

OILFIELD RESEARCH LABORATORIES

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

January 7, 1981

Inexco Oil Company
R R # 2, Box 3
Moran, Kansas 66755

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Thompson Lease, Well No. 1, located in Allen County, Kansas and submitted to our laboratory on November 7, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

3 c to Moran, Kansas
2 c to Oklahoma City, Oklahoma

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Inexco Oil Company Lease Thompson Well No. 1

Location 165' SNL & 165' EWL - SW $\frac{1}{4}$

Section 7 Twp. 25S Rge. 21E County Allen State Kansas

Elevation, Feet - - - - -

Name of Sand - - - - - Bartlesville

Top of Core - - - - - 778.0

Bottom of Core - - - - - 799.0

Top of Sand - - - - - 778.0

Bottom of Sand - - - - - 799.0

Total Feet of Permeable Sand - - - - - 21.0

Total Feet of Floodable Sand - - - - - 12.3

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 50	2.7	2.7
50 - 100	8.5	11.2
100 - 200	6.3	17.5
200 & Above	3.5	21.0

Average Permeability Millidarcys - - - - - 123.3

Average Percent Porosity - - - - - 17.8

Average Percent Oil Saturation - - - - - 37.9

Average Percent Water Saturation - - - - - 57.6

Average Oil Content, Bbls./A. Ft. - - - - - 525.

Total Oil Content, Bbls./Acre - - - - - 11,016.

Average Percent Oil Recovery by Laboratory Flooding Tests - - - - - 10.6

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - - 152.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - - 1,872.

Total Calculated Oil Recovery, Bbls./Acre - - - - - See "Calculated Recovery" Section

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>
778.0 - 782.7	Grayish light brown sandstone.
782.7 - 784.5	Light brown sandstone.
784.5 - 797.8	Brown sandstone.
797.8 - 799.0	Gray sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,872 barrels of oil per acre was obtained from 12.3 feet of sand. The weighted average percent oil saturation was reduced from 42.6 to 32.0, or represents an average recovery of 10.6 percent. The weighted average effective permeability of the samples is 12.58 millidarcys, while the average initial fluid production pressure is 15.6 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 15 samples tested, 8 produced water and oil, and 7 samples produced water only. This indicates that approximately 53 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 2,710 barrels of oil per acre. This is an average recovery of 220 barrels per acre foot from 12.3 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	35.0
Average porosity, percent	19.0
Oil saturation after flooding, percent	32.0
Performance factor, percent, estimated	50.0
Net floodable sand, feet	12.3

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Inexco Oil Company Lease Thompson Well No. 1

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	778.5	10.6	23	72	95	189	61.	1.5	1.5	284	91.50
2	780.5	18.2	35	60	95	494	78.	1.5	3.0	741	117.00
3	781.5	18.2	17	81	98	240	28.	1.7	4.7	408	47.60
4	783.5	19.5	31	60	91	469	108.	1.8	6.5	844	194.40
5	785.5	20.3	42	51	93	661	181.	2.0	8.5	1322	362.00
6	787.5	19.7	33	62	95	504	266.	2.0	10.5	1008	532.00
7	789.5	19.9	41	57	98	633	192.	1.5	12.0	950	288.00
8	790.5	19.7	40	54	94	611	56.	1.0	13.0	611	56.00
9	791.5	18.4	55	42	97	785	169.	1.0	14.0	785	169.00
10	792.5	17.2	59	38	97	787	266.	1.5	15.5	1181	399.00
11	794.5	16.7	49	48	97	635	62.	1.5	17.0	953	93.00
12	795.5	15.1	59	37	96	691	58.	1.0	18.0	691	58.00
13	796.5	16.8	57	40	97	743	40.	1.0	19.0	743	40.00
14	797.5	15.9	34	62	96	419	61.	0.8	19.8	335	48.80
15	798.5	17.1	10	85	95	133	77.	1.2	21.0	160	92.40

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Lease	Thompson	Well No.	1		
Depth Interval, Feet	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.		
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
778.0 - 788.5	10.5	18.0	30.6	63.8	439	4,607
788.5 - 799.0	10.5	17.5	45.1	51.3	610	6,409
778.0 - 799.0	21.0	17.8	37.9	57.6	525	11,016

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

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.		Bbls./A. Ft.		Bbls./A. Ft.				
1	778.5	10.7	23	191	0	0	23	72	304	9.74	10
2	780.5	18.0	35	489	0	0	35	61	247	8.16	10
3	781.5	18.3	17	241	0	0	17	80	409	10.35	10
4	783.5	19.5	31	469	2	30	29	63	234	12.00	10
5	785.5	20.4	42	665	10	158	32	63	244	14.35	10
6	787.5	19.5	33	499	4	61	29	61	305	16.07	10
7	789.5	20.0	41	636	9	140	32	61	422	13.35	20
8	790.5	19.8	40	614	10	154	30	62	208	11.14	15
9	791.5	18.4	55	785	17	243	38	60	315	13.30	15
10	792.5	17.1	59	783	27	358	32	60	268	16.71	15
11	794.5	16.9	49	642	12	157	37	57	94	1.80	30
12	795.5	15.2	59	696	0	0	59	36	91	1.50	30
13	796.5	16.6	57	734	0	0	57	36	41	0.45	35
14	797.5	16.0	34	422	0	0	34	59	44	0.45	30
15	798.5	17.1	10	133	0	0	10	87	314	6.00	30

Company Inexco Oil Company Lease Thompson Well No. 1

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

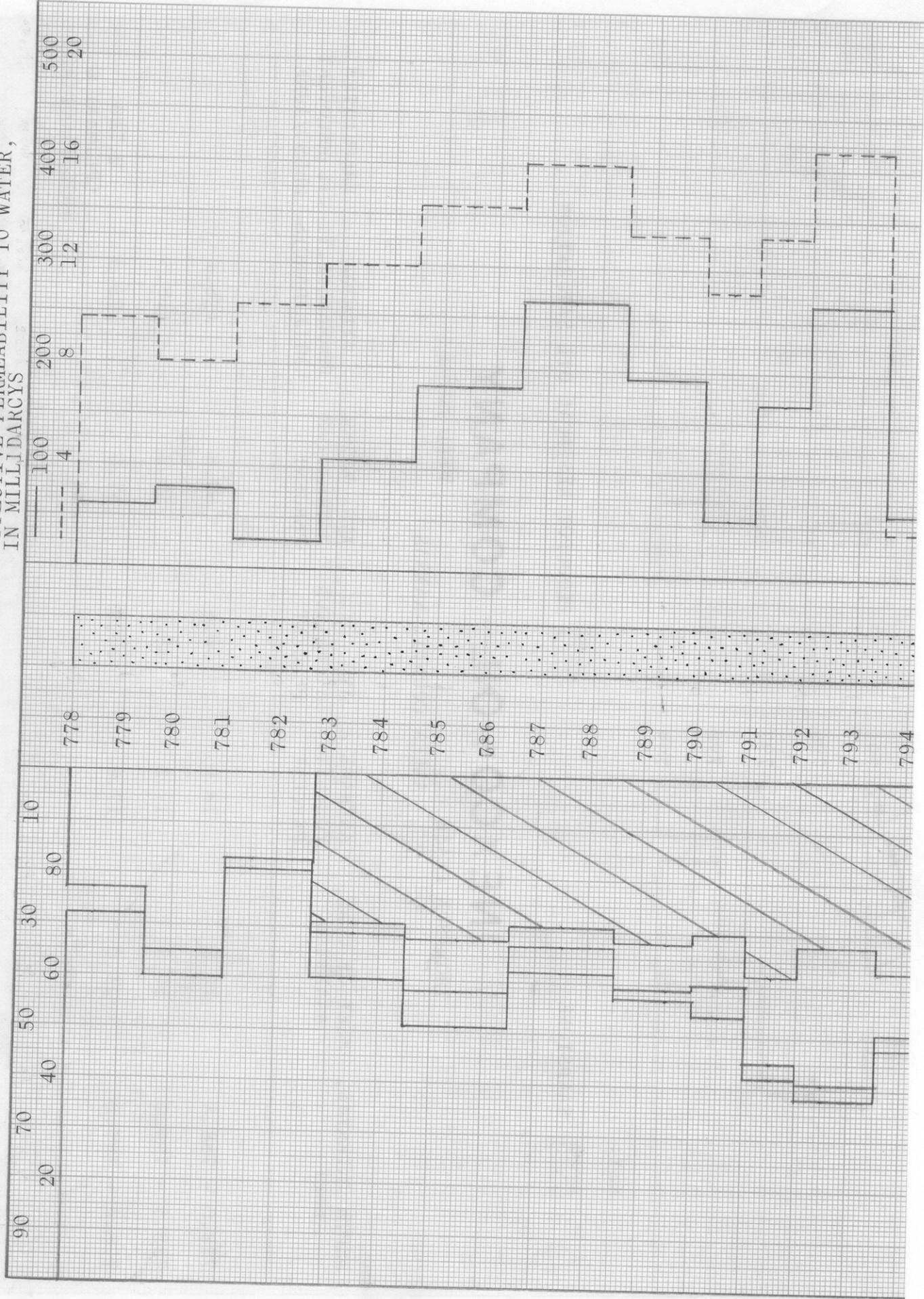
Company	Inexco Oil Company	Lease	Thompson	Well No.
Depth Interval, Feet	778.0 - 788.5	788.5 - 799.0	778.0 - 799.0	1
Feet of Core Analyzed	5.8	6.5	12.3	
Average Percent Porosity	19.8	18.4	19.0	
Average Percent Original Oil Saturation	35.5	49.0	42.6	
Average Percent Oil Recovery	5.5	15.2	10.6	
Average Percent Residual Oil Saturation	30.0	33.8	32.0	
Average Percent Residual Water Saturation	62.3	59.9	61.0	
Average Percent Total Residual Fluid Saturation	92.3	93.7	93.0	
Average Original Oil Content, Bbls./A. Ft.	547.	691.	623.	
Average Oil Recovery, Bbls./A. Ft.	85.	212.	152.	
Average Residual Oil Content, Bbls./A. Ft.	462.	479.	471.	
Total Original Oil Content, Bbls./Acre	3172.	4491.	7663.	
Total Oil Recovery, Bbls./Acre	492.	1380.	1872.	
Total Residual Oil Content, Bbls./Acre	2680.	3111.	5791.	
Average Effective Permeability, Millidarcys	14.21	11.11	12.58	
Average Initial Fluid Production Pressure, p.s.i.	10.	19.	15.6	

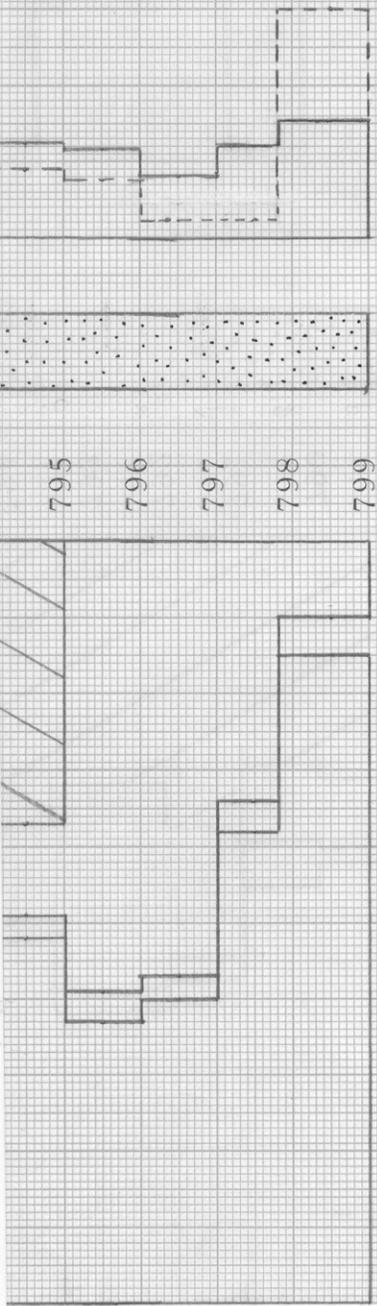
NOTE: Only those samples which recovered oil were used in calculating the above averages.

WATER SAT., PERCENT →

← OIL SAT., PERCENT

— PERMEABILITY, IN MILLIDARCYS
--- EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS





KEY:

 SANDSTONE

 FLOODPOT RESIDUAL OIL SATURATION

INEXCO OIL COMPANY

THOMPSON LEASE

WELL NO. 1

ALLEN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE POROSITY PERCENT	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY MILLIDARCYS	CALCULATED OIL RECOVERY BBLs./ACRE
778.0 - 788.5	10.5	18.0	30.6	63.8	128.1	2,710 (PRIMARY & WATERFLOODING)
788.5 - 799.0	10.5	17.5	45.1	51.3	118.5	
778.0 - 799.0	21.0	17.8	37.9	57.6	123.3	

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 CHANUTE, KANSAS
 JANUARY, 1981
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