OILFIELD RESEARCH LABORATORIES
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February 25, 1980

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 B. Bain Tract 1 Lease, Well No. 9, Anderson County, Kansas and submitted to our on January 30, 1980.

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

Company James E. Russell Petroleum, Inc. Lease B. Bain Tract 1 Well No. 9

Location 1100' EWL & 1540' SNL E½ SE¼

Section 10 Twp. 23S Rge. 19E County Anderson State Kansas

Elevation, Feet - - Datum: Mean sea level (Ground Level) 1,078.6

Name of Sand	Squirrel
Top of Core	738.0
Bottom of Core	778.0
Top of Sand	739.3
Bottom of Sand	767.6
Total Feet of Permeable Sand	19.1
Total Feet of Floodable Sand	2.5

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 1	6.2	6.2
1 - 5	5.8	12.0
5 - 10	5.8	17.8
10 - 15	1.3	19.1

Average Permeability Millidarcys	4.2
Average Percent Porosity	14.9
Average Percent Oil Saturation	30.5
Average Percent Water Saturation	49.3
Average Oil Content, Bbls./A. Ft.	362.
Total Oil Content, Bbls./Acre	9,013.
Average Percent Oil Recovery by Laboratory Flooding Tests	3.4
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	43.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	106.
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 from a semi-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
738.0 - 739.3	Shale, grayish brown, sandy. First oil show.
739.3 - 745.8	Sandstone and shale, brown and gray laminated.
745.8 - 747.0	Sandstone, light brown shaly.
747.0 - 748.8	Sandstone and shale, brown and gray laminated.
748.8 - 749.5	Shale, gray sandy.
749.5 - 751.8	Sandstone and shale, brown and gray laminated.
751.8 - 753.1	Sandstone, light brown shaly.
753.1 - 753.5	Sandstone and shale, brown and gray laminated.
753.5 - 753.9	Shale, gray sandy.
753.9 - 755.0	Sandstone, brown very shaly.
755.0 - 758.0	Sandstone, brown slightly shaly.
758.0 - 758.3	Shale, gray sandy.
758.3 - 758.8	Sandstone, brown slightly shaly.
758.8 - 759.4	Shale, gray sandy.
759.4 - 760.7	Sandstone, brown slightly shaly.
760.7 - 761.4	Shale, gray sandy.
761.4 - 762.0	Sandstone, brown slightly shaly.
762.0 - 763.7	Sandstone, gray very shaly.

763.7 - 765.0	Sandstone, dark brown.
765.0 - 765.6	Sandstone, brown slightly shaly.
765.6 - 766.6	Shale, gray sandy.
766.6 - 767.6	Sandstone, brown slightly calcareous.
767.6 - 769.4	Shale, gray sandy.
769.4 - 776.2	Shale, hard gray fossiliferous calcareous.
776.2 - 778.0	Shale, gray.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 106 barrels of oil per acre was obtained from 2.5 feet of sand. The weighted average percent oil saturation was reduced from 39.1 to 35.7, or represents an average recovery of 3.4 percent. The weighted average effective permeability of the samples is 0.24 millidarcys, while the average initial fluid production pressure is 50.0 pounds per square inch (See Table V).

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 490 barrels of oil per acre. This is an average recovery of 195 barrels per acre foot from 2.5 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	30.0
Average porosity, percent	16.2
Oil saturation after flooding, percent	35.7
Performance factor, percent, estimated	50.0
Net floodable sand, feet	2.5

An estimate of primary and waterflood recovery is herewith presented:

Average porosity (permeability 1.0 millidarcys or greater)	16.4
Net pay thickness (751.8 - 767.6)(permeability 1.0 millidarcys or greater)	9.0'
Estimated primary reserves, as a percent of porosity	4.0
Estimated primary reserves, barrels per acre foot	34.
Estimated primary reserves, barrels per acre	310.
Estimated waterflood reserves, barrels per acre	420.
Estimated total reserves, barrels per acre	730.

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease B. Bain Tract 1 Well No. 9

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	739.5	14.0	21	60	81	228	Imp.	0.7	0.7	160	0.00
2	740.5	14.8	24	56	80	276	1.2	1.0	1.7	276	1.20
3	741.5	12.7	31	65	96	305	Imp.	1.0	2.7	305	0.00
4	742.5	12.4	15	81	96	144	1.1	1.0	3.7	144	1.10
5	743.6	13.9	20	61	81	216	Imp.	1.0	4.7	216	0.00
6	744.5	14.3	23	59	82	255	0.64	1.0	5.7	255	0.64
7	745.5	17.9	23	33	56	319	0.74	0.8	6.5	255	0.59
8	746.5	17.4	22	36	58	297	4.9	1.2	7.7	356	5.88
9	747.5	12.7	20	67	87	197	0.38	1.0	8.7	197	0.38
10	748.5	13.7	31	55	86	330	2.6	0.8	9.5	264	2.08
11	750.5	15.2	24	57	81	283	0.36	1.3	10.8	368	0.47
12	751.6	13.5	32	65	97	335	Imp.	1.0	11.8	335	0.00
13	752.6	14.7	39	41	80	445	3.1	1.3	13.1	579	4.03
14	753.4	13.9	34	55	89	367	Imp.	0.4	13.5	147	0.00
15	754.5	14.0	38	50	88	413	0.71	1.1	14.6	404	0.78
16	755.5	12.6	30	63	93	293	0.52	1.0	15.6	293	0.52
17	756.5	16.6	42	33	75	541	8.7	1.0	16.6	541	8.70
18	757.5	16.5	32	39	71	410	7.2	1.3	17.9	533	9.36
19	758.5	17.4	37	36	73	500	9.6	0.5	18.4	250	4.80
20	759.5	17.8	37	36	73	511	7.4	0.6	19.0	307	4.44
21	760.5	17.5	38	36	74	516	8.7	0.7	19.7	361	6.09
22	761.7	17.4	43	34	77	581	8.2	0.6	20.3	349	4.92
23	762.5	11.8	12	84	96	110	Imp.	1.7	22.0	187	0.00
24	763.9	18.1	41	31	72	576	13.	0.5	22.5	288	6.50
25	764.5	19.1	72	26	98	1067	12.	0.8	23.3	854	9.60
26	765.5	16.6	41	34	75	528	7.2	0.6	23.9	317	4.32
27	766.8	14.4	43	31	74	480	6.1	0.5	24.4	240	3.05
28	767.5	13.3	45	35	80	464	2.1	0.5	24.9	232	1.50

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease B. Bain Tract 1 Well No. 9

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
739.3 - 751.8	8.1	1.5	12.34
751.8 - 767.6	11.0	6.2	67.64
739.3 - 767.6	19.1	4.2	79.98

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
739.3 - 751.8	11.8	14.4	23.8	53.7	265	3,131
751.8 - 767.6	13.1	15.4	36.6	45.4	449	5,882
739.3 - 767.6	24.9	14.9	30.5	49.3	362	9,013

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease B. Bain Tract 1 Well No. 9

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	739.5	14.4	20	223	0	0	20	62	223	0	Imp.	-
2	740.5	14.6	24	272	0	0	24	59	272	0	Imp.	-
3	741.5	13.0	30	303	0	0	30	66	303	0	Imp.	-
4	742.5	12.9	13	130	0	0	13	83	130	0	Imp.	-
5	743.6	13.6	20	211	0	0	20	63	211	0	Imp.	-
6	744.5	14.6	22	249	0	0	22	61	249	0	Imp.	-
7	745.5	17.4	25	337	0	0	25	40	337	0	Imp.	-
8	746.5	17.5	22	299	0	0	22	43	299	0	Imp.	-
9	747.5	13.1	19	193	0	0	19	69	193	0	Imp.	-
10	748.5	14.1	29	317	0	0	29	59	317	0	Imp.	-
11	750.5	15.2	24	283	0	0	24	67	283	0	Imp.	-
12	751.6	14.0	31	337	0	0	31	66	337	0	Imp.	-
13	752.6	15.0	39	454	4	46	35	48	408	18	0.45	50
14	753.4	14.3	33	366	0	0	33	56	366	0	Imp.	-
15	754.5	13.5	39	409	0	0	39	51	409	0	Imp.	-
16	755.5	13.0	29	292	0	0	29	65	292	0	Imp.	-
17	756.5	16.9	42	551	0	0	42	39	551	0	Imp.	-
18	757.5	16.9	31	407	0	0	31	42	407	0	Imp.	-
19	758.5	17.1	37	491	0	0	37	40	491	0	Imp.	-
20	759.5	17.4	38	513	0	0	38	39	513	0	Imp.	-
21	760.5	17.4	38	513	2	27	36	56	486	0	0.01	50
22	761.7	17.9	41	569	0	0	41	38	569	0	Imp.	-
23	762.5	12.2	13	123	0	0	13	85	123	0	Imp.	-
24	763.9	17.8	41	566	4	55	37	55	511	0	0.01	50
25	764.5	18.6	72	1039	0	0	72	36	1039	0	Imp.	-
26	765.5	16.2	43	541	0	0	43	35	541	0	Imp.	-
27	766.8	14.4	43	480	0	0	43	31	480	0	Imp.	-
28	767.5	13.7	44	468	0	0	44	37	468	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 B. Bain Tract 1 Well No. 9

Depth Interval, Feet	751.8 - 767.6
Feet of Core Analyzed	2.5
Average Percent Porosity	16.2
Average Percent Original Oil Saturation	39.1
Average Percent Oil Recovery	3.4
Average Percent Residual Oil Saturation	35.7
Average Percent Residual Water Saturation	51.6
Average Percent Total Residual Fluid Saturation	87.3
Average Original Oil Content, Bbls./A. Ft.	493.
Average Oil Recovery, Bbls./A. Ft.	43.
Average Residual Oil Content, Bbls./A. Ft.	450.
Total Original Oil Content, Bbls./Acre	1,232.
Total Oil Recovery, Bbls./Acre	106.
Total Residual Oil Content, Bbls./Acre	1,126.
Average Effective Permeability, Millidarcys	0.24
Average Initial Fluid Production Pressure, p.s.i.	50.0

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