



**AEC  
WEST**

**New Ventures**

***Geochemical Fieldwork Report  
on EL 387***

***Norman Wells Area – N.W.T.***

***Field work performed***

***August 22 - 27, 1997***

**Glen Andrews  
Sr. Geologist  
July 24, 1998**

**AEC West Ltd.  
New Ventures  
Geochemical Fieldwork Report  
on EL 387  
Norman Wells Area – N.W.T.**

**Field work performed  
August 22 - 27, 1997**

**Table of Contents & List of Enclosures**

**Part 1**

- Title Page
- Field Report Summary (Purpose & Results)
- Figures - Regional location map showing EL387, Fort Good Hope and Norman Wells
- List of Geochemical Sampling Sites & G.P.S. Localities

**Part 2**

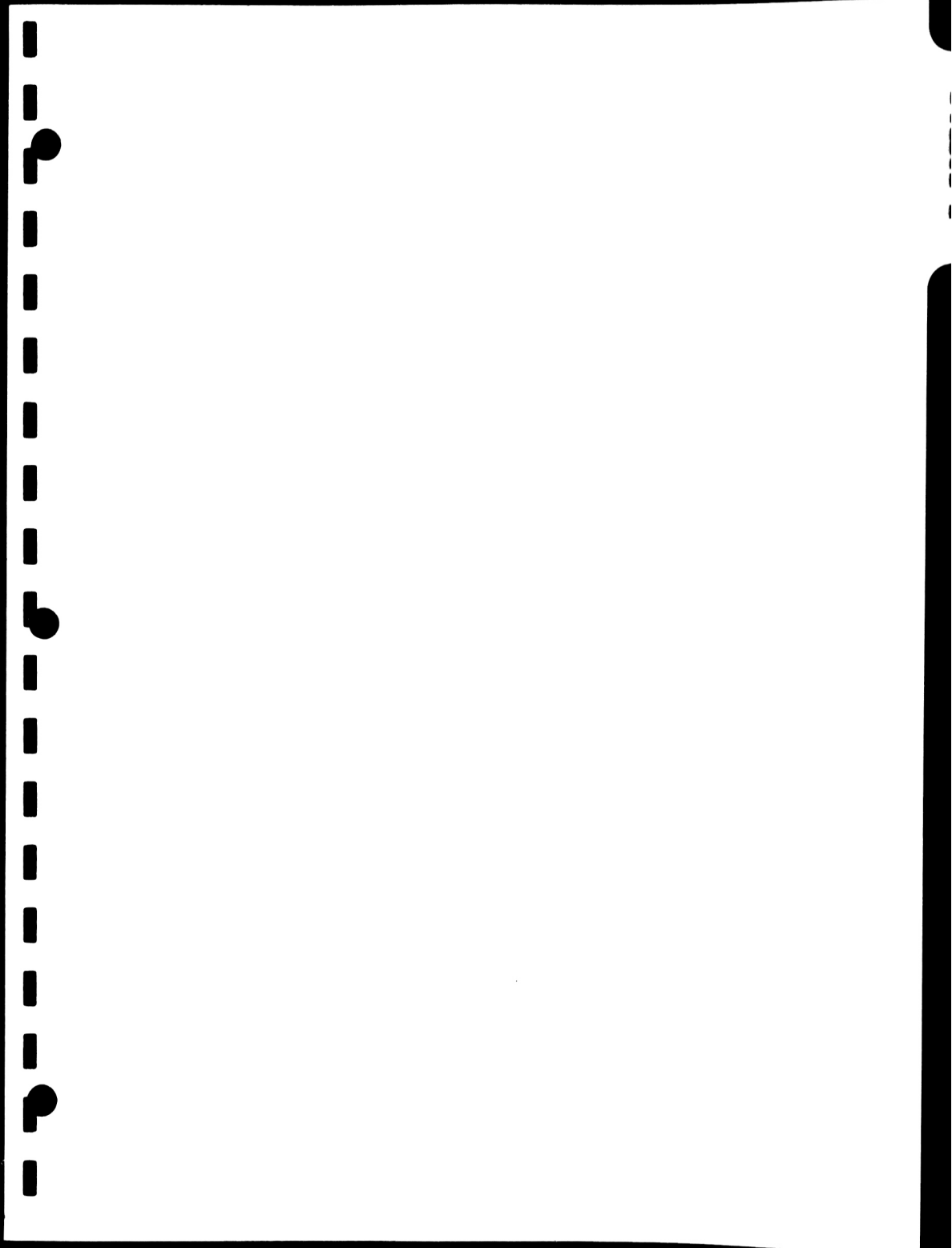
- Geochemical Report from E.D.M. Inc.  
(Summary localities, geochemical analysis, photographs of sample sites, hydrocarbon assessment with chromatograms)  
Note – Lab Results from Norwest Labs

***List of References***

***Appendices (in separate folder)***

1. *Topographic Maps, N.T.S. 106H + 96E, showing exact locations of surface geochemical samples in relationship to EL 387 (1:50,000 and 1:250,000)*





**AEC West Ltd.**  
**Geochemical Fieldwork Report**  
**on and adjacent to EL 387**

**South of Fort Good Hope & Northwest of Norman Wells**

**Title Page**

Operation Identifier	9233-A61-1E
Operator's Report Name	AEC West Ltd.
Type of Survey	Geochemical sampling fieldwork
Survey Locality	1. N.T.S. Map Sheet 106H (1:250,000) 2. N.T.S. Map Sheet 96E (1:250,000)
Year of Field Work	August 22 – 27, 1997
Name of Operation Operator	AEC West Ltd.
Field Geologist	Glen D. Andrews (AEC West)
Name of Sub-contractors	Dermot McCaw, E.D.S. (Environmental Data Management Ltd.) R. Corbet, Norwest Labs (analysed samples)
Native Guide & Support	Charlie Barnaby
Field Transportation	Tim Simmons Canadian Helicopters (Norman Wells, NWT)
Specific Interests	100% AEC West
Author of the Report	Glen D. Andrews, P.Geol. Senior Geologist – AEC West
Report Date	July 24, 1998
AEC Operating Licence	1997: # 878;                      1998: # 889



## **Geochemical Field Report Summary (Purpose & Results)**

**for EL 387  
Norman Wells Area, N.W.T.  
July 13 - 23, 1997**

The purpose of the geochemical field work (sampling and analysis) was to determine locations and types of hydrocarbon seeps on and adjacent to EL 387 (see regional location map, Figure 1). Visual observations from helicopters, during previous field geology work, had noted numerous iridescent sheens on the surface of lakes and small bodies of water, which gave the appearance of a thin film of oil on water.

AEC sub-contracted Dermot McCaw, of Environmental Data Management Inc., to do the field sampling in conjunction with AEC Senior Geologist, Glen D. Andrews, and native guide/support, Charlie Barnaby. The samples were analysed at Norwest Labs, and the complete results are provided in the sub-report by E.D.M. Inc. included in this report.

The area of EL 387 was flown by helicopter at low level and anomalous visual sighting were sample (see List of Geochemical Sampling Sites; also see Appendix - topographic map 1:250,000 with EL 387 outline and detailed topographic map 1:50,000 showing all sample locations). A few sites around the Norman Wells area were sampled where similar visual observations were noted, such as Seepage Lake, Norman Wells Public Dock and near the dam on Boswell Creek in Norman Wells.

Photographs of all sites sampled are included to show the nature of the visual (sheen / iridescence) anomalies. Most of the samples analysed had "no hydrocarbons detected". Lloyd Snowdon of the G.S.C. suggested that these visual sheens may be due to iron oxides associated with organics in stagnant waters where reducing conditions exist.

Samples 12A, 16A, 24A, 25A and 35A contain some indication of hydrocarbons. Samples 12A, 16A and 24A have insufficient hydrocarbon to allow an accurate assessment (see detailed results). Sample 25A, from the Norman Wells Public Dock,



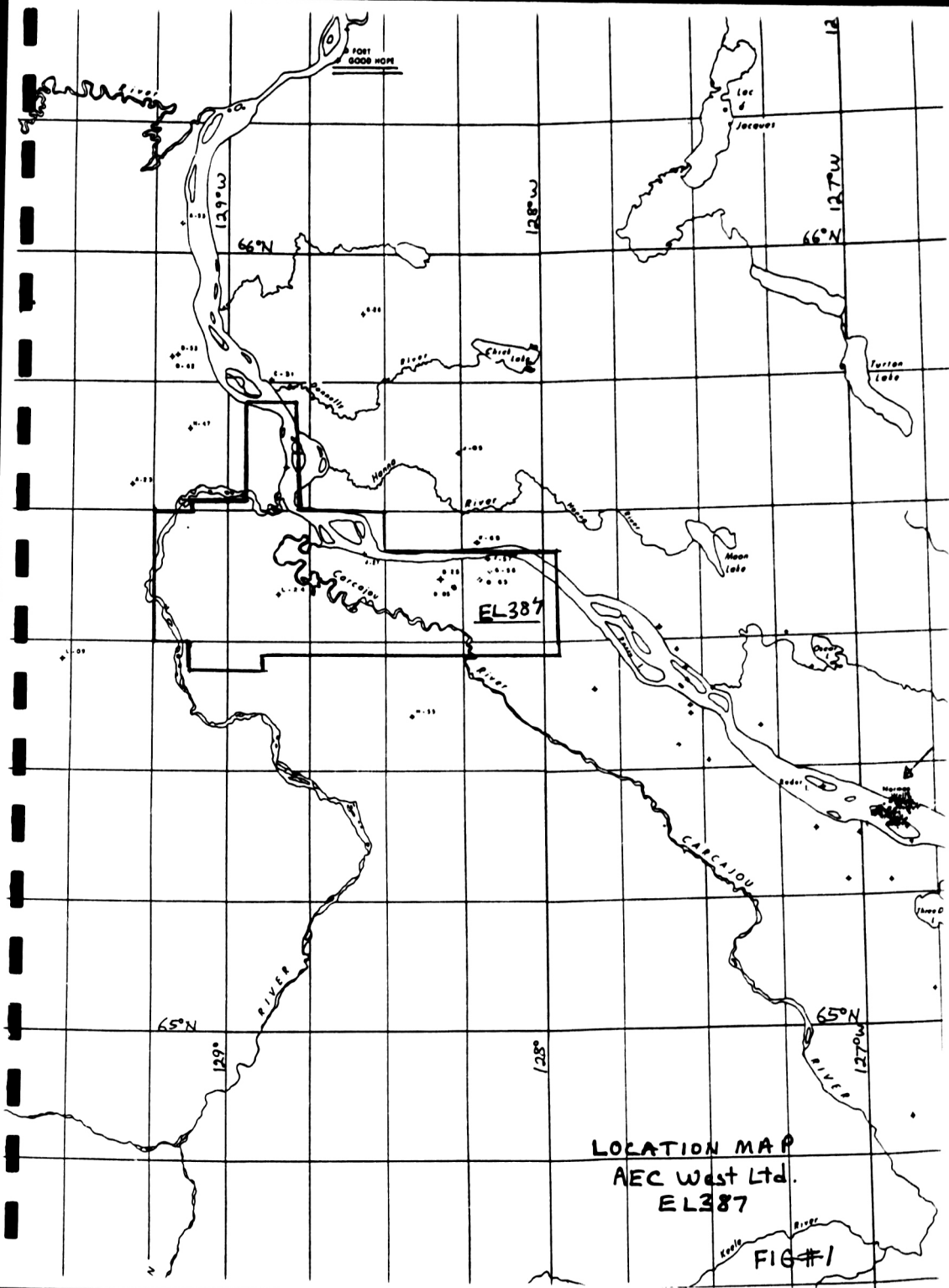
*"contains some hydrocarbon  $C_{11}$ - $C_{30}$ , which would indicate possible diesel" – possible spill or leak from boats? Sample 35A, from Seepage Lake, contains "hydrocarbons in the  $C_{11}$ - $C_{40}$  + range indicating the presence of weathered crude oil" consistent with a possible oil seep. Sample sites 5 and 29 are near the junction of Mountain River and the Mackenzie River at the old Chevron 1989-90 campsite. These samples were taken from a small, bubbling minor spring on the roadside, in gravel. Sample 29 was taken about 24 hours after the first sampling. This site appeared to have gas bubbling and strong iridescence; however, rusty iron staining was present in the area.*

Generally, the results of the field sampling suggest few (if any) significant oil seeps in the area of EL 387 related to the visual iridescence on water bodies.

A handwritten signature of Glen D. Andrews in cursive script, written over a horizontal line.

Glen D. Andrews – Sr. Geologist  
AEC West Ltd.

July 24, 1998



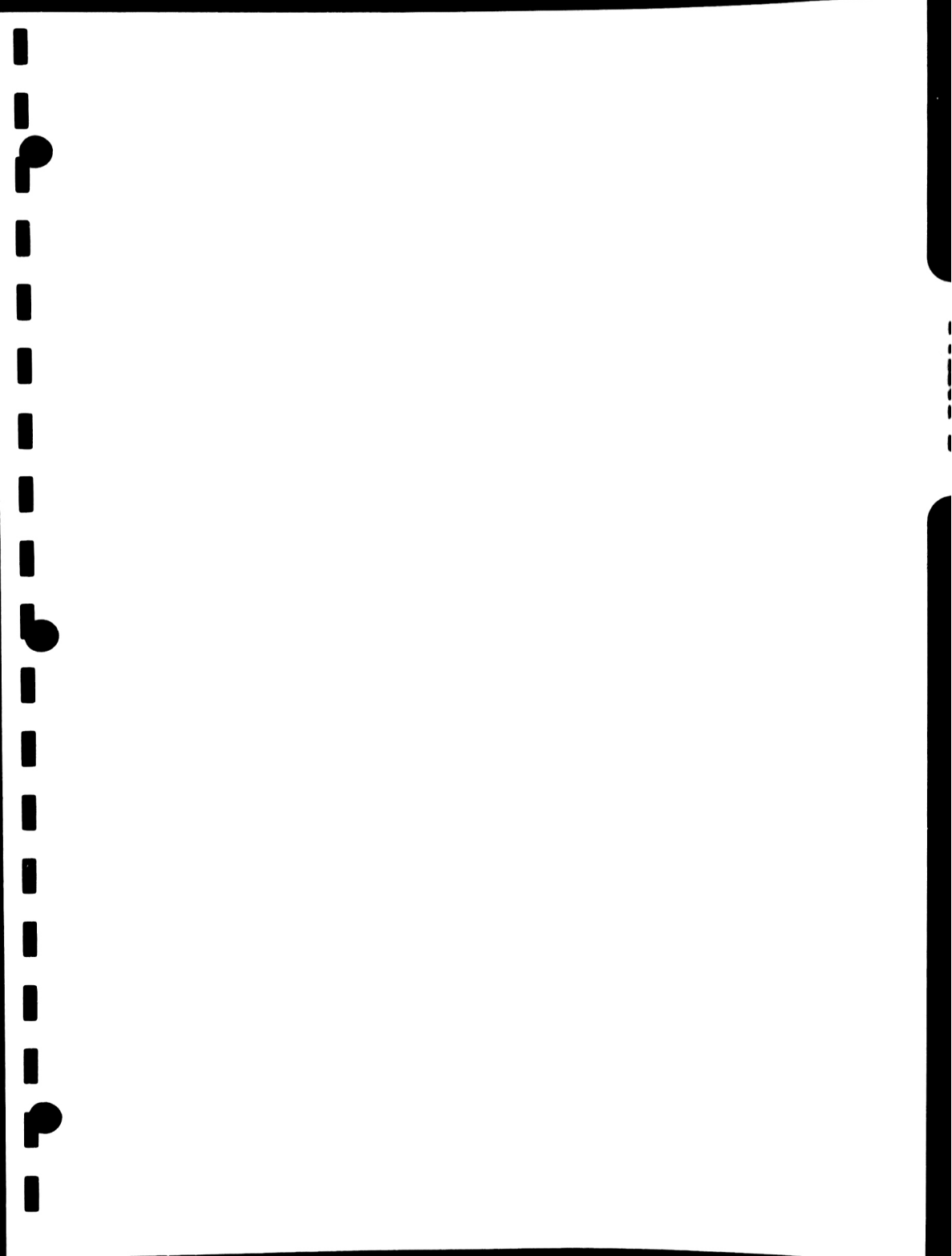
LOCATION MAP  
AEC West Ltd.  
EL387

FIG #1

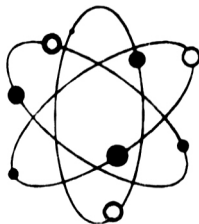
**List of Geochemical Sampling Sites  
for EL 387  
(Central N.W.T.)**

Site #	Global Positioning Satellite		
	Latitude	Longitude	
1	65° 39' 3.2" N	128° 40' 28.5" W	Axel Island, West end
2	65° 39' 12.1" N	128° 40' 47.1 W	
3	65° 38' 58.2" N	128° 40' 26.1 W	
4	65° 39' 13.7" N	128° 39' 35.8" W	
5	65° 40' 15.4" N	128° 49' 8.3" W	Road gravel, old Chevron site
6	65° 33' 22.6" N	128° 22' 17.2" W	
7	65° 34' 19.3" N	128° 28' 42.9" W	
8	65° 34' 26.9" N	128° 31' 19.7" W	
9	65° 35' 12.8" N	128° 29' 22.9" W	
10	65° 38' 46.2" N	128° 42' 45.3" W	
11	65° 44' 49.4" N	128° 46' 34.7" W	
12	65° 45' 8.5" N	128° 47' 27.0" W	
13	65° 49' 33.3" N	128° 55' 11.7" W	
14	65° 47' 5.7" N	128° 51' 29.8" W	
15	65° 46' 50.8" N	128° 51' 31.2" W	
16	65° 43' 20.1" N	128° 42' 53.6" W	
17	65° 43' 53.8" N	128° 50' 57.8" W	
18	65° 43' 26.7" N	128° 51' 53.9" W	
19	65° 42' 38.3" N	128° 55' 17.5" W	
20	65° 38' 30.5" N	128° 49' 15.0" W	
21	65° 37' 27.7" N	128° 50' 10.7" W	Immediately adjacent to Carcajou River in small slough
22	65° 35' 10.5" N	128° 48' 44.8" W	
23	65° 36' 4.8" N	128° 41' 30.1" W	
24	Norman Wells Public Dock		
25	Norman Wells Public Dock		
26	65° 35' 20.2" Ground	128° 20' 17.8" W	
	65° 35' 17" Air	128° 20' 32.8" W	
27	65° 35' 26.6 N	128° 34' 14.3 " W	
28	65° 32' 26.2" N	128° 37' 20.9" W	
29	65° 40' 15.4" N	128° 49' 8.3" W	Chevron Site Road revisited
30	65° 29' 53.7" N	128° 31' 34.5" W	
31	65° 33' 5.9" N	128° 29' 34.4" W	
32	65° 35' 16.9" N	128° 20' 19.0" W	
33	65° 34' 15.5" N	128° 17' 43.8" W	
34	65° 39' 36.2" N	128° 49' 38.4" W	
35	65° 17' 37.4" N	126° 50' 3.6" W	
	Seepage Lake		
36	Norman Wells Boswell Creek (Dam Street)		

See Appendix – Topographic maps showing localities



# **E.D.M. INC.**



## **AEC West**

**Drilling Waste Analysis for:  
Water Hydrocarbon Assessment**

**Date Reported: November 28, 1997**

**Invoice # E97-254**

**License # EL 387**

*Environmental Data Management Inc.  
Dermot McCaw  
4211 - 147 St. Edmonton, Alberta  
T6H 5V6  
Phone: 434-4584 Cell: 915-5596 Fax: 431-2890  
e-mail: dmccaw@oanet.com*





## **Table of Contents**

### **Tab 1**

GPS Listings

### **Tab 2**

Summary of Results

Site #: 1 through 38

### **Tab 3**

Hydrocarbon Characterization Chromatograms

Site #: 1A through 38A

### **Tab 4**

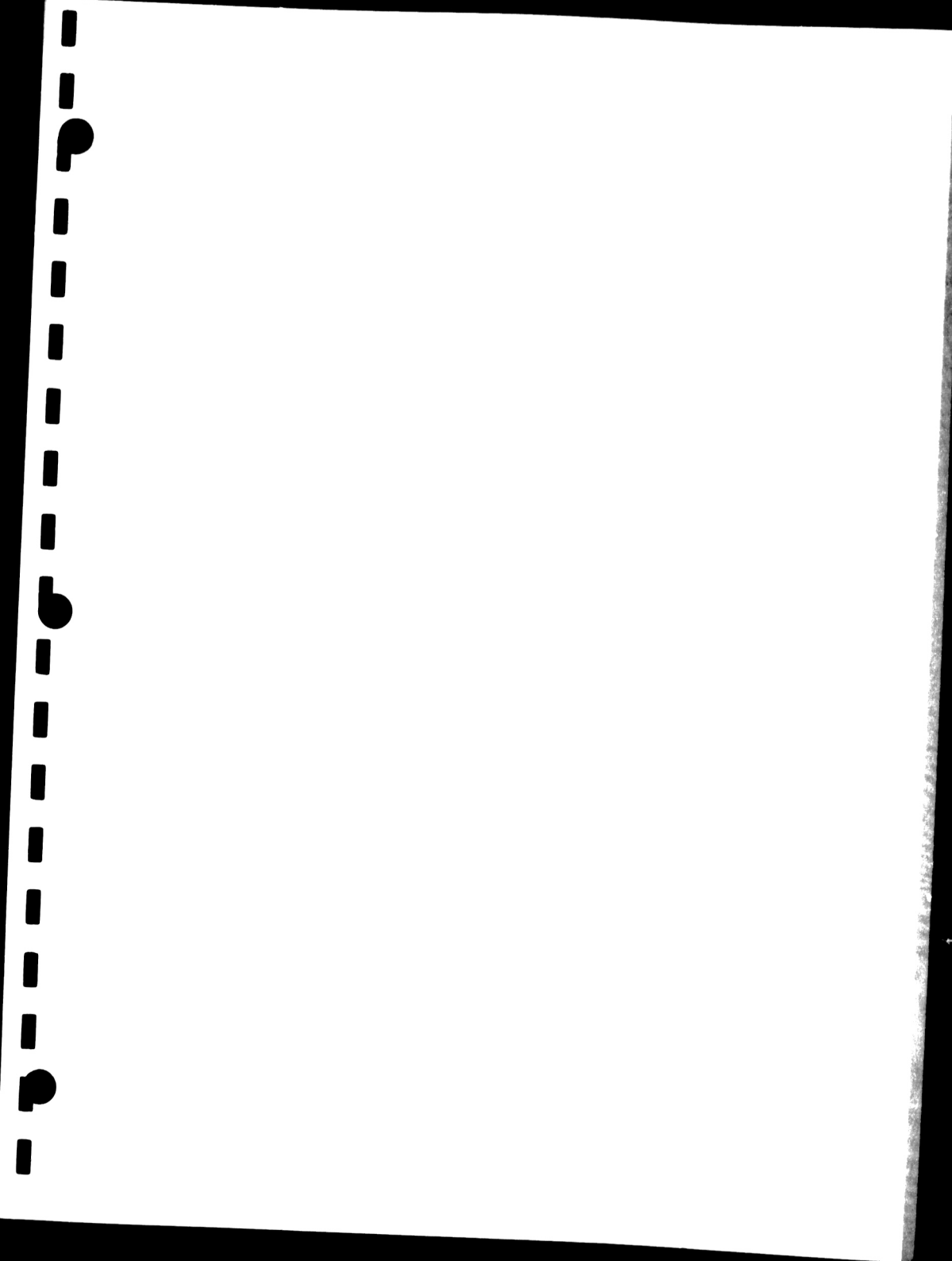
Summary of Results of combined samples from

12a, 16a, 24a, 25a and 35a

Hydrocarbon Characterization Chromatograms

### **Tab 5**

Quality Control Results

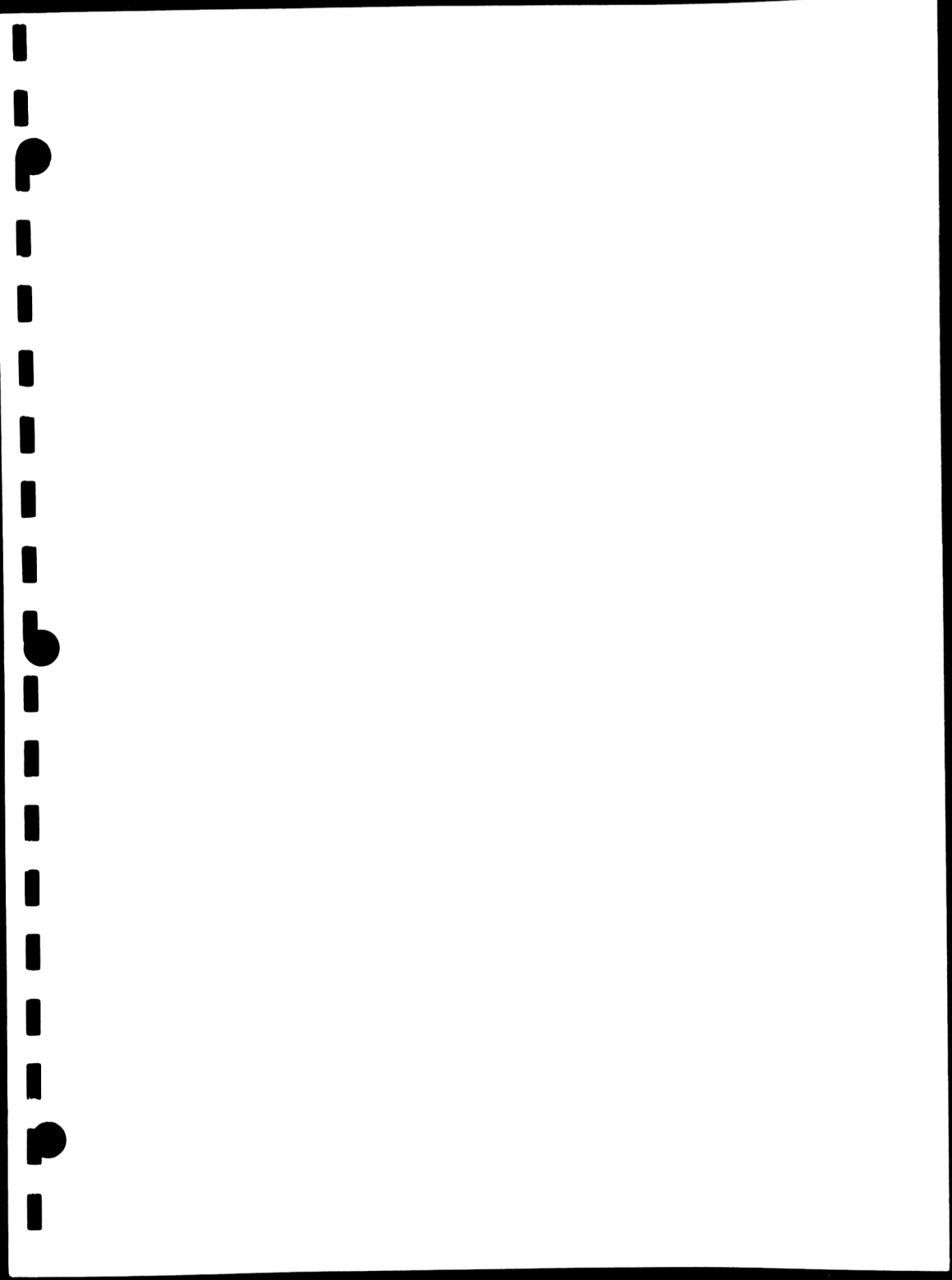




ENVIRONMENTAL DATA MANAGEMENT INC.

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Site #	Global Position Satellite	
	Latitude	Longitude
1	65° 39' 3.2" N	128° 40' 28.5" W
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13	65° 49' 33.3" N	128° 55' 11.7" W
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25	Norman Wells Public Dock	
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27	65° 35' 26.6" N	128° 34' 14.3" W
28	65° 32' 26.2" N	128° 37' 20.9" W
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32	65° 35' 16.9" N	128° 20' 19.0" W
33	65° 34' 15.5" N	128° 17' 43.8" W
34	65° 39' 36.2" N	128° 49' 38.4" W
35	65° 17' 37.4" N Seepage Lake	126° 50' 3.6" W
36	Norman Wells Boswell Creek	





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TO: Enviro. Data Management Inc.  
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DATE SAMPLED: 25-Aug-97  
DATE RECEIVED: 28-Aug-97  
DATE REPORTED: 24-Sep-97  
LAB FILE#: 97-08-3169

Revised

Project: E97-254

## HYDROCARBON ASSESSMENT - WATER

LAB #	1	2	3	4	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#1A	#2A	#3A	#4A	
<sup>1</sup> Total Extractables (C <sub>11</sub> - C <sub>30</sub> +)	<0.1	<0.1	<0.1	<0.1	0.1

  
R. Corbet, M.Sc., P. Ag.  
Manager - Organics

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0



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**Project:** E97-254

Page 2

**HYDROCARBON ASSESSMENT - WATER**

LAB #	5	6	7	8	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#5A	#6A	#7A	#8A	
<sup>2</sup> Total Extractables (C <sub>11</sub> - C <sub>30</sub> +)	<0.1	<0.1	<0.1	<0.1	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0



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**Project:** E97-254

Page 3

**HYDROCARBON ASSESSMENT - WATER**

LAB #	9	10	11	12	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#9A	#10A	#11A	#12A	
<sup>1</sup> Total Extractables (C11 - C30+)	<0.1	<0.1	<0.1	0.2	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0



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Project: E97-254

Page 4

## HYDROCARBON ASSESSMENT - WATER

LAB #	13	14	15	16	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#13A	#14A	#15A	#16A	
*Total Extractables (C11 - C30+)	<0.1	<0.1	<0.1	0.6	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0





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Project: E97-254

Page 5

**HYDROCARBON ASSESSMENT - WATER**

LAB #	17	18	19	20	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#17A	#18A	#19A	#20A	
<sup>2</sup> Total Extractables (C11 - C30+)	<0.1	<0.1	<0.1	<0.1	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0



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**LAB FILE#:** 97-08-3169

**Project:** E97-254

Page 6

**HYDROCARBON ASSESSMENT - WATER**

LAB #	21	22	23	24	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#21A	#22A	#23A	#24A	
*Total Extractables (C11 - C30+)	<0.1	<0.1	<0.1	0.5	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0



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Page 7

## HYDROCARBON ASSESSMENT - WATER

LAB #	25	26	27	28	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#25A	#26A	#27A	#28A	
<sup>1</sup> Total Extractables (C11 - C30+)	2.8	<0.1	<0.1	<0.1	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0



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DATE SAMPLED: 25-Aug-97  
DATE RECEIVED: 28-Aug-97  
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LAB FILE#: 97-08-3169

Project: E97-254

Page 8

## HYDROCARBON ASSESSMENT - WATER

LAB #	29	30	31	32	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#29A	#30A	#31A	#32A	
<sup>2</sup> Total Extractables (C <sub>11</sub> - C <sub>30</sub> +)	<0.1	<0.1	<0.1	<0.1	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0



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Page 9

## HYDROCARBON ASSESSMENT - WATER

LAB #	33	34	35	36	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#33A	#34A	#35A	#36A	
<sup>2</sup> Total Extractables (C11 - C30+)	<0.1	<0.1	13.9	<0.1	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

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Fax (604) 534-9996  
Fax (204) 275-6019

**TO:** Enviro Data Management Inc.  
AEC West  
**ATTN:** Dermot McCaw

**DATE SAMPLED:** 17-Oct-97  
**DATE RECEIVED:** 18-Oct-97  
**DATE REPORTED:** 22-Oct-97  
**LAB FILE#:** 97-10-4245

**HYDROCARBON ASSESSMENT - WATER**

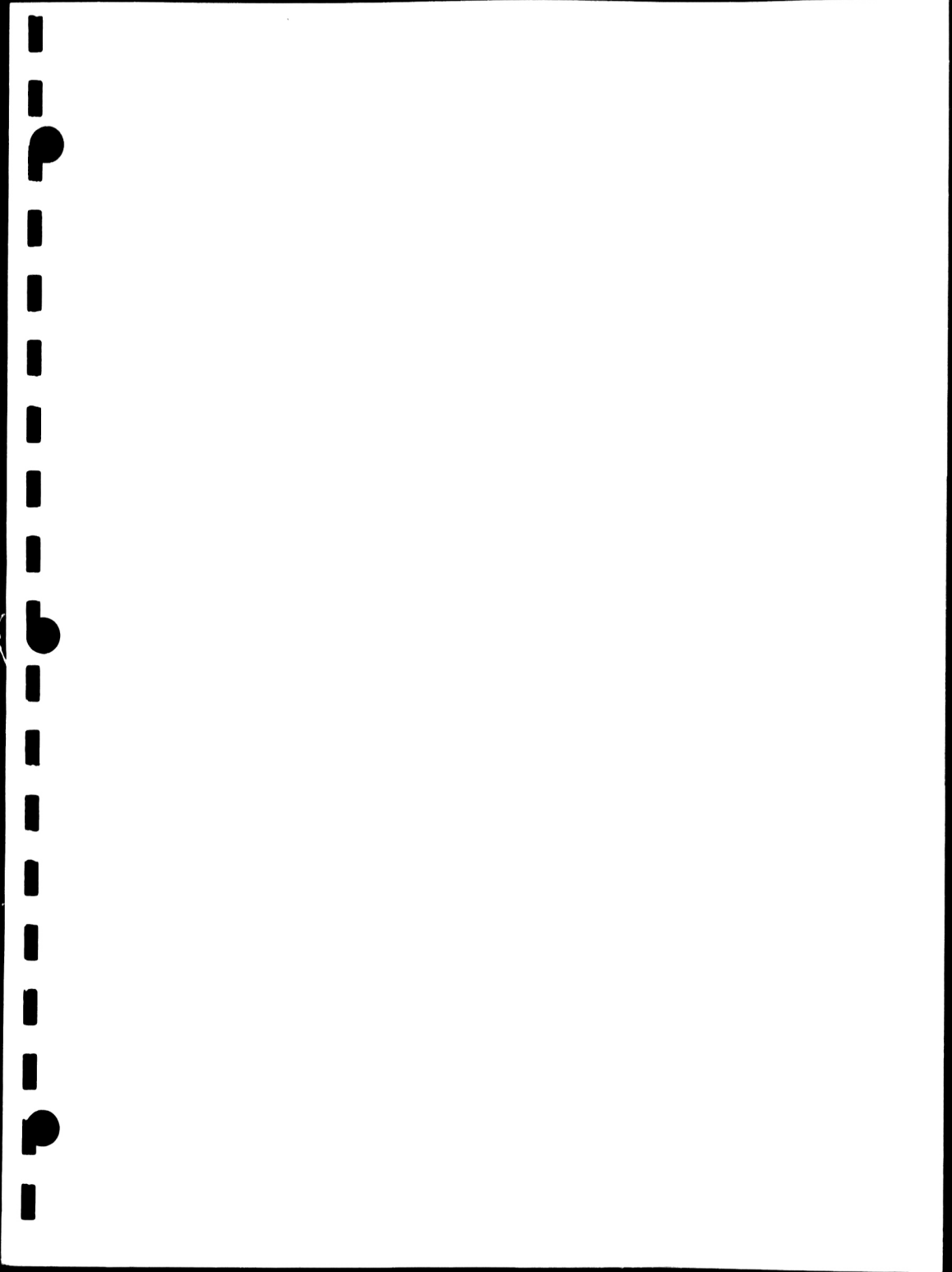
LAB #	1	4	Detection
CLIENT #	37A	38A	Limit
<sup>2</sup> Total Extractables (C <sub>11</sub> - C <sub>30</sub> *)	<0.1	<0.1	0.1

  
R. Corbet, M.Sc., P. Ag.  
Manager - Organics

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0



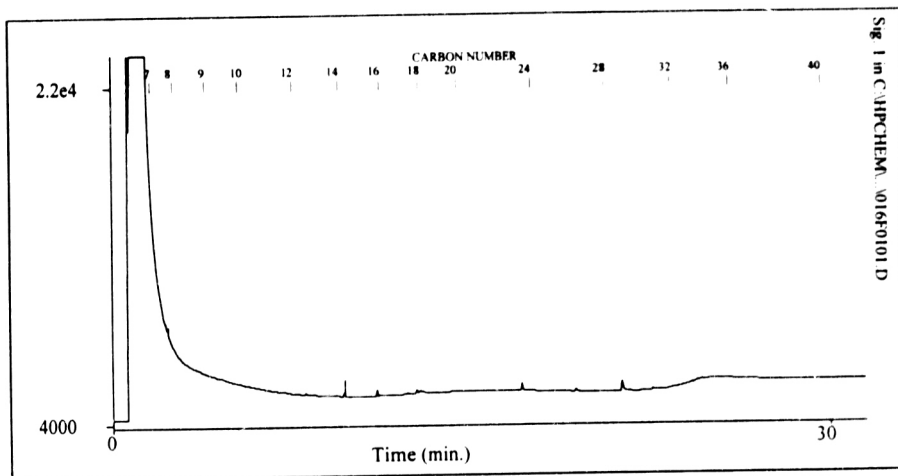


**NORWEST  
LABS**

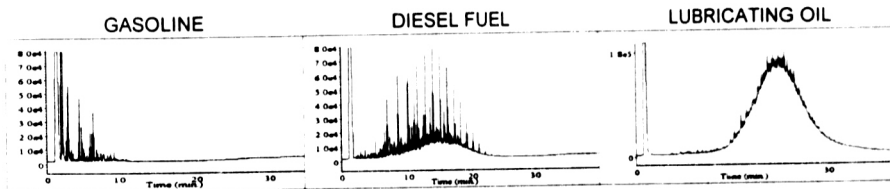
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #1A  
Lab No.: 3169-1W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline  
Varsol  
Kerosene

C4-C12  
C8-C12  
C7-C16

Diesel  
Lubricating Oils  
Crude Oils

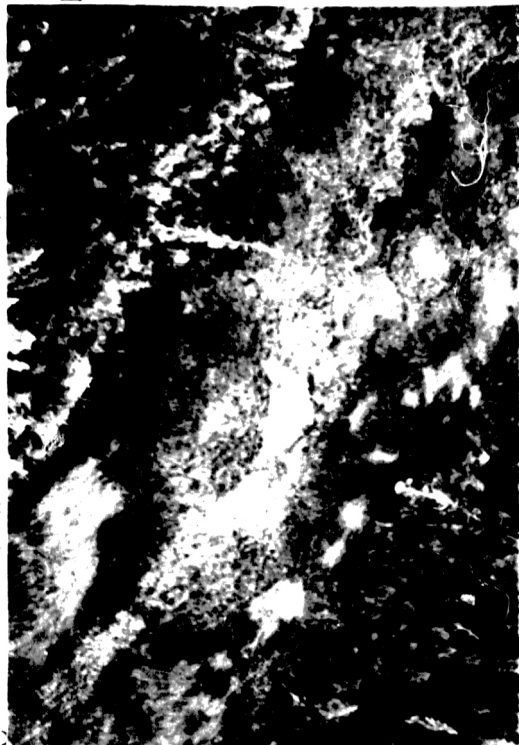
C8-C22  
C20-C40  
C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.







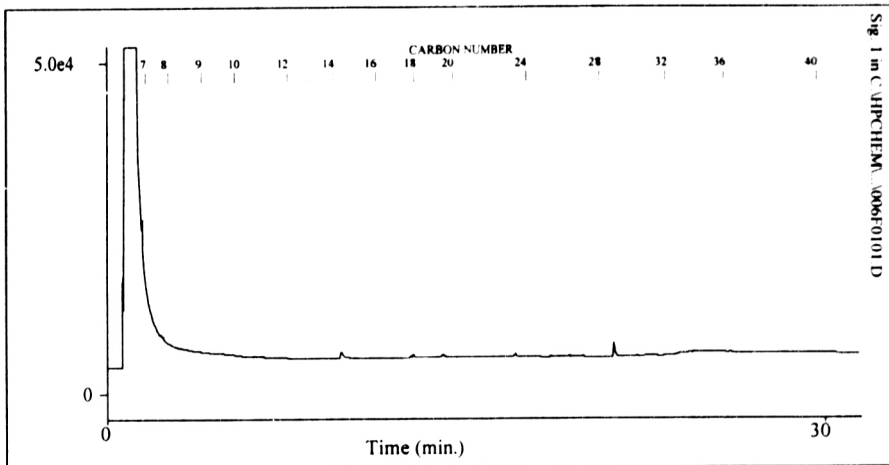


**NORWEST  
LABS**

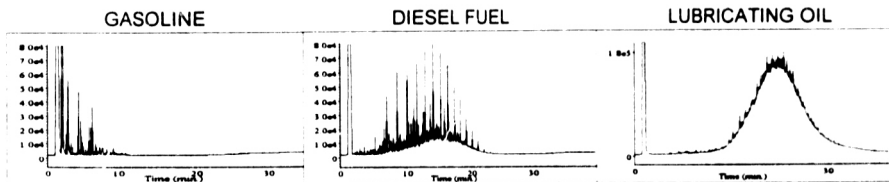
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: Sample #2A  
Lab No.: 3169-2W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



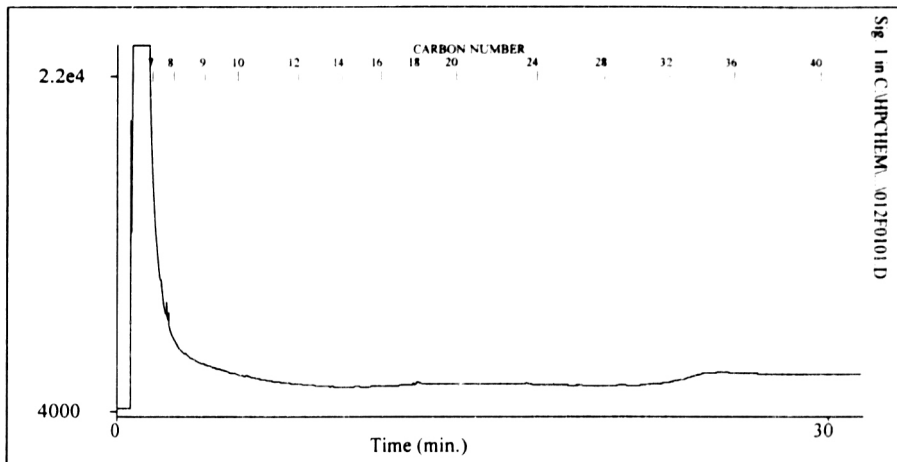


**NORWEST  
LABS**

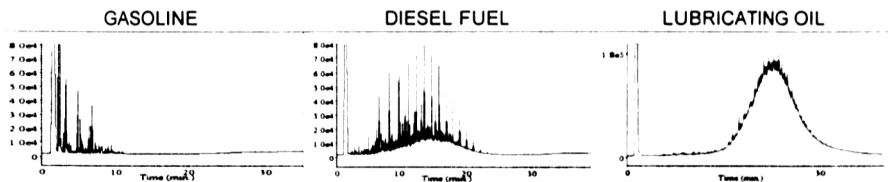
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #3A  
Lab No.: 3169-3W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



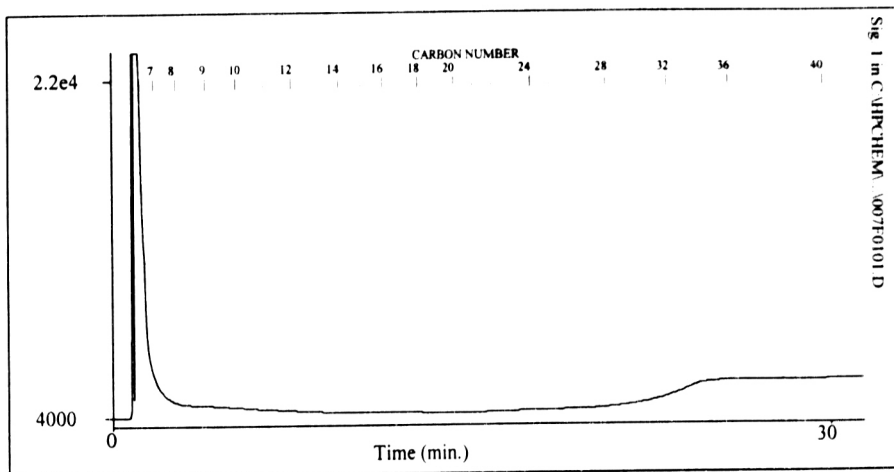


**NORWEST  
LABS**

### HYDROCARBON CHARACTERIZATION

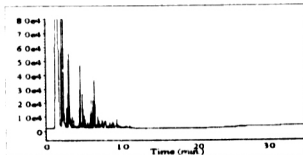
Client: E.D.M  
Sample ID: Sample #4A  
Lab No.: 3169-4W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97

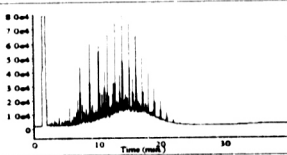


### TYPICAL PRODUCT CHROMATOGRAMS

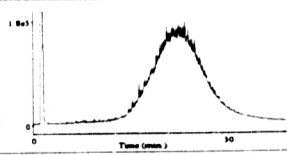
GASOLINE



DIESEL FUEL



LUBRICATING OIL



### Product Carbon Number Ranges

Gasoline  
Varsol  
Kerosene

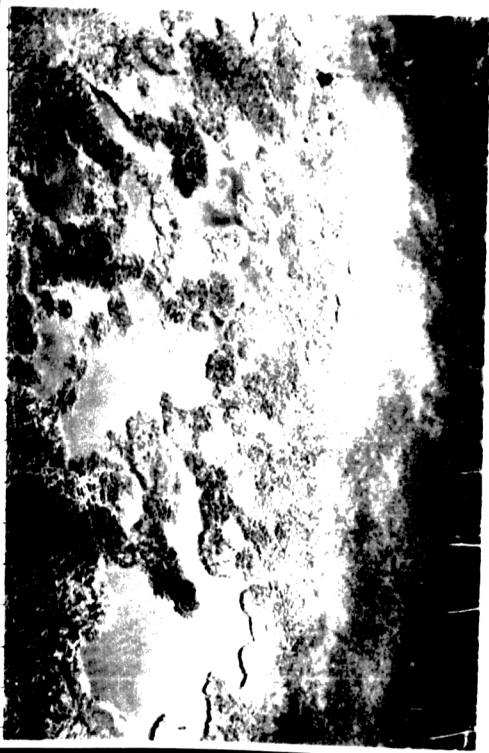
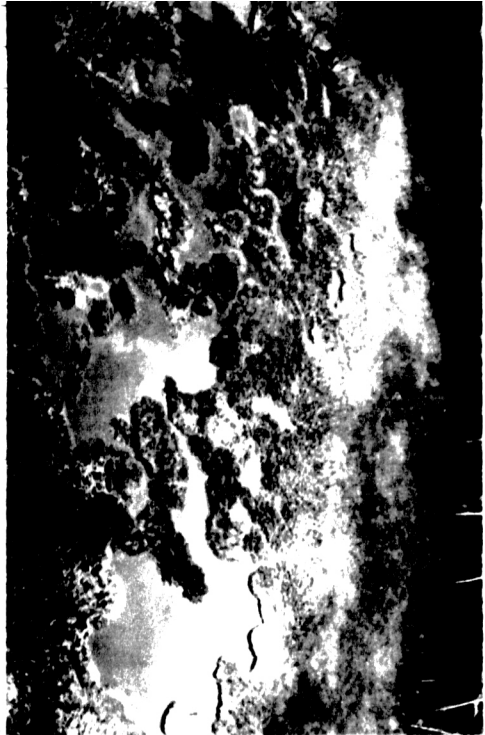
C4-C12  
C8-C12  
C7-C16

Diesel  
Lubricating Oils  
Crude Oils

C8-C22  
C20-C40  
C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z





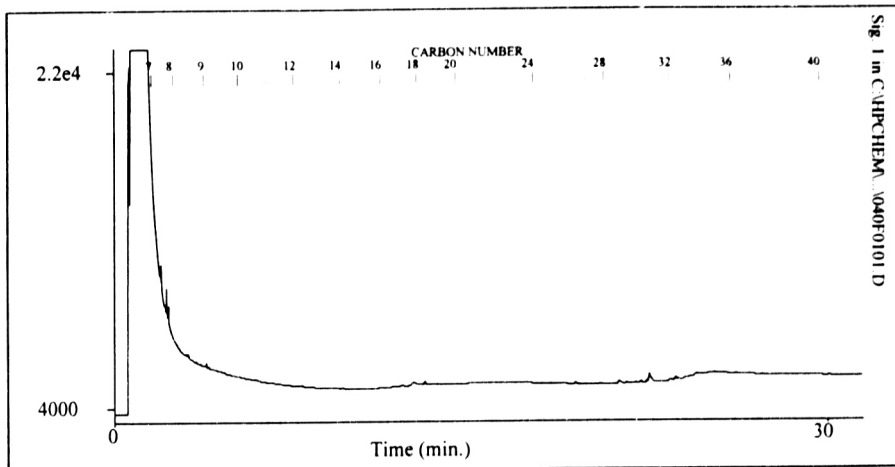


**NORWEST  
LABS**

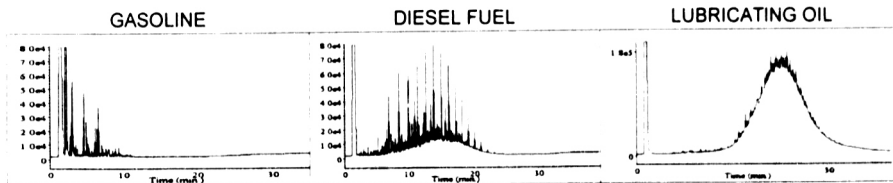
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #5A  
Lab No.: 3169-5W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT C-HROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.

5



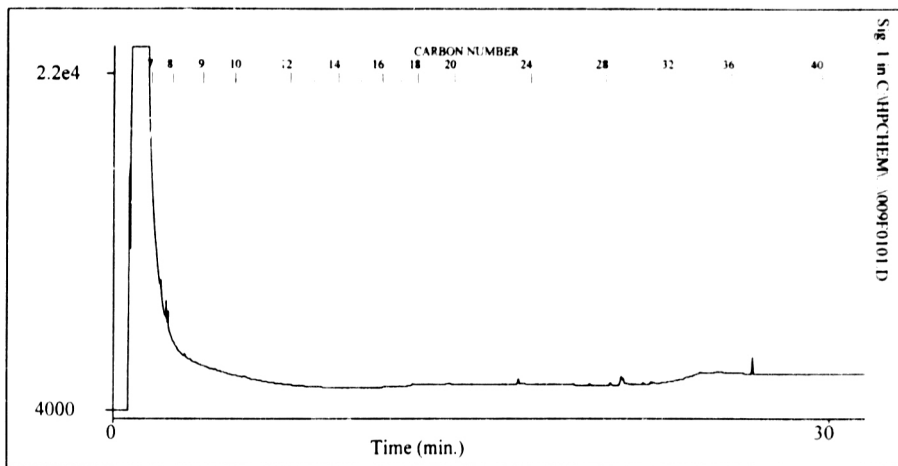


**NORWEST  
LABS**

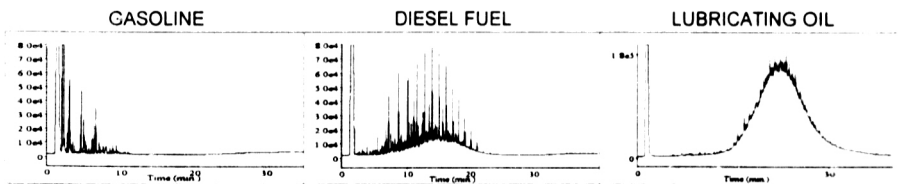
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #6A  
Lab No.: 3169-6W

Work Order No: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

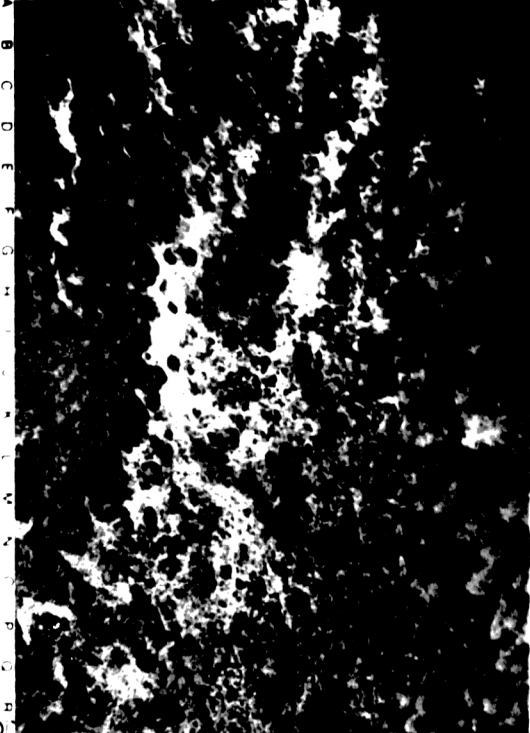
Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P  
Q  
R  
S  
T  
U  
V  
W  
X  
Y  
Z



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P  
Q  
R  
S  
T  
U  
V  
W  
X  
Y  
Z



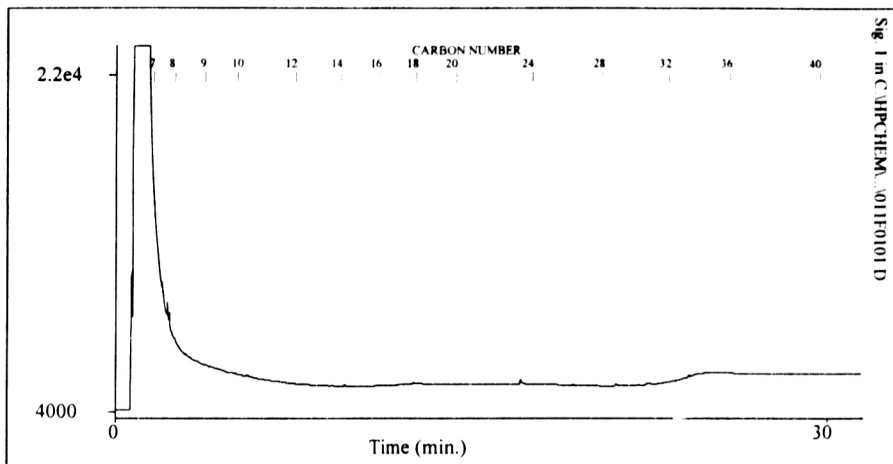


**NORWEST  
LABS**

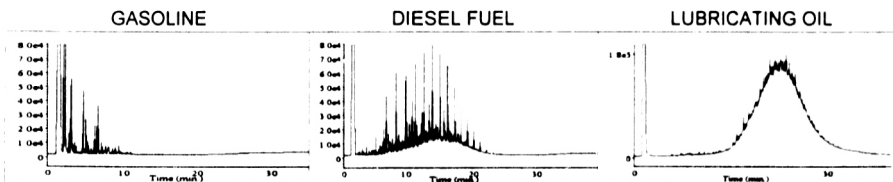
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #7A  
Lab No.: 3169-7W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



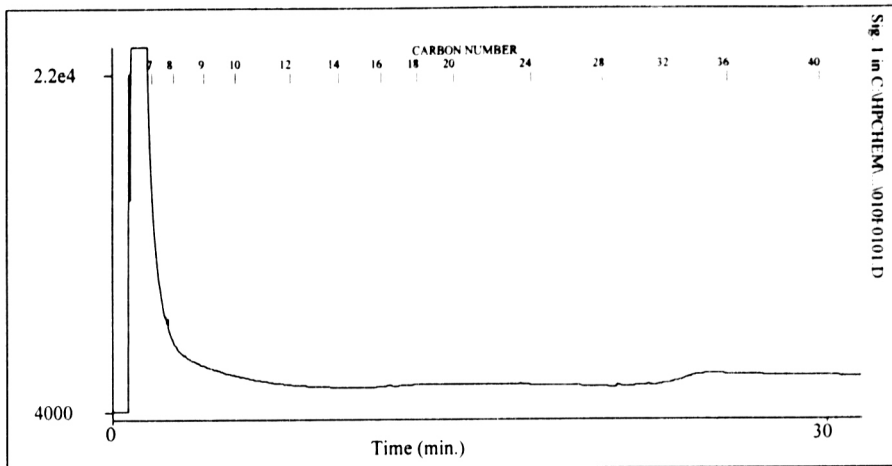


**NORWEST  
LABS**

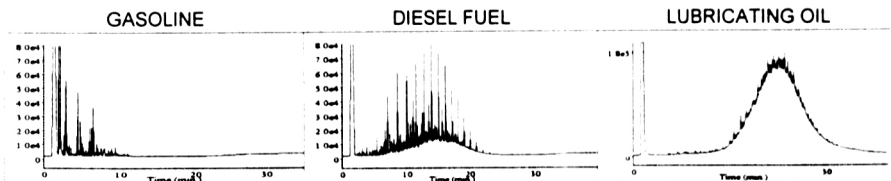
**HYDROCARBON CHARACTERIZATION**

Client: E.D.M  
Sample ID: Sample #8A  
Lab No.: 3169-8W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

**Sample Hydrocarbon Product Type Assessment**

No hydrocarbons were detected.





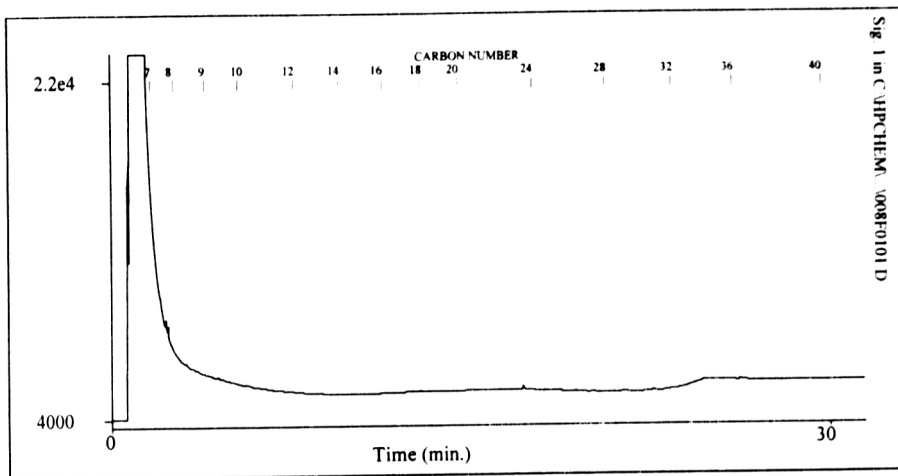


**NORWEST  
LABS**

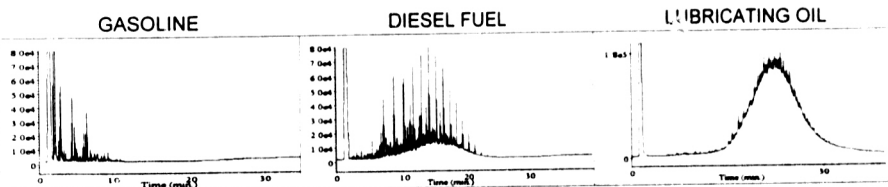
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #9A  
Lab No: 3169-9W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 22-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



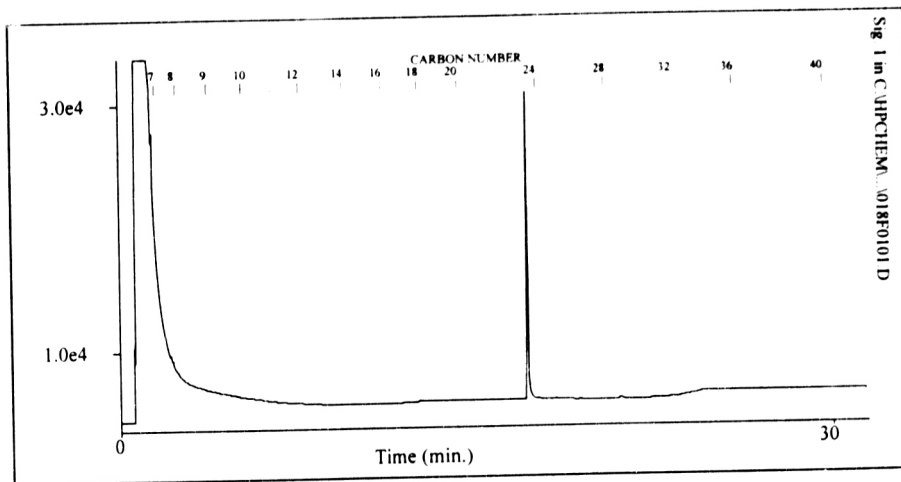


**NORWEST  
LABS**

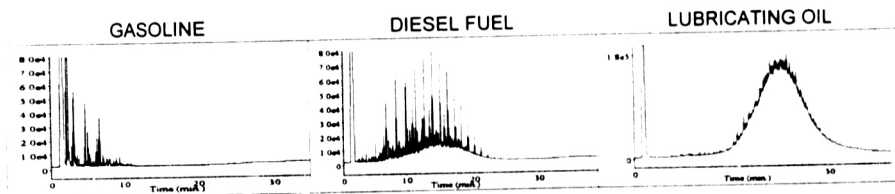
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #10A  
Lab No.: 3169-10W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



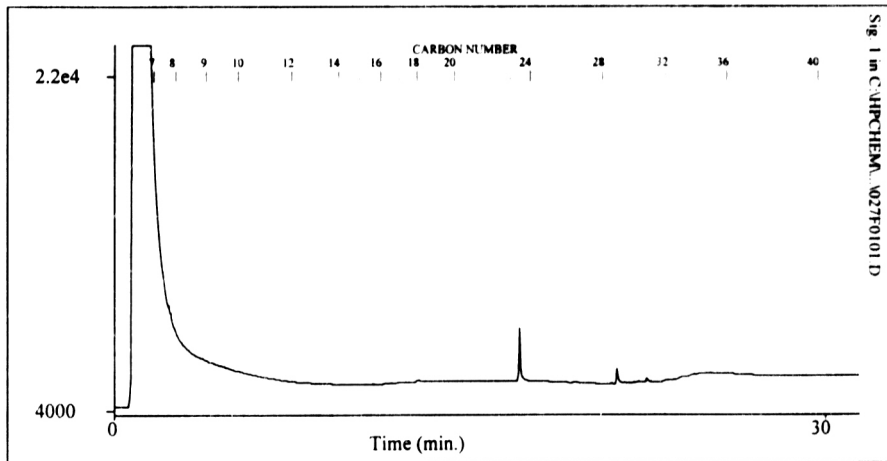


**NORWEST  
LABS**

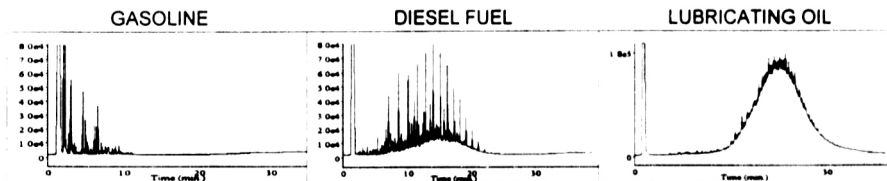
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #11A  
Lab No.: 3169-11W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C3-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



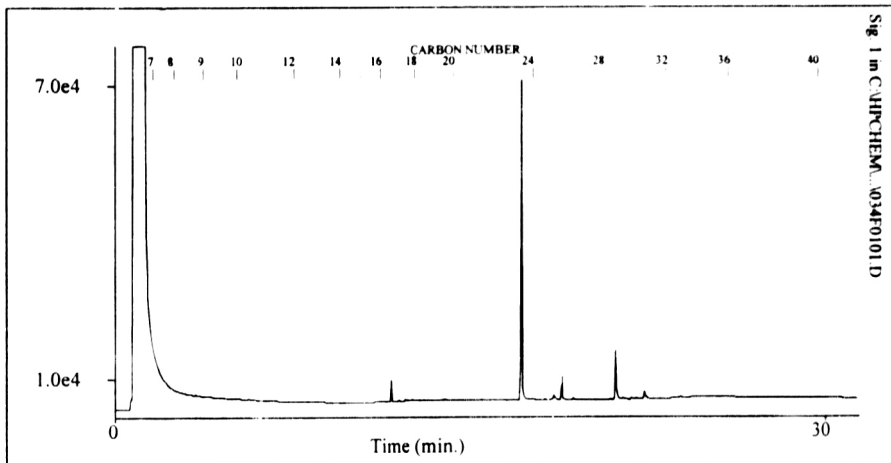


**NORWEST  
LABS**

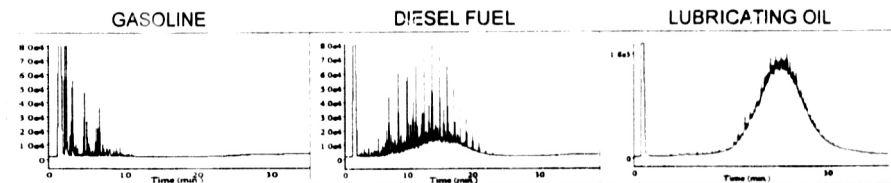
**HYDROCARBON CHARACTERIZATION**

Client: E.D.M.  
Sample ID: Sample #12A  
Lab No.: 3169-12W

Work Order No: 97-08-3169  
Date Sampled:  
Date Reported: 22-Sep-97



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

**Sample Hydrocarbon Product Type Assessment**

Insufficient amounts of hydrocarbons to do an accurate assessment.





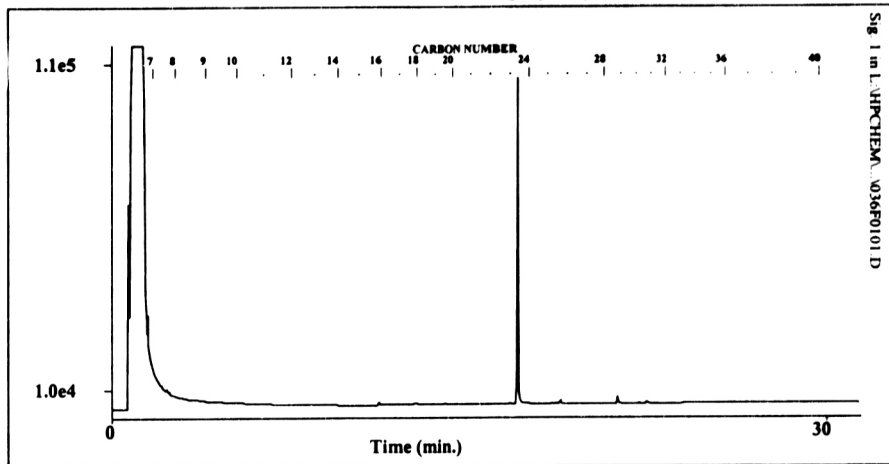


**NORWEST  
LABS**

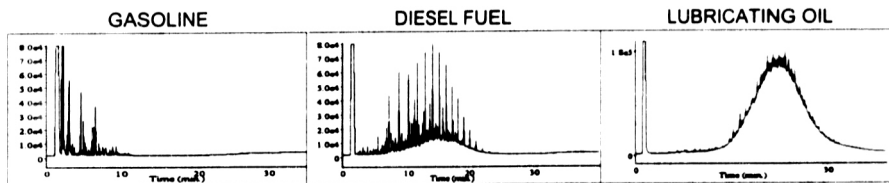
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #13A  
Lab No.: 3169-13W

Work Order No.: 97-08-3169  
Date Sampled: 25-09-95  
Date Reported: 24-Nov-97  
Other WO No.:



### TYPICAL PRODUCT CHROMATOGRAMS

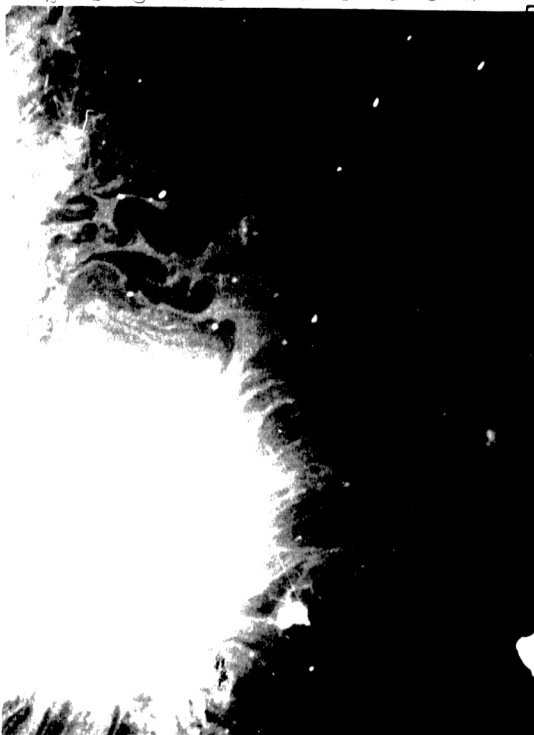
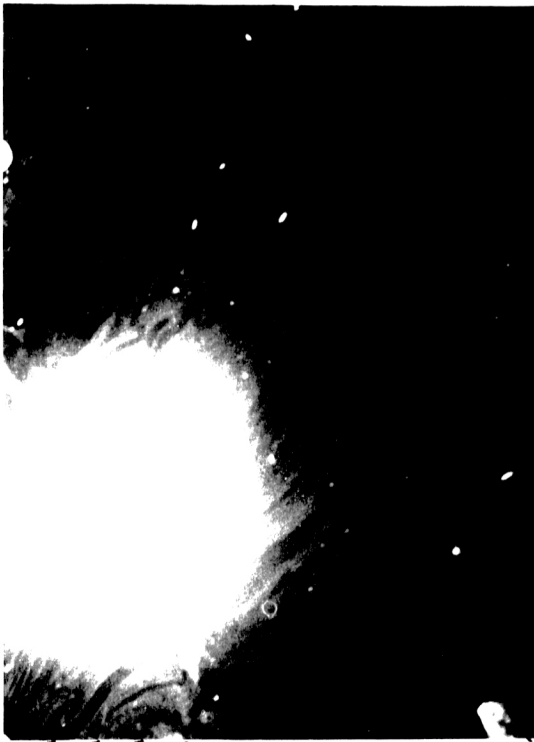


### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



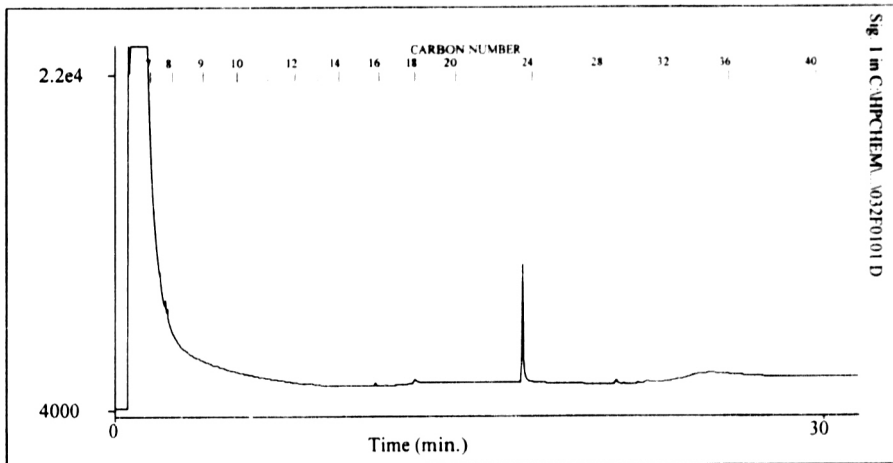


**NORWEST  
LABS**

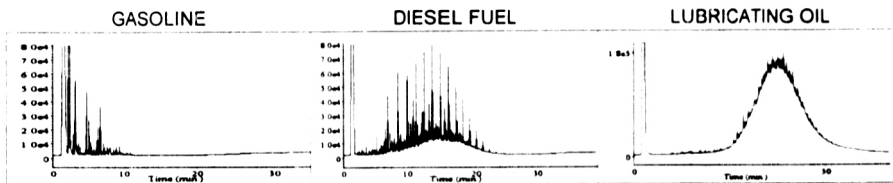
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #14A  
Lab No.: 3169-14W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



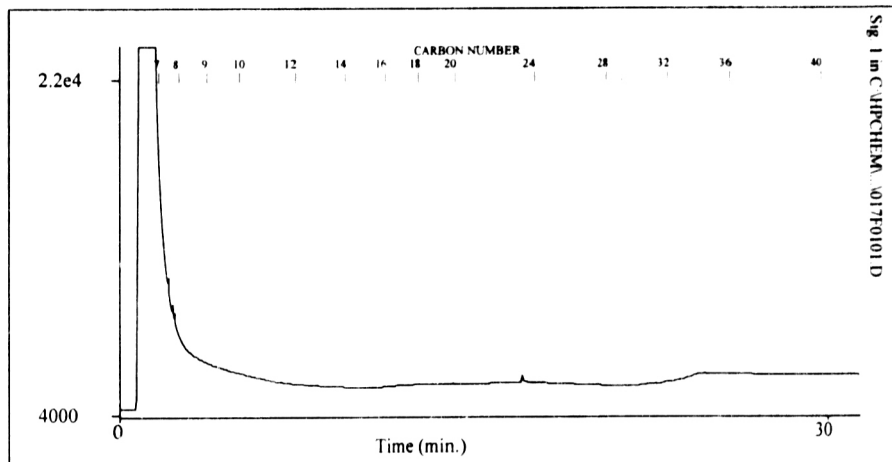


**NORWEST  
LABS**

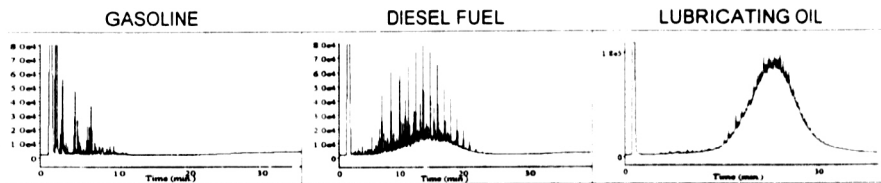
**HYDROCARBON CHARACTERIZATION**

Client: E.D.M  
Sample ID: Sample #15A  
Lab No.: 3169-15W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



**TYPICAL PRODUCT CHROMATOGRAMS**



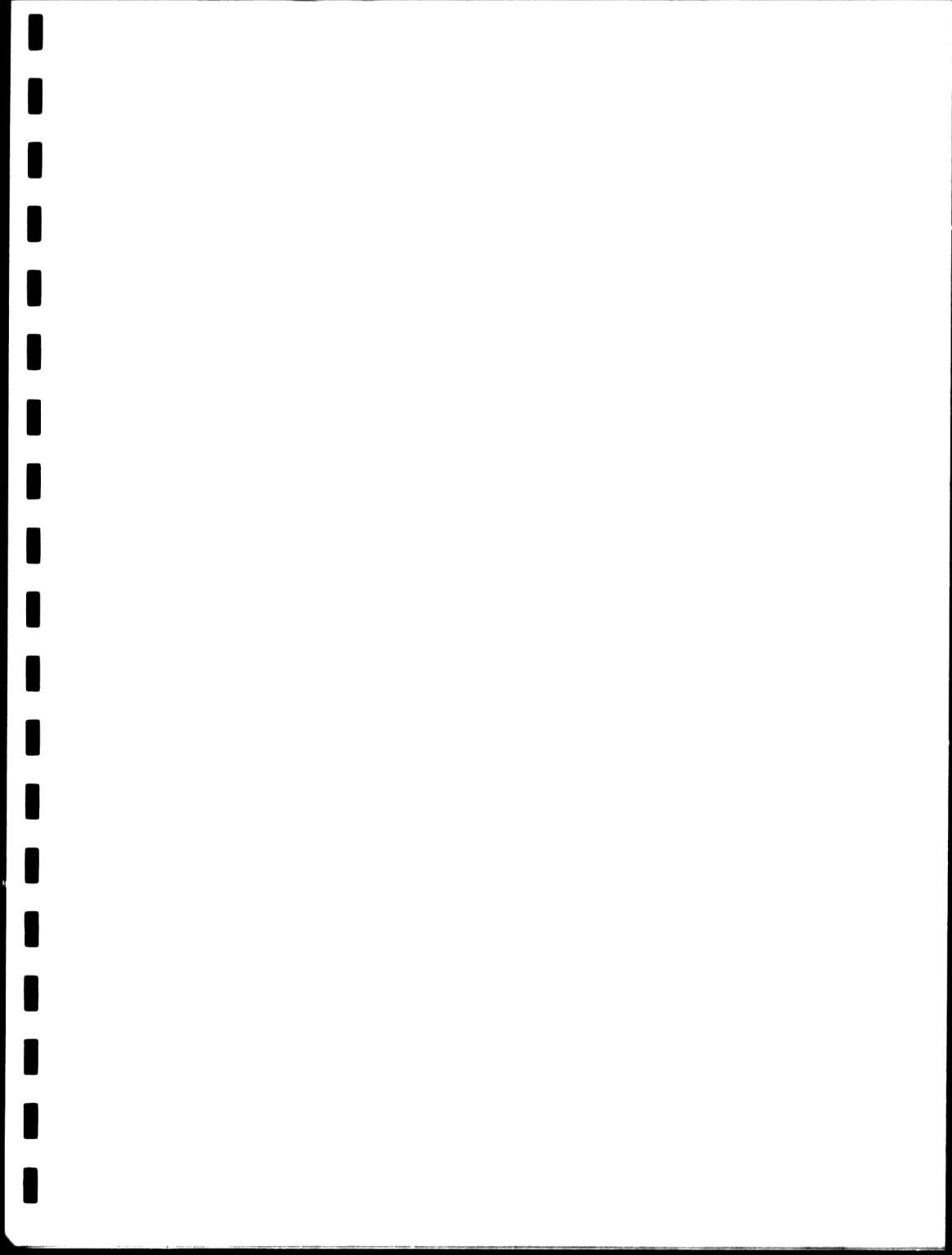
**Product Carbon Number Ranges**

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

**Sample Hydrocarbon Product Type Assessment**

No hydrocarbons were detected.





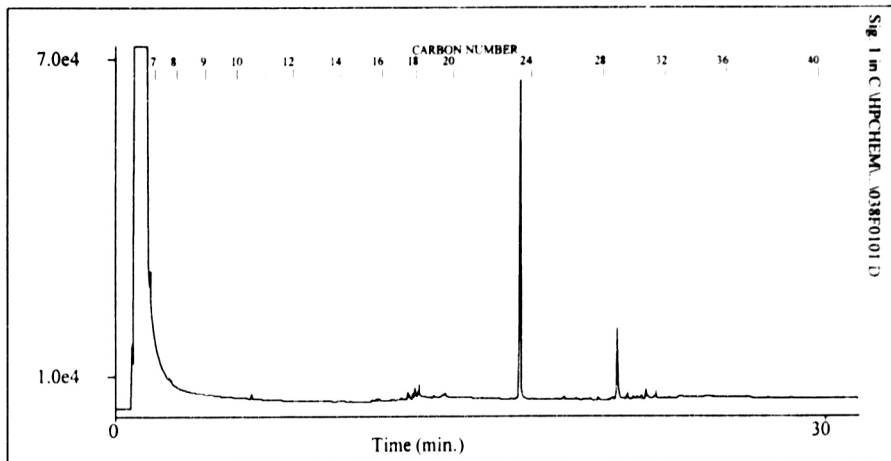


**NORWEST  
LABS**

### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #16  
Lab No.: 3169-16W

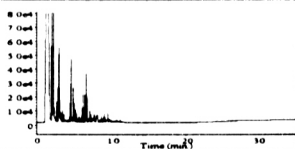
Work Order No: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



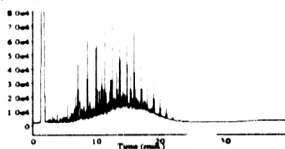
Sig 1 in C:\CHEM\03810101.D

### TYPICAL PRODUCT CHROMATOGRAMS

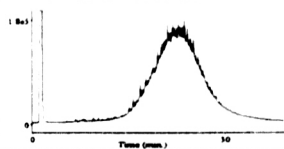
GASOLINE



DIESEL FUEL



LUBRICATING OIL



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

Insufficient amounts of hydrocarbons to do an accurate assessment.





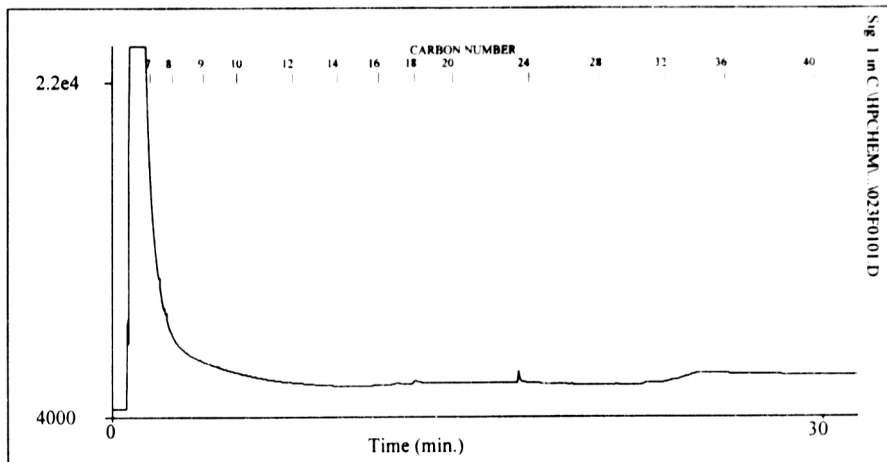


**NORWEST  
LABS**

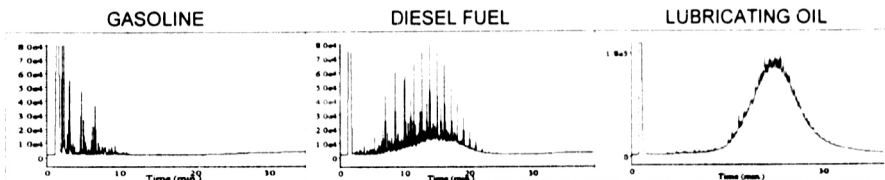
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #17A  
Lab No.: 3169-17W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS

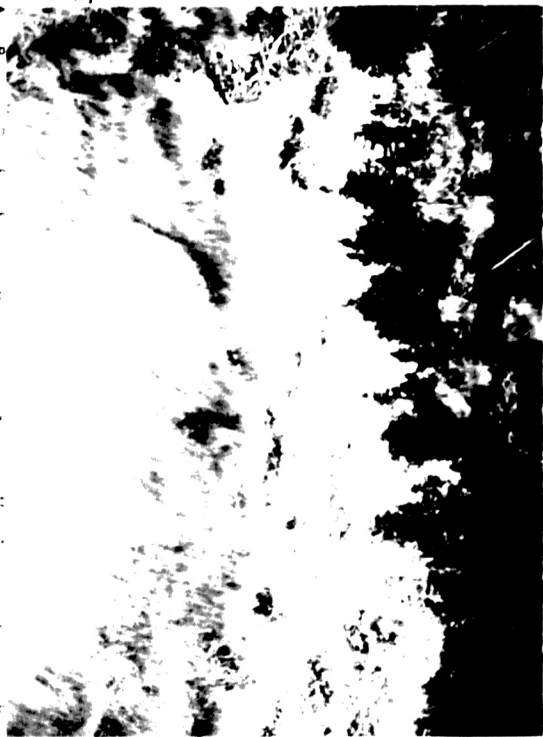


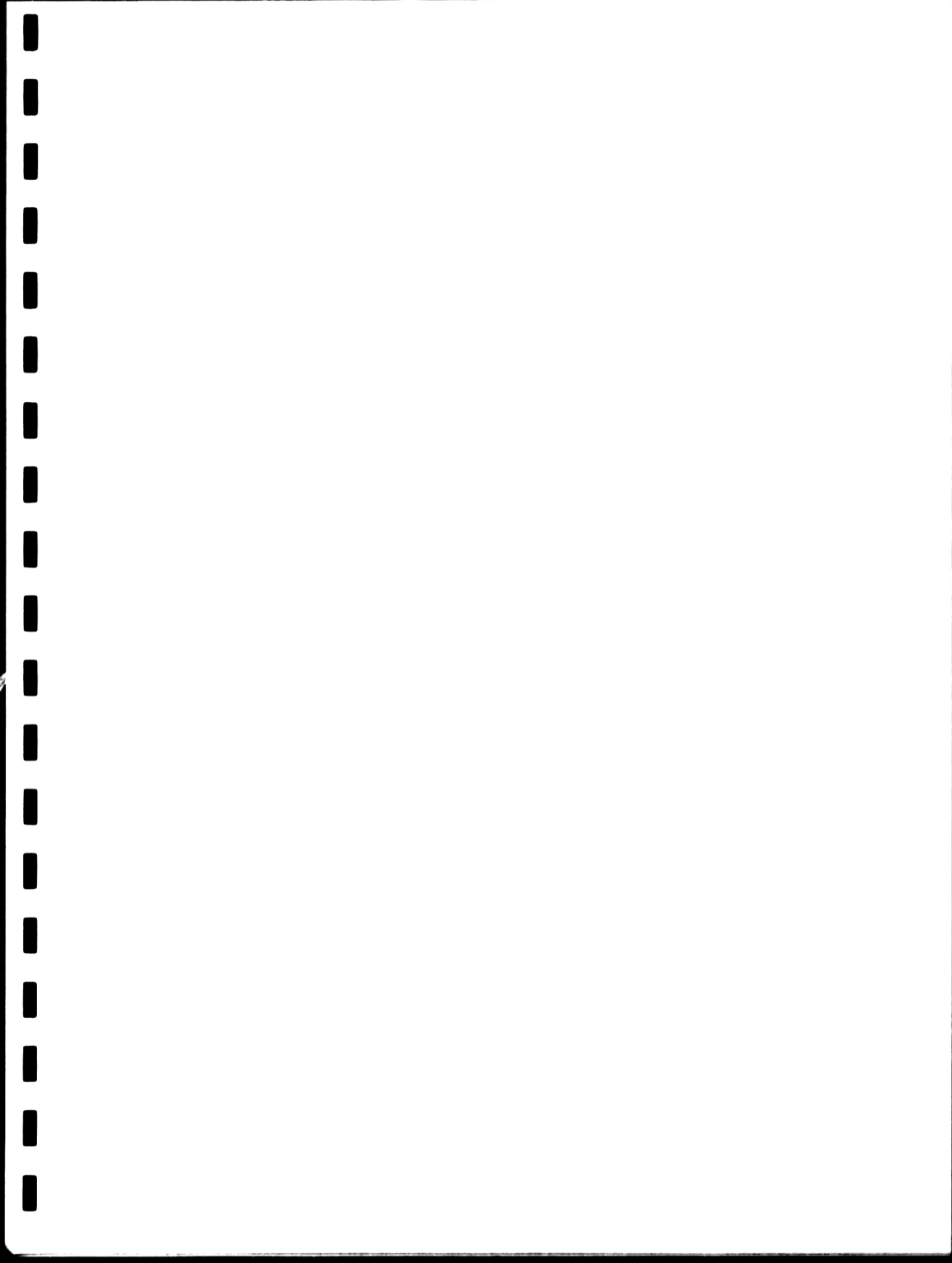
### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.





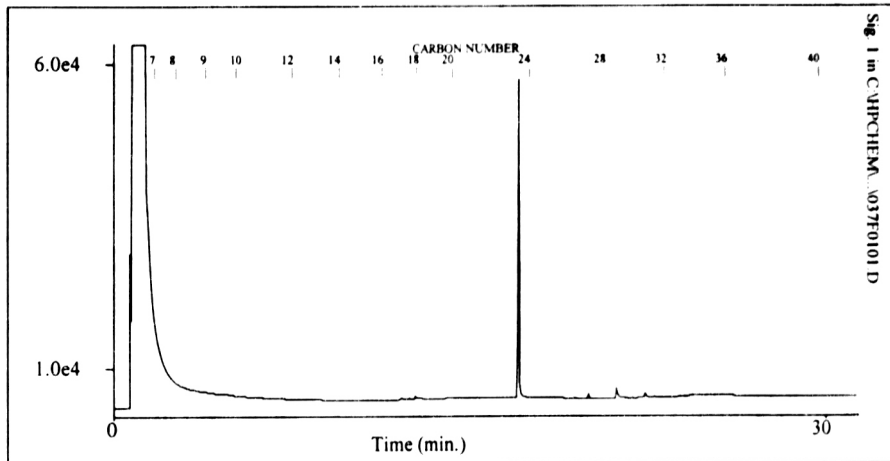


**NORWEST  
LABS**

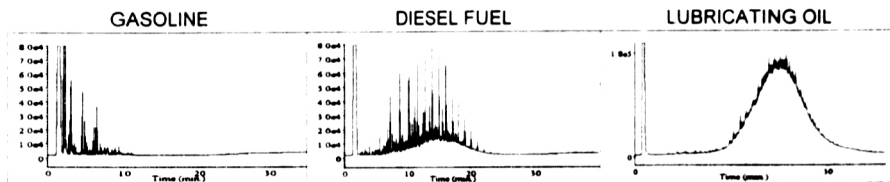
**HYDROCARBON CHARACTERIZATION**

Client: E.D.M  
Sample ID: Sample #18A  
Lab No.: 3169-18W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



**TYPICAL PRODUCT CHROMATOGRAMS**

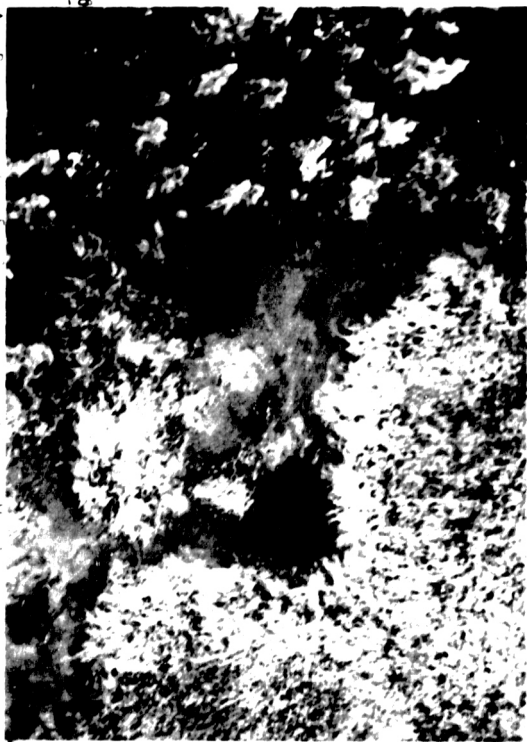


**Product Carbon Number Ranges**

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

**Sample Hydrocarbon Product Type Assessment**

No hydrocarbons were detected.



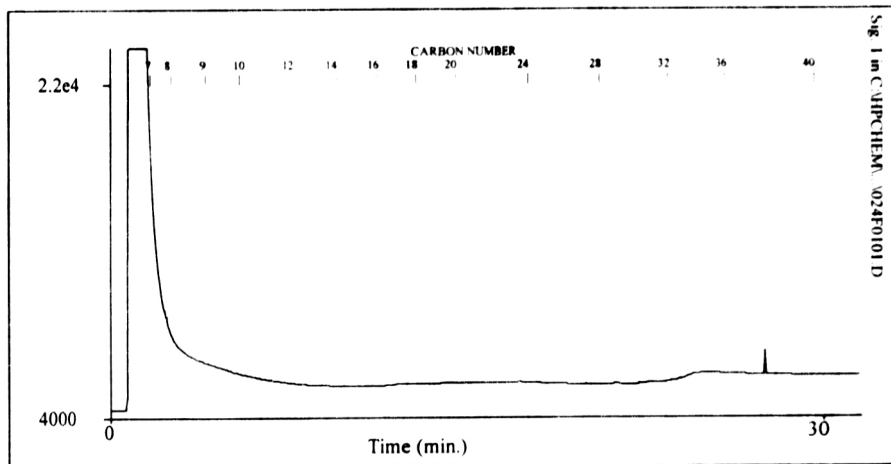


**NORWEST  
LABS**

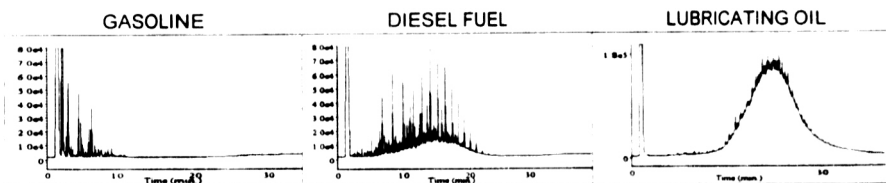
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #19A  
Lab No.: 3169-19W

Work Order No: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.





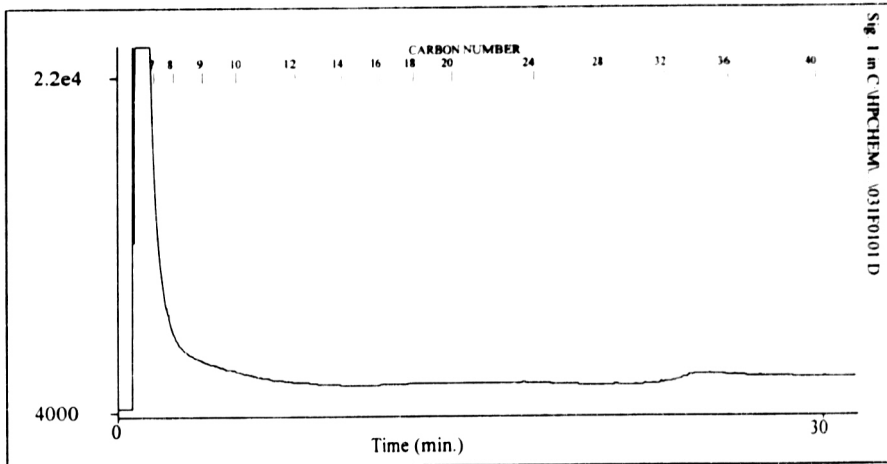


**NORWEST  
LABS**

### HYDROCARBON CHARACTERIZATION

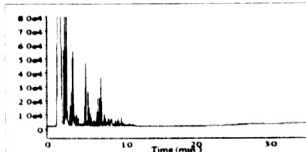
Client: E D M  
Sample ID: Sample #20A  
Lab No.: 3169-20W

Work Order No 97-08-3169  
Date Sampled  
Date Reported 11-Sep-97

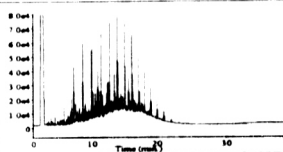


### TYPICAL PRODUCT CHROMATOGRAMS

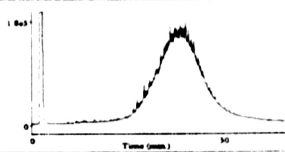
GASOLINE



DIESEL FUEL



LUBRICATING OIL



### Product Carbon Number Ranges

Gasoline  
Varsol  
Kerosene

C4-C12  
C8-C12  
C7-C16

Diesel  
Lubricating Oils  
Crude Oils

C8-C22  
C20-C40  
C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



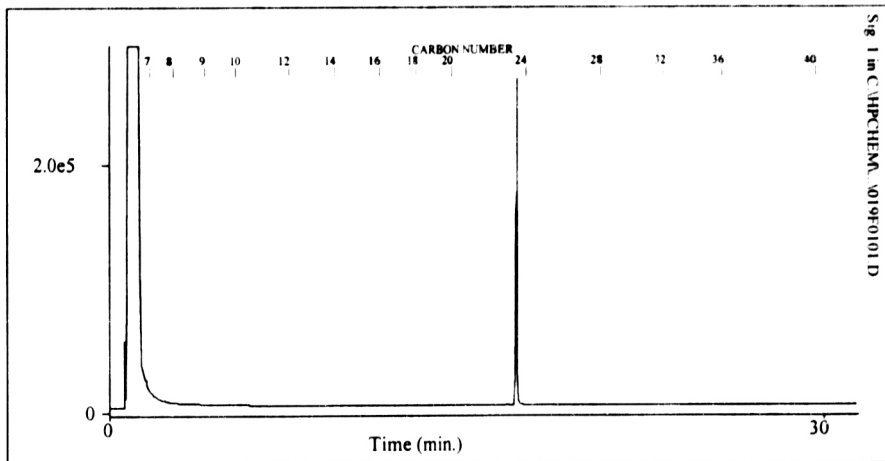


**NORWEST  
LABS**

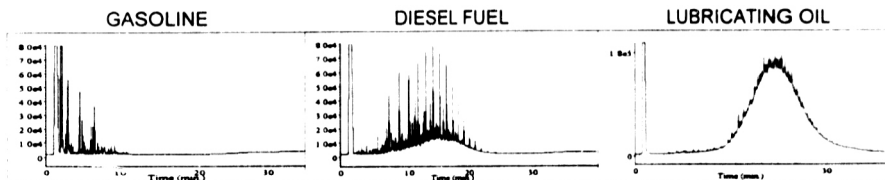
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #21A  
Lab No.: 3169-21W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS

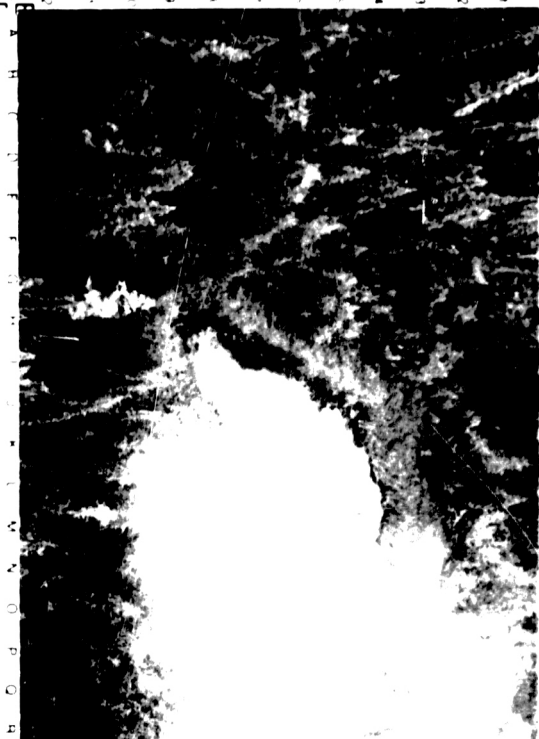
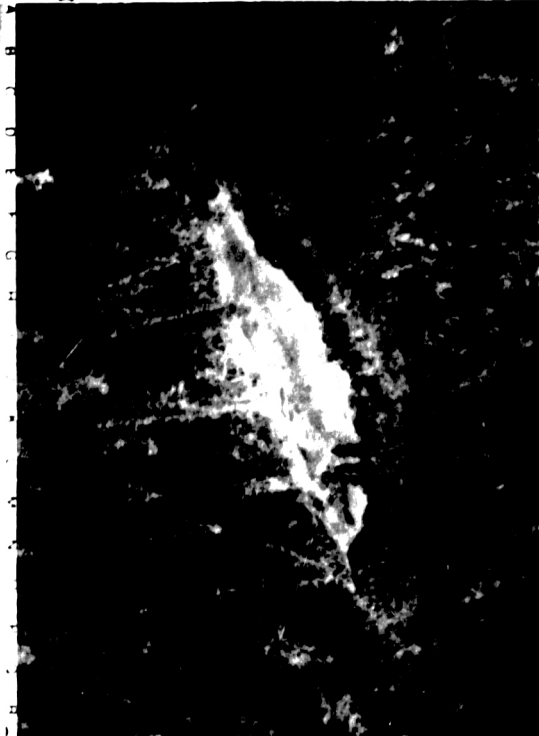


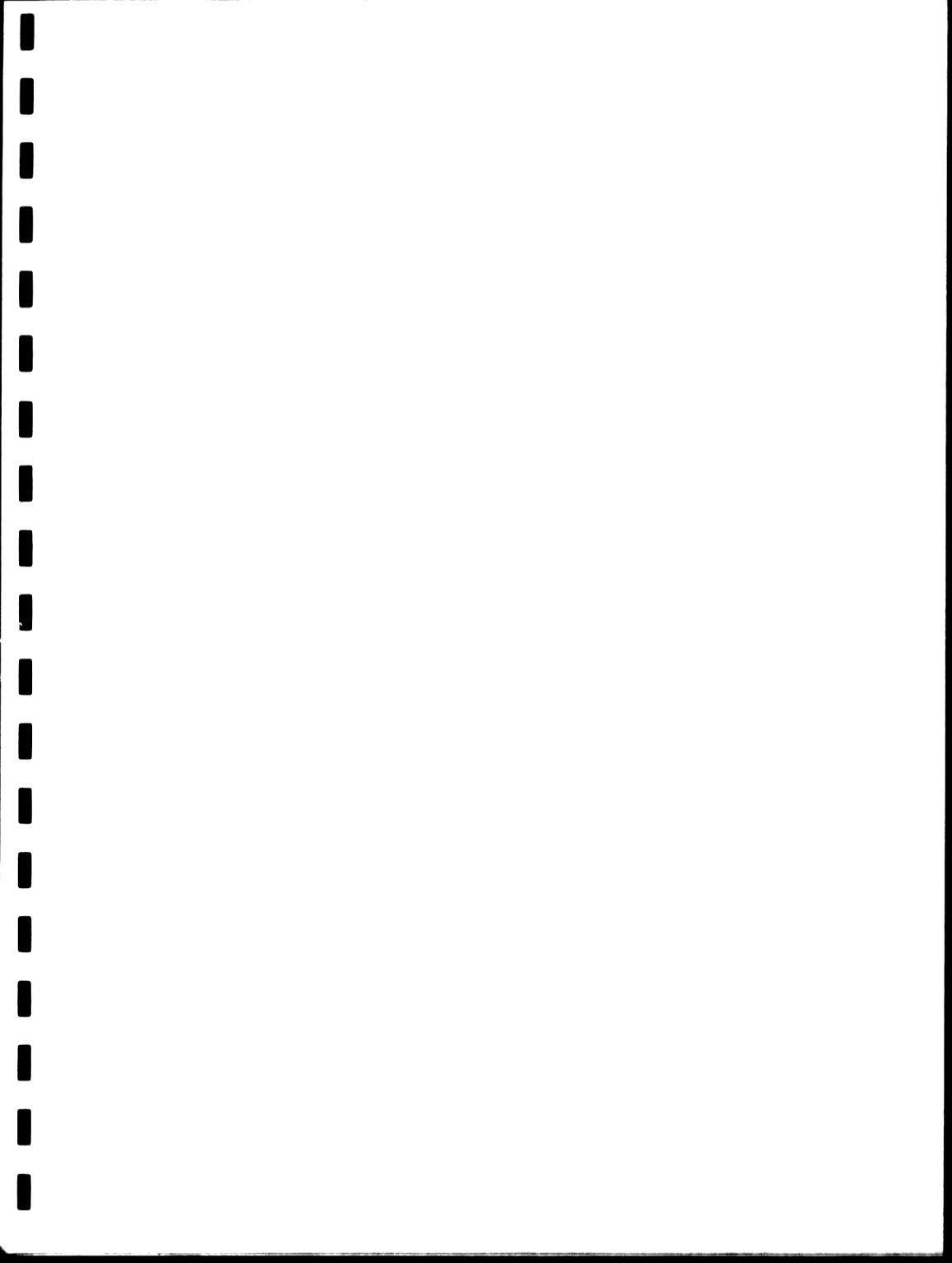
#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.





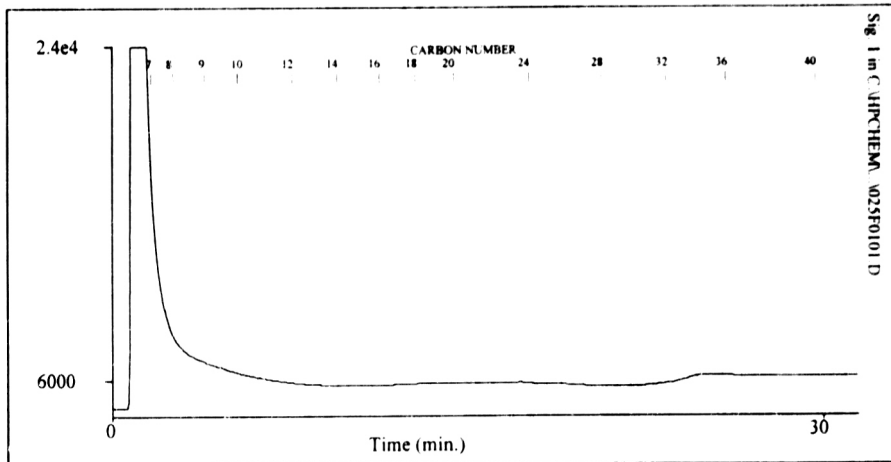


**NORWEST  
LABS**

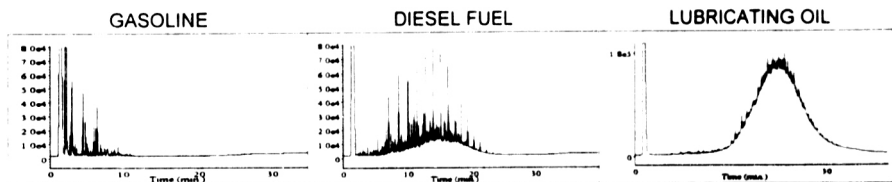
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #22A  
Lab No.: 3169-22W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



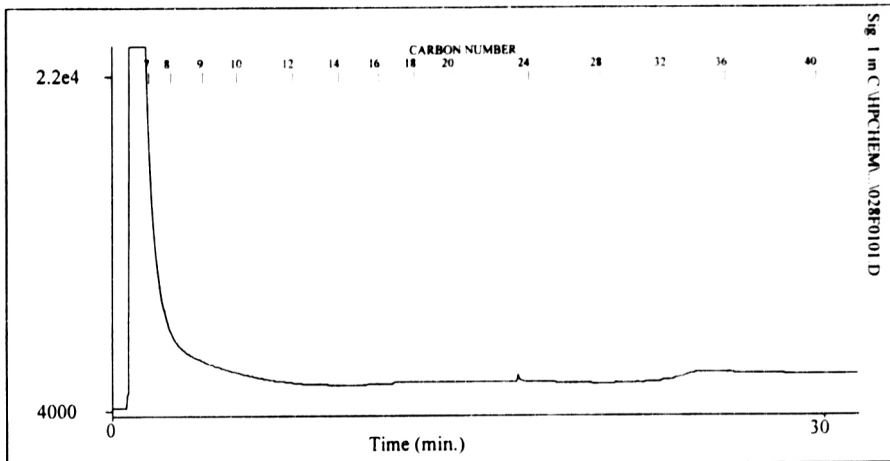


**NORWEST  
LABS**

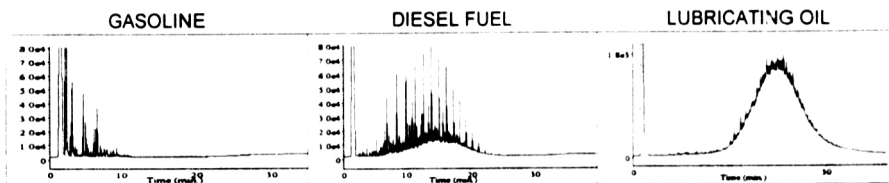
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #23A  
Lab No.: 3169-23W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



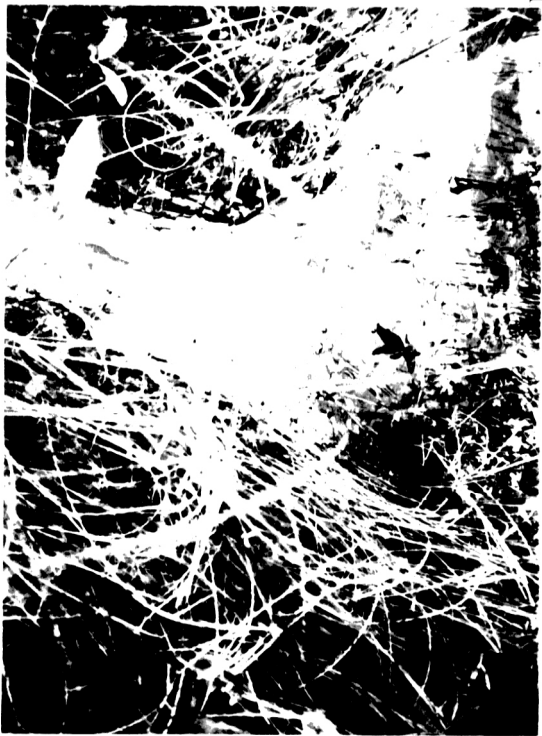
#### Product Carbon Number Ranges

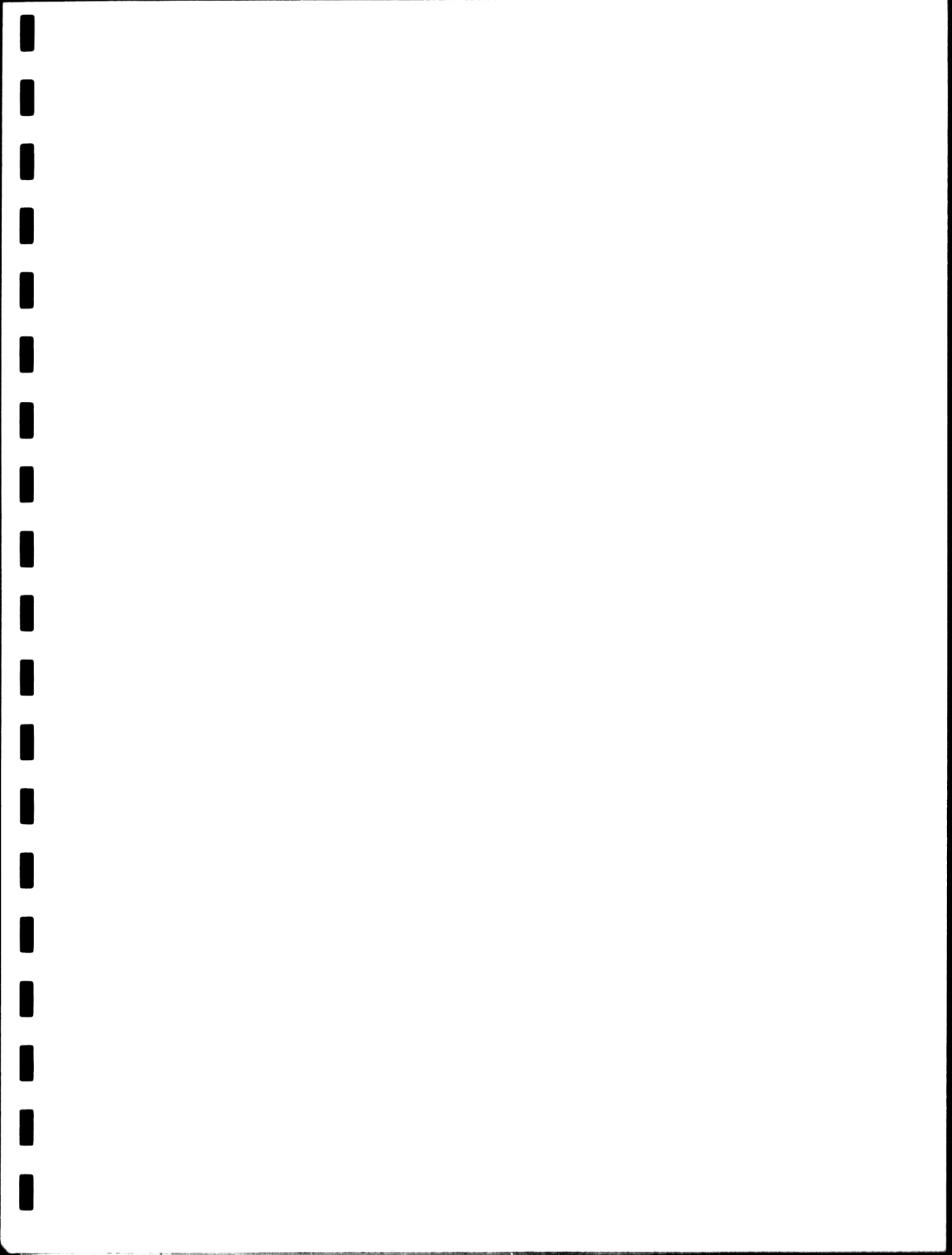
Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.







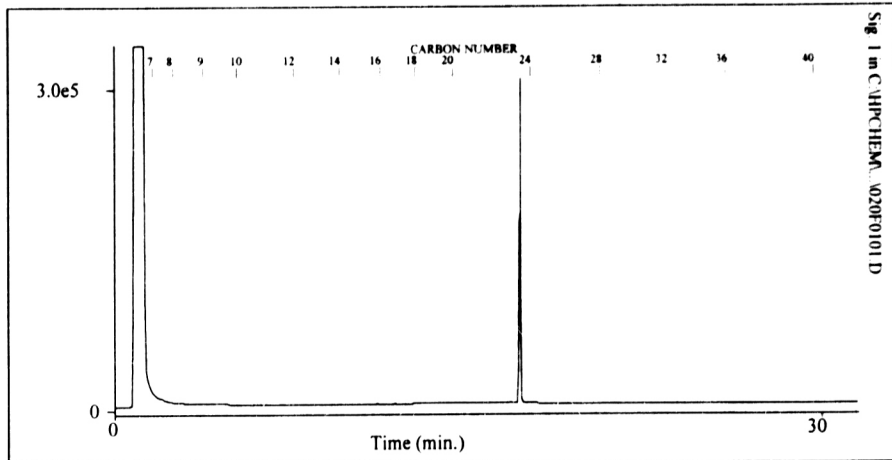


**NORWEST  
LABS**

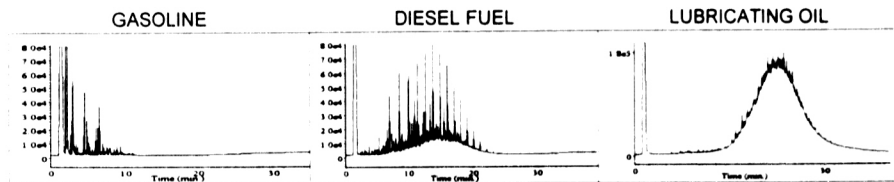
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #24A  
Lab No.: 3169-24W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS

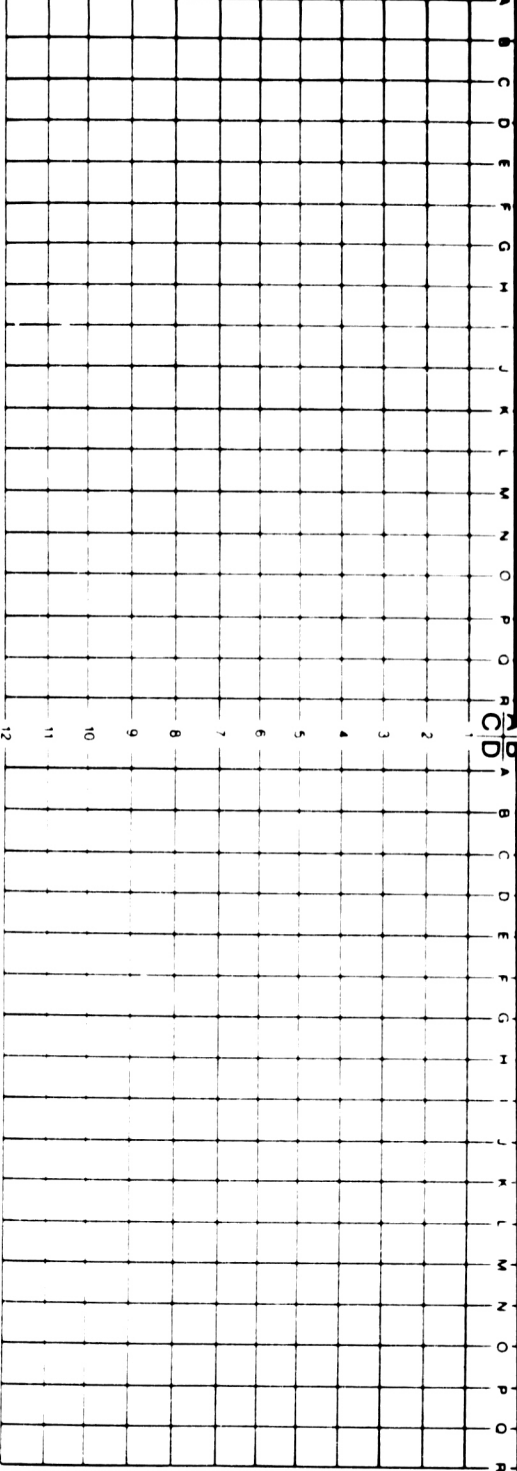


### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



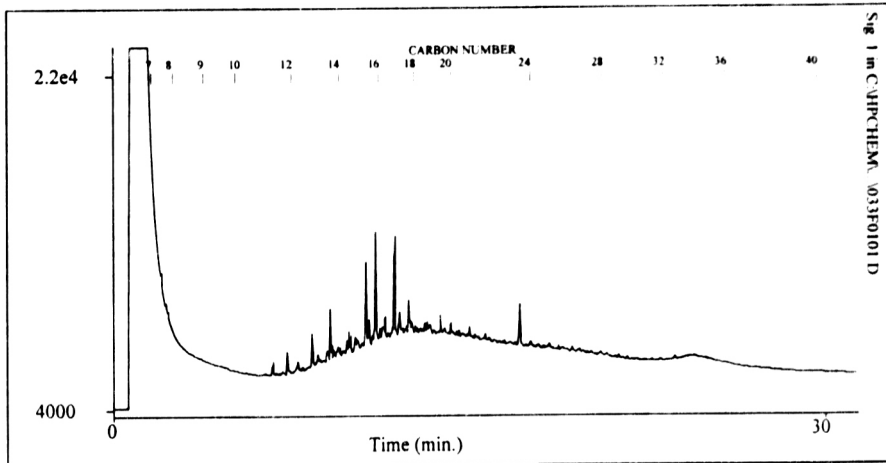


**NORWEST  
LABS**

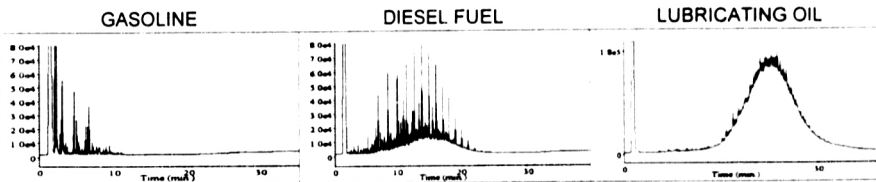
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #25A  
Lab No.: 3169-25W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS

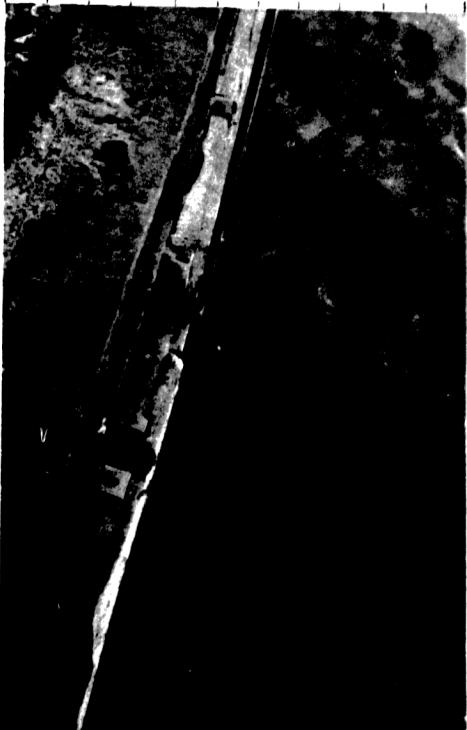


#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

The sample contains some hydrocarbons from C11 to C30+ which would indicate possible diesel.

[illegible]

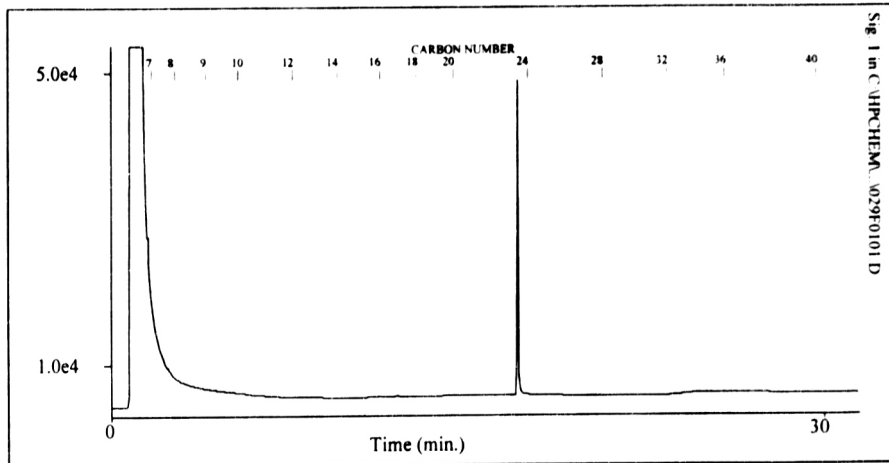


**NORWEST  
LABS**

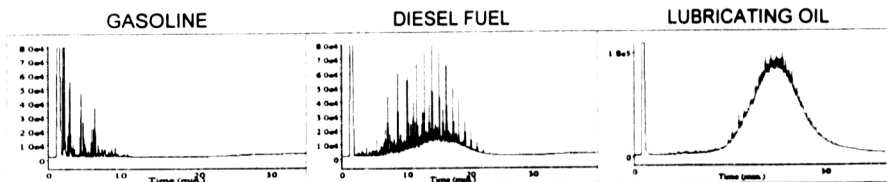
### HYDROCARBON CHARACTERIZATION

Client: E.D.M  
Sample ID: Sample #26A  
Lab No.: 3169-26W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline  
Varsol  
Kerosene

C4-C12  
C8-C12  
C7-C16

Diesel  
Lubricating Oils  
Crude Oils

C8-C22  
C20-C40  
C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.





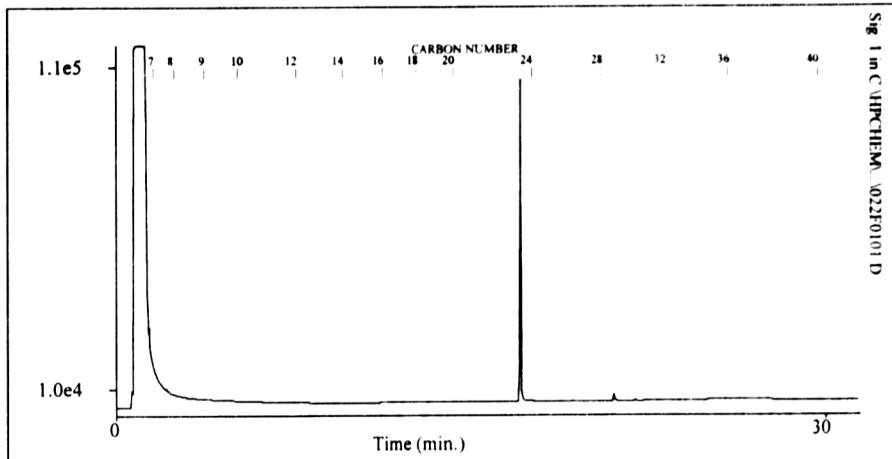


**NORWEST  
LABS**

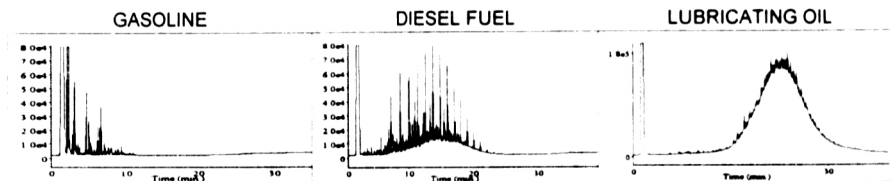
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #27A  
Lab No.: 3169-27W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



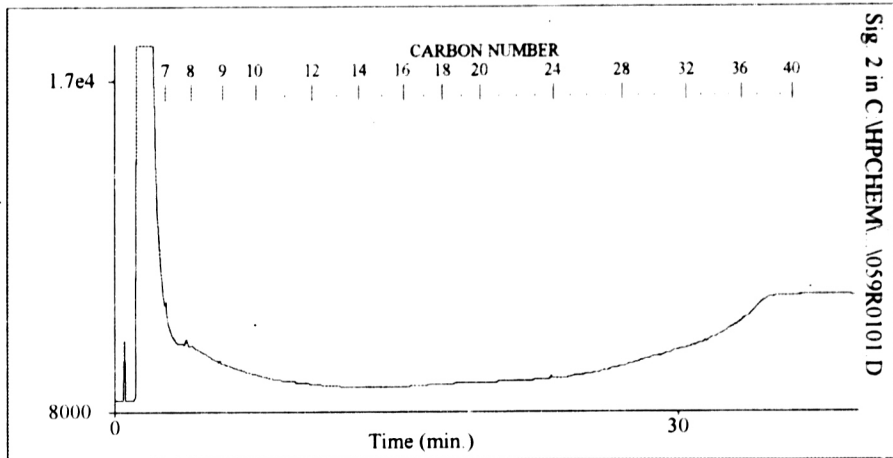


**NORWEST  
LABS**

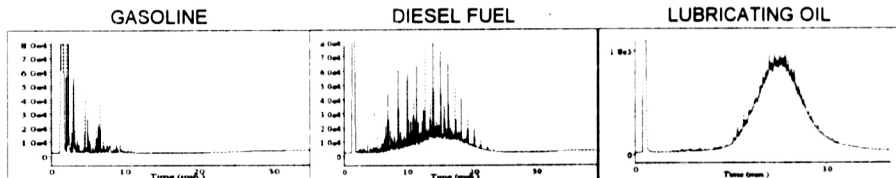
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: Sample #28A  
Lab No.: 3169-28W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 10-Sep-97  
Other WO No



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



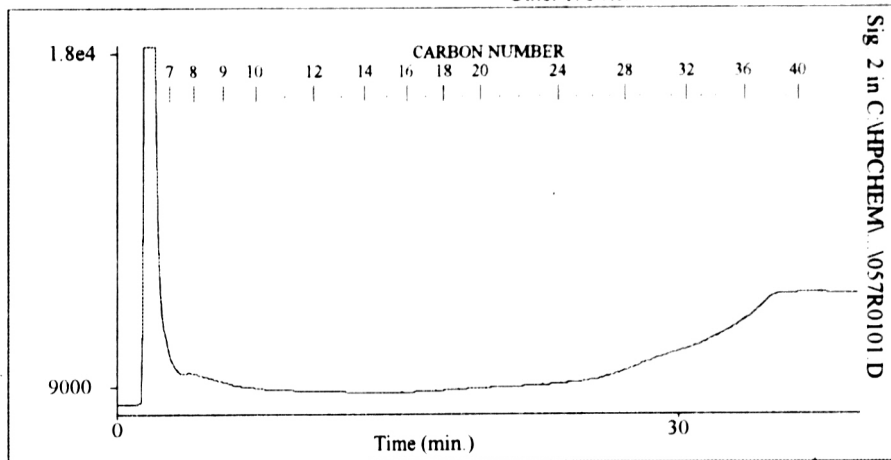


**NORWEST  
LABS**

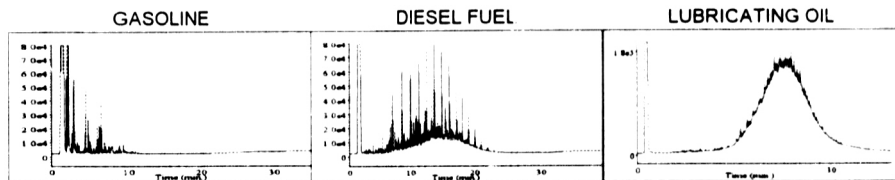
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: Sample #29A  
Lab No.: 3169-29W

Work Order No.: 97-08-3109  
Date Sampled:  
Date Reported: 10-Sep-97  
Other WO No.



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline  
Varsol  
Kerosene

C4-C12  
C8-C12  
C7-C16

Diesel  
Lubricating Oils  
Crude Oils

C8-C22  
C20-C40  
C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



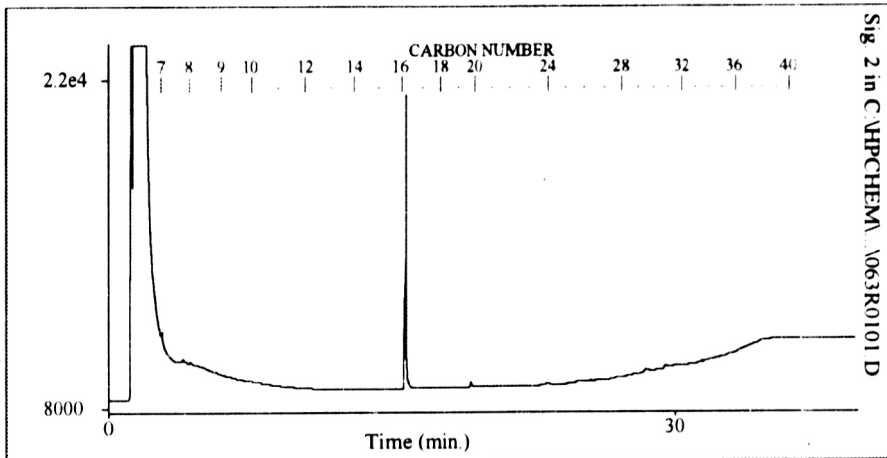


**NORWEST  
LABS**

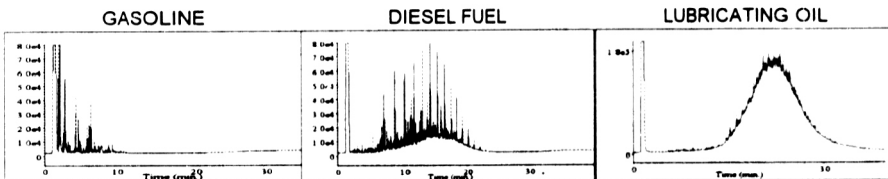
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: Sample #30A  
Lab No.: 3169-30W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 10-Sep-97  
Other WO No.



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.





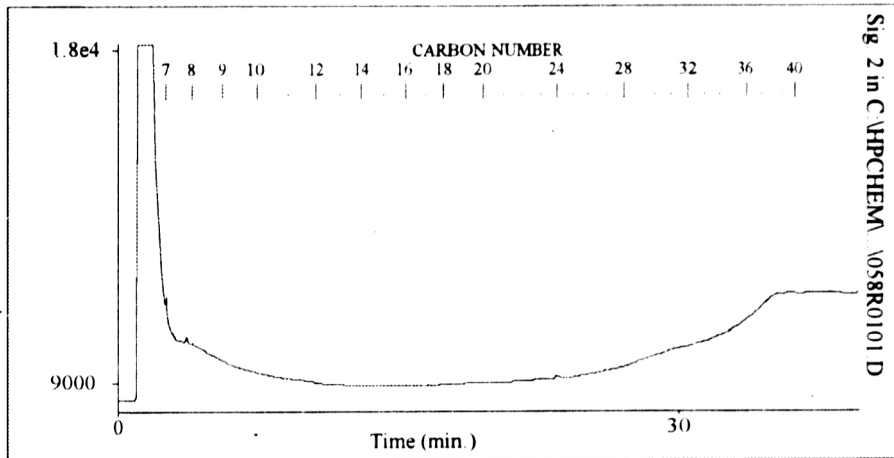


**NORWEST  
LABS**

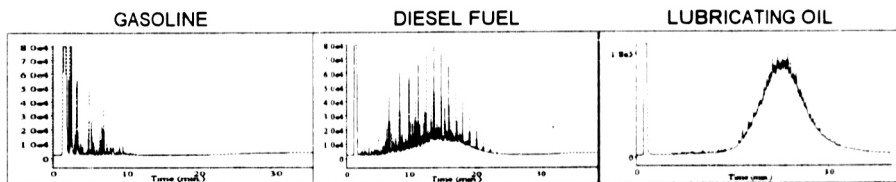
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: Sample #31A  
Lab No.: 3169-31W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 10-Sep-97  
Other WO No.



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline  
Varsol  
Kerosene

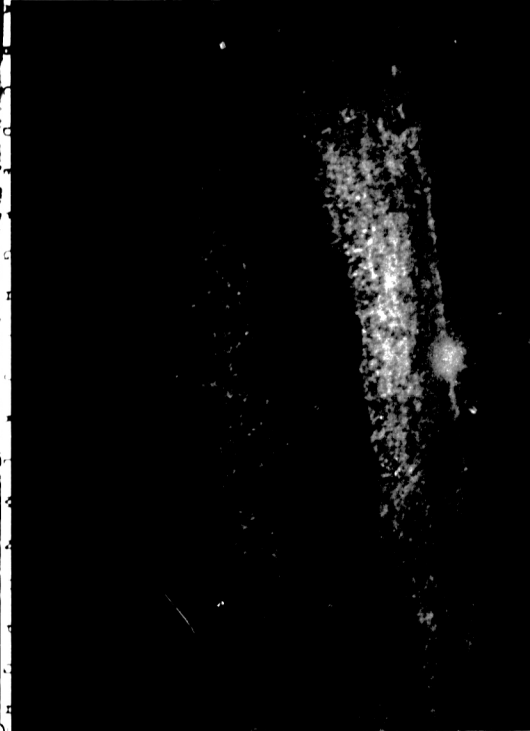
C4-C12  
C8-C12  
C7-C16

Diesel  
Lubricating Oils  
Crude Oils

C8-C22  
C20-C40  
C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



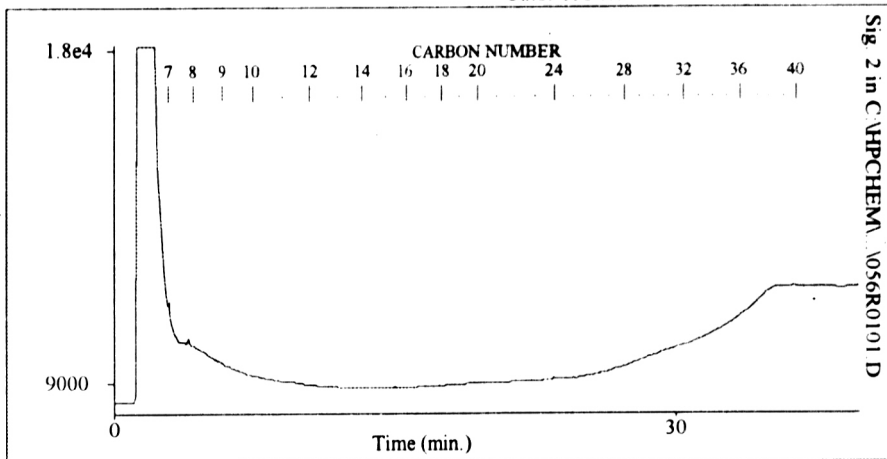


**NORWEST  
LABS**

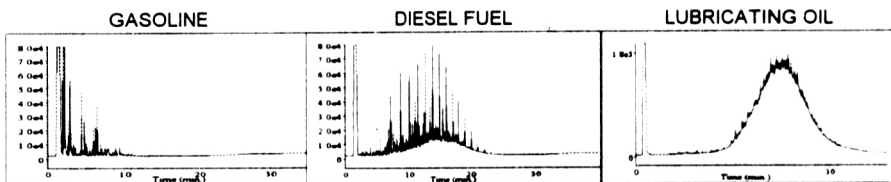
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: Sample #32A  
Lab No.: 3169-32W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 10-Sep-97  
Other WO No.



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.



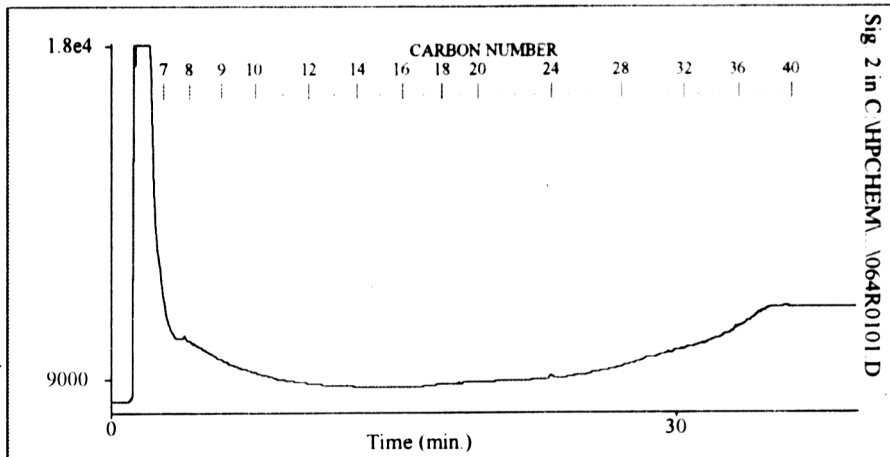


**NORWEST  
LABS**

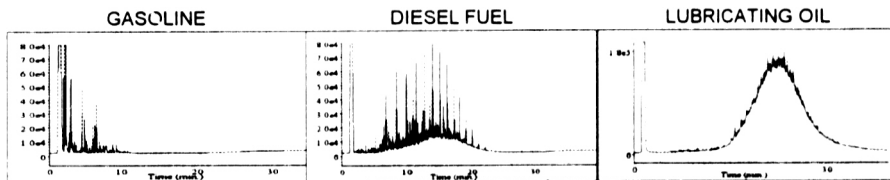
**HYDROCARBON CHARACTERIZATION**

Client: E.D.M. Inc.  
Sample ID: Sample #33A  
Lab No.: 3169-33W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 10-Sep-97  
Other WO No.



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

**Sample Hydrocarbon Product Type Assessment**

No hydrocarbons were detected.



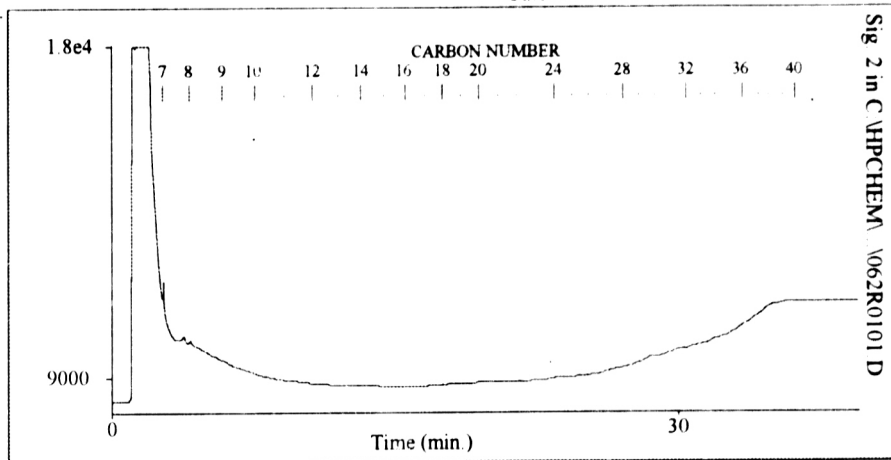


**NORWEST  
LABS**

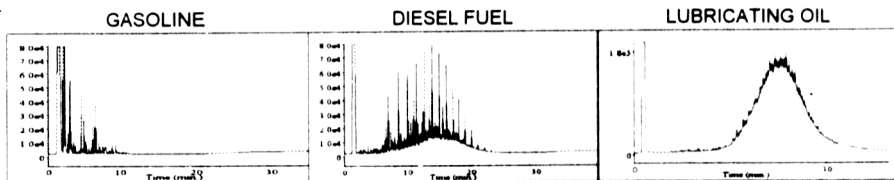
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: Sample #34A  
Lab No.: 3169-34W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 10-Sep-97  
Other WO No.



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No hydrocarbons were detected.





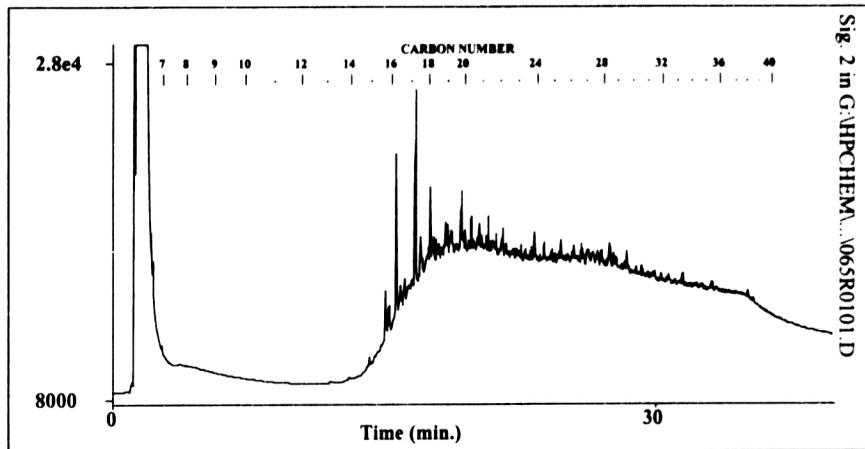


**NORWEST  
LABS**

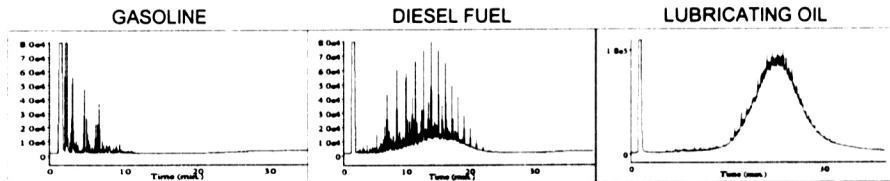
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: Sample #35  
Lab No.: 3169-35W

Work Order No.: 97-08-3169  
Date Sampled:  
Date Reported: 11-Sep-97  
Other WO No.



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

Hydrocarbons were detected in the C14-C40+ range indicating the presence of weathered crude oil.



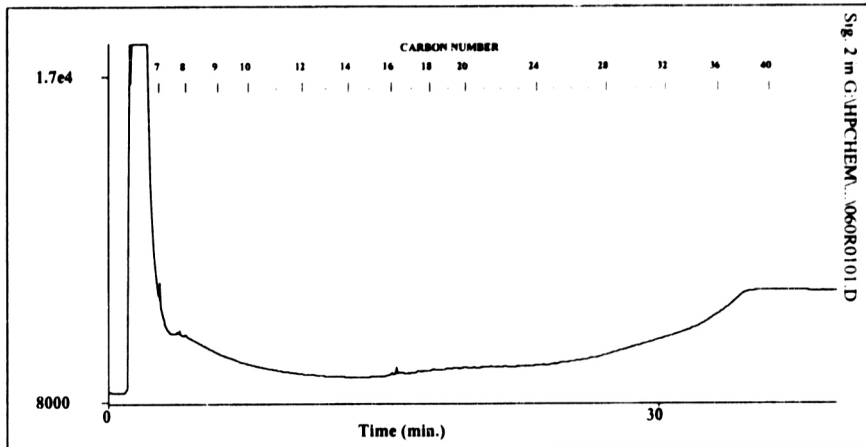


**NORWEST  
LABS**

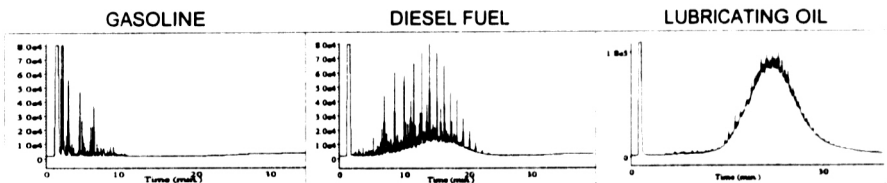
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #36A  
Lab No.: 3169-36W

Work Order No.: 97-08-3169  
Date Sampled: 11-Sep-97  
Date Reported: 24-Sep-97  
Other WO No.:



### TYPICAL PRODUCT CHROMATOGRAMS

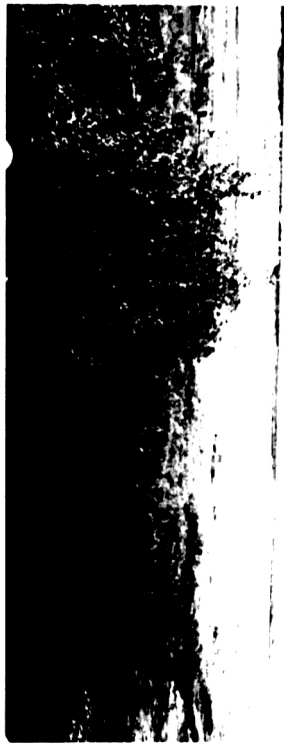


#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

No petroleum hydrocarbons were detected.



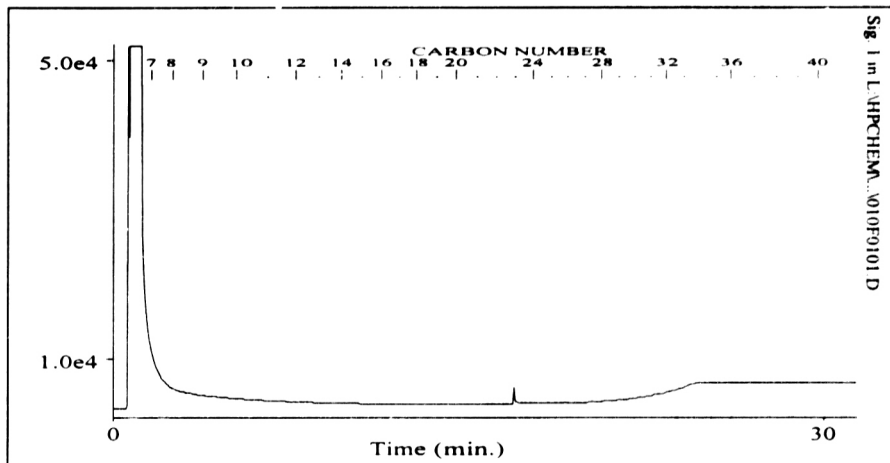


**NORWEST  
LABS**

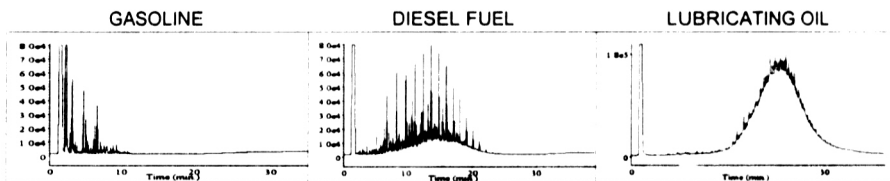
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: 37A  
Lab No.: 4245-1W

Work Order No.: 97-10-4245  
Date Sampled: NA  
Date Reported: 22-Oct-97



### TYPICAL PRODUCT CHROMATOGRAMS



#### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

#### Sample Hydrocarbon Product Type Assessment

There are no detectable hydrocarbons present.

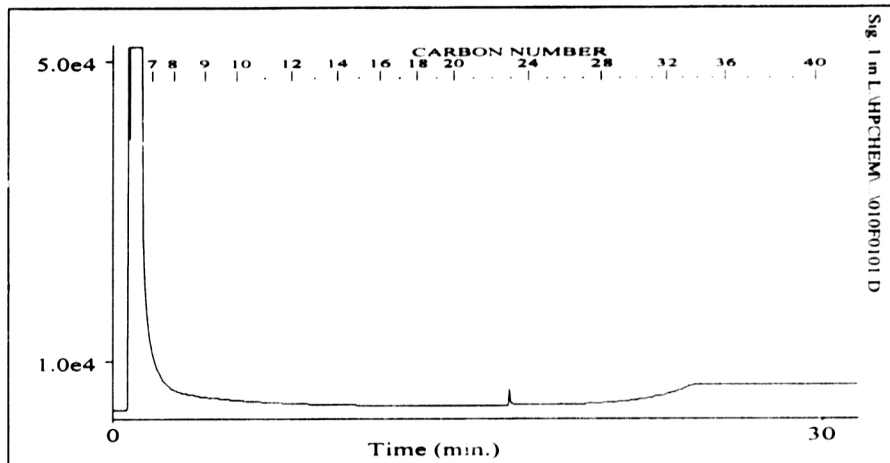


**NORWEST  
LABS**

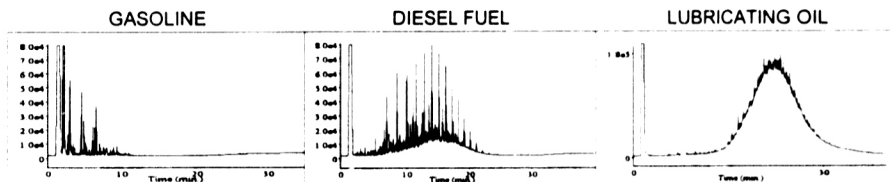
### HYDROCARBON CHARACTERIZATION

Client: E.D.M. Inc.  
Sample ID: 38A  
Lab No.: 4245-4W

Work Order No.: 97-10-4245  
Date Sampled: NA  
Date Reported: 22-Oct-97



### TYPICAL PRODUCT CHROMATOGRAMS

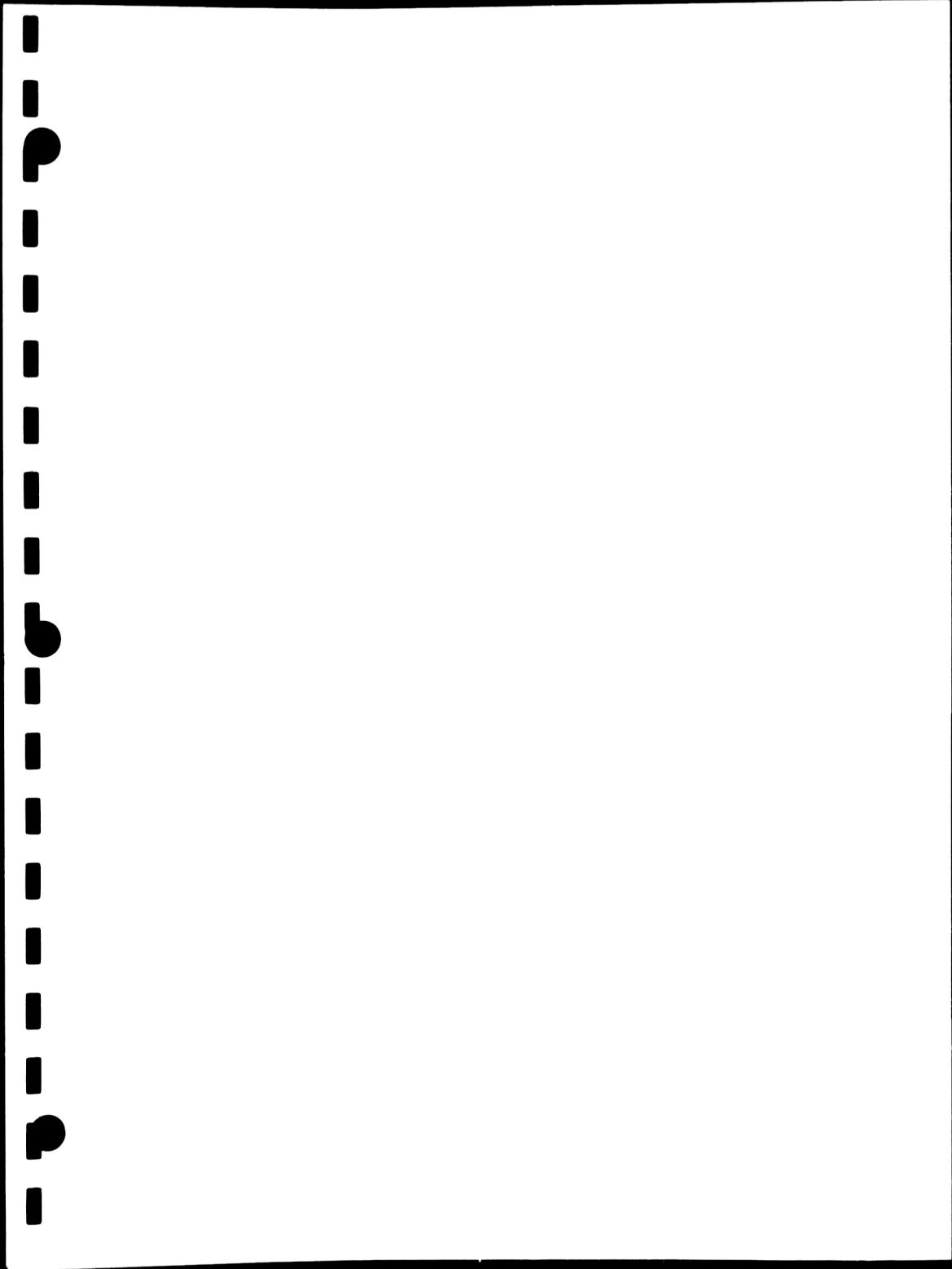


### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

### Sample Hydrocarbon Product Type Assessment

There are no detectable hydrocarbons present.





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Fax (604) 534-9996  
Fax (204) 275-6019

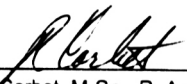
TO: Enviro. Data Management Inc.  
AEC West  
ATTN: Dermot McCaw  
Glen Andrews

DATE SAMPLED: 25-Aug-97  
DATE RECEIVED: 28-Aug-97  
DATE REPORTED: 25-Nov-97  
LAB FILE#: 97-08-3169

Project: E97-254

## HYDROCARBON ASSESSMENT - WATER

LAB #	12	16	24	25	Detection
CLIENT #	Sample	Sample	Sample	Sample	Limit
	#12A	#16A	#24A	#25A	
<sup>2</sup> Total Extractables (C <sub>11</sub> - C <sub>30</sub> +)	0.3	0.6	0.3	0.9	0.1

  
R. Corbet, M.Sc., P. Ag.  
Manager - Organics

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0





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Fax (403) 327-8527  
Fax (604) 534-9996  
Fax (204) 275-6019

**TO:** Enviro. Data Management Inc.  
AEC West  
**ATTN:** Dermot McCaw  
Glen Andrews

**DATE SAMPLED:** 25-Aug-97  
**DATE RECEIVED:** 28-Aug-97  
**DATE REPORTED:** 25-Nov-97  
**LAB FILE#:** 97-08-3169

**Project:** E97-254

Page 2

## HYDROCARBON ASSESSMENT - WATER

LAB #	35	Detection
CLIENT #	Sample #35A	Limit
<sup>1</sup> Total Extractables (C11 - C30+)	2.5	0.1

Results expressed in mg/L (ppm)

<sup>1</sup>Assessment as per US EPA Method 8020

<sup>2</sup>Assessment as per Alta. Env. Method A108.0

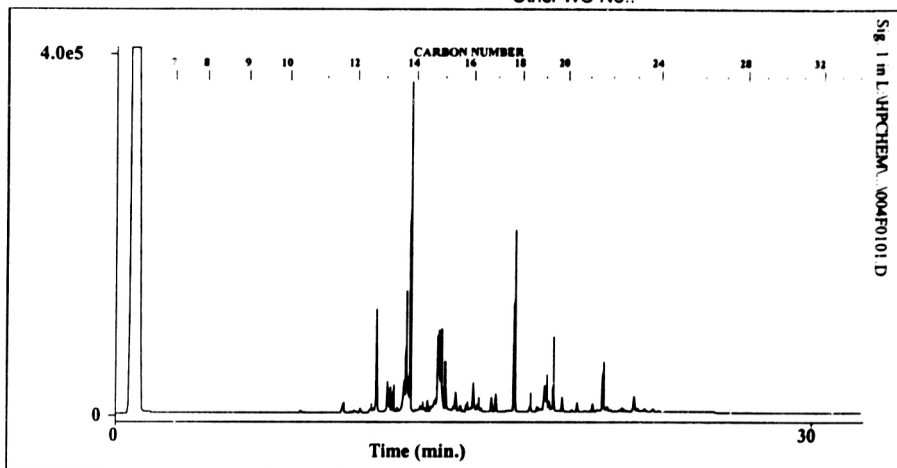


**NORWEST  
LABS**

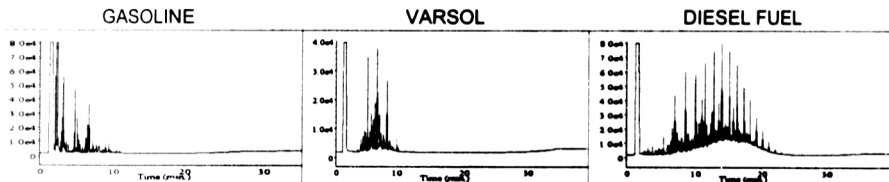
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #12  
Lab No.: 3169-12W

Work Order No.: 97-08-3169  
Date Sampled: NA  
Date Reported: 25-Nov-97  
Other WO No.:



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

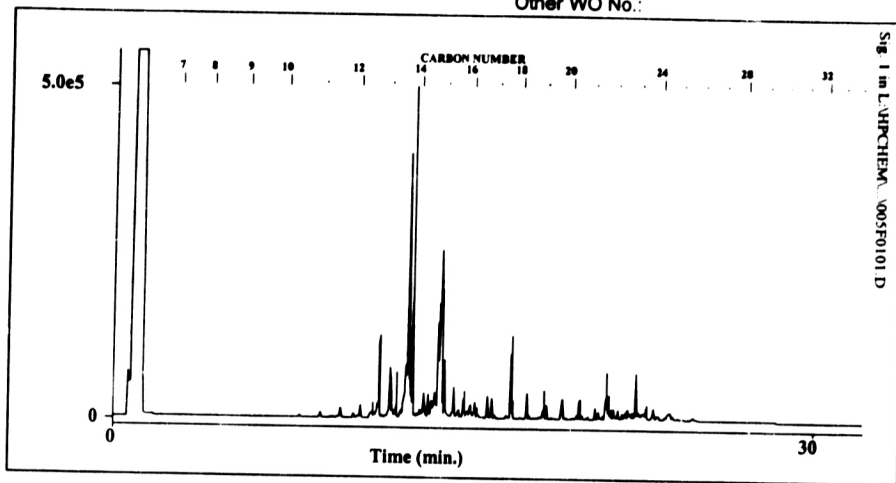


**NORWEST  
LABS**

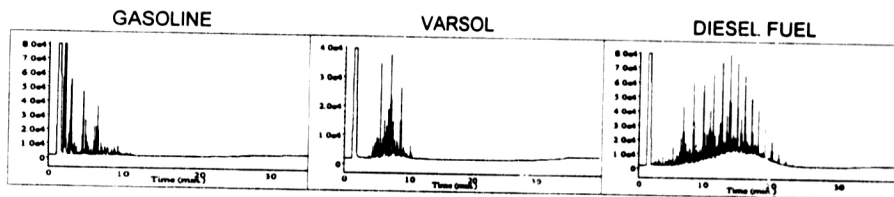
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #16  
Lab No.: 3169-16W

Work Order No.: 97-08-3169  
Date Sampled: NA  
Date Reported: 25-Nov-97  
Other WO No.:



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

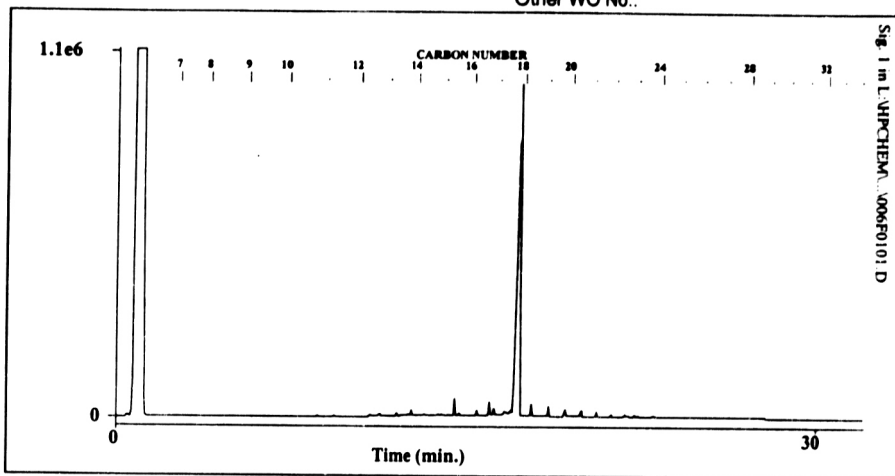


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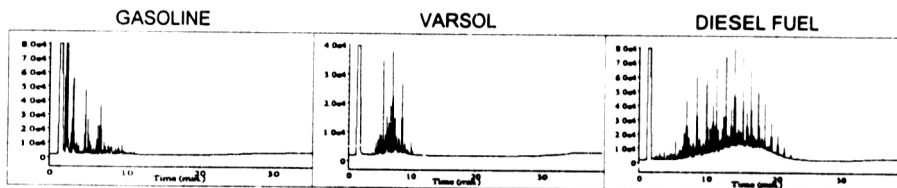
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #24  
Lab No.: 3169-24W

Work Order No.: 97-08-3169  
Date Sampled: NA  
Date Reported: 25-Nov-97  
Other WO No.:



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C60+

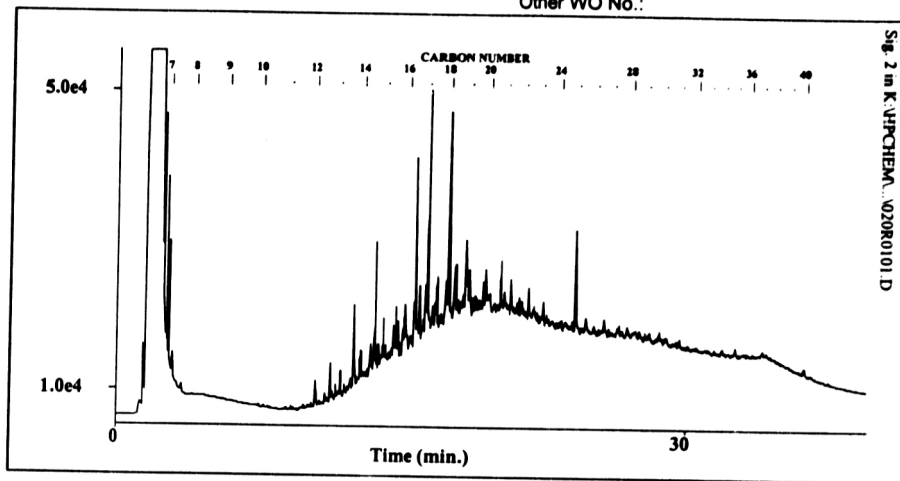


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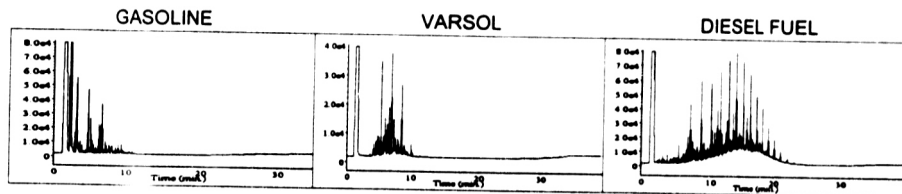
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #25  
Lab No.: 3169-25W

Work Order No.: 97-08-3169  
Date Sampled: NA  
Date Reported: 25-Nov-97  
Other WO No.:



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C80+

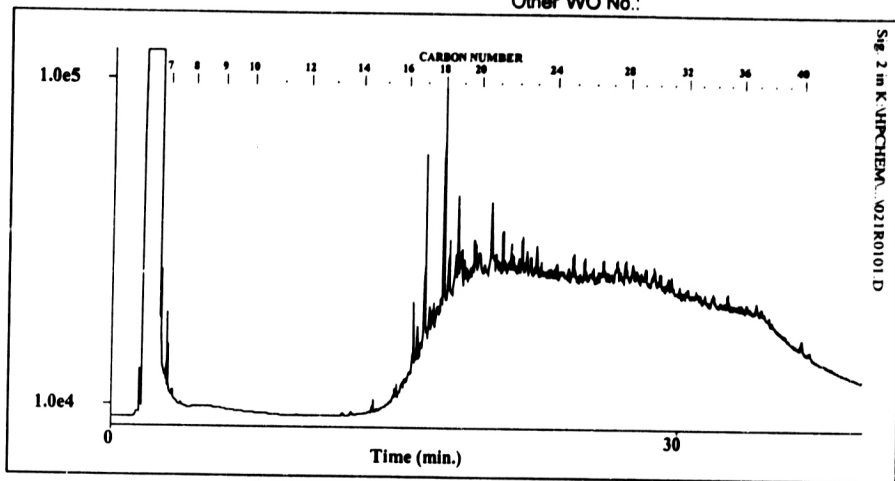


**NORWEST  
LABS**

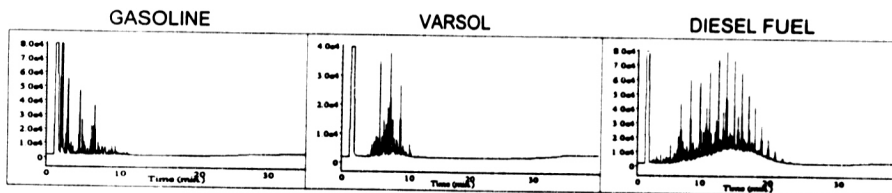
### HYDROCARBON CHARACTERIZATION

Client: E.D.M.  
Sample ID: Sample #35  
Lab No.: 3169-35W

Work Order No.: 97-08-3169  
Date Sampled: NA  
Date Reported: 25-Nov-97  
Other WO No.:

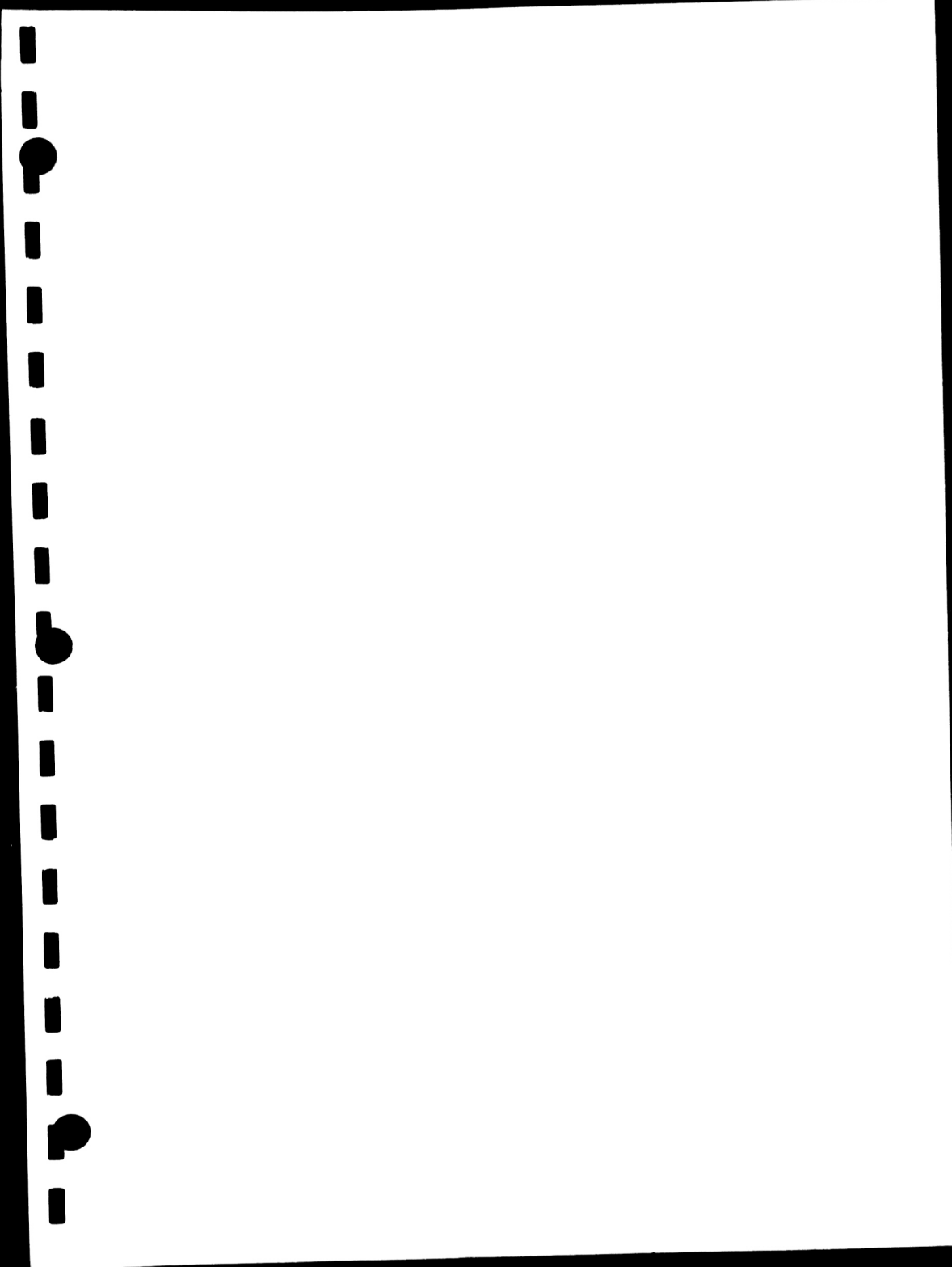


### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Diesel	C8-C22
Varsol	C8-C12	Lubricating Oils	C20-C40
Kerosene	C7-C16	Crude Oils	C3-C80+





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Fax (604) 534-9996  
Fax (204) 275-8019

**TO:** Enviro Data Management Inc.  
AEC West  
**ATTN:** Dermot McCaw

**DATE SAMPLED:** 17-Oct-97  
**DATE RECEIVED:** 18-Oct-97  
**DATE REPORTED:** 22-Oct-97  
**LAB FILE#:** 97-10-4245

Page 2

**TOTAL EXTRACTABLE HYDROCARBONS  
QUALITY ASSURANCE DATA**

*(This QA/QC data is representative of the lab based quality  
assurance program and is not to be utilized as field data.)*

Calibration Check (CC)

	<b>Actual Amt. (ng)</b>	<b>Detected Amt. (ng)</b>	<b>% Rec.</b>
<b>DIESEL</b>	2812	2823.9	100
Accuracy = Ave % Rec. MS + Ave % Rec. MSD			= 97 % Accuracy
	2		
% RSD = Ave % Rec. MS - Ave % Rec. MSD			= 3.6 % RSD
	% Accuracy		

The calculated values are based on matrix spike and duplicate recovery data performed on your samples at the time of analysis.

Date Acquired: Oct20/97

Analyst: Gavin January





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TO: Enviro. Data Management Inc.  
AEC West  
ATTN: Dermot McCaw  
Glen Andrews

DATE SAMPLED: 25-Aug-97  
DATE RECEIVED: 28-Aug-97  
DATE REPORTED: 24-Sep-97  
LAB FILE#: 97-08-3169

Project: E97-254

Page 10

## TOTAL EXTRACTABLE HYDROCARBONS QUALITY ASSURANCE DATA

*(This QA/QC data is representative of the lab based quality assurance program and is not to be utilized as field data.)*

### Calibration Check (CC)

	Actual Amt. (ng)	Detected Amt. (ng)	% Rec.
DIESEL	2812	2995	107
Accuracy	$= \frac{\text{Ave \% Rec. MS} + \text{Ave \% Rec. MSD}}{2}$		$= \frac{118}{\% \text{ Accuracy}}$
% RSD	$= \frac{\text{Ave \% Rec. MS} - \text{Ave \% Rec. MSD}}{\% \text{ Accuracy}}$		$= \frac{6.4}{\% \text{ RSD}}$

The calculated values are based on matrix spike and duplicate recovery data performed on your samples at the time of analysis.

Date Acquired: 97-09-23

Analyst: GAVIN JANUARY

