4-22-216

April 23, 1943

M. C. Colt, Producer
Iola, Kansas

Dear Sir:

Enclosed herewith is the report of the analysis of the core taken from your Steele Well No. 6A, Anderson County, Kansas, on April 13, 1943.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

Carl L. Pate

Carl L. Pate

CLP:bcm

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

STEELE LEASE WELL NO. 6A

ANDERSON COUNTY, KANSAS



OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

APRIL 21, 1943

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

STEELE LEASE WELL NO. 6A

## GENERAL INFORMATION

The Steele Well No. 6A, owned by M.C. Colt, Producer, is located in Section 9, T22S, R21E, Anderson County, Kansas. A two inch rotary core of the Bartlesville sandstone was taken from this well on April 13, 1943. Coring was started at a depth of 713.20 feet in dark shale and completed at 767.60 feet in black shale.

## FORMATION CORED

The detailed log of the formation cored is as follows:

| Depth Interval, Feet | | Description |
|---|---|---|
| 713.20 | - 714.03 - | Dark shale. |
| 714.03 | - 714.08 - | Limestone. |
| 714.08 | - 717.43 - | Laminated sandstone and shale. |
| 717.43 | - 718.00 - | Laminated sandy shale. |
| 718.00 | - 719.80 - | Dark shale. |
| 719.80 | - 720.80 - | Gray coarse grained micaceous sandstone. |
| 720.80 | - 724.21 - | Finely laminated micaceous sandy shale. |
| 724.21 | - 724.70 - | Gray medium grained micaceous sandstone. |
| 724.70 | - 725.70 - | Loss. |
| 725.70 | - 726.65 - | Gray slightly laminated micaceous sandstone. |
| 726.65 | - 727.95 - | Loss. |
| 727.95 | - 729.55 - | Gray medium grained micaceous sandstone. |

729.55 - 729.91 - Laminated micaceous sandstone.
729.91 - 732.40 - Gray coarse grained micaceous sandstone.
732.40 - 732.56 - Dense laminated shaley sandstone.
732.56 - 740.90 - Gray fairly coarse grained micaceous sandstone.
740.90 - 741.32 - Laminated micaceous shaley sandstone.
741.32 - 742.75 - Medium grained micaceous sandstone.
742.75 - 742.90 - Laminated micaceous shaley sandstone.
742.90 - 743.45 - Medium grained micaceous sandstone.
743.45 - 744.10 - Laminated micaceous carbonaceous sandstone.
744.10 - 744.59 - Finely laminated micaceous carbonaceous sandstone.
744.59 - 749.09 - Medium grained micaceous sandstone.
749.09 - 752.55 - Micaceous carbonaceous sandstone.
752.55 - 753.10 - Soft micaceous carbonaceous sandstone.
753.10 - 754.50 - Micaceous carbonaceous sandstone.
754.50 - 756.15 - Laminated micaceous carbonaceous sandstone.
756.15 - 759.57 - Micaceous carbonaceous sandstone.
759.57 - 759.95 - Laminated micaceous carbonaceous sandstone.
759.95 - 764.65 - Fine grained micaceous sandstone.
764.65 - 767.05 - Gray sandy shale.
767.05 - 767.60 - Black shale.

Due to the fact that there was a loss at the top of the pay, it is difficult to determine the exact top of the oil sand. Inasmuch as the saturation sample taken at 726.28 feet contained considerable oil, it is evident that the top of the oil sand is at 724.22 feet. Assuming the loss was oil sand, this would give a total of 39.47 feet of pay sand. That part of the pay extending from 724.22 to 749.08 feet is composed of medium to fairly coarse grained micaceous sandstone while that extending from 749.08 to 764.65 feet is made up

of medium grained micaceous carbonaceous sandstone and fine grained micaceous sandstone.

It was recommended that the core hole be plugged back to 764.00 feet.

This well has a much better body of sand than either Steele 4A or 5A.

## PERMEABILITY

The sand in this well is fairly loose; the overall weighted average permeability being 76.97 millidarcys. The average permeability of the good oil sand just below the packer setting (732.40 to 749.08 feet) is 94.28 millidarcys, while that of the lower section (749.08 to 764.65 feet) is 49.50 millidarcys (See Table II). The average permeability of this core checks very well with the 77.85 and 75.79 averages of Steele No. 4A and 5A.

This core has some high permeable streaks (See coregraph). Because of these high permeable streaks, it will become necessary to handle considerable return water in the later stages of the flood.

## PERCENT SATURATION

This core has a very good oil saturation; the overall weighted average being 44.22 percent. The section from 732.40 to 749.08 feet has an average of 42.89 percent while the lower section (749.08 to 764.65) averages 51.14 percent (See Table IV). The average percent oil saturation above the packer setting is only 27.96.

The overall weighted average percent water saturation is 30.65. From observing the data given in Table IV, it is noticeable that the average water saturation decreases with increase in depth.

## OIL CONTENT

The average oil content below the packer setting is 805 barrels per acre foot, while the overall average is 771. The total oil content, as shown by this core, is 28,016 barrels per acre; 25,414 barrels per acre being below the packer setting (Table IV).

## VISCOSITY

The viscosity of a sample of crude oil taken from the Cochran No. 22A well is 16.6 centipoises at 80°F. An oil with this viscosity should be floodable from a sand with an average permeability of 94.28 millidarcys. The A.P.I. gravity of the crude is 30.8° @ 60°F.

## FLOOD POT TESTS

According to flood pot tests, there are 16.20 feet of floodable sand below the packer setting (732.60 to 749.40 feet). A recovery of 4,504 barrels per acre or 278 barrels per acre foot was obtained from this section, by flood pot tests (See Table V & VI). The percent oil saturation was reduced from 45.89 to 29.70 or represents a recovery of 16.19 percent. An average pressure of 3.5 pounds per square inch was required to flood out the samples, included in the above section (Nos. 4 through 15 inclusive). This represents a good recovery, however, the saturation was not reduced as low as expected.

The bottom section, extending from 749.40 to 764.65 feet, did not respond to flood pot tests, even though pressures up to 50 pounds per square inch were used. Samples Nos. 16 and 19 produced a small amount of oil at high pressures, (Table V). It is unfortunate that this bottom section did not respond to flooding as it has a very good oil content (Table IV).

## CONCLUSION

From a study of this core, we believe an efficient water flood in the vicinity of this well, will produce approximately 4600 barrels per acre or 284 barrels per acre foot. This estimate is calculated from the 16.20 feet of floodable sand located below the packer setting and extending from 732.60 to 749.40 feet. This estimate agrees very well with the quantity of oil recovered by flood pot tests.

Evidently the viscosity of the oil in the sand section, extending from 749.08 to 764.65 feet, is so high that it is not recoverable under the prevailing conditions.

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

STEELE LEASE WELL NO. 6A

SHOT RECOMMENDATION

| Depth Interval, Feet | Size of Shell Inches | Qts./Ft. | Total Quarts |
|---|---|---|---|
| 736.50 - 738.50 | 3 | 1.50 | 3.00 |
| 738.50 - 743.50 | Spacer | - | - |
| 743.50 - 749.50 | 2½ | 1.00 | 6.00 |
| 749.50 - 751.50 | 3½ | 2.00 | 4.00 |
| 751.50 - 753.50 | Spacer | - | - |
| 753.50 - 757.00 | 3½ | 2.00 | 7.00 |
| 757.00 - 760.00 | Spacer | - | - |
| 760.00 - 763.00 | 3½ | 2.00 | 6.00 |
| | | TOTAL ----- | 26.00 |

Packer setting - 732.00 Feet.

Plug hole back to 764.00 Feet.

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CORE ANALYSIS REPORT

STEELE LEASE WELL NO. 6A

TABLE I

RESULTS OF PERMEABILITY TESTS

| Sample No. | Depth, Feet | Permeability, Millidarcys | Feet of Core Ft. | Feet of Core Cum. Ft. | Capacity Ft. x Md. |
|---|---|---|---|---|---|
| 1 | 724.37 | 89. | 0.47 | 0.47 | 41.83 |
| 2 | 726.08 | 13. | 0.94 | 1.41 | 12.22 |
| 3 | 728.07 | 41. | 0.25 | 1.66 | 10.25 |
| 4 | 728.27 | 22. | 0.30 | 1.96 | 6.60 |
| 5 | 728.68 | 109. | 0.50 | 2.46 | 54.50 |
| 6 | 729.17 | 25. | 0.56 | 3.02 | 14.00 |
| 7 | 729.76 | 66. | 0.35 | 3.37 | 23.10 |
| 8 | 730.35 | 216. | 0.59 | 3.96 | 127.50 |
| 9 | 730.73 | 92. | 0.50 | 4.46 | 46.00 |
| 10 | 731.27 | 271. | 0.50 | 4.96 | 135.50 |
| 11 | 731.73 | 131. | 0.50 | 5.46 | 65.50 |
| 12 | 732.22 | 121. | 0.40 | 5.86 | 48.40 |
| 13 | 732.74 | 24. | 0.43 | 6.29 | 10.32 |
| 14 | 733.17 | 143. | 0.50 | 6.79 | 71.50 |
| 15 | 733.67 | .56 | 0.50 | 7.29 | 0.28 |
| 16 | 734.20 | 95. | 0.50 | 7.79 | 47.50 |
| 17 | 734.75 | 172. | 0.50 | 8.29 | 86.00 |
| 18 | 735.16 | 13. | 0.50 | 8.79 | 6.50 |
| 19 | 735.62 | 230. | 0.40 | 9.19 | 92.20 |
| 20 | 736.00 | 141. | 0.40 | 9.59 | 56.40 |
| 21 | 736.45 | 55. | 0.49 | 10.08 | 26.95 |
| 22 | 737.08 | 82. | 0.51 | 10.59 | 41.82 |
| 23 | 737.54 | 30. | 0.50 | 11.09 | 15.00 |
| 24 | 738.10 | 28. | 0.50 | 11.59 | 14.00 |
| 25 | 738.59 | 61. | 0.60 | 12.19 | 36.60 |
| 26 | 739.08 | 268. | 0.30 | 12.49 | 80.40 |
| 27 | 739.39 | 286. | 0.50 | 12.99 | 143.00 |
| 28 | 739.76 | 66. | 0.40 | 13.39 | 26.40 |
| 29 | 740.21 | 144. | 0.40 | 13.79 | 57.60 |
| 30 | 740.61 | 159. | 0.40 | 14.19 | 63.60 |
| 31 | 741.10 | 17. | 0.42 | 14.61 | 7.14 |
| 32 | 741.47 | 40. | 0.28 | 14.89 | 11.20 |
| 33 | 741.73 | 90. | 0.40 | 15.29 | 36.00 |
| 34 | 742.12 | 172. | 0.40 | 15.69 | 68.80 |
| 35 | 742.52 | 260. | 0.35 | 16.04 | 91.00 |
| 36 | 743.08 | 77. | 0.30 | 16.34 | 23.10 |
| 37 | 743.30 | 94. | 0.25 | 16.59 | 23.50 |
| 38 | 743.79 | 25. | 0.65 | 17.24 | 16.25 |
| 39 | 744.16 | Imp. | 0.48 | 17.72 | 0.00 |
| 40 | 744.55 | 42. | 0.32 | 18.04 | 13.44 |
| 41 | 745.04 | 96. | 0.40 | 18.44 | 38.40 |
| 42 | 745.45 | 121. | 0.20 | 18.64 | 24.20 |
| 43 | 745.91 | 43. | 0.60 | 19.24 | 25.80 |

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STEELE LEASE WELL NO. 6A

TABLE I

RESULTS OF PERMEABILITY TESTS

| Sample No. | Depth, Feet | Permeability, Millidarcys | Feet of Core Ft. | Cum. Ft. | Capacity Ft. x Md. |
|---|---|---|---|---|---|
| 44 | 746.44 | 59. | 0.50 | 19.74 | 29.50 |
| 45 | 746.67 | 119. | 0.40 | 20.14 | 47.60 |
| 46 | 747.07 | 188. | 0.31 | 20.45 | 58.28 |
| 47 | 747.50 | 127. | 0.29 | 20.74 | 36.83 |
| 48 | 747.77 | 29. | 0.30 | 21.04 | 8.70 |
| 49 | 748.20 | 77. | 0.50 | 21.54 | 38.50 |
| 50 | 748.70 | 100. | 0.69 | 22.23 | 69.00 |
| 51 | 749.15 | 33. | 0.41 | 22.64 | 13.53 |
| 52 | 749.66 | 54. | 0.40 | 23.04 | 21.60 |
| 53 | 750.03 | 34. | 0.40 | 23.44 | 13.60 |
| 54 | 750.45 | 32. | 0.30 | 23.74 | 9.60 |
| 55 | 750.72 | 54. | 0.40 | 24.14 | 21.60 |
| 56 | 751.17 | 21. | 0.50 | 24.64 | 10.50 |
| 57 | 751.65 | 40. | 0.50 | 25.14 | 20.00 |
| 58 | 752.20 | 34. | 0.30 | 25.44 | 10.20 |
| 59 | 752.53 | 45. | 0.26 | 25.70 | 11.70 |
| 60 | 752.90 | 46. | 0.54 | 26.24 | 24.84 |
| 61 | 753.43 | 14. | 0.49 | 26.73 | 6.86 |
| 62 | 753.87 | 17. | 0.51 | 27.24 | 8.67 |
| 63 | 754.30 | 14. | 0.40 | 27.64 | 5.60 |
| 64 | 754.67 | 71. | 0.30 | 27.94 | 21.30 |
| 65 | 755.00 | 39. | 0.50 | 28.44 | 19.50 |
| 66 | 755.50 | 8.0 | 0.40 | 28.84 | 3.20 |
| 67 | 756.10 | 22. | 0.45 | 29.29 | 9.90 |
| 68 | 756.54 | 63. | 0.55 | 29.84 | 34.65 |
| 69 | 757.05 | 58. | 0.50 | 30.34 | 29.00 |
| 70 | 757.33 | 9.5 | 0.40 | 30.74 | 3.80 |
| 71 | 757.73 | 33. | 0.30 | 31.04 | 9.90 |
| 72 | 757.99 | 217. | 0.30 | 31.34 | 65.10 |
| 73 | 758.37 | 92. | 0.40 | 31.74 | 36.80 |
| 74 | 758.75 | 256. | 0.40 | 32.14 | 102.40 |
| 75 | 759.23 | 76. | 0.58 | 32.72 | 44.08 |
| 76 | 760.09 | 23. | 0.46 | 33.18 | 10.58 |
| 77 | 760.55 | 24. | 0.40 | 33.58 | 9.60 |
| 78 | 760.97 | 39. | 0.40 | 33.98 | 15.60 |
| 79 | 761.48 | 31. | 0.50 | 34.48 | 15.50 |
| 80 | 761.89 | 48. | 0.40 | 34.88 | 19.20 |
| 81 | 762.30 | 32. | 0.40 | 35.28 | 12.80 |
| 82 | 762.68 | 95. | 0.40 | 35.68 | 38.00 |
| 83 | 763.17 | 57. | 0.50 | 36.18 | 28.50 |
| 84 | 763.67 | 60. | 0.50 | 36.68 | 30.00 |
| 85 | 764.12 | 22. | 0.40 | 37.08 | 8.80 |
| 86 | 764.56 | 17. | 0.35 | 37.43 | 5.95 |

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TABLE II

SUMMARY OF PERMEABILITY TESTS

| Depth Interval, Feet | Feet of Core Analyzed | Average Permeability Millidarcys | Permeability Capacity Ft. x Md. |
|---|---|---|---|
| 724.23 - 732.40 | 5.86 | 99.90 | 585.40 |
| 732.40 - 749.08 | 16.37 | 94.28 | 1543.31 |
| 749.08 - 764.65 | 15.20 | 49.50 | 752.46 |
| 724.23 - 764.65 | 37.43 | 76.97 | 2881.17 |

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TABLE III

RESULTS OF SATURATION TESTS

| Sat. No. | Depth Feet | Effective Porosity Percent | Percent Saturation Oil | Water | Total | Oil Content, Bbls./A. Ft. | Feet of Core Ft. | Cum. Ft. | Total Oil Content Bbls./Acre |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 726.28 | 22.7 | 23.4 | 34.6 | 58.0 | 412 | 0.95 | 0.95 | 392 |
| 2 | 728.48 | 22.6 | 28.0 | 47.2 | 75.2 | 492 | 0.95 | 1.90 | 467 |
| 3 | 729.42 | 23.7 | 31.2 | 38.5 | 69.7 | 573 | 0.67 | 2.57 | 384 |
| 4 | 730.07 | 22.4 | 24.0 | 46.2 | 70.2 | 417 | 0.78 | 3.35 | 325 |
| 5 | 730.95 | 25.1 | 25.3 | 49.1 | 74.4 | 493 | 0.80 | 4.15 | 395 |
| 6 | 731.95 | 25.3 | 36.2 | 36.5 | 72.7 | 710 | 0.90 | 5.05 | 639 |
| 7 | 732.98 | 19.2 | 40.8 | 41.4 | 82.2 | 609 | 0.93 | 5.98 | 567 |
| 8 | 733.96 | 24.6 | 41.0 | 35.1 | 77.1 | 783 | 1.00 | 6.98 | 783 |
| 9 | 734.93 | 24.0 | 40.7 | 36.4 | 77.1 | 757 | 0.90 | 7.88 | 682 |
| 10 | 735.80 | 23.1 | 48.4 | 29.8 | 78.2 | 868 | 1.00 | 8.88 | 868 |
| 11 | 736.72 | 23.4 | 45.3 | 28.0 | 73.3 | 823 | 0.90 | 9.78 | 741 |
| 12 | 737.77 | 19.5 | 55.7 | 32.7 | 88.4 | 842 | 1.00 | 10.78 | 842 |
| 13 | 738.78 | 23.8 | 32.3 | 37.5 | 69.8 | 597 | 0.80 | 11.58 | 477 |
| 14 | 739.58 | 23.7 | 35.6 | 39.5 | 75.1 | 654 | 0.90 | 12.48 | 588 |
| 15 | 740.42 | 26.4 | 38.7 | 29.9 | 68.6 | 793 | 0.90 | 13.38 | 714 |
| 16 | 741.29 | 20.2 | 34.8 | 20.2 | 55.0 | 546 | 0.43 | 13.81 | 235 |
| 17 | 742.30 | 24.4 | 52.7 | 33.0 | 85.7 | 997 | 1.43 | 15.24 | 1424 |
| 18 | 743.48 | 22.6 | 32.0 | 28.4 | 60.4 | 562 | 1.09 | 16.33 | 612 |
| 19 | 744.36 | 21.3 | 27.8 | 24.8 | 52.6 | 458 | 0.49 | 16.82 | 225 |
| 20 | 745.23 | 24.6 | 40.3 | 36.2 | 76.5 | 771 | 0.92 | 17.74 | 709 |
| 21 | 746.21 | 23.2 | 47.7 | 29.6 | 77.3 | 858 | 1.00 | 18.74 | 858 |
| 22 | 746.87 | 24.7 | 41.3 | 29.3 | 70.6 | 792 | 1.00 | 19.74 | 792 |
| 23 | 747.99 | 25.9 | 44.8 | 26.5 | 71.3 | 902 | 1.00 | 20.74 | 902 |

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TABLE III

RESULTS OF SATURATION TESTS

| Sat. No. | Depth Feet | Effective Porosity Percent | Percent Saturation Oil | Water | Total | Oil Content, Bbls./A.Ft. | Feet of Core Ft. | Cum. Ft. | Total Oil Content Bbls./Acre |
|---|---|---|---|---|---|---|---|---|---|
| 24 | 748.94 | 23.4 | 60.2 | 20.5 | 80.7 | 1093 | 0.58 | 21.32 | 634 |
| 25 | 749.83 | 22.2 | 48.2 | 31.4 | 79.6 | 828 | 1.22 | 22.54 | 1010 |
| 26 | 750.91 | 21.7 | 57.2 | 24.5 | 81.7 | 962 | 1.20 | 23.74 | 1152 |
| 27 | 751.90 | 23.8 | 61.8 | 24.2 | 86.0 | 1142 | 1.07 | 24.81 | 1222 |
| 28 | 752.68 | 24.1 | 52.3 | 20.2 | 72.5 | 978 | 0.53 | 25.34 | 518 |
| 29 | 753.68 | 24.3 | 43.3 | 25.2 | 68.5 | 818 | 1.40 | 26.74 | 1147 |
| 30 | 754.84 | 21.0 | 53.2 | 30.2 | 83.4 | 867 | 0.80 | 27.54 | 693 |
| 31 | 755.79 | 21.8 | 34.8 | 36.5 | 71.3 | 588 | 0.85 | 28.39 | 500 |
| 32 | 756.78 | 22.3 | 38.2 | 27.4 | 65.6 | 661 | 1.05 | 29.44 | 694 |
| 33 | 757.53 | 18.6 | 40.2 | 34.0 | 74.2 | 578 | 0.80 | 30.24 | 463 |
| 34 | 758.54 | 21.5 | 49.0 | 21.0 | 70.0 | 818 | 0.80 | 31.04 | 655 |
| 35 | 759.45 | 20.7 | 43.3 | 27.8 | 71.1 | 697 | 0.58 | 31.62 | 403 |
| 36 | 760.33 | 21.0 | 53.2 | 24.8 | 78.0 | 867 | 0.95 | 32.57 | 823 |
| 37 | 761.28 | 21.1 | 58.2 | 21.2 | 79.4 | 953 | 0.90 | 33.47 | 858 |
| 38 | 762.50 | 19.7 | 65.5 | 18.5 | 84.0 | 1001 | 1.00 | 34.47 | 1001 |
| 39 | 763.36 | 21.2 | 58.7 | 18.0 | 76.7 | 965 | 0.90 | 35.37 | 868 |
| 40 | 764.36 | 17.4 | 58.3 | 25.7 | 84.0 | 793 | 0.95 | 36.32 | 754 |
| | | | | | | | | TOTAL --- | 28,016 |

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TABLE IV

SUMMARY OF SATURATION TESTS

| Depth Interval, Feet | Feet of Core Analyzed | Average Porosity Percent | Average Percent Oil Saturation | Average Percent Water Saturation | Average Oil Content Bbls./A.Ft. | Total Oil Content Bbls./Acre |
|---|---|---|---|---|---|---|
| 725.70 - 732.40 | 5.05 | 23.64 | 27.96 | 41.90 | 515 | 2,602 |
| 732.40 - 749.08 | 16.27 | 23.40 | 42.89 | 31.72 | 778 | 12,653 |
| 749.08 - 764.65 | 15.00 | 21.81 | 51.14 | 25.70 | 851 | 12,761 |
| 725.70 - 764.65 | 36.32 | 22.78 | 44.22 | 30.65 | 771 | 28,016 |

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TABLE V

RESULTS OF FLOOD POT TESTS

| Sample No. | Depth, Feet | Effective Porosity Percent | Original Oil Saturation Percent | Original Oil Saturation Bbls./A. Ft. | Oil Recovery Percent | Oil Recovery Bbls./A.Ft. | Residual Saturation %Oil | Residual Saturation %Water | Residual Saturation %Total | Residual Saturation Bbls./A.Ft. | Perm. Milli. | Average Pressure, Lbs./Sq.In. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 728.87 | 21.3 | 30.1 | 498 | 7.0 | 116 | 23.1 | 61.4 | 84.5 | 382 | 45. | 4 |
| 2 | 730.52 | 22.4 | 25.8 | 448 | 3.0 | 52 | 22.8 | 61.2 | 84.0 | 396 | 155. | 2 |
| 3 | 731.53 | 23.7 | 32.1 | 590 | 5.2 | 96 | 26.9 | 60.0 | 86.9 | 494 | 236. | 2 |
| 4 | 733.38 | 22.1 | 48.0 | 822 | 18.9 | 324 | 29.1 | 61.3 | 90.4 | 498 | 115. | 2 |
| 5 | 734.50 | 17.0 | 56.4 | 744 | 26.8 | 354 | 29.6 | 62.3 | 91.9 | 390 | 9.5 | 5 |
| 6 | 736.17 | 21.1 | 51.1 | 837 | 21.6 | 354 | 29.5 | 62.0 | 91.5 | 483 | 126. | 2 |
| 7 | 737.30 | 21.8 | 57.4 | 953 | 25.1 | 424 | 31.3 | 54.8 | 86.1 | 529 | 36. | 3 |
| 8 | 738.39 | 24.4 | 36.2 | 685 | 8.2 | 155 | 28.0 | 56.8 | 84.8 | 530 | 218. | 2 |
| 9 | 739.94 | 23.1 | 41.3 | 740 | 9.6 | 172 | 31.7 | 54.8 | 86.5 | 568 | 199. | 2 |
| 10 | 740.78 | 21.4 | 55.0 | 914 | 26.0 | 432 | 29.0 | 56.0 | 85.0 | 482 | 48. | 3 |
| 11 | 741.93 | 24.4 | 38.2 | 730 | 11.4 | 216 | 26.8 | 50.7 | 77.5 | 514 | 126. | 3 |
| 12 | 743.96 | 21.3 | 44.7 | 739 | 9.5 | 157 | 35.2 | 38.0 | 73.2 | 582 | 4.8 | 5 |
| 13 | 745.67 | 24.6 | 39.2 | 747 | 11.7 | 223 | 27.5 | 47.8 | 75.3 | 524 | 120. | 6 |
| 14 | 747.28 | 24.7 | 46.5 | 891 | 14.9 | 286 | 31.6 | 47.6 | 79.2 | 605 | 239. | 6 |
| 15 | 748.44 | 25.9 | 40.0 | 804 | 13.5 | 271 | 26.5 | 48.8 | 75.3 | 533 | 104. | 3 |
| 16 | 750.26 | 22.2 | 40.1 | 691 | 1.3 | 22 | 38.8 | 40.2 | 79.0 | 669 | 34. | 25 |
| 17 | 751.40 | 21.7 | 52.3 | 872 | 0 | 0 | 52.3 | 23.3 | 75.6 | 872 | 27. | 50 |
| 18 | 753.23 | 24.3 | 49.3 | 931 | 0 | 0 | 49.3 | 22.8 | 72.1 | 931 | 36. | 50 |
| 19 | 754.47 | 21.0 | 51.3 | 873 | 2.2 | 36 | 49.1 | 30.0 | 79.1 | 837 | 55. | 30 |
| 20 | 756.29 | 22.3 | 44.1 | 763 | 0 | 0 | 44.1 | 26.9 | 71.0 | 763 | 37. | 50 |
| 21 | 757.92 | 18.6 | 57.4 | 829 | 0 | 0 | 57.4 | 30.4 | 87.8 | 829 | 35. | 50 |
| 22 | 759.00 | 20.7 | 54.2 | 870 | 0 | 0 | 54.2 | 23.3 | 77.5 | 870 | 228. | 50 |
| 23 | 760.76 | 21.1 | 55.1 | 902 | 0 | 0 | 55.1 | 22.6 | 77.7 | 902 | 28. | 50 |
| 24 | 762.09 | 19.7 | 61.8 | 945 | 0 | 0 | 61.8 | 24.8 | 86.6 | 945 | 32. | 50 |
| 25 | 763.86 | 21.2 | 49.7 | 817 | 0 | 0 | 49.7 | 19.0 | 68.7 | 817 | 85. | 50 |

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

STEELE LEASE WELL NO. 6A

TABLE VI

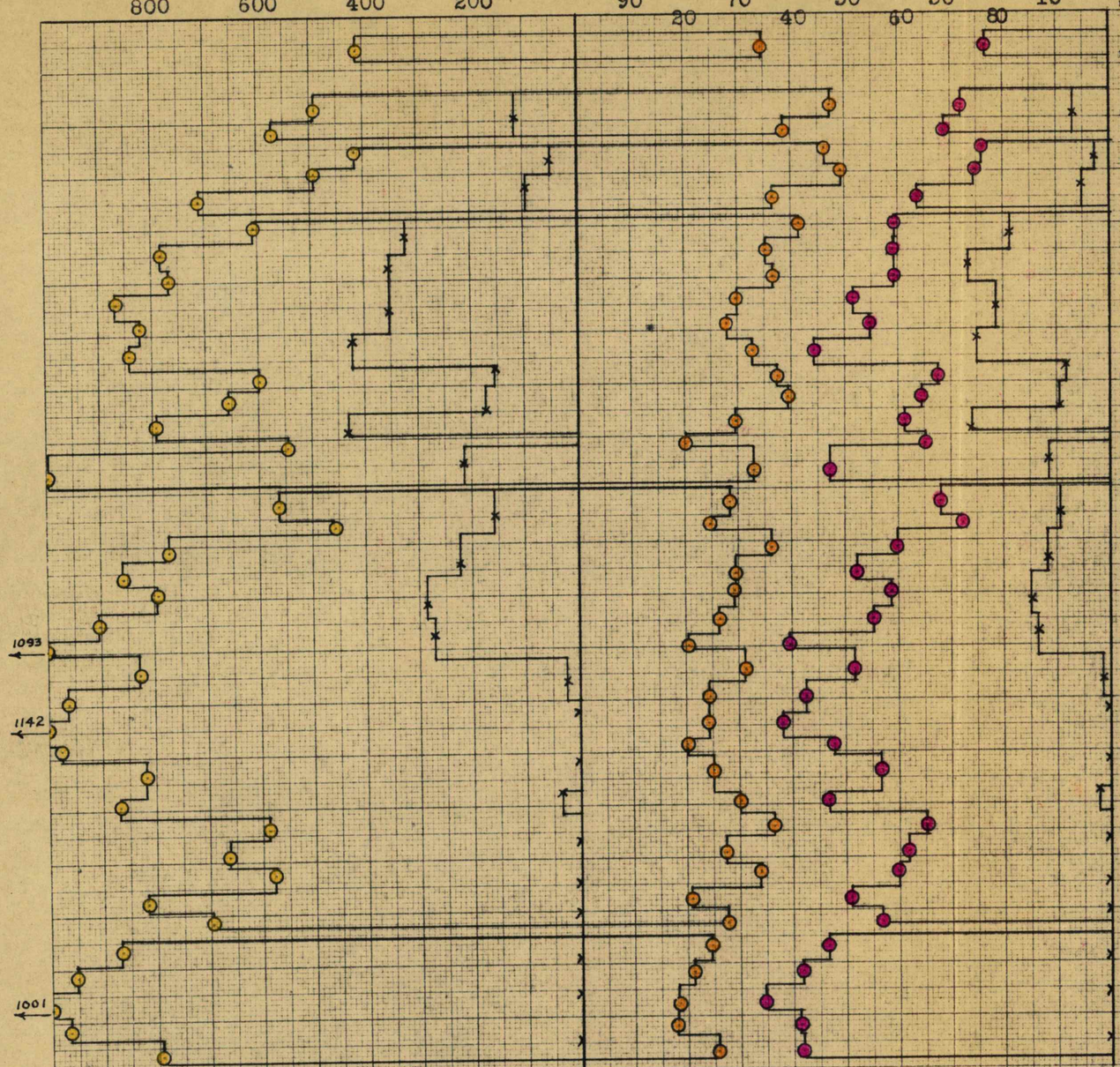
SUMMARY OF FLOOD POT TESTS

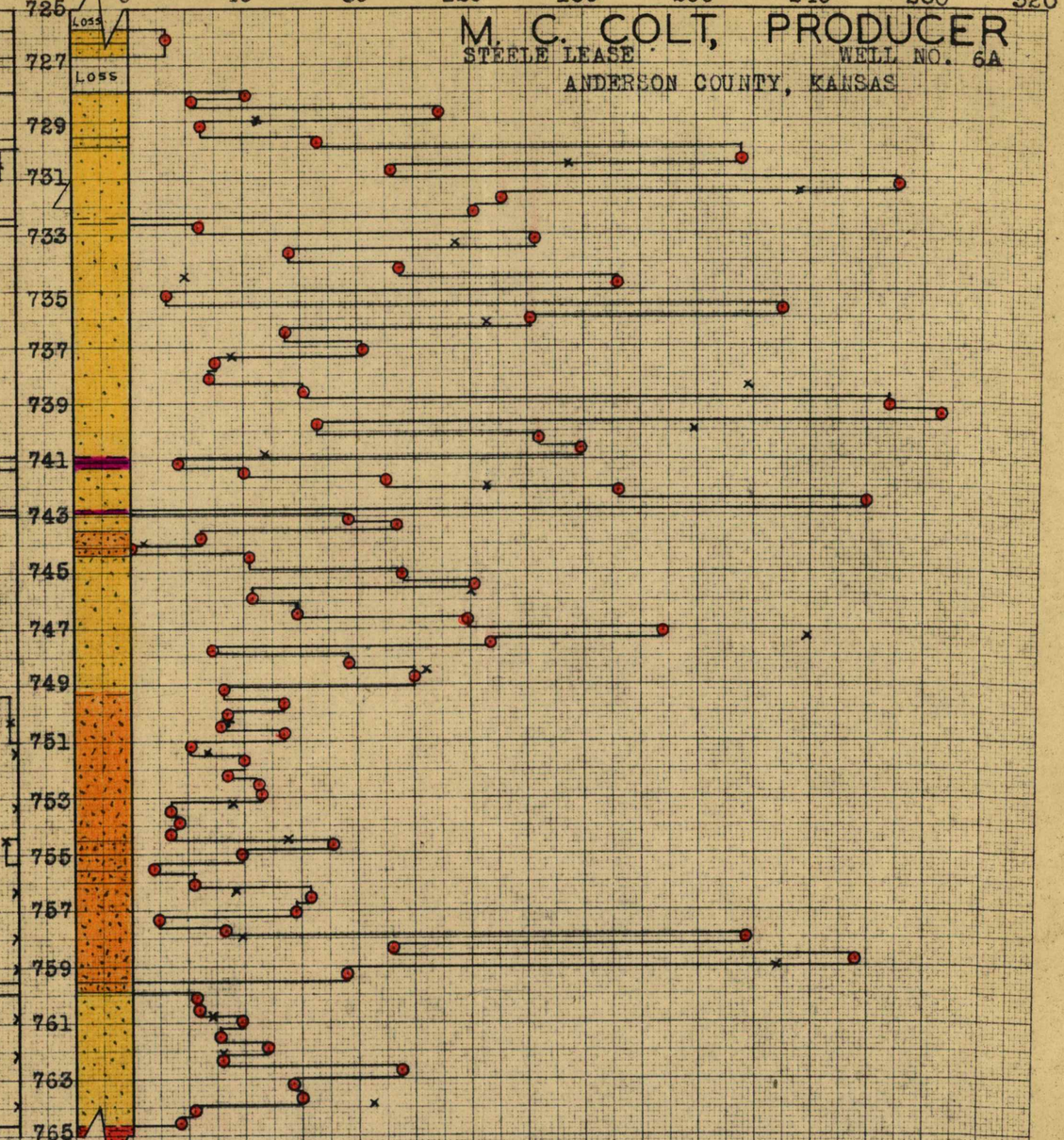
| | |
|---|---|
| Depth Interval, Feet | 732.60 - 749.40 |
| Feet of Sand Analyzed | 16.20 |
| Average Percent Original Oil Saturation | 45.89 |
| Average Percent Oil Recovery | 16.19 |
| Average Percent Residual Oil Saturation | 29.70 |
| Average Percent Residual Water Saturation | 52.76 |
| Average Original Oil Content, Bbls./A.Ft. | 800. |
| Average Oil Recovery, Bbls./A. Ft. | 278. |
| Average Residual Oil Content, Bbls./A. Ft. | 522. |
| Total Original Oil Content, Bbls./Acre | 12969. |
| Total Oil Recovery, Bbls./Acre | 4,504. |
| Total Residual Oil Content, Bbls./Acre | 8,465. |

# M. C. COLT, PRODUCER

STEELE LEASE WELL NO. 6A

ANDERSON COUNTY, KANSAS




| DEPTH, IN FEET | FEET OF SAND | AVG. OIL SATURATION PERCENT | AVG. OIL CONTENT BBLS./A.FT. | TOTAL OIL CONTENT BBLS./A.FT. | AVG. WATER SATURATION PERCENT |
|---|---|---|---|---|---|
| 725.70-732.40 | 5.05 | 27.96 | 515 | 2,602 | 41.90 |
| 732.40-749.08 | 16.27 | 42.89 | 778 | 12,653 | 31.72 |
| 749.08-764.65 | 15.00 | 51.14 | 851 | 12,761 | 25.70 |
| 725.70-764.65 | 36.32 | 44.22 | 771 | 28,016 | 30.65 |

X FLOOD POT RECOVERY

KEY:

| | AVG. PERMEABILITY, MILLIDARCYS |
|---|---|
| MICACEOUS SANDSTONE | 99.90 |
| LAMINATED MICACEOUS SANDSTONE | 94.28 |
| LAMINATED SHALEY SANDSTONE | 49.50 |
| LAMINATED MICACEOUS SHALEY SANDSTONE | 76.97 |
| MICACEOUS CARBONACEOUS SANDSTONE | |
| SANDY SHALE | |

X FLOOD POT PERMEABILITY