TABLES

a) CASING RECORD

Table 1 *Esso well 9/8-1*

Diameter	Depth below KB	
	m	ft
36"	138	451
20"	360	1180
13 3/8"	1265	4148

b) DEVIATION

Table 1 *Esso well 9/8-1*

Depth below KB		Degrees
m	ft	
1265	4150	0.3
1309	4295	0.1
1330	4363	0.3
1429	4688	0.8
1507	4944	1.3
1539	5049	1.3
1599	5246	1.9
1726	5663	3.3
1770	5807	3.1
1909	6263	4.0
2113	6932	2.2

Table 2a MUD PROGRAM *Esso well 9/8-1*

Depth below KB		Mud base	Additives	Problems	Remarks
m	ft				
Sea fl.—410	Sea fl. - 1350	Sea water	Salt gel, bentonite	Bridging, tight hole	Returns to sea fl.
360 —1280	1180—4198		XP-20, Spersene, Salinex, bentonite, barite, diesel oil		
1280	4198		Barite	2000 units of gas detected	Raised mud wt. to 10.4 ppg.
1265—2176	4148—7138		XP-20, Spersene, Salinex, diesel oil		
1554	5100				Chloride content reduced to 11000 ppm.

Table 2b *Esso well 9/8-1*

Depth below KB		Weight, ppg	Funnel visc., sec	Filt. loss, cm^3	% oil
m	ft				
360	1180	9.8	54	4.0	4
1128	3700	9.8	54	4.0	4
1280	4198	10.4	42	4.3	1
1295	4250	10.5	38	3.6	2
1369	4490	10.6	36	3.6	8
1439	4720	10.5	46	3.7	6
1524	5000	10.6	46	3.8	7
1686	5530	10.6	46	2.5	10
1734	5690	10.6	48	2.4	10
1895	6218	10.5	48	2.4	10
1974	6478	10.5	43	2.0	10
2024	6639	10.5	43	2.8	10
2085	6842	10.5	41	2.2	8
2176	6990	10.6	42	3.0	9
2131	7138	10.5	48	3.3	6

H. Testing: The Schlumberger wireline formation tester (FIT) was used with the following results:

	Test No. 1 6762'	Test No. 2 6764'	Test No. 3 6535'	Test No. 4 6320'
Pressure Data -				
Initial shut in	-	-	-	-
Shut in time	-	-	-	-
Sampling	-	-	0 psi.	1000 psi.
Sampling time	-	-	15 min.	20 min.
Final shut in	-	-	0	3590 psi.
Shut in time	-	-	15 min.	15 min.
Hydrostatic	-	-	3680 psi.	3660 psi.
Surface chamber	-	-	0 psi.	0 psi.
Recovery Data				
Gas (Total	-	-	- -	-
Condensate	-	-	-	-
Oil	-	-	-	-
Water	-	-	-	14,550 cc
Mud	15,400 cc	12,200 cc	200 cc	200 cc
Sand	Traces	Traces	-	Traces
Remarks	Immediate seal failure	Immediate seal failure	Tight formation	Resistivity of water 0.12 at 59° F Rmf was 0.24 at 64° F.

V-5 3

KEROGEN AND SOURCE ANALYSES OF CANNED CUTTINGS FROM THE ESSO 9/8-1 AND ESSO 16/9-1 WELLS, NORWAY

by

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SUMMARY

Canned cuttings samples from 1400-7100 feet in the Esso 9/8-1 well and 1350-11,985 feet in the Esso 16/9-1 well were analyzed for their hydrocarbon gases. Chips of uniform lithologies were picked from selected cuttings samples and analyzed for total organic matter, gasoline (C_4-C_7) yields, and visual kerogen characteristics.

In the 9/8-1 well the intervals 1350-2400 feet and 3000-4000 feet are interpreted to be immature oil source intervals, based on data from the combined visual kerogen and chemical analyses. Under present subsurface conditions these zones might be associated with accumulations of methane gas, and possibly with heavy asphaltic oils in adjacent reservoir beds. The zone from 6250 to 6450 feet is quite rich in organic matter and is tentatively rated as an immature oil source. The cyclohexane/methylcyclopentane ratios suggest it is more likely to be a gas source, but the other criteria suggest it is an oil source interval. Possibly this contradiction is a function of the early stage of maturation of the section.

In the 16/9-1 well the interval 1350-4250 feet, particularly below 3750 feet, is interpreted to be an immature oil prone section. The interval 7650-8250 feet is rich in organic matter and is rated as a source section. Low cyclohexane/methylcyclopentane ratios suggest it is a gas source, but other criteria suggest an oil source interval. Again, this might be attributable to the maturation state of the organic matter, and this section is therefore interpreted to be an immature oil source interval. A group of samples from the 11,150-11,350 feet section appear to be cavings, for they are nearly identical in all respects to shales from about 7650-8250 feet.

Tentative zonations of organic facies are suggested from the types of kerogen materials and from the gasoline data. However, the exploration significance of these zonations should be determined by someone familiar with the geology of the area.

Kerogen alteration data indicate that high subsurface temperatures have not been a problem in the two sampled sections. Alterations are rated at a maximum of 2+ on the 1-5 alteration scale.

INTRODUCTION

Canned cuttings samples from the intervals 1400-7100 feet in the Esso 9/8-1 well and 1350-11,985 feet in the Esso 16/9-1 well were analyzed for their yields of hydrocarbon gases. Chips of uniform lithologies were hand picked from selected samples and analyzed further for characteristics of visual kerogen, total organic matter concentrations and light gasoline (C_4-C_7) yields.

The purpose of these analyses was to provide means for estimating the source character and the degree of diagenetic maturity of the organic matter in the sections penetrated by the two wells.

Results of cuttings gas analyses were plotted on 1:2000 vertical scale strip logs and transmitted to the North Sea Study Group with our letter of November 25, 1968. Samples that were selected for further analyses were chosen on the basis of results of the cuttings gas data, and they also included cuttings from specific zones of interest that were listed in the October 24, 1968 letter NSG-1047 by A. J. Caan of the North Sea Study Group.

This report includes complete tabulations of results of the cuttings gas, visual kerogen, total organic matter and gasoline analyses that were run, plus graphic plots of the various types of data. Explanations of our criteria for interpreting these types of data plus brief discussions of the results of the analyses are included.

Charges for this service work have been billed to the North Sea Study Group through our Job No. 9488 for samples from the 16/9-1 well and Job No. 9489 for samples from the 9/8-1 well.

PROCEDURE

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 the gases released from a standard mixture of cuttings plus tap water after agitation for 2 minutes in a Waring blender. Combined results on air space gas plus cuttings gas were calculated for each sample. The data from the combined results were plotted graphically to show the vertical variations in total gas (C_1-C_4) and wet gas (C_2-C_4) and graphical plots were also made of the percent wet gas in total gas (Figs. 1 and 2).

Cuttings gas yields showed several vertical zonations which roughly correspond to different organic facies in the stratigraphic sections represented by the samples. Representative cuttings samples from the different distinctive zones defined by the cuttings gas were selected for further analyses. Sample intervals cited by the North Sea Group as of particular interest were also considered in choosing the samples for further analysis. The selected samples were then picked by hand to provide materials of uniform lithologies for the additional work.

Some of the sample intervals that were chosen contained soft argillaceous cuttings dispersed in drilling mud, and they completely disaggregated when we attempted to wash the mud away. As a result, we were not able to obtain cuttings chips from all of the intervals of interest.

The "picked" cuttings were analyzed for light gasoline (C_4-C_7) compounds, total organic matter and visual kerogen characteristics.

Results of the cuttings gas analyses are given in Tables I and II; results of the additional chemical and visual kerogen analyses are given in Tables III and IV for well 9/8-1 and Tables V and VI for well 16/9-1.

BASES FOR INTERPRETING DATA

Cuttings Gas

Cuttings gas data give indications of the vertical variability in the source character of a section of interest. The ratio of wet gas (C_2-C_4) to total gas (C_1-C_4) may distinguish methane-prone from oil-and "wet" gas-prone sections. The critical value of this ratio varies from basin to basin. In Western Canada wet gas concentrations of about 45% or greater are considered to be indicative of sections that are likely to produce oil or gas with significant amounts of hydrocarbon liquids. In the Permian section of West Texas the significant ratio appears to be closer to 20% or greater of wet gas in total gas.

The significant values for total amounts of hydrocarbon gas yielded by the cuttings also appear to vary from basin to basin, and possibly must be established separately for each area of interest. Zones with the greatest yields of gas are considered to be of most interest as sources.

Oil in the drilling mud makes it nearly impossible to establish practical quantitive criteria that can be used in comparing different wells. The oil will tend to reduce the amount of cuttings gas released during agitation in the blender, and it will affect the composition of the hydrocarbon gas that is obtained for analysis. However, even with oil in the mud, significant vertical patterns in hydrocarbon gas concentrations and compositions can be established in each well. The patterns from different wells can be compared to establish regional trends or areal configurations of different organic facies within a section of interest.

Visual Kerogen

Kerogen data give two types of information. The color alteration (carbonization) provides a gross indication of the amount of thermal diagenesis that the organic matter has undergone. The types of materials comprising the kerogen help define different organic facies that are present in the sampled sections and they may indicate the source character of some of these facies.

Kerogen color alterations are rated on a 1 to 5 scale, from unaltered to almost completely carbonized, respectively. Ratings of 4 or 5 suggest that subsurface temperatures have been high enough to destroy most of the producible liquid hydrocarbons. Sections in which kerogen alteration is rated 4 and 5 are more likely to be characterized by dry gas production, if producible hydrocarbons are found in the associated reservoirs. Immobile pyrobitumens may also be found in these reservoir beds. Alteration ratings of 1 to 2 suggest that thermal diagenesis of the kerogen has barely begun, and reservoired hydrocarbons, if present, are likely to be gases, possibly associated with heavy, asphaltic oils. Ratings of 2+ to 3 suggest that maturation of the material has progressed to the point that gas, liquid hydrocarbons, or mixed oil and gas may be produced, depending on the nature of the original source materials. A rating of 2 may be associated with either immature or moderately mature sediments, based on other chemical evidence, and hence is not diagnostic. The interpretation of the significance of alteration ratings of 4 or 5 is the most reliable of the above tentative rules of thumb.

Types of kerogen materials that are recognized include amorphous, finely disseminated, algal, herbaceous, woody and coaly. The source significance of these types is not established, but there have been suggestions in some areas, such as the offshore of southern Australia, that gas production is possibly associated with woody and coaly kerogen, whereas beds rated as oil sources may include rocks containing amorphous, finely disseminated and algal materials. These observations are speculative.

Total Organic Matter

The total organic matter concentration gives a rough indication of the richness of a rock in materials that can produce hydrocarbons. However, this measure alone does not indicate whether the organic material is oil-prone, gas-prone or mixed oil and gas prone. Rocks containing less than about 0.5% total organic matter are generally rated as poor sources, but this is modified by lithology. Carbonate sequences possibly include source rocks with still lower concentrations of total organic matter than 0.5%.

Sections that are notable for their production of dry gas (mainly methane) have commonly been found to be characterized by source rocks containing greater than about 1.1% total organic matter. However, a measure of the liquid hydrocarbons in these richer rocks is also necessary to determine whether they should be rated as oil prone or gas prone.

Light Gasoline (C_4-C_7) Hydrocarbons

Light gasolines apparently do not appear in source beds in concentrations above one or two parts per million until a fair degree of maturation occurs. Therefore, gasoline concentrations give one criterion of the degree of thermal maturation that the organic matter has attained.

In addition, ratios of specific gasoline compounds may indicate the possible source character of the rocks. In particular, the ratio of cyclohexane to methylcyclopentane (CH/MCP) has been found to be useful in the U. S. Gulf Coast and the Alaskan areas for distinguishing "non oily" from "oily" facies. To date commercial oil has not been found associated with strata having a CH/MCP ratio of less than 0.25. However, dry gas has been found in strata characterized by lower ratio values as well as in sections with ratios greater than 0.25.

The CH/MCP ratio is also useful in helping distinguish different organic facies that may be present within an oil-like section. Ratios all above 0.25 in value may show groupings in vertical patterns that correlate with stratigraphic zones that have distinctive source characteristics. Definition of such zones may be quite useful for correlating reservoired oils with specific source intervals.

DISCUSSION AND INTERPRETATION OF RESULTS

A. Esso 9/8-1 Well

The analytical results are summarized graphically in Fig. 1 and are tabulated in Tables I, III, and IV.

The cuttings gas plot (Fig. 1) shows zones of high methane yields from samples from the gross intervals 1350-2400 feet and 3000-4000 feet. Total organic matter in picked samples from these zones ranges from about 1 to 2.3 percent. These two observations both suggest that the two intervals cited are potential hydrocarbon source intervals, and that methane gas could be found in associated reservoir beds. These data do not determine whether the two sections contain potentially oil prone organic matter that is still immature diagenetically or whether the material is basically gas prone, regardless of maturation state. Kerogen in the picked samples is predominantly amorphous, which suggests that the former is the case. That is, these two zones possibly represent immature oil-prone organic facies, and under present subsurface conditions they would be associated mainly with methane and possibly heavy asphaltic oils. With deeper burial and elevated temperatures the gas would probably become wetter and the oils would become medium gravity or distillates.

Another zone of higher gas yields is the interval 6250-6450 feet. The cuttings gas here is wetter (Fig. 1) and suggests an oil prone zone. Total organic matter in picked cuttings in this interval is quite high,

approximately 7%; these samples are quite rich in potential source material. Kerogen alteration ratings are 1+ and 2, suggesting an immature diagenetic stage, although gasoline yields of 5 to 21 ppm indicate that at least moderate maturation has occurred. Kerogen is predominantly amorphous.

The cyclohexane/methylcyclopentane (CH/MCP) ratios are low, ranging from .15 to .37, suggesting that significant oil-like hydrocarbons have not been generated by this section. These combined criteria suggest a relatively immature but rich oil-prone organic facies which at present subsurface conditions would likely be characterized by gas and possibly distillate accumulations in associated reservoir beds.

Tentative zonations of the section suggested by the types of kerogen and by the CH/MCP ratios are suggested by dashed lines in Fig. 1. These could be more effectively placed by combining geochemical with other geological information.

Comments on samples from specific zones cited by the North Sea Study Group are included below:

1. 1900-2000 feet

Limestone chips from the 1950 feet sample contain enough organic matter (1%) to be rated as potential sources of hydrocarbons. Small amounts of amorphous kerogen present suggest a potential oil prone facies, but the data do not adequately distinguish whether the matter is potentially oil prone or gas prone. At present depths it would have generated mainly methane gas.

2. 3000 feet

Limestone chips from the 3050 feet sample contained above average total organic matter (1.9%). The same comments made above for the 1900-2000 feet sample are applicable.

3. 3400 feet

Limestone chips from the 3400 feet sample contained above average total organic matter and kerogen material is predominantly amorphous and herbaceous. This is interpreted as an immature oil prone source facies. Predominantly methane gas from the cuttings supports this interpretation.

4. 5500 feet

Shale chips from 5700 feet samples contained mainly coaly and woody kerogen, suggesting gas prone organic matter. Total organic matter is low (0.76%) for a significant gas source facies, and low yields of cuttings gas from these samples suggest that this is not a notable source interval.

5. 5800-6000 feet

Silty shale cuttings from the 5950 and 6000 feet samples contained nearly 2% total organic matter, suggesting a source facies. Kerogen was mainly amorphous, suggesting an oil-prone source, and this is supported by the sharp increase of wetness of the cuttings gas from this interval. Relatively low gasoline yields suggest the material is still relatively immature so that significant hydrocarbon liquids generation has not yet occurred.

6. 6200-6400 feet

Shale cuttings that were picked from samples in this interval were rich in organic matter (6-8%), suggesting a good source interval. This interval was discussed in the general introductory remarks above in regard to the 6250-6450 ft. section, where it is suggested that this is an immature oil-prone zone.

B. Esso 16/9-1 Well

The analytical results are summarized graphically in Fig. 2 and tabulated in Tables II, V, and VI.

The cuttings gas plot (Fig. 2) shows above normal yields of methane in the general interval from 1350-4250 feet with higher yields below 3750 feet. Total organic matter of picked cuttings is mainly about 0.9%, and visual kerogen is predominantly amorphous material in this interval. This is interpreted to be an immature oil-prone zone which under present conditions might be characterized with methane gas and possibly heavy asphaltic oils in associated porous zones. With deeper burial or elevated subsurface temperatures, wet gas and medium to high gravity oils might be generated.

A cuttings gas anomaly in the interval 7650-8250 feet indicates a hydrocarbon source interval. The high content of wet gas (over 50% C_2-C_4), high gasoline yields, and predominantly amorphous kerogen in the picked samples suggest an oil-prone source interval. Unusually high total organic content (up to 13%) of many of the picked samples suggests a rich source interval that might tend to be more associated with gas production. Low CH/MCP ratios (.12 to .17) suggest a "non-oily" section and are more indicative of a methane-prone interval. Possibly this is a feature of an immature oily section that has not yet released significant amounts of liquid hydrocarbons to the reservoir beds.

The cuttings gas anomaly at 11,150-11,350 feet may be due to cavings. Shale chips analyzed from this interval show organic compositions very similar to shales from about 7700-8250 feet, and the comments made in the paragraph above are applicable for the samples from this lower interval.

Possible zonations of organic facies based on kerogen type and on the CH/MCP ratios are indicated in Fig. 2. These could be placed more reliably by using other geologic information in addition to the geochemical data.

Comments on samples from specific zones cited by the North Sea Study Group are given below:

1. 2800-2950 feet

Samples were lost during washing, and no analyses were obtained. The soft clay chips disaggregated.

2. 3400-3800 feet

Sample were lost during washing.

3. 3950-4200 feet

Argillaceous cuttings chips from the 4150 and 4200 ft. samples and limestone chips from the 3950 ft. sample contained about 0.9% total organic matter. Their gasoline yields were fairly low and the cuttings gas from gross samples in this interval was predominantly methane. Visual kerogen was mainly amorphous material. These data suggest an immature oil source interval characterized at present conditions by dry gas plus possible heavy asphaltic oils in porous zones.

4. 6100-6300 feet

The chalky limestone analyzed from the 6100 ft sample is rated as a poor source.

5. 6800-7000 feet

Shale picked from the 6950 ft. sample is rated as a gas source on the basis of relatively high total organic matter (1.9%) and predominantly woody and coaly visual kerogen. Kerogen alteration of 2+ suggests a moderately matured diagenetic stage.

6. 7600-7700 feet

Wetness of the cuttings gas increases abruptly to over 50% at 7600 feet, as was mentioned above in the general remarks on the 16/9-1 well. Also, the kerogen changes to predominantly amorphous material. The CH/MCP ratios become quite low. This is a source section, but it is not clear whether it is an immature oil-prone interval or a gas-prone interval, as was discussed above. The CH/MCP ratio suggests it is limited to a gas-prone character, but the other data suggest oil-prone material.

7. 7750-7900 feet

This zone is quite rich in total organic matter, but the organic material appears to be generally of the same type found in the 7600-7700 ft.

zone, and the same remarks are applicable.

8. 11,100-11,400 feet

As was mentioned in the general discussion above on the 16/9-1 samples, the cuttings picked from 11,200, 11,250, 11,300, 11,350, and 11,400 feet samples resemble those from the 7750-7900 feet interval. They are probably cavings, but whether they are or not, the same remarks made regarding samples from 7750-11,400 feet are applicable.

9. 11,955-T.D.

A limestone sample from the 11,985 feet cuttings is rated as a poor to fair source. This lithology may not be the cause of the increased cuttings gas yield at this depth. The organic material in the limestone is possibly mixed oil and gas source material based on kerogen type and gasoline yield.

C. Kerogen Alteration, Both Wells

None of the kerogen observed from samples in either of the wells was strongly altered, with 2+ being the maximum alteration rating. Excessive subsurface temperatures do not appear to have been experienced by any of the samples from these wells. The sections appear to be diagenetically immature or only moderately matured, and harmful destruction of hydrocarbon liquids by thermal alteration has not been a problem.

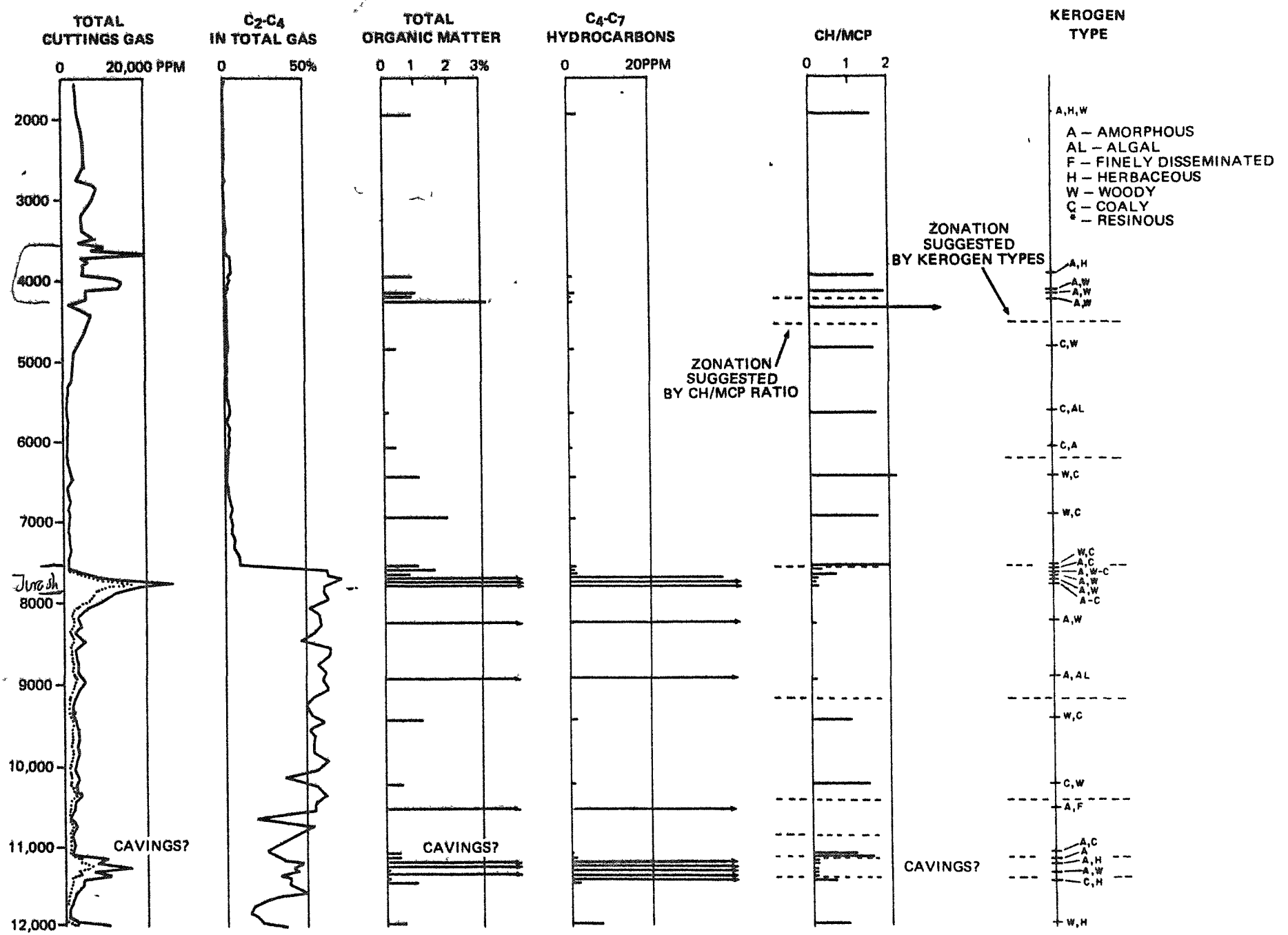

FIGURE 2. WELL 16/9-1, CHEMICAL AND VISUAL KEROGEN PATTERNS.

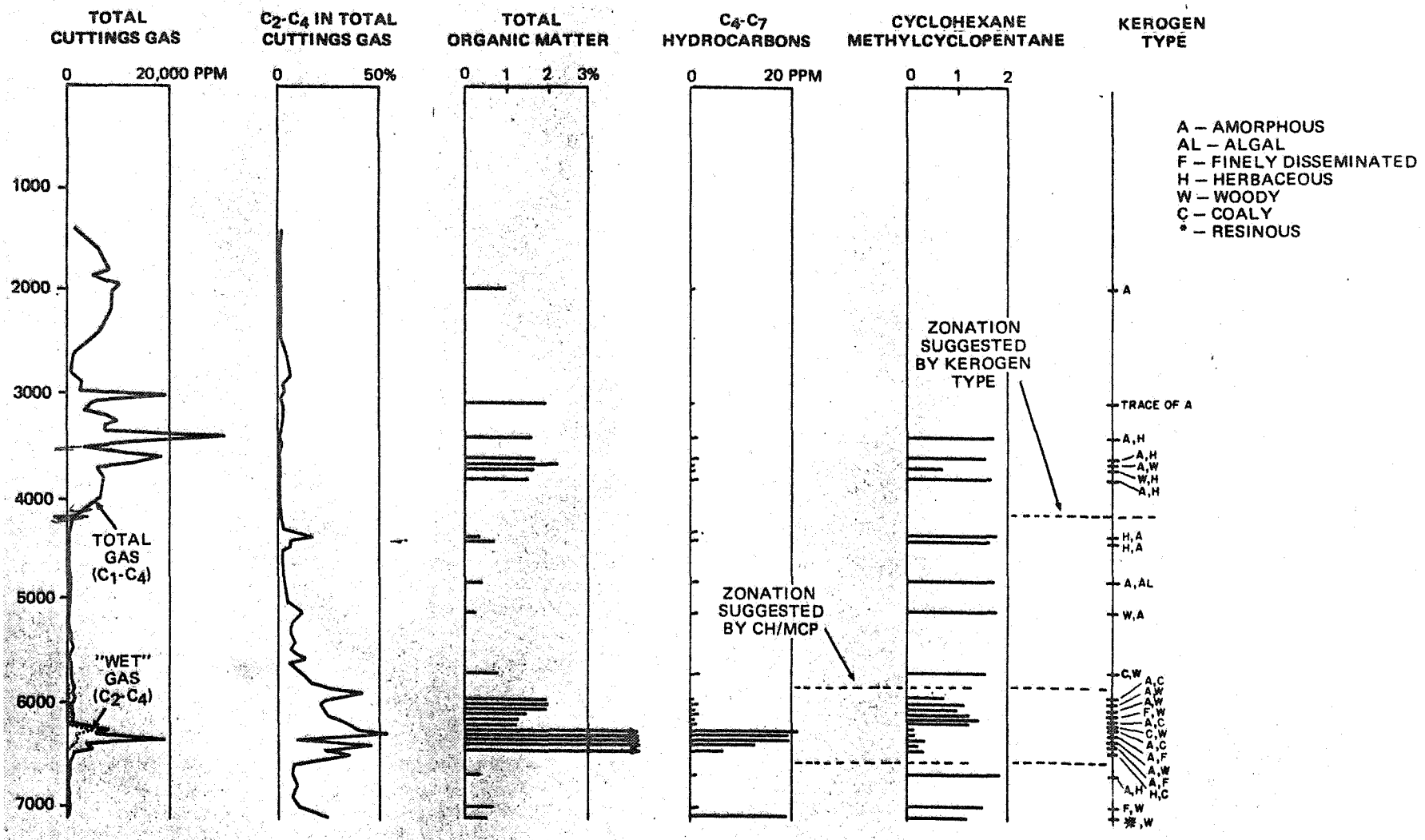

FIGURE 1. WELL 9/8-1, CHEMICAL AND VISUAL KEROGEN PATTERNS.

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C_1-C_4 HYDROCARBON ANALYSES AIR SPACE AT TOP OF CANS

SAMPLE NUMBER	R	DEPTH	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)	GAS COMPOSITION (PERCENT) C_2-C_4	TOTAL GAS	TOTAL GAS C_2	TOTAL GAS C_3	TOTAL GAS iC_4	TOTAL GAS nC_4	WET GAS C_2	WET GAS C_3	WET GAS iC_4	WET GAS nC_4	NOTES
55157A	4	1400	691.46	1.35	1.10	0.33	0.39	3.17	694.65	0.4563	100.	0.	0.	0.	0.	43.	35.	10.	12.	
55157E	4	1600	5203.44	6.63	3.68	0.94	1.21	12.48	5214.89	0.2388	100.	0.	0.	0.	0.	52.	30.	8.	10.	
55157I	4	1800	5267.27	5.22	3.11	1.42	3.77	13.52	5280.79	0.2559	100.	0.	0.	0.	0.	38.	23.	11.	28.	
55157J	4	1850	3264.80	1.49	4.18	2.24	5.34	13.24	3278.04	0.4038	100.	0.	0.	0.	0.	11.	31.	17.	41.	
55157K	4	1900	5342.85	2.29	5.37	3.01	8.24	18.90	5361.75	0.3525	100.	0.	0.	0.	0.	12.	28.	16.	44.	
55157L	4	1950	8806.49	4.48	9.75	5.89	17.52	37.65	8844.12	0.4255	100.	0.	0.	0.	0.	12.	26.	16.	46.	
55157M	4	2000	7659.09	12.87	7.88	5.59	11.79	38.13	7697.21	0.4953	100.	0.	0.	0.	0.	33.	21.	15.	31.	
55157N	4	2050	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	*C*
55158A	4	2200	7152.78	13.64	5.98	1.65	4.71	25.97	7178.75	0.3617	100.	0.	0.	0.	0.	53.	23.	6.	18.	
55158B	4	2400	4907.52	18.28	8.38	1.82	2.78	25.26	4932.78	0.5121	100.	0.	0.	0.	0.	49.	33.	7.	11.	
55158I	4	2600	548.57	4.05	8.34	3.54	2.91	18.84	567.41	3.3202	96.	1.	1.	1.	1.	21.	45.	19.	15.	
55158M	4	2800	6.32	0.27	0.42	0.27	0.22	1.18	7.50	15.7533	83.	4.	6.	4.	3.	23.	35.	23.	19.	
55158D	4	2900	2150.00	5.53	13.54	4.92	6.62	30.61	2180.61	1.4037	99.	0.	1.	0.	0.	18.	44.	16.	22.	
55158P	4	2950	1736.00	2.12	14.82	3.97	2.42	23.33	1759.33	1.3260	99.	0.	1.	0.	0.	9.	64.	17.	10.	
55159A	4	3000	15600.95	21.47	21.22	6.51	3.59	52.79	15653.73	0.3372	100.	0.	0.	0.	0.	41.	40.	12.	7.	
55158S	4	3050	4357.27	2.15	15.75	7.12	2.78	27.80	4385.07	0.6031	100.	0.	0.	0.	0.	8.	56.	26.	10.	
55159C	4	3100	2997.89	3.48	17.86	11.83	2.59	35.76	3033.65	1.1788	99.	0.	1.	0.	0.	10.	50.	33.	7.	
55159D	4	3150	2040.00	2.73	11.63	7.40	3.37	25.13	2045.13	1.2169	99.	0.	1.	0.	0.	11.	47.	29.	13.	
55159E	4	3200	5769.23	22.69	26.57	14.55	3.38	67.18	5836.41	1.1510	100.	0.	0.	0.	0.	34.	39.	22.	5.	
55159F	4	3250	8349.75	11.20	45.81	24.92	5.98	87.90	8437.65	1.0418	99.	0.	1.	0.	0.	13.	52.	28.	7.	
55159G	4	3300	6281.33	9.91	31.18	18.29	4.45	63.82	6345.15	1.0059	100.	0.	0.	0.	0.	16.	48.	29.	7.	
55159H	4	3350	6169.58	5.01	22.37	12.87	3.15	43.39	6212.97	0.6984	100.	0.	0.	0.	0.	12.	51.	30.	7.	
55159I	4	3400	27593.08	52.72	36.75	15.43	5.64	110.54	27703.61	0.3990	100.	0.	0.	0.	0.	48.	33.	14.	5.	
55159J	4	3450	11106.65	7.08	35.34	17.15	7.07	66.65	11173.28	0.5964	100.	0.	0.	0.	0.	11.	52.	26.	11.	
55159K	4	3500	2246.61	1.96	7.67	4.66	1.20	15.47	2262.08	0.6839	100.	0.	0.	0.	0.	13.	49.	30.	8.	
55159L	4	3550	8007.99	9.86	26.58	13.64	3.73	53.80	8061.79	0.6674	100.	0.	0.	0.	0.	18.	50.	25.	7.	
55159M	4	3600	9691.94	19.10	9.73	3.22	0.94	32.98	9724.92	0.3391	100.	0.	0.	0.	0.	57.	30.	10.	3.	
55159N	4	3650	6432.00	32.32	13.45	4.36	1.87	52.99	6484.89	0.8178	99.	1.	0.	0.	0.	64.	25.	8.	2.	
55159O	4	3700	650.95	2.83	1.50	0.56	0.20	5.09	656.04	0.7758	100.	0.	0.	0.	0.	56.	29.	11.	4.	
55160A	4	3800	2686.66	16.36	5.67	1.98	0.45	24.46	2711.12	0.9022	99.	1.	0.	0.	0.	67.	23.	8.	2.	
55160E	4	4000	4690.79	21.36	13.78	4.49	1.79	41.41	4732.20	0.8752	100.	0.	0.	0.	0.	52.	33.	11.	4.	
55160H	4	4200	409.82	7.04	3.28	1.98	0.87	13.17	422.99	3.1134	97.	2.	1.	0.	0.	53.	25.	15.	7.	
55160J	4	4300	8.64	0.65	0.76	1.08	4.36	6.85	15.49	44.2221	56.	4.	5.	7.	28.	9.	11.	16.	64.	
55160K	4	4350	27.55	1.90	3.61	5.17	16.41	26.88	54.84	49.0335	52.	3.	6.	9.	30.	7.	13.	19.	61.	
55160L	4	4400	21.20	1.20	0.98	1.20	4.23	7.61	28.81	26.4144	74.	4.	3.	4.	15.	16.	13.	16.	55.	
55160M	4	4450	10.83	0.57	0.58	0.75	2.52	4.42	15.25	28.9836	70.	4.	4.	5.	17.	13.	13.	17.	57.	
55160N	4	4500	12.23	0.96	0.74	0.39	1.15	3.24	15.47	20.9437	79.	6.	5.	3.	7.	30.	23.	12.	35.	
55160P	4	4600	9.50	0.44	0.35	0.07	0.12	0.98	10.48	9.3511	91.	4.	3.	1.	1.	45.	36.	7.	12.	
55161D	4	4800	7.57	1.65	0.16	0.09	0.08	1.98	9.55	20.7330	79.	17.	2.	1.	1.	83.	8.	5.	4.	
55161H	4	5000	18.94	0.76	0.57	0.61	1.82	3.66	22.60	16.1946	84.	3.	2.	3.	8.	21.	10.	17.	52.	
55161J	4	5100	20.40	0.67	0.87	1.49	4.03	7.06	27.46	25.7101	75.	2.	3.	5.	15.	9.	12.	21.	58.	
55161L	4	5200	10.58	0.56	0.20	0.29	0.92	1.97	12.55	15.6972	85.	4.	2.	2.	7.	28.	10.	15.	47.	
55161N	4	5300	219.48	5.48	3.31	0.83	0.77	10.39	229.87	4.5199	97.	2.	1.	0.	0.	53.	32.	8.	7.	
55161P	4	5400	194.40	6.89	5.43	1.37	0.91	14.60	209.00	6.9856	93.	3.	3.	1.	0.	48.	37.	9.	6.	
55162A	4	5450	537.78	15.33	12.26	2.76	1.64	31.99	569.77	5.6144	95.	3.	2.	0.	0.	48.	38.	9.	5.	
55162B	4	5500	175.85	7.37	6.79	1.84	1.24	17.14	192.99	8.8813	90.	4.	4.	1.	1.	42.	40.	11.	7.	
55162C	4	5550	0.30	0.0	0.01	0.01	0.01	0.03	0.33	9.0909	91.	0.	3.	3.	3.	0.	33.	33.	34.	
55162D	4	5600	166.40	4.88	4.71	1.56	0.88	12.13	178.53	6.7944	93.	3.	3.	1.	1.	40.	39.	13.	8.	
55162F	4	5700	181.82	7.47	6.74	1.65	0.83	16.69	198.51	8.4076	92.	4.	3.	1.	0.	45.	40.	10.	5.	
55162H	4	5800	277.57	16.30	17.88	5.28	2.58	42.01	319.58	13.1452	86.	5.	6.	2.	1.	39.	43.	12.	6.	
55162I	4	5850	510.37	41.67	50.65	14.38	5.45	112.15	622.52	18.0154	82.	7.	8.	2.	1.	37.	45.	13.	5.	
55162J	4	5900	420.87	46.71	68.46	23.02	11.53	149.72	570.59	26.2348	74.	8.	12.	4.	2.	31.	46.	15.	8.	
55162K	4	5950	525.00	49.65	68.45	20.16	9.48	147.74	672.74	21.9609	78.	7.	10.	3.	1.	34.	46.	14.	6.	
55162L	4	6000	277.73	21.06	27.37	8.85	4.25	61.75	339.46	18.1844	82.	6.	8.	3.	1.	34.	45.	14.	7.	
55162M	4	6050	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	*C*
55162N	4	6100	163.93	13.27	18.82	5.91	3.45	41.45	205.38	20.1821	80.	6.	9.	3.	2.	32.	46.	14.	8.	
55162O	4	6150	356.82	38.08	63.22	19.39	11.66	132.35	489.17	27.0560	73.	8.	13.	4.	2.	29.	47.	15.	9.	
55162P	4	6200	58.24	4.78	7.76	2.38	1.43	16.22	74.46	21.7835	78.	6.	10.	3.	2.	29.	48.	14.	9.	
55163A	4	6250	2952.26	265.23	407.10	133.95	78.23	884.51	3836.77	23.0535	77.	7.	11.	3.	2.	30.	46.	15.	9.	
55163B	4	6300	317.06	31.86	118.22	55.63	42.88	248.56	565.62	43.9391	55.	6.	20.	9.	7.	13.	46.	21.	18.	
55163C	4	6350	13919.97	222.78	334.40	109.12	71.23	737.52	14657.49	5.0317	95.	2.	2.	1.	0.	30.	45.	15.	10.	
55163D	4	6400	903.30	100.88	160.51	54.20	36.80	352.38	1255.69	28.0634	72.	8.	13.	4.	3.	29.	46.	15.	10.	
55163E	4	6450	2658.72	148.91	205.98	54.56	34.73	444.18	3102.90	14.3150	85.	5.	7.	2.	1.	34.	46.	12.	8.	
55163F	4	6500	134.40	14.71	25.25	8.57	6.05	54.58	188.98	28.8813	71.	8.	13.	5.	3.	27.	46.	16.	11.	
55163H	4	6600	17.27	2.55	3.38	1.17	0.99	8.09	25.36	31.9005	68.	10.	13.	5.	4.	32.	42.	14.	12.	
55163J	4	6700	10.37	1.08	1.82	0.70	0.61	4.21	14.58	28.8752	72.	7.	12.	5.	4.	26.	43.	17.	14.	
55163L	4	6800	13.02	1.51	2.06	1.40	2.61	7.58	20.60	36.7960	63.	7.	10.	7.	13.	20.	27.	18.	35.	
55163N	4	6900	27.69	3.08	5.50	1.88	2.01	12.55	40.24	31.1878	68.	8.	14.	5.	5.	24.	44.	16.	16.	
55163O	4	7000	30.43	2.36	4.09	1.61	1.29	9.35	39.78	23.5042	77.	6.	10.	4.	3.	25.	44.	17.	14.	
55163Q	4	7100	46.00	9.44	15.63	5.78	5.81	36.66	82.66	44.3503	56.	11.	19.	7.	7.	26.	42.	16.	16.	

B = CUTTINGS NOT ANALYZED   *C* = AIR SPACE GAS NOT RUN   *BC* = NO ANALYSES RUN

TABLE I B ESSO 9/8-1

C_1-C_4 HYDROCARBON ANALYSES - CUTTINGS ONLY

SAMPLE NUMBER	R	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS) 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)	GAS COMPOSITION (PERCENT) TOTAL GAS C_2-C_4	C_1	C_2	C_3	iC_4	nC_4	WET GAS C_2	C_3	iC_4	nC_4	NOTES
55157A	4	1400	627.60	4.78	4.02	0.74	1.21	10.75	638.35	1.6840	98	1	1	0	0	45	37	7	11	
55157E	4	1600	787.20	3.01	2.33	0.56	0.68	6.58	793.78	0.8289	100	0	0	0	0	46	35	8	10	
55157I	4	1800	2737.50	3.01	4.70	3.92	13.07	24.70	2762.20	0.8942	100	0	0	0	0	12	19	16	53	
55157J	4	1850	1270.50	0.88	3.11	3.78	8.64	16.42	1286.92	1.2759	99	0	0	0	1	5	19	17	59	
55157K	4	1900	1662.00	0.97	4.48	4.84	17.65	27.94	1689.94	1.6533	99	0	0	0	1	3	16	17	64	
55157L	4	1950	1069.50	1.98	3.29	2.94	11.65	19.83	1089.33	1.8203	99	0	0	0	1	10	17	15	58	
55157M	4	2000	1039.20	4.60	5.93	8.24	23.47	42.24	1081.44	3.9059	96	0	1	1	2	11	14	20	55	
55157N	4	2050	849.00	1.42	0.88	0.23	0.84	3.34	852.34	0.3918	100	0	0	0	0	43	25	7	25	*C*
55158A	4	2200	975.60	3.36	2.65	1.67	4.67	12.35	987.95	1.2500	100	0	0	0	0	27	21	14	38	
55158E	4	2400	957.60	2.30	4.45	1.86	3.55	12.16	969.76	1.2539	100	0	0	0	0	19	37	15	29	
55158I	4	2600	399.60	3.72	4.04	4.84	3.66	16.26	415.86	3.9099	96	1	1	1	1	23	25	29	23	
55158N	4	2800	445.80	4.96	4.26	6.94	5.50	23.66	469.46	5.0398	94	1	1	1	1	21	26	30	23	
55158O	4	2900	574.50	1.33	5.17	6.17	4.55	17.22	591.72	2.9101	97	0	1	1	1	8	30	36	26	
55158R	4	2950	504.75	1.85	10.77	6.78	5.09	24.51	529.26	4.6309	96	0	2	1	1	8	44	27	21	
55159A	4	3000	3310.55	13.72	17.95	12.09	8.35	52.11	3362.66	1.5497	99	0	1	0	0	26	35	23	16	
55159B	4	3050	630.25	2.30	5.88	12.70	5.97	27.55	657.80	4.2528	96	0	1	2	1	8	21	47	14	
55159C	4	3100	1071.00	2.57	8.21	9.34	4.50	24.62	1095.62	2.2471	98	0	1	1	0	10	33	39	18	
55159D	4	3150	960.00	2.83	10.45	16.55	4.45	34.28	994.28	3.4477	97	0	1	2	0	8	30	48	13	
55159E	4	3200	1446.00	11.95	23.81	28.50	7.71	71.97	1517.97	4.7412	94	1	2	2	1	17	33	39	11	
55159F	4	3250	1101.00	3.54	10.94	16.37	4.87	35.72	1136.72	3.1423	98	0	1	1	0	10	31	45	14	
55159G	4	3300	859.50	3.54	6.96	10.30	3.37	24.17	883.67	2.7351	98	0	1	1	0	15	29	42	14	
55159H	4	3350	1212.00	3.54	8.18	14.10	4.77	31.59	1243.59	2.5402	98	0	1	1	0	11	26	45	15	
55159I	4	3400	3369.14	12.83	19.92	16.88	7.08	56.71	3425.85	1.6555	99	0	1	0	0	23	35	30	12	
55159J	4	3450	834.00	2.83	3.93	5.21	2.67	14.64	848.64	1.7251	99	0	0	1	0	19	27	36	18	
55159K	4	3500	730.50	2.83	3.16	4.48	1.45	11.92	742.42	1.6055	99	0	0	1	0	24	27	37	12	
55159L	4	3550	1035.00	3.54	5.16	6.36	2.62	17.68	1052.68	1.6795	98	0	0	1	0	20	29	36	15	
55159M	4	3600	9374.99	16.99	33.99	21.61	10.05	82.65	9457.62	0.8737	100	0	0	0	0	21	41	26	12	
55159N	4	3650	4695.88	4.96	25.72	17.32	11.13	59.02	4755.01	0.8738	100	0	0	0	0	8	44	29	19	
55159O	4	3700	4823.99	3.89	15.85	12.76	4.99	37.48	4861.47	0.7710	100	0	0	0	0	10	43	34	13	
55160A	4	3800	4148.44	10.27	18.37	13.21	5.52	47.36	4195.80	1.1288	100	0	0	0	0	22	38	28	12	
55160E	4	4000	1469.53	6.90	9.52	7.18	3.34	26.94	1496.47	1.8002	99	0	1	0	0	26	35	27	12	
55160H	4	4200	546.00	2.01	1.78	1.19	0.84	5.82	552.82	1.0536	99	1	0	0	0	48	36	17	12	
55160J	4	4300	535.20	1.24	0.94	0.93	4.01	7.12	542.32	1.3128	99	0	0	0	1	17	13	13	57	
55160K	4	4350	390.00	3.30	3.69	10.60	44.14	60.73	450.73	13.4736	86	1	1	2	10	4	6	17	73	
55160L	4	4400	480.00	1.24	1.71	3.53	15.26	21.74	501.74	4.3328	96	0	0	1	3	6	8	16	70	
55160M	4	4450	385.80	1.95	1.59	2.64	11.13	17.31	403.11	4.2940	96	0	0	1	3	11	9	15	65	
55160N	4	4500	507.00	1.77	1.03	0.97	2.26	6.03	513.03	1.1752	100	0	0	0	0	29	17	16	38	
55160P	4	4600	404.40	2.65	3.04	0.61	0.95	7.25	411.65	1.7611	98	1	1	0	0	37	42	8	13	
55161D	4	4800	452.40	4.42	0.92	0.56	0.64	6.54	458.94	1.4249	99	1	0	0	0	67	14	9	10	
55161H	4	5000	300.00	2.30	1.04	1.82	6.52	11.68	311.68	3.7473	96	1	0	1	3	20	9	16	55	
55161J	4	5100	442.50	3.54	3.68	9.95	32.99	50.16	492.66	10.1814	89	1	1	2	7	7	7	20	66	
55161L	4	5200	279.80	3.36	1.38	3.16	12.12	19.92	299.72	4.9834	95	1	0	1	3	17	6	16	61	
55161N	4	5300	514.50	9.07	13.04	5.77	6.56	34.44	548.94	6.2738	94	2	2	1	1	26	38	17	19	
55161P	4	5400	704.40	12.74	24.76	11.90	9.70	59.10	763.50	7.7406	92	2	3	2	1	22	42	20	16	
55162A	4	5450	500.25	1.50	18.47	9.19	7.63	36.79	537.04	6.8505	94	0	3	2	1	4	50	25	21	
55162B	4	5500	559.20	8.67	20.79	11.36	8.51	49.33	608.53	8.1062	93	1	3	2	1	18	42	23	17	
55162C	4	5550	262.87	3.54	17.58	9.82	7.00	37.94	300.81	12.6125	88	1	6	3	2	9	47	26	18	
55162D	4	5600	602.40	5.84	12.89	9.00	7.03	34.76	637.16	5.4554	95	1	2	1	1	17	37	26	20	
55162F	4	5700	630.00	16.64	37.28	20.09	13.04	87.05	717.05	12.1399	88	2	5	3	2	19	43	23	15	
55162H	4	5800	592.80	20.53	54.45	33.70	19.84	128.52	721.32	17.8173	81	3	8	5	3	16	43	26	15	
55162I	4	5850	410.40	30.87	93.43	57.73	34.09	216.12	626.52	34.4953	66	5	15	9	5	14	43	27	16	
55162J	4	5900	217.20	28.32	119.02	88.68	51.71	287.73	504.93	56.9841	43	6	24	18	10	10	41	31	18	
55162K	4	5950	708.00	25.49	98.50	71.42	43.25	238.66	946.66	25.2107	74	3	10	8	5	11	41	30	18	
55162L	4	6000	632.40	25.49	71.27	51.56	33.07	181.69	814.09	22.3181	78	3	9	6	4	14	39	29	18	
55162M	4	6050	757.20	35.61	84.41	53.27	34.73	208.02	965.22	21.5519	77	4	9	6	4	17	40	26	17	*C*
55162N	4	6100	691.20	25.84	85.09	50.74	42.23	212.90	904.10	23.5482	76	3	9	7	5	12	40	28	20	
55162O	4	6150	570.00	22.30	84.82	75.89	48.34	231.35	801.35	28.8700	71	3	11	9	6	10	36	33	21	
55162P	4	6200	703.20	41.06	143.04	92.26	77.59	354.55	1057.75	33.5192	66	4	14	9	7	12	40	26	22	
55163A	4	6250	2070.00	271.87	971.28	516.36	450.29	2209.78	4279.78	51.6330	48	6	23	12	11	12	43	23	20	
55163B	4	6300	2118.75	313.79	1164.54	683.55	562.46	2724.79	4843.48	56.2557	44	6	24	14	12	12	42	25	21	
55163C	4	6350	3468.00	77.88	322.51	228.41	214.33	843.13	4311.12	19.5569	81	2	7	5	5	9	39	27	25	
55163D	4	6400	1056.00	133.94	551.03	355.33	298.16	1340.46	2396.46	55.9350	44	6	23	15	12	10	41	27	22	
55163E	4	6450	849.00	67.26	233.24	156.24	133.56	590.30	1439.30	41.0130	59	5	16	11	9	11	40	26	23	
55163F	4	6500	582.60	28.32	129.96	92.26	79.50	330.04	912.64	36.1632	64	3	14	10	9	9	39	28	24	
55163H	4	6600	496.20	4.60	11.80	8.80	8.74	33.94	530.14	6.4020	93	1	2	2	2	14	34	26	26	
55163J	4	6700	600.00	3.83	14.06	11.88	12.59	42.46	642.46	6.6089	94	0	2	2	2	7	33	28	32	
55163L	4	6800	298.20	2.30	5.32	5.04	10.53	23.19	321.39	7.2153	92	1	2	2	3	10	23	22	45	
55163N	4	6900	300.40	3.36	9.47	6.57	8.35	27.75	328.15	8.2841	94	1	2	1	2	12	34	24	30	
55163O	4	7000	498.60	5.13	18.60	15.36	15.10	54.19	552.79	9.8029	90	1	3	3	3	9	35	28	28	
55163Q	4	7100	426.00	10.80	41.72	28.50	30.27	111.29	537.29	20.7131	79	2	8	5	6	10	37	26	27	

B = CUTTINGS NOT ANALYZED *C* = AIR SPACE GAS NOT RUN *BC* = NO ANALYSES RUN

TABL I C ES 19 F

C_1 - C_4 HYDROCARBON ANALYSES CUTTING AND A R I F

AMF F N MBER	R	EPTH	METHANE (C_1)	ETHANE (C_2)	PROPANE (C_3)	ISO BUTANE (iC_4)	NORMA BUTANE (nC_4)	ET (C_2-C_4)	TOTAL (C_1-C_4)	GAS COMPOSITION (PERCENT) C_2-C_4	TOTAL GAS C_1	C_2	C_3	iC_4	nC_4	WET GAS C_2	C_3	iC_4	nC_4	NOTES
55157A	4	1400	1319.06	6.15	5.12	1.07	1.60	13.92	1332.98	1.0442	100.	0.	0.	0.	0.	44.	37.	8.	11.	
55157E	4	1600	5989.64	9.64	6.01	1.50	1.89	19.03	6008.67	0.3168	100.	0.	0.	0.	0.	50.	32.	8.	10.	
55157I	4	1800	8004.77	8.23	7.81	5.34	16.84	38.22	8042.98	0.4751	100.	0.	0.	0.	0.	22.	20.	14.	44.	
55157J	4	1850	4535.30	2.37	7.26	3.08	14.88	29.66	4564.96	0.6497	100.	0.	0.	0.	0.	8.	24.	17.	51.	
55157K	4	1900	7004.85	3.26	9.85	7.85	25.89	46.84	7051.69	0.6643	100.	0.	0.	0.	0.	7.	21.	17.	55.	
55157L	4	1950	9875.99	6.43	13.04	8.83	29.17	57.46	9933.45	0.5785	100.	0.	0.	0.	0.	11.	23.	15.	51.	
55157M	4	2000	8698.29	17.47	13.81	13.83	35.26	80.36	8778.65	0.9155	100.	0.	0.	0.	0.	22.	17.	17.	44.	
55157N	4	2050	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	*C*
55158A	4	2200	8128.37	17.00	8.63	3.32	9.38	38.32	8166.70	0.4692	100.	0.	0.	0.	0.	44.	23.	9.	24.	
55158E	4	2400	5865.12	14.55	12.83	3.68	6.34	37.42	5902.54	0.6340	100.	0.	0.	0.	0.	39.	34.	10.	17.	
55158I	4	2600	948.17	7.77	12.38	8.38	6.57	35.10	983.27	3.5696	96.	1.	1.	1.	1.	22.	35.	24.	19.	
55158M	4	2800	452.12	5.23	6.68	7.21	5.72	24.84	476.96	5.2079	95.	1.	1.	2.	1.	21.	27.	29.	23.	
55158O	4	2900	2724.50	6.86	18.71	11.09	11.17	47.83	2772.33	1.7252	99.	0.	1.	0.	0.	14.	40.	23.	23.	
55158P	4	2950	2240.75	4.07	25.39	10.67	7.51	47.64	2288.39	2.0803	99.	0.	1.	0.	0.	9.	53.	22.	16.	
55159A	4	3000	18911.50	35.19	39.17	18.60	11.94	104.89	19016.39	0.5516	100.	0.	0.	0.	0.	34.	37.	18.	11.	
55159B	4	3050	3187.52	4.45	24.33	19.82	6.76	55.35	3242.87	1.0558	100.	0.	0.	0.	0.	8.	44.	36.	12.	
55159C	4	3100	4068.89	6.05	26.07	21.17	7.09	60.38	4129.27	1.4622	98.	0.	1.	1.	0.	10.	43.	35.	12.	
55159D	4	3150	3000.00	5.56	22.08	23.95	7.82	59.41	3059.41	1.9419	98.	0.	1.	1.	0.	9.	37.	41.	13.	
55159E	4	3200	7215.23	34.64	50.38	43.05	11.09	139.15	7354.37	1.8921	98.	0.	1.	1.	0.	25.	36.	31.	8.	
55159F	4	3250	9450.75	14.74	56.75	41.29	10.85	123.62	9574.37	1.2912	99.	0.	1.	0.	0.	12.	46.	33.	9.	
55159G	4	3300	7140.83	13.65	38.14	28.59	7.82	87.99	7228.82	1.2173	99.	0.	1.	0.	0.	15.	44.	32.	9.	
55159H	4	3350	7381.58	8.55	31.55	26.87	7.92	74.98	7456.55	1.0056	100.	0.	0.	0.	0.	11.	42.	36.	11.	
55159I	4	3400	30962.21	65.35	56.67	32.31	12.72	167.26	31129.46	0.5373	100.	0.	0.	0.	0.	39.	34.	19.	8.	
55159J	4	3450	11940.65	9.91	39.27	22.36	9.74	81.27	12021.92	0.6760	100.	0.	0.	0.	0.	12.	48.	28.	12.	
55159K	4	3500	2977.11	4.77	10.83	9.14	2.65	27.39	3004.50	0.9116	100.	0.	0.	0.	0.	17.	40.	33.	10.	
55159L	4	3550	9042.99	13.48	31.74	20.00	6.35	71.48	9114.48	0.7843	100.	0.	0.	0.	0.	19.	44.	28.	9.	
55159M	4	3600	19066.93	36.09	43.72	24.83	10.99	115.61	19182.54	0.6027	100.	0.	0.	0.	0.	31.	38.	21.	10.	
55159N	4	3650	13127.98	38.28	39.17	22.18	12.40	112.02	13240.00	0.8460	100.	0.	0.	0.	0.	34.	35.	20.	11.	
55159O	4	3700	5474.94	6.72	17.35	13.32	5.19	42.57	5517.51	0.7715	100.	0.	0.	0.	0.	16.	41.	31.	12.	
55160A	4	3800	6835.09	26.63	24.04	15.19	5.97	71.82	6906.92	1.0399	100.	0.	0.	0.	0.	38.	33.	21.	8.	
55160E	4	4000	6160.32	28.26	23.30	11.67	5.13	68.35	6228.67	1.0974	100.	0.	0.	0.	0.	41.	34.	17.	8.	
55160H	4	4200	958.82	10.08	5.06	3.17	1.71	19.99	978.81	2.0484	98.	1.	1.	0.	0.	50.	25.	16.	9.	
55160J	4	4300	543.84	1.89	1.70	2.01	8.37	13.97	557.81	2.5044	98.	0.	0.	0.	2.	14.	12.	14.	60.	
55160K	4	4350	417.95	4.20	7.10	15.77	60.55	87.62	505.57	17.2308	83.	1.	1.	3.	12.	5.	8.	18.	69.	
55160L	4	4400	501.20	2.44	2.69	4.73	19.49	29.35	530.55	5.5319	94.	0.	1.	1.	4.	8.	9.	16.	67.	
55160M	4	4450	396.63	2.52	2.17	3.39	13.65	21.73	418.36	5.1940	94.	1.	1.	1.	3.	12.	10.	16.	62.	
55160N	4	4500	519.23	2.73	1.77	1.36	3.41	9.27	528.50	1.7539	98.	1.	0.	0.	1.	29.	19.	15.	37.	
55160P	4	4600	413.90	3.09	3.39	0.68	1.07	8.23	422.13	1.9495	98.	1.	1.	0.	0.	38.	41.	8.	13.	
55161D	4	4800	459.97	6.07	1.08	0.65	0.72	8.52	468.49	1.8185	99.	1.	0.	0.	0.	71.	13.	8.	8.	
55161H	4	5000	318.94	3.04	1.41	2.43	8.44	15.34	334.28	4.5887	95.	1.	0.	1.	3.	20.	9.	16.	55.	
55161J	4	5100	462.90	4.21	4.35	11.44	37.02	57.22	520.12	11.0012	89.	1.	1.	2.	7.	7.	8.	20.	65.	
55161L	4	5200	390.38	3.92	1.48	3.45	13.04	21.89	412.27	5.3095	95.	1.	0.	1.	3.	18.	7.	16.	59.	
55161N	4	5300	733.98	14.55	16.35	6.60	7.33	44.83	778.81	5.7561	94.	2.	2.	1.	1.	32.	37.	15.	16.	
55161P	4	5400	898.80	19.63	30.19	13.27	10.61	73.70	972.50	7.5784	93.	2.	3.	1.	1.	27.	41.	18.	14.	
55162A	4	5450	1038.03	16.83	30.73	11.95	9.27	68.78	1106.81	6.2142	93.	2.	3.	1.	1.	24.	46.	17.	13.	
55162B	4	5500	735.08	15.94	27.88	13.20	9.75	66.47	801.55	8.2929	92.	2.	3.	2.	1.	24.	41.	20.	15.	
55162C	4	5550	263.17	3.54	17.59	9.83	7.01	37.97	301.14	12.6086	88.	1.	6.	3.	2.	9.	47.	26.	18.	
55162D	4	5600	768.80	10.72	17.60	10.36	8.01	46.89	815.69	5.7485	93.	1.	2.	1.	1.	23.	37.	22.	17.	
55162F	4	5700	811.82	24.11	44.02	21.74	13.87	103.74	915.56	11.3307	88.	3.	5.	2.	2.	23.	43.	21.	13.	
55162H	4	5800	870.37	36.83	72.33	38.95	22.42	170.53	1040.90	16.3829	83.	4.	7.	4.	2.	22.	42.	23.	13.	
55162I	4	5850	920.77	72.34	144.08	72.11	39.54	328.27	1249.04	26.2817	73.	6.	12.	6.	3.	22.	44.	22.	12.	
55162J	4	5900	638.17	75.03	187.48	111.70	63.24	437.45	1075.62	40.6695	60.	7.	17.	10.	6.	17.	43.	26.	14.	
55162K	4	5950	1233.00	75.14	166.95	91.58	52.73	386.40	1619.40	23.8607	76.	5.	10.	6.	3.	19.	43.	24.	14.	
55162L	4	6000	910.13	46.88	98.84	60.71	37.32	243.42	1153.55	21.1017	79.	4.	9.	5.	3.	19.	41.	25.	15.	
55162M	4	6050	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	*C*
55162N	4	6100	858.13	39.11	103.91	45.65	45.68	234.35	1109.48	22.9281	77.	4.	9.	4.	4.	17.	45.	20.	18.	
55162O	4	6150	926.82	60.38	148.04	95.28	60.00	363.70	1290.52	28.1824	72.	5.	11.	7.	5.	17.	41.	26.	16.	
55162P	4	6200	761.44	45.81	151.40	94.56	79.02	370.77	1132.21	32.7474	68.	4.	13.	8.	7.	12.	42.	25.	21.	
55163A	4	6250	5022.26	337.10	1378.38	650.29	528.52	3094.29	8116.55	38.1232	61.	7.	17.	8.	7.	17.	45.	21.	17.	
55163B	4	6300	3636.81	365.68	1283.16	738.18	608.31	2993.28	6629.10	55.1362	45.	7.	24.	14.	11.	12.	43.	25.	20.	
55163C	4	6350	17387.97	300.66	656.91	337.53	285.56	1580.64	18968.61	8.3329	91.	2.	3.	2.	2.	19.	42.	21.	18.	
55163D	4	6400	1959.30	236.82	711.84	409.53	334.96	1693.85	3653.15	46.3521	53.	6.	19.	11.	9.	14.	42.	24.	20.	
55163E	4	6450	3507.72	216.17	439.22	210.80	168.29	1034.48	4542.20	22.7748	76.	5.	10.	5.	4.	21.	43.	20.	16.	
55163F	4	6500	717.00	43.03	155.21	100.83	85.35	384.62	1101.62	34.9140	65.	4.	14.	9.	8.	11.	41.	26.	22.	
55163H	4	6600	513.47	7.15	15.18	9.97	9.73	42.03	555.50	7.5661	92.	1.	3.	2.	2.	17.	36.	24.	23.	
55163J	4	6700	640.37	3.91	15.88	12.68	14.20	46.67	687.04	7.1030	93.	1.	2.	2.	2.	8.	35.	27.	30.	
55163L	4	6800	311.22	3.81	7.38	6.44	13.14	30.77	341.99	8.9971	91.	1.	2.	2.	4.	12.	24.	21.	43.	
55163N	4	6900	328.09	6.41	14.97	8.56	10.36	40.30	368.39	7.0901	92.	1.	3.	2.	2.	16.	37.	21.	26.	
55163O	4	7000	529.03	7.49	22.69	16.97	16.39	63.54	592.57	10.7227	89.	1.	4.	3.	3.	12.	35.	27.	26.	
55163Q	4	7100	472.00	20.24	57.35	34.28	36.08	147.95	619.95	23.8648	76.	3.	9.	6.	6.	14.	39.	23.	24.	

B = CUTTINGS NOT ANALYZED *C* = AIR SPACE GAS NOT RUN *BC* = NO ANALYSES RUN

SAMPLE NUMBER	R	DEPTH	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)	C_2 C	TOTAL GAS C_1	C_2	C_3	iC_4	nC_4	WET GAS C_2	C_3	iC_4	nC_4
			GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUME CUTTINGS)								GAS COMPOSITION (PERCENT)								
55167G	4	1350	2844.46	14.26	10.70	9.68	21.74	56.38	2900.84	1.9435	99.	0.	0.	0.	1.	25.	19.	17.	39.
55167H	4	1650	3036.83	5.80	3.21	4.10	13.49	26.70	3063.53	0.8715	100.	0.	0.	0.	0.	22.	12.	15.	51.
55167I	4	1750	3763.83	6.84	2.64	3.33	9.79	22.60	3786.43	0.5968	100.	0.	0.	0.	0.	30.	12.	15.	43.
55167M	4	1850	3855.81	6.62	1.85	2.37	7.75	18.60	3874.50	0.4824	100.	0.	0.	0.	0.	35.	10.	13.	42.
55168A	4	2150	4915.66	8.95	1.70	2.12	6.04	18.81	4934.47	0.3812	100.	0.	0.	0.	0.	48.	9.	11.	32.
55168B	4	2350	3142.50	6.88	1.89	2.30	6.48	17.45	3159.95	0.5382	100.	0.	0.	0.	0.	40.	8.	13.	38.
55168H	4	2550	5332.54	9.35	8.88	5.45	13.73	37.40	5369.94	0.6965	100.	0.	0.	0.	0.	25.	24.	15.	36.
55168L	4	2750	3845.45	11.43	8.52	13.02	35.82	68.79	3914.24	1.7574	99.	0.	0.	0.	1.	17.	12.	19.	52.
55168M	4	2800	6834.07	5.88	42.63	17.02	22.83	88.36	6922.42	1.2764	99.	0.	1.	0.	0.	7.	48.	19.	26.
55168N	4	2850	3199.42	5.55	30.40	12.01	18.20	66.16	3265.57	2.0004	100.	0.	0.	0.	0.	8.	46.	18.	28.
55168O	4	2900	7735.02	13.53	28.90	12.38	20.63	75.44	7810.45	0.9658	100.	0.	0.	0.	0.	18.	39.	16.	27.
55168P	4	2950	7535.88	18.13	28.27	11.92	20.49	78.80	7614.65	1.0349	100.	0.	0.	0.	0.	23.	36.	15.	26.
55169D	4	3150	4678.53	11.36	33.42	17.55	17.56	79.89	4758.42	1.6789	99.	0.	1.	0.	0.	14.	42.	22.	22.
55169H	4	3350	4910.70	14.32	46.17	24.70	17.99	101.18	5011.87	2.0188	99.	0.	1.	0.	0.	14.	44.	24.	18.
55169I	4	3400	5910.50	11.99	38.22	20.40	15.05	85.65	5996.15	1.4284	99.	0.	1.	0.	0.	16.	44.	24.	18.
55169J	4	3450	7233.08	14.00	42.77	21.43	15.35	93.54	7326.58	1.2707	99.	0.	1.	0.	0.	15.	46.	23.	16.
55169K	4	3500	3698.35	7.64	36.55	20.99	16.61	81.79	3780.14	2.1637	98.	0.	1.	1.	0.	9.	45.	26.	20.
55169L	4	3550	9473.71	33.40	63.33	28.35	17.22	142.29	9615.00	1.4799	99.	0.	1.	0.	0.	23.	45.	20.	12.
55169M	4	3600	6604.50	8.83	50.94	25.07	16.11	100.97	6705.47	1.4924	99.	0.	1.	0.	0.	9.	50.	25.	16.
55169N	4	3650	19643.43	36.04	126.43	40.18	24.75	226.39	19869.82	1.1396	99.	0.	1.	0.	0.	12.	55.	22.	11.
55169O	4	3700	4453.85	22.51	56.61	33.19	18.93	131.26	4585.09	2.8623	98.	0.	1.	1.	0.	17.	44.	25.	14.
55169P	4	3750	5643.73	34.16	117.82	63.30	30.31	245.64	5889.37	4.1710	96.	1.	2.	1.	1.	14.	48.	26.	12.
55170A	4	3800	4172.67	25.23	93.02	48.07	23.60	189.92	4362.59	4.3536	95.	1.	2.	1.	1.	13.	50.	25.	12.
55170B	4	3850	4638.44	27.13	94.04	47.84	22.66	191.47	4819.91	3.9725	96.	1.	2.	1.	0.	14.	49.	25.	12.
55170C	4	3900	4464.00	25.85	103.29	55.84	24.42	209.40	4673.40	4.4807	95.	1.	2.	1.	1.	12.	49.	27.	12.
55170D	4	3950	12838.12	42.72	119.81	58.09	27.43	247.73	12785.85	1.9376	98.	0.	1.	0.	0.	17.	48.	23.	11.
55170E	4	4000	14052.87	63.34	166.39	64.02	28.03	321.77	14374.64	2.2385	99.	0.	1.	0.	0.	20.	51.	20.	9.
55170F	4	4050	13348.46	48.83	187.94	61.17	31.88	300.84	13649.41	2.2048	99.	0.	1.	0.	0.	17.	55.	20.	11.
55170G	4	4100	5099.00	23.84	50.93	22.57	19.99	117.32	5216.32	2.2492	99.	0.	1.	0.	0.	20.	44.	19.	17.
55170H	4	4150	5469.79	20.20	42.41	17.73	17.21	97.54	5567.33	1.7521	98.	0.	1.	0.	0.	21.	43.	18.	18.
55170I	4	4200	5399.57	25.82	33.46	17.24	25.78	102.30	5531.87	1.8593	99.	0.	1.	0.	0.	25.	33.	17.	25.
55170J	4	4250	745.37	2.52	4.01	1.15	1.53	9.21	754.58	1.2205	99.	0.	1.	0.	0.	27.	44.	12.	17.
55170M	4	4400	6858.03	55.65	21.06	13.72	23.32	113.75	6971.78	1.6316	99.	1.	0.	0.	0.	48.	19.	12.	21.
55170P	4	4650	4704.27	27.27	18.89	10.15	16.27	72.28	4776.55	1.8132	98.	1.	0.	0.	0.	38.	27.	14.	21.
55171D	4	4850	2224.30	23.92	6.25	2.30	2.91	35.39	2259.69	1.5661	99.	1.	0.	0.	0.	68.	18.	6.	8.
55171G	4	5550	1941.78	9.70	3.52	1.31	3.14	17.47	1959.46	0.9017	100.	0.	0.	0.	0.	55.	20.	7.	18.
55171I	4	5950	351.27	4.67	1.70	0.71	1.75	8.83	360.10	1.5765	99.	1.	0.	0.	0.	53.	19.	8.	20.
55171K	4	5450	398.87	5.33	2.42	0.70	3.12	11.47	410.34	1.8792	98.	1.	0.	0.	1.	46.	21.	6.	27.
55171M	4	5550	327.87	3.67	2.26	1.22	1.99	9.14	337.01	2.7120	97.	1.	1.	0.	1.	40.	25.	13.	22.
55171O	4	5650	636.04	4.39	1.81	1.70	4.57	12.47	648.51	2.7803	98.	1.	0.	0.	1.	35.	15.	14.	36.
55172A	4	5750	592.68	4.31	1.97	1.05	2.10	9.43	602.11	1.5681	99.	1.	0.	0.	0.	46.	21.	11.	22.
55172C	4	5850	434.00	5.24	1.80	1.27	1.48	9.82	433.82	2.2638	99.	1.	0.	0.	0.	54.	18.	13.	15.
55172E	4	5950	471.11	5.62	2.25	1.34	1.22	10.43	481.54	2.1659	99.	1.	0.	0.	0.	53.	22.	13.	12.
55172G	4	6050	395.44	3.60	2.33	1.99	2.02	9.84	405.28	2.4278	98.	1.	1.	0.	0.	36.	23.	20.	21.
55172H	4	6100	274.40	1.28	1.35	0.88	1.28	4.79	279.19	1.7157	100.	0.	0.	0.	0.	27.	28.	18.	27.
55172I	4	6150	534.14	3.36	3.52	2.25	2.11	11.24	545.38	2.0608	98.	1.	1.	0.	0.	30.	31.	20.	19.
55172J	4	6200	591.80	1.44	2.90	1.90	2.01	8.25	600.05	1.3748	100.	0.	0.	0.	0.	17.	36.	23.	24.
55172K	4	6250	575.31	4.28	3.29	1.53	1.67	10.74	586.05	1.8526	98.	1.	1.	0.	0.	39.	31.	14.	16.
55172L	4	6300	848.44	3.75	2.33	1.15	1.06	8.29	856.73	0.9675	100.	0.	0.	0.	0.	45.	28.	14.	13.
55172M	4	6350	1166.94	4.34	3.02	1.51	1.71	10.58	1177.52	0.8984	100.	0.	0.	0.	0.	41.	29.	14.	16.
55172N	4	6450	1468.51	7.59	5.28	3.01	2.94	18.82	1487.33	1.2653	99.	1.	0.	0.	0.	40.	28.	16.	16.
55172P	4	6550	680.03	3.85	2.80	2.12	1.97	10.74	690.77	1.5547	99.	1.	0.	0.	0.	36.	26.	20.	18.
55173B	4	6650	921.05	6.54	4.50	3.16	2.85	17.05	938.10	1.8174	99.	1.	0.	0.	0.	38.	26.	19.	17.
55173D	4	6750	753.90	8.48	6.54	3.85	3.33	22.21	776.11	2.8616	98.	1.	1.	0.	0.	38.	29.	17.	15.
55173F	4	6850	616.32	8.31	9.34	6.28	5.24	29.17	645.49	4.5190	96.	1.	1.	1.	1.	28.	32.	22.	18.
55173H	4	6950	846.80	8.09	8.23	5.16	4.23	25.71	872.51	2.9404	97.	1.	1.	1.	0.	31.	33.	20.	16.
55173J	4	7050	565.33	7.95	7.08	4.63	4.18	23.84	589.17	4.0463	96.	1.	1.	1.	1.	33.	30.	19.	18.
55173L	4	7150	597.87	8.18	7.44	4.66	4.31	24.59	622.46	3.9503	96.	1.	1.	1.	1.	33.	30.	19.	18.
55173N	4	7250	594.88	10.06	11.05	6.50	6.07	33.68	628.56	5.3582	94.	2.	2.	1.	1.	30.	33.	19.	18.
55173P	4	7350	1070.00	14.68	18.05	12.80	13.57	58.80	1128.80	5.2090	95.	1.	2.	1.	1.	25.	31.	21.	23.
55174B	4	7450	669.13	9.29	18.95	14.76	16.59	59.59	728.72	8.1772	92.	1.	3.	2.	2.	16.	31.	25.	28.
55174D	4	7550	540.91	10.40	18.97	12.80	14.14	56.31	597.22	9.4285	91.	2.	3.	2.	2.	18.	34.	23.	25.
55174E	4	7600	929.28	197.30	613.14	344.95	417.71	1573.10	2503.38	62.8687	37.	8.	25.	14.	17.	13.	38.	22.	27.
55174F	4	7650	2628.97	780.38	1948.46	900.20	1077.09	4679.11	7308.07	64.0528	36.	10.	27.	12.	15.	16.	42.	19.	23.
55174G	4	7700	3453.48	1129.06	3770.21	1604.65	2434.10	8938.01	12391.49	72.1302	28.	9.	30.	13.	20.	13.	42.	18.	27.
55174H	4	7750	9058.99	2577.39	7650.89	2615.43	3756.88	16998.58	26057.57	65.2347	35.	11.	29.	10.	14.	15.	45.	15.	22.
55174I	4	7800	6744.94	1844.63	4482.80	1632.54	2483.59	10443.55	17187.49	60.7625	39.	11.	26.	9.	14.	18.	42.	16.	24.
55174J	4	7850	5139.79	1385.86	3417.07	1244.74	1851.30	7898.96	13038.75	60.5806	39.	11.	26.	10.	14.	18.	43.	16.	23.
55174L	4	7950	3605.82	1170.78	2853.47	927.07	1283.52	6234.82	9840.65	63.3578	37.	12.	29.	9.	13.	19.	45.	15.	21.
55174N	4	8050	2561.13	498.88	1217.96	423.67	600.04	2740.25	5300.38	51.6991	48.	9.	23.	8.	11.	18.	45.	15.	22.
55174P	4	8150	1224.61	298.81	730.43	266.37	379.41	1673.02	2898.63	57.7866	42.	10.	25.	9.	13.	18.	43.	16.	23.
55175B	4	8250	1504.80	407.70	940.04	347.44	474.94	2170.12	3674.92	59.0522	41.	11.	26.	9.	13.	19.	43.	16.	22.
55175D	4	8350	851.60	150.42	444.71	186.17	267.43	1048.73	1900.33	55.1867	45.	8.	23.	10.	14.	14.	42.	18.	26.
55175F	4	8450	2235.04	381.88	847.75	319.74	426.53	1945.90	4180.94	46.6761	54.	8.	20.	8.	10.	18.	44.	16.	22.
55175H	4	8550	673.09	191.73	558.79	220.04	293.59	1264.15	1937.24	65.2552	35.	10.	29.	11.	15.	15.	45.	17.	23.
55175J	4	8650	742.25	186.40	560.31	242.14	339.92	1328.77	2071.02	64.1602	36.	9.	27.	12.	16.	14.	42.	18.	26.
55175L	4	8750	1189.23	246.21	657.34	257.42	354.82	1515.79	2705.02	56.0362	44.	9.	24.	10.	13.	16.	44.	17.	23.
55175N	4	8850	1016.10	234.94	710.98	308.10	410.09	1663.11	2679.21	62.0746	38.	9.	27.	11.	15.	14.	43.	18.	25.
55175P	4	8950	1698.54	467.23	1242.58	397.85	483.60	2591.28	4289.82	60.4053	40.	11.	29.	9.	11.	18.	48.	15.	19.
55176B	4	9050	992.08	272.20	733.44	288.37	389.81	1684.22	2676.27	62.9316	37.	10.	27.	11.	15.	16.	44.	17.	23.
55176D	4	9150	728.19	131.42	367.69	152.79	209.12	860.82	1589.01	54.1733	46.	8.	23.	10.	13.	15.	43.	18.	24.
55176F	4	9250	560.34	75.93	233.54	101.47	143.67	554.61	1114.75	49.7348	50.	7.	21.	9.	13.	14.	42.	18.	26.
55176H	4	9350	640.00	113.27	308.35	123.31	165.70	710.63	1349.63	52.6537	47.	8.	23.	9.	12.	16.	44.	17.	23.
55176J	4	9450	903.55	155.97	584.43	277.81	394.27	1412.48	2316.03	60.9871	39.	7.	25.	12.	17.	11.	41.	20.	28.
55176L	4	9550	1235.02	207.54	590.59	240.50	317.29	1355.92	2590.94	52.3331	48.	8.	23.	9.	12.	15.	44.	18.	23.
55176N	4	9650	1295.32	239.43	646.75	291.45	394.57	1572.20	2867.52	54.8279	45.	8.	23.	10.	14.	15.	41.	19.	25.
55176P	4	9750	1158.15	213.69	570.22	225.39	308.13	1317.43	2475.58	53.2170	47.	9.	23.	9.	12.	16.	44.	17.	23.
55177B	4	9850	1188.23	267.24	623.50	217.15	300.06	1407.95	2593.18	54.2943	46.	10.	24.	8.	12.	19.	43.	15.	21.
55177D	4	9950	832.14	219.21	605.18	247.28	337.46	1409.13	2241.27	62.8719	37.	10.	27.	11.	15.	16.	42.	18.	24.
55177F	4	10050	675.30	142.82	396.09	152.05	214.97	906.93	1583.23	57.2835	43.	9.	25.	10.	14.	16.	43.	17.	24.
55177H	4	10150	1678.35	157.73	452.58	163.22	226.74	1000.27	2678.62	37.3427	63.	6.	17.	6.	8.	16.	45.	16.	23.
55177J	4	10250	719.31	152.74	406.12	158.03	213.09	930.00	1650.31	56.3530	44.	9.	25.	10.	13.	16.	44.	17.	23.
55177L	4	10350	1323.58	340.28	913.29	359.88	485.07	2098.52	3423.10	61.3046	39.	10.	27.	11.	14.	16.	44.	17.	23.
55177N	4	10450	558.38	101.27	309.81	128.87	169.08	709.03	1266.41	55.9873	44.	8.	24.	10.	13.	14.	44.	18.	24.
55177P	4	10550	520.57	98.90	290.29	121.34	162.09	672.62	1193.19	56.3715	44.	8.	24.	10.	14.	15.	43.	18.	24.
55178B	4	10650	626.66	27.83	48.81	24.35	33.10	134.79	761.48	17.7017	82.	4.	7.	3.	4.	21.	36.	18.	25.
55178D	4	10750	947.33	170.02	462.84	176.18	238.86	1047.90	1995.23	52.5202	47.	9.	23.	9.	12.	16.	44.	17.	23.
55178F	4	10850	563.98	50.17	178.12	83.68	112.67	424.64	988.62	42.9528	58.	5.	18.	8.	11.	12.	41.	20.	27.
55178H	4	10950	813.73	55.44	155.24	106.85	101.35	418.88	1232.61	33.9831	66.	4.	13.	9.	8.	13.	37.	26.	24.
55178J	4	11050	874.25	47.13	110.03	53.15	72.03	282.39	1156.64	24.4145	76.	4.	10.	5.	6.	17.	38.	19.	26.
55178K	4	11100	583.83	47.59	103.34	39.41	58.68	249.02	832.85	29.8997	70.	6.	12.	5.	7.	19.	41.	16.	24.
55178L	4	11150	6452.39	994.00	1453.31	444.20	515.16	3406.66	9859.05	34.5536	65.	10.	15.	5.	5.	29.	43.	13.	15.
55178M	4	11200	3686.62	750.48	1397.64	565.44	634.31	3347.86	7034.48	47.5922	52.	11.	20.	8.	9.	22.	42.	17.	19.
55178N	4	11250	9052.27	1733.31	2691.15	863.88	981.72	6271.05	15323.32	40.9249	59.	11.	18.	6.	6.	28.	42.	14.	16.
55178O	4	11300	3600.00	620.49	1159.38	479.92	509.12	2768.91	6368.91	43.4754	56.	10.	18.	8.	8.	22.	43.	17.	18.
55178P	4	11350	7258.16	978.34	1496.17	533.92	593.71	3602.13	10860.29	33.1679	67.	9.	14.	5.	5.	27.	42.	15.	16.
55179A	4	11400	2068.68	354.00	634.95	177.37	210.06	1376.38	3445.06	39.9523	61.	10.	18.	5.	6.	26.	46.	13.	15.
55179B	4	11450	2137.17	355.61	549.57	180.48	212.03	1297.69	3434.86	37.7800	63.	10.	16.	5.	6.	27.	43.	14.	16.
55179D	4	11550	879.24	177.87	364.76	126.82	154.31	823.76	1703.00	48.3711	53.	10.	21.	7.	9.	22.	44.	15.	19.
55179F	4	11650	446.12	31.01	57.00	27.86	37.27	153.14	599.26	25.5548	74.	5.	10.	5.	6.	20.	38.	18.	24.
55179H	4	11750	621.40	23.99	37.05	20.88	29.56	111.48	732.88	15.2112	85.	3.	5.	3.	4.	22.	32.	19.	27.
55179J	4	11850	504.27	13.58	23.69	17.23	24.37	78.87	583.14	13.5250	87.	2.	4.	3.	4.	17.	30.	22.	31.
55179K	4	11900	311.37	14.55	24.33	17.21	21.09	77.18	388.55	19.8635	81.	4.	6.	4.	5.	19.	32.	22.	27.
55179L	4	11950	1617.94	100.68	180.08	79.94	113.28	473.98	2091.92	22.6576	77.	5.	9.	4.	5.	21.	38.	17.	24.
55179M	4	11985	5753.20	433.57	1412.11	471.85	1014.44	3331.99	9085.19	36.6750	63.	5.	16.	5.	11.	13.	43.	14.	30.

SAMPLE NUMBER	R	DEPTH	GAS CONCENTRATION (VOLUME GAS PER MILLION VOLUMES CUTTINGS) 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)	GAS COMPOSITION (PERCENT) C_2-C_4	TOTAL GAS C_1	C_2	C_3	iC_4	nC_4	WET GAS C_2	C_3	iC_4	nC_4
55167A	4	1650	2203.66	7.18	4.37	5.22	12.45	29.22	2232.88	1.3086	99.	0.	0.	0.	1.	25.	15.	18.	42.
55167E	4	1700	2415.23	3.32	1.41	1.74	5.09	11.58	2426.81	0.4771	100.	0.	0.	0.	0.	29.	12.	15.	44.
55167I	4	1750	3189.03	3.83	1.37	1.85	4.81	11.81	3200.84	0.3689	100.	0.	0.	0.	0.	32.	12.	15.	41.
55167M	4	1850	3164.61	4.32	0.92	0.96	2.48	8.88	3173.50	0.2801	100.	0.	0.	0.	0.	49.	10.	11.	30.
55168A	4	2150	3943.66	6.65	0.67	0.84	1.91	10.07	3953.73	0.2547	100.	0.	0.	0.	0.	66.	7.	8.	19.
55168E	4	2350	4405.70	4.93	0.47	0.91	2.08	8.58	4414.28	0.1944	100.	0.	0.	0.	0.	57.	8.	11.	24.
55168H	4	2550	4204.54	6.87	4.84	2.10	4.03	17.83	4222.37	0.4229	100.	0.	0.	0.	0.	38.	27.	12.	23.
55168L	4	2750	3219.05	9.13	4.95	6.05	14.81	34.64	3253.69	1.0646	100.	0.	0.	0.	0.	26.	14.	17.	43.
55168M	4	2800	5428.57	3.93	28.61	7.53	7.65	47.52	5476.08	0.8677	99.	0.	1.	0.	0.	8.	60.	16.	16.
55168N	4	2850	6171.42	0.86	15.93	3.55	2.36	22.68	6194.09	0.3661	100.	0.	0.	0.	0.	4.	70.	16.	10.
55168O	4	2900	6473.52	10.70	18.47	4.90	6.70	40.77	6514.29	0.6258	100.	0.	0.	0.	0.	26.	45.	12.	16.
55168P	4	2950	3435.85	13.35	13.20	3.36	6.68	36.59	3472.44	1.0687	100.	0.	0.	0.	0.	36.	37.	9.	18.
55169D	4	3150	1837.91	7.47	8.35	2.37	1.85	20.04	1857.95	1.0786	100.	0.	0.	0.	0.	37.	42.	12.	9.
55169H	4	3350	2126.33	6.18	8.40	2.60	1.43	18.63	2144.96	0.8688	100.	0.	0.	0.	0.	33.	45.	14.	8.
55169I	4	3400	5120.00	9.91	22.71	7.94	4.56	45.11	5165.11	0.8733	100.	0.	0.	0.	0.	22.	50.	18.	10.
55169J	4	3450	5557.58	11.88	27.82	9.67	5.48	54.85	5612.40	0.9277	100.	0.	0.	0.	0.	22.	50.	18.	10.
55169K	4	3500	1562.35	3.75	6.97	2.39	1.09	14.20	1576.55	0.9007	100.	0.	0.	0.	0.	26.	49.	17.	8.
55169L	4	3550	7035.21	23.13	29.75	9.01	4.66	66.54	7101.75	0.9370	100.	0.	0.	0.	0.	35.	44.	14.	7.
55169M	4	3600	3838.50	5.31	14.21	4.39	2.12	26.03	3864.53	0.6735	100.	0.	0.	0.	0.	20.	55.	17.	8.
55169N	4	3650	16913.43	20.38	86.01	24.83	10.25	141.48	17054.91	0.8296	99.	0.	1.	0.	0.	14.	61.	18.	7.
55169O	4	3700	3577.85	18.97	31.99	11.24	4.49	66.69	3644.54	1.8299	98.	1.	1.	0.	0.	28.	48.	17.	7.
55169P	4	3750	4693.33	31.15	86.11	32.46	13.68	163.39	4856.72	3.3643	96.	1.	2.	1.	0.	19.	53.	20.	8.
55170A	4	3800	3662.67	23.11	67.51	24.63	10.24	125.49	3788.16	3.3127	96.	1.	2.	1.	0.	18.	54.	20.	8.
55170B	4	3850	3764.44	24.65	74.98	30.53	12.48	142.65	3907.09	3.6510	96.	1.	2.	1.	0.	17.	53.	21.	9.
55170C	4	3900	3564.00	22.66	66.35	25.56	9.86	124.43	3688.43	3.3735	96.	1.	2.	1.	0.	18.	53.	21.	8.
55170D	4	3950	5760.00	23.60	29.22	7.94	2.66	63.41	5823.41	1.0888	98.	0.	1.	0.	0.	37.	46.	13.	4.
55170E	4	4000	11448.87	58.74	95.25	26.67	8.95	189.61	11638.47	1.6291	98.	1.	1.	0.	0.	31.	50.	14.	5.
55170F	4	4050	7180.48	44.21	55.34	13.55	5.27	118.36	7298.84	1.6217	98.	1.	1.	0.	0.	37.	48.	11.	4.
55170G	4	4100	4088.00	18.88	33.01	9.92	6.25	68.05	4156.05	1.6375	99.	0.	1.	0.	0.	28.	48.	15.	9.
55170H	4	4150	4072.92	16.13	23.60	7.69	6.08	53.49	4126.41	1.2964	99.	0.	1.	0.	0.	30.	45.	14.	11.
55170I	4	4200	2279.57	8.12	5.93	1.80	1.77	17.62	2297.19	0.7670	100.	0.	0.	0.	0.	46.	34.	10.	10.
55170J	4	4250	155.13	0.93	0.78	0.31	0.20	2.23	157.35	1.4172	98.	1.	1.	0.	0.	42.	35.	14.	9.
55170M	4	4400	3839.28	22.37	5.40	2.37	2.97	33.11	3872.39	0.8550	99.	1.	0.	0.	0.	68.	16.	7.	9.
55170P	4	4650	3384.74	19.13	9.06	3.32	4.30	35.81	3420.55	1.0468	99.	1.	0.	0.	0.	54.	25.	9.	12.
55171D	4	4850	1854.70	21.98	5.74	2.00	2.51	32.23	1886.93	1.7081	99.	1.	0.	0.	0.	68.	18.	6.	8.
55171G	4	5250	1878.99	5.98	1.40	0.43	1.07	8.90	1887.89	0.6412	100.	0.	0.	0.	0.	67.	16.	5.	12.
55171I	4	5350	192.47	2.02	0.79	0.21	0.53	3.55	196.02	1.8110	99.	1.	0.	0.	0.	57.	22.	6.	15.
55171K	4	5450	133.27	2.83	1.27	0.24	0.97	5.41	138.68	3.9010	96.	2.	1.	0.	1.	53.	23.	4.	18.
55171M	4	5550	251.37	2.17	1.49	0.48	0.72	4.86	256.23	1.8966	98.	1.	1.	0.	0.	44.	31.	10.	15.
55171O	4	5650	84.44	1.74	1.07	0.70	1.69	5.20	89.64	5.8009	94.	2.	1.	1.	2.	33.	21.	13.	33.
55172A	4	5750	236.28	2.36	1.23	0.39	1.02	5.20	241.48	2.1534	98.	1.	1.	0.	0.	45.	24.	11.	20.
55172C	4	5850	146.50	3.14	1.15	0.67	0.70	5.66	152.16	3.7198	97.	2.	1.	0.	0.	56.	20.	12.	12.
55172E	4	5950	175.91	4.03	1.65	0.88	0.79	7.35	183.26	4.0107	97.	2.	1.	0.	0.	55.	22.	12.	11.
55172G	4	6050	98.44	2.36	1.22	0.76	0.67	5.01	103.45	4.8429	95.	2.	1.	1.	1.	48.	24.	15.	13.
55172H	4	6100	23.15	0.80	0.41	0.14	0.17	1.52	24.67	6.1612	93.	3.	2.	1.	1.	53.	27.	9.	11.
55172I	4	6150	159.74	1.06	1.47	0.58	0.48	3.60	163.34	2.2040	98.	1.	1.	0.	0.	29.	41.	16.	14.
55172J	4	6200	345.05	0.82	1.38	0.78	0.71	3.69	348.94	1.1146	100.	0.	0.	0.	0.	21.	41.	20.	18.
55172K	4	6250	178.71	2.66	1.30	0.79	0.75	6.50	185.21	3.5095	98.	1.	1.	0.	0.	41.	35.	12.	12.
55172L	4	6300	263.44	3.04	1.30	0.41	0.40	5.15	268.59	1.9172	99.	1.	0.	0.	0.	59.	25.	8.	8.
55172M	4	6350	713.94	1.86	1.48	0.39	0.44	4.17	718.11	0.5806	100.	0.	0.	0.	0.	45.	35.	9.	11.
55172N	4	6450	220.51	2.99	4.39	1.89	1.67	10.94	231.45	4.7267	95.	1.	2.	1.	1.	27.	41.	17.	15.
55172P	4	6550	248.03	1.20	1.00	0.46	0.40	3.06	248.09	1.2334	100.	0.	0.	0.	0.	39.	33.	15.	13.
55173B	4	6650	303.05	1.76	1.42	0.61	0.43	4.22	307.27	1.3732	99.	1.	0.	0.	0.	42.	34.	14.	10.
55173D	4	6750	337.50	6.37	3.63	1.30	0.95	12.25	349.75	3.5026	97.	2.	1.	0.	0.	51.	30.	11.	8.
55173F	4	6850	220.32	5.20	5.34	2.11	1.50	14.25	234.57	6.0749	94.	2.	2.	1.	1.	37.	37.	15.	11.
55173H	4	6950	334.40	5.61	5.34	2.15	1.61	14.74	349.14	4.2217	95.	2.	2.	1.	0.	38.	36.	15.	11.
55173J	4	7050	218.53	4.59	3.90	1.62	1.32	11.43	229.96	4.9704	94.	2.	2.	1.	1.	40.	34.	14.	12.
55173L	4	7150	201.67	3.76	4.40	1.87	1.31	11.34	213.41	5.4074	94.	2.	2.	1.	1.	33.	38.	16.	13.
55173N	4	7250	198.88	4.93	6.40	2.32	1.94	15.59	214.47	7.2691	93.	2.	3.	1.	1.	32.	41.	15.	12.
55173P	4	7350	640.60	8.49	8.76	3.39	3.31	23.95	664.55	3.6049	97.	1.	1.	1.	0.	35.	37.	14.	14.
55174B	4	7450	265.33	5.57	10.21	4.62	4.51	24.91	290.24	8.5826	90.	2.	4.	2.	2.	22.	41.	19.	18.
55174D	4	7550	269.71	7.78	14.64	7.34	7.34	37.47	307.18	12.1979	88.	3.	5.	2.	2.	21.	39.	20.	20.
55174E	4	7600	577.02	140.31	281.01	88.27	86.99	596.59	1173.61	50.8329	49.	12.	24.	8.	7.	24.	46.	15.	15.
55174F	4	7650	2059.57	603.43	1076.87	349.18	356.62	2385.80	4445.37	53.6693	46.	14.	24.	8.	8.	25.	45.	15.	15.
55174G	4	7700	2580.48	803.38	1772.93	521.39	653.30	3750.99	6331.47	59.2436	41.	13.	28.	8.	10.	21.	48.	14.	17.
55174H	4	7750	6238.98	1221.55	1911.71	500.47	576.88	4210.60	10449.59	40.2944	59.	12.	18.	5.	6.	29.	45.	12.	14.
55174I	4	7800	4922.94	1074.33	1571.70	406.43	468.75	3521.21	8444.14	41.7000	57.	13.	19.	5.	6.	31.	46.	12.	13.
55174J	4	7850	4065.78	957.64	1463.40	365.89	440.18	3227.12	7292.91	44.2501	56.	13.	20.	5.	6.	30.	45.	11.	14.
55174L	4	7950	3086.22	1096.44	2281.69	620.54	762.92	4761.58	7827.80	60.5736	40.	14.	29.	8.	9.	23.	48.	13.	16.
55174N	4	8050	1264.13	489.64	852.87	243.03	287.30	1952.34	3216.47	60.7007	39.	14.	30.	8.	9.	26.	49.	12.	15.
55174P	4	8150	784.41	259.87	427.28	83.94	102.11	873.20	1657.61	52.6782	47.	16.	26.	5.	6.	30.	48.	10.	12.
55175B	4	8250	1071.00	365.64	608.78	130.19	155.92	1252.53	2323.53	53.9063	46.	16.	26.	6.	7.	29.	49.	10.	12.
55175D	4	8350	353.60	105.11	167.83	33.20	38.47	344.61	698.21	49.3562	50.	15.	24.	5.	6.	31.	48.	10.	11.
55175F	4	8450	960.64	328.87	676.48	167.07	186.38	1358.80	2319.44	58.5831	42.	14.	29.	7.	8.	24.	50.	12.	14.
55175H	4	8550	295.09	177.22	429.10	112.90	133.83	853.05	1148.14	74.2984	26.	15.	37.	10.	12.	21.	50.	13.	16.
55175J	4	8650	382.25	155.71	305.04	73.70	82.98	617.43	999.68	61.7627	38.	16.	31.	7.	8.	25.	50.	12.	13.
55175L	4	8750	640.83	190.99	337.78	75.88	84.65	689.30	1330.13	51.8220	49.	14.	25.	6.	6.	28.	49.	11.	12.
55175N	4	8850	862.50	172.64	283.43	64.04	71.23	591.34	1153.84	51.2487	48.	15.	25.	6.	6.	29.	48.	11.	12.
55175P	4	8950	1105.74	454.15	1143.95	331.04	369.76	2298.90	3404.64	67.5225	32.	13.	34.	10.	11.	20.	50.	14.	16.
55176B	4	9050	615.25	243.17	469.34	111.80	132.87	957.18	1572.43	60.8726	40.	15.	30.	7.	8.	25.	49.	12.	14.
55176D	4	9150	370.59	100.62	170.50	37.32	42.74	351.18	721.77	48.6554	51.	14.	24.	5.	6.	29.	48.	11.	12.
55176F	4	9250	214.76	67.97	158.98	39.42	50.61	316.98	531.73	59.6141	40.	13.	30.	7.	10.	21.	51.	12.	16.
55176H	4	9350	276.00	104.60	218.88	48.61	58.34	430.43	706.43	60.9303	39.	15.	31.	7.	8.	24.	51.	11.	14.
55176J	4	9450	551.98	118.08	272.83	75.66	90.32	556.88	1108.53	50.2088	49.	11.	25.	7.	8.	21.	48.	14.	16.
55176L	4	9550	828.82	182.41	404.54	117.89	126.24	831.08	1659.90	50.0681	50.	11.	24.	7.	8.	22.	49.	14.	15.
55176N	4	9650	853.72	181.52	287.79	68.46	68.94	604.71	1458.43	41.4631	58.	12.	20.	5.	5.	30.	48.	11.	11.
55176P	4	9750	781.93	198.47	442.72	114.53	137.68	893.40	1675.33	53.3262	47.	12.	26.	7.	8.	22.	50.	13.	15.
55177B	4	9850	807.23	246.00	426.31	86.50	104.17	863.18	1670.41	51.6747	48.	15.	26.	5.	6.	28.	50.	10.	12.
55177D	4	9950	433.74	191.60	386.30	97.59	109.01	784.50	1218.24	64.3961	35.	16.	32.	8.	9.	24.	50.	12.	14.
55177F	4	10050	292.30	125.08	236.85	48.63	58.51	469.08	761.38	61.6076	39.	16.	31.	6.	8.	27.	51.	10.	12.
55177H	4	10150	430.35	153.13	403.74	107.79	138.97	803.63	1233.98	65.1250	35.	12.	33.	9.	11.	19.	51.	13.	17.
55177J	4	10250	241.11	114.53	166.72	31.10	34.25	346.60	587.71	59.3991	41.	17.	24.	5.	5.	33.	48.	9.	10.
55177L	4	10350	923.33	273.37	425.60	95.75	106.01	900.74	1824.07	49.3808	51.	15.	23.	5.	6.	30.	47.	11.	12.
55177N	4	10450	216.13	86.23	154.20	33.27	40.29	313.99	530.12	59.2295	41.	16.	29.	6.	8.	27.	49.	11.	13.
55177P	4	10550	190.57	51.29	67.99	14.39	15.81	149.48	340.05	43.9582	56.	15.	20.	4.	5.	34.	45.	10.	11.
55178B	4	10650	233.66	12.02	8.21	1.57	1.86	23.67	257.33	9.1982	90.	5.	3.	1.	1.	50.	35.	7.	8.
55178D	4	10750	686.33	121.59	156.41	31.25	36.10	345.35	1031.68	33.4745	67.	12.	15.	3.	3.	35.	46.	9.	10.
55178F	4	10850	130.78	45.92	108.35	28.25	29.33	211.75	342.53	61.8194	38.	13.	32.	8.	9.	22.	51.	13.	14.
55178H	4	10950	402.13	47.83	79.04	42.72	27.19	196.78	598.91	32.8563	67.	8.	13.	7.	5.	24.	40.	22.	14.
55178J	4	11050	406.25	13.86	14.60	5.24	8.12	40.86	447.11	9.1386	91.	3.	4.	1.	1.	34.	40.	13.	15.
55178K	4	11100	158.58	28.65	28.10	7.12	7.80	71.67	230.25	31.1270	70.	12.	12.	3.	3.	40.	39.	10.	11.
55178L	4	11150	5861.14	768.15	714.59	168.95	162.82	1814.47	7775.61	23.3354	77.	10.	9.	2.	2.	43.	39.	9.	9.
55178M	4	11200	3312.00	509.76	446.88	89.28	94.98	1140.89	4452.89	25.6213	75.	11.	10.	2.	2.	45.	39.	8.	8.
55178N	4	11250	7927.27	1513.83	1479.10	306.62	302.20	3601.74	11529.01	31.2407	68.	13.	13.	3.	3.	42.	41.	9.	8.
55178O	4	11300	2520.00	328.09	263.34	63.28	51.20	705.91	3225.91	21.8825	78.	10.	8.	2.	2.	47.	37.	9.	7.
55178P	4	11350	4051.91	265.92	149.55	37.52	27.27	480.25	4532.16	10.5966	89.	6.	3.	1.	1.	55.	31.	8.	6.
55179A	4	11400	726.18	50.98	26.19	6.25	6.54	89.96	816.14	11.0226	89.	6.	3.	1.	1.	57.	29.	7.	7.
55179B	4	11450	808.26	59.38	33.36	9.36	8.00	110.10	918.36	11.9887	88.	6.	4.	1.	1.	54.	30.	9.	7.
55179D	4	11550	397.44	73.79	77.48	12.24	14.39	177.90	575.34	30.9208	69.	13.	13.	2.	3.	41.	44.	7.	8.
55179F	4	11650	52.52	8.71	8.78	2.42	3.56	23.47	75.99	30.8856	69.	11.	12.	3.	5.	37.	38.	10.	15.
55179H	4	11750	115.00	4.52	4.73	2.28	4.12	15.65	130.65	11.9785	88.	3.	4.	2.	3.	29.	30.	15.	26.
55179J	4	11850	110.67	4.55	5.09	2.35	4.02	16.01	126.68	12.6381	87.	4.	4.	2.	3.	28.	32.	15.	25.
55179K	4	11900	63.87	4.64	4.94	2.26	2.96	14.80	78.67	18.8127	81.	6.	6.	3.	4.	31.	34.	15.	20.
55179L	4	11950	621.94	27.05	17.01	4.05	6.43	54.54	676.48	8.0622	91.	4.	3.	1.	1.	50.	31.	7.	12.
55179M	4	11985	4500.40	358.52	806.91	155.23	330.61	1651.26	6151.66	26.8425	73.	6.	13.	3.	5.	22.	49.	9.	20.

NUMBER		DEPTH	METHANE (C_1)	ETHANE (C_2)	PROPANE (C_3)	BUTANE (iC_4)	NORMAL BUTANE (nC_4)	WET (C_2+)			TOTAL GAS (C_1 C_2 C_3 iC_4 nC_4)	WET GAS (C_2 C_3 iC_4 nC_4)
55167A	4	1350	640.80	7.08	6.33	4.46	9.29	27.16	667.96	4.0660	96 1 1 1 1	26 23 16 31
55167E	4	1550	421.60	2.48	1.80	2.34	8.40	15.12	436.72	2.8746	98 0 0 0 1	16 13 15 56
55167I	4	1750	574.80	3.01	1.27	1.53	4.98	10.79	585.59	1.8425	98 1 0 0 1	28 12 16 46
55167M	4	1950	691.20	2.30	1.03	1.41	5.06	9.80	701.00	1.3970	99 0 0 0 1	23 11 16 51
55168A	4	2150	972.00	2.30	1.03	1.28	4.13	8.74	980.74	0.8911	100 0 0 0 0	26 12 15 47
55168E	4	2350	736.80	1.88	0.82	1.39	4.61	8.87	745.67	1.1895	99 0 0 0 1	22 10 16 52
55168H	4	2550	1128.00	2.49	4.04	3.35	9.70	19.57	1147.57	1.7053	99 0 0 0 1	13 21 17 49
55168L	4	2750	626.40	2.36	3.87	6.97	21.31	34.15	660.55	5.1699	98 0 1 1 3	7 10 20 61
55168M	4	2800	1405.50	1.95	14.02	9.49	15.38	40.84	1446.34	2.8237	97 0 1 1 1	5 34 23 38
55168N	4	2850	2028.00	4.68	14.47	8.48	15.84	43.48	2071.48	2.0990	98 0 1 0 1	11 33 20 36
55168O	4	2900	1261.50	2.83	10.43	7.48	13.93	34.67	1296.17	2.6748	97 0 1 1 1	8 30 22 40
55168P	4	2950	2100.00	4.78	15.07	8.56	13.80	42.21	2142.21	1.9704	98 0 1 0 1	11 36 20 33
55169D	4	3150	2840.62	3.89	25.07	15.18	15.71	59.85	2900.47	2.0634	97 0 1 1 1	6 43 25 26
55169H	4	3350	2784.37	8.14	35.77	22.10	16.54	82.55	2866.92	2.8794	97 0 1 1 1	10 43 27 20
55169I	4	3400	790.50	2.08	15.51	12.46	10.49	40.54	831.04	4.8782	96 0 2 1 1	5 38 31 26
55169J	4	3450	1375.50	2.18	16.95	11.76	9.86	38.69	1414.19	2.7358	97 0 1 1 1	5 40 30 25
55169K	4	3500	2136.00	3.89	29.58	18.60	15.52	67.59	2203.59	3.0672	97 0 1 1 1	6 43 28 23
55169L	4	3550	2437.50	10.27	33.58	19.34	12.56	75.75	2513.25	3.0140	98 0 1 1 0	14 45 26 17
55169M	4	3600	2826.00	3.54	36.73	20.68	13.99	74.94	2900.94	2.5833	98 0 1 1 0	5 49 28 19
55169N	4	3650	2730.00	5.66	40.42	24.33	14.50	84.91	2814.91	3.0164	97 0 1 1 1	7 47 29 17
55169O	4	3700	876.00	3.56	24.62	21.95	14.44	64.55	940.55	6.8630	93 0 3 2 2	5 39 34 22
55169P	4	3750	950.40	3.01	31.81	30.80	16.63	82.25	1032.65	7.9649	92 0 3 3 2	4 39 37 20
55170A	4	3800	810.00	2.12	25.31	23.44	13.56	64.43	874.43	11.2162	90 0 4 4 2	3 40 36 21
55170B	4	3850	864.00	2.48	19.05	17.11	10.18	48.82	912.82	5.3482	95 0 2 2 1	5 38 35 21
55170C	4	3900	900.00	3.19	36.94	30.28	16.56	86.97	986.97	8.8266	92 0 4 3 1	4 43 36 17
55170D	4	3950	6778.12	13.12	70.29	50.15	24.77	184.32	6962.44	2.6474	98 0 1 1 0	10 50 27 13
55170E	4	4000	2604.00	4.80	71.14	37.35	19.08	132.17	2736.17	4.8303	95 0 3 1 1	3 55 28 14
55170F	4	4050	6167.99	[illegible]	102.60	47.62	26.71	182.88	6350.87	2.8790	97 0 2 1 0	3 56 26 15
55170G	4	4100	1011.00	4.96	17.92	12.65	13.74	49.27	1060.27	4.6469	96 0 2 1 1	10 36 26 28
55170H	4	4150	1396.87	4.07	18.81	10.04	11.13	44.05	1440.92	3.0570	97 0 1 1 1	9 43 23 25
55170I	4	4200	3120.00	17.70	27.53	15.44	24.01	84.68	3204.68	2.6424	97 1 1 0 1	21 33 18 28
55170J	4	4250	590.25	1.59	3.22	0.84	1.33	6.98	597.23	1.1686	99 0 1 0 0	23 46 12 19
55170M	4	4400	3018.75	33.28	15.66	11.35	20.35	80.64	3099.39	2.6018	97 1 1 0 1	42 19 14 25
55170P	4	4650	1319.53	8.14	10.53	6.83	10.97	36.47	1356.00	2.6895	96 1 1 1 1	22 29 19 30
55171D	4	4850	369.60	1.95	0.51	0.30	0.40	3.16	372.76	0.8476	99 1 0 0 0	62 16 9 13
55171G	4	5250	362.80	3.72	2.12	0.86	2.07	8.77	371.57	2.3343	98 1 0 0 0	42 24 10 24
55171I	4	5350	358.80	2.65	0.91	0.50	1.22	5.28	364.08	1.4502	99 1 0 0 0	51 17 9 23
55171K	4	5450	465.60	2.30	1.15	0.46	2.15	6.06	471.66	1.2847	100 0 0 0 0	38 19 8 35
55171M	4	5550	76.50	1.50	0.77	0.74	1.27	4.28	80.78	5.2983	94 2 1 1 2	35 18 17 30
55171O	4	5650	351.60	2.65	0.74	1.00	2.88	7.27	358.87	2.0257	98 1 0 0 1	36 10 14 40
55172A	4	5750	356.40	1.95	0.74	0.46	1.08	4.23	360.63	1.1729	99 1 0 0 0	46 17 11 26
55172C	4	5850	277.50	2.12	0.65	0.60	0.79	4.16	281.66	1.4768	99 1 0 0 0	51 16 14 19
55172E	4	5950	295.20	1.59	0.60	0.46	0.43	3.08	298.28	1.0325	99 1 0 0 0	52 19 15 14
55172G	4	6050	297.00	1.24	1.01	1.23	1.35	4.83	301.83	1.6001	100 0 0 0 0	26 21 25 28
55172H	4	6100	251.25	0.48	0.94	0.74	1.11	3.27	254.52	1.2848	100 0 0 0 0	15 29 23 33
55172I	4	6150	374.40	2.30	2.05	1.67	1.62	7.64	382.04	1.9996	98 1 1 0 0	30 27 22 21
55172J	4	6200	246.75	0.62	1.32	1.12	1.30	4.36	251.11	1.7363	98 0 1 0 1	14 30 26 30
55172K	4	6250	396.60	1.59	0.99	0.74	0.92	4.24	400.84	1.0577	100 0 0 0 0	38 23 17 22
55172L	4	6300	385.00	0.71	1.03	0.74	0.66	3.14	388.14	0.5338	100 0 0 0 0	23 33 23 21
55172M	4	6350	453.00	2.48	1.54	1.12	1.27	6.41	459.41	1.3951	99 1 0 0 0	39 24 17 20
55172N	4	6450	1248.00	4.60	0.89	1.12	1.27	7.88	1255.88	0.6274	100 0 0 0 0	59 11 14 16
55172P	4	6550	435.00	2.65	1.80	1.66	1.57	7.68	442.68	1.7348	99 1 0 0 0	35 23 22 20
55173B	4	6650	618.00	4.78	3.08	2.55	2.42	12.83	630.83	2.0337	99 1 0 0 0	37 24 20 19
55173D	4	6750	416.40	2.12	2.81	2.55	2.48	9.96	426.36	2.3359	97 0 1 1 1	21 28 26 24
55173F	4	6850	396.00	3.01	4.00	4.17	3.74	14.92	410.92	3.6308	96 1 1 1 1	20 27 28 25
55173H	4	6950	512.40	2.48	2.89	2.98	2.62	10.97	523.37	2.0960	97 0 1 1 1	23 26 27 24
55173J	4	7050	346.80	3.36	3.18	3.01	2.86	12.41	359.21	3.4546	96 1 1 1 1	27 26 24 23
55173L	4	7150	396.00	4.42	3.04	2.79	2.80	13.05	409.05	3.1902	96 1 1 1 1	35 23 21 21
55173N	4	7250	396.00	5.13	4.65	4.18	4.13	18.09	414.09	4.3685	96 1 1 1 1	28 26 23 23
55173P	4	7350	429.60	6.19	9.29	9.11	10.26	34.85	464.45	7.5034	93 1 2 2 2	18 27 26 29
55174B	4	7450	403.80	3.72	8.74	10.14	12.08	34.68	438.48	7.9091	92 1 2 2 3	11 25 29 35
55174D	4	7550	271.20	2.65	4.33	5.26	6.60	18.84	290.04	6.4956	94 1 1 2 2	14 23 28 35
55174E	4	7600	353.25	56.99	334.13	256.68	330.72	978.52	1331.77	73.4751	27 4 25 19 25	6 34 26 34
55174F	4	7650	566.40	182.93	868.89	551.02	720.47	2293.31	2859.71	80.1938	20 5 31 19 25	7 38 24 31
55174G	4	7700	873.00	325.68	1997.28	1083.26	1780.80	5187.02	6060.02	85.5941	14 5 34 18 29	6 39 21 34
55174H	4	7750	2820.00	1785.84	5738.18	2112.96	3180.00	12787.98	15607.98	81.9323	18 11 37 14 20	14 44 17 25
55174I	4	7800	1821.00	770.30	2911.10	1226.11	2014.84	6922.35	8743.35	79.1727	21 9 33 14 23	11 42 18 29
55174J	4	7850	1074.00	428.20	1953.67	878.85	1411.12	4671.84	5745.84	81.3082	19 7 34 15 25	9 42 19 30
55174L	4	7950	519.60	74.34	571.78	306.53	540.60	1493.25	2012.85	74.1858	26 4 28 15 27	5 38 21 36
55174N	4	8050	1296.00	38.94	265.39	180.64	302.74	787.71	2083.71	37.8022	61 2 13 9 15	5 34 23 38
55174P	4	8150	439.20	38.94	303.15	182.43	277.30	801.82	1241.02	64.6097	36 3 24 15 22	5 37 23 35
55175B	4	8250	433.80	42.06	338.26	217.35	319.82	917.59	1351.39	67.8997	32 3 25 16 24	5 36 24 35
55175D	4	8350	496.00	45.31	276.88	152.97	228.96	706.12	1202.12	58.5732	41 4 23 13 19	6 39 22 33
55175F	4	8450	1262.40	23.01	171.27	152.67	240.15	587.10	1849.50	31.7437	68 1 9 8 13	4 29 26 41
55175H	4	8550	378.00	14.51	129.69	107.14	159.76	411.10	789.10	52.0973	48 2 16 14 20	4 32 26 38
55175J	4	8650	360.00	30.69	255.27	168.44	256.94	711.34	1071.34	66.3972	33 3 24 16 24	4 36 24 36
55175L	4	8750	548.40	55.22	319.56	181.54	270.17	826.49	1374.89	60.1132	40 4 23 13 20	7 38 22 33
55175N	4	8850	453.60	62.30	429.55	241.06	338.86	1071.77	1525.37	70.2629	30 4 28 16 22	6 40 22 32
55175P	4	8950	592.80	13.10	98.63	66.81	113.84	292.38	885.18	33.0305	67 1 11 8 13	4 34 23 39
55176B	4	9050	376.80	29.03	264.30	176.77	256.94	727.04	1103.84	65.8646	34 3 24 16 23	4 37 24 35
55176D	4	9150	357.60	30.80	196.99	115.47	166.38	509.64	867.24	58.7657	41 4 23 13 19	6 38 23 33
55176F	4	9250	345.60	7.26	74.36	62.05	92.86	237.43	583.03	40.7234	59 1 13 11 16	3 31 26 40
55176H	4	9350	363.00	8.67	89.47	74.70	107.36	280.20	643.20	43.5634	56 1 14 12 17	3 32 27 38
55176J	4	9450	351.60	37.88	311.80	202.37	303.75	855.80	1207.40	70.8820	29 3 26 17 25	4 37 24 35
55176L	4	9550	406.20	25.13	186.05	122.61	191.05	524.84	931.04	56.3713	43 3 20 13 21	5 35 23 37
55176N	4	9650	441.60	37.31	338.96	224.99	325.43	967.49	1409.09	68.6606	32 4 25 16 23	4 37 25 34
55176P	4	9750	376.20	15.22	127.80	110.86	170.45	424.03	800.23	52.9885	47 2 16 14 21	4 30 26 40
55177B	4	9850	378.00	21.24	196.99	130.65	195.89	544.77	922.77	59.0364	42 2 21 14 21	4 36 24 36
55177D	4	9950	398.40	27.61	218.88	149.69	228.45	624.63	1023.03	61.0568	39 3 21 15 22	4 35 24 37
55177F	4	10050	384.00	18.74	159.24	103.42	156.46	437.88	821.88	53.2778	47 2 19 13 19	4 36 24 36
55177H	4	10150	1248.00	4.60	48.84	55.43	87.77	196.64	1444.64	13.6117	87 0 3 4 6	2 25 28 45
55177J	4	10250	379.20	38.23	239.40	126.93	178.84	583.40	962.60	60.6067	39 4 25 13 19	7 40 22 31
55177L	4	10350	401.25	66.91	487.69	264.12	379.06	1197.78	1599.03	74.9066	25 4 30 17 24	6 40 22 32
55177N	4	10450	341.25	15.04	155.61	95.60	128.79	395.04	736.29	53.6527	47 2 21 13 17	4 39 24 33
55177P	4	10550	330.00	47.01	222.30	106.95	146.28	523.14	853.14	61.3193	38 6 26 13 17	9 43 20 28
55178B	4	10650	393.00	15.80	41.30	22.78	31.24	111.12	504.12	22.0425	78 3 8 5 6	14 37 21 28
55178D	4	10750	261.00	48.43	306.43	144.93	202.76	702.55	963.55	72.9126	27 5 32 15 21	7 43 21 29
55178F	4	10850	433.20	4.25	69.77	55.43	83.44	212.89	646.09	32.9508	66 1 11 9 13	2 33 26 39
55178H	4	10950	411.60	7.81	76.20	64.13	74.16	222.10	633.70	35.0481	65 1 12 10 12	3 35 29 33
55178J	4	11050	468.00	33.28	93.43	47.91	66.91	241.53	709.53	34.0408	66 5 13 7 9	14 38 20 28
55178K	4	11100	425.25	18.94	75.24	32.29	50.88	177.35	602.60	29.4307	72 3 12 5 8	11 42 18 29
55178L	4	11150	491.25	225.85	728.72	275.28	352.34	1592.19	2083.44	76.4212	24 11 35 13 17	14 46 17 22
55178M	4	11200	374.62	240.72	950.76	476.16	539.33	2206.97	2581.59	85.4888	15 9 37 18 21	11 43 22 24
55178N	4	11250	1125.00	219.48	1212.05	557.26	680.52	2669.31	3794.31	70.3503	30 6 31 15 18	8 46 21 25
55178O	4	11300	1080.00	292.40	896.04	416.64	457.92	2063.00	3143.00	65.6379	34 9 29 13 15	14 44 20 22
55178P	4	11350	3206.25	712.42	1346.62	496.40	566.44	3121.87	6328.12	49.3333	51 11 21 8 9	23 43 16 18
55179A	4	11400	1342.50	303.02	608.76	171.12	203.52	1286.42	2628.92	48.9334	50 12 23 7 8	24 47 13 16
55179B	4	11450	1328.91	286.23	516.21	171.12	204.03	1187.59	2516.50	47.1921	52 12 21 7 8	25 44 14 17
55179D	4	11550	481.80	104.08	287.28	114.58	139.92	645.86	1127.66	57.2743	44 9 25 10 12	16 44 18 22
55179F	4	11650	393.60	22.30	48.22	28.44	33.71	129.47	523.27	24.7807	76 4 8 5 6	17 37 20 26
55179H	4	11750	506.40	19.47	32.32	18.60	25.44	95.83	602.23	15.9125	85 3 5 3 4	20 34 19 27
55179J	4	11850	393.60	9.03	18.60	14.88	20.35	62.86	456.46	13.7711	87 2 4 3 4	14 30 24 32
55179K	4	11900	247.50	9.91	19.39	14.95	18.13	62.38	309.88	20.1303	80 3 6 5 6	16 31 24 29
55179L	4	11950	996.00	73.63	163.07	75.89	106.85	419.44	1415.44	29.6331	70 5 12 5 8	18 39 18 25
55179M	4	11985	1252.80	75.05	605.20	316.69	683.83	1680.73	2933.53	57.2938	42 3 21 11 23	4 36 19 41

TABLE III

WELL 9/8-1 - SAMPLE DESCRIPTIONS OF "PICKED" CUTTINGS AND RESULTS OF GASOLINE AND TOTAL ORGANIC MATTER ANALYSES*

Sample Depth (feet)	EPR Sample No.	Lithology of Analyzed Chips	GSA Color Code	Total Organic Matter (%)	C_4-C_7 Hydrocarbons (ppm)	Cyclohexane/Methylcyclopentane
1950	55157-L	Limestone; glauconitic, trace of pyrite	5YR 2/1	0.99	Trace	-
3050	55159-B	Limestone; pyritic and glauconitic	5YR 2/1	1.92	Trace	-
3400	-I	Limestone; argillaceous, glauconitic	5Y 2/1	1.60	0.97	1.74
3600	-M	Limestone; argillaceous, glauconitic, pyritic	5YR 2/1	1.67	1.16	1.56
3650	-N	Shale; silty, sandy, micaceous, pyritic	5Y 3/1	2.26	Trace	-
3700	-O_1	Limestone; pyritic, glauconitic, argillaceous	N2	1.71	0.08	0.62
3700	-O_2	Shale; calcareous, silty, pyritic, glauconitic, fossiliferous	5Y 6/1	1.60	0.13	0.76
3800	55160-A	Shale; silty, pyritic, slightly fossiliferous	5Y 2/1	1.54	1.14	1.66
4350	-K	Limestone; chalky, fossiliferous, slightly silty	5Y 3/1	0.35	0.99	1.78
4400	-L	Siltstone; pyritic, slightly fossiliferous	5YR 4/1	0.66	1.06	1.65
4800	55161-D	Limestone; fossiliferous	5YR 8/1	0.33	1.13	1.[illegible]
5100	-J	Limestone; fossiliferous	5Y 5/1	0.23	1.05	1.78
5700	55162-F	Shale; silty, pyritic	5Y 4/1	0.76	1.83	1.56
5950	-K	Shale; silty, glauconitic	5Y 3/1	1.92	0.19	0.70
6000	-L	Shale; silty, micaceous, slightly pyritic	5Y 2/1	1.96	1.57	1.10
6050	-M	Shale; silty, pyritic	5Y 3/1	1.92	0.62	1.00

*Note: Lithologic descriptions by R. E. Hukill
Gasoline analyses by H. M. Fry
Total organic matter by T. D. Coleman

TABLE III (CONTINUED)

WELL 9/8-1 - SAMPLE DESCRIPTIONS OF "PICKED" CUTTINGS AND RESULTS OF GASOLINE AND TOTAL ORGANIC MATTER ANALYSES*

Sample Depth (feet)	EPR Sample No.	Lithology of Analyzed Chips	GSA Color Code	Total Organic Matter (%)	C_4-C_7 Hydrocarbons (ppm)	Cyclohexane/Methylcyclopentane
6100	55162-N	Shale; silty, slightly pyritic	5Y 3/1	1.46	1.59	1.21
6150	-O	Shale; silty, micaceous, pyritic, glauconitic	5GY 3/1	1.27	0.14	1.40
6200	-P	Shale; silty, slightly pyritic	5Y 3/1	1.22	1.08	1.23
6250	55163-A	Shale; silty, calcareous, micaceous, pyritic, glauconitic	5Y 2/1	7.28	21.0	0.15
6300	-B	Shale; slightly silty and pyritic	5YR 2/1	6.73	19.1	0.16
6350	-C	Shale; silty, calcareous, micaceous, pyritic, glauconitic	5Y 2/1	7.44	19.3	0.37
6400	-D	Shale; slightly silty and pyritic	5YR 2/1	6.25	12.4	0.23
6450	-E	Shale; silty, calcareous, micaceous, pyritic, glauconitic, coal laminae	5Y 4/1	5.72	5.51	0.33
6700	-J	Shale; silty, sandy, slightly micaceous (red beds)	10R 2/4	0.33	0.96	1.84
7000	-O	Shale, silty	5Y 2/1-6/1	0.63	1.33	1.48
7100	-Q	Mudstone; silty, calcareous, slightly pyritic	10YR 4/2	0.47	18.9	1.12

*Note: Lithologic descriptions by R. E. Hukill
Gasoline analyses by H. M. Fry
Total organic matter by T. D. Coleman

TABLE IV

VISUAL KEROGEN CHARACTERISTICS OF 9/8-1 SAMPLES
(DESCRIBED BY J. L. MORGAN)

Sample Depth, feet	EPR Sample No.	Alteration	Types of Material*		
			Predominant	Secondary	Other
1950	55157-L	2	-	A	H
3050	55159-B	2	-	-	A
3400	-I	2	A	H	
3600	-M	2	A	H	
3650	-N	2	A	W	
3700	-O1	2	W	H	
3700	-O2	2	A	C	W
3800	55160-A	2	A	H	F
4350	-K	2	H	A	
4400	-L	2	H	A	
4800	55161-D	2	A	Al	
5100	-J	2	W	A	C
5700	55162-F	2	C	W	H, true A
5950	-K	2	A	C	
6000	-L	2	A	W	C
6050	-M	2	A	W	C
6100	-N	1+	F	W	C
6150	-O	1	A	C	
6200	-P	1	C	W	H, true A
6250	55163-A	1	A	C	
6300	-B	1+	A	F	W
6350	-C	2	A	W	
6400	-D	2	A	F	C
6450	-E	2	H	C	W
6700	-J	2	A	H	
7000	-O	2	F	W	A,C
7100	-Q	2+	Resin-like substance	W	A,C

*A - Amorphous
Al - Algal Debris
F - Finely Disseminated Debris
H - Herbaceous
W - Woody
C - Coaly

TABLE V

WELL 16/9-1 - SAMPLE DESCRIPTIONS OF "PICKED" CUTTINGS AND RESULTS OF GASOLINE AND TOTAL ORGANIC MATTER ANALYSES*

Sample Depth (feet)	EPR Sample No.	Lithology of Analyzed Chips	GSA Color Code	Total Organic Matter (%)	C_4-C_7 Hydrocarbons (ppm)	Cyclohexane/Methylcyclopentane
1950	55167-M	Claystone; silty, slightly calcareous	5GY 5/1	0.87	2.07	1.56
3950	55170-D	Limestone; argillaceous	5Y 3/1	0.87	0.91	1.61
4150	55170-H	Shale; silty, slightly pyritic and glauconitic	5Y 5/1	0.92	1.26	1.84
4200	-I	Claystone; calcareous (marl)	5Y 6/1	0.87	Trace (< 0.1)	-
4250	-J	Claystone; finely micaceous	5Y 5/1-6/1	3.17	0.52	5.45
4850	55171-D	Shale; glauconitic, fossiliferous, slightly calcareous and pyritic	5Y 3/1	0.26	0.95	1.59
5650	-O	Limestone; chalky, slightly fossiliferous	10YR 8/2	0.09	1.22	1.64
6100	55172-H	Chalk and chalky pellet limestone	N9	0.34	Trace (< 0.1)	-
6450	-N	Shale; silty, micaceous	5Y 3/1	1.04	1.59	2.17
6950	55173-H	Shale; slightly silty and pyritic	5Y 2/1	1.88	1.14	1.61
7550	55174-D	Shale; slightly calcareous, silty, and pyritic	5Y 2/1	1.04	1.07	1.90
7600	-E	Claystone; moderately calcareous	N4	1.56	0.40	0.26
7650	-F	Shale; slightly silty, calcareous, and pyritic	5Y 2/1	0.78	1.51	.77
7700	-G	Shale	N3	6.28	38.0	0.13
7700	-W	Shale; calcareous (marl)	N5	1.43	2.04	0.17
7750	-H	Shale; slightly silty	5YR 3/1	9.99	314.0	0.12
7800	-I	Shale; very calcareous (marl)	N4	0.95	1.59	0.17
7800	-X	Shale	N2	13.13	195.0	0.12

*Note: Lithologic descriptions by R. E. Hukill
Gasoline analyses by H. M. Fry
Total organic matter by T. D. Coleman

TABLE V (CONTINUED)

WELL 16/9-1 - SAMPLE DESCRIPTIONS OF "PICKED" CUTTINGS AND RESULTS OF GASOLINE AND TOTAL ORGANIC MATTER ANALYSES*

Sample Depth (feet)	EPR Sample No.	Lithology of Analyzed Chips	GSA Color Code	Total Organic Matter (%)	C_4-C_7 Hydrocarbons (ppm)	Cyclohexane/Methylcyclopentane
8250	55175-B	Shale, trace of pyrite	5YR 2/1	7.87	99.6	0.12
8950	-P	Shale, as above	5YR 2/1	8.04	121.0	0.12
9450	55176-J	Shale, slightly calcareous and silty; pyritic	5Y 3/1	1.14	1.16	1.00
10,250	55177-J	Shale, slightly calcareous and silty; pyritic	5Y 4/1	.48	0.92	1.43
10,550	-P	Shale; silty, pyritic	5Y 2/1	7.80	113.0	0.10
11,100	55178-K	Claystone, siltstone, sandstone (red beds)	10YR 4/2 5YR 4/1	0.40	0.08	1.11
11,150	-L	Shale; silty (red beds)	5R 3/2	0.43	0.88	1.50
11,200	-M	Claystone	N4	5.31	109.0	0.12
11,250	-N	Shale	5Y 2/1	6.34	92.5	0.10
11,300	55178-O	Shale	N3-N4	-	107.0	0.10
11,350	-P	Shale	5Y 2/1	6.70	111.0	0.12
11,400	55179-A	Shale	5YR 2/1-3/1	-	112 0	0.10
11,450	-B	Shale; calcareous, slightly silty, pyritic, trace of glauconite	5Y 4/1	0.92	1.51	0.59
11,985	-M	Limestone; slightly silty, trace of pyrite	5Y 2/1	0.54	7.52	0.84

*Note: Lithologic descriptions by R. E. Hukill
Gasoline analyses by H. M. Fry
Total organic matter by T. D. Coleman

TABLE VI

VISUAL KEROGEN CHARACTERISTICS OF 16/9-1 SAMPLES
(DESCRIBED BY J. L. MORGAN)

Sample Depth, feet	EPR Sample No.	Alteration	Types of Material*		
			Predominant	Secondary	Other
1950	55167-M	1	A	H	W
3950	55170-D	2	A	H	
4150	-H	2	A	W	
4200	-I	2	A	W	
4250	-J	2	A	W	
4850	55171-D	2	C	W	H
5650	-O	1	C	Al	
6100	55172-H	2	C	A	
6450	-N	2	W	C	
6950	55173-H	2+	W	C	
7550	55174-D	2+	W	C	H
7600	-E	2	A	C	
7650	-F	2	A	W,C	
7700	-G	2	A	W	C
7700	-W	2	A	C	W
7750	-H	2	A	W	C,Al
7800	-I	2	A,C	W	
7800	-X	2	A	C	
8250	55175-B	2	A	W	C,Al
8950	-P	2	A	Al	W
9450	55176-J	2+	W	C	A,Al
10,250	55177-J	2	C	W	H
10,550	-P	2	A	F	W,C,Al
11,100	55178-K	2	A	C	
11,150	-L	2	-	A,C	
11,200	-M	2	A	-	W,C
11,250	-N	2	A	H	Al
11,350	55178-P	2	A	W	Al
11,450	-B	2	C	H	A,W
11,985	-M	2	W	H	

*A - Amorphous
F - Finely Disseminated
Al - Algal
H - Herbaceous
W - Woody
C - Coaly