GEOLOGICAL REPORT

BEARDMORE DRILLING COMPANY

Inman 1

~~BATES NO. 1~~

C S/2 SW SW Section 31-30S-1W

SUMNER COUNTY, KANSAS

API: 15-191-30005

BY

FREDRICK W. STUMP

Geologist

GEOLOGICAL REPORT

Beardmore Drilling Company
Bates No. 1
C S/2 SW SW Section 31-30S-1W
Sumner County, Kansas

Elevations: 1302 KB
1300 DF
1297 GL

GENERAL:

Contractor	German Drilling Company
Commenced:	March 1, 1965
Completed:	March 12, 1965
Casing:	Set 8-5/8 @ 427' w/300 sx
Measurements:	All depths and data included in this report are with reference to kelly bushing elevation. No depth corrections are necessary in the time log.
Drilling Time:	5' time log from ground level to 2900' 1' time log from 2900' to 3755', R.T.D.
Samples:	10' samples were saved from 500' to 3500' 5' samples were saved from 3500' to 3755' R.T.D.
Electrical Surveys:	A Schlumberger Induction-Electrical log and Sonic log was run at total depth.
Drill Stem Tests:	DST No. 1 3728-3739 Mississippi DST No. 2 3741-3755 Mississippi
Cores:	Core No. 1 3729-3739 Mississippi Core No. 2 3740-3750 Mississippi Core No. 3 3750-3755 Mississippi
Gas Unit:	A Baroid Gas Detector Unit was on the test from approximately 600' to rotary total depth.

GEOLOGICAL:

Listed below are formation tops, zones of porosity, shows of oil and drill stem test results:

Formation	Sample Tops	E-Log Tops
Base Florence	885 (+ 417)	890 (+ 412)
Elmont-Reading	1725 (- 423)	1727 (- 425)
Topeka	2025 (- 723)	2023 (- 721)
Iatan	2755 (-1453)	2753 (-1451)
Stalnaker	2765 (-1463)	2766 (-1464)
Base Stalnaker	2865 (-1563)	2864 (-1562)

Formation	Sample Tops	E-Log Tops
Kansas City	3074 (-1772)	3074 (-1772)
Base Kansas City	3314 (-2012)	3312 (-2012)
Cherokee Shale	3566 (-2264)	3566 (-2264)
Mississippi Chert	3720 (-2418)	3722 (-2420)
Mississippi Limestone	3727 (-2425)	3728 (-2426)
Total Depth	3755 (-2453)	3759 (-2457)

Note: Figures on right side are E-log depths, those on left are sample depths.

KANSAS CITY @ 3074 (-1772) 3074 (-1772)

3156-3162 3156-3163

Limestone, cream and tan, fine crystalline to medium crystalline, much soft, granular and mealy, fossiliferous, with white and light grey, opaque chert. Fair to poor visible pinpoint porosity. No show of oil.

3188-3193 3191-3194

Limestone, tan and brown, fine crystalline, fossiliferous, partly oolitic, with white, opaque chert. Poor pinpoint and a trace of oolicastic porosity. No show of oil.

3206-3215 3208-3216

Limestone, tan, fine crystalline, sucrosic, micro-oolitic with white opaque chert. Fair to good oolicastic porosity. No show of oil.

3259-3268 3262-3272

Limestone, cream and tan, fine crystalline to medium crystalline, partly sucrosic, oolitic, (very large oolites) with white, opaque chert. Good oolicastic porosity. No show of oil.

MISSISSIPPI CHERT @ 3720 (-2418) 3722 (-2420)

3720-3727 3722-3728

Chert and shale: Chert, predominantly white and cream, opaque, fresh to slightly weathered with much smoky, grey, tan, cream and milky, opaque to semi-translucent, partly fossiliferous, fresh chert. Shale was mostly light apple green and light brown clay shale. Poor visible porosity in chert. No show of oil, no staining and no fluorescence. No gas kick on Baroid detector.

3727-3729

Limestone, cream and tan, fine crystalline to medium crystalline, part sucrosic, and dolomitic, with cream, fine crystalline, sucrosic, tight dolomite. Fair to poor visible pinpoint porosity. Slight show of very light oil, light spotty staining and fair fluorescence. No odor. This interval gave a 12 unit separation on the gas detector.

CORE NO. 1 3729-3739 Full recovery

3729-3733

Limestone, cream and tan, medium crystalline to coarse crystalline, dolomitic, fossiliferous, with cream, fine crystalline and sucrosic dolomite in some vugs and fossilcasts. Some grey, tan and cream, mottled and fossiliferous chert nodules throughout with a 2-inch thick chert band at base of this interval. Fair vugular and inter-crystalline porosity, some fossil-cast porosity. Fair amount of

pores bleeding oil in fresh core and fair show of free oil on fresh break with a good odor. Spotted staining, and fair patchy fluorescence.

3733-3734
Upper portion: Limestone, grey and brown, medium crystalline, dense more dolomitic than above grading into brown fine crystalline, dense, tight dolomite at base of interval, with scattered chert nodules as above. Very poor pinpoint porosity, no visible vugular or fossil-cast porosity. Poor, spotty show of free oil, spotty light staining, odor on fresh break and poor patchy fluorescence.

3734-3735
Dolomite, brown, very fine crystalline to fine crystalline, dense, tight, with an occasional area tight sucrosic dolomite, much white and grey, opaque chert disseminated throughout this interval. Very poor porosity, no show of free oil, very spotty light staining, spotty fluorescence, slight odor on break.

3735-3736
Dolomite as above, very tight with no visible porosity, no show of free oil, no odor, very poor, patchy fluorescence.

3736-3737
Dolomite as above with no fluorescence observed.

3737-3738
Dolomite as above with a slight amount of patchy fluorescence.

3738-3739
Dolomite as above, more cherty than above with a 4-inch thick chert band near base of this interval. Fair odor this foot on fresh break with poor, patchy fluorescence.

DRILL STEM TEST NO. 1 3728-3739 Open 15 minutes pre-flow 60 minutes for test. Weak blow increasing to fair. Recovered 120' slightly oil cut mud. IFP 60#, FFP 82#, IBHP 1307#/30 minutes, FBHP 1251#/30 minutes.

CORE NO. 2 3740-3750 Full Recovery

3740-3744
Dolomite, brown, very fine crystalline to fine crystalline, dense, tight, with some chert nodules sparsely disseminated throughout this section. No visible porosity. No show of oil, no staining, no fluorescence and no odor.

3744-3745
Dolomite, mostly as above but lower portion of this interval fine crystalline to medium crystalline, slightly fossiliferous and limy with poor pinpoint porosity. No show of free oil, trace spotty staining, slight odor and fair, patchy fluorescence.

3745-3746
Limestone, tan and brown, medium crystalline to coarse crystalline, fossiliferous, slightly cherty, with much tan, fine crystalline, sucrosic dolomite in vugs, fossil-casts and between large limestone crystals. Fair to poor pinpoint and vugular porosity. No show of free oil, spotty trace of staining, patchy fluorescence.

3746-3747
Limestone as above, partly dolomitic, more fossiliferous and more cherty than above. Fair vugular and pinpoint and trace fossil-cast porosity. No show of free oil, spotty light staining, fair odor, good even fluorescence.

3747-3748
Dolomite and limestone as above, predominantly medium crystalline to coarse crystalline, but more dolomite than limestone in this interval. Fair vugular and pinpoint porosity. Fair light staining, good even fluorescence, fair odor.

3748-3749
Limestone, dolomitic as above with one area near center of interval of grey brown, fine crystalline to medium crystalline, very dense, tight, dolomite with poor visible porosity, and no fluorescence. Remainder of interval has fair porosity as above, fair odor, good fluorescence, spotty stain.

3749-3750
Limestone, tan and brown, medium crystalline and coarse crystalline, with much crystalline, sucrosic, dolomite as above in vugs and between limestone crystals. This interval has few small areas of tight, dolomitic limestone. Overall fair porosity, spotty staining, and fair odor.

CORE NO. 3 3750-3755 Full Recovery

3750-3753
Limestone, brown, medium crystalline to coarse crystalline, fossiliferous, with much tan, fine crystalline, dolomite, fair to good vugular, pinpoint and trace fossil-cast porosity. No show of free oil, very spotty, light staining, fair odor, fair to patchy fluorescence.

3753-3754
Limestone as above, with more areas dolomite, and patches of grey, fine crystalline to very fine crystalline, dense, tight dolomite. Overall less porosity than above with very spotty light staining, fair odor and patchy fluorescence.

3754-3755
Limestone, as above, very dolomitic with increase in amount sucrosic dolomite. Fair to good vugular and pinpoint porosity. Trace of show of free oil on very bottom part of core, fair to good odor, and fluorescence. Spotty staining.

DRILL STEM TEST NO. 2 3741-3755 Open 10 minutes on pre-flow, 60 minutes for test. Recovered 120' mud, no show, and 180' clean salt water. IFP 36#, FFP 128#, IBHP 1233#/30 minutes, FBHP 1177#/30 minutes.

Rotary Total Depth 3755 (-2453)

CONCLUSION AND RECOMMENDATION:

Samples were examined by the undersigned from 500' to total depth. The only shows of oil observed were those described in this report. All shows were covered by drill stem tests, core analysis, and electric log interpretation and from the evaluation of the data acquired it was determined that the Mississippian in the subject test was non-commercial. It was therefore decided to abandon and plug the subject test.

Fredrick W. Stump
Geologist

Beardmore Drilling Company
Bates No. 1
C S/2 SW SW Section 31-30S-1W
Summer County, Kansas

TIME LOG

Depth FROM	TO	MINUTES	REMARKS
0 -	50	5-5-5-5-5-5-5-5-5-4	5' Drilling Time
	100	4-4-4-5-5-6-6-5-5-6	
	150	8-9-4-3-5-6-10-4-4-3	
	200	7-4-3-6-3-3-3-3-4-3	
	250	3-4-5-6-5-5-6-11-9-8	
	300	5-3-4-8-6-9-7-5-3-4	
	350	4-4-6-8-3-3-3-3-4-5	
	400	5-5-5-9-7-5-6-8-7-8	
	450	5-3-3-14-12-10-2-3-7-3	
	500	5-2-2-2-6-10-5-5-4-3	
	550	4-3-6-7-4-4-2-3-4-6	
	600	4-5-12-4-4-4-6-6-8-6	
	650	3-4-4-3-4-4-4-4-5-5	
	700	6-8-7-4-4-4-4-6-6-6	
	750	6-5-8-7-8-7-5-4-7-7	
	800	5-8-14-10-6-7-10-8-5-8	
	850	12-9-11-8-5-4-8-15-12-4	Trip @ 834'
	900	4-4-3-3-2-3-4-11-7-15	
	950	12-13-6-9-13-16-7-7-5-11	
	1000	3-4-6-7-11-11-9-3-4-25	
1000 -	1050	6-3-2-9-11-10-4-3-7-4	
	1100	3-10-6-7-8-6-5-7-3-4	Trip @ 1090'
	1150	4-3-8-4-2-3-3-3-3-3	
	1200	3-3-3-3-3-3-3-4-4-3	
	1250	4-5-4-8-9-7-5-11-8-4	
	1300	3-4-3-4-5-4-3-3-4-10	
	1350	7-6-7-8-8-7-6-7-8-8	
	1400	4-8-12-7-7-4-5-5-5-6	
	1450	4-5-5-4-5-6-6-4-3-3	
	1500	4-3-5-4-5-5-7-10-5-5	
	1550	6-6-7-6-7-4-10-4-5-4	
	1600	3-5-5-5-4-4-4-5-4-6	
	1650	4-5-4-8-8-7-8-8-5-5	
	1700	8-4-4-7-8-4-7-5-5-8	
	1750	5-4-5-5-5-11-12-12-12-15	
	1800	13-12-6-7-8-11-13-4-10-11	
	1810	2-1-2-2-4-5-3-6-3-5	1' Drilling Time
	1820	4-2-2-2-2-2-2-2-1-2	
	1830	2-3-2-3-2-2-1-2-1-2	
	1840	1-2-2-2-2-2-2-3-3-3	
	1850	4-3-3-5-3½-1½-1-1½-1½-3	
	1860	1-2-5-1-2-1-1-2-1-1	
	1870	2-1-1-½-1-½-1-1-1-1½	
	1880	2-2½-2-1-1-1-1-1-1-2	
	1890	1-1-2-2½-2-1½-1-2½-1½-1	Circ @ 1890'
	1900	1-2-1-4-2-2-3-2-1-1	
1900 -	1910	2-1½-1½-1-1-1-1½-1½-1-1	
	1920	2½-3-2-3-2-1-1-1-3-2	Circ @ 1912'

Depth FROM	TO	MINUTES	REMARKS
1920 -	1930	3½-3-3½-2-2-2-1-3-2-3	
	1940	2-1-1-1-3-3-4-4-3-4	
	1950	4-2-3-3-2-1-5-4-2-4	
	1960	2-2-3-2-3-4-1-1-2-2	Circ @ 1956'
	1995	10-5-10-8-4-6-6	Start 5' Drlg Time
2000 -	2050	7-4-5-4-5-5-6-7-6-8-9	
	2100	9-8-6-7-9-9-5-6-5-5-6	
	2150	8-6-7-7-8-8-5-5-7-7	
	2200	8-8-7-11-9-6-8-5-6-6	
	2250	5-6-6-8-11-10-8-6-6-5	
	2300	5-5-5-4-4-4-4-4-6-8	
	2350	4-4-5-4-4-4-4-6-5-5	
	2400	5-6-6-7-7-5-6-5-6-10	
	2450	14-10-5-5-5-7-9-8-10-8	
	2500	8-10-8-6-7-11-12-10-8-7	
2500 -	2550	5-6-6-9-10-11-11-6-4-6	
	2600	6-7-6-7-6-5-8-6-6-6	
	2650	6-6-6-6-6-6-7-7-8-8	
	2700	8-8-6-5-12-12-9-11-13-13	
	2750	12-12-13-19-28-26-30-21-34-42	
	2800	12-20-19-10-9-10-10-14-14-17	
	2850	9-10-7-7-7-7-8-9-13-12	
	2900	13-9-17-21-22-28-22-22-25-9	Trip @ 2795'
2900 -	2910	1-1½-1½-1-2-1-2-2-1-1	Start 1' Drilling Time
	2920	1-2-2½-1-1½-1-1-1-2-1	
	2930	2-1-1-2-1-2-1-1-1-2	
	2940	2-1-1-2-1-1-1-1-2-2	
	2950	2-1-1-1-2-1-1-1-2-1	
	2960	1-1-2-2-1-2-1-1-2-1	
	2970	1-1-1-2-1-2-1-1-1-2	
	2980	2-2-1-1-2-3-2-1-1-1	
	2990	1-2-2-1-1-1-1-2-2-1	
	3000	1-2-2-1-2-2-1-2-2-1	
3000 -	3010	2-1-1-1-2-1-2-1-1-2	
	3020	1-2-1-2-1-2-2-1-2-2	
	3030	1-2-2-1-1-1-1-2-1-2	
	3040	2-2-1-1-1-2-1-2-1-2	
	3050	1-2-2-1-2-2-2-2-2-2	
	3060	2-1-2-1-2-1-1-1-1-2	
	3070	1-2-2-1-2-2-2-1-1-2	
	3080	1-1-2-2-3-3-4-3-3-4	
	3090	4-5-5-5-5-2-4-3-2½-2½	
	3100	3-3-2-2-2-2-2-2-2-2½	
3100 -	3110	1½-2-2-2-2-2-3-3-4-3	
	3120	2-3-5-3-4-3-4-2-1½-1	
	3130	2-4½-4-3-7-8-3-8-8-4	
	3140	3-3-2-3-5-7-8-8-5-3	
	3150	5-4-4-5-6-8-7-8-4-6	
	3160	11-7-6-5-4-3-3-2-1-3	
	3170	3-6-8-6-5-2-5-2-3-3	
	3180	6-6-4-4-9-8-9-9-7-12	
	3190	6-7-6-11-10-15-9-8-5-5	
	3200	6-4-11-5-4-2-2-3-4-4	Trip @ 3193'

Depth FROM	TO	MINUTES	REMARKS
3200 -	3210	4-5-4-2-3-4-1-1-1-2	
	3220	2-3-2-2-1-3-2-2-3-2	
	3230	3-2-5-3-3-5-5-3-6-4	
	3240	3-3-5-5-4-4-5-7-3-5	
	3250	4-5-4-4-4-5-3-4-3-2	
	3260	5-6-6-6-6-5-10-5-5-3	
	3270	2-2-3-3½-2½-2½-1½-4-4-6	
	3280	3-3-6-3-5-5-4-4-5-3	
	3290	5-4-5-5-5-4-5-4-3-6	
	3300	6-5-7-6-4-5-7-6-5-5	
3300 -	3310	5-4-8-6-5-5-4-7-6-5	
	3320	7-7-8-8-6-5-4-5-4-4	
	3330	5-5-5-4-4-4-3-3-3-4	
	3340	3-3-2-3-5-4-3-3-3-3	
	3350	3-4-5-5-5-5-5-5-4-4	
	3360	3-5-4-3-3-4-3-2-2-2	
	3370	2-1-2-2-2-1-3-2-2-2	
	3380	1-2-3-1-2-1-1-1-1-1	
	3390	2-3-3-4-5-6-5-6-6-6	
	3400	7-4-4-4-5-6-6-4-4-4	
3400 -	3410	2-3-5-3-4-5-4-4-5-3	
	3420	5-6-5-5-5-4-6-4-5-5	
	3430	6-7-5-6-6-4-4-4-5-5	
	3440	5-5-6-4-6-4-5-5-5-6	
	3450	6-5-6-5-1-4-2-3-2-4	Trip @ 3444'
	3460	3-3-2-3-2-4-2-2-3-1	
	3470	2-2-3-2-3-2-3-3-3-4	
	3480	2-3-3-2-3-2-1-4-2-3	
	3490	4-4-2-4-2-3-4-4-2-2	
	3500	2-4-4-3-3-4-7-3-7-4	
3500 -	3510	5-6-4-4-2½-1½-4-3-2-2	
	3520	3½-2½-2-3-3-3-4-6-6-6	
	3530	7-3-5-5-3-2-2-2-2-3	
	3540	3-3-4-5-11-10-7-4-5-4	
	3550	5-4-5-4-4-4-5-7-8-7	
	3560	6-6-6-7-4-9-6-8-7-3	
	3570	3-3-7-8-4-7-4-3-2-2	
	3580	3-4-5-4-4-4-4-3-6-6	
	3590	5-4-3-5-4-4-4-4-5-4	
	3600	4-4-3-4-4-4-3-4-4-6	
3600 -	3610	5-4-4-5-3-3-2-2-5-4	
	3620	5-5-4-4-4-5-6-7-4-5	
	3630	3-5-7-6-5-4-6-8-7-3	
	3640	6-5-5-9-3-5-5-4-6-6	
	3650	5-5-7-4-5-7-7-5-5-4	
	3660	5-5-6-6-4-4-3-5-4-3	
	3670	4-2-5-4-4-3-6-5-8-5	
	3680	5-7-7-6-5-5-5-4-4-6	
	3690	6-5-4-5-4-5-4-4-6-7	
	3700	7-7-6-6-4-5-5-8-4-7	
3700 -	3710	7-7-6-6-5-6-7-6-4-6	
	3720	5-2-3-4-5-5-3-5-2-5	Circ @ 3715'
	3730	6-4-6-5-6-5-4½-3-4-13	Circ @ 3725'
	3740	8-8-16-14-12-15-17-18-23	
	3750	11-20-13-15-15-16-15-21-21-17	Core #2 3740-3750
	3755	8-8-8-12-10	Core #3 3750-3755