TOTAL - C.F.P.
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Département Laboratoires Exploration

GEOCHEMICAL STUDY OF 24/6-1

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C O N T E N T S

TABLES (in pocket)

FIGURES (in pocket)

RESUME - CONCLUSION
(Fig. 19)

Although the Upper Jurassic shales are the best source rocks, the Brent and the Dunlin can be considered as possible source rocks.

In the immature Tertiary Cretaceous section some intervals show relatively high organic content (700 - 1 000 m, 1 700 - 2 000 m).

At the present time, the beginning of oil window would be at around 3 500 - 3 800 m and the end (Ro=1.2%) near 4 800 m.

The adsorbed gas study shows that high amounts of wet gas have migrated from mature zones into the Heimdal sands. The condensate tested in the Jurassic sands show humic features and thus would have been generated by the Brent shales and coals. Unfortunately due to the use of oil based mud, no extracts can be performed in view of direct correlation between the supposed source rocks and the condensate.

I - INTRODUCTION

The geochemical study of 24/6-1 (Fig. 1) was performed mainly on the cuttings samples from tin cans sealed at the well site. These cans were taken from 300 m to 4 925 m about every 25 m. The gas from the head-space of these cans was analyzed. Visual kerogen analysis and maturity study were focused mainly on the Jurassic section. Two samples of condensate (DST 1) from the Middle Jurassic sandstones were also analyzed.

II - SOURCE ROCK EVALUATION

II.1 QUANTITY OF ORGANIC MATTER, TOTAL ORGANIC CARBON (TOC) (Tab. 1, Fig. 2, 3, 4)

Total Organic Carbon were analyzed by OSA Rock-Eval techniques. Below 2 800 m due to the use of oil based mud, the cuttings and SWC were chloroform washed before analyzing.

In the Tertiary section, high TOC (1 to 2%) are present in the 700 - 1 000 m interval. They correspond to lignitic debris. Another relatively organic rich level (TOC around 1%) is noted between 1 700 and 2 000 m. The rest of Tertiary is poorer in organic matter with TOC around 0.5%.

In the Cretaceous section (2 800 - 4 191 m), the organic amount remains relatively low : most of the TOC values are between 0.3 and 0.7%. Nevertheless, an organic rich (coaly) SWC (TOC = 10%) is to be noted at 4 069 m.

The Upper Jurassic shaly formations (Draupne and Heather) show high organic content : most of the TOC are between 2 and 3.5%.

In the Middle Jurassic sandy formation, very thin coal lenses ($\simeq$ 0.5 cm) were seen in cores at 4 500 and 4 502 m. At 4 512.55 m (core 3) a little thicker coal bed (5 cm) is present : it is embedded in a dark shaly level (4 511.7 - 4 512.85 m) showing a high organic content (TOC = 4.35%). Nevertheless, above 4 700 m, coal is a very minor component.

The relatively high organic content measured in the sandy samples of the cores are related to hydrocarbons staining.

Between 4 710 m and 4 780 m, thicker coals levels are present and were analyzed from SWC at 4 769, 4 769.5 and 4 770 m.

In the Dunlin shaly formation, the presence of relatively high organic amount (TOC = 1 to 2%) is to be noted.

II.2 QUALITY OF ORGANIC MATTER

Rock-Eval pyrolysis (Tab. 1, Fig. 2 to 6)

Due to the use of oil based mud, below 2 800 m the cuttings and SWC were chloroform washed when still wet. Thus, below 2 800 m, S1 values are unusable but TOC, S2, HI and Tmax are considered as representative.

In the Tertiary, the hydrogen indices (HI) are low to fair ranging from nearly nil to 300 mg/g. The best HI values correspond to the organic rich interval near 1 850 m.

In the Cretaceous, the HI are low between 2 800 and 3 600 m : below this depth, they become higher i.e. mostly between 150 and 300 mg/g.

In both the Tertiary and Cretaceous, the S2 are always lower than 4 kg/t.

In the Upper Jurassic (Draupne, Heather) the HI are fair but not much higher than at the basis of Cretaceous, i.e. between 150 and 300 mg/g. These relatively low HI (for Upper Jurassic) are due to the relatively high maturity of the formations. Nevertheless, the S2 are between 2 and 10 kg/t and are the highest values in the well.

In the sandy Middle Jurassic (Brent), the small coal lenses show HI between 100 and 300 mg/g which is in the normal range at this stage of maturity.

One of the two samples taken in the organic shaly level at the bottom of the core 3 (4 511 - 4 513 m) shows a fair HI (344 mg/g).

The other samples analyzed in the Brent are sandstones from the cores : they show very high S1 amount which correspond to the hydrocarbons staining the reservoir : for these samples the S2 and the HI have no significance in terms of source rock since they are related to secondary products.

In the shales from Dunlin the HI are relatively low i.e. between 50 and 130 mg/g.

Visual type of kerogen (Fig. 8)

Three kerogens from the Tertiary show a humic type. The kerogen at 1 600 m is mixed.

In the Cretaceous, the kerogen at 3 250 m is humic. In the lower part of the upper Cretaceous (3 725 and 4 050 m) the type is mixed and it corresponds to the better hydrogen indices found below 3 600 m.

In the Draupne and Heather shales, the kerogens are mostly composed of amorphous matter under its pulverulent and black aspect. Under reflected light, this amorphous organic matter is reflectant. The optical features of the amorphous matter are probably in relation to the relatively high degree of maturity. Small coaly particles (20 to 30%) are also present.

In the lower part of the Brent the siltstones show a clearly humic organic matter.

In the Dunlin, the bad quality of the kerogen preparation (high amount of remaining mineral) precludes the identification of the organic type.

<u>Elemental analysis</u> (Fig. 9)

Coal samples (from cores and SWC) and kerogens were analyzed.

The sample at 2 000 m shows chemical characteristics indicating an immature stage.

In the Upper Jurassic (4 191 - 4 473 m) kerogens due to the relatively high maturity stage, (end of the oil window) it is difficult to determine precisely the type of organic matter.

The coals at 4 502, 4 512, 4 769, 4 770 m are even more mature.

The two shaly samples at the basis of Brent with H/C around 0.65 and O/C around 0.04 show very mature features.

II.3 MATURITY

Vitrinite reflectance, TAI (Tab. 2, Fig. 10,11)

Vitrinite reflectance analysis were performed on kerogens, and on chips of coal either taken in the cores and the SWC or hand-picked in the cuttings. It is to be reminded that in the cores a small bed (5cm thick) of coal was seen at 4 512.55 m and very thin ones at 4 500 and 4 502 m. Moreover, the SWC taken near 4 770 m are coaly and correspond to thicker coal beds as indicated by log data.

In the Tertiary, the reflectance values vary between 0.2% and 0.4% indicating immaturity.

At the basis of the Cretaceous, at 4 069 m a SWC, rich in coaly particles shows a reflectance of 0.53%. In view of the depth and of other parameters such as Tmax, this value seems a little too low.

Near 4 500 m, the reflectance in coal chips from the core is around 0.9 - 0.95%. In the coal side wall cores around 4 770 -4 780 m, it is around 1.2 - 1.3%. These results obtained from coal are reliable and can be considered as reference points. The last two sets of results indicate a very high maturity gradient i.e. around 1% Ro per 1 000 m. Nevertheless, such a high increase in maturity is not uncommon when reaching a high maturity level, even in a normal thermal regime because of the exponential increase in the kinetic rate.

From these data, the beginning of the oil window is uncertain but probably between 3 500 and 3 800 m and the end of the oil window would be reached near 4 800 m. Since an important chronostratigraphical gap occurs at the limit Cretaceous -Jurassic, the abnormal low reflectance value of the SWC at 4 069 m could be explained by a maturity break related to a discordance after erosion. Nevertheless, such an hypothesis would involve an erosion of at least 4 000 m of sediments which is unrealistic.

<u>Pyrolysis temperature (Tmax)</u> (Tab. 1, Fig. 2,5,6,7)

Above 2 800 m, the Tmax are always lower than 430°C.

Between 2 800 and 3 500 m most of the significant values i.e. corresponding to samples with a sufficiently high TOC and a low amount of secondary products, are around 435°C.

At 3 500 m there is a clear increase in Tmax and in the lower parts of the Cretaceous (3 500 - 4 191 m) most of the values are between 440° and 450°C. This increase in Tmax could partly be due to the change of the type of organic matter in relation to the higher hydrogen indices in this zone.

In the Upper Jurassic shales, Tmax are between 445 and 460°C.

In the coal lenses of the Brent, Tmax values are between 460 and 490°C. The increase from 460°C at 4 512 m to 488°C at 4 770 m corresponds to the increase in vitrinite reflectance from 0.9 to 1.3%.

The shales of the Dunlin show Tmax in the same range as the Upper Jurassic ones.

These data would indicate that the Upper Jurassic shales are in the second part of the oil window and the lower part of the Brent at the beginning of the gas window.

III - HEAD SPACE GAS ANALYSIS, METHANE δ C13
(Tab. 3, Fig. 12 to 15)

Tin cans containing cuttings with mud were taken at the well site every 25 m. The composition of the gas (C1 to C4) in the head space was analyzed. Moreover methane δ C13 was analyzed about every 150 m.

In the upper part of the well (i.e. down to 1 500 m), the wet gas ratio (C2 to C4/C1 to C4) is almost nil :the gas is composed only of biogenic methane.

From 1 500 m to 2 150 m, the wet gas ratio increases quickly and reaches 70 - 75% in the interval 2 200 -2 700 m. Between 1 500 m and 2 100 m the quantities of gas (compared to the TOC) are relatively high. They correspond to accumulations in the sand interval (Heimdal formation 2 180 - 2 485 m). Thus, these high wet gas ratios can't be related to autochtonous gases since the host rocks are immature : they are to be related to gases migrated from a more mature zone and accumulated in the Heimdal sandy interval.

At 2 840 m, the wet gas ratios show a break and decrease strongly to 5.6%. They remain relatively low down to 4 200 m. Between 4 200 m and the TD, they increase again and the highest values reach about 30%. In the shaly marly Cretaceous section (2 800 - 4 200 m), the gas could have partly an autochtonous origin as indicated by the relatively little negative δ C13 values in the still immature section above 3 500 m. Below 4 000 m, the relatively low wet gas ratio in view of the quick increase in maturity can be explained by the leakage of relatively dry gas from the Jurassic gas condensate bearing reservoir.

<u>Methane δ C13</u> (Fig. 14, 15)

In the upper part above 1 400 m, the δ C13 is very negative (-60 to - 80‰) which is typical of biogenic gas. Between 2 180 m and 2 500 m (Heimdal sand) the δ C13 corresponds to mature gas (-30 to -35‰) which has migrated from deep zones and accumulated in the Heimdal sand. Between 1 400 and 2 000 m the decrease in the δ C13 is due to the mixing of gas leaked from Heimdal sand and the autochtonous one.

Between 2 800 and 4 500 m the δ C13 around -40 to - 45‰ probably corresponds partly to autochtonous gas and partly to gas migrated from the jurassic reservoir.

Between 4 500 m and the TD (4 937 m), the analyzed methane corresponds to gas present in the Jurassic reservoir :the δ C13 values around -30 to - 35‰ would indicate a thermogenic origin. The sample at 4 850 m (δ C13 = 43‰) is somewhat anomalous.

IV - CONDENSATE ANALYSIS

(Tab. 4 to 7, Fig. 16 to 18 and 20 to 23)

Two condensate samples from DST-1 were analyzed.

Both the C15+ and light (C5-C15) fractions were studied.

In the C15+ fraction, saturates are abundant i.e. around 86% and the heavy products around 1 to 3%. Although they are the most abundant in the C13-C15 range, n-alkanes are present until C33. The values of Pristane/C17 ($\simeq$0.45) and Phytane/C18 ($\simeq$0.23) indicate a rather mature stage. Pristane/Phytane around 2.2. - 2.5 would indicate a humic origin (terrestrial organic matter).

The indices (Ip and Ih) obtained from the light thermovaporizable fraction indicate a humic origin in a moderate stage of maturity.

Since the Ip, Ih, Pristane/Phytane values indicate a land-plant origin, the most probable source for the condensate is the coals and shales of the Middle Jurassic formation which are in a favourable stage of maturity. Unfortunately due to the use of oil based mud, no extracts can be performed in view of direct correlation between the supposed source rocks and the condensate.

Table 1

** NORWAY * 24/6-1 **

PETROLEUM POTENTIAL O S A


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******************************   L E G E N D   ***********************************
*                                                                                 *
* T.O.C ...................... : TOTAL ORGANIC CARBON ( WEIGHT % OF ROCK )        *
*                                                                                 *
* S1   PRODUCTIVITY .......... : KG OF HYDROCARBONS(FREE & THERMOVAPORIZABLE)PER*
*                                TON OF ROCK --------------> OIL                  *
* S2   POTENTIAL PRODUCTIVITY. : KG OF HYDROCARBONS(CRACKING OF KEROGEN) PER TON*
*                                OF ROCK ------------------> KEROGEN              *
* PI   PRODUCTION INDEX ...... : RATIO (PRODUCTIVITY / PRODUCTIVITY + POTENTIAL *
*                                PRODUCTIVITY) - S1/S1+S2                         *
* TMAX PYROLYSIS TEMPERATURE.  : TEMPERATURE("C)OF THE MAXIMUM FORMATION OF HY- *
*                                DROCARBONS BY CRACKING OF KEROGEN - S2           *
* HC   HYDROCARBONS INDEX .... : MG OF HYDROCARBONS(FREE & THERMOVAPORIZABLE)IN *
*                                THE ROCK PER G OF TOC - S1/TOC                   *
* HI   HYDROGEN INDEX .. ..... : MG OF HYDROCARBONS(COMING FROM CRACKING OF     *
*                                KEROGEN) PER G OF TOC - S2/TOC                   *
*                                                                                 *
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No GR	DEPTH	TOC	S1	S2	IP	TMAX	HC	HI
40193	225.05	.05	0.00	.11	0.00	473	0	220
40194	250.05	.13	.02	.14	.12	405	15	107
40195	275.05	.04	0.00	.05	0.00	321	0	125
40196	300.05	.04	0.00	.03	0.00	295	0	75
40197	325.05	.69	.01	1.94	.01	433	1	281
40199	375.05	.17	.03	.36	.08	424	18	211
40200	400.05	.13	0.00	.05	0.00	261	0	38
40201	425.05	.02	.01	.02	.50	261	50	100
40202	450.05	.02	0.00	0.00	0.00	261	0	0
40204	500.05	.01	0.00	0.00	0.00	248	0	0
40205	525.05	.01	0.00	0.00	0.00	295	0	0
40206	550.05	.01	0.00	.02	0.00	323	0	200
40207	575.05	.44	.02	.84	.02	429	5	190
40208	600.05	.10	0.00	.07	0.00	336	0	70
40209	625.05	.70	.03	.37	.07	396	4	52
40211	675.05	.34	0.00	.21	0.00	372	0	61
40212	700.05	2.69	.50	1.69	.23	406	19	62
40213	725.05	1.94	.05	1.37	.04	419	3	70
40214	750.05	.70	.03	.32	.09	414	4	45
40215	775.05	1.28	.06	.86	.07	394	5	67
40216	800.05	1.31	.03	.80	.04	413	2	61
40217	825.05	.80	.02	.51	.04	410	3	63
40218	850.05	.60	.03	.66	.04	404	5	110
40220	900.05	2.53	.08	2.12	.04	413	3	83

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No GR	DEPTH	TOC	S1	S2	IP	TMAX	HC	HI
40221	925.05	2.22	.06	2.08	.03	417	3	93
40222	950.05	1.40	.06	1.16	.05	407	4	82
40223	975.05	1.80	.08	2.25	.03	407	4	125
40224	1000.05	1.03	.04	.81	.05	421	4	78
40225	1025.05	.54	.06	.70	.08	425	11	129
40227	1075.05	.90	.04	1.00	.04	422	4	111
40228	1100.05	.97	.05	1.09	.04	421	5	112
40229	1125.05	1.26	.04	1.50	.03	424	3	119
40231	1175.05	.68	.03	.67	.04	427	4	98
40232	1200.05	.59	.04	.53	.07	423	7	89
40234	1250.05	.38	.02	.41	.05	438	5	107
40235	1300.05	.77	.02	.89	.02	427	3	115
40236	1325.05	.46	.01	.41	.02	435	2	89
40237	1350.05	.36	.01	.37	.03	439	3	102
40238	1375.05	.45	.01	.42	.02	429	2	93
40240	1425.05	.61	.03	.50	.06	425	5	81
40241	1450.05	.57	.02	.50	.04	427	4	87
40242	1475.05	.48	.06	.67	.08	425	13	139
40243	1500.05	.60	.09	.83	.10	423	15	138
40244	1525.05	.72	.10	.94	.10	423	14	130
40246	1575.05	.68	.06	.85	.07	424	9	125
40247	1600.05	.69	.08	.94	.08	428	12	136
40248	1625.05	.69	.06	1.11	.05	422	9	160
40249	1650.05	.95	.10	1.86	.05	422	11	195
40251	1700.05	.87	.08	2.08	.04	429	9	239
40252	1725.05	.92	.09	1.56	.05	426	10	169
40253	1750.05	1.08	.25	2.34	.10	426	23	216
40255	1800.05	1.22	.52	3.87	.12	421	43	317
40256	1825.05	1.12	.38	2.93	.12	424	34	261
40258	1900.05	.82	.19	1.71	.10	424	23	208
40260	1975.05	.92	.13	1.68	.07	430	14	182
40261	2000.05	1.13	.09	1.69	.05	430	8	149
40262	2025.05	.67	.08	1.25	.06	428	12	186
40264	2075.05	1.09	.12	2.28	.05	426	11	209
40265	2100.05	.92	.11	2.48	.04	426	12	269
40266	2125.05	.70	.04	1.00	.04	425	6	142
40267	2150.05	.68	.05	.83	.06	424	7	122
40269	2200.05	.71	.11	1.14	.09	428	15	160
40270	2225.05	.54	.10	1.39	.07	422	19	257
40271	2250.05	.38	.04	.71	.05	421	11	186
40272	2275.05	.25	.04	.43	.09	419	16	172
40273	2325.05	.19	.01	.32	.03	425	5	168
40275	2350.05	.49	.06	1.06	.05	425	12	216
40276	2375.05	.40	.04	.70	.05	431	10	175
40277	2400.05	.63	.11	1.23	.08	423	17	195
40278	2425.05	.38	.03	.48	.06	424	8	126
40280	2475.05	.13	.09	.16	.37	365	69	123
40281	2500.05	.58	.04	.64	.06	429	7	110
40282	2525.05	.56	.03	.53	.05	430	5	94
40283	2550.05	.49	.05	.93	.05	431	10	189
40284	2575.05	.63	.03	.83	.03	432	5	131
40286	2625.05	.38	.05	.72	.07	430	13	189
40287	2650.05	.46	.05	.90	.05	424	11	195
40288	2675.05	.21	.02	.34	.06	438	10	161
40289	2700.05	.39	.07	.85	.08	429	18	217
40290	2725.05	.61	.12	1.23	.09	427	20	201
40291	2750.05	.42	.06	.41	.13	427	14	97

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No GR	DEPTH	TOC	S1	S2	IP	TMAX	HC	HI
40292	2775.05	.30	.04	.39	.10	429	13	130
40294	2825.05	.69	.03	.35	.08	427	4	50
40729	2850.05	.36	.05	.11	.31	435	14	30
40730	2875.05	.49	.07	.35	.17	417	14	71
40731	2900.05	.39	.08	.25	.25	436	21	64
40732	2925.05	.33	.08	.21	.29	431	24	63
40733	2950.05	.36	.06	.21	.23	432	17	58
40734	2975.05	.39	.09	.28	.25	436	23	71
40735	3000.05	.43	.09	.38	.20	419	21	88
40736	3025.05	.40	.08	.18	.31	432	20	45
40737	3050.05	.26	.09	.22	.30	423	35	84
40738	3075.05	.33	.13	.42	.24	434	39	127
40739	3100.05	.33	.13	.20	.41	397	39	60
40740	3125.05	.38	.06	.27	.19	439	16	71
40741	3150.05	.30	.05	.12	.31	457	17	40
40742	3175.05	.38	.05	.20	.21	404	13	52
40743	3200.05	.43	.07	.24	.23	434	16	55
40744	3225.05	.49	.17	.31	.35	430	35	63
40745	3250.05	.58	.17	.52	.25	429	29	89
40746	3275.05	.59	.12	.50	.19	424	20	84
40747	3300.05	.51	.05	.29	.15	434	10	56
40748	3325.05	.44	.10	.48	.17	433	23	109
40749	3350.05	.34	.07	.24	.23	420	21	70
40750	3375.05	.30	.05	.18	.23	385	17	60
40751	3400.05	.34	.14	.23	.39	418	41	67
40752	3425.05	.48	.11	.37	.23	425	23	77
40753	3450.05	.47	.19	.46	.30	417	40	97
40754	3475.05	.38	.09	.36	.20	421	24	94
40755	3500.05	.47	.10	.46	.18	442	21	97
40756	3525.05	.38	.10	.51	.17	441	26	134
40757	3550.05	.44	.10	.71	.12	440	23	161
40758	3575.05	.52	.26	.65	.29	440	50	125
40759	3600.05	.50	.12	.70	.15	442	24	140
40760	3625.05	.47	.08	.72	.10	442	17	153
40761	3650.05	.50	.07	.70	.09	444	14	140
40762	3675.05	.53	.21	.85	.20	445	40	160
40763	3700.05	.58	.24	1.13	.18	446	41	194
44019	3705.01	1.00	.12	1.58	.07	442	12	158
40764	3725.05	.68	.19	1.16	.14	446	28	170
44020	3732.51	.20	.02	.08	.20	462	10	40
40765	3750.05	.50	.19	1.62	.11	451	38	324
40766	3775.05	.50	.11	1.11	.09	446	22	222
40767	3800.05	.53	.20	1.48	.12	449	38	279
44021	3813.01	.55	.06	.74	.07	439	11	134
40768	3825.05	.52	.15	.95	.14	446	29	182
40769	3850.05	.62	.20	1.25	.14	442	32	201
40770	3875.05	.64	.34	.88	.28	442	53	137
44022	3876.01	.41	.06	.25	.20	376	15	60
40771	3900.05	.56	.13	1.29	.09	446	23	230
44023	3903.01	.45	.05	.66	.07	440	11	146
40772	3925.05	.68	.17	1.65	.09	448	25	242
44024	3934.01	.79	.08	1.37	.06	441	10	173
40773	3950.05	.74	.24	2.11	.10	446	32	285
44025	3968.01	.21	.04	.21	.17	390	19	100
40774	3975.05	.54	.12	1.21	.09	446	22	224
44026	3984.01	.39	.08	.23	.27	387	21	58
40775	4000.05	.77	.12	2.16	.05	447	16	280

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No GR	DEPTH	TOC	S1	S2	IP	TMAX	HC	HI
44027	4005.01	.23	.03	.08	.30	365	13	34
40776	4025.05	.64	.25	1.72	.13	448	39	268
44028	4029.01	.19	.03	.14	.19	382	16	73
40777	4050.05	.78	.19	2.47	.07	449	24	316
43794	4069.01	10.36	.69	39.82	.02	455	7	384
40778	4075.05	.67	.22	2.07	.10	446	33	308
44029	4110.01	.25	.03	.18	.15	442	12	72
40779	4125.05	.89	.15	1.40	.10	442	17	157
40780	4150.05	1.05	.20	.67	.23	437	19	63
40781	4174.05	.85	.13	.93	.12	411	15	109
44030	4182.01	.32	.03	.43	.07	459	9	134
44031	4198.01	2.68	.43	4.06	.10	443	16	151
40782	4198.05	3.45	.40	6.15	.06	445	12	178
44032	4201.01	2.87	.43	7.35	.06	449	15	256
44033	4206.11	3.11	.39	6.11	.06	454	13	196
44034	4215.01	2.26	.93	9.90	.09	459	41	438
40783	4226.05	3.11	.27	4.10	.06	449	9	131
44035	4234.01	2.28	.20	4.52	.04	456	9	198
40784	4250.05	2.11	.26	4.11	.06	450	12	194
44036	4267.01	1.59	.08	3.74	.02	460	5	235
40785	4274.05	2.62	.42	3.81	.10	448	16	145
40786	4298.05	1.47	.81	4.25	.16	449	55	289
44037	4322.01	3.30	.42	10.30	.04	460	13	312
40787	4326.05	3.35	.30	6.41	.04	450	9	191
40788	4353.05	1.99	.38	6.98	.05	451	19	350
42575	4375.05	3.11	.26	4.32	.06	454	8	138
44038	4378.41	1.43	.15	2.35	.06	464	10	164
42576	4400.05	2.93	.05	3.08	.02	451	2	105
42577	4425.05	3.52	.13	3.08	.04	449	4	87
42578	4450.05	2.85	.07	2.26	.03	449	2	79
42579	4475.05	1.04	.15	.60	.20	442	14	57
43784	4492.85	.68	6.98	.34	.95	416		50
43785	4496.50	1.15	11.16	.68	.94	399	970	59
43786	4500.35	63.11	4.44	191.48	.02	454	7	303
43787	4500.80	.72	5.68	.28	.95	423	789	38
43682	4502.85	77.50	10.00	222.17	.04	458	13	287
43788	4505.60	.68	4.97	.31	.94	452	731	45
43789	4505.90	2.75	1.93	4.02	.32	463	70	146
43790	4508.50	1.56	6.85	1.22	.85	462	439	78
43791	4510.80	.83	7.50	.29	.96	418	904	34
43795	4511.90	.71	.39	2.11	.16	465	55	297
43683	4512.55	68.30	5.20	137.94	.04	462	8	202
43796	4512.75	4.35	1.18	15.00	.07	466	27	344
42580	4525.05	.62	.08	1.00	.07	441	13	161
42581	4550.05	2.43	.43	4.98	.08	453	18	204
42582	4575.05	1.38	.37	1.34	.22	444	27	97
42583	4600.05	4.05	.24	3.75	.06	465	6	92
42584	4625.05	1.60	.23	2.27	.09	424	14	141
43684	4631.50	24.96	16.78	34.46	.33	473	67	138
42585	4650.05	.39	.30	.44	.41	438	77	112
42586	4675.05	1.36	.23	1.31	.15	437	17	96
42587	4700.05	.85	.27	.58	.32	452	32	68
42588	4725.05	1.62	.10	1.52	.06	455	6	93
43797	4769.01	35.25	6.47	70.56	.08	483	18	200
43798	4769.51	51.99	10.31	68.88	.13	487	20	132
43799	4770.01	43.27	9.84	47.65	.17	488	23	110
43026	4775.05	2.35	.19	3.52	.05	455	8	149

** NORWAY * 24/6-1 **

No GR	DEPTH	TOC	S1	S2	IP	TMAX	HC	HI
44039	4787.51	.27	.09	.54	.15	428	33	200
43027	4800.05	1.44	.14	1.81	.07	445	10	125
44040	4811.01	2.03	.28	1.06	.21	453	14	52
44041	4818.01	1.28	.36	1.10	.25	456	28	85
43028	4825.05	.96	.13	1.14	.10	430	14	118
44042	4840.01	.42	.11	.36	.24	446	26	85
43029	4850.05	.86	.42	1.89	.18	445	49	219
44043	4872.01	.20	.06	.34	.15	434	30	170
44044	4880.01	1.37	.32	1.76	.15	441	23	128
43030	4900.05	.84	.20	1.42	.12	436	24	169
43031	4925.05	.53	.30	.77	.28	440	57	145
44045	4938.01	.32	.04	.92	.04	433	13	287

REFLECTOMETRY

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* NORWAY *
* 24/6-1 *

GEOCH. NUM.	DEPTH.	VITRINITE MEAN	S-D.	NB. MEAS	EXINITE MEAN	S-D.	NB. MEAS	INERTINITE MEAN	S-D.	NB. MEAS	CAVINGS MEAN	S-D.	NB. MEAS	REWORKED MEAN	S-D.	NB. MEAS	TOTAL NB. MEAS.
GK40220.	900.05	.22	.04	40	kerogen-cut.		0			0			0			0	40
GK40255.	1800.05	.26	.03	9	"	"	0			0			0			0	9
GK40261.	2000.05	.26	.03	9	"	"	0			0			0			0	9
GK40290.	2725.05	.42	.05	22	"	"	0	.72	.08	6			0			0	28
GK40764.	3725.05			0	"	"	0			0			0	1.04	.16	19	19
GK40777.	4050.05			0	"	"	0			0			0	1.13	.14	30	30
GR43794.	4069.00	.53	.05	28	coaly shale-SWC					0			0			0	28
GK40782.	4198.05	.73	.10	16	kerogen-cut.		0	1.25	.29	19			0			0	35
GK40784.	4250.05	.89	.13	6	"	"	0	1.30	.16	14			0			0	20
GK40786.	4298.05	.99	.10	9	"	"	0	1.23	.08	11			0			0	20
GK40788.	4353.05	1.08	.06	15	"	"	0	1.36	.20	5			0			0	20
GK42577.	4425.05	1.01	.08	14	"	"	0	1.27	.07	6			0			0	20
GK42579.	4475.05	.87	.10	26	"	"	0			0			0			0	26
GR43786.	4500.35	.90	.05	30	Silt. coal-core					0			0			0	30
GR43682.	4502.85	.95	.06	30	coal-core		0			0			0			0	30
GR43789.	4505.90	.90	.06	14	Silt. coal-core		0	1.42	.19	6			0			0	20
GR43683.	4512.55	.98	.05	56	coal-core		0	1.32	.03	4			0			0	60
GR43684.	4631.50	1.22	.05	30	"	"	0			0			0			0	30
GR43779.	4712.00	1.05	.04	6	Picked coal cut.		0			0			0			0	6
GR43780.	4718.00	1.15	.06	5	"	"	0 "			0			0			0	5
GK43515.	4726.00	1.23	.08	39	kerogen cut.		0			0			0			0	39
GR43781.	4726.02	1.07	.08	44	Picked coal cut.		0			0			0			0	44
GR43782.	4754.00	1.22	.09	46	"	"	0 "			0			0			0	46
GR43797.	4769.00	1.28	.09	28	Coal SWC		0			0			0			0	28
GR43798.	4769.50	1.20	.11	17	"	"	0			0			0			0	17
GR43799.	4770.00	1.28	.06	30	"	"	0			0			0			0	30
GK43516.	4774.00	1.30	.06	28	kerogen-cut.		0			0			0			0	28
GR43783.	4780.00	1.24	.11	9	Picked coal cut.		0			0			0			0	9
GK43029.	4850.05			0	kerogen-cut.		0			0	1.13	.08	8			0	8
GK43030.	4900.05			0	"	"	0			0	1.14	.09	13			0	13

Table 3

** ANALYSIS OF HEAD SPACE GAS * NORWAY * 24/6-1 **

NO. GEOCHIM.	DEPTH (METERS)	METHANE C1 PPM	ETHANE C2 PPM	PROPANE C3 PPM	I-BUTANE IC4 PPM	N-BUTANE NC4 PPM	TOTAL GAS C1-C4	T.O.C. 0/0	TG/TOC L/KG CAR	WET GAS 0/0	IC4/NC4
GR40193.	225.05	82.3	0.0	0.0	0.0		82.3	.050	.07162	0.000	
GR40194.	250.05	305.6	3.4	0.0	0.0		309.0	.130	.10339	1.089	
GR40195.	275.05	11.5	0.0	0.0	0.0		11.5	.040	.01254	0.000	
GR40199.	375.05	1368.6	2.8	0.0	0.0		1371.4	.170	.35092	.203	
GR40200.	400.05	960.3	0.0	0.0	0.0		960.3	.130	.32133	0.000	
GR40201.	425.05	113.8	0.0	0.0	0.0		113.8	.020	.24755	0.000	
GR40202.	450.05	159.7	0.0	0.0	0.0		159.7	.020	.34732	0.000	
GR40204.	500.05	1539.7	0.0	0.0	0.0		1539.7	.010	6.69751	0.000	
GR40205.	525.05	159.8	0.0	0.0	0.0		159.8	.010	.69503	0.000	
GR40206.	550.05	426.8	1.3	0.0	0.0		428.1	.010	1.86237	.310	
GR40207.	575.05	74.1	0.0	0.0	0.0		74.1	.440	.00733	0.000	
GR40208.	600.05	308.4	0.0	0.0	0.0		308.4	.100	.13415	0.000	
GR40209.	625.05	251.3	0.0	0.0	0.0		251.3	.700	.01562	0.000	
GR40211.	675.05	122.0	0.0	0.0	0.0		122.0	.340	.01561	0.000	
GR40212.	700.05	6708.7	4.1	0.0	0.0		6712.9	2.690	.10855	.062	
GR40213.	725.05	680.5	3.5	1.6	0.0		685.6	1.940	.01537	.736	
GR40214.	750.05	59.2	0.0	0.0	0.0		59.2	.700	.00368	0.000	
GR40215.	775.05	7.4	0.0	0.0	0.0		7.4	1.280	.00025	0.000	
GR40216.	800.05	0.0	0.0	0.0	0.0			1.310			
GR40217.	825.05	121.9	0.0	0.0	0.0		121.9	.800	.00663	0.000	
GR40218.	850.05	58.1	0.0	0.0	0.0		58.1	.600	.00421	0.000	
GR40220.	900.05	51.4	0.0	0.0	0.0		51.4	2.530	.00088	0.000	
GR40221.	925.05	309.0	0.0	0.0	0.0		309.0	2.220	.00606	0.000	
GR40222.	950.05	939.0	0.0	0.0	0.0		939.0	1.400	.02918	0.000	
GR40223.	975.05	177.8	0.0	0.0	0.0		177.8	1.800	.00430	0.000	
GR40224.	1000.05	2134.0	69.7	31.2	0.0		2234.9	1.030	.09439	4.514	
GR40225.	1025.05	182.1	0.0	0.0	0.0		182.1	.540	.01467	0.000	
GR40227.	1075.05	973.2	16.9	7.6	0.0		997.7	.900	.04822	2.456	
GR40228.	1100.05	851.5	16.5	5.5	0.0		873.6	.970	.03918	2.526	
GR40229.	1125.05	834.6	12.8	8.6	0.0		856.0	1.260	.02955	2.495	
GR40231.	1175.05	8362.4	7.9	2.6	0.0		8372.9	.680	.53562	.125	
GR40232.	1200.05	12208.9	6.4	0.0	0.0		12215.3	.590	.90062	.052	
GR40234.	1250.05	2898.5	7.4	0.0	0.0		2905.9	.380	.33265	.256	

** ANALYSIS OF HEAD SPACE GAS * NORWAY * 24/6-1 **

NO. GEOCHIM.	DEPTH (METERS)	METHANE C1 PPM	ETHANE C2 PPM	PROPANE C3 PPM	I-BUTANE IC4 PPM	N-BUTANE NC4 PPM	TOTAL GAS C1-C4	T.O.C. 0/0	TG/TOC L/KG CAR	WET GAS 0/0	IC4/NC4
GR40235.	1300.05	286.0	2.1	0.0	0.0		288.0	.770	.01627	.722	
GR40236.	1325.05	1404.0	4.6	0.0	0.0		1408.5	.460	.13320	.326	
GR40237.	1350.05	4066.5	15.5	2.6	0.0		4084.6	.360	.49355	.443	
GR40238.	1375.05	3219.0	14.1	7.6	4.4	4.4	3249.4	.450	.31411	.936	1.000
GR40240.	1425.05	15798.1	149.4	91.2	41.0	28.1	16107.7	.610	1.14866	1.922	1.458
GR40241.	1450.05	16303.9	192.2	99.6	43.8	26.8	16666.2	.570	1.27189	2.174	1.635
GR40242.	1475.05	17668.5	365.9	226.9	119.5	69.4	18450.2	.480	1.67205	4.237	1.723
GR40243.	1500.05	18920.8	460.0	283.7	159.1	90.5	19914.1	.600	1.44377	4.988	1.757
GR40244.	1525.05	17481.6	732.2	485.8	294.4	159.9	19153.9	.720	1.15722	8.731	1.841
GR40246.	1575.05	18408.2	646.2	445.3	428.2	197.3	20125.2	.680	1.28742	8.532	2.170
GR40247.	1600.05	21443.9	1234.2	631.5	328.0	133.6	23771.3	.690	1.49863	9.791	2.455
GR40248.	1625.05	24647.7	1781.8	891.6	455.2	173.0	27949.3	.690	1.76202	11.813	2.631
GR40249.	1650.05	40281.9	4630.8	2820.9	1516.8	580.8	49831.2	.950	2.28174	19.163	2.612
GR40251.	1700.05	59789.3	8151.4	5608.7	2559.9	1227.4	77336.7	.870	3.86683	22.690	2.086
GR40252.	1725.05	40035.3	6385.3	4744.6	2167.9	1167.1	54500.2	.920	2.57691	26.541	1.857
GR40253.	1750.05	25619.6	7044.5	7037.2	3394.1	1947.1	45042.6	1.080	1.81421	43.121	1.743
GR40255.	1800.05	82134.2	21593.0	18865.4	7226.5	4535.6	134354.6	1.220	4.79051	38.868	1.593
GR40256.	1825.05	77678.4	20962.3	21166.5	9659.0	6421.4	135887.6	1.120	5.27778	42.836	1.504
GR40258.	1900.05	35253.6	6457.3	4224.7	2946.9	1150.3	50032.7	.820	2.65417	29.539	2.562
GR40260.	1975.05	20566.9	5296.1	3373.1	3414.5	984.3	33635.0	.920	1.59035	38.853	3.469
GR40261.	2000.05	26490.3	6404.9	3165.7	3127.5	871.7	40060.1	1.130	1.54214	33.874	3.588
GR40262.	2025.05	26052.1	5599.9	2592.4	3059.9	810.1	38114.4	.670	2.47459	31.648	3.777
GR40264.	2075.05	23181.8	4727.8	1351.4	1737.5	339.3	31337.8	1.090	1.25064	26.026	5.121
GR40265.	2100.05	33898.2	12243.5	6289.4	5053.6	1685.9	59170.6	.920	2.79774	42.711	2.997
GR40266.	2125.05	17847.2	5040.8	2358.8	1829.4	585.0	27661.2	.700	1.71895	35.479	3.127
GR40267.	2150.05	14475.5	3568.5	2030.3	1301.6	498.8	21874.7	.680	1.39934	33.825	2.610
GR40269.	2200.05	8066.8	2787.5	2362.7	1355.4	606.7	15179.1	.710	.92999	46.856	2.234
GR40270.	2225.05	5335.1	2404.5	2060.9	1272.4	552.5	11625.4	.540	.93649	54.109	2.303
GR40271.	2250.05	4038.8	1667.6	1697.9	1257.8	579.8	9241.9	.380	1.05796	56.299	2.169
GR40272.	2275.05	1900.6	874.5	934.9	723.4	391.8	4825.2	.250	.83959	60.611	1.846
GR40274.	2325.05	1332.0	773.7	720.4	558.9	246.5	3631.4	.190	.83141	63.320	2.267
GR40275.	2350.05	1394.1	943.0	1402.9	995.8	627.6	5363.4	.490	.47614	74.007	1.587
GR40276.	2375.05	2706.3	1713.0	2345.2	1398.0	916.0	9078.5	.400	.98729	70.190	1.526

** ANALYSIS OF HEAD SPACE GAS * NORWAY * 24/6-1 **

NO. GEOCHIM.	DEPTH (METERS)	METHANE C1 PPM	ETHANE C2 PPM	PROPANE C3 PPM	I-BUTANE IC4 PPM	N-BUTANE NC4 PPM	TOTAL GAS C1-C4	T.O.C. 0/0	TG/TOC L/KG CAR	WET GAS 0/0	IC4/NC4
GR40277.	2400.05	2639.1	1250.2	1528.8	803.4	696.2	6917.7	.630	.47765	61.851	1.154
GR40278.	2425.05	1844.9	1424.9	2248.1	1024.8	1210.9	7753.6	.380	.88759	76.206	.846
GR40280.	2475.05	1134.3	689.3	907.5	326.4	407.1	3464.5	.130	1.15928	67.260	.802
GR40281.	2500.05	5271.0	2331.4	5279.1	1524.1	3941.8	18347.4	.580	1.37606	71.271	.387
GR40282.	2525.05	5854.5	2543.3	5102.8	1339.1	3570.3	18409.9	.560	1.43006	68.199	.375
GR40283.	2550.05	5647.4	2760.0	4462.6	1068.4	2537.8	16476.2	.490	1.46269	65.724	.421
GR40284.	2575.05	3408.1	1664.5	2899.9	731.9	1721.9	10426.4	.630	.71992	67.313	.425
GR40286.	2625.05	2063.4	2171.8	3076.8	681.2	1321.3	9314.3	.380	1.06625	77.847	.516
GR40287.	2650.05	6749.9	3602.3	5398.6	1569.6	2827.7	20148.1	.460	1.90531	66.499	.555
GR40288.	2675.05	2508.1	2279.5	3997.4	927.1	2082.7	11794.8	.210	2.44322	78.735	.445
GR40289.	2700.05	1934.8	1320.8	2314.4	616.1	1405.2	7591.4	.390	.84673	74.513	.438
GR40290.	2725.05	680.1	335.9	439.4	151.8	193.4	1800.7	.610	.12841	62.229	.785
GR40291.	2750.05	885.5	1224.0	1604.4	356.4	558.9	4629.3	.420	.47946	80.872	.638
GR40292.	2775.05	871.7	602.4	985.7	281.7	381.5	3122.9	.300	.45282	72.088	.738
GR40294.	2825.05	2000.4	1118.6	1516.7	688.7	556.3	5880.8	.690	.37074	65.984	1.238
GR40729.	2850.05	3458.1	432.7	182.2	19.7	38.7	4131.6	.360	.49923	16.300	.509
GR40730.	2875.05	30466.7	1509.5	415.0	42.6	86.0	32519.7	.490	2.88695	6.313	.495
GR40731.	2900.05	26343.1	1095.9	292.4	30.2	64.4	27826.1	.390	3.10368	5.330	.468
GR40732.	2925.05	87492.5	3954.3	852.7	74.0	137.1	92510.6	.330	12.19458	5.424	.540
GR40733.	2950.05	52402.1	2039.8	476.5	43.7	81.2	55043.3	.360	6.65107	4.798	.538
GR40734.	2975.05	24729.5	1034.0	270.9	25.8	47.2	26107.3	.390	2.91197	5.278	.546
GR40735.	3000.05	36522.6	1467.4	386.5	37.3	66.9	38480.8	.430	3.89282	5.089	.557
GR40736.	3025.05	9174.2	501.0	187.8	20.9	40.2	9924.1	.400	1.07925	7.556	.519
GR40737.	3050.05	130112.6	4782.5	943.9	80.2	137.3	136056.6	.260	22.76331	4.369	.584
GR40738.	3075.05	32540.7	1597.0	434.2	47.7	76.5	34696.0	.330	4.57357	6.212	.623
GR40739.	3100.05	76203.2	2516.6	577.1	59.9	104.6	79461.5	.330	10.47447	4.100	.573
GR40740.	3125.05	107951.2	3573.7	726.3	64.9	114.8	112430.9	.380	12.87038	3.984	.565
GR40741.	3150.05	39212.8	1307.4	297.0	28.5	51.4	40897.2	.300	5.93010	4.119	.555
GR40742.	3175.05	6237.4	1136.6	622.4	87.4	159.2	8243.1	.380	.94361	24.331	.549
GR40743.	3200.05	16757.4	1722.2	856.8	132.6	432.2	19901.1	.430	2.01325	15.797	.307
GR40744.	3225.05	1930.4	338.5	226.0	40.7	86.8	2622.4	.490	.23281	26.388	.468
GR40745.	3250.05	49445.6	1782.4	430.3	44.7	81.8	51784.7	.580	3.88385	4.517	.546
GR40747.	3300.05	44876.6	1976.3	456.0	45.4	89.7	47444.0	.510	4.04669	5.411	.506

** ANALYSIS OF HEAD SPACE GAS * NORWAY * 24/6-1 **

NO. GEOCHIM.	DEPTH (METERS)	METHANE C1 PPM	ETHANE C2 PPM	PROPANE C3 PPM	I-BUTANE IC4 PPM	N-BUTANE NC4 PPM	TOTAL GAS C1-C4	T.O.C. 0/0	TG/TOC L/KG CAR	WET GAS 0/0	IC4/NC4
GR40748.	3325.05	64283.0	4798.2	1660.2	193.0	399.5	71333.9	.440	7.05233	9.884	.483
GR40749.	3350.05	49773.6	3277.6	1237.2	163.6	356.5	54808.5	.340	7.01226	9.186	.459
GR40750.	3375.05	46460.9	2673.3	966.9	139.5	338.1	50578.8	.300	7.33392	8.141	.412
GR40751.	3400.05	69141.6	4001.4	1242.6	168.6	388.7	74942.9	.340	9.58828	7.741	.434
GR40752.	3425.05	31964.7	1762.1	545.2	68.7	154.0	34494.7	.480	3.12608	7.334	.446
GR40753.	3450.05	20136.7	858.8	300.0	50.5	117.6	21463.6	.470	1.98653	6.182	.430
GR40754.	3475.05	14392.1	721.4	250.2	41.4	101.5	15506.5	.380	1.77509	7.187	.408
GR40755.	3500.05	12379.1	524.9	135.1	20.4	48.5	13108.1	.470	1.21320	5.562	.421
GR40756.	3525.05	39981.2	1539.9	308.5	29.2	52.1	41910.9	.380	4.79769	4.604	.561
GR40757.	3550.05	20060.5	839.6	189.7	19.4	47.3	21156.5	.440	2.09161	5.181	.411
GR40758.	3575.05	62710.8	2210.1	487.5	48.5	96.2	65553.1	.520	5.48376	4.336	.504
GR40759.	3600.05	115527.3	4083.7	778.6	60.7	103.8	120554.1	.500	10.48821	4.170	.584
GR40760.	3625.05	22500.0	1921.0	667.3	69.7	144.3	25302.4	.470	2.34182	11.075	.483
GR40761.	3650.05	21841.7	1505.0	576.4	67.1	135.1	24125.4	.500	2.09891	9.466	.497
GR40762.	3675.05	57511.0	2918.2	758.3	70.6	139.6	61397.8	.530	5.03925	6.330	.506
GR40763.	3700.05	112486.1	4133.3	891.7	73.4	152.7	117737.2	.580	8.83029	4.460	.480
GR40764.	3725.05	86968.6	3672.6	839.9	73.0	149.9	91703.9	.680	5.86635	5.164	.487
GR40765.	3750.05	206620.2	11048.0	2455.2	192.2	381.6	220697.1	.500	19.20065	6.378	.504
GR40766.	3775.05	481827.1	25840.5	5802.8	467.6	952.8	514890.8	.500	44.79550	6.422	.491
GR40767.	3800.05	181417.6	9424.3	2179.8	178.2	365.8	193565.7	.530	15.88699	6.276	.487
GR40768.	3825.05	172819.3	9654.7	2455.2	217.4	465.3	185611.9	.520	15.52715	6.892	.467
GR40769.	3850.05	125806.0	7788.7	2186.1	210.2	487.8	136478.8	.620	9.57553	7.820	.431
GR40770.	3875.05	213921.9	10804.9	2551.9	222.0	483.8	227984.5	.640	15.49582	6.168	.459
GR40771.	3900.05	265352.8	14069.8	3428.1	302.7	619.4	283772.8	.560	22.04307	6.491	.489
GR40772.	3925.05	289861.8	13902.9	3196.5	269.4	603.3	307833.9	.680	19.69231	5.838	.446
GR40773.	3950.05	138876.7	7135.9	1720.3	150.5	305.2	148188.5	.740	8.71108	6.284	.493
GR40774.	3975.05	145024.3	6745.2	1624.6	148.5	307.2	153849.6	.540	12.39344	5.736	.483
GR40775.	4000.05	78124.3	3691.4	939.4	92.4	196.3	83043.8	.770	4.69144	5.924	.471
GR40776.	4025.05	95772.4	4939.2	1219.1	112.5	238.3	102281.4	.640	6.95194	6.364	.472
GR40777.	4050.05	136856.6	6751.6	1538.3	129.8	263.6	145539.9	.780	8.11665	5.966	.493
GR40778.	4075.05	138191.7	7287.3	1624.1	129.7	257.0	147489.8	.670	9.57583	6.304	.505
GR40779.	4125.05	6067.7	928.1	427.3	50.4	77.5	7551.0	.890	.36907	19.644	.651
GR40780.	4150.05	9823.3	297.4	75.4	6.3	12.3	10214.7	1.050	.42318	3.831	.509

** ANALYSIS OF HEAD SPACE GAS * NORWAY * 24/6-1 **

NO. GEOCHIM.	DEPTH (METERS)	METHANE C1 PPM	ETHANE C2 PPM	PROPANE C3 PPM	I-BUTANE IC4 PPM	N-BUTANE NC4 PPM	TOTAL GAS C1-C4	T.O.C. 0/0	TG/TOC L/KG CAR	WET GAS 0/0	IC4/NC4
GR40781.	4174.05	12790.7	518.0	154.1	15.7	26.2	13504.8	.850	.69113	5.288	.600
GR40782.	4198.05	63276.6	4010.4	1130.1	107.1	181.8	68706.0	3.450	.86629	7.902	.589
GR40783.	4226.05	19357.7	880.7	264.6	23.5	51.8	20578.4	3.110	.28783	5.932	.455
GR40784.	4250.05	22914.9	992.4	277.3	23.1	54.4	24262.0	2.110	.50019	5.552	.426
GR40785.	4274.05	25252.6	1820.8	620.8	56.3	136.6	27887.1	2.620	.46301	9.447	.412
GR40786.	4298.05	19402.9	1723.1	736.5	74.4	169.4	22106.4	1.470	.65417	12.229	.439
GR40787.	4326.05	49158.2	4601.6	1701.5	149.3	313.3	55923.9	3.350	.72618	12.098	.477
GR40788.	4353.05	30756.5	3798.0	1536.3	140.7	287.0	36518.4	1.990	.79827	15.778	.490
GR42577.	4425.05	8711.4	505.2	174.8	17.7	46.9	9456.0	3.520	.11686	7.875	.377
GR42578.	4450.05	13997.0	694.6	190.9	16.9	35.1	14934.6	2.850	.22795	6.278	.481
GR42579.	4475.05	41003.3	895.4	153.2	12.7	59.0	42123.7	1.040	1.76190	2.660	.216
GR42580.	4525.05	41941.4	1537.2	276.3	21.4	40.8	43817.1	.620	3.07426	4.281	.525
GR42581.	4550.05	1856.4	235.0	116.8	15.7	47.2	2271.2	2.430	.04066	18.263	.333
GR42582.	4575.05	1867.0	300.4	168.5	23.2	48.7	2407.7	1.380	.07590	22.459	.476
GR42583.	4600.05							4.050			
GR42584.	4625.05	229.9	46.8	51.4	7.7	24.2	359.9	1.600	.00979	36.114	.318
GR42585.	4650.05	7221.8	1296.6	491.9	35.2	193.0	9238.4	.390	1.03044	21.829	.182
GR42586.	4675.05	1754.6	98.8	32.3	2.4	5.4	1893.6	1.360	.06057	7.339	.442
GR42587.	4700.05	4263.3	559.9	239.4	19.2	42.0	5123.8	.850	.26222	16.794	.457
GR42588.	4725.05	19371.8	7181.3	3146.9	155.9	251.7	30107.5	1.620	.80844	35.658	.619
GR43026.	4775.05	20527.2	9197.8	1704.9	74.4	105.2	31609.5	2.350	.58511	35.060	.707
GR43027.	4800.05	3503.0	178.5	33.7	2.9	12.5	3730.7	1.440	.11270	6.103	.235
GR43028.	4825.05	8211.7	562.9	123.5	12.5	17.7	8928.3	.960	.40457	8.027	.707
GR43029.	4850.05	4831.6	265.6	47.8	4.2	28.0	5177.3	.860	.26187	6.677	.150
GR43030.	4900.05	2648.4	212.2	47.3	4.4	26.9	2939.1	.840	.15220	9.892	.162
GR43031.	4925.05	867.4	267.3	87.4	10.6	17.7	1250.4	.530	.10263	30.633	.600

Table 5

CRUDE OIL

NORWAY

G B : 44230

WELL	: 24/6-1	TEST	: DST-1 7H	PERIOD	: MIDDLE JURASSIC
FIELD	:	DEPTH (m)	: 4502.00 TO 4537.00	FORMATION	: BRENT

TEST RESULTS

FLUIDS : CONDENSAT

G.O.R (m3/m3) :
TEMP. (deg.C) :

GRAVITY { gr/cm3 :
a.p.i :

RESULTS OF THE GEOCHEMICAL ANALYSIS

GRAVITY (gr/cm3) : .791

CHROMATOGRAPHIC ANALYSIS

COMPOSITION (% WEIGHT)

DISTILLATE (<210 deg.C) :	
SATURATED HYDROCARBONS :	86.39
AROMATIC HYDROCARBONS :	11.99
RESINS :	1.62
ASPHALTENES :	0.00
SATURATES / AROMATICS :	7.21

N-ALKANES COMPOSITION

C	(% WEIGHT)
13 :	
14 :	11.06
15 :	10.72
16 :	10.13
17 :	9.48
18 :	8.20
19 :	6.82
20 :	6.15
21 :	5.50
22 :	4.97
23 :	4.67
24 :	4.07
25 :	3.68
26 :	3.20
27 :	2.82
28 :	2.33
29 :	2.09
30 :	1.60
31 :	1.43
32 :	1.07
33 :	
34 :	

COMPOSITION OF ALKANES WITH ISOPRENOID STRUCTURE (% WEIGHT / OF N-ALKANES)

19 (PRIST.) :	4.20
20 (PHYT.) :	1.87

PRIST./C 17 :	.44
PHYT./C 18 :	.23
PRIST./PHYT. :	2.25
CPI (C24-C32) :	1.03

Table 6

CRUDE OIL

NORWAY

G B : 44231

WELL : 24/6-1
FIELD :

TEST : DST-1 9H
DEPTH (m) : 4502.00 TO 4537.00

PERIOD : MIDDLE JURASSIC
FORMATION : BRENT

TEST RESULTS

FLUIDS : CONDENSAT

G.O.R (m3/m3) :
TEMP. (deg.C) :

GRAVITY { gr/cm3 :
a.p.i :

RESULTS OF THE GEOCHEMICAL ANALYSIS

GRAVITY (gr/cm3) : .792

COMPOSITION (% WEIGHT)

DISTILLATE (<210 deg.C)	:	
SATURATED HYDROCARBONS	:	86.22
AROMATIC HYDROCARBONS	:	10.62
RESINS	:	3.16
ASPHALTENES	:	0.00
SATURATES / AROMATICS	:	8.11

CHROMATOGRAPHIC ANALYSIS

N-ALKANES COMPOSITION C (% WEIGHT)

C	% WEIGHT
13	
14	10.71
15	10.35
16	9.85
17	9.23
18	7.54
19	6.99
20	6.19
21	5.52
22	5.09
23	4.84
24	4.26
25	3.89
26	3.43
27	3.00
28	2.50
29	2.21
30	1.71
31	1.53
32	1.16
33	
34	

COMPOSITION OF ALKANES WITH ISOPRENOID STRUCTURE (% WEIGHT / OF N-ALKANES)

19 (PRIST.)	4.17
20 (PHYT.)	1.71

PRIST./C 17	.45
PHYT./C 18	.23
PRIST./PHYT.	2.43
CPI (C24-C32)	1.03

NORWAY 24/6-1

Table 7

THERMOVAPORISATION RESULTS OF CRUDE OIL

N° GB	DEPTH METRES	PERIOD	OIL DENSITY °API	FORMATION PRESSURE GRADIENT / FORMATION TEMPERATURE	Ip / I1	Ih / I2	BENZENE n HEXANE RATIO	BENZENE + TOLUENE % *	NAPHTENES % *	PARAFFINS % *	n ALKANES % in nC4-nC15range
44230	4 502 - 4 537	MIDDLE JURASSIC BRENT	0.79	DST 1 7h	1.99 1.93	21.03 5.82	0.557				
44231	"	"	0.79	DST 1 9h	2.02 1.98	20.04 5.89	0.545				

$Ip = \frac{2\ Me\ C_6 + 3\ Me\ C_6}{3\ isomeres\ of\ DiMe\ Cyclo\ C_5}$ $Ih = \frac{n\ C7 \times 100}{Cyclo\ C_6 \leq peaks \leq Me\ Cyclo\ C_6}$ $I1 = \frac{n\ C6}{Me\ Cyclo\ C_5}$ $I2 = \frac{n\ C_7}{1\ trans\ 2\ DiMe\ Cyclo\ C_5}$

* % in n C_4 - Toluene range