Company:	NORSKE CONOCO AS	Country:	NORWAY
Well Name:	6507/7-13	Geo Area:	NORTH OF HEIDRUN
Contractor:	MAERSK	Field:	PL095
Rig:	JUTLANDER	Region:	Norwegian Sea

Interval Material Consumption

Interval #01 36 in. Hole Section

Top of Interval 404 m
Bottom of Interval 468 m

Material	Unit size	Quantity	Total cost (Kr)
barite	1000 KG. TON	99.000	91,990.80
bentonite	1000 KG. TON	63.000	173,807.55
N-VIS HI	50 LB. BAG	2	5,842.00
soda ash	25 KG. BAG	101	9,872.75
Miscellaneous Items			
Barasil-S			14,081.25
Junior eng			39,650.00
Pot cl brine			5,233.07
Senior eng			45,500.00
Wyoming bent.			2,758.85

Interval mud cost	Kr	281,513.10
Interval miscellaneous cost	Kr	107,223.17
Total interval cost	Kr	388,736.27
Programmed mud cost	Kr	72,158.00
Variance	Kr	209,355.10

Company:	NORSKE CONOCO AS	Country:	NORWAY
Well Name:	6507/7-13	Geo Area:	NORTH OF HEIDRUN
Contractor:	MAERSK	Field:	PL095
Rig:	JUTLANDER	Region:	Norwegian Sea

Interval Material Consumption

Interval #02 17.5 in. Hole Section

Top of Interval 468 m
Bottom of Interval 1,070 m

Material	Unit size	Quantity	Total cost (Kr)
barite	1000 KG. TON	9.000	8,362.80
bentonite	1000 KG. TON	26.000	71,730.10
N-VIS HI	50 LB. BAG	7	20,447.00
soda ash	25 KG. BAG	25	2,443.75
Miscellaneous Items			
Junior eng			7,930.00
Senior eng			9,100.00

Interval mud cost	Kr 102,983.65
Interval miscellaneous cost	Kr 17,030.00
Total interval cost	Kr 120,013.65
Programmed mud cost	Kr 265,367.00
Variance	Kr -162,383.35

Company:	NORSKE CONOCO AS	Country:	NORWAY
Well Name:	6507/7-13	Geo Area:	NORTH OF HEIDRUN
Contractor:	MAERSK	Field:	PL095
Rig:	JUTLANDER	Region:	Norwegian Sea

Interval Material Consumption

Interval #03 12.25 in. Hole Section

Top of Interval 1,070 m
Bottom of Interval 2,128 m

Material	Unit size	Quantity	Total cost (Kr)
BARASIL-S	1000 L. IBC	81	456,232.50
BARAZAN D	25 KG. SACK	62	135,166.20
barite	1000 KG. TON	188.000	174,689.60
FILTER-CHEK	25 KG. BAG	320	161,459.20
kcl	1000 KG. BAG	13	23,740.60
PAC-L	25 KG. BAG	150	116,092.50
potassium chloride brine	1000 L.	309.000	170,212.65
Miscellaneous Items			
Junior eng			27,755.00
Senior eng			31,850.00

Interval mud cost	Kr 1,237,593.25
Interval miscellaneous cost	Kr 59,605.00
Total interval cost	Kr 1,297,198.25
Programmed mud cost	Kr 1,665,621.00
Variance	Kr -428,027.75

Company:	NORSKE CONOCO AS	Country:	NORWAY
Well Name:	6507/7-13	Geo Area:	NORTH OF HEIDRUN
Contractor:	MAERSK	Field:	PL095
Rig:	JUTLANDER	Region:	Norwegian Sea

Interval Material Consumption

Interval #04 8.5 in. Hole Section

Top of Interval 2,128 m
Bottom of Interval 2,623 m

Material	Unit size	Quantity	Total cost (Kr)
BARAZAN D	25 KG. SACK	21	45,782.10
barite	1000 KG. TON	52.000	48,318.40
FILTER-CHEK	25 KG. BAG	44	22,200.64
kcl	1000 KG. BAG	7	12,783.40
PAC-L	25 KG. BAG	28	21,670.60
potassium chloride brine	1000 L.	56.000	30,847.60
Miscellaneous Items			
Junior eng			15,860.00
Senior eng			18,200.00

Interval mud cost	Kr 181,602.74
Interval miscellaneous cost	Kr 34,060.00
Total interval cost	Kr 215,662.74
Programmed mud cost	Kr 248,757.00
Variance	Kr -67,154.26

Company:	NORSKE CONOCO AS	Country:	NORWAY
Well Name:	6507/7-13	Geo Area:	NORTH OF HEIDRUN
Contractor:	MAERSK	Field:	PL095
Rig:	JUTLANDER	Region:	Norwegian Sea

Interval Material Consumption

Interval #05 8.5 in. Hole Section

Top of Interval 2,623 m
Bottom of Interval 2,623 m

Material	Unit size	Quantity	Total cost (Kr)
BARAZAN D	25 KG. SACK	18	39,241.80
barite	1000 KG. TON	60.000	55,752.00
FILTER-CHEK	25 KG. BAG	49	24,723.44
PAC-L	25 KG. BAG	31	23,992.45
potassium chloride	25 KG. BAG	120	7,176.00
potassium chloride brine	1000 L.	105.000	57,839.25
Miscellaneous Items			
Junior eng			39,650.00
Senior eng			45,500.00

Interval mud cost Kr 208,724.94

Interval miscellaneous cost Kr 85,150.00

Total interval cost Kr 293,874.94

Company:	NORSKE CONOCO AS	Country:	NORWAY
Well Name:	6507/7-13	Geo Area:	NORTH OF HEIDRUN
Contractor:	MAERSK	Field:	PL095
Rig:	JUTLANDER	Region:	Norwegian Sea

Interval Chemical Concentrations

Interval #03 12.25 in. Hole Section

Top of Interval 1,070 m
Bottom of Interval 2,128 m

Material	Average	Minimum	Maximum
BARASIL-S	68.9	61.6	72.1
BARAZAN	0.8	0.5	1.0
barite	92.3	61.0	130.0
FILTER-CHEK	4.6	4.4	4.8
kcl	46.9	29.4	54.6
PAC-L	2.1	2.1	2.2

All Concentrations In: ppb

Company:	NORSKE CONOCO AS	Country:	NORWAY
Well Name:	6507/7-13	Geo Area:	NORTH OF HEIDRUN
Contractor:	MAERSK	Field:	PL095
Rig:	JUTLANDER	Region:	Norwegian Sea

Interval Chemical Concentrations

Interval #04 8.5 in. Hole Section

Top of Interval 2,128 m
Bottom of Interval 2,623 m

Material	Average	Minimum	Maximum
BARASIL-S	54.3	50.4	63.9
BARAZAN	1.1	0.9	1.2
barite	125.5	105.4	141.1
FILTER-CHEK	4.1	3.7	4.3
kcl	50.7	48.3	56.1
PAC-L	2.2	2.0	2.4

All Concentrations In: ppb

Company:	NORSKE CONOCO AS	Country:	NORWAY
Well Name:	6507/7-13	Geo Area:	NORTH OF HEIDRUN
Contractor:	MAERSK	Field:	PL095
Rig:	JUTLANDER	Region:	Norwegian Sea

Interval Chemical Concentrations

Interval #05 8.5 in. Hole Section

Top of Interval 2,623 m
Bottom of Interval 2,623 m

Material	Average	Minimum	Maximum
BARASIL-S	39.7	33.7	46.5
BARAZAN	1.1	1.1	1.1
barite	127.7	113.3	143.6
FILTER-CHEK	3.9	3.6	4.1
kcl	52.8	51.0	56.2
PAC-L	2.0	1.9	2.2

All Concentrations In: ppb

Company:	NORSKE CONOCO AS	**Country:**	NORWAY
Well Name:	6507/7-13	**Geo Area:**	NORTH OF HEIDRUN
Contractor:	MAERSK	**Field:**	PL095
Rig:	JUTLANDER	**Region:**	Norwegian Sea

Mud Property Recap:Water-Based Mud

DATE	DEPTH	F/L TEMP	DENSITY	FUN VIS	RHEOLOGY @ 120°F				pH	FILTRATION				FILTRATE ANALYSIS					SAND	RETORT ANALYSIS				MBT	RHEOMETER DIAL READINGS		
					PV	YP	GELS			API	HTHP	Cake	Temp	Pm	Pf	Mf	Cl	Total Hardness		Corr Solids	LGS	Oil	Water		600/300	200/100	6/3
	m	Deg C	SG	sec/qt	cP	lbs/100 ft2				ml/30 mi	ml/30 min	32nd in	Deg C	ml	ml	ml	mg/l	mg/l	% by vol	% by vol	% by vol	% by vol	% by vol	me/ml mud			
11-12-00			1.05	123	1.0		/		11.00			2/ 0													/	/	/
12-12-00	459		1.05	28	1.0		/		11.00			2/ 0													/	/	/
13-12-00	468		1.05	137	1.0		/					2/ 0													/	/	/
14-12-00	468		1.05	133	1.0		/		11.20																/	/	/
15-12-00	468		1.05	128	1.0		/		11.20			2/ 0													/	/	/
16-12-00	790		1.05	128	1.0		/		11.20			2/ 0													/	/	/
17-12-00	1070		1.20	114	1.0		/		11.20			2/ 0													/	/	/
18-12-00	1070		1.04	57	1.0		/					2/ 0													/	/	/
19-12-00	1070		1.34	73	21.0	11.0	3.0/	4.0	12.00	2.7		1/ 0		33.00	30.20	34.50	67,000		0	6.23	4.69		90.00		53 / 32	24 / 15	3 / 2
20-12-00	1200	16	1.34	60	19.0	14.0	2.0/	2.0	12.50	2.7		1/ 0		33.30	32.50	35.20	65,000		0.2	8.43	0.48		88.00		52 / 33	24 / 15	4 / 3
21-12-00	2013	17	1.34	65	23.0	25.0	4.0/	7.0	12.00	2.4		1/ 0		29.70	28.90	29.80	84,000		0.5	10.93	5.05		86.00	7.50	71 / 48	37 / 25	6 / 5
22-12-00	2128	29	1.46	70	24.0	28.0	6.0/	8.0	11.90	2.4		1/ 0		31.50	30.00	32.50	76,000		0.5	13.55	2.65		82.50	7.50	76 / 52	40 / 28	7 / 5
23-12-00	2128		1.48	86	23.0	24.0	5.0/	7.0	12.00	2.0		1/ 0		32.50	30.00	33.75	85,000		0.5	13.58	2.04		82.00	7.50	70 / 47	38 / 27	6 / 5
24-12-00	2128		1.49	83	25.0	30.0	6.0/	9.0	11.90	2.1		1/ 0		32.00	30.00	34.00	82,500		0.5	13.72	1.51		82.00	7.50	80 / 55	45 / 30	8 / 6
25-12-00	2131	18	1.45	79	24.0	25.0	5.0/	7.0	11.70	2.5		1/ 0		0.75	26.25	31.25	83,500		0.5	13.66	3.96		82.00	5.00	73 / 49	40 / 27	6 / 5
26-12-00	2524	22	1.44	69	22.0	27.0	6.0/	9.0	11.90	2.8		1/ 0		22.00	21.25	23.75	80,000		0.5	13.86	4.76		82.00	10.00	71 / 49	40 / 27	7 / 6
27-12-00	2564	15	1.44	73	23.0	27.0	6.0/	11.0	11.70	3.0		1/ 0		20.00	20.00	23.00	80,000		0.5	13.33	3.74		82.50	12.50	73 / 50	41 / 30	8 / 6
28-12-00	2623		1.45	69	21.0	29.0	5.0/	10.0	11.90	2.6		1/ 0		21.75	22.50	25.00	83,000		0.5	13.69	4.01		82.00	12.50	71 / 50	40 / 29	8 / 6
29-12-00	2623	11	1.45	70	21.0	23.0	5.0/	9.0	11.80	2.5		1/ 0	-18	13.10	21.20	25.00	86,000		0.5	13.53	3.87		82.00	13.00	65 / 44	35 / 25	7 / 5
30-12-00	2623	11	1.45	70	21.0	23.0	5.0/	9.0	11.80	2.5		1/ 0	-18	13.10	21.20	15.00	86,000		0.5	13.53	3.87		82.00	13.00	65 / 44	35 / 25	7 / 5
31-12-00	2623	9	1.45	74	21.0	25.0	5.0/	9.0	11.90	2.4		1/ 0	-18	10.90	17.50	22.50	80,000		0.5	13.86	4.16		82.00	13.00	67 / 46	37 / 26	6 / 4
01-01-01	2623	9	1.45	75	21.0	24.0	5.0/	9.0	11.90	2.6		1/ 0	-18	11.00	17.00	22.00	82,000		0.5	13.75	4.06		82.00	13.00	66 / 45	36 / 26	6 / 5
02-01-01	2623	11	1.40	72	20.0	24.0	6.0/	10.0	11.80	2.8		1/ 0	-18	9.30	15.00	16.25	89,000		0.5	12.30	4.77		83.00	9.00	64 / 44	36 / 24	5 / 4

Company:	NORSKE CONOCO AS	**Country:**	NORWAY
Well Name:	6507/7-13	**Geo Area:**	NORTH OF HEIDRUN
Contractor:	MAERSK	**Field:**	PL095
Rig:	JUTLANDER	**Region:**	Norwegian Sea

Mud Property Recap:Water-Based Mud

DATE	DEPTH	F/L TEMP	DENSITY	FUN VIS	RHEOLOGY @ 120°F				pH	FILTRATION				FILTRATE ANALYSIS					SAND	RETORT ANALYSIS				MBT	RHEOMETER DIAL READINGS		
					PV	YP	GELS			API	HTHP	Cake	Temp	Pm	Pf	Mf	Cl	Total Hardness		Corr Solids	LGS	Oil	Water				
	m	Deg C	SG	sec/qt	cP	lbs/100 ft2				ml/30 mi	ml/30 min	32nd in	Deg C	ml	ml	ml	mg/l	mg/l	% by vol	% by vol	% by vol	% by vol	% by vol	me/ml mud	600/300	200/100	6/3
03-01-01	2623	11	1.40	72	20.0	25.0	6.0/	4.0	11.80	2.6		1/ 0	-18	9.30	15.00	16.00	84,000		0.5	12.58	4.99		83.00	9.00	65 / 45	36 / 24	5 / 4
04-01-01	2623	12	1.40	70	20.0	20.0	4.0/	5.0	11.90	2.8		1/ 0	-18	9.30	15.00	16.25	84,000		0.5	12.58	4.99		83.00	9.00	60 / 40	33 / 22	5 / 3
05-01-01	2090	20	1.40	58	20.0	21.0	4.0/	10.0	12.00	2.8		1/ 0	-18	9.00	12.50	14.00	87,000		0.3	12.41	4.84		83.00	9.00	61 / 41	35 / 24	6 / 4
06-01-01	2090		1.41	61	18.0	22.0	4.0/	10.0	12.00	3.0		1/ 0	-18	15.00	12.00	13.00	87,000		0.4	12.41	4.25		83.00	8.00	58 / 40	30 / 21	6 / 4
07-01-01	2090		1.41	64	19.0	22.0	4.0/	10.0	12.00	2.9		1/ 0	-18	15.00	12.00	13.00	86,000		0.4	12.47	4.29		83.00	8.00	60 / 41	31 / 21	6 / 5
08-01-01	2090		0.00	28	1.0		/					2/ 0	-18												/	/	/

The pressures, with corresponding water and hydrocarbon gradients, are plotted in figure 2.

Table 11: MDT pressures (all pressures are taken in Åre Fm, using quartz gauges

No	Actual depth mMD	m TVD SS	Formation Pressure (bars)	Hydrostatic Pressure (bars)	MOB. MD/cp	Comments	Pore Pressureg/cc
1	2404.8	2381.8	254.26	342.00	194	excellent	1.08
2	2405.7	2382.7	254.35	342.00	44.2	excellent	1.08
3	2407.0	2384.0	254.50	342.20	206	excellent	1.08
4	2408.0	2385.0	254.70	342.40	9.5	good	1.08
5	2410.5	2387.5	254.62	342.77	696.2	excellent	1.08
6	2411.5	2388.5		342.90	0.1	tight	
7	2411.0	2388.0	254.69	342.85	3136.3	excellent	1.08
8	2413.5	2390.5		343.20	1.9	tight	
9	2413.0	2390.0		343.13	3.5	tight	
10	2414.8	2391.8	255.00	343.39	1294.8	excellent	1.08
11	2415.8	2392.8	255.08	343.50	3181.6	excellent	1.08
12	2420.0	2397.0	255.38	344.10	1763	excellent	1.08
13	2422.0	2399.0	255.54	344.38	5414.9	excellent	1.08
14	2423.0	2400.0	255.61	344.50	16525	excellent	1.08
15	2425.0	2402.0	255.77	344.70	8004	excellent	1.08
16	2427.0	2404.0	255.93	345.05	32930	excellent	1.08
17	2429.0	2406.0	256.09	345.40	3285	excellent	1.08
18	2431.0	2408.0	256.25	345.60	14826	excellent	1.08
19	2437.5	2414.5		346.54	0.9	tight	
20	2439.5	2416.5	256.97	346.80	416	excellent	1.07
21	2440.5	2417.5		346.94		no seal	
22	2441.5	2418.5		347.08		no seal	
23	2450.0	2427.0		348.30	13.8	lost seal	
24	2451.0	2428.0	257.87	348.41	382.4	excellent	1.07
25	2452.0	2429.0	257.90	348.54	189.7	excellent	1.07
26	2453.0	2430.0	258.03	348.90	138.6	excellent	1.07
27	2457.5	2434.5	258.40	349.30	104.06	excellent	1.07
28	2463.5	2440.5	258.94	350.18	1187.4	excellent	1.07
29	2465.5	2442.5	259.12	350.46	1028.9	excellent	1.07
30	2466.0	2443.0	259.14	350.50	413	excellent	1.07
31	2467.0	2444.0	259.22	350.66	6089	excellent	1.07
32	2474.0	2451.0		351.60		tight	
33	2477.0	2454.0	259.89	352.07	455.2	excellent	1.07
34	2479.0	2456.0	259.95	352.52	2849.7	excellent	1.07
35	2481.0	2458.0	260.09	352.61	894.1	excellent	1.07
36	2483.0	2460.0	260.25	352.87	1161	excellent	1.07
37	2491.0	2468.0	260.93	354.00	233.4	excellent	1.07
38	2492.5	2469.5		354.22		tight	
39	2494.5	2471.5		354.50		no seal	
40	2507.2	2484.2		356.30		tight	
41	2508.0	2485.0		356.41		tight	
42	2522.0	2499.0		358.40		tight	

43	2535.0	2512.0	265.09	360.20	1326.8	excellent	1.07
44	2538.0	2515.0	265.40	360.70	579.9	excellent	1.07
45	2540.0	2517.0	265.59	361.00	72617.5	excellent	1.07
46	2546.0	2523.0		361.80	0.7	tight	
47	2548.0	2525.0	266.40	362.15	4379.7	excellent	1.07
48	2566.0	2543.0	268.22	364.70	1189.9	excellent	1.07
49	2569.0	2546.0	268.51	365.20	5092.9	excellent	1.07
50	2571.0	2548.0	268.73	365.50	1337.6	excellent	1.07
51	2574.0	2551.0	269.02	365.93	46341.7	excellent	1.07

2.11.2. Formation Fluid Samples

Both conventional MDT chambers (1 gallon and 450 cc MPRS) and single-phase, pre-pressured chambers rented from Corpro (250 cc SPMC) were used for sampling. The samples chambers were sent to Corpro, Stavanger for opening and subsequent analysis (see report from Corpro for details). The oils from different depths show very good consistency.
The water sample was taken for analysis of formation barium-content.

Table 12: MDT Fluid Samples.

RUN	DATE	DEPTH M MD	SAMPLE	QUALITY
1B	29.12.2000	2527 m	2x450cc	Tool failure
1B	29.12.2000	2540 m	1 gal + 4xMPRS	Good water samples
1C	01.01.2001	2481 m	No sample	Tool failure
1D	04.01.2001	2425 m	1 gal, 4xSPMC 2 xMPRS	Good oil
1D	04.01.2001	2427.5 m	1xSPMC and 2-3/4 gal.	Good oil.

GEOLAB NOR

Geochemical Report on 6507/7-13

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Date 14/06/01

Chapter 1

INTRODUCTION

1.1 General Comments

One oil was analysed. The results of this were compared with the oil data on Heidrun oils in the Geolab Nor database which Conoco has bought.

1.2 Analytical Program

The analytical program involved the following:

Analysis type	*No. of samples*	*Fig.*	*Table*
API gravity	1	-	1
Whole oil gas chromatography	1	1a-b	2a-c
Topping	1	-	-
Asphaltene separation	1	-	3a-e
MPLC separation	1	-	3a-e
Carbon isotope analysis of C_{15}+	1	2	4a-b
GC-IRMS analysis of whole oil	1	3	5a-g
GC-MS	1	4a-e	6a-k

Abbreviations

List of abbreviations used for lithology description
(sorted alphabetically)

ang	= angular
bar	= Baryte (mud additive)
bit	= bituminous
bl	= blue/blueish
blk	= black
br	= brittle
brn	= brown/brownish
Ca	= Carbonate (limestone/chalk/dolomite/siderite)
calc	= calcareous
carb	= carbonaceous
cem	= cement used as additive (under "cont") or to describe cemented S/Sst
Chert	= Chert
chk	= Chalk/chalky
cly	= clayey/shaly
cngl	= conglomeratic
Coal	= Coal
Coal-ad	= Coal-like additive (*e.g.* chromlignosulfonate)
Congl	= Conglomerat
Cont	= Contamination(s)
crs	= coarse grained
dd	= dried drilling mud
dol	= Dolomite/dolomitic
drk	= dark (colour)
dsk	= dusk/dusky (colour)
evap	= Salt/Gypsum/Halite (natural "Other" or as additive "Cont")
f	= fine grained
fe	= ferruginous
fib	= fibres (mud additive/contamination)
fis	= fissile
fos	= fossiliferous
glauc	= glauconite/glauconitic
gn	= green/greenish
gy	= grey/greyish
hd	= hard
ign	= Igneous (material derived from igneous source)
Kaolin	= Kaolin(ite)
kln	= kaolinitic
l	= loose
lam	= laminated/laminae
lt	= light (colour)
m	= medium (colour or grain size)
Marl	= Marl (calcareous claystone/mudstone)
mic	= micaceous
Mica-ad	= Mica used as mud additive
mrl	= marly
No Mat.	= No material left over after washing
ns	= nutshells (mud additive)
ol	= olive
ool	= Oolite/oolitic
or	= orange
Other	= Other lithology/mineral, specified after this word
pi	= pink/pinkish
pl	= pale (colour)
prp	= paint/rust/plastic contaminations/additives

pu	=	purple
pyr	=	Pyrite/pyritic
red	=	red/reddish
rnd	=	round/rounded
s	=	sandy
sft	=	soft
S/Sst	=	Sand and/or sandstone
Sh/Clst	=	Shale and/or claystone
sid	=	Siderite/sideritic
sil	=	siliceous/cherty
slt	=	silty
Sltst	=	siltstone
st	=	stained (with natural oil or oil-like additive)
tar-ad	=	Tar-like additive (*e.g.* "Black Magic")
trbfgs	=	turbodrilled fragments
Tuff	=	Tuff
tuff	=	tuffaceous
v col	=	various colours
w	=	white
wx	=	waxy
y	=	yellow/yellowish

General

EOM	=	Extractable Organic Matter
GC-MS	=	Gas Chromatograph - Mass Spectrometer
HC	=	Hydrocarbons
MPLC	=	Medium Pressure Liquid Chromatograph
NSO	=	Nitrogen-, Sulphur- and Oxygen-compounds
TOC	=	Total Organic Carbon
VRe	=	Vitrinite Reflectance equivalent

In GAS CHROMATOGRAPHY

FID	=	Flame Ionisation Detector
FPD	=	Flame Photometric Detector
GC	=	Gas Chromatograph
CPI	=	Carbon Preference Index, $0.5 \times \frac{C25+C27+C29+C31+C33}{C24+C26+C28+C30+C32} + \frac{C25+C27+C29+C31+C33}{C26+C28+C30+C32+C34}$

Bph	=	Biphenyl
P	=	phenanthrene
MP	=	methyl phenanthrene
MDBT	=	methyl dibenzothiophene
DBT	=	dibenzothiophene
MNR	=	2/1 methylnaphthalenes
ENR	=	2/1 ethylnaphthalenes
DMNR	=	2,6+2,7/1,5 dimethyl naphthalenes
BphR	=	Biphenyl/1,6 dimethylnaphthalene
MPI 1	=	methyl phenanthrene index, 1.5x(3MP+2MP) / P+9MP+1MP
MPI 2	=	methyl phenanthrene index, 3x(2MP) / P+9MP+1MP
(3+2/1)MDBT	=	3+2/1 methyl dibenzothiophenes
(4/1)MDBT	=	4/1 methyl dibenzothiophenes
Rc	=	0,6 MPI 1 + 0.4 (where 2/1MP = <2.65)

In GC-MS

Triterpanes

30d/(30d+29βα)= C_{30} diahopane/C_{30} diahopane+C_{29} βα hopane

Ts/(Ts+Tm) or 27Ts/(27Ts+27Tm) = C_{27} 22,29,30 18α trisnorneohopane / (C_{27} 22,29,30 17α trisnorhopane + C_{27} 22,29,30 18α trisnorneohopane)

Steranes

29ααS/(29ααR+29ααS) = %C_{29} 20S - % 5α 14α 17α 20S/(20S+20R) ethylcholestanes

29ββ (S+R) / (29αα (S+R) +29ββ (S+R))

= C_{29} ββ / (αα + ββ) − 5α 14β 17β / (5α 14β 17β + 5α 14α 17α) (20S+20R) ethylcholestanes

Experimental Procedures

Headspace Gas Analysis

The analysis is performed using a Varian 3400 gas chromatograph with a 50 m Plot fused silica Al_2O_3/KCL column, loop injector and flame ionization detector.Helium is used as carrier gas and the column is run from 70°C to 200°C, at a rate of 12°C/min. Final hold time is 13 min. Two cm^3 of headspace gas are removed from each sample can for chromatographic analysis of the C_1 to C_7 range of hydrocarbons.

Total organic carbon (TOC) analysis

This analysis is performed using a LECO CS244 Carbon Analyser. Hand-picked lithologies from cuttings samples are crushed with a mortar and pestle and approximately 200 mg (50 mg for coals) are accurately weighed into LECO crucibles. The samples are then treated three times with 10% hydrochloric acid to remove oxidized (carbonate) carbon, and washed four times with distilled water. The samples are dried on a hotplate at 60-70°C before analysis of total organic carbon.

Solvent extraction of organic matter (EOM)

The samples are extracted using a Tecator Soxtec HT-System. Carefully weighed samples are taken in a pre-extracted thimble. Some activated copper is added to the extraction cup and dichloromethane/methanol (93:7) is used as an extraction solvent. The samples are boiled for 1 h and then rinsed for 2 h. If the samples contain more than 10% TOC, the whole procedure is repeated once. The resulting solution is transferred to a flask and the solvent removed by rotary evaporation (200 mbar, 30°C). The amount of EOM is gravimetrically established.

Removal of asphaltenes

The EOM is dissolved in pentane in a flask to precipitate the asphaltenes by ultrasonic bath for 3 min. The solution is then stored in the dark and at ambient temperature for at least 8 h. The solution is then filtered (Baker 10-spe system) and the precipitated asphaltenes returned to the original flask by dissolution in dichloromethane. The solvent is removed by rotary evaporation at 200 mbar and 30°C.

Chromatographic separation of deasphaltened EOM

Chromatographic separation is performed using an MPLC system developed by the company. The EOM (minus asphaltenes) is injected into the MPLC and separated using hexane as an eluent. The saturated and aromatic hydrocarbon fractions are collected and the solvent removed using a rotary evaporator at 30°C. The fractions are then transferred to small pre-weighed vials and evaporated to dryness overnight. The vials are re-weighed to obtain the weights of both the saturated and the aromatic fractions. The weight of the NSO fraction which is retained on the column, is obtained by weight difference.

Gas chromatographic analyses

EOM.

The instrument used for this analysis is a DANI 8510 Gas Chromatograph equipped with an FID detector and an OV1 (25m) column. The carrier gas is helium and the temperature program run from 80°C to 300°C at a rate of 4°C/min.. Final hold time is 20 mins.. The EOM is diluted by 1:30 and a 1 microlitre aliquot of this is injected into the instrument.

Saturated hydrocarbon fractions. The instrument used for this analysis is a DANI 8510 Gas Chromatograph equipped with an FID detector and an OV1 (25 m) column. The carrier gas is helium and the temperature program runs from 80°C to 300°C at a rate of 4°C/min. Final hold time is 20 min. The saturated hydrocarbon fraction is diluted by 1:30 and a 1 µl aliquot of this is injected into the instrument.

Aromatic hydrocarbon fractions. The instrument used is a Varian 3400 Gas Chromatograph with a 40 m SE 54 capillary column, split injector and a column splitter leading to FID and FPD detectors, which allows simultaneous analysis of co-eluting hydrocarbons and sulphur compounds. The carrier gas is helium and the temperature program runs from 40°C to 290°C at a rate of 4°C/min. Final hold time is 10 min. The aromatic

hydrocarbon fraction is diluted by 1:30 and a 1 µl aliquot of this is injected into the instrument.

Combined gas chromatography-mass spectrometry (GC-MS)

The GC-MS analyses are performed on a Autospec Ultima system interfaced to a Hewlett Packard 5890 gas chromatograph. The GC is fitted with a fused silica SE54 capillary column (40 m x 0.22 mm i.d.) directly into the ion source. Helium (12 psi) is used as carrier gas and the injections are performed in splitless mode. The GC oven is programmed from 45°C to 150°C at 35°C/min, at which point the programme rate is 2°C/min up to 310°C where the column is held isothermally for 15 min. For the aromatic hydrocarbons, the GC oven is programmed from 50°C to 310°C at 5°C/min and held isothermally at 310°C for 15 min. The mass spectrometer is operated in electron impact (EI) mode at 70 eV electron energy, a trap current of 500 µA and a source temperature of 220°C. The instrument resolution used is 1500 (10 % value).

The data system used is a VG OPUS system. The samples are analysed in multiple ion detection mode (MID) at a scan cycle time of approximately 1.1 sec. Calculation of peak ratios is performed from peak heights in the appropriate Fragmentograms.

Saturated Fractions

Terpanes. The most commonly used fragment ions for detection of terpanes are m/z 177 for detection of demethylated hopanes or moretanes, m/z 191 for detection of tricyclic, tetracyclic- and pentacyclic terpanes and m/z 205 for methylated hopanes or moretanes.

Steranes. The most commonly used fragment ions for detection of steranes are m/z 259 for detection of rearranged steranes, m/z 217 for detection of rearranged and normal steranes and m/z 218 for detection of 14β,17β(H) steranes.

The m/z 231 fragment ion is used to detect possible aromatic contamination of the saturated fraction. It is also used for detection of methyl steranes.

Aromatic Fractions

Naphthalenes. Methylnaphthalenes are normally detected by the m/z 142 fragment ion, while C_2-naphthalenes are detected by m/z 156 and C_3-naphthalenes by m/z 170.

Dibenzothiophenes. The m/z 184 fragment ion is used to detect dibenzothiophene. The m/z 198 and 212 fragment ions are used for methyl-substituted dibenzothiophenes and dimethyl-substituted dibenzothiophenes, respectively.

Phenanthrenes. Phenanthrene is detected using the m/z 178 fragment ion. Anthracene will, if present, also give a signal in the m/z 178 fragment ion. Methyl-substituted phenanthrenes give signals in the m/z 192 fragment ion.

Aromatic steranes. Monoaromatic steranes are detected using the m/z 253 fragment ion, while the triaromatic steranes are detected using the m/z 231 fragment ion.

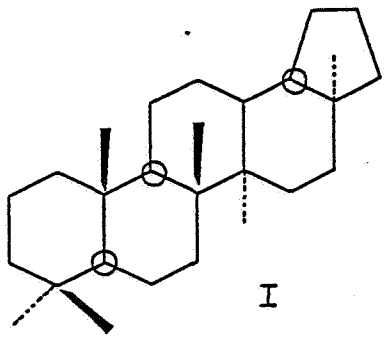
Mass chromatotograms representing terpanes (m/z 177, 191, 205)

Peak identification: α and β refer to hydrogen atoms at C-17 and C-21 respectively unless indicated otherwise.

27Ts	18α trisnorneohopane (Ts)	$C_{27}H_{46}$	(I)
27Tm	17α trisnorhopane (Tm)	$C_{27}H_{46}$	(II, R=H)
28αβ	bisnorhopane	$C_{28}H_{48}$	(IV)
25nor30αβ*	25-norhopane	$C_{29}H_{50}$	
29αβ	αβ norhopane	$C_{29}H_{50}$	(II, R=C_2H_5)
29Ts	norneohopane	$C_{29}H_{50}$	
29βα	βα norhopane	$C_{29}H_{50}$	(III, R=C_2H_5)
30αβ	αβ hopane	$C_{30}H_{52}$	(II, R=i-C_3H_7)
30O	oleanane	$C_{30}H_{52}$	
30βα	βα hopane	$C_{30}H_{52}$	(III, R=i-C_3H_7)
31αβS	(22S)αβ homohopane	$C_{31}H_{54}$	(II, R=i-C_4H_9)
31αβR	(22R)αβ homohopane	$C_{31}H_{54}$	(II, R=i-C_4H_9)
30G	gammacerane	$C_{30}H_{52}$	
31βα	βα homohopane	$C_{31}H_{54}$	(III, R=i-C_4H_9)
32αβS	(22S)αβ bishomohopane	$C_{32}H_{56}$	(II, R=i-C_5H_{11})
32αβR	(22R)αβ bishomohopane	$C_{32}H_{56}$	(II, R=i-C_5H_{11})
33αβS	(22S)αβ trishomohopane	$C_{33}H_{58}$	(II, R=i-C_6H_{13})
33αβR	(22R)αβ trishomohopane	$C_{33}H_{58}$	(II, R=i-C_6H_{13})
34αβS	(22S)αβ tetrakishomohopane	$C_{34}H_{60}$	(II, R=i-C_7H_{15})
34αβR	(22R)αβ tetrakishomohopane	$C_{34}H_{60}$	(II, R=i-C_7H_{15})
35αβS	(22S)αβ pentakishomohopane	$C_{35}H_{62}$	(II, R=i-C_8H_{17})
35αβR	(22R)αβ pentakishomohopane	$C_{35}H_{62}$	(II, R=i-C_8H_{17})
23/3	tricyclic terpane	$C_{23}H_{42}$	(V, R=C_4H_9)
24/3	tricyclic terpane	$C_{24}H_{44}$	(V, R=i-C_5H_{11})
25/3	tricyclic terpane (22R, 22S)	$C_{25}H_{46}$	(V, R=i-C_6H_{13})
24/4	tetracyclic terpane	$C_{24}H_{42}$	(VI)
26/3	tricyclic terpane (22R, 22S)	$C_{26}H_{48}$	(V, R=i-C_7H_{15})
21/3	tricyclic terpane	$C_{21}H_{38}$	(V, R=C_2H_5)
22/3	tricyclic terpane	$C_{22}H_{40}$	(V, R=C_3H_7)
25nor28*	25,28,30-trisnorhopane/moretane	$C_{27}H_{46}$	(VII)
30d	diahopane	$C_{30}H_{52}$	(VIII)

* Also identified and quantified in m/z 177 chromatograms

STRUCTURES REPRESENTING TERPANES



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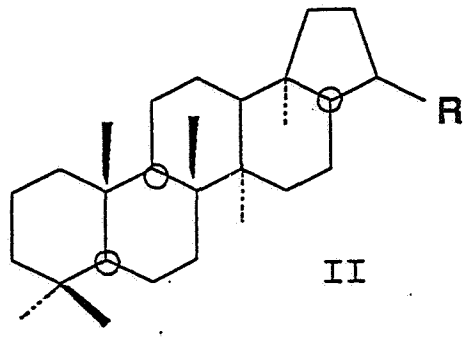

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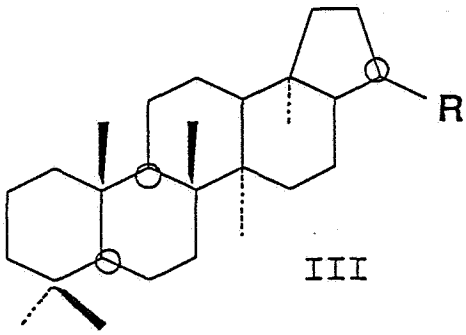

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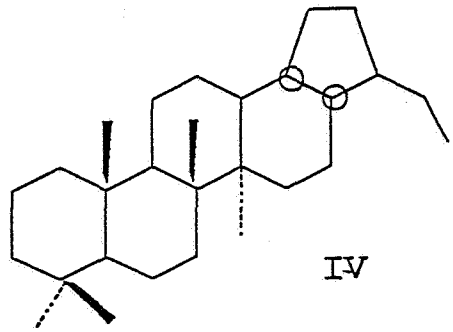

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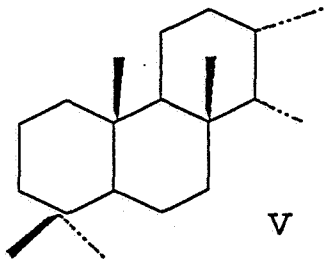

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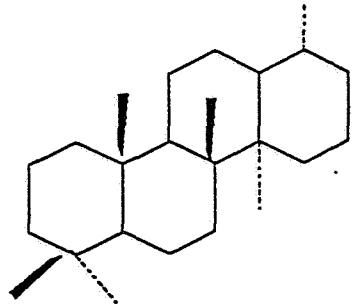

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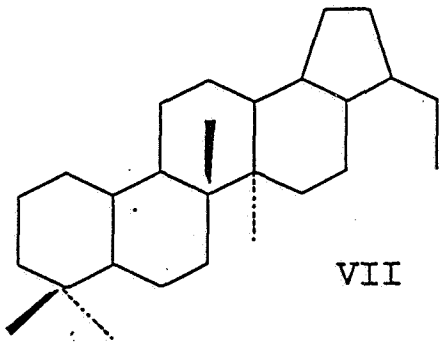


VII

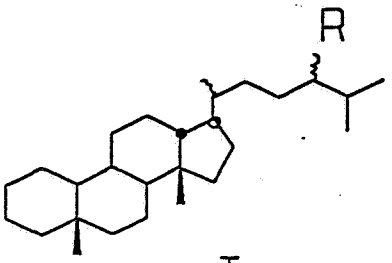
Fragmentograms representing steranes (m/z 217, 218, 259)

Peak identifications: α and β refer to hydrogen atoms at C-14 and C-17 in regular steranes and at C-13 and C-17 in diasteranes, unless indicated otherwise.

21α	5α sterane	$C_{21}H_{36}$	(V, R=C_2H_5)
22α	5α sterane	$C_{22}H_{38}$	(V, R=C_3H_7)
27dβS	(20S) βα diacholestane	$C_{27}H_{48}$	(I, R=H)
27dβR	(20R) βα diacholestane	$C_{27}H_{48}$	(I, R=H)
27dαS	(20S) αβ diacholestane	$C_{27}H_{48}$	(II, R=H)
27dαR	(20R) αβ diacholestane	$C_{27}H_{48}$	(II, R=H)
28dβS	(20S) βα 24-methyldiacholestane	$C_{28}H_{50}$	(I, R=CH_3)
28dβR	(20R) βα 24-methyldiacholestane	$C_{28}H_{50}$	(I, R=CH_3)
28dαR	(20R) αβ 24-methyldiacholestane	$C_{28}H_{50}$	(II, R=CH_3)
27ααS	+ (20S) αα cholestane	$C_{27}H_{48}$	(III, R=H)
29dβS	(20S) βα 24-ethyldiacholestane	$C_{29}H_{52}$	(II, R=C_2H_5)
27ββR*	+ (20R) ββ cholestane	$C_{27}H_{48}$	(IV, R=H)
27ββS*	(20S) ββ cholestane	$C_{27}H_{48}$	(IV, R=H)
28dαS	+ (20S) αβ 24-methyldiacholestane	$C_{28}H_{50}$	(II, R=CH_3)
27ααR	(20R) αα cholestane	$C_{27}H_{48}$	(III, R=H)
29dβR	(20R) βα 24-ethyldiacholestane	$C_{29}H_{52}$	(I, R=C_2H_5)
29dαR	(20R) αβ 24-ethyldiacholestane	$C_{29}H_{52}$	(II, R=C_2H_5)
28ααS	(20S) αα 24-methylcholestane	$C_{28}H_{50}$	(III, R=CH_3)
28ββR*	(20R) ββ 24-methylcholestane	$C_{28}H_{50}$	(IV, R=CH_3)
29dαS	+ (20S) αβ 24-ethyldiacholestane	$C_{29}H_{52}$	(II, R=C_2H_5)
28ββS*	(20S) ββ 24-methylcholestane	$C_{28}H_{50}$	(IV, R=CH_3)
28ααR	(20R) αα 24-methylcholestane	$C_{28}H_{50}$	(III, R=CH_3)
29ααS	(20S) αα 24-ethylcholestane	$C_{29}H_{52}$	(III, R=C_2H_5)
29ββR*	(20R) ββ 24-ethylcholestane	$C_{29}H_{52}$	(IV, R=C_2H_5)
29ββS*	(20S) ββ 24-ethylcholestane	$C_{29}H_{52}$	(IV, R=C_2H_5)
29ααR	(20R) αα 24-ethylcholestane	$C_{29}H_{52}$	(III, R=C_2H_5)
M30αα	αα 4-methyl-24-ethylcholestane	$C_{30}H_{54}$	
M30D	αα 4,23,24-trimethylcholestane	$C_{30}H_{54}$	
30ααS	(20S) αα 24-propylcholestane	$C_{30}H_{54}$	(III, R=C_3H_7)
30ββR*	(20R) ββ 24-propylcholestane	$C_{30}H_{54}$	(IV, R=C_3H_7)
30ββS*	(20S) ββ 24-propylcholestane	$C_{30}H_{54}$	(IV, R=C_3H_7)
30ααR	(20R) αα 24-propylcholestane	$C_{30}H_{54}$	(III, R=C_3H_7)

* Compounds identified and quantified in m/z 218 chromatograms

STRUCTURES REPRESENTING STERANES



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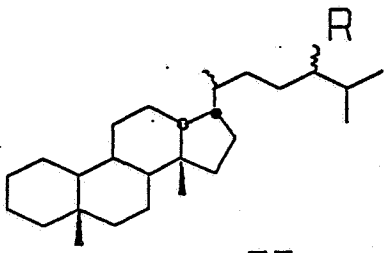

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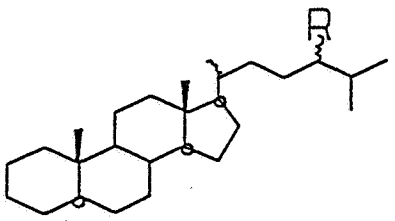

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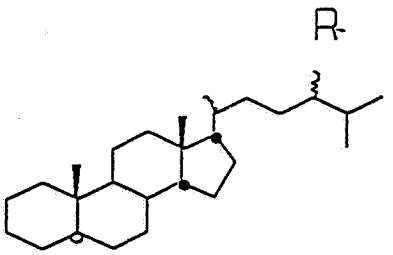

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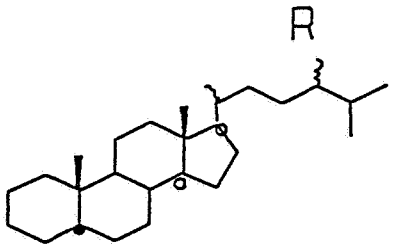

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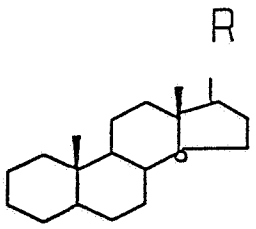


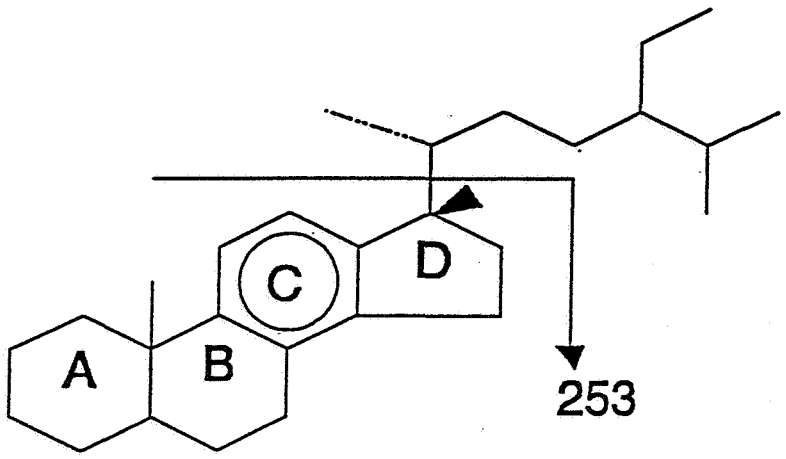
VI

Fragmentograms representing monoaromatic steranes
(m/z 253)

Description of C-ring monoaromatic steroid hydrocarbons

Peak	Substituents R1	R2	R3	R4	Abbreviation of compound
A1					C_{21}MA
B1					C_{22}MA
C1	β(H)	CH_3	S(CH_3)	H	βSC_{27}MA
	β(H)	CH_3	R(CH_3)	H	βRC_{27}MA
D1	CH_3	H	R(CH_3)	H	RC_{27}DMA
	α(H)	CH_3	S(CH_3)	H	αSC_{27}MA
E1	β(H)	CH_3	S(CH_3)	CH_3	βSC_{28}MA
	CH_3	H	S(CH_3)	CH_3	SC_{28}DMA
F1	α(H)	CH_3	R(CH_3)	H	αRC_{27}MA
	α(H)	CH_3	S(CH_3)	CH_3	αSC_{28}MA
G1	β(H)	CH_3	R(CH_3)	CH_3	βRC_{28}MA
	CH_3	H	R(CH_3)	CH_3	RC_{28}DMA
	β(H)	CH_3	S(CH_3)	C_2H_5	βSC_{29}MA
	CH_3	H	S(CH_3)	C_2H_5	SC_{29}DMA
H1	α(H)	CH_3	R(CH_3)	CH_3	αRC_{28}MA
	β(H)	CH_3	R(CH_3)	C_2H_5	βRC_{29}MA
	CH_3	H	R(CH_3)	C_2H_5	RC_{29}DMA
I1	α(H)	CH_3	R(CH_3)	C_2H_5	αRC_{29}MA

STRUCTURES REPRESENTING MONOAROMATIC STERANES



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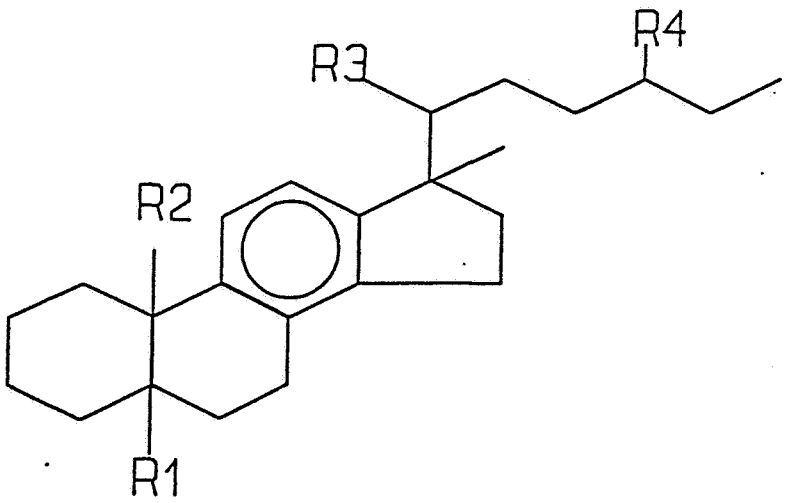
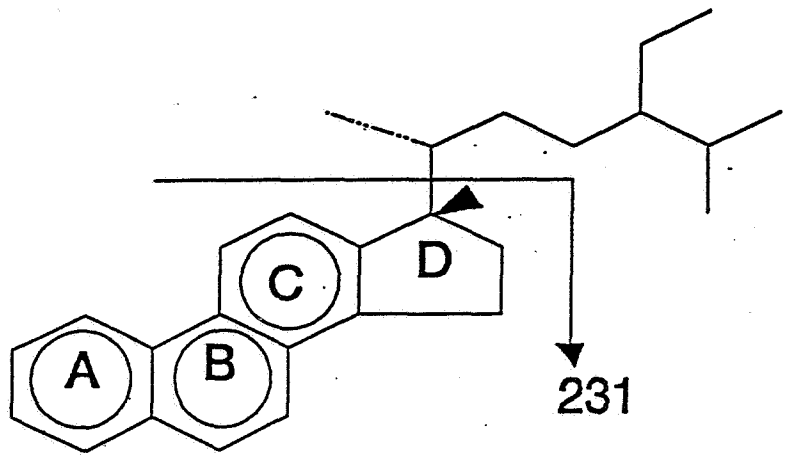


Fragmentograms representing triaromatic steranes
(m/z 231)

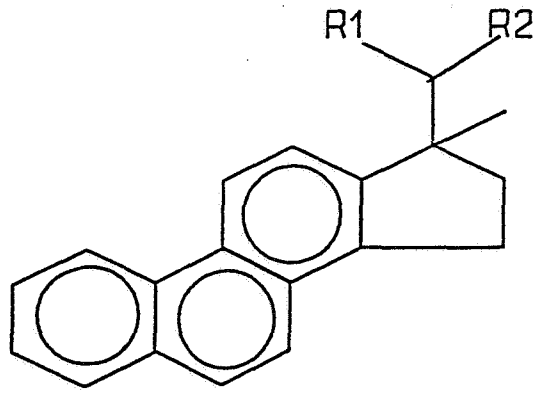
Description of ABC-ring triaromatic steroid hydrocarbons

Peak	Substituents R1	R2	Abbreviation of compound
a1	CH_3	H	$C_{20}TA$
b1	CH_3	CH_3	$C_{21}TA$
c1	$S(CH_3)$	C_6H_{13}	$SC_{26}TA$
d1	$R(CH_3)$ $S(CH_3)$	C_6H_{13} C_7H_{15}	$RC_{26}TA$ $SC_{27}TA$
e1	$S(CH_3)$	C_8H_{17}	$SC_{28}TA$
f1	$S(CH_3)$	C_7H_{15}	$RC_{27}TA$
g1	$R(CH_3)$	C_8H_{17}	$RC_{28}TA$

STRUCTURES REPRESENTING TRIAROMATIC STERANES



II



APPENDIX 1 :

Table 1: Physical parameters for NOCS 6507/7-13 oil

Well	Descript.	Sulphur (wt %)	Ni (ppm)	V (ppm)	°API	Sample
6507/7-13	MDT1B				28.3	U37/0001

n.e. = Insufficient material for analysis
n.d. = Not detected
n.a. = Not analyzed due to high water content

Table 2A: Light Hydrocarbons from Whole Oil GC for NOCS 6507/7-13 oil

Well	Description	2,2DMC4	2,3DMC4	nC6	MCyC5	Benz	Sample
6507/7-13	MDT1B	0.08	0.51	5.09	2.79	0.29	U37/0001

Table 2B: Light Hydrocarbons from Whole Oil GC for NOCS 6507/7-13 oil

Well	Description	CyC6	2MC6	3MC6	1,3ci-DMCyC5	1,3tr-DMCyC5	1,2tr-DMCyC5	nC7	MCyC6	Tol	nC8	p/m-Xylene	Sample
6507/7-13	MDT1B	2.84	2.57	2.06	0.66	0.61	1.52	5.16	4.97	0.94	5.10	0.81	U37/0001

Table 2c: Thompson's indices for NOCS 6507/7-13 oil

Well	Description	A	B	X	W	C	I	F	H	U	R	S	Sample
6507/7-13	MDT1B	0.06	0.18	0.16	1.02	1.31	1.66	1.04	24.69	1.02	2.01	63.63	U37/0001

THOMPSON'S INDICES

$$A = \frac{\text{Benzene}}{\text{nC6}} \qquad B = \frac{\text{Toluene}}{\text{nC7}} \qquad X = \frac{\text{p/m-xylene}}{\text{nC8}} \qquad W = \frac{\text{Benzene} * 10}{\text{CyC6}}$$

$$C = \frac{\text{nC6} + \text{nC7}}{\text{CyC6} + \text{MCyC6}} \qquad I = \frac{\text{2MC6} + \text{3MC6}}{\text{1,3ciDMCyC5} + \text{1,3trDMCyC5} + \text{1,2trDMCyC5}} \qquad F = \frac{\text{nC7}}{\text{MCyC6}}$$

$$H = \frac{\text{nC7} * 100}{\text{CyC6} + \text{2MC6} + \text{2,3DMC4} + \text{3MC6} + \text{1,3ciDMCyC5} + \text{1,3trDMCyC5} + \text{1,2trDMCyC5} + \text{nC7} + \text{MCyC6}}$$

$$U = \frac{\text{CyC6}}{\text{MCyC5}} \qquad R = \frac{\text{nC7}}{\text{2MC6}} \qquad S = \frac{\text{nC6}}{\text{2,2DMC4}}$$

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Table 3a: MPLC Bulk Composition: Weight of Oil and Fraction for NOCS 6507/7-13 oil

Well	Description	Whole oil (mg)	Light (mg)	Topped (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (mg)	Sample
6507/7-13	MDT1B	71.7	5.1	66.6	35.8	23.5	0.3	7.0	59.3	7.3	U37/0001

Table 3b: MPLC Bulk Composition: Comparison of topped oil (%) for NOCS 6507/7-13 oil

Well	Description	Sat	Aro	Asph	NSO	Total	HC	Non-HC	Recov. MPLC	Recov. Asph	Sample
6507/7-13	MDT1B	53.73	35.27	0.45	10.55	100.00	89.00	11.00	-	0.00	U37/0001

Table 3c: MPLC Bulk Composition: Ratios in topped oil for NOCS 6507/7-13 oil

Well	Description	Sat / Aro	HC / Non-HC	Asp / NSO	Sample
6507/7-13	MDT1B	1.52	8.09	0.04	U37/0001

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Table 4a: Tabulation of carbon isotope data on oils for NOCS 6507/7-13 oil

Well	Descript.	Whole oil	Topped oil	Saturated	Aromatic	NSO	Asphaltenes	Sample
6507/7-13	MDT1B	-	-29.10	-29.30	-28.64	-28.86	-28.31	U37/0001

Table 4b: Tabulation of cv values from carbon isotope data for NOCS 6507/7-13 oil

Well	Descript.	Saturated	Aromatic	cv value	Sample
6507/7-13	MDT1B	-29.30	-28.64	-1.10	U37/0001

Table 5A : Isotope GC of Whole Oil for NOCS 6507/7-13 oil

Well	Description	iC4	nC4	iC5	nC5	2,3DMC4	CyC5	2,3DMC4 +CyC5	2MC5	3MC5	nC6	Sample
6507/7-13	MDT1B	-	-31.72	-28.76	-30.28	-	-	-	-29.22	-27.78	-30.91	U37/0001

Table 5B : Isotope GC of Whole Oil for NOCS 6507/7-13 oil

Well	Description	MCyC5	Benz	CyC6	2MC6	3MC6	1,3ciDMCyC5	1,3trDMCyC5	1,2trDMCyC5	Sample
6507/7-13	MDT1B	-27.04	-	-26.33	-27.63	-29.46	-	-26.38	-	U37/0001

Table 5C : Isotope GC of Whole Oil for NOCS 6507/7-13 oil

Well	Description	nC7	MCyC6	Tol	2MC7	3MC7+1,2 3MCyC5	nC8	n-PrCyC5	1-cis-2 DMCyC6	1,1,3 TMCyC6	EtBenz	Sample
6507/7-13	MDT1B	-29.16	-25.69	-	-29.00	-26.44	-28.70	-28.21	-28.72	-	-	U37/0001

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Table 5D : Isotope GC of Whole Oil for NOCS 6507/7-13 oil

Well	Description	p/m-Xyl	2+4MC8	3MC8	o-Xyl	nC9	TeBuCyC5	SeBUCyC5	n-PrCyC6	2MC9	Sample
6507/7-13	MDT1B	-	-	-	-	-28.60	-28.06	-26.00	-	-	U37/0001

Table 5E : Isotope GC of Whole Oil for NOCS 6507/7-13 oil

Well	Description	o-EtTol	3,6DMC8	iC10	nC10	4MC10	iC11	nC11	4MC11	iC12	Sample
6507/7-13	MDT1B	-	-	-26.14	-27.86	-27.43	-	-27.97	-	-	U37/0001

Table 5F : Isotope GC of Whole Oil for NOCS 6507/7-13 oil

Well	Description	nC12	iC13	iC14	nC13	iC15	nC14	iC16	nC15	nC16	iC18	Sample
6507/7-13	MDT1B	-27.49	-27.12	-	-27.36	-27.81	-27.16	-26.49	-26.95	-26.68	-27.30	U37/0001

Table 5G : Isotope GC of Whole Oil for NOCS 6507/7-13 oil

Well	Description	nC17	Pristane	nC18	Phytane	nC19	nC20	nC21	nC22	nC23	nC24	Sample
6507/7-13	MDT1B	-27.32	-	-	-	-27.98	-	-	-	-	-	U37/0001

Table 6a: Variation in Triterpane Distribution (peak height) SIR for NOCS 6507/7-13 oil

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Rat.10	Rat.11	Rat.12	Rat.13	Rat.14	Sample
6507/7-13	MDT1B	0.94	0.48	0.17	0.53	0.35	0.09	0.23	0.44	0.19	0.15	0.92	0.36	0.11	60.16	U37/0001

List of Triterpane Distribution Ratios

Ratio 1: 27Tm / 27Ts

Ratio 2: 27Tm / 27Tm+27Ts

Ratio 3: 27Tm / 27Tm+30aß+30ßa

Ratio 4: 29aß / 30aß

Ratio 5: 29aß / 29aß+30aß

Ratio 6: 30d / 30aß

Ratio 7: 28aß / 30aß

Ratio 8: 28aß / 29aß

Ratio 9: 28aß / 28aß+30aß

Ratio 10: 24/3 / 30aß

Ratio 11: 30aß / 30aß+30ßa

Ratio 12: 29aß+29ßa / 29aß+29ßa+30aß+30ßa

Ratio 13: 29ßa+30ßa / 29aß+30aß

Ratio 14: 32aßS / 32aßS+32aßR (%)

Table 6b: Variation in Sterane Distribution (peak height) SIR for NOCS 6507/7-13 oil

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Ratio10	Sample
6507/7-13	MDT1B	0.74	46.31	76.39	1.17	0.78	0.43	0.31	0.62	0.86	3.01	U37/0001

List of Sterane Distribution Ratios

Ratio 1: 27dßS / 27dßS+27aaR

Ratio 2: 29aaS / 29aaS+29aaR (%)

Ratio 3: 2*(29ßßR+29ßßS) / (29aaS+29aaR + 2*(29ßßR+29ßßS)) (%)

Ratio 4: 27dßS+27dßR+27daR+27daS / 29dßS+29dßR+29daR+29daS

Ratio 5: 29ßßR+29ßßS / 29ßßR+29ßßS+29aaS

Ratio 6: 21a+22a / 21a+22a+29aaS+29ßßR+29ßßS+29aaR

Ratio 7: 21a+22a / 21a+22a+28daS+28aaS+29daR+29aaS+29ßßR+29ßßS+29aaR

Ratio 8: 29ßßR+29ßßS / 29aaS+29ßßR+29ßßS+29aaR

Ratio 9: 29aaS / 29aaR

Ratio 10: 29ßßR+29ßßS / 29aaR

Table 6c: Variation in Triaromatic Sterane Distribution (peak height) for NOCS 6507/7-13 oil

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Sample
6507/7-13	MDT1B	0.60	0.57	0.32	0.31	0.42	U37/0001

Ratio1: a1 / a1 + g1
Ratio2: b1 / b1 + g1
Ratio3: a1 + b1 / a1 + b1 + c1 + d1 + e1 + f1 + g1
Ratio4: a1 / a1 + e1 + f1 + g1
Ratio5: a1 / a1 + d1

Table 6d: Variation in Monoaromatic Sterane Distribution (peak height) for NOCS 6507/7-13 oil

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Sample
6507/7-13	MDT1B	0.49	0.29	0.36	0.28	U37/0001

Ratio1: A1 / A1 + E1
Ratio2: B1 / B1 + E1
Ratio3: A1 / A1 + E1 + G1
Ratio4: A1+B1 / A1+B1+C1+D1+E1+F1+G1+H1+I1

Table 6e: Aromatisation of Steranes (peak height) for NOCS 6507/7-13 oil

Well	Descript.	Ratio1	Ratio2	Sample
6507/7-13	MDT1B	0.57	0.85	U37/0001

$$\text{Ratio1:} \quad \frac{C1+D1+E1+F1+G1+H1+I1}{C1+D1+E1+F1+G1+H1+I1 + c1+d1+e1+f1+g1}$$

Ratio2: g1 / g1 + I1

Table 6f: Raw triterpane data (peak height) m/z 191 SIR for NOCS 6507/7-13 oil

Well	Descript.	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29ßa	30O	30aß	30ßa	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
6507/7-13	MDT1B	60629.1	52711.7	22244.2	45441.9	13914.5	84547.4	79539.8	82189.0	69559.0	U37/0001
		188536.0	76654.8	32130.2	31038.7	0.0	355454.8	30394.8	0.0	149971.2	
		96942.4	106585.6	70584.5	79532.0	49069.7	50565.4	31361.1	46225.7	29763.9	

Table 6g: Raw sterane data (peak height) m/z 217 SIR for NOCS 6507/7-13 oil

Well	Descript.	21a	22a	27dßS	27dßR	27daR	27daS	28dßS	28dßR	28daR*	Sample
		29dßS*	28daS*	27aaR	29dßR	29daR	28aaS	29daS*	28ßßS		
		28aaR	29aaS	29ßßR	29ßßS	29aaR					
6507/7-13	MDT1B	89545.1	42192.7	122326.6	76146.8	29595.6	28271.8	57343.6	33329.9	37062.4	U37/0001
		96015.0	60821.9	43191.4	59458.3	22649.2	22687.5	40406.9	47929.8		
		18915.3	31071.1	59927.4	48635.5	36023.6					

* 28daR coel with 27aaS, 29dßS coel with 27ßßR, 28daS coel with 27ßßS, 29daS coel with 28ßßR

Table 6h: Raw sterane data (peak height) m/z 218 SIR for NOCS 6507/7-13 oil

Well	Descript.	27ßßR	27ßßS	28ßßR	28ßßS	29ßßR	29ßßS	30ßßR	30ßßS	Sample
6507/7-13	MDT1B	96740.2	78481.0	65114.8	71994.2	90772.9	82888.5	25881.8	24111.0	U37/0001

Table 6i: Raw triterpane data (peak height) m/z 177 SIR for NOCS 6507/7-13 oil

Well	Descript.	25nor28aß	25nor30aß	Sample
6507/7-13	MDT1B	63423.5	43329.3	U37/0001

Table 6j: Raw triaromatic sterane data (peak height) m/z 231 for NOCS 6507/7-13 oil

Well	Descript.	a1	b1	c1	d1	e1	f1	g1	Sample
6507/7-13	MDT1B	5546.1	4918.3	1900.6	7753.0	4312.0	4165.6	3685.8	U37/0001

Table 6k: Raw monoaromatic sterane data (peak height) m/z 253 for NOCS 6507/7-13 oil

Well	Descript.	A1	B1	C1	D1	E1	F1	G1	H1	I1	Sample
6507/7-13	MDT1B	7911.3	3422.5	5412.4	3968.8	8241.0	1482.3	6103.2	3262.7	638.1	U37/0001