

OILFIELD RESEARCH LABORATORIES

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May 18, 1981

Rantoul Energy Corporation
Box 516
Hutchinson, Kansas 67501

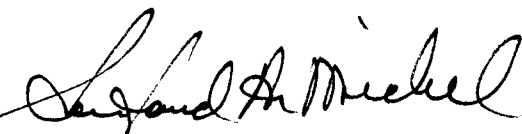
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Dunnivan Lease, Well No. 14-D, located in Franklin County, Kansas and submitted to our laboratory on May 8, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/mkf

5 c to Hutchinson, Ks.

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company Rantoul Energy Corporation Lease Dunnivan Well No. 14-D
 Location _____
 Section 32 Twp. 17 S Rge. 21E County Franklin State Kansas

Elevation, Feet

Name of Sand	Squirrel
Top of Core	672.0
Bottom of Core	691.3
Top of Sand	672.0
Bottom of Sand (Tested)	681.0
Total Feet of Permeable Sand	5.7
Total Feet of Floodable Sand	2.7

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	1.0	1.0
10 - 20	3.0	4.0
20 & Above	1.7	5.7

Average Permeability Millidarcys	15.4
Average Percent Porosity	16.6
Average Percent Oil Saturation	30.7
Average Percent Water Saturation	46.4
Average Oil Content, Bbls./A. Ft.	416.
Total Oil Content, Bbls./Acre	3,747.
Average Percent Oil Recovery by Laboratory Flooding Tests	6.4
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	98.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	264.
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 and salt water mud were used as a drilling fluid. The core was reported to be from a virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval,</u> <u>Feet</u>	<u>Description</u>
672.0 - 677.7	Brown sandstone.
677.7 - 691.3	Grayish light brown shaly sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 264 barrels of oil per acre was obtained from 2.7 feet of sand. The weighted average percent oil saturation was reduced from 47.1 to 40.7, or represents an average recovery of 6.4 percent. The weighted average effective permeability of the samples is 0.79 millidarcys, while the average initial fluid production pressure is 36.7 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 9 samples tested, 3 produced water and oil. This indicates that approximately 33 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 730 barrels of oil per acre. This is an average recovery of 271 barrels per acre foot from 2.7 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	20.0
Average porosity, percent	19.3
Oil saturation after flooding, percent	40.7
Performance factor, percent, estimated	50.0
Net floodable sand, feet	2.7

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-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	672.5	17.4	14	58	72	189	8.9	1.0	1.0	189	8.90
2	673.5	15.6	36	43	79	436	10.	1.0	2.0	436	10.00
3	674.5	20.1	55	27	82	858	11.	1.0	3.0	858	11.00
4	675.4	18.3	45	30	75	639	15.	1.0	4.0	639	15.00
5	676.5	21.3	34	20	54	562	28.	1.0	5.0	562	28.00
6	677.5	19.5	39	28	67	590	21.	0.7	5.7	413	14.70
7	678.5	13.9	32	64	96	345	Imp.	1.3	7.0	449	0.00
8	679.5	9.3	16	75	91	115	Imp.	1.0	8.0	115	0.00
9	680.6	15.8	7	62	69	86	Imp.	1.0	9.0	86	0.00

Company Rantoul Energy Corporation Lease Dunnivan Well No. 14-D

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Rantoul Energy Corporation		Lease	Dunnivan	Well No.	14-D
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.			
672.0 - 681.0	5.7	15.4	87.60			
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
672.0 - 681.0	9.0	16.6	30.7	46.4	416	3,747

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Rantoul Energy Corporation Lessee Dunnivan Well No. 14-D

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	672.5	17.9	13	181	0	0	13	60	0	Imp.	-
2	673.5	15.4	37	442	0	0	37	43	0	Imp.	-
3	674.5	20.2	55	862	11	172	44	42	26	0.83	30
4	675.4	18.3	45	639	5	71	40	56	10	0.60	50
5	676.5	21.4	34	564	0	0	34	23	0	Imp.	-
6	677.5	19.6	39	593	2	30	37	45	30	1.00	30
7	678.5	14.2	31	342	0	0	31	66	0	Imp.	-
8	679.5	9.2	16	114	0	0	16	76	0	Imp.	-
9	680.6	15.7	7	85	0	0	7	64	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.

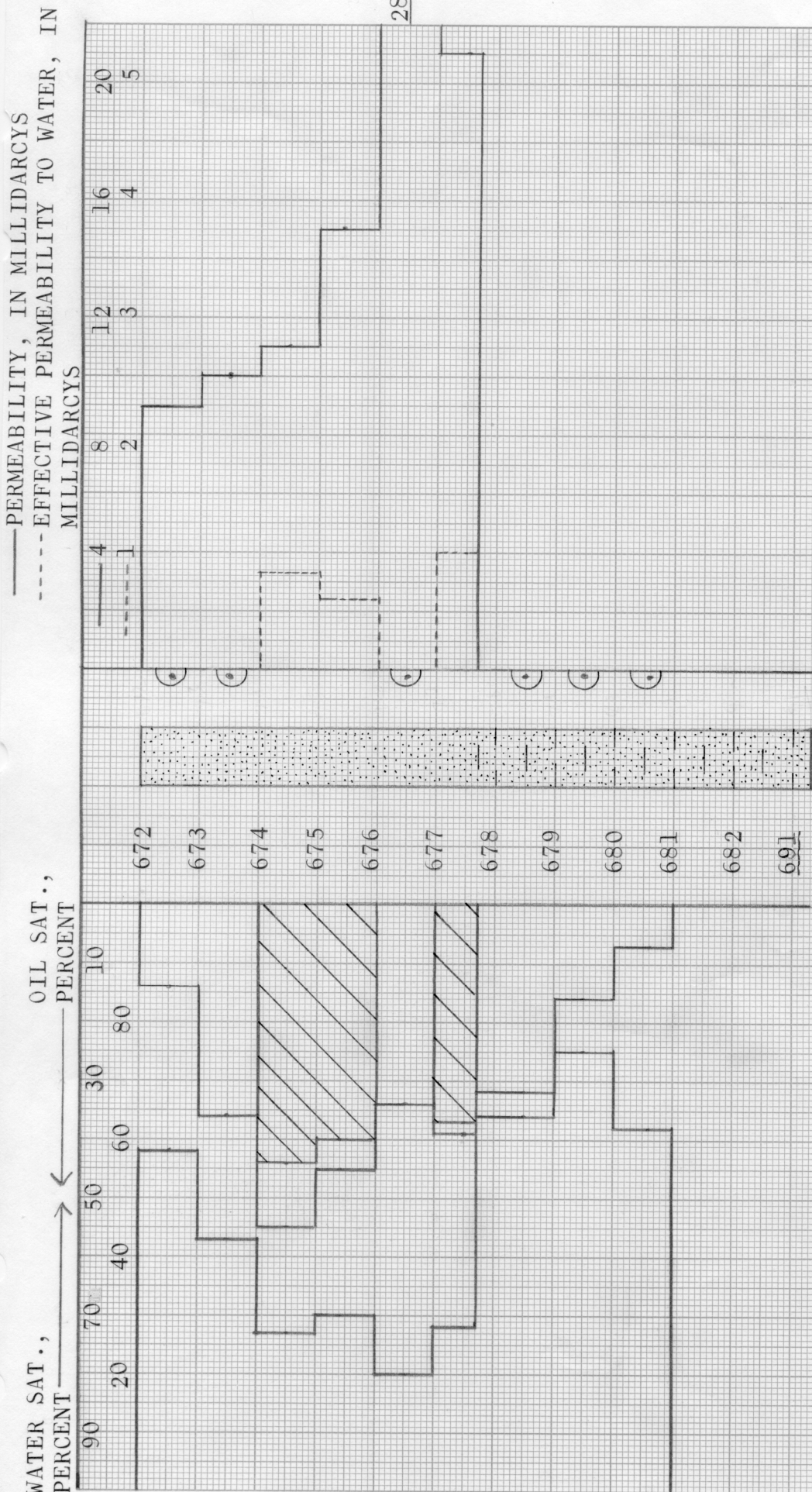
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SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Rantoul Energy Corporation	Lease	Dunnivan	Well No.	14-D
Depth Interval, Feet	672.0 - 681.0				
Feet of Core Analyzed	2.7				
Average Percent Porosity	19.3				
Average Percent Original Oil Saturation	47.1				
Average Percent Oil Recovery	6.4				
Average Percent Residual Oil Saturation	40.7				
Average Percent Residual Water Saturation	48.0				
Average Percent Total Residual Fluid Saturation	88.7				
Average Original Oil Content, Bbls./A. Ft.	710.				
Average Oil Recovery, Bbls./A. Ft.	98.				
Average Residual Oil Content, Bbls./A. Ft.	612.				
Total Original Oil Content, Bbls./Acre	1,916.				
Total Oil Recovery, Bbls./Acre	264.				
Total Residual Oil Content, Bbls./Acre	1,652.				
Average Effective Permeability, Millidarcys	0.79				
Average Initial Fluid Production Pressure, p.s.i.	36.7				

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



KEY:

SANDSTONE

SHALY SANDSTONE

FLOODPOT RESIDUAL OIL SATURATION

IMPERMEABLE TO WATER

RANTOUL ENERGY CORP.

DUNNIVAN LEASE

WELL NO. 14-D

FRANKLIN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVG. OIL		AVG. WATER		AVERAGE		CALCULATED
		SATURATION PERCENT	PERCENT	SATURATION PERCENT	PERCENT	PERMEABILITY, MILLIDARCYS	OIL RECOVERY BBLS. / ACRE	
672.0 - 681.0	9.0	16.6	30.7	46.4	15.4		730	(PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
MAY, 1981