# OILFIELD RESEARCH LABORATORIES

536 NORTH HIGHLAND - CHANUTE, KANSAS 66720 - PHONE (316) 431-2650

January 11, 1980

Tutcher Oil & Gas Company
Box 308
Overbrook, Kansas 66524

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Edwards Heirs Lease, Well No. 2, Coffey County, Kansas, and submitted to our laboratory on December 17, 1979.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Benjamin R. Pearman

Benjamin R. Pearman

BRP:vm
4 c to Overbrook, Kansas
1 c to Topeka, Kansas

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## GENERAL INFORMATION & SUMMARY

Company Tutcher Oil and Gas Company Lease Edwards Heirs Well No. 2

Location NW NW NW

Section 3 Twp. 23S Rge. 16E County Coffey State Kansas

| | |
|---|---|
| Name of Sand | Squirrel |
| Top of Core | 997.0 |
| Bottom of Core | 1008.0 |
| Top of Sand | 997.0 |
| Bottom of Sand | 1008.0 |
| Total Feet of Permeable Sand | 9.0 |
| Total Feet of Floodable Sand | 0.0 |

| Distribution of Permeable Sand: Permeability Range Millidarcys | Feet | Cum. Ft. |
|---|---|---|
| 0 - 1 | 1.6 | 1.6 |
| 1 - 34 | 4.2 | 5.8 |
| Above 34 | 3.2 | 9.0 |

| | |
|---|---|
| Average Permeability Millidarcys | 36.3 |
| Average Percent Porosity | 17.5 |
| Average Percent Oil Saturation | 56.6 |
| Average Percent Water Saturation | 27.0 |
| Average Oil Content, Bbls./A. Ft. | 781. |
| Total Oil Content, Bbls./Acre | 7,037. |
| Average Percent Oil Recovery by Laboratory Flooding Tests | 0 |
| Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. | 0 |
| Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre | 0 |
| Total Calculated Oil Recovery, Bbls./Acre | - |
| Packer Setting, Feet | |
| Viscosity, Centipoises @ | |
| A. P. I. Gravity, degrees @ 60 °F | |
| Elevation, Feet | |

This core was sampled and the samples sealed in plastic bags by a representative of the client. The well was reportedly drilled in virgin territory using fresh water mud as the circulating fluid.

## FORMATION CORED

The detailed log of the formation cored is as follows:

| Depth Interval, Feet | Description |
|---|---|
| 997.0 - 997.6 | Brown sandstone. |
| 997.6 - 998.4 | Gray sandy shale. |
| 998.4 - 1000.0 | Brown and gray laminated sandstone and shale. |
| 1000.0 - 1003.0 | Dark brown sandstone. |
| 1003.0 - 1004.8 | Brown and gray laminated sandstone and shale. |
| 1004.8 - 1006.0 | Dark brown sandstone. |
| 1006.0 - 1006.4 | Brown and gray laminated sandstone and shale. |
| 1006.4 - 1007.0 | Brown slightly shaly sandstone. |
| 1007.0 - 1008.0 | Brown and gray laminated sandstone and shale. |

## LABORATORY FLOODING TESTS

The sand in this core failed to respond to laboratory flooding tests. The weighted average effective permeability of the samples is 0.41 millidarcys, while the average initial fluid production pressure is 42.5 pounds per square inch.

## CALCULATED RECOVERY

Inasmuch as the core samples did not recover any oil on laboratory flooding tests, no recovery calculations are given for this core.

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## RESULTS OF SATURATION & PERMEABILITY TESTS

### TABLE 1-B

Company Tutcher Oil & Gas Company Lease Edwards Heirs Well No. 2

| Sample No. | Depth, Feet | Effective Porosity Percent | Percent Saturation | | | Oil Content Bbls. / A Ft. | Perm., Mill. | Feet of Sand | | Total Oil Content | Perm. Capacity Ft. X md. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Oil | Water | Total | | | Ft. | Cum. Ft. | | |
| 1 | 997.5 | 15.9 | 54 | 29 | 83 | 666 | 29. | 0.6 | 0.6 | 400 | 17.40 |
| 2 | 998.5 | 13.7 | 48 | 46 | 94 | 510 | 0.87 | 0.6 | 1.2 | 306 | 0.52 |
| 3 | 999.5 | 18.9 | 38 | 39 | 77 | 557 | 24. | 1.0 | 2.2 | 557 | 24.00 |
| 4 | 1000.5 | 22.3 | 63 | 11 | 74 | 1090 | 72. | 1.0 | 3.2 | 1090 | 72.00 |
| 5 | 1001.5 | 14.6 | 58 | 18 | 76 | 657 | 25. | 1.0 | 4.2 | 657 | 25.00 |
| 6 | 1002.5 | 17.2 | 64 | 15 | 79 | 854 | 34. | 1.0 | 5.2 | 854 | 34.00 |
| 7 | 1003.5 | 14.6 | 34 | 62 | 96 | 385 | 57. | 1.0 | 6.2 | 385 | 57.00 |
| 8 | 1005.5 | 19.1 | 62 | 19 | 81 | 919 | 76. | 1.2 | 7.4 | 1102 | 91.20 |
| 9 | 1006.5 | 19.3 | 86 | 10 | 96 | 1288 | 8.7 | 0.6 | 8.0 | 773 | 5.22 |
| 10 | 1007.5 | 18.1 | 65 | 24 | 89 | 913 | 0.53 | 1.0 | 9.0 | 913 | 0.53 |

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## SUMMARY OF PERMEABILITY & SATURATION TESTS

### TABLE III

Company Tutcher Oil & Gas Company Lease Edwards Heirs Well No. 2

| Depth Interval, Feet | Feet of Core Analyzed | Average Permeability, Millidarcys | Permeability Capacity Ft. x Md. |
|---|---|---|---|
| 997.0 - 1008.0 | 9.0 | 36.3 | 326.87 |

| Depth Interval, Feet | Feet of Core Analyzed | Average Percent Porosity | Average Percent Oil Saturation | Average Percent Water Saturation | Average Oil Content Bbl./A. Ft. | Total Oil Content Bbls./Acre |
|---|---|---|---|---|---|---|
| 997.0 - 1008.0 | 9.0 | 17.5 | 56.6 | 27.0 | 781 | 7,037 |

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## RESULTS OF LABORATORY FLOODING TESTS

### TABLE IV

Company Tutcher Oil & Gas Company Lease Edwards Heirs Well No. 2

| Sample No. | Depth, Feet | Effective Porosity Percent | Original Oil Saturation | | Oil Recovery | | Residual Saturation | | | Volume of Water Recovered cc* | Effective Permeability Millidarcys** | Initial Fluid Production Pressure Lbs./Sq./In. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | % | Bbls./A. Ft. | % | Bbls./A. Ft. | % Oil | % Water | Bbls./A. Ft. | | | |
| 1 | 997.5 | 16.2 | 53 | 666 | 0 | 0 | 53 | 32 | 666 | 0 | Imp. | - |
| 2 | 998.5 | 13.2 | 50 | 511 | 0 | 0 | 50 | 47 | 511 | 0 | Imp. | - |
| 3 | 999.5 | 18.7 | 40 | 580 | 0 | 0 | 40 | 51 | 580 | 10 | 0.15 | 50 |
| 4 | 1000.5 | 22.0 | 64 | 1092 | 0 | 0 | 64 | 29 | 1092 | 35 | 0.45 | 35 |
| 5 | 1001.5 | 14.2 | 58 | 638 | 0 | 0 | 58 | 20 | 638 | 0 | Imp. | - |
| 6 | 1002.5 | 17.3 | 63 | 844 | 0 | 0 | 63 | 33 | 844 | 15 | 0.20 | 50 |
| 7 | 1003.5 | 14.6 | 34 | 385 | 0 | 0 | 34 | 61 | 385 | 0 | Imp. | - |
| 8 | 1005.5 | 19.5 | 63 | 952 | 0 | 0 | 63 | 32 | 952 | 48 | 0.75 | 35 |
| 9 | 1006.5 | 19.3 | 88 | 1317 | 0 | 0 | 88 | 11 | 1317 | 0 | Imp. | - |
| 10 | 1007.5 | 18.3 | 66 | 936 | 0 | 0 | 66 | 26 | 936 | 0 | Imp. | - |

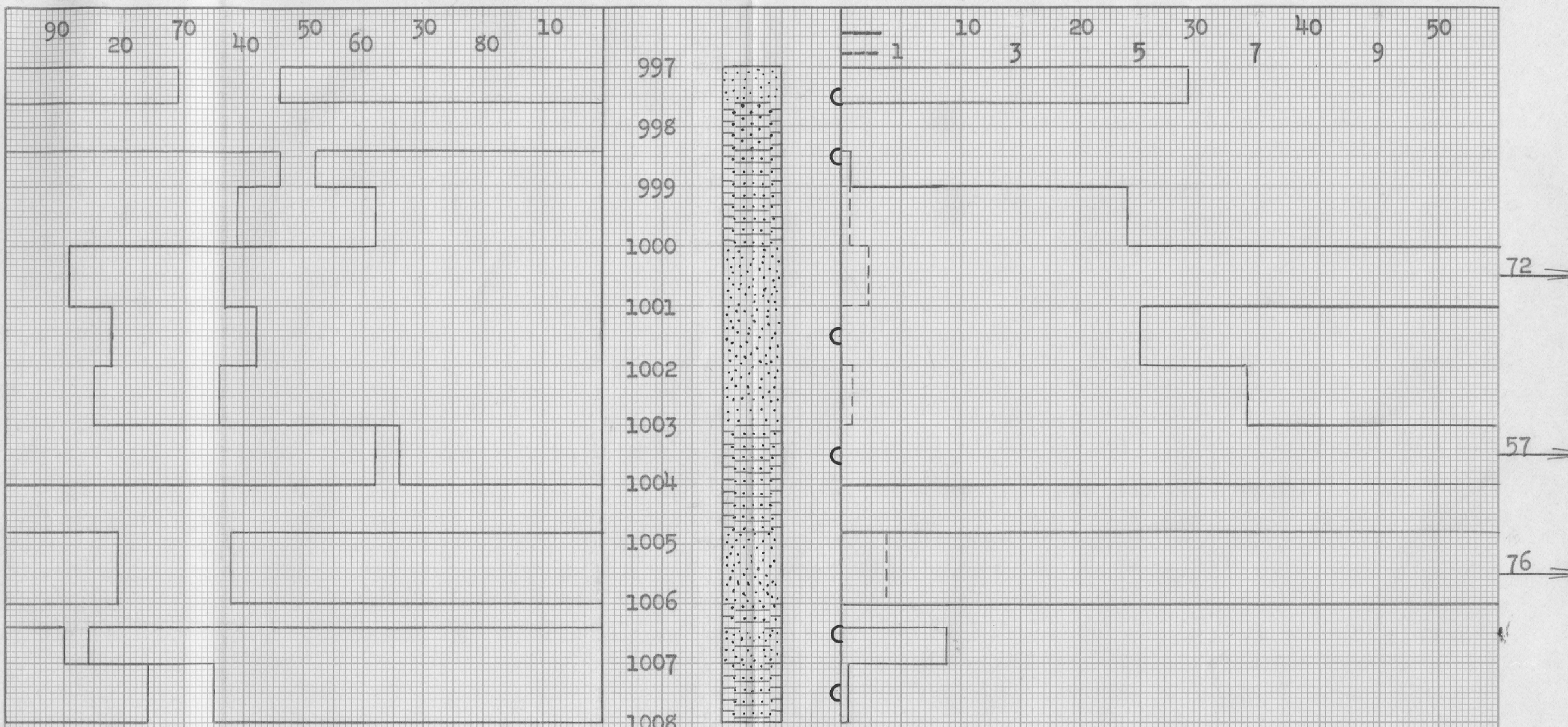
Notes: cc—cubic centimeter.

*—Volume of water recovered at the time of maximum oil recovery.

**—Determined by passing water through sample which still contains residual oil.

WATER SAT., PERCENT → ← OIL SAT., PERCENT

——— PERMEABILITY, IN MILLIDARCYS
- - - - - EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS




KEY:

SANDSTONE

SANDY SHALE

SHALY SANDSTONE

LAMINATED SANDSTONE AND SHALE

O IMPERMEABLE TO WATER

# TUTCHER OIL AND GAS CO.

EDWARDS HEIRS LEASE WELL NO. 2

COFFEY COUNTY, KANSAS

SANDY SHALE

LAMINATED SANDSTONE AND SHALE

O IMPERMEABLE TO WATER

# TUTCHER OIL AND GAS CO.

EDWARDS HEIRS LEASE — WELL NO. 2

COFFEY COUNTY, KANSAS

| DEPTH INTERVAL, FEET | FEET OF CORE ANALYZED | AVERAGE PERCENT POROSITY | AVG. OIL SATURATION PERCENT | AVG. WATER SATURATION PERCENT | AVERAGE PERMEABILITY, MILLIDARCYS | CALCULATED OIL RECOVERY BBLS./ACRE |
|---|---|---|---|---|---|---|
| 997.0 - 1008.0 | 9.0 | 17.5 | 56.6 | 27.0 | 36.3 | ---- |

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CHANUTE, KANSAS
JANUARY, 1980 HR