NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 257

Summary of the Monsanto Chemical Co., Lion Division - C. A. Swenson #1
Burke County, North Dakota
Well No. 2892 - Permit No. 2904

by William P. Eastwood
December, 1961

The Monsanto #1 Swenson is located in the SW/4, SW/4, Section 10, T. 160N., R. 91W., (660 feet from south line, 658.8 feet from west line) Burke County, North Dakota. Elevation: Ground 2314, K.B. 2327. Contractor: Calvert Drilling Co., Bismarck, North Dakota.

The drilling permit was issued April 24, 1961, with the well being classed as a Wildcat. The well was drilled to a total depth of 7,425 feet and completed as a producer from the Madison on May 29, 1961. The producing zone is about 20-30 feet stratigraphically lower than other Madison zones in Burke County. This well is the discovery well of the Dimond Field.

Drill stem Tests:

1. 7050-7105 (Rival subinterval and Madison undifferentiated). Tool opened with very weak blow throughout the test. Recovered 115 feet of slightly water cut mud.

Initial shut-in (1 1/2 hrs.)	3,143.6
Initial flow (1 hr.)	86.1
Final flow	132.8
Final shut-in (2 hrs.)	3,078.9

2. 7109-7132 (Madison undifferentiated). Gas to surface in 6 minutes. First 1 1/2 hrs. on 3/4" choke 45.9 MCFPD. Last 1 1/4 hrs. 1/8" choke 9.36 MCFPD. Recovered:

85	feet HO & GCM
545	feet free oil
1,230	feet HGCM
115	feet water
1,975	feet total.

Initial shut-in (1 hr.)	3,067.2
Initial flow (2 1/2 hrs.)	169.3
Final flow	776.4
Final shut-in	2,628.3

Casing and Tubing Record:

519 feet of 8 5/8 inch surface casing cemented with 325 sacks 7203.5 feet of 4 1/4 inch production casing cemented with 275 sacks 7133 feet of 2 inch tubing.

Core Record:

1. 7055-7105 (Rival subinterval and Madison undifferentiated.)

Completion Data:

1. Plugged back to 7189.

2. Notched 7033 and 7041 (Midale). Acidized with 1000 gallons regular and 1000 gallons retard. Swabbed all load oil and 135 barrels of water. Squeezed notches with 38 sacks.

3. Notched 7114 and 7121 (Madison undifferentiated). Acidized with 500 gallons regular and 500 gallons retard. Flowed 9 barrels load oil and died. Swabbed 149 barrels: 107 barrels new oil and 42 barrels load oil in 9 hours. Swabbed 17 barrels oil per hour for 6 hours. Shut-in overnight, shut-in tubing pressure 275 in 13 hours. Pumped 90 barrels oil in 12 hours, 25% water. Pumped 58.5 barrels oil and 41.5 barrels water per day. Pumped 55 barrels oil, 43% water.

4. Preliminary potential test (June 16, 1961). Pumped 88 barrels oil in 24 hours, 43% water, GOR 1,572, gravity 36^0 API.

Mechanical Logs:
Laterolog - Gamma Ray (535-7412)
Sonic - Caliper (6200-7405)

The formation tops were determined from samples and mechanical logs. Color names and numbers are those of the Rock Color chart of the National Research Council. Limestone petrography terms are those proposed by Folk (1959) Bulletin American Assoc. Petroleum Geologists, Vol. 43, No. 1, pp. 1-38.

FORMATION TOPS

Cretaceous	
Pierre Formation	1690
Niobrara Formation	3565
Greenhorn Formation	3995
Belle Fourche Formation	4103
Mowry Formation	4280
Basal Cretaceous Sands	4585
Jurassic	4952
Rierdon Formation	5350
Piper Formation	5460
Piper Limestone	5675
Triassic (?)	
Spearfish Formation	5900
Mississippian	
Otter Formation	6260 (?)
Kibbey Formation	6312
Kibbey Limestone	6400
Madison Group	
Poplar Interval	6620
Ratcliffe Interval	6860
Midale Subinterval	7018
Frobisher-Alida Interval	7052
Basic Rival Subinterval	7085
Total Depth	7425
Plugged Back Depth	7189

0-700 Missing.

700-730 Sandstone, very fine grained, silty, very calcareous, yellowish gray (5Y8/1). Common light gray (N7). Calcareous blocky shale.

730-790 Abundant calcareous shale as above, common to rare grayish yellow (5Y8/4) silty limestone. Cavings of glacial till, rare silty sandstone as above.

790-820 Badly caved. Gray non-calcareous shale.

820-880 Abundant shale, soft, silty, slightly calcareous, medium light gray (N5). Common yellowish gray (5Y8/1) to white calcareous siltstone, slightly glauconitic.

880-910 Shale and siltstone as above. Rate pale to dark yellowish brown (10YR6/2 - 10YR4/2) sublithographic (micrite) limestone. Till cavings.

910-940 Abundant medium light gray silty shale and common medium light gray, very fine grained, slightly calcareous shaly sandstone.

940-970 As above, sandstone common to abundant.

970-1000 Light gray clayey calcareous shale fragments coated with fine to medium quartz sand grains.

1000-1070 Light gray to medium light gray shale, silty, non-calcareous. Rare sand grains. Rare to common lignite fragments at 1000-1040.

1070-1160 Shale as above, slightly bentonitic. Common lignite fragments.

1160-1220 Common shale as above, common very light gray (N8) to light greenish gray (5GY8/1) silty shale, rare dark gray (N3) shale. No lignite seen.

1220-1250 Common light gray shale, common very light gray fine-grained, silty, friable sandstone, common lignite fragments, rare dark gray shale.

1250-1400 Abundant medium light gray (N6) blocky silty shale. Common to rare fine to medium quartz sand grains some of which are contained within the shale fragments.

1400-1430 Sandy shale. Abundant to common medium light gray non-calcareous shale fragments containing and coated by fine rounded quartz grains. Very common lignite fragments.

1430-1460 Sandy shale or shaly sandstone as above. Rare lignite.

1460-1490 Abundant very light gray (N8) to light gray (N7) silty shale. Rare sand grains. No lignite seen.

1490-1520 Shale as above medium light gray, rare lignite.

1520-1550 Common to abundant very fine grained, subfriable, very light gray quartz sandstone with calcareous cement. Low porosity and permeability. Common light gray shale as above.

1550-1580 Common to abundant silty shale. Common to rare sandstone as above.

1580-1610 Abundant shale as above. Very rare lignite fragments.

1610-1640 Shale as above, common dark gray fissile, hard shale very rare lignite.

1690 Top of Pierre Formation

1640-1700 Abundant light gray shale as above, rare calcareous-cemented quartz sandstone as above. Rare dark gray shale 1670-1700.

1700-1730 Shale as above. Fragments coated with very abundant fine to medium rounded quartz grains. Sand bed probably very friable, no sandstone fragments seen.

1730-1760 As above, rare fragments of fine grained quartz sandstone with white calcareous cement.

1760-1820 Shale as above, rare sand grains and sandstone.

1820-1940 Shale, light gray, slightly silty, blocky, slightly calcareous. Very rare light brown (5YR5/6) siltstone.
1940-1970 Shale, light gray, clayey, hard, blocky to subfissile.
1970-2000 Shale, medium gray (N5) to medium dark gray (N4) soft, blocky.
2000-2030 Shale, medium light gray (N6) blocky, soft.
2030-2090 Shale as above with common light gray hard shale as above. Lignite cavings.
2090-2360 Shale as above. Rare white bentonite (?). Rare cavings of lignite and calcareous sandstone.
2360-2450 Shale, medium light gray and light gray as above. Rare mollusk shell fragments. Rare to common medium dark gray (N4) shale. Lignite and sandstone cavings.
2450-3080 Abundant medium light gray hard shale, common light gray soft silty shale. Very rare black fissile shale cavings (?). Rare mollusk shell fragments.
3080-3560 Shale as above. Rare large fragments of coarsely crystalline calcite. Lignite and sandstone cavings. Rare mollusk fragments. Very rare dark yellowish brown sublithographic limestone.

3565 Top of Niobrara formation
3560-3680 Shale as above. Rare to common cavings as above. Very rare moderate yellowish brown siltstone.
3680-3800 Shale as above. Common medium dark gray (N4) subfissile shale. Lignite cavings.
3800-3890 Abundant medium dark gray (N4) subfissile shale containing rare "white specks." Common to rare medium light gray shale as above.
3890-3950 Very abundant medium dark gray (N4) to dark gray (N3) subfissile shale. Rare to common medium light gray shale as above. No "white specks".
3950-3980 Abundant medium light gray shale as above. Common dark gray shale as above. Rare dark gray shale with "white specks".

3995 Top of Greenhorn formation
3980-4100 As above with common "white specks". Rare fragments of fine grained white calcareous sandstone.

4103 Top of Belle Fourche formation
4100-4280 Abundant dark gray (N3) fissile shale. Rare medium dark gray (N4) shale containing "white specks". Rare to common medium light gray subfissile shale.

4280 Top of Mowry formation
4280-4490 Abundant dark gray fissile shale as above, rare pieces of which contain chitinous fragments. Very rare fragments of white silty blocky soft shale.
4490-4580 Dark gray shale as above. Cavings (?) of very light gray to white silty and sandy shale. Chitinous scales or fins in rare fragments of the dark shale at 4520-4550.

4585 Top of Basal Cretaceous Sands
4580-4640 Shale as above. Rare pieces of very light gray fine to very fine-grained slightly calcareous quartz sandstone.
4640-4670 Sbale as above, common sandstone as above.
4670-4700 Shale as above, rare sandstone as above.

4700-4730 Dark shale and rare white sandstone as above. Rare coarse subrounded frosted quartz grains and red-known siderite pellets.
4730-4760 Dark shale as above. Rare very fine grained white sandstone.
4760-4850 Shale and sandstone as above. Rare coarse subrounded to angular quartz grains and rare siderite pellets.
4850-4880 As above (?) badly caved.

4952 Top of Jurassic
4880-5030 Shale, dark gray, fissile, soft. Rare light gray subfissile shale, probably cavings. Rare coarse subrounded quartz grains. Rare very fine-grained quartz sandstone at 5000-5030.
5030-5090 Shale as above. Rare fine to very fine grained light gray slightly calcareous quartz sandstone.
5090-5150 Dark gray shale and sandstone as above, probably cavings. Rare blocky, non-calcareous shale, pale reddish brown (10R5/4) with pale olive (10Y6/2) spots.
5150-5300 Gray shale and calcareous sandstone as above (cavings ?). Rare grayish yellow green (5GY7/2) splintery shale. Very rare variegated shale as above.

5350 Top of Rierdon formation
5300-5360 As above with rare grayish green (10GY5/2) sandstone.

5460 Top of Piper formation
5360-5480 Common medium light gray subfissile shale. Common to abundant shale and sandstone as above.
5480-5570 As above. Dark gray shale less common. Rare variegated shale. Rare grayish green (10GY5/2) shale.
5570-5600 Abundant medium light gray to greenish gray silty shale. Rare reddish brown and grayish green shale as above. Dark gray shale cavings.
5600-5630 Shale as above. Rare yellowish gray to white limy sandstone, rare pale yellowish brown sublithographic limestone.
5630-5670 Abundant medium light gray to greenish gray shale. Rare white limy sandstone. Rare pale to moderate yellowish brown sublithographic (micrite)limestone. Dark gray shale cavings. Rare pale reddish brown shale. Very rare fragments of pelmicrite limestone.

5675 Top of Piper limestone
5670-5690 Abundant light gray to greenish gray waxy fissile shale. Rare pale to moderate reddish brown shale. Very rare sandstone and limestone. Black shale cavings.
5690-5730 Shale as above. Common white to yellowish gray, sublithographic to very fine crystalline (microsparite), slightly dolomitic limestone. Rare to common reddish brown shale.
5730-5740 Dolomitic limestone as above. Rare pale yellowish brown sublithographic pure limestone. Shale cavings as above.
5740-5760 Common pure limestone as above. Common to rare dolomitic limestone. Shale cavings. Rare ostiocode carapaces in the sublithographic limestone.
5760-5810 Abundant pale yellowish brown sublithographic fossiliferous limestone as above. Common to rare very light gray very fine crystalline limestone (microsparite). Shale cavings. No fossils seen below 5780.

5810-5830 Limestone as above with rare moderate yellowish brown fine crystalline limestone with white gypsum (?) inclusions. Shale and sandstone cavings.
5830-5870 Common moderate to dark yellowish brown fine crystalline limestone. Shale cavings. Common gypsum crystal masses in the limestone.
5870-5920 As above with abundant white fine crystalline gypsum.

5900 Top of Spearfish formation
5920-5950 Badly caved? Common reddish brown silty shale. Common greenish gray shale. Limestone and black shale cavings.
5920-6000 As above. Rare to common reddish brown, fine grained silty sandstone. Badly caved.
6000-6040 Rare sandstone as above, common moderate red waxy, fissile shale, common greenish gray shale. Cavings.
6040-6200 Abundant reddish-brown, fine-grained silty sandstone. Shale cavings.
6200-6260 As above with rare coarse, well-rounded, red-stained loose quartz grains. Rare pieces of the fine-grained sandstone contain white gypsum masses.

6260 Top of Otter formation
6260-6270 Sandstone as above. Rare pale red (5R6/2) waxy fissile shale. Badly caved.
6270-6280 Common pale red shale as above, common pale red, very fine grained limy quartz sandstone. Abundant moderate reddish brown fine-grained, non-limy quartz sandstone as above.
6280-6300 Abundant pale red, slightly limy, very fine grained sandstone. Common pale red shale. Rare moderate reddish brown sandstone as above. Dark shale cavings.

6312 Top of Kibbey formation
6300-6320 Abundant sandstone, white stained pale red, medium-grained, slightly limy cement. Shale and sandstone caving, as above.
6320-6340 As above. Badly caved. Grayish red (5R4/2) shale. Abundant moderate red (5R4/6) slightly limy, fine to medium grained sandstone.
6340-6370 Dark gray shale cavings?
6370-6420 Common medium to coarse, light red (5R6/6) slightly limy quartz sandstone, common reddish brown fine-grained quartz sandstone. Common loose, well rounded, red-stained quartz grains.

6400 Top of Kibbey limestone
Rare loose angular quartz grains. Dark gray shale cavings.
6420-6430 Abundant sandstone as above. Very rare pale yellowish brown sub-lithographic limestone.
6430-6440 Abundant pale yellowish brown to grayish orange pink (10R8/2) sub-lithographic (micrite) limestone. Sandstone and shale cavings.
6440-6460 As above. Rare pieces of limestone contain loosely packed well-rounded oolites or intraclasts (oomicrite or intramicrite).
6460-6500 Abundant very fine grained moderate red silty sandstone. Rare limestone as above. Common cavings (?) of dark gray to greenish gray shale.

6500-6510 Abundant dark gray, greenish gray, and grayish red shale. Rare sandstone as above. Probably badly caved.
6510-6520 As above, common grayish red (5R4/2 and 10R4/2) fissile shale.
6520-6530 Abundant dark gray to black fissile shale rare red shale as above.
6530-6570 Abundant moderate reddish brown (10R4/6) to moderate red (5R5/4) very fine grained silty sandstone. Shale cavings as above.
6570-6590 Abundant white to grayish pink (5R8/2) fine to medium grained, slightly limy quartz sandstone. Red sandstone and black shale cavings as above.
6590-6620 As above with rare pale red (5R6/2) limy sandy dolomite. Badly caved.

6620 Top of Madison group - Poplar interval
6620-6630 Rare to common pale yellowish brown sublithographic limestone. Sandstone and shale as above.
6630-6640 Common pale yellowish brown to light gray, sublithographic to fine crystalline, slightly pelletoidal limestone. Sandstone and shale as above.
6640-6650 As above. Rare fragments of coarsely crystalline limestone. Caliper log shows a washed-out section (salt?) at 6646-6674.
6650-6670 Abundant white fine crystalline gypsum (?) with common pale brown limy spots. Rare limestone consisting of red-stained oolites closely packed in calcite or anhydrite (oosparite), rare pale yellowish brown sublithographic limestone, rare very light gray to white fine crystalline (microsparite) limestone. Dark shale cavings. No staining or cut.
6670-6690 As above, no sublithographic limestone seen.
6690-6710 Limestone, pale to moderate yellowish brown, microsparite to fine intramicrosparite with good primary and secondary porosity and permeability. No oil stain or cut. Shale cavings. Common to rare very pale blue (5B8/2) fine crystalline anhydrite.
6710-6720 Limestone, as above with rare pale yellowish brown sublithographic (micrite) limestone. Rare white fine crystalline limestone containing pale blue (5B6/2) rounded intraclasts. Shale cavings.
6720-6730 Common white fine to medium crystalline limestone with closely packed bluish rounded intraclasts or oolites as above, good intergranular porosity and permeability. Rare porous and imporous limestone as above. Rare very light gray fine crystalline (microsparite) limestone containing coarse brown anhydrite crystals. Shale cavings.
6730-6740 Common to abundant pale yellowish brown sublithographic (micrite) limestone. Common white and blue intraoosparite as above. Rare fossiliferous intraoomicrite consisting of bluish and brown intraclasts, oolites and ostracodes closely packed in pale yellowish brown sublithographic limestone. Very rare pale yellowish brown microsparite limestone with white anhydrite inclusions.
6740-6770 As above? Badly caved, black and red shale. Washed out zone possibly salt at 6759-6763.
6770-6800 Rare to common light blue (5B7/6), fine crystalline anhydrite. Abundant black and red shale cavings (?).
6800-6810 Abundant bluish anhydrite as above. Rare pale yellowish brown anhydritic microsparite. Black shale cavings.

6810-6820 Limestone, common pale yellowish brown sublithographic (micrite) limestone with rare areas of poor secondary pinpoint porosity, rare intraoomicrite with fine to medium intraclasts and oolites loosely packed in micrite with good to fair pinpoint porosity. Anhydrite and shale cavings.

6820-6830 Limestone. Abundant very pale yellowish brown fine crystalline (microsparite) limestone containing rare brachiopod shells, poor porosity. Rare to common intramicrosparite with poor to fair pinpoint porosity consisting of fine intraclasts loosely packed in microsparite. No stain or cut.

6830-6850 Sandstone, consisting of fine to medium subrounded quartz grains loosely packed in a white fine crystalline limy dolomite cement, contains rare white anhydrite masses. Rare limestone as above. Shale cavings. Fair intercrystalline porosity.

6850-6860 White fine crystalline anhydrite. Rare very pale blue anhydrite. Badly caved.

6860 Top of Ratcliffe interval

6860-6870 As above with common microsparite limestone.

6870-6890 Limestone. Abundant pale to moderate yellowish brown intra-microsparite consisting of medium intraclasts loosely packed in fine crystalline limestone. Fair to good intercrystalline and intergranular porosity. No stain or cut. White anhydrite as above. Black and red shale cavings. Thin (1 foot) washed out zones between 6781 and 6793.

6890-6910 As above with common pale blue (5PB7/2) cryptocrystalline anhydrite.

6910-6920 Anhydrite, white to very pale yellowish brown, fine crystalline, slightly dolomitic. Rare pale blue anhydrite.

6920-6950 As above, rare to common pale yellowish brown medium to fine crystalline, sucrosic, dolomitic limestone. Slight dead oil stain, no cut.

6950-6960 Limestone, pale yellowish brown, fine crystalline (microsparite) with common patches of medium to coarse crystalline brownish calcite (sparite). Contains rare rounded intraclasts and rare ostracode valves. Rare anhydrite as above. No stain or cut.

6960-6970 Limestone as above with common moderate yellowish brown medium to coarse crystalline limestone.

6970-6997 Anhydrite, fine crystalline to cryptocrystalline, white to very pale blue (5B8/2).

6997-7000 Circulated. Anhydrite as above. Common to abundant pale yellowish brown, fine to medium crystalline limestone.

7000-7005 As above, black shale cavings.

7005-7010 Common pale yellowish brown to very light gray fine crystalline dolomitic limestone, common medium crystalline limestone as above. Rare anhydrite as above.

7018 Top of Midale subinterval

7010-7020 Anhydrite, cryptocrystalline to fine crystalline, white to pale yellowish brown to very pale blue.

7020-7025 Anhydrite, mostly very pale yellowish brown and cryptocrystalline, rare very pale blue anhydrite.

7025-7035 Anhydrite, as above with common pale yellowish brown, fine to medium crystalline, slightly anhydritic limestone. Fair inter-crystalline porosity. No stain.

Drill stem Test #1 (7050-7105, Rival subinterval)
Weak blow throughout test. Recovered 115 feet of slightly water cut mud.

7035-7055 Circulated at 7035 and at 7055. Abundant pale yellowish brown fine to medium crystalline, sucrosic limestone. Fair to good pinpoint and intercrystalline porosity. Faint spotty stain, very weak cut.

7052 Top of Frobisher Alida interval - Rival subinterval

Core #1 7055-7105 (Rival subinterval)

Description of core chips

7055-7056 Limestone, pale to moderate yellowish brown, probably slightly dolomitic and/or recrystallized. Microsucrosic with common small brown intraclasts and/or areas of non-recrystallization. Common dusky brown (5YR2/2) translucent coarse anhydrite crystals. Fair to poor intercrystalline porosity. Good oil stain and good cut.

7056-7057 As above but not as recrystallized. Good pinpoint and inter-crystalline porosity. Good stain and very good cut.

7057-7058 Limestone, moderate yellowish brown. Intrasparite and intra-micrite. Medium to fine rounded subspherical with rare ellipsoidal intraclasts closely to tightly packed sparry calcite and micrite. Appears to be an indistinct lamination in type of cement with the finer intraclasts occurring in the laminae of micrite. Some of the sparry calcite may actually be clear or brownish anhydrite common large inclusions of white anhydrite. Very low porosity and permeability. Slight oil stain on fracture surfaces.

7058-7059 Limestone, intrasparite and intramicrite as above, very anhydritic with common brownish anhydrite crystals. Slight to good stain on fractures and in recrystallized matrix. Poor porosity.

7059-7060 Limestone intrasparite with common areas of intramicrite. Very anhydritic, common large masses of white fine crystalline anhydrite and abundant fine brown anhydrite crystals. Very poor porosity, no oil stain.

7060-7061 Limestone, moderate yellowish brown, pelintramicrite. Pellets and fine intraclasts tightly packed in sublithographic matrix. Common brown dolomite (?) crystals. Very common large irregular white anhydrite masses. Very dense, very low porosity and permeability. No stain.

7061-7062 Anhydrite, white, very fine crystalline to cryptocrystalline with thin laminae of very pale orange (10YR8/2) to white very fine crystalline limy dolomite. No stain or cut.

7062-7063 Limestone. Pale yellowish brown sublithographic micrite and very anhydritic closely packed, medium grained intrasparite.

7063-7065 Interbedded white anhydrite and pale yellowish brown micrite. Contorted bedding, anhydrite inclusion in the limestone.

7065-7066 White anhydrite with abundant laminae and veins of very pale orange (10YR8/2) to white very fine crystalline dolomite.

7066-7067 White anhydrite with contorted laminae and small inclusions of micrite.

7067-7069 Limestone, pale yellowish brown to light gray. Tightly packed pelintramicrite with very common to abundant coarse brown limy anhydrite crystals. Very dense and tight. No stain.

7069-7071 Anhydrite and fine crystalline dolomite as in 7065-7066 above.
7071-7072 Anhydritic pelmicrite as in 7067-7069.
7072-7074 Anhydrite, white to pale brown. Very thin veins of brown and white limestone and limy dolomite.
7074-7075 Interbedded and interlaminated white cryptocrystalline anhydrite and moderate to dark yellowish brown pelmicrite limestone as in 7063-7065.
7075-7078 White to clear anhydrite with pale yellowish brown to very pale orange dolomite veins.
7078-7079 White cryptocrystalline very dense anhydrite.
7079-7088 Anhydrite, white to light gray, cryptocrystalline very dense and tight. No carbonate laminae or veins. Becomes dark gray at base.

7085 Log base of Rival subinterval
7088-7090 Dolomite, very pale orange to white slightly limy, very fine crystalline. Good intercrystalline porosity. No stain. Mottled with medium gray pyrite (?) inclusions.
7090-7091 Dolomite, pale yellowish brown, fine crystalline, slightly limy or it may effervesce because of the smallness of the crystals. Good intercrystalline porosity and permeability. No stain or cut.
7091-7092 Dolomite, as in 7088-7090 above.
7092-7093 Limestone, anhydritic pale yellowish brown, intrapelmicrite. Medium to fine pelmicrite intraclasts and pellets closely to tightly packed in sublithographic limestone. Abundant coarse crystals of white and pale brown anhydrite. Dense and tight, no stain.
7093-7094 Limestone, pale yellowish brown to very pale orange. Intrasparite with common patches of micrite. Fine rounded intraclasts closely to tightly packed in sparry calcite cement and sublithographic matrix. Common pale brown translucent anhydrite crystals which contain fine intraclasts as inclusions. Rare clear calcite (?) crystals. Very low porosity and permeability. No stain.
7094-7096 Limestone, pale yellowish brown. Pelmicrite with common coarse clear calcite and celestite (?) crystals. Tight, dense, no stain. Common very fine disseminated pyrite generally concentrated around the celestite crystals. Rare ostracode valves.
7096-7098 Limestone, pale yellowish brown. Pelmicrite with common fine intraclasts. Little or no celestite. Common to rare clear calcite veins. No pyrite seen. Dense, tight, no stain.
7098-7099 Limestone. Intramicrosparite. Medium to coarse pale yellowish brown ellipsoidal to subspherical rounded intraclasts loosely packed in light gray fine crystalline limestone. Probably slightly dolomitic. No stain.
7099-7101 Limestone. Pelintramicrite. Pellets and fine intraclasts with rare large intraclasts and oolites closely packed in pale yellowish brown, mottled medium gray, sublithographic limestone. Rare veins of calcite. Rare small irregular pores with oil staining. Very dense and tight.
7101-7102 Limestone, pale yellowish brown, pelmicrite, common calcispheres. Common coarse masses of calcite crystals. Very tight, no stain.
7102-7103 Limestone as above with less common calcite masses.
7103-7104 As above, medium to fine intraclasts common and loosely packed in the pelmicrite.

7104-7105 Limestone, pale yellowish brown. Oosparite. Medium sized, with rare coarse, oolites and surficial oolites closely to tightly packed in sparry calcite cement. Most nuclei seem to be particles of micrite and/or pelmicrite. Tight and dense, no stain. End of core.

Drillstem Test #2 7109-7132
Gas to surface in six minutes, recovered 545 feet of free oil.

7105-7110 Missing.

7110-7120 Limestone, moderate to dark yellowish brown micrite and pelmicrite. Rare white anhydrite inclusions. Common small round pores which are oil stained. Fair to poor porosity, poor permeability, slight cut. Common coarse calcite crystals concentrated in and around the pores.

7120-7125 Limestone, pale yellowish brown, micrite to fine intrapelmicrite, rare ostracode valves. Very rare fine pores as above, no stain or cut.

7125-7140 As above rare to common fragments of intraoomicrite. Scattered pinpoint pores.

7140-7150 Pale yellowish brown sublithographic limestone with oolites and pellets as above. Common light gray micrite limestone with common calcite masses and veins.

7150-7170 Limestone, pale yellowish brown, mostly fine tightly packed intrapelmicrite with common to rare fragments of pelmicrite and micrite. Rare to no gray limestone. Rare calcite masses. Rare pinpoint pores in the intrapelmicrite. No stain.

7170-7180 As above but micrite and pelmicrite more common.

7180-7205 As above with rare fragments of pale yellowish brown limestone having numerous pinpoint pores, slight oil stain, and very weak cut.

7205-7220 Common pale yellowish brown limestone as above, common light gray micrite to pelmicrite limestone, common to rare very porous limestone as above, no stain or cut. Porous limestone is coarsely crystalline and pores exist between crystals.

7220-7270 Limestone, very pale yellowish brown, micrite and fine intra-micrite with rare calcite masses and veins. Scattered pinpoint porosity. No stain. Rare fragments closely packed oosparite and loosely packed to scattered oomicrite.

7270-7290 Limestone, pale yellowish brown intramicrite and intraoosparite, rare micrite limestone. Poor porosity.

7290-7320 As above with common pale yellowish brown intramicrosparite consisting of fine to medium subrounded intraclasts closely to loosely packed in fine crystalline limestone. Fair inter-crystalline porosity.

7320-7330 Limestone as above, common medium dark gray shale cavings (?).

7330-7350 Sandstone. Light gray fine quartz sandstone with limy cement, friable, low porosity. Very common large areas of limestone and intraclasts in the sandstone. Apparently a gradational contact between the limestone and sandstone common to rare limestone as above. Black shale cavings. No stain.

7350-7390	Limestone. Abundant moderate yellowish brown sandy intrasparite limestone consisting of fine rounded intraclasts and common to rare quartz grains loosely packed in coarsely crystalline limestone. Rare sandstone as above. Limestone is probably secondarily recrystallized.
7390-7400	Coarsely crystalline limestone as above with rare dark yellowish brown intramicrite and micrite limestone.
7400-7410	Coarsely crystalline limestone as above, rare pieces of which contain common quartz and pyrite grains. Rare pieces of limy quartz sandstone. Maybe caved.
7410-7425	Limestone. Abundant pale yellowish brown fine to medium crystalline limestone, rare dark yellowish brown micrite limestone.
7425	Total depth.
7189	Plugged back depth.