

Doc. no.  
00S94\*4737  
Date  
2000-06-07

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Depth in MD RKB	Sample Content	Sample Size	Chamber Code (S/S/SLING)	Shut-in Pressure	Shut-in Temp	Pump-out Effect	Seal/Temp Dr. W. Obs'd	Mobility	Isolation			Operating Pressure Bar	Comments
									Down	Start	Stop		
2 626	Water	450 cc	MPSR#931	262	104	24	0.8 bar	930	17.12.99	14:23	14:24		Overpressured w. 275 bar Sent to PVT lab
2 626	Water	450 cc	MPSR#970	262	104	25	0.8 bar	930	17.12.99	14:24	14:25		Overpressured w. 275 bar. Sent to PVT lab.
2 626	Water	1 gal	MRSC-GA166	261	104	28	0.8 bar	930	17.12.99	14:27	14:32		Overpressured w. 275 bar. Transferred to 3 x 600 cc PVT bottles (no. 5834-MA, 5843-EA, 1555-EA), 1550 cc water drained and filled into atmospheric bottles. (1 litre water + water PAX)

\*Cleanup done in two stages for MRSC-GA165 due to tool shut down. OFA values identical for both clean up phases.

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Table 5.2: Sample overview

Depth m MD RKB	Sample Content	Sample Size	Character Code & Serial No.	Shut-in Pressure	Shut-in Temp	Pump Volume liters	Avg. Pump Drawdown	Mobility	Sampling			Opening Pressure bar	Comments
									Date	Start	Stop		
2 382	Gas	250 cc	SPMC#093	253	92	95	0.1 bar	3 826	16.12.99	15:15	15:16	413	15 vol% base oil contamination (vol% of condensate volume). Drained offshore
2 382	Gas	450 cc	MPSR#802	253	92	95	0.1 bar	3 826	16.12.99	15:20	15:21		Over pressured w. 275 bar- Sent to PVT lab (not transferred)
2 382	Gas	250 cc	SPMC#097	253	92	100	0.1 bar	3 826	16.12.99	15:29	15:30	393	Transferred to PVT bottle 2310-EA
2 382	Gas	450 cc	MPSR#36	253	93	105	0.1 bar	3 826	16.12.99	15:31	15:32		Overpressured w. 275 bar. Sent to PVT lab.
2 382	Gas	250 cc	SPMC#099	253	93	110	0.1 bar	3 826	16.12.99	15:45	15:46	386	Transferred to PVT bottle 2040-EA
2 382	Gas	450 cc	MPSR#605	253	93	115	0.1 bar	3 826	16.12.99	15:52	15:54		Overpressured w. 275 bar. Sent to PVT lab
2 382	Gas	450 cc	MPSR#710	253	93	120		3 826	16.12.99	16:01	16:05		No indication firing
2 382	Gas	2 3/4 gal	MRSC-JA113	253	93	123	0.1 bar	3 826	16.12.99	16:12	16:25	207	Overpressured w. 275 bar. Transferred to 3x 600 cc PVT bottle (no. 4813-EA, 5153-EA, 5820-MA) and 4x250 cc geochemistry bottles (no. 98-06, 41, 93-7, 98-09), Rest drained offshore (1.954 m3 gas, 625 cm3 cond)
2 382	Gas	1 gal	MRSC-GA194	253	93	143	0.1 bar	3 826	16.12.99	16:34	16:40	207	Overpressured w. 275 bar. Transferred to PVT bottle 4471-EA, 5237-EA, 5159-EA
2 581	Oil	250 cc	SPMC#100	258	102	88	0.1 bar	1 860	17.12.99	01:16	01:17		Empty (to be investigated onshore). All valves in MDT tool in correct position during sampling, checked at surface.
2 581	Oil	250 cc	SPMC#103	258	102	93	0.1 bar	1 860	17.12.99	01:24	01:28		Empty (to be investigated onshore). All valves in MDT tool in correct position during sampling, checked at surface.
2 581	Oil	450 cc	MPSR#712	258	103	98	0.1 bar	1 860	17.12.99	01:42	01:45		Overpressured w. 275 bar. Sent to PVT lab.
2 581	Oil	1 gal	MRSC-GA165	258	102	98+31*	0.1 bar	1 860	17.12.99	03:01	03:08	129	Overpressured w. 275 bar. Transferred to 3 x 600 cc PVT bottle (no. 5313-EA, 5233-EA, 4458-EA) + 2x250 cc geochemistry bottles (no. 34, 89-11). Pb = 172 bar at ?? C

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**COMMENTS:**

15 vol% base oil contamination in SPMC 093, taken in the gas zone at 2382.5 m. (vol% of condensate volume)

2x250 cm<sup>3</sup> SPMC taken in the oil zone were empty (SPMC 100 ans 103).

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												sample with probe 2 (large diam.).
31		2581.0	2554.37	258.677	258.677	1.02	393.70	-	CQGC576	-	102.7	Power shut down during sampling, new pretest before cont sampling.
FORMATION PRESSURE -MDT WELL: 64076-3					RUN: 1A, TLC			DATE: 15.12.99 - 17.12.99				
TST #	DEPTH mMD RT	DEPTH m TVD MSL	INIT. RES. PRESS (BAR)	RES. PRESS (BAR) HP-gauge	PORE PRESS GRAD. (g/cm3) ref. RT	HYD. PRESS BEFORE (BAR)	HYD PRESS AFTER (BAR)	PRESS GAUGE	MOB. mD/CP	TEMP °C	COMMENTS	
<b>PASS 2</b>												
32	2626.1	2599.46	262.691	262.691	1.02	398.09	398.10	CQGC576	-	104.4	Water sampling, very good permeability	
33	2617.0	2590.36	-	-	-	395.45	395.73	CQGC576	-	104.6	Tight Fm. Log indicates good sst. at this depth. Log probably off depth due to rig heave.	
34	2618.0	2591.36	261.761	261.761	1.02	395.54	395.97	CQGC576	93	104.5	Good	
35	2623.0	2596.36	262.388	262.388	1.02	396.75	397.01	CQGC576	930	104.4	Very good	
Number of pretests: 35				Good pretests: 28 (4 of these are PT prior to sampling), tight: 2, suspicious reading: 5				Number of samples: 5 x 250 cm <sup>3</sup> , 5 x 450 cm <sup>3</sup> , 3 x 1 gal, 1 x 2 3/4 gal				
Hydrostatic gradient to surface: 1.55 g/cm <sup>3</sup>												
Hydrostatic gradient in logging interval: 1.55 g/cm <sup>3</sup>												
Max. pore pressure gradient in interval ref. RT: 1.09 g/cm <sup>3</sup>												
Min. pore pressure gradient in interval ref. RT: 1.02 g/cm <sup>3</sup>												

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TST #	DEPTH mMD RT	DEPTH m TVD MSL	INIT. RES. PRESS (BAR)	RES. PRESS (BAR) HP- gauge	PORE PRESS GRAD. (g/cm3) ref. RT	HYD. PRESS BEFORE (BAR)	HYD PRESS AFTER (BAR)	PRESS GAUGE	MOB. mD/CP	TEMP °C	COMMENTS	
16	2515.5	2488.9	256.676	256.676	1.04	381.16	381.39	CQGC215	1338	95.5	Very good	
FORMATION PRESSURE -MDT WELL: 64076-5				RUN: 1A, TLC			DATE: 15/12/99 - 17/12/99					
17	2534.0	2507.4	257.130	257.130	1.04	384.63	384.90	CQGC215	3839	97.1	Very good	
18	2541.0	2514.4	257.293	257.293	1.03	384.87	385.24	CQGC215	2823	97.5	Very good	
19	2545.5	2518.87	257.405	257.405	1.03	384.93	385.46	CQGC215	1180	97.8	Very good	
20	2549.5	2522.87	257.524	257.524	1.03	386.07	386.53	CQGC215	4490	98.4	Very good	
21	2556.0	2529.37	257.711	257.711	1.03	386.79	387.49	CQGC215	215	98.9	Gauge not stable	
22	2556.0	2529.37	257.697	257.697	1.03	387.62	387.89	CQGC215	2245	99.9	Very good	
23	2581.0	2554.37	258.797	258.797	1.02	391.96	391.96	CQGC215	1506	100.9	Suspicious pressure reading	
24	2582.5	2555.87	258.921	258.921	1.02	392.37	392.36	CQGC215	2187	101.1	Suspicious pressure reading	
25	2584.0	2557.37	259.171	259.171	1.02	390.90	391.40	CQGC215	425	101.2	Suspicious pressure reading	
26	2585.5	2558.87	260.010	260.010	1.03	392.20	392.33	CQGC215	1088	101.4	Suspicious pressure reading	
27	2581.0	2554.37	258.632	258.632	1.02	391.09	391.40	CQGC576	1116	101.6	Very good. Change to probe2 (large diam).	
28	2582.5	2555.87	258.728	258.728	1.02	391.96	392.06	CQGC576	1437	101.8	Very good. Probe 2.	
29	2584.0	2557.37	258.797	258.797	1.02	391.11	391.49	CQGC576	1860	101.8	Very good. Probe 2.	
30	2581.0	2554.37	258.644	258.644	1.02	392.08	-	CQGC576	-	-	Very good . oil	

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Table 5.1: Formation pressure measurements

FORMATION PRESSURE - MDT WELL: 64076-5				RUN: IA, TLC			DATE: 15:12:99 - 17:12:99				
TST #	DEPTH mMD RT	DEPTH m TVD MSL	INIT. RES. PRESS (BAR)	RES. PRESS (BAR) HP- gauge	PORE PRESS GRAD. (g/cm3) ref .RT	HYD. PRESS BEFORE (BAR)	HYD PRESS AFTER (BAR)	PRESS GAUGE	MOB. mD/CP	TEMP °C	COMMENTS
<b>PASS 1</b>											
1	2380.5	2353.9	-	-	-	362.12	362.35	CQGC215	-	-	Tight
2	2382.0	2355.4	253.360	253.360	1.09	363.07	363.30	CQGC215	2228	90.2	Very good
3	2386.0	2359.4	253.470	253.470	1.08	362.88	363.32	CQGC215	3022	90.5	Very good
4	2392.0	2365.4	253.640	253.640	1.08	363.97	364.30	CQGC215	3316	90.8	Very good
5	2395.0	2368.4	253.690	253.690	1.08	364.16	364.53	CQGC215	3468	91.1	Very good
6	2399.0	2372.4	253.760	253.760	1.08	364.37	364.67	CQGC215	1149	91.4	Very good
7	2403.0	2376.4	253.855	253.855	1.08	364.50	364.94	CQGC215	5700	91.7	Very good
8	2408.0	2381.4	253.965	253.965	1.08	364.66	365.24	CQGC215	50	91.8	Fair
9	2412.0	2385.38	254.104	254.104	1.07	365.85	366.32	CQGC215	23	92.0	Plugging affects mobility. PT OK
10	2418.0	2391.38	254.272	254.272	1.07	367.80	367.90	CQGC215	3778	92.1	Very good
11	2425.5	2398.88	254.426	254.426	1.07	368.86	369.00	CQGC215	1682	92.2	Very good
12	2434.0	2407.38	254.637	254.637	1.07	369.87	370.03	CQGC215	1361	92.5	Very good
13	2443.0	2416.38	254.880	254.880	1.06	371.02	371.20	CQGC215	324	-	Good perm.
14	2382.5	2355.88	253.378	253.378	1.08	361.46	363.87	CQGC215	3827	93.6	gas sample. Very good .
15	2495.0	2468.37	256.806	256.806	1.05	378.10	378.54	CQGC215	158	94.9	Suspicious pressure reading

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There are uncertainties in log depths (+/- 1 m) due to severe rig heave and insufficient heave compensation when running MDT on drill pipe (rig was not equipped with active heave compensator)

Well: 6407/6-5  
 Field: Mikkel  
 Rig: Byford Dolphin

**DRILLING FLUIDS PROGRAM**

HOLE		CASING		MUD TYPE	MW [SG]	LGS [KG/m <sup>3</sup> ]	10 sec. [Pa]	10 min. [Pa]	Fann 100 rpm	Fann 3 rpm	O / W ratio	PV [mPa]	API FL [ml]	HTHP FL [ml]	MBT [KG/m <sup>3</sup> ]	pH	Ex llme [KG/m <sup>3</sup> ]	Stab [V]	WPA	DFE [%]	Total Volume Old Volume New Volume Usage [m <sup>3</sup> ]	
SIZE	TVD MD	SIZE	TVD MD																			
36"	312	30"	310	Bentonite/seawater	1.03-1.35	na	na	na	na	na	na	na	na	na	na	9-10	na	na	na	na	na	553,9 0 553,9 152,6
				Comments: This section was drilled using seawater/bentonite high viscosity sweeps to clean the hole. At TD a 40 m3 pill was swept around and the hole displaced to 1.35 s.g.																		
17 1/2"	423 423	13 3/8"	421 421	Bentonite/seawater	1.03-1.40	na	na	na	na	na	na	na	na	na	na	9-10	na	na	na	na	na	1079,5 192 887,5 756,5
				Comments: A 12 1/4" pilot hole was drilled and opened to 17 1/2" using bentonite mud for the gas interval and hi vis for holecleaning. 1.20 s.g. mud was used to drill into a shallow gas interval. The 17 1/2" hole was displaced to 1.25s.g.																		
12 1/4"	1202 1202	9 5/8"	1193 1193	KCl/PAC	1,20-1,23	50-60	5-8	11-17	na	8-9	na	10-14	7-10	na	50-60	8	na	na	na	na	na	639 323 316 639
				Comments: 323 M3 of Bentonite/seawater mud from previous section was used to drill out cement and then dumped as the well was displaced to a light KCl/PAC system due the reactive and wet shales. This system stabilised the well and proved cost efficient compared to drilling with Bentonite/seawater and riser installed.																		
8 1/2"	2759 2759			Versavert OBM	1,56	50-100	5-8	7-10	21-26	7-8	72/28-79/24	24-47	na	1-2	na	na	6-9	5-1100	0,85-0,9			336,7 0 336,7 179,7
				Comments: Prior to starting section, all excess WBM was dumped and pits cleaned out. Displaced well to 1,51 sg Versavert OBM while drilling out the shoe. Performed LOT to 1.63 sg and weighed up active to 1.55 sg. Drilling commenced with focus on keeping ECD levels and fluid loss at an absolute minimum. An increase in PV towards the end of the section came as a result of having to use coarser size screens due sand blinding in especialle the Tllje formation. No problems while drilling or logging related to drilling fluids were observed.																		



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B400-1269-1

**Geochemical evaluation of well 6407/6-5**

**LUT-GEO1500**

## 1 INTRODUCTION

This report presents the results of a geochemical evaluation of the 6407/6-5 well, Mikkell Field, offshore mid-Norway (Figure 1).

The well section is near vertical, with only a 1.5m difference between MD and TVD at TD. Water-based mud was used to drill the 12¼" section from 421m to 1203m MDRT, with bentonite used from 421m to 548m MDRT and KCL for the remainder of the section. Oil-based mud was used to drill the 8½" section from 1203m to 2759m MDRT (TD).

The total numbers of analyses carried out during the course of the study are as follows:

Analysis	Cuttings	Cores	MDT Fluids	Muds	Total
Sample preparation	57	36			93
TOC content	47	2			49
Rock-Eval	47	36			83
Vitrinite reflectance	14	2			16
Visual kerogen	10	2			12
Pyrolysis-GC	10				10
Solvent extraction		10		2	12
Asphaltene precipitation		1	2	1	4
Iatroscan			2		2
MPLC separation		1	2	1	4
Topping			2		2
Whole oil/extract GC		10	2	2	14
Saturate GC		1	2		3
Aromatic GC			2		2
Saturate GC-MS		1	2	1	4
Aromatic GC-MS			2		2
Carbon isotopes			2		2
Gas composition			2		2
Gas isotopes			2		2

Full details of the analytical programme on a sample-by-sample basis are presented in Table 1. The analyses were carried out by Geolab Nor a.s., with the exceptions of the vitrinite reflectance and gas analyses, which were carried out by IFE. All analytical work was performed in accordance with the guidelines given in "The Norwegian Industry Guide to Organic Geochemical Analyses, 3rd edition (1993)". The analytical data are presented in Appendix 1.

	Sample Depth	Sample Type	Extraction Cleaning	Lithology Description	Vitrinite Reflectance	Kerogen Description	TOC Content	Rock-Eval	Pyrolysis-GC	Whole Oil/Extract GC	Solvent Extraction	Bulk Composition	Saturate GC	Aromatic GC	Saturate GC-MS	Aromatic GC-MS	Carbon Isotopes	Gas Composition	Gas Isotopes
Rock Samples																			
	600	Cuttings		x	x	x													
	900	Cuttings		x	x	x													
	1200	Cuttings		x	x														
	1350	Cuttings		x	x	x													
	1550	Cuttings		x	x														
	1750	Cuttings		x	x	x													
	1970	Cuttings		x	x														
	2070	Cuttings		x	x	x													
	2170	Cuttings		x	x														
	2270	Cuttings		x	x														
	2340	Cuttings	x	x		x	x	x											
	2350	Cuttings	x	x			x	x											
	2360	Cuttings	x	x			x	x	x										
	2370	Cuttings	x	x	x	x	x	x	x										
	2375	Cuttings	x	x			x	x	x										
	2380	Cuttings	x	x			x	x	x										
	2460	Cuttings	x	x			x	x											
	2463	Cuttings	x	x			x	x											
	2466	Cuttings	x	x			x	x											
	2469	Cuttings	x	x	x	x	x	x											
	2472	Cuttings	x	x			x	x											
	2478	Cuttings	x	x			x	x											
	2481	Cuttings	x	x			x	x											
	2484	Cuttings	x	x			x	x	x										
	2496.40	Core, sst		x				x											
	2497.86	Core, sh		x	x	x	x	x											
	2499.12	Core, sst		x				x											
	2504.90	Core, sst		x				x											
	2506.56	Core, sst		x				x											
	2511.38	Core, sst		x				x											
	2517.64	Core, sst		x				x											
	2520.73	Core, sst		x				x											
	2532.66	Core, sst		x				x											
	2534.97	Core, sst		x				x											
	2537.42	Core, sst		x				x											
	2541.21	Core, sst		x				x											
	2544.39	Core, sst		x				x											
	2546.70	Core, sst		x				x											
	2551.76	Core, sst		x				x	x	x									
	2555.17	Core, sst		x				x											
	2558.94	Core, sst		x				x											
	2564.13	Core, sst		x				x											
	2566.38	Core, sst		x				x											
	2569.12	Core, sst		x				x											
	2570.07	Core, sst		x				x	x	x									
	2576.20	Core, sh		x	x	x	x	x											
	2577.33	Core, sst		x				x	x	x									
	2578.30	Core, sst		x				x											
	2579.06	Core, sst		x				x	x	x									
	2579.53	Core, sst		x				x	x	x									
	2580.59	Core, sst		x				x											
	2581.80	Core, sst		x				x											
	2583.60	Core, sst		x				x	x	x	x	x			x				

Table 1 Geochemical analytical programme

Sample Depth	Sample Type	Extraction Cleaning	Lithology Description	Vitrinite Reflectance	Kerogen Description	TOC Content	Rock-Eval	Pyrolysis-GC	Whole Oil/Extract GC	Solvent Extraction	Bulk Composition	Saturate GC	Aromatic GC	Saturate GC-MS	Aromatic GC-MS	Carbon Isotopes	Gas Composition	Gas Isotopes
2584.82	Core, sst		x				x											
2585.51	Core, sst		x				x		x	x								
2586.41	Core, sst		x				x		x	x								
2586.85	Core, sst		x				x		x	x								
2594.76	Core, sst		x				x											
2595.26	Core, sst		x				x		x	x								
2595.78	Core, sst		x				x											
2601	Cuttings	x	x			x	x											
2604	Cuttings	x	x			x	x											
2607	Cuttings	x	x			x	x											
2610	Cuttings	x	x			x	x											
2613	Cuttings	x	x			x	x											
2616	Cuttings	x	x			x	x	x										
2634	Cuttings	x	x			x	x											
2637	Cuttings	x	x			x	x											
2643	Cuttings	x	x			x	x											
2646	Cuttings	x	x			x	x											
2649	Cuttings	x	x			x	x											
2652	Cuttings	x	x			x	x											
2658	Cuttings	x	x			x	x											
2661	Cuttings	x	x			x	x											
2676	Cuttings	x	x			x	x											
2679	Cuttings	x	x			x	x											
2682	Cuttings	x	x			x	x											
2685	Cuttings	x	x			x	x											
2688	Cuttings	x	x			x	x	x										
2691	Cuttings	x	x	x	x	x	x											
2694	Cuttings	x	x			x	x											
2700	Cuttings	x	x			x	x											
2703	Cuttings	x	x			x	x											
2706	Cuttings	x	x			x	x	x										
2709	Cuttings	x	x			x	x											
2730	Cuttings	x	x			x	x	x										
2733	Cuttings	x	x			x	x											
2739	Cuttings	x	x			x	x											
2742	Cuttings	x	x			x	x	x										
2745	Cuttings	x	x			x	x											
2748	Cuttings	x	x			x	x											
2751	Cuttings	x	x			x	x											
2757	Cuttings	x	x	x	x	x	x											
Wireline Samples																		
2382.5	Gas/cond.								x		x	x	x	x	x	x	x	x
2581	Gas/oil								x		x	x	x	x	x	x	x	x
Mud Samples																		
2440									x	x								
2560									x	x	x			x				
Totals		47	93	16	12	49	83	10	14	12	4	3	2	4	2	2	2	2

Table 1 Geochemical analytical programme

Triterpanes

Depth	Sample Type	22S	TSTM	TTX	30D	30AB-HOP	28AB	TRICY	TETRACY	35H_34H	29H_30H	DEMET	GAMMA
2382.5	Cond.	0.60	1.62	2.54	0.17	0.90	0.05	0.83	0.34	0.69	0.48	0.05	0.07
2581	Oil	0.61	1.60	3.63	0.17	0.92	0.05	0.10	0.07	1.02	0.34	0.03	0.04
2583.6	Core	0.60	1.48	3.51	0.15	0.92	0.05	0.24	0.12	0.96	0.36	0.03	0.05
2560	Mud	0.58	0.04	0.00	0.00	0.78	0.01	1.31	0.16	0.63	0.71	0.00	0.31

Steranes

Depth	Sample Type	20S	BB	C27BB	C28BB	C29BB	C30BB	DIAST
2382.5	Cond.	0.48	0.64	45	27	28	0.05	2.42
2581	Oil	0.51	0.64	36	29	35	0.10	3.48
2583.6	Core	0.50	0.65	40	29	31	0.08	4.63
2560	Mud	0.34	0.28	18	46	36	-	0.30

Aromatic steroids

Depth	Sample Type	Arom1	Arom2	Crack1	Crack2
2382.5	Cond.	0.66	0.51	0.73	0.49
2581	Oil	0.60	0.48	0.53	0.27

Table 2 Saturated and aromatic hydrocarbon biomarker ratios

# GEOCHEMICAL DATA REPORT

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CONTRACT NO: DTJ 020215

TITLE

## NOCS WELL 6407/6-5 Standard Geochemical Evaluation

AUTHOR(S)

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GEOLAB PROJECT NO.

62532

DATE

26/05/00

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REPORT NO./FILE

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## Comments

The well was drilled with a mineral oil based mud system. Therefore, cuttings samples were solvent extracted before screening analysis. Note that the isotope composition of the NSO in the condensate sample from 2382.5 m is probably inaccurate due to low sample amount. The differences in vitrinite reflectance values between the IFE report (Rocks Appendix 4) and Table 4 of Rocks Appendix 1 for some samples (600 m, 1970 m, 2370 m, 2497,86 m and 2757 m) is due to *the method of rounding averages from three to two decimal places. The GLN database rounds down (e.g. average of 0.32+0.35=0.335 which becomes 0.33 for GLN while for IFE it is 0.34).*

Table 1 Analytical Program for NOCS Well 6407/6-5 (Mikkel)

Sample Depth (m)	Sample Type	Sample Code	Lithology Description	Picking for screening	Prøvepreparering (Kjemematriale)	Prøvepreparering (Løsningsmiddel-Ekstraksjon)	Leco TOC	RockEval	GHM Pyrolysis-GC	Picking for Extraction	Topping	fatroscan	SOXTEC Extraction	MPLC & Deasphaltene	EOM GC	Whole Oil GC	Sat GC ( or non-Q)	Aro GC (Non Quantitative)	Sat GCMS ( or non-Q)	Aro GCMS (Non-Q)	Isotope of EOM/fractions §	API Gravity (Westlab)	Vitrinite Reflectance	Visual Kerogen	Gas composition and isotopes (IFE)
Table nos.				3			5	5			8	8	8			13	9	9	11	12	10	17	4	7	14
600	c	T77/0039-0	X																			X	X		
900	c	T77/0040-0	X																			X	X		
1200	c	T77/0041-0	X																			X			
1350	c	T77/0042-0	X																			X	X		
1550	c	T77/0043-0	X																			X			
1750	c	T77/0044-0	X																			X	X		
1970	c	T77/0045-0	X																			X			
2070	c	T77/0046-0	X																			X	X		
2170	c	T77/0047-0	X																			X			
2270	c	T77/0048-0	X																			X			
2340	c	T77/0049-1	X			X	X	X																X	
2350	c	T77/0050-1	X			X	X	X																	
2360	c	T77/0051-5	X			X	X	X	X																
2370	c	T77/0052-4	X			X	X	X	X													X	X		



Table 1 Analytical Program for NOCS Well 6407/6-5 (Mikkel)

Sample Depth (m)	Sample Type	Sample Code	Lithology Description	Picking for screening	Prevepreparing (Kjernematriale)	Prevepreparing (Losningsmiddel-Ekstraksjon)	Leco TOC	RockEval	GHM Pyrolysis-GC	Picking for Extraction	Topping	atoscan	SOXTEC Extraction	MPLC & Deasphaltene	EOM GC	Whole Oil GC	Sat GC (Q or non-Q)	Aro GC (Non Quantitative)	Sat GCMS (Q or non-Q)	Aro GCMS (Non-Q)	Isotope of EOM/fractions §	API Gravity (Westlab)	Vitrinite Reflectance	Visual Kerogen	Gas composition and isotopes (IFE)
Table nos.			3				5	5			8	8	8			13	9	9	11	12	10	17	4	7	14
2541.21	p	T77/0012-0	X		X			X																	
2544.39	p	T77/0013-0	X		X			X																	
2546.7	p	T77/0014-0	X		X			X																	
2551.76	p	T77/0015-0	X		X			X				X		X											
2555.17	p	T77/0016-0	X		X			X																	
2558.94	p	T77/0017-0	X		X			X																	
2564.13	p	T77/0018-0	X		X			X																	
2566.38	p	T77/0019-0	X		X			X																	
2569.12	p	T77/0020-0	X		X			X																	
2570.07	p	T77/0021-0	X		X			X				X		X											
2576.2 shale	p	T77/0022-0	X		X		X	X															X	X	
2577.33	p	T77/0023-0	X		X			X				X		X											
2578.3	p	T77/0024-0	X		X			X																	
2579.06	p	T77/0025-0	X		X			X				X		X											
2579.53	p	T77/0026-0	X		X			X				X		X											
2580.59	p	T77/0027-0	X		X			X																	
2581.8	p	T77/0028-0	X		X			X																	
2583.6	p	T77/0029-0	X		X			X				X	X	X		X		X							
2584.82	p	T77/0030-0	X		X			X																	
2585.51	p	T77/0031-0	X		X			X				X		X											
2586.41	p	T77/0032-0	X		X			X				X		X											

Table 1 Analytical Program for NOCS Well 6407/6-5 (Mikkel)

Sample Depth (m)	Sample Type	Sample Code	Lithology Description	Picking for screening	Prevepreparing (Kjemematiale)	Prevepreparing (Losningsmiddel-Ekstraksjon)	Leco TOC	RockEval	GHM Pyrolysis-GC	Picking for Extraction	Topping fatroscau	SOXTEC Extraction	MPLC & Deasphaltene	EOM GC	Whole Oil GC	Sat GC (Q or non-Q)	Aro GC (Non Quantitative)	Sat GCMS (Q or non-Q)	Aro GCMS (Non-Q)	Isotope of EOM/fractions §	API Gravity (Westlab)	Vitrinite Reflectance	Visual Kerogen	Gas composition and isotopes (IFE)
				Table nos.	3		5	5			8	8	8		13	9	9	11	12	10	17	4	7	14
2586.85	p	T77/0033-0	X		X			X				X		X										
2594.76	p	T77/0034-0	X		X			X																
2595.26	p	T77/0035-0	X		X			X				X		X										
2595.78	c	T77/0036-0	X		X			X																
2601	c	T77/0063-1	X			X	X	X																
2604	c	T77/0064-1	X			X	X	X																
2607	c	T77/0065-1	X			X	X	X																
2610	c	T77/0066-1	X			X	X	X																
2613	c	T77/0067-1	X			X	X	X																
2616	c	T77/0068-1	X			X	X	X	X															
2634	c	T77/0069-1	X			X	X	X																
2637	c	T77/0070-1	X			X	X	X																
2643	c	T77/0071-1	X			X	X	X																
2646	c	T77/0072-1	X			X	X	X																
2649	c	T77/0073-1	X			X	X	X																
2652	c	T77/0074-1	X			X	X	X																
2658	c	T77/0075-1	X			X	X	X																
2661	c	T77/0076-1	X			X	X	X																
2676	c	T77/0077-1	X			X	X	X																
2679	c	T77/0078-1	X			X	X	X																
2682	c	T77/0079-1	X			X	X	X																

Table 1 Analytical Program for NOCS Well 6407/6-5 (Mikkel)

Sample Depth (m)	Sample Type	Sample Code	Lithology Description	Picking for screening	Prevepreparing (Kjernematriale)	Prevepreparing (Løsningsmiddel-Ekstraksjon)	Leco TOC	RockEval	GHM Pyrolysis-GC	Picking for Extraction	Topping fatroscaan	SOXTEC Extraction	MPLC & Deasphaltene	EOM GC	Whole Oil GC	Sat GC (Q or non-Q)	Aro GC (Non Quantitative)	Sat GCMS (Q or non-Q)	Aro GCMS (Non-Q)	Isotope of EOM/fractions §	API Gravity (Westlab)	Vitritite Reflectance	Visual Kerogen	Gas composition and isotopes (IFE)
Table nos.				3			5	5			8	8	8		13	9	9	11	12	10	17	4	7	14
2586.85	p	T77/0033-0	X		X			X				X		X										
2594.76	p	T77/0034-0	X		X			X																
2595.26	p	T77/0035-0	X		X			X				X		X										
2595.78	c	T77/0036-0	X		X			X																
2601	c	T77/0063-1	X			X	X	X																
2604	c	T77/0064-1	X			X	X	X																
2607	c	T77/0065-1	X			X	X	X																
2610	c	T77/0066-1	X			X	X	X																
2613	c	T77/0067-1	X			X	X	X																
2616	c	T77/0068-1	X			X	X	X	X															
2634	c	T77/0069-1	X			X	X	X																
2637	c	T77/0070-1	X			X	X	X																
2643	c	T77/0071-1	X			X	X	X																
2646	c	T77/0072-1	X			X	X	X																
2649	c	T77/0073-1	X			X	X	X																
2652	c	T77/0074-1	X			X	X	X																
2658	c	T77/0075-1	X			X	X	X																
2661	c	T77/0076-1	X			X	X	X																
2676	c	T77/0077-1	X			X	X	X																
2679	c	T77/0078-1	X			X	X	X																
2682	c	T77/0079-1	X			X	X	X																

Table 1 Analytical Program for NOCS Well 6407/6-5 (Mikkel)

Sample Depth (m)	Sample Type	Sample Code	Lithology Description	Picking for screening	Prevepreparing (Kjemematriale)	Prevepreparing (Losningsmiddel-Ekstraksjon)	Leco TOC	RockEval	GHM Pyrolysis-GC	Picking for Extraction	Topping	fatroscau	SOXTEC Extraction	MPLC & Deasphaltene	EOM GC	Whole Oil GC	Sat GC (Q or non-Q)	Aro GC (Non Quantitative)	Sat GCMS (Q or non-Q)	Aro GCMS (Non-Q)	Isotope of EOM/fractions §	API Gravity (Westlab)	Vitrimite Reflectance	Visual Kerogen	Gas composition and isotopes (IFE)	
Table nos.			3				5	5				8	8	8		13	9	9	11	12	10	17	4	7	14	
2685	c	T77/0080-1	X			X	X	X																		
2688	c	T77/0081-1	X			X	X	X	X																	
2691	c	T77/0082-1	X			X	X	X															X	X		
2694	c	T77/0083-1	X			X	X	X																		
2700	c	T77/0084-1	X			X	X	X																		
2703	c	T77/0085-1	X			X	X	X																		
2706	c	T77/0086-1	X			X	X	X	X																	
2709	c	T77/0087-1	X			X	X	X																		
2730	c	T77/0096-0	X			X	X	X	X																	
2733	c	T77/0089-1	X			X	X	X																		
2739	c	T77/0090-1	X			X	X	X																		
2742	c	T77/0091-1	X			X	X	X	X																	
2745	c	T77/0095-2	X			X	X	X																		
2748	c	T77/0092-1	X			X	X	X																		
2751	c	T77/0093-1	X			X	X	X																		
2757	c	T77/0094-1	X			X	X	X															X	X		
2382.5	g	IFE																								X
2581.0	g	IFE																								X
2382.5	o	T86/0001									X	X	X	X	X	X	X	X	X	X	X					
2581.0	o	T86/0002									X	X	X	X	X	X	X	X	X	X	X					
2440	m	T87/0001											X	X	X											
2560	m	T87/0002											X	X	X				X							
Total		99	57**	0	36	47	49	83	10	0	2	2	12	4	12	2	3	2	4	2	2	0	16	12	2	
Sample type key c = Cuttings s = SWC p = Conv core/ plug o=oil g= gas m=mud ** (+36 descriptions of cores)																										
§ Isotope analysis on EOM or whole oil and sat, aro, NSO and asphaltene fracti Q=quantitative																										

Table 3: Lithology description for well NOCS 6407/6-5

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
600.00						0039
			100	S/Sst : lt gy, f, l		0039-1L
900.00						0040
			100	S/Sst : lt gy, f, l		0040-1L
1200.00						0041
			90	Sltst : brn gy to gy brn, s, glauc		0041-2L
			10	S/Sst : lt gy, crs, l		0041-1L
1350.00						0042
			100	Sh/Clst: m gy, slt		0042-1L
1550.00						0043
			75	Cont : dd		0043-2L
			25	Sh/Clst: lt gy, slt		0043-1L
1750.00						0044
			85	Cont : dd		0044-2L
			10	Sh/Clst: lt gy, slt		0044-1L
			5	Ca : gy brn		0044-3L
1970.00						0045
			80	Cont : dd		0045-2L
			15	Sh/Clst: m gy		0045-1L
			5	Ca : lt gy		0045-3L
2070.00						0046
			55	Cont : dd		0046-3L
			35	Sh/Clst: m gy, slt		0046-2L
			10	Sltst : gy red, argill		0046-1L

Table 3: Lithology description for well NOCS 6407/6-5

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2170.00						0047
				80 Sh/Clst: lt gy to m gy, slt		0047-1L
				20 Cont : dd		0047-2L
2270.00						0048
				90 Sh/Clst: lt gy to m gy, slt		0048-1L
				10 Cont : dd		0048-2L
2340.00						0049
	1.39			85 Sh/Clst: m gy, slt		0049-1L
				15 Cont : dd		0049-2L
2350.00						0050
	1.52			95 Sh/Clst: m gy, slt		0050-1L
				5 Cont : dd		0050-2L
				tr Sh/Clst: gy red		0050-3L
				tr Ca : lt gy		0050-4L
2360.00						0051
	7.86			45 Sh/Clst: m gy, slt		0051-1L
				25 Sltst : drk gy to brn blk		0051-5L
				15 Cont : dd		0051-2L
				15 Sh/Clst: gy red		0051-3L
				tr Ca : lt gy		0051-4L
2370.00						0052
	6.73			80 Sltst : drk gy to brn blk		0052-4L
				10 Sh/Clst: m gy, slt		0052-1L
				10 Cont : dd		0052-2L
				tr Sh/Clst: gy red		0052-3L
2375.00						0053
	7.30			90 Sltst : drk gy to brn blk		0053-4L
				5 Sh/Clst: m gy, slt		0053-1L
				5 Cont : dd		0053-2L
				tr Sh/Clst: gy red		0053-3L

Table 3: Lithology description for well NOCS 6407/6-5

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2380.00						0054	
	5.94	90	Sltst	:	drk gy to brn blk	0054-4L	
		5	Sh/Clst:	:	m gy, slt	0054-1L	
		5	Cont	:	dd	0054-2L	
		tr	Sh/Clst:	:	gy red	0054-3L	
2460.00						0055	
	1.27	90	Sltst	:	lt gy, s	0055-1L	
		10	Cont	:	dd	0055-2L	
		tr	Sltst	:	drk gy to brn blk	0055-3L	
2463.00						0056	
	1.63	85	Sltst	:	lt gy, s	0056-1L	
		15	Cont	:	dd	0056-2L	
		tr	Sltst	:	drk gy to brn blk	0056-3L	
2466.00						0057	
	1.38	85	Sltst	:	lt gy, s	0057-1L	
		15	Cont	:	dd	0057-2L	
		tr	Sltst	:	drk gy to brn blk	0057-3L	
2469.00						0058	
	1.72	95	Sltst	:	lt gy to m gy, s, argill	0058-1L	
		5	Cont	:	dd	0058-2L	
		tr	Sh/Clst:	:	gy red	0058-3L	
2472.00						0059	
	1.85	90	Sh/Clst:	:	lt gy to m gy, slt, s	0059-1L	
		10	Cont	:	dd	0059-2L	
		tr	Ca	:		0059-3L	
2478.00						0060	
	1.86	95	Sh/Clst:	:	m gy, slt	0060-1L	
		5	Ca	:	brn gy	0060-3L	
		tr	Cont	:	dd	0060-2L	

Table 3: Lithology description for well NOCS 6407/6-5

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2481.00						0061	
	2.14	95	Sltst	:	lt gy to m gy, s	0061-1L	
		5	Cont	:	dd	0061-2L	
		tr	Ca	:	brn gy	0061-3L	
2484.00						0062	
	2.11	90	Sltst	:	lt gy to m gy, s	0062-1L	
		10	Cont	:	dd	0062-2L	
		tr	Ca	:	brn gy	0062-3L	
		tr	Sh/Clst:	:	brn blk to drk gy	0062-4L	
2496.40	ccp					0001	
		100	S/Sst	:	pl gy brn, st	0001-1L	
2497.86	ccp					0002	
	0.91	80	Sh/Clst:	:	drk gy, slt, s, st	0002-1L	
		20	S/Sst	:	pl gy brn, st	0002-2L	
2499.12	ccp					0003	
		100	S/Sst	:	pl gy brn, st	0003-1L	
2504.90	ccp					0004	
		100	S/Sst	:	pl gy brn, st	0004-1L	
2506.56	ccp					0005	
		100	S/Sst	:	pl gy brn, st	0005-1L	
2511.38	ccp					0006	
		100	S/Sst	:	pl gy brn, st	0006-1L	



Table 3: Lithology description for well NOCS 6407/6-5

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2517.64	ccp					0007	
		100	S/Sst	:	pl gy brn, st	0007-1L	
2520.73	ccp					0008	
		100	S/Sst	:	pl gy brn, st	0008-1L	
2532.66	ccp					0009	
		100	S/Sst	:	pl gy brn, st	0009-1L	
2534.97	ccp					0010	
		100	S/Sst	:	pl gy brn, st	0010-1L	
2537.42	ccp					0011	
		100	S/Sst	:	pl gy brn, st	0011-1L	
2541.21	ccp					0012	
		100	S/Sst	:	pl gy brn, st	0012-1L	
2544.39	ccp					0013	
		100	S/Sst	:	pl gy brn, st	0013-1L	
2546.70	ccp					0014	
		100	S/Sst	:	pl gy brn, st	0014-1L	
2551.76	ccp					0015	
		100	S/Sst	:	pl gy brn, st	0015-1L	

Table 3: Lithology description for well NOCS 6407/6-5

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2555.17	ccp					0016	
		100	S/Sst	:	pl gy brn, st	0016-1L	
2558.94	ccp					0017	
		100	S/Sst	:	pl gy brn, st	0017-1L	
2564.13	ccp					0018	
		100	S/Sst	:	pl gy brn, st	0018-1L	
2566.38	ccp					0019	
		100	S/Sst	:	pl gy brn, st	0019-1L	
2569.12	ccp					0020	
		100	S/Sst	:	pl gy brn, st	0020-1L	
2570.07	ccp					0021	
		100	S/Sst	:	pl gy brn, st	0021-1L	
2576.38	ccp					0022	
	1.01	100	Sh/Clst:	drk gy		0022-1L	
			bulk			0022-0B	
2577.33	ccp					0023	
		100	S/Sst	:	pl gy brn	0023-1L	
2578.30	ccp					0024	
		100	S/Sst	:	pl gy brn	0024-1L	

Table 3: Lithology description for well NOCS 6407/6-5

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2579.06	ccp					0025	
		100	S/Sst	:	pl gy brn	0025-1L	
2579.53	ccp					0026	
		100	S/Sst	:	pl gy brn	0026-1L	
2580.59	ccp					0027	
		100	S/Sst	:	pl gy brn	0027-1L	
2581.80	ccp					0028	
		100	S/Sst	:	pl gy brn	0028-1L	
2583.60	ccp					0029	
		100	S/Sst	:	pl gy brn	0029-1L	
2584.82	ccp					0030	
		100	S/Sst	:	pl gy brn	0030-1L	
2585.51	ccp					0031	
		100	S/Sst	:	pl gy brn	0031-1L	
2586.41	ccp					0032	
		100	S/Sst	:	pl gy brn	0032-1L	
2586.85	ccp					0033	
		100	S/Sst	:	pl gy brn	0033-1L	