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

May 18, 1981

James E. Russell Petroleum, Inc.
P. O. Box 2618
Abilene, Texas 79604

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Burke Lease, Well No. W-1, located in Anderson County, Kansas and submitted to our laboratory on May 6, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

Sanford A. Michel

SAM/kas

3 c to Abilene, Texas 79604
2 c to Chanute, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company James E. Russell Petroleum, Inc. Lease Burke Well No. W-1

Location 1040' SNL & 930' EWL NW¼

Section 26 Twp. 22S Rge. 19E County Anderson State Kansas

Elevation, Feet — Datum: Mean Sea Level (Ground Level)	1092.7
Name of Sand	Squirrel
Top of Core	786.0
Bottom of Core	804.7
Top of Sand	787.8
Bottom of Sand	800.4
Total Feet of Permeable Sand	12.6
Total Feet of Floodable Sand	6.3

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	6.2	6.2
10 - 30	4.1	10.3
30 & Above	2.3	12.6

Average Permeability Millidarcys	17.5
Average Percent Porosity	17.4
Average Percent Oil Saturation	51.9
Average Percent Water Saturation	31.6
Average Oil Content, Bbls./A. Ft.	688.
Total Oil Content, Bbls./Acre	8,667.
Average Percent Oil Recovery by Laboratory Flooding Tests	13.4
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	172.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	1,083.
Total Calculated Oil Recovery, Bbls./Acre	See "Calculated Recovery" Section

The core was sampled by a representative of Oilfield Research Laboratories. 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:

Depth Interval, Feet	Description
786.0 - 787.8	Shale, gray, sandy.
787.8 - 789.9	Sandstone, brown, shaly.
789.9 - 792.7	Sandstone, brown.
792.7 - 800.4	Sandstone, brown, laminated, shaly.
800.4 - 804.7	Shale, gray, sandy.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,083 barrels of oil per acre was obtained from 6.3 feet of sand. The weighted average percent oil saturation was reduced from 51.5 to 38.1, or represents an average recovery of 13.4 percent. The weighted average effective permeability of the samples is 0.63 millidarcys, while the average initial fluid production pressure is 35 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 12 samples tested, 6 produced water and oil, and 2 produced water only This indicates that approximately 50 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 1,410 barrels of oil per acre. This is an average recovery of 224 barrels per acre foot from 6.3 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	17.3
Oil saturation after flooding, percent	38.1
Performance factor, percent, estimated	50.0
Net floodable sand, feet	6.3

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease Burke Well No. W-1

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	788.5	16.7	65	19	84	842	7.1	1.1	1.1	926	7.81
2	789.5	15.7	62	26	88	755	1.9	1.0	2.1	755	1.90
3	790.5	17.0	48	34	82	633	25.	1.0	3.1	633	25.00
4	791.5	17.1	52	29	81	690	26.	0.8	3.9	552	20.80
5	792.5	18.5	48	29	77	689	43.	1.0	4.9	689	43.00
6	793.5	14.8	55	42	97	632	6.0	1.1	6.0	695	6.60
7	794.5	16.1	70	16	86	874	5.4	1.0	7.0	874	5.40
8	795.4	15.9	54	42	96	666	0.79	1.0	8.0	666	0.79
9	796.4	18.8	52	36	88	758	16.	1.0	9.0	758	16.00
10	797.5	16.2	55	38	93	691	3.1	1.0	10.0	691	3.10
11	798.5	20.3	31	38	69	488	28.	1.3	11.3	634	36.40
12	799.5	20.2	39	29	68	611	41.	1.3	12.6	794	53.30

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease Burke Well No. W-1

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
787.8 - 794.8	7.0	15.8	110.51
794.8 - 800.4	5.6	19.6	109.59
787.8 - 800.4	12.6	17.5	220.10

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
787.8 - 794.8	7.0	16.5	57.4	27.9	732	5,124
794.8 - 800.4	5.6	18.5	45.0	36.3	633	3,543
787.8 - 800.4	12.6	17.4	51.9	31.6	688	8,667

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease Burke Well No. W-1

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	788.5	16.5	65	832	25	320	40	56	512	13	0.75	45
2	789.5	15.8	62	760	0	0	62	30	760	0	Imp.	-
3	790.5	17.1	48	637	0	0	48	46	637	86	1.95	30
4	791.5	17.0	52	686	13	171	39	57	515	26	0.67	40
5	792.5	18.5	48	689	10	144	38	59	545	36	0.75	25
6	793.5	14.8	55	632	18	207	37	60	425	44	1.20	25
7	794.5	16.0	52	645	13	161	39	50	484	8	0.30	25
8	795.4	15.8	54	662	0	0	54	44	662	0	Imp.	-
9	796.4	18.4	53	757	0	0	53	37	757	0	Imp.	-
10	797.5	16.1	55	687	0	0	55	40	687	12	0.15	40
11	798.5	20.8	30	484	0	0	30	40	484	0	Imp.	-
12	799.5	20.1	39	608	3	47	36	46	561	14	0.22	50

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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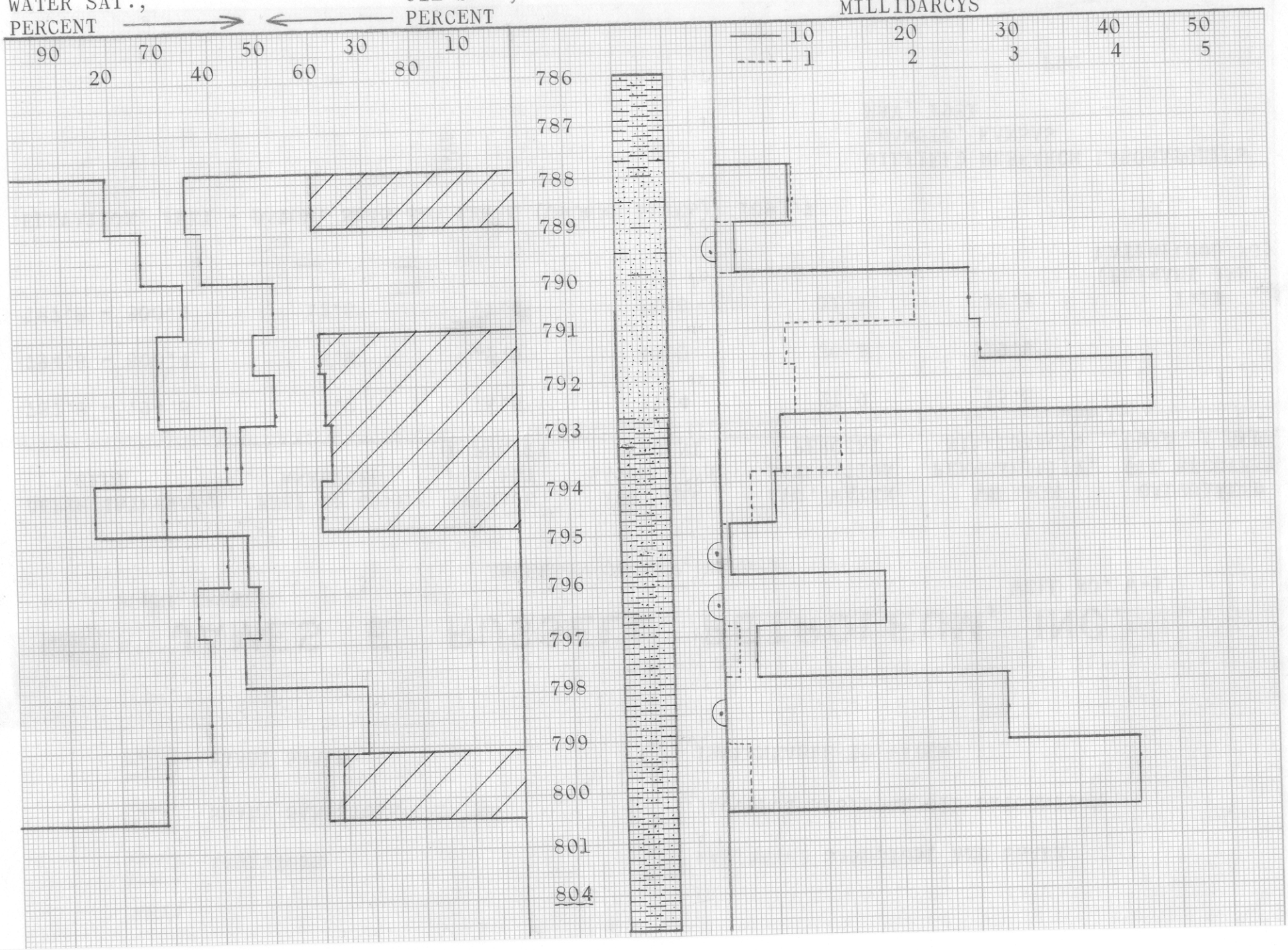
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company James E. Russell Petroleum, Inc. Lease Burke Well No. W-1

Depth Interval, Feet	787.8 - 794.8	794.8 - 800.4	787.8 - 800.4
Feet of Core Analyzed	5.0	1.3	6.3
Average Percent Porosity	16.5	20.1	17.3
Average Percent Original Oil Saturation	54.7	39.0	51.5
Average Percent Oil Recovery	16.1	3.0	13.4
Average Percent Residual Oil Saturation	38.6	36.0	38.1
Average Percent Residual Water Saturation	56.4	46.0	54.3
Average Percent Total Residual Fluid Saturation	95.0	82.0	92.4
Average Original Oil Content, Bbls./A. Ft.	698.	608.	680.
Average Oil Recovery, Bbls./A. Ft.	204.	47.	172.
Average Residual Oil Content, Bbls./A. Ft.	494.	561.	508.
Total Original Oil Content, Bbls./Acre	3,494.	790.	4,284.
Total Oil Recovery, Bbls./Acre	1,022.	61.	1,083.
Total Residual Oil Content, Bbls./Acre	2,472.	729.	3,201.
Average Effective Permeability, Millidarcys	0.75	0.22	0.63
Average Initial Fluid Production Pressure, p.s.i.	32.0	50.0	35.0

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


WATER SAT., PERCENT
OIL SAT., PERCENT
90
70
50
30
10
20
40
60
80
PERMEABILITY, IN MILLIDARCYS
EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS
10
20
30
40
50
1
2
3
4
5
786
787
788
789
790
791
792
793
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795
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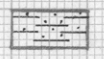
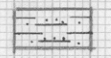
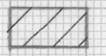
KEY:

 SANDSTONE

 SHALY SANDSTONE

 SANDY SHALE

 LAMINATED SANDSTONE AND SHALE

 FLOODPOT RESIDUAL OIL SATURATION

 IMPERMEABLE TO WATER

JAMES E. RUSSELL PETROLEUM, INC.

BURKE LEASE WELL NO. W-1

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
787.8 - 794.8	7.0	16.5	57.4	27.9	15.8	
794.8 - 800.4	5.6	18.5	45.0	36.3	19.6	
787.8 - 800.4	12.6	17.4	51.9	31.6	17.5	1410 (PRIMARY AND WATERFLOODING)

ELEVATION, FEET - DATUM: MEAN SEA LEVEL (GROUND LEVEL) 1092.7

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
MAY, 1981

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