

OILFIELD RESEARCH LABORATORIES

536 NORTH HIGHLAND - CHANUTE, KANSAS 66720 - PHONE (316) 431-2650

April 25, 1981

Dodson Production Company
P. O. Box 384
Cherryvale, Kansas 67335

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Wagner Lease, Well No. 9, located in Labette County, Kansas and submitted to our laboratory on April 9, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Cherryvale, Kansas

- REGISTERED ENGINEERS -

CORE ANALYSIS - WATER ANALYSIS - REPRESSURING ENGINEERING - SURVEYING & MAPPING - PROPERTY EVALUATION & OPERATION

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company Dodson Production Company Lease Wagner Well No. 9
 Location _____
 Section 2 Twp. 32S Rge. 17E County Labette State Kansas

Elevation, Feet

Name of Sand.....

Bartlesville

Top of Core

675.0

Bottom of Core

687.1

Top of Sand

675.0

Bottom of Sand

687.1

Total Feet of Permeable Sand

12.1

Total Feet of Floodable Sand

3.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	3.4	3.4
10 - 20	1.0	4.4
20 - 40	5.3	9.7
40 - 60	2.4	12.1

Average Permeability Millidarcys

27.2

Average Percent Porosity

16.3

Average Percent Oil Saturation

32.9

Average Percent Water Saturation

52.9

Average Oil Content, Bbls./A. Ft.

411.

Total Oil Content, Bbls./Acre

4,975.

Average Percent Oil Recovery by Laboratory Flooding Tests

3.0

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

35.

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

209.

Total Calculated Oil Recovery, Bbls./Acre

See "Calculated Recovery"
Section

The core was sampled and the samples sealed in plastic bags by a representative of the client.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
675.0 - 676.9	Light brown shaly sandstone.
676.9 - 683.7	Light brown sandstone.
683.7 - 685.2	Light brown and gray laminated sandstone and shale.
685.2 - 687.1	Light brown sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 209 barrels of oil per acre was obtained from 6.0 feet of sand. The weighted average percent oil saturation was reduced from 36.7 to 33.7, or represents an average recovery of 3.0 percent. The weighted average effective permeability of the samples is 1.31 millidarcys, while the average initial fluid production pressure is 35.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 10 samples tested, 5 produced water and oil, and 3 samples produced water only. This indicates that approximately 50 percent of the sand represented by these samples is floodable pay sand.

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CALCULATED RECOVERY

It would appear from a study of the core data, that efficient primary and waterflood operations in the vicinity of this well should recover approximately 1,030 barrels of oil per acre. This is an average recovery of 171 barrels per acre foot from 6.0 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.04
Reservoir water saturation, percent, estimated	35.0
Average porosity, percent	15.3
Oil saturation after flooding, percent	33.7
Performance factor, percent, estimated	50.0
Net floodable sand, feet	6.0

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company			Dodson Production Company			Lease		Wagner		Well No.		9	
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	675.3	16.6	29	53	82	374	8.5	1.0	1.0	374	8.50		
2	676.4	14.7	34	56	90	388	5.0	0.9	1.9	349	4.50		
3	677.5	18.2	28	37	65	395	60.	1.0	2.9	395	60.00		
4	678.5	16.2	42	41	83	528	16.	1.0	3.9	528	16.00		
5	679.5	17.5	32	54	86	434	46.	1.4	5.3	608	64.40		
6	681.5	17.3	35	46	81	470	36.	1.6	6.9	752	57.60		
7	683.6	12.7	39	52	91	384	31.	1.8	8.7	691	55.80		
8	684.4	15.1	27	70	97	316	9.2	1.5	10.2	474	13.80		
9	685.6	16.4	36	56	92	458	29.	0.9	11.1	412	26.10		
10	686.6	20.2	25	60	85	392	22.	1.0	12.1	392	22.00		

SUMMARY OF PERMEABILITY & SATURATION TESTS

Well No. 9

Company	Dodson Production Company		Lease	Wagner	Well No.	9
	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.		
	675.0 - 687.1	12.1	27.2	328.70		
	Depth Interval, Feet	Feet of Core Analyzed	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
	675.0 - 687.1	12.1	16.3	32.9	411	4,975

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Well No. 9

Company Dodson Production Company

Lease Wagner

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	675.3	16.7	29	376	0	0	29	60	32	1.00	35
2	676.4	14.7	34	388	2	23	32	59	40	1.07	35
3	677.5	18.0	28	391	0	0	28	68	12	0.60	50
4	678.5	16.1	42	525	5	62	37	60	34	1.12	35
5	679.5	17.5	32	434	2	27	30	59	32	1.09	25
6	681.5	17.8	34	470	0	0	34	48	0	Imp.	-
7	683.6	12.8	39	387	3	30	36	57	72	1.93	35
8	684.4	15.0	27	314	0	0	27	70	0	Imp.	-
9	685.6	16.5	36	461	3	38	33	63	16	0.83	45
10	686.6	20.4	25	396	0	0	25	64	258	4.80	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.

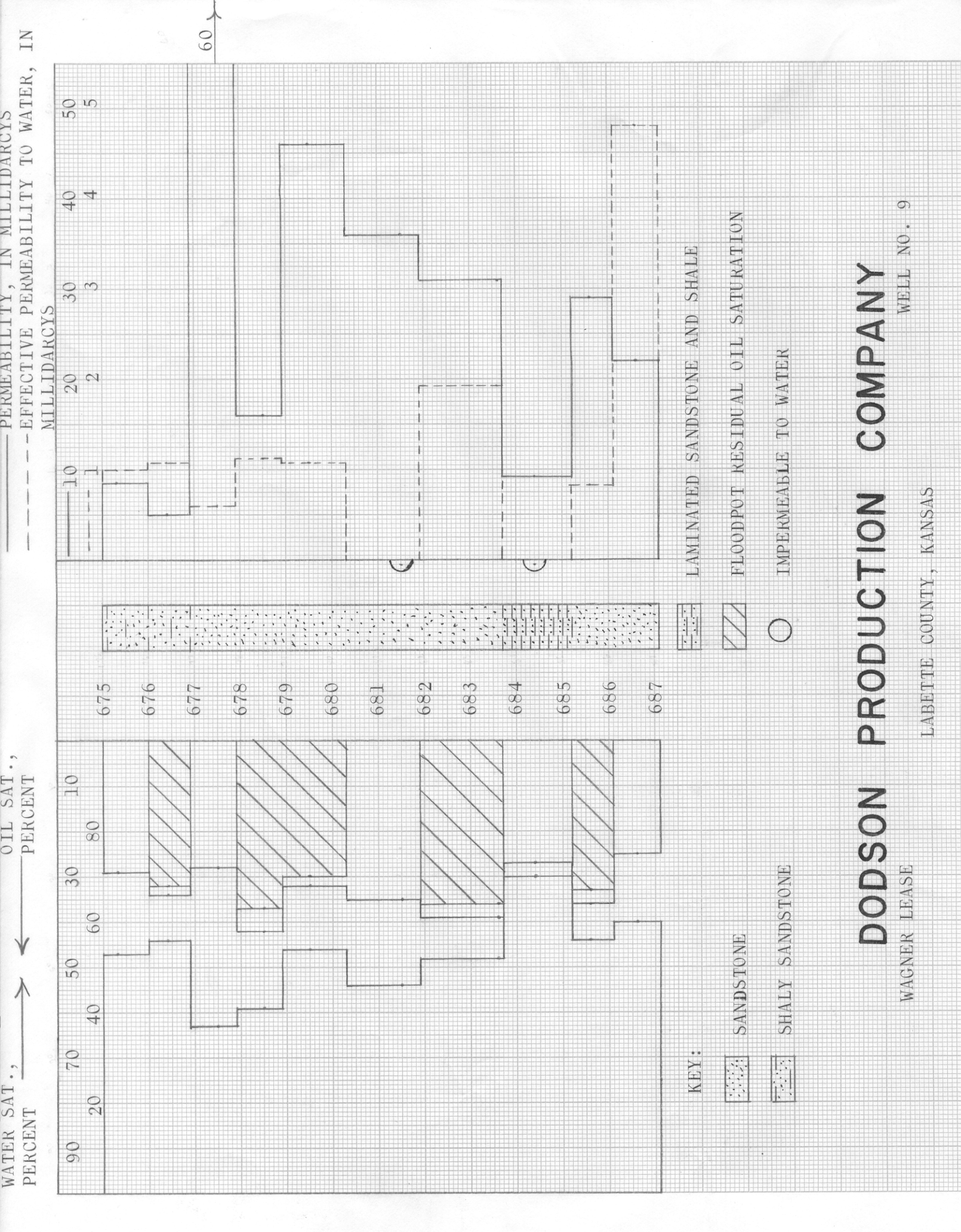
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SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Dodson Production Company	Lease	Wagner	Well No.
				9
Depth Interval, Feet	675.0 - 687.1			
Feet of Core Analyzed	6.0			
Average Percent Porosity	15.3			
Average Percent Original Oil Saturation	36.7			
Average Percent Oil Recovery	3.0			
Average Percent Residual Oil Saturation	33.7			
Average Percent Residual Water Saturation	59.2			
Average Percent Total Residual Fluid Saturation	92.9			
Average Original Oil Content, Bbls./A. Ft.	432.			
Average Oil Recovery, Bbls./A. Ft.	35.			
Average Residual Oil Content, Bbls./A. Ft.	397.			
Total Original Oil Content, Bbls./Acre	2,594.			
Total Oil Recovery, Bbls./Acre	209.			
Total Residual Oil Content, Bbls./Acre	2,385.			
Average Effective Permeability, Millidarcys	1.31			
Average Initial Fluid Production Pressure, p.s.i.	35.0			

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



Table

SHALY SANDSTONE



IMPERMEABLE TO WATER

DODSON PRODUCTION COMPANY

WAGNER LEASE

WELL NO. 9

LABETTE COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE		AVG. OIL		AVG. WATER		AVERAGE		CALCULATED	
		POROSITY	PERCENT	SATURATION	PERCENT	SATURATION	PERCENT	PERMEABILITY,	OIL RECOVERY,	BBLs. / ACRE	

675.0 - 687.1

12.1

16.3

32.9

52.9

27.2

1030

(PRIMARY AND
WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
APRIL, 1981

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