## Vitrinite Reflectance Data

**Well:** David River (Additional Data)  
**Location:** Bristol Bay, Alaska

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<td>BW+S BS/PL COAL FR+WV IN SLT/OX (M O FL)</td>
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<td>BW/PL VST+W+PAR (M O FL)</td>
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Figures in parentheses indicate number of readings.
# Table 1

Vitrinite reflectance data

**Well: David River-1A**  
**Location: Bristol Bay, Alaska**

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Figures in parentheses indicate number of readings  
See list of abbreviations overleaf
**TABLE 1A**

**VITRINITE TABLE ABBREVIATIONS**

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"(SPORE FLUORESCENCE COLOURS UNDER U.V. LIGHT)"

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### TABLE 2

**VISUAL KEROGEN DESCRIPTIONS**

- **WELL**: DAVID RIVER-1A
- **LOCATION**: BRISTOL BAY ALASKA

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**LOCATION:** BRISTOL BAY ALASKA

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ROCK-EVAL AND PYROLYSIS DATA

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**Lithology and TOC Data**

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**LOCATION: BRISTOL BAY ALASKA**

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**Sample Types:**
- N-CORE SAMPLE
- O-OUTCROP
- S-SIDEWALL CORE
- C-CUTTINGS
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SAMPLE TYPES :-
N-CORE SAMPLE D-OUTCROP
S-SIDEWALL CORE C-CUTTINGS
for well: DAVID RIVER

M = 1.36648E-04
C = .286802

OIL FLOOR - 1.3% Ro
OGT - 0.55% Ro
GGT - 0.7% Ro
AV. VALUES FOR OIL-PRONE KEROGEN

LINE OF BEST FIT TO DATA
WITH THRESHOLD ERROR RANGES
R^2 = .81
Depth (ft)

[fig. 2]
SAC FRACTION GAS CHROMATOGRAM

SAMPLE: 4146-4255ft
SAMPLE: 8465-8520ft
SAMPLE: 11058-11098ft

SAMPLE: 4058-5165ft
SAMPLE: 7196-7230ft

SAMPLE: 5888-5935ft
SAMPLE: 7350-7440ft

GEOCHEMISTRY BRANCH BP SUNBURG
OPERATIONS GROUP
**GEOLOGICAL AND WELL DATA**

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<th>Depth Drilled ft &amp; m</th>
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<th>Picked Log</th>
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<td>BEAR LAKE FORMATION</td>
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<td>SIEVRAK FORMATION</td>
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<td>FORMATION</td>
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**SOURCE ROCK QUALITY**

- TOTAL ORGANIC CARBON %
- VISUAL KEROGEN
- PYROLYSIS DATA
  - SOURCE TYPE
  - ROCK EVAL
  - PRODUCTS
  - MAX YIELD kg/t
  - OIL YIELD kg/t
  - GAS YIELD kg/t

**COMMENTS**

- BETWEEN 1500'- 2210'
  - P2 x 0

**SCALE = 1: 10,000**

**Petrochemical Log**

- **Date Spudded:** 11/6/68
- **Date Completed:** 31/6/69
- **TO:** 13769 ft
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<td></td>
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Index of Pet. 

Ratings for PGC and Rock Evaluation: 20% yields are critical.
### TABLE 1

**VITRINITE REFLECTANCE DATA**

**WELL:** MOODOO LAKE UNIT 2  
**LOCATION:** BRISTOL BAY, ALASKA

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<th>REFLECTANCE VALUES (%Ro)</th>
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<tr>
<td>780</td>
<td>.24(8)</td>
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<tr>
<td>1800</td>
<td>.37(5).53(4)</td>
<td>OCC BW/TR PHYT/F PAR V+I - NO FL</td>
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<tr>
<td>2160</td>
<td>.52(5).68(6)</td>
<td>LIGHT BS+W/TR PHYT/F VW/NOX - LT 0</td>
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<tr>
<td>2520</td>
<td>.42(6).63(2)</td>
<td>BAR/OCC BW/F COR V SP - NO FL</td>
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<td>2910</td>
<td>.5(2).77(5)</td>
<td>BW/TR VPAR+W-VAR - NO FL</td>
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<tr>
<td>3300</td>
<td>.42(1).8(4)</td>
<td>BAR/BW/F COR VW+PAR-VAR - DO</td>
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<tr>
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<td>.5(1).73(5)</td>
<td>BAR/OCC BW/F VPAR-VAR - NO FL</td>
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<td>BAR/BW/F VW+PAR - NO FL</td>
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<td>BW+LIGHT BS/TR VPAR+WPAR - M-DO</td>
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<td>4780</td>
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<td>BW+LIGHT-MOD S/F IPAR=VW - NO FL</td>
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<tr>
<td>5280</td>
<td>.8(21)</td>
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*Figures in parentheses indicate number of readings*

*See list of abbreviations overleaf*
TABLE 1A

VITRINITE TABLE ABBREVIATIONS

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(SPORE FLUORESCENCE COLOURS UNDER U.V. LIGHT)

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## TABLE 2
### VISUAL KEROGEN DESCRIPTIONS

**WELL:** HOODOO LAKE UNIT 2  
**LOCATION:** BRISTOL BAY, ALASKA

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<th>Spore Colour</th>
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<td>POOR-?MOD GAS</td>
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**LOCATION:** BRISTOL BAY, ALASKA

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### TABLE 4

**LITHOLOGY AND TOC DATA**

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**LOCATION:** BRISTOL BAY, ALASKA

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- C-CUTTINGS
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Vitrinite Reflectance Analysis
for well: HOODOO LAKE UNIT 2

M = 2.87750E-04
C = 1.88868

- OGT - 0.55% Ro
- GGT - 0.7% Ro
- OIL FLOOR - 1.3% R

AV. VALUES FOR OIL-PRONE KEROGEN

LINE OF BEST FIT TO DATA
WITH THRESHOLD ERROR RANGES

R^2 = .88
Depth (ft)
SAMPLE: BEAR LAKE FM 1888-1208 FT

SAMPLE: TOLSTOI FM 5040-5888 FT

SAMPLE: CHIGNIK FM 8100-8220 FT

SAMPLE: STEPOVAK FM 2018-2078 FT

SAMPLE: TOLSTOI FM 8840-8740 FT

SAMPLE: HERENDEEN FM 8540-8570 FT

SAMPLE: STEPOVAK FM 5820-5860 FT

SAMPLE: CHIGNIK FM 7240-7350 FT

GEOCHEMISTRY BRANCH, BP SUNBUR
OPERATIONS & DEVELOPMENT GROUP

NORMALISED n-ALKANE DISTRIBUTION
WELL: HOODOO LAKE UNIT #2  
LOCATION: BRISTOL BAY, ALASKA  
OPERATOR: SOCAL

Date Spudded: 13-2-70  
Date Completed: 21-4-70  
TD: 11,243 ft

BP RESEARCH CENTRE, SUNBURY OPERATIONAL SERVICES GROUP.  
PETROLEUM GEOCHEMICAL LOG

<table>
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<th>SPOROCOL</th>
<th>NITRINITE</th>
<th>REFLECTANCE %</th>
<th>GENERATION INDICES %</th>
<th>CARBON PREFERENCE INDEX</th>
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<td>SPORE TYPE</td>
<td>MATURE</td>
<td>REFINED</td>
<td>OIL PLOW</td>
<td>OIL PLOW</td>
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<td>0.05-0.5</td>
<td>0.12</td>
<td>0.80</td>
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<td>0.50</td>
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GEOLOGICAL AND WELL DATA

GEOMETRIC DATA | NUMERICAL LOG | VISUAL KEROGEN | SOURCE ROCK | QUALITY | PRODUCTS | COMMENTS |
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<td>STRATIGRAPHY</td>
<td>GRAVITY</td>
<td>LOG</td>
<td>PLEATED</td>
<td>DEG</td>
<td>MAX YIELD</td>
<td>OIL</td>
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<tr>
<td>100</td>
<td>1</td>
<td>0.1</td>
<td>1.0</td>
<td>5</td>
<td>10</td>
<td>100</td>
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SOURCES ROCK | QUALITY | PYROLYSIS DATA | COMMENTS |
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<td>TOTAL ORGANIC CARBON %</td>
<td>VISUAL KEROGEN</td>
<td>SOURCE TYPE</td>
<td>ROCK EVAL</td>
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<td>DEEP</td>
<td>OIL</td>
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KEY
- PROBABLE AUTOCHTHONOUS
- POSSIBLE ALLOGENOUS
- MUTHER STAINING AND OR WISP

NOTES
1. Average Generation Threshold for Oil from Ternupine.
4. Saturated Carbon.
**WELL:** HOODOO LAKE UNIT #2  
**LOCATION:** BRISTOL BAY, ALASKA.  
**OPERATOR:** SOCAL

**Date Spudded:** 13-2-70  
**Date Completed:** 21-4-70  
**TD:** 11,243 ft

### MATURITY INDICATORS

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<thead>
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<th>Spore Colour</th>
<th>Vitrinite Reflectance %</th>
<th>Generation Indices</th>
<th>Carbon Preference Index</th>
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<tr>
<td>IMMATURE</td>
<td>MATURE</td>
<td>IMMATURE</td>
<td>PEAK OIL</td>
</tr>
<tr>
<td>1,2,3,4,5,6,7</td>
<td>.02</td>
<td>.06</td>
<td>.08</td>
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### GEOLOGICAL AND WELL DATA

<table>
<thead>
<tr>
<th>Stratigraphy</th>
<th>Depth Drilled (ft &amp; m)</th>
<th>Graphic Log</th>
<th>Picked Log</th>
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</thead>
</table>

**TOTAL OIL CARBON CONTENT:**

- **POOR:** 0.5
- **MODERATE:** 1.5
**GEOLOGICAL AND WELL DATA**

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<tr>
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<th>Depth Oiled</th>
<th>Graphic Picked</th>
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</thead>
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<td>ft &amp; m</td>
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**SOURCE ROCK QUALITY**

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<th>Total Organic Carbon (%)</th>
<th>Visual Kerogen</th>
<th>Pyrolysis Data</th>
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<td>Source Type</td>
<td>Rock Eval</td>
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<td></td>
<td></td>
<td>Products</td>
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</tbody>
</table>

**COMMENTS**

- Source Type: ____________
- Rock Eval: ____________
- Products: ____________

---

**SP RESEARCH CENTRE, SUNBURY. OPERATIONAL SERVICES GROUP.**

**PETROLEUM GEOCHEMICAL LOG**

**SCALE = 1:10,000**

---

**SP RESEARCH CENTRE, SUNBURY.**
Rock potential Ratings for PGC:
- Ratings: Poor (<1.5), Good (1.5-5), Very Good (>5).

Hydrocarbon yields:
- Rock-EW (Oil + Gas), (Oil only).

Hydrocarbon Yield:
- From 250 to 550°C.

Migration of hydrocarbons reaching the reservoir may be only 10% of the total yield.
TABLE I

VITRINATE REFLECTANCE DATA

WELL: SANDY RIVER-1
LOCATION: BRISTOL BAY, ALASKA

<table>
<thead>
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<th>REFLECTANCE VALUES (%RO)</th>
<th>COMMENTS</th>
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<tr>
<td>2820</td>
<td>43(20)</td>
<td>F COAL CTGS /S BS - NO FL</td>
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<tr>
<td>3420</td>
<td>0(0)</td>
<td>NDP</td>
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<tr>
<td>3630</td>
<td>24(3)</td>
<td>EAR - Y/O (SPORES+HC SP)</td>
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<tr>
<td>4290</td>
<td>27(20)</td>
<td>LT BS+EW/WW+W PAR - Y/O+LTO</td>
</tr>
<tr>
<td>4860</td>
<td>3(21)</td>
<td>PL COAL CTGS V/VAP RO - FL HC SP</td>
</tr>
<tr>
<td>5100</td>
<td>37(21)</td>
<td>FULL RANGE MACERALS - Y/O</td>
</tr>
<tr>
<td>5320</td>
<td>31(22)</td>
<td>COAL V - Y/O</td>
</tr>
<tr>
<td>5710</td>
<td>3(20)</td>
<td>V - Y+Y/O (SPORES+HC SP)</td>
</tr>
<tr>
<td>6010</td>
<td>32(22)</td>
<td>V - Y/O</td>
</tr>
<tr>
<td>6310</td>
<td>29(20)</td>
<td>LIGNITE/F DIRTY CTGS - Y/O</td>
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<tr>
<td>6520</td>
<td>32(23)</td>
<td>COAL FULL RANGE MACERALS - Y+Y/O</td>
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<tr>
<td>6760</td>
<td>31(23)</td>
<td>M LIGNITE V/VAP RO - Y/O</td>
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<tr>
<td>7150</td>
<td>33(22)</td>
<td>EW/L PHY/WW+W PAR - LTO</td>
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<tr>
<td>7600</td>
<td>20(4)(3)</td>
<td>EAR F SP HIGH RO - NO FL</td>
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<tr>
<td>9075</td>
<td>35(22)</td>
<td>LIGNITE V/SH WW BS - Y/O</td>
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<td>V - Y/O+LTO</td>
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<tr>
<td>9645</td>
<td>36(22)</td>
<td>MOD/BS+EW/WW PAR V+VST - LTO</td>
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<tr>
<td>9975</td>
<td>39(22)</td>
<td>V - L/MO</td>
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<tr>
<td>10305</td>
<td>57(21)</td>
<td>VAR RO - DULL LTO+MO</td>
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<tr>
<td>10515</td>
<td>61(22)</td>
<td>LIG V/SH PL WW+VST - Y(PES) Y/O (SPORES)</td>
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<td>COAL V/SH BS+VST - MO</td>
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<td>64(22)</td>
<td>WW+VST - LTO+MO</td>
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<td>63(22)</td>
<td>WW+VST - LTO</td>
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<td>EW+BS/L/WW+W PAR/TR I PAR - LTO</td>
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<tr>
<td>12790</td>
<td>66(22)</td>
<td>PL EW+BS/L/WW+W PAR/TR I PAR - MO</td>
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<tr>
<td>-13050</td>
<td>63(7) 1.17(6)</td>
<td>EW+BS/L/V PAR/VAR RO CTG TO CTG - LTO/XO</td>
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</table>

Figures in parentheses indicate number of readings -
See list of abbreviations overleaf.

(P) RINT ANOTHER REPORT, (P) ETURN TO MAIN DATA ENTRY,
(A) SSIGN A NEW FILE OR (C) UIT ?
## TABLE 1A

**VITRINITE TABLE ABBREVIATIONS**

<table>
<thead>
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<th>Abbreviation</th>
<th>Description</th>
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<td>CARBARGILITE</td>
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<td>CUTTINGS</td>
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*(SPOR FLUORESCENCE COLOURS UNDER U.V. LIGHT)*

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<td>ORANGE</td>
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<td>LIGHT</td>
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<td>Y</td>
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TABLE 2

VISUAL KEROCEN DESCRIPTIONS

WELL: SANDY RIVER-1
LOCATION: BRISTOL BAY, ALASKA

<table>
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<td>Tasmanitids and leiospheres</td>
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TABLE 2A

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## TABLE 4
LITHOLOGY AND TOC DATA

**WELL:** SANDY RIVER-1  
**LOCATION:** BRISTOL BAY, ALASKA

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<th>Depth (ft)</th>
<th>Age/Fm</th>
<th>Picked Lithology</th>
<th>TOC</th>
<th>% Carbonate</th>
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### TABLE 5

**SEDIMENTS SOLUBLE EXTRACT DATA**

**WELL:** SANDY RIVER-1  
**LOCATION:** BRISTOL BAY, ALASKA

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<th>Depth (ft)</th>
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<th>TSE/TOC</th>
<th>SAC/TOC</th>
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TABLE 6
SEDIMENTS SOLUBLE EXTRACT DATA

WELL: SANDY RIVER-1
LOCATION: BRISTOL BAY, ALASKA

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<th>PRIST/C-17</th>
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CARBON ISOTOPES DATA

**WELL:** SANDY RIVER-1  
**LOCATION:** BRISTOL BAY, ALASKA

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<th>SAMPLE TYPE</th>
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C-13/C-12 ISOTOPE RATIOS RELATIVE TO PDB STANDARD  
SECONDARY STANDARD: NBS-22 AT -29.4 PERMIL
**WELL: SANDY RIVER No.1**  
**LOCATION: BRISTOL BAY, ALASKA**  
**OPERATOR: GULF OIL CORP.**

**Date Spudded:** 4-9-63  
**Date Completed:** 28-11-63  
**TD:** 13063 ft.

---

### MATURITY INDICATORS

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<th>SPORE COLOUR</th>
<th>VITRINITE REFLECTANCE %</th>
<th>GENERATION STAGES</th>
<th>CARBON PREFERENCE</th>
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### GEOLOGICAL AND WELL DATA

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### SOURCE ROCK QUALITY

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<th>SOURCE TYPE</th>
<th>ROCK EVAL</th>
<th>PYROLYSIS DATA</th>
<th>PRODUCTS</th>
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### COMMENTS

**TOUL ORGANIC VISUAL PYROLYSIS DATA**

**CARBON NUMBER**

**KEROGEN**

**ENL**

**ROBOTIC PRODUCTS**

---

**SCALE = 1:10,000**

**NOTES:**

1. *Autochthonous* indicates the rock is not modified by external processes.
2. *Allochthonous* indicates the rock is modified by external processes.
3. *Probable* or *Possible* indicates the presence of organic matter.
4. *Interpreted* indicates the rock is not affected by external processes.
5. *Possible* indicates the rock is affected by external processes.
6. *Bitumen Staining* and/or *Wet Spots* indicate potential oil source rocks.
**Well: Sandy River No. 1**
**Location:** Bristol Bay, Alaska
**Operator:** Gulf Oil Corp.

**Date Spudded:** 4-9-63
**Date Completed:** 28-11-63
**TD:** 13063 ft.

---

### Maturity Indicators

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<th>Generation Indices %</th>
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<td>Peak Oil</td>
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### Geological and Well Data

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**BP Research & Development**

---

**PET**
**GEOLOGICAL AND WELL DATA**

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<th>Depth Drilled</th>
<th>Graphic Log</th>
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**SOURCE ROCK QUALITY**

- **TOTAL ORGANIC CARBON %**
- **KEROGEN**
- **PYROLYSIS DATA**
  - **OIL**
  - **GAS**
  - **OIL/GAS** RATIO
  - **MAX. YIELD kg/t**
  - **GAS YIELD kg/t**
  - **ROCK EVAL**

**COMMENTS**

BP RESEARCH CENTRE, SUNBURY. OPERATIONAL SERVICES GROUP.

PETROLEUM GEOCHEMICAL LOG

SCALE = 1 : 10,000
2. Source Rock potential Ratings for PGC and RockEval (P2 only) Yield:
- < 0.5% = Insig.
- 0.5% - 1.5% = Poor
- 1.5% - 5% = Moderate
- 5% - 15% = Good
- < 15% = Very Good.

3. Sample with Oil yields of > 1.5 kg/tonne or Rock Eval Pyrolysis (Rock-py) with Oil yields of 1.5% - 3.5% are indicated to possess sufficient oil to consider commercial exploitation.

4. Samples with TOC values of > 1.5% in the source rock are considered very good.