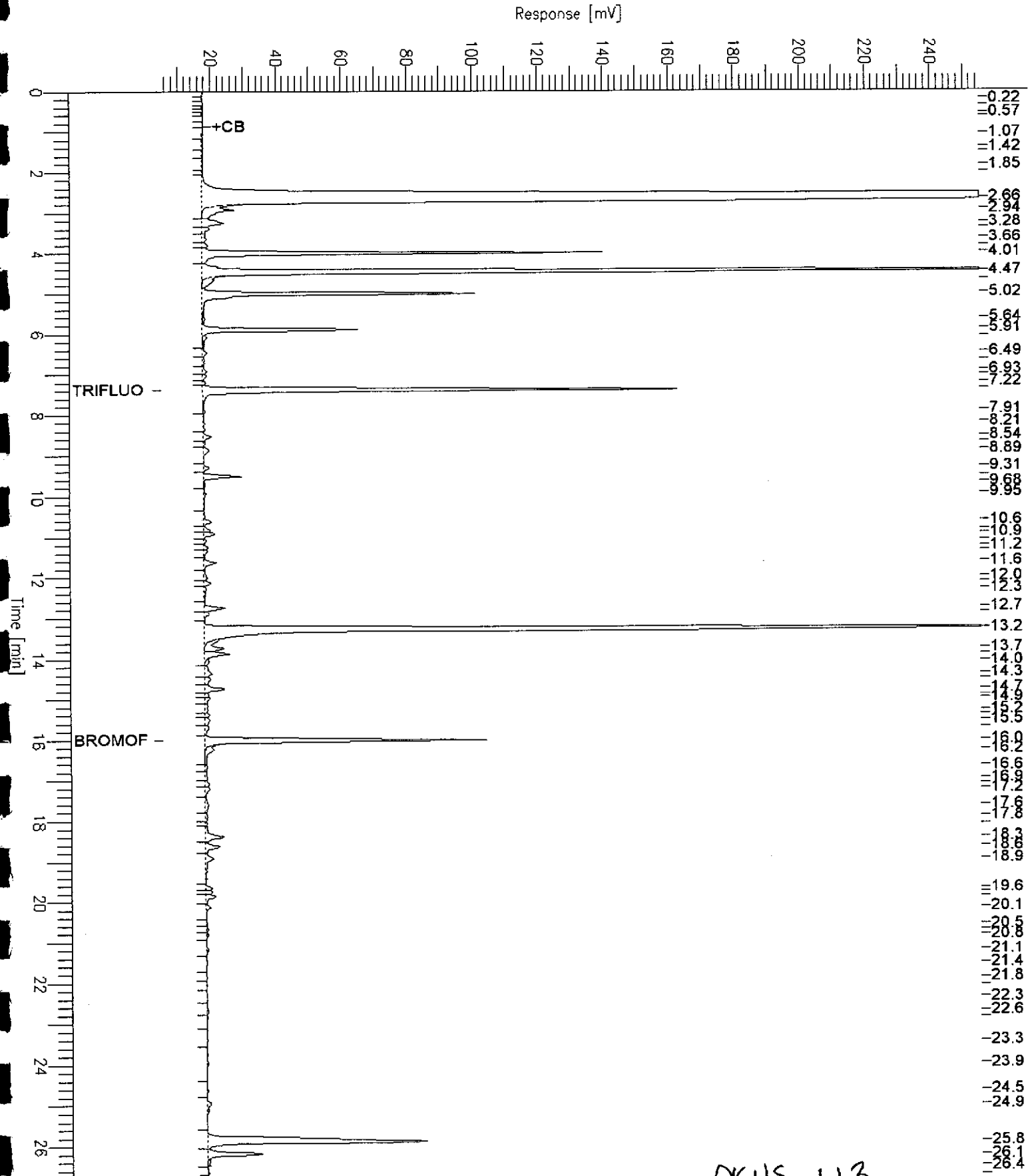
Low Point : 4.94 mV

High Point : 254.94 mV

Scale Factor: -1.0

Plot Offset: 5 mV

Plot Scale: 250.0 mV



OKUS-W3

# GC19 TVH 'X' Data File (FID)

Sample Name : 140978-007,49992

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\230X013.raw

Date : 8/18/99 10:46 PM

Method : TVHBTXE

Time of Injection: 8/18/99 10:19 PM

Start Time : 0.00 min

End Time : 26.80 min

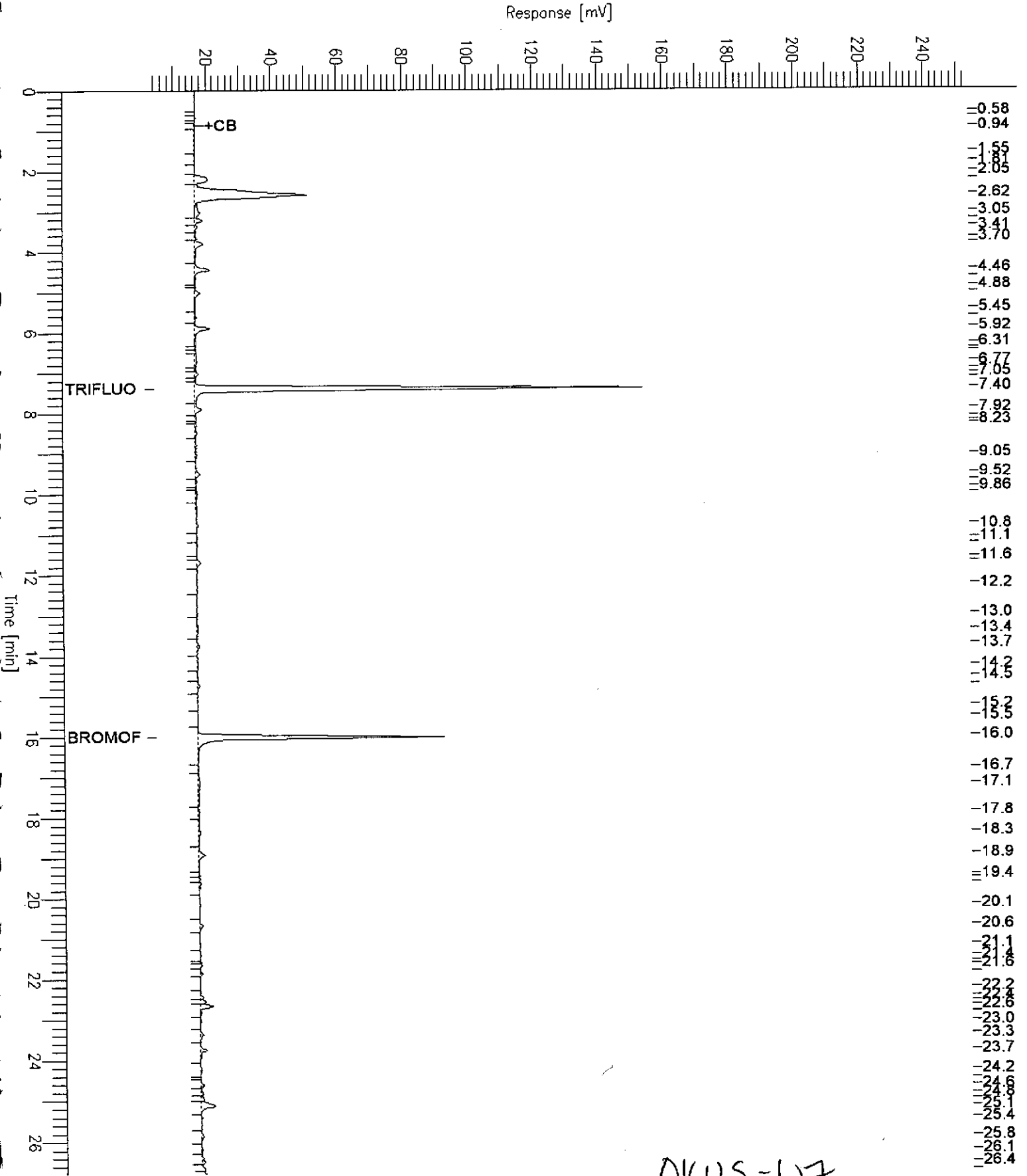
Low Point : 3.96 mV

High Point : 253.96 mV

Scale Factor: -1.0

Plot Offset: 4 mV

Plot Scale: 250.0 mV



DKUS-W7

# GC19 TVH 'X' Data File (FID)

Sample Name : 140978-008,49992

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\230X014.raw

Date : 8/18/99 11:25 PM

Method : TVHBTXE

Time of Injection: 8/18/99 10:58 PM

Start Time : 0.00 min

End Time : 26.80 min

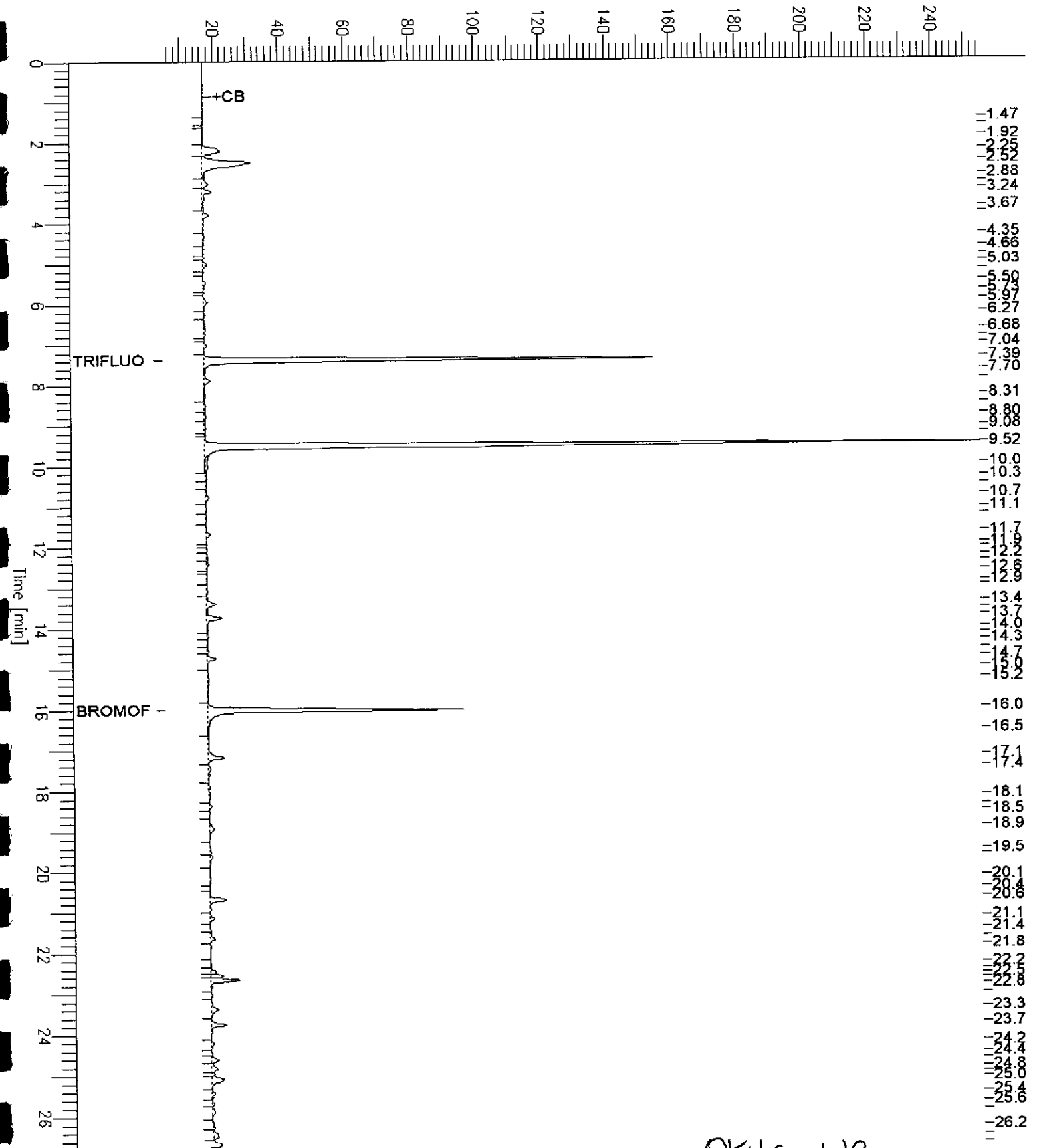
Low Point : 4.25 mV

High Point : 254.25 mV

Scale Factor: -1.0

Plot Offset: 4 mV

Response [mV]



OKUS-W8

# GC19 TVH 'X' Data File (FID)

Sample Name : CCV/LCS, QC05252, 99WS7780, 49992

Sample #: GAS

Page 1 of 1

FileName : G:\GC19\DATA\230X005.raw

Date : 8/18/99 04:40 PM

Method : TVHBTXE

Time of Injection: 8/18/99 04:10 PM

Start Time : 0.00 min

End Time : 26.80 min

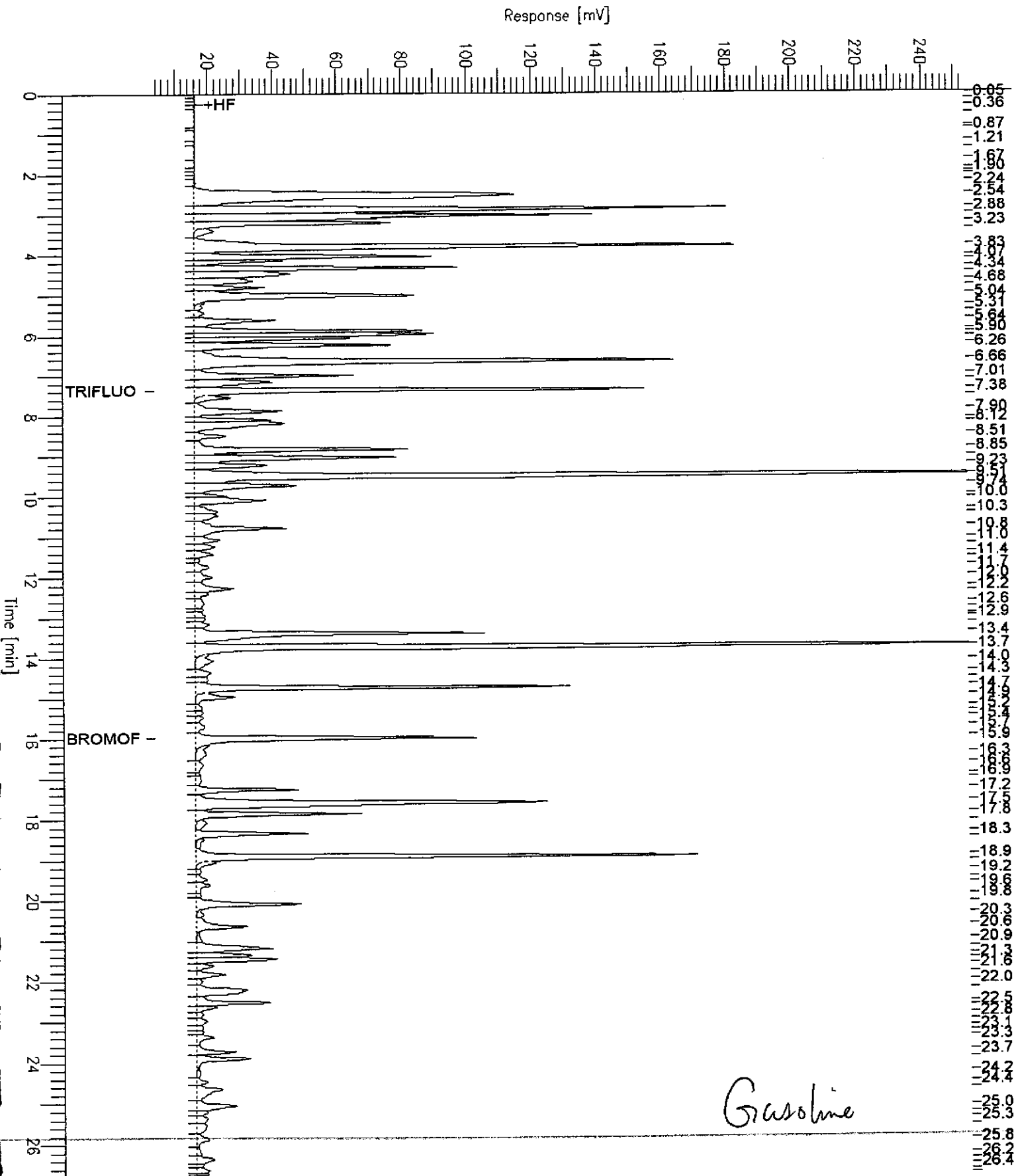
Low Point : 3.58 mV

High Point : 253.58 mV

Scale Factor: -1.0

Plot Offset: 4 mV

Plot Scale: 250.0 mV







BTXE

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8021B  
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
140978-001	APL/UP-W1	50044	08/12/99	08/20/99	08/20/99	
140978-002	APL/UP-W2	50044	08/12/99	08/20/99	08/20/99	
140978-003	OKUS-W2	50044	08/12/99	08/20/99	08/20/99	
140978-004	OKUS-W1	50044	08/12/99	08/20/99	08/20/99	

Matrix: Water

Analyte	Units	140978-001	140978-002	140978-003	140978-004
Diln Fac:		2	2	20	2
MTBE	ug/L	<4	<4	<40	<4
Benzene	ug/L	35	1.9	140	<1
Toluene	ug/L	3.4C	230	43	150
Ethylbenzene	ug/L	<1	<1	<10	1.6
m,p-Xylenes	ug/L	11	4	78	2.2
o-Xylene	ug/L	3	1.5	39	1
Surrogate					
Trifluorotoluene	%REC	96	93	97	94
Bromofluorobenzene	%REC	101	98	101	99

C: Presence of this compound confirmed by second column,  
however, the confirmation concentration differed from the reported  
result by more than a factor of two



BTXE

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8021B  
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
140978-005	OKUS-W10	50044	08/12/99	08/20/99	08/20/99	
140978-006	OKUS-W3	50044	08/12/99	08/20/99	08/20/99	
140978-007	OKUS-W7	50044	08/12/99	08/20/99	08/20/99	
140978-008	OKUS-W8	50044	08/12/99	08/20/99	08/20/99	

Matrix: Water

Analyte	Units	140978-005	140978-006	140978-007	140978-008
Diln Fac:		1	40	1	1
MTBE	ug/L	<2	<80	<2	<2
Benzene	ug/L	<0.5	160	1.2	<0.5
Toluene	ug/L	150	55	<0.5	73
Ethylbenzene	ug/L	1.4	<20	<0.5	1.1
m,p-Xylenes	ug/L	2.3	58	<0.5	1.5
o-Xylene	ug/L	0.97	22	<0.5	1.4
Surrogate					
Trifluorotoluene	%REC	93	95	91	92
Bromofluorobenzene	%REC	98	98	96	99



Lab #: 140978

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water  
Batch#: 49992  
Units: ug/L  
Diln Fac: 1

Prep Date: 08/18/99  
Analysis Date: 08/18/99

MB Lab ID: QC05254

Analyte	Result	
Gasoline C7-C12	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	87	53-150
Bromofluorobenzene	92	53-149



Lab #: 140978

BATCH QC REPORT

BTXE

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8021B  
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water  
Batch#: 50044  
Units: ug/L  
Diln Fac: 1

Prep Date: 08/19/99  
Analysis Date: 08/19/99

MB Lab ID: QC05429

Analyte	Result
MTBE	<2.0
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
m,p-Xylenes	<0.5
o-Xylene	<0.5

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	82	51-143
Bromofluorobenzene	86	37-146

Lab #: 140978

BATCH QC REPORT



Curtis & Tompkins, Ltd.  
Page 1 of 1

TVH-Total Volatile Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
Batch#: 49992  
Units: ug/L  
Diln Fac: 1

Prep Date: 08/18/99  
Analysis Date: 08/18/99

LCS Lab ID: QC05252

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline C7-C12	1702	2000	85	77-117
Surrogate	%Rec	Limits		
Trifluorotoluene	95	53-150		
Bromofluorobenzene	115	53-149		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits



Lab #: 140978

BATCH QC REPORT

BTXE

Client: Camp, Dresser & McKee	Analysis Method: EPA 8021B
Project#: 10605	Prep Method: EPA 5030
Location: Port Of Oakland	

LABORATORY CONTROL SAMPLE

Matrix: Water	Prep Date: 08/19/99
Batch#: 50044	Analysis Date: 08/19/99
Units: ug/L	
Diln Fac: 1	

LCS Lab ID: QC05430

Analyte	Result	Spike Added	%Rec #	Limits
MTBE	18.47	20	92	66-126
Benzene	16.86	20	84	65-111
Toluene	16.31	20	82	76-117
Ethylbenzene	17.01	20	85	71-121
m,p-Xylenes	34.82	40	87	80-123
o-Xylene	17.58	20	88	75-127
Surrogate	%Rec	Limits		
Trifluorotoluene	86	51-143		
Bromofluorobenzene	91	37-146		

# Column to be used to flag recovery and RPD values with an asterisk  
 \* Values outside of QC limits  
 Spike Recovery: 0 out of 6 outside limits

Lab #: 140978

## BATCH QC REPORT

Curtis & Tompkins, Ltd.  
Page 1 of 1

## BTXE

Client: Camp, Dresser & McKee  
 Project#: 10605  
 Location: Port Of Oakland

Analysis Method: EPA 8021B  
 Prep Method: EPA 5030

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ  
 Lab ID: 140959-001  
 Matrix: Water  
 Batch#: 50044  
 Units: ug/L  
 Diln Fac: 1

Sample Date: 08/13/99  
 Received Date: 08/13/99  
 Prep Date: 08/20/99  
 Analysis Date: 08/20/99

MS Lab ID: QC05431

Analyte	Spike Added	Sample	MS	%Rec #	Limits
MTBE	20	<2	25.48	127	49-136
Benzene	20	<0.5	17.56	88	55-122
Toluene	20	<0.5	17.01	85	63-139
Ethylbenzene	20	<0.5	18.22	91	61-137
m,p-Xylenes	40	0.52	36.21	89	57-148
o-Xylene	20	<0.5	18.71	94	70-141
Surrogate	%Rec	Limits			
Trifluorotoluene	92	51-143			
Bromofluorobenzene	99	37-146			

MSD Lab ID: QC05432

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
MTBE	20	25.94	130	49-136	2	11
Benzene	20	17.65	88	55-122	1	10
Toluene	20	17.13	86	63-139	1	10
Ethylbenzene	20	18.45	92	61-137	1	10
m,p-Xylenes	40	36.52	90	57-148	1	10
o-Xylene	20	18.94	95	70-141	1	10
Surrogate	%Rec	Limits				
Trifluorotoluene	91	51-143				
Bromofluorobenzene	97	37-146				

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 6 outside limits

Spike Recovery: 0 out of 12 outside limits



TEH-Tot Ext Hydrocarbons

Client: Camp, Dresser & McKee	Analysis Method: EPA 8015M
Project#: 10605	Prep Method: EPA 3520
Location: Port Of Oakland	

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
140978-001	APL/UP-W1	49985	08/12/99	08/17/99	08/18/99	
140978-002	APL/UP-W2	49985	08/12/99	08/17/99	08/18/99	
140978-003	OKUS-W2	49985	08/12/99	08/17/99	08/18/99	
140978-004	OKUS-W1	49985	08/12/99	08/17/99	08/18/99	

Matrix: Water

Analyte	Units	140978-001	140978-002	140978-003	140978-004
Diln Fac:		1	1	1	1
Diesel C10-C24	ug/L	52 Z	<50	810 Z	<50
Surrogate					
Hexacosane	%REC	77	73	77	67

Z: Sample exhibits unknown single peak or peaks





TEH-Tot Ext Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 3520

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
140978-005	OKUS-W10	49985	08/12/99	08/17/99	08/18/99	
140978-006	OKUS-W3	49985	08/12/99	08/17/99	08/18/99	
140978-007	OKUS-W7	49985	08/12/99	08/17/99	08/19/99	
140978-008	OKUS-W8	49985	08/12/99	08/17/99	08/19/99	

Matrix: Water

Analyte	Units	140978-005	140978-006	140978-007	140978-008
Diln Fac:		1	1	1	1
Diesel C10-C24	ug/L	<50	1600 Z	91	<50
Surrogate					
Hexacosane	%REC	74	84	83	80

Z: Sample exhibits unknown single peak or peaks

# Chromatogram

Sample Name : 140978-001sg,49985

Sample #: 49985

Page 1 of 1

FileName : G:\GC13\CHB\230B009.RAW

Date : 8/19/99 08:00 AM

Method : BTEH201.MTH

Time of Injection: 8/18/99 08:05 PM

Start Time : 0.01 min

End Time : 31.91 min

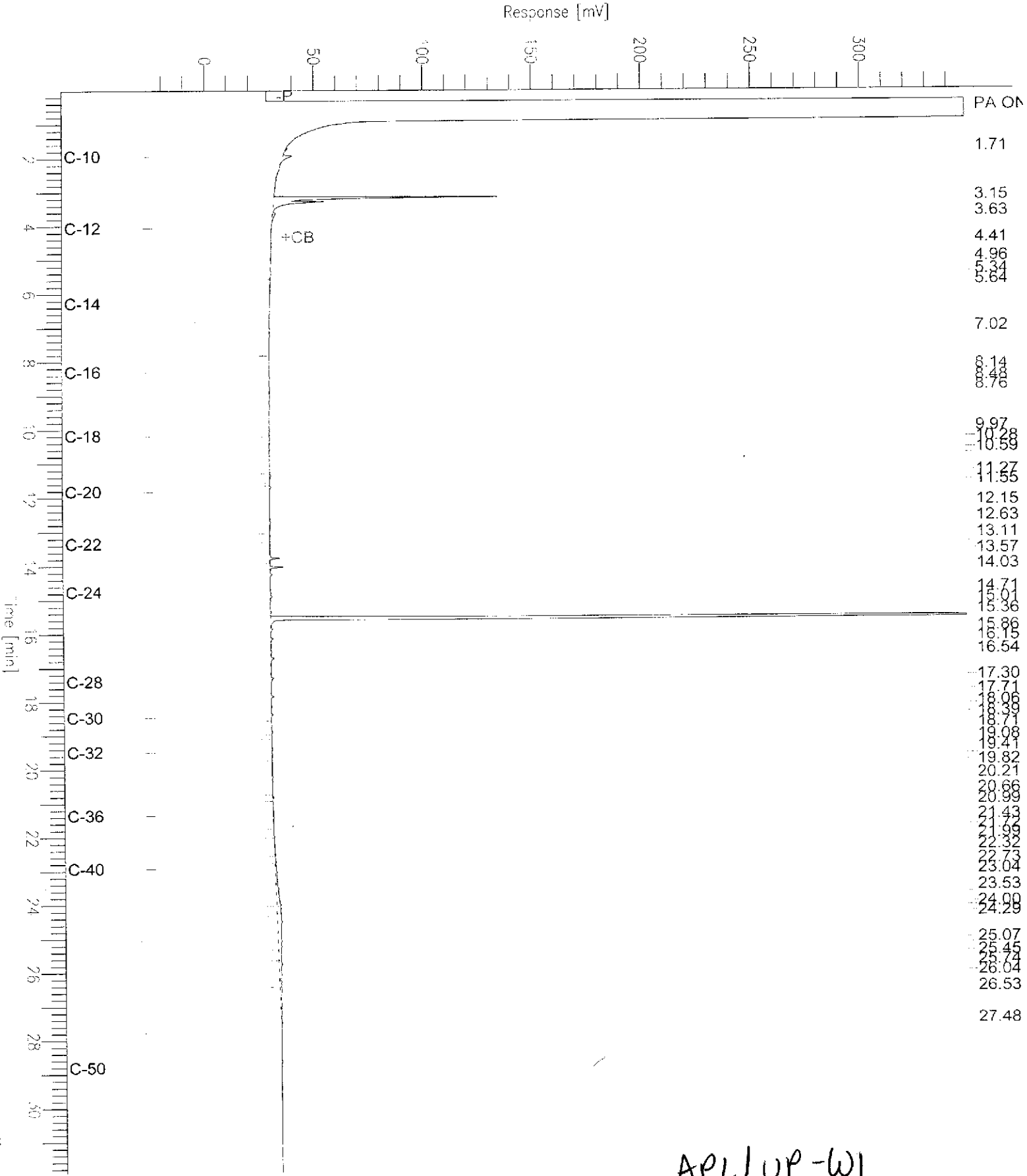
Low Point : -23.99 mV

High Point : 348.41 mV

Scale Factor: 0.0

Plot Offset: -24 mV

Plot Scale: 372.4 mV



APL/UP-W1

# Chromatogram

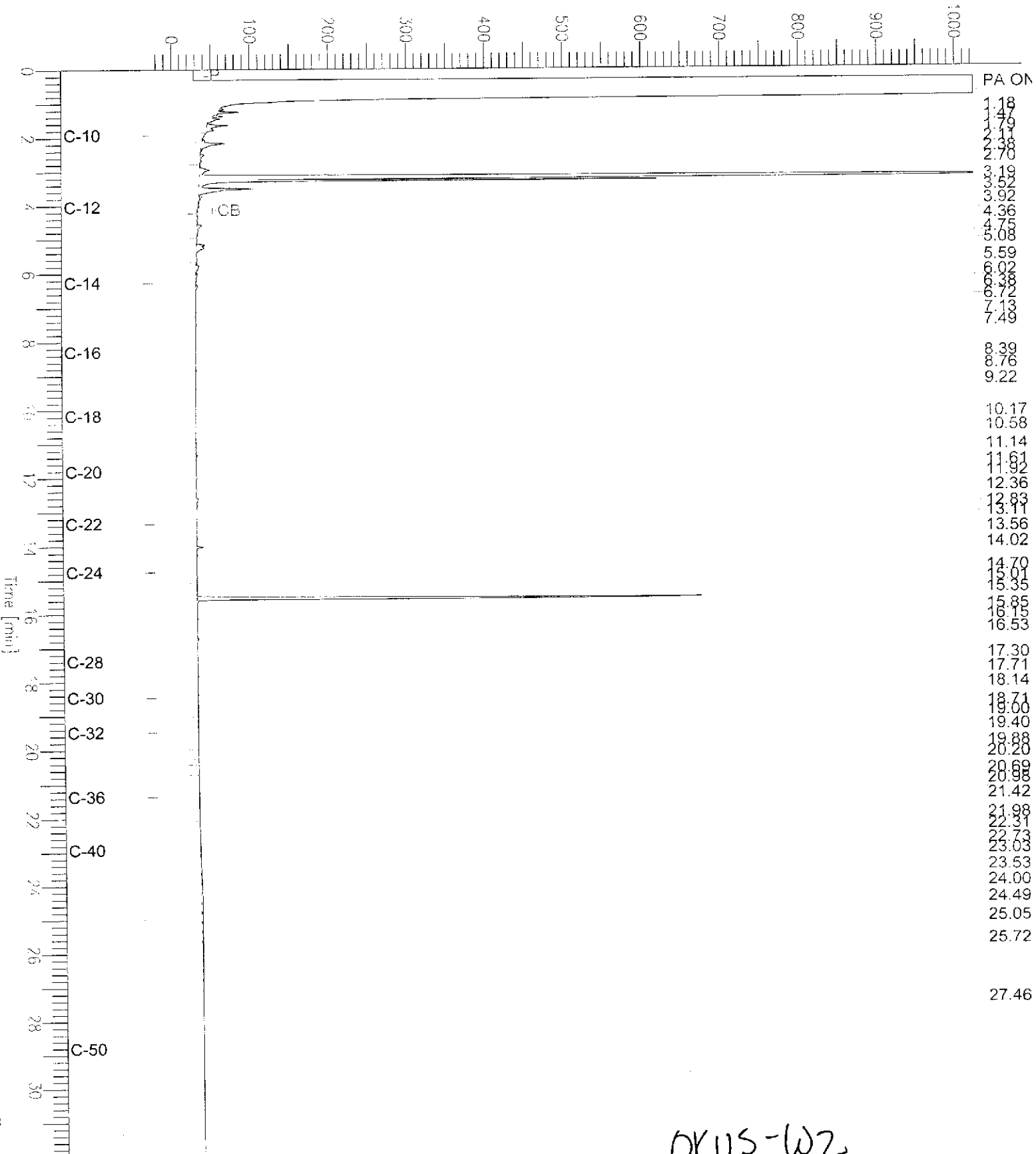
Sample Name : 140978-003sg,49985  
FileName : G:\GC13\CHB\230B011.RAW  
Method : BTEH201.MTH  
Start Time : 0.00 min  
Scale Factor: 0.0

End Time : 31.90 min  
Plot Offset: -24 mV

Sample #: 49985  
Date : 8/19/99 08:02 AM  
Time of Injection: 8/18/99 09:28 PM  
Low Point : -23.96 mV  
Plot Scale: 1048.0 mV  
High Point : 1024.00 mV

Page 1 of 1

Response [mV]



OKUS-WZ

# Chromatogram

Sample Name : 140978-006sg,49985

Sample #: 49985

Page 1 of 1

FileName : G:\GC13\CHB\230B014.RAW

Date : 8/19/99 08:06 AM

Method : BTEH201.MTH

Time of Injection: 8/18/99 11:33 PM

Start Time : 0.00 min

End Time : 31.90 min

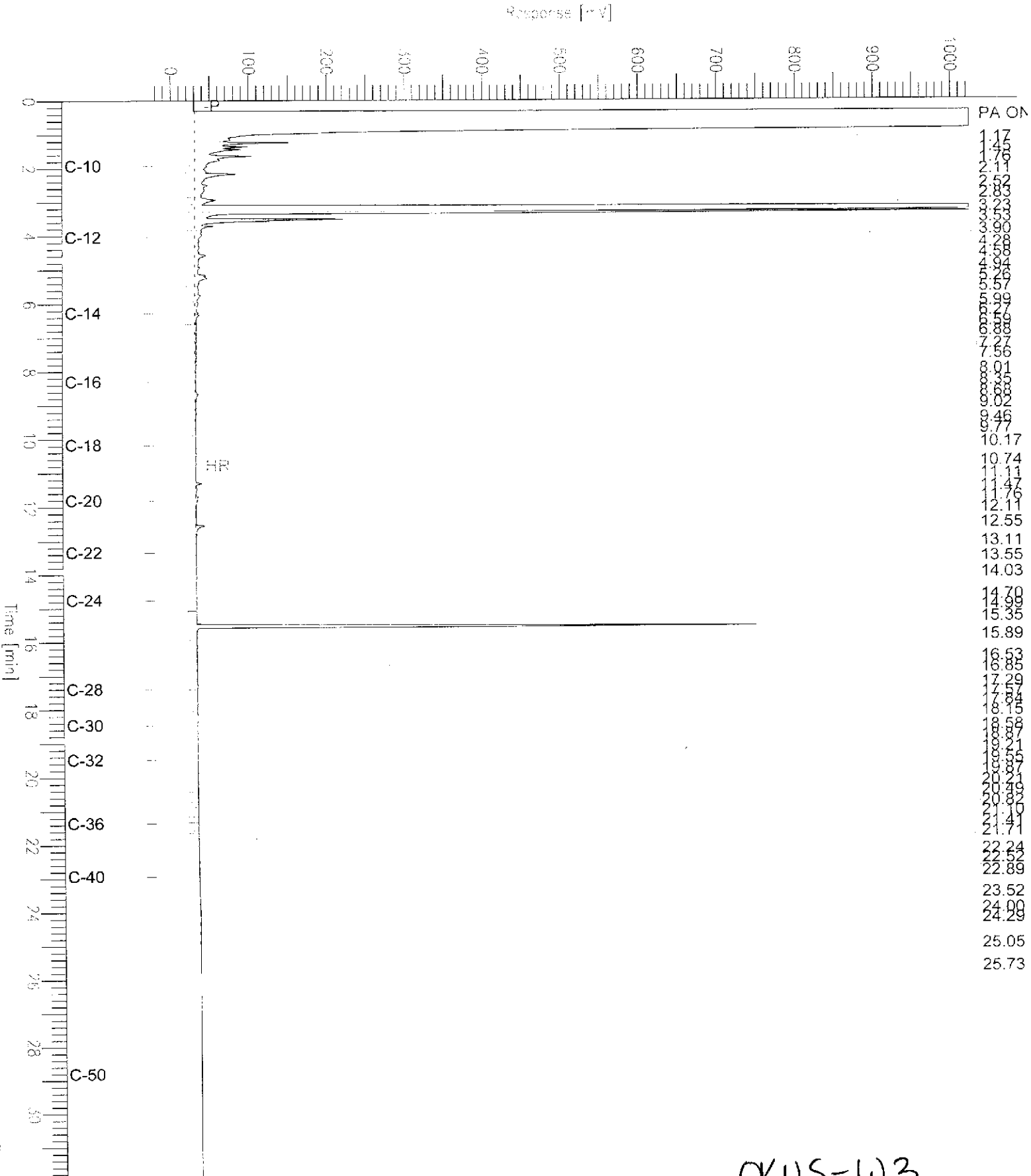
Low Point : -22.46 mV

High Point : 1024.00 mV

Scale Factor: 0.0

Plot Offset: -22 mV

Plot Scale: 1046.5 mV



OKUS-W3

# Chromatogram

Sample Name : 140978-007sg,49985

Sample #: 49985

Page 1 of 1

FileName : G:\GC13\CHB\230B015.RAW

Date : 8/19/99 08:07 AM

Method : BTEH201.MTH

Time of Injection: 8/19/99 12:14 AM

Start Time : 0.25 min

End Time : 31.91 min

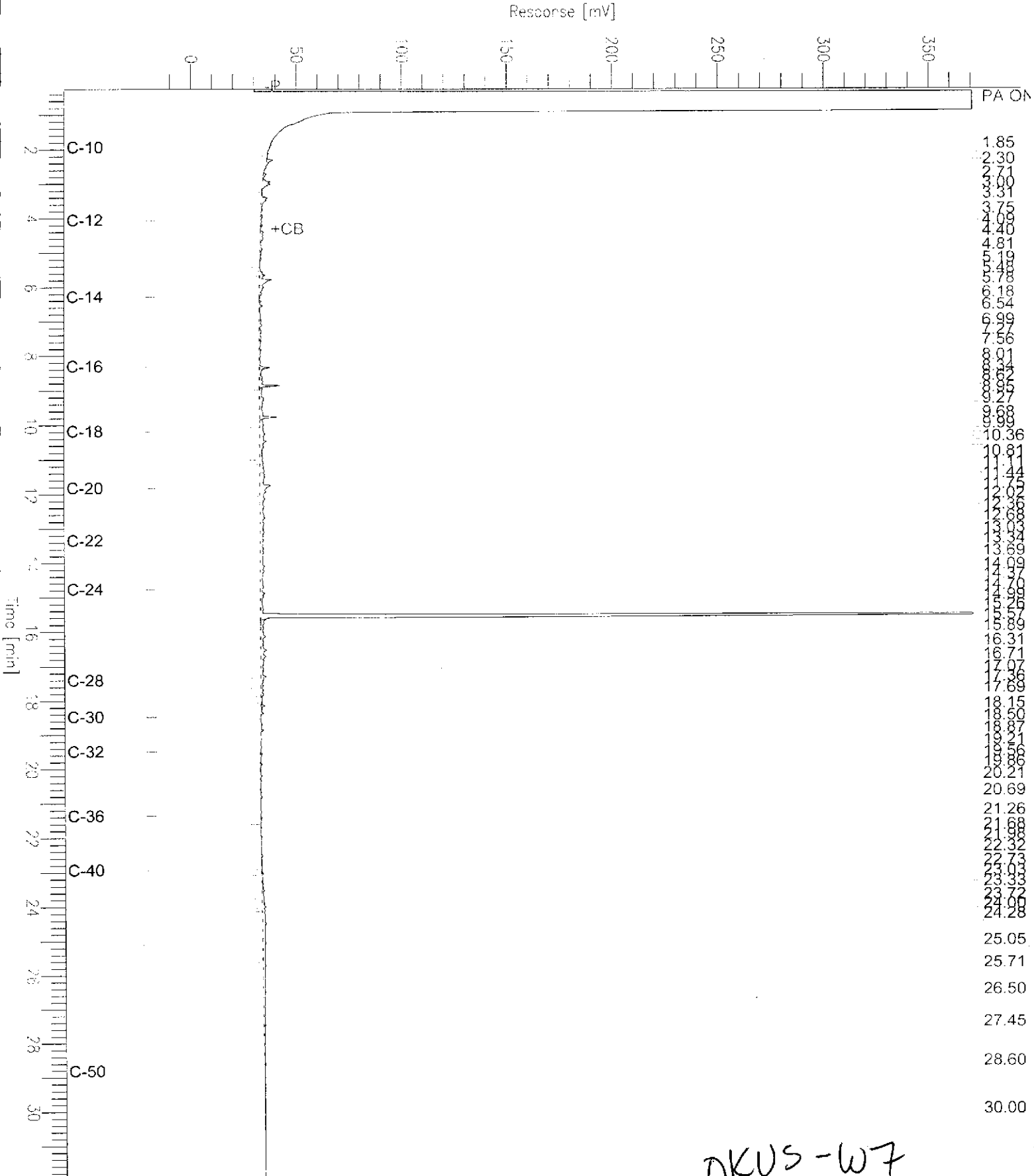
Low Point : -16.79 mV

High Point : 370.79 mV

Scale Factor: 0.0

Plot Offset: -17 mV

Plot Scale: 387.6 mV



DKUS-W7

# Chromatogram

Sample Name : x,ccv,99ws7881,dsl

Sample #: 500mg/l

FileName : C:\GC15\CHB\235B017.RAW

Date : 8/24/99 09:28 AM

Method : BTEH223.MTH

Time of Injection: 8/24/99 04:13 AM

Start Time : 0.01 min

End Time : 31.91 min

Low Point : 13.13 mV

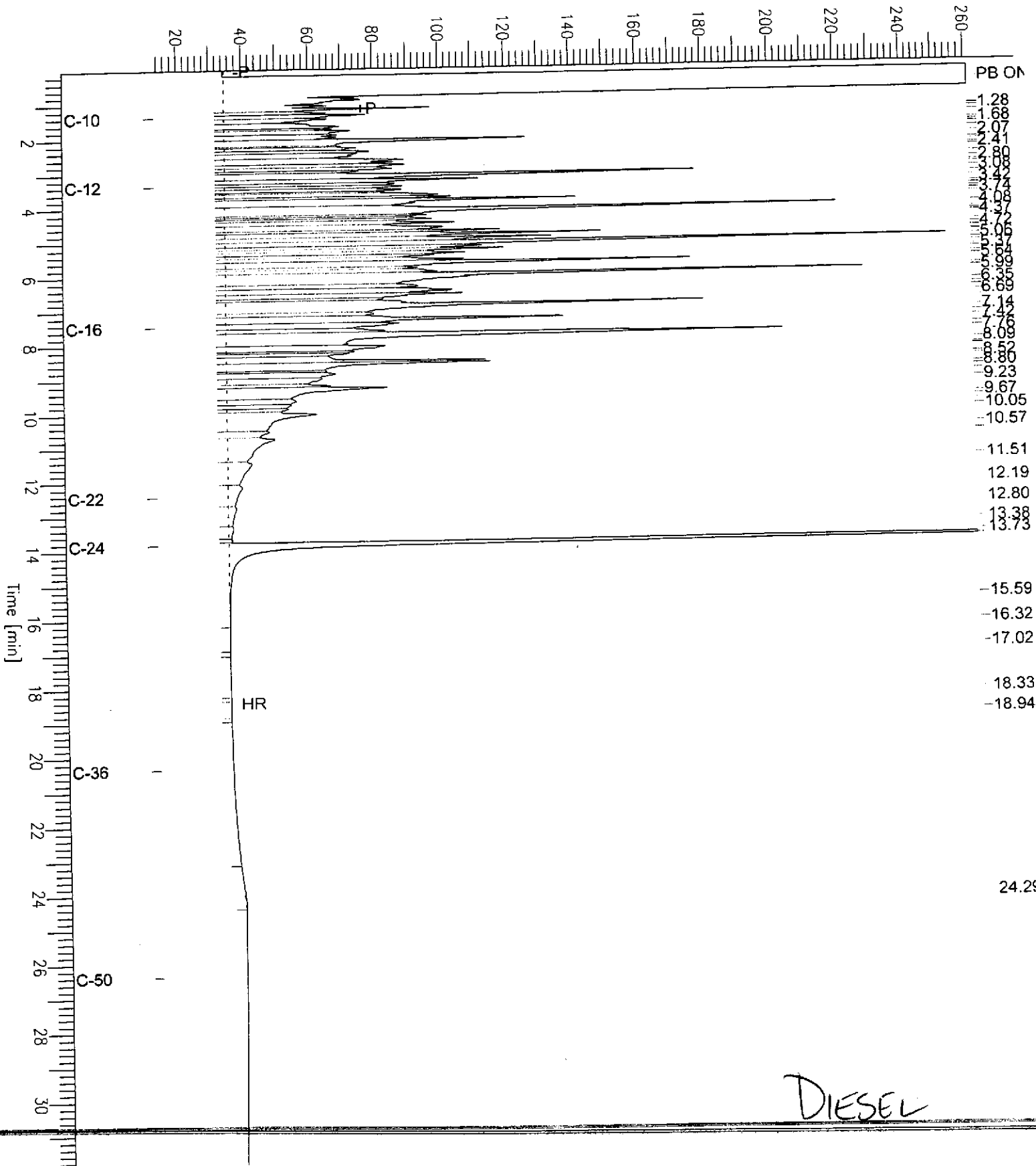
High Point : 261.12 mV

Scale Factor: 0.0

Plot Offset: 13 mV

Plot Scale: 248.0 mV

Response [mV]





Lab #: 140978

BATCH QC REPORT

TEH-Tot Ext Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 3520

METHOD BLANK

Matrix: Water  
Batch#: 49985  
Units: ug/L  
Diln Fac: 1

Prep Date: 08/17/99  
Analysis Date: 08/24/99

MB Lab ID: QC05226

Analyte	Result	
Diesel C10-C24	<50	
Surrogate	%Rec	Recovery Limits
Hexacosane	79	58-128

Lab #: 140978

BATCH QC REPORT



Curtis & Tompkins, Ltd.  
Page 1 of 1

TEH-Tot Ext Hydrocarbons

Client: Camp, Dresser & McKee  
Project#: 10605  
Location: Port Of Oakland

Analysis Method: EPA 8015M  
Prep Method: EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water  
Batch#: 49985  
Units: ug/L  
Diln Fac: 1

Prep Date: 08/17/99  
Analysis Date: 08/24/99

BS Lab ID: QC05227

Analyte	Spike Added	BS	%Rec #	Limits
Diesel C10-C24	2475	1835	74	50-114
Surrogate	%Rec	Limits		
Hexacosane	81	58-128		

BSD Lab ID: QC05228

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel C10-C24	2475	1894	77	50-114	3	25
Surrogate	%Rec	Limits				
Hexacosane	85	58-128				

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits