5.4 Modular Formation Dynamics Tester (MDT) Analysis

Tool type	Schlumberger MDT
Gauge	Quartz gauge BQP1#428
Resolution	0.010 PSI
RT	25m

One MDT run was performed, and 25 valid pre-test measurements were taken, resulting in high quality pressure data. Two fluid samples were taken in this well at 2097.9 mBRT (oil) and 2110.8 mBRT (water)

Resumè of sample results :

A 1x1 gal and 1x2 3/4 gal segregated samples were taken at 2110.8 mBRT. Drawdown pressure was 2600 PSI, that is around 300 PSI drawdown on formation. A total of 37 litres were pumped out before opening the chambers. The Optical Fluid Analyser (OFA) indicated over 90% water during filling 2 3/4 gal. The 1 gal chamber was filled afterwards, drained at surface and showed 99% water. The Multisampler failed to operate properly.

A 1x1 gallon segregated sample was taken at 2097.9 mBRT. Total volume pumped out 21.7 litres before taking the sample. OFA indicate clean formation fluid (oil), PVT analysis confirm the fluid was 99% formation oil and 1% oil phase filtrate. It was impossible to keep sample pressure above 2300 PSI due to tight formation. Pressure increased very slowly after chamber was filled. The packer was retracted and pumped out in open hole to attempt unplugging the probe. It was then re-set and a sample with the Multisampler attempted but failed.

Wellsite MDT Summary

BRT (m)	-25
WATER DEPTH (m)	125
AHN WITNESS	Wenche Skaget

MUD WT (s.g.)	1.29
MUD TYPE	OBM
HOLE SIZE	8 1/2"

TIME	DEPTH		HP GAUGE PRESSURE		TEMP	EMW	MOBILITY	REMARKS
	MDBRT	TVDSS	FORMATION	MUD HYDRO				
HH:MM	M	M	PSIA	PSIA	DEG F	PPG	mD/CP	
7:00	2092	2063,22	-		74	N/A	N/A	TIGHT
7:10	2096,5	2067,71	-		74	N/A	N/A	TIGHT
7:20	2097,5	2068,71	-		74,3	N/A	N/A	TIGHT
7:25	2097,8	2069,01	2902		74,7	8,25	12,9	GOOD TEST
14:40	2099,3	2070,51	-		75,6	N/A		TIGHT
7:37	2103	2074,20	2909,88		75,6	8,25	8,49	SUPERCHARGED?
7:50	2103,2	2074,40	2912		76	N/A		SUPERCHARGED?
7:30	2106	2077,19	-		75,7	N/A		TIGHT
8:50	2111	2082,19	2910,69		76,8	8,22	30,7	GOOD TEST
9:00	2113,5	2084,68	2914,7		77,1	N/A	14,9	GOOD TEST
9:15	2117,5	2088,67	-		77,3	N/A		TIGHT
9:20	2118	2089,17	2927,2		77,3	N/A		SUPERCHARGED?
9:35	2126	2097,16	-		77,7	N/A		TIGHT
9:40	2130	2101,15	-		77,7	N/A		TIGHT
9:50	2134	2105,15	-		77,9	N/A		TIGHT
10:15	2151	2122,12	2966,3		78	8,22	237	GOOD TEST
11:00	2180	2151,07	3008,2		79,5	8,23	298,5	GOOD TEST
10:55	2182	2153,07	3011,1		79,5	8,23	289,6	GOOD TEST
10:45	2184	2155,07	3013,9		79,2	8,23	317,4	GOOD TEST
10:35	2186	2157,06	3016,8		79,1	8,23	335,1	GOOD TEST
10:25	2188	2159,06	3019,6		79	8,23	333,9	GOOD TEST
10:40	2230	2200,93	3079,3		81,4	8,23	759,6	GOOD TEST
11:10	2232	2202,91	3082,4		81,5	8,23	267,7	GOOD TEST
11:00	2234	2204,88	3085,4		81,5	8,23	221,2	GOOD TEST
10:50	2236	2206,86	3087,8		81,5	8,23	342,5	GOOD TEST
11:10	2270	2240,43	3136,6		81,7	8,23	409,5	GOOD TEST
11:25	2280	2250,31	3150,9		82,2	8,24	233	GOOD TEST
11:40	2290	2260,18	3165,3		82,6	8,24	321,9	GOOD TEST
12:00	2296	2266,11	3174,3		88,1	8,24	13,6	GOOD TEST
12:25	2302	2272,03	3182,5		88,4	8,24	163,8	GOOD TEST
12:40	2434	2402,28	3480,4		87	8,52	294,5	GOOD TEST
12:50	2444	2412,16	3493,5		87,2	8,52	1106,9	GOOD TEST
13:05	2447	2415,13	3498,3		88,5	8,52	77,5	GOOD TEST
13:25	2452	2420,07	3505,9		89	8,52	251,4	GOOD TEST
13:40	2462	2429,95	3520,8		89,3	28,15	18,4	GOOD TEST
14:00	2474	2441,81	3536,2		89,7	28,14	1627	GOOD TEST
14:10	2476	2443,79	3539,1		90,1	28,14	1449	GOOD TEST

Table 5.4.1 MDT Sample Data.

Water Base Drilling Fluids Properties, daily record

Well: 25/8-9

Operator: Amerada Hess

Rig: Byford Dolphin

FSR	Date	Depth	MW	Flow	F.Vis	VG-meter readings @ 50 C								AV	PV	YP	Gel	Gel	API	API	pH
no.	1997			Temp		600	300	200	100	60	30	6	3				10 sec	10 min	Fluidloss	Cake	
•	•	m	sg	oC	s/qt.	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	cP	cP	Pa	cP	cP	ml	mm	
36" Section, riserless: Prehydrated Bentonite																					
1	05-01	150	1,03		108	55	47	38	27	23	18	14	12	28	8	19,5	6,0	20,0	13	2,0	8,00
2	06-01	227	1,20																		
12 1/4" Section, riserless: Prehydrated Bentonite																					
3	07-01	227																			
4	08-01	378	1,08		92	48	40	31	22	18	15	12	10	24	8	16,0	8,0	23,0	15	2,0	8,00
5	09-01	1110	1,08		94	50	43	32	23	18	16	14	11	25	7	18,0	9,0	24,0	15	2,0	7,50
6	10-01	1110	1,08		94	50	43	32	23	18	16	14	11	25	7	18,0	9,0	24,0	15	2,0	7,50

Oil Base Drilling Fluids Properties, daily record

Well: 25/8-9

Operator: Amerada Hess

Rig: Byford Dolphin

FSR	Date	Depth	MW	Flow	F.Vis	VG-meter readings @ 50 C								AV	PV	YP	Gel	Gel	ES	HTHP	Mp	Excess	CaCl2	WFS	Solids	Oil	Water	O/W	HGS	LGS	Sand	OOC	H2S
no.	1996			Temp		600	300	200	100	60	30	6	3				10 sec	10 min		150°c		Lime		activity				RATIO					
•	•	m	sg	oC	s/qt.	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	cP	cP	Pa	cP	cP	volts	ml	•	kg/m3	kg/m3		vol %	vol %	vol %	vol %	kg/m3	kg/m3	vol %	g/kg	mg/l
8 1/2" Section: Anca Vert																																
7	11-01	1110	1,37			120	69	51	30	22	15	7	5,5	60	51	9,0	5,0	12,0	470		2,10	7,8	144	0,92	17,0	65	17,0	78-22	555	89	1,00		0
8	12-01	1110	1,31		81	54	31	24	15	14	10	7	5	27	23	4,0	4,0	14,0	628		1,80	6,7	215	0,86	14,0	68	18,0	79-21	518	22	1,00		0
9	13-01	1110	1,28	17	92	64	38	30	20	16	12	8	6	32	26	6,0	6,0	18,0	675	1,2	2,20	8,1	241	0,83	14,0	68,0	18,0	79-21	439	71	1,00		0
10	14-01	1380	1,28	26	100	83	54	42	30	22	19	15	12	42	29	12,5	10,0	21,0	748	1,0	2,80	10,4	228	0,84	16,0	66,0	18,0	79-21	345	181	1,00	80	0
11	15-01	1760	1,30	28	109	73	47	38	27	21	18	14	13	37	26	10,5	18,0	26,0	900	3,8	1,00	3,7	256	0,81	14,0	66,0	20,0	77-23	476	45	1,00	116	0
12	16-01	1954	1,29	49	86	84	55	44	31	24	20	16	14	42	29	13,0	18,0	43,0	950	2,5	3,60	13,3	251	0,82	14,0	66,0	20,0	77-23	450	62	0,50	151	0
13	17-01	2097	1,30	36	84	81	52	43	33	23	20	17	15	41	29	11,5	20,0	45,0	920	3,2	3,00	11,1	251	0,82	15,0	65,0	20,0	76-24	429	100	0,75	184	0
14	18-01	2097	1,30	34	82	80	50	41	32	23	20	16	14	40	30	10,0	19,0	40,0	930	3,2	3,20	11,8	261	0,81	16,0	65,0	19,0	77-23	416	136	0,75	161	0
15	19-01	2322	1,30	38	96	82	53	42	29	23	19	15	13	41	29	12,0	17,0	38,0	950	3,4	3,90	14,4	254	0,82	15,0	67,0	18,0	79-21	444	93	0,75	155	0
16	20-01	2440	1,31	45	94	85	54	43	30	24	20	14	13	43	31	11,5	19,0	40,0	1060	3,1	3,60	13,3	283	0,78	16,0	65,0	19,0	77-23	416	136	0,25	175	0
17	21-01	2466	1,31	34	94	82	53	40	30	23	20	14	13	41	29	12,0	20,0	40,0	1050	2,7	2,80	10,4	283	0,78	15,0	66,0	19,0	78-22	463	81	0,25		
18	22-01	2513	1,31	39	118	85	54	43	31	25	21	16	14	43	31	11,5	20,0	42,0	990	3,4	3,80	14,1	260	0,81	15,0	66,5	18,5	78-22	467	79	0,25		
19	23-01	2548	1,29	29	104	87	54	45	34	25	22	17	15	44	33	10,5	20,0	42,0	1035	3,4	3,10	11,5	272	0,79	15,0	67,0	18,0	79-21	418	110	0,25		
20	24-01	2548	1,29	24	128	84	55	45	34	25	21	17	15	42	29	13,0	21,0	42,0	1030	3,0	3,00	11,1	284	0,78	15,0	67,0	18,0	79-21	418	110	0,25		
21	25-01	2548	1,29	23	130	85	56	45	35	25	21	17	15	43	29	13,5	21,0	42,0	1040	3,0	3,10	11,5	278	0,79	15,0	67,0	18,0	79-21	418	110	0,25		
22	26-01	2548	1,29	19	135	87	56	44	32	25	21	16	14	44	31	12,5	20,0	41,0	980	3,0	3,10	11,5	278	0,79	15,0	67,0	18,0	79-21	418	110	0,25		
23	27-01	1940	1,29	20	133	77	49	38	28	24	20	16	13	39	28	10,5	12,0	37,0	965	3,3	3,30	12,2	266	0,80	15,0	67,0	18,0	79-21	418	110	0,25		
P&A section Anca Vert																																
34	07-02	2687	1,32	15	145	103	66	54	41	28	20	19	16	52	37	14,5	16,0	38,0	860	3,0	3,10	11,5	263	0,81	16,5	62,5	21,0	75-25	404	154	0,75		0
35	08-02	2230	1,35	16	162	115	73	56	40	33	24	18	15	58	42	15,5	19,0	40,0	755	3,0	3,20	11,8	263	0,81	18,0	60,0	22,0	73-27	404	191	0,10		0
36	09-02	2230	1,35	16	153	113	71	55	39	30	22	19	15	57	42	14,5	18,0	38,0	742	3,00	3,20	11,8	268	0,81	18,5	60	21,5	74-26	385	217	0,10		0
37	10-02		DISPLACED TO SEAWATER.																														
Minimum Property:			1,28		81	54	31	24	15	14	10	7	5	27	23	4,0	4,0	12,0	470	1,0	1,0	3,7	144	0,78	14,0	60,0	17,0	0	345	22	0,10	80	0
Average Property:			1,31		115	90	57	46	33	25	20	16	14	45	32	12,7	17,7	38,4	914	3,0	3,1	11,5	262	0,81	15,6	64,7	19,7	#DIV/0!	422	121	0,56	139	0
Maximum Property:			1,37		162	120	73	56	41	33	24	19	15	60	51	15,5	21,0	45,0	1060	3,8	3,9	14,4	284	0,92	18,5	68,0	22,0	0	555	217	1,00	184	0

GEOCHEMICAL INTERPRETATION REPORT:

GEOLAB NOR AS
PO Box 5740 Fossegrenda
N-7002 Trondheim
Norway

Tel: (47) 73 964000
Fax: (47) 73 968728
Tlx: 65706 geono n

Internet: firmapost@geolab-nor.telemax no
X.400: S=firmapost, O=geolab-nor, A=telemax, C=no

CLIENT:

AMERADA HESS NORGE

REF(S)
Knut Bakken

TITLE

Geochemical report on NOCS 25/8-9

AUTHOR(S)

Peter Barry Hall

GEOLAB PROJECT NO.	DATE
62324	3.06.97
PROJECT MANAGER	QA RESPONSIBLE
Peter Barry Hall, Snr. Scientist	Kjell Arne Bakken, Snr. Scientist
REPORT NO./FILE	PAGE
	1 of 1

Chapter 1

INTRODUCTION

The well NOCS 25/8-9 (and A) was drilled (spudded in January 1997) by Amerada Hess Norge in the area south-east of the Heimdal field (block 25/4) and north-east of Balder field (blocks 25/10 and 25/11) in the Jotun Field area (Figure 1). The water depth was 125 m and the rotary table (RT) was 150 m above the sea floor and 25 m above sea level. All depths are given relative to RT unless otherwise specified.

Samples, including canned cuttings samples, side-wall cores and conventional cores, were supplied by Amerada Hess together with samples of the mineral oil additive to the drill-mud to Geolab Nor's laboratory in Trondheim. The stratigraphy of the well was provided by Amerada Hess, and these data are used in this report.

The analytical program included both screening and follow-up analysis, where samples were selected for the latter programme after agreement with Knut Bakken, Amerada Hess.

The report is divided into chapters according to the applied analytical methods. The results are generally discussed in a (descending) stratigraphic context.

1.1 General Well Information

The sample quality, particularly side-wall cores, was poor due to heavy staining by the oil based mud. There were sufficient amounts of sample material for analysis (both screening and follow-up analysis). Any obvious, superficial contamination was removed from the core and side-wall core samples. Use of the mineral oil drilling mud has caused some analytical problems, due to contamination of the extractable hydrocarbons, particularly in the side-wall cores and cuttings samples and all samples with low concentrations of in-situ hydrocarbons.

1.2 Analytical Program

The analytical programs, for 25/8-9 and 25/8-9A including analysis type and number of samples per analysis type are presented below, together with respective figure numbers and table numbers. All data for 25/8-9 can be found at the back of this report. Data and reporting of 25/8-9A can be found in a separate report.

Analytical Program for NOCS well 25/8-9

Analysis type	No of samples	Figures	Tables
Headspace and occluded gas	79*	2a-e	1
$\delta^{13}C$ Headspace gas (C_1-C_4)	14	3a-b	2
Lithology description	94§	2,4	3
TOC	54	4a	3,4
Rock-Eval pyrolysis	54	4b-e	4a-b
Thermal extraction GC (GHM, S_1)	25	5a-d	
Pyrolysis GC (GHM, S_2)	25	6a-k,7	5
Soxtec Extraction of organic matter	7		6a
Deasphalting	7		
MPLC separation	7		6b-d
Saturated hydrocarbon GC	7	8a-b	7
Aromatic hydrocarbon GC	7	9a-d	8a-b
Vitrinite reflectance	15	10	9
Visual kerogen microscopy	4	11	9,10
Isotope composition C_{15+} fractions	5	12a-b	11a-b
GC - MS of saturated HC	7	13a-g	12a-f
GC - MS of aromatic HC	7	14a-h	13a-f

*in only 71 headspace analyses were hydrocarbons detected, in the other samples headspace gas has been lost probably through leakage from the cans.

§one sample from 2425 m consisted of mud with very few cuttings

Analytical Program for NOCS well 25/8-9A

Analysis type	No of samples	Figures	Tables
Headspace and occluded gas	60	2a-e	1
$\delta^{13}C$ Headspace gas (C_1-C_4)	5	3a-b	2
Lithology description	65	2,4	3
TOC	12	4a	3,4
Rock-Eval pyrolysis	12	4b-e	4a-b
Thermal extraction GC (GHM, S_1)	5	5a-b	
Pyrolysis GC (GHM, S_2)	5	6a-b,7	5
Soxtec Extraction of organic matter	1		6a
Deasphalting	1		
MPLC separation	1		6b-d
Saturated hydrocarbon GC	1	8	7
Aromatic hydrocarbon GC	1	9	8a-b
Vitrinite reflectance	0		9
Visual kerogen microscopy	0		9,10
Isotope composition C_{15+} fractions	1	12a-b	11a-b
GC - MS of saturated HC	1	13a-c	12a-f
GC - MS of aromatic HC	1	14a-b	13a-f

The wells were drilled using an oil based drilling mud - Ancovert Oil-based Mud (OBM). This is composed mainly of mineral oil with < 5% aromatics, water and barite and and emulgant with minor amounts of monmorillonite and other inorganic additives. The mineral oil caused considerable problems due to heavy contamination of cuttings.

GEOLAB NOR

Table 1 : C1 to C7 hydrocarbons in HEADSPACE gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 / nC4
1140.00	6164	4	2		1	11	6171	7	0.1	0.24
1180.00	197	5	6	-	4	12	212	15	7.1	-
1220.00	3165	10	5		1	19	3182	17	0.5	0.29
1270.00	9593	5	3	-	-	5	9600	8	0.1	-
1300.00	15008	-	-	-	-	-	15008	-	-	-
1340.00	3926	2		-		2	3928	2	0.1	-
1380.00	917	2	-	-	-	-	919	2	0.2	-
1420.00	1401	4	1			2	1406	5	0.4	1.64
1460.00	750	3	1			1	754	5	0.6	2.05
1500.00	735	5	1		-	1	741	6	0.8	-
1540.00	734	5	1			1	741	7	1.0	2.39
1580.00	739	8	2	1		4	750	11	1.4	1.50
1620.00	984	13	3	1		2	1001	17	1.7	2.50
1660.00	1430	20	5	1	-	-	1456	26	1.8	-
1700.00	2634	52	10	3	1	3	2700	66	2.4	4.34
1740.00	5729	97	18	5	2	2	5851	122	2.1	3.21
1780.00	1744	33	8	2	1	1	1788	44	2.5	3.62
1820.00	902	14	4	1		-	921	19	2.0	6.03
1860.00	5390	108	30	5	3	1	5536	146	2.6	1.91
1900.00	14	3	5	1	1	-	24	10	41.7	1.16
1940.00	26892	793	287	42	41	15	28054	1162	4.1	1.04
1980.00	18315	676	246	39	43	18	19320	1005	5.2	0.90
2020.00	8116	338	95	15	18	7	8581	465	5.4	0.84
2029.00	3959	186	53	10	12	5	4220	261	6.2	0.82
2038.00	13031	468	133	25	31	10	13688	657	4.8	0.79
2047.00	1611	115	40	9	12	9	1787	176	9.9	0.79
2056.00	4010	221	65	14	20	16	4330	320	7.4	0.71

GEOLAB NOR

Table 1 : C1 to C7 hydrocarbons in HEADSPACE gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4/nC4
2065.00	1943	109	39	7	13	10	2111	168	8.0	0.56
2074.00	719	32	11	2	4	3	768	49	6.4	0.58
2083.00	417	17	5	1	2	2	442	25	5.6	0.54
2092.00	1888	130	44	10	14	29	2086	198	9.5	0.74
2101.00	2991	334	117	19	25	35	3487	496	14.2	0.74
2110.00	3057	342	92	11	15	16	3517	460	13.1	0.72
2128.00	1497	159	73	9	13	13	1751	254	14.5	0.70
2137.00	23968	2012	662	70	79	37	26790	2822	10.5	0.88
2155.00	21864	2229	835	84	92	39	25104	3240	12.9	0.91
2164.00	4648	443	174	17	20	9	5301	654	12.3	0.83
2173.00	430	68	47	6	8	3	560	129	23.1	0.72
2191.00	988	121	59	6	7	3	1181	193	16.3	0.90
2200.00	21	21	55	10	13	9	119	99	82.6	0.75
2209.00	3436	424	247	27	34	15	4166	731	17.5	0.79
2218.00	596	163	145	20	26	15	950	354	37.3	0.77
2227.00	6077	711	345	31	35	11	7200	1123	15.6	0.89
2236.00	724	97	49	6	7	3	884	160	18.1	0.82
2254.00	4598	632	316	30	38	15	5614	1016	18.1	0.77
2263.00	5187	931	571	62	75	30	6827	1639	24.0	0.82
2272.00	1148	102	46	6	7	2	1309	161	12.3	0.84
2281.00	807	72	30	3	3	2	915	108	11.8	0.77
2299.00	205	28	16	2	3	2	253	48	19.1	0.72
2308.00	399	38	33	3	7	1	480	81	17.0	0.44
2317.00	632	76	37	3	6	2	755	123	16.2	0.58
2326.00	129	17	10	1	2	-	160	30	19.0	0.70
2335.00	244	27	15	2	3	3	290	46	16.0	0.61
2344.00	169	17	8	1	2	-	196	27	14.0	0.63

GEOLAB NOR

Table 1 : C1 to C7 hydrocarbons in HEADSPACE gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 / nC4
2353.00	114	11	6	1	1	1	135	21	15.3	1.01
2362.00	740	76	32	6	7	6	861	121	14.1	0.78
2371.00	457	93	57	12	14	14	633	177	27.9	0.84
2380.00	178	22	9	1	2	2	213	34	16.1	0.50
2407.00	953082	66299	16126	1422	1225	467	1038*	85072	8.2	1.16
2416.00	169182	14990	4505	509	415	188	189602	20419	10.8	1.23
2425.00	573006	51758	15103	1647	1174	578	642687	69682	10.8	1.40
2434.00	84702	7771	2330	238	171	47	95212	10510	11.0	1.40
2443.00	1316	205	66	7	9	7	1604	288	18.0	0.80
2461.00	1567	481	299	33	33	-	2413	846	35.0	0.98
2470.00	2502	599	390	57	46	36	3595	1093	30.4	1.23
2479.00	31987	3367	1041	110	88	38	36593	4605	12.6	1.26
2488.00	8172	2783	1342	190	121	90	12609	4436	35.2	1.57
2497.00	55602	3734	921	95	65	20	60417	4815	8.0	1.45
2515.00	38528	7324	3126	380	261	163	49620	11092	22.4	1.46
2524.00	3816	1120	701	102	77	58	5815	1999	34.4	1.33
2542.00	24229	4497	2547	325	263	186	31861	7632	24.0	1.23

GEOLAB NOR

Table 1 : C1 to C7 hydrocarbons in CUTTINGS gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 / nC4
1140.00	7		1	-		1	7	1	9.5	-
1180.00	17	2	1			2	20	4	18.6	0.28
1220.00	5		1			2	6	1	14.8	0.25
1270.00	13	1				1	14	1	7.3	0.43
1300.00	40	3	1			2	45	5	10.5	0.31
1340.00	21	3	2			2	25	5	18.9	0.57
1380.00	8	1	1			2	9	2	18.0	0.40
1420.00	21	3	1	-	1	-	26	5	20.7	-
1460.00	11	1	1			2	13	2	15.3	0.50
1500.00	8	1	1	-	1		11	2	22.8	-
1540.00	17	2	1			3	20	4	17.4	0.56
1580.00	11	2	1		1	3	14	4	25.3	0.36
1620.00	8	1	1			2	10	2	19.9	0.81
1660.00	12	2	1			2	15	3	18.2	1.16
1700.00	6	2	1			1	9	3	37.5	1.11
1740.00	14	2	1	1		3	18	4	21.0	1.74
1780.00	15	5	14	1	3	2	39	24	61.5	0.44
1820.00	18	3	1			3	23	5	21.1	0.97
1860.00	17	3	3	1	1	3	24	7	30.4	1.27
1900.00	34	4	2		1	4	40	6	15.9	0.64
1940.00	30	12	18	6	9	28	76	46	60.4	0.66
1980.00	34	11	17	7	11	37	81	46	57.3	0.63
2020.00	24	9	13	6	9	14	60	37	60.8	0.66
2029.00	19	8	11	5	7	10	50	31	61.9	0.69
2038.00	68	23	22	8	13	19	134	67	49.6	0.64
2047.00	17	5	6	3	4	9	34	18	51.9	0.62
2056.00	18	6	7	2	4	7	37	20	52.3	0.54

GEOLAB NOR

Table 1 : C1 to C7 hydrocarbons in CUTTINGS gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 / nC4
2065.00	30	5	4	1	3	6	43	14	31.3	0.47
2074.00	18	3	2	1	1	4	24	6	24.6	0.49
2083.00	14	4	6	1	2	2	26	12	46.5	0.47
2092.00	31	7	8	3	6	26	54	23	43.2	0.61
2101.00	9	1	2	1	3	9	16	7	44.5	0.52
2110.00	24	4	4	1	2	7	35	11	31.9	0.49
2128.00	20	4	4	1	3	12	33	12	37.7	0.44
2137.00	30	7	9	3	5	11	53	24	44.3	0.52
2146.00	25	3	2		1	7	31	6	18.2	0.34
2155.00	31	10	15	4	5	7	66	34	52.4	0.71
2164.00	44	9	11	3	4	8	71	27	38.3	0.66
2173.00	25	4	3	1	1	1	33	8	23.3	0.67
2182.00	22	2	1			2	26	3	13.3	0.47
2191.00	15	3	6	1	2	4	26	12	44.1	0.69
2200.00	21	2	1		1	3	25	4	17.0	0.53
2209.00	24	9	13	3	4	7	53	29	54.5	0.68
2218.00	31	10	16	4	5	7	66	35	53.3	0.73
2227.00	26	14	23	5	7	5	75	49	64.9	0.71
2236.00	24	6	9	2	3	4	45	20	45.3	0.77
2245.00	20	6	10	2	3	5	42	22	51.6	0.72
2254.00	14	9	16	3	4	4	45	32	69.8	0.73
2263.00	43	12	19	4	7	10	85	41	49.0	0.62
2272.00	26	10	14	3	4	3	57	31	54.4	0.76
2281.00	30	6	7	1	2	4	47	17	36.9	0.62
2299.00	24	4	3	1	1	3	32	8	25.4	0.58
2308.00	38	6	4	1	1	4	49	11	22.5	0.60
2317.00	36	6	7	1	2	1	52	16	30.5	0.67

GEOLAB NOR

Table 1 : C1 to C7 hydrocarbons in CUTTINGS gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4/nC4
2326.00	42	8	5	1	2	6	57	15	26.7	0.59
2335.00	13	3	2	1	1	1	19	6	32.2	0.94
2344.00	37	7	4	1	1	3	51	14	27.2	0.79
2353.00	21	4	2	1	1	2	29	7	25.9	0.79
2362.00	17	3	3	1	1	2	25	8	31.4	0.75
2371.00	11	2	2	1	1	-	16	5	31.5	0.90
2380.00	26	5	4	1	1	4	36	11	29.3	0.73
2389.00	6	3	8	3	6	24	26	20	76.2	0.58
2398.00	12	2	7	4	8	36	33	21	62.5	0.44
2407.00	202	287	377	77	116	168	1059	857	80.9	0.66
2416.00	393	221	215	49	62	121	941	548	58.2	0.79
2425.00	64	154	134	21	28	43	401	337	84.1	0.75
2434.00	28	21	31	7	8	13	95	67	70.8	0.93
2443.00	30	10	13	3	4	8	61	31	50.6	0.79
2452.00	32	6	7	2	2	5	49	17	34.8	0.72
2461.00	43	80	109	19	16	18	266	223	83.8	1.18
2470.00	88	103	98	16	13	17	318	231	72.4	1.26
2479.00	1357	1241	706	84	77	64	3465	2108	60.8	1.10
2488.00	404	671	467	71	52	50	1666	1261	75.7	1.38
2497.00	292	300	198	32	22	22	845	553	65.4	1.43
2506.00	805	963	498	64	44	34	2373	1569	66.1	1.44
2515.00	191	386	196	27	21	22	821	630	76.7	1.27
2524.00	24	2	2	1	1	3	30	6	21.2	1.41
2533.00	18	1	1			2	20	2	9.6	0.93
2542.00	32	10	16	5	4	6	68	36	52.5	1.18

GEOLAB NOR

Table 1 : C1 to C7 hydrocarbons in HEADSPACE and CUTTINGS gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4/nC4
1140.00	6170	4	3		1	13	6178	8	0.1	0.22
1180.00	213	7	7		4	13	232	19	8.1	0.01
1220.00	3170	10	6		1	20	3188	18	0.6	0.28
1270.00	9606	6	3			7	9615	9	0.1	0.43
1300.00	15048	3	1			2	15053	5	0.0	0.31
1340.00	3946	4	2			3	3953	7	0.2	0.44
1380.00	924	3	1			2	928	4	0.4	0.40
1420.00	1422	7	2		1	2	1432	11	0.7	0.36
1460.00	761	5	1			4	768	7	0.9	1.15
1500.00	743	6	2		1	2	752	9	1.1	0.70
1540.00	751	7	2	1		4	762	11	1.4	1.24
1580.00	750	10	3	1	1	6	764	14	1.8	0.75
1620.00	992	14	3	1	1	4	1011	19	1.8	1.81
1660.00	1442	22	5	1		2	1471	28	1.9	8.30
1700.00	2640	55	11	3	1	4	2710	70	2.6	3.44
1740.00	5743	99	19	6	2	4	5868	126	2.1	2.98
1780.00	1759	39	22	3	4	3	1827	68	3.7	0.91
1820.00	920	17	5	1	1	3	944	24	2.5	2.10
1860.00	5407	111	33	6	3	4	5560	153	2.8	1.76
1900.00	48	7	6	2	2	4	64	16	25.5	0.99
1940.00	26922	805	305	48	50	43	28130	1208	4.3	0.96
1980.00	18349	687	263	46	55	54	19401	1051	5.4	0.85
2020.00	8139	347	108	20	26	22	8641	502	5.8	0.78
2029.00	3978	194	64	15	19	15	4270	292	6.8	0.77
2038.00	13099	491	155	33	44	30	13822	723	5.2	0.75
2047.00	1627	119	46	12	16	18	1821	194	10.6	0.75
2056.00	4028	227	72	16	24	23	4367	340	7.8	0.68

GEOLAB NOR

Table 1: C1 to C7 hydrocarbons in HEADSPACE and CUTTINGS gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4/nC4
2065.00	1973	114	43	8	16	16	2155	181	8.4	0.54
2074.00	737	35	13	3	5	7	792	55	6.9	0.56
2083.00	431	21	11	2	3	4	468	37	7.9	0.50
2092.00	1919	137	52	14	19	55	2140	222	10.4	0.70
2101.00	3000	336	119	20	28	45	3503	503	14.4	0.71
2110.00	3081	346	96	12	17	23	3552	471	13.3	0.70
2128.00	1518	163	77	11	16	25	1784	266	14.9	0.65
2137.00	23998	2019	670	72	84	47	26843	2845	10.6	0.86
2155.00	21896	2239	850	88	97	46	25170	3274	13.0	0.90
2164.00	4692	452	186	19	24	18	5373	681	12.7	0.81
2173.00	455	71	50	7	9	4	592	137	23.1	0.72
2191.00	1003	124	65	7	8	7	1207	204	16.9	0.85
2200.00	42	24	56	10	13	11	144	103	71.2	0.74
2209.00	3460	432	260	29	38	21	4220	760	18.0	0.78
2218.00	627	173	162	24	31	22	1016	389	38.3	0.76
2227.00	6103	725	368	36	42	17	7275	1171	16.1	0.86
2236.00	749	103	58	8	10	7	929	180	19.4	0.80
2254.00	4612	641	332	32	42	19	5660	1048	18.5	0.77
2263.00	5230	943	589	66	82	40	6911	1681	24.3	0.81
2272.00	1174	112	61	9	11	4	1366	192	14.1	0.81
2281.00	837	79	37	4	6	5	963	125	13.0	0.71
2299.00	228	31	19	2	3	4	284	56	19.8	0.69
2308.00	437	44	37	4	8	5	530	93	17.5	0.46
2317.00	668	82	44	5	8	4	807	138	17.2	0.60
2326.00	171	25	15	2	4	6	217	46	21.1	0.65
2335.00	257	30	17	2	4	4	309	53	17.0	0.67
2344.00	206	24	12	2	3	3	247	41	16.7	0.70

GEOLAB NOR

Table 1: C1 to C7 hydrocarbons in HEADSPACE and CUTTINGS gas
(µl gas/kg rock)

Project: NOCS 25/8-9
Well: NOCS 25/8-9
Depth unit of measure: m * Indicated values in ml gas/kg rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 / nC4
2353.00	135	15	9	2	2	3	163	28	17.2	0.93
2362.00	757	79	35	7	8	9	886	129	14.6	0.78
2371.00	468	95	59	13	15	14	649	182	28.0	0.84
2380.00	204	27	13	2	3	5	249	45	18.0	0.58
2407.00	953283	66586	16503	1499	1341	635	1039*	85929	8.3	1.12
2416.00	169575	15212	4720	558	477	310	190543	20967	11.0	1.17
2425.00	573069	51912	15237	1668	1202	621	643088	70019	10.9	1.39
2434.00	84730	7792	2361	246	179	61	95307	10577	11.1	1.38
2443.00	1346	216	79	11	13	16	1665	319	19.1	0.80
2461.00	1610	561	407	51	49	18	2679	1068	39.9	1.05
2470.00	2590	703	488	73	59	53	3913	1323	33.8	1.24
2479.00	33344	4607	1747	195	164	102	40058	6714	16.8	1.18
2488.00	8577	3454	1809	261	173	140	14274	5698	39.9	1.51
2497.00	55894	4034	1119	126	88	42	61262	5368	8.8	1.44
2515.00	38719	7710	3322	408	282	185	50441	11722	23.2	1.44
2524.00	3840	1122	703	103	77	60	5845	2005	34.3	1.33
2542.00	24261	4507	2563	330	268	192	31929	7668	24.0	1.23

Table 2: Isotope GC Analysis of Headspace Gas for well NOCS 25/8-9

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2	C3	iC4	nC4	CO2	D	Sample
2092.00	cut	bulk	-45.4	-27.1	-27.9	-29.0	-27.0	-14.8	-	0031-0B
2101.00	cut	bulk	-43.1	-26.6	-27.2	-	-24.9	-11.2	-	0032-0B
2110.00	cut	bulk	-45.3	-27.9	-28.0	-27.7	-26.8	-11.5	-	0033-0B
2128.00	cut	bulk	-46.7	-28.5	-28.3	-	-27.3	-13.7	-	0034-0B
2164.00	cut	bulk	-45.1	-28.2	-28.1	-30.0	-28.9	-18.0	-	0038-0B
2191.00	cut	bulk	-48.5	-28.6	-28.1	-	-29.9	-12.2	-	0041-0B
2254.00	cut	bulk	-43.7	-28.4	-28.4	-31.9	-31.7	-12.8	-	0048-0B
2281.00	cut	bulk	-42.7	-27.3	-27.2	-	-26.0	-12.8	-	0051-0B
2317.00	cut	bulk	-44.0	-28.2	-28.4	-	-28.7	-14.9	-	0055-0B
2380.00	cut	bulk	-40.4	-29.1	-31.3	-	-	-14.3	-	0062-0B
2407.00	cut	bulk	-44.1	-29.4	-30.4	-29.0	-30.1	-15.2	-	0065-0B
2443.00	cut	bulk	-41.7	-29.0	-30.2	-	-32.0	-13.3	-	0069-0B
2488.00	cut	bulk	-35.6	-26.8	-29.1	-28.3	-30.1	-12.9	-	0074-0B
2515.00	cut	bulk	-40.7	-28.5	-29.0	-28.6	-30.8	-8.9	-	0077-0B

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Depth Cvd	Type TOC%	%	Grp	Frm	Age / Lithology description	Trb	Sample
1140.00								0174
			40	Sh/Clst		m gy to gy brn, slt, glauc		0174-1L
			30	Sltst		m gy to gy brn		0174-2L
			20	S/Sst		w, glauc, f		0174-3L
			10	Cont		dd		0174-4L
1180.00								0173
			50	Sh/Clst		m gy to gy brn, slt, glauc		0173-1L
			50	Sltst		m gy to gy brn		0173-2L
			tr	S/Sst		w, glauc, f		0173-3L
1220.00								0098
			50	Sh/Clst		m gy to gy brn, gn gy, slt, glauc		0098-1L
			50	Sltst		m gy, s, cly		0098-2L
1270.00								0099
			70	S/Sst		m gy, slt, glauc		0099-2L
			30	Sh/Clst		m gy to gy brn, slt, glauc		0099-1L
1300.00								0100
			70	S/Sst		m gy, slt, glauc		0100-2L
			30	Sh/Clst		m gy to gy brn, slt, glauc		0100-1L
1340.00								0101
			70	S/Sst		m gy, slt, glauc		0101-2L
			30	Sh/Clst		m gy to gy brn, slt, glauc		0101-1L
1380.00								0102
			100	Sh/Clst		brn gy to gn gy, slt		0102-1L

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Depth Cvd	Type TOC%	%	Grp	Frm	Age	Trb	Sample	Lithology description
1420.00								0103	
			95					0103-1L	Sh/Clst: brn gy to gn gy, slt
			5					0103-2L	S/Sst : m gy, glauc, f
1460.00								0104	
			95					0104-1L	Sh/Clst: brn gy to gn gy, slt
			5					0104-2L	S/Sst : m gy, glauc, f
1500.00								0105	
			95					0105-1L	Sh/Clst: brn gy to gn gy, slt
			5					0105-2L	S/Sst : m gy, glauc, f
1540.00								0175	
			90					0175-1L	Sh/Clst: m gy to gy brn, slt, glauc
			10					0175-2L	Ca : pl brn
			tr					0175-3L	S/Sst : m gy, glauc, f
1580.00								0106	
			100					0106-1L	Sh/Clst: brn gy to gn gy, slt
1620.00								0107	
			100					0107-1L	Sh/Clst: brn gy to gn gy, carb, slt
1660.00								0108	
			100					0108-1L	Sh/Clst: brn gy to gn gy, slt
1700.00								0109	
		1.58	100					0109-1L	Sh/Clst: brn gy to gn gy, slt

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Depth Cvd	Type TOC%	%	Grp	Frm	Age	Trb	Sample	Lithology description
1740.00								0110	
			100					0110-1L	Sh/Clst: brn gy to gn gy, slt
			tr					0110-2L	S/Sst : brn gy, f
1780.00								0111	
		1.05	100					0111-1L	Sh/Clst: brn gy to gn gy, slt
			tr					0111-2L	S/Sst : brn gy, f
1820.00								0112	
			100					0112-1L	Sh/Clst: brn gy to gn gy, slt
1860.00								0113	
		1.26	100					0113-1L	Sh/Clst: brn gy to gn gy, slt
1900.00								0114	
			90					0114-1L	Sh/Clst: gn gy, mic
			10					0114-2L	Ca : gy w, pyr
1940.00								0115	
		1.74	100					0115-1L	Sh/Clst: ol gy to gy brn
1980.00								0116	
			80					0116-1L	Sh/Clst: ol gy to gy brn
			20					0116-2L	Tuff : drk gn gy
2020.00								0117	
		3.05	100					0117-1L	Sh/Clst: ol gy to gy brn, drk gy to gy blk
			tr					0117-2L	Cont : prp

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth	Type		Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description				
2029.00							0118
		100	Sh/Clst:		lt ol gy to drk gy, slt		0118-1L
		tr	Cont	:	prp		0118-2L
2038.00							0119
	2.45	100	Sh/Clst:		lt ol gy to drk gy, slt		0119-1L
		tr	Cont	:	prp		0119-2L
2047.00							0120
		50	Sh/Clst:		lt ol gy to drk gy, slt		0120-1L
		50	Ca	:	gy w, pl y brn		0120-2L
		tr	Cont	:	prp		0120-3L
2056.00							0165
	2.63	80	Sh/Clst:		lt ol gy to drk gy, slt		0165-1L
		20	Ca	:	gy w, pl y brn		0165-2L
2065.00							0121
		100	Sh/Clst:		lt ol gy to drk gy, slt		0121-1L
		tr	Cont	:	prp		0121-2L
2074.00							0122
	1.20	100	Sh/Clst:		pl gy to gn gy, slt		0122-1L
		tr	Cont	:	prp		0122-2L
2083.00							0123
	1.17	95	Sh/Clst:		pl gy to gn gy, drk brn gy, slt		0123-1L
		5	S/Sst	:	w to m lt gy		0123-2L
2088.00 swc							0081
	0.76	100	Sh/Clst:		gn gy		0081-1L

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Type Cvd	TOC%	%	Grp Frm Age / Lithology description	Trb	Sample
2091.50	swc					0082
	1.85		100	S/Sst : m lt gy gy, carb, slt, cly, mic		0082-1L
2092.00						0124
	0.77		70	S/Sst : w to m lt gy, f		0124-1L
			30	Sh/Clst: lt gn gy		0124-2L
2098.00	ccp					0091
	1.25		100	S/Sst : m lt gy, carb, slt, mic		0091-1L
2100.90	ccp					0093
	0.48		100	S/Sst : m lt gy, slt		0093-1L
2101.00						0125
			90	S/Sst : w to m lt gy, f		0125-1L
			10	Sh/Clst: lt gn gy		0125-2L
2101.08	ccp					0092
	0.37		100	S/Sst : m lt gy, slt		0092-1L
2104.80	ccp					0094
	0.69		100	S/Sst : brn gy, crs		0094-1L
2110.00						0126
			90	S/Sst : w to m lt gy, f		0126-1L
			10	Sh/Clst: lt gn gy		0126-2L
2110.20	ccp					0095
	0.30		100	S/Sst : m lt gy, carb, slt, cly, mic		0095-1L

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth		Type		Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description				
2128.00								0127
		0.27	60	S/Sst	:	w to m lt gy, f		0127-1L
			40	Sh/Clst	:	gn gy		0127-2L
2137.00								0128
		0.17	70	S/Sst	:	w to m lt gy, f		0128-1L
			30	Sh/Clst	:	gn gy		0128-2L
2138.50	swc							0083
		1.16	100	Ca	:	m lt gy gy, cly		0083-1L
2146.00								0129
			80	S/Sst	:	w to m lt gy, f		0129-1L
		0.63	20	Sh/Clst	:	gn gy		0129-2L
2155.00								0130
			70	Sh/Clst	:	drk gn gy, carb, slt		0130-1L
			20	Ca	:	w		0130-2L
			10	S/Sst	:	gy w		0130-3L
2164.00								0131
			90	S/Sst	:	gy w, glauc, f, crs		0131-1L
		1.14	10	Sh/Clst	:	m gy to gn gy		0131-2L
2173.00								0132
			70	Sh/Clst	:	m gy to gn gy		0132-2L
			30	S/Sst	:	gy w, glauc, f, crs		0132-1L
2182.00								0133
			90	S/Sst	:	gy w, glauc, f, crs		0133-1L
		3.34	10	Sh/Clst	:	m gy to gn gy		0133-2L

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Depth Cvd	Type TOC%	%	Grp Frm Age Lithology description	Trb	Sample
2191.00						0134
			90	S/Sst : gy w, glauc, f, crs		0134-1L
			10	Sh/Clst: m gy to gn gy		0134-2L
2200.00						0135
			80	S/Sst : gy w, glauc, f, crs		0135-1L
		2.47	20	Sh/Clst: m gy to gn gy		0135-2L
2209.00						0136
			90	Sh/Clst: drk gy, gn gy		0136-1L
			10	S/Sst : gy w		0136-2L
2218.00						0137
		1.52	90	Sh/Clst: drk gy, gn gy		0137-1L
			10	S/Sst : gy w		0137-2L
2227.00						0166
			90	Sh/Clst: lt ol gy to drk gy, slt		0166-1L
			10	S/Sst : gy w		0166-2L
2234.00	swc					0084
		1.68	100	S/Sst : m lt gy, cly, f		0084-1L
2236.00						0138
			90	S/Sst : gy w		0138-1L
			10	Sh/Clst: drk gy to gn gy		0138-2L
2245.00						0139
		2.21	65	Sh/Clst: drk gy to gn gy		0139-2L
			30	S/Sst : gy w		0139-1L
			5	Ca : w to gy w		0139-3L

GEOLAB NOR

Table 3. Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Depth Cvd	Type TOC%	%	Grp	Frm	Age	Lithology description	Trb	Sample
2254.00									0167
		1.88	80				Sh/Clst: drk gy to gn gy		0167-1L
			20				S/Sst : gy w		0167-2L
2263.00									0140
			80				Sh/Clst: drk gy to gn gy		0140-1L
			10				Ca : w to gy w		0140-2L
			10				S/Sst : w		0140-3L
2272.00									0141
			90				S/Sst : gy w		0141-1L
		3.48	5				Sh/Clst: drk gy to gn gy		0141-2L
			5				Ca : w		0141-3L
2281.00									0168
			90				S/Sst : gy w		0168-1L
			5				Sh/Clst: drk gy to gn gy		0168-2L
			5				Ca : w		0168-3L
2287.00	swc								0085
		1.52	100				S/Sst : m lt gy, cly, f		0085-1L
2299.00									0169
			80				S/Sst : gy w to m lt gy, f		0169-1L
			20				Sh/Clst: drk gy to gn gy		0169-2L
2308.00									0142
		0.20	60				S/Sst : gy w		0142-1L
			30				Ca : w		0142-2L
			10				Sh/Clst: gn gy		0142-3L

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Cvd	Type TOC%	%	Grp	Frm	Age / Lithology description	Trb	Sample
2317.00								0170
			70	S/Sst	:	gy w to m lt gy		0170-1L
			30	Ca	:	w		0170-2L
2323.00	swc							0086
		1.26	100	S/Sst	:	m lt gy, cly, f		0086-1L
2326.00								0143
			70	Ca	:	w		0143-1L
			25	S/Sst	:	gy w		0143-2L
			5	Sh/Clst	:	gn gy		0143-3L
2335.00								0144
		0.79	90	Ca	:	w		0144-1L
			10	Sh/Clst	:	gn gy		0144-2L
2344.00								0145
			95	Ca	:	w		0145-1L
			5	Sh/Clst	:	gn gy		0145-2L
2353.00								0146
		0.93	95	Ca	:	w		0146-1L
			5	Sh/Clst	:	gn gy		0146-2L
2362.00								0147
			95	Ca	:	w		0147-1L
			5	Sh/Clst	:	gn gy		0147-2L
2371.00								0148
		0.76	90	Ca	:	w		0148-1L
			10	Sh/Clst	:	gn gy		0148-2L

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Depth Cvd	Type TOC%	%	Grp Frm Age / Lithology description	Trb	Sample
2380.00						0171
			85	Ca : w, red brn, m brn		0171-1L
			10	Sh/Clst: red brn		0171-2L
		1.94	5	Sh/Clst: drk gy		0171-3L
2389.00						0172
		7.06	85	Sh/Clst: brn blk		0172-1L
			10	Ca : w, red brn		0172-2L
			5	Sh/Clst: red brn, drk gy		0172-3L
2398.00						0149
		8.35	95	Sh/Clst: brn blk, carb		0149-1L
			5	Ca : gy w		0149-2L
2407.00						0150
		9.96	95	Sh/Clst: brn blk, carb		0150-1L
			5	Ca : gy w		0150-2L
2416.00						0151
		8.53	85	Sh/Clst: brn blk, gy brn, carb		0151-1L
			10	S/Sst : pl y brn, l		0151-2L
			5	Coal : blk		0151-3L
2431.50	swc					0087
		2.12	70	S/Sst : m drk gy, cly, f		0087-1L
			30	Sh/Clst: drk gy, pyr		0087-2L
2434.00						0152
		1.05	90	S/Sst : gy w to pl y brn, kln		0152-1L
			10	Sh/Clst: gy brn		0152-2L

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Cvd	Type TOC%	%	Grp Frm Age Lithology description	Trb	Sample
2438.50		swc				0088
		1.03	100	S/Sst : m lt gy, slt, f		0088-1L
2440.30		ccp				0096
		0.10	100	S/Sst : m lt gy to lt brn gy, crs		0096-1L
2443.00						0153
			95	S/Sst : gy w to pl y brn, kln		0153-1L
			5	Sh/Clst: gy brn		0153-2L
2449.00		swc				0089
		1.87	100	S/Sst : m gy, slt, f		0089-1L
2452.00						0154
		0.47	95	S/Sst : gy w to pl y brn, kln		0154-1L
			5	Sh/Clst: gy brn		0154-2L
2461.00						0155
		0.52	95	S/Sst : gy w to pl y brn, kln		0155-1L
			5	Sh/Clst: gy brn		0155-2L
2462.81		ccp				0097
		0.32	100	S/Sst : brn gy, crs		0097-1L
2470.00						0156
			95	S/Sst : gy w to pl y brn, kln		0156-1L
			5	Sh/Clst: gy brn		0156-2L
2479.00						0157
			90	S/Sst : gy w to pl y brn, kln		0157-1L
	49.00		10	Sh/Clst: brn blk, brn gy, carb, wx		0157-2L

GEOLAB NOR

Table 3: Lithology description for well NOCS 25/8-9

Depth unit of measure: m

Depth Int	Cvd	Type TOC%	%	Grp	Frm	Age	Trb	Sample	Lithology description
2488.00								0158	
			70					0158-1L	S/Sst : gy w to pl y brn, kln
		69.60	20					0158-2L	Sh/Clst: brn blk, brn gy, carb, wx
			10					0158-3L	Coal : blk
2497.00								0159	
			90					0159-1L	S/Sst : gy w to pl y brn, kln
		23.60	10					0159-2L	Sh/Clst: brn blk, brn gy, carb, wx
			tr					0159-3L	Coal : blk
2506.00								0160	
			70					0160-1L	S/Sst : gy w to pl y brn, kln
		16.50	20					0160-2L	Sh/Clst: brn blk, brn gy, carb, wx
			10					0160-3L	Coal : blk
2515.00								0161	
			60					0161-1L	S/Sst : gy w to pl y brn, kln
		3.32	40					0161-2L	Sh/Clst: drk gy, gn gy
2524.00								0162	
			90					0162-1L	S/Sst : gy w to pl y brn
			10					0162-2L	Sh/Clst: drk gy
2533.00								0163	
			90					0163-1L	S/Sst : gy w to pl y brn
		6.56	10					0163-2L	Sh/Clst: drk gy
2542.00								0164	
			80					0164-1L	S/Sst : gy w to pl y brn
			20					0164-2L	Sh/Clst: drk gy