



OILFIELD RESEARCH LABORATORIES

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

June 22, 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 Strahm Lease, Well No. 0-3, Woodson County, Kansas, and submitted to our laboratory on June 11, 1979.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Benjamin R. Pearman

SAM:km

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

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 a non-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
1023.0 - 1023.2	Light brown calcareous sandstone.
1023.2 - 1025.1	Black shale.
1025.1 - 1030.2	Brown and gray laminated sandstone and shale; 60% sandstone.
1030.2 - 1037.0	Gray sandy shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 284 barrels of oil per acre was obtained from 1.5 feet of sand. The weighted average percent oil saturation was reduced from 49.0 to 36.0, or represents an average recovery of 13.0 percent. The weighted average effective permeability of the samples is 0.30 millidarcys, while the average initial fluid production pressure is 30.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 4 samples tested, 1 produced water and 1 oil. This indicates that approximately 25 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERY

It would appear from a study of the data, that efficient primary and waterflood operations in the vicinity of this well should recover approximately 425 barrels of oil per acre. This is an average recovery of 283 barrels per acre foot from 1.5 feet of floodable sand analyzed in this core.

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

Original formation volume factor	1.07
Reservoir water saturation, percent	20.0
Average porosity, percent	18.8
Oil saturation after flooding, percent	36.0
Performance factor, percent	50.0
Net floodable pay sand, feet	1.5

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company James E. Russell Petroleum, Inc.

Lease Strahm

Well No. 0-3

Sample No.	Depth, Feet	Effective Porosity Percent	Percent Saturation		Oil Content Bbbls. / A Ft.	Perm., Mill.	Feet of Sand		Total Oil Content	Perm. Capacity Ft. X md.
			Oil	Water			Ft.	Cum. Ft.		
1	1025.3	4.9	24	53	91	Imp.	0.9	0.9	82	0.00
2	1026.9	14.0	19	67	206	6.8	1.5	2.4	309	10.20
3	1028.2	18.9	49	23	719	13.	1.5	3.9	1079	19.50
4	1029.9	15.9	55	23	678	26.	1.2	5.1	814	27.60

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company James E. Russell Petroleum, Inc. Lease Strahm Well No. 0-3

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
1025.1 - 1030.2	4.2	13.6	57.30				
1025.1 - 1030.2	5.1	14.3		37.2	41.2	448	2,284

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company James E. Russell Petroleum, Inc. Lease Strahm Well No. 0-3

Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery		Residual Saturation		Volume of Water Recovered cc ^e	Effective Permeability Millidarcys ^{e,e}	Initial Fluid Production Pressure Lbs./Sq./In.
			%	Bbls./A. Ft.	%	Bbls./A. Ft.	% Oil	% Water			
1	1025.3	5.0	23	89	0	0	23	57	0	Imp.	-
2	1026.9	14.2	19	209	0	0	19	67	0	Imp.	-
3	1028.2	18.8	49	715	13	189	36	54	10	0.30	30
4	1029.9	15.8	53	649	0	0	53	30	0	Imp.	-

Notes: cc—cubic centimeter.

e.—Volume of water recovered at the time of maximum oil recovery.

ee.—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	Strahm	Well No.	0-3
Depth Interval, Feet	1025.1 - 1030.2				
Feet of Core Analyzed	1.5				
Average Percent Porosity	18.8				
Average Percent Original Oil Saturation	49.0				
Average Percent Oil Recovery	13.0				
Average Percent Residual Oil Saturation	36.0				
Average Percent Residual Water Saturation	54.0				
Average Percent Total Residual Fluid Saturation	90.0				
Average Original Oil Content, Bbls./A. Ft.	715.				
Average Oil Recovery, Bbls./A. Ft.	189.				
Average Residual Oil Content, Bbls./A. Ft.	526.				
Total Original Oil Content, Bbls./Acre	1,073.				
Total Oil Recovery, Bbls./Acre	284.				
Total Residual Oil Content, Bbls./Acre	789.				
Average Effective Permeability, Millidarcys	0.30				
Average Initial Fluid Production Pressure, p.s.i.	30.0				

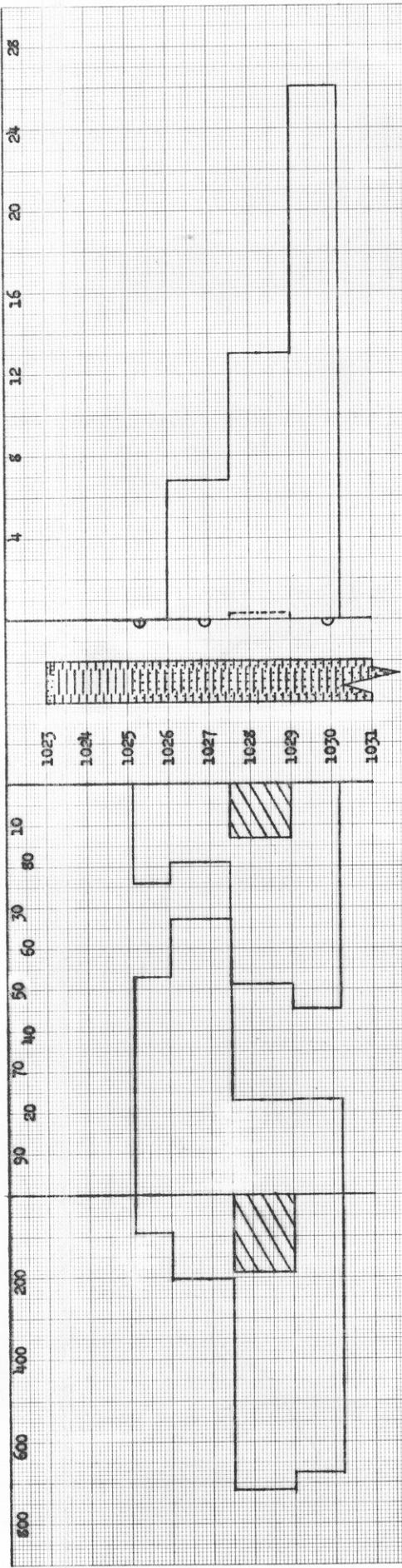
NOTE: Only those samples which recovered oil were used in calculating the above averages.

OIL CONTENT,
BELS./A. FT.

WATER SAT.,
PERCENT

OIL SAT.,
PERCENT

AIR PERMEABILITY, IN MILLIDARCS
--- EFFECTIVE PERMEABILITY, IN MILLIDARCS



KEY:
FLOOD FOR RECOVERY
GALLEGOSON SANDSTONE

LAMINATED SANDSTONE AND SHALE
SANDY SHALES

SHALE
○ IMPERMEABLE TO AIR
○ IMPERMEABLE TO WATER

JAMES E. RUSSELL PETROLEUM, INC.

WELL NO. 0-3
WOODSON COUNTY, KANSAS

STRAIN LEASE

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVG. OIL CONTENT BELS./A. FT.	TOTAL OIL CONTENT BELS./ACE	AVG. AIR PERMEABILITY, MILLIDARCS	CALCULATED OIL RECOVERY, BELS./ACE
1025.1 - 1030.2	5.1	14.3	37.2	43.2	448	2,284	13.6	425 (PRIMARY & WATER-FLOODING)

OILFIELD RESEARCH LABORATORIES
CHANOTE, KANSAS
JUNE, 1979.