

OILFIELD RESEARCH LABORATORIES

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March 7, 1980

Inexco Oil Company
Rural Route 2
Box 3
Moran, Kansas 66755

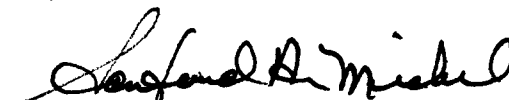
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Stottler Lease, Well No. 1-C-18, Allen County, Kansas, and submitted to our laboratory on February 19, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Sanford A. Michel

SAM/tem
3 c to Moran, Kansas
2 c to Oklahoma City, Oklahoma

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Inexco Oil Company Lease Stottler Well No. 1-C-18

Location 600' NSL & 660' WEL

Section 21 Twp. 25S Rge. 21E County Allen State Kansas

Elevation, Feet - - - - -

Name of Sand - - - - - Bartlesville

Top of Core - - - - - 660.0

Bottom of Core - - - - - 678.0

Top of Sand - - - - - (Tested) 661.9

Bottom of Sand - - - - - (Tested) 676.2

Total Feet of Permeable Sand - - - - - (Tested) 10.0

Total Feet of Floodable Sand - - - - - (Tested) 6.2

Distribution of Permeable Sand:
Permeability Range
Millidarcys

Feet

Cum. Ft.

0 - 5

2.3

2.3

5 - 100

2.0

4.3

100 - 300

1.4

5.7

300 - 500

4.3

10.0

193.8

Average Permeability Millidarcys - - - - -

19.4

Average Percent Porosity - - - - -

31.7

Average Percent Oil Saturation - - - - -

52.7

Average Percent Water Saturation - - - - -

476.

Average Oil Content, Bbls./A. Ft. - - - - -

4,758.

Total Oil Content, Bbls./Acre - - - - -

7.7

Average Percent Oil Recovery by Laboratory Flooding Tests - - - - -

114.

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - -

709.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - -

Total Calculated Oil Recovery, Bbls./Acre - - - - -

See "Calculated
Recovery" Section.

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The core was sampled and the samples sealed in plastic bags by a representative of the client. Fresh water mud was used as a drilling fluid.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
660.0 - 661.3	Gray sandy shale.
661.3 - 661.9	Brown and gray laminated sandstone and shale.
661.9 - 662.4	Brown sandstone.
662.4 - 663.0	Black carbonaceous sandstone.
663.0 - 664.2	Brown shaly sandstone.
664.2 - 665.5	Brown sandstone.
665.5 - 666.1	Black carbonaceous sandstone.
666.1 - 666.6	Brown and gray laminated sandstone and shale.
666.6 - 667.4	Dark brown slightly carbonaceous sandstone.
667.4 - 669.0	Dark brown sandstone.
669.0 - 670.2	Gray sandy shale.
670.2 - 671.1	Brown sandstone.
671.1 - 673.7	Brown and gray laminated sandstone and shale.
673.7 - 674.5	Brown sandstone.
674.5 - 675.1	Black carbonaceous sandstone.
675.1 - 676.2	Light brown shaly sandstone.
676.2 - 677.3	Brown and gray laminated sandstone and shale.
677.3 - 678.0	Gray laminated sandstone and shale.

-3-

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 709 barrels of oil per acre was obtained from 6.2 feet of sand. The weighted average percent oil saturation was reduced from 35.8 to 28.1, or represents an average recovery of 7.7 percent. The weighted average effective permeability of the samples is 13.64 millidarcys, while the average initial fluid production pressure is 24.4 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 12 samples tested, 8 produced water and oil, and 3 samples produced water only. This indicates that approximately 67 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 2,010 barrels of oil per acre. This is an average recovery of 324 barrels per acre foot from 6.2 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	25.0
Average porosity, percent	19.3
Oil saturation after flooding, percent	28.1
Performance factor, percent, estimated	50.0
Net floodable sand, feet	6.2

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Inexco Oil Company Lease Stottler Well No. 1-C-18

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	662.0	19.4	31	62	93	467	58.	0.5	0.5	234	29.00
2	662.9	16.8	41	58	99	534	350.	0.6	1.1	320	210.00
3	664.0	18.9	31	60	91	455	0.80	1.2	2.3	546.	0.96
4	665.0	22.1	23	65	88	394	399.	1.3	3.6	512	518.70
5	665.9	19.2	46	30	76	685	50.	0.6	4.2	411	30.00
6	667.0	21.0	28	64	92	456	203.	0.8	5.0	365	162.40
7	667.9	21.0	38	55	93	619	407.	0.8	5.8	495	325.60
8	668.9	18.0	36	35	71	503	305.	0.8	6.6	402	244.00
9	671.0	16.9	44	38	82	577	20.	0.9	7.5	519	18.00
10	673.9	20.5	24	36	60	382	324.	0.8	8.3	306	259.20
11	674.9	20.4	34	39	73	538	231.	0.6	8.9	323	138.60
12	675.6	18.1	21	70	91	295	1.3	1.1	10.0	325	1.43

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		Inexco Oil Company		Lease		Stottler		Well No.		1-C-18	
Depth Interval, Feet		Feet of Core Analyzed		Average Permeability, Millidarcys		Permeability Capacity Ft. x Md.					
661.3 - 676.2		10.0		193.8		1937.89					
Depth Interval, Feet		Feet of Core Analyzed		Average Percent Oil Saturation		Average Percent Water Saturation		Average Oil Content Bbl./A. Ft.		Total Oil Content Bbbl./Acre	
661.3 - 676.2		10.0		19.4		31.7		476		4,758	

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company			Inexco Oil Company			Lease			Stottler			Well No.			1-C-18		
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	662.0	19.2	31	462	4	60	27	65	344	25.49	10						
2	662.9	17.3	39	523	0	0	39	57	0	Imp.	-						
3	664.0	19.2	31	462	6	89	25	64	206	29.50	10						
4	665.0	22.2	23	396	0	0	23	71	246	17.24	10						
5	665.9	19.5	46	696	19	287	27	59	325	10.05	20						
6	667.0	21.1	28	458	4	65	24	67	308	12.21	10						
7	667.9	20.6	38	607	9	144	29	65	282	10.71	10						
8	668.9	18.2	36	508	7	99	29	63	335	14.66	25						
9	671.0	16.6	44	567	10	129	34	56	10	0.22	50						
10	673.9	20.7	24	385	0	0	24	66	272	31.49	15						
11	674.9	20.4	34	538	4	63	30	47	8	0.15	50						
12	675.6	17.9	21	292	0	0	21	73	26	0.36	40						

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	Inexco Oil Company	Lease	Stottler	Well No.	1-C-18
Depth Interval, Feet	661.9 - 676.2				
Feet of Core Analyzed	6.2				
Average Percent Porosity	19.3				
Average Percent Original Oil Saturation	35.8				
Average Percent Oil Recovery	7.7				
Average Percent Residual Oil Saturation	28.1				
Average Percent Residual Water Saturation	61.2				
Average Percent Total Residual Fluid Saturation	89.3				
Average Original Oil Content, Bbls./A. Ft.	531.				
Average Oil Recovery, Bbls./A. Ft.	114.				
Average Residual Oil Content, Bbls./A. Ft.	417.				
Total Original Oil Content, Bbls./Acre	3,292.				
Total Oil Recovery, Bbls./Acre	709.				
Total Residual Oil Content, Bbls./Acre	2,583.				
Average Effective Permeability, Millidarcys	13.64				
Average Initial Fluid Production Pressure, p.s.i.	24.4				

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

WATER SAT.
PERCENT

OIL SAT.
PERCENT

90 80 70 60 50 40 30 20 10

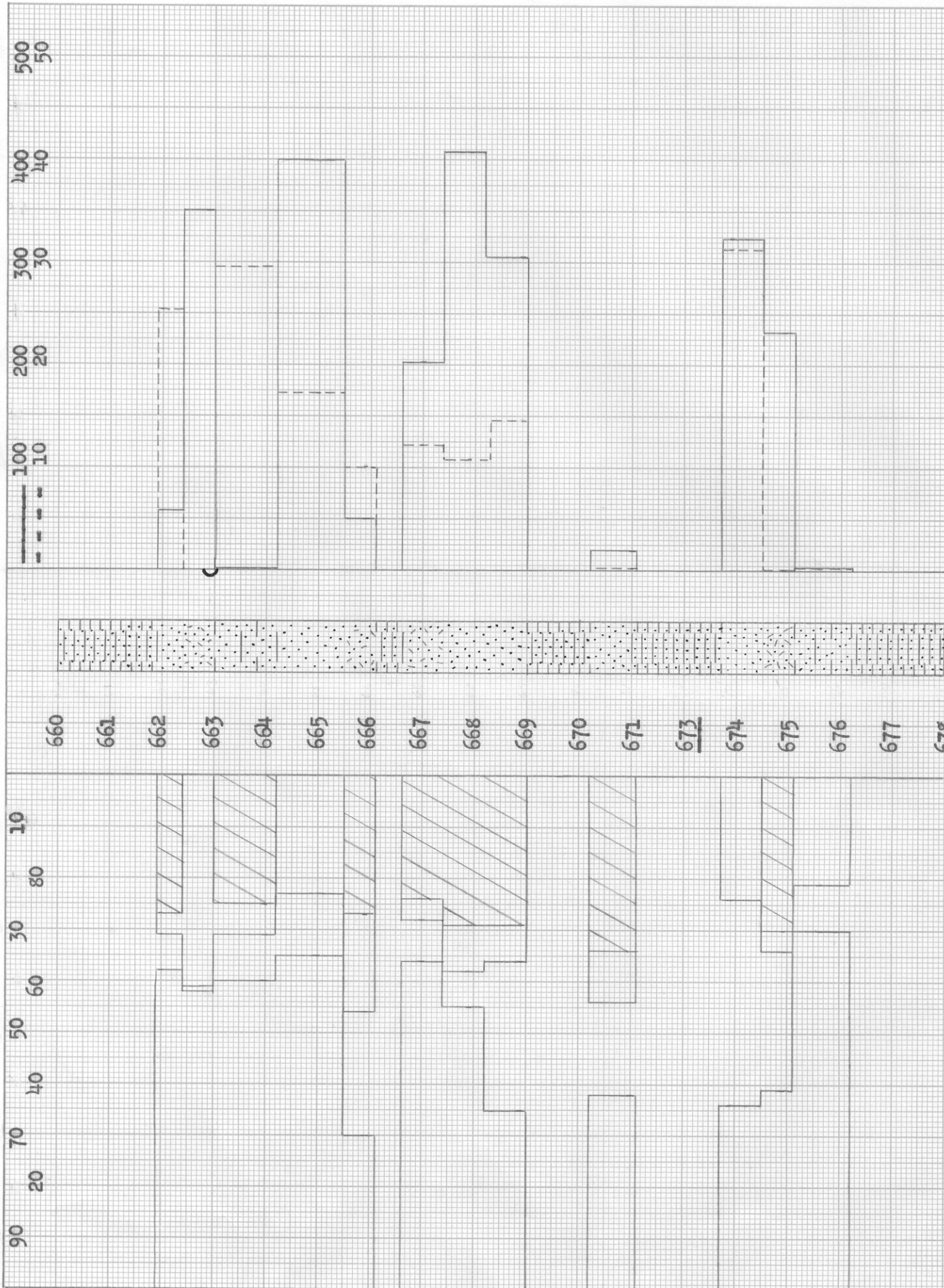
660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678

100 200 300 400 500
10 20 30 40 50

47 1512

PERMEABILITY, IN MILLIDARCS

EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCS



KEY:



SANDSTONE



CARBONACEOUS SANDSTONE



SHALY SANDSTONE



LAMINATED SANDSTONE AND SHALE



SANDY SHALE



FLOODPOT RESIDUAL OIL SATURATION

O IMPERMEABLE TO WATER

INEXCO OIL COMPANY

STOTTLER LEASE WELL NO. 1 - C - 18

ALLEN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE		AVG. OIL		AVG. WATER		AVERAGE		CALCULATED	
		PERCENT	PERCENT	SATURATION	PERCENT	SATURATION	PERCENT	PERMEABILITY,	OIL RECOVERY	MILLIDARCYS	BELS./ACRE
661.3 - 676.2	10.0	19.4	31.7	52.7	193.8	2,010	(PRIMARY AND WATERFLOODING)				

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CHANUTE, KANSAS
MARCH, 1960.
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