OILFIELD RESEARCH LABORATORIES

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

November 23, 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 (H. V. Scully) Lease, Well No. R-39, located in Anderson County, Kansas and submitted to our laboratory on November 17, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

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 (H. V. Scully) Well No. R-39

Location 1650' EWL & 2300' SNL, SE¼

Section 29 Twp. 22S Rge. 19E County Anderson State Kansas

Elevation, Feet Datum: Mean Sea Level (Ground Level)	1097.6
Name of Sand	Squirrel
Top of Core	790.0
Bottom of Core	809.8
Top of Sand	790.3
Bottom of Sand	809.0
Total Feet of Permeable Sand	14.8
Total Feet of Floodable Sand	8.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 4	7.2	7.2
4 - 9	3.0	10.2
15 - 28	3.6	13.8
45 - 50	1.0	14.8

Average Permeability Millidarcys	10.8
Average Percent Porosity	14.9
Average Percent Oil Saturation	32.4
Average Percent Water Saturation	53.3
Average Oil Content, Bbls./A. Ft.	388.
Total Oil Content, Bbls./Acre	6,713.
Average Percent Oil Recovery by Laboratory Flooding Tests	7.5
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	104.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	828.
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
790.0 - 790.3	Shale, gray.
790.3 - 791.0	Sandstone, shaly, grayish brown.
791.0 - 792.0	Shale, gray with brown sandstone partings.
792.0 - 792.7	Sandstone, very shaly, grayish brown.
792.7 - 793.1	Shale, gray.
793.1 - 793.8	Sandstone, very shaly, brown.
793.8 - 795.3	Sandstone, very shaly, grayish brown.
795.3 - 796.0	Sandstone, brown, with gray shale partings.
796.0 - 800.6	Sandstone, brown.
800.6 - 803.0	Sandstone, very shaly, grayish brown, with scattered gray shale partings.
803.0 - 805.0	Sandstone, shaly, with scattered gray shale partings.
805.0 - 806.0	Sandstone, brown, shale, gray, alternate layers.
806.0 - 808.0	Sandstone, slightly shaly, brown with scattered gray shale partings.
808.0 - 809.0	Sandstone, very shaly, grayish brown.
809.0 - 809.8	Shale, slightly sandy, gray.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 828 barrels of oil per acre was obtained from 8.0 feet of sand. The weighted average percent oil saturation was reduced from 36.8 to 29.3, or represents an average recovery of 7.5 percent. The weighted average effective permeability of the samples is 1.70 millidarcys, while the average initial fluid production pressure is 31.3 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 18 samples tested, 8 produced water and oil. This indicates that approximately 44 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 2,390 barrels of oil per acre. This is an average recovery of 298 barrels per acre foot from 8.0 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.05
Reservoir water saturation, percent, estimated	25.0
Average porosity, percent	16.6
Oil saturation after flooding, percent	29.3
Performance factor, percent, estimated	55.0
Net floodable sand, feet	8.0

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. **Lease** Unit 2 (H. V. Scully) **Well No.** R-39

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	790.5	14.7	35	44	79	399	3.1	0.7	0.7	279	2.17
2	792.6	14.4	21	58	79	235	0.85	0.7	1.4	165	0.60
3	793.7	14.1	45	46	91	492	0.21	0.7	2.1	344	0.15
4	794.5	9.2	17	79	96	121	Imp.	1.5	3.6	182	0.00
5	795.5	13.4	35	48	83	364	3.5	0.7	4.3	255	2.45
6	796.6	17.5	40	40	80	543	23.	1.0	5.3	543	23.00
7	797.6	17.3	41	39	80	550	24.	1.0	6.3	550	24.00
8	798.5	18.6	33	46	79	476	49.	1.0	7.3	476	49.00
9	799.6	17.8	37	46	83	511	15.	1.0	8.3	511	15.00
10	800.4	20.9	56	29	85	908	27.	0.6	8.9	545	16.20
11	801.6	14.5	26	67	93	292	0.95	1.4	10.3	409	1.33
12	802.5	13.3	36	54	90	372	0.22	1.0	11.3	372	0.22
13	803.5	14.1	11	70	81	120	1.9	1.0	12.3	120	1.90
14	804.6	13.9	17	64	81	183	5.2	1.0	13.3	183	5.20
15	805.4	14.5	55	36	91	619	3.9	1.0	14.3	619	3.90
16	806.5	15.9	37	40	77	456	8.3	1.0	15.3	456	8.30
17	807.6	16.6	31	59	90	399	6.1	1.0	16.3	399	6.10
18	808.4	12.3	32	62	94	305	Imp.	1.0	17.3	305	0.00

Oilfield Research Laboratories

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease Unit 2 (H. V. Scully) Well No. R-39

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
790.3 - 796.0	2.8	1.9	5.37
796.0 - 800.6	4.6	27.7	127.20
800.6 - 809.0	7.4	3.6	26.95
790.3 - 809.0	14.8	10.8	159.52

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
790.3 - 796.0	4.3	12.4	28.1	59.5	285	1,225
796.0 - 800.6	4.6	18.2	40.1	41.0	571	2,625
800.6 - 809.0	8.4	14.4	30.4	57.0	341	2,863
790.3 - 809.0	17.3	14.9	32.4	53.3	388	6,713

Oilfield Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease Unit 2 (H. V. Scully) Well No. R-39

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	790.5	15.2	34	401	0	0	34	45	401	0	Imp.	-
2	792.6	14.9	20	231	0	0	20	59	231	0	Imp.	-
3	793.7	14.2	45	496	0	0	45	46	496	0	Imp.	-
4	794.5	9.0	17	119	0	0	17	79	119	0	Imp.	-
5	795.5	13.9	34	367	0	0	34	49	367	0	Imp.	-
6	796.6	17.3	40	537	11	148	29	61	389	164	2.62	20
7	797.6	17.4	41	553	12	162	29	60	391	22	0.75	25
8	798.5	18.5	33	474	5	72	28	64	402	14	0.37	40
9	799.6	17.9	37	514	11	153	26	66	361	328	8.40	15
10	800.4	20.8	56	904	20	323	36	54	581	124	1.87	25
11	801.6	14.2	26	286	2	22	24	70	264	2	0.08	40
12	802.5	13.3	36	371	3	31	33	64	340	2	0.08	40
13	803.5	14.4	11	123	0	0	11	70	123	0	Imp.	-
14	804.6	13.4	18	187	0	0	18	63	187	0	Imp.	-
15	805.4	14.6	55	623	0	0	55	37	623	0	Imp.	-
16	806.5	15.8	37	454	3	37	34	50	417	3	0.11	45
17	807.6	16.5	31	397	0	0	31	59	397	0	Imp.	-
18	808.4	12.8	31	308	0	0	31	63	308	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.

Oilfield Research Laboratories

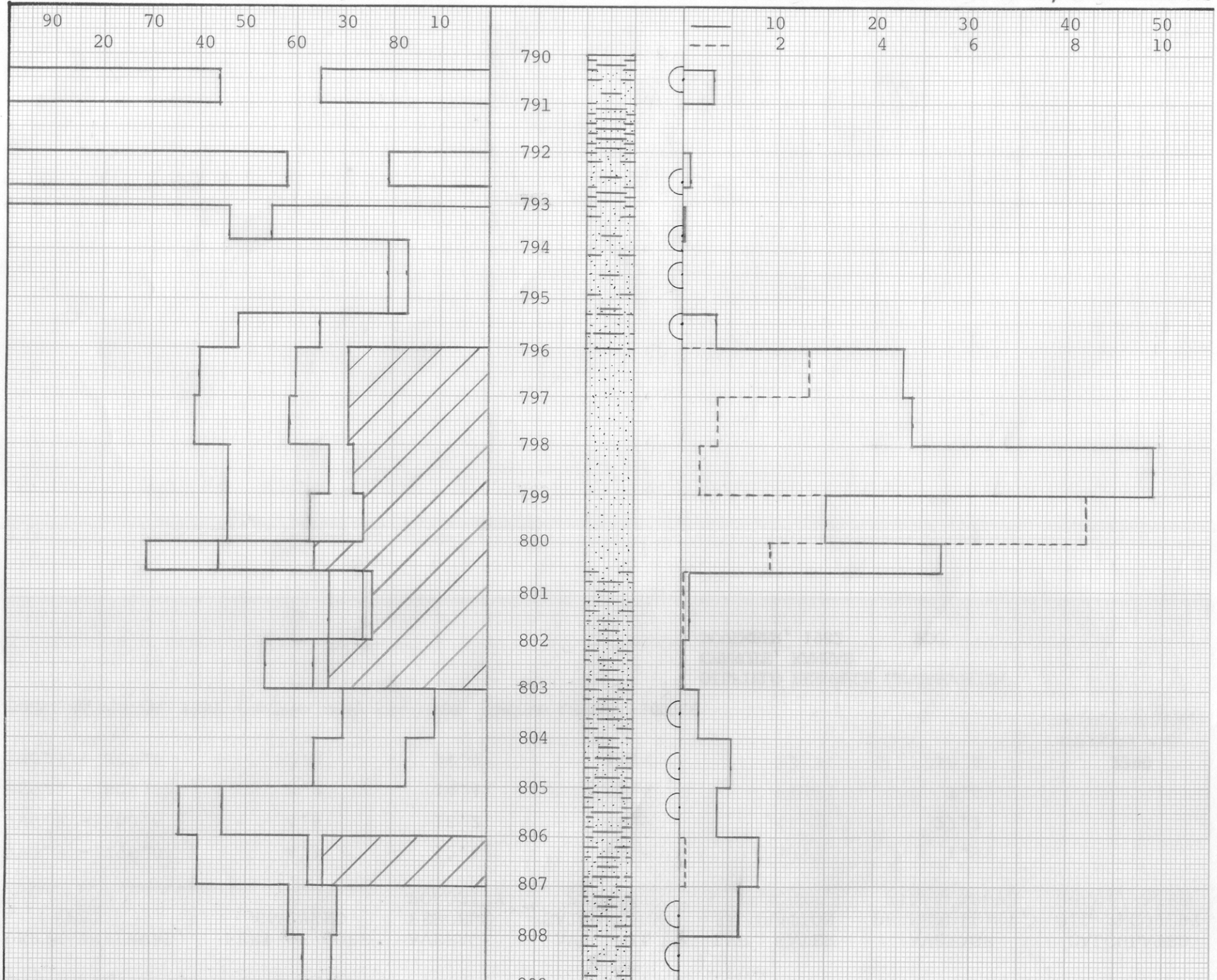
SUMMARY OF LABORATORY FLOODING TESTS

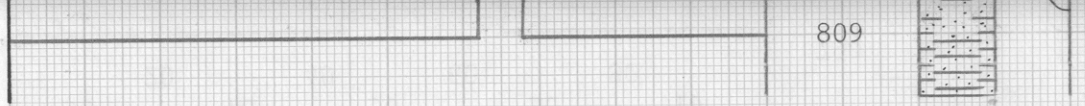
TABLE V

Company James E. Russell Petroleum, Inc. Lease Unit 2 (H. V. Scully) Well No. R-39

Depth Interval, Feet	796.0 - 800.6	800.6 - 809.0	796.0 - 809.0
Feet of Core Analyzed	4.6	3.4	8.0
Average Percent Porosity	18.2	14.4	16.6
Average Percent Original Oil Saturation	40.1	32.2	36.8
Average Percent Oil Recovery	11.1	2.6	7.5
Average Percent Residual Oil Saturation	29.0	29.6	29.3
Average Percent Residual Water Saturation	61.6	62.4	61.9
Average Percent Total Residual Fluid Saturation	90.6	92.0	91.2
Average Original Oil Content, Bbls./A. Ft.	569.	360.	481.
Average Oil Recovery, Bbls./A. Ft.	158.	29.	104.
Average Residual Oil Content, Bbls./A. Ft.	411.	331.	377.
Total Original Oil Content, Bbls./Acre	2,621.	1,226.	3,847.
Total Oil Recovery, Bbls./Acre	729.	99.	828.
Total Residual Oil Content, Bbls./Acre	1,892.	1,127.	3,019.
Average Effective Permeability, Millidarcys	2.89	0.089	1.70
Average Initial Fluid Production Pressure, p.s.i.	25.0	41.7	31.3

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
2 4 6 8 10
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808



KEY:

- SANDSTONE
- SHALE
- SANDY SHALE
- IMPERMEABLE TO WATER
- FLOODPOT RESIDUAL OIL SATURATION
- SHALE WITH SANDSTONE PARTINGS
- SHALY SANDSTONE
- SANDSTONE WITH SHALE PARTINGS
- SHALY SANDSTONE WITH SHALE PARTINGS
- ALTERNATE LAYERS OF SANDSTONE AND SHALE

JAMES E. RUSSELL PETROLEUM, INC.

UNIT 2 (H.V. SCULLY) LEASE WELL NO. R-39

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
790.3 - 796.0	4.3	12.4	28.1	59.5	1.9	
796.0 - 800.6	4.6	18.2	40.1	41.0	27.7	
800.6 - 809.0	8.4	14.4	30.4	57.0	3.6	
790.3 - 809.0	17.3	14.9	32.4	53.3	10.8	2390 (PRIMARY AND WATERFLOODING)

NOTE: ELEVATION, FEET - DATUM: MEAN SEA LEVEL (GROUND LEVEL) 1097.6

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
NOVEMBER, 1982 PDC