

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 115

Summary of the Calvert Exploration Co. & Leonard Ward - State A #1
Renville County, North Dakota
Permit No. 613 - Well No. 599

By Clarence Carlson

State A #1, Renville County, North Dakota. SW SW Section 36, T.
164N., R. 87W., Elevation 1807 K.B., 1796 G.L.

The Calvert - State A #1 was spudded May 25, 1954. 10 3/4" casing was set at 222 feet with 166 sacks of cement. The well was drilled to a total depth of 5410 feet, dry and abandoned June 19, 1954.

Plugging Record:

5275 feet - 15 sacks	3195 feet - 15 sacks
4530 feet - 15 sacks	230 feet - 15 sacks
4350 feet - 15 sacks	surface - 15 sacks
3645 feet - 15 sacks	

CORES:

4776-4791

Formation tops determined from samples and electric logs, corrected to electric logs. Colors determined from rock color chart. Not all lithologic units called in the following list.

Cretaceous System

Pierre Formation	708
Niobrara Formation	2322
Greenhorn Formation	2647
Dakota Sand	3205

Jurassic System 3625

Piper Lime 4178

Triassic System

Spearfish Formation 4358

Mississippian System

Charles Formation 4526

Mission Canyon Formation 4955

Lodgepole Formation 5220

220-260	Sand, mostly clear quartz, fine to medium grained, rounded to angular, some limestone grains, rounded some pieces of dark gray shale.
260-280	Sand, composed of quartz, as above, and limestone, yellow gray, medium grained, subrounded, little chert white, some shale chips, light gray.
280-300	Shale, medium light gray, brownish gray, bentonitic, silty.
300-320	Siltstone, light brownish gray, argillaceous.
320-380	Siltstone, light gray, argillaceous.
380-460	Shale, medium gray, brownish gray, micaceous.
460-500	Shale, medium gray, some lignite.
500-520	Sandstone, light gray, fine grained, argillaceous, micaceous.

520-540 Shale, medium gray, bentonitic, lumpy, spongy.
 540-580 Shale as above, sandstone light gray, very fine grained, argillaceous micaceous.
 580-620 Shale, medium gray, silty, micaceous, lumpy, spongy.
 620-660 Shale, medium light gray, micaceous, bentonitic, lumpy.
 660-700 Shale, as above, sand, fine to medium grained, subangular, loose grains.
 700-720 Shale, medium light gray, bentonitic, lumpy, compact with some very light gray bentonite, micaceous.
 720-740 Shale, medium light gray, bentonitic, micaceous, lumpy compact.
 740-760 Sandstone, light gray, very fine grained, argillaceous, some shale, as above.
 760-1000 Shale, medium light gray, bentonitic, micaceous, lumpy, compact.
 1000-1140 Shale, medium light gray, lumpy, compact.
 1140-1200 Shale, medium gray, lumpy, compact.
 1200-1300 Shale, medium light gray, lumpy, compact, some medium gray shale.
 1380-1560 Shale, medium gray, lumpy, compact.
 1600-1780 Shale, medium light gray to medium gray, lumpy, compact.
 1780-1840 Shale, medium light gray, lumpy, compact.
 1840-1860 Shale, medium light gray, as above, some very light gray, bentonite.
 1860-1960 Shale, medium gray, lumpy, compact.
 1960-2000 Shale, as above and light brown 5YR6/4 lumpy, spongy, little, very light gray bentonite.
 2000-2040 Shale, medium gray, lumpy, compact.
 2040-2060 Shale, medium gray light brown, lumpy, compact.
 2060-2140 Shale, medium gray, lumpy, compact.
 2140-2150 Shale, medium gray, lumpy, compact, some white bentonite.
 2150-2210 Shale, medium gray, lumpy, compact.
 2210-2280 Shale, medium gray, lumpy, compact, some white bentonite.
 2280-2320 Shale, medium gray, lumpy, spongy to compact.
 2320-2370 Shale, medium dark gray, lumpy, compact, calcareous with white specks.
 2370-2570 Shale, medium gray, lumpy, compact.
 2570-2590 Shale, medium gray, medium dark gray, lumpy, compact.
 2590-2650 Shale, medium gray, lumpy, compact.
 2650-2720 Shale, medium dark gray, calcareous, white specks lumpy, compact, many Inoceramus fragments.
 2720-2740 Shale, dark gray, lumpy, compact, also medium dark gray as above.
 2740-2780 Shale, as above, many Inoceramus fragments.
 2780-3000 Shale, dark gray, lumpy, compact to spongy.
 3000-3150 Shale, dark gray, splintery, compact.
 3150-3210 Shale, dark gray, flaky, spongy, some splintery, compact.
 3210-3220 Sand, colorless to very light gray, fine to medium subangular grains.
 3220-3240 Sandstone, light gray, fine grained, much shale, medium dark gray.
 3240-3250 Sandstone, as above, with some loose, medium to coarse rounded quartz grains, much shale, as above.
 3250-3290 Shale, medium dark gray, medium gray, flaky spongy.
 3290-3330 Shale, as above, sandstone light gray, fine grained.
 3330-3350 Sandstone, very light gray, fine to medium grained, subangular, loosely, cemented.
 3350-3360 Sandstone as above, and sandstone medium grained, subangular with some pyrite cement.

3360-3400 Sandstone very light gray, fine to medium grained, subangular, calcareous, much shale, medium gray, medium dark gray.

3400-3420 Shale, medium gray, lumpy, compact.

3420-3440 Shale, as above, some sandstone, very light gray, fine to medium grained, subangular.

3440-3450 Shale, medium dark gray, medium gray, lumpy, compact, some sandstone, very light gray, fine to medium grained, subangular with some pyrite cement.

3450-3480 Shale, medium gray and medium dark gray.

3480-3500 Shale, medium dark gray, splintery, compact.

3500-3540 Sandstone, grayish orange, fine to medium grained, slightly calcareous, much shale, medium dark gray.

3540-3550 Shale, medium gray, medium dark gray.

3550-3570 Shale, light greenish gray, calcareous, waxy, lumpy compact, much shale, medium dark gray, medium gray little shale, light brownish gray, lumpy, compact.

3570-3580 Shale, as above, little sandstone light gray, fine to medium grained.

3580-3610 Sandstone, very light gray, fine grained, some loose, medium to coarse, angular quartz and rounded limestone, some shale, as above.

3610-3630 Shale, dark gray, lumpy, brittle.

3630-3660 Sandstone, very light gray, fine grained, calcareous, some shale medium gray, light greenish gray, lumpy, spongy.

3660-3710 Shale, pale brown, light greenish gray, calcareous some sandstone, light gray very fine grained, calcareous.

3710-3750 Shale, light greenish gray, some pale brown, calcareous, little sandstone light gray to grayish orange, fine grained, calcareous.

3750-3770 Shale, medium light gray to light gray, waxy, lumpy, compact, also shale, light greenish gray, calcareous.

3770-3800 Shale, light greenish gray, calcareous, foliated, spongy to compact, light olive gray, calcareous, foliated, compact.

3800-3900 Shale, light olive gray to medium gray, calcareous, foliated, compact.

3900-3950 Shale, grayish red, 10R4/2, calcareous, lumpy, compact, shale, light olive gray to greenish gray, calcareous, lumpy compact to brittle.

3950-3990 Sandstone, very light gray to light yellowish and pinkish gray, fine grained calcareous, micaceous, well cemented some shale, as above.

3990-4020 Shale, light olive gray, light greenish gray, pale reddish brown, calcareous splintery, brittle, some sandstone as above.

4020-4030 Limestone, very light gray, fine grained, arenaceous, some shale, light olive gray, light greenish gray, calcareous some sandstone, light greenish gray, and light gray, fine to medium grained, slightly calcareous.

4030-4040 Shale, light olive gray, pale reddish brown, light greenish gray calcareous, splintery, little limestone as above.

4040-4060 Limestone, very light gray, sublithographic, arenaceous, little sandstone very light gray, fine grained, calcareous, some shale, as above.

4060-4070 Sandstone, very light gray, fine grained, calcareous, arenaceous, shale, light olive gray, greenish gray, calcareous, splintery, brittle.

4070-4090 Shale, as above, also pale reddish brown.

4090-Circulation 3/4 hour. Sandstone very light, gray, fine to medium grained, calcareous some shale as above.

4090-4120 Shale, greenish gray, grayish red, calcareous, splintery brittle, little sandstone, very light gray as above.

4120-4130 Shale, as above, some limestone, very light gray, sublithographic, some light gray, chert.

4130-4140 Limestone, light gray, sublithographic.

4140-4150 Shale, dark gray, splintery, brittle,

4150-4170 Shale, dark gray, greenish gray, splintery, compact to brittle.

4170-4180 Limestone, very light gray, sublithographic, some shale, as above.

4180-4230 Limestone, very light gray, sublithographic.

4230-4240 Limestone, as above and limestone, light gray, fine grained, granular.

4240-4250 Shale, light olive gray, medium gray, grayish red, splintery, brittle, slightly calcareous, some limestone as above.

4250-4260 Dolomite, light brownish gray, finely crystalline, dense, limey, some shale as above.

4260-4270 Shale, medium gray to light olive gray, splintery, compact, slightly calcareous.

4270-4290 Shale, as above with some anhydrite, white granular.

4290-4300 Shale, greenish gray to light olive gray, calcareous splintery, brittle.

4300-4320 Shale, greenish gray, 5GY6/1, grayish red, 10R4/2, calcareous splintery, brittle, a little white anhydrite.

4320-4330 Shale, greenish gray, grayish red, medium gray, calcareous, splintery, brittle.

4330-4360 Shale, as above, some white sugary gypsum.

4360-4380 Siltstone, grayish orange, sandy, calcareous, a little white gypsum.

4380-4390 Siltstone, moderate orange pink, calcareous, arenaceous.

4390-4460 Sandstone, moderate orange pink, fine grained, calcareous, silty.

4460-4470 Sandstone, moderate orange pink, fine to medium grained, slightly calcareous.

4470-4520 Sandstone, moderate reddish orange, very fine grained, slightly calcareous, argillaceous, little sandstone fine to medium grained, as above.

4520-4550 Sandstone, moderate reddish orange, fine to medium grained, slightly calcareous, a little white anhydrite.

4550-4560 Anhydrite, white to light gray, cryptocrystalline, dense.

4560-4570 Anhydrite, as above, some limestone grayish pink, fine grained.

4570-4590 Limestone, light brownish gray, slightly dolomitic, fine grained microsucrosic some white and pale red anhydrite.

4590-4600 Limestone, light yellowish gray, fine grained, fragmental with some medium to coarse crystals of light brown anhydrite, limestone fragments, rounded well worn.

4600-4620 Anhydrite, white to pinkish gray, microcrystalline.

4620-4629 Limestone, light yellowish gray, fine grained with much anhydrite, included as medium to coarse, light brown crystals.

4629-4670 Anhydrite, white to light gray, microcrystalline.

4670-4680 Limestone, light yellowish gray, fine grained, anhydrite.

4680-4690 Limestone, as above and light gray, sublithographic.

4690-4720 Limestone, very light gray, sublithographic, limestone light yellowish gray fine to medium grained, fragmental, anhydrite in part.

4720-4740 Anhydrite, white, microcrystalline, little limestone light yellowish gray, sublithographic.

4740-4748 Anhydrite, white, limestone light gray, fine grained, microcrystalline.

4748-4770 Limestone, light yellowish gray, sublithographic.

4770-4776 Limestone, light yellowish gray, sublithographic, some fine grained oolitic to fragmental.

Cores

4776-4777 Limestone, white, fine grained, chalky.

4777-4780 Limestone, light gray, microcrystalline.

4780-4782 Limestone, light yellowish gray, fine grained, oolitic with colorless, medium grain crystals of calcite filling pore spaces.

4782-4783 Limestone, oolitic as above with stylolitic seams cutting some of the oolitics.

4783-4784 Limestone, light yellowish gray, oolitic with recrystallized calcite filling pore spaces.

4784-4785 Limestone, light yellowish gray, very fine grained, vugular with medium to coarse crystals lining vugs.

4785-4791 Limestone, light yellowish gray, fine grained, oolitic, some vugs.

Samples

4800-4820 Limestone, light yellowish gray, fine grained, oolitic part.

4820-4830 Limestone, light yellowish gray, very fine grained, rounded fragmental.

4830-4860 Limestone, light yellowish gray, sublithographic.

4860-4870 Limestone, light yellowish gray, fine grained, fragmental.

4870-4880 Limestone, light yellowish gray, fine grained, oolitic in part, fragmental in part.

4880-4890 Limestone, light yellowish gray, fine grained, fragmental in part.

4890-4910 Limestone, light yellowish gray, fine grained, oolitic to fragmental.

4910-4950 Limestone, light yellowish gray, sublithographic, some fine grained, fragmental.

4950-4970 Limestone, yellowish gray, fine grained, oolitic and fragmental.

4970-5010 Limestone, yellowish gray, fine grained, fragmental.

5010-5040 Limestone, yellowish gray, fine grained, fragmental, chalky in part.

5040-5050 Limestone, yellowish gray, fine grained, fragmental, some microsucrosic.

5050-5080 Limestone, yellowish gray, fine grained, fragmental.

5080-5100 Limestone, very light gray, sublithographic.

5100-5110 Limestone, yellowish gray, microsucrosic, some light gray sublithographic.

5110-5130 Limestone, yellowish gray, fine grained, fragmental, some microsucrosic.

5130-5150 Limestone, yellowish gray, light gray, fine grained, oolitic.

5150-5170 Limestone, yellowish gray, microsucrosic.

5170-5180 Limestone, yellowish gray, fine grained, fragmental, some coarse crystals, anhydritic, some yellowish gray, microsucrosic.

5180-5190 Limestone, light brownish gray, microsucrosic.

5190-5210 Limestone, light brownish gray, fine grained, microsucrosic in part, fragmental in part, fossiliferous.

5210-5260 Limestone, light gray to light brownish gray, fine to medium grained fragmental.

5260-5290 Limestone, light gray, fragmental, few fossil fragments, slightly argillaceous, fine to medium grained.

5290-5300 Limestone, light gray, as above, slightly anhydritic.

5300-5360 Limestone, light gray, fine to medium grained, fragmental, fossiliferous.

5360-5370 Limestone, very light gray, fine grained to sublithographic, some light yellowish gray, microsucrosic.

5370-5390 Limestone, light gray, finely crystalline to fine grained, fragmental with some Brachipod fragments.

5390-5410 Limestone, light gray, fragmental as above, some light gray sublithographic argillaceous.

5410-Circulation 1 hour. Limestone, light gray, fine grained, fragmental.