

OILFIELD RESEARCH LABORATORIES

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

July 7, 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, H. V. Scully Lease, Well No. R-33, located in Anderson County, Kansas and submitted to our laboratory on June 25, 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

Unit 2,
 Lease H. V. Scully

Company James E. Russell Petroleum, Inc. Well No. R-33

Location 1965' EWL & 1955' SNL SE $\frac{1}{4}$

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

Elevation, Feet	1089.5
Name of Sand.....	Squirrel
Top of Core	792.0
Bottom of Core	810.5
Top of Sand	792.0
Bottom of Sand	806.0
Total Feet of Permeable Sand	14.0
Total Feet of Floodable Sand	8.1

Distribution of Permeable Sand:
 Permeability Range
 Millidarcys

	Feet	Cum. Ft.
0 - 10	7.8	7.8
10 - 40	4.1	11.9
80 - 160	2.1	14.0

Average Permeability Millidarcys	26.6
Average Percent Porosity	19.4
Average Percent Oil Saturation	36.2
Average Percent Water Saturation.....	35.2
Average Oil Content, Bbls./A. Ft.....	546.
Total Oil Content, Bbls./Acre.....	7,646.
Average Percent Oil Recovery by Laboratory Flooding Tests.....	6.7
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	109.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	881.

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:

<u>Depth Interval, Feet</u>	<u>Description</u>
792.0 - 792.8	Sandstone, slightly calcareous, grayish light brown.
792.8 - 793.7	Shaly sandstone, slightly calcareous, grayish light brown.
793.7 - 794.8	Sandstone, slightly calcareous, brown.
794.8 - 798.0	Sandstone, dark brown.
798.0 - 798.9	Shaly sandstone, grayish light brown.
798.9 - 800.0	Sandstone, light brown.
800.0 - 806.0	Shaly sandstone, grayish light brown.
806.0 - 810.5	Shale, slightly sandy, gray.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 881 barrels of oil per acre was obtained from 8.1 feet of sand. The weighted average percent oil saturation was reduced from 37.5 to 30.8, or represents an average recovery of 6.7 percent. The weighted average effective permeability of the samples is 6.53 millidarcys, while the average initial fluid production pressure is 25.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 14 samples tested, 8 produced water and oil. This indicates that approximately 57 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 2,960 barrels of oil per acre. This is an average recovery of 366 barrels per acre foot from 8.1 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	21.1
Oil saturation after flooding, percent	30.8
Performance factor, percent, estimated	55.0
Net floodable sand, feet	8.1

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease Unit 2, H. V. Scully Well No. R-33

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	792.5	20.4	33	30	63	522	32.	0.8	0.8	418	25.60
2	793.4	20.8	31	30	61	500	6.3	0.9	1.7	450	5.67
3	794.6	24.3	37	34	71	698	158.	1.1	2.8	768	173.80
4	795.5	20.6	40	19	59	639	10.	1.2	4.0	767	12.00
5	796.4	23.0	36	37	73	642	80.	1.0	5.0	642	80.00
6	797.4	19.7	53	22	75	810	13.	1.0	6.0	810	13.00
7	798.4	15.8	27	52	79	331	2.0	0.9	6.9	298	1.80
8	799.4	21.7	30	33	63	505	35.	1.1	8.0	556	38.50
9	800.4	17.9	29	44	73	403	1.5	1.0	9.0	403	1.50
10	801.4	19.8	30	37	67	461	6.3	1.0	10.0	461	6.30
11	802.5	17.0	42	47	89	554	1.1	1.0	11.0	554	1.10
12	803.5	17.8	39	35	74	539	6.6	1.0	12.0	539	6.60
13	804.5	15.7	39	43	82	475	0.47	1.0	13.0	475	0.47
14	805.6	16.7	39	34	73	505	5.8	1.0	14.0	505	5.80

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease Unit 2, H. V. Scully Well No. R-33

Depth Interval, Feet	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
792.0 - 798.0	792.0 - 798.0	6.0	51.7	310.07	38.7	28.4	643	3,855
798.0 - 806.0	798.0 - 806.0	8.0	7.8	62.07	34.4	40.4	474	3,791
792.0 - 806.0	792.0 - 806.0	14.0	26.6	372.14	36.2	35.2	546	7,646

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc.

Lease Unit 2, H. V. Scully

Well No. R-33

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	792.5	20.3	33	520	2	31	31	66	489	176	3.37	20
2	793.4	20.7	31	498	2	32	32	66	466	10	0.75	50
3	794.6	24.2	37	695	9	169	169	60	526	192	9.33	20
4	795.5	20.5	40	636	12	191	191	69	445	192	3.37	20
5	796.4	23.1	36	645	4	72	72	56	573	256	11.99	15
6	797.4	20.1	52	811	15	234	234	60	577	250	10.12	15
7	798.4	15.9	27	333	0	0	0	61	333	0	Imp.	-
8	799.4	21.8	30	507	2	34	34	64	473	250	11.33	20
9	800.4	18.0	29	405	0	0	0	45	405	0	Imp.	-
10	801.4	19.7	30	458	0	0	0	38	458	0	Imp.	-
11	802.5	17.1	42	557	0	0	0	48	557	0	Imp.	-
12	803.5	17.9	39	542	5	69	69	50	473	12	0.65	40
13	804.5	15.8	39	478	0	0	0	44	478	0	Imp.	-
14	805.6	16.6	39	502	0	0	0	34	502	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.

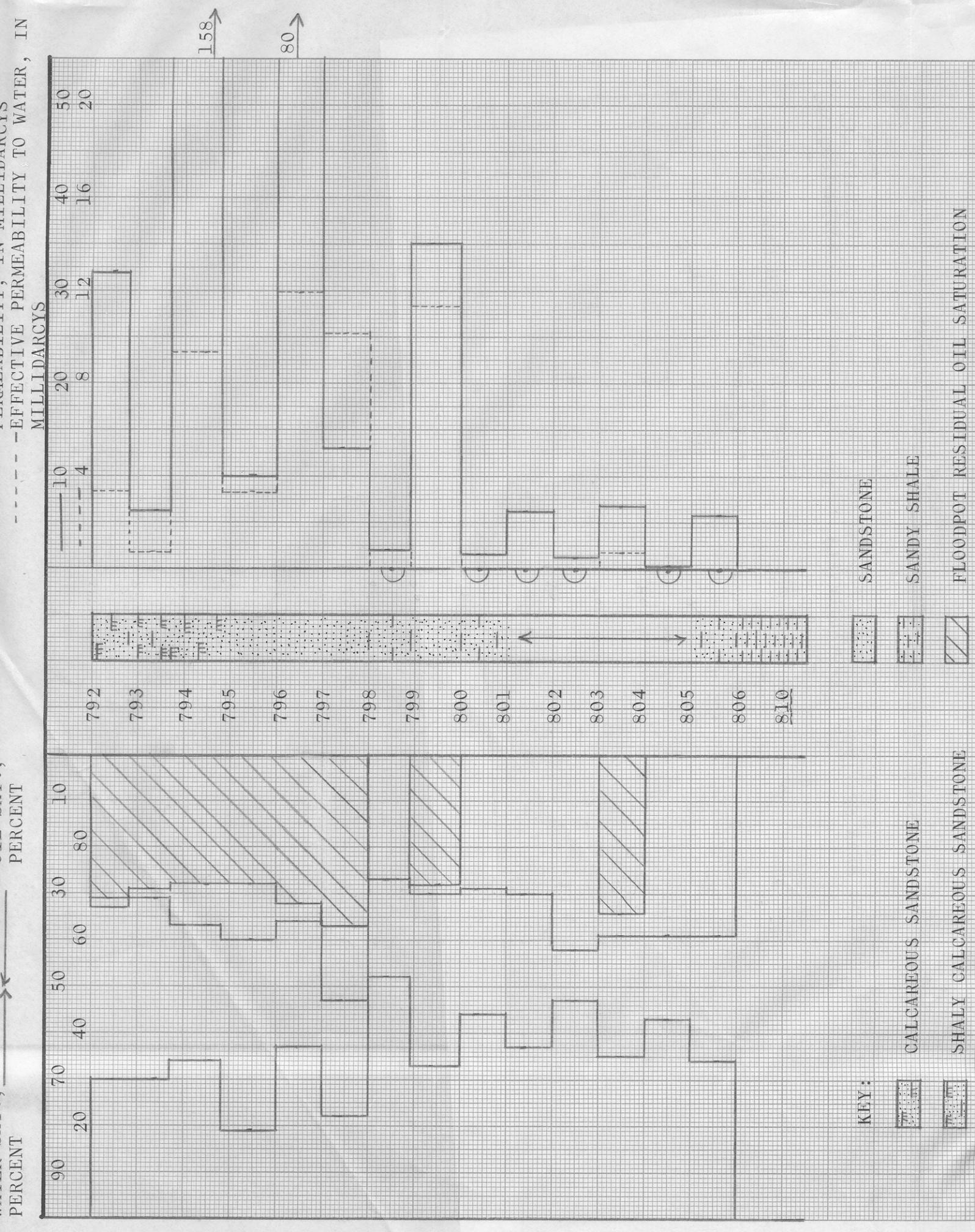
Oilfield Research Laboratories

SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	James E. Russell Petroleum, Inc.	Lease	Unit 2, H. V. Scully	Well No.	R-33
Depth Interval, Feet	792.0 - 798.0		798.0 - 806.0		792.0 - 806.0
Feet of Core Analyzed	6.0		2.1		8.1
Average Percent Porosity	21.5		20.0		21.1
Average Percent Original Oil Saturation	38.8		34.3		37.5
Average Percent Oil Recovery	7.8		3.4		6.7
Average Percent Residual Oil Saturation	30.7		30.9		30.8
Average Percent Residual Water Saturation	62.8		57.3		61.4
Average Percent Total Residual Fluid Saturation	93.8		88.2		92.2
Average Original Oil Content, Bbls./A. Ft.	641.		523.		611.
Average Oil Recovery, Bbls./A. Ft.	129.		50.		109.
Average Residual Oil Content, Bbls./A. Ft.	512.		473.		502.
Total Original Oil Content, Bbls./Acre	3,848.		1,099.		4,947.
Total Oil Recovery, Bbls./Acre	775.		106.		881.
Total Residual Oil Content, Bbls./Acre	3,073.		993.		4,066.
Average Effective Permeability, Millidarcys	6.63		6.24		6.53
Average Initial Fluid Production Pressure, p.s.i.	23.3		30.0		25.0

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



KEY:		SANDSTONE
		SANDY SHALE
		CALCAREOUS SANDSTONE
		SHALY CALCAREOUS SANDSTONE
		SHALY SANDSTONE
		FLOODPOT RESIDUAL OIL SATURATION
		IMPERMEABLE TO WATER

JAMES E. RUSSELL PETROLEUM, INC.

UNIT #2, (H.V. SCULLY) LEASE
ANDERSON COUNTY, KANSAS

WELL NO. R-33

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCY	CALCULATED OIL RECOVERY
792.0 - 798.0	6.0	21.5	38.7	28.4	51.7	
798.0 - 806.0	8.0	17.9	34.4	40.4	7.8	
792.0 - 806.0	14.0	19.4	36.2	35.2	26.6	2960 (PRIMARY AND WATERFLOODING)

NOTE: ELEVATION, FEET - DATUM: MEAN SEA LEVEL (GROUND LEVEL) 1089.5

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
JULY, 1981