



OILFIELD RESEARCH LABORATORIES

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

July 16, 1982

Rantoul Energy Corporation
1505 SW 42nd Street
Topeka, Kansas 66609

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Zastrow Lease, Well No. 33-B, located in Anderson County, Kansas and submitted to our laboratory on July 9, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/dlb

5 c to Topeka, Kansas

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company Rantoul Energy Corporation Lease Zastrow Well No. 33-B

Location _____

Section 13 Twp. 20S Rge. 20E County Anderson State Kansas

Elevation, Feet	
Name of Sand.....	Cattleman
Top of Core	728.0
Bottom of Core	733.6
Top of Sand	728.0
Bottom of Sand	732.7
Total Feet of Permeable Sand	4.7
Total Feet of Floodable Sand	2.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
15 - 25	1.7	1.7
75 - 90	3.0	4.7

Average Permeability Millidarcys	59.1
Average Percent Porosity	24.7
Average Percent Oil Saturation	58.5
Average Percent Water Saturation.....	14.1
Average Oil Content, Bbls./A. Ft.	1,117.
Total Oil Content, Bbls./Acre.....	5,252.
Average Percent Oil Recovery by Laboratory Flooding Tests.....	10.5
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	197.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	393.

See "Calculated Recovery"
Section

The core was sampled and the samples were sealed in plastic bags by a representative of the client. Fresh water mud was used as a drilling fluid. The core was reported to be from a non-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
728.0 - 732.7	Dark brown slightly carbonaceous sandstone.
732.7 - 733.6	Coal.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 393 barrels of oil per acre was obtained from 2.0 feet of sand. The weighted average percent oil saturation was reduced from 59.0 to 48.5, or represents an average recovery of 10.5 percent. The weighted average effective permeability of the samples is 1.31 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 5 samples tested, 2 produced water and oil. This indicates that approximately 40 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 770 barrels of oil per acre. This is an average recovery of 386 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	1.05
Reservoir water saturation, percent, estimated	10.0
Average porosity, percent	24.3
Oil saturation after flooding, percent	48.5
Performance factor, percent, estimated	55.0
Net floodable sand, feet	2.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Rantoul Energy Corporation

Lease Zastrow

Well No. 33-B

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	728.5	25.4	54	14	68	1064	87.	1.0	1.0	1064	87.00
2	729.5	23.1	64	14	78	1147	80.	1.0	2.0	1147	80.00
3	730.6	23.3	55	21	76	994	76.	1.0	3.0	994	76.00
4	731.5	26.9	55	9	64	1148	23.	1.0	4.0	1148	23.00
5	732.4	24.7	67	12	79	1284	17.	0.7	4.7	899	11.90

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Rantoul Energy Corporation Lease Zastrow Well No. 33-B

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 Bbls./Acre
728.0 - 732.7	4.7	59.1	277.90	58.5	14.1	1,117	5,252
728.0 - 732.7	4.7			24.7			

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Well No. 33-B

Company Rantoul Energy Corporation Lease Zastrow

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	728.5	25.3	54	1060	9	177	45	46	883	96	1.35	30
2	729.5	23.2	64	1152	12	216	52	29	936	116	1.27	30
3	730.6	23.4	55	998	0	0	55	20	998	0	Imp.	-
4	731.5	26.4	56	1147	0	0	56	9	1147	0	Imp.	-
5	732.4	24.8	67	1289	0	0	67	13	1289	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

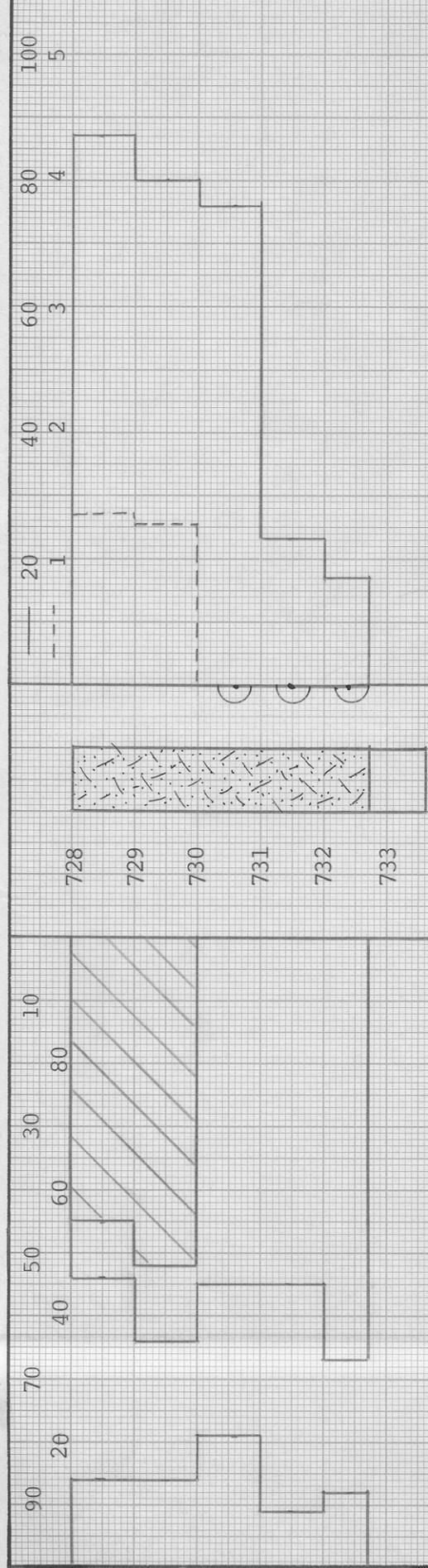
TABLE V

Company	Rantoul Energy Corporation	Lease	Zastrow	Well No.	33-B
Depth Interval, Feet	728.0 - 732.7				
Feet of Core Analyzed	2.0				
Average Percent Porosity	24.3				
Average Percent Original Oil Saturation	59.0				
Average Percent Oil Recovery	10.5				
Average Percent Residual Oil Saturation	48.5				
Average Percent Residual Water Saturation	37.5				
Average Percent Total Residual Fluid Saturation	86.0				
Average Original Oil Content, Bbls./A. Ft.	1,107.				
Average Oil Recovery, Bbls./A. Ft.	197.				
Average Residual Oil Content, Bbls./A. Ft.	910.				
Total Original Oil Content, Bbls./Acre	2,212.				
Total Oil Recovery, Bbls./Acre	393.				
Total Residual Oil Content, Bbls./Acre	1,819.				
Average Effective Permeability, Millidarcys	1.31				
Average Initial Fluid Production Pressure, p.s.i.	30.0				

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:
 [Hatched Box] FLOODPOT RESIDUAL OIL SATURATION
 [Circle] IMPERMEABLE TO WATER

[Empty Box] COAL
 [Dotted Box] CARBONACEOUS SANDSTONE

RANTOUL ENERGY CORPORATION

WELL NO. 33-B

ZASTROW LEASE

ANDERSON 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
728.0 - 732.7	4.7	24.7	58.5	14.1	59.1	770 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
 CHANUTE, KANSAS
 JULY, 1982
 PDC