

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 48

Summary of the Stanolind Oil Co. No. 1 Woodrow Starr
Fort Berthold Indian Reservation, McKenzie County, North Dakota
Well #341, Permit #357

By Morton Strassberg
March, 1954

Stanolind Oil Company - Woodrow Starr No. 1, McKenzie County, North Dakota, C SW SE Section 21, T. 152N., R. 94W., (660 feet from the S. line and 1980 feet from the E. line, Sec. 21) RDB 2145, G.L. 2132.

The Stanolind Oil - Starr No. 1 was spudded June 14, 1953 and 13 3/8 inch casing was set at 481 feet with 400 sacks of cement, 9 5/8 inch casing was set at 6176 feet, and 7 inch casing was set at 10,675 feet. Drilling was completed December 6, 1953.

CORES:

Core #1 - 8055-8105	Core#5 - 9123-9173
2 - 9010-9022	6 - 9302-9327
3 - 9022-9072	7 - 10,545-10,570
4 - 9073-9123	8 - 11,426-11,441

TESTS:

DST #1 - 8870-8904. Packer failed.

DST #2 - 8866-8904. Packer failed after 18 minutes faint blow for 3 minutes then died. Recovered 960 feet drilling mud and 1000 feet water cushion.

DST #3 - 8845-8906. Open 4 hours, shut in 1 hour. Faint blow, dead in two minutes. Recovered 1000 feet water cushion, 30 feet drilling mud. IBHPF 625#, FBHPF 625#, BHPSI 3950#.

DST #4 - 9010-9072. Faint blow for 21 minutes. Died. Open 2 hours. Recovered 1000 feet water cushion, 85 feet slightly oil cut mud.

DST #5 - 9118-9173. Open 2 hours, shut in 15 minutes. Recovered 410 feet gassy, slightly oil cut black salt water.

DST #6 - 9280-9301. Open 2 1/2 hours, shut in 45 minutes. Weak blow increasing to fair in 22 minutes. Strong blow rest of test. Recovered 1000 feet water cushion and an estimated 180 feet black crude oil dispersed in oil column (estimated Gr50°) 100 feet mud. Ten strands above fluid filled with heavy gas. No H₂S apparent, FBHPF 600# BHPSI 4400#.

DST #7 - Failed.

DST #8 - 9296-9327. Open 2 hours. Shut in 30 minutes. Ran 1000 feet water cushion. Recovered only water cushion. IBHPF 500#, BHPSI 1000#.

DST #9 - 9325-9542. Open 2 hours. Shut in 45 minutes. No blow. Recovered 1000 feet water cushion and 33 feet slightly gas cut mud, thin scum oil.

DST #10 - 9276-9343. Open 3 hours. Shut in 40 minutes. Faint blow 3 minutes. Recovered 1215 feet water cushion and formation water. Top 515 feet slightly gas cut. 700 feet blackish water, grindout 3-4% oil. IBHPF 500#, FBHPF 525#, BHPSI, 4250#, still building up.

DST #11 - 10,525-10,544. Open 3 hours, shut in 30 minutes. Gas to surface 90 minutes. Recovered 2500 feet water cushion, 1070 feet gas cut mud, gravity of oil 41.5°. FBHPI 1300#, FBHPF 1400#, BHPSI 6350#.

DST #12 - 11,485-11,529. Open 2 hours, shut in 30 minutes. Weak blow 90 minutes. Died. Recovered 3580 feet water cushion and mud cut water cushion, 90 feet very slightly gas cut mud. IBHFP 1825#, FBHFP 1830#, SIBHP 1975#.

DST #13 - Miss-run.

DST #14 - 12,175-12,271 Open 3 hours, shut in 30 minutes. Weak blow throughout. Recovered 4000 feet water cushion, 515 feet salt water cut mud. BHPF 2100#, BHPSI 4800#, Hydrostatic Pressure 800#.

DST #15 - Failed.

DST #16 - 12,413-12,460. Open 3 1/4 hours, slight blow after 1 hour. Recovered 1000 feet salt water. Packer stuck in hole.

PERFORATION AND TREATMENT

10,528-10,556 casing perforated with 4 Kone shots per foot. Sand oil squeeze, treatment consisted of injecting 80 barrels of crude oil followed by 4000 gallons No. 6 fuel oil with 3300# sand followed by 120 barrels of crude oil. Injection pressure for first crude oil 4900# to 4650# when injecting 1-1 1/4 bbl./min. Injection pressure for sand and fuel oil 6000# when injecting 1.2 bbls/min. Injection pressure for last crude oil 5200# when injecting at 1.2 bbls./min. Total load 295 bbls.

FORMATION TOPS

Formation tops were determined from sample, electric and radioactivity logs, not all lithologic formation tops called in following list. Color was determined from rock color chart.

Cretaceous System

Pierre Formation	1660
Niobrara Formation	3214
Greenhorn Formation	4112
"Muddy"	4624
Dakota	4905

Jurassic System

Morrison Formation	5303
Sundance Formation	5508
Piper Formation	6028

Triassic System

Spearfish Formation	6215
---------------------	------

Permian System	
Minnekahta Formation	7102
Opeche Formation	7230
Pennsylvanian System	
Minnelusa Formation	7335
Mississippian System	
Amsden Formation	7385
Big Snowy Group	
Heath Formation	7527
Kibby Formation	8029
Madison Group	
Charles Formation	8160
Mission Canyon Formation	8820
Lodgepole Formation	9377
Englewood Formation	10,438
Devonian System	
Lyleton Formation	10,622
"Nisku Equivalent"	10,710
Duperow Formation	10,812
Souris River Formation	11,180
Dawson Bay Formation	11,419
Prairie Evaporites Formation	11,605
Winnipegosis Formation	11,735
Ashern Formation	12,080
Silurian System	
Interlake Group	12,110

<u>From</u>	<u>To</u>	<u>Formation</u>
0	40	Lignite, black.
40	80	Lignite, black. Some fine to medium grained sand.
80	500	Sand, rounded to subrounded, fine to coarse grained, poorly sorted.
500	560	Lignite, black. Very light gray argillaceous limestone.
560	740	Lignite, black.
740	950	Sandstone, fine to very fine grained, subrounded to sub-angular little consolidation.
950	1070	Sandstone, light gray, very fine grained, silty, calcareous.
1070	1160	Shale, light brownish to medium gray.
1160	1280	Limestone, medium light gray, fine grained, arenaceous.
1280	1340	Sandstone, very fine grained, argillaceous, calcareous.
1340	1370	Shale, medium light gray, black lignite.
1370	1430	Shale, medium light gray.
1430	1460	Lignite, black to dark gray.
1460	1490	Shale, medium gray.
1490	1520	Sandstone, very fine grained, argillaceous, calcareous.
1520	1700	Sandstone, very fine to fine grained, argillaceous, calcareous.
1700	2090	Shale, medium light gray.
2090	3170	Shale, medium gray.
3170	3310	Shale, medium light gray, calcareous.
3310	3340	Shale, medium dark and brownish gray, calcareous.
3340	3370	Shale, medium gray and pale brown.

<u>From</u>	<u>To</u>	<u>Formation</u>
3370	3460	Shale, medium gray and pale brown, pyrite.
3460	3490	Shale, medium gray and pale brown.
3490	3520	Missing.
3520	3550	Shale, medium gray and pale brown.
3550	3580	Shale, medium gray and pale brown, white specks.
3580	3610	Shale, medium gray and pale brown.
3610	3730	Shale, medium gray.
3730	3850	Shale, medium gray, white specks, calcareous.
3850	3940	Shale, medium light to medium gray, white specks.
3940	3970	Shale, medium to medium dark gray.
3970	4010	Shale, medium light to medium gray.
4010	4020	Shale, medium light gray, calcareous.
4020	4050	Shale, medium light gray and pale brown.
4050	4060	Shale, medium light to medium gray.
4060	4080	Shale, medium gray and pale brown.
4080	4090	Shale, medium to medium light gray.
4090	4110	Shale, medium to medium dark gray.
4110	4120	Limestone, very light gray, fine grained, argillaceous.
4120	4130	Shale, light gray, calcareous.
4130	4140	Shale, light gray and pale brown.
4140	4150	Shale, light to medium gray and pale brown.
4150	4190	Shale, medium light to medium gray, calcareous.
4190	4230	Limestone, medium light gray, fine grained, argillaceous.
4230	4240	Limestone, medium light to medium gray, argillaceous.
4240	4280	Shale, medium to medium dark gray, white specks, calcareous.
4280	4310	Shale, medium gray, white specks, calcareous.
4310	4330	Shale, medium to medium dark gray, some white specks.
4330	4370	Shale, medium to medium dark gray, calcareous.
4370	4400	Shale, medium dark gray, carbonaceous.
4400	4420	Shale, medium light to medium dark gray.
4420	4460	Shale, medium light gray, calcareous and medium dark gray.
4460	4480	Shale, medium to medium dark gray.
4480	4500	Shale, medium dark gray.
4500	4510	Shale, medium dark gray, white bentonite.
4510	4520	Shale, medium dark to dark gray.
4520	4540	Shale, medium dark to dark gray, bentonite, pyrite.
4540	4560	Shale, medium dark gray.
4560	4620	Shale, medium to medium dark gray.
4620	4640	Shale, light gray, silty, and medium dark gray.
4640	4650	Shale, medium dark to dark gray.
4650	4660	Shale, medium light gray, calcareous.
4660	4670	Shale, medium light gray, calcareous, silty.
4670	4690	Shale, medium dark and light olive gray.
4690	4700	Shale, medium to medium dark gray, pyritic.
4700	4710	Shale, medium to medium dark gray, black phosphate nodules.
4710	4740	Shale, medium light gray, calcareous.
4740	4780	Shale, medium dark gray.
4780	4790	Shale, medium light, light olive, and medium dark gray.
4790	4800	Shale, medium light calcareous and medium dark gray.
4800	4810	Shale, medium dark gray. Very fine grained calcareous sandstone.
4810	4820	Shale, medium dark gray. Medium gray, calcareous siltstone.

<u>From</u>	<u>To</u>	<u>Formation</u>
4820	4840	Shale, medium dark gray, medium to medium dark gray calcareous siltstone.
4840	4870	Shale, medium dark gray. Medium light gray, calcareous siltstone.
4870	4900	Shale, light gray, silty, calcareous.
4900	4910	Shale, light gray, silty, calcareous. Very fine grained calcareous, glauconitic sandstone.
4910	4940	Sandstone, light gray, very fine grained.
4940	4970	Sandstone, light gray, very fine grained. Few siltstone concretions. Medium dark gray shale stringers.
4970	5010	Siltstone, light gray. Little very fine grained sandstone.
5010	5020	Siltstone, light gray, pale brown silty shale.
5020	5030	Siltstone, light gray. Few sandstone concretions.
5030	5050	Siltstone, pale brown, argillaceous. Fine grained sandstone.
5050	5060	Sandstone, fine grained, subangular, slightly iron stained.
5060	5070	Sandstone, fine to medium grained, subangular, slightly iron stained. Few iron stained siltstone concretions.
5070	5080	Sandstone, fine to medium grained, subangular to subrounded.
5080	5090	Shale, medium dark gray. Few free quartz grains.
5090	5100	Siltstone, light olive gray and pale brown, argillaceous.
5100	5120	Shale, medium dark gray, light gray argillaceous siltstone.
5120	5130	Shale, pale brown and medium dark gray. Very fine grain sandstone.
5130	5170	Sandstone, very fine grained, iron stained siltstone concretions.
5170	5190	Siltstone, light gray, little very fine grained sandstone.
5190	5200	Sandstone, very fine grained.
5200	5220	Sandstone, very fine grained, pale brown shale.
5220	5230	Siltstone, light gray, argillaceous, very fine grained sandstone.
5230	5250	Sandstone, very fine grained. Iron stained siltstone concretions. Siltstone and shale stringers.
5250	5280	Sandstone, medium to coarse grained, subrounded to subangular to subrounded, frosted, iron stained.
5280	5300	Sandstone, fine to coarse grained. Medium dark gray shale. Siltstone concretions.
5300	5320	Shale, pale brown and medium dark gray. Fine to coarse grained sandstone and iron stained siltstone concretions.
5320	5330	Shale, medium to medium dark gray. Very fine grained sandstone.
5330	5340	Shale, pale brown. Pale brown silty sandstone.
5340	5370	Shale, medium gray, silty.
5370	5390	Shale, medium to medium dark gray shale. Very fine grained sandstone.
5390	5400	Shale, light to medium dark gray, very fine grained glauconitic sandstone.
5400	5410	Sandstone, very fine grained, silty. Light gray shale.
5410	5430	Shale, medium gray silty and medium dark gray.
5430	5450	Shale, light gray, silty and medium to dark gray.
5450	5500	Shale, light gray, silty.
5500	5540	Siltstone, light to medium light gray, argillaceous, highly calcareous.

<u>From</u>	<u>To</u>	<u>Formation</u>
5540	5550	Siltstone, light to very light gray, calcareous.
5550	5590	Sandstone, light gray, very fine grained, silty, calcareous.
5590	5600	Sandstone, very fine grained, calcareous, silty. Light olive and medium gray shale.
5600	5610	Sandstone, very fine grained, calcareous, medium gray shale.
5610	5620	Shale, medium gray. Very fine grained calcareous sandstone.
5620	5630	Shale, medium gray, silty, calcareous.
5630	5660	Shale, medium to greenish gray, silty, calcareous. Fine grained sandstone.
5660	5670	Sandstone, very fine grained, calcareous. Medium gray, silty shale.
5670	5680	Shale, medium gray and pale brown, slightly silty.
5680	5690	Shale, medium to light olive gray. Light gray, very fine grained, silty, calcareous sandstone.
5690	5700	Shale, medium to light olive gray and pale brown. Very fine grained, silty, calcareous sandstone.
5700	5710	Shale, pale brown and light olive gray. Medium light gray calcareous siltstone.
5710	5720	Shale, medium to medium light gray. Medium light gray calcareous siltstone.
5720	5740	Shale, medium to medium dark gray and pale brown. Medium light gray calcareous siltstone.
5740	5760	Shale, medium light to medium gray, pyritic. Light gray calcareous siltstone and iron stained siltstone concretions.
5760	5770	Shale, medium light to dark gray.
5770	5780	Shale, medium dark to dark gray.
5780	5790	Shale, medium light to greenish gray, light gray calcareous siltstone.
5790	5800	Shale, light to medium light gray.
5800	5830	Limestone, medium light gray, dense, argillaceous. Medium light gray shale.
5830	5850	Limestone, medium light gray, slightly argillaceous. Medium gray shale stringers.
5850	5860	Shale, medium to medium dark gray. Medium light gray limestone streaks.
5860	5880	Shale, pale brown and medium gray calcareous.
5880	5890	Shale, pale brown, grayish red, and medium gray, calcareous. Iron stained siltstone concretions.
5890	5920	Shale, medium gray, pale brown and grayish red.
5920	5530	Shale, variegated medium light and light olive gray. Trace very light gray fine grained limestone.
5930	5950	Shale, variegated medium light to medium gray. Trace very light gray limestone.
5950	5970	Shale, variegated medium to light olive gray. Thin streak very light gray limestone.
5970	5990	Shale, variegated medium light and grayish red. Very fine grained calcareous sandstone.
5990	6020	Shale, medium to light olive gray. Little very fine grain sandstone.
6020	6030	Shale, medium to light olive gray, yellowish gray to sublithographic limestone.
6030	6040	Limestone, yellowish gray, sublithographic.

<u>From</u>	<u>To</u>	<u>Formation</u>
6040	6050	Limestone, yellowish gray, sublithographic. Stringers of medium gray shale.
6050	6080	Limestone, white to very light gray, sublithographic.
6080	6090	Limestone, very light gray, chalky, some pinpoint porosity, dolomitic.
6090	6110	Limestone, very light gray, sublithographic.
6110	6120	Limestone, white to very light gray, fine grained to sub-lithographic.
6120	6140	Limestone, as above, thin streaks medium gray to grayish red shale.
6140	6150	Shale, medium to medium dark gray. Thin streaks yellowish gray sublithographic limestone.
6150	6180	Limestone, light olive gray, sublithographic to light gray, chalky, argillaceous.
6180	6200	Shale, grayish red, slightly calcareous.
6200	6210	Shale, grayish red, calcareous. Yellowish gray sub-lithographic limestone.
6210	6240	Shale, grayish red and light greenish gray, calcareous.
6240	6250	Shale, grayish red orange, light greenish gray, slightly calcareous. White gypsum.
6250	6260	Gypsum, white streaks. Grayish red shale. Gypsum might be drilling mud.
6260	6280	Shale, grayish red, streaks white gypsum.
6280	6290	Gypsum, white. Streaks grayish red shale.
6290	6310	Gypsum, white, grayish red shale.
6310	6320	Shale, moderate red. White gypsum.
6320	6370	Gypsum, white, moderate red shale.
6370	6380	Shale, moderate red. White gypsum.
6380	6400	Gypsum, white. Moderate red shale.
6400	6500	Siltstone, moderate red, calcareous, argillaceous, arenaceous. Interbedded white gypsum.
6500	6510	Siltstone, moderate red, calcareous, arenaceous. Moderate red shale, Interbedded white gypsum.
6510	6670	Siltstone, moderate red, calcareous, arenaceous, white gypsum. Moderate red shale.
6670	6710	Siltstone, pale reddish brown to moderate red, calcareous, much well rounded, frosted, fine, quartz grains. White gypsum and selenite crystals.
6710	6720	Siltstone, same as above. Little grayish red shale.
6720	6730	Siltstone, pale reddish brown, calcareous. Considerable frosted, fine grained quartz. White sucrosic gypsum.
6730	6750	Siltstone, same as above. Light olive gray sublithographic limestone.
6750	6760	Limestone, white, chalky, dolomitic, peppery and light olive gray, dense.
6760	6780	Limestone, white, chalky, peppery. Arenaceous siltstone and sucrosic gypsum cave?
6780	6810	Shale, reddish brown, argillaceous, calcareous, arenaceous.
6810	6840	Shale, as above. White dolomitic limestone cave?
6840	6880	Shale, pale reddish brown, silty. Considerable well rounded frosted, iron stained quartz grains.
6880	6910	Shale, pale reddish brown, silty, few free, fine grained frosted iron stained quartz.

<u>From</u>	<u>To</u>	<u>Formation</u>
6910	7010	Shale, pale reddish brown, silty, slightly calcareous. Considerable, fine grained, frosted, iron stained free quartz.
7010	7100	Missing.
7100	7160	Siltstone, pale reddish brown, arenaceous, argillaceous.
7160	7170	Sandstone, very fine grained, friable, slightly iron stained. Pinkish gray, fine grained, arenaceous dolomite. Reddish brown siltstone cave?
7170	7200	Dolomite, yellowish gray, microsucrosic, arenaceous.
7200	7220	Sandstone, very fine grained, slightly iron stained. Yellowish gray, microsucrosic dolomite.
7220	7240	Sandstone, very fine grained, friable, slightly iron stained.
7240	7260	Anhydrite, translucent, brittle. Reddish brown siltstone.
7260	7270	Sandstone, very fine grained, light red, friable. Reddish brown shale.
7270	7290	Dolomite, pale yellowish brown, microsucrosic. Reddish brown shale.
7290	7300	Sandstone, grayish pink, very fine grained, slightly calcareous.
7300	7330	Sandstone, moderate pink, very fine grained. Reddish brown shale.
7330	7340	Dolomite, pale red, fine grained to sucrosic, arenaceous.
7340	7350	Dolomite, as above. Moderate pink very fine grained sandstone.
7350	7370	Dolomite, moderate pink, microsucrosic. Reddish brown shale.
7370	7400	Sandstone, moderate to pink, very fine grained. Pale red microsucrosic dolomite. Reddish brown shale.
7400	7410	Sandstone, white, very fine grained. Reddish brown calcareous shale cave?
7410	7420	Dolomite, light olive gray, microsucrosic, dense. Reddish brown shale.
7420	7440	Dolomite, light olive gray, fine grained, pinpoint porosity. Light of olive gray chert. Reddish brown shale.
7440	7460	Dolomite, pale red, microsucrosic, reddish brown shale.
7460	7480	Anhydrite, white to translucent. Reddish brown calcareous shale.
7480	7490	Shale, grayish red, flaky.
7490	7500	Shale, grayish red to pale reddish brown.
7500	7510	Shale, pale reddish brown, calcareous.
7510	7530	Shale, pale reddish brown to moderate red.
7530	7550	Shale, pale reddish brown, calcareous.
7550	7560	Shale, pale reddish brown, calcareous. Few free fine grains quartz. White to translucent anhydrite.
7560	7570	Shale, pale reddish brown to grayish red.
7570	7580	Shale, grayish red, fissile and pale reddish brown.
7580	7600	Shale, grayish red, fissile and medium dark gray.
7600	7660	Shale, dark gray and grayish red.
7660	7680	Shale, medium dark to dark gray and grayish red.
7680	7700	Shale, medium dark and a little yellowish gray.
7700	7710	Shale, medium to medium dark gray and gray red.
7710	7720	Shale, dusky yellow and medium light gray, calcareous.

<u>From</u>	<u>To</u>	<u>Formation</u>
7720	7750	Shale, pale greenish gray, calcareous.
7750	7760	Limestone, light gray, fine grained to oolitic.
7760	7770	Limestone, light gray, oolitic and medium gray, very fine grained.
7770	7790	Limestone, very fine grained, argillaceous.
7790	7810	Limestone, medium gray, fine grained, streaks of dark gray shale.
7810	7830	Shale, dark gray, medium gray, fine grained limestone.
7830	7850	Shale, dark gray. Medium light gray, fine grained limestone.
7850	7870	Shale, dark gray and grayish red.
7870	7890	Dolomite, light brownish gray, dark gray shale.
7890	7900	Shale, dark gray. Very fine grained sandstone.
7900	7920	Sandstone, very fine grained, slightly calcareous.
7920	7980	Sandstone, light gray to iron stained, very fine grained, slightly calcareous, silty.
7980	8030	Sandstone, very fine to fine grained, iron stained, slightly calcareous, silty.
8030	8040	Sandstone, white to iron stained, silty, slightly calcareous. Little very light gray, fine grained limestone.
8040	8050	Limestone, light olive gray to yellowish gray, sub-lithographic.
8050	8055	Missing.
8055	8058	Core. Anhydrite, medium dark to brownish black.
8058	8061	Anhydrite, white.
8061	8063	Limestone, medium to medium dark gray, microsucrosic, dense, dolomitic.
8063	8069	Dolomite, medium gray, microsucrosic, dense.
8069	8075	Dolomite, same.
8075	8080	Dolomite, grayish red, microsucrosic, dense.
8080	8082	Limestone, medium gray, fine grained, arenaceous.
8082	8110	End of core. Dolomite, grayish red, microsucrosic, dense.
8110	8120	Dolomite, same as above.
8120	8135	Shale, pale reddish brown, silty, calcareous.
8135	8140	Shale, pale reddish brown, calcareous.
8140	8155	Shale, pale reddish brown, calcareous.
8155	8160	Shale, pale red, calcareous, silty.
8160	8175	Dolomite, pale red, fine grained, argillaceous.
8175	8285	Dolomite, pale red to reddish gray, fine grained, argillaceous.
8285	8330	Dolomite, pale red, fine grained to microsucrosic, silty.
8330	8350	Dolomite, pale red, fine grained to microsucrosic, silty, grayish red shale.
8350	8360	Dolomite, pale red, microsucrosic, silty.
8360	8380	Dolomite, pale red, microsucrosic, silty, white gypsum.
8380	8390	Gypsum, white, pale red, microsucrosic, silty dolomite.
8390	8405	Dolomite, pale red, microsuorotic, silty. Pale red calcareous shale.
8405	8420	Dolomite, pale red, microsucrosic, silty. Pale red calcareous shale. Gypsum mud?
8420	8425	Gypsum, white, chalky to flaky. Pale red microsucrosic dolomitic.
8425	8435	Dolomite, pale red, microsucrosic, silty. White chalky gypsum.

<u>From</u>	<u>To</u>	<u>Formation</u>
8435	8450	Anhydrite, white to pinkish gray. Pale red, microsucrosic dolomite.
8450	8495	Anhydrite, white, flaky.
8495	8515	Anhydrite, white to pinkish gray. Pale red, microsucrosic, silty dolomite.
8515	8530	Anhydrite, white to pinkish gray. Light gray shale.
8530	8535	Shale, light gray, very calcareous. White to pinkish gray anhydrite.
8535	8550	Anhydrite, white to light gray. Light gray calcareous shale.
8550	8560	Anhydrite, white to pinkish gray. Light gray, very fine grained dense dolomite.
8560	8565	Anhydrite, white to pinkish gray. Light gray calcareous shale.
8565	8585	Limestone, brownish gray, sublithographic, platy.
8585	8600	Limestone, brownish gray, fossiliferous, very fine grained, some pinpoint porosity.
8600	8605	Limestone, brownish gray, clastic, fossiliferous, porous.
8605	8610	Limestone, pale brown, fine grained, clastic, fossiliferous.
8610	8620	Anhydrite, white to yellowish gray, pale brown, fine grain, platy limestone.
8620	8630	Anhydrite, white to yellowish gray. Pale brown, fine grain, limestone.
8630	8645	Dolomite, light gray to pale brown, fine grained, white anhydrite.
8645	8665	Anhydrite, white to yellowish gray, light and light brownish gray, fine grained dolomite.
8665	8670	Limestone, light gray, fine grained, dolomitic, white anhydrite.
8670	8680	Dolomite, medium light gray, dense. White to yellowish gray anhydrite.
8680	8690	Limestone, grayish brown, sublithographic.
8690	8695	Limestone, grayish brown, sublithographic, clastic in part, porous.
8695	8715	Limestone, grayish brown, clastic to oolitic, porous.
8715	8720	Limestone, brownish gray, sublithographic.
8720	8730	Limestone, very light gray, fine grained, arenaceous.
8730	8735	Anhydrite, white to light gray. Light gray arenaceous limestone.
8735	8740	Dolomite, light gray, sublithographic. White to light gray anhydrite.
8740	8760	Limestone, brownish gray, sublithographic. White anhydrite.
8760	8770	Dolomite, brownish gray, sublithographic.
8770	8775	Dolomite, medium light gray, very fine grained.
8775	8780	Dolomite, medium light gray, very fine grained and grayish brown sublithographic.
8780	8830	Dolomite, light to medium light gray, very fine grained.
8830	8835	Dolomite, medium to medium light gray, very fine grained, dense.
8835	8840	Limestone, medium to medium dark gray, fine grained, platy.
8840	8855	Limestone, medium gray to grayish brown, fine grained, platy.
8855	8865	Dolomite, medium to medium light gray, very fine grained, dense.

<u>From</u>	<u>To</u>	<u>Formation</u>
8865	8890	Limestone, grayish brown. Fine grained to sublithographic.
8890	8900	Limestone, medium gray to grayish brown, very fine grained.
8900	8920	Anhydrite, medium gray, flaky.
8920	8930	Limestone, dusky brown, fine grained, platy.
8930	8940	Limestone, very light to yellowish gray.
8940	8950	Limestone, pale to grayish brown, fine grained.
8950	8980	Circulation - 55. Limestone, pale brown, clastic, fossiliferous.
8980	9000	Missing.
9000	9005	Limestone, pale brown, fine grained to clastic.
9005	9009	1 1/2 hours. Limestone, grayish brown, sublithographic, platy.
9009	9022	Missing.
9022	9023	Core #3. Limestone, medium gray, fine grained, dense, dusky brown anhydrite crystals.
9023	9025	Anhydrite, white to medium gray.
9025	9027	Anhydrite, white to pale brown
9027	9029	Anhydrite, white to medium dark gray.
9029	9030	Limestone, medium gray, fine grained, dense, good oil cut and odor.
9029	9030	Anhydrite, light to medium dark gray.
9030	9032	Anhydrite, medium dark to dark gray.
9032	9033	Anhydrite, light olive to medium dark gray. Light olive gray, microsucrosic dolomite.
9033	9034	Dolomite, light olive gray, fine grained, inclusion of salt.
9034	9035	Anhydrite, light to medium gray.
9035	9037	Anhydrite, medium to medium dark gray.
9037	9040	Dolomite, olive gray, fine grained with thin medium dark gray laminations. Very good oil stain and cut.
9040	9042	Anhydrite, medium to medium dark gray.
9042	9044	Anhydrite, olive to medium gray.
9044	9046	Anhydrite, medium light gray.
9046	9049	Anhydrite, white to medium light gray.
9049	9051	Dolomite, medium gray, fine grained, inclusion of anhydrite.
9051	9052	Dolomite, medium gray, microsucrosic, inclusions of anhydrite, strong petroliferous odor and very good oil cut.
9052	9054	Limestone, medium light gray, microsucrosic, dense.
9054	9057	Limestone, medium gray, microsucrosic, dense, slight oil cut.
9057	9059	Dolomite, very light to medium light gray, peppered with salt crystals.
9059	9062	Limestone, medium gray, oolites lightly cemented with sublithographic limestone.
9062	9064	Limestone, very light gray, oolitic, tightly cemented.
9064	9066	Limestone, medium light gray, fine grained, pinpoint porosity, anhydrite inclusions. Petroliferous odor, good oil cut.
9066	9067	Limestone, light gray oolitic, well cemented, some pinpoint porosity. Good oil cut.
9067	9069	Limestone, alternating thin layers of oolitic with pinpoint porosity and very light gray fine grained, dense. Good oil cut.

<u>From</u>	<u>To</u>	<u>Formation</u>
9069	9072	Limestone, pale yellowish brown, oolitic, tightly cemented. Slight oil cut.
9072	9073	Limestone, medium light to medium gray, fine grained to oolitic, pinpoint porosity.
9073	9075	Core #4. Limestone, medium to medium dark gray, fine grained dense. Medium gray anhydrite. Slight oil cut.
9075	9077	Limestone, grayish brown, fine grained dense, anhydrite inclusions.
9077	9081	Limestone, dusky brown, oolitic, tightly cemented, anhydrite inclusions.
9081	9083	Anhydrite, white with oolite inclusions.
9083	9087	Limestone, dusky brown, cemented with anhydrite crystals, tight.
9087	9089	Anhydrite, white to medium gray.
9089	9091	Anhydrite, white to light gray.
9091	9093	Anhydrite, white to medium gray. Grayish brown limestone streaks.
9093	9095	Limestone, dusky brown, sublithographic, dense, white anhydrite inclusions.
9095	9097	Anhydrite, white, grayish brown limestone inclusions.
9097	9101	Limestone, medium gray, oolitic, tightly cemented with calcite, anhydrite inclusions.
9101	9103	Limestone, brownish gray, sublithographic, dense.
9203	9113	Anhydrite, white to grayish brown.
9113	9115	Anhydrite, white with brownish gray streaks.
9115	9117	Anhydrite, white with brownish gray streaks, fine grained dolomite.
9117	9119	Anhydrite, white to light brown, medium grained, slightly dolomitic. Medium dark gray, fine grained, dense limestone.
9119	9121	Limestone, medium dark gray, fine grained, dense, spotty fluorescence. Very slight oil cut.
9121	9123	Limestone, dusky brown, sublithographic, dense.
9125	9127	Limestone, medium dark gray, microsucrosic to sublithographic, dense.
9127	9128	Limestone, medium dark gray, fine grained, dense.
9128	9129	Limestone, brownish gray, fine grained, pinpoint porosity, slight spotty fluorescence and slight oil cut.
9130	9132	Core #5. Limestone, medium to medium light gray, fine grained to oolitic pinpoint porosity.
9132	9134	Limestone, brownish gray, intergranular porosity, oolitic slight oil cut.
9134	9135	Limestone, brownish gray, oolitic, pinpoint porosity. Slight oil cut.
9135	9136	Limestone, pale yellowish brown, fine grained dense.
9136	9137	Limestone, medium light to medium gray, fine grained, dense, oil cut.
9137	9138	Limestone, medium gray, microsucrosic.
9138	9142	Limestone, pale yellowish brown, finely sucrosic.
9142	9143	Limestone, pale yellowish brown, fine grained to oolitic, some intergranular porosity. Slight oil cut.
9143	9144	Limestone, pale brown, oolitic to fragmental, some intergranular porosity, slight oil cut.

<u>From</u>	<u>To</u>	<u>Formation</u>
9144	9146	Limestone, pale yellowish brown, fine grained, dense.
9146	9147	Limestone, medium gray, oolitic to fragmental, tightly cemented.
9147	9149	Limestone, medium dark gray, oolitic to fragmental, tightly cemented.
9149	9150	Limestone, medium gray, oolitic to fragmental, little intergranular porosity, slight oil cut.
9150	9151	Limestone, medium to medium dark gray, fine to medium grain, clastic, carbonaceous, residue along fracture. Slight oil cut.
9151	9154	Limestone, medium light to medium gray, clastic, fine to medium grained.
9154	9159	Core #5. Limestone as above.
9159	9161	Limestone, medium dark gray, light to medium gray, fine grained, clastic. White anhydrite inclusions.
9161	9163	Limestone, pale yellowish brown, fine to medium grained, clastic, fossiliferous.
9163	9166	Limestone, pale yellowish brown, microsucrosic.
9166	9167	Core #6. Limestone, pale yellowish brown, fine to medium grained, clastic.
9167	9168	Limestone, medium to medium dark gray, clastic, anhydritic.
9168	9169	Limestone, medium gray, fine grained, clastic, tight.
9169	9170	Limestone, medium to medium dark gray, fine to medium grain, clastic, fossiliferous, has thin seams of carbonaceous residue.
9170	9175	Limestone, medium gray, fine to medium grained, tight, clastic, thin seams of carbonaceous, residue. Slight oil cut. No oil cut at 9171-75. End of core.
9175	9185	Limestone, pale to grayish brown, fine to medium grained, clastic, some pinpoint porosity.
9185	9195	Limestone, pale yellowish brown, fine grained.
9195	9260	Limestone, pale yellowish brown, fine to medium grained, clastic, fossiliferous, tight.
9255	9280	Limestone, pale yellowish to grayish brown, fine to medium grained, clastic, tight.
9280	9290	Limestone, same as above. Little white to very light gray chalky limestone.
9290	9295	Limestone, white to very light gray, chalky and pale yellowish brown, fine to medium grained. Thin vertical fractures.
9295	9300	Limestone, light to medium light gray, fine to medium grained.
9302	9303	Core. Limestone, medium dark gray, fine to medium grained, clastic tight. Slight oil cut.
9303	9312	Limestone, same as above, no oil cut.
9312	9313	Limestone, medium to medium dark gray, fine to medium grained, clastic tight, stylolitic.
9313	9314	Limestone, white to medium light gray, medium grained, vuggy. Slight oil cut.
9314	9315	Limestone, medium gray, medium grained, clastic, tight, slight oil cut.
9315	9320	Limestone as above, no oil cut.

<u>From</u>	<u>To</u>	<u>Formation</u>
9320	9321	Limestone, light gray, fine grained, fossiliferous, tight.
9321	9327	Limestone, medium gray, fine to medium grained.
9327	9330	Missing.
9330	9345	Limestone, pale yellowish to pale brown, fine to medium grained fossiliferous.
9345	9370	Limestone, grayish orange pink, fine to medium grained.
9370	9380	Limestone, very light to light gray, fine grained.
9380	9395	Limestone, light gray, fine to medium grained, pinpoint porosity.
9395	9410	Limestone, light gray, fine to medium grained, fragmental.
9410	9430	Limestone, light to medium light gray, fine to medium grain.
9430	9465	Limestone, very light to medium gray, fine to medium grain, fragmental.
9465	9500	Limestone, light to medium light gray, fine to medium grain.
9500	9510	Limestone, very light to medium gray, fine to medium grain. Light red calcareous shale cave?
9510	9520	Limestone, light to medium gray, fine to medium grain, fragmental, some pinpoint porosity.
9520	9525	Limestone, medium dark gray, fine grained, dense and light to medium gray, fine to medium grained.
9525	9550	Limestone, light to medium light gray, fine to medium grain.
9550	9575	Limestone, light to medium gray, fine grained, dense, platy.
9575	9610	Limestone, medium light to medium gray, fine grained, dense, platy.
9610	9625	Limestone, very light gray, fine grained, chalky and light to medium gray, fine grained, dense.
9625	9635	Limestone, light to medium gray, fine grained, dense.
9635	9680	Limestone, light to medium dark gray, fine grained, dense.
9680	9730	Limestone, light to medium dark gray, fine grained, dense and very light gray, chalky.
9730	9750	Limestone, very light to light gray, fine grained and medium dark gray, fine grained, dense.
9750	9785	Limestone, light gray, fine grained, chalky to medium gray, fine grained, dense.
9785	9805	Limestone, medium gray, fine grained, dense.
9805	9820	Limestone, medium light to medium gray, fine grained, dense.
9820	9835	Limestone, medium light to medium gray, fine grained dense and very light gray, chalky.
9835	9910	Limestone, light to medium dark gray, fine grained, dense.
9910	10,045	Limestone, medium to medium dark gray, fine grained, dense.
10,045	10,140	Limestone, light to medium dark gray, fine grained, dense.
10,140	10,265	Limestone, medium light to medium dark gray, fine grained, dense.
10,270	10,290	Limestone, light to medium light gray, fine grained, dense.
10,290	10,295	Limestone as above, pale red shale cave?
10,295	10,300	Limestone, light to medium dark gray, fine grained, dense, pyrite.
10,300	10,435	Limestone, light to medium dark gray, fine grained, dense.
10,435	10,440	Limestone, light to medium dark gray, fine grained, dark gray shale.
10,440	10,460	Shale, dark gray.

<u>From</u>	<u>To</u>	<u>Formation</u>
10,460	10,470	Shale, dark gray. Medium light gray limestone with medium gray, very fine grained, calcareous sandstone, concretions. Very fine grained calcareous sandstone.
16,470	10,485	Sandstone, very fine grained, calcareous with black calcareous siltstone concretions. Black shale.
10,485	10,500	Shale, dark gray, very fine grained, calcareous sandstone with calcareous siltstone concretions.
10,500	10,520	Shale, dark gray to black, carbonaceous.
10,520	10,530	Shale, dark gray to black, carbonaceous. Little calcareous siltstone.
10,530	10,535	Siltstone, medium light gray, calcareous. Few free fine quartz grains. Black shale lag.
10,535	10,545	Sandstone, very fine to fine grained, calcareous, spotty fluorescence and oil cut. Black shale lag.
10,545	10,554	Core #7. Shale, greenish gray slaty shale, very faint oil cut.
10,554	10,566	Shale, medium dark gray, lumpy, slightly dolomitic.
10,566	10,569	Dolomite, medium to medium light gray, fine grained, dense, argillaceous.
10,569	10,570	Dolomite, medium to medium dark gray, fine grained, dense.
10,570	10,575	Missing.
10,575	10,580	Sandstone, fine grained, frosted to clear angular to subrounded. Medium to medium dark gray dolomite.
10,580	10,585	Dolomite, medium light to medium gray, fine grained dense. Fine grained free quartz.
10,585	10,590	Dolomite, lost circulation. Sample similar to above.
10,590	10,595	Dolomite, medium gray, fine grained, dense, poor sample.
10,595	10,600	Dolomite, medium gray, fine grained, dense. Free fine to medium grained quartz, poor sample.
10,600	10,610	Dolomite, medium gray, fine grained, medium dark gray shale.
10,610	10,625	Dolomite, medium light gray, fine grained. Medium dark gray shale and light gray calcareous siltstone.
10,625	10,630	Siltstone, light gray, calcareous, arenaceous. Light gray dolomite.
10,630	10,640	Sandstone, fine grained, frosted, subangular to angular. Light to medium gray dolomite.
10,640	10,650	Dolomite, medium light to medium gray, fine grained, poor sample.
10,650	10,655	Sandstone, white, very fine grained. Medium light gray, fine grained dolomite.
10,655	10,665	Dolomite, medium light gray, fine grained. Medium dark gray shale, poor sample.
10,665	10,670	Missing.
10,670	10,685	Dolomite, medium light to medium gray, fine grained, medium dark gray shale.
10,685	10,710	Shale, medium dark and greenish gray. Medium light gray, fine grained dolomite.
10,710	10,720	Dolomite, greenish gray, fine grained, dense.
10,720	10,735	Dolomite, medium light to greenish gray, fine grained. Light, gray, fine grained limestone.
10,735	10,745	Limestone, brownish gray, sublithographic.
10,740	10,750	Limestone, light gray, fine grained to brownish gray, sublithographic.

<u>From</u>	<u>To</u>	<u>Formation</u>
10,750	10,770	Limestone, pale yellowish brown to brownish gray, fine grain dense.
10,770	10,795	Limestone, light gray to light brown, fine grained, dense.
10,795	10,810	Limestone, light gray, fine grained to brownish gray, sub-lithographic.
10,810	10,815	Limestone, very light to pale brown, fine grained, abundant ostracods.
10,815	10,835	Limestone, very light to pale brown, fine grained to grayish brown, sublithographic.
10,835	10,845	Limestone, brownish gray, sublithographic. Lost circulation.
10,845	10,850	Limestone, very light to medium dark gray, fine grain, dense.
10,850	10,860	Limestone, light to medium dark gray, fine grained, dense.
10,860	10,880	Limestone, medium to brownish gray, fine grained dense to sublithographic.
10,880	10,895	Limestone, light to brownish gray, fine grained, dense. Lost circulation.
10,895	10,920	Limestone, light to brownish gray, fine grained to sub-lithographic.
10,920	10,950	Limestone, very light to brownish gray, fine grained, dense.
10,950	11,020	Limestone, light to brownish gray, fine grained, dense.
11,020	11,030	Limestone, light to brownish gray, fine grained, dense. Lost circulation.
11,030	11,085	Limestone, light to brownish gray, fine grained, dense.
11,088		Circulation 2 hours. Dolomite, brownish gray, finely granular, medium gray, fine grained limestone.
11,088	11,090	Limestone, brownish gray, finely granular, dolomitic.
11,090	11,095	Limestone, brownish gray, finely granular and medium to brownish gray, fine grained, dense.
11,095	11,115	Limestone, pale brown to brownish gray, finely granular, abundant ostracods.
11,115	11,125	Limestone, pale brown, finely granular and brownish gray, fine grained, dense. Lost circulation.
11,125	11,130	Limestone, very light to brownish gray, fine grained, dense.
11,130	11,145	Limestone, brownish gray, fine grained to sublithographic.
11,145	11,185	Limestone, light to brownish gray, fine grained, dense.
11,185	11,210	Limestone, light to brownish gray, fine grained, dense and brownish gray, finely granular.
11,210	11,220	Limestone, light to medium dark gray, fine grained, dense.
11,220	11,225	Limestone, light gray, fine grained to finely sucrosic.
11,225	11,250	Limestone, light to medium dark gray, fine grained to finely sucrosic.
11,250	11,265	Dolomite, pale yellowish brown, microsucrosic. Brownish gray fine grained, dense limestone.
11,265	11,275	Dolomite, pale yellowish brown, microsucrosic.
11,275	11,305	Limestone, light to medium dark gray, fine grained, dense.
11,305	11,350	Limestone, brownish black, sublithographic.
11,350	11,380	Limestone, medium light to brownish gray, fine grained to sublithographic.
11,380	11,395	Limestone, pale yellowish brown to brownish gray, fine grain to sublithographic.
11,395	11,420	Limestone, light gray, fine grained to brownish black, sub-lithographic.

<u>From</u>	<u>To</u>	<u>Formation</u>
11,420	11,425	Limestone, very light to pinkish gray, microsucrosic, pinpoint porosity.
11,425	11,428	Core #8. Limestone, medium gray, fine grained, salty, slightly vuggy.
11,428	11,430	Limestone, very light to light gray, fine grained, salty.
11,430	11,431	Limestone, pale yellowish brown, fine grained, dense, salty.
11,431	11,435	Dolomite, light to medium light gray, fine grained, dense, salty.
11,435	11,437	Dolomite, light to medium light gray, fine grained, dense, salty.
11,437	11,439	Dolomite, medium to medium dark gray, very fine grained, dense, salty.
11,439	11,441	Dolomite, medium light and medium dark gray, very fine grain, dense.
11,441	11,445	End Core. Limestone, light to medium dark gray, fine grain, dense, Light gray, fine grained dolomite.
11,445	11,450	Limestone, light gray, fine grained.
11,450	11,460	Limestone, light to medium dark gray, fine grained, dense.
11,460	11,470	Dolomite, light to medium light gray, fine grained.
11,470	11,490	Limestone, light to medium dark gray, fine grained, dense.
11,490	11,495	Limestone, medium to medium dark gray, fine grained, dense.
11,495	11,530	Limestone, light gray, fine grained and pale yellowish brown to brownish black, fine grained, some pinpoint porosity.
11,529	11,535	Limestone, medium gray to brownish black, fine grained, dense, to sublithographic.
11,535	11,540	Limestone, pale yellowish brown to brownish black, fine grained, some pinpoint porosity.
11,540	11,550	Limestone, pale yellowish brown to brownish black.
11,550	11,565	Limestone, pale yellowish brown to brownish black, fine grained, pinpoint porosity.
11,565	11,570	Limestone, light gray to brownish black, fine grained.
11,570	11,575	Limestone, brownish black, fine grained, dense to sublithographic.
11,575	11,585	Limestone, very light gray, fine grained, argillaceous and brownish black, fine grained, dense.
11,585	11,600	Limestone, brownish black, fine grained, dense and light gray, fine grained, argillaceous.
11,600	11,615	Limestone, medium gray to brownish black, fine grained, dense.
11,615	11,620	Limestone, pale yellowish brown to brownish black, fine grain, dense, and very light gray, fine grained, argillaceous.
11,620	11,630	Limestone, pale yellowish brown to black and very light gray argillaceous. White gypsum.
11,630	11,635	Limestone as above. No gypsum.
11,635	11,650	Limestone, pale yellowish brown to brownish black, fine grain, dense and very light to light gray argillaceous.
11,650	11,690	Limestone, very light to medium light gray, argillaceous and brownish black, fine grained, dense.
11,690	11,705	Limestone, light to brownish black, fine grained and light gray, argillaceous.

<u>From</u>	<u>To</u>	<u>Formation</u>
11,705	11,735	Shale, pale red and light gray, calcareous.
11,735	11,745	Shale, pale red and light gray, calcareous. Brownish black, fine grained dense limestone.
11,745	11,750	Limestone, brownish black, fine grained dense.
11,750	11,760	Limestone, light brown to brownish black, fine grained, dense.
11,760	11,795	Limestone, light to brownish black, fine grained, dense. Very light to light gray shale.
11,795	11,820	Limestone, pale yellowish brown to brownish black, fine grain dense to sublithographic.
11,820	11,865	Limestone, pale yellowish brown to brownish black, fine grain, dense.
11,865	11,910	Limestone, light gray, chalky to brownish black, fine grain, dense.
11,913		Circulation 3 hours. Limestone, light gray, fine grained to chalky and brownish black, fine grained, dense.
11,910	11,980	Limestone, same as above.
11,980	12,000	Limestone, medium to brownish gray, fine grained, dense.
12,000	12,040	Limestone, light gray to brownish black, fine grained to dense.
12,040	12,085	Limestone, light brown to medium dark gray, fine grain, dense.
12,085	12,095	Limestone, light to medium dark gray, fine grained, pale red, slightly calcareous shale.
12,095	12,105	Shale, pale red, slightly calcareous.
12,105	12,110	Limestone, light to medium dark gray, fine grained, pale red shale.
12,110	12,120	Limestone, medium to medium dark gray, fine grained, dense. Pale red calcareous shale.
12,120	12,130	Limestone, pale red, fine grained, argillaceous.
12,130	12,135	Limestone, light to medium dark gray, fine grained, dense.
12,135	12,155	Limestone, light gray to brownish black, fine grained, dense.
12,155	12,165	Dolomite, grayish orange pink, microsucrosic, some pinpoint porosity.
12,165	12,170	Dolomite as above. Lost circulation.
12,170	12,180	Dolomite, pale red to very light gray, sublithographic.
12,180	12,190	Limestone, medium to medium dark gray, fine grained, dense.
12,190	12,200	Dolomite, pale red to very light gray, sublithographic.
12,200	12,205	Dolomite, very light gray, sublithographic.
12,208		Circulation 3 1/2 hours. Dolomite, very light to pinkish gray, sublithographic.
12,205	12,215	Dolomite as above. Lost circulation.
12,215	12,230	Dolomite, very light to yellowish gray, microsucrosic to sublithographic.
12,230	12,265	Dolomite, very light to yellowish gray, microsucrosic to sublithographic, pinpoint porosity.
12,265	12,295	Limestone, light to yellowish gray, fine grained, dense, dolomitic.
12,295	12,310	Limestone, medium light to yellowish gray, fine grained, dense to sublithographic, some pinpoint porosity.

<u>From</u>	<u>To</u>	<u>Formation</u>
12,310	12,320	Dolomite, very light to yellowish gray, fine grained, dense, calcareous, some pinpoint porosity.
12,320	12,385	Limestone, very light to yellowish gray, fine grained, dense, some pinpoint porosity, dolomitic.
12,385	12,395	Limestone, very light gray, fine grained, dense. Yellowish gray, sublithographic dolomite.
12,395	12,440	Limestone, very light to yellowish gray, fine grained, dense to sublithographic.
12,440	12,460	Limestone, very light to yellowish gray, fine grain to fragmental
12,460		Circulation 3 hours. Limestone, very light to light gray, fine grained, fragment at to dense.
Total Depth		