

OILFIELD RESEARCH LABORATORIES

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

September 7, 1982

Specialty Drilling
c/o Robert Arrowwood
Route 4
Chanute, Kansas 66720

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Jarred-Arrow Lease, Well No. 5, located in Allen County, Kansas and submitted to our laboratory on August 31, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/rmc

5 c to Chanute, Kansas

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GENERAL INFORMATION & SUMMARY

Company Specialty Drilling Lease Jarred-Arrow Well No. 5

Location _____

Section 17 Twp. 26S Rge. 19E County Allen State Kansas

Elevation, Feet

Name of Sand

Bartlesville

Top of Core

827.0

Bottom of Core

846.7

Top of Sand(Tested).....

839.8

Bottom of Sand

846.7

Total Feet of Permeable Sand

6.9

Total Feet of Floodable Sand

2.9

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
65 - 82	2.0	2.0
120 - 125	2.0	4.0
302 - 347	2.9	6.9

Average Permeability Millidarcys

195.6

Average Percent Porosity

21.0

Average Percent Oil Saturation

46.3

Average Percent Water Saturation

21.0

Average Oil Content, Bbls./ A. Ft.

745.

Total Oil Content, Bbls./ Acre

5,140.

Average Percent Oil Recovery by Laboratory Flooding Tests

6.4

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

109.

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

317.

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. Salt water mud was used as a drilling fluid.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
827.0 - 830.6	Grayish brown shaly sandstone.
830.6 - 836.7	Gray shale.
836.7 - 839.8	Gray sandy shale.
839.8 - 844.7	Dark brown sandstone.
844.7 - 846.7	Brown sandstone with gray shale partings.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 317 barrels of oil per acre was obtained from 2.9 feet of sand. The weighted average percent oil saturation was reduced from 45.3 to 38.9, or represents an average recovery of 6.4 percent. The weighted average effective permeability of the samples is 5.21 millidarcys, while the average initial fluid production pressure is 23.3 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 7 samples tested, 3 produced water and oil, and 4 produced water only. This indicates that approximately 43 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 960 barrels of oil per acre. This is an average recovery of 332 barrels per acre foot from 2.9 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	15.0
Average porosity, percent	22.2
Oil saturation after flooding, percent	38.9
Performance factor, percent, estimated	45.0
Net floodable sand, feet	2.9

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Specialty Drilling Lease Jarred-Arrow Well No. 5

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			Ft.	Cum. Ft.		
1	840.6	20.9	38	13	616	346.	0.9	0.9	554	311.40
2	841.6	22.0	49	16	836	303.	1.0	1.9	836	303.00
3	842.5	24.0	43	20	801	340.	1.0	2.9	801	340.00
4	843.4	21.8	43	21	727	123.	1.0	3.9	727	123.00
5	844.5	23.6	48	23	879	123.	1.0	4.9	879	123.00
6	845.6	19.3	44	19	659	68.	1.0	5.9	659	68.00
7	846.4	15.2	58	34	684	81.	1.0	6.9	684	81.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		Specialty Drilling	Lease	Jarred-Arrow	Well No.	5
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.			
839.8 - 846.7	6.9	195.6	1,349.40			
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
839.8 - 846.7	6.9	21.0	46.3	21.0	745	5,140

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Specialty Drilling Lease Jarred-Arrow Well No. 5

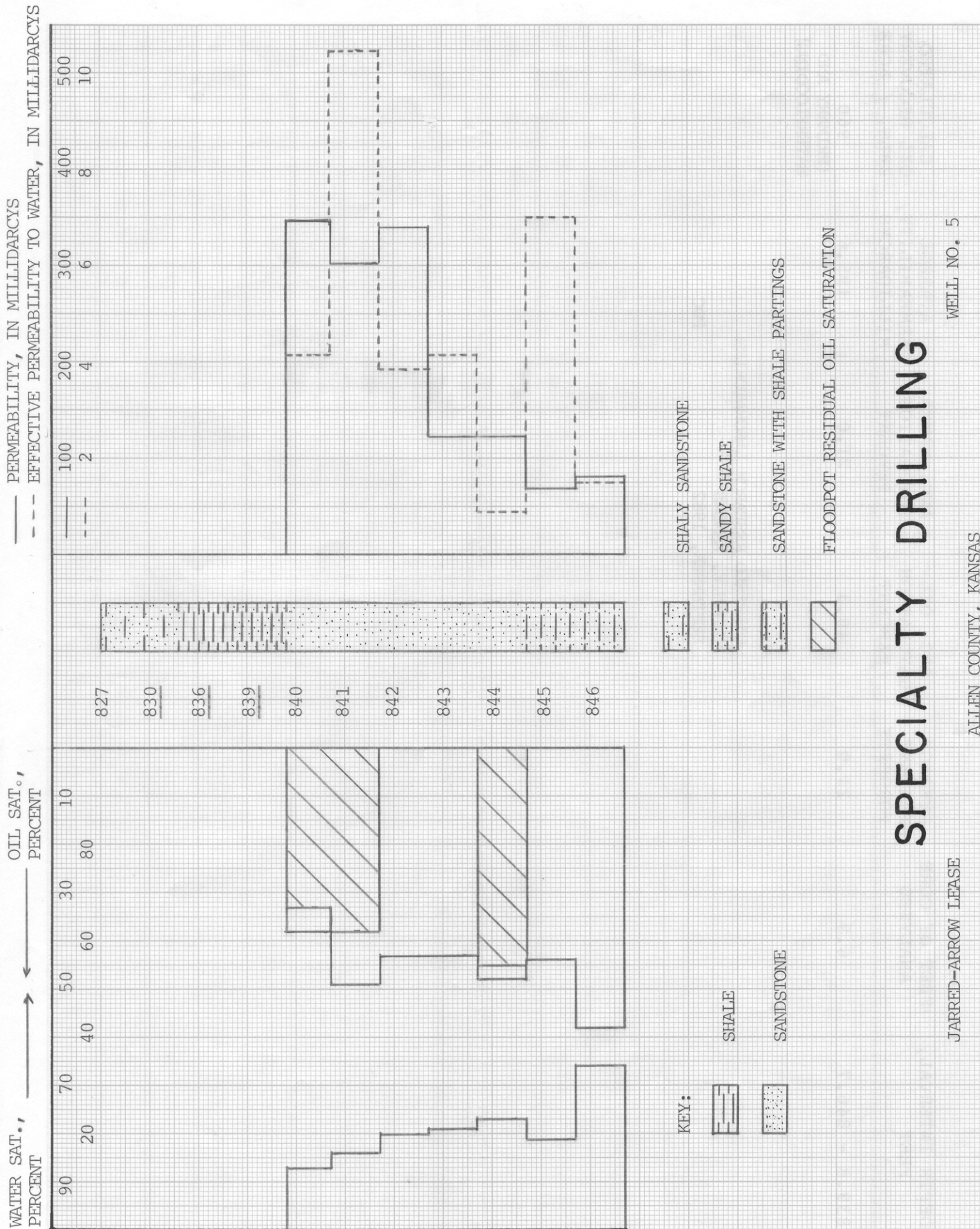
Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery		Residual Saturation			Volume of Water Recovered cc*	Effective Permeability Millidarcys**	Initial Fluid Production Pressure Lbs./Sq./In.
			%	Bbls./A. Ft.	%	Bbls./A. Ft.	% Oil	% Water	Bbls./A. Ft.			
1	840.6	20.8	38	613	5	81	33	45	532	246	4.12	20
2	841.6	22.1	49	840	11	189	38	48	651	238	10.49	20
3	842.5	23.9	43	797	0	0	43	34	797	222	3.82	25
4	843.4	22.3	42	727	0	0	42	41	727	250	4.12	25
5	844.5	23.5	48	875	3	55	45	35	820	52	0.90	30
6	845.6	19.7	43	657	0	0	43	39	657	322	7.00	20
7	846.4	15.3	58	688	0	0	58	36	688	82	1.50	35

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SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Specialty Drilling	Lease	Jarred-Arrow	Well No.	5
Depth Interval, Feet		839.8 - 846.7			
Feet of Core Analyzed		2.9			
Average Percent Porosity		22.2			
Average Percent Original Oil Saturation		45.3			
Average Percent Oil Recovery		6.4			
Average Percent Residual Oil Saturation		38.9			
Average Percent Residual Water Saturation		42.8			
Average Percent Total Residual Fluid Saturation		81.7			
Average Original Oil Content, Bbls./A. Ft.		781.			
Average Oil Recovery, Bbls./A. Ft.		109.			
Average Residual Oil Content, Bbls./A. Ft.		672.			
Total Original Oil Content, Bbls./Acre		2,267.			
Total Oil Recovery, Bbls./Acre		317.			
Total Residual Oil Content, Bbls./Acre		1,950.			
Average Effective Permeability, Millidarcys		5.21			
Average Initial Fluid Production Pressure, p.s.i.		23.3			

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



SPECIALTY DRILLING

JARRED-ARROW LEASE

ALLEN COUNTY, KANSAS

WELL NO. 5

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
839.8 - 846.7	6.9	21.0	46.3	21.0	195.6	960 (PRIMARY AND WATERFLOODING)

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CHANUTE, KANSAS

SEPTEMBER, 1982

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