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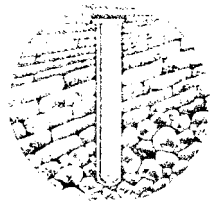
7D40BROGHILL

Belize

Regional Petroleum Geochemistry
of the Onshore and Offshore Sediments of
Belize

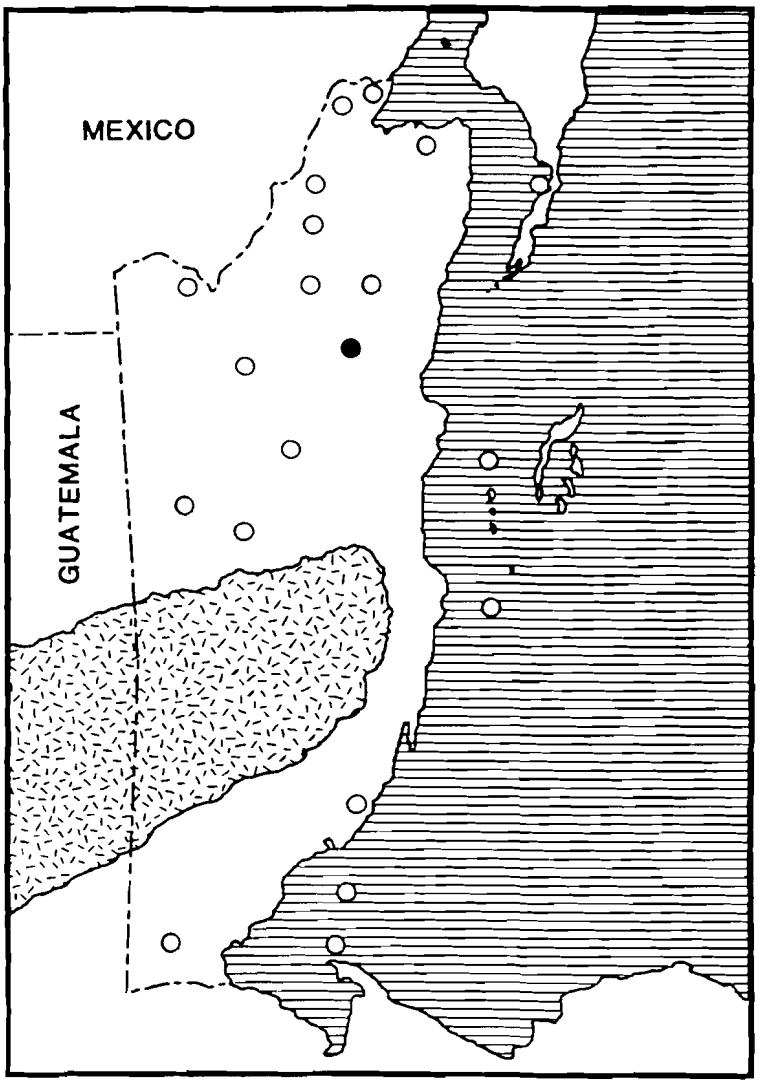
Gulf Oil Corporation
No. 1 Sand Hill
Belize, C.A.
5,042 ft T.D.



PROPRIETARY REPORT

BROWN & RUTH LABORATORIES, INC.
10690 SHADOW WOOD DRIVE, SUITE 130, HOUSTON, TEXAS 77043

Gulf Oil Corporation
No. 1 Sand Hill
Belize, C.A.
5,042 ft T.D.



This report represents part of a multi-well regional evaluation of the source-rock conditions of Belize. All geochemical data, along with interpretive discussion, are presented for this specific well. The regional interpretation is contained in a final report which integrates the results from all the individual well reports.

RESULTS & INTERPRETATIONS

GEOLOGY

I.a. Lithology

The well penetrated a limestone section above a thick dolomite sequence, with what appears to be a basal clastic section. The section has been divided into the following units.

(i) Barton Creek (500 to 1,510 ft): This unit is primarily white, chalky limestone and very finely crystalline lime mudstone. The mudstone is bioclastic and slightly dolomitic in part, and grades to microcrystalline lime mudstone with zones of translucent, finely-crystalline, hypidiotopic to idiotopic dolomite exhibiting moldic and minor intercrystalline porosity. Minor light gray translucent aphanitic chert is present at the top of the unit.

(ii) Yalbac (1,510 to 4,552 ft): This zone consists of very finely to finely-crystalline xenotopic/hypidiotopic dolomite. The dolomite contains minor zones of moldic/intercrystalline porosity and examples of fractures healed by clear dolomite or scattered small (1-2 mm) vugs lined/partially infilled with clear finely-crystalline idiotopic dolomite. The dolomite becomes argillaceous at the base of the unit and in places, the rock becomes an argillite (claystone) with embedded, finely crystalline dolomite rhombs. One core piece consists of cream-colored dolomite lithoclasts floating within the dolomite-embedded, argillaceous matrix.

(iii) Lower Yalbac Core Sample (4,695 ft): This zone consists of one core chip of medium gray, slightly argillaceous, microcrystalline dolomite with a white, microcrystalline to subfelted anhydrite.

(iv) Paleozoic Core Sample (5,040 ft): The last sample is a core chip of gray-black somewhat metamorphosed phylite (micaceous shale).

I.b. Depositional Environment

The first unit was deposited in a low energy, oxygenated subtidal marine environment. The environment was possibly somewhat restricted, and has been exposed to freshwater diagenesis, including the dolomitization.

The dolomite within the second unit was originally similar to the unit above and also deposited in a subtidal, somewhat restricted, marine environment. The isolated examples of lithoclasts suggests some early lithofication and possibly exposure.

The anhydrite/dolomite mudstone is similar to the subtidal hypersaline deposits observed in abundance in other wells.

The original environment of deposition of the phylite sample is speculative, but it appears to be organic rich, and may represent a deep water anoxic shale.

I.c. Stratigraphic Relations

The stratigraphy provided by the Belize Ministry of Natural Resources is as follows:

Formation	Age	Depth (ft)
Barton Creek	Upper Cretaceous	0-1,045
Yalbac	Middle Cretaceous	1,045-4,780
Margaret Creek	(?)	4,780-4,800
Paleozoic Shale	Paleozoic	4,800

GEOCHEMISTRY

II.a. Organic Facies

The Cretaceous section penetrated in this well consists mainly of marine limestone and dolomite. The lack of clastic material indicates that terrestrial influence was minimal, and that the organic material that reached the sea floor was predominantly of marine algal origin. Little of this organic matter was preserved, however. TOC values are very low (less than 0.4%, with three exceptions, discussed below), and Rock-Eval S2 values, with the same three exceptions, indicate negligible hydrocarbon-source potential. The high Hydrogen Indices (three above 300; many above 200) of the core samples are probably not indicative of an oil-source-quality kerogen, but rather occur for one of two reasons: 1) very low TOC values and small S2 peaks introduce large errors into the Hydrogen Index calculation, 2) or the rocks contain small amounts of non-indigenous (migrated) bitumen. Such migrated material often appears in the Rock-Eval S2 peak as well as the S1 peak, and can give the appearance of a high-quality kerogen. The second interpretation is supported by the high extract/TOC ratios (36 to 67%) of half the samples extracted, and by the likely presence of migrated bitumen in several other Belize wells.

The three samples having the highest TOC values (0.51, 0.53, and 1.72%) also have the highest Hydrogen Indices (411, 491, and 514). The low Production Indices (0.11, 0.09, and 0.05) would ordinarily indicate an immature kerogen. However, in this case those samples should be examined carefully for non-indigenous bitumen before they are concluded to be potential source rocks.

The sample from 2,570 ft is particularly interesting, because it is one of very few Cretaceous samples encountered in Belize that might be a true potential source rock. Depositional models suggest that organic-rich sediments could be deposited in local anoxic pockets within evaporite environments like the Cretaceous of Belize. If this sample is from a true anoxic environment, it would be very encouraging for the possibility of finding others, and perhaps, of having effective Cretaceous source rocks in the area. However, the lithologic description of the sample ("100% dolomite, argillaceous, dark to dusky yellowish brown") does not fit that of a sediment deposited under anoxic conditions. Furthermore, visual kerogen analysis indicates the presence of dead oil. Caution should be exercised in interpreting this sample too optimistically until corroborating evidence is available on the nature of its organic matter. The two less-rich samples are even more dubious. It is likely that the dull to moderate fluorescence recorded from many of the samples could originate from minute quantities of dead oil in microfractures within the carbonate matrix.

The single Paleozoic sample has a very low TOC value, and thus is interpreted to have had negligible hydrocarbon-source potential even when immature. The type of organic matter originally present could not be determined.

II.b. Thermal Maturity

On the basis of pyrolysis Tmax and several TAI measurements, the entire Cretaceous section appears to be thermally immature. The lowermost sample analyzed (4,695 ft from the Yalbac Formation) has a slightly higher TAI value than do the younger Cretaceous samples (1.8 vs. 1.4). Reflectance measurements on this sample are not interpretable because of the paucity of vitrinite. The Paleozoic sample, in contrast, is very overmature on the basis on its TAI value (4.2).

A Lopatin TTI calculation was performed for the basal part of the Yalbac Formation. The calculated TTI (2.3) agrees well with the measured maturities (averaging about 0.5% Re).

II.c. C15+ Extract Characterization

Of the several samples extracted, only one (608-053c) gave a large amount of extract (2,073 ppm). Because that extract represents over 40% of the TOC, the material is probably migrated bitumen. The chromatogram of sample 608-053c suggests that some biodegradation has occurred, because of the apparent depletion of n-alkanes. The saturated-hydrocarbon content is very low (4% of extract). Sample 608-056 also shows slight biodegradation.

The other samples have few interesting characteristics. Heavy n-alkanes are always almost completely lacking, indicating little terrestrial-lipid input. Some show slight odd-carbon preferences between C20 and C25; others show an equally slight even-carbon preference.

CONCLUSIONS

The organic matter preserved in the Cretaceous section is predominantly of marine algal origin, but has been extensively oxidized during deposition and early diagenesis. TOC values are therefore generally very low. High Hydrogen Indices and a few elevated TOC values probably indicate the presence of small amounts of migrated bitumen, the source for which is uncertain.

The Cretaceous section is thermally immature. The combination of poor source-rock quality and thermal immaturity indicates that the Cretaceous rocks at Gulf #1 Sand Hill have not sourced significant quantities of hydrocarbons.

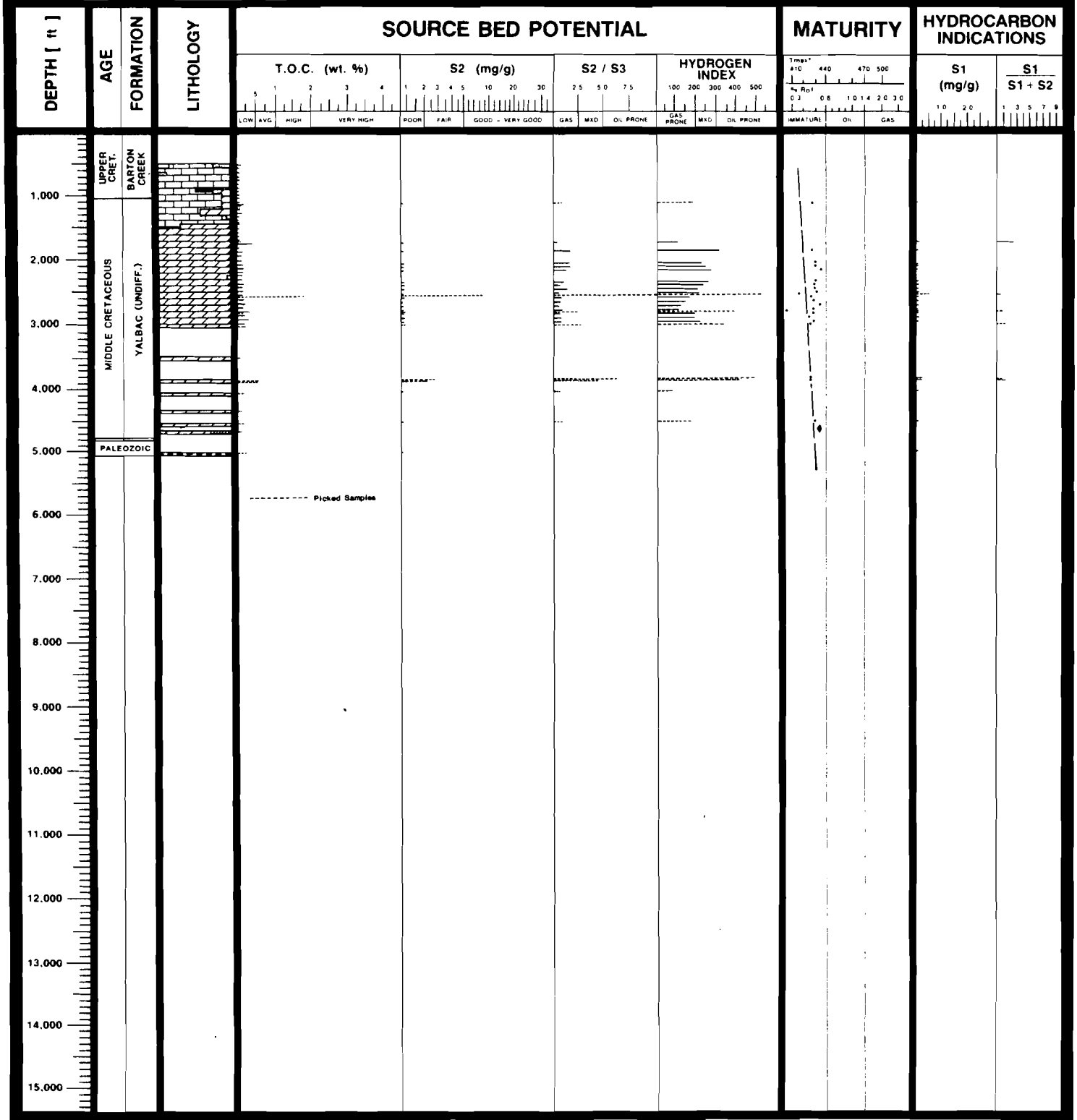
The single Paleozoic sample analyzed is highly overmature for oil generation. Its low TOC value suggests that, even when immature, its source potential was negligible.

Apparent biodegradation of some of the migrated bitumen suggests that the influence of meteoric waters in the Cretaceous section may have been substantial. Influx of surface waters can lower geothermal gradients appreciably. Depending upon when this influx began, the present geothermal gradient might either be anomalously low or representative of most of the maturity history of the rocks. The reasonably good correlation between measured and predicted maturities suggests that meteoric-water influx may have begun long ago.

BROWN & RUTH LABORATORIES, INC.

GEOCHEMICAL LOG

OPERATOR: Gulf Oil Company
WELL NAME: Sand Hill No. 1
LOCATION: Belize, C.A.
T.D.: 5,042'



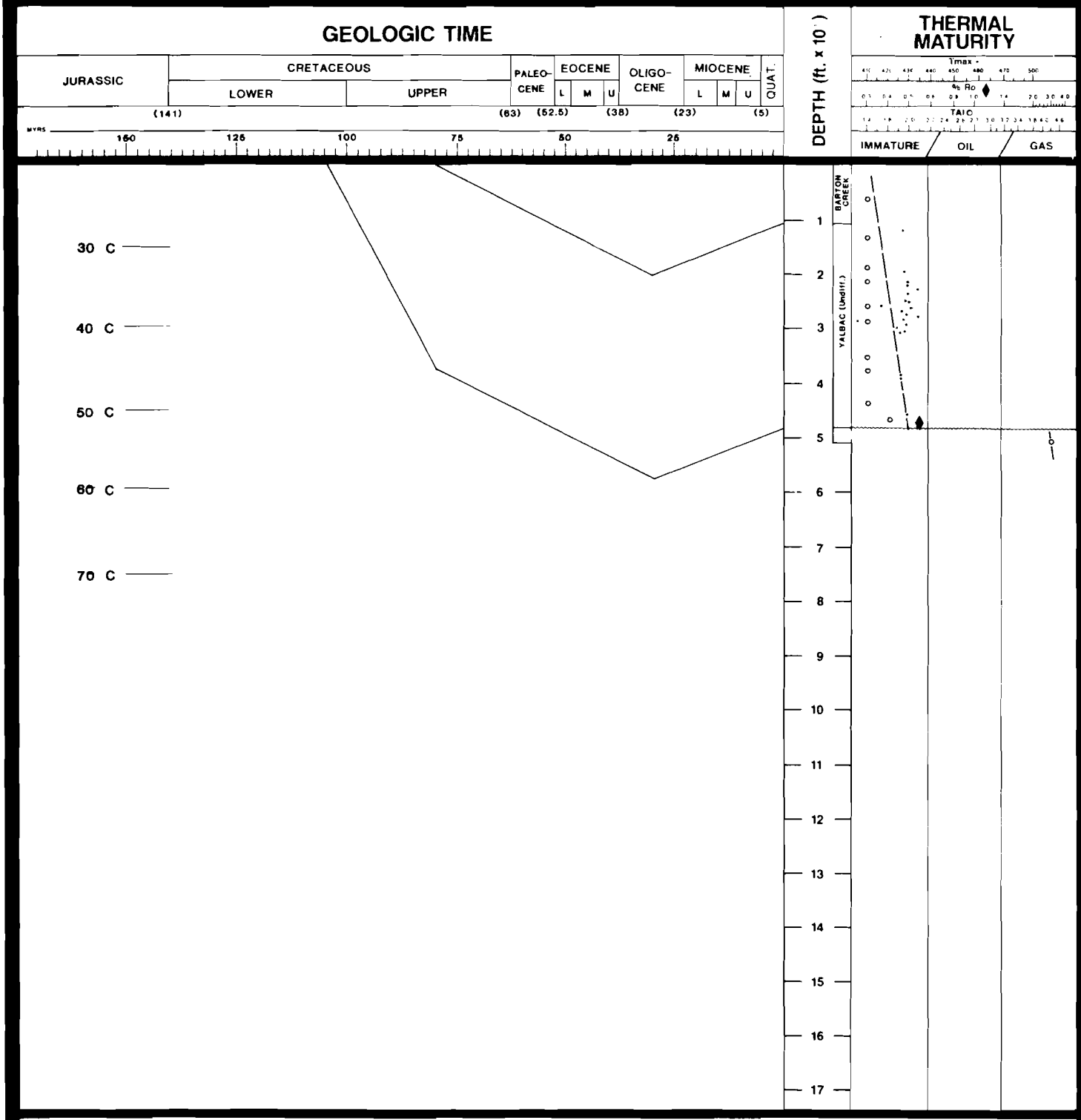
CONGLOMERATE
SANDSTONE
COAL
SHALE • SILTSTONE
LIMESTONE
DOLOMITE
HALITE
ANHYDRITE
IGNEOUS FRAGMENTS

S1 = Free Hydrocarbons Present in Rock
S2 = Hydrocarbons from Kerogen Pyrolysis
S3 = CO_2 from Kerogen Pyrolysis
Hydrogen Index = S2 / T.O.C.

BROWN & RUTH LABORATORIES, INC.

MATURATION PROFILE

OPERATOR: Gulf Oil Company
WELL NAME: Sand Hill No. 1
LOCATION: Belize, C.A.
T.D.: 5,042'



Stages of Hydrocarbon Generation

TTI = 10		Oil
TTI = 160		Condensate
TTI = 1000		Gas

Ro	TTI	Ro	TTI	Ro	TTI	Ro	TTI	Ro	TTI
0 30	<1	0 65	15	1 00	75	1 26	140	1 50	300
0 40	<1	0 70	20	1 07	92	1 30	160	1 62	370
0 50	3	0 77	30	1 15	110	1 36	180	1 75	500
0 55	7	0 85	40	1 19	120	1 39	200	1 87	650
0 60	10	0 93	56	1 22	130	1 46	260	2 00	900

APPENDIXES

Appendix I Analytical Data Tables

Appendix II Vitrinite Reflectance Histograms

Appendix III C_{15+} Gas Chromatograms

APPENDIX I

ANALYTICAL DATA TABLES

TABLE I

Lithologic Descriptions and Organic Carbon (T.O.C.) Results

Sample Number	Depth (feet)	Lithological Description	T.O.C. (%)
608-001	500-560	A) 60% limestone, white to very light gray B) 25% casing cement C) 15% cryptocryatalline quartz, light olive gray to olive gray	0.12
608-002	560-620	A) 100% limestone, white to very light gray trace quartz	0.06
608-003	620-680	A) 90% limestone, white to very light gray B) 10% quartz, clear	0.07
608-004	680-740	A) 100% limestone, white to very light gray trace casing cement and quartz	0.09
608-005	740-800	A) 100% limestone, white to very light gray trace casing cement	0.06
608-006	800-860	A) 100% limestone, white to very light gray	0.05
608-007	860-920	A) 50% limestone, white to very light gray B) 50% dolomite, very pale orange	0.06/0.06
608-008	920-980	A) 75% limestone, white to very light gray B) 25% dolomite, very pale orange to pale yellowish brown trace quartz and casing cement	0.07
608-009	980-1040	A) 90% limestone, white to very pale orange B) 10% dolomite, very pale orange to pale yellowish brown	0.07
608-010	1040-1095	A) 90% limestone, white to very pale orange B) 10% dolomite, very pale orange to pale yellowish brown	0.08
608-011	1095-1150	A) 90% limestone, white to very pale orange B) 10% dolomite, very pale orange to pale yellowish brown	0.09
608-012	1150-1210	A) 90% limestone, white to very pale orange B) 10% dolomite, very pale orange to pale yellowish brown	0.11
608-013	1210-1270	A) 60% limestone, white to pale yellowish brown B) 40% dolomite, pale to dark yellowish brown	0.10
608-014	1270-1330	A) 60% limestone, white to pale yellowish brown B) 40% dolomite, pale to dark yellowish brown	0.13
608-015	1330-1390	A) 95% limestone, generally white B) 5% dolomite, pale to dark yellowish brown trace quartz	0.06
608-016	1390-1450	A) 100% limestone, white	0.04
608-017	1450-1510	A) 70% dolomite, light gray to pale yellowish brown B) 30% limestone, generally white trace quartz	0.05
608-018	1510-1570	A) 100% dolomite, light gray to pale yellowish brown trace limestone	0.06
608-019	1570-1630	A) 100% dolomite, light gray to pale yellowish brown trace limestone	0.06
608-020	1630-1690	A) 100% dolomite, predominantly pale to dark yellowish brown	0.06
608-021	1690-1750	A) 100% dolomite, predominantly pale to dark yellowish brown	0.06/0.06
608-022	1750-1825	A) 100% dolomite, predominantly pale to dark yellowish brown trace casing cement	0.37
608-023	1830-1890	A) 100% dolomite, predominantly pale to dark yellowish brown trace casing cement	0.08
608-024	1890-1950	A) 100% dolomite, predominantly pale to dark yellowish brown trace casing cement	0.15
608-025	1950-2010	A) 100% dolomite, predominantly pale to dark yellowish brown trace casing cement	0.11
608-026	2010-2070	A) 100% dolomite, light gray to dark yellowish brown	0.14
608-027	2070-2130	A) 100% dolomite, light gray to dark yellowish brown trace limestone	0.17
608-028	2130-2190	A) 100% dolomite, very pale orange to pale yellowish brown trace limestone	0.19
608-029	2190-2250	A) 100% dolomite, light olive gray to pale yellowish brown trace limestone and casing cement	0.15
608-030	2250-2310	A) 95% dolomite, very light gray to dark yellowish brown B) 5% casing cement trace limestone	0.14/0.14
608-031	2310-2370	A) 100% dolomite, very light gray to dark yellowish brown trace casing cement	0.14
608-032	2370-2430	A) 100% dolomite, very light gray to dark yellowish brown trace casing cement	0.20
608-033	2430-2490	A) 100% dolomite, slightly calcareous, very light gray to pale yellowish brown trace casing cement	0.19
608-034	2490-2550	A) 100% dolomite, very pale orange to dark yellowish brown	0.18
608-035	2550-2610	A) 100% dolomite, very pale orange to dark yellowish brown trace casing cement	0.16
608-036	2610-2670	A) 100% dolomite, very pale orange to dark yellowish brown trace casing cement	0.23
608-037	2670-2730	A) 100% dolomite, very pale orange to dark yellowish brown trace casing cement	0.24
608-038	2730-2790	A) 100% dolomite, generally brownish gray and dark yellowish brown	0.17/0.17
608-039	2790-2850	A) 100% dolomite, pale to dark yellowish brown trace casing cement	0.34
608-040	2850-2910	A) 100% dolomite, pale to dark yellowish brown trace casing cement	0.20
608-041	2910-2990	A) 100% dolomite, pale to dark yellowish brown trace casing cement	0.33
608-042	2990-3040	A) 100% dolomite, grayish brown to dark yellowish brown	0.20
608-043c	1201	A) 90% limestone, very pale orange B) 10% dolomite, argillaceous, dark gray to dusky yellowish brown	0.10
608-044c	1471	A) 100% dolomite, light olive gray (abundant cavities throughout)	0.04
608-045c	1196	A) 100% limestone, generally white to very pale orange	0.20
608-046c	1821	A) 100% dolomite, very pale orange to pale yellowish brown	0.10
608-047c	2235	A) 100% dolomite, very pale orange to dark yellowish brown	---
608-048c	2570	A) 100% dolomite, argillaceous, dark to dusky yellowish brown	1.72

TABLE I

Lithologic Descriptions and Organic Carbon (T.O.C.) Results

Sample Number	Depth (feet)	Lithological Description	T.O.C. (%)
608-049c	2838	A) 100% dolomite, very pale orange to dark yellowish brown	0.21/0.21
608-050c	3045	A) 100% dolomite, very pale orange to dark yellowish brown	0.24
608-051c	3510	A) 100% dolomite, very pale orange to dark yellowish brown trace argillite material	0.09
608-052c	3868	A) 100% dolomite, very pale orange to pale yellowish brown	0.53
608-053c	3870	A) 100% dolomite, very pale orange to pale yellowish brown	0.51
608-054c	4095	A) 100% dolomite, very pale orange to dark yellowish brown	0.16
608-055c	4351	A) 100% dolomite, very pale orange to dark yellowish brown	0.10
608-056c	4552	A) 100% dolomite, very pale orange to dark yellowish brown	0.15
608-057c	4695	A) 70% dolomite, medium gray B) 30% anhydrite	0.08
608-058c	5040	A) 100% shale, micaceous, grayish black	0.22

Sample Number	Depth (feet)	Lithological Description	T.O.C. (%)

TABLE II

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Depth (ft.)	T.O.C. (% Wt.)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	$\frac{S2}{S3}$	Hydrogen Index	Oxygen Index
608-001	500-560	0.12	---	---	---	---	---	---	---	---
608-002	560-620	0.06	---	---	---	---	---	---	---	---
608-003	620-680	0.07	---	---	---	---	---	---	---	---
608-004	680-740	0.09	---	---	---	---	---	---	---	---
608-005	740-800	0.06	---	---	---	---	---	---	---	---
608-006	800-860	0.05	---	---	---	---	---	---	---	---
608-007	860-920	0.06	---	---	---	---	---	---	---	---
608-008	920-980	0.07	---	---	---	---	---	---	---	---
608-009	980-1040	0.07	---	---	---	---	---	---	---	---
608-010	1040-1095	0.08	---	---	---	---	---	---	---	---
608-011	1095-1150	0.08	---	---	---	---	---	---	---	---
608-012	1150-1210	0.11	---	---	---	---	---	---	---	---
608-013	1210-1270	0.10	---	---	---	---	---	---	---	---
608-014	1270-1330	0.13	---	---	---	---	---	---	---	---
608-015	1330-1390	0.06	---	---	---	---	---	---	---	---
608-016	1390-1450	0.04	---	---	---	---	---	---	---	---
608-017	1450-1510	0.05	---	---	---	---	---	---	---	---
608-018	1510-1570	0.06	---	---	---	---	---	---	---	---
608-019	1570-1630	0.06	---	---	---	---	---	---	---	---
608-020	1630-1690	0.06	---	---	---	---	---	---	---	---
608-021	1690-1750	0.06	---	---	---	---	---	---	---	---
608-022	1750-1825	0.40	0.14	0.43	1.95	**	0.24	0.22	108	488
608-023	1830-1890	0.08	---	---	---	---	---	---	---	---
608-024	1890-1950	0.15	<0.10	0.47	0.28	427	---	1.65	311	188
608-025	1950-2010	0.11	---	---	---	---	---	---	---	---
608-026	2010-2070	0.14	---	---	---	---	---	---	---	---
608-027	2070-2130	0.17	<0.10	0.38	0.24	429	---	1.59	221	139
608-028	2130-2190	0.19	<0.10	0.46	0.27	429	---	1.69	241	143
608-029	2190-2250	0.15	<0.10	0.41	0.32	434	---	1.29	273	212
609-030	2250-2310	0.14	---	---	---	---	---	---	---	---
608-031	2310-2370	0.14	---	---	---	---	---	---	---	---
608-032	2370-2430	0.20	<0.10	0.50	0.49	429	---	1.01	249	246
608-033	2430-2490	0.19	<0.10	0.43	0.67	428	---	0.64	224	352
608-034	2490-2550	0.18	<0.10	0.38	0.31	429	---	1.23	209	171

TABLE II

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Depth (ft.)	T.O.C. (% Wt.)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	$\frac{S2}{S3}$	Hydrogen Index	Oxygen Index
608-035	2550-2610	0.16	<0.10	0.33	0.63	430	---	0.52	206	393
608-036	2610-2670	0.23	<0.10	0.37	0.48	426	---	0.78	163	209
608-037	2670-2730	0.24	<0.10	0.35	0.47	428	---	0.75	146	196
608-038	2730-2790	0.17	<0.10	0.20	0.34	433	---	0.58	116	199
608-039	2790-2850	0.34	<0.10	0.39	0.41	427	---	0.95	115	121
608-040	2850-2910	0.20	<0.10	0.40	0.53	428	---	0.75	199	265
608-041	2910-2990	0.33	<0.10	0.66	0.91	423	---	0.72	199	277
608-042	2990-3040	0.20	<0.10	0.44	0.47	427	---	0.93	220	236
608-045c	1196	0.20	<0.10	0.38	0.40	427	---	0.96	191	199
608-043c	1201	0.10	---	---	---	---	---	---	---	---
608-044c	1471	0.04	---	---	---	---	---	---	---	---
608-046c	1821	0.10	---	---	---	---	---	---	---	---
608-047c	2235	---	---	---	---	---	---	---	---	---
608-048c	2570	1.72	0.46	8.84	0.80	416	0.05	11.02	514	47
608-049c	2838	0.21	0.10	0.82	0.35	407	0.08	2.35	391	166
608-050c	3045	0.24	0.10	0.79	0.31	425	0.10	2.58	330	128
608-051c	3510	0.09	---	---	---	---	---	---	---	---
608-052c	3868	0.53	0.26	2.60	0.42	425	0.09	6.27	491	78
608-053c	3870	0.51	0.25	2.10	0.50	425	0.11	4.20	411	98
608-054c	4095	0.16	<0.10	0.14	0.29	**	---	0.50	90	180
608-055c	4351	0.10	---	---	---	---	---	---	---	---
608-056c	4552	0.15	<0.10	0.26	0.32	429	---	0.81	171	212
608-057c	4695	0.08	---	---	---	---	---	---	---	---
608-058c	5040	0.22	<0.10	<0.10	0.25	---	---	---	---	115

**Unable to determine due to insufficient S2 yield, multiple peaks, etc.

TABLE III

Vitrinite Reflectance Summary Chart

Sample Number	Depth (ft.)	Total Readings	Minimum ($\%R_o$)	Maximum ($\%R_o$)	Average ($\%R_o$)	Standard Deviation
608-057c	4695	3	0.36	0.65	0.55	0.135
		4	1.55	2.14	1.82	0.241

TABLE IV

VISUAL KEROGEN ANALYSIS

Sample No.	Well Depth (ft)	Thermal Maturity		Kerogen Type (% Composition)					Amount Fluo-rescing (%)	Remarks
		%Ro	TAI	Amorphous	Alginite	Exinite	Vitrinite	Inertinite		
608-002	620	---	1.4e	95	---	---	---	5	95	Very sparse recovery; moderate fluorescence
608-007	920	---	ND	90	---	---	---	10	90	Very sparse recovery; moderate fluorescence
608-010	1095	---	ND	90	---	---	---	10	90	Very sparse recovery; dull fluorescence
608-014	1330	---	1.4e	75	---	---	10	15	75	Dull fluorescence; trace of foram tests, fungal marine deposition debris
608-018	1570	---	---	---	---	---	---	---	---	Barren
608-023	1890	---	1.4e	90	---	---	Tr	10	90	Dull fluorescence
608-027	2130	---	1.4	75	5	5	5	10	85	Moderate fluorescence; foram tests present; marine deposition
608-048c	2570	---	1.4	95	---	5	Tr	---	---	Moderate fluorescence; trace dead oil; marine deposition
608-049c	2838	---	1.4	90	---	---	10	---	90	Foram tests present; marine deposition
608-051c	3510	---	1.4	80	---	5	5	10	85	Dull fluorescence; foram tests present; marine deposition
608-052c	3868	---	1.4	80	---	5	15	Tr	85	Moderate fluorescence; foram test present; marine deposition; abundant peat contamination
608-055c	4351	---	1.4e	90	---	---	---	10	90	Moderate fluorescence; marine deposition
608-057c	4695	---	1.8e	80	---	---	---	20	80	Dull fluorescence; pyrite abundant
608-058c	5040	---	4.2e	---	---	---	---	100	---	

e = No spores or pollen present. TAI estimated from sapropel color.

TABLE V-A

Composition of C15+ Extract

Sample Number	Depth (ft.)	Extract (ppm)	Saturates (%)	Aromatics (%)	NSO (%)	Asphaltenes (%)
608-050c	3045	248	18.5	8.1	16.5	56.9
608-053c	3870	2073	4.4	9.8	23.4	62.4
608-056c	4552	549	18.9	8.0	31.0	42.1
608-059	1890-2070	90	53.3	---	---	47.8
608-060	2130-2310	545	5.0	2.0	7.7	85.3
608-061	2490-2670	229	14.0	4.8	47.5	34.0
608-062	2790-2990	297	15.2	7.7	22.6	54.5
608-064	1510-1690	404	12.6	---	---	86.1

TABLE V-B

Summary Table for C15+ Extract Analysis

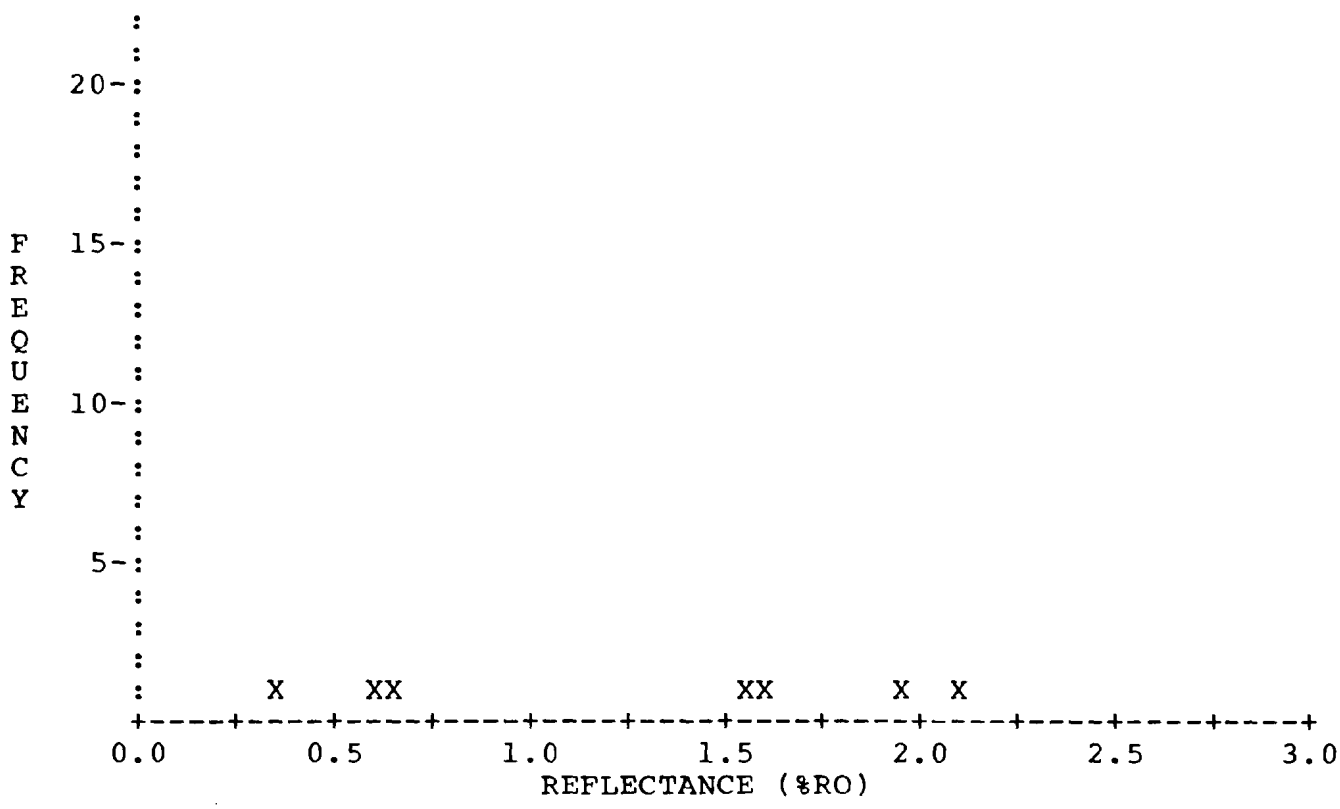
Sample Number	Depth (ft.)	Extract / TOC	CPI	Pristane / Phytane	Pristane / n-C17	Phytane / n-C18
608-050c	3045	10.3	1.18	0.50	0.6	0.5
608-053c	3870	40.6	1.49	0.70	0.7	0.7
608-056c	4552	36.6	---	0.90	0.5	0.5
608-059	1890-2070	6.9	1.16	0.30	0.9	0.6
608-060	2130-2310	36.3	1.09	0.60	0.7	0.6
608-061	2490-2670	13.5	1.16	0.70	0.6	0.5
608-062	2790-2990	9.9	1.15	0.40	0.6	0.6
608-064	1510-1690	67.3	1.37	0.30	0.7	0.8

APPENDIX II

VITRINITE REFLECTANCE HISTOGRAMS

VITRINITE REFLECTANCE HISTOGRAM

DESCRIPTION:..608-057
COMMENT:.....GULF #1 SAND HILL
DEPTH::.....4695



POPULATION GROUPS

POP.	COUNT	MIN. RO	MAX. RO	STD. DEV.	MEAN RO	COMMENTS
1	3	0.36	0.65	0.135	0.55	
2	4	1.55	2.14	0.241	1.82	

APPENDIX III

C_{15+} GAS CHROMATOGRAMS

GAS CHROMATOGRAMS

C_{18+} Saturate Hydrocarbon Fractions

Samples 808-050 to 808 808-064