



OILFIELD RESEARCH LABORATORIES

536 NORTH HIGHLAND - CHANUTE, KANSAS - PHONE HE1-2650

December 20, 1967

Jackson Brothers
514 North Main
Eureka, Kansas 67045

Gentlemen:

Enclosed herewith is the report of the analysis of the Rotary core taken from the Olsen Lease, Well No. 7-A, Greenwood County, Kansas, and submitted to our laboratory on December 17, 1967.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Carl L. Pate

CLP;bjo

6 c. - Eureka, Kansas

A fresh water mud was used as a circulating fluid in the coring of the sand in this well. This well was drilled in a virgin area. The core was sampled and sealed in tin cans by an employee of Oilfield Research Laboratories.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval,</u> <u>Feet</u>	<u>Description</u>
2313.0 - 2314.0	Gray and light brown shaly sandstone.
2314.0 - 2321.8	Light brown shaly sandstone.
2321.8 - 2322.0	Dark gray shale.
2322.0 - 2333.0	Shale (discarded at well).

Coring was started at a depth of 2313.0 feet in gray and light brown shaly sandstone and completed at 2333.0 feet in shale. This core shows a total of 8.8 feet of sandstone. The pay is made up of light brown shaly sandstone.

PERMEABILITY

The weighted average permeability of the cored section is 0.80 millidarcys. (See Table III). By observing the data given on the coregraph, it is noticeable that the sand has a comparatively uniform permeability profile. The permeability of the sand varies from Imp. to a maximum of 2.1 millidarcys.

PERCENT SATURATION & OIL CONTENT

The sand in this core shows a fair weighted average percent oil saturation, namely, 32.0. The weighted average percent water saturation of the cored section is 56.8 (See Table III). This gives an overall

weighted average total fluid saturation of 88.8 percent.

In an effort to determine whether or not any flushing of the sand occurred during coring, all of the saturation samples were analyzed for chloride content. The results of these tests are given in Tables VI and VII. From the data given in these tables and on the coregraph, it is evident that very little flushing of the sand occurred during coring as the more permeable sand does not necessarily have the lower chloride content.

The weighted average oil content of the cored section is 398 barrels per acre foot while the total oil content, as shown by this core, is 3,507 barrels per acre (See Table III).

LABORATORY FLOODING TESTS

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

CONCLUSION

From a study of the above data we estimate that approximately 700 barrels of oil per acre or an average of 103 barrels per acre foot can be recovered from the area, represented by this core, by efficient primary production methods. The data also indicates that it would not be advisable to waterflood the sand area represented by this core.

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Jackson Brothers

Lease Olsen

Well No. 7-A

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	2313.1	13.6	31	67	98	327	Imp.	1.0	1.0	327	0.00
2	2314.1	17.6	25	48	74	355	0.21	0.6	1.6	213	0.13
3	2315.1	16.6	32	58	90	412	0.42	1.0	2.6	412	0.42
4	2316.1	16.2	37	56	93	465	0.23	1.0	3.6	465	0.23
5	2317.1	16.1	37	56	93	462	Imp.	1.0	4.6	462	0.00
6	2318.1	15.7	40	56	96	487	0.43	1.0	5.6	487	0.43
7	2319.1	16.1	31	59	90	387	0.04	1.0	6.6	387	0.94
8	2320.1	16.9	27	58	85	354	0.78	1.0	7.6	354	0.78
9	2321.1	16.5	26	51	77	333	2.1	1.2	8.8	400	2.52

Oilfield Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery		Residual Saturation			Volume of Water Recovered cc ^o	Effective Permeability Millidarcys**	Initial Fluid Production Pressure Lbs./Sq./In.
			%	Bbbs./A. Ft.	%	Bbbs./A. Ft.	% Oil	% Water	Bbbs./A. Ft.			
1	2313.1	13.3	29	299	0	0	29	70	299	None	Imp.	
2	2314.1	17.1	28	372	0	0	28	50	372			
3	2315.1	16.4	29	369	0	0	29	64	369			
4	2316.1	16.4	33	420	0	0	33	63	420			
5	2317.1	15.7	34	414	0	0	34	60	414			
6	2318.1	16.0	36	447	0	0	36	62	447			
7	2319.1	15.8	29	356	0	0	29	65	356			
8	2320.1	16.5	24	307	0	0	24	66	307			
9	2321.1	16.9	24	315	0	0	24	60	315			

Well No. 7-A

Lease Olsen

Company Jackson Brothers

Notes: cc—cubic centimeter.

^o—Volume of water recovered at the time of maximum oil recovery.

**—Determined by passing water through sample which still contains residual oil.

Oilfield Research Laboratories
RESULTS OF WATER DIFFERENTIATION TESTS

TABLE VI

Company Jackson Brothers Lease Olsen Well No. 7-A

Sample No.	Depth, Feet	Chloride Content of Brine in Sand ppm	Percent Water Saturation		
			Connate	Drilling & Foreign	Total
1	2313.1	101,750			
2	2314.1	106,400			
3	2315.1	86,650			
4	2316.1	92,000			
5	2317.1	97,700			
6	2318.1	100,300			
7	2319.1	92,300			
8	2320.1	92,700			
9	2321.1	93,500			

Note: ppm — parts per million

Oilfield Research Laboratories

SUMMARY OF WATER DIFFERENTIATION TESTS

TABLE VII

Company Jackson Brothers Lease Olsen Well No. 7-A

Depth Interval, Feet	Chloride Content of Brine in Sand, ppm	Average Percent Connate Water	Average Percent Drilling & Foreign Water
2313.0 - 2321.8	84,909		

Note: ppm — parts per million.