6.3 Mud report

36" hole, 30" csg.:

A 17-1/2" pilot hole was drilled from 284 m to 348 m using seaweater with returns to the seabed. High viscous pills were circulated around as necessary to clean the hole. The 17-1/2" pilot hole was opened to 26" and 36" using hole openers. The hole was displaced to high viscous mud prior to run the 30" casing.

Materials used in this section:
Bentonite, Soda Ash and Caustic Soda.

26" hole, 20" csg.:

The riser was run and the 17-1/2" pilot hole drilled to 817 m using a bentonite - seawater mud system. At 817 m the mud was conditioned for logging and a wiper trip made. Due to tight hole while logging a wiper trip was made and the mudweight was increased to 1.15 rd. The hole was opened to 26" using underreamer. The mud was conditioned, the riser pulled and a wiper trip with 26" bit made prior to run the 20" casing.

Materials used in this section:
Baryte, Bentonite, Soda Ash, Caustic and WO.21.

17-1/2" hole, 13-3/8" csg.:

The 17-1/2" hole was drilled to 1220 m using a gyp-lignosulfonate mud system. The mudweight was increased to 1.24 rd prior to drilling out of the casing. At 913 m, drilling was stopped as the solids control equipment was not able to remove sufficient amount of solids from the mud. The equipment was repaired before drilling was resumed. Mud was lost over the shakers during this interval and new mud was built to maintain reasonable mud parameters.
A wiper trip was made between logruns, due to tight hole. Furthermore, the mudweight had to be increased to 1.30 rd. for the same reason.

Materials used in this section:
Baryte, Bentonite, Caustic Soda, Spersene, Gypsum, Drispac, XP.20, and Soda Ash.

12-1/4" hole, 9-5/8" csg.:

The 12-1/4" hole was drilled to 2707 m using the same mud system as in the 17-1/2" hole section. As the problem with the reactive calys disappared the addition of gypsum was stopped and the mud was converted to a gel-lignosulponate system. The mudweight was increased to 1.40 rd at 1355 m due to tight hole and reduced to 1.33 rd at 1600 m due to temporarily stuck pipe. At 2475 m the mudweight was increased to 1.40 rd and at 2700 m to 1.48 rd due to increase in pore pressure. One log run was made at 2393 m. When logging at 2707 m a wiper trip was made due to tight hole.

Materials used in this section:
Baryte, Bentonite, Caustic Soda, Spersene, Gypsum, Drispac, XP-20, Aluminium Stearate, Soda Ash, CMC LV and Lime.

8-3/8" hole:

The 8-3/8" hole was drilled with the excisting mud system. The mudweight was increased to 1.53 rd at 3117 m due to increase in pore pressure. The logs throughout this interval were run without experiencing hole problems.

Material used in this section:
Baryte, Bentonite, Caustic Soda, Spersene, XP-20, Drispac, Aluminium Stearate, Soda Ash, CMC LV and Drispac.

DRILLING MUD RECAP

Contractor WILHELMSEN OPERATOR NORSK HYDRO LEGAL DESCRIPTION 7117/9-1

Rig No TREASURE SCOUT Well Name And No. 7117/9-1 Field TROMSØ COUNTRY NORWAY

Promud a/s Warehouse HAMMERFEST Spud Date 20/4/82 No. Drilling Days To T.D. DATE T.D. REACHED 8/7/82 TOTAL DEPTH 3200 m TOTAL COST $ 345,518.87

DATE (1982)	TIME	DEPTH metres	WT (ppg)	FV API	PV cp @	YIELD POINT (lb/100ft²)	GELS (lb/100ft²) 0/10	pH	FILTRATE (ml/30 min) API	FILTRATE HT-HP	Pf	Cake (32nds in)	Alkalinity Pm	Alkalinity Pf, Mf	Chloride (ppm)	Calcium (ppm)	Sand (% by Vol)	Solids (% by Vol)	Oil (% by Vol)	Water (% by Vol)	Methy Blue (me/ml mud)		Circ Volume (bbl)	REMARKS
28/6	2400	2718	1.48	55	16	9.5	7/9.5	11.8	9.0			1	0.6	.6/.3	19000	160	0.5	20		80	30		1570	Drilling cement. 13 3/8 csg.
29/6	2400	2770	1.48	55	16	9.0	5/10	11.2	7.0			1	0.65	.1/.3	19500	120	0.5	19		81	30		1630	Drilling.
30/6	2400	2814	1.48	55	16	8.5	4/8	11.2	7.0	18	200	1/3	0.6	.1/25	18000	120	0.5	19		81	30		1680	RIH. Drilling.
1/7	2400	2900	1.48	60	17	8.5	5/9	11.2	6.5	16	200	1/3	0.6	.1/.3	18000	120	0.5	19		81	30		1680	POOH.
2/7	2400	2962	1.48	55	17	9.0	35/8	11.2	6.0	15	200	1/3	0.65	.1/.3	18500	120	0.5	19		81	30		1790	Drilling.
3/7	2400	2999	1.48	55	16	10.0	4/8	11.2	6.0	15	200	1/3	0.65	.1/.3	18500	200	0.5	19		81	30		1815	Drilling.
4/7	2400	3065	1.48	55	18	8.5	3/7	11.2	5.5	15	200	1/3	0.6	.1/.3	17500	200	0.5	19		81	30		1775	Drilling.
5/7	2400	3097	1.48	55	18	9.0	4/7	10.8	5.0	15	200	1/3	1.35	.9/1.1	17500	200	0.5	18		82	30		1835	POOH. For bit change & BOP test.
6/7	2400	3118	1.48	55	16	8.0	3/7	10.8	5.0	15	200	1/3	1.25	.9/1.2	17500	200	0.5	18		82	30		1840	Drilling.
7/7	2400	3183	1.53	55	18	9.5	3/7	10.6	5.0	15	200	1/3	1.0	.7/1.0	17000	200	0.5	18		82	30		1855	Drilling.
8/7	2400	3200	1.53	60	17	10.0	3/7	10.6	5.0	15	200	1/3	1.0	.7/1.0	17000	200	0.5	18		82	30		1630	Drilling / Logging.
9/7	2400	3200	1.53	60	17	10.0	3/7	10.6	5.0	15	200	1/3	0.9	.65/.9	17000	200	0.5	18		82	30		1630	Logging.
10/7	2400	3200	1.53	60	17	10.0	3/7	10.6	5.0	15	200	1/3	0.9	.65/.9	17000	200	0.5	18		82	30		1655	Plugging / abandoning.
11/7	2400	3200	1.30	45																			1650	" "
12/7	2400	3200	1.30	45																			1650	" "
13/7	2400	3200	1.30	45																			700	" "

Date 13/7/82 Promud a/s Technical Representative Tom Pawson. District North Sea. Region Norway. PAGE 5 OF 5

DRILLING MUD RECAP

Contractor WILHELMSEN OPERATOR NORSK HYDRO LEGAL DESCRIPTION 7117/9-1

Rig No TREASURE SCOUT Well Name And No. 7117/9-1 Field TROMSØ COUNTRY NORWAY

Promud a/s Warehouse HAMMERFEST Spud Date 20/4/82 No. Drilling Days To T.D. DATE T.D. REACHED 8/7/82 TOTAL DEPTH 3200 m TOTAL COST $ 345,518.87

DATE (1982)	TIME	DEPTH (metres)	WT (ppg)	FV (API)	PV (cp @)	YIELD POINT (lb/100ft²)	GELS (lb/100ft² 0/10)	pH	FILTRATE (ml/30 min) API	HT HP	P_f	Cake (32nds in)	Alkalinity P_m	Alkalinity P_f / M_f	Chloride (ppm)	Calcium (ppm)	Sand (% by Vol)	Solids (% by Vol)	Oil (% By Vol)	Water (% By Vol)	Methy Blue (me/ml mud)		Circ Volume (bbl)	REMARKS
20/6	2330	2642	1.4	55	20	7.5	2.5/12	11	7.5	16	200	1		.1/.32	16500	150	.2	16		84	30		2000	Drill ahead.
21/6	2330	2649	1.45	70	28	9	5/20	11	6.5	15	200	1		.16/35	16500	200	.2	17		83	30		2000	Raise mud wt. 4.1.45.
22/6	1550	2707	1.48	60	25	10	5/16	11	7.5	15	200	1		.1/.36	16500	200	.5	17		83	30		2100	Logging raise wt. to 1.48.
23/6	1800	2707	1.49	65	25	11.5	6/20	11.5	7.5	15	200	1		.1/.46	16500	150	.5	17		83	30		2100	Logging. Wiper trip.
24/6	2330	2707	1.49	60	23	9.5	2/11	11	7.5	15	200	1		.0/.12	16500	150	.5	17		83	30		2100	Logging.
25/6	1700	2707	1.49	55	14	9.0	3.5/6.5	10.8	8.0	16	200	1/3	.5	.1/.4	18500	160	.5	21		79	30		1920	Prepare to run 9 5/8 csg.
26/6	1700	2707	1.49	60	14	9.0	4/8	10.8	8.0	16	200	1/3	.5	.15/.4	18500	160	.5	20		80	30		2030	Run 206 jnts. 9 5/8 csg. Cmtd.
27/6	2400	2707	1.49	60	14	9.0	4/8	10.8	8.0	16	200	1/3	.5	.15/.4	18500	160	.5	20		80	30		2030	Making up 8 1/2 BHA.

Date 27/6/82 Promud a/s Technical Representative Tom Pawson. District North Sea. Region Norway. PAGE 4 OF 5

DRILLING MUD RECAP

Contractor WILHELMSEN OPERATOR NORSK HYDRO LEGAL DESCRIPTION 7117/9-1

Rig No TREASURE SCOUT Well Name And No. 7117/9-1 Field TROMSØ COUNTRY NORWAY

Promud a/s Warehouse HAMMERFEST Spud Date 20/4/82 No. Drilling Days To T.D. DATE T.D. REACHED 8/7/82 TOTAL DEPTH 3200 m TOTAL COST $ 345,518.87

DATE (19 82)	TIME	DEPTH metres	WT (PPG)	FV API	PV cp	YIELD POINT (lb/100ft²)	GELS (lb/100ft²) 0/10	pH	FILTRATE (ml/30 min) API	HT HP	P_F	Cake (2/32 in)	Alkalinity P_m	Alkalinity P_f / M_f	Chloride (ppm)	Calcium (ppm)	Sand (% by Vol)	Solids (% by Vol)	Oil (% by Vol)	Water (% by Vol)	Methy Blue (ml eq/ml mud)	Excess Lyp lb/bbl	Circ Volume (bbl)	REMARKS
25/5	2400	1204	1.3	60	14	24	10/20	10	15.0			2		.4/.9	6000	800	TR	14		86	37	3.0	1220	Built mud & pressure test BOP
26/5	2400	1204	1.3	50	13	16	6/12	10	14.0			2		.2/.5	6000	880	TR	15		85	35	3.0	1220	Tested BOP rams. Surface equip.
27/5	2400	1204	1.3	53	13	16	12/20	10	25.0			3		.15/.3	6500	1120	TR	15		85	30	3.0	1360	Drilling cement in 13 3/8 csg
28/5	2400	1223	1.3	50	18	14	9/28	10	16.0			2	.6	.2/.5	8800	880	.5	14		86	30	3.0	1320	Drilled to 1223m. Leak off test. Circulated.
29/5	2400	1223	1.3	50	18	14	5/14	10	9.0			2	.65	.2/.5	800	880	.5	13		87	28.5	3.0	1320	Circ. W.O. Spare parts. Yellow gnd.
30/5	2400	1223	1.3	48	20	12	7/15	10	9.0			2	.7	.3/.5	7500	800	.5	12		88	30	3.0	1750	At 13 3/8 shoe. Cmt. plug. Displ. riser. Pull BOP.
31/5	2400	1223	1.3	50	18	16	9/23	10	12.0			2	.7	.2/.4	8200	840	.5	12		88	21	3.0	1750	BOP on board. Working on Pod.
1/6	2400	1223	1.3	50	16	17	9/23	10	12.0			2	.7	.2/.4	8200	720	.5	12		88	21	3.0	1750	Working on BOP.
2/6	2400	1223	1.3	50	16	17	9/23	10	12.0			2	.7	.25/.4	8200	680	.5	13		87	24	3.0	1750	Running riser & BOP.
3/6	2400	1223	1.3	50	16	17	8/18	10				2	.7	.25/.4	8200	680	.5	13		87	24	3.0	1750	Testing BOP on seabed.
4/6	1900	1223	1.3	65	20	7.5	7/12	12	13.0			2	.5	.5/.9	5000	600	.5	13		87	25	3.0	1140	Drilling 12 1/4.
5/6	1600	1341	1.35	54	24	7	3/20	11.5	7.5			2	1.0	.2/.8	10000	640	.25	14		86	27.5	3.0	1260	Cut core.
6/6	2300	1350	1.4	59	24	6.5	2.5/16	11	9.4			2	.9	.16/.7	10000	640	.25	15		85	27.5	2.0	1435	Clean hole from 1221 - 1355.
7/6	1830	1369	1.4	53	23	6.5	3/14	11	9.5			2	.8	.13/.6	10000	640	.25	15		85	30	2.0	1430	RIH to drill ahead.
8/6	2330	1415	1.4	54	23	6.5	4.5/17	11	9.0			2	.2	.1/.4	12000	820	.25	14		86	30	2.0	1461	Drill ahead.
9/6	2330	1600	1.4	60	24	7.5	4.5/16	10	9.0			2	.2	.17/.3	13000	800	.25	16		84	30	2.0	1460	Stuck at 1364. Jar loose.
10/6	2330	1726	1.33	50	15	5	2.5/6	10	7.0	25	200	2	.6	.3/.7	13500	600	.25	12		88	25	1.0	1720	Drill ahead.
11/6	2330	1933	1.33	66	25	8	4/15	10.5	7.5	20	200	2	.4	.05/.2	14000	800	.5	14		86	30	1.0	1681	Wiper trip. Drill ahead.
12/6	0700	2000	1.33	55	22	5.5	2/10	10	7.0			1		.02/.16	14000	450	.5	14		86	30		1790	Test stack.
13/6	2330	2100	1.33	66	24	9	5/15	10.5	7.0	20	200	1	.4	.03/.4	14500	450	.5	14		86	30		1750	Drill to 2100. Wiper trip.
14/6	2330	2266	1.33	65	22	9	5/17	10	8.0	19	200	1		.05/.1	15000	400	.5	15		85	30		1800	Wiper trip 2211. Drill ahead.
15/6	2330	2366	1.33	67	22	9	5/19	10	8.5	22	200	1		.04/.09	15000	400	.5	15		85	30		1900	Wiper trip 2362.
16/6	2330	2390	1.33	61	21	7	3/13	10	8.5	21	200	1		.01/.06	16500	410	.5	15		85	30		1810	Hole bridged. Wash to bottom.
17/6	2330	2420	1.33	51	20	5	2.5/10	11	8.0	19	200	1		.2/.5	16500	350	.5	15		85	30		1710	Logging.
18/6	2330	2526	1.4	56	25	10	5/17	11	9.1	19	200	1		.1/.4	16500	250	.5	16		84	30		2000	Raise wt. Wiper trip.
19/6	2330	2530	1.4	62	25	10	4/15	10	8.0	19	200	1		.1/.3	16500	280	.5	16		84	30		2000	Test stack.

Date 19/6/82 Promud a/s Technical Representative Tom Pawson. District North Sea. Region Norway.

DRILLING MUD RECAP

Contractor WILHELMSEN OPERATOR NORSK HYDRO LEGAL DESCRIPTION 7117/9-1

Rig No TREASURE SCOUT Well Name And No. 7117/9-1 Field TROMSØ COUNTRY NORWAY

Promud a/s Warehouse HAMMERFEST Spud Date 20/4/82 No. Drilling Days To T.D. DATE T.D. REACHED 8/7/82 TOTAL DEPTH 3200 m TOTAL COST $ 345,518.87

DATE 1982	TIME	DEPTH meters	WT (ppg)	FV API	PV cp	YIELD POINT (lb/100ft²)	GELS (lb/100ft²) 0/10	pH	FILTRATE (ml/30 min) API	HT HP	°F	Cake (32nd in)	Alkalinity P_m	Alkalinity P_f, M_f	Chloride (ppm)	Calcium (ppm)	Sand (% by Vol)	Solids (% by Vol)	Oil (% by Vol)	Water (% by Vol)	Methy Blue (lbs/bbl mud)		CHC Volume (bbl)	REMARKS
11/5	2300	817	1.24	45				9.5													20		665	Building Gyp mud in pits.
12/5	1630	817	1.24	72	36	14	6/18	9.5	10.4			3		.05	1800	650		7		93	17			Build mud. Pull riser. Press leaks.
13/5	2200	817	1.24	72	36	14	6/18	9.5	10.4			3		.05	1800	650		7		93	17			Pull riser, test, run riser.
14/5	1930	817	1.24	47	22	9	4/14	9.2	15.0			4		.03	1400	500		7		93	18.5			Mud built to capacity, kooney leaks.
15/5	2300	817	1.24	54	28	10	4/12	10.5	9.6			3		.3/.45	1400	600		7		93	18.5		1570	Displace hole, drill out shoe.
16/5	1800	824	1.24	50	25	8	3/15	9.5	15.0			4		.05/.08	2200	800		7		93	18.5		1480	Leak off test. Run cmt. plug.
17/5	1800	829	1.24	51	26	9	4/18	10	16.0			4		.05/.08	2800	900		7.5		92.5	18.5		1435	Drilled plug. Rerun plug.
18/5	2300	919	1.24	59	20	10	6/15	10.5	18.0	- Metric		4		.15/.20	5200	800	0.5	14.0		86	27		1635	Drill. No solids equipm. to 913m
19/5	2330	1159	1.24	50	16	11.5	7/16	9.5	27.0	YP.		4		.1/.12	7400	500	0.4	16		84	35		1795	Drill. Lose mud. Build vol.
20/5	0830	1220	1.24	53	16	12	6/16	9.8	26.0	Gels		4		.1/.14	7800	400	0.4	16.5		83.5	35.5		1800	Drill to TD. Logging.
21/5	1330	1220	1.30	60	22	10	10/18	9.8	27.0	Raise Den-		4		.1/.14	7800	400	0.5	17		83	36.5		1870	Logging. Clean out trip log.
22/5	0900	1220	1.30	60	14	20	11/19	9.8	27.0	sity.		4		.1/.15	7800	400	0.5	17		83	37		1680	RIH. Circ. Run casing.
23/5	0900	1220	1.30	51	18	10	6/9	9.7	26.0			4		.1/.15	7800	400	0.4	17		83	37		1725	Casing to 1204m-Cement. No return.
24/5	2000	1220	1.30	50	18	9	6/9	9.7	27.0			4		.1/.15	7500	400	0.4	17		83	37		1240	Build mud. Pressure test.

Date 24/5 Promud a/s Technical Representative Ralph Cornick. District North Sea. Region Norway. PAGE 2 OF 5

DRILLING MUD RECAP

Contractor WILHELMSEN OPERATOR NORSK HYDRO LEGAL DESCRIPTION 7117/9-1

Rig No TREASURE SCOUT Well Name And No 7117/9-1 Field TROMSØ COUNTRY NORWAY

Promud a/s Warehouse HAMMERFEST Spud Date 20/4-82 No. Drilling Days To T.D. DATE T.D. REACHED 8/7-82 TOTAL DEPTH 3200 m TOTAL COST $ 345,518.87

DATE (1982)	TIME	DEPTH meters	WT (ppg)	FV API	PV cp's	YIELD POINT (lb/100ft²)	GELS (lb/100ft²) 0/10	pH	FILTRATE ml/30 min API	FILTRATE HT HP	P_F	Cake (32nd in)	Alkalinity P_m	Alkalinity P_f / M_f	Chloride (ppm)	Calcium (ppm)	Sand (% by Vol)	Solids (% By Vol)	Oil (% by Vol)	Water (% By Vol)	Methy Blue (me/ml) mud		Circ Volume (bbl)	REMARKS
18/4	2400	0	1.05	100+				10							0	40								Spud mud
19/4	2400	0	1.05	100+				10							0	40								Spud mud
20/4	2400	9	1.05	100+				10							0	40								Spud mud.
21/4	2400		1.05	100+				10							0	40								Spud mud.
22/4	2400		1.05	100+				10							0	40								Spud mud.
23/4	2400		1.05	100+				10							0	40								Spud mud.
24/4	2400		1.05	100+				10							0	40								Spud mud.
25/4	2400		1.05	100+				10							0	40								Spud mud.
26/4	2400		1.05	100+				10							0	40								Spud mud.
27/4	2400		1.05	100+				10							0	40								Spud mud.
28/4	2400		1.05	100+				10							0	40								Spud mud.
29/4	2400		1.05	100+				10							0	40								Spud mud.
30/4	2400	331	1.05	100+				10							0	40								Drlg 17½ pilot hole.
1/5	2400	346	1.05	100+				10							0	40								Drlg. 26" hole.
2/5	2400	346	1.05	100+				10							0	40								POOH to run casing.
3/5	2400	346	1.05	100+				10							0	40								Prepare mud for 25" hole.
4/5	2400	345	1.05	100+				10							0	40								Test marine riser.
5/5	2400	587	1.08	44	5	35	16-29	9	N/C					.1/.3	14000	140	.5	5		95	25		1838	
6/5	1817	817	1.10	45	6	39	19-31	9	N/C					.1/29	15000	160	.5	5.5		94.5	25		2050	Drill to 817 m TD.
7/5	2400	817	1.10	52	12	40	26-42	9	N/C					.0/.21	15000	200	.5	5.5		94.5	25		1860	Drilling. Hole opener.
8/5	2000	817	1.12	42	4	34	16/25	9	N/C					.0/.14	15000	300	.5	6.5		93.5	20		2100	Drilling. POOH.
9/5	0015	817	1.15	37	7	13	12/18	9	N/C					.03/.12	15000	260	.4	6.5		93.5	23		1800	Pulled riser. Clean out trip
10/5	2000	817	1.14	37	7	13	12/18	9	N/C					.03/.12	15000	260	.4	6.5		93.5	23		1800	Spot viscous mud. Run casing.
11/5	2300	817	1.02	100																				Cemented. Ran stack. Riser.
																				Ran	20" casing		to 800	m May 10.

Date 11/5/82 Promud a/s Technical Representative Brian Hutchings/Ralph Connick District North Sea. Region Norway. PAGE 1 OF 5

IKU

Confidential

INSTITUTT FOR KONTINENTALSOKKELUNDERSØKELSER

CONTINENTAL SHELF INSTITUTE

Håkon Magnussons gt. 1B — N-7000 Trondheim — Telephone (075) 15660 — Telex 55548

REPORT TITLE/ TITTEL

Source Rock Analysis Well 7117/9-1

CLIENT/ OPPDRAGSGIVER

Norsk Hydro A/S

RESPONSIBLE SCIENTIST/ PROSJEKTANSVARLIG

P.B. Hall

AUTHORS/ FORFATTERE

P.B. Hall, N. Mills, J.O. Vigran, T.M.Rønningsland and L. Husvik

DATE/ DATO	REPORT NO /RAPPORT NR.	NO. OF PAGES/ ANT SIDER	NO. OF ENCLOSURES/ ANT. BILAG
23.11.82	0-458	33	4

SUMMARY/ SAMMENDRAG

The whole of the analysed section of this well 817-3170 metres has only poor to fair potential for gas.

KEY WORDS/ STIKKORD

Screening Analysis | Gas/Lithology/TOC | Vitrinite Reflectance | Visual Kerogen

mixture of siderite and dolomite. Silty claystones above the main carbonate-rich section (from 1820 - 1865m) show an increase in C_1 - C_4 and C_5+ gas abundances compared with zone C. Percentage wetness and iC_4/nC_4 ratios remain constant and similar to those in zone C.

Zone E. 1925 - 2630 metres.
The lithology is the same as zone D, however the upper part of the zone from 1925 - 2770 metres contains up to 20% of a mixture of siderite and dolomite. Generally C_1 - C_4 and C_5+ gas abundances are low. Percentage wetness increases slightly down the section, while iC_4/nC_4 ratios vary considerably.

Zone F. 2630 - 3170 metres.
Consists mostly of claystones and siltstones which grade in colour from grey to dark grey. There is a slight increase in abundance of C_1 - C_4 and C_5+ hydrocarbons between 2700 - 2900 metres, otherwise the gas data is fairly similar to that from zone E.

Total Organic Carbon Content (TOC)

Generally the claystones/siltstones which constituted more than 10% of a sample were analysed. A few siderite/dolomite samples were also picked and analysed.

Zone A. 817 - 1220 metres.
Silty grey to light grey claystones (occasionally grey-green) have a fair abundance of organic carbon i.e. from 0.77 - 0.94%.

Zone B. 1220 - 1520 metres.
Grey to light grey (some brownish) claystones/siltstones in this section have a slightly higher organic carbon content than in zone A, from 1.1 to 2.0% (good). The high value of 2% may be due to slight contamination from additives.

Zone C. 1520 - 1820 metres.
Grey to light grey claystones in this section have fair TOC values from 0.6 to 0.9%.

Zone D. 1820 - 1925 metres.
Grey to light grey silty claystones and siltstones in this section show generally similar TOC values to Zone C i.e. 0.7 to 0.9% (fair). One value of 1.25% may be slightly high due to contamination from additives.

Zone E. 1925 - 2630 metres.
Grey to light grey claystones and siltstones in this section, have generally good TOC values from 1.0 to 1.5% (average 1.3%) reaching a maximum of 1.4 - 1.5% between 2300 - 2400 metres.

Zone F. 2630 - 3170 metres.
Organic carbon values of the claystones/siltstones in this section are similar to Zone E i.e. 1.0 to 1.4% (good) although the average is lower, 1.1% instead of 1.3%. The high value of 2.14% TOC should be excluded since it is probably affected by additives.

Extraction and Chromatographic Separation

No samples were extracted.

Examination in Reflected Light

Seven samples were examined in reflected light. The samples are completely dominated by reworked material and/or inertinite. Drilling mud and lignite additive are present in many samples.

Sample M-4675, 1400m: Claystone, Ro=0.42(25)
This sample has a moderate organic content with heavy bitumen staining in places. Bituminite, lignite and clean vitrinite are all present but there is a large amount of reworked material (Ro 0.75%). There is no fluorescence.

Sample M-4712, 1955m: Claystone, Ro=0.35(2) and 0.66(6)
This is a poor sample. It has a low organic content which is dominated by very small, rounded inertinite or reworked fragments and larger reworked material. There is a trace of bitumen wisps and bitumen staining. There is no fluorescence.

Sample M-5259, 2090m: Claystone, Ro=0.47(6)
There is a low organic content dominated by very small, round inertinite fragments and reworked material. There is only a trace of possibly true vitrinite particles and no good stringers. There is no fluorescence.

Sample M-5277, 2360m: Claystone, Ro=0.52(23)
The sample has a low to moderate organic content. This again consists dominantly of very small inertinite fragments. There is a moderate vitrinite content and this appears to be primary material. There is no fluorescence.

Sample M-5529, 2705m: Claystone and sandstone, Ro=0.42(4) and 0.67(8)
This is a very poor sample. There is a high content of drilling mud and lignite (presumably additive). There is a low to moderate organic content in the claystone which is dominated by very small, round iner-

tinite fragments and larger reworked particles. There is a trace of bitumen wisps. Distinction between primary and reworked vitrinite is difficult partially due to the small nature of all particles. There is no fluorescence.

Sample M-7239, 2990m: Claystone, Ro=0.58(6)
There is a moderate organic content but it is almost completely inertinite or reworked material. There is a trace of bituminite. Only a trace of primary vitrinite particles were found. The reworked material is possibly from two sources with reflectances of 0.85 and 1.04. There is no fluorescence.

Sample M-7251, 3170m: Claystone, Ro=0.64(11)
There is a low organic content. This is predominantly reworked material and inertinite with only a few primary vitrinite particles. There is no fluorescence.

IKU

Analyses in transmitted light

Well 7117/9-1
1400-3170m
Colours shows
- immature

The interval from 1400m to 3170m of well 7117/9-1 was evaluated on the basis of 7 samples. The colours of the material shows that the entire interval is immature.

The samples, evidently represented Tertiary to Cretaceous deposits but were of fairly uniform composition:

Woody and reworked woody material dominate though are relatively in variable proportions. Pollen, spores and dinoflagellate cysts are relatively in smaller amounts. True amorphous material (sapropel) seems subordinate in all samples. The material is well preserved.
Colour index: 1/1+ to 1+.

Rock-Eval Pyrolysis

A total of six samples were picked and analysed by Rock-Eval to complement the visual kerogen analysis.

No samples were analysed in zones A through D.

Zone E. 1925 - 2030 metres.

Three samples were analysed in this zone. A grey siltstone/claystone and a carbonate were analysed from 1940 - 1955 metres. These consist essentially of poor type III or a type IV kerogen (hydrogen indices of 60 and 40 respectively). T_{max} values are widely separated; 470 for the carbonate, 419 for the silt/claystone. The broad, flat S_2 peak in these examples does not allow an accurate T_{max} value to be measured. The third sample of a silty claystone from 2045 - 2090 metres contains poor type III kerogen and a T_{max} of 434 would suggest an early mature zone.

Zone F. 2630 - 3170 (TD) metres.

Three samples were analysed from this zone. They are all grey to dark grey claystones (grading to siltstones) from 2720 - 2765m, 2945 - 2990 metres and 3140 - 3170 metres. They all show similar features. The low hydrogen indices (50 -177) and high oxygen indices (36 - 87) indicates poor type III kerogen. The T_{max} values show a slight increase down the section from 436 to 439. These values suggest a zone which is oil window mature.

CONCLUSIONS

A complete analysis was not performed on this well therefore the conclusions are necessarily incomplete. The maturity of the analysed section based on vitrinite reflectance indicates that the section below 1400 metres is immature, moderate mature to 3000 metres and oil window mature below 3000 metres. T_{max} values suggest slightly higher maturities. Visual kerogen analyses indicated slightly lower values with the whole sequence being immature to moderate mature. It is probable that the vitrinite reflectance trend is correct. The visual kerogen analysis indicates that the samples analysed consist dominantly of woody and reworked woody material, which is supported by the Rock-Eval data (poor type III kerogen) and from observations made in reflected light microscopy. The whole analysed section of the well from 817 - 3170 metres has no good source rocks. There is a generally fair potential for gas for claystones and siltstones between 1220 - 1520 metres and 1940 - 3170 metres.

IKU

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M4239	850	7719	7	5	8	9	14	7748	29	.37	.89
M4241	910	32737	30	22	4	9	45	32803	65	.20	.49
M4243	970	35547		32		116	193	35695	148	.42	
M4245	1030	132995		44	50		267	133089	94	.07	
M4247	1090	55690	60	36	5	9	53	55801	111	.20	.61
M4249	1150	30826	16	14			106	30856	31	.10	
M4251	1220	158786	698	73	95		160	159652	866	.54	

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M4667	1280	30177	797	308	130	76	357	31488	1311	4.16	1.70
M4671	1340	16496	1017	140	70	29	163	17751	1255	7.07	2.46
M4675	1400	17106	2006	750	472	160	511	20493	3387	16.53	2.95
M4679	1460	4186	454	279	79	228	831	5226	1040	19.89	.35
M4683	1520	10903	1199	1085	517	789	5377	14493	3590	24.77	.66
M4687	1580	3056	424	704	499	846	8559	5528	2473	44.73	.59
M4691	1640	4020	475	489	251	431	3614	5666	1646	29.05	.58
M4695	1700	1490	91	50	87	236	1320	1954	464	23.74	.37
M4699	1745	3575	500	643	310	530	3558	5557	1982	35.67	.58
M4703	1820	3060	275	240	101	179	1065	3854	794	20.60	.56
M4704	1835	6032	975	913	295	480	2590	8695	2663	30.62	.61
M4705	1850	16235	2614	1773	443	770	1461	21835	5600	25.65	.58
M4706	1865	6381	1110	860	261	405	738	9018	2637	29.24	.65
M4707	1880	3230	497	343	98	149	294	4318	1088	25.19	.66
M4708	1895	4297	496	416	155	204	380	5568	1271	22.83	.76
M4709	1910	5436	704	558	194	260	544	7152	1716	24.00	.74
M4710	1925	2641	289	239	85	110	252	3363	722	21.47	.77
M4711	1940	1987	309	308	118	134	211	2855	868	30.39	.88
M4712	1955	2119	273	264	80	112	201	2848	729	25.59	.72
M4713	1970	4158	635	631	224	227	610	5876	1717	29.23	.99
M4714	1985	1075	117	105	42	38	104	1377	301	21.89	1.10
M4715	2000	3651	444	76	309	63	195	4542	892	19.63	4.91

TABLE 3 a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M5254	2015	3864	551	434	114	132	205	5095	1231	24.16	.87
M5255	2030	1533	205	136	37	33	59	1943	410	21.11	1.11
M5256	2045	2324	311	175	44	35	84	2889	566	19.58	1.27
M5259	2090	1392	192	142	42	36	89	1803	411	22.82	1.16
M5262	2135	837	148	99	16	34	48	1134	298	26.23	.47
M5265	2180	2237	454	285	40	91	124	3107	870	27.99	.44
M5268	2225	2385	367	232	63	48	89	3095	710	22.94	1.33
M5271	2270	1399	190	128	40	31	100	1788	389	21.74	1.30
M5274	2315	2510	355	261	77	65	132	3268	758	23.19	1.20
M5277	2360	1566	328	295	90	79	185	2358	792	33.60	1.14
M5280	2405	977	141	99	25	20	52	1263	286	22.61	1.22
M5283	2450	O P E N		L I D .							
M5286	2495	2698	488	273	59	58	108	3577	879	24.56	1.03

TABLE 1 a.

CONCENTRATION (ul Gas / 1g Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 --- nC4
M5514	2540	2401	924	1422	533	779	886	6059	3658	60.38	.68
M5517	2585	1798	535	530	152	190	231	3205	1407	43.91	.80
M5520	2630	2169	771	895	274	321	279	4430	2261	51.04	.85
M5523	2675	1804	512	1186	503		862	4005	2202	54.97	
M5526	2720	1874	6190	1671	655		870	10390	8516	81.96	
M5529	2765	1930	533	1304	401	599	832	4766	2837	59.52	.67
M5532	2810	3200	625	1706	556	907	1199	6995	3795	54.25	.61
M5535	2855	4327	1886	4364	1054	1480	1681	13111	8784	67.00	.71
M5538	2900	871	555	838	157	202	216	2624	1753	66.80	.77

TABLE 1 a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
M7236	2930	1428	844	834	107		102	3213	1785	55.56	
M7237	2960	1560	662	494	56	57	41	2828	1269	44.86	.98
M7239	2990	3378	2295	160	171	155	104	6158	2781	45.15	1.11
M7241	3020	3111	2101	2002	237	270		7721	4610	59.71	.88
M7243	3050	1103	665	605	69	80	46	2523	1420	56.28	.87
M7245	3080	2502	1054	806	84	94	54	4540	2038	44.89	.89
M7247	3110	2427	540	247	26	19	14	3259	832	25.54	1.33
M7249	3140	2544	1119	918	94	111	62	4786	2242	46.85	.85
M7251	3170	1660	461	246	23	22	11	2412	752	31.17	1.05

IKU

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 --- nC4
M4239	850	278	4	16		7	9	305	27	8.80	
M4241	910	585	4	5		21	11	614	30	4.82	
M4243	970	306	14	12		14	14	345	40	11.49	
M4245	1030	355	12				24	367	12	3.29	
M4247	1090	370	9	4		2	14	385	15	3.84	
M4249	1150	184	12	5			3	202	17	8.66	
M4251	1220	37	7					44	7	16.40	

TABLE 1 b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M4667	1280	196	102	52	47	17		415	218	52.63	2.75
M4671	1340	540	141	57	21	15	30	773	233	30.16	1.39
M4675	1400	152	82	126	34	14	50	408	256	62.82	2.44
M4679	1460	71	9	13	8	8	83	108	37	34.04	1.09
M4683	1520	19	6	31	5	7	5	68	49	71.95	.78
M4687	1580	6	4					10	4	38.88	
M4691	1640	29	33	32	13	28	876	135	106	78.66	.47
M4695	1700	17	22	20	6	9	220	75	58	77.47	.65
M4699	1745	102	43	60	48	56	701	309	207	67.01	.85
M4703	1820	83	26	34	15	46	1185	204	121	59.38	.33
M4704	1835	92	58	84	33	80	1414	348	255	73.48	.41
M4705	1850	196	81	142	67	179	2626	666	470	70.50	.38
M4706	1865	94	63	185	85	149	922	576	482	83.74	.57
M4707	1880	81	53	110	79	91	524	413	333	80.49	.87
M4708	1895	122	60	142	27	61	979	412	290	70.38	.45
M4709	1910	162	69	119	53	124	1456	528	366	69.29	.43
M4710	1925	200	45	130	51	111	1750	537	336	62.70	.46
M4711	1940	152	88	400	92	145	854	877	725	82.70	.63
M4712	1955	96	77	125	94	77	204	469	373	79.49	1.21
M4713	1970	63	44	99	18	26	120	250	188	74.96	.69
M4714	1985	157	91	147	56	92	350	545	387	71.14	.63
M4715	2000	164	107	232	47	71	294	620	456	73.56	.66

TABLE 1 b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M5254	2015	125	62	90	35	53	247	366	240	65.67	.67
M5255	2030	51	32	74	16	71	85	243	192	79.13	.23
M5256	2045	58	29	45	23	29	115	184	126	68.43	.77
M5259	2090	166	118	197	101	115	475	697	531	76.22	.88
M5262	2135	74	50	71	32	37	173	264	190	71.88	.87
M5265	2180	102	87	135	70	70	179	465	362	77.94	.99
M5268	2225	86	79	154	79	82	220	480	394	82.04	.96
M5271	2270	81	65	115	62	70	196	393	312	79.47	.88
M5274	2315	97	84	171	95	108	254	556	459	82.52	.88
M5277	2360	106	73	193	111	141	354	624	518	82.98	.79
M5280	2405	252	205	355	174	237	891	1223	971	79.36	.73
M5283	2450	O P E N		L I D .							
M5286	2495	304	413	841	386	342	1169	2285	1982	86.71	1.13

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M5514	2540	6	4	4	3		5	17	11	63.92	
M5517	2585	190	121	309	151	227	290	997	808	80.99	.67
M5520	2630	95	61	204	105	165	237	630	535	84.91	.64
M5523	2675	67	39	135	71	115	190	426	360	84.34	.62
M5526	2720	93	32	72	47	99	309	343	250	72.88	.48
M5529	2765	136	23	148	92	179	539	578	442	76.48	.52
M5532	2810	221	32	143	76	153	563	625	404	64.61	.50
M5535	2855	88	44	237	85	156	292	609	522	85.63	.54
M5538	2900	183	104	394	112	188	277	980	798	81.37	.60

TABLE 1 b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IFU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
M7236	2930	613	388	1049	311	445	442	2806	2193	78.16	.70
M7237	2960	503	683	1397	351	532	633	3466	2963	85.48	.66
M7239	2990	315	467	1591	431	679	684	3483	3168	90.95	.64
M7241	3020	745	390	1296	361	561	541	3354	2608	77.77	.64
M7243	3050	584	860	1894	452	738	844	4529	3945	87.11	.61
M7245	3080	739	1034	1952	449	733	730	4907	4168	84.94	.61
M7247	3110	834	1506	1964	363	577	575	5244	4409	84.09	.63
M7249	3140	593	830	1878	412	681	790	4393	3800	86.50	.60
M7251	3170	277	396	614	116	190	166	1593	1316	82.61	.61

IKU

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M4239	850	7997	11	21	8	16	23	8053	56	.69	.49
M4241	910	33322	34	27	4	30	56	33417	95	.28	.15
M4243	970	35853	14	44		130	207	36041	188	.52	
M4245	1030	133349	12	44	50		291	133456	106	.08	
M4247	1090	56060	69	41	5	11	68	56186	126	.22	.52
M4249	1150	31010	28	20			108	31058	48	.15	
M4251	1220	158823	705	73	95		160	159696	873	.55	

IKU

I c.

C1 - C7 HYDROCARBONS (Ia + Ib).

4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
	23	8053	56	.69	.49
	56	33417	95	.28	.15
	207	36041	188	.52	
	291	133456	106	.08	
	68	56186	126	.22	.52
	108	31058	48	.15	
	160	159696	873	.55	

1 c.

F C1 - C7 HYDROCARBONS (Ia + Ib).

	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
0	184	452	5461	1471	26.94	.81
3	104	144	2186	603	27.56	.51
7	64	199	3073	691	22.50	1.04
43	151	565	2500	942	37.70	.94
48	71	221	1398	487	34.84	.68
09	161	303	3572	1232	34.49	.68
142	130	309	3575	1104	30.87	1.09
102	101	296	2181	701	32.13	1.01
	173	173	386	3823	1216	31.82	1.00
	201	220	540	2982	1310	43.93	.92
	199	257	944	2486	1256	50.53	.77
	446	400	1277	5862	2860	48.79	1.12

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M4667	1280	30373	899	360	177	93	357	31903	1529	4.79	1.89
M4671	1340	17036	1157	197	91	43	193	18524	1489	8.04	2.09
M4675	1400	17257	2088	876	505	174	561	20900	3643	17.43	2.91
M4679	1460	4258	462	292	87	235	913	5334	1076	20.18	.37
M4683	1520	10922	1205	1115	522	796	5383	14561	3639	24.99	.66
M4687	1580	3062	428	704	499	846	8559	5538	2477	44.72	.59
M4691	1640	4049	508	521	264	459	4491	5801	1752	30.20	.57
M4695	1700	1507	113	70	93	245	1540	2029	522	25.74	.38
M4699	1745	3677	543	703	357	586	4259	5866	2189	37.32	.61
M4703	1820	3143	301	274	116	224	2250	4058	915	22.55	.52
M4704	1835	6124	1033	997	328	560	4004	9042	2918	32.27	.59
M4705	1850	16431	2695	1915	511	949	4088	22501	6070	26.98	.54
M4706	1865	6475	1174	1045	347	554	1661	9594	3119	32.51	.63
M4707	1880	3311	550	453	177	240	818	4731	1420	30.02	.74
M4708	1895	4419	556	558	182	265	1359	5980	1561	26.10	.69
M4709	1910	5598	773	677	248	385	2000	7680	2082	27.11	.64
M4710	1925	2841	334	368	135	221	2002	3899	1058	27.14	.61
M4711	1940	2139	397	708	210	279	1065	3732	1593	42.69	.75
M4712	1955	2215	350	389	174	189	406	3317	1102	33.22	.92
M4713	1970	4221	680	730	243	253	731	6126	1905	31.10	.96
M4714	1985	1233	208	251	100	130	455	1921	689	35.85	.77
M4715	2000	3815	551	308	356	134	489	5163	1348	26.11	2.65

TABLE 1 c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M5254	2015	3989	614	524	150	184	452	5461	1471	26.94	.81
M5255	2030	1584	236	210	53	104	144	2186	603	27.56	.51
M5256	2045	2382	341	220	67	64	199	3073	691	22.50	1.04
M5259	2090	1557	310	339	143	151	565	2500	942	37.70	.94
M5262	2135	911	197	170	48	71	221	1398	487	34.84	.68
M5265	2180	2340	541	420	109	161	303	3572	1232	34.49	.68
M5268	2225	2471	446	386	142	130	309	3575	1104	30.87	1.09
M5271	2270	1480	255	243	102	101	296	2181	701	32.13	1.01
M5274	2315	2607	439	432	173	173	386	3823	1216	31.82	1.00
M5277	2360	1672	400	489	201	220	540	2982	1310	43.93	.92
M5280	2405	1230	346	454	199	257	944	2486	1256	50.53	.77
M5283	2450	O P E N		L I D .							
M5286	2495	3002	901	1113	446	400	1277	5862	2860	48.79	1.12

TABLE) ..

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBON (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 --- nC4
M5514	2540	2407	928	1426	536	779	891	6076	3669	60.39	.69
M5517	2585	1987	655	839	303	417	522	4202	2215	52.71	.73
M5520	2630	2264	831	1099	379	486	516	5059	2796	55.26	.78
M5523	2675	1870	551	1322	575	115	1051	4432	2561	57.80	5.02
M5526	2720	1967	6222	1742	702	99	1180	10733	8766	81.67	7.10
M5529	2765	2065	556	1452	493	777	1371	5344	3279	61.35	.63
M5532	2810	3421	657	1849	632	1060	1763	7620	4198	55.10	.60
M5535	2855	4415	1930	4601	1139	1636	1973	13720	9306	67.82	.70
M5538	2900	1054	659	1232	269	390	493	3604	2550	70.76	.69

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
M7236	2930	2041	1231	1883	419	445	544	6018	3978	66.09	.94
M7237	2960	2063	1345	1891	407	589	674	6294	4231	67.23	.69
M7239	2990	3693	2762	1750	603	834	788	9641	5948	61.70	.72
M7241	3020	3856	2491	3298	598	831	541	11075	7219	65.18	.72
M7243	3050	1687	1526	2499	522	818	891	7052	5365	76.08	.64
M7245	3080	3241	2088	2757	533	827	784	9447	6206	65.69	.64
M7247	3110	3261	2046	2210	389	596	589	8503	5242	61.65	.65
M7249	3140	3137	1949	2796	506	791	852	9179	6042	65.82	.64
M7251	3170	1937	857	860	139	212	177	4005	2068	51.63	.66

IKU

TABLE 9.

R O C K . E V A L P Y R O L Y S E S

IKU No.	DEPTH m/ft	S1	S2	S3	TOC (%)	HYDR. INDEX	OXYGEN INDEX	OIL OR GAS CONTENT S1+S2	PROD. INDEX S1/(S1+S2)	TEMP. MAX (C)
M 4712	1955	0.22	0.41	0.73	1.01	41	72	0.63	0.35	419
		Clst								
M 4712	1955	0.15	0.35	3.28	0.58	60	566	0.50	0.30	470
		Sltst								
M 5259	2090	0.24	0.86	0.63	1.27	68	50	1.10	0.22	434
M 5277	2360	0.29	1.06	0.54	1.47	72	37	1.35	0.21	436
M 5529	2765	6.47	2.05	2.05	1.16	177	177	8.52	0.76	412
M 7239	2990	0.38	0.72	1.23	1.40	51	88	1.10	0.35	437
M 7251	3170	0.40	0.62	0.57	0.97	64	59	1.02	0.39	439

DATE : 23 - 11 - 82.

Lithology and Total Organic Carbon measurements

TABLE NO.:
WELL NO: 7117/9-1

Sample	Depth (m)	TOC	Lithology	
M-4239	817-850	0.94	30%	Silt/claystone, some sandy, slightly glauconitic, grey, some greenish.
			70%	Cement.
			sm.am.	Sand/Sandstone, coarse to very coarse, ?Siderite, yellowish brown.
M-4241	880-910	0.93	90%	Silt/Claystone, light grey - grey occasionally greenish, some sandy, black coal particles, occasionally glauconitic.
			Sm.am.	Sand; elongated white crystals in grey matrix.
			10%	Cement.
M-4243	940-970	0.77	65%	Claystone to clayey Siltstone, light grey/grey to greenish, greybrown.
			35%	Sand, fine - medium, some coarse, slightly glauconitic.
			Sm.am.	?Siderite
M-4245	1060-1030	0.90	50%	Claystone, grey, silty to very silty, slightly sandy.
			50%	Sand, medium, some coarse crystalline rock fragments,
			Sm.am.	glauconite.
M-4247	1060-1090	0.87	90%	Silty Claystone, grey to light grey, (greenish), occasionally glauconitic, slightly sandy.
			10%	Sand, as above.
			Sm.am.	?Siderite, light yellow-brown.
M-4249	1120-1150	0.77	80%	Silty Claystone, slightly glauconitic and sandy, grey.
			20%	Sand, as above
M-4251	1180-1220	0.82	100%	Claystone (sample cuttings coarser than 4mm.), grey and greygreen, the grey claystone contains abundant clasts (subrounded - subangular) of Claystone up to very coarse sand size.
			Sm.am.	?Siderite.
M-4667	1280	1.36	95%	Claystone, light grey to grey, occasionally greenish.
			5%	Cement.
			Sm.am.	Pyrite.

IKU

Lithology and Total Organic Carbon measurements

TABLE NO.:
WELL NO.: 7117/9-1

Sample	Depth (m)	TOC	Lithology	
M-4671	1340	1.09	100%	Claystone - Siltstone, light grey to grey.
			Sm.am.	Cement, Pyrite.
M-4675	1400	2.04		Claystone, grey (brownish), some light grey.
			3%	Coaly additive.
M-4679	1400	1.19	100%	Claystone, grey grading to light grey.
M-4683	1520	1.11	100%	Claystone, light grey/grey.
M-4687	1565-1580	0.89	100%	Claystone, light grey/grey.
M-4691	1625-1640	0.78	100%	Claystone, light grey to grey.
M-4695	1685-1700	0.60	100%	Claystone, light grey, grey to greybrown.
M-4699	1745-1760	0.71	97%	Claystone, light grey to grey.
			2%	Siderite/Dolomite.
			1%	Coaly additive.
M-4703	1805-1820	0.80	100%	Claystone, grey to light grey.
M-4704	1820-1835	0.72	100%	Claystone, grading to very silty, grey to light grey.
			Sm.am.	redbrown.
M-4705	1835-1850	1.25	100%	Claystone, as above.
M-4706	1850-1865	0.88	97%	Claystone grading to Siltstone, grey to light grey.
			Sm.am.	red-brown and green, slightly glauconitic, occasionally laminated.
			Sm.am.	Pyrite, Glauconite.
			3%	Siderite/Dolomite.
M-4707	1865-1880	0.88	95%	Claystone grading to Siltstone, as above.
			5%	Siderite/Dolomite.
M-4708	1880-1895	0.75	95%	Claystone to clayey Siltstone, grey, some light grey.
			5%	Siderite/Dolomite.

IKU

Lithology and Total Organic Carbon measurements

TABLE NO.:
WELL NO: 117/9-1

Sample	Depth (m)	TOC	Lithology	
M-4709	1895-1910	0.81	90%	Claystone to clayey Siltstone, as above.
			10%	Siderite/Dolomite.
M-4710	1910-1925	0.69	93%	Claystone to clayey Siltstone, grey, some light grey, some redbrown and greenish, occasionally glauconitic.
			7%	Siderite/dolomite.
M-4711	1925-1940	0.90	85%	Claystone grading to clayey Siltstone, grey, some light grey.
		0.56	15%	Siderite/Dolomite, yellowbrown.
M-4712	1940-1955	1.10	80%	Silt/Clay-stone, as above.
		0.58	20%	Siderite/ Dolomite.
M-4713	1955-1970	1.08	80%	Claystone grading to Siltstone, grey,
			Sm.am.	light grey.
		0.76	20%	Siderite/Dolomite, hard, Brown.
			Sm.am.	Pyrite.
M-4714	1970-1985	1.15	85%	Claystone grading to Siltstone, grey.
			15%	Siderite.
M-4715	1985-2000	1.18	85%	Claystone as above, with white Silt-lamina.
			15%	Siderite/Dolomite.
M-5254	2000-2015	1.05	95%	Claystone grading to Siltstone, grey.
			5%	Siderite, brown.
M-5255	2015-2030	1.10	93%	Silty Claystone as above.
			7%	Siderite, yellowish brown.
M-5256	2030-2045	1.24	95%	Silty Claystone as above.
			5%	Siderite.
M-5259	2090	1.27	90%	Silty Claystone as above.
			10%	Siderite.
M-5262	2135	1.24	92%	Silty Claystone as above.
			8%	Siderite.
M-5265	2180	1.33	90%	Silty Claystone as above.
			10%	Siderite.
M-5268	2225	1.39	92%	Silty Claystone as above, occasionally light grey.
			8%	Siderite.

Lithology and Total Organic Carbon measurements

TABLE NO.:
WELL NO.: 7117/9-1

Sample	Depth (m)	TOC	Lithology
M-5271	2270	1.49	92% Claystone as above, grey. 8% siderite, brown.
M-5274	2315	1.39	97% Claystone grading to Siltstone, grey, grading to dark grey. 3% Siderite. Sm.am. Coaly particles.'
M-5277	2360	1.47	97% Claystone as above. 3% Siderite. Sm.am. Coaly particles.
M-5280	2405	1.42	100% Claystone, grading to very silty, occasionally white silt/very fine sand laminae, grey (grading to dark). Sm.am. Siltstone, light grey, slightly calcareous; Siderite; Pyrite.
M-5283	2450	1.41	100% Claystone as above, occasional light grey. Sm.am. Silt/Sandstone, slightly calcareous, Siderite to Limestone.
M-5286	2495	1.37	100% Claystone as above. Sm.am. Siderite.
M-5514	2540	1.26	100% Claystone, grey to dark grey, some grading to Siltstone, sm.am. light grey. Sm.am. Limestone, brownish, Sandstone.
M-5517	2585	1.23	100% Claystone, as above. Sm.am. Sandstone, very fine; browngrey Limestone.
M-5520	2630	1.31	93% Claystone, as above. 7% Sandstone, very fine to fine, light grey. Sm.am. Mud cake.
M-5523	2675	1.23	85% Claystone - Siltstone, grey to dark grey, Sand/Silt- laminae. 15% Sandstone, very fine to fine, calcareous, light grey. Sm.am. Siderite.
M-5526	2720	1.00	20% Clay/Silt-stone as above. 80% Cement, light grey.

IKU

Lithology and Total Organic Carbon measurements

TABLE NO.:
WELL NO: 7117/9-1

Sample	Depth (m)	TOC	Lithology
M-5529	2765	1.16	40% Clay/Silt-stone, as above. 60% Cement and additives. Sm.am. Sandstone.
M-5532	2810	2.14	85% Clay/Silt-stone, as above. 15% Steel/Additives/Cement.
M-5535	2855	1.06	92% Claystone, grading to Siltstone, grey to dark grey. 8% Additives; Mud cake (yellowish)
M-5538	2900	1.08	95% Claystone, some grading to Siltstone, grey to dark grey. 5% Additives/mud cake, light, yellowish.
M-7236	2930	0.97	100% Claystone, dark grey, occasionally lamina of silt/very fine sand, grading to Siltstone. Sm.am. Siderite, brown.
M-7237	2960	1.03	100% Claystone, as above. Sm.am. Mudcake, additives, steel.
M-7239	2990	1.40	100% Claystone, dark grey, grading to Siltstone. Sm.am. Mud cake; Siderite.
M-7241	3020	1.10	92% Claystone, as above but dark to very dark grey. 8% Mud cake, light yellowish brown. Sm.am. Siderite.
M-7243	3050	1.10	90% Claystone, as above, very fine/fine sand lenses (glauconitic). 10% Mud cake as above. Sm.am. Siderite.
M-7245	3080	1.09	100% Claystone, as above, dark grey (grading to black).
M-7247	3110	1.00	95% Claystone, dark grey, grading to very silty. 5% Mud cake. Sm.am. Sandstone, very fine, slightly glauconitic; Siderite.
M-7249	3140	0.94	100% Claystone, as above. Sm.am. Siderite; Mud cake.

IKU

Lithology and Total Organic Carbon measurements

TABLE NO.:
WELL NO.: 7117/9-1

Sample	Depth (m)	TOC	Lithology
M-7251	3170	0.97	95% Claystone, as above. 5% Mud cake. Sm.am. Pyrite.

IKU

VITRINITE REFLECTANCE MEASUREMENTS

TABLE NO.:

WELL NO. 7117/9-1

Sample	Depth	Vitrinite reflectance	Fluorescence in UV light	Exinite content
M-4675	1400	0.42(25)	Nil	Nil
M-4712	1955	0.35(2),0.66(6)	Nil	Nil
M-5259	2090	0.47(6)	Nil	Nil
M-5277	2360	0.52(23)	Nil	Nil
M-5529	2705	0.42(4),0.67(8)	Nil	Nil
M-7239	2990	0.58(6)	Nil	Nil
M-7251	3170	0.64(11)	Nil	Nil

IKU

Visual Kerogen Analysis

TABLE NO.:
WELL NO.: 7117/9-1

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
	1400	W, WR!, P, S/Am, Cy	F-M	good	1/1+	Aggregates embedding vitrinite partly very small particles. Abundant pyrite.
	1955	W, WR!, P, Cut/Am, Cy	F-M	good	1/1+	Dispersed material. Abundant pyrite.
	2090	W, WR!, S, P, Cut/Am, Cy	F-M-(L)	good	1/1+	Small residue cysts, acritarchs algal colonies. Some reworking Vitrinite, semifusinite and fusinite.
	2360	W, WR!, P, Cut/Am, Cy	F-M	good to fair	1/1+	Small, pyritic residue. Loose aggregates. Cysts, tasmanitids and acritarchs. Fungal fruiting bodies.

ABBREVATIONS

Am	Amorphous	Cy	Cysts, algae	W	Woody material	F	Fine
He	Herbaceous	P	Pollen grains	C	Coal	M	Medium
Cut	Cuticles	S	Spores	R!	Reworked	L	Large

IKU

Visual Kerogen Analysis

TABLE NO.:
WELL NO.: 7117/9-1

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
	2765	W, C, P, S, Cut/Am, Cy	F-M-L	good	1/1+ 1+	Fairly large coaly/vitrinite fragments. Odontochitina. Pyrite.
	2990	WR!, W, P, S/Am, Cy	F(-M-L)	good to fair	1+	Rich in Cretaceous cysts.
	3170	WR!, W, P/Am, Cy	F(-M-L)	good to fair	1+	Rich in Cretacous cysts. Semifusinite/fusinite. Some staining of cysts.

ABBREVATIONS

Am	Amorphous	Cy	Cysts, algae	W	Woody material	F	Fine
He	Herbaceous	P	Pollen grains	C	Coal	M	Medium
Cut	Cuticles	S	Spores	R!	Reworked	L	Large