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Osage Oil and Gas Company #1 Cochran Estate Directional Drilled Hole.

Drilled from the NE-NE-SW, 10-27-15W,
to 236 feet east and 29 feet north,
approximately NW-NW-SE, 10-27-15W,
Pratt County, Kansas.

Contractor: Peel Drilling Company,
Drilling Completed: October 21, 1956,
8 5/8" casing at 308 feet.
Elevation: 2042 K.B.

Geological formations and zones of porosity as determined by sample examination and drilling time correlation, are herein described. Drilling operations were observed on location from 4300 feet to the total depth. Samples were examined from 3700 feet to the total depth.

Formation depths as listed below are directional drilling depths from the rotary table bushing and corresponding calculated vertical depth.

Heebner shale 3775 = (-1730) vertical depth.

Toronto limestone 3792 = (-1747) vertical depth.

Douglas 3825 = (-1779) vertical depth.

Brown limestone 3941 = 3933 (-1891) vertical depth.

Lansing 3961 = 3954 (-1912) vertical depth.

- 3967-71 Limestone, white collicastic (large), good porosity, fair stain in vugs.
3993-99 Limestone, crystalline, fair vuggy porosity, slight stain.
4010-18 Limestone, chalky, fossiliferous, poor porosity, no stain.
4119-25 Limestone, white, collicastic, good porosity, no show.
4173-81 Limestone, white, collicastic, good porosity, no show.
4204-10 Limestone, buff, collicastic, good porosity, no show.

Base Kansas City 4272 = 4246 (-2204) vertical depth.

Conglomerate 4432 = 4399 (-2357) vertical depth.

Sand 4436 = 4403 (-2361) vertical depth.

- 4436-44 Sand, medium grained, good porosity, good stain and show of free oil.

Mississippi chert 4460 = 4425 (-2383) vertical depth.

- 4460-72 Chert, white, yellow, slight vuggy porosity, light stain in vugs, shaley.
4472-90 Chert as above, part tripolitic with fair stain, dark oil residue.

Kinderhook shale 4490 = 4453 (-2411) vertical depth.

Sand 4496 = 4459 (-2417) vertical depth.

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Continued:

4496-4506 Sand, gray medium grained, poor to fair porosity, light stain, no free oil.

4511-18 Sand, gray, medium grained, fair porosity, light stain, no free oil.

R.T.D. 4520 = 4481 (-2439) vertical depth.

4" casing cemented at 4513 = 4475 vertical depth.

REMARKS

The Cochran Estate #1 (Directional) drilled from the original location, encountered the Conglomerate sand formation 236 feet east, and 29 feet north, at the calculated vertical depth of 4403 (-2361). Sand in the original hole was found at 4391 (-2349), a 12 feet higher datum.

Porosity zones in the Lansing, Mississippi and Kinderhook sand formations carried similar shows of oil as in the original test. Inasmuch as these shows were all previously drill stem tested, no further tests were considered necessary in the directional hole. Although 12 feet lower structurally, the good show of oil and similar formation thickness of the Conglomerate sand warranted setting casing to test.

Casing was cemented 7 feet off bottom in order that the Kinderhook sand section may be tested at some future time.

/s/ W. Vernon Hess
W. Vernon Hess

DRILLING TIME LOG

Osage Oil & Gas Co. Cochran Estate #1 (Directional)
NW-NW-SE 10-27-15W, Pratt County, Kansas.

DEPTH	MINUTES	REMARKS
3620 - 3640	4-5-3-4-5-5-4-4-4-4-5-5-2-2-5-3-2-3-3-4	
3640 - 3660	4-2-4-5-4-4-4-4-4-4-5-4-4-4-4-5-4-4-3-4	
3660 - 3680	4-4-4-4-4-5-4-5-4-4-4-4-4-5-4-4-4-4-2-3	
3680 - 3700	3-4-4-4-4-3-6-5-5-5-5-5-6-4-5-2-2-3-3-2	Trip at 3693.
3700 - 3720	5-5-3-2-3-4-4-3-4-4-4-3-4-4-4-4-5-4-4-4	
3720 - 3740	3-3-4-3-3-3-3-3-5-4-4-3-3-3-3-3-3-4-4-4	
3740 - 3760	3-4-4-3-3-4-3-3-3-4-4-5-3-2-3-3-6-6-6-6	
3760 - 3780	6-7-8-5-7-4-4-3-3-2-2-5-5-9-8-5-4-4-4-2	
3780 - 3800	2-3-4-4-4-4-4-4-4-4-3-4-4-5-5-6-6-8-5-6	
3800 - 3820	6-5-9-10-9-7-7-8-8-8-7-7-8-7-8-6-12-13-12-10	Whipstoe k 3816-3825.
3820 - 3840	11-12-13-12-14-2-3-3-3-4-4-4-3-3-3-3-3-3-4	
3840 - 3860	6-3-3-2-2-2-2-3-4-3-3-2-2-3-3-3-2-3-2-2	
3860 - 3880	2-2-2-2-1-2-2-2-2-3-4-4-8-3-3-3-4-5-6-5	
3880 - 3900	4-4-4-4-4-4-4-4-3-5-4-4-5-5-4-4-4-4-4-2	
3900 - 3920	2-2-3-3-3-4-4-6-8-8-8-5-5-5-5-6-8-8-7-7	
3920 - 3940	8-7-8-7-7-7-7-8-6-6-7-7-8-20-15-15-15-10-6	
3940 - 3960	11-9-10-9-10-10-9-9-10-7-8-8-8-7-10-16-20-13-16-11	
3960 - 3980	7-15-16-15-21-18-16-14-19-14-15-10-6-6-7-10-12-7-8-9	Trip at 3970.
3980 - 4000	9-10-8-9-10-7-8-8-8-8-10-12-13-10-11-14-11-14-14-13	
4000 - 4020	11-5-5-5-5-4-5-5-6-10-11-11-13-12-13-13-12-13-14-16	
4020 - 4040	17-15-13-15-18-10-16-20-20-18-10-12-10-14-7-19-19-25-20-11	Trip at 4027.
4040 - 4060	7-5-8-11-8-6-10-6-6-6-6-4-7-6-7-7-15-10-20-15	
4060 - 4080	13-11-8-17-13-12-17-14-20-4-4-5-9-6-9-5-5-5-5-6	Trip at 4069.
4080 - 4100	7-8-7-10-10-11-17-15-13-10-15-12-8-12-15-18-20-15-15-20	
4100 - 4120	17-15-20-19-6-6-7-11-14-5-3-1-1-1-1-6-15-15-12-20	
4120 - 4140	17-20-15-15-18-20-15-11-21-11-10-10-10-12-8-10-14-1818-15-19	
4140 - 4160	15-20-15-16-15-20-13-10-20-10-7-7-3-4-6-6-13-12-9-10	
4160 - 4180	8-7-6-5-3-3-3-4-6-5-2-4-5-6-9-10-11-16-17-15	
4180 - 4200	16-15-15-15-16-12-9-9-15-18-18-18-x-x-x-x-x-x-x	Trip & strap pipe 4192=4201.
4200 - 4220	11-6-12-5-4-4-2-2-3-4-6-7-7-6-10-11-16-11-12-20	
4220 - 4240	15-10-11-10-12-12-12-11-13-11-11-14-9-10-7-13-12-11-9-8	
4240 - 4260	7-7-12-6-7-12-5-10-17-13-9-8-10-15-13-10-13-8-14-11	
4260 - 4280	12-12-12-9-11-10-12-13-15-15-16-14-13-10-8-8-12-13-15-13	
4280 - 4300	18-6-6-6-11-9-13-14-11-10-10-10-10-11-11-11-9-9-7-7	
4300 - 4320	6-6-6-6-7-12-16-16-15-15-10-7-8-7-7-6-8-9-7-5	
4320 - 4340	5-7-7-7-7-7-5-12-13-12-12-14-14-14-13-13-12-12-12-10	
4340 - 4360	10-10-10-10-6-6-7-6-7-5-5-10-9-11-11-7-10-11-10-8	Trip at 4351.
4360 - 4380	7-12-13-9-7-6-13-10-10-12-11-12-15-12-11-7-10-11-12-11	
4380 - 4400	11-11-11-11-12-10-10-10-10-11-10-12-11-12-12-13-13-13-11	
4400 - 4420	14-14-13-11-12-16-15-15-16-16-13-15-14-16-14-18-16-16-16-17	
4420 - 4440	17-16-20-12-12-15-14-15-15-15-17-18-17-12-10-10-7-12-5-7	Cir. at 4424 & 4435
4440 - 4460	9-6-8-8-13-10-10-9-12-16-18-14-14-11-12-12-13-12-13-10	Cir. at 4448.
4460 - 4480	9-13-16-15-13-14-13-13-13-13-12-14-14-13-11-10-6-5-5-5-7	
4480 - 4500	6-6-9-8-11-12-10-10-14-13-13-16-18-10-10-10-8-8-6-4	Trip at 4492.
4500 - 4520	5-6-6-5-4-5-8-13-14-11-6-2-7-8-7-6-6-6-9-9-	Cir. at 4505 & 4520.

R.T.D. 4520.