

OILFIELD RESEARCH LABORATORIES

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July 30, 1980

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

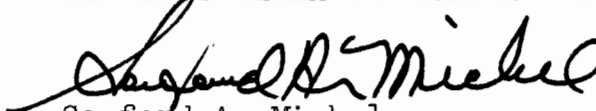
Gentlemen:

Enclosed herewith is the analysis of the rotary core taken from the Minckley B-Section 9 Lease, Well No. 97, Anderson County, Kansas, and submitted to our laboratory on May 27, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/tem

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

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company James E. Russell
Petroleum, Incorporated Lease Minckley B-Sec. 9 Well No. 97

Location 2420' EWL & 1980' SNL NE $\frac{1}{4}$

Section 9 Twp 23S Rge. 19E County Anderson State Kansas

Elevation, Feet . . Datum: Mean Sea Level (G.L.) . 1039.1

Name of Sand Squirrel

Top of Core 718.0

Bottom of Core 778.0

Top of Sand 718.0

Bottom of Sand 763.8

Total Feet of Permeable Sand 24.3

Total Feet of Floodable Sand 0.0

Distribution of Permeable Sand:
 Permeability Range
 Millidarcys

Feet

Cum. Ft.

0 - 1

9.8

9.8

1 - 5

7.0

16.8

5 - 10

6.1

22.9

10 - 15

1.4

24.3

Average Permeability Millidarcys 3.6

Average Percent Porosity 15.4

Average Percent Oil Saturation 34.1

Average Percent Water Saturation 47.2

Average Oil Content, Bbls./A. Ft. 423.

Total Oil Content, Bbls./Acre 15,365.

Average Percent Oil Recovery by Laboratory Flooding Tests 0

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. 0

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre 0

Total Calculated Oil Recovery, Bbls./Acre 0

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The core was sampled by a representative of Oilfield Research Laboratories. Fresh water mud was used as a drilling fluid. The core was from a non-virgin area.

Since the core did not respond to flooding susceptibility tests, no calculated recovery is given.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
718.0 - 719.3	Sandstone, grayish brown, very shaly. First oil show.
719.3 - 724.0	Shale, gray, sandy.
724.0 - 724.8	Shale, brownish gray, sandy.
724.8 - 729.9	Sandstone, grayish brown, very shaly.
729.9 - 731.3	Shale, gray sandy.
731.3 - 732.3	Sandstone, brown, slightly shaly.
732.3 - 735.7	Sandstone, grayish brown very shaly.
735.7 - 736.8	Sandstone and shale, brown and gray, laminated.
736.8 - 738.4	Sandstone, grayish brown, very shaly.
738.4 - 740.1	Sandstone, brown, slightly shaly.
740.1 - 740.6	Sandstone, brown, shaly.
740.6 - 743.7	Sandstone, grayish brown, very shaly.
743.7 - 744.6	Sandstone, brown, shaly.
744.6 - 747.0	Sandstone, grayish, brown, very shaly.
747.0 - 747.8	Sandstone, brown, shaly.
747.8 - 749.2	Sandstone, brown.
749.2 - 750.1	Shale, gray, sandy.

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750.1 - 752.0	Sandstone, and shale, brown and gray, laminated.
752.0 - 752.3	Shale, gray, sandy.
752.3 - 753.3	Sandstone, brown, slightly shaly.
753.3 - 753.7	Sandstone, brown, very shaly.
753.7 - 755.2	Sandstone, brown, shaly.
755.2 - 755.9	Sandstone, grayish brown, very shaly.
755.9 - 756.9	Shale, gray, sandy.
756.9 - 758.3	Sandstone, brown, shaly.
758.3 - 759.2	Sandstone, grayish brown, very shaly.
759.2 - 759.9	Shale, gray, sandy.
759.9 - 763.8	Sandstone, grayish brown, slightly carbonaceous, very shaly.
763.8 - 770.5	Shale, gray, sandy.
770.5 - 772.4	Shale, gray, calcareous, fossiliferous, sandy.
772.4 - 774.8	Shale, gray.
774.8 - 776.5	Shale, hard, gray, fossiliferous, calcareous.
776.5 - 778.0	Shale, gray, fossiliferous, calcareous.

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease Minckley B-Section 9 Well No. 97

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			Ft.	Cum. Ft.		
1	718.5	9.6	20	73	149	Imp.	1.3	1.3	194	0.00
2	725.3	11.3	35	60	307	Imp.	1.2	2.5	368	0.00
3	726.5	14.7	22	74	251	Imp.	1.0	3.5	251	0.00
4	727.5	11.6	3	88	27	Imp.	1.0	4.5	27	0.00
5	728.5	11.6	14	81	126	Imp.	1.0	5.5	126	0.00
6	729.5	9.0	21	70	146	Imp.	0.9	6.4	131	0.00
7	731.5	18.6	43	23	621	8.2	1.0	7.4	621	8.20
8	732.5	14.8	29	52	333	0.61	0.7	8.1	233	0.43
9	733.5	12.8	26	70	258	Imp.	1.0	9.1	258	0.00
10	734.5	14.5	33	57	371	0.32	1.0	10.1	371	0.32
11	735.5	17.9	45	32	625	Imp.	0.7	10.8	438	0.00
12	736.5	16.3	39	37	493	7.4	1.1	11.9	542	8.14
13	737.5	18.8	6	48	88	Imp.	1.6	13.5	141	0.00
14	738.8	17.1	51	27	677	7.5	0.6	14.1	406	4.50
15	739.5	18.9	41	29	601	6.6	1.1	15.2	661	7.26
16	740.5	16.8	40	39	521	2.9	0.5	15.7	261	1.45
17	741.5	14.2	22	63	242	0.76	1.4	17.1	339	1.06
18	742.5	17.3	52	39	698	1.4	1.0	18.1	698	1.40
19	743.5	18.8	38	36	554	0.99	0.7	18.8	388	0.69
20	744.5	18.8	59	27	861	5.0	0.9	19.7	775	4.50
21	745.5	14.9	26	56	301	0.53	1.4	21.1	421	0.74
22	746.5	17.2	35	39	467	Imp.	1.0	22.1	467	0.00
23	747.5	16.4	45	35	573	2.1	0.8	22.9	458	1.68
24	748.5	10.6	16	80	132	11.	1.4	24.3	185	15.40
25	750.5	14.2	41	45	452	3.1	0.9	25.2	407	2.79
26	751.5	18.2	41	32	579	6.1	1.3	26.5	753	7.93

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease Minckley B-Section 9 Well No. 79

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.	Cam. Ft.		
27	752.5	17.5	21	42	63	285	8.2	1.0	27.5	285	8.20
28	753.5	17.2	33	38	71	440	Imp.	0.4	27.9	176	0.00
29	754.5	16.5	58	27	85	742	4.9	1.5	29.4	1113	7.35
30	755.5	15.9	60	22	82	740	0.26	0.7	30.1	518	0.18
31	757.5	17.6	40	32	72	546	2.6	1.4	31.5	764	3.64
32	758.7	16.4	41	39	80	522	Imp.	0.9	32.4	470	0.00
33	760.5	17.2	46	34	80	614	0.41	1.1	33.5	675	0.45
34	761.5	15.1	47	33	80	551	0.24	1.0	34.5	551	0.24
35	762.5	16.0	45	33	78	559	0.51	1.0	35.5	559	0.51
36	763.5	15.8	34	44	78	417	0.39	0.8	36.3	334	0.31

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease Minckely B-Section 9 Well No. 79

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
718.0 - 738.4	3.8	4.5	17.09
738.4 - 752.3	13.0	4.4	57.60
752.3 - 763.8	7.5	1.7	12.68
718.0 - 763.8	24.3	3.6	87.37

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
718.0 - 738.4	13.5	14.0	24.6	59.2	274	3,701
738.4 - 752.3	14.0	16.2	35.7	44.7	465	6,504
752.3 - 763.8	8.8	16.5	46.0	32.9	586	5,160
718.0 - 763.8	36.3	15.4	34.1	47.2	423	15,365

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Incorporated Lease Minckley B-Sec. 9 Well No. 97

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			
1	718.5	10.0	19	147	0	0	19	75	0	Imp.	-
2	725.3	11.3	35	307	0	0	35	60	0	Imp.	-
3	726.5	14.3	23	255	0	0	23	73	0	Imp.	-
4	727.5	11.7	3	27	0	0	3	89	0	Imp.	-
5	728.5	11.5	14	125	0	0	14	81	0	Imp.	-
6	729.5	9.3	20	144	0	0	20	72	0	Imp.	-
7	731.5	18.5	43	617	0	0	43	30	0	Imp.	-
8	732.5	15.2	28	330	0	0	28	54	0	Imp.	-
9	733.5	13.0	26	262	0	0	26	70	0	Imp.	-
10	734.5	14.9	32	370	0	0	32	59	0	Imp.	-
11	735.5	18.0	45	628	0	0	45	35	0	Imp.	-
12	736.5	16.7	38	492	0	0	38	39	0	Imp.	-
13	737.5	18.8	6	88	0	0	6	50	0	Imp.	-
14	738.8	17.6	50	683	0	0	50	45	14	0.15	45
15	739.5	18.8	41	598	0	0	41	30	0	Imp.	-
16	740.5	16.3	41	518	0	0	41	40	0	Imp.	-
17	741.5	14.3	22	244	0	0	22	63	0	Imp.	-
18	742.5	17.5	52	706	0	0	52	41	0	Imp.	-
19	743.5	18.8	38	554	0	0	38	56	7	0.15	50
20	744.5	18.6	59	851	0	0	59	30	0	Imp.	-
21	745.5	15.4	25	299	0	0	25	59	0	Imp.	-
22	746.5	17.0	35	462	0	0	35	43	0	Imp.	-
23	747.5	16.0	46	571	0	0	46	37	0	Imp.	-
24	748.5	11.1	15	129	0	0	15	81	0	Imp.	-
25	750.5	14.3	41	455	0	0	41	47	0	Imp.	-
26	751.5	17.8	42	580	0	0	42	54	9	0.15	50
27	752.5	17.0	22	290	0	0	22	43	0	Imp.	-
28	753.5	17.2	33	440	0	0	33	40	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

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Incorporated Lease Minckley B-Sec. 9 Well No. 97

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.			
29	754.5	16.3	58	733	0	0	58	28	733	0	Imp.	-
30	755.5	16.0	60	745	0	0	60	25	745	0	Imp.	-
31	757.5	17.3	41	550	0	0	41	35	550	0	Imp.	-
32	758.7	16.9	40	524	0	0	40	44	524	0	Imp.	-
33	760.5	17.0	46	607	0	0	46	34	607	0	Imp.	-
34	761.5	15.3	47	558	0	0	47	35	558	0	Imp.	-
35	762.5	15.5	46	553	0	0	46	35	553	0	Imp.	-
36	763.5	16.0	34	422	0	0	34	49	422	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.