

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 71

Summary of the Frazier-Conroy - Thorson Ekrehagen #1  
Bottineau County, North Dakota  
Permit #263, Well #247

By Carole Smith  
May, 1954

The Frazier-Conroy--#1 Thorson Ekrehagen Estate, Bottineau County, North Dakota. Located: C NE SE Section 9, T. 163N., R. 78W., (660' from East line, 1980' from South line Section 9). Elevation: 1517 GL., 1523 K.B.

The Frazier-Conroy--#1 Ekrehagen was spudded December 28, 1952 and 323 feet of 10 3/4 inch surface casing was set with 150 sacks of cement; 5 1/2" casing set to 3066' with 150 sacks of cement. Initially flowed about 12 BFPD (about 50% water) from the open Madison (3066-3084). The well was completed January 30, 1953 at a total depth of 3084 feet.

CORES

Core #1: 3019-3028	Core #4: 3049-3063
Core #2: 3029-3038	Core #5: 3064-3073
Core #3: 3039-3048	Core #6: 3074-3084

TESTS

DST: 3045-3051  
Open 1 hour, SI 15 minutes, received 5' mud.

DST: 3051-3061  
Open 1 hour, SI 15 minutes, received 5' mud.

DST: 3074-3084  
Open 1 hour, receive 90' HGCM, 120' HO & GCM, 5 BSW, FP 0#, 30 minutes SIP 1200#, HP 1750, swabbed 8 BWPH with scum, oil, and some gas; bled mud, water, and small amount of oil; bled 1 BFPH, 60% oil; bled 2 BFPH; with a trace of water; sandfraced with 30 BF; set packer 3028'; pumped 2 1/2 BFPH; 2.6% water; pumped 15-30 BOPH, 2-50% water; pumped 12 BO & 12 BW 24 hours; pumped 7 BO 24 hours; pumped 12 BO & 12 BWPD; pumped 6-10 BWPD; pumped 14.1 BO 24 hours; Re-A with 1000 gallons; at 3065-3084' swabbed approximately 5-6 BOPD; pumped 32 BO, 15 BO & W in 17 hours; pumped 10 BOPD; Re-A with 5000 gallons; pumped 28 BF 12 hours, 40% water, pumped 12 BFPD, about 50% water.

FORMATION TOPS

Cretaceous System	
Niobrara	1240
Greenhorn	1590
Dakota	2020
Jurassic System	
Morrison	2323
Sundance	2402
Piper Lime	2695
Triassic System	
Spearfish	2950
Mississippian System	
Charles	3055
Total depth	3084

Formation tops were determined from samples and electric log; not all lithologic tops were called in the above list. Colors were determined from the rock color chart.

320-920	Shale; medium gray, firm; small amounts of bentonitic shale (440-520) scattered traces of light brown, dense anhydrite (?) beginning at 600; traces of white calcite beginning at 860.
920-1030	Shale; medium gray to medium light gray, firm, pyritic, becoming quite lumpy and bentonitic at 980.
1030-1070	Shale; medium gray to medium light gray, firm; pyritic; small amounts of lumpy bentonitic shale; traces of pyrite, yellow calcite, and dense brown anhydrite.
1070-1100	Bentonitic shale; medium gray, partly firm; traces of bentonite; much dark gray flaky shale at 1090.
1100-1330	Shale; gray black flaky; small amounts of bentonitic shale; scattered traces of calcite and iron stained very light gray shale; small amounts of bentonite beginning at 1150; missing samples: 1230-1320.
1330-1430	Shale; gray black, flaky; some, bentonite and bentonitic shale; traces of pyrite, dense brown anhydrite, firm light gray shale; small amounts of orange and yellow; and dark gray calcite beginning at 1350.
1430-1450	Shale; medium gray to gray black, very firm to flaky; traces of calcite.
1450-1470	Shale; dark gray, firm to lumpy, mostly bentonitic; small amounts of Inoceramus fragments and calcite; traces of pyrite.
1470-1480	Shale; dark gray, flaky; much calcite and Inoceramus fragments; traces of pyrite.
1480-1490	Shale; medium gray to dark gray, lumpy to flaky, partly bentonitic; traces of pyrite, and calcite, and Inoceramus fragments.
1490-1530	Shale; gray black, flaky, partly limey; some calcite, Inoceramus fragments, and dense gray limestone; some bentonitic shale.

1530-1660 Shale; dark gray to gray black, flaky; small amounts of bentonitic shale scattered traces of calcite, pyrite, dense gray limestone, and dense brown anhydrite; some dark gray soft limey shale with white spots beginning at 1630; missing samples: 1550-1560; 1620-1630.

1660-1670 Shale; dark gray, flaky, rather brittle; traces of Inoceramus fragments; calcite, and dense gray limestone.

1670-1700 Limey shale; medium dark gray to dark gray with white specks; some Inoceramus fragments and fragmental Inoceramus limestone.

1700-1730 Shale; medium gray to dark gray, firm to flaky; partly white specked; small amounts of calcite, Inoceramus fragments, and dense gray limestone increasing somewhat in quantity; missing samples 1710-1720.

1730-1760 Shale; gray black, firm, few white specks, partly limey; some Inoceramus limestone and calcite.

1760-1820 Shale; dark gray, flaky; traces of bentonitic shale, pyrite, dense brown anhydrite, calcite, and Inoceramus fragments.

1820-2100 Shale; dark gray to gray black, firm; some Inoceramus limestone at 1820; scattered traces of calcite; Inoceramus limestone, bentonitic shale, and dense brown anhydrite; missing samples: 2020-2040; some very coarse subround quartz sand (2070-2080); some medium grained limey white sandstone (2080-2100).

2100-2120 Sand; very coarse, subangular to subround quartz; traces of pyrite; much gray shale at 2100.

2120-2140 Shale; dark gray; flaky; some sand as above.

2140-2160 Sand as above; traces of shale and pyrite.

2160-2250 Shale as above; some sand as above; increasing in quantity at 2170; traces of pyrite; traces of sandstone beginning at 2200; traces of very light gray dense limestone beginning at 2210.

2250-2330 Shale; dark gray, flaky; some sand as above beginning at 2260; traces of pyrite; missing samples: 2310-2320.

2330-2420 Shale; dark gray to gray black, firm, traces of sand some very light gray fine grained, limey somewhat glauconitic; sandstone beginning at 2360; missing samples: 2400-2410.

2420-2450 Shale as above; some grayish green and olive shale at 2430; traces of light gray fine grained, glauconitic sandstone at 2430; missing samples: 2440-2450.

2450-2480 Shale; gray black, flaky; much medium to coarse, white, limey sandstone; traces of green shale and pyrite; missing samples: 2470-2480.

2480-2500 Shale as above; small amounts of sandstone as above and micro-sugary gray, fossiliferous limestone; missing samples: 2490-2500.

2500-2570 Shale; gray black, brittle, partly lumpy, scattered traces of reddish shale and greenish shale, pyrite, calcite, and sandstone; some pale, sublithographic limestone (2560-2570).

2570-2740 Shale; gray black, flaky, traces of green and reddish shales; pyrite, sand, and soft gray shale; small amounts of white, sublithographic limestone beginning at 2710; missing samples: 2730-2740.

2740-2760 Limestone; very pale yellow brown, sublithographic, argillaceous, slightly dolomitic; much shale as above; increasing at 2750.

2760-2860 Shale, dark gray to gray black, flaky; traces of red and green shales; small amounts of very light gray lithographic limestone increasing greatly in quantity at 2790; missing samples: 2850-2860.

2860-2890 Shale as above; some sublithographic to lithographic, very pale yellow brown to white limestone; traces of anhydrite.

2890-2920 Shale; as above traces of anhydrite and limestone.

2920-2960 Shale; medium gray to gray black, flaky; small amounts of greenish and reddish shales; traces of limestone; gypsum and anhydrite.

2960-3000 Shale; dark gray, flaky; much reddish and greenish shales; small amounts of white anhydrite.

3000-3019 Shale as above; small amounts of reddish sandstones and siltstones; traces of limestone and anhydrite.

Cored interval: 3019-3084.

3019 Silty shale and shaly siltstone; grayish red, with anhydrite streaks.

3020-3021 Sandstone; light brown to moderate brown, fine; anhydrite; streaks at 3021.

3022-3024 Shaly siltstone; grayish red to dark reddish brown; becoming fine grained; anhydrite streaks.

3024-3029 Sandstone; moderate brown fine, micaceous.

3030 Sandstone; moderate brown, fine micaceous, partly coarse sand, few anhydrite streaks.

3031-3034 Sandstone; pale brown, fine grained, micaceous; traces of anhydrite at 3034.

3035-3039 Sandstone; moderate brown; fine grained, micaceous.

3040-3041 Sandstone; moderate brown, fine grained, micaceous; anhydrite streaks increasing somewhat at 3041.

3042-3043 Sandstone; reddish brown, shaly and silty, becoming somewhat dolomitic at 3043; small amounts of anhydrite.

3044 Sandstone; moderate brown; fine grained, somewhat dolomitic; anhydrite streaks.

3045-3049 Siltstone; dark reddish brown to reddish brown, shaly, somewhat dolomitic, becoming partly fine grained at 3047; some anhydrite streaks.

3050-3054 Siltstone and fine grained sandstone; reddish brown, somewhat dolomitic, partly shaly; some anhydrite streaks.

3055-3056 Sandstone; moderate brown, very fine grained, partly dolomitic, micaceous; traces of anhydrite.

3057 Siltstone and very fine sandstone; moderate brown, micaceous.

3058-3061 Sandstone; light brown, fine grained, partly coarse sand, micaceous.

3062-3063 Siltstone; light brown, micaceous, slightly dolomitic.

3064 Siltstone; moderate brown, micaceous; slightly dolomitic; some anhydrite.

3065-3067 Sandy siltstone; light brown to moderate brown; some anhydrite.

3068 Dolomite; pale yellow brown, micro-sugary; much anhydrite.

3069 Dolomitic siltstone; light olive gray to pale yellow brown, micaceous small amounts of anhydrite.

3070-3074 Dolomite; pale yellow brown, micro-sugary to dense, partly medium yellow brown and crystalline; same anhydrite; much anhydrite; (3073-3074).

3075-3076 Dolomite; pale yellow brown, micro-sugary to dense, partly crystalline; some anhydrite at 3076.

3077 Anhydrite; dense, very light gray to white; much dolomite as above.

3078-3079 Limestone; very pale yellow brown, micro-sugary, small vugs, oil stained, some anhydrite.

3080-3084 Limestone; pale yellow brown, oolitic, well cemented with dolomite and anhydrite, becoming quite vuggy at 3081; oil stained.

3084 Total depth.