

OILFIELD RESEARCH LABORATORIES

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

May 1, 1980

Tap Oil Company
P.O. Box 95
Chanute, Kansas 66720

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Stabler Lease, Well No. T-2, Woodson County, Kansas, and submitted to our laboratory on March 28, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/tem

5 c to Chanute, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Tap Oil Company Lease Stabler Well No. T-2

Location -

Section 8 Twp 24S Rge. 16E County Woodson State Kansas

Elevation, Feet - - - - -

Name of Sand	Squirrel
Top of Core	1019.0
Bottom of Core	1038.3
Top of Sand	1019.7
Bottom of Sand	1038.3
Total Feet of Permeable Sand	19.3
Total Feet of Floodable Sand	12.4

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	2.9	2.9
10 - 50	5.3	8.2
50 - 100	9.1	17.3
100 - 200	2.0	19.3

Average Permeability Millidarcys	60.9
Average Percent Porosity	20.5
Average Percent Oil Saturation	44.7
Average Percent Water Saturation	29.0
Average Oil Content, Bbls./A. Ft.	718.
Total Oil Content, Bbls./Acre	13,866.
Average Percent Oil Recovery by Laboratory Flooding Tests	5.6
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	93.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	1,150.
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. The core was reported to be from a semi-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
1019.0 - 1019.7	Light brown sandstone.
1019.7 - 1033.2	Dark brown sandstone.
1033.2 - 1036.9	Brown and gray laminated sandstone and shale.
1036.9 - 1038.3	Dark brown sandstone.

LABORATORY FLOODING TESTS

The upper portion of the sand in this core responded well, relative to the lower portion of the sand, to laboratory flooding tests, as a total overall recovery of 1,150 barrels of oil per acre was obtained from 12.4 feet of sand. The weighted average percent oil saturation was reduced from 46.8 to 41.2, or represents an average recovery of 5.6 percent. The weighted average effective permeability of the samples is 3.67 millidarcys, while the average initial fluid production pressure is 27.9 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 19 samples tested, 12 produced water and oil, and 5 samples produced water only. This indicates that approximately 63 percent of the sand represented by these samples is floodable pay sand.

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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 4,150 barrels of oil per acre. This is an average recovery of 335 barrels per acre foot from 12.4 feet of floodable sand analyzed in this core.

These recovery values were calculated using the following data and assumptions:

Original formation volume factor, estimated	1.04
Reservoir water saturation, percent, estimated	15.0
Average porosity, percent	21.3
Oil saturation after flooding, percent	41.2
Performance factor, percent, estimated	50.0
Net floodable sand, feet	12.4

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE I-B

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.		
1	1019.5	18.4	27	44	385	83.	0.7	0.7	270	58.10
2	1020.5	20.5	46	29	732	11.	1.3	2.0	952	14.30
3	1021.5	20.2	34	22	533	80.	1.0	3.0	533	80.00
4	1022.5	20.7	48	27	771	71.	1.0	4.0	771	71.00
5	1023.5	19.8	42	30	645	117.	1.0	5.0	645	117.00
6	1024.6	19.8	44	30	676	26.	1.0	6.0	676	26.00
7	1025.5	20.0	35	32	543	43.	1.0	7.0	543	43.00
8	1026.5	23.1	47	19	842	199.	1.0	8.0	842	199.00
9	1027.5	23.4	44	23	799	90.	1.0	9.0	799	90.00
10	1028.5	22.7	47	17	828	89.	1.0	10.0	828	89.00
11	1029.5	22.4	53	17	921	61.	1.0	11.0	921	61.00
12	1030.5	21.0	50	22	815	73.	1.0	12.0	815	73.00
13	1031.5	15.5	44	42	529	68.	1.0	13.0	529	68.00
14	1032.5	20.6	46	29	735	28.	1.2	14.2	882	33.60
15	1033.5	12.6	28	64	274	46.	0.8	15.0	219	36.80
16	1034.8	22.3	45	29	779	2.7	1.0	16.0	779	2.70
17	1035.5	21.3	47	26	777	2.4	1.0	17.0	777	2.40
18	1036.5	20.4	48	28	760	5.0	0.9	17.9	684	4.50
19	1037.5	21.5	60	32	1001	76.	1.4	19.3	1401	106.40

Company Tap Oil Company

Lease Stabler

Well No. T-2

Oilfield Research Laboratories

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Lease	Stabler	Well No.		
Tap Oil Company			T-2		
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.		
1019.7 - 1033.2	14.2	72.0	1023.00		
1033.2 - 1038.3	5.1	30.0	152.80		
1019.7 - 1038.3	19.3	60.9	1175.80		
Depth Interval, Feet	Feet of Core Analyzed	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbl./Acre
1019.7 - 1033.2	14.2	43.8	27.1	705	10,006
1033.2 - 1038.3	5.1	47.4	34.6	757	3,860
1019.7 - 1038.3	19.3	44.7	29.0	718	13,866

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Tap Oil Company Lease Stabler Well No. T-2

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	1019.5	18.8	26	379	0	0	26	67	292	7.71	10
2	1020.5	20.6	46	735	48	3	43	53	219	3.90	25
3	1021.5	20.3	34	535	0	0	34	59	149	2.92	25
4	1022.5	21.1	48	786	131	8	40	53	298	7.95	25
5	1023.5	19.6	42	639	30	2	40	52	62	0.97	25
6	1024.6	20.0	44	683	78	5	39	55	119	2.92	25
7	1025.5	20.0	35	543	0	0	35	56	133	2.55	25
8	1026.5	22.9	47	835	107	6	41	52	206	11.62	20
9	1027.5	23.1	44	789	36	2	42	49	338	7.20	25
10	1028.5	22.5	47	820	175	10	37	57	249	4.57	25
11	1029.5	22.4	53	921	139	8	45	45	137	2.47	25
12	1030.5	21.0	50	815	163	10	40	48	106	1.57	25
13	1031.5	15.6	44	533	0	0	44	47	0	Imp.	-
14	1032.5	21.0	46	749	114	7	39	37	10	0.15	45
15	1033.5	13.1	27	274	0	0	27	47	19	0.37	50
16	1034.8	22.1	45	772	0	0	45	45	36	0.52	30
17	1035.5	21.2	47	773	49	3	44	40	38	0.60	35
18	1036.5	20.8	48	775	48	3	45	36	35	0.45	35
19	1037.5	21.2	60	987	0	0	60	33	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.

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SUMMARY OF LABORATORY FLOODING TESTS

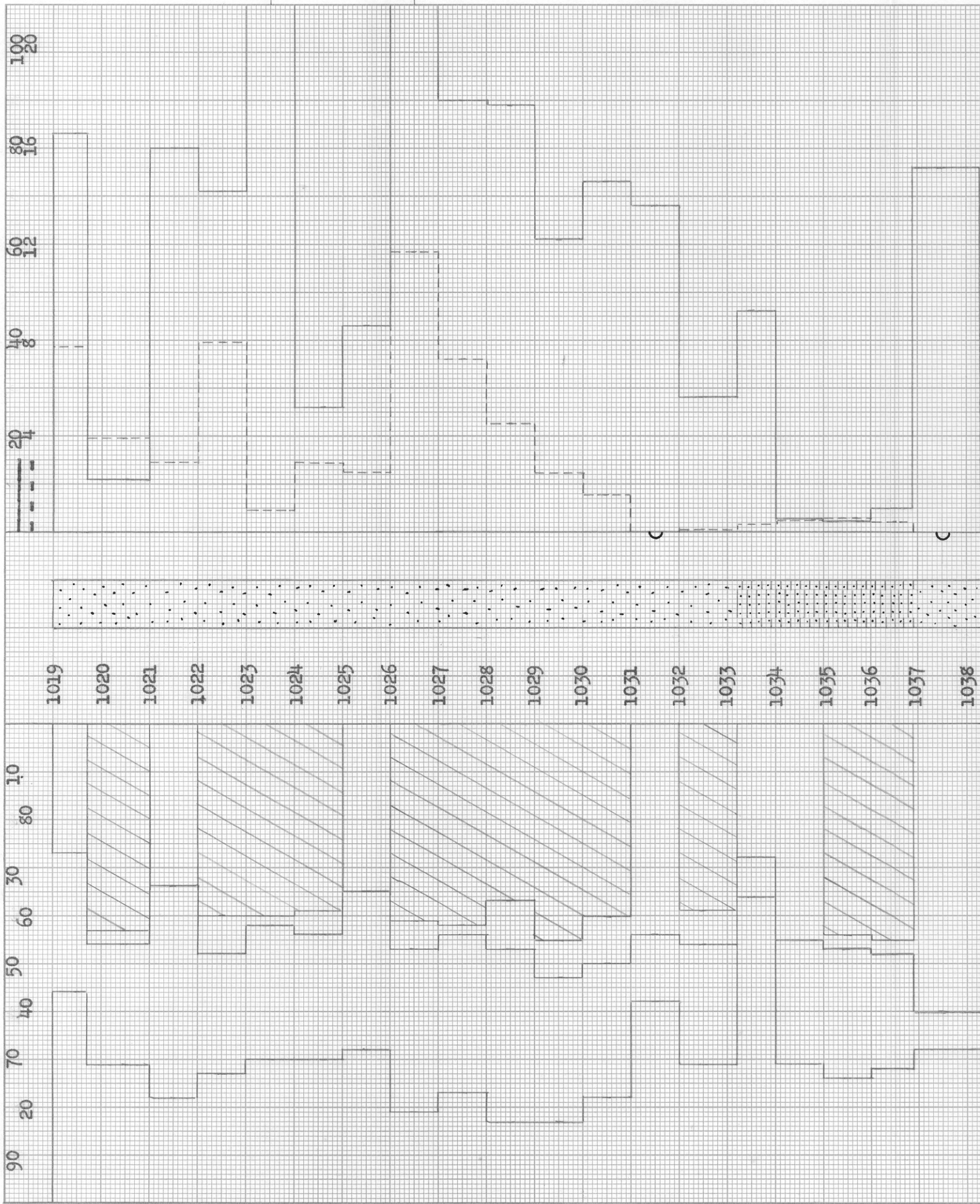
TABLE V

Company	Lease	Stabler	Well No.
Tap Oil Company	1019.7 - 1033.2	1033.2 - 1038.3	1019.7 - 1038.2
	10.5	1.9	12.4
Depth Interval, Feet			
	21.4	21.0	21.3
Feet of Core Analyzed			
	46.6	47.5	46.8
Average Percent Porosity			
	6.0	3.0	5.6
Average Percent Original Oil Saturation			
	40.6	44.5	41.2
Average Percent Oil Recovery			
	49.9	38.1	48.1
Average Percent Residual Oil Saturation			
	90.5	82.6	89.3
Average Percent Residual Water Saturation			
	776.	774.	775.
Average Original Oil Content, Bbls./A. Ft.			
	101.	49.	93.
Average Oil Recovery, Bbls./A. Ft.			
	675.	725.	682.
Average Residual Oil Content, Bbls./A. Ft.			
	8,142.	1,470.	9,612.
Total Original Oil Content, Bbls./Acre			
	1,058.	92.	1,150.
Total Oil Recovery, Bbls./Acre			
	7,084.	1,378.	8,462.
Total Residual Oil Content, Bbls./Acre			
	4.24	0.53	3.67
Average Effective Permeability, Millidarcys			
	26.5	35.0	27.9
Average Initial Fluid Production Pressure, p.s.i.			

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

--- EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCY

PERCENT



117

199

KEY:



SANDSTONE



LAMINATED SANDSTONE AND SHALE



FLOODPOT RESIDUAL OIL SATURATION



IMPERMEABLE TO WATER

TAP OIL

STABLER LEASE WELL NO. T - 2

WOODSON COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCS	CALCULATED OIL RECOVERY BBS/ACRE
1019.7 - 1033.2	14.2	20.6	43.8	27.1	72.0	
1033.2 - 1038.3	5.1	20.0	47.4	34.6	30.0	
1019.7 - 1038.3	19.3	20.5	44.7	29.0	60.9	4,150 (PRIMARY AND WATERFLOODING)

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CHANUTE, KANSAS
APRIL, 1980. HR