

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 219

Summary of the Carter Oil Company - Dallas Moore No. 1  
Divide County, North Dakota  
Well No. 2010 - Permit No. 2022

by David S. Johnson  
March 1959

The Carter Oil Company - Dallas Moore #1 is located in W 1/2 NW NE, 660 feet S/N and 2105 feet W/E of Section 7, T. 163N., R. 102W. (The location was moved 125 feet due to a stock pond). Elevation 2195 G.L., 2205 K.B.

The Carter Oil Company - Dallas Moore #1 was spudded September 22, 1958 and 16" casing was set at 80 feet with 9 yards of Ready mix. 10 3/4" casing was set at 2397 feet with 325 sacks of cement. The well was drilled to a total depth of 11,040 feet, plugged and abandoned as a dry hole on April 7, 1959.

Logs:

Schlumberger electric log	95'- 3152'
Schlumberger laterolog	2300'-11046'
Schlumberger microlaterolog	2298'-11049'
Schlumberger sonic	5200'-11045'
Schlumberger gamma ray-neutron	100'-11050'

Cores:

6587- 6607, recovered 17 feet  
6760- 6782, recovered 22 feet  
6782- 6828, recovered 46 feet  
8024- 8049, recovered 25 feet  
8436- 8446, recovered 10 feet  
9611- 9639, recovered 28 feet  
10352-10550, recovered 18 feet  
10561-10585, recovered 24 feet  
10855-10888, recovered 33 feet  
10888-10900, recovered 12 feet  
10900-10941, recovered 41 feet

Tests:

DST #1, 6580'-6607', weak blow increasing to fair in 25 minutes. Fair blow for 20 minutes, decreasing to weak in 30 minutes and continued weak throughout test. Recovered 180 feet of slightly mud-cut salt water, 360 feet salt water, 539 feet sulphur salt water. Total recovery 1,079 feet of fluid. Initial hydrostatic pressure 3720#, initial shut in pressure 2968#, initial flow pressure 26#, final flow pressure 538#, final shut in pressure 2600#, final hydrostatic pressure 3720#. Temperature 174° F.

DST #2, 6660'-6698', tool open 2. hours, weak blow, dead after 1 hour 10 minutes. Dead remainder of test (50 minutes), recovered 90 feet of mud, slightly cut with water. Initial hydrostatic pressure 3805#. Initial shut in pressure 375#, initial flow pressure 50#, final flow pressure 100#, final shut in pressure (30 minutes) 2340#, final hydrostatic pressure 3775#. Temperature 160°F.

DST #3, 6726'-6760', tool open 4 hours, shut in 30 minutes. Weak blow for 2 1/4 hours, increased to fair blow at 3 3/4 hours, fair blow remainder of test. No gas to surface. Recovered 4 feet free oil, 30.8° API corrected and no sulphur odor, 40 feet highly oil and gas cut mud salt water, 90 feet very slightly oil and oil cut mud and salt water, 90 feet salt water cut mud. Initial hydrostatic mud pressure 3788#, initial shut in pressure 109#, initial flow pressure 12#, final flow pressure 96#, final shut in pressure 275#, final hydrostatic mud pressure 3788#, bottom hole temperature 182°F.

DST #4, 6764'-6782', tool open 1 hour, shut in 30 minutes. Very light blow for 35 minutes, dead after 1 hour. Recovered 40 feet of drilling mud. Initial hydrostatic mud pressure 3809#, initial shut in pressure 26#, initial flow pressure 0#, final flow pressure 26#, final shut in pressure 2548#, final hydrostatic mud pressure 3809#. Temperature 162°F.

DST #5, 6773'-6828', tool open 4 hours, shut in 30 minutes. Strong blow for 15 minutes, diminishing to very weak blow in 1 1/2 hours. Very weak blow for the next 2 1/2 hours. Recovered 90 feet acid-cut muddy salt water with rainbow of oil. 440 feet of salt water. Initial hydrostatic mud pressure 3745#, initial shut in pressure 1730#, initial flow pressure 145#, final flow pressure 310#, final shut in pressure 830#, final hydrostatic mud pressure 3745#. Temperature 200°F.

DST #6, 6967'-6991', very weak blow for 3 hours, intermittent bubble for 1 hour. Recovered 200 feet salt water cut mud, 530 feet gas cut salty sulphur water with oil flecks on top. Initial hydrostatic mud pressure 4149#, initial shut in pressure 3129# (30 minutes), initial flow pressure 7#, final flow pressure 377#, final shut in pressure 2700#, final hydrostatic mud pressure 3863#.

DST #7, 7054'-7080', tool open 2 1/2 hours, shut in 30 minutes, very weak blow, dead in 10 minutes, dead remainder of test. Recovered 12 feet drilling mud. Initial hydrostatic pressure 3995#, initial shut in pressure 40#, initial flow pressure 40#, final flow pressure 40#, final shut in pressure 40#, final hydrostatic pressure 3975#. Temperature 150° F.

DST #8, 7160'-7180', tool open 3 hours, shut in 30 minutes. Very weak blow 3 minutes, dead remainder of test. Recovered 185 feet mud cut salt water. Initial hydrostatic pressure 4167#, initial shut in pressure 3237#, initial flow pressure 54#, final flow pressure 144#, final shut in pressure 3111#, final hydrostatic pressure 4136#.

DST #9, 8006'-8049', tool open 4 hours, shut in 30 minutes. Fair blow increased to strong in 10 minutes. Remained strong throughout test. Recovered 3424 feet fluid, 800 feet of mud cut salt water and 2624 feet salt water. Initial hydrostatic pressure 4420#, initial shut in pressure 3630#, initial flow pressure 100#, final flow pressure 1680#, final shut in pressure 3310#, final hydrostatic pressure 4370#. Temperature 210°F.

DST #10, 8403'-8446', tool open 4 hours, shut in 30 minutes. Weak blow throughout test. Recovered 350 feet mud cut salt water, and 360 feet sulphur salt water. Initial hydrostatic mud pressure 4645#, initial shut in pressure 3825#, initial flow pressure 45#, final flow pressure 390#, final shut in pressure 3435#, final hydrostatic 4655#. Bottom hole temperature 184°F.

DST #11, 9601'-9639', tool open 4 hours, shut in 30 minutes, very weak blow for one minute, dead for the remainder of the test. Recovered 100 feet drilling mud. Initial hydrostatic pressure 5213#, initial shut in pressure 4131#, initial flow pressure 0#, final flow pressure 18#, final shut in pressure 3362#, final hydrostatic pressure 5035#. Bottom hole temperature 244°F.

DST #12, 10200'-10295', tool open 4 hours, shut in 30 minutes. No water cushion. Very weak blow for 2 minutes and dead for remainder of test.

DST #13, 10492'-10550', tool open 4 hours shut in 30 minutes. 3/4" top and bottom choke. 2000 foot water pressure. Very weak, intermittent blow 30 minutes, dead remainder of test. Recovered 2950 feet total fluid, 1740 feet water cushion, 260 feet of mud cut water cushion, 740 feet of mud, 210 feet slightly mud cut salt water. Initial shut in pressure 4805#, initial flow pressure 917#, final flow pressure 1382#, final shut in pressure 4397#, hydrostatic mud pressure 5551#.

DST #14, 10554'-10585', Packers failed.

DST #15, 10550-10585' (Re-run), tool open 4 hours. Very weak blow throughout. 2000 foot water cushion. Recovered 2000 feet water cushion, 3330' drilling mud (tool opened one stand off bottom picked up drill string and closed. Reset tool on bottom), 990 feet of salt water with scum of oil. Initial hydrostatic mud pressure 5500#. Initial shut in pressure - miss-run, initial flow pressure 2965#, final flow pressure 3285#, final shut in pressure 4610# (30 minutes), final hydrostatic mud pressure 5355#.

#### Plugging Record:

10,328'-10,390' with 25 sacks of cement  
9,548'- 9,610' with 25 sacks of cement  
7,766'- 7,828' with 25 sacks of cement  
6,384'- 6,446' with 25 sacks of cement  
5,543'- 5,605' with 25 sacks of cement  
4,038'- 4,100' with 25 sacks of cement  
2,273'- 2,328' with 25 sacks of cement  
0'- 15' with 15 sacks of cement

#### Casing Left in Hole:

2,318' of 10 3/4" casing.

Formation tops were determined from samples and well logs. Doubtful or obscure formation tops were not picked. Colors and identifying numbers are taken from the Rock-color chart distributed by the Geological Society of America.

#### FORMATION TOPS

##### Cretaceous System

Niobrara formation	3154
Greenhorn formation	3504
Mowry formation	3736
Newcastle formation	3894
Fall River formation	4206

Jurassic System		
Rierdon formation		5007
Piper "lime"		5239
Triassic System		
Spearfish formation		5606
Mississippian System		
Charles formation		6054
Bakken formation		7730
Devonian System		
QuAppelle formation		7830
Bird Bear formation		7993
Duperow formation		8096
Souris River formation		8605
Dawson Bay formation		8970
Prairie Evaporite		9093
Winnipegosis formation		9405
Ashern formation		9552
Silurian System		
Interlake group		9609
Ordovician System		
Stony Mountain shale		10364
Red River formation		10390
Winnipeg shale		10822
Winnipeg sandstone		10974

100-160	Sand grains.
160-220	Lignite, some sand and gravels.
220-1030	Lignite, small amounts of shale, light gray, compact.
1030-1240	Shale, medium light gray, compact, some sand grains and lignite.
1240-1270	Sample missing.
1270-1300	Lignite.
1300-1660	Shale, medium light gray, compact. Small amounts of lignite, probably caving.
1660-1720	Shale, medium gray-medium light gray, compact.
1720-1870	Shale, medium gray-medium light gray, spongy-compact, some lignite and coarse sand grains. Some bentonite.
1870-2440	Shale, medium gray, compact, some bentonite. Some well rounded sand grains.
2440-2470	Shale, medium dark gray-medium light gray, compact-fissile.
2470-2500	Sample missing.
2500-3100	Shale, medium gray, compact-fissile. Small amounts of calcite.
3100-3150	Shale, medium dark gray-medium light gray, compact-fissile. Some calcite.
3150-3240	Shale, dark gray, "white specks", shale as above.
3240-3270	Sample missing.
3270-3280	Shale, medium dark gray-medium light gray, compact.
3280-3300	Samples missing.
3300-3330	Shale, medium dark gray-medium light gray, compact. Some "white specks". Inoceramus fragments.
3330-3380	Samples missing.
3380-3420	Shale, dark gray, compact-fissile, shale as above. Some "white specks".
3420-3450	Samples missing.
3450-3460	Shale, as above.

3460-3480 Sample missing.  
 3480-3490 Shale, as above.  
 3500-3630 Shale, dark gray-medium light gray, compact. Some "white specks".  
 Small amount of limestone, light brownish gray, crystalline.  
 3630-3660 Shale, grayish black, compact, carbonaceous.  
 3660-3900 Shale, dark gray, compact.  
 3900-3920 Shale, as above - a little sandstone, very light gray, calcareous.  
 3920-3980 Shale, as above. Small amount of limestone, light gray,  
 crystalline.  
 3980-4020 Samples missing.  
 4020-4040 Shale, dark gray, compact-fissile, carbonaceous.  
 4040-4070 Samples missing.  
 4070-4120 Shale, medium gray, compact-fissile.  
 4120-4180 Samples missing.  
 4180-4210 Shale, medium dark gray-medium light gray, compact. Inoceramus  
 fragments. Some calcite.  
 4210-4560 Samples missing.  
 4560-4770 Shale, dark gray-light gray, fissile.  
 4770-4860 Samples missing.  
 4860-5060 Shale, as above. Sand grains, clear, medium grained, subangular.  
 Some shale, oxidized, moderate reddish brown (10R4/6), lumpy.  
 5060-5148 Shale, medium dark gray-light gray, fissile. Some oxidized.  
 5148-5200 Samples missing.  
 5200-5220 Shale, medium dark gray-light gray, fissile-compact.  
 5220-5320 Limestone, white-light brownish gray, fine-medium grained, shale,  
 as above, some shale moderate reddish orange, compact.  
 5320-5430 Limestone, light brownish gray, fine-medium grained. Some  
 crystalline. Some shale, dark gray-greenish gray (5GY6/1) compact.  
 Some sandstone, white, fine grained, calcareous.  
 5430-5450 Samples missing.  
 5450-5470 Limestone, brownish gray-light brownish gray, medium grained.  
 Shale, medium dark gray-medium light gray, compact-fissile.  
 5470-5480 Limestone, brownish gray, fine grained, argillaceous. Shale as  
 above.  
 5480-5500 Limestone, brownish gray - very light gray, very fine-medium  
 grained. Some shale as above.  
 5500-5520 Limestone, yellowish gray (5Y8/1) fine grained. Some limestone,  
 as above.  
 5520-5550 Limestone, as above. Some shale, pale reddish brown, compact.  
 Some shale, medium dark gray, compact-platy.  
 5550-5580 Sample, as above. Small amounts of anhydrite.  
 5580-5610 Limestone, light brownish gray, very fine grained, anhydrite  
 fillings. Some shale as above.  
 5610-5640 Shale, grayish red (10R4/2) compact, silty, some limestone, shale  
 and anhydrite, as above.  
 5640-5680 Siltstone, moderate reddish brown (10R4/6) anhydritic, shale, dark  
 gray, platy.  
 5680-5690 Shale, medium dark gray-light gray, compact. Anhydrite, white.  
 Small amount of siltstone, as above.  
 5690-5730 Sandstone, moderate reddish orange (10R6/6) very fine grained.  
 Shale and some anhydrite, as above.  
 5730-5840 Sandstone and shale, as above, calcareous.  
 5840-5900 Sandstone and shale, as above. Some sand grains, medium grained,  
 well rounded.

5900-5980 Sandstone, and shale, as above. Some sandstone, moderate reddish orange, medium grained, poorly sorted, well rounded.

5980-6080 Siltstone, moderate reddish orange, slightly calcareous.  
Sandstone, as above. Small amounts of anhydrite filling and gypsum.

6080-6120 Limestone, light red-white, fine grained, gypsum, siltstone, and anhydrite, as above.

6120-6140 Anhydrite, white. Rest of sample, as above.

6140-6150 Sample as above. Some anhydrite, pale red (10R6/2).

6150-6170 Anhydrite, white. Limestone, medium light gray, very fine grained.

6170-6200 Anhydrite, as above. Interbedded limestone, light brownish gray (5YR6/1).

6200-6240 Salt.

6240-6260 Limestone, medium gray, fine grained. Some light gray anhydrite, dense.

6260-6300 Limestone, yellowish gray (5Y8/1) sublithographic. Some anhydrite, light gray, dense.

6300-6350 Anhydrite, yellowish gray, white, dense.

6350-6380 Anhydrite, medium light gray, dense. Some anhydrite, as above. Small amount of yellowish gray limestone. Some pinpoint porosity.

6380-6420 Limestone, yellowish gray, fine grained. Anhydrite, as above.

6420-6430 Anhydrite, medium light gray.

6430-6450 Limestone, light brownish gray, medium grained. Some anhydrite, white and shale, medium dark gray.

6450-6490 Anhydrite, white-medium gray, dense.

6490-6545 Anhydrite, as above. Limestone, yellowish gray, fine-medium grained.

6545-6550 Limestone, as above. Small amount of anhydrite, white.

6550-6570 Anhydrite, white-yellowish gray, dense. Some limestone, as above.

6570-6587 Limestone, yellowish gray, fine grained. Some anhydrite, as above.

6587-6605 Samples missing.

6605-6660 Limestone, yellowish gray-light brownish gray, fine-medium grained, some pinpoint porosity. Cavings.

6660-6690 Limestone, brownish gray-yellowish gray, medium grained. Some pinpoint porosity.

6690-6700 Limestone, as above. Some shale, medium dark gray, compact.

6700-6720 Limestone, yellowish gray, light brownish gray, fine-medium grained. Small amount of anhydrite, white.

6720-6760 Limestone, as above. Some limestone, brownish gray, fossiliferous.

#### Core Chip Description

6760-6761 Limestone, light brownish gray, coarse grained, crystalline.

6761-6762 Limestone, light brownish gray, fine grained, dense.

6762-6763 Limestone, as above. Thin shale partings.

6763-6764 Limestone, light brownish gray, medium grained, crystalline.

6764-6766 Limestone, yellowish gray, fine grained, dense.

6766-6768 Limestone, light brownish gray, medium-coarse grained, crystalline. Some anhydrite filling.

6768-6770 Limestone, light brownish gray, medium grained.

6770-6771 Limestone, light brownish gray, coarse grained, partly oolitic.

6771-6772 Limestone, light brownish gray, fine grained.

6772-6773 Limestone, light brownish gray, medium grained.

6773-6775 Limestone, light brownish gray, fine grained.

6775-6778 Limestone, light brownish gray, medium grained.

6778-6780 Limestone, yellowish gray, fossiliferous.  
 6780-6782 Limestone, yellowish gray, fine grained. Good porosity.  
 6782-6783 Limestone, as above. Limestone, light brownish gray, coarse grained. Some secondary calcite.  
 6783-6784 Limestone, light brownish gray, medium grained.  
 6784-6785 Limestone, light brownish gray, medium grained, spotty fluorescence, slight cut.  
 6785-6786 Limestone, as above.  
 6786-6787 Limestone, light brownish gray, coarse grained.  
 6787-6790 Limestone, light brownish gray, fine grained, fair porosity.  
 6790-6792 Limestone, light brownish gray, fine grained, slight cut.  
 6792-6796 Limestone, light brownish gray, fine grained.  
 6796-6799 Limestone, light brownish gray, medium grained.  
 6799-6801 Limestone, light brownish gray, fine grained.  
 6801-6802 Limestone, light brownish gray, fine grained, dense.  
 6802-6803 Limestone, brownish gray, very fine grained, dense, tight.  
 6803-6805 Limestone, as above. Anhydrite, yellowish gray.  
 6805-6807 Limestone, brownish gray, medium grained, anhydrite fillings.  
 6807-6810 Limestone, brownish gray, fine grained.  
 6810-6811 Limestone, brownish, gray, fine grained, spotty, fluorescence, slight cut.  
 6811-6815 Limestone, light brownish gray, fine grained. Spotty fluorescence, slight cut.  
 6815-6816 Limestone, light brownish gray, fine grained.  
 6816-6818 Limestone, brownish gray, some secondary calcite.  
 6818-6819 Limestone, brownish gray, fine grained. Some staining.  
 6819-6828 Limestone, light brownish gray, fine-medium grained, dense.  
 End of Core  
 6828-6850 Limestone, light brownish gray, fine grained. Much caving material.  
 6850-6875 Limestone, as above.  
 6875-6900 Limestone, yellowish gray-brownish gray, fine grained.  
 6900-6925 Limestone, as above, fair porosity.  
 6925-6990 Limestone, white-light brownish gray, fine grained. Sub-lithographic. Some porosity.  
 6990-7000 Limestone, yellowish gray, fine grained.  
 7000-7010 Limestone, as above. Some chert, light gray.  
 7010-7015 Limestone, light yellowish gray (5Y8/1) fine-medium grained.  
 7015-7025 Limestone, as above. Some limestone, light brownish gray, fine grained.  
 7025-7050 Limestone, brownish gray-light brownish gray, fine grained.  
 7050-7065 Limestone, light brownish gray. Some chert, light brownish gray.  
 7065-7080 Limestone, light brownish gray-brownish gray, fine-medium grained.  
 7080-7090 Limestone, as above. Some shale, medium dark gray, compact.  
 7090-7105 Limestone, as above. Partly fossiliferous.  
 7105-7125 Limestone, yellowish gray-light brownish gray, fine grained. Some vuggy porosity.  
 7125-7135 Limestone, as above. Some limestone, brownish black, fine grained, argillaceous.  
 7135-7140 Limestone, as above. Some chert, light brownish gray.  
 7140-7180 Limestone, light brownish gray-yellowish gray, fine grained.  
 7180-7190 Limestone, as above. Some shale, medium dark gray, compact.  
 7190-7195 Samples missing.

7195-7230 Limestone, light brownish gray, fine grained.  
7230-7275 Limestone, yellowish gray, fine grained. Some limestone, as above.  
7275-7290 Limestone, as above. Some chert, yellowish gray, dull.  
7290-7360 Limestone, yellowish gray-light brownish gray, fine grained. Some chert, as above.  
7360-7365 Limestone, as above. Some shale, medium dark gray, compact-splintery.  
7365-7430 Limestone, grayish black, argillaceous, fine grained. Some shale, as above.  
7430-7440 Limestone, yellowish gray-light gray, fine grained, some limestone, as above.  
7440-7450 Limestone, as above.  
7450-7465 Limestone, yellowish gray, light brownish gray, fine grained. Limestone, grayish black, fine grained.  
7465-7470 Limestone, as above. Limestone, light gray, dense.  
7470-7550 Limestone, medium light gray-light gray, fine grained. Some limestone as above.  
7550-7655 Limestone, medium gray, fine grained. Limestone, as above. Some medium dark gray limestone.  
7655-7735 Limestone, medium gray-light gray, fine grained. Some light brownish gray limestone, fine grained, hard, dense.  
7735-7755 Shale, black, compact. Limestone, as above.  
7755-7800 Samples missing.  
7800-7825 Shale, black, compact.  
7825-7835 Shale, as above. Some dolomite, pinkish gray (5YR8/1) very fine grained.  
7835-7855 Shale, greenish gray (5GY6/1) splintery-platy. Sandstone, and shale, as above.  
7855-7875 Shale, dark gray-medium light gray, compact. Dolomite, pinkish gray, very fine grained, hard. Some limestone, light brownish gray.  
7875-7880 Dolomite, light brown, microgranular. Some shale, as above.  
7880-7905 Dolomite, moderate orange pink, (10R7/4) microgranular, hard. Some shale, as above.  
7905-7930 Dolomite, as above. Some shale, grayish red (10R4/2), compact.  
7930-7950 Dolomite, as above. Shale, moderate red, compact. Some gypsum and anhydrite, white-clear.  
7950-7975 Shale, medium gray-greenish gray, fissile-compact. Dolomite and shale as above.  
7975-8024 Dolomite and shale, as above.

#### Core Chip Description

8024-8027 Limestone, light brownish gray, fine grained, fair porosity.  
8027-8028 Limestone, brownish gray, very fine grained, dense.  
8028-8030 Limestone, light brownish gray, fine grained, dense.  
8030-8033 Limestone, brownish gray, fine grained. Some anhydrite filling.  
8033-3040 Limestone, light brownish gray, fine grained. Some porosity.  
8040-8049 Limestone, yellowish gray, fine grained, some secondary calcite.

End of Core

8050-8065 Limestone, as above. Much caving.  
8065-8105 Limestone, yellowish gray-light brownish gray, fine grained.  
8105-8120 Limestone, as above. Shale, grayish red, hard, compact, dolomitic. A small amount of anhydrite.

8120-8130 Limestone and dolomite, as above. Some shale, dark gray, compact.  
 8130-8160 Limestone, light gray-light brownish gray, fine grained.  
 8160-8180 Limestone, as above. Some anhydrite.  
 8180-8215 Limestone, as above. Some dolomite, yellowish gray, fine grained.  
 Small amount of anhydrite.  
 8215-827 Limestone, light brownish gray, brownish gray, fine grained.  
 Spotty amounts of anhydrite.  
 8275-8280 Sample, as above. Some shale, medium gray, compact.  
 8280-8300 Anhydrite, yellowish gray, shale, and limestone, as above.  
 8300-8315 Limestone, light brownish gray-brownish gray, fine grained, dense.  
 8315-8325 Anhydrite, white. Limestone, as above.  
 8325-8385 Limestone, yellowish gray-brownish gray, fine grained. Small  
 amount of anhydrite.  
 8385-8400 Limestone, brownish gray, fine grained, dense. Some limestone,  
 yellowish gray, dull.  
 8400-8435 Limestone, as above. Limestone, yellowish gray, sucrosis.

Core Chip Descriptions

8436-8437 Limestone, brownish gray, fine grained, dense.  
 8437-8441 Limestone, light brownish gray, fine grained, dense.  
 8441-8443 Limestone, brownish gray, fine-medium grained. Some secondary  
 dolomite.  
 8443-8444 Limestone, brownish gray, fine grained dense.  
 8444-8445 Dolomite, yellowish gray, microsucrosic, some porosity.  
 8445-8446 Anhydrite, brownish gray, dense, massive.  
 End of core.

8445-8465 Limestone, brownish gray-yellowish gray, fine grained.  
 8465-8525 Limestone, yellowish gray, fine-medium grained. Some limestone as  
 above. Some vuggy porosity.  
 8525-8600 Limestone, yellowish gray, brownish gray. Fine grained, micro-  
 sucrosic.  
 8600-8620 Limestone, medium gray, fine grained. Limestone, as above.  
 8620-8630 Limestone, as above. Some shale, greenish gray (5G6/1) compact,  
 dolomitic.  
 8630-8680 Limestone, medium gray-brownish gray, fine grained, dense. Some  
 yellowish gray limestone, dull. Small amounts of shale, as above,  
 and anhydrite.  
 8680-8725 Dolomite, yellowish gray, microsucrosic. Some limestone as above.  
 Some shale and anhydrite, as above.  
 8725-8775 Limestone, brownish gray, very fine grained. Limestone,  
 yellowish gray, dull. Small amounts of shale, as above.  
 3775-8790 Limestone, light brownish gray, microsucrosic. Limestone, as  
 above.  
 8790-8865 Limestone, as above. Some anhydrite, white.  
 8865-8925 Limestone, yellowish gray-light brownish gray, fine grained,  
 microsucrosic.  
 8925-8960 Limestone, yellowish gray, fine grained, microgranular.  
 Limestone, as above.  
 8960-8990 Limestone, as above. Some limestone, medium gray-brownish gray,  
 fine grained.  
 8990-9020 Limestone, yellowish gray-light brownish gray, fine grained,  
 microsucrosic. Some anhydrite. The microsucrosic limestone has  
 some vuggy porosity.

9020-9040 Sample, as above. No anhydrite.  
 9040-9085 Limestone, yellowish gray-brownish gray, very fine-fine grained.  
 9085-9095 Limestone, as above. Some anhydrite, white-light brownish gray.  
 9095-9110 Salt. Some limestone and anhydrite, as above.  
 9110-9200 Salt, clear-moderate reddish orange stain.  
 9200-9210 Limestone, light brownish gray, fine grained. Shale, medium gray, compact, some salt, as above.  
 9210-9410 Salt. Limestone and shale, as above. Probably caving.  
 9410-9440 Dolomite, brownish gray, fine-medium grained. Some salt, as above.  
 9440-9505 Dolomite, brownish gray-light brownish gray, fine-medium grained.  
 9505-9515 Dolomite, as above, calcareous. Some salt.  
 9515-9555 Dolomite, as above. Limestone, yellowish gray, fine grained dull. Dolomite becomes very calcareous.  
 9555-9590 Dolomite, medium light gray, fine grained. Limestone and dolomite, as above.  
 9590-9600 Sample as above. Shale, greenish gray, platy.  
 9600-9610 Sample as above. Some dolomite, moderate pink, fine grained.

#### Core Chip Description

9611-9612 Dolomite, moderate orange pink (10R7/4) very fine grained.  
 9612-9615 Dolomite, grayish orange pink (10R8/2) sublithographic.  
 9615-9616 Dolomite, moderate reddish orange (10R6/6), very fine grained.  
 9616-9619 Dolomite, white, lithographic.  
 9619-9620 Dolomite, yellowish gray, very fine grained.  
 9620-9626 Dolomite, white, sublithographic.  
 9626-9630 Dolomite, moderate orange pink-white, very fine grained.  
 9630-9633 Dolomite, grayish orange pink, sublithographic.  
 9633-9634 Dolomite, yellowish gray, fine grained.  
 9634-9636 Dolomite, white, sublithographic.  
 9636-9638 Dolomite, yellowish gray, fine grained.  
 9638-9639 Dolomite, white-moderate orange pink, very fine grained.

#### End of Core

9640-9645 Caving material.  
 9645-9765 Dolomite, yellowish gray-white, very fine grained.  
 9765-9770 Dolomite, light brownish gray, very fine, grained.  
 9770-9820 Dolomite, as above. Some dolomite, moderate reddish brown, argillaceous.  
 9820-9825 Dolomite, white-yellowish gray, very fine-medium grained. Some crystalline.  
 9825-9835 Dolomite, as above. Some anhydrite, white, hard, dense. Small amount of salt, clear.  
 9835-9845 Dolomite, yellowish gray-light brownish gray, medium grained. Small amount of anhydrite, as above.  
 9845-9850 Dolomite, as above. Shale, dark gray, compact. Some dolomite, moderate reddish brown, argillaceous.  
 9850-9925 Dolomite, yellowish gray, (5Y8/1) fine-medium grained. Some anhydrite, white, hard, dense.  
 9925-9945 Dolomite, as above.  
 9945-9990 Dolomite, white-yellowish gray, fine-grained.  
 9990-10035 Dolomite, as above. Dolomite, light brownish gray, granular.  
 10035-10045 Dolomite, white-yellowish-gray, very fine grained.  
 10045-10170 Dolomite, as above. Dolomite, light-brownish gray, fine grained.

10170-10195 Dolomite, yellowish gray, fine grained.  
10195-10205 Dolomite, as above, Some dolomite, light gray, very fine grained.  
10205-10210 Dolomite, brownish gray (5YR4/1), very fine grained. Dolomite, as above.  
10210-10235 Dolomite, brownish gray, very fine grained.  
10235-10265 Dolomite, as above. Dolomite, yellowish gray, fine grained.  
10265-10275 Dolomite, as above. Shale, greenish gray, (5GY6/1), splintery.  
10275-10300 Dolomite, brownish gray-light brownish gray, fine grained. Some shale, as above.  
10300-10305 Sample, as above. Some dolomite, pale reddish brown. Argillaceous.  
10305-10320 Dolomite, light brownish gray, fine grained. Shale, as above.  
10320-10345 Sample missing.  
10345-10365 Dolomite, yellowish-gray, light brownish-gray, fine grained.  
10365-10375 Dolomite, as above. Some dolomite, moderate reddish brown, (10R4/6), argillaceous.  
10375-10390 Sample, as above. Limestone, medium gray, fine grained.  
10390-10415 Dolomite, yellowish gray, light brownish gray, fine grained.  
10415-10450 Dolomite, as above. Limestone, brownish gray, very fine grained.  
10450-10465 Dolomite, yellowish gray-light brownish gray, fine grained, partly crystalline.  
10465-10470 Dolomite, as above. Limestone, light brownish gray, very fine grained.  
10470-10510 Limestone, yellowish gray-brownish gray, fine grained. Small amount of anhydrite, white.  
10510-10530 Dolomite, light brownish gray, fine grained.

Core Chip Description

10532-10533 Dolomite, light brownish gray, fine grained.  
10533-10539 Dolomite, yellowish gray, fine grained.  
10539-10541 Dolomite, as above. Fragmental.  
10541-10542 Dolomite, brownish gray, oolitic. Some staining. Fair cut.  
10542-10543 Dolomite, yellowish gray, fine grained, crystalline.  
10543-10544 Dolomite, as above, good cut.  
10544-10545 Dolomite, as above, slight cut.  
10545-10547 Dolomite, as above, good cut and stain.  
10547-10548 Dolomite, light brownish gray, fine grained, good staining.  
10548-10550 Dolomite, yellowish gray (5Y8/1), fine grained. Slight cut. Good stain.

End of Core

10550-10560 Caving material. Variegated shale and dolomite, as above.

Core Chip Description

10561-10566 Dolomite, yellowish gray-light brownish gray, bleeding oil.  
10566-10569 Dolomite, light brownish gray, fine grained, good stain and cut, tight.  
10569-10570 Dolomite, light brownish gray, recrystallized. Good stain and cut, tight.  
10570-10572 Dolomite, light brownish gray, fine grained, good stain and cut, tight.  
10572-10580 Dolomite, light brownish gray, tight. Some stain.

10580-10584 Dolomite, yellowish gray, light brownish gray, fine grained, tight.

10584-10585 Dolomite, as above. Some dead oil.

End of Core

10585-10595 Caving material.

10595-10630 Dolomite, yellowish gray-light brownish gray, fine grained-microsugrosic. Some caving material.

10630-10645 Samples missing.

10645-10680 Dolomite, as above.

10680-10685 Dolomite, as above. Small amount of anhydrite and greenish gray shale.

10685-10715 Dolomite, as above. Some dolomite, white, lithographic.

10715-10780 Dolomite, yellowish gray, microsugrosic. Limestone, very light gray, very fine grained, soft.

10780-10795 Samples missing.

10795-10810 Limestone, very light gray-yellowish gray, fine grained, dull. Some dolomite, as above.

10810-10830 Limestone and dolomite, as above. Some limestone light brownish gray, brownish gray, very fine grained.

10830-10845 Limestone, as above. Some sandstone, white-very light gray, fine grained, dolomitic.

10845-10855 Sample, as above. Shale, greenish gray (5G6/1), compact.

10355-10860 Sample missing.

#### Core Chip Description

10860-10895 Shale, greenish gray (5G6/1), compact, waxy.

10895-10900 Shale, as above. Sandy.

10900-10901 Sandstone, white, very fine grained, hard.

10901-10902 Sandstone, white, medium grained, some stain.

10902-10903 Sandstone, as above.

10903-10904 Sandstone, as above, with black shale stringers.

10904-10914 Sandstone, as above. Some staining. Some porosity. Scattered pyrite.

10914-10921 Sandstone, white, medium grained, friable. Good porosity. Sand grains, subround.

10921-10925 Sandstone, white, medium grained, well indurated.

10925-10926 Shale, black, compact. Sandstone lenses, as above.

10926-10927 Sandstone, white, clear, quartzitic.

10927-10932 Sandstone, as above with black shale stringers.

10932-10934 Shale, black, compact.

10934-10941 Sandstone, as above with black shale stringers.

End of Core

10941-10995 Sandstone and shale, as above.

10995-11015 Sandstone and shale, as above. Small amount of gypsum, white.

11015-11040 Sandstone, white-very light gray, medium grained.

11,040 Total Depth.