

TABLE 3

ROCKEVAL PYROLYSIS DATA

GEOCHEM SAMPLE NUMBER	DEPTH	TOC (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Production INDEX	Hydrogen INDEX	Oxygen INDEX	Tmax (°C)
1689-011A	1150-1200	0.59	0.02	0.10	1.85	0.17	16.9	313.6	396
1689-012A	1200-1250	0.71	0.16	0.58	1.72	0.22	81.7	242.3	426
1689-013B	1250-1300	0.18	0.12	0.06	1.24	0.67	33.3	688.9	374
1689-014A	1300-1350	0.99	0.17	0.43	1.21	0.28	43.4	122.2	417
1689-015A	1350-1400	0.70	0.13	0.30	1.16	0.30	42.9	165.7	415
1689-016A	1400-1450	0.81	0.17	0.31	1.15	0.35	38.3	142.0	416
1689-017A	1450-1500	0.78	0.15	0.25	1.14	0.38	32.1	146.2	394
1689-018A	1500-1550	0.64	0.13	0.25	1.09	0.34	39.1	170.3	412
1689-019A	1550-1600	0.63	0.22	0.28	0.88	0.44	44.4	139.7	397
1689-020A	1600-1650	1.25	0.12	1.01	1.16	0.11	80.8	92.8	422
1689-021A	1650-1700	0.93	0.07	0.54	0.88	0.11	58.1	94.6	419
1689-022A	1700-1750	0.61	0.10	0.27	1.08	0.27	44.3	177.0	414
1689-023A	1750-1800	0.38	0.05	0.11	0.90	0.31	28.9	236.8	395
1689-170A	1753	0.76	0.64	0.43	1.43	0.60	56.6	188.2	321
1689-171A	1767	0.85	0.63	0.87	0.66	0.42	102.4	77.6	311
1689-173A	1779	0.24	0.14	0.15	0.62	0.48	62.5	258.3	417
1689-174A	1794.5	1.12	2.12	1.65	0.88	0.56	147.3	78.6	429
1689-024A	1800-1850	0.59	0.27	0.41	1.21	0.40	69.5	205.1	416
1689-176A	1809	0.17	0.04	0.04	0.46	0.50	23.5	270.6	387
1689-177A	1831	0.65	0.07	0.29	0.27	0.19	44.6	41.5	417
1689-178A	1840.1	0.49	0.06	0.14	0.20	0.30	28.6	40.8	416
1689-025A	1850-1900	0.52	0.19	0.30	1.13	0.39	57.7	217.3	418
1689-179A	1867	1.69	0.56	1.91	0.46	0.23	113.0	27.2	415
1689-180A	1892.5	0.27	0.05	0.11	0.23	0.31	40.7	85.2	414
1689-026A	1900-1950	0.80	0.07	0.30	1.15	0.19	37.5	143.7	429
1689-181A	1918.2	0.60	0.06	0.13	0.21	0.32	21.7	35.0	434
1689-182A	1929	0.75	0.46	0.83	0.18	0.36	110.7	24.0	317
1689-027A	1950-2000	0.42	0.08	0.20	1.05	0.29	47.6	250.0	377
1689-183A	1961	0.17	0.04	0.06	0.60	0.40	35.3	352.9	402
1689-184A	1966	0.44	0.08	0.14	0.05	0.36	31.8	11.4	402
1689-028A	2000-2050	0.36	0.05	0.16	0.80	0.24	44.4	222.2	393
1689-185A	2023.5	0.51	0.09	0.21	0.12	0.30	41.2	23.5	412
1689-186A	2028.5	0.52	0.05	0.12	0.14	0.29	23.1	26.9	406
1689-187A	2034	1.01	0.21	0.52	1.11	0.29	51.5	109.9	416
1689-188A	2044	0.85	0.30	0.79	1.38	0.28	92.9	162.4	415
1689-029A	2050-2100	0.62	0.10	0.35	0.86	0.22	56.5	138.7	413
1689-189A	2061	0.72	0.12	0.35	0.97	0.26	48.6	134.7	417
1689-030A	2100-2150	1.11	0.25	1.43	1.33	0.15	128.8	119.8	430
1689-031A	2150-2200	0.98	0.15	0.77	1.26	0.16	78.6	128.6	428
1689-190A	2154	0.74	0.10	0.52	0.92	0.16	70.3	124.3	427
1689-032A	2200-2250	0.84	0.27	0.80	0.99	0.25	95.2	117.9	371
1689-033A	2250-2300	0.76	0.14	0.52	1.12	0.21	68.4	147.4	422
1689-191A	2252	0.63	0.07	0.23	0.16	0.23	36.5	25.4	418
1689-034A	2300-2350	0.77	0.33	0.68	0.78	0.33	88.3	101.3	415
1689-035A	2350-2400	0.78	0.19	0.54	0.99	0.26	69.2	126.9	424
1689-036A	2400-2450	0.94	0.32	1.07	0.81	0.23	113.8	86.2	428
1689-192A	2433	1.06	0.37	1.57	0.66	0.19	148.1	62.3	429
1689-037A	2450-2500	0.69	0.14	0.41	0.59	0.25	59.4	85.5	420
1689-038A	2500-2550	0.77	0.18	0.57	0.66	0.24	74.0	85.7	422
1689-193A	2527	0.70	0.20	0.59	0.23	0.25	84.3	32.9	373

TABLE 3

ROCKEVAL PYROLYSIS DATA

GEOCHEM		TOC	S1	S2	S3	Production	Hydrogen	Oxygen	Tmax
SAMPLE	DEPTH	(%)	(mg/g)	(mg/g)	(mg/g)	INDEX	INDEX	INDEX	(°C)
1689-039A	2550-2600	0.76	0.18	0.49	0.66	0.27	64.5	86.8	418
1689-040A	2600-2650	0.79	0.55	0.73	0.72	0.43	92.4	91.1	428
1689-194A	2616	0.87	0.12	0.64	0.28	0.16	73.6	32.2	429
1689-041A	2650-2700	0.99	0.49	1.02	0.88	0.32	103.0	88.9	428
1689-195A	2655	0.64	0.06	0.15	0.02	0.29	23.4	3.1	428
1689-196A	2665	0.97	0.08	0.32	0.11	0.20	33.0	11.3	431
1689-197A	2675	0.89	0.14	0.13	0.26	0.52	14.6	29.2	431
1689-042A	2700-2709	0.84	0.34	0.54	0.56	0.39	64.3	66.7	428
1689-198A	2701.1	0.11	0.04	0.10	2.01	0.29	90.9	*,*	422
1689-199A	2701.5	0.38	0.14	0.15	0.18	0.48	39.5	47.4	372
1689-043A	2709-2718	48.20	0.58	16.47	26.47	0.03	34.2	54.9	419
1689-201A	2709.9	0.31	0.13	0.06	0.20	0.68	19.4	64.5	356
1689-045A	2727-2736	0.96	0.47	0.87	0.60	0.35	90.6	62.5	431
1689-202A	2732.45	0.12	0.13	0.18	0.43	0.42	150.0	358.3	386
1689-204A	2751.30	0.49	4.24	2.34	0.90	0.64	477.6	183.7	406
1689-051A	2781-2790	0.89	0.37	0.65	0.56	0.36	73.0	62.9	430
1689-206A	2793	0.44	0.12	0.25	0.37	0.32	56.8	84.1	425
1689-207A	2806	0.19	0.05	0.02	0.32	0.71	10.5	168.4	310
1689-209A	2823.50	0.37	1.67	1.01	1.03	0.62	273.0	278.4	367
1689-057A	2835-2844	0.93	0.32	0.53	0.50	0.38	57.0	53.8	429
1689-210A	2857.80	0.57	4.58	3.36	0.85	0.58	589.5	149.1	414

TABLE 4
GAS - OIL INDEX



GEOCHEM SAMPLE NUMBER	DEPTH	DRY GAS	WET GAS	GASOLINES KEROSENES	GAS OIL DISTILLATE	GAS-OIL INDEX
		% C ₁	% C ₂ - C ₅	% C ₆ - C ₁₄	% C ₁₅₊	$\frac{\% C_1 - C_5}{\text{TOTAL}}$

1689-020A	1600-1650	12.27	70.86	16.88	0.00	83.12
1689-174A	1794.5	10.94	64.76	24.30	0.00	75.70
1689-179A	1867	9.40	60.46	30.05	0.09	69.86
1689-187A	2034	11.81	59.99	28.20	0.00	71.80
1689-190A	2154	12.41	57.85	29.74	0.00	70.26
1689-192A	2433	13.20	62.76	24.04	0.00	75.96
1689-194A	2616	24.58	51.75	23.67	0.00	76.33
1689-197A	2675	15.01	58.04	26.95	0.00	73.05
1689-043A	2709-2718	28.39	38.62	30.12	2.88	67.01
1689-045A	2727-2736	10.55	51.26	36.76	1.42	61.82
1689-205A	2769.5	13.23	61.90	24.88	0.00	75.12
1689-057A	2835-2844	14.58	63.47	21.94	0.00	78.06
1689-210A	2857.8	11.30	55.36	33.33	0.00	66.67

TABLE 5a
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
1689-020A	1600-1650m	W; Al-H-I; Am		-	F-M	F-G	1+ to 2-	2
1689-174A	1779m	W-Al; I; H-Am	sapropelisation	-	F-M	G	1+ to 2-	2
1689-179A	1867m	Al*; Am**-I-W-H; -	* includes material passing to amorphous ** often Al, frequently incompletely developed	-	F-C	F-G	1+ to 2-	2
1689-187A	2034m	I-W; -; Al-H-Am	I/W differentiation difficult	70	M	F-G	2-	3
1689-190A	2154m	I; W; Al-H		70	F-M	F-G	2-	3
1689-192A	2433m	I-W; Al; H		60	F-M	F-G	2-	3
1689-194A	2616m	I; W; Al-H		85	F-M	F-G	2- to 2	3.5
1689-197A	2675m	I; W; Al-H		90	F-M	G	2-	3
1689-045A	2727-2736m	I; W; Al-H		85	F-M	G	2-	3
1689-205A	3769.50m	(W; I; H)	extremely, lean, unreliable	-	F-M	F	2- or 2- to 2	3.3
1689-057A	2835-2862m	I; W; Al-H		80	F-M	G	2- or 2- to 2	3.3
1689-210A	2857.80m	W-I; -; H-Al	lean, abundant contamination	-	F-M	F	2- to 2(??)	3.5(?)

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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 5b

KEROGEN COMPOSITION

Well : 6201/11-1

GEOCHEM SAMPLE NUMBER	DEPTH (m)	VISUAL ESTIMATE (%)				
		AM	AL	H	W	I
1689-020A	1600	1	20	15	55	10
1689-174A	1794.5	<10	35	<10	40	15
1689-179A	1867	25	40	10	10	15
1689-187A	2034	1	<10	<5	35	50
1689-190A	2154	-	<10	<10	30	55
1689-192A	2433	-	15	<10	40	40
1689-194A	2616	-	<10	<5	25	65
1689-197A	2675	-	<10	<10	20	70
1689-045A	2727	-	<10	<5	20	70
1689-205A	2769.5	(-	-	<5	75	20)*
1689-057A	2835	-	<10	<10	25	65
1689-210A	2857.5	-	1	<5	50	50

* extremely lean, unreliable

TABLE 6
VITRINITE REFLECTANCE DATA



GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	AVERAGE REFLECTIVITY R _o (%), (NUMBER OF PARTICLES)			REMARKS
			1	2	3	
1689-011A	1150m	WR	<u>0.37</u> (3)	0.50 (2) *		
1689-013A	1250m	WR	<u>0.40</u> (4)	0.61 (5) *	0.77 (2)	
1689-014A	1300m	WR	0.32 (1)	0.49 (5)	0.72 (1)	
1689-015A	1350m	WR	0.60 (1)			
1689-016A	1400m	WR	0.30 (1)	0.56 (5)	0.70 (4)	
1689-017A	1450m	WR	0.30 (1)	0.50 (1)		
1689-018A	1500m	WR	0.30 (1)	0.69 (2)		
1689-019A	1550m	WR	No determinations possible			
1689-020A	1600m	WR	0.30 (4)	<u>0.47</u> (4)	0.62 (3) *	
1689-021A	1650m	WR	0.34 (3)			
1689-022A	1700m	WR	0.41 (2)	0.79 (2)		
1689-170A SWC	1753m	WR	0.75 (3)			
1689-174A SWC	1794.5m	WR	0.58 (1)	0.80 (5)		
1689-179A SWC	1867m	WR	0.80 (5)			
1689-181A SWC	1918.2m	WR	<u>0.51</u> (3)	0.66 (4) *	9.86 (6) *	
1689-184A SWC	1966m	WR	0.71 (4)	0.82 (1)		
1689-185A SWC	2032.5m	WR	0.68 (5)	0.82 (10)		
1689-187A SWC	2034m	WR	0.64 (1)	0.78 (9)		
1689-189A SWC	2061m	WR	<u>0.54</u> (3)	0.72 (9) *	0.90 (5)	
1689-030A	2100m	WR	<u>0.54</u> (5)	0.67 (9) *	0.88 (6) *	
1689-190A SWC	2134m	WR	0.38 (1) 0.96 (4)	0.63 (3)	0.78 (2)	
1689-032A	2200m	WR	0.63 (2)	0.80 (14)		
1689-191A SWC	2252m	WR	0.72 (7)	0.89 (13)		
1689-034A	2300m	WR	<u>0.52</u> (1)	0.80 (12) *	0.99 (7) *	
1689-035A	2350m	WR	0.37 (1)	0.73 (14)	1.02 (6)	
1689-192A SWC	2433m	WR	0.40 (1)	0.75 (19)	0.94 (5)	

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

Preferred values underlined. *Reworked



TABLE 6
VITRINITE REFLECTANCE DATA

GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	AVERAGE REFLECTIVITY R _o (%), (NUMBER OF PARTICLES)			REMARKS
			1	2	3	
1689-037A	2450m	WR	<u>0.53</u> (3)	0.78(9)*	1.07(8)*	
1689-193A SWC	2527m	WR	<u>0.58</u> (1)	0.88(6)*	1.01(3)*	
1689-039A	2550m	WR	0.49(2)	0.72(10)	0.95(9)	
1689-194A SWC	2616m	WR	0.68(7)	0.96(6)	1.14(7)	
1689-195A SWC	2655m	WR	<u>0.57</u> (2)	0.81(4)*	1.12(12)*	
1689-197A SWC	2675m	WR	0.46(4) 1.20(5)	0.74(5)	0.98(1)	
1689-043A	2709m	WR	0.33(50)	0.90(3)		
1689-045A	2727m	WR	0.56(2)	0.92(5)	1.16(3)	
1689-204A CORE	2751.3m	WR	No determinations possible			
1689-205A CORE	2769.5m	WR	No determinations possible			
1689-206A SWC	2793m	WR	0.76(3)	0.89(13)	1.06(14)	
1689-057A	2835m	WR	0.52(1) 1.26(5)	0.75(2)	1.02(12)	
1689-210A CORE	2857.5m	WR	0.38(1)	0.72(2)		
1689-212A	2968m	WR	No determinations possible			

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

Preferred values underlined. *Reworked

**TABLE 7
METHYLPHENANTHRENE INDICES (MPI)**

GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	MPI 1		MPI 2	
			AREA	HEIGHT	AREA	HEIGHT
1689-020A	1600-1650		0.86	0.82	0.68	0.62
1689-030A	2100-2150		0.90	0.78	0.76	0.50
1689-039A	2550-2600		0.49	0.66	0.57	0.50
1689-041A	2650-2700		0.37	0.29	0.32	0.26
1689-202	2732.45	CORE	0.15	0.21	0.24	0.24
1689-204	2751.30	CORE	0.74	0.48	0.33	0.31
1689-205	2769.50	CORE	0.57	0.51	0.47	0.51
1689-209	2823.50	CORE	2.87	2.45	4.21	3.27
1689-210	2857.80	CORE	0.74	0.71	0.88	0.60
1689-091A	3141-3150		0.37	0.78	0.47	0.88

$$\text{MPI 1} = \frac{1.5 (2\text{-MP} + 3\text{-MP})}{\text{P} + 1\text{-MP} + 9\text{-MP}}$$

$$\text{MPI 2} = \frac{3 (2\text{-MP})}{\text{P} + 1\text{-MP} + 9\text{-MP}}$$

CT – ditch cuttings CO – core SWC – sidewall core

TABLE 7
METHYLPHENANTHRENE INDICES (MPI)

GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	MPI 1		MPI 2	
			AREA	HEIGHT	AREA	HEIGHT
1689-213	2713-2717	DST- 3	0.73	0.66	0.57	0.53

Oil Sample

$$\text{MPI 1} = \frac{1.5 (2\text{-MP} + 3\text{-MP})}{\text{P} + 1\text{-MP} + 9\text{-MP}}$$

$$\text{MPI 2} = \frac{3 (2\text{-MP})}{\text{P} + 1\text{-MP} + 9\text{-MP}}$$

CT – ditch cuttings CO – core SWC – sidewall core



TABLE 8a
 CONCENTRATION (PPM) OF EXTRACTED C₁₅₊ MATERIAL IN ROCK

JOB GEOCHEM SAMPLE NUMBER	LITHO	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
				Saturates	Aromatics	TOTAL	Preciptd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	TOTAL
1689-020A		1600-1650	324	105	24	129	86	108	0	195
1689-030A		2100-2150	475	247	39	286	33	154	1	189
1689-039A		2550-2600	1032	569	78	647	102	283	1	386
1689-041A		2650-2700	714	330	38	368	88	256	1	346
1689-202		2732.45	456	306	35	341	57	56	1	115
1689-204		2751.30	1704	1320	153	1473	90	137	3	231
1689-205		2769.50	10448	8244	1170	9415	357	646	30	1033
1689-209		2823.50	2742	2189	255	2445	136	151	10	297
1689-210		2857.80	6936	5232	713	5945	514	456	22	991
1689-091A		3141-3150	252	37	7	44	53	155	1	208

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

TABLE 8a
 CONCENTRATION (PPM) OF EXTRACTED C₁₅₊ MATERIAL

JOB	LITHO	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
				Saturates	Aromatics	TOTAL	Preciptd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	TOTAL

1639-213		DST 3 (2713-2717)	622833	497367	115933	613300	9533	30689	1861	42083
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S — shale, SS — sandstone, L — limestone, D — dolomite, M — mixed, see Table 1.



TABLE 8b
COMPOSITION (NORMALISED %) OF C₁₅₊ MATERIAL

JOB	LITHO	DEPTH	HYDROCARBONS		NON HYDROCARBONS		
GEOCHEM SAMPLE NUMBER			Saturates	Aromatics	Preciptd. Asphaltenes	Eluted NSO's	Non eluted NSO's

1689-020A		1600-1650	32.44	7.44	26.49	33.48	0.15
1689-030A		2100-2150	51.96	8.30	7.00	32.50	0.24
1689-039A		2550-2600	55.07	7.56	9.90	27.41	0.06
1689-041A		2650-2700	46.25	5.31	12.37	35.89	0.17
1689-202		2732.45	67.21	7.59	12.60	12.33	0.27
1689-204		2751.30	77.46	9.00	5.31	8.03	0.20
1689-205		2769.50	78.91	11.20	3.42	6.18	0.29
1689-209		2823.50	79.84	9.32	4.96	5.51	0.38
1689-210		2857.80	75.43	10.27	7.41	6.57	0.31
1689-091A		3141-3150	14.67	2.69	21.03	61.37	0.24

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

TABLE 8b
COMPOSITION (NORMALISED %) OF C₁₅₊ MATERIAL



JOB	LITHO	DEPTH	HYDROCARBONS		NON HYDROCARBONS		
GEOCHEM SAMPLE NUMBER			Saturates	Aromatics	Preciptd. Asphaltenes	Eluted NSO's	Non eluted NSO's

1689-213		DST 3 (2713-2717)	79.86	13.39	1.53	4.93	0.30
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S - shale, SS - sandstone, L - limestone, D - dolomite, M - mixed, see Table 1.



TABLE 9
SIGNIFICANT RATIOS (%) OF C₁₅₊ 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

1689-020A		1600-1650	1.04	39.88	1.24	3.11	4.36
1689-030A		2100-2150	0.83	60.26	3.45	5.72	6.26
1689-039A		2550-2600	0.74	62.63	8.74	13.95	7.28
1689-041A		2650-2700	0.56	51.57	6.58	12.76	8.70
1689-202		2732.45	0.11	74.80	31.00	41.44	8.86
1689-204		2751.30	0.37	86.45	39.81	46.04	8.61
1689-205		2769.50	0.09	90.11	1046.11	1160.91	7.04
1689-209		2823.50	0.09	89.16	271.65	304.69	8.57
1689-210		2857.80	0.15	85.71	396.33	462.43	7.34
1689-091A		3141-3150	0.73	17.36	0.60	3.45	5.45

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

TABLE 9
SIGNIFICANT RATIOS (%) OF C₁₅₊ 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							

1689-213		DST 3 (2713-2717)	*. **	93.24	*. **	*. **	5.96
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S - shale, SS - sandstone, L - limestone, D - dolomite, M - mixed, see Table 1.

TABLE 10
COMPOSITION (NORMALISED %) OF C₁₅+ SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS



GEOCHEM SAMPLE NUMBER	020A	030A	039A	041A/B	091A/B
DEPTH	1600- 1650m	2100- 2150m	2550- 2600m	2650- 2700m	3140- 3150m
SAMPLE TYPE	CTCT	CTCT	CTCT	CTCT	CTCT
nC15	2.23	10.13	12.42	39.22	30.30
nC16	3.50	12.82	6.80	16.81	17.08
nC17	10.83	11.03	4.97	8.96	9.37
nC18	7.64	10.88	3.92	6.16	7.71
nC19	5.33	8.79	2.75	3.36	5.51
nC20	4.86	5.96	2.75	2.24	3.86
nC21	5.18	4.92	2.88	1.68	2.75
nC22	6.37	3.73	3.27	1.68	2.75
nC23	6.37	2.68	3.79	1.68	2.20
nC24	7.40	2.53	4.05	1.12	2.20
nC25	7.25	6.86	5.75	1.12	2.75
nC26	7.01	2.09	6.27	1.12	1.65
nC27	7.25	3.58	7.19	1.12	2.20
nC28	5.73	1.94	8.10	1.12	1.65
nC29	4.78	2.09	6.01	1.12	2.20
nC30	3.18	1.49	5.49	1.12	0.83
nC31	2.15	1.64	4.05	1.40	1.65
nC32	1.27	1.34	3.53	2.24	0.28
nC33	0.88	1.64	2.48	2.24	1.10
nC34	0.56	1.94	2.22	2.80	1.10
nC35	0.24	1.94	1.31	1.68	0.83
Paraffin	48.74	17.15	23.79	37.38	30.89
Isoprenoid	3.14	3.12	5.29	8.17	7.83
Naphthene	48.12	79.73	70.92	54.45	61.28
CPI 1 Index	1.00	1.51	1.05	1.01	1.07
CPI 2 Index	1.08	1.91	0.97	0.96	1.70
CPI 3 Index	1.14	1.78	1.00	1.00	1.33
Prist/Phytane	0.80	1.35	1.79	2.25	1.42
Prist/nC17	0.26	0.95	2.87	1.69	1.59
Phytane/nC18	0.47	0.71	2.03	1.09	1.36

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

Job Number : 1689

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

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

CT - ditch cuttings CO - core SWC - sidewall core

TABLE 10
COMPOSITION (NORMALISED %) OF C₁₅₊ SATURATE (PARAFFIN – NAPHTHENE) HYDROCARBONS



GEOCHEM SAMPLE NUMBER	202	204	205	209	210
DEPTH	2732.45	2751.30	2764.50	2823.50	2857.80
SAMPLE TYPE	CO	CO	CO	CO	CO
nC15	1.95	8.45	18.74	13.35	10.47
nC16	2.73	8.86	14.79	14.17	10.98
nC17	2.81	11.08	8.88	11.50	9.46
nC18	3.51	9.83	8.68	11.09	8.95
nC19	3.67	8.86	9.07	8.62	8.78
nC20	3.82	7.48	6.90	6.98	7.60
nC21	3.90	6.23	5.13	5.95	6.25
nC22	4.13	5.82	4.34	4.72	5.24
nC23	4.29	4.99	3.55	3.70	4.39
nC24	5.23	5.12	2.96	2.46	4.05
nC25	6.47	4.99	2.96	2.05	4.22
nC26	6.63	2.91	1.97	2.67	2.87
nC27	7.49	2.77	1.78	2.05	2.87
nC28	7.72	1.94	1.78	1.85	2.53
nC29	8.19	1.94	1.18	1.44	2.03
nC30	6.32	1.52	0.39	1.44	1.69
nC31	6.16	1.38	1.58	1.23	1.52
nC32	4.99	1.11	1.78	0.62	1.01
nC33	4.37	1.52	2.56	1.44	1.86
nC34	3.51	2.08	0.99	1.85	2.20
nC35	2.11	1.11	0.00	0.82	1.01
Paraffin	31.18	28.03	17.48	26.04	20.15
Isoprenoid	4.60	8.31	6.66	10.86	7.01
Naphthene	64.22	63.66	75.86	63.10	72.84
CPI 1 Index	1.03	1.05	1.02	1.00	1.05
CPI 2 Index	1.10	1.22	1.16	0.92	1.13
CPI 3 Index	1.04	1.14	0.95	0.91	1.06
Prist/Phytane	1.63	1.67	1.64	1.99	1.61
Prist/nC17	3.25	1.67	2.67	2.41	2.27
Phytane/nC18	1.60	1.13	1.66	1.26	1.49

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

Job Number : 1689

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

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

CT – ditch cuttings CO— core SWC – sidewall core



TABLE 10
COMPOSITION (NORMALISED %) OF C₁₅₊ SATURATE (PARAFFIN - NAPHTHENE) HYDROCARBONS

GEOCHEM SAMPLE NUMBER	213
DEPTH	2713.00- 2717.00
SAMPLE TYPE	OIL
nC15	7.40
nC16	7.67
nC17	6.47
nC18	6.67
nC19	6.67
nC20	6.60
nC21	6.33
nC22	7.07
nC23	6.53
nC24	6.73
nC25	5.87
nC26	5.13
nC27	4.67
nC28	4.00
nC29	3.47
nC30	2.33
nC31	1.73
nC32	1.13
nC33	1.40
nC34	1.47
nC35	0.67
Paraffin	43.52
Isoprenoid	5.86
Naphthene	50.62
CPI 1 Index	0.97
CPI 2 Index	1.06
CPI 3 Index	1.02
Prist/Phytane	1.62
Prist/nC17	1.29
Phytane/nC18	0.77

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

Job Number : 1688

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

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

CT - ditch cuttings CO - core SWC - sidewall core

NBS 22 STANDARD	
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TABLE 11
CARBON ISOTOPE COMPOSITIONS (‰, PDB)

GEOCHEM SAMPLE NUMBER	DEPTH	TOTAL EXTRACT WHOLE OIL	SATURATES	AROMATICS	NSO	ASPHALTENES	KEROGEN	PYROLYSATE S2
1689-020A	1600-1650m	-29.03	-28.33	-27.70	-28.38	-27.95		
1689-030A	2100-2150m	-29.25	-29.11	-28.41	-29.08	-28.69		
1689-039A	2550-2600m	-28.82	-29.16	-29.43?	-36.89? -36.53?	-28.30		
1689-041A+B	2650-2700m	-28.52	-28.89	-28.44	-28.72	-28.56		
1689-213	2713-2717m DST 3	-29.31	-29.06 -28.98	-28.41	-28.27	-28.77		
1689-202A	2732.45m	-28.76	-29.19	-28.07*	-28.06*	-28.50*		
1689-204A	2751.30m	-28.75	-28.92	-28.44	-28.34	-28.61		
1689-205A	2769.50m	-28.80	-28.80	-28.39	-28.65	-28.80		
1689-209A	2823.50m	-28.67	-28.63	-28.28	-27.84*	-28.88		
1689-210A	2857.80m	-28.62	-28.47	-28.49	too small	-28.66		
1689-091A+B	3141-3150m	-27.83	-28.67	-27.80*	-27.24	-27.78		

* Very small sample



TABLE 12
BIOMARKER MOLECULAR RATIOS

GEOCHEM SAMPLE NUMBER	SAMPLE DEPTH/ IDENTITY	STERANES (m/z 217, 218)				TERPANES (m/z 191, 177)						GAMMACERANE INDEX [$\frac{G}{E}$]
		$C_{29} \frac{\alpha\alpha\alpha 20S [Q]}{\alpha\alpha\alpha 20R [T]}$	$C_{29} \frac{\alpha\beta\beta 20R [H]}{\alpha\alpha\alpha 20R [T]}$	$C_{27} \frac{20SDIAST [A]}{20RDIAST [B]}$	$\frac{C_{27} \beta\beta}{C_{29} \beta\beta} (218)$	$\frac{Tm [B]}{Ts [A]}$	$\frac{C_{29} 17\alpha NH [C]}{[C] + C_{30} 17\alpha H [E]}$	$C_{29} \frac{NM [D]}{[D] + NH [C]}$	$\frac{28, 30 BNH [Z]}{[Z] + C_{29} 17 NH [C]}$	$\frac{28, 30 \cdot BNH [Z]}{[Z] + 25, 28, 30 \cdot TNH [177]}$	$C_{31} \frac{20S [G]}{[G] + 20R [H]} \%$	
1689-020A	1600-1650m	0.47	1.01	1.86	0.89	0.79	0.25	0.40	-	-	45	-
1689-030A	2100-2150m	0.43	0.53	1.85	0.80	0.89	0.29	0.26	0.26	-	47	0.18
1689-039A	2550-2600m	0.69	0.94	2.04	0.91	0.76	0.32	0.17	0.22	-	52	-
1689-041A/B	2650-2700m	0.61	0.61	2.13	1.02	1.09	0.36	0.23	0.13	-	58	-
1689-213A	DST3 2713-2717m	1.40	1.71	1.99	0.87	0.46	0.28	0.09	0.24	-	58	-
1689-202A	2732.45m	0.95	1.58	1.73	1.12	0.63	0.27	-	-	-	59	-
1689-204A	2751.30m	0.90	1.11	1.49	0.99	0.49	0.31	0.11	0.09	-	58	-
1689-205A	2769.50m	1.20	1.86	1.91	0.95	0.41	0.34	-	0.19	-	59	-
1689-209A	2823.50	1.09	1.55	1.38	0.85	0.43	0.29	0.15	0.20	-	57	-
1689-210A	2857.80	0.98	1.36	1.80	0.95	0.46	0.29	-	0.15	-	55	-
1689-091A/B	3141-3150m	0.64	0.57	1.68	1.09	1.10	0.34	0.36	-	-	28	-

S55

[A] etc. REFERS TO IDENTIFICATION ON APPROPRIATE MASS FRAGMENTOGRAM
 CT - ditch cuttings CO - core SWC - sidewall core
 DIAST - DIASTERANES H - HOPANE NH - NORHOPANE BNH - BISNORHOPANE
 TNH - TRISNORHOPANE NM - NORMORETANE



Table 13

M/Z 191

SAMPLE NO	A	B	Z	C	C ₁	X	D	E	F	G	H
1689-020	2654	2097	-	2747	1463	3101	1851	8153	662	2051	2547
1689-030	1712	1520	1755	5096	1449	1405	1811	12583	1762	2991	3410
1689-041	2397	2616	997	6502	2292	641	1960	11626	1732	3679	2700
1689-039	4508	3434	2604	9194	3097	2426	1860	19117	2201	5854	5308
1689-213	9018	4106	3324	10300	5901	5513	1000	26105	1985	8821	6488
1689-202	1035	650	-	1161	627	660	-	3142	-	1269	889
1689-204	5235	2584	986	10571	4755	3694	1288	23129	1175	6862	5024
1689-205	6048	2470	2256	9767	4610	3959	-	18384	1033	5748	3961
1689-209	3927	1681	1422	5583	2319	2562	983	13066	1336	3427	2598
1689-210	3130	1455	779	4210	1945	2449	-	10328	548	3384	2765
1689-091	1583	1747	-	3800	547	570	2130	7379	2298	2388	6139

SAMPLE NO	G ₁	I	J	J ¹	K	K ¹	L	L ¹	M	M ¹
1689-020	1481	-	-	-	-	-	-	-	-	-
1689-030	-	-	-	-	-	-	-	-	-	-
1689-041	-	-	-	-	-	-	-	-	-	-
1689-039	-	-	-	-	-	-	-	-	-	-
1689-213	-	-	-	-	-	-	-	-	-	-
1689-202	-	-	-	-	-	-	-	-	-	-
1689-204	-	-	-	-	-	-	-	-	-	-
1689-205	-	-	-	-	-	-	-	-	-	-
1689-209	-	-	-	-	-	-	-	-	-	-
1689-210	-	-	-	-	-	-	-	-	-	-
1689-091	-	-	-	-	-	-	-	-	-	-

Table 13

M/Z 217

SAMPLE NO	A	B	C	D	E	F	G	H	I	J	K
1689-020	2323	1252	677	1308	1527	1830	371	2175	388	1147	1690
1689-030	1745	944	495	690	1142	1252	549	1926	581	1474	1156
1689-041	1382	678	334	694	833	970	313	1293	435	652	711
1689-039	3477	1635	922	1030	1362	2149	410	3613	1042	1404	2211
1689-213	5383	2709	1094	2673	4214	-	596	6057	1022	1143	4043
1689-202	606	350	142	255	370	407	88	737	158	92	365
1689-204	4043	2710	911	1967	2356	3100	400	3884	1356	988	2734
1689-205	4670	2443	749	2345	2469	3150	341	4263	1446	935	2287
1689-209	2457	1785	628	1342	1543	1582	375	2473	589	559	1754
1689-210	2243	1247	542	1223	1091	1627	341	2268	542	404	1336
1689-091	512	305	119	212	309	354	137	590	190	256	270

SAMPLE NO	L	M	N	O	P	Q	R	S	T
1689-020	924	775	1211	-	2176	700	1492	1150	1478
1689-030	612	1103	1318	673	2132	1111	1355	1269	2536
1689-041	450	499	766	472	745	653	650	770	1074
1689-039	1659	1168	2090	1198	2059	1539	2114	1888	2245
1689-213	2438	1300	2937	1600	1623	2667	3250	3160	1900
1689-202	201	165	312	181	150	691	282	250	178
1689-204	1657	1312	2217	1121	968	1415	1737	1314	1571
1689-205	1688	1444	2202	1193	922	1733	2682	1416	1444
1689-209	1180	836	1479	765	512	878	1255	1117	809
1689-210	935	396	1103	595	472	675	943	761	692
1689-091	145	175	243	-	265	317	285	247	499

Table 13

M/Z 218

SAMPLE NO	A&B	C&D	E&F
1689-020	2484	2721	2786
1689-030	3075	3339	3828
1689-041	2221	1751	2188
1689-039	5449	4750	5992
1689-213	6753	6148	7784
1689-202	997	684	887
1689-204	5528	4443	5611
1689-205	5281	4244	5586
1689-209	3032	2850	3553
1689-210	2560	1992	2689
1689-091	997	655	917

DETAILED GASOLINE (C4-C7) ANALYSIS

GEOCHEM SAMPLE
NUMBER 213

DEPTH

isobutane	4.10
n-butane	4.10
isopentane	5.19
n-pentane	5.71
2,2-dimethylB	1.15
cyclopentane(CP)	2.78
2,3-dimethylB	0.00
2-methylP	5.55
3-methylP	4.63
n-hexane	8.74
methylCP(MCP)	4.58
2,2-dimethylP	1.03
2,4-dimethylP	0.00
2,2,3-trimethylB	0.00
benzene	0.44
cyclohexane(CH)	9.35
3,3-dimethylP	0.00
1,1-dimethylCP	0.00
2-methylH	6.29
2,3-dimethylP	0.00
3-methylH	4.29
1,c,3-dimethylCP	0.81
1,t,3-dimethylCP	0.69
1,t,2-dimethylCP	1.82
3-ethylP	0.00
n-heptane	10.80
methylCH(MCH)	16.79
1,c,2-dimethylCP	0.00
toluene	1.18
nC7/C7nap x100	53.70
MCP/Bz	10.47
MH/DMCP	3.19
nC6/MCP	1.91
%n-PARAFFINS	29.34
%iso-PARAFFINS	32.23
% NAPHTHENES	36.81
% AROMATICS	1.62