

Chanute, Kansas

September 8, 1955

The Ohio Oil Company  
Thompson Building  
Tulsa 3, Oklahoma

Attention: Mr. Fred Kluck

Gentlemen:

Enclosed herewith is the report of the analysis of the 2 11/16" Rotary core taken from the R. Bryden A/C 1 Lease, Well No. 19, Greenwood County, Kansas, and submitted to our laboratory on August 26, 1955.

This core was taken and shipped to our laboratory by a representative of The Ohio Oil Company.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

*Carl L. McElrea*  
Carl L. McElrea

CLM:cb

4 c.c.



A water base mud was used as the circulating fluid in coring the sand in this well.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
2322.00 - 2324.40	Sandy shale.
2324.40 - 2326.60	Brown fine grained micaceous shaley sandstone.
2326.60 - 2328.10	Gray sandy shale.
2328.10 - 2329.30	Light brown fine grained micaceous sandstone.
2329.30 - 2330.10	Dark shale.
2330.10 - 2330.30	Brown fine grained micaceous sandstone.
2330.30 - 2330.70	Laminated sandy shale.
2330.70 - 2332.00	Brown fine grained micaceous sandstone.
2332.00 - 2332.40	Brown fine grained laminated micaceous shaley sandstone.
2332.40 - 2336.20	Brown fine grained micaceous slightly shaley sandstone.
2336.20 - 2338.00	Laminated gray sandy shale.
2338.00 - 2339.00	Brown fine grained micaceous sandstone.
2339.00 - 2340.00	According to field log, loss.
2340.00 - 2340.70	Brown fine grained micaceous sandstone.
2340.70 - 2342.30	Dark shale.
2342.30 - 2360.00	Core not received.

Coring was started at a depth of 2322.00 feet in sandy shale and completed at 2360.00 feet. The core representing the interval extending from a depth of 2340.70 to 2360.00 feet was not received in our laboratory. This core shows a total of 10.80 feet of sandstone. For the most part, the pay is made up of brown fine grained micaceous sandstone. There

was one loss of core, totaling 1.00 feet, which was probably sandstone.

#### PERMEABILITY

For the sake of distribution, the core was divided into two sections. The weighted average permeability of the upper and lower sections is 1.32 and 1.63 millidarcys respectively; the overall average being 1.72 (See Table III). By observing the data given on the coregraph, it is noticeable that the sand has a rather irregular permeability profile and is very tight. The permeability of the sand varies from impermeable to a maximum of 3.4 millidarcys.

#### PERCENT SATURATION & OIL CONTENT

The sand in this core shows a fairly low weighted average percent oil saturation, namely, 27.02. The weighted average percent oil saturation of the upper and lower sections is 27.68 and 26.31 respectively. The weighted average percent water saturation of the upper and lower sections is 56.05 and 53.98 respectively; the overall average being 55.18 (See Table III). This gives an overall weighted average total fluid saturation of 82.20 percent.

The weighted average oil content of the upper and lower sections is 368 and 346 barrels per acre foot respectively; the overall average being 358. The total oil content, as shown by this core, is 3,654 barrels per acre (See Table III).

#### LABORATORY FLOODING TESTS

The sand in this core did not respond to laboratory flooding tests, as all samples tested were impermeable to water.

#### CONCLUSION

On the basis of the results of the core analysis, it is evident that

the sand in the area represented by this core will not respond satisfactorily to water-flooding, as the sand is impermeable to water. However, it is possible that either shooting or sand-fracing into a permeable sand section will result in this well becoming a commercial producer.

This core shows a thin and very tight sand section having a fairly low oil saturation. The impermeable sand section is probably due to shaley cementing materials in the sand.

Oilfield Research Laboratories  
RESULTS OF PERMEABILITY TESTS  
TABLE I

Company The Ohio Oil Company Lease R. Brydan A/C 1 Well No. 19

Sample No.	Depth Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
1	2324.60	0.91	0.40	0.40	0.36
2	2325.05	3.0	0.35	0.75	1.05
3	2325.25	3.2	0.35	1.10	1.12
4	2325.80	1.6	0.60	1.70	0.96
5	2328.70	1.3	0.70	2.40	0.91
6	2329.20	Imp.	0.35	2.75	0.00
7	2330.50	Fractured	0.40	3.15	-
8	2331.10	2.1	0.50	3.65	1.05
9	2331.30	Imp.	0.30	3.95	0.00
10	2331.70	1.5	0.50	4.45	0.75
11	2332.30	Imp.	0.40	4.85	0.00
12	2332.80	Imp.	0.80	5.65	0.00
13	2333.60	0.76	0.60	6.25	0.46
14	2334.00	3.4	0.30	6.55	1.02
15	2334.20	0.57	0.40	6.95	0.23
16	2334.70	0.77	0.50	7.45	0.39
17	2335.30	3.4	0.50	7.95	1.70
18	2335.70	Imp.	0.30	8.25	0.00
19	2335.85	1.3	0.40	8.65	0.52
20	2336.30	Imp.	0.50	9.15	0.00
21	2338.20	1.5	0.50	9.65	0.75
22	2338.70	0.71	0.50	10.15	0.36
23	2340.10	3.4	0.30	10.45	1.02
24	2340.30	1.8	0.40	10.85	0.72

## RESULTS OF SATURATION TESTS

TABLE II

Company The Ohio Oil Company Lease R. Bryden A/C 1 Well No. 19

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.	
1	2324.85	18.4	23.9	52.2	76.1	341	0.75	0.75	256
2	2325.45	17.6	28.6	53.7	82.3	391	1.45	2.20	567
3	2328.90	16.1	21.0	58.0	79.0	262	1.20	3.40	314
4	2330.90	17.0	32.6	55.7	88.3	430	0.50	3.90	215
5	2331.50	16.9	32.0	57.0	89.0	420	0.80	4.70	336
6	2332.55	17.0	32.1	60.3	92.4	424	0.80	5.50	339
7	2333.85	18.1	27.1	55.5	82.6	381	0.90	6.40	343
8	2334.50	17.1	24.0	61.6	85.6	318	0.90	7.30	286
9	2335.55	17.7	24.3	61.1	85.4	334	0.80	8.10	267
10	2336.10	16.8	20.0	58.6	78.6	261	0.40	8.50	104
11	2338.45	16.9	26.8	47.6	74.4	352	1.00	9.50	352
12	2340.30	15.1	33.5	42.1	75.6	393	0.70	10.20	275
							Total -	- - - - -	3,654

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company The Ohio Oil Company Lease R. Bryden A/C 1 Well No. 19

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
2324.40 - 2332.00	3.40	1.82	6.20
2333.20 - 2340.70	4.40	1.63	7.17
2324.40 - 2340.70	7.80	1.72	13.37

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
2324.40-2333.20	5.50	17.12	27.68	56.05	368	2,027
2333.20-2340.70	4.70	17.04	26.31	53.98	346	1,627
2324.40-2340.70	10.20	17.09	27.02	55.18	358	3,654

Oilfield Research Lab

RESULTS OF LABORATORY

TABLE IV

Company The Ohio Oil Company

Lease

Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery	
			Percent	Bbls./A. Ft.	Percent	Bbls./A.
1	2324.85	18.2	22.4	316	0.0	0
2	2325.45	17.8	27.4	379	0.0	0
3	2328.90	16.2	19.8	249	0.0	0
4	2330.90	17.2	32.0	427	0.0	0
5	2331.50	16.6	30.2	389	0.0	0
6	2332.55	16.8	30.7	400	0.0	0
7	2333.85	17.9	26.0	361	0.0	0
8	2334.50	16.9	23.1	303	0.0	0
9	2335.55	17.6	23.0	314	0.0	0
10	2336.10	16.6	18.9	244	0.0	0
11	2338.45	16.9	25.6	336	0.0	0
12	2340.30	15.0	31.9	371	0.0	0

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.

Laboratories

LABORATORY FLOODING TESTS

TABLE IV

Lease R. Brydon A/C 1 Well No. 10

Core Recovery Bbls./A. Ft.	Residual Saturation		Volume of Water Recovered cc*	Effective Permeability, Millidarcys **	Initial Fluid Production Pressure Lbs./Sq. In.	
	% Oil	% Water				Bbls./A. Ft.
0	22.4	59.5	316	0	Imp.	50%
0	27.4	58.0	379	0	Imp.	50%
0	19.8	64.0	249	0	Imp.	50%
0	32.0	58.5	427	0	Imp.	50%
0	30.2	61.6	389	0	Imp.	50%
0	30.7	62.1	400	0	Imp.	50%
0	26.0	65.0	361	0	Imp.	50%
0	23.1	67.5	303	0	Imp.	50%
0	23.0	66.0	314	0	Imp.	50%
0	18.9	68.0	244	0	Imp.	50%
0	25.6	63.5	336	0	Imp.	50%
0	31.9	56.0	371	0	Imp.	50%

# Oilfield Research Laboratories

## GENERAL INFORMATION & SUMMARY

Company The Ohio Oil Company Lease R. Bryden A/C 1 Well No. 19

Location \_\_\_\_\_

Section 36 Twp 25S Rge 8E County Greenwood State Kansas

Name of Sand	Bartlesville
Top of Core	2322.00
Bottom of Core	2360.00
Top of Sand	2324.40
Bottom of Sand	2340.70
Total Feet of Permeable Sand	(Analyzed) 7.80
Total Feet of Floodable Sand	-

Distribution of Permeable Sand:  
Permeability Range  
Millidarcys

Feet

Cum. Ft.

0 - 1	1.80	1.80
1 - 2	3.70	5.50
2 & above	2.30	7.80

Average Permeability Millidarcys	1.72
Average Percent Porosity	17.09
Average Percent Oil Saturation	27.02
Average Percent Water Saturation	55.18
Average Oil Content, Bbls./A. Ft.	358.
Total Oil Content, Bbls./Acre	3,654.
Average Percent Oil Recovery by Laboratory Flooding Tests	-
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	-
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	-
Total Calculated Oil Recovery, Bbls./Acre	-
Packer Setting, Feet	-
Viscosity, Centipoises @	-
A. P. I. Gravity, degrees @ 60 °F	-
Elevation, Feet	-