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

July 1, 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 Unit 2, Robbins (Martin Glover) Lease, Well No. R-30, located in Anderson 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

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

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company James E. Russell Petroleum, Inc. Lease Unit 2, Robbins (Martin Glover) Well No. R-30

Location 1020' SNL & 2280' EWL, NE¼

Section 32 Twp. 22S Rge. 19E County Anderson State Kansas

Elevation, Feet — Datum: Mean Sea Level (Ground Level)	1091.8
Name of Sand	Squirrel
Top of Core	775.0
Bottom of Core	794.8
Top of Sand	775.0
Bottom of Sand	792.0
Total Feet of Permeable Sand	10.7
Total Feet of Floodable Sand	5.8

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 1	6.2	6.2
10 - 25	1.3	7.5
40 - 80	3.2	10.7

Average Permeability Millidarcys	18.4
Average Percent Porosity	16.9
Average Percent Oil Saturation	33.9
Average Percent Water Saturation	46.6
Average Oil Content, Bbls./A. Ft.	451.
Total Oil Content, Bbls./Acre	6,266.
Average Percent Oil Recovery by Laboratory Flooding Tests	6.3
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	88.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	510.
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
775.0 - 778.2	Sandstone, shaly, slightly calcareous grayish light brown.
778.2 - 778.8	Sandstone, slightly calcareous dark brown.
778.8 - 781.5	Shale, gray.
781.5 - 783.0	Sandstone, slightly calcareous brown.
783.0 - 783.4	Shale, hard gray.
783.4 - 785.8	Shale and sandstone, laminated gray and light brown.
785.8 - 792.0	Shaly sandstone, grayish light brown.
792.0 - 794.8	Shale, gray.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 510 barrels of oil per acre was obtained from 5.8 feet of sand. The weighted average percent oil saturation was reduced from 37.4 to 31.1, or represents an average recovery of 6.3 percent. The weighted average effective permeability of the samples is 3.21 millidarcys, while the average initial fluid production pressure is 29.2 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 13 samples tested, 6 produced water and oil, and 1 produced water only. This indicates that approximately 46 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 1,300 barrels of oil per acre. This is an average recovery of 225 barrels per acre foot from 5.8 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	30.0
Average porosity, percent	18.1
Oil saturation after flooding, percent	31.1
Performance factor, percent, estimated	45.0
Net floodable sand, feet	5.8

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. **Lease** Unit 2, Robbins (Martin Glover) **Well No.** R-30

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	775.4	15.7	51	25	76	621	0.52	1.0	1.0	621	0.52
2	776.5	16.6	46	39	85	592	0.63	1.0	2.0	592	0.63
3	777.5	15.1	43	36	79	504	0.33	1.2	3.2	605	0.40
4	778.5	18.8	30	37	67	438	13.	0.6	3.8	263	7.80
5	782.5	18.2	38	44	82	537	42.	1.5	5.3	806	63.00
6	783.5	24.7	27	39	66	517	78.	1.0	6.3	517	78.00
7	784.5	21.9	35	26	61	595	43.	0.7	7.0	417	30.10
8	785.5	19.4	43	31	74	647	21.	0.7	7.7	453	14.70
9	786.5	12.3	18	75	93	172	Imp.	1.6	9.3	275	0.00
10	788.5	13.0	23	68	91	232	Imp.	1.6	10.9	371	0.00
11	789.6	16.1	35	56	91	437	0.52	1.0	11.9	437	0.52
12	790.5	17.9	34	50	84	472	0.17	1.0	12.9	472	0.17
13	791.4	17.6	32	39	71	437	0.74	1.0	13.9	437	0.74

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease Unit 2, Robbins (Martin Glover) Well No. R-30

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
775.0 - 785.8	7.7	25.3	195.15
785.8 - 792.0	3.0	0.48	1.43
775.0 - 792.0	10.7	18.4	196.58

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
775.0 - 785.8	7.7	18.5	39.6	35.6	555	4,274
785.8 - 792.0	6.2	14.9	26.9	60.3	321	1,992
775.0 - 792.0	13.9	16.9	33.9	46.6	451	6,266

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease Unit 2, Robbins (Martin Glover) Well No. R-30

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	775.4	15.8	51	625	10	123	41	46	502	4	0.20	45
2	776.5	16.7	46	596	0	0	46	40	596	0	Imp.	-
3	777.5	15.2	43	507	0	0	43	37	507	0	Imp.	-
4	778.5	18.4	31	443	3	43	28	68	400	76	1.12	15
5	782.5	18.3	38	539	11	156	27	56	383	372	10.83	25
6	783.5	24.2	28	526	0	0	28	67	526	4	0.30	50
7	784.5	21.8	35	592	5	85	30	64	507	96	1.27	25
8	785.5	19.5	43	651	0	0	43	32	651	0	Imp.	-
9	786.5	12.4	18	173	0	0	18	76	173	0	Imp.	-
10	788.5	13.1	23	234	0	0	23	73	234	0	Imp.	-
11	789.6	16.2	35	440	0	0	35	57	440	0	Imp.	-
12	790.5	17.4	34	459	3	40	31	58	419	2	0.09	30
13	791.4	17.7	32	439	2	27	30	64	412	20	0.50	35

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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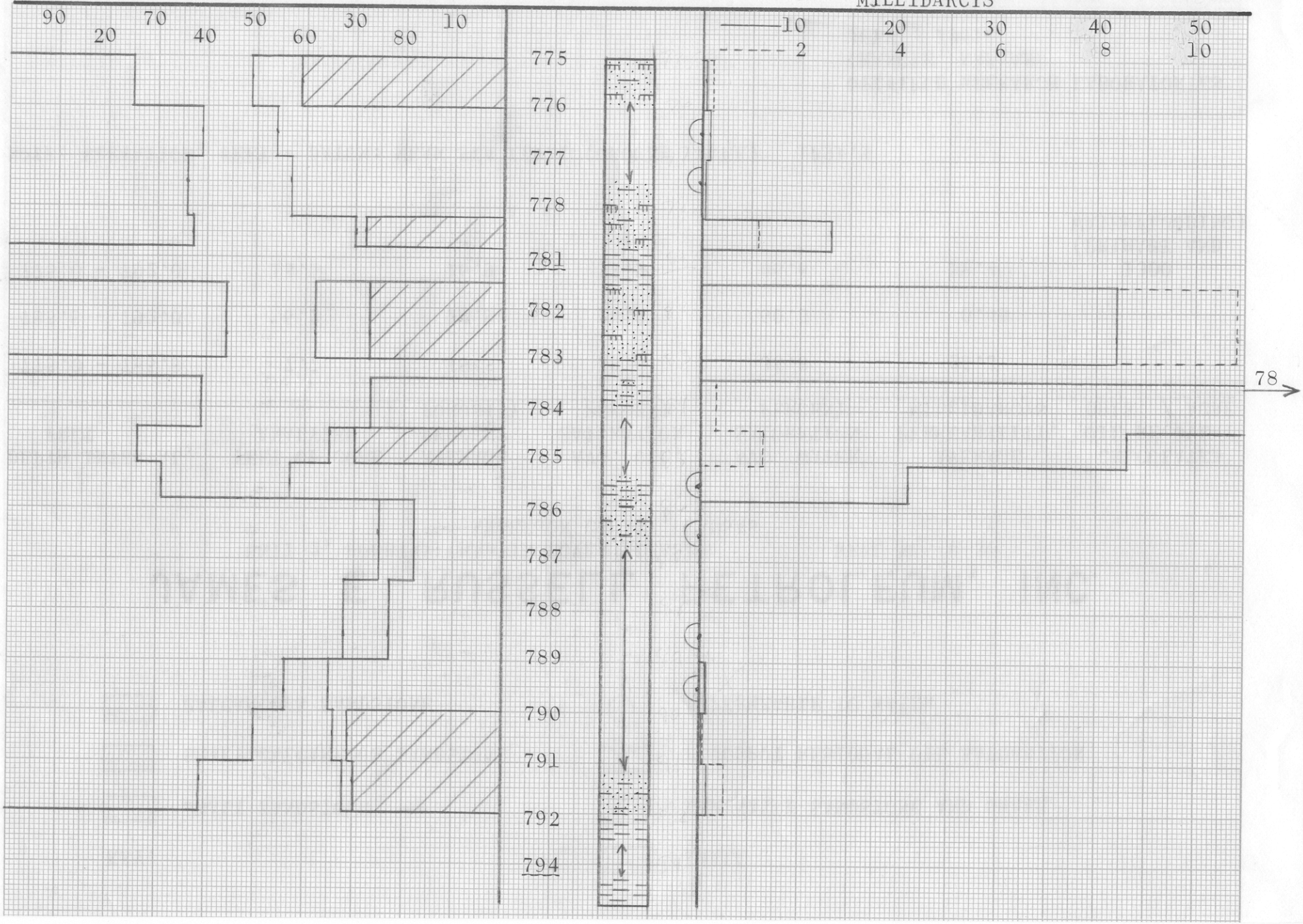
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company James E. Russell Petroleum, Inc. Lease Unit 2, Robbins (Martin Glover) Well No. R-30

Depth Interval, Feet	775.0 - 785.8	785.8 - 792.0	775.0 - 792.0
Feet of Core Analyzed	3.8	2.0	5.8
Average Percent Porosity	18.3	17.6	18.1
Average Percent Original Oil Saturation	39.8	33.5	37.4
Average Percent Oil Recovery	8.4	2.5	6.3
Average Percent Residual Oil Saturation	31.4	31.0	31.1
Average Percent Residual Water Saturation	56.7	61.0	58.2
Average Percent Total Residual Fluid Saturation	88.1	92.0	89.3
Average Original Oil Content, Bbls./A. Ft.	557.	450.	520.
Average Oil Recovery, Bbls./A. Ft.	117.	34.	88.
Average Residual Oil Content, Bbls./A. Ft.	440.	416.	432.
Total Original Oil Content, Bbls./Acre	2,115.	898.	3,013.
Total Oil Recovery, Bbls./Acre	443.	67.	510.
Total Residual Oil Content, Bbls./Acre	1,672.	831.	2,503.
Average Effective Permeability, Millidarcys	4.74	0.30	3.21
Average Initial Fluid Production Pressure, p.s.i.	27.5	32.5	29.2

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
2 4 6 8 10
775
776
777
778
781
782
783
784
785
786
787
788
789
790
791
792
794
78

KEY:

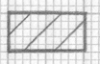

SHALY SANDSTONE


SHALY CALCAREOUS SANDSTONE


CALCAREOUS SANDSTONE


SHALE


LAMINATED SANDSTONE AND SHALE


FLOODPOT RESIDUAL OIL SATURATION


IMPERMEABLE TO WATER

JAMES E. RUSSELL PETROLEUM, INC.

UNIT 2, ROBBINS (MARTIN GLOVER) LEASE WELL NO. R-30
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
775.0 - 785.8	7.7	18.5	39.6	35.6	25.3	
785.8 - 792.0	6.2	14.9	26.9	60.3	0.48	
775.0 - 792.0	13.9	16.9	33.9	46.6	18.4	1300 (PRIMARY AND WATERFLOODING)

NOTE: ELEVATION, FEET - DATUM: MEAN SEA LEVEL (GROUND LEVEL) 1091.8

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
JULY , 1981

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