

OILFIELD RESEARCH LABORATORIES

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

March 3, 1980

TAK Oil Company
902 Main
Neodesha, Kansas 66757

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Marlen Frankenberry Lease, Well No. 1, Wilson County, Kansas, and submitted to our laboratory on February 13, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/tem

5 c to Neodesha, Kansas

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GENERAL INFORMATION & SUMMARY

Marlen

Company TAK Oil Company Lease Frankenberry Well No. 1

Location -

Section 30 Twp. 29S Rge. 16E County Wilson State Kansas

Elevation, Feet - - - - -

Name of Sand - - - - - Bartlesville

Top of Core - - - - - 828.0

Bottom of Core - - - - - 832.0

Top of Sand - - - - - 828.0

Bottom of Sand - - - - - 832.0

Total Feet of Permeable Sand - - - - - 4.0

Total Feet of Floodable Sand - - - - - 1.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 5	2.3	2.3
5 - 10	1.7	4.0

Average Permeability Millidarcys - - - - - 3.9

Average Percent Porosity - - - - - 12.9

Average Percent Oil Saturation - - - - - 26.4

Average Percent Water Saturation - - - - - 49.4

Average Oil Content, Bbls./A. Ft. - - - - - 295.

Total Oil Content, Bbls./Acre - - - - - 1,181.

Average Percent Oil Recovery by Laboratory Flooding Tests - - - - - 2.0

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - - 23.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - - 23.

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. Fresh water mud was used as a drilling fluid. The core was reported to be from a virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval,</u> <u>Feet</u>	<u>Description</u>
828.0 - 829.1	Brown and gray laminated sandstone and shale.
829.1 - 830.8	Brown slightly shaly sandstone.
830.8 - 832.0	Brown shaly slightly carbonaceous sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 23 barrels of oil per acre was obtained from 1.0 feet of sand. The weighted average percent oil saturation was reduced from 32.0 to 30.0 or represents an average recovery of 2.0 percent. The weighted average effective permeability of the samples is 0.30 millidarcys, while the average initial fluid production pressure is 50.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 4 samples tested, 1 produced water and oil, and 1 sample produced water only. This indicates that approximately 25 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 225 barrels of oil per acre. This is an average recovery of 225 barrels per acre foot from 1.0 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.07
Reservoir water saturation, percent, estimated	30.0
Average porosity, percent	14.9
Oil saturation after flooding, percent	30.0
Performance factor, percent, estimated	55.0
Net floodable sand, feet	1.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company TAK Oil Company

Lease Marlen Frankenberry

Well No. 1

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	828.5	10.2	12	77	89	95	0.57	1.1	1.1	105	0.63
2	829.5	14.7	32	33	65	365	7.1	1.0	2.1	365	7.10
3	830.5	13.8	26	42	68	278	8.5	0.7	2.8	195	5.95
4	831.5	13.2	42	35	77	430	1.5	1.2	4.0	516	1.80

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Lease	Well No.				
TAK Oil Company	Marlen Frankenberry	1				
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Percent Oil Saturation	Average Percent Water Saturation	Total Oil Content Bbls./Acre
828.0 - 832.0	4.0	3.9	15.48	26.4	49.4	295
828.0 - 832.0	4.0			12.9		1,181

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company TAK Oil Company Lease Marlen Frankenberg Well No. 1

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	828.5	10.7	11	92	0	0	11	80	0	Imp.	-
2	829.5	14.9	32	370	2	23	30	50	8	0.30	50
3	830.5	14.1	26	285	0	0	26	59	36	0.52	50
4	831.5	13.0	42	424	0	0	42	43	0	Imp.	-

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

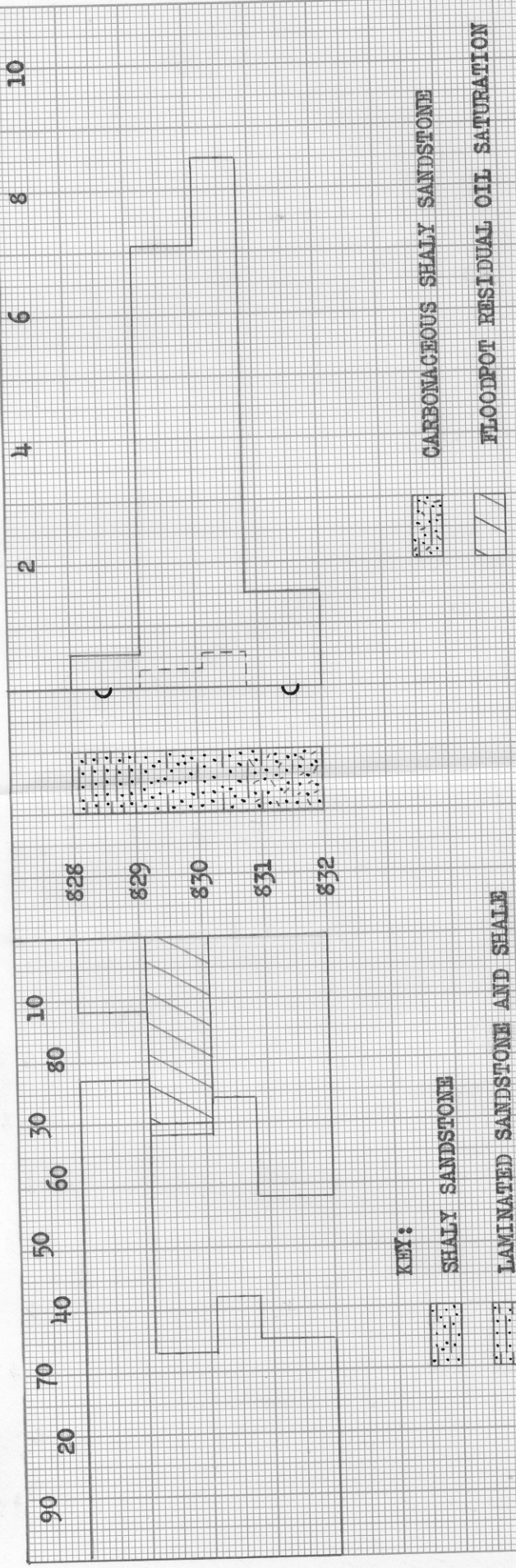
TABLE V

Company	TAK Oil Company	Lease	Marlen Frankenberry	Well No.	1
Depth Interval, Feet	828.0 - 832.0				
Feet of Core Analyzed	1.0				
Average Percent Porosity	14.9				
Average Percent Original Oil Saturation	32.0				
Average Percent Oil Recovery	2.0				
Average Percent Residual Oil Saturation	30.0				
Average Percent Residual Water Saturation	50.0				
Average Percent Total Residual Fluid Saturation	80.0				
Average Original Oil Content, Bbls./A. Ft.	370.				
Average Oil Recovery, Bbls./A. Ft.	23.0				
Average Residual Oil Content, Bbls./A. Ft.	347.				
Total Original Oil Content, Bbls./Acre	370.				
Total Oil Recovery, Bbls./Acre	23.				
Total Residual Oil Content, Bbls./Acre	347.				
Average Effective Permeability, Millidarcys	0.30				
Average Initial Fluid Production Pressure, p.s.i.	50.0				

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

PERMEABILITY, IN MILLIDARCS
EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCS

WATER SAT., PERCENT
OIL SAT., PERCENT



TAK OIL COMPANY

MARLEN FRANKENBERRY LEASE
 WILSON COUNTY, KANSAS
 WELL NO. 1

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCS	CALCULATED OIL RECOVERY BELS./ACRE
828.0 - 832.0	4.0	12.9	26.4	49.4	3.9	225 (PRIMARY & WATERFLOODING)