

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 165

Summary of the Argo Oil Corporation Harry Larson No. 1
Dunn County, North Dakota
Well No. 892 - Permit No. 904

by James Peterson
December, 1956

Argo Oil Corporation-Harry Larson No. 1, Dunn County, North Dakota.
Location: 75 feet North of center of NE/4 NW/4 Sec. 19, T. 144N., R. 94W.
Elevation: 2399 Gr., 2411 K.B.

The Argo Oil Corporation-Harry Larson No. 1 was spudded June 26, 1955, drilled to a total depth of 9712 feet, found dry and was plugged August 20, 1955.

Logging Record:

Laterolog from total depth to bottom of surface pipe. Microlaterolog and gamma ray from total depth to 8500'. Logs by Schlumberger.

Coring Record:

9375-9563
9567-9606
9608-9712

Testing Record:

DST #1 8806-8834'. Open 1 hour, shut in 15 minutes. Used 1000' water cushion. Bubbled 3 minutes and died. Recovered 1000' water cushion and 5 feet of drilling mud. F.P. 465-475 psig, . SIP 775 psig.

DST #2 8930-8967'. Open 1 hour, shut in 30 minutes. Used 1000' water cushion. Weak blow 12 minutes and died. Recovered water cushion and 5 feet of drilling mud. FP 475-485 psig, SIP 1975 psig.

DST #3 9454-9515'. Open 1 hour and 15 minutes. Shut in 30 minutes. Used 1460' water cushion. Weak blow for 25 minutes and died. Recovered water cushion and 121' of watery, slightly glassy drilling mud. FP 675-690, psig, SIP 3725 psig.

Casing Record:

707' 13 3/8", 48#, H-40, landed at 721' with 450 sacks of cement with 4% gel.

Cement plugs:

9420-9370, 20 sacks of cement
7020-6970, 20 sacks of cement
6510-6460, 20 sacks of cement
6240-6190, 20 sacks of cement
5330-5280, 20 sacks of cement
725- 700, 25 sacks of cement
10- 0, 5 sacks of cement

Formation tops were determined from samples of gamma ray and electric logs. Doubtful or obscure formation tops were not picked. Color names and identifying numbers are from the 1948 Rock-Color Chart (Second printing, 1951) distributed by the Geological Society of America, New York, N. Y.

FORMATION TOPS

Cretaceous System

Pierre formation	950
Niobrara formation	3840
Greenhorn formation	4534
Dakota group	4830
Muddy sandstone	5068
Dakota group sandstone	5400

Jurassic System

Jurassic shale	5762
Piper limestone	6315

Triassic System

Spearfish formation	6599
---------------------	------

Permian System

Minnekahta formation	7018
Opeche formation	7060

Pennsylvanian System

Minnelusa formation	7460
---------------------	------

Mississippian System

Amsden formation	7890
Big Snowy group	8090
Kibby sandstone	8373
Kibby limestone	8494
Charles formation	8680
Mission Canyon formation	9400

40-110	Lignite.
110-130	Sandstone, very light to medium light gray, fine to coarse grained, grains sub-angular to rounded, calcareous matrix. Interbedded lignite.
130-190	Lignite.
190-200	Lignite; few sandstone fragments as above; shell fragments.
200-260	Lignite.
260-280	Shale, medium gray, sandy; bentonite with lignite inclusions, medium light gray calcareous sandstone, fine grained.
280-290	Shale, medium light gray, silty with lignite inclusions. Some argillaceous limestone.
290-330	Shale, medium light gray, bentonitic; lignite.
330-350	Shale, lignite, as above; shale, brownish gray, earthy.
350-400	Shale, light gray, bentonitic, lumpy. Interbedded lignite.
400-500	Shale, light gray to brownish gray, lumpy. Interbedded lignite.
500-575	Shale, light gray, very sandy. Light gray sandstone.
575-610	Sandstone, light gray, fine to medium grained, sub-angular to rounded.
610-710	Shale, light gray, sandy; sandstone as above.
710-750	Shale, light gray to brownish gray, lumpy. Lignite.
750-830	Shale as above, some white bentonite. Lignite.
830-860	Shale, medium light gray, silty, lumpy.

860-880 Sandstone, medium light gray, shaly, lumpy. Sub-angular to rounded grains.

880-900 Shale, brownish gray, slightly calcareous, hard. Sandstone as above.

900-930 Shale, light gray and brownish gray, parts sandy, calcareous.

930-950 Shale, light to medium light gray, lumpy, calcareous, sandy. Lignite.

950-1000 Shale, medium light gray and brownish gray, lumpy. Some white bentonite. Lignite.

1000-1040 Shale as above, some fragments sandy. Lignite.

1040-1060 Shale, medium gray, lumpy, lignite inclusions.

1060-1090 Shale, light gray to brownish gray; white bentonite; lignite in sample.

1090-1240 Shale as above, some bentonite. Shell fragments.

1240-1300 Shale, medium gray, lumpy; few white bentonite specks.

1300-1350 Shale, medium light gray, lumpy, slightly calcareous.

1350-1400 Shale, medium light gray to pale brown, lumpy, slightly calcareous. White bentonite specks.

1400-1420 Shale as above, parts silty.

1420-1450 Shale, medium light gray to light brown, lumpy, slightly calcareous. Some sand and silt grains.

1450-1530 Shale as above; few very light gray sandstone fragments, shell fragments.

1530-1650 Shale, medium light to brownish gray, lumpy, slightly calcareous, sandy.

1650-1700 Shale, medium gray, lumpy, bentonitic in part, slightly calcareous, shell fragments.

1700-1760 Shale as above, white bentonite specks.

1760-1780 Shale as above, lignite.

1780-1790 Shale as above.

1790-1810 Shale as above; lignite.

1810-1830 Shale, medium to brownish gray, calcareous, lignite.

1830-1880 Shale as above, sandy.

1880-1900 Shale, medium light gray, sandy, micaceous; calcareous.

1900-1940 Shale, light olive gray, lumpy, slightly calcareous, sandy.

1940-1950 Shale, medium light gray to brownish gray, lignite.

1950-1970 Shale, medium dark gray, lumpy, slightly calcareous.

1970-1980 Shale, pale yellowish brown to medium gray, slightly calcareous.

1980-2020 Shale, medium gray, slightly calcareous, some bentonite.

2020-2060 Shale as above, sand grains.

2060-2100 Shale as above, some lignite.

2100-2150 Shale as above, bentonite.

2150-2170 Shale, medium light gray to medium gray, lumpy, silty, calcareous.

2170-2250 Shale, medium light gray, lumpy and soft, slightly bentonitic. Some silty shale.

2250-2260 Shale, medium light gray, sandy.

2260-2300 Shale, medium light gray, some sand grains.

2300-2390 Shale, medium light gray, lumpy, slightly calcareous; white bentonite.

2390-2410 Shale, medium light gray, silty, calcareous.

2410-2440 Shale, medium light gray to light brown (5YR5/6).

2440-2490 Shale, medium light gray, lumpy, slightly calcareous, white bentonite specks, shell fragments.

2490-2520 Shale, medium light gray to medium gray, calcareous, more compact to splintery than above, some white bentonite.

2520-2550 Shale, medium light gray, lumpy, bentonitic, slightly calcareous, shell fragments.

2550-2600 Shale, medium light to medium gray, bentonite, some lignite fragments, shell fragments, calcareous.

2600-2610 Shale, medium light gray to pale yellowish brown.

2610-2690 Shale, medium light gray to medium gray, fairly compact.

2690-2750 Shale, medium light gray, calcareous, shell fragments, white bentonite specks.

2750-2800 Shale, medium light to medium gray, slightly calcareous, bentonite shell fragments.

2800-2910 Shale, medium light gray, lumpy, slightly calcareous, white bentonite, shell fragments.

2910-2930 Shale, medium light gray to pale yellowish brown (10YR6/2) lumpy, white bentonite.

2930-3000 Shale, medium light gray as above.

3000-3020 Shale, medium light to medium gray as above.

3020-3040 Shale, medium light gray to pale yellowish brown (10YR6/2), as above.

3040-3090 Shale, medium light gray as above.

3090-3200 Shale, medium light to medium gray, as above.

3200-3360 Shale as above, less bentonite.

3360-3400 Shale, medium light gray, slightly calcareous, lumpy, some white bentonite, shell fragments.

3400-3490 Shale, medium light to medium gray, slightly calcareous, earthy, shell fragments.

3490-3560 Shale, medium gray as above.

3560-3790 Shale as above, slightly bentonitic, more compact than above.

3790-3850 Shale as above, some lignite fragments.

3850-3980 Shale, medium light gray, lumpy, white bentonite, shell fragments.

3980-4010 Shale, medium dark gray, white calcareous specks.

4010-4040 Shale, dark gray, calcareous.

4040-4080 Shale, medium to dark gray.

4080-4100 Shale, medium gray, white calcareous specks.

4100-4170 Shale, medium light to medium gray, lumpy, white bentonite. Some medium gray limestone, shell fragments.

4170-4280 Shale, medium dark gray, calcareous, also medium light gray, bentonitic shale, shell fragments.

4280-4350 Shale, medium light gray, calcareous, lumpy, bentonitic, shell fragments.

4350-4420 Shale, medium light gray to pale yellowish brown, as above.

4420-4460 Shale, medium light to medium dark gray, as above.

4460-4510 Shale, medium light gray, bentonitic, fair compaction, very slight reaction in HCl.

4510-4540 Shale, medium light to medium dark gray, lumpy, white bentonite.

4540-4640 Shale, medium dark gray, with white calcareous specks.

4640-4720 Shale, medium light gray to dark gray, shale as above.

4720-4750 Shale, dark gray, non-calcareous.

4750-4760 Shale as above, few fragments, with calcareous specks, cavings.

4760-4850 Shale, dark gray, little white bentonite, some medium gray shale.

4850-5000 Shale, dark gray, fragmental.

5000-5057 Shale, medium light to dark gray, some bentonite, shell fragments.

5057 Circulation 1 hour. Shale, medium light to dark gray, medium light gray shale contains some bentonite, also contains some carbonate. The dark gray shale is non-calcareous. Traces of shell fragments, pyrite, white to light gray limestone.

5050-5060 Shale, medium light to dark gray, shell fragments, bentonite.
 5071 Circulation 1 hour. Sandstone, very light gray, fine grained, grains angular and vitreous, friable, calcareous. Shale as above.
 5070-5120 Sandstone as above, shale as above.
 5120-5140 Shale, medium light gray to dark gray.
 5140-5180 Sandstone as above, shale as above.
 5180-5210 Shale, medium light to medium dark gray, sandstone fragments.
 5210-5340 Shale as above, bentonitic.
 5340-5400 Shale, medium light to dark gray.
 5400-5420 Sandstone, medium light gray, fine grained, non-calcareous, well sorted.
 5420-5500 Sandstone as above, fine to coarse grained. Shale cavings.
 5500-5540 Shale, medium dark gray, bentonite.
 5540-5550 Shale as above, sandstone fragments.
 5550-5680 Shale, medium dark to dark gray, fissile.
 5680-5700 Sandstone, very light to light gray, fine to medium grained, grains angular, shale cavings.
 5700-5720 Shale as above.
 5720-5750 Sandstone as above, shale, medium light gray, non-calcareous, fissile, shale as above.
 5750-5780 Shale, greenish gray, waxy; medium light gray, silty shale, shale cavings.
 5780-5810 Shale, light gray, lumpy, earthy; siltstone, light greenish gray, glauconitic; shale, light olive gray.
 5810-5830 Shale, light brownish gray, to brownish gray, greenish gray (5GY6/1) cavings.
 5830-5880 Shale as above, sandstone, light gray, fine grained, calcareous.
 5880-5930 Shale as above, also medium gray shale, sandstone, light gray, fine grained, calcareous.
 5930-5970 Sandstone as above, limestone, medium light gray, shale, medium gray.
 5970-5990 Siltstone, medium light gray, shaley, calcareous.
 5990-6000 Siltstone, pale yellowish brown, shale, pale to dark yellowish brown.
 6000-6020 Shale, brownish gray, to greenish gray, and medium gray.
 6020-6030 Shale as above; sandstone, light gray, fine grained, calcareous.
 6030-6080 Shale, medium light gray, shale as above.
 6080-6150 Shale, light olive gray to medium gray, fissile.
 6150-6180 Shale, medium light gray to pale yellowish brown, fissile, calcareous.
 6180-6230 Siltstone, medium light to medium gray, shale as above.
 6230 Circulation 1/2 hour. Shale, medium light gray, fissile, calcareous.
 6240-6260 Shale, grayish red, calcareous.
 6260-6270 Shale as above, dolomitic limestone, white, granular, interbedded with shale.
 6270-6280 Shale as above, limestone, very light gray, fragmental.
 6280-6300 Shale as above, limestone, very light gray, earthy to crystalline, vitreous.
 6300-6320 Limestone as above, shale, medium gray to grayish red.
 6320-6350 Limestone, very light gray to medium light gray, earthy to crystalline, shale as above.
 6350-6360 Shale, medium light to medium gray, limestone, very light to medium light gray, fragmental.

6360-6390 Shale as above, limestone, very light gray to light brownish gray.
 6390-6400 Calcitic dolomite, very light gray, fine to crystalline.
 6400-6410 Shale, medium light gray, calcareous to medium gray, non-calcareous, dolomitic limestone, very light gray, dense to sucrosic.
 6410-6430 Dolomitic limestone, very light gray, subcrystalline, fragmental, sublithographic, shell fragments.
 6440-6450 Anhydrite, very light to light gray, dolomitic limestone as above.
 6450-6490 Limestone, very light to light gray, dense, fragmental; anhydrite, shell fragments.
 6490-6500 Limestone, light gray, fragmental.
 6500-6510 Limestone, very light to light gray, fragmental, shale, dark reddish brown.
 6510-6530 Limestone as above, shale, medium gray, very slightly calcareous to non-calcareous, dark reddish brown shale, non-calcareous.
 6530-6550 Shale as above, limestone.
 6550-6560 Shale, medium dark gray, calcareous, shale as above, some limestone.
 6560-6590 Shale, light to medium gray, limestone, light gray, fragmental, dark reddish brownish associated with light gray, slightly calcareous, bentonitic shale.
 6590-6660 Shale, light to medium gray, some grayish red (10R4/2), limestone, light gray.
 6660-6720 Shale, medium light gray, calcareous, limestone, medium light gray.
 6720-6744 Shale, medium light to medium gray, fissile.
 6744 Circulation 1 hour, Dolomite, light brownish gray, shale, medium light to medium gray.
 6740-6750 Shale, medium light to light olive gray.
 6750-6760 Shale, light gray, lumpy, medium gray, platy, grayish red (10R4/2) to light olive gray. Anhydrite.
 6760-6800 Shale as above; siltstone, pale reddish brown to moderate reddish orange.
 6800-6851 Shale, medium light to dark gray, siltstone as above; shale, moderate brown (5YR3/4); anhydrite. Cavings.
 6851 Circulation 1 hour. Cavings.
 6851-6890 Cavings.
 6890-6940 Salt, siltstone, pale reddish brown (10R5/4) to moderate reddish brown (10R4/6); shale, moderate reddish brown.
 6940-6960 Shale, medium gray, shale as above.
 6960-7020 Shale, medium to medium dark gray; shale, moderate reddish brown.
 7020-7050 Limestone, pale red, subcrystalline, tight.
 7050-7060 Limestone as above; shale, medium gray to medium dark gray.
 1060-7100 Shale as above, splintery. Some limestone as above.
 7100-7130 Shale as above, siltstone, pale reddish brown (10R5/4), shale, moderate reddish brown (10R4/6), limestone, grayish orange pink.
 7130-7190 Salt; shale, moderate reddish brown to medium gray.
 7190-7200 Salt.
 7200-7260 Salt; shale, siltstone as above.
 7260-7280 Shale, medium to medium dark gray; limestone, pale red.
 7280-7320 Shale as above; also moderate reddish brown to brownish gray shale; limestone as above.
 7320-7390 Siltstone, pale reddish brown; shale, moderate reddish brown; salt, dolomite, grayish to moderate pink.

7390-7400 Siltstone, shale as above. Shale, medium gray, dolomite.
 7400-7410 As above, salt, dolomite.
 7410-7430 Shale, siltstone, dolomite as above.
 7430-7440 Salt; shale, grayish red, siltstone, moderate reddish brown.
 7440-7450 Salt.
 7450-7460 Salt. Shale, medium gray - cavings.
 7460-7500 Dolomite, pinkish gray, dense, cavings; very light gray anhydrite. Cavings.
 7500-7550 Dolomite, pinkish gray to pale red (5R6/2) subcrystalline, to crystalline; anhydrite, white to grayish pink, crystalline. Cavings.
 7550 Cavings - dolomite and anhydrite as above.
 7584-7630 Circulation 7:30. Sandstone, pinkish gray to pale red, fine grained, dolomite as above.
 7630-7644 Dolomite as above.
 7644 Circulation 1/4 hour. Dolomite and sandstone as above, shale cavings, medium dark gray to moderate reddish orange, anhydrite.
 7640-7700 As above.
 7700-7730 Shale, medium to medium dark gray, platy, dolomitic; dolomite, sandstone as above, anhydrite,
 7730-7740 Dolomite as above; shale as above; anhydrite and chert fragments.
 7740-7760 Shale as above; dolomite as above; anhydrite and chert fragments.
 7760-7780 Dolomite, pale red (5R6/2) to grayish red (5R4/2), subcrystalline, angular, shale, medium gray, dolomitic.
 7780-7800 Dolomite, very light gray to grayish red (5R4/2), subcrystalline to crystalline; anhydrite, shale.
 7800-7810 Shale, medium gray, slightly dolomitic, dolomite as above; shale, medium dark gray, fissile.
 7857 Circulation 1 3/4 hour. Sandstone, very light gray to pinkish gray, fine grained, vitreous, friable, dolomite, shale cavings.
 7850-7880 Sandstone, very light gray to pinkish gray, fine grained, vitreous. Cavings.
 7880-7900 Shale, olive gray to pale red, dolomite and shale as above.
 7900-7930 Chert, moderate pink to pale reddish brown (10R5/4). Dolomite, very light gray to brownish gray, cavings.
 7930-7940 Shale, medium to medium dark gray; dolomite, chert as above.
 7940-7960 Dolomite, very light gray to pale red (5R6/2); shale, medium light to medium dark gray and pale reddish brown, fragments rounded to fissile.
 7960-7976 As above; chert, moderate pink.
 7976 Circulation 1 3/4 hour. Limestone, very light gray to light brownish gray, subcrystalline; dolomite, pinkish gray to grayish red (5R4/2) and light gray; shale, dark gray, splintery and moderate reddish brown to medium gray, slightly dolomitic. Shell fragments.
 7970-7990 As above.
 7990 Dolomite, pale yellowish brown, to pale red.
 7990-8010 Limestone, light gray to light brownish gray; dolomite, pale red (10R6/2); chert, moderate orange pink (10R7/4) to pale red (10R6/2). Shale, medium gray to moderate reddish brown. Chert fragments.
 8010-8050 Limestone, light to light brownish gray; shale, medium to dark gray, dolomite.
 8050-8060 Limestone, brownish gray to dark reddish brown, dolomite as above, shale.

8060-8080 Limestone, light brownish gray to dark reddish brown; dolomite.
 8080-8100 Limestone, light brownish gray to medium gray.
 8100-8120 Shale, dark gray, platy; limestone as above.
 8120-8170 Shale, medium gray to dark gray, platy. Cavings.
 8170-8210 Shale, dark to medium gray, platy.
 8210-8240 Shale, light olive gray (5Y5/2), thin bedded, subwaxy. Shale, limestone as above, cavings.
 8240-8270 Shale, light olive gray to olive gray, thin bedded; as above.
 8270-8300 Shale as above; limestone, pinkish gray, dolomitic. Shale, dark reddish brown.
 8300-8320 As above, also shale, medium gray; oolitic limestone, medium light to medium gray. Cavings.
 8320-8370 Shale, light olive gray to olive gray; limestone, very light gray to light brownish gray, shale, dark reddish brown and medium gray.
 8370-8400 Sandstone, very light gray, fine grained, vitreous luster, dolomitic, cavings, shale and limestone.
 8400-8436 Sandstone, very light gray to pale brown (5YR5/2), dolomitic, fine grained, cavings, gray limestone, gray to olive gray and grayish red shale.
 8436 Circulation 1 1/2 hours. Sandstone as above, limestone very light gray to pale red, shale, light gray to dark gray, also light olive gray to moderate reddish brown.
 8430-8450 As above.
 8450-8520 Sandstone as above; siltstone, pale brown, dolomitic, shale, moderate reddish brown.
 8520-8530 Sandstone, very light gray, coarse grained, calcareous; also sandstone as above; limestone, light brownish gray to brownish gray.
 8530-8580 Limestone, light brownish gray, to brownish gray, fragmental, dense to grainy; sandstone as above; shale, dark gray, light olive gray, moderate reddish brown.
 8580 Circulation 1 hour. Shale, brownish gray to dark gray, platy; also light olive gray to moderate reddish brown shale, limestone as above. Sandstone, very light gray, medium grained, calcareous.
 8580-8600 As above.
 8600-8650 Shale, dark gray to medium gray, brownish gray; limestone, light brownish gray to brownish gray.
 8650-8660 Sandstone, very light gray, fine to medium grained, sub-angular to sub-round, frosted, calcareous.
 8660-8670 Shale as above.
 8670-8675 Salt or anhydrite indicated on logs. Poor samples.
 8675-8682 Shale as above.
 8682-8694 Salt or anhydrite indicated by logs. Poor samples.
 8694-8700 Dolomite, very light gray to light brownish gray, argillaceous, cavings.
 8700-8710 Salt indicated on logs. Cavings.
 8710-8720 Dolomite, very light gray, crystalline; limestone, light olive gray, dense; shale.
 8720-8730 Salt or anhydrite indicated on logs.
 8730-8735 Dolomite, light gray to light brownish gray, fine to, finely crystalline, limestone, light brownish gray; anhydrite.
 8735-8750 Salt or anhydrite indicated on logs; also very light gray, light brownish gray dolomite, fine to finely crystalline.
 8750-8755 Shale, medium gray to dark gray, dolomite as above, limestone, light brownish gray.

8755-8810 Salt indicated by logs.

8810-8820 Limestone, brownish gray, argillaceous, dense; shale, medium light gray to dark gray. No salt in samples.

8820-8833 Shale as above; limestone as above.

8833 Circulation 1 3/4 hour. Limestone, brownish gray, sharp fragments, subcrystalline; limestone, very light to medium gray, subangular to rounded. Shale.

8845 Circulation 7:15 p.m. - 8:30 p. m. Shale, medium light gray to medium gray, earthy, massive, fairly compact; limestone, light brownish gray to brownish gray. Cavings.

8840-8852 As above.

8852-8880 Salt or anhydrite indicated on logs.

8880-8890 Shale, medium gray to dark gray; limestone, very light gray.

8895 Circulation 2 hours. Salt or anhydrite indicated on logs but is not present in samples. Anhydrite, very light gray to light brownish gray, fine to finely crystalline, subangular to rounded fragments, shale, limestone.

8890-8900 As above.

8900-8910 Salt in samples.

8910-8920 Shale, dark gray, fissile - to grayish red (5R4/2) fissile, mottled grayish red - grayish yellow green, sharp fragments. Salt indicated on logs between 8912-8920.

8920-8940 Shale as above, limestone, medium light gray; anhydrite.

8940-8950 Limestone, medium gray to medium dark gray, subcrystalline.

8950-8966 Shale, dark gray, fissile; limestone, light brownish gray to medium gray, subcrystalline.

8966 Circulation 1 1/2 hour. Salt indicated on logs but is not present in samples. Shale, medium light gray, calcareous to dark gray, fissile; limestone, medium gray, dense, anhydrite.

8960-8970 Shale, medium gray to dark gray; limestone, light brownish gray to brownish gray, subcrystalline, dense, sharp fragments.

8970-8995 Salt indicated on logs. Sample as above.

8995 Circulation 1 1/2 hour. Shale, medium to dark gray, anhydrite, very light gray, fine to finely crystalline.

9000-9010 Limestone, medium to medium dark gray; shale as above.

9010-9060 Salt indicated on logs with thin medium gray to medium dark gray limestone interbedded at 9018-9022 & 9031-9035.

9060-9080 Limestone, medium light gray to medium dark gray; shale, salt cavings, anhydrite.

9080-9090 Dolomite, medium light gray, subcrystalline; limestone, medium gray, subcrystalline.

9090-9110 Shale, medium light gray to medium gray; limestone, medium light gray to brownish gray.

9110-9120 Dolomite, medium light gray, subcrystalline, tight.

9120-9150 Dolomite as above; salt indicated by logs.

9150-9166 Limestone, brownish gray, fine to crystalline.

9166 Circulation 1 3/4 hour. Salt or anhydrite indicated on logs. Limestone as above.

9170-9182 Limestone, brownish gray, fine to finely crystalline. Cavings.

9182 Circulation. Limestone, light brownish gray to brownish gray, fine to finely crystalline, limestone, light gray to medium gray; dolomite, medium light gray.

9182-9200 As above.

9202 Circulation 9:45 - 11:00. Limestone, light brownish gray, subcrystalline to crystalline; limestone, light gray, subcrystalline.

9200-9220 As above.
 9220-9240 Limestone, light gray to light brownish gray, subcrystalline to crystalline.
 9240-9250 Limestone, brownish gray, subcrystalline; limestone as above.
 9250-9280 Limestone, light gray to light brownish gray, fine to crystalline.
 9280-9290 Limestone, brownish gray, dense, subcrystalline; limestone as above, dolomite, medium gray, subcrystalline.
 9290-9300 Missing.
 9300-9310 Same as 9280-9290 interval.
 9320-9350 Anhydrite, light to medium light gray, dense, subcrystalline.
 9350-9360 Limestone as above. Cavings.
 9360-9377 Anhydrite as below.
 9377 Circulation 1 1/2 hours. Anhydrite, light gray to medium light gray, subcrystalline, very dense.

Cores

9375-9377 Anhydrite, light olive gray, subcrystalline.
 9377-9379 Anhydrite, pale yellowish brown, subcrystalline, dolomite, medium light gray, shale stringers.
 9379-9381 Anhydrite, light brownish gray, subcrystalline.
 9381-9385 Anhydrite, medium light to medium dark gray, subcrystalline, shale stringers.
 9385-9400 Anhydrite, light brownish gray to medium gray, fine to finely crystalline.
 9400-9401 Limestone, brownish gray, crystalline.
 9401-9407 Limestone, brownish gray, subcrystalline, dense.
 9407-9417 Anhydrite, medium light gray, subcrystalline.
 9417-9427 Limestone, brownish gray, fine to finely crystalline.
 9427-9429 Limestone, light brownish gray to medium light gray, sucrosic to crystalline, dolomitic.
 9429-9443 Limestone, medium light gray, subcrystalline, calcite crystals.
 9443-9451 Limestone, medium gray to light olive gray, finely crystalline.
 9451-9453 Limestone, medium dark gray, subcrystalline.
 9453-9459 Limestone, pale yellowish brown, fine to finely crystalline, calcite crystals, brownish gray.
 9459-9481 Limestone, pale yellowish brown to medium dark gray, fine to finely crystalline, black shaly streaks.
 9481-9493 Limestone, medium dark gray, mostly subcrystalline, some calcite crystals.
 9493-9507 Limestone, pale yellowish brown, fine to finely crystalline with some calcite crystals, black magnesium oxide inclusions, secondary calcite in fractures.
 9507-9513 Limestone, pale yellowish brown, subcrystalline to crystalline.
 9513-9523 Limestone, medium light gray to medium dark gray, fine to crystalline.
 9523-9539 Limestone, pale yellowish brown, fine to crystalline.
 9539-9550 Limestone, very light gray to medium gray, lithographic, sub-crystalline to crystalline, fossiliferous.
 9550-9569 Limestone, very light gray to medium gray, crystalline, fossiliferous.
 9569-9571 Limestone, medium light gray, microsucrosic.
 9571-9573 Limestone, medium gray, subcrystalline.
 9575-9579 Limestone, medium light gray, fine to crystalline.

9579-9589 Limestone, medium gray, crystalline.
 9589-9591 Limestone, very light gray, finely crystalline.
 9591-9597 Limestone, medium light gray, finely crystalline to crystalline.
 9597-9599 Limestone, medium gray, fine to finely crystalline.
 9599-9601 Limestone, white to very light gray, dolomitic.
 9601-9607 Limestone, pale yellowish brown, fine grained.
 9607-9619 Limestone, medium gray to medium dark gray, fine to crystalline, very tight.
 9619-9627 Limestone, medium dark gray, crystalline.
 9627-9637 Limestone, medium dark gray, fine to crystalline, tight, secondary limestone filling in cracks.
 9637-9647 Limestone, medium light gray to medium gray, fine grained to finely crystalline with some larger crystals.
 9647-9651 Limestone, medium dark gray, fine grained with some large crystals, secondary filling.
 9651-9657 Limestone, medium light gray, fine to crystalline.
 9657-9661 Limestone, medium dark gray, fine to crystalline, lithographic.
 9661-9665 Limestone, light brownish gray, fine grained, microsucrosic, lithographic.
 9665-9669 Limestone, light brownish gray, crystalline, lithographic.
 9669-9683 Limestone, very light gray, crystalline, lithographic, intergranular porosity, shell impressions, some banding.
 9683-9685 Limestone, light gray, finely crystalline with some large crystals, pinpoint porosity.
 9685-9695 Limestone, light olive gray, microsucrosic, lithographic.
 9695 Limestone, medium light gray to medium gray, finely crystalline, lithographic, secondary filling in fractures, stylolites, some larger crystals.