Classification: Internal Status: Draft

7125/4-1

Geochemical Data Report

StatoilHydro

Analytical procedures

Canned cuttings samples were sent onshore for Delta 13C isotope analysis in headspace gas and eventually analysed by APT, Kjeller, Norway. Also, such samples were analysed for vitrinite reflectance by the same contractor.

All other macrogeochemical analysis, including the GC and GCMS measurements on oils and sediments, were carried out at the Norsk Hydro Research Centre in Bergen. The GC and GCMS analysis were based on quantitative measurement techniques. The analytical methods are in accordance with the guidelines in the Norwegian Industry Guide to Organic Geochemical Analyses (NIGOGA 2000, edition 4.0). There are some deviation from this guide, however:

- Extract and asphaltene workup by centrifugation
- Internal standard compound mixture added for quality control and quantitative measurements
- GC analysis of aromatic fractions by 5% phenyl methyl- silicone stationary phase
- GC- MSD detection of the aromatic hydrocarbons (not by FID)
- Some limitations on the reporting of compounds relative to the NIGOGA guide due to known co-elutions or disputable compound identities

The data quality control is according to laboratory procedures and NIGOGA, available on request. Samples annotated "NSO1" represent the North Sea reference oil and reflect the analytical repeatability.

The data generated on the basis of the 7125/4-1 well material in this report has according to standard procedures on NOCS been reported digitally to Petrobank.

SOURCE ROCKS

In Table 3-1 are shown the Rock Eval pyrolysis data.

Depth (m MD)	Sample type	TOC (%)	S1 (kg/t)	S2 (kg/t)	S3 (kg/t)	Tmax (°C)	PI (mg/g TOC)	HI (mg/g TOC)
810- 820	DCW	0.95	0.44	0.52	1.24	402	0.46	55
830- 840	DCW	4.08	0.13	9.89	1.82	423	0.01	242
847- 850	DCW	2.95	0.23	5.41	6.21	428	0.04	183
856- 859	DCW	3.50	0.19	7.54	4.35	422	0.02	215
866.5	SWC	15.27	1.70	31.49	2.18	405	0.05	206

Table 3-1: Rock Eval pyrolysis data

Depth (m MD)	Sample type	EOM		Asph of EOM (%)	EOM Group Type %				EOM Group Type % (renorm)				
		%	ppm		SAT	ARO	NSO	Sum	SAT	ARO	NSO	ASPH	Sum
810- 820	DCW	0.21	2133	4.2	57.4	21.5	21.2	100.0	55.0	20.6	20.3	4.2	100.0
830- 840	DCW	0.20	2047	59.8	17.6	33.7	48.5	100.0	7.2	13.5	19.5	59.8	100.0
847- 850	DCW	0.12	1196	36.7	29.1	27.8	43.0	100.0	18.4	17.6	27.2	36.7	100.0
856- 859	DCW	0.33	3333	21.3	21.9	22.7	55.4	100.0	17.2	17.9	43.6	21.3	100.0
866.5	SWC	1.25	12547	59.2	18.3	33.0	50.7	100.0	6.8	13.5	20.7	59.2	100.0

Table 3-2: C15+ chemical extraction data

Depth (m RKB)	Sample type	29aaR,S (%29S)	Ts:Tm (%27Ts)	Ro(Ts) Vitr. Eq.(%)	MPI-1
810- 820	DCW	46	36	0.53	0.56
830- 840	DCW	16	11	0.29	0.43
847- 850	DCW	16	20	0.37	0.37
856- 859	DCW	12	16	0.34	0.39
866.5	SWC	11	2	0.22	0.42
NSO1	REF OIL	57	50	0.64	0.64

Table 3-3: Biomarker maturity ratios

4 THERMAL MATURITY

4.1 Vitrinite reflectance

Vitrinite reflectance of 38 samples (31 DC and 7 COCH) throughout the well profile was determined (APT, 2007). The resulting average reflectance values versus depth are shown in **Table 4-1** and **Figure 4-1**.

Sample number	Depth (m)	Vitrinite reflectance	Stdev	Count	Quality of data	Vitrinite reflectance	Stdev	Count	Quality of data
	2nd analyses					1st analyses			
40480	560	0.27	0.01	2	f	Recycled Population			
40481	580	0.20	0.04	3	f	Recycled Population			
40482	600	0.27	0.01	2	f	Recycled Population			
40483	620	0.22	0.05	3	f	Recycled Population			
40484	650	0.27	0.01	2	f	Recycled Population			
40485	680	0.23	0.01	2	f	Recycled Population			
40486	710	0.19	0.00	1	f	Recycled Population			
40487	730	Recycled Population				Recycled Population			
40488	750	Recycled Population				Recycled Population			
40489	770	Recycled Population				Recycled Population			
40490	790	0.39	0.03	5	f	Recycled Population			
40491	800	0.35	0.02	2	f	Recycled Population			
40492	830	0.30	0.03	8	f	0.37	0.04	7	f
40493	850	0.33	0.00	2	f	Recycled Population			
40327	887.8	Recycled Population				Recycled Population			
40328	888.5	Recycled Population				Recycled Population			
40329	891.5	Recycled Population				Recycled Population			
40330	893.8	0.25	0.00	2	f	0.45	0.01	3	f
40331	896.15	Recycled Population				Recycled Population			
40332	906.8	Recycled Population				Recycled Population			
40333	908.4	0.33	0.02	3	f	Recycled Population			
40494	931	0.52	0.02	2	p	Recycled Population			
40495	976	Recycled Population				Recycled Population			
40496	1030	NDP				0.42	0	1	p
40497	1084	Recycled Population				Recycled Population			
40498	1129	0.30	0.01	2	f	Recycled Population			
40499	1174	0.26	0.00	1	f	Recycled Population			
40500	1228	0.31	0.00	1	f	Recycled Population			
40501	1282	0.29	0.05	5	f	Recycled Population			
40502	1345	0.37	0.03	7	g	Recycled Population			
40503	1390	0.29	0.05	12	g	Recycled Population			
40504	1417	0.29	0.02	3	f	0.39	0.05	3	f
40505	1452	0.29	0.02	3	f	0.37	0.07	18	g
40506	1534	0.37	0.03	3	f	0.33	0.01	2	f
40507	1561	0.46	0.02	3	f	0.52	0.03	5	f
40508	1579	0.47	0.00	1	f	0.49	0.03	4	f
40509	1597	0.37	0.07	3	f	Recycled Population			
40510	1615	0.39	0.00	1	f	Recycled Population			

p = poor data; f = fair data; g = good reliable data; NDP = No Determination possible

Table 4-1: Summary data for primary vitrinite population from well 7125/4-1

4.2 Pyrolysis Tmax- values

For extra maturity control on the data under Section 4.1, a suite of 12 samples were, in addition to the 5 samples from the Hekkingen Fm already reported, chemically extracted and subjected to Rock Eval pyrolysis both before and after chemical extraction. The reason to perform Rock Eval pyrolysis after extraction was to remove any depletion in Tmax- values from possible mud- contamination and migrated hydrocarbons. The resulting data are shown in Table 4-2.

Depth	Sample	TOC (%)		S1 (kg/t)		S2 (kg/t)		S3 (kg/t)		Tmax (°C)	
m MD	type	UNEXTR	EXTR	UNEXTR	EXTR	UNEXTR	EXTR	UNEXTR	EXTR	UNEXTR	EXTR
493- 496	DCW	0.72	0.69	0.02	0.01	0.40	0.35	1.20	1.02	427	429
590- 600	DCW	0.95	0.87	0.04	0.01	0.78	0.56	3.38	2.52	427	426
670- 680	DCW	1.20	1.16	0.02	0.01	0.69	0.55	2.89	3.65	431	431
740- 750	DCW	0.88	0.77	0.07	0.02	0.26	0.14	4.87	4.01	416	424
810- 820	DCW	0.95	0.88	0.04	0.01	0.52	0.18	1.24	1.08	402	418
830- 840	DCW	4.08	3.96	0.13	0.06	9.89	8.43	1.82	1.72	423	426
847- 850	DCW	2.95	2.68	0.23	0.08	5.41	4.06	6.21	11.43	428	430
856- 859	DCW	3.50	3.63	0.19	0.07	7.54	7.35	4.35	4.92	422	425
866.5	SWC	15.27	15.02	1.70	0.84	31.49	26.32	2.18	2.94	405	406
896.15	COCH	0.32	0.31	0.02	0.06	0.22	0.10	3.00	3.23	405	466
991- 994	DCW	0.23	0.25	0.06	0.05	0.12	0.08	2.76	2.30	405	407
1126- 1129	DCW	0.48	0.39	0.06	0.08	0.17	0.15	4.80	4.40	430	437
1225- 1228	DCW	0.53	0.54	0.08	0.07	0.30	0.20	6.86	6.94	434	435
1342- 1345	DCW	0.27	0.28	0.06	0.05	0.11	0.08	3.89	3.53	428	427
1346.7	SWC	*	0.26	*	0.02	*	0.14	*	1.70	*	432
1459- 1462	DCW	0.81	0.73	0.17	0.04	0.74	0.53	2.83	2.28	431	438
1594- 1597	DCW	0.36	0.31	0.05	0.03	0.27	0.21	2.33	1.68	434	436

Table 4-2: Rock Eval pyrolysis before and after extraction of 17 sediment samples from well 7125/4-1

5.1 Composition of C1- nC6+ in headspace gas of canned cuttings

In Table 5-1 is shown the composition of the C1- nC6+ gas measured in headspace of the canned cuttings and in Table 5-2 are shown the normalised C1- nC5- data (to 100%). All data are given in gas volume % at ambient temperature.

Depth (m MD RKB)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	iC5 (%)	nC5 (%)	C6+ (%)	CO2 (%)	Sum (%)	Tot gas (ppm)	Comments
570- 580	66.74	9.31	8.31	2.20	5.90	1.50	1.10	0.14	3.60	100.00	69834	
640- 650	66.61	8.90	11.10	2.90	4.50	1.40	1.10	0.29	3.90	100.00	79514	
700- 710	64.19	4.59	7.89	3.59	5.69	2.99	2.60	0.87	7.29	100.00	720341	Shows at 699- 702 m
740- 750	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.70	100.00	232	< determination limit
790- 800	82.01	2.20	2.50	1.40	2.20	1.30	1.10	0.40	6.89	100.00	34266	
829- 830	58.21	13.10	17.30	3.59	5.20	1.30	0.66	0.25	3.39	100.00	54967	Hekkingen Fm
928- 931	48.61	3.20	7.30	4.50	7.50	5.00	4.50	2.59	16.69	100.00	5696	Reservoir (oil)
973- 976	16.40	3.20	19.29	10.10	21.09	11.10	10.60	4.23	4.00	100.00	17735	Reservoir (water zone)
1027- 1030	3.50	0.33	2.90	1.40	3.20	1.80	3.60	3.05	80.20	100.00	1186	< determination limit
1081- 1084	52.14	5.19	5.89	4.99	4.10	4.50	2.10	1.60	19.48	100.00	3878	
1126- 1129	14.09	1.40	2.20	1.10	1.50	0.75	0.82	3.29	74.65	100.00	729	< determination limit
1171- 1174	39.07	1.50	2.10	2.10	2.00	1.40	1.10	1.88	46.86	100.00	1465	< determination limit
1225- 1228	73.04	5.60	2.60	4.50	3.30	3.10	1.50	0.85	5.60	100.00	137573	Sample in res. oil zone
1278- 1282	62.81	1.70	3.00	5.00	4.60	6.10	4.90	2.49	9.50	100.00	184104	
1342- 1345	66.75	1.80	2.40	1.99	2.50	4.30	4.20	3.36	12.79	100.00	185562	
1387- 1390	48.80	5.70	6.50	2.79	3.90	2.10	2.30	1.29	26.70	100.00	213267	
1414- 1417	56.81	3.60	4.00	1.60	2.50	1.70	3.00	1.59	26.70	100.00	27560	
1459- 1462	58.57	16.79	11.99	3.29	4.89	1.50	1.10	0.35	2.29	100.00	288148	Reservoir (gas & oil)
1531- 1534	52.00	12.60	12.80	4.40	6.60	2.80	2.20	0.91	5.70	100.00	1327 65	
1594- 1597	62.24	14.58	7.99	4.00	3.80	1.50	1.10	0.50	4.30	100.00	385274	

(A lower determination limit of 2000 ppm total gas has been applied by APT in the screening for the isotope analysis)

Table 5-1: Composition of C1- C6+ and CO2 measured in headspace gas of canned cuttings

Depth (m MD RKB)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	iC5 (%)	nC5 (%)	Sum (%)	iC4 nC4	iC5 nC5	Tot gas (ppm)	Comments
570- 580	70.8	9.6	8.8	2.3	6.1	1.5	1.1	100.00	0.37	1.36	69834	
640- 650	69.7	8.4	11.6	3.0	4.7	1.5	1.1	100.00	0.64	1.37	79514	
700- 710	69.9	5.0	8.6	4.0	6.4	3.3	2.8	100.00	0.63	1.18	720341	"Associated gas" from oil
740- 750	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.00			232	
790- 800	86.5	2.4	2.7	1.5	2.4	1.4	1.2	100.00	0.64	1.18	34266	
829- 830	67.2	15.1	17.9	3.6	5.4	1.3	0.8	100.00	0.67	1.48	54967	Migrated C1- nC5 in Slf
928- 931	60.4	4.0	9.0	5.6	9.3	6.2	5.6	100.00	0.60	1.11	5696	C1- nC5 associated with oil
973- 976	17.9	3.5	21.0	11.0	23.0	12.1	11.5	100.00	0.48	1.05	17735	
1027- 1030	20.9	2.0	17.3	6.4	19.1	10.8	21.5	100.00	0.44	0.50	1186	
1081- 1084	66.1	6.6	7.5	6.3	5.2	5.7	2.7	100.00	1.22	2.14	3878	Some biodegradation?
1126- 1129	84.5	8.4	10.1	5.9	6.9	3.4	3.7	100.00	0.73	0.91	729	
1171- 1174	79.3	3.0	4.3	4.3	4.1	2.8	2.3	100.00	1.05	1.37	1465	
1225- 1228	79.0	6.0	2.8	4.9	2.5	3.3	1.6	100.00	1.96	2.07	137573	Biodegradation of C3- nC5
1278- 1282	71.9	1.9	3.4	5.7	5.5	6.9	5.6	100.00	1.04	1.24	184104	
1342- 1345	79.6	2.1	2.9	3.3	3.0	5.1	5.0	100.00	0.76	1.02	185562	
1387- 1390	86.9	8.1	9.3	3.9	5.6	3.0	3.3	100.00	0.69	0.91	213267	
1414- 1417	78.5	5.0	5.6	2.2	3.5	2.4	2.8	100.00	0.64	0.85	27560	
1459- 1462	60.1	17.2	12.3	3.3	4.4	1.5	1.1	100.00	0.74	1.36	288148	Non- degraded C3- nC4
1531- 1534	55.7	13.5	13.7	4.7	7.1	3.0	2.4	100.00	0.67	1.27	1327 65	
1594- 1597	65.4	15.3	8.4	4.2	4.0	1.6	1.2	100.00	1.05	1.36	385274	

5.2 Delta 13C isotope analysis on headspace gas in canned cuttings

The canned cuttings were analysed for Delta 13C isotopes of C1- nC4 hydrocarbons and CO2 in headspace. The resulting data are shown in Table 5-3.

Depth (m MD RKB)	Delta 13C- value (‰)						Comments
	C1	C2	C3	IC4	nC4	CO2	
570- 580	-43.6	-32.8	-32.9	-31.7	-32.5	-37.6	
640- 650	-44.1	-33.1	-32.4	-31.3	-32.4	-33.6	
700- 710	-42.7	-32.6	-32.8	-30.9	-32.5	-26.7	Shows at 699- 702 m
740- 750	*						< determination limit
790- 800	-42.2	-32.0	-32.9	-30.3	-31.8	-26.4	
820- 830	-43.5	-33.2	-32.1	-31.0	-31.6	-40.8	
928- 931	-43.7	-33.2	-32.9	-31.1	-32.7		Reservoir (oil)
973- 976	-46.1	-33.9	-33.0	-32.1	-33.5		Reservoir (water zone)
1027- 1030	*						< determination limit
1081- 1084	-46.2	-33.4	-32.8				
1126- 1129	*						< determination limit
1171- 1174	*						< determination limit
1225- 1228	-42.6						Sample in res. oil zone
1279- 1282	-43.4						
1342- 1345	-44.1						
1387- 1390	-43.6	-32.0	-28.5			-32.6	
1414- 1417	-42.3						
1459- 1462	-40.1	-31.7	-29.9	-30.0	-31.1		Reservoir (gas & oil)
1531- 1534	-41.3	-31.7	-30.4	-30.7			
1594- 1597	-48.4	-31.1	-28.2	-28.4	-28.6		

Table 5-3: Delta 13C- values of C1- nC4 and CO2 in headspace of canned cuttings samples

6.1 Composition of MDT- gases and Delta 13C isotope analysis

In Table 6-1 are shown the composition of the MDT- gases from C1- nC6+ gas chromatography that was performed in conjunction with the analysis of the Delta D1 and the Delta 13C isotope values. Since none of the gases released significant amounts of associated liquids when relieved of pressure during the PVT-characterisation, a GOR for the gases was not possible to determine. The MDT- oil samples from 938.1 m RKB, 967.2 m RKB and 1497.8 m RKB did, however, release associated gases when relieved of pressure. The C1- nC6+ gas composition of these are also shown in Table 6-1.

Sample type	Depth (m RKB)	Volume %									Sum	Total gas (ppm)
		C1	C2	C3	iC4	nC4	iC5	nC5	C6+	CO2		
MDT- gas	883.4	95.50	1.90	1.40	0.37	0.49	0.16	0.12	0.03	0.03	99.98	885461
MDT- gas	898.6	95.60	2.20	1.50	0.39	0.53	0.18	0.14	0.03	0.03	99.98	874923
MDT- oil	938.1	78.90	5.00	6.60	2.80	4.58	2.48	1.58	0.36	0.68	100.06	693695
MDT- gas	952.0	96.90	1.80	1.00	0.40	0.41	0.20	0.21	0.04	0.00	100.06	907836
MDT- oil	967.2	90.10	4.80	6.70	1.80	2.78	1.48	1.28	0.27	0.68	99.97	924763
MDT- gas	1477.3	95.40	2.50	0.85	0.24	0.44	0.17	0.23	0.04	0.11	99.98	926732
MDT- oil	1497.8	80.60	7.00	5.60	1.90	2.88	1.08	0.74	0.18	0.12	99.90	901049

Table 6-1: Composition of MDT gases and associated gases from GC of C1- nC6+ (volume %)

In Table 6-2 are shown the isotope- analysis of both the gases and the associated gases. In Figure 6-1 are shown plots of Delta 13C values for components C1- nC4.

Sample type	Depth (m RKB)	Delta 13C (‰)						Delta D1 (‰o)
		C1	C2	C3	iC4	nC4	CO2	
MDT- gas	883.4	-42.2	-33.3	-32.6	-29.4	-30.2	*	-193
MDT- gas	898.6	-44.0	-32.7	-34.4	-30.2	-31.8	*	-193
MDT- oil	938.1	-40.9	-31.0	-32.7	-30.5	-32.1	*	-197
MDT- gas	952.0	-44.8	-31.8	-33.7	-30.1	-31.4	*	-196
MDT- oil	967.2	-46.8	-33.7	-33.5	-31.7	-32.7	*	-198
MDT- gas	1477.3	-41.5	-31.1	-29.1	-29.2	-27.8	*	-186
MDT- oil	1497.8	-41.9	-31.5	-29.8	-29.8	-28.5	*	-191

Table 6-2: Delta 13C isotope analysis and Delta D1 analysis of gases and associated gases

In Table 6-3 are shown the Pristane/Phytane- ratios, Pristane/nC17- ratios and Phytane/nC18- ratios from the C5-C20 gas chromatography.

Depth (m RKB)	Sample type	Pr/Ph-ratio	Pr/nC17-ratio	Ph/nC18-ratio
914.5	MDT OIL A	1.49	1.09	0.67
914.5	MDT OIL B	1.52	1.13	0.69
938.1	MDT OIL	1.49	1.12	0.68
967.2	MDT OIL	1.55	1.17	0.92
1487.8	MDT OIL	1.63	0.99	0.77
NSO1	REF OIL	1.60	0.59	0.45
SENILIX	REF OIL	1.45	0.90	0.69

Table 6-3: Pristane/Phytane- ratios, Pristane/nC17- ratios and Phytane/nC18- ratios calculated from C5- C20 Gas chromatography

6.3 C15+ extraction data of MDT- oils and SWCs

MDT oils and SWCs were chemically extracted and fractionated (Iatroscan/MPLC) for preparative purposes and the resulting data are shown in Table 6-5.

Depth	Sample	EOM		Asph. of	EOM Group Type %				EOM Group Type % (renorm)				
(m RKB)	type	%	ppm	EOM (%)	SAT	ARO	NSO	Sum	SAT	ARO	NSO	ASPH	Sum
914.5	MDT OILA			3.4	62.8	24.8	12.8	100.0	60.6	23.6	12.3	3.4	100.0
914.5	MDT OILB			8.9	63.1	27.3	9.6	100.0	62.5	27.0	9.5	8.9	100.0
938.1	MDT OIL			6.7	64.7	24.2	11.1	100.0	64.3	24.0	11.0	6.7	100.0
967.2	MDT OIL			6.7	61.6	23.1	15.2	100.0	61.2	23.0	15.1	6.7	100.0
1195.6	SWC	0.46	4561	19.0	73.7	21.0	5.3	100.0	66.3	18.9	4.7	19.0	100.0
1196.8	SWC	0.76	7576	3.3	72.9	21.8	5.3	100.0	70.5	21.1	5.1	3.3	100.0
1196.7	SWC	0.40	3959	10.0	73.6	20.4	6.0	100.0	66.2	18.3	5.4	10.0	100.0
1198.9	SWC	0.36	3650	6.3	74.4	19.6	6.0	100.0	69.7	18.4	5.6	6.3	100.0
1487.8	MDT OIL			6.5	72.7	19.8	7.5	100.0	72.3	19.7	7.5	6.5	100.0
NSO1	REF OIL			6.2	64.6	26.1	9.3	100.0	64.5	26.1	9.3	6.2	100.0
SENILIX	REF OIL			6.2	75.2	18.9	5.9	100.0	75.0	18.8	5.9	6.2	100.0

(OIL A was collected in the MDT- chamber proper, OIL B in the tool pumphouse because because of a faulted O- ring)

Table 6-5: C15+ EOM Group type values for MDT- oils and SWCs

In Table 6-6 are shown the Pristane/Phytane, the Pristane/nC17- ratios and the Phytane/nC18- ratios from GC/FID of C15+ saturate fractions

Depth (m RKB)	Sample type	Pr/Ph-ratio	Pr/nC17-ratio	Ph/nC18-ratio
810- 820	DCW	1.37	1.06	0.87
830- 840	DCW	1.35	2.62	2.43
847- 850	DCW	1.07	2.60	3.36
856- 859	DCW	1.13	2.51	2.63
866.5	SWC	1.27	6.08	7.50
914.5	MDT OIL A	1.42	1.07	0.86
914.5	MDT OIL B	1.42	1.09	0.89
938.1	MDT OIL	1.40	1.06	0.87
967.2	MDT OIL	1.45	1.07	0.87
1185.6	SWC	1.34	0.90	0.93
1186.8	SWC	1.49	0.90	0.93
1196.7	SWC	1.32	0.84	0.87
1198.8	SWC	1.52	0.92	0.86
1467.8	MDT OIL	1.57	0.87	0.71
NSO1	REF OIL	1.55	0.56	0.42
SENILIX	REF OIL	1.55	0.68	0.66

Table 6-6 : Pristane/Phytane- ratios, Pristane/nC17- ratios and Phytane/nC18- ratios from GC/FID of C15+ saturate fractions

In Table 6-7 are shown the maturity of the oils represented by selected common maturity ratios for main biomarker classes steranes (represented by C29aaR/S), terpanes (represented by C27Ts/Tm) and aromatics (represented by m- phenantrenes, i.e. the index MPI-1).

Depth (m RKB)	Sample type	29aaR:S (%29S)	Ts:Tm (%27Ts)	Ro(Ts) Vitr. Eq.(%)	MPI-1	Rc(Aro) Vitr. Eq.(%)
914.5	MDT OIL A	54	43	0.57	0.61	0.77
914.5	MDT OIL B	53	44	0.58	0.60	0.76
938.1	MDT OIL	58	43	0.58	0.62	0.77
967.2	MDT OIL	55	43	0.57	0.60	0.76
1185.6	SWC	42	67	0.78	0.53	0.72
1186.8	SWC	44	67	0.79	0.56	0.74
1196.7	SWC	42	67	0.78	0.48	0.69
1198.8	SWC	39	64	0.75	0.44	0.67
1467.8	MDT OIL	54	64	0.77	0.65	0.79
NSO1	REF OIL	57	50	0.64	0.64	0.79
SENILIX	REF OIL	60	72	0.83	0.77	0.96

Table 6-7: Common maturity ratios of saturate and aromatic biomarkers in MDT oils and EOM fractions of SWCs

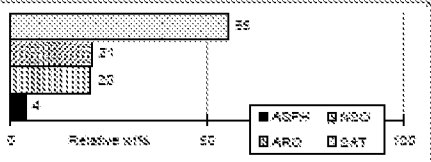
Country, well/location:	NOR, 7125/4-1,
Sample type, depth (m):	DC, 810-820 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	KCOOH
Remarks:	

Sediment sample

HYDRO
ESP Research Centre, Bergen, Norway

OrgID: 2479972, PlantID: 696659

Iatroscan



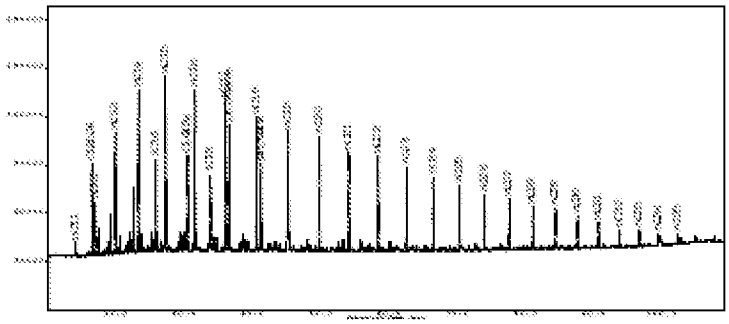
RockEval

S1	0.44
S2	0.52
PI	0.46
Tmax	402
TOC	0.95
HI	55
EOM wt%	0.213

δ13C fractions

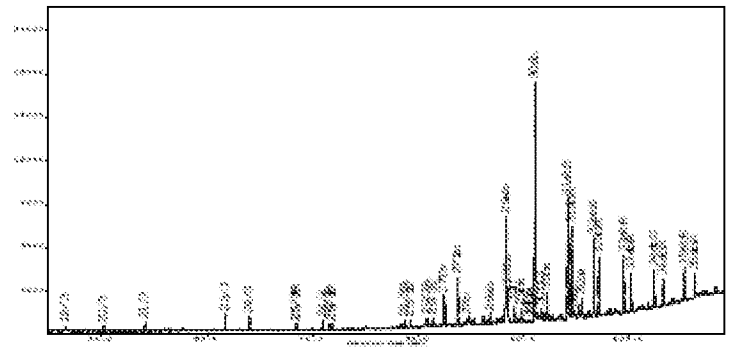
Sat.	-30.4
Aro.	-28.9
NSO	-29.4
Asph	-27.0
EOM / Oil	
Kerogen	

C15+ SAT-fraction hydrocarbons, GC/FID:



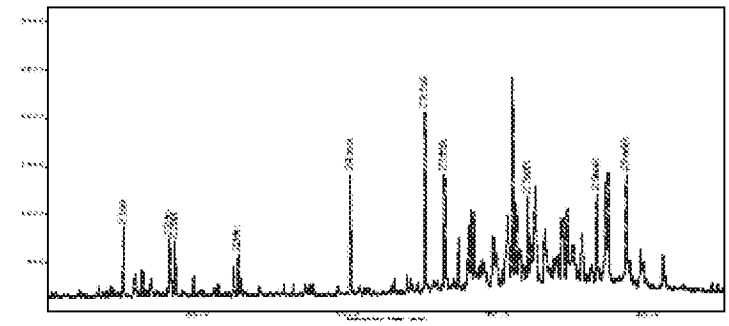
Parameter/amounts, µg/mg	
Pr/nC17	1.08
Ph/nC18	0.87
Pr/Ph	1.37
nC17/(C17+C27)	0.74
CPI2	1.08
nC17	5.67
Pristane	5.99
ΣC15-C35	75.4

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Ts	6.68
%23/3	6.94
%23/3	45.1
%24/4	33.1
C26/C25	0.972
%27Ts	38.2
%28αβ	6.63
%29Ts	25.3
%25nor30αβ	0.328
%29αβ	39.5
%30βα	10.2
%30D	9.59
%30G	4.04
%32αβS	57.8
%35αβ	47.0
30αβ	148.8
25nor30αβ	0.480
Σterpanes	897
%Pregnane	9.82
%29ααS	46.2
%29ββ	60.8
%27dia	51.5
%27ster. Norm	32.9
%28ster. Norm	22.6
%29ster. Norm	35.9
%30ster. Norm	8.75
Σsteranes	232
Hop/Ste	3.87

Steranes, m/z 217:



StatoilHydro

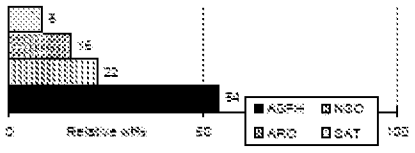
Country, well/location:	NOR, 7125/4-1,
Sample type, depth (m):	DC, 830-840 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	KCOOH
Remarks:	

Sediment sample

HYDRO
E&P Research Centre,
Bergen, Norway

SigID: 2479973, PlanID: 695031

Iatroscan



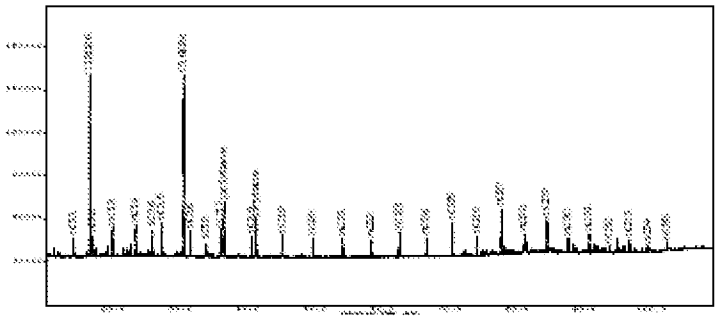
RockEval

S1	0.13
S2	9.89
PI	0.01
Tmax	423
TOC	4.08
HI	242
EOM wt%	0.235

δ13C fractions

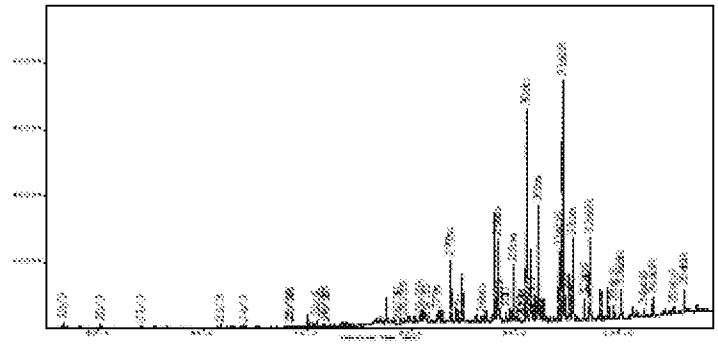
Sat.	
Aro.	
NSO	
Asph.	
EOM / Oil	
Kerogen	

C15+ SAT-fraction hydrocarbons, GC/FID:



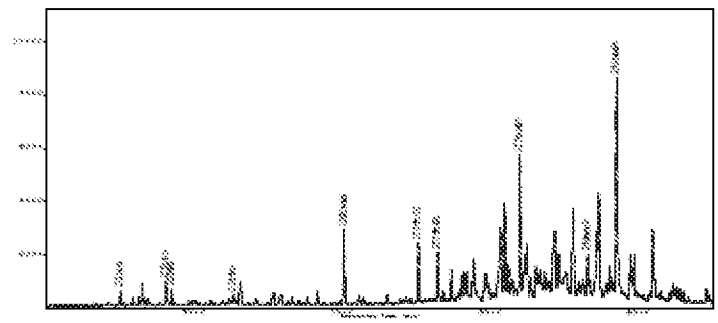
Parameter/amounts, ug/mg	
Pr/nC17	2.82
Ph/nC18	2.43
Pr/Ph	1.35
nC17/(C17+C27)	0.850
CPI2	2.42
nC17	0.600
Pristane	1.31
ΣC15-C35	11.6

Terpanes, m/z 191:



Parameter/amounts, ug/mg	
%Tm	1.60
%23/3	19.2
%23/3	43.5
%24/4	83.6
C26/C25	1.73
%27Ts	10.6
%28αβ	3.97
%29Ts	12.6
%25nor30αβ	2.19
%29αβ	36.5
%30βα	35.0
%30D	8.25
%30G	18.1
%32αβS	19.6
%35αβ	51.2
30αβ	139
25nor30αβ	2.9
Σterpanes	796
%Pregnane	8.19
%29ααS	15.9
%29ββ	43.4
%27δa	47.4
%27ster. Norm	25.6
%28ster. Norm	23.3
%29ster. Norm	42.0
%30ster. Norm	9.09
Σsteranes	194
Hop/Ste	3.96

Steranes, m/z 217:



StatoilHydro

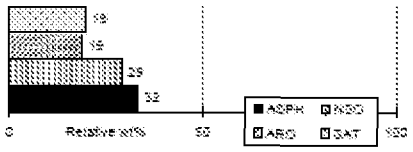
Country, well/location:	NOR, 7125/4-1,
Sample type, depth (m):	DC, 847-850 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	KCOOH
Remarks:	

Sediment sample

HYDRO
ESP Research Centre,
Bergen, Norway

OrgID: 3479878, PlantID: 696032

Iatroscan



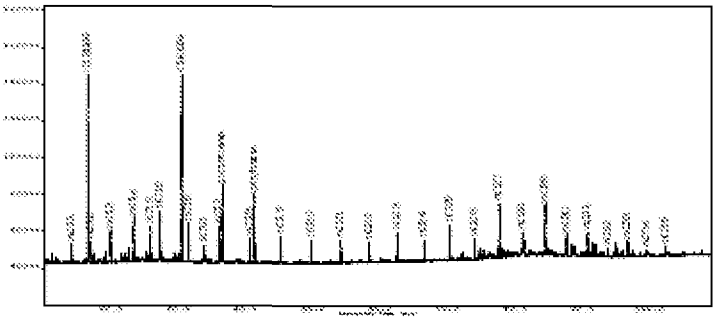
RockEval

S1	0.23
S2	5.41
PI	0.04
Tmax	428
TOC	2.96
HI	183
EOM wt%	0.120

δ13C fractions

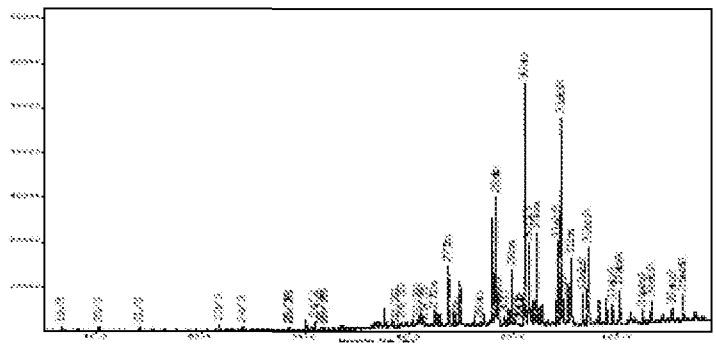
Sat.	-30.0
Aro.	-29.6
NSO	-29.9
Asph.	-29.7
EOM / OI	
Kerogen	

C15+ SAT-fraction hydrocarbons, GC/FID:



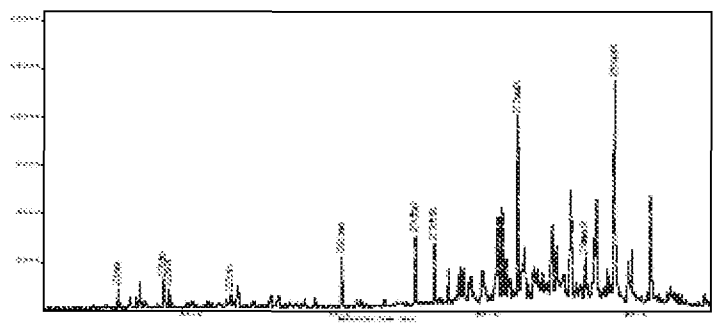
Parameteramounts, µg/mg	
Pr/nC_{17}	2.60
Ph/nC_{18}	3.36
Pr/Ph	1.07
$nC_{17}/(C_{17}+C_{27})$	0.388
CPI2	2.51
nC_{17}	0.620
Pristane	1.61
ΣC15-C35	13.8

Terpanes, m/z 191:



Parameteramounts, µg/mg	
%Tri	2.30
%20/3	12.3
%23/3	51.3
%24/4	61.2
C26/C25	1.15
%27Ts	19.7
%28αβ	1.95
%29Ts	11.9
%25nor30αβ	1.79
%29αβ	44.1
%30βα	27.2
%30D	5.05
%30G	13.3
%32αβS	27.7
%35αβ	51.7
30αβ	184.7
25nor30αβ	3.37
Σterpanes	1083
%Pregnane	6.70
%29ααS	15.9
%29ββ	42.5
%27dia	48.2
%27ster. Norm	27.4
%28ster. Norm	25.5
%29ster. Norm	37.1
%30ster. Norm	10.0
Σsteranes	300
Hop/Ste	3.54

Steranes, m/z 217:



StatoilHydro

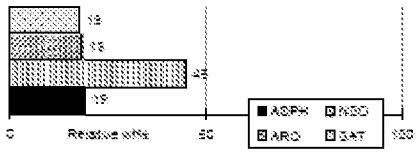
Country, well/location:	NOR, 7125/4-1,
Sample type, depth (m):	DC, 856-859 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	KCOOH
Remarks:	

Sediment sample

HYDRO
E&P Research Centre
Bergen, Norway

OrgID: 3479975, PlateID: 696033

Iatroscan



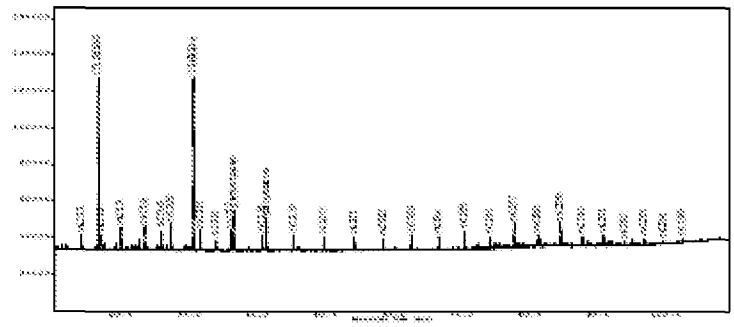
RockEval

S1	0.19
S2	7.54
PI	0.02
Tmax	422
TOC	3.50
HI	215
EOM wt%	0.333

δ13C fractions

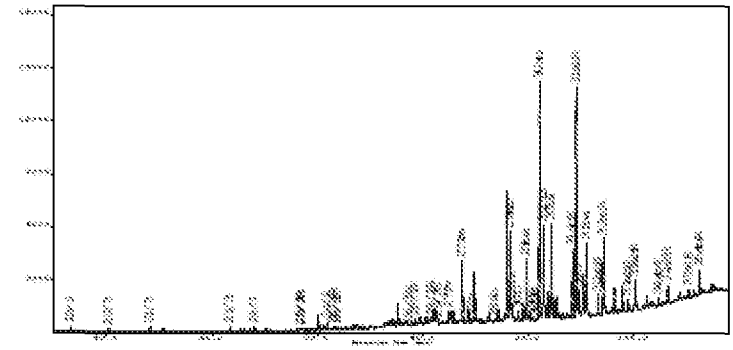
Sat.	
Aro.	
NSO	
Asph.	
EOM / Oil	
Kerogen	

C15+ SAT-fraction hydrocarbons, GC/FID:



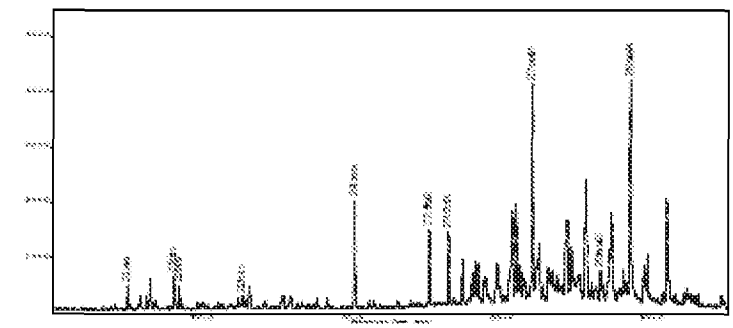
Parameter/amounts, µg/mg	
Pr/nC_{17}	2.51
Ph/nC_{18}	2.83
Pr/Ph	1.13
$nC_{17}/(C_{17}+C_{27})$	0.445
CPI2	2.04
nC_{17}	0.379
Pristane	0.936
ΣC15-C35	7.74

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	2.48
%20/3	15.6
%23/3	49.8
%24/4	58.3
C28/C25	1.28
%27Ts	16.4
%29αβ	2.00
%29Ts	15.5
%25nor30αβ	1.00
%29αβ	35.9
%30βα	28.1
%30D	5.73
%30G	13.8
%32αβS	21.4
%35αβ	56.6
30αβ	71.1
25nor30αβ	0.720
Σterpanes	383

Steranes, m/z 217:



%Pregnane	8.45
%29αααS	12.2
%29ββ	37.3
%27dia	53.4
%27ster. Norm	28.0
%28ster. Norm	29.8
%29ster. Norm	32.7
%30ster. Norm	9.49
Σsteranes	127
Hop/Ste	3.03

StatoilHydro

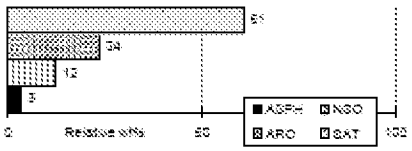
Country, well/location:	NOR, 7125/4-1,
Sample type, depth (m):	MDT oil, 914.5-914.5 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	KCOOH
Remarks:	

Fluid sample

HYDRO
E&P Research Centre,
Bergen, Norway

OrgID: 2458452, PlanID: 684153

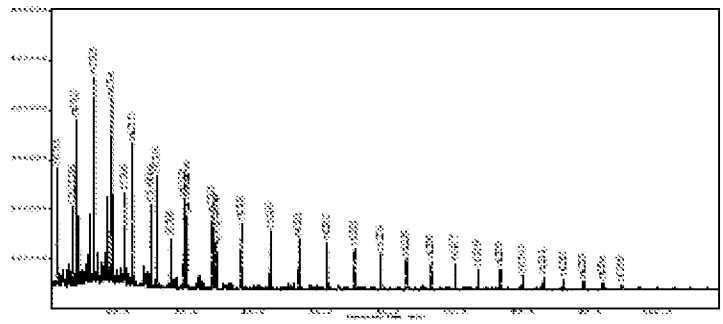
Iatroscan



δ13C fractions

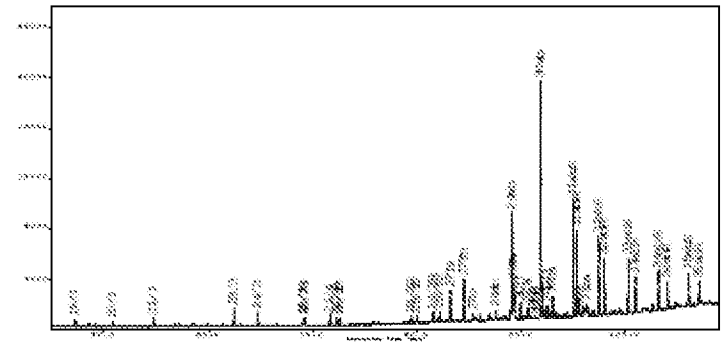
Sat.	-30.4
Aro.	-28.8
NSO	-29.4
Asph.	-28.5
EOM / OM	

C15+ SAT-fraction hydrocarbons, GC/FID:



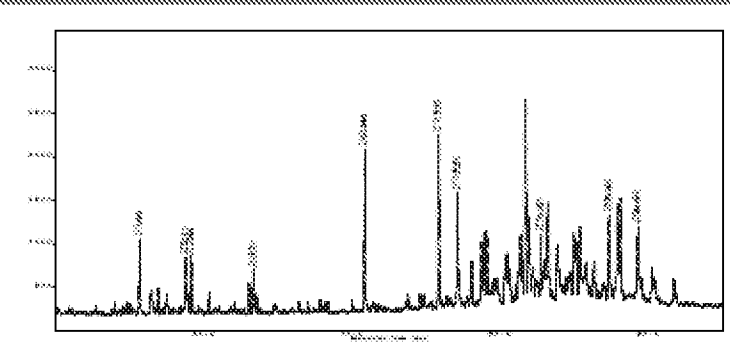
Parameter/amounts, µg/mg	
Pr/nC_{17}	1.07
Ph/nC_{18}	0.863
Pr/Ph	1.42
$nC_{17}/(C_{17}+C_{27})$	0.769
CPI2	1.08
nC_{17}	4.49
Pristane	4.81
ΣC15-C35	59.89

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	7.01
%20/3	6.39
%23/3	45.1
%24/4	33.3
C26/C25	0.974
%27Ts	42.7
%28αβ	6.43
%29Ts	23.2
%25nor30αβ	0.806
%29αβ	40.6
%30βα	8.43
%30D	9.45
%30G	3.66
%32αβS	58.3
%35αβ	44.8
30αβ	120.3
25nor30αβ	0.980
Σterpanes	728
%Pregnane	10.5
%29αxS	54.2
%29ββ	64.7
%27dia	50.5
%27ster. Norm	33.3
%28ster. Norm	22.1
%29ster. Norm	35.8
%30ster. Norm	8.92
Σsteranes	182
Hop/Ste	3.99

Steranes, m/z 217:



StatoilHydro

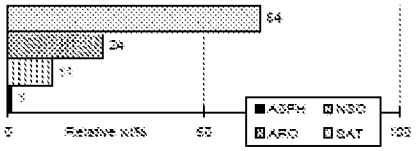
Country, well/location:	NOR, 7125/4-1.
Sample type, depth (m):	MDT oil, 938.12-938.12 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	KCOOH
Remarks:	

OrgID: 2469422, PlanID: 692036

Fluid sample

NYDSO
E&P Research Centre, Bergen, Norway

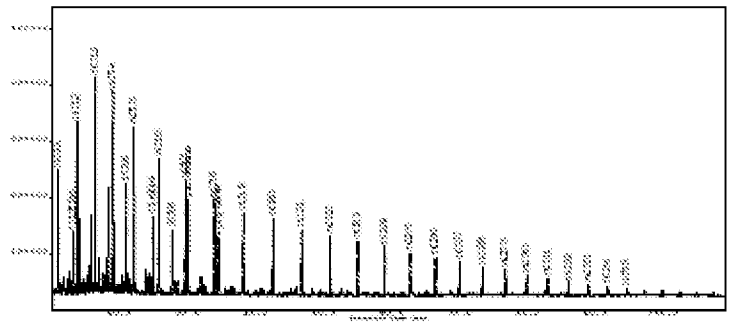
Iatroscan



δ13C fractions

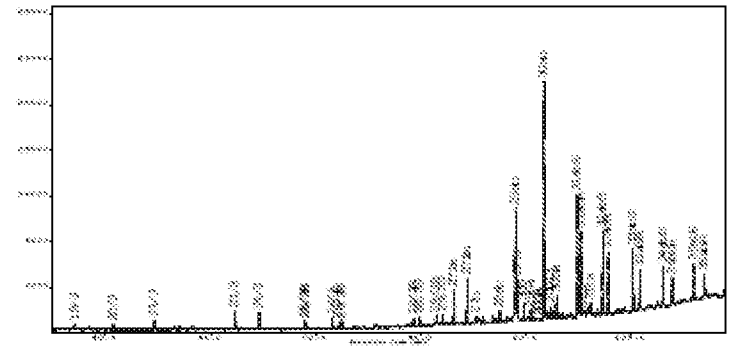
Sat.	-30.6
Aro.	-28.9
NSO	-28.9
Asph.	-28.7
EOM / Oil	

C15+ SAT-fraction hydrocarbons, GC/FID:



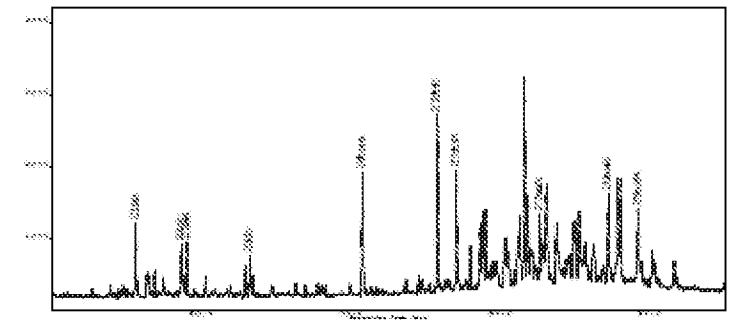
Parameter/amounts, ug/mg	
Pr/nC17	1.09
Ph/nC18	0.869
Pr/Ph	1.40
nC17/(C17+C27)	0.767
CPI2	1.04
nC17	6.15
Pristane	6.49
EC15-C35	81.09

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	6.97
%20/3	5.86
%23/3	43.2
%24/4	31.8
C26/C25	0.957
%27Ts	43.0
%28αβ	6.87
%29Ts	27.2
%25nor30αβ	0.578
%29αβ	41.0
%30βα	8.70
%30D	10.3
%30G	2.74
%32αβS	57.5
%35αβ	48.5
30αβ	141.5
25nor30αβ	0.820
Σterpanes	902
%Pregnane	9.56
%28ααS	57.0
%29ββ	66.2
%27dia	50.3
%27ster. Norm	33.7
%28ster. Norm	22.4
%29ster. Norm	35.1
%30ster. Norm	8.78
Σsteranes	240
Hop/Ste	3.75

Steranes, m/z 217:



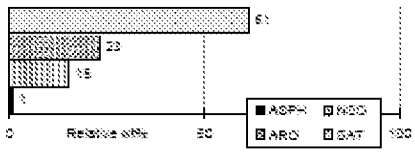
Country, well/location:	NOR, 7125/4-1,
Sample type, depth (m):	MDT oil, 967.2-967.2 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	KCOOH
Remarks:	

Fluid sample

HYDRO
E&P Research Centre,
Bergen, Norway

OrgID: 2475741, PrimID: 693998

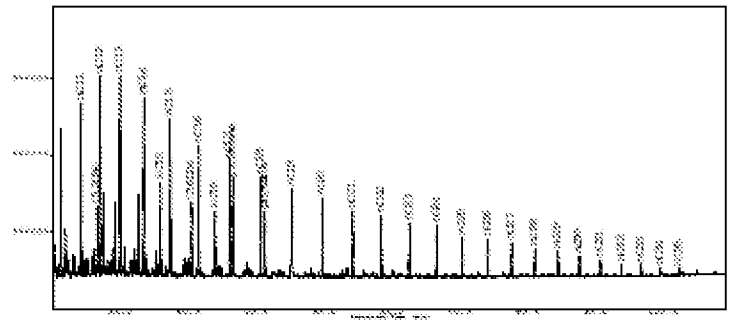
Iatroscan



δ13C fractions

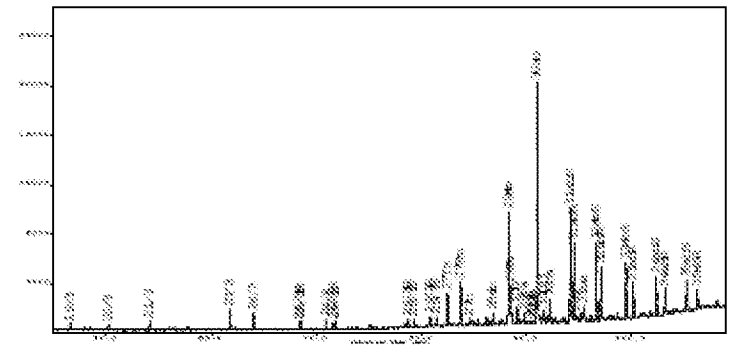
Sat.	-30.6
Aro.	-29.2
NSO	-29.0
Asph.	-28.6
EOM / Oil	

C15+ SAT-fraction hydrocarbons, GC/FID:



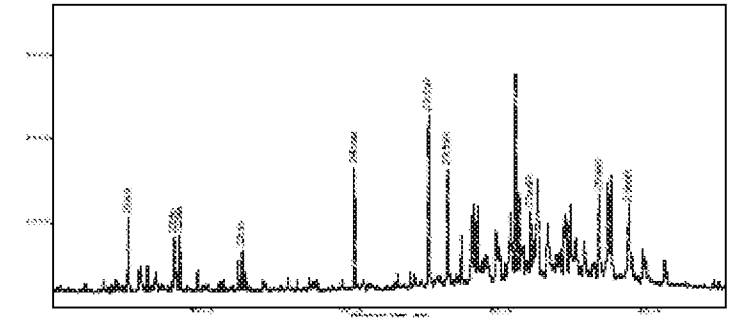
Parameter/amounts, µg/mg	
Pr/nC_{17}	1.07
Ph/nC_{18}	0.972
Pr/Ph	1.45
$nC_{17}/(C_{17}+C_{27})$	0.777
CPI2	1.08
nC_{17}	6.43
Pristane	6.89
ΣC15-C35	82.5

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	7.68
%20/3	6.30
%23/3	45.5
%24/4	30.9
C28/C25	1.03
%27Ts	42.7
%28αβ	6.49
%29Ts	25.6
%25nor30αβ	0.093
%29αβ	40.3
%30βα	6.29
%30D	9.79
%30G	3.11
%32αβS	58.4
%35αβ	43.6
30αβ	160.9
25nor30αβ	0.150
Σterpanes	941
%Pregnane	10.0
%29ααS	55.1
%29ββ	65.1
%27dia	50.2
%27ster. Norm	34.5
%28ster. Norm	22.3
%29ster. Norm	34.3
%30ster. Norm	8.84
Σsteranes	241
Hop/Ste	3.91

Steranes, m/z 217:



StatoilHydro

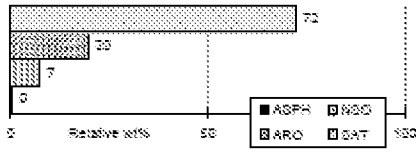
Country, well/location:	NOR, 7125/4-1.
Sample type, depth (m):	MDT oil, 1467.8-1467.8 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	KCOOH
Remarks:	

OrgID: 2479681, PlantID: 696231

Fluid sample

StatoilHydro
R&P Research Centre,
Bergen, Norway

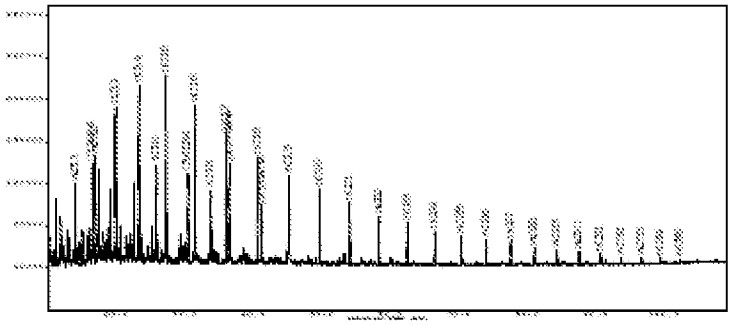
Iatroscan



δ13C fractions

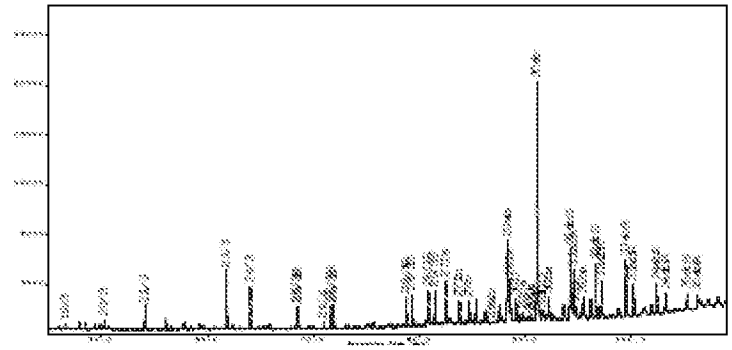
Sat.	-30.8
Aro.	-30.4
NSO	-30.9
Asph.	-30.6
EOM / Oil	

C15+ SAT-fraction hydrocarbons, GC/FID:



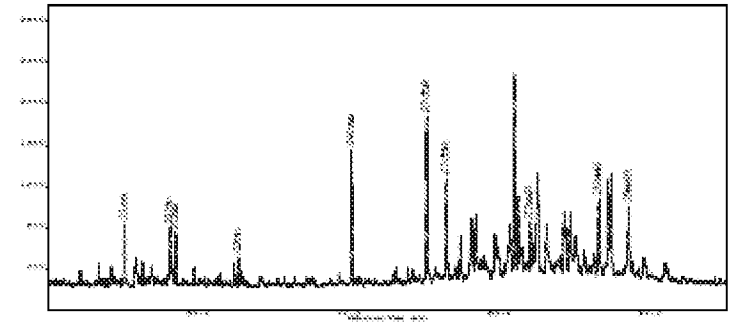
Parameter/amounts, µg/mg	
Pr/nC17	0.870
Ph/nC18	0.706
Pr/Ph	1.57
nC17/(C17+C27)	0.852
CPI2	1.09
nC17	5.75
Pristane	5.00
ΣC15-C35	59.5

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	23.32
%20/3	4.09
%23/3	47.6
%24/4	9.88
C26/C25	1.08
%27Ts	64.9
%28αβ	1.05
%29Ts	34.3
%25nor30αβ	0.144
%29αβ	31.9
%30βα	8.91
%30D	11.8
%30G	6.08
%32αβ,S	58.7
%35αβ	37.0
30αβ	172.9
25nor30αβ	0.250
Σterpanes	795

Steranes, m/z 217:



%Pregnane	9.89
%29ααS	53.7
%29ββ	67.6
%27dia	50.7
%27ster. Norm	33.7
%28ster. Norm	20.7
%29ster. Norm	35.7
%30ster. Norm	6.84
Σsteranes	199
Hop/Ste	3.98

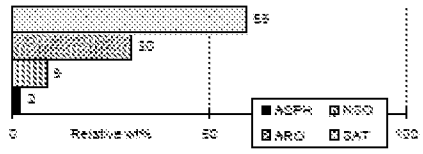
Country, well/location: NOR, NSO1
Sample type, depth (m): FLUI, 1-723.07 m MD RKB
Stratigraphy (Gr./Fm.):
Mud system:
Remarks:

OrgID: 3479831, PlantID: 656192

Fluid sample

HYDRO
EXP Research Centre,
Bergen, Norway

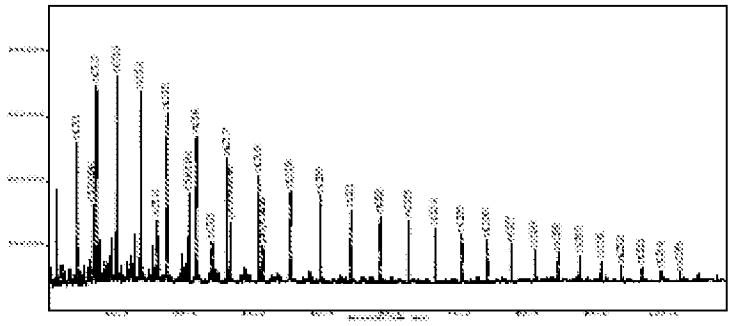
Iatroscan



δ13C fractions

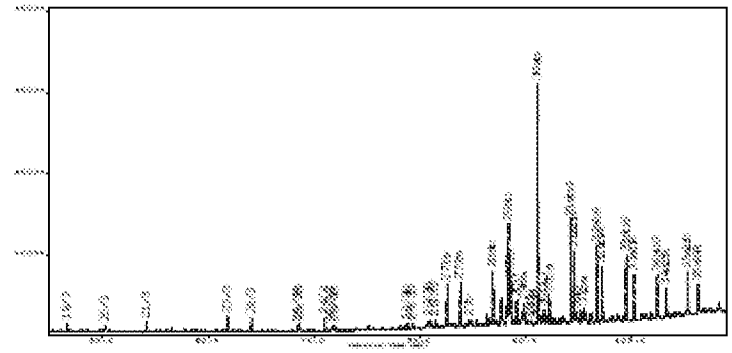
Sat.	-29.1
Aro.	-28.2
NSO	-28.1
Asph.	-27.9
EOM / Oil	-28.4

C15+ SAT-fraction hydrocarbons, GC/FID:



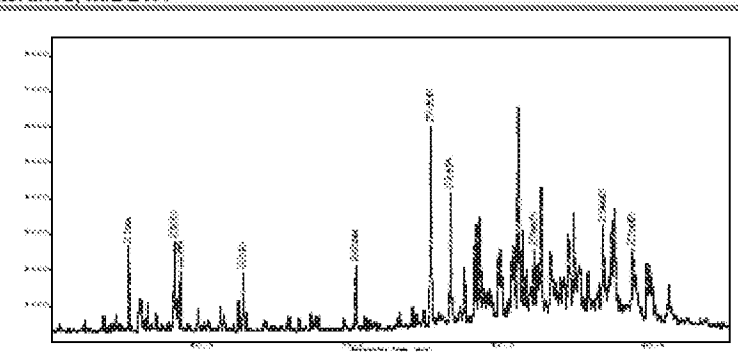
Parameter/amounts, µg/mg	
Pr/nC$_{17}$	0.538
Ph/nC$_{18}$	0.414
Pr/Ph	1.57
nC$_{17}$/(C$_{17}$+C$_{27}$)	0.784
CPI2	0.994
nC$_{17}$	5.73
Pristane	3.08
ΣC15-C35	63.9

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tm	5.98
%20/3	8.62
%23/3	44.7
%24/4	42.1
C26/C25	0.867
%27Ts	49.7
%28αβ	28.2
%29Ts	31.1
%25nor30αβ	12.0
%29αβ	38.5
%30βα	10.7
%30D	14.1
%30G	6.42
%32αβS	57.8
%35αβ	49.5
30αβ	185.2
25nor30αβ	28.7
Σterpanes	1266
%Pregnane	14.5
%29αααS	57.3
%29βββ	63.9
%27dia	65.4
%27ster. Norm	31.2
%28ster. Norm	27.6
%29ster. Norm	29.8
%30ster. Norm	11.5
Σsteranes	480
Hop/Ste	2.64

Steranes, m/z 217:



StatoilHydro