Western Atlas International
A Litton/Dresser Company

CORE LABORATOI

Sec. 9-T23S-R31W

# CORE ANALYSIS RESULTS

for

North American Resources Company, Inc.

Pauls No. 9-2 Well
Stewart Field
Finney County, Kansas
File Number: 57121-8243

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# CORE LABORATORIES

Company : North American Resources Company, Inc.
Well : Pauls No. 9-2
Location : Sec. 9 T23S R31W
Co,State : Finney, Kansas

Field : Stewart
Formation : Atoka-Morrow
Coring Fluid : Fresh Water Gel
Elevation : 2899 KB

File No.: 57121-8243
Date : 22-Sep-1988
API No. :
Analysts: JS MW

## CORE ANALYSIS RESULTS

4800 CORE = 4802 LOG

| SAMPLE NUMBER | DEPTH ft | PERMEABILITY (HORIZONTAL) Kair md | POROSITY (HELIUM) % | SATURATION (PORE VOLUME) OIL % | SATURATION (PORE VOLUME) WATER % | GRAIN DENSITY gm/cc | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| | Core No.1 Atoka-Morrow Formation 4750.0-4786.0 Cut 36.0' Rec. 36.0' | | | | | | |
| | 4750.0- 74.0 | | | | | | Ls -- No Analysis Requested |
| | 4774.0- 75.0 | | | | | | Ls Arg -- No Analysis |
| | 4775.0- 85.0 | | | | | | Shale -- No Analysis |
| 1 | 4785.3 | 86.9 | 15.9 | 18.6 | 50.6 | 2.65 | Sst lt gry vf-f gr sli arg |
| 2 | 4785.7 | 18.2 | 12.9 | 16.1 | 51.4 | 2.66 | Sst lt gry f gr arg |

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## TABLE I

## SUMMARY OF CORE DATA

### ZONE AND CUTOFF DATA

**ZONE:**

| | |
|---|---|
| Identification -------- | Morrow |
| Top Depth ---------- | 4750.0 ft |
| Bottom Depth ---------- | 4786.0 ft |
| Number of Samples -------- | 2 |

**DATA TYPE:**

| | |
|---|---|
| Porosity ---------- | (HELIUM) |
| Permeability ------- | (HORIZONTAL) Kair |

**CUTOFFS:**

| | |
|---|---|
| Porosity (Minimum) ------- | 0.0 % |
| Porosity (Maximum) ------- | 100.0 % |
| Permeability (Minimum) --- | 0.0000 md |
| Permeability (Maximum) --- | 100000. md |
| Water Saturation (Maximum) | 100.0 % |
| Oil Saturation (Minimum) - | 0.0 % |
| Grain Density (Minimum) -- | 2.00 gm/cc |
| Grain Density (Maximum) -- | 3.00 gm/cc |
| Lithology Excluded ------- | NONE |

### CHARACTERISTICS REMAINING AFTER CUTOFFS

**ZONE:**

| | |
|---|---|
| Number of Samples ----- | 2 |
| Thickness Represented - | 2.0 ft |

**POROSITY:**

| | |
|---|---|
| Storage Capacity ------ | 28.8 $\phi$-ft |
| Arithmetic Average ---- | 14.4 % |
| Minimum ---------- | 12.9 % |
| Maximum ---------- | 15.9 % |
| Median ---------- | 14.4 % |
| Standard Deviation ---- | ±2.1 % |

**GRAIN DENSITY:**

| | |
|---|---|
| Arithmetic Average ---- | 2.65 gm/cc |
| Minimum ---------- | 2.65 gm/cc |
| Maximum ---------- | 2.66 gm/cc |
| Median ---------- | 2.65 gm/cc |
| Standard Deviation ---- | ±0.01 gm/cc |

**PERMEABILITY:**

| | |
|---|---|
| Flow Capacity --------- | 105.1 md-ft |
| Arithmetic Average ---- | 52.6 md |
| Geometric Average ----- | 39.8 md |
| Harmonic Average ------ | 30.1 md |
| Minimum ---------- | 18.2 md |
| Maximum ---------- | 86.9 md |
| Median ---------- | 52.6 md |
| Standard Dev. (Geom) -- | $K \cdot 10^{\pm 0.481}$ md |

**HETEROGENEITY (Permeability):**

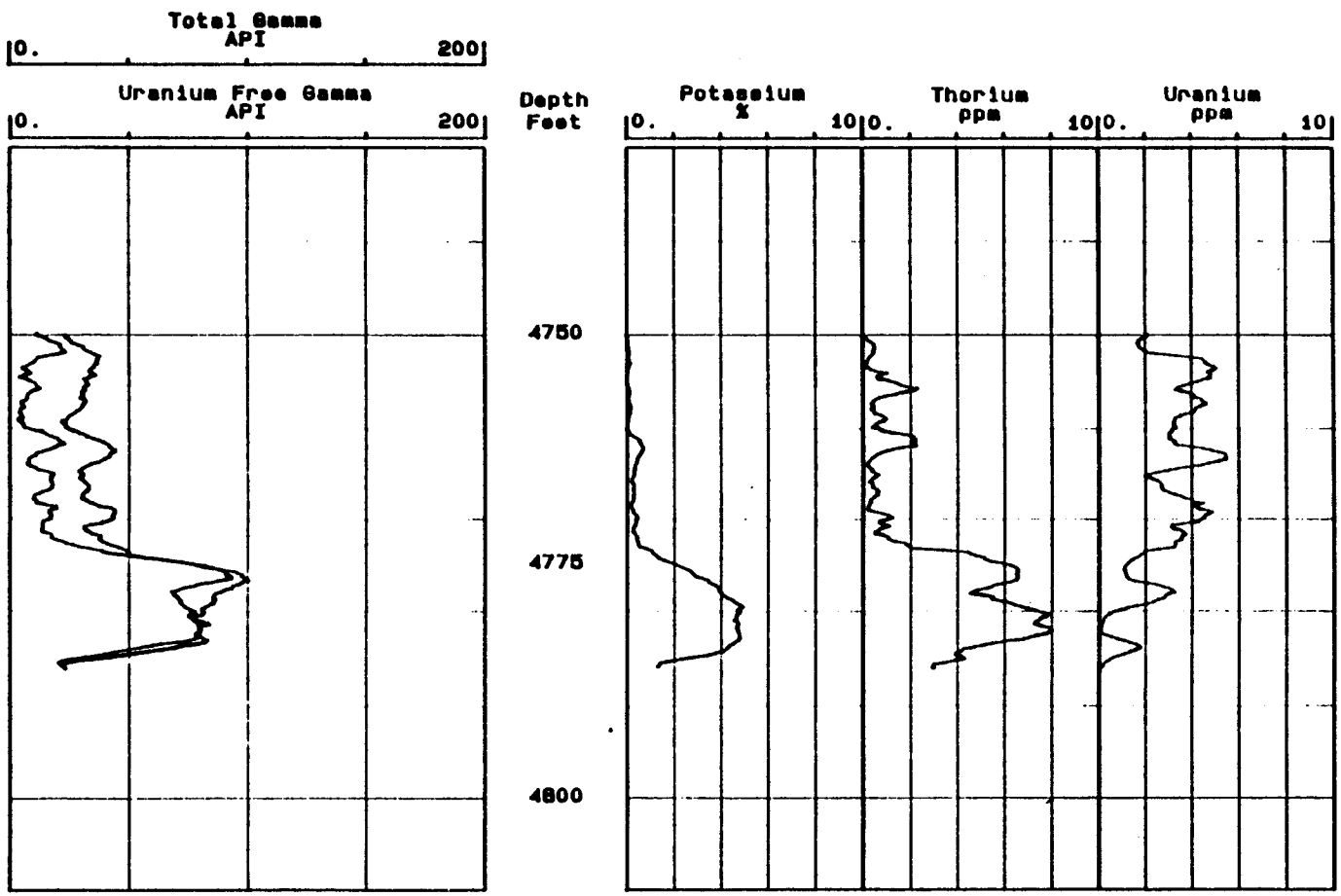
| | |
|---|---|
| Dykstra-Parsons Var. -- | 0.000 |
| Lorenz Coefficient ---- | 0.337 |

**AVERAGE SATURATIONS (Pore Volume):**

| | |
|---|---|
| Oil ---------- | 17.5 % |
| Water ---------- | 51.0 % |

# CORE LAB SPECTRAL GAMMA-RAY PLOT

**North American Resources Company**
Pauls No. 9-2 Well
Stewart Field
Finney County, Kansas
Morrow Fm (4750.0-4785.7 feet)

Core Laboratories 22-Sep-1988

Vertical Scale
5.00 in = 100.0 ft