

# RFT RESULTS

# WELL 7120/6-1

No.	Depth m	RKB	HP(PSI)	FP(PSI)	Perm
<b>RUN 3 A</b>					
3/1	2386,7	4151	3860		Low
3/2	2392,1	4162	3863		Good
3/3	2399,1	4174	3864		Very good
3/4	2406,5	4187	3879		Poor
3/5	2413,0	4198	3884		Very poor
3/6	2423,2	4205	—		Seal fail
3/7	2424,5	4218	—		Low
3/8	2427,5	4223	3874		Fair
3/9	2430,0	4227	3876		Fair good
3/10	2432,5	4232	3879		Very good
3/11	2435,0	4236	3882		Very good
3/12	2438,5	4242	3885		Very good
3/13	2440,5	4245	3887		Very good
3/14	2445,0	4253	3894		Very good
3/15	2450,0	4261	3902		Very good
3/16	2455,0	4270	3909		Very good
3/17	2460,0	4279	3917		Very good
3/18	2468,5	4293	3930		Very good
3/19	2472,5	4300	3936		Very good
3/20	2475,0	4304	3941		Very good
3/21	2478,5	4310	—		Seal fail
3/22	2479,5	4312	—		Very tight
3/23	2478,5	4311	—		Tight
3/24	2489,5	4329	—		Very tight
3/25	2494,3	4337	—		Seal fail
3/26	2494,4	4337	—		Very tight
3/27	2506,0	4357	—		Very tight
3/28	2513,0	4370	—		Very tight
3/29	2516,0	4375	4103		Tight
3/30	2523,2	4387	4068		Poor-fair
3/31	2528,5	4396	—		Very tight
3/32	2528,3	4395	—		Very tight
3/33	2535,0	4407	—		Very tight
3/34	2540,0	4415	—		Very tight
3/35	2543,2	4421	—		Very tight
3/36	2548,7	4431	—		Very tight
3/37	2553,5	4438	—		Very tight
3/38	2560,0	4450	4073,4		Very good
3/39	2562,7	4454	4077,3		Very good
3/40	2430,0	4225	3876,2		Good(sample)
3/41	2386,7	4150	3860,1		Poor
3/42	2390,3	4156	3862,1		Fair
3/43	2392,1	4159	3861,4		Good
3/44	2394,0	4162	3862,4		Fair
3/45	2399,6	4172	3864,0		Good
3/46	2404,9	4181			Fair

### Sample 3A: 2430,0 m:

A 2 3/4 gallon and a one gallon segregated sample were taken. The 2 3/4 gall chamber contained 3,4 SCF of gas, 2 liters of 32° API oil and 8 liters of filtrate, salinity was 60.000 PPM CL. The filling time was 9 minutes, shut in pressure 3875,2 PSIG. and surface opening pressure was 1650 PSIG.

The 1 gall chamber was recovered and shipped for PVT analysis. The filling time was 16 minutes and the shut in pressure was 3875,5 PSIG.

### Sample 3B: 2427,3 m

A 2 3/4 gall and a one gallon segregated sample were taken. The 2 3/4 gall chamber contained 2,45 SCF of gas and 10 litres of filtrate, salinity 64.000 PPM CL. The filling time was 15 minutes, shut in.

## RUN 3

Pressure was 3873 PSIG and surface opening pressure was 1650 PSIG. The 1 gallon chamber contained 0,35 SCF of gas and 3,5 litres of filtrate, the filling time was 6 minutes, the shut in pressure was 3873 PSIG and the surface opening pressure was 500 PSIG.

### Sample 3C: 2399,5 m

A 2 3/4 gallon and a one gallon segregated sample were taken. The 2 3/4 gallon chamber contained 39,2 SCF of gas, 0,2 litres of oil 50°API, and 0,3 litres of filtrate, salinity 52.000 PPM CL. The filling time was 12 minutes, shut in pressure was 3863,4 PSIG, and surface opening pressure 2550 PSIG. The one gallon chamber was recovered and shipped for PVT analysis, filling time was 8 minutes, and shut in pressure was 3863,4 PSIG.

## RUN 5D

NO.	Depth m	RKB	HP (PSI)	FP (PSI)	Perm
5/1	2562,5	4482,5	4076		Good
5/2	2594,5	4539,3	4127,1		Fair
5/3	2602	4551,5	4137,1		Low
5/4	2647	4628,3	4215		Very poor
5/5	2651,5	4635,2	4216,6		Very poor
5/6	2663,5	4655,6	4232,7		Good
5/7	2673,5	4671,7	4245		Good
5/8	2700,5	4719,2	4289,2		Good
5/9	2716,5	4746,8	4313,1		Good
5/10	2719,5	4751,5	4316,5		Very good
5/11	2727	4764,8	4328,5		Very good
5/12	2781	4856,6	—		Tight
5/13	2782	4858,5	—		Tight
5/14	2786	4866,6	—		Tight
5/15	2792,5	4877,8	—		Tight
5/16	2797,5	4889,4	—		Tight
5/17	2783	4860,3	—		Tight

# DST RESULTS

## DST 1

Perforated interval: 2459 – 2465 m Choke size: 80/64''  
Flow rate: 2813 bbl/d water

## DST 2

Perforated interval: 2432,05 – 2436,05 m  
Choke size: 80/64''  
Flow rates: 9600 bbl/d oil, grav.: 31,9 API  
6,3 mm scf/d gas, grav.: 0,705  
GOR 655 scf/bbl.

## DST 3

Perforated interval: 2418,35 – 2424,35 m  
No flow

## DST 4

Perforated interval: 2386,4 – 2401,4 m Choke size: 1''  
Flow rates: 44,6 mm scf/d gas, grav.: 0,695  
1021 bbl/d condensate, grav.: 57 API  
GOR 43 700 scf/bbl.

FWR - DATA SHEET

RFT RESULTS

PRESSURE TESTS: KOPI AV TRYKKDATA TABELL MED  
 TEST NO./RUN NR., DYP, PH(bar), PF(bar),  
 REMARKS (Perm./Test quality),  
 CORRECTIONS (if applied).

SAMPLING DATA

Sample No./Depth (mRKB)	3A/2430		3B/2427.3		3C/2399.5	
Chamber size (gal)	2 3/4	1	2 3/4	1	2 3/4	1
Gas volume (Scf)	3.4	*	2.45	.35	39.2	*
Oil/cond.volume (liter)	2	*	-	-	0.2	*
Filtrate volume (liter)	8	*	10	3.5	0.3	*
Oil/cond. gravity (API)	32	*			50	*
Gas composition, (ppm)	C1	134150		131840	115160	131800
	C2	43251		42136	18324	44255
	C3	20030	*	19721	4675	23823
	IC4	2105		2119	614	2948
	NC4	5608		2739	783	5545
	C5					
Opening pressure (Psig)	1650	*	1650	500	2550	*
Comments	Rig measurem. - R					
	Lab " " -L	R	L	R	R	R
						L

FLUID CONTACTS  
 AND GRADIENTS

GOC : 2427 mRKB      Gas gradient : 0.24 g/cc  
 OWC : 2442 "      Oil gradient : 0.73 "  
 GWC : -      Water gradient : 1.095 g/cc  
 FWL : 2442 "

\* See Norsk Hydro report:  
 "Representativity control of RFT-samples with measurement of fluid properties  
 well: 7120/6-1". Date 17/6-85.

**FWR - DATA SHEET**

<b>DST RESULTS</b>			
<b>DST NO.</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>PERFORATED INTERVAL</b>	2459,0 - 2465,0	2432,05 - 2436,05	2410,35 - 2424,35
<b>OIL/COND. FLOW RATE (Sm<sup>3</sup>/D)</b>	Water rate 408,6	1526,4	-
<b>GAS FLOW RATE (Sm<sup>3</sup>/D)</b>	-	1,78x10 <sup>5</sup>	Cushion rate 1,6
<b>CHOKE SIZE (mm)</b>	31,75	31,75	Bubblehose
<b>GOR (Sm<sup>3</sup>/Sm<sup>3</sup>)</b>	-	117	-
<b>OIL/COND.GRAVITY (g/cc)</b>	-	0,866	-
<b>GAS GRAVITY (to air=1)</b>	-	0,705	-
<b>WHP (bar)</b>	3,4	67,4	0
<b>FBHFP (bar)</b>	266,8	231,9	202,3
<b>FBHSIP (bar)</b>	269,2	264,4	205,0
<b>WHT (°C)</b>	26	37	-
<b>BHT (°C)</b>	88	92	81
<b>BS&amp;W (%)</b>	0	3	-
<b>CO<sub>2</sub> (%)</b>	20-30	6	-
<b>H<sub>2</sub>S (ppm)</b>	0	0	-
<b>K (mD)</b>	950-1200	800-1150	0,03

FWR – DATA SHEET

DST RESULTS			
DST NO.	4		
PERFORATED INTERVAL	2386,4 - 2401,4		
OIL/COND. FLOW RATE (Sm <sup>3</sup> /D)	162,4		
GAS FLOW RATE (Sm <sup>3</sup> /D)	1,26x10 <sup>6</sup>		
CHOKE SIZE (mm)	25,4		
GOR (Sm <sup>3</sup> /Sm <sup>3</sup> )	7783		
OIL/COND.GRAVITY (g/cc)	0,752		
GAS GRAVITY (to air=1)	0,695		
WHP (bar)	139,2		
FBHFP (bar)	249,9		
FBHSIP (bar)	265,8		
WHT (°C)	38		
BHT (°C)	89		
BS&W (%)	2,5		
CO <sub>2</sub> (%)	5		
H <sub>2</sub> S (ppm)	0		
K (mD)	173		

## 6.1 Mud report

### 36" hole:

The 36" hole was drilled from 337 m to 387 m using seawater and high viscous pills. After a trip for hole-opener and bitchange at 387 m, the hole was drilled to 404 m, and displaced with 1.25 r.d. mud prior to run the 30" casing.

### 26" hole:

The 17 1/2" pilot hole was drilled to 815 m using 1.09 r.d. spud mud. A wiper trip was made to the shoe, due to tight hole. Ran back to bottom and worked tight spots from 500 m to 530 m and from 620 m to 650 m, 3 m fill. Pulled out and ran the logs. Underreamed the hole to 26" and pulled out of the hole.

Made a wipertrip with a 26" bit prior to run the casing. The 20" casing shoe was set at 804 m.

### 17 1/2" hole:

Drilled cement with seawater and displaced the hole to 40 ppb KCl/Polymer mud at 803 m. Drilled the 17 1/2" hole to 2046 m, had to wash and ream several tight spots. Max overpull was 670 kN. Bit and stabilizers were balled up with clay, and the formation took large amounts of KCl to stabilize the swelling clay. The 13 3/8" casing was run with the shoe at 2031 m.

### 12 1/4" hole:

12 1/4" hole was drilled without problems with KCl/Polymer mud from the previous section. After twelve cores were cut from 2371 m to 2565 m, the drilling was continued to 2820 m. The mudweight through the hole section was 1.22 r.d. The 9 5/8" casing was set at 2806 m, and the well was tested while using the KCl/Polymer mudsystem.

TABLE B-9

Daily mud properties													Date		Date												
System : Boredata Sandnes													19851015		19851015												
Well: 7120/6-1																											
Mud Contractor: NPS																											
Norsk																											
Hydro																											
Date	Mud depth	Mud dens	PV	YP	GEL-0	GEL-10	Ph	100-psi	HP/HT	Cl-inn/out	Alkalinity-Pf	Pm	Mf	Ca++-inn/out	Oil-Sol	H2O	V.G. meter at 115-F					Mud type					
	(m)	(SG)	cps	mPa	mPa	mPa	(cc)	(cc)	mg/l					mg/l	%	%	%	rpm	rpm	rpm	rpm	rpm	rpm				
850130	337-0																100										
850131	337-0																100										
850201	337-0																100										
850202	387-1.25																100							Spud			
850203	404-1.05																100							Spud			
850204	404-1.05																100							Spud			
850205	404-1.05																100							Spud			
850205	404-1.06																100							Spud			
850207	815-1.09		10	11													100							Spud			
850208	815-1.11		11	22													100							Spud			
850209	815-1.10		10	22													100							Spud			
850210	815-1.09		10	22													100							Spud			
850211	815-1.09																100							Spud			
850212	815																100							Spud			
850213	815-1.10		14	9	2	3-9.80	8.4		78000		.50	.70	.90			100								KCl			
850214	815-1.10		13	9	2	3-9.80	8.4		78000		.50	.70	.90			100	47	33	26	17	2			1-KCl			
850215	815-1.10		14	10	3	3-9.80	8.4		78000		.50	.70	.90			100								KCl			
850216	824-1.10		9	10	1	3-10.5	9.2		60000		.40	.94	.82			100								KCl/Polymer			
850217	1174-1.13		15	12	3	7-9.8	7.4		74000		.15	.70	.30			100	39	30	15	10	4			2-KCl/Polymer			
850218	1355-1.11		14	10	3	3-9.70	8.4		74000		.05	.70	.4			97								KCl/Polymer			
850219	1564-1.18		16	11	3	6-9.70	6.7		76000		.20	.80	.60			99	39	30	15	10	4			2-KCl//Polymer			
850220	1653-1.20		20	16	4	8-9.90	6.0		77000		.40	1.5	.89			96								KCl/Polymer			
850221	1805-1.20		18	15	6	12-9.60	5.6		75000		.40	.72	.90			94								KCl/Polymer			
850222	1892-1.22		19	16	7	12-10.2	5.4		64000		.45	.77	.92			94								KCl/Polymer			
850223	1993-1.22		20	14	6	11-10.0	5.0		70000		.42	.80	.47			93								KCl/Polymer			
850224	2046-1.22		19	14	6	9-9.60	4.6		71000		.40	.62	.90			94								KCl/Polymer			
850225	2046-1.22		20	14	6	11-9.60	5.0		71000		.42	.90	.97			94								KCl/Polymer			
850226	2046-1.22		19	14	6	9-9.60	4.6		71000		.40	.62	.85			94								KCl/Polymer			
850227	2046-1.22		19	14	6	9-9.60	4.6		71000		.40	.62	.95			94								KCl/Polymer			
850228	2050-1.22		15	11	5	11-9.60	5.4		56000		.50	1.2	1.0			94								KCl/Polymer			
850301	2147-1.22		20	12	8	14-12.6	6.2		64000		1.5	4.2	2.1			92								KCl/Polymer			
850302	2249-1.22		21	13	4	13-11.1	4.6	18	72000		1.1	2.2	2.4			73	65	45	37	27	12	11		KCl/Polymer			
850303	2371-1.22		18	12	3	11-10.1	4.6	20.0	72000		0.5	1.4	1.4			95	70	48	38	24	8			6-KCl/Polymer			
850304	2373-1.22		19	12	3	10-10.0	4.8	20.0	72000		0.5	1.3	1.4			95	60	42	33	24	7			5-KCl/Polymer			
850305	2383-1.22		13	12	3	6-9.80	4.8	18.0	70000		.40	1.1	1.0			93	62	43	35	25	8			7-KCl/Polymer			
850306	2398-1.22		16	8	3	6-9.50	4.8	18.0	73000		.30	.90	1.0			95	50	37	28	19	6			5-KCl/Polymer			
850307	2418-1.22		17	12	3	7-9.60	4.8	18.0	72000		.40	1.0	1.0			94	49	33	22	18	6			5-KCl/Polymer			
850308	2440-1.22		18	14	4	7-9.60	5.0	18.0	70000		.40	1.1	1.0			95	58	41	33	24	8			6-KCl/Polymer			
850309	2443-1.23		19	12	4	7-9.20	4.8	18.0	69000		.25	0.7	.90			94	65	47	39	28	9			6-KCl/Polymer			
850310	2476-1.23		18	12	3	6-9.70	4.8	18.0	70000		.60	.80	1.6			95	64	45	37	26	8			7-KCl/Polymer			
850311	2503-1.22		17	12	3	6-9.50	4.8	18.0	68000		.60	.90	1.1			94	60	42	33	24	8			6-KCl/Polymer			
850312	2530-1.22		19	12	3	7-9.60	4.8	18.0	72000		.60	.80	1.4			95	58	41	33	23	7			5-KCl/Polymer			
850313	2549-1.22		19	12	3	6-9.60	4.8	18.0	70000		.50	.80	1.0			95	63	44	36	25	8			6-KCl/Polymer			
																95	62	43	35	25	8			6-KCl/Polymer			

Daily mud properties										..Date..												..Date..	
										19851015												19851015	
System: Boredata Sandnes																							
Well: 7120/6-1																							
Mud Contractor: MPS																							
										3-												3-	
Date	Mid	Mud	PV	YP	GEL	GEL	Ph	-100	HP/HT	Cl-	Alkalinity	Ca++	Oil	Sol	H2O	V.G. meter at 115-F						Mud	
-depth-	-dens-	-	-	-	0	10-	-psi	-	-inn/out	-	Pf Pm MF-	-inn/out	-	-	-	-600	-300	-200	-100-	6	3	-type	
- (m)	- (SG)	-cps	-mPa	-mPa	-mPa	-	- (cc)	- (cc)	- mg/l	-	-	- mg/l	- %	- %	- %	-rpm	-rpm	-rpm	-rpm	-rpm	-rpm	-rpm	-rpm
850314	2565	1.22	17	13	3	6	9.60	4.8	-18.0	-70000	-.60-.70-1.2-	-	-	-5	95	70	53	39	27	7	6	KCl/Polymer-	
850315	2584	1.22	17	12	3	5	9.60	4.8	-17.8	-70000	-.60-.74-1.1-	-	-	-5	95	70	53	39	27	7	6	KCl/Polymer-	
850316	2584	1.22	15	11	4	5	9.80	4.6	-18.0	-67000	-.10-.70-.30-	-	-	-5	95	54	39	29	18	7	5	KCl/Polymer-	
850317	2604	1.22	18	11	3	4	9.60	4.8	-18.0	-63000	-.10-.70-.40-	-	-	-6	94	58	40	30	21	6	5	KCl/Polymer-	
850318	2640	1.22	16	10	4	5	9.60	4.6	-18.5	-62000	-.10-.75-.65-	-	-	-6	94	52	35	28	19	5	4	KCl/Polymer-	
850319	2694	1.22	17	10	3	5	9.50	4.7	-18.0	-62000	-.10-.80-.50-	-	-	-6	94	55	38	30	21	7	5	KCl/Polymer-	
850320	2732	1.22	15	10	4	4	9.50	4.8	-18.0	-62000	-.15-.80-.60-	-	-	-6	94	51	36	28	20	6	5	KCl/Polymer-	
850321	2742	1.22	16	11	3	3	9.80	4.8	-18.0	-63000	-.20-.80-.60-	-	-	-5	95	54	38	20	21	6	5	KCl/Polymer-	
850322	2812	1.22	16	10	3	3	9.50	4.8	-18.0	-65000	-.20-.60-.60-	-	-	-7	93	52	36	29	20	6	5	KCl/Polymer-	
850323	2820	1.22	16	10	3	3	9.50	4.8	-18.0	-65000	-.20-.60-.60-	-	-	-7	93	52	36	29	20	6	5	KCl/Polymer-	
850324	2820	1.22	16	10	3	3	9.50	4.8	-18.0	-65000	-.20-.60-.60-	-	-	-7	93	52	36	24	20	6	5	KCl/Polymer-	
850325	2820	1.22	16	10	2	3	9.00	4.4	-18.0	-65000	-.20-.60-.70-	-	-	-7	93	52	46	28	20	6	5	KCl/Polymer-	
850326	2820	1.22	16	10	2	3	9.00	4.4	-18.0	-65000	-.20-.60-.70-	-	-	-7	93	52	46	21	20	6	5	KCl/Polymer-	
850327	2745	1.22	16	10	3	5	9.00	4.6	-18.2	-65000	-.20-.80-.70-	-	-	-7	93	52	46	28	25	6	5	KCl/Polymer-	
850328	2745	1.22	14	9	2	3	9.10	4.4	-18.0	-64000	-.15-.60-.60-	-	-	-5	95	43	29	23	16	4	4	KCl/Polymer-	
850329	2745	1.22	12	7	2	3	9.00	4.4	-18.0	-60000	-.30-.60-1.0-	-	-	-6	94	38	26	20	19	5	4	KCl/Polymer-	
850330	2745	1.22	15	7	3	3	9.20	4.6	-18.0	-63000	-.10-.70-.20-	-	-	-5	95	45	30	24	17	5	4	KCl/Polymer-	
850331	2745	1.22	20	5	2	3	9.20	4.6	-18.0	-64000	-.10-.70-1.2-	-	-	-5	95	50	30	-	-	-	-	KCl/Polymer-	
850401	2745	1.22	15	7	2	3	9.40	4.6	-19.0	-64000	-.10-.80-.20-	-	-	-5	95	44	29	23	16	5	4	KCl/Polymer-	
850402	2745	1.22	13	7	2	3	9.50	5.0	-19.0	-64000	-.10-.80-.30-	-	-	-5	95	40	27	21	15	5	4	KCl/Polymer-	
850403	2745	1.22	13	7	2	3	9.50	4.8	-19.0	-64000	-.10-.80-.20-	-160	-	-5	95	40	27	21	15	5	4	KCl/Polymer-	
850404	2745	1.22	14	7	2	3	9.50	4.8	-19.0	-64000	-.10-.70-.20-	-150	-	-5	95	42	28	-	-	-	-	KCl/Polymer-	
850405	2745	1.20	12	6	2	2	9.20	4.2	-18.0	-64000	-.00-.50-.20-	-140	-	-5	95	36	24	19	14	4	3	KCl/Polymer-	
850406	2745	1.22	15	9	2	3	10.1	4.2	-18.0	-64000	-.10-.70-.20-	-300	-	-6	94	48	33	26	19	6	5	KCl/Polymer-	
850407	2745	1.22	15	9	2	3	10.1	4.2	-18.0	-64000	-.10-.80-.20-	-300	-	-6	94	48	33	26	19	6	3	KCl/Polymer-	
850408	2745	1.22	13	7	2	3	9.50	4.2	-18.0	-64000	-.15-.50-.40-	-240	-	-6	94	41	28	22	15	6	5	KCl/Polymer-	
850409	2454	1.22	13	8	2	3	9.40	4.6	-18.0	-60000	-.10-.50-.30-	-240	-	-6	94	41	29	22	16	6	5	KCl/Polymer-	
850410	2454	1.22	13	8	2	3	9.00	4.8	-18.0	-60000	-.10-.60-.35-	-240	-	-6	94	42	29	23	16	6	5	KCl/Polymer-	
850411	2454	1.22	13	8	2	3	10.2	4.8	-18.0	-51000	-.10-.60-.35-	-200	-	-6	94	42	29	23	16	6	5	KCl/Polymer-	
850412	2454	1.22	19	11	3	5	9.95	4.4	-18.0	-50000	-.25-.40-.35-	-220	-	-6	94	59	40	31	21	6	4	KCl/Polymer-	
850413	2454	1.22	19	10	3	4	9.90	4.6	-18.0	-50000	-.20-.70-.40-	-240	-	-6	94	59	40	31	21	6	4	KCl/Polymer-	
850414	2454	1.22	18	11	3	4	9.80	4.6	-18.0	-50000	-.15-.85-.35-	-220	-	-6	94	58	40	31	22	7	3	KCl/Polymer-	
850415	2454	1.22	19	12	4	6	9.60	4.6	-18.0	-50000	-.10-.80-.35-	-240	-	-6	94	63	44	35	24	7	5	KCl/Polymer-	
850416	2431	1.22	17	10	3	5	9.20	4.4	-18.0	-55000	-.10-.70-.35-	-220	-	-	100	55	38	30	21	6	4	KCl/Polymer-	
850417	2431	1.22	17	13	5	3	9.00	3.8	-14	-55000	-.10-.70-.40-	-220	-	-6	94	60	43	34	24	7	4	KCl/Polymer-	
850418	2431	1.22	16	12	5	3	9.00	4.2	-	-50000	-.10-.60-.30-	-240	-	-6	94	56	40	32	23	7	3	KCl/Polymer-	
850419	2431	1.22	15	7	2	3	9.00	4.0	-16.0	-50000	-.10-.60-.30-	-240	-	-6	94	45	30	22	16	6	5	KCl/Polymer-	
850420	2415	1.22	14	8	3	4	9.00	3.8	-16.0	-50000	-.08-.60-.28-	-240	-	-6	94	45	31	23	17	7	6	KCl/Polymer-	
850421	2415	1.22	16	10	3	5	9.20	4.0	-16.0	-50000	-.10-.60-.30-	-320	-	-6	94	52	36	29	20	6	5	KCl/Polymer-	
850422	2415	1.22	16	10	3	5	9.20	4.0	-16.0	-50000	-.10-.60-.30-	-320	-	-6	94	52	36	29	20	6	5	KCl/Polymer-	
850423	2365	1.22	14	10	3	5	9.10	3.8	-14.0	-50000	-.10-.60-.30-	-320	-	-6	94	49	35	30	24	9	8	KCl/Polymer-	
850424	2365	1.22	19	12	4	7	9.00	3.7	-14.0	-50000	-.10-.60-.30-	-320	-	-6	94	62	44	36	26	10	9	KCl/Polymer-	

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- (( - Daily mud properties ..Date.. -
- (ooo) - System : Boredata Sandnes 19851015 -
- Norsk - Well: 7120/6-1 -
- Hydro - Mud Contractor: NPS -
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-Date	-Mid	-Mud	-PV	-YP	-GEL-GEL-Ph	-100	-HP/HT-CI-	-Alkalinity-	-Ca++	-Oil-Sol-H2O	V.G. meter at 115-F						-Mud
-depth-dens.-	-	-	-	-	-	-psi	-inn/out	- Pf Pm Mf-	-inn/out	-	-600-300-200-100-	-	-	-	-	-	-type
- (m) -(SG)	-cps-mPa-mPa-mPa-	- (cc)-(cc)	- mg/l	-	-	-	-	-	- mg/l	- % - % - %	-rpm-rpm-rpm-rpm-rpm-rpm-	-	-	-	-	-	-
-850425-	2365-1,22	- 16-	12-	4-	7-9.00-3.7	-14.0	-50000	-.10-.60-.30-	-320	- -6 -	94- 62-	44-	36-	26-	10-	9-	KCl/Polymer-
-850426-	2365-1,22	- 17-	12-	4-	7-9.10-3.6	-	-48000	-.10-.60-.30-	-320	- -6 -	94- 59-	42-	35-	25-	10-	9-	KCl/Polymer-
-850427-	2365-1,22	- 17-	11-	2-	4-8.80-4.0	-	-46000	-.10-.50-.30-	-300	- -7 -	93-	-	-	-	-	-	KCl/Polymer-
-850428-	2365-1,22	-	-	-	-	-	-	-	-	-	100-	-	-	-	-	-	KCl/Polymer-


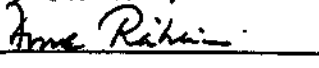
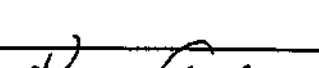



TABLE B-10

## MUD MATERIAL CONSUMPTION

HOLE SIZE (in)	BA- RITE (Mt)	BENTO- NITE (Mt)	CAUSTIC SODA (kg)	LIQ. CAUSTIC (M3)	LIME (kg)	KCl brine (m3)	KCl (kg)	SODA ASH (kg)
36	34	12	225					550
26	13	41		2.6				1150
17 1/2	46		1175	0.2		318	129700	3050
12 1/4	84		1050				7600	150
TEST	60		25		80		8000	
<b>TOTAL:</b>	<b>237</b>	<b>53</b>	<b>2475</b>	<b>2.8</b>	<b>80</b>	<b>318</b>	<b>213700</b>	<b>4900</b>

HOLE SIZE (m)	SODIUM BICARB. (kg)	DRISPAC REG. (kg)	DRISPAC SUPERLO (kg)	XC-PO- LYMER (kg)	DRILL DETER (drum)
36	500				
26	2450				
17 1/2		6875	3325	2400	8
12 1/4		4425	1050	975	
Test		25	50	2625	
<b>TOTAL</b>	<b>2950</b>	<b>11325</b>	<b>4425</b>	<b>6000</b>	<b>8</b>

ADDRESS TELEPHONE TELEX TELEFAX	<b>KJELLER</b> N-2007 Kjeller, Norway +47 2 712560 - 713560 74 573 energ n +47 2 715553	<b>HALDEN</b> N-1751 Halden, Norway +47 31 83100 76 335 energ n	<b>AVAILABILITY</b>  Private Confidential
<b>REPORT TYPE</b>	<b>REPORT NO.</b> IFE/KR/F-86/037	<b>DATE</b> 1986-03-07	
	<b>REPORT TITLE</b>  REPORT ON STABLE ISOTOPES ( $\delta^{13}C$ ) ON A NATURAL GAS FROM WELL 7120/6-1	<b>DATE OF LAST REV.</b>	
		<b>REV. NO.</b>	
	<b>CLIENT</b> Norsk Hydro a.s	<b>NUMBER OF PAGES</b> 3	
<b>CLIENT REF.</b> Jan Augustson	<b>NUMBER OF ISSUES</b> 15		
<b>SUMMARY</b>  The gas components $C_1$ - $C_4$ and $CO_2$ from a natural gas of well 7120/6-1 have been quantified, and the $\delta^{13}C$ values of $C_1$ - $C_4$ have been measured.		<b>DISTRIBUTION</b>  Norsk Hydro (10) Andresen, B. Brevik, E.M. Råheim, A.	
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>26 MARS 1986</p> <p>REVISJONSLISTE</p> <p>OLJEFORSEKTELSET</p> </div>			
<b>KEYWORDS</b>			
	<b>NAME</b>	<b>DATE</b>	<b>SIGNATURE</b>
<b>PREPARED BY</b>	Björg Andresen Einar M. Brevik Arne Råheim	1986-03-07 1986-03-07 1986-03-07	  
<b>REVIEWED BY</b>			
<b>APPROVED BY</b>	Karen Garder	1986-03-07	

## 1. ANALYTICAL PROCEDURE

The natural gas has been separated into the different gas components by a Carlo-Erba 4200 instrument. This gas chromatograph is equipped with a special injection loop in order to concentrate the samples, in the case of low concentration of the gas components. The hydrocarbon gas components were oxidized in separate CuO-ovens in order to prevent cross contamination. The combustion products CO<sub>2</sub> and H<sub>2</sub>O were frozen into collection vessels and separated.

The isotopic measurements were performed on a Finnigan Mat 251 mass spectrometer. Our  $\delta^{13}\text{C}$  value on NBS-22 is  $-29.77 \pm .06$  o/oo.

## 2. RESULTS

The composition of the sample is given in Table 1. The results have been normalized. The stable isotope results are given in Table 2.

Our uncertainty on the  $\delta^{13}\text{C}$  value is estimated to be  $\pm 0.3$  o/oo and includes all the different analysis step.

Table 1 Composition of a gas sample from well 7120/6-1

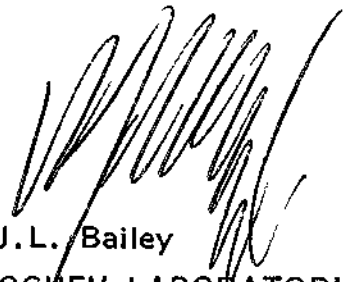
Sample	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	i-C <sub>4</sub>	n-C <sub>4</sub>	CO <sub>2</sub>	EC <sub>1-C<sub>4</sub></sub>	$\frac{EC_{2-C_4}}{EC_{1-C_4}}$	$\frac{i-C_4}{n-C_4}$
	%	%	%	%	%	%			
7120/6-1 Test 4	81.9	4.8	2.1	0.34	0.66	10.2	89.8	0.09	0.52

Table 2 Isotopic composition of a gas sample from well 7120/6-1

Sample	C <sub>1</sub> $\delta^{13}\text{C}$	C <sub>2</sub> $\delta^{13}\text{C}$	C <sub>3</sub> $\delta^{13}\text{C}$	i-C <sub>4</sub> $\delta^{13}\text{C}$	n-C <sub>4</sub> $\delta^{13}\text{C}$
7120-6-1 DST 4	-42.0	-32.5	-31.4	-25.4	-30.7

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OIL TO SOURCE ROCK CORRELATION STUDY FOR WELL 7120/6-1,  
TROMS-1 AREA, NORWAY



N.J.L. Bailey  
GEOCHEM LABORATORIES LIMITED

BA-85-5963-1

- 9 DES. 1985

**REGISTRERT**  
**OLJEDIREKTORATET**

### ANALYTICAL

The extracted sidewall cores and fractions from 2306 metres and 2355 metres were supplied by Norsk Hydro together with a piece of core from 2531.60 metres which was combined with the sample from 2531.55 metres. These samples, plus the shale and the coaly shale from 2650-2680 metres and the DST 2 crude oil formed the original sample suite for the study and were assigned the Geochem job number 1131. Subsequently, the study was expanded to include the sidewall cores (extracted powders and fractions) from 2322 metres and 2341.5 metres and the powdered core from 2550.20 metres. These samples were given the Geochem job number 1169.

The samples included in this study are as follows:

GEOCHEM SAMPLE NUMBER	DEPTH (M)
1131-001	2306
1169-003	2322
1169-008	2341.5
1131-006	2355
1131-012	2531.55-2531.60
1169-011	2550.20
1131-013 SHALE	2650-2680
1131-013 COALY SHALE	2650-2680
1131-011	DST 2 CRUDE OIL

The following analyses were performed.

ANALYSIS	NUMBER OF SAMPLES
Total organic carbon	5
Pyrolysis	1
Pyrolysis-GC	1
C <sub>15+</sub> extraction and chromatography	4
Whole oil chromatogram	1
Paraffin-naphthene chromatogram	9
Aromatic chromatogram	7
Carbon isotope (fraction)	42
Carbon isotope (kerogen)	8
Carbon isotope (pyrolysate)	8
Mass fragmentogram (8-ion)	9

No charges have been made for the carbon isotope and GC-MS (saturates) analyses upon the coaly shale from 2650-2680 metres. No material was available to run the aromatic chromatograms for the shales from 2650-2680 metres. Total extract carbon isotopes were not run upon the three (3) samples from Job 1169 as all of the analyses had to be completed within two (2) weeks and there was insufficient time to recombine and then refractionate the samples.

The data are presented in tables 1 through 7 and graphically in figures 1 through 7.

#### GENERAL INFORMATION

Ten (10) copies of this report have been forwarded to Helga Nes in Sandvika. A copy of the data has been retained by Geochem for future consultation with authorised Norsk Hydro personnel.

The results of this study are proprietary to Norsk Hydro A.S.

**TABLE 1**  
**COMPOSITION (NORMALISED %) OF C<sub>15</sub>- PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	1131 -011	1050 -061A	1050 -068A	1050 -078A	1050 -083A	1131 -012	1169 -011	1131 -013
DEPTH	0001 DST 2	0002 2306m SWC	0003 2322m SWC	0004 2341.5m SWC	0005 2355m SWC	0006 2531. 55m	0007 2550.2m	0008 2650- 2680m
SAMPLE TYPE	SHALE							
1 nC <sub>15</sub>	8.10	11.13	10.44	12.49	10.76	5.83	6.04	0.34
2 nC <sub>16</sub>	7.41	10.27	10.69	11.42	13.36	8.60	6.21	0.93
3 nC <sub>17</sub>	7.04	8.97	9.28	10.07	11.83	9.27	6.33	4.73
4 nC <sub>18</sub>	6.78	7.68	8.04	8.81	9.53	10.02	7.27	8.62
5 nC <sub>19</sub>	6.91	7.59	7.29	7.74	8.21	9.65	7.39	10.99
6 nC <sub>20</sub>	6.16	6.82	6.55	7.07	7.12	7.40	7.62	9.89
7 nC <sub>21</sub>	6.28	6.38	6.63	6.10	5.59	7.33	7.68	9.47
8 nC <sub>22</sub>	6.28	5.44	5.72	6.29	5.48	6.06	8.09	8.45
9 nC <sub>23</sub>	6.22	5.87	5.88	4.94	4.27	5.76	8.15	8.11
10 nC <sub>24</sub>	6.34	4.75	4.97	4.84	4.16	5.01	7.56	7.35
11 nC <sub>25</sub>	6.28	5.00	4.39	3.68	2.63	4.64	7.09	6.68
12 nC <sub>26</sub>	5.34	3.62	3.48	3.29	2.74	3.37	5.28	5.24
13 nC <sub>27</sub>	4.84	3.80	3.73	2.81	2.30	3.37	4.63	4.73
14 nC <sub>28</sub>	3.89	2.85	2.65	2.42	1.97	2.54	2.99	3.72
15 nC <sub>29</sub>	3.52	2.85	2.57	2.03	1.31	2.84	2.64	2.96
16 nC <sub>30</sub>	2.14	1.98	2.07	1.65	1.31	1.80	1.64	2.03
17 nC <sub>31</sub>	1.82	1.73	1.66	1.45	1.10	1.94	1.29	1.86
18 nC <sub>32</sub>	1.32	1.04	1.49	0.97	0.88	1.05	0.76	1.18
19 nC <sub>33</sub>	1.32	1.04	0.91	0.77	0.77	1.94	0.70	1.18
20 nC <sub>34</sub>	1.26	0.78	1.08	0.77	0.77	1.05	0.41	0.85
21 nC <sub>35</sub>	0.75	0.43	0.50	0.39	0.44	1.12	0.23	0.68
22 PARAFFIN	40.62	42.47	27.63	34.83	33.24	50.09	66.56	53.00
23 ISOPRENOID	3.75	6.60	4.17	5.43	5.42	3.82	4.17	2.20
24 NAPHTHENE	55.63	50.93	68.21	59.74	61.34	46.08	29.26	44.80
CPI INDEX A	1.03	1.14	1.11	0.93	0.89	1.10	1.06	1.05
25 CPI INDEX B	1.11	1.21	1.11	1.01	0.89	1.23	1.18	1.11
26 PRISTANE/PHYTANE	1.45	2.40	2.43	1.21	1.13	4.10	4.63	0.81
27 PRISTANE/nC <sub>17</sub>	0.78	1.22	1.15	0.85	0.73	0.66	0.81	0.39



**TABLE 1**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	1131 -013C
DEPTH	2050- 2080m
SAMPLE TYPE	COALY SHALE
nC <sub>15</sub>	13.49
nC <sub>16</sub>	9.28
nC <sub>17</sub>	8.66
nC <sub>18</sub>	8.66
nC <sub>19</sub>	7.92
nC <sub>20</sub>	6.93
nC <sub>21</sub>	6.56
nC <sub>22</sub>	6.06
nC <sub>23</sub>	5.82
nC <sub>24</sub>	5.45
nC <sub>25</sub>	5.07
nC <sub>26</sub>	4.21
nC <sub>27</sub>	3.34
nC <sub>28</sub>	2.48
nC <sub>29</sub>	2.10
nC <sub>30</sub>	1.24
nC <sub>31</sub>	0.87
nC <sub>32</sub>	0.50
nC <sub>33</sub>	0.62
nC <sub>34</sub>	0.50
nC <sub>35</sub>	0.25
PARAFFIN	47.36
ISOPRENOID	2.81
NAPHTHENE	49.82
CPI INDEX A	1.03
CPI INDEX B	1.10
PRISTANE/PHYTANE	3.80
PRISTANE/nC <sub>17</sub>	0.54

**TABLE 2a**  
**CONCENTRATION (PPM) OF EXTRACTED C<sub>15+</sub> MATERIAL IN ROCK**

GEOCHEM SAMPLE NUMBER	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
			Paraffin Naphthenes	Aromatics	TOTAL	Precipitd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	Sulphur
1050-061A	2306	3729	1198	807	2005	1317	329	58	20
1050-068A	2322	4401	1491	1008	2499	1438	366	91	7
1050-078A	2341.5	11590	4634	3302	7936	2153	1298	166	37
1050-083A	2355	11929	3619	3356	6975	3744	991	191	28
1131-012	2531.57	2343	509	527	1036	1124	152	27	4
1169-011	2550.2	1951	698	447	1145	484	294	22	7
1131-013*	2650-2680	327	54	59	113	156	39	19	0
1131-013C	2650-2680	20301	685	1079	1764	17869	495	124	48

\* 1131-013 SHALE  
 1131-013C COALY SHALE

**TABLE 2b**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> MATERIAL EXTRACTED FROM ROCK**

GEOCHEM SAMPLE NUMBER	DEPTH	HYDROCARBONS		NON HYDROCARBONS			
		Paraffin – Naphthenes	Aromatics	Precipd. Asphaltenes	Eluted NSO's	Non eluted NSO's	Sulphur
1131-011	DST 2	76.01	18.90	2.29	2.43	0.12	0.26
1050-061A	2306	32.12	21.64	35.33	8.82	1.55	0.54
1050-068A	2322	33.88	22.90	32.68	8.32	2.06	0.16
1050-078A	2341.5	39.99	28.49	18.58	11.20	1.43	0.32
1050-083A	2355	30.34	28.13	31.38	8.31	1.60	0.23
1131-012	2531.57	21.71	22.50	47.97	6.51	1.16	0.16
1169-011	2550.2	35.75	22.92	24.80	15.06	1.11	0.35
1131-013*	2650-2680	16.40	18.15	47.64	12.04	5.76	0.00
1131-013C	2650-2680	3.38	5.31	88.02	2.44	0.61	0.24
1131-013	SHALE						
1131-013C	COALY SHALE						

**TABLE 3**  
**SIGNIFICANT RATIOS (%) OF C<sub>15+</sub> FRACTIONS AND ORGANIC CARBON**

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS	HYDROCARBONS	TOTAL EXTRACT	P-NAPHTHENES
			TOTAL EXTRACT	ORG. CARBON	ORG. CARBON	AROMATICS
1050-061A	2306	2.50	53.76	8.02	14.91	1.48
1050-068A	2322	3.47	56.78	7.20	12.68	1.48
1050-078A	2341.5	7.05	68.47	11.26	16.44	1.40
1050-083A	2355	8.36	58.47	8.34	14.27	1.08
1131-012	2531.57	8.49	44.21	1.22	2.76	0.96
1169-011	2550.2	3.22	58.67	3.56	6.06	1.56
1131-013*	2650-2680	1.45	34.55	0.78	2.26	0.90
1131-013C*	2650-2680	22.10	8.69	0.80	9.19	0.64
1131-013	SHALE					
1131-013C	COALY SHALE					

TABLE 4

STANDARD PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON	S1 (mg/g)	S2 (mg/g)	PRODUCTION INDEX	HYDROGEN INDEX	Tmax (°C)
1169-011	2550.2	3.43	0.48	4.75	0.09	138.5	449

TABLE 5  
CARBON ISOTOPE DATA (‰, PDB)

<u>GEOCHEM</u> <u>SAMPLE</u> <u>NUMBER</u>	<u>SAMPLE</u> <u>IDENTIFICATION</u>	<u>SATURATES</u>	<u>AROMATICS</u>	<u>NSO</u>	<u>ASPHALTENES</u>
1131-011	DST 2	-30.07	-28.45	-26.77	-27.21
1131-001	2306m	-30.01	-28.67	-28.26	-27.07
1169-003	2322m	-27.02	-26.88	-27.20	-28.01, -27.90
1169-008	2341.5m	-27.13, -27.10	-27.05, -26.99	-26.47	-27.67
1131-006	2355m	-28.72	-27.88	-27.75	-27.29
1131-012	2531.55-2531.60m	-29.77, -29.84	-27.52	-27.36	-27.21
1169-011	2550.2m	-28.24	-26.11	-27.09	-26.31
1131-013	2650-2680m SHALE	-28.63	-27.34	-27.27	-26.51
1131-013	2650-2680m COALY SHALE	-29.76, -29.81	-27.15	-27.27	-27.17, -27.24

<u>GEOCHEM</u> <u>SAMPLE</u> <u>NUMBER</u>	<u>SAMPLE</u>	<u>TOTAL EXTRACT/OIL</u>	<u>KEROGEN</u>	<u>PYROLYSATE (S2)</u>
1131-011	DST 2	-29.37, -29.52		
1131-001	2306m	-28.93	-27.74	-28.48
1169-003	2322m		-28.07	-27.82
1169-008	2341.5m		-26.98	-28.28
1131-006	2355m	-27.99	-27.45	-28.37
1131-012	2531.55-2531.60m	-28.05, -27.90	-27.05	-29.39
1169-011	2550.2m		-25.98	-26.66
1131-013	2650-2680m SHALE	-27.01, -27.20	-25.42	-27.44, -27.49
1131-013	2650-2680m COALY SHALE	-27.34	-26.15, -26.10	-26.88, -27.01

TABLE 6

MOLECULAR MATURATION PARAMETERS

GEOCHEM SAMPLE NO.	DEPTH	STERANES M/Z 217 (259)			Tm Ts	TERPANES M/Z 191				
		$\frac{C_{29} \text{ 20S } (\alpha/\beta)}{C_{29} \text{ 20R } (\alpha/\beta)}$	$\frac{C_{29} \text{ 20R } (\beta/\beta)}{C_{29} \text{ 20R } (\alpha/\beta)}$	$\frac{C_{27} \text{ (20S) Diasteranes}}{C_{27} \text{ (20R) Diasteranes}}$		$\frac{C_{30} \text{ Moretane}}{C_{30} \text{ Hopane}}$	$\frac{C_{29} \text{ normoretane}}{C_{29} \text{ norhopane} + C_{29} \text{ normoretane}}$	$\frac{\text{Bisnorhopane } (C_{28})}{Tm + \text{Bisnorhopane} + C_{29} \text{ norhopane}}$	$\frac{C_{31} \text{ (20S)}}{C_{31} \text{ (20S)} + C_{31} \text{ (20R)}}$	x 100
1131-011	DST 2	1.37	2.06	1.33	0.90	0.10	0.07	0.15	57%	
1131-001	2306m	1.09	1.53	1.53	1.14	0.10	0.03	0.18	58%	
1169-003	2322m	1.36	2.04	1.36	0.70	0.09	0.22	0.18	60%	
1169-008	2341.5m	1.49	1.97	1.30	0.44	0.07	0.11	0.21	61%	
1131-007	2355m	1.58	2.29	1.49	0.54	0.06	0.11	0.13	62%	
1131-012	2531.55- 2531.60m	1.30	1.00	1.64	1.40	0.07	0.11	0.18	60%	
1169-011	2550.2m	1.04	1.56	1.09	2.26	0.11	0.11	0.20	59%	
1131-013	2650-2680m SHALE	0.80	1.35	1.59	2.65	0.11	0.08	0.10	59%	
1131-013C	2650-2680m COALY SHALE	0.82	1.13	1.50	3.86	0.21	0.11	0.14	58%	

TABLE 7a

COMPOSITION (NORMALISED %) OF C<sub>15+</sub> AROMATIC HYDROCARBONS

## - PHENANTHRENE SERIES

<u>GEOCHEM</u> <u>SAMPLE</u> <u>NUMBER</u>	<u>SAMPLE</u> <u>IDENTIFICATION</u>	<u>PHENANTHRENE</u> <u>(m/z 178)</u>	<u>METHYL</u> <u>PHENANTHRENE</u> <u>(m/z 192)</u>	<u>DIMETHYL</u> <u>PHENANTHRENE</u> <u>(m/z 206)</u>	<u>TRIMETHYL</u> <u>PHENANTHRENE</u> <u>(m/z 220)</u>
1131-011	DST 2	10.5	37.2	34.6	17.7
1131-003	2306m	16.2	41.8	29.0	13.0
1169-003	2322m	13.8	37.9	29.1	19.2
1169-008	2341.5m	9.9	39.8	32.2	18.1
1131-008	2355m	8.4	39.8	35.2	16.6
1131-012	2531.55-2531.60m	5.1	34.7	38.6	21.6
1169-011	2550.2m	11.8	40.4	30.3	17.5
1131-013	2650-2680m SHALES	10.7	44.4	31.9	13.0
1131-013C	2650-2680m COALY SHALES	21.0	35.8	28.8	13.5



TABLE 7b

COMPOSITION (NORMALISED %) OF C<sub>15+</sub> AROMATIC HYDROCARBONS

## - DIBENZOTHIOPHENE SERIES

<u>GEOCHEM</u> <u>SAMPLE</u> <u>NUMBER</u>	<u>SAMPLE</u> <u>IDENTIFICATION</u>	<u>DIBENZOTHIOPHENE</u> <u>(m/z 184)</u>	<u>METHYL</u> <u>DIBENZOTHIOPHENE</u> <u>(m/z 198)</u>	<u>DIMETHYL</u> <u>DIBENZOTHIOPHENE</u> <u>(m/z 212)</u>
1131-011	DST 2	1.51	41.0	43.9
1131-003	2306m	21.9	41.9	36.2
1169-003	2322m	25.7	46.2	28.1
1169-008	2341.5m	17.6	43.8	38.6
1131-008	2355m	12.3	43.5	44.2
1131-012	2531.55-2531.60m	8.5	40.0	51.5
1169-011	2550.2m	24.9	46.1	29.0
1131-013	2650-2680m SHALES	12.6	45.4	42.0
1131-013	2650-2680m COALY SHALES	21.4	46.2	32.4

450

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Prepared for

**NORSK HYDRO A.S.**

**DATA REPORT**

**NORDMELA, DYRØY AND YTTERØY FORMATIONS,**

**WELL 7120/6-1**

July 1986

**GEOCHEM**



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**Petroleum  
Geochemistry  
Division**



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86-5534-BA

18 AUG. 1986

**REGISTRERT****OLJEDIREKTORATET**

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TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS



GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
<u>WELL 7120/6-1</u>					
1301-001 CORE	2418.80m	A 98%	Sandstone, with arg. laminae, fine grained, poorly sorted, yellow F., milky C., medium grey	N5	0.67
1301-002 CORE	2475.10m	A 65%	Silty shale, subfissile, mod. hard, non-calc., micaceous, dark olive grey	5Y3/1	1.65,1.67
		B 35%	Sandstone, fine grained, subangular, mod. sorted, yellow F., milky C., v. light grey	N8	
1301-003 CORE	2475.50m	A 98%	Sandstone, with arg. laminae, fossils (large brachiopods), fine grained, poorly sorted, milky C., medium light grey	N6	0.62
1301-004 CORE	2480.50m	A 98%	Silty shale, sl. aren., pyritic, subfissile, mod. hard, non-calc., dark olive grey	5Y3/1	2.32
1301-005 CORE	2482.40m	A 98%	Sandstone, fine grained, poorly sorted, milky C., dark olive grey	5Y3/1	0.94
1301-006 CORE	2482.90m	A 98%	Sandstone, as 1301-005A	5Y3/1	4.23
1301-007 CORE	2484.00m	A 98%	Sandstone, as 1301-005A	5Y3/1	1.00
1301-008 CORE	2485.40m	A 98%	Sandstone, as 1301-005A	5Y3/1	2.39,2.41
1301-009 CORE	2486.00m	A 98%	Sandstone, with arg. laminae, fine grained, poorly sorted, milky C., medium grey to dark olive grey	N5- 5Y3/1	2.46
1301-010 CORE	2486.50m	A 98%	Sandstone, arg., fine grained, poorly sorted, milky C., dark olive grey	5Y3/1	1.25
1301-011 CORE	2487.50m	A 98%	Silty shale, aren. in part, fissile, mod. hard, non-calc., medium dark grey	N4	2.59
1301-012 CORE	2490.40m	A 98%	Sandstone, with arg. laminae, fine grained, mod. to poorly sorted, yellow F., milky C., medium dark grey to light grey	N4-7	1.07
1301-013 CORE	2490.80m	A 98%	Shale, silty, subfissile, mod. hard, non-calc., dark grey	N3	6.03,6.04
1301-014 CORE	2493.70m	A 98%	Sandstone, arg., fine grained, poorly sorted, milky C., medium grey	N5	0.92
1301-015 CORE	2496.40m	A 90%	Sandstone, arg., fine grained, poorly sorted, milky C., medium dark grey	N4	1.63
		B 10%	Sandstone, fine grained, mod. sorted, weak milky C., light grey	N7	

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



TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-016 CORE	2500.50m	A 98% Silty shale, occ. aren., subfissile, mod hard, non-calc., medium dark grey to medium grey	N4-5	2.46
1301-017 CORE	2502.00m	A 98% Silty shale, occ. aren., subfissile, mod. hard, non-calc., medium dark grey	N4	2.18
1301-018 CORE	2507.25m	A 60% Sandstone, fine grained, mod. sorted, pale yellow F., milky C., v. light grey	N8	
		B 40% Silty shale, occurring as thin interbeds, subfissile, mod. hard, non-calc., medium dark grey	N4	2.59
1301-019 CORE	2509.50m	A 98% Silty shale, occ. aren., fissile, mod. hard, non-calc., micaceous laminae, medium dark grey	N4	2.40, 2.37
1301-020 CORE	2511.35m	A 98% Silty shale, sandy lenses, subfissile, mod. hard, non-calc., medium dark grey	N4	1.46
1301-021 CORE	2511.90m	A 98% Shale, carbonaceous, subfissile, mod. hard, non-calc., olive black	5Y2/1	34.00
1301-022 CORE	2521.40m	A 50% Siltstone, occ. aren., subfissile, mod. hard, non-calc., micaceous, medium dark grey	N4	4.60
		B 50% Sandstone, fine grained, mod. sorted, milky C., v. light brownish grey	5YR7/1	
1301-023 CORE	2524.80m	A 98% Shale, silty layers, subfissile, mod. hard, non-calc., dark grey to medium dark grey	N3-4	2.23
1301-024 CORE	2529.10m	A 60% Siltstone, subfissile, mod. hard, non-calc., medium grey	N5	0.76, 0.74
		B 40% Sandstone, fine grained, mod. sorted, weak milky C., light grey	N7	
1301-025 CORE	2531.00m	A 98% Siltstone, grading to shale, subfissile, mod. hard, non-calc., dark grey	N3	5.00
1301-026 CORE	2532.90m	A 80% Siltstone, subfissile, mod. hard, non-calc., medium dark grey to medium grey	N4-5	1.50
		B 20% Sandstone, fine grained, mod. sorted, arg. laminae, light grey to v. light grey	N7-8	
1301-027 CORE	2534.30m	A 98% Shale, silty, subfissile, mod. hard, non-calc., medium dark grey	N4	2.23
1301-028 CORE	2536.30m	A 98% Siltstone, occ. aren., subfissile, mod. hard, non-calc., micaceous, medium grey	N5	1.12

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



TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-029 CORE	2539.50m	A 98% Siltstone, occ. aren., subfissile, mod. hard, non-calc., medium dark grey	N4	1.94,1.94
1301-030 CORE	2543.50m	A 60% Sandstone, fine grained, mod. sorted, arg. laminae, milky C., v. light grey B 40% Shale, aren. layers, subfissile, mod. hard, non-calc., medium dark grey	N8 N4	2.59
1301-031 CORE	2556.20m	A 98% Sandstone, fine grained, mod. sorted, arg.(micaceous) laminae, milky C., medium dark grey to medium light grey	N4-6	2.59
1301-032 CORE	2557.10m	A 98% Shale, aren. laminae, subfissile, mod. hard, non-calc., micaceous, medium dark grey	N4	3.78
1301-033 CORE	2558.60m	A 98% Shale, silty in part, subfissile, mod. hard, non-calc., medium dark grey	N4	2.01
1301-034	2580m	A 85% Sandstone, unconsolidated in part, fine grained, subangular, fairly well sorted, v. weak milky C., v. light brownish grey B 15% Shale, fissile, mod. hard, non-calc., generally dark greenish grey	5YR7/1 gen. 5GY4/1	1.04,1.08
1301-035	2582m	A 85% Sandstone, as 1301-034A B 15% Shale, as 1301-034B	5YR7/1 gen. 5GY4/1	1.13
1301-036	2585m	A 85% Sandstone, unconsolidated in part, fine grained, subangular, well sorted, v. weak milky C., pinkish grey B 15% Shale, as 1301-034B	5YR8/1 gen. 5GY4/1	1.32
1301-037	2587m	A 90% Sandstone, as 1301-036A B 10% Shale, as 1301-034B	5YR8/1 gen. 5GY4/1	0.97
1301-038	2590m	A 90% Sandstone, unconsolidated in part, fine grained, subangular, fairly well sorted, pinkish grey B 10% Shale, as 1301-034B	5YR8/1 gen. 5GY4/1	1.09
1301-039	2592m	A 60% Sandstone, as 1301-038A B 30% Sandstone, unconsolidated in part, fine grained, subangular, fairly well sorted, weak milky C., light brownish grey C 10% Shale, as 1301-034B	5YR8/1 5YR6/1 gen. 5GY4/1	1.42,1.46
1301-040	2595m	A 80% Sandstone, as 1301-038A B 10% Sandstone, as 1301-039B C 10% Shale, as 1301-034B	5YR8/1 5YR6/1 gen. 5GY4/1	1.26

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



**TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-041	2597m	A 80% Sandstone, unconsolidated in part, fine grained, subangular, fairly well sorted, pinkish grey	5YR8/1	1.10
		B 10% Sandstone, unconsolidated in part, fine grained, subangular, fairly well sorted, weak slow milky C., light brownish grey	5YR6/1	
		C 10% Shale, fissile, mod. hard, non-calc., gen. generally dark greenish grey Minor siltstone	5GY4/1	
1301-042	2600m	A 90% Sandstone, partly unconsolidated, fine grained, subangular, fairly well sorted, pinkish grey	5YR8/1	1.17
		B 10% Shale, fissile, mod. hard, non-calc., medium dark grey to dark greenish grey Minor siltstone	N4- 5GY4/1	
1301-043	2602m	A 95% Sandstone, as 1301-042A	5YR8/1	1.51
		B 5% Shale, as 1301-042B Minor siltstone	N4- 5GY4/1	
1301-044	2605m	A 95% Sandstone, as 1301-042A	5YR8/1	1.78, 1.77
		B <5% Shale, as 1301-042B	N4- 5GY4/1	
1301-045	2607m	A 98% Sandstone, as 1301-042A Minor shale	5YR8/1	
1301-046	2610m	A 95% Sandstone, as 1301-042A	5YR8/1	1.27
		B <5% Shale, as 1301-042B	N4- 5GY4/1	
1301-047	2612m	A 95% Sandstone, as 1301-042A	5YR8/1	1.37
		B <5% Shale, as 1301-042B	N4- 5GY4/1	
1301-048	2615m	A 95% Sandstone, as 1301-042A	5YR8/1	2.73
		B 5% Shale, as 1301-042B Minor coal	N4- 5GY4/1	
1301-049	2617m	A 90% Sandstone, as 1301-042A	5YR8/1	5.10
		B 10% Shale, as 1301-042B Minor coal	N4- 5GY4/1	
1301-050	2620m	A 95% Sandstone, as 1301-042A	5YR8/1	1.48
		B 5% Shale, as 1301-042B Minor siltstone	N4- 5GY4/1	

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



TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-051	2622m	A 90% Sandstone, partly unconsolidated, fine grained, subangular, well sorted, pinkish grey	5YR8/1	2.43, 2.47
		B 5% Sandstone, carbonaceous laminae, fine grained, subangular, mod. sorted, milky C., brownish grey	5YR4/1	
		C 5% Shale, sl. silty, mod. hard, non-calc., medium dark grey to dark greenish grey Minor siltstone	N4- 5GY4/1	
1301-052	2625m	A 90% Sandstone, as 1301-051A	5YR8/1	2.49
		B 5% Sandstone, as 1301-051B	5YR4/1	
		C 5% Shale, as 1301-051C	N4- 5GY4/1	
1301-053	2627m	A 98% Sandstone, as 1301-051A Minor shale	5YR8/1	
1301-054	2630m	A 85% Sandstone, as 1301-051A	5YR8/1	1.20
		B 10% Sandstone, micaceous, fine grained, subangular, mod. sorted, brownish grey to medium dark grey	5YR4/1- N4	
		C <5% Shale, fissile, mod. hard, non-calc., medium dark grey	N4	
1301-055	2632m	A 90% Sandstone, as 1301-051A	5YR8/1	
		B 10% Sandstone, as 1301-054B Minor shale	5YR4/1- N4	
1301-056	2635m	A 85% Sandstone, as 1301-051A	5YR8/1	2.57
		B 10% Sandstone, as 1301-054B	5YR4/1- N4	
		C <5% Shale, sl. silty, subfissile, mod. hard, non-calc., medium dark grey	N4	
1301-057	2637m	A 65% Sandstone, as 1301-051A	5YR8/1	3.22
		B 35% Shale, silty, sl. carbonaceous, mod. hard, non-calc., dark grey to medium dark grey	N3-4	
1301-058	2640m	A 55% Sandstone, as 1301-051A	5YR8/1	5.30, 5.34
		B 45% Shale, as 1301-057B	N3-4	
1301-059	2642m	A 55% Shale, sl. silty, sl. carbonaceous, fissile to subfissile, mod. hard, non-calc., micaceous, medium dark grey	N4	1.15
		B 25% Sandstone, micaceous, sl. carbonaceous, fine grained, mod. sorted, brownish grey	5YR4/1	
		C 20% Sandstone, mostly unconsolidated, well sorted, subangular, white	N9	

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



TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS



GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-060	2645m	A 40% Shale, sl. silty, sl. carbonaceous, fissile to subfissile, mod. hard, non-calc., micaceous, medium dark grey	N4	1.25
		B 30% Sandstone, micaceous, sl. carbonaceous, fine grained, mod. sorted, brownish grey	5YR4/1	
		C 30% Sandstone, mostly unconsolidated, well sorted, subangular, white	N9	
1301-061	2647m	A 65% Sandstone, as 1301-060C	N9	1.14
		B 25% Sandstone, as 1301-060B	5YR4/1	
		C 10% Shale, as 1301-060A	N4	
1301-062	2650m	A 70% Sandstone, as 1301-060C	N9	1.53
		B 20% Sandstone, as 1301-060B	5YR4/1	
		C <10% Shale, as 1301-060A	N4	
1301-063	2652m	A 60% Sandstone, as 1301-060C	N9	1.37, 1.38
		B 25% Sandstone, as 1301-060B	5YR4/1	
		C 15% Shale, as 1301-060A	N4	
1301-064	2655m	A 85% Sandstone, as 1301-060C	N9	1.18
		B 10% Sandstone, as 1301-060B	5YR4/1	
		C <5% Shale, as 1301-060A	N4	
1301-065	2657m	A 70% Sandstone, as 1301-060C	N9	41.40
		B 20% Sandstone, as 1301-060B	5YR4/1	
		C 10% Coal, shiny lustre, conchoidal fracture, brittle, black Minor shale	N1	
1301-066	2660m	A 65% Sandstone, partly unconsolidated, fine grained, subangular, fairly well sorted, white	N9	27.10, 27.20
		B 25% Siltstone, occ. v. fine aren., blocky, mod. hard, non-calc., medium light grey	N6	
		C 10% Coal, as 1301-065C Minor shale	N1	
1301-067	2662m	A 65% Sandstone, as 1301-066A	N9	20.60
		B 25% Siltstone, as 1301-066B	N6	
		C 10% Coal, as 1301-065C	N1	
1301-068	2665m	A 75% Sandstone, as 1301-066A	N9	12.10
		B 20% Siltstone, as 1301-066B	N6	
		C <5% Coal, as 1301-065C	N1	
1301-069	2667m	A 70% Sandstone, as 1301-066A	N9	1.59
		B 20% Sandstone, micaceous, fine grained, mod. sorted, brownish grey	5YR4/1	
		C <10% Siltstone, as 1301-066B Minor coal	N6	
1301-070	2670m	A 85% Sandstone, as 1301-066A	N9	
		B 15% Sandstone, as 1301-069B Minor coal, shale	5YR4/1	

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



TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt % of Rock)
1301-071	2672m	A 90% Sandstone, partly unconsolidated, fine grained, subangular, fairly well sorted, white	N9	
		B 10% Sandstone, micaceous, fine grained, mod. sorted, brownish grey Minor coal, shale	5YR4/1	
1301-072	2675m	A 95% Sandstone, as 1301-071A	N9	
		B 5% Sandstone, as 1301-071B Minor shale, coal	5YR4/1	
1301-073	2677m	A 80% Sandstone, blocky, fine to medium grained, subangular, fairly well sorted, non-calc., pale milky cut, pinkish grey	5YR8/1	
		B 10% Silty shale, subfissile, soft to mod. hard, non-calc., minor cavings, medium grey to medium dark grey	N5-4	2.12
		C 10% Silica flour?, blocky, soft, white	N9	
1301-074	2680m	A 80% Sandstone, as 1301-073A, pale milky C.	5YR8/1	
		B 15% Silty shale, as 1301-073B, minor cavings	N5-4	3.32
		C 5% Silica flour?, blocky, soft, white	N9	
1301-075	2682m	A 60% Sandstone, as 1301-073A, pale milky C.	5YR8/1	
		B 20% Shale, platy to subfissile, soft to mod. hard, sl. silty, non-calc., minor cavings, medium dark grey	N4	3.77
		C 15% Siltstone, blocky, soft, sl. micaceous, non-calc., medium grey to medium dark grey	N5-4	2.88
		D 5% Silica flour, as 1301-074C	N9	
1301-076	2685m	A 60% Sandstone, as 1301-073A	5YR8/1	
		B 25% Siltstone, as 1301-075C	N5-4	1.08, 1.04
		C 15% Shale, as 1301-075B, minor cavings	N4	2.24
1301-077	2687m	A 55% Sandstone, as 1301-73A	5YR8/1	
		B 35% Siltstone, as 1301-075C	N5-4	0.83
		C 10% Shale, as 1301-075B, minor cavings Minor dolomite	N4	1.43
1301-078	2690m	A 45% Sandstone, as 1301-073A	5YR8/1	
		B 45% Siltstone, as 1301-075C	N5-4	1.58
		C 10% Shale, as 1301-075B, minor cavings Minor dolomite	N4	3.73

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

**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**



GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-079	2692m	A 55% Silty shale/siltstone, blocky to subfissile, soft to mod. hard, non-calc., minor cavings, medium grey	N5	1.07,1.06
		B 30% Sandstone, blocky, fine to medium grained, subangular, well sorted, white to pinkish grey	N9- 5YR8/1	
		C 15% Shale, subfissile, soft to mod. hard, non-calc., sl. micaceous, medium dark grey Minor dolomite	N4	4.21
1301-080	2695m	A 45% Silty shale, as 1301-079A	N5	1.64
		B 45% Sandstone, as 1301-079B	N9- 5YR8/1	
		C 10% Shale, as 1301-079C, minor cavings Minor dolomite	N4	1.48
1301-081	2697m	A 65% Silty shale, as 1301-079A	N5	0.96,0.93
		B 35% Sandstone, as 1301-079B Minor dolomite and mudstone	N9- 5YR8/1	
1301-082	2700m	A 65% Silty shale, blocky to subfissile, mod. hard, non-calc., minor cavings, medium grey	N5	1.16
		B 30% Sandstone, blocky, fine to medium grained, subangular, well sorted, white to pinkish grey	N9- 5YR8/1	
		C 5% Shale, platy to subfissile, mod. hard, non-calc., sl. carbonaceous in part, minor cavings, medium dark grey to dark grey Minor other shale and dolomite?	N4-3	2.55
1301-083	2702m	A 45% Silty shale, as 1301-082A, minor cavings	N5	2.72
		B 35% Shale, as 1301-082C, minor cavings	N4-3	
		C 20% Sandstone, as 1301-082B	N9- 5YR8/1	
1301-084	2705m	A 40% Silty shale, as 1301-083A, minor cavings	N5	2.76,2.72
		B 30% Shale, as 1301-082C, minor to sig. cavings	N4-3	
		C 30% Sandstone, as 1301-082B	N9- 5YR8/1	
1301-085	2707m	A 60% Silty shale, as 1301-082A, minor cavings	N5	2.73
		B 25% Sandstone, as 1301-082B	N9- 5YR8/1	
		C 15% Shale, as 1301-082C, minor to sig. cavings	N4-3	2.51

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

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS



GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	GSA Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-086	2710m	A 45% Silty shale, blocky to subfissile, mod. hard, non-calc., minor cavings, medium grey	N5	2.85
		B 30% Sandstone, blocky, fine to medium grained, subangular, well sorted, white to pinkish grey	N9-5YR8/1	
		C 25% Shale, platy to subfissile, mod. hard, non-calc., sl. carbonaceous in part, minor cavings, medium dark grey to dark grey	N4-3	5.30
1301-087	2712m	A 50% Silty shale, subfissile, soft to mod. hard, non-calc., minor cavings, medium dark grey to brownish grey	N4-5YR4/1	2.63, 2.64
		B 30% Sandstone, blocky, fine to medium grained, subangular, fairly well sorted, pinkish grey	5YR8/1	
		C 20% Shale, subfissile, soft to mod. hard, non-calc., sl. carbonaceous?, minor cavings, medium dark grey to dark grey	N4-3	6.26
1301-088	2715m	A 65% Silty shale, as 1301-087A, minor cavings	N4-5YR4/1	2.84
		B 20% Sandstone, as 1301-087B	5YR8/1	
		C 15% Shale, as 1301-087C, minor cavings	N4-3	4.67
1301-089	2717m	A 70% Shale, carbonaceous, fissile to subfissile, mod. hard, non-calc., dark grey	N3	4.73
		B 25% Silty shale, platy, mod. hard, non-calc., medium dark grey to medium grey	N4-5	3.22
		C 5% Sandstone, often unconsolidated, subangular, fairly well sorted, pinkish grey	5YR8/1	
1301-090	2720m	A 65% Silty shale, as 1301-089B	N4-5	2.91, 2.87
		B 25% Sandstone, as 1301-089C	5YR8/1	
		C <10% Shale, as 1302-089A	N3	5.02
1301-091	2722m	A 40% Silty shale, as 1301-089B	N4-5	2.75
		B 40% Sandstone, as 1301-089C	5YR8/1	
		C 20% Shale, as 1301-089A	N3	5.20
1301-092	2725m	A 75% Silty shale, as 1301-089B	N4-5	3.34, 3.36
		B 20% Sandstone, as 1301-089C	5YR8/1	
		C <5% Shale, as 1301-089A	N3	5.33
1301-093	2727m	A 75% Sand, fine grained, subangular to subrounded, fairly well sorted, pinkish grey	5YR8/1	
		B 20% Silty shale, as 1301-089B	N4-5	3.78
		C 5% Shale, as 1301-089A	N3	4.30

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

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS



GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-094	2730m	A 65% Sandstone, dominantly unconsolidated, fine grained, subangular to subrounded, fairly well sorted, white to pinkish grey	N9-5YR8/1	
		B 25% Silty shale, platy, mod. hard, non-calc., medium dark grey to medium grey	N4-5	3.57
		C 10% Shale, carbonaceous, fissile to subfissile, mod. hard, non-calc., dark grey	N3	4.86
1301-095	2732m	A 90% Sandstone, as 1301-094A	N9-5YR8/1	
		B<10% Shale, sl. silty, sl. carbonaceous, subfissile to fissile, mod. hard, non-calc., dark grey to medium dark grey	N3-4	4.66,4.67
1301-096	2735m	A 90% Sandstone, as 1301-094A	N9-5YR8/1	
		B<10% Shale, as 1301-095B Minor coal	N3-4	
1301-097	2737m	A 80% Sandstone, generally unconsolidated, fine to medium grained, subangular to subrounded, fairly well sorted, pinkish grey	5YR8/1	
		B 20% Shale, as 1301-095B	N3-4	1.32
1301-098	2740m	A 80% Sandstone, as 1301-097A	5YR8/1	
		B 20% Shale, as 1301-095B	N3-4	1.58
1301-099	2742m	A 60% Sandstone, fine grained, subangular to subrounded, fairly well sorted, sl. arg. in part, generally pinkish grey	gen. 5YR8/1	
		B 25% Shale, as 1301-095B	N3-4	2.29
		C 15% Siltstone, sl. aren., sub-platy, mod. hard, non-calc., medium grey to medium light grey	N5-6	2.21,2.18
1301-100	2745m	A 65% Sandstone, as 1301-099A	gen. 5YR8/1	
		B 20% Shale, as 1301-095B	N3-4	1.60
		C 15% Siltstone, as 1301-099C	N5-6	2.72
1301-101	2747m	A 70% Sandstone, as 1301-099A	gen. 5YR8/1	
		B 20% Shale, as 1301-095B	N3-4	1.80
		C 10% Siltstone, as 1301-099C	N5-6	2.35
1301-102	2750m	A 75% Sandstone, as 1301-099A	gen. 5YR8/1	
		B 25% Shale, grading to silty shale, subfissile, mod. hard, non-calc., medium dark grey to medium grey	N4-5	1.70,1.67

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

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS



GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-103	2752m	A 70% Sandstone, fine grained, subangular to subrounded, fairly well sorted, sl. arg. in part, generally pinkish grey	gen. 5YR8/1	
		B 30% Shale, grading to silty shale, subfissile, mod. hard, non-calc., medium dark grey to medium grey	N4-5	1.13
1301-104	2755m	A 75% Sandstone, fine grained, subangular, fairly well sorted, sl. arg., v. light grey	N8	
		B 25% Shale, as 1301-103B	N4-5	1.19
1301-105	2757m	A 75% Sandstone, as 1301-104A	N8	
		B 25% Shale, as 1301-103B	N4-5	1.14
1301-106	2760m	A 55% Shale, as 1301-103B	N4-5	1.14, 1.18
		B 45% Sandstone, as 1301-104A Minor arg. sandstone	N8	
1301-107	2762m	A 40% Sandstone, as 1301-104A	N8	
		B 30% Shale, as 1301-103B	N4-5	1.65
		C 30% Sandstone, v. fine grained, micaceous, mod. sorted, arg., medium brownish grey	5YR5/1	
1301-108	2765m	A 40% Sandstone, as 1301-104A	N8	
		B 30% Shale, as 1301-103B	N4-5	0.81
		C 30% Sandstone, as 1301-107C	5YR5/1	
1301-109	2767m	A 40% Sandstone, as 1301-104A	N8	
		B 35% Shale, as 1301-103B	N4-5	1.27
		C 25% Sandstone, as 1301-107C	5YR5/1	
1301-110	2770m	A 55% Sandstone, partly unconsolidated, fine grained, subangular, mod. sorted, sl. arg., v. light grey to white	N8-9	
		B 45% Silty shale, grading to siltstone, subfissile to platy, mod. hard, non-calc., micaceous, medium dark grey Minor shale	N4	2.42
1301-111	2772m	A 65% Silty shale, as 1301-110B	N4	4.77
		B 35% Sandstone, as 1301-110A Minor shale	N8-9	
1301-112	2775m	A 60% Silty shale, as 1301-110B	N4	3.95, 3.91
		B 40% Sandstone, as 1301-110A Minor shale	N8-9	
1301-113	2777m	A 55% Sandstone, as 1301-110A	N8-9	
		B 45% Silty shale, as 1301-110B	N4	3.95

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

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS



GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-114	2780m	A 50% Sandstone, partly unconsolidated, fine grained, subangular, mod. sorted, sl. arg., v. light grey to white	N8-9	
		B 50% Silty shale, grading to siltstone, subfissile to platy, mod. hard, non-calc., micaceous, medium dark grey Minor shale	N4	4.33
1301-115	2782m	A 65% Sandstone, as 1301-0114A	N8-9	
		B 35% Silty shale, as 1301-114B	N4	4.22
1301-116	2785m	A 70% Sandstone, as 1301-0114A	N8-9	
		B 30% Silty shale, as 1301-114B	N4	3.62
1301-117	2787m	A 80% Sandstone, as 1301-0114A	N8-9	
		B 20% Silty shale, as 1301-114B	N4	3.14, 3.11
1301-118	2790m	A 85% Sandstone, as 1301-0114A	N8-9	
		B 15% Silty shale, as 1301-114B Minor carb. shale	N4	3.00
1301-119	2792m	A 90% Sandstone, partly unconsolidated, fine grained, subangular, mod. sorted, sl. arg., v. light grey to white	N8-9	
		B 10% Silty shale, sl. carbonaceous, subfissile to platy, mod. hard, non-calc., medium dark grey Minor shale	N4	3.94
1301-120	2795m	A 80% Sandstone, as 1301-119A	N8-9	
		B 20% Siltstone, sl. aren., sl. carbonaceous, sub-platy, mod. hard, non-calc., medium dark grey	N4	3.59
1301-121	2797m	A 85% Sandstone, as 1301-119A	N8-9	
		B 15% Siltstone, as 1301-120B	N4	2.86
1301-122	2800m	A 90% Sandstone, as 1301-119A	N8-9	
		B 10% Siltstone, as 1301-120B Minor other sandstone	N4	3.18
1301-123	2802m	A 90% Sandstone, as 1301-119A	N8-9	
		B <10% Siltstone, as 1301-120B Minor sandstone	N4	2.94, 2.95
1301-124	2805m	A 95% Sandstone, as 1301-119A	N8-9	
		B <5% Siltstone, as 1301-120B	N4	2.76
1301-125	2807m	A 95% Sandstone, as 1301-119A	N8-9	
		B <5% Siltstone, as 1301-120B	N4	3.08
1301-126	2810m	A 90% Sandstone, as 1301-119A	N8-9	
		B <10% Siltstone, as 1301-120B	N4	3.95

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

**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**



GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1301-127	2812m	A 90% Sandstone, partly unconsolidated, fine grained, subangular, mod. sorted, sl. arg., v. light grey to white B <10% Silty shale, sl. carbonaceous, subfissile to platy, mod. hard, non-calc., medium dark grey	N8-9  N4	4.46
1301-128	2815m	A 95% Sandstone, as 1301-127A B <5% Silty shale, as 1301-127B	N8-9 N4	7.05, 7.10
1301-129	2817m	A 95% Sandstone, as 1301-127A B <5% Silty shale, as 1301-127B Minor coal	N8-9 N4	4.49
1301-130	2820m	A 95% Sandstone, as 1301-127A B <5% Silty shale, as 1301-127B	N8-9 N4	4.40

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





TABLE 2

## ROCKEVAL PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Production INDEX	Hydrogen INDEX	Oxygen INDEX	Tmax (° C)
1301-001A	2418.80	0.21	0.84	0.31	0.20	125.4	46.3	442
1301-002A	2475.10	0.29	4.34	0.32	0.06	261.4	19.3	444
1301-003A	2475.50	0.14	0.79	0.46	0.15	127.4	74.2	442
1301-004A	2480.50	0.35	7.83	0.16	0.04	337.5	6.9	444
1301-005A	2482.40	0.20	2.49	0.25	0.07	264.9	26.6	445
1301-006A	2482.90	0.89	24.82	0.40	0.03	586.8	9.5	449
1301-007A	2484.00	0.21	3.05	0.21	0.06	305.0	21.0	446
1301-008A	2485.40	0.45	6.07	0.31	0.07	252.9	12.9	445
1301-009A	2486.00	0.59	8.32	0.29	0.07	338.2	11.8	442
1301-010A	2486.50	0.26	5.46	0.24	0.05	436.8	19.2	446
1301-011A	2487.50	0.52	14.73	0.26	0.03	568.7	10.0	448
1301-012A	2490.40	0.23	1.78	0.30	0.11	166.4	28.0	443
1301-013A	2490.80	1.29	30.28	0.64	0.04	502.2	10.6	447
1301-014A	2493.70	0.21	1.38	0.31	0.13	150.0	33.7	446
1301-015A	2496.40	0.42	3.69	0.25	0.10	226.4	15.3	442
1301-016A	2500.50	0.70	12.60	0.29	0.05	512.2	11.8	447
1301-017A	2502.00	0.67	7.43	0.62	0.08	340.8	28.4	445
1301-018B	2507.25	0.68	5.99	0.33	0.10	231.3	12.7	440
1301-019A	2509.50	0.57	6.05	0.39	0.09	254.2	16.4	442
1301-020A	2511.35	0.60	3.76	0.72	0.14	257.5	49.3	444
1301-021A	2511.90	6.60	170.40	0.86	0.04	501.2	2.5	444
1301-022A	2521.40	1.26	14.34	1.02	0.08	311.7	22.2	445
1301-023A	2524.80	0.50	8.00	0.40	0.06	358.7	17.9	445
1301-024A	2529.10	0.12	1.25	0.15	0.09	166.7	20.0	445
1301-025A	2531.00	1.50	11.40	0.98	0.12	228.0	19.6	447
1301-026A	2532.90	0.31	2.96	0.59	0.09	197.3	39.3	440
1301-027A	2534.30	0.49	5.79	0.49	0.08	259.6	22.0	442
1301-028A	2536.30	0.22	2.11	0.30	0.09	188.4	26.8	443
1301-029A	2539.50	0.36	3.91	0.19	0.08	201.5	9.8	444
1301-030B	2543.50	0.43	5.74	0.28	0.07	221.6	10.8	445
1301-031A	2556.20	0.41	5.22	0.20	0.07	201.5	7.7	442
1301-032A	2557.10	0.61	9.24	0.29	0.06	244.4	7.7	444
1301-033A	2558.60	0.33	4.01	0.29	0.08	199.5	14.4	445
1301-034B	2580	0.33	0.77	0.54	0.30	72.6	50.9	443
1301-035B	2582	0.68	1.17	0.58	0.37	103.5	51.3	375
1301-036B	2585	0.43	0.91	0.55	0.32	68.9	41.7	323
1301-037B	2587	0.43	0.81	0.44	0.35	83.5	45.4	351
1301-038B	2590	0.33	0.75	0.51	0.31	68.8	46.8	377
1301-039C	2592	0.30	0.69	0.58	0.30	47.9	40.3	381
1301-040C	2595	0.25	1.10	0.94	0.19	87.3	74.6	443
1301-041C	2597	0.27	0.81	0.63	0.25	73.6	57.3	384
1301-042B	2600	0.42	0.95	0.45	0.31	81.2	38.5	383
1301-043B	2602	0.23	0.62	1.18	0.27	41.1	78.1	436
1301-044B	2605	0.30	1.03	0.61	0.23	58.2	34.5	440
1301-046B	2610	0.30	0.84	0.52	0.26	66.1	40.9	442
1301-048B	2615	0.40	2.65	0.43	0.13	97.1	15.8	441
1301-049B	2617	0.95	5.21	0.68	0.15	102.2	13.3	438
1301-050B	2620	0.40	1.03	0.40	0.28	69.6	27.0	436
1301-051C	2622	0.67	1.83	0.47	0.27	74.7	19.2	440
1301-052C	2625	0.61	2.23	0.57	0.21	89.6	22.9	442



TABLE 2

## ROCKEVAL PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Production INDEX	Hydrogen INDEX	Oxygen INDEX	Tmax (° C)
1301-054C	2630	0.32	0.71	0.54	0.31	59.2	45.0	375
1301-056C	2635	0.77	2.82	1.96	0.21	109.7	76.3	442
1301-057B	2637	0.90	6.16	0.39	0.13	191.3	12.1	442
1301-058B	2640	1.00	9.31	0.56	0.10	175.0	10.5	441
1301-059A	2642	0.25	0.82	0.50	0.23	71.3	43.5	438
1301-060A	2645	0.30	0.86	0.43	0.26	68.8	34.4	417
1301-061C	2647	0.46	0.72	0.54	0.39	63.2	47.4	375
1301-062C	2650	0.34	1.22	0.44	0.22	79.7	28.8	439
1301-063C	2652	0.47	1.06	0.29	0.31	77.4	21.2	439
1301-064C	2655	0.31	0.85	0.31	0.27	72.0	26.3	386
1301-065C	2657	5.93	148.25	2.12	0.04	358.1	5.1	442
1301-066B	2660	0.31	3.05	0.28	0.09	130.9	12.0	442
1301-066C	2660	4.01	87.32	1.13	0.04	321.6	4.2	445
1301-067B	2662	0.29	2.05	0.27	0.12	109.0	14.4	442
1301-067C	2662	2.81	61.93	1.30	0.04	300.6	6.3	443
1301-068B	2665	0.37	2.64	0.44	0.12	118.9	19.8	443
1301-069C	2667	0.33	1.48	0.28	0.18	93.1	17.6	443
1301-073B	2677	0.53	2.63	0.42	0.17	124.1	19.8	444
1301-074B	2680	0.68	5.48	0.40	0.11	165.1	12.0	443
1301-075B	2682	0.64	5.70	0.63	0.10	151.2	16.7	444
1301-075C	2682	0.53	4.49	0.61	0.11	155.9	21.2	441
1301-076B	2685	0.19	0.90	0.88	0.17	84.9	83.0	442
1301-076C	2685	0.35	1.94	0.58	0.15	86.6	25.9	448
1301-077C	2687	0.21	1.37	0.59	0.13	95.8	41.3	444
1301-078B	2690	0.08	0.88	1.94	0.08	55.7	122.8	445
1301-078C	2690	0.21	2.36	0.88	0.08	63.3	23.6	447
1301-079A	2692	0.10	0.51	0.85	0.16	48.1	80.2	441
1301-079C	2692	0.35	3.58	0.73	0.09	85.0	17.3	443
1301-080A	2695	0.05	0.22	2.23	0.19	13.4	136.0	444
1301-081A	2697	0.07	0.39	0.74	0.15	41.5	78.7	444
1301-082A	2700	0.06	0.31	1.19	0.16	26.7	102.6	450
1301-083A	2702	0.19	1.56	1.68	0.11	57.4	61.8	446
1301-083B	2702	0.32	0.92	0.64	0.26	63.0	43.8	446
1301-084A	2705	0.24	1.82	2.01	0.12	66.4	73.4	448
1301-084B	2705	0.34	0.82	0.46	0.29	58.6	32.9	439
1301-085A	2707	0.23	1.73	1.88	0.12	63.4	68.9	446
1301-085C	2707	0.29	1.50	1.17	0.16	59.8	46.6	444
1301-086A	2710	0.33	1.84	3.68	0.15	64.6	129.1	445
1301-086C	2710	0.76	10.33	0.76	0.07	194.9	14.3	446
1301-087A	2712	0.36	1.82	3.09	0.17	69.2	117.5	446
1301-087C	2712	0.75	8.80	0.99	0.08	140.6	15.8	443
1301-088A	2715	0.39	2.25	3.75	0.15	79.2	132.0	444
1301-088C	2715	0.75	6.17	3.77	0.11	132.1	80.7	444
1301-089A	2717	1.03	7.74	2.11	0.12	163.6	44.6	443
1301-089B	2717	0.44	2.93	2.03	0.13	91.0	63.0	443
1301-090A	2720	0.37	2.50	2.19	0.13	85.9	75.3	443
1301-091A	2722	0.25	2.08	1.08	0.11	75.6	39.3	446
1301-091C	2722	1.07	7.45	1.48	0.13	143.3	28.5	446
1301-092A	2725	0.35	2.63	2.03	0.12	78.5	60.6	444
1301-093B	2727	0.60	3.75	1.90	0.14	99.2	50.3	444



TABLE 2

## ROCKEVAL PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Production INDEX	Hydrogen INDEX	Oxygen INDEX	Tmax (° C)
1301-094B	2730	0.56	3.46	2.21	0.14	96.9	61.9	445
1301-094C	2730	1.15	7.23	1.35	0.14	148.8	27.8	445
1301-095B	2732	1.13	6.71	2.08	0.14	144.0	44.6	442
1301-096B	2735	0.73	2.21	1.28	0.25	108.9	63.1	441
1301-097B	2737	0.39	1.11	0.74	0.26	84.1	56.1	441
1301-098B	2740	0.43	1.30	1.23	0.25	82.3	77.8	440
1301-099B	2742	0.60	2.56	1.36	0.19	111.8	59.4	442
1301-099C	2742	0.23	1.47	1.44	0.14	67.1	65.8	443
1301-100B	2745	0.44	1.62	0.75	0.21	101.2	46.9	441
1301-100C	2745	0.28	1.83	1.67	0.13	67.3	61.4	444
1301-101B	2747	0.34	1.61	0.99	0.17	89.4	55.0	444
1301-102B	2750	0.26	1.33	1.54	0.16	79.2	91.7	444
1301-103B	2752	0.18	0.84	0.85	0.18	74.3	75.2	440
1301-104B	2755	0.19	0.86	1.74	0.18	72.3	146.2	444
1301-105B	2757	0.19	0.94	0.82	0.17	82.5	71.9	444
1301-106A	2760	0.16	0.71	1.57	0.18	61.2	135.3	442
1301-107B	2762	0.16	0.88	1.32	0.15	53.3	80.0	444
1301-108B	2765	0.16	0.66	0.45	0.20	81.5	55.6	443
1301-109B	2767	0.21	0.94	0.73	0.18	74.0	57.5	442
1301-110A	2770	0.29	2.74	0.83	0.10	113.2	34.3	443
1301-111A	2772	0.63	6.44	0.70	0.09	135.0	14.7	439
1301-112A	2775	0.45	4.84	0.09	0.09	123.2	2.3	440
1301-113B	2777	0.53	5.53	0.74	0.09	140.0	18.7	442
1301-114B	2780	0.64	6.03	0.53	0.10	139.3	12.2	443
1301-115B	2782	0.60	5.37	0.85	0.10	127.3	20.1	436
1301-116B	2785	0.47	3.57	1.45	0.12	98.6	40.1	440
1301-117B	2787	0.37	3.42	0.73	0.10	109.6	23.4	445
1301-118B	2790	0.47	3.52	0.78	0.12	117.3	26.0	441
1301-119B	2792	0.55	4.91	0.83	0.10	124.6	21.1	440
1301-120B	2795	0.63	4.03	0.73	0.14	112.3	20.3	443
1301-121B	2797	0.44	2.75	1.53	0.14	96.2	53.5	443
1301-122B	2800	0.46	3.33	0.80	0.12	104.7	25.2	444
1301-123B	2802	0.35	2.66	2.14	0.12	90.5	72.8	442
1301-124B	2805	0.39	2.86	0.77	0.12	103.6	27.9	440
1301-125B	2807	0.36	2.82	1.91	0.11	91.6	62.0	442
1301-126B	2810	0.59	6.19	0.73	0.09	156.7	18.5	439
1301-127B	2812	0.70	7.85	0.73	0.08	176.0	16.4	440
1301-128B	2815	0.88	15.89	0.92	0.05	224.8	13.0	439
1301-129B	2817	0.52	6.63	0.77	0.07	147.7	17.1	441
1301-130B	2820	0.72	8.20	1.08	0.08	186.4	24.5	440

TABLE 3  
GAS - OIL INDEX



GEOCHEM SAMPLE NUMBER	DEPTH	DRY GAS	WET GAS	GASOLINES KEROSENES	GAS OIL DISTILLATE	GAS-OIL INDEX
		% C <sub>1</sub>	% C <sub>2</sub> - C <sub>5</sub>	% C <sub>6</sub> - C <sub>14</sub>	% C <sub>15+</sub>	% C <sub>1</sub> - C <sub>5</sub> TOTAL
1301-002A	2475.10	13.18	29.15	47.88	9.80	42.33
1301-004A	2480.50	10.17	22.34	49.79	17.70	32.51
1301-005A	2482.40	13.70	33.46	47.61	5.24	47.16
1301-006A	2482.90	10.01	17.37	55.87	16.75	27.38
1301-007A	2484.00	14.24	31.71	48.72	5.32	45.95
1301-008A	2485.40	19.39	23.69	43.21	13.71	43.08
1301-009A	2486.00	14.78	20.08	56.30	8.83	34.87
1301-010A	2486.50	5.43	20.96	53.57	20.05	26.38
1301-011A	2487.50	7.77	15.56	54.23	22.44	23.33
1301-013A	2490.80	10.99	14.41	50.00	24.59	25.41
1301-015A	2496.40	15.82	24.98	48.05	11.15	40.80
1301-016A	2500.50	10.08	14.20	51.02	24.71	24.28
1301-017A	2502.00	11.23	23.13	50.86	14.78	34.36
1301-018B	2507.25	19.94	40.96	35.85	3.24	60.90
1301-019A	2509.50	17.50	36.97	40.16	5.37	54.47
1301-020A	2511.35	14.69	25.69	44.05	15.57	40.38
1301-022A	2521.40	19.19	36.89	38.34	5.58	56.08
1301-023A	2524.80	12.44	20.28	47.05	20.23	32.72
1301-025A	2531.00	23.83	24.87	41.78	9.52	48.70
1301-026A	2532.90	17.07	34.54	42.58	5.82	51.60
1301-027A	2534.30	16.64	23.97	43.38	16.01	40.61
1301-028A	2536.30	21.94	37.43	38.31	2.32	59.37
1301-029A	2539.50	21.49	26.70	41.96	9.85	48.19
1301-030B	2543.50	17.41	29.50	40.04	13.05	46.91
1301-031A	2556.20	23.23	17.53	41.38	17.86	40.76
1301-032A	2557.10	20.10	23.48	42.42	14.00	43.58
1301-033A	2558.60	20.04	31.30	43.11	5.56	51.34
1301-048B	2615	24.93	34.28	37.77	3.03	59.21
1301-049B	2617	20.62	18.03	40.99	20.37	38.64
1301-052C	2625	17.17	39.66	36.26	6.91	56.83
1301-056C	2635	14.13	46.65	33.55	5.66	60.78
1301-057B	2637	12.65	36.76	45.63	4.96	49.41
1301-058B	2640	19.90	30.80	45.17	4.13	50.70
1301-065C	2657	16.85	19.46	46.22	17.47	36.31
1301-066B	2660	22.21	41.19	34.52	2.08	63.40
1301-066C	2660	20.20	16.61	44.60	18.58	36.81
1301-067B	2662	15.60	28.47	39.42	16.51	44.07
1301-067C	2662	19.26	21.36	48.64	10.73	40.62
1301-068B	2665	25.86	47.01	17.52	9.60	72.88
1301-073B	2677	12.66	41.65	39.30	6.39	54.31
1301-074B	2680	31.68	30.39	32.77	5.16	62.07
1301-075B	2682	20.25	25.60	39.96	14.18	45.85
1301-075C	2682	21.48	24.20	40.48	13.84	45.69
1301-078C	2690	9.46	25.72	46.34	18.48	35.19
1301-079C	2692	26.99	29.45	37.81	5.75	56.44
1301-086C	2710	21.37	25.75	39.26	13.63	47.12
1301-087C	2712	22.46	22.82	43.01	11.70	45.29
1301-088A	2715	18.84	39.27	33.74	8.15	58.11
1301-088C	2715	14.75	39.17	28.85	17.23	53.91
1301-089A	2717	16.72	27.96	40.38	14.94	44.68

TABLE 3  
GAS - OIL INDEX



GEOCHEM SAMPLE NUMBER	DEPTH	DRY GAS	WET GAS	GASOLINES KEROSENES	GAS OIL DISTILLATE	GAS-OIL INDEX
		% C <sub>1</sub>	% C <sub>2</sub> - C <sub>5</sub>	% C <sub>6</sub> - C <sub>14</sub>	% C <sub>15+</sub>	$\frac{\% C_1 - C_5}{\text{TOTAL}}$
1301-089B	2717	23.66	27.10	38.09	11.15	50.76
1301-090A	2720	23.89	29.93	35.20	10.98	53.81
1301-091A	2722	19.18	31.16	40.01	9.66	50.33
1301-091C	2722	19.99	22.14	42.29	15.58	42.13
1301-092A	2725	18.75	29.32	39.03	12.89	48.07
1301-093B	2727	13.60	25.97	43.44	16.99	39.57
1301-094B	2730	19.63	30.86	37.55	11.96	50.49
1301-094C	2730	15.49	22.33	45.10	17.07	37.83
1301-095B	2732	23.74	17.97	47.25	11.04	41.71
1301-096B	2735	18.18	38.01	39.40	4.41	56.19
1301-099B	2742	16.71	39.52	38.55	5.23	56.22
1301-110A	2770	34.77	17.73	34.17	13.33	52.50
1301-111A	2772	10.10	31.22	36.59	22.09	41.32
1301-112A	2775	23.11	32.34	32.78	11.77	55.46
1301-113B	2777	22.40	18.03	39.97	19.59	40.44
1301-114B	2780	21.74	20.94	40.86	16.46	42.68
1301-115B	2782	14.54	47.31	37.12	1.03	61.85
1301-116B	2785	27.10	22.41	39.13	11.36	49.51
1301-117B	2787	22.00	46.34	27.44	4.22	68.34
1301-118B	2790	25.93	27.03	36.39	10.66	52.96
1301-119B	2792	21.39	27.43	36.07	15.11	48.82
1301-120B	2795	26.17	27.03	37.17	9.62	53.21
1301-121B	2797	20.66	28.27	37.34	13.73	48.93
1301-122B	2800	23.59	46.05	29.63	0.72	69.64
1301-123B	2802	24.37	32.73	31.73	11.17	57.10
1301-124B	2805	24.93	36.38	31.96	6.73	61.31
1301-125B	2807	22.22	23.64	43.42	10.72	45.86
1301-126B	2810	22.19	26.44	40.16	11.21	48.63
1301-127B	2812	20.87	30.92	34.94	13.26	51.80
1301-128B	2815	21.66	26.88	34.69	16.77	48.54
1301-129B	2817	21.52	22.73	43.02	12.73	44.25
1301-130B	2820	22.71	21.96	39.73	15.60	44.68

TABLE 4  
KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES >35%; 10-35%; <10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV ATION	THERMAL ALTERATION INDEX	1 - 10 SCALE
1301-001A CORE	2418.80m	W; I-H; (Al)	H at 2 to 2+	80	M	F-G	2	4
1301-002A CORE	2475.10m	W; H-I; (Al)	differentiation difficult	40	F-M/C	F	2	4
1301-004A CORE	2480.50m	W-H; -; I-Am	minor contamination	--	M	F-G	2	4
1301-011A CORE	2487.50m	H-W; -; I-Am	scattered contamination differentiation difficult	--	M	F-G	2	4
1301-013A CORE	2490.80m	H-W; -; Am-I	differentiation extremely difficult, sapropelisation	--	F-C	F	2	4
1301-016A CORE	2500.50m	H; W; I-Am		--	F-M/C	F-G	2/2 to 2+	4.5
1301-017A CORE	2502.00m	W-H; -; I (-Al-Am)		20	M-C	G	2	4
1301-019A CORE	2509.50m	W; H; I-Al		--	F-M	G	2	4
1301-020A CORE	2511.35m	W; H; I	contamination	20	F-M	F	2/2 to 2+	4.5
1301-021A CORE	2511.90m	W; H; I	differentiation difficult	--	F-M/C	F-G	2	4
1301-022A CORE	2521.40m	W; H; Am-I	differentiation difficult frequent sapropelisation	--	F-C	F	2	4
1301-023A CORE	2524.80m	W-H; -; Am-I	differentiation extremely difficult, sapropelisation	--	M-C	F	2/2 to 2+	4.5

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

preservation = Poor, Fair, Good size = Fine, Medium, Coarse

TAI SCALE 1 | 1+ to 2- | 2- | 2 | 2 to 2+ | 2+ to 3- | 3 | 3+ | 4 | 5  
1 - 10 SCALE 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10



TABLE 4

## KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES > 35%; 10-35%; < 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	THERMAL ALTERATION INDEX	1 - 10 SCALE
1301-024A CORE	2529.10m	W;H-I;Am		--	F-M	F-G	2	4
1301-025A CORE	2531.00m	-;Am*-H**~W;I	*degraded, frequently incompletely developed **includes material passing to amorphous	--	F	F-G	2	4
1301-026A CORE	2532.90m	W-H;I;Am		--	F-M	F	2 to 2+ max	5 max
1301-027A CORE	2534.30m	W-H;I;Am		--	F-M/C	F-G	2 to 2+ max	5 max
1301-028A CORE	2536.30m	-;W-H-I;Am		--	M	G	2 to 2+	5
1301-029A CORE	2539.50m	W;H-I;Am		--	M	G	2 to 2+	5
1301-031A CORE	2556.20m	W;H-I;Am		--	F-C	G	2 to 2+	5
1301-032A CORE	2557.10m	W;H-I;Am		--	F-M/C	G	2 to 2+	5
1301-033A CORE	2558.60m	W;H-I;Am		--	M	G	2 to 2+	5
1301-034B	2580m	W;I-H;Am		70	F-M	F-G	2 to 2+	5
1301-036B	2585m	(Am*;W-I-Al-H;-)	differentiation difficult *degraded, incompletely developed, unrecognisable	40	M-C	F-G	2 to 2+(?)	5(?)

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

preservation = Poor, Fair, Good size = Fine, Medium, Coarse

TA1 SCALE	1	1+ to 2-	2-	2	2 to 2+	2+ to 3-	3	3+	4	5
1 - 10 SCALE	1	2	3	4	5	6	7	8	9	10



TABLE 4  
KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES > 35%; 10-35%; < 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	THERMAL ALTERATION INDEX	1 - 10 SCALE
1301-040C	2595m	Am*;W-I;H-A1	differentiation difficult *degraded, frequently incompletely developed, not prime quality	45	F-C	P-F	2 to 2+	5
1301-042B	2600m	Am*;W-I;H-A1	*dark, degraded, poor quality - possibly contamination	20	F-M	P	2 to 2+(?)	5(?)
1301-044B	2605m	-;W-H-I;Am-A1	sapropelisation	45	F-C	F-G	2 to 2+	5
1301-048B	2615m	W-I;-;Am-H	contamination	70	F-M	F	2 to 2+	5
1301-049B	2617m	(W-Am*;H-I;A1)	differentiation difficult *dark, degraded, includes incompletely developed material	30	F-M	F	2 to 2+(?)	5(?)
1301-051C	2622m	W;Am*-H**;-I;A1	differentiation difficult *degraded, disseminated, includes incompletely developed material **includes material passing to amorphous	25	F-M	F	2 to 2+	5
1301-057B	2637m	Am*;W;I-H-A1	*degraded, not prime quality	15	F-C	F	2 to 2+	5
1301-058B	2640m	Am*;W-I;H-A1	*degraded, finely disseminated	--	F	F	2 to 2+	5
1301-060A	2645m	Am*;W-I;H-A1	*of variable quality, includes degraded, disseminated material	--	F-C	F	2 to 2+	5
1301-063C	2652m	W;H-I;Am		--	M-C	G	2 to 2+	5
1301-066B	2660m	-;W-I-H-Am*;-	*finely disseminated	--	F-M/C	F-G	2 to 2+	5
1301-068B	2665m	W;I-Am**;-H;-	*as 066B	--	F-M/C	F-G	2 to 2+	5

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

preservation = Poor, Fair, Good    size = Fine, Medium, Coarse

TAI SCALE    1 | 1+ to 2- | 2- | 2 | 2 to 2+ | 2+ to 3- | 3 | 3+ | 4 | 5  
1 - 10 SCALE    1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10





**TABLE 4**  
**KEROGEN TYPE AND MATURATION**

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES > 35%; 10-35%; < 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	THERMAL ALTERATION INDEX	1-10 SCALE
1301-073B	2677m	Am*-W;H-I;-	*degraded, includes incompletely developed material, not prime quality	--	F-M/C	F	2 to 2+	5
1301-074B	2680m	W;H*-I-Am*;-	*includes material passing to amorphous	--	F-M/C	F-G	2 to 2+	5
1301-075B	2682m	W;H-I;Am		--	F-C	F-G	2 to 2+	5
1301-078B	2690m	W-Am*;I-H;-	*degraded, disseminated, not prime quality	--	F-M	F	2 to 2+	5
1301-081A	2697m	W-I;H;Am		--	F-C	G	2 to 2+	5
1301-083A	2702m	W-I;Am-H;Al		--	F-M	F	2 to 2+(?)	5(?)
1301-085A	2707m	W;I-H;Am		--	F-C	F-G	2 to 2+	5
1301-086C	2710m	Am*;W-H;I	*degraded, includes incompletely developed material generally finely disseminated, not prime quality	--	F-C	F	2 to 2+	5
1301-089A	2717m	Am;W-H*;I-Al	*includes material passing to amorphous	--	F-C	F-G	2 to 2+	5
1301-090A	2720m	W-Am*;I-H*;-	*as 089A	--	F-C	F-G	2 to 2+	5
1301-091C	2722m	Am;W;I-H-Al		--	F-C	F-G	2 to 2+	5
1301-092A	2725m	Am*;W-I;H-Al	*as 086C	--	F-M/C	F	2 to 2+	5
1301-092C	2725m	Am;W-I;H-Al		--	F-C	G	2 to 2+	5
1301-094B	2730m	W;I-H*-Am*;-	*includes material passing to amorphous	--	F-C	G	2 to 2+/2+	5.2

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

preservation = Poor, Fair, Good    size = Fine, Medium, Coarse

TA1 SCALE	1	1+ to 2-	2-	2	2 to 2+	2+ to 3-	3	3+	4	5
1-10 SCALE	1	2	3	4	5	6	7	8	9	10



**TABLE 4**  
**KEROGEN TYPE AND MATURATION**

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION				THERMAL MATURATION		
		TYPES > 35%; 10-35%; < 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	THERMAL ALTERATION INDEX	1 - 10 SCALE
1301-095C	2732m	Am*;W;H-I-A1	*includes incompletely developed material	--	F-C	G	2 to 2+	5
1301-097B	2737m	-,Am *-I-W-H*;A1	*includes material passing to amorphous	--	M-C	G	2 to 2+/2+	5.2
1301-099B	2742m	Am*;W;I-H-A1	*generally degraded, disseminated, not prime quality	--	F-C	F	2 to 2+/2+	5.2
1301-101B	2747m	Am*;W-I;H-A1	*degraded, incompletely developed, not prime quality	--	F-M/C	F	2 to 2+(?)	5.2(?)
1301-106A	2760m	Am*;W-I-H*;A1	*includes material passing to amorphous	--	F-C	G	2 to 2+	5
1301-107A	2762m	-,Am*-W-I-H*;A1	*as 106A	--	F-M	F-G	2 to 2+	5
1301-109B	2767m	-,Am*-W-I-H*;A1	*as 106A	--	F-C	G	2 to 2+	5
1301-110B	2770m	W;I-H;Am	sapropelisation	--	F-C	F-G	2 to 2+/2+	5.2
1301-111A	2772m	-,Am*-W-H*-I;-	*as 106A	--	F-M/C	F	2 to 2+/2+	5.2
1301-113B	2777m	W;H-I;Am	sapropelisation	--	F-C	G	2 to 2+/2+	5.2
1301-114B	2780m	-,W-Am*-H*-I;-	*includes material passing to amorphous	--	F-C	F-G	2 to 2+	5
1301-116B	2785m	W;Am*-H*-I;-	*as 114B	--	F-M	F	2 to 2+	5
1301-118B	2790m	W;Am*-I-H;-	*degraded, frequently incompletely developed	--	F-M	F	2 to 2+	5
1301-120B	2795m	W;Am*-I-H;-	*as 118B	--	F-M	F	2 to 2+	5
1301-122B	2800m	W;I-Am*-H;-	*degraded, incompletely developed, poor quality	--	F-M	P-F	2+(?)	5.5(?)

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

preservation = Poor, Fair, Good    size = Fine, Medium, Coarse

TA1 SCALE	1	1 + to 2-	2-	2	2 to 2+	2+ to 3-	3	3+	4	5
1 - 10 SCALE	1	2	3	4	5	6	7	8	9	10



**TABLE 4**  
**KEROGEN TYPE AND MATURATION**

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES > 35%; 10-35%; < 10%	REMARKS	RE WORKED (%)	PARTICLE SIZE	PRESERV ATION	THERMAL ALTERATION INDEX	1 - 10 SCALE
1301-126B	2810m	Am*;W-H;I	*includes incompletely developed material	--	F-C	F	2 to 2+	5
1301-128B	2815m	-;Am*-W-H**-I;-	differentiation difficult *degraded, disseminated, relatively poor quality **includes material passing to amorphous	--	F-M	P-F	2 to 2+	5
1301-130B	2820m	Am*;W-I-H;-	*degraded, disseminated, includes incompletely developed material, not prime quality	--	F-M	F	2 to 2+/2+	5.2

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

preservation = Poor, Fair, Good    size = Fine, Medium, Coarse

TA1 SCALE	1	1 + to 2-	2-	2	2 to 2+	2+ to 3-	3	3+	4	5
1 - 10 SCALE	1	2	3	4	5	6	7	8	9	10





TABLE 5  
KEROGEN COMPOSITION

GEOCHEM SAMPLE NUMBER	DEPTH (M)	VISUAL ESTIMATE (%)				
		Am	Al	H	W	I
<u>WELL 7120/6-1</u>						
1301-001A	2418.80	-	1	10	55	35
1301-002A	2475.10	-	1	35	50	15
1301-004A	2480.50	1	-	45	50	<10
1301-011A	2487.50	1	-	55	40	<10
1301-013A	2490.80	<10	-	50	35	<10
1301-016A	2500.50	<10	-	55	35	<10
1301-017A	2502.00	1	1	35	50	<10
1301-019A	2509.50	-	1	25	70	<10
1301-020A	2511.35	-	-	30	60	<10
1301-021A	2511.90	-	-	35	60	<10
1301-022A	2521.40	<10	-	30	60	<10
1301-023A	2524.80	<10	-	35	55	<10
1301-024A	2529.10	1	-	30	50	20
1301-025A	2531.00	40	-	30	25	<10
1301-026A	2532.90	<10	-	35	40	20
1301-027A	2534.30	<10	-	35	50	10
1301-028A	2536.30	<10	-	35	35	25
1301-029A	2539.50	1	-	30	50	20
1301-031A	2556.20	<10	-	10	75	10
1301-032A	2557.10	<10	-	30	50	20
1301-033A	2558.60	1	-	30	45	25
1301-034B	2580	1	-	10	60	30
1301-036B	2585	(40	10	10	20	20)
1301-040C	2595	40	<10	<10	25	20
1301-042B	2600	70	<10	<10	15	10
1301-044B	2605	<10	<10	30	35	30
1301-048B	2615	<10	-	<10	50	35
1301-049B	2617	(35	<10	15	40	10)
1301-051C	2622	25	<10	20	40	15
1301-057B	2637	70	<10	<10	15	<10
1301-058B	2640	55	<10	<10	25	10
1301-060A	2645	55	<10	<10	15	15
1301-063C	2652	<10	-	30	45	25
1301-066B	2660	10	-	20	35	35
1301-068B	2665	20	-	20	40	20
1301-073B	2677	40	-	10	40	10
1301-074B	2680	10	-	20	50	20
1301-075B	2682	<10	-	25	45	20
1301-078B	2690	35	-	10	40	15
1301-081A	2697	<10	-	10	55	35
1301-083A	2702	15	1	10	40	35
1301-085A	2707	<10	-	20	45	30
1301-086C	2710	50	<10	10	30	<10
1301-089A	2717	60	<10	10	20	<10
1301-090A	2720	35	-	10	35	20
1301-091C	2722	60	<10	<10	20	<10



TABLE 5

KEROGEN COMPOSITION

GEOCHEM SAMPLE NUMBER	DEPTH (M)	VISUAL ESTIMATE (%)				
		Am	A1	H	W	I
<u>WELL 7120/6-1</u>						
1301-092A	2725	60	1	<10	20	10
1301-092C	2725	60	<10	<10	20	10
1301-094B	2730	20	-	20	40	20
1301-095C	2732	60	<10	<10	20	<10
1301-097B	2737	30	<10	10	30	30
1301-099B	2742	65	1	<10	20	<10
1301-101B	2747	50	<10	<10	25	10
1301-106A	2760	40	<10	10	25	15
1301-107A	2762	35	1	15	30	20
1301-109B	2767	40	<10	15	30	15
1301-110B	2770	<10	-	25	45	25
1301-111A	2772	35	-	20	35	10
1301-113B	2777	<10	-	30	40	20
1301-114B	2780	25	-	20	40	15
1301-116B	2785	30	-	15	40	15
1301-118B	2790	15	-	15	55	15
1301-120B	2795	30	-	15	40	15
1301-122B	2800	15	-	10	50	25
1301-126B	2810	55	-	10	25	<10
1301-128B	2815	35	-	20	35	10
1301-130B	2820	40	-	15	30	15



TABLE 6  
VITRINITE REFLECTANCE DATA

GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	AVERAGE REFLECTIVITY R <sub>o</sub> (%), (NUMBER OF PARTICLES)			REMARKS
			1	2	3	
1301-001A	2418.80m	KC	1.26 (18)			
1301-002A	2475.10m	KC	0.86 (11)	1.26 (4)		
1301-015A	2496.40m	KC	0.89 (3)			
1301-016A	2500.50m	KC	0.52 (11) 1.05 (5)	0.71 (13)	0.85 (16)	
1301-021A	2511.90m	KC	0.51 (57)			
1301-027A	2534.30m	KC	0.50 (12)	0.75 (10)	1.33 (11)	
1301-032A	2557.10m	KC	0.62 (4) 1.11 (7)	0.73 (16)	0.87 (13)	
1301-034B	2580m	WR	0.59 (14)	0.77 (30)	1.04 (1)	
1301-042B	2600m	WR	0.52 (11)	0.78 (12)	1.00 (19)	
1301-051C	2622m	KC	0.71 (17)			
1301-057B	2637m	WR	0.53 (1)	0.72 (36)	1.08 (1)	
1301-066C	2660m	KC	0.75 (22)	0.88 (19)		
1301-074B	2680m	KC	0.85 (30)			
1301-081A	2697m	WR	0.80 (3)	0.93 (11)	1.79 (4)	
1301-089A	2717m	KC	0.83 (30)			
1301-099B	2742m	WR	0.74 (14)			
1301-106A	2760m	KC	0.84 (18)			
1301-114B	2780m	KC	0.83 (30)			
1301-122B	2800m	KC	0.80 (23)	1.01 (1)		
1301-130B	2820m	KC	0.79 (30)			

CT—ditch cuttings; CO—core; WR—whole rock; KC—kerogen concentrate.

TABLE 7a  
CONCENTRATION (PPM) OF EXTRACTED C<sub>15+</sub> MATERIAL IN ROCK

JOB GEOCHEM SAMPLE NUMBER	LITHO	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
				Saturates	Aromatics	TOTAL	Precipitd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	TOTAL
1301-001A		2418.80	494	224	89	313	107	70	5	181
1301-002B		2475.10	1139	654	144	798	177	154	11	341
1301-003A		2475.50	910	422	116	537	230	136	7	373
1301-005A		2482.40	916	342	139	482	336	87	12	435
1301-006A		2482.90	1669	395	346	741	680	227	20	928
1301-007A		2484.00	1196	437	246	683	285	219	10	513
1301-008A		2485.40	1950	537	375	912	876	150	11	1037
1301-009A		2486.00	1755	480	320	799	755	190	10	955
1301-010A		2486.50	1150	390	246	636	300	204	9	513
1301-012A		2490.40	998	410	143	553	315	123	8	445
1301-013A		2490.80	589	181	109	289	226	69	4	299
1301-014A		2493.70	824	301	131	432	277	98	17	392
1301-015		2496.40	1432	510	202	712	552	158	9	720
1301-018A		2507.25	2286	885	341	1227	732	295	32	1059
1301-022B		2521.40	1609	539	254	793	591	214	11	816
1301-024B		2529.10	792	176	130	305	373	113	1	486
1301-026B		2532.90	948	246	128	374	456	113	6	574
1301-030A		2543.50	474	103	72	175	234	62	3	300
1301-031A		2556.20	489	103	83	186	230	67	6	303
1301-034A		2580	512	214	24	238	207	57	10	274
1301-035A		2582	1243	482	61	543	553	125	22	700
1301-036A		2585	962	287	63	351	387	205	19	611
1301-037A		2587	554	184	38	222	239	88	5	332
1301-038A		2590	513	202	40	242	179	88	4	271
1301-039A/B		2592	326	120	22	142	124	57	3	185
1301-040A/B		2595	614	218	46	264	237	109	4	350
1301-041A		2597	307	106	27	134	112	58	3	173
1301-042A		2600	380	171	34	205	136	36	4	175
1301-043A		2602	138	43	8	51	72	14	1	87
1301-044A		2605	3099	195	655	850	1705	529	15	2250
1301-045A		2607	170	65	10	75	70	23	2	95
1301-046A		2610	174	55	9	65	56	51	2	109
1301-047A		2612	202	66	12	78	98	25	1	124
1301-048A		2615	211	76	16	92	90	28	1	119
1301-049A		2617	413	118	22	140	221	48	3	273
1301-050A		2620	311	111	22	133	125	48	4	178
1301-051A		2622	351	100	32	132	164	49	7	219
1301-052A		2625	313	67	25	93	181	33	6	220
1301-053A		2627	281	81	29	110	128	36	6	171
1301-054A/B		2630	311	102	31	133	133	42	3	178
1301-055		2632	293	117	28	145	98	45	5	148
1301-056A/B		2635	436	161	45	206	163	57	10	230
1301-057A		2637	254	66	28	94	137	22	1	160
1301-058A		2640	634	85	31	115	471	41	7	519
1301-059B/C		2642	1409	161	168	329	762	303	14	1079
1301-060B/C		2645	299	88	19	107	150	41	2	193

S - shale, SS - sandstone, L - limestone, D - dolomite, M - mixed, see Table 1.

TABLE 7a  
CONCENTRATION (PPM) OF EXTRACTED C<sub>15+</sub> MATERIAL IN ROCK

JOB	LITHO	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
				Saturates	Aromatics	TOTAL	Preciptd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	TOTAL
1301-061A/B		2647	318	111	24	135	129	52	1	182
1301-062A/B		2650	445	76	20	96	300	46	2	349
1301-063A/B		2652	424	122	26	148	230	44	2	276
1301-064A/B		2655	412	137	33	170	159	81	2	242
1301-065A/B		2657	145	32	7	39	82	23	1	106
1301-066A		2660	316	89	18	107	165	42	2	208
1301-067A		2662	507	112	32	144	273	84	6	363
1301-068A		2665	315	77	19	95	181	38	1	220
1301-069A/B		2667	411	130	35	164	183	62	2	247
1301-070		2670	267	100	34	134	98	34	1	133
1301-071		2672	371	138	44	182	138	49	3	189
1301-072		2675	347	112	32	144	160	42	2	203
1301-073A		2677	154	64	15	79	54	20	1	75
1301-074A		2680	401	148	44	193	158	48	2	208
1301-075A		2682	353	134	34	168	141	42	2	185
1301-076A		2685	621	166	35	201	341	76	3	420
1301-077A		2687	620	239	43	282	252	80	6	337
1301-078A		2690	554	221	29	250	235	64	5	304
1301-079B		2692	493	175	40	215	215	60	3	278
1301-081B		2697	466	148	34	183	245	34	3	283
1301-084C		2705	1408	506	103	609	667	121	11	799
1301-085B		2707	817	299	45	344	393	76	4	473
1301-086B		2710	553	226	33	259	231	61	3	294
1301-087B		2712	426	144	25	170	209	43	4	256
1301-090B		2720	1061	333	70	404	456	193	9	658
1301-091B		2722	944	224	37	262	598	75	9	682
1301-092B		2725	958	283	48	331	494	127	6	627
1301-093A		2727	322	111	23	133	160	26	3	189
1301-094A		2730	758	242	51	293	278	177	10	465
1301-095A		2732	317	89	19	109	172	32	4	209
1301-096A		2735	513	181	25	207	259	42	4	306
1301-097A		2737	599	179	24	203	321	71	5	396
1301-098A		2740	371	80	14	94	246	29	3	277
1301-099A		2742	210	48	10	58	137	12	2	152
1301-100A		2745	236	49	13	62	135	36	3	174
1301-101A		2747	166	38	7	45	103	16	2	121
1301-102A		2750	232	50	8	59	148	22	3	174
1301-103A		2752	216	67	9	76	117	20	2	139
1301-104A		2755	502	149	47	196	271	31	4	306
1301-105A		2757	393	105	17	121	238	29	4	272
1301-106B		2760	287	98	15	113	149	22	4	175
1301-107A/C		2762	757	215	61	276	402	75	5	481
1301-108A		2765	468	185	27	212	223	31	2	256
1301-109B		2767	376	119	37	156	180	37	3	220
1301-110A		2770	462	159	24	183	251	24	3	278
1301-111B		2772	440	159	31	190	213	34	3	250
1301-112B		2775	757	243	49	292	407	53	4	465
1301-113A		2777	344	97	20	116	206	20	2	228
1301-114A		2780	429	167	30	198	195	30	6	231
1301-115A		2782	391	145	30	176	185	27	4	215

S - shale, SS - sandstone, L - limestone, D - dolomite, M - mixed, see Table 1.





TABLE 7a  
 CONCENTRATION (PPM) OF EXTRACTED C<sub>15+</sub> MATERIAL IN ROCK

JOB	LITHO	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
				Saturates	Aromatics	TOTAL	Precipitd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	TOTAL
1301-116A		2785	333	77	16	94	221	16	2	239
1301-117A		2787	378	125	25	150	205	21	2	228
1301-118A		2790	378	139	21	161	180	35	3	217
1301-119A		2792	493	192	25	216	238	36	3	277
1301-120A		2795	401	150	21	170	164	62	4	231
1301-121A		2797	411	167	34	201	172	36	2	210
1301-122A		2800	470	178	36	214	216	38	2	256
1301-123A		2802	432	188	41	229	151	48	4	203
1301-124A		2805	438	168	41	210	168	57	3	228
1301-125A		2807	425	136	46	182	166	67	11	244
1301-126A		2810	231	84	19	103	84	43	2	129
1301-127A		2812	606	218	90	308	241	49	8	298
1301-128A		2815	319	111	54	165	121	31	2	154
1301-129A		2817	405	125	58	183	178	42	3	223
1301-130A		2820	305	117	44	161	119	23	1	144

S — shale, SS — sandstone, L — limestone, D — dolomite, M — mixed, see Table 1.

TABLE 7b  
COMPOSITION (NORMALISED %) OF C<sub>15+</sub> MATERIAL

JOB	LITHO	DEPTH	HYDROCARBONS		NON HYDROCARBONS		
			Saturates	Aromatics	Precipd. Asphaltenes	Eluted NSO's	Non eluted NSO's
1301-001A		2418.80	45.41	17.96	21.59	14.11	0.93
1301-002B		2475.10	57.40	12.63	15.54	13.48	0.95
1301-003A		2475.50	46.34	12.70	25.23	14.93	0.80
1301-005A		2482.40	37.37	15.19	36.64	9.50	1.30
1301-006A		2482.90	23.69	20.71	40.75	13.62	1.23
1301-007A		2484.00	36.55	20.55	23.82	18.28	0.80
1301-008A		2485.40	27.53	19.26	44.94	7.69	0.58
1301-009A		2486.00	27.33	18.22	43.04	10.82	0.60
1301-010A		2486.50	33.96	21.40	26.13	17.70	0.80
1301-012A		2490.40	41.04	14.35	31.54	12.31	0.76
1301-013A		2490.80	30.73	18.44	38.44	11.67	0.73
1301-014A		2493.70	36.50	15.92	33.58	11.94	2.07
1301-015		2496.40	35.60	14.12	38.56	11.06	0.66
1301-018A		2507.25	38.74	14.94	32.02	12.89	1.41
1301-022B		2521.40	33.50	15.80	36.76	13.28	0.67
1301-024B		2529.10	22.20	16.36	47.08	14.29	0.07
1301-026B		2532.90	25.98	13.50	48.05	11.88	0.59
1301-030A		2543.50	21.69	15.12	49.43	13.14	0.63
1301-031A		2556.20	21.14	16.89	46.98	13.76	1.23
1301-034A		2580	41.81	4.68	40.35	11.11	2.05
1301-035A		2582	38.79	4.93	44.52	10.02	1.75
1301-036A		2585	29.88	6.60	40.24	21.34	1.94
1301-037A		2587	33.18	6.82	43.18	15.91	0.91
1301-038A		2590	39.39	7.77	34.81	17.20	0.83
1301-039A/B		2592	36.70	6.73	38.05	17.51	1.01
1301-040A/B		2595	35.49	7.51	38.57	17.75	0.68
1301-041A		2597	34.65	8.91	36.63	18.81	0.99
1301-042A		2600	44.92	8.92	35.69	9.54	0.92
1301-043A		2602	31.29	5.44	52.38	10.20	0.68
1301-044A		2605	6.29	21.13	55.02	17.07	0.49
1301-045A		2607	38.22	5.76	41.36	13.61	1.05
1301-046A		2610	31.82	5.37	32.23	29.34	1.24
1301-047A		2612	32.88	5.86	48.65	12.16	0.45
1301-048A		2615	36.22	7.57	42.43	13.24	0.54
1301-049A		2617	28.68	5.28	53.58	11.70	0.75
1301-050A		2620	35.81	7.10	40.32	15.48	1.29
1301-051A		2622	28.37	9.13	46.63	13.94	1.92
1301-052A		2625	21.52	8.10	57.72	10.63	2.03
1301-053A		2627	28.71	10.41	45.74	12.93	2.21
1301-054A/B		2630	32.72	9.93	42.65	13.60	1.10
1301-055		2632	40.05	9.44	33.42	15.31	1.79
1301-056A/B		2635	36.87	10.32	37.46	12.98	2.36
1301-057A		2637	26.00	11.00	54.00	8.50	0.50
1301-058A		2640	13.37	4.81	74.33	6.42	1.07
1301-059B/C		2642	11.43	11.95	54.10	21.50	1.02
1301-060B/C		2645	29.26	6.38	50.00	13.83	0.53

TABLE 7b  
COMPOSITION (NORMALISED %) OF C<sub>15+</sub> MATERIAL



JOB	LITHO	DEPTH	HYDROCARBONS		NON HYDROCARBONS		
			Saturates	Aromatics	Precipitd. Asphaltenes	Eluted NSO's	Non eluted NSO's
1301-061A/B		2647	35.05	7.48	40.65	16.36	0.47
1301-062A/B		2650	17.12	4.47	67.49	10.42	0.50
1301-063A/B		2652	28.82	6.16	54.19	10.34	0.49
1301-064A/B		2655	33.16	8.09	38.64	19.58	0.52
1301-065A/B		2657	21.90	5.11	56.20	16.06	0.73
1301-066A		2660	28.23	5.74	52.15	13.40	0.48
1301-067A		2662	22.05	6.30	53.94	16.54	1.18
1301-068A		2665	24.31	5.96	57.34	11.93	0.46
1301-069A/B		2667	31.51	8.40	44.54	15.13	0.42
1301-070		2670	37.58	12.74	36.50	12.74	0.43
1301-071		2672	37.06	11.92	37.06	13.22	0.74
1301-072		2675	32.34	9.14	46.05	11.95	0.53
1301-073A		2677	41.73	9.71	34.89	12.95	0.72
1301-074A		2680	37.01	11.02	39.37	12.07	0.52
1301-075A		2682	37.95	9.74	40.00	11.79	0.51
1301-076A		2685	26.67	5.64	54.87	12.31	0.51
1301-077A		2687	38.61	6.93	40.59	12.87	0.99
1301-078A		2690	39.82	5.31	42.48	11.50	0.88
1301-079B		2692	35.47	8.14	43.60	12.21	0.58
1301-081B		2697	31.85	7.41	52.59	7.41	0.74
1301-084C		2705	35.92	7.35	47.35	8.57	0.82
1301-085B		2707	36.61	5.46	48.09	9.29	0.55
1301-086B		2710	40.83	5.96	41.74	11.01	0.46
1301-087B		2712	33.90	5.93	49.15	10.17	0.85
1301-090B		2720	31.40	6.61	42.98	18.18	0.83
1301-091B		2722	23.76	3.96	63.37	7.92	0.99
1301-092B		2725	29.56	5.03	51.57	13.21	0.63
1301-093A		2727	34.36	7.05	49.78	7.93	0.88
1301-094A		2730	32.00	6.67	36.67	23.33	1.33
1301-095A		2732	28.19	6.04	54.36	10.07	1.34
1301-096A		2735	35.39	4.94	50.62	8.23	0.82
1301-097A		2737	29.92	3.94	53.54	11.81	0.79
1301-098A		2740	21.54	3.85	66.15	7.69	0.77
1301-099A		2742	22.77	4.95	65.35	5.94	0.99
1301-100A		2745	20.88	5.49	57.14	15.38	1.10
1301-101A		2747	22.97	4.05	62.16	9.46	1.35
1301-102A		2750	21.69	3.61	63.86	9.64	1.20
1301-103A		2752	31.25	4.17	54.17	9.38	1.04
1301-104A		2755	29.63	9.36	54.00	6.24	0.78
1301-105A		2757	26.60	4.26	60.64	7.45	1.06
1301-106B		2760	34.18	5.06	51.90	7.59	1.27
1301-107A/C		2762	28.40	8.02	53.09	9.88	0.62
1301-108A		2765	39.52	5.71	47.62	6.67	0.48
1301-109B		2767	31.71	9.76	47.97	9.76	0.81
1301-110A		2770	34.44	5.30	54.30	5.30	0.66
1301-111B		2772	36.13	7.10	48.39	7.74	0.65
1301-112B		2775	32.07	6.52	53.80	7.07	0.54
1301-113A		2777	28.12	5.73	59.90	5.73	0.52
1301-114A		2780	39.03	7.05	45.45	7.05	1.41
1301-115A		2782	37.16	7.80	47.25	6.88	0.92



TABLE 7b  
COMPOSITION (NORMALISED %) OF C<sub>15+</sub> MATERIAL

JOB		LITHO	DEPTH	HYDROCARBONS		NON HYDROCARBONS		
GEOCHEM SAMPLE NUMBER				Saturates	Aromatics	Precipd. Asphaltenes	Eluted NSO's	Non eluted NSO's
	1301-116A		2785	23.24	4.93	66.20	4.93	0.70
	1301-117A		2787	33.15	6.52	54.35	5.43	0.54
	1301-118A		2790	36.88	5.67	47.52	9.22	0.71
	1301-119A		2792	38.89	5.00	48.33	7.22	0.56
	1301-120A		2795	37.31	5.18	40.93	15.54	1.04
	1301-121A		2797	40.66	8.24	41.76	8.79	0.55
	1301-122A		2800	37.81	7.65	45.98	8.10	0.45
	1301-123A		2802	43.43	9.60	34.85	11.11	1.01
	1301-124A		2805	38.46	9.47	38.46	13.02	0.59
	1301-125A		2807	31.89	10.81	38.92	15.68	2.70
	1301-126A		2810	36.30	8.15	36.30	18.52	0.74
	1301-127A		2812	36.03	14.81	39.73	8.08	1.35
	1301-128A		2815	34.74	17.06	37.87	9.70	0.63
	1301-129A		2817	30.79	14.27	43.93	10.39	0.63
	1301-130A		2820	38.44	14.40	39.05	7.66	0.46

S - shale, SS - sandstone, L - limestone, D - dolomite, M - mixed, see Table 1.

TABLE 8  
SIGNIFICANT RATIOS (%) OF C<sub>15+</sub> FRACTIONS AND ORGANIC CARBON

JOB	LITHO	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS TOTAL EXTRACT	HYDROCARBONS ORG. CARBON	TOTAL EXTRACT ORG. CARBON	SATURATES AROMATICS
GEOCHEM SAMPLE NUMBER							
1301-001A		2418.80	0.84	63.38	3.72	5.88	2.53
1301-002B		2475.10	0.25	70.03	31.91	45.56	4.54
1301-003A		2475.50	0.43	59.04	12.50	21.17	3.65
1301-005A		2482.40	0.85	52.56	5.67	10.78	2.46
1301-006A		2482.90	3.59	44.40	2.06	4.65	1.14
1301-007A		2484.00	0.88	57.10	7.76	13.59	1.78
1301-008A		2485.40	1.70	46.79	5.37	11.47	1.43
1301-009A		2486.00	1.70	45.55	4.70	10.32	1.50
1301-010A		2486.50	1.05	55.36	6.06	10.95	1.59
1301-012A		2490.40	0.68	55.39	8.13	14.68	2.86
1301-013A		2490.80	3.48	49.17	0.83	1.69	1.67
1301-014A		2493.70	0.72	52.41	6.00	11.44	2.29
1301-015		2496.40	0.91	49.72	7.83	15.74	2.52
1301-018A		2507.25	1.17	53.67	10.49	19.54	2.59
1301-022B		2521.40	1.39	49.29	5.71	11.57	2.12
1301-024B		2529.10	0.58	38.56	5.26	13.65	1.36
1301-026B		2532.90	0.62	39.47	6.04	15.30	1.92
1301-030A		2543.50	0.44	36.81	3.97	10.78	1.43
1301-031A		2556.20	3.07	38.03	0.61	1.59	1.25
1301-034A		2580	0.38	46.49	6.26	13.47	8.94
1301-035A		2582	0.24	43.72	22.64	51.80	7.87
1301-036A		2585	0.15	36.48	23.39	64.11	4.53
1301-037A		2587	0.10	40.00	22.17	55.42	4.87
1301-038A		2590	0.12	47.16	20.18	42.79	5.07
1301-039A/B		2592	0.13	43.43	10.90	25.11	5.45
1301-040A/B		2595	0.27	43.00	9.78	22.75	4.73
1301-041A		2597	0.29	43.56	4.61	10.59	3.89
1301-042A		2600	0.25	53.85	8.19	15.20	5.03
1301-043A		2602	0.23	36.73	2.20	6.00	5.75
1301-044A		2605	0.24	27.41	35.40	129.14	0.30
1301-045A		2607	0.17	43.98	4.39	9.98	6.64
1301-046A		2610	0.16	37.19	4.05	10.88	5.92
1301-047A		2612	0.16	38.74	4.88	12.60	5.62
1301-048A		2615	0.12	43.78	7.71	17.60	4.79
1301-049A		2617	0.18	33.96	7.79	22.93	5.43
1301-050A		2620	0.19	42.90	7.02	16.36	5.05
1301-051A		2622	0.29	37.50	4.54	12.11	3.11
1301-052A		2625	0.30	29.62	3.09	10.43	2.66
1301-053A		2627	0.18	39.12	6.10	15.59	2.76
1301-054A/B		2630	0.14	42.65	9.47	22.20	3.30
1301-055		2632	0.32	49.49	4.53	9.15	4.24
1301-056A/B		2635	0.43	47.20	4.78	10.13	3.57
1301-057A		2637	0.53	37.00	1.78	4.80	2.36
1301-058A		2640	0.27	18.18	4.27	23.48	2.78
1301-059B/C		2642	0.37	23.38	8.90	38.07	0.96
1301-060B/C		2645	0.38	35.64	2.81	7.88	4.58

**TABLE 8**  
**SIGNIFICANT RATIOS (%) OF C<sub>15+</sub> FRACTIONS AND ORGANIC CARBON**

JOB	LITHO	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS	HYDROCARBONS	TOTAL EXTRACT	SATURATES
GEOCHEM SAMPLE NUMBER				TOTAL EXTRACT	ORG. CARBON	ORG. CARBON	AROMATICS
1301-061A/B		2647	0.28	42.52	4.82	11.34	4.69
1301-062A/B		2650	0.28	21.59	3.43	15.89	3.83
1301-063A/B		2652	0.32	34.98	4.64	13.26	4.68
1301-064A/B		2655	0.31	41.25	5.49	13.30	4.10
1301-065A/B		2657	0.12	27.01	3.27	12.11	4.29
1301-066A		2660	0.09	33.97	11.92	35.08	4.92
1301-067A		2662	0.08	28.35	17.96	63.37	3.50
1301-068A		2665	0.16	30.28	5.96	19.69	4.08
1301-069A/B		2667	0.25	39.92	6.56	16.44	3.75
1301-070		2670	0.54	50.32	2.49	4.95	2.95
1301-071		2672	0.44	48.98	4.13	8.43	3.11
1301-072		2675	0.33	41.48	4.37	10.53	3.54
1301-073A		2677	0.25	51.44	3.17	6.16	4.30
1301-074A		2680	0.30	48.03	6.42	13.37	3.36
1301-075A		2682	0.09	47.69	18.72	39.25	3.89
1301-076A		2685	0.11	32.31	18.24	56.46	4.73
1301-077A		2687	0.86	45.54	3.28	7.21	5.57
1301-078A		2690	0.14	45.13	17.86	39.57	7.50
1301-079B		2692	0.16	43.60	13.43	30.80	4.36
1301-081B		2697	0.14	39.26	13.05	33.25	4.30
1301-084C		2705	0.43	43.27	14.17	32.75	4.89
1301-085B		2707	0.39	42.08	8.81	20.95	6.70
1301-086B		2710	0.38	46.79	6.81	14.56	6.85
1301-087B		2712	0.24	39.83	7.07	17.75	5.71
1301-090B		2720	0.29	38.02	13.91	36.60	4.75
1301-091B		2722	0.34	27.72	7.70	27.76	6.00
1301-092B		2725	0.35	34.59	9.47	27.37	5.88
1301-093A		2727	0.63	41.41	2.12	5.11	4.87
1301-094A		2730	0.28	38.67	10.46	27.06	4.80
1301-095A		2732	0.26	34.23	4.17	12.19	4.67
1301-096A		2735	0.27	40.33	7.66	18.99	7.17
1301-097A		2737	0.26	33.86	7.80	23.04	7.60
1301-098A		2740	0.16	25.38	5.89	23.21	5.60
1301-099A		2742	0.11	27.72	5.30	19.13	4.60
1301-100A		2745	0.13	26.37	4.78	18.13	3.80
1301-101A		2747	0.19	27.03	2.36	8.73	5.67
1301-102A		2750	0.27	25.30	2.18	8.61	6.00
1301-103A		2752	0.36	35.42	2.12	5.99	7.50
1301-104A		2755	0.33	38.98	5.93	15.20	3.17
1301-105A		2757	0.29	30.85	4.18	13.56	6.25
1301-106B		2760	0.32	39.24	3.52	8.98	6.75
1301-107A/C		2762	0.27	36.42	10.21	28.04	3.54
1301-108A		2765	0.34	45.24	6.22	13.76	6.92
1301-109B		2767	0.27	41.46	5.78	13.93	3.25
1301-110A		2770	0.25	39.74	7.34	18.47	6.50
1301-111B		2772	0.30	43.23	6.34	14.68	5.09
1301-112B		2775	0.26	38.59	11.24	29.12	4.92
1301-113A		2777	0.30	33.85	3.88	11.47	4.91
1301-114A		2780	0.29	46.08	6.82	14.80	5.53
1301-115A		2782	0.38	44.95	4.62	10.28	4.76

**TABLE 8**  
**SIGNIFICANT RATIOS (%) OF C<sub>15+</sub> FRACTIONS AND ORGANIC CARBON**

JOB	LITHO	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS		TOTAL EXTRACT ORG. CARBON	SATURATES AROMATICS
GEOCHEM SAMPLE NUMBER				TOTAL EXTRACT	ORG. CARBON		
1301-116A		2785	0.28	28.17	3.35	11.90	4.71
1301-117A		2787	0.39	39.67	3.84	9.69	5.08
1301-118A		2790	0.26	42.55	6.19	14.54	6.50
1301-119A		2792	0.26	43.89	8.32	18.97	7.78
1301-120A		2795	0.32	42.49	5.33	12.54	7.20
1301-121A		2797	0.28	48.90	7.18	14.67	4.93
1301-122A		2800	0.18	45.47	11.86	26.09	4.94
1301-123A		2802	0.18	53.03	12.74	24.02	4.53
1301-124A		2805	0.16	47.93	13.12	27.36	4.06
1301-125A		2807	0.13	42.70	13.97	32.71	2.95
1301-126A		2810	0.42	44.44	2.45	5.51	4.45
1301-127A		2812	0.12	50.84	25.68	50.51	2.43
1301-128A		2815	0.42	51.80	3.94	7.61	2.04
1301-129A		2817	0.29	45.06	6.30	13.98	2.16
1301-130A		2820	0.27	52.83	5.97	11.31	2.67



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-001A	-002B	-003A	-005A	-006A	-007A	-008A	-009A
DEPTH	2418. 80m	2475. 10m	2475. 50m	2482. 40m	2482. 90m	2484. 00m	2485. 40m	2486. 00m
SAMPLE TYPE								
nC <sub>15</sub>	9.61	7.47	12.12	8.02	20.58	5.28	12.25	9.53
nC <sub>16</sub>	10.01	5.72	8.97	6.36	16.76	6.07	10.06	9.28
nC <sub>17</sub>	9.46	5.56	8.05	5.90	14.11	6.38	7.77	7.86
nC <sub>18</sub>	8.51	6.21	8.23	6.49	11.29	7.18	7.57	7.27
nC <sub>19</sub>	8.27	5.72	7.77	6.49	8.30	7.48	6.67	6.52
nC <sub>20</sub>	7.49	6.81	7.96	7.36	6.31	8.22	6.27	6.44
nC <sub>21</sub>	6.86	6.27	7.96	7.36	4.65	6.69	6.08	6.10
nC <sub>22</sub>	6.38	6.32	6.94	6.36	3.65	7.06	5.78	6.19
nC <sub>23</sub>	6.15	5.72	6.11	6.43	2.99	6.99	5.98	5.94
nC <sub>24</sub>	5.20	5.83	5.64	6.36	2.66	6.38	5.58	5.02
nC <sub>25</sub>	4.89	5.72	4.63	5.70	2.16	5.21	5.28	4.52
nC <sub>26</sub>	3.94	5.94	3.61	4.31	1.49	5.09	4.38	4.26
nC <sub>27</sub>	3.23	5.34	2.96	5.24	1.33	4.05	3.78	4.60
nC <sub>28</sub>	2.36	4.69	1.94	4.11	1.00	4.23	2.99	3.26
nC <sub>29</sub>	2.13	5.34	1.76	4.57	0.66	3.93	2.49	3.51
nC <sub>30</sub>	1.50	3.71	1.39	3.11	0.50	2.82	1.79	2.93
nC <sub>31</sub>	1.26	2.56	1.20	2.25	0.50	2.58	1.59	2.51
nC <sub>32</sub>	0.87	1.63	0.93	1.46	0.33	1.66	1.10	1.51
nC <sub>33</sub>	0.87	1.85	0.83	1.19	0.33	1.35	1.20	1.42
nC <sub>34</sub>	0.71	0.93	0.65	0.53	0.25	0.67	0.90	0.84
nC <sub>35</sub>	0.32	0.65	0.37	0.40	0.17	0.67	0.50	0.50
PARAFFIN	40.47	54.66	42.29	56.01	29.98	60.26	36.17	50.17
ISOPRENOID	3.41	3.34	2.93	3.16	2.84	2.77	2.59	2.85
NAPHTHENE	56.12	42.00	54.77	40.83	67.18	36.97	61.24	46.98
CPI INDEX 1	1.05	0.97	1.05	1.09	1.03	0.93	1.04	1.05
CPI INDEX 2	1.11	1.06	1.09	1.18	1.11	1.00	1.09	1.12
CPI INDEX 3	1.02	1.01	1.07	1.24	1.07	0.87	1.03	1.22
PRISTANE/PHYTANE	1.61	1.33	2.13	2.70	1.85	3.17	1.88	2.40
PRISTANE/nC <sub>17</sub>	0.55	0.63	0.59	0.70	0.44	0.55	0.60	0.51

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2 \times (C_{27})}{C_{26}+C_{28}}$$





**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-010A	-012A	-013A	-014A	-015	-018A+B	-022B	-024B
DEPTH	2486. 50m	2490. 40m	2490. 80m	2493. 70m	2496. 40m	2507. 25m	2521. 40m	2529. 10m
SAMPLE TYPE								
nC <sub>15</sub>	11.74	6.77	0.45	9.04	7.91	12.53	7.44	17.57
nC <sub>16</sub>	9.52	7.61	3.85	8.83	6.69	8.32	7.38	12.01
nC <sub>17</sub>	8.50	7.31	8.37	8.34	6.88	7.08	6.82	8.78
nC <sub>18</sub>	8.32	7.78	9.13	8.07	7.78	6.98	6.63	9.22
nC <sub>19</sub>	7.67	7.61	8.52	7.79	7.52	6.47	8.06	7.03
nC <sub>20</sub>	7.02	7.43	8.22	7.58	6.75	6.47	7.50	7.03
nC <sub>21</sub>	6.75	6.30	7.24	7.51	6.62	6.06	6.88	6.00
nC <sub>22</sub>	6.19	6.24	7.09	6.40	6.17	5.65	7.69	5.12
nC <sub>23</sub>	5.91	6.65	7.16	5.77	7.20	5.85	7.01	5.42
nC <sub>24</sub>	4.90	6.18	6.86	5.15	5.85	5.34	5.83	4.25
nC <sub>25</sub>	4.53	5.64	6.64	4.45	5.40	5.13	5.64	3.37
nC <sub>26</sub>	3.79	4.81	5.43	3.55	4.24	4.52	4.46	2.78
nC <sub>27</sub>	3.23	4.99	4.98	3.34	4.69	3.90	5.08	2.64
nC <sub>28</sub>	2.31	3.57	4.07	2.78	3.54	3.80	3.35	1.90
nC <sub>29</sub>	2.22	3.45	3.62	2.64	3.47	2.98	3.16	1.76
nC <sub>30</sub>	1.57	2.50	2.41	2.16	2.77	2.16	2.36	1.17
nC <sub>31</sub>	1.48	2.02	2.04	1.95	2.44	1.85	1.98	1.02
nC <sub>32</sub>	1.29	1.25	1.21	1.46	1.61	1.44	0.99	0.88
nC <sub>33</sub>	1.48	0.95	1.21	1.60	1.29	1.54	0.99	0.88
nC <sub>34</sub>	0.83	0.59	0.98	0.90	0.64	1.23	0.43	0.73
nC <sub>35</sub>	0.74	0.36	0.53	0.70	0.51	0.72	0.31	0.44
PARAFFIN	38.34	56.29	29.24	48.61	57.87	40.72	70.56	37.40
ISOPRENOID	2.13	3.91	2.03	3.04	3.42	2.84	4.94	1.81
NAPHTHENE	59.53	39.80	68.73	48.34	38.70	56.44	24.50	60.79
CPI INDEX 1	1.06	1.05	1.03	1.05	1.12	1.02	1.06	1.07
CPI INDEX 2	1.10	1.14	1.12	1.08	1.15	1.02	1.21	1.09
CPI INDEX 3	1.06	1.19	1.05	1.05	1.21	0.94	1.30	1.12
PRISTANE/PHYTANE	1.86	1.79	1.04	3.50	3.00	1.43	3.71	2.00
PRISTANE/nC <sub>17</sub>	0.42	0.61	0.42	0.58	0.64	0.58	0.81	0.37

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-026B	-030A	-031A	-034A	-035A	-036A	-037A	-038A
DEPTH	2532. 90m	2543. 50m	2556. 20m	2580m	2582m	2585m	2587m	2590m
SAMPLE TYPE								
nC <sub>15</sub>	20.56	13.51	15.16	8.27	6.85	0.98	0.99	3.93
nC <sub>16</sub>	13.49	10.91	13.79	12.22	8.27	5.00	3.54	8.51
nC <sub>17</sub>	9.64	9.56	10.19	12.03	8.86	8.70	6.67	8.62
nC <sub>18</sub>	9.48	11.23	11.18	13.44	10.69	14.67	9.88	14.50
nC <sub>19</sub>	7.71	9.15	7.33	9.59	9.69	12.72	8.89	11.12
nC <sub>20</sub>	7.07	8.73	6.34	7.80	9.19	13.80	9.47	11.67
nC <sub>21</sub>	5.78	7.07	6.58	6.30	7.02	9.78	7.49	7.74
nC <sub>22</sub>	5.30	5.93	6.84	4.70	5.93	7.50	6.75	6.76
nC <sub>23</sub>	4.02	4.89	4.35	3.76	4.85	5.87	5.68	5.45
nC <sub>24</sub>	3.53	4.78	3.73	3.20	4.59	3.91	6.09	4.03
nC <sub>25</sub>	3.05	3.53	3.23	3.29	4.34	3.15	6.26	2.94
nC <sub>26</sub>	2.41	2.39	3.11	3.10	3.68	2.50	4.94	2.51
nC <sub>27</sub>	1.93	2.08	2.61	2.26	3.51	2.50	4.94	2.18
nC <sub>28</sub>	1.61	1.46	1.86	2.54	2.09	1.96	3.70	2.29
nC <sub>29</sub>	1.61	1.35	2.36	2.26	2.92	2.50	4.53	2.07
nC <sub>30</sub>	0.96	0.83	1.12	1.41	1.42	0.98	2.30	0.98
nC <sub>31</sub>	0.80	0.73	0.87	1.22	1.59	1.20	2.55	1.64
nC <sub>32</sub>	0.48	0.52	0.50	0.75	1.34	0.54	1.48	1.09
nC <sub>33</sub>	0.32	0.62	0.50	0.75	1.00	0.65	1.56	0.76
nC <sub>34</sub>	0.16	0.42	0.25	0.75	1.50	0.65	1.48	0.65
nC <sub>35</sub>	0.08	0.31	0.12	0.38	0.67	0.43	0.82	0.55
PARAFFIN	52.03	38.90	46.91	40.60	14.49	32.90	21.53	26.16
ISOPRENOID	3.68	2.47	4.14	3.09	1.37	3.61	2.16	2.80
NAPHTHENE	44.30	58.63	48.95	56.31	84.14	63.48	76.30	71.05
CPI INDEX 1	0.98	1.01	1.08	0.99	1.03	1.06	1.01	0.95
CPI INDEX 2	1.11	1.15	1.15	1.02	1.25	1.28	1.27	1.09
CPI INDEX 3	0.96	1.08	1.05	0.80	1.22	1.12	1.14	0.91
PRISTANE/PHYTANE	2.67	3.69	4.07	1.25	1.02	0.94	0.94	1.00
PRISTANE/nC <sub>17</sub>	0.53	0.52	0.70	0.35	0.54	0.61	0.73	0.62

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15</sub>+ SATURATE (PARAFFIN -- NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-039A/B	-040A/B	-041A	-042A	-043A	-044A	-045A	-046A
DEPTH	2592m	2595m	2597m	2600m	2602m	2605m	2607m	2610m
SAMPLE TYPE								
nC <sub>15</sub>	4.64	3.82	1.64	7.08	0.74	16.62	3.53	2.26
nC <sub>16</sub>	9.93	8.50	6.55	8.81	4.78	25.45	8.34	5.59
nC <sub>17</sub>	11.59	10.34	8.89	8.63	8.71	10.39	8.98	9.78
nC <sub>18</sub>	15.73	15.27	15.91	10.45	12.75	9.35	14.55	14.09
nC <sub>19</sub>	12.09	11.08	11.93	6.54	10.73	8.83	10.27	11.18
nC <sub>20</sub>	10.76	10.96	10.88	7.54	10.63	6.75	11.34	9.14
nC <sub>21</sub>	6.46	6.65	7.13	4.27	7.12	5.19	7.17	7.10
nC <sub>22</sub>	4.97	5.30	3.74	3.72	7.01	4.16	6.84	4.95
nC <sub>23</sub>	4.14	3.69	4.09	3.54	5.95	2.60	6.10	5.16
nC <sub>24</sub>	3.48	3.33	3.63	3.63	6.06	1.56	3.74	3.23
nC <sub>25</sub>	2.65	2.96	2.22	3.63	4.25	1.04	2.89	2.58
nC <sub>26</sub>	1.82	2.83	2.34	3.54	2.76	1.56	3.21	3.01
nC <sub>27</sub>	2.48	2.09	1.64	4.72	3.83	1.56	2.35	4.09
nC <sub>28</sub>	1.32	1.85	2.46	3.81	2.66	2.08	2.14	4.62
nC <sub>29</sub>	1.99	2.71	4.56	4.72	3.83	1.04	2.89	3.76
nC <sub>30</sub>	0.99	0.99	3.86	3.45	1.49	0.78	1.18	3.33
nC <sub>31</sub>	0.99	1.85	2.92	4.18	2.13	0.52	1.39	2.37
nC <sub>32</sub>	1.32	1.72	2.46	2.45	1.17	0.26	0.96	1.61
nC <sub>33</sub>	0.99	12.48	1.52	2.27	1.39	0.26	0.75	1.08
nC <sub>34</sub>	0.99	1.60	1.29	1.73	1.28	0.00	0.64	0.65
nC <sub>35</sub>	0.66	0.99	0.35	1.27	0.74	0.00	0.75	0.43
PARAFFIN	25.63	25.48	29.77	25.39	17.85	20.23	26.18	23.48
ISOPRENOID	3.44	3.04	3.38	2.54	1.95	0.95	2.44	2.53
NAPHTHENE	70.94	71.48	66.85	72.07	80.20	78.82	71.39	73.99
CPI INDEX 1	1.05	0.92	0.99	0.99	0.97	0.93	0.95	1.06
CPI INDEX 2	1.28	1.18	0.97	1.25	1.41	0.79	1.10	0.96
CPI INDEX 3	1.58	0.89	0.68	1.28	1.41	0.86	0.88	1.07
PRISTANE/PHYTANE	0.93	1.06	0.98	1.24	1.02	3.50	1.12	1.00
PRISTANE/nC <sub>17</sub>	0.56	0.60	0.63	0.64	0.63	0.35	0.55	0.55

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-047A	-048A	-049A	-050A	-051A	-052A	-053A	-054A/B
DEPTH	2612m	2615m	2617m	2620m	2622m	2625m	2627m	2630m
SAMPLE TYPE								
nC <sub>15</sub>	0.97	0.38	1.97	0.23	0.24	0.23	0.44	0.69
nC <sub>16</sub>	0.86	2.69	2.30	1.48	1.44	0.35	1.20	0.55
nC <sub>17</sub>	5.59	7.55	6.14	5.70	8.03	1.63	5.88	3.98
nC <sub>18</sub>	10.97	13.96	11.84	11.97	16.55	6.88	12.08	12.35
nC <sub>19</sub>	11.40	14.60	10.42	12.20	14.63	11.54	12.51	14.13
nC <sub>20</sub>	12.04	14.98	13.93	14.03	13.07	14.57	14.69	16.05
nC <sub>21</sub>	7.63	10.50	8.00	9.24	9.83	11.19	11.75	9.74
nC <sub>22</sub>	7.31	8.32	7.02	9.12	7.19	9.67	8.60	8.23
nC <sub>23</sub>	5.59	5.89	5.59	5.93	4.80	8.04	6.75	6.17
nC <sub>24</sub>	4.95	3.71	4.28	5.70	4.68	7.34	5.22	4.53
nC <sub>25</sub>	5.05	3.59	2.85	4.79	3.60	6.06	4.79	4.66
nC <sub>26</sub>	3.23	2.56	2.85	3.19	3.48	4.78	3.70	3.70
nC <sub>27</sub>	3.44	2.69	3.51	3.08	3.12	4.55	3.37	4.12
nC <sub>28</sub>	1.94	1.15	2.96	2.51	1.92	2.68	3.26	2.19
nC <sub>29</sub>	3.33	1.92	2.96	2.96	2.96	1.92	1.20	2.74
nC <sub>30</sub>	1.83	0.90	2.08	1.37	1.32	1.98	1.31	0.96
nC <sub>31</sub>	2.90	1.28	3.29	2.28	1.32	1.98	0.65	1.65
nC <sub>32</sub>	1.94	0.77	1.86	0.91	0.84	0.93	0.76	0.96
nC <sub>33</sub>	2.90	0.90	2.08	1.37	0.84	1.05	0.65	0.82
nC <sub>34</sub>	3.23	1.02	1.97	1.25	0.84	1.05	0.33	1.10
nC <sub>35</sub>	2.90	0.64	2.08	0.68	0.36	0.58	0.87	0.69
PARAFFIN	19.15	17.10	29.50	27.97	35.43	23.66	32.67	17.38
ISOPRENOID	1.38	2.26	2.43	2.46	3.74	0.74	1.71	1.38
NAPHTHENE	79.47	80.64	68.08	69.57	60.83	75.60	65.62	81.24
CPI INDEX 1	1.02	1.10	0.94	0.92	0.99	1.02	1.06	1.04
CPI INDEX 2	1.44	1.45	1.16	1.33	1.10	1.21	0.93	1.42
CPI INDEX 3	1.33	1.45	1.21	1.08	1.16	1.22	0.97	1.40
PRISTANE/PHYTANE	0.56	0.78	0.67	0.75	0.76	0.29	0.66	0.41
PRISTANE/nC <sub>17</sub>	0.46	0.76	0.54	0.66	0.57	0.43	0.35	0.59

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-055	-056A/B	-057A	-058A	-059B/C	-060B/C	-061A/B	-062A/B
DEPTH	2632m	2635m	2637m	2640m	2642m	2645m	2647m	2650m
SAMPLE TYPE								
nC <sub>15</sub>	0.24	0.24	0.24	0.80	0.58	0.22	3.90	0.22
nC <sub>16</sub>	0.85	0.96	0.24	0.62	1.50	0.44	3.20	1.11
nC <sub>17</sub>	5.33	4.78	1.66	1.33	5.08	0.44	4.60	5.13
nC <sub>18</sub>	16.59	14.34	5.77	4.51	15.36	4.20	5.31	13.60
nC <sub>19</sub>	12.95	14.81	8.14	8.75	11.43	9.83	8.11	14.72
nC <sub>20</sub>	14.77	15.29	10.11	11.14	13.74	14.14	11.71	11.82
nC <sub>21</sub>	11.14	9.92	8.29	10.70	9.47	13.81	10.71	9.92
nC <sub>22</sub>	7.75	6.57	7.27	8.49	6.35	9.94	9.21	6.80
nC <sub>23</sub>	7.51	5.38	7.98	8.31	6.93	7.96	7.21	5.57
nC <sub>24</sub>	5.21	4.66	7.03	7.43	4.73	6.52	6.31	3.57
nC <sub>25</sub>	3.63	3.23	8.77	7.43	3.93	6.19	5.51	3.34
nC <sub>26</sub>	2.66	3.11	8.77	7.43	3.93	6.19	5.51	3.34
nC <sub>27</sub>	2.91	2.99	7.27	5.13	4.16	5.08	5.11	2.45
nC <sub>28</sub>	1.57	2.63	7.42	6.10	4.04	4.86	4.90	2.68
nC <sub>29</sub>	1.45	3.35	5.45	4.33	2.89	2.76	3.00	3.34
nC <sub>30</sub>	0.97	1.79	5.53	5.75	3.70	4.64	4.10	3.79
nC <sub>31</sub>	1.09	1.91	3.16	3.09	1.62	1.99	1.80	3.34
nC <sub>32</sub>	0.61	1.19	2.53	3.01	1.85	2.65	1.50	2.68
nC <sub>33</sub>	0.61	1.08	1.42	1.50	0.81	1.55	1.20	2.45
nC <sub>34</sub>	0.85	1.08	0.95	0.71	0.92	0.99	0.90	1.67
nC <sub>35</sub>	1.33	0.72	0.55	0.62	0.58	0.77	1.10	1.11
PARAFFIN	31.92	29.84	42.67	32.00	33.31	25.78	26.17	39.78
ISOPRENOID	2.59	2.53	1.15	0.65	2.19	0.43	1.15	2.71
NAPHTHENE	65.49	67.63	56.18	67.35	64.50	73.80	72.68	57.52
CPI INDEX 1	1.15	1.00	1.11	1.15	1.09	1.13	1.04	1.10
CPI INDEX 2	1.22	1.13	1.23	1.35	1.22	1.37	1.21	1.03
CPI INDEX 3	1.37	1.04	1.17	1.29	1.15	1.24	1.21	0.92
PRISTANE/PHYTANE	0.60	0.58	0.36	0.21	0.63	0.50	1.00	0.85
PRISTANE/nC <sub>17</sub>	0.57	0.65	0.43	0.27	0.50	1.25	0.48	0.61

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2 \times (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15</sub>+ SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-063A/B	-064A/B	-065A/B	-066A	-067A	-068A	-069A/B	-070
DEPTH	2652m	2655m	2657m	2660m	2662m	2665m	2667m	2670m
SAMPLE TYPE								
nC <sub>15</sub>	0.37	0.39	0.54	0.74	0.39	0.33	0.27	0.26
nC <sub>16</sub>	1.50	2.31	0.45	0.89	0.78	0.66	0.45	2.00
nC <sub>17</sub>	6.62	7.42	0.90	2.52	3.36	4.74	3.46	6.43
nC <sub>18</sub>	14.37	12.81	4.03	4.23	8.27	10.13	11.74	10.77
nC <sub>19</sub>	14.37	12.04	7.88	4.45	7.49	11.56	12.28	10.34
nC <sub>20</sub>	15.25	12.14	11.91	5.42	9.76	13.77	12.10	11.03
nC <sub>21</sub>	10.87	9.63	10.47	6.75	7.18	9.47	10.46	7.82
nC <sub>22</sub>	8.37	6.94	9.94	6.82	6.87	8.48	8.55	8.17
nC <sub>23</sub>	6.25	5.88	6.45	8.09	6.17	6.94	7.46	7.56
nC <sub>24</sub>	3.50	3.56	7.52	9.35	7.42	5.18	6.64	5.73
nC <sub>25</sub>	3.87	4.34	8.68	9.72	7.18	5.51	5.10	6.95
nC <sub>26</sub>	2.62	3.18	5.01	7.94	6.79	4.63	3.73	5.56
nC <sub>27</sub>	2.75	4.24	6.45	9.42	5.39	5.07	4.09	4.78
nC <sub>28</sub>	1.62	2.60	3.85	6.31	3.43	3.19	2.64	3.21
nC <sub>29</sub>	2.00	4.43	5.01	7.49	3.90	4.07	3.82	3.04
nC <sub>30</sub>	0.75	2.02	3.58	3.64	2.73	1.65	1.82	1.82
nC <sub>31</sub>	1.12	2.12	3.13	3.26	3.28	2.31	2.00	1.74
nC <sub>32</sub>	1.25	0.96	1.07	1.34	3.59	0.66	2.00	1.74
nC <sub>33</sub>	1.37	1.35	1.52	0.89	2.42	0.77	1.09	0.87
nC <sub>34</sub>	0.75	1.25	0.90	0.52	2.11	0.55	0.82	0.61
nC <sub>35</sub>	0.37	0.39	0.72	0.22	1.48	0.33	0.55	0.35
PARAFFIN	27.09	28.45	45.72	41.11	35.14	30.29	33.38	34.21
ISOPRENOID	2.37	2.27	0.86	1.25	1.56	1.93	1.79	2.76
NAPHTHENE	70.54	69.28	53.42	57.64	63.29	67.78	64.82	63.03
CPI INDEX 1	1.14	1.21	1.07	1.13	0.95	1.05	1.07	1.04
CPI INDEX 2	1.35	1.53	1.44	1.33	1.08	1.42	1.31	1.23
CPI INDEX 3	1.29	1.47	1.45	1.32	1.05	1.30	1.29	1.09
PRISTANE/PHYTANE	0.75	0.89	0.31	0.86	0.68	0.61	0.44	0.94
PRISTANE/nC <sub>17</sub>	0.57	0.51	0.50	0.56	0.53	0.51	0.47	0.61

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-071	-072	-073A	-074A	-075A	-076A	-077A	-078A
DEPTH	2672m	2675m	2677m	2680m	2682m	2685m	2687m	2690m
SAMPLE TYPE								
nC <sub>15</sub>	0.41	0.32	5.62	0.94	0.92	2.06	2.41	4.39
nC <sub>16</sub>	0.51	1.68	6.37	4.69	5.44	2.25	2.66	5.36
nC <sub>17</sub>	6.03	6.95	9.00	9.03	8.21	7.25	4.49	8.61
nC <sub>18</sub>	12.68	12.32	12.93	14.30	13.76	9.50	9.56	9.31
nC <sub>19</sub>	12.27	12.74	11.15	10.08	9.96	8.03	9.56	8.96
nC <sub>20</sub>	13.50	12.11	10.68	11.61	10.27	10.38	9.14	10.28
nC <sub>21</sub>	9.51	8.53	7.03	7.03	8.52	6.86	8.37	7.73
nC <sub>22</sub>	8.18	7.37	5.90	6.57	7.49	6.76	6.73	7.29
nC <sub>23</sub>	7.57	5.89	4.50	5.04	7.39	5.58	6.98	5.54
nC <sub>24</sub>	5.52	5.58	4.12	4.92	5.34	5.88	6.32	4.31
nC <sub>25</sub>	4.91	5.16	4.03	4.81	4.21	5.09	3.57	5.01
nC <sub>26</sub>	3.68	4.00	3.09	3.52	3.08	3.43	4.41	4.04
nC <sub>27</sub>	4.29	4.00	2.53	4.22	2.57	4.80	3.91	4.57
nC <sub>28</sub>	2.76	2.74	2.53	1.99	2.26	2.06	3.49	3.16
nC <sub>29</sub>	2.86	3.37	2.44	3.40	3.08	5.68	5.07	3.95
nC <sub>30</sub>	1.33	1.89	1.31	1.52	1.44	3.33	4.41	1.67
nC <sub>31</sub>	1.53	1.79	1.87	1.99	1.75	3.13	2.41	2.37
nC <sub>32</sub>	0.82	1.05	1.50	1.06	1.54	3.53	2.00	1.05
nC <sub>33</sub>	0.72	1.05	1.22	1.29	1.23	2.15	1.58	0.97
nC <sub>34</sub>	0.51	0.84	1.22	1.17	1.03	1.37	2.00	0.79
nC <sub>35</sub>	0.41	0.63	0.94	0.82	0.51	0.88	0.58	0.62
PARAFFIN	42.82	26.54	39.93	18.83	35.09	17.29	20.14	24.34
ISOPRENOID	3.59	2.35	3.44	2.25	3.67	1.08	1.04	1.88
NAPHTHENE	53.59	71.11	56.62	78.92	61.24	81.63	78.82	73.78
CPI INDEX 1	1.08	1.00	0.96	1.02	1.06	1.04	0.99	1.05
CPI INDEX 2	1.30	1.24	1.14	1.49	1.18	1.39	0.93	1.40
CPI INDEX 3	1.33	1.19	0.90	1.53	0.96	1.75	0.99	1.27
PRISTANE/PHYTANE	0.58	0.75	1.09	1.49	1.04	1.00	1.07	1.10
PRISTANE/nC <sub>17</sub>	0.51	0.55	0.50	0.79	0.65	0.43	0.59	0.47

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15</sub>+ SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-079A	-081B	-084C	-085B	-086B	-087B	-090B	-091B
DEPTH	2692m	2695m	2705m	2707m	2710m	2712m	2720m	2722m
SAMPLE TYPE								
nC <sub>15</sub>	1.39	3.23	2.41	3.51	0.47	4.07	1.11	0.89
nC <sub>16</sub>	3.02	7.12	2.81	6.85	1.22	8.74	1.45	0.82
nC <sub>17</sub>	4.18	8.41	4.72	8.61	3.29	11.62	4.01	1.27
nC <sub>18</sub>	12.78	13.58	13.27	10.63	10.07	13.89	9.14	5.44
nC <sub>19</sub>	9.52	6.47	8.34	8.17	8.09	8.86	8.47	8.94
nC <sub>20</sub>	13.70	12.16	9.45	10.02	11.10	10.90	12.37	9.31
nC <sub>21</sub>	7.55	4.14	5.63	6.33	6.11	5.75	9.70	8.04
nC <sub>22</sub>	13.01	8.93	9.95	5.80	7.71	6.47	8.36	7.45
nC <sub>23</sub>	4.41	3.75	4.02	3.95	6.11	4.31	6.35	7.59
nC <sub>24</sub>	7.20	7.12	6.83	4.04	4.52	4.79	6.02	6.40
nC <sub>25</sub>	3.14	3.62	2.51	4.13	4.42	4.19	4.91	5.44
nC <sub>26</sub>	4.76	4.92	5.03	3.25	4.33	3.23	4.24	5.96
nC <sub>27</sub>	2.79	3.62	2.41	4.39	4.70	3.23	4.46	4.91
nC <sub>28</sub>	2.79	2.98	3.62	2.64	3.95	2.04	3.34	4.17
nC <sub>29</sub>	2.32	3.23	4.02	4.39	5.08	2.51	5.46	5.58
nC <sub>30</sub>	2.09	2.07	3.32	2.55	2.07	1.08	2.01	3.28
nC <sub>31</sub>	1.97	0.78	2.91	2.64	5.64	1.68	3.57	4.91
nC <sub>32</sub>	0.93	0.78	2.51	2.64	4.42	0.84	1.34	3.43
nC <sub>33</sub>	0.93	0.91	2.61	3.08	3.39	0.60	1.78	2.53
nC <sub>34</sub>	0.81	1.55	2.01	1.49	2.07	0.72	1.34	1.64
nC <sub>35</sub>	0.70	0.65	1.61	0.88	1.22	0.48	0.56	2.01
PARAFFIN	21.32	15.53	21.85	19.92	21.47	20.81	21.18	28.20
ISOPRENOID	1.31	1.61	1.30	1.96	0.87	2.07	1.04	0.90
NAPHTHENE	77.37	82.86	76.86	78.12	77.66	77.12	77.79	70.89
CPI INDEX 1	0.55	0.54	0.52	1.00	0.91	0.87	0.99	0.99
CPI INDEX 2	0.79	0.85	0.73	1.33	1.34	1.33	1.43	1.15
CPI INDEX 3	0.74	0.92	0.56	1.49	1.14	1.23	1.18	0.97
PRISTANE/PHYTANE	0.89	1.42	0.79	1.24	0.87	1.24	0.57	0.87
PRISTANE/nC <sub>17</sub>	0.69	0.72	0.55	0.63	0.57	0.47	0.44	1.18

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$





**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-092B	-093	-094A	-095A	-096A	-097A	-098A	-099A
DEPTH	2725m	2727m	2730m	2732m	2735m	2737m	2740m	2742m
SAMPLE TYPE								
nC <sub>15</sub>	0.36	0.16	1.63	0.57	1.34	0.53	4.38	0.64
nC <sub>16</sub>	0.58	0.72	1.63	1.24	3.36	0.59	5.12	1.06
nC <sub>17</sub>	1.23	4.96	6.66	3.53	6.94	1.45	8.43	4.26
nC <sub>18</sub>	3.91	10.01	9.05	8.11	12.99	4.56	12.27	12.45
nC <sub>19</sub>	3.33	10.73	13.57	9.73	12.32	6.01	10.35	11.38
nC <sub>20</sub>	2.97	10.89	9.17	12.88	12.21	8.00	11.53	13.94
nC <sub>21</sub>	3.04	10.17	9.42	11.35	8.96	5.88	7.68	8.19
nC <sub>22</sub>	3.55	7.69	7.41	8.68	7.28	6.74	6.83	7.13
nC <sub>23</sub>	3.55	8.01	8.54	7.35	5.82	4.36	5.02	5.85
nC <sub>24</sub>	3.55	6.24	7.41	6.11	4.48	5.62	4.59	6.81
nC <sub>25</sub>	4.85	4.96	4.77	5.63	4.26	5.09	4.48	4.57
nC <sub>26</sub>	5.86	4.80	5.65	6.58	3.14	5.02	3.09	4.04
nC <sub>27</sub>	8.76	5.52	2.64	3.63	3.25	6.28	3.52	3.30
nC <sub>28</sub>	9.48	3.76	4.15	3.91	1.79	6.15	1.49	3.09
nC <sub>29</sub>	8.32	3.44	1.76	4.39	2.91	7.80	3.31	4.26
nC <sub>30</sub>	9.04	2.32	2.64	1.91	2.02	5.16	1.71	2.23
nC <sub>31</sub>	8.03	2.08	1.01	1.81	2.58	6.01	2.35	2.98
nC <sub>32</sub>	6.95	1.28	1.13	0.95	1.23	5.29	1.07	1.28
nC <sub>33</sub>	5.07	1.04	0.75	0.67	1.23	4.56	0.96	1.28
nC <sub>34</sub>	4.56	0.48	0.50	0.67	1.12	2.91	1.17	0.74
nC <sub>35</sub>	3.04	0.72	0.50	0.29	0.78	1.98	0.64	0.53
PARAFFIN	32.82	45.24	21.89	43.68	11.40	27.39	17.03	42.65
ISOPRENOID	0.69	1.70	1.18	1.58	1.09	0.54	1.60	2.40
NAPHTHENE	66.49	53.06	76.93	54.73	87.73	72.07	81.37	54.95
CPI INDEX 1	1.08	1.12	0.94	0.96	1.08	0.89	1.04	0.86
CPI INDEX 2	1.01	1.13	0.63	1.00	1.36	1.16	1.55	1.18
CPI INDEX 3	1.14	1.29	0.54	0.69	1.32	1.12	1.53	0.93
PRISTANE/PHYTANE	1.42	0.96	0.65	0.65	0.89	0.43	0.91	0.61
PRISTANE/nC <sub>17</sub>	1.00	0.37	0.32	0.41	0.65	0.41	0.53	0.50

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2 \times (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-100A	-101A	-102A	-103A	-104A	-105A	-106A	-107A/C
DEPTH	2745m	2747m	2750m	2752m	2755m	2757m	2760m	2762m
SAMPLE TYPE								
nC <sub>15</sub>	5.94	0.55	0.54	1.43	1.32	1.07	1.03	1.30
nC <sub>16</sub>	6.42	0.66	0.62	1.43	1.21	1.61	1.03	3.76
nC <sub>17</sub>	7.77	2.97	0.93	3.57	4.17	2.68	7.57	7.23
nC <sub>18</sub>	9.68	13.20	4.72	12.54	11.62	10.46	2.07	18.79
nC <sub>19</sub>	9.30	12.76	4.80	12.54	13.05	9.29	2.93	12.43
nC <sub>20</sub>	10.64	13.53	6.27	11.42	13.71	10.19	4.91	11.99
nC <sub>21</sub>	8.05	8.91	5.26	8.46	9.32	7.42	4.73	7.95
nC <sub>22</sub>	8.25	9.13	4.80	7.14	7.57	6.34	5.94	8.38
nC <sub>23</sub>	6.33	7.15	3.64	5.81	6.36	5.00	6.88	4.62
nC <sub>24</sub>	5.94	5.61	5.80	5.10	4.71	5.00	7.57	2.60
nC <sub>25</sub>	5.08	5.06	9.98	3.98	3.73	3.31	6.63	2.60
nC <sub>26</sub>	2.88	3.63	8.67	3.47	3.51	4.02	6.37	1.30
nC <sub>27</sub>	3.16	3.41	8.75	3.36	4.71	3.93	6.88	1.45
nC <sub>28</sub>	1.92	2.86	7.20	5.10	2.74	6.70	4.91	1.88
nC <sub>29</sub>	2.68	3.74	10.60	3.87	4.06	6.17	5.59	3.32
nC <sub>30</sub>	1.15	1.43	6.73	1.83	1.97	2.41	3.61	2.60
nC <sub>31</sub>	1.92	2.20	4.49	2.96	2.85	5.81	3.87	2.02
nC <sub>32</sub>	0.77	1.32	2.86	1.63	1.32	2.68	4.04	2.17
nC <sub>33</sub>	0.96	0.88	1.86	1.94	0.99	2.77	3.70	1.45
nC <sub>34</sub>	0.77	0.55	0.93	1.22	0.77	1.88	4.30	1.16
nC <sub>35</sub>	0.38	0.44	0.54	1.22	0.33	1.25	5.42	1.01
PARAFFIN	28.36	26.34	37.32	26.27	26.06	20.53	30.36	19.96
ISOPRENOID	2.58	1.56	0.87	1.53	1.60	1.05	0.47	2.13
NAPHTHENE	69.06	72.10	61.81	72.20	72.33	78.43	69.17	77.91
CPI INDEX 1	1.00	0.96	1.06	0.92	1.06	0.83	1.01	0.93
CPI INDEX 2	1.50	1.31	1.26	1.05	1.40	1.14	1.12	1.15
CPI INDEX 3	1.32	1.05	1.10	0.79	1.51	0.73	1.22	0.91
PRISTANE/PHYTANE	1.16	0.42	0.50	0.58	0.40	0.63	0.80	1.06
PRISTANE/nC <sub>17</sub>	0.63	0.59	0.83	0.60	0.42	0.73	0.09	0.76

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-108A	-109B	-110A	-111B	-112B	-113A	-114A	-115A
DEPTH	2765m	2767m	2770m	2772m	2775m	2777m	2780m	2782m
SAMPLE TYPE								
nC <sub>15</sub>	12.47	1.86	1.17	0.37	1.15	1.52	1.07	1.71
nC <sub>16</sub>	12.59	2.74	3.15	4.44	2.98	3.13	1.88	6.22
nC <sub>17</sub>	7.76	6.46	7.82	6.17	4.62	6.34	5.10	6.34
nC <sub>18</sub>	14.59	11.16	14.00	16.05	12.42	10.71	12.48	15.24
nC <sub>19</sub>	7.53	8.10	8.63	8.52	7.41	8.12	8.05	8.17
nC <sub>20</sub>	9.18	11.49	12.25	10.49	8.57	9.20	14.23	11.34
nC <sub>21</sub>	4.12	6.24	6.65	5.93	5.68	6.52	6.98	6.34
nC <sub>22</sub>	5.76	7.11	9.68	6.54	7.31	6.34	9.26	7.80
nC <sub>23</sub>	2.00	4.92	4.67	4.32	4.23	4.82	5.77	4.27
nC <sub>24</sub>	5.06	5.69	6.07	4.57	5.00	4.55	5.91	3.66
nC <sub>25</sub>	1.65	3.06	3.85	3.21	3.66	7.32	5.23	2.68
nC <sub>26</sub>	2.94	3.94	4.55	3.70	4.04	3.75	4.16	3.29
nC <sub>27</sub>	1.65	3.50	3.50	5.43	4.23	4.02	4.16	2.32
nC <sub>28</sub>	2.35	3.50	2.80	2.96	3.56	2.50	2.68	4.27
nC <sub>29</sub>	2.59	5.03	2.68	3.58	5.10	4.29	3.62	4.02
nC <sub>30</sub>	2.00	4.92	1.87	3.33	3.27	4.20	1.61	4.51
nC <sub>31</sub>	1.65	3.72	2.10	2.72	5.20	4.02	2.55	3.41
nC <sub>32</sub>	1.53	3.83	1.17	2.59	3.46	4.02	1.07	1.83
nC <sub>33</sub>	0.82	1.31	1.40	1.23	3.27	2.50	1.48	1.46
nC <sub>34</sub>	0.94	0.88	1.28	1.85	2.79	1.34	1.74	0.73
nC <sub>35</sub>	0.82	0.55	0.70	1.98	2.02	0.80	0.94	0.37
PARAFFIN	22.87	24.22	18.12	21.07	21.40	25.37	17.39	24.17
ISOPRENOID	2.42	1.56	1.52	1.48	1.42	2.24	1.21	2.24
NAPHTHENE	74.70	74.21	80.36	77.45	77.18	72.39	81.40	73.58
CPI INDEX 1	0.50	0.75	0.69	0.90	0.80	1.14	0.83	0.71
CPI INDEX 2	0.73	0.90	0.98	1.11	1.21	1.33	1.36	0.84
CPI INDEX 3	0.62	0.94	0.95	1.63	1.11	1.29	1.22	0.61
PRISTANE/PHYTANE	1.57	1.03	1.57	1.11	1.16	1.20	0.93	1.53
PRISTANE/nC <sub>17</sub>	0.83	0.51	0.66	0.60	0.77	0.76	0.66	0.88

$$\text{C.P.I. 1} = \frac{1}{2} \frac{\text{C}_{21} + \text{C}_{23} + \text{C}_{25} + \text{C}_{27}}{\text{C}_{20} + \text{C}_{22} + \text{C}_{24} + \text{C}_{26}} + \frac{\text{C}_{21} + \text{C}_{23} + \text{C}_{25} + \text{C}_{27}}{\text{C}_{22} + \text{C}_{24} + \text{C}_{26} + \text{C}_{28}}$$

$$\text{C.P.I. 2} = \frac{1}{2} \frac{\text{C}_{25} + \text{C}_{27} + \text{C}_{29} + \text{C}_{31}}{\text{C}_{24} + \text{C}_{26} + \text{C}_{28} + \text{C}_{30}} + \frac{\text{C}_{25} + \text{C}_{27} + \text{C}_{29} + \text{C}_{31}}{\text{C}_{26} + \text{C}_{28} + \text{C}_{30} + \text{C}_{32}}$$

$$\text{C.P.I. 3} = \frac{2x (\text{C}_{27})}{\text{C}_{26} + \text{C}_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15</sub>+ SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-116A	-117A	-118A	-119A	-120A	-121A	-122A	-123A
DEPTH	2785m	2787m	2790m	2792m	2795m	2797m	2800m	2802m
SAMPLE TYPE								
nC <sub>15</sub>	1.27	0.77	1.64	4.34	1.16	1.52	13.48	2.64
nC <sub>16</sub>	0.95	6.30	4.50	6.04	3.19	4.35	14.27	4.43
nC <sub>17</sub>	5.40	7.96	7.98	6.63	8.22	6.86	9.10	4.06
nC <sub>18</sub>	5.32	13.92	11.98	9.27	10.93	11.97	11.57	9.62
nC <sub>19</sub>	4.29	9.94	8.80	8.16	9.48	10.55	6.97	6.32
nC <sub>20</sub>	7.07	9.50	10.75	9.44	10.83	12.30	8.31	8.40
nC <sub>21</sub>	3.73	7.18	6.76	6.80	7.93	8.05	4.38	4.43
nC <sub>22</sub>	4.45	6.63	6.35	7.91	7.16	7.62	4.83	6.51
nC <sub>23</sub>	3.73	4.97	4.61	5.61	5.51	5.33	3.37	3.21
nC <sub>24</sub>	5.32	4.42	5.42	6.21	5.13	5.11	4.04	3.30
nC <sub>25</sub>	7.15	3.87	3.99	3.91	4.93	4.03	2.70	3.58
nC <sub>26</sub>	8.42	4.31	3.79	4.51	3.87	2.83	2.92	5.28
nC <sub>27</sub>	9.45	3.09	4.09	4.42	4.16	3.81	2.36	6.04
nC <sub>28</sub>	8.66	4.97	5.73	2.55	3.00	1.96	2.13	6.51
nC <sub>29</sub>	8.42	1.88	3.89	3.91	3.58	3.26	2.25	6.51
nC <sub>30</sub>	7.47	3.31	1.23	3.06	1.84	1.96	1.35	6.89
nC <sub>31</sub>	4.21	1.44	2.76	2.30	2.71	2.83	1.57	4.43
nC <sub>32</sub>	2.38	1.77	1.13	1.62	1.45	1.52	1.01	3.87
nC <sub>33</sub>	1.27	1.33	1.64	1.28	1.93	1.74	1.12	1.89
nC <sub>34</sub>	0.64	1.22	1.94	1.45	1.84	1.20	1.35	1.23
nC <sub>35</sub>	0.40	1.22	1.02	0.60	1.16	1.20	0.90	0.85
PARAFFIN	29.99	23.62	18.03	20.47	19.33	19.57	19.60	22.19
ISOPRENOID	0.88	2.40	1.90	1.71	1.78	1.94	2.42	1.17
NAPHTHENE	69.13	73.98	80.07	77.82	78.90	78.49	77.98	76.64
CPI INDEX 1	0.92	0.85	0.83	0.86	1.01	0.99	0.78	0.77
CPI INDEX 2	1.03	0.66	1.08	1.06	1.31	1.43	1.02	0.92
CPI INDEX 3	1.11	0.67	0.86	1.25	1.21	1.59	0.93	1.02
PRISTANE/PHYTANE	0.85	1.42	1.06	1.28	0.90	0.86	1.56	1.24
PRISTANE/nC <sub>17</sub>	0.25	0.75	0.68	0.71	0.55	0.67	0.83	0.72

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$



**TABLE 9**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-124A	-125A	-126A	-127A	-128A	-129A	-130A
DEPTH	2805m	2807m	2810m	2812m	2815m	2817m	2820m
SAMPLE TYPE							
nC <sub>15</sub>	2.05	3.55	1.06	4.39	4.58	15.53	17.42
nC <sub>16</sub>	5.79	7.49	5.50	8.20	11.73	15.09	11.17
nC <sub>17</sub>	7.00	6.43	6.95	7.05	2.46	11.07	7.85
nC <sub>18</sub>	12.14	11.90	11.97	12.11	7.37	8.36	9.69
nC <sub>19</sub>	8.59	8.83	9.94	7.91	6.48	7.17	7.98
nC <sub>20</sub>	10.36	8.73	11.49	8.58	5.92	5.97	8.22
nC <sub>21</sub>	6.82	6.91	8.49	7.34	5.92	6.08	5.64
nC <sub>22</sub>	5.51	6.14	6.37	9.25	4.92	5.32	5.15
nC <sub>23</sub>	5.14	3.55	6.27	4.58	5.36	4.56	4.17
nC <sub>24</sub>	3.83	4.61	4.83	5.24	6.26	3.91	3.56
nC <sub>25</sub>	4.01	2.98	4.83	3.53	6.03	2.93	3.44
nC <sub>26</sub>	2.71	4.13	3.19	3.53	6.48	2.28	2.58
nC <sub>27</sub>	3.83	3.07	3.47	2.48	5.81	2.28	2.82
nC <sub>28</sub>	4.20	2.88	3.19	2.29	4.80	2.28	1.84
nC <sub>29</sub>	4.39	3.74	3.38	3.34	2.91	1.85	1.84
nC <sub>30</sub>	2.43	2.50	1.93	2.29	3.46	1.19	1.10
nC <sub>31</sub>	3.64	4.41	2.61	2.29	2.79	1.52	1.10
nC <sub>32</sub>	2.33	1.92	1.54	1.53	2.01	0.76	2.45
nC <sub>33</sub>	2.33	3.26	1.25	2.00	2.91	0.87	0.74
nC <sub>34</sub>	2.05	2.02	0.97	0.95	1.12	0.65	0.74
nC <sub>35</sub>	0.84	0.96	0.77	1.14	0.67	0.33	0.49
PARAFFIN	28.14	24.99	29.80	28.98	13.46	46.63	25.73
ISOPRENOID	2.10	2.45	2.45	2.24	1.59	7.39	2.40
NAPHTHENE	69.76	72.56	67.75	68.78	84.94	45.97	71.87
CPI INDEX 1	1.05	0.81	1.10	0.78	1.01	1.03	1.02
CPI INDEX 2	1.28	1.13	1.27	1.04	0.94	1.10	1.08
CPI INDEX 3	1.11	0.88	1.09	0.85	1.03	1.00	1.28
PRISTANE/PHYTANE	1.22	0.89	1.24	1.25	2.53	1.70	1.30
PRISTANE/nC <sub>17</sub>	0.59	0.72	0.65	0.61	3.45	0.90	0.67

$$\text{C.P.I. 1} = \frac{1}{2} \frac{\text{C}_{21} + \text{C}_{23} + \text{C}_{25} + \text{C}_{27}}{\text{C}_{20} + \text{C}_{22} + \text{C}_{24} + \text{C}_{26}} + \frac{\text{C}_{21} + \text{C}_{23} + \text{C}_{25} + \text{C}_{27}}{\text{C}_{22} + \text{C}_{24} + \text{C}_{26} + \text{C}_{28}}$$

$$\text{C.P.I. 2} = \frac{1}{2} \frac{\text{C}_{25} + \text{C}_{27} + \text{C}_{29} + \text{C}_{31}}{\text{C}_{24} + \text{C}_{26} + \text{C}_{28} + \text{C}_{30}} + \frac{\text{C}_{25} + \text{C}_{27} + \text{C}_{29} + \text{C}_{31}}{\text{C}_{26} + \text{C}_{28} + \text{C}_{30} + \text{C}_{32}}$$

$$\text{C.P.I. 3} = \frac{2x (\text{C}_{27})}{\text{C}_{26} + \text{C}_{28}}$$

725.3.

GEOCHEMICAL EVALUATION OF NORSK HYDRO'S 7120/6-1 WELL  
TROMS-1 AREA, NORWAY

- 9 JUL 1985

**REGISTRERT**  
**OLJEDIREKTORATET**

#### A. ANALYTICAL

Sixty seven (67) canned ditch cuttings samples, each composited over thirty (30) metres were received from the interval 815 metres to 2820 metres (TD). These samples were supplemented by a suite of forty nine (49) sidewall cores from the interval 2284-2368.5 metres and from below 2625 metres. Core chips from cores 1 through 12 were also submitted for use if the ditch cuttings were of poor quality. Thirteen (13) conventional core samples were included in the study. The samples were assigned the Geochem job number 1050.

Geochem were instructed to screen the cuttings samples with the light hydrocarbon, total organic carbon (below 1500m) and Rockeval pyrolysis analyses (below 1800m), with the kerogen and vitrinite reflectance analyses being run at 90 metres from 1500-2200m and at 30 metres below 2200m. Every sidewall core from the interval 2284-2368.5 metres was analysed by the total organic carbon, Rockeval pyrolysis, pyrolysis-GC, kerogen, vitrinite reflectance, C<sub>15+</sub> extraction and chromatography, C<sub>15+</sub> paraffin-naphthene and C<sub>15+</sub> aromatic capillary chromatographic analyses. The other sidewall cores were analysed for total organic carbon and Rockeval pyrolysis.

The results of the analyses upon the sidewall cores from 2284-2368.5 metres and

upon the other samples were forwarded to Norsk Hydro on 2nd May and 15th May 1985 respectively. Authorisation for the follow-up analyses was received on 31st May.

A total of sixty seven light hydrocarbon analyses, one hundred and ninety three total organic carbon analyses, eighty six Rockeval pyrolysis analyses, fifty seven pyrolysis-GC analyses, fifty five kerogen type and spore colouration analyses, fifty four vitrinite analyses, sixty two C<sub>15+</sub> extractions with chromatography, sixty two C<sub>15+</sub> paraffin-naphthene capillary chromatograms and sixty two C<sub>15+</sub> aromatic capillary chromatograms were run in this study.

The data are presented in tables 1 through 12 and in figures 1 through 13.

#### B. GENERAL INFORMATION

A draft copy of this report was forwarded to Helga Nes at Norsk Hydro in Sandvika and, after approval, ten (10) copies of the final report were submitted to Sandvika. A copy of the data has been retained by Geochem for future consultation with authorised Norsk Hydro personnel.

The analytical results will also be submitted on magnetic tape, whilst the interpretation will be discussed with Norsk Hydro in Harstad on 27th June 1985.

The extracted rock powders, extract fractions and kerogen slides for the sidewall cores from 2284-2368.5 metres have already been returned to Mr. Gjelsvik in Bergen and the remaining sample material will follow.

All of the results related to this study are proprietary to Norsk Hydro A.S.



**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-001	815-845m	A 98% Shaly mudstone, mod. hard, non-calc., sig. cavings, medium olive grey to light bluish grey Minor LCM - cement	5Y5/1- 5B7/1	0.69
1050-002	845-875m	A 98% Shaly mudstone, as 1050-001A, sig. cavings	5Y5/1- 5B7/1	0.65
1050-003	875-905m	A 98% Shaly mudstone, blocky, mod. hard, non-calc., sig. cavings, light bluish grey to light olive grey	5B7/1- 5Y6/1	0.61
1050-004	905-935m	A 98% Shaly mudstone, as 1050-003A, sig. cavings	5B7/1- 5Y6/1	0.57
1050-005	935-965m	A 98% Shaly mudstone, as 1050-003A, sig. cavings	5B7/1- 5Y6/1	0.56,0.57
1050-006	965-995m	A 98% Shaly mudstone, as 1050-003A, sig. cavings	5B7/1- 5Y6/1	0.65
1050-007	995-1025m	A 98% Shaly mudstone, blocky, mod. hard, non-calc., sig. cavings, light bluish grey to medium olive grey	5B7/1- 5Y5/1	0.65
1050-008	1025-055m	A 60% Shaly mudstone, as 1050-007A, sig. cavings	5B7/1- 5Y5/1	0.63
		B 40% Shaly mudstone, blocky, hard, non-calc., sig. cavings, light greenish grey	5GY8/1	0.26,0.28
1050-009	1055-085m	A 80% Shaly mudstone, as 1050-007A, sig. cavings	5B7/1- 5Y5/1	0.64
		B 10% Shaly mudstone, blocky, mod. hard, non-calc., sig. cavings, brownish grey	5YR4/1	0.23
		C 10% Shaly mudstone, as 1050-008B, caved	5GY8/1	
1050-010	1085-115m	A 90% Shaly mudstone, as 1050-007A, sig. cavings	5B7/1- 5Y5/1	0.32
		B 10% Siltstone, blocky, mod. hard, non-calc., sig. cavings, brownish grey	5YR4/1	0.11
1050-011	1115-145m	A 98% Shaly mudstone, as 1050-007A, sig. cavings Minor siltstone, glauconitic siltstone	5B7/1- 5Y5/1	0.60
1050-012	1145-175m	A 98% Silty mudstone, blocky, mod. hard, non-calc., minor pyrite, sig. cavings, medium greenish grey	5G5/1	0.66,0.66
1050-013	1175-205m	A 98% Silty mudstone, as 1050-012A, sig. cavings Minor sandstone	5G5/1	0.70
1050-014	1205-235m	A 98% Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., minor pyrite, sig. cavings, medium greenish grey	5G5/1	0.97
1050-015	1235-265m	A 98% Shaly mudstone, as 1050-014A, sig. cavings Minor sandstone	5G5/1	0.91

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

**TABLE 1**  
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GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-016	1265-295m	A 98%	Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., minor pyrite, sig. cavings, medium greenish grey	5G5/1	0.87
1050-017	1295-1325m	A 98%	Shaly mudstone, as 1050-016A, sig. cavings Minor sandstone	5G5/1	0.87,0.89
1050-018	1325-355m	A 98%	Shaly mudstone, blocky, mod. hard, non-calc., sig. cavings, medium greenish grey	5G5/1	0.86
1050-019	1355-385m	A 98%	Shaly mudstone, as 1050-018A, sig. cavings	5G5/1	0.76
1050-020	1385-415m	A 98%	Shaly mudstone, as 1050-018A, sig. cavings	5G5/1	0.74
1050-021	1415-445m	A 98%	Shaly mudstone, as 1050-018A, sig. cavings	5G5/1	0.76
1050-022	1445-475m	A 98%	Shaly mudstone, as 1050-018A, sig. cavings	5G5/1	0.72
1050-023	1475-505m	A 98%	Shaly mudstone, blocky, mod. hard, non-calc., sig. cavings, medium bluish grey	5B5/1	0.71,0.69
1050-024	1505-535m	A 98%	Shaly mudstone, blocky, mod. hard, non-calc., sig. cavings, v. dark greenish grey	5G3/1	0.95
1050-025	1535-565m	A 98%	Shaly mudstone, blocky, mod. hard, non-calc., sig. cavings, medium bluish grey	5B5/1	1.26
1050-026	1565-595m	A 98%	Shaly mudstone, often silty, blocky, mod. hard, non-calc., sig. cavings, medium bluish grey	5B5/1	1.23
1050-027	1595-625m	A 98%	Shaly mudstone, as 1050-025A, sig. cavings	5B5/1	1.16
1050-028	1625-655m	A 98%	Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., sig. cavings, medium bluish grey	5B5/1	1.00,1.03
1050-029	1655-685m	A 98%	Shaly mudstone, as 1050-028A, sig. cavings	5B5/1	1.28
1050-030	1685-715m	A 98%	Shaly mudstone, as 1050-028A, sig. cavings	5B5/1	1.29
1050-031	1715-745m	A 98%	Shaly mudstone, as 1050-028A, sig. cavings	5B5/1	1.11
1050-032	1745-775m	A 98%	Shaly mudstone, as 1050-028A, sig. cavings	5B5/1	1.14
1050-033	1775-805m	A 98%	Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., sig. cavings, medium bluish grey	5B5/1	1.04

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

**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-034	1805-835m	A 98% Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., sig. cavings, medium bluish grey Minor sandstone	5B5/1	1.02, 1.04 ✓
1050-035	1835-865m	A 60% Sandstone, v. fine to fine grained, arg. in part, mod. sorted, sig. cavings, v. light grey B 40% Shaly mudstone, as 1050-034A, sig. cavings	N8 5B5/1	1.26 ✓
1050-036	1865-895m	A 45% Sandstone, as 1050-035A, sig. cavings B 45% Shaly mudstone, as 1050-034A, sig. cavings C 10% Limestone, aren. in part, mod. hard, blocky, sig. cavings, white	N8 5B5/1 N9	0.93 ✓ 0.29 ✓
1050-037	1895-925m	A 98% Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., sig. cavings, v. dark greenish grey Minor sandstone, limestone	5G3/1	1.26 ✓
1050-038	1925-955m	A 98% Shaly mudstone, as 1050-037A, sig. cavings	5G3/1	2.35, 2.38 ✓
1050-039	1955-985m	A 98% Shaly mudstone, as 1050-037A, sig. cavings	5G3/1	2.03 ✓
1050-040	1985-2015m	A 98% Shaly mudstone, as 1050-037A, sig. cavings	5G3/1	1.98 ✓
1050-041	2015-045m	A 98% Shaly mudstone, as 1050-037A, sig. cavings	5G3/1	2.30 ✓
1050-042	2045-075m	A 98% Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., sig. cavings, v. light grey to light bluish grey Minor other shaly mudstone	N8- 5B7/1	1.13 ✓
1050-043	2075-105m	A 98% Shaly mudstone, blocky to sub-platy, mod. hard, non-calc., sig. cavings, dark grey to medium dark grey Minor sand, other shaly mudstone	N3-4	2.36 ✓
1050-044	2105-135m	A 98% Shaly mudstone, as 1050-043A, sig. cavings Minor sandstone	N3-4	1.77, 1.81 ✓
1050-045	2135-165m	A 98% Shaly mudstone, as 1050-043A, sig. cavings Minor LCM - cement, metal	N3-4	1.19 ✓
1050-046	2165-195m	A 98% Shaly mudstone, as 1050-043A, sig. cavings Minor LCM - cement, metal, siltstone	N3-4	1.45 ✓
1050-047	2195-225m	A 90% Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., sig. cavings, dark grey to greyish black B 10% Siltstone, blocky, mod. hard, non-calc., sig. cavings, greyish red Minor LCM - cement, metal	N3-2 10R4/2	3.19 ✓ 0.33 ✓

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

**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-048	2225-255m	A 40% Siltstone, blocky, mod. hard, non-calc., sig. cavings, greyish red	10R4/2	0.24 ✓
		B 30% Shaly mudstone, occ. silty, blocky, mod. hard, non-calc., sig. cavings, dark grey to greyish black	N3-2	1.10 ✓
		C 30% LCM - cement		
1050-049	2255-285m	A 55% Siltstone, blocky, mod. hard, non-calc., sig. cavings, v. light grey	N8	0.27 ✓
		B 40% Siltstone, as 1050-048A, sig. cavings	10R4/2	0.26, 0.27 ✓
		C 5% Shaly mudstone, as 1050-048B, caved	N3-2	
1050-050	2285-320m	A 70% Shaly mudstone, blocky,, mod. hard, non-calc., sig. cavings, dark olive grey	5Y3/1	3.26 ✓
		B 30% Siltstone, as 1050-049A, abundant	N8	
1050-051 SWC	2284m	A 98% Shaly mudstone, platy, soft to mod. hard, non-calc., olive grey	5Y4/1	0.33
1050-052 SWC	2286m	A 98% Shaly mudstone, platy, mod. soft to mod. hard, non-calc., olive black	5Y2/1	1.13 ✓
1050-053 SWC	2288m	A 98% Shaly mudstone, platy, mod. soft to mod. hard, non-calc., micropyrritic in part, olive black	5Y2/1	3.78 ✓
1050-054 SWC	2290m	A 98% Shaly mudstone, platy, mod. hard, non-calc., olive black	5Y2/1	1.39, 1.40 ✓
1050-055 SWC	2292m	A 98% Shaly mudstone as 1050-054A	5Y2/1	0.90 ✓
1050-056 SWC	2294m	A 98% Shaly mudstone as 1050-054A	5Y2/1	3.24 ✓
1050-057 SWC	2298m	A 98% Shaly mudstone as 1050-054A	5Y2/1	1.17 ✓
1050-058 SWC	2300m	A 98% Shaly mudstone as 1050-054A	5Y2/1	2.86 ✓
1050-059 SWC	2302m	A 98% Shaly mudstone as 1050-054A	5Y2/1	4.76 ✓
1050-060 SWC	2304m	A 98% Shaly mudstone as 1050-054A	5Y2/1	4.58, 4.60 ✓
1050-061 SWC	2306m	A 98% Shaly mudstone as 1050-054A	5Y2/1	2.41 ✓
1050-062 SWC	2310m	A 98% Shaly mudstone as 1050-054A	5Y2/1	4.06 ✓
1050-063 SWC	2312m	A 98% Shaly mudstone as 1050-054A	5Y2/1	5.39 ✓
1050-064 SWC	2314m	A 98% Shaly mudstone as 1050-054A	5Y2/1	4.25 ✓

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

**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-065 SWC	2316m	A 98% Shaly mudstone, platy, mod. soft, non-calc., olive black	5Y2/1	5.45, 5.50 ✓
1050-066 SWC	2318m	A 98% Shaly mudstone as 1050-065A	5Y2/1	3.71 ✓
1050-067 SWC	2320m	A 98% Shaly mudstone as 1050-065A	5Y2/1	2.71 ✓
1050-068 SWC	2322m	A 98% Shaly mudstone as 1050-065A	5Y2/1	4.11 ✓
1050-069 SWC	2326m	A 98% Shaly mudstone as 1050-065A	5Y2/1	4.28 ✓
1050-070	2320-350m	A 98% Shaly mudstone as 1050-065A	5Y2/1	3.84 ✓
1050-071	2350-380m	A 98% Shaly mudstone, carb. in part, blocky, mod. hard, non-calc., sig. cavings, olive black	5Y2/1	9.44 ✓
1050-072 SWC	2328m	A 98% Shaly mudstone, platy, mod. soft, non-calc., olive black	5Y2/1	4.77 ✓
1050-073 SWC	2330m	A 98% Shaly mudstone as 1050-072A	5Y2/1	2.54, 2.50 ✓
1050-074 SWC	2332m	A 98% Shaly mudstone as 1050-072A	5Y2/1	2.81 ✓
1050-075 SWC	2334m	A 98% Shaly mudstone as 1050-072A	5Y2/1	3.60 ✓
1050-076 SWC	2337m	A 98% Shaly mudstone, carb, in part, subfissile, soft, non-calc., dark olive grey	5Y3/1	7.42 ✓
1050-077 SWC	2338.5m	A 98% Shaly mudstone as 1050-076A	5Y3/1	11.80 ✓
1050-078 SWC	2341.5m	A 98% Shaly mudstone as 1050-076A	5Y3/1	7.25, 7.31 ✓
1050-079 SWC	2343m	A 98% Shaly mudstone as 1050-076A	5Y3/1	9.86 ✓
1050-080 SWC	2346m	A 98% Shaly mudstone as 1050-076A	5Y3/1	10.30 ✓
1050-081 SWC	2350.5m	A 98% Shaly mudstone as 1050-076A	5Y3/1	12.10 ✓
1050-082 SWC	2352m	A 98% Shaly mudstone, carb. in part, splintery, mod. hard, non-calc., dark olive grey	5Y3/1	8.90 ✓
1050-083 SWC	2355m	A 98% Shaly mudstone as 1050-082A	5Y3/1	8.57 ✓
1050-084 SWC	2359.5m	A 98% Shaly mudstone as 1050-082A	5Y3/1	11.50, 11.50 ✓

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

**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-085 SWC	2361m	A 98% Shaly mudstone, carb. in part, splintery, mod. hard, non-calc., dark olive grey	5Y3/1	18.80 ✓
1050-086 SWC	2362.5m	A 98% Shaly mudstone as 1050-085A	5Y3/1	9.29 ✓
1050-087 SWC	2346m	A 98% Shaly mudstone as 1050-085A	5Y3/1	11.00 ✓
1050-088 SWC	2365.5m	A 98% Shaly mudstone, carb. in part, splintery, mod. hard, non-calc., dark olive grey	5Y3/1	9.50 ✓
1050-089 SWC	2368.5m	A 98% Shaly mudstone, splintery, mod. hard, non-calc., medium dark grey	N4	0.88, 0.89 ✓
1050-090	2380-410m	A 70% Shaly mudstone, as 1050-088A, sig. cavings B 30% Shaly mudstone, as 1050-089A, abundant cavings Minor sandstone	5Y3/1 N4	7.62 ✓ 1.18 ✓
1050-091	2410-440m	A 60% Shaly mudstone, as 1050-088A, sig. cavings B 30% Shaly mudstone, as 1050-089A, sig. cavings C 10% LCM - cement Minor sandstone	5Y3/1 N4	3.79, 3.82 ✓ 0.92 ✓
1050-092	2440-470m	A 50% Shaly mudstone, sub-platy, mod. hard, non-calc., sig. cavings, dark grey to medium dark grey B 50% Sand, unconsolidated quartz, medium grained, sub-angular, mod. sorted, white F., milky cut, white	N3-4 N9	1.08 ✓
1050-093	2470-2500m	A 80% Shaly mudstone, as 1050-092A, sig. cavings B 20% Sand, unconsolidated quartz, medium grained, sub-angular, mod. sorted, pale yellow F., weak milky cut, white	N3-4 N9	1.91 ✓
1050-094	2500-530m	A 90% Shaly mudstone, as 1050-092A, sig. cavings B 10% Sandstone, medium grained, sub-angular, mod. sorted, pale yellow F., milky cut, white to light brownish grey	N3-4 N9- 5YR6/1	1.00 ✓
1050-095	2530-560m	A 98% Shaly mudstone, as 1050-092A, sig. cavings Minor sandstone	N3-4	1.44, 1.43 ✓
1050-096	2560-590m	A 80% Sandstone, partially unconsolidated, medium grained, sub-angular, mod. sorted, sig. cavings, pale yellow F., milky cut, white to light brownish grey	N9- 5YR6/1	

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

**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-096	2560-590m	B 20% Shaly mudstone, occ. carb., sub-platy, mod. hard, non-calc., abundant cavings, greyish black to dark grey	N2-3	1.63 ✓
1050-097	2590-620m	A 90% Sandstone, medium grained, sub-angular, mod. sorted, sig. cavings, white B 10% Shaly mudstone, as 1050-096B, abundant cavings	N9 N2-3	1.13 J
1050-098	2620-650m	A 70% Sandstone, as 1050-097A, sig. cavings B 30% Shaly mudstone, sub-platy, mod. hard, non-calc., sig. cavings, dark grey	N9 N3	1.36 ✓
1050-099 SWC	2625m	A 98% Shaly mudstone, splintery, mod. soft, non-calc., olive grey	5Y4/1	0.76
1050-100 SWC	2637.5m	A 98% Shaly mudstone, silty in part, mod. hard, non-calc., olive grey	5Y4/1	3.04 J
1050-101 SWC	2656m	A 98% Coal, brittle, splintery, shiny lustre, black	N1	61.9, 62.6 ✓
1050-102	2650-680m	A 80% Sandstone, as 1050-097A, sig. cavings B 20% Shaly mudstone, carb. in part, sub-platy. mod. hard, non-calc., greyish black to dark grey Minor coal	N9 N2-3	19.10 ✓
1050-103 SWC	2678m	A 98% Shaly mudstone, sub-platy, mod. soft, non-calc., minor silty layers, greyish black	N2	4.37 ✓
1050-104 SWC	2683.5m	A 98% Shaly mudstone, silty in part, blocky, mod. hard, non-calc., medium grey	N5	0.99 ✓
1050-105 SWC	2687m	A 98% Shaly mudstone, splintery, mod. hard, non-calc., olive grey	5Y4/1	0.44 ✓
1050-106 SWC	2693m	A 98% Shaly mudstone, as 1050-105A	5Y4/1	0.54, 0.56 ✓
1050-107 SWC	2698m	A 98% Shaly mudstone, silty in part, mod. hard, non-calc., greysih black	N2	3.89 J
1050-108 SWC	2704.5m	A 98% Shaly mudstone, carb. in part, mod. hard, non-calc., black	N1	3.29 J
1050-109 SWC	2707m	A 98% Shaly mudstone, silty in part, coaly lenses, mod. hard, non-calc., olive grey	5Y4/1	1.99 J
1050-110	2680-710m	A 60% Sandstone, fine to medium grained, micaceous partings, sub-angular, mod. sorted, sig. cavings, white B 40% Shaly mudstone, carb. in part, splintery, mod. hard, non-calc., sig. cavings, black to greyish black	N9 N1-N2	3.49 ✓

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

TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-111 SWC	2713m	A 98% Shaly mudstone, carb. in part, splintery, mod. hard, non-calc., sig. cavings, black to greyish black	N1-N2	4.12 J
1050-112	2710-732m	A 65% Shaly mudstone, as 1050-111A, sig. cavings B 35% Sandstone, fine to medium grained, micaceous partings, sub-angular, mod. sorted, sig. cavings, white	N1-N2 N9	4.52, 4.49 J
1050-113	2732-770m	A 60% Sandstone, as 1050-112B, sig. cavings B 40% Shaly mudstone, as 1050-111A, sig. cavings	N9 N1-N2	1.55 v
1050-114 SWC	2770m	A 98% Silty mudstone, massive, mod. soft, non-calc., medium dark grey	N4	1.87 v
1050-115	2770-800m	A 80% Sandstone, as 1050-111A, sig. cavings B 20% Silty mudstone, carb. in part, blocky, mod. hard, non-calc., sig. cavings, greyish black to medium dark grey	N1-N2 N2-N4	4.51 J
1050-116	2800-820m	A 95% Sandstone, as 1050-112B, sig. cavings B 5% Carb. shale, blocky, mod. soft, non-calc., sig. cavings, black	N9 N1	10.60 v
1050-117 CORE #3	2384.92m	A 55% Shale, platy to subfissile, mod. hard, non-calc., micaceous, medium dark grey B 45% Shale, platy, mod. hard, non-calc., sl. micaceous, pearly lustre, medium dark grey	N4 N4	1.02 <u>0.87</u>
1050-118 CORE #4	2399.55m	A 95% Sandstone, blocky, medium grained, sub-angular, well sorted, non-calc. matrix, v. light brownish grey B 5% Shale/mudstone, soft, non-calc., sl. carb?, medium dark grey to brownish grey	5YR7/1 N4- 5YR4/1	<u>4.05</u>
1050-119 CORE #4	2415.8m	A 95% Sandstone, blocky, medium grained, sub-angular, well sorted, non-calc. v. light brown, with thin interbeds of B 5% Siltstone/silty shale, soft to medium hard, non-calc., sl. micaceous, medium dark grey	5YR7/1 N4	3.36
1050-120 CORE #5	2421.73m	A 98% Sandstone, blocky, fine to medium grained, sub-angular, fairly well sorted, non-calc. matrix, thin arg. laminae, dull gold F., milky cut, pinkish grey	5YR8/1	

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Lost Circulation Material, moderately, occasionally, slightly, very



**TABLE 1**  
**ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH		GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1050-121 CORE #5	2434.73m	A 98%	Sandstone, blocky, medium grained, sub-angular, fairly well sorted, non-calc., oil stained, yellow F., milky cut, dark yellowish brown	10YR4/2	
1050-122 CORE #6	2447.65m	A 98%	Sandstone, blocky, medium grained, sub-angular, well sorted, non-calc., oil stained, dull gold F., milky cut, pale yellowish brown	10YR6/2	
1050-123 CORE #6	2463.84m	A 98%	Sandstone, blocky, medium grained, sub-angular, well sorted, non-calc., oil stained, dull gold F., milky cut, pale yellowish brown	10YR6/2	
1050-124 CORE #8	2486.65m	A 98%	Sandstone, blocky, fine to medium grained, sub-angular, well sorted, non-calc., micaceous/arg. laminae, v. light brownish grey	5YR7/1	
1050-125 CORE #9	2502.58m	A 98%	Siltstone, blocky to subfissile, mod. hard, sl. micaceous, non-calc., v. dark brownish grey to brownish grey	5YR3/1- 5YR4/1	2.23, 2.21
1050-126 CORE #10	2506.02m	A 98%	Sandstone, fine to medium grained, sub-angular, well sorted, non-calc., micaceous/arg. laminations, pinkish grey	5YR8/1	
1050-127 CORE #11	2530.55m	A 98%	Sandstone, blocky, fine to medium grained, sub-angular, well sorted, non-calc., light grey to v. light brownish grey	N7- 5YR7/1	
1050-128 CORE #11	2531.55m	A 98%	Shale, platy to subfissile, mod. hard, non-calc., sl. silty, sl. carb?, v. pale milky cut, dark grey	N3	7.11
1050-129 CORE #12	2556.10m	A 98%	Sandstone, medium to coarse grained, sub-angular, fairly well sorted, non-calc., sl. micaceous, minor mudstone inclusion, pinkish grey to v. light brownish grey	5YR8/1- 5YR7/1	

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

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-001	815-845	4121	195	121	58	49	4543	422	9.3	73	1.20
1050-002	845-875	3868	218	115	56	44	4300	432	10.1	113	1.29
1050-003	875-905	3990	129	77	42	36	4275	285	6.7	130	1.19
1050-004	905-935	4897	129	74	41	34	5175	278	5.4	203	1.19
1050-005	935-965	6455	107	71	49	41	6723	268	4.0	235	1.20
1050-006	965-995	3797	88	55	36	29	4005	208	5.2	158	1.26
1050-007	995-1025	4034	128	66	41	30	4298	264	6.1	139	1.36
1050-008	1025-1055	2951	39	21	13	11	3035	84	2.8	54	1.23
1050-009	1055-1085	3330	69	27	16	12	3454	125	3.6	50	1.32
1050-010	1085-1115	3044	41	18	11	8	3122	78	2.5	33	1.27
1050-011	1115-1145	5692	97	35	18	10	5852	160	2.7	21	1.75
1050-012	1145-1175	3994	173	40	19	8	4234	240	5.7	7	2.34
1050-013	1175-1205	3518	141	52	31	19	3761	243	6.5	8	1.62
1050-014	1205-1235	1782	54	20	14	6	1876	95	5.0	4	2.45
1050-015	1235-1265	2825	56	12	3	7	2903	78	2.7	17	0.49
1050-016	1265-1295	2066	110	21	13	6	2216	150	6.8	15	2.13
1050-017	1295-1325	2086	92	20	12	5	2215	129	5.8	3	2.41
1050-018	1325-1355	3601	87	19	11	5	3724	123	3.3	9	2.10
1050-019	1355-1385	1821	76	18	9	7	1932	110	5.7	334	1.25
1050-020	1385-1415	2305	60	16	7	10	2397	92	3.8	610	0.74
1050-021	1415-1445	1480	43	13	6	7	1549	69	4.5	483	0.90
1050-022	1445-1475	1657	57	17	8	6	1746	89	5.1	491	1.38
1050-023	1475-1505	1856	78	25	16	8	1983	127	6.4	457	1.94
1050-024	1505-1535	1962	184	48	30	12	2237	275	12.3	283	2.50
1050-025	1535-1565	2436	334	78	52	18	2917	481	16.5	219	2.92
1050-026	1565-1595	2769	367	101	70	25	3332	563	16.9	315	2.76
1050-027	1595-1625	2133	345	93	58	21	2649	516	19.5	246	2.81
1050-028	1625-1655	4233	621	228	142	53	5277	1044	19.8	667	2.67
1050-029	1655-1685	1986	334	83	40	16	2459	473	19.2	337	2.59
1050-030	1685-1715	1539	257	74	31	14	1916	377	19.7	273	2.21

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

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-031	1715-1745	3335	431	149	37	24	3975	640	16.1	491	1.54
1050-032	1745-1775	2365	285	119	20	17	2807	442	15.7	420	1.20
1050-033	1775-1805	793	109	55	9	8	973	180	18.5	145	1.17
1050-034	1805-1835	2194	318	186	37	30	2765	571	20.7	304	1.21
1050-035	1835-1865	1007	150	101	24	18	1300	293	22.5	214	1.36
1050-036	1865-1895	2694	369	262	79	69	3473	779	22.4	606	1.15
1050-037	1895-1925	2625	629	396	118	78	3846	1220	31.7	109	1.52
1050-038	1925-1955	57404	21325	14512	4095	2368	99704	42300	42.4	4530	1.73
1050-039	1955-1985	2428	944	765	239	147	4523	2095	46.3	253	1.63
1050-040	1985-2015	7209	1636	1146	333	278	10603	3393	32.0	1037	1.20
1050-041	2015-2045	3180	1622	1176	359	297	6634	3454	52.1	589	1.21
1050-042	2045-2075	5873	1200	1035	337	328	8773	2901	33.1	1057	1.03
1050-043	2075-2105	6557	1927	901	257	241	9884	3326	33.7	629	1.07
1050-044	2105-2135	4310	697	357	102	89	5556	1246	22.4	394	1.16
1050-045	2135-2165	1056	303	154	43	31	1586	530	33.4	182	1.37
1050-046	2165-2195	3515	1076	202	33	27	4854	1338	27.6	271	1.20
1050-047	2195-2225	2998	800	167	12	7	3984	986	24.7	111	1.65
1050-048	2225-2255	2059	452	162	18	24	2715	656	24.2	35	0.75
1050-049	2255-2285	2910	449	521	29	136	4045	1135	28.0	129	0.21
1050-050	2285-2320	11502	7678	9088	1690	7251	37208	25707	69.1	4477	0.23
1050-070	2320-2350	12717	7344	8362	4047	7880	40349	27632	68.5	8996	0.51
1050-071	2350-2380	8538	4692	4726	2327	4225	24509	15971	65.2	3513	0.55
1050-090	2380-2410	7035	3620	4280	676	2482	18092	11057	61.1	2116	0.27
1050-091	2410-2440	3603	1562	1189	114	372	6840	3237	47.3	554	0.31
1050-092	2440-2470	7425	1163	806	93	301	9788	2363	24.1	1049	0.31
1050-093	2470-2500	5332	1195	790	58	160	7536	2204	29.2	591	0.36
1050-094	2500-2530	920	217	193	26	95	1450	530	36.5	389	0.27
1050-095	2530-2560	5394	641	283	30	79	6426	1032	16.1	233	0.38
1050-096	2560-2590	3429	665	215	24	55	4387	959	21.8	159	0.44
1050-097	2590-2620	2284	799	263	30	54	3429	1146	33.4	98	0.56

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

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-098	2620-2650	2207	969	611	57	79	3924	1717	43.8	114	0.72
1050-102	2650-2680	3414	1260	758	66	80	5578	2164	38.8	65	0.83
1050-110	2680-2710	1711	637	172	14	16	2549	839	32.9	33	0.83
1050-112	2710-2732	3511	1301	339	29	39	5218	1708	32.7	96	0.75
1050-113	2732-2770	3787	1350	273	28	34	5472	1685	30.8	58	0.84
1050-115	2770-2800	3169	1161	238	40	42	4651	1482	31.9	235	0.95
1050-116	2800-2820	10712	2192	484	73	103	13564	2852	21.0	706	0.71

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

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-001	815-845	1885	68	92	57	73	2174	290	13.3	439	0.78
1050-002	845-875	2182	107	149	86	106	2630	448	17.0	506	0.81
1050-003	875-905	1709	59	83	57	69	1977	268	13.6	373	0.82
1050-004	905-935	1195	48	67	47	62	1419	224	15.8	400	0.76
1050-005	935-965	751	22	29	24	30	856	105	12.3	282	0.81
1050-006	965-995	386	19	28	24	32	489	104	21.2	291	0.74
1050-007	995-1025	654	24	29	21	28	757	102	13.5	290	0.74
1050-008	1025-1055	545	18	16	12	17	607	63	10.3	185	0.67
1050-009	1055-1085	1633	22	16	12	15	1699	66	3.9	155	0.79
1050-010	1085-1115	1421	24	20	16	20	1503	81	5.4	454	0.82
1050-011	1115-1145	2033	43	30	21	20	2146	113	5.3	90	1.07
1050-012	1145-1175	2114	91	76	46	31	2358	244	10.3	54	1.51
1050-013	1175-1205	803	36	28	6	4	878	75	8.5	139	1.39
1050-014	1205-1235	740	51	33	24	15	862	122	14.2	25	1.62
1050-015	1235-1265	2713	108	61	44	24	2949	237	8.0	45	1.82
1050-016	1265-1295	2012	91	44	32	17	2196	184	8.4	9	1.86
1050-017	1295-1325	1587	69	32	20	12	1719	133	7.7	5	1.63
1050-018	1325-1355	660	43	25	18	16	763	102	13.4	24	1.11
1050-019	1355-1385	696	44	21	12	14	789	92	11.7	1386	0.88
1050-020	1385-1415	621	73	36	20	32	782	161	20.6	2756	0.63
1050-021	1415-1445	223	27	12	5	10	277	54	19.6	2535	0.53
1050-022	1445-1475	317	35	20	14	14	400	83	20.7	2955	1.01
1050-023	1475-1505	1304	111	54	43	29	1541	237	15.4	2380	1.47
1050-024	1505-1535	1693	188	82	73	39	2075	382	18.4	2199	1.87
1050-025	1535-1565	961	147	86	75	33	1302	341	26.2	1427	2.30
1050-026	1565-1595	1018	224	113	119	87	1561	543	34.8	2032	1.37
1050-027	1595-1625	1815	359	161	176	118	2629	813	30.9	2084	1.50
1050-028	1625-1655	335	130	114	131	69	778	443	56.9	1998	1.89
1050-029	1655-1685	1047	203	93	69	41	1454	406	27.9	1949	1.69
1050-030	1685-1715	1129	325	170	119	59	1802	673	37.3	1573	2.03

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

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-031	1715-1745	927	258	136	71	51	1442	516	35.8	1618	1.38
1050-032	1745-1775	805	262	171	54	45	1337	532	39.8	1620	1.18
1050-033	1775-1805	751	271	247	46	61	1376	624	45.4	1293	0.76
1050-034	1805-1835	265	86	82	26	36	495	229	46.4	1569	0.72
1050-035	1835-1865	647	333	429	126	140	1675	1028	61.4	1576	0.90
1050-036	1865-1895	272	110	148	63	76	669	397	59.4	1789	0.82
1050-037	1895-1925	3565	1067	982	347	334	6295	2730	43.4	1654	1.04
1050-038	1925-1955	4730	2236	2153	606	679	10405	5675	54.5	1943	0.89
1050-039	1955-1985	1538	750	779	262	290	3618	2080	57.5	1385	0.90
1050-040	1985-2015	1643	1042	1258	434	523	4899	3256	66.5	1737	0.83
1050-041	2015-2045	2622	1525	1758	511	733	7150	4528	63.3	2021	0.70
1050-042	2045-2075	412	476	808	330	488	2515	2102	83.6	2453	0.68
1050-043	2075-2105	5592	2512	2578	865	1258	12805	7212	56.3	3637	0.69
1050-044	2105-2135	1510	1136	1328	473	637	5084	3574	70.3	2046	0.74
1050-045	2135-2165	740	467	344	114	121	1785	1045	58.6	618	0.94
1050-046	2165-2195	709	656	265	56	61	1746	1037	59.4	682	0.92
1050-047	2195-2225	1176	877	331	18	33	2435	1260	51.7	267	0.55
1050-048	2225-2255	449	582	260	22	76	1389	940	67.7	380	0.29
1050-049	2255-2285	715	293	403	35	175	1621	906	55.9	408	0.20
1050-050	2285-2320	636	1445	4801	556	3497	10935	10298	94.2	4196	0.16
1050-070	2320-2350	9173	7244	9690	5482	10448	42038	32865	78.2	16180	0.52
1050-071	2350-2380	8817	7969	7304	2813	3428	30331	21514	70.9	12552	0.82
1050-090	2380-2410	5895	5611	7602	1880	7446	28434	22539	79.3	10556	0.25
1050-091	2410-2440	5070	3855	5102	542	2273	16842	11772	69.9	3727	0.24
1050-092	2440-2470	3126	1049	833	124	383	5514	2388	43.3	1311	0.32
1050-093	2470-2500	4056	1545	1167	168	494	7430	3374	45.4	1412	0.34
1050-094	2500-2530	1043	1138	872	105	377	3535	2492	70.5	804	0.28
1050-095	2530-2560	3638	968	690	107	311	5714	2077	36.3	1054	0.35
1050-096	2560-2590	8661	3791	1690	146	472	14760	6099	41.3	1018	0.31
1050-097	2590-2620	2703	583	343	62	154	3845	1142	29.7	633	0.40

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

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-098	2620-2650	5971	1780	1143	114	341	9349	3378	36.1	717	0.34
1050-102	2650-2680	11276	5060	2875	166	474	19851	8576	43.2	559	0.35
1050-110	2680-2710	10154	4080	1285	57	175	15751	5597	35.5	252	0.33
1050-112	2710-2732	11208	5741	2277	179	450	19855	8647	43.5	648	0.40
1050-113	2732-2770	2186	1751	565	59	127	4689	2503	53.4	567	0.47
1050-115	2770-2800	9996	3680	640	46	121	14483	4488	31.0	535	0.38
1050-116	2800-2820	3548	846	221	47	74	4737	1189	25.1	1472	0.63

**TABLE 2 C**  
**TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C<sub>1</sub> - C<sub>7</sub> HYDROCARBONS (2A + 2B)**

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-001	815-845	6006	262	213	115	121	6717	712	10.6	513	0.95
1050-002	845-875	6050	325	263	142	150	6930	880	12.7	620	0.95
1050-003	875-905	5699	188	160	99	105	6251	552	8.8	503	0.94
1050-004	905-935	6092	177	141	88	96	6594	502	7.6	603	0.91
1050-005	935-965	7205	129	100	73	71	7579	374	4.9	517	1.04
1050-006	965-995	4183	107	84	60	61	4495	312	6.9	449	0.98
1050-007	995-1025	4688	152	95	62	58	5055	367	7.3	429	1.06
1050-008	1025-1055	3496	57	37	25	28	3642	146	4.0	239	0.89
1050-009	1055-1085	4963	91	44	28	27	5153	191	3.7	205	1.03
1050-010	1085-1115	4466	66	38	27	28	4625	159	3.4	488	0.95
1050-011	1115-1145	7724	140	65	39	30	7998	273	3.4	111	1.31
1050-012	1145-1175	6108	264	116	65	39	6592	484	7.3	61	1.68
1050-013	1175-1205	4321	178	80	37	23	4639	318	6.9	147	1.58
1050-014	1205-1235	2521	105	53	38	20	2738	217	7.9	29	1.86
1050-015	1235-1265	5538	164	73	47	31	5853	315	5.4	62	1.53
1050-016	1265-1295	4078	200	65	45	23	4412	334	7.6	24	1.93
1050-017	1295-1325	3672	161	52	32	17	3934	262	6.7	8	1.86
1050-018	1325-1355	4261	130	44	29	21	4487	225	5.0	33	1.36
1050-019	1355-1385	2518	120	40	21	21	2720	203	7.4	1720	1.00
1050-020	1385-1415	2926	132	52	27	42	3179	254	8.0	3366	0.66
1050-021	1415-1445	1702	70	25	12	17	1826	123	6.8	3018	0.68
1050-022	1445-1475	1974	92	37	22	20	2146	171	8.0	3446	1.12
1050-023	1475-1505	3160	189	80	58	37	3524	364	10.3	2836	1.58
1050-024	1505-1535	3656	372	131	103	51	4312	657	15.2	2482	2.02
1050-025	1535-1565	3397	481	164	127	50	4219	822	19.5	1646	2.52
1050-026	1565-1595	3788	591	214	189	112	4893	1106	22.6	2346	1.68
1050-027	1595-1625	3948	703	254	234	138	5278	1329	25.2	2330	1.69
1050-028	1625-1655	4568	751	342	272	122	6055	1487	24.6	2666	2.23
1050-029	1655-1685	3033	537	177	110	57	3913	879	22.5	2285	1.94
1050-030	1685-1715	2669	583	244	150	73	3718	1049	28.2	1846	2.06



**TABLE 2 C**  
**TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C<sub>1</sub> - C<sub>7</sub> HYDROCARBONS (2A + 2B)**

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-031	1715-1745	4262	688	285	108	75	5418	1156	21.3	2109	1.43
1050-032	1745-1775	3170	547	290	74	62	4144	974	23.5	2039	1.19
1050-033	1775-1805	1545	379	301	55	68	2349	804	34.2	1438	0.81
1050-034	1805-1835	2459	404	268	63	67	3260	801	24.6	1873	0.94
1050-035	1835-1865	1655	483	530	151	158	2976	1321	44.4	1790	0.95
1050-036	1865-1895	2965	478	410	142	146	4141	1176	28.4	2395	0.98
1050-037	1895-1925	6190	1695	1378	465	412	10140	3950	39.0	1762	1.13
1050-038	1925-1955	62134	23561	16665	4701	3047	110109	47975	43.6	6473	1.54
1050-039	1955-1985	3966	1694	1544	501	437	8141	4176	51.3	1638	1.15
1050-040	1985-2015	8852	2678	2404	767	801	15502	6650	42.9	2775	0.96
1050-041	2015-2045	5802	3147	2934	871	1030	13784	7982	57.9	2610	0.84
1050-042	2045-2075	6285	1676	1844	668	815	11288	5003	44.3	3510	0.82
1050-043	2075-2105	12150	4439	3479	1122	1499	22689	10539	46.4	4266	0.75
1050-044	2105-2135	5820	1833	1686	576	725	10639	4820	45.3	2440	0.79
1050-045	2135-2165	1795	769	497	156	152	3371	1575	46.7	800	1.03
1050-046	2165-2195	4224	1732	467	88	88	6600	2375	36.0	952	1.01
1050-047	2195-2225	4174	1677	499	30	40	6420	2246	35.0	378	0.75
1050-048	2225-2255	2508	1034	422	40	100	4104	1596	38.9	415	0.40
1050-049	2255-2285	3625	741	924	64	310	5666	2040	36.0	537	0.21
1050-050	2285-2320	12138	9123	13888	2246	10748	48143	36005	74.8	8673	0.21
1050-070	2320-2350	21890	14588	18052	9529	18328	82387	60497	73.4	25176	0.52
1050-071	2350-2380	17355	12661	12030	5140	7654	54840	37485	68.4	16065	0.67
1050-090	2380-2410	12930	9231	11882	2555	9928	46526	33596	72.2	12673	0.26
1050-091	2410-2440	8672	5417	6291	656	2646	23682	15009	63.4	4281	0.25
1050-092	2440-2470	10551	2212	1639	217	684	15302	4751	31.0	2360	0.32
1050-093	2470-2500	9389	2739	1958	226	654	14966	5577	37.3	2003	0.35
1050-094	2500-2530	1963	1354	1065	131	472	4985	3022	60.6	1193	0.28
1050-095	2530-2560	9032	1609	973	137	390	12141	3109	25.6	1288	0.35
1050-096	2560-2590	12090	4456	1905	170	527	19148	7058	36.9	1177	0.32
1050-097	2590-2620	4987	1382	606	92	207	7275	2288	31.4	731	0.45

**TABLE 2 C**  
**TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C<sub>1</sub> - C<sub>7</sub> HYDROCARBONS (2A + 2B)**

GEOCHEM SAMPLE NUMBER	DEPTH	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>	$\frac{iC_4}{nC_4}$
1050-098	2620-2650	8177	2749	1755	171	420	13272	5095	38.4	831	0.41
1050-102	2650-2680	14690	6320	3633	232	554	25429	10740	42.2	624	0.42
1050-110	2680-2710	11865	4717	1457	71	191	18300	6435	35.2	285	0.37
1050-112	2710-2732	14719	7042	2616	208	488	25074	10354	41.3	744	0.43
1050-113	2732-2770	5973	3101	838	88	161	10160	4187	41.2	626	0.55
1050-115	2770-2800	13165	4842	877	86	164	19134	5969	31.2	771	0.53
1050-116	2800-2820	14261	3038	705	120	177	18301	4041	22.1	2178	0.68

TABLE 3  
KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES 40%; 10-40%; 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	INDEX	1 - 10 SCALE
1050-024A	1505-535m	W-I;H;Al	dominant H at 2- to 2 and 2	85	F-M	F-G	1+ to 2-/2-	
1050-027A	1595-625m	W-I;-;H-Al	H at 2- through 2+	90	F-M	F-G	1+ to 2-/2-(?)	
1050-030A	1685-715m	W-I;-;H-Al		85	F-M	F-G	2-(?)	
1050-033A	1775-805m	W-I;-;Al-H		-	F-M	F	---	
1050-037A	1895-925m	W-I;-;H-Al		80	F-M	F-G	2-/2- to 2	
1050-038A	1925-955m	W;I-H;Al-Am		75	F-M/C	F-G	2- to 2	
1050-042A	2045-075m	W;I;H-Al	fairly lean	50	F-M	F	2- to 2	
1050-044A	2105-135m	W;I-H;Al-Am		-	F-M	F	2- to 2	
1050-047A	2195-225m	W-I;Am*-Al*-H;-	*includes material passing to amorphous	60	F-M	F-G	2- to 2	
1050-050A	2285-320m	Al;W-Am;H-I	close to 2	-	F-M/C	F-G	2- to 2/2	
1050-051A	2284m SWC	W;-;I-H-Al	close to 2	80	F-M	F	2- to 2/2	
1050-052A	2286m SWC	-;W-Al*-Am*-H-I;-	differentiation difficult * includes material passing to Am	-	F-M/C	F-G	2- to 2/2	
1050-053A	2288m SWC	-;Al**-Am*-W;H-I	differentiation difficult, close to 2 **includes material passing to Am *includes incompletely developed material	-	F-C	G	2- to 2/2	
1050-054A	2290m SWC	-;W-Al**-Am*-H-I;-	differentiation difficult * ** as 053A	-	F-C	F-G	2- to 2/2	
1050-055A	2292m SWC	W;H-I;Al-Am		-	F-C	F-G	2- to 2/2	
1050-056A	2294m SWC	-;Al**-W-Am*;H-I	differentiation difficult * ** as 053A	-	F-C	F-G	2- to 2/2	

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other,, structured, spore-pollen, thick-walled, unstructured

Dominant, Major, Significant, Minor

**TABLE 3**  
**KEROGEN TYPE AND MATURATION**

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION						THERMAL MATURATION	
		TYPES 40%; 10-40%; 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	INDEX	1-10 SCALE	
1050-057A	2298m	SWC	W-Al*;H-I;Am	differentiation difficult *includes incompletely developed material	-	F-C	F	2- to 2/2	
1050-058A	2300m	SWC	Am*;W-Al**;H-I	differentiation difficult * **as 057A	-	F-C	F-G	2- to 2/2	
1050-059A	2302m	SWC	Am*;Al**;W-H-I	*includes incompletely developed material **frequently passing to Am	-	F-C	F-G	2- to 2	
1050-060A	2304m	SWC	Am*-Al**;-;W-H-I	* **as 059A	-	F-C	F-G	2- to 2	
1050-061A	2306m	SWC	-;Al**-Am*-W;I-H	* **as 059A	-	M	F-G	2- to 2/2	
1050-062A	2310m	SWC	Am*;Al**-W;I-H	* **as 059A	-	F-C	F-G	2- to 2/2	
1050-063A	2312m	SWC	Am*;Al**;W-I-H	*includes incompletely developed material **frequently passing to Am	-	F-C	F-G	2- to 2/2	
1050-064A	2314m	SWC	Am*;Al**-W;I-H	* **as 063A	-	F-C	F	2- to 2/2	
1050-065A	2316m	SWC	Am*;Al**-W;I-H	* **as 063A	-	F-C	F	2- to 2/2	
1050-066A	2318m	SWC	Am*;Al**-W;I-H	* **as 063A	-	F-C	F-G	2- to 2/2	
1050-067A	2320m	SWC	-;Am*-Al**-W;I-H	* **as 063A	-	F-M/C	F-G	2- to 2/2	

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other., structured, spore-pollen, thick-walled, unstructured

Dominant, Major, Significant, Minor

TABLE 3  
KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION							THERMAL MATURATION	
		TYPES 40%; 10-40%; 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	INDEX	1 - 10 SCALE		
1050-068A	2322m	SWC	Am*;Al**;W-I-H	*includes incompletely developed material **frequently passing to Am	-	F-C	F-G	2-	to 2/2	
1050-069A	2326m	SWC	Am*;Al**;W-I-H	possibly 2 max	-	F-C	F-G	2-	to 2/2	
1050-072A	2328m	SWC	Am*;Al**-W;I-H	* **as 068A	-	F-C	F-G	2-	to 2/2	
1050-073A	2330m	SWC	-;Am*-W-Al**;I-W	* **as 068A	-	F-M/C	F-G	2-	to 2/2	
1050-074A	2332m	SWC	-;Am*-W-Al**;I-H	* **as 068A	-	F-C	F	2		
1050-075A	2334m	SWC	-;Am*-W-Al**-I;H	* **as 068A	-	M	F-G	2		
1050-076A	2337m	SWC	Am*;W-Al**-I;H	differentiation difficult *frequently incompletely developed **includes material passing to Am	-	F-C	F	2(?)		
1050-077A	2338.5m	SWC	Am*;Al**-W;I	* **as 076A	-	F-M	F	2(?)		
1050-078A	2341.5m	SWC	Am*;Al**-W;I-H	*frequently incompletely developed **includes material passing to Am	-	F-C	F	2(?)		
1050-079A	2343m	SWC	Am*;Al**-W;I	* **as 078A	-	F-C	F	---		
1050-080A	2346m	SWC	Am*-Al**;W;I-H	differentiation difficult * **as 078A	-	F-C	F	2(??)		
1050-081A	2350.5m	SWC	Am*;Al**-W;I	differentiation difficult * **as 078A	-	F-C	F	---		

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other., structured, spore-pollen, thick-walled, unstructured

Dominant, Major, Significant, Minor

TABLE 3

## KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES 40%; 10-40%; 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	INDEX	1 - 10 SCALE
1050-071A	2350-380m	Am*;W-Al**;I-H	*includes incompletely developed material **includes material passing to amorphous	-	F-C	F	2	
1050-082A	2352m SWC	Am*;Al**-W;I-H	differentiation difficult *frequently incompletely developed **includes material passing to Am	-	F-C	F	2(??)	
1050-083A	2355m SWC	-;Am*-W-Al**;I-H	differentiation difficult *frequently incompletely developed **includes material passing to Am	-	F-C	F-G	2(?)	
1050-084A	2359.5m SWC	Am*;Al**-W;I	* **as 083A	-	F-M	F	---	
1050-085A	2361m SWC	W;Am*;H-Al-I	*largely degraded, incompletely developed	-	F-C	F-G	2	
1050-086A	2362.5m SWC	Am*;Al**-W;I	differentiation difficult *includes incompletely developed material **includes material passing to Am	-	F-C	F	---	
1050-087A	2364m SWC	-;Am*-Al**-W;I-H	differentiation difficult material at 2 to 2+ * **as 083A	-	F-C	F	2(?)	
1050-088A	2365.5m SWC	Am*;Al**-W;I-H	differentiation difficult * includes incompletely developed material **includes material passing to Am	-	F-C	F	2	
1050-089A	2368.5m SWC	W;H-I;Al-Am	H at 2 to 2+	-	M	G	2	
1050-093A	2470-500m	W;-;I-Al-H-Am		-	F-C	F-G	2	
1050-095A	2530-560m	W;I-Am-Al-H;-	lean, differentiation frequently difficult	35	F-M	F	2(?)	

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other,, structured, spore-pollen, thick-walled, unstructured

Dominant, Major, Significant, Minor

**TABLE 3**  
**KEROGEN TYPE AND MATURATION**

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION					THERMAL MATURATION	
		TYPES 40%; 10-40%; 10%	REMARKS	RE- WORKED (%)	PARTICLE SIZE	PRESERV- ATION	INDEX	1 - 10 SCALE
1050-128A	2531.5m CORE	Al*-Am*;W;H-I	*includes material passing to amorphous, widespread sapropelisation, largely unrecognisable, differentiation extremely difficult	-	F-C	F-G	2	
1050-100A	2637.5m SWC	W;H-I;Al-Am		-	F-C	F-G	2 to 2+ max	
1050-111A	2713m SWC	W-I;H;Am-Al	disseminated amorphous-like contamination significant H at 2+ and 2+ to 3-	-	F-M	F	2 to 2+(?)	
1050-114A	2770m SWC	W;I-H;Al-Am		-	F-C	G	2 to 2+	
1050-116A	2800-820m	W;H-I-Am;Al	differentiation difficult	-	F-C	F	2 to 2+(?)	

Algal, Amorphous, Herbaceous, Inertinites, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other, structured, spore-pollen, thick-walled, unstructured

Dominant, Major, Significant, Minor

**TABLE 4**  
**VITRINITE REFLECTANCE DATA**

GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	AVERAGE REFLECTIVITY R <sub>o</sub> (%), (NUMBER OF PARTICLES)			REMARKS
			1	2	3	
1050-024A	1505-1535m	WR	0.48 (2)	1.16 (17)	-	
1050-027A	1595-1625m	WR	0.50 (5)	1.26 (12)	-	
1050-030A	1685-1715m	WR	0.50 (16)	1.14 (2)	1.41 (9)	
1050-033A	1775-1805m	WR	1.30 (16)	-	-	
1050-037A	1895-1925m	WR	0.47 (1)	1.28 (15)	-	
1050-038A	1925-1955m	WR	0.46 (11)	1.21 (8)	-	
1050-042A	2045-2075m	WR	1.10 (3)	-	-	
1050-044A	2105-2135m	WR	1.15 (15)	-	-	
1050-047A	2195-2225m	WR	0.48 (2)	1.17 (16)	-	
1050-050A	2285-2320m	WR	0.50 (20)	-	-	
1050-051A	2284m	SWC	WR	1.35 (14)	-	-
1050-052A	2286m	SWC	WR	0.58 (13)	-	-
1050-053A	2288m	SWC	KC	0.51 (30)	-	-
1050-054A	2290m	SWC	WR	0.57 (12)	-	-
1050-055A	2292m	SWC	WR	0.58 (12)	-	-
1050-056A	2294m	SWC	KC	0.53 (22)	-	-
1050-057A	2298m	SWC	WR	0.56 (17)	-	-
1050-058A	2300m	SWC	KC	0.55 (17)	-	-
1050-059A	2302m	SWC	KC	0.55 (17)	-	-
1050-060A	2304m	SWC	KC	0.54 (18)	-	-
1050-061A	2306m	SWC	KC	0.57 (14)	-	-
1050-062A	2310m	SWC	KC	0.55 (22)	-	-
1050-063A	2312m	SWC	KC	0.54 (30)	-	-
1050-064A	2314m	SWC	KC	0.53 (9)	-	-
1050-065A	2316m	SWC	KC	0.55 (30)	-	-
1050-066A	2318m	SWC	KC	0.54 (21)	-	-
1050-067A	2320m	SWC	WR	0.54 (6)	1.22 (3)	-
1050-068A	2322m	SWC	KC	0.54 (13)	-	-
1050-069A	2326m	SWC	KC	0.53 (11)	-	-
1050-071A	2350-2380m		KC	0.65 (40)	-	-
1050-072A	2328m	SWC	KC	0.50 (8)	-	-
1050-073A	2330m	SWC	WR	0.57 (8)	1.27 (4)	-
1050-074A	2332m	SWC	WR	0.53 (5)	1.19 (5)	-
1050-075A	2334m	SWC	KC	0.54 (22)	-	-
1050-076A	2337m	SWC	KC	0.61 (30)	-	-
1050-077A	2338.5m	SWC	KC	0.55 (18)	-	-
1050-078A	2341.5m	SWC	KC	0.57 (17)	-	-

GT—ditch cuttings; CO—core; WR—whole rock; KC—kerogen concentrate.

Colours — spore fluorescence.

\*Reworked



**TABLE 4**  
**VITRINITE REFLECTANCE DATA**

GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	AVERAGE REFLECTIVITY R <sub>o</sub> (%), (NUMBER OF PARTICLES)			REMARKS
			1	2	3	
1050-079A	2343m	SWC	KC	0.60 (30)	-	-
1050-080A	2346m	SWC	KC	0.55 (44)	-	-
1050-081A	2350.5m	SWC	KC	0.60 (50)	-	-
1050-082A	2352m	SWC	KC	0.58 (30)	-	-
1050-083A	2355m	SWC	KC	0.58 (42)	-	-
1050-084A	2359.5m	SWC	KC	0.64 (27)	-	-
1050-085A	2361m	SWC	KC	0.68 (40)	-	-
1050-086A	2362.5m	SWC	KC	0.61 (13)	-	-
1050-087A	2364m	SWC	KC	0.60 (28)	-	-
1050-088A	2365.5m	SWC	KC	0.60 (38)	-	-
1050-089A	2368.5m	SWC	WR	0.64 (9)	1.26 (6)	-
1050-093A	2470-2500m		WR	0.68 (20)	-	-
1050-095A	2530-2560m		WR	0.67 (15)	-	-
1050-101A	2656m		WR	0.93 (40)	-	-
1050-111A	2713m		WR	0.83 (25)	1.00 (3)	-
1050-114A	2770m		KC	0.84 (30)	-	-
1050-116B	2800-2820m		KC	0.54 (9)	0.74 (21)	-

GT—ditch cuttings; CO—core; WR—whole rock; KC—kerogen concentrate.

Colours — spore fluorescence.

\*Reworked

TABLE 5

## METHYL PHENANTHRENE INDEX

SAMPLE NUMBER	DEPTH	BY AREA	BY HEIGHT
1050-007	995-1025	1.64	1.81
1050-012	1145-1175	0.28	0.51
1050-014	1205-1235	0.66	1.16
1050-020	1385-1415	0.93	0.86
1050-025	1535-1565	0.63	0.66
1050-030	1685-1715	0.61	0.66
1050-034	1805-1835	0.75	0.40
1050-041	2015-2045	0.72	0.65
1050-047	2195-2225	0.39	0.39
1050-051A	2284	0.72	0.73
1050-052A	2286	0.66	0.69
1050-053A	2288	0.57	0.60
1050-054A	2290	0.71	0.42
1050-055A	2292	0.68	0.46
1050-056A	2294	0.78	0.73
1050-057A	2298	0.42	0.58
1050-058A	2300	0.60	0.61
1050-059A	2302	0.59	0.65
1050-060A	2304	0.63	0.63
1050-061A	2306	0.61	0.64
1050-062A	2310	0.65	0.67
1050-063A	2312	0.63	0.59
1050-064A	2314	0.63	0.59
1050-065A	2316	0.63	0.58
1050-066A	2318	0.64	0.62
1050-067A	2320	0.66	0.64
1050-068A	2322	0.63	0.60
1050-069A	2326	0.68	0.60
1050-072A	2328	0.68	0.58
1050-073A	2330	0.73	0.59
1050-074A	2332	0.47	0.55
1050-075A	2334	0.69	0.78
1050-076A	2337	0.72	0.61
1050-077A	2338	0.71	0.62
1050-078A	2341.5	0.77	0.64
1050-079A	2343	0.70	0.63
1050-080A	2346	0.59	0.59
1050-081A	2350.5	0.58	0.57
1050-082A	2352	0.24	0.27
1050-083A	2355	0.54	0.60
1050-084A	2359.5	0.58	0.61
1050-085A	2361	0.74	0.69
1050-086A	2362.5	0.68	0.62
1050-087A	2364	0.55	0.55
1050-088A	2365.5	0.62	0.65
1050-089A	2368.5	0.44	0.56
1050-091	2410-2440	0.58	0.63
1050-120A	2421.73	0.65	1.03
1050-121A	2434.73	0.51	0.76
1050-122A	2447.65	0.72	0.84
1050-123A	2463.84	0.63	0.67
1050-095	2530-2560	0.68	0.74
1050-127A	2530.55	0.59	0.79
1050-129A	2556.10	0.60	0.66
1050-096A	2560-2590	0.76	0.77
1050-103	2678	1.25	0.67
1050-112A	2710-2732	0.54	0.31
1050-114	2770	0.65	0.68

**TABLE 6**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> MATERIAL EXTRACTED FROM ROCK**

GEOCHEM SAMPLE NUMBER	DEPTH	HYDROCARBONS		NON HYDROCARBONS			
		Paraffin – Naphthenes	Aromatics	Precipd. Asphaltenes	Eluted NSO's	Non eluted NSO's	Sulphur
1050-001	815-845	20.03	8.31	49.73	14.03	2.86	5.04
1050-007	995-1025	10.46	7.19	70.92	6.70	3.10	1.63
1050-012	1145-1175	23.19	10.14	52.80	10.35	3.52	0.00
1050-014	1205-1235	60.88	6.65	11.95	15.79	2.84	1.89
1050-020	1385-1415	26.59	8.06	42.02	14.75	7.03	1.54
1050-025	1535-1565	70.52	5.01	15.37	5.18	1.66	2.26
1050-030	1685-1715	17.57	11.82	49.66	11.15	9.80	0.00
1050-034	1805-1835	26.98	5.27	53.75	6.69	5.27	2.03
1050-038	1925-1955	10.53	16.61	49.92	14.14	8.06	0.74
1050-041	2015-2045	13.04	12.56	67.15	3.22	3.22	0.81
1050-047	2195-2225	5.45	11.61	71.56	6.64	4.74	0.00
1050-051A	2284	26.09	17.39	39.86	7.73	5.07	3.86
1050-052A	2286	20.47	19.49	36.06	14.42	4.29	5.26
1050-053A	2288	39.17	20.75	28.26	8.11	2.85	0.86
1050-054A	2290	25.50	19.69	36.69	12.98	2.01	3.13
1050-055A	2292	23.92	16.89	47.10	9.49	1.36	1.23
1050-056A	2294	33.79	24.26	29.85	9.63	2.09	0.39
1050-057A	2298	38.42	22.51	26.08	9.09	3.46	0.43
1050-058A	2300	31.33	24.78	28.79	11.86	2.74	0.51
1050-059A	2302	26.74	25.16	38.01	7.03	2.36	0.70
1050-060A	2304	27.80	24.68	30.45	12.97	3.45	0.64
1050-061A	2306	32.12	21.64	35.33	8.82	1.55	0.54
1050-062A	2310	29.45	19.86	40.22	8.03	2.06	0.37
1050-063A	2312	25.09	30.10	32.00	11.42	1.39	0.00
1050-064A	2314	29.96	23.47	26.35	15.81	4.08	0.34
1050-065A	2316	28.80	22.57	34.51	11.09	2.79	0.24
1050-066A	2318	29.07	19.34	39.69	9.92	1.71	0.26
1050-067A	2320	40.44	21.79	20.83	13.95	2.06	0.93
1050-068A	2322	33.88	22.90	32.68	8.32	2.06	0.16
1050-069A	2326	38.69	26.64	21.90	10.48	2.29	0.00
1050-072A	2328	40.84	23.98	15.88	15.29	3.37	0.63
1050-073A	2330	43.86	22.30	15.02	15.14	3.40	0.28
1050-074A	2332	48.21	24.98	10.38	13.36	2.83	0.24
1050-075A	2334	46.63	25.00	7.75	15.93	4.33	0.37

**TABLE 6**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> MATERIAL EXTRACTED FROM ROCK**

GEOCHEM SAMPLE NUMBER	DEPTH	HYDROCARBONS		NON HYDROCARBONS			
		Paraffin – Naphthenes	Aromatics	Preciptd. Asphaltenes	Eluted NSO's	Non eluted NSO's	Sulphur
1050-076A	2337	35.62	34.56	12.67	13.38	2.98	0.78
1050-077A	2338.5	35.32	37.14	10.56	14.11	2.18	0.70
1050-078A	2341.5	39.99	28.49	18.58	11.20	1.43	0.32
1050-079A	2343	31.87	31.95	17.55	14.17	3.84	0.62
1050-080A	2346	31.56	33.28	14.41	17.30	2.83	0.61
1050-081A	2350.5	23.69	37.27	20.33	16.14	2.17	0.40
1050-082A	2352	37.64	33.81	9.36	17.30	1.67	0.22
1050-083A	2355	30.34	28.13	31.38	8.31	1.60	0.23
1050-084A	2359.5	27.01	33.58	24.60	11.66	2.73	0.42
1050-085A	2361	20.15	43.99	15.34	16.83	2.95	0.74
1050-086A	2362.5	32.13	31.38	18.55	14.00	3.38	0.57
1050-087A	2364	26.42	36.50	12.34	20.92	2.75	1.07
1050-088A	2365.5	28.11	35.53	15.34	15.10	2.59	3.34
1050-089A	2368.5	33.29	29.72	16.71	15.82	3.70	0.77
1050-091A	2410-2440	16.00	22.66	48.17	9.10	2.84	1.22
1050-120A	2421.73	72.59	14.92	4.39	5.80	1.61	0.69
1050-121A	2434.73	73.96	17.68	1.52	5.23	1.53	0.08
1050-122A	2447.65	69.99	17.78	3.84	6.41	1.69	0.29
1050-123A	2463.84	72.62	14.60	2.13	9.01	1.40	0.24
1050-124A	2486.65	61.63	24.27	7.55	4.32	2.22	0.00
1050-126A	2506.02	74.19	13.09	6.69	4.25	1.43	0.35
1050-095	2530-2560	46.12	18.45	19.05	13.11	2.06	1.21
1050-127A	2530.55	78.06	11.86	5.58	2.75	1.32	0.43
1050-129A	2556.10	17.49	16.38	52.78	10.33	3.02	0.00
1050-096A	2560-2590	10.10	15.28	59.89	11.32	1.50	1.91
1050-103	2678	12.58	20.59	51.31	9.64	4.25	1.63
1050-112A	2710-2732	28.12	17.59	41.27	9.42	2.84	0.76
1050-114	2770	15.68	15.25	56.12	10.94	2.01	0.00

**TABLE 7**  
**CONCENTRATION (PPM) OF EXTRACTED C<sub>15+</sub> MATERIAL IN ROCK**

GEOCHEM SAMPLE NUMBER	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
			Paraffin Naphthenes	Aromatics	TOTAL	Precipitd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	Sulphur
1050-001	815-845	531	106	44	151	264	75	15	27
1050-007	995-1025	520	54	37	92	369	35	16	9
1050-012	1145-1175	463	107	47	154	244	48	16	0
1050-014	1205-1235	1747	1064	116	1180	209	276	50	33
1050-020	1385-1415	524	139	42	182	220	77	37	8
1050-025	1535-1565	2413	1701	121	1822	371	125	40	55
1050-030	1685-1715	284	50	34	83	141	32	28	0
1050-034	1805-1835	448	121	24	144	241	30	24	9
1050-038	1925-1955	666	70	111	181	333	94	54	5
1050-041	2015-2045	572	75	72	146	384	18	18	5
1050-047	2195-2225	368	20	43	63	263	24	17	0
1050-051A	2284	409	107	71	178	163	32	21	16
1050-052A	2286	450	92	88	180	162	65	19	24
1050-053A	2288	4908	1922	1019	2941	1387	398	140	42
1050-054A	2290	945	241	186	427	347	123	19	30
1050-055A	2292	866	207	146	353	408	82	12	11
1050-056A	2294	3155	1066	765	1831	942	304	66	12
1050-057A	2298	602	231	136	367	157	55	21	3
1050-058A	2300	2643	828	655	1483	761	313	73	13
1050-059A	2302	5674	1517	1428	2945	2156	399	134	40
1050-060A	2304	5340	1485	1318	2803	1626	693	184	34
1050-061A	2306	3729	1198	807	2005	1317	329	58	20
1050-062A	2310	5471	1611	1086	2698	2200	439	113	20
1050-063A	2312	6049	1517	1821	3338	1936	691	84	0
1050-064A	2314	5268	1578	1236	2815	1388	833	215	18
1050-065A	2316	5977	1721	1349	3071	2062	663	167	14
1050-066A	2318	6206	1804	1200	3005	2463	616	106	16
1050-067A	2320	1457	589	317	907	303	203	30	14
1050-068A	2322	4401	1491	1008	2499	1438	366	91	7
1050-069A	2326	1682	651	448	1099	368	176	39	0
1050-072A	2328	3313	1353	794	2147	526	506	112	21
1050-073A	2330	5228	2293	1166	3459	785	792	178	15
1050-074A	2332	3449	1663	861	2524	358	461	98	8
1050-075A	2334	7729	3604	1932	5536	599	1231	334	29

**TABLE 7**  
**CONCENTRATION (PPM) OF EXTRACTED C<sub>15+</sub> MATERIAL IN ROCK**

GEOCHEM SAMPLE NUMBER	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
			Paraffin - Naphthenes	Aromatics	TOTAL	Precipitd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	Sulphur
1050-076A	2337	9480	3377	3276	6653	1201	1269	283	74
1050-077A	2338.5	6444	2276	2393	4668	680	909	141	45
1050-078A	2341.5	11590	4634	3302	7936	2153	1298	166	37
1050-079A	2343	11332	3611	3620	7231	1988	1606	436	71
1050-080A	2346	12987	4099	4323	8422	1872	2247	368	79
1050-081A	2350.5	13879	3289	5173	8461	2821	2241	301	55
1050-082A	2352	11222	4224	3794	8019	1050	1941	188	25
1050-083A	2355	11929	3619	3356	6975	3744	991	191	28
1050-084A	2359.5	13786	3724	4629	8353	3392	1608	376	57
1050-085A	2361	10682	2153	4699	6852	1638	1798	315	79
1050-086A	2362.5	14509	4662	4552	9215	2691	2031	490	82
1050-087A	2364	9307	2459	3397	5856	1149	1947	256	100
1050-088A	2365.5	9234	2595	3281	5876	1416	1394	239	309
1050-089A	2368.5	807	269	240	508	135	128	30	6
1050-091A	2410-2440	2179	349	494	842	1050	198	62	27
1050-120A	2421.73	1380	1002	206	1208	61	80	22	9
1050-121A	2434.73	13790	10198	2438	12636	210	721	212	11
1050-122A	2447.65	3421	2395	608	3003	131	219	58	10
1050-123A	2463.84	5349	3885	781	4666	114	482	75	13
1050-124A	2486.65	1638	1009	397	1407	124	71	36	0
1050-126A	2506.02	1743	1293	228	1521	117	74	25	6
1050-095	2530-2560	685	316	126	442	131	90	14	8
1050-127A	2530.55	3087	2409	366	2776	172	85	41	13
1050-129A	2556.10	512	90	84	173	270	53	15	0
1050-096A	2560-2590	457	46	70	116	274	52	7	9
1050-103	2678	992	125	204	329	509	96	42	16
1050-112A	2710-2732	1781	501	313	814	735	168	51	14
1050-114	2770	975	153	149	302	547	107	20	0

TABLE 8  
SIGNIFICANT RATIOS (%) OF C<sub>15+</sub> FRACTIONS AND ORGANIC CARBON

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS	HYDROCARBONS	TOTAL EXTRACT	P-NAPHTHENES
			TOTAL EXTRACT	ORG. CARBON	ORG. CARBON	AROMATICS
1050-001	815-845	0.81	28.34	1.86	6.56	2.41
1050-007	995-1025	0.65	17.65	1.41	8.01	1.45
1050-012	1145-1175	0.76	33.33	2.03	6.09	2.29
1050-014	1205-1235	0.81	67.53	14.57	21.57	9.16
1050-020	1385-1415	0.77	34.65	2.36	6.81	3.30
1050-025	1535-1565	1.08	75.54	16.87	22.34	14.06
1050-030	1685-1715	1.20	29.39	0.70	2.36	1.49
1050-034	1805-1835	0.93	32.25	1.55	4.81	5.12
1050-038	1925-1955	2.15	27.14	0.84	3.10	0.63
1050-041	2015-2045	1.96	25.60	0.75	2.92	1.04
1050-047	2195-2225	1.65	17.06	0.38	2.23	0.47
1050-051A	2284	0.42	43.48	4.23	9.73	1.50
1050-052A	2286	1.15	39.96	1.57	3.92	1.05
1050-053A	2288	4.34	59.92	6.78	11.31	1.89
1050-054A	2290	1.31	45.19	3.26	7.21	1.30
1050-055A	2292	0.84	40.81	4.21	10.30	1.42
1050-056A	2294	3.09	58.05	5.93	10.21	1.39
1050-057A	2298	1.02	60.93	3.60	5.91	1.71
1050-058A	2300	2.76	56.10	5.37	9.58	1.26
1050-059A	2302	4.06	51.90	7.25	13.98	1.06
1050-060A	2304	4.33	52.48	6.47	12.33	1.13
1050-061A	2306	2.50	53.76	8.02	14.91	1.48
1050-062A	2310	3.68	49.31	7.33	14.87	1.48
1050-063A	2312	4.77	55.19	7.00	12.68	0.83
1050-064A	2314	3.72	53.42	7.57	14.16	1.28
1050-065A	2316	4.66	51.37	6.59	12.83	1.28
1050-066A	2318	3.25	48.42	9.24	19.09	1.50
1050-067A	2320	2.45	62.23	3.70	5.95	1.86
1050-068A	2322	3.47	56.78	7.20	12.68	1.48
1050-069A	2326	3.76	65.33	2.92	4.47	1.45
1050-072A	2328	4.40	64.82	4.88	7.53	1.70
1050-073A	2330	2.05	66.16	16.87	25.50	1.97
1050-074A	2332	2.48	73.19	10.18	13.91	1.93
1050-075A	2334	3.32	71.63	16.67	23.28	1.86

TABLE 8  
SIGNIFICANT RATIOS (%) OF C<sub>15+</sub> FRACTIONS AND ORGANIC CARBON

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS	HYDROCARBONS	TOTAL EXTRACT	P-NAPHTHENES
			TOTAL EXTRACT	ORG. CARBON	ORG. CARBON	AROMATICS
1050-076A	2337	7.13	70.18	9.33	13.30	1.03
1050-077A	2338.5	11.20	72.45	4.17	5.75	0.95
1050-078A	2341.5	7.05	68.47	11.26	16.44	1.40
1050-079A	2343	9.32	63.81	7.76	12.16	1.00
1050-080A	2346	9.80	64.85	8.59	13.25	0.95
1050-081A	2350.5	12.20	60.96	6.94	11.38	0.64
1050-082A	2352	9.07	71.45	8.84	12.37	1.11
1050-083A	2355	8.36	58.47	8.34	14.27	1.08
1050-084A	2359.5	11.00	60.59	7.59	12.53	0.80
1050-085A	2361	18.70	64.14	3.66	5.71	0.46
1050-086A	2362.5	8.19	63.51	11.25	17.72	1.02
1050-087A	2364	10.40	62.91	5.63	8.95	0.72
1050-088A	2365.5	8.85	63.64	6.64	10.43	0.79
1050-089A	2368.5	0.78	63.01	6.52	10.34	1.12
1050-091A	2410-2440	3.28	38.67	2.57	6.64	0.71
1050-120A	2421.73	0.17	87.51	71.06	81.20	4.86
1050-121A	2434.73	0.06	91.64	2106.00	2298.33	4.18
1050-122A	2447.65	0.06	87.78	500.51	570.21	3.94
1050-123A	2463.84	0.06	87.22	777.60	891.51	4.97
1050-124A	2486.65	0.32	85.90	43.97	51.18	2.54
1050-126A	2506.02	0.47	87.28	32.37	37.08	5.67
1050-095	2530-2560	1.34	64.56	3.30	5.11	2.50
1050-127A	2530.55	0.50	89.92	55.51	61.74	6.58
1050-129A	2556.10	0.44	33.86	3.94	11.64	1.07
1050-096A	2560-2590	0.29	25.38	4.00	15.77	0.66
1050-103	2678	4.76	33.17	0.69	2.08	0.61
1050-112A	2710-2732	4.78	45.71	1.70	3.72	1.60
1050-114	2770	1.96	30.94	1.54	4.97	1.03



TABLE 9

## ROCKEVAL PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Production INDEX	Hydrogen INDEX	Oxygen INDEX	Tmax (°C)
1050-033A	1775-1805	0.12	0.35	1.16	0.26	33.7	111.5	445
1050-034A	1805-1835	0.45	0.38	0.64	0.54	36.9	62.1	288
1050-035B	1835-1865	0.05	0.16	0.42	0.24	12.7	33.3	432
1050-036B	1865-1895	0.03	0.17	0.61	0.15	18.3	65.6	429
1050-037A	1895-1925	0.05	0.30	0.52	0.14	23.8	41.3	436
1050-038A	1925-1955	0.10	1.03	1.10	0.09	43.6	46.6	440
1050-039A	1955-1985	0.18	1.16	1.18	0.13	57.1	58.1	438
1050-040A	1985-2015	0.23	1.10	1.19	0.17	55.6	60.1	437
1050-041A	2015-2045	0.24	1.31	0.86	0.15	57.0	37.4	440
1050-042A	2045-2075	0.16	0.88	0.71	0.15	77.9	62.8	439
1050-043A	2075-2105	0.24	1.42	0.90	0.14	60.2	38.1	438
1050-044A	2105-2135	0.13	0.86	0.94	0.13	48.0	52.5	440
1050-045A	2135-2165	0.06	0.36	0.43	0.14	30.3	36.1	439
1050-046A	2165-2195	0.06	0.46	0.69	0.12	31.7	47.6	441
1050-047A	2195-2225	0.21	1.55	0.31	0.12	48.6	9.7	443
1050-048B	2225-2255	0.07	0.30	0.32	0.19	27.3	29.1	439
1050-049A	2255-2285	0.01	0.08	0.30	0.11	29.6	111.1	400
1050-051A	2284	0.06	0.17	0.35	0.26	51.5	106.1	443
1050-050A	2285-2320	0.83	7.84	0.24	0.10	240.5	7.4	443
1050-052A	2286	0.27	1.32	0.38	0.17	116.8	33.6	443
1050-053A	2288	1.40	8.57	0.68	0.14	226.7	18.0	441
1050-054A	2290	0.46	2.09	0.51	0.18	150.4	36.7	441
1050-055A	2292	0.25	0.84	0.43	0.23	93.3	47.8	441
1050-056A	2294	1.09	6.88	0.55	0.14	212.3	17.0	443
1050-057A	2298	0.39	1.50	0.51	0.21	128.2	43.6	443
1050-058A	2300	1.16	5.84	0.52	0.17	204.2	18.2	444
1050-059A	2302	1.98	11.61	0.90	0.15	243.9	18.9	444
1050-060A	2304	1.82	13.71	0.75	0.12	298.7	16.3	447
1050-061A	2306	1.12	4.50	0.57	0.20	186.7	23.7	444
1050-062A	2310	1.64	9.81	0.76	0.14	241.6	18.7	444
1050-063A	2312	2.53	14.52	0.77	0.15	269.4	14.3	443
1050-064A	2314	1.95	8.93	0.85	0.18	210.1	20.0	446
1050-065A	2316	2.65	13.19	0.81	0.17	240.9	14.8	446
1050-066A	2318	1.91	9.87	0.72	0.16	266.0	19.4	448
1050-067A	2320	1.50	5.87	0.67	0.20	216.6	24.7	447
1050-070A	2320-2350	1.43	9.57	0.33	0.13	249.2	8.6	444
1050-068A	2322	1.84	5.98	0.92	0.24	145.5	22.4	447
1050-069A	2326	2.47	8.76	0.84	0.22	204.7	19.6	445
1050-072A	2328	2.36	10.97	0.71	0.18	230.0	14.9	447
1050-073A	2330	1.44	6.26	0.55	0.19	248.4	21.8	447
1050-074A	2332	1.49	6.16	0.42	0.19	219.2	14.9	445
1050-075A	2334	2.59	6.51	0.55	0.28	180.8	15.3	445
1050-076A	2337	4.58	13.75	1.11	0.25	185.3	15.0	444
1050-077A	2338.5	5.85	20.25	1.65	0.22	171.6	14.0	445
1050-078A	2341.5	4.47	11.64	1.44	0.28	159.9	19.8	442
1050-079A	2343	5.31	17.18	1.29	0.24	174.2	13.1	445
1050-080A	2346	5.50	17.70	1.25	0.24	171.8	12.1	445
1050-071A	2350-2380	4.27	16.96	0.89	0.20	179.7	9.4	444
1050-081A	2350.5	6.35	26.30	1.28	0.19	217.4	10.6	451
1050-082A	2352	5.42	17.21	1.49	0.24	193.4	16.7	445

TABLE 9

## ROCKEVAL PYROLYSIS DATA

GEOCHEM		S1	S2	S3	Production	Hydrogen	Oxygen	Tmax
SAMPLE NUMBER	DEPTH	(mg/g)	(mg/g)	(mg/g)	INDEX	INDEX	INDEX	(°C)
1050-083A	2355	5.02	15.84	1.34	0.24	184.8	15.6	447
1050-084A	2359.5	6.09	23.31	1.30	0.21	202.7	11.3	448
1050-085A	2361	9.04	44.42	1.17	0.17	236.3	6.2	448
1050-086A	2362.5	5.62	20.17	1.07	0.22	217.1	11.5	450
1050-087A	2364	5.60	22.63	1.06	0.20	205.7	9.6	450
1050-088A	2365.5	5.14	18.00	0.91	0.22	189.5	9.6	446
1050-089A	2368.5 <i>Handwritten</i>	0.41	1.02	0.44	0.29	115.9	50.0	442
1050-090A	2380-2410	2.20	11.89	0.61	0.16	156.0	8.0	446
1050-091A	2410-2440 <i>Handwritten</i>	0.51	3.61	0.40	0.12	93.8	10.4	447
1050-091B	2410-2440	0.04	0.25	0.31	0.14	27.2	33.7	439
1050-092A	2440-2470	0.07	0.44	0.28	0.14	40.7	25.9	441
1050-093A	2470-2500	0.17	1.12	0.30	0.13	58.6	15.7	442
1050-094A	2500-2530 <i>Handwritten</i>	0.08	0.37	0.31	0.18	37.0	31.0	439
1050-095A	2530-2560	0.09	0.52	0.34	0.15	36.1	23.6	443
1050-096B	2560-2590	0.09	0.66	0.26	0.12	40.5	16.0	445
1050-097B	2590-2620	0.03	0.36	0.27	0.08	31.9	23.9	444
1050-098B	2620-2650 <i>Handwritten</i>	0.14	0.80	0.29	0.15	58.8	21.3	448
1050-100A	2637.5	0.43	3.06	2.15	0.12	100.7	70.7	441
1050-102B	2650-2680	0.87	25.31	0.62	0.03	132.5	3.3	449
1050-099A	2652	0.05	0.50	0.17	0.09	65.8	22.4	455
1050-101A	2656	5.75	108.00	2.37	0.05	173.5	3.8	450
1050-103A	2678	0.46	4.21	1.94	0.10	96.3	44.4	442
1050-110B	2680-2710	0.21	2.08	0.32	0.09	59.6	9.2	449
1050-104A	2683.5	0.07	0.57	0.77	0.11	57.6	77.8	451
1050-105A	2687 <i>Handwritten</i>	0.04	0.25	0.17	0.14	56.8	38.6	456
1050-106A	2693 <i>Handwritten</i>	0.01	0.19	0.85	0.05	34.5	154.5	450
1050-107A	2698	0.24	1.99	3.76	0.11	51.2	96.7	448
1050-108A	2704.5	0.21	1.66	0.97	0.11	50.5	29.5	455
1050-109A	2707	0.18	1.23	6.56	0.13	61.8	329.6	445
1050-112A	2710-2732	0.57	5.19	0.70	0.10	115.3	15.6	446
1050-111A	2713	0.46	4.67	0.73	0.09	113.3	17.7	449
1050-113B	2732-2770	0.07	0.49	0.26	0.13	31.6	16.8	446
1050-114A	2770	0.23	3.23	0.28	0.07	172.7	15.0	444
1050-115B	2770-2800	0.60	5.07	0.38	0.11	112.4	8.4	448
1050-116B	2800-2820	0.35	2.96	0.46	0.11	27.9	4.3	452

TABLE 10

## STANDARD PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON	S1 (mg/g)	S2 (mg/g)	PRODUCTION INDEX	HYDROGEN INDEX	Tmax (°C)
1050-117A	2384.92	1.02	0.64	1.35	0.32	132.35	441
1050-117B	2384.92	0.87	0.53	0.97	0.35	111.49	431
1050-118B	2399.55	4.05	1.63	4.88	0.25	120.49	443
1050-119B	2415.8	3.36	1.79	5.71	0.24	169.94	441
1050-125A	2502.58	2.22	0.94	5.56	0.14	250.45	440
1050-128A	2531.55	7.11	3.42	23.67	0.13	332.91	444

TABLE 11

GAS - OIL GENERATION INDEX

<u>GEOCHEM SAMPLE NUMBER</u>	<u>DEPTH (M)</u>	<u>C<sub>1</sub>-C<sub>5</sub> (%)</u>	<u>C<sub>6+</sub> (%)</u>	<u>GOGI</u>
1050-037A	1895-1925m	29.33	70.67	0.42
1050-039A	1955-1985m	38.54	61.46	0.63
1050-041A	2015-2045m	29.18	70.82	0.41
1050-043A	2075-2105m	34.80	65.20	0.53
1050-047A	2195-2225m	37.80	62.20	0.61
1050-051A	2248m SWC	29.70	70.30	0.42
1050-052A	2286m SWC	33.68	66.32	0.51
1050-053A	2288m SWC	9.67	90.33	0.11
1050-054A	2290m SWC	20.53	79.47	0.26
1050-055A	2292m SWC	18.29	81.71	0.22
1050-056A	2294m SWC	15.43	84.57	0.18
1050-057A	2298m SWC	15.81	84.19	0.19
1050-058A	2300m SWC	32.61	76.39	0.31
1050-059A	2302m SWC	18.29	81.71	0.22
1050-060A	2304m SWC	11.42	88.58	0.13
1050-061A	2306m SWC	12.56	86.44	0.16
1050-062A	2310m SWC	11.18	88.82	0.13
1050-063A	2312m SWC	15.27	84.73	0.18
1050-064A	2314m SWC	14.11	85.89	0.16
1050-065A	2316m SWC	14.18	85.82	0.17
1050-066A	2318m SWC	15.88	84.12	0.19
1050-067A	2320m SWC	24.47	75.53	0.32
1050-068A	2322m SWC	16.71	83.29	0.20
1050-069A	2326m SWC	16.75	83.25	0.20
1050-072A	2328m SWC	14.21	85.79	0.17
1050-073A	2330m SWC	22.99	77.01	0.30
1050-074A	2332m SWC	16.85	83.15	0.20
1050-075A	2334m SWC	22.41	77.54	0.29
1050-076A	2337m SWC	34.14	65.86	0.52
1050-077A	2338.5m SWC	11.31	88.69	0.13
1050-078A	2341.5m SWC	18.19	81.81	0.22
1050-079A	2343m SWC	10.00	90.00	0.11
1050-080A	2346m SWC	15.48	84.52	0.18

TABLE 11

GAS - OIL GENERATION INDEX

<u>GEOCHEM SAMPLE NUMBER</u>	<u>DEPTH (M)</u>	<u>C<sub>1</sub>-C<sub>5</sub> (%)</u>	<u>C<sub>6+</sub> (%)</u>	<u>GOGI</u>
1050-081A	2350.5m SWC	24.29	75.71	0.32
1050-082A	2352m SWC	18.32	81.68	0.22
1050-083A	2355m SWC	20.17	79.83	0.25
1050-084A	2359.5m SWC	11.00	89.00	0.12
1050-085A	2361m SWC	15.20	84.80	0.18
1060-086A	2362.5m SWC	20.03	79.97	0.25
1050-087A	2364m SWC	29.79	71.21	0.40
1050-088A	2365.5m SWC	29.42	70.58	0.42
1050-089A	2368.5m SWC	27.77	72.23	0.39
1050-090A	2380-2410m	10.73	89.27	0.12
1050-091A	2410-2440m	26.13	73.87	0.35
1050-093A	2470-2500m	24.16	75.84	0.32
1050-128A	2531.55m CORE #11	22.36	77.84	0.29
1050-100A	2637.5m SWC	26.74	73.26	0.37
1050-101A	2656m SWC	19.59	80.41	0.24
1050-102B	2650-2680m	23.26	76.74	0.30
1050-103A	2678m SWC	30.92	69.08	0.45
1050-107A	2698m SWC	28.74	71.26	0.40
1050-108A	2704.5m SWC	29.74	70.26	0.42
1050-109A	2707m SWC	29.26	70.74	0.41
1050-110B	2680-2710m	31.64	68.36	0.46
1050-111A	2713m SWC	23.88	76.12	0.31
1050-114A	2770m SWC	38.86	61.14	0.64
1050-116B	2800-2820m (TD)	18.00	82.00	0.22

**TABLE 12**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-001	-007	-012	-014	-020	-025	-030
DEPTH	815- 845m	995- 1025m	1145- 1145m	1205- 1235m	1385- 1415m	1535- 1565m	1685- 1715m
SAMPLE TYPE							
nC <sub>15</sub>	1.80	0.86	0.35	70.54	4.78	73.46	42.65
nC <sub>16</sub>	5.51	1.08	1.27	9.53	10.34	8.35	13.25
nC <sub>17</sub>	8.77	2.80	3.36	4.77	13.12	5.01	10.02
nC <sub>18</sub>	11.47	8.49	11.11	5.24	17.75	4.17	9.37
nC <sub>19</sub>	11.81	12.26	11.81	4.29	16.51	3.34	6.79
nC <sub>20</sub>	9.34	11.61	11.23	1.91	11.42	1.67	5.17
nC <sub>21</sub>	5.40	10.32	8.45	0.95	6.79	0.83	3.23
nC <sub>22</sub>	3.71	8.71	7.29	0.48	4.63	0.83	2.10
nC <sub>23</sub>	4.61	7.42	5.90	0.48	3.24	0.83	1.45
nC <sub>24</sub>	3.60	5.38	6.48	0.48	2.62	0.83	1.29
nC <sub>25</sub>	5.51	5.59	6.25	0.48	2.62	0.33	0.97
nC <sub>26</sub>	4.16	4.30	4.98	0.48	1.85	0.33	0.65
nC <sub>27</sub>	6.41	5.27	5.56	0.19	1.54	0.00	0.65
nC <sub>28</sub>	2.36	2.69	3.13	0.19	0.93	0.00	0.48
nC <sub>29</sub>	5.40	4.09	4.05	0.00	0.62	0.00	0.48
nC <sub>30</sub>	1.35	1.51	1.62	0.00	0.31	0.00	0.32
nC <sub>31</sub>	4.05	2.90	2.55	0.00	0.31	0.00	0.32
nC <sub>32</sub>	1.01	1.83	1.16	0.00	0.15	0.00	0.32
nC <sub>33</sub>	2.02	1.29	1.74	0.00	0.15	0.00	0.16
nC <sub>34</sub>	0.79	0.86	1.04	0.00	0.15	0.00	0.16
nC <sub>35</sub>	0.90	0.75	0.69	0.00	0.15	0.00	0.16
PARAFFIN	19.80	23.79	19.40	34.92	15.07	27.36	51.20
ISOPRENOID	2.38	1.23	1.80	1.83	2.93	0.91	4.96
NAPHTHENE	77.81	74.99	78.81	63.25	82.00	71.72	43.84
CPI INDEX A	1.32	1.16	1.03	0.96	1.05	0.00	1.04
CPI INDEX B	2.13	1.51	1.41	0.00	1.23	0.00	1.12
PRISTANE/PHYTANE	0.67	0.20	0.25	0.83	0.66	1.00	1.50
PRISTANE/nC <sub>17</sub>	0.55	0.31	0.55	0.50	0.59	0.33	0.58

**TABLE 12**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-034	-038	-041	-047	-051A	-052A	-053A
DEPTH	1805- 1835m	1925- 1955m	2015- 2045m	2195- 2225m	2284m SWC	2286m SWC	2288m SWC
SAMPLE TYPE							
nC <sub>15</sub>	54.78	8.85	16.50	6.75	0.73	0.42	8.18
nC <sub>16</sub>	10.43	12.49	12.94	5.38	4.82	3.56	8.60
nC <sub>17</sub>	7.83	13.51	11.42	4.01	10.16	7.80	8.60
nC <sub>18</sub>	7.83	14.76	11.80	3.33	12.25	10.09	7.42
nC <sub>19</sub>	6.96	10.90	10.15	3.72	10.68	10.60	6.58
nC <sub>20</sub>	4.35	8.85	7.36	6.46	10.47	9.41	6.66
nC <sub>21</sub>	2.17	6.24	5.58	7.63	8.17	8.82	6.49
nC <sub>22</sub>	1.52	4.77	4.19	8.51	7.02	7.80	6.07
nC <sub>23</sub>	0.87	4.09	4.31	9.30	5.86	6.45	5.90
nC <sub>24</sub>	0.65	3.18	3.43	8.61	4.92	6.53	5.96
nC <sub>25</sub>	0.43	2.95	3.17	7.73	4.40	5.85	4.97
nC <sub>26</sub>	0.43	1.93	2.28	6.16	3.56	4.41	4.22
nC <sub>27</sub>	0.43	2.04	2.03	5.97	3.77	4.24	4.30
nC <sub>28</sub>	0.43	1.14	1.27	4.31	2.83	2.88	3.37
nC <sub>29</sub>	0.43	1.36	1.27	4.31	2.62	2.97	3.37
nC <sub>30</sub>	0.22	0.68	0.63	2.54	1.99	1.87	2.70
nC <sub>31</sub>	0.22	0.68	0.51	2.45	1.88	1.87	2.11
nC <sub>32</sub>	0.00	0.57	0.38	1.17	1.36	1.19	1.77
nC <sub>33</sub>	0.00	0.57	0.38	0.68	1.15	1.44	1.35
nC <sub>34</sub>	0.00	0.23	0.25	0.68	0.84	1.02	1.52
nC <sub>35</sub>	0.00	0.23	0.13	0.29	0.52	0.76	0.76
PARAFFIN	48.63	45.98	35.69	31.51	38.60	39.52	33.75
ISOPRENOID	3.17	7.72	5.98	1.23	4.08	5.93	5.46
NAPHTHENE	48.20	46.29	58.33	67.25	57.32	54.54	60.79
CPI INDEX A	0.92	1.10	1.11	1.07	1.03	1.04	1.07
CPI INDEX B	0.00	1.32	1.22	1.19	1.13	1.20	1.09
PRISTANE/PHYTANE	1.00	1.90	1.81	1.86	1.15	2.16	1.67
PRISTANE/nC <sub>17</sub>	0.42	0.82	0.94	0.63	0.56	1.32	1.18

TABLE 12  
COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-054A	-055A	-056A	-057A	-058A	-059A	-060A
DEPTH	2290m	2292m	2294m	2298m	2300m	2302m	2304m
	SWC	SWC	SWC	SWC	SWC	SWC	SWC
SAMPLE TYPE							
nC <sub>15</sub>	2.16	3.94	7.10	7.47	9.98	13.03	10.28
nC <sub>16</sub>	5.82	8.18	9.69	11.34	9.66	10.91	8.98
nC <sub>17</sub>	7.61	9.80	9.12	11.72	8.18	9.09	8.78
nC <sub>18</sub>	8.51	9.80	7.77	11.25	7.56	7.47	6.79
nC <sub>19</sub>	8.73	9.18	7.58	10.02	7.48	7.58	7.19
nC <sub>20</sub>	7.91	7.79	6.72	7.66	6.55	6.57	6.79
nC <sub>21</sub>	7.61	7.41	6.33	6.90	6.70	5.66	6.49
nC <sub>22</sub>	6.87	6.17	6.53	5.29	6.00	6.06	6.19
nC <sub>23</sub>	6.49	5.71	5.85	5.10	5.77	5.66	6.19
nC <sub>24</sub>	6.04	5.09	5.28	4.06	4.99	4.75	5.69
nC <sub>25</sub>	6.12	5.09	4.99	3.69	4.75	4.34	5.09
nC <sub>26</sub>	4.93	4.32	4.22	3.21	4.44	3.64	4.09
nC <sub>27</sub>	4.93	4.71	4.41	3.02	4.29	3.43	4.09
nC <sub>28</sub>	3.51	2.62	3.07	2.46	3.35	2.42	2.79
nC <sub>29</sub>	3.73	2.85	3.07	2.08	3.04	2.83	2.69
nC <sub>30</sub>	2.24	1.77	2.21	1.32	1.95	1.72	2.10
nC <sub>31</sub>	2.39	1.77	1.63	1.13	1.64	1.62	2.00
nC <sub>32</sub>	1.34	1.16	1.73	0.95	1.17	1.01	1.50
nC <sub>33</sub>	1.42	1.31	1.15	0.57	1.09	0.81	1.00
nC <sub>34</sub>	1.04	0.85	0.96	0.47	0.78	0.91	0.90
nC <sub>35</sub>	0.60	0.46	0.58	0.28	0.62	0.51	0.40
PARAFFIN	40.85	36.14	37.48	47.17	39.39	36.71	38.10
ISOPRENOID	5.64	4.57	6.19	5.75	5.25	6.30	6.62
NAPHTHENE	53.51	59.29	56.33	47.08	55.36	56.99	55.29
CPI INDEX A	1.08	1.12	1.04	1.09	1.06	1.02	1.06
CPI INDEX B	1.23	1.25	1.11	1.07	1.09	1.18	1.13
PRISTANE/PHYTANE	2.30	2.22	2.31	1.63	2.29	2.54	2.63
PRISTANE/nC <sub>17</sub>	1.26	0.89	1.26	0.65	1.13	1.36	1.43



**TABLE 12**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-061A	-062A	-063A	-064A	-065A	-066A	-067A	-068A
DEPTH	2306m SWC	2310m SWC	2312m SWC	2314m SWC	2316m SWC	2318m SWC	2320m SWC	2322m SWC
SAMPLE TYPE								
nC <sub>15</sub>	11.13	10.19	11.64	9.90	9.61	9.98	8.21	10.44
nC <sub>16</sub>	10.27	10.09	11.09	9.64	9.26	9.73	9.95	10.69
nC <sub>17</sub>	8.97	9.49	9.09	8.58	9.17	8.64	9.04	9.28
nC <sub>18</sub>	7.68	7.77	8.00	7.69	7.58	8.14	8.59	8.04
nC <sub>19</sub>	7.59	7.27	8.00	6.90	8.20	7.30	8.21	7.29
nC <sub>20</sub>	6.82	7.37	6.73	6.45	7.05	6.88	7.60	6.55
nC <sub>21</sub>	6.38	6.46	6.09	6.45	6.70	6.46	6.84	6.63
nC <sub>22</sub>	5.44	5.45	5.73	5.57	5.73	6.12	6.00	5.72
nC <sub>23</sub>	5.87	5.55	6.09	5.39	6.17	5.96	5.62	5.88
nC <sub>24</sub>	4.75	5.05	4.91	4.95	5.56	5.29	5.85	4.97
nC <sub>25</sub>	5.00	4.64	4.18	4.69	4.50	4.36	4.26	4.39
nC <sub>26</sub>	3.62	3.73	3.64	4.16	3.70	3.27	3.95	3.48
nC <sub>27</sub>	3.80	3.73	3.27	4.60	4.06	3.44	3.50	3.73
nC <sub>28</sub>	2.85	2.72	2.45	3.01	2.73	4.36	2.51	2.65
nC <sub>29</sub>	2.85	2.83	2.55	3.09	2.73	3.27	3.04	2.57
nC <sub>30</sub>	1.98	2.12	1.64	2.56	1.85	1.76	1.90	2.07
nC <sub>31</sub>	1.73	1.72	1.55	1.86	1.68	1.68	1.60	1.66
nC <sub>32</sub>	1.04	1.51	1.09	1.59	1.15	1.17	1.14	1.49
nC <sub>33</sub>	1.04	1.01	0.91	1.15	1.06	0.92	0.99	0.91
nC <sub>34</sub>	0.78	0.91	0.82	1.24	0.97	0.84	0.76	1.08
nC <sub>35</sub>	0.43	0.40	0.55	0.53	0.53	0.42	0.46	0.50
PARAFFIN	42.47	38.95	36.14	39.73	40.67	39.76	48.90	27.63
ISOPRENOID	6.60	6.49	5.55	5.87	6.53	6.30	6.87	4.17
NAPHTHENE	50.93	54.56	58.31	54.41	52.80	53.94	44.22	68.21
CPI INDEX A	1.14	1.07	1.05	1.10	1.09	1.00	0.98	1.11
CPI INDEX B	1.21	1.11	1.11	1.11	1.16	1.04	1.09	1.11
PRISTANE/PHYTANE	2.40	2.44	2.45	2.71	2.25	1.95	2.08	2.43
PRISTANE/nC <sub>17</sub>	1.22	1.24	1.20	1.26	1.21	1.21	1.05	1.15

**TABLE 12**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-069A	-072A	-073A	-074A	-075A	-076A	-077A	-078A
DEPTH	2326m SWC	2328m SWC	2330m SWC	2332m SWC	2334m SWC	2337m SWC	2338.5m SWC	2341.5m SWC
SAMPLE TYPE								
nC <sub>15</sub>	8.99	9.90	9.54	10.87	11.29	13.12	12.10	12.49
nC <sub>16</sub>	10.11	10.15	9.62	10.55	10.69	12.12	11.08	11.42
nC <sub>17</sub>	9.33	10.07	9.03	8.99	8.43	10.25	10.15	10.07
nC <sub>18</sub>	8.64	8.26	8.44	8.50	8.08	9.25	9.78	8.81
nC <sub>19</sub>	7.95	7.75	7.43	7.52	7.56	7.75	8.57	7.74
nC <sub>20</sub>	7.17	6.45	7.17	7.44	6.86	7.50	7.91	7.07
nC <sub>21</sub>	6.48	6.02	6.33	6.70	6.08	5.75	5.68	6.10
nC <sub>22</sub>	6.22	5.68	5.99	6.38	5.91	5.37	5.68	6.29
nC <sub>23</sub>	5.53	5.08	5.74	5.48	5.47	4.87	4.93	4.94
nC <sub>24</sub>	4.49	5.08	5.15	5.15	5.21	4.00	4.56	4.84
nC <sub>25</sub>	4.32	4.30	4.56	4.01	4.00	3.25	3.91	3.68
nC <sub>26</sub>	3.37	3.61	3.71	3.52	3.65	3.13	2.79	3.29
nC <sub>27</sub>	3.63	4.04	3.54	3.60	3.65	2.87	2.51	2.81
nC <sub>28</sub>	2.59	2.75	2.62	2.29	2.61	2.37	1.96	2.42
nC <sub>29</sub>	3.20	2.84	2.95	2.37	2.78	2.25	1.96	2.03
nC <sub>30</sub>	1.90	2.32	1.86	1.72	2.09	1.75	1.40	1.65
nC <sub>31</sub>	1.73	1.72	1.94	1.47	1.74	1.50	1.21	1.45
nC <sub>32</sub>	1.47	1.46	1.35	1.23	1.30	0.87	1.68	0.97
nC <sub>33</sub>	1.04	1.03	1.10	10.90	1.04	0.87	0.74	0.77
nC <sub>34</sub>	1.12	1.03	1.18	0.90	0.96	0.75	0.84	0.77
nC <sub>35</sub>	0.69	0.43	0.76	0.41	0.61	0.37	0.56	0.39
PARAFFIN	38.40	41.46	37.54	43.22	41.11	35.71	33.68	34.83
ISOPRENOID	6.44	6.74	6.30	5.37	6.07	5.40	5.33	5.43
NAPHTHENE	55.16	51.80	56.16	51.41	52.82	58.88	60.99	59.74
CPI INDEX A	1.07	1.03	1.04	1.01	1.00	0.98	0.97	0.93
CPI INDEX B	1.21	1.10	1.17	1.11	1.08	1.05	1.06	1.01
PRISTANE/PHYTANE	1.85	1.95	1.76	1.58	1.24	1.20	1.13	1.21
PRISTANE/nC <sub>17</sub>	1.17	1.07	1.19	0.85	0.97	0.80	0.83	0.85

**TABLE 12**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-079A	-080A	-081A	-082A	-083A	-084A	-085A	-086A
DEPTH	2343m SWC	2346m SWC	2350.5m SWC	2352m SWC	2355m SWC	2354.5m SWC	2361m SWC	2362.5m SWC
SAMPLE TYPE								
nC <sub>15</sub>	11.56	13.88	15.02	12.55	14.24	10.76	13.98	14.07
nC <sub>16</sub>	11.74	12.13	14.06	12.35	13.36	12.24	14.81	13.74
nC <sub>17</sub>	10.25	10.16	12.87	9.76	11.83	11.45	12.66	10.99
nC <sub>18</sub>	9.23	9.40	10.13	8.96	9.53	9.77	11.23	9.12
nC <sub>19</sub>	7.92	8.09	8.70	7.97	8.21	9.67	9.44	8.68
nC <sub>20</sub>	7.64	7.32	7.51	7.67	7.12	7.70	8.00	7.25
nC <sub>21</sub>	6.24	5.90	5.96	6.27	5.59	6.42	5.97	6.04
nC <sub>22</sub>	6.06	5.46	5.36	5.98	5.48	5.92	4.66	5.49
nC <sub>23</sub>	4.94	4.04	3.81	4.48	4.27	4.94	4.18	4.51
nC <sub>24</sub>	4.47	4.48	3.58	4.58	4.16	4.15	3.46	3.85
nC <sub>25</sub>	3.82	3.17	2.86	3.49	2.63	3.46	2.63	3.19
nC <sub>26</sub>	3.17	2.73	2.15	3.19	2.74	2.96	2.15	2.53
nC <sub>27</sub>	2.80	2.19	1.79	2.69	2.30	2.37	1.79	2.09
nC <sub>28</sub>	2.42	2.08	1.43	2.09	1.97	1.78	1.31	1.76
nC <sub>29</sub>	2.14	1.86	1.19	1.99	1.31	1.58	0.96	1.65
nC <sub>30</sub>	1.58	1.31	0.83	1.49	1.31	1.18	0.72	1.10
nC <sub>31</sub>	1.12	1.20	0.83	1.10	1.10	1.09	0.60	0.88
nC <sub>32</sub>	0.84	2.08	0.48	1.00	0.88	0.79	0.48	0.88
nC <sub>33</sub>	0.75	0.87	0.60	0.80	0.77	0.49	0.36	0.66
nC <sub>34</sub>	0.75	0.98	0.60	0.90	0.77	0.79	0.36	0.99
nC <sub>35</sub>	0.56	0.66	0.24	0.70	0.44	0.49	0.24	0.55
PARAFFIN	32.54	32.54	27.16	30.58	33.24	29.74	29.92	34.02
ISOPRENOID	5.07	5.09	4.21	4.87	5.42	4.58	4.18	4.71
NAPHTHENE	62.39	62.38	68.63	64.54	61.34	65.68	65.89	61.27
CPI INDEX A	0.97	0.90	0.96	0.93	0.89	0.99	1.03	0.99
CPI INDEX B	1.04	0.91	1.10	1.00	0.89	1.05	1.03	1.05
PRISTANE/PHYTANE	1.26	1.23	1.24	1.16	1.13	1.17	1.25	1.17
PRISTANE/nC <sub>17</sub>	0.85	0.85	0.67	0.88	0.73	0.72	0.61	0.68

**TABLE 12**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-087A	-088A	-089A	-120A	-091A	-121A	-122A	-123A
DEPTH	2364m SWC	2365.5m SWC	2368.5m SWC	2421.73m CORE #5	2410- 2440m	2434.73m CORE #5	2447.65 CORE #6	2463.84m CORE #6
SAMPLE TYPE								
nC <sub>15</sub>	13.92	12.69	9.23	7.37	7.43	4.30	5.82	3.83
nC <sub>16</sub>	14.03	14.13	10.17	7.19	14.31	4.36	6.43	4.01
nC <sub>17</sub>	12.49	13.02	8.84	5.81	16.97	4.42	6.18	4.85
nC <sub>18</sub>	10.94	11.37	8.69	5.39	13.04	4.83	5.92	5.27
nC <sub>19</sub>	8.62	9.27	8.06	6.17	10.38	5.31	5.82	6.05
nC <sub>20</sub>	7.29	7.84	6.81	5.57	9.29	5.01	5.61	6.17
nC <sub>21</sub>	6.19	6.07	6.49	5.39	5.33	5.79	5.56	6.47
nC <sub>22</sub>	5.64	5.41	5.48	5.63	4.77	5.91	5.46	6.95
nC <sub>23</sub>	4.53	4.19	5.79	5.51	3.93	6.68	5.66	7.43
nC <sub>24</sub>	3.31	3.53	5.01	5.81	3.37	7.22	6.02	7.43
nC <sub>25</sub>	2.87	2.65	4.77	5.63	2.95	7.16	6.33	7.43
nC <sub>26</sub>	2.43	2.43	4.46	5.39	2.38	7.04	5.35	7.19
nC <sub>27</sub>	1.99	1.88	3.99	5.15	1.96	7.22	5.30	6.41
nC <sub>28</sub>	1.33	1.43	2.74	4.73	1.40	5.91	5.04	5.27
nC <sub>29</sub>	0.99	1.21	2.90	4.49	1.26	5.67	4.73	4.55
nC <sub>30</sub>	0.99	0.77	2.03	3.65	0.84	3.70	3.81	2.94
nC <sub>31</sub>	0.88	0.66	1.64	3.06	0.70	2.57	3.24	2.34
nC <sub>32</sub>	0.33	0.55	1.02	2.28	0.56	1.97	2.06	1.62
nC <sub>33</sub>	0.44	0.33	0.94	2.28	0.56	2.45	2.16	1.80
nC <sub>34</sub>	0.55	0.33	0.55	2.04	0.42	1.73	2.21	1.44
nC <sub>35</sub>	0.22	0.22	0.39	1.44	0.14	0.78	1.29	0.54
PARAFFIN	32.47	36.08	48.57	43.41	40.24	50.70	44.42	48.53
ISOPRENOID	4.52	5.42	3.00	3.59	5.36	2.63	3.57	2.82
NAPHTHENE	63.01	58.50	48.42	53.00	54.40	46.67	52.01	48.65
CPI INDEX A	1.03	0.96	1.08	0.99	0.99	1.05	1.03	1.02
CPI INDEX B	1.08	1.01	1.12	1.04	1.09	1.08	1.09	1.06
PRISTANE/PHYTANE	1.25	1.23	1.93	1.56	1.44	1.49	1.60	1.37
PRISTANE/nC <sub>17</sub>	0.62	0.64	0.46	0.87	0.46	0.70	0.80	0.69

**TABLE 12**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-124A	-126A	-127A	-095	-129A	-096A	-103
DEPTH	2486.65m CORE #8	2506.02m CORE #10	2530.55m CORE #11	2530- 2560m	2556.10m CORE #12	2560- 2590m	2678m SWC
SAMPLE TYPE							
nC <sub>15</sub>	4.46	3.14	3.53	15.97	3.33	3.42	0.98
nC <sub>16</sub>	4.87	3.32	4.08	12.87	6.80	11.35	4.99
nC <sub>17</sub>	5.58	4.18	5.66	10.64	8.23	19.13	9.36
nC <sub>18</sub>	5.87	4.12	6.03	10.89	7.95	19.13	11.23
nC <sub>19</sub>	6.40	4.80	7.31	10.64	7.27	16.17	11.23
nC <sub>20</sub>	6.57	4.74	6.70	8.29	6.05	9.95	10.07
nC <sub>21</sub>	7.10	5.72	8.04	6.19	5.17	5.91	7.84
nC <sub>22</sub>	7.28	6.21	7.80	4.58	4.69	3.58	7.58
nC <sub>23</sub>	7.39	7.44	8.28	3.84	5.44	2.49	6.77
nC <sub>24</sub>	6.28	6.83	7.19	2.85	5.30	1.71	5.88
nC <sub>25</sub>	6.92	8.12	7.37	3.09	4.49	1.40	5.44
nC <sub>26</sub>	5.46	6.52	5.60	2.23	4.76	1.09	4.63
nC <sub>27</sub>	5.34	6.70	5.54	1.86	4.08	0.93	4.01
nC <sub>28</sub>	4.75	5.72	4.45	1.49	3.54	0.78	2.85
nC <sub>29</sub>	4.40	5.60	4.08	1.24	4.28	0.78	2.58
nC <sub>30</sub>	3.17	3.75	2.50	0.99	3.67	0.47	1.43
nC <sub>31</sub>	2.41	3.38	2.13	0.87	3.40	0.47	1.16
nC <sub>32</sub>	1.70	2.77	1.28	0.50	3.20	0.31	0.62
nC <sub>33</sub>	1.70	3.38	1.28	0.50	3.26	0.31	0.71
nC <sub>34</sub>	1.47	1.72	0.67	0.37	2.86	0.31	0.45
nC <sub>35</sub>	0.88	1.85	0.49	0.12	2.24	0.31	0.18
PARAFFIN	47.29	63.66	62.67	38.02	78.33	46.26	57.92
ISOPRENOID	3.11	1.92	2.02	6.31	5.75	5.76	4.03
NAPHTHENE	49.60	34.42	35.31	55.67	15.92	47.99	38.05
CPI INDEX A	1.09	1.13	1.12	1.09	0.98	1.08	1.00
CPI INDEX B	1.12	1.16	1.18	1.15	1.01	1.12	1.14
PRISTANE/PHYTANE	1.49	1.88	4.30	1.09	1.84	0.95	1.69
PRISTANE/nC <sub>17</sub>	0.71	0.47	0.46	0.81	0.58	0.32	0.47

**TABLE 12**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> PARAFFIN – NAPHTHENE HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-112A	-114
DEPTH	2710- 2732m	2770m SWC
SAMPLE TYPE		
nC <sub>15</sub>	4.94	1.79
nC <sub>16</sub>	6.88	5.38
nC <sub>17</sub>	8.21	8.03
nC <sub>18</sub>	8.90	9.66
nC <sub>19</sub>	9.25	9.51
nC <sub>20</sub>	7.72	8.03
nC <sub>21</sub>	7.51	7.01
nC <sub>22</sub>	7.16	6.70
nC <sub>23</sub>	6.75	6.94
nC <sub>24</sub>	5.84	6.39
nC <sub>25</sub>	5.35	5.69
nC <sub>26</sub>	4.66	5.46
nC <sub>27</sub>	4.66	4.52
nC <sub>28</sub>	3.20	3.59
nC <sub>29</sub>	3.06	4.44
nC <sub>30</sub>	1.95	2.26
nC <sub>31</sub>	1.67	1.64
nC <sub>32</sub>	0.90	0.94
nC <sub>33</sub>	0.76	0.94
nC <sub>34</sub>	0.42	0.70
nC <sub>35</sub>	0.21	0.39
PARAFFIN	74.86	50.73
ISOPRENOID	3.80	5.14
NAPHTHENE	21.34	44.13
CPI INDEX A	1.06	1.00
CPI INDEX B	1.16	1.13
PRISTANE/PHYTANE	3.56	1.50
PRISTANE/nC <sub>17</sub>	0.48	0.76

450



**Norsk Hydro**

To: PL 097-partners  
cc: NPD

86-5731-BA  
12 SEPT. 1986  
**REGISTRERT**  
OLJEDIREKTORATET

Your ref.

Your letter of

Our ref.

Date

O&G-Group  
JHA/Jan

Harstad, 18.08.86

QUANTITATIVE PYROLYSIS GAS CHROMATOGRAPHY - WELL 7120/6-1

Yours faithfully  
For Norsk Hydro a.s

*J. H. Augustson*  
J.H. Augustson

Enclosure

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TABLE 1  
GAS OIL INDEX (1)

GEOCHEM SAMPLE NUMBER	DEPTH	% C1	% C2-5	% C6-14	% C15+	C1-5 C6+
1050-051A	2284	4.85	21.83	57.78	15.53	0.36
1050-052A	2286	14.13	37.47	34.01	14.38	1.07
1050-053A	2288	7.74	2.87	54.99	34.40	0.12
1050-054A	2290	3.64	11.35	80.45	4.56	0.18
1050-055A	2292	7.53	10.28	71.17	11.03	0.22
1050-056A	2294	10.21	8.84	52.95	28.00	0.24
1050-057A	2298	8.26	3.84	72.92	14.98	0.14
1050-058A	2300	11.06	13.84	56.70	18.40	0.33
1050-059A	2302	10.73	11.42	50.05	27.80	0.28
1050-060A	2304	7.20	5.95	47.65	39.20	0.15
1050-061A	2306	7.47	6.63	51.10	34.81	0.16
1050-062A	2310	7.57	9.19	50.40	32.84	0.20
1050-063A	2312	8.30	9.74	57.34	24.62	0.22
1050-064A	2314	7.93	14.93	49.18	27.95	0.30
1050-065A	2316	10.22	9.74	55.17	24.88	0.25
1050-066A	2318	6.78	5.32	58.54	29.35	0.14
1050-067A	2320	11.37	13.20	63.02	12.41	0.33
1050-068A	2322	12.27	12.50	52.26	22.98	0.33
1050-069A	2326	10.67	12.98	59.45	16.90	0.31
1050-072A	2328	10.01	6.85	56.47	26.67	0.20
1050-073A	2330	10.15	13.85	62.95	13.04	0.32
1050-074A	2332	6.85	10.48	57.04	25.63	0.21
1050-075A	2334	9.29	12.20	62.11	16.40	0.27
1050-076A	2337	7.46	18.90	62.97	10.67	0.36
1050-077A	2338.5	8.24	5.18	59.88	26.70	0.15
1050-078A	2341.5	11.89	5.87	59.38	22.86	0.22
1050-079A	2343	7.36	3.46	54.88	34.30	0.12
1050-080A	2346	4.41	11.22	43.20	41.18	0.19
1050-081A	2350.5	15.87	15.02	58.88	10.23	0.45
1050-082A	2352	7.42	5.51	54.70	32.37	0.15
1050-083A	2355	7.75	23.82	58.79	9.64	0.46
1050-084A	2359.5	8.75	6.38	51.70	33.18	0.18
1050-085A	2361	9.77	16.44	53.95	19.83	0.36
1050-086A	2362.5	12.99	11.74	57.68	17.58	0.33
1050-087A	2364	15.83	10.42	62.98	10.77	0.36
1050-088A	2365.5	10.73	10.16	64.65	14.46	0.26
1050-089A	2368.5	10.99	29.19	56.69	3.14	0.67
1050-101A	2656	36.14	19.88	35.79	8.19	1.27



TABLE 2  
GAS OIL INDEX (2)

GEOCHEM SAMPLE NUMBER	DEPTH	% C1	% C2-6	% C7-14	% C15+	C1-6 C7+
1050-051A	2284	4.85	30.64	48.97	15.53	0.55
1050-052A	2286	14.13	46.12	25.36	14.38	1.52
1050-053A	2288	7.74	8.06	49.81	34.40	0.19
1050-054A	2290	3.64	12.82	78.98	4.56	0.20
1050-055A	2292	7.53	23.92	57.52	11.03	0.46
1050-056A	2294	10.21	12.20	49.59	28.00	0.29
1050-057A	2298	8.26	21.09	55.67	14.98	0.42
1050-058A	2300	11.06	23.38	47.16	18.40	0.53
1050-059A	2302	10.73	14.55	46.93	27.80	0.34
1050-060A	2304	7.20	11.24	42.36	39.20	0.23
1050-061A	2306	7.47	13.15	44.58	34.81	0.26
1050-062A	2310	7.57	12.91	46.68	32.84	0.26
1050-063A	2312	8.30	17.55	49.53	24.62	0.35
1050-064A	2314	7.93	20.55	43.57	27.95	0.40
1050-065A	2316	10.22	16.35	48.56	24.88	0.36
1050-066A	2318	6.78	18.17	45.70	29.35	0.33
1050-067A	2320	11.37	24.38	51.85	12.41	0.56
1050-068A	2322	12.27	16.84	47.92	22.98	0.41
1050-069A	2326	10.67	22.96	49.47	16.90	0.51
1050-072A	2328	10.01	15.28	48.04	26.67	0.34
1050-073A	2330	10.15	24.33	52.48	13.04	0.53
1050-074A	2332	6.85	18.91	48.62	25.63	0.35
1050-075A	2334	9.29	22.70	51.60	16.40	0.47
1050-076A	2337	7.46	31.73	50.14	10.67	0.64
1050-077A	2338.5	8.24	10.11	54.95	26.70	0.22
1050-078A	2341.5	11.89	13.90	51.35	22.86	0.35
1050-079A	2343	7.36	5.21	53.13	34.30	0.14
1050-080A	2346	4.41	13.58	40.83	41.18	0.22
1050-081A	2350.5	15.87	28.67	45.23	10.23	0.80
1050-082A	2352	7.42	13.02	47.19	32.37	0.26
1050-083A	2355	7.75	36.31	46.29	9.64	0.79
1050-084A	2359.5	8.75	8.02	50.05	33.18	0.20
1050-085A	2361	9.77	18.81	51.58	19.83	0.40
1050-086A	2362.5	12.99	19.68	49.74	17.58	0.49
1050-087A	2364	15.83	17.92	55.49	10.77	0.51
1050-088A	2365.5	10.73	17.74	57.07	14.46	0.40
1050-089A	2368.5	10.99	46.59	39.29	3.14	1.36
1050-101A	2656	36.14	23.32	32.35	8.19	1.47

TABLE 3  
GAS OIL INDEX (2)

GEOCHEM SAMPLE NUMBER	DEPTH	% C1	% C2-6	% C7-14	% C15+	C1-6 C7+
1301-002A	2475.10	13.18	39.16	37.87	9.80	1.10
1301-004A	2480.50	10.17	30.45	41.68	17.70	0.68
1301-005A	2482.40	13.70	41.84	39.23	5.24	1.25
1301-006A	2482.90	10.01	26.25	46.99	16.75	0.57
1301-007A	2484.00	14.24	40.92	39.52	5.32	1.23
1301-008A	2485.40	19.39	30.76	36.14	13.71	1.01
1301-009A	2486.00	14.78	28.96	47.42	8.83	0.78
1301-010A	2486.50	5.43	28.25	46.28	20.05	0.51
1301-011A	2487.50	7.77	22.62	47.17	22.44	0.44
1301-013A	2490.80	10.99	22.12	42.29	24.59	0.50
1301-015A	2496.40	15.82	32.20	40.83	11.15	0.92
1301-016A	2500.50	10.08	20.17	45.04	24.71	0.43
1301-017A	2502.00	11.23	31.38	42.60	14.78	0.74
1301-018B	2507.25	19.94	48.22	28.60	3.24	2.14
1301-019A	2509.50	17.50	44.64	32.49	5.37	1.64
1301-020A	2511.35	14.69	33.18	36.55	15.57	0.92
1301-022A	2521.40	19.19	44.37	30.86	5.58	1.74
1301-023A	2524.80	12.44	27.77	39.56	20.23	0.67
1301-025A	2531.00	23.83	31.38	35.28	9.52	1.23
1301-026A	2532.90	17.07	41.40	35.72	5.82	1.41
1301-027A	2534.30	16.64	31.31	36.04	16.01	0.92
1301-028A	2536.30	21.94	44.12	31.62	2.32	1.95
1301-029A	2539.50	21.49	33.43	35.23	9.85	1.22
1301-030B	2543.50	17.41	36.20	33.34	13.05	1.16
1301-031A	2556.20	23.23	22.04	36.87	17.86	0.83
1301-032A	2557.10	20.10	29.76	36.14	14.00	0.99
1301-033A	2558.60	20.04	38.19	36.22	5.56	1.39
1301-048B	2615	24.93	42.08	29.97	3.03	2.03
1301-049B	2617	20.62	23.83	35.18	20.37	0.80
1301-052C	2625	17.17	47.78	28.14	6.91	1.85
1301-056C	2635	14.13	55.34	24.87	5.66	2.28
1301-057B	2637	12.65	44.76	37.63	4.96	1.35
1301-058B	2640	19.90	40.01	35.95	4.13	1.49
1301-065C	2657	16.85	27.94	37.74	17.47	0.81
1301-066B	2660	22.21	50.34	25.36	2.08	2.64
1301-066C	2660	20.20	23.83	37.38	18.58	0.79
1301-067B	2662	15.60	36.23	31.66	16.51	1.08
1301-067C	2662	19.26	30.15	39.86	10.73	0.98
1301-068B	2665	25.86	54.24	10.30	9.60	4.03
1301-073B	2677	12.66	49.79	31.17	6.39	1.66
1301-074B	2680	31.68	37.70	25.46	5.16	2.27
1301-075B	2682	20.25	32.55	33.01	14.18	1.12
1301-075C	2682	21.48	32.42	32.26	13.84	1.17
1301-078C	2690	9.46	36.61	35.45	18.48	0.85
1301-079C	2692	26.99	37.79	29.47	5.75	1.84
1301-086C	2710	21.37	32.67	32.34	13.63	1.18
1301-087C	2712	22.46	30.71	35.13	11.70	1.14
1301-088A	2715	18.84	49.78	23.23	8.15	2.19
1301-088C	2715	14.75	49.58	18.44	17.23	1.80
1301-089A	2717	16.72	36.50	31.84	14.94	1.14

TABLE 3 (CONT.)

## GAS OIL INDEX (2)

GEOCHEM SAMPLE NUMBER	DEPTH	% C1	% C2-6	% C7-14	% C15+	C1-6 C7+
1301-089B	2717	23.66	34.75	30.45	11.15	1.40
1301-090A	2720	23.89	39.15	25.98	10.98	1.71
1301-091A	2722	19.18	40.38	30.78	9.66	1.47
1301-091C	2722	19.99	28.33	36.10	15.58	0.94
1301-092A	2725	18.75	35.41	32.94	12.89	1.18
1301-093B	2727	13.60	37.04	32.37	16.99	1.03
1301-094B	2730	19.63	38.10	30.31	11.96	1.37
1301-094C	2730	15.49	30.17	37.26	17.07	0.84
1301-095B	2732	23.74	25.26	39.96	11.04	0.96
1301-096B	2735	18.18	49.44	27.98	4.41	2.09
1301-099B	2742	16.71	48.96	29.11	5.23	1.91
1301-110A	2770	34.77	21.60	30.30	13.33	1.29
1301-111A	2772	10.10	37.17	30.64	22.09	0.90
1301-112A	2775	23.11	38.73	26.39	11.77	1.62
1301-113B	2777	22.40	23.93	34.08	19.59	0.86
1301-114B	2780	21.74	33.40	28.39	16.46	1.23
1301-115B	2782	14.54	55.99	28.44	1.03	2.39
1301-116B	2785	27.10	28.82	32.72	11.36	1.27
1301-117B	2787	22.00	54.71	19.07	4.22	3.29
1301-118B	2790	25.93	33.42	29.99	10.66	1.46
1301-119B	2792	21.39	34.95	28.55	15.11	1.29
1301-120B	2795	26.17	34.29	29.92	9.62	1.53
1301-121B	2797	20.66	36.52	29.09	13.73	1.34
1301-122B	2800	23.59	54.33	21.35	0.72	3.53
1301-123B	2802	24.37	40.19	24.27	11.17	1.82
1301-124B	2805	24.93	44.65	23.69	6.73	2.29
1301-125B	2807	22.22	32.07	34.99	10.72	1.19
1301-126B	2810	22.19	34.74	31.86	11.21	1.32
1301-127B	2812	20.87	38.98	26.89	13.26	1.49
1301-128B	2815	21.66	32.33	29.24	16.77	1.17
1301-129B	2817	21.54	31.48	34.31	12.67	1.13
1301-130B	2820	22.71	27.71	33.98	15.60	1.02

U-450



Norsk Hydro 3

Oljedirektoratet  
P.O. Box 600  
4001 STAVANGER

ATTN.: A. JOHANSEN

87-0068-8A

16 JAN. 1987

**REGISTRERT**

**OLJEDIREKTORATET**

Deres ref

Deres brev av

Vår ref

O&G/Utf.  
SGH/Jan

Dato

14.01.87

Dear Sir,

7120/6-1 - OIL SAMPLE GEOCHEMICAL ANALYSES

Please find enclosed all raw data from geochemical analyses carried out by Norsk Agip A/S and returned to the licence, as originally agreed in February 1986.

Yours faithfully,

For Norsk Hydro a.s

S.G. Holehouse

Enclosure

TAB. 1

BULK DATA OF EXTRACTS AND OIL

DEPTH (m)	EOH/R %*	TOC%**	EOH/TOC%	SAT %	ARO %	NBO %
1720-1800	0.32	5.04	6.35	23.9	7.4	56.7
1820-1860	0.41	10.00	4.10	21.8	26.3	52.0
1900-1940	0.11	0.58	18.97	41.3	10.0	48.0
2060-2140	0.16	5.37	2.98	26.9	10.2	62.9
2400-2440	0.14	0.94	14.58	32.9	8.5	58.5
2960-3000	0.10	1.06	9.43	37.1	9.0	53.9
2432-2436	-	-	-	73.5	16.1	10.4

\* EOH/R = Extractable Organic Matter over rock amount.

\*\*TOC = Total Organic Carbon

TAB. 2

GAS CROMATOGRAPHIC DATA

DEPTH (m)	Pr/Ph	Pr/n-C <sub>17</sub>	Ph/n-C <sub>18</sub>	OEP *	CPI **	MPI1 ***
1720-1800	2.12	2.73	1.83	1.05	1.67	0.68
1820-1860	2.30	2.97	1.60	1.00	1.61	0.59
1900-1940	1.24	0.82	0.70	0.88	0.81	1.00
2060-2140	1.78	0.94	0.57	1.02	n.d.	0.45
2400-2440	1.02	0.88	0.71	0.93	1.01	0.92
2960-3000	1.30	0.66	0.49	0.88	1.19	0.80
°2432-2436	1.54	0.84	0.36	1.02	1.08	0.78

\* OEP = Odd-Even predominance  
 \*\* CPI = Carbon Preference index  
 \*\*\* MPI1 = Metil Phenantrene Index 1

° Oil sample

TAB. 3

CARBON ISOTOPIC DATA OF EXTRACTS AND OIL

DEPTH (m)	DELTA <sup>13</sup> C VS. PDB		
	SAT	ARO	RES
1720 - 1800	- 29.85	- 29.18	- 28.83
1820 - 1860	- 28.72	- 27.13	- 27.26
1900 - 1940	- 27.94	- 26.98	- 27.35
2060 - 2140	- 27.66	- 26.26	- 26.58
2400 - 2440	- 27.62	- 27.57	- 26.91
2960 - 3000	- 27.66	- 27.07	- 27.02
2432 - 2436 *	- 29.65	- 27.99	- 27.64

\* Oil Sample

TAB. 4

G.C./M.S. DATA

Depth (m)	Nor/Hop *	Bis Nor **	C <sub>29</sub> Unknown ***	C <sub>30</sub> Unknown ****	Steranes Terpanes
1720-1800	0.58	-	+	+	0.30
1820-1860	0.54	-	+	+	0.14
1900-1940	0.79	+	-	-	0.14
2060-2140	0.88	+	-	-	0.06
2400-2440	0.77	-	-	-	0.11
2960-3000	1.23	-	-	-	0.06
*2432-2436	0.57	-	++	++	0.33

\* Oil Sample

- = No Detected

+ = Detected

++ = Abundant

\* = Norhopane/Hopane

\*\* = Bisnorhopane

\*\*\* = Terpane C<sub>29</sub> Pentacyclic

\*\*\*\* = Terpane C<sub>30</sub> Pentacyclic



3/

# **GEOCHEM LABORATORIES LIMITED**

CHESTER STREET, CHESTER CH4 8RD, ENGLAND  
phone (0244) 671121 · telex 61297 · cable Geochem Chester.

Prepared for

**NORSK HYDRO**

**DATA REPORT**

**WELL 7120/6-1**

April 1986

**GEOCHEM**



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**Petroleum  
Geochemistry  
Division**

u-450



TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt % of Rock)
1307-001	2390.0m	A 98% Sandstone, massive, fine grained, well sorted, non-calc. matrix, pale milky cut, v. pale yellowish brown	10YR7/2	
1307-002	2395.0m	A 98% Sandstone, massive, fine grained, well sorted, non-calc. matrix, minor dark silty? laminae, pale milky cut, v. pale yellowish brown	10YR7/2	
1307-003	2400.0m	A 98% Sandstone, as 1307-002A, pale milky cut	10YR7/2	
1307-004	2405.0m	A 98% Sandstone, massive, fine to medium grained, subangular, fairly well sorted, non-calc., v. pale yellowish brown to medium grey	10YR7/2-N5	
1307-005	2409.0m	A 98% Siltstone, as 1307-004A, pale milky cut	10YR7/2-N5	
1307-006	2414.0m	A 98% Sandstone, massive, medium grained, subangular, well sorted, non-calc. matrix, pale milky cut, pale yellowish brown	10YR6/2	
1307-007	2419.5m	A 98% Sandstone, massive, fine grained, well sorted, silty to arg. layers, pale milky cut, pale yellowish brown to medium dark grey	10YR6/2-N4	
1307-008	2424.4m	A 98% Sandstone, massive, fine to medium grained, subangular, well sorted, non-calc. cement, pale creamy F., milky cut, v. pale yellowish brown to pale yellowish brown	10YR7/2-10YR6/2	
1307-009	2427.0m	A 98% Sandstone, as 1307-008A, pale creamy F., milky cut	10YR7/2-10YR6/2	
1307-010	2429.0m	A 98% Sandstone, massive, medium grained, subangular, well sorted, non-calc. cement, pale creamy F., milky cut, v. pale yellowish brown to pale yellowish brown	10YR7/2-10YR6/2	
1307-011	2431.0m	A 98% Sandstone, massive, medium grained, subangular, fairly well sorted, creamy F., milky cut, medium yellowish brown	10YR5/2	
1307-012	2433.0m	A 98% Sandstone, as 1307-011A, creamy F., milky cut	10YR5/2	
1307-013	2433.5m	A 98% Sandstone, massive, medium grained, fairly well sorted, non-calc. cement, creamy F., milky cut, light yellowish brown	10YR6/4	

86-5208-BA  
- 4 JULI 1986  
**REGISTRERT**  
OLJEDIREKTORATET

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



TABLE 1  
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
1307-014	2437.0m	A 98% Sandstone, massive, medium grained, fairly well sorted, non-calc. cement, creamy F., milky cut, light yellowish brown	10YR6/4	
1307-015	2438.0m	A 98% Sandstone, as 1307-014A, creamy F., milky cut	10YR6/4	
1307-016	2440.0m	A 98% Sandstone, massive, medium grained, subangular, fairly well sorted, non-calc. matrix, sulphurous smell, creamy F., milky cut, dark yellowish brown	10YR4/2	
1307-017	2443.5m	A 98% Sandstone, massive, medium grained, subangular, fairly well sorted, grain supported, creamy F., milky cut, dark yellowish brown	10YR4/2	
1307-018	2444.5m	A 98% Sandstone, as 1307-017A, creamy F., milky cut	10YR4/2	
1307-019	2446.0m	A 98% Sandstone, massive, medium grained, subangular, well sorted, grain supported, pale creamy F., sl. milky cut, v. pale yellowish brown	10YR7/2	
1307-020	2449.0m	A 98% Sandstone, massive, medium grained, subangular, well sorted, grain supported, v. pale yellowish brown to pale yellowish brown	10YR7/2- 10YR6/2	
1307-021	2451.0m	A 98% Sandstone, as 1307-020A, pale creamy F., milky cut	10YR7/2- 10YR6/2	
1307-022	2453.0m	A 98% Sandstone, as 1307-020A, pale creamy F., milky cut	10YR7/2- 10YR6/2	
1307-023	2456.0m	A 98% Sandstone, as 1307-020A, pale creamy F., milky cut	10YR7/2- 10YR6/2	
1307-024	2460.0m	A 98% Sandstone, as 1307-020A, pale creamy F., milky cut	10YR7/2- 10YR6/2	
1307-025	2470.0m	A 98% Sandstone, as 1307-020A, pale creamy F., milky cut	10YR7/2- 10YR6/2	

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

TABLE 2a  
CONCENTRATION (PPM) OF EXTRACTED C<sub>15+</sub> MATERIAL IN ROCK

GEOCHEM SAMPLE NUMBER	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
			Paraffin Naphthenes	Aromatics	TOTAL	Precipd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	Sulphur
1307-001A	2390.0	498	300	60	360	69	64	5	0
1307-002A	2395.0	117	58	13	71	33	10	2	0
1307-003A	2400.0	491	224	52	276	162	49	4	0
1307-004A	2405.0	1281	808	170	978	143	125	35	0
1307-005A	2409.0	309	146	42	188	84	34	3	0
1307-006A	2414.0	621	385	64	450	86	75	11	0
1307-007A	2419.5	523	252	119	371	80	66	5	0
1307-008A	2424.4	2736	1878	309	2187	163	334	52	0
1307-009A	2427.0	1858	1375	211	1586	95	158	19	0
1307-010A	2429.0	3059	2340	318	2658	170	227	4	0
1307-011A	2431.0	8263	6116	1114	7230	306	637	91	0
1307-012A	2433.0	8208	6155	1027	7182	307	710	8	0
1307-013A	2433.5	10010	7511	1275	8787	198	981	44	0
1307-014A	2437.0	10143	7635	1388	9023	227	839	54	0
1307-015A	2438.0	10861	8414	1240	9655	210	958	39	0
1307-016A	2440.0	13504	10184	1836	12019	254	1192	39	0
1307-017A	2443.5	12118	9094	1543	10638	243	1188	49	0
1307-018A	2444.5	10204	7837	1091	8928	283	893	100	0
1307-019A	2446.0	3373	2466	384	2850	170	341	12	0
1307-020A	2449.0	2368	1569	354	1923	157	278	10	0
1307-021A	2451.0	1872	1257	262	1518	126	223	4	0
1307-022A	2453.0	2358	1697	283	1981	154	217	6	0
1307-023A	2456.0	3262	2501	299	2800	212	241	9	0
1307- 024	2460.0	4253	3081	476	3557	282	357	57	0
1307-025A	2470.0	2855	1898	418	2316	219	309	11	0

TABLE 2b  
COMPOSITION (NORMALISED %) OF C<sub>15+</sub> MATERIAL EXTRACTED FROM ROCK

GEOCHEM SAMPLE NUMBER	DEPTH	HYDROCARBONS		NON HYDROCARBONS			
		Paraffin - Naphthenes	Aromatics	Preciptd. Asphaltenes	Eluted NSO's	Non eluted NSO's	Sulphur
1307-001A	2390.0	60.24	11.99	13.93	12.84	0.99	0.00
1307-002A	2395.0	49.83	11.19	28.47	8.47	2.03	0.00
1307-003A	2400.0	45.58	10.67	32.95	9.99	0.81	0.00
1307-004A	2405.0	63.05	13.28	11.16	9.74	2.77	0.00
1307-005A	2409.0	47.23	13.75	27.27	10.86	0.89	0.00
1307-006A	2414.0	62.05	10.33	13.77	12.05	1.80	0.00
1307-007A	2419.5	48.20	22.81	15.36	12.70	0.94	0.00
1307-008A	2424.4	68.65	11.28	5.95	12.22	1.90	0.00
1307-009A	2427.0	73.98	11.37	5.13	8.52	1.00	0.00
1307-010A	2429.0	76.49	10.39	5.55	7.43	0.13	0.00
1307-011A	2431.0	74.01	13.48	3.70	7.70	1.10	0.00
1307-012A	2433.0	74.99	12.51	3.74	8.66	0.10	0.00
1307-013A	2433.5	75.04	12.74	1.98	9.80	0.44	0.00
1307-014A	2437.0	75.28	13.69	2.23	8.27	0.53	0.00
1307-015A	2438.0	77.47	11.42	1.93	8.82	0.35	0.00
1307-016A	2440.0	75.41	13.59	1.88	8.83	0.29	0.00
1307-017A	2443.5	75.05	12.74	2.00	9.80	0.41	0.00
1307-018A	2444.5	76.80	10.69	2.78	8.75	0.98	0.00
1307-019A	2446.0	73.10	11.38	5.04	10.11	0.36	0.00
1307-020A	2449.0	66.27	14.94	6.64	11.74	0.40	0.00
1307-021A	2451.0	67.12	13.98	6.75	11.93	0.23	0.00
1307-022A	2453.0	71.98	12.02	6.51	9.21	0.27	0.00
1307-023A	2456.0	76.67	9.17	6.49	7.40	0.26	0.00
1307- 024	2460.0	72.45	11.20	6.62	8.39	1.33	0.00
1307-025A	2470.0	66.47	14.65	7.67	10.83	0.38	0.00

**TABLE 3**  
**SIGNIFICANT RATIOS (%) OF C<sub>15+</sub> FRACTIONS AND ORGANIC CARBON**

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS	HYDROCARBONS	TOTAL EXTRACT	P-NAPHTHENES
			TOTAL EXTRACT	ORG. CARBON	ORG. CARBON	AROMATICS
1307-001A	2390.0	0.09	72.23	40.00	55.37	5.02
1307-002A	2395.0	0.13	61.02	5.50	9.01	4.45
1307-003A	2400.0	0.11	56.25	25.08	44.60	4.27
1307-004A	2405.0	0.30	76.33	32.59	42.70	4.75
1307-005A	2409.0	0.20	60.98	9.42	15.46	3.44
1307-006A	2414.0	0.22	72.38	20.43	28.23	6.01
1307-007A	2419.5	0.57	71.00	6.51	9.17	2.11
1307-008A	2424.4	0.12	79.93	182.26	228.03	6.09
1307-009A	2427.0	0.17	85.35	93.28	109.29	6.51
1307-010A	2429.0	0.10	86.88	265.80	305.92	7.36
1307-011A	2431.0	0.07	87.50	1032.85	1180.42	5.49
1307-012A	2433.0	0.07	87.51	1026.0	1172.57	5.99
1307-013A	2433.5	0.08	87.78	1098.37	1251.25	5.89
1307-014A	2437.0	0.10	88.96	902.35	1014.3	5.50
1307-015A	2438.0	0.06	88.89	1609.16	1810.16	6.78
1307-016A	2440.0	0.07	89.00	1717.00	1929.14	5.55
1307-017A	2443.5	0.05	87.79	2127.60	2423.60	5.89
1307-018A	2444.5	0.09	87.49	992.02	1137.78	7.19
1307-019A	2446.0	0.06	84.48	474.94	562.17	6.42
1307-020A	2449.0	0.05	81.21	384.63	473.63	4.44
1307-021A	2451.0	0.07	81.09	216.90	267.47	4.80
1307-022A	2453.0	0.06	84.00	330.10	392.97	5.99
1307-023A	2456.0	0.08	85.84	350.01	407.73	8.36
1307- 024	2460.0	0.06	83.65	592.87	708.75	6.47
1307-025A	2470.0	0.05	81.12	463.27	571.09	4.54



**TABLE 4**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-001A	-002A	-003A	-004A	-005A	-006A	-007A	-008A
DEPTH	2390.0	2395.0	2400.0	2405.0	2409.0	2414.0	2419.5	2424.4
SAMPLE TYPE								
nC <sub>15</sub>	5.68	6.01	5.19	9.06	7.55	8.10	9.96	5.17
nC <sub>16</sub>	6.07	5.94	7.39	9.71	6.77	8.61	9.14	6.58
nC <sub>17</sub>	6.79	6.45	8.58	8.85	8.85	7.67	8.10	7.02
nC <sub>18</sub>	7.31	7.54	8.58	8.42	7.79	7.58	7.94	7.02
nC <sub>19</sub>	8.36	7.73	8.18	7.85	7.61	7.46	7.42	8.18
nC <sub>20</sub>	7.90	7.86	7.65	7.42	7.55	7.33	6.74	7.32
nC <sub>21</sub>	7.44	8.37	6.59	7.00	6.89	7.13	5.77	6.95
nC <sub>22</sub>	7.18	7.60	6.59	7.21	6.65	7.65	5.84	6.58
nC <sub>23</sub>	7.05	8.43	6.12	5.64	6.89	6.36	5.39	5.60
nC <sub>24</sub>	6.46	6.33	5.79	5.85	6.00	6.23	4.94	5.60
nC <sub>25</sub>	6.07	6.84	5.19	4.78	5.94	5.53	4.87	5.17
nC <sub>26</sub>	5.22	5.24	4.66	4.07	4.98	4.31	4.42	4.68
nC <sub>27</sub>	4.44	4.28	4.32	3.50	4.38	3.79	3.90	5.11
nC <sub>28</sub>	3.52	3.51	3.39	2.71	3.42	2.83	3.30	4.31
nC <sub>29</sub>	3.20	3.19	3.19	2.36	2.88	2.89	3.22	4.25
nC <sub>30</sub>	2.02	1.66	2.26	1.57	1.92	2.06	2.17	2.71
nC <sub>31</sub>	1.63	1.34	1.86	1.50	1.62	1.41	1.87	2.58
nC <sub>32</sub>	1.17	0.77	1.60	0.93	1.32	0.96	1.42	1.85
nC <sub>33</sub>	1.17	0.51	1.33	0.86	1.02	0.84	1.27	1.54
nC <sub>34</sub>	0.91	0.32	1.00	0.43	0.78	0.51	1.05	1.17
nC <sub>35</sub>	0.39	0.06	0.53	0.29	0.36	0.32	0.45	0.62
PARAFFIN	46.52	62.38	49.04	58.47	48.19	56.83	46.69	62.91
ISOPRENOID	4.59	6.14	4.96	6.05	4.13	6.65	4.34	5.34
NAPHTHENE	48.89	31.49	46.00	35.48	47.67	36.52	48.97	31.75
CPI INDEX 1	1.03	1.13	0.99	0.95	1.05	0.99	0.99	1.01
CPI INDEX 2	1.09	1.17	1.06	1.08	1.09	1.11	1.08	1.13
CPI INDEX 3	1.01	0.98	1.07	1.03	1.04	1.06	1.01	1.14
PRISTANE/PHYTANE	1.44	1.30	1.58	1.50	1.38	1.46	1.64	1.34
PRISTANE/nC <sub>17</sub>	0.86	0.86	0.72	0.70	0.65	0.86	0.65	0.69

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$

CT - ditch cuttings CO - core SWC - sidewall core

**TABLE 4**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-009A	-010A	-011A	-012A	-013A	-014A	-015A	-016A
DEPTH	2427.0	2429.0	2431.0	2433.0	2433.5	2437.0	2438.0	2440.0
SAMPLE TYPE								
nC <sub>15</sub>	3.46	5.32	3.64	3.23	2.83	6.02	4.92	6.92
nC <sub>16</sub>	5.19	8.82	5.55	6.39	4.87	7.35	6.34	8.83
nC <sub>17</sub>	6.62	8.56	6.57	9.00	6.51	8.25	7.00	9.16
nC <sub>18</sub>	6.86	8.24	7.34	8.66	7.42	6.93	6.83	8.35
nC <sub>19</sub>	7.64	8.37	7.64	9.28	7.30	7.17	7.05	8.21
nC <sub>20</sub>	7.10	8.50	7.34	9.00	7.19	7.11	6.72	8.42
nC <sub>21</sub>	6.44	6.42	6.64	7.56	7.19	6.51	5.90	6.79
nC <sub>22</sub>	6.38	6.61	6.75	7.08	6.74	5.90	6.45	6.45
nC <sub>23</sub>	6.44	5.77	6.27	7.08	6.57	5.12	6.18	5.91
nC <sub>24</sub>	6.38	5.90	6.03	6.12	6.51	5.06	6.12	5.84
nC <sub>25</sub>	6.21	5.19	5.61	5.77	6.34	6.14	6.40	5.16
nC <sub>26</sub>	5.43	4.80	5.19	4.88	5.32	4.76	5.63	4.21
nC <sub>27</sub>	5.31	4.28	5.37	4.54	5.83	4.76	5.19	3.46
nC <sub>28</sub>	4.59	3.50	4.54	3.30	4.19	4.40	4.32	3.12
nC <sub>29</sub>	4.24	3.18	4.36	2.96	4.13	4.34	4.10	3.05
nC <sub>30</sub>	2.92	1.95	2.87	1.72	2.77	3.01	2.90	1.70
nC <sub>31</sub>	2.74	1.69	2.63	1.51	2.38	2.53	2.46	1.56
nC <sub>32</sub>	1.91	0.97	1.85	0.76	1.98	1.75	1.80	1.02
nC <sub>33</sub>	1.91	1.04	1.79	0.69	1.81	1.45	1.69	0.95
nC <sub>34</sub>	1.49	0.65	1.37	0.41	1.42	0.90	1.26	0.61
nC <sub>35</sub>	0.72	0.26	0.66	0.07	0.68	0.54	0.71	0.27
PARAFFIN	43.51	57.28	45.48	61.73	47.13	61.05	47.19	59.61
ISOPRENOID	4.05	5.57	4.02	5.60	3.76	5.11	3.92	5.58
NAPHTHENE	52.44	37.15	50.50	32.67	49.11	33.84	48.89	34.80
CPI INDEX 1	1.02	0.94	1.00	1.04	1.07	1.05	1.00	0.97
CPI INDEX 2	1.10	1.08	1.10	1.15	1.15	1.15	1.10	1.10
CPI INDEX 3	1.06	1.03	1.10	1.11	1.23	1.04	1.04	0.94
PRISTANE/PHYTANE	1.33	1.50	1.39	1.49	1.39	1.62	1.49	1.51
PRISTANE/nC <sub>17</sub>	0.80	0.68	0.78	0.60	0.71	0.63	0.71	0.61

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$





**TABLE 4**  
**COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN – NAPHTHENE) HYDROCARBONS**

GEOCHEM SAMPLE NUMBER	-017A	-018A	-019A	-020A	-021A	-022A	-023A	-024A
DEPTH	2443.5	2444.5	2446.0	2449.0	2451.0	2453.0	2456.0	2460.0
SAMPLE TYPE								
nC <sub>15</sub>	3.08	6.71	2.64	5.08	2.07	3.39	2.37	3.04
nC <sub>16</sub>	4.89	7.64	4.28	6.79	4.45	5.49	4.40	5.37
nC <sub>17</sub>	6.51	7.88	6.05	7.83	6.46	7.36	6.21	6.98
nC <sub>18</sub>	7.24	7.53	7.43	7.89	7.47	7.71	7.11	7.56
nC <sub>19</sub>	7.60	7.18	7.49	7.83	7.47	7.71	7.22	8.53
nC <sub>20</sub>	7.66	7.29	8.06	7.65	7.53	6.77	7.17	8.14
nC <sub>21</sub>	7.12	6.59	7.30	7.83	7.41	7.59	6.83	7.30
nC <sub>22</sub>	6.94	7.06	7.75	6.79	6.88	6.65	6.94	7.43
nC <sub>23</sub>	7.00	6.01	7.12	6.30	7.47	6.71	6.60	7.37
nC <sub>24</sub>	6.69	6.30	6.93	6.24	6.46	5.90	6.49	6.21
nC <sub>25</sub>	6.09	5.19	6.99	6.18	6.16	5.08	6.04	5.95
nC <sub>26</sub>	5.49	5.31	5.60	5.14	5.51	5.08	5.87	5.43
nC <sub>27</sub>	5.37	4.08	5.16	4.28	5.22	5.66	5.59	4.59
nC <sub>28</sub>	3.98	3.50	3.97	3.73	4.33	4.32	4.91	3.94
nC <sub>29</sub>	3.86	3.21	3.65	3.43	3.85	3.97	4.29	3.23
nC <sub>30</sub>	2.65	2.28	2.46	2.20	2.85	3.15	2.99	2.52
nC <sub>31</sub>	2.29	2.04	2.08	1.71	2.43	2.69	2.71	2.13
nC <sub>32</sub>	1.75	1.46	1.70	0.98	2.02	1.63	2.09	1.49
nC <sub>33</sub>	1.75	1.28	1.51	1.04	1.78	1.58	1.98	1.42
nC <sub>34</sub>	1.39	0.99	1.20	0.67	1.42	1.05	1.47	0.90
nC <sub>35</sub>	0.66	0.47	0.63	0.37	0.77	0.53	0.73	0.45
PARAFFIN	45.94	58.96	45.23	53.49	45.50	56.67	46.59	58.25
ISOPRENOID	3.91	5.26	3.50	5.11	3.80	4.63	3.58	4.86
NAPHTHENE	50.15	35.78	51.27	41.41	50.70	38.70	49.83	36.90
CPI INDEX 1	1.03	0.91	1.02	1.04	1.06	1.08	0.99	1.01
CPI INDEX 2	1.10	1.00	1.12	1.10	1.06	1.08	1.05	1.03
CPI INDEX 3	1.13	0.93	1.08	0.97	1.06	1.20	1.04	0.98
PRISTANE/PHYTANE	1.35	1.47	1.24	1.14	1.24	1.22	1.23	1.35
PRISTANE/nC <sub>17</sub>	0.75	0.67	0.71	0.65	0.72	0.61	0.68	0.69

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$

CT – ditch cuttings CO – core SWC – sidewall core



TABLE 4  
COMPOSITION (NORMALISED %) OF C<sub>15+</sub> SATURATE (PARAFFIN -- NAPHTHENE) HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-025A
DEPTH	2470.0
SAMPLE TYPE	
nC <sub>15</sub>	1.80
nC <sub>16</sub>	3.77
nC <sub>17</sub>	5.04
nC <sub>18</sub>	6.26
nC <sub>19</sub>	6.61
nC <sub>20</sub>	7.25
nC <sub>21</sub>	7.13
nC <sub>22</sub>	7.13
nC <sub>23</sub>	7.25
nC <sub>24</sub>	6.78
nC <sub>25</sub>	6.96
nC <sub>26</sub>	5.74
nC <sub>27</sub>	5.97
nC <sub>28</sub>	4.81
nC <sub>29</sub>	4.64
nC <sub>30</sub>	3.42
nC <sub>31</sub>	2.84
nC <sub>32</sub>	2.09
nC <sub>33</sub>	2.09
nC <sub>34</sub>	1.57
nC <sub>35</sub>	0.87
PARAFFIN	48.25
ISOPRENOID	3.36
NAPHTHENE	48.39
CPI INDEX 1	1.07
CPI INDEX 2	1.13
CPI INDEX 3	1.13
PRISTANE/PHYTANE	1.26
PRISTANE/nC <sub>17</sub>	0.77

$$C.P.I. 1 = \frac{1}{2} \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{20}+C_{22}+C_{24}+C_{26}} + \frac{C_{21}+C_{23}+C_{25}+C_{27}}{C_{22}+C_{24}+C_{26}+C_{28}}$$

$$C.P.I. 2 = \frac{1}{2} \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}$$

$$C.P.I. 3 = \frac{2x (C_{27})}{C_{26}+C_{28}}$$

CT - ditch cuttings CO - core SWC - sidewall core



## BRIEF DESCRIPTION OF THE ANALYSES PERFORMED BY GEOCHEM

"Screen Analyses" are described in sections A, C and D, "Sample Preparation" in section B, "Follow-up Analyses" in sections E through K and "Correlation Studies" in section L. The analyses can be run on either core or cuttings material with the proviso that samples must be canned for the C<sub>1</sub>-C<sub>7</sub> analysis and should be canned (or at least wet) for the C<sub>4</sub>-C<sub>7</sub> analysis. The other analyses can be run on both canned and bagged samples.

### A) C<sub>1</sub>-C<sub>7</sub> LIGHT HYDROCARBON ANALYSIS

The abundance and composition of the C<sub>1</sub>-C<sub>7</sub> hydrocarbons in sediments reflects their source richness, maturity and the character of the hydrocarbons they can yield. Most importantly, it is extremely sensitive to the presence of migrated hydrocarbons and is an excellent method for their detection. As it provides the information on most of the critical parameters and is also economical, this analysis is excellent for screening samples to decide which of them merit further analysis.

During the time which elapses between the collection of the sample at the wellsite and its analysis in the laboratory, a fraction of the total gas passes from the rock to the air space at the top of the can. For this reason, both the air space and the cuttings are analysed.

The analysis involves the gas chromatographic separation of the individual C<sub>1</sub>-C<sub>4</sub> gaseous hydrocarbons (methane, ethane, propane, isobutane and normal butane) and a partial resolution of the C<sub>5</sub>-C<sub>7</sub> gasoline-range hydrocarbons (for their complete resolution see Section E). The ppm abundance of the five gases and of the total C<sub>5</sub>-C<sub>7</sub> hydrocarbons are calculated from their electronically integrated peak areas (not from peak height) by comparison with a standard.

In the report, the following data are tabulated: the abundance and composition of the air space gas, of the cuttings gas and of the combined air space and cuttings gases. The combined results are also presented graphically.

### B) SAMPLE WASHING AND HAND PICKING

All of the analyses described in subsequent sections are run on washed and hand picked samples.

Cuttings are washed to remove the drilling mud, care being taken not to remove soft clays and fine sand during the washing procedure. Using the C<sub>1</sub>-C<sub>7</sub> hydrocarbon data profile of the well, or the organic carbon profile (if this analysis is used for screening), electric logs (if supplied) and the appearance of the cuttings under the binocular microscope, samples are selected to represent the lithological and geochemical zones penetrated by the well. These samples are then carefully hand picked and the lithology of the uncaved material is described. It is these samples which are submitted for further analysis.

Sample material remaining after analysis is retained for six months. Unless instructions are received to the contrary, Geochem Laboratories may then destroy the samples.

Our reports incorporate a gross lithological description of all the samples which have been analysed and litho percentage logs. As screen analyses are recommended at narrow intervals, a complete lithological profile is obtained.



C) ORGANIC CARBON ANALYSIS

The organic carbon content of a rock is a measure of its total organic richness. Combined with the visual kerogen, C<sub>1</sub>-C<sub>7</sub>, C<sub>4</sub>-C<sub>7</sub>, pyrolysis and C<sub>15+</sub> analyses, the organic carbon content is used to evaluate the potential (not necessarily actual) hydrocarbon source richness of the sediment. This analysis is an integral part of a total evaluation and it can also be used as an economical screen analysis for dry samples (when the C<sub>1</sub>-C<sub>7</sub> analysis cannot be used).

Hand picked samples are dried, crushed and then acidised to remove the inorganic calcium and magnesium carbonates. The actual analysis involves combustion in a Leco carbon analyser. Blanks, standards and duplicates are run routinely for purposes of quality control at no extra cost to the client.

The data are tabulated and presented diagrammatically in our reports in a manner which facilitates comparison with the gross lithology (see Section B) of the samples.

D) MINI-PYROLYSIS

An ideal screen analysis which provides a definitive measure of potential source richness upon those samples whose organic carbon contents suggest fair or good source potential. This is described in detail in section K.

E) DETAILED C<sub>4</sub>-C<sub>7</sub> HYDROCARBON ANALYSIS

The abundance and composition of the C<sub>4</sub>-C<sub>7</sub> gasoline-range hydrocarbons in sediments reflects their source quality, level of thermal maturation and organic facies. In addition, the data also reveal the presence of migrated hydrocarbons and can be used for crude oil-parent source rock correlation studies.

This powerful analysis, performed upon hand picked lithologies, is employed as a follow-up to confirm the potential of samples which have been selected using the initial screen analysis. It is used in conjunction with the organic carbon, visual kerogen and C<sub>15+</sub> analyses.

The individual normal paraffins, isoparaffins, naphthenes and aromatics with between four and seven carbon atoms in the molecule (but also including toluene) are resolved by capillary gas chromatography and their peak areas electronically integrated.

Normalised compositions, selected ratios and the ppm abundance of the total gasoline-range fraction are tabulated in the report and also presented graphically.

F) KEROGEN TYPE AND MATURATION

Kerogen is the insoluble organic matter in rocks. Visual examination of the kerogen gives a direct measure of thermal maturity and of the composition of the organic matter (organic facies) and indicates the source quality of the sediment - which is confirmed using the organic carbon, light hydrocarbon, pyrolysis and C<sub>15+</sub> analyses.

The type of hydrocarbon (oil or gas) generated by a source rock is a function of the types and level of thermal maturation of the organic matter which are present. Both of these parameters are measured directly by this method.



Kerogen is separated from the inorganic rock matrix by acid digestion and flotation methods which avoid oxidation of the organic matter. It is then mounted on a glass slide and examined at high and low magnifications with a Leitz microscope. Chemical methods measure the total kerogen population but, with this technique, individual particles can be selected for examination and spurious material identified. This is particularly valuable in reworked, contaminated and turbodrilled sediments.

The following data are generated: the types of the organic matter present and their relative abundances, an estimate of the proportion of reworked material, preservation state, the thermal maturity of the non-reworked organic matter using the spore colouration technique.

Our maturation scale has been developed to digitise small but recognisable changes in organic matter colouration resulting from increasing maturity and to place particular emphasis upon the immature to mature transition. In the absence of a universal colouration scale, the most significant points on our scale have been calibrated against equivalent vitrinite reflectance values. The following maturation stages are recognised at the low end of the scale:-

- a) immature; thermal index less than 2- (0.45% Ro)
- b) marginally mature; indices between 2- and 2.  
Minor hydrocarbon generation from amorphous and herbaceous  
(± algal) organic matter
- c) mature; indices between 2 (0.53% Ro) and 2 to 2+ (0.72% Ro),  
significant generation from amorphous, algal and herbaceous  
organic matter but wood only marginally mature
- d) oil window; indices of 2 to 2+ (0.72% Ro) through to 3  
(1.2% Ro). Peak hydrocarbon generation.

The condensate zone starts at a thermal index of 3 whilst indices of 3+ (2.0% Ro) and higher indicate the eometamorphic dry gas stage.

A total of fourteen types of organic matter are sought based upon the major categories of algal, amorphous, herbaceous (spore, pollen, cuticle), wood, inertinite and resin. This detail is essential for a proper understanding of hydrocarbon source potential as the different sub-groups within each category have different properties.

Upon completion of the study, the kerogen slides are sent to the client.

#### G) VITRINITE REFLECTANCE

Vitrinite reflectance is an alternative/confirmatory method for evaluating thermal maturation which is used in conjunction with the visual kerogen analysis. The reflectivity of vitrinite macerals increases in response to thermal alteration and is used to define maturation levels and, by projection, to predict maturity at depth or the thicknesses of section removed by erosion.

Measurements are made upon kerogen separations in conjunction with polished whole rock samples. In general, this analysis is performed upon the same samples as the visual kerogen analysis, thus facilitating a direct comparison of the two sets of results.

If possible, forty to fifty measurements are taken per sample - unless the sediments are organically lean, vitrinite is sparse or only a single uniform population is present. The data are plotted in a histogram which



distinguishes the indigenous vitrinite from possible reworked or caved material. Averages are calculated for each population. Comments upon exinite fluorescence and upon the character of the phytoclasts are noted on the histograms. The reports contain the tabulated data, histograms and the reflectivities plotted against depth.

The vitrinite and visual kerogen techniques provide mutually complementary information upon maturity, organic matter type and diagenesis.

#### H) C<sub>15+</sub> EXTRACTION, DEASPHALTENING AND CHROMATOGRAPHIC SEPARATION

Sections "A" and "E" dealt with analyses covering the light end of the hydrocarbon spectrum. This section is concerned with the solvent extractable organic material in the rock with more than fourteen carbon atoms in the molecule (i.e. the heavy end). The amount and composition of this extract indicates source richness and type, the level of thermal maturation and the possible presence of migrated hydrocarbons.

These results are integrated with those derived from the pyrolysis, visual kerogen, organic carbon and light hydrocarbon analyses.

The techniques involved in this analysis employ pure solvents and have been designed to give reproducible results. Hand picked samples are ground and then solvent extracted in a soxhlet apparatus, or by blending, with dichloromethane (the solvent system can be adapted to client's specifications). After asphaltene precipitation, the total extract is separated by column chromatography or high pressure liquid chromatography into the following fractions: paraffin-naphthene hydrocarbons, aromatic hydrocarbons, eluted NSO's (nitrogen-, sulphur-, and oxygen- containing non-hydrocarbons) and non-eluted NSO's. Note that the non-hydrocarbons are split into three fractions and not reported as a gross value. These fractions can be submitted for further analyses (carbon isotopes, gas chromatography, mass spectroscopy) including correlation studies.

For convenience and thoroughness, the data are reported in three formats: the weights of the fractions, ppm abundances and normalised percentage compositions. The data are also presented diagrammatically.

#### J) GC ANALYSIS OF C<sub>15+</sub> PARAFFIN-NAPHTHENE HYDROCARBONS

The gas chromatographic configurations of the heavy C<sub>15+</sub> paraffin-naphthene hydrocarbons reflect source type, the degree of thermal maturation and the presence and character of migrated hydrocarbons or contamination.

Not only is this analysis an integral part of any source rocks study but it also provides a fingerprint for correlation purposes and helps to define the geochemical/palynological environmental character of the source rocks from which crude oils were derived.

The paraffin-naphthene hydrocarbons obtained by column chromatography are separated by high resolution capillary chromatography. Excellent resolution of the individual normal paraffins, isoprenoids and significant individual isoparaffins and naphthenes is achieved. Runs are normally terminated at nC<sub>35</sub>. A powerful in-house microprocessor system is being introduced to correct for the change in response factor with chain length.

The normal paraffin carbon preference indices (C.P.I.) indicate if odd (values in excess of 1) or even (values less than 1) normal paraffins are dominant.



Strong odd preferences ( $\pm$  strong pristane peaks) are characteristic of immature land plant organic matter whilst even preferences ( $\pm$  strong phytane peaks) suggest a reducing environment of deposition. With increasing maturity, values approach 1.0 and oils are typically close to 1.0. The indices are calculated using the following formulae:

$$\text{C.P.I.}_A = \frac{C_{21} + C_{23} + C_{25} + C_{27}}{C_{20} + C_{22} + C_{24} + C_{26}} + \frac{C_{21} + C_{23} + C_{25} + C_{27}}{C_{22} + C_{24} + C_{26} + C_{28}}$$
$$\text{C.P.I.}_B = \frac{C_{25} + C_{27} + C_{29} + C_{31}}{C_{24} + C_{26} + C_{28} + C_{30}} + \frac{C_{25} + C_{27} + C_{29} + C_{31}}{C_{26} + C_{28} + C_{30} + C_{32}}$$

Chromatograms are reproduced in the report for use as visual fingerprints and in addition, the following data are tabulated: normalised normal paraffin distributions; proportions of paraffins, isoprenoids and naphthenes in the total paraffin-naphthene fraction; C.P.I.<sub>A</sub> and C.P.I.<sub>B</sub>; pristane to phytane ratio; pristane to nC<sub>17</sub> ratio.

#### K) PYROLYSIS

The process of thermal maturation can be simulated in the laboratory by pyrolysis, which involves heating the sample under specified conditions and measuring the oil-like material which is freed/generated from the rock. With this analysis, the potential richness of immature sediments can be determined and, by coupling the pyrolysis unit to a gas chromatograph, the liberated material can be characterised. These results are correlated with those obtained from the organic carbon, kerogen and C<sub>15+</sub> analyses.

Small amounts of powdered sample are heated in helium to release the thermal bitumen (up to 340°C) and pyrolysate (340-550°C). The thermal bitumen correlates with the solvent extractable material (see above) whilst the pyrolysate fraction does not exist in a "free" state but is generated from the kerogen, thus simulating maturation in the subsurface. Abundances (weight ppm of rock) are measured with a flame ionisation detector against a standard. Thermal bitumen includes source indigenous, contaminant and migrated hydrocarbons but the pyrolysate abundance is a measure of ultimate source richness. The capillary gas chromatogram of the pyrolysate is used to evaluate the character of the parent organic matter and whether it is oil or gas prone. Peak temperature(s) of pyrolysate evolution is recorded. Carbon dioxide can be measured if requested but is normally ignored as the separation of the organic and inorganic species has been found to be artificial and unreliable.

Pyrolysate yields provide a definitive measure of potential source richness which avoids the ambiguities of the organic carbon data and the problem of contamination. This analysis is also used to evaluate the quality and character of the organic matter and the degree to which it has realised its ultimate hydrocarbon potential. Geochem does not employ the pyrolysis technique to evaluate maturation, preferring the kerogen and vitrinite reflectance analyses which avoid the problem of reworking and hence, are more reliable.



Capillary chromatograms produced for the pyrolysate hydrocarbons range from  $C_1$  (methane) out towards  $C_{35}$  but exhibit considerable variations. They are used to define whether a source rock will yield oil, condensate or gas. With this new technique, it is now possible to complete the evaluation of a source rock.

The data are tabulated and presented graphically. MINI-PYROLYSIS includes ppm thermal bitumen and ppm pyrolysate. PYROLYSIS also provides the above together with the temperature of peak pyrolysate evolution. The capillary chromatograms of the pyrolysate obtained by PYROLYSIS-GC are reproduced in the report. The Mini-Pyrolysis analysis is recommended as a screening technique.

#### L) CORRELATION STUDY ANALYSES

Oil to oil and oil to parent source rock correlation studies require high resolution analytical techniques. This requirement is satisfied by some of the analyses discussed above but others have been selected specifically for correlation work. Many of these analyses also provide information upon the character of the environment of deposition of the parent source rocks.

- detailed  $C_4$ - $C_7$  hydrocarbon (gasoline range) analysis. See Section E. Although these hydrocarbons can be affected by migrational/alteration processes, they commonly provide a very useful correlation parameter.
- capillary gas chromatography of the  $C_{15+}$  paraffin-naphthenes. See section J. The branched+normal paraffin distributions are used to "fingerprint" the samples.
- capillary chromatograms of whole oils and of the  $C_{4+}$  fraction of source rocks.
- capillary gas chromatography of  $C_{15+}$  aromatic hydrocarbons. Separate chromatograms of the hydrocarbons and of the sulphur-bearing species are reproduced.
- high pressure liquid chromatograms.
- mass spectrometric carbon isotope analyses of crude oil and rock extract fractions and of kerogen separations. A powerful tool for comparing hydrocarbons and correlating hydrocarbons to organic matter. With this technique the problem of source rock contamination can be avoided. The data are recorded on x-y or Galimov plots.
- mass fragmentograms (mass chromatograms) of fragment ions characteristic of selected hydrocarbon groups such as the steranes and terpanes. The fragmentograms provide a convenient and simple means of presenting detailed mass spectrometric data and are used as a sophisticated fingerprinting technique. This provides the ultimate resolution for correlating hydrocarbons and facilitates the examination of hydrocarbon classes.
- vanadium and nickel contents.

Suites of (rather than single) analyses are employed in correlation studies, the actual selection depending upon the complexity of the problem. See also section N.





M) ANALYSES FOR SPECIAL CASES

M-1) ELEMENTAL KEROGEN ANALYSIS

This analysis evaluates source quality, whether the sediments are oil or gas prone, the character of the organic matter and its level of thermal maturation. It is the chemical equivalent of the visual kerogen analysis. The pyrolysis analysis is generally preferred to this technique, both methods providing similar information.

M-2) SULPHUR ANALYSIS

The abundance of sulphur in source rocks and crude oils.

M-3) CARBONATE CONTENT

The mineral carbonate content of sediments is determined by acid treatment. These data are particularly useful when used in conjunction with organic carbon contents as a screening technique.

M-4) NORMAL PARAFFIN ANALYSIS

Following the removal of the branched paraffins and naphthenes from the total paraffin-naphthene fraction, a chromatogram of the normal paraffins is obtained. The resulting less complicated chromatogram facilitates the examination of normal paraffin distributions.

M-5) SOLID BITUMEN EVALUATION

Residual solid bitumen after crude oil is generated by three prime processes; the action of waters, gas deasphalting, thermal alteration. Thus it provides a means of determining the reservoir history of a crude and of evaluating whether adjacent traps will or will not be prospective for oil. In carbonate sections, where organic matter is sometimes sparse, this technique is also used to evaluate thermal maturation levels.

The analysis involves the determination of the solubility (in CS<sub>2</sub>) of the solid bitumen and of the atomic hydrogen to carbon ratio of the insoluble fraction.

N) CRUDE OIL ANALYSIS

N-1) API GRAVITY

This can be performed upon large (hydrometer) and small (SG bottle, pycnometer) samples and even upon stains extracted from sediments (refractive index).

N-2) SULPHUR CONTENTS (ASTM E30-47)

N-3) POUR POINT (ASTM D97-66, IP15/67)

N-4) VISCOSITY (ASTM D445-72, IP71/75)



N-5) FRACTIONAL DISTILLATION

Graph of cumulative distillation yield against temperature. Five percent cuts taken for further analysis. Mass spectrometric studies of these fractions provide a detailed picture of the distribution of paraffins and of the various naphthene and aromatic groups within a crude, which is useful both for correlation and for refinery evaluation purposes.