

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 25

Summary of the Samedan Oil Company Vaughn Hanson #1
McLean County, North Dakota

By Morton Strassberg

Samedan Oil Company - Vaughn Hanson No. 1, McLean County, North Dakota,
Section 10, T. 146N., R. 81W., (1320 feet N. of S. line and 1323 feet E. of W.
line) Elevation: K.B. 1995

The Samedan Oil Company - Vaughn Hanson No. 1 was spudded July 15, 1950
and 10 3/4 inch casing was set at 488 feet with 306 bags cement.

The drilling was completed September 15, 1950 and abandoned. Total depth
9033 feet.

Cement plugs were placed at the following places:

7500-7575 with 30 sacks	3420-3495 with 30 sacks
6500-6525 with 10 sacks	480- 555 with 30 sacks
5090-5115 with 10 sacks	surface-37.5 with 15 sacks
3640-3665 with 10 sacks	

Formation tops determined from sample and electric logs, not all
lithologic tops called in following list. Colors determined from rock color
chart.

TOPS

	<u>Depth</u>
Cretaceous System	
Pierre Formation	936
Niobrara Formation	2280
Greenhorn Formation	2770
Dakota	3426
Jurassic System	
Morrison Formation	3709
Sundance Formation	3778
Piper Formation	4240
Triassic System	
Spearfish Formation	4417
Mississippian System	
Amsden Formation	4548
Big Snowy Group	4620
Kibbey Formation	4870
Charles Formation	5039
Mission Canyon Formation	5457
Lodgepole Formation	5810
Englewood (Bakken) Formation	6452
Devonian System	
Lyleton (Three Forks) Formation	6533
Nisku Formation	6588
Woodbend (Duperow) Formation	6665
Beaverhill Lake Group	

Souris River Formation	6959
	<u>Depth</u>
Dawson Bay Formation	7170
Elk Point Group	
Prairie Evaporite	7300
Winnipegosis Formation	7341
Ashern Formation	7457
Silurian System	
Interlake Formation	7475
Ordovician System	
Stony Mountain Formation	7900
Stony Mountain Shale Formation	8000
Red River Formation	8100
Winnipeg Formation	8706
Winnipeg Sandstone	8894
Total Depth	9033

Vaughn Hanson No. 1

Samedan Oil Company - Vaughn Hanson No. 1 Well
 NE 1/4 Section 10, T. 146N., R. 81W. McLean County, North Dakota

Partial sample log by D. F. Towse

Logged from 3600' to 3730'

In Dakota group (electric log top at 3430')

3600-3640	Sandstone, medium to coarse grained, quartzose, porous, with a small amount of rust. No oil shows, fluorescence, or oil cut.
70	Shale, medium gray, dense micaceous, with a trace of micaceous bentonite at the base.
3670-3710	Sandstone, coarse, friable, quartzose, with some very coarse rounded pink quartz grains. No shows.
-30	Shale, medium light gray, slightly silty and bentonitic.

Logged from 5600' to 5900'

Beginning in basal Charles Formation

5600-5610	Limestone, pale yellowish brown, coarse fragmental, well cemented, slightly porous.
-30	Anhydrite, medium gray, very fine grained.
-40	Limestone, mottled yellowish brown and pale yellowish brown, coarse fragmental. Small porosity. No shows.
5648- 53	Circulated. Limestone, yellowish brown, coarse fragmental, with small amounts of anhydrite. Fair solution intergranular porosity.
5650- 70	Limestone as above.
	5670' <u>Top of Mission Canyon Limestone and Madison Group</u>
5670- 75	Circulated 1 hour. Limestone, oolitic, with small porosity. No shows. No fluorescence.

5670-5690 Limestone as above.
 5690-5740 Limestone, pale yellowish brown, coarse oolitic, friable, with small porosity in better cemented fragments.
 5740-5780 Limestone as above, but coarse fragmental and fewer oolites.
 5780-5800 Limestone, very pale orange to pale yellowish brown, fine grained, dense tight.
 5800-5820 Limestone, light brownish gray mottled, coarse fragmental. No shows.
 5820-5830 Limestone, very pale orange, fine grained, dense.
 5830-5850 Dolomite, light yellowish brown, fine granular, tight. Some mineral fluorescence, but no oil cut or fluorescence.
 5850-5870 Limestone, coarse fragmental, light brownish gray mottled, tight to friable.
 5870-5900 Limestone, very pale orange and light gray mottled, dense to fine grained, very little porosity. (Still in Madison group at 5900').

Logged from 6598' to 6900'

Beginning in the Devonian Lyleton shale

6598-6602 Circulated 56 minutes. Shale, pale orange and anhydrite, with a small amount of dolomite.

6600' Top of Manitoban Formation

6600-6620 Limestone, mottled pale yellowish brown to brownish gray, coarse granular to fragmental, with anhydrite inclusions.
 6622 Circulated 50 minutes. Anhydrite, white to very pale orange.
 6620-6670 Limestone with anhydrite as above, mostly tight, with abundant white anhydrite @ 6640-50 and 6660-70.
 6670-6700 Dolomite, pale yellowish brown, medium granular, slightly porous, with abundant white to light gray anhydrite from 6680-6700.
 6700-6710 No sample.
 6710-6730 Calcitic dolomite, light grayish brown, fine granular, with small porosity. Sample 6720, circulated 58 minutes, and sample 6720-30 contained much anhydrite.
 6730-6740 Limestone, dolomitic, very pale orange, medium to coarse fragmental, tight.
 6735 Circulated 55 minutes. Limestone as above, with a small amount of lithographic limestone and a few sand grains.
 6740-6770 Limestone as in 6730-40; with a small amount of gray to greenish gray anhydrite at 6740-50. Samples at 6760 and 6765-70 were circulated.
 6770-6840 Limestone, light yellowish brown, medium fragmental, slightly porous. Details as follows:
 6770-80 small anhydrite; 6775 circulated, much cave, no fluorescence, no shows; 6790-6800 poor sample with cavings; 6820-30 small amount of chalky limestone; 6830-40 some medium granular limestone and brachiopod fragments.
 6840-6880 Limestone, light yellowish brown and small amounts of brownish gray, medium fragmental, slightly porous. Circulated samples at 6843' and 6848' had small amounts of anhydrite.

6880-6890 Dolomite, pale brown, medium granular, porous, no oil cut or fluorescence.
6890-6900 Limestone, very pale yellowish, brown, very fine grained, tight.

(Still in Devonian system at 6900')

Sample log by Morton Strassberg

510-520 Dolomite, very light gray, argillaceous, finely granular. Fine grained, subangular, frosted quartz.
520-530 Dolomite as above, light gray shale.
530-540 Dolomite as above, increase in quartz.
540-550 Shale, light gray, fine grained, clear to frosted quartz.
550-570 Shale, light gray, bentonitic. Fine grained quartz.
570-590 Sandstone, fine grained, subrounded to subangular, mostly frosted, some clear.
590-620 Shale, medium light gray, fine grained quartz.
620-630 Sandstone, very fine grained, medium light gray shale.
630-650 Shale, medium light gray, bentonitic, arenaceous.
650-690 Sandstone, very fine to fine grained, angular to subangular, frosted, medium light gray shale.
690-710 Shale, medium light gray, arenaceous, bentonitic.
720-760 Shale, medium light gray.
760-770 Shale, medium light gray, arenaceous.
770-780 Shale, medium light gray.
780-790 Shale, light to medium light gray, very arenaceous.
790-980 Sandstone, fine grained, subangular, frosted.
990-1000 Sandstone, fine grained, subangular, frosted, argillaceous.
1000-1050 Shale, light gray, arenaceous.
1050-1080 Shale as above, no sandstone.
1080-1110 Shale as above, arenaceous.
1110-1130 Sandstone, very fine grained, subrounded, frosted.
1130-1170 Sandstone as above, argillaceous.
1170-1190 Shale, medium light gray, arenaceous.
1230-1240 Shale, medium light gray, slightly arenaceous.
1240-1290 Shale, medium light gray.
1290-1300 Shale, medium gray, white fibrous gypsum.
1300-1310 Shale as above, less gypsum.
1310-1320 Shale, medium gray.
1320-1330 Shale, as above, small amount gypsum.
1330-1350 Shale, medium gray, bentonitic.
1350-1500 Shale, medium light gray.
1500-1510 Shale, medium light gray, small amount very fine quartz.
1510-1690 Shale, medium light gray.
1690-1700 Shale as above, small amount fine grained, angular clear quartz. Small amount olive gray shale.
1700-1710 Shale, medium light gray, bentonitic. Small amount light olive gray.
1710-1720 Shale, medium light gray and considerable light olive gray.
1720-1740 Shale, medium light gray.
1740-1750 Shale, medium light gray and light olive gray.
1750-1800 Shale as above, slightly arenaceous.
1800-1810 Shale, medium light gray, slightly arenaceous.

1810-1830 Shale, medium light gray and small amount light olive gray.
 1830-1840 Shale, medium light gray.
 1840-1880 Shale as above, considerable very fine grained quartz.
 1880-1920 Shale, medium light gray.
 1920-1930 Shale as above, arenaceous.
 1930-1960 Shale, medium light and light olive gray, arenaceous.
 1960-2010 Shale, medium light gray, arenaceous. Small yellowish gray dolomite.
 2010-2020 Shale, medium light gray.
 2020-2080 Shale, as above, slightly arenaceous.
 2080-2100 Shale, medium light to medium gray.
 2100-2110 Shale, medium light to medium gray, slightly bentonitic.
 2110-2130 Shale, medium to medium light gray.
 2130-2140 Shale, medium light gray, bentonitic, pyritic.
 2140-2150 Shale as above, no pyrite, arenaceous.
 2150-2160 Shale as above, pyrite.
 2160-2170 Shale as above, no pyrite.
 2170-2180 Shale as above.
 2180-2280 Shale, medium to medium light gray, arenaceous.

Niobrara 2280
 2280-2290 Shale, medium to medium light gray, arenaceous, pyritic.
 2290-2300 Shale as above, bentonitic.
 2300-2310 Shale, medium light to medium dark gray, pyritic, bentonitic.
 2310-2340 Shale as above, white specks.
 2340-2350 Shale, medium light to medium dark gray, pyritic, formanifera, small amount sandstone.
 2350-2370 Shale as above, no formanifera, inoceramus.
 2370-2390 Shale, medium light to medium dark gray, shell fragments, small amount sandstone.
 2390-2400 Shale as above, little olive gray dolomite.
 2400-2410 Shale, medium light to medium gray.
 2410-2450 Shale as above, small amount sand and bentonite.
 2450-2470 Shale, medium light to medium dark gray, small amount sandstone.
 2470-2490 Shale as above, micaceous bentonite.
 2490-2500 Shale as above, pyritic.
 2500-2510 Shale as above, no pyrite.
 2510-2530 Shale as above, pyrite.
 2530-2540 Shale, medium light to medium dark gray. Small amount anhydrite and pyrite.
 2540-2550 Shale as above, no anhydrite, small amount light olive gray dolomite.
 2550-2570 Shale, medium light to medium dark gray, small amount sandstone.
 2570-2580 Shale as above, pyritic.
 2580-2590 Shale as above, no sandstone or pyrite.
 2590-2600 Shale as above, small amount sandstone.
 2600-2610 Shale, medium to medium light gray.
 2610-2630 Shale as above, small amount pale brown dolomite.
 2630-2670 Shale as above, small amount white bentonite.
 2670-2690 Shale as above, small fine grained sandstone.
 2690-2700 Shale as above, no sandstone.
 2700-2720 Shale as above, pyritic, fine grained sandstone.

2720-2790 Shale, medium light to medium gray, small amount sand.

Greenhorn Formation 2770

2790-2800 Shale as above, shell fragments, small light olive gray dolomite, small amount sandstone.

2800-2810 Shale, medium light to medium dark gray. Considerable fine grained sandstone. Small light olive gray dolomite, shell fragments.

2810-2820 Shale as above, much inoceramus fragments, smaller amount sandstone.

2820-2830 Shale as above, pyritic.

2830-2840 Shale as above, no pyrite.

2840-2850 Shale as above, no sandstone.

2850-2890 Shale as above, white specks.

2900-2910 Shale, medium to medium dark gray. Considerable inoceramus and other shell fragments.

2910-2930 Shale as above, some white specks.

2930-2940 Shale as above, no specks.

2940-2960 Shale as above, small amount white specks, small amount sandstone.

2960-2970 Shale as above, no sandstone.

2970-2990 Shale, medium to medium dark gray, white specks, fossil fragments, small fine grained sandstone.

2990-3000 Shale as above, no white specks.

3000-3020 Shale as above. Considerable fine grained calcareous sandstone.

3020-3040 Shale as above, less sandstone.

3040-3050 Shale as above, considerable white bentonite.

3050-3080 Shale, medium to medium dark gray, shell fragments, small amount bentonite and calcareous sandstone.

3080-3100 Shale as above, no bentonite.

3100-3130 Shale, medium light to medium dark gray. Small amount bentonite and fine grained sandstone.

3130-3150 Shale as above, no sand.

3150-3170 Shale as above, mostly medium dark gray.

3170-3200 Shale as above, small amount fine grained calcareous sandstone.

3200-3220 Shale, medium dark gray.

3220-3250 Shale, mostly medium dark gray, some medium light gray.

3250-3300 Shale as above, small amount white bentonite.

3300-3340 Shale, medium to medium dark gray.

3340-3360 Shale as above, slightly pyritic.

3360-3370 Shale as above, small amount sandstone.

3370-3380 Shale as above, no pyrite.

3380-3420 Shale as above, no sandstone.

Dakota 3426

3420-3430 Shale as above, pyritic.

3430-3440 Shale, medium to medium dark gray, small amount fine grained calcareous sandstone.

3440-3450 Shale, medium to medium dark gray, considerable very fine grained white sandstone.

3450-3460 Shale as above, the sandstone is slightly iron stained.

3460-3470 Shale, almost all medium dark gray, less sandstone.

3470-3480 Shale, medium dark gray, white to iron stained very fine grained sandstone and iron stained very fine grained sandstone concretions.

3480-3490 Shale as above, much less sand and concretions.
 3490-3500 Shale as above, almost no sandstone, pyritic.
 3500-3530 Shale, medium to medium dark gray, small amount white fine grained sandstone and a few iron stained concretions, pyritic.
 3530-3538 Shale as above, no pyrite.
 3538 25 minutes circulation. Sandstone, white, fine grained subangular to subrounded frosted, pyritic.
 3550-3560 Sandstone as above, considerable medium dark gray shale cave?
 3560-3570 Sandstone as above, calcite cement.
 3570-3600 Sandstone as above, some iron stained sandstone concretions.

Morrison 3709

3600-3730 On printed sheet. Page 1.
 3730-3740 Shale, medium light to medium dark gray, small amount white bentonite.
 3740-3770 Shale as above, some light gray siltstone.

Sundance 3778

3770-3790 Shale, medium light to medium dark gray and light gray silty shale, some white bentonite.
 3790 25 minutes. Shale, medium to medium dark gray, small amount white to iron stained fine grained sandstone.
 3790-3840 Shale as above, white fine grained sandstone.
 3840-3850 Shale as above, increase in sandstone.
 3850-3860 Shale, medium dark, small amount fine grained sandstone and iron stained sandstone concretions.
 3860-3900 Shale as above, very little sandstone.
 3900-3910 Shale as above, some white bentonite.
 3910-3920 Shale, medium to medium dark gray, considerable white to iron stained very fine grained sandstone, small amount pink anhydrite.
 3913 25 minutes circulation. Shale, medium to medium dark, white to iron stained very fine grained sandstone. Some pink anhydrite.
 3920-3940 Shale, same as above.
 3950 Circulation ? Shale, medium to medium dark gray, micaceous bentonite, small amount fine grained sandstone.
 3950-3960 Shale, same as above.
 3960-3980 Shale as above, no bentonite.
 3980-4120 Shale as above, very little sandstone.
 4120-4170 Shale, medium to medium dark gray, small amount very fine grained sandstone.
 4170-4190 Shale, medium to medium dark gray and a small amount of pale red calcareous arenaceous.
 4190-4200 Shale, medium light to medium dark gray, light gray silty shale. Small fine grained sandstone.
 4205 45 minutes. Shale, same as above.
 4200-4210 Shale, same as above.
 4210-4250 Shale, medium to medium dark gray and olive gray and light gray silty shale, some very fine grained sandstone and pink anhydrite.

Piper 4240

4250-4260 Shale as above, some white limestone.

4260-4270 Shale as above, considerable fine grained white limestone.
4275 1 hour. Shale, medium to medium dark gray, white fine grained limestone.

4270-4280 Shale as above, some pink anhydrite.
4280-4290 Shale as above, some light bluish gray bentonite.
4290-4300 Limestone, white, fine grained, medium to medium dark gray shale.

4310-4330 Shale, medium to medium dark gray, considerable white fine grained and light brownish gray limestone.

4330-4340 Shale as above, very little limestone.
4340-4360 Shale as above, more limestone.
4360-4370 Shale as above, some brownish gray shale.
4390-4400 Shale, medium light to medium dark gray, fine grained white limestone.

4400-4410 Shale as above, considerable limestone.
4410-4420 Shale as above, some pinkish gray limestone.

Spearfish 4417

4420-4430 Shale as above, less limestone.
4430-4440 Shale, medium light to medium dark gray and considerable pale red, some white fine grained limestone.
4440-4450 Shale, medium to medium dark gray and some pale red. Small amount white fine grained limestone.
4450-4470 Shale as above, white anhydrite.
4470-4520 Shale as above, more pale red shale.
4520-4530 Shale as above, much iron stained anhydrite.
4530-4560 Shale as above, some white very fine grained sandstone, iron stained.
4560-4570 Shale, pale red and medium to medium dark gray, considerable argillaceous fine grained, pale red sandstone.

Amsden 4548

4570-4580 Shale as above, little red shale.
4590-4600 Shale as above, some white fine grained limestone.
4600-4640 Shale, medium to medium gray and a little pale red. White to iron stained fine grained sandstone.

Big Snowy 4620

4640-4650 Shale, medium light to medium dark gray and some pale red. Small amount white to iron stained sandstone.
4650-4660 Shale, pale red and some medium to medium dark gray shale, some white to iron stained fine grained sandstone.
4660 1 hour. Shale as above, with white to pinkish anhydrite.
4660-4670 Shale as above.
4670-4680 Shale as above, considerable very fine grained white sandstone, slight oil stain was able to get a cut.
4680-4700 Shale as above, oil stain was able to get cut.
4700-4710 Shale as above, considerable white fine grained limestone, no oil stain.
4710-4730 Shale, pale red and some medium gray, white to iron stained calcareous very fine grained sandstone.
4730-4760 Shale as above, some fine to medium quartz grains, subrounded, frosted.
4760-4770 Shale, pale red and dark yellowish orange, some medium gray. Very fine grained sandstone, white fine grained limestone.

4770-4790 Shale, pale red, dark yellowish orange and some medium gray, fine grained, white to iron stained sandstone.

4790-4800 Shale as above, pinkish white arenaceous limestone.

4800-4810 Shale as above, some arenaceous shale, very little limestone.

4810-4830 Shale as above, some fine grains of loose quartz.

4835 1 hour. Shale, pale reddish brown, very fine grained white to iron stained, calcareous sandstone.

Kibbey 4870

4835-4850 Shale as above.

4850-4860 Shale as above, fine to medium grained free quartz.

4860-4900 Shale as above, micro gastropod.

4900-4910 Shale as above, considerable white sublithographic limestone.

4910-4930 Shale as above, less sandstone.

4930-4940 Shale as above, only a little free quartz.

4940-5010 Shale, pale red to yellowish orange and medium gray. Small amount white limestone and fine free quartz grains.

Charles 5039

5010-5020 Shale, light brown to pale red, slightly calcareous shale.

5020-5030 Shale, grayish orange pink, calcareous, and some medium gray.

5040-5050 Shale, moderate red, dark yellowish orange, and some medium gray. Some fine free quartz grains and a small amount of grayish pink limestone.

5050-5080 Shale as above, considerable white, very light gray, and pinkish gray limestone.

5080-5090 Shale as above, some white very fine grained sandstone.

5090-5100 Shale, pale red to moderate red, some medium gray. White fine grained limestone. Fine free quartz grains.

5100-5110 Shale as above, some pale yellowish brown and very light gray limestone.

5110-5120 Limestone, white to light gray, fine to medium granular. Pale red and moderate red shale. Few free fine quartz grains.

5120-5130 Limestone, as above, more shale.

5130-5140 Shale, medium gray and pale to moderate red. Considerable white anhydrite and white to light gray limestone.

5145 45 minutes. Limestone, white, fine grained, very arenaceous. Some pale red and medium gray shale. Little white anhydrite.

5140-5150 Limestone as above.

5150-5160 Shale, moderate red to light brown and medium light to medium dark gray.

5160-5180 Shale as above, considerable white anhydrite and small amount white to iron stained sandstone.

5180 1 hour. Limestone, white to very light gray, fine grained, pinpoint porosity.

5180-5190 Limestone as above, some arenaceous. Considerable moderate red and medium gray shale. Small amount white anhydrite, fine free quartz.

5196 3/4 hour. Limestone, white to light gray, fine grained, arenaceous, some moderate red shale.

5190-5200 Limestone, same as above.

5200-5210 Shale, moderate red to grayish red and light brown. Some arenaceous white limestone, white anhydrite and a few free quartz grains.

5210-5240 Limestone, white to light gray, fine grained, arenaceous. Moderate red to grayish red and light, brown shale. Considerable fine free quartz.

5250-5260 Shale, pale to moderate red and medium light to medium dark gray. Some very light gray fine grained limestone and white anhydrite.

5260-5280 Shale as above, increase in anhydrite.

5280-5300 Anhydrite, white to light gray, some white fine grained limestone and pale to moderate red and medium light to medium dark shale.

5300-5310 Shale, pale to moderate red, white anhydrite and very light gray, fine grained, arenaceous limestone.

5310-5320 Shale, pale to moderate red and some medium to medium dark. Some white anhydrite and very fine white sandstone.

5323 3/4 hour. Shale, same as above, some fine grained limestone.

5330-5360 Shale, same as above.

5358 50 minutes. Shale, same as above, with some medium gray shale.

5360-5370 Shale, same as above.

5370-5390 Shale, same as above, considerable white anhydrite.

5390-5410 Shale, medium light to medium dark gray and some moderate and grayish red. Small amount white anhydrite.

5410-5430 Shale as above, small amount light gray limestone.

5430-5440 Shale as above, some argillaceous siltstone.

5440-5450 Shale as above, some arenaceous limestone.

Mission Canyon 5457

5450-5460 Shale, medium light to medium dark gray and some pale red. Considerable white anhydrite and a little white fine grained limestone.

5460-5480 Shale, medium light to medium dark gray and pale red. White anhydrite and grayish orange pink finely granular vuggy dolomite. Circulation 45 minutes at 5467.

5473 65 minutes. Shale, same as above.

5480 Limestone, pinkish gray oolitic, shale medium light to medium dark gray and pale red.

5485 50 minutes. Limestone, pinkish gray, oolitic, good porosity.

5480-5490 Limestone, same as above.

5490-5520 Limestone as above, considerable medium light to medium dark gray shale.

5520-5550 Limestone as above, no shale.

5550-5570 Limestone, light gray coarsely fragmental, slightly oolitic.

5570-5600 Limestone as above, some light gray, fine grained.

5600-5900 See pages 2 and 3.

5900-5920 Limestone, light to medium light gray, fragmental, tight.

5920-5970 Limestone, same as above, slightly oolitic.

5970-5990 Limestone, light to medium gray, medium granular, fragmental, tightly cemented.

5990-6000 Limestone, same as above, some oolites, medium dark gray shale.

6000-6070 Limestone as above, no shale.

6220-6230 Limestone, medium to medium light gray, fine grained. Considerable medium to medium dark gray shale.

6230-6250 Limestone, medium to medium dark gray, finely granular. Medium dark gray dolomite. Crinoidal.

6250-6260 Limestone as above, no dolomite.

6260-6310 Limestone as above, some highly fossiliferous, fragmental limestone.

6320-6360 Limestone, medium gray, fine grained, dense, crinoid stem segments and brachiopod fragments.

6360-6400 Limestone as above, some light gray fine grained limestone, unfossiliferous.

6400-6430 Limestone as above, mostly light grays.

6430-6450 Limestone, light to medium light gray, fine grained, dense.

Englewood 6452

6450-6460 Limestone, very light gray, and some medium light gray, fine grained, dense.

6460-6470 Shale, dark gray, considerable very light gray, dense limestone.

6470-6480 Shale as above, very little limestone.

6485 Circulation ? Shale as above, more limestone some white very finely granular dolomite.

6480-6490 Dolomite, white, very finely granular. Very light gray limestone and small amount black shale.

6490-6500 Dolomite, white to pinkish gray, very finely granular pyritic.

6500-6510 Shale, light brown, white to iron stained, finely granular dolomite.

6510-6520 Limestone, white to iron stained, argillaceous finely granular, slightly dolomitic. Small amount light brown shale.

6523 1 hour. Limestone, same as above.

Lyleton 6533

6520-6570 Limestone, same as above.

6570-6590 Limestone, light to medium gray, finely granular to dense. Considerable medium dark gray shale.

6590-6598 Limestone, light brown, fine to medium grained, some light brown shale.

Nisku 6588

6598-6900 See pages 2 and 3.

6900-6930 Limestone, light to medium gray, fine grained, dense to finely granular, porous, fragmental.

6930-6950 Limestone, very light to light gray, fine grained, dense and fine to medium granular with pinpoint porosity.

Souris River 6959

6950-6960 Limestone, very light to light gray, finely granular. Much pale yellow brown, fine grained, calcareous dolomite.

6960 1 hour. Dolomite, pale yellowish brown, finely granular, porous, very light to light gray, fine grained to fragmental limestone.

6960-6970 Dolomite as above.

6975 1 hour. Dolomite as above, more limestone.

6970-6980 Limestone, white to very light gray, fine grained, considerable pale yellowish brown dolomite.

6980-6990 Limestone as above, little dolomite.

6990-7050 Dolomite, pinkish gray, finely granular, very light gray, fine grain limestone.

7050-7080 Limestone, white to light gray, fine grained, dense to finely granular, dolomitic, some finely granular dolomite.

7080-7090 Limestone as above, very dolomitic.
 7082 1 hour. Dolomite, pinkish gray, finely granular.
 7090-7100 Dolomite as above.
 7100-7110 Dolomite as above, some white to very light gray, fine grained dense limestone.
 7110-7130 Limestone, light gray to light brownish gray, fine grained, dense, small amount pinkish gray dolomite.
 7130-7150 Limestone, white to light gray, fine grained dense. White fine to medium grained, frosted, subrounded sandstone.
 7150-7190 Limestone, white to very light gray, fine grained, dense. Circulation at 7160.

Dawson Bay 7170

7190-7210 Limestone, white to light gray, fine grained, dense.
 7210-7240 Limestone as above, some pinpoint porosity.
 7240-7260 Limestone as above, no porosity.
 7265 1 hour circulation. Limestone, white to very light gray, fine grain, dense.
 7265-7270 Limestone as above.
 7270-7278 Limestone, white to light gray, fine grained, dense to finely granular.
 7280-7290 Limestone as above. Considerable pinkish gray, finely granular dolomite.

Prarie Evaporite 7300

7290-7320 Limestone, white to light gray, fine grained, medium dark gray shale.
 7320-7330 Limestone as above, considerable light brownish gray dolomite.
 7324 1 hour. Limestone as above.

Winnipegosis Formation 7341

7330-7350 Dolomite, white to very light gray, finely granular, some very light gray fine grained limestone.
 7350-7380 Limestone, white to medium light gray, fine grained, dense. Pinkish gray, finely granular dolomite.
 7380-7470 Limestone, white to medium light gray, fine grained.

Ashern Formation 7457

Interlake 7475

7470-7490 Limestone, white to medium light gray, fine grained, dense. Medium dark gray shale. Light gray, finely granular dolomite.
 7490-7500 Limestone as above, no shale.
 7500-7520 Limestone as above, little dolomite.
 7520-7560 Anhydrite, white, fine to medium grained, some selenite.
 7565-7570 1 hour circulation. Shale, light to moderate red, mottled, white anhydrite.
 7570-7580 Shale as above, considerable fine, subrounded, frosted quartz grains.
 7580-7590 Shale, light to moderate red mottled.
 7590-7600 Shale as above, little anhydrite.
 7610-7620 Shale as above, considerable anhydrite.
 7620-7650 Shale as above, little anhydrite, white dolomite and white fine grained limestone.

7650-7660 Shale as above, considerable white, finely granular dolomite, no limestone.

7660-7700 Dolomite, white, fine to medium granular, good intergranular porosity. Light to moderate red shale.

7700-7760 Dolomite, white, fine to coarsely granular, good intergranular porosity.

7760-7770 1 3/4 hour circulation. Dolomite, white, fine grained, dense and fine to medium granular, porous.

7770-7790 Dolomite as above.

7790 1 1/2 hours. Dolomite as above, little moderate reddish brown shale.

7790-7810 Dolomite as above.

7815 66 minutes. Dolomite, white to light olive gray, fine grained, dense and white, fine to medium granular.

7810-7860 Dolomite, white, fine grained, dense and white, fine to medium granular.

7860-7870 Dolomite as above, good vuggy porosity.

7870-7910 Dolomite as above, pinpoint porosity only.

Stony Mountain 7900

7910-7940 Dolomite, white, fine grained, dense and white finely granular, pinpoint porosity. Light gray limestone.

7950-7960 Dolomite as above.

7960-7970 Dolomite as above, more light gray limestone.

7960 1 1/6 hour. Dolomite as above, good pinpoint and some intergranular porosity.

7970-8000 Dolomite as above, some fine, subrounded, frosted, free quartz.

Stony Mountain Shale 8000

8000-8010 Dolomite, white to pinkish gray, finely granular to dense, some pinpoint porosity. Light gray, fine grained, dense limestone.

8010-8030 Dolomite as above, some fine to medium grained sandstone.

8030-8040 Dolomite as above, some pale yellowish brown, finely granular dolomite.

8040-8060 Dolomite as above, considerable light gray limestone.

8060-8070 Dolomite as above, some fine, rounded, frosted free quartz.

8070-8090 Dolomite as above, more limestone.

Red River 8100

8090-8160 Limestone, medium light to medium gray, fine grained, dense. White to pinkish gray, finely granular to dense dolomite.

8155 1 hour. Limestone, medium light to light gray.

8160-8190 Limestone, as above, almost 1/2 dolomite.

8190-8220 Limestone as above, some pinkish gray, fragmental, porous limestone.

8220-8260 Limestone, light to medium light gray, fine grained, dense, very light to light gray, fine grained dolomite.

8260-8310 Dolomite, white to pinkish gray, very finely granular. Very light to medium light gray, fine grained, dense limestone.

8310-8330 Dolomite, white to pinkish gray, fine grained dense to finely granular, very light to medium light gray, fine grained limestone.

8330-8350 Limestone, medium light to very light gray, fine grained. White to very light gray dolomite.

8360-8370 Limestone as above.
 8380-8400 Limestone as above.
 8400-8410 Limestone as above, some finely granular, light gray dolomitic limestone.
 8410-8500 Limestone as above, little dolomite.
 8500-8550 Limestone, white to pinkish gray, fine grained, dense to finely granular. Very light gray dolomite.
 8550-8570 Limestone as above, considerable light gray dolomitic limestone.
 8570-8660 Limestone as above, no dolomite.
 8660-8700 Limestone as above, little pale reddish brown shale.

Winnipeg Formation 8706

8700-8770 Limestone, very light to medium light gray, fine grained, dense.
 8770-8780 Limestone as above, little medium dark gray shale.
 8780-8800 Limestone as above, little moderate red shale.
 8800-8810 Limestone as above, some medium dark gray shale.
 8810-8820 Limestone as above, more shale.
 8820-8890 Shale, dark greenish gray. Very light gray, fine grained limestone.

Winnipeg Sandstone 8894

8890-8900 Shale as above, little limestone.
 8900-8910 Shale as above, fine, free, subrounded, to subangular, frosted quartz.
 8910-8920 Shale, dark greenish gray. Much fine, subangular to subrounded, frosted quartz.
 8920-8930 Shale as above, much quartz.
 8930-8940 Sandstone, fine grained, subrounded to subangular, slightly frosted and clear. Dark greenish gray shale.
 8933 1 1/2 hours. Sandstone, as above, white, fine grained limestone.
 8940-8950 Shale, dark greenish gray, small amount sandstone.
 8950-8960 Shale as above, no sand.
 8960-8970 Shale as above, considerable fine grained sandstone.
 8970-8980 Shale as above, no sandstone, white fine grained limestone.
 8990-9000 Shale as above, fine grained sandstone.
 9000-9030 Shale, as above, much fine grained sandstone and white fine grained limestone.
 9030 2 hour circulation. Shale, medium dark greenish gray shale, fine grained, glauconitic, sandstone, white fine grained limestone.
 9033 Total Depth.