NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 255

Summary of the Caroline Hunt Trust Estate - E. B. Sauter Estate No. 1
Kidder County, North Dakota
Well No. 748 - Permit No. 761

by Dan E. Hansen
May 1961

The Caroline Hunt Trust Estate - E. B. Sauter No. 1 is located in the center of the NW NE Sec. 32, T. 141N., R. 74W., Kidder County. The K.B. elevation is given as 1848 feet.

The well was spudded October 4, 1954; drilled to a depth of 5904 feet (mechanical log), ending in the Deadwood formation; found dry; and plugged October 30, 1954. Casing of 10 3/4 was set at 313 feet with 160 sacks cement and 3 sacks $CaCl_3$.

Logs:
- Electrical
- Microlog
- Gamma Ray-Neutron

Cores: None

Tests: None

Plugging Record:
Cement plugs were set at the following depths:
- 4980-5050 20 sacks cement
- 3680-3750 20 sacks cement
- 2998-3050 15 sacks cement
- 2448-2500 15 sacks cement
- 263- 313 25 sacks cement inside 10 3/4" surface casing
- 0- 13 surface plug, 5 sacks cement

Formation tops are picked from samples and electric logs and corrected to electric logs. Not all formation tops are called in the following list. Colors are from the rock color chart distributed by the Geological Society of America.

FORMATION TOPS

Cretaceous System	
Pierre formation	442
Niobrara formation	1432
Greenhorn formation	1913
Mowry shale	2270
Fall River-Lakota sandstones	2512
Jurassic System	
Piper lime	3029
Mississippian System	
Madison undiffereniated	3322

Devonian System	
Birdbear formation	4300
Duperow formation	4343
Souris River formation	4518
Dawson Bay formation	4600
Prairie formation	4656
Silurian System	
Interlake group	4691
Ordovician System	
Stony Mountain formation	4884
Red River formation	5027
Winnipeg formation	
Roughlock member	5624
Icebox shale	5677
Black island sandstone	5803
Cambrian-Ordovician Systems	
Deadwood formation	5822

0-30	Clay, silty, light brownish gray; clay pale yellowish brown, silty; plus pebbles of pale yellowish brown dolomite. Traces of quartz grains.
30-60	Samples missing.
60-90	Clay, silty, light brownish gray. Pebbles of igneous rock fragments and quartz. Small amount of loose quartz grains. Traces of glauconite.
90-120	Clay, silty and silt, light brownish gray, with some fragments of silt with glauconite grains. Traces of light olive gray shale. Small amount of sandstone, light gray, small grains of glauconite in some fragments, others contain mica.
120-150	Clay and silt, as above. Pebbles of pale yellowish brown dolomite.
150-180	Clay and silt, as above, with fragments of sandstone, fine-to medium-grained, light gray, glauconitic, silty.
180-270	Sandstone, light gray, fine-to medium-grained, slightly to calcareous, “salt & pepper” appearance, silty, some obvious grains of glauconite. Pale reddish brown clay; and clay and silt, as above. Carbonaceous fragments from 210-240.
270-300	Sandstone, as above, some fragments “rusty” colored.
300-330	Sandstone, as above, with pale reddish brown clay and sandstone fragments.
330-360	Samples missing.
360-390	Sandstone, clay and silt, as above.
390-420	Samples, as above. Small amounts of medium gray shale. Medium gray silt with glauconite grains. Cement at 400-410.
420-440	Silt and sandstone, greenish gray, glauconite.
440-470	Sandstone, light gray, calcareous, cemented, fine-grained and medium light gray shale, spongy.
470-480	Shale, medium gray to medium light gray, spongy.
480-540	Shale, medium gray, massive and spongy.
540-580	Shale, medium gray and medium dark gray, massive and spongy. Small amounts of light gray and light greenish gray bentonite.
580-610	Shale, medium gray, massive, moderately calcareous. With few fragments light gray “chalk”. Shale, also as above.
610-810	Shale, medium gray, massive and spongy. Small amounts of light gray bentonite.

810-820	Shale, as above, very small amounts of light brownish gray shale fragments.
820-1210	Shale, medium gray, massive. A few spongy fragments.
1210-1310	Shale, medium gray, massive and spongy. Very light greenish gray bentonite from 1210-1220.
1310-1420	Shale, medium gray, spongy, with light gray bentonite. Some light brownish gray shale, flaky. Very poor samples.
1420-1500	Shale, medium gray, calcareous, "white specks". With medium dark gray and medium gray shale, spongy. Some light gray bentonite.
1500-1550	Shale, medium gray, spongy and dark gray, massive. Small amount of calcareous, medium gray shale.
1550-1790	Shale, medium dark gray, flaky, lumpy and spongy. With medium gray shale.
1790-1900	Shale, medium dark gray, lumpy and spongy. Traces of light gray bentonite.
1900-1920	Shale, dark gray, massive, calcareous. Few calcite prisms, traces of pyrite, and small amount of shale with "white specks."
1920-2070	Shale, medium dark gray to dark gray, calcareous, "white specks". Small amounts of calcite prisms and pyrite. Traces very light bluish gray bentonite.
2070-2190	Shale, medium dark gray to dark gray, massive to flaky.
2190-2270	Shale, medium gray, massive to lumpy, spongy.
2270-2360	Shale, dark gray, massive to laminated, spongy.
2360-2510	Shale, medium dark gray, massive to laminated, spongy. Some dark gray shale, as above. Small amount of light gray bentonite.
2510-2590	Shale, as above, also dark gray. With very coarse loose quartz grains. Also medium gray silty shale.
2590-2600	Shale, as above. Occasional fragment of friable, light gray, fine grained quartzose sandstone.
2600-2730	Shale, as above.
2730-2760	Shale, as above. Small amount of light greenish gray shale and very fine-grained, white quartzose sandstone.
2760-2790	Shale, dark gray, laminated to flaky.
2790-2810	Shales, dark gray, massive to flaky. With small amounts of very light gray, very fine-grained to fine-grained, quartzose sandstone; light greenish gray, waxy shale; and pale reddish brown shale and fine-grained sandstone.
2810-2900	Shales, as above, with increase in content of light greenish gray shale.
2900-2920	Shale, light greenish gray, splintery with dark gray, fissile shale. Small amounts of pale reddish brown shale. Small amounts of white, very light gray fragmental, arenaceous limestone. Traces of crinoid fragment.
2920-3030	Shale, as above. With fragments of light olive green shale and fine-grained white, quartzose sandstone. Traces of pyrite and pale reddish brown sandstone, very fine-grained. One fragment of glauconitic, fine-grained, quartzose sandstone at 2940-2950. Traces of shell fragments.
3030-3180	Limestone, light brownish gray, dense, very fine, micrite, with traces of fragmental (sublithographic). Gray shale, as above. Few fragments of anhydrite from 3090-3110. From 3090-3140 there are occasional fragments of light gray, limestone, dolomitic in part, sublithographic. Very poor samples.

3180-3200	Limestone, very light brownish gray to light gray, sub-lithographic. Much gray and greenish gray shale.
3200-3270	Shale, grayish red (l0R4/2) to pale reddish brown, silty in part, massive. Traces of anhydrite, white. Much gray and greenish gray shale. Rare rounded frosted quartz grains.
3270-3280	Limestone, pinkish gray, sublithographic. Trace of grayish pink, calcareous siltstone. Much gray and greenish gray shale. Small amount of grayish red shale.
3280-3330	Limestone, as above. Shales, as above. Very poor samples from 3290-3330.
3330-3440	Limestone, very light brownish gray to pinkish gray, sub-lithographic to fragmental-sublithographic. (Micrite to intra-sparite?). Rare fragments of pinkish gray, very fine-grained sandstone. Shales, as above. No visible porosity in the limestone fragments.
3440-3460	Limestone, very light brownish gray to light gray, fragmental-sublithographic limestone.
3460-3490	Poor samples, all shale.
3490-3530	Shale, as above, with fragments of fragmental-sublithographic, very light brownish gray limestone. Traces of white anhydrite. Traces of light gray, argillaceous limestone.
3530-3560	Limestone, as above, also fragments pelletoidal - sublithographic and some fragments intraclastic.
3560-3580	Limestone, as above, with small amounts of white-light gray anhydrite.
3580-3620	Shale, as above, with fragments of white-light gray anhydrite. Poor samples.
3620-3640	Limestone, light brownish gray, microsucrosic. Shales, as above. Small amount of anhydrite.
3640-3660	Shales, gray, grayish green, and reddish brown as above. Poor samples. Traces of limestone, as above.
3660-3700	Anhydrite, white to very light gray, dense. Shales, as above.
3700-3780	Samples missing.
3780-3820	Shales, as above. Poor samples.
3820-3900	Limestone, very light gray, sublithographic, small amounts of fossil fragments. Large amount of shale fragments as cavings.
3900-4030	Limestone, light gray, fragmental intraclasts with very fine-grained cement. Also a small amount of sublithographic limestone. A few fossil fragments.
4030-4080	Limestone, light gray, fragmental and sublithographic. Small amount of fossil fragment and granular limestone.
4080-4130	Limestone, light gray, sublithographic with traces of fragmental limestone. Small amounts of very light gray chert.
4130-4300	Limestone, as above, with very fine-grained granular limestone, light gray to very light brownish gray. Very poor samples from 4170-4190, also 4280-4300.
4300-4310	Shale, dark gray, soft with a small amount of black, flaky to fissile sooty shale which is possibly Balsken shale.
4310-4360	Dolomite, light brownish gray, limy, granular, coarse to fine-grained, some vuggy porosity. Much gray and red-brown shale, cavings.
4360-4500	Dolomite, light brownish gray to pinkish gray, fine-grained, granular to dense, grainy and microgranular. Pinpoint and vugular porosity.

4500-4530	Limestone, light brownish gray, grainy, very fine-grained to sub-lithographic, dense, also some fragments that are granular, dolomitic.
4530-4570	Dolomite, very light brownish gray to grayish pink, limy, grainy, dense, very fine-grained to fine grained. Some vuggy porosity.
4570-4590	Limestone, very light brownish gray, grainy to microgranular, dolomitic and sublithographic. Small amounts of flaky gray shale.
4590-4600	Cave, all gray and red-brown shale, soft.
4600-4620	Samples missing.
4620-4660	Limestone, light brownish gray, grainy, very fine-grained to sub-lithographic. Traces of anhydrite.
4660-4700	Dolomite, grayish pink and orange, dense, grainy to lithographic. Some pale red, dolomitic shale.
4700-4760	Dolomite, as above, with a grayish orange pink lithographic dolomite. Some very pale orange dolomite.
4760-4820	Dolomite, very pale orange, grainy, very fine-grained, to lithographic. With dolomite, as above.
4820-4840	Dolomite, as above, with traces very light pinkish-gray chert.
4840-4900	Dolomite, as above.
4900-5030	Dolomite limy, very light brownish gray, grainy, fine-grained. Dolomite, as above. Poor samples. From 4930-5030 the samples consist for the most part of soft, gray shales.
5030-5110	Limestone, very light brownish gray to light gray, very fine-grained grainy to sublithographic. Rare light brownish gray anhydrite, dense, crystalline.
5110-5150	Samples missing.
5150-5190	Limestone, as above. Poor samples, much cave.
5190-5260	Limestone, as above. Caving content decreases.
5260-5280	Samples missing.
5280-5400	Limestone, as above.
5400-5420	Samples missing.
5420-5450	Limestone, as above.
5450-5490	Samples missing.
5490-5510	Limestone, as above.
5510-5560	Samples missing.
5560-5600	Limestone, as above, rare fragments of fossils.
5600-5620	Samples missing.
5620-5660	Limestone, as above.
5660-5690	Shale cavings (gray, soft) with some limestone as above.
5690-5840	Shale, greenish gray, splintery.
5840-5880	Shale as above, with a few fragments of fine-medium grained quartz sandstone that is cemented with calcareous material and contains traces of glauconite.
	End of samples. Depth according to driller is 5881 feet. Depth reached with mechanical log device was 5904 feet.