TESTING:

Three zones were tested.

DST no.1A:	2802-2820 m, no response from formation
DST no.1:	2436-2439 m, oil test
DST no.2:	2394-2403 m, no response from formation

DST no.1A:
Had to change out flopetrol sub sea test tree due to failing pressure test. Later small piece of metal were found on seat in leaking SSTT-tree. Lost 5 hrs rig-time due to this.

Performed successful isolation squeeze between water and oil (squeezed at 2440 - 2441.6 m).

DST no.1:
A mechanical tubing release was used to drop the guns after fireing. This was done to enable deep bottom hole sampling.
The 9-5/8" casing was first perforated with 6 shots pr. foot, and after that the well was re-perforated by 12 shots pr. foot (test no.1 RR). in attempt to improve flowing rate.

An acid job was also attempted to improve flow conditions, but failed due to that the LPR-N valve or the drill pipe tester valve, closed (See 'equipment failure').
The Sperry Sun "Gauge Carrier" was set out of function, probably due to damage when running the string in hole (See 'equipment failure').

DAILY DRILLING MUD ADDITIONS

DATE: 18-Nov-85

OPERATOR: STATOIL HARSTAD WELL NO.: 7121/5-1 RIG NAME: WEST VANGUARD

SPUD DATE: 7-Jun-1985 No.drlg days to TD: 68 TOTAL DEPTH: 3200

CONTRACTOR: SNEDVIG WAREHOUSE: HAMMERFEST TOTAL COST: 437,266.51

Product :	Bento-nite	Caustic soda	Soda Ash	Barite	N.P. 302	Gypsum	Drispac Reg.	Drispac S/L.	Prothin	NaCl	Pro-Defoam	Perma-lose	Probio	XC-Pol	Soltex	Lime
Price	403.60	22.47	22.79	151.20	252.71	10.80	199.00	208.00	18.20	11.55	72.19	60.19	750.00	393	103.95	5.41
Unit	at	25 kg	50 kg	at	25 kg	40 kg	50 lb	50 lb	25 kg	50 kg	5 gal	25 kg	55 gal	25 kg	50 lb	20 kg

Date	Depth																COST Daily	COST Cumulative
07-Jun	357	24	7	7													10,003.22	10,003.22
08-Jun	423	14	5	5													5,876.70	15,879.92
09-Jun	423	11	7	7													4,756.42	20,636.34
10-Jun	623	9	2	2	10					8							5,380.52	26,016.86
11-Jun	877	2	1	1	2					2							1,191.26	27,208.12
12-Jun	564	4	2	2													1,704.92	28,913.04
13-Jun	654	5	4		10												3,619.88	32,532.92
14-Jun	778	8	10						3	5							4,168.50	36,701.42
15-Jun	865	3	8		35					5							6,773.36	43,474.98
16-Jun	865	10	14		70												14,934.58	58,409.56
17-Jun	865	10	8		22												7,542.16	65,951.72
29-Jun	865		7	2		49	88	35				106	1				27,631.20	93,582.92
30-Jun	865								20								4,160.00	97,742.92
01-Jul	865				15												2,268.00	100,010.92
02-Jul	917	7	5		13	25	5					35					13,381.55	113,392.47
03-Jul	1188	4	1		32	38	124	36				60					28,192.85	141,585.32
04-Jul	1378		2		36	15	117	17	50		1						24,325.39	165,910.71
05-Jul	1536		4			22	20	14	25		1						13,851.50	179,762.21
06-Jul	1723		12			15	60	9	50		2						16,899.29	196,661.50
07-Jul	1861		10			10	20		44								12,119.80	208,781.30
08-Jul	1925		15		10	20	25	16	12								12,853.25	221,634.55
09-Jul	1925					10		4	5				2				5,863.10	227,497.65

DAILY DRILLING MUD ADDITIONS

DATE: 18-Nov-85

OPERATOR: STATOIL HARSTAD WELL NO.: 7121/5-1 RIG NAME: WEST VANGUARD

SPUD DATE: 7-Jun-1985 No.drlg days to TD: 68 TOTAL DEPTH: 3200

CONTRACTOR: SNEDVIG WAREHOUSE: HAMMERFEST TOTAL COST: 437,266.51

Product :	Bento-nite	Caustic soda	Soda Ash	Barite	N.P. 302	Gypsum	Drispac Reg.	Drispac S/L.	Prothin	NaCl	Pro-Defoam	Perma-lose	Prohio	IC-Pol	Soltex	Lime		
Price	403.60	22.47	22.79	151.20	252.71	10.80	199.00	208.00	18.20	11.55	72.19	60.19	750.00	393	103.95	5.41		
Unit	mt	25 kg	50 kg	mt	25 kg	40 kg	50 lb	50 lb	25 kg	50 kg	5 gal	25 kg	55 gal	25 kg	50 lb	20 kg	C O S T	
Date	Depth																Daily	Cumulative
10-Jul	1925	25			5		3	5									3,462.30	230,959.95
11-Jul	1931				5		5	5		150							5,031.05	235,991.00
12-Jul	2089	5		2	29		25			22							12,972.44	248,963.44
13-Jul	2140	8					11			15							2,542.01	251,505.45
14-Jul	2225	8					21	5		52							5,999.36	257,504.81
15-Jul	2325	8					8			15							1,945.01	259,449.82
16-Jul	2365	10		51			5	3		28			1	6			12,986.30	272,436.12
17-Jul	2392	5		5			1			14							1,229.05	273,665.17
18-Jul	2415							12					1	8			6,390.00	280,055.17
19-Jul	2436	4		4				5		10							1,850.18	281,905.35
20-Jul	2442	1		2			5	8		17							3,180.22	285,085.57
21-Jul	2461	3		23													3,545.01	288,630.58
22-Jul	2480	2		8			5	2		28							2,988.94	291,619.52
23-Jul	2499	3		13													2,033.01	293,652.53
24-Jul	2509	5		7	5			2		17							3,046.65	296,699.18
25-Jul	2522	2		1	5			2		5							1,933.44	298,632.62
26-Jul	2536			7	2												1,563.82	300,196.44
27-Jul	2539																0.00	300,196.44
28-Jul	2539																0.00	300,196.44
29-Jul	2548	8		7	11			4		35			1				6,004.22	306,200.66
30-Jul	2572				13					15					162		20,298.38	326,499.04
31-Jul	2608			22	6		8	8		5					16	2	9,830.43	336,329.47

DAILY DRILLING MUD ADDITIONS

DATE: 18-Nov-85

OPERATOR: STATOIL HARSTAD WELL NO.: 7121/5-1 RIG NAME: WEST VANGUARD

SPUD DATE: 7-Jun-1985 No.drlg days to TD: 68 TOTAL DEPTH: 3200

CONTRACTOR: SNEDVIG WAREHOUSE: HAMMERFEST TOTAL COST: 437,266.51

Product :	Bento-nite	Caustic soda	Soda Ash	Barite	N.P. 302	Gypsum	Drispac Reg.	Drispac S/L.	Prothin	NaCl	Pro-Defoam	Perma-lose	Probio	XC-Pol	Soltex	Lime	
Price	403.60	22.47	22.79	151.20	252.71	10.80	199.00	208.00	18.20	11.55	72.19	60.19	750.00	393	103.95	5.41	
Unit	mt	25 kg	50 kg	mt	25 kg	40 kg	50 lb	50 lb	25 kg	50 kg	5 gal	25 kg	55 gal	25 kg	50 lb	20 kg	C O S T
Date Depth																	Daily Cumulative
01-Aug 2631		11		9	4		8	4		34					10	5	6,502.06 342,831.53
02-Aug 2655		4		8			5								6	3	2,934.41 345,765.94
03-Aug 2705		1		17	4		4	4		5			1		16	5	7,729.71 353,495.65
04-Aug 2752		3			4			1		1					50	2	6,506.12 360,001.77
05-Aug 2755		5		3	9		4	9		12			1				6,396.94 366,398.71
06-Aug 2755		8		1				3					1				1,704.96 368,103.67
07-Aug 2755	15	2		4			3										7,300.74 375,404.41
08-Aug 2755		1			37		20	18					1				17,846.74 393,251.15
09-Aug 2765				1	12		3	6									5,028.72 398,279.87
10-Aug 2792				9	7			1									3,337.77 401,617.64
11-Aug 2855					5		1	3									2,086.55 403,704.19
12-Aug 2933		12		3			4	4									2,351.24 406,055.43
13-Aug 2980					5		3	3									2,484.55 408,539.98
14-Aug 3044		6			5		3	9									3,867.37 412,407.35
15-Aug 3082	1	4			5		3	6									3,602.03 416,009.38
16-Aug 3103		2						4									876.94 416,886.32
17-Aug 3162		3			2			6									1,820.83 418,707.15
18-Aug 3200		4						4									921.88 419,629.03
19-Aug 3200																	0.00 419,629.03
20-Aug 3200																	0.00 419,629.03
21-Aug 3200		10															224.70 419,853.73
22-Aug 3200		8															179.76 420,033.49

DAILY DRILLING MUD ADDITIONS

DATE: 18-Nov-85

OPERATOR: STATOIL HARSTAD WELL NO.: 7121/5-1 RIG NAME: WEST VANGUARD

SPUD DATE: 7-Jun-1985 No.drlg days to TD: = 68 TOTAL DEPTH: 3200

CONTRACTOR: SNEDVIG WAREHOUSE: HAMMERFEST TOTAL COST: 437,266.51

Product :	Bento-nite	Caustic soda	Soda Ash	Barite	M.P. 302	Gypsum	Drispac Reg.	Drispac S/L.	Prothin	NaCl	Pro-Defoam	Perma-lose	Probio	XC-Pol	Soltex	Lime		
Price	403.60	22.47	22.79	151.20	252.71	10.80	199.00	208.00	18.20	11.55	72.19	60.19	750.00	393	103.95	5.41		
Unit	mt	25 kg	50 kg	mt	25 kg	40 kg	50 lb	50 lb	25 kg	50 kg	5 gal	25 kg	55 gal	25 kg	50 lb	20 kg	C O S T	
Date	Depth																Daily	Cumulative
23-Aug	3161		6														134.82	420,168.31
24-Aug	3161			23													3,477.60	423,645.91
25-Aug														4			1,572.00	425,217.91
26-Aug																	0.00	425,217.91
27-Aug				4													604.80	425,822.71
28-Aug				4			12										2,992.80	428,815.51
29-Aug				7			6	6									3,500.40	432,315.91
30-Aug				8			10										3,199.60	435,515.51
31-Aug				5			5										1,751.00	437,266.51
01-Sep																	0.00	437,266.51
02-Sep																	0.00	437,266.51
03-Sep																		
04-Sep																		
05-Sep																		

DRILLING MUD RECAP

OPERATOR: STATOIL HARSTAD | WELL NO.: 7121/5-1 | RIG NAME: WEST VANGUARD

SPUD DATE: 07-Jun-1985 | No.drlg days to TD: 44 | TOTAL DEPTH: 2700

CONTRACTOR: SNEDVIG | WAREHOUSE: HAMMERFEST | TOTAL COST: $437,266.51

Date	Depth	M.W.	FV API @	PV cp @	YP API @	GELS 0/10	pH	API FL	Cake	ALKALINITY Pm	Pf/Mf	Cl- mg/l	Ca- mg/l	Sand %	Solids %	Oil %	Water %	MBT	EX.GYP
07-Jun	357	1.06	100		SPUD	MUD													
08-Jun	423	1.06	100		SPUD	MUD													
09-Jun	423	1.06	85	7	42	25/55	9.5	N/C											
10-Jun	623	1.05	53	7	35	19/47		27.0	4		.3/.7	14000	320	TR	6.0		94		
11-Jun	877	1.06	50	8	32	17/42	8.0	24.0	3		.1/.3	11000		TR	6.0		94		
12-Jun	564	1.06	40	5	30	15/21	8.5	28.0	4	0.20	.1/.2	12000		TR	6.0		94		
13-Jun	654	1.06	45	6	38	17/26	8.8	28.0	4	0.35	.05/.35	10000	120	TR	6.0		94		
14-Jun	778	1.06	42	6	32	21/27	9.1	23.0	3	0.30	.05/.3	10000	160	TR	6.0		94		
15-Jun	865	1.06	39	6	27	18/34	8.5	21.0	3	0.30	.5/.25	11000		TR	6.0		94		
16-Jun	865	1.17	48	12	22	14/26	8.5	N/C	3	0.30	.1/.3	13000			8.0		92		
17-Jun	865	1.17	45				8.5	N/C											
18-Jun	STRIKE																		
19-Jun																			
20-Jun																			
21-Jun																			
22-Jun																			
23-Jun																			
24-Jun																			
25-Jun																			
26-Jun																			
27-Jun																			
28-Jun																			
29-Jun	865	1.04	55	12	12	2/3	9.8	6.4	1/32	0.50	.01/.41	23000	3800		4.0		96		4.00
30-Jun	865	1.04	56	14	16	3/4	10.1	5.9	1	0.50	.01/.41	23000			4.0		96		4.00
01-Jul	865	1.10	56	14	16	3/4	10.1	5.9	1	0.50	.01/.41	23000			4.0		96		4.00

DRILLING MUD RECAP

OPERATOR: STATOIL HARSTAD | WELL NO.: 7121/5-1 | RIG NAME: WEST VANGUARD

SPUD DATE: 07-Jun-1985 | No.drlg days to TD: 44 | TOTAL DEPTH: 2700

CONTRACTOR: SNENVIG | WAREHOUSE: HAMMERFEST | TOTAL COST: $437,266.51

Date	Depth	M.T.	FV API @	PV cp @	YP API @	GELS 0/10	pH	API FL	Cake	ALKALINITY Pm	Pf/Mf	Cl- mg/l	Ca- mg/l	Sand %	Solids %	Oil %	Water %	MBT	EX.GYP
02-Jul	917	1.10	53	15	18	3/5	10.6	6.4	1	0.75	.02/.60	23000	4100	1/4	6.0		94	6.25	3.60
03-Jul	1188	1.11	54	16	21	3/7	9.7	5.2	1/32	0.65	.12/.37	22750	2800	TR	7.0		93	11.25	4.01
04-Jul	1393	1.11	54	15	23	4/6	9.4	4.8	1/32	0.16	.11/.26	22000	3640	TR	8.0		92	11.25	3.60
05-Jul	1536	1.13	54	16	24	5/8	9.5	4.0	1/32	0.28	.12/.37	22000	2400	TR	9.0		91	11.50	3.70
06-Jul	1723	1.12	56	16	21	4/7	9.3	5.1	1/32	0.14	.08/.36	22000	3480	TR	11.0		89	12.50	3.40
07-Jul	1840	1.12	50	15	17	4/7	9.5	4.2	2/32	0.27	.02/.42	21500	3760	TR	12.0		88	15.00	2.50
08-Jul	1925	1.14	56	17	20	5/9	9.4	5.1	1/32	0.41	.15/.47	21500	2020	TR	10.0		89	15.00	2.30
09-Jul	1925	1.14	60	16	22	5/9	9.0	5.1	1/32	0.41	.15/.47	21500	2020	TR	10.0		89	15.00	2.30
10-Jul	1925	1.14	60	16	22	5/9	10.1	5.1	1/32	0.41	.15/.47	21500	2020	TR	10.0		90	15.00	2.30
11-Jul	1931	1.15	48	14	19	4/7	10.1	5.0	1/32	0.31	.03/.63	38000	1260	TR	8.0		92	13.75	2.10
12-Jul	2089	1.15	56	15	17	3/12	9.5	4.5	1	0.35	.04/.64	37000	2000	TR	10.0		90	13.75	1.70
13-Jul	2140	1.15	65	16	19	3/12	10.2	4.1	1	0.55	.04/.64	37000	1840	TR	9.0		91	13.75	1.60
14-Jul	2255	1.15	51	16	18	2/7	9.5	4.2	1	0.43	.04/.34	36000	1480	TR	8.0		91	15.00	1.46
15-Jul	2310	1.15	50	16	19	3/12	9.7	4.5	1	0.34	.05/.35	37000	1120	TR	9.0		91	15.00	0.70
16-Jul	2365	1.30		19	24	4/13	9.6	4.3	1	0.31	.14/.43	40000	1000	TR	12.0		88	15.00	
17-Jul	2392	1.30	55	19	18	3/13	10.0	4.3	1	0.46	.28/.46	41000	940	TR	11.0		89	15.00	
18-Jul	2403	1.30	58	19	20	4/10	9.9	4.2	1	0.45	.10/.26	38000	1040	1/4	13.0		87	15.00	.34
19-Jul	2427	1.30	52	18	19	3/9	10.0	4.4	1	0.43	.09/.29	38000	920	1/4	13.0		87	15.00	.46
20-Jul	2442	1.30	57	19	22	3/8	9.8	4.1	1	0.40	.08/.28	40000	960	1/4	13.0		87	15.00	
21-Jul	2443	1.34	56	18	26	3/6	9.3	3.5	1	0.24	.04/.24	40000	1040	1/4	14.0		86	12.50	.12
22-Jul	2474	1.34	58	17	23	3/6	9.4	3.9	1	0.25	.04/.19	39000	920	1/4	14.0		86	13.75	
23-Jul	2497	1.34	60	18	24	3/7	9.5	4.0	1	0.27	.06/.24	38500	840	1/4	14.0		86	12.50	
24-Jul	2509	1.34	60	16	24	3/7	9.5	3.8	1	0.28	.07/.24	40000	800	TR	15.0		85	12.50	
25-Jul	2522	1.34	60	17	23	3/7	9.3	4.1	1	0.28	.05/.25	39000	760	TR	14.0		86	12.50	
26-Jul	2536	1.34	58	17	23	3/7	9.3	4.0	1	0.30	.05/.26	39000	770	TR	14.0		86	12.50	

DRILLING MUD RECAP

OPERATOR: STATOIL HARSTAD | WELL NO.: 7121/5-1 | RIG NAME: WEST VANGUARD

SPUD DATE: 07-Jun-1985 | No.drlg days to TD: 44 | TOTAL DEPTH: 2700

CONTRACTOR: SNEDVIG | WAREHOUSE: HAMMERFEST | TOTAL COST: $437,266.51

Date	Depth	M.T.	FV API @	PV cp @	YP API @	GELS 0/10	pH	API FL	Cake	ALKALINITY Pm	Pf/Mf	Cl- mg/l	Ca- mg/l	Sand %	Solids %	Oil %	Water %	MBT	EK.GYP
27-Jul	2539	1.34	58	17	22	3/7	9.1	4.2	1	0.28	.04/.26	39000	770	TR	14.0		86	12.50	
28-Jul	2539	1.34	58	17	22	3/7	9.1	4.2	1	0.28	.04/.26	39000	770	TR	14.0		86	12.50	
29-Jul	2548	1.34	58	17	23	4/8	9.5	4.7	2	0.30	.05/.32	38500	740	TR	13.0		87	10.00	
30-Jul	2572	1.34	59	19	22	3/11	9.3	4.3	3	0.32	.03/.60	40000	560	TR	13.0		87	10.00	
31-Jul	2600	1.34	58	20	23	4/8	9.3	4.1	2	0.35	.04/.55	37000	520	TR	14.0		86	10.00	
01-Aug	2628	1.34	59	21	22	4/9	9.3	3.8		0.34	.05/.65	41500	450	TR	14.0		86	10.00	
02-Aug	2645	1.34	58	19	24	4/12	9.3	4.3	2	0.41	.07/.70	40500	520	TR	15.0		85	12.50	
03-Aug	2684	1.34	60	21	24	4/17	9.2	4.2	2	0.45	.04/.65	44500	520	TR	15.0		85	12.50	
04-Aug	2740	1.34	61	21	23	4/17	9.0	4.2	2	0.41	.06/.70	40000	560	TR	16.0		84	12.50	
05-Aug	2755	1.34	58	21	22	4/14	8.8	4.2	2	0.42	.06/.70	39500	540	TR	16.0		84	12.50	
06-Aug	2755	1.34	58	21	22	4/14	10.0	4.3	2	0.47	.08/.75	39500	540	TR	16.0		84	12.50	
07-Aug	2755	1.34	58	21	22	4/14	10.0	4.3	2	0.47	.08/.75	39500	540	TR	16.0		84	12.50	
08-Aug	2755	1.16	60	19	19	4/4	8.5	3.6	2	0.33	.02/.55	29500	1320	TR	15.0		85	5.00	
09-Aug	2763	1.16	55	16	15	4/4	10.6	3.5	2	1.10	.09/.60	29000	1160	TR	7.5		92.5	5.00	
10-Aug	2792	1.16	57	18	20	4/4	10.1	3.6	1	0.85	1.0/1.3	28000	1360	TR	9.0		91	6.25	
11-Aug	2855	1.16	55	18	21	3/5	9.8	3.5	1	0.65	.07/.48	28500	1380	TR	7.0		93	7.50	
12-Aug	2933	1.16	57	17	19	3/5	10.4	3.6	1	0.89	.08/.71	28000	1200	TR	7.0		93	8.75	
13-Aug	2980	1.16	54	15	19	2/4	10.2	3.6	1	0.56	.07/.72	29000	1120	TR	6.0		94	7.55	
14-Aug	3044	1.16	58	16	18	2/4	10.2	3.4	1	0.74	.10/.75	28000	840	TR	6.0		94	13.40	
15-Aug	3082	1.16	61	15	18	2/4	10.6	3.8	1	0.86	.18/.64	28500	680	TR	6.0		94	7.50	
16-Aug	3103	1.16	58	15	16	2/4	10.5	3.3	1	0.78	.11/.60	28000	720	TR	6.0		94	7.50	
17-Aug	3162	1.16	56	14	17	2/4	10.5	3.6	1	0.82	.11/.71	28000	640	TR	6.0		94	8.75	
18-Aug	3200	1.16	56	15	18	2/4	10.2	3.4	1	0.75	.07/.66	27500	680	TR	6.0		94	8.75	
19-Aug	3200	1.16	55	14	17	2/4	10.0	3.6	1	0.71	.05/.61	27500	680	TR	6.0		94	8.75	
20-Aug	3200	1.16	54	14	16	2/4	10.0	3.5	1	0.70	.5/.58	27500	680	TR	6.0		94	7.50	

DRILLING MUD RECAP

OPERATOR: STATOIL HARSTAD | WELL NO.: 7121/5-1 | RIG NAME: WEST VANGUARD

SPUD DATE: 07-Jun-1985 | No.drlg days to TD: 44 | TOTAL DEPTH: 2700

CONTRACTOR: SNEDVIG | WAREHOUSE: HAMMERFEST | TOTAL COST: $437,266.51

Date	Depth	M.T.	FV API @	PV cp @	YP API @	GELS 0/10	pH	API FL	Cake	ALKALINITY Pm	Pf/Mf	Cl- mg/l	Ca- mg/l	Sand %	Solids %	Oil %	Water %	MBT	EX.GYP
21-Aug	3200	1.16	58	15	19	2/4	10.2	3.6	1	0.86	.89/.97	27500	600	TR	6.0		94	8.75	
22-Aug	3200	1.16	60	15	20	2/5	10.4	3.4	1	1.20	.96/1.0	27500	600	TR	6.0		94	8.75	
23-Aug	3161	1.16	61	15	18	2/4	10.5	3.6	1	0.68	.04/.58	27500	600	TR	6.0		94	8.75	
24-Aug	3161	1.23	56	14	19	2/5	10.6	3.8	1	0.84	.26/.71	27500	600	TR	9.0		91	8.75	
25-Aug	3161	1.23	54	15	17	2/5	10.5	3.6	1	0.78	.18/.69	27500	640	TR	9.0		91	8.75	
26-Aug	3161	1.23	56	14	17	2/4	10.4	3.6	1	0.76	.16/.65	26500	600	TR	9.0		91	7.50	
27-Aug	2802	1.23	54	15	16	2/4	10.3	3.8	1	0.74	.12/.58	27000	600	TR	9.0		91	7.50	
28-Aug	2546	1.23	61	15	17	2/5	10.6	4.0	1	0.85	.13/.46	27000	840	TR	9.0	TR	91	7.50	
29-Aug	2544	1.23	56	13	15	2/3	10.8	5.6	1	2.60	1.0/1.7	28000	1200	TR	8.0	TR	92	8.50	
30-Aug	2544	1.23	50	14	14	2/4	13.0	7.0	1.5	4.20	1.8/2.5	26000	1280	TR	9.0	TR	91	8.75	
31-Aug	2544	1.23	50	14	14	2/4	13.0	7.0	1.5	4.20	1.8/2.5	26000	1280	TR	9.0	TR	91	8.75	
01-Sep	2544	1.23	50	14	14	2/4	13.0	7.0	1.5	4.20	1.8/2.5	26000	1280	TR	9.0	TR	91	8.75	
02-Sep	2544	1.23	43	12	12	2/3	12.5	9.0	1.5	3.90	1.6/2.2	26000	1200	TR	9.0	TR	91	7.50	
03-Sep	2544	1.23	43	12	12	2/3	12.5	9.0	1.5	3.90	1.6/2.2	26000	1200	TR	9.0	TR	91	7.50	
04-Sep	2544	1.23	42	10	11	2/3	12.5	11.0	1.5	3.80	1.5/2.2	26000	1100	TR	9.0	TR	91	7.50	
05-Sep	2544	1.23	40	9	13	2/4	12.0	16.0	1.5	3.60	1.4/2.0	26000	1040	TR	9.0	1	91	7.50	
06-Sep	2540	1.23	40	10	12	2/4	12.0	16.0	1.5	3.50	1.3/1.8	26000	1020	TR	9.0	1	90	6.25	
07-Sep	2540	1.23	40	10	12	2/4	12.0	16.0	1.5	3.50	1.3/1.8	26000	1020	TR	9.0	1	90	6.25	
08-Sep	2544	1.23	40	10	12	2/4	12.0	16.0	1.5	3.50	1.3/1.8	26000	1020	TR	9.0	1	90	6.25	

COMPLETION INTERVAL

COMPANY Statoil Well No. 7121/5-1 Page 1 of _____

Casing Size	Meters		(Bit Size)	Meters	
30 "	from 357	to 420	36 "	hole from 357	to 423

Material Consumption for Interval:

Product	Units	Size	Cost/Unit	Total Cost
Bentonite	49	M/T	403.60	19,776.40
Caustic Soda	12	25 kg	22.47	269.64
Soda Ash	12	50 kg	22.79	273.48
				20,319.52

Material Cost for Interval $ 20,319.52 Average Cost per meter $ 307,871

Number of Days 3 Average Cost per Day $ 6,773.173

Comments

COMPLETION INTERVAL

COMPANY Statoil Well No. 7121/5-1 Page 2 of

Casing Size	Meters		(Bit Size)	Meters	
20 "	from 420	to 865	26 "	hole from 423	to 865

Material Consumption for Interval:

Product	Units	Size	Cost/Unit	Total Cost
Bentonite	51	M/T	403.60	20,583.60
Caustic Soda	49	25 kg	22.47	1,101.03
Soda Ash	5	50 kg	22.79	113.95
Barite	149	M/T	151.20	22,528.80
Prothin	20	25 kg	18.20	364.00

Material Cost for Interval $ 44,691.38 Average Cost per meter $ 101.111

Number of Days 7 Average Cost per Day $ 6,384.482

Comments

COMPLETION INTERVAL

COMPANY Statoil Well No. 7121/5-1 Page 3 of

Casing Size	Meters	(Bit Size)	Meters
13 3/8 " from	865 to 1913	17,5 " hole from	865 to 1925

Material Consumption for Interval:

Product	Units	Size	Cost/Unit	Total Cost
Drispac SL	209	50 lbs	208.-	43,472.-
Drispac Reg.	134	50 lbs	199.-	26,666.-
Permalose	201	25 kg	60.19	12,098.19
Milpolymer 302	209	25 kg	252.71	52,816.39
Gypsum	459	40 kg	10.80	4,957.20
Probio	3	200 l	750.00	2,250.00
Prodefoamer	4	25 l	72.19	288,76
Caustic Soda	56	25 kg	22.47	1,258.32
Bentonite	11	M/T	403.60	4,439.60
Soda Ash	2	50 kg	22.79	45.58
Barite	70	M/T	151.20	10,584.00

Material Cost for Interval $ 158,876.04 Average Cost per meter $ 149.883

Number of Days 12 Average Cost per Day $ 13,239.67

Comments

COMPLETION INTERVAL

COMPANY Statoil Well No. 7121/5-1 Page 4 of

Casing Size	Meters		(Bit Size)	Meters	
9 5/8 "	from 1913	to 2739	12 1/4 "	hole from 1913	to 2755

Material Consumption for Interval:

Product	Units	Size	Cost/Unit	Total Cost
Bentonite	15	M/T	403.60	6,054.00
Caustic Soda	131	25 kg	22.47	2,943.57
Barite	194	M/T	151.20	29,332.80,
Drispac S/L	74	50 lb	208.00	15,392.00
Drispac Reg.	122	50 lb	199.00	24,278,00
Milpolymer 302	102	25 kg	252.71	25,776.42
Pro-Bio	6	200 l	750.00	4,500.00
Salt	480	50 kg	11.55	5,544.00
XC-Polymer	16	25 kg	393.00	6,300.00
Soltex	260	50 lb	103.95	27,027.00
Lime	17	20 kg	5.41	91.97

Material Cost for Interval $ 147,240.56 Average Cost per meter $ 174.87

Number of Days 29 Average Cost per Day $ 5,077.26

Comments

COMPLETION INTERVAL

COMPANY Statoil Well No. 7121/5-1 Page 5 of

Casing Size	Meters	(Bit Size)	Meters
7 " from	to 3161	8 1/2 " hole from 2739	to 3200

Material Consumption for Interval:

Product	Units	Size	Cost/Unit	Total Cost
Bentonite	1	M/T	403.60	403.60
Caustic Soda	50	25 kg	22.47	1,123.50
Barite	13	M/T	151.20	1,965.60
Drispac S/L	64	50 lb	208.00	13,312.00
Drispac Reg.	37	50 lb	199.00	7,363.00
Milpolymer 302	78	25 kg	252.71	19,711.38
Probio	1	200 l	750.00	750.00

Material Cost for Interval $ 44,629.08 Average Cost per meter $ 96.81

Number of Days 15 Average Cost per Day $ 2,975.27

Comments

Repeat formation tester

A total of 8 RFT runs with an HP-gauge in addition to the strain gauge were run in this well. Six attempts of segregated samples were done and five were good samples. Out of 63 pretest record attempts 38 points were obtained.

Pretest record in Stø, Nordmela and Dyrøy formations:

Run no.	Test no.	Depth mRKB	Form. pressure kPa Strain/Hp	gm/cc	Permeability	Comments
3A	1	2370	26626/26573	1.144	Very good	Used
3A	2	2372.5	26619/26580	1.143	Good	Used
3A	3	2376	26619/26588	1.141	Good	Used
3A	4	2379.5	27060/27052	1.160	Poor	Not used
3A	5	2380.7	- / -	-	Tight	
3A	6	2383	- / -	-	Tight	
3A	7	2386	26639/26622	1.138	Poor	Not used
3A	8	2388	26660/26624	1.137	Poor	Not used
3A	9	2397.5	- / -	-	Tight	
3A	10	2398.5	26942/26916	1.145	Very low	Not used
3A	11	2403	- / -	-	Tight	
3A	12	2407	26688/26646	1.129	Good	Used
3A	13	2413.5	26708/26659	1.127	Fair	Used
3A	14	2416.5	26708/26668	1.126	Fair	Used
3A	15	2419	26708/26673	1.125	Good	Used
3A	16	2424	26701/26685	1.123	Good	Used
3A	17	2429.5	26736/26699	1.121	Fair	Used
3A	18	2431	- / -	-	Tight	
3A	19	2431.3	26812/26764	1.123	Fair	Not used
3A	20	2432	- / -	-	Tight	
3A	21	2434	26764/26728	1.120	Good	Used
3A	22	2436	26777/26741	1.120	Very good	Used
3A	23	2437.7	26853/26752	1.119	Very good	Used
3A	24	2438	- / -	-	Tight	
3A	25	2442.5	26826/26797	1.119	Good	Used
3A	26	2458.5	- / -	-	Tight	
3A	27	2462.6	27039/26991	1.118	Fair	Used
3A	28	2466.7	27081/27061	1.119	Fair	Used
3A	29	2471.8	27170/27173	1.121	Very low	Not used
3A	30	2472	27177/27127	1.119	Low	Used
3A	31	2484	- / -	-	Tight	
3A	32	2484.2	- / -	-	Tight	
3A	33	2484.5	- / -	-	Tight	
3A	34	2494.7	- / -	-	Tight	
3A	35	2495	- / -	-	Tight	
3A	36	2507	27446/n.a.	1.117	Excellent	Sample 1
3A	37	2511.5	27488/n.a.	1.116	Fair	
3A	38	2518	27570/n.a.	1.117	Fair	
3B	1	2434	26833/n.a.	1.124	Good	Sample 2
3C	1	2429.5	26743/n.a.	1.123	Good	Sample 3
3D	1	2424	26667/26676	1.122	Good	Sample 4
3E	1	2370	26584/26562	1.143	Very good	Sample 5

The HP-gauge failed to operate during the last part of run 3A, and was left out in run 3B and 3C to be repaired.

Pretest records in Dyrøy and Ytterøy formations:

Run No.	Test No.	Depth m RKB	Form.pressure kPa Strain/Hp	Permeability gm/cc	Comments	
4 G	1	2508	27556/27467	1.117	Good	Used
4 G	2	2512	27598/27505	1.117	Very good	Used
4 G	3	2522	27653/27611	1.117	Good	Used
4 G	4	2531	27736/27704	1.116	Good	Used
4 G	5	2560.5	28060/28018	1.116	Excellent	Used
4 G	6	2571	28170/28130	1.116	Good	Used
4 G	7	2662	- / -	-	Tight	

Pretest records in Aun formation:

Run No.	Test No.	Depth m RKB	Form.Pressure kPa Strain/Hp	Permeability gm/cc	Comments	
5 C	1	2802.9	31266/31248	1.137	Very low	
5 C	2	2810	- / -	-	Tight	
5 C	3	2810.9	- / -	-	Tight	
5 C	4	2815.5	- / -	-	Tight	
5 C	5	2818.9	31659/31716	1.148	Very low	
5 C	6	2817.2	- / -	-	Tight	
5 C	7	2825.4	- / -	-	Tight	
5 C	8	2838.3	- / -	-	Tight	
5 C	9	2876	- / -	-	Tight	
5 C	10	2884	- / -	-	Tight	
5 C	11	3059.2	- / -	-	Tight	
5 C	12	3083.2	- / -	-	Tight	
5 C	13	3118.2	- / -	-	Tight	
5 C	14	2802.7	31183/31130	1.133	Very low	Sample 6

Sampling

Sample No. 1:

Segregated sample taken at 2507 m RKB. The 2 3/4 gallon chamber was bled off at wellsite:

Opening pressure	:	4240 kPa
Gas	:	0.72 ft^3
Condensate	:	None observed
Water/mud filtrate	:	10.4 litres,
		s.g. = 1.065, chlorides = 40000 ppm

The 1 gallon chamber was sent onshore for analysis:

Opening pressure	:	4240 kPa at 15.5°C
Gas	:	0 litres
Condensate	:	None observed
Water/mud filtrate	:	3.1 litres

Results:	Water analysis	Mud filtrate
Chloride content	46020 ppm	39000 ppm
pH	7.3	9.3
Specific gravity	1.059	1.03

The chamber was found to contain almost all mudfiltrate/ water. It was therefore impossible to collect a gas sample for analysis.

Sample No. 2:

Segregated sample taken at 2434.0 m RKB. The 2 3/4 gallon chamber was bled off at wellsite:

Opening pressure	:	2170 kPa
Gas	:	0.22 ft^3
Condensate	:	None observed
Water/mud filtrate	:	10.5 litres,
		s.g. = 1.06, chlorides = 39000 ppm

The 1 gallon chamber was also bled off at the wellsite:

Opening pressure	:	2515 kPa
Gas	:	0.88 ft^3
Condensate	:	None observed
Water/mud filtrate	:	3.8 litres
		s.g. = 1.055, chlorides = 39000 ppm

Sample No. 3:

Segregated sample taken at 2429.5 m RKB. The 2 3/4 gallon chamber was bled off at wellsite:

Opening pressure	:	114000 kPa
Gas	:	1.83 ft^3
Condensate	:	None observed
Water/mud filtrate	:	10.5 litres

s.g. = 1.06, chlorides = 39000 ppm

The 1 gallon chamber was sent onshore for analysis:

Opening pressure	:	16650 kPa at 15.5°C
Gas	:	13.2 litres
Condensate	:	None observed
Water/mud filtrate	:	2.0 litres

Results:	Water analysis	Mud filtrate
Chloride content	35960 ppm	39000 ppm
pH	6.2	9.3
Specific gravity	1.050	1.03

Hydrocarbon analysis:

Component	Mol %
CO_2	1.46
N_2	1.72
Methane	86.03
Ethane	5.17
Propane	2.37
i-butane	0.42
n-butane	0.81
i-pentane	0.25
n-pentane	0.25
Hexanes	0.20
Heptanes	0.47
Octanes	0.47
Nonanes	0.18
Decanes +	0.20
Total	100.00

Expansion factor E : 227 sm^3/m^3
Calculated gas gravity : 0.701

Sample No. 4:

Segregated sample taken at 2424 m RKB. The 2 3/4 gallon chamber was bled off at wellsite:

Opening pressure : 16515 kPa
Gas : 4.82 ft^3
Condensate : None observed
Water/mud filtrate : 9.3 litres,
s.g. = 1.05, chlorides = 39000 ppm

The 1 gallon chamber was sent onshore for analysis:

Opening pressure	:	16990 kPa at 15.5°C
Gas	:	15.9 litres
Condensate	:	None observed
Water/mud filtrate	:	1.7 litres

Results:	Water analysis	Mud filtrate
Chloride content	35380 ppm	39000 ppm
pH	6.1	9.3
Specific gravity	1.048	1.03

Hydrocarbon analysis:

Component	Mol %
CO_2	3.31
N_2	1.85
Methane	83.98
Ethane	5.14
Propane	2.41
i-butane	0.38
n-butane	0.77
i-pentane	0.27
n-pentane	0.29
Hexanes	0.24
Heptanes	0.58
Octanes	0.43
Nonanes	0.13
Decanes +	0.22
Total	100.00

Expansion factor E	:	228 sm^3/m^3
Calculated gas gravity	:	0.721

Sample No. 5:

Segregated sample taken at 2370 m RKB. The 2 3/4 gallon chamber was bled off at wellsite:

Opening pressure	:	18720 kPa
Gas	:	34.6 ft^3
Condensate	:	0.25 litres
Water/mud filtrate	:	3.2 litres,

s.g. = 1.05, chlorides = 39000 ppm

The 1 gallon chamber was sent onshore for analysis:

Opening pressure	:	17700 kPa at 15.5°C
Gas	:	67.4 litres
Condensate	:	None observed
Water/mud filtrate	:	0.7 litres

Results:	Water analysis	Mud filtrate
Chloride content	32830 ppm	39000 ppm
pH	6.6	9.3
Specific gravity	1.046	1.03

Hydrocarbon analysis:

Component	Mol %
CO_2	4.03
N_2	2.05
Methane	83.02
Ethane	5.02
Propane	2.17
i-butane	0.43
n-butane	0.93
i-pentane	0.30
n-pentane	0.29
Hexanes	0.41
Heptanes	0.35
Octanes	0.47
Nonanes	0.21
Decanes +	0.32
Total	100.00

Expansion factor : 227 sm^3/m^3
Calculated gas gravity : 0.736

Sample No. 6:

Segregated sample taken at 2802.7 m RKB. The 2 3/4 gallon chamber was bled off at wellsite:

Opening pressure : 0 kPa
Gas : 0 ft^3
Condensate : None observed
Water/mud filtrate : 180 ml,
chlorides = 26000 ppm

The 1 gallon chamber was also bled off at the wellsite:

Opening pressure	:	0 kPa
Gas	:	0 ft^3
Condensate	:	None observed
Water/mud filtrate	:	300 ml

Testing

Dst No. 1A

Objectives: Receive good fluid samples for analysis
Determine productivity of perforated interval
Pressure and temperature measurements

Perforation interval: 2802.0 - 2820.0 m RKB.

The test was performed by using of the following test string:

- 3.5" tubing in a 7" liner
- Downhole tester valve
- 2 pressure gauges in gauge carriers
- Tubing conveyed perforation, 12 shots/foot

Test performance

The well was perforated underbalanced using diesel as cushion with a differensial pressure of approximately 9000 kPa.

On perforation the well was open on a 12.7 mm choke to surge tank. There was no response on flow. After 3 hours only 100 litres were produced to surge tank.

Tubing was then pressured up to 34500 kPa well head pressure for injection test. No injection was established.

The test zone was considered to be tight and any further attempts to get flow was cancelled.

One of the gauges in the gauge carrier did not work.

Dst No. 1

Objectives: Receive good reservoir samples for analysis.
Pressure and temperature measurements.
Determine productivity of the perforated interval.
Determine the water/gas coning problem.

Perforation interval: 2436.0 - 2439.0 m RKB.

The test was performed by using of the following test string:

- 3.5" tubing
- Downhole tester valve
- 2 Sperry-Sun pressure and temperature gauges in gauge carriers
- 4 Flopetrol pressure and temperature gauges set in F-nippel
- Tubing conveyed perforation, 6 shots/foot

Test performance

The well was perforated underbalanced using diesel as cushion. The following flow and shut-in periods were performed:

Clean up-flow	:	7.00 hours
First build-up	:	13.93 hours
First flow	:	3.83 hours
Second build-up	:	3.71 hours
Second flow	:	1.53 hours
Third build-up	:	5.93 hours
Fourth flow	:	1.32 hours
Fourth build-up	:	2.55 hours
Main flow	:	10.38 hours
Main build-up	:	18.27 hours
First multi rate flow	:	4.35 hours
Second multi rate flow	:	1.98 hours

The test operation was performed without any significant problems except from two pressure gauges; one did not start to record and the other showed to low values for pressure and temperature.

During the main flow period CO_2, H_2S, BS&W, oil and gas gravity were measured in addition to trace element analysis.

Good pressure and temperature data were obtained from four gauges.

There were taken four sets of PVT-samples during the main flow period.

Bottom hole sampling

After the first and second shut-in period the well was reopened to obtain mono phasic bottom hole fluid samples. Three out of four samplers performed well and one failed to close.

Test results

Testphase	Duration min.	WHP kPa	WHT ^{0}C	BHP kPa	BHT ^{0}C	Oil rate m^3/D	Gas rate Msm^3/D	Choke mm
Clean-up flow	420	4320	12.0	18358	86.7	227.1	-	6.40 11.10
First build-up	836	9680	10.0	22605	82.1	-	-	-
First flow	230	7320	8.0	24557	85.1	34.7	-	3.18
Second build-up	223	9100	8.0	26793	83.4	-	-	-
Second flow	92	7400	8.0	24413	84.9	36.1	-	3.18
Third build-up	356	-	-	28592	83.2	-	-	-
Third flow	79	3550	11.6	16289	87.7	-	-	12.70
Fourth build-up	153	-	-	26525	85.7	-	-	-
Main flow	623	3570	16.1	16273	89.9	229.1	27.19	12.70
Main build-up	1096	4430	7.8	26534	84.0	-	-	-
Multirate flow	261	2220	17.2	13782	90.2	296.3	34.66	19.05
Multirate flow	119	1710	17.8	12897	90.4	326.2	38.49	25.40

Gas oil ratio from main flow: 119 Sm^3/m^3.

CO_2 = 2 %
H_2S = 5 %
BS&W = 0 %

Input parameters

Average porosity	:	16.5 %
Formation temperature	:	91.0°C
Well bore radius	:	0.155 m
Bo	:	1.4307 Rm^3/Sm^3
Viscosity	:	0.55 mPa x s
Eff. prod. time	:	610 min.

Dst No. 1 R.R.

Oil test

Objectives: Receive good reservoir samples for analysis.
Pressure and temperature measurements.
Determine productivity of the perforated interval.
Determine the water/gas coning problem.

Perforation interval: 2436 - 2439 m RKB.

The test was performed by using of the following test string:

- 3.5" tubing
- Downhole tester valve
- 2 pressure & temperature gauges in gauge carriers
- 6 pressure & temperature gauges in F-nipple, two wireline runs
- Tubing conveyed perforation, 12 shots/foot

Test performance

The well was perforated underbalanced using diesel as cushion.

The following flow and shut-in periods were performed:

Initial flow	:	44 min.
Initial build-up	:	85 min.
First flow	:	355 min.
Second build-up	:	198 min.
Multirate flow	:	7424 min.
Third build-up	:	2181 min.
Third flow	:	1994 min.
Inject diesel	:	52 min.
Diesel flow	:	365 min.
Final build-up	:	355 min.

Eight gauges performed well, but memory capacity on one gauge was exhausted during the multirate flow.

During the multirate flow period, CO_2 and H_2S content was measured in the dissolved gas. Also density and BS&W was measured in addition to samples taken for trace element analysis.

Results from multirate flow:

CO_2	:	5.0 %
H_2S	:	2.0 ppm
BS&W	:	0 %

Test results

Testphase	Duration min.	WHP kPa	WHT °C	BHP kPa	BHT °C	Oil rate m^3/D	Gas rate Msm^3/D	Choke mm
Clean-up old pf	300	3160	11.0	-	-	155.6	23.90	12.70
Build-up	105	9190	10.9	-	-	-	-	-
Clean-up new pf	44	6550	8.5	-	-	107.8	-	6.35
First build-up	85	9150	8.5	-	-	-	-	-
First flow	103	4240	12.0	-	-	281.3	30.68	12.70
First flow	107	2700	15.5	-	-	378.4	43.14	19.10
First flow	145	2060	17.8	-	-	425.2	47.62	25.40
Second build-up	198	9200	13.9	-	-	-	-	-
Multirate flow	254	4360	16.5	18180	90.8	271.1	31.37	12.70
Multirate flow	2633	4880	22.0	15570	91.0	340.7	68.02	15.87
Multirate flow	87	2800	24.0	13370	90.0	425.3	84.29	25.40
Multirate flow	3699	2650	25.8	11730	88.8	358.6	141.80	31.75
Multirate flow	27	-	-	-	-	-	-	19.05
Multirate flow	55	-	-	-	-	-	-	12.70
Multirate flow	669	8650	18.0	17230	90.0	210.3	87.34	11.10
Main build-up	2181	16100	11.0	25780	86.0	-	-	-
Third flow	1578	8540	19.0	17370	89.6	208.1	85.25	11.10
Third flow	140	7000	17.5	16360	89.7	-	-	9.53
Third flow	284	11030	15.0	20660	90.4	126.4	51.14	7.94

Gas/oil ratio: Multirate flow:

GOR (Sm^3/m^3)	CHOKE (mm)
115.7	12.7
199.8	15.9
198.2	25.4
395.4	31.7
415.3	11.1

The analysis is based on gauge SDP No. 83073 from Flopetrol (sensing depth 2402.92 m RKB).

Input parameters

Avg. porosity (net sand, perf. interval)	:	16.5 %
Avg. Sw (perf. interval)	:	12.6 %
Formation temperature	:	90.0°C
Wellbore radius	:	0.155 m
Bo	:	1.42 Rm^3/Sm^3
Viscosity	:	0.55 mPa x S
Specific gravity	:	0.869

Average rates and delta times during the multirate flow:

t_0 =	46.75 hrs	q_0 =	0 Sm^3/d
t_1 =	50.90 hrs	q_1 =	273 Sm^3/d
t_2 =	94.93 hrs	q_2 =	344 Sm^3/d
t_3 =	158.41 hrs	q_3 =	386 Sm^3/d
t_4 =	170.46 hrs	q_4 =	215 Sm^3/d
t_5 =	198.67 hrs	q_5 =	0 Sm^3/d

Dst No. 2

Objectives: Determine productivity of the perforated interval.
Receive good fluid samples for analysis.
Pressure and temperature measurements.

Perforation interval: 2394 - 2403 m RKB.

The test was performed by using of the following test string:

- 3.5" tubing
- Downhole tester valve
- 2 pressure gauges in gauge carriers
- Tubing conveyed perforation, 12 shots/foot

Test performance

The well was perforated underbalanced using diesel as cushion. The well was opened on a 12.7 mm adjustable choke before perforating. The well head pressure was observed in 2 hours without no well head pressure response.

An injection test was then performed. The tubing was pressured up and the formation broke at 31500 kPa. The total injected volume was 0.4 m^3. The well was then opened on a 12,7 mm adjustable choke to surge tank. After 2.6 hours only 0,76 m^3 cushion were produced to surge tank.

The test zone was considered to be tight and any further attempts to get flow was cancelled.

Both gauges performed well during the test.

U-468

1 = 3

société nationale
elf aquitaine (production)

EP/S/EXP/RAG-Lab.Bss n° 130/86 RP
/dd

Boussens, 22nd November 1986

71-21/5-1 WELL

(TROMSØ AREA - NORWAY)

-

GEOCHEMICAL STUDY OF THE DST 2 OIL SAMPLE

AND OF SOME CORE SAMPLES

FROM LADINIAN

adresse postale : ☐ tour Elf - Cédex 45 92078 Paris La Défense — téléphone : 33 (1) 47.44.45.46 — télex : Elfa 615 400 F
☐ Pau - 64018 Pau Cédex — (33) 59.83.40.00 — Petra 560 804 F
☐ Lacq - BP 22 Lacq 64170 Artix — (33) 59.05.24.50 — Petra 560 053 F
☒ Boussens - Boussens 31360 Saint Martory — (33) 61.97.80.00 — SNEA 530 385 F

Imp 7261 SNEA(P) - RGM N° 953 006 002

TABLE 1 - 71-21/5-1 Well

OIL COMPOSITION , CHROMATOGRAPHICAL AND ISOTOPICAL DATA

WELL	71-21/5-1
* TEST	DST 2
DEPTH (m)	2436-2439
RESERVOIR	ST[illegible] Fm
AGE	Mid.Jur.
GOR (m3/m3)	100-300
° API	30.1
Spec.Grav.	0.8754
Sulfur (ppm)	4000
DISTILLATE	15.0
ASPHALTENES	0
RESINS	5.7
SATURATED HC	52.3
AROMATIC HC	27.0
S/A	1.93
X1=n-C6/MCP	1.38
X2=n-C7/DMCP	4.15
Y1=n-C7/TOL	-
Z1=n-C10/DMN	3.08
n-alk.% TV	30
n-alk.% SAT.	19
Pr/n-C17 = A	0.83
Ph/n-C18 = B	0.60
Pr/Ph	1.38
A/B	1.38
MPI 1	0.835
MPI 2	0.854
MPR	0.94
d13 C RD/PDB	-29.2

* DST 1 was written on the sampling bottle but, after the preliminary report of P.VERDIER (Nov.85) it is the DST 2 rather the DST 1 ! G.O.C. and W.O.C. are at 2427.5 and 2442 m respectively.

TABLE 2 - TROMSO AREA

OILS AND CONDENSATE COMPOSITIONS,

CHROMATOGRAPHICAL AND ISOTOPICAL DATA

WELL	71-20/8-1	71-21/4-1	71-21/5-1
TEST	DST 3	DST 2	DST 2
DEPTH	2093-2110		2436-2439
GOR (m3/m3)	17750	117-200	100-300
° API	52.3	51.1	30.1
Spec.Grav.	0.7698	0.775	0.8754
Sulfur (ppm)	-	365	4000
DISTILLATE	80.7	71.7	15.0
ASPHALTENES	0	0	0
RESINS	0.1	0.4	5.7
SATURATED HC	15.5	22.5	52.3
AROMATIC HC	3.7	5.5	27.0
S/A	4.13	4.12	1.93
X1=n-C6/MCP	1.77	1.67	1.38
X2=n-C7/DMCP	5.85	4.63	4.15
Y1=n-C7/TOL	0.62	-	-
Z1=n-C10/DMN	6.41	1.89	3.08
n-alk.% TV	29	27	30
n-alk.% SAT.	33	26	19
Pr/n-C17 = A	0.80	1.00	0.83
Ph/n-C18 = B	0.40	0.63	0.60
Pr/Ph	2.91	1.97	1.38
A/B	1.96	1.58	1.38
MPI 1	-	0.55	0.835
MPI 2	-	0.60	0.854
MPR	-	0.71	0.94
d13 C HT/PDB	-28.0	-29.35	-
d13 C RD/PDB	-28.65	-29.90	-29.2

TABLE 3 - 71-21/5-1 DST2

MASS-SPECTROMETRY DATA

STERANES	71-21/5-1	71-21/4-1	71-20/8-1
29bbS/29aaR	1.2		
29bbR/29aaR	1.57		
29aaS/29aaR	0.92	1.23	1.11
27Sdia/29aaR	1.50	5.48	8.78
22 4Me/29aaR	0.05		
% 20S C29	45		
% bb C29	59		
21 St/22 St	1.75		
22 4Me/22 St	0.15		
TRITERPANES			
29H/30H	0.52	0.68	0.62
Tm/Ts	1.01	0.93	0.62
23-3/24-4	0.74		
% 22S C31	61		
% 22S C32	60		
ba/ab C30 x100	8		
23-3/21St	0.94		
TT/ST	1.37		
MISCELLANEOUS			
29DH/29H	low		
28BNH/29H	low	0.13	0.19
29-5/29H	0.37		
Oln/30H	low		
Gorn/30H	0.08		
31-3/29H	0.25		
31-3/23-3	2.52		
35-6/35H	low		
35H/33H	0.45		
29+30/35H	11.31		

TABLE 4 - TROMSO AREA

MASS SPECTROMETRY DATA

SAMPLE	Up. CRET.	Low. CRET.	Up. JUR.	Mid. JUR.	Low. JUR.	TRIAS.	PERM.	71-21 /4-1 DST2	71-20 /8-1 DST1	71-2[illegible] /5-1 DST1
29H/30H	0.68	0.79	0.75	0.68	0.44	0.83	0.70	0.68	0.62	0.52
Tm/Ts	1.52	1.63	7.33	10.42	1.16	2.62	1.64	0.93	0.62	1.01
23-3/30H	0.38	0.52	0.07	0.04	0.05	0.34	0.50	0.39	0.98	
24-4/30H	0.11	0.14	0.09	0.06	0.06	0.18	0.15	0.30	0.50	
32S/(32S+32R)	0.61	0.57	0.64	0.62	0.60	0.54	0.64	0.64	0.63	0.60
Bisnor/29H	0.61	0.52	0.02	0.03	0.17	0.31	0.68	0.13	0.19	v.low
26-3/24-4	1.79	1.72	0.53	0.36	0.31	0.33	1.75	0.69	0.81	
29aaS/29aaR	0.64	0.57	0.67	0.54	0.79	1.1	1.1	1.23	1.11	0.92
29bbR/29aaR	1.47	1.22	0.90	0.58	1.31	1.94	2.33	1.84	1.56	1.57
27diaS/29aaR	0.70	0.59	2.79	1.32	1.31	-	1.03	5.48	8.78	1.50
% 27	32	34	42	37.5	33	36	32	45	44	
% 28 STERANES	29	29	25	25	26	36	31.5	24	27	
% 29	39	37	33	37.5	41	28	36.5	31	29	

TABLE 5 71-21/5-1 LADINIAN - ORGANIC INVENTORY
(Core 10)

N°	DEPTH	TOC	S1	S2	S3	PI	HI	OI	TM
1	3083.4	1.06	0.24	0.43	0.22	36	40	20	(480)
2	3084.4	1.21	0.28	0.63	0.19	31	52	15	(460)
3	3093	0.17	*						
4	3084.6	0.21	*						
5	3102.7	1.94	0.44	1.36	0.10	24	70	5	457

* : too low TOC to perform Rock-Eval pyrolysis

TOC	Total Organic Carbon (% weight of rock)
S1	Hydrocarbons present in the rock (mg HC/g rock)
S2	Hydrocarbons produced by pyrolysis (mg HC/g rock)
S3	CO2 produced by pyrolysis (mg CO2/g rock)
PI	Production Index = S1/(S1+S2)
HI	Hydrogen Index (mg HC/ g TOC)
OI	Oxygen Index (mg CO2/g TOC)
TM	Temperature recorded at the maximum of pyrolysis (°C)

GEOCHEMICAL EVALUATION OF THE 7121/5-1 WELL TROMS AREA, OFFSHORE NORWAY.

U-468

PETROLEUM TECHNOLOGY

Report no.
GEOLAB
Copy no.
No. of copies 10

Grading Confidential

GEOLOGICAL
LABORATORIES

Title
Geochemical Evaluation and Correlation study of the 7121/5-1 Well Troms Area, Offshore Norway

Requested by	Project	
Steinar Westre, LET-H		
Date	**Number of pages**	**No. of encs.**
11/02-86		1

Key words
Source Rocks, Oil, Correlation, GC/MS + isotope

Abstract

Prepared by
Geochem Labs

Textoperator

Approved by

17/2-86 Kjell Øygard
Kjell Øygard

20/2-86 Hilary Irwin
Hilary Irwin

19/2-86 Snorre Olaussen
Snorre Olaussen

INTRODUCTION

This report presents a geochemical evaluation of the section between 580 metres and 3200 metres (TD) in the Statoil 7121/5-1 well.

ANALYTICAL

A total of one hundred and sixty seven (167) canned cuttings samples; composited at 30 metres above 940 metres and generally at 15 metres below this depth were received. They were supplemented by eighteen (18) sidewall cores, thirty three (33) core samples and a sample of DST-1 oil at 2436-2439 metres. Of the cores eighteen (18) represent source facies whilst the remainder are sandstones. The samples were assigned the Geochem job number 1183.

No serious contamination was observed during the sample washing process.

Geochem were instructed to analyse 109 canned samples as follows:

600-1005 metres	5 cans
1005-2214 metres	39 cans
2214-3200 metres	65 cans

The samples were analysed under contract T6192, No. 16, telexed specification (telexes 1/11/85, 27/11/85).

Total numbers of analyses performed in this study are listed below.

ANALYSIS	NUMBER OF ANALYSES
Headspace and cuttings gas	109
Total organic carbon	243
Pyrolysis	162
Vitrinite reflectance	28
Kerogen type and spore colouration	34
C_{15+} extraction and chromatography	30
Capillary GC - paraffin-naphthenes	30
Capillary GC - aromatics	30
Pyrolysis-GC	8
Carbon isotopes - extract fractions	37
Carbon isotopes - kerogen	5
GC-MS biomarker analysis	8

The data are listed in tables 1 to 13 and presented graphically in figures 1 to 19.

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-007	580-610m	A 98% Mudstone, blocky to subfissile, mod. hard, non-calc., abundant cavings, light grey to v. light olive grey Minor other mudstone	N7-5Y7/1	0.65
1183-011	700-730m	A 98% Mudstone, as 1183-007A, abundant cavings Minor other mudstone	N7-5Y7/1	0.82
1183-014	790-820m	A 98% Mudstone, as 1183-007A, abundant cavings Minor other mudstone	N7-5Y7/1	0.65,0.64
1183-017	880-910m	A 98% Shaly mudstone, subfissile, mod. hard, non-calc., sig. cavings, medium light grey to light olive grey Minor other mudstone	N6-5Y6/1	0.62
1183-022	985m SWC	A 98% Claystone, subfissile to blocky, soft, non-calc., light olive grey	5Y6/1	0.31
1183-024	995-1010m	A 98% Shaly mudstone, grading to claystone, subfissile to blocky, soft to mod. hard, non-calc., medium light grey to light olive grey Minor other mudstone	N6-5Y6/1	0.41
1183-027	1040-055m	A 98% Claystone, blocky to subfissile, shaly in part, soft to mod. hard, non-calc., sig. cavings, medium light grey to light olive grey Minor limestone and mudstone	N6-5Y6/1	0.44
1183-029	1070-085m	A 98% Claystone, as 1183-027A, minor cavings Minor limestone, mudstone and pyrites	N6-5Y6/1	0.59,0.60
1183-031	1100m SWC	A 98% Claystone, subfissile, soft, non-calc., olive grey	5Y4/1	0.86
1183-032	1100-115m	A 98% Claystone, blocky, soft, non-calc., medium grey to olive grey Minor limestone, pyrites and mudstone	N5-5Y4/1	0.91
1183-034	1130-145m	A 98% Claystone, as 1183-032A, minor cavings Minor anhydrite	N5-5Y4/1	1.01
1183-036	1160-175m	A 98% Claystone, as 1183-032A Minor anhydrite	N5-5Y4/1	0.98
1183-038	1190-205m	A 90% Claystone, blocky, soft, non-calc., medium grey	N5	0.94
		B 10% Shale, platy, mod. hard, non-calc., minor cavings, medium grey Minor anhydrite	N5	0.95,0.95

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-039	1200m SWC	A 98% Claystone, subfissile, soft, non-calc., medium dark grey to olive grey	N4-5Y4/1	0.89
1183-040	1205-220m	A 98% Claystone, blocky to subfissile, shaly in part, soft to mod. hard, non-calc., minor cavings, medium grey to medium olive grey Minor anhydrite	N5-5Y5/1	0.92
1183-042	1235-250m	A 98% Claystone, as 1183-040A, minor cavings Minor anhydrite and mudstone	N5-5Y5/1	0.89
1183-044	1265-280m	A 80% Claystone, blocky, soft, non-calc., minor cavings, medium grey	N5	0.82
		B 20% Shale, platy, mod. hard, non-calc., minor cavings	N5	0.90,0.89
1183-046	1295-310m	A 98% Claystone, as 1183-044A, minor cavings Minor shale	N5	0.61
1183-048	1325-340m	A 50% Claystone, as 1183-044A, minor cavings	N5	0.84
		B 50% Shale, as 1183-044B, sig. cavings	N5	0.87
1183-050	1350m SWC	A 98% Claystone, subfissile, mod. hard, non-calc., medium dark grey	N4	0.69
1183-051	1355-370m	A 90% Claystone, blocky to subfissile, soft to mod. hard, non-calc., minor cavings, medium dark grey to medium grey	N4-5	0.72
		B 10% Shale, platy, soft to mod. hard, non-calc., medium dark grey to medium grey	N4-5	0.77,0.80
1183-053	1385-400m	A 80% Claystone, as 1183-051A	N4-5	0.68
		B 20% Shale, as 1183-051B, minor cavings	N4-5	0.80
1183-055	1415-430m	A 50% Claystone, as 1183-051A	N4-5	0.64
		B 50% Shale, as 1183-051B, minor cavings	N4-5	0.69
1183-057	1445-460m	A 60% Shale, platy to thinly fissile, mod. hard, non-calc., medium dark grey to medium grey	N4-5	0.70,0.73
		B 40% Claystone, blocky, soft to mod. hard, non-calc., medium grey	N5	0.69
1183-059	1475-490m	A 50% Shale, as 1183-057A, minor cavings	N4-5	0.70
		B 50% Claystone, as 1183-057B, minor cavings Minor pyrites	N5	0.70
1183-061	1505-520m	A 70% Claystone, blocky, soft to mod. hard, non-calc., sig. cavings, medium grey	N5	0.96

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-061	1505-520m	B 30% Shale, platy, mod. hard, non-calc., minor cavings, medium grey to medium dark grey Minor pyrites	N5-4	0.76
1183-063	1535-550m	A 75% Claystone, blocky, soft to mod. hard, non-calc., sig. cavings, medium grey	N5	1.14,1.15
		B 30% Shale, platy, mod. hard, non-calc., sig. cavings, medium grey to medium dark grey	N5-4	0.87
1183-065	1565-580m	A 70% Claystone, as 1183-063A, minor cavings	N5	1.52
		B 30% Shale, as 1183-063B, sig. cavings Minor pyrites	N5-4	0.78
1183-067	1595-610m	A 60% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	0.83
		B 40% Claystone, blocky, soft to mod. hard, non-calc., minor cavings, medium grey	N5	1.20,1.20
1183-069	1625-640m	A 50% Shale, as 1183-067A, minor cavings	N4	0.89
		B 50% Claystone, as 1183-067B, minor cavings Minor anhydrite	N5	1.12
1183-071	1655-670m	A 65% Claystone, as 1183-067B, minor cavings	N5	1.27
		B 35% Shale, as 1183-067A, sig. cavings	N4	1.08
1183-073	1685-700m	A 65% Claystone, as 1183-067B, minor cavings	N5	1.12,1.13
		B 35% Shale, as 1183-067A, sig. cavings	N4	0.94
1183-075	1715-730m	A 60% Claystone, as 1183-067B, minor cavings	N5	1.15
		B 40% Shale, as 1183-067A, sig. cavings	N4	0.90
1183-077	1745-760m	A 70% Shale, platy, mod. hard, non-calc., minor cavings, medium dark grey	N4	1.06,1.07
		B 30% Claystone, blocky, soft to mod. hard, non-calc., minor cavings, medium grey	N5	1.14
1183-079	1775-790m	A 60% Shale, as 1183-077A	N4	1.07
		B 40% Claystone, as 1183-077B, minor cavings	N5	0.98
1183-081	1805-820m	A 50% Shale, as 1183-077A, minor to sig. cavings	N4	1.02
		B 50% Claystone, as 1183-077B, minor cavings	N5	1.18
1183-083	1835-850m	A 65% Shale, as 1183-077A, minor to sig. cavings	N4	1.15,1.14
		B 35% Claystone, as 1183-077B, minor cavings	N5	1.48
1183-085	1865-880m	A 65% Shale, platy to platy fossil, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.22

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	GSA Colour Code	TOTAL ORGANIC CARBON (Wt % of Rock)
1183-085	1865-880m	B 35% Claystone, blocky, soft to mod. hard, non-calc., sig. cavings, medium grey	N5	1.43
1183-087	1895-910m	A 85% Shale, platy to platy fossil, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.22
		B 15% Claystone, as 1183-085B, sig. cavings, minor other shale and mudstone	N5	1.24,1.23
1183-089	1925-940m	A 65% Shale, platy to platy fossil, mod. hard, non-calc., abundant to dominant cavings, medium dark grey	N4	1.37
		B 35% Claystone, blocky, soft to mod. hard, non-calc., abundant to dominant cavings, medium grey	N5	1.02
1183-091	1955-970m	A 70% Shale, platy; mod. hard, non-calc., abundant cavings, medium dark grey	N4	1.57
		B 30% Claystone, blocky, soft, sl. silty, non-calc., abundant cavings, medium grey LCM-cement	N5	1.49
1183-092 SWC	1972.5m	A 98% Claystone, subfissile, soft, non-calc., medium dark grey to medium grey	N4-5	2.60
1183-094	1985-2000m	A 55% Mudstone, blocky, soft to mod. hard, sl. silty, non-calc., sig. cavings, medium grey	N5	2.39,2.42
		B 45% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	2.10
1183-096	2015-030m	A 60% Mudstone, as 1183-094A, sig. cavings	N5	2.36
		B 40% Shale, as 1183-094B, sig. cavings	N4	2.20
1183-098	2045-060m	A 60% Mudstone, as 1183-094A, sig. cavings	N5	2.45,2.46
		B 40% Shale, as 1183-094B, sig. cavings Minor pyrites	N4	2.06
1183-100	2075-090m	A 60% Mudstone, as 1183-094A, minor to sig. cavings	N5	2.02
		B 40% Shale, as 1183-094B, sig. cavings	N4	2.01
1183-102	2105-120m	A 60% Mudstone, as 1183-094A, minor to sig. cavings	N5	2.17,2.21
		B 40% Shale, as 1183-094B, sig. cavings Minor pyrites	N4	1.79
1183-104 SWC	2142m	A 98% Claystone, shaly mudstone, sub-fissile, soft, non-calc., medium grey	N5	1.31
1183-105	2135-150m	A 50% Mudstone, blocky, soft, non-calc., silty, sig. cavings, medium grey	N5	1.52
		B 50% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.59

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-107	2165-180m	A 70% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.54
		B 30% Mudstone, blocky, soft, non-calc., silty, sig. cavings, medium grey	N5	1.33,1.37
1183-110	2210-225m	A 60% Shale, subfissile, soft to mod. hard	N5	0.83
		B 40% Shale, platy, mod. hard, non-calc., minor to sig. cavings, medium dark grey to dark grey	N4-3	0.86
1183-111	2225-240m	A 65% Shale, subfissile, soft to mod. hard, minor cavings, medium grey	N5	0.79
		B 35% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey to dark grey	N4-3	0.87
1183-112	2240-255m	A 55% Shale, as 1183-111A, minor to sig. cavings	N5	0.96,0.99
		B 45% Shale, as 1183-111B, sig. cavings Minor mudstone and pyrites	N4-3	0.77
1183-113	2255-270m	A 50% Shale, subfissile, soft to mod. hard, non-calc., minor to sig. cavings, medium dark grey to medium grey	N4-5	1.20
		B 50% Shale, platy to subfissile, mod. hard, non-calc., minor to sig. cavings, dark grey to medium dark grey, occ. dark brownish grey Minor siltstone and other shale	N3-4 occ. 5YR3/1	2.86
1183-114	2270-285m	A 50% Shale, subfissile, mod. hard, non-calc., dark brownish grey Minor cavings	5YR3/1	4.18
		B 25% Shale, subfissile to blocky, mod. hard, non-calc., minor cavings, medium grey	N5	1.29
		C 20% Shale, platy, mod. hard, non-calc., abundant cavings	N4	1.44,1.47
		D 5% Siltstone, blocky, soft to mod. hard, non-calc., dark pinkish grey Minor mudstone	5YR7/1	2.84
1183-115	2285-300m	A 35% Shale, as 1183-114A, minor cavings	5YR3/1	5.16
		B 35% Shale, as 1183-114B, minor cavings	N5	2.60
		C 20% Limestone, blocky, soft to mod. hard, yellowish grey	5Y8/1	0.26
		D 10% Shale, as 1183-114C, abundant cavings Minor siltstone and mudstone	N4	0.94,0.92
1183-116	2300-315m	A 98% Shale, subfissile, soft to mod. hard, sl. silty, non-calc., sig. cavings, dusky yellowish brown to brownish grey Minor other shale and siltstone	10YR2/2-5YR4/1	4.33

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-117 SWC	2310m	A 98% Shaly mudstone, subfissile, soft, non-calc., sl. silty, dusky yellowish brown	10YR2/2	4.17
1183-118	2315-330m	A 98% Shale, subfissile, mod. hard, non-calc, sl. silty, sig. cavings, dusky yellowish brown Minor other shale	10YR2/2	7.90
1183-119	2330-345m	A 98% Shale, as 1183-118A, minor cavings, Minor other shale	10YR2/2	9.98
1183-120	2345-360m	A 98% Silty shale, blocky to subfissile, mod. hard, non-calc., minor to sig. cavings, brownish grey to dusky yellowish brown Minor other shale	5YR4/1-10YR2/2	13.10
1183-121 SWC	2359.5m	A 98% Silty shale, subfissile, mod. hard, non-calc., olive grey	5Y4/1	2.22,2.25
1183-122 CORE	2365.34-2365.39m	A 98% Sandstone, blocky, medium grained, subangular to subrounded, fairly well sorted, non-calc., milky cut, pale yellowish brown	10YR6/2	
1183-123	2360-375m	A 60% Shale, platy to thinly fissile, mod. hard, non-calc., minor to sig. cavings, medium dark grey	N4	1.13
		B 30% Silty shale, as 1183-120A, minor cavings	5YR4/1-10YR2/2	5.86
		C 10% Sandstone, blocky, medium grained, subangular to subrounded, fairly well sorted, non-calc., pinkish grey	5YR8/1	
1183-124	2375-390m	A 85% Shale, as 1183-123A, sig. cavings	N4	0.99
		B 10% Silty shale, as 1183-120A, minor cavings	5YR4/1-10YR2/2	2.31
		C 5% Sandstone, as 1183-123C	5YR8/1	
1183-125	2390-405m	A 90% Shale, as 1183-123A, sig. cavings	N4	1.26,1.25
		B 10% Silty mudstone, blocky, soft to mod. hard, non-calc., medium dark grey to brownish grey Minor sandstone	N4-5YR4/1	1.22
1183-126 CORE	2405.35-2405.40m	A 98% Sandstone, blocky, medium grained, subangular, well sorted, non-calc., milky cut, light grey to dark pinkish grey	N7-5YR7/1	
1183-127	2405-420m	A 75% Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey	N4	0.90
		B 25% Mudstone, blocky, soft to mod. hard, non-calc., minor to sig. cavings, medium dark grey to brownish grey Minor sandstone	N4-5YR4/1	1.65

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-128 CORE	2418.15-2418.20m	A 98%	Sandstone, blocky, massive, well sorted, non-calc., milky cut, dark pinkish grey	5YR7/1	
1183-129 CORE	2420.45-2420.50m	A 98%	Sandstone, as 1183-128A, pale milky cut	5YR7/1	
1183-130 CORE	2423.02-2423.08m	A 98%	Sandstone, massive, medium grained, subangular, well sorted, non-calc., Sl. oil stain on fracture line?, pale yellow F., milky cut, dark pinkish grey	5YR7/1	
1183-131 CORE	2425.05-2425.12m	A 98%	Sandstone, massive, medium grained, subangular, well sorted, non-calc., pale yellow F., milky cut, dark pinkish grey	5YR7/1	
1183-132	2420-435m	A 60%	Shale, platy, mod. hard, non-calc., minor to sig. cavings, medium dark grey	N4	1.24
		B 40%	Mudstone, blocky to subfissile, soft to mod. hard, non-calc., minor cavings, medium grey to medium brownish grey Minor sandstone	N5-5YR5/1	1.67
1183-133 CORE	2428.30-2428.35m	A 98%	Sandstone, massive, fine-medium grained, subangular, well sorted, non-calc., oil stained, pale yellow F., milky cut, dark yellowish brown	10YR4/2	
1183-134 CORE	2428.30-2428.35m	A 98%	Sandstone, blocky-massive, fine-medium grained, subangular, well sorted, non-calc., pale yellow F., milky cut, dark pinkish grey	5YR7/1	
1183-135 CORE	2441.05-2441.10m	A 98%	Silty shale, platy to thinly fissile, mod. hard, sl. micaceous, non-calc., dark grey to medium dark grey	N3-4	4.05
1183-136	2435-450m	A 50%	Silty mudstone, subfissile to blocky, soft to mod. hard, non-calc., minor cavings, medium grey	N5.	
		B 50%	Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.30
1183-137 CORE	2444.60-2444.65m	A 98%	Silty shale, subfissile to platy, mod. hard, sl. micaceous, non-calc., medium dark grey to medium grey	N4-5	1.86,1.85
1183-138 CORE	2444.93-2444.98m	A 98%	Siltstone, blocky, mod. hard, non-calc., grades to sandstone, medium dark grey	N4	1.69

Abbreviations * arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-139 CORE	2455.30-2455.35m	A 98%	Sandstone, massive, fine-medium grained, subangular, well sorted, non-calc., oil stained, pale yellow F., milky cut, very dark yellowish brown	10YR3/2	
1183-140	2450-465m	A 60%	Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.44
		B 40%	Mudstone, blocky to subfissile, sl. silty, soft to mod. hard, non-calc., minor cavings, medium grey to medium brownish grey	N5-5YR5/1	1.23
1183-141 CORE	2462.85-2462.90m	A 98%	Silty shale, platy, mod. hard, micaceous, non-calc., grades to siltstone, dark grey to medium dark grey	N3-4	4.61
1183-142 CORE	2467.20-2467.25m	A 98%	Sandstone, massive, fine-medium grained, subangular, well sorted, non-calc., oil stained, dull gold F., milky cut, medium yellowish brown	10YR5/2	
1183-143	2465-480m	A 55%	Mudstone, blocky, soft to mod. hard, non-calc., minor cavings, medium grey	N5	1.29
		B 45%	Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey Minor sandstone	N4	1.40,1.41
1183-144 CORE	2473.11-2473.16m	A 98%	Silty shale, subfissile, mod. hard, micaceous, non-calc., grades in part to sandstone	N5	0.87
1183-145 CORE	2479.17-2479.21m	A 90%	Shale, platy to subfissile, mod. hard, non-calc., medium dark grey, interbedded with	N4	8.00
		B 10%	Coal, blocky, brittle, vitreous lustre, black	N1	67.50
1183-146	2480-495m	A 60%	Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.52
		B 40%	Mudstone, subfissile to blocky, soft to mod. hard, non-calc., minor cavings, medium grey Minor sandstone	N5	1.70,1.71
1183-147 CORE	2487.62-2487.66m	A 98%	Silty shale, blocky to subfissile, mod. hard, non-calc., minor coal horizons, occasional pyrites, medium dark grey to dark grey	N4-3	5.60
1183-148 CORE	2491.51-2491.56m	A 75%	Silty shale, subfissile, mod. hard, non-calc., micaceous, medium dark grey to dark grey	N4-3	1.48

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-148 CORE	2491.51-2491.56m	B 20%	Silty sandstone, fine grained, well sorted, light grey	N7	0.54
		C 5%	Coal, blocky, brittle as minor inclusions in the shale, greyish black	N2	
1183-149 CORE	2497.91-2497.96m	A 98%	Coal, blocky, brittle, greyish black to brownish black	N2-5YR2/1	61.30
1183-150 CORE	2501.32-2501.36m	A 98%	Shale, sub-fissile to blocky, mod. hard, sl. micaceous, non-calc., sl. carbonaceous, dark grey Pyritised	N3	17.60
1183-151	2495-510m	A 50%	Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.05,1.04
		B 30%	Mudstone, blocky, soft to mod. hard, non-calc., minor cavings, medium grey	N5	1.26
		C 20%	Shale, subfissile, soft to mod. hard, non-calc., medium dark grey to brownish grey Minor sandstone	N4-5YR4/1	4.23
1183-152 CORE	2502.76-2502.81m	A 98%	Sandstone, massive, medium grained, subangular, well sorted, grain supported, oil stained, dull gold F., milky cut, dark yellowish brown	10YR4/2	
1183-153 CORE	2509.07-2509.12m	A 98%	Shale/claystone, blocky to subfissile, soft to mod. hard, non-calc., occasional coal inclusions, medium grey	N5	1.84
1183-154 CORE	2513.60-2513.64m	A 95%	Siltstone, blocky to platy, micaceous, mod. hard, non-calc., grades to sandstone with inclusions/ laminae	N4-N6	7.84
		B 5%	Coal, blocky, brittle, greyish black	N2	60.00,66.30
1183-155 SWC	2515m	A 98%	Silty shale, subfissile, mod. hard, non-calc., coaly in part, medium dark grey to medium grey	N4-5	2.71
1183-156 CORE	2516.65-2516.70m	A 98%	Sandstone, massive, fine-medium grained, subangular, well sorted, grain supported, oil stained, gold F., milky cut, dark yellowish brown	10YR4/2	
1183-157	2510-525m	A 85%	Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.39
		B 15%	Shaly mudstone, subfissile to blocky, mod. hard, non-calc., minor to sig. cavings, medium grey Minor sandstone	N5	1.21

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-158 CORE	2519.85-2519.90m	A 98%	Shale, platy, mod. hard, micaceous, non-calc., medium dark grey	N4	3.19
1183-159 CORE	2524.61-2524.66m	A 98%	Sandstone, massive, fine-medium grained, subangular, well sorted, grain supported, oil stained, gold F., milky cut, medium yellowish brown	10YR5/2	
1183-160	2525-540m	A 65%	Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey	N4	0.86
		B 20%	Mudstone, blocky to subfissile, soft to mod. hard, non-calc., minor cavings, medium grey to medium brownish grey	N5-5YR5/1	1.46,1.50
		C 10%	Shale, subfissile, mod. hard, non-calc., dark grey to dark brownish grey	N3-5YR3/1	4.10
		D 5%	Sandstone, blocky, fine to medium grained, well sorted, non-calc., pale milky cut, pinkish grey	5YR8/1	
1183-161 CORE	2535.75-2535.79m	A 98%	Shale, subfissile to blocky, mod. hard, non-calc., medium grey	N5	0.70
1183-162	2540-555m	A 50%	Shale, platy to thinly fissile, mod. hard, non-calc., minor to sig. cavings, medium dark grey	N4	1.25
		B 25%	Mudstone, blocky, soft to mod. hard, sl. silty, non-calc., minor cavings, medium grey to medium brownish grey	N5-5YR5/1	1.50
		C 15%	Sandstone, unconsolidated in part, medium grained, subangular, well sorted, patchy oil stain, very pale milky cut, brownish grey to pinkish grey	5YR4/1-5YR8/1	
		D 10%	Shale, subfissile to blocky, mod. hard, sl. mudstone?, non-calc, sig. cavings, dark grey	N3-5YR3/1	3.41,3.44
1183-164	2570-585m	A 50%	Shale, as 1183-162A, sig. cavings	N4	1.48
		B 35%	Sandstone, as 1183-162C	5YR4/1-5YR8/1	
		C 10%	Mudstone, as 1183-162B, sig. cavings	N5-5YR5/1	1.27
		D 5%	Shale, subfissile, mod. hard, non-calc., carbonaceous?, dark brownish grey	5YR3/1	4.09,4.10
1183-165	2585-600m	A 80%	Sandstone, as 1183-162C	5YR4/1-5YR8/1	

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-165	2585-600m	B 15%	Shale, platy, mod. hard, non-calc., sig. to abundant cavings, medium dark grey to dark grey	N4-3	0.91
		C 5%	Siltstone, blocky, soft, non-calc., sig. cavings, medium grey to medium brownish grey Minor other shale	N5-5YR5/1	0.61
1183-166	2600-615m	A 80%	Sandstone, unconsolidated in part, medium grained, subangular, well sorted, patchy oil stain, very pale milky cut, brownish grey to pinkish grey	5YR4/1-5YR8/1	
		B 10%	Shale, as 1183-165B, dominant cavings	N4-3	0.74
		C 10%	Silty mudstone, blocky to to subfissile, soft, non-calc., minor cavings, medium grey to medium brownish grey	N5-5YR5/1	1.21
1183-167	2615-630m	A 90%	Sandstone, as 1183-166A	5YR4/1-5YR8/1	
		B 5%	Silty mudstone, as 1183-166C, minor cavings	N5-5YR5/1	1.94,1.98
		C 5%	Shale, as 1183-165B, dominant cavings	N4-3	
1183-168	2630-645m	A 85%	Sandstone, as 1183-166A	5YR4/1-5YR8/1	
		B 10%	Silty mudstone, as 1183-166C	N5-5YR5/1	2.13
		C 5%	Shale, as 1183-165B, dominant cavings Minor siltstone	N4-3	
1183-169 SWC	2643m	A 98%	Shale, blocky, mod. hard, sl. silty, non-calc., medium grey	N5	0.61
1183-170	2645-660m	A 70%	Sandstone, blocky, medium-fine grained, subangular, well sorted, micaceous, non-calc., grain supported, pinkish grey	5YR8/1	
		B 15%	Silty mudstone, blocky, soft to mod. hard, non-calc., micaceous, grades to siltstone, sig. cavings, medium grey to medium brownish grey	N5-5YR5/1	2.57
		C 10%	Shale, platy, mod. hard, non-calc., dominant cavings, medium dark grey	N4	1.60,1.64
		D 5%	Shale, blocky to subfissile, mod. hard, non-calc., sl. carbonaceous?, dark grey	N3	5.84

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt % of Rock)
1183-171	2660-675m	A 70%	Sandstone, blocky, medium-fine grained, subangular, well sorted, micaceous, non-calc., grain supported, pinkish grey	5YR8/1	
		B 15%	Silty mudstone, blocky, soft to mod. hard, non-calc., micaceous, grades to siltstone, minor cavings, medium grey to medium brownish grey	N5-5YR5/1	3.01
		C 10%	Shale, platy, mod. hard, non-calc., sig. to abundant cavings, medium dark grey	N4	1.06
		D 5%	Shale, blocky to subfissile, mod. hard, non-calc., sl. carbonaceous?, minor cavings, dark grey	N3	13.75,13.70
1183-172	2675-690m	A 75%	Sandstone, blocky, medium grained, subangular, well sorted, grain supported, non-calc., patchy oil stain, gold F., milky cut, pinkish grey to dark yellowish brown	5YR8/1-10YR4/2	
		B 10%	Silty mudstone, blocky, soft to mod. hard, non-calc., minor cavings, medium dark grey to brownish grey	N4-5YR4/1	3.19
		C 10%	Shale, platy, mod. hard, non-calc, sig. cavings, medium dark grey to dark grey	N4-3	1.23
		D 5%	Shale, subfissile, mod. hard, non-calc., sl. carb.?, minor cavings, dark grey to dark brownish grey	N3-5YR3/1	3.26
1183-173	2690-705m	A 85%	Sandstone, blocky, medium grained, subangular, well sorted, grain supported, non-calc., pinkish grey	5YR8/1	
		B 10%	Silty mudstone, as 1183-172B, minor cavings	N4-5YR4/1	2.34
		C 5%	Shale, as 1183-172C, sig. to abundant cavings	N4-3	1.34
			Minor other shale		
1183-174	2705-720m	A 80%	Sandstone, as 1183-173A, minor cavings	5YR8/1	
		B 10%	Siltstone, blocky, soft, non-calc., medium grey to dark brownish grey	N5-5YR3/1	1.45,1.43
		C 5%	Silty shale, subfissile, soft to mod. hard, non-calc., sl. carb., minor cavings, dark grey to dark brownish grey	N3-5YR3/1	9.10
		D 5%	Shale, as 1183-172C, abundant cavings	N4-3	
1183-175	2720-735m	A 65%	Sandstone, as 1183-173A, minor cavings	5YR8/1	
		B 30%	Silty mudstone, grading to siltstone, blocky, soft, non-calc., minor cavings, brownish grey to medium brownish grey	5YR4/1-5YR5/1	2.50

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-175	2720-735m	C 5% Shale, platy, mod. hard, non-calc, dominant cavings, medium dark grey to dark grey Minor other shale	N4-3	
1183-176	2738m SWC	A 98% Siltstone, blocky, soft, non-calc., banded, medium brownish grey	5YR5/1	1.86
1183-177	2735-750m	A 60% Siltstone, blocky, soft, non-calc., minor cavings, medium brownish grey	5YR5/1	1.96
		B 40% Sandstone, blocky, fine to medium grained, subangular, well sorted, non-calc., pinkish grey Minor caved shale	5YR8/1	
1183-178	2750-765m	A 45% LCM cement		
		B 25% Siltstone, as 1183-177A, minor cavings	5YR5/1	1.60,1.57
		C 25% Shale, platy to subfissile, soft to mod. hard, non-calc., minor to sig. cavings, medium dark grey	N4	1.51
		D 5% Sandstone, as 1183-177B	5YR8/1	
1183-179	2765-780m	A 65% Mudstone, subfissile, soft to mod. hard, non-calc., sl. silty, minor cavings, medium grey	N5	0.78
		B 30% Shale, as 1183-178C, minor cavings	N4	1.35
		C 5% LCM - cement Minor sandstone		
1183-180 SWC	2795.5m	A 98% Shaly mudstone, subfissile, soft, sl. silty, non-calc., medium grey	N5	1.39
1183-181	2780-795m	A 75% Shaly mudstone, subfissile, soft, sl. silty, non-calc., minor cavings, medium grey to medium dark grey	N5-4	1.08
		B 15% Sandstone, blocky, fine to medium grained, subangular, well sorted, non-calc., pinkish grey	5YR8/1	
		C 10% Mudstone, blocky, soft, non-calc., medium light grey	N6	0.68,0.71
1183-182	2795-810m	A 75% Sandstone, as 1183-181B, minor cavings	5YR8/1	
		B 15% Shaly mudstone, as 1183-181A, sig. cavings	N5-4	1.14
		C 10% Silty mudstone, subfissile to blocky, soft, non-calc., minor cavings, medium grey to medium brownish grey	N5-5YR5/1	1.36
1183-183	2810-825m	A 98% Sandstone, as 1183-181A, minor cavings Minor mudstone	N5-4	

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-184	2825-840m	A 98% Sandstone, blocky, fine to medium grained, subangular, well sorted, non-calc., minor cavings, pinkish grey Minor shale/mudstone	5YR8/1	
1183-185	2840-855m	A 90% Sandstone, as 1183-184A, minor cavings	5YR8/1	
		B 5% Shale, platy to subfissile, mod. hard, non-calc., minor cavings, medium dark grey to brownish grey	N4-5YR4/1	1.10
		C 5% Shaly mudstone, subfissile to blocky, soft to mod. hard, non-calc., minor cavings, medium grey	N5	1.44
1183-186	2855-870m	A 90% Sandstone, as 1183-184A, minor cavings	5YR8/1	
		B 5% Shale, as 1183-185B, sig. cavings	N4-5YR4/1	0.49
		C 5% Shaly mudstone, as 1183-185C, sig. cavings Minor other shale/mudstone, minor limestone	N5	1.24,1.20
1183-187	2870-889m	A 45% Sandstone, blocky, fine grained, well sorted, non-calc., minor cavings, pinkish grey	5YR8/1	
		B 25% Shale, subfissile, mod. hard, non-calc., minor cavings, medium brownish grey	5YR5/1	0.55
		C 15% Silty mudstone, blocky to subfissile, soft to mod. hard, non-calc., brownish grey to greyish brown	5YR4/1-5YR3/2	0.15
		D 10% Shale, platy to subfissile, silty, soft, non-calc., medium olive grey	5Y5/1	0.14
		E 5% Shale, platy, mod. hard, non-calc., medium dark grey Minor limestone	N4	0.79
1183-188	2880m SWC	A 98% Shaly mudstone/claystone, subfissile, soft to mod. hard, sl. silty, non-calc., greyish red	5R4/2	0.23,0.20
1183-189	2885-900m	A 75% Sandstone, as 1183-187A, minor cavings	5YR8/1	
		B 15% Shale, subfissile to platy, mod. hard, non-calc., minor cavings, medium dark grey to brownish grey	N4-5YR4/1	0.53
		C 5% Shale, as 1183-187D, minor cavings	5Y5/1	0.12
		D 5% Silty mudstone, as 1183-187C, minor cavings Minor other shale and limestone	5YR4/1-5YR3/2	0.19

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-190	2900-915m	A 40% Sandstone, blocky, fine grained, well sorted, non-calc., minor cavings, pinkish grey	5YR8/1	
		B 30% Shaly mudstone, blocky to platy, soft to mod. hard, sl. silty, non-calc., minor cavings, light greyish brown	5YR4/2	0.16
		C 20% Shale, subfissile to platy, mod. hard, non-calc., minor cavings, medium dark grey to brownish grey	N4-5YR4/1	0.35,0.35
		D 10% Shale, platy to subfissile, silty, soft, non-calc., medium olive grey	5Y5/1	0.12
		Minor limestone and other shale		
1183-191	2915-930m	A 85% Sandstone, blocky, fine to medium grained, subangular, well sorted, non-calc. to sl. calc., pinkish grey to v. light grey	5YR8/1-N8	
		B 10% Shale, as 1183-190C, minor cavings	N4-5YR4/1	0.36
		C 5% Shaly mudstone, as 1183-190B	5YR4/2	0.14
		Minor other mudstone and limestone		
1183-192	2930-945m	A 85% Sandstone, as 1183-191A, minor cavings	5YR8/1-N8	
		B 10% Shale, as 1183-190C, minor cavings	N4-5YR4/1	0.57
		C 5% Shaly mudstone, as 1183-190B, sig. cavings	5YR4/2	0.17,0.18
		Minor limestone and other mudstone		
1183-193	2945-960m	A 50% Shale, platy, mod. hard, non-calc., minor cavings, medium dark grey to medium grey	N4-5	0.61
		B 45% Sandstone, as 1183-191A, minor cavings	5YR8/1-N8	
		C 5% Shaly mudstone, as 1183-190B, sig. cavings	5YR4/2	0.16
1183-194	2960-975m	A 70% Sandstone, as 1183-191A, minor cavings	5YR8/1-N8	
		B 30% Shaly mudstone, subfissile to platy, mod. hard, non-calc., minor to sig. cavings, medium dark grey to olive grey	N4-5Y4/1	0.36
		Minor red shale		
1183-195	2975-990m	A 80% Sandstone, blocky, medium grained, subangular, well sorted, sl. calc. to non-calc., v. light grey	N8	
		B 20% Shaly mudstone, as 1183-194B, minor to sig. cavings	N4-5Y4/1	0.28
		Minor other mudstone		

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-196	2984m SWC	A 98% Shaly mudstone, subfissile, soft, non-calc., medium grey	N5	0.22
1183-197	2990-3005m	A 80% Sandstone, blocky, medium grained, subangular, well sorted, sl. calc. to non-calc., minor cavings, v. light grey	N8	
		B 15% Shaly mudstone, subfissile to platy, mod. hard, non-calc., minor to sig. cavings, medium dark grey to olive grey	N4-5Y4/1	0.25,0.27
		C 5% Shaly mudstone, subfissile to blocky, mod. hard, non-calc., minor to sig. cavings, greyish red	5R4/2	0.13
1183-198	3005-020m	A 55% Sandstone, as 1183-197A, minor cavings	N8	
		B 25% Shale, platy, mod. hard, non-calc., minor cavings, medium dark grey	N4	0.35
		C 15% Siltstone, blocky to subfissile, soft to mod. hard, non-calc., medium grey	N5	0.45
		D 5% Silty mudstone, subfissile to blocky, soft to mod. hard, non-calc., sig. cavings, greyish red	5R4/2	0.18
1183-199	3020-035m	A 80% Sandstone, blocky, medium grained, subangular, fairly well sorted, non-calc. matrix, minor cavings, v. light grey	N8	
		B 15% Shale, as 1183-198B, sig. cavings	N4	0.50,0.50
		C 5% Shale, subfissile, mod. hard, non-calc., minor cavings, dark grey to dark olive grey Minor red shale and siltstone	N3-5Y3/1	0.59
1183-200	3035-050m	A 55% Sandstone, as 1183-199A	N8	
		B 35% Shale, as 1183-198B, sig. cavings	N4	0.78
		C 10% Siltstone, blocky, soft, non-calc., minor cavings, medium grey to medium brownish grey Minor other shale and coal	N5-5YR5/1	1.08
1183-201	3050-065m	A 65% Sandstone, as 1183-199A	N8	
		B 25% Shale, as 1183-198B	N4	0.57,0.54
		C 10% Shale, platy, mod. hard, non-calc., dark grey to dark brownish grey Minor siltstone and other shale	N3-5YR3/1	0.49
1183-202	3065-080m	A 55% Sandstone, as 1183-199A, minor cavings	N8	
		B 45% Shale, subfissile to platy, mod. hard, non-calc., sl. silty, minor to sig. cavings, medium dark grey to brownish grey Minor other shale	N4-5YR4/1	0.47

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	GSA Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-203 SWC	3077.1m	A 98% Shale, subfissile, mod. hard, non-calc., dark grey to dark brownish grey	N3-5YR3/1	3.69
1183-204 CORE	3085.28-3085.35m	A 98% Sandstone, massive, medium grained, subangular to subrounded, fairly well sorted, grain supported, non-calc., light grey	N7	
1183-205 CORE	3092.52-3092.55m	A 98% Shale, subfissile, mod. hard, non-calc., medium dark grey	N4	0.43
1183-206 CORE	3094.67-3094.72m	A 98% Shale, blocky to subfissile, mod. hard, sl. silty, non-calc., medium grey	N5	0.20,0.19
1183-207 CORE	3095.53-3095.60m	A 98% Sandstone, massive, fine to medium grained, subangular to subrounded, well sorted, sl. calc., light grey.	N7	
1183-208 CORE	3098.39-3098.44m	A 98% Shale, subfissile, mod. hard, non-calc., medium dark grey	N4	0.95
1183-209 CORE	3102.35-3102.40m	A 98% Shale, subfissile, mod. hard, non-calc., medium dark grey	N4	1.28
1183-210	3095-110m	A 80% Sandstone, blocky, medium grained, subangular, well sorted, non-calc., v. light grey	N8	
		B 20% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey to medium grey	N4-5	0.61
		Minor other shale		
1183-211	3110-125m	A 85% Sandstone, as 1183-210A	N8	
		B 10% Shale, as 1183-210B, sig. cavings	N4-5	0.43
		C 5% Shaly coal, platy, mod. hard, greyish black to dark grey	N2-3	17.90,18.10
		Minor other shale		
1183-212 SWC	3132.5m	A 98% Mudstone, blocky, soft, non-calc., sl. silty, medium grey	N5	0.63
1183-213	3125-140m	A 55% Sandstone, as 1183-210A	N8	
		B 25% Shale, as 1183-210B, sig. cavings	N4-5	0.52
		C 15% Silty mudstone, blocky, soft, non-calc., minor cavings, medium grey to medium olive grey	N5-5Y5/1	0.31
		D 5% Shaly coal, as 1183-211C	N2-3	2.54
		Minor other shale		
1183-214	3140-155m	A 60% Sandstone, as 1183-210A	N8	
		B 30% Shale, as 1183-210B, sig. cavings	N4-5	0.56
		C 10% Silty mudstone, as 1183-213C, minor cavings	N5-	0.28,0.29
		Minor coal and other shale		

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1183-215 SWC	3158.5m	A 98% Silty mudstone, subfissile to blocky, mod. hard, non-calc., medium grey to medium olive grey	N5-5Y5/1	0.44
1183-216	3155170m	A 65% Sandstone, blocky, unconsolidated in part, medium grained, subangular, well sorted, non-calc., v. light grey	N8	
		B 35% Silty shale, subfissile, soft to mod. hard, non-calc., medium grey Minor other shale and siltstone	N5	0.49
1183-217	3170-185m	A 50% Silty shale, subfissile, mod. hard, non-calc., grades to siltstone, medium grey	N5	0.36
		B 25% Sandstone, as 1183-126A	N8	
		C 25% Shale, platy to subfissile, mod. hard, non-calc., minor cavings, medium dark grey Minor other shell	N4	0.92
1183-218	3178m SWC	A 98% Shale, subfissile, mod. hard, sl. silty, non-calc., medium dark grey	N4	0.31,0.31
1183-219	3185-200m	A 65% Shale, platy, mod. hard, non-calc., minor cavings, medium grey to medium olive grey	N5-5Y5/1	0.36
		B 20% Silty sandstone, blocky to platy, mod. hard, v. fine grained, well sorted, non-calc., light grey	N7	0.20
		C 10% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.02
		D 5% Shale, subfissile to blocky, silty, mod. hard, non-calc., minor cavings, greyish red Minor other shale	5R4/2	0.19

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 2A
CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS IN AIR SPACE GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-007	580-610	1114	211	116	38	41	1520	406	26.7	55	0.94
1183-011	700-730	1595	343	187	50	51	2227	631	28.4	75	0.98
1183-014	790-820	2883	288	192	66	73	3502	620	17.7	155	0.91
1183-017	880-910	1422	100	75	30	31	1657	236	14.2	93	0.97
1183-024	995-1010	1204	515	498	91	196	2503	1300	51.9	119	0.46
1183-027	1040-1055	2940	434	348	61	139	3923	982	25.0	92	0.44
1183-029	1070-1085	3685	1545	1354	212	428	7224	3539	49.0	199	0.50
1183-032	1100-1115	1278	632	692	365	767	3733	2455	65.8	433	0.48
1183-034	1130-1145	2506	1245	1157	202	317	5427	2921	53.8	127	0.64
1183-036	1160-1175	1611	497	298	50	65	2521	910	36.1	40	0.77
1183-038	1190-1205	962	272	196	46	61	1536	575	37.4	60	0.75
1183-040	1205-1220	1489	113	71	22	20	1715	226	13.2	35	1.08
1183-042	1235-1250	801	65	35	12	9	922	120	13.0	16	1.37
1183-044	1265-1280	1699	268	165	30	39	2201	502	22.8	31	0.76
1183-046	1295-1310	1701	62	38	7	10	1818	117	6.4	16	0.75
1183-048	1325-1340	881	143	91	17	25	1158	276	23.9	21	0.67
1183-051	1355-1370	1520	62	33	8	9	1631	112	6.8	12	0.87
1183-053	1385-1400	540	46	41	10	15	652	112	17.2	13	0.63
1183-055	1415-1430	103	6	8	2	4	124	21	16.7	1	0.63
1183-057	1445-1460	1540	23	17	6	5	1592	52	3.2	1	1.03
1183-059	1475-1490	580	29	25	8	9	651	71	10.9	3	0.85
1183-061	1505-1520	474	16	8	2	2	501	27	5.5	0	1.20
1183-063	1535-1550	4215	152	89	37	25	4518	303	6.7	1	1.49
1183-065	1565-1580	2451	128	55	21	11	2665	214	8.0	2	1.94
1183-067	1595-1610	2501	105	54	22	13	2694	194	7.2	5	1.68
1183-069	1625-1640	1493	81	45	17	10	1645	152	9.2	5	1.74
1183-071	1655-1670	3917	236	73	25	15	4265	348	8.1	1	1.69
1183-073	1685-1700	930	53	12	4	2	1002	71	7.1	0	1.81
1183-075	1715-1730	2409	171	61	16	15	2672	263	9.9	13	1.09
1183-077	1745-1760	3352	166	53	10	9	3590	238	6.6	0	1.09

TABLE 2A
CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS IN AIR SPACE GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-079	1775-1790	2365	128	37	6	4	2540	175	6.9	2	1.57
1183-081	1805-1820	1735	101	34	3	1	1874	139	7.4	0	2.28
1183-083	1835-1850	1173	72	25	2	2	1273	100	7.8	0	0.86
1183-085	1865-1880	1596	204	90	7	6	1903	307	16.1	0	1.21
1183-087	1895-1910	100	19	28	4	4	154	54	35.2	1	1.16
1183-089	1925-1940	1730	267	124	14	10	2146	415	19.4	5	1.36
1183-091	1955-1970	1319	399	181	21	14	1934	615	31.8	6	1.49
1183-094	1985-2000	4147	1649	860	97	63	6817	2670	39.2	31	1.54
1183-096	2015-2030	3630	1528	898	94	65	6216	2585	41.6	25	1.44
1183-098	2045-2060	1542	614	348	37	31	2571	1029	40.0	12	1.19
1183-100	2075-2090	331	132	108	17	12	601	270	44.9	4	1.39
1183-102	2105-2120	1182	551	467	60	59	2319	1137	49.0	23	1.02
1183-105	2135-2150	2700	1081	674	77	98	4630	1930	41.7	69	0.79
1183-107	2165-2180	966	469	382	34	43	1893	927	49.0	16	0.80
1183-110	2210-2225	2002	973	930	56	104	4065	2063	50.7	20	0.54
1183-111	2225-2240	1189	341	246	13	24	1812	623	34.4	6	0.54
1183-112	2240-2255	523	277	236	13	21	1071	548	51.2	4	0.63
1183-113	2255-2270	1219	836	792	40	108	2996	1776	59.3	16	0.37
1183-114	2270-2285	1510	747	684	60	181	3182	1672	52.5	82	0.33
1183-115	2285-2300	1613	1028	1227	497	1408	5773	4160	72.1	860	0.35
1183-116	2300-2315	10913	7954	10299	4539	13347	47054	36141	76.8	10192	0.34
1183-118	2315-2330	1820	607	1319	1408	1068	6222	4402	70.7	2988	1.32
1183-119	2330-2345	13529	9926	11928	8630	15530	59545	46015	77.3	16210	0.56
1183-120	2345-2360	9895	5987	6231	7450	4139	33702	23807	70.6	13362	1.80
1183-123	2360-2375	1166	810	970	600	1204	4750	3584	75.5	1127	0.50
1183-124	2375-2390	5531	4470	6076	1489	4635	22202	16670	75.1	4082	0.32
1183-125	2390-2405	138	86	189	45	94	553	415	75.1	245	0.48
1183-127	2405-2420	28	26	104	17	54	229	201	87.6	158	0.31
1183-132	2420-2435	125	194	348	55	132	853	728	85.3	386	0.42
1183-136	2435-2450	2381	1566	1511	157	285	5900	3519	59.6	373	0.55

TABLE 2A
CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS IN AIR SPACE GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-140	2450-2465	92	305	442	50	150	1039	946	91.1	327	0.33
1183-143	2465-2480	80	74	69	8	17	247	167	67.4	35	0.44
1183-146	2480-2495	2065	1114	836	85	150	4250	2184	51.4	150	0.56
1183-151	2495-2510	957	390	188	17	29	1581	624	39.4	35	0.58
1183-157	2510-2525	1124	508	369	32	81	2114	990	46.8	56	0.39
1183-160	2525-2540	1467	774	611	61	112	3025	1558	51.5	119	0.55
1183-162	2540-2555	379	106	81	9	19	594	215	36.2	16	0.49
1183-163	2555-2570	2067	977	726	82	107	3959	1892	47.8	56	0.76
1183-164	2570-2585	575	122	55	6	9	767	191	24.9	6	0.67
1183-165	2585-2600	1669	710	712	141	240	3472	1803	51.9	364	0.59
1183-166	2600-2615	552	232	178	26	38	1026	474	46.2	64	0.67
1183-167	2615-2630	489	187	120	18	17	831	342	41.2	18	1.03
1183-168	2630-2645	69	120	153	22	47	411	342	83.3	101	0.47
1183-170	2645-2660	1133	579	394	39	59	2205	1071	48.6	64	0.66
1183-171	2660-2675	3837	1711	697	59	119	6423	2586	40.3	156	0.49
1183-172	2675-2690	37845	19642	15968	3287	5163	81905	44060	53.8	10403	0.64
1183-173	2690-2705	645	308	188	27	45	1214	568	46.8	75	0.59
1183-174	2705-2720	1511	758	612	159	219	3259	1749	53.7	242	0.72
1183-175	2720-2735	1452	359	112	16	29	1969	517	26.3	79	0.55
1183-177	2735-2750	1008	491	2947	26	37	4509	3500	77.6	50	0.70
1183-178	2750-2765	228	140	73	9	28	478	250	52.3	79	0.33
1183-179	2765-2780	1591	907	457	61	85	3102	1511	48.7	74	0.71
1183-181	2780-2795	1281	759	346	65	85	2535	1255	49.5	171	0.77
1183-182	2795-2810	1847	1127	767	244	255	4240	2393	56.4	762	0.95
1183-183	2810-2825	1383	595	682	350	521	3531	2148	60.8	1377	0.67
1183-184	2825-2840	729	286	401	276	398	2091	1362	65.1	1287	0.69
1183-185	2840-2855	441	152	190	78	116	976	535	54.9	599	0.67
1183-186	2855-2870	388	88	70	24	26	596	208	34.9	82	0.93
1183-187	2870-2885	884	300	97	11	17	1309	425	32.5	60	0.65
1183-189	2885-2900	484	138	72	20	22	737	252	34.2	66	0.87

TABLE 2A

CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS IN AIR SPACE GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-190	2900-2915	309	127	65	15	24	540	231	42.8	104	0.61
1183-191	2915-2930	512	162	119	40	40	873	361	41.4	150	0.99
1183-192	2930-2945	18	4	3	1	2	29	11	37.3	23	0.64
1183-193	2945-2960	730	373	193	29	32	1357	627	46.2	38	0.92
1183-194	2960-2975	356	223	245	194	223	1241	885	71.3	296	0.87
1183-195	2975-2990	503	288	293	214	245	1542	1040	67.4	533	0.88
1183-197	2990-3005	797	275	166	38	53	1329	531	40.0	162	0.71
1183-198	3005-3020	862	476	250	49	59	1695	833	49.2	110	0.82
1183-199	3020-3035	853	506	561	322	384	2626	1773	67.5	732	0.84
1183-200	3035-3050	1679	871	440	68	86	3144	1465	46.6	148	0.79
1183-201	3050-3065	579	255	169	39	41	1083	505	46.6	83	0.94
1183-202	3065-3080	1170	581	372	106	140	2369	1200	50.6	347	0.76
1183-210	3095-3110	171	41	28	14	22	276	105	38.1	136	0.62
1183-211	3110-3125	29	11	6	2	3	51	22	42.8	30	0.76
1183-213	3125-3140	62	29	16	3	4	114	52	45.8	12	0.70
1183-214	3140-3155	22	15	16	3	5	62	39	63.6	27	0.66
1183-216	3155-3170	22	7	16	5	17	67	45	67.1	124	0.29
1183-217	3170-3185	486	211	248	65	100	1110	624	56.2	239	0.65
1183-219	3185-3200	686	537	502	110	192	2028	1341	66.1	670	0.57

TABLE 2B

CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS IN CUTTING GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-007	580-610	8260	254	208	63	114	8899	639	7.2	392	0.55
1183-011	700-730	7760	343	399	106	194	8803	1043	11.9	459	0.55
1183-014	790-820	3905	102	126	56	99	4288	383	8.9	347	0.57
1183-017	880-910	1255	43	50	20	34	1402	147	10.5	220	0.57
1183-024	995-1010	6302	661	532	67	175	7736	1434	18.5	122	0.38
1183-027	1040-1055	1284	171	212	56	230	1953	669	34.3	233	0.25
1183-029	1070-1085	5160	1857	1697	288	758	9760	4600	47.1	597	0.38
1183-032	1100-1115	7471	2451	3982	866	2727	17496	10026	57.3	1742	0.32
1183-034	1130-1145	7404	2238	2405	334	881	13263	5859	44.2	601	0.38
1183-036	1160-1175	3568	517	711	186	519	5501	1933	35.1	771	0.36
1183-038	1190-1205	2729	273	439	125	342	3908	1179	30.2	455	0.36
1183-040	1205-1220	1567	104	181	66	129	2047	479	23.4	194	0.52
1183-042	1235-1250	2663	114	116	45	61	2999	336	11.2	348	0.74
1183-044	1265-1280	2122	201	298	81	189	2891	769	26.6	235	0.43
1183-046	1295-1310	2616	110	89	20	39	2874	258	9.0	90	0.50
1183-048	1325-1340	2429	203	284	67	164	3147	718	22.8	177	0.41
1183-051	1355-1370	1203	48	56	18	34	1360	157	11.5	63	0.54
1183-053	1385-1400	1110	65	69	16	28	1287	177	13.7	49	0.57
1183-055	1415-1430	401	28	52	16	27	524	123	23.4	8	0.60
1183-057	1445-1460	770	27	40	15	24	875	105	12.1	29	0.64
1183-059	1475-1490	279	28	49	20	36	412	133	32.2	42	0.56
1183-061	1505-1520	2072	193	231	67	105	2669	597	22.4	48	0.64
1183-063	1535-1550	614	62	105	42	32	855	242	28.2	3	1.29
1183-065	1565-1580	1723	137	158	57	38	2114	391	18.5	25	1.50
1183-067	1595-1610	2880	138	171	69	52	3311	431	13.0	13	1.32
1183-069	1625-1640	1690	100	122	50	41	2003	313	15.6	22	1.23
1183-071	1655-1670	1587	153	113	39	31	1923	336	17.5	25	1.27
1183-073	1685-1700	3599	293	162	48	27	4129	530	12.8	0	1.80
1183-075	1715-1730	3655	304	151	35	32	4177	522	12.5	6	1.08
1183-077	1745-1760	1341	199	153	29	30	1753	412	23.5	4	0.97

TABLE 2B
CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS IN CUTTING GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-079	1775-1790	799	126	90	10	8	1034	235	22.7	284	1.21
1183-081	1805-1820	549	141	105	11	12	818	269	32.9	2	0.95
1183-083	1835-1850	1476	371	190	10	11	2058	582	28.3	6	0.90
1183-085	1865-1880	218	91	96	7	11	423	205	48.5	9	0.62
1183-087	1895-1910	638	59	85	13	18	811	174	21.4	14	0.72
1183-089	1925-1940	2666	595	318	30	29	3637	971	26.7	9	1.05
1183-091	1955-1970	5696	1593	952	91	87	8419	2724	32.3	32	1.06
1183-094	1985-2000	4735	1524	1026	101	99	7485	2750	36.7	51	1.03
1183-096	2015-2030	6983	4564	4493	522	485	17047	10064	59.0	204	1.08
1183-098	2045-2060	7319	4026	3396	326	368	15434	8115	52.6	1086	0.89
1183-100	2075-2090	9199	4788	4458	479	608	19532	10333	52.9	199	0.79
1183-102	2105-2120	6771	3888	3793	415	650	15516	8745	56.4	217	0.64
1183-105	2135-2150	5944	2164	1436	180	311	10035	4091	40.8	194	0.58
1183-107	2165-2180	5788	3429	3237	305	633	13391	7603	56.8	221	0.48
1183-110	2210-2225	208	601	1548	108	256	2722	2514	92.4	68	0.42
1183-111	2225-2240	988	1326	2003	117	256	4690	3702	78.9	41	0.46
1183-112	2240-2255	4309	2456	2906	167	426	10264	5955	58.0	65	0.39
1183-113	2255-2270	1749	2840	4270	215	822	9897	8147	82.3	132	0.26
1183-114	2270-2285	8664	6689	7462	828	2924	26567	17903	67.4	506	0.28
1183-115	2285-2300	5757	4706	6860	1764	7892	26979	21222	78.7	5221	0.22
1183-116	2300-2315	8053	6120	9115	7067	13765	44120	36067	81.7	22317	0.51
1183-118	2315-2330	7787	6943	9924	2570	11053	38277	30490	79.7	33369	0.23
1183-119	2330-2345	8891	7579	10696	14612	7315	49094	40202	81.9	32112	2.00
1183-120	2345-2360	9626	8516	10639	11649	6000	46430	36804	79.3	20518	1.94
1183-123	2360-2375	2550	4081	6993	3101	10235	26960	24410	90.5	11460	0.30
1183-124	2375-2390	528	772	3019	589	2858	7765	7237	93.2	5616	0.21
1183-125	2390-2405	86	38	316	79	248	767	681	88.8	683	0.32
1183-127	2405-2420	182	59	1159	246	805	2450	2268	92.6	1144	0.31
1183-132	2420-2435	291	1206	2912	499	1405	6314	6023	95.4	4166	0.36
1183-136	2435-2450	851	1448	2277	264	812	5653	4802	84.9	1547	0.32

TABLE 2B
CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS IN CUTTING GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-140	2450-2465	581	251	964	104	376	2275	1695	74.5	395	0.28
1183-143	2465-2480	1041	2255	3535	5262	963	13056	12016	92.0	737	5.47
1183-146	2480-2495	5801	3678	2927	251	761	13418	7617	56.8	679	0.33
1183-151	2495-2510	5363	3130	2703	205	638	12039	6676	55.5	546	0.32
1183-157	2510-2525	3152	3691	3783	366	990	11983	8831	73.7	895	0.37
1183-160	2525-2540	2219	2167	2048	193	551	7179	4960	69.1	551	0.35
1183-162	2540-2555	4547	3378	4057	493	1405	13880	9333	67.2	1125	0.35
1183-163	2555-2570	7866	4915	4072	387	1055	18295	10429	57.0	659	0.37
1183-164	2570-2585	5340	3952	3914	428	978	14612	9272	63.5	871	0.44
1183-165	2585-2600	1030	854	1074	132	353	3442	2413	70.1	326	0.37
1183-166	2600-2615	934	800	1156	229	589	3708	2774	74.8	2265	0.39
1183-167	2615-2630	1000	1222	1115	110	325	3771	2772	73.5	989	0.34
1183-168	2630-2645	3151	918	1075	142	431	5718	2567	44.9	752	0.33
1183-170	2645-2660	7353	4517	2822	145	454	15291	7937	51.9	369	0.32
1183-171	2660-2675	8035	5106	3278	180	548	17147	9112	53.1	668	0.33
1183-172	2675-2690	5207	2673	2069	394	937	11280	6073	53.8	5769	0.42
1183-173	2690-2705	7103	3801	2301	289	781	14275	7172	50.2	22078	0.37
1183-174	2705-2720	6803	4282	3042	428	1261	15815	9013	57.0	2537	0.34
1183-175	2720-2735	6408	4076	2210	261	702	13657	7249	53.1	2291	0.37
1183-177	2735-2750	6616	4606	2273	196	486	14178	7561	53.3	700	0.40
1183-178	2750-2765	254	101	256	36	156	803	549	68.4	311	0.23
1183-179	2765-2780	745	768	612	62	196	2384	1638	68.7	222	0.32
1183-181	2780-2795	665	811	563	78	200	2316	1652	71.3	213	0.39
1183-182	2795-2810	3072	1581	1067	426	730	6877	3804	55.3	5745	0.58
1183-183	2810-2825	2282	1012	1602	1234	2018	8147	5866	72.0	15318	0.61
1183-184	2825-2840	1854	488	765	572	1006	4686	2832	60.4	11081	0.57
1183-185	2840-2855	547	195	264	108	223	1338	791	59.1	2564	0.49
1183-186	2855-2870	768	297	498	266	352	2181	1413	64.8	1908	0.75
1183-187	2870-2885	1002	382	192	29	61	1666	664	39.8	890	0.47
1183-189	2885-2900	900	323	162	19	39	1442	543	37.6	405	0.49

TABLE 2B

CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS IN CUTTING GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-190	2900-2915	295	175	111	19	30	631	335	53.2	187	0.62
1183-191	2915-2930	526	322	523	305	535	2212	1686	76.2	5903	0.57
1183-192	2930-2945	4956	1196	655	255	359	7421	2465	33.2	42229	0.71
1183-193	2945-2960	4155	1613	546	50	128	6492	2336	36.0	677	0.39
1183-194	2960-2975	4593	2320	1544	330	465	9253	4659	50.4	980	0.71
1183-195	2975-2990	5122	2154	2500	1418	2445	13639	8517	62.4	16852	0.58
1183-197	2990-3005	800	329	291	75	137	1632	833	51.0	1044	0.55
1183-198	3005-3020	612	261	138	26	47	1084	471	43.5	344	0.56
1183-199	3020-3035	3414	1013	800	294	529	6049	2636	43.6	4184	0.56
1183-200	3035-3050	5650	1890	499	64	166	8269	2619	31.7	841	0.39
1183-201	3050-3065	6861	2385	680	75	164	10166	3305	32.5	462	0.46
1183-202	3065-3080	2360	707	418	106	198	3789	1429	37.7	2478	0.54
1183-210	3095-3110	574	71	108	43	206	1002	428	42.7	3355	0.21
1183-211	3110-3125	385	174	144	22	80	805	420	52.2	474	0.28
1183-213	3125-3140	838	197	162	23	78	1297	460	35.4	396	0.29
1183-214	3140-3155	318	76	99	18	75	586	268	45.7	736	0.25
1183-216	3155-3170	575	107	99	29	79	890	314	35.3	1252	0.37
1183-217	3170-3185	1381	658	1047	324	858	4269	2888	67.6	6111	0.38
1183-219	3185-3200	834	539	951	262	812	3398	2565	75.5	4985	0.32

TABLE 2C

TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS (2A + 2B)

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-007	580-610	9374	465	324	101	154	10418	1044	10.0	447	0.65
1183-011	700-730	9355	686	586	157	246	11030	1675	15.2	533	0.64
1183-014	790-820	6787	390	318	122	172	7790	1003	12.9	502	0.71
1183-017	880-910	2677	143	124	49	65	3059	382	12.5	313	0.76
1183-024	995-1010	7506	1175	1030	158	371	10240	2734	26.7	241	0.43
1183-027	1040-1055	4224	605	560	118	369	5876	1651	28.1	324	0.32
1183-029	1070-1085	8846	3401	3051	500	1186	16984	8139	47.9	796	0.42
1183-032	1100-1115	8748	3083	4674	1231	3493	21230	12481	58.8	2175	0.35
1183-034	1130-1145	9910	3483	3563	536	1198	18690	8779	47.0	728	0.45
1183-036	1160-1175	5179	1014	1009	237	584	8023	2843	35.4	811	0.41
1183-038	1190-1205	3690	545	635	171	404	5444	1754	32.2	515	0.42
1183-040	1205-1220	3057	217	252	88	148	3762	706	18.8	229	0.59
1183-042	1235-1250	3464	179	151	57	70	3920	456	11.6	363	0.82
1183-044	1265-1280	3821	469	463	111	229	5092	1271	25.0	266	0.48
1183-046	1295-1310	4317	172	127	27	49	4692	375	8.0	106	0.55
1183-048	1325-1340	3310	346	375	84	189	4304	994	23.1	198	0.44
1183-051	1355-1370	2723	110	90	26	42	2991	268	9.0	75	0.61
1183-053	1385-1400	1650	110	110	25	43	1939	289	14.9	62	0.59
1183-055	1415-1430	505	34	60	19	31	648	144	22.2	9	0.60
1183-057	1445-1460	2310	50	57	21	29	2467	157	6.4	31	0.71
1183-059	1475-1490	859	57	73	28	45	1063	204	19.2	44	0.62
1183-061	1505-1520	2546	209	239	70	107	3170	624	19.7	48	0.65
1183-063	1535-1550	4828	214	194	79	57	5373	544	10.1	4	1.38
1183-065	1565-1580	4174	265	212	78	49	4779	605	12.7	28	1.59
1183-067	1595-1610	5380	243	225	91	65	6005	625	10.4	17	1.39
1183-069	1625-1640	3183	180	167	67	51	3648	465	12.8	27	1.32
1183-071	1655-1670	5504	388	186	64	45	6188	683	11.0	26	1.41
1183-073	1685-1700	4529	347	174	52	29	5130	601	11.7	0	1.80
1183-075	1715-1730	6064	475	212	51	47	6850	786	11.5	19	1.08
1183-077	1745-1760	4692	366	206	39	39	5342	650	12.2	5	1.00

TABLE 2C
TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS (2A + 2B)

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-079	1775-1790	3165	254	127	16	12	3574	409	11.5	286	1.32
1183-081	1805-1820	2284	242	139	14	13	2692	408	15.2	2	1.08
1183-083	1835-1850	2649	443	215	11	13	3331	682	20.5	6	0.90
1183-085	1865-1880	1815	296	186	14	17	2327	512	22.0	10	0.83
1183-087	1895-1910	737	77	112	17	21	965	228	23.6	15	0.80
1183-089	1925-1940	4397	862	441	44	39	5783	1387	24.0	14	1.13
1183-091	1955-1970	7015	1992	1134	112	100	10353	3338	32.2	38	1.12
1183-094	1985-2000	8882	3174	1886	199	162	14301	5420	37.9	82	1.23
1183-096	2015-2030	10613	6092	5391	616	550	23262	12650	54.4	229	1.12
1183-098	2045-2060	8861	4640	3744	362	398	18005	9144	50.8	1098	0.91
1183-100	2075-2090	9530	4921	4567	496	620	20134	10603	52.7	203	0.80
1183-102	2105-2120	7952	4438	4259	475	709	17834	9882	55.4	240	0.67
1183-105	2135-2150	8644	3245	2109	257	410	14665	6021	41.1	263	0.63
1183-107	2165-2180	6754	3897	3618	339	676	15284	8530	55.8	237	0.50
1183-110	2210-2225	2210	1574	2479	164	360	6786	4577	67.4	88	0.46
1183-111	2225-2240	2177	1667	2249	130	280	6502	4325	66.5	48	0.46
1183-112	2240-2255	4832	2733	3142	180	447	11335	6503	57.4	69	0.40
1183-113	2255-2270	2969	3676	5062	255	930	12892	9924	77.0	148	0.27
1183-114	2270-2285	10174	7436	8146	889	3105	29750	19575	65.8	588	0.29
1183-115	2285-2300	7369	5734	8087	2261	9300	32752	25382	77.5	6082	0.24
1183-116	2300-2315	18966	14074	19414	11607	27112	91173	72207	79.2	32509	0.43
1183-118	2315-2330	9607	7550	11243	3978	12121	44499	34892	78.4	36356	0.33
1183-119	2330-2345	22421	17505	22625	23242	22845	108638	86218	79.4	48322	1.02
1183-120	2345-2360	19521	14503	16870	19099	10139	80132	60611	75.6	33880	1.88
1183-123	2360-2375	3716	4891	7963	3701	11439	31710	27994	88.3	12587	0.32
1183-124	2375-2390	6059	5242	9096	2078	7493	29967	23908	79.8	9698	0.28
1183-125	2390-2405	224	124	505	125	342	1320	1096	83.0	928	0.36
1183-127	2405-2420	210	85	1263	262	859	2679	2469	92.2	1302	0.31
1183-132	2420-2435	416	1400	3260	554	1537	7167	6751	94.2	4552	0.36
1183-136	2435-2450	3232	3014	3789	420	1098	11553	8321	72.0	1920	0.38

TABLE 2C
TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS (2A + 2B)

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-140	2450-2465	673	555	1407	154	526	3314	2641	79.7	722	0.29
1183-143	2465-2480	1121	2329	3604	5270	980	13303	12182	91.6	772	5.38
1183-146	2480-2495	7866	4792	3763	336	910	17667	9801	55.5	828	0.37
1183-151	2495-2510	6321	3520	2890	222	667	13620	7300	53.6	581	0.33
1183-157	2510-2525	4276	4199	4153	398	1071	14097	9820	69.7	951	0.37
1183-160	2525-2540	3686	2942	2659	254	663	10204	6518	63.9	671	0.38
1183-162	2540-2555	4926	3484	4138	502	1424	14473	9548	66.0	1141	0.35
1183-163	2555-2570	9933	5893	4798	469	1162	22255	12321	55.4	715	0.40
1183-164	2570-2585	5915	4074	3969	434	987	15378	9463	61.5	877	0.44
1183-165	2585-2600	2699	1564	1786	274	593	6914	4216	61.0	690	0.46
1183-166	2600-2615	1486	1032	1334	254	627	4734	3248	68.6	2329	0.41
1183-167	2615-2630	1488	1408	1236	128	342	4602	3114	67.7	1007	0.37
1183-168	2630-2645	3220	1038	1228	165	478	6129	2909	47.5	852	0.34
1183-170	2645-2660	8487	5096	3216	184	512	17496	9009	51.5	432	0.36
1183-171	2660-2675	11872	6818	3975	238	667	23570	11698	49.6	824	0.36
1183-172	2675-2690	43052	22315	18037	3681	6100	93184	50132	53.8	16172	0.60
1183-173	2690-2705	7748	4110	2489	316	826	15489	7741	50.0	22153	0.38
1183-174	2705-2720	8313	5040	3654	586	1481	19074	10761	56.4	2779	0.40
1183-175	2720-2735	7860	4435	2322	278	732	15627	7766	49.7	2370	0.38
1183-177	2735-2750	7625	5096	5220	222	523	18686	11062	59.2	750	0.42
1183-178	2750-2765	482	241	328	45	184	1281	799	62.4	390	0.25
1183-179	2765-2780	2337	1675	1070	123	281	5486	3149	57.4	295	0.44
1183-181	2780-2795	1946	1570	909	143	284	4852	2906	59.9	384	0.50
1183-182	2795-2810	4920	2708	1834	670	986	11117	6197	55.7	6508	0.68
1183-183	2810-2825	3665	1607	2284	1584	2539	11678	8014	68.6	16695	0.62
1183-184	2825-2840	2583	774	1167	848	1405	6777	4194	61.9	12368	0.60
1183-185	2840-2855	988	348	454	186	339	2314	1326	57.3	3163	0.55
1183-186	2855-2870	1156	385	568	290	378	2777	1621	58.4	1990	0.77
1183-187	2870-2885	1886	682	289	40	78	2975	1089	36.6	949	0.51
1183-189	2885-2900	1384	461	234	39	62	2179	795	36.5	471	0.63

TABLE 2C
TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C_1 - C_7 HYDROCARBONS (2A + 2B)

GEOCHEM SAMPLE NUMBER	DEPTH	C_1 Methane	C_2 Ethane	C_3 Propane	iC_4 Isobutane	nC_4 Butane	TOTAL C_1 - C_4	TOTAL C_2 - C_4	% GAS WETNESS	TOTAL C_5 - C_7	$\frac{iC_4}{nC_4}$
1183-190	2900-2915	604	303	177	33	54	1171	567	48.4	291	0.62
1183-191	2915-2930	1038	484	642	345	575	3085	2047	66.3	6053	0.60
1183-192	2930-2945	4974	1200	659	257	361	7450	2476	33.2	42252	0.71
1183-193	2945-2960	4886	1985	739	79	160	7849	2963	37.8	714	0.49
1183-194	2960-2975	4949	2543	1789	524	688	10493	5544	52.8	1276	0.76
1183-195	2975-2990	5624	2442	2793	1632	2690	15181	9557	63.0	17386	0.61
1183-197	2990-3005	1597	603	457	113	190	2961	1364	46.1	1205	0.59
1183-198	3005-3020	1474	736	388	75	106	2779	1305	47.0	453	0.71
1183-199	3020-3035	4266	1519	1361	616	913	8675	4409	50.8	4916	0.67
1183-200	3035-3050	7329	2762	939	132	252	11414	4084	35.8	989	0.52
1183-201	3050-3065	7440	2640	850	114	205	11249	3809	33.9	545	0.56
1183-202	3065-3080	3530	1288	790	212	338	6158	2628	42.7	2825	0.63
1183-210	3095-3110	745	111	137	57	228	1278	533	41.7	3491	0.25
1183-211	3110-3125	414	186	150	24	82	856	442	51.6	504	0.29
1183-213	3125-3140	899	226	178	26	82	1411	512	36.3	408	0.31
1183-214	3140-3155	341	92	114	22	80	648	307	47.4	763	0.27
1183-216	3155-3170	597	114	115	34	97	957	360	37.6	1376	0.35
1183-217	3170-3185	1868	869	1295	390	958	5380	3512	65.3	6350	0.41
1183-219	3185-3200	1520	1077	1453	372	1005	5426	3906	72.0	5656	0.37

TABLE 3

STANDARD PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON	S1 (mg/g)	S2 (mg/g)	PRODUCTION INDEX	HYDROGEN INDEX	Tmax (%C)
1183-007A	580-610	0.65	0.03	0.27	0.10	41.5	425
1183-011A	700-730	0.82	0.02	0.44	0.04	53.7	430
1183-014A	790-820	0.65	0.03	0.28	0.10	43.1	428
1183-017A	880-910	0.67	0.03	0.27	0.10	40.3	429
1183-022A	985	0.31	0.03	0.10	0.23	32.3	419
1183-024A	995-1010	0.41	0.03	0.13	0.19	31.7	421
1183-027A	1040-1055	0.44	0.03	0.15	0.17	34.1	419
1183-029A	1070-1085	0.60	0.04	0.20	0.17	33.3	424
1183-031A	1100	0.86	0.05	0.37	0.12	43.0	423
1183-032A	1100-1115	0.91	0.06	0.55	0.10	60.4	428
1183-034A	1130-1145	1.01	0.04	0.52	0.07	51.5	429
1183-036A	1160-1175	0.98	0.05	0.47	0.10	48.0	429
1183-038A	1190-1205	0.94	0.16	0.61	0.21	64.9	426
1183-039A	1200	0.89	0.04	0.30	0.12	33.7	429
1183-040A	1205-1220	0.92	0.03	0.34	0.08	37.0	432
1183-042A	1235-1250	0.89	0.06	0.40	0.13	44.9	427
1183-044A	1265-1280	0.82	0.07	0.34	0.17	41.5	422
1183-044B	1265-1280	0.90	0.07	0.35	0.17	38.9	426
1183-046A	1295-1310	0.61	0.06	0.20	0.23	32.8	418
1183-048A	1325-1340	0.84	0.05	0.29	0.15	34.5	424
1183-048B	1325-1340	0.87	0.07	0.37	0.16	42.5	424
1183-050A	1350	0.69	0.04	0.12	0.25	17.4	428
1183-051A	1355-1370	0.72	0.06	0.15	0.29	20.8	424
1183-053A	1385-1400	0.68	0.05	0.12	0.29	17.6	431
1183-055B	1415-1430	0.69	0.07	0.24	0.23	34.8	433
1183-057A	1445-1460	0.70	0.05	0.17	0.23	24.3	426
1183-059A	1475-1490	0.70	0.10	0.16	0.38	22.9	427
1183-061A	1505-1520	0.96	0.06	0.34	0.15	35.4	431
1183-063A	1535-1550	1.14	0.16	0.78	0.17	68.4	431
1183-065A	1565-1580	1.52	0.43	3.10	0.12	203.9	496
1183-067A	1595-1610	0.83	0.08	0.25	0.24	30.1	430
1183-069A	1625-1640	0.89	0.06	0.30	0.17	33.7	422
1183-069B	1625-1640	1.12	0.17	1.00	0.15	89.3	428
1183-071A	1655-1670	1.27	0.11	0.90	0.11	70.9	431
1183-073A	1685-1700	1.12	0.06	0.63	0.09	56.2	430
1183-073B	1685-1700	0.94	0.06	0.31	0.16	33.0	433
1183-075A	1715-1730	1.15	0.11	0.65	0.14	56.5	433
1183-077A	1745-1760	1.06	0.08	0.41	0.16	38.7	430
1183-079A	1775-1790	1.07	0.08	0.41	0.16	38.3	426
1183-081A	1805-1820	1.02	0.41	0.63	0.39	61.8	415
1183-081B	1805-1820	1.18	0.19	0.73	0.21	61.9	423
1183-083A	1835-1850	1.14	0.10	0.29	0.26	25.4	430
1183-083B	1835-1850	1.48	0.44	2.00	0.18	135.1	426
1183-085B	1865-1880	1.43	0.43	1.74	0.20	121.7	430
1183-087A	1895-1910	1.22	0.06	0.26	0.19	21.3	425
1183-089A	1925-1940	1.37	0.07	0.89	0.07	65.0	433
1183-091A	1955-1970	1.57	0.07	0.98	0.07	62.4	433
1183-092A	1972.5	2.60	0.16	2.31	0.06	88.8	432
1183-094A	1985-2000	2.39	0.23	2.54	0.08	106.3	435
1183-094B	1985-2000	2.10	0.21	2.16	0.09	102.9	434

TABLE 3

STANDARD PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON	S1 (mg/g)	S2 (mg/g)	PRODUCTION INDEX	HYDROGEN INDEX	Tmax (%C)
1183-096B	2015-2030	2.20	0.15	2.39	0.06	108.6	436
1183-098A	2045-2060	2.45	0.23	3.44	0.06	140.4	434
1183-100A	2075-2090	2.02	0.19	2.88	0.06	142.6	435
1183-100B	2075-2090	2.01	0.14	2.27	0.06	112.9	436
1183-102A	2105-2120	2.21	0.20	3.02	0.06	136.7	435
1183-105A	2135-2150	1.52	0.14	1.68	0.08	110.5	472
1183-104A	2142	1.31	0.14	1.25	0.10	95.4	435
1183-107A	2165-2180	1.54	0.13	1.28	0.09	83.1	435
1183-110A	2210-2225	0.83	0.09	0.25	0.26	30.1	434
1183-111B	2225-2240	0.87	0.06	0.28	0.18	32.2	432
1183-112A	2240-2255	0.96	0.06	0.35	0.15	36.5	435
1183-113A	2255-2270	1.20	0.08	0.54	0.13	45.0	438
1183-113B	2255-2270	2.86	0.33	3.19	0.09	111.5	441
1183-114A	2270-2285 SL	4.18	0.65	6.33	0.09	151.4	442
1183-115A	2285-2300	5.16	2.77	15.67	0.15	303.7	438
1183-115B	2285-2300 OLD	2.60	1.23	7.06	0.15	271.5	439
1183-116A	2300-2315 "	4.33	3.03	13.68	0.18	315.9	444
1183-117A	2310 "	4.17	3.04	13.63	0.18	326.9	441
1183-118A	2315-2330 "	7.90	6.47	20.86	0.24	264.1	443
1183-119A	2330-2345 "	9.98	6.89	21.86	0.24	219.0	447
1183-120A	2345-2360 "	13.10	9.78	31.84	0.23	243.1	446
1183-121A	2359.5 "	2.25	3.34	2.02	0.62	89.8	434
1183-123A	2360-2375 STP	1.13	0.12	0.62	0.16	54.9	440
1183-123B	2360-2375 "	5.86	3.61	13.56	0.21	231.4	443
1183-124A	2375-2390 "	0.99	0.12	0.39	0.24	39.4	441
1183-124B	2375-2390 "	2.31	0.65	3.06	0.18	132.5	447
1183-125A	2390-2405 "	1.25	0.18	0.85	0.17	68.0	439
1183-127A	2405-2420 "	0.90	0.09	0.34	0.21	37.8	441
1183-132A	2420-2435 "	1.24	0.17	0.76	0.18	61.3	438
1183-132B	2420-2435 "	1.67	0.23	1.41	0.14	84.4	442
1183-136A	2435-2450	1.00	0.14	0.65	0.18	65.0	442
1183-136B	2435-2450	1.30	0.11	0.73	0.13	56.2	437
1183-135A	2441.05-.10 "	4.05	1.62	14.76	0.10	364.4	443
1183-137A	2444.60-.65 "	1.85	0.61	7.93	0.07	428.6	449
1183-138A	2448.93-.98 "	1.69	0.64	4.79	0.12	283.4	441
1183-140A	2450-2465 "	1.44	0.12	0.84	0.13	58.3	440
1183-141A	2462.85-.90 "	4.61	1.13	10.60	0.10	229.9	445
1183-143A	2465-2480 "	1.29	0.11	0.80	0.12	62.0	440
1183-144A	2473.11-.16 "	0.87	0.19	1.20	0.14	137.9	445
1183-145A	2479.17-.21 "	8.00	1.02	17.76	0.05	222.0	450
1183-145B	2479.17-.21 "	67.50	14.52	176.58	0.08	261.6	434
1183-146A	2480-2495 "	1.52	0.31	1.12	0.22	73.7	440
1183-147A	2487.62-.66 "	5.60	2.30	17.16	0.12	306.4	449
1183-148A	2491.51-.56 "	1.48	0.27	2.25	0.11	152.0	448
1183-151A	2495-2510 "	1.05	0.09	0.38	0.19	36.2	444
1183-151C	2495-2510 "	4.23	0.94	5.26	0.15	124.3	443
1183-149A	2497.91-.96 "	61.30	7.05	87.50	0.07	142.7	447
1183-150A	2501.32-.36 "	17.60	3.84	39.82	0.09	226.2	447
1183-153A	2509.07-.12 DYK	1.84	0.30	1.90	0.14	103.3	452
1183-154A	2513.60-.64 "	7.84	2.28	20.77	0.10	264.9	447

TABLE 3

STANDARD PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON	S1 (mg/g)	S2 (mg/g)	PRODUCTION INDEX	HYDROGEN INDEX	Tmax (%C)
1183-157A	2510-2525	1.39	0.20	0.69	0.22	49.6	440
1183-155A	2515	2.71	0.46	2.20	0.17	81.2	452
1183-158A	2519.85-.90	3.19	0.69	3.95	0.15	123.8	448
1183-160B	2525-2540	1.46	0.11	1.01	0.10	69.2	439
1183-160C	2525-2540	4.10	1.89	12.12	0.13	295.6	364
1183-161A	2535.75-.79	0.70	0.11	0.54	0.17	77.1	446
1183-162A	2540-2555	1.25	0.09	0.62	0.13	49.6	440
1183-162B	2540-2555	1.46	0.26	1.32	0.16	90.4	441
1183-163C	2555-2570	24.50	4.00	51.95	0.07	212.0	445
1183-164A	2570-2585	1.48	0.15	0.89	0.14	60.1	440
1183-164D	2570-2585	4.10	0.95	6.85	0.12	167.1	445
1183-166C	2600-2615	1.21	0.14	0.86	0.14	71.1	443
1183-167B	2615-2630	1.98	0.28	1.28	0.18	64.6	441
1183-169A	2643	0.61	0.09	0.27	0.25	44.3	428
1183-170B	2645-2660	2.57	0.24	1.04	0.19	40.5	447
1183-171B	2660-2675	3.01	0.71	2.36	0.23	78.4	451
1183-171D	2660-2675	13.75	2.36	23.17	0.09	168.5	450
1183-172B	2675-2690	3.19	1.04	3.90	0.21	122.3	450
1183-173B	2690-2705	2.34	0.38	2.20	0.15	94.0	450
1183-174B	2705-2720	1.45	0.47	1.55	0.23	106.9	448
1183-175B	2720-2735	2.50	0.52	2.30	0.18	92.0	448
1183-177A	2735-2750	1.96	0.37	1.48	0.20	75.5	447
1183-176A	2738	1.86	0.42	1.28	0.25	68.8	436
1183-178B	2750-2765	1.60	0.15	0.91	0.14	56.9	444
1183-179A	2765-2780	0.78	0.53	1.78	0.23	228.2	440
1183-181A	2780-2795	1.08	0.20	0.96	0.17	88.9	444
1183-182B	2795-2810	1.14	0.24	0.99	0.20	86.8	443
1183-180A	2795.5	1.39	0.22	0.51	0.30	36.7	448
1183-185B	2840-2855	1.10	0.16	0.95	0.14	86.4	441
1183-186B	2855-2870	0.49	0.10	0.60	0.14	122.4	448
1183-187B	2870-2885	0.55	0.05	0.15	0.25	27.3	434
1183-188A	2880	0.23	0.06	0.07	0.46	30.4	468
1183-189B	2885-2900	0.53	0.06	0.13	0.32	24.5	441
1183-190C	2900-2915	0.35	0.06	0.11	0.35	31.4	441
1183-191B	2915-2930	0.16	0.04	0.10	0.29	62.5	444
1183-192B	2930-2945	0.57	0.07	0.22	0.24	38.6	446
1183-193A	2945-2960	0.61	0.08	0.31	0.21	50.8	444
1183-194B	2960-2975	0.36	0.04	0.08	0.33	22.2	441
1183-195B	2975-2990	0.28	0.05	0.09	0.36	32.1	442
1183-196A	2984	0.22	0.08	0.02	0.80	9.1	441
1183-197B	2990-3005	0.25	0.11	0.09	0.55	36.0	453
1183-198B	3005-3020	0.35	0.06	0.08	0.43	22.9	444
1183-199B	3020-3035	0.50	0.08	0.13	0.38	26.0	445
1183-200B	3035-3050	0.78	0.09	0.35	0.20	44.9	454
1183-201B	3050-3065	0.57	0.07	0.20	0.26	35.1	452
1183-202B	3065-3080	0.47	0.06	0.12	0.33	25.5	451
1183-203A	3077.1	3.69	0.47	3.53	0.12	95.7	460
1183-205A	3092.52-.55	0.43	0.10	0.12	0.45	27.9	455
1183-206A	3094.67-7	0.20	0.09	0.21	0.30	105.0	457
1183-210B	3095-3110	0.61	0.10	0.22	0.31	36.1	457

TABLE 3

STANDARD PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON	S1 (mg/g)	S2 (mg/g)	PRODUCTION INDEX	HYDROGEN INDEX	Tmax (%C)
1183-208A	3098.39-.44	0.95	0.13	0.52	0.20	54.7	453
1183-209A	3102.35-.40	1.28	0.21	0.54	0.28	42.2	452
1183-211C	3110-3125	17.90	2.04	30.85	0.06	172.3	453v
1183-213B	3125-3140	0.52	0.07	0.21	0.25	40.4	449
1183-212A	3132.5	0.63	0.23	0.37	0.38	58.7	451
1183-214B	3140-3155	0.56	0.13	0.47	0.22	83.9	449
1183-216B	3155-3170	0.49	0.09	0.25	0.26	51.0	451
1183-215A	3158.5	0.44	0.15	0.26	0.37	59.1	449
1183-217C	3170-3185	0.92	0.27	0.78	0.26	84.8	446
1183-218A	3178	0.31	0.05	0.05	0.50	16.1	444
1183-219A	3185-3200	0.36	0.08	0.11	0.42	30.6	448
1183-219C	3185-3200	1.02	0.24	0.90	0.21	88.2	453v

TABLE 4

GOGI INDEX

GEOCHEM SAMPLE NUMBER	DEPTH	% C_1	% C_2-C_5	% C_6-C_{14}	% C_{15+}
1183-114A	2270-285m	29.93	15.66	42.97	11.44
1183-116A	2300-315m	13.73	16.20	43.79	26.28
1183-120A	2345-360m	23.54	32.35	37.74	6.37
1183-135A	2441.05-.10m	21.34	32.58	42.21	3.87
1183-141A	2462.85-.90m	9.54	20.45	45.95	24.06
1183-145A	2479.17-.21m	13.45	16.46	36.94	33.15
1183-149A	2497.91-.96m	11.69	22.78	35.13	30.40
1183-158A	2519.85-.90m	14.21	24.44	34.70	26.65

TABLE 5
KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES 40%; 10-40%; 10%	REMARKS	RE-WORKED (%)	PARTICLE SIZE	PRESERV-ATION	INDEX	1 – 10 SCALE
1183-007A	580-610m	I-W;Al-H;Am		70	F-M	F	1+	
1183-022A	985m SWC	W;I;H-Am	extremely lean, unreliable	-	F	P-F	---	
1183-031A	1100m SWC	W-I;H;Al-Am	lean 2- and 2- to 2	70	F-M	F	1+	
1183-039A	1200m SWC	I-W;-;H-Al-Am	H at 2- to 2 and 2	75	F-M	F	1+ to 2-	
1183-050A	1350m SWC	I-W;-;H-Al	H at 2- through 2	90	F-M	F-G	1+ to 2-	
1183-057A	1445-460m	I;W;H-Al	lean	85	F-M	F	2-	
1183-065A	1565-580m	W-I;-;H-Al-Am	H at 2- through 2	85	F-M	F	1+ to 2-	
1183-071A	1655-670m	W-I;-;H-Al	dominant H marginally mature	90	F-M	F	1+ to 2-(?)	
1183-077A	1745-760m	W-I;-;H-Al-Am	lean minor material at 1+ to 2-, good H at 2- to 2	80	F-M	F-G	2- max (?)	
1183-085B	1865-880m	W-I;-;H-Al	H at 2- to 2 and 2	90	F-M	F	2-	
1183-092A	1972.5m SWC	W;I-H;Al-Am	H at 2, minor material at 1+ to 2-	80	F-M/C	F-G	2-(?)	
1183-098A	2045-060m	W;I;H-Al-Am	cavings?	60	F-M	F	2-(?)	
1183-104A	2142m SWC	W;I;H-Al-Am	H at 2- to 2 and 2	30	F-M	F	2-(?)	
1183-114A	2270-285m	Am*;Al**-W;I-H	differentiation difficult H at 2- to 2 *includes disseminated and incompletely developed, not prime quality **generally passing to amorphous	10	F-M	F	2- to 2	
1183-117A	2310m SWC	Al;Am*-W;I-H	*as 114A	10	F-M	F	2- to 2(?)	
1183-120A	2345-360m	Al;W-Am*-I;H	differentiation difficult *as 114A	30	F-M/C	F	2- to 2/2(?)	

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other,. structured, spore-pollen, thick-walled, unstructured

Dominant, Major, Significant, Minor

TABLE 5

KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES 40%; 10-40%; 10%	REMARKS	RE-WORKED (%)	PARTICLE SIZE	PRESERV-ATION	INDEX	1 – 10 SCALE
1183-121A	2359.5m SWC	-;Am*-Al-W;I-H	lean, differentiation difficult *finely disseminated, poor quality	25	F-M	P-F	---	
1183-125A	2390-405m	W-I;H;Al-Am	lean, contamination	80	F-M	F	2- to 2/2(?)	
1183-135A CORE	2441.05-2441.10m	W;Am*-H;I	*finely disseminated, unrecognisable	-	F-M	F	2- to 2	
1183-145A CORE	2479.17-2479.21m	Am*;W;Al-H-I	*degraded, not typically oil-prone, includes incompletely developed material	5	F-C	F	2	
1183-147A CORE	2487.62-2487.66m	Am*;W;Al-H-I	differentiation difficult *as 145A	-	F-M	F	2	
1183-150A CORE	2501.32-2501.36m	Al;W-Am;H-I	differentiation difficult, frequently unrecognisable	-	F-M	F	2	
1183-154A CORE	2513.60-2513.64m	W;H-Am*-I;Al	*fine grained, disseminated, unrecognisable	-	F-M	F	2	
1183-158A CORE	2519.85-2519.90m	W;Am*-I-H;Al	differentiation difficult *as 154A	30	F-M	F	2	
1183-163C	2555-570m	W;I-Al*-Am*;H	differentiation difficult, frequently unrecognisable *atypical, includes material passing to amorphous	25	F-C	F	2	
1183-169A	2643m SWC	W;I;H-Am-Al	extremely lean, unreliable.	-	F	F	---	
1183-171B	2660-675m	W;I-H;Al-Am		70	F-M/C	F	2	
1183-176A	2738m SWC	W-I;H;Am-Al		70	M	F	2/2 to 2+	
1183-187B	2870-889m	I-W;-;H-Am-Al	lean H at 2+	85	F-M	F-G	2 to 2+(?)	
1183-193A	2945-960m	W-I;-;H-Am-Al	lean material at 2+ and greater	75	F-M	F	2 to 2+(?)	

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other,. structured, spore-pollen, thick-walled, unstructured

Dominant. Maior. Sianificant Minor

TABLE 5

KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES 40%; 10-40%; 10%	REMARKS	RE-WORKED (%)	PARTICLE SIZE	PRESERV-ATION	INDEX	1 – 10 SCALE
1183-203A	3077.1m SWC	W;Am*-H-I;Al	differentiation difficult *includes finely disseminated and incompletely developed material	40	F-C	F	2 to 2+	
1183-209A CORE	3102.35-3102.40m	W;I;H-Am;Al		50	F-M	F	2 to 2+	
1183-212A	3132.5m SWC	W;I-Am;Al-H	lean, contamination	-	F-M	F	---	
1183-218A	3178m SWC	W-I;-;H-Am-Al	lean, contamination	70	F	F	2(?)	

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other,. structured, spore-pollen, thick-walled, unstructured

Dominant, Maior. Sionificant Minor

TABLE 6
VITRINITE REFLECTANCE DATA

GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	AVERAGE REFLECTIVITY Ro (%), (NUMBER OF PARTICLES)			REMARKS
			1	2	3	
1183-007A	580-610m	WR	0.33(2)	0.96(10)*	-	
1183-022A	985m SWC	WR	0.34(1)	1.00(8)*	-	
1183-031A	1100m SWC	WR	0.36(2)	0.99(11)*	-	
1183-039A	1200m SWC	WR	0.38(3)	0.97(9)*	-	
1183-050A	1350m SWC	WR	1.00(12)*	-	-	
1183-057A	1445-460m	WR	0.59(2)	0.99(14)*	-	
1183-065A	1565-580m	WR	0.38(1)	0.60(15)*	0.94(9)*	
1183-071A	1655-670m	WR	0.51(2)	0.77(7)*	0.97(4)*	
1183-077A	1745-760m	WR	0.56(1)	0.90(4)*	1.14(2)*	
1183-085B	1865-880m	WR	0.55(1)	1.06(9)*	-	
83-092A	1972.5m SWC	WR	0.56(11) 1.26(3)*	0.77(12)*	0.96(4)*	
1183-098A	2045-060m	KC	0.45(17)	0.60(12)*	-	
1183-114A	2270-285m	WR	0.48(3)	0.63(5)*	1.17(6)*	
1183-117A	2310m SWC	WR	0.53(7)	1.13(6)*	-	
1183-121A	2359.5m SWC	WR	0.55(4)	1.14(8)*	-	
1183-125A	2390-405m	WR	0.60(6)	1.12(8)*	-	
1183-135A CORE	2441.05-2441.10m	KC	0.58(30)	-	-	
1183-145B CORE	2479.17-2479.21m	KC	0.69(39)	-	-	
1183-149B CORE	2497.91-2497.96m	WR	0.74(30)	-	-	
83-154A RE	2513.60-2513.64m	KC	0.73(29)	-	-	
1183-163C	2555-570m	KC	0.80(30)*	-	-	
1183-169A	2643m SWC	KC	0.69(3)	1.03(20)*	1.39(3)*	
1183-176A	2738m SWC	KC	0.72(19)	1.05(8)*	-	
1183-187B	2870-889m	WR	0.73(1)	1.26(7)*	-	
1183-193A	2945-960m	WR	0.83(11)	1.15(9)*	-	
1183-203A	3077.1m SWC	WR	0.96(27)	1.41(3)*	-	
1183-209A CORE	3102.35-3102.40m	WR	0.95(16)	1.19(9)*	-	
1183-218A	3178m SWC	WR	1.32(1)*	1.80(2)*	-	

CT—ditch cuttings; CO—core; WR—whole rock; KC—kerogen concentrate. Colours — spore fluorescence. *Reworked

TABLE 7

METHYL PHENANTHRENE INDEX

GEOCHEM SAMPLE NUMBER	DEPTH	% AREA	% HEIGHT
1183-001	DST 1	0.69	0.71
1183-031	1100m SWC	1.02	0.96
1183-096	2015-030m	0.67	0.66
1183-107	2165-180m	0.65	0.65
1183-114A	2270-285m	0.65	0.69
1183-116	2300-315m	0.68	0.65
1183-118	2315-330m	0.45	0.62
1183-119A	2330-345m	0.49	0.65
1183-120	2345-360m	0.49	0.64
1183-122	2365.34-.39m CORE	0.58	0.66
1183-126	2405.35-.40m CORE	0.66	0.73
1183-130	2423.02-.08m CORE	0.69	0.66
1183-133	2428.30-.35m CORE	0.61	0.68
1183-135	2441.05-.10m CORE	0.52	0.66
1183-137	2444.60-.65m CORE	0.55	0.68
1183-139	2455.30-.35m CORE	0.64	0.71
1183-141	2462.85-.90m CORE	0.65	0.82
1183-142	2467.20-.25m CORE	0.73	0.73
1183-145A	2479.17-.21m CORE	0.56	0.62
1183-147A	2487.62-.66m CORE	0.52	0.60
1183-150A	2501.32-.36m CORE	0.58	0.70
1183-152	2502.76-.81m CORE	0.71	0.70
1183-154A	2513.60-.64m CORE	0.51	0.56
1183-158A	2519.85-.90m CORE	0.47	0.53
1183-172A	2675-690m	0.60	0.65
1183-177A	2735-750m	0.56	0.65
1183-183A	2810-825m	0.70	0.69
1183-195A	2975-990m	0.82	0.83
1183-203A	3077.1m SWC	0.96	0.98
1183-219	3185-200m	0.50	0.61

TABLE 8a

CONCENTRATION (PPM) OF EXTRACTED C_{15+} MATERIAL IN ROCK

GEOCHEM SAMPLE NUMBER	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
			Paraffin - Naphthenes	Aromatics	TOTAL	Precipitd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	Sulphur
1183-031	1100	178	72	26	98	38	35	7	0
1183-096	2015-2030	347	59	66	125	172	49	0	0
1183-107A	2165-2180	342	102	104	206	66	65	5	0
1183-114A	2270-2285	1065	246	264	509	185	360	10	0
1183-116	2300-2315	3217	1725	848	2573	293	338	13	0
1183-1180	2315-2330	7182	3674	2004	5677	503	953	50	0
1183-119A	2330-2345	4117	1586	1427	3014	591	493	19	0
1183-120	2345-2360	3989	1638	1495	3133	428	391	37	0
1183-122	2365.34	452	266	59	325	82	44	1	0
1183-126	2405.35	514	331	94	425	40	42	6	0
1183-130	2423.02	3235	2362	617	2979	86	157	12	0
1183-1233	2428.30	8943	1730	5117	6847	146	1906	43	0
1183-135A	2441.05	3013	767	882	1649	1042	294	27	0
1183-137	2444.60	2560	1249	872	2122	203	209	27	0
1183-139	2455.30	7898	5541	1312	6854	409	628	7	0
1183-141	2462.85	2612	648	1053	1702	646	238	27	0
1183-142	2467.20	4725	3316	887	4202	54	406	62	0
1183-145A	2479.17	1685	479	576	1055	307	303	21	0
1183-147A	2487.562	2511	1202	809	2011	194	276	30	0
1183-150A	2501.32	1651	439	806	1245	181	207	18	0
1183-152	2502.76	8827	5679	1961	7640	301	853	34	0
1183-154A	2513.60	1372	305	510	816	234	305	17	0
1183-158A	2519.85	673	228	235	463	99	109	3	0
1183-172A	2675-2690	631	423	105	528	43	53	7	0
1183-177A	2735-2750	433	184	142	326	50	57	1	0
1183-183A	2810-2825	145	102	12	114	23	7	1	0
1183-195A	2975-2990	316	217	26	243	26	40	7	0
1183-203A	3077.1	867	167	144	311	367	167	22	0
1183-219	3185-3200	391	264	50	314	33	39	4	0

TABLE 8b

COMPOSITION (NORMALISED %) OF C_{15+} MATERIAL EXTRACTED FROM ROCK

GEOCHEM SAMPLE NUMBER	DEPTH	HYDROCARBONS		NON HYDROCARBONS			
		Paraffin – Naphthenes	Aromatics	Precipitd. Asphaltenes	Eluted NSO's	Non eluted NSO's	Sulphur
1183-031	1100	40.70	14.48	21.53	19.57	3.72	0.00
1183-096	2015-2030	16.93	19.12	49.61	14.21	0.13	0.00
1183-107A	2165-2180	29.71	30.43	19.32	19.08	1.45	0.00
1183-114A	2270-2285	23.07	24.77	17.39	33.84	0.93	0.00
1183-116	2300-2315	53.63	26.36	9.10	10.51	0.40	0.00
1183-1180	2315-2330	51.15	27.90	7.00	13.27	0.69	0.00
1183-119A	2330-2345	38.54	34.67	14.36	11.98	0.46	0.00
1183-120	2345-2360	41.06	37.49	10.72	9.81	0.92	0.00
1183-122	2365.34	58.83	12.97	18.23	9.77	0.19	0.00
1183-126	2405.35	64.44	18.35	7.82	8.25	1.14	0.00
1183-130	2423.02	73.03	19.08	2.66	4.86	0.38	0.00
1183-1233	2428.30	19.35	57.22	1.63	21.32	0.48	0.00
1183-135A	2441.05	25.45	29.29	34.59	9.76	0.91	0.00
1183-137	2444.60	48.80	34.06	7.91	8.16	1.06	0.00
1183-139	2455.30	70.16	16.62	5.18	7.95	0.09	0.00
1183-141	2462.85	24.83	40.33	24.72	9.10	1.03	0.00
1183-142	2467.20	70.17	18.77	1.15	8.59	1.32	0.00
1183-145A	2479.17	28.43	34.16	18.20	17.96	1.25	0.00
1183-147A	2487.562	47.88	32.21	7.73	10.99	1.20	0.00
1183-150A	2501.32	26.58	48.84	10.97	12.52	1.08	0.00
1183-152	2502.76	64.34	22.21	3.41	9.66	0.38	0.00
1183-154A	2513.60	22.26	37.20	17.07	22.26	1.22	0.00
1183-158A	2519.85	33.83	34.96	14.66	16.17	0.38	0.00
1183-172A	2675-2690	67.06	16.70	6.81	8.35	1.09	0.00
1183-177A	2735-2750	42.46	32.76	11.44	13.17	0.17	0.00
1183-183A	2810-2825	70.31	8.20	16.02	4.69	0.78	0.00
1183-195A	2975-2990	68.81	8.25	8.09	12.71	2.15	0.00
1183-203A	3077.1	19.23	16.67	42.31	19.23	2.56	0.00
1183-219	3185-3200	67.65	12.79	8.52	10.05	0.98	0.00
1183-001	DST 1 2436-2439	80.28	14.51	2.04	2.94	0.18	0.06

TABLE 9

SIGNIFICANT RATIOS (%) OF C_{15+} FRACTIONS AND ORGANIC CARBON

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS / TOTAL EXTRACT	HYDROCARBONS / ORG. CARBON	TOTAL EXTRACT / ORG. CARBON	P-NAPHTHENES / AROMATICS
1183-031	1100	0.94	55.19	1.04	1.89	2.81
1183-096	2015-2030	2.11	36.05	0.59	1.64	0.89
1183-107A	2165-2180	1.46	60.14	1.41	2.35	0.98
1183-114A	2270-2285	4.63	47.84	1.10	2.30	0.93
1183-116	2300-2315	3.90	79.99	6.60	8.25	2.03
1183-1180	2315-2330	6.40	79.04	8.87	11.22	1.83
1183-119A	2330-2345	10.70	73.20	2.82	3.85	1.11
1183-120	2345-2360	8.72	78.55	3.59	4.57	1.10
1183-122	2365.34	0.11	71.80	29.53	41.13	4.54
1183-126	2405.35	0.07	82.79	60.78	73.41	3.51
1183-130	2423.02	0.11	92.10	270.82	294.05	3.83
1183-1233	2428.30	0.09	76.57	760.83	993.62	0.34
1183-135A	2441.05	3.77	54.74	4.37	7.99	0.87
1183-137	2444.60	1.58	82.86	13.43	16.21	1.43
1183-139	2455.30	0.18	86.78	380.77	438.80	4.22
1183-141	2462.85	5.12	65.15	3.32	5.10	0.62
1183-142	2467.20	0.15	88.94	280.14	314.98	3.74
1183-145A	2479.17	8.85	62.59	1.19	1.90	0.83
1183-147A	2487.562	5.14	80.09	3.91	4.89	1.49
1183-150A	2501.32	19.20	75.43	0.65	0.86	0.54
1183-152	2502.76	0.08	86.55	954.99	*.**	2.90
1183-154A	2513.60	8.65	59.45	0.94	1.59	0.60
1183-158A	2519.85	3.32	68.80	1.40	2.03	0.97
1183-172A	2675-2690	0.23	83.76	22.97	27.43	4.02
1183-177A	2735-2750	1.83	75.22	1.78	2.37	1.30
1183-183A	2810-2825	0.19	78.52	5.99	7.63	8.57
1183-195A	2975-2990	0.18	77.06	13.51	17.53	8.34
1183-203A	3077.1	3.98	35.90	0.78	2.18	1.15
1183-219	3185-3200	0.45	80.44	6.98	8.68	5.29

TABLE 10

COMPOSITION (NORMALISED %) OF C_{15+} PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-031	-096	-107A	-114A	-116	-118	-119A	-120
DEPTH	1100m SWC	2015-2030m	2165-2180m	2270-2285m	2300-2315m	2315-2330m	2330-2345m	2345-2360m
SAMPLE TYPE								
nC_{15}	12.88	2.12	15.53	22.19	10.87	12.01	14.01	1.02
nC_{16}	14.06	4.44	15.28	15.96	8.17	9.66	13.41	1.70
nC_{17}	9.12	5.80	10.10	12.74	8.49	8.74	12.26	2.81
nC_{18}	7.74	7.97	7.48	7.43	7.57	8.40	3.19	3.77
nC_{19}	6.37	7.71	7.64	6.79	8.11	8.91	8.86	5.42
nC_{20}	5.79	7.12	5.36	4.57	6.22	6.79	6.21	5.97
nC_{21}	3.21	6.55	4.32	3.97	5.84	5.91	5.53	6.11
nC_{22}	4.48	6.84	4.69	3.68	5.98	5.92	5.61	8.37
nC_{23}	3.15	7.38	4.35	3.55	5.41	4.85	4.54	8.39
nC_{24}	3.41	5.63	4.28	3.12	5.29	5.43	4.65	9.60
nC_{25}	4.69	6.79	4.22	3.15	5.08	4.66	4.30	9.15
nC_{26}	3.43	4.97	3.18	2.34	3.37	3.41	2.87	7.69
nC_{27}	4.90	4.57	2.99	2.30	3.54	2.83	2.37	6.63
nC_{28}	2.84	3.78	2.19	1.65	2.94	2.58	2.22	5.35
nC_{29}	3.02	3.99	2.09	1.70	2.98	2.24	2.01	4.44
nC_{30}	1.95	3.54	1.54	1.32	2.11	1.50	1.42	2.98
nC_{31}	2.30	2.10	0.98	1.01	1.65	1.20	0.83	2.52
nC_{32}	1.34	1.67	1.24	0.63	1.72	1.22	1.05	1.87
nC_{33}	2.20	2.57	1.33	0.88	1.75	1.13	1.37	2.26
nC_{34}	1.86	2.28	0.59	0.58	1.63	1.51	1.71	2.33
nC_{35}	1.24	2.18	0.62	0.45	1.28	1.10	1.58	1.61
PARAFFIN	9.46	13.53	18.29	18.46	15.76	17.96	9.32	22.46
ISOPRENOID	1.79	2.43	4.09	3.50	3.06	3.22	1.83	1.76
NAPHTHENE	88.75	84.04	77.63	78.04	81.18	78.82	88.86	75.78
CPI INDEX A	1.03	1.11	1.01	1.07	1.04	0.95	0.98	0.97
CPI INDEX B	1.42	1.11	1.09	1.17	1.14	1.05	1.06	1.08
PRISTANE/PHYTANE	2.59	2.88	2.83	3.07	2.49	1.32	1.26	1.24
PRISTANE/nC_{17}	1.50	2.30	1.64	1.12	1.63	1.17	0.89	1.54

TABLE 10

COMPOSITION (NORMALISED %) OF C_{15+} PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-122	-126	-130	-133	-135A	-137
DEPTH	2364.34-2365.39m	2405.35-2405.40m	2423.02-2423.08m	2428.30-2428.35m	2441.05-2441.10m	2444.60-2444.65m
SAMPLE TYPE						
nC_{15}	3.19	0.98	3.21	4.07	7.78	11.34
nC_{16}	3.71	1.89	3.32	4.97	6.76	10.34
nC_{17}	4.47	2.97	4.04	5.34	6.81	7.95
nC_{18}	4.70	3.84	4.53	5.28	6.85	6.36
nC_{19}	5.94	6.07	5.51	6.46	6.71	6.45
nC_{20}	5.81	6.23	5.41	6.14	5.79	5.99
nC_{21}	5.47	6.23	5.34	5.87	5.48	7.10
nC_{22}	6.35	7.63	6.17	6.48	5.85	6.64
nC_{23}	6.69	7.01	6.46	6.07	5.81	7.59
nC_{24}	6.94	9.11	6.55	7.36	6.39	6.33
nC_{25}	7.51	8.48	7.14	7.47	6.29	6.60
nC_{26}	6.85	7.53	7.34	6.72	5.22	3.97
nC_{27}	5.86	6.02	7.43	5.64	4.79	3.82
nC_{28}	5.64	5.20	6.14	5.04	4.43	2.30
nC_{29}	4.60	4.83	5.35	4.42	3.78	1.96
nC_{30}	4.00	3.49	4.02	3.09	2.52	1.17
nC_{31}	2.88	3.02	2.96	2.28	2.02	0.99
nC_{32}	2.25	2.30	1.65	1.89	1.16	0.95
nC_{33}	2.76	2.68	2.80	2.14	2.32	1.00
nC_{34}	2.61	2.65	2.71	1.99	1.96	0.54
nC_{35}	1.75	1.85	1.96	1.29	1.29	0.62
PARAFFIN	20.58	21.76	21.16	25.04	17.20	29.61
ISOPRENOID	1.90	1.81	1.81	2.16	1.95	2.47
NAPHTHENE	77.52	76.43	77.03	72.80	80.86	67.92
CPI INDEX A	0.99	0.93	1.02	0.96	0.99	1.20
CPI INDEX B	1.00	1.04	1.07	1.04	1.09	1.28
PRISTANE/PHYTANE	1.45	1.33	1.49	1.49	2.34	2.39
PRISTANE/nC_{17}	1.23	1.60	1.27	0.97	1.16	0.74

TABLE 10

COMPOSITION (NORMALISED %) OF C_{15+} PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-139	-141	-142	-145A	-147A	-150A
DEPTH	2455.30-2455.35m	2462.85-2462.90m	2467.20-2467.25m	2479.17-2479.21m	2487.62-2487.66m	2501.32-2501.36m
SAMPLE TYPE						
nC_{15}	2.85	11.81	1.71	7.17	3.85	6.00
nC_{16}	3.90	9.33	2.76	8.94	4.62	6.37
nC_{17}	4.58	6.67	3.76	8.72	5.29	6.94
nC_{18}	5.23	5.41	5.48	8.49	5.61	6.76
nC_{19}	6.71	6.16	6.84	8.49	5.93	6.96
nC_{20}	6.75	4.90	6.60	7.88	5.64	6.10
nC_{21}	6.10	5.07	6.50	6.69	6.00	6.02
nC_{22}	6.36	5.35	7.92	6.48	5.58	6.74
nC_{23}	5.39	5.55	7.27	5.77	5.85	6.99
nC_{24}	7.98	6.09	8.80	5.38	6.46	7.43
nC_{25}	8.23	5.98	8.83	4.95	6.85	7.13
nC_{26}	7.05	5.42	6.86	3.47	5.19	5.71
nC_{27}	5.76	4.10	5.93	3.11	5.59	4.48
nC_{28}	5.56	3.91	4.87	2.71	4.12	3.20
nC_{29}	4.33	3.48	3.86	2.26	4.00	3.04
nC_{30}	2.97	3.79	2.63	1.48	2.62	2.30
nC_{31}	2.04	1.25	2.04	0.85	2.18	1.57
nC_{32}	1.32	0.75	1.02	1.74	1.98	1.10
nC_{33}	2.15	2.08	2.27	2.63	5.08	2.43
nC_{34}	2.46	1.99	2.258	2.09	4.84	1.97
nC_{35}	1.75	0.91	1.48	0.71	2.75	0.76
PARAFFIN	21.56	13.93	32.00	31.43	26.52	25.55
ISOPRENOID	1.79	1.04	2.55	2.64	1.42	1.99
NAPHTHENE	76.65	85.03	65.45	65.93	72.07	72.46
CPI INDEX A	0.94	0.97	0.97	1.01	1.10	1.01
CPI INDEX B	1.03	0.92	1.12	1.02	1.18	1.09
PRISTANE/PHYTANE	1.42	2.20	1.12	4.06	4.52	3.38
PRISTANE/nC_{17}	1.06	0.77	1.12	0.77	0.83	0.87

TABLE 10

COMPOSITION (NORMALISED %) OF C_{15+} PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-152	154A	-158A	-172A	-177A	-183A	-195A
DEPTH	2502.76-2502.81m	2513.60-2513.64m	2519.85-2519.90m	2675-2690m	2735-2750m	2810-2825m	2975-2990m
SAMPLE TYPE							
nC_{15}	3.49	6.50	9.14	6.94	12.46	1.54	2.36
nC_{16}	3.62	6.94	7.98	9.25	1.70	3.34	3.29
nC_{17}	4.11	6.74	6.48	6.33	6.66	2.44	4.13
nC_{18}	4.45	7.23	6.56	5.25	5.59	3.32	5.86
nC_{19}	6.36	7.29	6.50	6.75	6.31	5.52	8.74
nC_{20}	6.30	6.54	6.19	6.38	6.02	7.11	7.73
nC_{21}	6.09	5.59	6.13	6.12	5.65	7.93	8.03
nC_{22}	6.94	6.57	5.96	6.89	5.65	9.29	8.82
nC_{23}	6.42	5.88	6.46	6.86	5.62	8.25	6.97
nC_{24}	8.01	6.71	6.13	7.04	6.00	8.83	6.82
nC_{25}	7.72	6.62	6.05	6.69	5.86	10.19	6.62
nC_{26}	6.48	5.71	5.00	5.28	4.87	7.14	5.37
nC_{27}	6.16	4.80	4.58	4.48	4.13	5.40	4.18
nC_{28}	5.30	4.08	3.90	3.64	3.36	4.63	4.40
nC_{29}	4.74	3.52	3.79	3.31	3.28	3.93	3.57
nC_{30}	3.28	2.02	2.57	2.33	2.17	2.97	2.84
nC_{31}	2.55	1.64	2.31	1.94	1.79	2.94	2.76
nC_{32}	1.54	1.43	1.36	1.62	1.38	2.13	2.04
nC_{33}	2.53	1.71	1.45	1.88	1.49	1.82	1.59
nC_{34}	2.41	1.55	0.96	1.89	1.64	1.72	1.88
nC_{35}	1.51	0.94	0.50	1.31	0.83	1.19	1.97
PARAFFIN	24.96	18.83	30.32	26.36	23.34	26.64	18.77
ISOPRENOID	1.88	1.99	1.90	3.66	2.19	1.16	1.09
NAPHTHENE	73.16	79.19	67.79	69.98	74.47	72.19	80.14
CPI INDEX A	0.97	0.94	1.05	1.00	1.01	1.02	0.96
CPI INDEX B	1.10	1.07	1.13	1.09	1.10	1.14	1.03
PRISTANE/PHYTANE	1.28	1.81	3.65	1.79	2.47	1.33	1.36
PRISTANE/nC_{17}	1.03	1.01	0.76	1.41	1.00	1.02	0.81

TABLE 10

COMPOSITION (NORMALISED %) OF C_{15+} PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-203A	-219
DEPTH	3077.1m SWC	3185-3200m
SAMPLE TYPE		
nC_{15}	1.34	17.39
nC_{16}	3.29	14.51
nC_{17}	5.95	10.88
nC_{18}	8.21	8.32
nC_{19}	6.82	8.53
nC_{20}	9.25	6.60
nC_{21}	5.07	5.35
nC_{22}	7.84	4.71
nC_{23}	8.12	3.88
nC_{24}	4.40	3.82
nC_{25}	8.42	3.52
nC_{26}	5.92	2.30
nC_{27}	4.11	2.26
nC_{28}	8.45	1.92
nC_{29}	3.37	1.67
nC_{30}	1.70	1.18
nC_{31}	2.24	0.93
nC_{32}	1.56	0.73
nC_{33}	1.56	0.50
nC_{34}	1.42	0.61
nC_{35}	0.97	0.36
PARAFFIN	11.18	28.99
ISOPRENOID	1.17	2.17
NAPHTHENE	87.65	68.84
CPI INDEX A	0.95	1.02
CPI INDEX B	0.96	1.14
PRISTANE/PHYTANE	1.63	2.28
PRISTANE/nC_{17}	1.09	0.48

TABLE 10

COMPOSITION (NORMALISED %) OF C_{15+} PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-001
DEPTH	DST 1
SAMPLE TYPE	
nC_{15}	6.95
nC_{16}	6.63
nC_{17}	6.64
nC_{18}	6.16
nC_{19}	7.08
nC_{20}	6.51
nC_{21}	5.84
nC_{22}	6.06
nC_{23}	5.85
nC_{24}	6.48
nC_{25}	6.52
nC_{26}	4.81
nC_{27}	4.81
nC_{28}	4.29
nC_{29}	3.51
nC_{30}	2.54
nC_{31}	2.15
nC_{32}	1.50
nC_{33}	2.06
nC_{34}	2.19
nC_{35}	1.42
PARAFFIN	18.81
ISOPRENOID	1.78
NAPHTHENE	79.41
CPI INDEX A	1.01
CPI INDEX B	1.12
PRISTANE/PHYTANE	1.65
PRISTANE/nC_{17}	0.89

TABLE 11

CARBON ISOTOPE RESULTS

$^{o}/_{oo}$ PDB

GEOCHEM SAMPLE NUMBER	DEPTH	SATURATES	AROMATICS	NSO's	ASPHALTENES	TOTAL EXTRACT	KEROGEN
1183-114A	2270-2285m	-29.68	-27.38	-27.48	-27.04	-29.53	-26.37
1183-116A	2300-2315m	-	-	-	-	-	-28.82
1183-120	2345-2360m	-29.04	-27.75	-27.25	-26.96	-28.10	-27.12
1183-135	2441.05-2441.10m	-29.02	-27.45	-26.56	-26.30	-26.65	-26.31
1183-147A	2487.62-2487.66m	-31.32	-27.38	-27.70	-27.12	-29.80	-26.21
1183-172A	2675-2690m	-29.71	-27.62	-27.69	-26.65	-28.84	-
1183-183A	2810-2825m	-30.13	-	-	-	-29.49	-
1183-195A	2975-2990m	-29.08	-28.20	-28.85	-27.55	-28.41	-
1183-001	DST 1	-29.92	-28.03	-27.74	-28.74	-29.31	-

TABLE 12a

MOLECULAR MATURATION PARAMETERS

GEOCHEM SAMPLE NUMBER	DEPTH	STERANES M/Z 217			TRITERPANES M/Z 191		
		~~αααα~~20S	~~αβ~~	Ts/Tm	NORHOPANE	C_{28} BISNORHOPANE	$C_{28,30}$-BISNORHOPANE
					HOPANE + NORHOPANE	C_{28} BISNORHOPANE + C_{29} NORHOPANE	$C_{28,30}$- BISNORHOPANE + $C_{25,28,30}$ TRISNORHOPANE
1183-114	2270-285m	1.06	0.79	0.05	0.45	0.02	*
1183-120	2345-360m	1.28	1.53	1.32	0.27	-	*
1183-135	2441.05-.10m	1.28	1.30	0.47	0.37	0.22	0.36
1183-147	2487.62-.66m	0.84	1.52	0.86	0.26	-	*
1183-172	2675-690m	1.39	1.77	1.00	0.31	0.04	0.70
1183-183	2810-825m	1.22	1.40	1.21	0.33	-	*
1183-195	2975-990m	1.02	1.15	0.81	0.44	0.28	0.28
1183-001	DST 1	1.48	1.80	0.76	0.33	0.08	0.54

* - one or both components not detected

TABLE 12b

GC-MS DATA - INTEGRATED PEAK AREAS

DEMETHYLATED HOPANES (M/Z 177)

GEOCHEM SAMPLE NUMBER	DEPTH	A
1183-114	2270-285m	-
1183-120	2345-360m	-
1183-135	2441.05-.10m	81864
1183-147	2487.62-.66m	-
1183-172	2675-690m	
1183-183	2810-825m	-
1183-195	2975-990m	33090
1183-001	DST 1	2271

TABLE 12c

GC-MS DATA INTEGRATED PEAK AREAS

TERPANES

(MZ 191)

GEOCHEM SAMPLE NUMBER	DEPTH	A	B	C	D	E	F	X	Z	G	H
1183-114	2270-285m	8006	149445	206542	32071	248149	94435	17601	3259	196663	146757
1183-120	2345-360m	13695	10367	21694	1904	59482	4710	5530	-	29952	19348
1183-135	2441.05-.10m	46124	97680	163372	17434	284192	42463	41861	45637	171797	120270
1183-147	2487.62-.66m	13311	154609	21925	1100	63790	4935	16150	-	17760	13725
1183-172	2675-690m	31522	31494	64476	6328	140443	14017	20040	3037	58780	31810
1183-183	2810-825m	12522	10374	14508	913	29239	3658	10556	-	15615	4560
1183-195	2975-990m	27111	33300	33101	13747	42127	10667	8773	13149	21824	11506
1183-001	DST 1	13787	18249	45153	4168	90889	7489	7267	3990	29062	19631

TABLE 12d

GC-MS DATA INTEGRATED PEAK AREAS

STERANES

(MZ 217)

GEOCHEM SAMPLE NUMBER	DEPTH	A	B	Q	R	S	T
1183-114	2270-225m	2385	1591	3105	2317	2034	2941
1183-120	2345-360m	3112	1968	1583	1883	1786	1232
1183-135	2441.05-.10m	3540	2642	8335	8513	8768	6527
1183-147	2487.62-.66m	877	697	602	1093	946	718
1183-172	2675-690m	27181	22302	15727	20045	17479	11300
1183-183	2810-825m	7500	6427	3794	4352	5347	3101
1183-195	2975-990m	32884	24546	16398	18587	19560	16143
1183-001	DST 1	9034	6971	7994	9703	8668	5384

TABLE 12e

GC-MS DATA INTEGRATED PEAK AREAS

STERANES

MZ 218

GEOCHEM SAMPLE NUMBER	DEPTH	A	B	C	D	E	F	Q	T
1183-114	2270-285m	1890	1312	1079	1147	1821	2253	1231	1204
1183-120	2345-360m	1809	1237	1200	1225	1528	1786	695	586
1183-135	2441.05-.10m	6053	1797	3360	3082	8713	9311	3697	2215
1183-147	2487.62-.66m		A and B NOT SPLIT						
1183-172	2675-690m	20892	16190	12203	16015	16425	22607	7035	5392
1183-183	2810-825m	4614	2649	2713	3036	4298	4870	1582	1535
1183-195	2975-990m	28268	22059	20621	23209	23940	30952	10224	11044
1183-001	DST 1	15709	12262	11077	12464	16479	21425	7162	4705

7121/5-1

3

T./H. Geochem Eval.
rec. 25.3.86.

TABLE 13

DETAILED GASOLINE (C_2-C_7) ANALYSIS

GEOCHEM SAMPLE NUMBER	-001
DEPTH	DST-1 2436-2439m
ethane	0.21
propane	1.82
isobutane	1.24
n-butane	4.45
isopentane	4.36
n-pentane	5.86
2,2-dimethylB	0.34
cyclopentane	1.55
2,3-dimethylB	0.27
2-methylP	3.62
3-methylP	2.35
n-hexane	6.61
methylCP(MCP)	5.11
2,2-dimethylP	0.37
2,4-dimethylP	0.09
2,2,3-trimethylB	0.19
benzene	6.59
cyclohexane(CH)	7.26
3,3-dimethyl P	-
1,1-dimethylCP	-
2-methylH	3.29
2,3-dimethylP	0.48
3-methylH	2.86
1,c,3-dimethylCP	1.09
1,t,3-dimethylCP	1.04
1,t,2-dimethylCP	1.96
3-ethylP	-
n-heptane	7.63
methylCH(MCH)	15.07
1,c,2-dimethylCP	-
toluene	14.28
nC7/C7nap x 100	39.83
MCP/Bz	0.78
MH/DMCP	1.51
nC6/MCP	1.29
%n-PARAFFINS	25.05
%iso-PARAFFINS	19.88
% PARAFFINS	33.76
% AROMATICS	21.31

Institute for energy technology

	KJELLER	HALDEN
ADDRESS	N-2007 Kjeller, Norway	N-1751 Halden, Norway
TELEPHONE	+47 2 712560 - 713560	+47 31 83100
TELEX	74 573 energ n	76 335 energ n
TELEFAX	+47 2 715553	

AVAILABILITY

Private
Confidential

REPORT TYPE

REPORT NO.
IFE/KR/F-85/181

DATE
1985-12-18

REPORT TITLE

REPORT ON STABLE ISOTOPES ($\delta^{13}C$, δD, $\delta^{18}O$) ON A NATURAL GAS FROM WELL 7121/5-1

DATE OF LAST REV.

REV. NO.

CLIENT
Statoil

NUMBER OF PAGES
4

CLIENT REF.
T-6269, avrop nr. 62

NUMBER OF ISSUES
15

SUMMARY

The gas components C_1-C_4 and CO_2 have been separated from the natural gas of well 7121/5-1 and the $\delta^{13}C$ values of these components have been measured. The isotopic composition of hydrogen from CH_4 has also been measured.

DISTRIBUTION

Statoil 10
Andresen, B.
Brevik, E.M.
Råheim, A.

KEYWORDS

	NAME	DATE	SIGNATURE
PREPARED BY	Bjørg Andresen	1985-12-18	Bjørg Andresen
	Einar Brevik	1985-12-18	Einar Brevik
	Arne Råheim	1985-12-18	Arne Råheim
REVIEWED BY			
APPROVED BY	Karen Garder	1985-12-18	Karen Garder

1. ANALYTICAL PROCEDURE

The natural gas has been separated into the different gas components by a Carlo-Erba 4200 instrument. This gas chromatograph is equipped with a special injection loop in order to concentrate the samples, in the case of low concentration of the gas components. The hydrocarbon gas components were oxidized in separate CuO-ovens in order to prevent cross contamination. The combustion products CO_2 and H_2O were frozen into collection vessels and separated.

The water was reduced with zinc metal in a sealed tube to prepare hydrogen for isotopic analysis. The isotopic measurements were performed on a Finnigan Mat 251 mass spectrometer. Our $\delta^{13}C$ value on NBS-22 is -29.77 $\pm$ .06 o/oo.

2. RESULTS

The composition of the sample are given in Table 1. The results have not been normalized to 100%. The rest is air. The stable isotope results are given in Table 2.

Our uncertainty on the $\delta^{13}C$ value is estimated to be $\pm$ 0.3 o/oo and includes all the different analysis step. The uncertainty on the δD value is likewise estimated to be $\pm$ 5 o/oo.

Table 1 Composition of a natural gas from well 7121/5-1

Sample	C_1 %	C_2 %	C_3 %	i-C_4 %	n-C_4 %	CO_2 %
7121/5-1 DST 1	76	7.7	4.4	0.6	1.3	2.2

Table 2 Isotopic composition of a natural gas from well 7121/5-1

Sample	C_1		C_2	C_3	i-C_4	n-C_4	CO_2	
	$\delta^{13}C$	δD SMOW	$\delta^{13}C$	$\delta^{13}C$	$\delta^{13}C$	$\delta^{13}C$	$\delta^{13}C$	$\delta^{18}O$ PDB
7121/5-1 DST 1	-43.1	-160	-32.6	-31.3	-23.9	-30.9	-16.2	-15.8

* James, Alan T. (1983): Correlation of Natural Gas by Use of Carbon Isotopic Distribution between Hydrocarbon Components, AAPG, Vol. 67, No. 7, July 1983.

** Schoell, M. (1983): Genetic Characterization of Natural Gases, AAPG, December 1983.