BROWN & RUTH LABORATORIES, INC.
10690 SHADOW WOOD DRIVE, SUITE 130, HOUSTON, TEXAS 77043 (713) 461-2354

March 29, 1982

Mobil Exploration & Producing
Services, Inc.
P.O. Box 900
Dallas, Texas 75221

Attention: Ulrich A. Franz

Gentlemen:

This report presents the results of our analysis of three hundred eight (308) samples representing eight (8) different wells from the North Slope of Alaska.

This work was authorized by Ulrich Franz. Instructions designating the analyses to be carried out and methods to be used for handpicking the samples, were furnished by he and Mark Nuckels.

An interim report presenting the tabulated data was sent to MEPSI in Dallas on March 23, 1982. This report represents our final completed report.

We are pleased to have been of service to Mobil. If you have any questions regarding the data, then please contact us.

Very truly yours,

BROWN & RUTH LABORATORIES, INC.

Gary W. Ruth

Gary W. Ruth

GWR/ab
Attachments

GM&D DATA REPORT NO. 3

LIST OF WELLS PROFILED

1. Gulf Oil Corporation, No. 1 Colville Delta State
   Spot. NE NW SW Sec. 9 T. 13N R.6E
   T.D. 9,299'

2. Placid Oil Company, No.1 Plaghm Beechey Point
   Spot. NE NW SW Sec. 14 T. 13N R. 11E
   T.D. 11,920'

3. Sinclair - British Petroleum, No. 1 UGNU
   Spot. NE SE NW Sec. 22 T. 12N R. 9E
   T.D. 9,428'

4. Standard Oil of California, No. 32-14 Simpson Lagoon
   Spot. SW NE NW Sec. 14 T. 13N R. 9E
   T.D. 10,483'

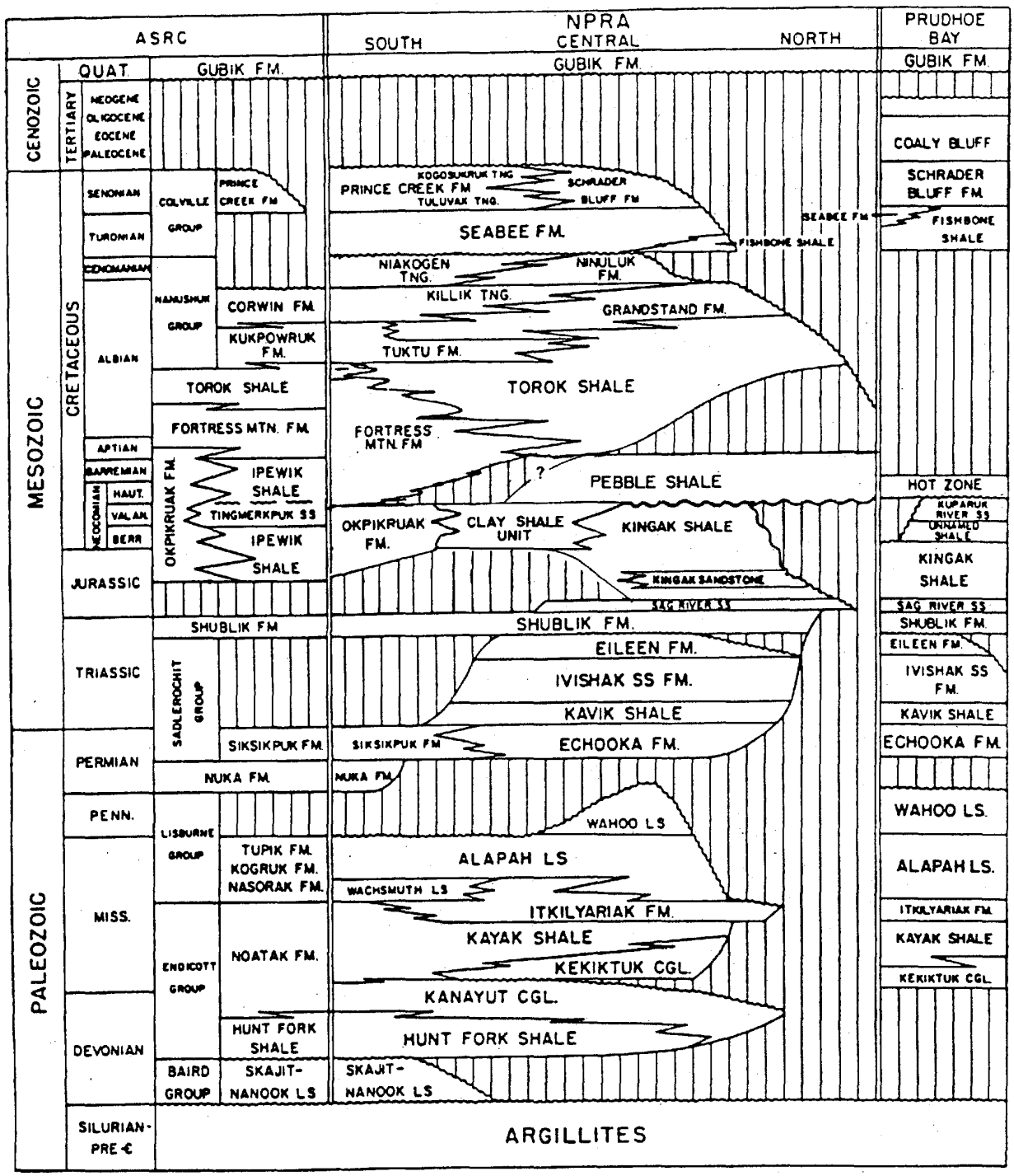
5. Atlantic Richfield Company, No. 1 Placid State (3-10-13)
   Spot. NE NW SW Sec. 3 T. 10N R. 13E
   T.D. 11,400'

6. Union Oil Company, No. 1 KOOKPUK
   Spot. NW NW SW Sec. 19 T. 11N R.7E
   T.D. 10,193'

7. Sinclair Oil & Gas Company, No. 1 Colville State
   Spot. SW SW SW Sec. 25 T. 12N R. 7E
   T.D. 9,930'

8. Sohio Petroleum Company, No. 11 West Sak
   Spot. NW NW NE Sec. 36 T. 12N R. 8E
   T.D. 6,062'

GENERALIZED STRATIGRAPHY OF NORTHERN ALASKA



CONTRACT SERVICE REPORT - 276

CLIENT: Mobil Exploration & Producing Services, Inc.
P.O. Box 900
Dallas, Texas 75221

WELL: Gulf Oil Corp. No. 1 Colville Delta State, N. Slope Alaska

AUTHORIZATION: Ulrich A. Franz

SAMPLE DESCRIPTION

A total of forty-nine (49) cuttings samples and six core fragments were received. Forty-seven (47) of the samples were selected for analysis. Sample quality was generally good.

SAMPLE PREPARATION

This well was used to familiarize the Brown & Ruth Laboratories geologist with Mobil's specified handpicking procedure. Mobil's geologist furnished formation tops for all of the wells and selected representative samples of the formations of interest. The samples were then picked in his presence to agree with the specified tops.

The sand intervals were excluded and not analyzed. Lithologic descriptions were, at Mobil's request, not carried out.

POTENTIAL SOURCE UNITS

The sediments represented by the samples between the surface and the well depth 2470' (formation tops unavailable) have very high organic carbon contents. The pyrolysis results indicate an immature section with no potential for significant hydrocarbon generation.

Hot Zone (Pebble Shale) - Samples representing the Hot Zone Formation have extremely high organic carbon contents (most T.O.C. values exceed 3.0%) but because the sediments are very immature, it is doubtful if the section is generating commercially significant quantities of oil or gas.

JURASSIC & TRIASSIC - Below the Neocomian Unconformity there is a definite rise in the thermal alteration level. Although the sediments are still considered immature in the uppermost Kingak section, the alteration gradient appears to reach the oil generating threshold near the base of the section. This has resulted

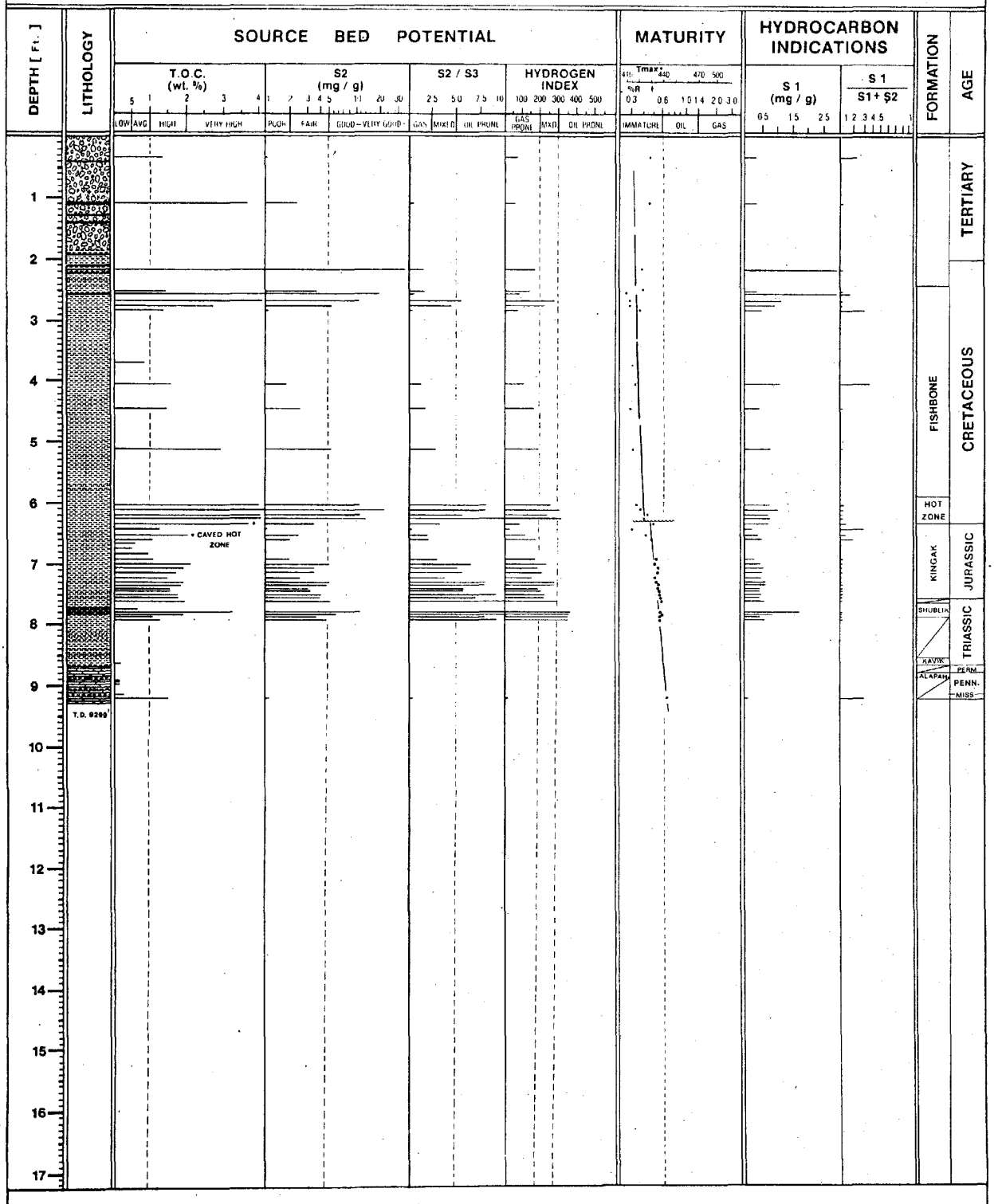
in a favorable oil source characterization for the organic rich Lower Kingak and Shublik Formations. Of the two, the Shublik has the greatest potential, and appears to be an excellent oil source.

Although some of the Tertiary and Upper Cretaceous (Fishbone) samples exhibited extremely high organic carbon contents, the sediments are very immature and do not appear capable of generating significant quantities of oil or gas within this area.

BROWN & RUTH LABORATORIES, INC.

GEOCHEMICAL LOG

OPERATOR: Gulf Oil Corporation
WELL NAME: No. 1 Colville Delta State
LOCATION: North Slope, Alaska
T.D.: 9299'



LITHOLOGICAL LEGEND

- SANDSTONE
- LIMESTONE
- SHALE OR SILTSTONE
- COAL
- DOLOMITE
- CONGLOMERATE

PYROLYSIS TERMS

S1 FREE HYDROCARBONS PRESENT IN ROCK

S2 HYDROCARBONS FROM PYROLYSIS OF KEROGEN

S3 CO_2 FROM KEROGEN PYROLYSIS

HYDROGEN INDEX S2 T.O.C.

TABLE I

Gulf Oil No. 1 Colville Delta St.

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
276-001	320-350	1.39	0.30	0.95	2.06	430	0.24	0.46	68	148
276-002	930-1100	3.63	0.37	2.33	3.46	429	0.14	0.67	64	95
276-003	1440-1500		100% Tillite - no analysis performed							
276-004	2130-2190	27.12	5.44	47.18	25.99	423	0.10	1.82	174	96
276-005	2440-2530	1.51	0.30	3.75	1.60	424	0.07	2.34	249	106
276-006	2530-2560	23.87	3.88	19.58	40.67	404	0.17	0.48	82	170
276-007	2620-2690	4.25	1.21	11.99	2.34	415	0.09	5.12	282	55
276-008	2670-2770	2.61	0.87	5.92	1.52	414	0.13	3.88	227	58
276-009	2770-2830	1.33	0.49	1.15	1.63	421	0.30	0.71	86	122
276-010	3580-3700	0.85	--	--	--	--	--	--	--	--
276-011	3970-4060	1.63	1.11	1.82	1.85	419	0.38	0.99	112	113
276-012	4360-4450	1.45	0.40	2.45	1.16	415	0.14	2.11	169	80
276-013	5020-5140	2.95	0.72	5.66	2.04	416	0.11	2.78	192	69
276-014	5950-6040	4.18	0.71	10.84	1.37	419	0.06	7.90	259	33
276-015	6030-6120	7.41	0.98	22.34	2.93	421	0.04	7.62	302	40
276-016	6120-6200	4.63	0.67	11.17	2.06	428	0.06	5.42	241	45
276-017	6200-6280	4.61	0.89	15.63	0.88	424	0.05	17.82	339	19
276-018	6280-6360	3.68	0.69	3.62	1.37	432	0.16	2.64	98	37
276-019	6360-6440	1.36	0.18	0.43	2.05	416	0.29	0.21	32	150
276-020	6440-6520	2.11	0.43	2.52	1.17	426	0.14	2.16	120	56
276-021	6520-6600	1.07	0.46	2.00	0.92	430	0.19	2.18	187	86
276-022	6600-6680	0.61	--	--	--	--	--	--	--	--
276-023	6680-6760	0.52	--	--	--	--	--	--	--	--
276-024	6760-6840	0.98	--	--	--	--	--	--	--	--
276-025	6840-6920	1.07	0.33	1.95	0.61	435	0.14	3.21	182	57
276-026	6920-7000	2.14	0.45	4.92	0.74	433	0.08	6.69	230	34
276-027	7000-7080	1.90	0.49	3.59	0.73	435	0.12	4.92	189	39
276-028	7080-7160	1.69	0.50	3.51	0.65	435	0.12	5.43	208	38
276-029	7160-7240	1.54	0.45	2.53	0.78	433	0.15	3.25	165	51
276-030	7240-7300	1.87	0.68	5.13	0.61	434	0.12	8.38	274	33
276-031	7300-7350	1.79	0.63	4.90	0.59	435	0.11	8.26	274	33
276-032	7350-7400	1.56	0.42	3.08	0.53	435	0.12	5.79	197	34
276-033	7400-7450	1.59	0.41	3.31	0.58	436	0.11	5.67	208	37
276-034	7450-7500	1.79	0.47	4.13	0.45	438	0.10	9.20	231	25
276-035	7500-7550	1.84	0.38	3.96	0.56	439	0.09	7.06	215	31

TABLE I

Gulf Oil No.1 Colville Delta St

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
276-036	7550-7600	1.97	0.61	5.82	0.47	439	0.09	12.40	296	24
276-037	7620-7650		Sand Section, No Analysis Performed							
276-038	7710-7760	0.67	--	--	--	--	--	--	--	--
276-039	7760-7800	3.36	1.59	13.11	0.66	439	0.11	19.74	390	20
276-040	7800-7850	1.95	0.78	7.30	0.36	440	0.10	20.21	375	19
276-041	7850-7890	1.06	0.41	3.74	0.48	438	0.10	7.86	353	45
276-042	7890-7930	1.33	0.58	4.70	0.49	437	0.11	9.57	353	37
276-043	8070-8110		Sand Section, No Analysis Performed							
276-044	8250-8290		" "	" "	"					
276-045	8490-8530		" "	" "	"					
276-046	8610-8660	0.17	--	--	--	--	--	--	--	--
276-047	8830-8870	0.15	--	--	--	--	--	--	--	--
276-048	9100-9150	0.35	--	--	--	--	--	--	--	--
276-049	9190-9200	1.52	0.15	0.34	0.37	443	0.30	0.93	23	24
276-050	8953-8999 C#4	0.18	--	--	--	--	--	--	--	--
276-051	8242-8261 C#3		Sand Section, No Analysis Performed							
276-052	8016-8038 C#2		" "	" "	"					
276-053	7650-7670 C#1		" "	" "	"					
276-054	8969 C#4	0.17	--	--	--	--	--	--	--	--
276-055	8984 C#4	0.14	--	--	--	--	--	--	--	--

* Well depth measured in feet

CONTRACT SERVICE REPORT - 277

CLIENT: Mobil Exploration & Producing Services, Inc.
P.O. Box 900
Dallas, Texas 75221

WELL: Placid Oil Co. No. 1 Plaghm Beechey Point, N. Slope, Alaska

AUTHORIZATION: Ulrich A. Franz

SAMPLE DESCRIPTION

A total of thirty-nine (39) cuttings samples were received, and twenty-nine were selected for analysis. Sample quality was generally good, although in a number of cases there was insufficient material for analysis.

SAMPLE PREPARATION

Caved material was not a major problem in this well, although some was present in some of the samples.

All samples were handpicked to conform with the formation tops submitted for the well. The sand intervals were excluded and not analyzed. Lithologic descriptions were, at Mobil's request, not carried out.

DATA EVALUATION

The sediments represented by the samples from the well interval 2560-5520' (formation tops unavailable) are slightly above average in organic matter content with T.O.C. values generally 1.0-1.4%. The pyrolysis data indicate an immature section with no potential for significant hydrocarbon generation.

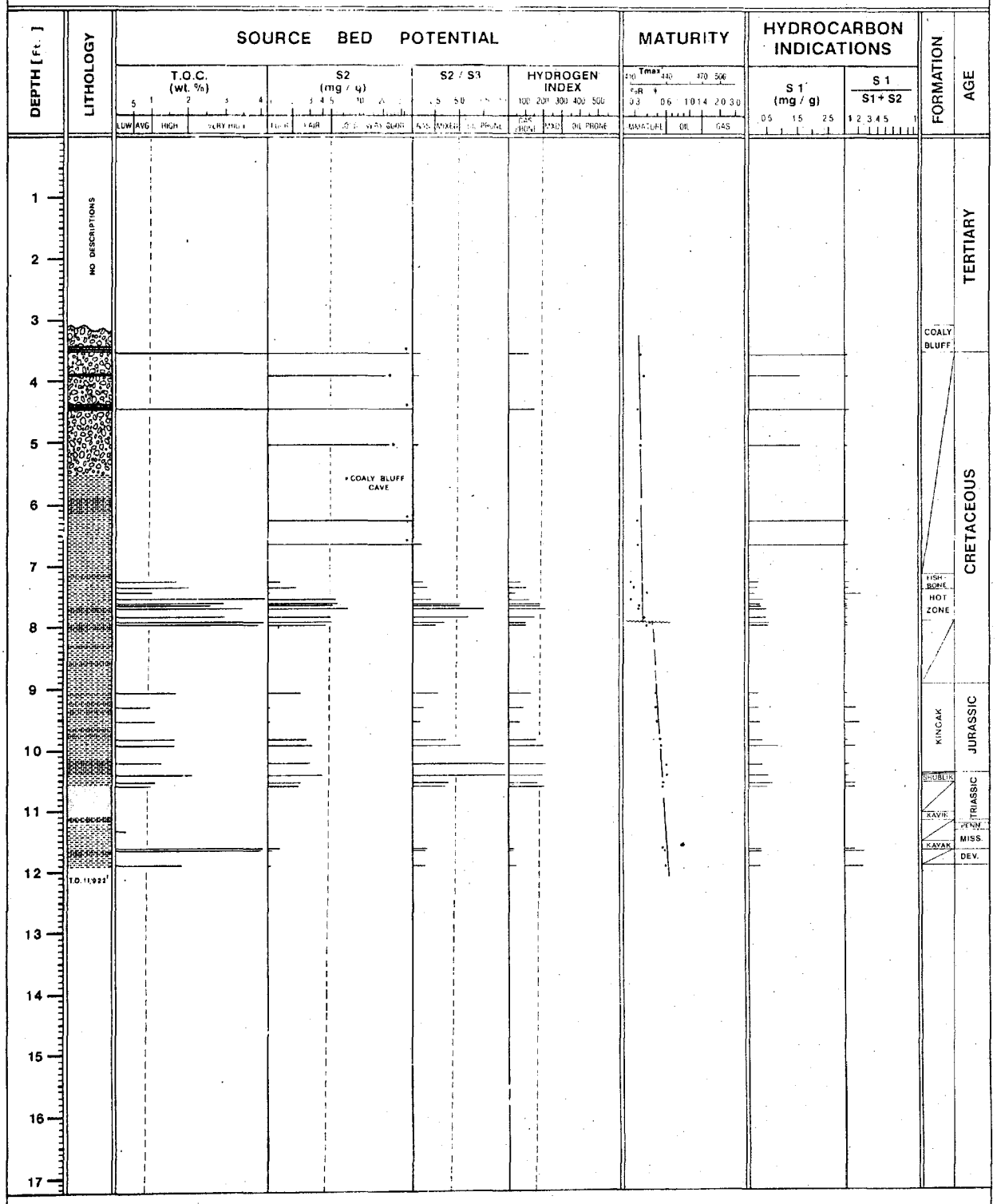
Fair to good source potential for gas and wet gas - condensate is indicated at base of Cretaceous, but the section is immature (based on Tmax values) at well location.

No source potential for oil or gas is indicated for Shublik Fm., Kavik Shale, or Kayak Shale at well location.

BROWN & RUTH LABORATORIES INC.

GEOCHEMICAL LOG

OPERATOR: Placid Oil Company
WELL NAME: No. 1 Plaghm Beechey Point
LOCATION: North Slope, Alaska
T.D.: 11,920'



LITHOLOGICAL LEGEND

- SANDSTONE
- LIMESTONE
- SHALE OR SILTSTONE
- COAL
- DOLOMITE
- CONGLOMERATE

PYROLYSIS TERMS

S1 = FREE HYDROCARBONS PRESENT IN ROCK

S2 = HYDROCARBONS FROM PYROLYSIS OF KEROGEN

S3 = CO_2 FROM KEROGEN PYROLYSIS

HYDROGEN INDEX = S2 / T.O.C.

TABLE I

Placid Oil No. 1 Plaghm
Beechey Point

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
277-001	3450-3570	29.16	3.16	33.99	31.63	420	0.09	1.07	117	108
277-002	3780-3900	***	1.56	22.12	28.75	423	0.07	0.77	---	---
277-003	4320-4440	27.35	3.48	43.61	**	418	0.07	**	159	**
277-004	4890-5010	***	1.65	24.67	28.08	420	0.06	0.88	---	---
277-005	5530-5650	INSUFFICIENT SAMPLE FOR ANALYSIS								
277-006	6180-6260	***	5.31	56.35	**	418	0.09	**	---	---
277-007	6600-6660	***	4.14	48.16	42.51	417	0.08	1.13	---	---
277-008	6980-7060	INSUFFICIENT SAMPLE FOR ANALYSIS								
277-009	7200-7280	1.83	0.22	1.53	1.10	413	0.12	1.39	84	60
277-010	7280-7360	2.09	0.25	2.38	1.15	415	0.09	2.08	114	55
277-011	7360-7440	1.13	0.20	0.59	1.32	428	0.25	0.45	53	117
277-012	7440-7520	4.75	0.44	6.54	2.68	414	0.06	2.44	138	57
277-013	7520-7660	2.99	0.37	5.91	1.09	415	0.06	5.41	198	37
277-014	7580-7680	2.67	0.40	5.32	1.01	420	0.07	5.26	199	38
277-015	7740-7700	3.46	0.67	8.26	1.06	420	0.08	7.79	239	31
277-016	7760-7840	3.01	0.51	5.17	0.86	425	0.09	5.99	172	29
277-017	7860-7920	4.21	0.61	5.48	1.47	429	0.10	3.72	130	35
277-018	7920-7980	3.62	0.56	4.70	1.62	425	0.11	2.90	130	45
277-019	8000-8080	SAND SECTION	NO ANALYSIS PERFORMED							
277-020	8560-8640	SAND SECTION	NO ANALYSIS PERFORMED							
277-021	9000-9080	1.65	0.31	2.42	0.72	435	0.11	3.34	146	44
277-022	9220-9300	1.02	0.30	1.02	0.66	431	0.23	1.54	100	65
277-023	9490-9530	1.19	0.36	1.06	1.06	433	0.25	1.00	89	89
277-024	9770-9820	1.61	0.43	2.96	0.69	437	0.13	4.27	184	43
277-025	9900-9930	1.58	0.74	3.37	0.63	438	0.18	5.35	213	40
277-026	10180-10220	1.42	0.42	3.03	0.34	443	0.12	8.97	213	24
277-027	10370-10410	2.07	0.66	4.32	0.45	444	0.13	9.56	209	22
277-028	10460-10500	SAND SECTION	NO ANALYSIS PERFORMED							
277-029	10500-10540	1.32	0.71	2.47	0.55	440	0.22	4.51	187	42
277-030	10560-10600	1.06	0.52	2.32	0.57	439	0.18	4.09	219	54

TABLE I

Placid Oil No. 1 Plaghm
Beechey Point

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
277-031	10800-10840	SAND SECTION	NO ANALYSIS PERFORMED							
277-032	11030-11060	SAND SECTION	NO ANALYSIS PERFORMED							
277-033	11130-11170	INSUFFICIENT SAMPLE MATERIAL FOR ANALYSIS								
277-034	11170-11210	INSUFFICIENT SAMPLE MATERIAL FOR ANALYSIS								
277-035	11350-11370	0.45	---	----	----	---	----	----	---	---
277-036	11550-11590	INSUFFICIENT SAMPLE MATERIAL FOR ANALYSIS								
277-037	11590-11630	4.61	0.44	1.47	0.62	440	0.23	2.38	32	13
277-038	11640-11670	4.28	0.46	1.03	0.58	441	0.31	1.75	24	14
277-039	11860-11900	1.88	0.45	0.99	0.57	441	0.31	1.73	53	31

* Well Depth Measured in Feet
** Maximum Detector Limit Exceeded; Unable to Repeat Analysis Due to Insufficient Sample Material
*** Insufficient Sample Material for Analysis

CONTRACT SERVICE REPORT - 278

CLIENT: Mobil Exploration & Producing Services, Inc.
P.O. Box 900
Dallas, Texas 75221

WELL: Sinclair - British Petroleum No. 1 UGNU, N. Slope, Alaska

AUTHORIZATION: Ulrich A. Franz

SAMPLE DESCRIPTION

A total of sixty-three (63) cuttings samples and eight (8) core fragments were received. Fifty-one of the samples were selected for analysis. Sample quality was generally good, although there was insufficient material for analysis in some cases.

SAMPLE PREPARATION

Caved material was a major problem in this well, and it was necessary to pick most of the samples. The picking was done according to the formation tops submitted for the well. The sand intervals were excluded and not analyzed. As with the other wells, lithologic descriptions were not carried out.

POTENTIAL SOURCE UNITS

HOT ZONE (PEBBLE SHALE) - The samples representing the Hot Zone Formation are extremely rich (T.O.C. values exceeding 4.0%), but are also immature. It is doubtful if such immature sediments can source significant quantities of either liquid or gaseous hydrocarbons and the zone is considered non-prospective within this area.

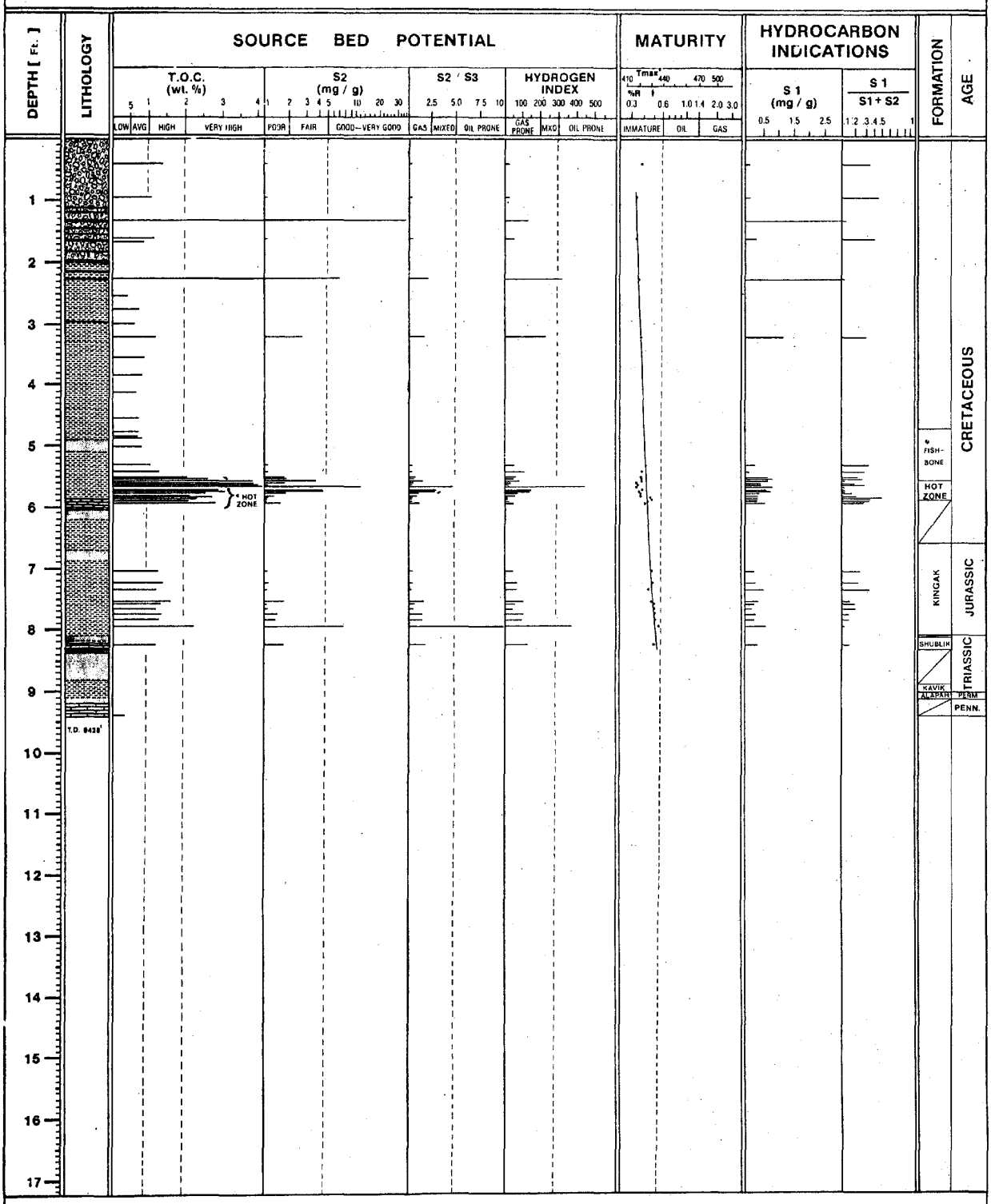
JURASSIC & TRIASSIC - The organic content of the Jurassic and Triassic sediments is high (1.23% - 2.35%), but the section appears to be immature. The pyrolysis results indicate that some hydrocarbons are being generated, but it is doubtful if the quantities are commercially significant within this area.

Although some of the samples between the surface and 4750' (Tertiary tops unavailable) exhibited an extremely high organic carbon content, the section is grossly immature and is not a source unit within this area.

BROWN & RUTH LABORATORIES, INC.

GEOCHEMICAL LOG

OPERATOR: Sinclair - British Petroleum
WELL NAME: No. 1 UGNU
LOCATION: North Slope, Alaska
T.D.: 9428'



LITHOLOGICAL LEGEND

- SANDSTONE
- LIMESTONE
- SHALE OR SILTSTONE
- COAL
- DOLOMITE
- CONGLOMERATE

PYROLYSIS TERMS

S1 = FREE HYDROCARBONS PRESENT IN ROCK

S2 = HYDROCARBONS FROM PYROLYSIS OF KEROGEN

S3 = CO_2 FROM KEROGEN PYROLYSIS

HYDROGEN INDEX = S2/T.O.C.

TABLE I

Sinclair-B.P. No.1 UGNU

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
278-001	370-400	1.37	0.17	0.32	1.51	422	0.34	0.21	24	111
278-002	680-710	Insufficient sample material for analysis								
278-003	960-990	1.16	0.24	0.28	1.38	419	0.46	0.20	24	119
278-004	1320-1350	28.10	5.31	39.55	**	401	0.12	**	141	**
278-005	1590-1620	1.09	0.38	0.57	3.62	417	0.40	0.16	52	332
278-006	1660-1680	0.86	---	---	---	---	---	---	--	---
278-007	1980-2010	Insufficient sample material for analysis								
278-008	2300-2330	25.60	7.26	82.00	41.18	420	0.08	1.99	320	161
278-009	2500-2540	0.46	---	---	---	---	---	---	--	---
278-010	2760-2790	0.74	---	---	---	---	---	---	--	---
278-011	2950-2980	0.67	---	---	---	---	---	---	--	---
278-012	3210-3240	1.18	1.16	2.71	1.94	422	0.30	1.40	229	164
278-013	3530-3560	0.83	---	---	---	---	---	---	--	---
278-014	3850-3880	0.79	---	---	---	---	---	---	--	---
278-015	4100-4130	0.68	---	---	---	---	---	---	--	---
278-016	4500-4530	0.77	---	---	---	---	---	---	--	---
278-017	4750-4780	0.76	---	---	---	---	---	---	--	---
278-018	4810-4840	0.76	---	---	---	---	---	---	--	---
278-019	4860-4890	0.84	---	---	---	---	---	---	--	---
278-020	4980-5010	0.84	---	---	---	---	---	---	--	---
278-021	5280-5310	1.06	0.28	0.52	1.84	427	0.35	0.28	49	174
278-022	5400-5430	1.39	0.18	0.45	1.67	422	0.29	0.27	33	120
278-023	5460-5500	2.12	0.54	1.82	1.97	421	0.23	0.92	86	93
278-024	5500-5530	2.56	0.76	1.90	2.43	421	0.29	0.78	74	95
278-025	5550-5580	3.86	0.54	3.82	3.04	421	0.12	1.25	99	79
278-026	5580-5610	3.98	0.42	1.72	3.69	417	0.20	0.47	43	93
278-027	5610-5640	4.23	0.45	1.11	4.02	417	0.29	0.28	26	95
278-028	5640-5670	5.12	0.84	13.08	2.62	417	0.06	4.99	452	91
278-029	5700-5730	2.89	0.52	4.33	1.49	424	0.11	2.90	150	52
278-030	5730-5760	3.22	0.65	4.49	1.59	420	0.13	2.83	139	49
278-031	5760-5790	2.61	0.44	1.93	1.93	422	0.19	1.00	74	74
278-032	5790-5820	2.24	0.38	1.31	2.14	423	0.22	0.61	59	96
278-033	5820-5850	2.74	0.37	0.41	2.54	431	0.47	0.16	15	93
278-034	5850-5880	2.41	0.33	0.60	2.36	432	0.35	0.26	25	98
278-035	5880-5910	2.24	0.33	0.70	1.90	429	0.32	0.37	32	85

TABLE I

Sinclair-B.P. No.1 UGNU

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
278-036	5910-5940	2.82	0.65	1.68	1.86	426	0.28	0.90	60	66
278-037	5940-5970		Sand Section, No Analysis Performed							
278-038	6240-6270		" "	" "	"					
278-039	6270-6310		" "	" "	"					
278-040	6310-6340		" "	" "	"					
278-041	6340-6370		" "	" "	"					
278-042	6370-6400		" "	" "	"					
278-043	6630-6660		" "	" "	"					
278-044	6660-6690		100% Caving; Not in Place Material							
278-045	6800-6830		" "	" "	" "	"				
278-046	6990-7020	1.30	0.24	0.71	1.35	433	0.25	0.53	55	104
278-047	7200-7230	1.49	0.28	1.06	1.33	433	0.21	0.79	71	89
278-048	7340-7370	1.28	0.52	0.98	1.69	430	0.35	0.58	77	132
278-049	7490-7520	1.65	0.39	1.91	1.12	431	0.17	1.71	116	68
278-050	7560-7580	1.39	0.23	0.80	1.65	434	0.22	0.49	58	119
278-051	7650-7680	1.30	0.18	0.59	1.48	434	0.23	0.40	46	114
278-052	7740-7770	1.42	0.30	1.55	1.06	435	0.16	1.47	109	74
278-053	7830-7860	1.34	0.23	1.37	1.08	435	0.15	1.27	102	80
278-054	7940-7970	2.35	0.66	8.56	0.75	439	0.07	11.38	364	32
278-055	8178-8210		See Note							
278-056	8178-8330	1.23	0.30	1.76	0.88	434	0.15	1.99	143	72
278-057	8250-8270		See Note							
278-058	8300-8330		" "							
278-059	8490-8520		Sand Section, No Analysis Performed							
278-060	8760-8790		" "	" "	"					
278-061	8970-9000		100% Caving; Not in Place Material							
278-062	9040-9070		" "	" "	" "	"				
278-063	9400-9428	0.31	---	---	---	---	---	---	---	---
278-064	6036 C#1		Sand Section, No Analysis Performed							
278-065	6045 C#1		" "	" "	"					
278-066	6187 C#2		" "	" "	"					
278-067	6192 C#2		" "	" "	"					
278-068	8157 C#3		" "	" "	"					
278-069	8173 C#3	3.88	1.01	14.61	0.37	441	0.06	39.18	377	10

CONTRACT SERVICE REPORT - 280

CLIENT: Mobil Exploration & Producing Services, Inc.
P.O. Box 900
Dallas, Texas 7522l

WELL: Standard Oil of California No. 32-14 Simpson Lagoon, N. Slope, Alaska

AUTHORIZATION: Ulrich A. Franz

SAMPLE DESCRIPTION

A total of ninety-seven (97) cuttings samples and six (6) core fragments were received. Seventy-four (74) of the samples were selected for analysis. Sample quality was generally fair to good, although lost circulation material was present in some of the samples.

SAMPLE PREPARATION

Caved material was a major problem in this well, and it was necessary to pick most of the samples. The picking was done according to the formation tops submitted for the well. The sand intervals were excluded and not analyzed. As with the other wells, lithologic descriptions were not carried out.

POTENTIAL SOURCE UNITS

HOT ZONE (PEBBLE SHALE) - Samples from the Hot Zone Formation exhibit very high organic carbon contents (T.O.C. values range from 1.10% to 3.50%), but unfortunately the sedimentary section is extremely immature. It is therefore doubtful if the sediments are generating commercially significant quantities of oil or gas.

JURASSIC & TRIASSIC - The thermal conditions below the Neocomian Unconformity do appear higher, and the organic rich Jurassic (Kingak) and Upper Triassic (Shublik) do appear to have an oil source potential. Both the organic content and the thermal gradient show some increase with depth throughout this interval (Kingak to Shublik). Thus, the sediments with the maximum potential are the Lower Kingak and the Shublik Formations.

Although some of the Tertiary and Upper Cretaceous (includes coaly Bluff and Fishbone) samples exhibited extremely high organic contents, the sediments are very immature and do not appear capable of generating significant quantities of oil or gas within this area.

TABLE I

Sinclair-B.P. No.1 UGNU

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
278-070	8431 C#4		Sand Section, No Analysis Performed							
278-071	8436 C#4		" "	" "	"					

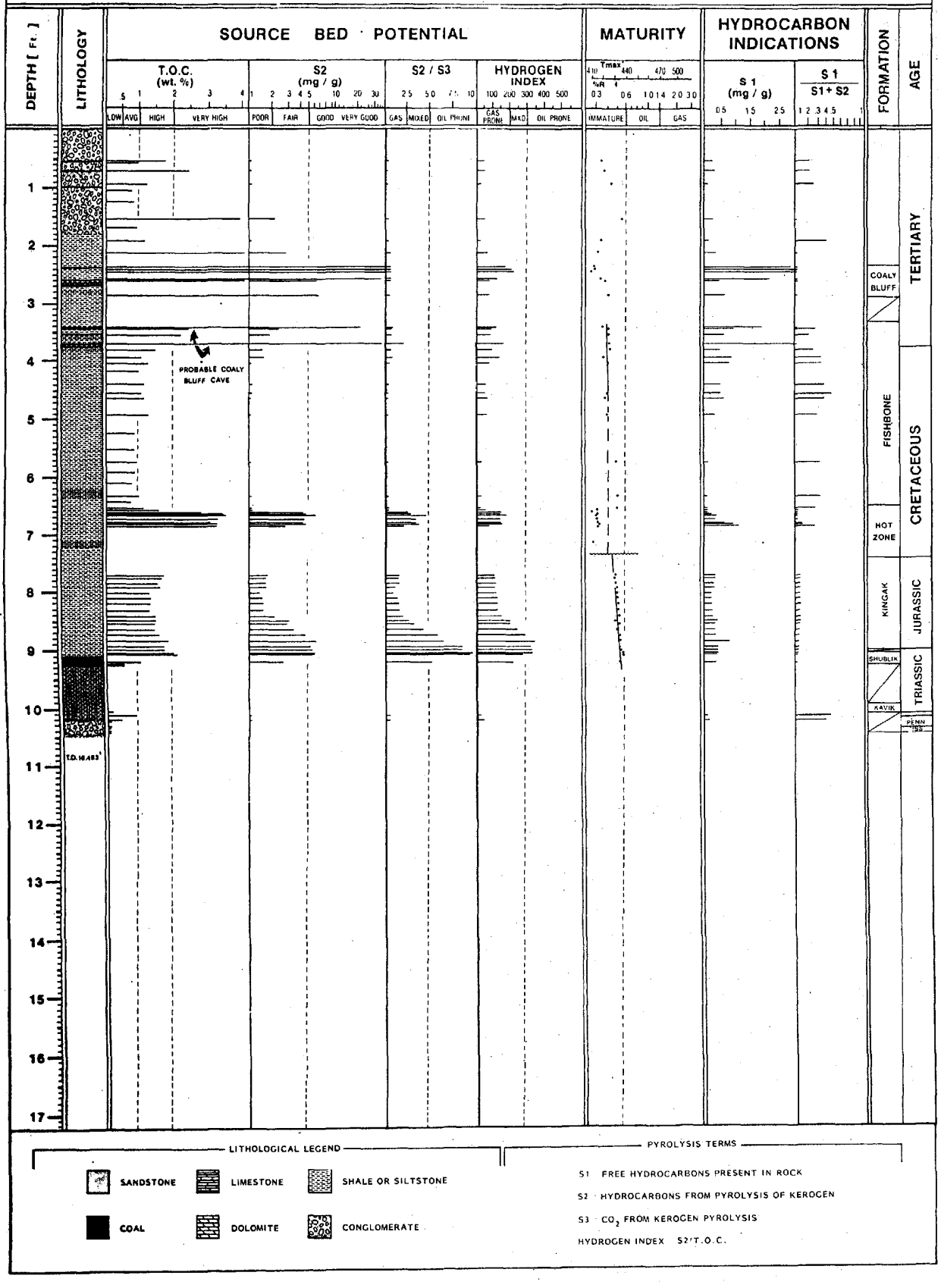
* Well depth in feet

** Maximum detector level exceeded; unable to repeat analysis due to insufficient sample material

Note: Samples 055, 057 & 058 combined with Sample 056 to obtain adequate sample material for analysis

GEOCHEMICAL LOG

T.D.: 10,483'



LITHOLOGICAL LEGEND

SANDSTONE · LIMESTONE · SHALE OR SILTSTONE

COAL · DOLOMITE · CONGLOMERATE

PYROLYSIS TERMS

S1 · FREE HYDROCARBONS PRESENT IN ROCK

S2 · HYDROCARBONS FROM PYROLYSIS OF KEROGEN

S3 · CO_2 FROM KEROGEN PYROLYSIS

HYDROGEN INDEX · S2/T.O.C.

TABLE I

SOCAL No. 32-14 Simpson Lag.

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
280-001	530-560	1.74	0.26	0.84	2.53	419	0.23	0.33	48	146
280-002	560-590	0.93	--	--	--	--	--	--	--	--
280-003	680-710	2.35	0.30	1.16	5.09	421	0.21	0.23	49	217
280-004	920-950	1.27	0.14	0.40	4.57	428	0.25	0.09	32	360
280-005	1040-1070	0.70	--	--	--	--	--	--	--	--
280-006	1250-1280	0.76	--	--	--	--	--	--	--	--
280-007	1520-1550	3.95	0.32	2.14	4.95	437	0.13	0.43	54	125
280-008	1670-1700	0.94	--	--	--	--	--	--	--	--
280-009	1910-1940	1.21	0.16	0.22	2.40	418	0.42	0.09	18	199
280-010	2120-2150	4.83	0.36	2.75	5.96	415	0.12	0.46	57	123
280-011	2360-2390	25.49	3.54	44.44	35.29	411	0.07	1.26	174	138
280-012	2390-2420	24.67	5.50	50.12	38.01	412	0.10	1.32	203	154
280-013	2420-2450	27.50	5.39	57.23	45.49	408	0.09	1,26	208	165
280-014	2560-2590	28.67	1.91	32.70	37.74	418	0.06	0.87	114	132
280-015	2570-2600	8.61	0.48	6.66	7.65	421	0.07	0.87	77	89
280-016	2870-2887	9.10	0.58	7.03	8.38	425	0.08	0.84	77	92
280-017	3350-3410	21.51	1.96	23.75	21.24	420	0.08	1.12	110	99
280-018	3410-3440	2.40	0.93	2.35	2.48	424	0.28	0.95	98	103
280-019A	3530-3560	28.72	3.34	50.75	**	421	0.06	**	177	**
280-019	3530-3560	2.23	0.54	1.94	2.72	425	0.22	0.71	87	122
280-020	3620-3650	8.33	1.23	7.77	9.05	422	0.14	0.86	93	109
280-021	3650-3710	22.97	4.59	38.15	20.11	426	0.11	1.90	166	88
280-022	3770-3800	1.46	0.49	1.41	2.77	427	0.26	0.51	96	189
280-023	3950-3980	1.08	0.82	1.59	2.22	421	0.34	0.72	147	206
280-024	4040-4070	1.25	0.66	1.04	1.91	425	0.39	0.54	83	153
280-025	4100-4190	0.93	--	--	--	--	--	--	--	--
280-026	4310-4400	1.07	0.50	0.70	2.00	***	0.41	0.35	66	187
280-027	4520-4550	1.02	0.50	0.51	2.32	425	0.50	0.22	50	227
280-028	4610-4640	1.10	0.61	0.95	3.08	422	0.39	0.31	87	280
280-029	4880-4940	1.28	0.34	0.80	3.70	424	0.30	0.22	62	289
280-030	5240-5270	0.83	--	--	--	--	--	--	--	--
280-031	5480-5510	0.88	--	--	--	--	--	--	--	--
280-032	5750-5780	0.99	0.17	0.35	2.20	432	0.33	0.16	35	222
280-033	5900-5930	0.90	--	--	--	--	--	--	--	--
280-034	6080-6110	0.86	--	--	--	--	--	--	--	--

TABLE I

SOCAL No. 32-14 Simpson Lag.

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxyger Index
280-035	6320-6350	1.00	0.14	0.28	2.00	433	0.34	0.14	28	200
280-036	6410-6440	0.75	--	--	--	--	--	--	--	--
280-037	6500-6530	1.10	0.10	0.25	1.15	433	0.28	0.22	23	104
280-038	6530-6560	1.68	0.12	0.93	1.32	417	0.12	0.71	56	79
280-039	6590-6620	2.89	0.18	4.36	1.68	410	0.04	2.60	151	58
280-040	6620-6650	3.39	0.25	4.91	1.75	415	0.05	2.81	145	52
280-041	6650-6680	3.50	0.44	6.68	1.42	414	0.06	4.70	191	41
280-042	6710-6740	3.32	0.37	4.52	1.33	414	0.08	3.40	136	40
280-043	6770-6800	3.04	0.77	4.14	1.22	417	0.16	3.38	136	40
280-044	6800-6830	3.34	0.96	4.81	1.31	418	0.17	3.68	144	39
280-045	6830-6890	3.34	1.10	2.83	1.39	416	0.28	2.04	85	42
280-046	6890-6920		Sand Section, No Analysis Performed							
280-047	6920-6980		" "	" "	"					
280-048	6980-7040		" "	" "	"					
280-049	7040-7100		" "	" "	"					
280-050	7100-7160		" "	" "	"					
280-051	7160-7220		" "	" "	"					
280-052	7220-7280		" "	" "	"					
280-053	7280-7340		" "	" "	"					
280-054	7340-7400		" "	" "	"					
280-055	7460-7490		" "	" "	"					
280-056	7610-7640		" "	" "	"					
280-057	7700-7730	1.76	0.36	1.85	1.25	432	0.16	1.49	105	71
280-058	7760-7790	1.67	0.36	1.78	1.35	431	0.17	1.32	107	81
280-059	7850-7880	1.54	0.30	1.74	1.23	432	0.15	1.41	113	80
280-060	7910-7940	1.59	0.34	1.75	1.44	433	0.16	1.22	110	91
280-061	8000-8030	1.36	0.27	1.48	1.36	432	0.16	1.09	109	100
280-062	8090-8120	1.43	0.28	1.62	1.28	432	0.15	1.27	113	89
280-063	8180-8210	1.38	0.28	1.70	1.26	433	0.14	1.35	123	91
280-064	8300-8320	1.29	0.24	1.66	0.98	432	0.13	1.70	129	76
280-065	8420-8440	1.50	0.30	2.38	0.97	434	0.11	2.45	159	65
280-066	8480-8500	1.52	0.47	3.12	1.20	431	0.13	2.60	205	79
280-067	8560-8580	1.47	0.32	3.04	0.86	435	0.10	3.54	207	58
280-068	8660-8680	1.48	0.37	3.61	0.83	433	0.09	4.36	244	56
280-069	8760-8780	1.63	0.44	4.85	0.78	436	0.08	6.19	298	48
280-070	8860-8880	1.91	0.80	6.72	0.97	435	0.11	6.90	352	51

TABLE I

SOCAL No. 32-14 Simpson

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxy Inc
280-071	8920-8940	1.76	0.48	5.94	0.66	434	0.08	8.94	338	38
280-072	8980-9000	1.78	0.48	6.07	0.72	436	0.07	8.46	341	40
280-073	9040-9060	2.06	0.45	6.73	0.68	439	0.06	9.96	327	33
280-074	9060-9080	2.22	0.40	6.40	0.66	439	0.06	9.76	288	30
280-075	9100-9120		Sand Section, No Analysis Performed							
280-076	9140-9160		100% Caving, No In Place Material							
280-077	9180-9200	1.17	0.36	2.70	0.48	436	0.12	5.60	231	41
280-078	9220-9240	0.67	--	--	--	--	--	--	--	--
280-079	9240-9260	0.65	--	--	--	--	--	--	--	--
280-080	9260-9280	0.56	--	--	--	--	--	--	--	--
280-081	9280-9300		Sand Section, No Analysis Performed							
280-082	9300-9320		"	"	"	"				
280-083	9320-9340		"	"	"	"				
280-084	9340-9360		"	"	"	"				
280-085	9360-9380		"	"	"	"				
280-086	9420-9440		"	"	"	"				
280-087	9520-9540		"	"	"	"				
280-088	9620-9640		"	"	"	"				
280-089	9700-9720		"	"	"	"				
280-090	10060-10080	0.11	--	--	--	--	--	--	--	--
280-091	10100-10120	0.93	0.14	0.15	1.00	**	0.50	0.14	16	108
280-092	10200-10220	0.51	0.23	0.31	1.69	**	0.43	0.18	60	331
280-093	10220-10240	0.09	--	--	--	--	--	--	--	--
280-094	10300-10320	0.10	--	--	--	--	--	--	--	--
280-095	10360-10380	0.06	--	--	--	--	--	--	--	--
280-096	10440-10460	0.13	--	--	--	--	--	--	--	--
280-097	10460-10480		Insufficient Sample							
280-098	7120 (Core)		Sand Section, No Analysis Performed							
280-099	7131 (Core)		"	"	"	"				
280-100	7130 (Core)		"	"	"	"				
280-101	9389 (Core)		"	"	"	"				
280-101a	9389 (Core)		"	"	"	"				
280-102	10420 (Core)	0.10	--	--	--	--	--	--	--	--

TABLE I

SOCAL No. 32-14 Simpson Lag

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxyger Index

* Well depth measured in feet
** Maximum detector limit exceeded; unable to repeat analysis due to insufficient sample material
*** Unable to determine due to insufficient S2 yield, multiple peaks, etc.

CONTRACT SERVICE REPORT - 281

CLIENT: Mobil Exploration & Producing Services, Inc.
P.O. Box 900
Dallas, Texas 75221

WELL: Atlantic Richfield Co. No. 1 Placid State (3-10-13), N. Slope, Alaska

AUTHORIZATION: Ulrich A. Franz

SAMPLE DESCRIPTION

A total of twenty-two (22) cuttings samples and five (5) core fragments were received. All twenty-seven (27) samples were analyzed. Sample quality was generally good.

SAMPLE PREPARATION

Caved material was a major problem in this well, and it was necessary to pick most of the samples. The picking was done according to the formation tops submitted for the well. As with the other wells, lithologic descriptions were not carried out.

POTENTIAL SOURCE UNITS

HOT ZONE (PEBBLE SHALE) - Although the entire Cretaceous is definitely immature, the Hot Zone shale has an extremely high organic carbon content (3.42 - 4.10%). The pyrolysis results indicate that significant amounts of hydrocarbon has been generated within the Hot Zone, but it is uncertain if this immature section is generating commercial quantities of oil or gas.

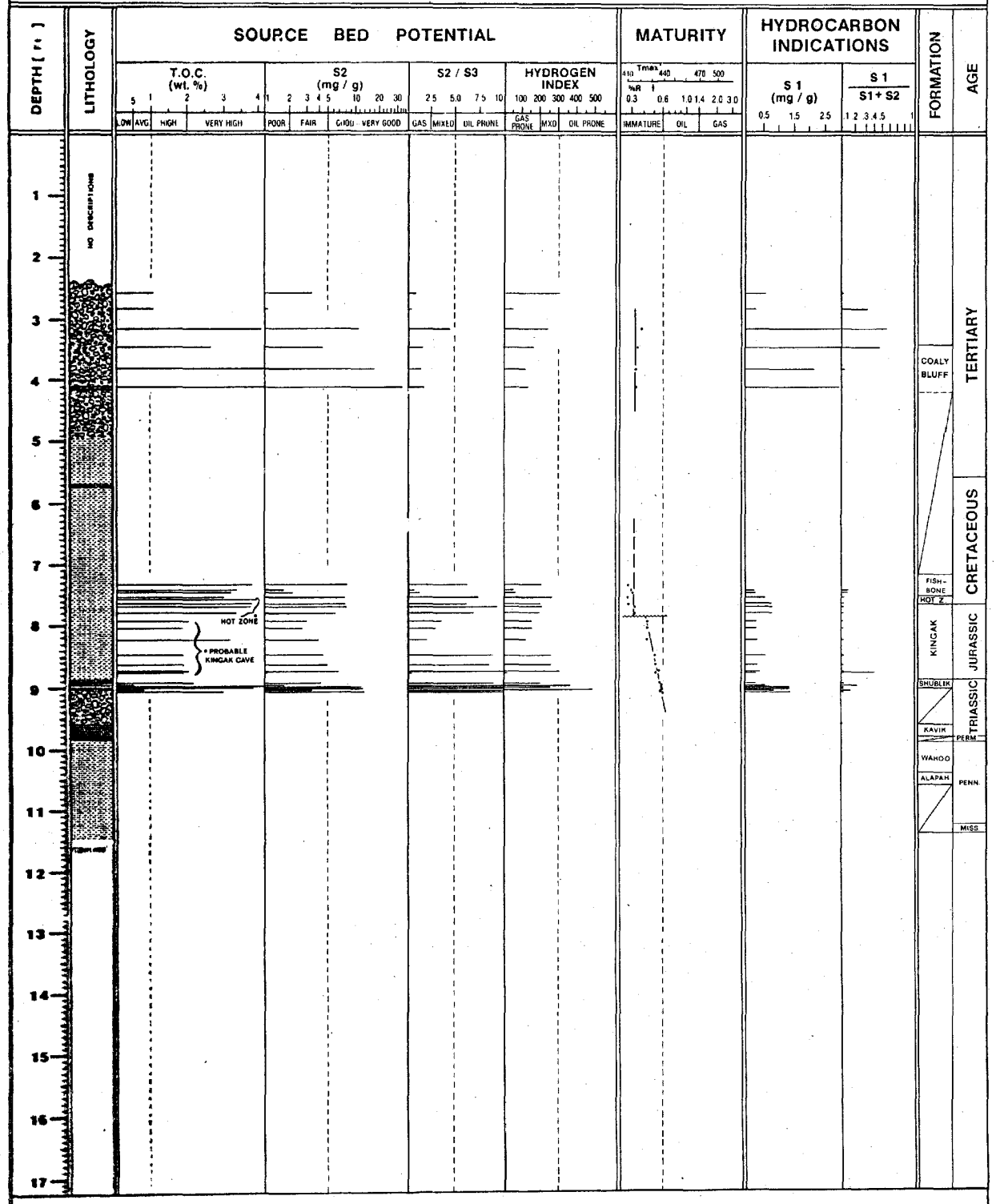
JURASSIC & TRIASSIC - The thermal maturation level appears significantly higher below the Neocomian Unconformity and this increase is reflected in the hydrocarbon source potential. The Jurassic Kingak Formation and Upper Triassic Shublik Formation appear to be generating significant quantities of oil. This is especially true of the Shublik Formation which appears to be an excellent source unit.

Although some of the Tertiary samples exhibit an extremely high organic carbon content, the section is grossly immature and is not a source unit within this area.

BROWN & RUTH LABORATORIES, INC.

GEOCHEMICAL LOG

OPERATOR: Atlantic Richfield Company
WELL NAME: No. 1 Placid State (3-10-13)
LOCATION: North Slope, Alaska
T.D.: 11,400'



LITHOLOGICAL LEGEND

SANDSTONE — LIMESTONE — SHALE OR SILTSTONE

COAL — DOLOMITE — CONGLOMERATE

PYROLYSIS TERMS

S1 = FREE HYDROCARBONS PRESENT IN ROCK

S2 = HYDROCARBONS FROM PYROLYSIS OF KEROGEN

S3 = CO_2 FROM KEROGEN PYROLYSIS

HYDROGEN INDEX = S2/T.O.C.

TABLE I

ARCO No. 1 Placid State

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
281-001	2500-2590	1.17	0.55	3.61	3.29	**	0.13	1.10	309	282
281-002	2770-2860	1.13	0.32	0.68	1.53	**	0.32	0.44	60	135
281-003	3100-3190	4.42	16.11	11.05	2.49	423	0.59	4.43	250	56
281-004	3400-3490	2.72	4.37	4.54	2.47	419	0.49	1.83	167	91
281-005	3700-3800	16.20	2.13	19.05	15.01	417	0.10	1.27	118	93
281-006	4010-4100	25.15	3.11	32.18	23.23	417	0.09	1.39	128	92
281-007	7280-7340	3.92	0.45	8.02	1.26	411	0.05	6.38	205	32
281-008	7340-7420	3.41	0.32	1.74	2.18	414	0.16	0.80	51	64
281-009	7420-7460	3.09	0.35	2.12	1.60	417	0.14	1.32	69	52
281-010	7480-7540	3.12	0.58	8.45	1.12	412	0.06	7.52	271	36
281-011	7560-7580	4.10	0.46	0.93	2.08	424	0.33	0.45	23	51
281-012	7600-7660	3.78	0.71	8.20	1.27	413	0.08	6.48	217	34
281-013	7660-7700	3.71	0.90	8.63	0.95	418	0.09	9.05	233	26
281-014	7740-7800	3.42	0.84	7.15	1.00	417	0.11	7.15	209	29
281-015	7880-7940	2.09	0.34	3.30	0.90	427	0.09	3.65	158	43
281-016	8020-8050	1.86	0.37	2.93	1.01	427	0.11	2.89	158	55
281-017	8220-8250	3.26	0.45	4.10	1.81	429	0.10	2.27	126	55
281-018	8460-8490	1.80	0.58	4.84	0.54	435	0.11	8.94	269	30
281-019	8600-8630	1.95	0.39	5.17	0.63	436	0.07	8.16	272	33
281-020	8750-8770	2.21	0.47	7.49	0.58	439	0.06	12.81	339	27
281-021	8770-8780	1.97	0.40	0.55	0.58	436	0.42	0.94	28	30
281-022	8910-8930	2.25	0.43	4.68	0.50	439	0.09	9.36	208	22
281-023	8950-8961	0.53	0.70	1.97	0.17	440	0.26	11.54	372	32
281-024	8962-8973	5.36	1.40	14.15	0.26	440	0.09	54.04	264	5
281-025	8975-8984	3.85	1.95	15.78	0.42	440	0.11	37.54	410	11
281-026	8987-9005	0.71	0.84	3.66	0.19	439	0.19	19.11	515	27
281-027	9012-9019	3.11	1.47	17.11	0.19	441	0.08	88.48	550	6

*Well Depth in Feet

**Unable to Determine Due to Insufficient S_2 Yield, Multiple Peaks, Etc.

CONTRACT SERVICE REPORT - 282

CLIENT: Mobil Exploration & Producing Services, Inc.
P.O. Box 900
Dallas, Texas 75221

WELL: Union Oil Co. No. 1 KOOKPUK, N. Slope, Alaska

AUTHORIZATION: Ulrich A. Franz

SAMPLE DESCRIPTION

A total of fifty-four (54) cuttings samples were received. Forty-five (45) of the samples were selected for analysis. Sample quality was generally good although there was insufficient material in some cases. A few of the samples were also contaminated with lost circulation material.

SAMPLE PREPARATION

Caved material was a major problem in this well, and it was necessary to pick most of the samples. The picking was done according to the formation tops submitted for the well. As with the other wells, lithologic descriptions were not carried out.

POTENTIAL SOURCE UNITS

HOT ZONE (PEBBLE SHALE) - The samples representing the Hot Zone Formation are extremely rich (T.O.C. values range from 1.42% to 3.67%), but are extremely immature. It is doubtful if such immature sediments can source significant quantities of either oil or gas, and the zone is considered non-prospective within this area.

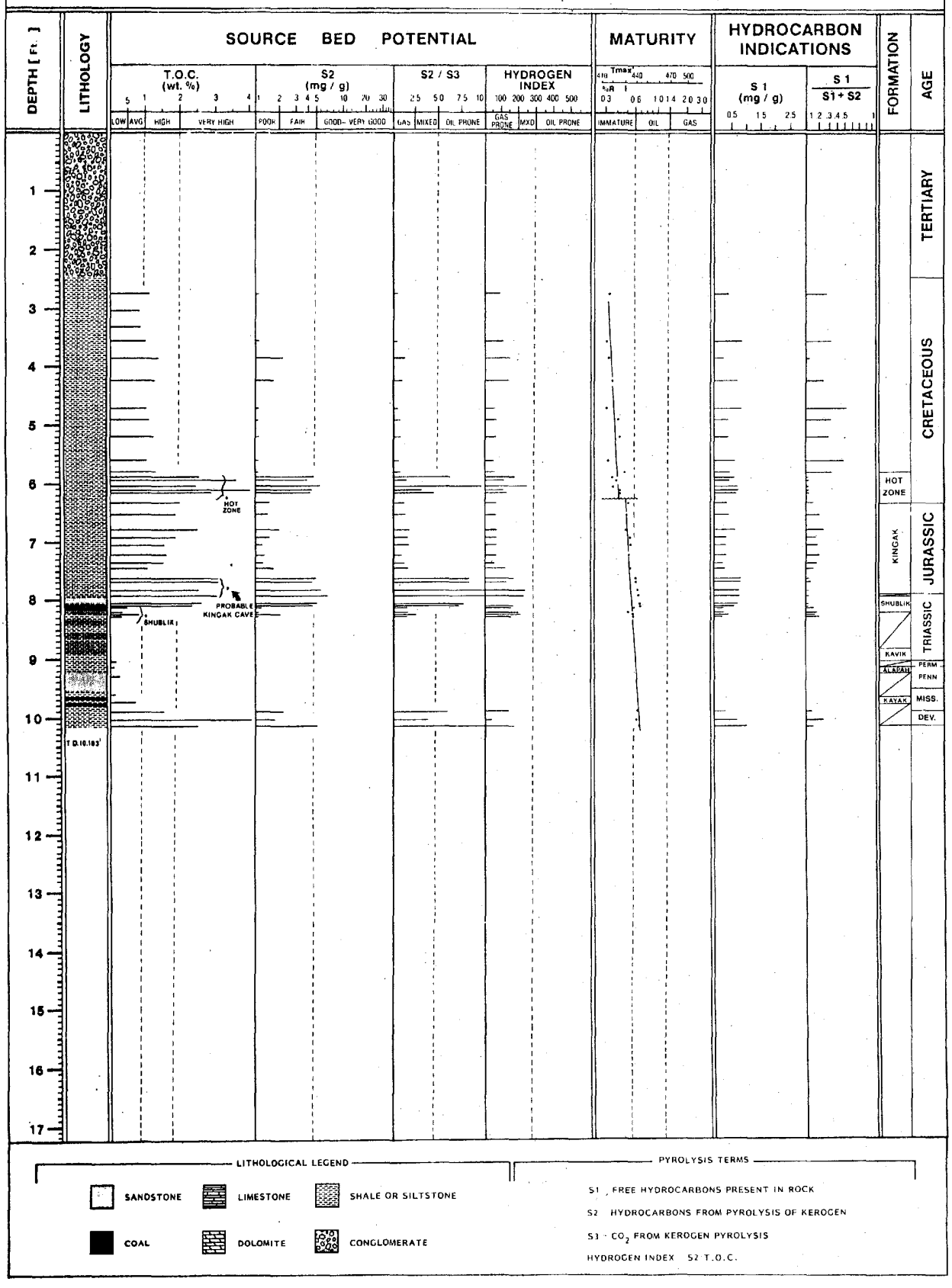
JURASSIC - Below the Neocomian Unconformity the thermal maturation level is significantly higher. The Kingak Shale is organically rich (T.O.C. values range from 1.32% to 3.11%). This organic richness, combined with the increased thermal maturity, results in a good oil source potential for the Kingak Shale. This is especially true near the base of the Jurassic, where the alteration gradient is well within the oil window. This section of the Lower Kingak appears to be an excellent oil source.

DEVONIAN - A Devonian argillite encountered at the base of the well has some potential as an oil source. The organic content is high (T.O.C. values of 2.59% and 4.04%), and the thermal maturation level is well within the oil window.

BROWN & RUTH LABORATORIES, INC.

GEOCHEMICAL LOG

OPERATOR: Union Oil Company
WELL NAME: No. 1 Kookpuk
LOCATION: North Slope, Alaska
T.D.: 10,193'



LITHOLOGICAL LEGEND

SANDSTONE · LIMESTONE · SHALE OR SILTSTONE
COAL · DOLOMITE · CONGLOMERATE

PYROLYSIS TERMS

S1 , FREE HYDROCARBONS PRESENT IN ROCK
S2 HYDROCARBONS FROM PYROLYSIS OF KEROGEN
S3 CO_2 FROM KEROGEN PYROLYSIS
HYDROGEN INDEX S2 T.O.C.

TABLE I

Union Oil No.1 KOOKPUK

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
282-001	1980-2140	Insufficient Sample Material for Analysis								
282-002	2720-2780	1.10	0.44	1.09	1.77	419	0.29	0.62	99	161
282-003	2960-3020	0.88	---	---	---	---	---	---	--	---
282-004	3280-3340	0.94	---	---	---	---	---	---	--	---
282-005	3520-3580	1.01	0.83	1.16	2.16	417	0.42	0.53	114	21
282-006	3820-3880	1.48	0.32	2.23	1.26	419	0.12	1.77	151	85
282-007	4160-4220	1.35	0.63	1.90	1.70	421	0.25	1.12	141	126
282-008	4640-4700	1.06	0.90	0.73	1.80	417	0.55	0.41	69	170
282-009	4840-4900	1.14	0.40	0.88	1.45	426	0.31	0.61	78	127
282-010	5140-5200	1.29	0.42	0.95	1.26	428	0.30	0.76	74	97
282-011	5560-5600	1.18	0.68	0.63	1.28	419	0.52	0.50	54	108
282-012	5740-5800	1.42	0.48	0.91	1.10	430	0.35	0.83	64	77
282-013	5840-5900	2.53	0.64	4.97	0.76	421	0.11	6.52	196	30
282-014	5900-5940	3.67	0.45	4.00	2.19	424	0.10	1.83	109	60
282-015	5960-6020	2.50	0.72	6.15	0.68	422	0.10	8.99	246	27
282-016	6060-6120	4.08	0.72	4.61	1.53	427	0.13	3.02	113	37
282-017	6120-6180	2.89	0.66	4.19	0.88	427	0.14	4.74	145	31
282-018	6280-6340	2.02	0.39	1.62	1.56	434	0.19	1.04	80	77
282-019	6440-6520	1.97	0.41	1.56	1.26	432	0.21	1.23	79	64
282-020	6640-6800	2.51	0.67	2.03	1.19	431	0.25	1.71	81	47
282-021	6880-6920	1.94	0.34	1.53	1.40	434	0.18	1.09	79	72
282-022	7030-7060	1.55	0.31	1.27	1.01	437	0.20	1.27	82	65
282-023	7210-7240	1.66	0.41	1.47	1.34	435	0.22	1.10	89	81
282-024	7350-7370	1.60	0.32	1.31	1.00	435	0.20	1.31	82	62
282-025	7460-7490	1.32	0.36	1.82	0.84	437	0.17	2.18	138	63
282-026	7600-7630	3.11	0.81	5.64	0.66	441	0.13	8.57	181	21
282-027	7670-7700	3.11	0.85	4.88	0.57	441	0.15	8.59	157	18
282-028	7800-7830	2.58	0.72	6.31	0.48	442	0.10	13.10	245	19
282-029	7910-7940	3.10	0.80	7.47	0.65	443	0.10	11.50	241	21
282-030	8000-8030	Insufficient Sample Material for Analysis								
282-031	8050-8080	2.62	0.78	5.57	0.71	443	0.12	7.90	213	27
282-032	8090-8120	2.44	0.60	4.76	0.69	444	0.11	6.90	195	28
282-033	8120-8160	0.61	0.26	1.12	0.57	440	0.19	1.95	183	94
282-034	8160-8210	0.49	0.26	1.03	0.49	436	0.20	2.08	210	101
282-035	8210-8240	0.91	0.48	2.15	0.71	439	0.18	3.02	236	78

TABLE I

Union Oil No.1 KOOKPUK

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
282-037	8290-8330	Sand Section; No Analysis Performed								
282-038	8330-8370	"	"	"	"	"				
282-039	8570-8600	"	"	"	"	"				
282-040	8760-8800	"	"	"	"	"				
282-041	8890-9010	0.19	---	---	----	---	---	---	---	---
282-044	9020-9140	0.12	---	---	---	---	---	---	---	---
282-046	9140-9185	100% Caving; No In Place Material								
282-047	9185-9220	"	"	"	"	"				
282-048	9230-9300	0.40	---	---	---	---	---	---	---	---
282-049	9300-9340	Insufficient Sample								
282-050	9560-9600	0.10	---	---	---	---	---	---	---	---
282-051	9710-9740	0.79	---	---	---	---	---	---	---	---
282-052	9870-9900	1.61	0.41	2.43	0.38	442	0.14	6.48	151	23
282-053	10010-10050	4.04	0.71	1.95	0.50	441	0.27	3.89	48	12
282-054	10140-10170	2.59	1.07	5.15	0.48	443	0.17	10.80	199	18

*Well Depth In Feet

CONTRACT SERVICE REPORT - 284

CLIENT: Mobil Exploration & Producing Services, Inc.
P.O. Box 900
Dallas, Texas 75221

WELL: Sinclair Oil & Gas Co. No. 1 Colville State, N. Slope, Alaska

AUTHORIZATION: Ulrich A. Franz

SAMPLE DESCRIPTION

A total of twenty-four (24) cuttings samples and two (2) core chips were received. All twenty-six (26) samples were analyzed. Sample quality was fair, although a few of the samples were contaminated with lost circulation material. The upper eighteen (18) samples from 2560 - 6280 feet were just mudstone.

SAMPLE PREPARATION

Since the samples were mostly mudstone, and tops were not available until the Hot Zone at 5852', unpicked sample material was analyzed to this depth. The samples from 7890 - 9900 feet were handpicked to agree with the formation tops submitted for the well. As with other wells, lithologic descriptions were not carried out.

POTENTIAL SOURCE UNITS

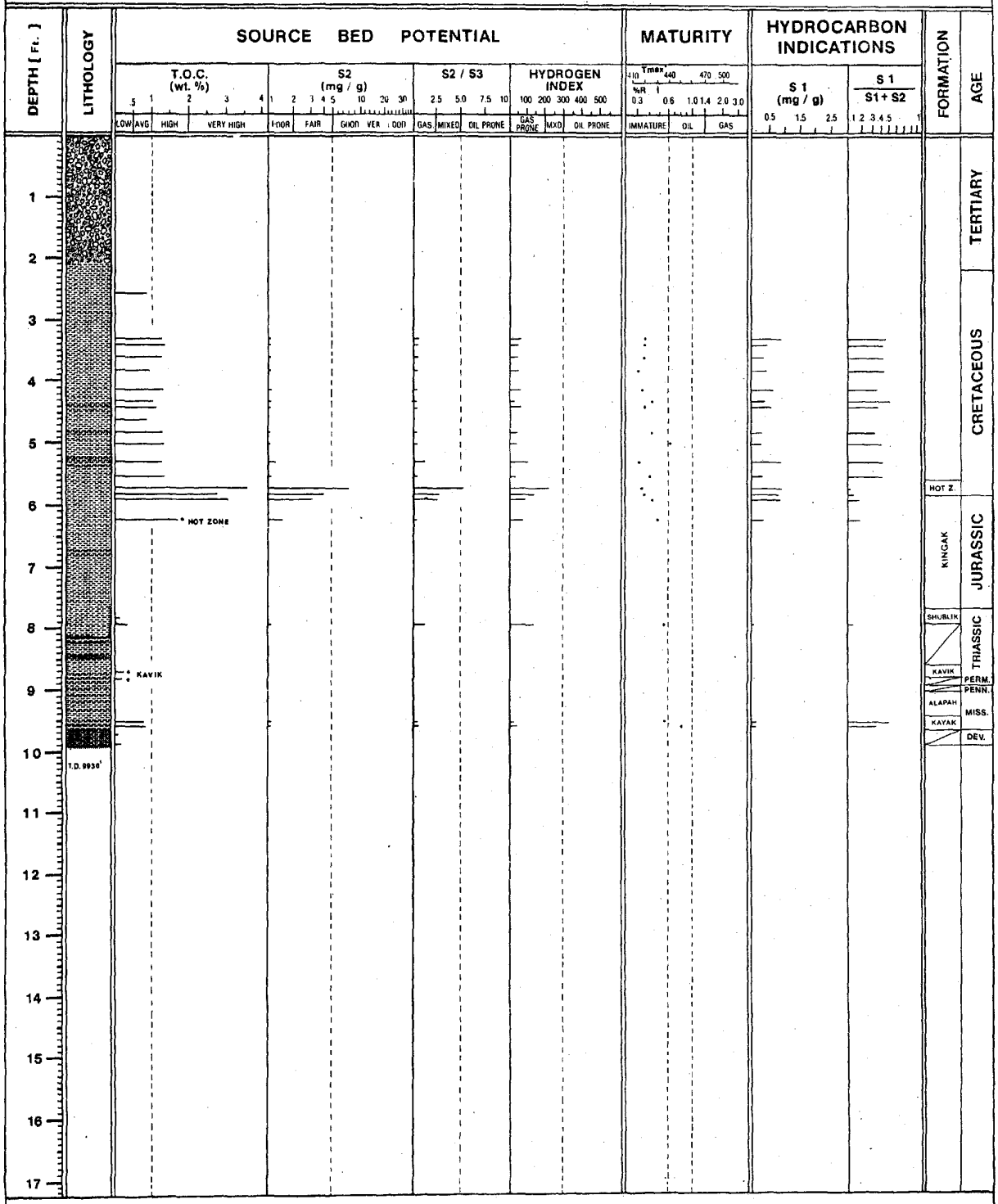
HOT ZONE (PEBBLE SHALE) - Samples from the Hot Zone have very high organic carbon contents (T.O.C. values range from 1.75% to 3.58%), but the samples are immature and the section is not considered to be a potential source unit within this area.

Although some of the post-Hot Zone (Units of the Fishbone unavailable) sediments do exhibit greater than average organic carbon contents (T.O.C. values range from 0.89% to 1.42%) the samples are grossly immature and are not considered potential source units.

BROWN & RUTH LABORATORIES, INC.

GEOCHEMICAL LOG

OPERATOR: Sinclair Oil & Gas Company
WELL NAME: No. 1 Colville State
LOCATION: North Slope, Alaska
T.D.: 9930'



LITHOLOGICAL LEGEND

- SANDSTONE
- LIMESTONE
- SHALE OR SILTSTONE
- COAL
- DOLOMITE
- CONGLOMERATE

PYROLYSIS TERMS

S1 = FREE HYDROCARBONS PRESENT IN ROCK

S2 = HYDROCARBONS FROM PYROLYSIS OF KEROGEN

S3 = CO_2 FROM KEROGEN PYROLYSIS

HYDROGEN INDEX = S2/T.O.C.

TABLE I

Sinclair No. 1 Colville St.

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
284-001	2560-2590	0.89	--	--	--	--	--	--	--	--
284-002	3290-3320	1.22	0.86	0.89	1.92	423	0.49	0.47	73	157
284-003	3390-3420	1.28	0.47	0.64	1.63	424	0.42	0.39	50	127
284-004	3580-3610	1.21	0.38	0.49	1.51	421	0.44	0.32	40	125
284-005	3790-3820	0.99	0.46	0.57	1.71	417	0.45	0.34	58	173
284-006	4120-4150	1.42	0.67	1.12	1.83	420	0.38	0.61	79	129
284-007	4290-4320	1.05	0.42	0.40	1.43	428	0.51	0.28	38	136
284-008	4390-4420	1.17	0.53	0.85	2.09	422	0.39	0.41	72	178
284-009	4590-4620	0.94	--	--	--	--	--	--	--	--
284-010	4790-4820	1.29	0.35	0.64	1.59	428	0.35	0.40	50	123
284-011	4990-5020	1.32	0.32	0.41	1.38	433	0.44	0.30	31	105
284-012	5180-5210	1.34	0.34	0.58	1.35	435	0.37	0.43	44	101
284-013	5300-5320	1.27	0.77	1.39	1.14	419	0.36	1.23	110	90
284-014	5490-5520	1.35	0.34	0.43	1.02	426	0.44	0.42	33	77
284-015	5690-5720	3.58	0.92	8.51	1.58	420	0.10	5.37	238	44
284-016	5790-5820	2.74	0.72	4.01	1.45	423	0.15	2.77	146	53
284-017	5880-5910	3.09	0.79	3.10	1.16	428	0.20	2.66	100	38
284-018	6250-6280	1.75	0.38	1.57	2.40	433	0.20	0.66	90	137
284-019	7890-7930	0.47	0.13	0.73	0.52	439	0.15	1.41	156	111
284-020	8690-8720	0.28	--	--	--	--	--	--	--	--
284-021	8790-8820	0.22	--	--	--	--	--	--	--	--
284-022	8490-9520	0.81	0.31	0.23	0.66	439	0.58	0.34	28	81
284-023	9570-9600	0.98	0.26	0.41	0.85	458	0.39	0.48	42	87
284-024	9870-9900	0.22	--	--	--	--	--	--	--	--
284-025	7884-7887**	0.10	--	--	--	--	--	--	--	--
284-026	9746-9746**	0.13	--	--	--	--	--	--	--	--

* Well depth measured in feet
** Core

CONTRACT SERVICE REPORT - 285

CLIENT: Mobil Exploration & Producing Services, Inc.
P.O. Box 900
Dallas, Texas 75221

WELL: Sohio Petroleum Company, No. 11 West Sak, N. Slope, Alaska

AUTHORIZATION: Ulrich A. Franz

SAMPLE DESCRIPTION

A total of eleven (11) cuttings samples were received, and all eleven were analyzed. Sample quality was good.

SAMPLE PREPARATION

All of these samples had been previously handpicked by Mobil. Instructions were that the samples should be analyzed as received. No lithologic descriptions were carried out.

DATA EVALUATION

Because of the limited number of samples and the fact that they represented only ± 900 feet of section, a plot of the data was not prepared for this well.

The interval 4840-5740' (no formation tops were provided) is high in organic matter content with values ranging from 2-4%. The pyrolysis data indicate a thermally immature, gas prone section.

TABLE I

Sohio No. 11 West Sak

Results of Organic Carbon Analysis and Rock-Eval Pyrolysis

Sample Number	Well Depth*	T.O.C. (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index	S2/S3	Hydrogen Index	Oxygen Index
285-001	970-1060	24.26	7.42	52.56	34.50**	363	0.12	1.52**	217	142**
285-002	4840-4930	3.73	0.96	3.62	4.38	412	0.21	0.83	97	117
285-003	4960-5050	3.31	1.17	6.14	3.27	414	0.16	1.88	186	99
285-004	5050-5140	3.34	1.04	2.80	4.03	414	0.27	0.70	84	121
285-005	5140-5230	2.12	0.48	3.64	1.44	415	0.12	2.53	172	68
285-006	5230-5320	1.89	0.36	2.04	1.59	421	0.15	1.28	108	84
285-007	5320-5410	2.52	0.65	5.12	1.65	419	0.11	3.11	203	65
285-008	5410-5500	4.19	1.02	13.77	1.20	418	0.07	11.43	329	29
285-009	5500-5540	3.20	0.54	4.88	1.46	422	0.10	3.35	153	46
285-010	5600-5640	3.92	0.94	8.16	1.25	425	0.10	6.51	208	32
285-011	5700-5740	3.08	0.74	3.41	1.27	424	0.18	2.68	111	41

* Well depth measured in feet

** Maximum detector limit exceeded - unable to repeat analysis due to insufficient sample material.

TABLE I

GULF OIL CORP.
No. 1 Colville Delta State

File No. 276
February 18, 1983

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
276-010	3580-3700	0.85	0.46	0.76	1.64	413	0.30	0.46	89	193
276-022	6600-6680	0.61	0.35	0.59	0.60	422	0.37	0.98	97	98
276-023	6680-6760	0.52	0.26	0.46	0.54	425	0.36	0.86	88	104
276-024	6760-6840	0.98	0.32	1.42	0.57	430	0.18	2.50	145	58
276-038	7710-7760	0.67	0.42	1.02	0.84	433	0.19	2.16	152	125

TABLE I

SINCLAIR
No. 1 UGNU

File No. 278
February 18, 1983

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
278-013	3530-3560	0.83	0.12	0.25	2.46	304	0.33	0.10	30	296
278-014	3850-3880	0.79	0.17	0.36	2.80	367	0.33	0.13	46	354
278-015	4100-4130	0.68	0.16	0.29	2.14	370	0.35	0.14	43	315
278-017	4750-4780	0.76	0.12	0.19	1.41	---	0.39	0.14	25	186
278-018	4810-4840	0.76	0.45	0.81	0.86	**	0.36	0.94	107	113
278-019	4860-4890	0.84	0.29	0.39	1.38	414	0.43	0.28	46	165
278-020	4980-5010	0.84	0.57	0.87	1.72	**	0.40	0.50	103	204

TABLE I

SOCAL
No. 32-14 Simpson Lagoon

File No. 280
February 18, 1983

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
280-025	4100-4190	0.93	0.52	0.79	1.90	428	0.40	0.42	85	205
280-030	5240-5270	0.83	0.24	0.47	2.08	429	0.33	0.23	57	250
280-031	5480-5510	0.88	0.31	0.69	3.24	429	0.31	0.21	79	368
280-033	5900-5930	0.90	0.31	0.71	1.53	427	0.31	0.46	79	170
280-034	6080-6110	0.86	0.21	0.54	1.51	430	0.28	0.35	61	176
280-036	6410-6440	0.75	0.22	0.53	0.90	425	0.29	0.59	71	120
280-078	9220-9240	0.67	0.26	2.40	0.32	439	0.10	7.53	358	48
280-079	9240-9260	0.65	0.32	2.45	0.27	439	0.12	9.13	377	41
280-080	9260-9280	0.56	0.33	2.03	0.26	438	0.14	7.77	362	47

TABLE I

Union No. 1 Kookpuk

File No. 282
February 18, 1983

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
282-003	2960-3020	0.88	0.46	0.87	2.00	413	0.35	0.43	90	227
282-004	3280-3340	0.96	0.38	0.81	1.61	421	0.32	0.50	86	171

TABLE I

Sinclair No. 1 Colville State
North Slope, Alaska

File No. 284
February 18, 1983

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
284-001	2560-2590	0.89	0.88	0.76	1.66	347	0.54	0.46	85	187
284-009	4590-4620	0.94	0.29	0.55	1.40	419	0.34	0.40	59	149

CONTRACT SERVICE REPORT

Pyrolysis/T.O.C. Profiles

Eight (8) North Slope Alaska Wells