

OILFIELD RESEARCH LABORATORIES

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

April 28, 1981

Oaks Petroleum, Inc.
% Calvin T. Oakes, Jr.
R. R. #2
Stoystown, Pennsylvania 15563

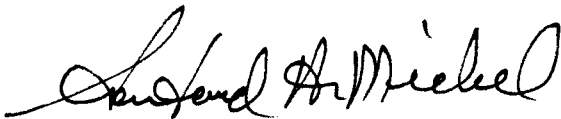
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Collins Lease, Well No. C-6, located in Franklin County, Kansas and submitted to our laboratory on April 15, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/mkf

2 c to Stoystown, Pa.

3 c to Paola, Ks.

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GENERAL INFORMATION & SUMMARY

Company Oaks Petroleum, Inc. Lease Collins Well No. C-6
 Location 1020' SNL & 75' WEL SW $\frac{1}{4}$
 Section 16 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet - - - - -

Name of Sand - - - - - Upper Squirrel

Top of Core - - - - - 493.5

Bottom of Core - - - - - 502.0

Top of Sand - - - - - 494.1

Bottom of Sand - - - - - (Tested) 499.0

Total Feet of Permeable Sand - - - - - 4.4

Total Feet of Floodable Sand - - - - - 3.4

Distribution of Permeable Sand:
Permeability Range
Millidarcys

Feet

Cum. Ft.

0 - 2 2.0 2.0

95 - 130 2.4 4.4

Average Permeability Millidarcys - - - - - 60.6

Average Percent Porosity - - - - - 18.3

Average Percent Oil Saturation - - - - - 40.8

Average Percent Water Saturation - - - - - 45.5

Average Oil Content, Bbls./A. Ft. - - - - - 575.

Total Oil Content, Bbls./Acre - - - - - 2,530.

Average Percent Oil Recovery by Laboratory Flooding Tests - - - - - 10.5

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - - 150.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - - 511.

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. Air was used as a drilling fluid.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval,</u> <u>Feet</u>	<u>Description</u>
493.5 - 494.1	Gray shale.
494.1 - 495.4	Gray and brown slightly calcareous laminated shale and sandstone.
495.4 - 496.5	Brown slightly calcareous sandstone.
496.5 - 497.0	Gray shale.
497.0 - 502.0	Gray and brown slightly calcareous laminated shale and sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 511 barrels of oil per acre was obtained from 3.4 feet of sand. The weighted average percent oil saturation was reduced from 42.8 to 32.3, or represents an average recovery of 10.5 percent. The weighted average effective permeability of the samples is 4.44 millidarcys, while the average initial fluid production pressure is 26.7 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 4 samples tested, 3 produced water and oil. This indicates that approximately 75 percent of the sand represented by these samples is floodable pay sand.

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 650 barrels of oil per acre. This is an average recovery of 191 barrels per acre foot from 3.4 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.03
Reservoir water saturation, percent, estimated	40.0
Average porosity, percent	19.0
Oil saturation after flooding, percent	32.3
Performance factor, percent, estimated	50.0
Net floodable sand, feet	3.4

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Oaks Petroleum, Inc. Lease Collins Well No. C-6

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	494.4	21.5	44	47	91	734	96.	1.3	1.3	954	124.80
2	495.5	19.5	33	42	75	499	127.	1.1	2.4	549	139.70
3	497.6	15.0	52	41	93	605	1.6	1.0	3.4	605	1.60
4	498.4	16.0	34	52	86	422	0.71	1.0	4.4	422	0.71

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		Lease	Well No.	
Oaks Petroleum, Inc.		Collins	C-6	
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	
494.1 - 499.0	4.4	60.6	266.81	
Depth Interval, Feet	Feet of Core Analyzed	Average Percent Oil Saturation	Average Percent Water Saturation	Total Oil Content Bbls./Acre
494.1 - 499.0	4.4	40.8	45.5	2,530
		Average Percent Porosity		
		18.3		

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Well No. C-6

Lease Collins

Company Oaks Petroleum, Inc.

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.
			%	Bbbls./A. Ft.	%	Bbbls./A. Ft.	% Oil	% Water	Bbbls./A. Ft.			
1	494.4	21.6	44	737	10	168	34	59	569	174	9.37	20
2	495.5	19.5	33	499	7	106	26	61	393	78	1.95	20
3	497.6	15.1	52	609	15	176	37	58	433	12	0.75	40
4	498.4	16.5	33	422	0	0	33	54	422	0	Imp.	50

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

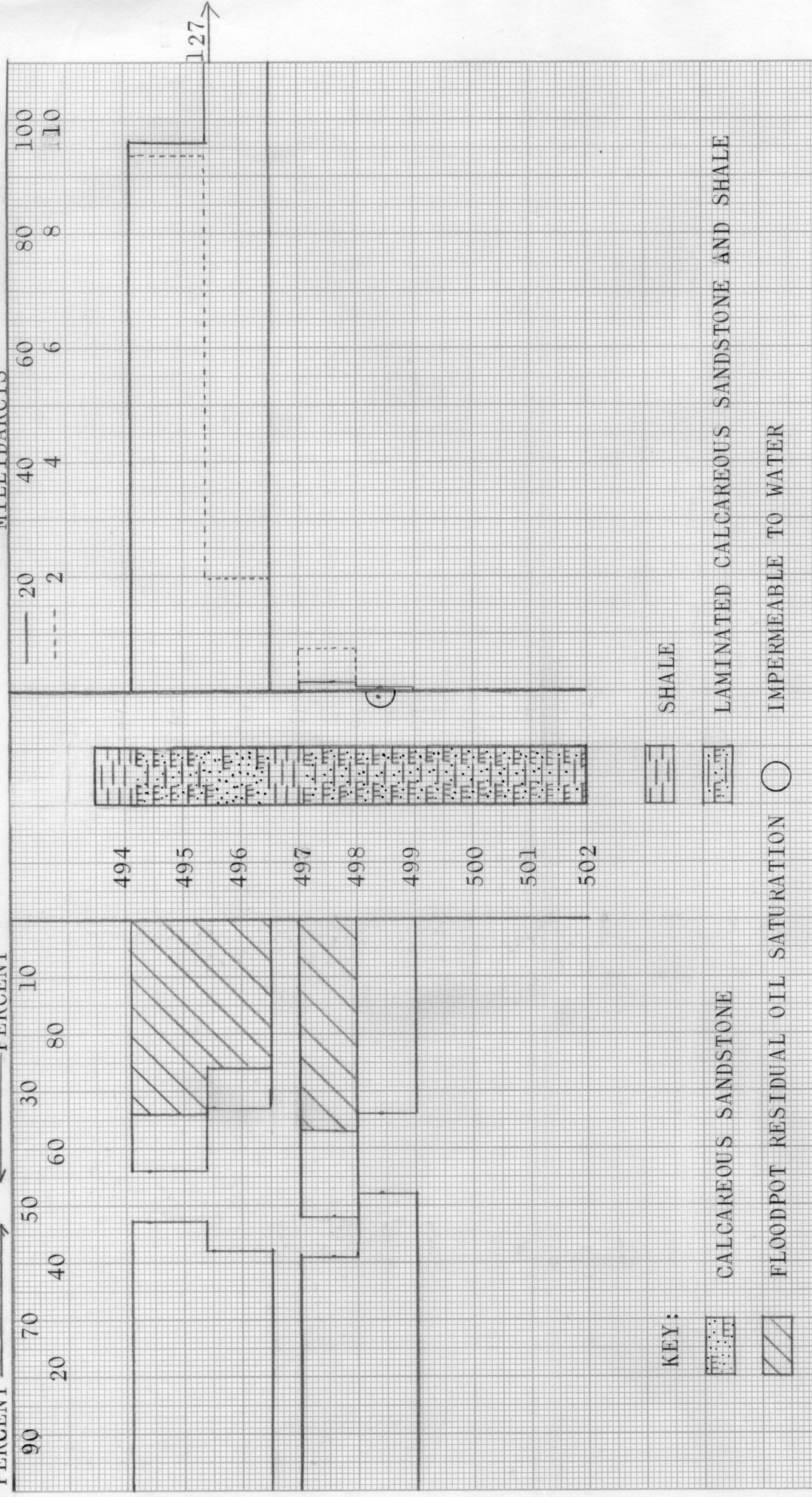
TABLE V

Company	Oaks Petroleum, Inc.	Lease	Collins	Well No.	C-6
Depth Interval, Feet	494.1 - 499.0				
Feet of Core Analyzed	3.4				
Average Percent Porosity	19.0				
Average Percent Original Oil Saturation	42.8				
Average Percent Oil Recovery	10.5				
Average Percent Residual Oil Saturation	32.3				
Average Percent Residual Water Saturation	59.4				
Average Percent Total Residual Fluid Saturation	91.7				
Average Original Oil Content, Bbls./A. Ft.	622.				
Average Oil Recovery, Bbls./A. Ft.	150.				
Average Residual Oil Content, Bbls./A. Ft.	472.				
Total Original Oil Content, Bbls./Acre	2,116.				
Total Oil Recovery, Bbls./Acre	511.				
Total Residual Oil Content, Bbls./Acre	1,605.				
Average Effective Permeability, Millidarcys	4.44				
Average Initial Fluid Production Pressure, p.s.i.	26.7				

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



KEY:

▨ CALCAREOUS SANDSTONE

▤ LAMINATED CALCAREOUS SANDSTONE AND SHALE

○ FLOODPOT RESIDUAL OIL SATURATION

○ IMPERMEABLE TO WATER

OAKS PETROLEUM, INC.

COLLINS LEASE

WELL NO. C-6

FRANKLIN COUNTY, KANSAS

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
494.1 - 499.0	4.4	18.3	40.8	45.5	60.6	650 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
 CHANUTE, KANSAS
 APRIL, 1981

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