

# FMT RESULTS

WELL: 30/9-2

No	Depth (mRKB)	H.P. (PSI)	F.P. (PSI)	PERM.		No	Depth (mRKB)	H.P. (PSI)	F.P. (PSI)	PERM.
1/1	2305.5	4646	144	Tight		1/3	2755	5550	4291	
2/1	2309.3	4657	4295	Tight. 20 min to build up		Segregated sample no. 3 Opening pressure: 0 psig Recovered: 0 cu.ft gas, 0 lt oil, Opaque fluid 5.2 lt water 4.0 lt, cl-: 22 500 (formation water)				
3/1	2315	4666	4289	Tight. 21 min to build up						
4/1	2317	4667	4307	Tight. 13 min to build up		1/4 2639.5      5324      4170  2 3/4 gal sample no. 4 Opening pressure: 0 psig Recovered: 0.1 cu. ft gas, liqued: 8.8 lt - water + Opaque fluid when settled				
5/1	2319.5	4671	160	Very slow build up						
6/1	2362.5	4769	4267	Tight. 17 min to build up		2/4 2690      5429      4217  2 3/4 gal sample no. 5 Opening pressure: 1500 psig Recovered: 11.2 cu. ft gas, 3.8 lt oil				
7/1	2403.5	4857	4316	Tight. 20 min to build up						
8/1	2469	4993	5	No build up						
9/1	2499.5	5245	4117	Good						
10/1	2590.5	5230	4106	»						
11/1	2596	5241	4113	»						
12/1	2590	5243	4114	»						
13/1	2600.5	5247	4118	»						
14/1	2617	5279	4142	Low						
15/1	2622.5	5292	4142	Good						
16/1	2639.5	5328	4160	»						
17/1	2662.5	5376	4180	»						
18/1	2686	5424	4207	»						
19/1	2690	5429	4212	»						
20/1	2692	5433	4214	»						
21/1	2694	5434	4215	Poor						
22/1	2702	5444	4223	»						
23/1	2705	5453	4227	»						
24/1	2707	5456	4229	»						
25/1	2710	5462	4232	»						
26/1	2718.5	5480	4240	»						
27/1	2721	5484	4242	»						
28/1	2723	5487	4244	»						
29/1	2726	5493	4247	»						
30/1	2728	5496	4249	»						
31/1	2734.5	5510	4256	»						
32/1	2738	5514	4260	»						
33/1	2740	5517	4263	»						
34/1	2742.5	5523	4267	»						
35/1	2748.5	5533	131	No build up						
36/1	2748	5532	4276	Good						
37/1	2753.5	5543	4284	»						
38/1	2756	5547	4287	»						
39/1	2759.9	5555	4292	»						
40/1	2762	5559	4296	»						
41/1	2765	5566	4300	»						
42/1	2599.5	5232	4128			Segregated sample no. 1 Opening pressure: 2200 psig Recovered: 20.2 cu.ft gas, 2.2 lt oil.				
1/2	2728	5488	4246			Segregated sample no. 2 Opening pressure: 1420 psig Recovered: 12.45 cu.ft gas, 7.4 lt oil.				

The 9 5/8" casing was landed and cemented with the shoe at 2810 m. Due to a leak in the ball joint it was replaced with a flexjoint. Dresser Atlas logging tools were run: CBL/CCL/VDL/GR and CCL/GR. The oilbased mud was displaced with seawater, and cement was drilled from 2740 m to 2767 m with 8 3/8" bit. Four drill stem tests were performed before plugging back the well. The well is temporary abandoned for future use in the Oseberg development.

### 3.2 Production testing summary

The well was plugged back to 2767 m before perforating the first drill stem test interval.

#### DST no. 1

Perforating interval: 2738 - 2757 m. Set the packer and opened the well for initial flow for 8 minutes.

The well was shut in for initial build-up for 2 hours.

Opened the well and flowed it for the main flow period. Surface samples were taken from the stock tank. The flow time was 8 hours.

The well was shut in for a pressure build up period of 11 hours. Ran bottom hole samples and opened the well to flow. Started flowing the well on 12/64" choke and increased to 24/64" choke while the bottom hole samplers went down. Took 2 bottom hole samples in first run. Changed to 20/64" choke and took 3 bottom hole samples in second run.

Performed injection test with filtered seawater. Killed the well and pulled out of the hole with the test string.

#### DST no. 2

Plugged back to 2733 m and perforated from 2704 m to 2728 m. Set the packer and opened the well for initial flow for 6 minutes. The well was shut in for initial build up for 22 minutes.

Opened the well and flowed it for the main flow period. Started flowing through 28/64" ADJ choke. Diverted the flow through the separator. Changed to 26/64" choke and took surface samples from the separator. The main flow duration was 18 hours.

The well was shut in for a pressure build-up period of 27 hours. Ran bottom hole samplers and retrieved 6 samples in two runs.

Performed injection test with filtered seawater.

Killed the well and pulled out of the hole with the test string.

DST no. 3

Plugged back to 2699 m and perforated from 2685 m to 2693 m. Set the packer and opened the well for initial flow for 5 minutes. The well was shut in for initial build up for 10 minutes.

Opened the well and flowed it for the main flow period. Started flowing through 48/64" ADJ choke. Diverted the flow through the separator. Changed to 28/64" choke and took the surface samples from the separator. The main flow duration was 12 hours.

The well was shut in for a pressure build-up period of 14 hours. Ran bottom hole samples and retrieved 5 samples in two runs.

Killed the well and pulled out of the hole with the test string.

DST no. 4

Plugged back to 2680 m and perforated from 2595 m to 2604 m. Set the packer and opened the well for initial flow for 3 minutes. The well was shut in for initial build up for one hour.

Opened the well and flowed it for the main flow period. Started flowing on 48/64" ADJ choke. Changed to 28/64" fixed choke and diverted the flow through the separator. Took the surface samples from the separator. The main flow duration was 12 hours.

The well was shut in for a pressure built up period of 18 hours. Ran bottom hole samples and retrieved 5 samples in two runs.

Killed the well and pulled out of the hole with the test string. Plugged back to 2590 m.

# DST RESULTS

WELL: 30/9-2

DST No. 1:                      Perforated interval : 2738–2757 m  
   Water flow rate : 928,5 Sm<sup>3</sup>/day  
   choke size : 48/64"  
   Oil cut : 1%  
   BHT : 104°C  
   Final injection rate : 2655 Sm<sup>3</sup>/day  
   WHP : 100.6 bars

DST No. 2:                      Perforated Interval : 2728–2704 m  
   Oil rate : 400.6 Sm<sup>3</sup>/day (32° API gravity)  
   Gas rate : 41,059 Sm<sup>3</sup>/day (0.708 gravity)  
   GOR : 102.5 Sm<sup>3</sup>/Sm<sup>3</sup>  
   Choke : 26/64"  
   CO<sub>2</sub> : 1%  
   H<sub>2</sub>S : 0  
   BHT : 104,7°C  
   Final injection rate : 2114.5 Sm<sup>3</sup>/day  
   WHP : 128 bars

DST No. 3:                      Perforated interval : 2685–2693 m  
   Oil rate : 494,5 Sm<sup>3</sup>/day (3k.2° API gravity)  
   Gas rate : 50.686 Sm<sup>3</sup>/day (0.695 gravity)  
   GOR : 102.5 Sm<sup>3</sup>/Sm<sup>3</sup>  
   Choke : 28/64"  
   CO<sub>2</sub> : 1%  
   H<sub>2</sub>S : 0  
   BHT : 103,7°C

DST No. 4:                      Perforated Interval : 2595–2604 m  
   Oil rate : 479.3 Sm<sup>3</sup>/day (36.5° API gravity)  
   Gas rate : 57.766 Sm<sup>3</sup>/day (0.730 gravity)  
   GOR : 120.5 Sm<sup>3</sup>/Sm<sup>3</sup>  
   Choke : 28/64"  
   CO<sub>2</sub> : 0.8%  
   H<sub>2</sub>S : 0  
   BHT : 100.3°C

## MATERIALS USED PER CASING INTERVAL

<u>36" Hole</u>	<u>127 m - 220 m</u>	<u>93 m drilled</u>	
<u>Material</u>	<u>Packing</u>	<u>Quantity</u>	<u>Cost</u>
BENTONITE	M/T	35	9.625.00
LIME	40 kg	11	109.12
SODA ASH	50 kg	15	311.55
SODIUM BICARBONATE	50 kg	4	88.56
Total cost			\$ 10.134.23
Cost/meter	93 m drilled		\$ 108.97
Cost/barrel	1370 bbls built		\$ 7.39

<u>26"Hole</u>	<u>217 m - 915 m</u>	<u>698 m drilled</u>	
<u>Material</u>	<u>Packing</u>	<u>Quantity</u>	<u>Cost</u>
BARITE	M/T	16	2.019.36
BENTONITE	M/T	76	20.900.00
LIME	40 kg	55	545.60
SODIUM BICARBONATE	50 kg	44	974.16
Total cost			\$24.439.12
Cost/meter	698 m drilled		\$ 35.01
Cost/barrel	5669 bbls built		\$ 4.31

17 1/2" Hole

901 m - 1715 m

814 m drilled

<u>Material</u>	<u>Packing</u>	<u>Quantity</u>	<u>Cost</u>
BARITE	M/T	15	1.893.15
DEXTRID	50 kg	295	17.868.15
IMCO SPOT	25 kg	100	8.500.00
KCI (BRINE)	bbl	1453	27.316.40
KCI (SACK)	50 kg	427	7.980.63
PIPE LAX	55 gal	55	4.925.50
SODIUM BICARBONATE	50 kg	9	199.26
STOKOPOL EM -35	25 kg	45	5.573.25
WALLNUT	25 kg	10	175.50
XC POLYMER	50 lb	141	43.710.00
Total cost			\$ 118.141.84
Cost/meter	814 m drilled		\$ 145.14
Cost/barrel	2918 bbls built		\$ 40.49

12 1/4" Hole

<u>Material</u>	<u>Packing</u>	<u>Quantity</u>	<u>Cost</u>
BARITE	M/T	581.5	73.391.12
CALCIUM CHLORIDE	50 kg	471	13.188.10
DURATONE II	50 lb	743	50.494.28
DRILLTREAT	55 gal	6	5.006.22
EZ MUL NT	55 gal	71	47.255.47
EZ SPOT	55 gal	21	17.705.52
GELTONE II	50 lb	417	34.519.26

INVERMUL NT	55 gal	47	27.695.22
LIME	40 kg	425	4.216.00
OMC	55 gal	10	10.332.80
SLIK 5	55 gal	28	8.783.88
SURFLO S-30	55 gal	9	4.026.96
XC POLYMER	50 lb	5	1.550.00

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Total Mud Material Cost		5209	\$ 298.164.73
ENVIROMUL	bb1	1600	164.096.00
IL 2832 Oil	bb1	2672	215.336.48
ENVIRMUL Credit	bb1	1635	(92.039.20)

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Total Mud cost			\$ 585.558.01
Cost/barrel including			
IL 2832 Oil cost		3574	\$ 163.83
Cost/meter including			
IL 2832 Oil cost		1351	\$ 433.42



TOTAL MATERIAL CONSUMPTION

<u>Material</u>	<u>Packing</u>	<u>Quantity</u>
BARITE	M/T	612
BENTONITE	M/T	111
CALCIUM CHLORIDE	50 kg	632
DEXTRID	50 lb	295
DURATONE	50 lb	743
DRILLTREAT	55 gal	6
ENVIROMUL	bb1	1600
EZ MUL NT	55 gal	71
EZ SPOT	55 gal	21
GELTONE II	50 lb	417
IL 2832	bb1	2672
IMCO SPOT	25 kg	100
INVERMUL NT	55 gal	47
KCI (BRINE)	bb1	1453
KCI (SACK)	50 kg	427
LIME	40 kg	491
OMC	55 gal	10
PILE LAX	55 gal	5
SODA ASH	50 kg	15
SODIUM BICARBONATE	50 kg	57
STOKOPOL EM - 35	25 kg	45
SURFLO S--30	55 gal	9
WALLNUT	25 kg	10
XC POLYMER	50 lb	146
SLIK 5	55 gal	28



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Rapport/Report

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Resyme/Konklusjon/Anbefaling  
 Summary Conclusion/Recommendation

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I      Objectives

The objectives of this study have been to monitor certain properties of oils produced by Petrojarl in well 30/9-2 as a function of production time. The reservoir production was carried out in the vicinity of the tar zone located in the southern part of the Oseberg Field. Consequently major analytical attention was given to asphaltenes and heavy alkanes.

The first sample was collected week 40 (early October) 1986 and the last sample was collected week 51 (end of December) 1986. (One sample, was not taken in week 49 due to a stop in production). A total of 11 oil samples were analysed from that period. However, Oseberg Production extended the study and included oils sampled in the period of weeks 1-5, 1987.

Results from the first 11 samples are reported here, and results from the additional 5 oils will be reported later.

TABLE I : BULK PARAMETERS.

SAMPLE	% ASPH.	% SAT	% ARO	% NSO	ARO/SAT	NSO/SAT
40A	0.74	52	32	16	0.61	0.31
41A	0.96	54	37	9	0.68	0.17
41B	1.08	48	38	14	0.78	0.30
41C	1.10	51	36	13	0.70	0.26
42A	1.17	58	36	7	0.62	0.12
42B		51	33	16	0.64	0.32
42C	1.12	31	48	20	1.53	0.65
43A	1.30	51	30	19	0.60	0.37
43B	1.13	55	31	15	0.57	0.27
43C	1.24	62	30	8	0.49	0.12
44A	1.40	51	34	14	0.67	0.28
44B	1.39	51	34	15	0.67	0.31
44C	1.37	47	32	21	0.67	0.46
45A	1.32	56	38	6	0.69	0.11
45B	1.24	53	34	12	0.65	0.24
45C	1.22	54	33	13	0.62	0.23
46A	1.41	55	34	10	0.63	0.19
46B	1.37	55	30	14	0.55	0.26
46C	1.34	59	31	10	0.53	0.18
47A	1.33	54	39	6	0.73	0.12
47B	1.24	50	36	14	0.72	0.28
47C	1.33	50	37	13	0.74	0.26
48A	1.32	41	38	22	0.92	0.54
48B	1.36	43	37	20	0.85	0.46
48C	1.26	41	41	18	1.00	0.44
50A	1.21	46	35	19	0.76	0.41
50B	1.27	50	33	17	0.65	0.35
50C	1.27	49	34	17	0.70	0.35
51A	1.15	53	44	3	0.83	0.06
51B	1.19	54	40	6	0.74	0.11
51C	1.25	71	14	14	0.20	0.20

TABLE II : ALKANE PARAMETERS, WHOLEOIL.

SAMPLE	CPI 1	CPI 2	PR/n-C17	Pr/Ph	C20-25/ C26-35
UKE 40	1.11	0.95	0.57	1.47	1.54
UKE 40B	1.13	0.97	0.61	1.53	1.32
UKE 40C	1.10	0.94	0.63	1.43	1.49
UKE 41	1.10	0.98	0.55	1.50	1.75
UKE 41B	1.17	0.99	0.60	1.93	1.50
UKE 41C	1.17	1.00	0.59	1.54	1.53
UKE 42	1.03	0.91	0.57	1.43	1.66
UKE 42B	1.09	0.95	0.60	1.52	1.55
UKE 42C	1.10	0.93	0.60	1.66	1.51
UKE 43	1.09	0.82	0.59	1.53	1.54
UKE 43B	1.15	0.98	0.61	1.60	1.53
UKE 43C	1.11	0.97	0.68	1.29	1.78
UKE 44	1.12	1.03	0.61	1.65	1.57
UKE 44B	1.10	0.97	0.61	1.61	1.57
UKE 44C	1.11	0.99	0.59	1.53	1.44
UKE 45	1.11	0.94	0.67	1.53	1.46
UKE 45B	1.07	0.96	0.60	1.55	1.63
UKE 45C	1.07	0.93	0.57	1.42	1.60
UKE 46	1.09	0.96	0.61	1.60	1.60
UKE 46B	1.07	0.88	0.57	1.26	1.44
UKE 46C	1.09	0.95	0.63	1.55	1.56
UKE 47	1.11	0.95	0.64	1.46	1.51
UKE 47B	1.16	0.97	0.60	1.49	1.52
UKE 47C	1.14	0.92	0.61	1.54	1.54
UKE 48A	1.09	0.94	0.58	1.43	1.58
UKE 48B	1.06	0.92	0.61	1.61	1.53
UKE 48C	1.11	0.87	0.56	1.61	1.49
UKE 50A	1.00	1.00	0.66	1.30	1.59
UKE 50B	1.10	1.15	0.68	1.69	1.59
UKE 50C	1.04	1.06	0.65	1.34	1.48
UKE 51A	1.01	1.10	0.69	1.52	1.65
UKE 51B	1.03	1.01	0.66	1.65	1.60
UKE 51C	1.05	1.06	0.64	1.65	1.61



TABLE III : BIOMARKER PARAMETERS.

SAMPLE	% 20S	C20/C29	C28/C29
UKE40	41	2.58	0.68
UKE41A	42	2.07	0.64
UKE41B	48	2.21	0.63
UKE41C	41	2.31	0.64
UKE42A	44	2.38	0.68
UKE42B	40	2.68	0.66
UKE42C	43	2.24	0.54
UKE43A	44	2.41	0.68
UKE43B	40	2.72	0.64
UKE43C	44	2.23	0.66
UKE 44A	39	1.16	0.61
UKE 44B	43	1.23	0.56
UKE 44C	42	1.11	0.64
UKE 45A	39	1.12	0.63
UKE 45B	42	1.17	0.60
UKE 45C	42	1.12	0.60
UKE 46A	39	1.40	0.59
UKE 46B	44	1.06	0.52
UKE 46C	43	1.09	0.63
UKE 47A	37	1.19	0.63
UKE 47B	44	1.06	0.65
UKE 47C	41	1.09	0.63
UKE 48A	39	1.09	0.67
UKE 48B	36	1.14	0.58
UKE 48C	40	0.71	0.62
UKE 50A	41	1.09	0.60
UKE 50B	41	1.16	0.66
UKE 50C	40	1.16	0.58
UKE 51A	42	1.03	0.63
UKE 51B	43	1.06	0.56
UKE 51C	43	1.06	0.57

TABLE IV : AROMATIC PARAMETERS.

SAMPLE	RETENE/ ?	C1-DBT C1-P	C20/C28R
UKE40	2.46		0.34
UKE41A			
UKE41B			
UKE41C	2.91	0.25	0.37
UKE42A	3.00	0.26	0.37
UKE42B			
UKE42C			
UKE43A			
UKE43B			
UKE43C	3.01	0.27	0.56
UKE 44A			
UKE 44B	3.00	0.25	0.40
UKE 44C			
UKE 45A			
UKE 45B	2.70	0.23	0.35
UKE 45C			
UKE 46A			
UKE 46B	2.82	0.25	0.43
UKE 46C			
UKE 47A	2.92	0.27	0.39
UKE 47B			
UKE 47C			
UKE 48A	3.00	1.95	0.38
UKE 48B			
UKE 48C			
UKE 50A			
UKE 50B	2.97	0.24	0.39
UKE 50C			
UKE 51A			
UKE 51B		0.26	0.39
UKE 51C			

**GEOCHEMICAL ANALYSIS REPORT**  
**WELL NOCS 30/9-2a**

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**APPENDIX 4: CHROMATOGRAMS**

**APPENDIX 5: GAS CHROMATOGRAPHY - MASS SPECTROMETRY**

**SUMMARY**

Well NOCS 30/9-2a is situated in the southern part of the Oseberg Field. The well was drilled with an oil based mud, which has made interpretation difficult and destroyed much information.

## INTRODUCTION

Well 30/9-2a is situated at the southern fringe of the Oseberg oil-field in the Norwegian sector of the North Sea. The total drilled depth was 2830 m. Samples were collected between 2350 m and 2830 m from the Norwegian Petroleum Directorate in Stavanger. A total of 163 samples was collected, washed (only the cuttings samples) and described. The analysed section of the well is from 2470 m to 2830 m, with a sampling interval 5 m for the cuttings samples and a more variable sampling interval for the core chip samples. A careful selection of suitable samples was made for screening analysis (i.e. TOC and Rock-Eval analysis). Eighty-five samples were selected for this analysis, and from the data obtained the samples were chosen for follow-up analyses. These were:

Thermal extraction - pyrolysis - gas chromatography	48 samples
Extraction, MPLC fractination, saturated and aromatic hydrocarbon gas chromatography	27 samples
Vitrinite reflectance microscopy	15 samples
Visual kerogen analysis	14 samples
Gas chromatography - mass spectrometry	3 samples
Isotope analysis of C <sub>15</sub> + fractions	3 samples

The well was drilled with an oil-based mud (called "diesel" for convenience in this report). This partly masks natural hydrocarbons, partly enhancing the presence of hydrocarbons in the samples, especially during screening analysis.



Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2350.00						0069
			75	Marl : m gy		0069-1L
			25	Ca : w, chk		0069-2L
			tr	Cont : dd		0069-3L
2355.00						0070
			55	Ca : w to gy pi, chk		0070-2L
			45	Marl : m gy		0070-1L
			tr	Cont : prp, dd		0070-3L
2360.00						0071
			65	Marl : m gy		0071-1L
			35	Ca : w to gy pi, chk		0071-2L
			tr	Cont : prp, dd		0071-3L
2365.00						0072
			75	Marl : m gy		0072-1L
			25	Ca : w to gy pi, chk		0072-2L
			tr	Cont : prp, dd		0072-3L
2370.00						0073
			80	Marl : m gy		0073-1L
			20	Ca : w to gy pi, chk		0073-2L
			tr	Cont : prp, dd		0073-3L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2375.00						0074
			65	Marl : m gy		0074-1L
			35	Ca : w to gy pi, chk		0074-2L
			tr	Cont : prp, dd		0074-3L
2380.00						0075
			50	Marl : m gy		0075-1L
			50	Ca : w to gy pi, chk		0075-2L
			tr	Cont : prp, dd		0075-3L
2385.00						0076
			85	Marl : m gy		0076-1L
			15	Cont : dd		0076-3L
			tr	Ca : w to gy pi, chk		0076-2L
2390.00						0077
			85	Marl : m gy		0077-1L
			15	Cont : dd		0077-3L
			tr	Ca : w to gy pi, chk		0077-2L
2395.00						0078
			75	Marl : m gy		0078-1L
			25	Cont : dd		0078-3L
			tr	Ca : w to gy pi, chk		0078-2L
2400.00						0079
			70	Marl : m gy		0079-1L
			20	Cont : dd		0079-3L
			10	Ca : w to gy pi, chk		0079-2L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2410.00						0080
				70 Sh/Clst: m gy, calc		0080-1L
				20 Ca : w to gy pi, chk		0080-2L
				10 Cont : dd		0080-3L
2415.00						0081
				75 Sh/Clst: m gy, calc		0081-1L
				15 Cont : dd		0081-3L
				10 Ca : w to gy pi, chk		0081-2L
2420.00						0082
				65 Ca : w to gy pi, chk		0082-2L
				35 Sh/Clst: m gy, calc		0082-1L
				tr Cont : dd		0082-3L
2425.00						0083
				95 Sh/Clst: m gy, calc		0083-1L
				5 Cont : dd		0083-3L
				tr Ca : w to gy pi, chk		0083-2L
2430.00						0084
				90 Sh/Clst: m gy, calc		0084-1L
				10 Cont : dd		0084-3L
				tr Ca : w to gy pi, chk		0084-2L
2435.00						0085
				85 Sh/Clst: m gy, calc		0085-1L
				15 Cont : dd		0085-3L
				tr Ca : w to gy pi, chk		0085-2L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2440.00						0086
				50 Sh/Clst: m gy, calc		0086-1L
				45 Ca : w to gy pi, chk		0086-2L
				5 Cont : dd		0086-3L
2445.00						0087
				90 Sh/Clst: m gy, calc		0087-1L
				10 Cont : dd		0087-3L
				tr Ca : w to gy pi, chk		0087-
2450.00						0088
				90 Sh/Clst: m gy to drk gn gy, calc		0088-1L
				10 Cont : dd		0088-3L
				tr Ca : w to gy pi, chk		0088-2L
				tr Other : pyr		0088-4L
2455.00						0089
				85 Sh/Clst: m gy to drk gn gy, calc		0089-1L
				15 Cont : dd		0089-3L
				tr Ca : w to gy pi, chk		0089-2L
				tr Other : pyr		0089-4L
2460.00						0090
				80 Sh/Clst: m gy to drk gn gy, calc		0090-1L
				20 Cont : dd		0090-3L
				tr Ca : w to gy pi, chk		0090-2L
				tr Other : pyr		0090-4L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2465.00						0091	
		80	Sh/Clst:	m gy to drk gn gy, calc		0091-1L	
		20	Cont	: dd		0091-3L	
		tr	Ca	: w to gy pi, chk		0091-2L	
		tr	Other	: pyr		0091-4L	
2470.00						0092	
	1.96	100	Ca	: w to gy pi, chk		0092-2L	
		tr	Sh/Clst:	m gy to drk gn gy, calc		0092-1L	
		tr	Cont	: dd		0092-3L	
2475.00						0093	
		100	Ca	: w to gy pi, chk		0093-2L	
		tr	Sh/Clst:	m gy to drk gn gy, calc		0093-1L	
		tr	Cont	: dd		0093-3L	
2480.00						0094	
		45	Ca	: w to gy pi, s, chk		0094-2L	
		40	Sh/Clst:	m gy to drk gn gy, calc		0094-1L	
		15	Cont	: dd		0094-3L	
2485.00						0095	
	2.05	75	Sh/Clst:	m gy to drk gn gy, calc		0095-1L	
		15	Ca	: w to gy pi, s, chk		0095-2L	
		10	Cont	: prp, dd		0095-3L	
		tr	Other	: pyr		0095-4L	

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2495.00						0096
				90 Sh/Clst: m gy to drk gn gy, calc		0096-1L
				10 Cont : prp, dd		0096-3L
				tr Ca : w to gy pi, s, chk		0096-2L
				tr Other : pyr		0096-4L
2500.00						0097
				90 Sh/Clst: m gy to drk gn gy, calc		0097-1L
				10 Cont : prp, dd		0097-2L
				tr Ca : w to gy pi, s, chk		0097-3L
				tr Other : pyr		0097-4L
2505.00						0098
				90 Sh/Clst: m gy to drk gn gy, calc		0098-1L
				10 Cont : prp, dd		0098-3L
				tr Ca : w to gy pi, s, chk		0098-2L
				tr Other : pyr		0098-4L
2510.00						0099
				100 Ca : w to gy pi, s, chk		0099-2L
				tr Sh/Clst: m gy to drk gn gy, calc		0099-1L
				tr Cont : prp, dd		0099-3L
2515.00						0100
	3.95			90 Sh/Clst: drk gy, mic		0100-4L
				10 Ca : w to gy pi, s, chk		0100-2L
				tr Sh/Clst: m gy to drk gn gy, calc		0100-1L
				tr Cont : prp, dd		0100-3L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2520.00						0101
	4.36	90	Sh/Clst:	drk gy, mic		0101-4L
		5	Ca	: w to gy pi, s, chk		0101-2L
		5	Cont	: prp, dd		0101-3L
			tr Sh/Clst:	m gy to drk gn gy, calc		0101-1L
2525.00						0102
	4.74	90	Sh/Clst:	drk gy, mic		0102-4L
		10	Cont	: dd		0102-3L
			tr Sh/Clst:	m gy to drk gn gy, calc		0102-1L
			tr Ca	: w to gy pi, s, chk		0102-2L
2530.00						0103
	4.50	95	Sh/Clst:	drk gy, mic		0103-4L
		5	Cont	: dd		0103-3L
			tr Sh/Clst:	m gy to drk gn gy, calc		0103-1L
			tr Ca	: w to gy pi, s, chk		0103-2L
2535.00						0104
	5.13	100	Sh/Clst:	drk gy, slt, mic		0104-3L
			tr Ca	: w to gy pi, s, chk		0104-1L
			tr Cont	: dd		0104-2L
			tr Coal	: blk		0104-4L
2540.00						0105
	5.68	100	Sh/Clst:	drk gy, slt, mic		0105-3L
			tr S/Sst	: w, calc, cem		0105-1L
			tr Cont	: dd		0105-2L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2545.00						0106	
	4.65	100	Sh/Clst: drk gy, slt, mic tr S/Sst : w, calc, cem tr Cont : dd			0106-3L 0106-1L 0106-2L	
2550.00						0107	
	4.46	100	Sh/Clst: drk gy, slt, mic tr Cont : prp, dd			0107-2L 0107-1L	
2555.00						0108	
	4.37	100	Sh/Clst: drk gy, slt, mic tr Cont : prp, dd tr S/Sst : w, calc, cem			0108-2L 0108-1L 0108-3L	
2560.00						0109	
	5.77	100	Sh/Clst: drk gy, slt, mic tr Cont : prp, dd tr S/Sst : w, calc, cem tr Other : pyr			0109-2L 0109-1L 0109-3L 0109-4L	
2565.00						0110	
	6.10	100	Sh/Clst: drk gy, slt, mic tr Cont : prp, dd tr S/Sst : w, calc, cem			0110-2L 0110-1L 0110-3L	
2570.00						0111	
	5.40	100	Sh/Clst: drk gy, slt, mic tr Cont : prp, dd tr S/Sst : w, calc, cem			0111-2L 0111-1L 0111-3L	



Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2575.00						0112	
	4.18	100	Sltst	:	drk gy to dsk brn, mic	0112-2L	
			tr Cont	:	prp, dd	0112-1L	
			tr S/Sst	:	w, calc, cem	0112-3L	
			tr Ca	:	m brn, s	0112-4L	
2580.00						0113	
	2.88	95	Sltst	:	drk gy to dsk brn, mic	0113-2L	
		5	Ca	:	m brn, s	0113-4L	
			tr Cont	:	prp, dd	0113-1L	
			tr S/Sst	:	w, calc, cem	0113-3L	
2585.00						0114	
	3.26	75	Sltst	:	drk gy to dsk brn, mic	0114-2L	
		15	S/Sst	:	w to dsk brn, calc, cem	0114-3L	
		10	Cont	:	dd	0114-1L	
			tr Ca	:	m brn, s	0114-4L	
2590.00						0115	
		70	Sltst	:	drk gy to dsk brn, carb, mic	0115-2L	
	44.43	25	Coal	:	blk	0115-4L	
		5	S/Sst	:	w to dsk brn, calc, cem	0115-3L	
			tr Cont	:	dd	0115-1L	
2591.40	ccp					0001	
	1.07	100	S/Sst	:	brn gy to drk y brn, mic, f, cem	0001-1L	

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2593.90	ccp					0002
		61.26	100	Coal : blk		0002-1L
2595.00						0116
				75 Cont : dd		0116-1L
				15 S/Sst : w, calc, cem, l, kln		0116-3L
				10 Sh/Clst: gn gy to m gy		0116-5L
				tr Sltst : drk gy to dsk brn, carb, mic		0116-2L
				tr Coal : blk		0116-1L
2597.05	ccp					0003
		1.61	100	S/Sst : brn blk, st, cem		0003-1L
2600.00						0117
				80 S/Sst : w to lt y brn, cem, l, kln		0117-3L
				10 Cont : dd		0117-1L
				5 Sltst : drk gy to dsk brn, carb, mic		0117-2L
				5 Sh/Clst: gn gy to m gy		0117-5L
				tr Coal : blk		0117-4L
2600.30	ccp					0004
		0.98	100	S/Sst : m brn to dsk y brn, st, cem		0004-1L
2603.10	ccp					0005
		2.29	100	S/Sst : pl y brn to drk y brn, cem		0005-1L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2605.00						0163	
		100	S/Sst	: w to lt y brn, cem, l, kln		0163-1L	
			tr Coal	: blk		0163-2L	
			tr Sh/Clst	: gn gy to m gy		0163-3L	
			tr Cont	: dd		0163-4L	
2606.10	ccp					0006	
	1.34	100	S/Sst	: lt gy to pl y brn, mic, f, cem		0006-1L	
2609.05	ccp					0007	
	2.09	100	S/Sst	: lt gy to drk gy, carb, slt, f, cem, lam		0007-1L	
2610.00						0118	
		65	Sh/Clst	: drk gy to dsk brn, carb		0118-2L	
		25	S/Sst	: w to lt y brn, cem, l, kln		0118-3L	
		10	Cont	: dd		0118-1L	
			tr Coal	: blk		0118-4L	
			tr Sh/Clst	: gy red		0118-5L	
2614.10	ccp					0008	
	1.06	100	Sltst	: brn gy, cly, mic		0008-1L	
			tr Other	: carb		0008-2L	
2615.00						0119	
		70	Sh/Clst	: gn gy		0119-5L	
		15	Coal	: blk		0119-4L	
		10	Cont	: dd		0119-1L	
		5	Sh/Clst	: drk gy to dsk brn, slt		0119-2L	
			tr S/Sst	: w to lt y brn, cem, l, kln		0119-3L	

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2617.00	ccp					0009
	0.46	100	S/Sst	: lt brn gy, mic, f, cem		0009-1L
2619.70	ccp					0010
	1.18	100	S/Sst	: lt gy to drk gy, slt, mic, cem, lam		0010-1L
2620.00						0120
	29.75	70	S/Sst	: w to lt y brn, cem, l, kln		0120-3L
		25	Coal	: blk		0120-4L
		5	Sh/Clst	: gn gy		0120-5L
			tr Cont	: dd		0120-1L
			tr Sh/Clst	: drk gy to dsk brn, slt		0120-2L
2622.75	ccp					0011
	1.11	100	S/Sst	: m brn to dsk brn, st, cem		0011-1L
2625.00						0121
		100	S/Sst	: w to lt y brn, st, cem, l, kln		0121-3L
			tr Cont	: dd		0121-1L
			tr Sh/Clst	: drk gy to dsk brn, slt		0121-2L
			tr Coal	: blk		0121-4L
			tr Sh/Clst	: gn gy		0121-5L
2625.20	ccp					0012
	0.57	100	S/Sst	: lt y brn to drk y brn, cem		0012-1L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
2627.45	ccp					0013
	0.47	100	Sh/Clst: brn gy, wx			0013-1L
2628.10	ccp					0014
	0.32	100	Sltst : lt brn gy to lt gy, cly, mic			0014-1L
2630.00						0122
		100	S/Sst : w to lt y brn, st, cem, l, kln			0122-3L
			tr Cont : dd			0122-1L
			tr Sh/Clst: drk gy to dsk brn, slt			0122-2L
			tr Coal : blk			0122-4L
			tr Sh/Clst: gn gy			0122-5L
2631.25	ccp					0015
	0.26	100	Sh/Clst: brn gy, s, wx			0015-1L
2634.30	ccp					0016
	0.26	100	Sh/Clst: brn gy, slt			0016-1L
2635.00						0123
		80	S/Sst : w to lt y brn, cem, l, kln			0123-3L
		20	Sh/Clst: brn gy to dsk brn, slt			0123-2L
			tr Cont : dd			0123-1L
			tr Other : pyr			0123-4L
			tr Sh/Clst: gn gy			0123-5L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
2637.35	ccp					0017
	0.20	100	S/Sst	: w to lt gy, slt, cem		0017-1L
2640.00						0124
		100	S/Sst	: w to lt y brn, cem, l, kln		0124-3L
			tr Cont	: prp, dd		0124-1L
			tr Sh/Clst:	brn gy to dsk brn, slt		0124-2L
			tr Sh/Clst:	gn gy		0124-4L
2640.20	ccp					0018
	0.67	100	S/Sst	: pl y brn, cem		0018-1L
2643.60	ccp					0019
	0.23	100	Sltst	: m gy, mic		0019-1L
2645.00						0125
		100	S/Sst	: w to lt y brn, cem, l, kln		0125-3L
			tr Cont	: prp, dd		0125-1L
			tr Sh/Clst:	brn gy to dsk brn, slt		0125-2L
			tr Sh/Clst:	gy red		0125-4L
2646.40	ccp					0020
	1.17	100	Sltst	: m gy, s, mic		0020-1L
2649.20	ccp					0021
	1.21	100	S/Sst	: w to lt gy, slt, cem, lam		0021-1L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2650.00						0126	
		85	S/Sst	: w to lt y brn, cem, l, kln		0126-3L	
		15	Coal	: blk, cly		0126-5L	
			tr Cont	: prp, dd		0126-1L	
			tr Sh/Clst:	brn gy to dsk brn, slt		0126-2L	
			tr Sh/Clst:	gy red		0126-4L	
2650.20	ccp					0022	
	22.88	100	Sh/Clst:	blk to brn blk, carb		0022-1L	
2653.05	ccp					0023	
	3.18	100	Sh/Clst:	brn gy, slt, mic		0023-1L	
			tr Ca	: carb		0023-2L	
2655.00						0127	
		100	S/Sst	: w to lt y brn, cly, cem, l, kln		0127-3L	
			tr Cont	: dd		0127-1L	
			tr Sh/Clst:	brn gy to dsk brn, slt		0127-2L	
			tr Sh/Clst:	gn gy		0127-4L	
			tr Coal	: blk, cly		0127-5L	
2656.50	ccp					0024	
	31.80	100	Sh/Clst:	brn blk, carb		0024-1L	
2659.30	ccp					0060	
	8.56	100	Sh/Clst:	brn gy to dsk brn, wx		0060-1L	

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2660.00						0128
			75	Coal : blk, cly		0128-5L
			20	S/Sst : w to lt y brn, cly, cem, l, kln		0128-3L
			5	Cont : dd		0128-1L
			tr	Sh/Clst: brn gy to dsk brn, slt		0128-2L
			tr	Sh/Clst: gn gy		0128-4L
2662.02	ccp					0025
		0.39	100	Sltst : m gy, s, mic		0025-1L
2662.85	ccp					0026
		18.05	100	S/Sst : w to drk gy, cem, lam		0026-1L
			tr	Other : carb		0026-2L
2664.30	ccp					0027
		52.04	100	Coal : blk		0027-1L
2665.00						0129
			60	Coal : blk, cly		0129-5L
			35	S/Sst : w to lt y brn, cly, cem, l, kln		0129-3L
			5	Cont : dd		0129-1L
			tr	Sh/Clst: brn gy to dsk brn, slt		0129-2L
			tr	Sh/Clst: gn gy		0129-4L
2666.50	ccp					0028
		1.39	100	Sh/Clst: brn gy, mic		0028-1L



Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2668.50	ccp					0029
	0.70	100		Sh/Clst: brn gy, mic		0029-1L
2670.00						0130
				80 S/Sst : w to lt y brn, cly, cem, l, kln		0130-3L
				15 Sh/Clst: brn gy to dsk brn, slt		0130-2L
				5 Coal : blk, cly		0130-5L
				tr Cont : dd		0130-1L
				tr Sh/Clst: gn gy		0130-4L
2671.00	ccp					0030
	62.64	100		Coal : blk		0030-1L
2674.00	ccp					0031
	0.43	100		Sh/Clst: brn gy, s, mic		0031-1L
2675.00						0131
				60 Sh/Clst: brn gy to dsk brn		0131-2L
				30 Coal : blk, cly		0131-5L
				10 S/Sst : w to lt y brn, cly, cem, l, kln		0131-3L
				tr Cont : dd		0131-1L
				tr Sh/Clst: gn gy		0131-4L
2677.10	ccp					0032
	0.91	100		Sh/Clst: brn gy, mic		0032-1L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology	description	
2678.40	ccp					0033
		2.15	100	Sh/Clst: brn gy, carb, mic		0033-1L
2680.00						0132
				80 Sltst	: brn gy	0132-2L
				20 S/Sst	: w to lt y brn, cly, cem, l, kln	0132-3L
				tr Cont	: dd	0132-1L
				tr Sh/Clst	: gn gy	0132-4L
				tr Coal	: blk, cly	0132-5L
2681.40	ccp					0034
		0.37	100	S/Sst : w to m gy, slt, cem, lam		0034-1L
2684.10	ccp					0035
		2.98	100	S/Sst : lt y brn to drk gy, cem		0035-1L
2685.00						0133
				85 S/Sst	: w to lt y brn, cly, cem, l, kln	0133-3L
				15 Sltst	: brn gy	0133-2L
				tr Cont	: dd	0133-1L
				tr Sh/Clst	: gy red	0133-4L
				tr Coal	: blk, cly	0133-5L
2686.95	ccp					0036
		1.41	100	S/Sst : drk y brn, cem		0036-1L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2689.35	ccp					0037
		2.21	100	S/Sst : dsk brn, st, cem		0037-1L
2690.00						0134
				50 Sh/Clst: brn gy to gn gy, slt, mic		0134-2L
				50 S/Sst : w to lt y brn, cly, cem, l, kln		0134-3L
				tr Cont : dd		0134-1L
				tr Sh/Clst: gy red		0134-4L
				tr Coal : blk, cly		0134-5L
2692.05	ccp					0038
		15.51	100	S/Sst : dsk brn to blk, carb, pyr, st, cem		0038-1L
2695.00						0135
				90 S/Sst : w to lt y brn, cly, cem, l, kln		0135-3L
				10 Coal : blk, cly		0135-5L
				tr Cont : dd		0135-1L
				tr Sh/Clst: brn gy to gn gy, slt, mic		0135-2L
				tr Sh/Clst: gy red		0135-4L
2695.05	ccp					0039
		4.08	100	S/Sst : lt y brn, carb, cem		0039-1L
2697.55	ccp					0040
		34.23	100	Coal : blk		0040-1L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2699.05	ccp					0041
	3.92	100	S/Sst	: lt gy to m gy, mic, cem		0041-1L
2700.00						0136
			80	S/Sst : w to lt y brn, cly, cem, l, kln		0136-3L
			20	Coal : blk, cly		0136-5L
			tr	Cont : dd		0136-1L
			tr	Sh/Clst: brn gy to gn gy, slt, mic		0136-2L
			tr	Sh/Clst: gy red		0136-4L
2702.55	ccp					0042
	0.60	100	S/Sst	: lt y brn to m gy, mic, cem, lam		0042-1L
2705.00						0137
			90	S/Sst : w to lt y brn, cly, cem, l, kln		0137-3L
			10	Coal : blk, cly		0137-5L
			tr	Cont : dd		0137-1L
			tr	Sh/Clst: brn gy to gn gy, slt, mic		0137-2L
			tr	Sh/Clst: gy red		0137-4L
2705.75	ccp					0043
	1.25	100	S/Sst	: drk y brn to dsk brn, mic, crs, st, cem		0043-1L
2708.30	ccp					0044
			100	S/Sst : drk y brn, mic, cem, cnsl		0044-1L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2710.00						0138
	6.38	85	S/Sst	: w to lt y brn, cly, cem, l, kln		0138-3L
		15	Sh/Clst:	brn gy to gn gy, slt, mic		0138-2L
			tr Cont	: dd		0138-1L
			tr Sh/Clst:	gy red		0138-4L
			tr Coal	: blk, cly		0138-5L
2711.30	ccp					0045
	1.45	100	S/Sst	: drk y brn, crs, st, cem		0045-1L
2714.20	ccp					0048
	0.87	100	S/Sst	: drk y brn, mic, crs, cem		0048-1L
2715.00						0139
		100	S/Sst	: w to lt y brn, cem, l, kln		0139-3L
			tr Cont	: dd		0139-1L
			tr Sh/Clst:	brn gy to gn gy, slt, mic		0139-2L
			tr Sh/Clst:	gy red		0139-4L
			tr Coal	: blk, cly		0139-5L
2717.10	ccp					0046
	1.55	100	S/Sst	: drk y brn, pyr, mic, crs, cem, l		0046-1L
2720.00						0140
		100	S/Sst	: w to lt y brn, cem, l, kln		0140-3L
			tr Cont	: dd		0140-1L
			tr Sh/Clst:	brn gy to gn gy, slt, mic		0140-2L
			tr Sh/Clst:	gy red		0140-4L
			tr Coal	: blk, cly		0140-5L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2720.65	ccp					0047
	1.05	100	S/Sst	: drk y brn to dsk y brn, mic, crs, cem		0047-1L
2723.50	ccp					0049
		100	S/Sst	: drk y brn to dsk y brn, mic, crs, st, cem		0049-1L
			tr Cont	: prp, dd		0049-2L
2725.00						0141
		95	S/Sst	: w to lt y brn, cem, l, kln		0141-3L
		5	Sh/Clst	: brn gy to gn gy, slt, mic		0141-2L
			tr Cont	: dd		0141-1L
			tr Sh/Clst	: gy red		0141-4L
			tr Coal	: blk, cly		0141-5L
2726.45	ccp					0050
	0.92	100	S/Sst	: drk y brn, crs, cem		0050-1L
2729.75	ccp					0051
		100	S/Sst	: drk y brn, mic, crs, cem		0051-1L
2730.00						0142
	4.69	100	S/Sst	: w to lt y brn, cem, l, kln		0142-3L
			tr Cont	: dd		0142-1L
			tr Sh/Clst	: brn gy to gn gy, slt, mic		0142-2L
			tr Sh/Clst	: gy red		0142-4L
			tr Coal	: blk, cly		0142-5L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2732.70	ccp					0052	
	0.80	100	S/Sst : drk gy, pyr, mic, crs, cem			0052-1L	
2735.00						0143	
		95	S/Sst : w to lt y brn, cem, l, kln			0143-3L	
		5	Sh/Clst: brn gy to gn gy, slt, mic			0143-2L	
			tr Cont : dd			0143-1L	
			tr Sh/Clst: gy red			0143-4L	
			tr Coal : blk, cly			0143-5L	
2735.40	ccp					0053	
		100	S/Sst : drk y brn, mic, crs, cem			0053-1L	
2738.20	ccp					0054	
	2.35	100	S/Sst : lt gy to drk gy, pyr, mic, cem			0054-1L	
2740.00						0144	
		100	S/Sst : w to lt y brn, cem, l, kln			0144-3L	
			tr Cont : dd			0144-1L	
			tr Sh/Clst: brn gy to gn gy, slt, mic			0144-2L	
			tr Sh/Clst: gy red			0144-4L	
			tr Coal : blk, cly			0144-5L	
2741.53	ccp					0068	
	1.49	100	S/Sst : drk y brn, cem			0068-1L	

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2744.69	ccp					0055
			100	S/Sst : drk y brn to drk gy, mic, crs, cem		0055-1L
2745.00						0145
			95	S/Sst : w to lt y brn, cem, l, kln		0145-3L
			5	Sh/Clst: brn gy to gn gy, slt, mic		0145-2L
				tr Cont : dd		0145-1L
				tr Sh/Clst: gy red		0145-4L
				tr Coal : blk, cly		0145-
2747.50	ccp					0056
		3.05	100	S/Sst : drk y brn to drk gy, carb, mic, cem		0056-1L
2750.00						0146
			100	S/Sst : w to lt y brn, cem, l, kln		0146-3L
				tr Cont : dd		0146-1L
				tr Sh/Clst: brn gy to gn gy, slt, mic		0146-2L
				tr Sh/Clst: gy red		0146-4L
				tr Coal : blk, cly		0146-5L
2750.45	ccp					0057
		1.99	100	S/Sst : lt gy to drk gy, cem		0057-
2753.80	ccp					0058
			100	S/Sst : lt gy to lt y brn, cem		0058-1L
				tr Other : carb		0058-2L



Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2755.00						0147	
		90	S/Sst	:	w to lt y brn, cem, l, kln	0147-3L	
		10	Sh/Clst:	:	brn gy to gn gy, slt, mic	0147-2L	
			tr Cont	:	dd	0147-1L	
			tr Sh/Clst:	:	gy red	0147-4L	
			tr Coal	:	blk, cly	0147-5L	
2756.65	ccp					0059	
	0.57	100	S/Sst	:	drk gy, mic, crs, cem	0059-1L	
2759.70	ccp					0061	
		100	S/Sst	:	m gy, crs, cem	0061-1L	
2760.00						0148	
		95	S/Sst	:	w to lt y brn, cem, l, kln	0148-3L	
		5	Sh/Clst:	:	brn gy to gn gy, slt, mic	0148-2L	
			tr Cont	:	prp, dd	0148-1L	
			tr Sh/Clst:	:	gy red	0148-4L	
			tr Coal	:	blk, cly	0148-5L	
2762.65	ccp					0062	
	0.48	100	S/Sst	:	m gy, crs, cem	0062-1L	
2765.00						0149	
		100	S/Sst	:	w to lt y brn, cem, l, kln	0149-3L	
			tr Cont	:	dd	0149-1L	
			tr Sh/Clst:	:	brn gy to gn gy, slt, mic	0149-2L	
			tr Sh/Clst:	:	gy red	0149-4L	
			tr Coal	:	blk, cly	0149-5L	

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2765.85	ccp					0063
			100	S/Sst : m gy, crs, cem		0063-1L
2768.25	ccp					0064
		0.47	100	S/Sst : lt gy, crs, cem		0064-1L
2770.00						0150
			95	S/Sst : w to lt y brn, cem, l, kln		0150-
			5	Sh/Clst: brn gy to gn gy, slt, mic		0150-2L
				tr Cont : dd		0150-1L
				tr Sh/Clst: gy red		0150-4L
				tr Coal : blk, cly		0150-5L
2771.25	ccp					0065
		0.61	100	Sh/Clst: drk gy to brn blk, slt, mic		0065-1L
2774.40	ccp					0066
		1.19	100	Sltst : drk gy to brn blk, cly, mic		0066-1L
2775.00						0151
			100	Sh/Clst: m gy to drk gy, slt		0151-??
				tr Cont : dd		0151-
				tr S/Sst : w to lt y brn, cem, l, kln		0151-3L
2777.00	ccp					0067
		1.43	100	Sltst : drk gy to brn blk, mic		0067-1L
				tr Cont : dd		0067-2L

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2780.00						0152	
		100	Sltst	: m gy, mic		0152-2L	
			tr Cont	: dd		0152-1L	
			tr S/Sst	: w to lt y brn, cem, l, kln		0152-3L	
2785.00						0153	
	3.83	100	Sltst	: m gy, mic		0153-2L	
			tr Cont	: dd		0153-1L	
2790.00						0154	
		100	Sltst	: m gy, mic		0154-2L	
			tr Cont	: prp, dd		0154-1L	
2795.00						0155	
		100	Sltst	: m gy, mic		0155-2L	
			tr Cont	: prp, dd		0155-1L	
2800.00						0156	
	2.46	100	Sltst	: m gy, mic		0156-2L	
			tr Cont	: dd		0156-1L	
2805.00						0157	
		100	Sltst	: m gy, mic		0157-2L	
			tr Cont	: dd		0157-1L	

Table 1 : Lithology description for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2810.00						0158
			100	Sltst : m gy, mic		0158-2L
				tr Cont : dd		0158-1L
2815.00						0159
		1.52	100	Sltst : m gy, mic		0159-2L
				tr Cont : dd		0159-1L
2820.00						0160
			100	Sltst : m gy, mic		0160-2L
				tr Cont : dd		0160-1L
2825.00						0161
			100	Sltst : m gy, mic		0161-2L
				tr Cont : dd		0161-1L
				tr Ca : m y brn		0161-3L
2830.00						0162
		3.21	100	Sltst : m gy, mic		0162-2L
				tr Cont : dd		0162-1L
				tr Ca : m y brn		0162-3L

Table 2 : Rock-Eval table for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2470.00	cut	Ca : w to gy pi	16.67	3.08	0.87	3.54	1.96	157	44	19.8	0.84	439	0092-2L
2485.00	cut	Sh/Clst: m gy to drk gn gy	13.25	3.74	0.88	4.25	2.05	182	43	17.0	0.78	365	0095-1L
2515.00	cut	Sh/Clst: drk gy	12.17	10.61	0.78	13.60	3.95	269	20	22.8	0.53	429	0100-4L
2520.00	cut	Sh/Clst: drk gy	8.93	8.15	0.66	12.35	4.36	187	15	17.1	0.52	431	0101-4L
2525.00	cut	Sh/Clst: drk gy	12.63	15.43	0.69	22.36	4.74	326	15	28.1	0.45	430	0102-4L
2530.00	cut	Sh/Clst: drk gy	12.21	13.22	0.78	16.95	4.50	294	17	25.4	0.48	430	0103-4L
2535.00	cut	Sh/Clst: drk gy	11.01	13.56	0.89	15.24	5.13	264	17	24.6	0.45	428	0104-3L
2540.00	cut	Sh/Clst: drk gy	10.91	12.41	0.83	14.95	5.68	218	15	23.3	0.47	432	0105-3L
2545.00	cut	Sh/Clst: drk gy	14.38	13.82	0.95	14.55	4.65	297	20	28.2	0.51	428	0106-3L
2550.00	cut	Sh/Clst: drk gy	13.57	11.10	1.11	10.00	4.46	249	25	24.7	0.55	430	0107-2L
2555.00	cut	Sh/Clst: drk gy	12.22	9.39	0.99	9.48	4.37	215	23	21.6	0.57	430	0108-2L
2560.00	cut	Sh/Clst: drk gy	14.70	19.05	1.23	15.49	5.77	330	21	33.8	0.44	428	0109-2L
2565.00	cut	Sh/Clst: drk gy	15.47	14.94	1.20	12.45	6.10	245	20	30.4	0.51	429	0110-2L
2570.00	cut	Sh/Clst: drk gy	14.68	9.42	1.32	7.14	5.40	174	24	24.1	0.61	428	0111-2L
2575.00	cut	Slstst : drk gy to dsk brn	11.81	6.89	1.37	5.03	4.18	165	33	18.7	0.63	428	0112-2L

Table 2 : Rock-Eval table for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2580.00	cut	Sltst : drk gy to dsk brn	14.28	3.62	2.25	1.61	2.88	126	78	17.9	0.80	426	0113-2L
2585.00	cut	Sltst : drk gy to dsk brn	18.21	3.67	1.50	2.45	3.26	113	46	21.9	0.83	420	0114-2L
2590.00	cut	Coal : blk	54.80	82.30	14.42	5.71	44.43	185	32	137.1	0.40	434	0115-4L
2591.40	ccp	S/Sst : brn gy to drk y brn	7.34	0.61	0.56	1.09	1.07	57	52	8.0	0.92	426	0001-1L
2593.90	ccp	Coal : blk	46.93	163.97	7.95	20.63	61.26	268	13	210.9	0.22	430	0002-1L
2597.05	ccp	S/Sst : brn blk	9.15	2.03	0.62	3.27	1.61	126	39	11.2	0.82	429	0003-1L
2600.30	ccp	S/Sst : m brn to dsk y brn	8.46	1.27	0.56	2.27	0.98	130	57	9.7	0.87	413	0004-1L
2603.10	ccp	S/Sst : pl y brn to drk y brn	9.10	2.75	0.58	4.74	2.29	120	25	11.9	0.77	426	0005-1L
2606.10	ccp	S/Sst : lt gy to pl y brn	4.25	1.48	0.51	2.90	1.34	110	38	5.7	0.74	404	0006-1L
2609.05	ccp	S/Sst : lt gy to drk gy	2.78	2.05	0.66	3.11	2.09	98	32	4.8	0.58	439	0007-1L
2614.10	ccp	Sltst : brn gy	1.13	1.18	0.46	2.57	1.06	111	43	2.3	0.49	436	0008-1L
2617.00	ccp	S/Sst : lt brn gy	2.34	0.59	0.40	1.47	0.46	128	87	2.9	0.80	362	0009-1L
2619.70	ccp	S/Sst : lt gy to drk gy	2.83	1.64	0.48	3.42	1.18	139	41	4.5	0.63	433	0010-1L
2620.00	cut	Coal : blk	39.54	27.95	13.18	2.12	29.75	94	44	67.5	0.59	440	0120-4L
2622.75	ccp	S/Sst : m brn to dsk brn	9.98	2.00	0.51	3.92	1.11	180	46	12.0	0.83	343	0011-1L

Table 2 : Rock-Eval table for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2625.20	ccp	S/Sst : lt y brn to drk y brn	5.28	0.67	0.46	1.46	0.57	118	81	6.0	0.89	413	0012-1L
2627.45	ccp	Sh/Clst: brn gy	0.45	0.28	0.29	0.97	0.47	60	62	0.7	0.62	345	0013-1L
2628.10	ccp	Sltst : lt brn gy to lt gy	0.37	0.16	0.63	0.25	0.32	50	197	0.5	0.70	323	0014-1L
2631.25	ccp	Sh/Clst: brn gy	0.50	0.19	0.89	0.21	0.26	73	342	0.7	0.72	345	0015-1L
2634.30	ccp	Sh/Clst: brn gy	0.43	0.37	0.25	1.48	0.26	142	96	0.8	0.54	438	0016-1L
2637.35	ccp	S/Sst : w to lt gy	0.58	0.46	0.13	3.54	0.20	230	65	1.0	0.56	380	0017-1L
2640.20	ccp	S/Sst : pl y brn	6.59	0.31	0.27	1.15	0.67	46	40	6.9	0.96	369	0018-1L
2643.60	ccp	Sltst : m gy	0.36	0.14	0.20	0.70	0.23	61	87	0.5	0.72	307	0019-1L
2646.40	ccp	Sltst : m gy	1.03	1.63	0.65	2.51	1.17	139	56	2.7	0.39	438	0020-1L
2649.20	ccp	S/Sst : w to lt gy	0.91	1.59	1.25	1.27	1.21	131	103	2.5	0.36	441	0021-1L
2650.20	ccp	Sh/Clst: blk to brn blk	4.07	31.41	2.07	15.17	22.88	137	9	35.5	0.11	441	0022-1L
2653.05	ccp	Sh/Clst: brn gy	1.09	3.44	1.69	2.04	3.18	108	53	4.5	0.24	436	0023-1L
2656.50	ccp	Sh/Clst: brn blk	5.62	84.85	2.71	31.31	31.80	267	9	90.5	0.06	438	0024-1L
2659.30	ccp	Sh/Clst: brn gy to dsk brn	2.01	30.40	0.77	39.48	8.56	355	9	32.4	0.06	435	0060-1L
2662.02	ccp	Sltst : m gy	0.49	0.33	0.27	1.22	0.39	85	69	0.8	0.60	437	0025-1L

Table 2 : Rock-Eval table for well NOCS 30/9-2A

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2662.85	ccp	S/Sst : w to drk gy	44.60	65.89	1.92	34.32	18.05	365	11	110.5	0.40	427	0026-1L
2664.30	ccp	Coal : blk	19.45	107.58	3.95	27.24	52.04	207	8	127.0	0.15	433	0027-1L
2666.50	ccp	Sh/Clst: brn gy	0.73	1.45	1.42	1.02	1.39	104	102	2.2	0.33	439	0028-1L
2668.50	ccp	Sh/Clst: brn gy	0.70	1.18	1.49	0.79	0.70	169	213	1.9	0.37	438	0029-1L
2671.00	ccp	Coal : blk	25.06	141.60	5.33	26.57	62.64	226	9	166.7	0.15	431	0030-1L
2674.00	ccp	Sh/Clst: brn gy	0.23	0.35	0.85	0.41	0.43	81	198	0.6	0.40	441	0031-1L
2677.10	ccp	Sh/Clst: brn gy	0.72	1.36	0.41	3.32	0.91	149	45	2.1	0.35	439	0032-1L
2678.40	ccp	Sh/Clst: brn gy	1.03	2.51	0.16	15.69	2.15	117	7	3.5	0.29	440	0033-1L
2681.40	ccp	S/Sst : w to m gy	0.71	0.43	0.03	14.33	0.37	116	8	1.1	0.62	347	0034-1L
2684.10	ccp	S/Sst : lt y brn to drk gy	10.11	8.36	1.50	5.57	2.98	281	50	18.5	0.55	430	0035-1L
2686.95	ccp	S/Sst : drk y brn	12.81	1.91	0.20	9.55	1.41	135	14	14.7	0.87	375	0036-1L
2689.35	ccp	S/Sst : dsk brn	17.26	5.96	0.15	39.73	2.21	270	7	23.2	0.74	341	0037-1L
2692.05	ccp	S/Sst : dsk brn to blk	35.96	63.35	1.77	35.79	15.51	408	11	99.3	0.36	423	0038-1L
2695.05	ccp	S/Sst : lt y brn	6.68	9.39	0.25	37.56	4.08	230	6	16.1	0.42	425	0039-1L
2697.55	ccp	Coal : blk	10.85	50.71	3.28	15.46	34.23	148	10	61.6	0.18	438	0040-1L