

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 188

Summary of the Continental Oil Company-Pure Oil Company - J. F. Miller #1  
Burleigh County, North Dakota  
Well No. 1371 - Permit No. 1383

by Robert M. Eisenhard  
January 1958

Continental Oil Company-Pure Oil Company - J. F. Miller No. 1 is located in the SE of the SW of Sec. 30, T. 143N., R. 75W., Burleigh County, North Dakota. Elevation 2051 feet K.B.

The Continental Oil Company-Pure Oil Company - J. F. Miller No. 1 was spudded January 14, 1957; drilled to a total depth of 4290' K.B., found dry and plugged January 25, 1957. 10 3/4" casing was set at 350 feet with 300 sacks of cement.

Logs: Microlaterolog, Laterolog, and Electrical.

Cores: 4036' to 4094'

Tests:

DST #1, 4031-4094, open 2 hours, shut in 30 minutes. Recovered 350 feet salt water. IFP 55 psi, FFP 160 psi, sip 1465 psi, HYD. Press. 2225-2190 psi.

Plugging Record:

4035-3970	20 sacks of cement
3725-3660	20 sacks of cement
2785-2720	20 sacks of cement
360- 320	25 sacks of cement

A plate was welded on the surface casing two feet below ground level. A cement plug was not placed in the surface as the land owner requested permission to use the well as a water source.

Formation tops were picked from samples and electric logs; corrected to electric logs. Not all formation tops are called in the following list. Colors are from the rock color chart distributed by the Geological Society of America.

FORMATION TOPS

Cretaceous System	
Pierre formation	650
Niobrara formation	1680
Greenhorn formation	2185
Dakota Group	2535
Dakota Group Sands	2783
Jurassic System	
Piper Lime	3390
Triassic System	

Spearfish formation	3565
Mississippian System	
Big Snowy Group	3640
Charles formation	3725
MC 3	4088
MC 2	4132
MC 1	4171
10-30	Sand, medium to very coarse, rounded and subrounded, mostly clear quartz, few subangular grains, and some pitted grains.
30-50	Sand as above; some small rounded light gray shale pebbles.
50-70	Sand as above; with many shale pebbles as above.
70-80	Sand as above, more of very coarse size, more subangular and subrounded; many shale pebbles as above.
80-90	Shale pebbles, light gray, rounded; much very coarse sand to small pebble size quartz, feldspar and mica, subangular to subrounded.
90-100	Sand, medium to very coarse, subangular to rounded, mostly clear quartz grains; some shale and quartz pebbles as above.
100-170	Sand, very coarse to small pebbles, quartz, feldspar and mica, subangular and subrounded; many light gray rounded shale and yellowish gray siltstone pebbles and some medium to coarse sand as above.
170-190	Sand, medium to coarse, angular to rounded, mostly clear quartz; some very coarse grains to small pebbles of glacial origin.
190-300	Sand as above; much very coarse grained material and small pebbles as above.
300-330	Sand and pebbles as above; light brownish gray shale and siltstone.
330-340	Siltstone, brownish medium gray; some sand and pebbles as above.
340-350	Sand and pebbles as above; minor siltstone as above.
350-400	Sand and pebbles as above.
400-410	Sandstone very light gray, angular to subrounded, very fine to fine grains, clayey matrix, slightly calcareous, very friable.
410-450	Shale, light brownish gray to medium brownish gray silty; very minor lignite.
450-520	Sandstone, very light gray, subangular to subrounded, very fine to fine grains, clayey matrix, slightly calcareous, friable; some shale as above.
520-550	Shale, medium light gray, some silty.
550-600	Siltstone, to very fine grained sandstone, medium light gray, some shale as above.
600-650	Shale very light olive gray (5Y6/2), some silty; some siltstone and very fine grained sandstone, as above.
650-670	Shale, very light olive gray (5Y6/2), some silty.
670-760	Siltstone and very fine grained sandstone, very light olive gray (5Y6/2).
760-840	Shale, medium light gray; white, claystone.
840-860	Shale, medium light gray.
860-980	Shale, medium light gray, lumpy.
980-1000	Shale, medium light gray, some lumpy.
1000-1030	Shale, medium light gray.
1030-1130	Shale, medium gray to medium light gray.
1130-1420	Shale, medium light gray.
1420-1430	Shale, medium light gray, soft; white bentonite.

1430-1440 Shale, light gray compact; some shale and bentonite, as above.  
 1440-1450 Shale, medium light gray.  
 1450-1460 Shale, medium light gray, compact to soft; some white bentonite.  
 1460-1470 Shale, medium light gray.  
 1470-1510 Shale, medium light gray, compact to lumpy.  
 1510-1560 Shale, medium light gray, compact to soft.  
 1560-1680 Shale, medium light gray to dark gray.  
 1680-1700 Shale, medium light gray and medium dark gray some with abundant white specks, calcareous.  
 1700-1740 Shale, medium light gray to medium dark gray, abundant white specks, calcareous.  
 1740-1750 Shale as above; some medium light gray to medium light greenish gray (5GY7/1).  
 1750-1760 Shale, medium light gray and light gray; minor medium gray shale with abundant white specks.  
 1760-1770 Shale, medium gray, abundant white specks, calcareous; some shale as above.  
 1770-1780 Shale, medium light gray to light gray; some shale with abundant white specks as above.  
 1780-1790 Shale as above; minor medium brownish gray (5YR5/1) shale.  
 1790-1820 Shale, dark gray to light gray; minor shale with white specks.  
 1820-1840 Shale, medium light gray to light gray; minor white specked shale.  
 1840-1870 Shale, medium light gray and light gray.  
 1870-1890 Shale, as above; some shell fragments and Inoceramus prisms.  
 1890-1910 Shale, light gray and very light brownish gray (5YR7/1).  
 1910-1940 Shale, medium light gray to light gray.  
 1940-1980 Shale, as above; minor dark reddish brown dolomitic limestone and dark yellowish orange calcite.  
 1980-1990 Shale, medium gray to light gray.  
 1990-2030 Shale, as above; very minor pale yellowish brown siltstone and very minor dark reddish brown dolomitic limestone.  
 2030-2050 Shale, medium gray to light gray, minor greenish white (5G9/1) bentonite.  
 2050-2070 Shale, medium dark gray to light gray.  
 2070-2120 Shale, as above; minor grayish yellow (5Y8/4) calcite.  
 2120-2180 Shale, as above, compact to lumpy; minor medium dark gray limestone and grayish yellow (5Y8/4) calcite.  
 2180-2210 Shale, light gray, compact to lumpy; minor medium dark gray limestone.  
 2210-2240 Shale, medium gray to light gray; Inoceramus prisms; minor fine crystalline dark gray limestone; minor medium gray shale with abundant white specks calcareous.  
 2240-2260 Shale, dark gray, abundant white specks, calcareous Inoceramus prisms and shell fragments; minor light gray shale.  
 2260-2270 Shale, medium dark gray to light gray; minor shale with white specks as above.  
 2270-2300 Shale, dark gray, abundant white specks, calcareous; some light gray shale; abundant Inoceramus prisms.  
 2300-2340 Shale as above, abundant Inoceramus prisms and Globigerina.  
 2340-2400 Shale, medium gray to light gray much dark gray calcareous shale with white specks; Inoceramus prisms and Globigerina.  
 2400-2420 Shale, medium gray to light gray; some dark gray calcareous shale with white specks; few Inoceramus prisms and abundant Globigerina.

2420-2430 Shale, light gray to medium dark gray; some Inoceramus prisms and shell fragments; some dark gray calcareous shale with white specks; some Globigerina.

2430-2440 Shale, medium dark gray, some with white specks, calcareous; minor medium light gray.

2440-2480 Shale, medium dark gray to light gray; some Inoceramus prisms and shell fragments.

2480-2570 Shale, medium dark gray and minor light gray; Inoceramus prisms.

2570-2580 Shale, medium dark gray and minor light gray.

2580-2590 Shale, medium gray to light gray.

2590-2660 Shale, medium dark gray and minor light gray.

2660-2670 Shale, medium gray and medium light gray.

2670-2700 Shale, medium dark gray to light gray; Inoceramus prisms.

2700-2720 Shale, medium dark gray and minor light gray.

2720-2730 Shale, medium gray and medium light gray.

2730-2740 Shale, as above; minor medium dark gray calcareous shale with abundant white specks.

2740-2800 Shale, medium dark gray to light gray.

2810-2840 Shale, medium gray and medium light gray; coarse to very coarse, rounded and subrounded milky quartz grains.

2840-2860 Shale and quartz grains as above; some pyrite and pyrite cemented quartz sandstone; minor very fine grained quartz sandstone with calcareous cement.

2860-2890 Shale, medium dark gray to light gray; minor quartz grains and calcareous quartz sandstone as above.

2890-2910 Shale, medium dark gray to medium light gray; minor quartz grains as above, some pyrite.

2910-2920 Shale, quartz grains and pyrite as above; few dusky yellow and dusky red carbonate nodules.

2920-2930 Shale, dark gray and minor medium light gray; minor coarse to very coarse, rounded to subrounded quartz grains; few moderate red carbonate nodules.

2930-2950 Shale, medium light gray to medium gray; quartz grains as above; dusky yellow and moderate red carbonate nodules.

2950-2970 Shale, medium gray; medium to very coarse, rounded to subrounded clear and stained quartz grains; few carbonate nodules as above.

2970-3000 Sand, quartz grains, as above, carbonate nodules and medium light gray shale as above.

3000-3030 Shale, medium dark gray and medium gray; quartz grains and carbonate nodules as above.

3030-3040 Shale as above; many quartz grains as above.

3040-3060 Shale, medium dark gray to medium gray some quartz grains and carbonate nodules as above.

3060-3090 Shale, medium dark gray, fossil to medium light gray; some quartz grains and carbonate nodules as above.

3090-3100 Shale, medium dark gray to medium gray; very minor moderate red (5R4/6) soft shale; much pyrite and some medium to coarse sub-rounded quartz grains.

3100-3120 Shale, as above; minor calcareous cemented, very fine grained white quartz sandstone; very minor white soft limestone; quartz grains and pyrite as above.

3120-3130 Shale, medium dark gray to medium gray; minor quartz grains and pyrite as above.

3130-3140 Shale, as above; minor calcareous cemented, very fine grained quartz white sandstone, some loose quartz grains and carbonate nodules as above.

3140-3160 Shale, medium dark gray to medium gray; minor quartz grains and calcareous sandstone as above.

3160-3170 Shale, medium dark gray to medium light gray; minor yellowish gray (5Y8/1) calcareous siltstone.

3170-3190 Shale, medium dark gray to medium gray; yellowish gray (5Y8/1) calcareous siltstone; minor moderate red (5R4/6) soft shale.

3190-3200 Shale, medium dark gray to medium light gray; medium to coarse subrounded quartz grains.

3200-3210 Shale, medium dark gray to medium light gray, some medium light greenish gray (5GY7/1); minor calcareous yellowish gray (5Y7/2) siltstone.

3210-3230 Shale and minor siltstone, as above; loose quartz sand grains as above.

3230-3240 Shale, medium light greenish gray (5GY7/1) and medium dark gray; very minor calcareous siltstone as above; minor very pale orange limestone.

3240-3250 Shale, siltstone and limestone as above; crinoid stems.

3250-3270 Shale, greenish gray (5GY6/1) and medium dark gray, very minor, siltstone as above and moderate red (5R4/6) shale.

3270-3280 Shale, as above; pinkish gray to nearly clear calcite.

3280-3290 Shale and calcite as above, minor yellowish gray (5Y7/2) calcareous siltstone.

3290-3310 Shale, medium dark gray and greenish gray.

3310-3350 Shale, medium light greenish gray (5GY7/1) medium dark gray and minor moderate red (5R4/6).

3350-3370 Shale, as above; many crinoid stems and other fossil debris.

3370-3400 Shale, dark gray to medium light gray; much fossil debris; very minor yellowish gray (5Y7/2) calcareous siltstone; minor moderate red (5R4/6) shale.

3400-3410 Shale, medium dark gray, medium light greenish gray (5GY7/1), light moderate reddish brown (10R5/6); some medium subrounded quartz grains; very minor very pale orange limestone and light greenish gray (5GY8/1) calcareous siltstone.

3410-3440 Limestone, yellowish gray (5Y7/2) fine crystalline shale as above.

3440-3460 Limestone, as above; much shale as above.

3460-3470 Shale, dark gray to medium gray; pinkish gray fine crystalline limestone, some with silt grains; very minor light greenish gray (5GY8/1) calcareous siltstone.

3470-3500 Limestone, pinkish gray and yellowish gray (5Y7/2), fine crystalline medium dark gray and greenish gray (5GY6/1) shale.

3500-3550 Limestone, white to very pale orange, slight porosity fine crystalline some medium dark gray and greenish gray (5GY6/1).

3550-3560 Limestone, as above; medium dark gray shale; minor clear to white crystalline gypsum.

3560-3570 Shale, medium dark gray medium light greenish gray (5GY7/1), and light moderate reddish brown (10R5/6); limestone as above; clear to white crystalline gypsum.

3570-3580 Shale, as above; limestone as above; medium to very coarse; sub-angular to rounded, quartz grains.

3580-3600 Shale, moderate reddish brown (10R4/6), some medium dark gray to medium light gray shale; minor limestone and gypsum as above.

3600-3610 Shale, moderate red (5R4/6), minor light greenish gray (5G8/1) and medium dark gray shale, very minor limestone and gypsum as above.

3610-3640 Shale, limestone and gypsum as above; medium to very coarse, subrounded to rounded, quartz grains; minor moderate reddish orange slightly calcareous siltstone.

3640-3670 Shale, moderate reddish brown to light dusky red (5R4/4), minor light greenish gray (5G8/1) and medium gray shale; very minor gypsum.

3670-3680 Shale, as above; minor very pale yellowish brown (10YR7/2) limestone.

3680-3690 Shale, medium dark gray to light gray, moderate reddish brown, minor moderate red (5R5/4).

3690-3710 Shale, dark gray, medium light greenish gray (5GY7/1), and moderate red (5R4/6) to moderate reddish brown; minor gypsum.

3710-3720 Shale, dark gray to medium gray; minor yellowish gray (5Y7/2) limestone.

3720-3730 Shale as above; white to very pale orange fine crystalline and minor oolitic limestone.

3730-3750 Limestone, very pale orange, oolitic and fragmental, some porosity; minor shale as above; crystalline anhydrite.

3750-3760 Limestone, as above; considerable shale caving.

3760-3770 Limestone, as above; and very pale yellowish brown (10YR7/2) to very pale orange, fine crystalline, limestone; much shale caving.

3770-3790 Limestone, very pale orange sublithographic and fragmental-oolitic.

3790-3800 Dolomite, pale red purple and very pale red purple (5RP7/2) fine crystalline; limestone as above.

3800-3810 Limestone, very pale orange, fragmental; white crystalline anhydrite, minor dolomite as above; shale cavings.

3810-3820 Limestone very pale orange, fine crystalline to fragmental-oolitic much dolomite as above.

3820-3830 Limestone, very pale orange, fragmental, some porosity; some dolomite as above; some medium dark gray to medium light gray shale.

3830-3840 Limestone, very pale orange, fragmental-oolitic and fine crystalline; much dolomite as above.

3840-3850 Limestone as above; much white fine crystallized anhydrite; much shale caving.

3850-3870 Limestone, very pale orange fragmental, and medium light gray very fine crystalline and fragmental; some anhydrite as above and shale caving.

3870-3880 Limestone and anhydrite as above; fissile dark gray shale and some shale caving.

3880-3890 Sample mostly shales as above; probably caving.

3890-3920 Limestone, yellowish gray (5Y8/1) fine crystalline and fragmental, medium gray, very fine crystalline; minor pale red purple fine crystalline dolomite; medium gray, greenish gray (5GY6/1) and moderate reddish brown shale, much probably cavings; white crystallized anhydrite.

3920-3930 Limestone, very pale yellowish brown (10YR7/2) fine crystalline and fragmental, some scattered porosity.

3930-3960 Limestone, as above; some microsucrosic pale yellowish brown (10YR6/2) dolomite; white crystallized anhydrite and shale cavings.

3960-3970 Limestone, very pale yellowish brown (10YR7/2) sucrosic and fragmental; white fine crystallized anhydrite.

3970-3980 Dolomite, microsucrosic very light olive gray; some limestone as above; white to light bluish gray sublithographic and fine crystalline anhydrite.

3980-3990 Anhydrite as above; pale moderate reddish orange (10R7/6) fine crystalline anhydritic limestone; minor dolomite as above; medium dark gray to medium light gray, dusky red and moderate reddish brown shale (probably much caving).

3990-4000 Dolomite, anhydritic, fine crystalline, pale moderate reddish orange (10R7/6); some shale and anhydrite as above.

4000-4010 Anhydrite, white to light bluish gray, sublithographic and fine crystallized; dark gray to medium gray shale, minor moderate reddish brown and dusky red shale.

4010-4030 Shale, moderate reddish brown and light dusky red (5R4/4); very light gray, very fine crystalline anhydrite.

4036 Circulation 1/4, 1/2, and 3/4 hours. Limestone, very pale yellowish brown (10YR7/2) fine crystalline and fragmental; minor anhydrite and shale, as above.

4036-4039½ Beginning Core #1. Anhydrite, light bluish gray, very fine crystalline, some medium light gray limestone streaks.

4039½-4046 Anhydrite, white to bluish white, very fine crystalline.

4046-4046½ Anhydrite as above; very pale yellowish brown (10YR7/2), oolitic and fragmental limestone.

4046½-4053½ Anhydrite, very light gray, very fine crystalline.

4053½-4058 Anhydrite, very light gray, very fine crystalline.

4058-4060 Anhydrite, as above; very pale yellowish brown (10YR7/2) oolitic limestone.

4060-4065 Limestone, as above; pale brown and crystallized anhydrite.

4065-4073 Limestone, as above; some crystallized anhydrite as above and some very light gray, very fine crystalline anhydrite.

4073-4080½ Anhydrite, very light gray, very fine crystalline.

4080½-4081½ Limestone, very pale yellowish brown (10YR7/2) microsucrosic oolitic.

4081½-4087 Dolomite, yellowish gray (5Y7/2), fine crystalline, some very light gray very fine crystalline anhydrite.

4087-4094 Anhydrite, light gray, very fine crystalline; very light olive gray limestone laminations.

4094-4100 Shale, light gray to dark gray, light dusky red and moderate reddish brown shale, minor limestone and crystallized anhydrite, (cavings).

4100-4110 Limestone, very pale orange, microsucrosic, oolitic-fragmental, some porosity; some shale as above.

4110-4120 Limestone, very pale yellowish brown (10YR7/2) microsucrosic, oolitic-fragmental, some good scattered porosity; minor microsucrosic very pale yellowish brown dolomitic limestone.

4120-4130 Limestone, very pale yellowish brown (10YR7/2) microsucrosic, dolomitic, minor very pale orange, very fine crystalline limestone.

4130-4140 Anhydrite, light bluish gray, very fine crystalline.

4140-4150 Limestone, very pale yellowish brown, very fine crystalline to microsucrosic, dolomitic, some porosity.

4160-4170 Limestone, as above; anhydritic, brownish light gray, very fine, crystalline limestone, very minor white crystallized anhydrite.

4170-4180 Dolomite, very pale orange, very fine crystalline and micro-sucrosic, some scattered porosity; light bluish gray sub-lithographic anhydrite.

4180-4190 Dolomite as above to sucrosic; minor very pale orange oolitic limestone.

4190-4200 Limestone, very pale orange, oolitic, some good porosity; some dolomite as above.

4200-4220 Limestone, as above.

4220-4230 Limestone, as above to very pale orange sucrosic, good porosity.

4230-4240 Limestone, very pale orange, medium to coarse oolitic and minor sucrosic.

4240-4250 Limestone as above with much sucrosic and minor very fine crystalline, some dolomitic.

4250-4260 Dolomite, very pale yellowish brown (10YR7/2) sucrosic, some porosity; some limestone as above.

4260-4270 Limestone, very pale orange, fragmental and oolitic, anhydritic.

4270-4285 Limestone, very pale orange, oolitic, fragmental and micro-sucrosic.

4285 Total depth.