

OIL FIELD RESEARCH LABORATORIES  
CHANUTE, KANSAS

November 19, 1951

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma

Gentlemen:

Enclosed herewith are the results of air permeability and porosity tests made on the 2 5/8" Rotary core taken from the Cartwright "C" Lease, Well No. 3-A, Greenwood County, Kansas, and submitted to our laboratory on November 5, 1951.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

Carl L. Pate

CLP:pc

c. c.

PHILLIPS PETROLEUM COMPANY

CORE ANALYSIS REPORT

CARTWRIGHT "C" LEASE WELL NO. 3-A

GREENWOOD COUNTY, KANSAS

OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

NOVEMBER 19, 1951

# Oil Field Research Laboratories

## GENERAL INFORMATION & SUMMARY

Company Phillips Petroleum Company Lease Cartwright "C" Well No. 3-A

Location 1065' South of the North Line & 253' East of the West Line, NW $\frac{1}{4}$

Section 6 Twp. 24S Rge. 10E County Greenwood State Kansas

Name of Sand	Burbank
Top of Core	2270.00
Bottom of Core	2376.00
Top of Sand	2471.74
Bottom of Sand	2365.55
Total Feet of Permeable Sand	66.08

Total Feet of Floodable Sand

Distribution of Permeable Sand:

Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 1	14.76	14.76
1 - 2	8.14	22.90
2 - 4	8.34	31.24
4 - 12	8.92	40.16
12 - 20	15.27	55.43
20 - 24	3.20	58.63
24 & above	7.45	66.08

Average Permeability Millidarcys 9.91

Average Percent Porosity 18.84

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 (Ground) 1345.00

OIL FIELD RESEARCH LABORATORIES  
CHANUTE, KANSAS

LOG

Company Phillips Petroleum Company Lease Cartwright "C" Well No. 3-A

<u>Depth Interval,</u> <u>Feet</u>	<u>Description</u>
2270.00 - 2271.74	- Gray sandy shale.
2271.74 - 2272.00	- Gray fine grained micaceous shaley sandstone.
2272.00 - 2273.00	- Grayish light brown fine grained micaceous shaley sandstone.
2273.00 - 2274.46	- Gray shale.
2274.46 - 2276.20	- Grayish light brown fine grained micaceous shaley sandstone.
2276.20 - 2277.10	- Gray sandy shale containing a sand streak.
2277.10 - 2277.36	- Grayish light brown fine grained micaceous shaley sandstone.
2277.36 - 2278.95	- Light brown fine grained micaceous sandstone.
2278.95 - 2279.25	- Grayish light brown fine grained micaceous shaley sandstone.
2279.25 - 2280.32	- Laminated sandy shale.
2280.32 - 2281.40	- Light brown fine grained micaceous slightly shaley sandstone.
2281.40 - 2282.05	- Hard gray sandy shale.
2282.05 - 2282.87	- Light brown fine grained micaceous shaley sandstone.
2282.87 - 2282.95	- Gray sandy shale.
2282.95 - 2283.55	- Light brown fine grained micaceous shaley sandstone.
2283.55 - 2283.97	- Gray shale.
2283.97 - 2284.44	- Light brown fine grained micaceous shaley sandstone.
2284.44 - 2284.70	- Laminated sandy shale.
2284.70 - 2286.03	- Light brown fine grained micaceous shaley sandstone containing a shale break.
2286.03 - 2286.40	- Laminated shaley limestone.

OIL FIELD RESEARCH LABORATORIES  
CHANUTE, KANSAS

-2-

- 2286.40 - 2287.15 - Limestone.
- 2287.15 - 2287.70 - Grayish light brown fine grained micaceous shaley sandstone.
- 2287.70 - 2288.00 - According to log, sandy shale.
- 2288.00 - 2288.60 - Laminated shaley sandstone.
- 2288.60 - 2292.60 - Light brown fine grained slightly laminated micaceous shaley sandstone.
- 2292.60 - 2300.35 - Light brown fine grained micaceous sandstone.
- 2300.35 - 2302.30 - Light brown fine grained micaceous shaley sandstone.
- 2302.30 - 2305.10 - Light brown fine grained micaceous sandstone containing a shale break.
- 2305.10 - 2306.00 - According to log, loss, probably sandstone.
- 2306.00 - 2306.25 - Gray sandy shale.
- 2306.25 - 2306.75 - Light brown fine grained micaceous shaley sandstone.
- 2306.75 - 2306.95 - Light brown fine grained micaceous calcareous sandstone.
- 2306.95 - 2308.65 - Gray shale containing a vertical fracture.
- 2308.65 - 2309.00 - Laminated sandy shale.
- 2309.00 - 2309.15 - Laminated shaley sandstone.
- 2309.15 - 2312.00 - Laminated sandy shale.
- 2312.00 - 2313.28 - Gray shale.
- 2313.28 - 2313.45 - Gray fine grained micaceous sandstone.
- 2313.45 - 2313.63 - Gray shale.
- 2313.63 - 2314.60 - Gray laminated shaley sandstone.
- 2314.60 - 2315.70 - Gray shale.
- 2315.70 - 2316.20 - Gray laminated shaley sandstone.
- 2316.20 - 2318.30 - Gray shale.
- 2318.30 - 2319.40 - Gray fine grained micaceous shaley sandstone.
- 2319.40 - 2319.65 - Gray shale.

## OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

-3-

- 2319.65 - 2321.43 - Light brown fine grained micaceous sandstone.
- 2321.43 - 2321.93 - Gray shale.
- 2321.93 - 2322.65 - Light brown fine grained micaceous sandstone.
- 2322.65 - 2323.00 - Light brown fine grained micaceous slightly carbonaceous sandstone.
- 2323.00 - 2323.55 - Shaley sandstone.
- 2323.55 - 2324.00 - Gray sandy shale.
- 2324.00 - 2324.25 - Light brown fine grained micaceous sandstone.
- 2324.25 - 2325.00 - Gray shale.
- 2325.00 - 2336.00 - Light brown fine grained micaceous sandstone.
- 2336.00 - 2336.35 - Hard grayish brown shale.
- 2336.35 - 2336.60 - Light brown fine grained micaceous sandstone.
- 2336.60 - 2336.73 - Hard brown shale.
- 2336.73 - 2338.00 - Light brown fine grained micaceous conglomeratic sandstone.
- 2338.00 - 2338.83 - Hard brown shale.
- 2338.83 - 2341.70 - Light brown fine grained micaceous sandstone.
- 2341.70 - 2342.00 - According to log, loss, probably sandstone.
- 2342.00 - 2342.20 - Light brown fine grained micaceous sandstone.
- 2342.20 - 2342.60 - Light brown fine grained laminated micaceous carbonaceous sandstone.
- 2342.60 - 2344.20 - Light brown fine grained micaceous sandstone.
- 2344.20 - 2344.60 - Light brown fine grained micaceous sandstone containing a shale inclusion.
- 2344.60 - 2350.70 - Light brown fine grained micaceous sandstone.
- 2350.70 - 2354.00 - Light brown fine grained micaceous slightly calcareous sandstone.
- 2354.00 - 2360.30 - Light brown fine grained micaceous sandstone.
- 2360.30 - 2362.40 - Light brown medium grained micaceous carbonaceous slightly calcareous sandstone.

OIL FIELD RESEARCH LABORATORIES  
CHANUTE, KANSAS

-4-

- 2362.40 - 2363.20 - Light brown fine grained micaceous carbonaceous sandstone.
- 2363.20 - 2363.35 - Laminated carbon and sandstone.
- 2363.35 - 2364.25 - Light brown fine grained micaceous sandstone.
- 2364.25 - 2365.25 - Dark fine grained micaceous carbonaceous sandstone.
- 2365.25 - 2365.55 - Hard brown slightly calcareous sandy shale.
- 2365.55 - 2366.00 - Gray shale.
- 2366.00 - 2376.00 - Soft shale, core not received.

**Oil Field Research Laboratories**  
**RESULTS OF PERMEABILITY AND POROSITY TESTS**

**TABLE I A**

Company Phillips Petroleum Company Lease Cartwright "C" Well No. 3-A

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.	Percent Porosity
			Ft.	Cum. Ft.		
1	2272.57	0.52	1.00	1.00	0.52	19.3
2	2274.78	0.65	0.84	1.84	0.55	20.2
3	2275.80	0.58	0.90	2.74	0.52	18.4
4	2277.28	1.7	0.26	3.00	0.44	19.3
5	2278.42	3.0	1.59	4.59	4.77	20.4
6	2281.25	1.3	0.98	5.57	1.27	19.4
7	2282.57	0.79	0.72	6.29	0.57	18.8
8	2283.45	0.48	0.60	6.89	0.29	19.7
9	2284.15	0.57	0.47	7.36	0.27	17.0
10	2285.23	0.54	1.03	8.39	0.56	17.0
11	2288.30	Imp.	0.60	8.99	0.00	-
12	2289.30	0.85	1.20	10.19	1.02	18.2
13	2290.22	0.69	0.90	11.09	0.62	18.1
14	2291.27	0.67	1.00	12.09	0.67	18.2
15	2292.20	0.61	0.90	12.99	0.55	18.7
16	2293.20	3.5	1.10	14.09	3.85	19.0
17	2294.20	3.2	1.00	15.09	3.20	18.1
18	2295.13	0.94	0.95	16.04	0.89	16.4
19	2296.13	2.4	1.05	17.09	2.52	20.1
20	2297.24	0.58	1.00	18.09	0.58	15.7
21	2298.20	2.6	1.00	19.09	2.60	18.1
22	2299.20	3.1	1.00	20.09	3.10	18.2
23	2300.20	1.2	0.65	20.74	0.78	18.5
24	2301.20	0.58	1.35	22.09	0.78	18.8
25	2302.18	0.60	0.60	22.69	0.36	17.7
26	2303.18	1.0	1.35	24.04	1.35	18.6
27	2304.16	1.6	0.95	24.99	1.52	19.7
28	2305.00	1.2	0.45	25.44	0.54	18.4
29	2306.55	0.93	0.50	25.94	0.47	18.9
30	2319.83	1.6	0.65	26.59	1.04	18.2
31	2320.83	1.4	1.13	27.72	1.58	13.6
32	2322.35	1.6	0.72	28.44	1.15	19.5
33	2325.24	12.	0.65	29.09	7.80	20.7
34	2326.22	14.	1.00	30.09	14.00	20.3
35	2327.13	15.	0.95	31.04	14.25	19.1
36	2328.18	14.	1.00	32.04	14.00	20.0
37	2329.15	15.	1.00	33.04	15.00	19.8
38	2330.12	23.	1.00	34.04	23.00	20.1
39	2331.13	6.8	1.00	35.04	6.80	20.5
40	2332.12	8.0	1.00	36.04	8.00	20.3

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

Company Phillips Petroleum Company Lease Cartwright "C" Well No. 3-A

Sample No.	Depth, Feet	Permeability Millidarcys	Feet of Core		Permeability Capacity Ft. x Md.	Percent Porosity
			Ft.	Cum. Ft.		
41	2333.15	15.	1.05	37.09	15.75	20.6
42	2334.23	14.	0.95	38.04	13.30	20.6
43	2335.14	14.	1.35	39.39	18.90	19.0
44	2336.46	11.	0.25	39.64	2.75	19.0
45	2337.53	14.	1.27	40.91	17.78	19.2
46	2339.05	11.	0.72	41.63	7.92	17.0
47	2340.04	14.	0.95	42.58	13.30	17.2
48	2340.95	22.	1.20	43.78	26.40	17.4
49	2342.50	0.59	0.40	44.18	0.24	16.3
50	2343.45	2.3	1.60	45.78	3.68	18.2
51	2344.50	0.61	0.40	46.18	0.24	17.9
52	2345.50	11.	1.40	47.58	15.40	17.6
53	2346.46	13.	0.95	48.53	12.35	19.0
54	2347.46	51.	1.00	49.53	51.00	22.6
55	2348.46	5.7	1.00	50.53	5.70	18.7
56	2349.43	8.4	1.00	51.53	8.40	18.6
57	2350.38	9.1	0.75	52.28	6.83	19.6
58	2351.43	13.	1.20	53.48	15.60	16.8
59	2352.43	1.0	1.00	54.48	1.00	16.3
60	2253.43	28.	1.10	55.58	30.80	20.9
61	2354.30	27.	0.70	56.28	18.90	17.5
62	2355.18	19.	1.00	57.28	19.00	19.6
63	2356.20	29.	1.00	58.28	29.00	21.8
64	2357.15	15.	0.95	59.23	14.25	21.6
65	2358.17	16.	1.00	60.23	16.00	20.0
66	2359.15	20.	1.00	61.23	20.00	21.4
67	2360.15	28.	0.65	61.88	18.20	19.4
68	2361.17	27.	1.40	63.28	37.80	18.9
69	2362.16	34.	0.70	63.98	23.80	15.8
70	2363.16	6.0	0.80	64.78	4.80	16.3
71	2364.17	41.	0.90	65.68	36.90	20.5
72	2365.13	6.8	1.00	66.68	6.80	18.1

## Oil Field Research Laboratories

### SUMMARY OF PERMEABILITY & POROSITY TESTS

TABLE II A

Company	Phillips Petroleum Company	Lease	Cartwright "C"	Well No.	
Depth Interval, Feet	Feet of Core Analyzed	Average Air Permeability, Millidarcys	Average Effective Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Percent Porosity
2272.00-2322.65	27.84	1.39	-	38.93	18.40
2325.00-2346.95	20.09	12.49	-	250.86	19.09
2346.95-2365.25	18.15	20.10	-	364.78	19.24
2272.00-2365.25	66.08	9.91	-	654.57	18.84