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

October 2, 1979

Oaks Petroleum, Inc.
R. R. 2
Stoystown, Pennsylvania 15563

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the East Miller Lease, Well No. O-50, Franklin County, Kansas, and submitted to our laboratory on September 25, 1979.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Benjamin R. Pearman

Benjamin R. Pearman

SAM:bl
3 c to Stoystown, Pennsylvania
1 c to Ottawa, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Oaks Petroleum, Inc. Lease East Miller Well No. 0-50

Location 600' FEL and 720' FSL

Section 10 Twp. 17S Rge. 21E County Franklin State Kansas

Name of Sand	Upper Squirrel
Top of Core	620.0
Bottom of Core	632.0
Top of Sand	620.0
Bottom of Sand	628.9
Total Feet of Permeable Sand	5.4
Total Feet of Floodable Sand	3.6

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 5	2.0	2.0
5 - 10	2.8	4.8
10 - 15	0.6	5.4

Average Permeability Millidarcys	6.2
Average Percent Porosity	18.7
Average Percent Oil Saturation	35.4
Average Percent Water Saturation	46.9
Average Oil Content, Bbls./A. Ft.	518.
Total Oil Content, Bbls./Acre	3,316.
Average Percent Oil Recovery by Laboratory Flooding Tests	11.1
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	174.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	626.
Total Calculated Oil Recovery, Bbls./Acre	See "Calculated Recovery Section"
Packer Setting, Feet	
Viscosity, Centipoises @	
A. P. I. Gravity, degrees @ 60 °F	
Elevation, Feet	

The core was sampled by a representative of Oilfield Research Laboratories. 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:

Depth Interval, Feet	Description
620.0 - 620.5	Brown shaly sandstone.
620.5 - 620.9	Gray sandy shale.
620.9 - 621.5	Brown sandstone.
621.5 - 625.0	Brown and gray slightly laminated sandstone and shale.
625.0 - 626.0	Brown and gray laminated sandstone and shale.
626.0 - 628.1	Gray sandy shale.
628.1 - 628.9	Brown shaly sandstone.
628.9 - 632.0	Gray sandy shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 626 barrels of oil per acre was obtained from 3.6 feet of sand. The weighted average percent oil saturation was reduced from 36.7 to 25.6, or represents an average recovery of 11.1 percent. The weighted average effective permeability of the samples is 0.25 millidarcys, while the average initial fluid production pressure is 32.5 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 7 samples tested, 4 produced water and oil. This indicates that

approximately 57 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERY

It would appear from a study of the data, that efficient primary and waterflood operations in the vicinity of this well should recover approximately 1,300 barrels of oil per acre. This is an average recovery of 361 barrels per acre foot from 3.6 feet of floodable sand analyzed in this core.

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

Original formation volume factor	1.04
Reservoir water saturation, percent	30.0
Average porosity, percent	20.3
Oil saturation after flooding, percent	25.6
Performance factor, percent	55.0
Net floodable pay sand, feet	3.6

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Oaks Petroleum, Inc. Lease East Miller Well No. 0-50

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	620.4	19.9	43	39	82	664	2.6	0.5	0.5	332	1.30
2	621.2	20.7	37	37	74	594	14.	0.6	1.1	356	8.40
3	622.2	20.9	33	45	78	535	2.1	1.5	2.6	803	3.15
4	623.4	19.9	39	36	75	602	6.3	1.0	3.6	602	6.30
5	624.2	16.6	53	42	95	683	9.9	1.0	4.6	683	9.90
6	625.7	14.6	15	72	87	170	Imp.	1.0	5.6	170	0.00
7	628.5	18.1	33	51	84	463	5.3	0.8	6.4	370	4.24

Oilfield Research Laboratories

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Oaks Petroleum, Inc. Lease East Miller Well No. 0-50

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
620.0 - 624.0	3.6	5.3	19.15
624.0 - 628.9	1.8	7.9	14.14
620.0 - 628.9	5.4	6.2	33.29

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
620.0 - 624.0	3.6	20.5	36.7	40.3	581	2,093
624.0 - 628.9	2.8	16.3	33.7	55.3	437	1,223
620.0 - 628.9	6.4	18.7	35.4	46.9	518	3,316

Oilfield Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Oaks Petroleum, Inc. Lease East Miller Well No. O-50

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	620.4	20.0	43	667	18	279	25	68	388	5	0.20	25
2	621.2	21.0	37	603	10	163	27	67	440	17	0.50	25
3	622.2	20.5	33	525	8	127	25	71	399	2	0.20	45
4	623.4	19.6	39	593	13	198	26	65	395	3	0.20	35
5	624.2	16.6	53	683	0	0	53	38	683	0	Imp.	-
6	625.7	14.8	14	161	0	0	14	73	161	0	Imp.	-
7	628.5	18.2	33	466	0	0	33	63	466	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.

Oilfield Research Laboratories

SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company Oaks Petroleum, Inc. Lease East Miller Well No. O-50

Depth Interval, Feet	620.0 - 624.0
Feet of Core Analyzed	3.6
Average Percent Porosity	20.3
Average Percent Original Oil Saturation	36.7
Average Percent Oil Recovery	11.1
Average Percent Residual Oil Saturation	25.6
Average Percent Residual Water Saturation	68.3
Average Percent Total Residual Fluid Saturation	93.9
Average Original Oil Content, Bbls./A. Ft.	577.
Average Oil Recovery, Bbls./A. Ft.	174.
Average Residual Oil Content, Bbls./A. Ft.	403.
Total Original Oil Content, Bbls./Acre	2,078.
Total Oil Recovery, Bbls./Acre	626.
Total Residual Oil Content, Bbls./Acre	1,452.
Average Effective Permeability, Millidarcys	0.25
Average Initial Fluid Production Pressure, p.s.i.	32.5

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