

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 83

Summary of the Peak Drilling Company Ohlhauser #1
Emmons County, North Dakota
Well #43 - Permit #56

By Carole Smith
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The Peak Drilling Company - #1 Ohlhauser, Emmons County, North Dakota.
Located: C NE SE, Section 8, T132N, R78W, (660 feet from east line, 1980 feet
from south line, Section 8) Elevation: 1820 DF.

The Peak Ohlhauser #1 was spudded December 18, 1951 and 207' of 10 3/4" casing was set with 125 sacks of cement. The original hole was lost while attempting to plug back and test the top of the Madison. A new hole was drilled to a depth of 3599 feet. After testing, the following plugs were set: 3555-3570 (7 sacks), 2615-2630 (7 sacks), 2345-2470 (50 sacks), 675-692 (8 sacks). A cap was welded on the surface casing and a 2" pipe welded to the cap was left projecting 4' above the ground. The cellar was filled with cement. Plugs were set in the original hole at: 5485-5500, 4470-4485, 4195-4210, 3555-3570, and 3595-3700. The well was abandoned January 27, 1952 at a total depth of 5885'. (granite at 5881)

CORES:

3582-3599

TESTS:

DST #1 (3569-3599): Open 1 hour, shut in 15 minutes, fair to good blow throughout; recovered 290' fluid; 30' mud; 260' muddy saltwater - FP 50#, BHSIP 1550#, HP 2000#.

FORMATION TOPS

Cretaceous System	
Niobrara Formation	1210
Greenhorn Formation	1820
Muddy	2268
Dakota	2475
Jurassic System	
Morrison Formation	2595
Sundance Formation	2660
Piper Formation	2865
Triassic System	
Spearfish Formation	3020
Mississippian System	
Amsden Formation	3050
Big Showy Group	3212
Charles Formation	3366
Mission Canyon Formation	3575
Lodgepole Formation	3900
Englewood Formation	4200

Devonian System - undifferentiated	4243
Silurian System	
Interlake	4492
Ordovician System	
Upper Stony Mountain	4600
Lower Stony Mountain	4650
Red River Formation	4748
Upper Winnipeg Sand	5350
Winnipeg Formation	5402
Winnipeg sand	5539
Granite	5881
Total Depth	5885

Formation tops were picked from samples and electric logs; not all lithologic formation tops were called. Colors were determined from the rock color chart.

200	210	Shale, light brownish gray, micaceous, lumpy.
210	300	Shale, light olive grey, micaceous, lumpy; much yellow green film; traces of a moderate reddish brown iron rock.
300	330	Shale, light olive grey to medium grey, micaceous, pyritic; small amount of white bentonite flecked with black at 320-330.
330	370	Shale, medium grey, increasingly lumpy and calcareous.
370	390	Shale; medium grey, mostly calcareous and bentonitic.
390	400	Limestone, white with black specks.
400	440	Shale, medium grey, partly lumpy, decreasingly calcareous; scattered amounts of chalky white limestone (410-440) as above.
440	490	Shale, light olive grey, micaceous, partly lumpy and calcareous. (Missing samples 450-480).
490	510	Shale, medium grey, partly lumpy and calcareous; traces of chalky limestone and moderate reddish brown iron rock.
510	540	Shale, light olive grey, a small amount is lumpy and calcareous.
540	550	Shale as above; plus a small amount of chalky white limestone with black specks.
550	580	Shale, medium light grey.
580	600	Shale, medium grey, somewhat brittle.
600	610	Shale, medium dark grey, greenish grey (5GY 6/1), slightly calcareous; much chalky, yellowish grey limestone.
610	640	Shale, medium grey; some greenish grey; traces of limestone.
640	660	Shale, medium light grey to medium grey.
660	800	Shale, medium grey; dense; scattered small amounts of dense, pale limestone and inoceramus fragments.
800	850	Shale, medium to medium dark grey, dense, brittle; scattered traces of inoceramus fragments, dense moderate yellow brown dolomite.
850	890	Shale; medium grey, dense and lumpy; traces of light brown (5YR 5/6), dense, dolomitic shale.
890	940	Shale, light olive grey, dense; scattered of dense moderate yellow brown dolomite, pyrite.
940	950	Missing samples.

950	970	Shale, medium grey and light olive grey, mottled, dense and lumpy shale; traces (950-960) of dense dolomite as above, and very fine, white sandstone.
970	980	Shale, medium light grey, dense; traces of dolomite and inoceramus fragments.
980	1010	Shale, light, olive grey, lumpy, pyritic, calcareous; traces of dense dolomite; some yellow brown, shaly siltstone (990-1000).
1010	1020	Missing samples.
1020	1120	Shale, medium grey, dense to lumpy, micaceous, pyritic, slightly bentonitic and calcareous; scattered traces of white bentonite, hard dense orange brown dolomite. Missing samples 1090-1110.
1120	1140	Shale, dark grey, micaceous to light olive grey dense and lumpy; traces of bentonite, inoceramus fragments.
1140	1160	Shale, dark grey, micaceous, dense to lumpy, pyritic; traces of white to pale yellow bentonite, calcareous and bentonitic, light olive grey shale (1150-1160).
1160	1190	Shale, medium dark grey, lumpy; calcareous, micaceous; traces of bentonite.
1190	1200	Missing samples.
1200	1250	Shaly limestone, medium dark grey, soft, white speckled; scattered traces of pyrite.
1250	1280	Shaly limestone as above; light olive grey, calcareous, micaceous shale (50%); traces of inoceramus fragments and pyrite.
1280	1290	Shaly, speckled limestone as above; traces of inoceramus prisms, pyrite, and light olive grey shale.
1290	1420	Shaly limestone, medium grey, lumpy, micaceous, pyritic; small amounts of light to dark grey shale, partly calcareous; traces of pyrite, inoceramus fragments, white bentonite.
1420	1430	Shale, medium grey, micaceous, slightly bentonitic, pyritic; traces of siderite ?
1430	1480	Shale, medium grey to light olive grey, partly calcareous and lumpy; traces of pyrite, shell fragments, siderite ?, limestone.
1480	1520	Shale, medium to medium dark grey, dense and lumpy; traces of shell fragments, limestone, bentonite.
1520	1560	Shale, medium grey to moderate greenish grey, dense to lumpy, pyritic, micaceous, traces of bentonite.
1560	1600	Shale, greenish grey, slightly silty, lumpy, calcareous and bentonitic in part.
1600	1700	Shale, light olive grey, green grey, micaceous, lumpy, partly calcareous and bentonitic; traces of pyrite, bentonite, inoceramus fragments.
1700	1730	Shale, medium grey, light olive grey, slightly calcareous and bentonitic, pyritic; traces of pyrite, bentonite, shell fragments, siderite ?
1730	1750	Shale, green grey, medium grey, lumpy, slightly bentonitic; traces of bentonite, pyrite, siderite ?
1750	1820	Shale, medium dark grey, dense to lumpy, pyritic, partly calcareous and/or bentonite, micaceous; traces of bentonite, pyrite.

1820	1830	Shale, medium light grey, medium grey, dense, hard; traces of pyrite, inoceramus fragments, limestone.
1830	1850	Limestone, sugary, fossiliferous (aragonitic); a small amount of shale as above; many inoceramus fragments.
1850	1940	Shale, dark grey; calcareous; limestone, fragmental, fossiliferous (inoceramus); some shaly, grey limestone; inoceramus fragments.
1940	2010	Shale, dark grey to grey black, partly lumpy and calcareous, micaceous; traces of inoceramus limestone, bentonite, inoceramus fragments.
2010	2060	Shale, greyish black, lumpy to dense, pyritic; some shale is light olive grey, micaceous.
2060	2070	Shale, same as above, only spotted and calcareous in part.
2070	2090	Shale, grey, black, dense, somewhat calcareous; much pale yellow to white, soft bentonite.
2090	2100	Shale, grey black, lumpy, calcareous, some bentonite.
2100	2120	Shale, light grey to grey black, partly lumpy and calcareous; some bentonite.
2120	2130	Shale, grey black, dense, micaceous, partly lumpy and limy; small amounts of bentonite and inoceramus fragments.
2130	2140	Shale, medium grey to grey black, partly lumpy slightly limy; small amounts of light olive grey, lumpy shale.
2140	2200	Shale, dark grey, micaceous, flaky; scattered traces of inoceramus limestone and fragments, pyrite.
2200	2210	Shale, medium grey to dark grey shale, partly lumpy, partly spotted; traces of pyrite and inoceramus limestone.
2210	2220	Shale, dark grey, flaky, brittle; some grey, spotted, limy shale; traces of inoceramus limestone.
2220	2240	Shale, medium dark grey to brownish grey, brittle, partly lumpy; traces of inoceramus fragments.
2240	2250	Shale, light grey to dark grey, flaky; some limy grey shale; traces of inoceramus limestone and fragments.
2250	2270	Shale, dark grey, brittle, partly light olive grey and brownish grey; scattered traces of inoceramus limestone and prisms, sugary white sandstone.
2270	2310	Shale, medium grey to dark grey, brittle, partly light olive grey, lumpy and silty.
2310	2340	Silty shale, light olive grey, lumpy; some dark shale as above; traces of light brown siderite ?
2340	2410	Shale, medium dark grey to grey black, partly lumpy and slightly limy, traces of pyrite, inoceramus prisms, bentonite; some light grey shale beginning at 2380.
2410	2440	Shale, medium dark grey to dark grey, brittle; traces of bentonite, pyrite, inoceramus prisms, spotted limy shale; a trace of glauconite sandstone and grey, sugary limestone at 2430.
2440	2480	Shale, medium dark grey to greyish black, becoming partly lighter and lumpy and slightly limy beginning at 2460.
2480	2500	Shale, greyish black to brownish black, brittle, slightly silty; small amounts of fine grained sandstone beginning at 2490.
2500	2540	Shale, medium dark gray to dark grey, brittle; small amounts of light grey shale with brown spots; scattered traces of pyrite, shale, sandstone, and radium light grey shaly siltstone.

2547 Circulation 1 hour. Shale, dark grey, traces of green and yellow green shale, quartzose sandstone, reddish brown concretions, and pyrite.

2550 2560 Shale as above; some medium dark grey, slightly limy shale; traces of reddish brown concretions (quartz) and shale.

2560 2590 Shale, dark grey, brittle, becoming slightly brownish at 2580, slightly limy; traces of pale yellow green shale and coarse, quartzose sandstone (becoming finer) beginning at 2580.

2590 2640 Shale, dark grey, slightly limy; traces of coarse to fine, quartzose sandstone; traces of greenish grey shale beginning at 2600 and increasing at 2610; small amounts of shaly siltstone and silty shale beginning at 2620.

2640 2660 Shale, dark grey, rather brittle, becoming partly brownish at 2650; some light olive grey shale; traces of pyrite and coarse sandstone.

2660 2670 Shale as above; much grey, lumpy, slightly bentonitic shale; traces of bentonite and grey siltstone.

2670 2690 Shaly siltstone, medium grey, small amounts of shale as above; traces of pale green shale.

2690 2720 Shale, grey, slightly greenish and limy; some shaly siltstone as above; scattered trace of shell fragments, pyrite, pale green shale, and reddish brown shale; missing samples 2710-2720.

2720 2730 Shale, medium dark grey to greenish grey, brittle; traces of glauconitic sandstone, shell fragments, pyrite, and limy, reddish brown shale.

2730 2740 Shale as above, some moderate reddish brown, limy, somewhat silty shale; traces of grey siltstone, pale green shale and pyrite.

2740 2750 Shale, light grey to dark grey, firm, brittle; small amounts of moderate reddish brown shale; traces of fine to coarse sandstone and grey siltstone.

2750 2770 Shale, dark grey to grey black, brittle; traces of limy, reddish brown shale and siltstone.

2770 2780 Shale, light grey to dark grey, slightly greenish in part, partly silty; small amounts of silty, reddish brown shale.

2780 2790 Shale, light grey to dark grey, firm; some limy white siltstone and fine sandstone; traces of reddish shale.

2790 2830 Shale, greenish grey to grey green, limy, silty, lumpy; small amounts of grey and silty reddish shale; scattered traces of siltstone, sandstone and pyrite.

2830 2860 Shale, greenish grey and pale olive, waxey, partly lumpy; small amounts of grey and reddish shale; traces of coarse sandstone and pyrite; much silty, shaly limestone beginning at 2850.

2860 2880 Siltstone, light olive grey to greenish grey, shaly, limy; small amounts of greenish grey and grey shale.

2880 2910 Limy dolomite, almost white, chalky to dense, argillaceous; some greenish grey shale; small amounts of black shale; traces of inoceramus fragments; trace of pinkish white chert, increasing greatly at 2900.

2910 2930 Limy dolomite, almost white, sublithographic, tiny vugs; much black and greenish shale; small amounts of reddish brown, silty shale.

2930	2960	Limestone, moderate red (5YR 5/4), micro-sugary; some limy dolomite as above; some shale as above, rather poor samples.
2960	2970	Limestone, pearly, dense; much dense, moderate red limestone; much greenish, lumpy, silty, limy shale.
2970	3030	Limy shale, moderate reddish brown, soft, lumpy, silty; some chalky white limestone; small amounts of black and green shales; traces of white anhydrite, increasing somewhat at 2990.
3030	3050	Shale, medium grey to dark grey, firm, some grey, glauconitic, limy, sandy shale; some very pale orange, micro-sugary dolomite; small amounts of white anhydrite and moderate reddish brown shale.
3050	3070	Shale, medium grey to dark grey, moderate reddish brown; some dolomite as above; some dense, pinkish limestone beginning at 3060; small amounts of greenish shale; traces of anhydrite and sandstone.
3070	3090	Shale, moderate reddish brown, some black, small amounts of anhydrite, increasing in quantity; small amounts of dense, pale dolomite with tiny vugs, increasing greatly in quantity at 3080.
3090	3100	Shale, moderate reddish brown, partly silty and sandy; some dark grey, brittle shale; some pink to greyish orange pink, micro-sugary to dense, argillaceous dolomite; small amounts of white anhydrite.
3100	3130	Dolomite, pale, sublithographic to dense; small amounts of reddish brown and black shale, increasing greatly in quantity at 3110.
3130	3160	Shale, reddish brown, slightly silty; some grey, black, and green shale; much light grey to white, fine sugary to dense dolomite, increasing in quantity at 3150.
3160	3200	Shale as above; much pale, dense and sublithographic dolomite, decreasing in quantity and ending at 3190; small amounts of white anhydrite.
3200	3210	Dolomite, greyish, micro-sugary to dense; much reddish, dark grey and greenish shale; traces of white anhydrite.
3210	3220	Shale, red, black, grey, green, lumpy; poor sample.
3220	3230	Shale, red, dark grey, and greenish; some micro-sugary to dense, pale yellow brown dolomite; small amounts of white anhydrite.
3230	3240	Shale, black to medium grey, firm, some red, green, and brownish; much greyish, micro-sugary to dense, slightly limy dolomite; small amounts of white anhydrite.
3240	3250	Shale, moderate reddish brown, silty; some fossiliferous, grey shale; much micro-sugary to dense, pale yellow brown dolomite; trace of pyrite and dusky yellow shale.
3250	3260	Dolomite, greyish orange-pink, fine sugary to micro-sugary, some shale as above; traces of anhydrite, sand and pyrite.
3260	3270	Shale, red, dark grey, light olive brown to dark greenish yellow; some dolomite as above; traces of sand, pyrite, and anhydrite.
3270	3280	Dolomite, dark grey, fine sugary to dense; some shale as above.
3280	3310	Shale, red, yellow, and grey, small amounts of pink, greenish, orangish shale; small amounts of dolomite and anhydrite; traces of limestone, pyrite and sand.

3310	3330	Shale, light olive brown, reddish brown, reddish purple, dark grey; small amounts of dense dolomite and anhydrite; traces of pyrite.
3330	3380	Shale, variegated, partly silty; traces of sand, pyrite and anhydrite; small amounts of medium to coarse, pale yellow to white, limy sandstone beginning at 3550; many round, very dark red, ironstone concretions beginning at 3360.
3380	3410	Limestone, white to very light grey, chalky to sub-lithographic, partly oolitic (3390-3400); some shale as above; traces of anhydrite, sand and iron concretions.
3410	3420	Dolomite, grey, dense to sublithographic, somewhat limy; some variegated shale as above; traces of anhydrite.
3420	3440	Limestone, almost white, dense to micro-sugary; some red and black shale; much light olive brown shale beginning at 3430; small amounts of white anhydrite.
3440	3460	Limestone, white to very pale yellow brown, micro-sugary to sublithographic; much red and black shale.
3460	3470	Limestone, very pale yellow brown, sugary and chalky, with tiny vugs, partly fine oolitic; some red, grey and black shale.
3470	3490	Limestone, white to very pale yellow brown, chalky to sub-lithographic; some red, grey, and black shale, traces of anhydrite.
3490	3500	Limy shale and shaly limestone, medium grey, lumpy; much shale as above.
3500	3540	Shale, dark grey to black, moderate reddish brown, partly limy; some pale, dense limestone beginning at 3510; traces of anhydrite and pyrite.
3540	3550	Shale, reddish and grey, partly limy; much very pale orange to light grey, fine sugary limestone; small amounts of dolomite.
3550	3570	Limestone, greyish orange pink, sublithographic; some grey and red shale, increasing in quantity; some chalky, shaly, grey limestone beginning at 3560.
3570	3580	Shale, moderate reddish brown to moderate red, partly silty, some grey; small amounts of anhydrite and dense limestone.
3580	3600	Limestone, very pale yellow brown, sublithographic to pseudo-oolitic, becoming greyish orange pink; small amounts of red and grey shale.
3600	3610	Shale, greys, some red and green, much pale yellow brown to greyish orange pink, chalky and crystalline limestone; traces of anhydrite.
3610	3613	Limestone, very pale orange, oolitic, partly chalky and crystalline; much red and grey shale.
3613	3650	Missing samples.
3650	3680	Limestone, very pale orange to light yellow grey, sublithographic to sugary; some red and grey shale; some dense, medium blue grey dolomite beginning at 3660; missing samples 3670-3680.
3680	3690	Dolomite, pale yellow brown to light olive gray, fine sugary; some shale and limestone as above, small amounts of white anhydrite; traces of pyrite.
3690	3700	Anhydrite, white; much white, fine sugary dolomite; much red, grey, and black shale; traces of pyrite.

3700 3710 Dolomite, white to light olive grey, fine sugary to dense; some white anhydrite.

3710 3720 Dolomite, white to very pale orange, micro-sugary to chalky; partly crystalline; some white anhydrite, much limy, medium dark grey shale.

3720 3730 Dolomitic limestone, pale yellow brown, pseudo-oolitic to sugary; small amounts of white anhydrite.

3730 3740 Limestone, very pale orange to pale yellow brown, sugary to oolitic; much brittle, black shale.

3730 3780 Limestone, pale yellow brown, sugary to oolitic; small amounts of green and reddish shales; some pale yellow brown, sugary, limy dolomite beginning at 3770.

3780 3790 Limestone, pale yellow brown, sugary; some dolomite as above; small amounts of red and dark grey shale.

3790 3800 Limestone, medium grey, fine sugary; some pale yellow brown, fine sugary, dolomite to limestone; small amounts of red, grey, green and black shales; traces of anhydrite.

3800 3810 Limestone, pale yellow brown, sugary, partly dolomitic; some grey, sugary limestone; traces of shell impressions and anhydrite.

3810 3830 Limestone, medium light grey to medium grey, fine sugary to crystalline, partly chalky and very pale yellow brown; shell impressions; some fine sugary, light olive grey shale beginning at 3820; small amounts of shale.

3830 3840 Limestone, pale yellow brown to grey, fine sugary to fragmental, traces of shale.

3840 3850 Limestone, very light grey, fragmental to chalky; some grey, micro-sugary, limy dolomite; some dark grey shale.

3850 3860 Limestone, light olive grey to grey, fine sugary to fragmental; partly chalky; shell impressions; some reddish brown and medium dark grey shale; traces of anhydrite.

3860 3870 Limestone, very pale yellow brown, chalky, pseudo-oolitic, tiny vugs; much moderate reddish brown (silty) and dark grey shale; small amounts of sugary, yellow brown dolomite; traces of pyrite.

3870 3890 Limestone, medium grey to light grey, fine sugary to fragmental; some grey, green, and reddish shale, increasing in quantity; traces of pyrite and anhydrite.

3890 3970 Shale, grey, reddish brown, light olive brown, and greenish; some grey, fragmental limestone; traces of anhydrite.

3970 3980 Shale as above; much light grey, fragmental limestone and dolomite.

3980 3990 Shale, reddish brown and black, mostly; much white anhydrite and grey, fragmental limestone.

3990 4010 Shale as above; some grey, fragmental limestone; small amounts of anhydrite, pyrite, and greenish shale.

4010 4030 Shale, medium grey to dark grey, partly limy, some red; small amounts of anhydrite, pyrite, and dense limestone.

4030 4050 Shale, light grey to dark grey, reddish brown; much anhydrite, pyrite, and fine sugary, grey limestone.

4050 4060 Shale as above, much fine sugary to fragmental, grey limestone, partly dolomitic; small amounts of white anhydrite and dense dolomite; shell fragments.

4060 4070 Limestone, greyish, fragmental to chalky; much grey, red, greenish, partly silty shale, traces of anhydrite, pyrite, and medium sand.

4070 4130 Limestone, light yellow grey to greyish orange, chalky to fine sugary, becoming whiter and more chalky; some shale as above; traces of sand, pyrite, and anhydrite; traces of light grey, slightly orange chert beginning at 4120.

4130 4150 Limestone, light yellow grey to light orangish brown, fine sugary; some grey and red shale; traces of light yellow grey chert; missing samples 4140-4150.

4150 4160 Shale, medium grey to medium dark grey, firm, partly limy, pyritic.

4160 4170 Shale, dark grey and olive black, small amounts of reddish brown and pale green; some limestone as above, traces of anhydrite and dolomite.

4170 4180 Shale, red, greys, greenish, partly limy; some limestone as above; some sugary, yellow brown dolomite; traces of anhydrite.

4180 4190 Shale, as above, partly silty; pale greyish and brownish; chalky to micro-sugary limestone; traces of anhydrite and pyrite.

4190 4200 Limestone, pale, dense; some shale as above.

4200 4210 Shale, red, grey, green, partly limy; much limestone as above; traces of anhydrite.

4210 4220 Shale, light to dark grey, partly limy, small amounts of reddish and greenish; much limestone as above; small amounts of dolomite.

4220 4250 Shale, medium grey to medium dark grey, reddish brown, greenish grey, partly limy; some chalky to sugary, pale limestone and dolomite; some pyrite and white anhydrite beginning at 4230.

4250 4280 Limestone, very pale yellow brown, sugary; much of weathered chert; traces of shale; a small amount of dense, pale dolomite (4260-4270).

4280 4290 Shale, reddish, greenish, grey, some yellow brown, fine sugary to micro-sugary dolomite; traces of limestone, anhydrite, pyrite and shell fragments.

4290 4310 Limestone to dolomite, pale yellow brown, fine sugary to micro-sugary; some weathered chert and dark grey shale, traces of pyrite and anhydrite.

4310 4320 Dolomite, pale yellow brown, sugary; much pale yellow brown and light grey, micro-sugary dolomite; some weathered chert and grey shale.

4320 4330 Dolomite, pale yellow brown, dense, partly sugary; some weathered chert and dark grey shale.

4330 4340 Dolomite, pale yellow grey, fine sugary; small amounts of lithographic limestone, weathered chert, and dark grey shale.

4340 4390 Dolomite, yellow brown, fine to medium sugary, partly dense (4360-80); traces of limestone, shale, chert, pyrite, and anhydrite.

4390 4400 Dolomite, pale yellow brown to moderate red, micro-sugary to fine sugary; some moderate reddish brown, greenish, and grey shale.

4400 4410 Shale, reddish, grey to black, greenish grey; some dense to fine sugary, pale dolomite to limestone; traces of pyrite, anhydrite, coarse sandstone and moderate red dolomite.

4410 4420 Dolomite, very pale yellow brown to light yellow grey, fine sugary; some shale as above; small amounts of micro-sugary limestone; traces of pyrite and anhydrite.

4420 4430 Limestone, light brown to light grey, micro-sugary to sub-lithographic; small amounts of dolomite as above and dark grey shale.

4430 4440 Dolomite, pale yellow brown to yellow brown, sugary; much pale, micro-sugary to chalky; small amounts of shale.

4440 4450 Shale, variegated (red, grey, reddish purple, light olive brown, dusky yellow), partly silty; much dense, white to very pale yellow brown limestone; traces of rounded sand and pyrite.

4450 4470 Dolomite, pale yellow brown to light olive grey, dense to fine sugary; some greenish, grey, and reddish shale, increasing somewhat in quantity; traces of pyrite, anhydrite, and limestone.

4470 4490 Dolomite, pale yellow brown to pale yellow grey, slightly green, fine sugary to dense; traces of shale, anhydrite, and pyrite.

4490 4500 Limestone, greyish orange pink to very pale yellow brown, dense to fine sugary; small amounts of dolomite, some shale as above.

4500 4510 Shale, greenish grey, some grey and moderate, reddish brown; much dense to fine sugary, very pale orange, partly pseudo-oolitic limestone.

4510 4530 Dolomite, very pale orange, very fine sugary to finely oolitic; much grey and green shale, increasing in quantity.

4530 4540 Dolomite, very pale orange, dense to coarse sugary; some grey and green shale.

4540 4550 Limy dolomite, very pale orange, fine sugary to sub-lithographic; some shale.

4550 4560 Dolomite; very pale orange, dense, slightly limy; much greenish shale, some grey and moderate reddish brown.

4660 4570 Shale, grey, and greenish; some dense, very pale orange limestone; some pale pink, dense, shaly limestone; small amounts of dolomite as above.

4570 4580 Dolomite, very pale orange, dense; much grey, greenish, and reddish brown shale; traces of pink shale, pyrite, anhydrite and limestone.

4580 4590 Dolomite, pale orange, very fine sugary to sugary; much greyish green and dark grey shale; some dense limestone; traces of reddish shale and pyrite.

4590 4600 Shale as above; much pale orange, dense, slightly limy dolomite; some dense limestone.

4600 4610 Dolomite, very pale orange, dense to micro-sugary; some very pale orange, dense limestone; much shale as above.

4610 4620 Limestone and dolomite, pale yellow brown to pale orange brown, dense, to fine sugary, much green and grey, partly limy shale.

4620 4630 Dolomite as above; small amounts of limestone; some shale as above.

4630 4640 Dolomite, pale yellow brown to pale orange, micro-sugary to chalky; some shale as above.

4640 4650 Shale, dark grey, moderate reddish brown, and greenish grey, much dolomite as above.

4650 4670 Shale as above; much very pale orange to light yellow grey to light grey, micro-sugary to sublithographic dolomite; missing samples 4660-4670.

4670 4680 Dolomite, greyish orange pink to white, dense to micro-sugary; some grey shale.

4680 4700 Dolomite, very pale orange to pale yellow grey, dense to micro-sugary; much medium dark grey shale, becoming rather greenish; traces of reddish brown shale and dense, grey limestone and bryozoa.

4700 4720 Dolomite, very pale orange to light olive grey, fine sugary; much shale as above; small amounts of greyish, fragmental and chalky limestone.

4720 4730 Shale, grey, reddish, and greenish; some medium grey to very pale orange, fine to medium sugary; traces of dolomite as above.

4730 4740 Limestone, medium grey to medium dark grey, fragmental; some shale and very pale orange dolomite; traces of chalky limestone, reddish shale, and pyrite.

4740 4750 Limestone, dark grey, chalky to fragmental; much very pale orange to yellow grey, fine sugary to micro-sugary dolomite; much shale, bryozoa.

4750 4760 Limestone, medium dark grey to white, fragmental and chalky; some very pale orange, micro-sugary limestone and dolomite; some green and grey shale; traces of pyrite, bryozoa and shell fragments.

4760 4770 Shale, dark grey to greenish grey; much very light grey, chalky to lithographic limestone.

4770 4780 Limestone, white to light yellow grey, chalky to sublithographic; some shale as above.

4780 4820 Limestone, very pale orange to very light grey, very fine sugary to sublithographic; some dark, grey and greenish shale; small amounts of pale yellow brown, fine sugary, dolomitic limestone beginning at 4800.

4820 4830 Limestone, white to pale orange, very fine sugary to chalky, partly vuggy; small amounts of grey, red and green shale, traces of pyrite, bryozoa, and shell fragments.

4830 4850 Limestone, white to pale orange to moderate reddish orange, very fine sugary, partly crystalline; traces of shale.

4850 4880 Dolomite, very pale orange to pale yellow grey, very fine sugary to sublithographic, becoming rather limy at 4870; traces of shale.

4880 4900 Limestone, light yellow grey to very pale orange, very fine sugary to dense, partly dolomitic; traces of shell fragments, pyrite, and shale.

4900 4920 Limestone, pale yellow grey to very pale orange, very fine sugary, slightly dolomitic; traces of dolomite, shale and pyrite.

4920 4940 Limestone, pale yellow brown, fine sugary to medium sugary, partly dolomitic; traces of chert and shell fragments beginning at 4930.

4940 4970 Limestone, pale yellow brown to light yellow grey, fine sugary to medium sugary; becoming partly chalky; traces of shell fragments, chert and shale.

4970 4980 Limestone, pale yellow brown to white, medium sugary, partly chalky, partly dolomitic, traces of shale, pyrite, chert, bryozoa, and shell fragments.

4980 5000 Limestone, pale orange, lithographic to micro-sugary; some pale green and black shale, decreasing in quantity.

5000 5040 Limestone, pale yellow brown, chalky to medium sugary; traces of pyrite, bryozoa, chert, and shale.

5040 5060 Limestone, white to pale yellow brown to greyish, chalky to fragmental; traces of chert, pyrite, and anhydrite.

5060 5070 Limestone, pale yellow brown, sugary; traces of chert and shell fragments.

5070 5080 Limestone, white to pale yellow brown, chalky to medium sugary, traces of pyrite.

5080 5120 Limestone, pale yellow brown to pale orange to white, sugary to chalky, partly dolomitic; much silty, dark greenish grey shale (5090-5100); traces of pyrite, shale, bryozoa, and shell fragments; the limestone is partly fragmental.

5120 5140 Limestone, very pale yellow brown to white, chalky to very fine sugary, partly fragmental, fossiliferous; traces of silty greenish shale, chert and anhydrite.

5140 5160 Limestone, white to pale yellow brown, chalky to medium sugary, slightly dolomitic in parts, small amounts of chert, increasing somewhat in quantity.

5160 5200 Limestone as above; much very light grey chert; much dark grey and greenish shale (5170-5180); traces of pyrite and shale.

5200 5230 Limestone, very pale yellow brown to white, chalky to micro-sugary; small amounts of chert; much greyish green, dark grey, and reddish brown shale beginning at 5210; traces of pyrite and shell fragments.

5230 5240 Limestone, very pale orange to light yellow grey, dense to fragmental, partly vuggy, partly fossiliferous; small amounts of grey and green shale; traces of pyrite, chert and shell fragments.

5240 5300 Shale, greyish black, moderate reddish brown, dark greenish grey; much white to light yellow grey, sublithographic to micro-sugary limestone, increasing in quantity at 5260; traces of chert and pyrite.

5300 5318 Limestone, pale, micro-sugary to sublithographic; some greenish and grey shale, decreasing in quantity; traces of pyrite and chert.

5318 5330 Limestone, very pale orange to light yellow grey, dense to very fine sugary; much grey black to greenish shale; traces of pyrite, chert and bryozoa.

5330 5340 Shale, greys and greens; some pale, micro-sugary to sublithographic limestone; traces of pyrite, bryozoa, chert and fine sandstone.

5340 5360 Shale, light grey to dark grey, greenish, partly silty and limy; much light grey to light yellow grey, sublithographic to micro-sugary; traces of pyrite, chert, shell fragments, and bryozoa.

5360	5380	Shale, moderate reddish brown, grey, greenish, partly silty; much white to pale yellow brown, chalky to fine sugary limestone; traces of pyrite and chert.
5380	5410	Limestone, white to light yellow grey, dense to chalky to micro-sugary; much dark grey to black shale, small amounts of reddish; traces of pyrite, chert, bryozoa, sandstone and shell fragments.
5410	5570	Shale, greyish green, splintery; scattered traces of red and black shale, pyrite, bryozoa, and shell fragments; traces of fine sandstone beginning at 5540 and becoming coarser and greater in quantity there after.
5570	5710	Sandstone, rather coarse, green specked; much splintery greenish shale; small amounts of very coarse rounded, quartz sand beginning at 5630 and increasing in quantity.
5710	5760	Sandstone, medium, quartzose, green specked; much grey green, splintery shale, increasing greatly in quantity at 5740.
5760	5880	Shale, grey green, splintery; much medium, quartzose, green specked sandstone; traces of sand.
5881		Granite.
5885		Total Depth.