1.8. Mud Summary

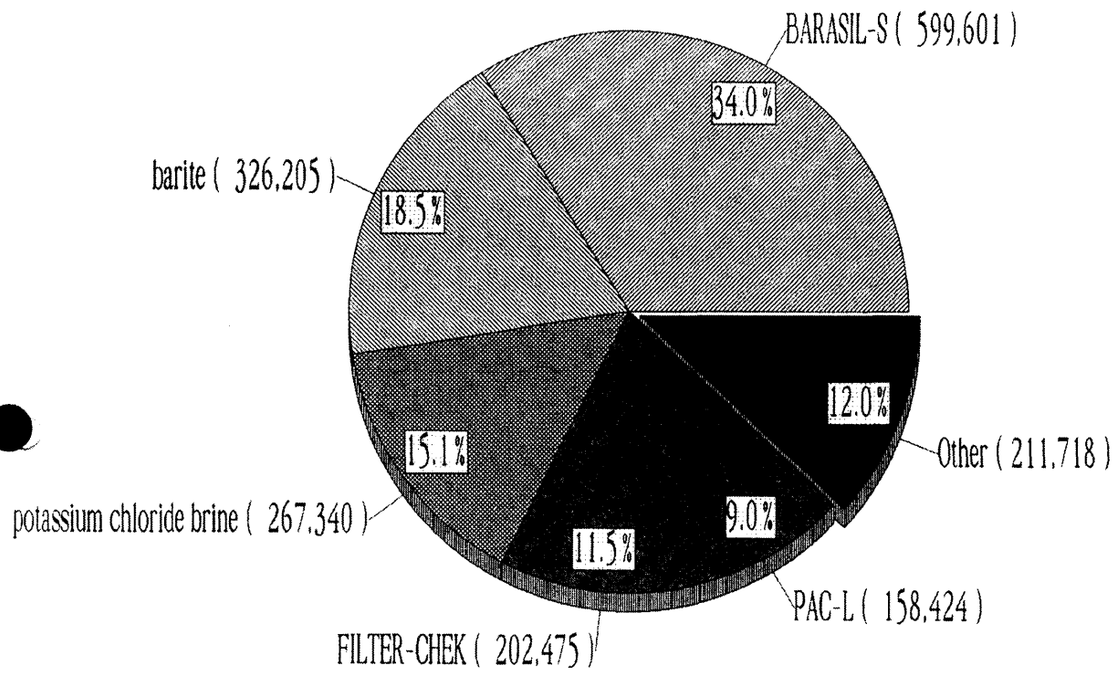
36" conductor hole	Sea water/Bentonite Hi-Vis pills as required 1.2 SG Hi-Vis mud left in hole for casing run 1,262 bbls used Total cost 62,707 Kr
17.1/2" surface hole	Sea water/Bentonite Hi-Vis pills as required 1.20 SG Hi-Vis mud left in hole for casing run 5,408 bbls used Total Cost 222,297 Kr
12.1/4" intermediate hole	Barasilc (Sodium Silicate) Mud (1.30 - 1.6 SG) 3,674 bbls used Total Cost 1,765,762 Kr
8.1/2" intermediate hole	KCL Polymer Mud (1.52 - 1.53 SG) Sodium Silicate concentration allowed to deplete naturally 3,644 bbls used Total Cost 328,850 Kr

Company:	BP Norge UA	Country:	NORWAY
Well Name:	2/1-12 Hrek	Geo. Area:	NORTH SEA
Contractor:	Maersk Drilling	Field:	
Rig:	Maersk Jutlander	Region:	

Usage by Product

Interval # 03 12.25 in. Hole Section

KRONE



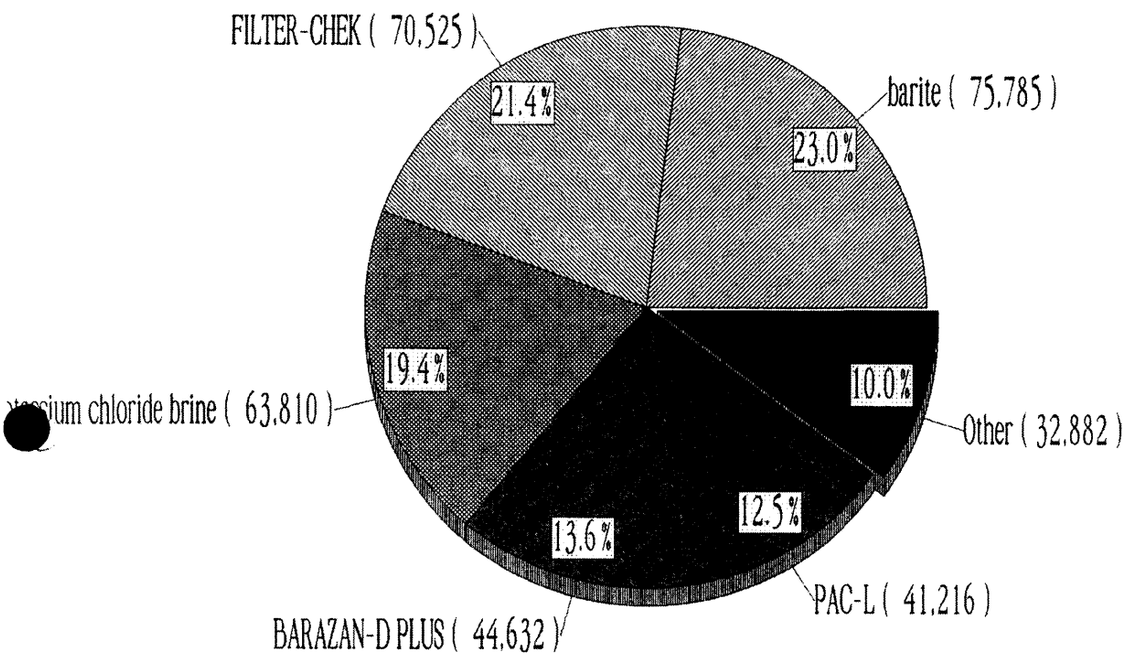
Interval Mud Cost: 1,765,763

Company:	BP Norge UA	Country:	NORWAY
Well Name:	2/1-12 Hrek	Geo. Area:	NORTH SEA
Contractor:	Maersk Drilling	Field:	
Rig:	Maersk Jutlander	Region:	

Usage by Product

Interval # 04 8.5 in. Hole Section

KRONE



Interval Mud Cost: 328,850

Company:	**BP Norge UA**	**Country:**	**NORWAY**
Well Name:	**2/1-12 Hårek**	**Geo Area:**	**NORTH SEA**
Contractor:	**Maersk Drilling**	**Field:**	
Rig:	**Maersk Jut**	**Region:**	

Total Material Consumption

Material	Unit size	Quantity	Total cost (Kr)
BARASCAV D	25 KG. BAG	44	7,392.00
BARASIL-S	1000 L.	132.333	599,600.82
BARAZAN-D PLUS	25 KG. BAG	117	186,498.00
barite	1000 KG. TON	728.000	479,752.00
BAROFIBRE COARSE	40 LB. BAG	30	10,200.00
BAROFIBRE FINE	25 LB. BAG	50	14,000.00
bentonite	1000 KG. TON	97.000	191,187.00
FILTER-CHEK	25 KG. BAG	600	273,000.00
guar gum	25 KG. BAG	16	5,568.00
lime	25 KG. BAG	10	470.00
mica coarse	25 KG. BAG	9	711.00
mica fine	25 KG. BAG	12	948.00
N-VIS HI	50 LB. BAG	4	11,872.00
PAC-L	25 KG. BAG	310	199,640.00
potassium chloride	1000 KG. BAG	33	51,612.00
potassium chloride brine	1000 L.	639.286	331,150.15
soda ash	25 KG. BAG	141	9,306.00
Tetra Defoam Green	25 L. CAN	3	5,730.00
WALL-NUT MEDIUM	25 KG. BAG	14	980.00

Total mud cost	**Kr2,379,616.97**
Programmed mud cost	**Kr2,357,791.00**
Variance	**Kr 21,825.97**

BP Amoco

Geochemical Evaluation

Well 2/1-12

June 1999

by
Rune R. Olsen, BP-Amoco Norge

TABLE 1

LITHOLOGY AND STRATIGRAPHY

COUNTRY: Norway
WELL: 2/1-12 NOCS

DEPTH (m)	DEPTHRANGE (m)	FORMATION	AGE	LITHOLOGY	PICKED LITHOLOGY	SAMPLE TYPE
3249				Mudstone, medium grey	Mudstone	SWC
3250.2				Mudstone, medium grey	Mudstone	SWC
3260				Sandstone	Sandstone	SWC
3350				Sandstone, 90%, Siltstone 10% med grey	Bulked	Cutting
3362				Sandstone, 90%, Siltstone 10% med grey	Bulked	Cutting
3363.3				Mudstone, medium grey	Mudstone	SWC
3371				Sandstone 60%, med grey sandy siltstone 40%	Bulked	Cutting
3379.3				Mudstone, medium grey	Mudstone	SWC
3380				Sandstone 40%, med grey sandy siltstone 60%	Bulked	Cutting
3392				Sandstone 70%, med grey sandy siltstone 30%	Bulked	Cutting
3401				Sandstone 20%, med grey sandy siltstone 80%	Bulked	Cutting
3410				Siltstone medium grey 100%	Siltstone	Cutting
3422				Siltstone medium grey 100%	Siltstone	Cutting
3434				Siltstone medium grey 100%	Siltstone	Cutting
3440				Siltstone medium grey 100%	Siltstone	Cutting
3453				Siltstone medium grey 100%	Siltstone	Cutting
3461				Siltstone medium grey 100%	Siltstone	Cutting
3470				Siltstone medium grey 100%	Siltstone	Cutting

TABLE 1

LITHOLOGY AND STRATIGRAPHY

COUNTRY: Norway
WELL: 2/1-12 NOCS

DEPTH (m)	DEPTHRANGE (m)	FORMATION	AGE	LITHOLOGY	PICKED LITHOLOGY	SAMPLE TYPE
3482				Siltstone medium grey 100%	Siltstone	Cutting
3491				Siltstone medium grey 100%	Siltstone	Cutting
3500				Siltstone medium grey 100%	Siltstone	Cutting
3512				Siltstone medium grey 100%	Siltstone	Cutting
3521				Siltstone medium grey 100%, trace coal (removed)	Siltstone	Cutting
3530				Sandstone 70%, med grey sandy siltstone 30%	Bulked	Cutting
3542				Sandstone 90%, med grey sandy siltstone 10%	Bulked	Cutting
3548				Sandstone 50%, Coal 50%	Sandstone	Cutting
3550				Sandstone 20%, Coal 80%	Sandstone	Cutting
3548				Sandstone 50%, Coal 50%	Coal	Cutting
3550				Sandstone 20%, Coal 80%	Coal	Cutting

TABLE 2

SOURCE ROCK QUALITY INDICATORS

COUNTRY: Norway
WELL: 2/1-12 NOCS

DEPTH (m)	DEPTHRANGE (m)	FORMATION	PICKED LITHOLOGY	S1 (kg/t)	S1 (mg/gC)	S2 (kg/t)	TOC (%)	TMAX deg C	HI	GOGI	CARBT (%)	S (%)
3249			Mudstone	0.46	164.3	0.65	0.28	426	232		39.8	0.59
3250.2			Mudstone	0.52	148.6	0.63	0.35	430	180		15.4	0.55
3260			Sandstone	0.35	700.0	0.38	0.05	428	760		5.9	0.07
3350			Bulked				0.44				10.18	0.86
3362			Bulked	0.8	71.4	3.2	1.12	429	286		10.29	1.12
3363.3			Mudstone	1.3	265.3	1.4	0.49	429	286		26.4	0.8
3371			Bulked	0.7	68.0	2.5	1.03	425	243		10.36	1.17
3379.3			Mudstone	5.1	283.3	6.1	1.8	434	339		17.8	1.3
3380			Bulked	0.8	71.4	3.3	1.12	430	295		12.62	1.12
3392			Bulked				0.93				12.5	1.02
3401			Bulked	0.9	72.6	3.8	1.24	429	306		16.75	1.43
3410			Siltstone	1	54.6	4.4	1.83	430	240		10.92	1.5
3422			Siltstone	1	76.9	4	1.3	430	308		17.49	1.39
3434			Siltstone	0.8	70.2	3.2	1.14	426	281		17.95	1.26
3440			Siltstone	0.7	60.9	2.8	1.15	433	243		14.17	1.33
3453			Siltstone	0.8	59.3	3.2	1.35	429	237		13.46	1.41
3461			Siltstone	0.7	53.8	3.1	1.3	432	238		7.55	1.28
3470			Siltstone				0.95				16.34	1.39
3482			Siltstone	0.8	52.6	3.9	1.52	432	257		1.2	1.6
3491			Siltstone	0.8	46.8	4.7	1.71	435	275		14.17	1.54
3500			Siltstone	1	43.9	7	2.28	436	307		12.13	1.83
3512			Siltstone	0.9	57.0	4.5	1.58	433	285		13.74	1.74

TABLE 2

SOURCE ROCK QUALITY INDICATORS

COUNTRY: Norway
WELL: 2/1-12 NOCS

DEPTH (m)	DEPTHRANGE (m)	FORMATION	PICKED LITHOLOGY	S1 (kg/t)	S1 (mg/gC)	S2 (kg/t)	TOC (%)	TMAX deg C	HI	GOGI	CARBT (%)	S (%)
3521			Siltstone				0.8				11.25	1.35
3530			Bulked				0.41				18.3	0.82
3542			Bulked				0.38				11.99	0.84
3548			Sandstone	0.7	59.8	1.9	1.17	436	162		12.39	0.8
3550			Sandstone	0.8	39.8	3.1	2.01	436	154		10.19	0.58
3548			Coal	3.6	18.3	67.9	19.72	432	344		1.88	0.56
3550			Coal	3.7	15.7	71.4	23.64	434	302		1.92	0.37

Oil Analysis

Well name :	2/1-12
Suite name :	2/1-12
Country Of Origin :	Norway
Depth (m) :	3133
Sample name :	
Test Number :	
G number :	G 3510
Lab Number:	9902OIL009S001

Inspection Properties

API :	
Density @ 15 deg C :	
Wax Content %wt :	
Wax Melting Point deg C :	
Pour Point deg C :	
Viscocity 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 :**	0.54	**M2 :**	0.73
H2 :	0.55	**S2 :**	0.61	**M3 :**	0.64
H3 :	0.89	**S3 :**	37:17:45	**M4 :**	44.34
H4 :	0	**S4 :**	33:30:35	**M5 :**	
H5 :	100:86:72:46:27:20	**S5 :**	57.10	**A1 :**	0.53
H6 :	0.52	**S6 :**		**A2 :**	0.53
H7 :	0.57	**S7 :**	45.41	**A3 :**	0.58
H8 :		**S8 :**	0.00	**A4 :**	0.33
H9 :		**S9 :**		**A5 :**	0.38
H10 :		**S10 :**		**A6 :**	1.08
H11 :	9.14			**MDR :**	2.15
H12 :	7.94			**MBP :**	4.51
H13 :	0.00				
H14 :	23.97				
H15 :	0.00				
H16 :	5.04				
H17 :	43.61				
H18 :	0.00				

HPLC

Saturates %wt :	62.25
Aromatics %wt :	31.73
Residues %wt :	6.01
Asphaltenes (Micro Method) %wt :	3.9

Saturates GC

Pristane/Phytane :	1.11
Pristane/nC17 :	0.60
Phytane/nC18 :	0.62
CPI :	1.06
ALKIND :	73.09
R22 :	0.97

Light Hydrocarbons

MCH % :	39.3
HER :	0.40
HXR :	0.56

Stable Carbon Isotopes

Saturates :	-28.6
Total Oil :	-28.2
Aromatics :	-27.5
Residue :	
Asphaltenes :	
STANDARD:	NBS22 -29.8

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

Table 3

Appendix A - Peak Area Lists

Software Version:	4.1<0G07>				
Date:	19/02/99	11:16			
Sample Name:	9902OIL009S001 2/1-12 3133m G3510				
Data File:	C:_DATA\B9902009\WOGC001.RAW	Date:	19/02/99	10:09	
Sequence File:	C:_DATA\B9902009\WOGC.SEQ	Cycle:	2	Channel:	A
Instrument:	WHOLE_OILS_GC	Rack/Vial:	0	0	Operator:
Sample Amount:	1	tion Factor	1		

Whole Oil GC Analysis

Component Name	Time [min]	Area [µV·s]	Amount [%]
Propane	1.56	0	0
2-methylpropane	2.132	0	0
n-butane	2.654	0	0
2-methylbutane	4.151	1996.8	0.02
n-pentane	4.807	3173.4	0.03
DCM	5.345	0	0
2,2-dimethylbutane	5.621	241.5	0
Cyclopentane	6.25	594.6	0.01
2,3-dimethylbutane	6.378	2123.2	0.02
2-methylpentane	6.542	14785.6	0.15
3-methylpentane	6.874	10242.4	0.11
n-hexane	7.346	32277.6	0.34
methylcyclopentane	7.875	18855.8	0.2
2,4-dimethylpentane	8.081	4323.3	0.04
Benzene	8.477	450.7	0
cyclohexane	8.635	25566	0.27
2-methylhexane + 1,2-DMP	9.006	47977	0.5
3-methylhexane	9.204	35409.8	0.37
1,3-cis-dimethylcyclopentane	9.279	12331.6	0.13
1,3-trans-dimethylcyclopentane	9.34	11954	0.12
1,2-trans-dimethylcyclopentane	9.407	24819.5	0.26
n-heptane	9.804	109180	1.13
methylcyclohexane	10.145	164143.9	1.71
ethylcyclopentane	10.431	7485.41	0.08
Toluene	11.109	5671.25	0.06
n-Octane	12.067	192413.9	2
n-Nonane	14.139	341249.5	3.55
n-Decane	16.042	396333.7	4.12
n-C11	17.811	458231.6	4.76
n-C12	19.46	518410.6	5.39
n-C13	21.011	595682.7	6.19
n-C14	22.469	752488.6	7.82
n-C15	23.823	620831.4	6.45
n-C16	25.107	504477.5	5.24
n-C17	26.327	496565.9	5.16
Pristane	26.442	335583.5	3.49
n-C18	27.48	422259	4.39
Phytane	27.627	247401.3	2.57
n-C19	28.58	401979.7	4.18
n-C20	29.626	350335.8	3.64
n-C21	30.626	323757.5	3.37
n-C22	31.58	288757	3
n-C23	32.498	278460.3	2.89
n-C24	33.375	235238.2	2.45
n-C25	34.22	199272.4	2.07
n-C26	35.032	196273.9	2.04
n-C27	35.815	165132.5	1.72
n-C28	36.573	137922.3	1.43
n-C29	37.306	129744.6	1.35
n-C30	38.055	103618.3	1.08
n-C31	38.844	108201.1	1.12
n-C32	39.693	91143.76	0.95
n-C33	40.633	88395.6	0.92
n-C34	41.675	54685.18	0.57
n-C35	42.869	26171.4	0.27
n-C36	44.239	25157.2	0.26
		9619779	100

Batch Code	9902OIL009S001
Data File	C:_DATA\B9902009\WOGC001.RAW
MCH (MeCyC6 as % all C7 alkanes)	39.30
HER (Heptane/(Hp+MeCyC6)	0.40
HXR (Hexane/(Hx+CyC6)	0.56
Thompson's Heptane Ratio	25.31
Thompson's Iso Heptane Index	1.70
Note: -1 denotes not calculated	

Software Version	4.1<0G07>				
Date:	02/03/99	13:42			
Sample Name:	9902OIL009S001 2/1-12 3133m G3510				
Data File:	C:_DATA\B9902009\SAC001.RAW	Date:	02/03/99	12:13	
Sequence File:	C:_DATA\B9902009\SAC2.SEQ	Cycle:	2	Channel:	A
Instrument:	SAC_GC	Rack/Vial:	0	0	Operator:
Sample Amount:	1	Dilution F	1		

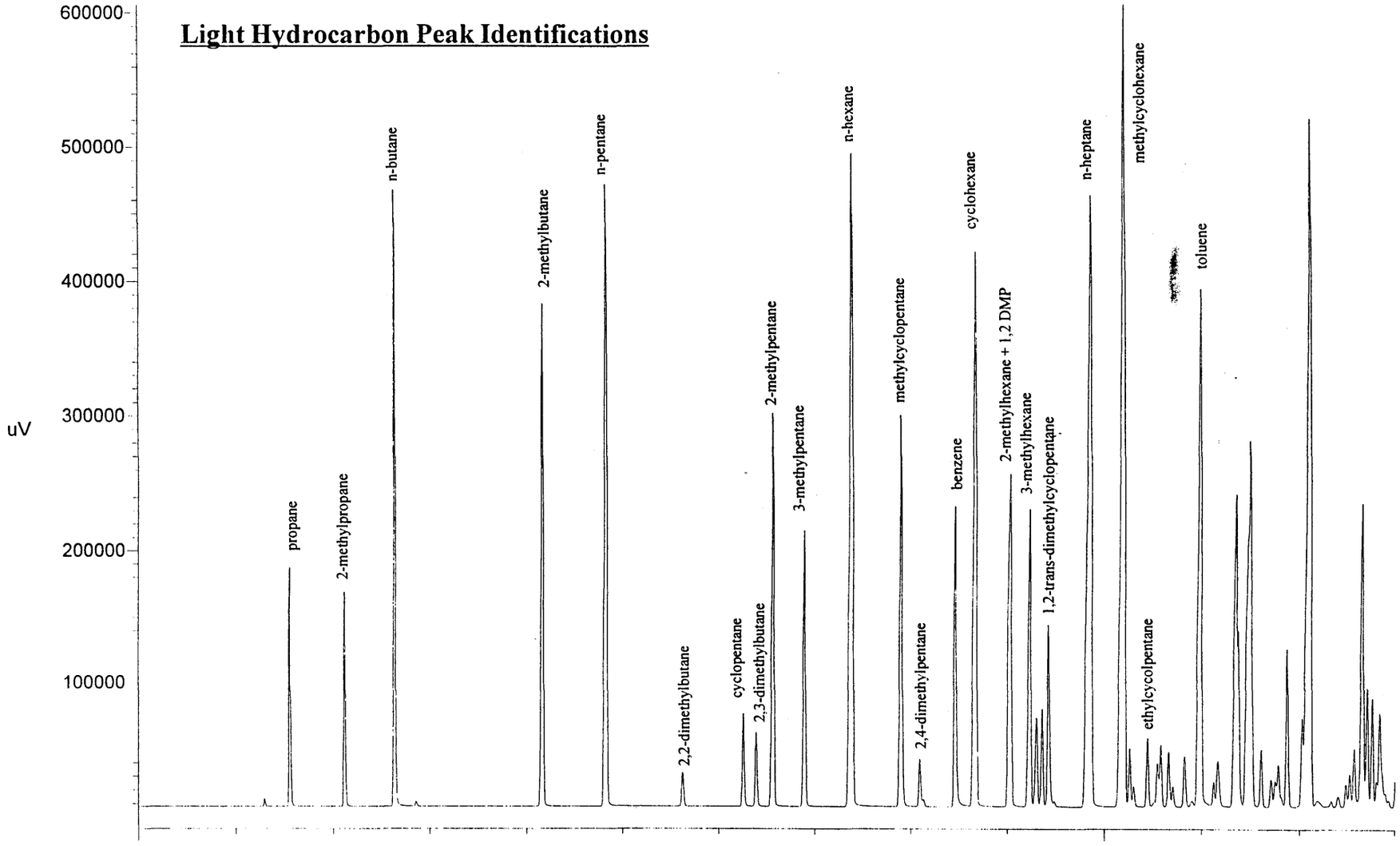
Saturates Fraction GC Analysis

Component Name	Time [min]	Area [µV·s]	Amount [%]
N-C12	6.574	397862.4	2.88
N-C13	7.977	838675.7	6.08
N-C14	9.357	1290766	9.35
N-C15	10.667	1044181	7.56
N-C16	11.923	1128014	8.17
N-C17	13.12	1008051	7.3
PRISTANE	13.234	601726.9	0
N-C18	14.256	873169.2	6.33
PHYTANE	14.4	544407	0
N-C19	15.344	917243.3	6.64
N-C20	16.379	759022.2	5.5
N-C21	17.37	682599.9	4.94
N-C22	18.316	631477.5	4.57
N-C23	19.227	624468.6	4.52
N-C24	20.099	517926.6	3.75
N-C25	20.938	463763	3.36
N-C26	21.747	395247.7	2.86
N-C27	22.527	371087.2	2.69
N-C28	23.277	333527.9	2.42
N-C29	24.006	317473.7	2.3
N-C30	24.709	224750.1	1.63
N-C31	25.402	226215.8	1.64
N-C32	26.132	211133.2	1.53
N-C33	26.92	230794.5	1.67
N-C34	27.79	135201.8	0.98
N-C35	28.761	108346.4	0.78
N-C36	29.871	73196.9	0.53
		14950329	100

Batch Code	9902OIL009S001
Data File	C:_DATA\B9902009\SAC001.RAW
CPI (24 to 32)	1.06
Pr/Ph Ratio	1.11
Pr/n-C17	0.60
Ph/n-C18	0.62
Alkane Index (C17/(C17+C27)%	73.09
R22 Index 2*C22/(C21+C23)	0.97

Note: -1 denotes not calculated

Appendix B - GC Hydrocarbon Identifications


Light Hydrocarbon Peak Identifications
600000
500000
400000
300000
200000
100000
uV
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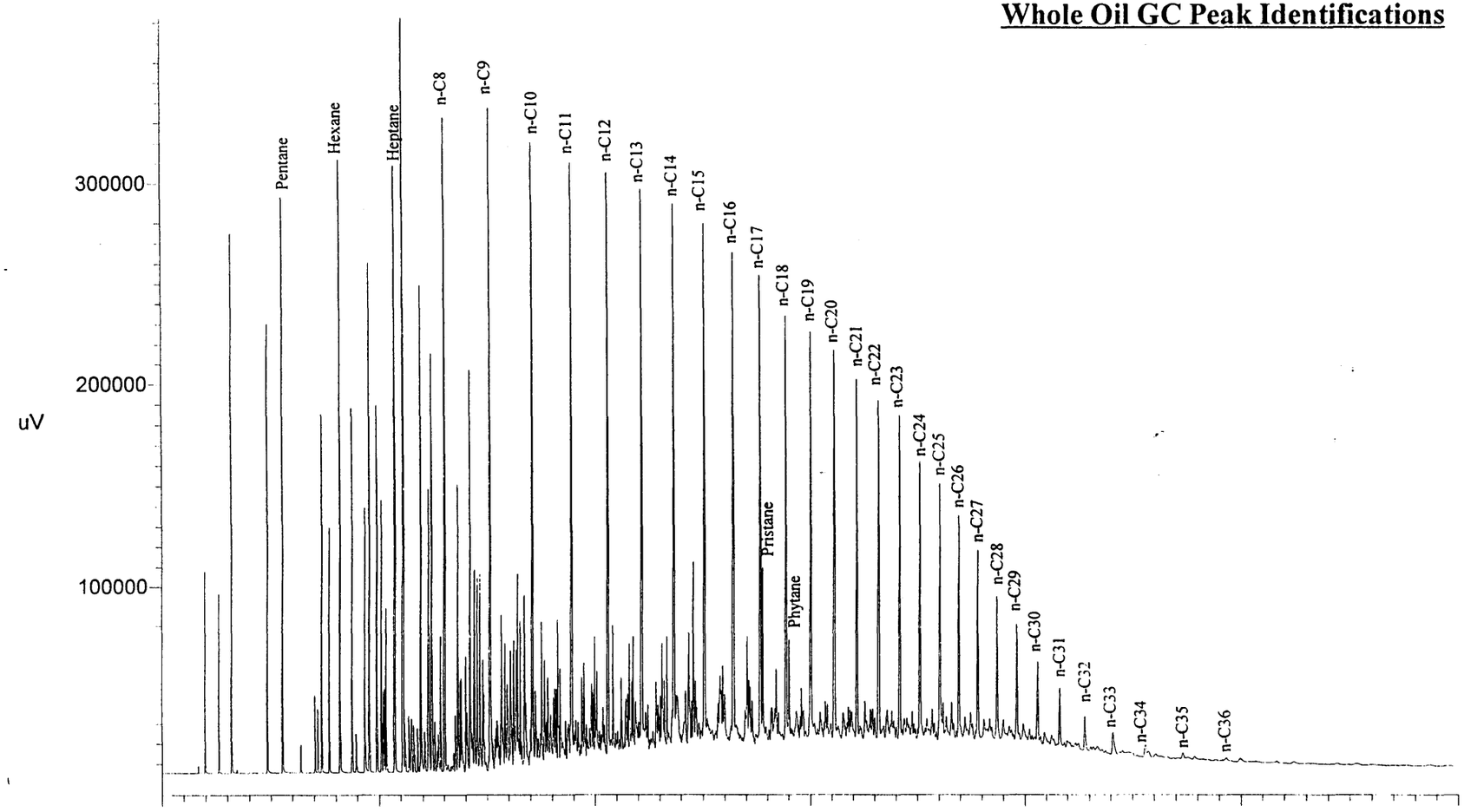
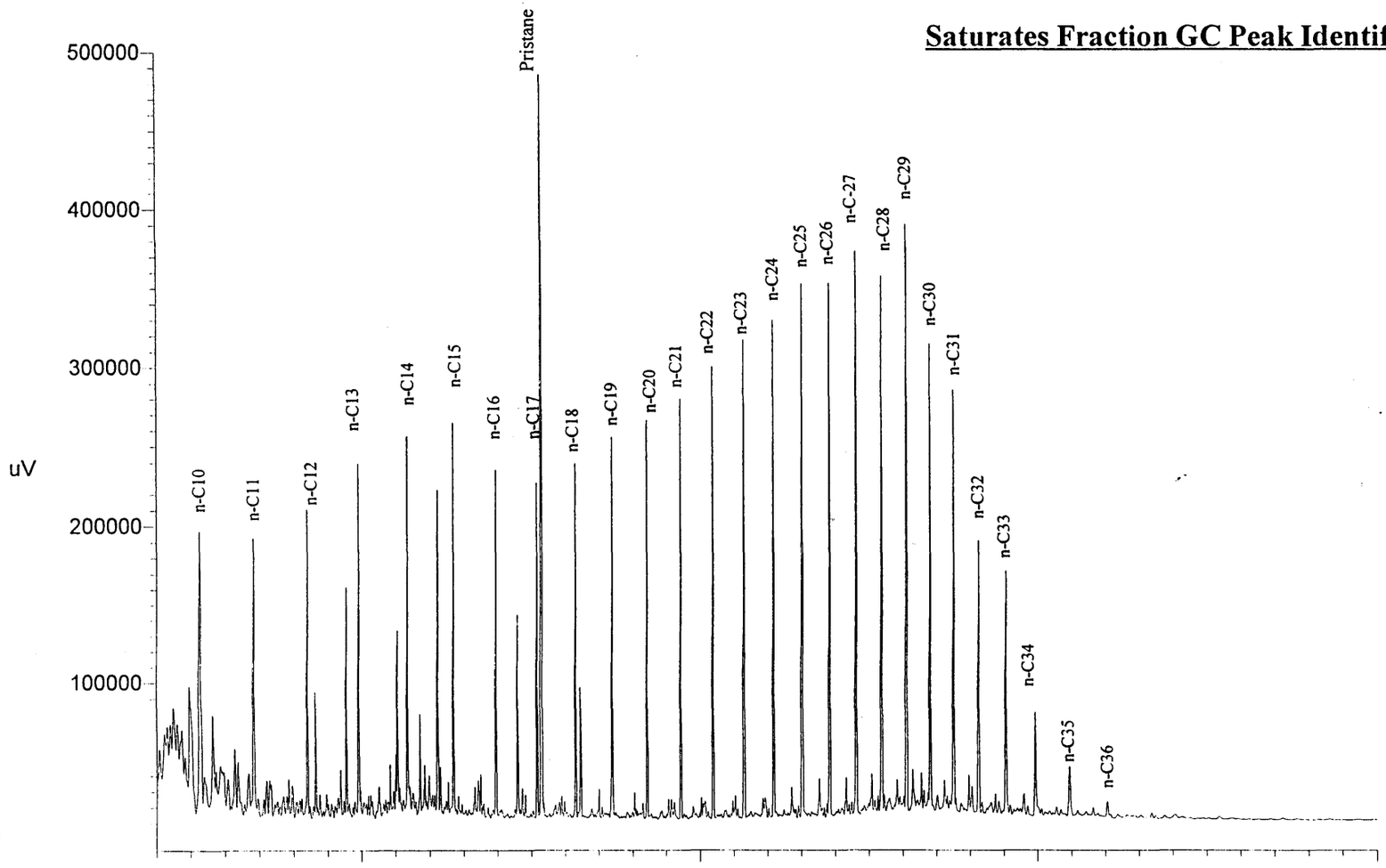
2-methylpropane
n-butane
2-methylbutane
n-pentane
2,2-dimethylbutane
cyclopentane
2,3-dimethylbutane
2-methylpentane
3-methylpentane
n-hexane
methylcyclopentane
2,4-dimethylpentane
benzene
cyclohexane
2-methylhexane + 1,2 DMP
3-methylhexane
1,2-trans-dimethylcyclopentane
n-heptane
methylcyclohexane
ethylcyclopentane
toluene

Whole Oil GC Peak Identifications



Saturates Fraction GC Peak Identifications



Appendix C - Molecular Parameter List

APPENDIX

MOLECULAR PARAMETER LIST

CODE	PARAMETER	USE
H1	C32 HOPANE 22S/(22S+22R)	M
H2	C31 HOPANE 22S/(22S+22R)	M
H3	C30 HOPANE/(C30 HOPANE+C30 MORETANE)	MS
H4	ββ HOPANES PRESENT/ABSENT	M
H5	C30:C31:C32:C33:C34:C35 HOPANE DISTRIBUTION	S
H6	C27 HOPANES Ts/(Ts+Tm)	MS
H7	C33 HOPANE 22S/(22S+22R)	M
H8	C34 HOPANE 22S/(22S+22R)	M
H9	C35 HOPANE 22S/(22S+22R)	M
S1	C29 ααα STERANES 20S/(20S+20R)	M
S2	C29 STERANES αββ/(αββ+ααα)	M
S3	STERANES ααα C27:C28:C29	S
S4	STERANES αββ C27:C28:C29	S
S5	βα DIASTERANES/(SAME + ααα+αββ STERANES) %	SM
A1	C28 20R TRIAROM. STERANE/(SAME+C29 20R MONOAROM. STERANE)	M
A2	SUM TRIAROM. STERANES/(SAME+SUM MONOAROM. STERANES)	M
A3	C20 TRIAROM. STERANE/(SAME+C28 20R TRIAROM. STERANE)	M
A4	C20+C21 TRIAROM. STERANE/(SAME+SUM C26-C28 TRIAROM. STERANES)	M
A5	C26 20S TRIAROM. STERANE/C28 20S TRIAROM. STERANE	S
A6	C27 20R TRIAROM. STERANE/C28 20R TRIAROM. STERANE	S
M2	PHENANTHRENES (3ME+2ME)/(9ME+1ME)	M
M3	MPI [(3ME+2ME)/(PHENANTHRENE+9ME+1ME)] * 1.5	M
M4	SUM C27-C35 HOPANES/(SAME+ SUM C27-C29 STERANES) %	S
ALKIND		ALKANE
INDEX	n-C17/(n-C17+n-C27) %	S
R22	R22 INDEX (2 X n-C22)/(n-C21+n-C23)	SM
MCH	Methylcyclohexane/Sum C7 non aromatics %	
HER	n-Heptane/(same+methylcyclohexane)	
HXR	n-Hexane/(same+cyclohexane)	

Notes:

1) FOR A FULL DISCUSSION OF THE USE OF THESE PARAMETERS CONSULT GCB/173/86 in summary S=source parameter ,M=maturity parameter
2) Aromatic Steranes ,TRIAROM. STERANE refers to monomethyl triaromatic steranes and MONOAROM. STERANE refers to dimethyl monoaromatic steranes.

MOLECULAR PARAMETER LIST

LGC CODE	PARAMETER	USE
H1	C32 HOPANE 22S/(22S+22R)	M
H2	C31 HOPANE 22S/(22S+22R)	M
H3	C30 HOPANE/(C30 HOPANE+C30 MORETANE)	MS
H4	bb HOPANES PRESENT/ABSENT	M
H5	C30:C31:C32:C33:C34:C35 HOPANE DISTRIBUTION	S
H6	C27 HOPANES Ts/(Ts+Tm)	MS
H7	C33 HOPANE 22S/(22S+22R)	M
H8	C34 HOPANE 22S/(22S+22R)	M
H9	C35 HOPANE 22S/(22S+22R)	M
H10	RESIN DITERPANES % RELATIVE TO C30 HOPANE (PEAK G)	S
H11	C23 EXT TRICYCLIC TERPANE % RELATIVE TO C30 HOPANE (PEAK G)	S
H12	C24 TETRACYCLIC TERPANE % RELATIVE TO C30 HOPANE (PEAK G)	S
H13	28,30 BISNORHOPANE (PEAK X) % RELATIVE TO C30 HOPANE (PEAK G)	S
H14	PENTACYCLANE P % RELATIVE TO C30 HOPANE (PEAK G)	S
H15	OLEANANE % RELATIVE TO C30 HOPANE (PEAK G)	S
H16	GAMMACERANE % RELATIVE TO (PEAK G)	S
H17	HOPANES C35/(C34+C35) %	S
H18	25-NORHOPANE/C30 HOPANE %	S
S1	C29 aaa STERANES 20S/(20S+20R)	M
S2	C29 STERANES abb/(abb+aaa)	M
S3	STERANES aaa C27:C28:C29	S
S4	STERANES abb C27:C28:C29	S
S5	ba DIASTERANES/(SAME+aaa+abb STERANES) %	SM
S6	LOW MOLECULAR WEIGHT STERANES RELATIVE TO C29 STERANES	S
S7	STERANE INDEX C27/(C27+C29) % (FROM S3)	S
S8	4-ME C30 STERANE % RELATIVE TO C29 20R aaa STERANE (PEAK 42)	S
S9	4-ME STERANES INDEX C28/(C28+C30) %	S
S10	BICADINANES PRESENT/ABSENT	S
A1	C28 20R TRIAROM. STERANE/(SAME+C29 20R MONOAROM. STERANE)	M
A2	SUM TRIAROM. STERANES/(SAME+SUM MONOAROM. STERANES)	M
A3	C20 TRIAROM. STERANE/(SAME+C28 20R TRIAROM. STERANE)	M
A4	C20+C21 TRIAROM. STERANE/(SAME+SUM C26-C28 TRIAROM. STERANES)	M
A5	C26 20S TRIAROM. STERANE/C28 20S TRIAROM. STERANE	S
A6	C27 20R TRIAROM. STERANE/C28 20R TRIAROM. STERANE	S
M2	PHENANTHRENES (3ME+2ME)/(9ME+1ME)	M
M3	MPI [(3ME+2ME)/(PHENANTHRENE+9ME+1ME)] * 1.5	M
MBP	3-METHYL BIPHENYL/2-METHYL BIPHENYL	M
MDR	4-METHYLDIBENZOTHIOPHENE/1-METHYLDIBENZOTHIOPHENE	M
M4	SUM C27-C35 HOPANES/(SAME+ SUM C27-C29 STERANES) %	S
ALKIND	ALKANE INDEX n-C17/(n-C17+n-C27) %	S
R22	R22 INDEX (2 * n-C22)/(n-C21+n-C23)	SM
MCH	METHYLCYCLOHEXANE/SUM C7 NON AROMATICS %	
HER	N-HEPTANE/(SAME+METHYLCYCLOHEXANE)	
HXR	N-HEXANE/(SAME+CYCLOHEXANE)	

NOTES:

1. S=SOURCE PARAMETER, M=MATURITY PARAMETER.
2. TRIAROM. STERANE=MONOMETHYL TRIAROMATIC STERANES
   MONOAROM. STERANE=DIMETHYL MONOAROMATIC STERANES. (13/11/92)

Appendix D - Biomarker Identifications

BIOMARKER IDENTIFICATION - PENTACYCLIC HYDROCARBONS

LGC CODE	ASSIGNMENT BASED ON MASS SPECTROMETRY (m/e 191)
I	9-DODECYLPERHYDROANTHRACENE [INTERNAL STANDARD]
Ts	18α(H)-22,29,30-TRISNORNEOHOPANE
Tm	17α(H)-22,29,30-TRISNORHOPANE
Q	17β(H)-22,29,30-TRISNORHOPANE
W	17α(H)-25,30-BISNORHOPANE
X	17α(H),18α(H),21β(H)-28,30-BISNORHOPANE
Y	17α(H)-25-NORHOPANE
D	17α(H),21β(H)-30-NORHOPANE
D2	18α(H)-30-NORNEOHOPANE
π	17α(H),15α(Me)-27-NORHOPANE ("DIAHOPANE")
A	17β(H),21α(H)-30-NORMORETANE
B	18α(H)-OLEANANE
G	17α(H),21β(H)-HOPANE
H	17β(H),21β(H)-30-NORHOPANE
K	17β(H),21α(H)-MORETANE
N	(22S)-17α(H),21β(H)-30-METHYLHOPANE
O	(22R)-17α(H),21β(H)-30-METHYLHOPANE
S	GAMMACERANE
P	17β(H),21β(H)-HOPANE
R	17β(H),21α(H)-30-METHYLMORETANE
U	(22S)-17α(H),21β(H)-30-ETHYLHOPANE
V	(22R)-17α(H),21β(H)-30-ETHYLHOPANE
J	17β(H),21β(H)-METHYLHOPANE
α	(22S)-17α(H),21β(H)-30-n-PROPYLHOPANE
β	(22R)-17α(H),21β(H)-30-n-PROPYLHOPANE
L	17β(H),21β(H)-ETHYLHOPANE
γ	(22S)-17α(H),21β(H)-30-n-BUTYLHOPANE
δ	(22R)-17α(H),21β(H)-30-n-BUTYLHOPANE
ε	(22S)-17α(H),21β(H)-30-n-PENTYLHOPANE
ζ	(22R)-17α(H),21β(H)-30-n-PENTYLHOPANE

BIOMARKER IDENTIFICATION - STERANES

LGC CODE	ASSIGNMENT BASED ON MASS SPECTROMETRY (m/e 217)
10	(20S)-13β(H),17α(H)-DIACHOLESTANE
11	(20R)-13β(H),17α(H)-DIACHOLESTANE
13	(20S)-13α(H),17β(H)-DIACHOLESTANE
14	(20R)-13α(H),17β(H)-DIACHOLESTANE
15	(24S/R)-(20S)-13β(H),17α(H)-24-METHYLDIACHOLESTANE
16	(24S/R)-(20S)-13β(H),17α(H)-24-METHYLDIACHOLESTANE
18	(24S/R)-(20R)-13β(H),17α(H)-24-METHYLDIACHOLESTANE
19	(24R/S)-(20R)-13β(H),17α(H)-24-METHYLDIACHOLESTANE
20A	(24S/R)-(20S)-13α(H),17β(H)-24-METHYLDIACHOLESTANE
20B	(20S)-5α(H),14α(H),17α(H)-CHOLESTANE
21A	(24R+S)-(20S)-13β(H),17α(H)-24-ETHYLDIACHOLESTANE
21B	(20R)-5α(H),14β(H),17β(H)-ISOCHOLESTANE
22	(20S)-5α(H),14β(H),17β(H)-ISOCHOLESTANE
25	(20R)-5α(H),14α(H),17α(H)-CHOLESTANE
27	(24S+R)-(20R)-13β(H),17α(H)-24-ETHYLDIACHOLESTANE
29	(24S+R)-(20S)-13α(H),17β(H)-24-ETHYLDIACHOLESTANE
33A	(24S+R)-(20R)-5α(H),14β(H)17β(H)-24-METHYLISOCHOLESTANE
33B	(24S+R)-(20R)-13α(H),17β(H)-24-ETHYLDIACHOLESTANE
34	(24S+R)-(20S)-5α(H),14β(H),17β(H)-24-METHYLISOCHOLESTANE
36	(24S+R)-(20R)-5α(H),14α(H),17α(H)-24-METHYLCHOLESTANE
39	(24S+R)-(20S)-5α(H),14α(H),17α(H)-24-ETHYLCHOLESTANE
40	(24S+R)-(20R)-5α(H),14β(H),17β(H)-24-ETHYLISOCHOLESTANE
41	(24S+R)-(20S)-5α(H),14β(H),17β(H)-24-ETHYLISOCHOLESTANE
42	(24S+R)-(20R)-5α(H),14α(H),17α(H)-24-ETHYLCHOLESTANE
46	(24S+R)-(20R)C_{30} STERANE

BIOMARKER IDENTIFICATION - AROMATIC STEROIDAL HYDROCARBONS
(AROMATIC STERANES)

LGC CODE	TENTATIVE ASSIGNMENT BASED ON MASS SPECTROMETRY (m/e 253 mass fragmentogram)
F22	C_{21} DIMETHYL MONOAROMATIC STEROID
F23	C_{22} DIMETHYL MONOAROMATIC STEROID
F2	C_{27}(20S)5β(H)DIMETHYL MONOAROMATIC STEROID
F3	C_{27}(20R)5β(H)DIMETHYL MONOAROMATIC STEROID
F4	C_{27}(20S)5α(H)DIMETHYL MONOAROMATIC STEROID
F5	C_{28}(20S)5β(H)DIMETHYL MONOAROMATIC STEROID
F6	C_{27}(20R)5α(H)DIMETHYL MONOAROMATIC STEROID
F7	C_{28}(20S)5α(H)DIMETHYL MONOAROMATIC STEROID
F8	C_{28}(20R)5β(H)DIMETHYL MONOAROMATIC STEROID
F9	C_{29}(20S)5β(H)DIMETHYL MONOAROMATIC STEROID
F10	C_{29}(20S)5α(H)DIMETHYL MONOAROMATIC STEROID
F11	C_{28}(20R)5α(H)DIMETHYL MONOAROMATIC STEROID
F12	C_{29}(20R)5β(H)DIMETHYL MONOAROMATIC STEROID
F13	C_{29}(20R)5α(H)DIMETHYL MONOAROMATIC STEROID
	(m/e 231 mass fragmentogram)
F14	C_{20}METHYL TRIAROMATIC STEROID
F15	C_{21}METHYL TRIAROMATIC STEROID
F16	C_{26}(20S)METHYL TRIAROMATIC STEROID
F17	C_{26}(20R)METHYL TRIAROMATIC STEROID
F18	C_{27}(20S)METHYL TRIAROMATIC STEROID
F19	C_{28}(20S)METHYL TRIAROMATIC STEROID
F20	C_{27}(20R)METHYL TRIAROMATIC STEROID
F21	C_{28}(20R)METHYL TRIAROMATIC STEROID

BIOMARKER IDENTIFICATION - NORHOPANES

LCG CODE	TENTATIVE ASSIGNMENT BASED ON MASS SPECTROMETRY (m/e 177)
W	17α(H)-25,30-BISNORHOPANE
Y	17α(H)-25-NORHOPANE
D	17α(H),21β(H)-30-NORHOPANE
C1	(22S)-17α(H)-25-NOR-30-METHYLHOPANE
G	17α(H),21β(H)HOPANE
C2	(22R)-17α(H)-25-NOR-30-METHYLHOPANE
C3	(22S)-17α(H)-25-NOR-30-ETHYLHOPANE
C4	(22R)-17α(H)-25-NOR-30-ETHYLHOPANE
C5	(22S)-17α(H)-25-NOR-30-n-PROPYLHOPANE
C6	(22R)-17α(H)-25-NOR-30-n-PROPYLHOPANE
C7	(22S)-17α(H)-25-NOR-30-n-BUTYLHOPANE
C8	(22R)-17α(H)-25-NOR-30-n-BUTYLHOPANE
C9	(22S)-17α(H)-25-NOR-30-n-PENTYLHOPANE
C10	(22R)-17α(H)-25-NOR-30-n-PENTYLHOPANE

BIOMARKER IDENTIFICATION - STERANES

CODE	ASSIGNMENT BASED ON MASS SPECTROMETRY (m/e 217)
10	(20S)-13β(H),17α(H)-DIACHOLESTANE
11	(20R)-13β(H),17α(H)-DIACHOLESTANE
13	(20S)-13α(H),17β(H)-DIACHOLESTANE
14	(20R)-13α(H),17β(H)-DIACHOLESTANE
15	(24S/R)-(20S)-13β(H),17α(H)-24-METHYLDIACHOLESTANE
16	(24S/R)-(20S)-13β(H),17α(H)-24-METHYLDIACHOLESTANE
18	(24S/R)-(20R)-13β(H),17α(H)-24-METHYLDIACHOLESTANE
19	(24R/S)-(20R)-13β(H),17α(H)-24-METHYLDIACHOLESTANE
20A	(24S/R)-(20S)-13α(H),17β(H)-24-METHYLDIACHOLESTANE
20B	(20S)-5α(H),14α(H),17α(H)-CHOLESTANE
21A	(24R+S)-(20S)-13β(H),17α(H)-24-ETHYLDIACHOLESTANE
21B	(20R)-5α(H),14β(H),17β(H)-ISOCHOLESTANE
22	(20S)-5α(H),14β(H),17β(H)-ISOCHOLESTANE
25	(20R)-5α(H),14α(H),17α(H)-CHOLESTANE
7	(24S+R)-(20R)-13β(H),17α(H)-24-ETHYLDIACHOLESTANE
29	(24S+R)-(20S)-13α(H),17β(H)-24-ETHYLDIACHOLESTANE
33A	(24S+R)-(20R)-5α(H),14β(H)17β(H)-24-METHYLISOCHOLESTANE
33B	(24S+R)-(20R)-13α(H),17β(H)-24-ETHYLDIACHOLESTANE
34	(24S+R)-(20S)-5α(H),14β(H),17β(H)-24-METHYLISOCHOLESTANE
36	(24S+R)-(20R)-5α(H),14α(H),17α(H)-24-METHYLCHOLESTANE
39	(24S+R)-(20S)-5α(H),14α(H),17α(H)-24-ETHYLCHOLESTANE
40	(24S+R)-(20R)-5α(H),14β(H),17β(H)-24-ETHYLISOCHOLESTANE
41	(24S+R)-(20S)-5α(H),14β(H),17β(H)-24-ETHYLISOCHOLESTANE
42	(24S+R)-(20R)-5α(H),14α(H),17α(H)-24-ETHYLCHOLESTANE
43	(24S+R)-(20S)-5α(H),14α(H),17α(H)-24-PROPYLCHOLESTANE
44	(24S+R)-(20R)-5α(H),14β(H),17β(H)-24-PROPYLCHOLESTANE
45	(24S+R)-(20S)-5α(H),14β(H),17β(H)-24-PROPYLCHOLESTANE
46	(24S+R)-(20R)-5α(H),14α(H),17α(H)-24-PROPYLCHOLESTANE
47	C30 4α-ME-24-ETHYLCHOLESTANE
48	C30 4β-ME-24-ETHYLCHOLESTANE
49	C30 4α,23,24-TRIMETHYLCHOLESTANE