

OILFIELD RESEARCH LABORATORIES

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July 1, 1959

Mr. Leonard Wacknov
800 W. Fourth
Kansas City, Missouri

Dear Sir:

Enclosed herewith is the report of the analysis of the Cable Tool core taken from the Collins Lease, Well No. 3, Franklin County, Kansas, and submitted to our laboratory on June 26, 1959.

Your business is greatly appreciated.

Very truly yours,

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Carl L. Pate

CLP:cs

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GENERAL INFORMATION & SUMMARY

Company	<u>Leonard Wacknov</u>	Lease	<u>Collins</u>	Well No.	<u>3</u>	
Location	<u>SW$\frac{1}{4}$, NE$\frac{1}{4}$</u>					
Section	<u>31</u>	Twp.	<u>15S</u>	Rge.	<u>21E</u>	
		County	<u>Franklin</u>		State	<u>Kansas</u>
Name of Sand	-				Squirrel	
Top of Core	-				692.7	
Bottom of Core	-				717.0	
Good						
Top of Sand	-				699.3	
Good						
Bottom of Sand	-				704.2	
Total Feet of Permeable Sand	-				2.9	
Total Feet of Floodable Sand	-				-	
Distribution of Permeable Sand:						
	Permeability Range Millidarcys	Feet	Cum. Ft.			
	0 - 25	0.8	0.8			
	25 - 30	1.6	2.4			
	30 & above	0.5	2.9			
Average Permeability Millidarcys	-				21.3	
Average Percent Porosity	-				20.4	
Average Percent Oil Saturation	-				25.8	
Average Percent Water Saturation	-				65.1	
Average Oil Content, Bbls./A. Ft.	-				416.	
Total Oil Content, Bbls./Acre	-				5,120.	
Average Percent Oil Recovery by Laboratory Flooding Tests	-				1.0	
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	-				18.	
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	-				18.	
Total Calculated Oil Recovery, Bbls./Acre	-				-	
Packer Setting, Feet	-					
Viscosity, Centipoises @	-					
A. P. I. Gravity, degrees @ 60 °F	-					
Elevation, Feet	-					

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The sand was cored in water. This well was drilled in a virgin area.

This core was sampled and the samples were sealed in cans by a representative 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>
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692.7 - 693.3	- Light brown calcareous shaley sandstone.
693.3 - 694.3	- Gray sandy limestone.
694.3 - 696.9	- Drilled with tools.
696.9 - 699.3	- Alternate layers of sandstone and shale.
699.3 - 704.2	- Brown fine grained micaceous sandstone.
704.2 - 708.9	- Brown finely laminated slightly shaley sandstone.
708.9 - 711.3	- Loss.
711.3 - 717.0	- Sandy shale.

Coring was started at a depth of 692.7 feet in light brown calcareous shaley sandstone and completed at 717.0 feet in sandy shale. This core shows a total of 10.2 feet of sandstone. For the most part, the pay is made up of brown fine grained sandstone.

PERMEABILITY

The weighted average permeability of the sand analyzed, is 21.3 millidarcys (See Table III). The permeability of the sand varies from impermeable to a maximum of 38 millidarcys.

Due to the small size of the core biscuits, we were able to get only 7 samples for air permeability tests.

PERCENT SATURATION & OIL CONTENT

The sand in this core shows a fairly low weighted average percent oil saturation, namely, 25.8. The weighted average percent oil saturation of the upper and lower sections is 28.1 and 21.5 respectively. The weighted average percent water saturation of the upper and lower sections is 62.1 and 70.8 respectively; the overall average being 65.1 (See Table III). This gives an overall weighted average total fluid saturation of 90.9 percent.

The weighted average oil content of the upper and lower sections is 464 and 329 barrels per acre foot respectively; the overall average being 416. The total oil content, as shown by this core, is 5,120 barrels per acre (See Table III).

LABORATORY FLOODING TESTS

By observing the data given in Table IV, you will note that of the 4 samples tested, 3 produced water and 1 oil. This indicates that approximately 25 percent of the sand represented by these samples is floodable pay sand. The tests also show that the sand has a wide variation in effective permeability. Because of the thin core biscuits, we were able to get only four samples for flood pot tests.

CONCLUSION

This core shows a thin pay sand section (699.3 to 704.2 feet) having a fairly low oil saturation, a high water saturation and a comparatively low permeability.

It is evident that this well was drilled near the edge of the trend. Inasmuch as this well was drilled approximately 400 feet from a good oil producer, chances are, this well can be sand-fractured into a thicker and more oil saturated sand section. If this can be accomplished, then

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this well would probably make a commercial oil producer.

This core does not show enough floodable sand to justify water-repressuring.

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RESULTS OF PERMEABILITY TESTS
TABLE I

Company Leonard Wacknov Lease Collins Well No. 3

Sample No.	Depth Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
1	692.8	Imp.	0.3	0.3	0.00
2	693.2	Imp.	0.3	0.6	0.00
3	697.3	0.52	0.8	1.4	0.42
4	699.4	25.	0.4	1.8	10.00
5	700.0	38.	0.5	2.3	19.00
6	700.5	29.	0.6	2.9	17.40
7	702.3	25.	0.6	3.5	15.00

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RESULTS OF SATURATION TESTS

TABLE II

Company Leonard Wacknov Lease Collins Well No. 3

Stat. No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content Ehbl./A. Ft.	Feet of Core		Total Oil Content Ehbl./Acre
			Oil	Water	Total		Feet	Cum. Ft.	
1	693.0	14.2	15	78	93	165	0.6	0.6	99
2	697.1	17.5	28	61	89	380	1.1	1.7	418
3	699.8	24.0	26	56	82	485	1.1	2.8	534
4	701.1	21.8	24	70	94	406	1.2	4.0	488
5	702.1	22.5	32	56	88	558	1.0	5.0	558
6	703.1	21.4	34	57	91	565	1.0	6.0	565
7	704.0	20.5	33	63	96	525	0.6	6.6	315
8	705.1	22.4	30	62	92	521	1.4	8.0	730
9	706.1	16.9	13	79	92	170	1.0	9.0	170
10	707.1	21.6	24	65	89	403	1.0	10.0	403
11	708.1	19.5	21	73	94	318	1.3	11.3	414
12	712.1	19.6	28	66	94	426	1.0	12.3	426
							Total-	- - - -	-5,120

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Leonard Wacknov	Lease	Collins	Well No.	3
Depth Interval, Feet	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Total Oil Content Bbls./Acre
692.7 - 705.6	696.9 - 702.6	2.9	21.3	61.82	3,707
705.6 - 712.6					1,413
692.7 - 712.6					5,120

Depth Interval, Feet	Feet of Core Analyzed	Average Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
692.7 - 705.6	8.0	21.0	28.1	62.1	464	3,707
705.6 - 712.6	4.3	19.4	21.5	70.8	329	1,413
692.7 - 712.6	12.3	20.4	25.8	65.1	416	5,120

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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*	Effective Permeability Millidarcys**	Initial Fluid Production Pressure Lbs./Sq./In.
			%	Bbls./A. Ft.	%	Bbls./A. Ft.	% Oil	% Water			
1	693.0	14.1	12	131	0	0	12	73	0	Imp.	50+
2	697.1	17.8	30	415	0	0	30	63	5	0.301	35
3	699.6	23.7	24	422	0	0	24	72	96	8.92	15
5	702.5	22.8	32	566	1	18	31	62	56	2.98	25

Company Leonard Wacknov Lease Collins Well No. 3

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.