

## GC-MS BIOMARKER PARAMETERS

HSRUN	34/11-4T2 4195.15m 34/11-4T2 4196.15m 34/11-4T2 4198.2m			
	MPDMIO00854061	MPDMIO00854071	MPDMIO00854081	
H1	C32 HOPANES 22S/(22S+22R)	0.6	0.6	0.59
H2	C31 HOPANES 22S/(22S+22R) M/Z205	0.55	0.54	0.55
H3	C30: HOPANE/(HOPANE+MORETANE)	0.79	0.8	0.79
H4	C30: BB HOPANE / C30 HOPANE AS %	3.47	3.07	3.54
H5_0	C29 HOPANE AS % C30	66.06	64.06	62.5
H5_1	HOPANE DISTRIBUTION RELATIVE TO C30	100	100	100
H5_2	C31 HOPANES AS % OF C30 (205 CORRECTED)	34.77	31.48	33.2
H5_3	C32 HOPANES	15.99	13.98	15.47
H5_4	C33 HOPANES	9.3	7.96	10.66
H5_5	C34 HOPANES	4.71	4.1	4.8
H5_6	C35 HOPANES	2.97	2.62	2.95
H6	C27 HOPANES TS/(TS+TM)	0.1	0.1	0.09
H7	C33 HOPANES 22S/(22S+22R)	0.55	0.55	0.55
H11	C23 TRICYCLIC/C30 HOPANE AS %	10.51	10.64	6.31
H12	C24 TETRACYCLIC/C30 HOPANE AS %	5.03	4.76	2.98
H13	28 30 BISNORHOPANE/HOPANE AS %			
H14	C30 DIAHOPANE PI/HOPANE AS %			
H15	OLEANANE/HOPANE AS %			
H16	GAMMACERANE/HOPANE AS % (205 BACK CALCULATED)	13.36	13.09	13.86
H17	HOPANE INDEX C35/(C35+C34) %	38.72	38.99	38.05
H18	25-NORHOPANE(Y)/HOPANE AS % G			
H19	C29 18A-NORHOPANE D2/C30 HOPANE AS %			
S1	C29 STERANES 20S/(20S+20R)	0.37	0.39	0.38
S2	C29 STERANES m/z218 ABB/(ABB+AAA)	0.32	0.31	0.32
S3_1	STERANE DISTRIBUTION AAA C27 %	23.97	24.3	22.63
S3_2	C28 %	40.67	41.98	41.82
S3_3	C29 %	35.36	33.72	35.55
S4_1	STERANE DISTRIBUTION ABB C27 %	23.2	21.45	21.93
S4_2	C28 %	40.66	41.73	41.15
S4_3	C29 %	36.14	36.83	36.93
S5	BA DIASTERANES/(BA DIASTERANES+AAA+ABB STERANES) %	27.46	24.44	25.88
S7	STERANE INDEX C27/(C27+C29) % FROM S3	40.4	41.88	38.9
S8	C30 4-ME STERANE AS % OF C29 20R AAA	10.64	11.26	9.74
M4	SUM C27 TO C35 HOPANES/(SAME+C27 TO C29 STERANES)	78.08	78.77	78.85
PR/PH	PRISTANE/PHYTANE RATIO ESTIMATE			
M2	PHENANTHRENES (3ME+2ME) / (9ME+1ME)	1.05	1.02	1.2
M3	MP11 PHENANTHRENES (3ME+2ME) / (9ME+1ME+PHEN) * 1.5	0.47	0.45	0.76
A1	ARO STERANES: C28 20R TRI/(SAME+C29 20R 5A&B MONO 12)	0.42	0.41	0.46
A2	ARO STERANES: SUM TRI/(SAME+SUM MONO)(F9&F12split)	0.46	0.4	0.43
A3	TRI ARO STERANES: C20/(C20+C28 20R)	0.58	0.51	0.44
A4	TRI ARO STERANES: (C20+C21)/(SAME+SUM C26 TO C28)	0.33	0.28	0.25
A5	TRI ARO STERANES: C26 20S / C28 20S	0.29	0.33	0.32
A6	TRI ARO STERANES: C27 20R / C28 20R	0.92	0.8	0.83
MDR	4-ME DIBENZOTHIOPHENE / 1-ME DIBENZOTHIOPHENE	2.45	2.22	7.83
MBP	3-METHYLBIPHENYL / 2-METHYLBIPHENYL	9.9	8.06	18.96
MNR	2-ME NAPHTHALENE/1-ME NAPHTHALENE	1.16	1.2	1.7
SMN	(2-ME NAPHTH+1-ME NAPHTH)/C23 TRICYCLIC			
DBTP	DIBENZOTHIOPHENE(MZ184)/PHENANTHRENE(MZ178)	0.03	0.03	0.05
T19	C19 TRICYCLIC/C23 TRICYCLIC %	56.65		
T20	C20 TRICYCLIC/C23 TRICYCLIC %	108.19	52.03	68.97
T21	C21 TRICYCLIC/C23 TRICYCLIC %	109.68	118.53	154.01
T22	C22 TRICYCLIC/C23 TRICYCLIC %	22.62	25.25	26.58
T23	C23 TRICYCLIC/C23 TRICYCLIC %	100	100	100
T24	C24 TRICYCLIC/C23 TRICYCLIC %	38.05	35.96	38.57
T25	C25 TRICYCLIC/C23 TRICYCLIC %	20.68	21.53	24.94
T26	C26 TRICYCLIC/C23 TRICYCLIC %	42.43	34.51	43.25
T28	C28 TRICYCLIC/C23 TRICYCLIC %			
T29	C29 TRICYCLIC/C23 TRICYCLIC %			
T30	C30 TRICYCLIC/C23 TRICYCLIC %			
19/23	C19 TRICYCLIC/C23 TRICYCLIC AS %	56.65	59.27	
20/21	C20 TRICYCLIC/C21 TRICYCLIC AS %	98.65	43.89	44.78
22/21	C22 TRICYCLIC/C21 TRICYCLIC AS %	20.62	21.3	17.26
24/23	C24 TRICYCLIC/C23 TRICYCLIC AS %	38.05	35.96	38.57
26/25	C26 TRICYCLIC/C25 TRICYCLIC AS %	205.13	160.24	173.44
244_24	C24 TETRACYCLIC/C24 TRICYCLIC AS %	125.76	124.5	122.4
TET_23	C24 TETRACYCLIC/C23 TRICYCLIC AS %	47.86	44.77	47.21

APPENDIX - D  
MUD EXTRACTS DATA

# Oil Analysis

**Well name :** 34/11-4T2  
**Suite name :** Statoil Mud Extracts  
**Country Of Origin :** Norway  
**Depth (m) :** 3948  
**Sample name :** Mud Extract  
**Test Number :**  
**G number :** G  
**Lab Number:** 9907OIL007S001

### Inspection Properties

**API :**  
**Density @ 15 deg C :**  
**Wax Content %wt :**  
**Wax Melting Point deg C :**  
**Pour Point deg C :**  
**Viscosity cSt @ 20 deg C :**  
**Total Acidity mg KOH/g :**  
**Asphaltenes %wt (IP Method) :**  
**Nitrogen ppm :**  
**Sulphur %wt :**  
**Nickel ppm :**  
**Vanadium ppm :**  
**Nickel/Vanadium :**

### Biomarker Ratios

H1 : 0.57	S1 : 0.39	M2 : 0.59
H2 : 0.54	S2 : 0.34	M3 : 0.56
H3 : 0.80	S3 : 32:36:31	M4 : 71.20
H4 :	S4 : 25:38:35	M5 :
H5 : 100:36:17:10:5:4	S5 : 22.98	A1 : 0.50
H6 : 0.14	S6 :	A2 : 0.37
H7 : 0.57	S7 : 51.05	A3 : 0.47
H8 :	S8 : 11.48	A4 : 0.26
H9 :	S9 :	A5 : 0.41
H10 :	S10 :	A6 : 0.79
H11 : 19.23		MDR : 2.53
H12 : 6.93		MBP : 4.89
H13 :		
H14 :		
H15 :		
H16 : 10.26		
H17 : 42.59		
H18 :		

### Iatroscan

**Saturates %wt :** 96.24  
**Aromatics %wt :** 0.00  
**Residues %wt :** 0.66

**Asphaltenes (Micro Method) %wt :** 3.1

### Saturates GC

**Pristane/Phytane :** 0.63  
**Pristane/nC17 :** 0.20  
**Phytane/nC18 :** 0.41  
**CPI :** 1.51  
**ALKIND :** 99.80  
**R22 :** 0.92

### Light Hydrocarbons

**MCH % :**  
**HER :**  
**HXR :**

### Stable Carbon Isotopes

**Saturates :**  
**Total Oil :**  
**Aromatics :**  
**Residue :**  
**Asphaltenes :**

**STANDARD:**

**N.B.** ALKIND - 100\*n-C17/(n-C17+n-C27)  
 R22 - 2\*n-C22/(n-C21+n-C23)

**HER - Heptane/Heptane+Methylcyclohexane**  
**HXR - Hexane/Hexane+cyclohexane**  
**MCH% - Methylcyclohexane as Percentage of Saturates C7 Components**

# Oil Analysis

**Well name :** 34/11-4T2  
**Suite name :** Statoil Mud Extracts  
**Country Of Origin :** Norway  
**Depth (m) :** 4148  
**Sample name :** Mud Extract  
**Test Number :**  
**G number :**  
**Lab Number :** 9907OIL007S002

## Inspection Properties

**API :**  
**Density @ 15 deg C :**  
**Wax Content %wt :**  
**Wax Melting Point deg C :**  
**Pour Point deg C :**  
**Viscosity cSt @ 20 deg C :**  
**Total Acidity mg KOH/g :**  
**Asphaltenes %wt (IP Method) :**  
**Nitrogen ppm :**  
**Sulphur %wt :**  
**Nickel ppm :**  
**Vanadium ppm :**  
**Nickel/Vanadium :**

## Biomarker Ratios

H1 : 0.59	S1 : 0.39	M2 : 0.56
H2 : 0.56	S2 : 0.33	M3 : 0.56
H3 : 0.79	S3 : 26:40:33	M4 : 81.78
H4 :	S4 : 19:42:37	M5 :
H5 : 100:32:14:8:3:2	S5 : 23.30	A1 : 0.51
H6 : 0.08	S6 :	A2 : 0.43
H7 : 0.56	S7 : 44.86	A3 : 0.49
H8 :	S8 : 13.15	A4 : 0.29
H9 :	S9 :	A5 : 0.29
H10 :	S10 :	A6 : 0.80
H11 : 13.96		MDR : 2.78
H12 : 6.18		MBP : 4.61
H13 :		
H14 :		
H15 :		
H16 : 16.14		
H17 : 38.56		
H18 :		

## Iatroscan

**Saturates %wt :** 96.61  
**Aromatics %wt :** 0.00  
**Residues %wt :** 0.82  
**Asphaltenes (Micro Method) %wt :** 2.57

## Saturates GC

**Pristane/Phytane :** 1.60  
**Pristane/nC17 :** 0.24  
**Phytane/nC18 :** 0.21  
**CPI :** 1.49  
**ALKIND :** 99.85  
**R22 :** 0.91

## Light Hydrocarbons

**MCH % :**  
**HER :**  
**HXR :**

## Stable Carbon Isotopes

**Saturates :**  
**Total Oil :**  
**Aromatics :**  
**Residue :**  
**Asphaltenes :**

**STANDARD:**

**N.B.** ALKIND - 100\*n-C17/(n-C17+n-C27)  
 R22 - 2\*n-C22/(n-C21+n-C23)

HER - Heptane/Heptamethylcyclohexane  
 HXR - Hexane/Hexamethylcyclohexane  
 MCH% - Methylcyclohexane as Percentage of Saturates C7 Components

## Oil Analysis

**Well name :** 34/11-4T2  
**Suite name :** Statoil Mud Extracts  
**Country Of Origin :** Norway  
**Depth (m) :** 4204  
**Sample name :** Mud Extract  
**Test Number :**  
**G number :**  
**Lab Number :** 9907OIL007S003

### Inspection Properties

**API :**  
**Density @ 15 deg C :**  
**Wax Content %wt :**  
**Wax Melting Point deg C :**  
**Pour Point deg C :**  
**Viscosity cSt @ 20 deg C :**  
**Total Acidity mg KOH/g :**  
**Asphaltenes %wt (IP Method) :**  
**Nitrogen ppm :**  
**Sulphur %wt :**  
**Nickel ppm :**  
**Vanadium ppm :**  
**Nickel/Vanadium :**

### Biomarker Ratios

H1 : 0.56	S1 : 0.39	M2 : 0.50
H2 : 0.56	S2 : 0.39	M3 : 0.54
H3 : 0.81	S3 : 28:39:32	M4 : 74.90
H4 :	S4 : 25:39:34	M5 :
H5 : 100:36:17:11:5:4	S5 : 36.00	A1 : 0.42
H6 : 0.15	S6 :	A2 : 0.39
H7 : 0.57	S7 : 46.13	A3 : 0.54
H8 :	S8 : 13.76	A4 : 0.29
H9 :	S9 :	A5 : 0.45
H10 :	S10 :	A6 : 0.95
H11 : 14.53		MDR : 2.29
H12 : 6.89		MBP : 5.27
H13 :		
H14 :		
H15 :		
H16 : 9.78		
H17 : 44.18		
H18 :		

### Iatroscan

**Saturates %wt :** 96.01  
**Aromatics %wt :** 0.00  
**Residues %wt :** 1.49  
**Asphaltenes (Micro Method) %wt :** 2.49

### Saturates GC

**Pristane/Phytane :** 0.96  
**Pristane/nC17 :** 0.22  
**Phytane/nC18 :** 0.32  
**CPI :** 1.53  
**ALKIND :** 99.77  
**R22 :** 0.95

### Light Hydrocarbons

**MCH % :**  
**HER :**  
**HXR :**

### Stable Carbon Isotopes

**Saturates :**  
**Total Oil :**  
**Aromatics :**  
**Residue :**  
**Asphaltenes :**

**STANDARD:**

**N.B.** ALKIND -  $100 \cdot n\text{-C17} / (n\text{-C17} + n\text{-C27})$   
 R22 -  $2 \cdot n\text{-C22} / (n\text{-C21} + n\text{-C23})$

**HER - Heptane/Heptane+Methylcyclohexane**  
**HXR - Hexane/Hexane+cyclohexane**  
**MCH% - Methylcyclohexane as Percentage of Saturates C7 Components**

SATURATE GC

34/11-4T2 Mud Extracts	9907OIL007S001	9907OIL007S002	9907OIL007S003
Depth (m)	3948m	4148m	4204m
Saturates Fraction GC Analysis	Area	Area	Area
Component	[ $\mu$ V-s]	[ $\mu$ V-s]	[ $\mu$ V-s]
N-C12	38227.8	29342.4	157072.13
N-C13	137587.28	80709.4	421685.09
N-C14	1608484.8	860230.53	3230146.6
N-C15	945353.4	449546.1	111947.31
N-C16	1199172.59	539638.34	1978152.17
N-C17	655646.62	292260.85	1163444.84
PRISTANE	133358.58	70020.25	257864.29
N-C18	512616.17	205086.59	843474.51
PHYTANE	212719.53	43644.42	268313.42
N-C19	281921.71	119267.42	454670.47
N-C20	163715.4	64309.1	273888.9
N-C21	98024.1	39913.2	180050.5
N-C22	59995.4	24069.8	115423.7
N-C23	31814.3	13073	63320.2
N-C24	14781.4	6088.8	30711.9
N-C25	6432	2110.52	12785.8
N-C26	2211.79	933.68	4506.55
N-C27	1308.06	453	2689.9
N-C28	811.6	250.4	1718.92
N-C29	1249.54	474.68	2606.58
N-C30	472.89	0	789.49
N-C31	509.8	0	0
N-C32	304.75	0	0
N-C33	0	0	0
N-C34	0	0	0
N-C35	0	0	0
N-C36	0	0	0
<b>TOTAL</b>	<b>6106719.52</b>	<b>2841422.47</b>	<b>9575263.28</b>
<b>Batch Code</b>	<b>9907OIL007S001</b>	<b>9907OIL007S002</b>	<b>9907OIL007S003</b>
CPI (24 to 32)	1.51	1.49	1.53
Pr/Ph Ratio	0.63	1.60	0.96
Pr/n-C17	0.20	0.24	0.22
Ph/n-C18	0.41	0.21	0.32
Alkane Index (C17/(C17+C27))%	99.80	99.85	99.77
R22 Index 2*C22/(C21+C23)	0.92	0.91	0.95
(Pr/n-C17)/(Ph/n-C18)	0.49	1.13	0.70
Note: -1 denotes not calculated			

Software Version: 4.1<0G07>  
 Sample Name: 9907OIL007S001 34/11-4T2 3948m  
 Instrument: SAC\_GC  
 Raw Data File: C:\\_DATA\B9907007\ARO001.RAW  
 Sequence File: C:\\_DATA\B9907007\ARO.SEQ

## Aromatics GC

Component Name	Time [min]	Area [ $\mu$ V·s]	Area [%]
	8.442	45963.1	2.12
1-ME NAPTHALENE	9.316	0	0
2-ME NAPTHALENE	9.54	0	0
	10.571	11478.39	0.53
	10.637	18795.21	0.87
	10.742	11599.4	0.53
	10.905	49025.13	2.26
2,6+2,7-DIMETHYLNAPT	11.005	222881.5	10.27
1,3+1,7-DIMETHYLNAPT	11.094	324.73	0.01
1,6-DIMETHYLNAPTHALE	11.146	9890.49	0.46
1,5+1,5+2,3-DIMETHYL	11.308	16084.9	0.74
	11.381	4135.35	0.19
1,2-DIMETHYLNAPTHALE	11.56	2066	0.1
	11.918	27467.61	1.27
	12.014	15637.79	0.72
	12.105	10965	0.51
	12.423	10270.91	0.47
	12.482	44991.86	2.07
	12.619	10312.03	0.48
	12.79	21202.6	0.98
	13.041	7858.93	0.36
	13.119	22604.67	1.04
	13.166	6922.68	0.32
	13.227	16477.32	0.76
	13.304	25418.04	1.17
	13.394	7678.56	0.35
	13.542	9505.2	0.44
	13.629	126419.4	5.83
	13.75	40422.97	1.86
	14.046	3133	0.14
	14.313	21135.2	0.97
	14.391	23700.1	1.09
	14.466	32613.7	1.5
	14.613	7770.5	0.36
	14.863	16073.4	0.74
	14.947	33188.8	1.53
	15.461	3651	0.17
PHENANTHRENE	15.547	0	0
	15.619	9388.8	0.43
	15.767	5791.87	0.27
	15.829	39085.93	1.8
	16.086	24698	1.14
3-ME PHENANTHRENE	16.801	0	0
2-ME PHENANTHRENE	16.854	0	0
9-ME PHENANTHRENE	17.049	0	0
	17.069	8965.26	0.41
1-ME PHENANTHRENE	17.103	0	0
	17.17	17154.14	0.79
	17.735	65264.64	3.01
	17.833	26496.96	1.22
	17.982	104635.8	4.82

18.209	12907	0.59
18.868	23054.27	1.06
19.099	51634.53	2.38
19.192	10023.8	0.46
19.58	7648.23	0.35
19.665	41332.17	1.9
19.931	14887	0.69
20.505	15619.2	0.72
20.864	6966.8	0.32
20.962	24620.7	1.13
21.202	24429.4	1.13
22.688	26852	1.24
24.031	15267.2	0.7
24.09	97203	4.48
24.292	13936.2	0.64
25.253	315665.9	14.55
25.709	10405.2	0.48
26.666	7583.5	0.35
27.021	7707.9	0.36
27.132	9669.1	0.45
27.306	13036	0.6
27.705	20143	0.93
28.191	46584.4	2.15
28.93	93851.3	4.32
29.625	10102.6	0.47
30.587	9940.4	0.46
	2170218	100

Software Version: 4.1<0G07>  
 Sample Name: 9907OIL007S002 34/11-4T2 4148m MUD  
 Instrument: SAC\_GC  
 Raw Data File: C:\\_DATA\B9907007\ARO002.RAW  
 Sequence File: C:\\_DATA\B9907007\ARO.SEQ

## Aromatics GC

Component Name	Time [min]	Area [ $\mu$ V·s]	Area [%]
1-ME NAPHTHALENE	9.316	0	0
2-ME NAPHTHALENE	9.54	0	0
	10.9	2119.77	0.13
2,6+2,7-DIMETHYLNAPT	10.989	21512.4	1.28
	11.06	78.18	0
1,3+1,7-DIMETHYLNAPT	11.085	0	0
1,6-DIMETHYLNAPHTHALE	11.141	3092.58	0.18
1,5+1,5+2,3-DIMETHYL	11.378	519.77	0.03
1,2-DIMETHYLNAPHTHALE	11.548	585.49	0.03
	12.479	14288.5	0.85
	13.118	11592.4	0.69
	13.3	14250.61	0.85
	13.391	6317.59	0.37
	13.538	4530.8	0.27
	13.623	78027.75	4.63
	13.748	31039.15	1.84
	14.311	14868.87	0.88
	14.39	12445.93	0.74
	14.613	7110.1	0.42
	14.948	37650.7	2.23
	15.066	8553.9	0.51
	15.223	12317.1	0.73
	15.366	5532.8	0.33
PHENANTHRENE	15.505	18258.1	1.08
	15.62	11961	0.71
	15.77	7235.79	0.43
	15.829	24052.71	1.43
	15.979	6991.09	0.41
	16.088	35927.91	2.13
	16.564	10740.8	0.64
	16.781	16775.3	1
3-ME PHENANTHRENE	16.801	0	0
2-ME PHENANTHRENE	16.854	0	0
9-ME PHENANTHRENE	17.049	0	0
	17.07	8746.11	0.52
1-ME PHENANTHRENE	17.103	0	0
	17.172	27016.89	1.6
	17.734	51766.1	3.07
	17.837	28327.9	1.68
	17.98	87179.63	5.17
	18.08	12138.67	0.72
	18.209	17101.7	1.01
	18.608	5316	0.32
	18.87	15091.2	0.9
	19.102	51211	3.04
	19.196	12992	0.77
	19.581	8492.4	0.5
	19.665	42744.4	2.54
	19.725	17271	1.02
	19.932	13353	0.79
	20.143	6741.8	0.4

20.508	25082.2	1.49
20.868	13751.27	0.82
20.965	31555.13	1.87
21.202	29977.6	1.78
22.553	13568.5	0.81
22.693	30339.6	1.8
22.849	6273.7	0.37
24.034	16240.48	0.96
24.094	102912.4	6.11
24.193	6173.7	0.37
24.295	19894.4	1.18
25.258	339911.3	20.17
25.712	10485.6	0.62
27.025	7453.7	0.44
27.307	13835.1	0.82
27.707	20135.2	1.19
28.193	42830.3	2.54
28.932	87190.6	5.17
29.63	14830.4	0.88
30.591	10526.4	0.62
31.382	18218.2	1.08
33.761	41.81	0
	1685094	100

Software Version: 4.1<OG07>  
 Sample Name: 9907OIL007S003 34/11-4T2 4204m MUD  
 Instrument: SAC\_GC  
 Raw Data File: C:\\_DATA\B9907007\ARO003.RAW  
 Sequence File: C:\\_DATA\B9907007\ARO.SEQ

Aromatics GC			
Component Name	Time [min]	Area [ $\mu$ V·s]	Area [%]
	4.968	15428.2	0.78
	5.383	166486.1	8.43
	5.496	27694.9	1.4
	8.05	3730.2	0.19
	8.448	119410.8	6.05
	8.928	6670.1	0.34
1-ME NAPTHALENE	9.303	15177.9	0.77
2-ME NAPTHALENE	9.526	10327	0.52
	10.574	13679.49	0.69
	10.639	18932.11	0.96
	10.743	7579.6	0.38
	10.905	36832.07	1.86
2,6+2,7-DIMETHYLNAPT	11.004	173143.6	8.77
1,3+1,7-DIMETHYLNAPT	11.094	3109.64	0.16
1,6-DIMETHYLNAPTHALE	11.144	15204.19	0.77
1,5+1,5+2,3-DIMETHYL	11.381	4644.14	0.24
1,2-DIMETHYLNAPTHALE	11.557	2409.86	0.12
	12.013	12271.5	0.62
	12.104	11013.6	0.56
	12.483	41649.83	2.11
	12.619	15535.97	0.79
	13.119	19668.24	1
	13.165	6959.63	0.35
	13.231	15621.56	0.79
	13.303	23716.54	1.2
	13.395	8023.43	0.41
	13.543	5907	0.3
	13.626	91517.84	4.63
	13.75	37031.36	1.87
	14.313	14939.8	0.76
	14.393	11470.4	0.58
	14.862	15886.5	0.8
	14.948	33177.4	1.68
	15.223	12116.8	0.61
	15.366	5259	0.27
	15.46	4236.8	0.21
PHENANTHRENE	15.547	0	0
	15.619	11386.47	0.58
	15.685	7343.93	0.37
	15.77	6227.37	0.32
	15.828	14012.82	0.71
	16.088	26052.8	1.32
	16.781	21903.8	1.11
3-ME PHENANTHRENE	16.801	0	0
2-ME PHENANTHRENE	16.854	0	0
9-ME PHENANTHRENE	17.049	0	0
	17.069	7443.48	0.38
1-ME PHENANTHRENE	17.103	0	0
	17.17	21194.32	1.07
	17.731	27099.51	1.37
	17.835	26277.69	1.33

17.976	48987.6	2.48
18.209	15931	0.81
18.868	15096.4	0.76
19.099	38741.4	1.96
19.195	8864.6	0.45
19.663	22847.8	1.16
20.505	18816.6	0.95
20.867	11384.52	0.58
20.963	21913.88	1.11
21.201	25706.3	1.3
22.69	22407.8	1.13
22.847	4156.5	0.21
24.032	12360.4	0.63
24.089	78757	3.99
24.293	13932.7	0.71
25.253	271607.4	13.75
27.023	6464	0.33
27.306	10754.3	0.54
27.704	13818.9	0.7
28.187	29615.9	1.5
28.927	62244.9	3.15
29.629	11905.6	0.6
30.588	13478.4	0.68
33.76	0.46	2.00E-05
	1975200	100

## GC-MS PEAK HEIGHT DATA

PEAK HEIGHTS	MPDMIO00852021.LIS MPDMIO00852031.LIS MPDMIO00852041.LIS		
	34/11-4T2 3948m Mud \$9907OIL007S001S	34/11-4T2 4148m Mud \$9907OIL007S002S	34/11-4T2 4204m Mud \$9907OIL007S003S
PRISTANE	0	0	0
PHYTANE	0	0	0
C19 TRICYCLIC TERPANE(19/3)	0	882070	815904
C20 TRICYCLIC TERPANE(20/3)	1834120	1851430	1586910
C21 TRICYCLIC TERPANE(21/3)	1934730	1799780	1632560
C22 TRICYCLIC TERPANE(22/3)	537001	357826	362147
C23 TRICYC TERPANE(T5:23/3)	1798210	1309090	1393240
C24 TRICYC TERPANE (24/3)	606014	527654	545211
C25 TRICYC TERPANE (25/3)	294876	195755	273766
C24 TETRACYC TERP (S:24/4)	648250	579663	661096
C26 TRICYCLIC TERPANE(26/3)	196096	179491	220276
C26 TRICYCLIC TERP 2 (26/3)	186783	179491	220276
C28 TRICYCLIC TERPANE(28/3)	147631	82216	135931
C28 TRICYCLIC TERP 2 (28/3)	130106	72841	108173
C29 TRICYCLIC TERPANE(29/3)	0	0	0
C29 TRICYCLIC TERP 2 (29/3)	0	0	0
C27 18A HOPANE (Ts:27Ts)	283978	165679	337895
C27 17A HOPANE (Tm:27Tm)	1685400	1938340	1909170
C30 TRICYCLIC TERPANE(30/3)	0	0	0
C30 TRICYCLIC TERP 2 (30/3)	0	0	0
25-TRISNORm/z177(25nor28ab)	129011	71733	114359
C28 BISNORHOPANE (X:28ab)	250732	0	238189
25-NOR m/z177 (Y:25nor30ab)	0	0	0
25-NORHOPANE (Y:25nor30ab)	0	0	0
C29 HOPANE (D:29ab)	5344070	6028250	6270900
C29 18A NORHOPANE (D2:29Ts)	0	0	0
C30 C30 DIAHOPANE (Pi:30d)	0	0	0
C29 NORMORETANE (A:29ba)	729307	775795	728277
C30 18A OLEANANE (B:30O)	0	0	0
C30 HOPANE (G:30ab)	9351000	9378200	9590780
NOR-GAMMACERANE? (G2)	0	0	0
C30 MORETANE (K:30ba)	2296150	2494110	2283010
C31 22S HOPANE (N:31abS)	1836520	1699720	1981780
C31 22R HOPANE (O:31abR)	2514710	2850160	2475290
C31 22S M/Z205 (N205)	616037	621229	751442
C31 22R M/Z205 (O205)	521575	488508	583092
C30 GAMACERANE (S:30G)	0	0	0
C30 17B 21B HOPANE (P)	333391	402108	205528
C32 22S HOPANE (U:32abS)	935669	791395	950645
C32 22R HOPANE (V:32abR)	710992	552598	737297
C33 22S HOPANE(Alpha:33abS)	577086	446708	620411
C33 22R HOPANE (Beta:33abR)	439303	349252	467776
C34 22S HOPANE(Gamma:34abS)	313755	200243	286170
C34 22R HOPANE(Delta:34abR)	243602	143868	221448
C35 22S HOP (Epsilon:35abS)	245563	136295	240558
C35 22R HOPANE (Zeta:35abR)	167848	79630	161278
C21 STERANE	328987	212153	305216
C27 20S DIASTER (10:27dbS)	420491	202114	556743
C27 20R DIASTER (11:27dbR)	279291	155098	349675
C27 20S AAA STER (20:27aaS)	549819	274777	342514
C29 20S DIASTER (21A:29dbS)	301428	161808	377586
C27 20R ISOST218(21B:27bbR)	292706	141088	306527
C27 20S ISOST218 (22:27bbS)	245118	112932	250877
C27 20R ISOSTER 217 (27bbR)	301428	161808	377586
C27 20S ISOSTER 217 (27bbS)	215488	113842	203563
C27 20R AAA STER (25:27aaR)	947790	481831	594386
C29 20R DIASTER (27:29dbR)	241941	117104	300001
C28 20R ISOST218(33A:28bbR)	432217	275328	461763
C28 20S ISOST218 (34:28bbS)	400732	274132	392108
C28 20R ISOSTER 217 (28bbR)	496915	319199	542800
C28 20S ISOSTER 217 (28bbS)	334370	207981	344176
C28 20R AAA STER (36:28aaR)	1061030	718364	828049
C29 20S AAA STER (39:29aaS)	569961	374412	450585
C29 20R ISOST218 (40:29bbR)	385003	239556	360744
C29 20S ISOST218 (41:29bbS)	385267	239526	376364
C29 20R ISOSTER217 (29bbR)	336760	193774	326543
C29 20S ISOSTER217 (29bbS)	357901	212913	335774
C29 20R AAA STER (42:29aaR)	908898	592325	693988
C30 20R ISOSTER218 (30bbR)	0	46714	77690
C30 20S ISOSTER218 (30bbS)	0	0	0
C30 4-METHYL STERANE (46)	104318	77900	95521

## GC-MS PEAK HEIGHT DATA

PEAK HEIGHTS	MPDMIO00852021.LIS MPDMIO00852031.LIS MPDMIO00852041.LIS		
	34/11-4T2 3948m Mud \$9907OIL007S001\$	34/11-4T2 4148m Mud \$9907OIL007S002\$	34/11-4T2 4204m Mud \$9907OIL007S003\$
2-ME NAPHTHALENE	19549600	13457800	13209400
1-ME NAPHTHALENE	18001300	11821800	11514200
2-ME BIPHENYL	925582	738106	709033
3-ME BIPHENYL	4529250	3406250	3733850
4-ME BIPHENYL	1832520	1261760	1363030
PHENANTHRENE	4251580	3132580	4595300
3-ME PHENANTHRENE	1397130	1141470	1916820
2-ME PHENANTHRENE	1301360	957687	1649450
9-ME PHENANTHRENE	3242310	2670490	5126660
1-ME PHENANTHRENE	1899150	1537510	2868300
DIBENZOTHIOPHENE	694058	444642	798384
4-ME DIBENZOTHIOPHENE	1107540	773675	1582140
3+2-ME DIBENZOTHIOPHENE	399048	241008	597990
1-ME DIBENZOTHIOPHENE	437807	278148	690730
C21 MA STERANE (F2:A1)	197331	0	300182
C22 MA STERANE (F3:B1)	135454	0	207313
C27 20S 5B DM MA-ST(F2:C1)	35941	38023	60276
C27 20S 10B DM MA-DIA (C1)	264029	145449	334873
C27 20R 5B DM MA-ST(F3:D1)	219598	164989	329482
C27 20S 5A DM MA-ST(F4:D1)	0	0	89214
C28 20S 5B DM MA-ST(F5:E1)	421229	234239	531584
C27 20S 5A DM MA-DS( :F1)	58299	26288	48256
C27 20R 5A DM MA-ST(F6:G1)+	166117	87431	186931
C28 20S 5A DM MA-ST(F7:G1)	166117	87431	186931
C28 20R 5B DM MA-ST(F8:G1)	321250	217487	443803
C29 20S 5B DM MA-ST(F9:G1)	394553	0	471706
C29 20S 5A DM MA-ST(F10:H1)	90551	47554	73781
C28 20R 5A DM MA-ST(F11:H1)	215981	120658	150552
C29 20R 5B DM MA-ST(F12:H1)	0	0	259766
C29 20R 5A DM MA-ST(F13:I1)	79681	50681	101648
C20 ME TA-STER(F14:a1)	206812	131018	343904
C21 ME TA-STER(F15:b1)	192953	112626	324076
C26 20S ME TA-STER(F16:c1)	91274	36165	144304
C26 20R ME TA-STER(F17:d1)+	376947	206743	570645
C27 20S ME TA-STER(F18:d1)	376947	206743	570645
C28 20S ME TA-STER(F19:e1)	221801	122920	321555
C27 20R ME TA-STER(F20:f1)	187069	107070	281319
C28 20R ME TA-STER(F21:g1)	236421	133779	295470
?C21 20S DIASTER	587842	344923	477603
?C21 20R DIASTER	160162	93141	176996
?C21 AAA+ABB	328987	212153	305216
?C22 DIASTER	0	39531	0
?C22 AAA+ABB	200295	135449	188266

## GC-MS BIOMARKER PARAMETERS

HSRUN	34/11-4T2 3948m Mud 4/11-4T2 4148m Mud 34/11-4T2 4204m Mud			
	MPDMIO00852021	MPDMIO00852031	MPDMIO00852041	
H1	C32 HOPANES 22S/(22S+22R)	0.57	0.59	0.56
H2	C31 HOPANES 22S/(22S+22R) M/Z205	0.54	0.56	0.56
H3	C30: HOPANE/(HOPANE+MORETANE)	0.8	0.79	0.81
H4	C30: BB HOPANE / C30 HOPANE AS %			
H5_0	C29 HOPANE AS % C30	57.15	64.28	65.38
H5_1	HOPANE DISTRIBUTION RELATIVE TO C30	100	100	100
H5_2	C31 HOPANES AS % OF C30 (205 CORRECTED)	36.27	32.38	36.7
H5_3	C32 HOPANES	17.61	14.33	17.6
H5_4	C33 HOPANES	10.87	8.49	11.35
H5_5	C34 HOPANES	5.96	3.67	5.29
H5_6	C35 HOPANES	4.42	2.3	4.19
H6	C27 HOPANES TS/(TS+TM)	0.14	0.08	0.15
H7	C33 HOPANES 22S/(22S+22R)	0.57	0.56	0.57
H11	C23 TRICYCLIC/C30 HOPANE AS %	19.23	13.96	14.53
H12	C24 TETRACYCLIC/C30 HOPANE AS %	6.93	6.18	6.89
H13	28 30 BISNORHOPANE/HOPANE AS %			
H14	C30 DIAHOPANE PI/HOPANE AS %			
H15	OLEANANE/HOPANE AS %			
H16	GAMMACERANE/HOPANE AS % (205 BACK CALCULATED)	10.26	16.14	9.78
H17	HOPANE INDEX C35/(C35+C34) %	42.59	38.56	44.18
H18	25-NORHOPANE(Y)/HOPANE AS % G			
H19	C29 18A-NORHOPANE D2/C30 HOPANE AS %			
S1	C29 STERANES 20S/(20S+20R)	0.39	0.39	0.39
S2	C29 STERANES m/z218 ABB/(ABB+AAA)	0.34	0.33	0.39
S3_1	STERANE DISTRIBUTION AAA C27 %	32.48	26.88	28.08
S3_2	C28 %	36.37	40.08	39.12
S3_3	C29 %	31.15	33.04	32.79
S4_1	STERANE DISTRIBUTION ABB C27 %	25.12	19.81	25.95
S4_2	C28 %	38.9	42.84	39.74
S4_3	C29 %	35.98	37.35	34.31
S5	BA DIASTERANES/(BA DIASTERANES+AAA+ABB STERANES) %	22.98	23.3	36
S7	STERANE INDEX C27/(C27+C29) % FROM S3	51.05	44.86	46.13
S8	C30 4-ME STERANE AS % OF C29 20R AAA	11.48	13.15	13.76
M4	SUM C27 TO C35 HOPANES/(SAME+C27 TO C29 STERANES)	71.2	81.78	74.9
PR/PH	PRISTANE/PHYTANE RATIO ESTIMATE	2.24	2.15	2.21
M2	PHENANTHRENES (3ME+2ME) / (9ME+1ME)	0.59	0.56	0.5
M3	MPI1 PHENANTHRENES (3ME+2ME) / (9ME+1ME+PHEN) * 1.5	0.56	0.56	0.54
A1	ARO STERANES: C28 20R TRI/(SAME+C29 20R 5A&B MONO 12)	0.5	0.51	0.42
A2	ARO STERANES: SUM TRI/(SAME+SUM MONO)(F9&F12split)	0.37	0.43	0.39
A3	TRI ARO STERANES: C20/(C20+C28 20R)	0.47	0.49	0.54
A4	TRI ARO STERANES: (C20+C21)/(SAME+SUM C26 TO C28)	0.26	0.29	0.29
A5	TRI ARO STERANES: C26 20S / C28 20S	0.41	0.29	0.45
A6	TRI ARO STERANES: C27 20R / C28 20R	0.79	0.8	0.95
MDR	4-ME DIBENZOTHIOPHENE / 1-ME DIBENZOTHIOPHENE	2.53	2.78	2.29
MBP	3-METHYLBIPHENYL / 2-METHYLBIPHENYL	4.89	4.61	5.27
MNR	2-ME NAPHTHALENE/1-ME NAPHTHALENE	1.09	1.14	1.15
SMN	(2-ME NAPHTH+1-ME NAPHTH)/C23 TRICYCLIC			
DBTP	DIBENZOTHIOPHENE(MZ184)/PHENANTHRENE(MZ178)	0.16	0.14	0.17
T19	C19 TRICYCLIC/C23 TRICYCLIC %		67.38	58.56
T20	C20 TRICYCLIC/C23 TRICYCLIC %	102	141.43	113.9
T21	C21 TRICYCLIC/C23 TRICYCLIC %	107.59	137.48	117.18
T22	C22 TRICYCLIC/C23 TRICYCLIC %	29.86	27.33	25.99
T23	C23 TRICYCLIC/C23 TRICYCLIC %	100	100	100
T24	C24 TRICYCLIC/C23 TRICYCLIC %	33.7	40.31	39.13
T25	C25 TRICYCLIC/C23 TRICYCLIC %	16.4	14.95	19.65
T26	C26 TRICYCLICS/C23 TRICYCLIC %	21.29	27.42	31.62
T28	C28 TRICYCLICS/C23 TRICYCLIC %	15.45	11.84	17.52
T29	C29 TRICYCLICS/C23 TRICYCLIC %	220.49	101.39	91.02
T30	C30 TRICYCLICS/C23 TRICYCLIC %			
19/23	C19 TRICYCLIC/C23 TRICYCLIC AS %		67.38	58.56
20/21	C20 TRICYCLIC/C21 TRICYCLIC AS %	94.8	102.87	97.2
22/21	C22 TRICYCLIC/C21 TRICYCLIC AS %	27.76	19.88	22.18
24/23	C24 TRICYCLIC/C23 TRICYCLIC AS %	33.7	40.31	39.13
26/25	C26 TRICYCLICS/C25 TRICYCLIC AS %	129.84	183.38	160.92
244_24	C24 TETRACYCLIC/C24 TRICYCLIC AS %	106.97	109.86	121.26
TET_23	C24 TETRACYCLIC/C23 TRICYCLIC AS %	36.05	44.28	47.45

APPENDIX - E  
HYDROCARBON FLUIDS DATA

## Oil Analysis

**Well name :** 34/11-2S  
**Suite name :** Statoil Oil Analyses  
**Country Of Origin :** Norway  
**Depth (m) :** 4142.5  
**Sample name :**  
**Test Number :** DST2  
**G number :** G 3544  
**Lab Number :** 9907OIL004S001

### Inspection Properties

**API :** 45.3  
**Density @ 15 deg C :** 0.8002  
**Wax Content %wt :**  
**Wax Melting Point deg C :**  
**Pour Point deg C :**  
**Viscosity cSt @ 20 deg C :**  
**Total Acidity mg KOH/g :**  
**Asphaltenes %wt (IP Method) :**  
**Nitrogen ppm :**  
**Sulphur %wt :**  
**Nickel ppm :**  
**Vanadium ppm :**  
**Nickel/Vanadium :**

### Biomarker Ratios

H1 :	S1 : 0.74	M2 : 0.77
H2 :	S2 : 0.69	M3 : 0.74
H3 :	S3 : 60:15:23	M4 : 14.54
H4 :	S4 : 31:32:36	M5 :
H5 :	S5 : 51.98	A1 :
H6 : 0.62	S6 :	A2 :
H7 :	S7 : 71.80	A3 :
H8 :	S8 :	A4 :
H9 :	S9 :	A5 :
H10 :	S10 :	A6 :
H11 : 51.93		MDR : 10.50
H12 : 47.49		MBP : 20.13
H13 :		
H14 : 116.36		
H15 :		
H16 :		
H17 :		
H18 :		

### Iatroscan

**Saturates %wt :** 84.59  
**Aromatics %wt :** 15.11  
**Residues %wt :** 0.30

**Asphaltenes (Micro Method) %wt :** 0

### Saturates GC

**Pristane/Phytane :** 2.23  
**Pristane/nC17 :** 0.56  
**Phytane/nC18 :** 0.31  
**CPI :** 1.15  
**ALKIND :** 75.37  
**R22 :** 0.99

### Light Hydrocarbons

**MCH % :** 43.2  
**HER :** 0.38  
**HXR :** 0.39

### Stable Carbon Isotopes

**Saturates :** -28.9  
**Total Oil :** -28.4  
**Aromatics :** -26.4  
**Residue :**  
**Asphaltenes :**  
**STANDARD:** NBS22 -29.8

**N.B.** ALKIND -  $100 \cdot n\text{-C17} / (n\text{-C17} + n\text{-C27})$   
 R22 -  $2 \cdot n\text{-C22} / (n\text{-C21} + n\text{-C23})$

**HER - Heptane/Heptane+Methylcyclohexane**  
**HXR - Hexane/Hexane+cyclohexane**  
**MCH% - Methylcyclohexane as Percentage of Saturates C7 Components**

## Oil Analysis

**Well name :** 34/11-4T3  
**Suite name :** Statoil Oil Analyses  
**Country Of Origin :** Norway  
**Depth (m) :** 4194.8  
**Sample name :** 4194.8M MDBD  
**Test Number :** MDT  
**G number :** G 3545  
**Lab Number:** 9907OIL004S002

### Inspection Properties

**API :** 42.2  
**Density @ 15 deg C :** 0.8146  
**Wax Content %wt :**  
**Wax Melting Point deg C :**  
**Pour Point deg C :**  
**Viscosity cSt @ 20 deg C :**  
**Total Acidity mg KOH/g :**  
**Asphaltenes %wt (IP Method) :**  
**Nitrogen ppm :**  
**Sulphur %wt :**  
**Nickel ppm :**  
**Vanadium ppm :**  
**Nickel/Vanadium :**

### Biomarker Ratios

H1 :	S1 : 0.60	M2 : 1.47
H2 :	S2 : 0.64	M3 : 1.24
H3 : 0.90	S3 : 32:13:53	M4 : 22.84
H4 :	S4 : 28:30:40	M5 :
H5 :	S5 : 58.20	A1 :
H6 :	S6 :	A2 :
H7 :	S7 : 37.99	A3 :
H8 :	S8 :	A4 :
H9 :	S9 :	A5 :
H10 :	S10 :	A6 :
H11 :		MDR : 16.83
H12 :		MBP : 38.36
H13 :		
H14 : 28.79		
H15 :		
H16 :		
H17 :		
H18 :		

### Iatroscan

**Saturates %wt :** 87.35  
**Aromatics %wt :** 12.05  
**Residues %wt :** 0.39  
**Asphaltenes (Micro Method) %wt :** 0.21

### Saturates GC

**Pristane/Phytane :** 1.59  
**Pristane/nC17 :** 0.57  
**Phytane/nC18 :** 0.41  
**CPI :** 1.11  
**ALKIND :** 76.16  
**R22 :** 0.98

### Light Hydrocarbons

**MCH % :** 42.6  
**HER :** 0.37  
**HXR :** 0.47

### Stable Carbon Isotopes

**Saturates :** -29.7  
**Total Oil :** -29.2  
**Aromatics :** -26.7  
**Residue :**  
**Asphaltenes :**  
**STANDARD:** NBS22 -29.8

**N.B.** ALKIND -  $100 \times \frac{n\text{-C17}}{(n\text{-C17} + n\text{-C27})}$   
 R22 -  $2 \times \frac{n\text{-C22}}{(n\text{-C21} + n\text{-C23})}$

**HER - Heptane/Hep'**  $\frac{\text{Methylcyclohexane}}{\text{Cyclohexane}}$   
**HXR - Hexane/Hex**  $\frac{\text{Cyclohexane}}{\text{Cyclohexane}}$   
**MCH% - Methylcyclohexane as Percentage of Saturates C7 Components**

## Oil Analysis

**Well name :** Dead Oil  
**Suite name :** Statoil Oil Analyses  
**Country Of Origin :** Norway  
**Depth (m) :**  
**Sample name :** Dead Oil  
**Test Number :**  
**G number :** G 3546  
**Lab Number:** 9907OIL004S003

### Inspection Properties

**API :** 32.2  
**Density @ 15 deg C :** 0.8642  
**Wax Content %wt :**  
**Wax Melting Point deg C :**  
**Pour Point deg C :**  
**Viscosity cSt @ 20 deg C :**  
**Total Acidity mg KOH/g :**  
**Asphaltenes %wt (IP Method) :**  
**Nitrogen ppm :**  
**Sulphur %wt :**  
**Nickel ppm :**  
**Vanadium ppm :**  
**Nickel/Vanadium :**

### Biomarker Ratios

H1 : 0.58	S1 : 0.59	M2 : 0.56
H2 : 0.57	S2 : 0.58	M3 : 0.59
H3 : 0.89	S3 : 34:24:41	M4 : 62.85
H4 : 0	S4 : 31:31:36	M5 :
H5 : 100:62:44:36:21:19	S5 : 49.20	A1 : 0.59
H6 : 0.55	S6 :	A2 : 0.55
H7 : 0.58	S7 : 46.00	A3 : 0.37
H8 :	S8 : 53.93	A4 : 0.19
H9 :	S9 :	A5 : 0.62
H10 :	S10 :	A6 : 0.87
H11 : 5.89		MDR : 2.26
H12 : 5.36		MBP : 6.31
H13 : 23.02		
H14 : 8.24		
H15 : 0.00		
H16 : 0.00		
H17 : 47.89		
H18 : 10.74		

### Iatroscan

**Saturates %wt :** 44.62  
**Aromatics %wt :** 46.76  
**Residues %wt :** 8.05  
**Asphaltenes (Micro Method) %wt :** 0.57

### Saturates GC

**Pristane/Phytane :** 1.62  
**Pristane/nC17 :** 0.67  
**Phytane/nC18 :** 0.49  
**CPI :** 1.01  
**ALKIND :** 77.63  
**R22 :** 1.00

### Light Hydrocarbons

**MCH % :** 41.5  
**HER :** 0.40  
**HXR :** 0.31

### Stable Carbon Isotopes

**Saturates :** -29.1  
**Total Oil :** -28.6  
**Aromatics :** -28  
**Residue :** -28  
**Asphaltenes :** -27.7  
**STANDARD:** NBS22 -29.8

**N.B.** ALKIND -  $100 \cdot n\text{-C17}/(n\text{-C17}+n\text{-C27})$   
 R22 -  $2 \cdot n\text{-C22}/(n\text{-C21}+n\text{-C23})$

**HER - Heptane/Heptane+Methylcyclohexane**  
**HXR - Hexane/Hexane+cyclohexane**  
**MCH% - Methylcyclohexane as Percentage of Saturates C7 Components**

## Oil Analysis

Well name : 34/11-4T3  
 Suite name : Statoil Oil Analyses  
 Country Of Origin : Norway  
 Depth (m) : 4151  
 Sample name : TS-80-04  
 Test Number : MDT  
 G number : G 3550  
 Lab Number: 9907OIL004S005

### Inspection Properties

API : 40.6  
 Density @ 15 deg C : 0.8223  
 Wax Content %wt :  
 Wax Melting Point deg C :  
 Pour Point deg C :  
 Viscosity cSt @ 20 deg C :  
 Total Acidity mg KOH/g :  
 Asphaltenes %wt (IP Method) :  
 Nitrogen ppm :  
 Sulphur %wt :  
 Nickel ppm :  
 Vanadium ppm :  
 Nickel/Vanadium :

### Biomarker Ratios

H1 : 0.59	S1 : 0.61	M2 : 1.41
H2 : 0.54	S2 : 0.67	M3 : 1.16
H3 : 0.86	S3 : 47:16:36	M4 : 44.61
H4 :	S4 : 29:31:39	M5 :
H5 : 100:55:35:20:9:8	S5 : 42.74	A1 : 1.00
H6 : 0.57	S6 :	A2 : 0.76
H7 : 0.48	S7 : 56.80	A3 : 0.88
H8 :	S8 : 26.45	A4 : 0.69
H9 :	S9 :	A5 : 0.76
H10 :	S10 :	A6 : 0.71
H11 : 20.02		MDR : 16.49
H12 : 10.55		MBP : 37.36
H13 :		
H14 : 19.32		
H15 :		
H16 :		
H17 : 46.51		
H18 : 11.21		

### Iatroscan

Saturates %wt : 81.38  
 Aromatics %wt : 18.07  
 Residues %wt : 0.55  
 Asphaltenes (Micro Method) %wt : 0

### Saturates GC

Pristane/Phytane : 1.57  
 Pristane/nC17 : 0.50  
 Phytane/nC18 : 0.35  
 CPI : 1.15  
 ALKIND : 75.29  
 R22 : 1.02

### Light Hydrocarbons

MCH % : 51.3  
 HER : 0.29  
 HXR : 0.36

### Stable Carbon Isotopes

Saturates : -29.3  
 Total Oil : -28.4  
 Aromatics : -26.1  
 Residue :  
 Asphaltenes :  
 STANDARD: NBS22 -29.8

N.B. ALKIND -  $100 \cdot n\text{-C17}/(n\text{-C17}+n\text{-C27})$   
 R22 -  $2 \cdot n\text{-C22}/(n\text{-C21}+n\text{-C23})$

HER - Heptane/Heptamethylcyclohexane  
 HXR - Hexane/Hexamethylcyclohexane  
 MCH% - Methylcyclohexane as Percentage of Saturates C7 Components

WHOLE OIL GC

Condensate Samples	9907OIL004S001 34/11-2S	9907OIL004S002 34/11-4T3
Depth (m)	4142.5m	4194.8m
Whole Oil GC Analysis	Area	Area
Component	[ $\mu$ V·s]	[ $\mu$ V·s]
Propane	0	2851
2-methylpropane	0	7152.6
n-butane	0	35116.6
2-methylbutane	2831.4	124509.6
n-pentane	17112	226971.1
DCM	0	0
2,2-dimethylbutane	3890	11479.2
Cyclopentane	12308	38984.8
2,3-dimethylbutane	15482.8	56205.6
2-methylpentane	118123.6	339659.6
3-methylpentane	87295.4	223013.8
n-hexane	391239.6	776390.8
methylcyclopentane	245388.6	459914.6
2,4-dimethylpentane	30999.4	67280.7
Benzene	254779.1	483930.6
cyclohexane	606269.4	869621.8
2-methylhexane + 1,2-DMP	378680.2	660067.6
3-methylhexane	274978.7	448544.2
1,3-cis-dimethylcyclopentane	78223.2	132092.4
1,3-trans-dimethylcyclopentane	75614	130218.1
1,2-trans-dimethylcyclopentane	145325	245274.7
n-heptane	941246	1375622.4
methylcyclohexane	1510547	2333226.6
ethylcyclopentane	59938.38	84291.85
Toluene	1623310	1621577.4
n-Octane	1071030.86	1516875.41
n-Nonane	1149282.05	1685885.43
n-Decane	942512.29	1415940.96
n-C11	908263.19	1393676.73
n-C12	772515.26	1210537.69
n-C13	683735.16	1104463.87
n-C14	727302.18	1094151.66
n-C15	597323.47	976695.37
n-C16	492974.89	786761.8
n-C17	441126.78	713288.2
Pristane	246279.84	380448.2
n-C18	382234.93	656728.25
Phytane	122745.84	255497.15
n-C19	385689.21	645396.61
n-C20	301528.01	495106.7
n-C21	262072.7	435996.4
n-C22	254020.06	399976.68
n-C23	223612	366637.52
n-C24	203740.29	326145
n-C25	166813.4	297735.5
n-C26	162026.96	266167.5
n-C27	133126.61	223931.95
n-C28	108759.53	188116.23

**WHOLE OIL GC**

<b>Condensate Samples</b>	<b>9907OIL004S001 34/11-2S</b>	<b>9907OIL004S002 34/11-4T3</b>
Depth (m)	4142.5m	4194.8m
Whole Oil GC Analysis	Area	Area
Component	[ $\mu\text{V}\cdot\text{s}$ ]	[ $\mu\text{V}\cdot\text{s}$ ]
n-C29	93286.03	170807.5
n-C30	67950.09	123082.8
n-C31	53458.8	121909.32
n-C32	32526.63	90866.35
n-C33	39000	96124.53
n-C34	16442.63	43351.5
n-C35	1013.92	35180.9
n-C36	4592.98	31548.84
	17920568.36	28303030.21
Batch Code	9907OIL004S001	9907OIL004S002
MCH (MeCyC6 as % all C7 alkanes)	43.21	42.60
HER (Heptane/(Hp+MeCyC6))	0.38	0.37
HXR (Hexane/(Hx+CyC6))	0.39	0.47
Thompson's Heptane Ratio	23.47	22.21
Thompson's Iso Heptane Index	2.18	2.18
Note: -1 denotes not calculated		

WHOLE OIL GC

Condensate Samples	9907OIL004S003 Dead Oil	9907OIL004S005 34/11-4T3
Depth (m)		4151m
Whole Oil GC Analysis	Area	Area
Component	[ $\mu\text{V}\cdot\text{s}$ ]	[ $\mu\text{V}\cdot\text{s}$ ]
Propane	0	15402.8
2-methylpropane	0	16934.2
n-butane	0	60536.1
2-methylbutane	119.8	109606.1
n-pentane	1056.2	155937.6
DCM	0	0
2,2-dimethylbutane	416.5	10837.2
Cyclopentane	3262.4	31623.3
2,3-dimethylbutane	2753	34095.3
2-methylpentane	25851	177499.2
3-methylpentane	22502.1	117455.2
n-hexane	122032.2	381629.1
methylcyclopentane	98498.4	337168.7
2,4-dimethylpentane	12523.6	32732
Benzene	83639.2	446678.9
cyclohexane	265673.8	667949.6
2-methylhexane + 1,2-DMP	207311.8	364652.3
3-methylhexane	157868.2	244891.4
1,3-cis-dimethylcyclopentane	51196.8	92685.2
1,3-trans-dimethylcyclopentane	49330.6	90866.5
1,2-trans-dimethylcyclopentane	109656.8	163888.4
n-heptane	588564.4	781933.1
methylcyclohexane	873801.4	1939132.4
ethylcyclopentane	57175.77	71101.38
Toluene	621228.71	2370514.5
n-Octane	901734.68	1166259.2
n-Nonane	1146369.44	1575205.1
n-Decane	1028530.49	1392244.35
n-C11	1061032.62	1391235.03
n-C12	942554.76	1160163.6
n-C13	869551.09	988318.01
n-C14	935549.8	1133742.44
n-C15	797963.88	885994.55
n-C16	641541.6	710749.44
n-C17	556761.14	648949.2
Pristane	318585.41	346572.6
n-C18	496521.54	579785
Phytane	214317.44	194547.02
n-C19	481611.6	603325.05
n-C20	366554.72	454407.93
n-C21	310826.73	398602.8
n-C22	301706.14	385709.76
n-C23	260263.2	339682.83
n-C24	233744.2	295646.4
n-C25	206273.5	277287.3
n-C26	182623.81	241600.35
n-C27	158348.79	206049.79
n-C28	127836.8	164204.09

**WHOLE OIL GC**

Condensate Samples	9907OIL004S003 Dead Oil	9907OIL004S005 34/11-4T3
Depth (m)		4151m
Whole Oil GC Analysis	Area	Area
Component	[ $\mu\text{V}\cdot\text{s}$ ]	[ $\mu\text{V}\cdot\text{s}$ ]
n-C29	133430.05	127403.6
n-C30	101939.58	105993.83
n-C31	97295.32	97741.04
n-C32	104447.07	72172.22
n-C33	78887.9	77562
n-C34	30734.4	37748.04
n-C35	26250.95	26197.85
n-C36	26977.53	19228.95
	16495228.86	24820079.84
Batch Code	9907OIL004S003	9907OIL004S005
MCH (MeCyC6 as % all C7 alkanes)	41.46	51.27
HER (Heptane/(Hp+MeCyC6))	0.40	0.29
HXR (Hexane/(Hx+CyC6))	0.31	0.36
Thompson's Heptane Ratio	25.55	17.99
Thompson's Iso Heptane Index	1.74	1.75
Note: -1 denotes not calculated		

SATURATE GC

Condensate Samples	9907OIL004S001 34/11-2S	9907OIL004S002 34/11-4T3
Depth (m)	4142.5m	4194.8m
Saturates Fraction GC Analysis	Area	Area
Component	[ $\mu\text{V}\cdot\text{s}$ ]	[ $\mu\text{V}\cdot\text{s}$ ]
N-C12	1675417.84	2240624.95
N-C13	1649504.6	2123443.21
N-C14	1591934.6	1971476.6
N-C15	1648647.41	2075831.36
N-C16	1629123.6	2006294.29
N-C17	1373139.97	1731952.14
PRISTANE	770799.63	987760.86
N-C18	1131531.6	1517886.17
PHYTANE	345137.8	620747.06
N-C19	1187675.74	1532551.72
N-C20	956713.2	1212382.9
N-C21	851839.75	1057374.79
N-C22	784735.8	964760.6
N-C23	726858.84	902830.89
N-C24	627861.8	821718.97
N-C25	653503.76	806349
N-C26	473905.21	621775.84
N-C27	448612.29	542242.88
N-C28	359876.8	463335.8
N-C29	311845.2	419608.5
N-C30	227953.48	302549.9
N-C31	172335.8	285050.8
N-C32	105442.2	211716.4
N-C33	112041.4	213452.4
N-C34	54347.8	96715.2
N-C35	21724.6	92949.8
N-C36	13401.6	69785.4
TOTAL	19905912.32	25893168.42
Batch Code	9907OIL004S001	9907OIL004S002
CPI (24 to 32)	1.15	1.11
Pr/Ph Ratio	2.23	1.59
Pr/n-C17	0.56	0.57
Ph/n-C18	0.31	0.41
Alkane Index (C17/(C17+C27))%	75.37	76.16
R22 Index $2 \cdot \text{C}22 / (\text{C}21 + \text{C}23)$	0.99	0.98
(Pr/n-C17)/(Ph/n-C18)	1.84	1.39

Note: -1 denotes not calculated

SATURATE GC

Condensate Samples	9907OIL004S003 Dead Oil	9907OIL004S005 34/11-4T3
Depth (m)		4151m
Saturates Fraction GC Analysis	Area	Area
Component	[ $\mu\text{V}\cdot\text{s}$ ]	[ $\mu\text{V}\cdot\text{s}$ ]
N-C12	1225724.5	2310121.5
N-C13	1337703.07	2101653.2
N-C14	1429144.26	1907096.05
N-C15	1454235.23	1936963.49
N-C16	1498283.89	1897635.11
N-C17	1245597.71	1603964.4
PRISTANE	840542.8	802901.2
N-C18	1061123.4	1445498.7
PHYTANE	520454.9	510177.45
N-C19	1052743.07	1407810.3
N-C20	831793.2	1179777.8
N-C21	684942.4	1021053.96
N-C22	633378.4	971053.79
N-C23	587931.8	878182.5
N-C24	524733.9	746506.4
N-C25	421641.7	790597.46
N-C26	394045.67	573379.38
N-C27	358939.09	526381.7
N-C28	297508.9	431121.6
N-C29	291932.8	381641.9
N-C30	227193.61	300403.01
N-C31	162140.6	290001.12
N-C32	138462.8	186739.47
N-C33	144586.7	178936.4
N-C34	95101.65	69619.1
N-C35	68493.57	60497
N-C36	45671.4	40660.2
TOTAL	17574051.02	24550374.19
Batch Code	9907OIL004S003	9907OIL004S005
CPI (24 to 32)	1.01	1.15
Pr/Ph Ratio	1.62	1.57
Pr/n-C17	0.67	0.50
Ph/n-C18	0.49	0.35
Alkane Index (C17/(C17+C27))%	77.63	75.29
R22 Index $2\cdot\text{C}22/(\text{C}21+\text{C}23)$	1.00	1.02
(Pr/n-C17)/(Ph/n-C18)	1.38	1.42

Note: -1 denotes not calculated

Software Version: 4.1<0G07>  
 Sample Name: 9907OIL004S001 34/11-2S 4142.5m G3544  
 Instrument: SAC\_GC  
 Raw Data File: C:\\_DATA\B9907004\ARO001.RAW  
 Sequence File: C:\\_DATA\B9907004\ARO.SEQ

Aromatics GC			
Component Name	Time [min]	Area [ $\mu$ V·s]	Area [%]
	7.627	13487	0.07
	7.754	6366	0.03
	8.958	38355.6	0.2
	9.056	9384.8	0.05
	9.205	30413.81	0.16
1-ME NAPHTHALENE	9.357	555180.6	2.95
	9.484	36380.49	0.19
2-ME NAPHTHALENE	9.574	350116.4	1.86
	9.799	109241.9	0.58
	9.908	55880.34	0.3
	9.967	38503.03	0.2
	10.154	85266.26	0.45
	10.272	11750.2	0.06
	10.332	67272.49	0.36
	10.522	276268.7	1.47
	10.623	64552.51	0.34
	10.796	299323.4	1.59
2,6+2,7-DIMETHYLNAPT	10.994	842747.5	4.48
1,3+1,7-DIMETHYLNAPT	11.2	970982.6	5.16
1,6-DIMETHYLNAPHTHALE	11.246	588543.8	3.13
	11.333	57037.96	0.3
1,5+1,5+2,3-DIMETHYL	11.447	435683.3	2.32
	11.515	54556.11	0.29
1,2-DIMETHYLNAPHTHALE	11.615	80885.7	0.43
	11.755	39519.7	0.21
	11.937	75677.47	0.4
	12.022	552582	2.94
	12.129	316009.5	1.68
	12.265	59074.01	0.31
	12.343	244508.6	1.3
	12.392	94185.06	0.5
	12.54	171431.9	0.91
	12.634	371081.2	1.97
	12.709	392183	2.09
	12.891	421106.4	2.24
	12.953	306868.7	1.63
	13.117	397596.2	2.11
	13.186	104261.1	0.55
	13.284	345857	1.84
	13.389	384378	2.04
	13.529	170024.4	0.9
	13.782	182390.8	0.97
	13.845	139054.8	0.74
	13.942	207756.4	1.1
	14.061	171039.1	0.91
	14.187	191428.5	1.02
	14.323	13456.24	0.07
	14.388	86671.18	0.46
	14.456	155100.4	0.82
	14.579	61106.25	0.32
	14.636	174764.1	0.93

	14.714	347364	1.85
	14.812	458528.5	2.44
	14.92	293408.1	1.56
	15.01	78937.65	0.42
	15.077	83999.35	0.45
	15.131	182601	0.97
	15.241	100184.9	0.53
	15.3	43822.42	0.23
	15.346	109934.5	0.58
	15.523	138985.3	0.74
PHENANTHRENE	15.618	455949.1	2.42
	15.718	34316.52	0.18
	15.782	23257.88	0.12
	15.837	83275.9	0.44
	15.981	16882	0.09
	16.077	147813.4	0.79
	16.157	190759.1	1.01
	16.226	141634.7	0.75
	16.271	41550.71	0.22
	16.37	77291	0.41
	16.419	9877.3	0.05
	16.54	76999.3	0.41
	16.667	113098.4	0.6
	16.765	44710.12	0.24
3-ME PHENANTHRENE	16.915	281499.5	1.5
2-ME PHENANTHRENE	16.984	279629.6	1.49
	17.072	112162.8	0.6
9-ME PHENANTHRENE	17.183	369620.5	1.97
1-ME PHENANTHRENE	17.239	242281.4	1.29
	17.374	120536.7	0.64
	17.441	113092.2	0.6
	17.563	20627.2	0.11
	17.662	76106.61	0.4
	17.717	36143.09	0.19
	17.894	35014.95	0.19
	17.972	22129.45	0.12
	18.099	119915.8	0.64
	18.195	143713.8	0.76
	18.317	117964.7	0.63
	18.407	326627.3	1.74
	18.469	160743.4	0.85
	18.513	140541.6	0.75
	18.618	157338.1	0.84
	18.741	39881.79	0.21
	18.803	103625.9	0.55
	18.897	145988.2	0.78
	19.092	65884	0.35
	19.223	10958.34	0.06
	19.272	62907.26	0.33
	19.506	91739.08	0.49
	19.604	90120.05	0.48
	19.694	21318.17	0.11
	19.753	62411.51	0.33
	19.834	19245.9	0.1
	19.984	45111.6	0.24
	20.07	94183.39	0.5
	20.221	66407.62	0.35
	20.313	45735.8	0.24
	20.469	19754.2	0.11
	20.6	45500.4	0.24
	20.729	18693.15	0.1
	20.845	37709.25	0.2

20.944	30683.06	0.16
21.036	26913.84	0.14
21.086	13530.31	0.07
21.192	50103.77	0.27
21.252	34133.73	0.18
21.432	27648	0.15
21.533	11235	0.06
21.66	11965.32	0.06
21.763	25217.47	0.13
21.872	23994.9	0.13
21.946	17017.67	0.09
21.997	18640.22	0.1
22.249	66666.2	0.35
22.437	30288.46	0.16
22.52	32199.94	0.17
22.638	19786	0.11
22.83	12755.6	0.07
23.273	38057.8	0.2
23.481	31524.3	0.17
23.665	19307.2	0.1
23.941	14512	0.08
24.246	16051.18	0.09
24.302	13174.02	0.07
25.074	8418.13	0.04
25.176	15660.27	0.08
25.298	20333.1	0.11
26.73	10303.4	0.05
33.767	72.48	4.00E-04
	18805531	100

Software Version: 4.1<OG07>  
 Sample Name: 9907OIL004S002 34/11-4T3 4194.8m G3545  
 Instrument: SAC\_GC  
 Raw Data File: C:\\_DATA\B9907004\ARO002.RAW  
 Sequence File: C:\\_DATA\B9907004\ARO.SEQ

Aromatics GC			
Component Name	Time [min]	Area [ $\mu$ V·s]	Area [%]
	8.937	43882.2	0.14
	9.181	20121.6	0.06
1-ME NAPTHALENE	9.332	542988.1	1.72
	9.457	39378.9	0.12
2-ME NAPTHALENE	9.544	247060.2	0.78
	9.775	102045.8	0.32
	9.886	32399.6	0.1
	10.13	93766.3	0.3
	10.31	78068.8	0.25
	10.497	322502.5	1.02
	10.605	95068.09	0.3
	10.767	302639.5	0.96
2,6+2,7-DIMETHYLNAPT	10.975	1168459	3.7
1,3+1,7-DIMETHYLNAPT	11.178	985275.5	3.12
1,6-DIMETHYLNAPTHALE	11.224	629055.2	1.99
	11.309	78023.73	0.25
1,5+1,5+2,3-DIMETHYL	11.424	463272.1	1.47
	11.493	151959.4	0.48
1,2-DIMETHYLNAPTHALE	11.598	62836.7	0.2
	11.646	69126.01	0.22
	11.727	61420.79	0.19
	11.836	6007.8	0.02
	12.014	894581.9	2.83
	12.119	536757.1	1.7
	12.185	16463.6	0.05
	12.253	49755.4	0.16
	12.335	251901.2	0.8
	12.434	47033.4	0.15
	12.527	268526.4	0.85
	12.624	505600.3	1.6
	12.7	503426.9	1.59
	12.873	551762.8	1.75
	12.943	471165.6	1.49
	13.101	452839.8	1.43
	13.174	223759.6	0.71
	13.275	535280.9	1.7
	13.387	827227.8	2.62
	13.531	309143	0.98
	13.673	41846.5	0.13
	13.78	291665.3	0.92
	13.839	270119.8	0.86
	13.935	220849.9	0.7
	14.057	230754.5	0.73
	14.183	148086.1	0.47
	14.31	15778.67	0.05
	14.372	142376	0.45
	14.447	248631.6	0.79
	14.644	415277.4	1.32
	14.722	652051.6	2.07
	14.831	933481.4	2.96
	14.926	484157.1	1.53

	15.01	138396.7	0.44
	15.067	135211.3	0.43
	15.131	304893.1	0.97
	15.243	257968.4	0.82
	15.344	226254.2	0.72
	15.467	92702.56	0.29
	15.527	134920.3	0.43
PHENANTHRENE	15.634	843295.6	2.67
	15.716	46627.66	0.15
	15.771	46932.86	0.15
	15.837	69321	0.22
	15.976	21499.6	0.07
	16.088	381819.5	1.21
	16.156	534587.1	1.69
	16.258	486443.7	1.54
	16.384	242087.1	0.77
	16.476	221975.1	0.7
	16.544	224580.8	0.71
	16.674	330991.6	1.05
	16.766	73084.79	0.23
	16.838	15416.68	0.05
3-ME PHENANTHRENE	16.946	676371.5	2.14
2-ME PHENANTHRENE	17.019	687384.1	2.18
	17.081	176416.3	0.56
9-ME PHENANTHRENE	17.205	559043.7	1.77
1-ME PHENANTHRENE	17.246	475573	1.51
	17.387	295699.4	0.94
	17.46	267888.2	0.85
	17.579	95517.78	0.3
	17.677	210007	0.67
	17.74	163211.5	0.52
	17.804	184685.9	0.59
	17.91	117988.6	0.37
	17.975	65737.31	0.21
	18.113	227592.9	0.72
	18.221	113535.4	0.36
	18.324	56943.4	0.18
	18.432	351924.6	1.11
	18.485	99100.03	0.31
	18.601	60968	0.19
	18.811	290181.4	0.92
	18.923	287453.9	0.91
	18.99	21767.7	0.07
	19.109	124627	0.39
	19.268	120869.1	0.38
	19.309	143949.7	0.46
	19.414	55105.41	0.17
	19.524	154404.5	0.49
	19.618	202624.2	0.64
	19.705	56021.59	0.18
	19.767	127672.4	0.4
	19.845	96386.48	0.31
	19.903	109669.4	0.35
	19.999	176250.3	0.56
	20.083	237120.9	0.75
	20.213	161048.7	0.51
	20.328	85822.69	0.27
	20.484	75663.1	0.24
	20.54	70735.87	0.22
	20.609	87912.92	0.28
	20.711	32885.12	0.1
	20.841	89580.58	0.28

20.935	102276.4	0.32
21.034	67350.25	0.21
21.117	78214.39	0.25
21.21	141300.3	0.45
21.265	113559.9	0.36
21.402	76819.19	0.24
21.45	72431.81	0.23
21.676	40064.94	0.13
21.725	59385.65	0.19
21.861	53545.18	0.17
21.946	54895.65	0.17
21.99	65901.11	0.21
22.078	28054.46	0.09
22.127	15050.41	0.05
22.187	11254.41	0.04
22.267	194786.1	0.62
22.353	41810.29	0.13
22.445	89079.02	0.28
22.549	126085.1	0.4
22.636	44743.23	0.14
22.713	109833.9	0.35
22.829	66956.48	0.21
22.923	105569	0.33
23.113	19807.8	0.06
23.302	141947.4	0.45
23.519	127808.7	0.4
23.639	46848.89	0.15
23.696	20464.61	0.06
23.782	54166.02	0.17
23.94	15725.6	0.05
24.051	36420.6	0.12
24.263	140190.8	0.44
24.408	79711.96	0.25
24.552	49567.4	0.16
24.757	20473.4	0.06
24.969	5992.2	0.02
25.064	7733.38	0.02
25.161	49490.03	0.16
25.233	11123.53	0.04
25.306	35499.86	0.11
25.398	23323.5	0.07
25.579	4481.3	0.01
25.729	28061.6	0.09
25.887	24846.3	0.08
25.964	14767.8	0.05
26.242	45909.04	0.15
26.335	19150.06	0.06
26.485	13807.2	0.04
26.542	6907	0.02
26.722	18598.4	0.06
27.025	4628.8	0.01
27.268	22271.2	0.07
27.981	9672.8	0.03
28.75	14839.8	0.05
31.422	31033.4	0.1
33.861	1099.4	0
	31563347	100

Software Version: 4.1<OG07>  
 Sample Name: 9907OIL004S003 Dead Oil G3546 Time:  
 Instrument: SAC\_GC Channel:  
 Raw Data File: C:\\_DATA\B9907004\ARO003.RAW  
 Sequence File: C:\\_DATA\B9907004\ARO.SEQ

## Aromatics GC

Component Name	Time [min]	Area [ $\mu\text{V}\cdot\text{s}$ ]	Area [%]
	7.609	25779.8	0.31
	8.406	17711.1	0.21
	8.588	17071.2	0.21
	8.69	8329.4	0.1
	8.93	26155.2	0.32
	9.029	10558.3	0.13
1-ME NAPHTHALENE	9.316	192670.3	2.32
	9.455	32769.36	0.39
2-ME NAPHTHALENE	9.54	181919.4	2.19
	9.773	68839.79	0.83
	9.881	44822.88	0.54
	9.94	19029.93	0.23
	10.129	71979	0.87
	10.303	76922.4	0.93
	10.485	129975.7	1.57
	10.59	29429.98	0.35
	10.698	23029.65	0.28
	10.759	81834.55	0.99
2,6+2,7-DIMETHYLNAPT	10.942	230233.8	2.77
1,3+1,7-DIMETHYLNAPT	11.13	270350	3.26
1,6-DIMETHYLNAPHTHALE	11.175	243056.1	2.93
	11.287	25747.28	0.31
1,5+1,5+2,3-DIMETHYL	11.389	198257.3	2.39
	11.462	29097.55	0.35
1,2-DIMETHYLNAPHTHALE	11.57	65915.31	0.79
	11.631	36399.44	0.44
	11.886	51615.14	0.62
	11.96	146756.3	1.77
	12.068	75493.6	0.91
	12.231	41073.14	0.5
	12.291	109087.8	1.31
	12.347	67317.28	0.81
	12.408	35304.88	0.43
	12.497	86001.85	1.04
	12.578	140843.3	1.7
	12.649	131428.5	1.58
	12.84	196672.6	2.37
	12.892	89984.63	1.08
	13.065	223554.2	2.69
	13.134	55017.91	0.66
	13.214	111223.9	1.34
	13.336	228040.7	2.75
	13.473	43046.8	0.52
	13.578	39086.8	0.47
	13.728	51344.3	0.62
	13.888	93894.6	1.13
	13.971	19272.03	0.23
	14.043	67656.57	0.82
	14.137	115415.2	1.39
	14.285	15898.6	0.19
	14.344	50482.47	0.61

	14.41	72925.23	0.88
	14.472	14614.7	0.18
	14.531	38183.88	0.46
	14.587	111496.2	1.34
	14.649	83759.8	1.01
	14.736	132509.7	1.6
	14.848	123847.6	1.49
	14.949	38594.5	0.47
	15.084	49533.8	0.6
	15.299	8308.2	0.1
	15.409	30688.19	0.37
	15.457	66469.84	0.8
PHENANTHRENE	15.547	177003.4	2.13
	15.673	41916.19	0.51
	15.74	34884.79	0.42
	15.791	84322.76	1.02
	15.89	20341.83	0.25
	15.942	33867.39	0.41
	16.028	71943.85	0.87
	16.111	101868.8	1.23
	16.167	68048.03	0.82
	16.22	40144.79	0.48
	16.317	83448.69	1.01
	16.396	73704.31	0.89
	16.468	62135.5	0.75
	16.619	93234.34	1.12
	16.719	24075.86	0.29
3-ME PHENANTHRENE	16.854	110703.7	1.33
2-ME PHENANTHRENE	16.91	92336.93	1.11
	17.025	70189.62	0.85
9-ME PHENANTHRENE	17.114	127392.9	1.54
1-ME PHENANTHRENE	17.168	123119.4	1.48
	17.301	52219.14	0.63
	17.385	58616.31	0.71
	17.517	22633.36	0.27
	17.612	38371.53	0.46
	17.668	26698.7	0.32
	17.738	22979.71	0.28
	17.921	12153.1	0.15
	17.998	58761.28	0.71
	18.048	45382.95	0.55
	18.137	43060.58	0.52
	18.274	38512.02	0.46
	18.34	94302.18	1.14
	18.406	16980.6	0.2
	18.685	23207.89	0.28
	18.756	39981.83	0.48
	18.849	76582.62	0.92
	18.979	15817.48	0.19
	19.047	58423.29	0.7
	19.177	14564.71	0.18
	19.23	18795.72	0.23
	19.287	28306.37	0.34
	19.456	20977.38	0.25
	19.513	8917.22	0.11
	19.644	10777.75	0.13
	19.706	30213.62	0.36
	19.792	18468.73	0.22
	19.848	29191.04	0.35
	20.039	77573.27	0.93
	20.086	16802.97	0.2
	20.156	108534.6	1.31

20.284	29578.52	0.36
20.415	15384.4	0.19
20.563	41781.32	0.5
20.696	16374.58	0.2
20.889	20269	0.24
20.994	11546.8	0.14
21.205	12474	0.15
21.618	14695.8	0.18
21.818	11832.8	0.14
22.597	16077	0.19
22.796	9052.4	0.11
22.893	9366	0.11
23.156	35605.8	0.43
23.234	29174.4	0.35
23.394	7814.4	0.09
23.61	21290	0.26
24.21	11288.97	0.14
24.264	16563.43	0.2
25.05	7417.91	0.09
25.143	16172.09	0.19
26.398	24754.6	0.3
26.834	17588.8	0.21
27.91	23704.8	0.29
33.803	818.74	0.01
	8297447	100

Software Version: 4.1<OG07>  
 Sample Name: 9907OIL004S005 34/11-4T3 4151M MDT G3550  
 Instrument: SAC\_GC  
 Raw Data File: C:\\_DATA\B9907004\ARO005.RAW  
 Sequence File: C:\\_DATA\B9907004\ARO.SEQ

Aromatics GC			
Component Name	Time [min]	Area [ $\mu$ V·s]	Area [%]
	5.123	80540.57	0.41
	5.263	265233.4	1.34
	5.732	209995.9	1.06
	5.835	410178.1	2.07
	5.963	66816.25	0.34
	6.145	164644.7	0.83
	6.246	157885.9	0.8
	6.556	241997	1.22
	6.656	50596.86	0.26
	6.796	314982.9	1.59
	7.069	93203.59	0.47
	7.204	247280	1.25
	7.326	306264.6	1.55
	7.46	63828.02	0.32
	7.538	92347.27	0.47
	7.658	579234.5	2.93
	7.77	15985.18	0.08
	7.841	97747.36	0.49
	7.96	137619.5	0.7
	8.033	40827.13	0.21
	8.171	24893.09	0.13
	8.232	89648.21	0.45
	8.355	27931.6	0.14
	8.443	108679.3	0.55
	8.629	49137.4	0.25
	8.784	74597	0.38
	8.982	194536.2	0.98
	9.084	23140.14	0.12
	9.243	132089.8	0.67
1-ME NAPTHALENE	9.413	1745069	8.82
	9.514	92326.63	0.47
2-ME NAPTHALENE	9.614	688080	3.48
	9.818	283778.7	1.43
	9.923	111899.8	0.57
	9.982	56615.74	0.29
	10.064	25137.5	0.13
	10.166	134690.7	0.68
	10.288	20510.2	0.1
	10.347	85647	0.43
	10.544	463606.4	2.34
	10.628	93306.34	0.47
	10.805	313340.9	1.58
2,6+2,7-DIMETHYLNAPT	11.019	992580.7	5.02
1,3+1,7-DIMETHYLNAPT	11.206	843484.3	4.26
1,6-DIMETHYLNAPTHALE	11.252	572538.3	2.89
	11.337	55150.95	0.28
1,5+1,5+2,3-DIMETHYL	11.449	361802.8	1.83
	11.522	147599.5	0.75
1,2-DIMETHYLNAPTHALE	11.618	49086.88	0.25
	11.671	47182.67	0.24
	11.753	47171.05	0.24

	11.94	40274.1	0.2
	12.029	591303.9	2.99
	12.134	364405.3	1.84
	12.205	15752.63	0.08
	12.277	47497.99	0.24
	12.339	150456	0.76
	12.446	32836	0.17
	12.533	144805.9	0.73
	12.623	270247.9	1.37
	12.698	262948.6	1.33
	12.877	251774.4	1.27
	12.939	165742.2	0.84
	13.1	199397.3	1.01
	13.173	90471.41	0.46
	13.264	211631.5	1.07
	13.332	100052.8	0.51
	13.379	223294.1	1.13
	13.517	149768.4	0.76
	13.666	33577.2	0.17
	13.768	62490.27	0.32
	13.832	83592.03	0.42
	13.924	53039.7	0.27
	14.046	90485.58	0.46
	14.177	97526.92	0.49
	14.311	9372.3	0.05
	14.369	54703.6	0.28
	14.441	90966	0.46
	14.615	137709.1	0.7
	14.696	228355.6	1.15
	14.786	285663.8	1.44
	14.896	158694.9	0.8
	14.996	36245.91	0.18
	15.054	34722.93	0.18
	15.11	95143.69	0.48
	15.225	52220.53	0.26
	15.324	40978.17	0.21
	15.449	28591.48	0.14
	15.504	46375.43	0.23
PHENANTHRENE	15.585	244468.2	1.24
	15.702	9792	0.05
	15.816	30534.1	0.15
	16.056	101418.1	0.51
	16.143	115593.9	0.58
	16.201	81615.8	0.41
	16.343	69819.75	0.35
	16.431	49732.44	0.25
	16.519	59987.75	0.3
	16.641	80489.99	0.41
	16.742	19075.08	0.1
3-ME PHENANTHRENE	16.89	168769.1	0.85
2-ME PHENANTHRENE	16.952	167900.4	0.85
	17.049	33545.8	0.17
9-ME PHENANTHRENE	17.142	135985.1	0.69
1-ME PHENANTHRENE	17.196	108210.5	0.55
	17.343	54546.58	0.28
	17.437	166170.6	0.84
	17.538	12277.2	0.06
	17.636	61673.81	0.31
	17.688	11100.29	0.06
	17.869	19190	0.1
	17.944	12153.65	0.06
	18.086	68123.05	0.34

18.172	95219.01	0.48
18.297	36836.08	0.19
18.37	124143.7	0.63
18.433	38071.8	0.19
18.547	17292.8	0.09
18.773	95416.7	0.48
18.876	86888.9	0.44
18.994	7342.4	0.04
19.066	38758.84	0.2
19.196	8579.78	0.04
19.252	49701.28	0.25
19.379	18767.81	0.09
19.472	40493.63	0.2
19.568	38350.97	0.19
19.728	30159.3	0.15
19.801	15894.2	0.08
19.956	36580.85	0.18
20.027	54098.06	0.27
20.194	45785.19	0.23
20.278	22913.8	0.12
20.439	9621.2	0.05
20.566	23079.2	0.12
20.676	7102	0.04
20.898	17482.6	0.09
21.061	7584.9	0.04
21.163	43008.44	0.22
21.22	21596.96	0.11
21.336	19827.76	0.1
21.403	21036.45	0.11
21.504	8989.48	0.05
22.214	30692.9	0.16
22.384	24916.8	0.13
22.487	17372.4	0.09
22.616	16185.8	0.08
22.814	13523.4	0.07
23.241	23962.2	0.12
23.454	35169.03	0.18
23.627	26518.17	0.13
24.214	12149.7	0.06
33.757	256.8	0
	19789127	100

## GC-MS PEAK HEIGHT DATA

HSRUN	MPDMIO00850041.LIS	MPDMIO00850061.LIS	MPDMIO00850071.LIS	MPDMIO00851061.LIS
PEAK HEIGHTS	Dead Oil G3546 \$9907OIL004S003\$	4/11-2S 4142.5m G3544 \$9907OIL004S001\$	4/11-4T3 4194.8m G3545 \$9907OIL004S002\$	4/11-4T3 4151m G3550 \$9907OIL004S005\$
PRISTANE	54185100	14907600	23494100	16632200
PHYTANE	53032100	11594400	20517900	13483000
C19 TRICYCLIC TERPANE(19/3)	1444120	0	0	193483
C20 TRICYCLIC TERPANE(20/3)	1677190	0	0	134000
C21 TRICYCLIC TERPANE(21/3)	1842750	0	0	80451
C22 TRICYCLIC TERPANE(22/3)	350036	0	0	0
C23 TRICYC TERPANE(Ts:23/3)	3249360	77342	0	120309
C24 TRICYC TERPANE (24/3)	2784440	0	0	98831
C25 TRICYC TERPANE (25/3)	1640340	0	0	60942
C24 TETRACYC TERP (\$:24/4)	2953820	70738	0	63406
C26 TRICYCLIC TERPANE(26/3)	1143660	0	0	50268
C26 TRICYCLIC TERP 2 (26/3)	1010630	0	0	46407
C28 TRICYCLIC TERPANE(28/3)	1008690	0	0	47136
C28 TRICYCLIC TERP 2 (28/3)	1075410	0	0	38560
C29 TRICYCLIC TERPANE(29/3)	2413450	0	0	97193
C29 TRICYCLIC TERP 2 (29/3)	1863950	0	0	85630
C27 18A HOPANE (Ts:27Ts)	8667140	168671	0	181087
C27 17A HOPANE (Tm:27Tm)	7128140	104734	0	136117
C30 TRICYCLIC TERPANE(30/3)	1703520	0	0	116667
C30 TRICYCLIC TERP 2 (30/3)	1308970	0	0	52571
25-TRISNORm/z177(25nor28ab)	4260600	0	0	62759
C28 BISNORHOPANE (X:28ab)	12690700	0	0	39920
25-NOR m/z177 (Y:25nor30ab)	4261020	0	0	38668
25-NORHOPANE (Y:25nor30ab)	5972980	0	0	67411
C29 HOPANE (D:29ab)	22637600	35668	115242	402847
C29 18A NORHOPANE (D2:29Ts)	9622830	84939	0	166419
C30 C30 DIAHOPANE (PI:30d)	4539730	173321	45372	116145
C29 NORMORETANE (A:29ba)	4995920	10517	0	74753
C30 18A OLEANANE (B:30O)	0	0	0	0
C30 HOPANE (G:30ab)	55123900	148946	157582	601093
NOR-GAMMACERANE? (G2)	2017270	0	0	38566
C30 MORETANE (K:30ba)	6535720	0	0	99553
C31 22S HOPANE (N:31abS)	19859400	46443	0	177971
C31 22R HOPANE (O:31abR)	14085000	26666	0	126404
C31 22S M/Z205 (N205)	6744060	0	0	63868
C31 22R M/Z205 (O205)	5014360	0	0	54903
C30 GAMACERANE (S:30G)	0	0	0	0
C30 17B 21B HOPANE (P)	1122550	0	0	0
C32 22S HOPANE (U:32abS)	14347400	0	0	126709
C32 22R HOPANE (V:32abR)	10205800	0	0	87669
C33 22S HOPANE(Alpha:33abS)	11620900	0	0	59119
C33 22R HOPANE (Beta:33abR)	8302870	0	0	63506
C34 22S HOPANE(Gamma:34abS)	7287130	0	0	30916
C34 22R HOPANE(Delta:34abR)	4678160	0	0	25640
C35 22S HOP (Epsilon:35abS)	6552000	0	0	30777
C35 22R HOPANE (Zeta:35abR)	4445340	0	0	18392
C21 STERANE	6090290	172756	425485	285845
C27 20S DIASTER (10:27dbS)	10327900	280447	199901	291304
C27 20R DIASTER (11:27dbR)	6701490	180038	129850	186347
C27 20S AAA STER (20:27aaS)	4386160	50057	63294	91119
C29 20S DIASTER (21A:29dbS)	8512070	201249	124086	211290
C27 20R ISOST218(21B:27bbR)	5748370	63504	97698	141437
C27 20S ISOST218 (22:27bbS)	4479180	38370	76432	105304
C27 20R ISOSTER 217 (27bbR)	8512070	201249	124086	211290
C27 20S ISOSTER 217 (27bbS)	3682180	19815	73738	91574
C27 20R AAA STER (25:27aaR)	3049490	34048	34568	82203
C29 20R DIASTER (27:29dbR)	7414740	173662	154761	219514
C28 20R ISOST218(33A:28bbR)	5153120	49740	86000	124413
C28 20S ISOST218 (34:28bbS)	5293690	52976	98320	132874
C28 20R ISOSTER 217 (28bbR)	6390440	92825	128077	150103
C28 20S ISOSTER 217 (28bbS)	4797380	37133	117244	127967
C28 20R AAA STER (36:28aaR)	2102780	8831	13959	28913
C29 20S AAA STER (39:29aaS)	5079290	38512	83017	99695
C29 20R ISOST218 (40:29bbR)	5642800	59215	120134	163691
C29 20S ISOST218 (41:29bbS)	6338890	55989	127054	160734
C29 20R ISOSTER217 (29bbR)	5329080	36411	110468	149783
C29 20S ISOSTER217 (29bbS)	5543630	0	73138	134331
C29 20R AAA STER (42:29aaR)	3580410	13375	56427	62525
C30 20R ISOSTER218 (30bbR)	1993510	0	0	44458
C30 20S ISOSTER218 (30bbS)	2094080	0	0	0
C30 4-METHYL STERANE (46)	1930980	0	0	16540

## GC-MS PEAK HEIGHT DATA

HSRUN	MPDMIO00850041.LIS	MPDMIO00850061.LIS	MPDMIO00850071.LIS	MPDMIO00851061.LIS
PEAK HEIGHTS	Dead Oil G3546	4/11-2S 4142.5m G3544	4/11-4T3 4194.8m G3545	4/11-4T3 4151m G3550
	\$9907OIL004S003\$	\$9907OIL004S001\$	\$9907OIL004S002\$	\$9907OIL004S005\$
2-ME NAPHTHALENE	652116032	303422016	342731008	631030976
1-ME NAPHTHALENE	542468992	182532000	134892000	311035008
2-ME BIPHENYL	22330100	3413900	2380420	4962330
3-ME BIPHENYL	141011008	68727000	91321704	185386000
4-ME BIPHENYL	41163800	22199800	30568600	64003200
PHENANTHRENE	102463000	31456500	40306400	54059800
3-ME PHENANTHRENE	43162200	14222000	24377300	29393400
2-ME PHENANTHRENE	38931000	12041000	22103800	27839800
9-ME PHENANTHRENE	103070000	25584300	23425700	28874700
1-ME PHENANTHRENE	61806300	12817400	12342800	16882300
DIBENZOTHIOPHENE	21049500	1503330	3108210	0
4-ME DIBENZOTHIOPHENE	31355000	3885240	6549520	6977450
3+2-ME DIBENZOTHIOPHENE	11882500	1058160	2638000	2743980
1-ME DIBENZOTHIOPHENE	13863700	369998	389250	423138
C21 MA STERANE (F22:A1)	5975900	94991	124867	75347
C22 MA STERANE (F23:B1)	4796080	55479	33640	55918
C27 20S 5B DM MA-ST(F2:C1)	2528320	0	0	0
C27 20S 10B DM MA-DIA (C1)	7948160	0	0	0
C27 20R 5B DM MA-ST(F3:D1)	9244300	0	0	0
C27 20S 5A DM MA-ST(F4:D1)	3121140	0	0	0
C28 20S 5B DM MA-ST(F5:E1)	11308100	0	0	0
C27 20S 5A DM MA-DS( :F1)	1356140	0	0	0
C27 20R 5A DM MA-ST(F6:G1)+	4742930	0	0	0
C28 20S 5A DM MA-ST(F7:G1)	4742930	0	0	0
C28 20R 5B DM MA-ST(F8:G1)	10688600	0	0	16295
C29 20S 5B DM MA-ST(F9:G1)	12502400	0	0	0
C29 20S 5A DM MA-ST(F10:H1)	2924690	0	0	0
C28 20R 5A DM MA-ST(F11:H1)	3874140	0	0	0
C29 20R 5B DM MA-ST(F12:H1)	7503440	0	0	0
C29 20R 5A DM MA-ST(F13:I1)	2772450	0	0	0
C20 ME TA-STER(F14:a1)	9519030	187582	178987	196874
C21 ME TA-STER(F15:b1)	11180700	155136	133408	123239
C26 20S ME TA-STER(F16:c1)	10693700	0	0	23201
C26 20R ME TA-STER(F17:d1)+	31755500	0	0	43636
C27 20S ME TA-STER(F18:d1)	31755500	0	0	43636
C28 20S ME TA-STER(F19:e1)	17135000	0	0	30729
C27 20R ME TA-STER(F20:f1)	14461300	0	0	19778
C28 20R ME TA-STER(F21:g1)	16530900	0	0	27959
?C21 20S DIASTER	4665420	191133	386031	252062
?C21 20R DIASTER	2132700	71379	168396	112713
?C21 AAA+ABB	6090290	172756	425485	285845
?C22 DIASTER	0	0	0	0
?C22 AAA+ABB	3325330	50470	66916	73045

## GC-MS BIOMARKER PARAMETERS

HSRUN	Dead Oil			
	34/11-2S 4142.5m MPDMIO00850041	34/11-4T3 4194.8m MPDMIO00850061	34/11-4T3 4151m MPDMIO00850071	34/11-4T3 4151m MPDMIO00851061
H1 C32 HOPANES 22S/(22S+22R)	0.58			0.59
H2 C31 HOPANES 22S/(22S+22R) M/Z205	0.57			0.54
H3 C30: HOPANE/(HOPANE+MORETANE)	0.89		0.9	0.86
H4 C30: BB HOPANE / C30 HOPANE AS %				
H5_0 C29 HOPANE AS % C30	41.07	23.95	73.13	67.02
H5_1 HOPANE DISTRIBUTION RELATIVE TO C30	100	100	100	100
H5_2 C31 HOPANES AS % OF C30 (205 CORRECTED)	62.81	62.36		55.06
H5_3 C32 HOPANES	44.54			35.66
H5_4 C33 HOPANES	36.14			20.4
H5_5 C34 HOPANES	21.71			9.41
H5_6 C35 HOPANES	19.95			8.18
H6 C27 HOPANES TS/(TS+TM)	0.55	0.62		0.57
H7 C33 HOPANES 22S/(22S+22R)	0.58			0.48
H11 C23 TRICYCLIC/C30 HOPANE AS %	5.89	51.93		20.02
H12 C24 TETRACYCLIC/C30 HOPANE AS %	5.36	47.49		10.55
H13 28 30 BISNORHOPANE/HOPANE AS %	23.02			
H14 C30 DIAHOPANE P/HOPANE AS %	8.24	116.36	28.79	19.32
H15 OLEANANE/HOPANE AS %				
H16 GAMMACERANE/HOPANE AS % (205 BACK CALCULATED)				
H17 HOPANE INDEX C35/(C35+C34) %	47.89			46.51
H18 25-NORHOPANE(Y)/HOPANE AS % G	10.84			11.21
H19 C29 18A-NORHOPANE D2/C30 HOPANE AS %	17.46	57.03		27.69
S1 C29 STERANES 20S/(20S+20R)	0.59	0.74	0.6	0.61
S2 C29 STERANES m/z218 ABB/(ABB+AAA)	0.58	0.69	0.64	0.67
S3_1 STERANE DISTRIBUTION AAA C27 %	34.92	60.52	32.94	47.34
S3_2 C28 %	24.08	15.7	13.3	16.65
S3_3 C29 %	41	23.78	53.76	36.01
S4_1 STERANE DISTRIBUTION ABB C27 %	31.32	31.86	28.75	29.78
S4_2 C28 %	31.99	32.12	30.43	31.06
S4_3 C29 %	36.69	36.02	40.81	39.16
S5 BA DIASTERANES/(BA DIASTERANES+AAA+ABB STERANES) %	49.2	51.98	58.2	42.74
S7 STERANE INDEX C27/(C27+C29) % FROM S3	46	71.8	37.99	56.8
S8 C30 4-ME STERANE AS % OF C29 20R AAA	53.93			26.45
M4 SUM C27 TO C35 HOPANES/(SAME+C27 TO C29 STERANES)	62.74	15.22		44.61
PR/PH PRISTANE/PHYTANE RATIO ESTIMATE	1.53	1.93	1.72	1.85
M2 PHENANTHRENES (3ME+2ME) / (9ME+1ME)	0.56	0.77	1.47	1.41
M3 MPII PHENANTHRENES (3ME+2ME) / (9ME+1ME+PHEN) * 1.5	0.59	0.74	1.24	1.16
A1 ARO STERANES: C28 20R TRI/(SAME+C29 20R 5A&B MONO 12	0.59			1
A2 ARO STERANES: SUM TRI/(SAME+SUM MONO)(F9&F12split)	0.55	0.69		0.76
A3 TRI ARO STERANES: C20/(C20+C28 20R)	0.37	1	1	0.88
A4 TRI ARO STERANES: (C20+C21)/(SAME+SUM C26 TO C28)	0.19	1	1	0.69
A5 TRI ARO STERANES: C26 20S / C28 20S	0.62			0.76
A6 TRI ARO STERANES: C27 20R / C28 20R	0.87			0.71
MDR 4-ME DIBENZOTHIOPHENE / 1-ME DIBENZOTHIOPHENE	2.26	10.5	16.83	16.49
MBP 3-METHYLBIPHENYL / 2-METHYLBIPHENYL	6.31	20.13	38.36	37.36
MNR 2-ME NAPHTHALENE/1-ME NAPHTHALENE	1.2	1.66	2.54	2.03
SMN (2-ME NAPTH+1-ME NAPTH)/C23 TRICYCLIC				
DBTP DIBENZOTHIOPHENE(MZ184)/PHENANTHRENE(MZ178)	0.21	0.05	0.08	
T19 C19 TRICYCLIC/C23 TRICYCLIC %	44.44			160.82
T20 C20 TRICYCLIC/C23 TRICYCLIC %	51.62			111.38
T21 C21 TRICYCLIC/C23 TRICYCLIC %	56.71			66.87
T22 C22 TRICYCLIC/C23 TRICYCLIC %	10.77			
T23 C23 TRICYCLIC/C23 TRICYCLIC %	100			100
T24 C24 TRICYCLIC/C23 TRICYCLIC %	85.69			82.15
T25 C25 TRICYCLIC/C23 TRICYCLIC %	50.48			50.65
T26 C26 TRICYCLIC/C23 TRICYCLIC %	66.3			80.36
T28 C28 TRICYCLIC/C23 TRICYCLIC %	64.14			71.23
T29 C29 TRICYCLIC/C23 TRICYCLIC %	131.64			151.96
T30 C30 TRICYCLIC/C23 TRICYCLIC %	92.71			140.67
19/23 C19 TRICYCLIC/C23 TRICYCLIC AS %	44.44			160.82
20/21 C20 TRICYCLIC/C21 TRICYCLIC AS %	91.02			166.56
22/21 C22 TRICYCLIC/C21 TRICYCLIC AS %	19			
24/23 C24 TRICYCLIC/C23 TRICYCLIC AS %	85.69			82.15
26/25 C26 TRICYCLIC/C25 TRICYCLIC AS %	131.33			158.64
244_24 C24 TETRACYCLIC/C24 TRICYCLIC AS %	106.08			64.16
TET_23 C24 TETRACYCLIC/C23 TRICYCLIC AS %	90.9			52.7