



Date 10-MAR-89

## GFS - Geochemical Filing System

## G E O C H E M I C A L   D A T A   O F   S A M P L E   S   1 1 4 6 8 4

Country	Norway	( 203)	Order seq.no.	1	
Well	01/06-01	( 203/0077 )	Reference	RIS 310114	dd. 31-JAN-86
Depth	10364.0 - 10344.0 ft		Inv. number	812003810	
Sample type	Crude oil		Report number		dd. 31-OCT-86
Geogr.coord.	E 2.5983 N 56.3803				

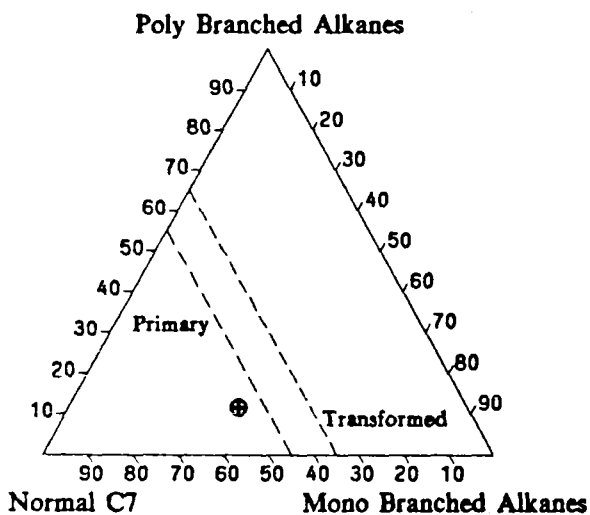
Sample treatment Original sample  
Remarks OMC 2123

API	45.6	C7-DISTRIBUTION	STERANES/TRITERPANES	CARBON ISOTOPE RATIO
SPECIFIC GRAVITY	0.7989	C7-Alkane	Iso-steranes	Topped total oil -28.8
ORG.CARBON (%W)		Normal-C7	Rearranged steranes	Topped saturates
After ETAC extr.		Mono-branched	Triterpanes	Topped aromatics
ETAC EXTRACT (%W)		Poly-branched	STERANES	
ETAC EXTR./ORG.CARB.		C7-Alk/Naphthene	Iso-steranes	
CHCL3 EXTR. AFTER ETAC		Normal-C7	Rearr.-steranes	
SULPHUR (%W)	0.1	Naphthenes	Normal-steranes	
V (AS METAL) (PPM)	0	Branched Alkanes	TRITERPANES	
NI (AS METAL) (PPM)	0	C7-Alk/Naphth/Aromatics	H	
PRISTANE/PHYTANE	1.5	Alkanes	O+L	
PRISTANE/N-C17	0.5	Naphthenes	W+T	
PHYTANE/N-C18	0.4	Aromatics	STERANE CARBON NO DISTRIB.	
ACI (Saturates)	23.3	C15-DISTRIBUTION	C27	
CORRELATION COEFF.	-.9996	1-Ring	C28	
BOILING < 120 C *	5.9	2-Ring	C29	
		3-Ring	STERANE DOM	
		C30-DISTRIBUTION	20S/20R+20S	0.32
		3-Ring	Iso/Iso+Normal	0.87
		4-Ring	TS/TM	6.50
		5-Ring	3R/(3R+5R)	
		C29 DOM 67 VR/E 0.90		
		GROSS COMPOSITION **		
		Saturates		Legend:
		Aromatics		---- not detectable
		Heterocompounds		==== not yet attempted
		TLCFID asphaltenes		blank not determined
		ASPHALTENES		* Calculated
				** TLCFID SiO2

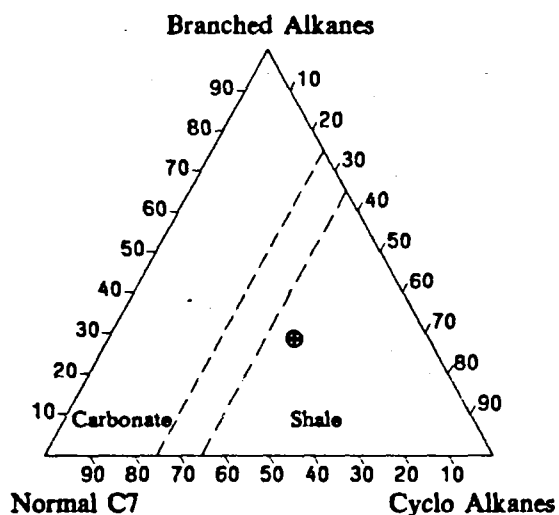
1/20

The Light Fraction (< 120 C.) of the oil sample from  
well 01/06-01 (3158.95 m.), Norway OMC 2123

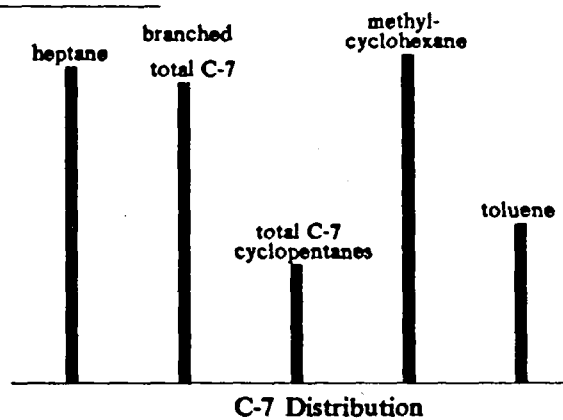
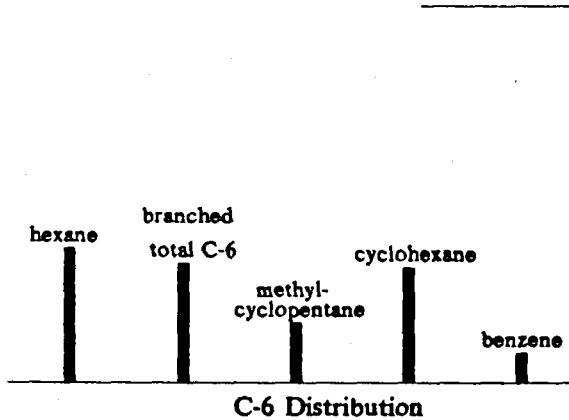
Alkane Distribution



Alkane/Cyclo-alkane Distribution



C-6 and C-7 Distributions



**C-7 ALKANES (%)**

Normal C-7 :	51
Mono Branched :	38
Poly Branched :	11

**C-7 ALKANES / CYCLO ALKANES (%)**

Normal C-7 :	30
Cyclo Alkanes :	42
Branched Alkanes :	28

**C-7 ALK. / CYCLO ALK. / AROMATICS (%)**

Alkanes :	50
Cyclo Alkanes :	37
Aromatics :	13

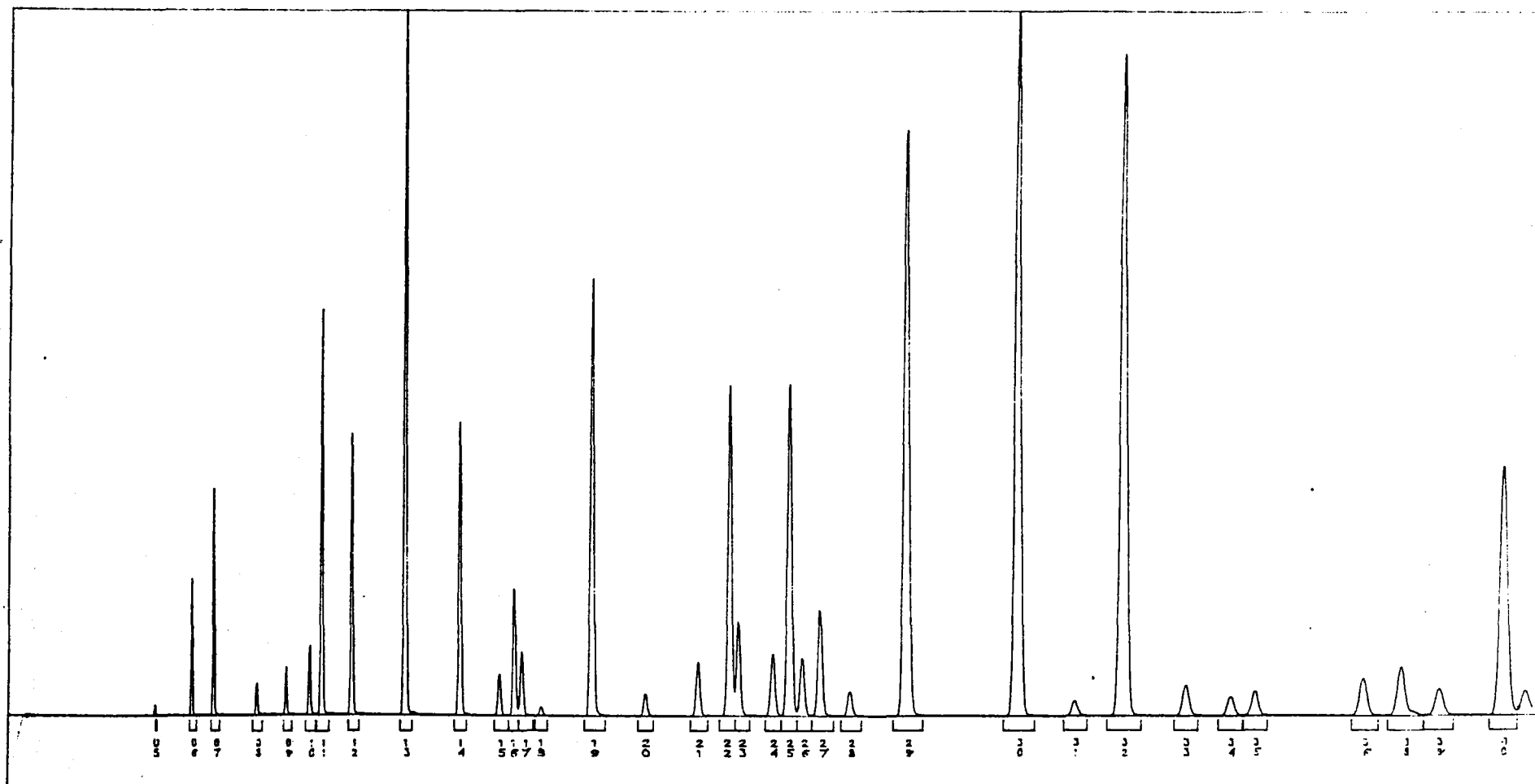
C-7 TEMP. OF EXPULSION (C) : 139

C-7 VR/E : 0.92

**Conclusions :**

- 1 : the oil shows no indication of bacterial degradation
- 2 : it is almost certain that this oil was expelled from a shaly source rock

# GAS CHROMATOGRAM OF THE C-7 FRACTION



Country	NORWAY
Well	1/6-1
Depth	10364.00 F
Sample type	CRUDE OIL

GASCHROMATOGRAPHIC ANALYSIS OF HYDROCARBONS BOILING BELOW 114 DEGREES CENTIGRADE

COUNTRY : NORWAY  
 WELL : 1/6-1  
 DEPTH : 10364.00 F

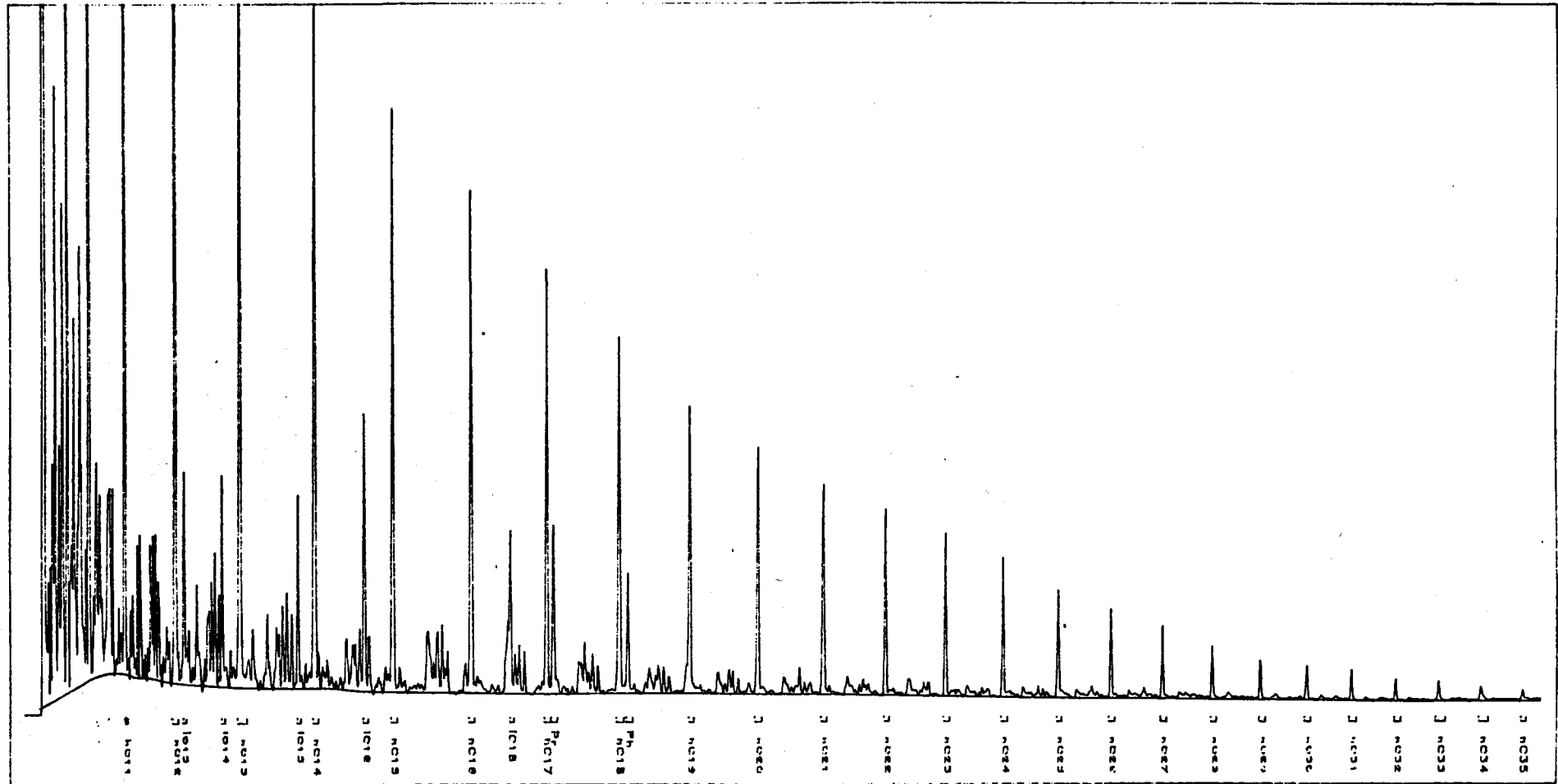
REF. NUMBER : 854962  
 LOCATION : BRETT  
 APPARATUS : 07-1

OMC NUMBER : 2123

PEAK	COMPONENT	PEAK MAX	PEAK AREA	WEIGHT PERC
1	METHANE	- - NOT	DETECTED - -	
2	ETHANE	- - NOT	DETECTED - -	
3	PROPANE	- - NOT	DETECTED - -	
4	ISOBUTANE	- - NOT	DETECTED - -	
5	N-BUTANE	39.30	219.	0.04
6	ISOPENTANE	519.56	3596.	0.60
7	N-PENTANE	844.94	6581.	1.11
8	2,2-DIMETHYLBUTANE	122.29	1210.	0.20
9	CYCLOPENTANE	171.75	1803.	0.30
10	2,3-DIMETHYLBUTANE	254.03	2926.	0.49
11	2-METHYLPENTANE	1486.71	17326.	2.91
12	3-METHYLPENTANE	1016.29	12909.	2.17
13	N-HEXANE	2733.44	38707.	6.51
14	METHYLCYCLOPENTANE	1044.28	17291.	2.91
15	2,2-DIMETHYLPENTANE	153.83	2879.	0.48
16	BENZENE	467.04	8589.	1.44
17	2,4-DIMETHYLPENTANE	226.77	4416.	0.74
18	2,2,3-TRIMETHYLBUTANE	33.53	679.	0.11
19	CYCLOHEXANE	1554.21	33202.	5.58
20	3,3-DIMETHYLPENTANE	79.35	1912.	0.32
21	1,1-DIMETHYLCYCLOPENTANE	195.05	5042.	0.85
22	2-METHYLHEXANE	1173.50	31003.	5.21
23	2,3-DIMETHYLPENTANE	334.13	8794.	1.48
24	1-CIS-3-DIMETHYLCYCLOPENTANE	220.59	6159.	1.04
25	3-METHYLHEXANE	1192.57	33772.	5.68
26	1-TRANS-3-DIMETHYLCYCLOPENTANE	206.77	5949.	1.00
27	1-TRANS-2-DIMETHYLCYCLOPENTANE	377.15	11156.	1.88
28	3-ETHYLPENTANE	89.54	2786.	0.47
29	2,2,4-TRIMETHYLPENTANE	2091.28	70568.	11.87
30	N-HEPTANE	2523.88	90592.	15.23
31	1-CIS-2-DIMETHYLCYCLOPENTANE	54.43	2147.	0.36
32	METHYLCYCLOHEXANE	2361.20	94139.	15.83
33	1,1,3-TRIMETHYLCYCLOPENTANE	110.11	4729.	0.80
34	2,2-DIMETHYLHEXANE	68.05	3044.	0.51
35	ETHYLCYCLOPENTANE	87.04	3793.	0.64
36	2,5-DIMETHYLHEXANE	133.72	6550.	1.10
37	2,4-DIMETHYLHEXANE	- - NOT	DETECTED - -	
38	2,2,3-TRIMETHYLPENTANE	173.37	9261.	1.56
39	1-TRANS-2-CIS-4-TRIMETHYLCYCLOPENTANE	95.92	4855.	0.82
40	TOLUENE	894.53	46053.	7.74
			594636.	100.00

\* : ESTIMATED PEAK AREA

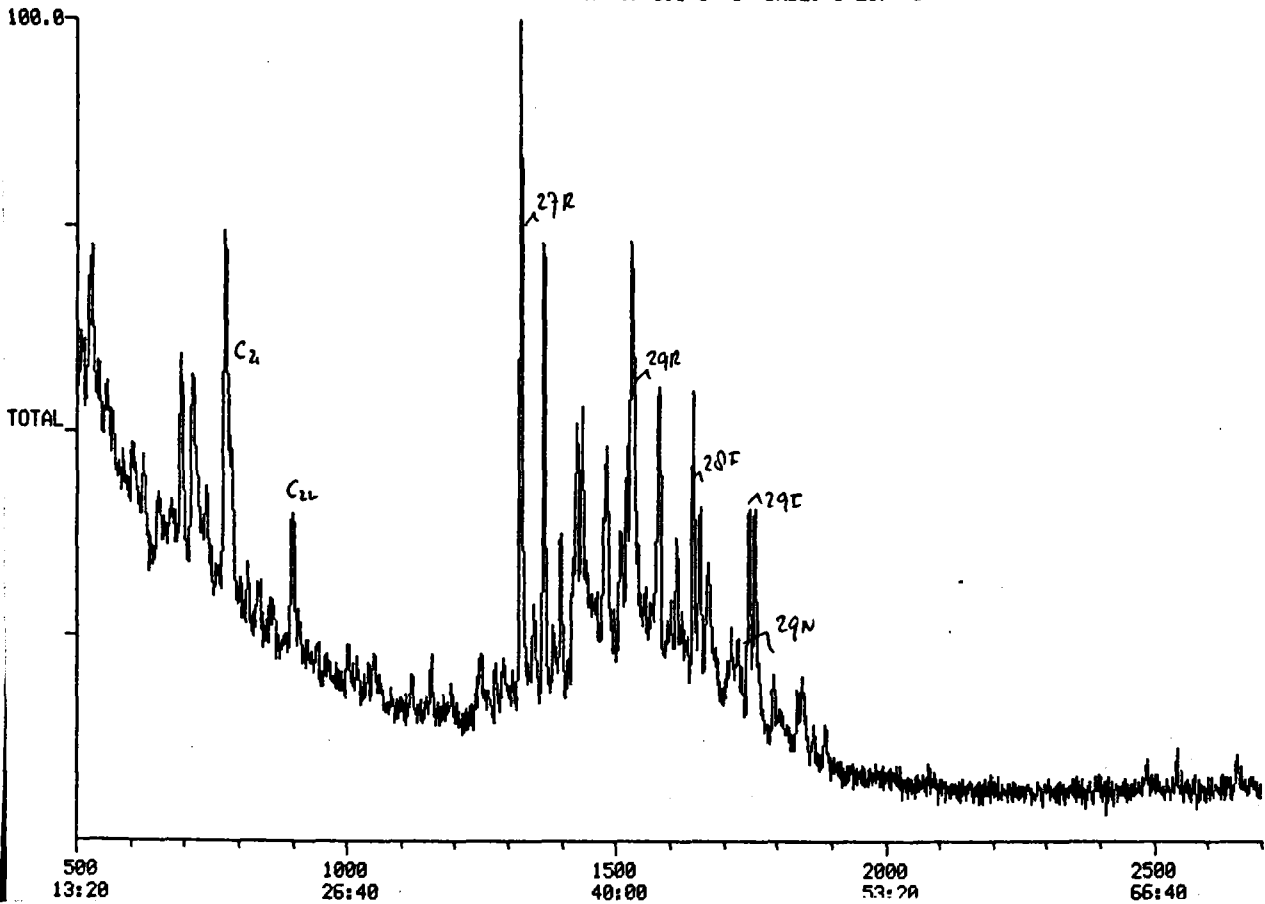
## GAS CHROMATOGRAM OF THE SATURATED HYDROCARBONS



NORWAY 1/6-1 10364--10344 FT , OMC 2123, S 114684/1

MIDTOTAL DATA: 56740B #1 SCANS 500 TO 2700  
 12/13/85 11:49:00 CALI: CALH1 #2  
 SAMPLE: NORWAY: 1/6-1 10364-10344 FT OMC 2123 5114684/1 12/120/.3UL  
 CONDS.: COL#412986 FUSSIL-5 25M .32MM 5PSI 1600EV 260/260/240C  
 RANGE: G 1.2700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

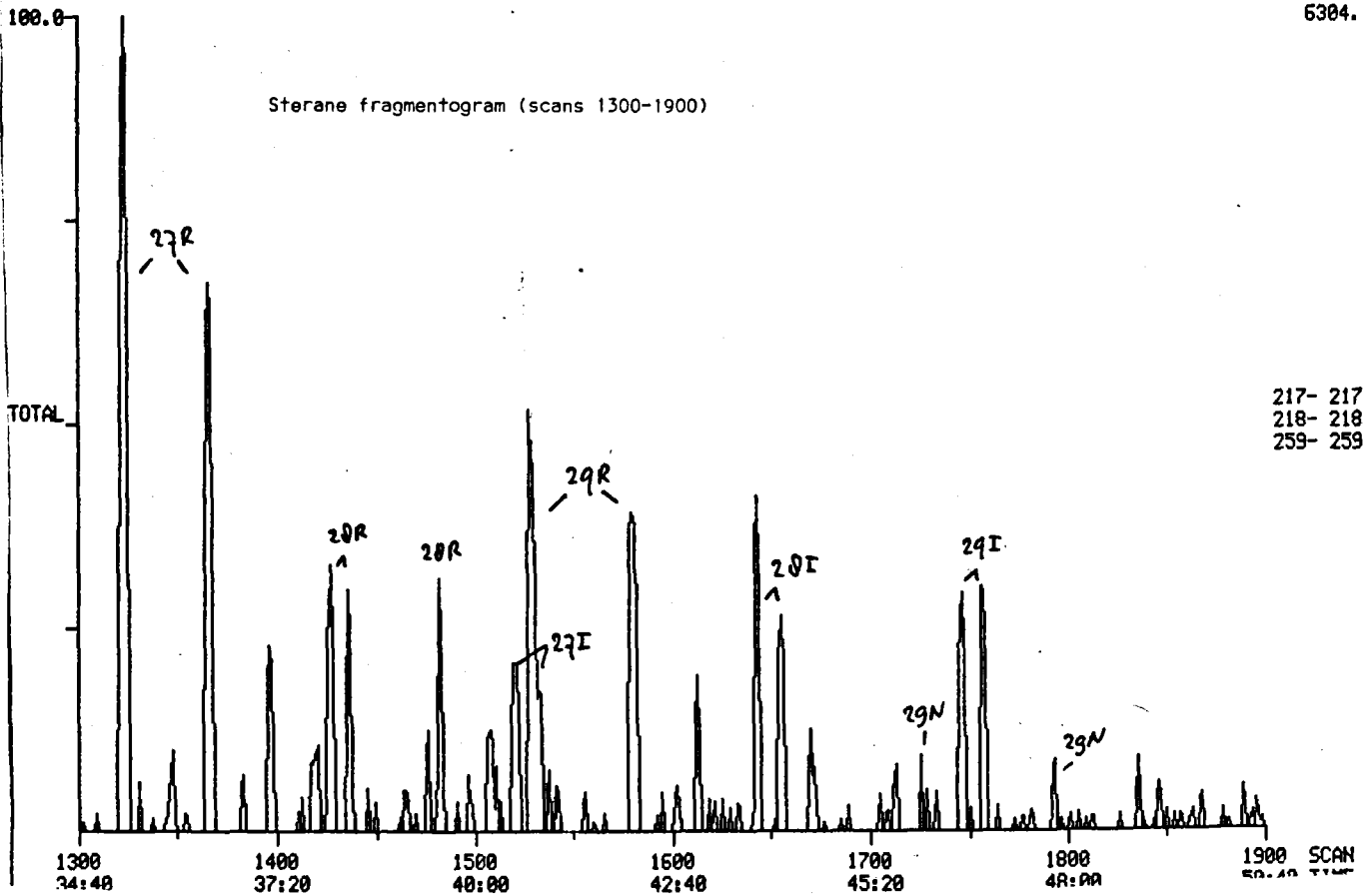
7568.



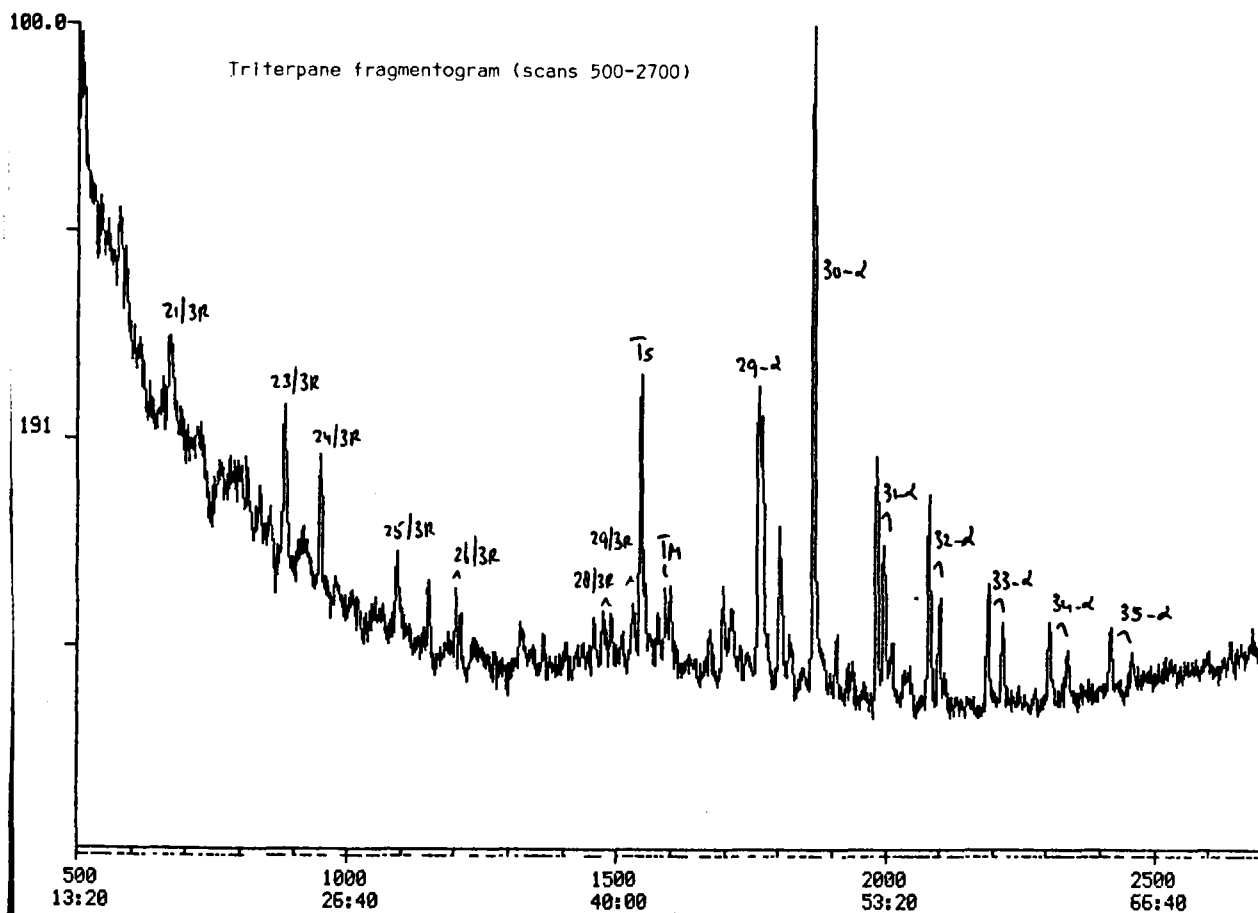
217- 217  
 218- 218  
 259- 259

MIDTOTAL DATA: 56740B #1 SCANS 1300 TO 1900  
 12/13/85 11:49:00 ENHANCED (368 IN 0T)  
 SAMPLE: NORWAY: 1/6-1 10364-10344 FT OMC 2123 5114684/1 12/120/.3UL  
 CONDS.: COL#412986 FUSSIL-5 25M .32MM 5PSI 1600EV 260/260/240C  
 RANGE: G 20, 30 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

6304.

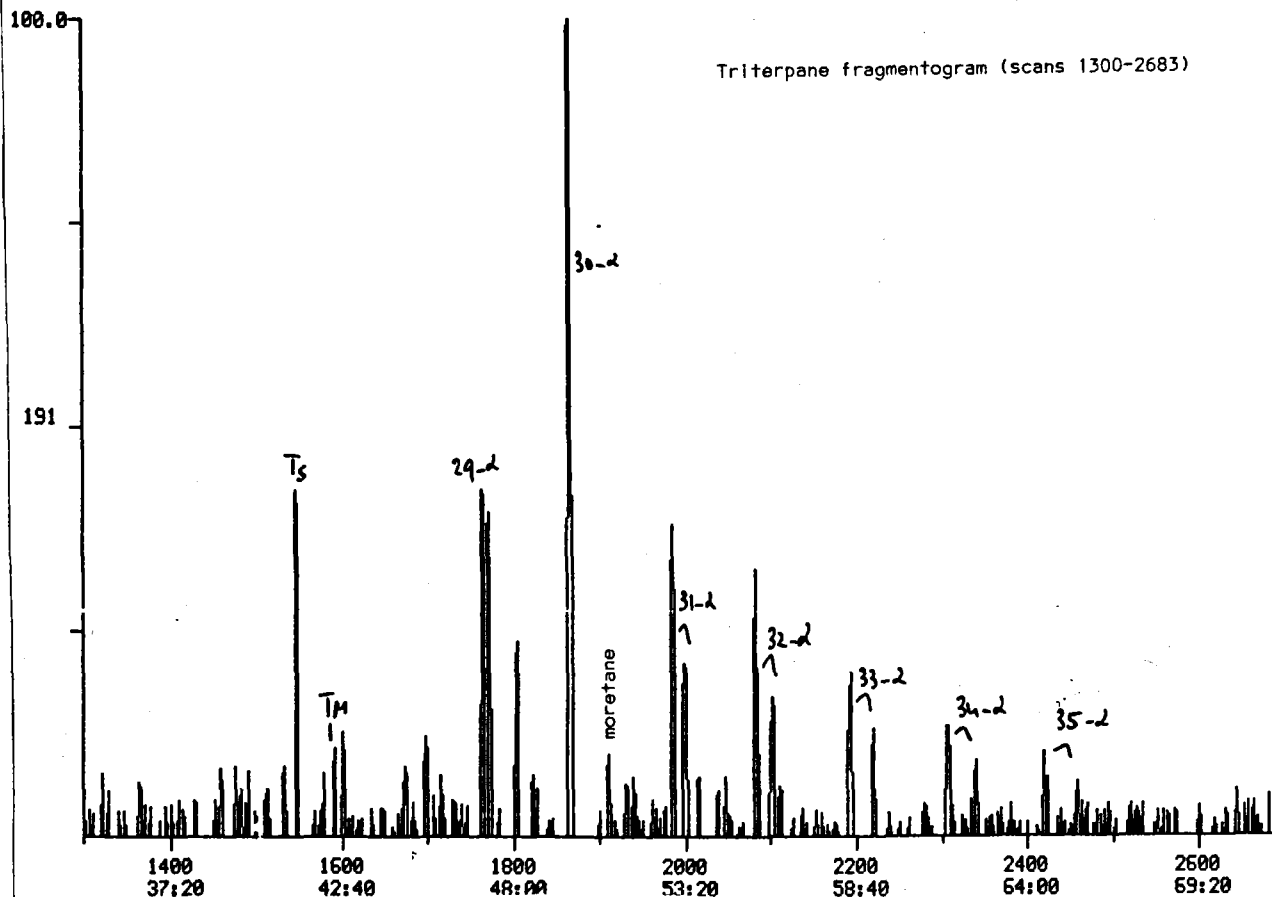


217- 217  
 218- 218  
 259- 259



191.057 ± 0.500

MIDMASS CHROMATOGRAM DATA: 5674085 #1 SCANS 1300 TO 2683  
 12/13/85 11:49:00 ENHANCED (368 IN 0T)  
 SAMPLE: NORWAY: 1/6-1 10364-10344 FT OMC 2123 5114684/1 12/120/.3UL  
 CONDS.: COL#412986 FUSSIL-5 25M .32MM 5PSI 1600EU 260/260/240C  
 RANGE: G 20, 30 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



191.057 ± 0.500



Date 21-MAR-89

GFS - Geochemical Filing System

## G E O C H E M I C A L   D A T A   O F   S A M P L E   S   1 2 9 4 2 7

Country	Norway	( 203 )	Order seq.no.	2	
Well	01/06-01	( 203/0077 )	Reference	WAK	dd. 10-APR-86
Depth	10730.0 - 10760.0 ft		Inv. number	812003810	dd. 10-AUG-86
Sample type	Crude oil		Report number		
Geogr.coord.	E 2.5983 N 56.3803				

Sample treatment	Original sample
Remarks	OMC 2122

API	47.6	C7-DISTRIBUTION	STERANES/TRITERPANES	CARBON ISOTOPE RATIO
SPECIFIC GRAVITY	0.7900	C7-Alkane	Iso-steranes	Topped total oil -28.5
ORG.CARBON (%)		Normal-C7	Rearranged steranes	Topped saturates
After ETAC extr.		Mono-branched	Triterpanes	Topped aromatics
ETAC EXTRACT (%)		Poly-branched	STERANES	
ETAC EXTR./ORG.CARB.		C7-Alk/Naphthene	Iso-steranes	
CHCL3 EXTR. AFTER ETAC		Normal-C7	Rearr.-steranes	
SULPHUR (%)	0.2	Naphthenes	Normal-steranes	
V (AS PORPH.) (PPM)	0	Branched Alkanes	TRITERPANES	
NI (AS PORPH.) (PPM)	0	C7-Alk/Naphth/Aromatics	H	
PRISTANE/PHYTANE	1.2	Alkanes	O+L	
PRISTANE/N-C17	0.5	Naphthenes	W+T	
PHYTANE/N-C18	0.4	Aromatics	STERANE CARBON NO DISTRIB.	
ACI (Saturates)	====	C15-DISTRIBUTION	C27	
CORRELATION COEFF.	====	1-Ring	C28	
BOILING < 120 C *	====	2-Ring	C29	
		3-Ring	STERANE DOM	
		C30-DISTRIBUTION	20S/20R+20S	
		3-Ring	Iso/Iso+Normal	
		4-Ring	TS/TM	
		5-Ring	3R/(3R+5R)	
		C29 DOM 72 VR/E 1.10		
		GROSS COMPOSITION **		
		Saturates		Legend:
		Aromatics		---- not detectable
		Heterocompounds		==== not yet attempted
		TLCFID asphaltenes		blank not determined
		ASPHALTENES		* Calculated
				** TLCFID SiO2

Date 21-MAR-89

GFS - Geochemical Filing System

G E O C H E M I C A L D A T A O F S A M P L E S 1 2 9 4 2 6

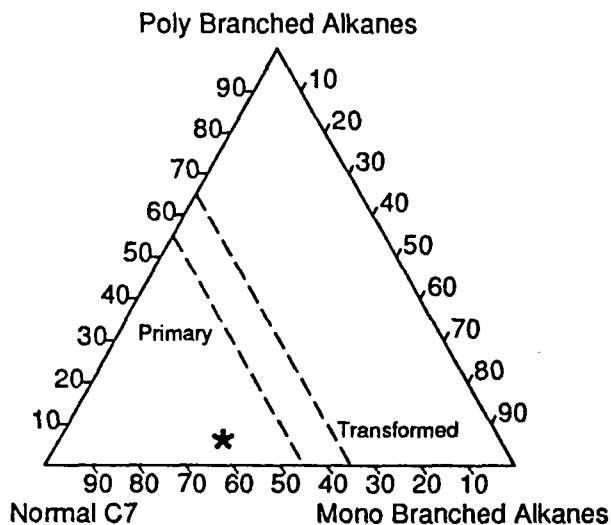
Country	Norway	( 203 )	Order seq.no.	2	
Well	01/06-01	( 203/0077 )	Reference	WAK	dd. 10-APR-86
Depth	11920.0 - 11962.0 ft		Inv. number	812003810	
Sample type	Crude oil		Report number		dd. 10-AUG-86
Geogr.coord.	E 2.5983 N 56.3803				

Sample treatment Original sample  
Remarks OMC 2121

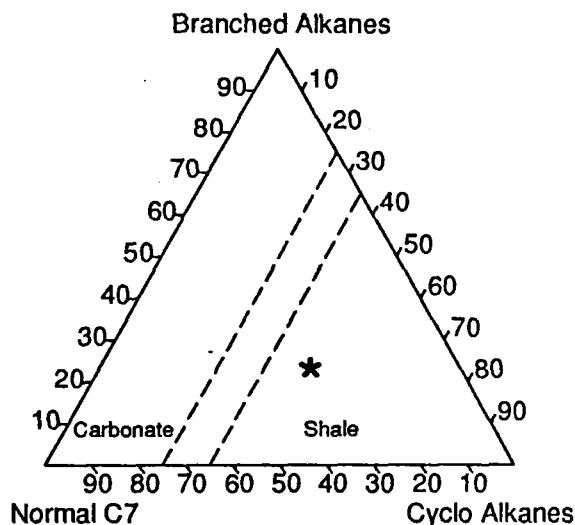
API	49.9	C7-DISTRIBUTION	STERANES/TRITERPANES	CARBON ISOTOPE RATIO
SPECIFIC GRAVITY	0.7800	C7-Alkane	Iso-steranes	Topped total oil -29.1
ORG. CARBON (%W)		Normal-C7	Rearranged steranes	Topped saturates
After ETAC extr.		Mono-branched	Triterpanes	Topped aromatics
ETAC EXTRACT (%W)		Poly-branched	STERANES	
ETAC EXTR./ORG.CARB.		C7-Alk/Naphthene	Iso-steranes	
CHCL3 EXTR. AFTER ETAC		Normal-C7	Rearr.-steranes	
SULPHUR (%W)	0.5	Naphthenes	Normal-steranes	
V (AS PORPH.) (PPM)	12	Branched Alkanes	TRITERPANES	
NI (AS PORPH.) (PPM)	7	C7-Alk/Naphth/Aromatics	H	
PRISTANE/PHYTANE	1.5	Alkanes	O+L	
PRISTANE/N-C17	0.4	Naphthenes	W+T	
PHYTANE/N-C18	0.3	Aromatics	STERANE CARBON NO DISTRIB.	
ACI (Saturates)	====	C15-DISTRIBUTION	C27	
CORRELATION COEFF.	====	1-Ring	C28	
BOILING < 120 C *	====	2-Ring	C29	
		3-Ring	STERANE DOM	
		C30-DISTRIBUTION	20S/20R+20S	
		3-Ring	Iso/Iso+Normal	
		4-Ring	TS/TM	
		5-Ring	3R/(3R+5R)	
		C29 DOM 65 VR/E 0.80		
		GROSS COMPOSITION **		
		Saturates		Legend:
		Aromatics		---- not detectable
		Heterocompounds		==== not yet attempted
		TLCFID asphaltenes		blank not determined
		ASPHALTENES		* Calculated
				** TLCFID SiO2

The Light Fraction (< 120 C.) of the oil sample from well 01/06-01 (3633.22 m.), Norway OMC 2121

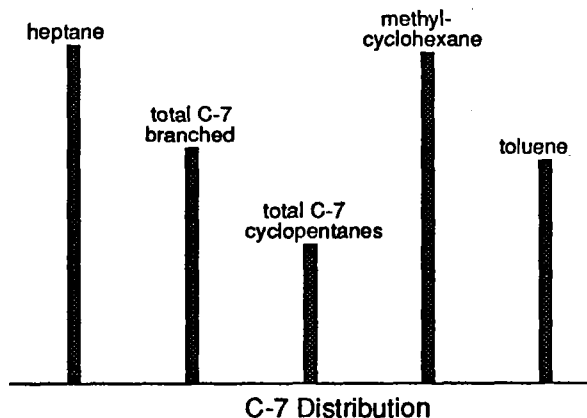
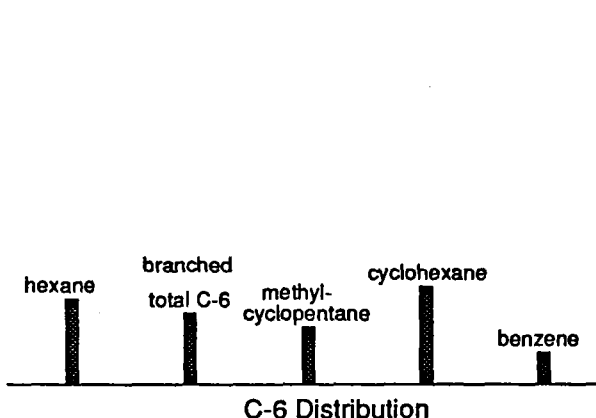
Alkane Distribution



Alkane/Cyclo-alkane Distribution



C-6 and C-7 Distributions



<b>C-7 ALKANES (%)</b>	
Normal C-7 :	59
Mono Branched :	35
Poly Branched :	6
<b>C-7 ALKANES / CYCLO ALKANES (%)</b>	
Normal C-7 :	32
Cyclo Alkanes :	45
Branched Alkanes :	23
<b>C-7 ALK. / CYCLO ALK. / AROMATICS (%)</b>	
Alkanes :	45
Cyclo Alkanes :	37
Aromatics :	18
C-7 TEMP. OF EXPULSION (C) :	120
C-7 VR/E :	0.73

Conclusions :

- 1 : the oil shows no indication of bacterial degradation
- 2 : it is almost certain that this oil was expelled from a shaly source rock

Date 10-MAR-89

GFS - Geochemical Filing System

G E O C H E M I C A L D A T A O F S A M P L E S 1 1 4 6 8 3

Country	Norway	( 203)	Order seq.no.		
Well	01/06-01	( 203/0077 )	Reference	RIS 310114	dd. 31-JAN-86
Depth	12535.0 - 12575.0 ft		Inv. number	812003810	
Sample type	Crude oil		Report number		dd. 31-OCT-86
Geogr.coord.	E 2.5983 N 56.3803				

Sample treatment Original sample  
Remarks OMC 2120

API	38.4	C7-DISTRIBUTION		STERANES/TRITERPANES		CARBON ISOTOPE RATIO	
SPECIFIC GRAVITY	0.8329	C7-Alkane		Iso-steranes	19	Topped total oil	-29.2
ORG. CARBON (%w)		Normal-C7	59	Rearranged steranes	70	Topped saturates	
After ETAC extr.		Mono-branched	33	Triterpanes	11	Topped aromatics	
ETAC EXTRACT (%w)		Poly-branched	7	STERANES			
ETAC EXTR./ORG.CARB.		C7-Alk/Naphthenes		Iso-steranes	28		
CHCL3 EXTR. AFTER ETAC		Normal-C7	34	Rearr.-steranes	69		
SULPHUR (%w)	0.3	Naphthenes	43	Normal-steranes	3		
V (as metals) (PPM)	0	Branched Alkanes	23	TRITERPANES			
NI (as metals) (PPM)	0	C7-Alk/Naphth/Aromatics		H	100		
PRISTANE/PHYTANE	1.5	Alkanes	47	O+L	0		
PRISTANE/n-C17	0.5	Naphthenes	36	W+T	0		
PHYTANE/n-C18	0.4	Aromatics	16	STERANE CARBON NO. DISTRIB.			
ACI (saturates)	19.6	C15-DISTRIBUTION		C27	35		
CORRELATION COEFF.	-.9986	1-ring	65	C28	30		
BOILING < 120 C	6.2	2-ring	28	C29	35		
		3-ring	7	STERANE DOM			
		C30-DISTRIBUTION		20S/20R+20S	0.57		
		3-ring	35	Iso/Iso+Normal	0.80		
		4-ring	41	TS/TM	0.00		
		5-ring	23	3R/(3R+5R)	0.08		
		C29 DOM 71 VR/E	1.03				
		GROSS COMPOSITION **					
		Saturates	75				
		Aromatics	22				
		Heterocompounds	3				
		TLCFID asphaltenes	0				
		ASPHALTENES					

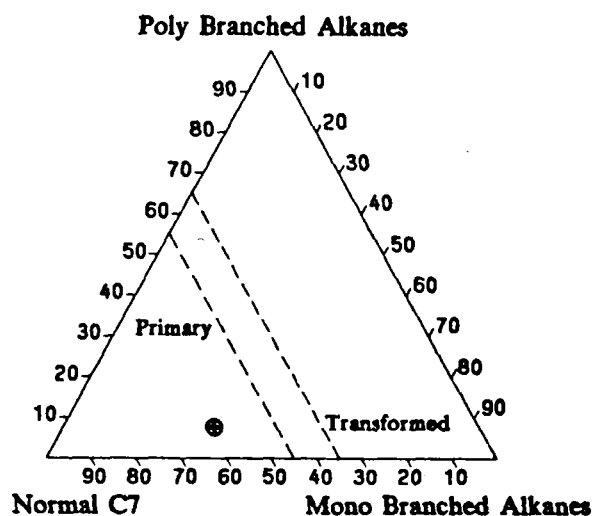
Legend:

---- not detectable  
==== not yet attempted  
blank not determined

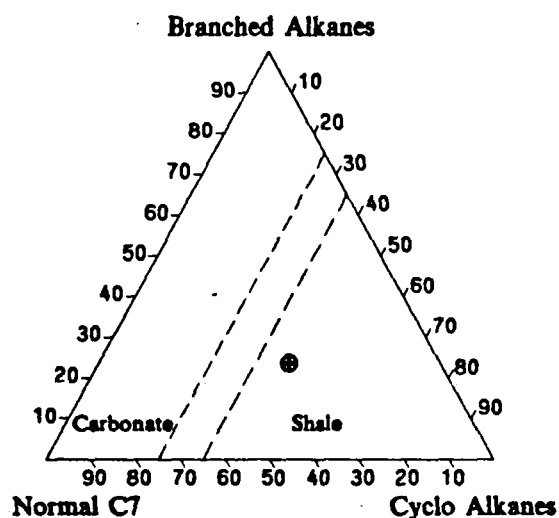
\*\* TLCFID S102

**The Light Fraction (< 120 C.) of the oil sample from  
well 01/06-01 (3820.67 m.), Norway OMC 2120**

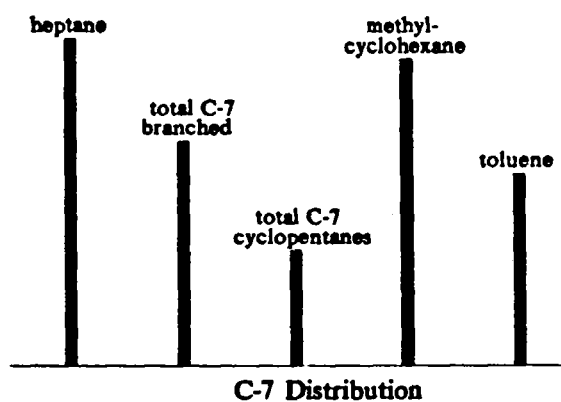
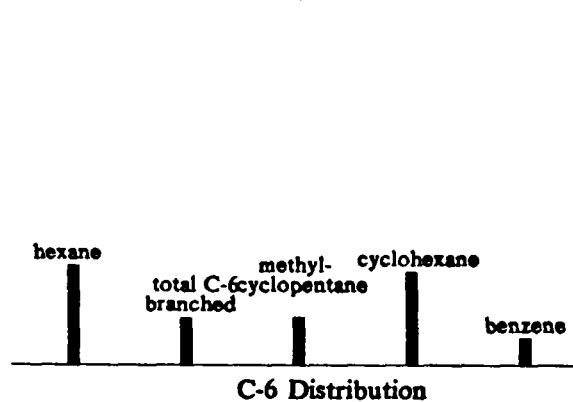
**Alkane Distribution**



**Alkane/Cyclo-alkane Distribution**



**C-6 and C-7 Distributions**



**C-7 ALKANES (%)**

Normal C-7 :	59
Mono Branched :	33
Poly Branched :	7

**C-7 ALKANES / CYCLO ALKANES (%)**

Normal C-7 :	34
Cyclo Alkanes :	43
Branched Alkanes :	23

**C-7 ALK. / CYCLO ALK. / AROMATICS (%)**

Alkanes :	47
Cyclo Alkanes :	36
Aromatics :	16

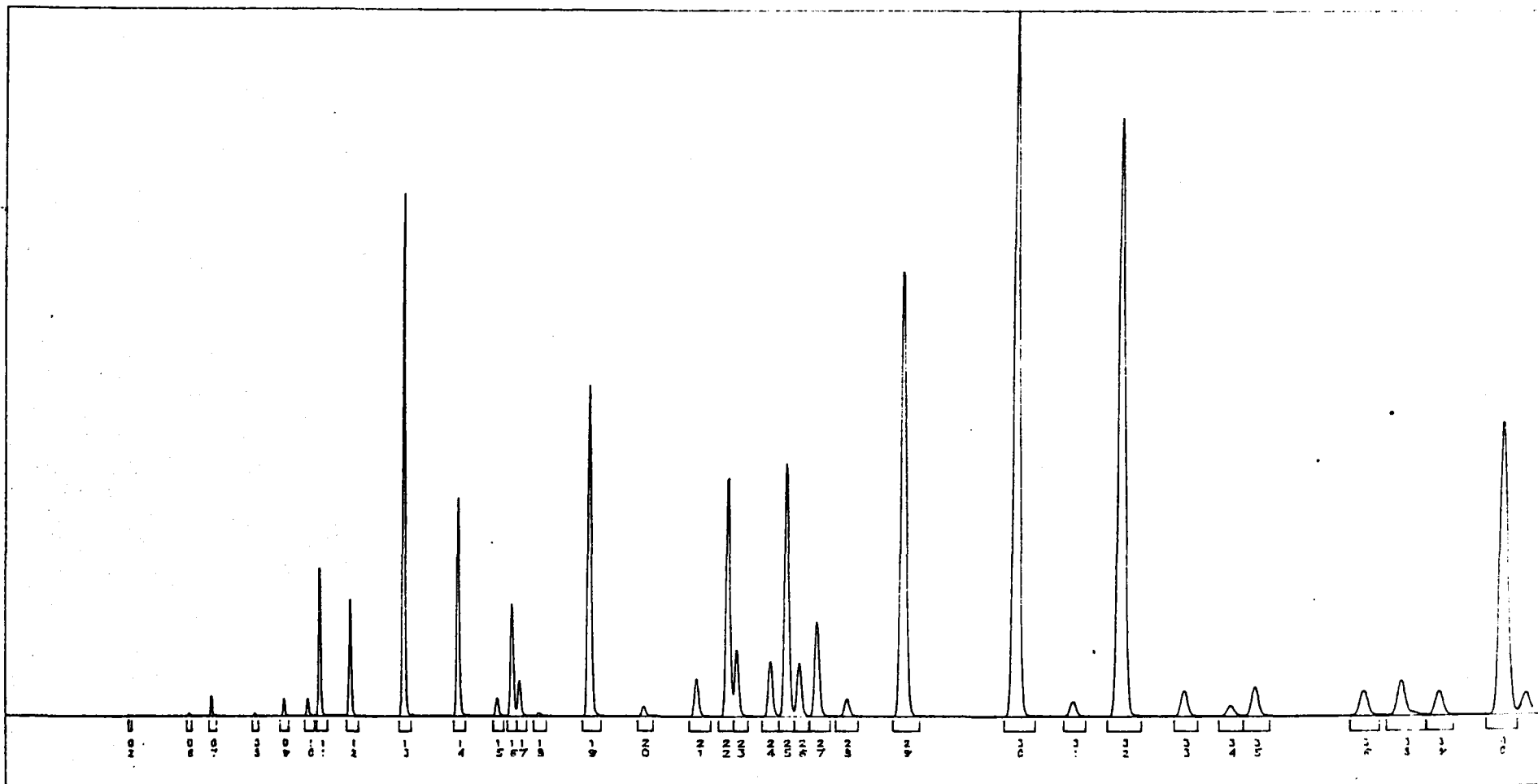
C-7 TEMP. OF EXPULSION (C) : 135

C-7 VR/E : 0.88

**Conclusions :**

- 1 : the oil shows no indication of bacterial degradation
- 2 : it is almost certain that this oil was expelled from a shaly source rock

## GAS CHROMATOGRAM OF THE C-7 FRACTION



Country	NORWAY
Well	1/6-1
Depth	12535.00 F
Sample type	CRUDE OIL

GASCHROMATOGRAPHIC ANALYSIS OF HYDROCARBONS BOILING BELOW 114 DEGREES CENTIGRADE  
 =====

COUNTRY : NORWAY REF. NUMBER : 854961  
 WELL : 1/6-1 LOCATION : BRETT  
 DEPTH : 12535.00 F APPARATUS : C7-1  
 OMC NUMBER : 2120

PEAK	COMPONENT	PEAK MAX	PEAK AREA	WEIGHT PERC
1	METHANE	- - NOT	DETECTED	- -
2	ETHANE	9.52	89.	0.01
3	PROPANE	- - NOT	DETECTED	- -
4	ISOBUTANE	- - NOT	DETECTED	- -
5	N-BUTANE	- - NOT	DETECTED	- -
6	ISOPENTANE	19.08	149.	0.02
7	N-PENTANE	108.52	888.	0.13
8	2,2-DIMETHYLBUTANE	18.44	183.	0.03
9	CYCLOPENTANE	86.82	943.	0.14
10	2,3-DIMETHYLBUTANE	89.16	1070.	0.16
11	2-METHYLPENTANE	756.04	9240.	1.35
12	3-METHYLPENTANE	581.90	7740.	1.13
13	N-HEXANE	2618.45	38506.	5.63
14	METHYLCYCLOPENTANE	1064.05	18336.	2.68
15	2,2-DIMETHYLPENTANE	91.17	1743.	0.25
16	BENZENE	555.31	10487.	1.53
17	2,4-DIMETHYLPENTANE	177.38	3515.	0.51
18	2,2,3-TRIMETHYLBUTANE	17.84	397.	0.06
19	CYCLOHEXANE	1627.23	36050.	5.27
20	3,3-DIMETHYLPENTANE	51.51	1291.	0.19
21	1,1-DIMETHYLCYCLOPENTANE	190.77	5292.	0.77
22	2-METHYLHEXANE	1184.67	32124.	4.69
23	2,3-DIMETHYLPENTANE	329.80	9062.	1.32
24	1-CIS-3-DIMETHYLCYCLOPENTANE	273.80	7893.	1.15
25	3-METHYLHEXANE	1246.39	36433.	5.32
26	1-TRANS-3-DIMETHYLCYCLOPENTANE	264.53	7880.	1.15
27	1-TRANS-2-DIMETHYLCYCLOPENTANE	465.95	14200.	2.07
28	3-ETHYLPENTANE	90.47	2909.	0.43
29	2,2,4-TRIMETHYLPENTANE	2195.09	76339.	11.15
30	N-HEPTANE	3463.57	127763.	18.67
31	1-CIS-2-DIMETHYLCYCLOPENTANE	75.86	3016.	0.44
32	METHYLCYCLOHEXANE	2932.75	119787.	17.50
33	1,1,3-TRIMETHYLCYCLOPENTANE	128.74	5612.	0.82
34	2,2-DIMETHYLHEXANE	53.18	2469.	0.36
35	ETHYLCYCLOPENTANE	145.38	6501.	0.95
36	2,5-DIMETHYLHEXANE	124.25	6225.	0.91
37	2,4-DIMETHYLHEXANE	- - NOT	DETECTED	- -
38	2,2,3-TRIMETHYLPENTANE	172.26	9450.	1.38
39	1-TRANS-2-CIS-4-TRIMETHYLCYCLOPENTANE	120.33	6213.	0.91
40	TOLUENE	1436.34	74639.	10.91
			684433.	100.00

\* : ESTIMATED PEAK AREA

Reference nr. 855099

Recorded KSEPL

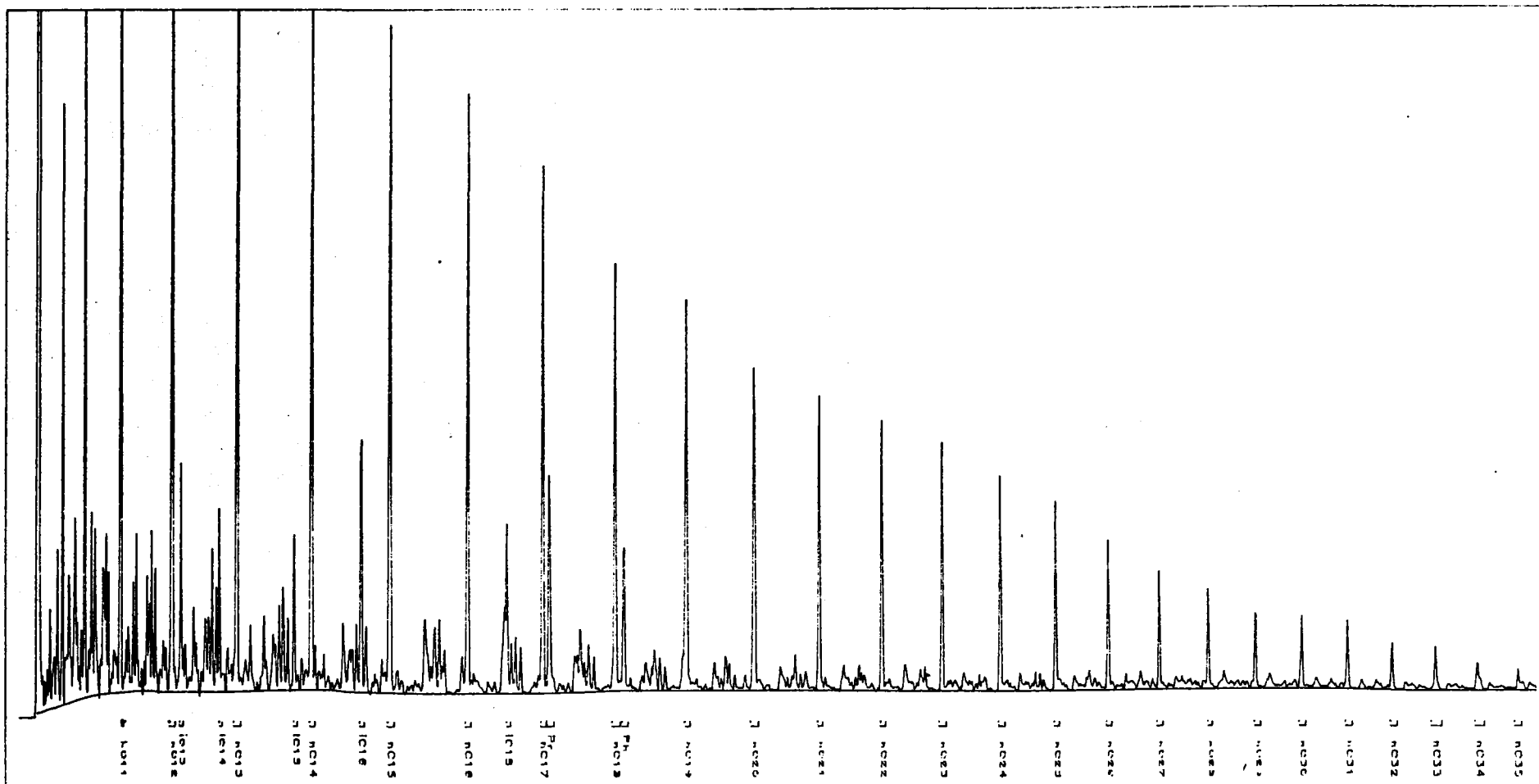
620-15

11-11-85

GPS nr. 114683/01

Calibration nr.

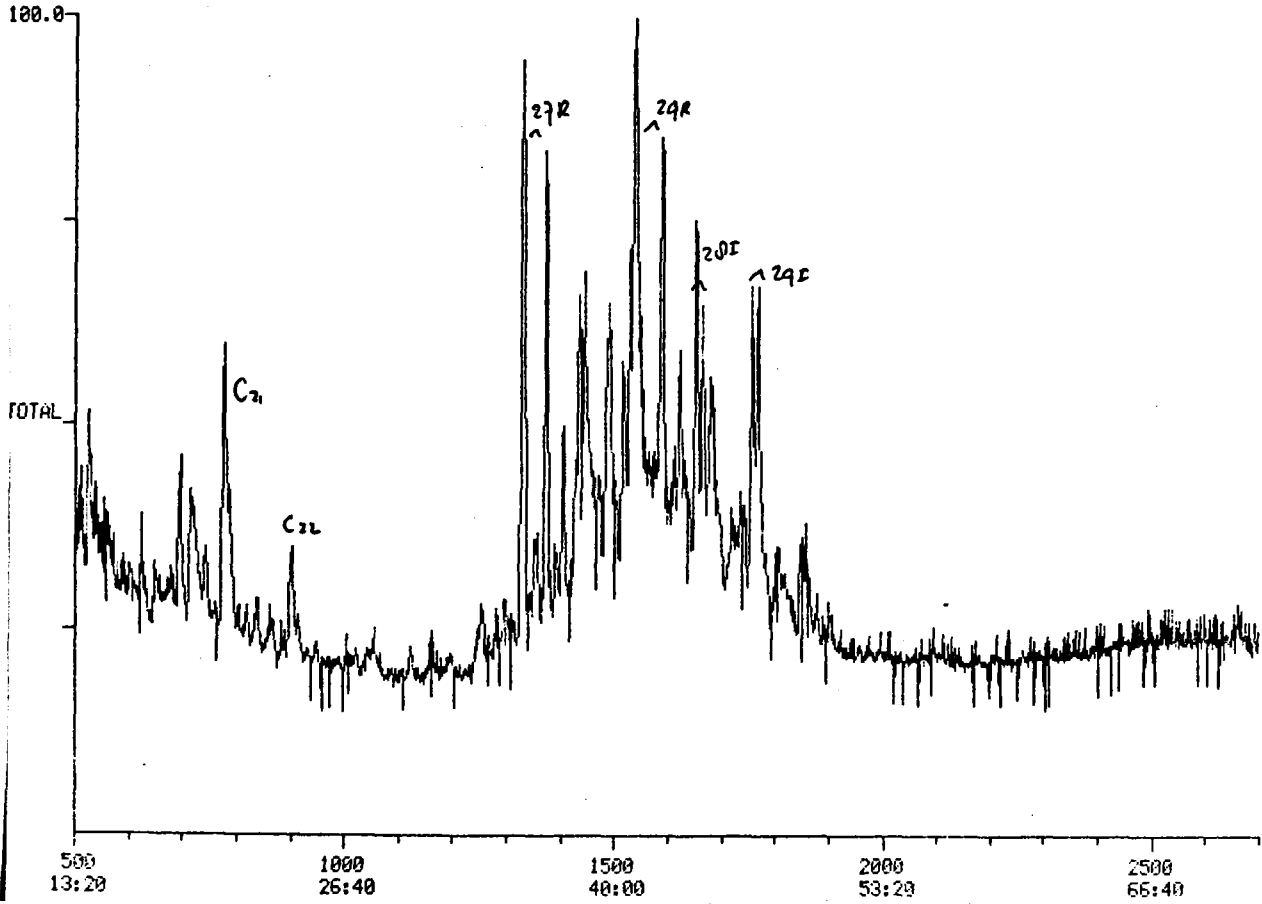
# GAS CHROMATOGRAM OF THE SATURATED HYDROCARBONS



NORWAY 1/6--1 12535--12575 FT, OMC 2120, S 114683/1



MIDTOTAL 12/11/85 14:47:00 DATA: 56720BAS #1 SCANS 1300 TO 1900  
 12/11/85 14:47:00 CALI: CALH1 #3  
 SAMPLE: NORWAY 1/6-1 12535-12575 FT 5114683/1 25/250/.2UL ENHANCED (36B IN 0T)  
 CONDS.: COL#412986 FUSSIL-5 25M .32MM 5PSI 1600EV 260/260/240C OMC 2120  
 RANGE: G 1.2700 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



MIDTOTAL DATA: 56720BAS #1 SCANS 1300 TO 1900  
 12/11/85 14:47:00 ENHANCED (36B IN 0T)  
 SAMPLE: NORWAY 1/6-1 12535-12575 FT 5114683/1 25/250/.2UL  
 CONDS.: COL#412986 FUSSIL-5 25M .32MM 5PSI 1600EV 260/260/240C OMC 2120  
 RANGE: G 20, 30 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

