OIL FIELD RESEARCH LABORATORIES
CHANUTE, KANSAS

March 19, 1951

The Ohio Oil Company
Thompson Building
Tulsa, Oklahoma

Attention: Mr. Fred Kluck

Gentlemen:

Enclosed herewith is the report of the analysis of the 2½" Rotary core taken from the Martindell Lease, Well No. 42, Greenwood County, Kansas, ans submitted to our laboratory on February 27, 1951.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

Clayton A. Nattier

CAN:cmd

cc: To Mr. H. A. Scott

THE OHIO OIL COMPANY

CORE ANALYSIS REPORT

MARTINDELL LEASE WELL NO. 42

GREENWOOD COUNTY, KANSAS

OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

MARCH 19, 1951

Oil Field Research Laboratories

GENERAL INFORMATION & SUMMARY

Company The Ohio Oil Company Lease Martindell Well No. 42

Location

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

Name of Sand	Bartlesville
Top of Core	2264.00
Bottom of Core	2300.00
Top of Sand (According to strip log)	2262.00
Bottom of Sand	2294.80
Total Feet of Permeable Sand	15.06

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 1	2.00	2.00
1 - 2	3.16	5.16
2 - 3	4.23	9.39
3 - 5	1.90	11.29
5 - 7	2.37	13.66
7 & above	1.40	15.06

Average Permeability Millidarcys	3.50
Average Percent Porosity	15.19
Average Percent Oil Saturation	22.91
Average Percent Water Saturation	52.25
Average Oil Content, Bbls./A. Ft.	271.
Total Oil Content, Bbls./Acre	3,446.
Average Percent Oil Recovery by Laboratory Flooding Tests	2.78
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	35.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	63.
Total Calculated Oil Recovery, Bbls./Acre	950.
Casing Point (5½") ~~Packer Setting,~~ Feet	2255.00
Viscosity, Centipoises @	
A. P. I. Gravity, degrees @ 60 °F	
Elevation, Feet	1388.00

Fresh water was used in making up the circulating fluid used in the coring of the sand in this well.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
2262.00 - 2264.00	Drilled.
2264.00 - 2364.30	Laminated shaley sandstone containing a vertical fracture.
2264.30 - 2264.55	Finely laminated sandy shale containing a vertical fracture.
2264.55 - 2264.80	Gray fine grained micaceous shaley sandstone containing a vertical fracture.
2264.80 - 2265.05	Light brown fine grained micaceous sandstone containing a vertical fracture.
2265.05 - 2265.27	Finely laminated sandy shale containing a vertical fracture.
2265.27 - 2265.47	Light brown fine grained micaceous sandstone containing a vertical fracture.
2265.47 - 2266.00	Gray shale containing a vertical fracture.
2266.00 - 2266.75	Light brown fine grained micaceous sandstone containing a vertical fracture.
2266.75 - 2267.00	Laminated sandy shale.
2267.00 - 2267.45	Light brown fine grained micaceous sandstone.
2267.45 - 2267.65	Hard light brown fine grained micaceous shaley sandstone.
2267.65 - 2268.35	Finely laminated sandy shale containing a vertical fracture.
2268.35 - 2268.65	Light brown fine grained micaceous sandstone.
2268.65 - 2269.20	Light brown fine grained slightly laminated micaceous shaley sandstone.
2269.20 - 2269.35	Light brown fine grained micaceous sandstone.
2269.35 - 2269.55	Gray shale.

2269.55 - 2269.87 - Laminated shaley sandstone.

2269.87 - 2270.45 - Light brown fine grained slightly laminated micaceous shaley sandstone.

2270.45 - 2270.65 - Finely laminated sandy shale.

2270.65 - 2270.80 - Light brown fine grained micaceous sandstone.

2270.80 - 2271.45 - Light brown fine grained laminated micaceous shaley sandstone.

2271.45 - 2271.80 - Light brown fine grained micaceous slightly shaley sandstone.

2271.80 - 2272.02 - Light brown fine grained micaceous sandstone.

2272.02 - 2272.20 - Gray shale.

2272.20 - 2272.85 - Light brown fine grained micaceous sandstone.

2272.85 - 2273.20 - Light brown fine grained micaceous slightly shaley sandstone.

2273.20 - 2273.50 - Gray shale.

2273.50 - 2273.72 - Light brown fine grained micaceous sandstone.

2273.72 - 2273.85 - Gray shale.

2273.85 - 2274.10 - Light brown fine grained micaceous sandstone.

2274.10 - 2274.45 - Finely laminated sandy shale.

2274.45 - 2274.70 - Light brown fine grained laminated micaceous shaley sandstone.

2274.70 - 2275.13 - Laminated sandy shale.

2275.13 - 2275.60 - Light brown fine grained slightly laminated micaceous shaley sandstone.

2275.60 - 2275.78 - Gray shale.

2275.78 - 2275.98 - Laminated shaley sandstone.

2275.98 - 2276.15 - Light brown fine grained micaceous slightly shaley sandstone.

2276.15 - 2276.40 - Finely laminated sandy shale.

2276.40 - 2277.05 - Light brown fine grained laminated micaceous shaley sandstone containing a vertical fracture.

2277.05 - 2278.40 - Laminated sandy shale containing a vertical fracture.

2278.40 - 2278.75 - Gray fine grained laminated micaceous shaley sandstone containing a vertical fracture.

2278.75 - 2278.95 - Gray sandy shale containing a vertical fracture.

2278.95 - 2279.35 - Light brown fine grained micaceous sandstone.

2279.35 - 2279.65 - Gray sandy shale.

2279.65 - 2280.60 - Alternate layers of shale and sandstone.

2280.60 - 2280.72 - Light brown fine grained laminated micaceous shaley sandstone.

2280.72 - 2281.05 - Laminated sandy shale.

2281.05 - 2281.30 - Light brown fine grained micaceous sandstone.

2281.30 - 2281.50 - Gray shale.

2281.50 - 2282.00 - Loss.

2282.00 - 2282.45 - Brownish gray fine grained micaceous sandstone.

2282.45 - 2283.05 - Finely laminated sandy shale.

2283.05 - 2283.35 - Laminated shaley sandstone.

2283.35 - 2283.55 - Finely laminated sandy shale.

2283.55 - 2284.05 - Light brown fine grained micaceous sandstone.

2284.05 - 2284.35 - Light brown fine grained slightly laminated micaceous shaley sandstone.

2284.35 - 2285.70 - Light brown fine grained micaceous sandstone.

2285.70 - 2286.20 - Light brown fine grained laminated micaceous shaley sandstone.

2286.20 - 2286.45 - Gray shale.

2286.45 - 2286.65 - Light brown fine grained slightly laminated shaley sandstone.

2286.65 - 2287.96 - Light brown fine grained micaceous sandstone.

2287.96 - 2288.35 - Light brown fine grained laminated micaceous shaley sandstone.

2288.35 - 2288.70 - Light brown fine grained micaceous sandstone.

2288.70 - 2289.70 - Sandy conglomerate.

2289.70 - 2290.15 - Light brown fine grained slightly shaley micaceous sandstone.

2290.15 - 2290.35 - Gray sandy shale.

2290.35 - 2290.70 - Brownish gray fine grained finely laminated micaceous carbonaceous sandstone.

2290.70 - 2291.00 - Gray slightly carbonaceous sandy shale.

2291.00 - 2291.65 - Light brown fine grained micaceous sandstone.

2291.65 - 2292.45 - Finely laminated sandy shale.

2292.45 - 2292.60 - Finely laminated shaley sandstone.

2292.60 - 2293.60 - Gray shale.

2293.60 - 2294.20 - Light brown fine grained micaceous slightly shaley sandstone.

2294.20 - 2294.80 - Light brown fine grained micaceous sandstone.

2294.80 - 2296.20 - Finely laminated sandy shale.

2296.20 - 2300.00 - Gray shale.

Coring was started at a depth of 2264.00 feet in laminated shaley sandstone and completed at 2300.00 feet in gray shale. This core shows a total of 17.67 feet of sandstone. For the most part, the pay sand is made up of fine grained micaceous to shaley sandstone. The sand in this core is badly broken by layers of shale. The upper part of the cored section shows the presence of a vertical fracture.

PERMEABILITY

For the sake of distribution, the core was divided into three sections. The weighted average permeability of the upper, middle and lower sections are 4.09, 1.40 and 3.92 millidarcys respectively; the overall average being 3.50 (See Table II). From the above data and that given on the coregraph, it is noticeable that the sand has a very irregular permeability profile and is comparatively tight.

PERCENT SATURATION & OIL CONTENT

The sand in this core has a low weighted average percent oil saturation, namely 22.91. The weighted average percent oil saturation of the upper, middle and lower sections are 24.92, 20.73 and 22.76 respectively. The weighted average percent water saturation of the upper, middle and lower sections are 49.05, 57.07 and 51.14 respectively; the overall average being 52.25 (See Table IV). This gives an overall weighted average total fluid saturation of 75.16 percent. This comparatively low total fluid saturation indicates that an appreciable amount of fluid was lost during coring which was probably oil.

In an effort to determine the degree of flushing of the sand during coring, all of the saturation samples were analyzed for chloride content which in turn were used in the calculation of percent connate water. The results of these tests are given in Tables VII and VIII. From the data given in these tables and on the coregraph, it is evident that some of the sand was badly flushed during coring, however, we are inclined to believe that most of the oil lost during coring was due to the expansion of gas carried in solution by the oil.

The weighted average oil content of the upper, middle and lower sections are 290, 220 and 286 barrels per acre foot respectively; the overall average being 271. The total oil content, as shown by this core is 3,446 barrels per acre (See Table IV).

LABORATORY FLOODING TESTS

Inasmuch as the percent saturation of the sand in this core is very low, naturally, one would expect very little oil to be recovered by laboratory flooding tests. A total recovery of 63 barrels of oil per acre

was obtained from 1.80 feet of sand. The weighted average percent oil saturation was reduced from 26.11 to 23.33, or represents an average recovery of 2.78 percent. The weighted average effective permeability of the samples is 0.114 millidarcys, while the average initial fluid production pressure is 45.0 pounds per square inch (See Table VI).

From the data given in Table V, you will note that of the 28 samples tested only 7 produced water and 3 oil. This indicates that only a small amount of the cored section is floodable. The tests also show that the sand has a very low effective permeability.

CONCLUSION

From a study of the above data, we believe that an efficient water flood within the vicinity of this well will recover a total of approximately 950 barrels of oil per acre or an average of 240 barrels per acre foot from the 3.95 feet of floodable sand analyzed. In calculating this recovery, an allowance was made for oil lost during coring, and it was assumed that the true water saturation of the sand is 38 percent.

The principle drawback of the sand in this core is the fact that it is very tight and that the cored section is badly broken by layers of shale. Apparently, the shaley condition of most of the sand accounts for the low permeability. It is evident that this well was drilled near the edge of the trend. Chances are if you have not already done so, it would be advisable to shoot the sand in this well. Inasmuch as this core shows the presence of vertical fractures and if they continue into some thief formation, it will be necessary to use selective plugging in order to shut off same.

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RESULTS OF PERMEABILITY TESTS

TABLE I

Company The Ohio Oil Company Lease Martindell Well No. 42

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
1	2265.45	Imp.	0.20	0.20	0.00
2	2266.38	5.6	0.55	0.75	3.08
3	2267.05	2.2	0.45	1.20	0.99
4	2267.35	2.4	0.25	1.45	0.60
5	2268.40	1.8	0.30	1.75	0.54
6	2268.72	8.7	0.55	2.30	4.78
7	2269.25	1.8	0.15	2.45	0.27
8	2269.66	0.95	0.32	2.77	0.30
9	2270.17	2.3	0.58	3.35	1.33
10	2270.87	1.6	0.40	3.75	0.64
11	2271.52	2.1	0.35	4.10	0.74
12	2271.95	5.8	0.22	4.32	1.28
13	2272.48	6.9	0.40	4.72	2.76
14	2272.68	8.2	0.25	4.97	2.05
15	2272.90	3.4	0.35	5.32	1.19
16	2273.55	Imp.	0.22	5.54	0.00
17	2274.08	5.6	0.25	5.79	1.40
18	2274.54	Imp.	0.25	6.04	0.00
19	2275.85	0.54	0.20	6.24	0.11
20	2276.08	0.35	0.17	6.41	0.06
21	2276.45	0.39	0.65	7.06	0.25
22	2278.45	2.6	0.35	7.41	0.91
23	2279.07	2.6	0.40	7.81	1.04
24	2280.08	1.3	0.25	8.06	0.33
25	2280.69	0.57	0.12	8.18	0.07
26	2281.20	1.0	0.25	8.43	0.25
27	2282.12	2.1	0.45	8.88	0.95
28	2283.65	4.1	0.50	9.38	2.05
29	2284.14	2.3	0.30	9.68	0.69
30	2284.40	5.7	0.45	10.13	2.57
31	2285.05	7.5	0.40	10.53	3.00
32	2285.35	6.4	0.50	11.03	3.20
33	2285.88	4.0	0.50	11.53	2.00
34	2286.48	3.4	0.20	11.73	0.68
35	2286.90	2.2	0.45	12.18	0.99
36	2287.29	2.3	0.25	12.43	0.58
37	2287.50	2.3	0.40	12.83	0.92
38	2287.93	1.3	0.21	13.04	0.27
39	2288.10	0.43	0.39	13.43	0.17
40	2288.40	4.4	0.35	13.78	1.54

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RESULTS OF PERMEABILITY TESTS

TABLE I

Company The Ohio Oil Company Lease Martindell Well No. 42

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.
			Ft.	Cum. Ft.	
41	2288.85	Imp.	0.30	14.08	0.00
42	2289.59	29.	0.20	14.28	5.80
43	2290.06	0.53	0.15	14.43	0.08
44	2290.60	Imp.	0.35	14.78	0.00
45	2291.50	1.0	0.40	15.18	0.40
46	2292.50	Imp.	0.15	15.33	0.00
47	2293.75	1.9	0.60	15.93	1.14
48	2294.45	1.3	0.60	16.53	0.78

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SUMMARY OF PERMEABILITY TESTS

TABLE II

Company The Ohio Oil Company Lease Martindell Well No. 42

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity, Ft. x Md.
2264.80-2274.10	5.37	4.09	21.95
2274.10-2283.35	2.84	1.40	3.97
2283.55-2294.80	6.85	3.92	26.86
2264.80-2294.80	15.06	3.50	52.78

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RESULTS OF SATURATION TESTS

TABLE III

Company The Ohio Oil Company Lease Martindell Well No. 42

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.	
1	2264.90	13.7	17.6	68.5	86.1	187	0.25	0.25	47
2	2266.05	15.1	23.5	35.1	58.6	275	0.40	0.65	110
3	2266.60	13.6	20.2	55.8	76.0	213	0.35	1.00	75
5	2268.50	14.9	24.6	43.8	68.4	284	0.30	1.30	85
F- 6A	2269.15	15.6	24.6	-	-	298	0.55	1.85	164
F- 7A	2270.75	15.0	24.5	-	-	285	0.15	2.00	43
8	2271.25	13.8	27.4	43.3	70.7	294	0.65	2.65	191
9	2272.25	16.6	27.6	48.1	75.7	356	0.65	3.30	232
10	2273.05	14.4	27.9	60.9	88.8	312	0.35	3.65	109
F-11A	2273.95	15.4	24.9	-	-	298	0.25	3.90	75
11	2274.30	13.1	22.4	56.6	79.0	228	0.35	4.25	80
12	2275.45	12.6	19.0	63.1	82.1	186	0.47	4.72	87
13	2276.65	12.2	20.0	65.3	85.3	189	0.65	5.37	123
15	2278.60	13.6	19.9	58.7	78.6	210	0.35	5.72	74
16	2279.20	14.6	22.1	52.1	74.2	251	0.40	6.12	100
17	2280.45	13.8	24.4	49.2	73.6	262	0.20	6.32	52
18	2282.30	14.7	18.7	57.7	76.4	213	0.45	6.77	96
19	2283.10	16.3	22.5	39.4	61.9	285	0.30	7.07	86
20	2283.87	17.7	21.1	44.5	65.6	290	0.50	7.57	145

Oil Field Research Laboratories

RESULTS OF SATURATION TESTS

TABLE III

Company The Ohio Oil Company Lease Martindell Well No. 42

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.	
21	2284.75	17.2	24.7	51.7	76.4	330	0.80	8.37	264
22	2285.55	17.2	20.8	52.0	72.8	278	0.55	8.92	153
23	2287.05	17.0	20.7	54.1	74.8	273	0.70	9.62	191
24	2287.65	15.6	24.4	52.1	76.5	296	0.61	10.23	181
25	2288.55	15.0	20.9	41.5	62.4	243	0.35	10.58	85
26	2289.75	15.5	23.7	54.6	78.3	285	0.30	10.88	86
27	2291.05	15.1	23.5	57.5	81.0	275	0.25	11.13	69
F- 28A	2291.30	14.6	23.2	-	-	263	0.40	11.53	105
30	2294.05	16.5	21.6	61.0	82.6	276	0.60	12.13	166
31	2294.65	14.8	25.0	42.0	67.0	287	0.60	12.73	172
							Total	- - - - -	- 3,446

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SUMMARY OF SATURATION TESTS

TABLE IV

Company The Ohio Oil Company Lease Martindell Well No. 42

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
2264.80-2274.10	3.90	14.90	24.92	49.05	290	1131
2274.10-2283.35	3.17	13.66	20.73	57.07	220	698
2283.55-2294.80	5.66	16.25	22.76	51.14	286	1617
2264.80-2294.80	12.73	15.19	22.91	52.25	271	3446

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Company The Ohio Oil Company Lease Ma

Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery	
			Percent	Bbls./A. Ft.	Percent	Bbls./A.
1	2265.00	13.2	16.7	171	0.0	0
2	2266.16	14.8	22.0	253	0.0	0
3	2266.70	13.6	21.1	223	0.0	0
5	2268.60	15.3	25.1	298	0.0	0
6A	2269.15	15.6	24.6	298	0.0	0
7A	2270.75	15.0	24.5	285	0.0	0
8	2271.36	13.2	27.6	283	0.0	0
9	2272.36	16.2	27.6	347	3.7	47
10	2273.16	14.3	28.2	313	3.3	37
11A	2273.95	15.4	24.9	298	0.0	0
12	2275.55	13.1	19.7	200	0.0	0
13	2276.75	12.2	19.3	183	0.0	0
15	2278.70	13.4	19.3	201	0.0	0
16	2279.30	14.2	22.5	248	0.0	0
17	2280.55	14.3	22.4	249	0.0	0
18	2282.40	14.9	19.0	220	0.0	0
19	2283.20	15.4	23.1	276	0.0	0
20	2283.97	17.0	20.9	276	0.0	0
21	2284.85	17.3	24.1	323	1.8	24
22	2285.65	17.1	21.1	280	0.0	0
23	2287.15	15.4	21.3	255	0.0	0
24	2287.75	16.0	23.1	287	0.0	0
25	2288.66	15.3	19.1	227	0.0	0
26	2289.85	15.7	25.8	314	0.0	0
27	2291.17	14.7	24.1	275	0.0	0
28A	2291.30	14.6	23.2	263	0.0	0
30	2294.17	15.5	23.2	279	0.0	0
31	2294.77	14.6	26.8	304	0.0	0

Notes:
cc - cubic centimeter
* - Volume of water recovered at the time
** - Determined by passing water through sa
"A" - Samples were taken from core after it

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)F LABORATORY FLOODING TESTS

TABLE V

ie Martindell Well No. 42

)very	Residual Saturation			Volume of Water Recovered cc*	Effective Permeability, Millidarcys **	Initial Fluid Production Pressure Lbs./Sq. In.
Bbls./A. Ft.	% Oil	% Water	Bbls./A. Ft.			
0	16.7	72.0	171	0	Imp.	50/
0	22.0	44.5	253	0	Imp.	50/
0	21.1	50.0	223	0	Imp.	50/
0	25.1	57.6	298	0	Imp.	50/
0	24.6	57.3	298	0	Imp.	50/
0	24.5	55.0	285	2	0.192	50
0	27.6	62.1	283	0	Imp.	50/
47	23.9	56.9	300	1	0.092	50
37	24.9	64.3	276	4	0.415	40
0	24.9	63.5	298	2	0.186	50
0	19.7	64.4	200	0	Imp.	50/
0	19.3	69.3	183	0	Imp.	50/
0	19.3	64.5	201	0	Imp.	50/
0	22.5	57.5	248	0	Imp.	50/
0	22.4	56.0	249	0	Imp.	50/
0	19.0	58.9	220	0	Imp.	50/
0	23.1	71.8	276	0	Imp.	50/
0	20.9	65.8	276	4	0.142	40
24	22.3	65.3	299	-	Cracked	-
0	21.1	63.6	280	6	0.186	40
0	21.3	58.0	255	1	0.100	50
0	23.1	55.9	287	0	Imp.	50/
0	19.1	61.8	227	0	Imp.	50/
0	25.8	63.5	314	0	Imp.	50/
0	24.1	56.1	275	0	Imp.	50/
0	23.2	56.3	263	0	Imp.	50/
0	23.2	56.3	279	0	Imp.	50/
0	26.8	54.5	304	0	Imp.	50/

he time of maximum oil recovery.
rough sample which still contains residual oil.
fter it was received in the laboratory.

Oil Field Research Laboratories

SUMMARY OF LABORATORY FLOODING TESTS

TABLE VI

Company The Ohio Oil Company Lease Martindell Well No. 42

Depth Interval, Feet	2272.20 - 2285.15
Feet of Core Analyzed	1.80
Average Percent Porosity	16.28
Average Percent Original Oil Saturation	26.11
Average Percent Oil Recovery	2.78
Average Percent Residual Oil Saturation	23.33
Average Percent Residual Water Saturation	62.05
Average Percent Total Residual Fluid Saturation	85.38
Average Original Oil Content, Bbls./A. Ft.	330.
Average Oil Recovery, Bbls./A. Ft.	35.
Average Residual Oil Content, Bbls./A. Ft.	295.
Total Original Oil Content, Bbls./Acre	594.
Total Oil Recovery, Bbls./Acre	63.
Total Residual Oil Content, Bbls./Acre	531.
Average Effective Permeability, Millidarcys	0.114
Average Initial Fluid Production Pressure, p.s.i.	45.0

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

Oil Field Research Laboratories

RESULTS OF WATER DIFFERENTATION TESTS

TABLE VII

Company The Ohio Oil Company Lease Martindell Well No. 42

Sample No.	Depth, Feet	Chloride Content of Brine in Sand ppm	Percent Water Saturation		
			Connate	Drilling & Foreign	Total
1	2264.90	59,000	64.3	4.2	68.5
2	2266.05	56,100	31.3	3.8	35.1
3	2266.60	58,100	51.6	4.2	55.8
5	2268.50	60,200	41.9	1.9	43.8
8	2271.25	61,200	42.2	1.1	43.3
9	2272.25	60,800	46.6	1.5	48.1
10	2373.05	56,800	55.0	5.9	60.9
11	2274.30	60,300	54.3	2.3	56.6
12	2275.45	51,500	51.7	11.4	63.1
13	2276.65	65,500	65.3	0.0	65.3
15	2278.60	68,400	58.7	0.0	58.7
16	2279.20	57,800	47.9	4.2	52.1
17	2280.45	66,900	49.2	0.0	49.2
18	2282.30	48,000	44.1	13.6	57.7
19	2283.10	52,000	32.6	6.8	39.4
20	2283.87	15,000	10.6	33.9	44.5
21	2284.75	15,000	12.3	39.4	51.7
22	2285.55	13,800	11.3	40.7	52.0
23	2287.05	16,500	14.2	39.9	54.1
24	2287.65	15,200	12.6	39.5	52.1
25	2288.55	23,700	15.6	25.9	41.5
26	2289.75	60,500	52.5	2.1	54.6
27	2291.05	62,000	56.6	0.9	57.5
30	2294.05	59,500	57.7	3.3	61.0
31	2294.65	74,000	42.0	0.0	42.0

Note: ppm - parts per million

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SUMMARY OF WATER DIFFERENTIATION TESTS

TABLE VIII

Company The Onio Oil Company Lease Martindell Well No. 42

Depth Interval, Feet	Chloride Content of Brine in Sand, ppm	Average Percent Connate Water	Average Percent Drilling & Foreign Water
2264.80-2273.20	59,237	46.17	2.88
2274.10-2283.35	58,596	52.05	8.12
2283.55-2294.80	32,325	25.51	28.93
2264.80-2294.80	46,620	38.26	16.63

Note: ppm - parts per million