

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 58

Summary of the Calvert Exploration Company Joseph Bachmeier (Ziegler) #1  
McHenry County, North Dakota  
Well #360, Permit #376

By Carole Smith  
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The Calvert Exploration Company-Joseph Bachmeier (Ziegler) #1, McHenry County, North Dakota, Section 23, T. 154N., R. 76W. (696 feet from North line, 660 feet from West line, section 23). Elevation: 1542 G.L., 1554 K.B.

The Calvert Exploration Company-Joseph Bachmeier (Ziegler) #1 was spudded August 4, 1953 and 324' of 10 3/4" surface casing was set with 125 sacks at 303 feet. Cement plugs of 15 sacks were set at 0-40, 303-343, 2233-2273, 3143-3183, 3486-3526, and 3748-3788. The well was abandoned August 17, 1953 at a total depth of 3965 feet.

Tests

DST 1730-1731: open 45 minutes, received 130' mud, FP 0#, HP 900#

Cores

3483'-3503'

Formation Tops

Cretaceous System	
Niobrara	1241
Greenhorn	1740
Dakota	2235
Jurassic System	
Morrison	2553
Piper lime	2880
Triassic System	
Spearfish	3146
Mississippian System	
Charles	3270
Mission Canyon	3450
Lodgepole	3750

Tops were picked from sample and electric logs; not all tops called.  
Colors from rock color chart.

<u>From</u>	<u>To</u>	<u>Formation</u>
300	360	Shale; medium dark gray lumpy, somewhat calcareous.
360	420	Shale; medium gray, lumpy to firm.
420	450	Shale; medium dark gray to dark gray, firm to lumpy; trace of pyrite.
450	570	Shale; medium dark gray, lumpy.
570	600	Shale; medium gray, bentonitic, lumpy.

<u>From</u>	<u>To</u>	<u>Formation</u>
600	750	Shale; medium gray, rather firm, partly lumpy and bentonitic.
750	780	Shale; medium gray to medium dark gray, firm.
780	1050	Shale; medium gray, firm to lumpy, slightly bentonitic; scattered traces of pyrite.
1050	1110	Bentonitic shale; medium gray, lumpy.
1110	1260	Shale; dark gray to gray black, flaky, partly lumpy; scattered traces of iridescent shell fragments.
1260	1290	Shale; gray black to black, flaky to lumpy, rather calcareous.
1290	1350	Shale; medium dark gray, rather calcareous, white specked.
1350	1470	Shale; medium dark gray shale, mostly lumpy, slightly calcareous; traces of crystalline calcite and dense dark gray, limestone (1380-1410).
1470	1500	Shale; medium gray to dark gray, lumpy, pyritic, somewhat calcareous; traces of calcite crystals.
1500	1650	Shale; medium gray to medium dark gray, lumpy.
1650	1740	Shale; dark gray to gray black, flaky, becoming rather lumpy at 1710.
1740	1860	Calcareous shale; dark gray, white specked; some inoceramus prisms and limestone (ending at 1770).
1860	1980	Shale; medium gray to dark gray; partly lumpy and calcareous; a trace of gray siltstone appears at 1950.
1980	2040	Shale; medium gray to dark gray, flaky to lumpy, partly silty.
2040	2130	Shale; dark gray, flaky, partly firm; traces of silt and coarse sand beginning at 2070.
2130	2220	Somewhat sandy shale; medium gray to dark gray, partly lumpy; small amounts of light brown to white, subangular, coarse quartz sand.
2220	2290	Somewhat silty and sandy shale; medium gray, lumpy; traces of gray, limey, glauconitic, very fine grained sandstone beginning at 2240.
2290	2300	Sand; coarse to very coarse, subangular quartz; much gray shale.
2300	2330	Shale; dark gray, mostly flaky; much lumpy, slightly calcareous shale beginning at 2310; scattered traces of sand and reddish shale.
2330	2350	Shale; medium gray to dark gray, firm to lumpy, partly calcareous; traces of pyrite, white limestone, coarse sand, concretionary pitted reddish quartz.
2350	2380	Shale; medium gray to dark gray, firm to lumpy; traces of coarse sand, pyrite, light brown shale.
2380	2390	Shale; dark gray, firm to lumpy, partly calcareous; traces of sand and reddish shale.
2390	2400	Sand; light brown, orange, yellow white, very coarse, subangular quartz; much gray shale.
2400	2480	Shale; medium dark gray, firm, partly lumpy; traces of coarse sand, limey white fine sandstone; traces of concretionary pitted reddish quartz beginning at 2460 (cave?)
2480	2530	Shale; medium dark gray, firm partly lumpy slightly calcareous; scattered traces of pyrite.

<u>From</u>	<u>To</u>	<u>Formation</u>
2530	2560	Sand; very coarse, subangular to subround quartz; much gray shale; traces of pyrite.
2560	2600	Shale; medium dark gray to dark gray, flaky to lumpy; traces of sand as above.
2600	2680	Shale; medium gray to gray black, lumpy to flaky, very coarse sandy, slightly silty; some light brown, partly silty shale and traces of greenish shale appear at 2650.
2680	2690	Sandstone; white to very light gray, limey, fine grained; much medium gray, sandy, pyritic shale; some light brown shale.
2690	2700	Sandstone; siltstone, and sand, light gray to white; much shale as above.
2700	2710	Shale; medium gray, lumpy, pyritic; some sand, sandstone and siltstone as above, some light gray to white, micro-sugary limestone; traces of brown shale and pyrite.
2710	2740	Shale as above; small amounts of greenish shale; traces of sand much pearly, soft limestone (2720-2730); the shale is partly green, lumpy and calcareous.
2740	2760	Shale; medium gray, slightly green and limey; small amounts of reddish brown shale, sand, shelly limestone.
2760	2810	Shale; greenish gray, somewhat calcareous; flaky to lumpy; much very coarse sand (2770-2800) traces of sandstone and reddish shale; much chalky white limestone and a trace of oolitic limestone begin at 2800.
2810	2830	Shale; dark gray, flaky; some waxey green shale and silty reddish brown shale, decreasing greatly in quantity at 2820.
2830	2880	Calcareous shale; medium gray to medium light gray, becoming greenish, lumpy; traces of pyrite, red and green shale, limestone anhydrite; becoming somewhat silty and sandy at 2860.
2880	2910	Calcareous shale; medium gray, silty and sandy, slightly green in part, lumpy; traces of limestone, red and green shales.
2910	2930	Calcareous shale; greenish, splintery, partly gray as above; small amount of lithographic, white limestone (2920-2930).
2930	2950	Limestone; almost white, lithographic to sublithographic; some green and gray shales, increasing greatly in quantity.
2950	2960	Shale; waxey green, gray, reddish, lumpy medium gray, partly silty and calcareous; traces of sand and limestone.
2960	3000	Calcareous shale; medium gray, lumpy, silty; some white limestone, some greenish shale beginning at 2980; traces of sand.
3000	3030	Shale; dark gray, flaky; small increasing amounts of lithographic white limestone; traces of red and green shale.
3030	3080	Rather calcareous shale; gray; green; olive; soft; flaky; small amount of silty reddish shale; much almost white, lithographic limestone beginning at 3040; the shale becomes sandy at 3060 and increases in quantity; traces of white anhydrite.
3080	3090	Calcareous shale; medium gray to dark gray; small amounts of white anhydrite.

<u>From</u>	<u>To</u>	<u>Formation</u>
3090	3140	Shale; medium gray, lumpy, silty, rather calcareous; some white anhydrite, increasing greatly in quantity; some reddish shale beginning at 3120.
3140	3150	Shale; as above, some white anhydrite.
3150	3170	Somewhat calcareous shale; gray; partly reddish, partly glauconitic; some white anhydrite.
3170	3180	Shale; dark gray, lumpy to flaky, small amounts of reddish brown shale; traces of sand and anhydrite.
3180	3260	Shale; medium gray and reddish brown, firm, partly silty and sandy; traces of anhydrite, green shale, sandstone; much reddish fine sandstone and coarse quartz sand beginning at 3200 and decreasing at 3240.
3260	3280	Shale; gray, reddish brown, green, partly calcareous and silty; traces of sand, sandstone, and anhydrite.
3280	3300	Limestone; almost white, sublithographic, becoming partly micro-sugary and argillaceous and dolomitic; some shale as above.
3300	3340	Shale; dark gray, some red, traces of green; much sublithographic white limestone with included crystals and rust streaks (3310-3330); much dense to micro-sugary, pale dolomite (3330-3340); traces of white anhydrite.
3340	3350	Limestone; pale, micro-sugary to sublithographic, argillaceous, partly brown crystalline; some red and gray shale; traces of white anhydrite.
3350	3390	Anhydrite; white, decreasing in quantity; much reddish shale, also decreasing somewhat increasing amounts of lumpy, limey, gray shale, traces of dense limestone and dolomite.
3390	3420	Shale; gray, green, reddish, mostly limey; much micro-sugary to sublithographic, argillaceous, pale limestone (3390-3400); small amounts of white anhydrite and dense pink dolomite.
3420	3430	Shale; flaky gray; some dense, pale reddish brown dolomite; small amounts of white anhydrite.
3430	3470	Shale; reddish, gray greenish, partly limey, small amounts of dolomite as above and white anhydrite.
3470	3483	Limestone; very light gray and brown (almost white) micro-sugary to lithographic; increasing amounts of gray and red partly calcareous shale and white anhydrite.
3483	3503	Cored interval.
3483	3486	Dolomite; light olive gray to pale yellow brown, very dense, becoming partly micro-sugary and mostly very pale yellow brown.
3486	3487	Dolomite; very light olive gray to very light gray, very dense.
3487	3488	Limestone; pale yellow brown, oolitic.
3488	3490	Limestone; pale yellow brown with dark yellow brown spots, micro-sugary to sublithographic, becoming partly pseudo-oolitic.
3490	3491	Limestone; very pale yellow brown to white, micro-sugary to sublithographic.
3491	3493	Limestone; very pale yellow brown, coarsely oolitic, partly vuggy with calcite crystals.

<u>From</u>	<u>To</u>	<u>Formation</u>
3493	3495	Limestone; very pale yellow brown, tiny oolites and vugs, well cemented.
3495	3499	Limestone; pale yellow brown, fine to coarse oolitic, increasingly vuggy with calcite crystals in the vugs.
3499	3500	Limestone; pale yellow brown, tiny vugs, partly coarse oolitic quite dense.
3500	3503	Limestone; pale yellow brown, dense, increasingly, vugular, partly oolitic (no oolites after 3502).
3503	3510	Shale; dark gray, flaky some reddish and greenish shale; some micro-sugary to dense, pale limestone.
3510	3520	Oolitic limestone; very pale yellow brown; much shale as above.
3520	3550	Limestone; very pale yellow brown, sublithographic to lithographic partly crystalline, slightly oolitic at 3540.
3550	3600	Limestone; very light gray and very pale yellow brown, micro-sugary and chalky, partly pseudo-oolitic; small amounts of shale; traces of sand, pyrite, and anhydrite.
3600	3610	Limestone; almost white, sublithographic; much gray green and reddish shale, some white anhydrite beginning at 3605.
3610	3620	Dolomite; pale red and pale purple, dense; much gray and green shale beginning at 3615.
3620	3625	Shale; gray and green, partly limey; much white anhydrite; some dolomite as above.
3625	3635	Shale; dark gray, flaky, small amounts of red and green; some dense white anhydrite.
3635	3645	Limestone; very light gray to very pale yellow brown, micro-sugary and chalky; traces of shale and anhydrite.
3645	3650	Limestone; yellow brown to very light gray, fine to medium sugary, partly chalky.
3650	3670	Limestone; yellow brown, micro-sugary; some gray, red, and green shales; traces of anhydrite.
3670	3690	Limestone; yellow brown, medium sugary to micro-sugary; much gray shale; traces of red and green shale and white anhydrite.
3690	3710	Limestone; yellow brown, fine to micro-sugary; increasing amounts of shale as above.
3710	3720	Shale as above; some white anhydrite; some limestone as above.
3720	3750	Limestone; very pale yellow brown, micro-sugary and/or chalky; some shale as above, increasing greatly in quantity between 3730 and 3750.
3750	3770	Limestone; very pale yellow brown very light gray, dense to micro-sugary and/or chalky, partly crystalline; traces of sand and shale.
3770	3800	Shale; medium dark gray to dark gray; some limey green shale; traces of red shale, white anhydrite, pale limestone; increasing amounts of white to black, crystalline to fragmental, fossiliferous shaly limestone.
3800	3820	Limestone; as above; much shale (3810-3820).
3820	3840	Limestone; gray, white, partly brown, lumpy, dense, shaly fossiliferous crystalline, partly chalky; much shale (3830-3840).

<u>From</u>	<u>To</u>	<u>Formation</u>
3840	3880	Limestone; very light gray to gray, light olive gray, micro-sugary and/or chalky, partly argillaceous and fossiliferous; small amounts of shale; traces of sand and anhydrite.
3880	3930	Limestone, gray and white, fragmental shaly fossiliferous, some shale, small amounts of anhydrite and sand.
3930	3940	Limestone; gray, micro-sugary; some limestone as above, some shale traces of anhydrite.
3940	3950	Shale; medium gray to dark gray; small amounts of red and green shales; some limestone as above and white anhydrite.
3950	3965	Limestone; very light gray, chalky and/or fine sugary, partly fragmental; small amounts of gray shale.
3965		Total depth.