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

July 7, 1981

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 Dunnivan Lease, Well No. 28-D, located in Franklin County, Kansas and submitted to our laboratory on June 27, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Topeka, Kansas

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GENERAL INFORMATION & SUMMARY

Company Rantoul Energy Corporation Lease Dunnivan Well No. 28-D

Location

Section 32 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet	
Name of Sand	Squirrel
Top of Core	660.0
Bottom of Core	676.7
Top of Sand	660.0
Bottom of Sand	676.7
Total Feet of Permeable Sand	9.7
Total Feet of Floodable Sand	2.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 5	3.7	3.7
5 - 10	3.0	6.7
30 - 50	3.0	9.7

Average Permeability Millidarcys	15.9
Average Percent Porosity	16.3
Average Percent Oil Saturation	35.1
Average Percent Water Saturation	45.8
Average Oil Content, Bbls./A. Ft.	478.
Total Oil Content, Bbls./Acre	6,055.
Average Percent Oil Recovery by Laboratory Flooding Tests	7.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	100.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	199.
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 with 3% KCl was used as a drilling fluid.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
660.0 - 663.0	Light brown slightly calcareous slightly shaly sandstone.
663.0 - 664.0	Dark brown calcareous shaly sandstone.
664.0 - 668.0	No core.
668.0 - 671.0	Dark brown slightly calcareous slightly carbonaceous sandstone.
671.0 - 674.0	Hard grayish light brown calcareous fossiliferous shaly sandstone.
674.0 - 676.7	Grayish light brown slightly calcareous shaly sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 199 barrels of oil per acre was obtained from 2.0 feet of sand. The weighted average percent oil saturation was reduced from 57.5 to 50.5, or represents an average recovery of 7.0 percent. The weighted average effective permeability of the samples is 1.30 millidarcys, while the average initial fluid production pressure is 37.5 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 13 samples tested, 2 produced water and oil, and 1 produced water only. This indicates that approximately 15 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 380 barrels of oil per acre. This is an average recovery of 192 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	25.0
Average porosity, percent	19.0
Oil saturation after flooding, percent	50.5
Performance factor, percent, estimated	60.0
Net floodable sand, feet	2.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Rantoul Energy Corporation Lease Dunnivan Well No. 28-D

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	660.6	18.5	30	35	65	431	7.1	1.0	1.0	431	7.10
2	661.5	19.1	39	34	73	578	8.3	1.0	2.0	578	8.30
3	662.4	18.9	42	35	77	616	6.8	1.0	3.0	616	6.80
4	663.4	8.8	30	42	72	205	0.50	1.0	4.0	205	0.50
5	668.4	21.9	53	18	71	901	43.	1.0	5.0	901	43.00
6	669.4	24.0	61	30	91	1136	32.	1.0	6.0	1136	32.00
7	670.4	16.0	63	31	94	782	46.	1.0	7.0	782	46.00
8	671.4	12.4	20	70	90	192	Imp.	1.0	8.0	192	0.00
9	672.5	11.6	24	71	95	216	Imp.	1.0	9.0	216	0.00
10	673.5	6.0	20	73	93	93	Imp.	1.0	10.0	93	0.00
11	674.4	17.5	17	50	67	231	4.0	1.0	11.0	231	4.00
12	675.5	19.5	24	62	86	363	3.0	1.0	12.0	363	3.00
13	676.5	17.9	32	43	75	444	4.6	0.7	12.7	311	3.22

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Rantoul Energy Corporation Lease Dunnivan Well No. 28-D

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
660.0 - 671.0	7.0	20.5	143.70
671.0 - 676.7	2.7	3.8	10.22
660.0 - 676.7	9.7	15.9	153.92

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
660.0 - 671.0	7.0	18.2	45.4	32.1	664	4,649
671.0 - 676.7	5.7	14.0	22.4	62.5	247	1,406
660.0 - 676.7	12.7	16.3	35.1	45.8	478	6,055

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Rantoul Energy Corporation Lease Dunnivan Well No. 28-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	Bbls./A. Ft.			
1	660.6	18.6	30	433	0	0	30	36	433	0	Imp.	-
2	661.5	19.0	39	575	0	0	39	35	575	0	Imp.	-
3	662.4	18.8	42	613	0	0	42	36	613	0	Imp.	-
4	663.4	8.9	30	207	0	0	30	42	207	0	Imp.	-
5	668.4	21.8	53	896	5	85	48	24	811	25	1.35	45
6	669.4	23.9	61	1131	0	0	61	32	1131	106	2.32	30
7	670.4	16.3	62	784	9	114	53	42	670	14	1.25	30
8	671.4	12.4	20	192	0	0	20	71	192	0	Imp.	-
9	672.5	11.6	24	216	0	0	24	72	216	0	Imp.	-
10	673.5	6.1	20	95	0	0	20	74	95	0	Imp.	-
11	674.4	17.6	17	232	0	0	17	53	232	0	Imp.	-
12	675.5	19.4	24	361	0	0	24	64	361	0	Imp.	-
13	676.5	18.3	31	440	0	0	31	46	440	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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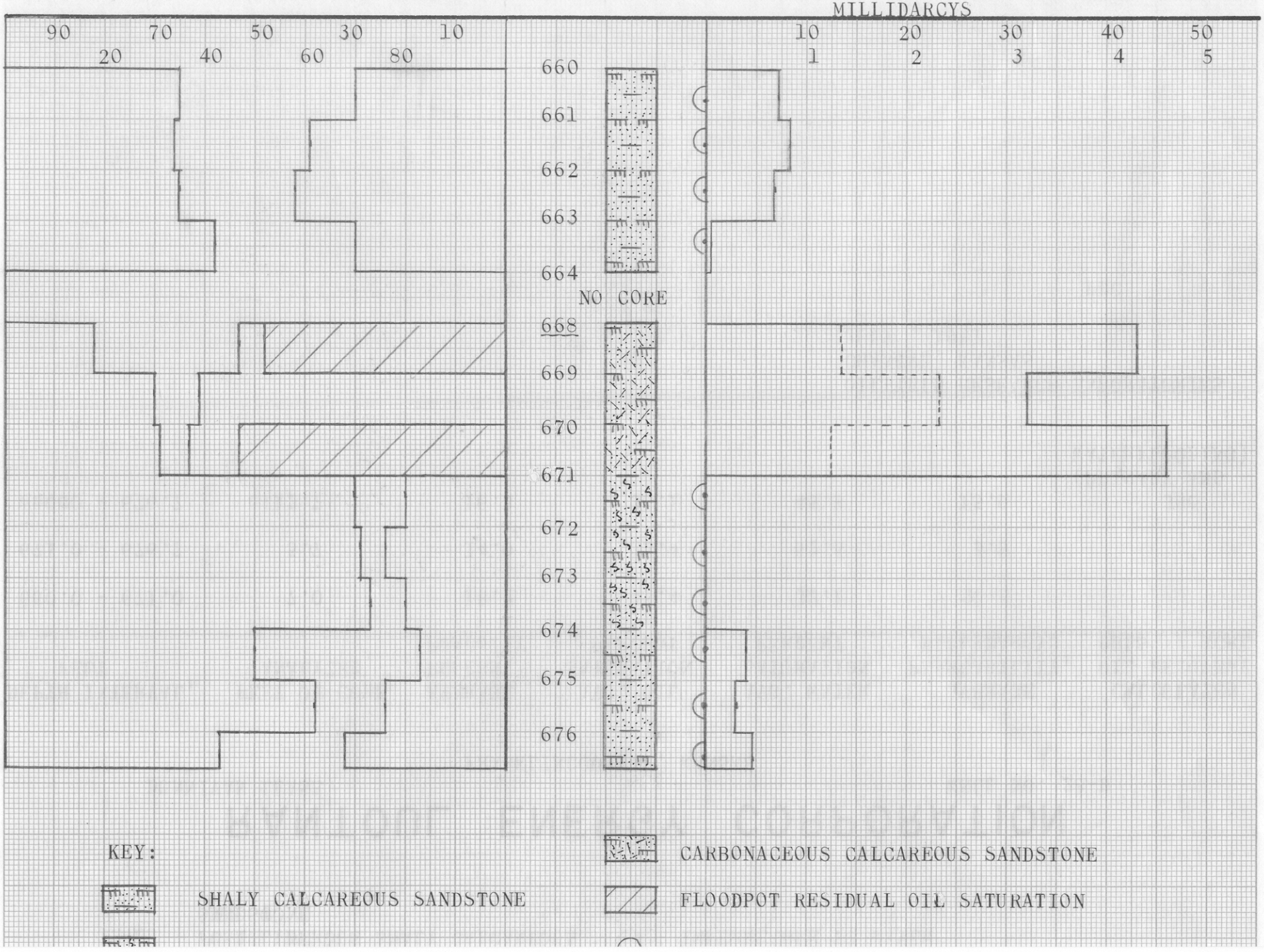
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company Rantoul Energy Corporation Lease Dunnivan Well No. 28-D

Depth Interval, Feet	660.0 - 671.0
Feet of Core Analyzed	2.0
Average Percent Porosity	19.1
Average Percent Original Oil Saturation	57.5
Average Percent Oil Recovery	7.0
Average Percent Residual Oil Saturation	50.5
Average Percent Residual Water Saturation	33.0
Average Percent Total Residual Fluid Saturation	83.5
Average Original Oil Content, Bbls./A. Ft.	841.
Average Oil Recovery, Bbls./A. Ft.	100.
Average Residual Oil Content, Bbls./A. Ft.	741.
Total Original Oil Content, Bbls./Acre	1,680.
Total Oil Recovery, Bbls./Acre	199.
Total Residual Oil Content, Bbls./Acre	1,481.
Average Effective Permeability, Millidarcys	1.3
Average Initial Fluid Production Pressure, p.s.i.	37.5

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
90 70 50 30 10
20 40 60 80
10 20 30 40 50
1 2 3 4 5
660
661
662
663
664
NO CORE
668
669
670
671
672
673
674
675
676
KEY:
SHALY CALCAREOUS SANDSTONE
CARBONACEOUS CALCAREOUS SANDSTONE
FLOODPOT RESIDUAL OIL SATURATION

FOSSILIFEROUS SHALY CALCAREOUS SANDSTONE

IMPERMEABLE TO WATER

RANTOUL ENERGY CORPORATION

DUNNIVAN LEASE

WELL NO. 28-D

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
660.0 - 671.0	7.0	18.2	45.4	32.1	20.5	
671.0 - 676.7	5.7	14.0	22.4	62.5	3.8	
660.0 - 676.7	12.7	16.3	35.1	45.8	15.9	380 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
JULY , 1981

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