

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 235

Summary of the Gordon B. Butterfield - Rudolph Trautman No. 1
Stutsman County, North Dakota
Well No. 644 - Permit No. 658

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The Gordon B. Butterfield No. 1, located SE 1/4 SE 1/4 sec. 5, T. 139N., R. 68W., Stutsman County, North Dakota. Elevation of Kelly bushing is 1945 feet; ground level is 1938 feet. Drilling permit issued June 28, 1954.

The well was spudded June 30, 1954, and drilled to a depth of 4305 feet, plugged and abandoned as a dry hole on August 2, 1954.

Logs Run:

Electric
Microlog

Drill Stem Tests:

No. 1. 3199 - 3215'. Open 1 1/2 hours, shut in 45 minutes.
Fair to weak blow at the end of the test.
Recovered 605 feet of water, mud cut and slightly salty.
Initial hydrostatic pressure 1700.
Final hydrostatic pressure 1660.
Final pressure 0-280 lbs.
Shut-in pressure 1200 lbs.

Core Record: None

Casing Record:

296 feet of 10 3/4 inch surface casing set at 535 with 160 sacks of cement.

Plugging Record:

1. 3850 feet with 15 sacks of cement.
2. 2450 feet with 15 sacks of cement.
3. 2100 feet with 15 sacks of cement.
4. Bottom of casing with 10 sacks of cement.
5. Top of casing with 5 sacks of cement.

Formation tops were determined by well samples and mechanical logs. Doubtful or obscure formations were not picked. Color names are those used by the Rock Color Chart (Goddard, and others, 1951).

FORMATION TOPS

Cretaceous System

Pierre formation	425
Niobrara formation	1165
Greenhorn formation	1655
Newcastle	2007

Dakota Group	1950
Fall River	2168
Jurassic System	
Piper lime	2550
Mississippian	
Tilston interval	2605
Bottineau interval	2700
Bakken	3059
Devonian Undifferentiated	3100
Ordovician	
Stony Mountain formation	3185
Red River	3377
Winnipeg formation	
Upper	3955
Middle	4021
Lower	4150
Cambrian	
Deadwood	4265
Precambrian	
Granite, schist	4306

0-670	Samples missing.
670-700	Shale, medium light gray (N6), very slightly calcareous, fissile and compact, scattered, rounded quartz grains, rust colored to colorless.
700-730	Shale and quartz grains, as above.
730-760	As above.
790-820	Shale, as above, no quartz grains.
820-1030	As above.
1030-1060	Shale, medium light gray (N6), compact to fissile, very slightly calcareous, Inoceramus prisms; lignite coal.
1060-1120	Shale, as above; lignite, increased abundance; shale, light gray (N7), silty; shale, light brown (5YR6/4), calcareous, fissile.
1120-1180	Lignite coal; shale, light gray (N7), fissile.
1180-1230	Shale, light gray, fissile; lignite coal.
1230-1267	Shale, light gray, fissile; lignite; numerous Inoceramus prisms; scattered quartz grains, angular, colorless; microfossils.
1267-1297	Shale and lignite as above; scattered grains of very pale orange (10YR8/2), limestone, dense.
1297-1328	Shale as above; minor lignite; Inoceramus prisms; scattered quartz grains pyrite crystals.
1328-1358	Shale, medium gray, fissile, compact; Inoceramus prisms; scattered limestone fragments, very pale orange; shale, medium dark gray (N4), with white specks, calcareous, soft.
1358-1388	Shale, medium gray and dark gray as above; pyrite crystals.
1388-1418	Shale, as above; Inoceramus prisms; scattered limestone fragments, very pale orange.
1418-1448	Shale, black (N1), fissile; lignite; shale, as above.
1448-1478	Samples missing.
1478-1508	Shale, black (N1), fissile; lignite.
1508-1597	Shale, medium gray (N5), dark gray (N3), calcareous; Inoceramus prisms; shale, medium gray with white calcareous specks.
1597-1637	Shale, as above; shale, light gray (N7), with white, calcareous specks.

1637-1647 Shale, medium gray and light gray; scattered quartz grains; Inoceramus prisms.

1647-1657 As above; shale, medium gray with white specks.

1657-1667 Shale, grayish black (N2), fissile; shale, as above.

1667-1690 Shale, medium gray and light gray; numerous Inoceramus prisms.

1690-1720 Shale, dark gray (N3), calcareous; numerous Inoceramus prisms.

1720-1750 Sandstone, pinkish gray (5YR8/1), light gray (N7), calcareous, very fine grained; shale and Inoceramus prisms as above.

1750-1820 Shale, light and dark gray, compact; Inoceramus prisms.

1820-1900 Shale, light and medium gray, and black, fissile to compact, Inoceramus prisms.

1900-1910 Shale, black (N1), fissile, calcareous; shale, light and medium gray.

1910-2000 Shale, light and medium gray; Inoceramus prisms.

2000-2010 Shale, light and medium gray, and black.

2010-2110 Shale, as above; Inoceramus prisms.

2110-2130 Shale, light and medium gray.

2130-2180 Shale, as above; shale, black; Inoceramus prisms.

2180-2190 Shale, as above; quartz grains; scattered; sandstone, pinkish gray (5YR8/1), calcareous.

2190-2240 Sandstone, pinkish gray (5YR8/1), calcareous, fine grained; sandstone, light brownish gray (5YR6/1), calcareous; scattered rounded quartz grains, clear to rusty.

2240-2260 Sandstone, as above; sandstone, light brown, fine grained; scattered quartz grains, coarse grained, rounded.

2260-2280 Shale, medium dark gray (N4), compact.

2280-2290 Sandstone, coarse grained, loose and friable, rounded and angular, pinkish gray and light brown.

2290-2350 Shale, dark gray to black, calcareous fissile; pyrite crystals; scattered quartz grains.

2350-2370 Shale as above; shale, moderate reddish orange (10R6/6), calcareous, silty and sandy.

2370-2400 Shale, dark gray to black, slightly calcareous; sandstone, pinkish gray and light brown, medium grained; coarse quartz grains, scattered, loose.

2400-2515 Sandstone, light gray (N7), very fine grained, slightly calcareous; shale light gray to medium gray; pyrite crystals.

2515-2525 Sandstone and shale as above; sandstone, moderate reddish orange (10R6/6), coarse grained, argillaceous.

2525 Circulation 1/2 hour. Limestone, white (N9) to very light gray (N8), sublithographic to chalky, suboolitic; chert, white.

2525-2545 Limestone, as above.

2545-2570 Limestone, as above; depth correction 30 feet marked on the sample bag.

2570-2590 Limestone, as above; shale, medium to light gray (cavings).

2590-2600 Limestone, and shale, as above; shale, moderate reddish brown (10R4/6) silty, calcareous; scattered quartz grains, clear to reddish stained.

2600-2605 Limestone and shale as above; sandstone, white, coarse, calcareous.

2605-2640 Limestone, white to pinkish gray (5YR8/1), sublithographic to chalky.

2640-2670 Limestone, grayish orange pink (5YR7/2), dense, sublithographic, partly crystalline.

2670-2710 Limestone, as above; limestone, grayish orange pink, fragmental; limestone, moderate pink (5R7/4), fragmental.

2710-2730 Limestone, pale red and white, crystalline to fragmental.

2730-2820 Limestone, as above; limestone, moderate red (5R5/4), crystalline.

2820-2840 Limestone, as above; abundance of shale, medium dark to black, fissile to compact, may be cave; limestone as above.

2840-2890 Shale, as above; Inoceramus prisms indicate cave; limestone, as above.

2890-2910 Limestone as above.

2910-2950 Samples missing.

2950-2960 Limestone, grayish orange pink, dense; chalk, white, soft.

2956 Circulation. Limestone, white to grayish orange pink, pelletoid to dense.

2960-2990 Limestone, as above.

2990-3060 Limestone, light brownish gray (5YR6/1), crystalline, oolitic, subsucrosic.

3060-3080 Limestone, as above; much shale, black to medium dark; gray, fissile.

3080-3100 Shale, as above; light gray shale.

3100-3180 Dolomite, grayish orange pink, sucrosic; dolomite, moderate, orange pink (10R7/4), sucrosic.

3180-3190 Dolomite, as above; dolomite, light brownish gray (5YR6/1), sublithographic.

3190-3215 Limestone, pinkish gray (5YR8/1) and very pale orange (10YR8/2), dense.

3215 Circulation, one hour. Limestone, as above.

3220-3230 Limestone, as above.

3230-3250 Limestone, as above; dolomite, moderate pinkish orange (10R7/4), sucrosic.

3250-3300 Dolomite, as above; dolomite, grayish orange pink (5YR7/2), sucrosic to subsucrosic.

3300-3330 Dolomite, as above; limestone, grayish orange pink, dense, fossiliferous.

3330-3380 Dolomite and limestone, as above; variegated dolomites, sucrosic.

3380-3400 Dolomite, light red (5R6/6), sucrosic; dolomite, moderate red (5R5/4), sucrosic.

3400-3420 Dolomite, light red and grayish orange pink, dense.

3420-3450 Limestone, grayish orange pink, dense.

3450-3510 Limestone, very pale orange (10YR8/2) to moderate orange pink (5YR8/4) dense.

3510-3520 Limestone, as above; dolomite, grayish orange pink, sucrosic.

3520-3550 Dolomite, as above; dolomite, grayish pink (5R8/2), sucrosic; limestone as above.

3550-3595 Dolomite, and limestone, as above; dolomite, moderate pink (5R7/4), dense.

3595 Circulation 1/2 hour. Dolomite and limestone, as above.

3595-3700 Dolomite, moderate pink (5R7/4), subsucrosic; dolomite, grayish pink, dense to subsucrosic.

3700-3740 Dolomite, as above; limestone, white, sublithographic; chert, white.

3740-3760 Limestone, white to grayish orange pink, dense; chert, white; fossiliferous.

3760-3820 Limestone, as above; limestone, grayish orange pink, fragmental; chert, white.

3820-3870 Limestone, as above; dolomite, grayish orange pink, subsucrosic.
 3870-3900 Limestone, as above.
 3900-3970 Limestone, as above; abundant shale, medium dark gray, fissile,
 may be due to cave.
 3970 Circulation 1/2 hour. Limestone and shale, as above. Inoceramus
 prisms in shale indicate shale caving.
 3970-4030 Limestone and shale (cave), as above; siltstone, greenish gray
 (5G6/1), (poor sample recovery).
 4030-4130 Shale, greenish gray, splintery and fissile.
 4130-4157 Shale, as above; shale, medium dark gray, splintery and fissile.
 4157-4175 Shale, as above.
 4175-4230 Shale, as above; sandstone, very fine grained, calcareous,
 quartzose, very light gray.
 4230-4240 Shale, as above; sandstone, as above; sandstone, very light gray,
 glauconitic, slightly calcareous; sandstone, very dark red
 (5R2/6), slightly calcareous, very fine grained.
 4240-4306 Sandstone, moderate pink (5R7/4), very fine grained, calcareous.
 4306 Weathered granite; hornblende schist; biotite schist; crystalline
 quartz.
 4306 Total depth.