

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 45

Summary of the Calvert Exploration Company State #1  
Eddy County, North Dakota  
Permit #453, Well #437

By Morton Strassberg

March, 1954

Calvert Exploration Company - State #1, Eddy County, North Dakota;  
NW 1/4 NW 1/4 Section 16, T. 150N., R. 67W. (660 feet from N. line and 660  
feet from W. line). Elevation: D.F. 1466, K.B. 1478.

The Calvert Exploration Company - State #1 was spudded October 18, 1953  
and 10 3/4 inch casing was set at 196 feet with 90 sacks of cement.

The drilling was completed November 1, 1953 and the well was abandoned.  
Total depth was 4235 feet. Cement plugs were set at the following depths with  
15 sacks of cement.

4001-4044	1910-1953
3330-3373	1625-1668
2980-2023	196- 239
2400-2443	0- 43

Formation tops were determined from samples and electric log, not all  
lithologic tops were called in the following list. Colors were determined from  
rock color chart.

	<u>Tops</u>
Cretaceous System	
Niobrara Formation	680 Electric Log
Greenhorn Formation	1163
"Dakota "	1613
Jurassic System	
Morrison Formation	1847
Sundance Formation	1898
"Red Beds"	1954
Mississippian System	
Lodgepole Formation	2029
Englewood Formation	2552
Devonian System	
Nisku Formation	2568
Duperow Formation	2601
Souris River Formation	2806
Dawson Bay Formation	2920
Ashern Formation	2995
Silurian System	
Interlake Group	3038

Ordovician System	
Upper Stony Mountain	3171
Lower Stony Mountain	3234
Red River Formation	3330
Winnipeg Formation	3968
Winnipeg Sand (Samples and Electric Log 4100)	
(Gamma Ray Log 4090)	
Pre-Cambrian	4218
Total Depth	4235

<u>From</u>	<u>To</u>	<u>Formation</u>
250	280	Shale, medium light gray, micaceous.
280	310	Shale, same.
310	340	Shale, medium light gray.
340	370	Shale, medium light gray, medium to coarse sand grains.
370	400	Missing samples.
400	430	Shale, medium light gray, slightly calcareous, calcite prisms.
430	460	Shale, light gray.
460	490	Shale, same.
490	520	Shale, same.
520	550	Shale, same.
550	580	Shale, medium light gray, slightly calcareous.
580	610	Shale, same.
610	640	Shale, same.
640	670	Shale, medium dark gray, white specks, calcareous.
670	700	Shale, medium light to medium gray, white specks, calcareous.
700	730	Shale, same.
730	760	Shale, same.
760	790	Shale, same.
790	820	Shale, same.
820	850	Shale, same.
850	880	Shale, medium light to medium gray, calcareous, calcite prisms.
880	970	Shale, medium light to medium gray, calcareous.
970	1030	Shale, medium light to medium dark gray.
1030	1150	Shale, medium light to medium gray.
1150	1210	Shale, medium light to medium dark gray, white specks, calcareous.
1210	1270	Shale, medium gray, white specks, calcareous, calcite prisms.
1270	1330	Shale, medium light to medium dark gray, white specks calcareous, white bentonite.
1330	1390	Shale, medium to medium dark gray, calcareous, calcite prisms.
1390	1450	Shale, medium to medium dark gray, calcareous, white bentonite.
1450	1500	Shale, medium light to medium gray, free, fine to medium grained quartz.
1500	1510	Shale, medium gray, fine grained, free quartz.
1510	1520	Shale, medium light to medium gray, calcareous.

<u>From</u>	<u>To</u>	<u>Formation</u>
1520	1530	Shale, medium light to medium gray, calcareous.
1530	1540	Shale, medium gray, slightly calcareous.
1540	1550	Shale, light to medium dark gray.
1550	1560	Shale, medium gray, fine to medium grained, free quartz.
1560	1580	Shale, medium gray calcareous, silty.
1580	1610	Shale, medium light to medium gray, calcareous, fine grained, subrounded to subangular, iron stained free quartz.
1610	1620	Sandstone, fine to medium grained, subangular, frosted to iron stained, medium gray shale.
1620	1630	Sandstone, very fine grained, slightly iron stained, fine grained free quartz.
1630	1640	Siltstone, light gray argillaceous, fine grained, free quartz.
1640	1650	Siltstone, light gray, argillaceous fine to coarse grained frosted to iron stained quartz.
1650	1660	Siltstone, light gray, argillaceous, iron stained siltstone concretions and fine grained free quartz.
1660	1670	Sandstone, very light gray, very fine grained, calcareous, iron stained siltstone concretions.
1670	1680	Sandstone, very light gray, very fine grained, calcareous, iron stained siltstone concretions, medium gray shale.
1680	1690	Siltstone, very light gray, argillaceous, fine grained quartz and siltstone concretions, medium gray shale.
1690	1700	Siltstone, medium light gray, argillaceous fine grained free quartz and iron stained siltstone concretions.
1700	1710	Shale, medium gray silty fine to medium iron stained sand grains.
1710	1750	Siltstone, light to yellowish gray, argillaceous.
1750	1770	Shale, medium gray silty.
1770	1790	Siltstone, medium light gray, micaceous, argillaceous.
1790	1820	Siltstone, medium light gray, argillaceous, iron stained siltstone concretions.
1820	1840	Siltstone, medium light gray, iron stained siltstone concretions, medium gray shale.
1840	1850	Fine to medium grained, subrounded to subangular, frosted. (sandstone)
1850	1860	Shale, medium gray, light gray siltstone, fine to medium grained quartz.
1860	1880	Shale, medium light gray, silty.
1880	1890	Shale, medium gray, silty, yellowish gray siltstone.
1890	1940	Sandstone, white, very fine grained.
1940	1960	Sandstone, very fine grained, silty, calcareous.
1960	1970	Shale, medium gray silty, fine grained iron stained concretions.
1970	1980	Siltstone, moderate brown argillaceous.
1980	1990	Shale, pale reddish brown, calcareous.
1990	2020	Shale, pale reddish brown and medium gray, calcareous.
2020	2030	Limestone, white to very light gray, fine grained to chalky pale reddish brown and medium gray calcareous shale.
2030	2040	Dolomite, yellowish gray, microcrystalline, vuggy, limestone white to very light gray, fine grained, pinpoint to intergranular porosity.

<u>From</u>	<u>To</u>	<u>Formation</u>
2040	2050	Dolomite, grayish orange to pink, microsucrosic, vuggy porosity.
2050	2060	Limestone, very light to pinkish gray, fine grained, grayish orange pink dolomite.
2060	2070	Limestone, very light to pinkish gray fine grained, charophytes.
2070	2090	Sandstone, medium to coarse grained, frosted to iron stained, subangular to subrounded (Lakota cave) very light to yellowish gray, fine grained limestone.
2090	2100	Limestone, very light to yellowish gray, fine grained, fine to coarse grained, frosted to iron stained, subangular to subrounded sandstone (Lakota cave?).
2100	2120	Limestone, very light to yellowish gray, fine grained.
2120	2140	Limestone, very light gray fine grained to microsucrosic, fine to medium grained sand grains (cave?).
2140	2190	Limestone, very light to pinkish gray, fine grained to microsucrosic.
2190	2210	Limestone, very light to pinkish gray, fine grained to microsucrosic, medium gray shale.
2210	2220	Shale, medium gray (cave?).
2220	2230	Limestone, very light to yellowish gray, fine grained, medium gray shale cave.
2230	2250	Limestone, very light to pinkish gray, fine grained, pale reddish brown to medium gray shale.
2250	2260	Limestone, very light to pinkish gray, fine grained, charophyte.
2260	2280	Limestone, very light to pinkish gray, fine grained, medium gray shale.
2280	2300	Limestone, very light to pinkish gray, fine grained and pale red fine grained argillaceous.
2300	2310	Limestone, very light to pinkish gray, fine grained.
2310	2320	Limestone, pinkish gray to pale red, fine grained dense.
2320	2330	Limestone, grayish pink, fine grained to microsucrosic.
2330	2360	Limestone, very light to pinkish gray, microsucrosic to fine grained.
2360	2410	Limestone, very light to pinkish gray, microsucrosic to fine grained. Medium gray shale.
2410	2420	Limestone, very light gray, fine grained to chalky.
2423		Circulation 3/4 hour, limestone, white to yellowish gray, microsocrosic.
2423	2430	Limestone, white to very light gray, microsucrosic to chalky medium gray shale.
2430	2440	Limestone, white, microsucrosic to chalky.
2440	2480	Limestone, white to yellowish gray, chalky to microsucrosic.
2480	2530	Limestone, very light to yellowish gray, chalky to microsucrosic medium gray shale.
2530	2540	Limestone, yellowish gray, dense, slightly dolomitic.
2540	2550	Limestone, very light to yellowish gray, dense to microsucrosic.
2550	2580	Dolomite, pale red, very fine grained dense.
2580	2590	Dolomite, grayish orange pink to pale red, fine grained, some pinpoint porosity.

<u>From</u>	<u>To</u>	<u>Formation</u>
2590	2600	Shale, moderate reddish orange, calcareous.
2600	2620	Dolomite, yellowish gray, microsucrosic to fine grained, some pinpoint porosity.
2620	2630	Dolomite, yellowish gray, fine grained, intergranular to pinpoint porosity.
2630	2660	Dolomite, grayish orange pink, fine grained to sucrosic pinpoint porosity.
2660	2670	Dolomite, grayish orange pink finely rhombis to sucrosic, intergranular porosity.
2670	2680	Dolomite, light to pale red, very fine grained dense.
2680	2700	Dolomite, grayish orange pink, fine grained dense to finely sucrosic having intergranular porosity.
2700	2710	Limestone, very light to yellowish gray, very fine grained dense.
2710	2730	Dolomite, grayish orange pink, fine grained to finely rhombic, intergranular porosity.
2730	2780	Dolomite, grayish orange pink, very fine grained dense.
2780	2790	Limestone, very light to yellowish gray, fine grained, medium gray shale.
2790	2800	Limestone, white to very light gray, sublithographic.
2800	2810	Limestone, white to very light gray, sublithographic, medium gray and pale brown shale.
2810	2890	Grayish orange pink, microsucrosic, dolomite.
2890	2900	Limestone, pinkish gray, sublithographic.
2900	2910	Limestone, pinkish gray, very fine grained to sublithographic.
2910	2920	Dolomite, grayish orange pink, microsucrosic.
2920	2930	Limestone, pinkish gray, sublithographic.
2930	2940	Limestone, white to very light gray sublithographic to fine grained.
2940	2950	Dolomite, grayish orange pink, microsucrosic.
2950	2970	Limestone, very light to yellowish gray, fine grained to sublithographic.
2970	2980	Limestone, grayish pink microsucrosic, slightly dolomitic.
2980	2990	Dolomite, grayish orange pink microsucrosic, pinpoint and same intergranular porosity.
2990	3000	Shale, medium gray, pale orange pink microsucrosic dolomite.
3000	3010	Shale medium gray and pale reddish brown calcareous.
3010	3050	Shale, moderate reddish orange calcareous.
3050	3060	Shale, pale reddish brown, calcareous, white chalky limestone.
3060	3070	Dolomite, moderate reddish orange, very fine grained dense.
3070	3090	Dolomite, moderate orange pink, microsucrosic to sublithographic.
3090	3100	Dolomite, white to pinkish gray, microsucrosic to sublithographic.
3100	3110	Missing samples.
3110	3120	Dolomite, white to pinkish gray, microsucrosic.
3120	3140	Dolomite, white to pinkish gray, microsucrosic, medium gray shale.
3140	3160	Dolomite, white microsucrosic to sublithographic.

<u>From</u>	<u>To</u>	<u>Formation</u>
3160	3170	Dolomite, moderate orange pink fine grained, pale reddish brown, calcareous shale.
3170	3180	Dolomite, white to pinkish gray, sublithographic.
3180	3190	Dolomite, white to pinkish gray, sublithographic, medium gray shale.
3190	3200	Limestone, yellowish to pinkish gray, microsucrosic, fine to medium grained, subrounded to rounded frosted quartz.
3200	3210	Dolomite, white to pinkish gray, microsucrosic, fine grained rounded frosted quartz.
3220	3260	Dolomite, grayish orange pink sucrosic to sublithographic.
3260	3270	Dolomite, grayish orange pink, sucrosic to sublithographic.
3270	3300	Shale, grayish orange pink, calcareous.
3300	3330	Shale, grayish orange pink, calcareous, white to very light gray, fossiliferous limestone.
3330	3350	Limestone, very light to pinkish gray, sublithographic.
3350	3360	Limestone, white, sublithographic.
3360	3370	Limestone, white, sublithographic medium gray and pale reddish brown shale.
3370	3380	Limestone, white, sublithographic.
3380	3390	Limestone, white to yellowish gray, sublithographic.
3390	3410	Dolomite, pinkish gray, sublithographic.
3410	3450	Dolomite, white to yellowish gray, sublithographic.
3450	3570	Dolomite, grayish orange pink microsucrosic. Medium gray, gray shale.
3570	3610	Dolomite, grayish orange pink, microsucrosic medium gray shale.
3610	3620	Dolomite, grayish orange pink, microsucrosic, white sublithographic limestone.
3620	3650	Limestone, white sublithographic, grayish orange pink microsucrosic dolomite.
3650	3670	Limestone, very light to yellowish gray fine grained.
3670	3690	Limestone, yellowish to pinkish gray, fine grained to sublithographic.
3690	3700	Dolomite, white to pinkish gray, sublithographic.
3700	3710	Dolomite, white to pinkish gray, microsucrosic to sublithographic.
3710	3720	Dolomite, white to pinkish gray, microsucrosic to sublithographic white chert, medium gray shale.
3720	3740	Limestone, very light to grayish pink dolomite, fine grained to microsucrosic, medium gray shale.
3740	3760	Limestone, pinkish gray, microsucrosic.
3760	3780	Limestone, pinkish gray, microsucrosic medium gray and pale reddish brown shale, bryozoan fragments.
3780	3790	Limestone, very light gray fine grained to sublithographic, fine to medium subangular free sand grains.
3790	3850	Limestone, very light to pinkish gray, sublithographic.
3850	3860	Limestone, pinkish gray sublithographic.
3860	3870	Limestone, pinkish gray, sublithographic, pale reddish brown and medium gray shale.
3870	3900	Shale medium gray and a little pale reddish brown, pinkish gray sublithographic limestone, bryozoan fragments.
3900	3920	Limestone, pinkish gray, fine grained to sublithographic, bryozoan fragments, medium gray and pale red brown shale.

<u>From</u>	<u>To</u>	<u>Formation</u>
3920	3930	Shale, medium to medium dark gray and pale reddish brown. Pinkish gray fine grained to sublithographic limestone, bryozoan fragments few free sand grains.
3930	3940	Limestone, pinkish gray, fine grained to sublithographic. Few free sand grains. Pyrite, medium gray shale.
3940	3950	Shale, medium gray, medium to coarse grained, subangular free quartz.
3950	3960	Shale, light brownish gray calcareous and medium gray, fine to coarse grained free quartz.
3960	3970	Shale, medium to light brownish gray, calcareous, fine to medium grained free quartz.
3970	3975	Shale, greenish gray, fissile fine grained free quartz.
3975	3990	Shale, greenish gray, fissile.
3990	4000	Shale, greenish to light olive gray, fissile.
4000	4030	Shale, greenish to olive gray, fissile.
4030	4040	Shale, pale yellowish brown calcareous and greenish gray.
4040	4050	Shale, grayish red and greenish gray, considerable fine to medium, subrounded to subangular, frosted quartz.
4050	4060	Shale, greenish gray and grayish red, pale red arenaceous siltstone.
4060	4070	Shale, pale red calcareous.
4070	4100	Shale, greenish gray and grayish red.
4100	4107	Shale, grayish red and greenish gray sandstone to medium grained subrounded to subangular frosted. (4107 1 hour circulation)
4110	4140	Sandstone, fine to medium grained, subrounded to subangular, frosted to iron stained, grayish red and greenish gray shale.
4140	4150	Shale greenish gray and grayish red, fine to medium grained subrounded sandstone.
4150	4160	shale, greenish gray, and grayish red. Pale red arenaceous calcareous, slightly glauconitic.
4160	4200	Siltstone, pale red arenaceous, calcareous, glauconitic fine to medium grained, subrounded quartz, greenish gray and grayish red shale.
4200	4210	Sandstone, pale red, very fine grained, silty, calcareous, glauconitic.
4210	4220	Sandstone, pale red, very fine to medium grained, subangular to subrounded, calcareous, glauconitic and pink granite.
4220	4235	Granite, pink.
4235		Total depth.