OILFIELD RESEARCH LABORATORIES
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June 10, 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 A Lease, Well No. 3, Franklin County, Kansas, and submitted to our laboratory on May 1, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas
5 c to Hutchinson, Kansas

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GENERAL INFORMATION & SUMMARY

Company Rantoul Energy Corporation Lease Judson A Well No. 3

Location —

Section 22 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet - - - - - - - - - - - - - - - - -

Name of Sand	Squirrel
Top of Core	494.0
Bottom of Core	512.3
Top of Sand	494.0
Bottom of Sand	512.3
Total Feet of Permeable Sand	12.3
Total Feet of Floodable Sand	0.9

Distribution of Permeable Sand:

Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 5	5.0	5.0
10 - 20	4.4	9.4
20 - 30	1.2	10.6
50 - 70	1.7	12.3

Average Permeability Millidarcys	16.8
Average Percent Porosity	18.9
Average Percent Oil Saturation	24.0
Average Percent Water Saturation	56.6
Average Oil Content, Bbls./A. Ft.	352.
Total Oil Content, Bbls./Acre	6,442.
Average Percent Oil Recovery by Laboratory Flooding Tests	3.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	34.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	31.
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. Fresh water mud was used as a drilling fluid.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
494.0 - 496.8	Grayish brown shaly sandstone.
496.8 - 499.2	Brown sandstone.
499.2 - 500.1	Grayish brown shaly sandstone.
500.1 - 503.7	Brown slightly calcareous sandstone.
503.7 - 505.8	Grayish brown shaly sandstone.
505.8 - 506.5	Brown sandstone.
506.5 - 508.2	Grayish brown shaly sandstone.
508.2 - 508.8	Brown slightly calcareous sandstone.
508.8 - 512.3	Grayish brown slightly calcareous shaly sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 31 barrels of oil per acre was obtained from 0.9 feet of sand. The weighted average percent oil saturation was reduced from 37.0 to 34.0, or represents an average recovery of 3.0 percent. The weighted average effective permeability of the samples is 0.37 millidarcys, while the average initial fluid production pressure is 30.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 18 samples tested, 1 produced water and oil, and 6 samples produced water only. This indicates that approximately 6 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 185 barrels of oil per acre. This is an average recovery of 205 barrels per acre foot from 0.9 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.05
Reservoir water saturation, percent, estimated	30.0
Average porosity, percent	14.4
Oil saturation after flooding, percent	30.0
Performance factor, percent, estimated	50.0
Net floodable sand, feet	0.9

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Rantoul Energy Corporation Lease Judson A Well No. 3

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	494.6	17.3	19	68	87	255	2.3	1.0	1.0	255	2.30
2	495.7	18.9	32	51	83	469	1.1	1.0	2.0	469	1.10
3	496.5	22.1	39	41	80	669	4.1	0.8	2.8	535	3.28
4	497.7	22.0	13	57	70	222	25.	1.2	4.0	266	30.00
5	498.5	19.0	19	61	80	280	20.	1.2	5.2	336	24.00
6	499.5	14.3	36	61	97	399	0.57	0.9	6.1	359	0.51
7	500.7	22.2	25	49	74	431	11.	0.9	7.0	388	9.90
8	501.5	21.6	25	53	78	419	17.	1.0	8.0	419	17.00
9	502.5	23.1	20	48	68	358	54.	1.0	9.0	358	54.00
10	503.4	19.6	20	59	79	304	65.	0.7	9.7	213	45.50
11	504.7	12.7	10	87	97	99	0.18	1.3	11.0	129	0.23
12	505.5	18.2	30	53	83	424	Imp.	0.8	11.8	339	0.00
13	506.4	15.2	43	35	78	507	13.	0.7	12.5	355	9.10
14	507.4	20.3	23	54	77	362	Imp.	1.7	14.2	615	0.00
15	508.5	15.4	17	76	93	203	17.	0.6	14.8	122	10.20
16	509.3	20.7	37	33	70	594	Imp.	1.2	16.0	713	0.00
17	510.3	16.7	15	74	89	194	Imp.	1.0	17.0	194	0.00
18	511.5	18.7	20	54	74	290	Imp.	1.3	18.3	377	0.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Rantoul Energy Corporation Lease Judson A Well No. 3

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
494.0 - 503.7	9.7	19.3	187.59
503.7 - 512.3	2.6	7.5	19.53
494.0 - 512.3	12.3	16.8	207.12

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
494.0 - 503.7	9.7	20.0	24.2	55.1	371	3,598
503.7 - 512.3	8.6	17.6	23.5	58.3	331	2,844
494.0 - 512.3	18.3	18.9	24.0	56.6	352	6,442

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Rantoul Energy Corporation Lease Judson A Well No. 3

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	494.6	17.7	18	247	0	0	18	70	247	0	Imp.	-
2	495.7	18.7	32	464	0	0	32	52	464	0	Imp.	-
3	496.5	22.0	39	666	0	0	39	42	666	0	Imp.	-
4	497.7	21.9	13	221	0	0	13	77	221	51	0.75	25
5	498.5	19.1	19	282	0	0	19	78	282	85	0.82	25
6	499.5	14.4	36	402	3	34	33	64	368	26	0.37	30
7	500.7	22.0	25	427	0	0	25	70	427	27	0.37	35
8	501.5	21.9	24	408	0	0	24	70	408	74	1.20	25
9	502.5	23.0	20	357	0	0	20	74	357	0	Imp.	-
10	503.4	19.5	20	303	0	0	20	75	303	33	0.60	25
11	504.7	12.4	11	106	0	0	11	86	106	0	Imp.	-
12	505.5	17.8	31	428	0	0	31	55	428	0	Imp.	-
13	506.4	15.7	42	512	0	0	42	36	512	0	Imp.	-
14	507.4	20.2	23	360	0	0	23	75	360	75	1.27	25
15	508.5	15.9	16	197	0	0	16	78	197	0	Imp.	-
16	509.3	20.5	37	588	0	0	37	40	588	0	Imp.	-
17	510.3	17.0	15	198	0	0	15	76	198	0	Imp.	-
18	511.5	18.4	21	300	0	0	21	55	300	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 Rantoul Energy Corporation Lease Judson A Well No. 3

Depth Interval, Feet	494.0 - 503.7
Feet of Core Analyzed	0.9
Average Percent Porosity	14.4
Average Percent Original Oil Saturation	37.0
Average Percent Oil Recovery	3.0
Average Percent Residual Oil Saturation	34.0
Average Percent Residual Water Saturation	64.0
Average Percent Total Residual Fluid Saturation	98.0
Average Original Oil Content, Bbls./A. Ft.	402.
Average Oil Recovery, Bbls./A. Ft.	34.
Average Residual Oil Content, Bbls./A. Ft.	368.
Total Original Oil Content, Bbls./Acre	362.
Total Oil Recovery, Bbls./Acre	31.
Total Residual Oil Content, Bbls./Acre	331.
Average Effective Permeability, Millidarcys	0.37
Average Initial Fluid Production Pressure, p.s.i.	30.0

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