NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 95

Summary of the Wm. H. Hunt and Zach Brooks Drilling Co. State #1
Bowman County, North Dakota
Well #485, Permit #501

By Morton Strassberg
November 1954

Wm. H. Hunt and Zach Brooks Drilling Co. - State #1, Bowman County, North Dakota C NW NW Section 16, T. 129N., R. 104W. (660 feet from N. line and 660 feet from W line). Elevation G.L. 3200, K.B. 3212.

The Wm. H. Hunt - Zach Brooks - State #1 was spudded December 6, 1953 and 13 3/8" casing was cemented at 750 feet with 550 sacks of cement. Seven inch casing was cemented at 10,000 feet with 1200 sacks of cement. The well was completed as a dry hole April 2, 1954 and was abandoned. Total depth 10,013 feet.

DST #1 9186-9220 - Packers failed to seat. Miss-Run.

DST #2 9176-9221 - Tool open 3 hours. Shut in 30 minutes. Air immediately, weak blow for 90 minutes increasing to good blow which lasted for duration of test. No gas or fluid to surface. Recovered 61 stands of gas (5490'), 15 feet dark brown free oil; 175 feet heavily oil and gas cut drilling mud; 990 feet oil cut water; 570 feet slightly oil cut salt water. FP 470-475#, HP 4995-4870#, BHSIP in 30 minutes 3315#.

DST #3 9270-9332 - Tool open 4 hours. Shut in 30 minutes. Air immediately, weak blow for 150 minutes and died. Dead for 70 minutes. Weak blow for 60 minutes and died. Dead for remainder of test. No gas or fluid to surface. Recovered 60 feet slightly oil cut water; 420 feet oil and gas cut water; 270 feet muddy water. FP 120-370#, HP 5000-4900#, BHSIP in 30 minutes 2860#.

DST #4 9335-9346 - Tool open 4 hours. Shut in 30 minutes. Air immediately, weak blow for 123 minutes and died. Dead for 32 minutes. Very weak blow for 1 hour and 26 minutes and died. Dead for remainder of test. No gas or fluid to surface. Recovered 184 feet muddy water and 400 feet of salt water, no shows of oil and gas. FP 130-200#, HP 5025-5015#, BHSIP in 30 minutes 2910#.

DST #5 9350-9402 - Tool open 4 hours. Shut in 30 minutes. Air immediately, gas to surface. Recovered 90 feet oil and gas cut mud; 240 feet thick, greasy, heavy, black frothy free oil estimated to be 29° API gravity; 180 feet oil cut water estimated to be 50%, 270 feet water with trace of oil; and 630 feet salt water. FP 100-455#, HP 5025-4955#, BHSIP in 30 minutes 3055#.

DST #6 9400-9460 - Tool open 4 hours. Shut in 30 minutes. Air immediately, weak blow for 60 minutes increasing to good blow which lasted throughout test. No gas or fluid to surface. Recovered 240 feet of muddy water and 780 feet of salt water. FP 100-450#, HP 4975-4925#, BHSIP in 30 minutes 3150#.
No cores were taken.

Cement plugs were set at the following depths:
- **Surface with 10 sacks**
- 749- 809 with 30 sacks
- 4670-4720 with 20 sacks
- 7530-7580 with 20 sacks
- 9105-9155 with 20 sacks

Formation tops were determined from samples and electric, micro and radioactivity logs and were corrected to electric log tops unless otherwise noted. Not all lithologic tops were called in the following list. Colors were determined from the rock color chart.

### Formation Tops

**Cretaceous System**
- Niobrara Formation 3130
- Greenhorn Formation 3735
- Dakota 4720

**Jurassic System**
- Morrison Formation 4952 Samples
- Sundance Formation 5088
- Piper Formation 5690

**Triassic System**
- Spearfish Formation 5884

**Permian System**
- Minnekahta Formation 6330
- Opeche Formation 6373

**Pennsylvanian System**
- Minnelusa Formation 6473

**Mississippian System**
- Amsden Formation 6625
- Kibbey Limestone 6990
- Charles Formation 7109
- Mission Canyon Formation 7574
- Lodgepole Formation 7915
- Englewood Formation? 8360 Radioactivity

**Devonian System - Top**
- Ashern Formation 8400
- 8596

**Silurian System**
- Interlake Group 8660

**Ordovician System**
- Upper Stony Mountain 8980
- Lower Stony Mountain 9102
- Red River Formation 9160
- Winnipeg Formation 9709
- Winnipeg Limestone 9803
- Winnipeg Sandstone 9952

2000-2020 Shale, light to medium gray bentonitic.
2020-2040 Shale, medium dark and light olive gray silty.
2040-2060 Shale, medium light gray bentonitic and light olive gray.
<table>
<thead>
<tr>
<th>Time Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2060-2090</td>
<td>Shale, medium light to medium gray, bentonitic.</td>
</tr>
<tr>
<td>2090-2100</td>
<td>Shale, medium dark to dark gray, white specks.</td>
</tr>
<tr>
<td>2100-2130</td>
<td>Shale, medium light to medium gray, shell fragments.</td>
</tr>
<tr>
<td>2130-2150</td>
<td>Shale, medium light to medium gray bentonitic.</td>
</tr>
<tr>
<td>2150-2160</td>
<td>Shale, medium light and light olive gray.</td>
</tr>
<tr>
<td>2160-2190</td>
<td>Shale, medium light and light olive gray, shell fragments.</td>
</tr>
<tr>
<td>2190-2230</td>
<td>Shale, medium light to medium gray and light olive gray.</td>
</tr>
<tr>
<td>2230-2240</td>
<td>Shale, medium light to medium dark gray, calcareous, and light olive gray shell fragments.</td>
</tr>
<tr>
<td>2240-2260</td>
<td>Shale, pale brown.</td>
</tr>
<tr>
<td>2260-2270</td>
<td>Shale, medium light to medium gray bentonitic and pale brown.</td>
</tr>
<tr>
<td>2270-2290</td>
<td>Shale, medium light to dark gray, pyritic and pale brown.</td>
</tr>
<tr>
<td>2290-2300</td>
<td>Shale, medium to medium dark gray and pale brown.</td>
</tr>
<tr>
<td>2300-2360</td>
<td>Shale, medium light to medium gray and pale brown calcareous, shell fragments.</td>
</tr>
<tr>
<td>2360-2370</td>
<td>Shale, medium gray, calcareous, shell fragments.</td>
</tr>
<tr>
<td>2370-2420</td>
<td>Shale, medium light to medium gray, calcareous, bentonitic and light olive gray, shell fragments.</td>
</tr>
<tr>
<td>2420-2450</td>
<td>Shale, medium gray, bentonitic, calcareous and pale brown, shell fragments.</td>
</tr>
<tr>
<td>2450-2480</td>
<td>Shale, medium light to medium gray, calcareous, bentonite, and shell fragments.</td>
</tr>
<tr>
<td>2480-2500</td>
<td>Shale, medium gray bentonitic and pale brown shell fragments.</td>
</tr>
<tr>
<td>2500-2520</td>
<td>Shale, medium light to medium gray, bentonitic, calcareous.</td>
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<tr>
<td>2520-2540</td>
<td>Shale, medium gray, bentonitic, calcareous and pale brown.</td>
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<td>2540-2630</td>
<td>Shale, medium gray, bentonitic, calcareous, shell fragments.</td>
</tr>
<tr>
<td>2630-2670</td>
<td>Shale, medium light to medium gray, calcareous.</td>
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<tr>
<td>2670-2700</td>
<td>Shale, medium gray, bentonitic and pale brown.</td>
</tr>
<tr>
<td>2700-2740</td>
<td>Shale, medium to medium dark gray, calcareous, shell fragments.</td>
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<td>2740-2760</td>
<td>Shale, medium light to medium gray, calcareous, bentonitic.</td>
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<td>2760-2820</td>
<td>Shale, medium to medium dark gray, calcareous, shell fragments.</td>
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<td>2820-2910</td>
<td>Shale, medium light to medium gray, calcareous, shell fragments.</td>
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<td>2910-2960</td>
<td>Shale, medium gray, calcareous.</td>
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<td>2960-2970</td>
<td>Shale, medium to medium dark gray, calcareous.</td>
</tr>
<tr>
<td>2970-3010</td>
<td>Shale, medium light to medium gray, calcareous.</td>
</tr>
<tr>
<td>3010-3050</td>
<td>Shale, medium light to medium gray, calcareous, silty.</td>
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<tr>
<td>3050-3080</td>
<td>Shale, medium and medium dark gray, calcareous.</td>
</tr>
<tr>
<td>3080-3090</td>
<td>Shale, medium gray, calcareous.</td>
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<tr>
<td>3090-3140</td>
<td>Shale, medium and medium dark gray, calcareous.</td>
</tr>
<tr>
<td>3140-3150</td>
<td>Shale, medium light to medium gray.</td>
</tr>
<tr>
<td>3150-3160</td>
<td>Shale, medium light and light olive gray.</td>
</tr>
<tr>
<td>3160-3210</td>
<td>Shale, medium light and medium dark gray, white specks, calcareous.</td>
</tr>
<tr>
<td>3210-3230</td>
<td>Shale, medium dark to dark gray, white specks, calcareous.</td>
</tr>
<tr>
<td>3230-3250</td>
<td>Shale, medium to dark gray, white specks, calcareous.</td>
</tr>
<tr>
<td>3250-3300</td>
<td>Shale, medium light to medium gray, calcareous.</td>
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<td>3300-3310</td>
<td>Shale, medium light and dark gray, calcareous.</td>
</tr>
<tr>
<td>3310-3350</td>
<td>Shale, medium light and medium dark gray, white specks, calcareous.</td>
</tr>
<tr>
<td>3350-3390</td>
<td>Shale, medium dark to dark gray, white specks, calcareous.</td>
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<tr>
<td>3390-3400</td>
<td>Shale, medium light to medium gray, calcareous.</td>
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<tr>
<td>3400-3520</td>
<td>Shale, medium dark to dark gray, white specks, calcareous and medium light gray.</td>
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</tbody>
</table>
3520-3530 Shale, medium dark to dark gray, white specks, calcareous.
3530-3540 Shale, medium dark to dark gray, white specks, calcareous and light olive gray.
3540-3640 Shale, medium dark to dark gray, white specks, calcareous and medium gray.
3640-3660 Shale, medium gray and medium dark gray, white specks, calcareous.
3660-3670 Shale, medium gray.
3670-3680 Shale, dark gray, white specks, calcareous.
3680-3700 Shale, medium dark to dark gray, white specks, calcareous and medium gray.
3700-3760 Shale, medium gray.
3760-3790 Shale, dark gray, white specks, calcareous, light gray siltstone.
3790-3810 Shale, medium to medium dark gray, light gray calcareous siltstone.
3810-3840 Shale, medium to medium dark gray, white specks, calcareous.
3840-3850 Shale, medium to medium dark gray, white specks, calcareous.
3850-3860 Shale, dark gray, light gray siltstone.
3860-3970 Shale, light to dark gray.
3970-4010 Shale, medium light to medium gray, bentonitic.
4010-4050 Shale, medium gray bentonitic and dark gray.
4050-4100 Missing.
4100-4150 Shale, medium light to medium gray, bentonitic.
4150-4200 Shale, medium light gray, bentonitic.
4200-4390 Shale, medium light gray bentonitic and dark gray.
4390-4410 Shale, dark gray.
4410-4550 Shale, medium light gray, bentonitic and dark gray.
4550-4560 Shale, dark gray, fine grained sandstone.
4560-4580 Missing.
4580-4680 Shale, dark and olive gray.
4680-4730 Shale, dark gray, light gray siltstone.
4720-4750 Shale, dark gray, glauconitic siltstone.
4750-4790 Siltstone, light gray and glauconitic.
4790-4850 Sandstone, fine grained, slightly iron stained.
4850-4870 Sandstone, fine grained, silty.
4870-4900 Sandstone, fine grained silty and very coarse grained.
4900-4920 Sandstone, fine grained, calcareous.
4920-4950 Sandstone, fine grained, calcareous and very coarse grained subangular.
4950-4960 Sandstone, fine grained, calcareous, light gray siltstone.
4960-4980 Shale, medium gray, medium gray siltstone.
4980-5010 Missing.
5010-5030 Sandstone, white fine grained. Glaucnotic siltstone.
5030-5100 Shale, medium gray. Light gray siltstone.
5100-5160 Shale, medium gray and greenish gray.
5160-5170 Shale, medium to medium dark gray. Glaucnotic siltstone.
5170-5190 Shale, medium to medium dark gray. Light gray, calcareous slightly glauconitic siltstone.
5190-5250 Shale, medium to medium dark and greenish gray. Light gray, slightly glauconitic calcareous siltstone.
5250-5280 Shale, medium to medium dark gray. Light gray siltstone.
5280-5320 Shale, medium to medium dark and dark greenish gray. Glaucnotic siltstone.
5320-5350  Siltstone, very light gray, calcareous, glauconitic.
5350-5420  Shale, medium and greenish gray. Light gray, glauconitic, calcareous, siltstone.
5420-5440  Siltstone, light gray, slightly calcareous. Medium to medium dark gray shale.
5440-5470  Shale, medium to medium dark gray. Light gray partially glauconitic and pyritic siltstone.
5470-5510  Siltstone, very light gray, slightly calcareous. Medium to medium dark gray shale.
5510-5540  Shale, medium to medium dark gray. Very light gray calcareous siltstone.
5540-5570  Shale, medium to light olive gray.
5570-5590  Shale, medium light and greenish gray.
5590-5680  Missing.
5680-5700  Limestone, light gray, argillaceous, fine grained.
5700-5720  Dolomite, yellowish gray, sublithographic to microsucrosic.
5720-5750  Dolomite, pale red, sublithographic to microsucrosic.
5750-5780  Shale, medium to medium dark gray.
5780-5820  Siltstone, pale red.
5820-5830  Siltstone, pale red, white gypsum.
5850-5860  Siltstone, pale to gray red, argillaceous.
5860-5870  Limestone, pale brown, sublithographic.
5870-5880  Poor sample.
5880-5900  Siltstone, pale red. White to pale red anhydrite. Greenish gray shale.
5900-5920  Siltstone, very light gray to glauconitic. Greenish gray siltstone.
5920-5930  Shale, dark reddish brown, silty. Glaucnitic siltstone.
5930-5950  Shale, dark reddish brown, silty.
5950-5970  Shale, dark reddish brown, silty. Grayish red siltstone and iron stained free quartz.
5970-6100  Shale, dark reddish brown, silty.
6100-6120  Anhydrite, pale red.
6120-6190  Shale, dark reddish brown, silty. White to pale red anhydrite.
6190-6210  Anhydrite, white to pale red.
6210-6320  Shale, dark reddish brown, silty. White to pale red anhydrite.
6320-6340  Siltstone, pale reddish brown, argillaceous. White to pale red anhydrite.
6340-6350  Anhydrite, white to pale red. Dark reddish brown argillaceous shale.
6350-6370  Limestone, white to pinkish gray, chalky. Pale red anhydrite.
6370-6400  Limestone, pale red, argillaceous.
6400-6410  Shale, medium dark to dark gray. Dark reddish brown silty shale.
6410-6430  Shale, grayish red to dark reddish brown.
6430-6470  Anhydrite, white to pale red. Dark reddish brown argillaceous fine to medium grained sandstone.
6470-6500  Shale, grayish red. White to pale red anhydrite.
6500-6510  Dolomite, very light to pale red, microsucrosic.
6510-6520  Shale, greenish gray and grayish red. Greenish gray sucrosic dolomite.
6520-6530  Dolomite, pale red, microsucrosic.
6530-6540  Siltstone, pale red. Pale red to pale brown, microsucrosic dolomite.
6540-6560  Siltstone, white to pale red and fine grained sandstone.
6560-6580 Anhydrite, white.
6580-6590 Shale, gray red and pale reddish brown, silty white and pale red anhydrite.
6590-6600 Dolomite, pale red to pale brown, anhydritic.
6600-6650 Anhydrite, white to pale red. Fine grained sandstone.
6650-6820 Dolomite, pale red, microsucrosic, arenaceous.
6820-6850 Dolomite, pale red to grayish orange, microsucrosic to sucrosic.
6850-6860 Shale, grayish red. Pale red sucrosic dolomite.
6860-6870 Siltstone, pale reddish brown, argillaceous. Pale red arenaceous dolomite.
6870-6890 Shale, moderate red. Very light to pinkish gray sublithographic limestone.
6890-6910 Dolomite, grayish orange pink, microsucrosic, argillaceous.
6910-6930 Dolomite, grayish orange, pink, microsucrosic.
6930-6950 Limestone, pale yellowish brown, fragmental, dolomitic.
6950-6960 Missing.
6960-6970 Anhydrite, white to pinkish gray, arenaceous.
6970-6990 Siltstone, pale reddish brown, argillaceous and fine grained sandstone.
6990-7000 Sandstone, pale red to pale reddish brown, fine to medium grained.
7000-7915 Missing.
7915-7925 Limestone, light to medium gray, fine grained to sublithographic, argillaceous.
7925-7940 Missing.
7940-7945 Limestone, very light gray, chalky and pale yellowish brown fragmental.
7945-7980 Missing.
7980-7985 Dolomite, white to yellowish gray, microsucrosic.
7985-8000 Missing.
8000-8060 Dolomite, grayish orange. Pink, microsucrosic, cherty.
8060-8090 Dolomite, pale yellowish brown to yellowish gray, fine grained, highly cherty.
8090-8100 Limestone, pinkish gray to pale yellowish brown, fragmental, cherty.
8100-8110 Limestone, grayish orange pink, oolitic.
8110-8190 Dolomite, pale red to grayish orange pink, sucrosic to fragmental, calcareous.
8190-8200 Limestone, yellowish gray to pale yellowish brown, oolitic.
8200-8260 Limestone, yellowish gray to pale yellowish brown, fine grained to fragmental.
8260-8290 Limestone, pale yellowish brown to pale red, fine grained to sucrosic, dolomitic.
8290-8300 Dolomite, grayish orange pink, sucrosic, calcareous. White chert.
8300-8320 Limestone, yellowish gray to pale yellowish brown, fine grained, dolomitic.
8320-8360 Limestone, yellowish gray to pale red, fine grained to fragmental, dolomitic.
8360-8370 Dolomite, yellowish gray to pale yellowish brown, microsucrosic.
8370-8380 Siltstone, pale red to pale reddish brown, argillaceous.
8380-8400 Dolomite, pale yellowish brown, microsucrosic to fine grained.
8400-8420 Dolomite, pale red and pale yellowish brown, cherty.
8420-8430 Dolomite, pale yellowish brown, sucrosic, cherty.
8430-8440 Dolomite, pale yellowish brown and pale red, sucrosic.
8440-8450 Shale, medium dark gray. Yellowish gray sucrosic dolomite.
8450-8460 Dolomite, pale yellowish brown, sucrosic.
8460-8470 Dolomite, pale yellowish brown and pale red sucrosic.
8470-8490 Dolomite white and pale yellowish brown sucrosic. White chert.
8490-8585 Dolomite, pale yellowish brown and pale red sucrosic.
8585-8608 Dolomite, pale yellowish to pale brown, sucrosic to sublithographic.
8608-8645 Shale, medium to medium dark and silty pale reddish brown.
8645-8670 Shale, pale red, highly calcareous and medium to medium dark gray. Medium grained free quartz.
8670-8700 Dolomite, white to yellowish gray and pale red sucrosic.
8700-8740 Dolomite, yellowish gray and pale yellowish brown.
8740-8770 Dolomite, white to yellowish gray, microsucrosic.
8770-8780 Dolomite, yellowish gray to pale yellowish brown, sucrosic. White chert.
8780-8880 Dolomite, white to pale yellowish brown, microsucrosic to sublithographic.
8880-8890 Dolomite, white to pale yellowish brown and pale red sucrosic.
8890-9005 Dolomite, white to yellowish gray, microsucrosic to sublithographic.
9005-9075 Dolomite, yellowish gray and pale red, microsucrosic to sublithographic.
9075-9090 Dolomite, light to medium light gray, pale red and yellowish gray, microsucrosic.
9090-9105 Dolomite, light to medium light gray, argillaceous, microsucrosic
9105-9140 Dolomite, light to medium light gray, argillaceous. Medium to medium dark gray shale.
9140-9155 Limestone, light to medium gray, fragmental, argillaceous.
9155-9220 Limestone, light to medium gray, fragmental, fossiliferous.
9220-9230 Lost circulation
9230-9245 Limestone, very light to medium gray, fragmental.
9245-9250 Limestone, yellowish gray to pale yellowish brown, fine grained to chalky.
9250-9265 Limestone, yellowish gray to medium gray and pale brown, fine grained to fragmental and sublithographic. Some carbonaceous residue.
9265-9295 Limestone, yellowish gray to pale brown, fine grained to fragmental.
9295-9305 Dolomite, yellowish gray to pale yellowish brown, fine grained to sublithographic.
9305-9325 Dolomite, pale yellowish brown, sublithographic.
9325-9335 Dolomite, pale brown, sucrosic, oil saturated.
9335-9345 Dolomite, grayish orange pink to pale yellowish brown.
9345-9390 Dolomite, pale yellowish brown, sublithographic.
9390-9465 Dolomite, pale to grayish brown, sucrosic, oil saturated.
9465-9505 Dolomite, pale brown, sucrosic. Pale yellowish brown, fragmental limestone.
9505-9540 Dolomite, pale yellowish brown, sucrosic, calcareous. Pale yellowish brown, fragmental limestone.
<table>
<thead>
<tr>
<th>Period</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9540-9655</td>
<td>Dolomite, pale yellowish brown to pale brown, sucrosic, calcareous, fragmental in part.</td>
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<tr>
<td>9655-9670</td>
<td>Limestone, yellowish gray to pale yellowish brown, fine grained to fragmental, dolomite.</td>
</tr>
<tr>
<td>9670-9710</td>
<td>Limestone, pale yellowish to pale brown, fragmental to sub-lithographic.</td>
</tr>
<tr>
<td>9710-9715</td>
<td>Shale, medium dark to dark gray.</td>
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<tr>
<td>9715-9725</td>
<td>Missing.</td>
</tr>
<tr>
<td>9725-9730</td>
<td>Shale, greenish to dark greenish gray, splintery.</td>
</tr>
<tr>
<td>9730-9765</td>
<td>Shale, dark greenish gray, splintery.</td>
</tr>
<tr>
<td>9765-9780</td>
<td>Shale, greenish black to black, splintery.</td>
</tr>
<tr>
<td>9780-9805</td>
<td>Shale, dark greenish gray to greenish black, splintery.</td>
</tr>
<tr>
<td>9805-9810</td>
<td>Shale, dark greenish gray to greenish black, slightly arenaceous.</td>
</tr>
<tr>
<td>9810-9815</td>
<td>Missing.</td>
</tr>
<tr>
<td>9815-9835</td>
<td>Limestone, yellowish gray to pale yellowish brown, fine grained to sublithographic. Free fine to medium grained rounded quartz.</td>
</tr>
<tr>
<td>9835-9855</td>
<td>Limestone, white to yellowish gray, fine grained to chalky and fragmental, glauconitic specks.</td>
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<tr>
<td>9855-9935</td>
<td>Limestone, white to yellowish gray, chalky to fragmental, glauconitic.</td>
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<tr>
<td>9935-9940</td>
<td>Limestone, white to yellowish gray, chalky to fragmental, glauconitic, arenaceous.</td>
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<tr>
<td>9940-9952</td>
<td>Missing.</td>
</tr>
<tr>
<td>9952-10010</td>
<td>Sandstone, fine grained, rounded, calcareous, glauconitic.</td>
</tr>
<tr>
<td>10013</td>
<td>Total Depth</td>
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</table>