New Mexico Bureau of Mines and Mineral Resources
Open File Report No. OF 195

# HYDROCARBON SOURCE-ROCK EVALUATION STUDY, SKELLY NO. 1-A STATE C WELL, LUNA COUNTY, NEW MEXICO

by Douglas A. Muckelroy
GeoChem Laboratories, Inc.
Houston, Texas
April 13, 1982

GeoChem Laboratories, Inc.

GEOCHEMICAL ANALYSES
SOURCE ROCK EVALUATION

CRUDE OIL—SOURCE ROCK CORRELATION

CRUDE OIL CHARACTERIZATION
GEOCHEMICAL PROSPECTING

1143-C BRITTMOORE ROAD • HOUSTON, TEXAS 77043-5094 • 713/467-7011

April 13, 1982

Marshall R. Young Oil Co.
Mr. Clayton S. Valder
750 West Fifth Street
Fort Worth, Texas 76102

Dear Mr. Valder:

Enclosed please find the results of the organic geochemical analysis performed on a suite of six (6) well cuttings samples covering the interval 8300± feet to 8800± feet. These samples are from the Skelly #1A State C Well, located in Luna County, New Mexico.

Upon arrival at GeoChem, the samples were assigned the GeoChem Job Number 2271 and were submitted to the following organic geochemical analytical program:

Total organic carbon and brief lithological description.....Table I

Visual kerogen assessment.....Table II

## DISCUSSION OF RESULTS

### A. Thermal Maturity of the Sediments

The thermal maturity of the sediments from the analyzed well interval 8300± feet to 8500± feet is a severely altered Maturation Index Stage 4- to 4. Those sediments below 8500± feet cannot be rated due to the fact that no kerogen was available for assessment (Table II). The severely altered 4- to 4 stage is based on the black coloration of the small amount of inertinite organic matter isolated from these samples.

At this level of thermal maturity, these sediments are below the oil-generating window, wherein only petrogenic methane gas could be generated.

B. Hydrocarbon Source Characterization of the Sediments

The sediments analyzed from the Skelly #1A State C well are considered to have a poor hydrocarbon source character. This interpretation is based on the poor amounts of organic matter (mean: 0.11% total organic carbon; Table I) analyzed, which is comprised of inertinite organic matter type (Table II).

Should we be of any additional assistance concerning this study, or any other matter, please do not hesitate to call upon us.

Yours truly,

Doug Muckelroy
GEOCHEM LABORATORIES, INC.

st

Enclosure

Table I

SCREEN ANALYSIS SUMMARY

| GeoChem Sample Number | Well Interval (Feet) | Brief Lithological Description | Total Organic Carbon (% of Rock) |
|---|---|---|---|
| 2271-001 | 8300-8310 | Composite: volcanic rocks, red shale and dolomite. | 0.14 |
| 2271-002 | 8400-8410 | Dolomite, pinkish gray. | 0.10 |
| 2271-003 | 8500-8510 | Dolomite, pinkish gray. | 0.10/0.09 |
| 2271-004 | 8600-8620 | Dolomite, pinkish gray. | 0.10 |
| 2271-005 | 8700-8710 | Dolomite, pinkish gray. | 0.10 |
| 2271-006 | 8790-8800 | Dolomite, pinkish gray. | 0.12/0.12 |

## TABLE II
## VISUAL KEROGEN ASSESSMENT WORKSHEET

Skelly #1-A
State C

| GEOCHEM No | DEPTH | INDIGENOUS POPULATION (INTERPRETED) TYPE OF ORGANIC MATTER | INDIGENOUS POPULATION (INTERPRETED) MATURATION INDEX | REMARKS | GENERAL CHARACTERISTICS COLOR OF ORGANIC MATTER | GENERAL CHARACTERISTICS STATE OF ORGANIC MATTER | % | CAVED AND/OR REWORKED POPULATION(S) TYPE OF ORGANIC MATTER | CAVED AND/OR REWORKED POPULATION(S) MATURATION INDEX | REMARKS | SUMMARY ORGANIC MATTER TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2271-001 | 8300 | | | I;-;- | | | | | | | I;-;- VLOM |
| 2271-003 | 8500 | | | I;-;- | | | | | | | I;-;- VLOM |
| 2271-005 | 8700 | | | No kerogen | | | | | | | No kerogen VLOM |

VLOM = Very little organic material.

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