

OIL FIELD RESEARCH LABORATORIES
CHANUTE, KANSAS

October 9, 1951

Phillips Petroleum Company
Production Department
Bartlesville, Oklahoma

Gentlemen:

Enclosed herewith are the results of air permeability and porosity tests made on the 2½" Rotary core taken from the Beal Unit "D", Well No. W-2, Greenwood County, Kansas, and submitted to our laboratory on September 24, 1951.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

Clayton A. Nattier

CAN:mm
c.c.

PHILLIPS PETROLEUM COMPANY

CORE ANALYSIS REPORT

BEAL UNIT "D" WELL NO. W-2

GREENWOOD COUNTY, KANSAS

OIL FIELD RESEARCH LABORATORIES

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Oil Field Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Phillips Petroleum Company Lease Beal Unit "D" Well No. W-2

Location 1450' South of the North Line & 1950' East of the West Line, SE 1/4

Section 21 Twp. 23S Rge. 11E County Greenwood State Kansas

Name of Sand Bartlesville

Top of Core 1843.00

Bottom of Core 1951.00

Top of Sand 1846.50

Bottom of Sand 1945.32

Total Feet of Permeable Sand 86.45

Total Feet of Floodable Sand

Distribution of Permeable Sand:
Permeability Range
Millidarcys

Feet

Cum. Ft.

0 - 2	18.28	18.28
2 - 4	27.34	45.62
4 - 8	11.09	56.71
8 - 12	9.41	66.12
12 - 24	11.15	77.27
24 - 48	6.53	83.80
48 & above	2.65	86.45
Average Permeability Millidarcys		13.69

Average Percent Porosity 19.02

Average Percent Oil Saturation

Average Percent Water Saturation

Average Oil Content, Bbls./A. Ft.

Total Oil Content, Bbls./Acre

Average Percent Oil Recovery by Laboratory Flooding Tests

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre

Total Calculated Oil Recovery, Bbls./Acre

Packer Setting, Feet

Viscosity, Centipoises @

A. P. I. Gravity, degrees @ 60 °F

Elevation, Feet 1132.00

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LOG

Company Phillips Petroleum Company Lease Beal Unit "D" Well No. W-2

<u>Depth Interval, Feet</u>	<u>Description</u>
1843.00 - 1846.00	- Gray sandy shale.
1846.00 - 1846.14	- Light brown fine grained micaceous sandstone.
1846.14 - 1846.50	- Laminated shaley sandstone.
1846.50 - 1848.10	- Light brown fine grained laminated micaceous shaley sandstone.
1848.10 - 1849.00	- Gray shale.
1849.00 - 1850.60	- Brown fine grained micaceous shaley sandstone.
1850.60 - 1852.35	- Gray shale.
1852.35 - 1854.30	- Brown fine grained micaceous slightly shaley sandstone.
1854.30 - 1860.40	- Light brown fine grained micaceous sandstone.
1860.40 - 1861.00	- Loss.
1861.00 - 1869.20	- Light brown fine grained micaceous sandstone.
1869.20 - 1870.00	- Light brown fine grained micaceous slightly shaley sandstone.
1870.00 - 1879.00	- Light brown fine grained micaceous sandstone.
1879.00 - 1880.13	- Brown fine grained micaceous sandstone.
1880.13 - 1880.30	- Light brown fine grained micaceous conglomeratic sandstone.
1880.30 - 1880.80	- Light brown fine grained micaceous sandstone containing a shale streak.
1880.80 - 1881.00	- Light brown fine grained micaceous slightly conglomeratic sandstone.
1881.00 - 1881.95	- Light brown fine grained micaceous sandstone.
1881.95 - 1882.47	- Light brown fine grained micaceous conglomeratic sandstone.
1882.47 - 1887.65	- Light brown fine grained micaceous sandstone.
1887.65 - 1888.00	- Light brown fine grained micaceous shaley sandstone.

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- 1888.00 - 1888.15 - Gray slightly shaley sandstone.
- 1888.15 - 1888.26 - Brown fine grained micaceous sandstone.
- 1888.26 - 1888.40 - Gray sandy shale.
- 1888.40 - 1888.75 - Light brown fine grained laminated micaceous shaley sandstone.
- 1888.75 - 1889.10 - Brown fine grained micaceous sandstone.
- 1889.10 - 1889.32 - Gray shale.
- 1889.32 - 1889.56 - Light brown fine grained micaceous slightly calcareous sandstone.
- 1889.56 - 1889.95 - Alternate layers of sandstone and shale.
- 1889.95 - 1890.20 - Light brown fine grained micaceous sandstone.
- 1890.20 - 1890.63 - Light brown fine grained micaceous conglomeratic sandstone.
- 1890.63 - 1894.35 - Light brown fine grained micaceous sandstone.
- 1894.35 - 1894.62 - Light brown fine grained shaley slightly laminated micaceous carbonaceous sandstone.
- 1894.62 - 1896.70 - Light brown fine grained micaceous sandstone.
- 1896.70 - 1897.00 - Loss.
- 1897.00 - 1897.45 - Laminated carbonaceous sandy shale.
- 1897.45 - 1898.92 - Light brown fine grained micaceous sandstone.
- 1898.92 - 1899.06 - Light brown fine grained slightly laminated micaceous carbonaceous sandstone.
- 1899.06 - 1900.00 - Dark laminated carbonaceous shale.
- 1900.00 - 1901.00 - Core not received. Soft black shale (Discarded at well).
- 1901.00 - 1904.86 - Light brown fine grained micaceous sandstone.
- 1904.86 - 1906.15 - Light brown fine grained laminated micaceous carbonaceous sandstone.
- 1906.15 - 1906.44 - Sandy conglomerate.
- 1906.44 - 1912.90 - Grayish light brown fine grained micaceous sandstone.
- 1912.90 - 1914.60 - Light brown medium grained micaceous sandstone.

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- 1914.60 - 1915.00 - Loss.
- 1915.00 - 1920.25 - Light brown medium grained micaceous sandstone.
- 1920.25 - 1921.30 - Light brown medium grained micaceous slightly calcareous sandstone containing a vertical fracture.
- 1921.30 - 1922.95 - According to log, conglomeratic sandstone, loss. Core not received.
- 1922.95 - 1926.25 - Light brown coarse grained micaceous calcareous sandstone containing a vertical fracture.
- 1926.25 - 1929.70 - Light brown fine grained micaceous sandstone.
- 1929.70 - 1933.00 - Light brown medium grained micaceous sandstone.
- 1933.00 - 1935.00 - Light brown fine grained micaceous sandstone.
- 1935.00 - 1935.65 - Brown fine grained laminated micaceous carbonaceous sandstone.
- 1935.65 - 1945.22 - Light brown fine grained micaceous sandstone.
- 1945.22 - 1945.32 - Conglomeratic sandstone.
- 1945.32 - 1945.50 - Sandy conglomerate.
- 1945.50 - 1946.60 - Loss.
- 1946.60 - 1948.00 - Dark gray sandy shale. Bottom of core received.
- 1948.00 - 1951.00 - According to log, soft black shale. Core not received.

Oil Field Research Laboratories
RESULTS OF PERMEABILITY AND POROSITY TESTS
TABLE 1A

Company Phillips Petroleum Company Lease Beal Unit "D" Well No. W-2

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.	Percent Porosity
			Ft.	Cum. Ft.		
1	1846.85	Imp.	0.85	0.85	0.00	-
2	1847.82	0.52	0.75	1.60	0.39	17.5
3	1849.10	0.74	0.60	2.20	0.44	20.7
4	1850.10	1.0	1.00	3.20	1.00	19.1
5	1852.45	0.76	0.60	3.80	0.46	16.7
6	1853.45	2.0	1.35	5.15	2.70	20.5
7	1854.48	3.3	0.65	5.80	2.15	19.5
8	1855.50	3.9	1.00	6.80	3.90	20.3
9	1856.45	3.6	1.00	7.80	3.60	19.6
10	1857.45	2.1	0.85	8.65	1.79	18.6
11	1858.10	5.7	0.90	9.55	5.13	19.6
12	1859.28	5.0	1.00	10.55	5.00	20.1
13	1860.09	6.1	0.70	11.25	4.27	20.0
14	1861.42	13.	0.95	12.20	12.35	20.6
15	1862.45	2.2	1.00	13.20	2.20	17.9
16	1863.45	3.4	0.90	14.10	3.06	18.3
17	1864.23	9.2	1.00	15.10	9.20	20.0
18	1865.48	5.6	1.05	16.15	5.88	19.3
19	1866.35	10.	1.00	17.15	10.00	21.3
20	1867.45	3.2	1.05	18.20	3.36	17.8
21	1868.45	2.1	1.25	19.45	2.63	19.7
22	1869.55	0.99	0.80	20.25	0.79	16.7
23	1870.50	17.	0.95	21.20	16.15	22.4
24	1871.40	25.	1.00	22.20	25.00	23.4
25	1872.45	12.	1.00	23.20	12.00	20.5
26	1873.45	25.	1.05	24.25	26.25	20.4
27	1874.52	2.1	1.00	25.25	2.10	17.9
28	1875.48	13.	1.00	26.25	13.00	22.1
29	1876.55	3.0	1.00	27.25	3.00	20.2
30	1877.45	4.9	0.90	28.15	4.41	17.5
31	1878.40	22.	1.10	29.25	24.20	22.0
32	1879.55	27.	1.13	30.38	30.51	22.9
33	1880.50	13.	0.35	30.73	4.55	21.9
34	1881.45	7.2	0.95	31.68	6.84	24.3
35	1882.50	6.2	0.43	32.11	2.67	19.8
36	1883.35	24.	1.05	33.16	25.20	19.9
37	1884.45	21.	0.95	34.11	19.95	21.7
38	1885.40	14.	1.10	35.21	15.40	18.7
39	1886.65	23.	1.10	36.31	25.30	18.7
40	1887.50	5.2	0.55	36.86	2.86	20.0

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Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.	Percent Porosity
			Ft.	Cum. Ft.		
41	1888.52	0.79	0.35	37.21	0.28	17.7
42	1889.40	1.1	0.24	37.45	0.26	18.8
43	1890.46	1.1	0.43	37.88	0.47	18.7
44	1891.50	3.0	1.37	39.25	4.11	19.3
45	1892.42	0.63	1.00	40.25	0.63	17.7
46	1893.52	1.5	1.35	41.60	2.03	17.2
47	1894.42	0.40	0.27	41.87	0.11	16.8
48	1895.45	1.0	1.28	43.15	1.28	17.1
49	1896.40	2.0	0.80	43.95	1.60	18.5
50	1897.55	3.2	0.65	44.60	2.08	19.7
51	1898.55	2.4	0.72	45.32	1.73	18.1
52	1901.05	4.8	0.55	45.87	2.64	19.7
53	1902.02	15.	0.95	46.82	14.25	21.2
54	1903.00	8.2	1.00	47.82	8.20	19.5
55	1904.03	9.2	0.90	48.72	8.28	18.8
56	1904.80	5.8	0.46	49.18	2.67	19.1
57	1905.90	9.3	1.29	50.47	12.00	19.4
58	1906.90	1.6	0.96	51.43	1.54	16.7
59	1907.90	2.0	1.00	52.43	2.00	16.9
60	1908.90	2.8	1.05	53.48	2.94	16.3
61	1909.95	2.5	0.95	54.43	2.38	16.7
62	1910.90	2.6	1.00	55.43	2.60	16.9
63	1911.92	2.6	1.00	56.43	2.60	16.3
64	1912.85	2.4	0.50	56.93	1.20	19.5
65	1913.63	5.4	1.20	58.13	6.48	21.3
66	1914.58	7.3	0.50	58.63	3.65	21.7
67	1915.80	2.3	1.30	59.93	2.99	17.3
68	1916.82	3.0	1.05	60.98	3.15	19.7
69	1917.90	1.5	1.05	62.03	1.58	17.5
70	1918.87	11.	1.00	63.03	11.00	19.1
71	1919.92	9.7	0.85	63.88	8.25	16.8
72	1920.90	18.	1.05	64.93	18.90	19.4
73	1923.05	288.	0.65	65.58	187.20	22.5
74	1924.15	306.	1.00	66.58	306.00	25.4
75	1925.06	58.	1.00	67.58	58.00	23.8
76	1926.20	19.	0.65	68.23	12.35	20.0
77	1927.15	3.1	1.45	69.68	4.50	19.2
78	1928.18	4.6	0.90	70.58	4.14	15.9
79	1929.15	2.2	1.10	71.68	2.42	15.7
80	1930.15	42.	0.95	72.63	39.90	22.5

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Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.	Percent Porosity
			Ft.	Cum. Ft.		
81	1931.15	0.96	1.00	73.63	0.96	14.7
82	1932.20	41.	1.35	74.98	55.35	21.4
83	1933.15	1.4	0.65	75.63	0.91	16.7
84	1934.15	2.0	1.35	76.98	2.70	16.1
85	1935.15	9.9	0.65	77.63	6.44	21.1
86	1936.15	0.45	1.00	78.63	0.45	13.9
87	1937.15	1.3	1.05	79.68	1.37	14.8
88	1938.27	3.5	1.00	80.68	3.50	19.6
89	1939.14	1.2	0.95	81.63	1.14	16.7
90	1940.20	1.3	1.00	82.63	1.30	16.6
91	1941.15	1.4	0.95	83.58	1.33	16.4
92	1942.10	4.5	1.00	84.58	4.50	18.3
93	1943.12	1.7	1.00	85.58	1.70	17.6
94	1944.10	8.0	1.62	87.20	12.96	16.0
95	1945.25	11.	0.10	87.30	1.10	20.8

Oil Field Research Laboratories

SUMMARY OF PERMEABILITY & POROSITY TESTS

TABLE II A

Company	Phillips Petroleum Company	Lease	Beal Unit "D"	Well No.	W-2
Depth Interval, Feet	Feet of Core Analyzed	Average Air Permeability, Millidarcys	Average Effective Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Percent Porosity
1847.35-1870.00	19.40	4.14	-	80.30	19.31
1870.00-1921.30	44.68	8.80	-	393.27	19.26
1922.95-1945.32	22.37	31.75	-	710.22	18.26
1847.35-1945.32	86.45	13.69	-	1,183.79	19.02