

# OILFIELD RESEARCH LABORATORIES

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July 10, 1980

James E. Russell Petroleum, Inc.  
P.O. Box 2618  
Abilene, Texas 79604

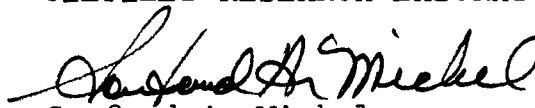
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Minckley B-Section 3 Lease, Well No. 39, Anderson County, Kansas, and submitted to our laboratory on May 20, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

  
Sanford A. Michel

SAM/tem

3 c to Abilene, Texas  
2 c to Chanute, Kansas

# Oilfield Research Laboratories

## GENERAL INFORMATION & SUMMARY

James E. Russell

Company Petroleum, Incorporated Lease Minckley B-Sec. 3 Well No. 39

Location 1100' EWL & 1540' SNL SE $\frac{1}{4}$

Section 3 Twp. 23S Rge. 19E County Anderson State Kansas

Elevation, Feet Datum: Mean Sea Level (G.L.) 1087.2

Name of Sand - - - - - Squirrel

Top of Core - - - - - 718.0

Bottom of Core - - - - - 738.4

Top of Sand - - - - - 725.1

Bottom of Sand - - - - - 731.9

Total Feet of Permeable Sand - - - - - 5.9

Total Feet of Floodable Sand - - - - - 0.0

Distribution of Permeable Sand:  
Permeability Range  
Millidarcys

Feet

Cum. Ft.

0 - 1 3.5 3.5

1 - 2 1.3 4.8

5 - 6 0.5 5.3

10 - 15 0.6 5.9

Average Permeability Millidarcys - - - - - 2.6

Average Percent Porosity - - - - - 15.3

Average Percent Oil Saturation - - - - - 30.2

Average Percent Water Saturation - - - - - 40.4

Average Oil Content, Bbls./A. Ft. - - - - - 357.

Total Oil Content, Bbls./Acre - - - - - 2,428.

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 - - - - - 0

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The core was sampled by a representative of Oilfield Research Laboratories. Fresh water mud was used as a drilling fluid. The core was from a non-virgin area.

Since the core did not respond to flooding susceptibility tests, no calculated recovery is given.

FORMATION CORED

The detailed log of the formation cored is as follows:

| <u>Depth Interval,<br/>Feet</u> | <u>Description</u>                              |
|---------------------------------|-------------------------------------------------|
| 718.0 - 718.6                   | Shale, gray.                                    |
| 718.6 - 719.0                   | Coal.                                           |
| 719.0 - 723.9                   | Shale, gray, sandy. First oil show.             |
| 723.9 - 724.4                   | Sandstone, grayish brown, very shaly.           |
| 724.4 - 724.8                   | Limestone, gray.                                |
| 724.8 - 725.1                   | Shale, grayish brown, sandy.                    |
| 725.1 - 726.9                   | Sandstone, brown, slightly calcareous, shaly.   |
| 726.9 - 727.9                   | Sandstone, brown, hard, calcareous, shaly.      |
| 727.9 - 728.4                   | Sandstone, brown, slightly calcareous, shaly.   |
| 728.4 - 729.0                   | Sandstone, brown, slightly calcareous.          |
| 729.0 - 731.9                   | Sandstone and shale, gray and brown, laminated. |

## RESULTS OF SATURATION &amp; PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc.

Lease

Minckley B-Section 3

Well No.

39

| 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          | 725.7       | 16.2                       | 17                 | 41    | 58    | 214                       | 1.5          | 0.9          | 0.9      | 193               | 1.35                     |
| 2          | 726.2       | 14.4                       | 37                 | 39    | 76    | 413                       | 0.81         | 0.5          | 1.4      | 207               | 0.41                     |
| 3          | 726.7       | 11.2                       | 28                 | 39    | 67    | 243                       | 2.0          | 0.4          | 1.8      | 97                | 0.80                     |
| 4          | 727.4       | 17.6                       | 30                 | 33    | 63    | 410                       | 0.19         | 1.0          | 2.8      | 410               | 0.19                     |
| 5          | 728.0       | 16.6                       | 35                 | 26    | 61    | 451                       | 5.3          | 0.5          | 3.3      | 223               | 2.65                     |
| 6          | 728.8       | 17.1                       | 35                 | 27    | 62    | 464                       | 14.          | 0.6          | 3.9      | 278               | 8.40                     |
| 7          | 729.5       | 14.8                       | 35                 | 38    | 73    | 402                       | 0.85         | 1.0          | 4.0      | 402               | 0.85                     |
| 8          | 730.5       | 12.7                       | 30                 | 63    | 93    | 296                       | 0.76         | 1.0          | 5.9      | 296               | 0.76                     |
| 9          | 731.5       | 15.4                       | 30                 | 44    | 74    | 358                       | Imp.         | 0.9          | 6.8      | 322               | 0.00                     |

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## SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Incorporated Lease Minckley B-Section 3 Well No. 39

| Depth Interval,<br>Feet | Feet of Core<br>Analyzed | Average<br>Permeability,<br>Millidarcys | Permeability<br>Capacity<br>Ft. x Md. |
|-------------------------|--------------------------|-----------------------------------------|---------------------------------------|
| 725.1 - 731.9           | 5.9                      | 2.6                                     | 15.41                                 |

| Depth Interval,<br>Feet | Feet of Core<br>Analyzed | Average<br>Percent<br>Porosity | Average<br>Percent Oil<br>Saturation | Average<br>Percent Water<br>Saturation | Average<br>Oil Content<br>Bbl./A. Ft. | Total Oil<br>Content<br>Bbls./Acre |
|-------------------------|--------------------------|--------------------------------|--------------------------------------|----------------------------------------|---------------------------------------|------------------------------------|
| 725.1 - 731.9           | 6.8                      | 15.3                           | 30.2                                 | 40.4                                   | 357                                   | 2,428                              |

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## RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Incorporated Lease Minckley B-Section 3 Well No. 39

| 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 |                               |                                      |                                                |
| 1          | 725.7       | 16.5                       | 17                      | 218          | 0            | 0            | 17                  | 43      | 0                             | Imp.                                 | -                                              |
| 2          | 726.2       | 14.8                       | 36                      | 413          | 0            | 0            | 36                  | 40      | 0                             | Imp.                                 | -                                              |
| 3          | 726.7       | 11.0                       | 28                      | 239          | 0            | 0            | 28                  | 55      | 8                             | 0.15                                 | 50                                             |
| 4          | 727.4       | 17.2                       | 31                      | 414          | 0            | 0            | 31                  | 34      | 0                             | Imp.                                 | -                                              |
| 5          | 728.0       | 16.5                       | 35                      | 448          | 0            | 0            | 35                  | 49      | 15                            | 0.22                                 | 45                                             |
| 6          | 728.8       | 16.9                       | 35                      | 459          | 0            | 0            | 35                  | 30      | 0                             | Imp.                                 | -                                              |
| 7          | 729.5       | 15.0                       | 34                      | 396          | 0            | 0            | 34                  | 39      | 0                             | Imp.                                 | -                                              |
| 8          | 730.5       | 13.1                       | 29                      | 295          | 0            | 0            | 29                  | 65      | 0                             | Imp.                                 | -                                              |
| 9          | 731.5       | 15.4                       | 30                      | 358          | 0            | 0            | 30                  | 44      | 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.