

OILFIELD RESEARCH LABORATORIES

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

April 23, 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. 8, located in Labette County, Kansas and submitted to our laboratory on April 8, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Cherryvale, Kansas

Onfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Dodson Production Company Lease Wagner Well No. 8
 Location _____
 Section 2 Twp. 32S Rge. 17E County Labette State Kansas

Elevation, Feet
 Name of Sand.....
 Top of Core 682.0
 Bottom of Core 695.5
 Top of Sand 682.0
 Bottom of Sand 695.5
 Total Feet of Permeable Sand 13.5
 Total Feet of Floodable Sand 7.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
8 - 30	4.7	4.7
35 - 60	4.3	9.0
60 - 90	2.6	11.6
100 & Above	1.9	13.5

Average Permeability Millidarcys 46.3
 Average Percent Porosity 16.2
 Average Percent Oil Saturation 37.2
 Average Percent Water Saturation..... 44.8
 Average Oil Content, Bbls./A. Ft. 470.
 Total Oil Content, Bbls./Acre..... 6,351.
 Average Percent Oil Recovery by Laboratory Flooding Tests..... 7.7
 Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. 102.
 Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre 713.
 Total Calculated Oil Recovery, Bbls./Acre.....

See "Calculated Recovery"
Section

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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>
682.0 - 687.9	Light brown slightly calcareous sandstone.
687.9 - 689.0	Light brown slightly calcareous slightly shaly sandstone.
689.0 - 689.6	Light brown slightly calcareous sandstone.
689.6 - 690.7	Light brown and gray laminated slightly calcareous sandstone and shale.
690.7 - 695.5	Light brown slightly calcareous sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 713 barrels of oil per acre was obtained from 7.0 feet of sand. The weighted average percent oil saturation was reduced from 42.7 to 35.0, or represents an average recovery of 7.7 percent. The weighted average effective permeability of the samples is 1.01 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 13 samples tested, 7 produced water and oil, and 5 samples produced water only. This indicates that approximately 54 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 1,760 barrels of oil per acre. This is an average recovery of 252 barrels per acre foot from 7.0 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	25.0
Average porosity, percent	17.5
Oil saturation after flooding, percent	35.0
Performance factor, percent, estimated	50.0
Net floodable sand, feet	7.0

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Dodson Production Company Lease Wagner Well No. 8

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	682.5	16.8	50	29	79	652	37.	1.0	1.0	652	37.00
2	683.6	16.9	38	45	83	498	35.	1.0	2.0	498	35.00
3	684.3	14.2	32	27	59	353	60.	1.0	3.0	353	60.00
4	685.5	16.5	19	53	72	243	101.	1.0	4.0	243	101.00
5	686.5	17.0	35	47	82	462	28.	1.0	5.0	462	28.00
6	687.4	16.4	44	28	72	560	101.	0.9	5.9	504	90.90
7	688.5	13.3	44	51	95	454	8.9	1.1	7.0	499	9.79
8	689.5	16.9	35	44	79	459	62.	0.6	7.6	275	37.20
9	690.4	13.1	21	77	98	213	9.4	1.1	8.7	234	10.34
10	691.7	16.4	39	57	96	496	35.	1.3	10.0	645	45.50
11	692.5	17.7	30	48	78	412	86.	1.0	11.0	412	86.00
12	693.7	17.9	39	29	68	542	42.	1.0	12.0	542	42.00
13	694.4	17.4	51	40	91	688	28.	1.5	13.5	1032	42.00

SUMMARY OF PERMEABILITY & SATURATION TESTS

Well No. 8

Company	Dodson Production Company	Lease	Wagner	Well No.	8
	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	
	682.0 - 695.5	13.5	46.3	624.73	
	Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Water Saturation	Total Oil Content Bbls./Acre
	682.0 - 695.5	13.5	16.2	37.2	470
					6,351

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Dodson Production Company			Lease		Wagner		Well No.		8		
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	682.5	16.7	50	648	19	246	31	68	26	0.94	40
2	683.6	16.9	38	498	3	39	35	60	38	1.00	30
3	684.3	14.4	32	357	0	0	32	53	34	1.00	30
4	685.5	16.6	19	245	0	0	19	79	0	Imp.	-
5	686.5	16.9	35	459	4	52	31	65	58	1.50	30
6	687.4	16.6	44	567	7	90	37	51	42	1.00	30
7	688.5	13.4	44	457	0	0	44	52	30	0.64	35
8	689.5	17.1	35	464	3	40	32	59	56	1.25	30
9	690.4	13.2	21	215	0	0	21	78	42	1.00	30
10	691.7	16.6	39	502	0	0	39	57	14	0.75	50
11	692.5	17.6	30	410	0	0	30	63	14	0.67	45
12	693.7	18.1	39	548	2	28	37	47	20	0.75	40
13	694.4	17.4	51	688	12	162	39	53	16	0.83	45

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

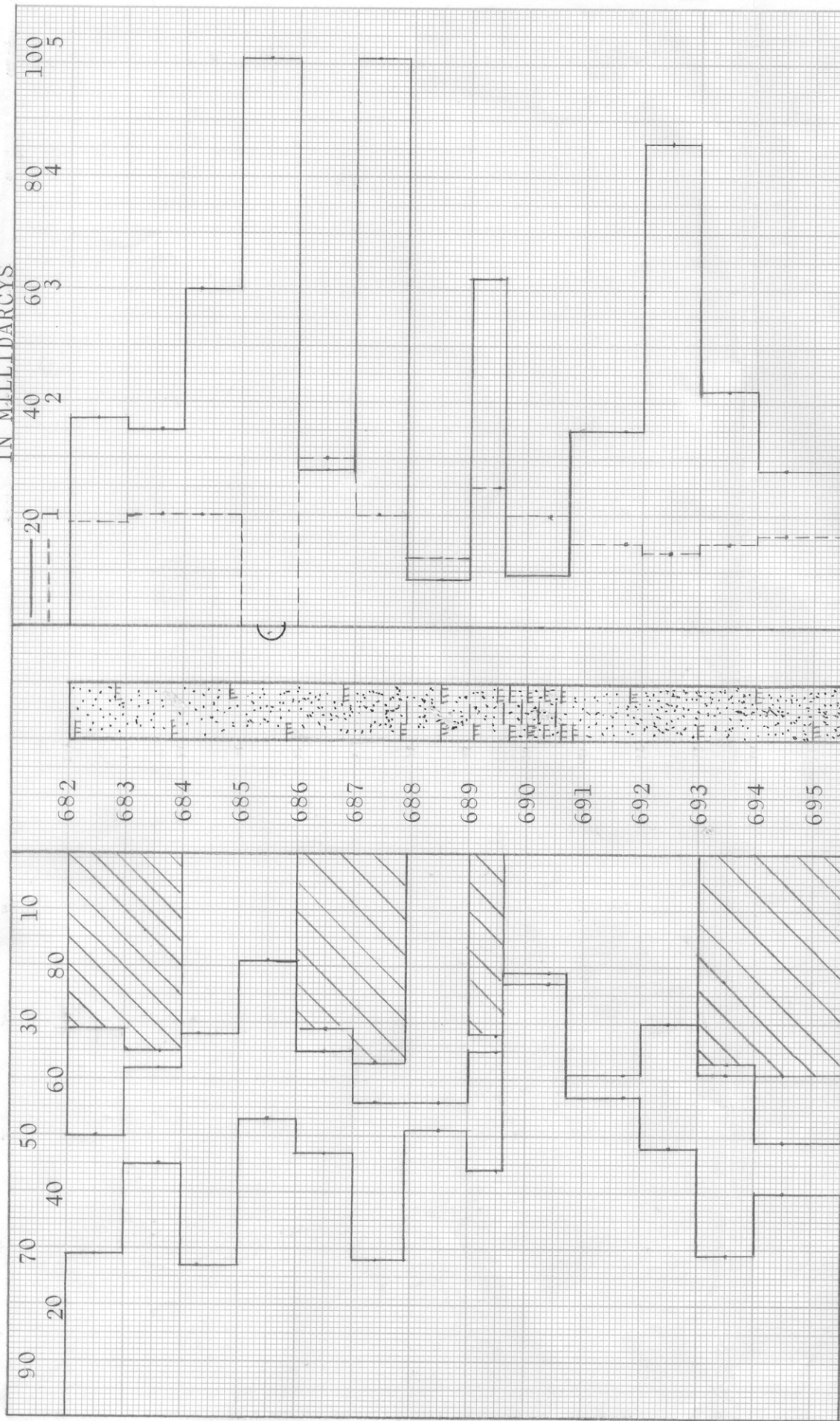
Company	Lease	Wagner	Well No.
Dodson Production Company	682.0 - 695.5		8
Depth Interval, Feet			
Feet of Core Analyzed	7.0		
Average Percent Porosity	17.5		
Average Percent Original Oil Saturation	42.7		
Average Percent Oil Recovery	7.7		
Average Percent Residual Oil Saturation	35.0		
Average Percent Residual Water Saturation	57.3		
Average Percent Total Residual Fluid Saturation	92.3		
Average Original Oil Content, Bbls./A. Ft.	568.		
Average Oil Recovery, Bbls./A. Ft.	102.		
Average Residual Oil Content, Bbls./A. Ft.	466.		
Total Original Oil Content, Bbls./Acre	3,974.		
Total Oil Recovery, Bbls./Acre	713.		
Total Residual Oil Content, Bbls./Acre	3,261.		
Average Effective Permeability, Millidarcys	1.01		
Average Initial Fluid Production Pressure, p.s.i.	35.0		

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

WATER SAT.,
PERCENT

→ ←
OIL SAT.,
PERCENT

— PERMEABILITY, IN MILLIDARCYS
- - - EFFECTIVE PERMEABILITY TO WATER,
IN MILLIDARCYS



KEY:



CALCAREOUS SANDSTONE



SHALY CALCAREOUS SANDSTONE



LAMINATED CALCAREOUS SANDSTONE AND SHALE



FLOODPOT RESIDUAL OIL SATURATION



IMPERMEABLE TO WATER

DODSON PRODUCTION COMPANY

WAGNER LEASE

WELL NO. 8

CALCAREOUS SANDSTONE

FLOODPOT RESIDUAL OIL SATURATION

SHALY CALCAREOUS SANDSTONE

IMPERMEABLE TO WATER

DODSON PRODUCTION COMPANY

WAGNER LEASE

LABETTE COUNTY, KANSAS

WELL NO. 8

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCYs	CALCULATED OIL RECOVERY, BBLs. / ACRE
682.0 - 695.5	13.5	16.2	37.2	44.8	46.3	1760 (PRIMARY AND WATERFLOODING)

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CHANUTE, KANSAS
APRIL, 1981

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