

February 15, 1950

The Ohio Oil Company  
Thompson Building  
Tulsa, Oklahoma

Attention: Mr. R. E. McMillen

Gentlemen:

Enclosed herewith is the report of the partial analysis of the 2 $\frac{1}{2}$ " Rotary core taken from the Martindell Lease, Well No. 40, Greenwood County, Kansas, and submitted to our laboratory on February 1, 1950.

In calculating the recovery for the sand within the vicinity of this well, an allowance was made for oil lost during coring, and it was assumed that the true water saturation of the sand is 40 percent.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

Carl L. Pate

CLP:bb  
c.c. to Mr. Fred Kluck

THE OHIO OIL COMPANY

CORE ANALYSIS REPORT

MARTINDELL LEASE

WELL NO. 40

GREENWOOD COUNTY, KANSAS

OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

FEBRUARY 15, 1950

# Oil Field Research Laboratories

## GENERAL INFORMATION & SUMMARY

Company The Ohio Oil Company Lease Martindell Well No. 40

Location \_\_\_\_\_

Section 31 Twp. 23 S Rge. 10 E County Greenwood State Kansas

Name of Sand	Bartlesville
Top of Core	2299.00
Bottom of Core	2358.00
Top of Sand	2310.50
Bottom of Sand	2356.40
Total Feet of Permeable Sand	13.39

Distribution of Permeable Sand:

Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 2	5.17	5.17
2 - 4	3.40	8.57
4 - 8	3.74	12.31
8 - 12	0.30	12.61
12 & above	0.78	13.39

Average Permeability, Millidarcys	3.46
Average Percent Porosity	15.84
Average Percent Oil Saturation	25.04
Average Percent Water Saturation	-
Average Oil Content, Bbls./A. Ft.	309.
Total Oil Content, Bbls./Acre	5,736.
Average Percent Oil Recovery by Laboratory Flooding Tests	3.05
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	38.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	113.
Total Calculated Oil Recovery, Bbls./Acre	500.

Casing Point, Packer Setting, Feet 2310.0

Viscosity, Centipoises @

A. P. I. Gravity, degrees @ 60 °F

Note: The above averages are for that part of the sand section extending from the casing point to the bottom of the sand.

OIL FIELD RESEARCH LABORATORIES

LOG

Company The Ohio Oil Company Lease Martindell Well No. 40

<u>Depth Interval,</u> <u>Feet</u>	<u>Description</u>
2299.00 - 2305.10	- Gray sandy shale.
2305.10 - 2305.80	- Gray fine grained laminated micaceous sandstone.
2305.80 - 2309.40	- Laminated sandy shale.
2309.40 - 2310.50	- Gray shale.
2310.50 - 2311.17	- Gray fine grained slightly laminated micaceous sandstone.
2311.17 - 2311.97	- Gray sandy shale.
2311.97 - 2312.10	- Gray fine grained micaceous shaley sandstone.
2312.10 - 2312.90	- Laminated sandstone and shale.
2312.90 - 2313.20	- Gray fine grained micaceous slightly laminated sandstone.
2313.20 - 2313.87	- Gray fine grained laminated micaceous sandstone.
2313.87 - 2314.18	- Gray shale.
2314.18 - 2315.28	- Gray fine grained micaceous sandstone.
2315.28 - 2315.38	- Gray shale.
2315.38 - 2315.80	- Gray sandy shale.
2315.80 - 2316.10	- Gray fine grained micaceous sandstone.
2316.10 - 2318.10	- Gray shale.
2318.10 - 2319.05	- Gray fine grained micaceous slightly shaley sandstone.
2319.05 - 2320.25	- Gray fine grained micaceous sandstone.
2320.25 - 2321.25	- Loss.
2321.25 - 2323.10	- Gray fine grained micaceous sandstone.
2323.10 - 2323.55	- Laminated sandstone and shale.
2323.55 - 2323.88	- Gray fine grained micaceous slightly shaley sandstone.
2323.88 - 2324.06	- Gray sandy shale.

- 2324.06 - 2324.30 - Gray fine grained micaceous sandstone.
- 2324.30 - 2324.45 - Laminated sandstone and shale.
- 2324.45 - 2324.55 - Gray shale.
- 2324.55 - 2326.35 - Gray fine grained micaceous sandstone.
- 2326.35 - 2327.70 - Gray fine grained micaceous sandstone containing a vertical fracture.
- 2327.70 - 2328.60 - Gray fine grained micaceous sandstone.
- 2328.60 - 2329.50 - Gray shale containing a vertical fracture.
- 2329.50 - 2329.65 - Gray fine grained laminated micaceous sandstone.
- 2329.65 - 2330.00 - Laminated sandstone and shale.
- 2330.00 - 2330.80 - Gray shale.
- 2330.80 - 2331.10 - Gray fine grained micaceous sandstone.
- 2331.10 - 2346.00 - Loss.
- 2346.00 - 2346.25 - Laminated sandstone and shale, containing a vertical fracture.
- 2346.25 - 2346.80 - Laminated sandstone and shale.
- 2346.80 - 2347.73 - Gray shale.
- 2347.73 - 2348.20 - Gray fine grained micaceous shaley sandstone.
- 2348.20 - 2348.65 - Gray sandy shale.
- 2348.65 - 2350.95 - Gray fine grained micaceous sandstone.
- 2350.95 - 2351.80 - Gray fine grained micaceous slightly carbonaceous sandstone.
- 2351.80 - 2352.75 - Gray fine grained micaceous sandstone.
- 2352.75 - 2353.10 - Gray fine grained micaceous conglomeratic sandstone.
- 2353.10 - 2355.40 - Gray fine grained laminated micaceous sandstone.
- 2355.40 - 2356.10 - Laminated sandstone and shale.
- 2356.10 - 2356.40 - Gray fine grained micaceous sandstone.
- 2356.40 - 2358.00 - Loss.

**Oil Field Research Laboratories**  
**RESULTS OF PERMEABILITY TESTS**  
**TABLE I**

Company The Ohio Oil Company Lease Martindell Well No. 40

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
1	2310.85	0.41	0.40	0.40	0.16
2	2311.11	0.43	0.35	0.75	0.15
3	2312.00	Imp.	0.35	1.10	0.00
4	2313.25	Imp.	0.45	1.55	0.00
5	2314.25	0.93	0.55	2.10	0.51
6	2314.75	0.56	0.80	2.90	0.45
7	2315.25	Imp.	0.90	3.80	0.00
8	2315.72	Imp.	0.15	3.95	0.00
9	2318.40	Imp.	0.47	4.42	0.00
10	2318.88	0.51	0.50	4.92	0.26
11	2319.40	2.0	0.35	5.27	0.70
12	2320.04	3.9	0.35	5.62	1.37
13	2321.35	4.0	0.25	5.87	1.00
14	2321.70	1.3	0.85	6.72	1.11
15	2322.10	4.2	0.30	7.02	1.26
16	2322.40	4.3	0.35	7.37	1.51
17	2322.85	3.7	0.20	7.57	0.74
18	2323.72	0.53	0.50	8.07	0.27
19	2324.20	4.4	0.45	8.52	1.98
20	2324.56	Imp.	0.35	8.87	0.00
21	2324.98	14.	0.50	9.37	7.00
22	2325.37	10.	0.17	9.54	1.70
23	2325.75	11.	0.13	9.67	1.43
24	2326.10	7.2	0.67	10.34	4.82
25	2326.50	1.3	0.32	10.66	0.42
26	2327.20	4.2	0.50	11.16	2.10
27	2327.98	16.	0.28	11.44	4.48
28	2329.55	Imp.	0.42	11.86	0.00
29	2347.75	Imp.	0.50	12.36	0.00
30	2348.90	2.8	0.45	12.81	1.26
31	2349.38	2.0	0.70	13.51	1.40
32	2349.65	2.7	0.50	14.01	1.35
33	2350.06	5.0	0.25	14.26	1.25
34	2350.60	4.8	0.40	14.66	1.92
35	2351.02	1.2	0.35	15.01	0.42
36	2351.45	2.5	0.40	15.41	1.00
37	2351.75	2.0	0.45	15.86	0.90
38	2352.04	4.7	0.33	16.19	1.55
39	2352.48	4.1	0.24	16.43	0.98
40	2352.82	1.3	0.25	16.68	0.33

**Oil Field Research Laboratories**  
**RESULTS OF PERMEABILITY TESTS**  
**TABLE I**

Company The Ohio Oil Company Lease Martindell Well No. 40

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
41	2353.13	1.9	0.30	16.98	0.57
42	2353.58	Imp.	0.40	17.38	0.00
43	2354.03	Imp.	0.45	17.83	0.00
44	2354.45	Imp.	0.45	18.28	0.00
45	2354.95	Imp.	0.70	18.98	0.00
46	2355.48	Imp.	0.70	19.68	0.00

**Oil Field Research Laboratories**  
**SUMMARY OF PERMEABILITY TESTS**

**TABLE II**

Company <u>The Ohio Oil Company</u>		Lease <u>Martindell</u>		Well No. <u>40</u>
Depth Interval Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity, Ft. x Md.	
2305.10 - 2316.10	2.10	0.60	1.27	
2318.10 - 2328.60	6.67	4.82	32.15	
2330.80 - 2356.40	4.62	2.79	12.93	
2310.00 - 2356.40	13.39	3.46	46.35	

**Oil Field Research Laboratories**  
**RESULTS OF SATURATION TESTS**

**TABLE III**

Company The Ohio Oil Company Lease Martindell Well No. 40

Sat. No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content Bbls./A. Ft.	Feet of Core		Total Oil Content Bbls./Acre
			Oil	Water	Total		Ft.	Cum. Ft.	
2	2305.45	15.3	14.8	-	-	176	0.70	0.70	123
3	2310.65	15.2	23.8	-	-	282	0.67	1.37	189
4	2313.05	15.5	19.8	-	-	239	0.97	2.34	232
5	2315.05	15.6	32.2	-	-	390	1.10	3.44	430
6	2315.95	15.3	27.6	-	-	329	0.30	3.74	99
7	2318.20	15.3	25.9	-	-	308	2.15	5.89	663
8	2321.90	16.5	27.2	-	-	350	1.15	7.04	403
9	2323.00	17.2	29.0	-	-	388	0.70	7.74	272
10	2324.75	15.6	24.3	-	-	294	0.75	8.49	220
11	2325.90	16.7	27.0	-	-	351	1.80	10.29	632
12	2328.40	16.2	19.8	-	-	249	1.50	11.79	374
13	2330.95	17.2	21.7	-	-	290	0.30	12.09	87
14	2348.07	14.7	20.6	-	-	235	0.47	12.56	111
15	2349.15	16.7	21.9	-	-	285	1.05	13.61	300
16	2350.28	16.5	23.8	-	-	306	1.25	14.86	382
17	2351.25	16.1	31.2	-	-	391	0.85	15.71	332
18	2352.25	16.7	24.7	-	-	321	0.95	16.66	305
19	2353.35	15.3	20.0	-	-	238	0.70	17.36	167
20	2354.30	13.1	25.1	-	-	256	1.00	18.36	256
21	2355.30	13.6	23.9	-	-	252	0.60	18.96	151
22	2356.25	17.2	32.7	-	-	437	0.30	19.26	131
							Total	- - -	5,859

Oil Field Research Laboratories

SUMMARY OF SATURATION TESTS

TABLE IV

Company	The Ohio Oil Company	Lease	Martindell	Well No.	40	
Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbls./A. Ft.	Total Oil Content Bbls./Acre
2305.10-2316.10	3.74	15.43	23.88	-	287	1,073
2318.10-2328.60	8.05	16.14	25.32	-	319	2,564
2330.80-2356.40	7.47	15.66	24.38	-	297	2,222
2310.00-2356.40	18.56	15.84	25.04	-	309	5,736

Oil Field

RESULTS OF

Company The Ohio Oil CompanyLease 1

Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery	
			Percent	Bbls./A. Ft.	Percent	E
2	2305.45	15.3	14.8	176	0.0	
3	2310.65	15.2	23.8	282	0.0	
4	2313.05	15.5	19.8	239	0.0	
5	2315.05	15.6	32.2	390	0.0	
6	2315.95	15.3	27.6	329	0.0	
7	2318.20	15.3	25.9	308	0.0	
8	2321.90	16.5	27.2	350	0.0	
9	2323.00	17.2	29.0	388	0.0	
10	2324.75	15.6	24.3	294	2.0	
11	2325.90	16.7	27.0	351	0.0	
12	2328.40	16.2	19.8	249	0.0	
13	2330.95	17.2	21.7	290	0.0	
14	2348.07	14.7	20.6	235	0.0	
15	2349.15	16.7	21.9	285	0.2	
16	2350.28	16.5	23.8	306	0.0	
17	2351.25	16.1	31.2	391	6.8	
18	2352.25	16.7	24.7	321	0.0	
19	2353.35	15.3	20.0	238	0.0	
20	2354.30	13.1	25.1	256	0.0	
21	2355.30	13.6	23.9	252	0.0	
22	2356.25	17.2	32.7	437	5.0	

Notes: cc - cubic cent  
\*Volume of water of maximum oil  
\*\*Determined by which still c

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LABORATORY FLOODING TESTS

TABLE V

Cartindell Well No. 40

Bls./A. Ft.	Residual Saturation			Volume of Water Recovered cc*	Effective Permeability ** Millidarcys	Initial Fluid Production Pressure Lbs./Sq. In.
	% Oil	% Water	Bbls./A. Ft.			
0	14.8	65.2	176	0	Imp.	50+
0	23.8	59.5	282	0	Imp.	50+
0	19.8	59.5	239	0	Imp.	50+
0	32.2	51.2	390	0	Imp.	50+
0	27.6	55.5	329	0	Imp.	50+
0	25.9	50.0	308	0	Imp.	50+
0	27.2	56.0	350	0	Imp.	50+
0	29.0	51.0	388	1	0.149	50
24	22.3	64.5	270	63	1.75	15
0	27.0	54.0	351	0	Imp.	50+
0	19.8	66.6	249	9	0.260	30
0	21.7	62.2	290	4	0.102	45
0	20.6	65.2	235	0	Imp.	50+
3	21.7	58.5	282	1	0.105	50
0	23.8	58.0	306	2	0.200	50
85	24.4	58.5	306	0	0.003	40
0	24.7	60.7	321	2.5	0.149	45
0	20.0	60.5	238	0	Imp.	50+
0	25.1	67.0	256	0	Imp.	50+
0	23.9	60.6	252	0	Imp.	50+
57	27.7	63.6	370	59.5	3.36	10

timer  
 or recovered at the time  
 l recovery.  
 passing water through sample  
 contains residual oil.

**Oil Field Research Laboratories**  
**SUMMARY OF LABORATORY FLOODING TESTS**

TABLE VI

Company	The Ohio Oil Company	Lease	Martindell	Well No.	40
Depth Interval, Feet	2324.55 - 2356.40				
Feet of Core Analyzed	2.95				
Average Percent Porosity	16.31				
Average Percent Original Oil Saturation	26.31				
Average Percent Oil Recovery	3.05				
Average Percent Residual Oil Saturation	23.26				
Average Percent Residual Water Saturation	60.58				
Average Percent Total Residual Fluid Saturation	83.84				
Average Original Oil Content, Bbls./A. Ft.	333.				
Average Oil Recovery, Bbls./A. Ft.	38.				
Average Residual Oil Content, Bbls./A. Ft.	295.				
Total Original Oil Content, Bbls./Acre	982.				
Total Oil Recovery, Bbls./Acre	113.				
Total Residual Oil Content, Bbls./Acre	869.				
Average Effective Permeability, Millidarcys	0.828				
Average Initial Fluid Production Pressure, p.s.i.	28.8				

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