

OILFIELD RESEARCH LABORATORIES

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August 15, 1979

Lincoln 77
8485 Kathy Lane
Lincoln, Nebraska 68526

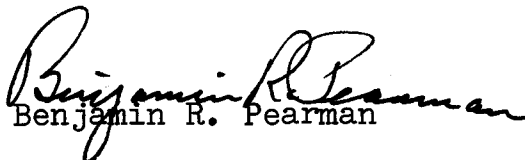
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Gleue Lease, Well No. 7, Coffey County, Kansas, and submitted to our laboratory on August 10, 1979.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Benjamin R. Pearman

BRP:dlb

4 c to Lincoln, Nebraska
1 c to Topeka, Kansas

Fresh water mud was used as the circulating fluid while taking this core. The well was reported to have been drilled in semi virgin territory. The core was sampled and the samples sealed in plastic bags by a representative of the client.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
1010.0 - 1010.4	Hard gray calcareous fossiliferous shaly sandstone.
1010.4 - 1011.4	Brown and gray laminated sandstone and shale.
1011.4 - 1012.4	Brown slightly shaly sandstone.
1012.4 - 1012.9	Gray sandy shale.
1012.9 - 1016.0	Dark brown sandstone.

LABORATORY FLOODING TESTS

The lower portion of the sand in this core responded to laboratory flooding tests, as a total recovery of 832 barrels of oil per acre was obtained from 3.1 feet of sand. The weighted average percent oil saturation was reduced from 58.0 to 40.5, or represents an average recovery of 17.5 percent. The weighted average effective permeability of the samples is 2.72 millidarcys, while the average initial fluid production pressure is 20.0 pounds per square inch (See Table V).

CALCULATED RECOVERY

A study of the results of the laboratory tests indicate that efficient primary and waterflooding operations in the vicinity of this well should recover approximately 960 barrels of oil per acre.

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This is an average recovery of 310 barrels per acre foot from the 3.1 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	15.0
Average porosity, percent	19.8
Oil saturation after flooding, percent	40.5
Performance factor, percent	50.0
Net floodable pay sand, feet	3.1

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Lincoln 77

Lease Gleue

Well No. 7

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	Total			Ft.	Cum. Ft.		
1	1010.5	14.0	44	46	90	478	0.58	0.5	0.5	239	0.29
2	1011.3	15.6	46	31	77	557	0.82	0.5	1.0	279	0.41
3	1012.3	15.1	38	46	84	445	6.0	1.0	2.0	445	6.00
4	1013.4	19.6	50	20	70	760	38.	1.1	3.1	836	41.80
5	1014.5	20.6	57	18	75	911	145.	1.0	4.1	911	145.00
6	1015.4	19.0	68	18	86	1,002	64.	1.0	5.1	1,002	64.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Lease	Well No.		
Lincoln 77	Gleue	7		
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Total Oil Content Bbls./Acre
1010.4 - 1016.0	5.1	50.5	257.50	
Depth Interval, Feet	Feet of Core Analyzed	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.
1010.4 - 1016.0	5.1	51.5	28.0	727
				3,712

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Lincoln 77 Lease Gleue Well No. 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	1010.5	13.9	43	464	0	0	43	49	0	Imp.	-
2	1011.3	15.3	46	546	0	0	46	33	0	Imp.	-
3	1012.3	15.5	38	457	0	0	38	56	7	0.17	40
4	1013.4	19.4	50	753	13	196	37	61	41	0.98	20
5	1014.5	20.8	57	920	18	290	39	60	239	5.25	20
6	1015.4	19.1	68	1,008	22	326	46	52	82	2.10	20

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 Lincoln 77

Lease Gleue

Well No. 7

Depth Interval, Feet 1010.4 - 1016.0

Feet of Core Analyzed 3.1

Average Percent Porosity 19.8

Average Percent Original Oil Saturation 58.0

Average Percent Oil Recovery 17.5

Average Percent Residual Oil Saturation 40.5

Average Percent Residual Water Saturation 57.9

Average Percent Total Residual Fluid Saturation 98.4

Average Original Oil Content, Bbls./A. Ft. 889.

Average Oil Recovery, Bbls./A. Ft. 268.

Average Residual Oil Content, Bbls./A. Ft. 621.

Total Original Oil Content, Bbls./Acre 2,758.

Total Oil Recovery, Bbls./Acre 832.

Total Residual Oil Content, Bbls./Acre 1,926.

Average Effective Permeability, Millidarcys 2.72

Average Initial Fluid Production Pressure, p.s.i. 20.0

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