

#### 4.4.2 RFT Survey.

Three RFT runs, 3/1, 3/2 and 3/3, were performed in the 8.5" hole section over the interval 3433-3331 m RKB. A total of thirty three pressure points were attempted and a segregated fluid sample was taken.

Run 3/1 attempted four pressure points and was abandoned after the HP gauge failed. Twenty one pressure points were attempted on run 3/2. Following the failure of the HP gauge again, the data was aquired using the strain gauge.

A segregated sample was taken taken on run 3/3 which recovered 5 ltr of muddy water in the 6 gallon chamber. The 1 gallon chamber was plugged. A wellsite analysis of the fluid recovered is summarized below.

Water analysis:	Chlorides:	58,000 mg/ltr	cf Drilling mud:	59,000 mg/ltr
	pH:	6.48		8
	Hardness:	200 ppm		160 ppm

A pressure/depth plot is illustrated in Figure 4.5. The first RFT point established a formation pressure of 490.55 bar at 3332 m which gives a calculated pore pressure of 1.48 sg EMW.

A salt water gradient has however been interpreted of 0.105 sg based on the pressure points at 3332 m and 3414 m respectively,

## RFT TEST SUMMARY

Table 4.3

TEST DEPTH (M)		STRAIN GAUGE PRESSURES (bars)			REMARKS / FORMATION
MDRKB	TVDSS	HYDRO BEFORE	FORMATION	HYDRO AFTER	
Run 3/1					
3331.5	3306	499.25	---	---	Seal failure / D
3332.0	3307	499.32	490.55	499.33	5.1 mD/Cp / D
3337.5	3312.5	500.16	---	500.16	HP plugged, tight / D
3414	3389	511.5	499.52	511.5	Ignore HP / S
Run 3/2					
3393	3368	508.18	---	508.16	Tight / H
3395.5	3370.5	508.58	---	---	Seal failure / H
3396	3371	508.66	---	508.61	Tight / H
3402.5	3377.5	509.63	---	509.59	Tight / H
3407	3382	511.3	---	511.3	Tight / H
3409.5	3384.5	510.69	499.17	510.63	7 mD/Cp. / H
3414	3389	511.3	---	511.3	Tight / S
3414.2	3389.2	511.4	499.54	511.3	/ S
3429.5	3404.5	513.65	---	513.63	Tight, HP plugged? / S
3430.5	3405.5	513.81	502.64	513.63	/ S
3432.5	3407.5	514.12	502.91	514.11	/ S
3440.5	3415	515.29	505.57	515.31	2.3 mD/Cp. HP plugged? / S
3453	3428	517.21	---	517.12	Tight / S
3454.5	3429.5	517.36	---	517.34	Tight / S
3461	3436	518.37	---	520.34	Tight / S
3476	3451	520.6	---	520.54	Tight / S
3476.5	3451.5	520.61	---	520.60	Tight / S
3495	3470	523.4	---	523.39	Tight / S
3494.5	3469.5	523.23	---	523.2	Tight / S
3421.5	3396.5	512.5	502.58	512.47	Tight / S
3403	3378	509.74	497.64	509.73	11 mD/Cp. / H
Run 3/3					
3403	3378	508.97	497.05	508.89	Sample * / H
3403.2	3378.2	508.95	496.97	508.95	/ H
3410	3385	510.01	---	510.03	HP plugged? / H
3409	3384	509.9	---	509.88	Tight / H
3415	3390	510.83	498.91	510.81	9.37 mD/Cp. / S
3421	3396	511.71	---	511.72	Tight / H
3430	3425	513.09	501.89	513.09	1.59 mD/Cp. / S
3433	3408	513.56	501.19	513.55	15.7 mD/Cp. / S

D = Draupne Fm      H = Hugin Fm      S = Skagerrak Fm

\* A segregated sample was taken which recovered 5 lt. of muddy water in 2.5 hrs.

# DEMINEX NORGE

# MUD PROPERTIES

# WELL 15/6-7

Interval (size) {CSG}	Depth (m) <small>(rtb-seabed=133m)</small>	Formation Type	MW (sg)	YP (Pa)	Fann 3 rpm (lbs/100ft <sup>2</sup> )	GELS 10sec/10min (Pa)	Visc. (sec/l)	pH	API FL (ml)	HTHP FL (Note 1) (ml)	CEC (kg/m <sup>3</sup> )	LGS (kg/m <sup>3</sup> )	KCL (kg/m <sup>3</sup> ) (in)	MUD SYSTEM
36" {30"}	219	Clay	1.05-1.20				140-145							Gel - seawater.
9 7/8" {PILOT}	505	Clay	1.05-1.20 (1.5,killmud)				140-150							Gel - seawater
26" {20"}	505	Clay	1.05-1.20 (1.5,killmud)				140-150							Gel - seawater
17 1/2" {13 3/8"}	1173	Claystone Sandstone	1.05-1.17	7-10	14-22	1-2/2-6	44-56	8.0-8.2	4.4-5.1	14.0-14.5	6-21	44-121	90-110	KCl/PHPA
12 1/4" {9 5/8"}	2788	Calystone Sandstone Limestone Limestone	1.17-1.30	18-24	7-10	2-5/3-5	44-55	8.0-12.0	4.0-4.6	12.0-13.0	21-40	11-220	90-125	KCl/PHPA/glycol
8 1/2"	3540	Limestone Claystone Sandstone	1.30-1.52	18-26	6-13	3-5/4-8	43-53	7.9-10.7	3.4-4.3	12-15.9	14-21	32-140	115	KCl/PHPA

1) Pilot testing @ downhole temp.:  
 17 1/2" @ 40 C  
 12 1/2" @ 95 C  
 8 1/2" @ 126 C

BA-93-2360-1

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*Prepared for*

**DEMINEX NORGE AS**

**GEOCHEMICAL EVALUATION OF THE N15/6-7 WELL**

**Report Number 93/8219/01/01**

**August 1993**

## **INTRODUCTION**

This report presents the results of a geochemical evaluation of the interval 530 metres to 3540 metres in the N15/6-7 well drilled by DEMINEX Norge AS in the Norwegian Sector of the North Sea.

The analytical programme was specified by the client and was designed to investigate the source potential and maturity of the sediments and to detect and characterise shows of migrated hydrocarbons.

Detailed discussions of Organic Facies and Source Richness, Thermal Maturation and Show Detection and Characterisation are presented in the appropriate text chapters and have been integrated to form the Conclusions.

This project was supervised by Mr A J G Faulkner, DEMINEX Norge AS, Oslo.

### **ANALYTICAL**

One hundred and eighty three (183) canned ditch cuttings samples from the section between 530 metres and 3540 metres and two canned mud samples (1715 metres and 1820 metres) arrived at the Geochem Group's Laboratories on 11th June 1993. Although the mud samples were not used in this study, the frequency of mud samples could be increased in future wells. The samples were composited over thirty (30) metre intervals above 1700 metres, over fifteen (15) metre intervals between 1700 - 3000 metres and below this depth, over nine (9) metres. No samples were received from 3426 metres and 3435 metres across the cored interval and empty cans were received from 2090 metres (absent due to a depth correction) and 3329 metres (lost due to well control operations). Twenty five (25) sidewall cores from 1362 - 3430.5 metres, which arrived on 15th June 1993, were also included in this study. The samples were assigned the Geochem job number 8219.

Sample depths are reported relative to KB whereas the stratigraphic breakdown and

geochemical zonation refer to log depths. The well was drilled with a water based mud system with the addition of KCL Polymer and the use in certain sections of 3% Glycol. A sample of Glycol was submitted by the client and was fingerprinted. Its use is believed not to have affected the geochemical analyses with a single important exception. Solvent extraction of selected ditch cuttings samples frequently resulted in anomalously high total extract yields and total extracts that were found to be greatly enhanced in NSO compounds relative to the hydrocarbons. Chromatograms of the nC5 fractions i.e. the deasphalted extracts (text figure 10), indicated that the affected C<sub>15+</sub> extracts were dominated by a homologous series of polar compounds identified from the TIC chromatogram (text figure 11) as glycols. It would appear, therefore, that although glycol is chemically stable at room temperature and pressure conditions, its addition to the mud system has resulted in the production of a series of polymerised glycols during drilling. Their extraction with organic solvents has dramatically enhanced C<sub>15+</sub> extract abundances and distorted total extract compositions although the saturates configurations have remained (largely) unaffected.

The samples were screened with the C<sub>1</sub>-C<sub>7</sub> headspace gas and total organic carbon analyses. Representative samples were selected for follow-up analysis on the basis of the screening results.

The following analyses were carried out during this study:

<b>Analysis</b>	<b>Cuttings</b>	<b>SWC</b>	<b>Mud</b>
Headspace gas	165	-	2
Sample preparation	157	-	
Lithological description	157	25	
Total organic carbon content (including duplicates)	179	22	
Rock Eval pyrolysis	27	4	

Pyrolysis-gas chromatography	10	2
Vitrinite reflectance	22	10
Spore colour/kerogen type	25	10
C <sub>15+</sub> extraction and chromatography (including repeats)	8	1
C <sub>15+</sub> saturates gas chromatogram (including repeats)	8	1
nC <sub>5</sub> chromatogram	3	
TIC chromatogram	1	

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The results of these analyses are presented as tables 1 through 10 and graphically in figures 1 through 12. A brief description of the analytical techniques employed in this study is included in the back of the report.

The following Geochem Group personnel were involved in this project:

Project co-ordination:	P Walko
Geochemical interpretation and report preparation:	P Walko
Vitrinite reflectance:	D Moore
Spore colouration/kerogen typing:	P Walko
Sample preparation and analysis:	Supervised by J Jones

### **GENERAL INFORMATION**

A preliminary copy and seven (7) final copies of this report have been forwarded to Mr A J G Faulkner at DEMINEX Norge in Oslo. A copy of the data has been retained by Geochem for future consultation with authorised DEMINEX personnel.

The remaining sample material will be handled as directed.

The results of this study are proprietary to DEMINEX Norge AS.

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219				
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)

WELL: N 15/6-7

8219-001	530m	A 60% CLAYSTONE - platy to blocky, soft, mod to v calc, silty, light olive grey. B 40% LCM - cement.	5Y6/1	0.56
8219-002	560m	A 60% SILTY CLAYSTONE - blocky, mod soft, calc, sandy, light olive grey. B 40% SAND - v fine grained, sub-angular, N8 no F, no C, very light grey.	5Y6/1	0.50
8219-003	590m	A 80% SILTY CLAYSTONE - as 002A, light olive grey. B 15% SAND - as 002B, no F, no C, very light grey. C 5% Shell fragments.	5Y6/1 N8	0.43
8219-004	620m	A 95% CALC CLAYSTONE - platy to blocky, soft, medium light grey. B 5% Sand.	N6	0.67
8219-005	650m	A 95% CLAYSTONE - platy to blocky, soft, sl to v calc, silty, light olive grey. B 5% Sand, LCM - cement.	5Y6/1	0.57, 0.58
8219-006	680m	A100% CLAYSTONE - as 005A, light olive grey.	5Y6/1	0.74
8219-007	710m	A100% CLAYSTONE - as 005A, light olive grey.	5Y6/1	0.74
8219-008	740m	A100% CLAYSTONE - as 005A, light olive grey.	5Y6/1	0.73
8219-009	770m	A100% CLAYSTONE - as 005A, light olive grey.	5Y6/1	0.70
8219-010	800m	A 80% CLAYSTONE - platy to blocky, firm, sl to v calc, silty, light olive grey. B 20% SAND - fine grained, sub-angular to N9 sub-rounded, no F, no C, white.	5Y6/1	0.64, 0.62
8219-011	830m	A100% SAND - as 010B, no F, no C, white.	N9	
8219-012	860m	A100% SAND - as 010B, no F, v slow blooming cut, white.	N9	
8219-013	890m	A100% SAND - as 010B, no F, no C, white.	N9	

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomite, Fluorescence, foraminifera fossiliferous, Lost Circulation Material, moderately, occasionally, slightly, very



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8219-014	920m	A100% SAND - fine grained, sub-angular to N9 sub-rounded, trace glauconite, trace mica, no F, no C, white.		
8219-015	950m	A100% SAND - as 014A, no F, no C, white.	N9	
8219-016	980m	A100% SAND - as 014A, no F, no C, white.	N9	
8219-017	1010m	A100% SAND - as 014A, no F, no C, white.	N9	
8219-018	1040m	A100% CLAYSTONE - platy to blocky, firm, calc, silty, micaceous, light olive grey.	5Y6/1	1.97
8219-019	1070m	A 70% SAND - fine grained, sub-angular to N9 sub-rounded, trace glauconite, trace mica, no F, no C, white. B 30% CLAYSTONE - blocky, firm, calc, silty, micaceous, light olive grey.	5Y6/1	2.13
8219-020	1100m	A 95% CLAYSTONE - as 019B, abundant cavings, light olive grey. B 5% Sand.	5Y6/1	3.17
8219-021	1130m	A 80% CLAYSTONE - as 019B, sig cavings, light olive grey. B 20% SAND - as 019A, no F, no C, white.	5Y6/1 N9	1.92
8219-022	1160m	A 60% CLAYSTONE - as 019B, sig cavings, light olive grey. B 40% SAND - as 019A, no F, no C, white.	5Y6/1 N9	1.79, 1.80
8219-023	1190m	A 55% CLAYSTONE - as 019B, abundant cavings, light olive grey. B 40% LCM - cement. C 5% Sand.	5Y6/1	1.36
8219-024	1220m	A 95% CLAYSTONE - as 019B, light olive grey. B 5% LCM - cement.	5Y6/1	1.78
8219-025	1250m	A100% CLAYSTONE - platy, firm, calc, silty, micromicaceous, olive grey.	5Y4/1	2.00
8219-026	1280m	A100% CLAYSTONE - as 025A, olive grey.	5Y4/1	2.04
8219-027	1310m	A100% CLAYSTONE - platy, firm, sl calc, silty, micromicaceous, dark olive grey.	5Y3/1	3.12, 3.17
8219-028	1340m	A 80% CLAYSTONE - as 027A, dark olive grey.	5Y3/1	4.18

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		B 20% SAND - fine grained, sub-angular, trace glauconite, trace mica, no F, no C, white.	N9	
8219-187	SWC 1362m	A100% CLAYSTONE - platy, soft, non-calc, micromicaceous, dusky yellowish brown.	10YR2/2	1.70
8219-029	1370m	A 95% CLAYSTONE - as 027A, dark olive grey. B 5% Sand.	5Y3/1	4.48
8219-030	1400m	A 95% CLAYSTONE - as 027A, dark olive grey. B 5% Sand.	5Y3/1	3.81
8219-031	1430m	A 95% CLAYSTONE - as 027A, dark olive grey. B 5% Sand.	5Y3/1	4.03
8219-188	SWC 1450m	A100% CLAYSTONE - platy, soft, non-calc, silty, micromicaceous, olive grey.	5Y4/1	1.18, 1.18
8219-032	1460m	A100% CLAYSTONE - firm, sl to mod calc, silty, micromicaceous, (Stratapax), olive grey.	5Y4/1	1.90, 1.90
8219-033	1490m	A100% CLAYSTONE - as 032A, olive grey.	5Y4/1	2.00
8219-034	1520m	A100% CLAYSTONE - as 032A, olive grey.	5Y4/1	1.75
8219-035	1550m	A100% CLAYSTONE - as 032A, olive grey.	5Y4/1	1.48
8219-036	1580m	A100% CLAYSTONE - as 032A, olive grey.	5Y4/1	1.51
8219-037	1610m	A100% CLAYSTONE - firm, calc, silty, micromicaceous, (Stratapax), olive grey.	5Y4/1	1.43, 1.45
8219-038	1640m	A100% CLAYSTONE - as 037A, olive grey.	5Y4/1	1.51
8219-189	SWC 1650m	A100% CLAYSTONE - platy, soft, non-calc, silty, micromicaceous, olive grey.	5Y4/1	1.57
8219-039	1670m	A100% CLAYSTONE - as 037A, olive grey.	5Y4/1	1.48
8219-040	1700m	A100% CLAYSTONE - as 037A, olive grey.	5Y4/1	2.14
8219-042	1730m	A100% CLAYSTONE - firm, sl calc, silty, micromicaceous, (Stratapax), dark olive grey.	5Y3/1	1.92

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GEOCHEM SAMPLE NUMBER				
8219-190	SWC 1741m	A100% CLAYSTONE - platy, soft, non-calc, sub-vitreous, olive black.	5Y2/1	1.63
8219-043	1745m	A100% CLAYSTONE - as 042A, dark olive grey.	5Y3/1	1.74, 1.75
8219-044	1760m	A100% CLAYSTONE - as 042A, dark olive grey.	5Y3/1	1.57
8219-045	1775m	A 95% CLAYSTONE - as 042A, dark olive grey. B 5% LCM - cement.	5Y3/1	1.24
8219-191	SWC 1782m	A100% SANDSTONE - fine grained, sub-angular, poorly consolidated, no F, no C, very light grey.	N8	
8219-046	1790m	A100% CLAYSTONE - platy, mod soft, non-calc, micromicaceous, dark greenish grey.	5GY4/1	0.45
8219-047	1805m	A100% CLAYSTONE - fissile to platy, mod soft, non-calc, medium grey.	N5	0.42
8219-192	SWC 1822m	A100% CLAYSTONE - platy, firm, non-calc, olive grey.	5Y4/1	0.34
8219-049	1835m	A100% CLAYSTONE - fissile to platy, mod soft, non to sl calc, medium grey.	N5	0.56, 0.57
8219-050	1850m	A 60% CLAYSTONE - platy, mod hard, sl calc, silty, micaceous, very dark yellowish brown. B 40% SAND - fine grained, sub-angular to sub-rounded, trace glauconite, trace mica, no F, no C, white.	10YR3/2	3.39
8219-051	1865m	A 95% CLAYSTONE - platy, firm, non-calc, medium dark grey. B 5% Sand.	N4	0.44
8219-052	1880m	A 95% CLAYSTONE - as 051A, medium dark grey. B 5% Sand.	N4	0.58
8219-053	1895m	A 95% CLAYSTONE - as 051A, medium dark grey. B 5% Sand.	N4	0.45
8219-054	1910m	A 95% SAND - fine grained, sub-angular to sub-rounded, trace glauconite, trace mica, no F, no C, white.		

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GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
		B 5% Claystone.		
8219-055	1925m	A 70% CLAYSTONE - fissile to platy, firm, N5 sl calc, silty, medium grey.		0.41, 0.40
		B 15% CLAYSTONE - platy, firm, sl calc, silty, very dark yellowish brown.	10YR3/2	4.37
		C 15% SAND - as 054A, no F, no C, white.	N9	
8219-056	1940m	A100% SAND - as 054A, no F, no C, white.	N9	
8219-193	SWC 1948m	A100% CLAYSTONE - platy, soft, non to v sl calc, sub-vitreous, dark grey to olive grey.	N3 - 5Y4/1	0.32
8219-057	1955m	A 90% CLAYSTONE - fissile, firm, non- calc, medium dark grey.	N4	0.63
		B 10% SAND - as 054A, no F, no C, white.	N9	
8219-058	1970m	A 90% CLAYSTONE - as 057A, medium dark grey.	N4	0.57
		B 10% SAND - as 054A, no F, no C, white.	N9	
8219-059	1985m	A 95% SAND - as 054A, no F, no C, white.	N9	
		B 5% Claystone.		
8219-060	2000m	A 90% SAND - med grained, sub-angular to rounded, trace mica, no F, no C, white.	N9	
		B 10% CLAYSTONE - as 057A, sig cavings, medium dark grey.	N4	0.54
8219-061	2015m	A 90% SAND - fine to med grained, sub- angular to rounded, trace glauconite, trace mica, no F, no C, white.	N9	
		B 10% CLAYSTONE - fissile, firm, non- calc, medium dark grey.	N4	0.77, 0.73
8219-062	2030m	A100% CLAYSTONE - fissile to platy, firm, non-calc, dark grey to dark brownish grey.	N3 - 5YR3/1	0.56
8219-063	2045m	A100% CLAYSTONE - as 062A, dark grey to dark brownish grey.	N3 - 5YR3/1	0.53
8219-064	2060m	A 95% CLAYSTONE - as 062A, dark grey to dark brownish grey.	N3 - 5YR3/1	0.52
		B 5% Sand.		
8219-065	2075m	A 90% CLAYSTONE - fissile, firm, non- calc, medium grey.	N5	0.48
		B 5% Sand.		

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GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
		C 5% Dark grey claystone.		
8219-067	2105m	A 85% CLAYSTONE - fissile, firm, non-calc, medium grey. B 10% SAND - fine grained, sub-angular, trace glauconite, trace mica, no F, no C, white. C 5% Dark grey claystone.	N5 N9	0.45
8219-068	2120m	A100% CLAYSTONE - as 067A, medium grey.	N5	0.50
8219-194	SWC 2122m	A100% SANDSTONE - v fine grained, sub-angular, poorly consolidated, no F, no C, very light grey.	N8	
8219-069	2135m	A 95% CLAYSTONE - as 067A, medium grey. B 5% Sand.	N5	0.58
8219-070	2150m	A100% CLAYSTONE - as 067A, medium grey.	N5	0.60
8219-071	2165m	A100% CLAYSTONE - fissile, firm, non-calc, medium dark grey.	N4	1.06
8219-072	2180m	A100% CLAYSTONE - fissile, firm, non-calc, medium dark grey to medium grey.	N4 N5	- 0.85, 0.84
8219-195	SWC 2192m	A100% CLAYSTONE - platy, mod soft, non to sl calc, sub-vitreous, dark brownish grey.	5YR3/1	0.21, 0.22
8219-073	2195m	A100% CLAYSTONE - as 072A, medium dark grey to medium grey.	N4 N5	- 0.65
8219-074	2210m	A100% CLAYSTONE - as 072A, medium dark grey to medium grey.	N4 N5	- 0.61
8219-075	2225m	A 95% CLAYSTONE - platy, mod soft, sl calc, haematitic, greyish red. B 5% Grey claystone.	10R4/2	0.25
8219-076	2240m	A 80% CLAYSTONE - as 075A, greyish red. B 20% CLAYSTONE - as 072A, medium dark grey to medium grey.	10R4/2 N4 N5	0.19 - 0.31, 0.30
8219-077	2255m	A 95% CLAYSTONE - platy, firm, sl calc, silty, medium dark grey. B 5% Red claystone.	N4	1.52
8219-078	2270m	A 95% CLAYSTONE - firm, sl calc, silty, (Stratapax), medium grey to medium light grey.	N5 N6	- 1.15

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GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
		B 5% LCM - cement.		
8219-079	2285m	A100% CLAYSTONE - as 078A, medium grey to medium light grey.	N5 N6	- 1.05
8219-080	2300m	A100% CLAYSTONE - as 078A, medium grey to medium light grey.	N5 N6	- 1.17
8219-081	2315m	A100% CLAYSTONE - firm, sl calc, (Stratapax), medium dark grey.	N4	1.63, 1.64
8219-082	2330m	A100% CLAYSTONE - as 081A, medium dark grey.	N4	1.68
8219-083	2345m	A100% CLAYSTONE - as 081A, medium dark grey.	N4	1.89
8219-084	2360m	A100% CLAYSTONE - as 081A, medium dark grey.	N4	1.73
8219-196	SWC 2367m	A100% CLAYSTONE - platy, soft, non-calc, sub-vitreous, dark grey.	N3	1.13
8219-085	2375m	A100% CLAYSTONE - firm, non-calc, (Stratapax), medium dark grey.	N4	1.31
8219-086	2390m	A100% CLAYSTONE - as 085A, medium dark grey.	N4	1.23, 1.24
8219-197	SWC 2404m	A100% CLAYSTONE - platy, mod soft, sl calc, medium olive grey.	5Y5/1	0.38
8219-087	2405m	A100% CLAYSTONE - firm, non-calc, (Stratapax), medium light grey.	N6	0.66
8219-088	2420m	A100% CLAYSTONE - as 087A, medium light grey.	N6	0.78
8219-089	2435m	A 90% CLAYSTONE - as 087A, medium light grey. B 5% Red claystone and cement. C 5% Sand.	N6	0.47
8219-198	SWC 2444m	A100% SANDSTONE - fine grained, sub-angular, abundant interbedded clay and thin coaly laminae, no F, slow blooming cut, very light grey.	N8	1.78
8219-090	2450m	A 60% SAND - fine grained, sub-angular, no F, no C, white. B 40% CLAYSTONE - as 087A, abundant cavings, medium light grey.	N9 N6	0.72

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomite, Fluorescence, foraminifera fossiliferous, Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219				
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
8219-091	2465m	A 60% CLAYSTONE - as 087A, sig cavings, medium light grey. B 40% SAND - as 090A, no F, no C, white.	N6 N9	0.79
8219-092	2480m	A 95% SAND - fine grained, sub-angular, no F, no C, white. B 5% Claystone.	N9	
8219-093	2495m	A 95% SAND - as 092A, no F, no C, white. B 5% Claystone.	N9	
8219-094	2510m	A100% SAND - as 092A, no F, no C, white.	N9	
8219-095	2525m	A 50% CLAYSTONE - fissile, firm, non- calc, medium grey. B 45% SAND - fine grained, sub-angular, no F, no C. C 5% Red claystone.	N5	0.86
8219-096	2540m	A 80% SAND as 095B, no F, no C, white. B 20% CLAYSTONE - as 095A, medium grey.	N9 N5	0.76
8219-097	2555m	A 60% SAND - as 095B, no F, no C, white. B 40% CLAYSTONE - as 095A, sig cavings, medium grey.	N9 N5	0.94
8219-098	2570m	A 95% SAND - as 095B, no F, no C, white. B 5% Claystone.	N9	
8219-099	2585m	A 98% SAND - fine to med grained, sub- angular, no F, no C, white. B 2% Claystone.	N9	
8219-100	2600m	A 70% CLAYSTONE - fissile, firm, non- calc, medium grey. B 30% SAND - as 099A, no F, no C, white.	N5 N9	1.06
8219-199	SWC 2602m	A100% SANDSTONE - fine grained, sub- angular, arg, mod indurated, trace mica, no F, no C, pale yellowish brown.	10YR6/2	
8219-101	2615m	A 90% CLAYSTONE - as 100A, abundant cavings, medium grey. B 5% Sand. C 5% Red claystone cavings.	N5	0.64, 0.64
8219-102	2630m	A 70% CLAYSTONE - as 100A, abundant cavings, medium grey. B 15% SAND - as 099A, no F, no C, white. C 10% LIMESTONE - blocky, mod hard, chalky, no F, no C.	N5 N9	0.65 0.11

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fossiliferous, Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219				
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
		D 5% Red claystone cavings.		
8219-103	2645m	A 80% CLAYSTONE - as 100A, sig cavings, medium grey. B 10% SAND - as 099A, no F, no C, white. C 5% Limestone. D 5% Red claystone.	N5 N9	0.46
8219-104	2660m	A 50% CLAYSTONE - as 100A, abundant cavings, medium grey. B 40% SAND - as 099A, no F, no C, white. C 5% Limestone. D 5% Red claystone cavings.	N5 N9	0.68
8219-200	SWC 2674m	A100% SANDSTONE - fine to med grained, sub-angular, arg, mod indurated, mod calc matrix, no F, no C, pale yellowish brown.	10YR6/2	
8219-106	2690m	A 75% LIMESTONE - blocky, mod hard, chalky, no F, no C, very light grey B 25% CLAYSTONE - fissile, firm, non-calc, medium grey.	N8 N5	0.13 0.74
8219-107	2705m	A 50% CALC SANDSTONE - blocky, fine grained, sub-angular, arg to silty no F, no C, very light grey. B 30% CLAYSTONE - platy, mod soft, sl calc, light olive grey to olive grey. C 15% CLAYSTONE - blocky, soft, v calc, silty, pale red. D 5% CLAYSTONE - platy, mod hard, sl calc, medium grey to medium dark grey.	N8 5Y6/1 - 5Y4/1 5R6/2 N5 - N4	0.54 0.15
8219-108	2720m	A 75% CLAYSTONE - as 107B, light olive grey to olive grey. B 20% LIMESTONE - as 106A, no F, no C, very light grey. C 5% Sandstone, red claystone.	5Y6/1 - 5Y4/1 N8	0.67, 0.67 0.17
8219-109	2735m	A 85% LIMESTONE - as 106A, no F, no C, very light grey. B 10% CLAYSTONE - as 107B, light olive grey to olive grey. C 5% Sandstone, trace dark grey claystone.	N8 5Y6/1 - 5Y4/1	0.14 0.48
8219-110	2750m	A 95% LIMESTONE - blocky, mod hard, chalky, dull gold F, no C, white.	N9	0.12

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TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219				
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
		B 5% CLAYSTONE - as 107B, light olive grey to olive grey.	5Y6/1 - 5Y4/1	0.99, 0.98
8219-111	2765m	A 98% LIMESTONE - as 110A, no F, no C, white. B 2% Claystone.	N9	0.08
8219-112	2780m	A 75% LIMESTONE - as 110A, no F, no C, white. B 25% CLAYSTONE - as 107B, light olive grey to olive grey.	N9 5Y6/1 - 5Y4/1	0.09 0.83
8219-113	2795m	A 80% LIMESTONE - platy, mod soft, chalky, no F, no C, white to light olive grey. B 20% CLAYSTONE - platy, soft, sl calc, medium grey.	N9 - 5Y6/1	0.08 1.05, 1.08
8219-114	2810m	A 98% LIMESTONE - as 110A, no F, no C, white. B 2% Claystone.	N9	0.18
8219-115	2825m	A 98% LIMESTONE - as 113A, dull gold F, no C, white to light olive grey. B 2% Claystone.	N9 - 5Y6/1	0.14
8219-116	2840m	A 50% LIMESTONE - as 113A, no F, no C, white to light olive grey. B 50% CALC CLAYSTONE - platy, silty, mod soft, light olive grey.	N9 - 5Y6/1 5Y6/1	0.08 0.26
8219-117	2855m	A 98% LIMESTONE - platy, mod soft, chalky, gold F, no C, pale yellowish brown. B 2% Claystone.	10YR6/2	0.11, 0.11
8219-118	2870m	A 98% LIMESTONE - as 117A, gold F, no C, pale yellowish brown. B 2% Claystone.	10YR6/2	0.10
8219-119	2885m	A100% LIMESTONE - as 117A, gold F, no C, pale yellowish brown.	10YR6/2	0.09
8219-120	2900m	A 98% LIMESTONE - as 117A, gold F, no C, pale yellowish brown. B 2% Claystone.	10YR6/2	0.11
8219-121	2915m	A 98% LIMESTONE - as 117A, gold F, no C, pale yellowish brown. B 2% Claystone.	10YR6/2	0.11

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TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219				
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
8219-122	2930m	A 98% LIMESTONE - as 117A, gold F, no C, pale yellowish brown. B 2% Claystone.	10YR6/2	0.10, 0.09
8219-123	2945m	A 80% LIMESTONE - blocky, mod hard, gold F, no C, very pale orange. B 15% CLAYSTONE - platy, mod hard, calc, medium grey. C 5% Red claystone.	10YR8/2 N5	0.09 0.24
8219-124	2960m	A 70% CLAYSTONE - blocky to platy, v calc, silty, pale reddish brown. B 25% LIMESTONE - as 123A, gold F, no C, very pale orange. C 5% Claystone.	10R5/4 10YR8/2	0.09 0.08
8219-125	2975m	A 85% LIMESTONE - platy to blocky, mod hard, v arg, no F, no C, light olive grey. B 10% CLAYSTONE - as 124A, pale reddish brown. C 5% Claystone, white limestone.	5Y6/1 10R5/4	0.11, 0.11
8219-126	2990m	A 98% LIMESTONE - platy, hard, chalky, gold F, no C, white to yellowish grey. B 2% Claystone.	N9 5Y8/1	- 0.10
8219-127	3003m	A100% LIMESTONE - as 126A, gold F, no C, white.	N9	0.08
8219-128	3012m	A 90% LIMESTONE - as 126A, gold F, no C, white to yellowish grey. B 8% CLAYSTONE - as 124A, pale reddish brown. C 2% Grey claystone.	N9 5Y8/1 10R5/4	- 0.07 0.17
8219-129	3027m	A 60% LIMESTONE - as 126A, gold F, no C, white to yellowish grey. B 35% CLAYSTONE - as 124A, pale reddish brown. C 5% Grey claystone.	N9 5Y8/1 10R5/4	- 0.07, 0.07 0.10
8219-131	3039m	A 80% LIMESTONE - as 126A, gold F, no C, white to yellowish grey. B 15% CLAYSTONE - as 124A, pale reddish brown. C 5% Grey claystone.	N9 5Y8/1 10R5/4	- 0.10 0.19
8219-133	3057m	A 95% LIMESTONE - platy, arg, mod hard, no F, no C, light olive grey.	5Y6/1	0.17

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fossiliferous, Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219				
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
		B 5% Grey claystone, white limestone, red claystone.		
8219-135	3075m	A 98% LIMESTONE - as 133A, no F, no C, light olive grey. B 2% Red claystone.	5Y6/1	0.19, 0.21
8219-137	3093m	A100% ARG LIMESTONE - blocky, hard, no F, no C, light olive grey.	5Y6/1	0.15
8219-139	3111m	A 95% ARG LIMESTONE - as 137A, no F, no C, light olive grey. B 5% Claystone, sand.	5Y6/1	0.20
8219-141	3129m	A 90% ARG LIMESTONE - as 137A, no F, no C, light olive grey. B 10% CLAYSTONE - platy, hard, sl calc, medium grey to medium dark grey.	5Y6/1 N5 - N4	0.21 0.38
8219-143	3147m	A 95% ARG LIMESTONE - as 137A, no F, no C, light olive grey. B 5% Claystone.	5Y6/1	0.18, 0.18
8219-201	SWC 3163m	A100% CALC CLAYSTONE - platy, mod soft, thin limestone laminae, greenish grey.	5G6/1	0.10
8219-202	SWC 3180m	A100% CALC CLAYSTONE - platy, mod soft, medium grey.	N5	0.16, 0.16
8219-149	3201m	A 95% ARG LIMESTONE - blocky, hard, no F, no C, light olive grey. B 5% Dark grey claystone, red claystone.	5Y6/1	0.17
8219-151	3219m	A 95% CALC CLAYSTONE - platy, mod soft, sl micaceous, dark grey to medium dark grey. B 5% Limestone.	N3 - N4	0.41
8219-203	SWC 3219m	A100% CALC CLAYSTONE - platy, mod soft, micromicaceous, minor thin limestone laminae, medium dark grey	N4	0.50
8219-152	3228m	A 90% CALC CLAYSTONE - as 151A, dark grey to medium dark grey. B 5% Dark grey claystone. C 5% Limestone.	N3 - N4	0.20
8219-153	3239m	A100% CLAYSTONE - blocky, soft, v calc, greyish black.	N2	5.72, 5.73

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fossiliferous, Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219				
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (wt. %)
8219-154	3246m	A100% CLAYSTONE - platy, hard, non-calc, sl silty, greyish black to dusky yellowish brown.	N2 - 10YR2/2	9.08
8219-204	SWC 3257m	A100% CLAYSTONE - platy, soft, non-calc, micromicaceous, dusky yellowish brown.	10YR2/2	8.47
8219-156	3264m	A100% CLAYSTONE - hard, platy, non-calc, sl silty, greyish black to dusky yellowish brown.	N2 - 10YR2/2	8.65
8219-205	SWC 3274m	A100% CLAYSTONE - platy, soft, non-calc, micromicaceous, dusky yellowish brown.	10YR2/2	8.17
8219-158	3282m	A 98% CLAYSTONE - platy, hard, non-calc, sl silty, greyish black to dusky yellowish brown. B 2% Coaly claystone.	N2 - 10YR2/2	8.26
8219-159	3291m	A 98% CLAYSTONE - as 158A, greyish black to dusky yellowish brown. B 2% Coaly claystone, trace calcite.	N2 - 10YR2/2	6.68
8219-160	3300m	A100% CLAYSTONE - platy, hard, sl calc, greyish black.	N2	4.47, 4.46
8219-206	SWC 3308m	A100% CLAYSTONE - platy, soft, non-calc, micromicaceous, dusky yellowish brown.	10YR2/2	3.31
8219-207	SWC 3321.5m	A100% CLAYSTONE - platy, soft, non-calc, micromicaceous, greyish black.	N2	8.80, 8.80
8219-164	3338m	A 80% CLAYSTONE - platy, hard, non-calc, sl silty, micaceous, dark grey to dark yellowish brown. B 15% SAND - v fine grained, sub-angular, no F, slow blooming cut, white. C 5% Calc sandstone.	N3 - 10YR4/2	3.34
8219-165	3345m	A 70% CLAYSTONE - as 164A, dark grey to dark yellowish brown. B 25% SAND - as 164B, no F, slow blooming cut, dark yellowish brown to white. C 5% Calc sandstone.	N3 - 10YR4/2	3.73
8219-208	SWC 3351m	A100% CLAYSTONE - platy, mod soft, non-calc, dark grey.	N3	2.41
8219-167	3363m	A 85% CLAYSTONE - as 164A, dark grey.	N3	2.57

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TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219				
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
		B 10% SAND - as 164B, no F, slow blooming N9 cut, white. C 5% White calc sandstone.		
8219-168	3372m	A 50% CLAYSTONE - as 164A, dark grey to dark yellowish brown. B 45% SAND - as 164B, no F, slow blooming N9 cut, white. C 5% White calc sandstone.	N3 - 10YR4/2	1.32
8219-169	3381m	A 85% CLAYSTONE - platy, mod hard to soft, non-calc, dark grey. B 5% Sand. C 5% Sandstone. D 5% Pale grey claystone.	N3	2.96
8219-170	3390m	A 60% CLAYSTONE - as 169A, dark grey. B 30% SANDSTONE - blocky, hard, v fine grained, v calc, no F, v slow blooming cut, very light grey. C 5% Sand. D 5% Pale grey claystone.	N3 N8	2.63
8219-209	SWC 3395.5m	A100% SANDSTONE - v fine grained, sub- angular, arg to silty, micromicaceous, no F, slow blooming cut, olive grey.	5Y4/1	
8219-210	SWC 3401.5m	A100% SANDSTONE - v fine grained, sub- angular, arg to silty, micromicaceous, no F, slow blooming cut, light olive grey.	5Y6/1	
8219-172	3408m	A100% SANDSTONE - blocky, poorly consolidated, med to fine grained, no F, slow blooming cut, light olive grey to very light grey.	5Y6/1 - N8	
8219-173	3417m	A100% SANDSTONE - as 172A, no F, slow blooming cut, light olive grey to very light grey.	5Y6/1 - N8	
8219-211	SWC 3430.5m	A100% SANDSTONE - fine grained, sub- angular to sub-rounded, no F, no C, very light grey.	N8	
8219-174	3444m	A100% SANDSTONE - as 172A, no F, slow blooming cut, light olive grey to very light grey.	5Y6/1 - N8	

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fossiliferous, Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

JOB 8219	DEPTH/ IDENTITY	GROSS LITHOLOGIC DESCRIPTION	G S A COLOUR CODE	TOTAL ORGANIC CARBON (Wt. %)
GEOCHEM SAMPLE NUMBER				
8219-176	3462m	A100% SANDSTONE - as 172A, no F, slow blooming cut, light olive grey to very light grey.	5Y6/1 - N8	
8219-178	3480m	A100% SANDSTONE - blocky, poorly consolidated, arg to silty, no F, no C, pale red to yellowish grey.	10R6/2 - 5Y8/1	
8219-180	3498m	A100% SANDSTONE - as 178A, no F, no C, pale red to light olive grey.	10R6/2 - 5Y6/1	
8219-182	3516m	A 85% SANDSTONE - as 178A, no F, no C, pale red to light olive grey. B 15% Claystone cavings.	10R6/2 - 5Y6/1	
8219-184	3534m	A 60% CLAYSTONE - platy to blocky, mod soft, non-calc, moderate reddish brown. B 40% SANDSTONE - as 178A, no F, no C, pale red to light olive grey.	10R4/6  10R6/2 - 5Y6/1	0.18, 0.17
8219-185	3540m	A 95% CLAYSTONE - as 184A, moderate reddish brown. B 5% Sandstone.	10R4/6	0.15, 0.16

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TABLE 2  
CONCENTRATION (VOL. PPM OF ROCK) OF C<sub>1</sub>-C<sub>7</sub> HYDROCARBONS IN HEAD SPACE GAS

JOB 8219											
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	C <sub>1</sub> Methane	C <sub>2</sub> Ethane	C <sub>3</sub> Propane	iC <sub>4</sub> Isobutane	nC <sub>4</sub> Butane	TOTAL C <sub>1</sub> -C <sub>4</sub>	TOTAL C <sub>2</sub> -C <sub>4</sub>	% GAS WEINESS	TOTAL C <sub>5</sub> -C <sub>7</sub>	$\frac{iC_4}{nC_4}$

WELL: N 15/6-7

8219-001	530m	5647	3	2	0	0	5652	5	0.1	0	0.00
8219-002	560m	9147	4	0	0	0	9151	4	0.0	0	0.00
8219-003	590m	7256	3	0	0	0	7259	3	0.0	0	0.00
8219-004	620m	32529	6	0	0	0	32535	6	0.0	0	0.00
8219-005	650m	5370	3	0	0	0	5373	3	0.1	0	0.00
8219-006	680m	2747	4	1	0	0	2752	5	0.2	0	0.00
8219-007	710m	6858	11	4	0	0	6873	15	0.2	0	0.00
8219-008	740m	11360	30	9	3	2	11404	44	0.4	0	1.50
8219-009	770m	7540	13	0	0	0	7553	13	0.2	0	0.00
8219-010	800m	2953	10	0	0	0	2963	10	0.3	0	0.00
8219-011	830m	2369	1	0	0	0	2370	1	0.0	0	0.00
8219-012	860m	1631	1	0	0	0	1632	1	0.1	0	0.00
8219-013	890m	834	1	0	0	0	835	1	0.1	0	0.00
8219-014	920m	932	1	0	0	0	933	1	0.1	0	0.00
8219-015	950m	832	1	0	0	1	834	2	0.2	0	0.00
8219-016	980m	441	0	0	0	0	441	0	0.0	0	0.00
8219-017	1010m	1026	1	0	0	0	1027	1	0.1	0	0.00
8219-018	1040m	13152	17	0	0	0	13169	17	0.1	0	0.00
8219-019	1070m	10355	13	0	0	0	10368	13	0.1	0	0.00
8219-020	1100m	13478	22	0	0	0	13500	22	0.2	0	0.00
8219-021	1130m	14842	18	0	0	0	14860	18	0.1	0	0.00
8219-022	1160m	10647	15	0	0	0	10662	15	0.1	0	0.00
8219-023	1190m	2307	22	20	0	0	2349	42	1.8	0	0.00
8219-024	1220m	4755	30	21	0	0	4806	51	1.1	0	0.00
8219-025	1250m	4154	20	25	0	0	4199	45	1.1	0	0.00
8219-026	1280m	4817	13	8	0	0	4838	21	0.4	0	0.00
8219-027	1310m	10488	39	19	0	0	10546	58	0.6	0	0.00
8219-028	1340m	4670	22	22	0	0	4714	44	0.9	0	0.00
8219-029	1370m	3857	22	4	0	0	3883	26	0.7	0	0.00
8219-030	1400m	6765	41	5	1	1	6813	48	0.7	7	1.00
8219-031	1430m	2304	31	4	0	0	2339	35	1.5	0	0.00
8219-032	1460m	2609	30	5	0	1	2645	36	1.4	3	0.00

TABLE 2  
CONCENTRATION (VOL. PPM OF ROCK) OF C<sub>1</sub>-C<sub>7</sub> HYDROCARBONS IN HEAD SPACE GAS

JOB 8219											
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	C <sub>1</sub> Methane	C <sub>2</sub> Ethane	C <sub>3</sub> Propane	iC <sub>4</sub> Isobutane	nC <sub>4</sub> Butane	TOTAL C <sub>1</sub> -C <sub>4</sub>	TOTAL C <sub>2</sub> -C <sub>4</sub>	% GAS WEIENESS	TOTAL C <sub>5</sub> -C <sub>7</sub>	iC <sub>4</sub> nC <sub>4</sub>
8219-033	1490m	2836	31	4	0	0	2871	35	1.2	0	0.00
8219-034	1520m	2043	29	4	0	0	2076	33	1.6	0	0.00
8219-035	1550m	2724	42	6	0	0	2772	48	1.7	0	0.00
8219-036	1580m	2799	56	6	0	0	2861	62	2.2	0	0.00
8219-037	1610m	4855	81	10	0	0	4946	91	1.8	1	0.00
8219-038	1640m	5949	83	13	0	0	6045	96	1.6	0	0.00
8219-039	1670m	12863	156	31	0	0	13050	187	1.4	0	0.00
8219-040	1700m	7173	90	32	0	0	7295	122	1.7	0	0.00
8219-041	MUD 1715m	1433	8	8	0	0	1449	16	1.1	0	0.00
8219-042	1730m	7444	111	35	0	0	7590	146	1.9	0	0.00
8219-043	1745m	8353	111	29	0	0	8493	140	1.6	0	0.00
8219-044	1760m	7944	104	30	0	0	8078	134	1.7	0	0.00
8219-045	1775m	10153	153	49	0	0	10355	202	2.0	0	0.00
8219-046	1790m	3928	34	14	0	0	3976	48	1.2	0	0.00
8219-047	1805m	2440	27	10	0	0	2477	37	1.5	0	0.00
8219-048	MUD 1820m	1460	8	4	0	0	1472	12	0.8	3	0.00
8219-049	1835m	4576	68	8	0	0	4652	76	1.6	0	0.00
8219-050	1850m	8466	72	16	0	0	8554	88	1.0	0	0.00
8219-051	1865m	2413	55	10	0	0	2478	65	2.6	0	0.00
8219-052	1880m	1397	49	16	0	0	1462	65	4.4	0	0.00
8219-053	1895m	1605	65	14	0	0	1684	79	4.7	0	0.00
8219-054	1910m	1117	19	8	0	0	1144	27	2.4	0	0.00
8219-055	1925m	3241	84	49	0	0	3374	133	3.9	0	0.00
8219-056	1940m	963	13	16	3	15	1010	47	4.7	0	0.20
8219-057	1955m	2444	76	50	0	0	2570	126	4.9	0	0.00
8219-058	1970m	1853	47	60	0	0	1960	107	5.5	0	0.00
8219-059	1985m	1828	43	17	0	0	1888	60	3.2	0	0.00
8219-060	2000m	1474	31	8	2	0	1515	41	2.7	0	0.00
8219-061	2015m	1069	23	8	0	0	1100	31	2.8	0	0.00
8219-062	2030m	792	32	13	0	0	837	45	5.4	0	0.00
8219-063	2045m	649	20	7	0	0	676	27	4.0	0	0.00
8219-064	2060m	699	18	6	0	0	723	24	3.3	0	0.00
8219-065	2075m	1234	31	23	0	0	1288	54	4.2	0	0.00
8219-067	2105m	2140	18	15	0	0	2173	33	1.5	0	0.00



TABLE 2  
CONCENTRATION (VOL. PPM OF ROCK) OF C<sub>1</sub>-C<sub>7</sub> HYDROCARBONS IN HEAD SPACE GAS

JOB 8219											
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	C <sub>1</sub> Methane	C <sub>2</sub> Ethane	C <sub>3</sub> Propane	iC <sub>4</sub> Isobutane	nC <sub>4</sub> Butane	TOTAL C <sub>1</sub> -C <sub>4</sub>	TOTAL C <sub>2</sub> -C <sub>4</sub>	% GAS WEINESS	TOTAL C <sub>5</sub> -C <sub>7</sub>	iC <sub>4</sub> nC <sub>4</sub>
8219-068	2120m	1528	47	20	0	0	1595	67	4.2	0	0.00
8219-069	2135m	642	33	23	8	17	723	81	11.2	23	0.47
8219-070	2150m	390	21	20	10	14	455	65	14.3	37	0.71
8219-071	2165m	555	39	55	31	10	690	135	19.6	140	3.10
8219-072	2180m	613	61	107	55	22	858	245	28.6	277	2.50
8219-073	2195m	349	40	93	46	111	639	290	45.4	150	0.41
8219-074	2210m	653	61	158	91	58	1021	368	36.0	668	1.57
8219-075	2225m	1280	28	43	13	36	1400	120	8.6	89	0.36
8219-076	2240m	247	9	16	5	11	288	41	14.2	32	0.45
8219-077	2255m	670	62	131	46	106	1015	345	34.0	124	0.43
8219-078	2270m	880	112	270	117	212	1591	711	44.7	203	0.55
8219-079	2285m	1105	142	345	136	256	1984	879	44.3	252	0.53
8219-080	2300m	1329	196	540	223	410	2698	1369	50.7	445	0.54
8219-081	2315m	1387	360	968	352	656	3723	2336	62.7	669	0.54
8219-082	2330m	1061	292	775	291	564	2983	1922	64.4	528	0.52
8219-083	2345m	2439	1014	3183	1626	3501	11763	9324	79.3	5331	0.46
8219-084	2360m	1229	267	797	385	814	3492	2263	64.8	1278	0.47
8219-085	2375m	912	181	454	195	415	2157	1245	57.7	518	0.47
8219-086	2390m	1379	186	381	164	379	2489	1110	44.6	566	0.43
8219-087	2405m	308	58	104	43	99	612	304	49.7	179	0.43
8219-088	2420m	293	52	90	39	92	566	273	48.2	182	0.42
8219-089	2435m	739	125	260	127	294	1545	806	52.2	570	0.43
8219-090	2450m	1471	681	530	104	249	3035	1564	51.5	295	0.42
8219-091	2465m	1418	392	463	130	301	2704	1286	47.6	594	0.43
8219-092	2480m	421	99	123	32	84	759	338	44.5	207	0.38
8219-093	2495m	373	66	91	16	45	591	218	36.9	156	0.36
8219-094	2510m	277	25	24	3	9	338	61	18.0	56	0.33
8219-095	2525m	31	12	58	25	57	183	152	83.1	113	0.44
8219-096	2540m	425	106	149	37	97	814	389	47.8	288	0.38
8219-097	2555m	287	5	48	6	17	363	76	20.9	42	0.35
8219-098	2570m	1286	780	862	198	530	3656	2370	64.8	452	0.37
8219-099	2585m	353	170	230	56	150	959	606	63.2	166	0.37
8219-100	2600m	3227	1305	1254	269	680	6735	3508	52.1	401	0.40
8219-101	2615m	284	110	149	46	115	704	420	59.7	35	0.40

TABLE 2  
CONCENTRATION (VOL. PPM OF ROCK) OF C<sub>1</sub>-C<sub>7</sub> HYDROCARBONS IN HEAD SPACE GAS

JOB 8219											
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	C <sub>1</sub> Methane	C <sub>2</sub> Ethane	C <sub>3</sub> Propane	iC <sub>4</sub> Isobutane	nC <sub>4</sub> Butane	TOTAL C <sub>1</sub> -C <sub>4</sub>	TOTAL C <sub>2</sub> -C <sub>4</sub>	% GAS WEIENESS	TOTAL C <sub>5</sub> -C <sub>7</sub>	$\frac{iC_4}{nC_4}$
8219-102	2630m	500	154	141	32	76	903	403	44.6	48	0.42
8219-103	2645m	377	64	68	13	36	558	181	32.4	23	0.36
8219-104	2660m	573	136	136	26	70	941	368	39.1	35	0.37
8219-105	2675m	450	112	153	30	91	836	386	46.2	28	0.33
8219-106	2690m	581	91	125	40	98	935	354	37.9	162	0.41
8219-107	2705m	250	32	51	12	24	369	119	32.2	40	0.50
8219-108	2720m	86	13	21	5	12	137	51	37.2	15	0.42
8219-109	2735m	159	28	57	26	58	328	169	51.5	63	0.45
8219-110	2750m	67	9	18	9	21	124	57	46.0	29	0.43
8219-111	2765m	36	6	11	4	9	66	30	45.5	11	0.44
8219-112	2780m	113	13	18	5	8	157	44	28.0	5	0.63
8219-113	2795m	60	14	33	18	40	165	105	63.6	67	0.45
8219-114	2810m	47	3	2	0	1	53	6	11.3	1	0.00
8219-115	2825m	38	3	3	0	1	45	7	15.6	0	0.00
8219-116	2840m	123	11	13	1	6	154	31	20.1	5	0.17
8219-117	2855m	86	6	5	0	1	98	12	12.2	1	0.00
8219-118	2870m	118	9	7	0	2	136	18	13.2	1	0.00
8219-119	2885m	140	11	10	1	2	164	24	14.6	5	0.50
8219-120	2900m	83	8	14	2	4	111	28	25.2	8	0.50
8219-121	2915m	150	12	12	2	4	180	30	16.7	6	0.50
8219-122	2930m	65	6	8	1	3	83	18	21.7	4	0.33
8219-123	2945m	82	7	8	1	3	101	19	18.8	3	0.33
8219-124	2960m	105	9	9	1	3	127	22	17.3	2	0.33
8219-125	2975m	109	8	7	0	1	125	16	12.8	1	0.00
8219-126	2990m	141	11	9	1	2	164	23	14.0	1	0.50
8219-127	3003m	386	29	17	1	2	435	49	11.3	5	0.50
8219-128	3012m	225	19	14	2	5	265	40	15.1	3	0.40
8219-129	3027m	482	67	140	33	113	835	353	42.3	69	0.29
8219-131	3039m	271	304	1331	309	1185	3400	3129	92.0	419	0.26
8219-133	3057m	220	26	43	11	39	339	119	35.1	11	0.28
8219-135	3075m	1215	124	174	21	113	1647	432	26.2	148	0.19
8219-137	3093m	186	47	120	23	76	452	266	58.8	52	0.30
8219-139	3111m	602	323	572	248	760	2505	1903	76.0	333	0.33
8219-141	3129m	1416	511	1118	308	986	4339	2923	67.4	679	0.31

TABLE 2  
CONCENTRATION (VOL. PPM OF ROCK) OF C<sub>1</sub>-C<sub>7</sub> HYDROCARBONS IN HEAD SPACE GAS

JOB 8219											
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	C <sub>1</sub> Methane	C <sub>2</sub> Ethane	C <sub>3</sub> Propane	iC <sub>4</sub> Isobutane	nC <sub>4</sub> Butane	TOTAL C <sub>1</sub> -C <sub>4</sub>	TOTAL C <sub>2</sub> -C <sub>4</sub>	% GAS WETNESS	TOTAL C <sub>5</sub> -C <sub>7</sub>	iC <sub>4</sub> / nC <sub>4</sub>
8219-143	3147m	959	723	1321	543	1651	5197	4238	81.5	661	0.33
8219-145	3165m	95	91	183	78	241	688	593	86.2	95	0.32
8219-147	3183m	1100	361	458	83	277	2279	1179	51.7	244	0.30
8219-149	3201m	966	396	438	71	234	2105	1139	54.1	104	0.30
8219-151	3219m	1260	291	282	41	170	2044	784	38.4	147	0.24
8219-152	3228m	1549	473	455	56	298	2831	1282	45.3	261	0.19
8219-153	3239m	1147	891	1167	124	675	4004	2857	71.4	320	0.18
8219-154	3246m	4036	3206	4381	752	3745	16120	12084	75.0	2532	0.20
8219-155	3255m	3111	2159	2871	325	1839	10305	7194	69.8	1091	0.18
8219-156	3264m	7208	5405	7867	1271	7799	29550	22342	75.6	5898	0.16
8219-157	3273m	488	1104	1325	257	1578	4752	4264	89.7	831	0.16
8219-158	3282m	2802	2246	2490	505	2796	10839	8037	74.1	1614	0.18
8219-159	3291m	2355	1649	1895	331	1829	8059	5704	70.8	1231	0.18
8219-160	3300m	2320	1537	1758	192	1263	7070	4750	67.2	855	0.15
8219-161	3309m	1192	701	1088	108	835	3924	2732	69.6	542	0.13
8219-162	3318m	2337	1354	2006	172	1244	7113	4776	67.1	890	0.14
8219-164	3338m	1917	612	1206	104	718	4557	2640	57.9	517	0.14
8219-165	3345m	1872	745	1578	141	1065	5401	3529	65.3	574	0.13
8219-166	3354m	24	7	18	2	17	68	44	64.7	28	0.12
8219-167	3363m	371	80	156	13	92	712	341	47.9	146	0.14
8219-168	3372m	331	64	108	8	50	561	230	41.0	60	0.16
8219-169	3381m	446	128	272	25	137	1008	562	55.8	130	0.18
8219-170	3390m	154	37	74	7	40	312	158	50.6	65	0.18
8219-171	3399m	507	94	178	19	89	887	380	42.8	50	0.21
8219-172	3408m	162	38	62	7	31	300	138	46.0	19	0.23
8219-173	3417m	128	42	81	8	33	292	164	56.2	22	0.24
8219-174	3444m	251	56	101	15	72	495	244	49.3	25	0.21
8219-176	3462m	531	124	131	15	69	870	339	39.0	47	0.22
8219-178	3480m	239	58	77	6	41	421	182	43.2	39	0.15
8219-180	3498m	200	57	72	8	43	380	180	47.4	30	0.19
8219-182	3516m	357	96	113	12	69	647	290	44.8	57	0.17
8219-184	3534m	78	10	16	1	11	116	38	32.8	22	0.09
8219-185	3540m	42	6	9	1	5	63	21	33.3	10	0.20

TABLE 3  
ROCKEVAL PYROLYSIS DATA

JOB 8219									
GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	TOC (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	PRODUCTION INDEX	HYDROGEN INDEX	OXYGEN INDEX	TMAX (°C)

WELL: N 15/6-7

8219-006A	680m	0.74	0.16	0.63	0.95	0.20	85.1	128.4	426
8219-018A	1040m	1.97	0.25	3.05	1.06	0.08	154.8	53.8	432
8219-020A	1100m	3.17	0.36	4.74	1.40	0.07	149.5	44.2	427
8219-024A	1220m	1.78	0.53	2.91	1.74	0.15	163.5	97.8	426
8219-027A	1310m	3.15	0.46	5.28	1.12	0.08	167.6	35.6	427
8219-029A	1370m	4.48	1.34	8.18	1.68	0.14	182.6	37.5	403
8219-031A	1430m	4.03	0.39	5.35	1.14	0.07	132.8	28.3	430
8219-033A	1490m	2.00	0.69	3.12	1.75	0.18	156.0	87.5	424
8219-038A	1640m	1.51	0.63	2.68	0.95	0.19	177.5	62.9	431
8219-040A	1700m	2.14	1.11	3.91	0.84	0.22	182.7	39.3	433
8219-043A	1745m	1.75	0.30	3.04	0.74	0.09	173.7	42.3	435
8219-077A	2255m	1.52	0.94	2.34	0.72	0.29	153.9	47.4	437
8219-080A	2300m	1.17	0.55	1.81	0.80	0.23	154.7	68.4	427
8219-083A	2345m	1.89	1.03	3.15	0.58	0.25	166.7	30.7	437
8219-085A	2375m	1.31	0.63	2.07	1.24	0.23	158.0	94.7	433
8219-198A	SWC 2444m	1.78	1.30	1.39	0.71	0.48	78.1	39.9	430
8219-100A	2600m	1.06	0.27	1.12	0.75	0.19	105.7	70.8	429
8219-153A	3239m	5.73	3.32	28.72	0.70	0.10	501.2	12.2	430
8219-154A	3246m	9.08	5.15	45.93	0.69	0.10	505.8	7.6	437
8219-156A	3264m	8.65	5.67	48.05	0.46	0.11	555.5	5.3	431
8219-158A	3282m	8.26	5.88	42.77	0.46	0.12	517.8	5.6	430
8219-159A	3291m	6.68	3.53	26.42	0.39	0.12	395.5	5.8	432
8219-160A	3300m	4.47	1.36	13.75	0.49	0.09	307.6	11.0	434
8219-206A	SWC 3308m	3.31	1.67	9.66	0.82	0.15	291.8	24.8	435
8219-207A	SWC 3321.5m	8.80	3.26	12.81	0.85	0.20	145.6	9.7	432
8219-164A	3338m	3.34	1.76	10.15	1.27	0.15	303.9	38.0	434
8219-165A	3345m	3.73	1.20	10.39	0.72	0.10	278.6	19.3	433
8219-208A	SWC 3351m	2.41	1.10	4.47	0.79	0.20	185.5	32.8	438
8219-167A	3363m	2.57	1.59	3.73	1.01	0.30	145.1	39.3	433
8219-169A	3381m	2.96	1.79	4.73	1.03	0.27	159.8	34.8	431
8219-170A	3390m	2.63	0.97	5.20	1.30	0.16	197.7	49.4	440

PRODUCTION INDEX = S1 / (S1 + S2)  
OXYGEN INDEX = 100 x S3 / TOC

HYDROGEN INDEX = 100 x S2 / TOC

TABLE 4.1  
PYROLYSIS-GC GAS-OIL INDICES

JOB 8219 GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	% C1	% C2-C5	% C6-C14	% C15+	% nC17	INDICES		
							TOLUENE nC8	% PHENOL	% C1-C5

WELL: N 15/6-7

8219-020A	1100m	7.26	36.03	54.24	2.46	0.11	2.60	0.51	43.29
8219-029A	1370m	6.48	36.56	51.61	5.34	0.24	3.82	0.26	43.04
8219-040A	1700m	5.87	51.79	40.05	2.29	0.13	2.61	0.28	57.66
8219-154A	3246m	6.41	22.87	56.30	14.42	0.91	0.51	0.07	29.28
8219-158A	3282m	5.95	31.31	51.85	10.89	0.80	0.95	0.33	37.26
8219-159A	3291m	6.21	31.04	51.97	10.78	0.81	1.02	0.35	37.25
8219-160A	3300m	6.63	30.02	52.37	10.98	0.78	1.15	0.17	36.65
8219-206A	SWC 3308m	9.46	27.77	50.68	12.09	0.80	1.58	0.11	37.23
8219-207A	SWC 3321.5m	9.84	25.45	51.81	12.90	0.89	1.45	0.09	35.29
8219-164A	3338m	9.57	25.55	52.42	12.47	1.00	1.32	0.12	35.12
8219-165A	3345m	7.49	26.07	57.35	9.09	0.66	1.25	0.14	33.56
8219-167A	3363m	11.59	35.33	47.20	5.88	0.35	1.77	0.15	46.92

TABLE 4.2  
PYROLYSIS-GC GAS-OIL INDICES

JOB 8219 GEOCHEM SAMPLE NUMBER	DEPTH/ IDENTITY	% C1	% C2-C6	% C7-C14	% C15+	% nC17	INDICES		
							TOLUENE nC8	% PHENOL	% C1-C6

WELL: N 15/6-7

8219-020A	1100m	7.26	52.08	38.19	2.46	0.11	2.60	0.51	59.34
8219-029A	1370m	6.48	47.78	59.72	5.34	0.24	3.82	0.26	54.26
8219-040A	1700m	5.87	62.77	29.08	2.29	0.13	2.61	0.28	68.64
8219-154A	3246m	6.41	32.72	46.44	14.42	0.91	0.51	0.07	39.13
8219-158A	3282m	5.95	40.82	42.34	10.89	0.80	0.95	0.33	46.77
8219-159A	3291m	6.21	40.43	42.58	10.78	0.81	1.02	0.35	46.64
8219-160A	3300m	6.63	39.74	42.65	10.98	0.78	1.15	0.17	46.37
8219-206A	SWC 3308m	9.46	37.46	40.99	12.09	0.80	1.58	0.11	46.92
8219-207A	SWC 3321.5m	9.84	34.79	42.47	12.90	0.89	1.45	0.09	44.63
8219-164A	3338m	9.57	34.69	43.28	12.47	1.00	1.32	0.12	44.26
8219-165A	3345m	7.49	36.72	46.70	9.09	0.66	1.25	0.14	44.21
8219-167A	3363m	11.59	46.26	36.27	5.88	0.35	1.77	0.15	57.85