



OILFIELD RESEARCH LABORATORIES

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

May 5, 1981

Yenom Oil Company
841 North Broadway
Wichita, Kansas 67214

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Dotson Lease, Well No. 13, located in Bourbon County, Kansas and submitted to our laboratory on April 15, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/mkf

4 c to Wichita, Ks.
1 c to Chanute, Ks.

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GENERAL INFORMATION & SUMMARY

Company Yenom Oil Company Lease Dotson Well No. 13
 Location 1155' EWL & 165' NSL
 Section 26 Twp. 26S Rge. 21E County Bourbon State Kansas

Elevation, Feet
 Name of Sand..... CATTLEMAN
 Top of Core 640.0
 Bottom of Core 654.0
 Top of Sand 640.0
 Bottom of Sand (Tested) 652.9
 Total Feet of Permeable Sand 11.3
 Total Feet of Floodable Sand 2.0

| Distribution of Permeable Sand: Permeability Range Millidarcys | Feet | Cum. Ft. |
|--|------|----------|
| 0 - 20 | 3.9 | 3.9 |
| 35 - 45 | 3.0 | 6.9 |
| 100 - 180 | 3.0 | 9.9 |
| 330 - 336 | 1.4 | 11.3 |

Average Permeability Millidarcys 97.9
 Average Percent Porosity 18.0
 Average Percent Oil Saturation 53.1
 Average Percent Water Saturation..... 31.4
 Average Oil Content, Bbls./A. Ft. 738.
 Total Oil Content, Bbls./Acre..... 9,074.
 Average Percent Oil Recovery by Laboratory Flooding Tests..... 4.0
 Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. 56.
 Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre 112.
 Total Calculated Oil Recovery, Bbls./Acre..... -

The core was sampled and the samples sealed in plastic bags by a representative of the client. Fresh water mud was used as a drilling fluid.

Since only three samples were subjected to flooding susceptibility tests, no calculated recovery is given.

FORMATION CORED

The detailed log of the formation cored is as follows:

| <u>Depth Interval, Feet</u> | <u>Description</u> |
|---------------------------------|---|
| 640.0 - 651.3 | Brown slightly calcareous sandstone. |
| 651.3 - 651.9 | Gray sandy shale. |
| 651.9 - 654.0 | Brown and gray laminated sandstone and shale. |

LABORATORY FLOODING TESTS

At the request of the client sample numbers 2, 5, and 8 were subjected to flooding tests. These samples responded to laboratory flooding tests, as a total recovery of 112 barrels of oil per acre was obtained from 2.0 feet of sand. The weighted average percent oil saturation was reduced from 37.0 to 33.0, or represents an average recovery of 4.0 percent. The weighted average effective permeability of the samples is 3.00 millidarcys, while the average initial fluid production pressure is 30.0 pounds per square inch (See Table V).

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Yenom Oil Company Lease Dotson Well No. 13

| 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 | 640.6 | 21.4 | 49 | 44 | 93 | 814 | 12. | 1.0 | 1.0 | 814 | 12.00 |
| 2 | 641.8 | 18.7 | 37 | 42 | 79 | 537 | 44. | 1.0 | 2.0 | 537 | 44.00 |
| 3 | 642.5 | 16.5 | 37 | 47 | 84 | 474 | 42. | 1.0 | 3.0 | 474 | 42.00 |
| 4 | 643.5 | 15.3 | 54 | 39 | 93 | 641 | 37. | 1.0 | 4.0 | 641 | 37.00 |
| 5 | 644.7 | 17.9 | 37 | 25 | 62 | 514 | 101. | 1.0 | 5.0 | 514 | 101.00 |
| 6 | 645.8 | 19.6 | 64 | 18 | 82 | 973 | 175. | 1.0 | 6.0 | 973 | 175.00 |
| 7 | 646.7 | 21.2 | 62 | 24 | 86 | 1020 | 178. | 1.0 | 7.0 | 1020 | 178.00 |
| 8 | 647.7 | 22.8 | 56 | 26 | 82 | 991 | 335. | 1.4 | 8.4 | 1387 | 469.00 |
| 9 | 649.1 | 15.0 | 69 | 26 | 95 | 803 | 17. | 1.0 | 9.4 | 803 | 17.00 |
| 10 | 650.3 | 16.0 | 60 | 30 | 90 | 745 | 14. | 1.0 | 10.4 | 745 | 14.00 |
| 11 | 651.1 | 17.1 | 42 | 32 | 74 | 557 | 19. | 0.9 | 11.3 | 501 | 17.10 |
| 12 | 652.8 | 12.6 | 68 | 26 | 94 | 665 | Imp. | 1.0 | 12.3 | 665 | 0.00 |

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

| Company | Lease | Dotson | Well No. | | |
|-------------------------|--------------------------|---|--|---------------------------------------|------------------------------------|
| Yenom Oil Company | | | 13 | | |
| Depth Interval, Feet | Feet of Core Analyzed | Average Permeability, Millidarcys | Permeability Capacity Ft. x Md. | | |
| 640.0 - 648.4 | 8.4 | 126.0 | 1,058.00 | | |
| 648.4 - 652.9 | 2.9 | 16.6 | 48.10 | | |
| 640.0 - 652.9 | 11.3 | 97.9 | 1,106.10 | | |
| Depth Interval, Feet | Feet of Core Analyzed | Average Percent Oil Saturation | Average Percent Water Saturation | Average Oil Content Bbl./A. Ft. | Total Oil Content Bbls./Acre |
| 640.0 - 648.4 | 8.4 | 49.8 | 32.8 | 757 | 6,360 |
| 648.4 - 652.9 | 3.9 | 60.2 | 28.4 | 696 | 2,714 |
| 640.0 - 652.9 | 12.3 | 53.1 | 31.4 | 738 | 9,074 |

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

| Company | | Yenom Oil Comapny | | Lease | | Dotson | | Well No. | | 13 | |
|------------|-------------|----------------------------|-------------------------|--------------|--------------|--------------|---------------------|----------|-------------------------------|--------------------------------------|--|
| 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. |
| | | | % | Bbbs./A. Ft. | % | Bbbs./A. Ft. | % Oil | % Water | | | |
| 2 | 641.8 | 18.6 | 37 | 534 | 2 | 29 | 35 | 62 | 127 | 2.70 | 30 |
| 5 | 644.7 | 17.9 | 37 | 514 | 6 | 83 | 31 | 61 | 156 | 3.30 | 30 |
| 8 | 647.7 | 22.7 | 56 | 986 | 0 | 0 | 56 | 29 | 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.

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SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

| | | | | | |
|---|-------------------|-------|--------|----------|----|
| Company | Yenom Oil Company | Lease | Dotson | Well No. | 13 |
| Depth Interval, Feet | 640.0 - 648.4 | | | | |
| Feet of Core Analyzed | 2.0 | | | | |
| Average Percent Porosity | 18.3 | | | | |
| Average Percent Original Oil Saturation | 37.0 | | | | |
| Average Percent Oil Recovery | 4.0 | | | | |
| Average Percent Residual Oil Saturation | 33.0 | | | | |
| Average Percent Residual Water Saturation | 61.5 | | | | |
| Average Percent Total Residual Fluid Saturation | 94.5 | | | | |
| Average Original Oil Content, Bbls./A. Ft. | 524. | | | | |
| Average Oil Recovery, Bbls./A. Ft. | 56. | | | | |
| Average Residual Oil Content, Bbls./A. Ft. | 468. | | | | |
| Total Original Oil Content, Bbls./Acre | 1,048. | | | | |
| Total Oil Recovery, Bbls./Acre | 112. | | | | |
| Total Residual Oil Content, Bbls./Acre | 936. | | | | |
| Average Effective Permeability, Millidarcys | 3.00 | | | | |
| Average Initial Fluid Production Pressure, p.s.i. | 30.0 | | | | |

NOTE: Only those samples which recovered oil were used in calculating the above averages.