

OILFIELD RESEARCH LABORATORIES

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April 18, 1980

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

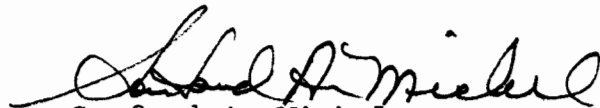
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Foster Lease, Well No. 4, Anderson County, Kansas, and submitted to our laboratory on March 13, 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, Knasas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company James E. Russell Petroleum, Incorporated Lease Foster Well No. 4
 Location 2420' SNL & 220' EWL SW $\frac{1}{4}$ SW $\frac{1}{4}$

Section 11 Twp. 23S Rge. 19E County Anderson State Kansas

Elevation, Feet . Mean Sea Level (G.L.) 1091.2

Name of Sand Squirrel

Top of Core 749.0

Bottom of Core 792.0

Top of Sand 749.0

Bottom of Sand 778.9

Total Feet of Permeable Sand 18.7

Total Feet of Floodable Sand 0.0

Distribution of Permeable Sand:
 Permeability Range
 Millidarcys

Feet

Cum. Ft.

0 - 1 7.1 7.1

1 - 5 2.2 9.3

5 - 10 6.6 15.9

10 - 20 2.0 17.9

30 - 40 0.8 18.7

Average Permeability Millidarcys 5.5

Average Percent Porosity 15.2

Average Percent Oil Saturation 27.8

Average Percent Water Saturation 44.8

Average Oil Content, Bbls./A. Ft. 333.

Total Oil Content, Bbls./Acre 8,598.

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. Air and water was used as a drilling fluid. The core was from a virgin area.

Since the core did not respond to flooding susceptibility tests, no calculated recovery is given. However, an estimate of primary reserves is presented.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
749.0 - 750.7	Sandstone, grayish brown, shaly.
750.7 - 752.0	Shale, gray, sandy.
752.0 - 752.9	Sandstone, grayish brown, shaly.
752.9 - 753.5	Shale, gray, sandy.
753.5 - 756.2	Sandstone, grayish brown, shaly.
756.2 - 756.6	Shale, gray, sandy.
756.6 - 760.8	Sandstone and shale, brown and gray, laminated.
760.8 - 762.1	Shale, gray, sandy.
762.1 - 762.5	Sandstone, brown, shaly.
762.5 - 763.0	Shale, gray, sandy.
763.0 - 765.4	Sandstone, brown, slightly shaly.
765.4 - 766.5	Sandstone, brown, shaly.
766.5 - 768.0	Shale, gray, sandy.
768.0 - 774.2	Sandstone, brown, shaly.
774.2 - 775.8	Sandstone, brown.

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<u>Depth Interval, Feet</u>	<u>Description</u>
775.8 - 778.9	Sandstone, brown, shaly.
778.9 - 780.9	Shale, fossiliferrous, calcareous, gray, sandy.
780.9 - 783.0	Shale, gray, sandy.
783.0 - 785.8	Shale, gray, fossiliferrous, calcareous, sandy.
785.8 - 787.5	Shale, gray, sandy.
787.5 - 788.3	Coal.
788.3 - 790.2	Shale, hard gray, fossiliferrous, calcareous, conglomeratic, sandy.
790.2 - 792.0	Shale, gray, sandy.

PRIMARY RESERVES ESTIMATE

Average porosity (permeability 1.0 millidarcys or greater)	16.7
Net Pay Thickness (771.0 - 778.9) (Permeability 1.0 millidarcys or greater)	8.0'
Estimated Primary Reserves As A Percent of Oil In Place	4.0
Formation Volume Factor, Estimated	1.05
Reservoir Water Saturation Percent, Estimated	20.0
Estimated Primary Reserves, Barrels Per Acre Foot	40.
Estimated Primary Reserves, Barrels Per Acre	320.

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease Foster Well No. 4

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	749.5	12.3	16	74	153	Imp.	1.0	1.0	153	0.00
2	750.5	13.4	28	61	291	Imp.	0.7	1.7	204	0.00
3	752.5	13.3	18	66	186	Imp.	0.9	2.6	167	0.00
4	753.7	15.3	26	42	309	0.19	0.5	3.1	155	0.10
5	754.5	11.9	32	62	295	0.52	1.0	4.1	295	0.52
6	755.6	13.6	33	47	348	13.	1.2	5.3	418	15.60
7	756.8	16.4	34	46	433	0.53	1.2	6.5	520	0.64
8	758.5	15.1	22	52	258	0.17	1.0	7.5	258	0.17
9	759.5	14.5	28	50	315	0.79	1.0	8.5	315	0.79
10	760.5	13.9	26	50	280	0.25	1.0	9.5	280	0.25
11	762.3	14.7	11	42	125	0.40	0.4	9.9	50	0.16
12	763.5	17.9	23	23	319	6.2	1.0	10.9	319	6.20
13	764.5	18.4	23	38	328	8.2	1.4	12.3	459	11.48
14	765.5	15.1	10	56	117	Imp.	1.1	13.4	129	0.00
15	766.7	10.0	14	52	109	Imp.	0.5	13.9	55	0.00
16	767.5	9.8	13	58	99	Imp.	1.0	14.9	99	0.00
17	768.5	17.8	29	29	401	Imp.	1.0	15.9	401	0.00
18	769.7	14.2	26	55	286	0.31	1.0	16.9	286	0.31
19	770.5	14.7	40	55	456	5.4	1.0	17.9	456	5.40
20	771.5	18.9	36	25	528	2.0	1.0	18.9	528	2.00
21	772.5	17.4	35	30	473	6.3	1.0	19.9	473	6.30
22	773.5	18.5	29	32	416	7.4	1.2	21.1	499	8.88
23	774.5	16.4	37	30	471	12.	0.8	21.9	377	9.60
24	775.5	18.9	36	24	528	31.	0.8	22.7	422	24.80
25	776.6	13.3	30	49	310	3.1	1.2	23.9	372	3.72
26	777.6	15.8	35	36	429	6.3	1.0	24.9	429	6.30
27	778.5	14.0	49	27	532	Imp.	0.9	25.8	479	0.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	James E. Russell Petroleum, Inc.	Lease	Foster	Well No.	4
Depth Interval, Feet	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	
749.0 - 771.0	749.0 - 771.0	10.7	3.4	35.97	
771.0 - 778.9	771.0 - 778.9	8.0	8.4	67.00	
749.0 - 778.9	749.0 - 778.9	18.7	5.5	102.97	

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
749.0 - 771.0	16.9	14.5	23.6	50.0	270.	4,563
771.0 - 778.9	8.9	16.4	35.9	34.9	453.	4,035
749.0 - 778.9	25.8	15.2	27.8	44.8	333.	8,598

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Sample No.	Depth, Feet	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	749.5	12.6	147	0	0	15	76	0	Imp.	-
2	750.5	13.2	287	0	0	28	63	0	Imp.	-
3	752.5	13.3	186	0	0	18	66	0	Imp.	-
4	753.7	15.1	305	0	0	26	44	0	Imp.	-
5	754.5	12.4	298	0	0	31	63	0	Imp.	-
6	755.6	14.0	348	0	0	32	48	0	Imp.	-
7	756.8	16.0	434	0	0	35	48	0	Imp.	-
8	758.5	15.0	256	0	0	22	54	0	Imp.	-
9	759.5	15.0	314	0	0	27	52	0	Imp.	-
10	760.5	14.1	284	0	0	26	51	0	Imp.	-
11	762.3	14.7	125	0	0	11	42	0	Imp.	-
12	763.5	18.2	311	0	0	22	26	83	Imp. 1.80	40
13	764.5	18.9	308	0	0	21	62	0	Imp.	-
14	765.5	15.5	108	0	0	9	58	0	Imp.	-
15	765.5	10.3	104	0	0	13	54	0	Imp.	-
16	766.7	10.1	102	0	0	13	60	0	Imp.	-
17	767.5	18.1	393	0	0	28	51	21	Imp. 0.37	45
18	768.5	14.6	283	0	0	25	58	0	Imp.	-
19	769.7	15.0	465	0	0	40	40	10	Imp. 0.15	50
20	770.5	18.6	519	0	0	36	39	10	Imp. 0.15	50
21	771.5	17.9	458	0	0	33	40	0	Imp.	-
22	772.5	18.0	419	0	0	30	53	10	Imp. 0.15	50
23	773.5	16.7	479	0	0	37	48	14	Imp. 0.22	50
24	774.5	18.8	525	0	0	36	51	303	5.70	30
25	775.5	13.5	314	0	0	30	50	0	Imp.	-
26	776.6	16.0	434	0	0	35	40	0	Imp.	-
27	777.6	14.4	536	0	0	48	29	0	Imp.	-

Company James E. Russell Petroleum, Inc. Lease Foster Well No. 4

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.