

Project Sample List

Sample Name	Date Collected	Sample Type	Collected By	Description/Location
Pump Station 6 - MP 208				
Soil Samples				
SS-208-1	9/12/98	Soil	FP	Soil in gravel clearing NW of pump station. Dark gravel.
SS-208-2	9/12/98	Soil	FP	NW corner (low spot) adjacent to grease ramp/debris pit area. Dark fill, oily look
SS-208-3	9/12/98	Soil	FP	Middle of grease ramp/debris pit. Dried hydrocarbon?
SS-208-4	9/12/98	Soil	FP	S side of ravine/wetland E of pump house. Strong oil smell in organic soil deposits.
SS-208-5	9/12/98	Soil	BB	0-0.1 vertical composite sample N-side of POL tank. D brown sand & gravel - waste oil smell.
SS-208-6	9/12/98	Soil	FP	SE side of POL tank - downgradient of inspection port.
SS-208-7	9/12/98	Soil	BB	Downgradient of barrel dump 'H' (next to POL tank). Tan fine sand under thin organic
SS-208-8	9/13/98	Soil	FP	Composite sample (6) of stained area E of barrel dump 'F'.
SS-208-9	9/13/98	Soil	FP	<i>Blind replicate of SS-208-C1</i>
SS-208-10	9/13/98	Soil	BB	10m E of western caboose area. Grey clayey silt w/ some sand & gravel overlain by organics Very moist.
SS-208-11	9/13/98	Soil	BB	Septic pit area.
SS-208-12	9/13/98	Soil	BB	Near oil-heater tank.
SS-208-13	9/13/98	Soil	GM	<i>Blind replicate of TP5.</i>
SS-208-14	9/13/98	Soil	BB	Background soil (west of site). Medium brown loose gravelely sand with some silt overlain by mossy organics
SS-208-15	9/13/98	Soil	GM	<i>Blind replicate of SS-208-7.</i>
SS-208-A1	9/12/98	Soil	FP	Centre of barrel dump 'A'
SS-208-A2	9/12/98	Soil	FP	Downgradient (east) of barrel dump 'A'
SS-208-B1	9/12/98	Soil	BB	Centre of barrel dump 'B'
SS-208-B2	9/12/98	Soil	BB	Downgradient (east) of barrel dump 'B'
SS-208-C1	9/12/98	Soil	BB	Centre of barrel dump 'C'
SS-208-C2	9/12/98	Soil	BB	Downgradient (east) of barrel dump 'C'
SS-208-D1	9/12/98	Soil	BB	Centre of barrel dump 'D'
SS-208-D2	9/12/98	Soil	BB	Downgradient (east) of barrel dump 'D'
SS-208-E1	9/12/98	Soil	BB	Centre of barrel dump 'E'
SS-208-E2	9/12/98	Soil	BB	Downgradient (east) of barrel dump 'E'
SS-208-F1	9/12/98	Soil	BB	Centre of barrel dump 'F'
SS-208-F2	9/12/98	Soil	BB	Downgradient (south) of barrel dump 'F'
TP1 East End Fill	9/12/98	Soil	GM	Surface soil at east end of UST near fill pipe.
TP1 0-01 m	9/12/98	Soil	GM	Upper 0.1 m of soil at west end of UST
TP1 0.1-0.5 m	9/12/98	Soil	GM	Lower 0.4 m of soil at west end of UST
TP3	9/12/98	Soil	GM	Shallow soils in wetland approx. 10 m north of UST
TP5	9/12/98	Soil	GM	Shallow soils in wetland approx. 15 m northeast of UST
TP11	9/12/98	Soil	GM	Shallow soils in wetland approx. 25 m northeast of UST
TP13	9/12/98	Soil	GM	Shallow clayey soils in wetland approx. 15 m north of UST
Water Samples				
SW-208-1	9/12/98	Water	FP	208-Mile creek downstream of site. At beaver dam.
SW-208-1	9/12/98	Water	BB	208-Mile creek upstream of site.
SW-208-3	9/12/98	Water	FP	Pond east of pump house (east of sample SS-280-4).
TP5	9/12/98	Water	BB	Water in test pit 5.

Sample Name	Date Collected	Sample Type	Collected By	Description/Location
Vegetation Samples				
VS-208-1	9/13/98	Vegetation	FP	Willow buds near barrel dump 'H'.
VS-208-2	9/13/98	Vegetation	FP	"Indian Tea" (not labrador tea) near barrel dump 'H'.
VS-208-3	9/13/98	Vegetation	FP	Blueberry. West of barrel dump 'F' near open barrel of grease.
VS-208-4	9/13/98	Vegetation	FP	Reindeer lichen between barrel dumps 'F' and 'D'.
VS-208-5	9/13/98	Vegetation	FP	Willow buds near oil heater.
VS-208-6	9/13/98	Vegetation	FP	Willow buds near TP 4 (10m northeast of UST).
VS-208-7	9/13/98	Vegetation	FP	Grasses (mostly seed pods) near TP 4
Hydrocarbon Samples				
HC-208-1	9/12/98	Grease	FP	Grease spill SE of power house.
HC-208-2	9/12/98	Oil Tar	FP	Dessicated sludge near POL tank inspection port.
HC-208-3	9/12/98	Grease	FP	Open grease pot in truck box
HC-208-4	9/12/98	Light Oil	FP	Motor oil (?) from barrel east of barrel dump 'F'.
HC-208-5	9/12/98	Heavy Oil	FP	Black oil from barrels in dump 'H'.
HC-208-6	9/13/98	Heavy Oil	GM	Oil sample from UST.
Laydown Area - MP 207.5				
Soil Samples				
SS-207-1	9/13/98	Soil	FP	Gravelly soil near broken tractor battery.
SS-207-2	9/13/98	Soil	BB	Gravelly soil from between vehicle hulks.
SS-207-3	9/13/98	Soil	BB	Downgradient sample from base of hill.
SS-207-G1	9/13/98	Soil	FP	Composite sample (6) of stained area of barrel dump 'G'.
SS-207-G2	9/13/98	Soil	FP	Test pit 0.3-0.4 m below barrel dump 'G' stained area. Sandy pea-gravel soils.
Old Squaw Barrel Dump - MP 210				
Soil Samples				
SS-212-1	9/13/98	Soil	GM	Background, upgradient from barrel dump 'B'.
SS-212-2	9/13/98	Soil	BB	Downgradient - near campsite south of barrel dump 'B'.
SS-212-A1	9/13/98	Soil	BB	Centre of barrel dump 'A'.
SS-212-A2	9/13/98	Soil	BB	Downgradient (south) of barrel dump 'A'.
SS-212-B1	9/13/98	Soil	BB	West part of barrel dump 'B'.
SS-212-B2	9/13/98	Soil	BB	Centre of barrel dump 'B'.
SS-212-C1	9/13/98	Soil	BB	Centre of barrel dump 'C'.
SS-212-C2	9/13/98	Soil	BB	Downgradient (east) of barrel dump 'C'.
Vegetation Samples				
VS-212-1	9/13/98	Vegetation	FP	Willow buds from near sample SS-212-A1
VS-212-2	9/13/98	Vegetation	FP	Caribou lichen from near sample SS-212-A2
Boulder Creek Quarry/Barrel Dump - MP 215				
Soil Samples				
SS-215-1	9/14/98	Soil	FP	Background soil (north of site).
SS-215-2	9/14/98	Soil	FP	Downgradient from gully.
SS-215-3	9/14/98	Soil	FP	Next to pyrite showing, middle of quarry. Strong sulphur smell.
SS-215-4	9/14/98	Oil Tar	FP	Crude oil tar from north edge of quarry.
SS-215-5	9/14/98	Soil	FP	Mouth of gully.
SS-215-6	9/14/98	Soil	BB	Between cabooses.
SS-215-A1	9/14/98	Soil	BB	Centre of gully - Barrel dump 'A'
SS-215-A2	9/14/98	Soil	BB	Shore of pond - Barrel dump 'A'.
SS-215-B1	9/14/98	Soil	BB	North end of barrel dump 'B'
SS-215-B2	9/14/98	Soil	BB	Shore of pond - barrel dump 'B'.

Sample Name	Date Collected	Sample Type	Collected By	Description/Location
SS-215-C1	9/14/98	Soil	FP	Centre of barrel dump 'C' - near RRMC tag #128
SS-215-C2	9/14/98	Soil	FP	SW of barrel dump 'C'.
Water Samples				
SW-215-1	9/14/98	Water	FP	Pond water - collected near barrel dump 'A'.
Vegetation Samples				
VS-215-1	9/14/98	Vegetation	FP	Willow buds in barrel dump 'A' area.
VS-215-2	9/14/98	Vegetation	FP	Willow buds in gully near sample SS-215-2
Boulder Creek Barrel Dump - MP 216				
Soil Samples				
SS-216-1	9/14/98	Soil	BB	Gravel clearing north of site
SS-216-2	9/14/98	Soil	BB	Middle of barrel dump
SS-216-3	9/14/98	Soil	BB	South of barrel dump
SS-216-4	9/14/98	Soil	BB	Downgradient of barrel dump.
Vehicle Boneyard - MP 223				
Soil Samples				
SS-223-1	9/18/98	Soil	BB	Background sample - southwest of site
SS-223-2	9/18/98	Soil	BB	Between vehicle hulks - west end
SS-223-3	9/18/98	Soil	BB	Between vehicle hulks - middle
SS-223-4	9/18/98	Soil	BB	Between vehicle hulks - north end
SS-223-5	9/18/98	Soil	BB	Between vehicle hulks - northeast end
SS-223-6	9/18/98	Soil	BB	Southwest corner of debris area
SS-223-7	9/18/98	Soil	BB	Southeast corner of debris area
Water Samples				
SW-223-1	9/18/98	Water	BB	Small mash water - collected northeast of site.

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CHEMICAL ANALYSIS REPORT

Date: October 8, 1998
ASL File No. J8784
Report On: 98-800 Canol Rd. Water Analysis
Report To: **Gartner Lee Ltd.**
Suite 212 Main St.
Whitehorse, YT
Y1A 2A9
Attention: **Mr. Forest Pearson**
Received: September 21, 1998

ASL ANALYTICAL SERVICE LABORATORIES LTD.
per:

A handwritten signature in cursive script, reading "Miles Gropen".

Heather A. Ross, B.Sc. - Project Chemist
Miles Gropen, B.Sc. - Project Chemist



**RESULTS OF ANALYSIS - Water**

File No. J8784

		SW 208-1	SW 208-2	SW 215-1
		98 09 12	98 09 12	98 09 12
Physical Tests				
Hardness	CaCO ₃	84.0	75.9	40.5
Total Metals				
Aluminum	T-Al	<0.005	0.012	0.042
Antimony	T-Sb	<0.2	<0.2	<0.2
Arsenic	T-As	<0.2	<0.2	<0.2
Barium	T-Ba	0.23	0.23	0.02
Beryllium	T-Be	<0.005	<0.005	<0.005
Boron	T-B	<0.1	<0.1	<0.1
Cadmium	T-Cd	<0.0002	<0.0002	<0.0002
Calcium	T-Ca	25.3	23.4	10.0
Chromium	T-Cr	<0.01	<0.01	<0.01
Cobalt	T-Co	<0.01	<0.01	<0.01
Copper	T-Cu	<0.01	<0.01	<0.01
Iron	T-Fe	<0.03	0.10	0.20
Lead	T-Pb	<0.001	0.001	<0.001
Magnesium	T-Mg	5.0	4.2	3.8
Manganese	T-Mn	<0.005	<0.005	<0.005
Mercury	T-Hg	<0.00005	<0.00005	<0.00005
Molybdenum	T-Mo	<0.03	<0.03	<0.03
Nickel	T-Ni	<0.05	<0.05	<0.05
Selenium	T-Se	0.001	0.001	0.004
Silver	T-Ag	<0.0001	<0.0001	<0.0001
Thallium	T-Tl	<0.002	<0.002	<0.002
Uranium	T-U	0.00048	0.00045	0.00001
Zinc	T-Zn	<0.005	0.006	0.014

Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.



RESULTS OF ANALYSIS - Water

File No. J8784

	SW 208-1	SW 208-2	SW 208-3	TP 5	SW 215-1
	98 09 12	98 09 12	98 09 12	98 09 12	98 09 12
Extractables					
EPH (C10-18)	0.6	<0.5	<0.5	10.0	<0.5
EPH (C19-31)	<1	<1	<1	12	<1

Results are expressed as milligrams per litre except where noted.
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EPH = Extractable Petroleum Hydrocarbons.

**RESULTS OF ANALYSIS - Water**

File No. J8784

	MP73 MW1	MP73 MW2	MP73 MW3	Travel Blank
	98 09 12	98 09 12	98 09 12	98 09 12
<u>Polycyclic Aromatic Hydrocarbons</u>				
Acenaphthene	-	-	<0.0005	-
Acenaphthylene	-	-	<0.0005	-
Acridine	-	-	<0.00005	-
Anthracene	-	-	<0.0001	-
Benz(a)anthracene	-	-	<0.00001	-
Benzo(a)pyrene	-	-	<0.00001	-
Benzo(b)fluoranthene	-	-	<0.00001	-
Benzo(g,h,i)perylene	-	-	<0.0001	-
Benzo(k)fluoranthene	-	-	<0.00001	-
Chrysene	-	-	<0.0001	-
Dibenz(a,h)anthracene	-	-	<0.00001	-
Fluoranthene	-	-	<0.0001	-
Fluorene	-	-	<0.0001	-
Indeno(1,2,3-c,d)pyrene	-	-	<0.00001	-
Naphthalene	-	-	<0.0002	-
Phenanthrene	-	-	<0.0002	-
Pyrene	-	-	<0.00002	-
<u>Extractables</u>				
EPH (C10-18)	<0.5	<0.5	12.8	<0.5
EPH (C19-31)	<1	<1	2	<1

Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows:

Conventional Parameters in Water

These analyses are carried out in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

Metals in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 19th Edition 1995 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000A), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

Mercury in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 19th Edition 1995 published by the American Public Health Association. A cold-oxidation procedure involving bromine monochloride is used, followed by instrumental analysis by cold-vapour atomic absorption spectrophotometry (CVAAS).

Extractable Hydrocarbons in Water

This analysis is carried out using procedures adapted from U.S. EPA Methods 3510/8015 (Publ. #SW-846, 3rd ed., Washington, DC 20460) and British Columbia Ministry of Environment, Lands and Parks Method for "Extractable Petroleum Hydrocarbons in Water by GC/FID" (January 1996). The procedure involves a methylene chloride solvent extraction followed by analysis of the extract by capillary column gas chromatography with flame ionization detection. Results are not corrected for Polycyclic Aromatic



Hydrocarbons (PAHs) for Extractable Petroleum Hydrocarbon (LEPH/HEPH) purposes.

Polycyclic Aromatic Hydrocarbons in Water

This analysis is carried out using a procedure adapted by ASL from U.S. EPA Methods 3510, 3630 and 8270 (publ. #SW-846, 3rd Ed., Washington, DC 20460). The procedure involves the extraction of the sample with methylene chloride followed by silica column chromatography cleanup. This cleanup procedure has been found to effectively remove aliphatic and heterocyclic hydrocarbons which could potentially interfere with the analysis. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection.

End of Report



APPENDIX

**HYDROCARBON
DISTRIBUTION
REPORTS**

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8784-T--1 SW 208-1

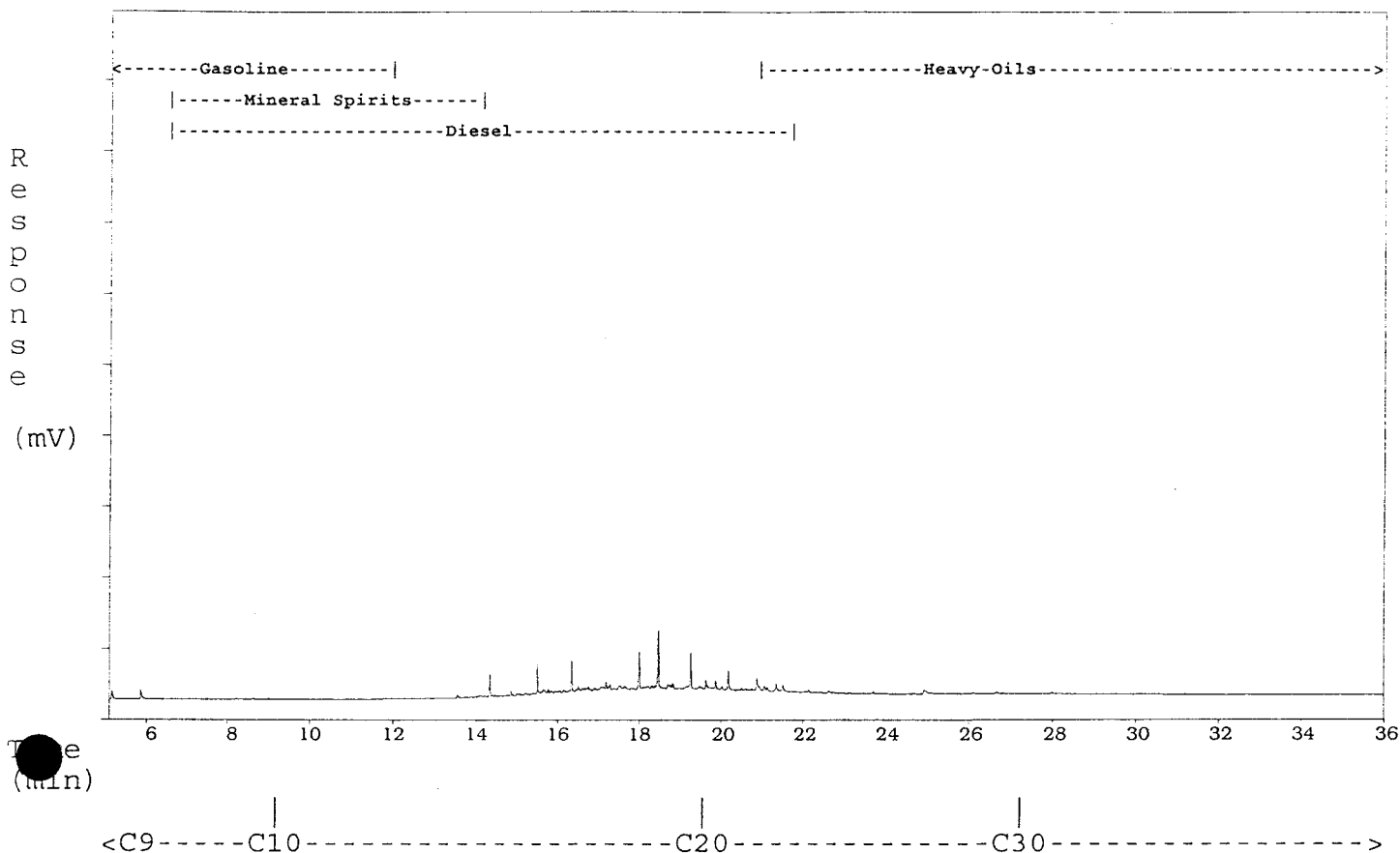
98 09 12

Sample acquired: SEP 28, 1998 17:59:52

Sequence File: TEH28SEP

File Name: C:\TEH2\28SEP\TEH28SEP.21R , Sample Name: J8784-T--1

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8784-T--1* 1.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.5
C10-C19 (beg-nC10 to beg-nC20)	57.9
C20-C30 (beg-nC20 to beg-nC31)	31.0
C31-C40 (beg-nC31 to beg-nC41)	10.7

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8784-T--4

TP 5

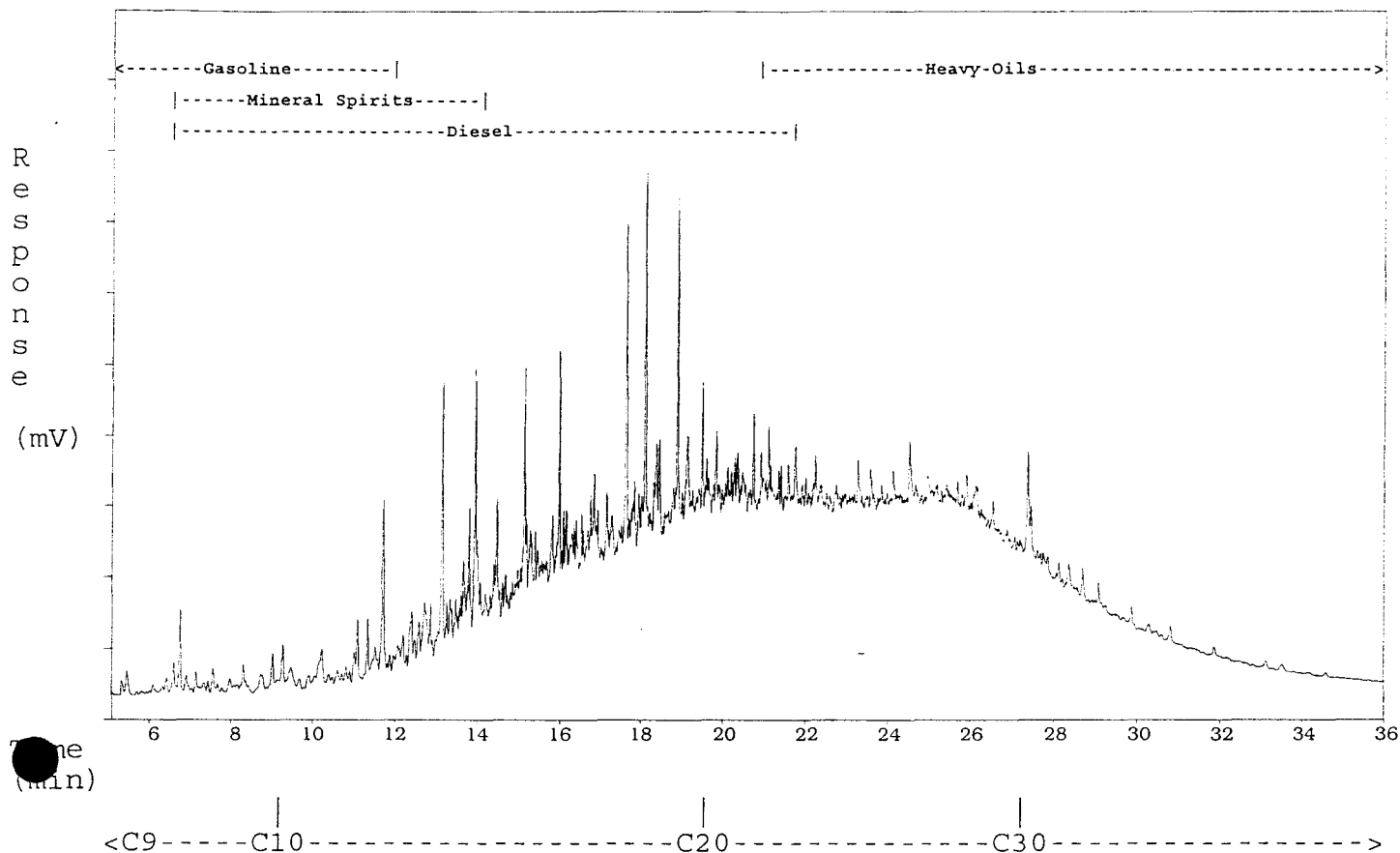
98 09 12

Sample acquired: SEP 28, 1998 18:53:04

Sequence File: TEH28SEP

File Name: C:\TEH2\28SEP\TEH28SEP.24R , Sample Name: J8784-T--4

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8784-T--4*

1.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.6
C10-C19 (beg-nC10 to beg-nC20)	39.3
C20-C30 (beg-nC20 to beg-nC31)	39.4
C31-C40 (beg-nC31 to beg-nC41)	20.8

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8784-T--8 MP73 MW3

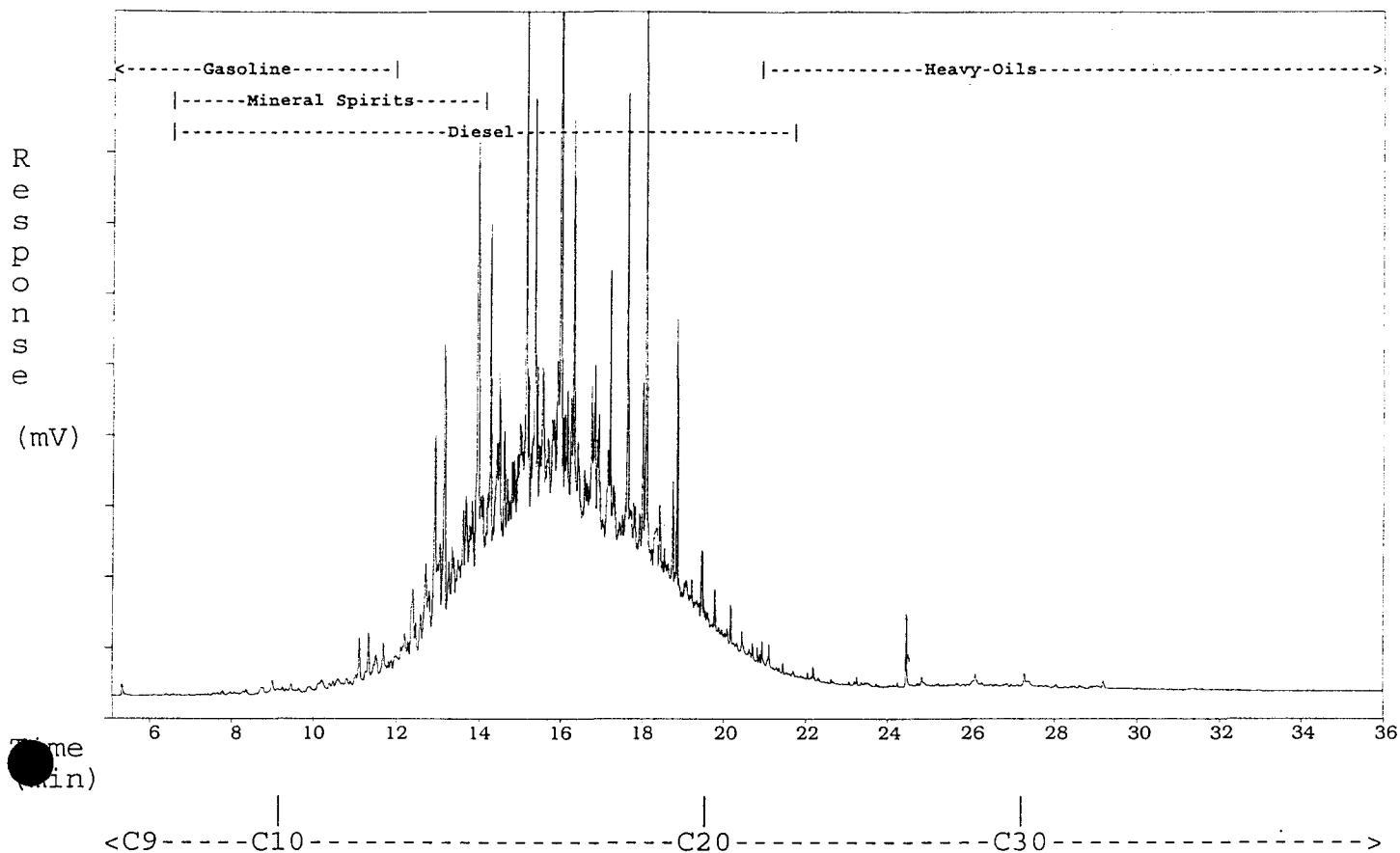
98 09 12

Sample acquired: SEP 28, 1998 20:39:33

Sequence File: TEH28SEP

File Name: C:\TEH2\28SEP\TEH28SEP.28R , Sample Name: J8784-T--8

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8784-T--8*

1.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	91.0
C20-C30 (beg-nC20 to beg-nC31)	6.7
C31-C40 (beg-nC31 to beg-nC41)	2.2

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.



APPENDIX

**CHAIN OF
CUSTODY
FORMS**



CHEMICAL ANALYSIS REPORT

Date: October 22, 1998
ASL File No. J8785
Report On: 98-800 Soil & Oil Analysis

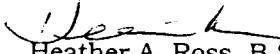
Report To: **Gartner Lee Ltd.**
Suite 212 Main St.
Whitehorse, YT
Y1A 2A9

Attention: **Mr. Forest Pearson**

Received: September 21, 1998

ASL ANALYTICAL SERVICE LABORATORIES LTD.

per:


Heather A. Ross, B.Sc. - Project Chemist
Miles Gropen, B.Sc. - Project Chemist





REMARKS

File No. J8785

Please note that the oil samples identified as "HC 208-4", "HC 208-5" and "HC 208-6" were subcontracted to Powertech Labs Inc. for the Waste Oil Specifications, which includes metals, Polychlorinated Biphenyls and Total Organic Halide. The other samples that are identified as oils were too solid to perform this analysis and were returned to ASL for metals and extractable petroleum hydrocarbon analysis, as per the client's instructions.

**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

		SS 212- A1	SS 212- A2	SS 212- B1	SS 212- B2	SS 212- B3
		98 09 13	98 09 13	98 09 13	98 09 13	98 09 13
Physical Tests						
Moisture	%	45.1	13.3	28.2	21.8	28.7
pH		5.26	-	-	-	-
Total Metals						
Antimony	T-Sb	<20	-	-	-	-
Arsenic	T-As	13	-	-	-	-
Barium	T-Ba	890	-	-	-	-
Beryllium	T-Be	1.2	-	-	-	-
Cadmium	T-Cd	1.1	-	-	-	-
Chromium	T-Cr	45	-	-	-	-
Cobalt	T-Co	6	-	-	-	-
Copper	T-Cu	22	-	-	-	-
Lead	T-Pb	<50	-	-	-	-
Mercury	T-Hg	0.043	-	-	-	-
Molybdenum	T-Mo	4	-	-	-	-
Nickel	T-Ni	33	-	-	-	-
Selenium	T-Se	1.0	-	-	-	-
Silver	T-Ag	<2	-	-	-	-
Tin	T-Sn	<10	-	-	-	-
Vanadium	T-V	181	-	-	-	-
Zinc	T-Zn	143	-	-	-	-

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

	SS 212- A1	SS 212- A2	SS 212- B1	SS 212- B2	SS 212- B3
	98 09 13	98 09 13	98 09 13	98 09 13	98 09 13
<u>Extractables</u>					
EPH (C10-18)	<200	<200	<200	<200	<200
EPH (C19-31)	<200	<200	<200	1130	581

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

SS 212- C1	SS 212- C2	SS 216-1	SS 216-2	SS 216-3
98 09 13	98 09 13	98 09 14	98 09 14	98 09 14

Physical Tests

Moisture %	33.3	30.0	19.3	47.4	28.2
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Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	SS 212- C1	SS 212- C2	SS 216-1	SS 216-2	SS 216-3
	98 09 13	98 09 13	98 09 14	98 09 14	98 09 14
<u>Extractables</u>					
EPH (C10-18)	<200	<200	<200	<200	<200
EPH (C19-31)	<200	1580	<200	314	<200

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

SS 216-4 SS 215-1 SS 215-2 SS 215-3 SS 215-5

98 09 14 98 09 14 98 09 14 98 09 14 98 09 14

Physical Tests

Moisture %	20.2	31.8	39.7	22.2	9.7
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Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

SS 216-4	SS 215-1	SS 215-2	SS 215-3	SS 215-5
98 09 14	98 09 14	98 09 14	98 09 14	98 09 14

Extractables

EPH (C10-18)	<200	<200	<200	<200	<200
EPH (C19-31)	<200	<200	<200	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

		SS 215-6	SS 215-A1	SS 215-A2	SS 215-B1	SS 215-B2
		98 09 14	98 09 14	98 09 14	98 09 14	98 09 14
<u>Physical Tests</u>						
Moisture	%	20.0	31.0	55.3	43.4	62.9
pH		-	5.98	-	-	-
<u>Total Metals</u>						
Antimony	T-Sb	-	<20	-	-	-
Arsenic	T-As	-	16	-	-	-
Barium	T-Ba	-	735	-	-	-
Beryllium	T-Be	-	1.0	-	-	-
Cadmium	T-Cd	-	0.9	-	-	-
Chromium	T-Cr	-	28	-	-	-
Cobalt	T-Co	-	5	-	-	-
Copper	T-Cu	-	53	-	-	-
Lead	T-Pb	-	<50	-	-	-
Mercury	T-Hg	-	0.177	-	-	-
Molybdenum	T-Mo	-	8	-	-	-
Nickel	T-Ni	-	35	-	-	-
Selenium	T-Se	-	6	-	-	-
Silver	T-Ag	-	<2	-	-	-
Tin	T-Sn	-	<10	-	-	-
Vanadium	T-V	-	168	-	-	-
Zinc	T-Zn	-	178	-	-	-

Remarks regarding the analyses appear at the beginning of this report.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	SS 215-6	SS 215-A1	SS 215-A2	SS 215-B1	SS 215-B2
	98 09 14	98 09 14	98 09 14	98 09 14	98 09 14
<u>Extractables</u>					
EPH (C10-18)	<200	<200	<200	202	<200
EPH (C19-31)	<200	<200	<200	685	561

Remarks regarding the analyses appear at the beginning of this report.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

SS 215- C1	SS 215- C2	SS 208-1	SS 208-2	SS 208-3
98 09 14	98 09 14	98 09 12	98 09 12	98 09 12

Physical Tests

Moisture	%	44.0	23.5	5.9	27.8	7.3
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Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

SS 215- C1	SS 215- C2	SS 208-1	SS 208-2	SS 208-3
98 09 14	98 09 14	98 09 12	98 09 12	98 09 12

Extractables

EPH (C10-18)	<200	<200	393	947	388
EPH (C19-31)	<200	<200	2020	2110	2800

Remarks regarding the analyses appear at the beginning of this report.

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**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

		SS 208-4	SS 208-5	SS 208-6	SS 208-7	SS 208-8
		98 09 12	98 09 12	98 09 12	98 09 12	98 09 12
<u>Physical Tests</u>						
Moisture	%	63.8	8.6	26.3	40.8	10.7
pH		-	-	-	6.04	-
<u>Total Metals</u>						
Antimony	T-Sb	-	-	-	<20	-
Arsenic	T-As	-	-	-	13	-
Barium	T-Ba	-	-	-	1550	-
Beryllium	T-Be	-	-	-	1.5	-
Cadmium	T-Cd	-	-	-	1.7	-
Chromium	T-Cr	-	-	-	36	-
Cobalt	T-Co	-	-	-	22	-
Copper	T-Cu	-	-	-	28	-
Lead	T-Pb	-	-	-	<50	-
Mercury	T-Hg	-	-	-	0.103	-
Molybdenum	T-Mo	-	-	-	<4	-
Nickel	T-Ni	-	-	-	63	-
Selenium	T-Se	-	-	-	2.3	-
Silver	T-Ag	-	-	-	<2	-
Tin	T-Sn	-	-	-	<10	-
Vanadium	T-V	-	-	-	110	-
Zinc	T-Zn	-	-	-	391	-

Remarks regarding the analyses appear at the beginning of this report.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

SS 208-4	SS 208-5	SS 208-6	SS 208-7	SS 208-8
98 09 12	98 09 12	98 09 12	98 09 12	98 09 12

Extractables

EPH (C10-18)	9200	3440	<200	<200	1170
EPH (C19-31)	11200	5190	<200	468	21900

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

		SS 208-9	SS 208-10	SS 208-11	SS 208-12	SS 208-13
		98 09 12	98 09 13	98 09 13	98 09 13	98 09 13
<u>Physical Tests</u>						
Moisture	%	5.5	25.4	15.9	17.6	23.8
pH		-	-	-	7.50	-
<u>Total Metals</u>						
Antimony	T-Sb	-	-	-	<20	-
Arsenic	T-As	-	-	-	15	-
Barium	T-Ba	-	-	-	1250	-
Beryllium	T-Be	-	-	-	1.9	-
Cadmium	T-Cd	-	-	-	1.4	-
Chromium	T-Cr	-	-	-	38	-
Cobalt	T-Co	-	-	-	37	-
Copper	T-Cu	-	-	-	14	-
Lead	T-Pb	-	-	-	<50	-
Mercury	T-Hg	-	-	-	0.039	-
Molybdenum	T-Mo	-	-	-	6	-
Nickel	T-Ni	-	-	-	91	-
Selenium	T-Se	-	-	-	1.4	-
Silver	T-Ag	-	-	-	<2	-
Tin	T-Sn	-	-	-	<10	-
Vanadium	T-V	-	-	-	116	-
Zinc	T-Zn	-	-	-	633	-

Remarks regarding the analyses appear at the beginning of this report.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	SS 208-9	SS 208-10	SS 208-11	SS 208-12	SS 208-13
	98 09 12	98 09 13	98 09 13	98 09 13	98 09 13
<u>Extractables</u>					
EPH (C10-18)	256	<200	<200	<200	468
EPH (C19-31)	6340	<200	<200	<200	1520

Remarks regarding the analyses appear at the beginning of this report.

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¹Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

		SS 208- 14	SS 208- 15	TP1 East End Fill Pipe	TP1 0-0.1M	TP1 0.1-0.5M
		98 09 13	98 09 13	98 09 12	98 09 12	98 09 12
<u>Physical Tests</u>						
Moisture	%	16.4	39.4	7.7	9.8	7.8
pH		-	6.15	-	-	-
<u>Total Metals</u>						
Antimony	T-Sb	-	<20	-	-	-
Arsenic	T-As	-	18	-	-	-
Barium	T-Ba	-	1930	-	-	-
Beryllium	T-Be	-	2.0	-	-	-
Cadmium	T-Cd	-	3.8	-	-	-
Chromium	T-Cr	-	53	-	-	-
Cobalt	T-Co	-	31	-	-	-
Copper	T-Cu	-	35	-	-	-
Lead	T-Pb	-	<50	-	-	-
Mercury	T-Hg	-	0.142	-	-	-
Molybdenum	T-Mo	-	6	-	-	-
Nickel	T-Ni	-	75	-	-	-
Selenium	T-Se	-	3.4	-	-	-
Silver	T-Ag	-	<2	-	-	-
Tin	T-Sn	-	<10	-	-	-
Vanadium	T-V	-	167	-	-	-
Zinc	T-Zn	-	458	-	-	-

Remarks regarding the analyses appear at the beginning of this report.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	SS 208- 14	SS 208- 15	TP1 East End Fill Pipe	TP1 0-0.1M	TP1 0.1-0.5M
	98 09 13	98 09 13	98 09 12	98 09 12	98 09 12
<u>Extractables</u>					
EPH (C10-18)	<200	<200	1430	7050	428
EPH (C19-31)	<200	300	3930	18500	2570

Remarks regarding the analyses appear at the beginning of this report.

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**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

		TP3	TP5	TP11	TP13	SS 208-A1
		98 09 12	98 09 12	98 09 12	98 09 12	98 09 12
<u>Physical Tests</u>						
Moisture	%	68.7	23.0	72.4	47.1	6.1
pH		6.62	-	-	-	-
<u>Total Metals</u>						
Antimony	T-Sb	<20	-	-	-	-
Arsenic	T-As	12	-	-	-	-
Barium	T-Ba	1250	-	-	-	-
Beryllium	T-Be	0.7	-	-	-	-
Cadmium	T-Cd	3.6	-	-	-	-
Chromium	T-Cr	20	-	-	-	-
Cobalt	T-Co	5	-	-	-	-
Copper	T-Cu	23	-	-	-	-
Lead	T-Pb	68	-	-	-	-
Mercury	T-Hg	0.068	-	-	-	-
Molybdenum	T-Mo	<4	-	-	-	-
Nickel	T-Ni	29	-	-	-	-
Selenium	T-Se	2.2	-	-	-	-
Silver	T-Ag	<2	-	-	-	-
Tin	T-Sn	<10	-	-	-	-
Vanadium	T-V	70	-	-	-	-
Zinc	T-Zn	188	-	-	-	-

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	TP3	TP5	TP11	TP13	SS 208-A1
	98 09 12	98 09 12	98 09 12	98 09 12	98 09 12
<u>Extractables</u>					
EPH (C10-18)	59600	3930	3130	618	<200
EPH (C19-31)	61400	7930	4210	1140	<200

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

SS 208- A2	SS 208- B1	SS 208- B2	SS 208- C1	SS 208- C2
98 09 12	98 09 12	98 09 12	98 09 12	98 09 12

Physical Tests

Moisture %	6.3	37.1	12.4	6.1	5.9
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Remarks regarding the analyses appear at the beginning of this report.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	SS 208- A2	SS 208- B1	SS 208- B2	SS 208- C1	SS 208- C2
	98 09 12	98 09 12	98 09 12	98 09 12	98 09 12
<u>Extractables</u>					
EPH (C10-18)	<200	<200	<200	329	<200
EPH (C19-31)	<200	399	269	4490	4500

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**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

		SS 208- D1	SS 208- D2	SS 208- E1	SS 208- E2	SS 208- F1
		98 09 12	98 09 12	98 09 12	98 09 12	98 09 12
<u>Physical Tests</u>						
Moisture	%	12.7	8.6	10.8	40.3	20.0
pH		8.10	-	-	-	-
<u>Total Metals</u>						
Antimony	T-Sb	<20	-	-	-	-
Arsenic	T-As	12	-	-	-	-
Barium	T-Ba	1180	-	-	-	-
Beryllium	T-Be	1.0	-	-	-	-
Cadmium	T-Cd	0.9	-	-	-	-
Chromium	T-Cr	28	-	-	-	-
Cobalt	T-Co	7	-	-	-	-
Copper	T-Cu	22	-	-	-	-
Lead	T-Pb	<50	-	-	-	-
Mercury	T-Hg	0.042	-	-	-	-
Molybdenum	T-Mo	<4	-	-	-	-
Nickel	T-Ni	26	-	-	-	-
Selenium	T-Se	0.4	-	-	-	-
Silver	T-Ag	<2	-	-	-	-
Tin	T-Sn	<10	-	-	-	-
Vanadium	T-V	104	-	-	-	-
Zinc	T-Zn	99	-	-	-	-

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	SS 208- D1	SS 208- D2	SS 208- E1	SS 208- E2	SS 208- F1
	98 09 12	98 09 12	98 09 12	98 09 12	98 09 12
<u>Extractables</u>					
EPH (C10-18)	<200	<200	<200	<200	409
EPH (C19-31)	570	8960	1100	1870	7080

Remarks regarding the analyses appear at the beginning of this report.

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

		SS 208- F2	MP73 MW3 E	SS 207-1	SS 207-2	SS 207-3
		98 09 12	98 09 08	98 09 13	98 09 13	98 09 13
Physical Tests						
Moisture	%	8.1	12.5	5.7	7.6	12.8
pH		-	-	7.68	-	-
Total Metals						
Antimony	T-Sb	-	-	142	-	-
Arsenic	T-As	-	-	14	-	-
Barium	T-Ba	-	-	536	-	-
Beryllium	T-Be	-	-	1.0	-	-
Cadmium	T-Cd	-	-	2.6	-	-
Chromium	T-Cr	-	-	26	-	-
Cobalt	T-Co	-	-	7	-	-
Copper	T-Cu	-	-	33	-	-
Lead	T-Pb	-	-	8370	-	-
Mercury	T-Hg	-	-	0.061	-	-
Molybdenum	T-Mo	-	-	<4	-	-
Nickel	T-Ni	-	-	28	-	-
Selenium	T-Se	-	-	0.5	-	-
Silver	T-Ag	-	-	<2	-	-
Tin	T-Sn	-	-	<10	-	-
Vanadium	T-V	-	-	110	-	-
Zinc	T-Zn	-	-	113	-	-
Polycyclic Aromatic Hydrocarbons						
Acenaphthene		-	0.04	-	-	-
Acenaphthylene		-	0.02	-	-	-
Anthracene		-	<0.01	-	-	-
Benz(a)anthracene		-	<0.01	-	-	-
Benzo(a)pyrene		-	<0.01	-	-	-
Benzo(b)fluoranthene		-	<0.01	-	-	-
Benzo(g,h,i)perylene		-	<0.01	-	-	-
Benzo(k)fluoranthene		-	<0.01	-	-	-
Chrysene		-	<0.01	-	-	-
Dibenz(a,h)anthracene		-	<0.01	-	-	-
Fluoranthene		-	<0.01	-	-	-
Fluorene		-	<0.01	-	-	-
Indeno(1,2,3-c,d)pyrene		-	<0.01	-	-	-
Naphthalene		-	<0.01	-	-	-
Phenanthrene		-	0.01	-	-	-
Pyrene		-	0.01	-	-	-

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

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¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	SS 208- F2	MP73 MW3 E	SS 207-1	SS 207-2	SS 207-3
	98 09 12	98 09 08	98 09 13	98 09 13	98 09 13
<u>Extractables</u>					
EPH (C10-18)	<200	3770	<200	<200	<200
EPH (C19-31)	790	<200	<200	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

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**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8785

		SS 207- G1	SS 207- G2	SS 212-1	SS 212-2
		98 09 13	98 09 13	98 09 13	98 09 13
<u>Physical Tests</u>					
Moisture	%	6.6	6.0	34.1	62.3
pH		-	-	5.37	-
<u>Total Metals</u>					
Antimony	T-Sb	-	-	<20	-
Arsenic	T-As	-	-	16	-
Barium	T-Ba	-	-	956	-
Beryllium	T-Be	-	-	1.4	-
Cadmium	T-Cd	-	-	0.4	-
Chromium	T-Cr	-	-	44	-
Cobalt	T-Co	-	-	9	-
Copper	T-Cu	-	-	15	-
Lead	T-Pb	-	-	68	-
Mercury	T-Hg	-	-	0.031	-
Molybdenum	T-Mo	-	-	<4	-
Nickel	T-Ni	-	-	24	-
Selenium	T-Se	-	-	0.5	-
Silver	T-Ag	-	-	<2	-
Tin	T-Sn	-	-	<10	-
Vanadium	T-V	-	-	131	-
Zinc	T-Zn	-	-	73	-

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RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8785

	SS 207- G1	SS 207- G2	SS 212-1	SS 212-2
	98 09 13	98 09 13	98 09 13	98 09 13
<u>Extractables</u>				
EPH (C10-18)	<200	<200	<200	<200
EPH (C19-31)	2780	<200	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

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RESULTS OF ANALYSIS - Oil¹

File No. J8785

		SS 215-4 ² Hydrocar	HC 208-1 ³	HC 208-2 ⁴	HC 208-3 ⁵	HC 208-4
		98 09 14	98 09 12	98 09 12	98 09 12	98 09 12
Physical Tests						
Flashpoint	Degrees C.	>61	>61	>61	>61	-
Moisture	%	<0.1	<0.1	<0.1	<0.1	-
Total Metals						
Arsenic	T-As	4	0.30	31	0.12	<4
Cadmium	T-Cd	<0.3	14.0	<0.3	<0.3	<1
Chromium	T-Cr	6	<2	11	<2	<1
Lead	T-Pb	25	17	114	5	<1
Polycyclic Aromatic Hydrocarbons						
Acenaphthene		0.11	-	-	-	-
Acenaphthylene		<0.05	-	-	-	-
Anthracene		<0.05	-	-	-	-
Benz(a)anthracene		0.06	-	-	-	-
Benzo(a)pyrene		<0.05	-	-	-	-
Benzo(b)fluoranthene		0.24	-	-	-	-
Benzo(g,h,i)perylene		0.10	-	-	-	-
Benzo(k)fluoranthene		<0.05	-	-	-	-
Chrysene		0.66	-	-	-	-
Dibenz(a,h)anthracene		<0.05	-	-	-	-
Fluoranthene		<0.05	-	-	-	-
Fluorene		<0.05	-	-	-	-
Indeno(1,2,3-c,d)pyrene		<0.05	-	-	-	-
Naphthalene		0.16	-	-	-	-
Phenanthrene		0.09	-	-	-	-
Pyrene		0.52	-	-	-	-

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per litre except where noted.

²Results are expressed as milligrams per dry kilogram except where noted.

³Results are expressed as milligrams per dry kilogram except where noted.

⁴Results are expressed as milligrams per dry kilogram except where noted.

⁵Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Oil¹**

File No. J8785

	SS 215-4 ² Hydrocar	HC 208-1 ³	HC 208-2 ⁴	HC 208-3 ⁵	HC 208-4
	98 09 14	98 09 12	98 09 12	98 09 12	98 09 12
<u>Polychlorinated Biphenyls</u>					
Total Polychlorinated Biphenyls	-	-	-	-	<2
<u>Extractables</u>					
EPH (C10-18)	5840	17200	125000	33900	-
EPH (C19-31)	46900	373000	206000	450000	-
<u>Organic Parameters</u>					
Total Organic Halide	-	-	-	-	<300
<u>Surrogate Standards</u>					
d10-Acenaphthene (SS)	% 100	-	-	-	-
d12-Chrysene (SS)	% 69	-	-	-	-
d8-Naphthalene (SS)	% 90	-	-	-	-
d12-Perylene (SS)	% 87	-	-	-	-
d10-Phenanthrene (SS)	% 86	-	-	-	-

Remarks regarding the analyses appear at the beginning of this report.

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²Results are expressed as milligrams per dry kilogram except where noted.

³Results are expressed as milligrams per dry kilogram except where noted.

⁴Results are expressed as milligrams per dry kilogram except where noted.

⁵Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Oil¹**

File No. J8785

	HC 208-5	HC 208-6	MP 124.5
			Crude
			Oil Tar
	98 09 12	98 09 12	98 09 12

Physical Tests

Flashpoint	Degrees C.	-	-	>61
Moisture	%	-	-	<0.1

Total Metals

Arsenic	T-As	<4	<4	39
Cadmium	T-Cd	<1	<1	<0.3
Chromium	T-Cr	<1	<1	7
Lead	T-Pb	<1	61	41

Polycyclic Aromatic Hydrocarbons

Acenaphthene	-	-	2.0
Acenaphthylene	-	-	0.6
Anthracene	-	-	<0.2
Benz(a)anthracene	-	-	0.3
Benzo(a)pyrene	-	-	<0.2
Benzo(b)fluoranthene	-	-	1.0
Benzo(g,h,i)perylene	-	-	0.5
Benzo(k)fluoranthene	-	-	<0.2
Chrysene	-	-	2.3
Dibenz(a,h)anthracene	-	-	<0.1
Fluoranthene	-	-	1.1
Fluorene	-	-	<0.1
Indeno(1,2,3-c,d)pyrene	-	-	<0.1
Naphthalene	-	-	0.1
Phenanthrene	-	-	<0.7
Pyrene	-	-	4.8

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per litre except where noted.

**RESULTS OF ANALYSIS - Oil¹**

File No. J8785

	HC 208-5	HC 208-6	MP 124.5
	98 09 12	98 09 12	Crude Oil Tar 98 09 12
<u>Polychlorinated Biphenyls</u>			
Total Polychlorinated Biphenyls	<2	<2	-
<u>Extractables</u>			
EPH (C10-18)	-	-	67800
EPH (C19-31)	-	-	214000
<u>Organic Parameters</u>			
Total Organic Halide	<300	<300	-
<u>Surrogate Standards</u>			
d10-Acenaphthene (SS)	% -	-	96
d12-Chrysene (SS)	% -	-	72
d8-Naphthalene (SS)	% -	-	72
d12-Perylene (SS)	% -	-	69
d10-Phenanthrene (SS)	% -	-	68

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per litre except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8785

Sediment/Soil ¹	SS 215-6	SS 215-6
----------------------------	----------	----------

98 09 14	QC # 133891
----------	----------------

Physical Tests

Moisture %	20.0	17.1
------------	------	------

Extractables

EPH (C10-18)	<200	<200
--------------	------	------

EPH (C19-31)	<200	<200
--------------	------	------

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8785

Sediment/Soil ¹	SS 215- B2	SS 215- B2
	98 09 14	QC # 133892

Physical Tests

Moisture %	62.9	65.9
------------	------	------

Extractables

EPH (C10-18)	<200	<200
EPH (C19-31)	561	490

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8785

Sediment/Soil ¹	SS 208-2	SS 208-2
----------------------------	----------	----------

98 09 12	QC # 133893
----------	----------------

Physical Tests

Moisture %	27.8	22.7
------------	------	------

Extractables

EPH (C10-18)	947	907
EPH (C19-31)	2110	1880

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8785

Sediment/Soil ¹	SS 208-10	SS 208-10
	98 09 13	QC # 133894

Physical Tests

Moisture %	25.4	23.2
------------	------	------

Extractables

EPH (C10-18)	<200	<200
EPH (C19-31)	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8785

Sediment/Soil ¹	SS 208- C1	SS 208- C1
	98 09 12	QC # 133895

Physical Tests

Moisture %

6.1

6.6

Extractables

EPH (C10-18)

329

235

EPH (C19-31)

4490

5610

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8785

Sediment/Soil ¹	SS 208- F1	SS 208- F1
	98 09 12	QC # 133896

Physical Tests

Moisture %	20.0	14.7
------------	------	------

Extractables

EPH (C10-18)	409	390
EPH (C19-31)	7080	5600

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8785

Sediment/Soil ¹	SS 207- G2	SS 207- G2
	98 09 13	QC # 133904

Physical Tests

Moisture %	6.0	5.9
------------	-----	-----

Extractables

EPH (C10-18)	<200	<200
EPH (C19-31)	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

EPH = Extractable Petroleum Hydrocarbons.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 2 - METHODOLOGY

File No. J8785

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows:

Moisture

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of three hours.

pH in Soil

This analysis is carried out in accordance with procedures described in "Soil Sampling and Methods of Analysis" (CSSS). The procedure involves mixing the air-dried sample with deionized/distilled water. The pH of the solution is then measured using a standard pH probe. A one to two ratio of sediment to water is used for mineral soils and a one to ten ratio is used for highly organic soils.

Metals in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3050B or Method 3051, published by the United States Environmental Protection Agency (EPA). The sample is manually homogenized and a representative subsample of the wet material is weighed. The sample is then digested by either hotplate or microwave oven using a 1:1 ratio of nitric acid and hydrochloric acid. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000A) and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Extractable Hydrocarbons in Sediment/Soil

This analysis is carried out using procedures adapted from U.S. EPA Methods 3500/8015 (Publ. # SW-846 3rd ed., Washington, DC 20460) and British Columbia Ministry of Environment, Lands and Parks Method for "Extractable Petroleum Hydrocarbons in Soil by GC/FID" (January 1996) The procedure involves a hexane/acetone solvent extraction followed by



analysis of the extract by capillary column gas chromatography with flame ionization detection. Results are not corrected for Polycyclic Aromatic Hydrocarbons (PAHs) for Extractable Petroleum Hydrocarbon (LEPH/HEPH) purposes.

Polycyclic Aromatic Hydrocarbons in Sediment/Soil

This analysis is carried out using a procedure adapted by ASL from U.S. EPA Methods 3500, 3630, and 8270 (Publ. #SW-846 3rd ed., Washington, DC 20460). The procedure involves a microwave assisted extraction with dichloromethane followed by a clean-up using silica gel column chromatography. This clean-up procedure has been found to effectively remove aliphatic and heterocyclic hydrocarbons which could potentially interfere with the analysis. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection.

Flashpoint of Oil

This analysis is carried out in accordance with ASTM (American Society for Testing and Materials) Method D93 (Pensky-Marten closed cup). The procedure involves heating a subsample at a slow constant rate with continual stirring in a closed cup. A small flame is directed into the cup at regular intervals. The flashpoint is the lowest temperature at which the application of the test flame ignites the vapour above the sample.

Note: Flashpoint analysis is subcontracted.

Metals in Oil, Grease, Paint and Product Mixtures

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3051, published by the United States Environmental Protection Agency (EPA). The procedures involve a digestion using a 1:1 ratio of nitric acid and hydrochloric acid combined with microwave heating. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000A) and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.



Polychlorinated Biphenyls in Oil

This analysis is carried out in accordance with procedures that are consistent with the requirements of the appropriate regulatory agencies and adapted from the American Society for Testing Materials (ASTM), Method D4059-86. Specifically, a subsample is diluted with hexane, partitioned with florisil and analysed for PCB using a gas chromatograph equipped with an electron capture detector.

Total Organic Halide (TOX) in Oil

This analysis is carried out using a procedure adapted from U.S. EPA Method 9020 (Publ. # SW-846, 3rd ed., Washington, DC 20460). The procedure involves diluting a subsample with xylene and extracting with dilute sulphuric acid to remove inorganic halogen. The extract is then analysed with a TOX analyser.

Note: TOX analysis is subcontracted.

End of Report



APPENDIX

**HYDROCARBON
DISTRIBUTION
REPORTS**

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--4 SS 212- B2

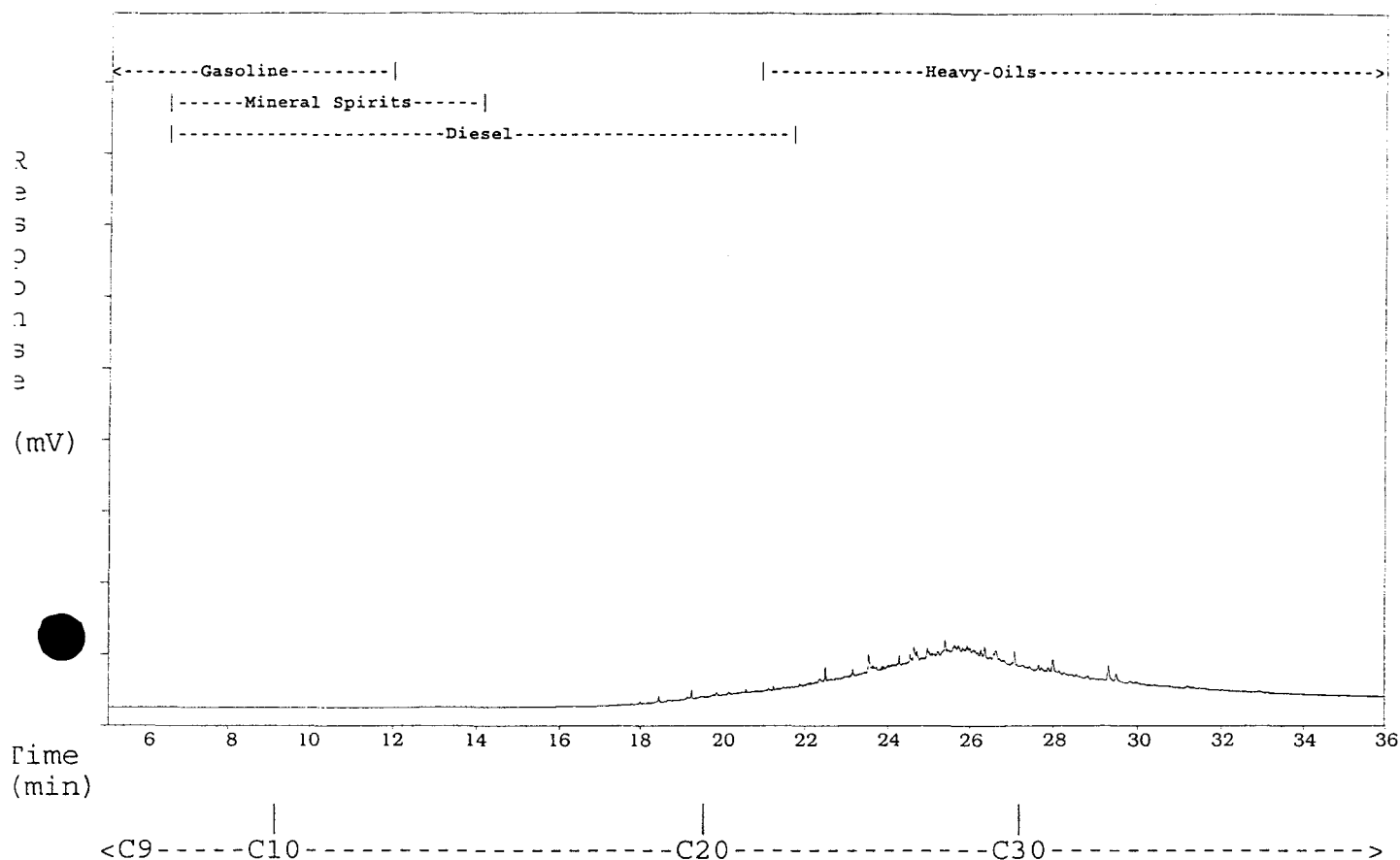
98 09 13

Sample acquired: SEP 30, 1998 19:19:52

Sequence File: TEH30SEP

File Name: C:\TEH2\30SEP\TEH30SEP.13R , Sample Name: J8785-T--4

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--4* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	3.9
C20-C30 (beg-nC20 to beg-nC31)	47.1
C31-C40 (beg-nC31 to beg-nC41)	49.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--5 SS 212- B3 98 09 13

Sample acquired: OCT 1, 1998 21:46:38

Sequence File: TEH1OCT

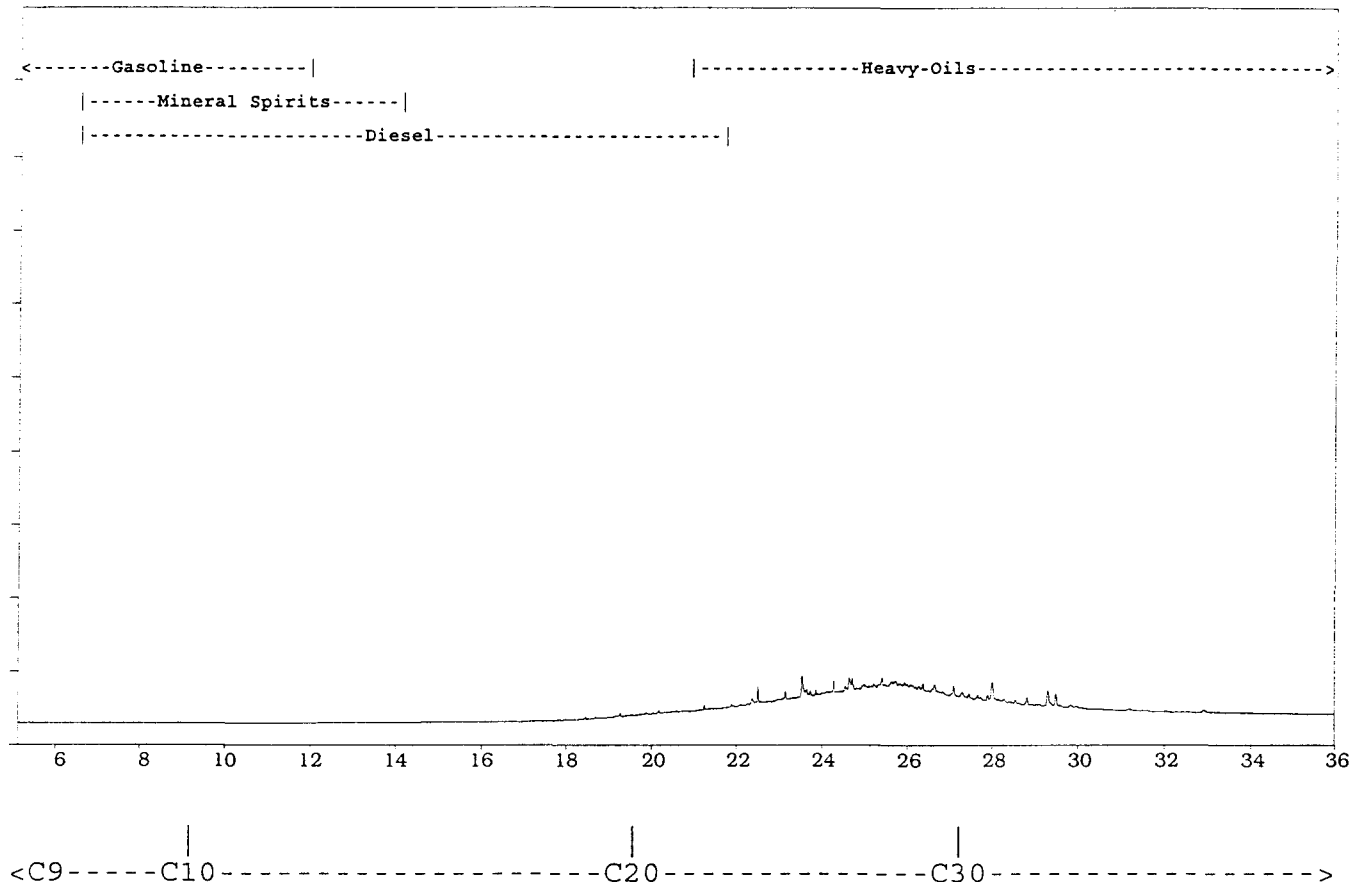
File Name: C:\TEH2\1OCT\TEH1OCT.23R , Sample Name: J8785-T--5

Chromatogram Scale: 50.0 millivolts

R
e
s
p
o
n
s
e

(mV)

Time
(min)



ASL Sample ID: J8785-T--5* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	3.7
C20-C30 (beg-nC20 to beg-nC31)	50.9
C31-C40 (beg-nC31 to beg-nC41)	45.4

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

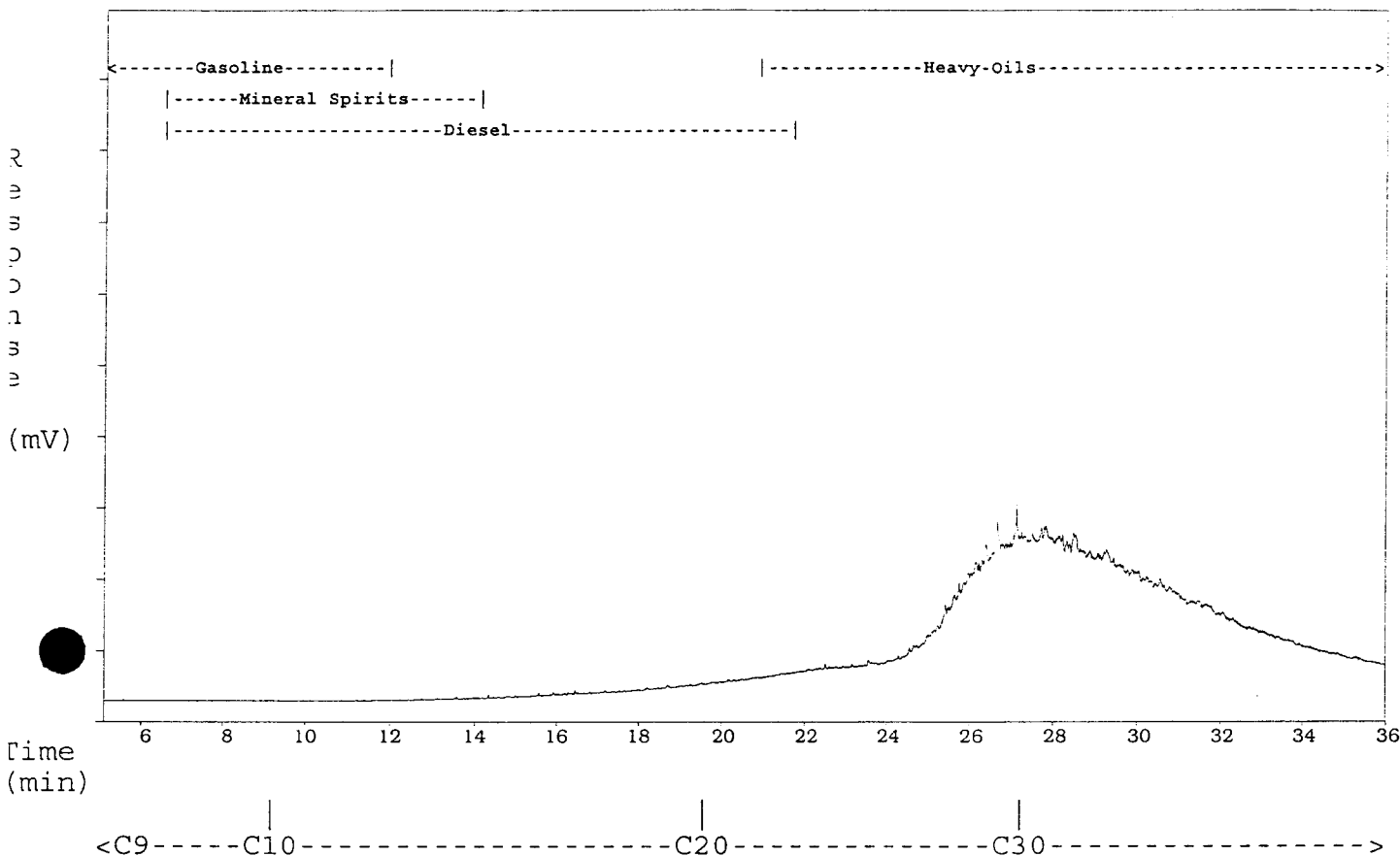
SAMPLE NAME: J8785-T--7 SS 212- C2 98 09 13

Sample acquired: OCT 1, 1998 22:40:17

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.25R , Sample Name: J8785-T--7

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--7* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	2.8
C20-C30 (beg-nC20 to beg-nC31)	17.0
C31-C40 (beg-nC31 to beg-nC41)	80.2

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--9 SS 216-2

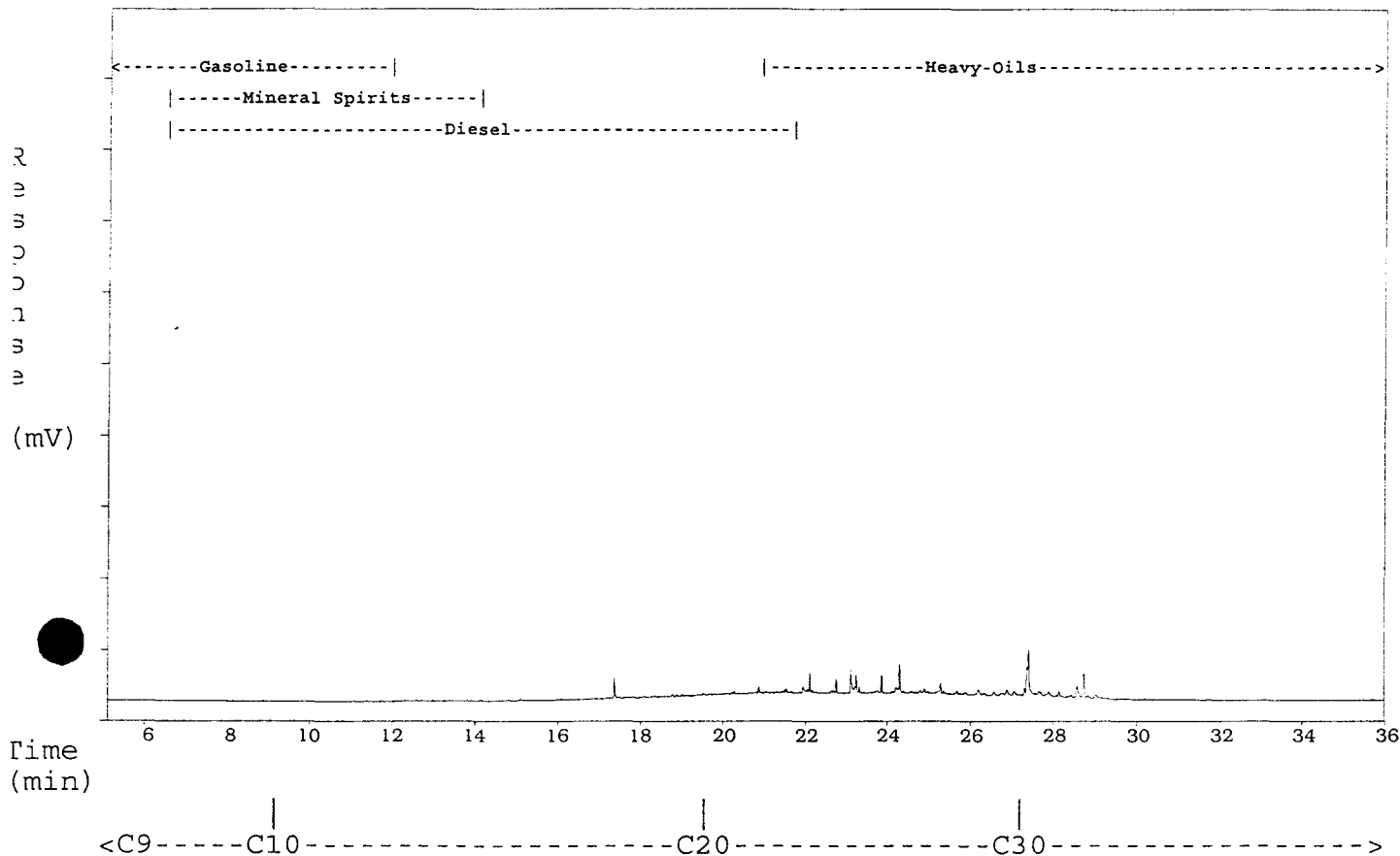
98 09 14

Sample acquired: OCT 1, 1998 02:36:04

Sequence File: TEHSEP30

File Name: C:\TEH\SEP30\TEHSEP30.35R , Sample Name: J8785-T--9

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--9* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	15.8
C20-C30 (beg-nC20 to beg-nC31)	58.3
C31-C40 (beg-nC31 to beg-nC41)	25.8

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

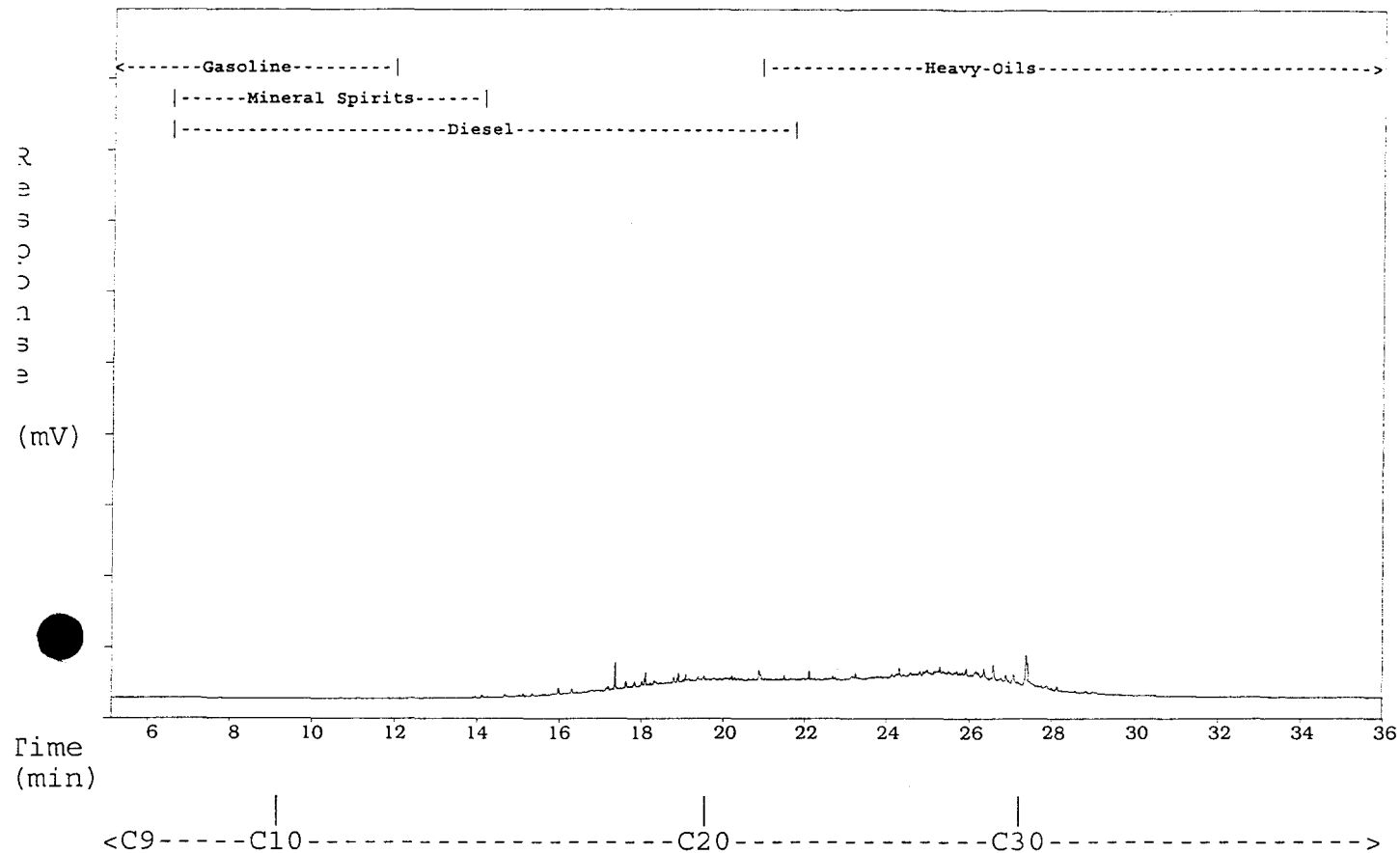
SAMPLE NAME: J8785-T--20 SS 215- B1 98 09 14

Sample acquired: OCT 1, 1998 07:04:08

Sequence File: TEHSEP30

File Name: C:\TEH\SEP30\TEHSEP30.45R , Sample Name: J8785-T--20

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--20* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	24.1
C20-C30 (beg-nC20 to beg-nC31)	54.4
C31-C40 (beg-nC31 to beg-nC41)	21.4

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--21 SS 215- B2

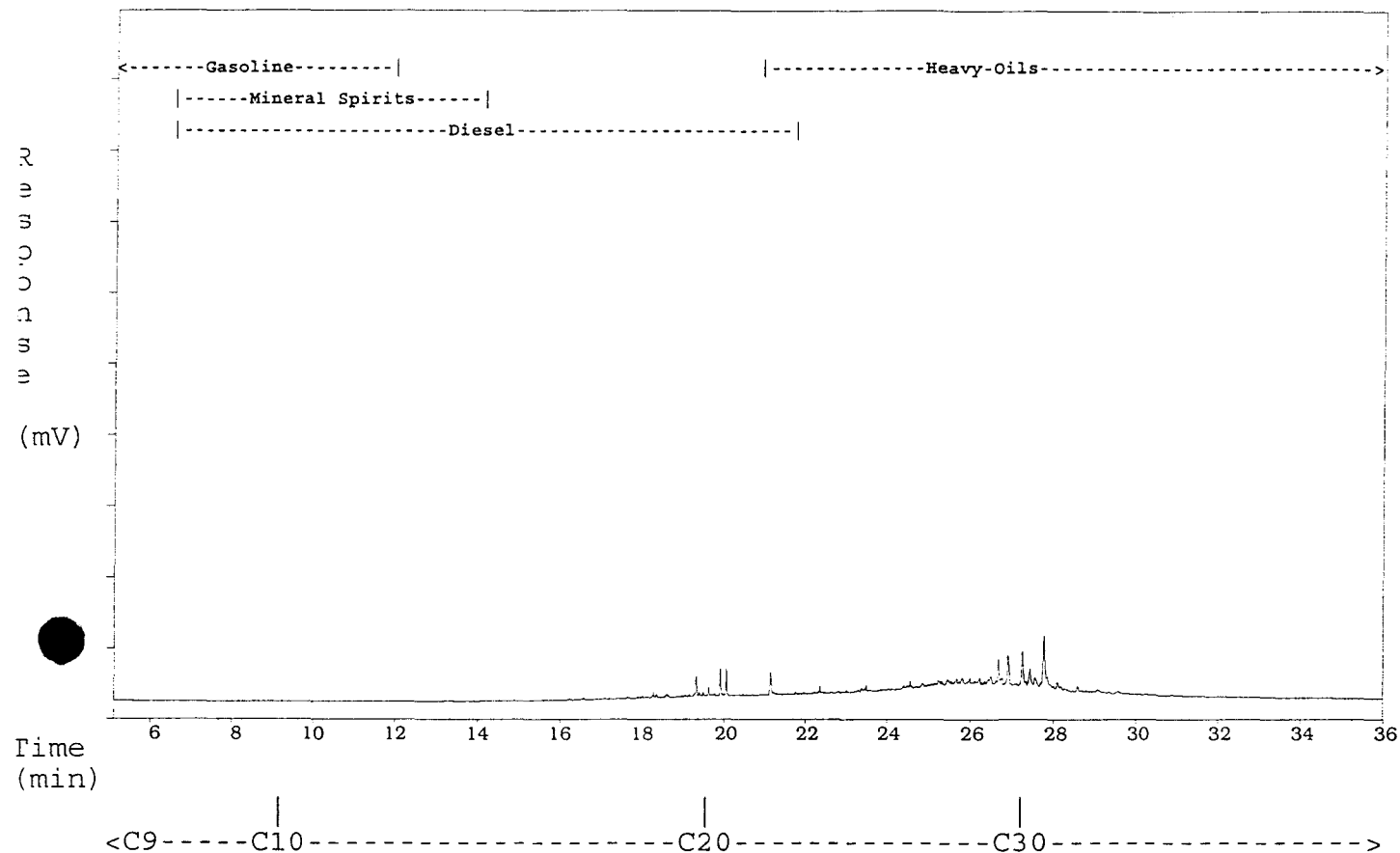
98 09 14

Sample acquired: OCT 1, 1998 07:04:08

Sequence File: TEHSEP30

File Name: C:\TEH\SEP30\TEHSEP30.46R , Sample Name: J8785-T--21

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--21* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	10.4
C20-C30 (beg-nC20 to beg-nC31)	41.3
C31-C40 (beg-nC31 to beg-nC41)	48.3

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

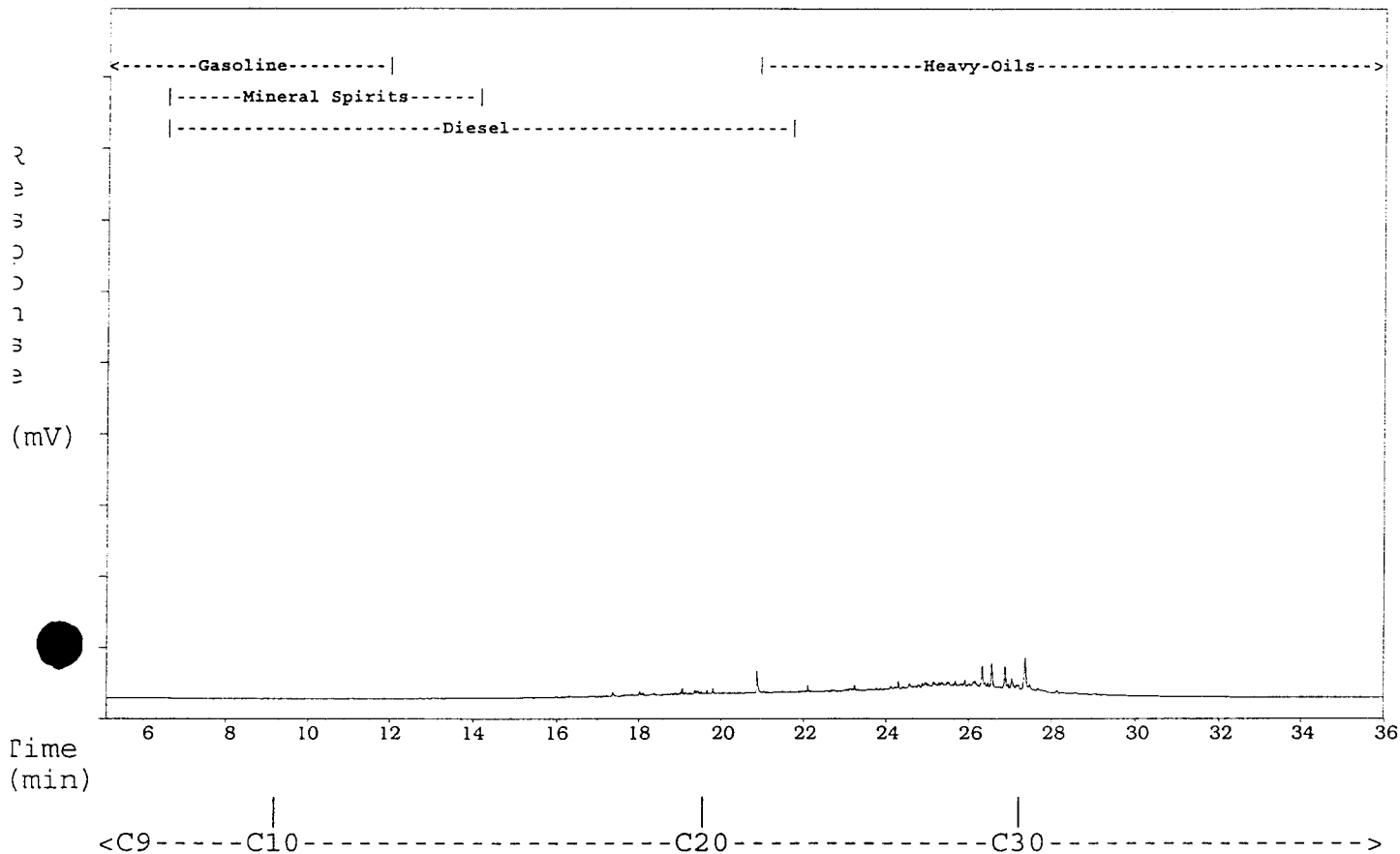
SAMPLE NAME: J8785 - 21 SS 215- B2 LRep

Sample acquired: OCT 1, 1998 07:57:18

Sequence File: TEHSEP30

File Name: C:\TEH\SEP30\TEHSEP30.47R , Sample Name: QC-T--133892#J8785 21DU: 98 09 14

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: QC-T--133892#J8785 21DUP* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	13.4
C20-C30 (beg-nC20 to beg-nC31)	52.7
C31-C40 (beg-nC31 to beg-nC41)	33.9

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--31 SS 208-1

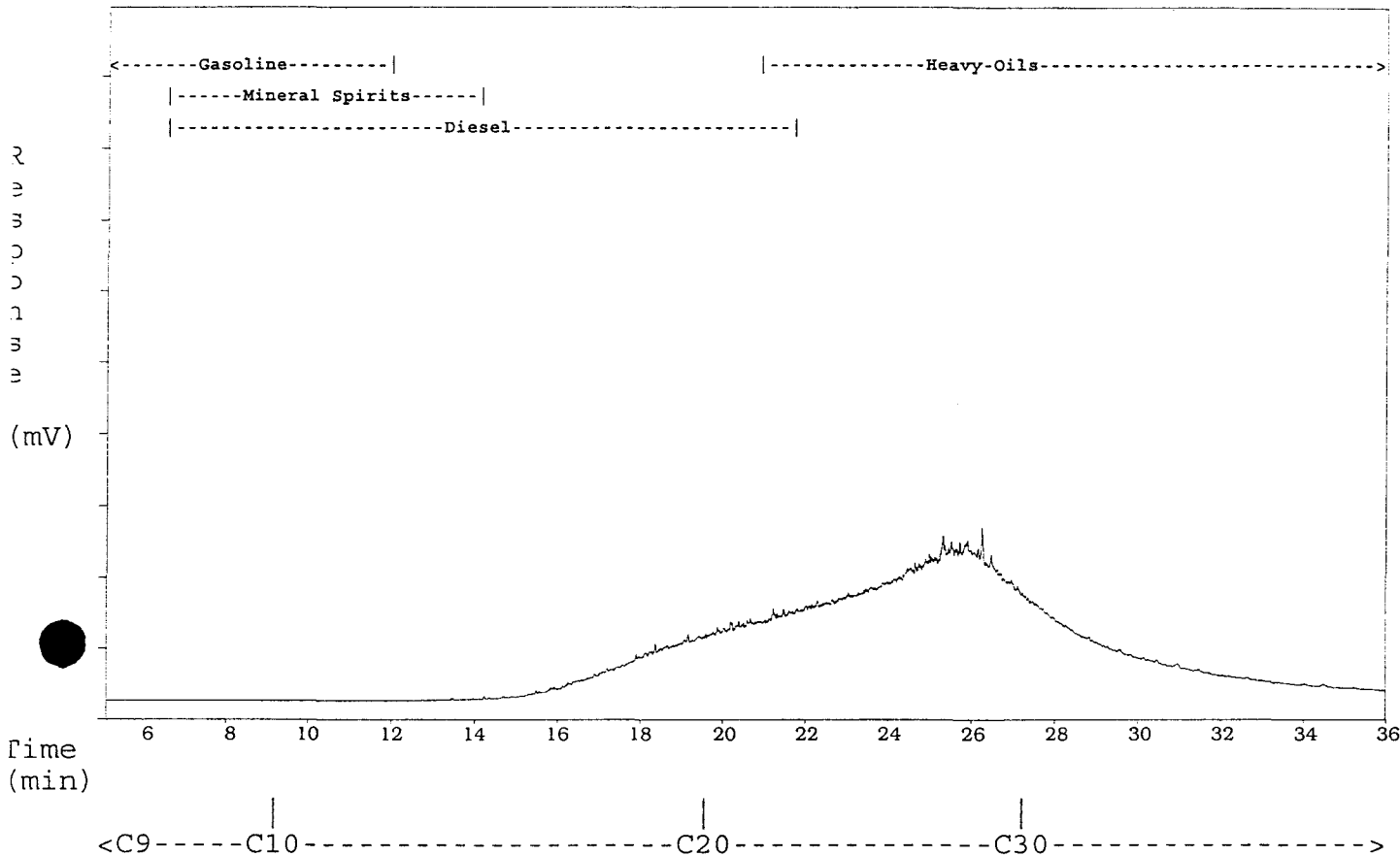
98 09 12

Sample acquired: OCT 1, 1998 08:50:33

Sequence File: TEHSEP30

File Name: C:\TEH\SEP30\TEHSEP30.50R , Sample Name: J8785-T--31

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--31* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	13.7
C20-C30 (beg-nC20 to beg-nC31)	51.4
C31-C40 (beg-nC31 to beg-nC41)	34.9

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

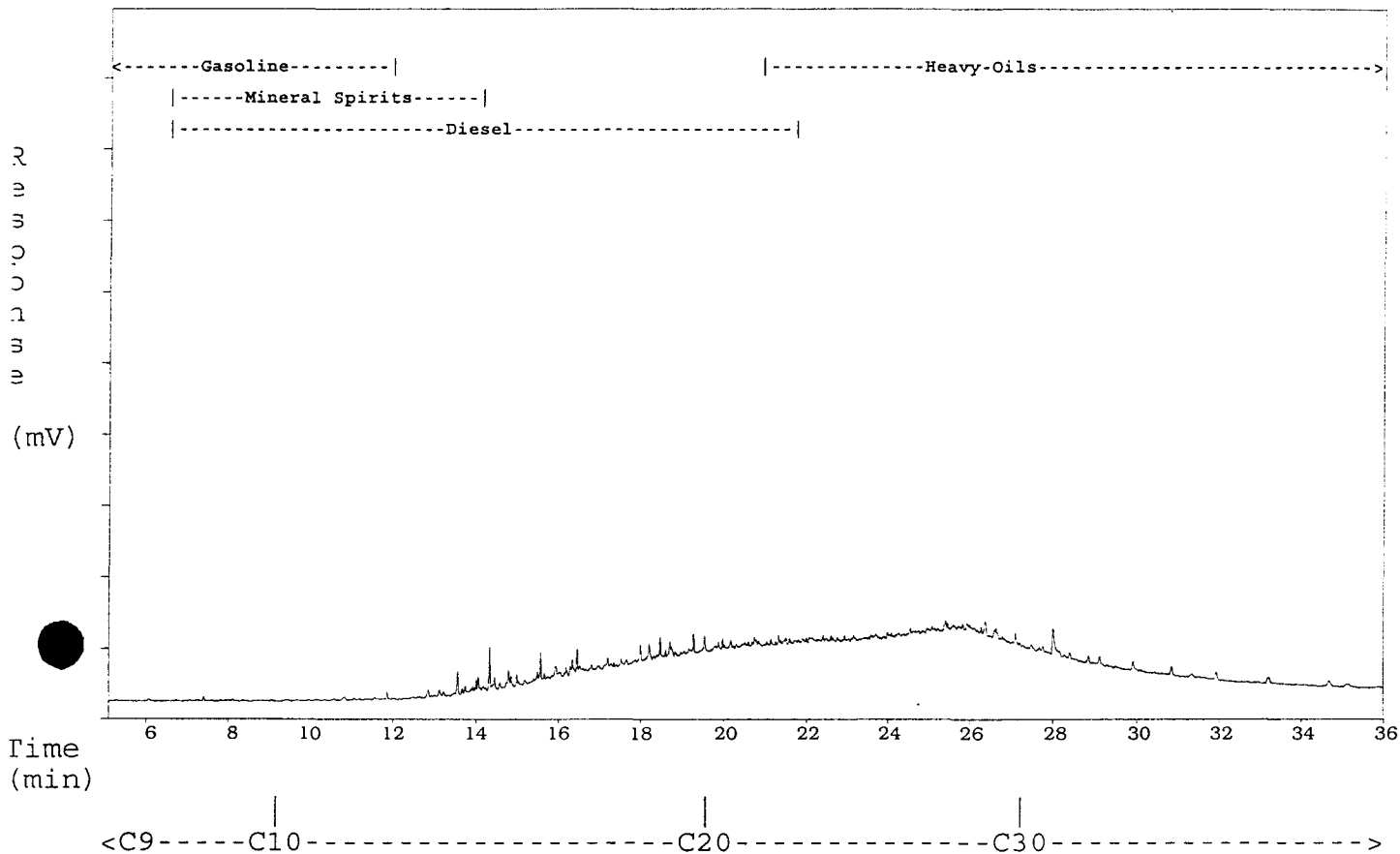
SAMPLE NAME: J8785-T--32 SS 208-2 98 09 12

Sample acquired: OCT 1, 1998 15:27:25

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.09R , Sample Name: J8785-T--32

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--32* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	26.1
C20-C30 (beg-nC20 to beg-nC31)	43.4
C31-C40 (beg-nC31 to beg-nC41)	30.3

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

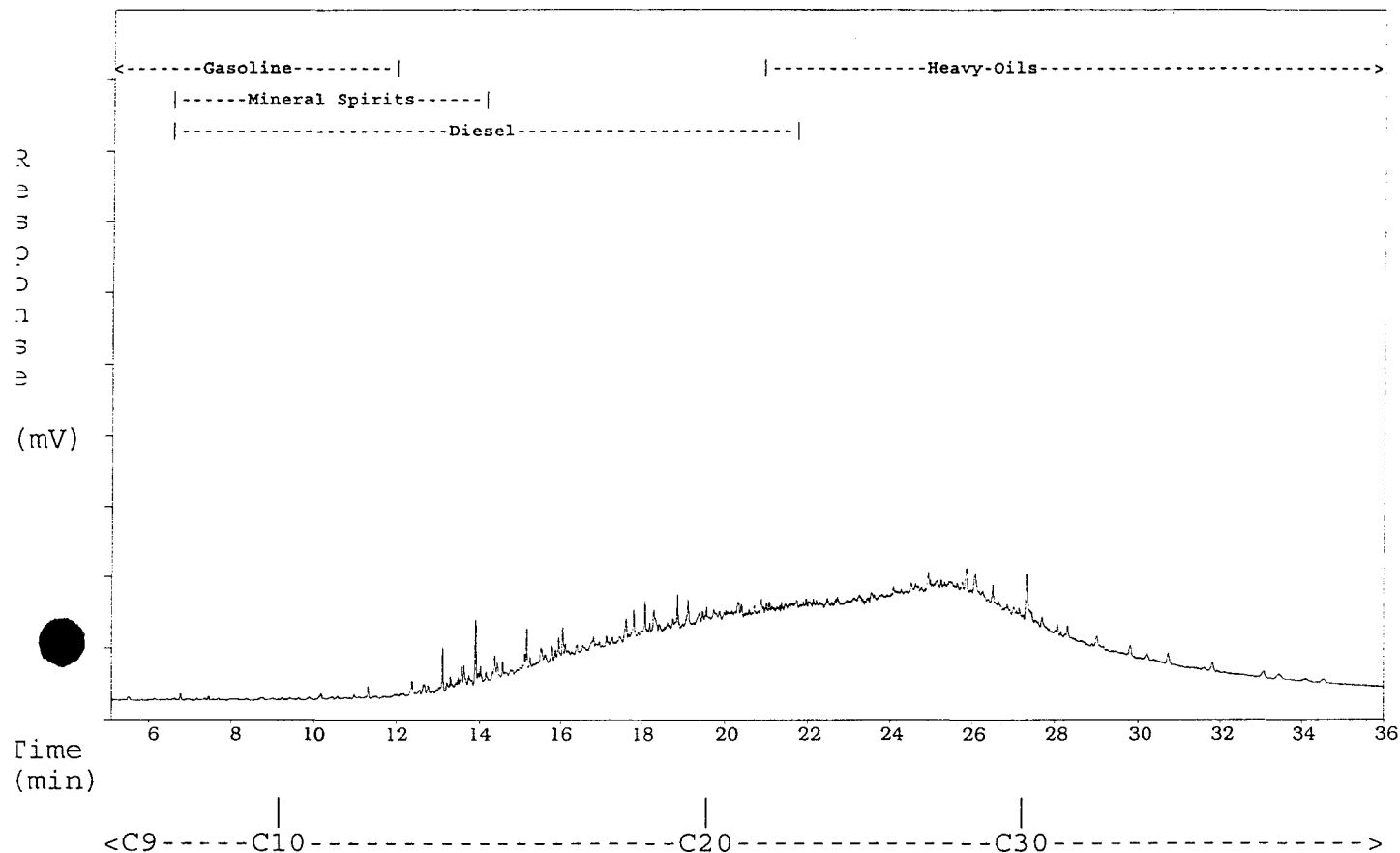
SAMPLE NAME: J8785 - 32 SS 208-2 LREP 98 09 12

Sample acquired: OCT 1, 1998 15:27:25

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.10R , Sample Name: QC-T--133893#J8785 32DP

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: QC-T--133893#J8785 32DP* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	27.8
C20-C30 (beg-nC20 to beg-nC31)	43.7
C31-C40 (beg-nC31 to beg-nC41)	28.3

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--33 SS 208-3

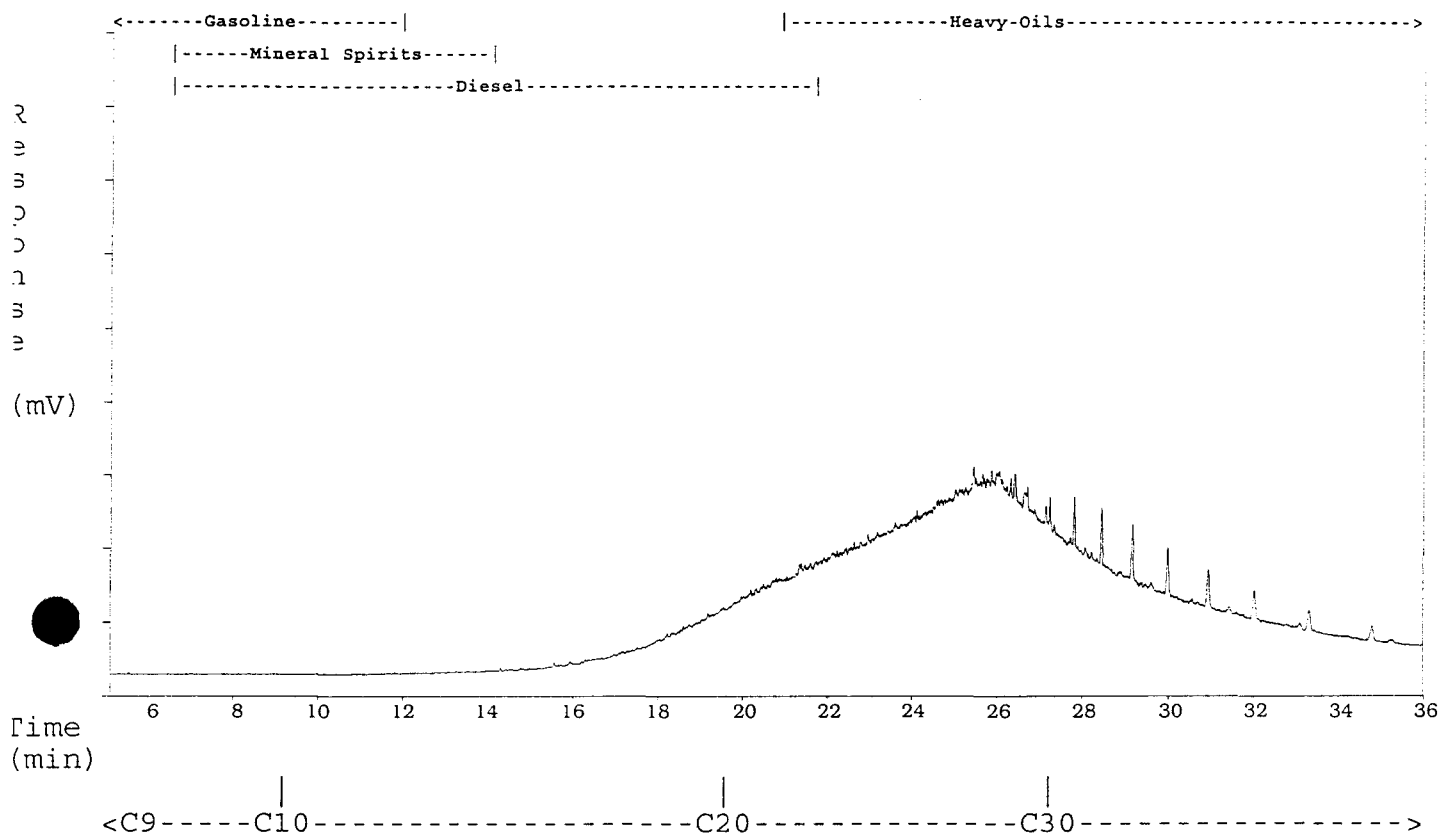
98 09 12

Sample acquired: OCT 1, 1998 16:23:28

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.11R , Sample Name: J8785-T--33

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--33*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

C9	(beg-nC9 to beg-nC10)	0.0
C10-C19	(beg-nC10 to beg-nC20)	8.5
C20-C30	(beg-nC20 to beg-nC31)	46.9
C31-C40	(beg-nC31 to beg-nC41)	44.5

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--34

SS_208-4

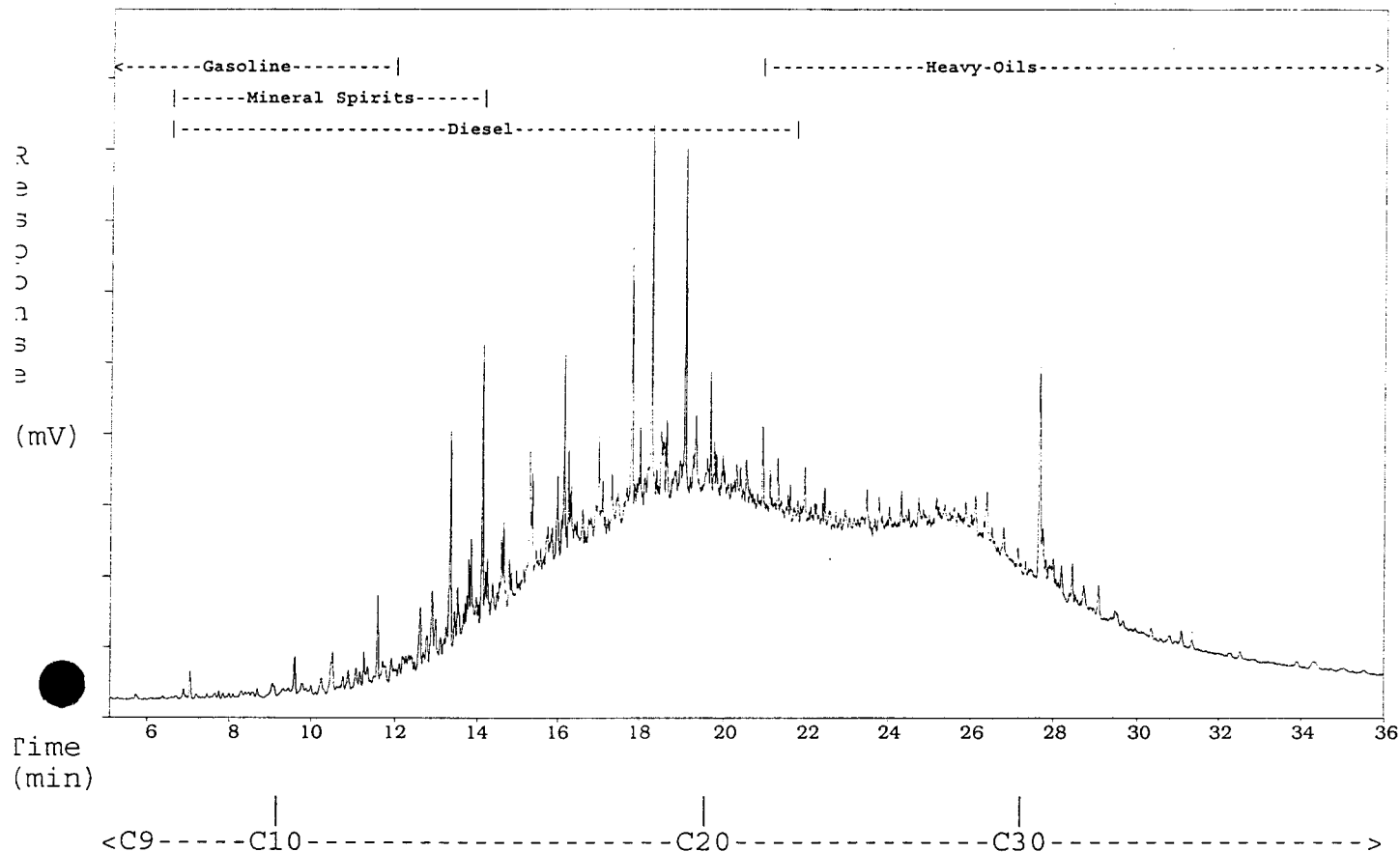
98 09 12

Sample acquired: OCT 2, 1998 23:57:31

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.23R , Sample Name: J8785-T--34#R

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--34#R*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.3
C10-C19 (beg-nC10 to beg-nC20)	42.6
C20-C30 (beg-nC20 to beg-nC31)	35.8
C31-C40 (beg-nC31 to beg-nC41)	21.3

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

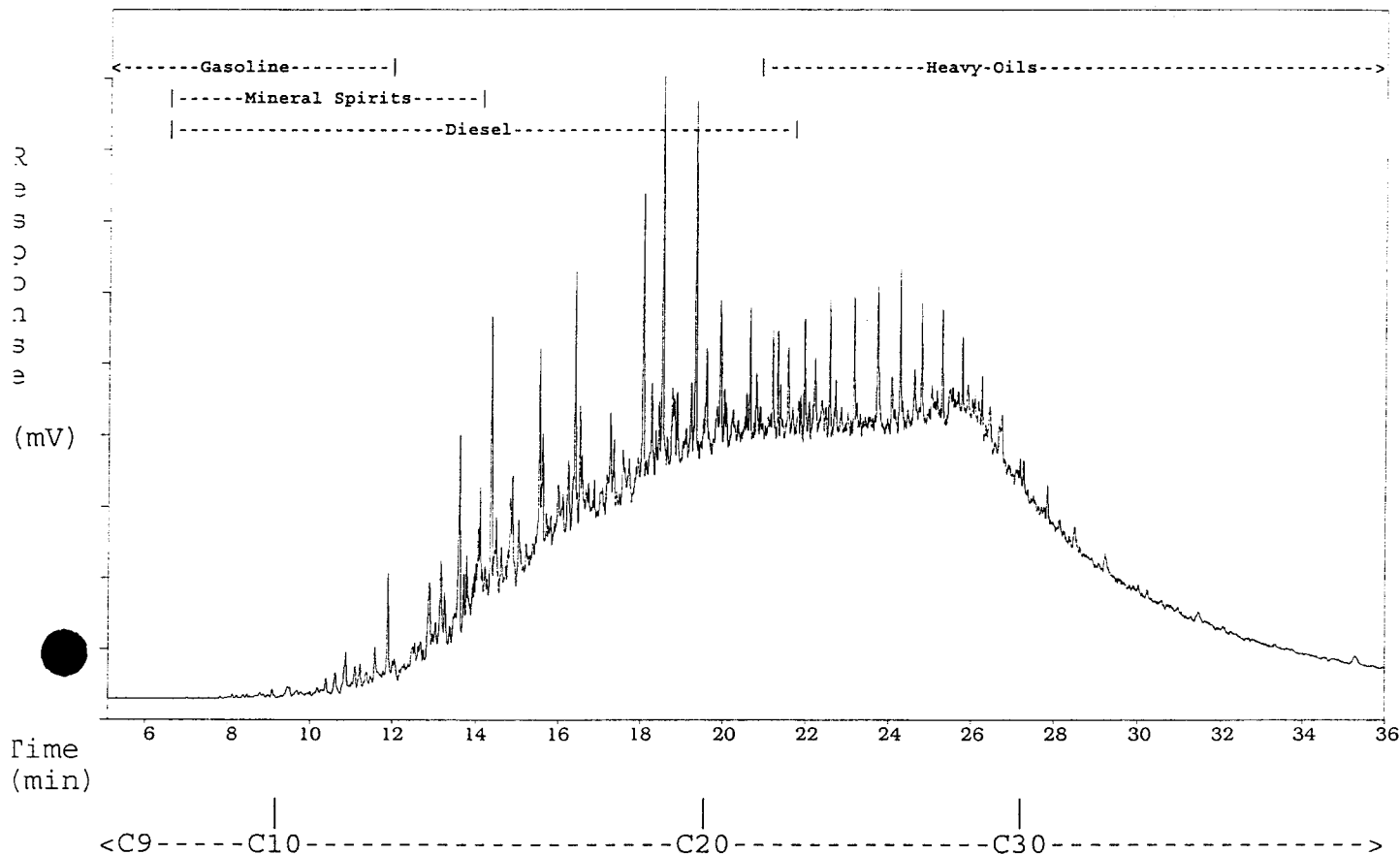
SAMPLE NAME: J8785-T--35 SS 208-5 98 09 12

Sample acquired: OCT 1, 1998 23:33:59

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.27R , Sample Name: J8785-T--35

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--35*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	35.0
C20-C30 (beg-nC20 to beg-nC31)	40.4
C31-C40 (beg-nC31 to beg-nC41)	24.5

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--37

SS_208-7

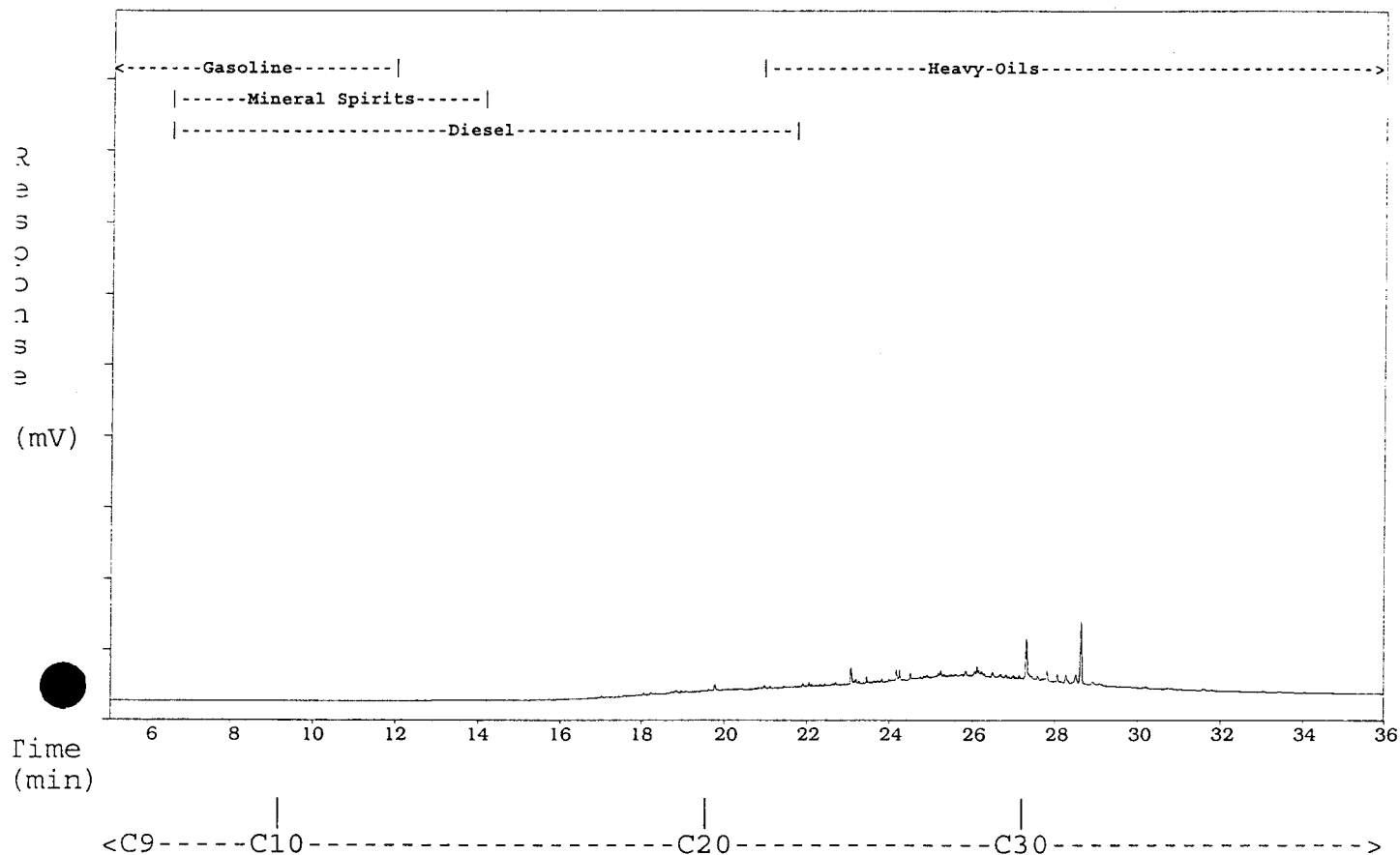
98 09 12

Sample acquired: OCT 2, 1998 23:57:31

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.24R , Sample Name: J8785-T--37#R

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--37#R*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	8.7
C20-C30 (beg-nC20 to beg-nC31)	44.1
C31-C40 (beg-nC31 to beg-nC41)	47.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

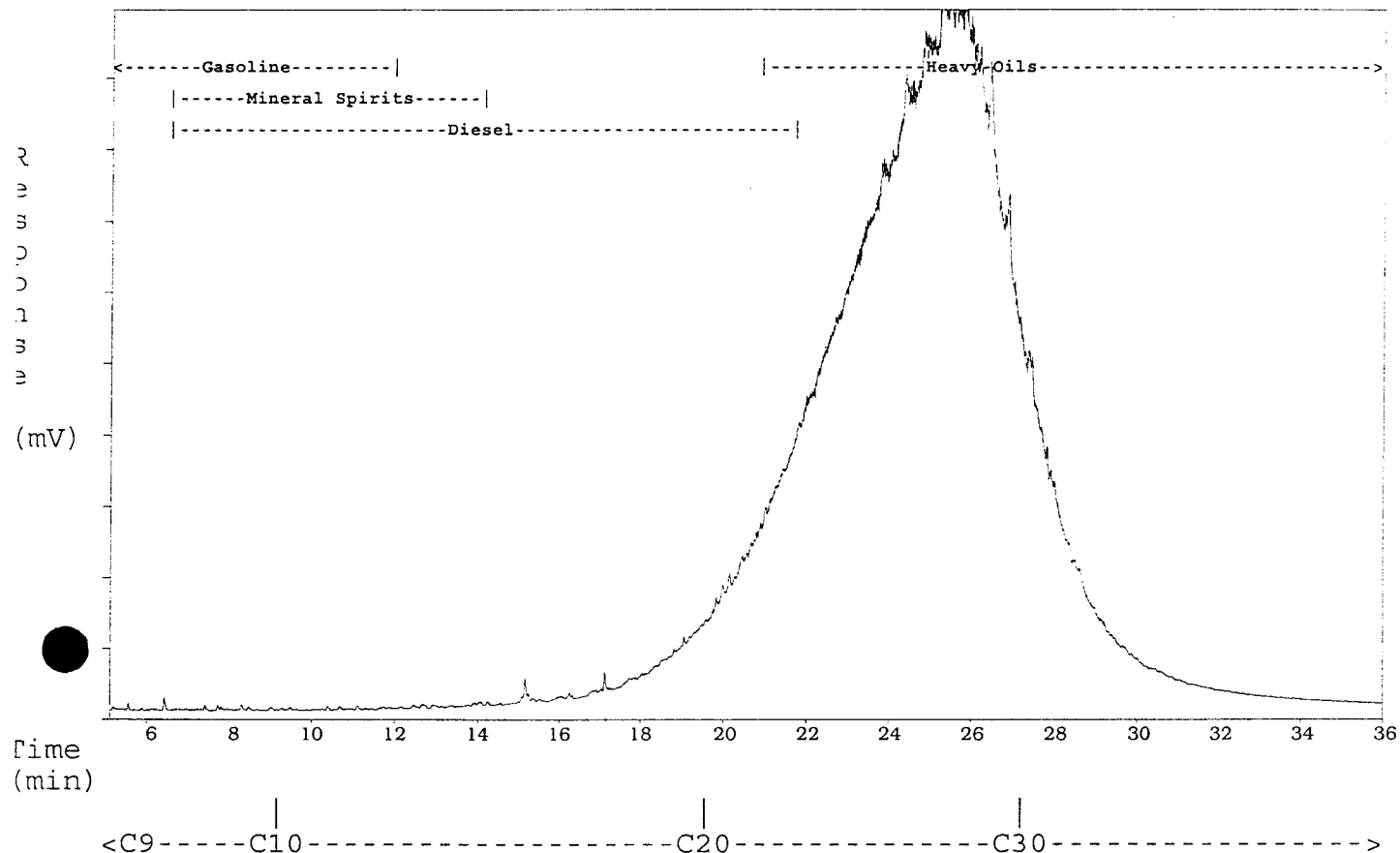
SAMPLE NAME: J8785-T--38 SS 208-8 98 09 12

Sample acquired: OCT 2, 1998 01:21:04

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.32R , Sample Name: J8785-T--38

Chromatogram Scale: 150.0 millivolts



ASL Sample ID: J8785-T--38* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.1
C10-C19 (beg-nC10 to beg-nC20)	5.2
C20-C30 (beg-nC20 to beg-nC31)	63.0
C31-C40 (beg-nC31 to beg-nC41)	31.8

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

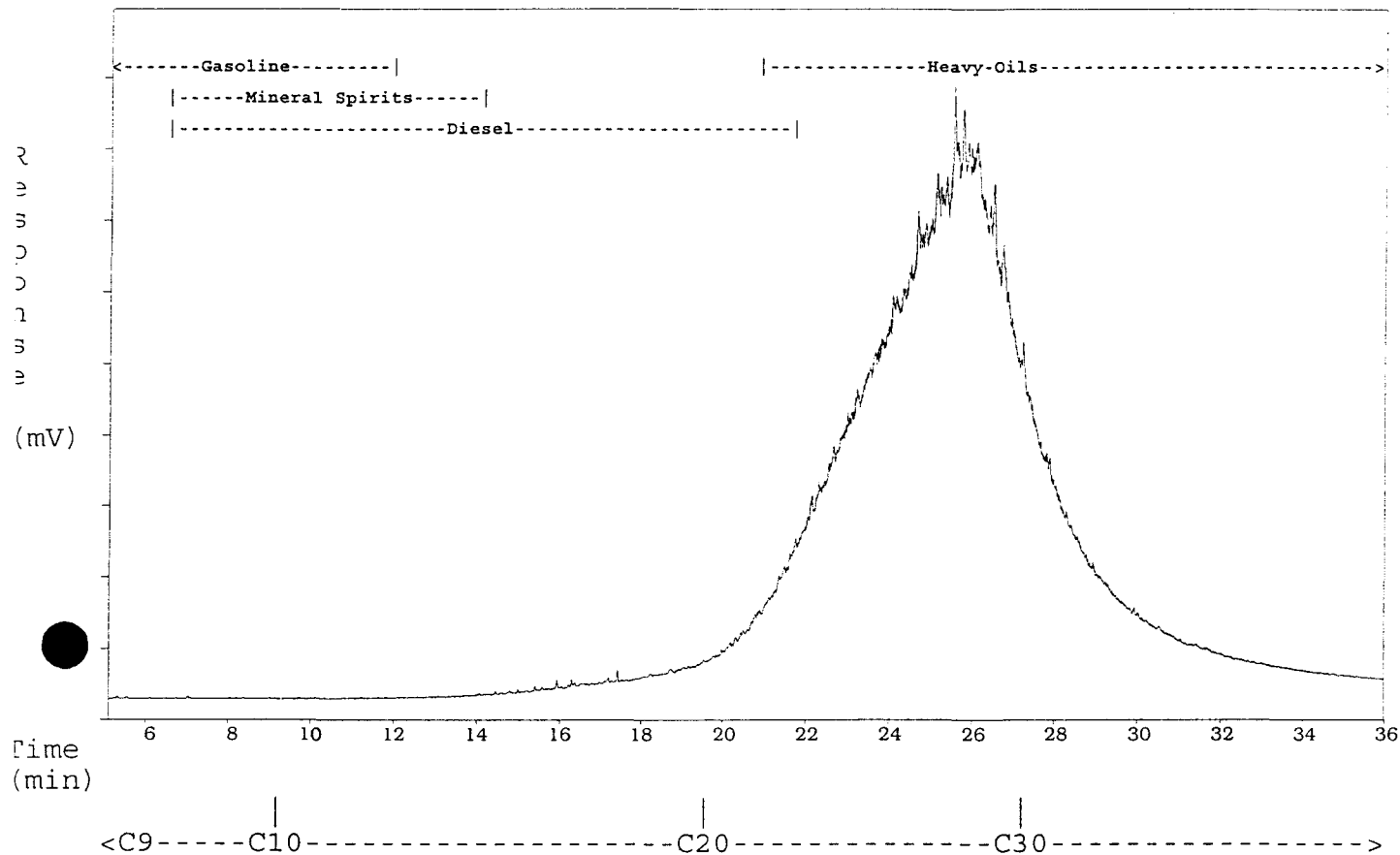
SAMPLE NAME: J8785-T--39 SS 208-9 98 09 12

Sample acquired: OCT 2, 1998 02:14:39

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.33R , Sample Name: J8785-T--39

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--39* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	3.2
C20-C30 (beg-nC20 to beg-nC31)	55.3
C31-C40 (beg-nC31 to beg-nC41)	41.4

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

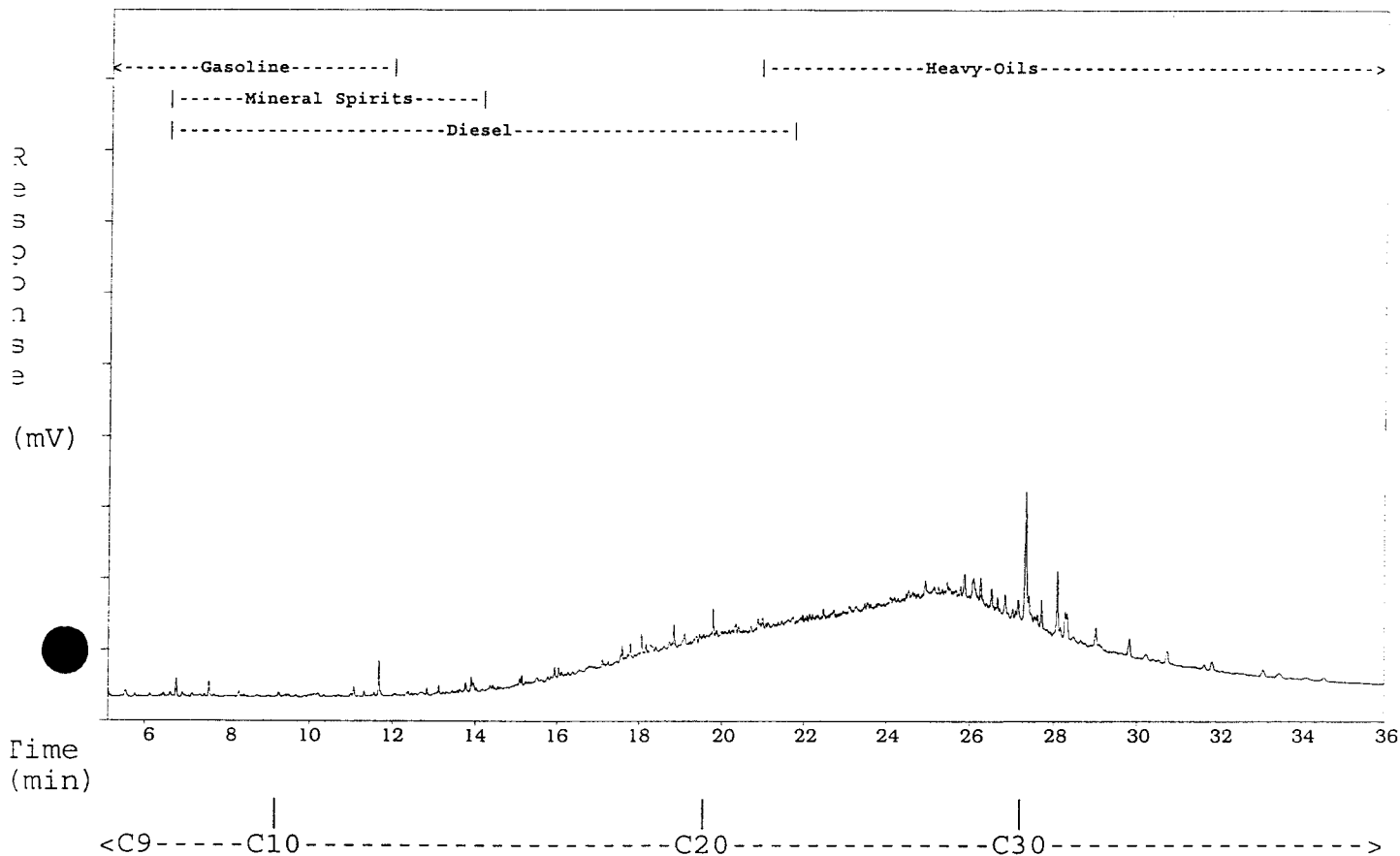
SAMPLE NAME: J8785-T--43 SS 208- 13 98 09 13

Sample acquired: OCT 2, 1998 04:54:52

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.40R , Sample Name: J8785-T--43

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--43* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.4
C10-C19 (beg-nC10 to beg-nC20)	18.8
C20-C30 (beg-nC20 to beg-nC31)	45.6
C31-C40 (beg-nC31 to beg-nC41)	35.1

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--45

SS,208- 15

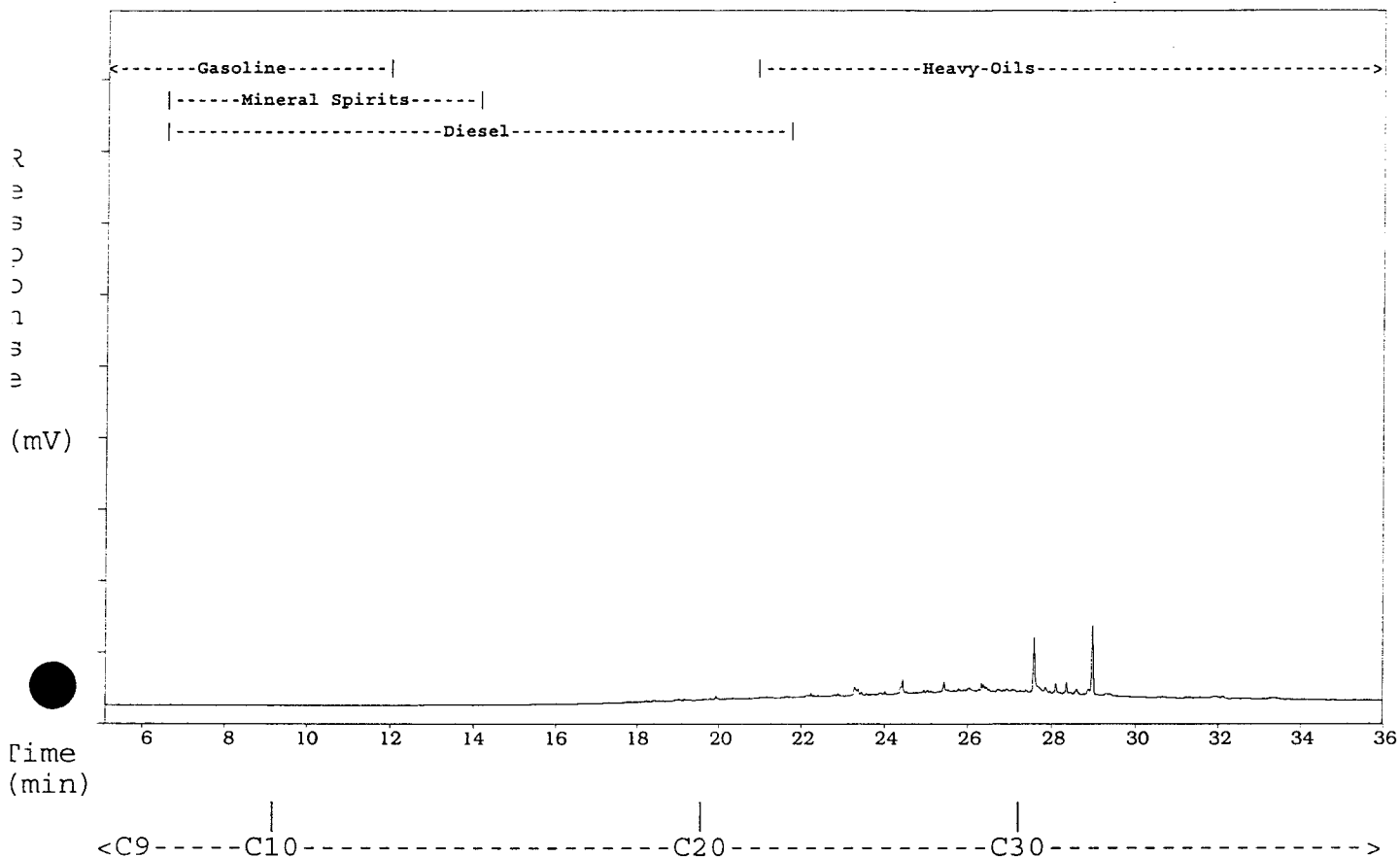
98 09 13

Sample acquired: OCT 6, 1998 09:14:38

Sequence File: TEH5OCT

File Name: C:\TEH2\5OCT\TEH5OCT.39R , Sample Name: J8785-T--45#RR

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--45#RR*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	7.6
C20-C30 (beg-nC20 to beg-nC31)	39.9
C31-C40 (beg-nC31 to beg-nC41)	52.3

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--46 TP1 East End Fill Pipe

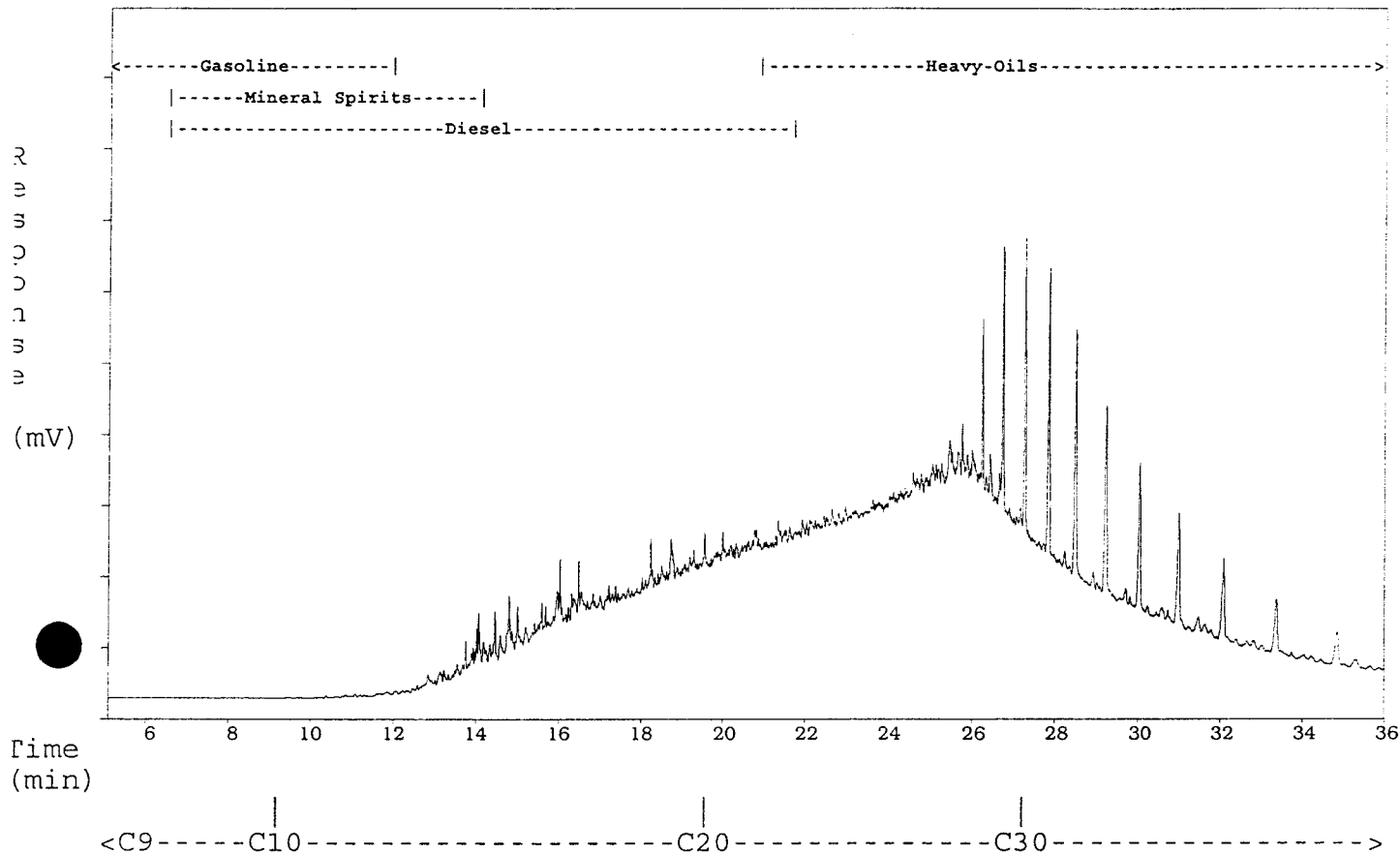
Sample acquired: OCT 2, 1998 06:49:54

File Name: C:\TEH2\1OCT\TEH1OCT.43R , Sample Name: J8785-T--46

Chromatogram Scale: 50.0 millivolts

98 09 12

Sequence File: TEH1OCT



ASL Sample ID: J8785-T--46*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

C9	(beg-nC9 to beg-nC10)	0.1
C10-C19	(beg-nC10 to beg-nC20)	23.0
C20-C30	(beg-nC20 to beg-nC31)	41.3
C31-C40	(beg-nC31 to beg-nC41)	35.6

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--47 TP1

0-0.1M

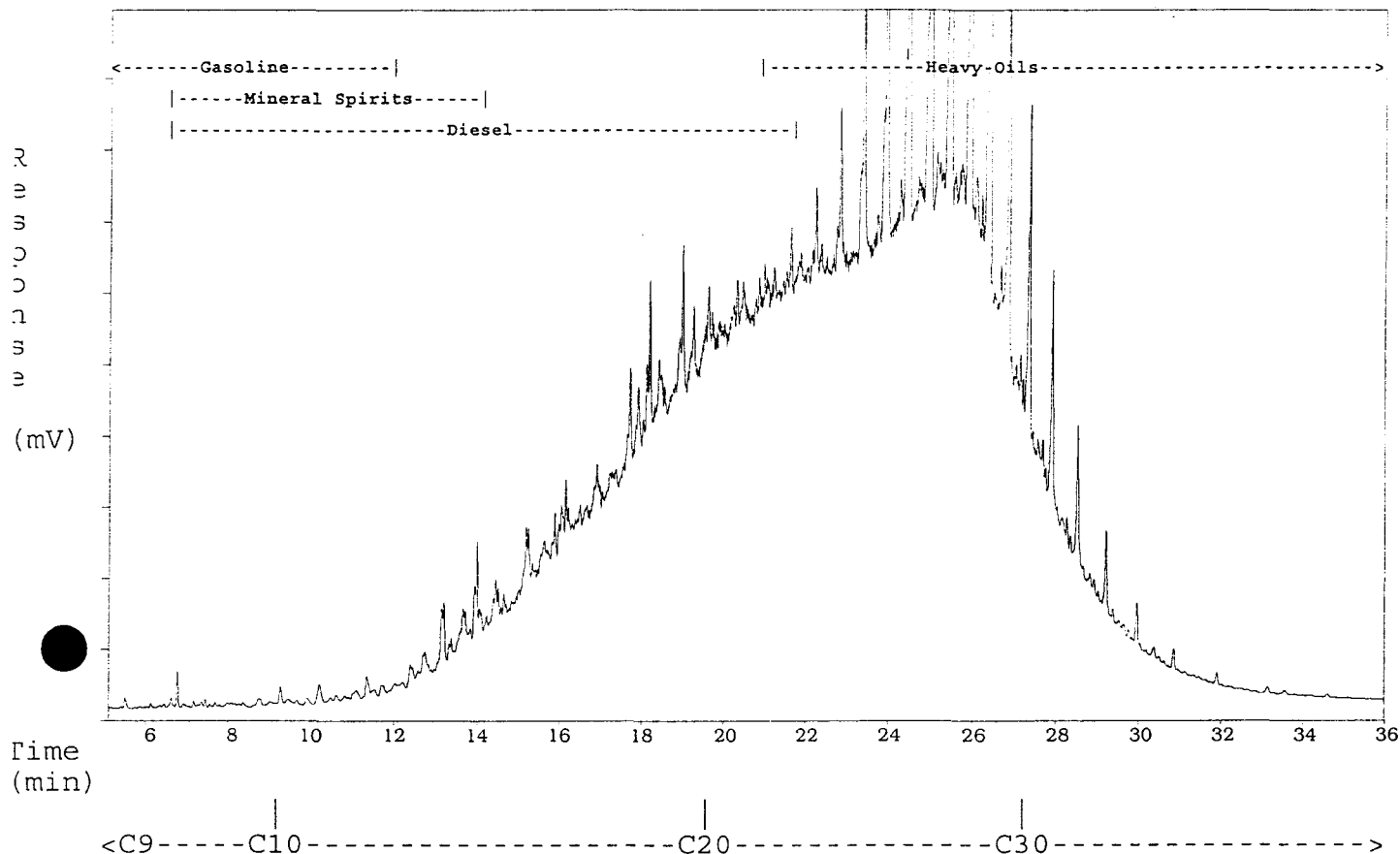
98 09 12

Sample acquired: OCT 2, 1998 06:49:54

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.44R , Sample Name: J8785-T--47

Chromatogram Scale: 100.0 millivolts



ASL Sample ID: J8785-T--47*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	27.0
C20-C30 (beg-nC20 to beg-nC31)	50.3
C31-C40 (beg-nC31 to beg-nC41)	22.6

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HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--48 TP1

0.1-0.5M

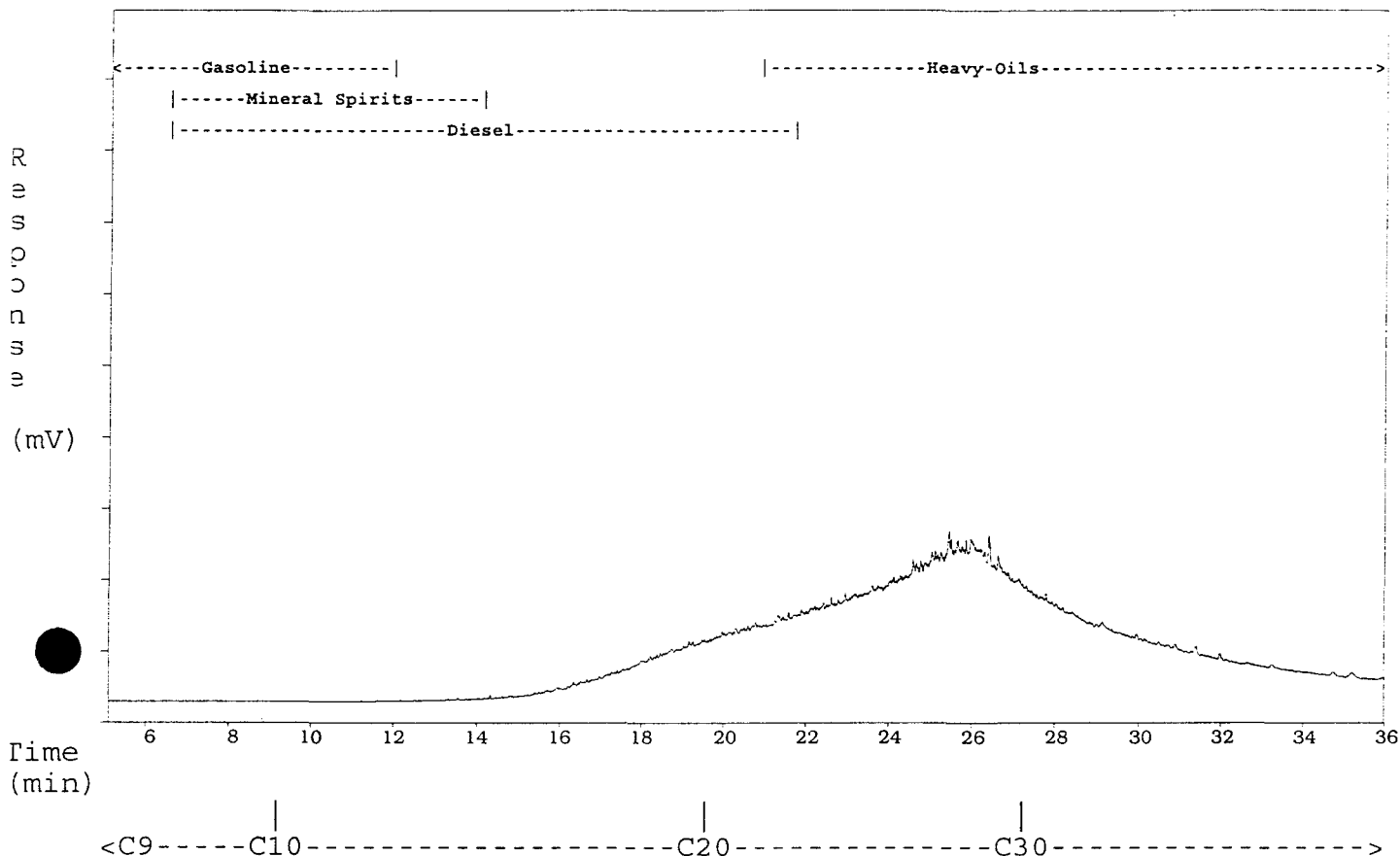
98 09 12

Sample acquired: OCT 2, 1998 07:43:31

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.45R , Sample Name: J8785-T--48

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--48*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

C9	(beg-nC9 to beg-nC10)	0.0
C10-C19	(beg-nC10 to beg-nC20)	11.8
C20-C30	(beg-nC20 to beg-nC31)	45.8
C31-C40	(beg-nC31 to beg-nC41)	42.4

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--49 TP3

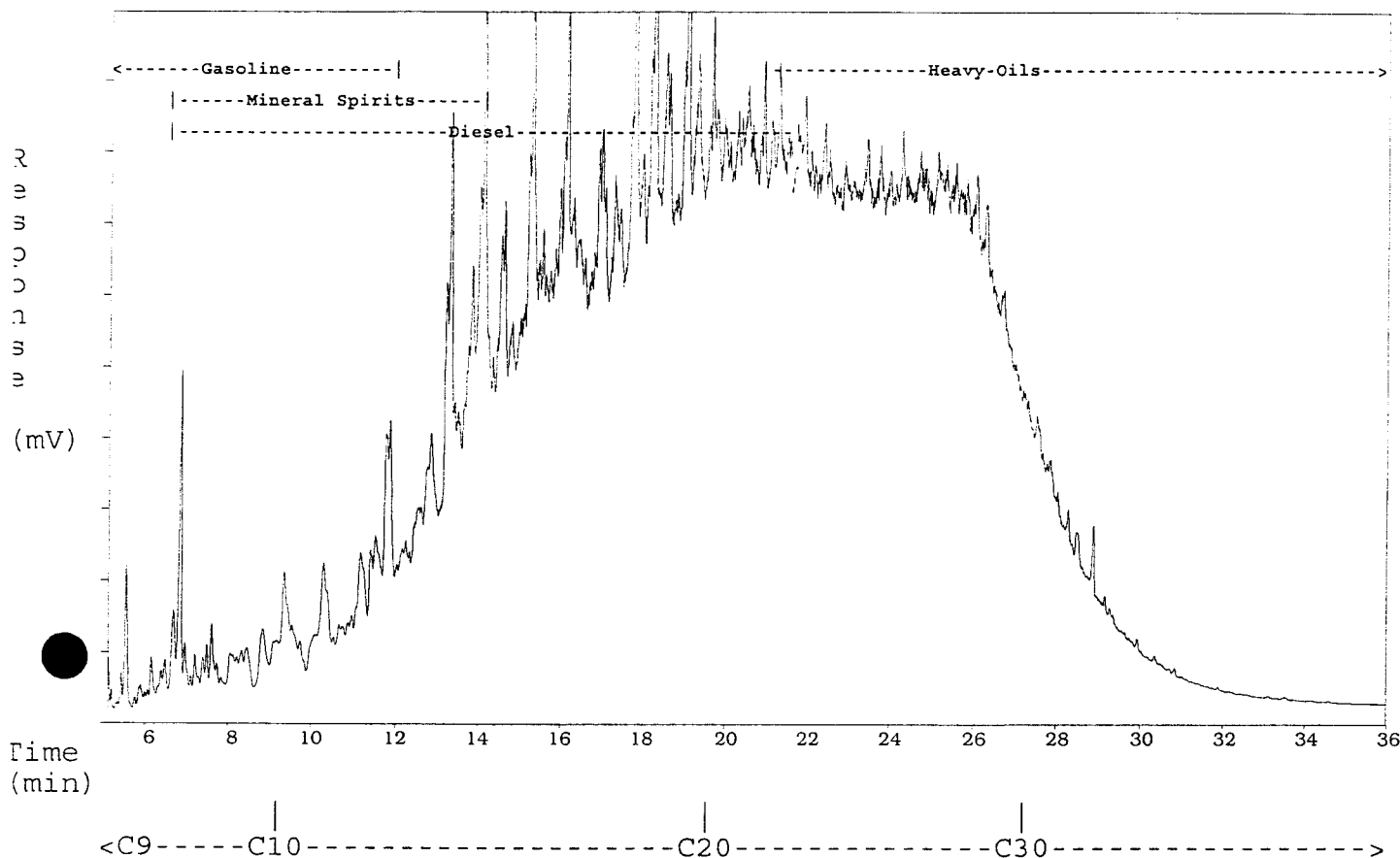
98 09 12

Sample acquired: OCT 2, 1998 07:43:31

Sequence File: TEH1OCT

File Name: C:\TEH2\1OCT\TEH1OCT.46R , Sample Name: J8785-T--49

Chromatogram Scale: 100.0 millivolts



ASL Sample ID: J8785-T--49*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

C9	(beg-nC9 to beg-nC10)	1.6
C10-C19	(beg-nC10 to beg-nC20)	47.2
C20-C30	(beg-nC20 to beg-nC31)	38.2
C31-C40	(beg-nC31 to beg-nC41)	13.1

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

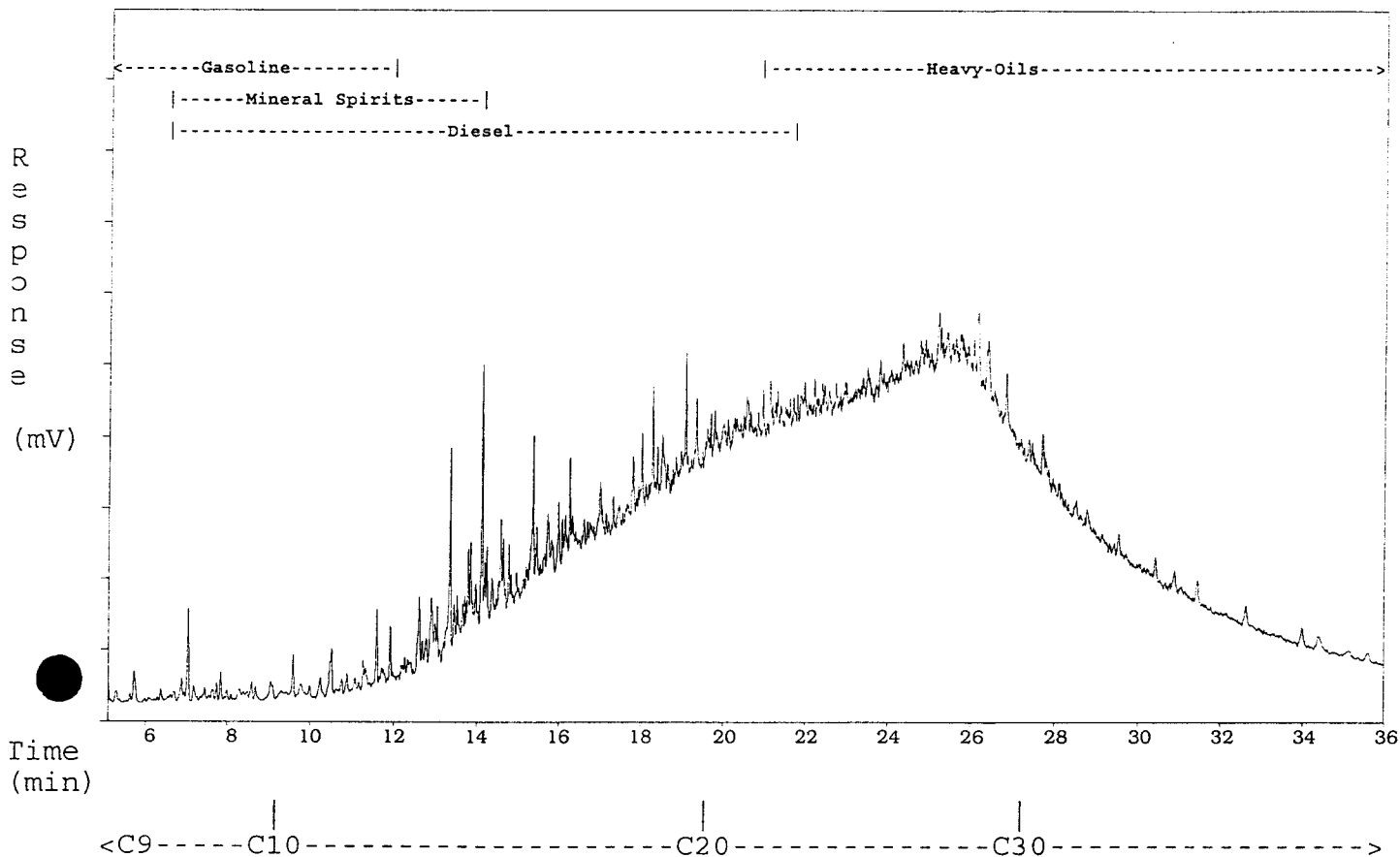
SAMPLE NAME: J8785-T--50 TP5 98 09 12

Sample acquired: OCT 3, 1998 01:44:30

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.27R , Sample Name: J8785-T--50

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--50* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.5
C10-C19 (beg-nC10 to beg-nC20)	29.1
C20-C30 (beg-nC20 to beg-nC31)	41.4
C31-C40 (beg-nC31 to beg-nC41)	29.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

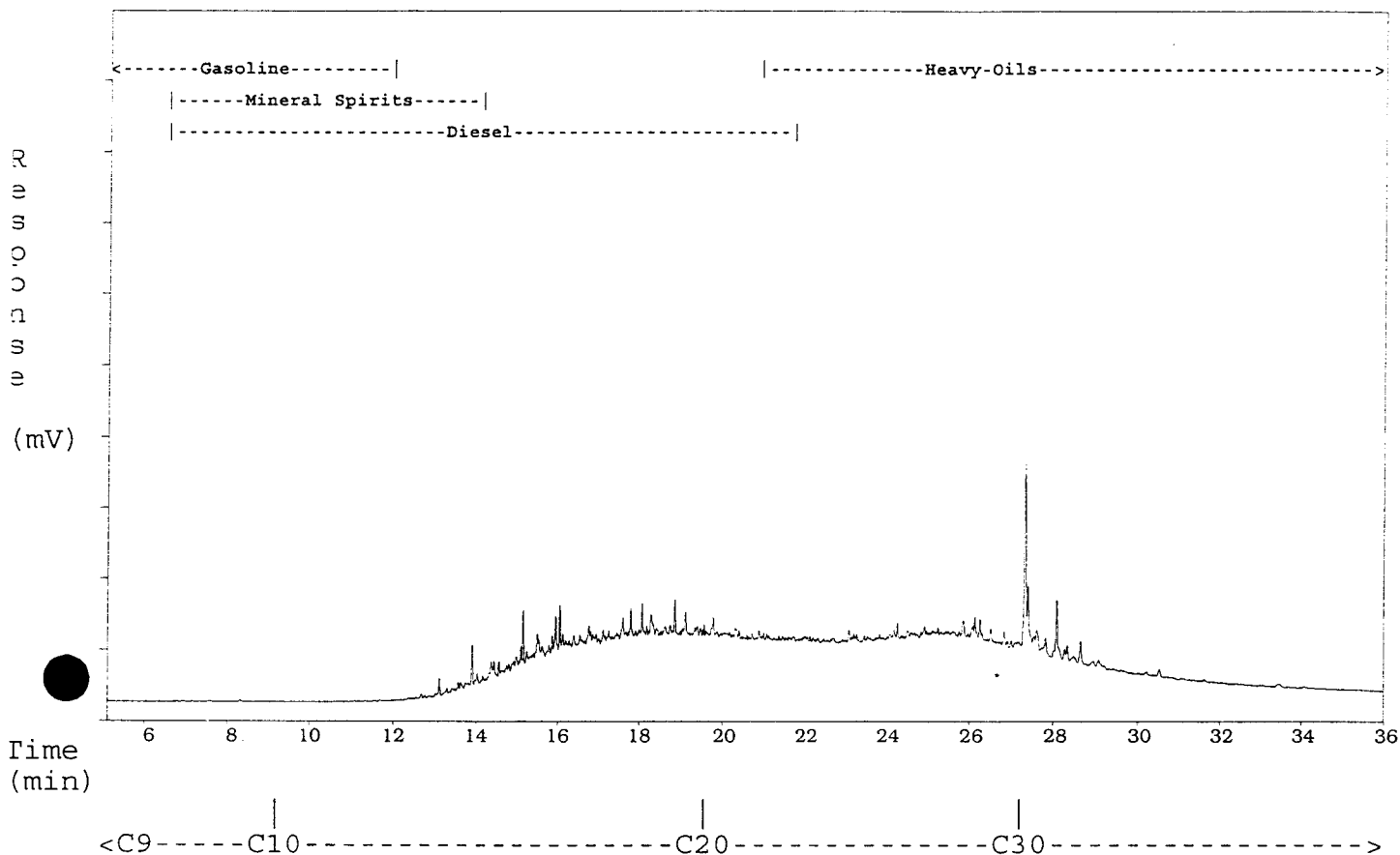
SAMPLE NAME: J8785-T--51 TP11 98 09 12

Sample acquired: OCT 3, 1998 01:44:30

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.28R , Sample Name: J8785-T--51

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--51* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	36.5
C20-C30 (beg-nC20 to beg-nC31)	36.8
C31-C40 (beg-nC31 to beg-nC41)	26.5

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

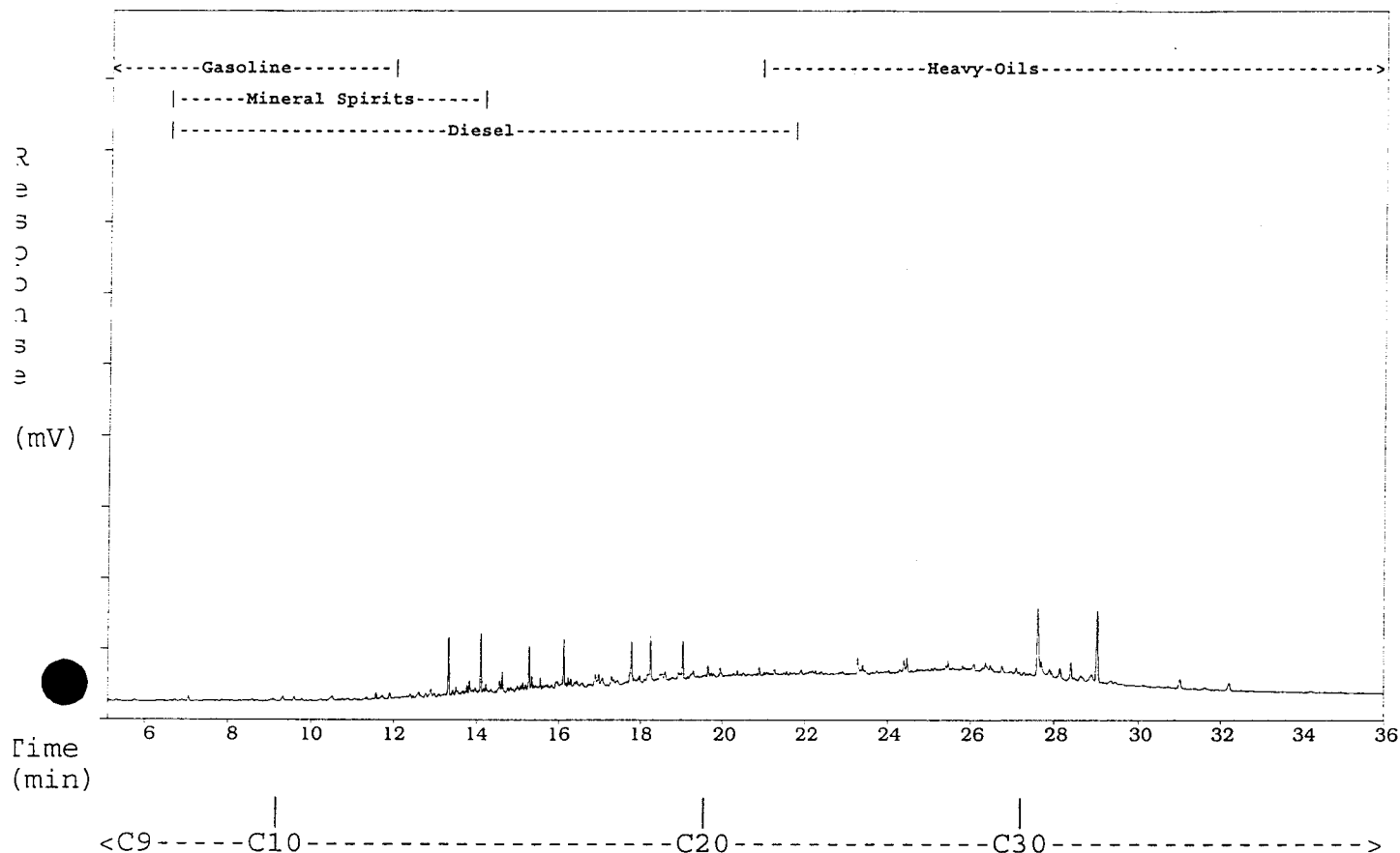
SAMPLE NAME: J8785-T--52 TP13 98 09 12

Sample acquired: OCT 3, 1998 03:31:30

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.31R , Sample Name: J8785-T--52

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--52* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.3
C10-C19 (beg-nC10 to beg-nC20)	32.1
C20-C30 (beg-nC20 to beg-nC31)	37.9
C31-C40 (beg-nC31 to beg-nC41)	29.7

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

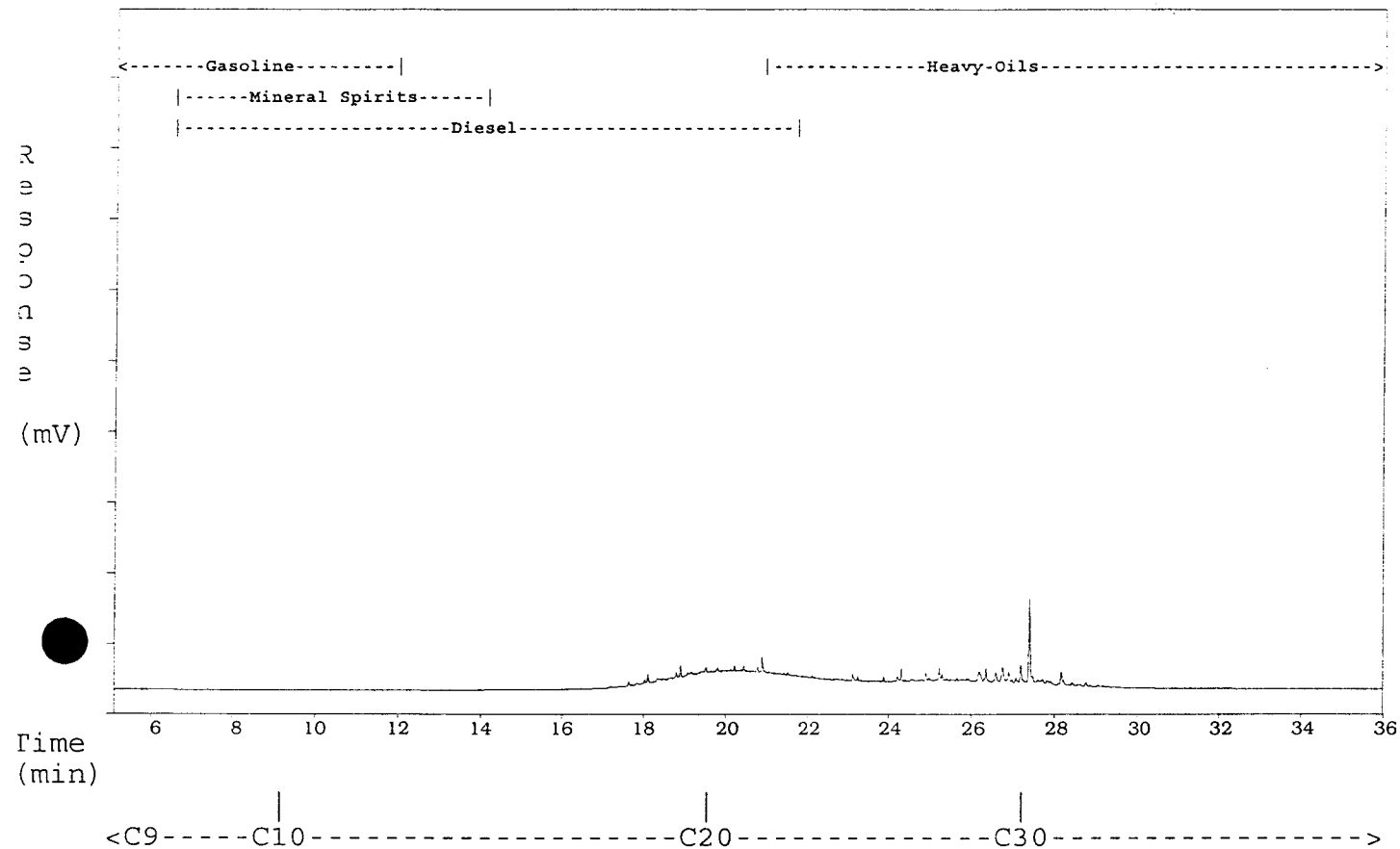
SAMPLE NAME: J8785-T--55 SS 208- B1 98 09 12

Sample acquired: OCT 2, 1998 04:55:41

Sequence File: TEHOCT1

File Name: C:\TEH\OCT1\TEHOCT1.43R , Sample Name: J8785-T--55

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--55* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	25.4
C20-C30 (beg-nC20 to beg-nC31)	52.5
C31-C40 (beg-nC31 to beg-nC41)	22.2

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--56 SS 208- B2

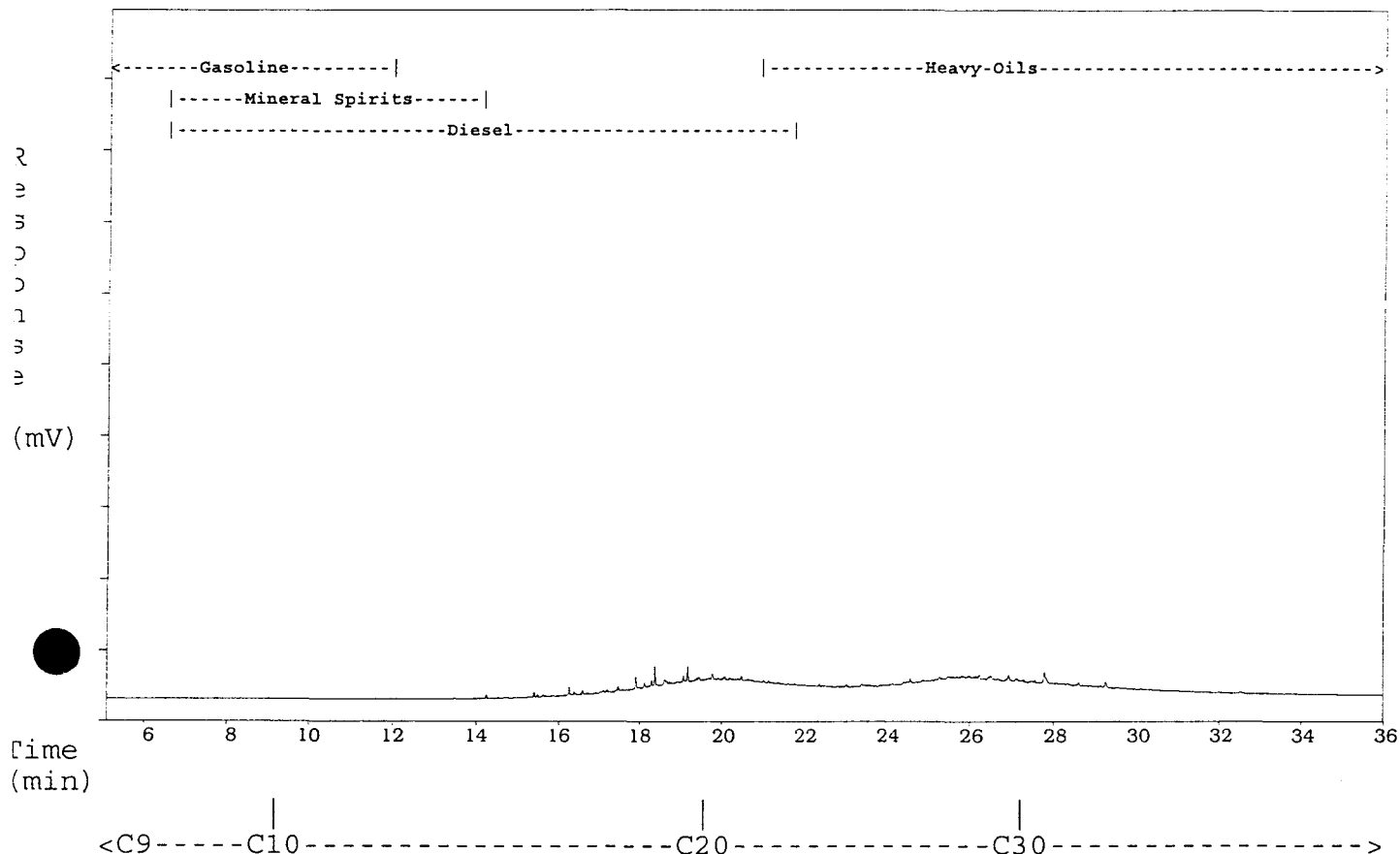
98 09 12

Sample acquired: OCT 2, 1998 04:55:41

Sequence File: TEHOCT1

File Name: C:\TEH\OCT1\TEHOCT1.44R , Sample Name: J8785-T--56

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--56* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	23.7
C20-C30 (beg-nC20 to beg-nC31)	41.9
C31-C40 (beg-nC31 to beg-nC41)	34.4

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

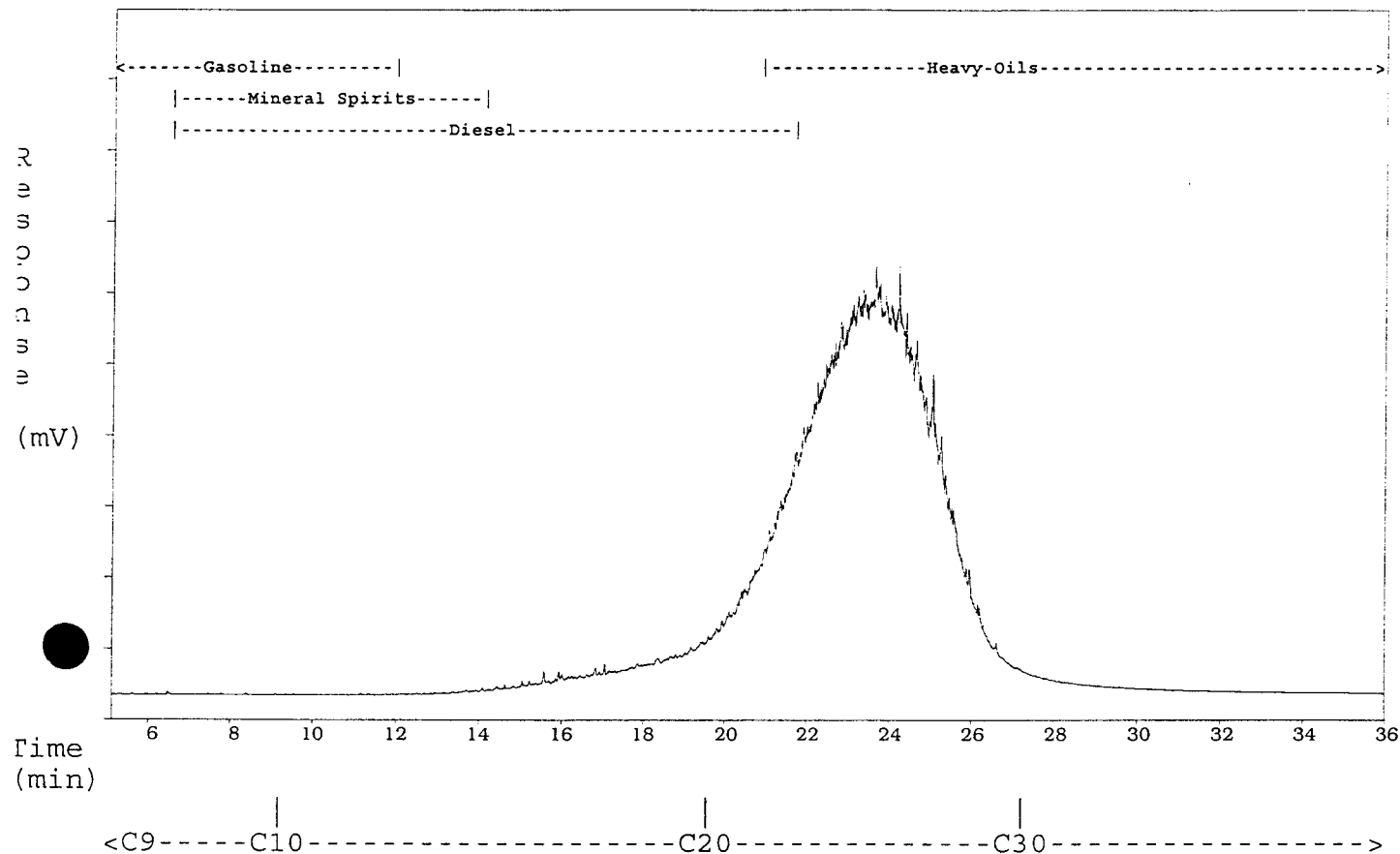
SAMPLE NAME: J8785-T--57 SS 208- C1 98 09 12

Sample acquired: OCT 2, 1998 05:56:59

Sequence File: TEHOCT1

File Name: C:\TEH\OCT1\TEHOCT1.45R , Sample Name: J8785-T--57

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--57* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	8.6
C20-C30 (beg-nC20 to beg-nC31)	85.9
C31-C40 (beg-nC31 to beg-nC41)	5.5

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

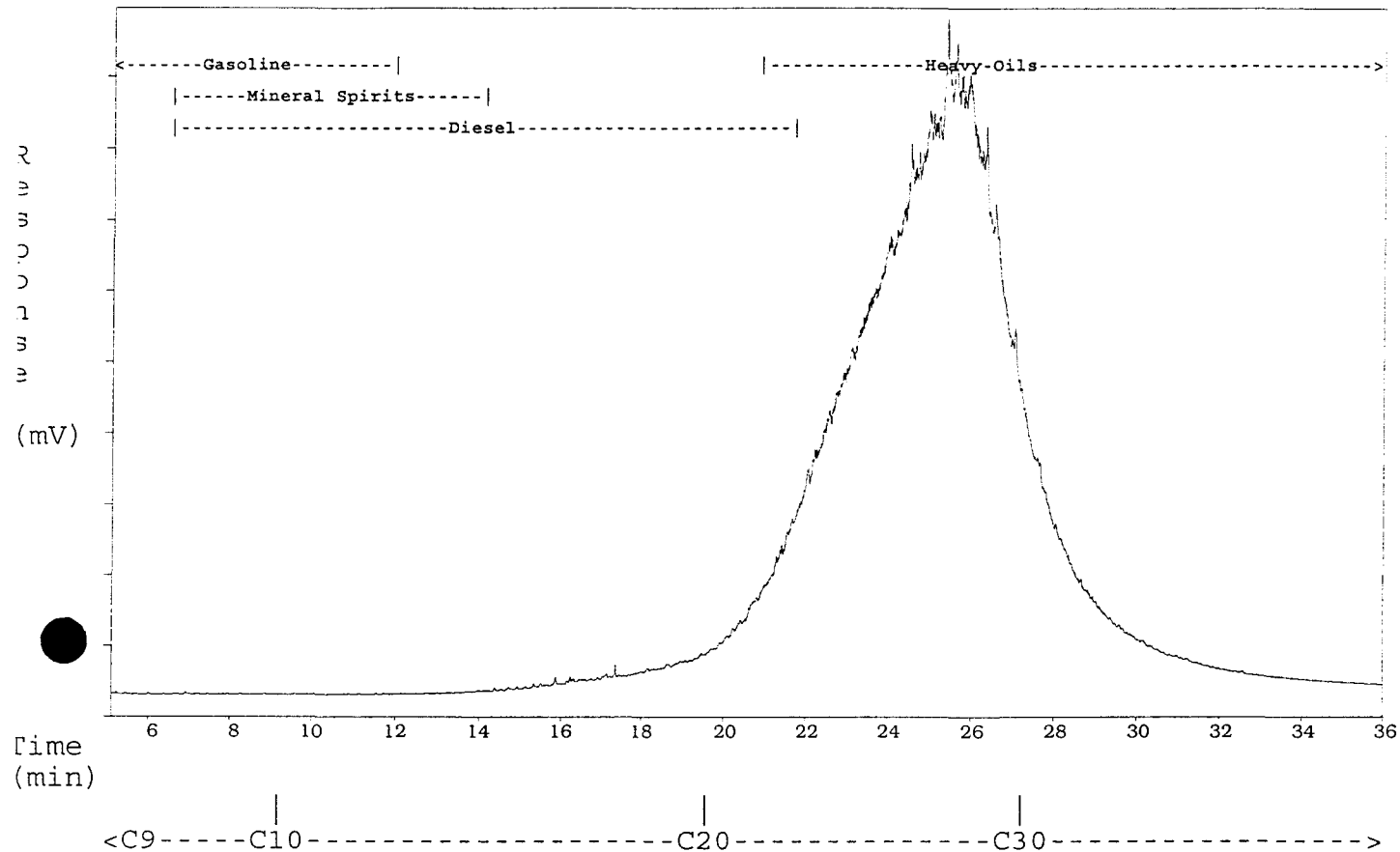
SAMPLE NAME: J8785 - 57 SS 208- C1 LRep

Sample acquired: OCT 2, 1998 05:56:59

Sequence File: TEHOCT1

File Name: C:\TEH\OCT1\TEHOCT1.46R , Sample Name: QC-T--133895#J8785 57DP 98 09 12

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: QC-T--133895#J8785 57DP* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	3.6
C20-C30 (beg-nC20 to beg-nC31)	61.8
C31-C40 (beg-nC31 to beg-nC41)	34.6

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

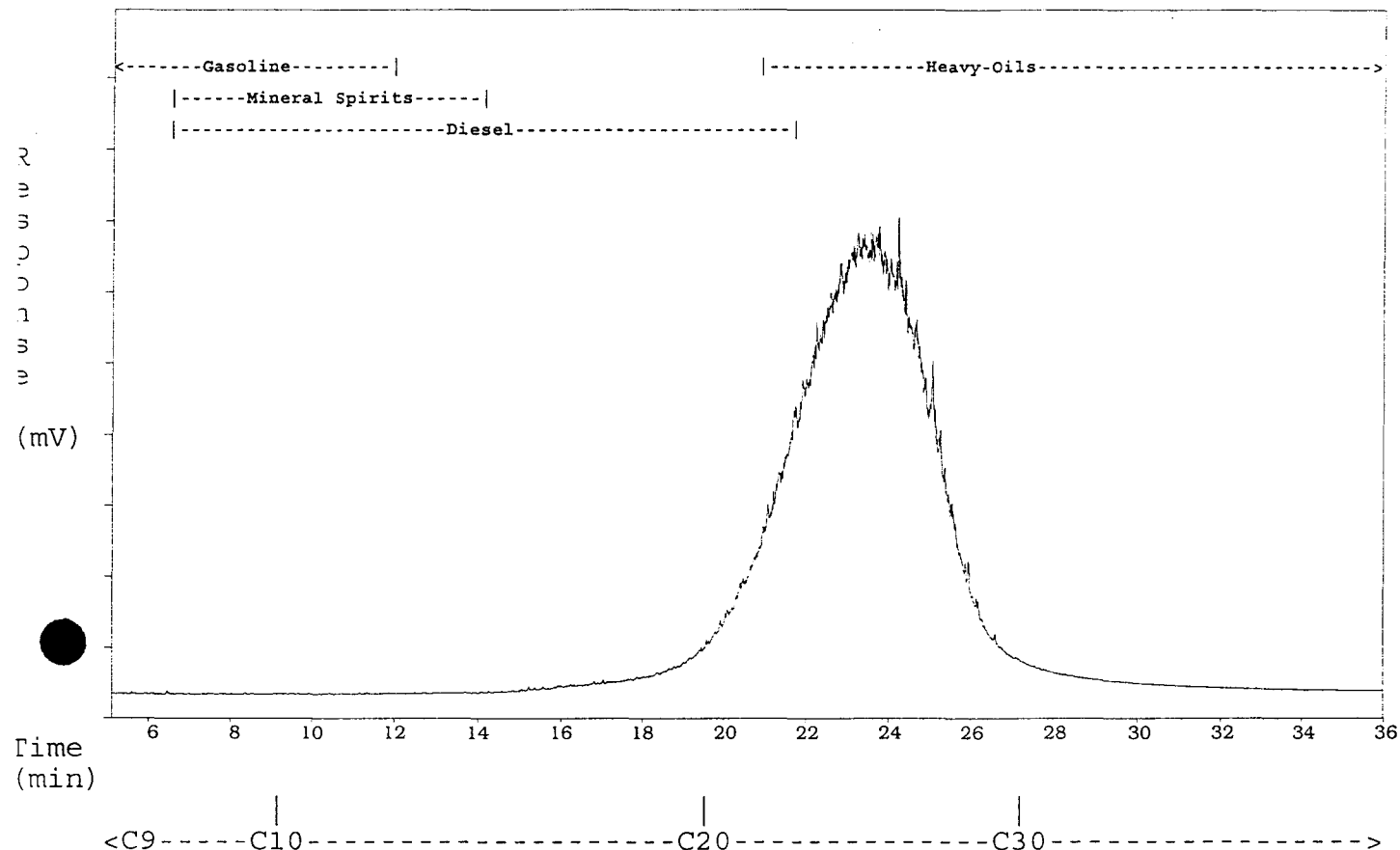
SAMPLE NAME: J8785-T--58 SS 208- C2 98 09 12

Sample acquired: OCT 2, 1998 06:50:54

Sequence File: TEHOCT1

File Name: C:\TEH\OCT1\TEHOCT1.47R , Sample Name: J8785-T--58

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--58* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	5.1
C20-C30 (beg-nC20 to beg-nC31)	87.8
C31-C40 (beg-nC31 to beg-nC41)	7.1

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--59

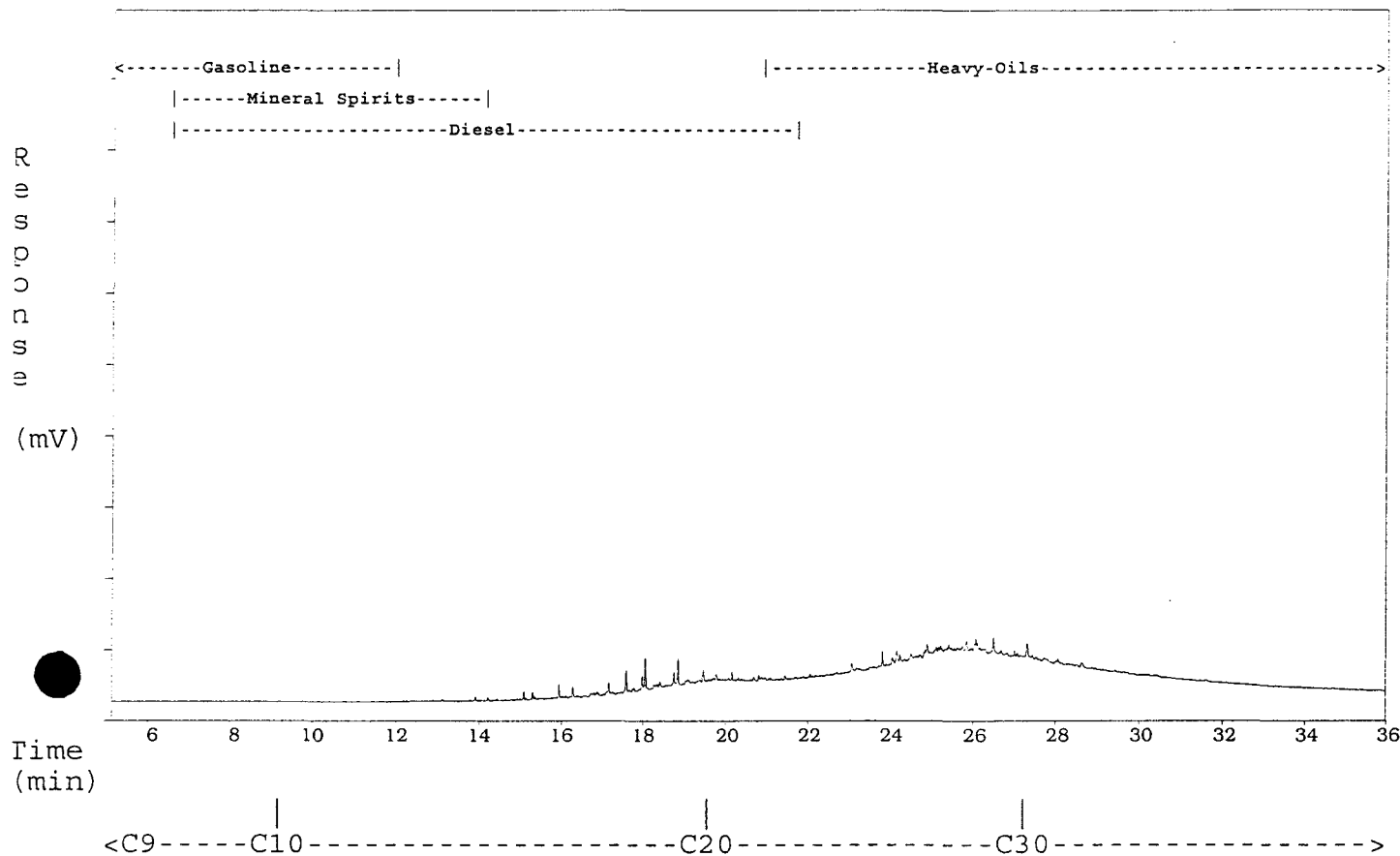
SS 208- D1 98 09 12

Sample acquired: OCT 3, 1998 00:51:06

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.26R , Sample Name: J8785-T--59#R

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--59#R*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

C9	(beg-nC9 to beg-nC10)	0.0
C10-C19	(beg-nC10 to beg-nC20)	12.4
C20-C30	(beg-nC20 to beg-nC31)	40.9
C31-C40	(beg-nC31 to beg-nC41)	46.6

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

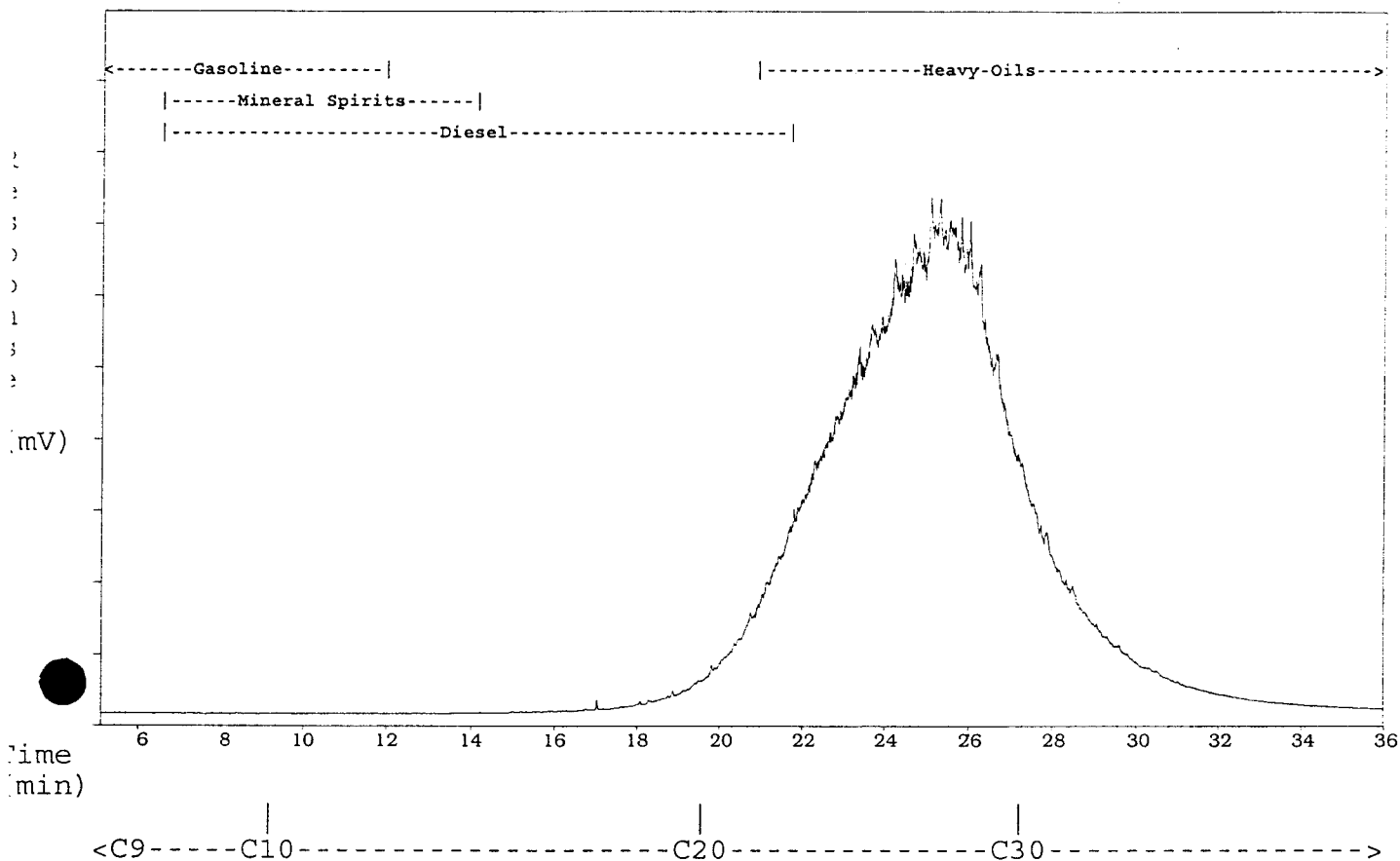
SAMPLE NAME: J8785-T--60 SS 208-D2 98 09 12

Sample acquired: OCT 2, 1998 23:04:01

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.22R , Sample Name: J8785-T--60

Chromatogram Scale: 100.0 millivolts



ASL Sample ID: J8785-T--60* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	2.2
C20-C30 (beg-nC20 to beg-nC31)	64.3
C31-C40 (beg-nC31 to beg-nC41)	33.6

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

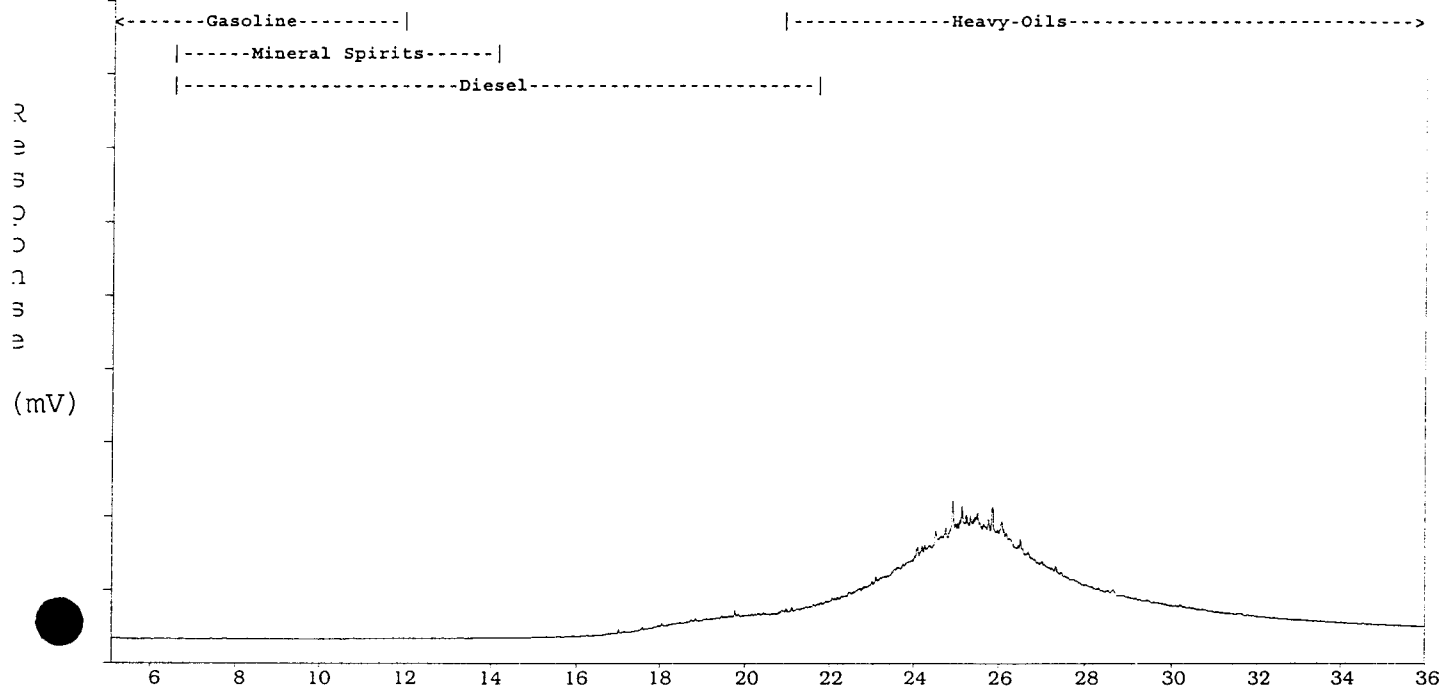
SAMPLE NAME: J8785-T--61 SS 208- E1 98 09 12

Sample acquired: OCT 2, 1998 17:43:01

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.10R , Sample Name: J8785-T--61

Chromatogram Scale: 50.0 millivolts



<C9-----C10-----C20-----C30----->
ASL Sample ID: J8785-T--61* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	6.0
C20-C30 (beg-nC20 to beg-nC31)	50.1
C31-C40 (beg-nC31 to beg-nC41)	43.8

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

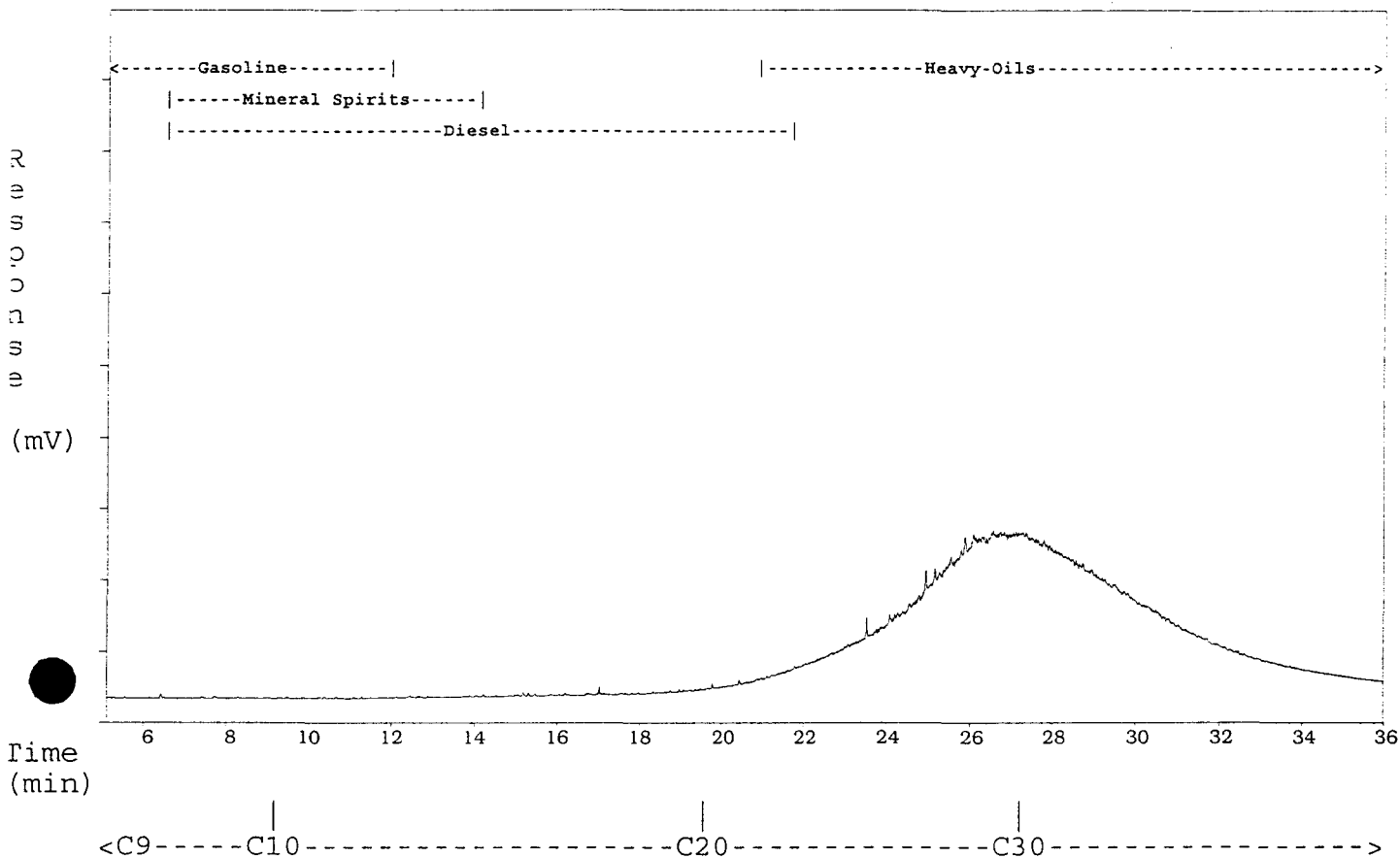
SAMPLE NAME: J8785-T--62 SS 208- E2 98 09 12

Sample acquired: OCT 2, 1998 18:36:42

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.12R , Sample Name: J8785-T--62

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--62*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

C9	(beg-nC9 to beg-nC10)	0.1
C10-C19	(beg-nC10 to beg-nC20)	1.6
C20-C30	(beg-nC20 to beg-nC31)	29.2
C31-C40	(beg-nC31 to beg-nC41)	69.1

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

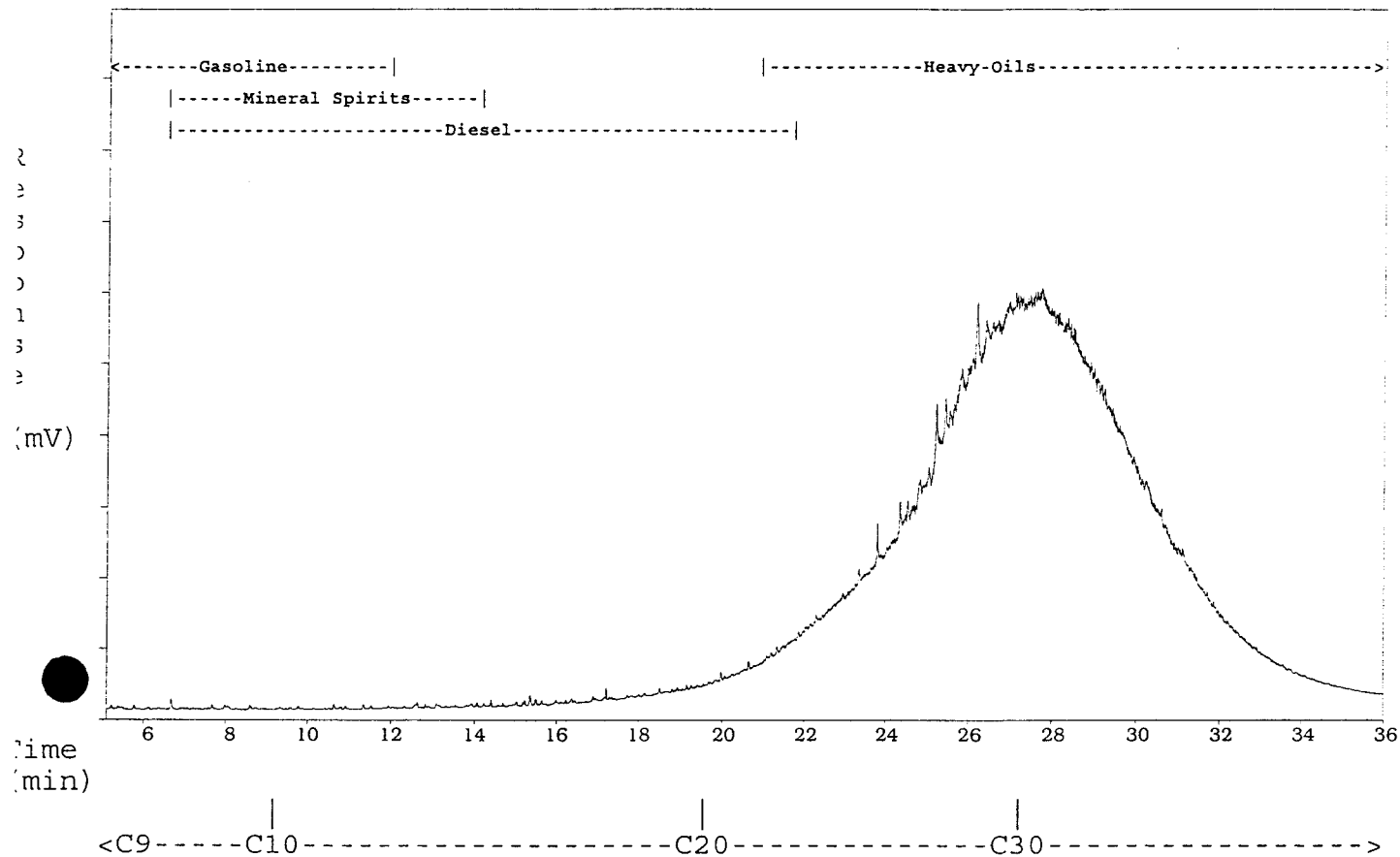
SAMPLE NAME: J8785-T--63 SS 208-E1 98 09 12

Sample acquired: OCT 3, 1998 07:04:43

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.39R , Sample Name: J8785-T--63

Chromatogram Scale: 100.0 millivolts



ASL Sample ID: J8785-T--63* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	2.2
C20-C30 (beg-nC20 to beg-nC31)	28.0
C31-C40 (beg-nC31 to beg-nC41)	69.8

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

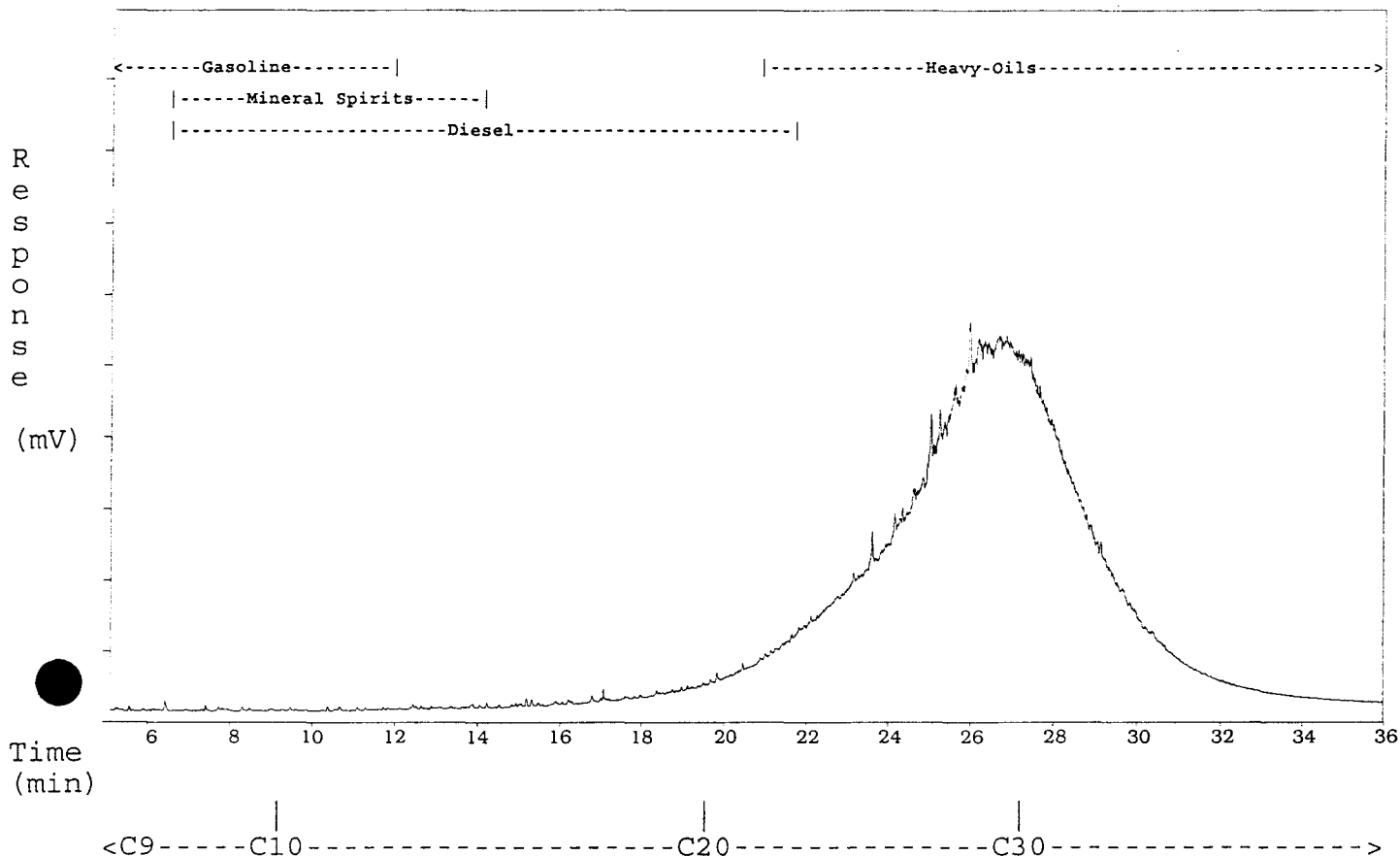
SAMPLE NAME: J8785 - 63 SS 208- F1 LRep

Sample acquired: OCT 3, 1998 07:04:43

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.40R , Sample Name: QC-T--133896#J8785 63DP 98 09 12

Chromatogram Scale: 100.0 millivolts



ASL Sample ID: QC-T--133896#J8785 63DP* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.1
C10-C19 (beg-nC10 to beg-nC20)	3.7
C20-C30 (beg-nC20 to beg-nC31)	38.7
C31-C40 (beg-nC31 to beg-nC41)	57.5

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

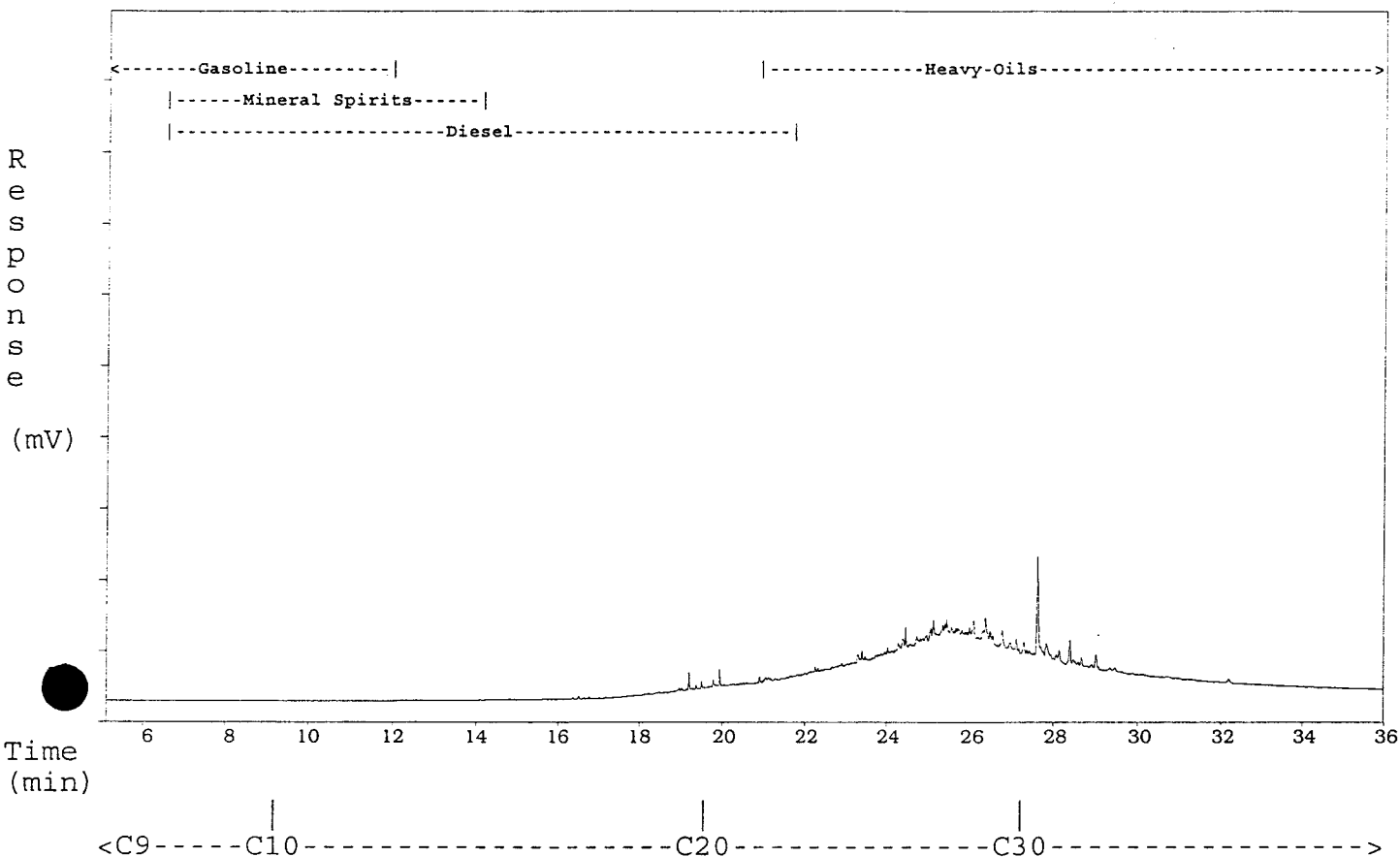
SAMPLE NAME: J8785-T--64 SS 208-F2 98 09 12

Sample acquired: OCT 2, 1998 18:36:42

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.11R , Sample Name: J8785-T--64

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--64* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	4.5
C20-C30 (beg-nC20 to beg-nC31)	46.1
C31-C40 (beg-nC31 to beg-nC41)	49.4

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--65:

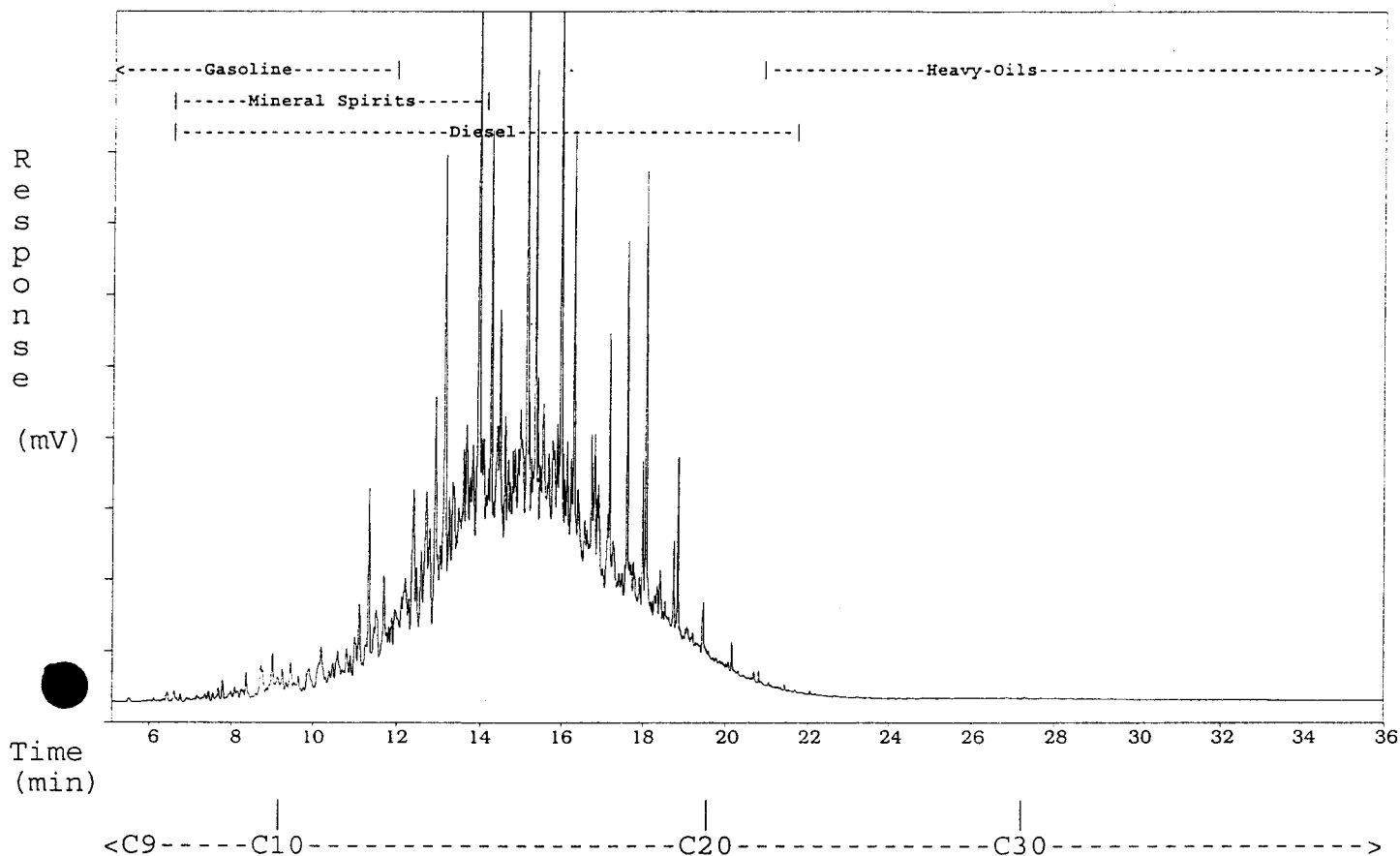
MP73 MW3 E 98 09 08

Sample acquired: OCT 6, 1998 09:14:38

Sequence File: TEH5OCT

File Name: C:\TEH2\5OCT\TEH5OCT.40R , Sample Name: J8785-T--65#RR

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--65#RR*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

C9	(beg-nC9 to beg-nC10)	0.8
C10-C19	(beg-nC10 to beg-nC20)	95.9
C20-C30	(beg-nC20 to beg-nC31)	3.0
C31-C40	(beg-nC31 to beg-nC41)	0.3

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

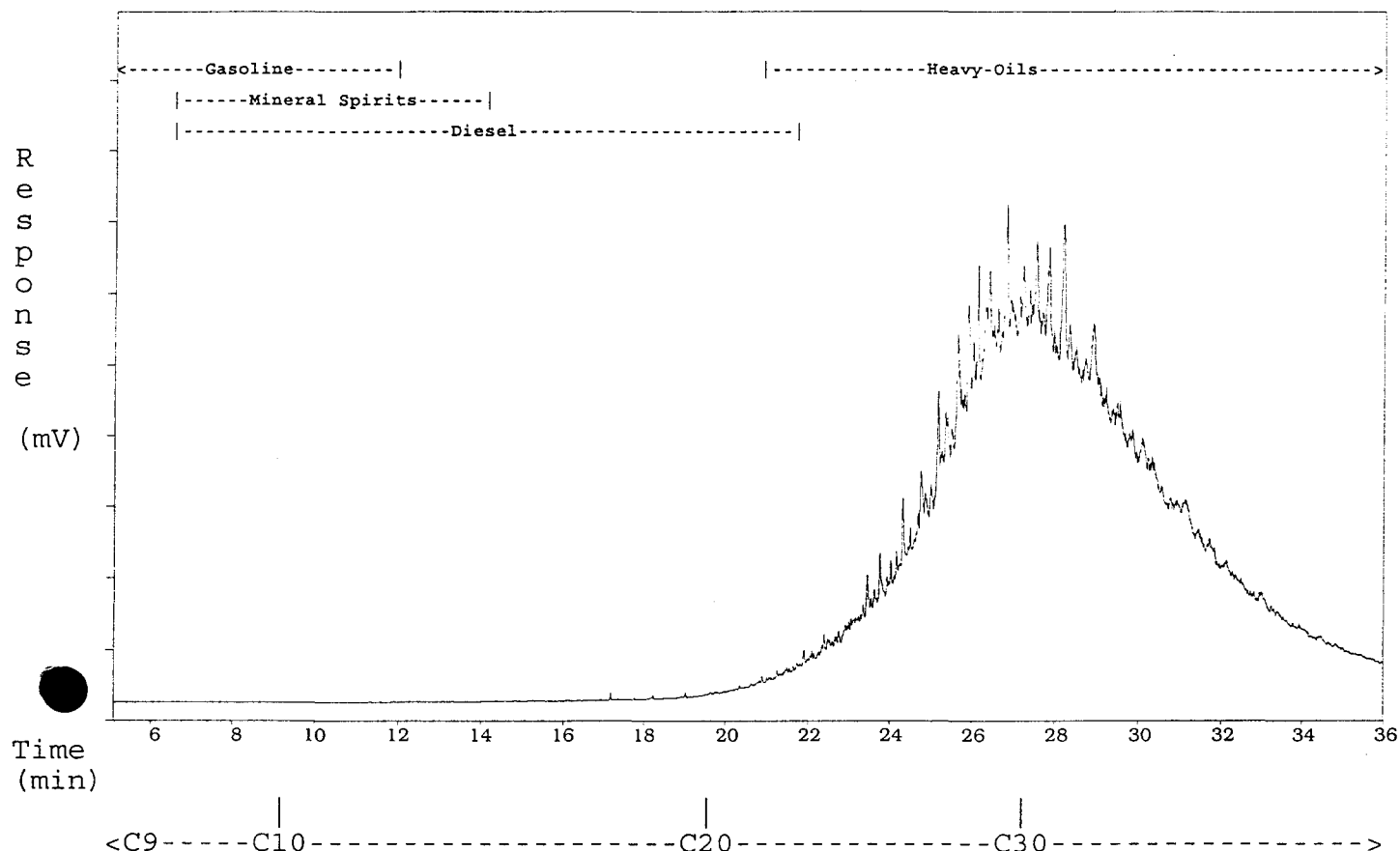
SAMPLE NAME: J8785-T--69 SS 207- G1 98 09 13

Sample acquired: OCT 3, 1998 09:44:31

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.45R , Sample Name: J8785-T--69

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--69*

8.0Dilution

HYDROCARBON RANGE (by Carbon#)

RELATIVE AMOUNT (%)

C9 (beg-nC9 to beg-nC10)	0.1
C10-C19 (beg-nC10 to beg-nC20)	1.3
C20-C30 (beg-nC20 to beg-nC31)	21.6
C31-C40 (beg-nC31 to beg-nC41)	77.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

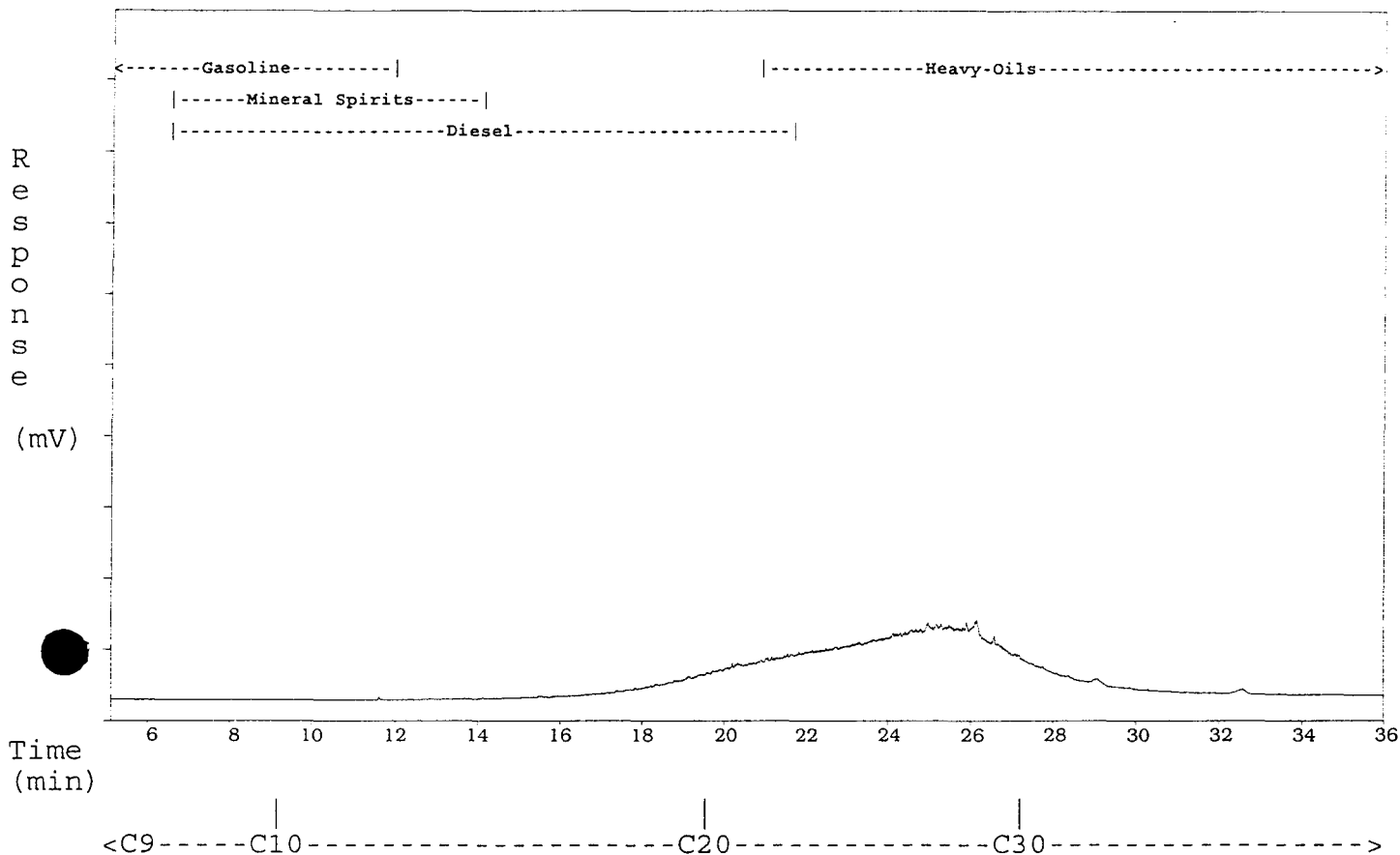
SAMPLE NAME: J8785-T--15 SS 215-4 Hydrocar 98 09 14

Sample acquired: OCT 15, 1998 08:19:36

Sequence File: TEHOCT14

File Name: C:\TEH\OCT14\TEHOCT14.53R , Sample Name: J8785-T--15

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--15* 30.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	11.0
C20-C30 (beg-nC20 to beg-nC31)	61.3
C31-C40 (beg-nC31 to beg-nC41)	27.7

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--24 HC 208±1

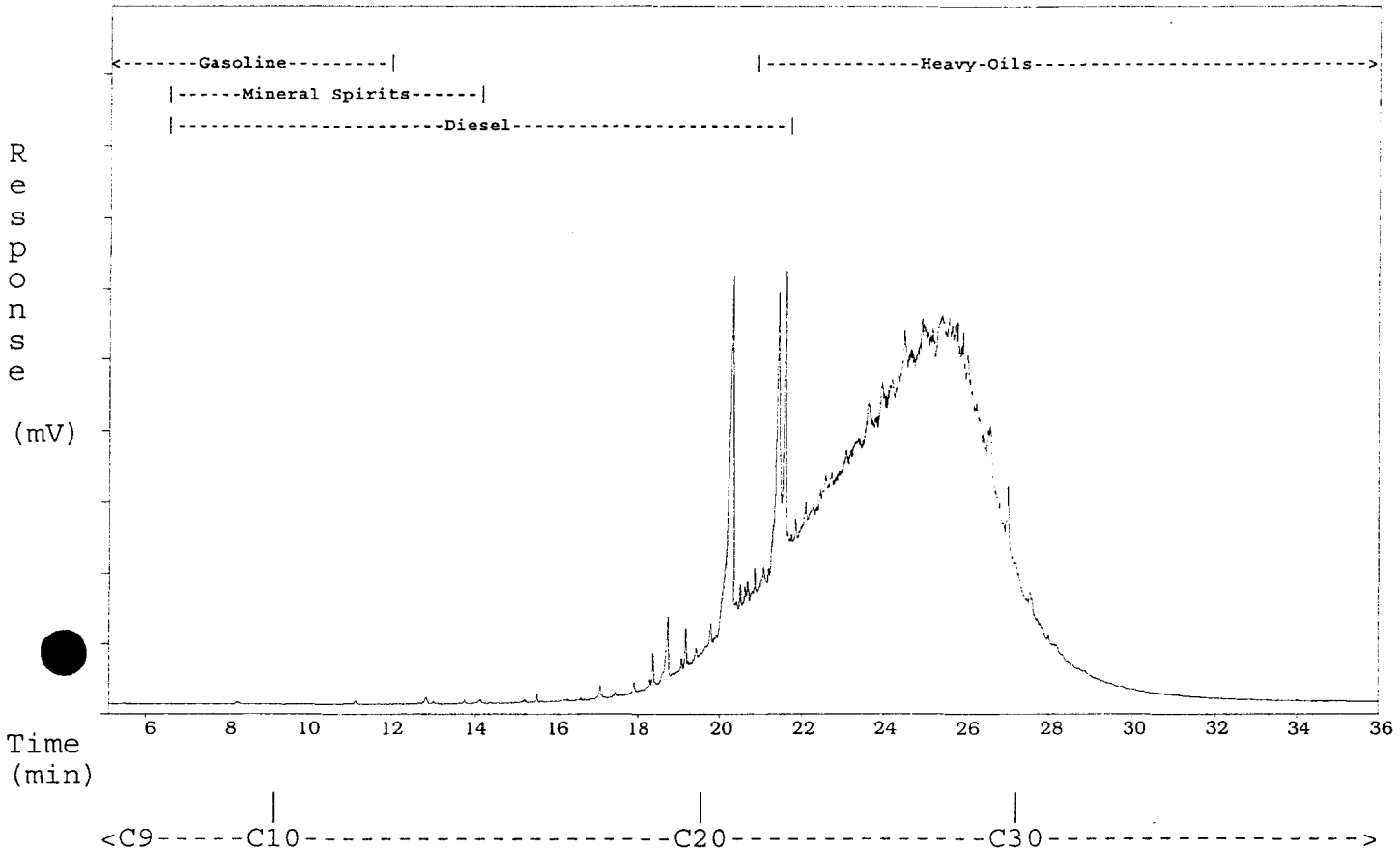
98 09 12

Sample acquired: OCT 15, 1998 05:39:24

Sequence File: TEHOCT14

File Name: C:\TEH\OCT14\TEHOCT14.48R , Sample Name: J8785-T--24

Chromatogram Scale: 100.0 millivolts



ASL Sample ID: J8785-T--24* 30.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	4.8
C20-C30 (beg-nC20 to beg-nC31)	72.4
C31-C40 (beg-nC31 to beg-nC41)	22.7

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--25 HC 208±2

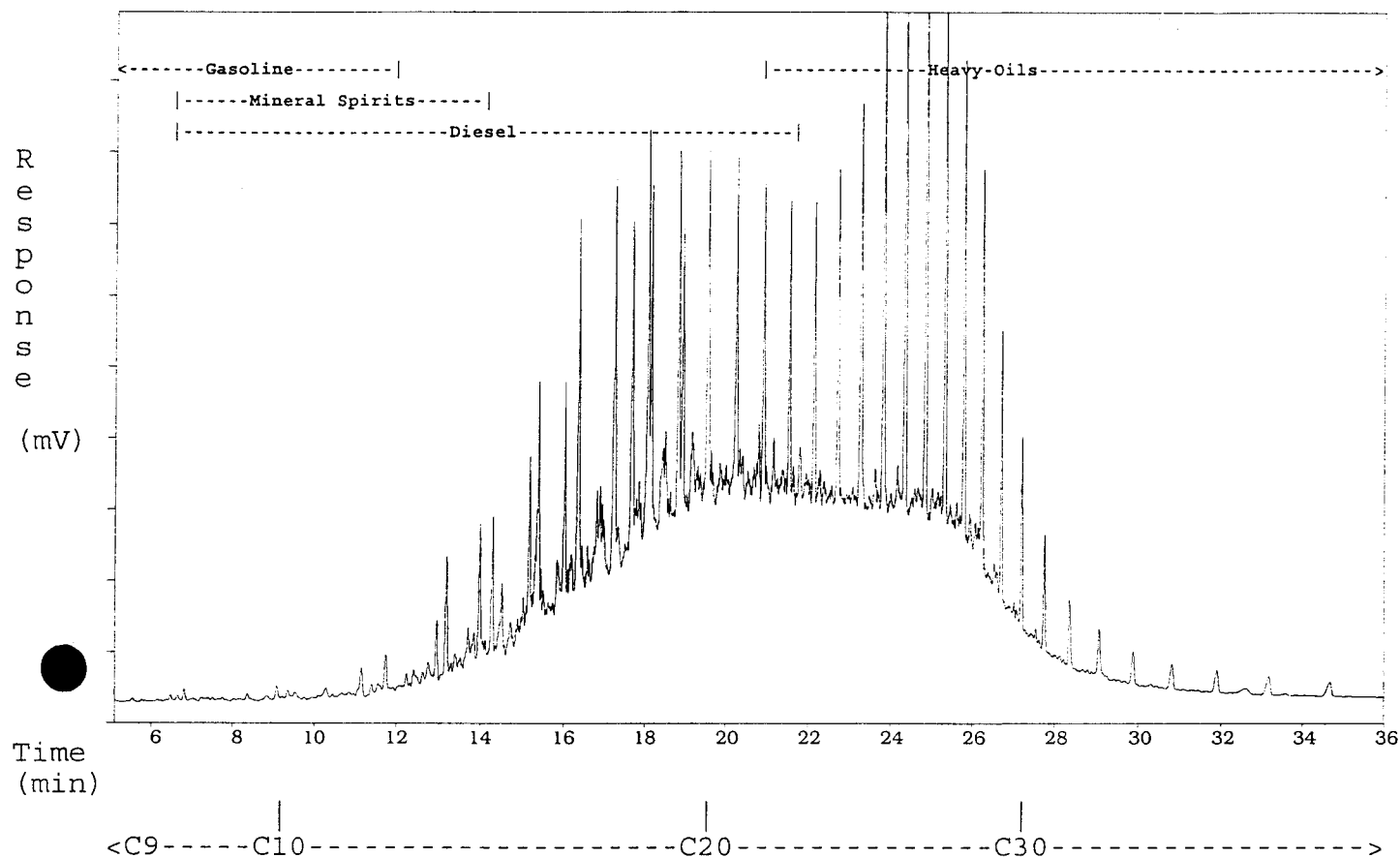
98 09 12

Sample acquired: OCT 15, 1998 07:26:01

Sequence File: TEHOCT14

File Name: C:\TEH\OCT14\TEHOCT14.51R , Sample Name: J8785-T--25

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--25* 30.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	39.2
C20-C30 (beg-nC20 to beg-nC31)	48.6
C31-C40 (beg-nC31 to beg-nC41)	12.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

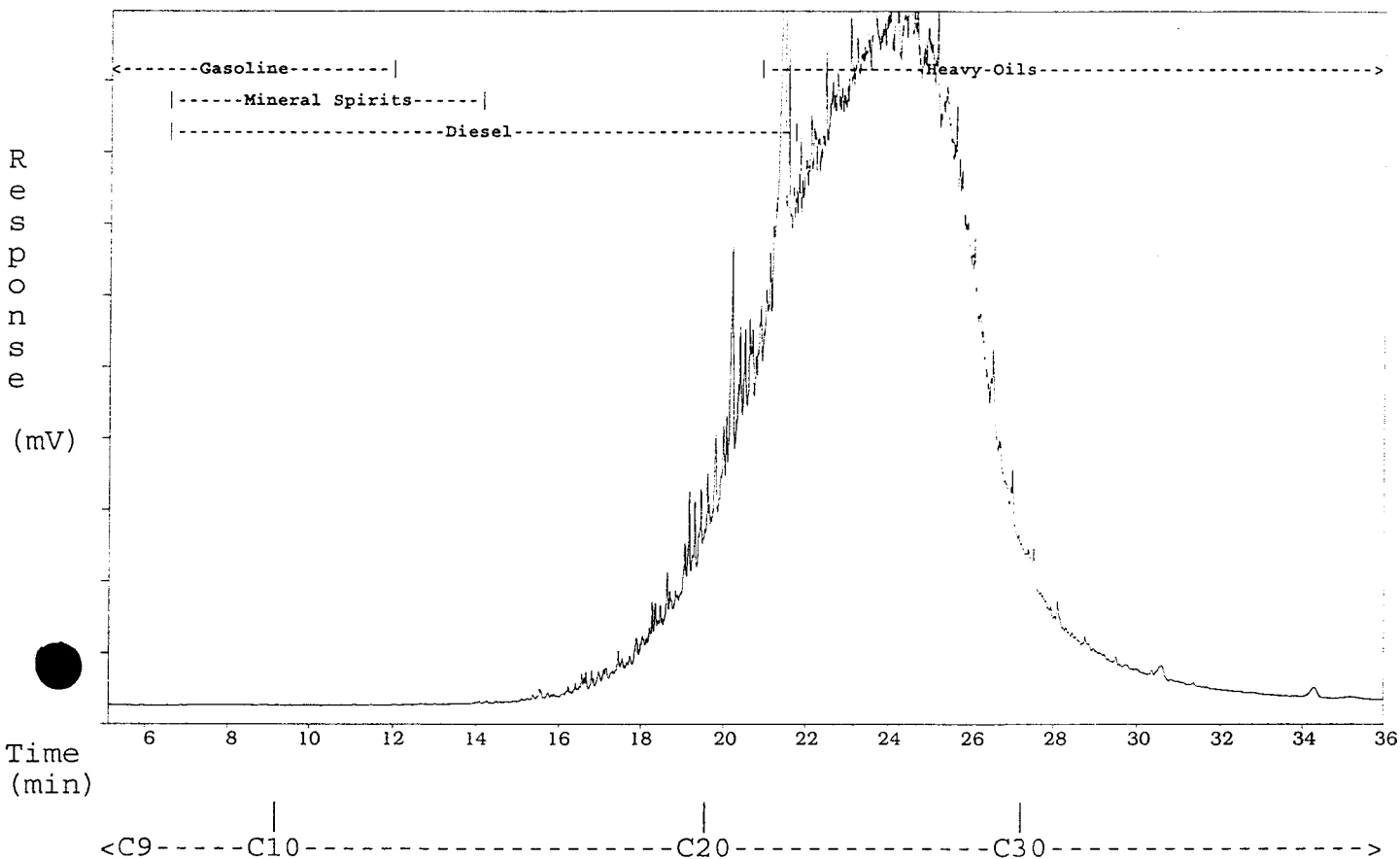
SAMPLE NAME: J8785-T--26 HC 208-3 98 09 12

Sample acquired: OCT 15, 1998 08:19:36

Sequence File: TEHOCT14

File Name: C:\TEH\OCT14\TEHOCT14.54R , Sample Name: J8785-T--26

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--26* 30.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	8.0
C20-C30 (beg-nC20 to beg-nC31)	76.7
C31-C40 (beg-nC31 to beg-nC41)	15.3

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8785-T--30 MP 124.5 Crude Oil Tar

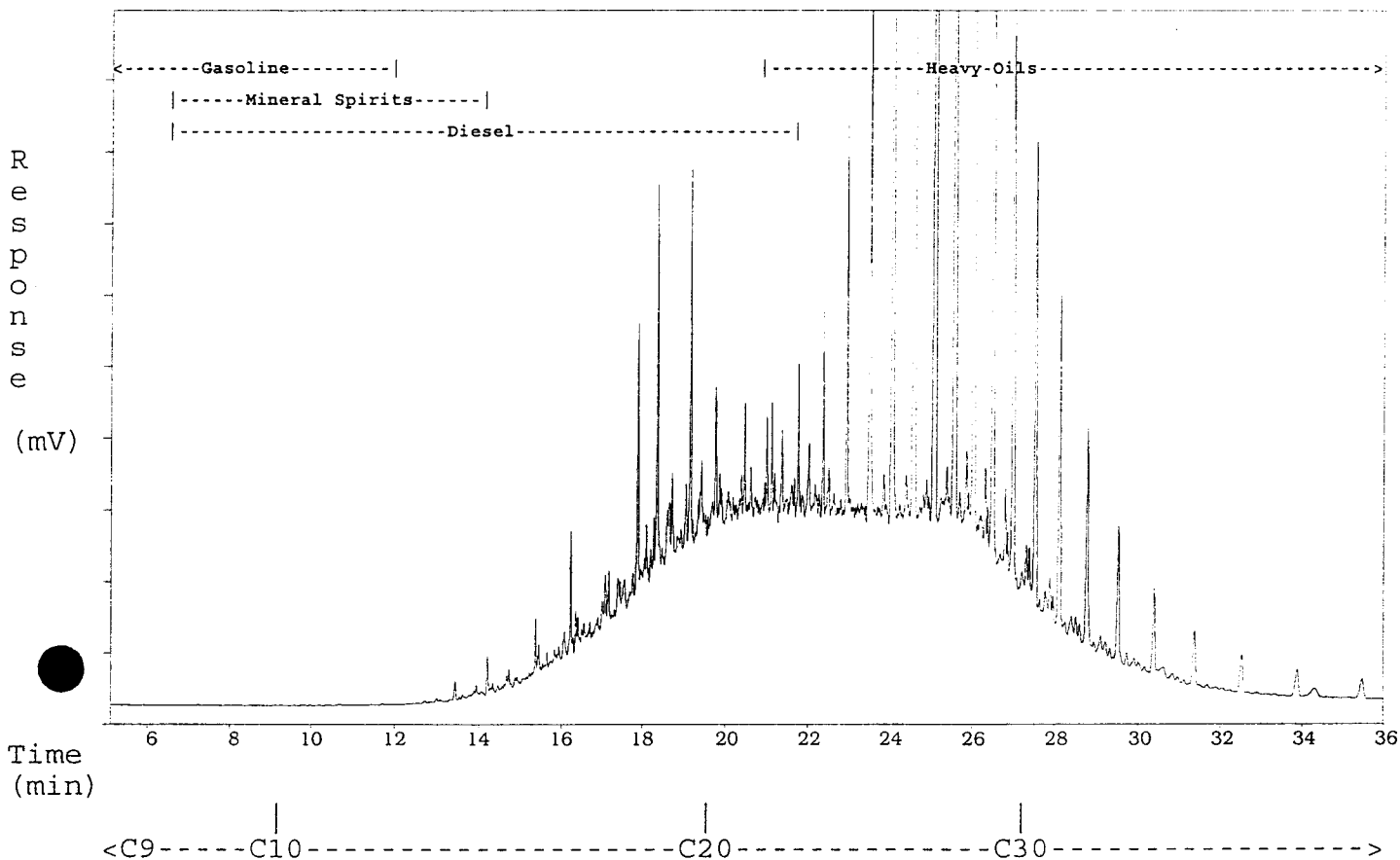
Sample acquired: OCT 15, 1998 07:26:01

Sequence File: TEHOCT14

File Name: C:\TEH\OCT14\TEHOCT14.52R , Sample Name: J8785-T--30

98 09 12

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8785-T--30* 30.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	22.8
C20-C30 (beg-nC20 to beg-nC31)	52.6
C31-C40 (beg-nC31 to beg-nC41)	24.6

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.



APPENDIX

**CHAIN OF
CUSTODY
FORMS**

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CLIENT: City of Vancouver
 ADDRESS: 1000 Burrard Street
 CONTACT: John Smith
 TELEPHONE: 604 273 1474 FAX: 604 273 1474
 PROJECT NAME/NO.: 1000 Burrard St
 QUOTE / P.O. NO.:
 DATE SUBMITTED: ASL CONTACT: John Smith

Specialists in
Environmental Chemistry



788 Triumph Street
Vancouver, BC
V6L 1K5
TEL: (604) 253-4188
TOLL FREE: (800) 665-0243
FAX: (604) 253-6700

ANALYSIS REQUESTED

BETX VPH
 VOC VPH
 EPH
 PAH
 LEPH / HEPH
 MOG SWOG
 Metals - PL, RL, CL, IL AL
 Metals - AW DW

FOR LAB USE ONLY	LAB USE ONLY		SAMPLE IDENTIFICATION		DATE / TIME COLLECTED			MATRIX	ANALYSIS REQUESTED										NOTES
	Y	M	D						S	W									
1	58785			SS 213-A1	15	1	13	AM											
2				SS 213-A2				PM											
3				SS 212-B1				AM											
4				SS 212-B2				PM											
5				SS 212-B3				AM											
6				SS 212-B4				PM											
7				SS 212-B5				AM											
8				SS 212-B6				PM											
9				SS 214-2				AM											
10				SS 214-3				PM											
11				SS 214-4				AM											
12				SS 215-1				PM											
13				SS 215-2				AM											
14				SS 215-3				PM											

TURN AROUND REQUIRED:

- ☐ ROUTINE (7 - 10 WORKING DAYS)
☐ RUSH (SPECIFY DATE):

SPECIAL INSTRUCTIONS:

SAMPLE CONDITION UPON RECEIPT:

- ☐ FROZEN
☐ COLD
☐ AMBIENT

RELINQUISHED BY:

DATE

TIME

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

Customized - British Columbia, CSR

REPORT COPY

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

1988 Triumph Street
 Vancouver, BC
 Canada V5L 1K5
 TEL: (604) 253-4188
 TOLL FREE: (800) 665-0243
 FAX: (604) 253-6700

ANALYSIS REQUESTED

PAGE 1 OF 1

CLIENT: British Columbia
 ADDRESS: 1000 Burrard Street
 CONTACT: Mr. [illegible]
 TELEPHONE: 604-253-4188 FAX: 604-253-6700
 PROJECT NAME/NO.: 708-1
 QUOTE / P.O. NO.: 708-1
 DATE SUBMITTED: 11/2/08 ASL CONTACT: Mr. [illegible]

Specialists in
 Environmental Chemistry



analytical service
 laboratories Ltd.

BETX ✓ VPH ✓
 VOC ✓ VPH ✓
 EPH ✓
 PAH ✓
 LEPH/HEPH ✓
 MO+G ✓ SWOG ✓
 Metals - PL, RL, CL, IL ✓ AL ✓
 Metals - AW ✓ DW ✓
 Waste Characterization ✓

FOR LAB USE ONLY	LAB USE ONLY		SAMPLE IDENTIFICATION		DATE / TIME COLLECTED			MATRIX	ANALYSIS REQUESTED										NOTES
	Y	M	D						S	W									
15				CS 715-4				AM	0.1										Crude tar
16				CS 715-5				PM											
17				CS 715-6				PM											
18				CS 715-A1				PM											
19				CS 715-A2				PM											
20				CS 715-B1				PM											
21				CS 715-B2				PM											
22				CS 715-C1				PM											
23				CS 715-C2				PM											
24				HC 708-1				PM											
25				HC 708-2				PM											
26				HC 708-3				PM											
27				HC 708-4				PM											
28				HC 708-5				PM											
29				HC 708-6				PM											
30				MP 124.5 Crude oil tar				PM	0.1										Crude tar

TURN AROUND REQUIRED:

- ☐ ROUTINE (7 - 10 WORKING DAYS)
☐ RUSH (SPECIFY DATE): _____

SPECIAL INSTRUCTIONS:

SAMPLE CONDITION UPON RECEIPT:

- ☐ FROZEN
☐ COLD
☐ AMBIENT

RELINQUISHED BY:

DATE

TIME

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

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CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

188 Triumph Street
Vancouver, BC
Canada V5L 1K5
TEL: (604) 253-4188
TOLL FREE: (800) 665-0243
FAX: (604) 253-6700

ANALYSIS REQUESTED

OF

CLIENT: CONTRACTOR DEP. LIAISON
ADDRESS: Suite 212, 712 Main St.
Forest River, MN
CONTACT: _____
TELEPHONE: 612.712.2121 FAX: _____
PROJECT NAME/NO.: 10000000000000000000
QUOTE / P.O. NO.: _____
DATE SUBMITTED: _____ ASL CONTACT: 11/11/00

Specialists in
Environmental Chemistry



analytical service
laboratories ltd.

5-0243
0

BETX _____ VPH _____
VOC _____ VPH _____
EPH _____
PAH _____
LEPH / HEPH _____
MO+G _____ SWOG _____
Metals - PL, RL, CL, IL _____, AL _____
Metals - AW _____, DW _____

FOR LAB USE ONLY

[illegible]

TURN AROUND REQUIRED:

- ☐ ROUTINE (7 - 10 WORKING DAYS)
☐ RUSH (SPECIFY DATE): _____

SPECIAL INSTRUCTIONS:

SAMPLE CONDITION
UPON RECEIPT:

- ☐ FROZEN
☐ COLD
☐ AMBIENT

RELINQUISHED BY:

DATE

TIME

RELINQUISHED BY:

DATE _____

TIME

RECEIVED BY:

DATE _____

TIME

RECEIVED BY:

DATE	
------	--

TIME

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CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

88 Triumph Street
Vancouver, BC
Canada V5L 1K5
TEL: (604) 253-4188
TOLL FREE: (800) 665-0243
FAX: (604) 253-6700

ANALYSIS REQUESTED

OF

CLIENT: _____
ADDRESS: _____
CONTACT: _____
TELEPHONE: _____ FAX: _____
PROJECT NAME/NO.: _____
QUOTE / PO. NO.: _____
DATE SUBMITTED: _____
ASL CONTACT: _____

Specialists in
Environmental Chemistry



BETX _____ VPH _____
VOC _____ VPH _____
EPH _____
PAH _____
LEPH / HEPH _____
MO+G _____ SWOG _____
Metals - PL, RL, CL, IL, AL _____
Metals - AW _____ DW _____

FOR LAB USE ONLY	LAB USE ONLY		SAMPLE IDENTIFICATION				DATE / TIME COLLECTED			MATRIX	ANALYSIS REQUESTED										NOTES
	Y	M	D								C	W									
8785	96			TPP - Eng - and (11/1/96)			18	09	12	AM											
	47			TP1 - O - 0.5 m						PM											
	48			TP1 - O - 0.5 m						PM											
	49									PM											
	50			TP5						PM											
	51									PM											
	52			TP13						PM											
	53									PM											
	54			SS 708 - A2						PM											
	55			SS 708 - A1						PM											
	56			SS 708 - B2						PM											
	57			SS 708 - C1						PM											
	58			SS 708 - C2						PM											
	59			SS 708 - D1						PM											
	60			SS 708 - D2						PM											

TURN AROUND REQUIRED:

- ☐ ROUTINE (7 - 10 WORKING DAYS)
☐ RUSH (SPECIFY DATE): _____

SPECIAL INSTRUCTIONS:

SAMPLE CONDITION UPON RECEIPT:

- ☐ FROZEN
☐ COLD
☐ AMBIENT

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

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CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

188 Triumph Street
Vancouver, BC
Canada V5L 1K5
TEL: (604) 253-4188
TOLL FREE: (800) 665-0243
FAX: (604) 253-6700

ANALYSIS REQUESTED

OF

CLIENT: Gordon Lee Ltd.
ADDRESS: 5047 72nd St. Richmond
CONTACT: Paul Brown
TELEPHONE: 604-23-1111 FAX: 604-23-0321
PROJECT NAME/NO.: 15300 1000 Rd
QUOTE / P.O. NO.: _____
DATE SUBMITTED: _____ ASL CONTACT: Heather

Specialists in
Environmental Chemistry



analytical service
laboratories Ltd.

BETX _____ VPH _____
VOC _____ VPH _____
EPH _____
PAH _____
LEPH/HEPH _____
MO+G _____ SWOG _____
Metals - RL, RL, CL, IL, AL _____
Metals - AW _____ DW _____

LAB USE ONLY	SAMPLE IDENTIFICATION		DATE / TIME COLLECTED			MATRIX	ANALYSIS REQUESTED										NOTES
			Y	M	D		BETX	VOC	EPH	PAH	LEPH/HEPH	MO+G	SWOG	Metals - RL, RL, CL, IL, AL	Metals - AW	DW	
1585	SS 208-E1		15	09	12	AM			X								
1586	SS 208-E2					PM			X								
1587	SS 208-F1					AM			X								
1588	SS 208-F2					PM			X								
1589	208 U/S soil					AM											held
1590	208 U/S soil					PM											held
1591	11173-MW3 W		13	09	07	AM											held
1592	11173-MW3 E					PM			X	X							
1593	205 nile CI. soil		15	09	12	AM											held
1594	205 nile CI. soil					PM											
1595	207-1					AM			X				X				
1596	207-2					PM			X								
1597	207-3					AM		X	X								
1598	207-4					PM		X	X								
1599	207-5					AM		X	X								
1600	207-6					PM		X	X								
1601	207-7					AM		X	X								
1602	207-8					PM		X	X								
1603	207-9					AM		X	X								
1604	207-10					PM		X	X								
1605	207-11					AM		X	X								
1606	207-12					PM		X	X								

TURN AROUND REQUIRED:

- ☐ ROUTINE (7 - 10 WORKING DAYS)
☐ RUSH (SPECIFY DATE): _____

SPECIAL INSTRUCTIONS:

SAMPLE CONDITION UPON RECEIPT:

- ☐ FROZEN
☐ COLD
☐ AMBIENT

RELINQUISHED BY:

DATE

TIME

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

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CHEMICAL ANALYSIS REPORT

Date: October 23, 1998
ASL File No. J8910
Report On: 98-800 Soil, Water & Product Analysis
Report To: **Gartner Lee Ltd.**
Suite 212 Main St.
Whitehorse, YT
Y1A 2A9
Attention: **Mr. Forest Pearson**
Received: September 24, 1998

ASL ANALYTICAL SERVICE LABORATORIES LTD.
per:

A handwritten signature in cursive script, appearing to read "Heather A. Ross".

Heather A. Ross, B.Sc. - Project Chemist
Miles Gropen, B.Sc. - Project Chemist



**REMARKS**

File No. J8910

Please note that the product samples identified as "B73-1", "B124-1" and "B124-2" were subcontracted to Powertech Labs Inc. for the Waste Oil Specifications, which includes metals, Polychlorinated Biphenyls and Total Organic Halide. The other samples that are identified as products were too solid to perform this analysis and were returned to ASL for metals and extractable petroleum hydrocarbon analysis, as per the client's instructions.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-223-1	SS-223-2	SS-223-3	SS-223-4	SS-223-5
98 09 18	98 09 18	98 09 18	98 09 18	98 09 18

Physical Tests

Moisture %

10.5	21.5	11.7	8.8	8.5
------	------	------	-----	-----

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. J8910

		SS-223-6	SS-223-7	SS-UN-1	SS-SEKIE 2-1	SS-267.5 -1
		98 09 18	98 09 18	98 09 18	98 09 18	98 09 18
Physical Tests						
Moisture	%	8.0	7.0	5.5	10.2	14.7
Total Metals						
Antimony	T-Sb	-	-	<20	<20	-
Arsenic	T-As	-	-	10	58	-
Barium	T-Ba	-	-	166	47	-
Beryllium	T-Be	-	-	<0.5	1.2	-
Cadmium	T-Cd	-	-	0.7	<0.1	-
Chromium	T-Cr	-	-	10	30	-
Cobalt	T-Co	-	-	22	<2	-
Copper	T-Cu	-	-	33	35	-
Lead	T-Pb	-	-	<50	231	-
Mercury	T-Hg	-	-	0.039	0.153	-
Molybdenum	T-Mo	-	-	5	9	-
Nickel	T-Ni	-	-	46	<5	-
Selenium	T-Se	-	-	2	5	-
Silver	T-Ag	-	-	<2	<2	-
Tin	T-Sn	-	-	<10	<10	-
Vanadium	T-V	-	-	32	625	-
Zinc	T-Zn	-	-	135	42	-

Remarks regarding the analyses appear at the beginning of this report.

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EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

	SS-267.5 -2	SS-267.5 -3	SS-267.5 -4	SS-267.5 -5	SS-267.5 -6
	98 09 18	98 09 18	98 09 18	98 09 18	98 09 18
Physical Tests					
Moisture %	27.7	28.4	13.0	28.6	12.8

Remarks regarding the analyses appear at the beginning of this report.

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¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-267.5 -7	SS-267.5 -8	SS-267.5 -9	SS-267.5 -10	SS-234 (A)-1-1
98 09 18	98 09 18	98 09 18	98 09 18	98 09 19

Physical Tests

Moisture %	9.2	18.6	11.4	10.8	57.1
------------	-----	------	------	------	------

Remarks regarding the analyses appear at the beginning of this report.

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EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

	SS-234 (A)-1-2	SS-234 (A)-1-3	SS-234 (A)-1-4	SS-234 (A)-2-1	SS-234 (A)-2-2
	98 09 19	98 09 19	98 09 19	98 09 19	98 09 19
Physical Tests					
Moisture %	30.6	14.0	16.5	39.9	27.0

Remarks regarding the analyses appear at the beginning of this report.

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¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

	SS-234 (A)-2-3	SS-234 (A)-2-4	SS-234 (A)-3-1	SS-234 (A)-3-2	SS-234 (A)-3-3
	98 09 19	98 09 19	98 09 19	98 09 19	98 09 19
Physical Tests					
Moisture %	44.3	18.9	42.9	39.9	29.7

Remarks regarding the analyses appear at the beginning of this report.

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EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-234
(A)-3-4

SS-234
(A)-3-5

98 09 19

98 09 19

Physical Tests

Moisture %

21.9

6.2

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-223-1	SS-223-2	SS-223-3	SS-223-4	SS-223-5
98 09 18	98 09 18	98 09 18	98 09 18	98 09 18

Extractables

EPH (C10-18)	<200	<200	<200	<200	<200
EPH (C19-31)	<200	<200	<200	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-223-6	SS-223-7	SS-267.5 -1	SS-267.5 -2	SS-267.5 -3
98 09 18	98 09 18	98 09 18	98 09 18	98 09 18

Extractables

EPH (C10-18)
EPH (C19-31)

<200	<200	<200	<200	<200
<200	<200	<200	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-267.5 -4	SS-267.5 -5	SS-267.5 -6	SS-267.5 -7	SS-267.5 -8
98 09 18	98 09 18	98 09 18	98 09 18	98 09 18

Extractables

EPH (C10-18)	<200	<200	<200	660	<200
EPH (C19-31)	<200	<200	<200	4650	<200

Remarks regarding the analyses appear at the beginning of this report.

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EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-267.5 -9	SS-267.5 -10	SS-234 (A)-1-1	SS-234 (A)-1-2	SS-234 (A)-1-3
98 09 18	98 09 18	98 09 19	98 09 19	98 09 19

Extractables

EPH (C10-18)	<200	<200	<200	14700	<200
EPH (C19-31)	<200	844	233	1940	<200

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-234 (A)-1-4	SS-234 (A)-2-1	SS-234 (A)-2-2	SS-234 (A)-2-3	SS-234 (A)-2-4
98 09 19	98 09 19	98 09 19	98 09 19	98 09 19

Extractables

EPH (C10-18)	<200	<200	<200	<200	<200
EPH (C19-31)	<200	212	<200	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Sediment/Soil¹

File No. J8910

SS-234 (A)-3-1	SS-234 (A)-3-2	SS-234 (A)-3-3	SS-234 (A)-3-4	SS-234 (A)-3-5
98 09 19	98 09 19	98 09 19	98 09 19	98 09 19

Extractables

EPH (C10-18)	<200	<200	<200	<200	458
EPH (C19-31)	284	<200	<200	<200	2850

Remarks regarding the analyses appear at the beginning of this report.

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¹Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Product¹**

File No. J8910

		MP174- ² TAR-1	MO174- ³ TAR-2	B73-1	B124-1	B124-2
		98 09 19	98 09 19	98 09 19	98 09 19	98 09 19
Physical Tests						
Flashpoint	Degrees C.	>61	>61	-	-	-
Moisture	%	<0.1	<0.1	-	-	-
Total Metals						
Arsenic	T-As	166	28	<4	<4	<4
Cadmium	T-Cd	<0.3	<0.3	<1	<1	<1
Chromium	T-Cr	32	6	<1	<1	<1
Lead	T-Pb	227	36	72	16	11

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per litre except where noted.

²Results are expressed as milligrams per dry kilogram except where noted.

³Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Product¹**

File No. J8910

	MP174- ² TAR-1	MO174- ³ TAR-2	B73-1	B124-1	B124-2
	98 09 19	98 09 19	98 09 19	98 09 19	98 09 19
<u>Polychlorinated Biphenyls</u>					
Total Polychlorinated Biphenyls	-	-	<2	<2	<2
<u>Extractables</u>					
EPH (C10-18)	16100	46400	-	-	-
EPH (C19-31)	141000	220000	-	-	-
<u>Organic Parameters</u>					
Total Organic Halide	-	-	<300	<300	<300

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per litre except where noted.

²Results are expressed as milligrams per dry kilogram except where noted.

³Results are expressed as milligrams per dry kilogram except where noted.

**RESULTS OF ANALYSIS - Water¹**

File No. J8910

		SW-UN-1	SW-SEKIE 2-1	SW-MAC.
		98 09 18	98 09 18	98 09 18
Physical Tests				
Hardness	CaCO ₃	29.6	116	161
Total Metals				
Aluminum	T-Al	0.009	67.7	147
Antimony	T-Sb	<0.2	<0.2	<0.2
Arsenic	T-As	<0.2	<0.2	<0.2
Barium	T-Ba	0.12	0.02	<0.01
Beryllium	T-Be	<0.005	<0.005	0.009
Boron	T-B	<0.1	<0.1	<0.1
Cadmium	T-Cd	<0.0002	0.190	0.149
Calcium	T-Ca	8.23	24.2	20.0
Chromium	T-Cr	<0.01	0.06	0.21
Cobalt	T-Co	<0.01	0.15	0.20
Copper	T-Cu	<0.01	0.30	0.13
Iron	T-Fe	<0.03	99.6	242
Lead	T-Pb	<0.001	0.05	<0.01
Magnesium	T-Mg	2.2	13.4	26.9
Manganese	T-Mn	<0.005	1.50	1.11
Mercury	T-Hg	<0.00005	<0.00005	<0.00005
Molybdenum	T-Mo	<0.03	<0.03	<0.03
Nickel	T-Ni	<0.05	1.29	2.23
Selenium	T-Se	0.001	0.0043	0.0092
Silver	T-Ag	<0.0001	<0.001	<0.001
Thallium	T-Tl	<0.0001	0.002	0.003
Uranium	T-U	0.00001	0.0152	0.0219
Zinc	T-Zn	0.033	10.3	4.95

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per litre except where noted.

**RESULTS OF ANALYSIS - Water¹**

File No. J8910

	SW-223-1	MW-234- MW-1	TB-1	TB-2	TB-3
	98 09 18	98 09 19	98 09 18	98 09 18	98 09 18
<u>Polycyclic Aromatic Hydrocarbons</u>					
Acenaphthene	-	<0.0005	-	-	-
Acenaphthylene	-	<0.0005	-	-	-
Acridine	-	0.00009	-	-	-
Anthracene	-	0.0003	-	-	-
Benz(a)anthracene	-	0.00084	-	-	-
Benzo(a)pyrene	-	0.00065	-	-	-
Benzo(b)fluoranthene	-	0.00094	-	-	-
Benzo(g,h,i)perylene	-	0.0004	-	-	-
Benzo(k)fluoranthene	-	0.00038	-	-	-
Chrysene	-	0.0010	-	-	-
Dibenz(a,h)anthracene	-	0.00014	-	-	-
Fluoranthene	-	0.0019	-	-	-
Fluorene	-	<0.0001	-	-	-
Indeno(1,2,3-c,d)pyrene	-	0.00044	-	-	-
Naphthalene	-	0.0003	-	-	-
Phenanthrene	-	0.0009	-	-	-
Pyrene	-	0.00163	-	-	-
<u>Extractables</u>					
EPH (C10-18)	0.6	1.8	<0.5	<0.5	<0.5
EPH (C19-31)	1	8	<1.0	<1.0	<1.0

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per litre except where noted.



Appendix I - QUALITY CONTROL - Replicates

File No. J8910

Sediment/Soil ¹	SS-267.5 -6	SS-267.5 -6
	98 09 18	QC # 134301

Physical Tests

Moisture %	12.8	18.1
------------	------	------

Extractables

EPH (C10-18)	<200	<200
EPH (C19-31)	<200	<200

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8910

Sediment/Soil ¹	SS-234 (A)-1-1	SS-234 (A)-1-1
	98 09 19	QC # 134302

Physical Tests

Moisture %	57.1	56.4
------------	------	------

Extractables

EPH (C10-18)	<200	<200
EPH (C19-31)	233	266

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8910

Sediment/Soil¹

SS-234
(A)-2-2

SS-234
(A)-2-2

98 09 19

QC #
134303

Physical Tests

Moisture %

27.0

25.0

Extractables

EPH (C10-18)

<200

<200

EPH (C19-31)

<200

<200

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

EPH = Extractable Petroleum Hydrocarbons.

¹Results are expressed as milligrams per dry kilogram except where noted.



Appendix 2 - METHODOLOGY

File No. J8910

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows:

Moisture

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of three hours.

Metals in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3050B or Method 3051, published by the United States Environmental Protection Agency (EPA). The sample is manually homogenized and a representative subsample of the wet material is weighed. The sample is then digested by either hotplate or microwave oven using a 1:1 ratio of nitric acid and hydrochloric acid. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000A) and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Extractable Hydrocarbons in Sediment/Soil

This analysis is carried out using procedures adapted from U.S. EPA Methods 3500/8015 (Publ. # SW-846 3rd ed., Washington, DC 20460) and British Columbia Ministry of Environment, Lands and Parks Method for "Extractable Petroleum Hydrocarbons in Soil by GC/FID" (January 1996). The procedure involves a hexane/acetone solvent extraction followed by analysis of the extract by capillary column gas chromatography with flame ionization detection. Results are not corrected for Polycyclic Aromatic Hydrocarbons (PAHs) for Extractable Petroleum Hydrocarbon (LEPH/HEPH) purposes.

Flashpoint of Oil

This analysis is carried out in accordance with ASTM (American Society for Testing and Materials) Method D93 (Pensky-Marten closed cup). The



procedure involves heating a subsample at a slow constant rate with continual stirring in a closed cup. A small flame is directed into the cup at regular intervals. The flashpoint is the lowest temperature at which the application of the test flame ignites the vapour above the sample.

Note: Flashpoint analysis is subcontracted.

Metals in Oil, Grease, Paint and Product Mixtures

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3051, published by the United States Environmental Protection Agency (EPA). The procedures involve a digestion using a 1:1 ratio of nitric acid and hydrochloric acid combined with microwave heating. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000A) and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Polychlorinated Biphenyls in Oil

This analysis is carried out in accordance with procedures that are consistent with the requirements of the appropriate regulatory agencies and adapted from the American Society for Testing Materials (ASTM), Method D4059-86. Specifically, a subsample is diluted with hexane, partitioned with florisil and analysed for PCB using a gas chromatograph equipped with an electron capture detector.

Total Organic Halide (TOX) in Oil

This analysis is carried out using a procedure adapted from U.S. EPA Method 9020 (Publ. # SW-846, 3rd ed., Washington, DC 20460). The procedure involves diluting a subsample with xylene and extracting with dilute sulphuric acid to remove inorganic halogen. The extract is then analysed with a TOX analyser.

Note: TOX analysis is subcontracted.



Conventional Parameters in Water

These analyses are carried out in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

Metals in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 19th Edition 1995 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000A), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

Mercury in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 19th Edition 1995 published by the American Public Health Association. A cold-oxidation procedure involving bromine monochloride is used, followed by instrumental analysis by cold-vapour atomic absorption spectrophotometry (CVAAS).

Polycyclic Aromatic Hydrocarbons in Water

This analysis is carried out using a procedure adapted by ASL from U.S. EPA Methods 3510, 3630 and 8270 (publ. #SW-846, 3rd Ed., Washington, DC 20460). The procedure involves the extraction of the sample with methylene chloride followed by silica column chromatography cleanup. This cleanup procedure has been found to effectively remove aliphatic and heterocyclic hydrocarbons which could potentially interfere with the analysis. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection.



Extractable Hydrocarbons in Water

This analysis is carried out using procedures adapted from U.S. EPA Methods 3510/8015 (Publ. #SW-846, 3rd ed., Washington, DC 20460) and British Columbia Ministry of Environment, Lands and Parks Method for "Extractable Petroleum Hydrocarbons in Water by GC/FID" (January 1996). The procedure involves a methylene chloride solvent extraction followed by analysis of the extract by capillary column gas chromatography with flame ionization detection. Results are not corrected for Polycyclic Aromatic Hydrocarbons (PAHs) for Extractable Petroleum Hydrocarbon (LEPH/HEPH) purposes.

End of Report



APPENDIX

**HYDROCARBON
DISTRIBUTION
REPORTS**

HYDROCARBON DISTRIBUTION REPORT

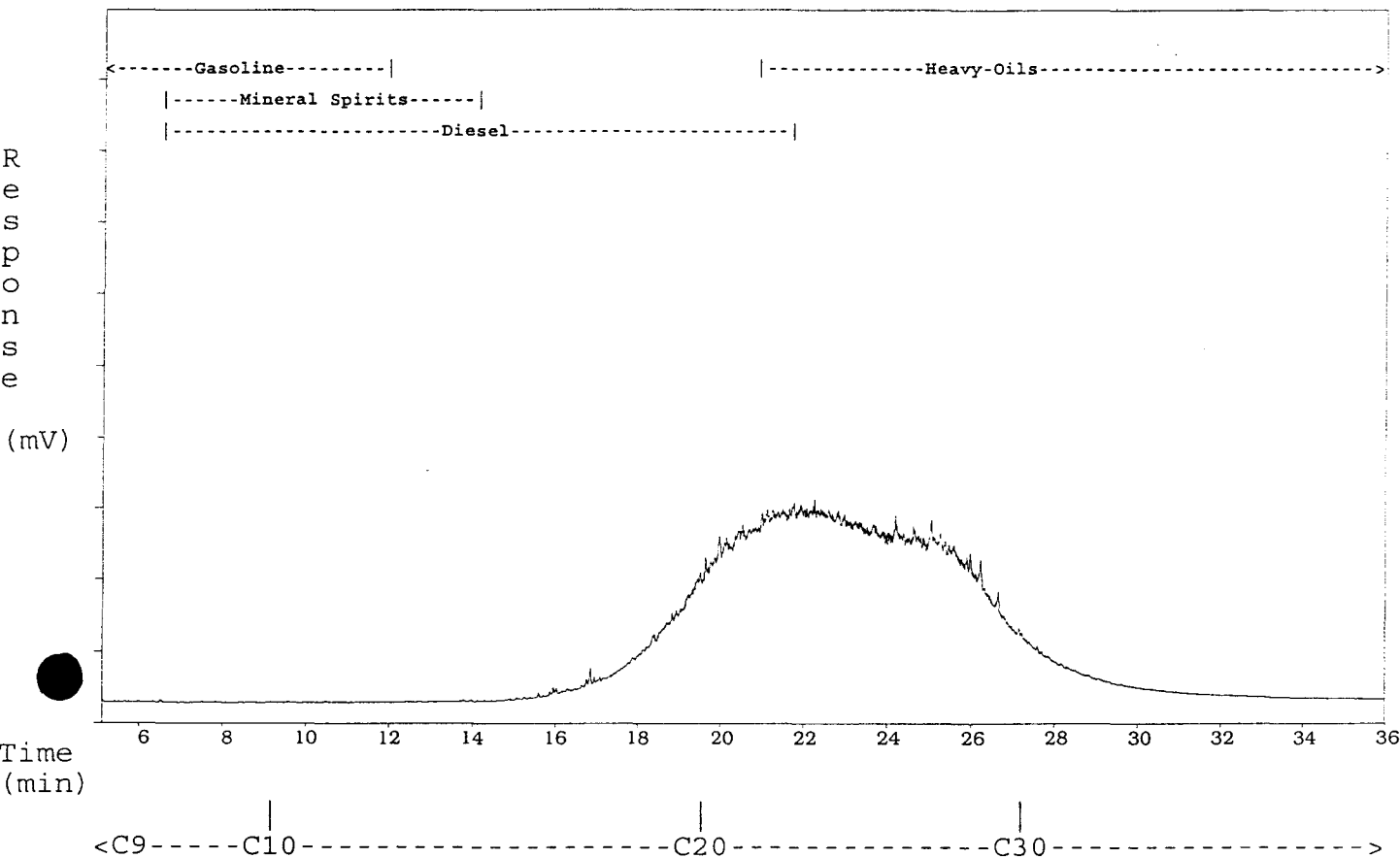
SAMPLE NAME: J8910-T--20 SS-267.5 -7 98 09 18

Sample acquired: OCT 3, 1998 02:11:07

Sequence File: TEHOCT2

File Name: C:\TEH\OCT2\TEHOCT2.27R , Sample Name: J8910-T--20

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8910-T--20* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	16.8
C20-C30 (beg-nC20 to beg-nC31)	67.3
C31-C40 (beg-nC31 to beg-nC41)	15.8

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8910-T--23 SS-267.5 -10 98 09 18

Sample acquired: OCT 3, 1998 04:50:14

Sequence File: TEHOCT2

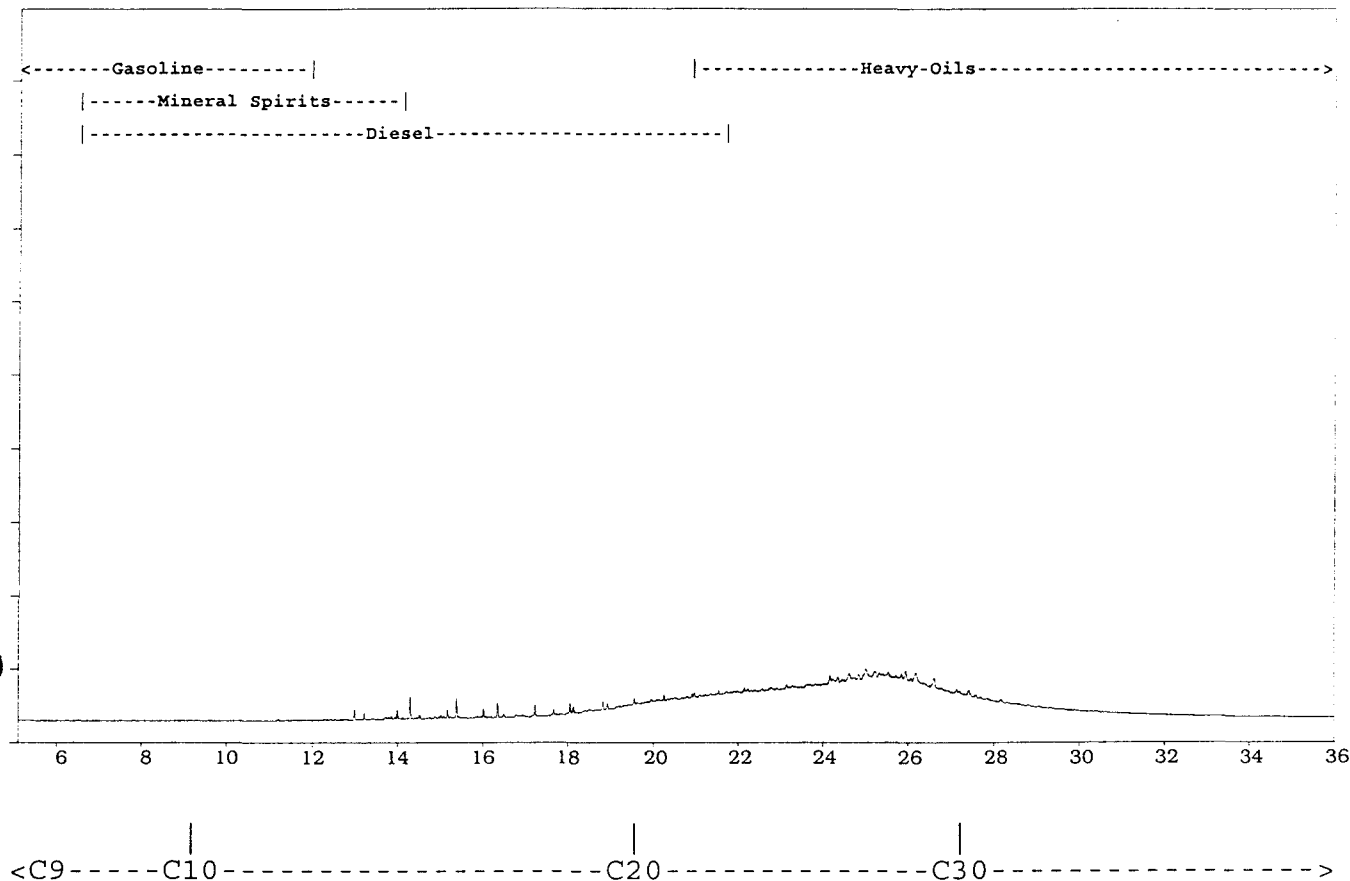
File Name: C:\TEH\OCT2\TEHOCT2.33R , Sample Name: J8910-T--23

Chromatogram Scale: 50.0 millivolts

Response

(mV)

Time
(min)



ASL Sample ID: J8910-T--23* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	12.8
C20-C30 (beg-nC20 to beg-nC31)	58.0
C31-C40 (beg-nC31 to beg-nC41)	29.1

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8910-T--25 SS-234 (A)-1-1

98 09 19

Sample acquired: OCT 3, 1998 03:57:01

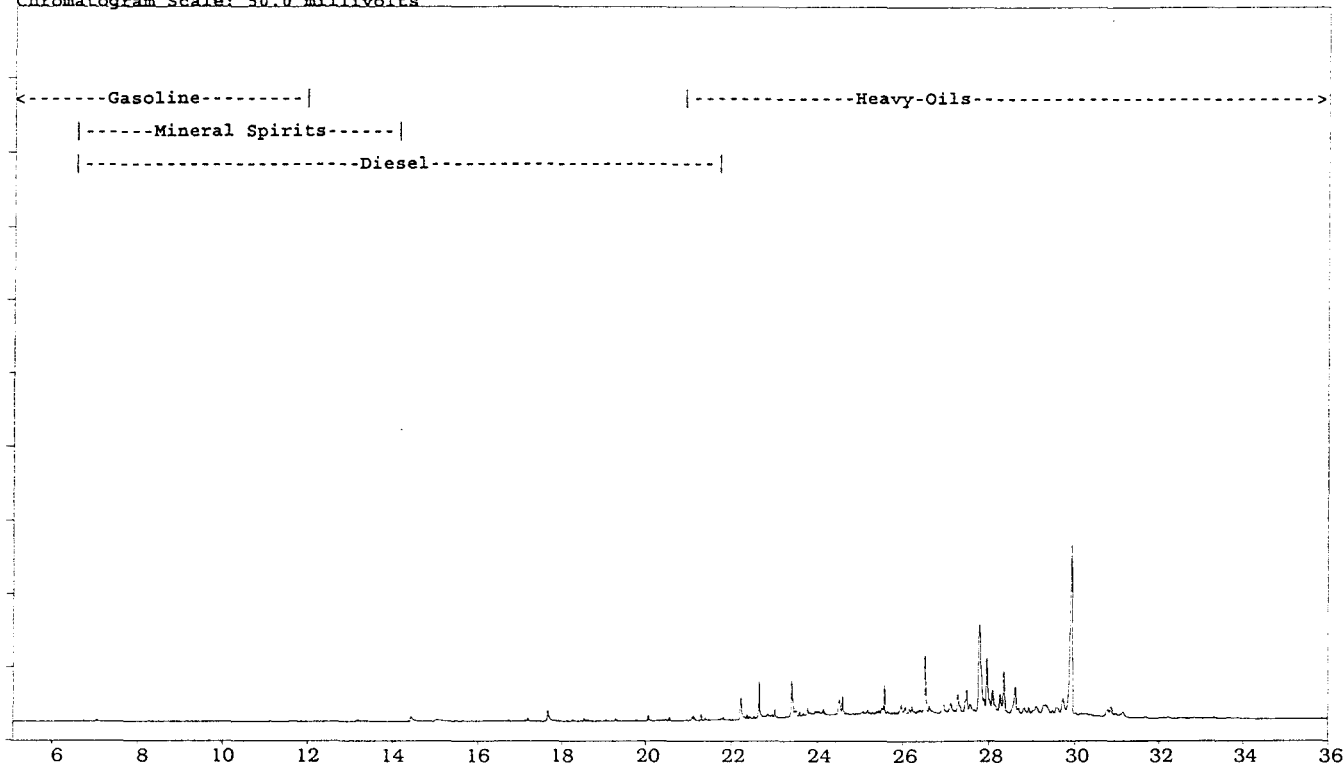
Sequence File: TEHOCT2

File Name: C:\TEH\OCT2\TEHOCT2.32R , Sample Name: J8910-T--25

Chromatogram Scale: 50.0 millivolts

R
e
s
p
o
n
s
e

(mV)



Time
(min)

<C9-----C10-----C20-----C30----->

ASL Sample ID: J8910-T--25* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.3
C10-C19 (beg-nC10 to beg-nC20)	1.9
C20-C30 (beg-nC20 to beg-nC31)	24.6
C31-C40 (beg-nC31 to beg-nC41)	73.2

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

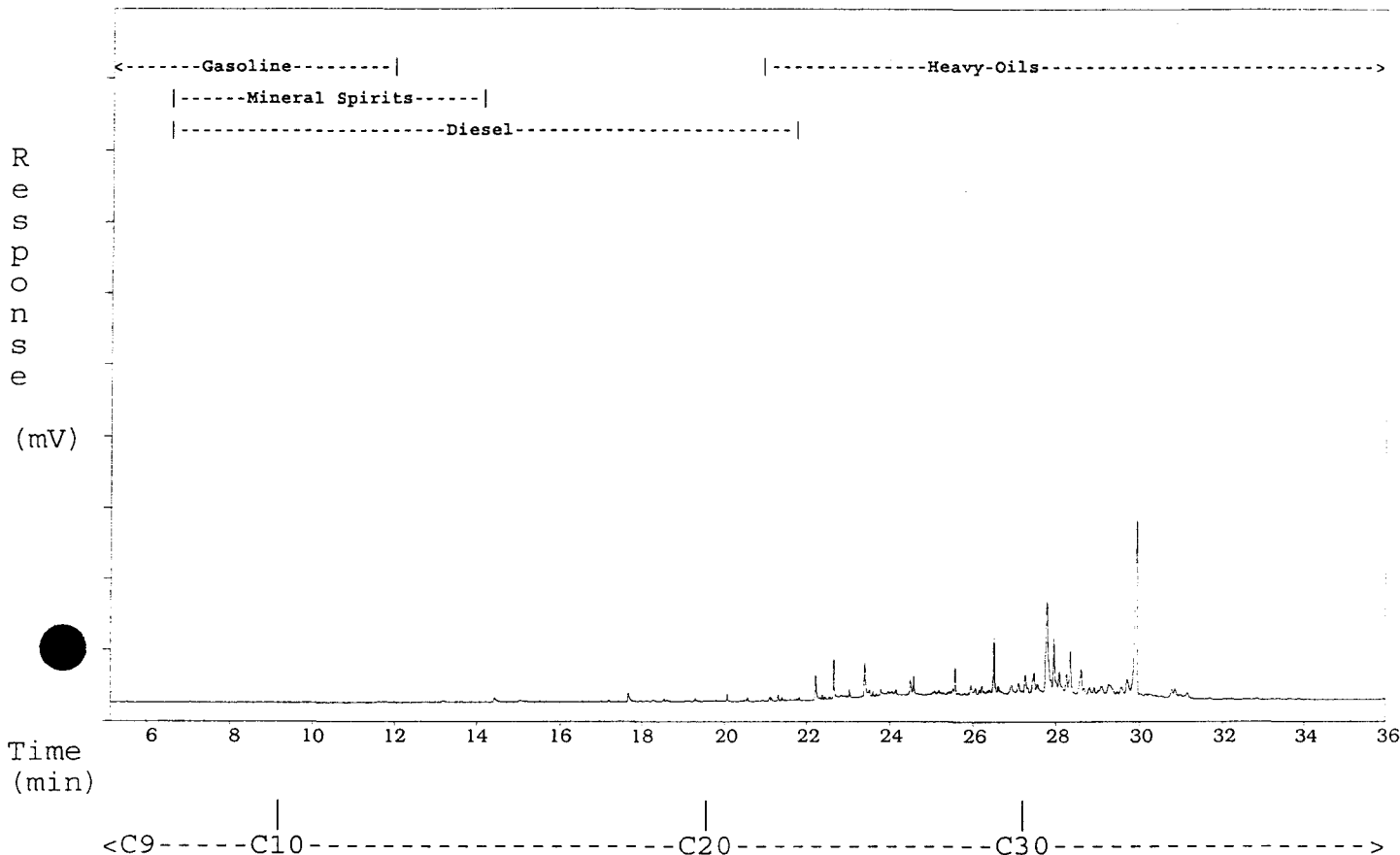
SAMPLE NAME: J8910 - 25 SS-234 (A)-1-1 LRep

Sample acquired: OCT 3, 1998 04:50:14

Sequence File: TEHOCT2

File Name: C:\TEH\OCT2\TEHOCT2.34R , Sample Name: QC-T--134302#J8910 25DU 98 09 19

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: QC-T--134302#J8910 25DUP* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.1
C10-C19 (beg-nC10 to beg-nC20)	2.8
C20-C30 (beg-nC20 to beg-nC31)	26.9
C31-C40 (beg-nC31 to beg-nC41)	70.1

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

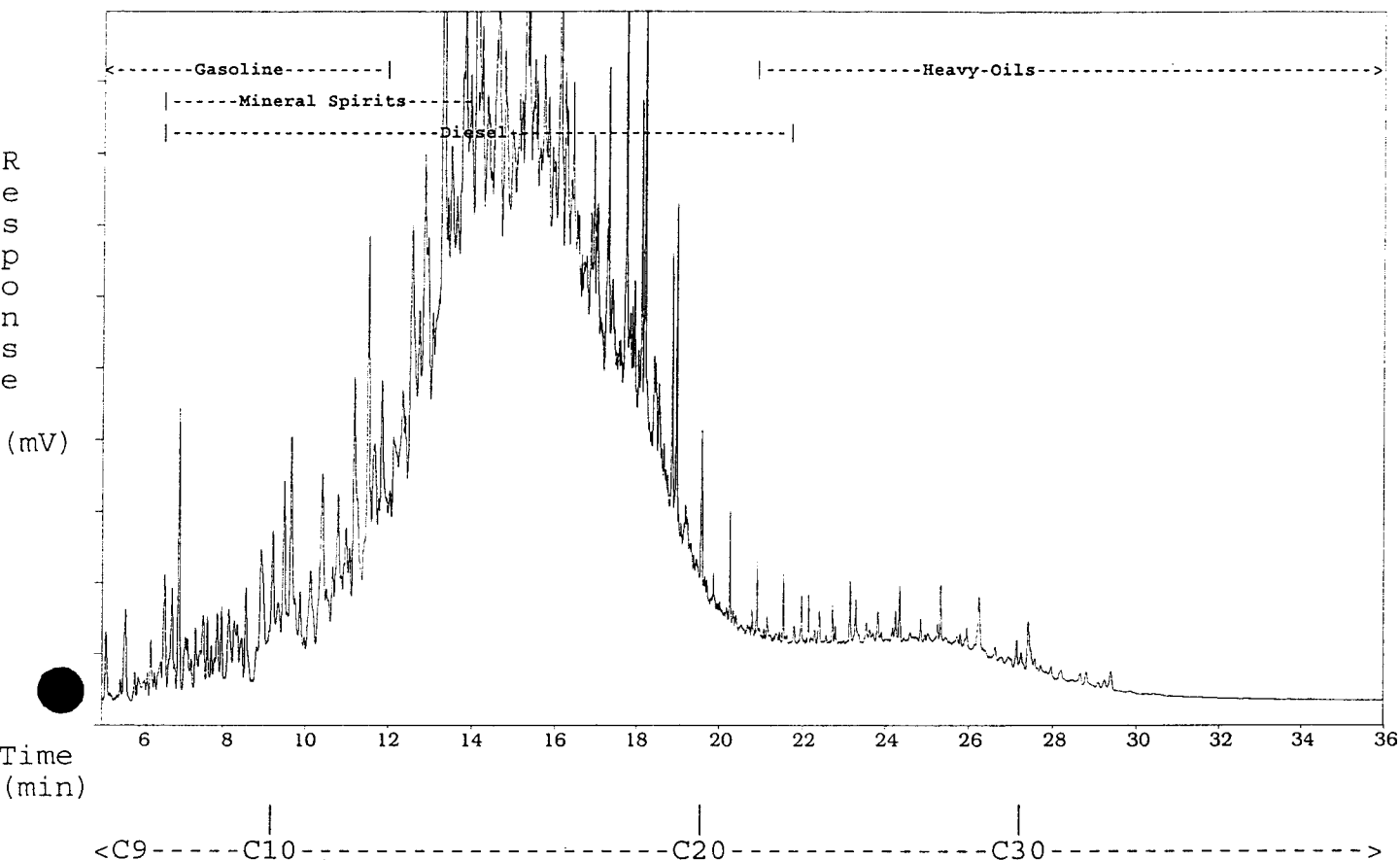
SAMPLE NAME: J8910-T--26 SS-234 (A)-1-2 98 09 19

Sample acquired: OCT 3, 1998 05:43:38

Sequence File: TEHOCT2

File Name: C:\TEH\OCT2\TEHOCT2.35R , Sample Name: J8910-T--26

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8910-T--26* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	2.9
C10-C19 (beg-nC10 to beg-nC20)	84.8
C20-C30 (beg-nC20 to beg-nC31)	9.1
C31-C40 (beg-nC31 to beg-nC41)	3.2

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8910-T--29 SS-234 (A)-2-1

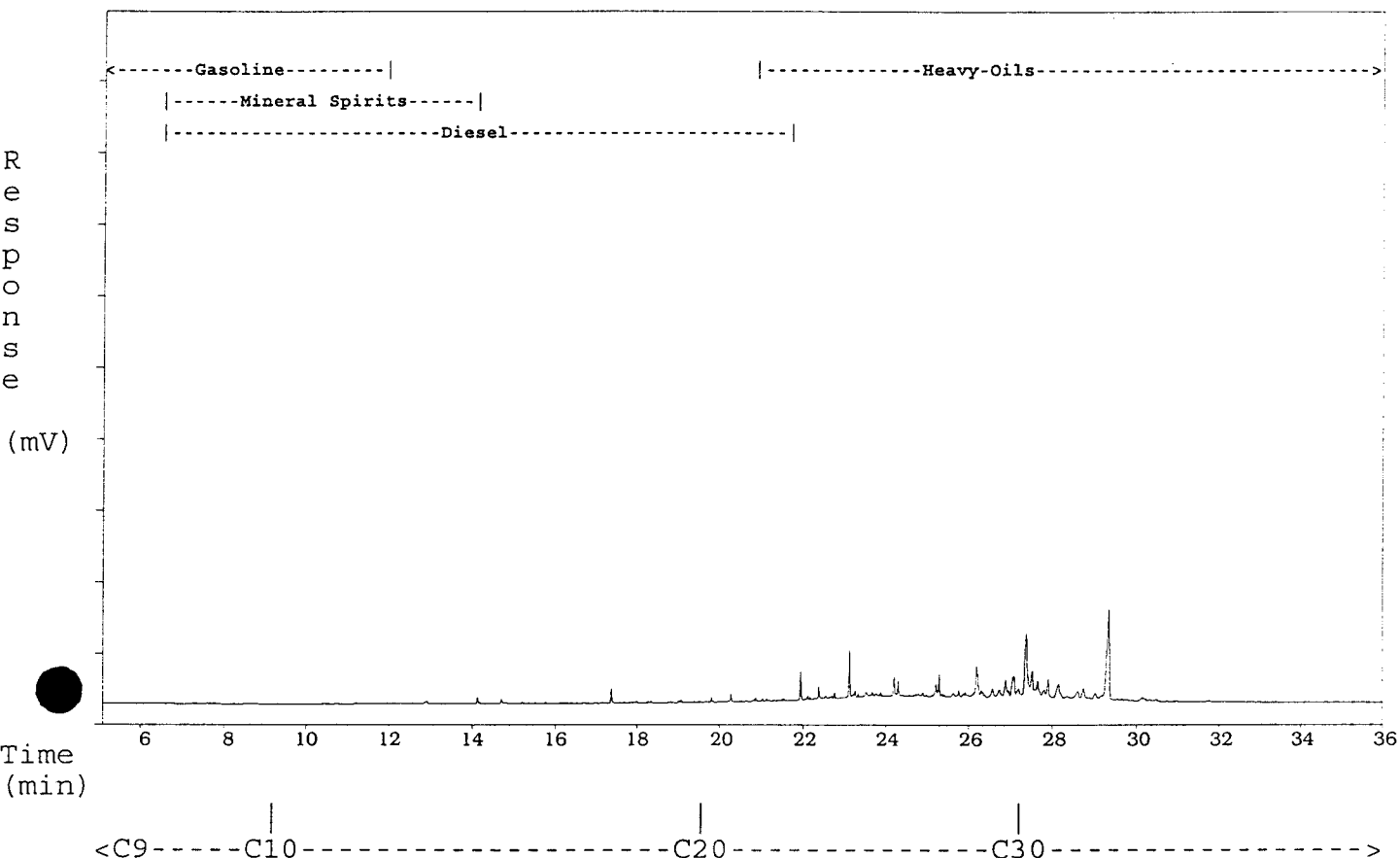
Sample acquired: OCT 5, 1998 18:22:41

Sequence File: TEHOCT5

File Name: C:\TEH\OCT5\TEHOCT5.13R , Sample Name: J8910-T--29

98 09 19

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8910-T--29* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.1
C10-C19 (beg-nC10 to beg-nC20)	5.0
C20-C30 (beg-nC20 to beg-nC31)	39.6
C31-C40 (beg-nC31 to beg-nC41)	55.2

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

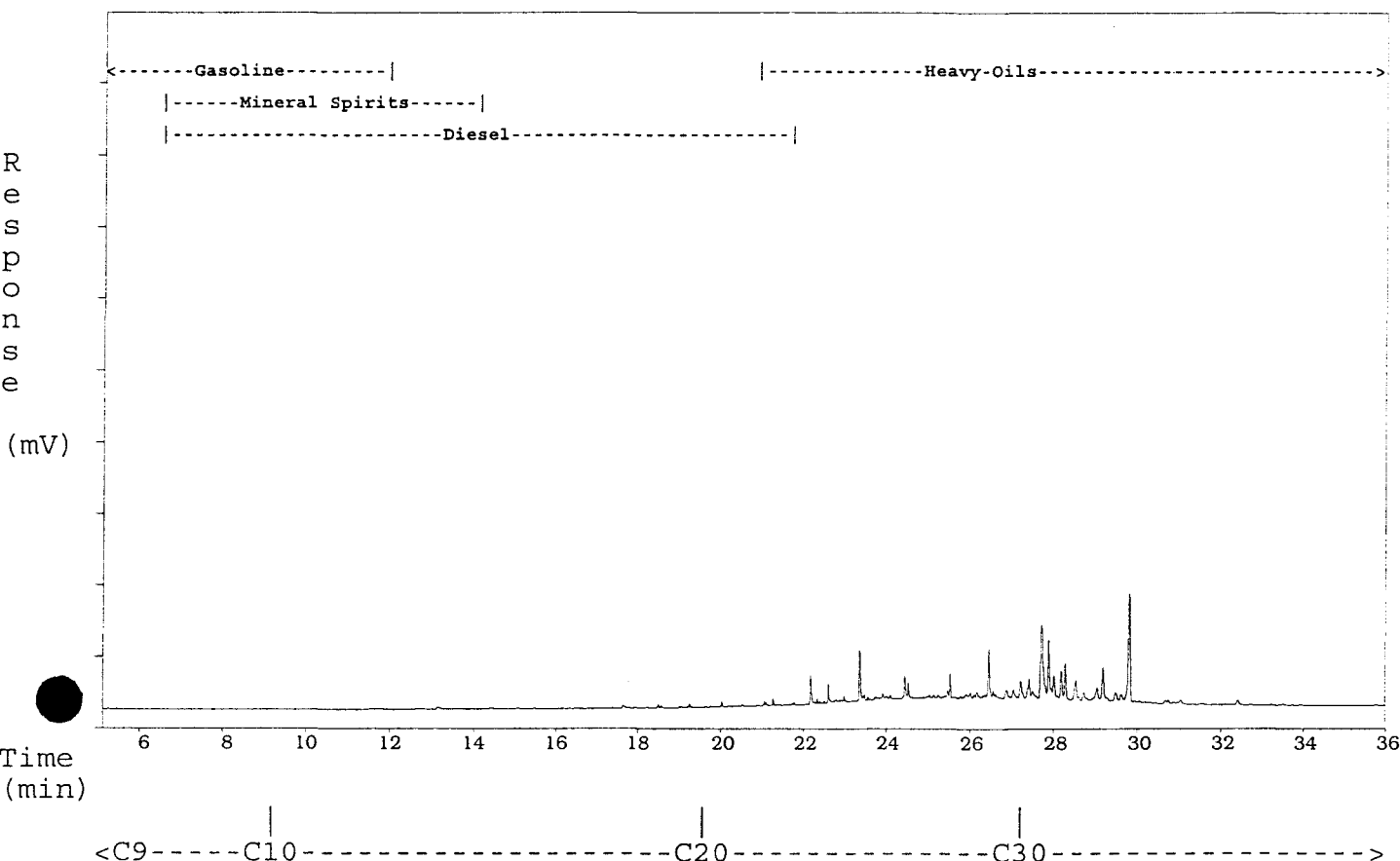
SAMPLE NAME: J8910-T--33 SS-234 (A)-3-1 98 09 19

Sample acquired: OCT 5, 1998 20:09:01

Sequence File: TEHOCT5

File Name: C:\TEH\OCT5\TEHOCT5.18R , Sample Name: J8910-T--33

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8910-T--33* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.2
C10-C19 (beg-nC10 to beg-nC20)	0.4
C20-C30 (beg-nC20 to beg-nC31)	0.0
C31-C40 (beg-nC31 to beg-nC41)	99.4

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

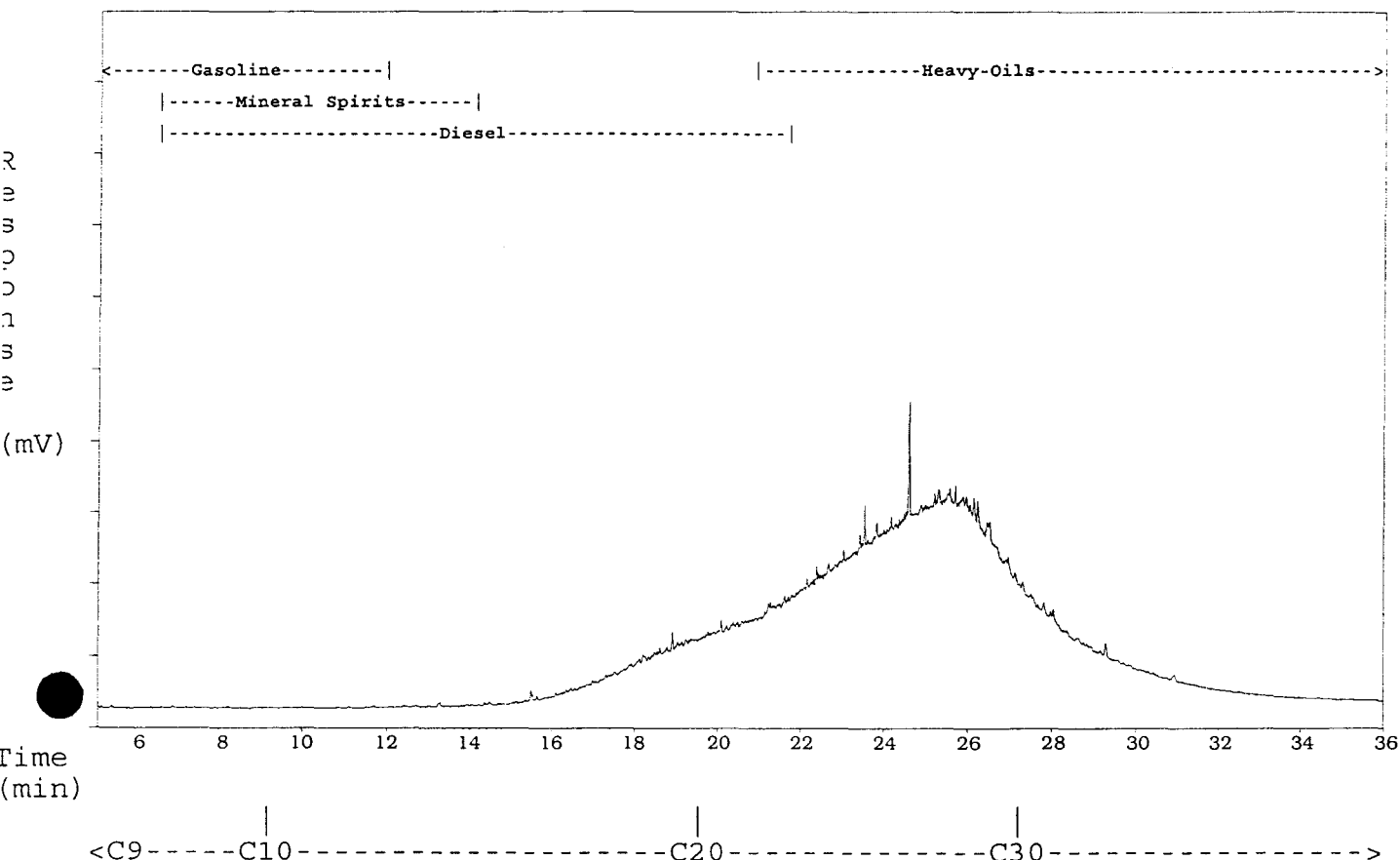
SAMPLE NAME: J8910-T--37 SS-234 (A)-3-5 98 09 19

Sample acquired: OCT 6, 1998 00:34:31

Sequence File: TEHOCT5

File Name: C:\TEH\OCT5\TEHOCT5.28R , Sample Name: J8910-T--37

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8910-T--37* 8.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.1
C10-C19 (beg-nC10 to beg-nC20)	11.9
C20-C30 (beg-nC20 to beg-nC31)	56.9
C31-C40 (beg-nC31 to beg-nC41)	31.1

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes -C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8910-T--38 MP174- TAR-1

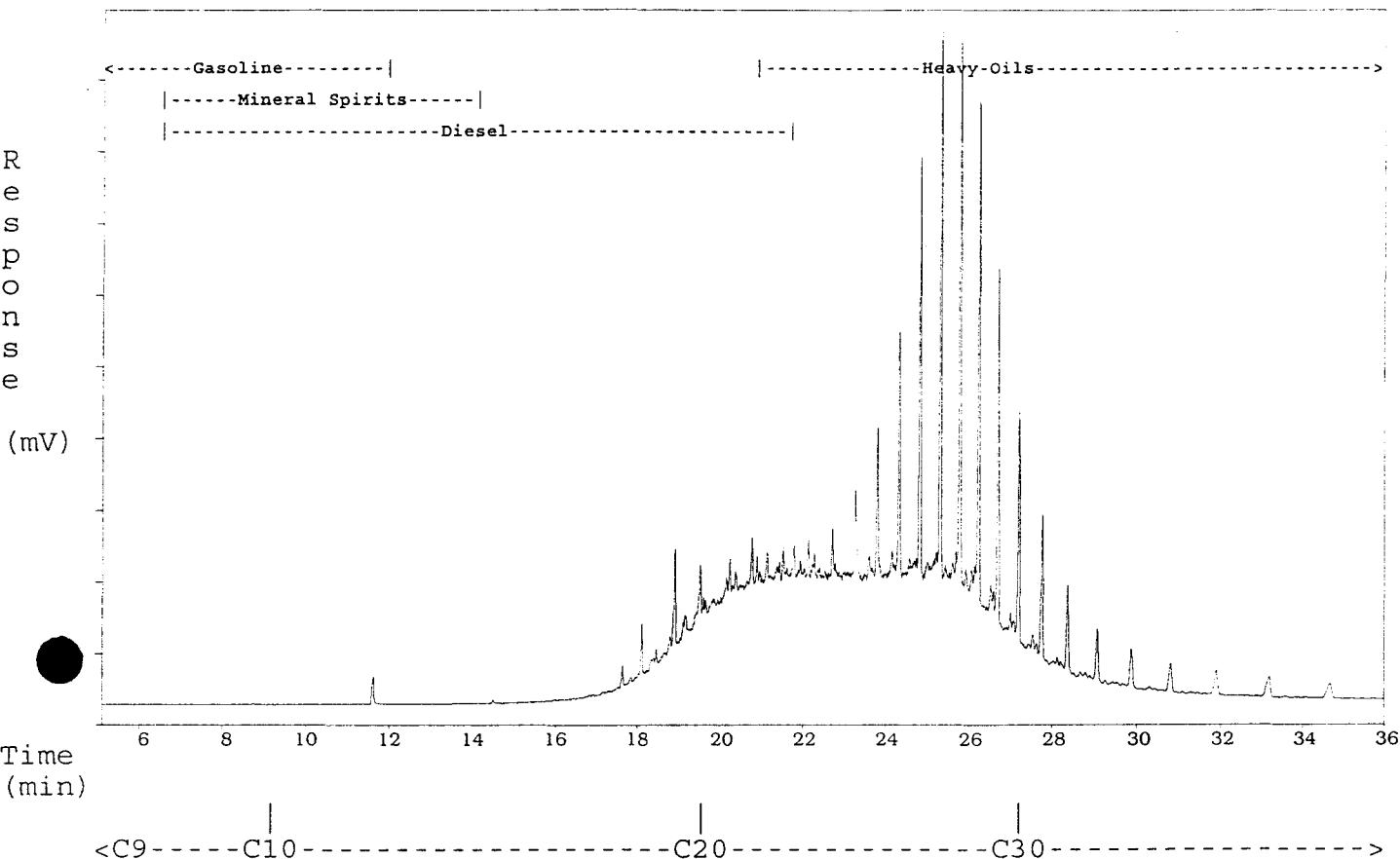
98 09 19

Sample acquired: OCT 15, 1998 06:32:43

Sequence File: TEHOCT14

File Name: C:\TEH\OCT14\TEHOCT14.49R , Sample Name: J8910-T--38

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8910-T--38* 30.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	12.3
C20-C30 (beg-nC20 to beg-nC31)	63.8
C31-C40 (beg-nC31 to beg-nC41)	23.9

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

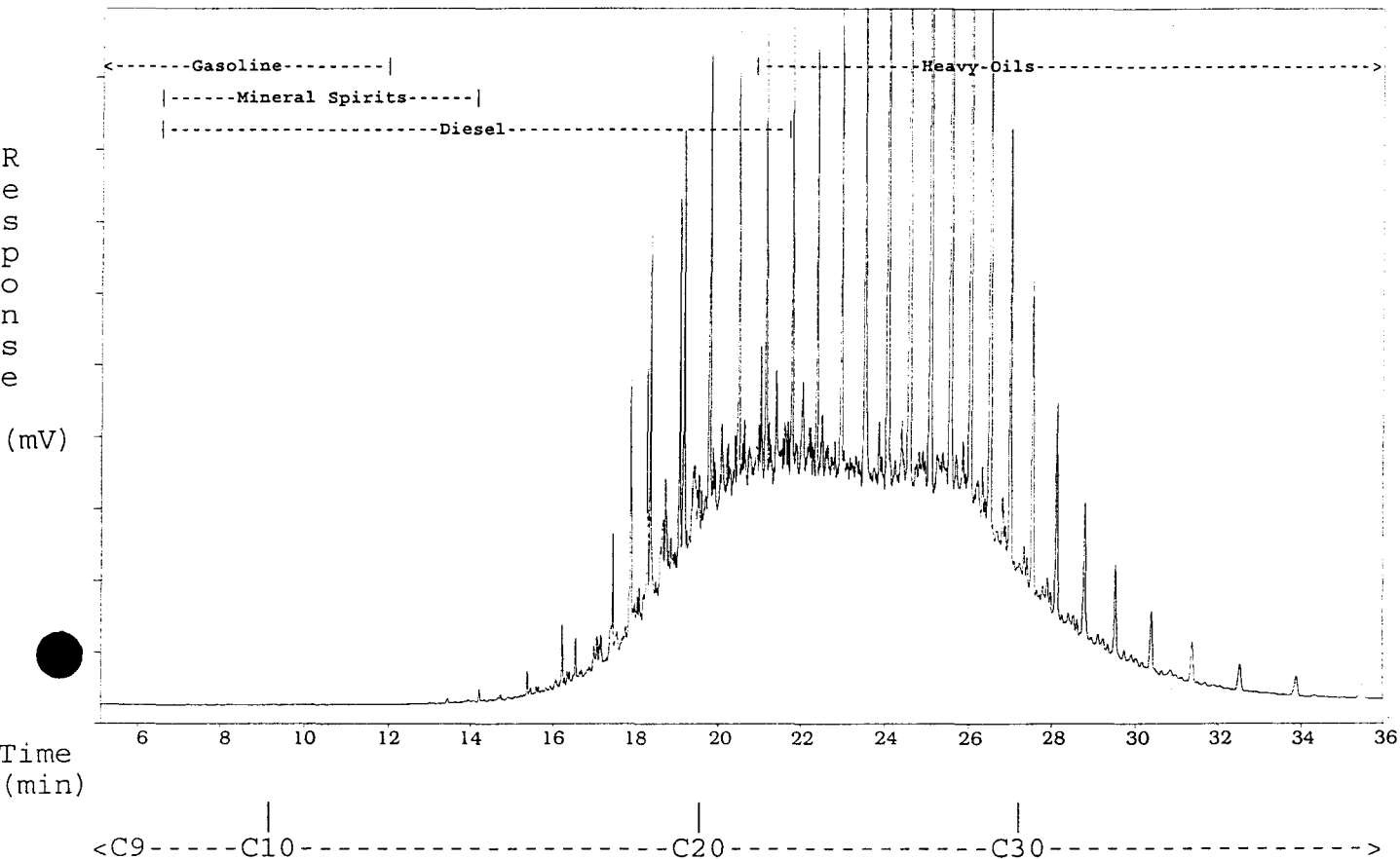
SAMPLE NAME: J8910-T--39 MO174- TAR-2 98 09 19

Sample acquired: OCT 15, 1998 06:32:43

Sequence File: TEHOCT14

File Name: C:\TEH\OCT14\TEHOCT14.50R , Sample Name: J8910-T--39

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8910-T--39* 30.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.0
C10-C19 (beg-nC10 to beg-nC20)	17.7
C20-C30 (beg-nC20 to beg-nC31)	58.8
C31-C40 (beg-nC31 to beg-nC41)	23.5

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: J8910-T--8 SW-223-1

98 09 18

Sample acquired: OCT 4, 1998 01:39:58

Sequence File: TEH2OCT

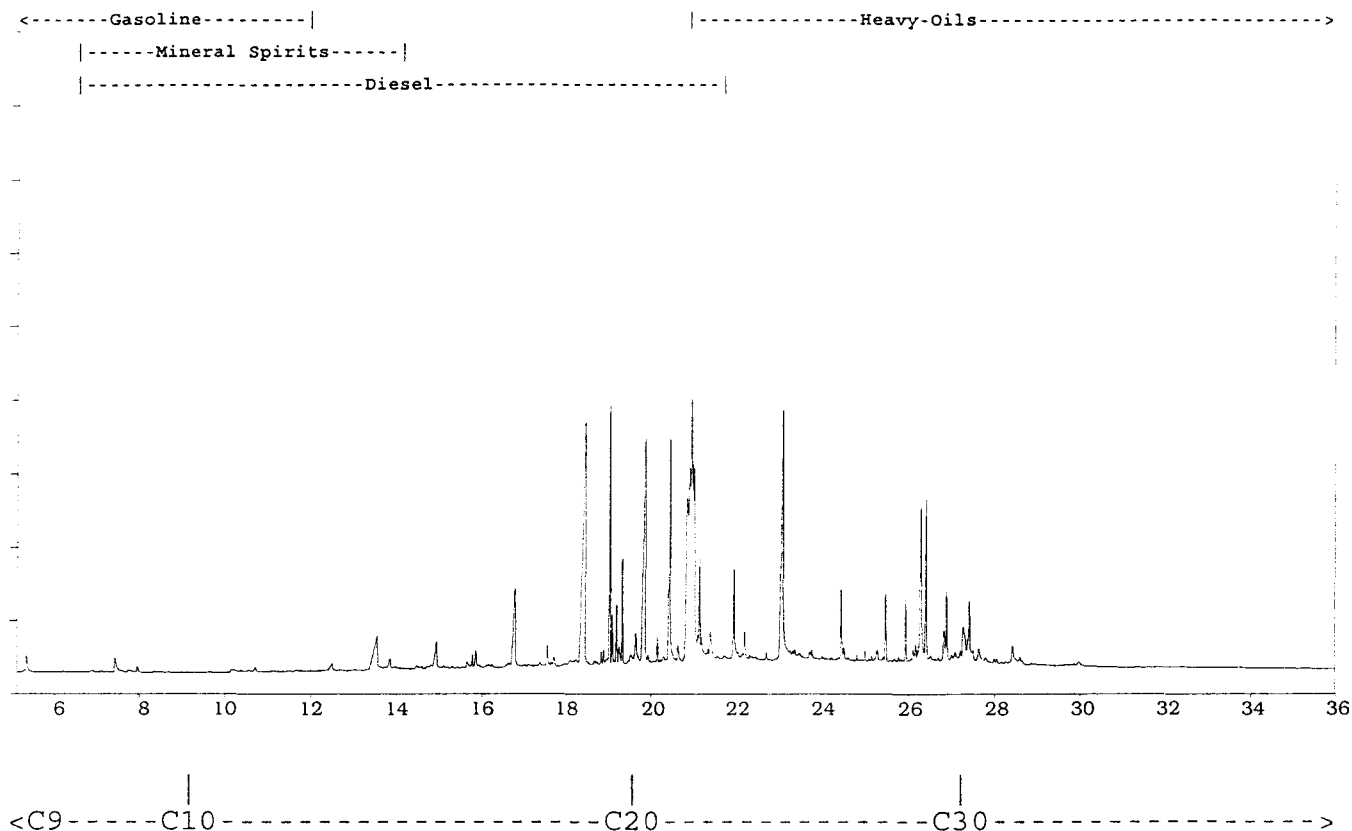
File Name: C:\TEH2\2OCT\TEH2OCT.82R , Sample Name: J8910-T--8

Chromatogram Scale: 50.0 millivolts

R
e
s
p
o
n
s
e

(mV)

Time
(min)



ASL Sample ID: J8910-T--8* 1.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.8
C10-C19 (beg-nC10 to beg-nC20)	31.3
C20-C30 (beg-nC20 to beg-nC31)	46.7
C31-C40 (beg-nC31 to beg-nC41)	21.2

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HYDROCARBON DISTRIBUTION REPORT

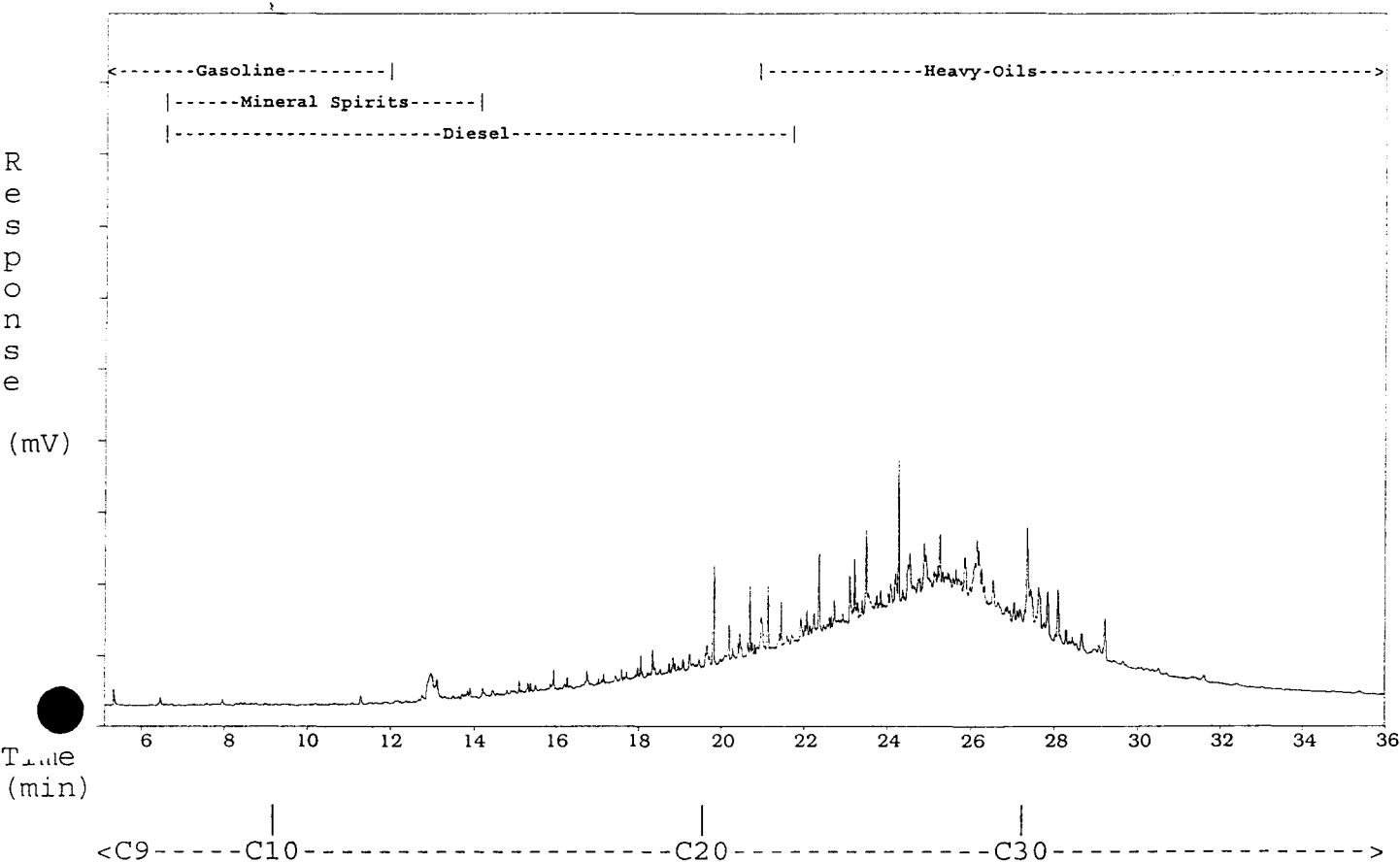
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Sample acquired: OCT 3, 1998 15:03:02

Sequence File: TEH2OCT

File Name: C:\TEH2\2OCT\TEH2OCT.58R , Sample Name: J8910-T--24

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: J8910-T--24* 1.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 (beg-nC9 to beg-nC10)	0.1
C10-C19 (beg-nC10 to beg-nC20)	14.5
C20-C30 (beg-nC20 to beg-nC31)	49.1
C31-C40 (beg-nC31 to beg-nC41)	36.3

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APPENDIX

**CHAIN OF
CUSTODY
FORMS**

CHAIN CUSTODY / ANALYTICAL REQUEST FORM

CLIENT: GLL (Whitehorse)
 ADDRESS: _____
 CONTACT: FOREST PEARSON
 TELEPHONE: 867-633-6474 FAX: _____
 PROJECT NAME/NO.: 98-800
 QUOTE / P.O. NO.: _____
 DATE SUBMITTED: _____
 ASL CONTACT: HEATHER ROSS / MYLES GROGAN

8 Triumph Street
 Vancouver, BC
 Canada V5L 1K5
 TEL: (604) 253-4188
 TOLL FREE: (800) 665-0243
 FAX: (604) 253-6700

Specialists in
 Environmental Chemistry



ANALYSIS REQUESTED

BETX ☒ VOC ☒ EPH ☒ PAH ☒ LEPH/HEPH ☒ MO+G ☒ SWOG ☒
 Metals - PL, RL, CL, IL, AL ☒
 Metals - AW ☒ DW ☒
 ALL LEPH/HEPH

LAB USE ONLY	SAMPLE IDENTIFICATION		DATE / TIME COLLECTED			MATRIX	ANALYSIS REQUESTED										NOTES
			Y	M	D	AM PM	BETX	VOC	EPH	PAH	LEPH/HEPH	MO+G	SWOG	Metals - PL, RL, CL, IL, AL	Metals - AW	DW	
58910	SS-223-1		98	09	18	AM											SAMPLES COLLECTED IN 125ml JARS ARE IDENTICAL (250ml JARS UNAVAILABLE)
2	" - 2					AM											
3	" - 3					PM											
4	" - 4					AM											
5	" - 5					PM											
6	" - 6					AM											
7	" - 7					PM											
8	SW-223-1					AM											
9	SS-UN-1					PM											
10	SW-UN-1					AM											
11	SS-SEKIE2-1					PM											2 125ml JARS
12	SW-SEKIE2-1					AM											
13	SW-MACINTOSH					PM											
14	SS-267.5-1					AM											ONE 125ml
15	" - 2					PM											ONE 125ml
16	" - 3					AM											

TURN AROUND REQUIRED:

- ☐ ROUTINE (7 - 10 WORKING DAYS)
☐ RUSH (SPECIFY DATE): _____

SPECIAL INSTRUCTIONS:

T-METALS PRESERVED WITH HNO₃

CONTACT FOREST PEARSON TO CONFIRM WHICH SAMPLES ARE TO BE TESTED AND ANALYSIS REQUESTED.

Customized - British Columbia, CSR

SAMPLE CONDITION UPON RECEIPT:

- ☐ FROZEN
☐ COLD
☐ AMBIENT

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

REPORT COPY

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

88 Triumph Street
Vancouver, BC
Canada V5L 1K5
TEL: (604) 253-4188
TOLL FREE: (800) 665-0243
FAX: (604) 253-6700

Specialists in
Environmental Chemistry



analytical service
laboratories Ltd.

ANALYSIS REQUESTED

2 OF 3

CLIENT: _____
ADDRESS: _____
CONTACT: _____
TELEPHONE: _____ FAX: _____
PROJECT NAME/NO.: _____
QUOTE / PO. NO.: _____
DATE SUBMITTED: _____ ASL CONTACT: _____

BETX _____ VPH _____
VOC _____ VPH _____
EPH _____
PAH _____
LEPH/HEPH _____
MO+G _____ SWOG _____
Metals - PL, RL, CL, IL, AL _____
Metals - AW, DW _____

FOR LAB USE ONLY	LAB USE ONLY		SAMPLE IDENTIFICATION			DATE / TIME COLLECTED			MATRIX		ANALYSIS REQUESTED										NOTES
	Y	M	D								S	W									
58910	98	09	18	17	SS-267.5-4				AM	SOIL											
				18	-5				PM												
				19	-6				AM												
				20	-7				PM												
				21	-8				AM												
				22	-9				PM												
				23	-10				AM												
				24	TP-234.5-1			19	PM												
				24	MW-234-MW-1				AM	WATER											24E 125ml JAR ONLY
				25	SS-234(A)-1-1				PM												
				26	" -2				AM												
				27	" -3				PM												
				28	" -4				AM												
				29	SS-234(A)-2-1				PM												
				30	" -2				AM												
				31	" -3				PM												
				32	" -3				AM												

TURN AROUND REQUIRED:

- ☐ ROUTINE (7 - 10 WORKING DAYS)
☐ RUSH (SPECIFY DATE): _____

SPECIAL INSTRUCTIONS:

SAMPLE CONDITION UPON RECEIPT:

- ☐ FROZEN
☐ COLD
☐ AMBIENT

RELINQUISHED BY:

DATE

TIME

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

Customized - British Columbia, CSR

REPORT COPY

988 Triumph Street
Vancouver, BC
Canada V5L 1K5
TEL: (604) 253-4188
TOLL FREE: (800) 665-0243
FAX: (604) 253-6700

Specialists in
Environmental Chemistry



analytical service
laboratories ltd.

PAGE 3 OF 3

CLIENT: _____

ADDRESS: _____

CONTACT: _____

TELEPHONE: _____ FAX: _____

PROJECT NAME/NO.: _____

QUOTE / P.O. NO.: _____

DATE SUBMITTED: _____ ASL CONTACT: _____

[illegible]

TURN AROUND REQUIRED:

- ☐ ROUTINE (7 - 10 WORKING DAYS)
☐ RUSH (SPECIFY DATE): _____

SPECIAL INSTRUCTIONS:

SAMPLE CONDITION
UPON RECEIPT:

- ☐ FROZEN
☐ CQLD
☐ AMBIENT

RELINQUISHED BY:

DATE _____

TIME

RELINQUISHED BY:

DATE _____

TIME

RECEIVED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

Customized - British Columbia, CSR

REPORT COPY



CHEMICAL ANALYSIS REPORT

Date: November 10, 1998
ASL File No. J8783
Report On: 98-800 Tissue and Solid Analysis
Report To: **Gartner Lee Ltd.**
Suite 212 Main St.
Whitehorse, YT
Y1A 2A9
Attention: **Mr. Forest Pearson**
Received: September 21, 1998

ASL ANALYTICAL SERVICE LABORATORIES LTD.
per:

A handwritten signature in cursive script, appearing to read 'Miles Gropen'.

Heather A. Ross, B.Sc. - Project Chemist
Miles Gropen, B.Sc. - Project Chemist





REMARKS

File No. J8783

Please note that the sample labelled "VS 208-3" contained large amounts of sediment along with some plant tissue. Due to the heterogeneity problems associated with analysing these two matrices together as one sample, the two matrices were separated and analysed separately. The tissue portion is reported as "VS 208-3 Blueberry" and the sediment portion is reported as "VS 208-3 Sediment".



RESULTS OF ANALYSIS - Tissue

File No. J8783

		VS 208-1 Willow 98 09 13	VS 208-2 Indian Tea 98 09 13	VS 208-3 Blue- berry 98 09 13	VS-208-4 Cariboo Lichen 98 09 13	VS 280-5 Willow 98 09 13
Physical Tests						
Moisture	%	37.4	30.1	45.7	69.5	38.5
Total Metals						
Aluminum	T-Al	17	50	77	250	39
Antimony	T-Sb	0.18	0.21	0.41	0.17	0.07
Arsenic	T-As	<0.05	<0.05	<0.05	0.22	<0.05
Barium	T-Ba	31.3	221	146	72.6	14.7
Beryllium	T-Be	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	T-Bi	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd	13.5	1.51	2.53	0.38	8.72
Calcium	T-Ca	4870	4650	3110	4080	3150
Chromium	T-Cr	<0.5	0.5	0.7	2.0	1.2
Cobalt	T-Co	0.4	<0.1	<0.1	0.1	0.4
Copper	T-Cu	4.44	4.49	9.65	1.58	3.94
Lead	T-Pb	<0.1	0.3	0.6	2.0	0.1
Lithium	T-Li	<0.2	<0.2	<0.2	<0.2	<0.2
Magnesium	T-Mg	927	730	1100	654	1010
Manganese	T-Mn	136	93.2	511	18.0	56.4
Molybdenum	T-Mo	0.15	0.18	0.31	0.71	0.68
Nickel	T-Ni	4.2	1.9	1.2	1.4	4.5
Selenium	T-Se	<1	<1	<1	<1	1
Strontium	T-Sr	13.6	17.8	6.34	5.49	6.99
Thallium	T-Tl	<0.03	<0.03	<0.03	<0.03	<0.03
Tin	T-Sn	<0.2	<0.2	<0.2	<0.2	<0.2
Uranium	T-U	<0.01	<0.01	<0.01	0.02	<0.01
Vanadium	T-V	<0.5	<0.5	<0.5	1.2	<0.5
Zinc	T-Zn	212	85.0	64.0	23.6	189

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.

**RESULTS OF ANALYSIS - Tissue**

File No. J8783

		VS 208-6 Willow	VS 208-7 Grasses	VS 215-1 Willow	VS 215-2 Willow	VS 212-1 Willow
		98 09 13	98 09 13	98 09 14	98 09 14	98 09 13
Physical Tests						
Moisture	%	40.0	54.3	34.3	45.8	53.9
Total Metals						
Aluminum	T-Al	126	56	25	13	58
Antimony	T-Sb	0.15	0.32	0.07	0.04	0.12
Arsenic	T-As	0.06	0.08	0.05	<0.05	<0.05
Barium	T-Ba	60.8	130	24.9	26.4	394
Beryllium	T-Be	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	T-Bi	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd	1.40	<0.03	8.53	18.1	8.93
Calcium	T-Ca	6070	7180	5310	3440	16500
Chromium	T-Cr	1.2	<0.5	<0.5	<0.5	1.3
Cobalt	T-Co	0.4	<0.1	0.6	0.3	1.5
Copper	T-Cu	3.14	0.88	4.07	5.38	4.06
Lead	T-Pb	1.0	0.7	0.2	<0.1	0.3
Lithium	T-Li	<0.2	<0.2	<0.2	<0.2	<0.2
Magnesium	T-Mg	1200	2860	1260	1440	4060
Manganese	T-Mn	158	294	222	128	86.2
Molybdenum	T-Mo	0.17	0.29	1.32	0.21	0.91
Nickel	T-Ni	0.8	0.3	6.2	0.8	7.3
Selenium	T-Se	<1	<1	<1	<1	<1
Strontium	T-Sr	11.3	12.7	12.6	6.62	49.5
Thallium	T-Tl	<0.03	<0.03	<0.03	<0.03	<0.03
Tin	T-Sn	<0.2	<0.2	<0.2	<0.2	<0.2
Uranium	T-U	0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	T-V	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	T-Zn	73.9	36.0	202	340	208

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.

**RESULTS OF ANALYSIS - Tissue**

File No. J8783

VS 212-2
Cariboo
Lichen
98 09 13**Physical Tests**

Moisture	%	64.9
----------	---	------

Total Metals

Aluminum	T-Al	442
Antimony	T-Sb	0.25
Arsenic	T-As	0.28
Barium	T-Ba	97.8
Beryllium	T-Be	<0.1
Bismuth	T-Bi	<0.1
Cadmium	T-Cd	1.20
Calcium	T-Ca	2730
Chromium	T-Cr	3.0
Cobalt	T-Co	0.3
Copper	T-Cu	2.12
Lead	T-Pb	2.2
Lithium	T-Li	0.3
Magnesium	T-Mg	568
Manganese	T-Mn	23.0
Molybdenum	T-Mo	0.36
Nickel	T-Ni	2.2
Selenium	T-Se	<1
Strontium	T-Sr	6.92
Thallium	T-Tl	<0.03
Tin	T-Sn	<0.2
Uranium	T-U	0.03
Vanadium	T-V	2.1
Zinc	T-Zn	36.5

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.

**RESULTS OF ANALYSIS - Solids**

File No. J8783

208 Oil
Heater

98 09 13VS208-3
Sediment

98 09 13**Physical Tests**

Moisture	%	-	24.7
----------	---	---	------

Total Metals

Aluminum	T-Al	-	18400
Antimony	T-Sb	-	<20
Arsenic	T-As	-	<100
Barium	T-Ba	-	807
Beryllium	T-Be	-	0.9
Bismuth	T-Bi	-	<10
Cadmium	T-Cd	-	<2
Calcium	T-Ca	-	3950
Chromium	T-Cr	-	29
Cobalt	T-Co	-	7
Copper	T-Cu	-	15
Iron	T-Fe	-	23400
Lead	T-Pb	-	68
Lithium	T-Li	-	23
Magnesium	T-Mg	-	3400
Manganese	T-Mn	-	303
Molybdenum	T-Mo	-	<4
Nickel	T-Ni	-	19
Phosphorus	T-P	-	1010
Potassium	T-K	-	3170
Selenium	T-Se	-	<50
Silver	T-Ag	-	<2
Sodium	T-Na	-	448
Strontium	T-Sr	-	27.5
Thallium	T-Tl	-	<50
Tin	T-Sn	-	<10
Titanium	T-Ti	-	421
Vanadium	T-V	-	82
Zinc	T-Zn	-	111

Inorganic Parameters

Asbestos ¹	See Below	-
-----------------------	-----------	---

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
¹Please refer to the attached subconsultant's report for details.



Appendix 1 - QUALITY CONTROL - Replicates

File No. J8783

Tissue	VS 208-6 Willow	VS 208-6 Willow
	98 09 13	QC # 133986

Total Metals

Aluminum	T-Al	126	93
Antimony	T-Sb	0.15	0.17
Arsenic	T-As	0.06	0.06
Barium	T-Ba	60.8	67.7
Beryllium	T-Be	<0.1	<0.1
Bismuth	T-Bi	<0.1	<0.1
Cadmium	T-Cd	1.40	1.53
Calcium	T-Ca	6070	6960
Chromium	T-Cr	1.2	1.2
Cobalt	T-Co	0.4	0.4
Copper	T-Cu	3.14	3.20
Lead	T-Pb	1.0	1.0
Lithium	T-Li	<0.2	<0.2
Magnesium	T-Mg	1200	1350
Manganese	T-Mn	158	179
Molybdenum	T-Mo	0.17	0.18
Nickel	T-Ni	0.8	0.8
Selenium	T-Se	<1	<1
Strontium	T-Sr	11.3	12.9
Thallium	T-Tl	<0.03	<0.03
Tin	T-Sn	<0.2	<0.2
Uranium	T-U	0.01	0.01
Vanadium	T-V	<0.5	<0.5
Zinc	T-Zn	73.9	83.8

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.



Appendix 2 - METHODOLOGY

File No. J8783

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows:

Tissue Moisture

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of six hours.

Metals in Vegetation and Animal Tissue

This analysis is carried out using procedures adapted from "Recommended Guidelines for Measuring Metals in Puget Sound Marine Water, Sediment, and Tissue Samples" prepared for the United States Environmental Protection Agency and the Puget Sound Water Quality Authority, 1995. Tissue samples are homogenized either mechanically or manually prior to digestion. The hotplate digestion involves the use of nitric acid followed by repeated additions of hydrogen peroxide. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000A), inductively coupled plasma - mass spectrometry (EPA Method 6020), and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Moisture

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of three hours.

Asbestos in Water

This analysis is carried out in accordance with the Workers' Compensation Board (WCB) Analytical Procedure 0205. The samples are ashed at 675 C for six hours and the remaining ash examined for asbestos by microscopy.

End of Report



APPENDIX

**RESULTS OF
SUBCONTRACTED
ANALYSES**



Suite 115
10751 Shellbridge Way
Richmond, British Columbia
V6X 2W8
Phone: (604) 244-8101
Fax: (604) 244-8491
E-Mail: phhrich@phhenvironmental.com

October 1, 1998

ASL Analytical Service Laboratories Ltd.
1988 Triumph Street
Vancouver, BC
V5L 1K5

Attention: Ms. Heather Ross

Dear Ms. Ross:

Re: Bulk Material Identification Report - PHH Project No. 1068T

Please find enclosed our laboratory's result for the one (1) bulk sample (PHH Environmental sample number 1068T-1) that was received at our laboratory for identification on September 22, 1998.

Examination of the sample for asbestos content was conducted in accordance with current Workers' Compensation Board of British Columbia 0205 and US 40 Code of Federal Regulations Chapter I (1-1-87 edition) Part 763, Subpart F, Appendix A methodologies for the analysis of asbestos in building materials using polarised light microscopy (PLM) and dispersion staining techniques. The detection limit of these methods is listed as 1%. Multiple phases within samples are analysed separately. Quantification by visual estimate is subjective and may result in a higher degree of error for samples containing low percentages of asbestos. The report spreadsheet indicates nonfibrous material as "NF".

RESULTS:

LAB LOG #	SAMPLE ID	ASBESTOS TYPE	ASBESTOS AMOUNT (%vol/vol)	OTHER FIBRE TYPE	OTHER FIBRE AMOUNT (%vol/vol)
4449	J8783-12	NF	<1	Cellulose Glass	10 80

< = less than

%vol/vol = percent by volume basis

This test report relates only to the items tested and any extrapolation by the client of these results is the responsibility of the client. This report must not be reproduced except in full with approval from PHH Environmental Limited.

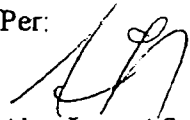
PHH Environmental will store the sample for 90 days after analysis. After this time, the sample will be disposed of unless the client has requested that the sample be returned.

If further clarification of the result is required please do not hesitate to contact our laboratory. Thank you for having PHH Environmental Limited Laboratory Services carry out this work for you.

Sincerely,

PHH ENVIRONMENTAL LIMITED

Per:



Alex Jang, AScT
Laboratory Analyst

1068TL01.doc



APPENDIX

**CHAIN OF
CUSTODY
FORMS**

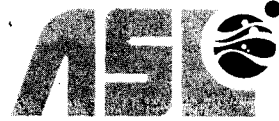
CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

1988 Triumph Street
Vancouver, BC
Canada V5L 1K5
TEL: (604) 253-4188
TOLL FREE: (800) 665-0243
FAX: (604) 253-6700

ANALYSIS REQUESTED

PAGE ____ OF ____

Specialists in
Environmental Chemistry



analytical service
laboratories Ltd.

CLIENT: _____
ADDRESS: _____
CONTACT: _____
TELEPHONE: _____ FAX: _____
PROJECT NAME/NO.: _____
QUOTE / PO. NO.: _____
DATE SUBMITTED: _____ ASL CONTACT: _____

BETX ✓ VPH _____
VOC ✓ VPH _____
EPH _____
PAH _____
LEPH / HEPH _____
MO+G ✓ SWOG _____
Metals - PL, RL, CL, IL _____
Metals - AW ✓ AL _____
Metals - DW ✓ DW _____
Asbestos ✓ Asbestos _____
Soils ✓ Soils _____

FOR LAB USE ONLY	LAB USE ONLY		SAMPLE IDENTIFICATION	DATE / TIME COLLECTED			MATRIX	BE	VO	EP	PA	LE	MC	Me	Me	S	W							NOTES
	Y	M		D	AM	PM																		
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

TURN AROUND REQUIRED:

☒ ROUTINE (7 - 10 WORKING DAYS)

☐ RUSH (SPECIFY DATE): _____

SPECIAL INSTRUCTIONS:

SAMPLE CONDITION UPON RECEIPT:

☐ FROZEN

☐ COLD

☐ AMBIENT

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

RELINQUISHED BY:

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TIME

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TIME

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DOCS//FORMS/ChnCsdy/

SOP02 04
TSSP02 04



RECEIVED JAN 13 1999

CHEMICAL ANALYSIS REPORT

Date: January 5, 1999
ASL File No. K2338
Report On: 98-800 Soil & Product Analysis
Report To: **Gartner Lee Ltd.**
Suite 212 Main St.
Whitehorse, YT
Y1A 2A9
Attention: **Mr. Forest Pearson**
Received: September 21, 1998

ASL ANALYTICAL SERVICE LABORATORIES LTD.
per:

A handwritten signature in cursive script that reads 'Miles Gropen'.

Heather A. Ross, B.Sc. - Project Chemist
Miles Gropen, B.Sc. - Project Chemist





REMARKS

File No. K2338

A product sample identified as "HC 208-6" was submitted for characterisation by gas chromatography with flame ionisation detection (GC/FID). The Hydrocarbon Distribution Report for this sample and reference standards have been appended to this report to assist you in your investigation. The scale at the top of the chromatographic traces represents the hydrocarbon range of common petroleum products. The scale at the bottom represents retention time in minutes.

This sample has a hydrocarbon distribution similar to Crude Oil or Bunker Fuel.

**RESULTS OF ANALYSIS - Sediment/Soil¹**

File No. K2338

SS 208-8

Physical Tests

Moisture	%	8.1
pH		5.15

Total Metals

Antimony	T-Sb	<20
Arsenic	T-As	10
Barium	T-Ba	638
Beryllium	T-Be	1.0
Cadmium	T-Cd	1.1
Chromium	T-Cr	32
Cobalt	T-Co	8
Copper	T-Cu	16
Lead	T-Pb	<50
Mercury	T-Hg	0.013
Molybdenum	T-Mo	<4
Nickel	T-Ni	22
Selenium	T-Se	0.3
Silver	T-Ag	<2
Tin	T-Sn	<10
Vanadium	T-V	72
Zinc	T-Zn	93

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

¹Results are expressed as milligrams per dry kilogram except where noted.



RESULTS OF ANALYSIS - Product¹

File No. K2338

HC 208-6

Extractables
GC Scan

Appendix

Remarks regarding the analyses appear at the beginning of this report.

< = Less than the detection limit indicated.

¹Please refer to the attached appenidix for details.



METHODOLOGY

File No. K2338

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows:

Moisture

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of three hours.

pH in Soil

This analysis is carried out in accordance with procedures described in "Soil Sampling and Methods of Analysis" (CSSS). The procedure involves mixing the air-dried sample with deionized/distilled water. The pH of the solution is then measured using a standard pH probe. A one to two ratio of sediment to water is used for mineral soils and a one to ten ratio is used for highly organic soils.

Metals in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3050B or Method 3051, published by the United States Environmental Protection Agency (EPA). The sample is manually homogenized and a representative subsample of the wet material is weighed. The sample is then digested by either hotplate or microwave oven using a 1:1 ratio of nitric acid and hydrochloric acid. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000A) and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Product Characterization by Gas Chromatography

This analysis is carried out using a procedure adapted from U.S. EPA Method 8015 (Publ. #SW-846 3rd ed., Washington, DC 20460). A portion of the product is diluted with methylene chloride followed by analysis using capillary column gas chromatography with flame ionization detection. The chromatogram is then compared to known petroleum blends for



METHODOLOGY (cont'd)

File No. K2338

identification.

End of Report



APPENDIX

**HYDROCARBON
DISTRIBUTION
REPORTS**

HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: K2338-T--2

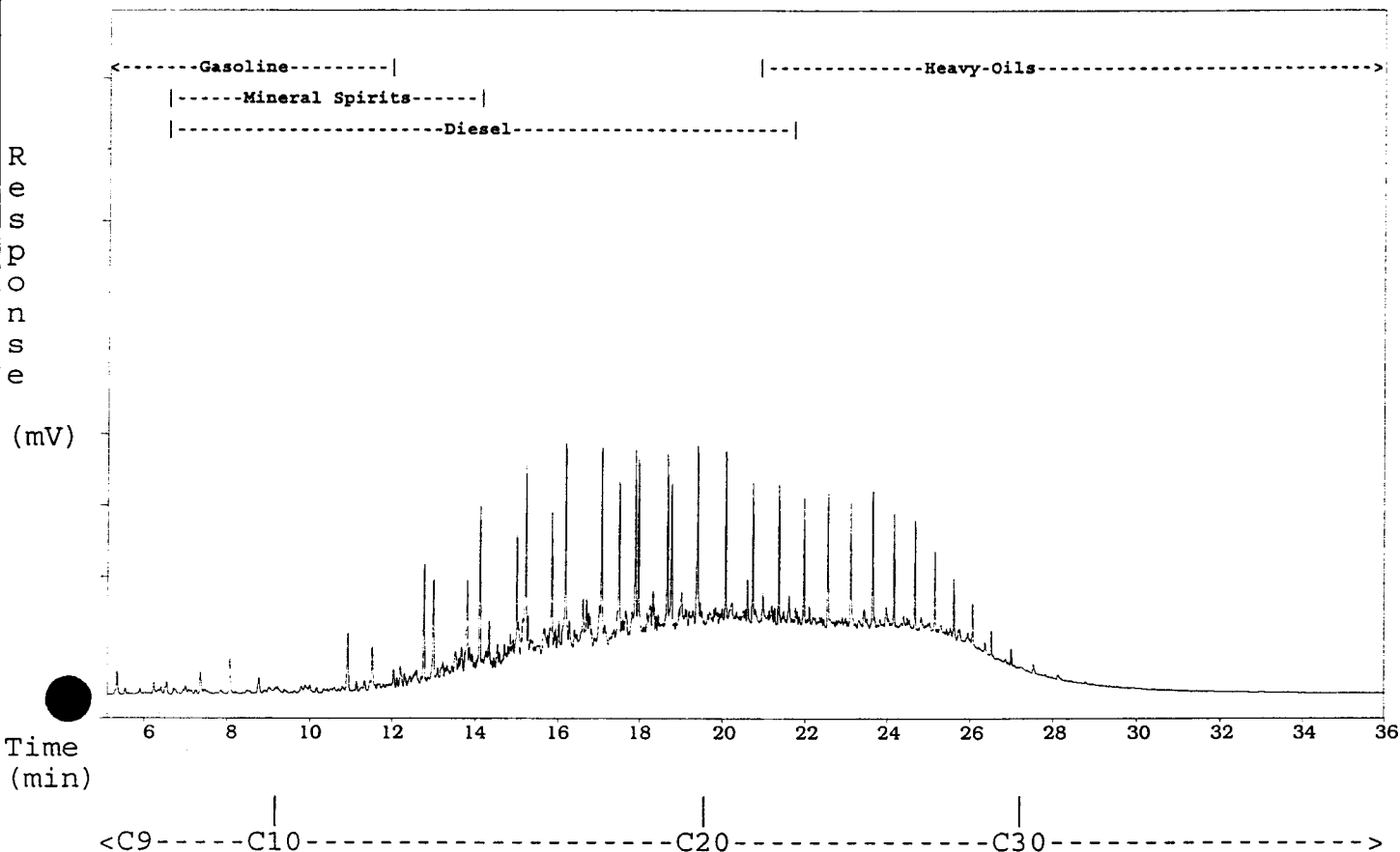
HC 208-6

Sample acquired: DEC 22, 1998 03:45:09

Sequence File: TEH21DEC

File Name: C:\TEH2\21DEC\TEH21DEC.38R , Sample Name: K2338-T--2#SCAN

Chromatogram Scale: 50.0 millivolts



ASL Sample ID: K2338-T--2#SCAN*

1.0Dilution

HYDROCARBON RANGE (by Carbon#)	RELATIVE AMOUNT (%)
C9 -C10 (beg-nC9 to beg-nC10)	0.8
C10-C19 (beg-nC10 to beg-nC20)	47.3
C20-C30 (beg-nC20 to beg-nC31)	43.2
C31-C40 (beg-nC31 to beg-nC41)	8.6

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amounts of hydrocarbon product present in the ranges specified. Percent values are relative to the sum of all chromatographic peaks between the retention times of the alkanes n-C9 and n-C40, and are based solely on the areas of those peaks.

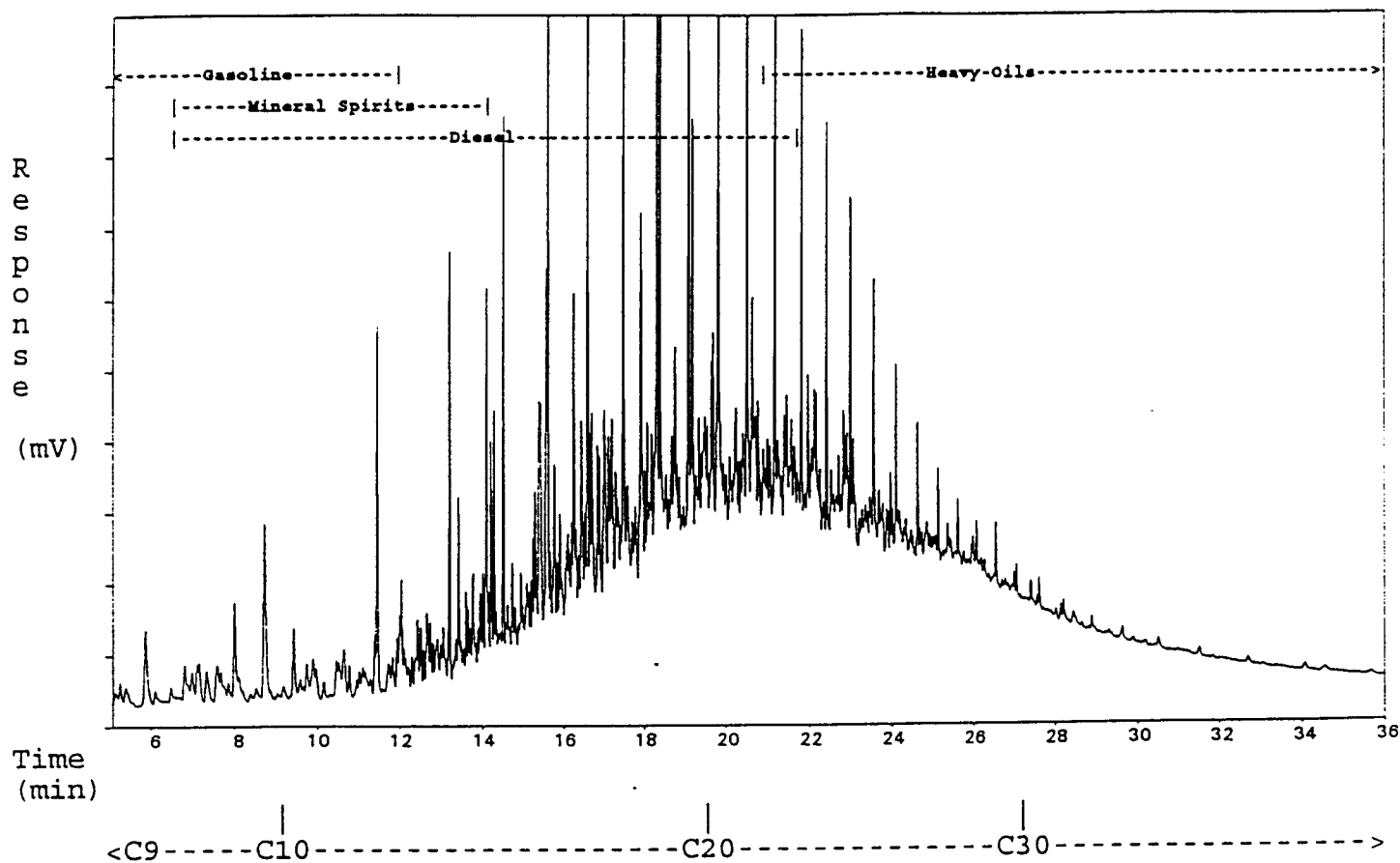
HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: BUNKER FUEL

Sample acquired: DEC 29, 1993 22:55:30

File Name: E:\TEH\TEHDEC29.28R , Sample Name: BUNKER FUEL

Sequence file: TEHDEC29



HYDROCARBON RANGE (C#)	RELATIVE AMOUNT (%)
Less than Carbon 10 (<C10)	1.9
Carbon 10 to Carbon 20 (C10-C20)	47.4
Carbon 20 to Carbon 30 (C20-C30)	37.8
Greater than Carbon 30 (>C30)	12.9

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amount of hydrocarbon product present in the ranges specified.

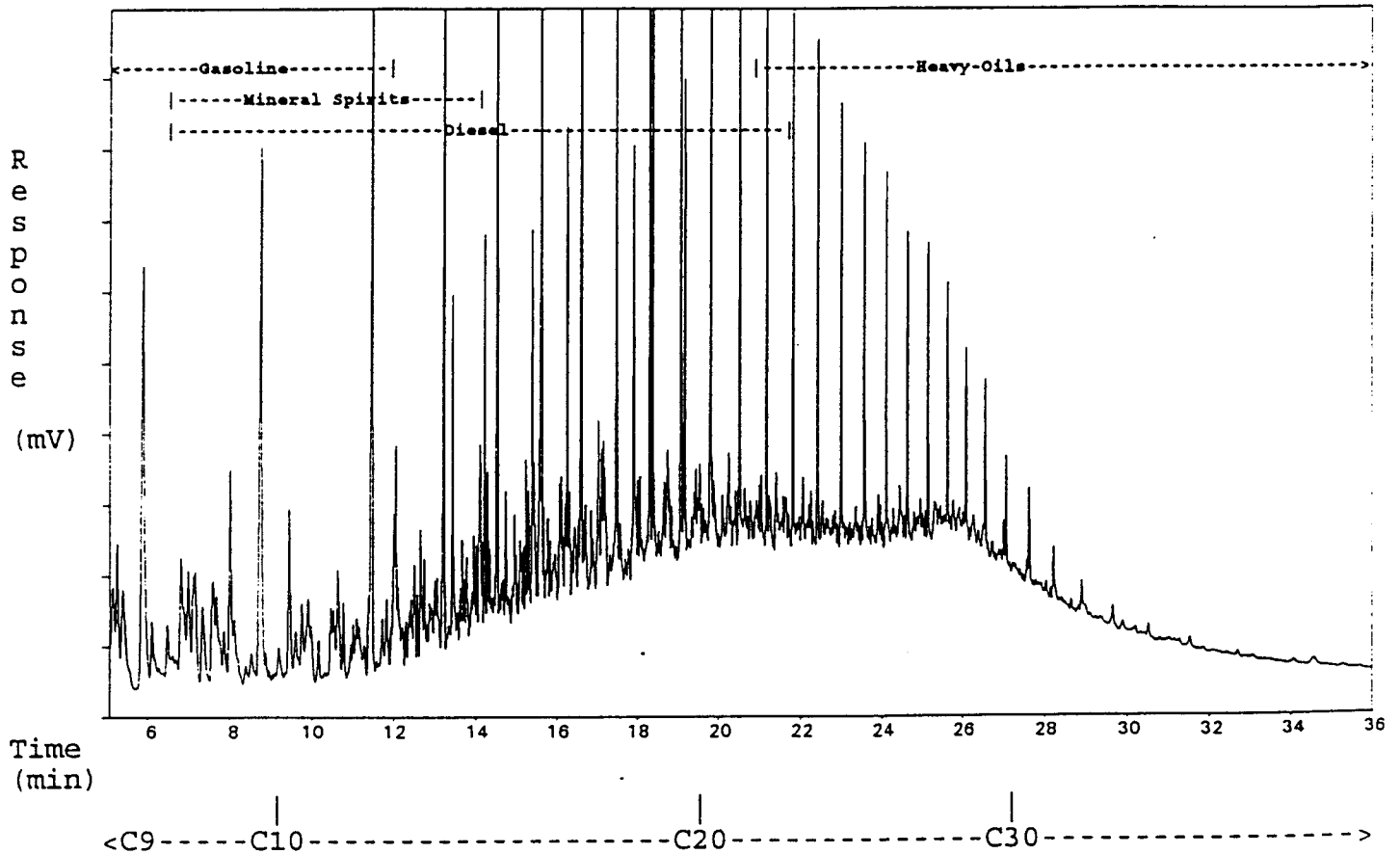
HYDROCARBON DISTRIBUTION REPORT

SAMPLE NAME: CRUDE OIL

Sample acquired: DEC 29, 1993 22:05:26

File Name: E:\TEH\TEHDEC29.26R , Sample Name: CRUDE OIL

Sequence file: TEHDEC29



HYDROCARBON RANGE (C#)		RELATIVE AMOUNT (%)
Less than Carbon 10 (<C10)		8.3
Carbon 10 to Carbon 20 (C10-C20)		45.9
Carbon 20 to Carbon 30 (C20-C30)		31.1
Greater than Carbon 30 (>C30)		14.5

The Hydrocarbon Distribution Report is intended to assist you in characterizing the hydrocarbon product present in a given sample. The scale at the top of the chromatographic trace represents the hydrocarbon range of common petroleum products. Comparison of this report with those of reference standards may also assist you in the identification of the hydrocarbon product detected in your sample. The second part of the report is a table that expresses the relative amount of hydrocarbon product present in the ranges specified.