

OILFIELD RESEARCH LABORATORIES

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

December 1, 1981

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

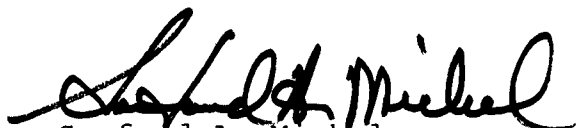
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Burke Lease, Well No. W-7, located in Anderson County, Kansas and submitted to our laboratory on November 19, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/mkf

3 c to Abilene, Tx.
2 c to Chanute, Ks.

- REGISTERED ENGINEERS -

CORE ANALYSIS - WATER ANALYSIS - REPRESSURING ENGINEERING - SURVEYING & MAPPING - PROPERTY EVALUATION & OPERATION

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company James E. Russell Petroleum, Inc. Lease Burke Well No. W-7
 Location 580' EWL & 1320' SNL NW $\frac{1}{4}$
 Section 26 Twp. 22S Rge. 19E County Anderson State Kansas

Elevation, Feet Datum: Mean Sea Level (Ground Level) 1103.4
 Name of Sand SQUIRREL
 Top of Core 793.0
 Bottom of Core 810.8
 Top of Sand 793.0
 Bottom of Sand (Tested) 806.0
 Total Feet of Permeable Sand 10.8
 Total Feet of Floodable Sand 4.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 5	3.7	3.7
5 - 10	5.1	8.8
10 - 20	0.5	9.3
30 - 40	1.5	10.8

Average Permeability Millidarcys 9.8
 Average Percent Porosity 15.7
 Average Percent Oil Saturation 49.4
 Average Percent Water Saturation 35.6
 Average Oil Content, Bbls./A. Ft. 611.
 Total Oil Content, Bbls./Acre 7,520.
 Average Percent Oil Recovery by Laboratory Flooding Tests 10.9
 Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. 151.
 Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre 603.
 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 non-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
793.0 - 797.0	Sandstone, shaly, grayish brown.
797.0 - 798.5	Sandstone, brown.
798.5 - 801.6	Sandstone and shale, gray and brown, alternate layers.
801.6 - 802.3	Shale, gray.
802.3 - 804.0	Sandstone and shale, laminated, gray and brown, containing a vertical fracture.
804.0 - 804.5	Sandstone, brown, containing a vertical fracture.
804.5 - 806.0	Sandstone and shale, alternate layers of gray and brown containing a vertical fracture.
806.0 - 807.3	Sandstone, very shaly, grayish brown.
807.3 - 810.8	Shale, gray.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 151 barrels of oil per acre was obtained from 4.0 feet of sand. The weighted average percent oil saturation was reduced from 49.9 to 39.0, or represents an average recovery of 10.9 percent. The weighted average effective permeability of the samples is 0.30 millidarcys, while the average initial fluid production

pressure is 33.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 12 samples tested, 5 produced water and oil. This indicates that approximately 42 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 1000 barrels of oil per acre. This is an average recovery of 251 barrels per acre foot from 4.0 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	20.0
Average porosity, percent	17.4
Oil saturation after flooding, percent	39.0
Performance factor, percent, estimated	50.0
Net floodable sand, feet	4.0

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc.

Lease Burke

Well No. W-7

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	793.6	10.8	40	46	86	335	Imp.	1.5	1.5	503	0.00
2	795.4	15.0	37	44	81	431	1.5	1.5	3.0	647	2.25
3	796.3	18.3	65	14	79	923	6.0	1.0	4.0	923	6.00
4	797.5	18.9	59	23	82	865	31.	1.0	5.0	865	31.00
5	798.4	18.3	46	33	79	653	37.	0.5	5.5	327	18.50
6	799.4	15.5	35	47	82	421	8.3	1.0	6.5	421	8.30
7	800.4	17.2	55	29	84	734	7.5	1.0	7.5	734	7.50
8	801.5	16.4	49	39	88	623	8.3	1.1	8.6	695	9.13
9	802.4	15.8	50	38	88	613	3.3	0.7	9.3	429	2.31
10	803.4	16.1	45	37	82	562	7.8	1.0	10.3	562	7.80
11	804.2	17.5	55	26	81	747	13.	0.5	10.8	374	6.50
12	805.6	14.4	62	36	98	693	4.5	1.5	12.3	1040	6.75

Oilfield Research Laboratories

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		James E. Russell Petroleum, Inc.		Lease		Burke		Well No.		W-7	
Depth Interval, Feet		Feet of Core Analyzed		Average Permeability, Millidarcys		Permeability Capacity Ft. x Md.					
793.0 - 806.0		10.8		9.8		106.04					
Depth Interval, Feet		Feet of Core Analyzed		Average Percent Oil Saturation		Average Percent Water Saturation		Average Oil Content Bbl./A. Ft.		Total Oil Content Bbls./Acre	
793.0 - 806.0		12.3		49.4		35.6		611		7,520	

Oilfield Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease Burke Well No. W-7

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	793.6	11.0	39	333	0	0	39	48	0	Imp.	-
2	795.4	14.5	38	427	0	0	38	44	0	Imp.	-
3	796.3	18.2	65	918	0	0	65	16	0	Imp.	-
4	797.5	19.1	59	874	14	207	45	40	25	0.37	25
5	798.4	18.2	46	649	15	212	31	52	42	0.75	20
6	799.4	15.6	35	424	5	61	30	59	17	0.37	30
7	800.4	17.1	55	730	10	133	45	46	0	0.01	50
8	801.5	16.7	48	622	0	0	48	42	0	Imp.	-
9	802.4	15.5	51	613	0	0	51	39	0	Imp.	-
10	803.4	16.1	45	562	0	0	45	39	0	Imp.	-
11	804.2	17.6	55	751	14	191	41	49	8	0.15	40
12	805.6	14.6	61	691	0	0	61	37	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

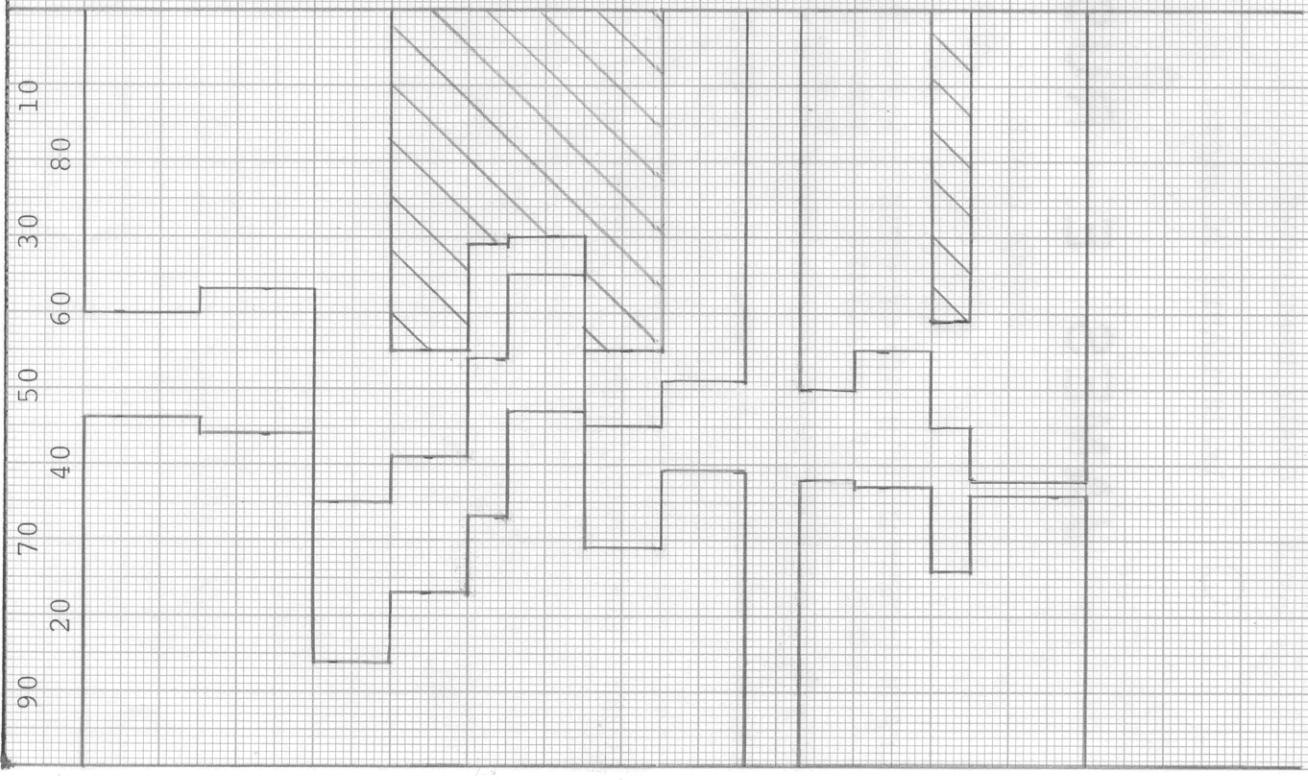
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	James E. Russell Petroleum, Inc.	Lease	Burke	Well No.	W-7
Depth Interval, Feet	793.0 - 806.0				
Feet of Core Analyzed	4.0				
Average Percent Porosity	17.4				
Average Percent Original Oil Saturation	49.9				
Average Percent Oil Recovery	10.9				
Average Percent Residual Oil Saturation	39.0				
Average Percent Residual Water Saturation	48.9				
Average Percent Total Residual Fluid Saturation	87.9				
Average Original Oil Content, Bbls./A. Ft.	682.				
Average Oil Recovery, Bbls./A. Ft.	151.				
Average Residual Oil Content, Bbls./A. Ft.	531.				
Total Original Oil Content, Bbls./Acre	2,729.				
Total Oil Recovery, Bbls./Acre	603.				
Total Residual Oil Content, Bbls./Acre	2,126.				
Average Effective Permeability, Millidarcys	0.30				
Average Initial Fluid Production Pressure, p.s.i.	33.0				

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

WATER SAT., PERCENT → ← OIL SAT., PERCENT

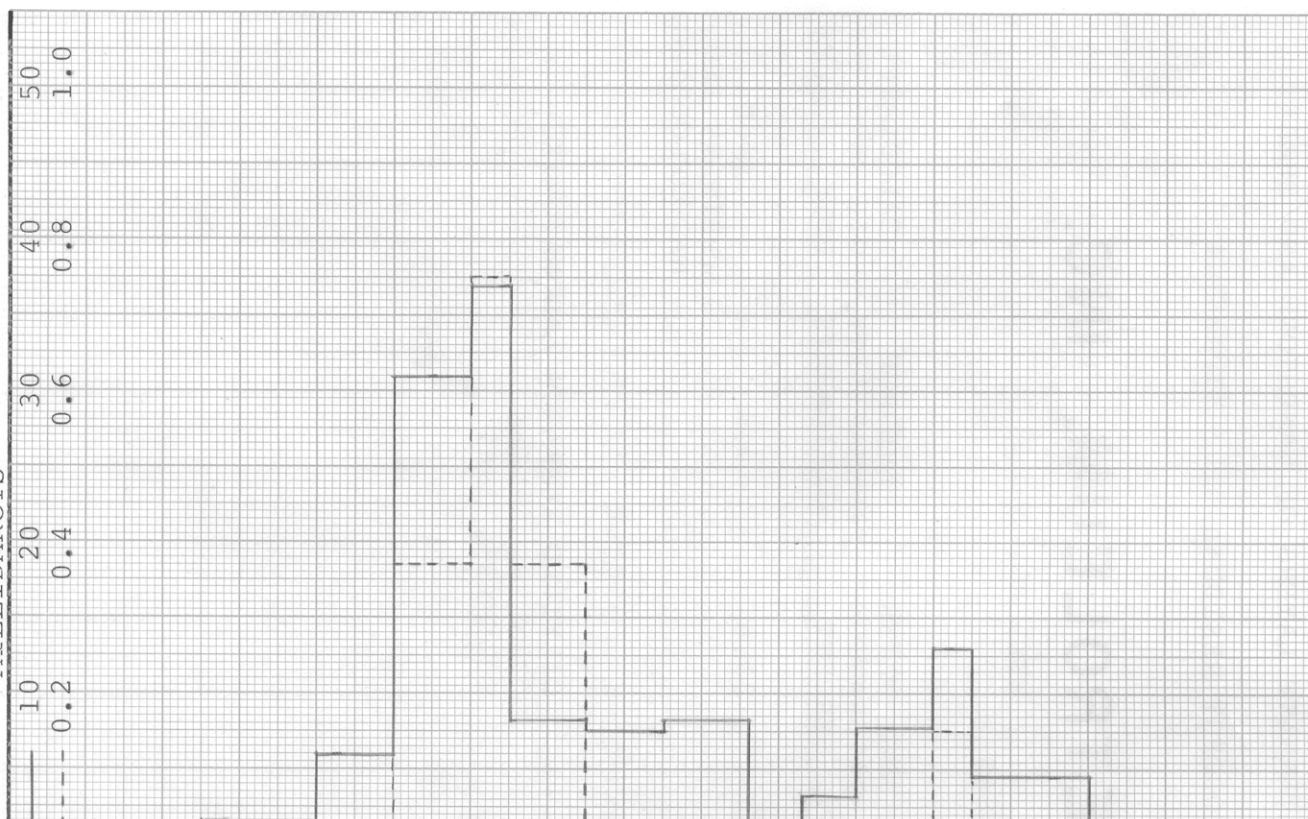


KEY:

I

FORMATION CONTAINING A VERTICAL FRACTURE

PERMEABILITY, IN MILLIDARCYS
 EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS



	SANDSTONE		SHALE
	SHALY SANDSTONE		ALTERNATE LAYERS OF SANDSTONE AND SHALE
	IMPERMEABLE TO WATER		FLOODPOT RESIDUAL OIL SATURATION

JAMES E. RUSSELL PETROLEUM, INC.

BURKE LEASE

ANDERSON COUNTY, KANSAS

WELL NO. W-7

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCYS	CALCULATED OIL RECOVERY BBLs. / ACRE
-------------------------	--------------------------	--------------------------------	-----------------------------------	-------------------------------------	---	--

793.0 - 806.0	12.3	15.7	49.4	35.6	9.8	1000 (PRIMARY AND WATERFLOODING)
---------------	------	------	------	------	-----	--

NOTE: ELEVATION, FEET - DATUM: MEAN SEA LEVEL (GROUND LEVEL) ... 1103.4

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
NOVEMBER, 1981

PDC