



OILFIELD RESEARCH LABORATORIES

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June 30, 1981

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

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary cores taken from the Dunnivan Lease, Well No. B6-D, located in Franklin County, Kansas and submitted to our laboratory on June 22, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/kas

5 c to Topeka, Kansas

- REGISTERED ENGINEERS -

CORE ANALYSIS - WATER ANALYSIS - REPRESSURING ENGINEERING - SURVEYING & MAPPING - PROPERTY EVALUATION & OPERATION

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GENERAL INFORMATION & SUMMARY

Company Rantoul Energy Corporation Lease Dunnivan Well No. B6-D
 Location _____
 Section 32 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet		
Name of Sand.....	Squirrel	Cattleman
Top of Core	621.0	735.0
Bottom of Core	632.0	740.8
Top of Sand	621.0	735.0
Bottom of Sand	632.0	740.8
Total Feet of Permeable Sand	7.0	3.1
Total Feet of Floodable Sand	0.0	

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
	<u>SQUIRREL SAND</u>	
0 - 5	6.5	6.5
30 - 35	0.5	7.0
	<u>CATTLEMAN SAND</u>	
20 - 35	1.5	1.5
45 - 60	1.6	3.1

Average Permeability Millidarcys	4.2	39.2
Average Percent Porosity	15.9	13.6
Average Percent Oil Saturation	32.7	37.6
Average Percent Water Saturation.....	55.1	46.3
Average Oil Content, Bbls./A. Ft.....	406.	424.
Total Oil Content, Bbls./Acre.....	4,469.	2,459.
Average Percent Oil Recovery by Laboratory Flooding Tests.....	0.	5.7
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.....	0.	85.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	0.	262.
Total Calculated Oil Recovery, Bbls./Acre.....	0.	See "Cal. Rec."

Section

OILFIELD RESEARCH LABORATORIES

-2-

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.

Since only the Cattleman sand responded to flooding susceptibility tests, calculated recovery is given for the Cattleman sand only.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
	<u>SQUIRREL SAND</u>
621.0 - 627.2	Grayish brown very shaly sandstone.
627.2 - 627.7	Light brown sandstone.
627.7 - 632.0	Grayish brown very shaly sandstone.
	<u>CATTLEMAN SAND</u>
735.0 - 736.5	Grayish light brown calcareous shaly sandstone.
736.5 - 739.6	Brown slightly calcareous sandstone.
739.6 - 740.8	Grayish light brown slightly calcareous shaly sand- stone.

LABORATORY FLOODING TESTSCATTLEMAN SAND

The Cattleman sand in this core responded to laboratory flooding tests as a total recovery of 262 barrels of oil per acre was obtained from 3.1 feet of sand. The weighted average percent oil saturation was reduced from 40.0 to 34.3, or represents an average recovery of 5.7 percent. The weighted average effective permeability of the samples is 9.48 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 6 samples tested, 4 produced water and oil. This indicates that approximately 67 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERYCATTLEMAN SAND

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 890 barrels of oil per acre. This is an average recovery of 287 barrels per acre foot from 3.1 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	25.0
Average porosity, percent	18.1
Oil saturation after flooding, percent	34.3
Performance factor, percent, estimated	55.0
Net floodable sand, feet	3.1

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Rantoul Energy Corporation Lease Dunnivan Well No. B6-D

Sample No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content Bbbls. / A Ft.	Perm., Mill.	Feet of Sand		Total Oil Content	Perm. Capacity Ft. X md.
			Oil	Water	Total			Ft.	Cum. Ft.		
						<u>SQUIRREL SAND</u>					
1	621.6	13.7	22	75	97	234	Imp.	1.0	1.0	234	0.00
2	622.5	14.3	42	53	95	466	Imp.	1.0	2.0	466	0.00
3	623.5	15.1	33	53	86	387	0.37	1.0	3.0	387	0.37
4	624.6	14.0	42	50	92	456	Imp.	1.0	4.0	456	0.00
5	625.5	18.3	26	47	73	369	4.7	1.0	5.0	369	4.70
6	626.5	18.7	43	41	84	624	2.7	1.2	6.2	749	3.24
7	627.5	20.9	33	37	70	535	30.	0.5	6.7	268	15.00
8	628.5	15.5	30	55	85	361	1.8	1.3	8.0	469	2.34
9	629.5	17.5	33	56	89	448	3.3	1.0	9.0	448	3.30
10	630.5	15.8	25	70	95	306	0.26	1.0	10.0	306	0.26
11	631.5	13.6	30	63	93	317	Imp.	1.0	11.0	317	0.00
						<u>CATTLEMAN SAND</u>					
12	735.6	10.1	51	45	96	400	Imp.	1.5	1.5	600	0.00
13	736.6	18.8	39	41	80	569	23.	0.5	2.0	285	11.50
14	737.5	19.8	32	28	60	492	55.	0.6	2.6	295	33.00
15	738.5	15.5	29	35	64	349	30.	1.0	3.6	349	30.00
16	739.5	19.5	56	33	89	847	47.	1.0	4.6	847	47.00
17	740.3	5.9	15	80	95	69	Imp.	1.2	5.8	83	0.00

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

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	Ebls./A. Ft.			
1	621.6	13.8	22	236	0	0	22	74	236	0	Imp.	-
2	622.5	14.7	41	468	0	0	41	55	468	0	Imp.	-
3	623.5	15.2	33	389	0	0	33	54	389	0	Imp.	-
4	624.6	14.1	42	459	0	0	42	51	459	0	Imp.	-
5	625.5	18.2	26	367	0	0	26	48	367	0	Imp.	-
6	626.5	18.8	43	627	0	0	43	42	627	0	Imp.	-
7	627.5	20.8	33	533	0	0	33	38	533	0	Imp.	-
8	628.5	15.6	30	363	0	0	30	56	363	0	Imp.	-
9	629.5	17.6	33	451	0	0	33	57	451	0	Imp.	-
10	630.5	15.3	26	309	0	0	26	70	309	0	Imp.	-
11	631.5	13.6	30	317	0	0	30	62	317	0	Imp.	-
<u>SQUIRREL SAND</u>												
<u>CATTLEMAN SAND</u>												
12	735.6	10.2	51	404	0	0	51	44	404	0	Imp.	-
13	736.6	19.2	38	566	6	89	32	50	477	49	0.74	40
14	737.5	19.9	32	494	3	46	29	68	448	295	5.25	20
15	738.5	15.1	30	351	2	23	28	53	328	24	0.37	45
16	739.5	19.6	56	852	11	167	45	45	685	102	25.49	15
17	740.3	6.0	15	70	0	0	15	81	70	0	Imp.	-

Well No. B6-D

Lease

Dunnivan

Company

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

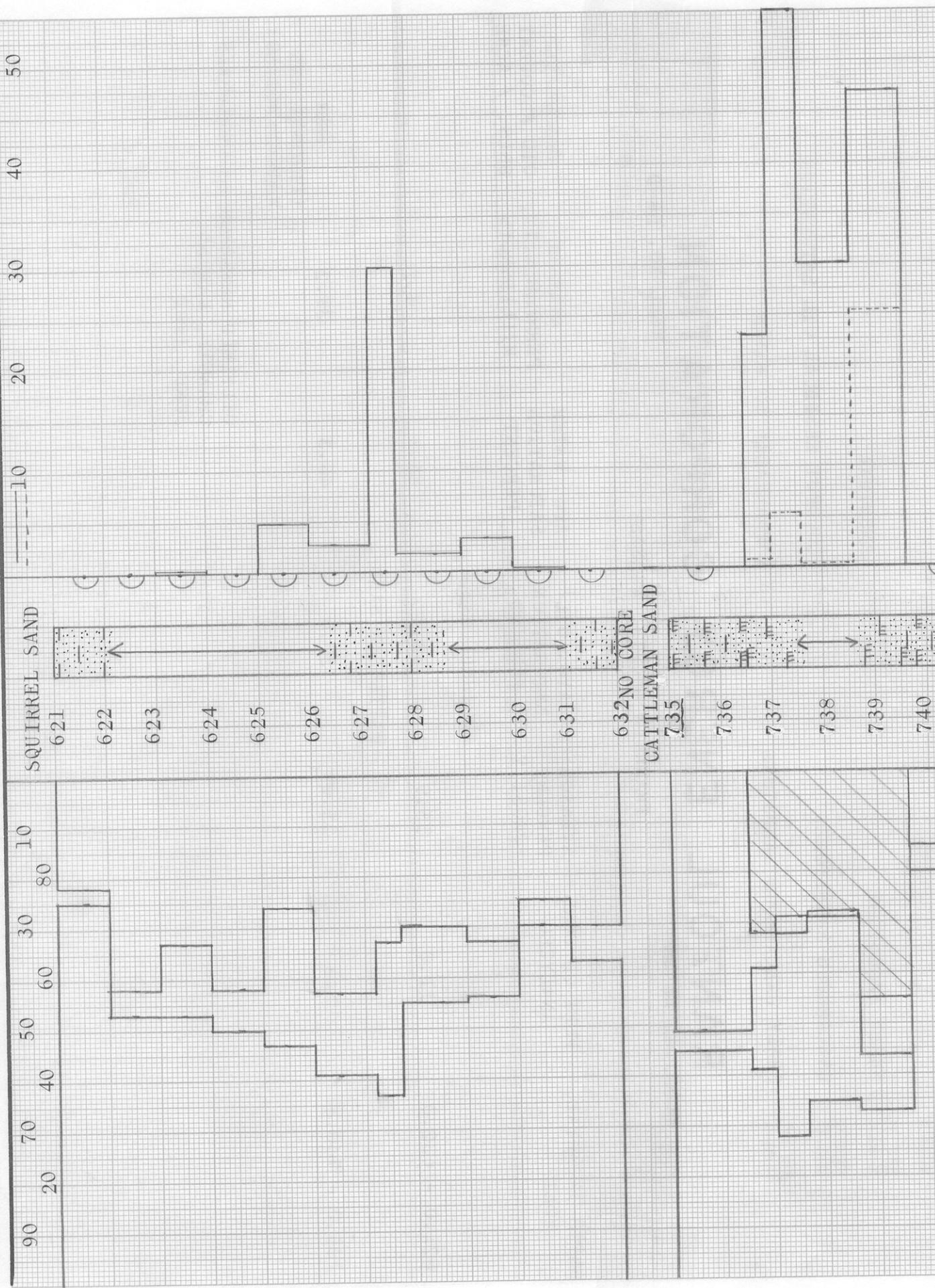
Company	Rantoul Energy Corporation	Lease	Dunnivan	Well No.	B6-D
Depth Interval, Feet	<u>CATTLEMAN SAND</u> 735.0 - 740.8				
Feet of Core Analyzed	3.1				
Average Percent Porosity	18.1				
Average Percent Original Oil Saturation	40.0				
Average Percent Oil Recovery	5.7				
Average Percent Residual Oil Saturation	34.3				
Average Percent Residual Water Saturation	52.8				
Average Percent Total Residual Fluid Saturation	87.1				
Average Original Oil Content, Bbls./A. Ft.	576.				
Average Oil Recovery, Bbls./A. Ft.	85.				
Average Residual Oil Content, Bbls./A. Ft.	491.				
Total Original Oil Content, Bbls./Acre	1,783.				
Total Oil Recovery, Bbls./Acre	262.				
Total Residual Oil Content, Bbls./Acre	1,521.				
Average Effective Permeability, Millidarcys	9.48				
Average Initial Fluid Production Pressure, p.s.i.	30.0				

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

PERMEABILITY, IN MILLIDARCYS
 EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS

PERMEABILITY, IN MILLIDARCYS

WATER SAT., PERCENT
 OIL SAT., PERCENT



KEY:



SHALY SANDSTONE



SANDSTONE



CALCAREOUS SANDSTONE



FLOODPOT RESIDUAL OIL SATURATION



SHALY CALCAREOUS SANDSTONE



IMPERMEABLE TO WATER

RANTOUL ENERGY CORPORATION

DUNNIVAN LEASE

FRANKLIN COUNTY, KANSAS

WELL NO. B6-D

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE		AVG. OIL		AVG. WATER		AVERAGE		CALCULATED
		POROSITY	PERCENT	SATURATION	PERCENT	SATURATION	PERCENT	PERMEABILITY,	OIL RECOVERY	
				PERCENT		PERCENT		MILLIDARCS		BBLs. / ACRE

621.0 - 632.0

11.0

15.9

32.7

55.1

4.2

-

735.0 - 740.8

5.8

13.6

37.6

46.3

39.2

890

(PRIMARY AND
WATERFLOODING)

SQUIRREL SAND

CATTLEMAN SAND

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
JUNE, 1981

PDC