ESSO PRODUCTION RESEARCH COMPANY

HYDROCARBON SOURCE CHARACTERISTICS OF CANNED CUTTINGS FROM 17/9-1, OFFSHORE NORWAY

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January, 1974

EPR.5ES.74

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by

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SUMMARY AND CONCLUSIONS

Cuttings were analyzed from the interval 1500-9200 ft. Charges for this service work were billed to our Job No. 6347.

The analytical results are given in Tables I-III and they are summarized graphically in Fig. 1. The data are interpreted as follows:

Approximate Interval (feet)	Maturity	Source Quality (Richness)	Indigenous Hydrocarbons Expected (If Reservoired)
1500-2400	Immature	Fair	Lean
2400-3900	Immature	Poor	Lean
3900-6100	Immature	Fair to Good	Gas
6100-7200	Transitional	Fair to Good	Gas (minor liquids)
7200-8800	Mature	Rich (Shales Only)*	Wet gas or condensate
8800-9200	Mature	Fair (Shales Only)*	Wet gas or condensate

*The interval below about 7300 ft contains considerable amounts of volcanic materials, which undoubtedly causes the average source richness of this section to be somewhat poorer. The cuttings gas yields were mostly rather modest below 7300 ft, suggesting an overall rating of only "fair" at best, although individual shale beds appear to be "good to rich" potential oil sources.

The interval below 7200 ft would be rated as an oil source rather than a wet gas or condensate source if it were not for the low cyclohexane/methylcyclopentane values (Fig. 1). In the past we have not found oil production associated with strata for which CH/MCP values are less than about 0.25-0.30. The kerogen in these samples was predominantly amorphous, which we generally rate as oil prone.

Kerogen alterations of "2" below 7200 ft are sufficient to rate the amorphous material as "mature." The coaly and woody materials are probably still at the "transitional" stage of maturation. Relatively high gasoline yields from these samples support the "mature" ratings.

PROCEDURES

Compositions and concentrations of hydrocarbon gases in the air spaces above the cuttings in the sample cans were determined by gas chromatography. Similar data were obtained on gases released from a standard mixture of cuttings and tap water after two minutes of agitation in a Waring blender. Combined results on the air space gas plus the cuttings gas were calculated for each sample. The data were plotted graphically to show vertical variations in total gas (C_1-C_4) and wet gas (C_2-C_4), and a graphical plot was also made of the percent wet gas in total gas (Figure 1). Detailed results of the analyses are listed in Table I.

Chips of uniform lithologies were picked by hand from the heterogeneous mixtures of chips in the original samples. These are described in Table II. As noted in Table II, six of the samples consisted of slurries of disaggregated formation clays, possibly mixed with drilling mud. These samples were analyzed "as is" and are not as reliable as the "picked" ones for rating source characteristics. Drilling muds may contain organic matter of various types, including considerable amounts of diesel oil or live crude oil.

Our standard analytical procedures were used for determining the C_4-C_7 content and the total organic content of the slurries and "picked" chips. These results are given in Table III and they are plotted graphically in Fig. 1. Visual kerogen characteristics of most of these samples were also determined (Table II and Fig. 1).

DISCUSSION

The cuttings gas profile suggests that only the interval in the vicinity of 7000-7400 ft in this well is a significant source. Samples from both above and below gave rather low total gas yields. However, some of the shales below 7400 ft appear on the basis of high total organic matter, predominantly amorphous kerogen, and high gasoline yields, to be rich potential oil sources. Apparently these shales are relatively thin beds separated by volcanic materials. Thus, the overall or average source potential may not be high.

The ratio cyclohexane/methycyclopentane (CH/MCP) is bothersome in that its use is still based purely on empirical evidence, without valid theoretical backing. Nevertheless, we have never yet found oil associated with a section where the values of CH/MCP are so consistently low as those for this well (Fig. 1 and Table III). Such a profile has always been found to be associated with gassy sections, if reservoired hydrocarbons were present at all.

TABLE IA

C_1-C_4 HYDROCARBON ANALYSES - AIR SPACE AT TOP OF CANS

SAMPLE NUMBER	R	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS)							GAS COMPOSITION (PERCENT)									
			METHANE (C_1)	ETHANE (C_2)	PROPANE (C_3)	ISO-BUTANE (iC_4)	NORMAL BUTANE (nC_4)	WET (C_2-C_4)	TOTAL * (C_1-C_4)	TOTAL GAS						WET GAS			
										C_2-C_4	C_1	C_2	C_3	iC_4	nC_4	C_2	C_3	iC_4	nC_4
61670A	4	1500	1555.77	9.92	2.36	0.85	2.15	15.28	1571.05	0.9726	99.	1.	0.	0.	0.	65.15.	6.		
61670B	4	1600	2069.27	11.40	3.69	2.18	2.63	19.90	2089.17	0.9525	99.	1.	0.	0.	0.	57.19-11-			
61670C	4	1700	1135.36	12.48	2.67	1.48	2.48	19.11	1154.41	1.6554	99.	1.	0.	0.	0.	65.14.	8.		
61670D	4	1800	1457.66	11.73	5.45	2.12	3.00	22.30	1479.96	1.5068	99.	1.	0.	0.	0.	53.24.10.			
61670E	4	1900	959.32	7.82	9.61	3.80	3.75	24.98	984.30	2.5378	98.	1.	1.	0.	0.	31.39.15.			
61670F	4	2000	1164.91	8.26	6.22	5.35	5.82	25.65	1190.56	2.1544	98.	1.	1.	0.	0.	32.24.21.			
61670G	4	2100	8.89	0.33	0.94	0.12	0.76	2.15	11.04	19.4746	80.	3.	9.	1.	7.	15.44.	6.		
61670H	4	2200	3.99	0.07	0.17	0.01	0.36	0.61	4.60	13.2608	86.	2.	4.	0.	8.	11.28.	2.		
61670I	4	2300	570.83	4.48	0.63	0.07	0.53	5.71	576.54	0.9903	99.	1.	0.	0.	0.	79.11.	1.		
61670J	4	2400	8.30	0.82	0.73	0.05	0.52	2.12	10.42	20.3455	80.	8.	7.	0.	5.	39.34.	2.		
61670K	4	2500	212.64	2.83	1.49	0.07	1.02	5.41	218.05	2.4811	98.	1.	1.	0.	0.	52.28.	1.		
61670L	4	2600	242.08	3.27	1.69	0.07	1.37	6.40	248.48	2.5756	97.	1.	1.	0.	1.	52.26.	1.		
61670L	4	2600	296.74	3.79	2.04	0.19	1.62	7.64	304.38	2.5098	97.	1.	1.	0.	1.	50.27.	2.		
61670M	4	2700	165.97	3.88	1.85	0.18	1.55	7.46	173.43	4.3014	96.	2.	1.	0.	1.	52.25.	2.		
61670N	4	2800	5.24	0.11	0.50	0.04	0.67	1.32	6.56	20.1219	79.	2.	8.	1.	10.	8.38.	3.		
61670O	4	2900	193.42	2.65	1.40	0.21	1.12	5.38	198.80	2.7067	97.	1.	1.	0.	1.	49.26.	4.		
61670P	4	3000	85.50	1.64	0.77	0.09	0.75	3.25	88.75	3.6620	96.	2.	1.	0.	1.	50.24.	3.		
61670Q	4	3100	139.50	9.46	6.75	1.69	6.50	24.40	163.90	14.8871	85.	6.	4.	1.	4.	38.28.	7.		
61670R	4	3200	108.02	4.90	3.00	0.87	3.45	12.22	120.24	10.1630	90.	4.	2.	1.	3.	40.25.	7.		
61670S	4	3300	226.46	11.81	8.61	2.79	9.97	33.18	259.64	12.7792	87.	5.	3.	1.	4.	36.26.	8.		
61670T	4	3400	41.68	2.92	2.04	0.32	1.91	7.19	48.87	14.7125	85.	6.	4.	1.	4.	41.28.	4.		
1691A	4	3500	13.83	1.34	1.04	0.07	0.90	3.35	17.18	19.4993	81.	8.	6.	0.	5.	40.31.	2.		
61691B	4	3600	16.34	1.77	1.34	0.29	1.63	5.03	21.37	23.5376	77.	8.	6.	1.	8.	35.27.	6.		
61691C	4	3700	22.41	2.11	1.24	0.21	1.26	4.82	27.23	17.7009	81.	8.	5.	1.	5.	44.26.	4.		
61691D	4	3800	11.04	0.60	0.40	0.05	0.44	1.69	12.73	13.2757	86.	6.	3.	0.	3.	47.24.	3.		
61691E	4	3900	69.38	0.64	0.60	0.10	0.77	2.11	71.49	2.9514	97.	1.	1.	0.	1.	30.28.	5.		
61691F	4	4000	1681.92	51.84	10.18	2.87	3.32	68.21	1750.13	3.8974	96.	3.	1.	0.	0.	76.15.	4.		
61691G	4	4100	2783.96	49.67	15.87	3.83	3.82	72.59	2856.49	2.5412	97.	2.	1.	0.	0.	68.22.	5.		
61691H	4	4200	1284.37	21.73	7.16	2.61	2.46	33.96	1318.35	2.5774	97.	2.	1.	0.	0.	64.21.	8.		
61691I	4	4300	1517.47	22.40	9.18	3.32	3.85	38.75	1556.22	2.4900	98.	1.	1.	0.	0.	57.24.	9.		
61691J	4	4400	1603.43	20.48	7.95	3.16	3.19	34.78	1638.21	2.1230	99.	1.	0.	0.	0.	59.23.	9.		
61691K	4	4500	1644.54	19.20	8.00	3.76	3.15	34.11	1678.65	2.0320	99.	1.	0.	0.	0.	57.23.11.			
61691L	4	4600	1437.60	16.80	7.96	3.76	3.33	31.67	1469.47	2.1688	98.	1.	1.	0.	0.	53.25.12.			
61691M	4	4700	1782.83	26.16	11.92	5.91	4.73	48.72	1831.55	2.6600	98.	1.	1.	0.	0.	54.24.12.			
61691N	4	4800	2016.30	44.16	14.08	6.84	4.78	69.86	2088.16	3.3455	97.	2.	1.	0.	0.	63.20.10.			
61691O	4	4900	4.50	0.02	0.01	0.01	0.17	0.21	4.71	4.4585	96.	0.	0.	0.	4.	10.	5.	5.	
61691P	4	5000	2341.70	35.50	16.75	11.92	6.93	71.10	2412.80	2.9468	98.	1.	1.	0.	0.	49.24.17.			
61691Q	4	5100	1934.21	43.20	25.59	18.80	10.27	97.86	2032.07	4.8157	95.	2.	1.	1.	1.	45.26.19.			
61691R	4	5200	1567.15	35.10	20.25	14.88	7.90	78.13	1645.28	4.7487	96.	2.	1.	1.	0.	45.26.19.			
61691S	4	5300	2095.93	58.49	40.93	30.55	15.44	145.41	2241.34	6.4876	93.	3.	2.	1.	1.	40.28.21.			
61691T	4	5400	2.89	0.06	0.08	0.02	0.15	0.31	3.20	9.6875	89.	2.	3.	1.	5.	19.26.	6.		
61693A	4	5500	941.87	37.22	32.41	28.88	12.96	111.47	1053.34	10.5825	89.	4.	3.	3.	1.	33.29.26.			
61693B	4	5600	1228.60	55.27	50.44	48.10	21.04	174.85	1403.45	12.4585	88.	4.	4.	3.	1.	31.29.28.			
61693C	4	5700	1611.62	77.42	76.35	77.84	38.96	270.57	1882.19	14.3753	86.	4.	4.	4.	2.	29.28.29.			
61693D	4	5800	866.19	58.56	61.60	67.13	31.51	218.80	1084.99	20.1660	80.	5.	6.	6.	3.	27.26.31.			
61693E	4	5900	1041.19	51.11	54.13	57.72	25.86	188.82	1230.01	15.3511	85.	4.	4.	5.	2.	27.29.30.			
61693F	4	6000	340.59	24.48	33.53	43.20	17.35	118.56	459.15	25.8215	75.	5.	7.	9.	4.	21.28.36.			
61693G	4	6100	10.98	1.42	4.23	6.22	2.20	14.07	25.05	56.1676	43.	6.	17.	25.	9.	10.30.44.			
61693H	4	6200	783.23	64.88	69.97	70.60	26.13	231.58	1014.81	22.8200	77.	6.	7.	7.	3.	28.30.31.			
61693I	4	6300	2016.43	249.60	255.47	206.51	81.81	793.39	2809.82	28.2363	72.	9.	9.	7.	3.	31.33.26.			
693J	4	6400	116.97	15.84	13.41	9.56	3.48	42.31	159.28	26.5633	74.	10.	8.	6.	2.	37.32.23.			
693K	4	6500	5120.84	613.49	510.05	309.32	142.78	1575.63	6696.47	23.5292	76.	9.	8.	5.	2.	39.32.20.			
61693L	4	6600	3462.47	436.15	394.99	236.51	119.62	1187.26	4649.73	25.5340	75.	9.	8.	5.	3.	37.33.20.			
61693M	4	6700	414.82	145.08	205.22	117.95	68.95	537.20	952.02	56.4274	44.	15.	22.	12.	7.	27.38.22.			
61693N	4	6800	825.39	169.24	157.50	74.59	40.38	441.71	1267.10	34.8599	66.	13.	12.	6.	3.	38.36.17.			
61693O	4	6900	0.58	0.14	0.33	0.16	0.19	0.82	1.40	58.5714	41.	10.	24.	11.	14.	17.40.20.			
61693P	4	7000	1421.99	837.62	1543.51	650.98	852.69	3884.99	5306.98	73.2053	27.	16.	29.	12.	16.	22.39.17.			
61693Q	4	7100	6509.65	2518.75	4209.92	1073.76	2215.25	10017.68	16527.32	60.6128	40.	15.	26.	6.	13.	25.42.11.			
61693R	4	7200	7750.02	2139.02	2767.36	529.57	1113.55	6549.49	14299.51	45.8022	54.	15.	19.	4.	8.	33.42.	8.		
61693S	4	7300	13021.30	3091.82	3815.42	779.61	1337.43	9024.27	22045.57	40.9346	59.	14.	17.	4.	6.	34.42.	9.		
61760A	4	7400	1329.89	776.93	1451.12	329.59	569.69	3127.33	4457.22	70.1632	30.	17.	33.	7.	13.	25.46.11.			
61760B	4	7500	760.87	662.86	1779.02	500.24	903.54	3845.66	4606.53	83.4828	17.	14.	38.	11.	20.	17.47.13.			
61760C	4	7600	257.60	218.04	825.49	258.21	558.59	1860.33	2117.93	87.8372	12.	10.	40.	12.	26.	12.44.14.			
61760D	4	7700	1030.18	604.80	1152.58	257.96	509.76	2525.10	3555.28	71.0239	29.	17.	33.	7.	14.	24.46.10.			
61760E	4	7800	654.08	340.48	673.88	166.31	356.83	1537.50	2191.58	70.1549	30.	16.	30.	8.	16.	22.44.11.			
61760F	4	7900	484.02	361.39	989.18	270.74	502.21	2123.52	2607.54	81.4377	19.	14.	38.	10.	19.	17.46.13.			
61760G	4	8000	823.18	550.71	1149.02	266.89	541.53	2506.15	3329.33	75.2749	25.	17.	34.	8.	16.	22.45.11.			
61760H	4	8100	635.39	520.53	1536.77	411.64	818.13	3287.07	3922.46	83.8012	16.	13.	40.	10.	21.	16.46.13.			
61760I	4	8200	1134.92	469.79	862.19	203.84	360.76	1896.58	3031.50	62.5624	38.	15.	28.	7.	12.	25.45.11.			
61760J	4	8300	229.36	217.03	579.84	138.89	342.45	1278.21	1507.57	84.7861	15.	14.	39.	9.	23.	17.45.11.			
61760K	4	8400	770.88	324.27	622.66	143.66	283.20	1373.79	2144.67	64.0560	36.	15.	29.	7.	13.	24.45.10.			
61760L	4	8500	1352.13	451.76	763.71	187.70	327.62	1730.79	3082.92	56.1413	43.	15.	25.	6.	11.	26.44.11.			
61760M	4	8600	1582.48	572.21	959.25	212.91	484.41	2228.78	3817.26	58.3869	41.	15.	25.	6.	13.	26.42.10.			
61760N	4	8700	491.77	256.63	535.97	142.43	310.94	1245.97	1737.74	71.7006	28.	15.	31.	8.	18.	21.43.11.			
61760O	4	8800	271.69	188.31	518.20	142.01	305.86	1154.38	1426.07	80.9483	19.	13.	37.	10.	21.	16.46.12.			
61760P	4	8900	178.70	100.80	233.50	53.61	127.44	515.35	694.05	74.2525	26.	15.	33.	8.	18.	20.45.10.			
61760Q	4	9000	301.59	110.46	276.15	70.59	176.67	633.87	935.46	67.7602	31.	12.	30.	8.	19.	17.44.11.			
61760R	4	9100	154.06	119.17	332.34	84.67	206.30	742.48	896.54	82.8161	17.	13.	38.	9.	23.	16.45.11.			
61760S	4	9200	647.54	394.24	945.91	220.46	453.75	2014.36	2661.90	75.6738	24.	15.	36.	8.	17.	20.46.11.			

TABLE 1B

C_1-C_4 HYDROCARBON ANALYSES - CUTTINGS ONLY

SAMPLE NUMBER	R	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS)							GAS COMPOSITION (PERCENT)									
			METHANE (C_1)	ETHANE (C_2)	PROPANE (C_3)	ISO-BUTANE (iC_4)	NORMAL BUTANE (nC_4)	WET (C_2-C_4)	TOTAL (C_1-C_4)	TOTAL GAS						WET GAS			
										C_2-C_4	C_1	C_2	C_3	iC_4	nC_4	C_2	C_3	iC_4	nC_4
61670A	4	1500	641.23	3.90	0.62	0.05	0.50	5.07	646.30	0.7844	99.	1.	0.	0.	0.	77.	12.	1.	10.
61670B	4	1600	386.32	4.35	0.66	0.15	0.77	5.93	392.25	1.5117	99.	1.	0.	0.	0.	73.	11.	3.	13.
61670C	4	1700	741.10	3.90	0.47	0.03	0.17	4.57	745.67	0.6128	99.	1.	0.	0.	0.	85.	10.	1.	4.
61670D	4	1800	751.61	2.55	0.89	0.24	1.55	5.23	756.84	0.6910	100.	0.	0.	0.	0.	46.	17.	5.	30.
61670E	4	1900	1072.22	7.80	1.59	0.49	0.83	10.71	1082.93	0.9889	99.	1.	0.	0.	0.	72.	15.	5.	8.
61670F	4	2000	967.10	6.90	0.97	0.19	0.55	8.61	975.71	0.8824	99.	1.	0.	0.	0.	81.	11.	2.	6.
61670G	4	2100	693.79	4.20	0.39	0.05	0.50	5.14	698.93	0.7354	99.	1.	0.	0.	0.	81.	8.	1.	10.
61670H	4	2200	1009.15	5.70	0.62	0.05	0.44	6.81	1015.96	0.6703	99.	1.	0.	0.	0.	84.	9.	1.	6.
61670I	4	2300	1040.69	7.80	0.62	0.05	0.66	9.13	1049.82	0.8696	99.	1.	0.	0.	0.	85.	7.	1.	7.
61670J	4	2400	1061.71	8.40	1.16	0.15	1.33	11.04	1072.75	1.0291	99.	1.	0.	0.	0.	76.	11.	1.	12.
61670K	4	2500	925.06	5.70	0.84	0.05	0.33	6.97	932.03	0.7478	99.	1.	0.	0.	0.	81.	13.	1.	5.
61670L	4	2600	946.06	8.10	0.66	0.10	0.61	9.47	955.55	0.9910	99.	1.	0.	0.	0.	86.	7.	1.	6.
61670L	4	2600	940.82	7.35	0.89	0.05	0.33	8.62	949.44	0.9078	99.	1.	0.	0.	0.	85.	10.	1.	4.
61670M	4	2700	919.60	7.80	1.16	0.19	0.88	10.03	929.83	1.0786	99.	1.	0.	0.	0.	77.	12.	2.	9.
61670N	4	2800	883.01	7.35	0.82	0.05	0.28	8.50	891.51	0.9534	99.	1.	0.	0.	0.	86.	10.	1.	3.
61670O	4	2900	404.71	2.77	0.39	0.10	0.50	3.76	408.47	0.9204	99.	1.	0.	0.	0.	74.	10.	3.	13.
61670P	4	3000	846.22	7.35	0.70	0.10	0.28	8.43	854.65	0.9863	99.	1.	0.	0.	0.	88.	8.	1.	3.
61670Q	4	3100	851.47	6.30	0.89	0.10	0.44	7.73	859.20	0.8996	99.	1.	0.	0.	0.	81.	12.	1.	6.
61670R	4	3200	946.06	8.10	0.47	0.10	0.55	9.22	955.30	0.9651	99.	1.	0.	0.	0.	88.	5.	1.	6.
61670S	4	3300	835.70	6.75	0.58	0.10	0.39	7.82	843.52	0.9270	99.	1.	0.	0.	0.	87.	7.	1.	5.
61670T	4	3400	851.47	7.50	1.86	0.15	0.55	10.06	861.53	1.1676	99.	1.	0.	0.	0.	76.	18.	1.	5.
61691A	4	3500	777.89	7.80	1.24	0.10	0.72	9.86	787.75	1.2516	99.	1.	0.	0.	0.	79.	13.	1.	7.
61691B	4	3600	772.63	7.35	1.71	0.10	0.61	9.77	782.40	1.2467	99.	1.	0.	0.	0.	75.	18.	1.	6.
691C	4	3700	1051.20	5.55	1.40	0.10	0.44	7.49	1058.69	0.7074	99.	1.	0.	0.	0.	74.	19.	1.	6.
91D	4	3800	1156.32	7.20	1.79	0.24	0.61	9.84	1166.16	0.8438	99.	1.	0.	0.	0.	74.	18.	2.	6.
61691E	4	3900	1019.66	8.70	2.02	0.29	0.66	11.67	1031.33	1.1315	99.	1.	0.	0.	0.	75.	17.	2.	6.
61691F	4	4000	1062.74	7.80	1.79	0.24	0.83	10.66	1093.40	0.9749	99.	1.	0.	0.	0.	73.	17.	2.	8.
61691G	4	4100	1124.76	9.30	3.42	2.53	2.49	17.74	1142.52	1.5527	99.	1.	0.	0.	0.	53.	19.	14.	14.
61691H	4	4200	583.42	7.50	3.80	1.36	2.21	14.87	598.29	2.4854	98.	1.	1.	0.	0.	50.	26.	9.	15.
61691I	4	4300	741.10	7.50	1.36	0.49	1.99	11.34	752.44	1.5071	99.	1.	0.	0.	0.	66.	12.	4.	18.
61691J	4	4400	1030.16	6.30	0.62	0.24	0.77	7.93	1038.11	0.7638	99.	1.	0.	0.	0.	79.	8.	3.	10.
61691K	4	4500	967.10	7.20	1.44	0.53	1.44	10.61	977.71	1.0851	99.	1.	0.	0.	0.	67.	14.	5.	14.
61691L	4	4600	1009.15	7.95	1.96	1.07	1.88	12.88	1022.03	1.2602	99.	1.	0.	0.	0.	62.	15.	8.	15.
61691M	4	4700	893.52	7.20	2.17	0.67	1.71	11.95	905.47	1.3197	99.	1.	0.	0.	0.	61.	18.	7.	14.
61691N	4	4800	1135.30	7.65	1.16	0.63	1.16	10.60	1145.90	0.9250	99.	1.	0.	0.	0.	72.	11.	6.	11.
61691O	4	4900	925.06	7.50	2.06	2.23	2.82	14.61	939.67	1.5548	99.	1.	0.	0.	0.	52.	14.	15.	19.
61691P	4	5000	777.89	7.35	2.06	1.26	1.77	12.44	790.33	1.5739	99.	1.	0.	0.	0.	59.	17.	10.	14.
61691Q	4	5100	825.19	7.65	4.19	5.54	5.53	22.91	848.10	2.7013	97.	1.	0.	1.	1.	34.	18.	24.	24.
61691R	4	5200	735.84	6.00	3.96	6.60	5.86	22.42	758.26	2.9567	96.	1.	1.	1.	1.	27.	18.	29.	26.
61691S	4	5300	620.21	5.70	3.57	6.46	5.92	21.65	641.86	3.3730	96.	1.	1.	1.	1.	26.	16.	31.	27.
61691T	4	5400	840.96	6.30	6.37	11.95	8.63	33.25	874.21	3.8034	96.	1.	1.	1.	1.	19.	19.	36.	26.
61693A	4	5500	646.49	5.70	5.90	12.14	9.18	32.92	679.41	4.8453	95.	1.	1.	2.	1.	17.	16.	37.	26.
61693B	4	5600	704.30	7.20	10.25	19.04	12.39	48.88	753.18	6.4898	93.	1.	1.	3.	2.	15.	21.	39.	25.
61693C	4	5700	767.38	7.80	7.45	15.15	11.95	42.35	809.73	5.2301	95.	1.	1.	2.	1.	18.	18.	36.	28.
61693D	4	5800	646.49	7.50	9.31	23.12	14.38	54.31	700.80	7.7497	93.	1.	1.	3.	2.	14.	17.	43.	26.
61693E	4	5900	756.66	8.10	10.09	22.53	14.16	54.88	811.74	6.7607	93.	1.	1.	3.	2.	15.	18.	41.	26.
61693F	4	6000	620.21	6.90	5.20	12.53	8.74	33.37	653.58	5.1057	95.	1.	1.	2.	1.	21.	16.	37.	26.
61693G	4	6100	693.79	8.70	13.20	29.14	23.01	74.05	767.84	9.6439	90.	1.	2.	4.	3.	12.	18.	39.	31.
61693H	4	6200	840.96	8.25	28.57	59.44	34.96	131.22	972.18	13.4975	86.	1.	3.	6.	4.	6.	22.	45.	27.
61693I	4	6300	651.74	10.35	49.06	91.69	59.29	210.39	862.13	24.4035	75.	1.	6.	11.	7.	5.	23.	44.	28.
61693J	4	6400	630.45	41.40	175.17	233.10	148.68	598.30	1428.75	41.8757	59.	3.	12.	16.	10.	7.	29.	39.	25.
61693K	4	6500	893.52	91.80	310.50	331.66	230.10	964.06	1861.58	52.0020	48.	5.	17.	18.	12.	9.	32.	35.	24.
61693L	4	6600	904.03	135.60	409.86	354.31	272.58	1172.35	2076.38	56.4612	43.	7.	20.	17.	13.	12.	35.	30.	23.
61693M	4	6700	762.12	62.40	350.24	326.34	325.68	1064.66	1826.78	58.2807	42.	3.	19.	18.	18.	6.	32.	31.	31.
61693N	4	6800	1367.56	283.20	814.75	509.71	538.06	2145.74	3533.32	60.7287	40.	8.	23.	14.	15.	13.	38.	24.	25.
61693O	4	6900	925.06	232.80	1033.34	596.74	835.44	2698.32	3623.38	74.4697	26.	6.	29.	16.	23.	9.	38.	22.	31.
61693P	4	7000	946.06	212.40	1758.67	789.43	1585.92	4346.41	5292.50	82.1241	18.	4.	33.	15.	30.	5.	41.	18.	36.
61693Q	4	7100	1051.20	561.60	3376.74	1044.29	3115.20	8099.32	9150.53	88.5121	11.	6.	38.	11.	34.	7.	42.	13.	38.
61693R	4	7200	4835.52	5664.00	13910.38	2486.40	7080.00	29140.78	33976.30	85.7680	14.	17.	41.	7.	21.	19.	48.	9.	24.
61693S	4	7300	2522.88	1560.00	4173.12	893.55	2460.30	9086.96	11609.84	78.2694	22.	13.	36.	8.	21.	17.	46.	10.	27.
61760A	4	7400	574.87	246.00	1477.98	466.20	1442.55	3632.73	4207.60	86.3373	14.	6.	35.	11.	34.	7.	40.	13.	40.
61760B	4	7500	735.84	45.00	518.53	194.25	685.87	1443.65	2179.49	66.2380	34.	2.	24.	9.	31.	3.	36.	13.	48.
61760C	4	7600	830.45	19.20	290.63	142.97	467.28	920.08	1750.53	52.5601	47.	1.	17.	8.	27.	2.	32.	16.	50.
61760D	4	7700	720.07	110.40	462.02	130.54	410.64	1113.60	1833.67	60.7307	40.	6.	25.	7.	22.	10.	41.	12.	37.
61760E	4	7800	909.29	60.00	308.02	118.88	361.08	847.98	1757.27	48.2555	51.	3.	18.	7.	21.	7.	36.	14.	43.
61760F	4	7900	614.95	54.00	506.74	226.88	679.68	1467.30	2082.25	70.4670	30.	3.	24.	11.	32.	4.	35.	15.	46.
61760G	4	8000	751.61	242.40	1629.50	534.58	1770.00	4176.47	4928.09	84.7484	15.	5.	33.	11.	36.	6.	39.	13.	42.
61760H	4	8100	946.08	26.80	245.92	88.58	0.0	363.30	1309.38	27.7459	72.	2.	19.	7.	0.	8.	68.	24.	0.
61760I	4	8200	925.06	163.20	884.30	329.45	1118.64	2495.59	3420.65	72.9566	27.	5.	26.	10.	32.	7.	35.	13.	45.
61760J	4	8300	651.74	21.30	198.72	72.26	254.88	547.16	1198.90	45.6385	54.	2.	17.	6.	21.	4.	36.	13.	47.
61760K	4	8400	604.44	120.00	526.61	169.39	520.38	1336.38	1940.82	68.8564	31.	6.	27.	9.	27.	9.	39.	13.	39.
61760L	4	8500	893.52	264.30	1003.54	317.02	941.64	2526.20	3419.72	73.8715	26.	8.	29.	9.	28.	10.	40.	13.	37.
61760M	4	8600	798.91	105.60	414.83	118.10	375.24	1013.77	1812.68	55.9266	43.	6.	23.	7.	21.	10.	41.	12.	37.
61760N	4	8700	657.00	99.60	462.02	170.94	531.00	1263.56	1920.56	65.7912	34.	5.	24.	9.	28.	8.	37.	14.	41.
61760O	4	8800	835.70	11.70	59.62	29.14	88.50	188.96	1024.66	18.4412	81.	1.	6.	3.	9.	6.	32.	15.	47.
61760P	4	8900	620.21	16.50	70.17	25.25	74.34	186.26	806.47	23.0957	77.	2.	9.	3.	9.	9.	38.	14.	39.
61760Q	4	9000	730.58	33.60	104.33	29.14	96.46	263.53	994.11	26.5091	74.	3.	10.	3.	10.	13.	39.	11.	37.
61760R	4	9100	1040.69	30.60	121.72	73.04	150.45	375.81	1416.50	26.5309	73.	2.	9.	5.	11.	8.	32.	19.	41.
61760S	4	9200	846.22	61.80	290.63	97.90	300.90	751.23	1597.45	47.0268	53.	4.	18.	6.	19.	8.	39.	13.	40.

TABLE IC

C_1-C_4 HYDROCARBON ANALYSES - CUTTINGS AND AIR SPACE

SAMPLE NUMBER	R	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS)							GAS COMPOSITION (PERCENT)									
			METHANE	ETHANE	PROPANE	ISO-BUTANE	NORMAL BUTANE	WET	TOTAL	TOTAL GAS						WET GAS			
			(C_1)	(C_2)	(C_3)	(iC_4)	(nC_4)	(C_2-C_4)	(C_1-C_4)	C_2-C_4	C_1	C_2	C_3	iC_4	nC_4	C_2	C_3	iC_4	nC_4
61670A	4	1500	2197.00	13.62	2.98	0.90	2.65	20.35	2217.35	0.9177	99.	1.	0.	0.	0.	68.15.	4.1		
61670B	4	1600	2455.59	15.75	4.35	2.33	3.40	25.83	2481.42	1.0409	99.	1.	0.	0.	0.	61.17.	9.1		
61670C	4	1700	1876.40	16.38	3.14	1.51	2.65	23.68	1900.08	1.2462	99.	1.	0.	0.	0.	70.13.	6.1		
61670D	4	1800	2209.27	14.28	6.34	2.36	4.55	27.53	2236.80	1.2307	99.	1.	0.	0.	0.	51.23.	9.1		
61670E	4	1900	2031.54	15.62	11.20	4.29	4.58	35.69	2067.23	1.7264	98.	1.	1.	0.	0.	44.31.	12.1		
61670F	4	2000	2132.01	15.16	7.19	5.54	6.37	34.26	2166.27	1.5815	99.	1.	0.	0.	0.	44.21.	16.1		
61670G	4	2100	702.66	4.53	1.33	0.17	1.26	7.29	709.97	1.0268	99.	1.	0.	0.	0.	63.18.	2.1		
61670H	4	2200	1013.14	5.77	0.79	0.06	0.60	7.42	1020.56	0.7270	99.	1.	0.	0.	0.	77.11.	1.1		
61670I	4	2300	1611.52	12.28	1.25	0.12	1.19	14.84	1626.36	0.9124	99.	1.	0.	0.	0.	83. 8.	1.		
61670J	4	2400	1070.01	9.22	1.89	0.20	1.85	13.16	1083.17	1.2149	99.	1.	0.	0.	0.	70.14.	2.1		
61670K	4	2500	1137.70	8.53	2.38	0.12	1.35	12.38	1150.08	1.0764	99.	1.	0.	0.	0.	69.19.	1.1		
61670L	4	2600	1186.16	11.37	2.35	0.17	1.98	15.87	1204.03	1.3180	99.	1.	0.	0.	0.	72.15.	1.1		
61670L	4	2600	1237.56	11.14	2.43	0.24	1.95	16.26	1253.82	1.2967	99.	1.	0.	0.	0.	69.18.	1.1		
61670M	4	2700	1085.77	11.66	3.01	0.37	2.43	17.49	1103.26	1.5853	99.	1.	0.	0.	0.	67.17.	2.1		
61670N	4	2800	888.25	7.46	1.32	0.09	0.95	9.82	898.07	1.0934	99.	1.	0.	0.	0.	76.13.	1.1		
61670O	4	2900	596.13	5.42	1.79	0.31	1.62	9.14	607.27	1.5050	99.	1.	0.	0.	0.	59.20.	3.1		
61670P	4	3000	931.72	6.99	1.47	0.19	1.03	11.68	943.40	1.2380	99.	1.	0.	0.	0.	76.13.	2.		
61670Q	4	3100	990.97	15.76	7.64	1.79	6.94	32.13	1023.10	3.1404	96.	2.	1.	0.	1.	48.24.	6.2		
61670R	4	3200	1054.10	13.00	3.47	0.97	4.00	21.44	1075.54	1.9934	99.	1.	0.	0.	0.	60.16.	5.1		
61670S	4	3300	1062.16	18.56	9.19	2.89	10.36	41.00	1103.16	3.7165	96.	2.	1.	0.	1.	46.22.	7.2		
61670T	4	3400	893.15	10.42	3.90	0.47	2.46	17.25	910.40	1.8947	99.	1.	0.	0.	0.	60.23.	3.1		
61691A	4	3500	791.72	9.14	2.28	0.17	1.62	13.21	804.93	1.6411	99.	1.	0.	0.	0.	70.17.	1.1		
61691B	4	3600	786.97	9.12	3.05	0.39	2.24	14.80	803.77	1.8413	99.	1.	0.	0.	0.	61.21.	3.1		
61691C	4	3700	1073.61	7.66	2.69	0.31	1.70	12.31	1085.92	1.1336	99.	1.	0.	0.	0.	62.21.	3.1		
61691D	4	3800	1167.36	8.60	2.19	0.29	1.05	11.53	1178.89	0.9780	99.	1.	0.	0.	0.	69.19.	3.		
61691E	4	3900	1089.04	9.24	2.62	0.39	1.43	13.78	1102.82	1.2495	99.	1.	0.	0.	0.	68.19.	3.1		
61691F	4	4000	2764.66	59.64	11.97	3.11	4.15	78.87	2643.53	2.7736	98.	2.	0.	0.	0.	76.15.	4.		
61691G	4	4100	3408.68	58.37	19.29	6.36	6.31	90.33	3599.01	2.2588	99.	1.	0.	0.	0.	65.21.	7.		
61691H	4	4200	1867.79	29.23	10.98	3.97	4.67	48.85	1916.64	2.5487	97.	2.	1.	0.	0.	60.22.	8.1		
61691I	4	4300	2258.57	29.90	10.54	3.61	5.84	50.09	2308.66	2.1696	99.	1.	0.	0.	0.	59.21.	8.1		
61691J	4	4400	2633.61	26.76	8.57	3.40	3.96	42.71	2676.32	1.5958	99.	1.	0.	0.	0.	63.20.	8.		
61691K	4	4500	2611.64	26.40	9.44	4.29	4.59	44.72	2656.36	1.6835	99.	1.	0.	0.	0.	59.21.	10.1		
61691L	4	4600	2446.75	24.75	9.94	4.85	5.21	44.75	2491.50	1.7961	99.	1.	0.	0.	0.	55.22.	11.1		
61691M	4	4700	2678.35	33.56	14.09	6.78	6.44	60.67	2737.02	2.2166	98.	1.	1.	0.	0.	55.23.	11.1		
61691N	4	4800	3183.60	51.81	15.24	7.47	5.94	80.46	3234.06	2.4879	98.	2.	0.	0.	0.	65.19.	9.		
61691O	4	4900	929.56	7.52	2.07	2.24	2.99	14.82	944.38	1.5692	99.	1.	0.	0.	0.	51.14.	15.2		
61691P	4	5000	3119.59	42.85	18.61	13.18	8.70	83.54	3203.13	2.6080	98.	1.	1.	0.	0.	51.23.	16.1		
61691Q	4	5100	2759.40	50.85	24.78	24.34	15.80	120.77	2880.17	4.1931	95.	2.	1.	1.	1.	42.25.	20.1		
61691R	4	5200	2302.99	41.10	24.21	21.46	13.76	100.55	2403.54	4.1834	95.	2.	1.	1.	1.	41.24.	21.1		
61691S	4	5300	2716.14	64.19	44.56	37.01	21.36	167.06	7883.20	5.7942	94.	2.	2.	1.	1.	38.27.	22.1		
61691T	4	5400	842.85	6.36	6.45	11.97	8.78	33.56	877.41	3.8248	96.	1.	1.	1.	1.	19.19.	36.2		
61693A	4	5500	1568.36	42.92	38.31	41.02	22.14	144.39	1732.75	8.3330	93.	2.	2.	2.	1.	30.27.	28.1		
61693B	4	5600	1932.90	62.47	60.69	67.14	33.43	223.73	2156.63	10.3740	89.	3.	3.	3.	2.	28.27.	30.1		
61693C	4	5700	2379.00	85.22	83.80	92.99	50.91	312.92	2691.92	11.6244	89.	3.	3.	3.	2.	27.27.	30.1		
61693D	4	5800	1532.68	66.06	70.91	90.25	45.89	273.11	1785.79	15.2935	84.	4.	4.	5.	3.	24.26.	33.1		
61693E	4	5900	1798.05	59.21	64.22	80.25	40.02	243.70	2041.75	11.9356	88.	3.	3.	4.	2.	24.26.	34.1		
61693F	4	6000	960.80	31.38	38.73	55.73	26.09	151.93	1112.73	13.6537	87.	3.	3.	5.	2.	21.25.	37.1		
61693G	4	6100	704.77	10.12	17.43	35.36	25.21	88.12	792.89	11.1137	90.	1.	2.	4.	3.	11.20.	40.2		
61693H	4	6200	1624.19	73.13	96.54	130.04	61.09	362.80	1986.99	18.2587	81.	4.	5.	7.	3.	20.27.	36.1		
61693I	4	6300	2668.17	259.45	304.53	298.20	141.10	1003.78	3671.95	27.3364	73.	7.	8.	8.	4.	26.30.	30.1		
61693J	4	6400	947.42	57.24	188.53	242.68	152.16	640.61	1588.03	40.3399	59.	4.	12.	15.	10.	9.	29.	38.2	
61693K	4	6500	6014.36	705.29	820.55	644.98	372.88	2543.69	8558.05	29.7228	70.	8.	10.	8.	4.	28.	32.	25.1	
61693L	4	6600	4388.56	571.75	804.85	590.82	392.20	2359.61	6726.11	35.0814	64.	9.	12.	9.	6.	24.	34.	25.1	
61693M	4	6700	1177.94	207.48	555.46	444.29	394.63	1601.86	2778.80	57.6457	42.	7.	20.	16.	14.	13.	34.	28.2	
61693N	4	6800	2213.97	452.44	972.25	584.30	578.46	2587.45	4800.42	53.9005	46.	9.	20.	12.	12.	17.	38.	23.2	
61693O	4	6900	925.64	232.94	1033.67	596.90	835.63	2699.14	3624.78	74.4635	26.	6.	29.	16.	23.	9.	38.	22.3	
61693P	4	7000	2366.67	1050.22	3302.18	1440.41	2436.61	8231.41	10599.48	77.6566	22.	10.	31.	14.	23.	13.	40.	17.3	
61693Q	4	7100	7580.85	3080.35	7588.16	2118.05	5330.45	18117.00	25677.85	70.5550	29.	12.	30.	8.	21.	17.	42.	12.2	
61693R	4	7200	12565.54	7803.02	16677.74	3015.97	8193.55	35690.27	46275.81	73.9299	26.	16.	35.	6.	17.	22.	47.	8.2	
61693S	4	7300	15544.16	4651.62	7986.54	1673.16	3797.73	18111.73	33655.41	53.8137	46.	14.	24.	5.	11.	26.	44.	9.2	
61760A	4	7400	1904.76	1022.93	2929.10	795.79	2012.24	6760.05	8664.82	78.0173	22.	12.	34.	9.	23.	15.	43.	12.3	
61760B	4	7500	1497.71	707.86	2297.55	694.49	1589.41	5289.30	6786.02	77.9442	22.	10.	34.	10.	23.	13.	44.	13.3	
61760C	4	7600	1098.05	237.24	1116.12	401.18	1025.87	2780.41	3868.46	71.8738	28.	6.	29.	10.	27.	9.	40.	14.3	
61760D	4	7700	1751.25	715.20	1614.60	388.50	920.40	3638.70	5388.95	67.5215	32.	13.	30.	7.	17.	20.	44.	11.2	
61760E	4	7800	1563.37	400.48	981.90	285.19	717.91	2385.48	3948.85	60.4095	40.	10.	25.	7.	18.	17.	41.	12.3	
61760F	4	7900	1098.97	415.39	1495.92	497.62	1181.89	3590.82	4689.79	76.5667	23.	9.	32.	11.	25.	12.	41.	14.3	
61760G	4	8000	1573.76	793.11	2778.52	799.47	2311.53	6682.62	8257.41	80.9287	19.	10.	34.	10.	28.	12.	41.	12.3	
61760H	4	8100	1581.47	546.33	1782.69	500.22	818.13	3650.37	5231.84	69.7722	30.	10.	34.	10.	16.	15.	49.	14.2	
61760I	4	8200	2056.98	632.99	1746.49	533.29	1479.40	4392.17	6452.15	68.0729	32.	10.	27.	8.	23.	14.	40.	12.3	
61760J	4	8300	880.10	238.33	778.56	211.15	597.33	1825.37	2706.47	67.4447	33.	9.	29.	8.	22.	13.	42.	12.3	
61760K	4	8400	1374.32	444.27	1149.27	313.05	803.58	2710.17	4085.49	66.3365	34.	11.	28.	8.	20.	16.	42.	12.3	
61760L	4	8500	2244.65	715.76	1767.25	504.72	1269.26	4256.99	6502.64	65.4656	35.	11.	27.	8.	20.	17.	41.	12.3	
61760M	4	8600	2388.39	677.81	1374.08	331.01	859.65	3242.55	5629.94	57.5948	42.	12.	24.	6.	15.	21.	42.	10.2	
61760N	4	8700	1148.77	356.23	997.99	313.37	841.94	2509.53	3658.30	68.5983	31.	10.	27.	9.	23.	14.	40.	12.3	
61760O	4	8800	1137.39	200.01	577.82	171.15	394.36	1343.34	2480.73	54.8138	45.	8.	24.	7.	16.	15.	43.	13.2	
61760P	4	8900	798.91	117.30	303.67	78.86	201.78	701.61	1500.52	46.7578	54.	8.	20.	5.	13.	17.	43.	11.2	
61760Q	4	9000	1032.17	144.06	380.48	99.73	273.13	897.40	1929.57	46.5078	54.	7.	20.	5.	14.	16.	43.	11.3	
61760R	4	9100	1194.75	149.77	454.06	157.71	356.75	1118.29	2313.04	48.3472	52.	6.	20.	7.	15.	13.	41.	14.3	
61760S	4	9200	1493.76	456.04	1236.54	318.36	754.65	2765.59	4259.35	64.9299	35.	11.	29.	7.	18.	16.	45.	12.2	

TABLE II

Descriptions of "Picked" Sample Material and of Visual Kerogen, 17/9-1

(Kerogen by J. L. Morgan)

Depth (feet)	EPR No.	Cross Lithology	GSA Color Code	Kerogen Alteration	Types of Kerogen* Predominant	Secondary	Other	Remarks
1700	61670-C	Mixture of mud and small chips, mod. calc.	5Y 5/1	1+	H,W	C	Al	
2300	-I	Shale, olive gray to med. dk. gray	5Y 4/1 - N4	1+	A,H	C	W	Abundant Pyrite
2600	-L	Chalk and chert, white	N9	1+	C	H	Al	"
3100	-Q	As above	N9	1+	A	Al	C	"
3600	61691-B	Chalk, pinkish white	5YR 9/1	1+	C	Al	W	"
3900	-E	Chert, minor limestone, friable	N8	1+	C	M	W	"
4000	-F	Mud, med. gray, v. calc.	N5	1+	C	W	A	
4700	-M	Mud, med. dark gray, mod. calc.	N4	2-	C	W	M,H	Also several microfossils with alteration "2"
5100	-Q	Mud and fine chips, med. dk. gray to med gray, v. calc.	N4-N5	2-	C	W	A,M	
5500	61693-A	Mixture of shale, claystone and drilling mud,	N5	2-	C	W	A,H	
6100	-C	Shale, med. gray	N5	2-	C	W	H	
6300	-I	Shale, med. dk. gray, fish debris	N4					
6600	-L	Mixture of mud and fine chips, med. olive gray, mod calc.	5Y 5/1					
6800	-N	Shale, med. dk. gray	N4	2-	A,C	W	H	
7000	-P	Shale, as above	N4	2-	A,C	H	W	
7200	-R	Shale, med. dk. gray, v. fissile and splintery	N4					
7300	-S	Shale, as above	N4	2	A	C	W	Abundant Pyrite
7400	61740-A	Shale, med. dk. gray, v. fissile and splintery, with fish scales	N4					
7600	-C	Shale, med. dk. gray to dk. gray, as above	N4-N3	2	A	C	W	Abundant Pyrite
7800	-E	Shale, as above	N4-N3					
8000	-G	Shale, grayish black to dk. gray, thin prismatic chips	N2-N3	2	A	C	W	"
8100	-H	Shale and volcanics, dk. gray to med. dk. gray	N3-N4	2	A	C,Al	W	"
8300	-J	Shale, dk. gray; trace of volcanics	N3					
8500	-L	Shale, dk. gray, sl. calc.	N3	2	A	C	W	"
8700	-N	Shale and volcanics, olive black to med. dk. gray, sl. calc.	5Y 2/1-N4					
8800	-O	Volcanics, med. dk. gray to med. bluish gray	N4-N5-5B 5/1	2	A	C	W	"
9100	-R	Volcanics, variegated	N4-5B 5/1	2	A	C	W	"
9200	-S	Volcanics, shale, mica flakes mixture	N4-5Y 2/1					

*A - Amorphous
Al - Algal
H - Herbaceous
W - Woody
M - Microplankton
C - Coaly

TABLE III

Total Organic Matter and Light Gasolines (C_4-C_7) in "Picked" Cuttings, 17/9-1

(Analyses by H. M. Fry)

Depth (ft)	EPR No.	Total Organic Matter (%)	C_4-C_7 (ppm)	Correlation Ratios (See Table III-A) C_1/C_2	A/D_2	C_1/D_2	CH* MCP
1700	61670-C	.68	0.	-	-	-	-
2300	-I	.88	0.	-	-	-	-
2600	-L	.07	0.	-	-	-	-
3100	-Q	.10	0.	-	-	-	-
3600	61691-B	.15	0.	-	-	-	-
3900	-E	.12	0.	-	-	-	-
4000	-F	1.60	.21	.96	14.68	6.67	.37
4700	-M	1.62	0.	-	-	-	-
5100	-Q	1.10	1.8	.60	3.72	5.40	.25
5500	61693-A	1.15	.48	.72	6.46	5.84	.25
6100	-G	.56	.85	.80	8.76	7.04	.17
6300	-I	1.37	6.1	.55	4.17	5.62	.14
6600	-L	1.81	3.4	.68	5.00	6.77	.14
6800	-N	1.82	4.7	.90	3.43	7.21	.20
7000	-P	1.88	2.4	.78	3.87	7.57	.17
7200	-R	5.53	10.8	.83	2.67	5.28	.37
7300	-S	5.73	36.2	.62	2.72	8.88	.40
7400	61760-A	3.85	11.0	.94	2.65	7.45	.27
7600	-C	3.28	53.7	.63	2.83	5.15	.21
7800	-E	3.44	101.5	.53	3.36	4.66	.19
8000	-G	3.06	87.3	.53	3.23	4.88	.18
8100	-H	3.52	91.9	.59	3.24	5.40	.20
8300	-J	3.32	132.8	.60	3.35	4.82	.23
8500	-L	4.09					
8700	-N	4.27	90.8	.59	3.30	5.14	.18
8800	-O	1.17	22.6	.52	19.06	4.33	.20
9100	-R	.37	7.1	.60	2.92	4.66	.21
9200	-S	2.01	37.2	.53	3.32	4.80	.19

*CH - Cyclohexane
MCP - Methylcyclopentane