

# NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 249

Summary of the I. J. Wilhite - Ida Pixley #1  
Burke County, North Dakota  
Well No. 2564 - Permit No. 2576

By William P. Eastwood  
April 1961

I. J. Wilhite - Ida Pixley #1 is located in SE 1/4, SE 1/4, Section 23, Township 160 North, Range 93 West (510 FSL, 800 FEL), Burke County, North Dakota. Elevation: ground 2362, K.B. 2372. Contractor: Star Drilling, Inc., Bismarck, North Dakota.

The drilling permit was issued December 24, 1959, with the well being classed as a wildcat. The well was drilled to a total depth of 7685 and completed on March 8, 1960 as a producer from the Midale subinterval of the Madison, and was the discovery well of the Gros Ventre field.

## Drill Stem Tests:

1. 7576-7594 (Midale subinterval). Gas to surface in 1 hour 20 minutes. Recovered 95 feet oil cut mud, 90 feet gas cut oil emulsion, 165 feet oil, and 100 feet of salt water.

Initial hydrostatic	4612
Final hydrostatic	4449
Initial flow	72
Final flow	191
Initial shut-in	3226
Final shut-in	2409

2. 7608-7620 (Rival subinterval). Gas to surface in 19 minutes. Recovered 365 feet slightly mud cut oil, 135 feet salt water.

Initial hydrostatic	4589
Final hydrostatic	4309
Initial flow	72
Final flow	191
Initial shut-in	3321
Final shut-in	3321

## Casing and Tubing Record:

493 feet of 9-5/8 inch surface casing cemented with 300 sacks.  
7682 feet of 4-1/2 inch production casing cemented with 450 sacks.  
7663 feet of 2-3/8 inch tubing.

## Core Record:

1. 7594-7620 (Midale and Rival subintervals).  
2. 7620-7640 (Rival subinterval).

## Completion Data:

1. Plugged back to 7595.  
2. Perforated Midale subinterval from 7580-7590 with 2 holes per foot. Acidized with 2,000 gallons.  
3. Pumped 40 barrels oil per day through 16/64 inch choke. GOR 460 cubic feet per barrel, 50% water, gravity 39.0° API. Shut-in tubing pressure 40.

# Mechanical Logs:

Laterolog - Gamma Ray (491-7685)

Sonic - Gamma Ray (6683-7683)

The formation tops were determined from samples and mechanical logs. Color names are those used in the Rock Color Chart of the National Research Council. Limestone petrography terms are those proposed by Folk (1959), Bulletin of the American Association of Petroleum Geologists, vol. 43, no. 1, pp. 1-38.

## FORMATION TOPS

### Cretaceous

Pierre formation	1872
Niobrara formation	3795
Greenhorn formation	4198
Belle Fourche formation	4296
Mowry formation	4470
Basal Cretaceous sands	4806

### Jurassic

Rierdon formation	5556
Piper formation	5675
Piper limestone	5884

### Triassic

Spearfish formation	6122
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### Pennsylvanian

Tyler formation	6426
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### Mississippian

Otter formation	6560
Kibbey formation	6733
Kibbey limestone	6861
Madison group	
Poplar interval	7020
Ratcliffe interval	7390
Midale subinterval	7574
Frobisher-Alida interval	7614

Total depth	7685
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0-900	Missing.
900-930	Shale, light gray, very calcareous, blocky.
930-990	Missing.
990-1110	Abundant lignite, common limy shale as above.
1110-1200	Shale, light gray, very limy, silty, hard and blocky. Rare to no lignite. Rare pieces of yellowish gray (5Y8/1) very fine grained, limy sandstone.
1200-1230	Abundant medium gray, medium grained, limy, arkosic (?) sandstone. Common medium light gray, silty, non-calcareous, blocky shale.
1230-1260	Abundant shale as above, no sandstone. Lignite cavings.
1250-1410	Shale as above, with common, limy sandstone as above. Lignite cavings.
1410-1530	Abundant medium light gray, sandy shale. Rare sandstone as above. Lignite cavings.
1530-1590	As above, with common medium dark gray, silty, subfissile shale.
1590-1680	Abundant medium dark gray shale as above.

1680-1710 Medium dark gray shale and light gray shale as above; common very light gray to white, limy, medium grained sandstone.

1710-1770 Abundant medium gray, subfissile shale, common light gray shale as above; rare sandstone as above. Lignite cavings.

1872 Top of Pierre formation

1770-1920 Very abundant, medium sized, angular to subrounded, loose grains of quartz and rare epidote. Rare shale as above. Rare lignite cavings.

1920-1980 Abundant light brownish gray (5YR6/1) soft shale, common loose quartz grains as above.

1980-2130 Abundant light gray, silty, non-calcareous, soft shale. Rare to common, very fine grained, white sandstone.

2130-2520 Abundant medium light gray to medium gray subfissile shale.

2520-2700 Shale, medium gray to light brownish gray (5YR6/1), silty. Rare fragments of moderate reddish brown (10R6/6) siltstone.

2700-2820 Abundant medium light gray, subfissile, clayey shale, common silty shale as above. Very rare reddish brown siltstone as above.

2820-2910 Abundant shale as above; common reddish brown siltstone as above; rare mollusk fragments.

2910-3000 Shale as above; very rare siltstone as above.

3000-3270 Abundant light gray, silty, soft shale. Lignite cavings.

3270-3750 Abundant medium light gray, subfissile shale, common light gray, silty shale as above. Rare mollusk fragments. Very rare reddish brown siltstone.

3795 Top of Niobrara formation

3750-3810 As above, rare white limy shale.

3810-3870 Shale as above, with common moderate reddish brown, dolomitic siltstone.

3870-3900 As above. Very rare black shale with pinkish white limy specks.

3900-4020 Shale and dolomitic limestone or silty dolomite as above. No "white specks."

4020-4170 Abundant medium gray, fissile shale; rare medium gray, sub-lithographic (micrite) limestone. Rare dark gray, fissile shale; rare mollusk fragments. Very rare white microcrystalline limestone.

4198 Top of Greenhorn formation

4170-4230 Abundant black fissile shale containing rare "white specks." Rare white limestone fragments.

4230-4260 Abundant medium light gray, silty, soft shale; common black fissile shale.

4296 Top of Belle Fourche formation

4260-4440 Abundant black shale as above; common silty shale as above.

4470 Top of Mowry formation

4440-4800 Very abundant black fissile shale; rare silty shale as above.

4806 Top of Basal Cretaceous sands

4800-4890 Abundant black shale as above. Common light gray to white, sub-friable, medium grained, quartz sandstone.

4890-4950 As above, with common coarse, angular to subangular quartz grains. 4920-4950 missing.

4950-5250 Abundant light brownish gray (5YR6/1) sandy and silty shale, common black fissile shale; rare sandstone and quartz as above. Very rare moderate red (5R4/6) shale.

5250-5430 Abundant light gray silty shale, common black fissile shale. Rare medium to fine grained white sandstone at 5370-5430.

5430-5490 Shale as above; common sandstone as above.

5490-5520 Abundant black fissile shale, common light gray shale, rare white sandstone.

5520-5540 Missing.

5540-5550 Abundant black fissile shale, common light gray shale; rare white sandstone; very rare pale green (5G7/2) shale.

5556 Top of Rierdon formation

5550-5630 As above, with common, grayish yellow green (5GY7/2) clayey and micaceous, waxy-appearing shale.

5630-5670 Abundant black, very fissile shale, common grayish yellow green shale as above. Common to rare, greenish gray (5GY6/1) waxy shale.

5675 Top of Piper formation

5670-5710 Abundant, light gray to greenish gray, waxy, micaceous shale. Common black fissile shale.

5710-5740 Shale as above, with common, white, sublithographic (micrite) limestone.

5740-5790 Shale as above, with rare to common, moderate red (5R5/4) shale and fine grained sandstone. Rare white limestone as above.

5790-5810 Abundant, olive gray (5Y6/1), greenish gray (5GY6/1), and light brownish gray (5YR6/1) to pale green (10G6/2) shale. Common, white, medium grained, limy sandstone. Common moderate red (5R5/4) shale. Rare, white, micrite limestone.

5810-5820 Abundant black fissile shale; common variegated shale as above.

5820-5870 Variegated shale and sandstone as above. Rare black shale cavings (?) as above. Amount of moderate red shale increases toward base. Rare pieces of white, limy sandstone.

5870-5890 Abundant, light gray, limy shale; common variegated shale as above.

5884 Top of Piper limestone

5890-5910 Abundant variegated shale as above; common, white, sub-lithographic, dolomitic limestone.

5910-5930 As above, with common, yellowish gray (5Y7/2), limy dolomite.

5930-5940 Shale as above, with common moderate yellowish brown, micrite limestone. Rare dolomite and dolomitic limestone as above.

5940-5950 Abundant dark gray to black shale; rare limestone as above.

5950-6010 Abundant white to yellowish gray (5Y7/2) sublithographic (micrite) limestone. Black shale as above. The limestone becomes darker in color to pale yellowish brown (10YR6/2) at 5980 to base.

6010-6020 Common limestone as above. Common pale greenish yellow (10Y8/2) sandy shale, and grayish yellow green (5GY7/2) very fine grained sandstone.

6020-6040 Very abundant, moderate red (5R4/6), silty, fissile, micaceous shale; black shale and limestone cavings as above.

6040-6050 Abundant grayish yellow green (5GY7/2) shale; very common, white, cryptocrystalline to sublithographic, limy dolomite.

- 6050-6070 Abundant limy dolomite, pale to moderate yellowish brown containing many inclusions of white fine crystalline gypsum (?) crystals. Rare moderate yellowish brown micrite limestone. Common shale as above.
- 6070-6090 Abundant, dark yellowish brown, dolomitic shale; common to rare dolomite as above.
- 6122 Top of Spearfish formation
- 6090-6140 Abundant black and grayish yellow green shale. Common moderate red, silty, non-micaceous shale. Rare to common white bentonite (?) and white, fine crystalline gypsum.
- 6140-6170 Very common, moderate red shale as above, abundant black and greenish shale as above. Rare dolomite fragments.
- 6170-6210 Abundant, moderate red, subfissile, non-micaceous, silty shale, sandy shale, and shaly, fine grained sandstone. Shale and dolomite cavings as above.
- 6210-6330 Abundant, moderate red, fine grained, shaly sandstone, and common, moderate red, sandy shale. Dark shale cavings.
- 6330-6410 As above, with rare to common, medium grained, moderate red, shaly sandstone. The fine grained sandstone consists of angular to subrounded quartz grains, while the medium grained sandstone consists of well rounded grains. Rare, moderate red, sandy shale. Dark shale cavings, Rare fragments of pink, fine crystalline gypsum at 6360-6400.
- 6426 Top of Tyler formation
- 6410-6440 Abundant, medium gray to medium dark gray, silty, subfissile shale. Common to rare, moderate red, shaly sandstone.
- 6440-6450 As above, with common, moderate red, fissile, waxy-appearing shale.
- 6450-6480 Abundant moderate red, fissile, waxy shale. Common dark shale cavings. Rare pieces of grayish purple (5P4/2), waxy, fissile shale.
- 6480-6530 Abundant moderate red shale as above. Very common, greenish gray (5G6/1) to medium gray, soft, fissile shale.
- 6530-6550 Very abundant, moderate red, waxy shale as above. Rare to common, light gray to very light gray, fissile, waxy shale. Rare pieces of white, fine to medium grained, friable sandstone.
- 6550-6560 Abundant medium light gray, soft shale; common, moderate red shale as above. Very rare white sandstone as above.
- 6560 Top of Otter formation
- 6560-6570 Very abundant, black, fissile shale. Rare moderate red shale as above.
- 6570-6600 Common black, fissile shale; common, medium gray, soft shale; common moderate red shale. Rare, white, pinkish gray (5YR8/1) and pale red (5R6/2) medium grained sandstone.
- 6600-6610 Abundant moderate red, waxy, fissile shale; common to rare, moderate red, medium grained sandstone and sandy shale. Common, medium gray to black, fissile shale. Rare, white, angular quartz fragments.
- 6610-6640 As above, with rare to common, white to pale yellowish brown, microsucrosic, dolomitic limestone.
- 6640-6650 Abundant, medium to dark gray, fissile shale; common limestone as above; rare, moderate red shale as above. No sandstone.

6650-6660 Abundant, pale red (5R6/2), shaly, limy, microsucrosic dolomite. Rare limestone and dark shale as above.

6660-6690 Dolomite as above, with very common, white to grayish pink (5R8/2), micrite and pelmicrite limestone with rare fragments of very pale yellowish brown, oosparite limestone. Common dark shale cavings.

6690-6710 Abundant dark fissile shale as above; common limestone and dolomite as above.

6710-6730 Dark shale, moderate red shale, and fine grained sandstone, rare dark greenish yellow (10Y6/6) shale. Rare limestone and dolomite as above, Probably badly caved.

6733 Top of Kibbey formation

6730-6810 Abundant, dark gray to black, subfissile shale; common to abundant, white to moderate pink (5R7/4), medium to fine grained sandstone.

6810-6820 Dark shale and red sandstone as above, with common, moderate red (5R5/4), fissile, waxy shale.

6820-6860 Very abundant, moderate red (5R5/4) to pale red purple (5RP6/2) sandstone. Rare sandstone and shale as above.

6861 Top of Kibbey limestone

6860-6870 Abundant, dark gray shale as above; common, moderate red shale as above. Rare to common, white, fine crystalline gypsum. Very rare, pale yellowish brown limestone.

6870-6890 Abundant, pale to moderate yellowish brown, sublithographic (micrite) limestone. Shale cavings as above. Limestone has scattered areas of good pinpoint porosity but is tight between these areas.

6890-6910 Common, moderate pink, limy, medium to fine grained sandstone. Common limestone and shale as above.

6910-6940 Abundant, dark gray, fissile shale; common, moderate red, very fine grained, shaly sandstone. No limestone.

6940-6980 As above, with common to abundant, moderate red, fissile, waxy shale.

6980-7000 Abundant, moderate red shale as above; rare, dark shale as above. Rare to common, pale yellowish green (10GY7/2), waxy shale.

7020 Top of Poplar interval

7000-7030 Abundant, black, fissile shale; common to rare red shale as above; rare, white, fine crystalline gypsum.

7030-7060 Black and red shale as above; common, moderate orange pink (10R7/4) limy, silty shale. Probably badly caved. Laterolog and Sonic log indicate salt and interbedded shale and anhydrite between 7020 and 7200.

7060-7100 Black and moderate red shale; rare fragments of white anhydrite.

7100-7110 Common, light gray to pale yellowish brown, microsucrosic limestone. Shale cavings and rare anhydrite as above.

7110-7130 Abundant, light to medium gray, micrite and microsparite limestone common to rare microsucrosic limestone as above. Rare pieces of the limestone have good pinpoint porosity. Cavings as above.

7130-7150 Mostly black and red shale cavings; common white anhydrite; rare limestone.

7150-7180 Limestone, oolpelmicrosparite, consisting of dark gray pellets and small oolites in a white fine crystalline matrix. Rare, pale yellowish brown, microsucrosic limestone; common white anhydrite. Abundant black and red shale cavings.

7180-7220 Badly caved; common white anhydrite; rare limestone. Laterolog and sonic log indicate a salt bed at about 7150-7190.

7220-7230 Abundant pale yellowish brown, micrite and pelmicrite limestone, fair to poor pinpoint porosity. Rare, pale yellowish brown oomicrosparite. Badly caved.

7230-7240 Limestone as above, with common to abundant, medium light gray, pelmicrosparite, shaly limestone. Common black and red shale cavings.

7240-7260 Common to abundant light bluish gray (5B7/1) cryptocrystalline anhydrite. Rare limestone as above. Black and red shale cavings.

7260-7270 Abundant white anhydrite; common blue anhydrite as above; rare limestone.

7270-7300 Abundant dark gray shale; rare red shale. Very rare blue anhydrite as above.

7300-7320 Common white anhydrite. Badly caved.

7320-7340 Anhydrite, white and light bluish gray. Abundant cavings.

7340-7370 Limestone, pale to moderate yellowish brown, micrite and pelmicrite with rare oosparite. Scattered patches of good pinpoint porosity. Black and red shale cavings.

7370-7390 Rare limestone as above; common white anhydrite. Badly caved.

7390 Top of Ratcliffe interval

7390-7400 Abundant black shale; rare red shale. Rare white anhydrite.

7400-7440 As above, with rare to common, light bluish gray anhydrite, and pale yellowish brown, microsucrosic, limy dolomite. Sonic log indicates a salt bed at about 7416-7430.

7440-7460 Very badly caved black and red shale. Very rare white anhydrite.

7460-7470 Limestone, moderate to dark yellowish brown, pelmicrite and micro-sucrosic. The microsucrosic limestone has good pinpoint porosity and some fragments have slight oil staining.

7470-7480 Abundant, light bluish gray to white, fine crystalline to crypto-crystalline anhydrite. Rare to common, pale yellowish brown, micrite and pelmicrite limestone with scattered pinpoint porosity. Red shale cavings.

7480-7490 Abundant, pale to moderate yellowish brown, pelmicrite limestone with patches of microsparite. Fair pinpoint porosity, no stain. Rare, light bluish gray anhydrite. Common red shale cavings.

7490-7515 As above, with very common, pale yellowish brown, microsucrosic, dolomitic limestone. Fair intercrystalline porosity and permeability. No staining. Rare light bluish gray anhydrite.

7515-7520 As above, with common light bluish gray anhydrite.

7520-7530 Abundant, medium gray to medium dark gray, soft, silty shale; common to rare, light bluish gray and white anhydrite; rare limestone. Common red shale cavings. The gray shale seen in this interval is lighter in color and softer than the black fissile shale cavings seen up the hole.

7530-7545 Black and red shale cavings. Light bluish gray to white anhydrite.

7545-7555 Abundant pale yellowish brown to yellowish gray (5Y8/1), micrite and pelmicrite limestone, poor porosity and permeability. Common to rare, pale yellowish brown, pelmicrite limestone with patches of sparite, scattered pinpoint porosity. Rare light bluish gray to white, cryptocrystalline anhydrite. No stain.

7555-7565 Badly caved. Limestone and anhydrite as above.

7565-7570 Badly caved, Rare limestone, common white to bluish anhydrite.

7574 Top of Midale subinterval

7570-7588 Abundant, pale yellowish brown to yellowish gray (5Y8/1), micrite to microsugrosic, dolomitic limestone. Common white anhydrite. Common black and red shale cavings. No stain seen.

Drill stem test #1. (7576-7594) Recovered oil, oil cut mud, and salt water.

7580-7590 Perforated interval. Flowed 40 BOPD, 50% water, GOR 460.

7588 Circulated 1-1/2 hours. Abundant pale yellowish brown, micro-sugrosic, limy dolomite. No oil odor, no stain, no cut. Fair intercrystalline porosity and permeability.

7588-7594 As above.

Core #1 (7594-7620). Description of core chips.

7594-7595 Limestone, dolomitic, pale yellowish brown with common, small, dark yellowish brown anhydrite (?) crystals. Fair oil stain on fracture surfaces. Slight stain within the rock matrix. Good cut in carbon tetrachloride. The samples from the perforated interval may have been heated too much in the drying process, thus driving out the oil. Fair to good intercrystalline porosity, low permeability.

7595-7596 Limestone, pale yellowish brown, intrapelmicrosparite. Pellets, small intraclasts, and fossil fragments (algae and ostracodes) loosely packed in a pale yellowish brown, microsugrosic, dolomitic matrix. Low porosity and permeability. Slight stain, weak cut.

7596-7597 Limestone, dolomitic, microsugrosic, pale yellowish brown. No stain, no cut. Low porosity and permeability.

7597-7598 Dolomitic, microsugrosic limestone as above. Good stain and cut. Fair porosity and permeability.

7598-7601 As above, weak stain and faint cut. Better intercrystalline porosity and permeability than above.

7601-7602 Dolomitic limestone as above, very weak cut.

7602-7603 Limestone, medium light gray, microsugrosic. Probably contains very little dolomite. Good intercrystalline porosity. No stain or cut.

7603-7604 Limestone, pale to moderate yellowish brown, slightly dolomitic. Microsugrosic with thin laminae of slightly coarser microsparite. Thin bands and laminae of algal (?) fragments. Low intercrystalline porosity and permeability. No stain.

7604-7605 Limestone, pale yellowish brown, dolomitic, microsugrosic. Spotty stain. Rare small anhydrite crystals.

7605-7606 Dolomite, limy, pale yellowish brown, microsugrosic. Contains small limy spots and calcareous fossil fragments. Fair intercrystalline porosity, No stain.



Drill stem test #2 (7608-7620). Recovered slightly mud cut oil and salt water.

- 7606-7610 Limestone, moderate yellowish brown to medium gray. Intra-microsparite. Small intraclasts and abundant fossil fragments (brachiopods, crinoids, algae) loosely scattered in a microsparite to micrite matrix. Low porosity and permeability, no oil stain. Common brachiopod shell impressions. Common dark gray, shaly laminae.
- 7610-7611 Limestone, pale to moderate yellowish brown. Intrapelsparite. Abundant intraclasts and small pellets closely packed in a sparite cement with rare patches of micrite. Rare brachiopod fossils. No stain. Very low porosity and permeability.
- 7611-7612 Limestone, pale yellowish brown. Intrapelmicrite. As above, but with little sparry calcite. Styolitic. Tight.
- 7612-7613 Limestone, pale yellowish brown. Intrasparite with patches of micrite. Medium to small rounded intraclasts or large pellets closely packed in a sparite or micrite cement. Certain areas of the rock are poorly cemented and have good intergranular porosity. No stain.
- 7613-7614 Limestone, pale yellowish brown. Intrapelmicrite with patches of sparite. Intraclasts and pellets closely packed in a micrite cement with common small areas of sparite cement. Rare small areas of poor cementing and thus fair pinpoint and intergranular porosity with faint oil staining.

7614 Top of Frobisher-Alida subinterval

- 7614-7615 Limestone, pale yellowish brown. Peldismicrite with rare large intraclasts. Small pellets and algal (?) fragments closely packed in a sublithographic matrix. Common small irregular calcite masses. Abundant calcispheres. Scattered pinpoint pores. No staining. Very low permeability.
- 7615-7619 As above, with rare calcite masses. Good black to dark brown oil stain in rare areas of little cement. Fair to good pinpoint porosity. Rare brachiopod fragments.
- 7619-7620 Limestone, pale yellowish brown. Oopelsparite with patches of micrite. Small oolites, surficial oolites, and/or rounded intraclasts and small pellets closely packed in a sparry calcite cement with some small areas cemented by sublithographic limestone. Fair to poor intergranular porosity with rare small irregular vugs. Pores and vugs lined with small drusy calcite crystals and the walls of the pores and vugs are oil stained.

Core #2 (7620-7640)

- 7620-7622 Limestone, pale yellowish brown. Pelmicrite. Very small pellets loosely packed in a sublithographic matrix. Rare small irregular vugs, some lined with drusy oil stained calcite crystals, others filled with coarsely crystalline calcite. Some of the large calcite crystals are oil stained. Fair vuggy porosity, low permeability.
- 7622-7623 Pelmicrite as above, but pellets larger and more numerous. No vugs and no oil staining. Common pinpoint pores, low permeability.

7623-7627 Limestone, pale yellowish brown, pelintra micrite. Pellets and rounded intraclasts closely packed in a sublithographic matrix. Good pinpoint and intergranular porosity, low permeability. A few of the intergranular pores are filled with coarse calcite. No oil staining.

7627-7629 As above, but intraclasts more common and more of the intergranular pores are filled with calcite. Here and in 7623-7627 above the pores are arranged in a sublinear pattern parallel to bedding.

7629-7631 Pelmicrite as above, rare large intraclasts. Rare linear algal (?) fragments. Chip of 7630-7631 contains a slightly curved piece of sublithographic limestone about one inch long and .01 inch wide. May be an algal crust.

7631-7633 Limestone, pale yellowish brown. Pelintra micrite, abundant pellets much smaller than above and common small rounded intraclasts. Fair to good pinpoint and intergranular porosity as above.

7633-7634 As above, but pellets slightly larger and with more calcite filling the porosity. Rare large intraclasts.

7634-7636 Limestone, light gray. Pelmicrite, small pellets, calcispheres, and linear algal fragments in a very dense, sublithographic matrix. No porosity or permeability. Pellets very small and indistinct.

7636-7639 Limestone, pale to moderate yellowish brown, pelmicrite. Abundant pellets, larger than above, closely packed in a sublithographic matrix. Rare pinpoint pores, very low permeability. End of core.

7639-7640 Missing.

7640-7650 Abundant, pale yellowish brown to yellowish gray, micrite and pelmicrite limestone, scattered pinpoint porosity. Common black shale cavings.

7650-7665 Abundant light gray to yellowish gray limestone. Pelmicrite with rare small intraclasts. Very low pinpoint porosity and permeability. Rare coarse calcite crystal masses.

7665-7670 As above, with common, very light gray, micrite limestone.

7670-7675 Abundant, pale yellowish brown, pelmicrite limestone. Scattered pinpoint porosity.

7675-7684 As above (?), abundant red shale cavings.

7685 Total depth.

7595 Plugged back depth.