

TESTS

RFT tests

<u>RUN &amp; NO</u>	<u>DEPTH</u> (LD mbrt)	<u>PRESSURE</u> (psig)	<u>COMMENTS</u>
2A - 1	1683.4 m	-	Dry Test
" - 2	1716.0 m	2478.6	Good Test
" - 3	1712.0 m	2472.7	Good Test
" - 4	1706.1 m	2464.3	Good Test
" - 5	2249.0 m	3268.3	Good Test
" - 6	2248.1 m	3266.3	Good Test
" - 7	2246.0 m	3265.1	Good Test
" - 8s	2247.0 m	3265.7	Good Test, 1 gal unsegregated sample
3B - 1	2248.0 m	3273.3	Good Test
" - 2	2257.0 m	3285.5	Good Test
" - 3	2271.0 m	3305.4	Good Test
" - 4	2286.0 m	3326.5	Good Test
" - 5	2302.0 m	3349.1	Good Test
" - 6	2309.0 m	3358.6	Good Test
" - 7	2315.0 m	3367.4	Good Test
" - 8	2334.5 m	-	Dry Test
" - 9	2334.0 m	-	Dry Test
" - 10	2333.5 m	-	Dry Test
" - 11	2348.0 m	-	Dry Test
" - 12	2345.5 m	3420.6	Good Test
" - 13	2406.0 m	-	Dry Test
" - 14	2404.5 m	-	Dry Test
" - 15s	2302.0 m	3347.7	Good Test, Sample
4C - 1	2766.0 m	4039.5	Poor Permeability, Supercharged?
" - 2	2771.5 m	4038.0	Good Permeability
" - 3	2777.1 m	4045.0	Good Permeability
" - 4	2800.0 m	-	Dry Test
" - 5	2799.4 m	4071.0	Good Permeability
" - 6	2835.5 m	4124.0	Good Permeability
" - 7	2868.1 m	4186.0	Good Permeability
" - 8	2826.5 m	4121.0	Good Permeability
" - 9	3311.5 m	-	Seal Failure
" - 10	3312.0 m	5488.0	Poor Permeability, Supercharged?
" - 11	3336.0 m	5495.0	Moderate Permeability
" - 12	3350.0 m	5494.5	Good test
" - 13	3371.0 m	5526.0	Good Permeability
" - 14	3403.5 m	5669.0	Good Test
" - 15	3469.5 m	-	Seal Failure
" - 16	3468.6 m	-	Dry Test
" - 17	3469.0 m	-	Seal Failure
" - 18	3468.8 m	-	Seal Failure
" - 19	3492.1 m	-	Seal Failure
" - 20	3492.9 m	5840.0	Good Test
" - 21	3532.0 m	-	Seal Failure
" - 22	3551.0 m	-	Dry Test
" - 23	3551.6 m	6139.0	Supercharged?
" - 24	3571.1 m	5970.0	Good Test
" - 25			No Test
" - 26	3314.1 m	5467.0	Good Test
" - 27	3314.1 m	-	Seal Failure
" - 28s	3314.1 m	5469.0	1 gallon sample
" - 29	3324.0 m	5635.0	Seal Failure
" - 30	3310.9 m	5484.0	Poor Permeability
" - 31s	2771.5 m	4040.0	2.75 gallon sample

# MUD VOLUME DISTRIBUTION SUMMARY



**N Baroid**

Operator: BP

Well: 26/4-1

Rig: T. Scout

Hole size	Interval m			Mud/Brine BBLs						Cuttings volume drilled BBL	Interval Mud Type
	Spud Depth	TD depth	Length	Built	Dumped	Lost to formation	Lost over solios control equip.	Left behind casing	Transfer to next section		
36	142	236	94	1758	998	-	-	-	760	388	Gel-mud
26	236	723	487	1590	2350	-	-	-	0	1049	Gel-mud
17 1/2	723	1680	957	6021	1983	NIL	1585	NIL	2453	934.2	KCL-polymer
12 1/4	1680	2680	1000	6961	3190	2227	1482	125	2390	478.3	KCL-polymer
8 3/8	2680	3690	1010	2649	3315	NIL	1224	left in hole 500	NIL	225.8	Seawater polymer
<b>TOTALS</b>				18979	11836	2227	4291	625		3075.3	

Total Mud/Brine left in hole + behind casing: 625 bbls

Total Mud/Brine to sea: 16.127 bbls

- 33 -

SUMMARY OF WELL INFORMATION, TOTAL PRODUCTS USED AND RELATED COSTS

Well No: 26/4-1

Location: Norwegian North Sea

Drilling Rig/Contractor: Treasure Scout/W. Wilhelmsen

Bore Sections and Depths: 12 1/4" pilot, 36" hole, 236 m

Casing Depths: 233 m

Date of Spud: 8/5/87

Date of T.D.: 9/5/87

<u>Product</u>	<u>Quantity</u>	<u>Unit Cost</u> <u>US\$</u>	<u>Cost</u> <u>US\$</u>
Bentonite	13 MT	201.00	2613.00
Barite	9 MT	72.00	648.00
Caustic Soda	8 SX	10.35	82.80
Soda Ash	2 SX	14.82	29.64
Lime	3 SX	5.60	16.80

Total Cost of Mud Chemicals

3390.24

Cost of Mud Engineering Days

\$ 750.00

Cost of Solids Control Rental

-

Shale Shakers

-

Mud Cleaner

-

Centrifuge

-

Other

Cost of Solids Control Maintenance  
To Include Service Engineers/Spare Parts  
(Give Details)

Total Cost of Mud Related Services

\$ 4140.24

SUMMARY OF WELL INFORMATION, TOTAL PRODUCTS USED AND RELATED COSTS

Well No: 26/4-1

Location: 26/4

Drilling Rig/Contractor: W. W. DRLG

Hole Sections and Depths: 26" hole to 723 m

Casing Depths: 20" at 711 m

Date of Spud: 10/5/87

Date of T.D.: 13/5/87

<u>Product</u>	<u>Quantity</u>	<u>Unit Cost</u> <u>US\$</u>	<u>Cost</u> <u>US\$</u>
Barite	51 MT	72.00	3672.00
Bentonite	26 MT	201.00	5226.00
Soda Ash	7 SXS	14.82	103.74
Caustic	7 SXS	10.35	72.45
Lime	27 SXS	5.60	151.20
PAC-R	6 SXS	68.00	408.00

Total Cost of Mud Chemicals

9633.39

Cost of Mud Engineering Days

1875.00

Cost of Solids Control Rental

Shale Shakers

Mud Cleaner

Centrifuge

Other

Cost of Solids Control Maintenance  
To Include Service Engineers/Spare Parts  
(Give Details)

Total Cost of Mud Related Services

11508.39

SUMMARY OF WELL INFORMATION, TOTAL PRODUCTS USED AND RELATED COSTS

Well No: 26/4-1

Location: 26/4

Drilling Rig/Contractor: W. W. Drilling

Hole Sections and Depths: 17 1/2" hole to 1680 m

Casing Depths: 1675 m

Date of Spud: 15/5/87

Date of T.D.: 24/5/87

<u>Product</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Cost</u>
		<u>US\$</u>	<u>US\$</u>
Barite	535 MT	72.00	38520.00
KCL-Brine	598 BBL	12.10	7235.80
KCL-SXS	2160 SXS	12.08	26092.80
XCD-polymer	144 SXS	208.00	29952.00
Dextrid	449 SXS	25.00	11225.00
Stockopol EM35	46 DRM	61.16	2813.36
Pac-R	104 SXS	68.00	7072.00
Pac-L	51 SXS	68.00	3468.00
Soda Ash	32 SXS	14.82	474.24
KOH	8 SXS	41.40	331.20
Bicarb	5 SXS	17.80	89.00

Total Cost of Mud Chemicals

127273.40

Cost of Mud Engineering Days

\$ 7125.00

Cost of Solids Control Rental

Shale Shakers

Mud Cleaner

Centrifuge

Other

Cost of Solids Control Maintenance  
To Include Service Engineers/Spare Parts  
(Give Details)

Total Cost of Mud Related Services

\$ 134398.40

SUMMARY OF WELL INFORMATION, TOTAL PRODUCTS USED AND RELATED COSTS

Well No: 26/4-1

Location: 26/4

Drilling Rig/Contractor: W. W. DRLG

Hole Sections and Depths: 12 1/4" hole

Casing Depths: 2668 m

Date of Spud: 27/5/87

Date of T.D.: 18/6/87

<u>Product</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Cost</u>
		<u>US\$</u>	<u>US\$</u>
Barite	685	72.00	49320.00
Dextrid	482	25.00	12050.00
Pac-L	1	688.00	1156.00
Pac-R	235	688.00	15980.00
KCL	1648	12.08	19907.84
KOH	40	41.40	1656.00
Soda Ash	32	14.82	474.24
Sodium Bicarb	55	17.80	979.00
Stockopol	60	61.60	3669.60
XCD-polymer	84	208.00	17472.00
Mica-F	164	11.80	1935.20
Mica-C	100	11.80	1180.00
Wallnut-F	47	13.20	620.40
Wallnut-C	23	13.20	303.60
Diaseal-D	95	40.00	3800.00
KCL Brine	867	12.18	10490.70
Bentonite	1	201.00	201.00
<b>Total Cost of Mud Chemicals</b>			

\$ 141195.58

Cost of Mud Engineering Days

\$ 17250.00

Cost of Solids Control Rental

-

Shale Shakers

-

Mud Cleaner

-

Centrifuge

-

Other

-

Cost of Solids Control Maintenance  
To Include Service Engineers/Spare Parts  
(Give Details)

**Total Cost of Mud Related Services**

\$ 158445.58

SUMMARY OF WELL INFORMATION, TOTAL PRODUCTS USED AND RELATED COSTS

Well No: 26/4-1

Location: 26/4

Drilling Rig/Contractor: W. W. Drilling

Hole Sections and Depths: 8 3/8" to 3690 m

Casing Depths: -

Date of Spud: 23 June

Date of T.D.: 9 July 87

<u>Product</u>	<u>Quantity</u>	<u>Unit Cost</u> <u>US\$</u>	<u>Cost</u> <u>US\$</u>
Barite	72	72.00	5184.00
Dextrid	302	25.00	7550.00
Pac-L	89	68.00	6052.00
Pac-R	73	68.00	4964.00
KCL	50	12.08	604.00
KOH	51	41.40	2111.40
Soda Ash	11	14.82	163.02
Sod-Bicarbonate	9	17.80	160.20
XCD-polymer	52	208.00	10816.96
Stockopol EM35	6	61.16	366.96
Coat 888	9	192.00	1728.00
Lime	19	4.48	85.12

Total Cost of Mud Chemicals \$ 39784.70

\$ 9375.00

Cost of Mud Engineering Days

Cost of Solids Control Rental

Shale Shakers

Mud Cleaner

Centrifuge

Other

Cost of Solids Control Maintenance  
To Include Service Engineers/Spare Parts  
(Give Details)

Total Cost of Mud Related Services \$ 49159.70



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3

Copy No. 3

# RESEARCH CENTRE

SUNBURY - ON - THAMES

MIDDLESEX

3

## EXPLORATION AND PRODUCTION DIVISION

GCB/193/87

NOVEMBER 1987

### GEOCHEMISTRY BRANCH

#### THE GEOCHEMICAL CHARACTERISATION OF SEDIMENTS

#### RECOVERED FROM WELL 26/4-1, NOCS

by

R.I. Crisp and S. Fry

87-1789-BA
18 DES. 1987
<b>REGISTRERT</b>
OLJEDIREKTORATET

Work by:  
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LITHOLOGY AND STRATIGRAPHY

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH (m)	DEPTH RANGE	LITHOLOGY
2643.80		MUDSTONE-dusky yellsh brn, frm, well lam, sl silty, sl dol
2656.00		MUDSTONE-dusky yellsh brn, frm, well lam, slty, sl dol
2668.00		MUDSTONE-dusky yellsh brn, frm, well lam, sl slty, sl dol
2672.00		MUDSTONE-dk gy, frm, blk, mod calc, occ carb frags/inclusions
2682.00		MUDSTONE-dk gy, frm, blk, mod calc, occ carb frags/inclusions
2690.50		MUDSTONE-dk gy, hd, blk - ang, bec v calc
2691.50		MUDSTONE-dk gy, hd, blk - ang, mod calc
2700.00		MUDSTONE-dk gy, hd, ang, non - v sl calc
2707.00		MUDSTONE-dk gy, hd, ang, non - v sl calc
2725.00		SILTSTONE-brnsh gy, frm - mod hd, carb, mic, non - sl calc
2733.00		SILTSTONE-brnsh gy, frm - mod hd, carb, mic, non - sl calc
2754.50		SANDSTONE-pale yel, brn, md hd, vf, ang, calc, slty, carb, glauc
2826.00		COAL-blk, brittle, bit
2900.00		MUDSTONE-brnsh gy - m dk gy, m hd, blk - ang, slty, mic, sl calc
2950.00		MUDSTONE-lt oliv gy - brnsh gy, frm - m hd, sl - m calc swells
2971.00	2968-2971.0	MUDSTONE-dusky yel brn - brn gy, slty 80%:LIMESTONE-lt gy 20%
2983.00	2980-2983.0	MUDSTONE-dusky yel brn - brn gy, slty 100%
2992.00	2989-2992.0	MUDSTONE-dusky yel brn - brn gy, slty 95%:LIMESTONE-v lt gy 5%
3000.00		SANDSTONE-wh, frm, well cmt, calc cmt, qtz grns, clss, vf, well srt
3050.00		MUDSTONE-lt olive gy - brnsh gy, frm - m hd, sl - m calc swells
3090.00		MUDSTONE-lt olive gy - brnsh gy, frm - m hd, sl - m calc swells

Table 1a

L I T H O L O G Y   A N D   S T R A T I G R A P H Y

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH (m)	DEPTH RANGE	LITHOLOGY
3150.00		MUDSTONE-brnsh gy - dk gy, mod hd, blkly - ang, slty, mic, sl calc
3200.00		MUDSTONE-lt olive gy, m hd, blkly, mod calc
3250.00		MUDSTONE-lt olive gy, m hd, blkly, sl calc
3300.00		MUDSTONE-oliv gy - m dk gy, frm - m hd, blkly, non - sl calc
3308.42	3308.22-3308.42	SANDSTONE-wh - v lt gy, hd silisic, qtz grains
3311.50		COAL-blk
3426.00		COAL-blk, brittle, bit

Table 1b

Sample Identifier	2656.0m	2826.0m	2992.0m	3426.0m						
Sample Type	SWC	SWC	CUT	SWC						
Amount of Organic Matter	V.LGE	V.LGE	V.LGE	V.LGE						
MIOSPORES	2	2	3	2						
DINOFLAGELLATE CYSTS ETC	2		2							
TASMANITIDS AND LEIOSPHERES	3		2							
FORAM LININGS										
MEGASPORES										
OTHER MICROFOSSILS										
MISCELLANEOUS PHYTOCLASTS										
CUTICLES			1							
OTHER TISSUES			2							
BROWN 'WOOD' (HUM + VIT)		5		5b, 4						
BLACK 'WOOD' (VIT + IN)	2	4/5	2	4/5						
BLACK 'WOOD' (REWORKED)										
FINELY DISSEMINATED PARTICLES	4/5	4/5	4/5a-3	3						
AM. VASCULAR PLANT MATERIAL										
AMORPHOUS AQUATIC MATERIAL	5		5							
PRESERVATION STATE	FAIR	GOOD	POOR	GOOD						
REWORKING										
Undifferentiated Marine										
Open Marine										
Restricted Marine	X		X							
Near Shore/Terrig. Infl.										
Brackish/Marine Infl.										
Non Marine/Freshwater		X		X						
SPORE COLOURATION INDEX	3	3	3	3						
OIL POTENTIAL	VG	-	G	SUB						
GAS POTENTIAL	SUB	G	SUB	G						

1-Trace, 2-Present, 3-Common, 4-Frequent, 5-Abundant, ?-Uncertain, V-Very, G-Good, M-Moderate, P-Poor, S-Subordinate  
a-1st slide only, b-mostly oxidation breakdown products

TABLE 2 VISUAL KEROGEN DESCRIPTIONS

OPTICAL SOURCE ROCK MATURITY INDICATORS

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH (m)	SPORE COLOUR	VITRINITE REFLECTANCE (%Ro)	REFLECTANCE (%Ro)	COMMENTS
2643.80		.46(22)		PHY-low;V+W(40%);I(60%)/BS-mod;BW-rich.(Y+Y/O)
2656.00	3			
2691.50		.42(21)		PHY-low;VW(50%);I(50%)/BS-mod-str;BW-rich(Y+Y/O)
2826.00	3	.63(21)		PHY-total;V(20%);I(80%). (LT-M O)
2950.00		.68(21)		PHY-mod;VW(50%);I(50%)/BS-mod;BW-mod. (M O)
2992.00	3			
3000.00				NDP
3090.00		.66(25)		PHY-mod;VW(50%);I(50%)/BS-mod;BW-mod. (M O)
3200.00		.71(4)		PHY-low;V-tr;I(100%)/BS-lt;BW-low. (M O)
3300.00		.66(4)		PHY-low;V tr;I(100%)/BS-lt-mod;BW-mod. (D O)
3426.00	3	.83(31)		PHY-total;V(80%);I(10%);LIPTINITE(10%).

Table 3

MOLECULAR SOURCE ROCK INDICATORS

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH (m)	A	B	C	D	E	F	G	H	I	J
2643.80	0.52	0.57	100:94:64:71:51:63				39.90	0.64	0.20	0.54
2672.00	0.55	0.60	100:79:95:119:76:134	0.38	0.40	33:35:32	45.90	0.77	0.29	0.65
2691.50	0.53	0.60	100:102:62:76:52:52	0.34	0.36	38:23:39	44.40	0.45	0.17	0.56
2754.50	0.52	0.60	100:106:47:26:16:7	0.49	0.39	39:22:39	76.60	0.52	0.43	0.66
2826.00	0.60	0.62	100:115:86:27:12:1			9:24:68	85.80		0.15	0.65
2983.00	0.62	0.59	100:85:65:39:21:19	0.53	0.45	27:31:42	44.40	0.70	0.14	0.60
3308.42	0.58	0.58	100:89:64:51:39:28	0.50	0.73	37:29:33	80.80			0.75
3311.50										0.63
3426.00	0.60	0.58	100:101:69:28:15:6	0.52	0.66	23:21:56	91.10			0.80

Table 4

SOURCE ROCK QUALITY INDICATORS

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH (m)	DEPTH RANGE (m)	PICKED LITHOLOGY	P1 (kg/t)	P1 (mg/gC)	P2 (kg/t)	GOGI	HI	TOC (%)	CARBT (%)	S (%)
2643.80		*MUDSTONE	2.5	39.7	25.2	0.24	400	6.3	6.7	3.0
2656.00		*MUDSTONE	2.1	31.4	23.7	0.24	355	6.7	6.7	2.7
2668.00		*MUDSTONE	2.3	31.8	23.4	0.27	324	7.2	7.1	2.3
2672.00		*MUDSTONE	3.3	32.8	36.0	0.25	358	10.1	3.7	2.8
2682.00		*MUDSTONE	1.2	41.0	5.8	0.24	198	2.9	52.7	4.4
2690.50		*MUDSTONE	1.4	30.8	11.8	0.20	259	4.6	13.2	3.4
2691.50		*MUDSTONE	1.3	23.9	13.4	0.25	246	5.4	6.1	2.9
2700.00		*MUDSTONE	0.6	26.5	5.9	0.20	261	2.3	5.6	3.4
2707.00		*MUDSTONE	0.7	37.8	3.9		211	1.9	5.8	2.9
2725.00		*SILTSTONE	0.4		0.7					
2733.00		*SILTSTONE	0.4	51.3	1.0		128	0.78	5.9	0.5
2754.50		+SANDSTONE	0.2	58.8	0.7		206	0.34	4.1	0.4
2826.00		*COAL	6.6	10.5	105.4	0.40	168	62.6	7.2	0.6
2900.00		*MUDSTONE	0.6	67.4	1.5		169	0.89	11.2	0.6
2950.00		*MUDSTONE	0.5	48.1	1.4		135	1.0	8.7	0.7
2971.00	2968-2971.0	MUDSTONE	0.4	41.7	1.8		188	0.96	9.1	0.6
2983.00	2980-2983.0	MUDSTONE	1.5	53.4	10.8	0.18	384	2.8	9.7	4.1
2992.00	2989-2992.0	MUDSTONE	0.9	45.2	7.2	0.18	362	2.0	9.0	3.2
3000.00		*SANDSTONE	0.5	161.3	0.5		161	0.31	5.1	1.2
3050.00		*MUDSTONE	0.6	61.2	1.7		173	0.98	9.4	0.3
3090.00		*MUDSTONE	0.5	49.0	1.7		167	1.0	16.0	0.1
3150.00		*MUDSTONE	0.7	66.7	1.5		143	1.0	8.9	0.4
3200.00		*MUDSTONE	0.3	73.2	0.7		171	0.41	27.7	0.1
3250.00		*MUDSTONE	0.1	40.0	0.4		160	0.25	81.9	0.3
3300.00		*MUDSTONE	0.6	60.0	1.0		100	1.0	5.4	1.1
3308.42	3308.22-3308.4	+SANDSTONE	0.3		0.3					
3311.50		+COAL	15.5	21.4	233.0	0.30	322	72.3	0.0	0.9
3426.00		*COAL	11.8	17.2	132.8	0.41	193	68.7	0.0	1.4

Sample Type=CUTTINGS unless marked: \*=SIDE WALL CORE, +=CORE

PYROLYSIS - GC DATA

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH (m)	C1-C5 (%)	C6-C9 (%)	C10-C13 (%)	C14-C22 (%)	C23-C36 (%)	GOGI	HI	TOC (%)
2643.80	19	13	14	27	25	0.24	400	6.3
2656.00	19	14	14	26	25	0.24	355	6.7
2668.00	21	13	12	26	26	0.27	324	7.2
2672.00	20	12	12	26	28	0.25	358	10.1
2682.00	19	17	16	27	18	0.24	198	2.9
2690.50	16	15	16	28	23	0.20	259	4.6
2691.50	19	14	14	26	24	0.25	246	5.4
2700.00	17	17	17	30	17	0.20	261	2.3
2826.00	28	10	12	21	26	0.40	168	62.6
2983.00	15	13	13	29	27	0.18	384	2.8
2992.00	14	15	16	31	20	0.18	362	2.0
3311.50	23	7	11	23	35	0.30	322	72.3
3426.00	29	7	10	21	30	0.41	193	68.7

Table 6

SOLUBLE EXTRACT DATA - 1

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH (m)	TOC (%)	TSE (%)	TSE (mg/gC)	SAC (mg/gC)	SAC (%)	AROM (%)	RES (%)	ASPH (%)
2643.80	6.3	0.514	82	27	32.7	32.4	28.4	6.5
2672.00	10.1	0.846	84	25	29.5	36.5	24.6	9.4
2691.50	5.4	0.378	69	16	23.5	35.5	26.0	15.1
2754.50	0.34	0.009	26	7	27.7	31.2	33.2	7.9
2826.00	62.6	1.247	20	2	10.6	37.3	19.8	32.3
2983.00	2.8	0.367	131	53	40.2	37.4	18.5	3.8
3308.42		0.002			31.8	41.9	18.5	7.8
3311.50	72.3	0.494	7	1	11.7	21.7	14.7	52.0
3426.00	68.7	1.053	15	3	22.3	38.6	0.8	38.3

Table 7a



SOLUBLE EXTRACT DATA - 2

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH	CPI	PR/PH	PR/C17	PH/C18
2643.80	1.04	1.51	1.39	1.06
2672.00	0.85	1.22	1.16	1.08
2691.50	1.06	1.77	2.79	1.58
2754.50	1.13	2.34	1.71	0.58
2826.00	1.19	9.18	28.26	2.28
2983.00	1.00	1.52	1.20	0.99
3308.42	1.09	2.75	0.66	0.22
3311.50	1.08	3.38	0.54	0.17
3426.00	1.11	3.95	1.03	0.20

Table 7b

CARBON ISOTOPE RATIOS

WELL: 26/4-1

LOCATION: NORWAY

NORTH SEA

DEPTH (m)	PICKED LITHOLOGY	SAMPLE	ISOTOPE RATIO (per mil)
2643.80	MUDSTONE	KEROGEN TSE	-31.4
2672.00	MUDSTONE	KEROGEN TSE	-30.7
2691.50	MUDSTONE	KEROGEN TSE	-28.0
2826.00	COAL	KEROGEN TSE	-24.4
2983.00	MUDSTONE	KEROGEN TSE	-31.0
3311.50	COAL	KEROGEN TSE	-25.6
3426.00	COAL	KEROGEN TSE	-26.8

C-12/C-13 ISOTOPIC RATIOS ARE RELATIVE TO  
PDB STANDARD:NBS-22 AT -29.8 per mil

Table 8

APPENDIX

MOLECULAR PARAMETERS - CODING LIST

A	C32 HOPANE	$22S/(22S + 22R)$
B	C31 HOPANE	$22S/(22S + 22R)$
C	HOPANE DISTRIBUTION	(C30:C31:C32:C33:C34:C35)
D	C29 $\alpha\alpha\alpha$ STERANES	$20S/(20S + 20R)$
E	C29 STERANES	$\alpha\beta\beta/(\alpha\beta\beta + \alpha\alpha\alpha)$
F	$\alpha\alpha\alpha$ STERANES	(C27:C28:C29)
G	HOPANES/(HOPANES + STERANES)	
H	AROMATIC STERANES	(C28 TRI)/(C28 TRI + C29 MONO)
I	AROMATIC STERANES	(C20 TRI)/(C20 TRI + C28 TRI)
J	PHENANTHRENES	$[(3Me + 2Me)/(9Me + 1Me + Phen)] * 1.5$

BA-93-557-1

15 JAN 1993

REGISTERED

OLDFORD

## Geochemical Report for

### Well NOCS 26/4-1

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Date : 07.01.93

## Chapter 1

# INTRODUCTION

### 1.1 General Comments

Lithological description, Rock-Eval analysis, vitrinite reflection analysis and visual kerogen microscopy were performed on well NOCS 26/4-1. The lithological description and the Rock-Eval analysis were performed to evaluate on the potential source rocks to be able to select samples for vitrinite reflection analysis and visual kerogen description.

### 1.2 Analytical Program

<u>Analysis type</u>	<u>No of samples</u>	<u>Figures</u>	<u>Tables</u>
Lithology description	164	2,2a	1
Rock-Eval pyrolysis	78	2,2a,3,4,5	2
Vitrinite reflectance	30	6,6a	3
Visual Kerogen microscopy	17	7	3,4

- 1-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1010.00						0001
				50 S/Sst : w, f, crs, l		0001-1L
				50 Sltst : pl brn, s, sft		0001-2L
				tr Ca : w, chk		0001-3L
				tr Cont : prp		0001-4L
1050.00						0003
				60 Sltst : m gy to lt brn, s		0003-2L
				40 S/Sst : w, f, crs, l		0003-1L
				tr Cont : prp, Mica-ad		0003-3L
1090.00						0005
				80 Sltst : m gy to lt brn, s		0005-2L
				20 S/Sst : w, f, crs, l		0005-1L
				tr Cont : prp, Mica-ad		0005-3L
				tr Ca : w, f		0005-4L
1130.00						0007
				95 Sltst : m gy to lt brn		0007-2L
				5 S/Sst : w, f, crs, l		0007-1L
1170.00						0009
				100 Sltst : lt brn gy to brn gy, fos, mic		0009-2L
				tr S/Sst : w, f, crs, l		0009-1L

- 2-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1220.00						0011
			100	Sltst : lt brn gy to brn gy, fos, mic		0011-2L
				tr S/Sst : w, f, crs, l		0011-1L
				tr Cont : prp, fib		0011-3L
1250.00						0013
			100	Sltst : lt brn gy to brn gy, mic		0013-2L
				tr S/Sst : w, f, crs, l		0013-1L
				tr Cont : prp, fib, bar		0013-3L
1290.00						0015
			95	Sltst : lt brn gy to brn gy, mic, pyr, fos		0015-2L
			5	S/Sst : w, f, crs, l		0015-1L
				tr Cont : cem		0015-3L
1350.00						0018
			100	Sh/Clst: lt ol gy, slt, fos, pyr		0018-1L
				tr S/Sst : w, f, crs, l		0018-2L
				tr Cont : cem, prp		0018-3L
1370.00						0019
			100	Sh/Clst: lt ol gy, slt, pyr		0019-1L
				tr S/Sst : w, crs, l		0019-2L
				tr Cont : prp		0019-3L
1430.00						0022
			100	Sh/Clst: lt ol gy, slt, mic, pyr		0022-1L
				tr Ca : w, f		0022-2L
				tr S/Sst : w, crs, l		0022-3L
				tr Cont : prp, fib		0022-4L

- 3-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1450.00						0023
			90	Sh/Clst: lt ol gy, slt, mic, pyr, fos		0023-1L
			5	Ca : w, f		0023-2L
			5	S/Sst : w, crs, l, rnd		0023-3L
			tr	Cont : prp		0023-4L
1490.00						0025
			95	Sh/Clst: lt ol gy, slt, pyr		0025-1L
			5	Ca : w to lt gy, f, cly		0025-2L
			tr	S/Sst : w to drk red gy, crs, l, f, cem, calc		0025-3L
			tr	Cont : prp, fib		0025-4L
1550.00						0027
			100	Sh/Clst: lt ol gy to lt brn gy, slt		0027-1L
			tr	Ca : w, f		0027-2L
			tr	S/Sst : w to drk red gy, crs, l		0027-3L
			tr	Cont : prp, fib		0027-4L
			tr	Sltst : or gy		0027-5L
1590.00						0029
			100	Sh/Clst: m gy to lt brn gy, slt, pyr		0029-1L
			tr	S/Sst : w, l		0029-2L
			tr	Cont : prp, fib		0029-3L
1630.00						0031
			100	Sh/Clst: lt ol gy to m gy, fos		0031-1L
			tr	Ca : w, f		0031-2L
			tr	S/Sst : w, crs, l		0031-3L
			tr	Cont : fib		0031-4L



- 4 -

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1670.00						0033
				80 Sh/Clst: lt ol gy to gn gy, fos		0033-1L
				20 Sh/Clst: ol gy to m gy		0033-2L
				tr S/Sst : w, crs, l		0033-3L
				tr Cont : fib, dd, prp		0033-4L
1710.00						0035
				75 Ca : w to lt gy, f, chk		0035-1L
				20 Sh/Clst: lt ol gy to ol gy		0035-2L
				5 S/Sst : w, crs, l, rnd		0035-3L
				tr Cont : prp		0035-4L
1750.00						0037
				100 Sh/Clst: lt ol gy to ol gy		0037-1L
				tr Ca : w to lt gy, f, chk		0037-2L
				tr S/Sst : w, crs, l		0037-3L
				tr Cont : prp		0037-4L
1790.00						0039
				70 Sh/Clst: lt ol gy to gn gy		0039-1L
				30 Sh/Clst: m gy to ol gy		0039-2L
				tr Ca : w		0039-3L
				tr S/Sst : w, crs, l		0039-4L
				tr Cont : prp, fib, cem		0039-5L
1850.00						0042
				100 Sh/Clst: lt ol gy		0042-1L
				tr Sltst : w to or gy, calc		0042-2L
				tr Cont : prp		0042-3L

- 5-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1870.00						0043
				95 Sh/Clst: lt ol gy to m gy		0043-1L
				5 Sltst : w to or gy, calc		0043-2L
				tr Cont : prp		0043-3L
				tr S/Sst : w, crs, l		0043-4L
1930.00						0046
				100 Sh/Clst: lt ol gy		0046-1L
				tr Sltst : w to or gy, calc		0046-2L
				tr Cont : prp, fib		0046-3L
1970.00						0048
				85 Sh/Clst: lt ol gy to m gy		0048-1L
				10 Sh/Clst: drk gy		0048-2L
				5 Sltst : w to or gy, calc		0048-3L
				tr Ca : lt brn gy to brn gy, dol		0048-4L
				tr Ca : w, crs		0048-5L
				tr Cont : prp		0048-6L
2036.00						0051
				80 Sh/Clst: m brn to brn gy, calc, slt		0051-1L
				20 Sh/Clst: lt ol gy		0051-2L
				tr Ca : w		0051-3L
				tr Cont : prp		0051-4L
2057.00						0052
				60 Sh/Clst: lt ol gy to m gy		0052-1L
				35 Sh/Clst: m brn to brn gy, calc		0052-2L
				5 Cont : dd, prp		0052-3L
				tr Ca : w, f		0052-4L

- 6-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2090.00						0054
			60	Cont : lt gy, cem		0054-1L
			20	Sh/Clst: lt ol gy to m gy		0054-2L
			15	Sh/Clst: m brn to brn gy		0054-3L
			5	Cont : Mica-ad		0054-4L
2135.00						0056
			95	Sh/Clst: lt gy to m gy		0056-1L
			5	Cont : dd, cem, Mica-ad		0056-2L
2171.00						0058
			65	Sh/Clst: ol gy to m gy, calc		0058-1L
			35	Cont : dd, Mica-ad		0058-2L
			tr	Sh/Clst: m brn		0058-3L
			tr	Ca : w, crs		0058-4L
2231.00						0061
			70	Sh/Clst: m gy, calc		0061-1L
			10	S/Sst : w, f, cem, calc		0061-2L
			10	Ca : w, f, chk, sft		0061-3L
			10	Cont : dd, prp, Mica-ad, ns		0061-4L
2253.00	ccp					0063
	0.01	100	S/Sst	: lt gy, f, crs, cem, pyr, mic		0063-1L
2253.10	ccp					0280
		100	S/Sst	: y gy, s, glauc		0280-1L

- 7-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2256.70	ccp					0281	
	0.01	100	S/Sst	: lt ol gy, s, glauc		0281-1L	
2258.00	ccp					0064	
		100	S/Sst	: w to lt gy, f, crs, cem, mic		0064-1L	
2259.80	ccp					0282	
	0.02	100	S/Sst	: lt ol gy, s, glauc		0282-1L	
2260.80	ccp					0273	
		100	Sltst	: lt gy, calc, carb		0273-1L	
2263.00	ccp					0065	
		100	Sh/Clst:	lt gy to pl pi, calc		0065-1L	
2264.70	ccp					0274	
	0.02	100	S/Sst	: lt ol gy, carb		0274-1L	
2270.00	ccp					0066	
	0.05	100	S/Sst	: w to lt gy to m y brn, f, crs, cem, mic		0066-1L	
2273.00	ccp					0275	
	0.02	100	S/Sst	: lt ol gy, carb		0275-1L	

- 8-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2275.00	ccp					0067
		100	S/Sst	: w to lt gy, f, crs, cem, mic		0067-1L
2280.00	ccp					0068
		100	S/Sst	: w to lt gy, f, crs, cem, mic		0068-1L
2282.00	ccp					0276
		0.01	100	S/Sst : lt ol gy, carb, mic		0276-1L
2285.00	ccp					0069
		0.03	100	S/Sst : w to lt gy, f, crs, cem, mic		0069-1L
2288.00	ccp					0277
		0.01	100	S/Sst : lt ol gy, carb, mic		0277-1L
2290.00	ccp					0070
			100	S/Sst : w to lt gy, f, crs, cem, mic		0070-1L
2295.00	ccp					0071
			100	S/Sst : w to lt gy, f, crs, cem, mic		0071-1L
2297.30	ccp					0278
		0.02	100	S/Sst : lt ol gy, carb, mic		0278-1L

- 9-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2300.00						0072
				50 Sh/Clst: lt ol gy to m gy		0072-1L
				30 S/Sst : w, crs, l, ang, f, cem, calc		0072-2L
				15 Sh/Clst: gy brn, calc		0072-3L
				5 Cont : ns, dd		0072-4L
2330.00						0074
				40 Marl : lt gy to m lt gy		0074-1L
				30 Sh/Clst: lt ol gy, calc		0074-2L
				25 S/Sst : w, crs, f, f, cem, calc		0074-3L
				5 Sh/Clst: m brn to gy brn		0074-4L
				tr Cont : prp		0074-5L
2369.00						0076
				80 Ca : w, f, chk		0076-1L
				20 Sh/Clst: m gy, calc		0076-2L
				tr Sh/Clst: m red brn, calc		0076-3L
2385.00						0077
				50 Sh/Clst: ol gy to m gy to drk gy		0077-1L
				45 Marl : lt gy		0077-2L
				5 Ca : w, f, chk		0077-3L
				tr Sh/Clst: brn gy to m red brn		0077-4L
2405.00						0078
				85 Ca : w, f, chk		0078-1L
				15 Sh/Clst: ol gy, calc		0078-2L
				tr Sh/Clst: brn gy		0078-3L

- 10-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2445.00						0080
			70	Ca : w to lt gy, f, chk		0080-1L
			30	Sh/Clst: m gy, calc		0080-2L
			tr	Cont : prp		0080-3L
2465.00						0081
			60	Ca : w to lt gy, f, chk		0081-1L
			40	Sh/Clst: lt ol gy to ol gy to m gy, calc		0081-2L
			tr	Cont : prp, Mica-ad		0081-3L
			tr	Sh/Clst: gy brn		0081-4L
2505.00						0083
			85	Ca : w to lt gy, f, chk, cly		0083-1L
			15	Sh/Clst: lt ol gy to ol gy		0083-2L
2545.00						0085
			45	Marl : gy pi		0085-1L
			35	Sh/Clst: lt ol gy to ol gy		0085-2L
			20	Ca : w to gy pi, f, chk, cly		0085-3L
			tr	Cont : prp, fib		0085-4L
2585.00						0087
			70	Ca : w to lt gy, f, chk, crs, glauc, slt		0087-1L
			20	Sh/Clst: ol gy, calc		0087-2L
			10	Sh/Clst: m gy to drk gy, slt, calc		0087-3L
			tr	Sh/Clst: gy brn		0087-4L
			tr	Chert : gy brn to dsk brn		0087-5L

- 11-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2605.00						0088
				50 Marl : m gy		0088-1L
				40 Sh/Clst: lt ol gy to ol gy		0088-2L
				10 Ca : w to lt gy, f, chk, cly, glauc		0088-3L
				tr Cont : prp		0088-4L
2640.00						0091
	6.24			65 Sh/Clst: drk gy, calc		0091-1L
				30 Ca : w, f, chk		0091-2L
				5 Sh/Clst: gn gy, slt		0091-3L
2645.00						0092
	7.19			70 Sh/Clst: ol gy to drk gy, pyr		0092-1L
				25 Ca : w, f, chk		0092-2L
				5 Sh/Clst: gn gy, slt		0092-3L
				tr Cont : blk, Coal-ad, prp		0092-4L
2650.00						0093
	7.19			75 Sh/Clst: ol gy to drk gy, pyr		0093-1L
				15 Ca : w, f, chk		0093-2L
				10 Sh/Clst: gn gy, slt		0093-3L
				tr Cont : blk, Coal-ad, prp		0093-4L
2653.00						0094
				80 Sh/Clst: ol gy to drk gy, pyr		0094-1L
				15 Ca : w, f, chk		0094-2L
				5 Sh/Clst: gn gy, slt		0094-3L
				tr Cont : blk, Coal-ad, prp		0094-4L
				tr Sh/Clst: gy brn		0094-5L



- 12-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2659.00						0095
	5.44	85	Sh/Clst:	ol gy to drk gy, pyr		0095-1L
		10	Ca	: w, f, chk		0095-2L
		5	Sh/Clst:	gn gy to lt ol gy, slt		0095-3L
		tr	Cont	: prp		0095-4L
2665.00						0096
		90	Sh/Clst:	drk gy, pyr		0096-1L
		5	Sh/Clst:	gn gy to lt ol gy, slt		0096-2L
		5	Cont	: dd		0096-3L
		tr	Ca	: w, f, chk		0096-4L
2671.00						0097
	6.03	100	Sh/Clst:	drk gy, pyr		0097-1L
		tr	Sh/Clst:	gn gy to lt gy, slt		0097-2L
		tr	Cont	: prp		0097-3L
		tr	Ca	: w to lt gy, f, chk, slt		0097-4L
2677.00						0098
		95	Sh/Clst:	drk gy, pyr		0098-1L
		5	Sh/Clst:	gn gy to lt ol gy, slt		0098-2L
		tr	Cont	: fib		0098-3L
		tr	Ca	: w, f, chk		0098-4L
2683.00						0099
		40	Cont	: lt gy, cem		0099-1L
	4.87	35	Sh/Clst:	m gy to drk gy, pyr		0099-2L
		15	Sh/Clst:	ol gy		0099-3L
		5	Sh/Clst:	gy brn to gy red, calc		0099-4L
		5	Cont	: prp, fib		0099-5L
		tr	S/Sst	: w, f, cem, crs		0099-6L

- 13-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2689.00						0100
	9.06	95	Sh/Clst:	drk gy		0100-1L
		5	Cont	: lt gy, cem		0100-2L
		tr	Sh/Clst:	lt ol gy		0100-3L
		tr	Cont	: prp		0100-4L
2695.00						0101
		65	Sh/Clst:	drk gy, calc		0101-1L
		20	Sh/Clst:	m gy, calc		0101-2L
		10	Ca	: w, f, chk		0101-3L
		5	Cont	: Mica-ad, prp, bar		0101-4L
		tr	Sh/Clst:	gy brn		0101-5L
		tr	S/Sst	: w, crs, l		0101-6L
2701.00						0102
		70	Sh/Clst:	drk gy, calc		0102-1L
		20	Cont	: fib, prp, bar, Mica-ad, ns, cem		0102-2L
		5	Sh/Clst:	lt ol gy to m gy		0102-3L
		5	S/Sst	: w, crs, l		0102-4L
2707.00						0103
	6.34	95	Sh/Clst:	drk gy, slt		0103-1L
		5	Cont	: fib, prp, Mica-ad		0103-2L
		tr	Sh/Clst:	lt ol gy		0103-3L
		tr	S/Sst	: w, crs, l, f, cem		0103-4L
		tr	Ca	: w, f, chk, sft		0103-5L
2713.00						0104
	7.31	95	Sh/Clst:	drk gy, slt, mic, pyr		0104-1L
		5	Cont	: fib, prp		0104-2L
		tr	Sh/Clst:	ol gy		0104-3L
		tr	S/Sst	: w, f, cem		0104-4L
		tr	Ca	: w, f, chk		0104-5L
		tr	Coal	: blk		0104-6L

- 14-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2719.00						0105
	8.26	95	Sh/Clst:	drk gy, slt, mic, pyr		0105-1L
		5	Cont	: fib, prp, Mica-ad		0105-2L
			tr Sh/Clst:	lt ol gy		0105-3L
			tr S/Sst	: w, crs, l		0105-4L
			tr Ca	: w, f, chk		0105-5L
2725.00						0106
		50	Sh/Clst:	drk gy, slt, mic, pyr		0106-1L
		45	Cont	: dd		0106-2L
		5	Cont	: prp, fib		0106-6L
			tr Sh/Clst:	lt ol gy		0106-3L
			tr S/Sst	: w, crs, l		0106-4L
			tr Ca	: w, f, chk		0106-5L
2731.00						0107
	4.74	65	Cont	: dd		0107-2L
		30	Sh/Clst:	m gy to drk gy, slt		0107-1L
		5	Ca	: w, f, chk		0107-5L
			tr Sh/Clst:	lt ol gy		0107-3L
			tr S/Sst	: w, crs, l		0107-4L
2737.00						0108
	1.36	40	Cont	: dd		0108-2L
		20	Sltst	: drk gy, cly, pyr		0108-1L
		20	Sltst	: m gy		0108-3L
		15	S/Sst	: lt gy, f, cem, calc		0108-4L
		5	Cont	: prp, fib		0108-5L

- 15-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2743.00						0109
	2.27	35	Sh/Clst:	drk gy to dsk brn, slt, pyr		0109-1L
	0.73	25	S/Sst	: lt gy, f, cem, calc, slt		0109-2L
		25	Sh/Clst:	m gy to lt ol gy		0109-3L
		15	Cont	: prp, fib, dd		0109-4L
		tr	Ca	: w, crs		0109-5L
		tr	Sh/Clst:	gy brn, calc		0109-6L
2749.00						0110
	1.52	45	Sltst	: lt gy to m gy, calc, mic		0110-2L
		40	Sh/Clst:	drk gy to drk brn gy, slt		0110-1L
		10	Cont	: prp, dd, fib		0110-5L
		5	Sh/Clst:	ol gy		0110-3L
		tr	Ca	: w to lt gy, f, cly		0110-4L
2754.00	ccp					0249
	0.25	100	Sltst	: lt ol gy, carb, cly, mic, f		0249-1L
2755.00						0111
	2.26	55	Cont	: lt gy, sft, dd		0111-1L
		25	Sh/Clst:	drk gy to drk brn gy, slt		0111-2L
		15	Sltst	: lt gy, s, mic		0111-3L
		5	Cont	: prp, fib		0111-4L
2757.00	ccp					0250
	0.28	100	Sltst	: lt ol gy, carb, cly, mic, f		0250-1L

- 16-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
2758.60	ccp					0251
	0.21	100	Sltst	:	lt ol gy, carb, mic, glauc, f	0251-1L
2761.00						0112
	0.35	70	Sltst	:	lt or to or gy, sft, calc	0112-1L
		25	Sh/Clst:	:	brn blk to dsk y brn, slt	0112-2L
		5	S/Sst	:	w, f, cem	0112-3L
		tr	Ca	:	w, f, chk	0112-4L
		tr	Cont	:	prp	0112-5L
2761.00	ccp					0252
	0.12	100	Sltst	:	lt ol gy, carb, mic, glauc, f	0252-1L
2764.00	ccp					0253
		90	S/Sst	:	lt ol gy, carb, mic, f	0253-1L
		10	Coal	:	ol blk, cly	0253-2L
2765.00	ccp					0254
	36.62	80	Coal	:	ol blk, pyr	0254-2L
		20	S/Sst	:	lt ol gy, carb, mic, f	0254-1L
2765.30	ccp					0255
	0.31	100	S/Sst	:	lt brn gy, carb, s, dol, hd	0255-1L
2767.00						0113
		75	Sltst	:	lt or to or gy to lt gy, sft, calc	0113-1L
		20	Sh/Clst:	:	m drk gy to ol gy, slt	0113-2L
		5	Cont	:	prp	0113-3L
		tr	Coal	:	blk	0113-4L

- 17-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2767.65	ccp					0256
	0.05	100	S/Sst	: y gy, carb, mic, f		0256-1L
2770.55	ccp					0257
		100	S/Sst	: y gy to lt gy, calc, carb, mic		0257-1L
2773.00						0114
	0.21	95	Sltst	: w to lt or, calc, sft		0114-1L
		5	Sh/Clst:	m drk gy to brn gy, slt		0114-2L
			tr Cont	: prp		0114-3L
2773.50	ccp					0258
	0.08	100	S/Sst	: y gy, calc, carb, mic		0258-1L
2776.60	ccp					0259
		100	S/Sst	: y gy, calc, carb, mic		0259-1L
2778.63	ccp					0260
	0.10	100	S/Sst	: y gy, calc, carb, mic		0260-1L
2779.00						0115
		75	Sltst	: w to lt or, calc, sft		0115-1L
		20	Sh/Clst:	m gy to drk gy, slt, calc		0115-2L
		5	Cont	: prp		0115-3L
			tr Sh/Clst:	dsk y brn, slt		0115-4L

- 18-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2780.75	ccp					0261	
	0.03	100	S/Sst : y gy, calc, carb, mic			0261-1L	
2785.00						0116	
			55 Sh/Clst: m drk gy to drk gy, slt			0116-1L	
			15 Sh/Clst: m gy to drk gn gy, slt			0116-2L	
			15 S/Sst : w to lt or, f, cem, calc			0116-3L	
			10 Sltst : w to lt or, calc			0116-4L	
			5 Cont : prp			0116-5L	
2791.00						0117	
			45 S/Sst : w to lt gy, f, cem, calc			0117-1L	
			40 Sltst : w to lt or, calc			0117-2L	
			15 Sh/Clst: m gy to drk gy, slt			0117-3L	
			tr Sh/Clst: lt gy, slt			0117-4L	
			tr Cont : prp			0117-5L	
2797.00						0118	
			50 Sltst : w to lt or, calc			0118-2L	
			40 S/Sst : w to lt gy, f, cem, calc			0118-1L	
			10 Sh/Clst: m gy to drk gy, slt, pyr			0118-3L	
			tr Cont : prp			0118-4L	
2803.00						0119	
	0.18		45 S/Sst : w to lt gy, f, cem, calc, mic			0119-1L	
			40 Sltst : w to lt or, calc			0119-2L	
			10 Sh/Clst: m gy to drk gy, slt, pyr			0119-3L	
			5 Cont : prp, fib			0119-4L	

- 19 -

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
2809.00						0120
		75	Coal	: blk		0120-1L
		25	S/Sst	: w to lt or, f, cem, crs, l		0120-2L
		tr	Ca	: w, f		0120-3L
2815.00						0121
		60	Coal	: blk		0121-1L
		35	S/Sst	: w to lt or, f, cem, crs, l, mic		0121-2L
		5	Sltst	: w to lt gy, sft		0121-3L
		tr	Cont	: prp		0121-4L
2821.00						0122
	61.99	75	Coal	: blk		0122-1L
		20	S/Sst	: w to lt or, f, cem, crs, l, mic, st		0122-2L
		5	Sltst	: w to lt gy, sft		0122-3L
		tr	Cont	: prp		0122-4L
2827.00						0123
		50	S/Sst	: w to or gy, f, cem, crs, l		0123-1L
		35	Coal	: blk		0123-2L
		15	Cont	: Mica-ad		0123-3L
		tr	Cont	: prp		0123-4L
2833.00						0124
		55	S/Sst	: w to lt brn, crs, crs, f, cem		0124-1L
		20	Cont	: Mica-ad		0124-2L
		20	Coal	: blk		0124-3L
		5	Cont	: dd		0124-4L



- 20 -

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2842.00						0125	
	0.50	45	Coal	:	blk	0125-1L	
		40	S/Sst	:	w to lt brn, crs, l, f, cem, ang	0125-2L	
		10	Cont	:	w to lt gy, sft, dd	0125-3L	
		5	Cont	:	Mica-ad	0125-4L	
2845.00						0126	
		45	S/Sst	:	w to lt brn, crs, l, f, cem, ang	0126-2L	
		30	Coal	:	blk	0126-1L	
		15	Cont	:	Mica-ad, prp	0126-4L	
		10	Cont	:	w to lt gy, sft, dd	0126-3L	
2851.00						0127	
		45	Coal	:	blk	0127-1L	
		35	S/Sst	:	w to lt brn, crs, l, f, cem, ang	0127-2L	
		10	Cont	:	w to lt gy, sft, dd	0127-3L	
		10	Cont	:	Mica-ad, dd	0127-4L	
2857.00						0128	
	45.47	35	Coal	:	blk	0128-1L	
		35	S/Sst	:	w to lt brn, crs, l, f, cem, ang	0128-2L	
		15	Cont	:	w to lt gy, sft, dd	0128-3L	
		10	Cont	:	Mica-ad, prp	0128-4L	
		5	Sltst	:	lt brn gy	0128-5L	
2863.00						0129	
		40	Sltst	:	m gy	0129-1L	
		30	Cont	:	w to lt gy, dd	0129-2L	
		15	Coal	:	blk	0129-3L	
		15	S/Sst	:	w to or gy, f, cem, ang, crs, l	0129-4L	
		tr	Cont	:	prp, fib	0129-5L	
		tr	Ca	:	w, f, chk	0129-6L	

- 21-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2869.00						0130
			35	S/Sst : w, crs, l		0130-1L
			30	Cont : w to lt gy, sft, dd		0130-2L
			15	Sltst : lt gy to m gy		0130-3L
			10	Sh/Clst: dsk brn to brn blk, slt		0130-4L
			10	Coal : blk		0130-5L
			tr	Ca : w, f, chk		0130-6L
			tr	Cont : prp		0130-7L
2875.00						0131
	1.63		65	Sltst : lt gy to m gy		0131-3L
			15	Coal : blk		0131-4L
			10	S/Sst : w to lt or, f, cem, calc, crs, l		0131-1L
			10	Cont : w to lt gy, dd		0131-2L
			tr	Ca : w, f		0131-5L
			tr	Cont : Mica-ad, prp, fib		0131-6L
2881.00						0132
			60	Sltst : brn gy to m gy, mic		0132-3L
			15	Cont : dd		0132-2L
			10	S/Sst : w to lt or, f, cem, calc, crs, l		0132-1L
			10	Coal : blk		0132-4L
			5	Sh/Clst: dsk brn to brn blk, slt		0132-5L
			tr	Cont : Mica-ad, prp		0132-6L
2887.00						0133
			50	Sltst : brn gy to m gy, mic, cly		0133-1L
			15	Sh/Clst: m gy to drk gy, slt		0133-2L
			15	S/Sst : w to lt or, f, cem, crs, l		0133-3L
			10	Coal : blk		0133-4L
			10	Cont : dd, Mica-ad, fib		0133-5L

- 22-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2893.00						0134
				60 Sltst : m gy, mic		0134-1L
				25 Cont : dd		0134-5L
				10 Coal : blk		0134-4L
				5 S/Sst : w to pl y brn, f, cem		0134-3L
				tr Sh/Clst: lt brn, slt		0134-2L
				tr Cont : Mica-ad, fib		0134-6L
2899.00						0135
				75 Cont : dd		0135-4L
				10 Sltst : m gy, cly, mic		0135-1L
				10 Coal : blk		0135-3L
				5 S/Sst : or gy to pl y brn, f, cem		0135-2L
				tr Cont : prp, fib		0135-5L
				tr Ca : w, f		0135-6L
2905.00						0136
				25 S/Sst : w to lt gy to or gy, f, cem, calc, crs, l, ang		0136-2L
				25 Sh/Clst: m drk gy to ol gy, slt		0136-5L
				20 Sltst : lt gy to pl y brn, calc		0136-1L
				20 Cont : dd		0136-4L
				5 Coal : blk		0136-3L
				5 Cont : prp		0136-6L
2911.00						0137
				45 Ca : w to lt gy, f, slt		0137-5L
				20 Sltst : m gy, mic		0137-1L
				20 S/Sst : w to or gy, f, cem, calc		0137-2L
				10 Cont : dd		0137-4L
				5 Coal : blk		0137-3L

- 23-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2917.00						0138
	1.45		65	Sltst : m gy		0138-1L
			20	Cont : dd		0138-4L
			10	Ca : w to lt gy, f, slt		0138-5L
			5	S/Sst : w, crs, f, cem		0138-2L
			tr	Coal : blk		0138-3L
2923.00						0139
			70	Sltst : m gy to m lt gy		0139-1L
			25	Cont : dd		0139-4L
			5	Ca : w to lt gy, f, slt		0139-5L
			tr	S/Sst : w, crs, l		0139-2L
			tr	Coal : blk		0139-3L
			tr	Cont : prp		0139-6L
2929.00						0140
			40	Sltst : m gy to m lt gy, mic		0140-1L
			30	Cont : dd		0140-3L
			25	Sltst : lt gy, mic, calc		0140-5L
			5	Coal : blk		0140-2L
			tr	Cont : prp		0140-4L
2935.00						0141
			65	Sltst : m gy to m lt gy, mic		0141-1L
			30	Cont : dd		0141-3L
			5	Coal : blk		0141-2L
			tr	Cont : prp		0141-4L
			tr	Sh/Clst: w, crs, cem, calc, l		0141-5L

- 24-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample	
Int Cvd	TOC%	%	Lithology description				
2941.00						0142	
	0.56	55	Sltst	: lt gy, calc		0142-2L	
		45	Sltst	: m gy, calc, cly, mic		0142-1L	
			tr Cont	: prp		0142-3L	
2980.00						0148	
	2.73	90	Sh/Clst:	m gy to m drk gy, slt, mic		0148-1L	
		10	Cont	: dd		0148-2L	
			tr Sltst	: lt gy, calc		0148-3L	
			tr Coal	: blk, prp		0148-4L	
3010.00						0153	
	1.82	80	Sltst	: m gy to m lt gy, cly, mic		0153-1L	
		20	Cont	: dd		0153-2L	
			tr Ca	: w to lt gy, f, slt		0153-3L	
			tr Cont	: prp		0153-4L	
			tr Coal	: blk		0153-5L	
3028.00						0156	
	1.68	70	Sh/Clst:	m gy to drk gy, slt		0156-1L	
		15	Cont	: dd		0156-2L	
		10	Sh/Clst:	drk y brn, calc		0156-3L	
		5	Sltst	: lt gy, calc		0156-4L	
			tr Cont	: prp		0156-5L	
			tr Coal	: blk		0156-6L	
3058.00						0161	
	1.17	70	Sh/Clst:	m drk gy to drk gy, slt, mic		0161-1L	
		25	Cont	: dd		0161-2L	
		5	Sh/Clst:	gy brn, slt, calc		0161-3L	
			tr Coal	: blk		0161-4L	
			tr Cont	: prp, fib		0161-5L	

- 25-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
3079.00						0165
	0.99	85	Sh/Clst:	m lt gy to drk gy, slt, pyr		0165-1L
		15	Cont	: dd		0165-2L
			tr Sh/Clst:	m brn to gy brn, slt, calc		0165-3L
			tr Cont	: prp, fib		0165-4L
3103.00						0169
	1.34	65	Sh/Clst:	m lt gy to drk gy, slt		0169-1L
		35	Cont	: dd		0169-2L
			tr Sltst	: lt gy, calc		0169-3L
			tr S/Sst	: w to gy brn, crs, l, ang		0169-4L
			tr Cont	: prp, fib		0169-5L
			tr Coal	: blk		0169-6L
3133.00						0174
	1.03	45	Sltst	: lt gy to m gy, calc		0174-1L
		35	Sltst	: m lt gy to drk gy, slt		0174-2L
		20	Cont	: dd		0174-3L
			tr Coal	: blk		0174-4L
			tr Cont	: prp, fib		0174-5L
3163.00						0179
	1.15	95	Sltst	: m gy, calc		0179-1L
		5	Cont	: dd, fib		0179-2L
			tr Coal	: blk		0179-3L
3193.00						0184
	0.90	85	Sltst	: m lt gy to m drk gy, mic, cly		0184-1L
		15	Cont	: dd		0184-2L
			tr Coal	: blk		0184-3L

- 26-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
3217.00						0188
	1.04	50	Sh/Clst:	m gy to m drk gy, mic		0188-1L
		25	Sltst	: lt gy to lt brn gy to m gy, calc		0188-2L
		25	Cont	: dd, fib		0188-3L
3277.00						0198
	2.24	80	Sltst	: m drk gy to drk gy, mic, pyr		0198-1L
		5	Sltst	: dsk y brn		0198-2L
		5	Cont	: dd		0198-3L
		5	Sltst	: lt gy to m gy, s, calc		0198-4L
		5	S/Sst	: w to lt gy, calc		0198-5L
3307.00						0203
	0.21	45	S/Sst	: w, f, cem, calc, l		0203-1L
		35	Sh/Clst:	m drk gy to drk gy, slt, pyr		0203-2L
		10	Coal	: blk		0203-3L
		10	Cont	: dd, prp		0203-4L
3308.10	ccp					0262
		95	S/Sst	: y gy, calc, carb, mic		0262-2L
		5	Coal	: ol blk, carb, mic		0262-1L
3310.00	ccp					0263
		100	S/Sst	: ol gy, carb, cly, mic		0263-1L
3311.25	ccp					0264
	0.50	100	S/Sst	: ol gy to lt ol gy, carb, cly, mic		0264-1L

- 27-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
3312.00	ccp			Stat Lower Jurassic		0265
		3.28	100	Sh/Clst: m gy, mic		0265-1L
3312.70	ccp					0266
				95 S/Sst : y gy, carb, mic		0266-1L
				5 Coal : ol blk, mic, cly		0266-2L
3314.00	ccp					0267
				50 S/Sst : y gy, carb, mic		0267-1L
				50 Sh/Clst: m gy, mic		0267-2L
3314.65	ccp					0268
		3.23	100	Sh/Clst: ol blk, s, wx		0268-1L
3315.55	ccp					0269
		0.23	100	S/Sst : y gy to m y brn, carb, mic		0269-1L
3316.10	ccp					0270
		2.08	100	Sh/Clst: drk gy, mic		0270-1L
3316.85	ccp					0271
				100 S/Sst : ol gy to m gy, carb, cly, mic		0271-1L



- 28 -

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
3319.00						0204
	0.40		35	Sh/Clst: m drk gy to drk gy, slt		0204-1L
			30	S/Sst : w to lt brn gy, f, cem, mic		0204-2L
			25	Sh/Clst: brn blk, carb		0204-3L
			10	Sltst : lt gy to m gy		0204-4L
			tr	Coal : blk		0204-5L
			tr	Cont : prp		0204-6L
3325.00						0205
	0.37		45	S/Sst : w to lt brn gy, f, cem, mic		0205-1L
			35	Sh/Clst: m gy to drk gy, slt		0205-2L
			20	Sh/Clst: brn blk, carb		0205-3L
			tr	Coal : blk		0205-4L
			tr	Cont : prp		0205-5L
3337.00						0207
			45	S/Sst : w to lt brn gy, f, crs, cem		0207-1L
			40	Coal : blk		0207-2L
			10	Sh/Clst: m gy to drk gy, slt		0207-3L
			5	Sh/Clst: brn blk, carb		0207-4L
			tr	Cont : prp, fib		0207-5L
3358.00						0210
	6.30		50	Sh/Clst: m gy to drk gy, slt, mic		0210-1L
			35	S/Sst : w to lt brn gy, f, cem, crs, l, ang		0210-2L
			10	Sltst : m lt gy to drk gy, s, mic		0210-3L
			5	Cont : prp, dd		0210-4L
			tr	Coal : blk		0210-5L

- 29-

Table 1 : Lithology description for well NOCS 26/4-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
3376.00						0213
				35 Sh/Clst: brn blk to blk, carb		0213-1L
				30 S/Sst : w to or gy, f, crs, cem, ang		0213-2L
				25 Sh/Clst: m gy to drk gy, slt, mic		0213-3L
				5 Coal : blk		0213-4L
				5 Sltst : lt gy to m gy		0213-5L
				tr Cont : prp		0213-6L
3382.00						0214
	33.43			40 Sh/Clst: brn blk to blk, carb		0214-1L
				30 Sh/Clst: m lt gy to drk gy, slt, mic		0214-2L
				20 S/Sst : w to or gy, f, crs, cem, ang		0214-3L
				5 Coal : blk		0214-4L
				5 Cont : dd, prp		0214-5L
3400.00						0217
	2.70			40 Sltst : m lt gy to m drk gy, cly, mic		0217-1L
				25 S/Sst : w to or gy, f, cem, ang, crs, l		0217-2L
				15 Sltst : w to lt gy, s		0217-3L
				5 Sh/Clst: m drk gy to drk gy		0217-4L
				5 Coal : blk		0217-5L
				5 Cont : prp, dd, fib		0217-6L
				5 Sh/Clst: brn blk, carb		0217-7L
3412.00						0219
	48.19			45 Sh/Clst: brn blk, carb		0219-1L
				40 S/Sst : w to or gy		0219-2L
				10 Coal : blk		0219-3L
				5 Sh/Clst: m drk gy to drk gy, slt, mic		0219-4L
				tr Cont : prp		0219-5L