

OILFIELD RESEARCH LABORATORIES

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June 20, 1980

Rantoul Energy Corporation
Box 516
Hutchinson, Kansas 67501

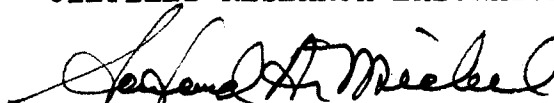
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Judson B Lease, Well No. 6-W, Franklin County, Kansas, and submitted to our laboratory on May 8, 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** Judson B **Well No.** 6-W
Location -
Section 23 **Twp.** 17S **Rge.** 21E **County** Franklin **State** Kansas

Elevation, Feet

Name of Sand	Peru
Top of Core	340.0
Bottom of Core	351.5
Top of Sand	340.0
Bottom of Sand	349.2
Total Feet of Permeable Sand	8.2
Total Feet of Floodable Sand	8.2

Distribution of Permeable Sand:
Permeability Range
Millidarcys

	Feet	Cum. Ft.
50 - 100	4.4	4.4
100 - 200	1.0	5.4
200 - 300	2.8	8.2

Average Permeability Millidarcys	148.8
Average Percent Porosity	23.1
Average Percent Oil Saturation	34.2
Average Percent Water Saturation	44.9
Average Oil Content, Bbls./A. Ft.	612.
Total Oil Content, Bbls./Acre	5,020.
Average Percent Oil Recovery by Laboratory Flooding Tests	8.9
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	160.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	1,310.
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.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
340.0 - 340.8	Gray and brown laminated calcareous sandstone and shale.
340.8 - 343.2	Brown slightly calcareous sandstone.
343.2 - 344.2	Gray limestone.
344.2 - 349.2	Brown calcareous sandstone.
349.2 - 351.5	Grayish brown slightly calcareous sandy shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,310 barrels of oil per acre was obtained from 8.2 feet of sand. The weighted average percent oil saturation was reduced from 34.2 to 25.3, or represents an average recovery of 8.9 percent. The weighted average effective permeability of the samples is 7.57 millidarcys, while the average initial fluid production pressure is 16.9 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 8 samples tested, 8 produced water and oil. This indicates that approximately 100 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 3,440 barrels of oil per acre. This is an average recovery of 420 barrels per acre foot from 8.2 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	25.0
Average porosity, percent	23.1
Oil saturation after flooding, percent	25.3
Performance factor, percent, estimated	50.0
Net floodable sand, feet	8.2

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Rantoul Energy Corporation Lease Judson B Well No. 6-W

Sample No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content Bbbs. / A Ft.	Perm., Mill.	Feet of Sand		Total Oil Content	Perm. Capacity Ft. X md.
			Oil	Water	Total			Ft.	Cum. Ft.		
1	340.4	23.5	34	58	92	620	75.	0.8	0.8	496	60.00
2	341.6	23.4	34	54	88	617	99.	1.2	2.0	740	118.80
3	342.3	23.2	29	51	80	522	61.	1.2	3.2	626	73.20
4	344.7	22.0	40	29	69	683	247.	0.8	4.0	546	197.60
5	345.2	23.4	32	36	68	581	277.	1.0	5.0	581	277.00
6	346.4	22.8	33	35	68	584	277.	1.0	6.0	584	277.00
7	347.3	23.6	40	39	79	732	131.	1.0	7.0	732	131.00
8	348.2	22.6	34	52	86	596	71.	1.2	8.2	715	85.20

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		Lease		Well No.			
Rantol Energy Corporation		Judson B		6-W			
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbl./Acre
340.0 - 349.2	8.2	148.8	1219.80				
340.0 - 349.2	8.2			34.2	44.9	612	5,020
				23.1			

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Rantoul Energy Corporation Lease Judson B Well No. 6-W

Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery		Residual Saturation		Volume of Water Recovered cc ^a	Effective Permeability Millidarcys ^{oo}	Initial Fluid Production Pressure Lbs./Sq./In.
			%	Bbls./A. Ft.	%	Bbls./A. Ft.	% Oil	% Water			
1	340.4	23.4	34	617	11	200	23	72	417	8.55	15
2	341.6	23.2	34	612	4	72	30	66	540	2.10	15
3	342.3	23.3	29	524	9	163	20	77	361	6.60	15
4	344.7	22.0	40	683	8	137	32	64	546	11.24	15
5	345.2	23.6	32	586	10	183	22	74	403	10.83	15
6	346.4	22.8	33	584	12	212	21	75	372	15.37	15
7	347.3	23.8	40	739	14	258	26	72	481	5.25	30
8	348.2	22.7	34	599	5	88	29	64	511	3.60	15

Notes: cc—cubic centimeter.

^a—Volume of water recovered at the time of maximum oil recovery.

^{oo}—Determined by passing water through sample which still contains residual oil.

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SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Rantoul Energy Corporation	Lease	Judson B	Well No.	6-W
Depth Interval, Feet	340.0 - 349.2				
Feet of Core Analyzed	8.2				
Average Percent Porosity	23.1				
Average Percent Original Oil Saturation	34.2				
Average Percent Oil Recovery	8.9				
Average Percent Residual Oil Saturation	25.3				
Average Percent Residual Water Saturation	70.5				
Average Percent Total Residual Fluid Saturation	95.8				
Average Original Oil Content, Bbls./A. Ft.	614.				
Average Oil Recovery, Bbls./A. Ft.	160.				
Average Residual Oil Content, Bbls./A. Ft.	454.				
Total Original Oil Content, Bbls./Acre	5,031.				
Total Oil Recovery, Bbls./Acre	1,310.				
Total Residual Oil Content, Bbls./Acre	3,721.				
Average Effective Permeability, Millidarcys	7.57				
Average Initial Fluid Production Pressure, p.s.i.	16.9				

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

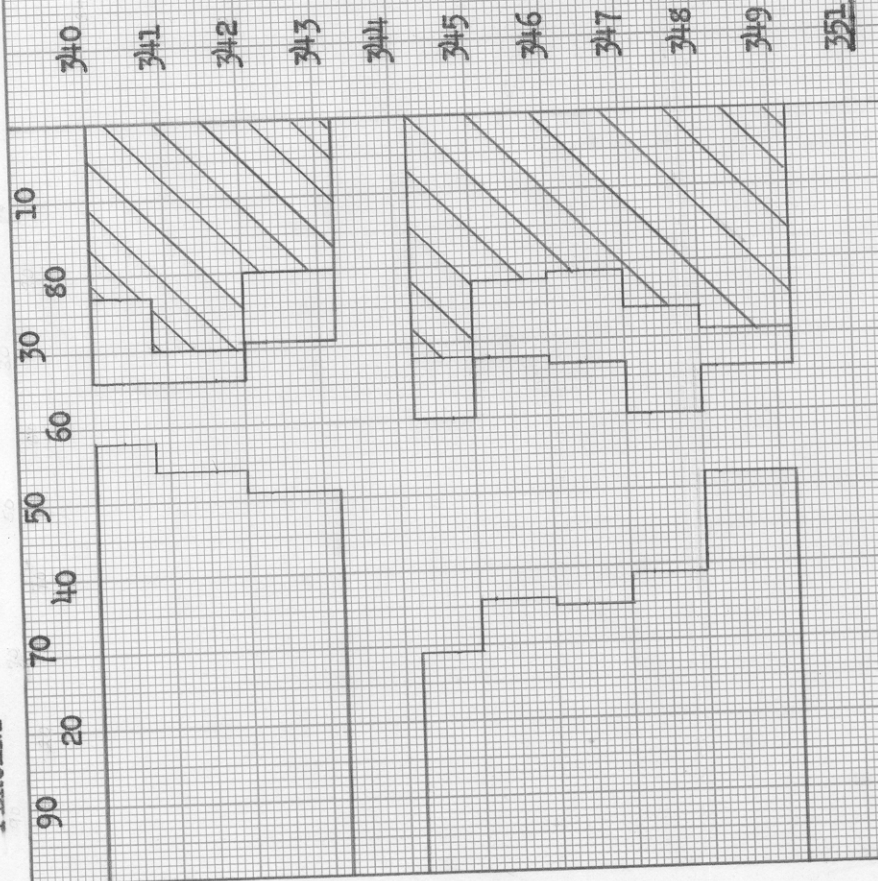
PERMEABILITY, IN MILLIDARCY

EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCY

WATER SAT., PERCENT

OIL SAT., PERCENT

100 4
200 8
300 12
400 16
500 20



— PERMEABILITY, IN MILLIDARCY
- - - EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCY

KEY:
 LAMINATED CALCAREOUS SANDSTONE & SHALE
 LIMESTONE
 FLOCCIPOT RESIDUAL OIL SATURATION

CALCAREOUS SANDSTONE
 CALCAREOUS SANDY SHALE

RANTOUL ENERGY CORP.

JUDSON B LEASE

WELL NO. 6-W

FRANKLIN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY MILLIDARCS	CALCULATED OIL RECOVERY BBL./ACRE
340.0 - 349.2	8.2	23.1	34.2	44.9	148.8	3,440 (PRIMARY & WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
JUNE, 1980

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