

Table 6.2.2

TOTAL MUDCONSUMPTION WELL 34/7-24S

MATERIALS	UNIT	36" HOLE	12 1/4" HOLE	8 1/2" HOLE	TOTAL
Barite	MT	48	34	270	352
Bentonite	MT	43	20	3	66
Caustic Soda	Kg	100	75	50	225
Soda Ash	Kg	50	100		150
Drill Starch	Kg		6 000		6 000
Sod. Bicarbonate	Kg		150	500	650
EB Mul	Kg			4531	4531
Novamul	Kg			390	390
EB Mod	Kg			1683	1683
Calcium Chloride	Kg			4525	4525
EB Coat	Kg			199	199
Lime	Kg			1260	1260
VG-69	Kg			375	375
Finagreen	m ³			136	136
Duratone	Kg			1816	1816

6.3

CASING AND WELLHEAD REPORT

Well : 34/7-24S Rig: Vildkat Explorer

Wellhead: DRIL-QUIP SS15, 15.000 psi

Casing hangers: 9 5/8" hanger with 13 3/8" Dummy hanger

Status: Permanently Abandoned

SIZE (INCH)	GRADE	WEIGHT (LBS/FT)	THREADS	NO. OF JOINTS	TOTAL LENGTH(M)
30	B	310	ST-2	4	49.6
18 5/8	X-56	84.5	RL-4S	13	154
9 5/8	N-80	47	New VAM	94	1112

Geochemical Report
Well NOCS 34/7-24S

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REGISTRERT

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Chapter 1

INTRODUCTION

1.1 General Comments

The drillmud used during drilling the well appears to contain some hydrocarbon based additive (glycol?) which caused difficulties cleaning the samples prior to the analysis. The drillmud additive is also suspected to partly stain the samples affecting the analytical results. The drillmud was analysed by GHM and found to contain several unknown hydrocarbons as illustrated in the Appendix. For better cleaning of the samples a mild soxleth extraction was conducted (for details see analytical procedures). This cleaning removed the mud containing glycol, but apparently also removed most of the light hydrocarbons present in the samples.

1.2 Analytical Program

<u>Analysis type</u>	<u>No of samples</u>	<u>Figures</u>	<u>Tables</u>
Headspace and Occluded Gas	50	1a-c	1a-c
Lithology description	55	1-6	2
TOC	56	2	2,3
Rock-Eval pyrolysis	56	3-5	3a-b
Soxhlet Extraction of organic matter	11		4a
MPLC/HPLC separation	11		4b-d
Saturated hydrocarbon GC	11	6a	5
Isotope composition C ₁₅ + fractions	11	8,9	6a-b
GC - MS of saturated HC	11	10a-d	7a-e

Experimental

Headspace Gas Analysis

The analysis is performed using a Perkin Elmer 8310 gas chromatograph with a 50 m Plot fused silica $\text{Al}_2\text{O}_3/\text{KCL}$ column, loop injector and flame ionization detector. Nitrogen is used as carrier gas and the column is run from 70°C to 200°C, at a rate of 12°C/min. Final hold time is 5 min.

Two cm^3 of headspace gas are removed from each sample can for chromatographic analysis of the C_1 to C_7 range of hydrocarbons.

Occluded Gas Analysis

The gas chromatograph used for this analysis is identical to that used for headspace gas analysis and is operated under the same conditions. The canned samples are washed in thermostat-controlled water to remove drilling contaminants and sieved on a 2 mm mesh sieve to remove large, caved rock fragments. An aliquot (ca 25 mg) of sieved sample is crushed with 25 cm^3 water in an airtight ball mill. After crushing, 2 cm^3 of the released gas are removed from the ball mill for gas chromatographic analysis.

Cleaning of Samples (Mini-Extraction)

Samples containing oil based or glycol based drill mud is cleaned by using a mild solvent extraction. The samples are solvent extracted with dichloromethane/methanol (93/7) for approximately 1 hour using soxleth instrumentation. After extraction the samples are washed with water and air-dried before analyses are performed

Total Organic Carbon (TOC) and Total Carbon Analysis

This analysis is performed using a LECO CS244 Carbon Analyser.

Hand-picked lithologies from cuttings samples are crushed with a mortar and pestle and approximately 200 mg (50 mg for coals) are accurately weighed into LECO crucibles. The samples are then treated three times with 10 % hydrochloric acid to remove oxidized (carbonate) carbon, and washed four times with distilled water. The samples are dried on a hotplate at 60 - 70°C before analysis of total organic carbon.

Total carbon is also analysed on the same instrument using approximately 200 mg of untreated crushed whole rock. Oxidized (carbonate) carbon is calculated by weight difference.

Total organic carbon can also be analysed on the Rock-Eval II Pyrolyser during the normal run of the instrument.

Rock-Eval Pyrolysis

This analysis is performed by using a Rock-Eval II Pyrolyser. Approximately 100 mg crushed whole rock is analysed. The sample is first heated at 300°C for three min in an atmosphere of helium to release the free hydrocarbons present (S1 peak) and then pyrolysed by increasing the temperature from 300°C to 600°C (temp. gradient 25°C/min) (S2 peak). Both the S1 and S2 yields are measured using a flame ionization detector (FID). In the temperature interval between 300°C and 390°C, the released gases are split and a proportion passed through a carbon dioxide trap, which is connected to a thermal conductivity detector (TCD). The value obtained from the TCD corresponds to the amount of oxygen contained in the kerogen of the sample and is reported as the S3 peak.

The Rock-Eval II Pyrolyser also analyses the TOC of each sample during the normal run of the instrument.

Solvent Extraction of Organic Matter (EOM)

The samples are extracted using a Tecator Soxtec HT-System. Carefully weighed samples are taken in a pre-extracted thimble. Some activated copper is added to the extraction cup and dichloromethane/methanol (93/7) is used as an extraction solvent. The samples are boiled for 1 hour and then rinsed for 2 hours. If the samples contain more than 10 % TOC, then the whole procedure is repeated once. The resulting solution is filtered and the solvent removed by rotary evaporation (200 mb, 30°C). The amount of EOM is gravimetrically established.

Removal of Asphaltenes

The EOM is dissolved in tetrahydrofuran in a flask and n-pentane is added to precipitate the asphaltenes. The solution is then stored in the dark and at ambient temperature for at least 8 hours. The solution is then filtered (Baker 10-spe system) and the precipitated asphaltenes returned to the original flask by dissolution in dichloromethane. The solvent is removed by rotary evaporation at 200 mB and 30°C.

Chromatographic Separation of deasphaltened EOM

Chromatographic separation is performed using an MPLC system developed by the company. The EOM (minus asphaltenes) is injected into the MPLC and separated using hexane as an eluent. The saturated and aromatic hydrocarbon fractions are collected and the solvent removed using a rotary evaporator at 30°C. The fractions are then transferred to small pre-weighed vials and evaporated to dryness in a stream of nitrogen. The vials are re-weighed to obtain the weights of both the saturated and the aromatic fractions. The weight of the NSO fraction which is retained on the column, is obtained by weight difference.

Gas Chromatographic Analyses

Saturated hydrocarbon fractions:

The instrument used for this analysis is a PERKIN ELMER 8320 Gas Chromatograph equipped with an FID detector and an OV1 column. The carrier gas is helium and the temperature program runs from 80°C to 300°C at a rate of 4°C/min. Final hold time is 20 mins. The saturated hydrocarbon fraction is diluted by 1:30 and a 1 microlitre aliquot of this is injected into the instrument.

Combined Gas Chromatography - Mass Spectrometry (GC-MS)

The GC-MS analyses are performed on a VG TS250 system interfaced to a Hewlett Packard 5890 gas chromatograph. The GC is fitted with a fused silica SE54 capillary column (40 m x 0.22 mm i.d.) directly into the ion source. Helium (12 psi) is used as carrier gas and the injections are performed in splitless mode. The GC oven is programmed from 45°C to 150°C at 35°C/min, at which point the programme rate is 2°C/min up to 310°C where the column is held isothermally for 15 min. For the aromatic hydrocarbons, the GC oven is programmed from 50°C to 310°C at 5°C/min. and held isothermally at 310°C for 15 min. The mass spectrometer is operated in electron impact (EI) mode at 70 eV electron energy, a trap current of 500 uA and a source temperature of 220°C. The instrument resolution used is 2500 (10 % value).

The data system used is a VG PDP11/73 for acquiring data, and a Vax station 3100 for peak processing the data. The samples are analysed in multiple ion detection mode (MID) at a scan cycle time of approximately 1.1 sec. Calculation of peak ratios is performed from peak heights in the appropriate mass fragmentograms.

Saturated Fractions

Terpanes

The most commonly used fragment ions for detection of terpanes are M/Z 163 for detection of 25,28,30 trisnormoretane or 25,28,30 trisnorhopane, M/Z 177 for detection of demethylated hopanes or moretanes, M/Z 191 for detection of tricyclic, tetracyclic- and pentacyclic terpanes and M/Z 205 for methylated hopanes or moretanes. The molecular ions M/Z 370 and 384 are also recorded for identification of C₂₇ and C₂₈ triterpanes respectively.

Steranes

The most commonly used fragment ions for detection of steranes are M/Z 149 to distinguish between 5 α and 5 β steranes, M/Z 189 and 259 for detection of rearranged steranes, M/Z 217 for detection of rearranged and normal steranes and M/Z 218 for detection of 14 β (H) 17 β (H) steranes.

The M/Z 231 fragment ion is used to detect possible aromatic contamination of the saturated fraction. It is also used for detection of methyl steranes.

Mass Fragmentograms representing Terpanes
(M/Z 163, 177, 191, 205, 370, 384, 398, 412 and 426)

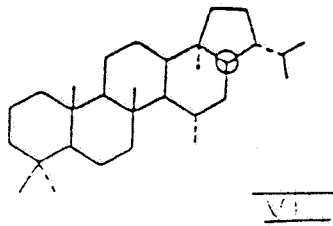
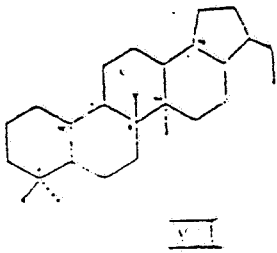
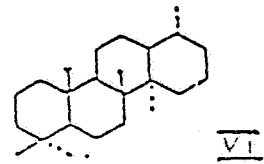
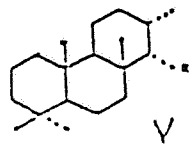
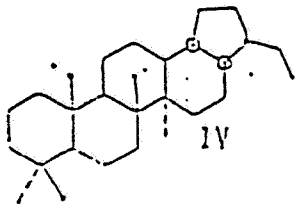
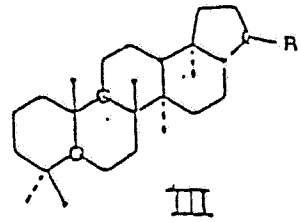
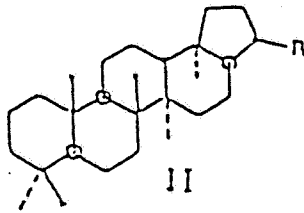
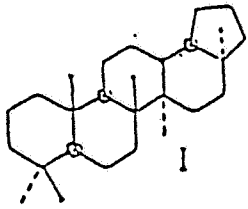
Peak Identification: (α and β refer to hydrogen atoms at C-17 and C-21 respectively unless indicated otherwise).

27Ts	18 α trisnorneohopane (T _s)	C ₂₇ H ₄₄	(I)
27Tm	17 α trisnorhopane (T _m)	C ₂₇ H ₄₆	(II, R=H)
28 $\alpha\beta$	Bisnorhopane	C ₂₈ H ₄₈	(IV)
25nor30 $\alpha\beta$ *	norhopane	C ₂₉ H ₅₀	
29 $\alpha\beta$	$\alpha\beta$ norhopane	C ₂₉ H ₅₀	(II, R=C ₂ H ₅)
29Ts	norneohopane	C ₂₉ H ₅₀	
29 $\beta\alpha$	$\beta\alpha$ norhopane	C ₂₉ H ₅₀	(III, R=C ₂ H ₅)
30 $\alpha\beta$	$\alpha\beta$ hopane	C ₃₀ H ₅₂	(II, R=i-C ₃ H ₇)
30O	Oleanane	C ₃₀ H ₅₂	
30 $\beta\alpha$	$\beta\alpha$ hopane	C ₃₀ H ₅₂	(III, R=i-C ₃ H ₇)
31 $\alpha\beta$ S	22S $\alpha\beta$ homohopane	C ₃₁ H ₅₄	(II, R=i-C ₄ H ₉)
31 $\alpha\beta$ R	22R $\alpha\beta$ homohopane	C ₃₁ H ₅₄	(II, R=i-C ₄ H ₉)
30G	gammacerane	C ₃₀ H ₅₂	
31 $\beta\alpha$	$\beta\alpha$ homohopane	C ₃₁ H ₅₄	(III, R=i-C ₄ H ₉)
32 $\alpha\beta$ S	22S $\alpha\beta$ bishomohopane	C ₃₂ H ₅₆	(II, R=i-C ₅ H ₁₁)
32 $\alpha\beta$ R	22R $\alpha\beta$ bishomohopane	C ₃₂ H ₅₆	(II, R=i-C ₅ H ₁₁)
33 $\alpha\beta$ S	22S $\alpha\beta$ trishomohopane	C ₃₃ H ₅₆	(II, R=i-C ₅ H ₁₁)
33 $\alpha\beta$ R	22R $\alpha\beta$ trishomohopane	C ₃₃ H ₅₈	(II, R=i-C ₆ H ₁₃)
34 $\alpha\beta$ S	22S $\alpha\beta$ tetrakishomohopane	C ₃₄ H ₆₀	(II, R=i-C ₇ H ₁₅)
34 $\alpha\beta$ R	22R $\alpha\beta$ tetrakishomohopane	C ₃₄ H ₆₀	(II, R=i-C ₇ H ₁₅)
35 $\alpha\beta$ S	22S $\alpha\beta$ pentakishomohopane	C ₃₅ H ₆₂	(II, R=i-C ₈ H ₁₇)
35 $\alpha\beta$ R	22R $\alpha\beta$ pentakishomohopane	C ₃₅ H ₆₂	(II, R=i-C ₈ H ₁₇)
23/3	Tricyclic terpane	C ₂₃ H ₄₂	(V, R=i-C ₄ H ₉)
24/3	Tricyclic terpane	C ₂₄ H ₄₄	(V, R=i-C ₅ H ₁₁)
25/3	Tricyclic terpane (17R, 17S)	C ₂₅ H ₆₆	(V, R=i-C ₆ H ₁₃)
24/4	Tetracyclic terpane	C ₂₄ H ₄₂	(VI)
26/3	Tricyclic terpane (17R, 17S)	C ₂₆ H ₄₈	(V, R=i-C ₇ H ₁₅)

21/3	Tricyclic terpane	$C_{21}H_{38}$	(V, R= C_2H_5)
22/3	Tricyclic terpane	$C_{22}H_{40}$	(V, R= C_3H_7)
25nor28 $\alpha\beta$ *	25,28,30-trisnorhopane/moretane	$C_{27}H_{46}$	(VII)
30d	$\alpha\beta$ diahopane	$C_{30}H_{52}$	(VIII)

* Also identified and quantified in M/Z 177 fragmentograms

STRUCTURES REPRESENTING TERPANES



Mass Fragmentograms representing Steranes
 (M/Z 149, 189, 217, 218, 259, 372, 386, 400 and 414)

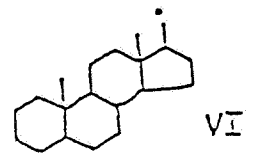
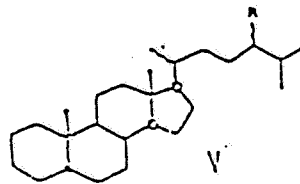
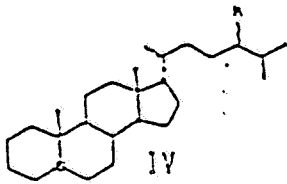
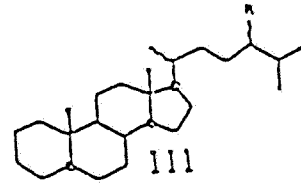
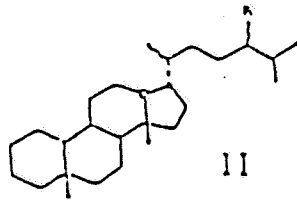
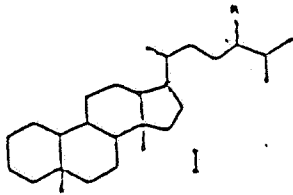
Peak Identifications: α and β refer to hydrogen atoms at C-5, C-14 and C-17 in regular steranes and at C-13 and C-17 in diasteranes.

21 α	5 α sterane	C ₂₁ H ₃₆	(V, R=C ₂ H ₅)
22 α	5 α sterane	C ₂₂ H ₃₈	(V, R=C ₃ H ₇)
27d β S	20S $\beta\alpha$ diacholestane	C ₂₇ H ₄₈	(I, R=H)
27d α R	20R $\beta\alpha$ diacholestane	C ₂₇ H ₄₈	(I, R=H)
27d α S	20S $\alpha\beta$ diacholestane	C ₂₇ H ₄₈	(II, R=H)
27d α R	20R $\alpha\beta$ diacholestane	C ₂₇ H ₄₈	(II, R=H)
28d β S	20S $\beta\alpha$ 24-methyl-diacholestane	C ₂₈ H ₅₀	(I, R=CH ₃)
28d β R	20R $\beta\alpha$ 24-methyl-diacholestane	C ₂₈ H ₅₀	(I, R=CH ₃)
28d α R	20R $\alpha\beta$ 24-methyl-diacholestane	C ₂₈ H ₅₀	(II, R=CH ₃)
27 $\alpha\alpha$ S	+ 20S $\alpha\alpha\alpha$ cholestane	C ₂₇ H ₄₈	(III, R=H)
29d β S	20S $\beta\alpha$ 24-ethyl-diacholestane	C ₂₉ H ₅₂	(II, R=C ₂ H ₅)
27 $\beta\beta$ R*	+ 20R $\alpha\beta\beta$ cholestane	C ₂₇ H ₄₈	(IV, R=H)
27 $\beta\beta$ S*	20S $\alpha\beta\beta$ cholestane	C ₂₇ H ₄₈	(IV, R=H)
28d α S	+ 20S $\alpha\beta$ 24-methyl-diacholestane	C ₂₈ H ₅₀	(II, R=CH ₃)
27 $\alpha\alpha$ R	20R $\alpha\alpha\alpha$ cholestane	C ₂₇ H ₄₈	(III, R=H)
29d β R	20R $\beta\alpha$ 24-ethyl-diacholestane	C ₂₉ H ₅₂	(I, R=C ₂ H ₅)
29d α R	20R $\alpha\beta$ 24-ethyl-diacholestane	C ₂₉ H ₅₂	(II, R=C ₂ H ₅)
28 $\alpha\alpha$ S	20S $\alpha\alpha\alpha$ 24-methyl-cholestane	C ₂₈ H ₅₀	(III, R=CH ₃)
28 $\beta\beta$ R*	20R $\alpha\beta\beta$ 24-methyl-cholestane	C ₂₈ H ₅₀	(IV, R=CH ₃)
29d α S	+ 20S $\alpha\beta$ 24-ethyl-diacholestane	C ₂₉ H ₅₂	(II, R=C ₂ H ₅)
28 $\beta\beta$ S*	20S $\alpha\beta\beta$ 24-methyl-cholestane	C ₂₈ H ₅₀	(IV, R=CH ₃)
28 $\alpha\alpha$ R	20R $\alpha\alpha\alpha$ 24-methyl-cholestane	C ₂₈ H ₅₀	(III, R=CH ₃)
29 $\alpha\alpha$ S	20S $\alpha\alpha\alpha$ 24-ethyl-cholestane	C ₂₉ H ₅₂	(III, R=C ₂ H ₅)
29 $\beta\beta$ R*	20R $\alpha\beta\beta$ 24-ethyl-cholestane	C ₂₉ H ₅₂	(IV, R=C ₂ H ₅)
29 $\beta\beta$ S*	20S $\alpha\beta\beta$ 24-ethyl-cholestane	C ₂₉ H ₅₂	(IV, R=C ₂ H ₅)
29 $\alpha\alpha$ R	20R $\alpha\alpha\alpha$ 24-ethyl-cholestane	C ₂₉ H ₅₂	(III, R=C ₂ H ₅)
M30 $\alpha\alpha$	$\alpha\alpha$ 4-methyl-24-ethyl-cholestane	C ₃₀ H ₅₄	

M30D	$\alpha\alpha$ 4,23,24-trimethyl-cholestane	$C_{30}H_{54}$	
30 $\alpha\alpha$ S	20S $\alpha\alpha\alpha$ 24-propyl-cholestane	$C_{30}H_{54}$	(M, R= C_3H_7)
30 $\beta\beta$ R*	20R $\alpha\beta\beta$ 24-propyl-cholestane	$C_{30}H_{54}$	(V, R= C_3H_7)
30 $\beta\beta$ S*	20S $\alpha\beta\beta$ 24-propyl-cholestane	$C_{30}H_{54}$	(M, R= C_3H_7)
30 $\alpha\alpha$ R	20R $\alpha\alpha\alpha$ -24-propyl-cholestane	$C_{30}H_{54}$	(M, R= C_3H_7)

* Compounds identified and quantified in M/Z 218 fragmentograms

STRUCTURES REPRESENTING STERANES



Stable Carbon Isotope Ratio Mass Spectrometry

Carbon isotope analysis is performed on a dual inlet VG SIRA 10 instrument. The combustion of the samples is performed by a Carlo Erba EA 1108 element analyser directly connected to the inlet system of the mass spectrometer.

The combustion temperature is 1020°C and the carrier gas used was Helium. After the combustion H₂O and CO₂ are trapped in individual cool traps. The CO₂ gas is then heated up before admission into the mass spectrometer. The whole operation is controlled by an IBM PC50 computer system.

δ-values

The isotope ratios are given as δ-values in ‰ versus the PDB-standard:

$$\delta^{13}\text{C} = \left(\frac{R_{\text{sample}} - R_{\text{standard}}}{R_{\text{standard}}} \right) \times 1000$$
$$R = \frac{^{13}\text{C}}{^{12}\text{C}}$$

The PDB-standard (a marine chalk of the Pee Dee-formation, USA) was created by Craig 1957. All results of ¹³C/¹²C-analysis of organic matter today are calculated (Craig correction) against this international standard.

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

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

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
380.00	20438	5	1	-	-	1	20444	6	-	-
460.00	195501	32	6	3	1	1	195543	42	-	3.00
540.00	200553	42	9	1	-	1	200605	52	-	-
620.00	180880	40	9	-	-	-	180929	49	-	-
700.00	46641	14	3	1	-	1	46659	18	-	-
780.00	62112	8	-	-	-	12	62120	8	-	-
860.00	886	36	-	-	-	-	922	36	3.9	-
940.00	8468	6	-	-	-	1	8474	6	0.1	-
1020.00	13142	11	-	-	-	1	13153	11	0.1	-
1100.00	38216	16	-	-	-	1	38232	16	-	-
1180.00	49295	24	-	-	-	1	49319	24	0.1	-
1260.00	17640	7	-	-	-	-	17647	7	-	-
1340.00	16061	52	51	1	9	27	16174	113	0.7	0.11
1420.00	649	35	8	-	3	12	695	46	6.6	-
1500.00	4833	33	22	-	5	19	4893	60	1.2	-
1580.00	2035	51	37	-	9	36	2132	97	4.6	-
1660.00	7961	64	28	3	7	40	8063	102	1.3	0.43
1740.00	12902	136	18	9	4	21	13069	167	1.3	2.25
1820.00	6299	68	10	2	3	18	6382	83	1.3	0.67
1900.00	18769	137	15	4	8	62	18933	164	0.9	0.50
1980.00	20052	464	65	49	6	30	20636	584	2.8	8.17
2060.00	26742	896	109	81	13	57	27841	1099	4.0	6.23
2140.00	3880	96	16	4	2	11	3998	118	3.0	2.00

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

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

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
2220.00	6258	210	42	8	4	9	6522	264	4.1	2.00
2300.00	3741	268	79	15	9	14	4112	371	9.0	1.67
2380.00	1552	248	117	22	15	21	1954	402	20.6	1.47
2460.00	1920	205	80	14	9	9	2228	308	13.8	1.56
2540.00	1568	202	82	15	9	10	1876	308	16.4	1.67
2620.00	9250	1884	748	129	69	59	12080	2830	23.4	1.87
2700.00	23558	1234	552	83	52	45	25479	1921	7.5	1.60
2720.00	3126	124	83	14	11	16	3358	232	6.9	1.27
2740.00	23165	1029	416	54	38	33	24702	1537	6.2	1.42
2760.00	22239	838	353	45	32	30	23507	1268	5.4	1.41
2780.00	10467	1229	439	55	41	30	12231	1764	14.4	1.34
2800.00	21863	2202	776	94	76	45	25011	3148	12.6	1.24
2820.00	11056	1287	629	90	83	30	13145	2089	15.9	1.08
2840.00	9176	972	454	63	66	16	10731	1555	14.5	0.95
2860.00	1372	519	519	93	122	30	2625	1253	47.7	0.76
2880.00	10659	1433	970	151	222	66	13435	2776	20.7	0.68
2900.00	4954	1097	1052	189	331	178	7623	2669	35.0	0.57
2920.00	1400	747	1099	213	438	328	3897	2497	64.1	0.49
2959.00	77860	13192	9001	1275	2557	1773	103885	26025	25.1	0.50
2977.00	87065	12902	8670	1419	2708	1950	112764	25699	22.8	0.52
2995.00	73657	10921	8753	1715	3557	2871	98603	24946	25.3	0.48
3031.00	77389	10045	7124	1393	2635	2062	98586	21197	21.5	0.53
3067.00	373612	50114	27233	4493	6693	4882	462145	88533	19.2	0.67

Table 1a: C1 to C7 hydrocarbons in HEADSPACE gas
(μ l gas/kg rock)

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

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
3085.00	158361	13700	5607	732	1144	593	179544	21183	11.8	0.64
3103.00	43202	8533	5117	668	1230	665	58750	15548	26.5	0.54
3130.00	92207	14898	7425	896	1782	1049	117208	25001	21.3	0.50
3145.00	12357	2678	1834	241	532	333	17642	5285	30.0	0.45

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

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

Depth unit of measure: m

* Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 --- nC4
380.00	303	9	2	-	1	1	315	12	3.8	-
460.00	221	5	1	-	-	1	227	6	2.6	-
540.00	238	5	1	-	-	1	244	6	2.5	-
620.00	252	7	2	-	1	2	262	10	3.8	-
700.00	307	9	3	-	1	4	320	13	4.1	-
780.00	271	8	2	-	1	5	282	11	3.9	-
860.00	268	8	2	-	1	4	279	11	3.9	-
940.00	140	8	3	-	1	6	152	12	7.9	-
1020.00	136	8	3	-	1	7	148	12	8.1	-
1100.00	271	9	4	-	1	8	285	14	4.9	-
1180.00	109	7	3	-	1	7	120	11	9.2	-
1260.00	181	8	4	-	2	8	195	14	7.2	-
1340.00	18	1	1	-	-	3	20	2	10.0	-
1420.00	40	3	1	-	1	6	45	5	11.1	-
1500.00	12	1	1	-	-	2	14	2	14.3	-
1580.00	13	2	1	-	-	2	16	3	18.8	-
1660.00	14	2	1	-	-	2	17	3	17.7	-
1740.00	13	2	1	-	-	1	16	3	18.8	-
1820.00	14	2	1	-	1	8	18	4	22.2	-
1900.00	43	3	1	-	-	-	47	4	8.5	-
1980.00	39	3	1	1	-	4	44	5	11.4	-
2060.00	38	3	1	-	1	2	43	5	11.6	-
2140.00	24	2	1	-	-	1	27	3	11.1	-

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

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

Depth unit of measure: m

* Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 --- nC4
2220.00	29	3	2	-	-	1	34	5	14.7	-
2300.00	17	2	1	-	-	1	20	3	15.0	-
2380.00	23	2	1	-	-	1	26	3	11.5	-
2460.00	25	3	2	-	-	1	30	5	16.7	-
2540.00	37	3	2	-	1	1	43	6	14.0	-
2620.00	57	7	7	2	2	3	75	18	24.0	1.00
2700.00	40	9	13	4	3	5	69	29	42.0	1.33
2720.00	5	-	1	-	-	1	6	1	16.7	-
2740.00	48	14	18	4	4	7	88	40	45.5	1.00
2760.00	44	9	11	3	3	6	70	26	37.1	1.00
2780.00	86	45	52	13	13	22	209	123	58.9	1.00
2800.00	102	59	67	15	16	22	259	157	60.6	0.94
2820.00	49	16	24	7	10	12	106	57	53.8	0.70
2840.00	53	15	20	5	8	8	101	48	47.5	0.63
2860.00	41	10	27	9	17	10	104	63	60.6	0.53
2880.00	27	5	13	5	10	8	60	33	55.0	0.50
2900.00	34	6	17	6	15	18	78	44	56.4	0.40
2920.00	29	6	18	7	21	43	81	52	64.2	0.33
2959.00	92	181	455	109	291	395	1128	1036	91.8	0.37
2977.00	393	517	937	214	546	641	2607	2214	84.9	0.39
2995.00	219	274	617	176	486	631	1772	1553	87.6	0.36
3031.00	287	339	648	169	447	551	1890	1603	84.8	0.38
3067.00	788	934	1261	247	615	726	3845	3057	79.5	0.40

Table 1b: C1 to C7 hydrocarbons in CUTTINGS gas
(μ l gas/kg rock)

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

Depth unit of measure: m * Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 nC4
3085.00	1781	1241	1131	185	466	484	4804	3023	62.9	0.40
3103.00	57	81	177	42	107	115	464	407	87.7	0.39
3130.00	106	233	451	86	256	302	1132	1026	90.6	0.34
3145.00	62	47	94	21	56	68	280	218	77.9	0.38

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

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

Depth unit of measure: m

* Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 --- nC4
380.00	20741	14	3	-	1	2	20759	18	0.1	-
460.00	195722	37	7	3	1	2	195770	48	-	3.00
540.00	200791	47	10	1	-	2	200849	58	-	-
620.00	181132	47	11	-	1	2	181191	59	-	-
700.00	46948	23	6	1	1	5	46979	31	0.1	1.00
780.00	62383	16	2	-	1	17	62402	19	-	-
860.00	1154	44	2	-	1	4	1201	47	3.9	-
940.00	8608	14	3	-	1	7	8626	18	0.2	-
1020.00	13278	19	3	-	1	8	13301	23	0.2	-
1100.00	38487	25	4	-	1	9	38517	30	0.1	-
1180.00	49404	31	3	-	1	8	49439	35	0.1	-
1260.00	17821	15	4	-	2	8	17842	21	0.1	-
1340.00	16079	53	52	1	9	30	16194	115	0.7	0.11
1420.00	689	38	9	-	4	18	740	51	6.9	-
1500.00	4845	34	23	-	5	21	4907	62	1.3	-
1580.00	2048	53	38	-	9	38	2148	100	4.7	-
1660.00	7975	66	29	3	7	42	8080	105	1.3	0.43
1740.00	12915	138	19	9	4	22	13085	170	1.3	2.25
1820.00	6313	70	11	2	4	26	6400	87	1.4	0.50
1900.00	18812	140	16	4	8	62	18980	168	0.9	0.50
1980.00	20091	467	66	50	6	34	20680	589	2.9	8.33
2060.00	26780	899	110	81	14	59	27884	1104	4.0	5.79

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

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

Depth unit of measure: m

* Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 --- nC4
2140.00	3904	98	17	4	2	12	4025	121	3.0	2.00
2220.00	6287	213	44	8	4	10	6556	269	4.1	2.00
2300.00	3758	270	80	15	9	15	4132	374	9.1	1.67
2380.00	1575	250	118	22	15	22	1980	405	20.5	1.47
2460.00	1945	208	82	14	9	10	2258	313	13.9	1.56
2540.00	1605	205	84	15	10	11	1919	314	16.4	1.50
2620.00	9307	1891	755	131	71	62	12155	2848	23.4	1.85
2700.00	23598	1243	565	87	55	50	25548	1950	7.6	1.58
2720.00	3131	124	84	14	11	17	3364	233	6.9	1.27
2740.00	23213	1043	434	58	42	40	24790	1577	6.4	1.38
2760.00	22283	847	364	48	35	36	23577	1294	5.5	1.37
2780.00	10553	1274	491	68	54	52	12440	1887	15.2	1.26
2800.00	21965	2261	843	109	92	67	25270	3305	13.1	1.18
2820.00	11105	1303	653	97	93	42	13251	2146	16.2	1.04
2840.00	9229	987	474	68	74	24	10832	1603	14.8	0.92
2860.00	1413	529	546	102	139	40	2729	1316	48.2	0.73
2880.00	10686	1438	983	156	232	74	13495	2809	20.8	0.67
2900.00	4988	1103	1069	195	346	196	7701	2713	35.2	0.56
2920.00	1429	753	1117	220	459	371	3978	2549	64.1	0.48
2959.00	77952	13373	9456	1384	2848	2168	105013	27061	25.8	0.49
2977.00	87458	13419	9607	1633	3254	2591	115371	27913	24.2	0.50
2995.00	73876	11195	9370	1891	4043	3502	100375	26499	26.4	0.47

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

Project: NOCS 34/7-24S

Well: NOCS 34/7-24S

Depth unit of measure: m

* Indicated values in ml gas/kg source rock

Depth	C1	C2	C3	iC4	nC4	C5+	sum C1-C4	sum C2-C4	%wet ness	iC4 --- nC4
3031.00	77676	10384	7772	1562	3082	2613	100476	22800	22.7	0.51
3067.00	374400	51048	28494	4740	7308	5608	465990	91590	19.7	0.65
3085.00	160142	14941	6738	917	1610	1077	184348	24206	13.1	0.57
3103.00	43259	8614	5294	710	1337	780	59214	15955	26.9	0.53
3130.00	92313	15131	7876	982	2038	1351	118340	26027	22.0	0.48
3145.00	12419	2725	1928	262	588	401	17922	5503	30.7	0.45

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
2915.00				0001
		90 Sh/Clst: m gy		0001-1L
		10 Sltst : lt gy		0001-2L
2920.00				0002
	0.81	95 Sh/Clst: m gy		0002-1L
		5 Cont : dd		0002-2L
2925.00				0003
	0.68	70 Sh/Clst: m gy to ol gy		0003-1L
		15 Ca : lt or gy to lt gy		0003-3L
	1.32	10 Sltst : lt brn gy		0003-2L
		5 Cont : dd		0003-4L
2930.00				0004
	0.83	50 Sh/Clst: m gy		0004-1L
		40 Ca : lt or gy		0004-3L
		5 Sltst : lt brn gy		0004-2L
		5 Cont : dd		0004-4L
2935.00				0005
	1.52	35 Sltst : drk gy to drk brn, sft, cly		0005-2L
		30 Ca : lt or gy		0005-3L
		25 Sh/Clst: m gy		0005-1L
		10 Cont : dd		0005-4L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample	
Int	Cvd	TOC%	%	Lithology description	
2940.00				0006	
		3.43	75	Sltst : m gy to drk gy to drk brn, sft, cly	0006-1L
			15	Cont : dd	0006-3L
			10	Ca : lt or gy	0006-2L
2945.00				0007	
			100	No Mat.	0007-1L
2950.00				0008	
		4.09	95	Sh/Clst: m gy to drk gy, slt, sft	0008-1L
			5	Cont : dd	0008-2L
2953.00				0009	
		4.42	95	Sh/Clst: m gy to drk gy, slt, calc, sft	0009-1L
			5	Cont : dd	0009-2L
2956.00				0010	
		4.68	95	Sh/Clst: m gy to drk gy, slt, calc, sft	0010-1L
			5	Cont : dd	0010-2L
2959.00				0011	
		5.08	95	Sh/Clst: m gy to drk gy, slt, calc, sft	0011-1L
			5	Cont : dd	0011-2L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
2962.00				0012
	5.35	95	Sh/Clst: m gy to drk gy, slt, calc, sft	0012-1L
		5	Cont : dd	0012-2L
2965.00				0013
	5.22	90	Sh/Clst: m gy to drk gy, slt, calc, sft	0013-1L
		10	Cont : dd	0013-2L
2968.00				0014
	5.81	90	Sh/Clst: m gy to drk gy to drk brn, slt,	0014-1L
			calc, sft	
		10	Cont : dd	0014-2L
2971.00				0015
	4.94	90	Sh/Clst: m gy to drk gy to drk brn, slt,	0015-1L
			calc, sft	
		10	Cont : dd	0015-2L
2974.00				0016
	7.17	90	Sh/Clst: m gy to drk gy to drk brn, slt,	0016-1L
			calc, sft	
		10	Cont : dd	0016-2L
2977.00				0017
	8.85	90	Sh/Clst: m gy to drk gy to drk brn, slt,	0017-1L
			calc, sft	
		10	Cont : dd	0017-2L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
2980.00				0018
	9.05	90	Sh/Clst: m gy to drk gy to drk brn, slt, calc, sft	0018-1L
		10	Cont : dd	0018-2L
2986.00				0019
	8.28	90	Sh/Clst: m gy to drk gy to drk brn, slt, calc, sft	0019-1L
		10	Cont : dd	0019-2L
2989.00				0020
	7.40	90	Sh/Clst: m gy to drk gy to drk brn, slt, calc, sft	0020-1L
		10	Cont : dd	0020-2L
		tr	Sh/Clst: lt gy	0020-3L
2992.00				0021
	7.89	90	Sh/Clst: m gy to drk gy to drk brn, slt, calc, sft	0021-1L
		10	Cont : dd	0021-2L
2995.00				0022
	4.82	90	Sh/Clst: m gy to drk gy to drk brn, slt, calc, sft	0022-1L
		10	Cont : dd	0022-2L
2998.00				0023
	7.44	95	Sh/Clst: m gy to drk gy, slt, calc, sft	0023-1L
		5	Cont : dd	0023-2L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample
Int	Cvd	TOC%	%	Lithology description
3001.00				0024
		6.17	90	Sh/Clst: m gy to drk gy, slt, calc, sft
			10	Cont : dd
				0024-1L
				0024-2L
3004.00				0025
		4.95	90	Sh/Clst: m gy to drk gy, slt, calc, sft
			10	Cont : dd
				0025-1L
				0025-2L
3010.00				0026
		5.05	90	Sh/Clst: m gy to drk gy, slt, calc, sft
			10	Cont : dd
				0026-1L
				0026-2L
3013.00				0027
		4.78	85	Sh/Clst: m gy to drk gy, slt, calc, sft
			15	Cont : dd
				0027-1L
				0027-2L
3016.00				0028
			100	No Mat.
				0028-1L
3022.00				0029
		6.87	90	Sh/Clst: m gy to drk gy, slt, sft
			10	Cont : dd
				0029-1L
				0029-2L
3028.00				0030
		6.60	90	Sh/Clst: m gy to drk gy, slt, sft
			10	Cont : dd
				0030-1L
				0030-2L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample
Int	Cvd	TOC%	%	Lithology description
3031.00				0031
	6.55	90	Sh/Clst: m gy to drk gy, slt, sft	0031-1L
		10	Cont : dd	0031-2L
3037.00				0032
	4.30	90	Sh/Clst: m gy to drk gy, slt, sft	0032-1L
		10	Cont : dd	0032-2L
3040.00				0033
	7.15	90	Sh/Clst: m gy to drk gy, slt, sft	0033-1L
		10	Cont : dd	0033-2L
3043.00				0034
	6.77	95	Sh/Clst: m gy to drk gy, slt, sft	0034-1L
		5	Cont : dd	0034-2L
3049.00				0035
	6.77	95	Sh/Clst: m gy to drk gy, slt, sft	0035-1L
		5	Cont : dd	0035-2L
3052.00				0036
	6.62	95	Sh/Clst: m gy to drk gy, slt, sft	0036-1L
		5	Cont : dd	0036-2L
3058.00				0037
	6.50	95	Sh/Clst: m gy to drk gy, slt, sft	0037-1L
		5	Cont : dd	0037-2L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample
Int	Cvd	TOC%	%	Lithology description
3064.00				0038
	6.47	95	Sh/Clst: m gy to drk gy to m brn gy, slt, sft	0038-1L
		5	Cont : dd	0038-2L
3067.00				0039
	6.35	95	Sh/Clst: m gy to drk gy to m brn gy, slt, sft	0039-1L
		5	Cont : dd	0039-2L
3070.00				0040
	6.08	95	Sh/Clst: m gy to drk gy to m brn gy, slt, sft	0040-1L
		5	Cont : dd	0040-2L
3076.00				0041
	6.25	90	Sh/Clst: m gy to drk gy to m brn gy, slt, sft	0041-1L
		5	Cont : dd	0041-2L
		5	Sh/Clst: m gy to drk gy to m brn gy, trbofgs	0041-3L
3079.00				0042
	6.27	85	Sh/Clst: m gy to drk gy to m brn gy, slt, sft	0042-1L
		10	Cont : dd	0042-2L
		5	Sh/Clst: m gy to drk gy to m brn gy, trbofgs	0042-3L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample		
Int	Cvd	TOC%	%	Lithology description		
3082.00						0043
		6.42	95	Sh/Clst: m gy to drk gy to m brn gy, sft, sft		0043-1L
			5	Cont : dd		0043-2L
3085.00						0044
		4.09	90	Sh/Clst: m gy to brn gy, sft		0044-1L
			10	Cont : dd		0044-2L
3091.00						0045
		3.41	90	Sh/Clst: m gy to brn gy, sft		0045-1L
			5	Cont : dd		0045-2L
			5	Sh/Clst: lt gy		0045-3L
3097.00						0046
		2.88	85	Sh/Clst: m gy to brn gy, sft		0046-1L
			10	Sh/Clst: lt gy		0046-3L
			5	Cont : dd		0046-2L
3103.00						0047
		1.98	90	Sh/Clst: m gy to brn gy, sft		0047-1L
			5	Cont : dd		0047-2L
			5	Sh/Clst: lt gy		0047-3L
3109.00						0048
		1.68	90	Sh/Clst: m gy to brn gy, sft		0048-1L
			10	Cont : dd		0048-2L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample		
Int	Cvd	TOC%	%	Lithology description		
3115.00						0049
	2.96	90		Sh/Clst: m gy to brn gy, sft		0049-1L
				10 Cont : dd		0049-2L
				tr Ca : lt or gy		0049-3L
				tr Sltst : gy w, s		0049-4L
3118.00						0050
	2.06	100		Sh/Clst: m gy to brn gy, sft		0050-1L
				tr Cont : dd		0050-2L
				tr Ca : lt or gy		0050-3L
				tr Sltst : gy w, s		0050-4L
3121.00						0051
	2.62	90		Sh/Clst: m gy to brn gy, sft		0051-1L
				5 Cont : dd		0051-2L
				5 Sltst : gy w, s		0051-3L
3130.00						0052
	2.59	95		Sh/Clst: m gy, sft		0052-1L
				5 Cont : dd		0052-2L
3136.00						0053
	1.53	95		Sh/Clst: m gy		0053-1L
				5 Sltst : gy w to lt or gy		0053-2L
				tr Cont : dd		0053-3L
3139.00						0054
	3.41	95		Sh/Clst: m gy		0054-1L
				5 Sltst : gy w to lt or gy		0054-2L
				tr Cont : dd		0054-3L

Table 2 : Lithology description for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Type		Trb	Sample
Int	Cvd	TOC%	%	Lithology description
3145.00				0055
	1.96	80		Sh/Clst: brn gy to m brn gy to m gy, sft
		15		Cont : dd
		5		Sh/Clst: lt gy to gn gy
				0055-1L
				0055-2L
				0055-3L

Table 3a: Rock-Eval table for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2920.00	cut	Sh/Clst: m gy	0.18	0.62	0.43	1.44	0.81	77	53	0.8	0.23	430	0002-1L
2925.00	cut	Sh/Clst: m gy to ol gy	0.10	0.66	0.40	1.65	0.68	97	59	0.8	0.13	436	0003-1L
2925.00	cut	Sltst : lt brn gy	1.04	12.57	1.70	7.39	1.32	952	129	13.6	0.08	452	0003-2L
2930.00	cut	Sh/Clst: m gy	0.46	1.11	0.63	1.76	0.83	134	76	1.6	0.29	426	0004-1L
2935.00	cut	Sltst : drk gy to drk brn	1.07	3.06	0.87	3.52	1.52	201	57	4.1	0.26	423	0005-2L
2940.00	cut	Sltst : m gy to drk gy to drk brn	0.57	15.53	0.91	17.07	3.43	453	27	16.1	0.04	424	0006-1L
2950.00	cut	Sh/Clst: m gy to drk gy	1.36	20.39	0.80	25.49	4.09	499	20	21.8	0.06	421	0008-1L
2953.00	cut	Sh/Clst: m gy to drk gy	0.67	23.43	0.90	26.03	4.42	530	20	24.1	0.03	421	0009-1L
2956.00	cut	Sh/Clst: m gy to drk gy	0.60	25.64	0.99	25.90	4.68	548	21	26.2	0.02	422	0010-1L
2959.00	cut	Sh/Clst: m gy to drk gy	0.24	26.17	0.88	29.74	5.08	515	17	26.4	0.01	422	0011-1L
2962.00	cut	Sh/Clst: m gy to drk gy	0.53	28.40	1.10	25.82	5.35	531	21	28.9	0.02	424	0012-1L
2965.00	cut	Sh/Clst: m gy to drk gy	0.53	28.64	0.98	29.22	5.22	549	19	29.2	0.02	422	0013-1L
2968.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.55	29.46	1.16	25.40	5.81	507	20	30.0	0.02	425	0014-1L
2971.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.54	37.79	1.18	32.03	4.94	765	24	38.3	0.01	422	0015-1L
2974.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.55	41.34	1.16	35.64	7.17	577	16	41.9	0.01	424	0016-1L
2977.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.37	54.36	1.00	54.36	8.85	614	11	54.7	0.01	423	0017-1L

Table 3a: Rock-Eval table for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2980.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.81	53.73	1.08	49.75	9.05	594	12	54.5	0.01	422	0018-1L
2986.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.52	46.78	1.14	41.04	8.28	565	14	47.3	0.01	417	0019-1L
2989.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.57	38.37	1.24	30.94	7.40	519	17	38.9	0.01	418	0020-1L
2992.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.71	38.25	1.21	31.61	7.89	485	15	39.0	0.02	418	0021-1L
2995.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.32	34.09	1.06	32.16	4.82	707	22	34.4	0.01	417	0022-1L
2998.00	cut	Sh/Clst: m gy to drk gy	0.64	35.76	1.17	30.56	7.44	481	16	36.4	0.02	417	0023-1L
3001.00	cut	Sh/Clst: m gy to drk gy	0.69	24.74	1.29	19.18	6.17	401	21	25.4	0.03	415	0024-1L
3004.00	cut	Sh/Clst: m gy to drk gy	0.46	26.45	1.02	25.93	4.95	534	21	26.9	0.02	426	0025-1L
3010.00	cut	Sh/Clst: m gy to drk gy	0.61	29.30	1.12	26.16	5.05	580	22	29.9	0.02	419	0026-1L
3013.00	cut	Sh/Clst: m gy to drk gy	0.61	24.15	1.15	21.00	4.78	505	24	24.8	0.02	423	0027-1L
3022.00	cut	Sh/Clst: m gy to drk gy	0.75	33.33	1.01	33.00	6.87	485	15	34.1	0.02	421	0029-1L
3028.00	cut	Sh/Clst: m gy to drk gy	0.44	31.29	1.13	27.69	6.60	474	17	31.7	0.01	421	0030-1L
3031.00	cut	Sh/Clst: m gy to drk gy	0.23	30.09	0.88	34.19	6.55	459	13	30.3	0.01	423	0031-1L
3037.00	cut	Sh/Clst: m gy to drk gy	0.56	29.22	1.28	22.83	4.30	680	30	29.8	0.02	422	0032-1L
3040.00	cut	Sh/Clst: m gy to drk gy	0.77	30.83	1.28	24.09	7.15	431	18	31.6	0.02	421	0033-1L
3043.00	cut	Sh/Clst: m gy to drk gy	0.55	29.07	1.33	21.86	6.77	429	20	29.6	0.02	420	0034-1L

Table 3a: Rock-Eval table for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
3049.00	cut	Sh/Clst: m gy to drk gy	0.48	28.56	1.17	24.41	6.77	422	17	29.0	0.02	421	0035-1L
3052.00	cut	Sh/Clst: m gy to drk gy	0.47	29.45	1.22	24.14	6.62	445	18	29.9	0.02	424	0036-1L
3058.00	cut	Sh/Clst: m gy to drk gy	0.43	28.81	1.25	23.05	6.50	443	19	29.2	0.01	422	0037-1L
3064.00	cut	Sh/Clst: m gy to drk gy to m brn gy	0.92	30.03	1.26	23.83	6.47	464	19	31.0	0.03	423	0038-1L
3067.00	cut	Sh/Clst: m gy to drk gy to m brn gy	0.40	28.57	0.92	31.05	6.35	450	14	29.0	0.01	424	0039-1L
3070.00	cut	Sh/Clst: m gy to drk gy to m brn gy	0.41	28.67	1.04	27.57	6.08	472	17	29.1	0.01	423	0040-1L
3076.00	cut	Sh/Clst: m gy to drk gy to m brn gy	0.42	28.27	1.17	24.16	6.25	452	19	28.7	0.01	423	0041-1L
3079.00	cut	Sh/Clst: m gy to drk gy to m brn gy	0.36	27.47	1.33	20.65	6.27	438	21	27.8	0.01	424	0042-1L
3082.00	cut	Sh/Clst: m gy to drk gy to m brn gy	0.60	26.96	1.24	21.74	6.42	420	19	27.6	0.02	425	0043-1L
3085.00	cut	Sh/Clst: m gy to brn gy	0.37	26.81	1.15	23.31	4.09	656	28	27.2	0.01	426	0044-1L
3091.00	cut	Sh/Clst: m gy to brn gy	0.40	21.70	1.39	15.61	3.41	636	41	22.1	0.02	428	0045-1L
3097.00	cut	Sh/Clst: m gy to brn gy	0.80	10.92	0.86	12.70	2.88	379	30	11.7	0.07	428	0046-1L
3103.00	cut	Sh/Clst: m gy to brn gy	0.28	7.34	0.91	8.07	1.98	371	46	7.6	0.04	431	0047-1L

Table 3a: Rock-Eval table for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
3109.00	cut	Sh/Clst: m gy to brn gy	0.28	5.93	1.07	5.54	1.68	353	64	6.2	0.05	430	0048-1L
3115.00	cut	Sh/Clst: m gy to brn gy	0.32	16.40	1.19	13.78	2.96	554	40	16.7	0.02	428	0049-1L
3118.00	cut	Sh/Clst: m gy to brn gy	0.48	24.41	1.14	21.41	2.06	1185	55	24.9	0.02	424	0050-1L
3121.00	cut	Sh/Clst: m gy to brn gy	0.68	19.08	1.70	11.22	2.62	728	65	19.8	0.03	427	0051-1L
3130.00	cut	Sh/Clst: m gy	0.51	17.59	1.12	15.71	2.59	679	43	18.1	0.03	430	0052-1L
3136.00	cut	Sh/Clst: m gy	0.15	10.75	0.77	13.96	1.53	703	50	10.9	0.01	430	0053-1L
3139.00	cut	Sh/Clst: m gy	0.30	23.69	1.05	22.56	3.41	695	31	24.0	0.01	428	0054-1L
3145.00	cut	Sh/Clst: brn gy to m brn gy to m gy	0.89	13.01	1.16	11.22	1.96	664	59	13.9	0.06	431	0055-1L

Table 3b: Rock-Eval table for well RE,STD

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1.00	n/a	bulk	0.46	18.66	1.82	10.25	3.90	478	47	19.1	0.02	421	0012-0B
2.00	n/a	bulk	0.33	17.48	2.26	7.73	4.19	417	54	17.8	0.02	418	0013-0B
3.00	n/a	bulk	0.30	17.54	2.43	7.22	4.24	414	57	17.8	0.02	420	0014-0B
4.00	n/a	bulk	0.28	17.20	2.56	6.72	4.29	401	60	17.5	0.02	420	0015-0B
5.00	n/a	bulk	0.32	18.36	2.53	7.26	4.46	412	57	18.7	0.02	425	0016-0B

Table 4 a: Weight of EOM and Chromatographic Fraction for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	Rock Extracted (g)	EOM (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (mg)	TOC (e) (%)	Sample
2940.00	cut	Sltst : m gy to drk gy to drk brn	2.2	8.4	0.8	0.6	1.8	5.2	1.4	7.1	3.99	0006-1L
2968.00	cut	Sh/Clst: m gy to drk gy to drk brn	3.0	4.6	0.9	0.8	1.4	1.5	1.6	2.9	5.74	0014-1L
2980.00	cut	Sh/Clst: m gy to drk gy to drk brn	2.6	6.3	0.9	0.6	2.3	2.6	1.5	4.8	8.78	0018-1L
3001.00	cut	Sh/Clst: m gy to drk gy	4.0	13.9	1.1	0.8	3.5	8.4	1.9	11.9	6.63	0024-1L
3022.00	cut	Sh/Clst: m gy to drk gy	4.8	14.0	1.0	1.0	5.5	6.4	2.0	12.0	7.27	0029-1L
3043.00	cut	Sh/Clst: m gy to drk gy	5.5	9.7	1.0	1.1	4.4	3.1	2.1	7.6	7.35	0034-1L
3064.00	cut	Sh/Clst: m gy to drk gy to m brn gy	4.9	14.1	0.9	1.2	8.0	3.9	2.2	11.9	7.54	0038-1L
3082.00	cut	Sh/Clst: m gy to drk gy to m brn gy	7.3	17.4	1.4	1.7	8.6	5.8	3.1	14.4	7.18	0043-1L
3103.00	cut	Sh/Clst: m gy to brn gy	4.0	6.7	1.1	0.6	2.4	2.5	1.7	4.9	3.33	0047-1L
3118.00	cut	Sh/Clst: m gy to brn gy	5.0	9.4	1.1	1.3	2.7	4.4	2.4	7.0	5.46	0050-1L
3139.00	cut	Sh/Clst: m gy	5.7	7.2	1.0	1.0	2.2	3.0	2.0	5.2	4.41	0054-1L

Table 4 b: Concentration of EOM and Chromatographic Fraction (wt ppm rock) for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
2940.00	cut	Sltst : m gy to drk gy to drk brn	3800	339	271	814	2375	610	3190	0006-1L
2968.00	cut	Sh/Clst: m gy to drk gy to drk brn	1526	302	251	469	503	553	973	0014-1L
2980.00	cut	Sh/Clst: m gy to drk gy to drk brn	2461	348	232	891	988	581	1879	0018-1L
3001.00	cut	Sh/Clst: m gy to drk gy	3430	279	200	878	2071	480	2950	0024-1L
3022.00	cut	Sh/Clst: m gy to drk gy	2914	212	212	1151	1338	424	2490	0029-1L
3043.00	cut	Sh/Clst: m gy to drk gy	1745	176	205	803	559	382	1362	0034-1L
3064.00	cut	Sh/Clst: m gy to drk gy to m brn gy	2855	189	252	1632	782	441	2414	0038-1L
3082.00	cut	Sh/Clst: m gy to drk gy to m brn gy	2381	185	232	1174	788	418	1963	0043-1L
3103.00	cut	Sh/Clst: m gy to brn gy	1682	279	158	609	634	438	1244	0047-1L
3118.00	cut	Sh/Clst: m gy to brn gy	1875	224	255	531	863	480	1394	0050-1L
3139.00	cut	Sh/Clst: m gy	1261	174	174	388	523	349	911	0054-1L

Table 4 c: Concentration of EOM and Chromatographic Fraction (mg/g TOC(e)) for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
2940.00	cut	Sltst : m gy to drk gy to drk brn	95.26	8.51	6.80	20.41	59.54	15.31	79.95	0006-1L
2968.00	cut	Sh/Clst: m gy to drk gy to drk brn	26.60	5.26	4.38	8.18	8.77	9.65	16.95	0014-1L
2980.00	cut	Sh/Clst: m gy to drk gy to drk brn	28.03	3.97	2.65	10.15	11.26	6.62	21.41	0018-1L
3001.00	cut	Sh/Clst: m gy to drk gy	51.74	4.22	3.02	13.25	31.25	7.24	44.50	0024-1L
3022.00	cut	Sh/Clst: m gy to drk gy	40.09	2.92	2.92	15.84	18.42	5.83	34.26	0029-1L
3043.00	cut	Sh/Clst: m gy to drk gy	23.75	2.41	2.80	10.93	7.61	5.21	18.54	0034-1L
3064.00	cut	Sh/Clst: m gy to drk gy to m brn gy	37.87	2.51	3.34	21.65	10.38	5.85	32.02	0038-1L
3082.00	cut	Sh/Clst: m gy to drk gy to m brn gy	33.16	2.59	3.23	16.36	10.98	5.82	27.34	0043-1L
3103.00	cut	Sh/Clst: m gy to brn gy	50.53	8.40	4.77	18.31	19.06	13.16	37.37	0047-1L
3118.00	cut	Sh/Clst: m gy to brn gy	34.34	4.11	4.69	9.74	15.81	8.79	25.55	0050-1L
3139.00	cut	Sh/Clst: m gy	28.59	3.96	3.96	8.80	11.88	7.92	20.68	0054-1L

Table 4 d: Composition of material extracted from the rock (%) for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	Sat	Aro	Asph	NSO	HC	Non-HC	Sat	HC	Sample
			EOM	EOM	EOM	EOM	EOM	EOM	EOM	Aro	
2940.00	cut	Sltst : m gy to drk gy to drk brn	8.93	7.14	21.43	62.50	16.07	83.93	125.00	19.15	0006-1L
2968.00	cut	Sh/Clst: m gy to drk gy to drk brn	19.78	16.48	30.77	32.97	36.26	63.74	120.00	56.90	0014-1L
2980.00	cut	Sh/Clst: m gy to drk gy to drk brn	14.17	9.45	36.22	40.16	23.62	76.38	150.00	30.93	0018-1L
3001.00	cut	Sh/Clst: m gy to drk gy	8.15	5.84	25.61	60.39	14.00	86.00	139.51	16.28	0024-1L
3022.00	cut	Sh/Clst: m gy to drk gy	7.28	7.28	39.51	45.93	14.55	85.45	100.00	17.03	0029-1L
3043.00	cut	Sh/Clst: m gy to drk gy	10.13	11.79	46.02	32.06	21.92	78.08	85.96	28.08	0034-1L
3064.00	cut	Sh/Clst: m gy to drk gy to m brn gy	6.62	8.83	57.15	27.40	15.44	84.56	75.00	18.27	0038-1L
3082.00	cut	Sh/Clst: m gy to drk gy to m brn gy	7.80	9.75	49.34	33.10	17.56	82.44	80.00	21.29	0043-1L
3103.00	cut	Sh/Clst: m gy to brn gy	16.62	9.43	36.23	37.72	26.05	73.95	176.19	35.22	0047-1L
3118.00	cut	Sh/Clst: m gy to brn gy	11.96	13.65	28.36	46.03	25.61	74.39	87.60	34.42	0050-1L
3139.00	cut	Sh/Clst: m gy	13.85	13.85	30.77	41.54	27.69	72.31	100.00	38.30	0054-1L

Table 5: Saturated Hydrocarbon Ratios for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	Pristane	Pristane	Pristane/nC17	Phytane	CPI1	nC17	Sample
			nC17	Phytane	Phytane/nC18	nC18		nC17+nC27	
2940.00	cut	Sltst : m gy to drk gy to drk brn	-	-	-	-	-	1.00	0006-1L
2968.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.45	-	-	-	1.71	0.74	0014-1L
2980.00	cut	Sh/Clst: m gy to drk gy to drk brn	0.21	-	-	-	1.68	0.76	0018-1L
3001.00	cut	Sh/Clst: m gy to drk gy	0.75	-	-	-	1.75	0.75	0024-1L
3022.00	cut	Sh/Clst: m gy to drk gy	0.95	-	-	-	1.89	0.73	0029-1L
3043.00	cut	Sh/Clst: m gy to drk gy	0.78	-	-	-	1.25	0.77	0034-1L
3064.00	cut	Sh/Clst: m gy to drk gy to m brn gy	1.55	-	-	-	1.88	0.67	0038-1L
3082.00	cut	Sh/Clst: m gy to drk gy to m brn gy	1.42	-	-	-	1.77	0.71	0043-1L
3103.00	cut	Sh/Clst: m gy to brn gy	0.68	-	-	-	1.99	0.75	0047-1L
3118.00	cut	Sh/Clst: m gy to brn gy	0.58	-	-	-	2.10	0.84	0050-1L
3139.00	cut	Sh/Clst: m gy	0.58	-	-	-	1.92	0.81	0054-1L

Table 6A: Tabulation of carbon isotope data for EOM/EOM - fractions for well NOCS 34/7-24S

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Saturated	Aromatic	NSO	Asphaltenes	Kerogen	Sample
2940.00	cut	Sltst	-	-25.97	-27.75	-	-	-	0006-1
2968.00	cut	Sh/Clst	-	-27.66	-29.14	-	-	-	0014-1
2980.00	cut	Sh/Clst	-	-28.61	-29.27	-	-	-	0018-1
3001.00	cut	Sh/Clst	-	-28.36	-28.04	-	-	-	0024-1
3022.00	cut	Sh/Clst	-	-28.73	-27.90	-	-	-	0029-1
3043.00	cut	Sh/Clst	-	* -	-27.77	-	-	-	0034-1
3064.00	cut	Sh/Clst	-	-27.84	-26.75	-	-	-	0038-1
3082.00	cut	Sh/Clst	-	* -	-26.00	-	-	-	0043-1
3103.00	cut	Sh/Clst	-	-27.12	-25.69	-	-	-	0047-1
3118.00	cut	Sh/Clst	-	* -	-28.83	-	-	-	0050-1
3139.00	cut	Sh/Clst	-	* -	-27.75	-	-	-	0054-1

* Too little material.

Table 6B: Tabulation of cv values from carbon isotope data for well NOCS 34/7-24S

Depth unit of measure: m

<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>cv value</u>	<u>Interpretation</u>	<u>Sample</u>
2940.00	cut	Sltst	-25.97	-27.75	-7.55	Marine	0006-1
2968.00	cut	Sh/Clst	-27.66	-29.14	-6.36	Marine	0014-1
2980.00	cut	Sh/Clst	-28.61	-29.27	-4.25	Marine	0018-1
3001.00	cut	Sh/Clst	-28.36	-28.04	-2.15	Marine	0024-1
3022.00	cut	Sh/Clst	-28.73	-27.90	-0.90	Marine	0029-1
3043.00	cut	Sh/Clst	* -	-27.77	-	Marine	0034-1
3064.00	cut	Sh/Clst	-27.84	-26.75	-0.60	Marine	0038-1
3082.00	cut	Sh/Clst	* -	-26.00	-	Marine	0043-1
3103.00	cut	Sh/Clst	-27.12	-25.69	-0.07	Marine	0047-1
3118.00	cut	Sh/Clst	* -	-28.83	-	Marine	0050-1
3139.00	cut	Sh/Clst	* -	-27.75	-	Marine	0054-1

* Too little material.

Table 7a: Variation in Triterpane Distribution (peak height) SIR for Well NOCS 34/7-24S

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Rat.10	Rat.11	Rat.12	Rat.13	Rat.14	Sample
2940.00	Sltst	1.46	0.59	0.16	0.49	0.33	0.06	0.07	0.14	0.07	0.15	0.89	0.38	0.21	43.88	0006-1
2968.00	Sh/Clst	1.55	0.61	0.21	0.69	0.41	0.07	0.20	0.29	0.16	0.07	0.88	0.41	0.14	51.83	0014-1
2980.00	Sh/Clst	1.91	0.66	0.14	0.51	0.34	-	-	-	-	0.13	0.84	0.34	0.20	47.18	0018-1
3001.00	Sh/Clst	1.47	0.60	0.21	0.49	0.33	0.09	0.09	0.17	0.08	0.07	0.89	0.36	0.18	47.07	0024-1
3022.00	Sh/Clst	2.89	0.74	0.17	0.54	0.35	0.07	1.09	2.01	0.52	0.03	0.85	0.37	0.21	44.36	0029-1
3043.00	Sh/Clst	4.43	0.82	0.24	0.70	0.41	0.07	1.72	2.47	0.63	0.08	0.84	0.41	0.20	38.83	0034-1
3064.00	Sh/Clst	14.41	0.94	0.24	0.42	0.30	0.07	0.04	0.10	0.04	0.03	0.77	0.31	0.32	50.83	0038-1
3082.00	Sh/Clst	14.97	0.94	0.23	0.45	0.31	0.07	0.02	0.05	0.02	0.02	0.80	0.34	0.31	54.15	0043-1
3103.00	Sh/Clst	5.47	0.85	0.25	0.55	0.36	0.08	0.05	0.08	0.04	0.13	0.74	0.37	0.39	46.77	0047-1
3118.00	Sh/Clst	3.02	0.75	0.20	0.69	0.41	0.05	0.13	0.19	0.12	0.05	0.82	0.41	0.22	42.49	0050-1
3139.00	Sh/Clst	2.68	0.73	0.20	0.64	0.39	0.06	0.04	0.06	0.03	0.07	0.86	0.43	0.25	49.75	0054-1

List of Triterpane Distribution Ratios

Ratio 1: $27Tm / 27Ts$

Ratio 2: $27Tm / 27Tm+27Ts$

Ratio 3: $27Tm / 27Tm+30a\beta+30\beta a$

Ratio 4: $29a\beta / 30a\beta$

Ratio 5: $29a\beta / 29a\beta+30a\beta$

Ratio 6: $30d / 30a\beta$

Ratio 7: $28a\beta / 30a\beta$

Ratio 8: $28a\beta / 29a\beta$

Ratio 9: $28a\beta / 28a\beta+30a\beta$

Ratio 10: $24/3 / 30a\beta$

Ratio 11: $30a\beta / 30a\beta+30\beta a$

Ratio 12: $29a\beta+29\beta a / 29a\beta+29\beta a+30a\beta+30\beta a$

Ratio 13: $29\beta a+30\beta a / 29a\beta+30a\beta$

Ratio 14: $32a\beta S / 32a\beta S+32a\beta R$ (%)

Table 7b: Variation in Sterane Distribution (peak height) SIR for Well NOCS 34/7-24S

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Ratio6</u>	<u>Ratio7</u>	<u>Ratio8</u>	<u>Ratio9</u>	<u>Ratio10</u>	<u>Sample</u>
2940.00	Sltst	0.34	19.90	47.30	1.20	0.69	0.36	0.26	0.31	0.25	0.56	0006-1
2968.00	Sh/Clst	0.24	24.24	53.81	1.18	0.71	0.27	0.20	0.37	0.32	0.77	0014-1
2980.00	Sh/Clst	0.50	26.87	51.12	1.62	0.66	0.40	0.29	0.34	0.37	0.72	0018-1
3001.00	Sh/Clst	0.43	17.43	55.72	1.06	0.78	0.36	0.27	0.39	0.21	0.76	0024-1
3022.00	Sh/Clst	0.42	19.82	49.55	1.42	0.71	0.30	0.22	0.33	0.25	0.61	0029-1
3043.00	Sh/Clst	0.49	19.80	55.16	1.74	0.76	0.32	0.23	0.38	0.25	0.77	0034-1
3064.00	Sh/Clst	0.53	21.52	53.68	1.23	0.73	0.17	0.12	0.37	0.27	0.74	0038-1
3082.00	Sh/Clst	0.57	19.61	60.90	1.12	0.80	0.21	0.17	0.44	0.24	0.97	0043-1
3103.00	Sh/Clst	0.59	17.67	53.27	1.22	0.76	0.39	0.31	0.36	0.21	0.69	0047-1
3118.00	Sh/Clst	0.51	15.73	43.70	1.69	0.71	0.23	0.18	0.28	0.19	0.46	0050-1
3139.00	Sh/Clst	0.40	20.16	45.78	1.28	0.68	0.24	0.19	0.30	0.25	0.53	0054-1

List of Sterane Distribution Ratios

Ratio 1: $27d\beta S / 27d\beta S + 27aaR$

Ratio 2: $29aaS / 29aaS + 29aaR$ (%)

Ratio 3: $2 * (29\beta\beta R + 29\beta\beta S) / (29aaS + 29aaR + 2 * (29\beta\beta R + 29\beta\beta S))$ (%)

Ratio 4: $27d\beta S + 27d\beta R + 27daS + 27daR / 29d\beta S + 29d\beta R + 29daS + 29daR$

Ratio 5: $29\beta\beta R + 29\beta\beta S / 29\beta\beta R + 29\beta\beta S + 29aaS$

Ratio 6: $21a + 22a / 21a + 22a + 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 7: $21a + 22a / 21a + 22a + 28daR + 28aaS + 29daR + 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 8: $29\beta\beta R + 29\beta\beta S / 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 9: $29aaS / 29aaR$

Ratio 10: $29\beta\beta R + 29\beta\beta S / 29aaR$

Table 7c: Raw triterpane data (peak height) m/z 191 SIR for Well NOCS 34/7-24S

Depth unit of measure: m

Depth	Lithology	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28a β	25nor30a β	Sample
		29a β	29Ts	30d	29 β a	300	30a β	30 β a	30G	31a β S	
		31a β R	32a β S	32a β R	33a β S	33a β R	34a β S	34a β R	35a β S	35a β R	
2940.00	Sltst	180.0 313.8 132.7	93.8 116.2 70.1	61.7 40.2 89.7	91.8 123.6 68.7	26.1 0.0 53.5	96.1 639.9 54.4	139.9 80.4 54.4	44.9 0.0 39.2	0.0 157.6 37.3	0006-1
2968.00	Sh/Clst	47.8 292.8 81.4	31.9 95.5 61.9	20.9 28.0 57.5	30.8 43.8 33.8	19.9 0.0 38.6	82.7 426.2 35.1	128.2 59.5 34.7	83.7 0.0 31.8	0.0 100.1 61.0	0014-1
2980.00	Sh/Clst	142.8 263.6 102.9	68.8 80.9 48.7	31.5 0.0 54.5	23.7 54.7 31.4	14.8 0.0 49.7	54.0 515.9 25.1	103.4 100.2 29.9	0.0 0.0 21.8	0.0 191.6 24.9	0018-1
3001.00	Sh/Clst	95.9 345.0 189.7	46.4 144.2 81.3	26.7 65.9 91.4	52.5 101.3 76.6	17.8 0.0 65.9	138.4 699.0 41.5	203.8 89.5 56.5	60.1 0.0 42.6	0.0 229.2 50.9	0024-1
3022.00	Sh/Clst	78.8 877.6 399.1	44.7 245.7 165.5	37.8 105.9 207.5	69.6 234.6 124.8	0.0 0.0 144.6	132.9 1614.0 88.6	384.7 279.0 97.8	1766.0 0.0 85.4	0.0 406.5 124.3	0029-1

Table 7c: Raw triterpane data (peak height) m/z 191 SIR for Well NOCS 34/7-24S

Depth unit of measure: m

Depth	Lithology	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29Ba	30O	30aß	30Ba	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
3043.00	Sh/Clst	129.7 752.7 265.0	84.8 172.0 95.7	44.6 78.5 150.7	55.9 155.6 81.5	0.0 0.0 84.4	94.3 1078.3 58.6	417.4 212.1 49.4	1857.8 0.0 45.6	0.0 364.9 82.0	0034-1
3064.00	Sh/Clst	160.6 1833.4 1526.1	126.0 274.9 533.9	66.8 285.0 516.5	114.6 677.9 312.0	32.3 0.0 336.2	122.1 4341.7 288.4	1759.5 1268.2 226.0	179.2 0.0 191.8	109.4 2104.6 224.2	0038-1
3082.00	Sh/Clst	155.9 1516.9 1304.1	77.5 241.9 502.7	41.3 227.9 425.8	102.5 677.6 179.5	0.0 0.0 220.5	82.3 3354.0 133.1	1231.8 844.6 161.9	81.8 0.0 89.8	60.5 1634.7 149.5	0043-1
3103.00	Sh/Clst	69.7 225.4 193.2	52.6 48.3 59.1	19.3 31.4 67.2	26.1 100.6 27.4	0.0 0.0 32.4	33.0 406.5 20.4	180.3 144.3 22.5	19.1 0.0 21.3	13.3 224.1 27.4	0047-1
3118.00	Sh/Clst	131.8 888.2 347.5	60.0 232.0 140.8	33.1 63.8 190.6	84.9 206.7 87.1	0.0 0.0 105.7	128.6 1293.2 49.2	388.8 279.0 98.0	170.7 0.0 52.8	28.9 499.6 64.8	0050-1

Table 7c: Raw triterpane data (peak height) m/z 191 SIR for Well NOCS 34/7-24S

Depth unit of measure: m

Depth	Lithology	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aβ	25nor30aβ	Sample
		29aβ	29Ts	30d	29βa	300	30aβ	30βa	30G	31aβS	
		31aβR	32aβS	32aβR	33aβS	33aβR	34aβS	34aβR	35aβS	35aβR	
3139.00	Sh/Clst	113.4	55.4	25.1	62.0	15.7	84.7	227.2	28.6	0.0	0054-1
		517.5	165.3	44.4	196.6	0.0	806.3	131.0	0.0	277.0	
		200.3	90.1	91.0	50.3	67.2	31.4	29.9	29.8	24.2	

Table 7d: Raw sterane data (peak height) m/z 217 SIR for Well NOCS 34/7-24S

Depth unit of measure: m

Depth	Lithology	21a	22a	27d β S	27d β R	27daS	27daR	28d β S	28d β R	28daS*	Sample
		29d β S*	28daR*	27aaR	29d β R	29daS	28aaS	29daR*	28 $\beta\beta$ S		
		28aaR	29aaS	29 $\beta\beta$ R	29 $\beta\beta$ S	29aaR					
2940.00	Slstst	106.8	54.8	114.1	94.2	53.8	60.6	62.3	54.3	88.4	0006-1
		111.6	40.1	52.7	37.7	161.5	39.8	52.5	60.3	66.3	
2968.00	Sh/Clst	44.3	26.1	65.1	54.2	25.6	23.3	22.8	31.7	39.9	0014-1
		81.5	29.2	41.5	28.7	91.3	21.3	33.8	26.9	23.2	
2980.00	Sh/Clst	82.3	30.3	100.8	64.1	32.1	35.0	41.9	34.2	38.8	0018-1
		41.6	29.2	35.8	21.1	79.6	23.3	23.9	30.4	40.7	
3001.00	Sh/Clst	123.0	49.1	147.4	115.4	63.0	55.4	72.2	60.7	105.0	0024-1
		104.0	33.3	70.8	49.3	157.7	41.0	43.8	45.5	46.4	
3022.00	Sh/Clst	192.9	49.7	327.9	261.5	133.1	143.1	228.2	117.4	142.0	0029-1
		184.5	74.3	110.1	74.0	300.6	79.0	62.8	121.4	74.9	

* 28daS coel with 27aaS, 29d β S coel with 27 $\beta\beta$ R, 28daR coel with 27 $\beta\beta$ S, 29daR coel with 28 $\beta\beta$ R

Table 7d: Raw sterane data (peak height) m/z 217 SIR for Well NOCS 34/7-24S

Depth unit of measure: m

Depth	Lithology	21a	22a	27dBS	27dBR	27daS	27daR	28dBS	28dBR	28daS*	Sample
		29dBS*	28daR*	27aaR	29dBR	29daS	28aaS	29daR*	28BS		
		28aaR	29aaS	29BBR	29BS	29aaR					
3043.00	Sh/Clst	175.9	62.7	335.0	370.6	148.4	129.2	156.6	125.5	143.2	0034-1
		211.2	141.5	352.1	168.4	90.7	71.9	93.4	71.7		
		155.6	61.2	122.3	67.8	247.9					
3064.00	Sh/Clst	306.5	93.5	1028.5	759.9	406.3	547.3	438.8	336.0	377.3	0038-1
		960.7	393.2	898.6	694.7	305.8	231.0	274.9	263.9		
		516.1	275.8	430.2	312.4	1005.8					
3082.00	Sh/Clst	283.1	84.9	606.9	503.0	254.8	222.3	227.9	231.7	180.4	0043-1
		595.7	218.6	462.4	444.2	207.8	101.2	171.3	178.3		
		224.0	149.1	428.8	163.2	611.1					
3103.00	Sh/Clst	63.6	30.3	70.8	62.6	28.0	29.4	24.2	22.8	25.2	0047-1
		63.5	34.5	48.5	45.3	30.4	16.7	17.5	22.8		
		26.7	16.3	31.9	20.7	76.0					
3118.00	Sh/Clst	132.8	46.7	398.3	216.7	101.8	91.5	96.9	82.8	118.5	0050-1
		211.5	91.5	381.5	151.5	61.4	51.5	53.3	76.9		
		141.1	67.4	108.1	58.2	361.2					

* 28daS coel with 27aaS, 29dBS coel with 27BBR, 28daR coel with 27BS, 29daR coel with 28BBR

Table 7d: Raw sterane data (peak height) m/z 217 SIR for Well NOCS 34/7-24S

Depth unit of measure: m

Depth	Lithology	21a	22a	27d β S	27d β R	27daS	27daR	28d β S	28d β R	28daS*	Sample
		29d β S*	28daR*	27aaR	29d β R	29daS	28aaS	29daR*	28 β β S		
		28aaR	29aaS	29 β β R	29 β β S	29aaR					
3139.00	Sh/Clst	67.6	30.2	141.4	98.4	41.3	45.9	39.9	34.3	73.9	0054-1
		64.2	85.6	42.2	208.5	96.2	35.2	35.8	38.7	37.6	
			44.0	58.0	34.1	174.2					

* 28daS coel with 27aaS, 29d β S coel with 27 β β R, 28daR coel with 27 β β S, 29daR coel with 28 β β R

Table 7e: Raw sterane data (peak height) m/z 218 SIR for Well NOCS 34/7-24S

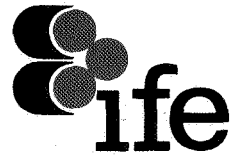
Depth unit of measure: m

Depth	Lithology	27 β BR	27 β BS	28 β BR	28 β BS	29 β BR	29 β BS	30 β BR	30 β BS	Sample
2940.00	Sltst	49.4	55.9	64.0	68.0	52.7	54.7	0.0	0.0	0006-1
2968.00	Sh/Clst	44.1	31.8	31.7	30.6	27.1	37.2	16.4	16.4	0014-1
2980.00	Sh/Clst	44.0	58.7	39.3	54.9	30.9	38.0	0.0	0.0	0018-1
3001.00	Sh/Clst	55.4	70.8	72.0	66.5	58.6	53.7	0.0	0.0	0024-1
3022.00	Sh/Clst	115.7	118.9	113.9	126.1	112.9	86.4	21.6	32.0	0029-1
3043.00	Sh/Clst	121.2	123.6	81.5	104.7	126.9	87.7	33.7	33.0	0034-1
3064.00	Sh/Clst	385.1	329.1	314.1	320.9	484.5	448.9	56.6	57.6	0038-1
3082.00	Sh/Clst	211.5	210.8	149.4	183.3	418.0	220.5	31.6	38.8	0043-1
3103.00	Sh/Clst	34.5	29.5	20.4	19.2	34.0	18.1	0.0	0.0	0047-1
3118.00	Sh/Clst	114.3	87.5	76.1	110.7	123.6	74.0	22.1	27.8	0050-1
3139.00	Sh/Clst	45.5	46.4	39.8	41.5	54.2	35.0	0.0	0.0	0054-1

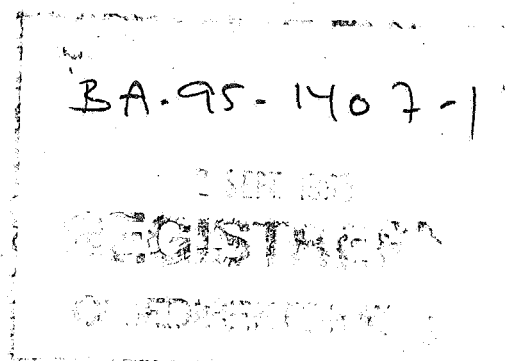
Table 7f: Raw triterpane data (peak height) m/z 177 SIR for Well NOCS 34/7-24S

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>25nor28aß</u>	<u>25nor30aß</u>	<u>Sample</u>
2940.00	Sltst	24.7	22.8	0006-1
2968.00	Sh/Clst	24.8	0.0	0014-1
2980.00	Sh/Clst	0.0	0.0	0018-1
3001.00	Sh/Clst	23.5	0.0	0024-1
3022.00	Sh/Clst	48.9	0.0	0029-1
3043.00	Sh/Clst	36.0	0.0	0034-1
3064.00	Sh/Clst	94.2	64.4	0038-1
3082.00	Sh/Clst	93.9	0.0	0043-1
3103.00	Sh/Clst	31.7	0.0	0047-1
3118.00	Sh/Clst	0.0	0.0	0050-1
3139.00	Sh/Clst	0.0	0.0	0054-1



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1 Introduction

This report gives the result of routine vitrinite reflectance analyses on 26 samples covering the interval from 1100 to 3145 mRKB in well 34/7-24S offshore Norway.

2 Material

2.1 Samples

The material was provided from the client as 26 washed cuttings. The sample positions are indicated in figure 1.

2.2 Geological information and casing points

Information on the stratigraphy and casing points was not supplied from the client.

3 Analytical techniques

3.1 Preparation

The cuttings samples were treated with hydrochloric and hydrofluoric acid prior to further preparation. The aim was to avoid soft and expanding mineral phases in order to ensure good polishing quality.

The sample material resulting from the acid treatment was embedded in an epoxy resin to make briquettes, ground flat and polished using 0.25 micron diamond paste and magnesium oxide as the two final steps.

3.2 Analysis

The analytical equipment being used was a Zeiss MPM 03 photometer microscope equipped with an Epiplan-Neofluar 40/0.90 oil objective. The sensitive measuring spot was kept constant for all measurements at about 2.5 micron in diameter. The measurements were made through a green band pass filter (546 nm) and in oil immersion (refractive index 1.515 at 18°C). The readings were made without a polarizer and using a stationary stage. This procedure is called measurement of random reflectance (%Rm). The photometer is calibrated daily against a standard of known reflectance (%Rm=0.588) and routinely (daily) checked against two other standards of significant different reflectances (%Rm=0.879 and 1.696). A deviation from these values of less than ± 0.01 and ± 0.02 respectively is considered as acceptable. The calibration is routinely checked during the course of measurements at least every hour, and a deviation of less than ± 0.005 is considered as acceptable.

For each sample at least 20 points were measured if possible, and quality ratings are given to various important aspects which may affect the measurements. The aspects are abundance of vitrinite, uncertainties in the identification of indigenous vitrinite, type of vitrinite, particle size, particle surface quality and abundance of pyrite.

3.3 Presentation of results

The raw data from the measurements are presented in appendix for each sample both as tabulated data and histograms. A true vitrinite population is selected among the readings based on observations made during the measurements, and arithmetic mean values are calculated for this population and other populations. A quality rating is given to the true population. The results are listed in table 1.

The results are presented as vitrinite reflectance versus depth plots on linear and semilogarithmic scales (figure 1). A vitrinite reflectance versus depth trend is interpreted manually on the linear plot and transferred to the semilogarithmic plot. The interpreted trend is also listed in table 2.

Table 1 Vitrinite reflectance data

Well
34/7-24S

IFE no.	Depth, mRKB	Sample type	Lithology	%Rm	Std. dev.	N	Quality	Preparation
SA 1475	1100	cut	clst	0.23	0.04	22	M	HF
SA 1476	1180	cut	clst	0.23	0.03	24	M	HF
SA 1477	1260	cut	clst	0.24	0.04	26	M	HF
SA 1478	1340	cut	clst	0.28	0.04	21	M	HF
SA 1479	1420	cut	clst/slst	0.29	0.00	1	P	HF
SA 1480	1500	cut	clst/sst	0.27	0.04	9	P	HF
SA 1481	1580	cut	clst	0.29	0.05	11	P	HF
SA 1482	1660	cut	clst	0.28	0.02	12	P	HF
SA 1483	1740	cut	clst	0.30	0.03	16	M	HF
SA 1484	1820	cut	clst	0.29	0.04	9	P	HF
SA 1485	1900	cut	clst	0.29	0.03	7	P	HF
SA 1486	1980	cut	clst	0.37	0.06	24	M	HF
SA 1487	2060	cut	clst	0.38	0.06	26	M	HF
SA 1488	2140	cut	clst	0.55	0.12	18	P	HF
SA 1489	2220	cut	clst	0.39	0.07	8	P	HF
SA 1490	2300	cut	clst	0.40	0.07	20	P	HF
SA 1491	2380	cut	clst	0.43	0.13	11	P	HF
SA 1492	2460	cut	clst	0.43	0.08	11	P	HF
SA 1493	2540	cut	clst	0.44	0.05	10	M	HF
SA 1494	2620	cut	clst	0.46	0.06	17	M	HF
SA 1495	2700	cut	clst	0.46	0.06	5	M	HF
SA 1496	2800	cut	clst	0.50	0.07	25	M	HF
SA 1497	2900	cut	clst	0.60	0.11	4	P	HF
SA 1498	2998	cut	clst	0.57	0.09	20	M	HF
SA 1499	3097	cut	clst	0.58	0.07	25	M	HF
SA 1500	3145	cut	clst	0.58	0.06	7	P	HF

G	Good quality	P	Poor quality	st	HC-staining	HF	HF-treated
M	Moderate quality	X	Not vitrinite	Barren	Barren of vitrinite	Bulk	Bulk rock