OILFIELD RESEARCH LABORATORIE

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December 31, 1980

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 Booth Lease, Well No. 21, located in Allen County, Kansas and submitted to our laboratory on October 27, 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 Booth Well No. 21

Location -

Section 18 Twp. 21S Rge. 25E County Allen State Kansas

Elevation, Feet -

Name of Sand	Bartlesville
Top of Core	775.0
Bottom of Core	793.0
Top of Sand	775.0
Bottom of Sand	793.0
Total Feet of Permeable Sand	15.8
Total Feet of Floodable Sand	8.2

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 20	3.8	3.8
20 - 40	3.7	7.5
40 - 80	5.1	12.6
80 & Above	3.2	15.8

Average Permeability Millidarcys	50.0
Average Percent Porosity	16.5
Average Percent Oil Saturation	33.3
Average Percent Water Saturation	50.0
Average Oil Content, Bbls./A. Ft.	431.
Total Oil Content, Bbls./Acre	7,367.
Average Percent Oil Recovery by Laboratory Flooding Tests	4.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	56.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	463.
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:

Depth Interval, Feet	Description
775.0 - 777.0	Light brown sandstone.
777.0 - 778.7	Brown and gray laminated sandstone and shale.
778.7 - 779.6	Gray laminated sandstone and shale.
779.6 - 779.9	Brown shaly sandstone.
779.9 - 783.3	Brown sandstone.
783.3 - 783.9	Brown and gray laminated sandstone and shale.
783.9 - 786.3	Brown sandstone.
786.3 - 789.0	Brown and gray laminated sandstone and shale.
789.0 - 790.4	Grayish light brown sandstone.
790.4 - 792.2	Brown sandstone.
792.2 - 793.0	Grayish light brown sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 463 barrels of oil per acre was obtained from 8.2 feet of sand. The weighted average percent oil saturation was reduced from 37.8 to 33.8, or represents an average recovery of 4.0 percent. The weighted average effective permeability of the samples is 5.05 millidarcys, while the average initial fluid production pressure is 20.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 18 samples tested, 9 produced water and oil, and 6 samples produced water only. This indicates that approximately 50 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 1,910 barrels of oil per acre. This is an average recovery of 233 barrels per acre foot from 8.2 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	30.0
Average porosity, percent	18.3
Oil saturation after flooding, percent	33.8
Performance factor, percent, estimated	50.0
Net floodable sand, feet	8.2

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Inexco Oil Company Lease Booth Well No. 21

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	775.5	17.0	21	72	93	277	56.	1.0	1.0	277	56.00
2	776.5	18.9	20	61	81	292	35.	1.0	2.0	292	35.00
3	777.5	16.3	19	70	89	240	52.	1.0	3.0	240	52.00
4	778.5	18.7	44	36	80	638	35.	0.7	3.7	447	24.50
5	779.7	19.7	36	46	82	550	Imp.	0.3	4.0	165	0.00
6	780.5	17.3	36	40	76	483	26.	1.0	5.0	483	26.00
7	781.5	19.0	39	39	78	575	33.	1.0	6.0	575	33.00
8	782.5	20.0	34	48	82	528	115.	1.4	7.4	739	161.00
9	783.5	20.0	35	52	87	543	9.6	0.6	8.0	326	5.76
10	784.5	18.2	37	46	83	522	84.	1.0	9.0	522	84.00
11	785.5	19.2	40	35	75	596	67.	1.4	10.4	834	93.80
12	786.5	18.0	41	36	77	573	78.	0.7	11.1	401	54.60
13	787.5	7.6	31	60	91	183	Imp.	1.0	12.1	183	0.00
14	788.5	16.3	37	37	74	468	8.5	1.0	13.1	468	8.50
15	789.5	10.2	21	70	91	166	11.	1.4	14.5	232	15.40
16	790.5	12.7	56	36	92	552	53.	1.0	15.5	552	53.00
17	791.5	17.0	41	35	76	541	92.	0.8	16.3	433	73.60
18	792.5	16.0	20	70	90	248	17.	0.8	17.1	198	13.60

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Inexco Oil Company Lease Booth Well No. 21

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
775.0 - 787.0	10.8	57.9	625.66
787.0 - 793.0	5.0	32.8	164.10
775.0 - 793.0	15.8	50.0	789.76

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
775.0 - 787.0	11.1	18.5	33.1	48.6	478	5,301
787.0 - 793.0	6.0	12.9	33.7	52.5	344	2,066
775.0 - 793.0	17.1	16.5	33.3	50.0	431	7,367

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Inexco Oil Company Lease Booth Well No. 21

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.			
1	775.5	17.1	21	279	0	0	21	75	279	448	7.65	15
2	776.5	18.7	20	290	0	0	20	73	290	283	4.50	15
3	777.5	16.3	19	240	0	0	19	73	240	107	1.50	20
4	778.5	18.8	44	642	5	73	39	57	569	242	4.35	15
5	779.7	19.8	36	553	0	0	36	58	553	0	Imp.	-
6	780.5	17.2	36	480	5	67	31	53	413	18	0.50	40
7	781.5	19.0	39	575	5	74	34	59	501	143	2.40	20
8	782.5	20.1	34	530	4	62	30	61	468	352	8.25	15
9	783.5	20.0	35	543	3	47	32	62	496	243	4.05	15
10	784.5	18.4	37	528	4	57	33	63	471	494	8.10	20
11	785.5	19.3	40	599	0	0	40	58	599	487	7.50	15
12	786.5	18.1	41	576	3	42	38	56	534	292	8.66	15
13	787.5	7.8	30	182	0	0	30	63	182	0	Imp.	-
14	788.5	16.2	37	465	3	38	34	50	427	263	4.35	20
15	789.5	9.9	22	169	0	0	22	71	169	0	Imp.	-
16	790.5	12.7	56	552	0	0	56	40	552	184	3.30	20
17	791.5	17.0	41	541	3	40	38	60	501	241	3.75	20
18	792.5	16.4	19	242	0	0	19	75	242	323	3.45	15

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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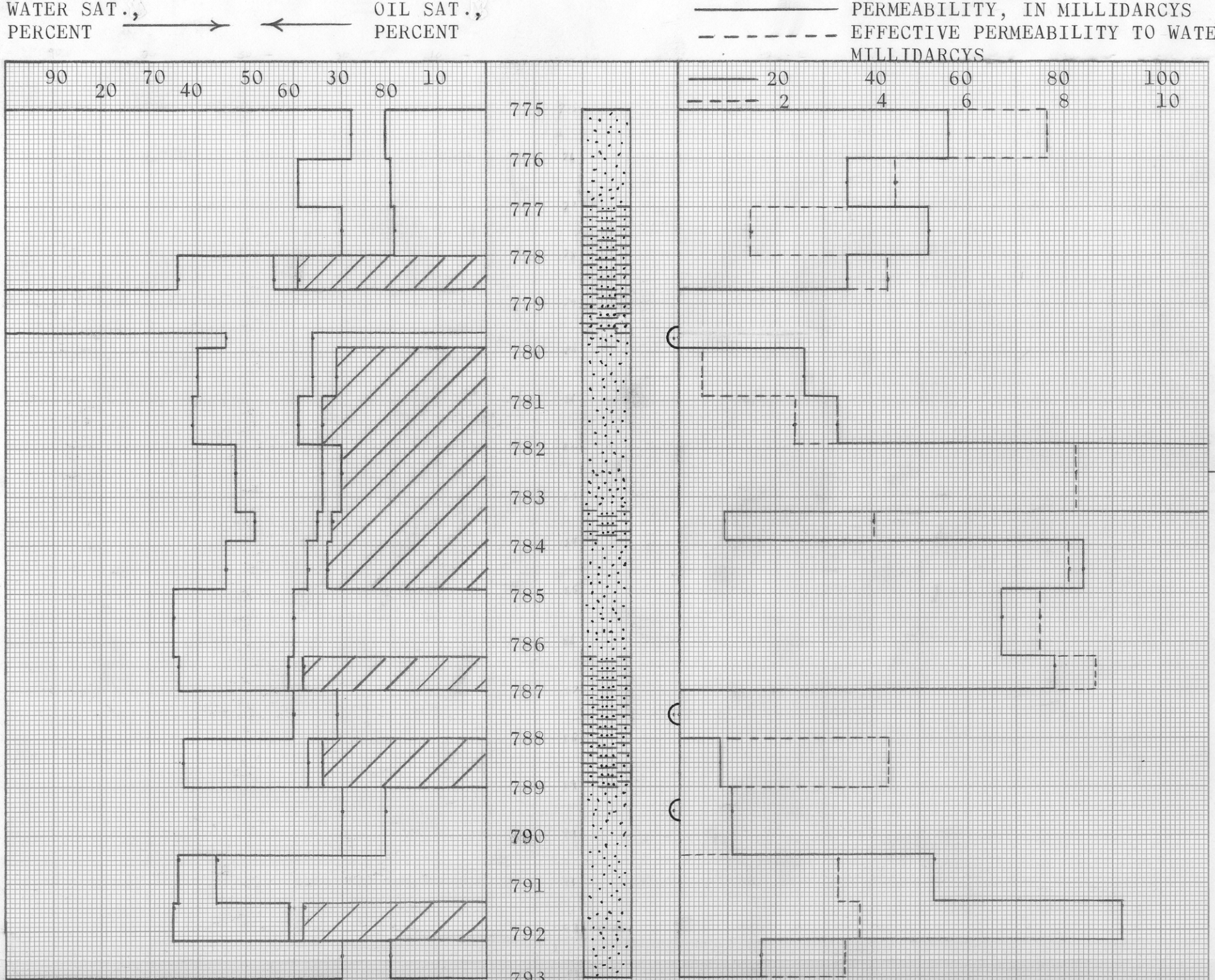
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company Inexco Oil Company Lease Booth Well No. 21

Depth Interval, Feet	775.0 - 787.0	787.0 - 793.0	775.0 - 793.0
Feet of Core Analyzed	6.4	1.8	8.2
Average Percent Porosity	18.8	16.6	18.3
Average Percent Original Oil Saturation	37.5	38.8	37.8
Average Percent Oil Recovery	4.2	3.0	4.0
Average Percent Residual Oil Saturation	33.3	35.8	33.8
Average Percent Residual Water Saturation	58.9	54.4	57.9
Average Percent Total Residual Fluid Saturation	92.2	90.2	91.7
Average Original Oil Content, Bbls./A. Ft.	547.	499.	536.
Average Oil Recovery, Bbls./A. Ft.	61.	39.	56.
Average Residual Oil Content, Bbls./A. Ft.	486.	460.	480.
Total Original Oil Content, Bbls./Acre	3503.	898.	4401.
Total Oil Recovery, Bbls./Acre	393.	70.	463.
Total Residual Oil Content, Bbls./Acre	3110.	828.	3938.
Average Effective Permeability, Millidarcys	5.33	4.08	5.05
Average Initial Fluid Production Pressure, p.s.i.	20.0	20.0	20.0

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



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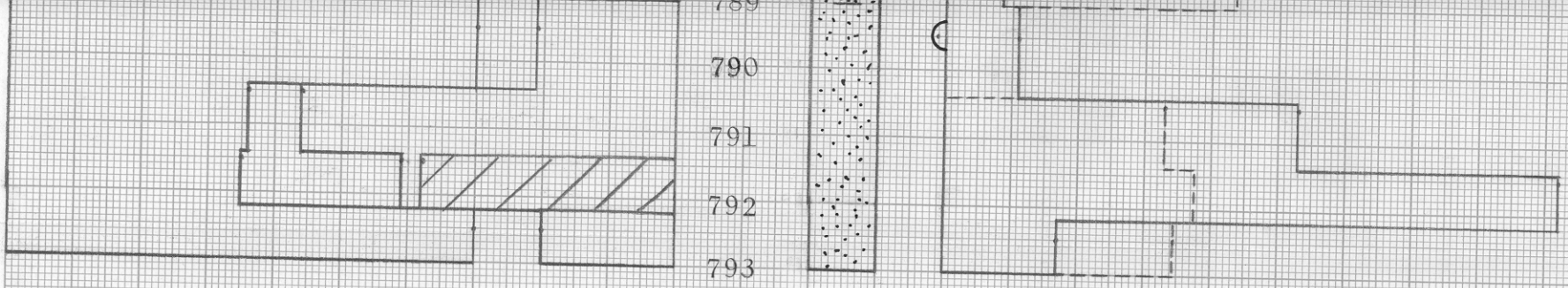

KEY:

SANDSTONE

SHALY SANDSTONE

LAMINATED SANDSTONE AND SHALE

FLOODPOT RESIDUAL OIL SATURATION

IMPERMEABLE TO WATER

INEXCO OIL COMPANY

BOOTH LEASE

WELL NO. 21

ALLEN COUNTY, KANSAS

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
775.0 - 787.0	11.1	18.5	33.1	48.6	57.9	
787.0 - 793.0	6.0	12.9	33.7	52.5	32.8	
775.0 - 793.0	17.1	16.5	33.3	50.0	50.0	1910

(PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
DECEMBER, 1980