

OILFIELD RESEARCH LABORATORIES

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August 3, 1979

Floyd Dotson
Box 896
Ft. Scott, Kansas 66701

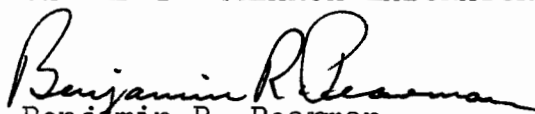
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Pribbernow Lease, Well No. 46, Woodson County, Kansas, and submitted to our laboratory on July 30, 1979.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Benjamin R. Pearman

SAM:dlb

5 c to Ft. Scott, Kansas

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GENERAL INFORMATION & SUMMARY

Company Floyd Dotson Lease Pribbernow Well No. 46

Location 1485' FEL & 935' FSL, SE $\frac{1}{4}$

Section 20 Twp. 25S Rge. 17E County Woodson State Kansas

Name of Sand	Squirrel
Top of Core	777.5
Bottom of Core	789.5
Top of Sand	778.6
Bottom of Sand	787.2
Total Feet of Permeable Sand	4.5
Total Feet of Floodable Sand	1.4

Distribution of Permeable Sand:
Permeability Range
Millidarcys

Feet

Cum. Ft.

0 - 10	2.1	2.1
10 - 20	1.7	3.8
40 - 50	0.7	4.5

Average Permeability Millidarcys	16.6
Average Percent Porosity	13.2
Average Percent Oil Saturation	60.8
Average Percent Water Saturation	21.5
Average Oil Content, Bbls./A. Ft.	630.
Total Oil Content, Bbls./Acre	3,022.
Average Percent Oil Recovery by Laboratory Flooding Tests	14.5
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	168.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	235.
Total Calculated Oil Recovery, Bbls./Acre (Primary and waterflooding)	260.
Packer Setting, Feet	
Viscosity, Centipoises @	
A. P. I. Gravity, degrees @ 60 °F	
Elevation, Feet	

The core was sampled in the laboratory after being delivered by the client. The drilling fluid consisted of fresh water mud. The core was reported to be from a non virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
777.5 - 778.6	Gray shale.
778.6 - 778.9	Hard brown calcareous sandstone.
778.9 - 779.3	Hard gray limestone
779.3 - 781.4	Hard brown calcareous sandstone.
781.4 - 784.8	Gray shale.
784.8 - 787.2	Hard brown calcareous sandstone.
787.2 - 789.5	Gray shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 245 barrels of oil per acre was obtained from 1.4 feet of sand. The weighted average percent oil saturation was reduced from 58.5 to 44.0, or represents an average recovery of 14.5 percent. The weighted average effective permeability of the samples is 1.95 millidarcys, while the average initial fluid production pressure is 22.5 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 6 samples tested, 2 produced water and 2 oil. This indicates that approximately 33 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERY

It would appear from a study of the data, that efficient primary and waterflood operations in the vicinity of this well should recover approximately 260 barrels of oil per acre. This is an average recovery of 190 barrels per acre foot from 1.4 feet of floodable sand analyzed in this core.

These recovery values were calculated using the following data and assumptions:

Original formation volume factor	1.04
Reservoir water saturation, percent	20.0
Average porosity, percent	14.9
Oil saturation after flooding, percent	44.0
Performance factor, percent	50.0
Net floodable pay sand, feet	1.4

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Floyd Dotson

Lease Pribbnow

Well No. 46

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	778.8	7.7	38	40	78	227	Imp.	0.3	0.3	68	0.00
2	780.0	12.4	73	5	78	702	4.0	1.0	1.3	702	4.00
3	781.0	12.5	45	41	86	436	10.	1.1	2.4	480	11.00
4	785.2	14.5	76	14	90	855	15.	1.0	3.4	855	15.00
5	786.3	14.2	61	21	82	672	18.	0.7	4.1	470	12.60
6	787.0	14.7	56	18	74	639	46.	0.7	4.8	447	32.20

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company <u>Floyd Dotson</u>		Lease <u>Pribbernow</u>		Well No. <u>46</u>	
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.		
778.6 - 787.2	4.5	16.6	74.80		

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
778.6 - 787.2	4.8	13.2	60.8	21.5	630	3,022

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company		Floyd Dotson		Lease		Pribbnow		Well No.		46	
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	778.8	7.9	35	215	0	0	35	55	0	Imp.	-
2	780.0	12.4	72	693	0	0	72	10	0	Imp.	-
3	781.0	12.6	44	430	0	0	44	44	0	Imp.	-
4	785.2	14.8	74	850	0	0	74	20	0	Imp.	-
5	786.3	14.7	61	696	13	148	48	47	43	0.82	20
6	787.0	15.1	56	656	16	187	40	54	138	3.08	25

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.

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SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Floyd Dotson	Lease	Pribbernow	Well No.	46
Depth Interval, Feet	778.6 - 787.2				
Feet of Core Analyzed	1.4				
Average Percent Porosity	14.9				
Average Percent Original Oil Saturation	58.5				
Average Percent Oil Recovery	14.5				
Average Percent Residual Oil Saturation	44.0				
Average Percent Residual Water Saturation	50.5				
Average Percent Total Residual Fluid Saturation	94.5				
Average Original Oil Content, Bbls./A. Ft.	677.				
Average Oil Recovery, Bbls./A. Ft.	168.				
Average Residual Oil Content, Bbls./A. Ft.	509.				
Total Original Oil Content, Bbls./Acre	947.				
Total Oil Recovery, Bbls./Acre	235.				
Total Residual Oil Content, Bbls./Acre	712.				
Average Effective Permeability, Millidarcys	1.95				
Average Initial Fluid Production Pressure, p.s.i.	22.5				

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