

March 31, 1949

Deep Rock Oil Corporation
Tulsa, Oklahoma

Att: Mr. T. F. Lawry

Gentlemen:

Enclosed herewith is the report of the analysis
of the 2½" rotary core taken from the Brownrigg Lease,
Well No. K-15, Linn County, Kansas, and submitted
to our laboratory on March 24, 1949.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

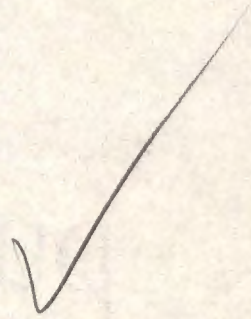
Carl L. Pate

CLP:bc
c.c. to Mr. Neil Henderson.

30-20-22E

K-15

Brownrigg



DEEP ROCK OIL CORPORATION

CORE ANALYSIS REPORT

BROWNRIGG LEASE

WELL NO. K-15

LINN COUNTY, KANSAS

OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

MARCH 31, 1949

Oil Field Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

Location 330 ft. S. of N. Line and 330 ft. W. of E. Line, NW 1/4

Section 30 Twp. 20 Rge. 22 County Linn State Kansas

Name of Sand	Squirrel
Top of Core	561.52
Bottom of Core	631.40
Top of ^{Pay} Sand	581.50
Bottom of Sand	625.13
Total Feet of Permeable Sand	30.61

Distribution of Permeable Sand:
Permeability Range
Millidarcys

Feet

Cum. Ft.

0 - 5	6.42	6.42	
5 - 10	6.14	12.56	
10 - 20	3.60	16.16	
20 - 40	3.52	19.68	
40 - 80	6.48	26.16	
80 - 120	1.35	27.51	
120 - 160	0.50	28.01	
160 & above	2.60	30.61	

Average Permeability, Millidarcys

41.13

Average Percent Porosity

19.60

Average Percent Oil Saturation

28.68

Average Percent Water Saturation

51.50

Average Oil Content, Bbls./A. Ft.

441.

Total Oil Content, Bbls./Acre

13,625.

Average Percent Oil Recovery by Laboratory Flooding Tests

6.60

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.

106.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre

1,887.

Total Calculated Oil Recovery, Bbls./Acre

1,880.

Packer Setting, Feet

Note:

The above averages are for that
part of the sand section extending
from the packer setting to the top
of the cement plug.

583.5

Viscosity, Centipoises @

A. P. I. Gravity, degrees @ 60 °F

Salt water was used as a circulating fluid in the coring of the sand in this well. This well is located approximately 200 feet from a water injection well, and as a result, the sand within the vicinity of this well is pressured up.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
561.52 - 563.50	- Conglomeratic calcareous shale (Discarded at well.)
563.50 - 565.50	- Shale (Discarded at well).
565.50 - 566.30	- Conglomeratic calcareous sandy shale (Discarded at well).
566.30 - 566.90	- Dry sand (No saturation; discarded at well).
566.90 - 568.30	- Limestone and shale (Discarded at well).
568.30 - 570.50	- Sandy shale (Discarded at well).
570.50 - 570.87	- Gray sandy shale.
570.87 - 571.00	- Light brown fine grained micaceous shaley sandstone.
571.00 - 571.90	- Finely laminated sandy shale.
571.90 - 572.55	- Light brown fine grained laminated micaceous sandstone.
572.55 - 572.82	- Laminated sandstone and shale.
572.82 - 573.17	- Finely laminated sandy shale.
573.17 - 573.65	- Laminated sandstone and shale.
573.65 - 574.15	- Light brown fine grained laminated micaceous sandstone
574.15 - 575.65	- Laminated sandstone and shale.
575.65 - 575.92	- Gray sandy shale.
575.92 - 576.20	- Light brown fine grained slightly laminated micaceous sandstone.
576.20 - 577.26	- Sandy shale.
577.86 - 579.10	- Finely laminated sandy shale.
579.10 - 579.35	- Finely laminated shaley sandstone.

- 579.35 - 580.00 - Light brown fine grained finely laminated micaceous sandstone.
- 580.00 - 581.50 - Finely laminated sandy shale.
- 581.50 - 581.95 - Light brown fine grained slightly laminated sandstone.
- 581.95 - 582.28 - Gray sandy shale.
- 582.28 - 583.31 - Light brown fine grained micaceous sandstone.
- 583.31 - 583.86 - Finely laminated sandstone and shale.
- 583.86 - 585.75 - Brown fine grained micaceous sandstone.
- 585.75 - 586.40 - Light brown fine grained laminated micaceous sandstone.
- 586.40 - 587.33 - Finely laminated sandstone and shale.
- 587.33 - 587.45 - Gray shale.
- 587.45 - 588.05 - Finely laminated sandy shale.
- 588.05 - 588.30 - Brown fine grained micaceous sandstone.
- 588.30 - 590.20 - Gray sandy shale.
- 590.20 - 590.80 - Finely laminated sandy shale.
- 590.80 - 591.05 - Laminated shaley sandstone.
- 591.05 - 591.42 - Gray sandy shale.
- 591.42 - 591.65 - Laminated shaley sandstone.
- 591.65 - 594.15 - Brown fine grained slightly laminated micaceous sandstone.
- 594.15 - 594.90 - Brown fine grained laminated micaceous sandstone.
- 594.90 - 595.90 - Laminated shaley sandstone.
- 595.90 - 597.43 - Finely laminated sandy shale.
- 597.43 - 598.10 - Laminated shaley sandstone.
- 598.10 - 598.35 - Light brown fine grained slightly laminated micaceous sandstone.
- 598.35 - 601.00 - Finely laminated sandy shale.

- 601.00 - 601.30 - Gray shale.
- 601.30 - 602.12 - Finely laminated sandy shale.
- 602.12 - 604.10 - Light brown fine grained laminated micaceous sandstone.
- 604.10 - 604.30 - Sandy shale.
- 604.30 - 604.60 - Laminated shaley sandstone.
- 604.60 - 609.20 - Brown fine grained micaceous slightly carbonaceous sandstone.
- 609.20 - 609.50 - Light brown fine grained micaceous carbonaceous slightly shaley sandstone.
- 609.50 - 613.50 - Brown fine grained micaceous carbonaceous shaley sandstone.
- 613.50 - 613.75 - Light brown fine grained laminated carbonaceous sandstone.
- 613.75 - 618.48 - Brown fine grained micaceous sandstone.
- 618.48 - 620.82 - Light brown fine grained micaceous carbonaceous slightly shaley sandstone.
- 620.82 - 621.02 - Light brown fine grained micaceous carbonaceous sandstone.
- 621.02 - 621.80 - Light brown fine grained micaceous sandstone.
- 621.80 - 622.90 - Light brown fine grained micaceous carbonaceous sandstone.
- 622.90 - 625.13 - Light brown fine grained micaceous sandstone.
- 625.13 - 627.03 - Gray shale.
- 627.03 - 628.05 - Coal.
- 628.05 - 629.50 - Gray shale.
- 629.50 - 631.40 - Gray shale (Discarded at well).

Coring was started at a depth of 561.52 feet in conglomeratic calcareous shale and completed at 631.40 feet in gray shale. The upper part of the sand section in this well is fairly well broken with layers of sandy shale. This core shows a total of 39.19 feet of formation containing oil. For the most part the sand section is made up of fine grained micaceous to carbonaceous shaley sandstone.

PERMEABILITY

For the sake of distribution the core was divided into three sections. The weighted average permeability of the upper, middle and lower sections are 5.32, 28.22 and 101.31 millidarcys respectively (See Table II). The weighted average permeability for that part of the sand section extending from the packer setting to the top of the cement plug is 41.13 millidarcys. In the remainder of the report the latter section will be referred to as the pay sand.

By observing the data given above and on the coregraph, it is noticeable that the cored section has a very irregular permeability profile. The upper part of the cored section is very tight in comparison with the lower part.

PERCENT SATURATION & OIL CONTENT

The pay sand in this core has only a fair weighted average percent oil saturation, namely, 28.68. The weighted average percent oil saturation of the upper, middle and lower sections are 26.65, 32.96 and 23.82 respectively (See Table IV). The weighted average percent water saturation of the pay sand is 51.50. This gives an overall weighted average total fluid saturation of 80.18 percent (for the pay sand). The analysis show that for the most part the sand in this core has a comparatively high water saturation, in fact, the lower part seems to be more or less watered out.

The weighted average oil content of the pay sand is 441 barrels per acre foot, while the total oil content, as shown by this core, is 13,625 barrels per acre. The total oil content, as shown for the entire core, is 15,192 barrels per acre.

using proper selective plugging.

more than likely, the recovery for this area could be increased by very irregular permeability profile. In the later stages of the flood, The principle drawback of this core is the fact that it was as it would not be reliable.

calculate the recovery for the area within the vicinity of this well, Inasmuch as the sand in this well is pressured up, we did not

CONCLUSION

amount of water and that the lower part will readily take water. part of the cored section is tight and will not take any appreciable The results of these tests show that for the most part the upper Of the 36 samples tested, 19 produced oil and 25 took water.

(see Table VI).

initial fluid production pressure is 19.4 pounds per square inch permeability of the samples is 3.17 millidarcys, while the average average recovery of 6.60 percent. The weighted average effective oil saturation was reduced from 30.05 to 23.45, or represents an was obtained from 17.85 feet of sand. The weighted average percent flooding tests, as a total recovery of only 1,887 barrels per acre The pay sand in this core did not respond very well to laboratory

LABORATORY FLOODING TESTS

OIL FIELD RESEARCH LABORATORIES

SHOT RECOMMENDATION

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

<u>Depth Interval, Feet</u>	<u>Feet of Sand</u>	<u>Size of Shell Inches</u>	<u>Qts./Ft.</u>	<u>Total Qts.</u>
588.5 - 595.0	6.5	3½	2.0	13.0
595.0 - 605.0	10.0	Spacer		
605.0 - 616.5	<u>11.5</u>	3½	2.0	<u>23.0</u>
Total	18.0			36.0

Recommended Packer Setting - 583.5 feet

Note: Plug hole back to 625.0 feet

Note: This well is pressured up and located
approximately 200' from an injection well.

Oil Field Research Laboratories
RESULTS OF PERMEABILITY TESTS
TABLE I

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
1	570.95	2.0	0.13	0.13	0.26
2	572.28	2.7	0.63	0.78	1.76
3	572.63	Imp.	0.27	1.05	0.00
4	573.30	Imp.	0.10	1.15	0.00
5	574.05	4.3	0.50	1.65	2.15
6	574.95	Broken	0.15	1.80	0.00
7	575.25	1.5	0.10	1.90	0.15
8	575.65	Imp.	0.40	2.30	0.00
9	576.06	8.9	0.28	2.58	2.49
10	576.58	Broken	0.25	2.83	0.00
11	576.70	Imp.	0.23	3.06	0.00
12	577.50	Imp.	0.40	3.46	0.00
13	578.35	Imp.	0.64	4.12	0.00
14	578.75	Imp.	0.60	4.72	0.00
15	579.17	9.3	0.23	4.97	2.33
16	579.98	3.5	0.63	5.62	2.28
17	581.24	0.99	0.60	6.22	0.39
18	581.55	4.5	0.43	6.67	2.03
19	581.99	Imp.	0.33	7.00	0.00
20	582.30	Broken	0.37	7.37	0.00
21	582.95	2.5	0.43	7.82	1.13
22	583.27	8.4	0.21	8.03	1.76
23	583.90	5.2	0.19	8.22	0.99
24	584.13	11.	0.30	8.52	3.30
25	584.35	9.2	0.33	8.87	3.22
26	584.63	16.	0.30	9.17	4.80
27	585.15	9.5	0.75	9.92	7.13
28	585.60	8.7	0.13	10.07	1.31
29	586.00	4.1	0.50	10.57	2.05
30	586.50	Imp.	0.40	10.97	0.00
31	587.10	Imp.	0.40	11.37	0.00
32	587.33	Imp.	0.13	11.50	0.00
33	588.10	4.8	0.23	11.73	1.13
34	588.40	Imp.	0.20	11.93	0.00
35	589.07	Imp.	0.43	12.40	0.00
36	589.45	Imp.	0.43	12.83	0.00
37	590.35	1.3	0.60	13.43	0.78
38	590.84	4.6	0.23	13.70	1.15
39	591.20	Imp.	0.37	14.07	0.00
40	591.97	6.3	0.35	14.42	2.21

Oil Field Research Laboratories
RESULTS OF PERMEABILITY TESTS
TABLE I

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
41	592.16	2.7	0.40	14.82	1.08
42	592.62	Broken	0.40	15.22	0.00
43	593.00	14.	0.35	15.57	4.90
44	593.35	9.2	0.55	16.12	5.06
45	594.04	5.0	0.45	16.57	2.25
46	594.25	4.0	0.45	17.02	1.80
47	594.85	5.3	0.30	17.32	1.59
48	595.15	7.1	0.60	17.92	4.26
49	595.87	3.6	0.40	18.32	1.44
50	596.18	2.8	0.30	19.02	1.96
51	597.00	Imp.	0.55	19.57	0.00
52	597.30	Imp.	0.28	19.85	0.00
53	598.00	1.2	0.67	20.52	0.80
54	598.75	Imp.	0.60	21.12	0.00
55	599.14	Imp.	0.35	21.47	0.00
56	599.50	Imp.	0.40	21.87	0.00
57	599.95	Imp.	0.45	22.32	0.00
58	600.35	Imp.	0.40	22.72	0.00
59	600.75	Broken	0.45	23.17	0.00
60	601.09	Imp.	0.15	23.32	0.00
61	601.28	Imp.	0.15	23.47	0.00
62	602.05	Imp.	0.52	23.99	0.00
63	602.25	Imp.	0.48	24.47	0.00
64	602.97	1.2	0.50	24.97	0.60
65	603.25	2.9	0.40	25.37	1.16
66	603.70	9.2	0.60	25.97	5.52
67	604.15	Imp.	0.20	26.17	0.00
68	604.35	3.4	0.30	26.47	1.02
69	605.16	68.	0.70	27.17	47.60
70	605.45	71.	0.50	27.67	35.50
71	606.09	55.	0.35	28.02	19.25
72	606.25	43.	0.45	28.47	19.35
73	606.96	40.	0.50	28.97	20.00
74	607.20	22.	0.20	29.17	4.40
75	607.42	34.	0.50	29.67	17.00
76	608.18	11.	0.50	30.17	5.50
77	608.41	21.	0.20	30.37	4.20
78	608.60	32.	0.70	31.07	22.40
79	609.30	0.93	0.30	31.37	0.28
80	609.73	58.	0.50	31.87	29.00

Oil Field Research Laboratories
RESULTS OF PERMEABILITY TESTS
TABLE I

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
81	610.22	8.5	0.40	32.27	3.40
82	610.60	12.	0.35	32.62	4.20
83	610.94	111	0.40	33.02	4.40
84	611.37	18.	0.45	33.47	3.10
85	611.95	7.7	0.30	33.97	3.85
86	612.30	6.6	0.25	34.22	1.65
87	612.46	8.3	0.45	34.67	3.74
88	613.16	3.5	0.45	35.12	1.58
89	613.39	1.7	0.25	35.37	0.43
90	613.60	9.7	0.25	35.62	2.43
91	614.19	28.	0.40	36.02	11.20
92	614.75	201.	0.60	36.62	120.60
93	615.40	167.	0.65	37.27	108.55
94	615.90	226.	0.55	37.82	124.30
95	616.40	175.	0.40	38.22	70700
96	616.85	163.	0.40	38.62	65.20
97	617.20	123.	0.50	39.12	61.50
98	617.85	75.	0.50	39.62	37.50
99	618.18	44.	0.48	40.10	21.12
100	618.59	26.	0.52	40.62	13.52
101	619.35	32.	0.50	41.12	16.00
102	619.63	17.	0.25	41.37	4.25
103	619.92	46.	0.55	41.92	25.30
104	620.75	54.	0.52	42.44	26.08
105	621.07	43.	0.78	43.22	33.54
106	621.89	15.	0.30	43.52	4.50
107	622.29	92.	0.40	43.92	36.80
108	622.79	12.	0.40	44.32	4.60
109	623.20	104.	0.55	44.87	57.20
110	623.70	53.	0.35	45.22	18.55
111	624.02	37.	0.50	45.72	18.50
112	624.50	99.	0.40	46.12	39.60
113	624.95	62.	0.43	46.55	26.66

Oil Field Research Laboratories
SUMMARY OF PERMEABILITY TESTS

TABLE II

Company <u>Deep Rock Oil Corporation</u>		Lease <u>Brownrigg</u>		Well No. <u>K-15</u>
Depth Interval Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity, Ft. x Md.	
571.90 - 604.10	14.50	5.32	77.16	
604.60 - 614.40	9.55	28.22	269.46	
614.40 - 621.80	7.80	101.31	729.46	
583.50 - 625.00	30.61	41.13	1,258.98	

Oil Field Research Laboratories

RESULTS OF SATURATION TESTS

TABLE III

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

Sat. No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content, Bbls./A. Ft.	Feet of Core		Total Oil Content Bbls./Acre
			Oil	Water	Total		Ft.	Cum. Ft.	
2	572.05	16.1	14.4	67.3	81.7	180	0.65	0.65	117
4	574.21	16.3	15.9	68.0	83.9	201	0.45	1.10	90
5	575.06	16.9	20.3	69.7	90.0	267	1.05	2.15	280
8	579.50	17.9	23.4	53.3	76.7	325	0.85	2.80	211
10	581.40	13.1	13.1	84.4	97.5	133	0.50	3.30	67
F10	581.78	20.7	30.1	-	-	506	0.45	3.75	228
11	582.50	21.8	29.3	45.7	75.0	496	1.03	4.78	511
12	583.45	15.0	28.6	68.6	97.2	333	0.55	5.33	183
13	584.35	19.2	32.5	39.2	71.7	483	0.94	6.27	454
14	585.33	20.1	37.4	40.5	77.9	583	0.95	7.22	554
15	586.25	19.9	36.3	40.6	76.9	562	0.65	7.87	365
F15-	586.82	16.2	34.3	-	-	431	0.93	8.80	401
16	587.58	15.2	20.7	66.8	87.5	245	0.60	9.40	147
19	591.50	14.5	22.0	73.0	95.0	246	0.23	9.63	57
F19	591.80	20.9	39.4	-	-	639	0.50	10.13	320
20	592.40	19.2	33.4	45.9	79.3	498	0.85	10.98	423
21	593.52	19.3	36.1	43.5	79.6	541	1.15	12.13	623
22	594.42	20.1	37.2	41.1	78.3	579	0.75	12.88	434
23	595.35	16.6	36.3	57.6	93.9	467	1.00	13.88	467
24	596.46	14.6	16.4	79.2	95.6	186	1.53	15.41	285
25	597.60	16.7	16.6	72.0	88.6	215	0.67	16.08	144
26	598.20	18.9	29.0	50.0	79.0	425	0.25	16.33	106

Oil Field Research Laboratories

RESULTS OF SATURATION TESTS

TABLE III

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

Sat. No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content, Bbls./A. Ft.	Feet of Core		Total Oil Content Bbls./Acre
			Oil	Water	Total		Ft.	Cum. Ft.	
E-26	598.53	15.1	19.4	-	-	227	0.65	16.98	148
30	602.45	15.4	14.2	73.8	88.0	169	0.78	17.76	132
31	603.45	16.9	21.7	60.2	81.9	284	1.20	18.96	341
32	604.72	22.7	31.0	39.4	70.4	546	0.50	19.46	273
33	605.60	19.8	42.7	42.1	84.8	656	0.90	20.36	591
34	606.46	22.7	36.2	34.5	70.7	638	1.10	21.46	703
35	607.65	21.4	37.8	32.2	70.0	627	1.00	22.46	627
36	608.77	21.9	39.6	32.2	71.8	674	1.10	23.56	742
37	610.00	16.4	33.4	42.5	75.9	425	1.10	24.66	468
38	611.15	21.5	24.5	52.7	77.2	408	1.30	25.96	531
39	612.66	20.4	26.3	52.2	78.5	417	1.60	27.56	668
40	613.63	16.2	24.3	59.0	83.3	306	0.25	27.81	777
F40	613.95	21.9	33.0	-	-	561	0.65	28.46	365
41	614.86	22.3	26.1	87.4	73.5	452	1.10	29.56	487
42	616.15	23.1	30.2	42.9	73.1	542	1.30	30.86	705
43	617.40	22.8	27.5	49.3	76.8	486	1.68	32.54	817
44	618.80	21.4	16.3	59.1	75.4	270	1.02	33.56	276
45	620.15	22.2	16.7	68.4	85.1	288	1.52	35.08	438
46	621.38	20.8	25.9	59.0	84.9	419	0.78	35.86	326
							Total	- - - -	15,192

Oil Field Research Laboratories

SUMMARY OF SATURATION TESTS

TABLE IV

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbls./A. Ft.	Total Oil Content Bbls./Acre
571.90-604.10	18.96	17.55	26.65	58.23	374	7088
604.60-614.40	9.50	20.69	32.96	42.60	531	5045
614.40-621.80	7.40	22.24	23.82	54.20	413	3059
583.50-625.00	30.89	19.60	28.68	51.50	441	13625

Oil Field Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE V

Company Deep Rock Oil CorporationLease BrownriggWell No. L-18

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.
			Percent	Bbls./A. Ft.	Percent	Bbls./A. Ft.	% Oil	% Water	Bbls./A. Ft.			
2	572.45	16.8	16.8	215	0.0	0	16.8	79.5	215	2	0.0966	45
4	574.45	15.2	17.8	210	0.0	0	17.8	77.5	210	0	Imp.	50 +
5	575.52	16.6	19.2	247	0.0	0	19.2	76.9	247	0	Imp.	50 +
8	579.75	18.4	20.8	297	0.0	0	20.8	70.2	297	0	Imp.	50 +
10	581.78	20.7	30.1	506	5.3	69	24.6	69.9	417	78	1.92	20
11	582.77	18.5	28.6	410	0.0	0	28.6	62.5	410	3	0.099	40
12	583.67	17.4	24.8	335	5.9	80	18.9	69.5	255	14	0.385	25
13	584.70	20.3	29.2	460	12.6	199	16.6	78.7	261	29	0.799	20
14	585.60	20.2	35.8	561	8.8	138	27.0	67.0	423	3.5	0.150	25
15	586.62	16.2	34.3	451	6.0	75	28.3	69.4	356	0	0.027	40
16	587.89	17.6	17.0	232	0.0	0	17.0	81.9	232	0	Imp.	50 +
19	591.80	20.9	39.4	639	18.0	292	21.4	75.9	347	22	0.508	15
20	592.80	20.2	33.7	529	12.6	198	21.1	75.1	331	19	0.500	15
21	593.75	19.6	33.3	514	8.3	126	25.5	56.1	388	1	0.188	25
22	594.66	19.6	33.8	545	6.1	93	29.7	59.1	452	1	0.099	25
23	595.65	16.0	31.7	334	2.4	30	29.3	60.0	364	0	0.005	45
24	596.75	15.5	14.9	179	0.0	0	14.9	81.4	179	0	Imp.	50 +
25	597.82	14.4	17.0	190	0.0	0	17.0	73.0	190	0	Imp.	50 +
26	598.53	15.1	19.4	227	0.0	0	19.4	72.4	227	0	Imp.	50 +
28	602.75	15.3	14.3	170	0.0	0	14.3	73.4	170	0	Imp.	50 +
31	603.95	18.8	20.0	292	0.0	0	20.0	72.0	292	0	Imp.	50 +
32	604.97	23.1	30.6	548	6.2	111	24.4	56.0	437	136.5	11.22	10
33	605.65	21.2	41.2	677	13.8	227	27.4	67.7	450	65	3.37	15
34	606.75	21.6	36.3	610	12.0	202	24.3	72.5	408	53	2.59	15
35	607.95	19.3	35.3	528	0.0	0	35.3	58.0	528	13.5	0.355	30
36	609.05	20.7	35.9	577	0.0	0	35.9	58.9	577	26	0.710	20
37	610.36	16.6	29.3	378	0.0	0	29.3	64.4	378	5	0.205	35
38	611.65	22.0	23.4	399	0.0	0	23.4	72.1	399	62	1.79	15
39	612.95	19.8	26.1	401	0.0	0	26.1	64.0	401	3	0.238	40

Oil Field Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE V

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

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 Pres Lbs./Sq. In.
			Percent	Bbls./A. Ft.	Percent	Bbls./A. Ft.	% Oil	% Water	Bbls./A. Ft.			
40	613.95	21.9	33.0	561	3.3	56	29.7	68.0	505	48	1.42	20
41	615.15	21.7	26.0	438	3.5	59	32.5	71.0	379	87	5.90	10
42	616.63	23.4	25.3	459	5.1	93	20.2	70.8	366	132	8.49	10
43	617.65	22.7	29.7	523	3.4	60	26.3	67.9	463	110	6.39	15
44	619.20	21.6	17.4	292	0.4	7	17.0	79.2	285	203	5.99	10
45	620.45	20.3	14.5	233	0.4	6	14.4	74.3	227	196	5.12	10
46A	621.65	21.5	19.5	325	0.0	0	19.5	76.0	325	195	10.49	5
47A	622.62	-	-	-	-	-	-	-	-	-	0.199	-
48A	623.87	-	-	-	-	-	-	-	-	-	7.62	-

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.

Salt water was used to flood out these samples.

Oil Field Research Laboratories

SUMMARY OF LABORATORY FLOODING TESTS

TABLE VI

Company Deep Rock Oil Corporation Lease Brownrigg Well No. K-15

Depth Interval, Feet	581.50-595.90	604.60-614.40	614.40-621.02	583.50-625.00
Feet of Core Analyzed	8.72	3.15	6.62	17.85
Average Percent Porosity	19.99	22.13	21.95	20.67
Average Percent Original Oil Saturation	34.49	36.10	22.89	30.05
Average Percent Oil Recovery	8.72	9.78	2.60	6.60
Average Percent Residual Oil Saturation	25.77	26.32	20.29	23.45
Average Percent Residual Water Saturation	67.48	67.27	72.21	69.11
Average Percent Total Residual Fluid Saturation	93.25	93.59	92.50	92.56
Average Original Oil Content, Bbls./A. Ft.	511.	609.	394.	479.
Average Oil Recovery, Bbls./A. Ft.	133.	164.	46.	106.
Average Residual Oil Content, Bbls./A. Ft.	378.	445.	348.	373.
Total Original Oil Content, Bbls./Acre	4,457.	1,919.	2,609.	8,543.
Total Oil Recovery, Bbls./Acre	1,157.	518.	303.	1,887.
Total Residual Oil Content, Bbls./Acre	3,300.	1,401.	2,306.	6,656.
Average Effective Permeability, Millidarcys	0.371	3.94	6.36	3.17
Average Initial Fluid Production Pressure, p.s.i.	25.5	15.0	11.0	19.4

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