

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 10

Summary of the Ajax Oil Company Bell No.1 Well

Pierce County, North Dakota

By Sidney B. Anderson

Ajax Oil Company - Bell No. 1 Well, Pierce County, North Dakota.  
NE 1/4, NE 1/4, Section 28, T. 158N, R. 72W. (850 feet S. of N. Line, 660 feet  
W. of E. line, Section 28). Elevation: 1510 feet G.L. Total Depth: 5383.

The Ajax Bell No. 1 was spudded July 4, 1951 and 12-3/4 inch casing was  
run at 142 feet. Twisted off drill stem at 3,255 feet July 13, whipstock set  
at 3,062 feet and drill stem again twisted off August 30, at 5,383 feet in  
Winnipeg shale. The well was plugged and abandoned on October 18, 1951.

Tests - DST 3500'-3554', open 45 minutes, recovered 210 feet of muddy  
water. Ajax reported brown organic residue 3490'-3500' and slight fluorescence  
3500'-3510'. Cored 3508'-3513'.

Formation tops determined from sample and electric logs.

FORMATION TOPS

	<u>Depth</u>
Cretaceous System	
Niobrara Formation	1087 (electric log)
Greenhorn Member	1500 (electric log)
Dakota	1942
Jurassic System	
Morrison Formation	2058 (electric log)
Sundance Group	2156
Piper Formation (Sawtooth)	2412
Mississippian System	
Mission Canyon Formation ?	2612
Lodgepole Formation	2695
Englewood Formation	3270
Devonian System	3300
Ashen Formation	4150
Silurian System	4200
Ordovician System	
Stony Mountain Shale member	4650
Red River Formation	4730
Winnipeg Formation	5230
Total Depth	5383

1660-1670	Medium dark gray shale, lumpy.
1670-1680	Shale, medium dark gray, few white specks.
1680-1690	Shale, medium dark gray N4.
1690-1750	Shale, medium dark gray.
1750-1760	Shale, medium dark gray, few white specks, cave?
1760-1820	Shale, medium dark gray.
1820-1830	Shale, medium gray N5.
1830-1840	Shale, medium gray N5, little pyrite.

1840-1850 Shale, medium gray.  
 1850-1860 Shale, medium gray, few rounded quartz grains.  
 1860-1880 Shale, medium gray.  
 1880-1890 Shale, medium dark gray, few pieces green gray shale.  
 1890-1900 Shale, medium dark gray.  
 1900-1920 Shale, medium gray N5.  
 1920-1930 Shale, medium gray N5, few rounded quartz grains, fine grained.  
 1940-1970 Missing.

Dakota 1990 feet.

2000-2010 Shale, as above few very fine grained rounded quartz grains.  
 2010-2020 Shale, as above.  
 2020-2030 Shale, medium gray and green gray 5GY6/1, few very fine grained rounded quartz grains.  
 2030-2050 Missing.  
 2050-2060 Shale, medium gray to medium dark gray.  
 2060-2070 Shale, medium gray.  
 2070-2080 Shale, medium dark gray.  
 2080-2090 Shale, medium dark gray, calcareous.  
 2090-2100 Shale as above.  
 2100-2130 Missing.

Morrison 2125 feet.

2130-2140 Shale and sandstone, shale as above and very fine grained, colorless sandstone, calcareous cement.  
 2140-2150 Shale and sandstone, shale as above, very fine grained, colorless sandstone and a few coarse quartz grains.  
 2150-2160 Shale and sandstone as above and much medium to coarse rounded quartz.  
 2160-2170 Shale and sandstone same as above and some pyrite.  
 2170-2180 Shale and sandstone as above, little glauconite and pyrite.

Ellis 2175 feet.

2180-2190 Shale and sandstone as above, little green bentonitic shale and pyrite.  
 2190-2200 Shale, mostly gray shale, little quartz very dirty sample.  
 2200-2210 Shale, mostly gray shale.  
 2210-2230 Shale as above.  
 2230-2240 Missing.  
 2240-2250 Shale as above, little pyrite.  
 2250-2260 Shale as above.  
 2260-2270 Shale as above and some light green gray shale 5G8/1.  
 2270-2280 Shale as above.  
 2280-2290 Shale and little very fine grained sandstone.  
 2290-2300 Shale and little very fine grained sandstone, some pale brown shale, 5YR5/2.  
 2300-2310 Shale and sandstone as above, above, glauconitic sandstone, light green gray shale, pale brown shale and pale red brown shale, 10R5/4  
 2310-2320 Shale, mostly gray shale and some light green gray and pale reddish brown.

2320-2330 Shale as above, little very fine grained sandstone and little pink anhydrite.

2330-2340 Shale same as above, much pink anhydrite, little pyrite.

2340-2350 Shale, varicolored, shale and some pink anhydrite.

2350-2360 Shale as above, little glauconitic sandstone, fine grained.

2360-2370 Shale as above, mostly gray, some pink anhydrite.

2370-2380 Shale, pale reddish brown shale and also some gray shale, and pink anhydrite.

2380-2390 Shale, pale reddish brown shale and also some gray shale, and little pink anhydrite.

2390-2400 Shale as above.

2400-2410 Shale, varicolored shale and light gray siltstone.

2410-2420 Shale as above, mostly pale reddish brown gray. Little pink anhydrite and little pyrite.

2420-2430 Shale as above, some rounded quartz grains, pyrite, and little pink anhydrite.

2430-2440 Shale as above.

2440-2450 Shale, as above, pink anhydrite and little white limestone, dense.

2450-2460 Shale, gray and reddish shale as above, little white limestone, pieces of white anhydrite, fibrous.

2460-2470 Shale as above, little green shale and some pink anhydrite.

2470-2480 Shale as above, little white limestone and some pyrite.

2480-2490 Shale, varigated shale, little white limestone and little pyrite and pink anhydrite.

2490-2500 Shale as above.

2500-2510 Shale and limestone, shale as above, and white limey marl.

2510-2520 Shale and limestone as above, and some yellow gray platy limestone.

2520-2530 Shale and limestone as above.

2530-2540 Shale and limestone, shale as above and yellow gray limestone, dense.

2540-2560 Shale and limestone as above, mostly shale.

2560-2570 Shale and limestone, medium dark gray to green gray shale, little limestone as above.

2570-2580 Shale and anhydrite, shale as above, and white anhydrite.

2580-2590 Shale, anhydrite, and limestone, shale as above and white anhydrite as above and very little pale yellow brown limestone, dense.

2590-2600 Shale, as above some green gray and red gray, little limestone and anhydrite.

2600-2620 Shale as above.

2620-2630 Shale, varigated shale.

2630-2640 Shale, varigated shale, little pink anhydrite and yellow gray limestone.

2640-2650 Shale as above, little white anhydrite and pieces of fibrous anhydrite, little yellow gray limestone.

2650-2660 Shale as above, little white and pink anhydrite, pieces of fibrous anhydrite, and little yellow gray limestone.

2660-2670 Shale as above, few pieces of yellow gray dolomite.

2670-2680 Shale, varigated shale, little white and pink anhydrite.

2680-2690 Shale, varigated shale, little white and pink anhydrite.

2690-2700 Shale, varigated shale, little pink anhydrite and few pieces of gypsum or fibrous anhydrite.

2700-2710 Shale, varigated shale.  
 2710-2720 Shale, varigated shale, little pink anhydrite.  
 2720-2730 Shale, varigated shale, little pink anhydrite.  
 2730-2740 Shale, varigated shale.  
 2740-2750 Shale as above, few pieces of yellow gray limestone, dense.  
 2750-2760 Shale and limestone, shale cave? varigated shale, some gray orange pink limestone, dense.  
 2760-2770 Shale and limestone, varigated shale, much limestone as above, quite dense, little pin point porosity.  
 2770-2790 Shale and limestone as above, some yellow gray limestone, coarsely crystalline limestone, and some pink anhydrite.  
 2790-2810 Shale and limestone as above.  
 2810-2820 Limestone same as above, granular, quite dense.  
 2820-2830 Circulation 30 minutes, limestone as above, granular, little pin point porosity, quite dense.  
 2830-2840 Limestone as above, some pale red limestone, little pin point porosity.  
 2840-2850 Limestone as above, some pale red, limestone, little pin point porosity.  
 2850-2870 Limestone as above, some pale red limestone.  
 2870-2880 Limestone as above.  
 2880-2900 Limestone as above, few pieces of pink anhydrite.  
 2900-2910 Limestone grayish orange pink, lot of gray shale, probably cave, poor sample and a few quartz grains, pyrite.  
 2910-2920 Limestone same as above.  
 2920-2930 Limestone gray orange pink, light brown otherwise same as above.  
 2930-2940 Limestone as above.  
 2940-2950 Limestone as above, iron stains no fluorence.  
 2950-2960 No sample.  
 2960-2990 Limestone as above, gray limestone.  
 2990-3000 Limestone as above, very light gray limestone, green gray shale, probably cave.  
 3000-3010 Limestone, very light gray limestone, crystalline, some light brown limestone, and some pale brown shale.  
 3010-3020 Limestone same as above, fossil fragments.  
 3020-3030 Dolomite and anhydrite pink fibrous, (dolomite yellow gray sucrose).  
 3030-3040 Dolomite same as above, anhydritic dolomite, (glauconitic cave?)  
 3040-3050 Limestone, green gray limestone, (glauconite).  
 3050-3060 Limestone, green gray limestone, (glauconite).  
 3060-3070 Limestone same as above.  
 3070-3080 Limestone, very light gray, some anhydrite, may be cave.  
 3080-3090 Limestone, dolomitic limestone light gray.  
 3090-3100 Limestone, dolomitic, and pink anhydrite.  
 3100-3110 Limestone, light gray yellow gray crystalline, some pink anhydrite.  
 3110-3120 Limestone, pale yellow brown, appears to be fairly porous.  
 3120-3130 Limestone same as above.  
 3130-3140 Limestone as above, some white limestone, sucrose.  
 3140-3150 Limestone, pale yellow brown, quite porous, sucrose, vuggy.  
 3150-3160 Limestone as above.  
 3160-3170 Limestone, pale yellow brown cherty?

3170-3180 Limestone, pale yellow broom cherty, may be cave?  
 3180-3190 Limestone, yellow gray, slightly cherty, little anhydrite cave?  
 3190-3200 Limestone, same as above, crinoid stem?  
 3200-3210 Limestone same as above, cherty?  
 3210-3220 Limestone, pale yellow brown, some light green gray limestone crystalline some anhydrite (cave)?  
 3220-3230 Limestone same as above, cherty.  
 3230-3240 Limestone as above, (lot of glauconite cave?)  
 3240-3250 Limestone pale yellow brown, (lot of quartz cave?) Crinoid stem some anhydrite, probably cave.  
 3250-3260 Limestone, pale yellow brown limestone, medium gray shale, very dirty sample.  
 3260-3270 Limestone, very light gray limestone and medium light gray shale, limestone crystalline.  
 3270-3280 Limestone and shale, very light gray limestone, crystalline, and medium gray shale.  
 3280-3290 Shale, green gray, medium gray shale, some limestone, very light gray, crinoid stem?  
 3290-3300 Shale, dark gray on fresh fracture, amber fossil fragments.  
 3300-3310 Limestone, gray (amber Limestone) finely crystalline.  
 3310-3320 Dolomite, limey, very light gray light olive gray, some limestone, also some coarsely crystalline.  
 3320-3330 Dolomite, coarsely crystalline, pale yellow brown.  
 3330-3340 Dolomite, coarsely sucrose, yellow gray, good porosity, vuggy.  
 3340-3350 Dolomite, sugary and vuggy, pale yellow gray, good porosity.  
 3350-3360 Dolomite, sucrose, to microsucrose, yellow gray fairly good porosity.  
 3360-3370 Dolomite and limestone, sucrose, dolomite granular, limestone yellow gray.  
 3370-3380 Dolomite, sucrose, fairly porous yellow gray.  
 3380-3390 Dolomite, same as above, lot of cave.  
 3390-3400 Dolomite, dense sucrose yellow gray, lot of cave.  
 3400-3410 Dolomite, dense sucrose, yellow gray.  
 3410-3420 Limestone, dense very light gray.  
 3420-3430 Limestone as above.  
 3430-3440 Dolomite, limey dolomite yellow gray, pin point porosity.  
 3440-3450 Limestone, yellow gray sucrose.  
 3450-3460 Dolomite, yellow gray sucrose, some limestone,  
 3460-3470 Limestone, yellow gray, sucrose, coarsely crystalline anhydrite.  
 3470-3480 Dolomite and limestone, yellow gray sucrose.  
 3480-3490 Dolomite and limestone, yellow gray and pale yellow brown sucrose and anhydrite.  
 3490-3500 Dolomite, coarsely crystalline, pale yellow brown.  
 3500-3510 Dolomitic sucrose, no fluorence, also shale.  
 Core number 1  
 3508-3509 Chips limestone pale yellow brown, finely crystalline.  
 3509-3510 Dolomite, medium dark gray, with buff mottled.  
 3510-3511 Dolomite, very pale orange, dense, finely crystalline.  
 3511-3512 Limestone, pale yellow brown dense.  
 3512-3513 Limestone, same as above.  
 3513-3520 Dolomite, medium gray, some anhydrite, pale yellow brown dolomite.  
 3520-3530 Dolomite, medium gray, and pale yellow brown, some anhydrite.

3530-3540 Dolomite, pale yellow brown (also gray dolomite cave?)  
sucrosic.

3540-3550 Dolomite, pale yellow brown (also gray dolomitic cave?)  
sucrosic.

3550-3570 Dolomite, quite coarsely crystalline, pale yellow brown, some  
anhydrite.

3570-3580 Dolomite, coarsely crystalline, vuggy, some gray limestone.

3580-3590 Dolomite, coarsely crystalline, vuggy, pale yellow brown.

3590-3600 Missing.

3600-3610 Dolomite, coarsely crystalline to granular, pale yellow brown,  
some anhydrite.

3610-3620 Dolomite, pale yellow brown, sucrosic.

3620-3630 Limestone, yellow gray, dense, extremely fine crystalline.

3630-3640 Limestone and dolomite, limestone same as above, dolomite,  
sucrose very light gray to yellow gray, vuggy.

3640-3650 Dolomite, yellow gray, extremely crystalline, vuggy.

3650-3660 Limestone and dolomite, yellow gray dolomite, some whitish  
chalky limestone, dolomitic coarsely crystalline some  
anhydrite.

3660-3670 Limestone, and dolomite, fine to coarsely textured, yellow  
gray.

3670-3690 Limestone, pink gray to finely white, finely crystalline.

3690-3710 Dolomite, light gray very finely granular, microsucose.

3710-3720 Dolomite, light gray very finely granular, and anhydrite.

3720-3760 Dolomite, light gray to yellow gray, fine crystalline

3760-3770 Dolomite, light gray to yellow gray, fine crystalline, shell  
fragments. (brachiopod).

3770-3780 Dolomite, sucrose light gray.

3780-3800 Dolomite, light gray to yellow gray, sucrose.

3800-3820 Dolomite, light gray, sucrose, some yellow gray.

3820-3830 Dolomite, light gray, dense, microsucose yellow brown,  
coarsely crystalline anhydrite.

3830-3840 Dolomite, pale yellow brown, dense, finely crystalline, cherty.

3840-3850 Dolomite, yellow gray to light gray, finely crystalline to  
coarsely sucrose, iron staining, anhydrite cherty?

3850-3860 Dolomite, light gray, finely crystalline, dense, some pale  
yellow brown dolomite.

3860-3870 Dolomite, pale yellow brown, coarsely sucrose, some light gray  
sucrose.

3870-3880 Dolomite, pale yellow brown coarsely sucrose, some light gray  
sucrose, cherty, rotten anhydrite.

3880-3900 Dolomite, finely crystalline to lithographic, light gray  
dolomite, anhydrite.

3900-3910 Dolomite, yellow gray, light gray, finely sucrose.

3910-3920 Dolomite, yellow gray to light gray same as above, a few vugs,  
and iron stains.

3920-3930 Dolomite, yellow gray, to light gray, sucrose.

3930-3940 Dolomite, yellow gray lithographic to sucrose, some anhydrite.

3940-3960 Dolomite, yellow gray, coarsely sucrose, and vuggy.

3960-3970 Dolomite, pale yellow brown, coarsely sucrose, and slightly  
vuggy.

3970-3980 Dolomite, same as above, sucrose, and iron stains.

3980-3990 Dolomite same as above, dense finely sucrose.

3990-4000 Dolomite, color same as above, dense, finely sucrose.

4000-4010 Dolomite, pale yellow brown, dense, finely crystalline to amorphous, limey dolomite.

4010-4020 Dolomite, pale yellow brown, dense, finely crystalline to amorphous, limey dolomite, shell fragments.

4020-4030 Dolomite, amorphous, pale yellow brown, limey dolomite.

4030-4040 Dolomite, amorphous, pale yellow brown, limey dolomite.

4040-4050 Dolomite, very light gray dolomite, otherwise same as above.

4050-4060 Dolomite same as above.

4060-4070 Dolomite, very light gray, finely crystalline.

4070-4080 Dolomite, finely crystalline to crystalline, some red shale and gray red.

4080-4100 Limestone and dolomite, lithographic limestone, finely crystalline gray red shale, limestone and dolomite pale yellow brown.

4100-4105 Circulation 25 minutes, limestone, pale yellow brown crystalline.

4100-4105 Circulation 35 minutes, limestone coarsely crystalline.

4105-4120 Limestone, yellow gray to very light gray, vuggy.

4120-4125 Circulation 45 minutes, pale yellow brown, vuggy.

4125-4130 Dolomite, pale yellow brown, coarsely crystalline, and some limestone.

4130-4140 Dolomite, pale yellow brown, coarsely crystalline some ls.

4140-4150 Limestone and dolomite, pale yellow brown partly is or very limey dolomite, lots of caving in samples.

4150-4160 Dolomite, pale yellow brown, few pieces red shale, lots of gray shale cavings.

4160-4170 Dolomite and shale, pale yellow brown dolomite red shale and (grayish, caving?)

4170-4180 Shale, gray red, also limestone and dolomite lot of gray shale.

4180-4190 Shale same as above and limestone and dolomite, some anhydrite.

4190-4200 Missing.\_

4200-4210 Dolomite, pale yellow brown and some gray red anhydrite.

4210-4220 Dolomite, yellow gray and some pale yellow brown dolomite and anhydrite yellow gray dolomite, microsucose, pale yellow brown sucrose, anhydrite.

4220-4230 Dolomite, yellow gray and some pale yellow brown dolomite, anhydrite yellow gray, dolomite microsucose, anhydrite.

4230-4250 Dolomite, yellow gray microsucose, some pale brown yellow dolomite and anhydrite.

4250-4260 Dolomite, yellow gray to pale yellow brown, and anhydrite, and some iron staining.

4260-4270 Dolomite, yellow gray to pale yellow brown, some white very limey dolomite or limestone, little anhydrite, microsucose, few fragments, coarsely sucrose.

4270-4280 Dolomite, pale yellow brown, some anhydrite.

4280-4290 Dolomite, pale yellow brown, microsucroso, dense, and some anhydrite.

4290-4300 Dolomite, pale yellow brown some pink gray and some gray yellow, few bluish framgments.

4300-4310 Dolomite, microsucose to lithographic, color as above, no bluish fragments.

4310-4340 Dolomite, microsucose to lithographic color as above, anhydrite.

4340-4350 Dolomite, dense lithographic platy, microsucose, anhydrite.

4350-4400 Dolomite, anhydritic, otherwise same as above, possibly some limestone anhydrite, iron staining.

4400-4410 Dolomite, pale yellow brown microsucose to lithographic.

4410-4220 Dolomite, white, lithographic, anhydrite.

4420-4430 Dolomite, white, lithographic.

4430-4440 Dolomite, white, lithographic, shell fragments.

4440-4450 Dolomite, pale red and white, lithographic.

4450-4460 Dolomite, white and some pale red lithographic as above.

4460-4470 Dolomite, pale red to very pale orange microsucose.

4470-4480 Dolomite, mostly white dolomite, microsucose, other varicolored dolomite.

4480-4500 Dolomite, very pale orange, and other varicolored dolomite.

4500-4510 Dolomite, very pale orange and other varied colored dolomite, macrosucose to sucrose.

4510-4530 Dolomite same as above, iron carbonate staining.

4530-4540 Dolomite, pale yellow brown sucrose and other varicolored dolomite, iron carbonaceous staining.

4540-4545 Circulation 45:60, dolomite white, microsucose iron stains.

4545-4560 Dolomite, white, very pale orange microsucose to sucrose.

4560-4570 Dolomite, mostly white, some pale yellow brown microsucose to lithographic dolomite.

4570-4580 Dolomite, pale yellow brown to white also, (shale cavings?).

4580-4590 Dolomite, pale yellow brown, mostly shale cavings.

4590-4600 Dolomite, pale yellow brown to white some shale cavings.

4600-4610 Limestone, pale yellow brown to white, (dolomitic limestone).

4610-4620 Limestone, pale yellow brown to white macrosucose, (dol. ls).

4620-4640 Limestone, pale yellow brown to white, microsucose, dolomitic limestone, (crinoid stem).

4640-4650 Limestone, whitish to yellow gray (dolomitic limestone).

4650-4660 Limestone, same as above, lot of gray fossil fragments.

4660-4670 Limestone, very light gray to yellow brown, platy to sucrose, fossil fragments.

4670-4680 Limestone, very light gray to yellow brown and white microsucose to sucrose.

4680-4690 Limestone, very light gray to white, fossil fragments, bryozoa.

4690-4700 Limestone, very light gray crystalline limestone, some pale yellow brown sucrose.

4700-4710 Limestone, very light gray crystalline to microsucose.

4710-4720 Limestone, color same as above, crystalline to microsucose, platy.

4720-4730 Limestone, very light gray to white, crystalline to microsucose, some grayish shale cave? some fossil fragments and bryozoa.

4730-4740 Limestone, very pale orange to white sucrose to platy.

4740-4750 Limestone, very pale orange to white sucrose to platy, bryozoa fragments.

4750-4760 Limestone same as above, microsucose to sucrose bryozoa fragments.

4760-4770 Dolomite, pale yellow brown, platy limey.

4770-4780 Dolomite, pale yellow brown to very pale orange, limey and vuggy, microsucose to coarsely sucrose.

4780-4790 Dolomite, pale yellow brown sucrose, very dirty sample, gray shale cavings?



4790-4810 Dolomite, yellow gray and pale yellow brown crystalline to sucrose, fossil fragments, gray bryozoa on shell fragments.

4810-4820 Dolomite and limestone, crystalline to sucrose, white pale yellow brown light gray.

4820-4830 Limestone, crystalline to sucrose, white pale yellow brown, light gray anhydrite.

4830-4840 Limestone same as above, no pale yellow brown, fossil fragments, bryozoa.

4840-4850 Limestone, crystalline to sucrose, anhydrite, fossil fragments, bryozoa.

4850-4860 Limestone, pale yellow brown to yellow gray stains, bryozoa fragments.

4860-4870 Limestone, yellow gray, coarsely crystalline to sucrose.

4870-4880 Limestone same as above, anhydrite, fossil fragments, bryozoa.

4880-4890 Limestone same as above, anhydrite.

4890-4900 Limestone color and texture same as above, shell fragments.

4900-4910 Limestone color same as above, coarsely crystalline to sucrose, fossil fragments, bryozoa.

4910-4920 Limestone, pale yellow brown to yellow gray coarsely crystalline to extremely sucrose, shell fragments.

4920-4930 Limestone same as above, coarsely crystalline to sucrose to platy, bryozoa fragments.

4930-4940 Limestone, whitish chalky to yellow gray, coarsely crystalline to sucrose some platy bryozoa fragments.

4940-4950 Limestone same as above, some anhydrite, bryozoa fragments.

4950-4960 Limestone, color as above, sucrose, dirty sample.

4960-4970 Limestone, yellow gray to light olive gray coarsely crystalline to sucrose, some chalky limestone, mottled, shell fragments and bryozoa fragments.

4970-4980 Limestone, same as above, and bryozoa fragments.

4980-4990 Limestone, same as above, dirty sample.

4990-5000 Limestone, white, pinkish gray to yellow gray, sucrose.

5000-5010 Limestone, white, pinkish gray to yellow gray, and some mottling? bryozoa and other fossil fragments, and anhydrite.

5010-5020 Limestone, varicolored, pale yellow brown, mottling, crystalline to sucrose, bryozoa and other fossil fragments.

5020-5030 Limestone, light gray, pale yellow brown and yellow gray (mottling) and bryozoa brachiopod.

5030-5040 Limestone, white chalky, very light gray, few pale yellow brown crystalline, platy, dense.

5040-5050 Limestone, white, light gray, some yellow gray, anhydrite, sucrose and shell fragments.

5050-5060 Limestone, few white fragments, mainly yellow gray, lot of anhydrite and sand grains, (cave?) crystalline to sucrose, some gray shale.

5060-5070 Limestone, very light gray to yellow gray, crystalline to sucrose, anhydrite, and some sand cave?

5070-5080 Limestone, very light gray to white, crystalline to slightly sucrose and anhydrite.

5080-5090 Limestone, same as above, crystalline to slightly sucrose, bryozoa fragments, and anhydrite.

5090-5100 Limestone, same as above.

5100-5110 Limestone, yellow gray, crystalline to sucrose, and anhydrite.

5110-5120 Limestone, same as above, dirty sample, lot of gray shale cave?

5120-5130 Limestone, yellow gray, some pale yellow brown, few chalky white, crystalline to sucrose, anhydrite, and shale cavings?

5130-5140 Limestone, varicolored, mostly light, crystalline to sucrose, gray shale caving, anhydrite, bryozoa fragments, poor sample.

5140-5150 Limestone, varicolored, crystalline to sucrose, anhydrite, shale cavings?

5150-5160 Limestone, yellow gray, crystalline to sucrose, shell fragments.

5160-5170 Limestone, yellow gray, crystalline to sucrose, platy.

5170-5180 Limestone, yellow gray, coarsely crystalline to sucrose, few white fragments, other varicolored limestone and anhydrite.

5180-5190 Limestone, yellow gray, (mostly) and other varicolored limestone, crystalline to sucrose, bryozoa fragments.

5190-5200 Limestone, yellow gray to light brown, crystalline, and anhydrite.

5200-5210 Limestone, mainly yellow gray, some pinkish gray, gray shale (cave?) anhydrite, bryozoa fragments, mostly crystalline, and some sucrose.

5210-5220 Limestone, yellow gray, crystalline, some sucrose, anhydrite, bryozoa and shell fragments.

5220-5230 Limestone, same as above, much medium gray shale.

5230-5240 Limestone, much medium light gray shale, few fragments of splintery green gray shale.

5240-5250 Shale, mixed limestone and shale; shale, medium gray, to light gray to green gray, calcareous and pyritic shale.

5250-5260 Shale, same as above.

5260-5270 Shale, much green gray splintery shale, and some gray shale and limestone.

5270-5280 Shale, same as above, pyritic, slightly soapy.

5280-5290 Shale, same as above, some large pieces of gray shale cave?

5290-5300 Shale, green gray, some gray shale and limestone cave?

5300-5310 Shale, same as above, several rounded sand grains.

5310-5320 Shale, same as above, some rounded free sand grains, brachiopod.

5320-5330 Shale, same as above, few sand grains and some large pieces gray shale cave.

5330-5340 Shale, same as above, very few sand grains.

5340-5350 Shale, same as above, some nodular shale pebbles, and green shale.

5350-5360 Shale, same as above, very few sand grains, phosphate nodules.

5360-5380 Shale, same as above, few sand grains.

5380-5373 Circulation 30 minutes; shale same as above, with very few sand grains.

5373 Circulation 60 minutes; shale same as above, numerous rounded sand grains.

5375 Circulation 15 minutes; shale same as above, numerous rounded sand grains.

5375 Circulation 30 minutes; shale same as above, with numerous rounded sand grains.

5375 Circulation 60 minutes; shale same as above, fine to coarse rounded sand grains.

5380 Shale, same as above, mostly fine rounded sand, some coarse.