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

December 9, 1982

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 (Martin-Glover) Lease, Well No. R-35, located in Anderson County, Kansas and submitted to our laboratory on December 6, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel
by B.L.

Sanford A. Michel

SAM/rmc

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 (Martin-Glover) Well No. R-35

Location 1980' EWL & 660' SNL, NE¼

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

Elevation, Feet Datum: Mean Sea Level (Ground Level)	1084.0
Name of Sand	Squirrel
Top of Core	775.0
Bottom of Core	794.4
Top of Sand	775.0
Bottom of Sand	791.5
Total Feet of Permeable Sand	12.0
Total Feet of Floodable Sand	6.9

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	6.5	6.5
10 - 20	2.4	8.9
20 - 26	0.7	9.6
127 - 204	2.4	12.0

Average Permeability Millidarcys	39.8
Average Percent Porosity	17.4
Average Percent Oil Saturation	38.4
Average Percent Water Saturation	38.2
Average Oil Content, Bbls./A. Ft.	527.
Total Oil Content, Bbls./Acre	7,165.
Average Percent Oil Recovery by Laboratory Flooding Tests	9.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	147.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	1,013.
Total Calculated Oil Recovery, Bbls./Acre	See "Calculated Recovery" Section

The core was sampled by a representative of Oilfield Research Laboratories. Salt 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 - 776.3	Sandstone, shaly, grayish brown.
776.3 - 776.8	Shale, gray.
776.8 - 777.6	Sandstone, slightly shaly, grayish brown.
777.6 - 779.2	Sandstone, very shaly, grayish brown.
779.2 - 780.0	Shale, gray, slightly sandy.
780.0 - 781.0	Shale, gray, sandstone, brown, alternate layers.
781.0 - 782.7	Sandstone, brown.
782.7 - 782.9	Sandstone, shaly, grayish brown.
782.9 - 783.6	Sandstone, brown.
783.6 - 783.8	Sandstone, brown, shale, gray, alternate layers.
783.8 - 784.0	Sandstone, brown.
784.0 - 784.3	Sandstone, shaly, grayish brown.
784.3 - 785.0	Sandstone, brown with scattered gray shale partings.
785.0 - 786.0	Sandstone, very shaly, grayish brown.
786.0 - 786.5	Sandstone, slightly shaly, brown.
786.5 - 786.7	Sandstone, very shaly, grayish brown.
786.7 - 787.0	Sandstone, brown with gray shale partings.
787.0 - 787.2	Shale, gray.
787.2 - 788.6	Sandstone, brown with gray shale partings.
788.6 - 790.2	Sandstone, shaly, grayish brown.

Depth Interval, Feet	Description
790.2 - 790.7	Sandstone, brown, shale, gray, alternate layers.
790.7 - 791.5	Sandstone, shaly, grayish brown.
791.5 - 792.4	Shale, gray, slightly sandy, with scattered brown sandstone partings.
792.4 - 794.4	Shale, slightly sandy, gray.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,013 barrels of oil per acre was obtained from 6.9 feet of sand. The weighted average percent oil saturation was reduced from 39.4 to 30.4, or represents an average recovery of 9.0 percent. The weighted average effective permeability of the samples is 4.85 millidarcys, while the average initial fluid production pressure is 24.4 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 15 samples tested, 8 produced water and oil. This indicates that approximately 53 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 2,130 barrels of oil per acre. This is an average recovery of 308 barrels per acre foot from 6.9 feet of floodable sand analyzed in this core.

These recovery values were calculated using the following data and assumptions:

Original formation volume factor, estimated	1.06
Reservoir water saturation, percent, estimated	20.0
Average porosity, percent	19.6
Oil saturation after flooding, percent	30.4
Performance factor, percent, estimated	45.0
Net floodable sand, feet	6.9

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease Unit 2 (Martin-Glover) Well No. R-35

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	775.6	16.3	50	31	81	632	1.8	1.3	1.3	822	2.34
2	777.5	17.6	39	30	69	533	6.5	0.8	2.1	426	5.20
3	778.5	9.1	32	63	95	226	Imp.	1.6	3.7	362	0.00
4	780.7	18.9	46	18	64	674	12.	1.0	4.7	674	12.00
5	781.6	23.8	36	25	61	665	203.	1.0	5.7	665	203.00
6	782.6	23.6	47	30	77	861	153.	0.7	6.4	603	107.10
7	783.5	23.0	36	40	76	642	127.	0.7	7.1	449	88.90
8	784.6	18.8	37	37	74	540	18.	0.7	7.8	378	12.60
9	785.4	13.6	26	67	93	274	0.74	1.0	8.8	274	0.74
10	786.4	18.4	47	39	86	671	7.5	0.5	9.3	336	3.75
11	787.6	19.4	42	31	73	632	15.	0.7	10.0	442	10.50
12	788.5	18.9	33	32	65	484	25.	0.7	10.7	339	17.50
13	789.4	14.9	35	24	59	405	3.6	1.6	12.3	648	5.76
14	790.4	16.7	44	37	76	570	6.3	0.5	12.8	285	3.15
15	791.3	20.7	36	61	97	578	5.8	0.8	13.6	462	4.64

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease Unit 2 (Martin-Glover) Well No. R-35

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
775.0 - 779.2	2.1	3.6	7.54
780.0 - 785.0	4.1	103.3	423.60
785.0 - 791.5	5.8	7.9	46.04
775.0 - 791.5	12.0	39.8	477.18

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 - 779.2	3.7	13.5	39.8	44.6	435	1,610
780.0 - 785.0	4.1	21.6	40.5	28.8	675	2,769
785.0 - 791.5	5.8	17.0	36.0	40.7	480	2,786
775.0 - 791.5	13.6	17.4	38.4	38.2	527	7,165

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease Unit 2 (Martin-Glover) Well No. R-35

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	775.6	16.7	49	635	0	0	49	32	635	0	Imp.	-
2	777.5	17.4	39	526	0	0	39	30	526	0	Imp.	-
3	778.5	9.6	31	231	0	0	31	64	231	0	Imp.	-
4	780.7	18.8	46	671	12	175	34	60	496	60	0.97	20
5	781.6	23.9	36	667	11	204	25	61	463	198	18.29	10
6	782.6	23.7	47	864	18	331	29	55	533	306	17.49	10
7	783.5	22.9	36	640	10	178	26	62	462	28	0.45	25
8	784.6	18.7	37	537	0	0	37	38	537	0	Imp.	-
9	785.4	13.1	27	274	0	0	27	66	274	0	Imp.	-
10	786.4	18.3	47	667	9	128	38	50	539	3	0.22	45
11	787.6	19.3	42	629	13	195	29	66	434	32	0.52	25
12	788.5	18.7	33	479	2	29	31	68	450	39	0.87	25
13	789.4	15.1	35	410	3	35	32	57	375	16	0.37	35
14	790.4	16.6	44	567	0	0	44	38	567	0	Imp.	-
15	791.3	20.2	37	580	0	0	37	60	580	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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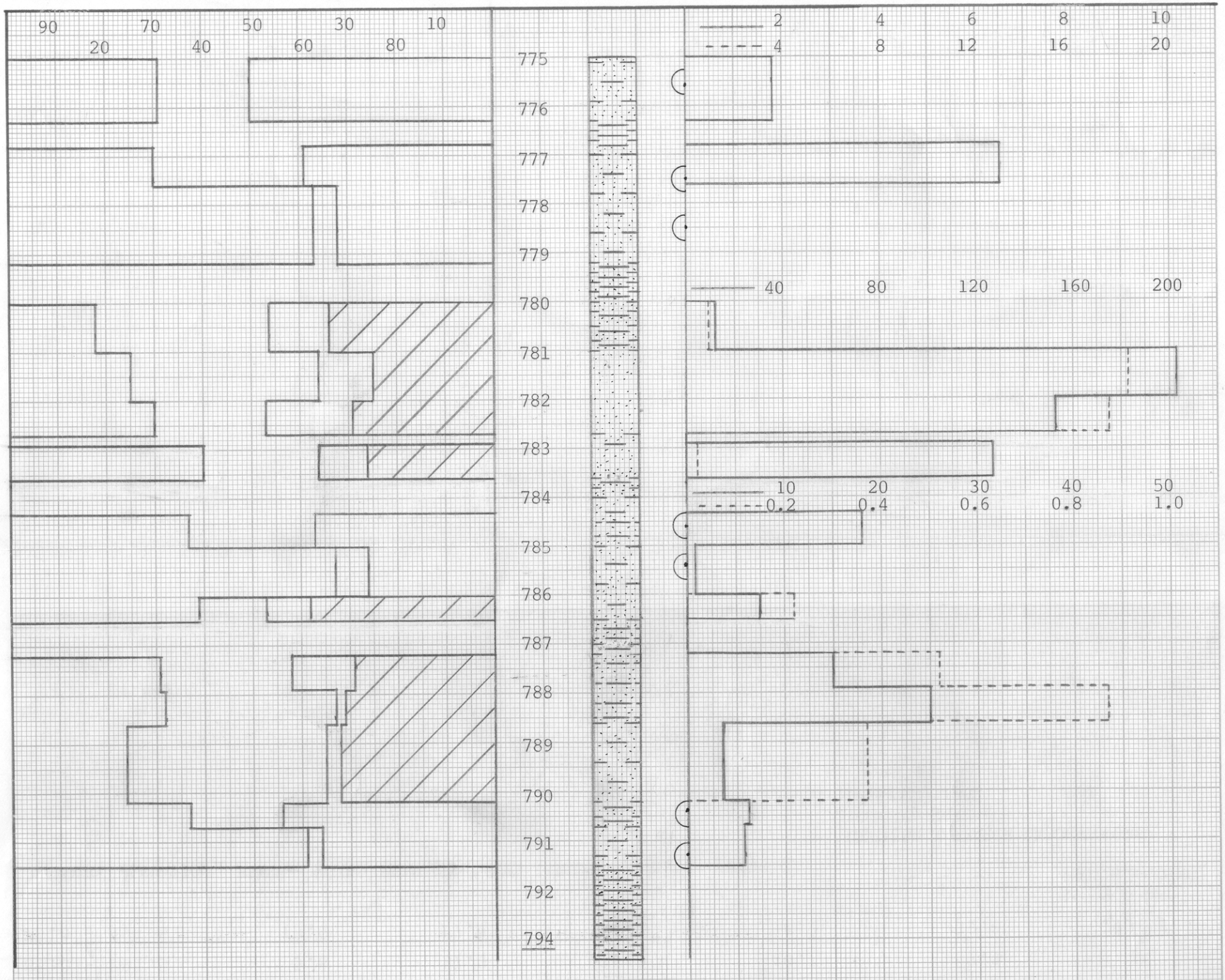
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company James E. Russell Petroleum, Inc. Lease Unit 2 (Martin-Glover) Well No. R-35

Depth Interval, Feet	780.0 - 785.0	785.0 - 791.5	780.0 - 791.5
Feet of Core Analyzed	3.4	3.5	6.9
Average Percent Porosity	22.1	17.1	19.6
Average Percent Original Oil Saturation	41.2	37.8	39.4
Average Percent Oil Recovery	12.5	5.7	9.0
Average Percent Residual Oil Saturation	28.7	32.1	30.4
Average Percent Residual Water Saturation	59.7	60.0	59.8
Average Percent Total Residual Fluid Saturation	88.4	92.1	90.2
Average Original Oil Content, Bbls./A. Ft.	703.	504.	603.
Average Oil Recovery, Bbls./A. Ft.	216.	79.	147.
Average Residual Oil Content, Bbls./A. Ft.	487.	425.	456.
Total Original Oil Content, Bbls./Acre	2,391.	1,766.	4,157.
Total Oil Recovery, Bbls./Acre	736.	277.	1,013.
Total Residual Oil Content, Bbls./Acre	1,655.	1,489.	3,144.
Average Effective Permeability, Millidarcys	9.36	0.48	4.85
Average Initial Fluid Production Pressure, p.s.i.	16.3	32.5	24.4

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
2 4 6 8 10
4 8 12 16 20
40 80 120 160 200
10 20 30 40 50
0.2 0.4 0.6 0.8 1.0
775
776
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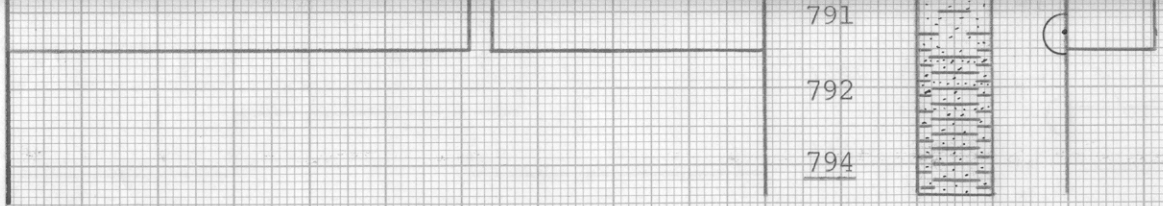

KEY:

SANDSTONE

SHALE

SHALY SANDSTONE

IMPERMEABLE TO WATER

SANDY SHALE

SANDSTONE WITH SHALE PARTINGS

SANDY SHALE WITH SANDSTONE PARTINGS

ALTERNATE LAYERS OF SANDSTONE AND SHALE

FLOODPOT RESIDUAL OIL SATURATION

JAMES E. RUSSELL PETROLEUM, INC.

UNIT 2 (MARTIN GLOVER) LEASE — WELL NO. R-35

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 - 779.2	3.7	13.5	39.8	44.6	3.6	
780.0 - 785.0	4.1	21.6	40.5	28.8	103.3	
785.0 - 791.5	5.8	17.0	36.0	40.7	7.9	
775.0 - 791.5	13.6	17.4	38.4	38.2	39.8	2130 (PRIMARY AND WATERFLOODING)

NOTE: ELEVATION , FEET - DATUM: MEAN SEA LEVEL (GROUND LEVEL) 1084.0

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
DECEMBER, 1982 PDC