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

March 28, 1979

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 Bain Tract 1 Lease, Well No. 2, Anderson County, Kansas, and submitted to our laboratory on March 16, 1979.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Benjamin R. Pearman

Benjamin R. Pearman

SAM:km
3 c to Abilene, Texas
2 c to Chanute, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company James E. Russell Petroleum, Inc. Lease Bain Tract 1 Well No. 2

Location 220' EWL & 1980' SNL E½ SE¼

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

Name of Sand	Squirrel
Top of Core	724.0
Bottom of Core	763.5
Top of Sand	724.0
Bottom of Sand	759.8
Total Feet of Permeable Sand	27.6
Total Feet of Floodable Sand	1.6

Distribution of Permeable Sand:

Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 1	10.2	10.2
1 - 5	8.0	18.2
5 - 10	5.4	23.6
10 - 15	4.0	27.6

Average Permeability Millidarcys	4.2
Average Percent Porosity	15.9
Average Percent Oil Saturation	28.4
Average Percent Water Saturation	44.8
Average Oil Content, Bbls./A. Ft.	346.
Total Oil Content, Bbls./Acre	10,117.
Average Percent Oil Recovery by Laboratory Flooding Tests	2.4
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	33.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	53.
Total Calculated Oil Recovery, Bbls./Acre (Primary & Waterflooding)	490.
Packer Setting, Feet	
Viscosity, Centipoises @	
A. P. I. Gravity, degrees @ 60 °F	
Elevation, Feet (Ground Level)	1068.9

The core was sampled by a representative of Oilfield Research Laboratories. The drilling fluid consisted of fresh water mud. The core was reported to be from virgin territory.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
724.0 - 729.8	Light brown and gray laminated sandstone and shale; 50% Sand. 1st Oil Show.
729.8 - 730.6	Light brown slightly shaly sandstone; 85% Sand.
730.6 - 732.7	Light brown and gray finely laminated slightly micaceous sandstone and shale; 90% Sand.
732.7 - 733.2	Gray sandy shale.
733.2 - 734.0	Light brown and gray finely laminated sandstone and shale; 90% Sand.
734.0 - 734.9	Light brown and gray laminated sandstone and shale; 70% Sand.
734.9 - 735.3	Gray sandy shale.
735.3 - 736.6	Light brown slightly shaly sandstone; 80% Sand.
736.6 - 737.9	Gray and light brown slightly laminated sandy shale.
737.9 - 738.6	Light brown slightly shaly sandstone; 90% Sand.
738.6 - 739.6	Light brown and gray finely laminated sandstone and shale; 50% Sand.
739.6 - 739.9	Gray sandy shale.
739.9 - 740.6	Light brown slightly shaly sandstone; 90% Sand.
740.6 - 741.1	Gray sandy shale.
741.1 - 741.7	Grayish brown slightly shaly sandstone; 60% Sand.
741.7 - 744.0	Light brown sandstone; 95% Sand.
744.0 - 746.0	Light brown slightly micaceous sandstone; 90% Sand.
746.0 - 746.3	Gray sandy shale.

Depth Interval, Feet	Description
746.3 - 750.6	Light brown sandstone; 95% Sand.
750.6 - 752.0	Gray sandy shale.
752.0 - 752.8	Light brown and gray laminated micaceous sandstone and shale; 70% Sand.
752.8 - 753.4	Gray finely laminated sandstone and shale; 50% Sand.
753.4 - 754.6	Brown slightly micaceous sandstone; 90% Sand.
754.6 - 756.9	Light brown and gray laminated sandstone and shale; 80% Sand.
756.9 - 758.6	Brownish gray very shaly sandstone; 40% Sand.
758.6 - 759.8	Light brown and gray very laminated sandstone and shale.
759.8 - 760.5	Hard gray calcareous shale.
760.5 - 763.5	Gray shale.

SUMMARY

It would appear from a study of the 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 306 barrels per acre foot from 1.6 acre feet of floodable sand analyzed in this core.

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

Original formation volume factor	1.05
Reservoir water saturation, percent	25.
Average porosity, percent	18.0
Oil saturation after flooding, percent	27.6
Performance factor, percent	50.0
Net floodable pay sand, feet	1.6

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease Bain Tract 1 Well No. 2

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	724.5	16.5	11	57	68	141	Imp.	1.0	1.0	141	0.00
2	725.5	13.3	16	65	81	165	0.51	1.0	2.0	165	0.51
3	726.5	14.7	28	47	75	319	0.35	1.0	3.0	319	0.35
4	727.3	16.0	20	41	61	248	0.52	1.0	4.0	248	0.52
5	728.7	14.9	25	51	76	289	0.47	1.0	5.0	289	0.47
6	729.5	15.5	22	49	71	265	0.22	0.8	5.8	212	0.18
7	730.5	15.2	23	50	73	271	0.57	0.8	6.6	217	0.46
8	731.5	16.2	24	40	64	302	2.5	1.4	8.0	423	3.50
9	732.5	15.5	13	54	67	156	2.0	0.7	8.7	109	1.40
10	733.6	14.1	39	55	94	427	5.8	0.8	9.5	342	4.64
11	734.6	12.7	29	60	89	286	4.0	0.9	10.4	257	3.60
12	735.6	11.8	22	63	85	201	0.15	0.7	11.1	141	0.11
13	736.5	12.5	16	70	86	155	Imp.	0.6	11.7	93	0.00
14	738.5	15.9	22	50	72	271	4.1	0.6	12.3	163	2.46
15	739.5	18.2	20	43	63	282	0.44	1.0	13.3	282	0.44
16	740.5	15.3	38	39	77	451	1.6	0.7	14.0	316	1.12
17	741.3	18.0	20	44	64	279	0.62	0.6	14.6	167	0.37
18	742.6	19.1	25	38	63	370	14.	1.3	15.9	481	18.20
19	743.5	18.9	23	37	60	337	7.6	1.0	16.9	337	7.60
20	744.5	16.6	30	42	72	387	3.3	1.0	17.9	387	3.30
21	745.4	16.7	28	42	70	364	6.5	1.0	18.9	364	6.50
22	746.5	15.2	37	45	82	437	11.	0.7	19.6	306	7.70
23	747.5	15.4	33	42	75	395	4.2	1.0	20.6	395	4.20
24	748.5	18.0	27	34	61	378	15.	1.0	21.6	378	15.00
25	749.4	15.6	37	43	80	449	12.	1.0	22.6	449	12.00
26	750.4	19.0	35	27	62	517	5.3	0.6	23.2	310	3.18
27	752.5	18.8	35	29	64	512	0.76	0.8	24.0	410	0.61
28	753.6	17.4	44	28	72	595	9.2	0.6	24.6	357	5.52
29	754.5	16.9	48	30	78	631	4.7	0.6	25.2	379	2.82
30	755.5	15.5	43	37	80	518	5.2	1.4	26.6	725	7.28

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc. Lease Bain Tract 1 Well No. 2

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.		
31	756.5	14.8	31	46	77	357	0.63	0.9	27.5	321	0.57
32	757.5	14.8	32	42	74	368	1.4	1.1	28.6	405	1.54
33	758.5	13.6	36	50	86	381	0.22	0.6	29.2	229	0.13

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease Bain Tract 1 Well No. 2

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
724.0 - 744.0	15.3	3.0	45.93
744.0 - 758.6	12.3	5.7	70.35
724.0 - 758.6	27.6	4.2	116.28

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
724.0 - 744.0	16.9	15.7	23.0	49.2	278	4,702
744.0 - 758.6	12.3	16.2	35.0	38.9	440	5,415
724.0 - 758.6	29.2	15.9	28.4	44.8	346	10,117

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease Bain Tract 1 Well No. 2

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	724.5	16.5	11	141	0	0	11	77	141	0	Imp.	-
2	725.5	13.5	14	147	0	0	14	70	147	0	Imp.	-
3	726.5	14.8	28	321	0	0	28	60	321	0	Imp.	-
4	727.3	15.7	22	268	0	0	22	63	268	0	Imp.	-
5	728.7	15.0	25	291	0	0	25	61	291	0	Imp.	-
6	729.5	15.4	23	275	0	0	23	62	275	0	Imp.	-
7	730.5	15.7	22	268	0	0	22	71	268	12	0.22	40
8	731.5	15.8	25	306	0	0	25	58	306	3	0.22	50
9	732.5	15.6	15	182	0	0	15	73	182	0	Imp.	-
10	733.6	14.3	38	421	0	0	38	49	421	0	Imp.	-
11	734.6	12.6	30	293	0	0	30	59	293	0	Imp.	-
12	735.6	12.0	22	205	0	0	22	66	205	0	Imp.	-
13	736.5	12.4	18	173	0	0	18	68	173	0	Imp.	-
14	738.5	15.8	24	294	0	0	24	62	294	0	Imp.	-
15	739.5	18.0	21	293	0	0	21	60	293	0	Imp.	-
16	740.5	15.3	36	309	0	0	36	50	309	0	Imp.	-
17	741.3	18.2	20	282	0	0	20	76	282	36	0.60	30
18	742.6	19.0	24	354	0	0	24	70	354	35	0.60	30
19	743.5	18.4	25	357	0	0	25	63	357	16	0.23	40
20	744.5	17.0	29	382	0	0	29	58	382	16	0.30	40
21	745.4	17.2	28	240	0	0	28	59	240	21	0.30	40
22	746.5	15.7	37	451	0	0	37	50	451	12	0.15	40
23	747.5	15.9	33	407	0	0	33	51	407	8	0.15	45
24	748.5	17.7	27	371	2	27	25	61	344	9	0.15	45
25	749.4	16.1	36	450	0	0	36	53	450	9	0.23	45
26	750.4	18.5	35	503	3	43	32	55	460	2	0.15	50
27	752.5	18.6	36	520	0	0	36	51	520	0	Imp.	-
28	753.6	17.5	41	557	0	0	41	48	557	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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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease Bain Tract 1 Well No. 2

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	16.9	47	616	0	0	47	40	616	0	Imp.	-
30	755.5	15.3	45	535	0	0	45	46	535	0	Imp.	-
31	756.5	14.9	32	370	0	0	32	62	370	0	Imp.	-
32	757.5	14.8	33	379	0	0	33	52	379	0	Imp.	-
33	758.5	13.8	35	375	0	0	35	60	375	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 Bain Tract 1 Well No. 2

Depth Interval, Feet	744.0 - 758.6
Feet of Core Analyzed	1.6
Average Percent Porosity	18.0
Average Percent Original Oil Saturation	30.0
Average Percent Oil Recovery	2.4
Average Percent Residual Oil Saturation	27.6
Average Percent Residual Water Saturation	58.8
Average Percent Total Residual Fluid Saturation	86.4
Average Original Oil Content, Bbls./A. Ft.	421.
Average Oil Recovery, Bbls./A. Ft.	33.
Average Residual Oil Content, Bbls./A. Ft.	388.
Total Original Oil Content, Bbls./Acre	673.
Total Oil Recovery, Bbls./Acre	53.
Total Residual Oil Content, Bbls./Acre	620.
Average Effective Permeability, Millidarcys	0.15
Average Initial Fluid Production Pressure, p.s.i.	47.5

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