OILFIELD RESEARCH LABORATORIES
536 NORTH HIGHLAND - CHANUTE, KANSAS - PHONE HE1-2650

18-25-21E

Richard Booth 1

October 11, 1966

G. K. Woods
Box 1867
Ardmore, Oklahoma

Dear Sir:

Enclosed herewith is the report of the analysis of the Rotary core samples taken from the Richard Booth Lease, Well No. 1, Allen County, Kansas, and submitted to our laboratory on October 6, 1966.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Benjamin R. Pearman

Benjamin R. Pearman

BRP:rf

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GENERAL INFORMATION & SUMMARY

Company G. K. Woods Lease Richard Booth Well No. 1

Location

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

Name of Sand	Bartlesville
Top of Core	760.0
Bottom of Core	779.0
Top of Sand (Analyzed)	760.0
Bottom of Sand (Analyzed)	779.0
Total Feet of Permeable Sand	19.0
Total Feet of Floodable Sand	0.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
7 - 20	3.4	3.4
20 - 50	3.0	6.4
50 - 100	6.6	13.0
100 - 150	4.0	17.0
150 & above	2.0	19.0

Average Permeability Millidarcys	98.2
Average Percent Porosity	20.4
Average Percent Oil Saturation	62.9
Average Percent Water Saturation	31.8
Average Oil Content, Bbls./A. Ft.	996.
Total Oil Content, Bbls./Acre	18,919.
Average Percent Oil Recovery by Laboratory Flooding Tests	0.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	0.0
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	0.0
Total Calculated Oil Recovery, Bbls./Acre (Primary)	1,460.
Packer Setting, Feet	
Viscosity, Centipoises @	
A. P. I. Gravity, degrees @ 60 °F	
Elevation, Feet	

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

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
760.0 - 766.6	Brown, laminated, shaly sandstone.
766.6 - 770.6	Brown sandstone.
770.6 - 779.0	Brown, laminated, shaly sandstone.

For the most part, the pay is made up of brown, more or less shaly sandstone.

PERMEABILITY

For the sake of distribution, the core was divided into two sections. The weighted average permeability of the upper and lower sections is 63.4 and 116.8 millidarcys respectively; the overall average being 98.2 (See Table III). By observing the data given on the coregraph, it is noticeable that the sand has a rather irregular permeability profile. The permeability of the sand varies from 7.9 to a maximum of 377. millidarcys.

PERCENT SATURATION & OIL CONTENT

The sand in this core shows a good weighted average percent oil saturation, namely, 62.9. The weighted average percent oil saturation of the upper and lower sections is 52.2 and 68.4 respectively.

The weighted average percent water saturation of the upper and lower sections is 40.1 and 27.4 respectively; the overall average being 31.8 (See Table III). This gives an overall weighted average total fluid saturation of 94.7 percent.

The weighted average oil content of the upper and lower sections is 766 and 1,118 barrels per acre foot respectively; the overall average being 996. The total oil content, as shown by this core, is 18,919 barrels per acre (See Table III).

LABORATORY FLOODING TESTS

The sand in this core failed to respond to laboratory flooding tests.

By observing the data given in Table IV, you will note that of the 19 samples tested, 9 produced water and none oil. The tests also show that the sand has a wide variation in effective permeability to water.

CONCLUSION

The results of the laboratory tests indicate that efficient primary operations in the vicinity of this well should recover approximately 1,460 barrels of oil per acre or an average of 77 barrels per acre foot from the 19.0 feet of pay sand analyzed in this core. These recovery values were calculated using the following data and assumptions:

Original formation volume factor	1.03
Primary recovery, estimated, percent	5.0
Average porosity, percent	20.4
Net pay sand, feet	19.0

Even though the core failed to respond to laboratory flooding tests, it is possible that this virgin reservoir would respond to a water pressure maintenance operation using water.

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company G. K. Woods Lease Richard Booth 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	760.1	20.2	42	42	84	658	68.	0.6	0.6	395	40.80
2	761.1	20.3	46	40	86	724	8.1	1.0	1.6	724	8.10
3	762.1	18.4	46	46	92	656	63.	1.0	2.6	656	63.00
4	763.1	20.8	54	36	90	871	81.	1.0	3.6	871	81.00
5	764.1	17.9	60	38	98	832	16.	1.0	4.6	832	16.00
6	765.1	18.9	59	38	97	864	149.	1.0	5.6	864	149.00
7	766.1	17.1	54	42	96	716	60.	1.0	6.6	716	60.00
8	767.1	21.8	68	29	97	1,148	352.	1.0	7.6	1,148	352.00
9	768.1	24.3	77	17	94	1,452	149.	1.0	8.6	1,452	149.00
10	769.1	23.1	71	27	98	1,272	63.	1.0	9.6	1,272	63.00
11	770.1	25.2	84	13	97	1,640	377.	1.0	10.6	1,640	377.00
12	771.1	19.2	52	44	96	775	143.	1.0	11.6	775	143.00
13	772.1	21.1	54	44	98	883	119.	1.0	12.6	883	119.00
14	773.1	21.2	62	36	98	1,020	63.	1.0	13.6	1,020	63.00
15	774.1	21.2	66	31	97	1,085	92.	1.0	14.6	1,085	92.00
16	775.1	21.4	61	29	90	1,010	22.	1.0	15.6	1,010	22.00
17	776.1	21.9	78	17	95	1,320	23.	1.0	16.6	1,320	23.00
18	777.1	18.6	72	21	93	1,038	35.	1.0	17.6	1,038	35.00
19	778.1	15.4	73	23	96	870	7.9	1.4	19.0	1,218	11.06
								Total	-------	18,919	

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company G. K. Woods Lease Richard Booth Well No. 1

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
760.0 - 766.6	6.6	63.4	417.90
766.6 - 779.0	12.4	116.8	1,449.06
760.0 - 779.0	19.0	98.2	1,866.96

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
760.0 - 766.6	6.6	19.0	52.2	40.1	766	5,058
766.6 - 779.0	12.4	21.0	68.4	27.4	1,118	13,861
760.0 - 779.0	19.0	20.4	62.9	31.8	996	18,919

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

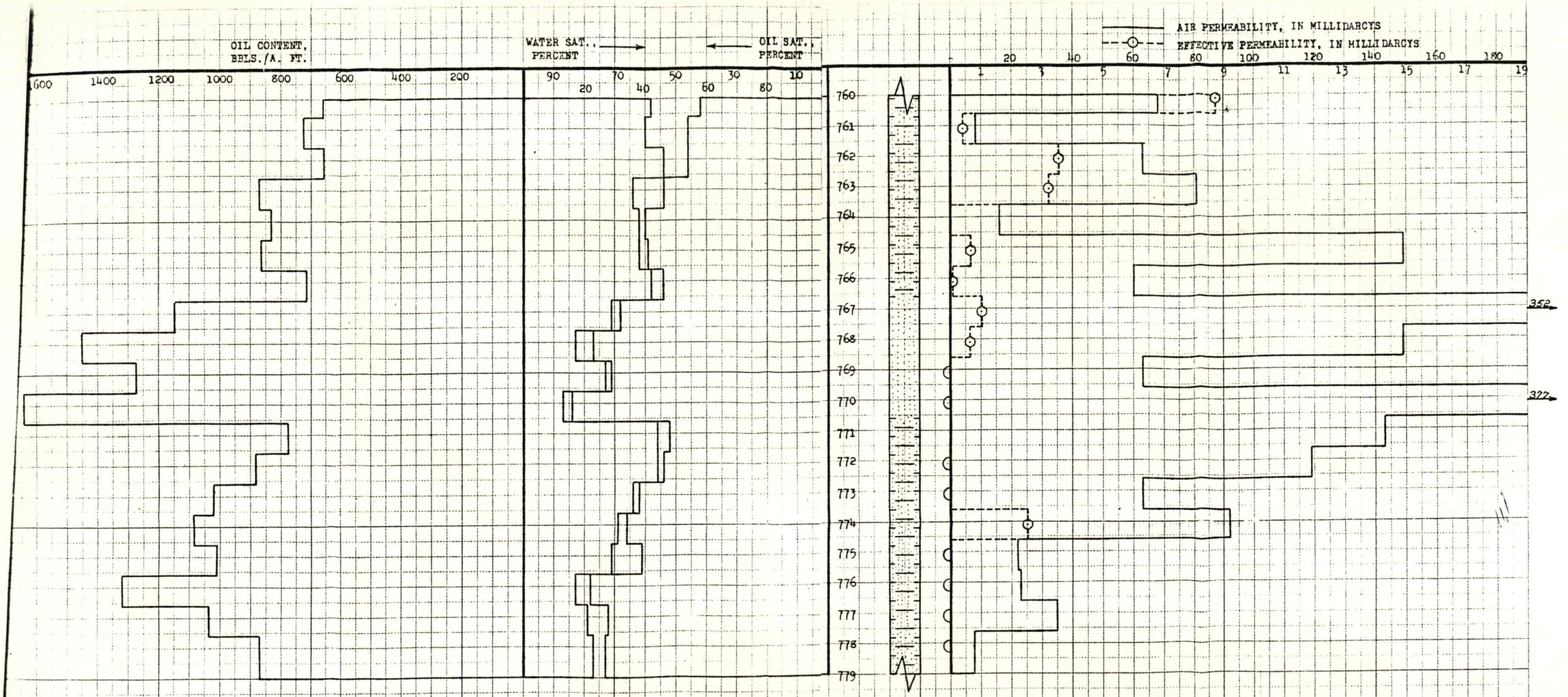
Company G. K. Woods Lease Richard Booth Well No. 1

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	760.1	20.4	42	664	0	0	42	55	664	316	8.76	20
2	761.1	20.7	47	754	0	0	47	47	754	14	0.410	50
3	762.1	18.9	45	659	0	0	45	51	659	257	3.55	20
4	763.1	20.9	53	859	0	0	53	41	859	270	3.22	20
6	765.1	18.7	60	870	0	0	60	39	870	30	0.680	30
7	766.1	17.4	52	701	0	0	52	46	701	3	0.097	50
8	767.1	21.7	68	1143	0	0	68	30	1143	32	1.04	50
9	768.1	24.0	76	1414	0	0	76	22	1414	29	0.658	30
10	769.1	23.0	73	1302	0	0	73	26	1302	0	Imp.	-
11	770.1	25.3	84	1648	0	0	84	12	1648	0	Imp.	-
13	772.1	20.8	56	902	0	0	56	43	902	0	Imp.	-
14	773.1	21.2	60	986	0	0	60	37	986	0	Imp.	-
15	774.1	21.2	66	1087	0	0	66	33	1087	71	2.52	20
16	775.1	21.3	62	1023	0	0	62	30	1023	0	Imp.	-
17	776.1	21.6	79	1322	0	0	79	19	1322	0	Imp.	-
18	777.1	18.4	71	1012	0	0	71	22	1012	0	Imp.	-
19	778.1	15.7	73	889	0	0	73	25	889	0	Imp.	-

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.



G. K. WOODS

RICHARD BOOTH WELL NO. 1

ALLEN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE POROSITY, PERCENT	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVG. OIL CONTENT BBLS./A.FT.	TOTAL OIL CONTENT BBLS./ACRE	AVG. AIR PERMEABILITY MILLIDARCYS	CALCULATED OIL RECOVERY, BBLS./ACRE
760.0 - 766.6	6.6	19.0	52.2	40.1	766	5,058	63.4	
766.6 - 779.0	12.4	21.0	68.4	27.4	1,118	13,861	116.8	
760.0 - 779.0	19.0	20.4	62.9	31.8	996	18,919	98.2	1,460 (Primary)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
OCTOBER, 1966