

OILFIELD RESEARCH LABORATORIES

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

June 3, 1980

Rantoul Energy Corporation
Box 516
Hutchinson, Kansas 67501

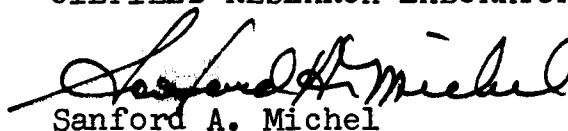
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Caylor Lease, Well No. 16, Franklin County, Kansas, and submitted to our laboratory on April 29, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Sanford A. Michel

SAM/tem

5 c to Hutchinson, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Rantoul Energy Corporation Lease Caylor Well No. 16

Location 165' NSL & 165' WEL NW $\frac{1}{4}$

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

Elevation, Feet - - - - -

Name of Sand - - - - - Squirrel

Top of Core - - - - - 474.0

Bottom of Core - - - - - 488.0

Top of Sand - - - - - 474.0

Bottom of Sand - - - - - 488.0

Total Feet of Permeable Sand - - - - - 10.1

Total Feet of Floodable Sand - - - - - 1.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 5	3.6	3.6
10 - 20	1.9	5.5
20 - 50	2.9	8.4
50 - 80	1.7	10.1

Average Permeability Millidarcys - - - - - 25.6

Average Percent Porosity - - - - - 18.8

Average Percent Oil Saturation - - - - - 18.5

Average Percent Water Saturation - - - - - 56.0

Average Oil Content, Bbls./A. Ft. - - - - - 272.

Total Oil Content, Bbls./Acre - - - - - 3,021.

Average Percent Oil Recovery by Laboratory Flooding Tests - - - - - 3.0

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - - 53.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - - 53.

Total Calculated Oil Recovery, Bbls./Acre - - - - - See "Calculated Recovery" Section.

-2-

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.

FORMATION CORED

<u>Depth Interval, Feet</u>	<u>Description</u>
474.0 - 475.2	Grayish brown shaly sandstone.
475.2 - 476.1	Grayish brown sandstone.
476.1 - 481.7	Light brown slightly calcareous sandstone.
481.7 - 482.3	Gray sandy shale.
482.3 - 483.2	Grayish brown shaly sandstone.
483.2 - 484.3	Gray sandy shale.
484.3 - 484.8	Grayish brown shaly sandstone.
484.8 - 486.0	Gray sandy shale.
486.0 - 488.0	Grayish brown shaly sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 53 barrels of oil per acre was obtained from 1.0 feet of sand. The weighted average percent oil saturation was reduced from 33.0 to 30.0, or represents an average recovery of 3.0 percent. The weighted average effective permeability of the samples is 17.14 millidarcys, while the average initial fluid production pressure is 20.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 12 samples tested, 1 produced water and oil, and 8 samples produced water only. This indicates that approximately 8 percent of the sand represented by these samples is floodable pay sand.

OILFIELD RESEARCH LABORATORIES

-3-

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 53 barrels of oil per acre. This is an average recovery of 53 barrels per acre foot from 1.0 foot 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	40.0
Average porosity, percent	22.7
Oil saturation after flooding, percent	30.0
Performance factor, percent, estimated	50.0
Net floodable sand, feet	1.0

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Rantoul Energy Corporation

Lease Caylor

Well No. 16

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	474.5	16.2	12	65	77	151	0.83	1.2	1.2	181	1.00
2	475.7	20.7	18	58	76	289	14.	0.9	2.1	260	12.60
3	476.5	21.0	3	67	70	49	26.	0.9	3.0	44	23.40
4	477.5	17.5	16	61	77	217	17.	1.0	4.0	217	17.00
5	478.3	18.7	19	59	78	276	31.	1.0	5.0	276	31.00
6	479.5	21.5	19	47	66	317	68.	1.0	6.0	317	68.00
7	480.5	19.7	17	65	82	260	78.	0.7	6.7	182	54.60
8	481.5	22.7	33	43	76	581	45.	1.0	7.7	581	45.00
9	482.4	17.9	19	65	84	264	1.9	0.9	8.6	238	1.71
10	484.5	11.0	17	60	77	145	0.27	0.5	9.1	73	0.14
11	486.6	18.8	17	48	65	248	4.1	1.0	10.1	248	4.10
12	487.3	16.8	31	39	70	404	Imp.	1.0	11.1	404	0.00

Oilfield Research Laboratories

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		Lease		Caylor		Well No.	
Rantoul Energy Corporation						16	
Depth Interval, Feet	Feet of Core Analyzed	Average Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre	
474.0 - 480.7	6.7	19.2	14.8	60.2	220	1,477	
480.7 - 488.0	4.4	18.2	24.2	49.7	351	1,544	
474.0 - 488.0	11.1	18.8	18.5	56.0	272	3,021	

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
474.0 - 480.7	6.7	31.0	207.60
480.7 - 488.0	3.4	15.0	50.95
474.0 - 488.0	10.1	25.6	258.55

Oilfield Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Rantoul Energy Corporation Lease Caylor Well No. 16

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	474.5	16.7	11	143	0	0	11	67	0	Imp.	-
2	475.7	20.5	18	286	0	0	18	80	99	1.80	25
3	476.5	21.2	3	49	0	0	3	88	258	10.68	20
4	477.5	18.0	15	209	0	0	15	73	58	2.40	20
5	478.3	19.1	18	267	0	0	18	78	227	4.05	25
6	479.5	21.3	19	314	0	0	19	74	249	9.50	20
7	480.5	19.9	16	247	0	0	16	75	154	1.65	25
8	481.5	22.7	33	581	3	53	30	60	340	17.14	20
9	482.4	18.2	18	254	0	0	18	69	97	1.50	25
10	484.5	11.0	17	145	0	0	17	60	0	Imp.	-
11	486.6	18.9	17	249	0	0	17	77	288	5.70	20
12	487.3	17.0	31	409	0	0	31	67	5	0.15	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.

Oilfield Research Laboratories

SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Rantoul Energy Corporation	Lease	Caylor	Well No.	16
Depth Interval, Feet	474.0 - 480.7				
Feet of Core Analyzed	1.0				
Average Percent Porosity	22.7				
Average Percent Original Oil Saturation	33.0				
Average Percent Oil Recovery	3.0				
Average Percent Residual Oil Saturation	30.0				
Average Percent Residual Water Saturation	60.0				
Average Percent Total Residual Fluid Saturation	90.0				
Average Original Oil Content, Bbls./A. Ft.	581.				
Average Oil Recovery, Bbls./A. Ft.	53.				
Average Residual Oil Content, Bbls./A. Ft.	528.				
Total Original Oil Content, Bbls./Acre	581.				
Total Oil Recovery, Bbls./Acre	53.				
Total Residual Oil Content, Bbls./Acre	528.				
Average Effective Permeability, Millidarcys	17.14				
Average Initial Fluid Production Pressure, p.s.i.	20.0				

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