

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 22

Summary of the F. L. Bailey No. 1 Well
Foster County, North Dakota

by John W. Caldwell

T. M. Evans Company - F. L. Bailey No. 1, Foster County, North Dakota, Section 26, T. 145N., R.62W., (1980 feet S. of N. line and 1980 feet W. of E. line, Section 26). Elevation G. L. 1491.

The Evans No, 1 Bailey was spudded April 6, 1953, and 10 3/4 inch casing was run at 256 feet. The well was plugged April 21, 1953. Cement plugs were used as follows: 10 sacks in top of surface pipe, 10 sacks 258-268 feet, 10 sacks 1200-1210 feet, 10 sacks 1760-1770 feet, 10 sacks 2050-2060 feet, and 10 sacks 2770-2780 feet.

There were no drill stem tests or cores taken.

Formation tops determined from sample and electric logs, not all lithologic formation tops called in following list. Colors determined from rock color chart.

Formation Tops

	<u>Depth</u>
Niobrara	500
Greenhorn	933
Muddy	1242
Dakota	1400
Morrison	1692 ? (Electric log tops)
Lodgepole	1712 ? (Electric log tops, samples missing.)
Bakken	1750
Devonian	1788
Interlake	1840
Upper Stony Mountain	1922
Stony Mountain	1951
Red River	2031
Winnipeg Shale	2582
Winnipeg Sand	2787

F. L. Bailey No. 1

<u>From</u>	<u>To</u>	<u>Formation</u>
	70	Light gray shale.
70	80	Siltstone, white to very light gray calcareous, with little dark gray shale.
335	355	Light gray shale.
355	365	Shale, light gray, with little white to very light gray earthy calcareous siltstone.
365	375	Shale, light gray, calcareous.
375	385	Shale, light gray, calcareous, with some white to very light gray calcareous siltstone.

<u>From</u>	<u>To</u>	<u>Formation</u>
385	395	Shale, light gray, little calcareous siltstone as above.
395	405	Shale, medium light gray, calcareous, bentonitic.
405	415	Shale, light gray, calcareous, bentonitic.
415	425	Shale, light gray, calcareous, bentonitic, with some white to light gray calcareous siltstone earthy.
425	435	Shale, medium light gray, calcareous, bentonitic little calcareous siltstone as above.
435	440	Shale, medium light gray, calcareous, bentonitic.
450	460	Same as above with some light gray calcareous siltstone.
470	480	Shale, medium light gray calcareous, bentonitic with some light gray calcareous siltstone.
Niobrara 500		
480	500	Shale, medium light gray, calcareous, white specks.
500	520	Shale, dark gray, calcareous, white specks.
520	540	Shale, dark gray calcareous, white specks, some light gray calcareous shale.
540	620	Shale, medium gray, very calcareous, few white specks, bentonitic at 620.
620	640	Shale, medium gray calcareous, bentonitic, white specks.
640	660	Shale, light gray, very calcareous, bentonitic, few earthy light gray limestone nodules.
660	670	Shale as above, slightly bentonitic, few limestone nodules as above.
670	710	Shale, medium to dark gray, calcareous, slightly bentonitic.
710	790	Shale, medium gray, calcareous, bentonitic.
870	880	Shale, dark gray, calcareous, slightly bentonitic, white specks.
900	910	Shale, dark gray, calcareous.
910	920	Shale, dark gray, calcareous, bentonitic.
920	930	Same as above, pyrite.
Greenhorn		
933	940	Shale, dark gray, calcareous, bentonitic, Globigerina.
950	960	Shale, medium to dark gray, slightly bentonitic, calcareous.
960	970	Shale, medium to dark gray, calcareous, Globigerina, inoceramus prisms.
970	980	Shale, medium to dark gray, calcareous, bentonitic.
990	1000	Shale, medium gray, calcareous, slightly bentonitic.
1000	1010	Shale, medium gray, calcareous.
1020	1030	Shale, medium to dark gray, calcareous, slightly bentonitic.
1030	1050	Shale, medium to dark gray, calcareous. Globigerina 40-50
1050	1060	Shale, dark gray, calcareous, inoceramus prisms, Globigerina.

<u>From</u>	<u>To</u>	<u>Formation</u>
1060	1070	Shale, medium gray calcareous, inoceramus prisms.
1070	1080	Shale, medium gray calcareous, inoceramus prisms, pyrite, white specks, Globigerina.
1080	1090	Shale, medium gray, calcareous, bentonitic, white specks, Globigerina, inoceramus prisms.
1090	1100	Shale, medium gray, calcareous, bentonitic, Globigerina.
1100	1110	Shale, medium gray, calcareous, bentonitic, pyrite, Globergina.
1110	1120	Shale, medium gray, calcareous, white specks.
1120	1140	Medium gray shale, calcareous, slightly bentonitic 20-30, bentonitic 30-40, Globigerina.
1140	1160	Shale, medium gray, calcareous, slightly bentonitic, Globigerina.
1170	1180	Shale, medium gray, calcareous.
1180	1200	Shale, medium gray, calcareous, slightly bentonitic, Globigerina at 80-90.
1220	1230	Shale, medium to dark gray, slightly calcareous, slightly bentonitic, Globigerina.
1230	1250	Shale, medium gray, calcareous, bentonitic, Globigerina at 40-50.
Muddy 1242		
1250	1260	Shale, medium to dark gray, slightly calcareous, large amount of bentonite.
1260	1270	Shale, medium gray, slightly calcareous, some bentonite, slight amount of very fine angular sand.
1270	1280	Shale, medium gray, slightly calcareous, some very fine angular sand.
1280	1290	Shale, medium gray calcareous, slightly bentonitic.
1290	1300	Shale, dark gray, slightly calcareous.
1300	1310	Shale, medium gray, slightly calcareous, bentonitic.
	1305	Circulation 45 minutes. Shale, medium gray, slightly calcareous, slight amount light brown to reddish brown fine grain dolomite, bentonitic.
1320	1330	Shale, medium gray, slightly calcareous, bentonitic.
1350	1360	Shale, medium gray, calcareous, bentonitic.
1360	1370	Shale, medium gray, slightly calcareous, bentonitic.
1370	1380	Shale, medium to dark gray, slightly bentonitic.
1380	1390	Shale, medium gray, slightly calcareous, bentonitic.
Dakota 1400		
1390	1400	Shale, medium gray, calcareous, slightly bentonitic.
1400	1410	Shale, medium gray, calcareous, slightly bentonitic.
1410	1420	Shale, medium gray, slightly calcareous, slightly bentonitic.
1430	1440	Shale, medium gray, slightly bentonitic, Globigerina.
1440	1450	Shale, medium gray, slightly bentonitic.
1450	1470	Medium gray shale.
1470	1490	Shale, medium gray, large amount of white to light gray bentonite.
1490	1500	Shale, medium gray, some bentonite as above.

<u>From</u>	<u>To</u>	<u>Formation</u>
1510	1515	Shale, medium gray, bentonitic, slightly calcareous.
1535	1540	Shale, medium gray, slightly bentonitic, few sand grains, fine to coarse grained.
1540	1545	Shale, medium gray, slightly bentonitic, slightly calcareous, few sand grains as above.
1545	1550	Shale, medium gray, bentonitic, slightly calcareous, few sand grains as above.
1555	1560	Sandstone, light gray fine grained, sub-rounded frosted few coarse sand grains.
1585	1590	Shale, medium gray, calcareous, bentonitic, few sand grains as above.
1590	1595	Shale as above, large amount of light gray fine grained sandstone.
1605	1620	Sandstone, light gray, fine - medium grained loose frosted sub-rounded, large amount of shale as above.
1620	1630	Sandstone as above, some shale as above.
1630	1645	Sandstone as above, slight amount of shale as above.
1645	1670	Sandstone as above, few coarse grains.
1670	1675	Sandstone as above, few coarse grains, little gray shale.
Morrison 1692		
1675	1715	Sandstone as above, few coarse grains.
Lodgepole 1712		
1715	1730	Sandstone as above, medium to fine grained, few coarse grains.
1730	1735	Sandstone as above, fine grained, few coarse grains.
1735	1740	Sandstone as above, fine to medium grained, few coarse grains.
1740	1745	Sandstone as above, fine to medium grained, some coarse and very coarse grains.
Bakken 1750		
Devonian 1788		
1800	1815	Dolomite, yellowish gray, medium grained, sugary; with some brownish gray, medium grained, sugary dolomite 10-15.
1815	1830	Dolomite, brownish gray, fine to medium grained.
1830	1835	Dolomite as above with some light and dark gray shale and bentonite.
Interlake 1840		
1835	1840	Shale, medium dark gray, some dolomite as above.
1840	1845	Shale, as above, large amount of yellowish gray crystalline limestone.
1845	1850	Limestone, white, very light gray, crystalline to fine grain, some shale as above.
1850	1855	Limestone, as above, large amount of dark gray shale, few coarse grains (quartz) slight amount of reddish brown siltstone.
1855	1860	Limestone, white to very light gray, crystalline to fine grained, little medium dark gray shale.

<u>From</u>	<u>To</u>	<u>Formation</u>
1860	1865	Limestone as above, large amount of dark gray shale.
1865	1875	Limestone, white to very light gray, crystalline to fine grained, some medium dark gray shale.
1875	1885	Dolomite, yellowish gray, fine to medium grained, sugary.
1885	1890	Shale, medium gray, some dolomite as above, little white limestone and bentonite.
1890	1900	Shale as above, some white brownish gray fine grained dolomitic limestone, reddish orange calcareous shale.
1900	1905	Shale, medium gray, large amount of white and pale red limestone, red silty shale.
1905	1910	Limestone, pale red limestone, some medium gray shale.
	1910	Circulation 30 minutes. Dolomite, white to light gray, fine to medium grained, some dark gray shale.
1910	1915	Shale, dark gray, little dolomite as above.
1915	1920	Dolomite, white to yellowish gray, fine to medium grained.
Upper Stony Mountain 1922		
1920	1930	Dolomite as above, little gray shale.
1930	1935	Dolomite as above, large amount of medium gray shale.
Stony Mountain 1951		
1935	1955	Dolomite as above, some medium gray shale.
1955	1960	Dolomite as above, some medium gray shale, little white to yellowish gray crystalline to fine grained limestone.
1960	1965	Shale, medium gray, some dolomite as above, few medium to very coarse quartz grains.
1965	1970	Limestone, white to yellowish gray, crystalline to fine grained large amount medium to coarse rounded frosted sand.
1970	1975	Shale, medium gray, large amount limestone as above, little sand as above.
1975	1980	Limestone, white to pale red crystalline to fine grained, some shale as above, little sand as in 1965-70.
1980	1985	Limestone as above, some medium gray shale, some sand as in 65-70, pyrite.
1985	1990	Dolomite, white fine to medium grained, little limestone, as above and sand as in 65-70.
1990	1995	Dolomite, white to yellowish gray, fine to medium grained, little gray shale.
1995	2000	Dolomite as above, some medium gray shale, few rounded coarse quartz grains.
2000	2010	Shale, medium gray, large amount dolomite as above, little pale red limestone, few sand grains.
2010	2015	Dolomite, pale red fine to medium grained, large amount of medium gray shale, few sand grains.

<u>From</u>	<u>To</u>	<u>Formation</u>
2015	2025	Dolomite as above, some medium gray shale, some medium to coarse grained sub-rounded sand.
2025	2030	Shale, medium gray, some dolomite as above and few sand grains as above.
Red River 2031		
2030	2040	Shale, medium gray, bentonitic.
2040	2045	Shale as above, bentonitic, few medium to coarse quartz grains rounded and angular.
2045	2050	Shale as above, bentonitic, few medium to coarse quartz grains, rounded and angular, little limestone and dolomite.
2050	2055	Dolomite, white to yellowish gray, fine grained, some medium gray shale, few quartz grains.
2055	2060	Dolomite as above, some medium gray shale, few quartz grains.
2060	2065	Dolomite as above little medium gray shales.
2065	2075	Dolomite, yellowish gray to light olive gray crystalline to fine grain.
2075	2090	Dolomite, yellowish gray, crystalline to fine grained, limestone at 80-90.
2095	2100	Dolomite, pinkish gray, crystalline to fine grained.
2100	2110	Dolomite, white to pinkish gray, crystalline to fine.
2110	2130	Dolomite, white, crystalline to fine grained.
2130	2140	Dolomite as above, little gray shale.
2140	2145	Dolomite as above.
2145	2150	Dolomite as above, limey.
2150	2155	Dolomite, white to light gray, crystalline to fine grain little gray shale.
2155	2165	Dolomite, white to light gray, crystalline to fine grain.
2165	2170	Dolomite, white to pinkish gray, crystalline to fine grain.
2175	2180	Dolomite, pinkish gray, crystalline to fine grained.
2190	2195	Dolomite, yellowish gray, crystalline, medium grain.
2195	2200	Dolomite, pinkish gray, fine to medium grain.
2200	2205	Dolomite, pinkish gray, medium to coarse grain, pinpoint porosity.
2205	2220	Dolomite, yellow to brownish gray, crystalline to medium grained.
2220	2230	Dolomite, color as above, crystalline to fine grained.
2230	2235	Dolomite, pinkish gray, crystalline to fine grain.
2235	2240	Dolomite, pinkish gray, fine to medium grain, pinpoint porosity.
2240	2245	Dolomite, white to pink gray, fine to medium grain, pinpoint porosity.
2245	2250	Dolomite, white to light gray, fine to medium grain, pinpoint porosity.
2250	2260	Dolomite, white to pinkish gray, fine to medium grain, pinpoint porosity.

<u>From</u>	<u>To</u>	<u>Formation</u>
2260	2275	Dolomite as above, fine to medium to coarse grain, pinpoint porosity and intergranular. Little white earthy porous limestone at 70-75. 15 and 30 minute circulation at 2263.
2275	2280	Dolomite, white to pinkish gray, fine to coarse grain, intergranular porosity, little white earthy limestone.
2280	2290	Dolomite, yellowish gray, fine to coarse grain, intergranular porosity, white chert.
2290	2295	Dolomite, pinkish gray, fine to medium grained, pinpoint porosity.
	2295	Circulation 30 minutes. Dolomite, yellowish gray fine to coarse intergranular porosity.
	2295	Circulation 45 minutes. Dolomite, pinkish gray, crystalline to medium grained, pinpoint porosity.
2295	2300	Dolomite as above.
2300	2305	Dolomite as above, white chert.
2305	2310	Dolomite as above.
2310	2315	Dolomite as above, pyrite.
2315	2320	Dolomite, pinkish gray to pale red crystalline to fine grained, pinpoint porosity, white chert.
2320	2325	Dolomite, as above, little white porous earthy limestone, white chert.
2325	2335	Limestone, white to very light gray, sub-crystalline to fine grain, fossiliferous, streaked with red.
2335	2340	Limestone as above, some gray shale and dolomite as 20-25.
2340	2355	Limestone, pinkish gray, small red streaks, earthy to fine grain, fossiliferous.
2355	2380	Limestone, pinkish gray, small red streaks, fine grained, fossiliferous, chert.
2380	2390	Limestone as above, no chert.
2390	2420	Limestone, pinkish gray, small red to purple streaks, fine grained, fossiliferous.
2420	2425	Limestone, pinkish gray, few pieces pale red, fine grained, fossiliferous.
2430	2435	Lost circulation material.
2435	2440	Limestone, pinkish gray, few pale red pieces, fine grained, fossiliferous.
2440	2450	Limestone as above, few medium sized quartz grains, chert.
2450	2460	Limestone, pinkish gray, fine grained, fossiliferous.
2460	2465	Limestone as above, little gray shale, few sand grains, pyrite, fossiliferous.
2465	2485	Limestone, as above, little gray shale, little tan dolomite, few sand grains.
2485	2490	Limestone, pinkish to yellowish gray, fine grained, few sand grains, fine to medium rounded.
2490	2495	Limestone, yellowish gray, fine grained.
2495	2500	Limestone as above, little gray shale, few sand grains, pyrite.

<u>From</u>	<u>To</u>	<u>Formation</u>
2500	2530	Limestone, pinkish gray, fine grained, few sand grains.
2530	2540	Limestone, grayish orange pink, earthy to fine grained.
2540	2545	Limestone, pinkish gray, earthy to fine grained.
2545	2550	Shale, pale red brown, calcareous.
2550	2565	Limestone, pinkish gray, fine grained.
2565	2570	Limestone, yellowish gray, fine grained.
2570	2575	Limestone as above, little gray shale.
2575	2580	Limestone as above, large amount of medium gray shale.
Winnipeg Shale 2582		
2580	2585	Shale, medium gray, some limestone as above.
2595	2600	Shale, medium gray, little limestone as above.
2600	2605	Shale, pale reddish brown calcareous.
2605	2610	Limestone, pinkish gray to pale reddish brown, fine grained, shale as above and gray shale.
2610	2615	Shale, pale reddish brown, calcareous, some limestone as above.
2615	2630	Shale, pale reddish gray to pale reddish brown, calcareous, little limestone as in 05-10.
2630	2640	Shale, medium gray to pale reddish gray, calcareous.
2640	2650	Shale, light olive gray to pale reddish gray, calcareous.
2650	2655	Shale, pale reddish brown, slightly calcareous.
2655	2670	Shale, pale reddish brown, slight amount gray shale.
2670	2680	Shale as above, some reddish gray and gray shale.
2680	2685	Shale as above, little gray shale, pyrite.
2685	2700	Shale as above, little gray shale.
2700	2705	Shale, grayish red, little greenish gray shale.
2705	2715	Shale, grayish red, little greenish gray and gray shale.
2715	2725	Shale, grayish red.
2725	2730	Shale, grayish red, little greenish gray shale.
2730	2735	Shale, grayish red.
2735	2745	Shale, grayish red, little greenish gray and gray shale.
2745	2755	Shale, grayish red.
2755	2765	Shale, grayish red, little medium dark gray shale.
2765	2770	Shale, grayish red, little medium gray shale.
2770	2775	Shale, grayish red, little greenish gray shale.
2775	2780	Shale, grayish red, little gray shale.
2780	2800	Shale, grayish red, little greenish gray and gray shale, few sand grains at 95-2800.
Winnipeg Sand 2787		
2800	2805	Shale as above, some limestone, white, fine grained.
2805	2810	Shale, as above, limestone as above, little sub-angular to sub-rounded fine grained sandstone, grayish red.

<u>From</u>	<u>To</u>	<u>Formation</u>
2810	2815	Sandstone, grayish red, sub-rounded, fine grained, calcareous cement, glauconite, little limestone and shale as above.
2815	2820	Sandstone as above, little limestone and shale as above.
2820	2825	Sandstone, pale reddish brown, sub-rounded, fine grained calcareous cement, much glauconite, little shale as above.
2825	2850	Sandstone as above, some glauconite.
2850	2861	Sandstone as above, very fine to fine grained, little glauconite. 30 and 60 minutes circulation.
Total Depth		