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

June 18, 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. 20, Franklin County, Kansas and submitted to our laboratory on May 6, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas
5 c to Hutchinson, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Rantoul Energy Corporation Lease Judson A Well No. 20

Location –

Section 23 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet –

Name of Sand	Squirrel
Top of Core	483.0
Bottom of Core	501.5
Top of Sand	483.0
Bottom of Sand	500.7
Total Feet of Permeable Sand	14.5
Total Feet of Floodable Sand	2.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 – 1	3.8	3.8
1 – 10	3.7	7.5
10 – 50	4.7	12.2
50 – 100	2.3	14.5

Average Permeability Millidarcys	21.8
Average Percent Porosity	19.3
Average Percent Oil Saturation	17.9
Average Percent Water Saturation	67.1
Average Oil Content, Bbls./A. Ft.	262.
Total Oil Content, Bbls./Acre	4,639.
Average Percent Oil Recovery by Laboratory Flooding Tests	4.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	66.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	131.
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
483.0 - 485.2	Light brown shaly sandstone.
485.2 - 487.9	Brown sandstone.
487.9 - 489.1	Brown shaly sandstone.
489.1 - 490.7	Brown sandstone.
490.7 - 493.3	Brown shaly slightly calcareous sandstone.
493.3 - 496.0	Brown sandstone.
496.0 - 500.7	Grayish brown shaly sandstone.
500.7 - 501.5	Grayish brown sandy shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 131 barrels of oil per acre was obtained from 2.0 feet of sand. The weighted average percent oil saturation was reduced from 34.0 to 30.0, or represents an average recovery of 4.0 percent. The weighted average effective permeability of the samples is 0.60 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 18 samples tested, 2 produced water and oil, and 11 samples produced water only. This indicates that approximately 11 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 450 barrels of oil per acre. This is an average recovery of 227 barrels per acre foot from 2.0 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	45.0
Average porosity, percent	21.1
Oil saturation after flooding, percent	30.0
Performance factor, percent, estimated	50.0
Net floodable sand, feet	2.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Rantoul Energy Corporation Lease Judson A Well No. 20

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	483.5	19.6	28	58	86	426	3.0	1.0	1.0	426	3.00
2	484.5	20.2	8	77	85	125	Imp.	1.2	2.2	150	0.00
3	485.5	25.0	5	75	80	97	33.	0.8	3.0	78	26.40
4	486.5	16.3	11	86	97	139	29.	1.0	4.0	139	29.00
5	487.5	14.9	4	91	95	46	13.	0.9	4.9	41	11.70
6	488.5	17.7	8	81	89	110	0.55	1.2	6.1	132	0.66
7	489.5	22.9	3	69	72	53	77.	0.9	7.0	48	69.30
8	490.5	21.4	10	73	83	166	82.	0.7	7.7	116	57.40
9	491.5	15.6	22	73	95	266	0.28	1.3	9.0	346	0.36
10	492.5	15.7	34	58	92	414	0.86	1.3	10.3	538	1.12
11	493.5	20.4	16	70	86	253	69.	0.7	11.0	177	48.30
12	494.5	23.4	34	55	89	617	43.	1.0	12.0	617	43.00
13	495.3	24.3	16	56	72	302	12.	1.0	13.0	302	12.00
14	496.5	14.4	28	63	91	313	Imp.	1.0	14.0	313	0.00
15	497.5	20.0	7	57	64	109	Imp.	1.0	15.0	109	0.00
16	498.5	20.3	29	52	81	457	3.8	1.0	16.0	457	3.80
17	499.5	19.0	34	50	84	501	7.3	1.0	17.0	501	7.30
18	500.5	21.1	13	66	79	213	3.4	0.7	17.7	149	2.38

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Rantoul Energy Corporation Lease Judson A Well No. 20

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
483.0 - 490.7	6.5	30.4	197.46
490.7 - 500.7	8.0	14.8	118.26
483.0 - 500.7	14.5	21.8	315.72

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
483.0 - 490.7	7.7	19.5	9.8	76.6	147	1,130
490.7 - 500.7	10.0	19.1	24.1	59.9	351	3,509
483.0 - 500.7	17.7	19.3	17.9	67.1	262	4,639

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Rantoul Energy Corporation Lease Judson A Well No. 20

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	483.5	19.4	28	421	0	0	28	65	421	13	0.15	30
2	484.5	20.1	8	125	0	0	8	90	125	42	0.30	15
3	485.5	24.8	5	96	0	0	5	91	96	279	2.70	10
4	486.5	16.8	10	130	0	0	10	84	130	128	0.82	10
5	487.5	14.7	4	46	0	0	4	92	46	9	0.15	50
6	488.5	17.5	8	109	0	0	8	88	109	0	Imp.	-
7	489.5	22.9	3	53	0	0	3	91	53	266	2.62	10
8	490.5	21.0	11	179	0	0	11	84	179	249	3.60	10
9	491.5	15.6	22	266	0	0	22	73	266	0	Imp.	-
10	492.5	16.0	33	410	0	0	33	62	410	0	Imp.	-
11	493.5	20.1	17	265	0	0	17	78	265	9	0.15	45
12	494.5	23.2	34	612	4	72	30	63	540	68	1.05	30
13	495.3	24.3	16	302	0	0	16	80	302	71	1.20	20
14	496.5	14.8	27	310	0	0	27	70	310	4	0.08	50
15	497.5	19.9	7	108	0	0	7	60	108	0	Imp.	-
16	498.5	20.2	29	454	0	0	29	64	454	10	0.15	45
17	499.5	19.0	34	501	4	59	30	65	442	11	0.15	35
18	500.5	21.3	13	215	0	0	13	70	215	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. 20

Depth Interval, Feet	490.7 - 500.7
Feet of Core Analyzed	2.0
Average Percent Porosity	21.1
Average Percent Original Oil Saturation	34.0
Average Percent Oil Recovery	4.0
Average Percent Residual Oil Saturation	30.0
Average Percent Residual Water Saturation	64.0
Average Percent Total Residual Fluid Saturation	94.0
Average Original Oil Content, Bbls./A. Ft.	563.
Average Oil Recovery, Bbls./A. Ft.	66.
Average Residual Oil Content, Bbls./A. Ft.	497.
Total Original Oil Content, Bbls./Acre	1,125.
Total Oil Recovery, Bbls./Acre	131.
Total Residual Oil Content, Bbls./Acre	994.
Average Effective Permeability, Millidarcys	0.60
Average Initial Fluid Production Pressure, p.s.i.	32.5

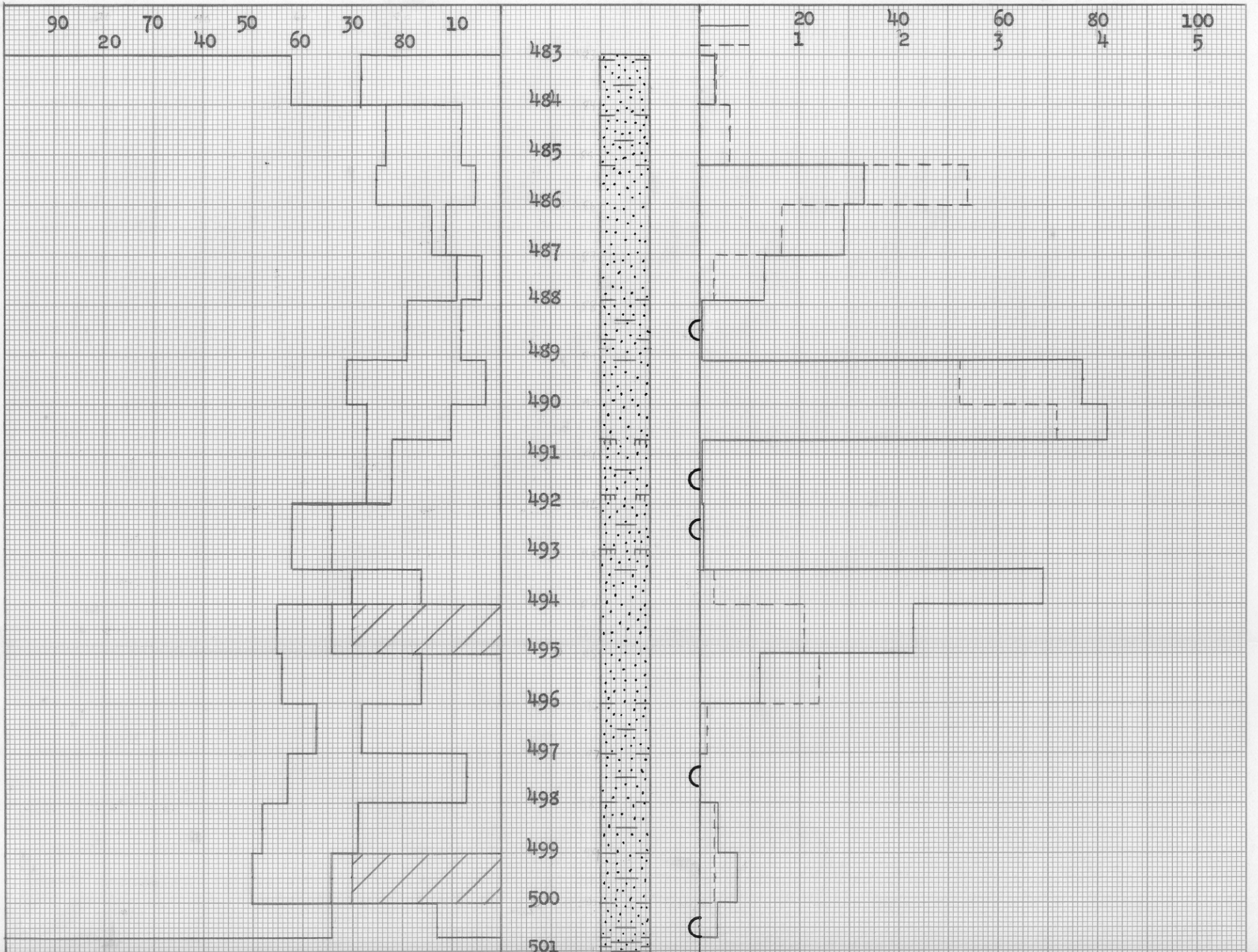
NOTE: Only those samples which recovered oil were used in calculating the above averages.

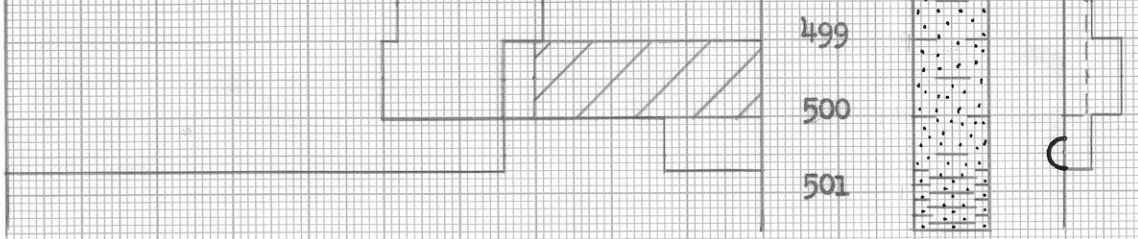
WATER SAT., PERCENT →

← OIL SAT., PERCENT

——— PERMEABILITY, IN MILLIDARCYS

– – – EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS





KEY:

SHALY SANDSTONE

SHALY CALCAREOUS SANDSTONE

FLOODPOT RESIDUAL OIL SATURATION

SANDSTONE

SANDY SHALE

IMPERMEABLE TO WATER

RANTOUL ENERGY CORP.

JUDSON A LEASE WELL NO. 20

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
483.0 - 490.7	7.7	19.5	9.8	76.6	30.4	
490.7 - 500.7	10.0	19.1	24.1	59.9	14.8	
483.0 - 500.7	17.7	19.3	17.9	67.1	21.8	450 (PRIMARY & WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
JUNE, 1980 VM