

MUD LOG GGS # 3128

Georgia Geological Survey well no. 3128

Jeff Davis County, Georgia drilling permit no. 96

Chevron Oil Co., J. L. Sinclair no. 1

Total depth 4054 feet

Geophysical datum: Kelley bushing, 15 feet above the ground level which is 271.7 feet, or 287 feet above sea level.

Logged by Gilbert L. Treadwell, completed 6-10-76

note. an asterisk \* after a depth indicates that a microfossil slide was made of some of the specimens.

## Short summary

- 0-440 no samples
- 440-840 pure, white, very light gray to light tan limestone; very fossiliferous, chalky. Microcoquina, calcarenite and individual fossils usually make up the sample.
- 840-1080 Beginning of interbedded dolomite with the limestone. From 950 to 1080 pure dolomite. Grayish orange 10YR7/2 to pale yellowish brown 10YR6/2. Slightly fossiliferous, vuggy, sucrosic, cherty dolomite.
- 1080-1290 Limestone with interbedded sand at the bottom of the section. Approximately white, glauconitic, cherty, chalky, porous limestone as calcarenite.  
at 1250-1280  
no samples, lost circulation
- 1290-1430 very glauconitic sand with some dolomite, chert, mica and limestone
- 1430-2040 Interbedded limestone and sand, with occasional dolomite and shale. Lignitic, phosphatic, cherty, micaceous, clayey, pyritic.
- 2040-2370 Shale with interbedded sand. Shale is soft, friable, medium light gray N6, micaceous, fossiliferous, waxy, and calcareous. Coring from 2349-2371.5
- 2370-2800 Clear, well sorted, subangular, coarse grained, slightly shaly slightly limy, lignitic, pyritic, slightly glauconitic, micaceous sand.
- 2800-3140 Soft, fissile, olive gray 5Y4/1 lignitic, pyritic, glauconitic, slightly phosphatic, sandy, calcareous shale.
- 3140-4040 Very uniform and unchanging sand section. Clear to yellow, orange, pink and red, micaceous, feldspathic, slightly lignitic, angular, coarse grained, average 1 mm, shaley (1-40%) sand. Section looks much like that in GGS 505, Marion County. From 3940-4040, up to 60% sandstone, white, pale orange, dense, silica to lime cement, medium to coarse grained.
- 4040-4060 Basement. Dark, basic igneous rock.

Total depth 4062

check for  
0-440  
440-450\*

no samples.

Fresh, hard, very light gray N8 to pinkish gray 5YR8/1, pyritic, very fossiliferous, forams, dull, nonporous to slightly porous, dense, chalky limestone; as microcoquina and calcarenite.

450-460

no change. forams are flat spirals and orbicular. Also bryozoa. Cement in sample.

460-470\*

little change. darker gray to lighter gray N7, also pinkish gray 5YR8/1 and approximately white N9. Some microcrystalline, recrystallized.

470-500

Same.

500-510\*

Same

✓ 510-520

No change. Much bryozoa and large forams.

✓ 520-530

Fresh, hard, very light gray N8 to white N9 to light gray N7, very fossiliferous, dull, dense to porous pure limestone as above. Some 2 mm white calcite rhombs.

✓ 530-540

Fresh, hard, pinkish gray 5YR4/1, very light gray N8 to white N9, very fossiliferous, dull, dense to porous pure limestone

✓ 540-550

Little change. except in color. Less gray and more light tan, approximately very pale orange 10YR8/2. Some microcrystalline texture apparently from recrystallization. No change in fossil type.

✓ 550-570

no change.

570-580

Fresh, hard, very pale orange 10YR8/2 to white N9, very fossiliferous, porous, dull, chalky, pure limestone. Less fossils and more calcarenite than above.

580-600

no change.

600-610\*

white to tan pure limestone

610-620

pure, approximately white limestone, mostly as calcarenite.

620-630

no change.

✓ 630-640

Fresh, soft, white N9, fossiliferous, dull, slightly porous, chalky, powdery limestone.

640-650

pure, white, chalky limestone.

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600-610\*

- 650-660 More recrystallization than above, as evidenced by microcrystallinity and vugginess; may be partially dolomitized; darker tan in color. Still mostly white, chalky calcarenite as above; also bits of brown chert.
- 660-670 Same as 640-650
- 670-680 Fresh, hard to brittle, white to very pale orange, fossiliferous (much less than above), dull to slightly resinous, slightly porous to vuggy, some microcrystallinity limestone; mostly calcarenite.
- 680-690 no change
- 690-700 Less of the tan, vuggy limestone; back to mostly white, chalky calcarenite.
- 700-710 no change
- 710-720\* Fresh, hard to soft, white N9 to very pale orange (light tan) 10YR8/2, fossiliferous, dull, dense to porous, some vuggy, mostly chalky limestone; some clear, secondary overgrowth.
- 720-730 no change.
- 730-740 Fresh, hard, white N9, fossiliferous, dull, porous, chalky, dolomitic (10%) limestone. Dolomite is grayish orange 10YR7/4, porous, resinous, finely rhombic crystalline and sucrosic.
- 740-750 Same as above
- 750-760 no change
- 760-770 Fresh, hard to brittle, white N9, dull, dense to porous, chalky, fossiliferous, dolomitic (5%) limestone.
- 770-780 no change.
- 780-790\* Fresh, hard to brittle, white, dull, fossiliferous, dense to porous, chalky dolomitic (3%) limestone.
- 790-810 no change.
- 810-820 Fresh, hard, white, dull, slightly pyritic, dense to porous, fossiliferous, chalky, powdery, slightly dolomitic (5%) limestone.
- 820-840 no change.
- 840-850\* 60% fresh, hard, white N9, chalky pure limestone  
40% Fresh, hard, dark yellowish brown 10YR4/2 to dusky yellowish brown 10YR2/2 to moderate yellowish brown 10YR5/4, fossiliferous, (recrystallized), resinous, dense to porous, fine to very fine grained rhombic crystalline, some in limestone cement, sucrosic, pure dolostone.

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note

- 850-860 70% pure chalky limestone as above  
30% pure sucrosic dolomite as above
- 860-870 Same; dolomite 25%, limestone 75%
- 870-900 no change
- 900-910 60% chalky calcarenite as above  
40% dolomite as above.
- 910-920\* 55% dolomite. Dominantly light tan to very pale orange 10YR8/2; also moderate yellowish brown, dark yellowish brown, and dusky yellowish brown; slightly fossiliferous, resinous, dense to porous to vuggy, finely rhombic crystalline, sucrosic.  
45% limestone. White, dull, powdery, slightly porous chalky, slightly fossiliferous, calcilutite (limestone cemented calcareous rock flour). Some dolomite rhombs included. Some of the limestone could be called chalk. 2 pieces, about 1 mm of black, brittle, angular obsidian?
- 920-930 no change 55% dolomite, 45% limestone
- 930-940 55% limestone. Fresh, hard to soft, white to very light gray N8, slightly fossiliferous, dull, mostly porous calcarenite and calcilutite often with included finely crystalline, rhombic dolomite.  
45% dolomite as above.
- 940-950 60% limestone, 40% dolomite
- 950-960 Fresh, hard, dominantly orange 10YR7/4, also pale yellowish brown 10YR6/2, dark yellowish brown 10YR4/2, dusky yellowish brown 10YR2/2, resinous, slightly fossiliferous (recrystallized), slightly porous, vuggy, sucrosic, very finely crystalline, cherty (5%) dolomite; 25% limestone as above.
- 960-970 Same as above. Some of the fossils have undergone selective recrystallization, with the dolomitization occurring in bands, apparently according to growth lines.
- 970-980 Fresh, hard, dominantly grayish orange, cherty (5%) limy (10%) dolomite.
- 980-990 no change
- 990-1000 Cherty (6%) limy (8%) dolomite.
- 1000-1010 Little change. Darker dominant color-pale yellowish brown 10YR6/2. 5% chert, 5% limestone.
- 1010-1020 Lighter the dominant color-grayish orange 10YR7/4. Same sucrosic porous dolomite, 7% limestone, 4% chert.
- 1020-1030 Same as above.

- 1030-1040 Fresh, hard, dominantly gry or 10YR7/4, finely crystalline, rhombic, porous to vuggy, resinous, sucrosic, limy (5%) cherty (5%) dolomite.
- 1040-1050 no change. Chert is pale yellowish brown 10YR6/2, waxy, subtranslucent and smooth as above.
- 1050-1060 limy (3%) cherty (8%) dolomite
- 1060-1070 limy (3%) cherty (12%) dolomite. A quite tough section-many drill bit fragments.
- 1070-1080 limy (4%) cherty (10%) dolomite
- ✓1080-1090\* Fresh, hard, about white N9, glauconitic, fossiliferous, chalky, dull, porous, cherty (2%) dolomitic (15%) limestone, as calcarenite.
- 1090-1100 Fresh, hard to soft, white, slightly glauconitic, fossiliferous, chalky, dull, slightly porous, cherty (8%) dolomitic (10%) calcarenite.
- 1100-1120 no change
- 1120-1130 Fresh, brittle, white, glauconitic altering to pyritic, slightly fossiliferous, chalky, dull, porous, cherty (3%) dolomitic (7%) limestone as calcarenite.
- 1130-1140 Fresh, brittle, dominantly tan to buff, about very pale orange 10YR8/2, glauconitic, very slightly fossiliferous, less chalky, dull to resinous, porous, mostly microcrystalline, slightly cherty (1/2%) dolomitic (1% finely crystalline, rhombic, pale yellowish brown 10YR6/2, resinous, sucrosic) limestone. Much new resinous limestone included in the chalky calcarenite. This new, shiny, darker tan limestone may be the result of recrystallization of the chalky limestone. There is much secondary overgrowth (over the white, chalky pieces). Limestone rapidly dissolves in acid.
- 1140-1160 no change.
- 1160-1170 no change, less glauconite.
- 1170-1180\* Little change. more chert (4%), very little solitary dolomite (as chunks). Most as very finely crystalline rhombs in the calcarenite, about 5%
- 1180-1190 no change, 8% chert.
- 1190-1200 60% limestone, most as white, pearly, shell chips and calcarenite. 40% sand and sandstone. Clear, glauconitic, phosphatic, vitreous, medium sorted, subrounded, coarse grained sand. The sandstone is clear, vitreous, well sorted, glauconitic, angular, phosphatic, fine grained, lime cemented. A bit of chert (2%) and dolomite (1%). total glauconite 8%

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12/25

- 1200-1210 70% limestone, white, chalky, glauconitic, sandy (5% calcarenite. also white, pearly shell chips  
30% sand and sandstone, very glauconitic, trace chert and dolomite.
- 1210-1220 85% white, chalky, non glauconitic, slightly porous, dolomitic (30%) calcarenite  
15% light gray N7 glauconitic, pyritic, slightly sandy, dense limestone
- 1220-1230 As 1200-1210
- 1230-1240 Fresh, hard to soft, very pale orange 10YR8/2, pyritic, glauconitic, phosphatic, fossiliferous (pearly shell chips and forams and a bit of coral), dull, chalky, slightly porous, cherty (2%) dolomitic (10%) sandy (20%, coarse grained, angular, clear) limestone.
- 1240-1250 little change. 1/2% lignite; trace limonite on some grains.
- 1250-1280 no samples. lost circulation.
- 1280-1290 40% limestone, cream white to very light gray N8, dense, microcrystalline, slightly phosphatic, slightly glauconitic, dull to pearly.  
35% dolomite, light olive gray 5Y6/1, resinous, sucrosic, fine rhombic crystalline as dolarenite with quartz sand, phosphate and glauconite.  
25% quartz sand, clear, vitreous, well sorted, sub rounded, fine to coarse grained (1/8-1mm), average 1 mm.
- 1290-1300 Fresh, hard, clear, very glauconitic (8%), vitreous, well sorted, porous, subangular, fine to very coarse grained (1/8-2mm), average 1 mm, dolomitic (15%) limy (15%) sand.
- 1300-1310 Fresh, hard, clear, very glauconitic (7%), vitreous, well sorted, porous, subangular, fine to very coarse grained (1/8-2mm), average 1 mm, dolomitic (10%) limy (8%) sand.
- 1310-1330 no change.
- 1330-1340 little change. Very glauconitic, clear, subangular, vitreous, well sorted, coarse grained, dolomitic (10%) limy (5%) sand.
- 1340-1350 Fresh, soft, very light gray N8, speckled, slightly pyritic, slightly glauconitic, slightly flaky, slightly fossiliferous, dull to earthy, limy (5% as limestone like above) dolomitic (8%) sandy (15%), very slightly calcareous claystone.
- 1350-1360 Fresh, very hard, light gray N7, speckled, lignitic, glauconitic, micaceous, dull, well sorted, silica cemented, nonporous, angular fine grained (1/8-1/4mm) slightly cherty, limy (25%), very slightly calcareous sandstone.

- ✓ 1360-1370\* Fresh, hard, light gray N7, speckled, glauconitic, dull, well sorted, silica cemented, non porous, angular, fine grained (1/8-1/4mm) slightly cherty, sandy (15%, unconsolidated, subrounded, fine to coarse grained, clear) limy (25% cream white, dense fossiliferous limestone) shaly (10%) sandstone.
- ✓ 1370-1390 As above
- 1390-1400 Fresh, hard, light gray N7, glauconitic, micaceous, cherty, dull, well sorted, silica cemented, slightly fossiliferous, non porous, angular, very fine to fine grained (1/16-1/4mm) shaly (5%) sandy (10% clear, subrounded, fine to coarse grained, vitreous, unconsolidated sand), limy (10%) sandstone.
- 1400-1410 no change.
- 1410-1420 Very hard, dense, light gray, glauconitic, micaceous, very fine to fine grained sandstone with 3% limestone and 5% unconsolidated coarse grained sand.
- 1420-1430 More shale in the sample, now calcareous. Dominantly sandstone as above, some cemented by the calcareous clay to limestone pieces and coarse grained quartz sand.
- 1430-1440 Fresh, hard, white N9, glauconitic (very), pyritic, slightly micaceous, dull, non porous, microcrystalline, sandy (10% as unconsolidated, coarse grains and some fine grained sandstone as above), shaly (35% brittle, fissile, medium light gray N6, flaky, earthy, slightly calcareous) limestone.
- ✓ 1440-1450 Fresh, hard, very light gray N8 to white to cream white, fossiliferous, dull, non porous, sandy (10% unconsolidated grains) limestone.
- ✓ 1450-1460 Little change, 5% sand. Some limestone chalky, most of the limestone is calcarenite, very light gray N7
- ✓ 1460-1470 rather pure, slightly pyritic, very light gray N8 limestone.
- ✓ 1470-1480 Fresh, hard, white to very light gray, fossiliferous, dull to pearly, non porous, sandy (5%) limestone. Most of the limestone is dense, pure, microcrystalline; some quartz, sandy calcarenite. also as pearly shell chips, probably pelecypods.
- 1480-1490 now mostly quartz sandy calcarenite, glauconitic
- 1490-1500 now mostly light brownish gray 5YR6/1. Pearly shell chips, with sandy, white, microcrystalline limestone.
- 1500-1510 100% limestone.  
60% light brownish gray to brownish gray 5YR6/1-4/2, laminated, pearly pelecypod shell fragments  
40% about white, microcrystalline, dull, non porous, shaly (0-10%) sandy (2-15%) limestone.

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1440

- 1510-1520 Fresh, hard, brownish gray 5YR4/1 to light gray N7, slightly phosphatic, glauconitic (both free and included in limestone), fossiliferous (as pelecypod shell chips), dull to pearly, non porous, sandy (20%) limestone.
- 1520-1530 same as above in lithology but smaller pieces
- 1530-1540 Limestone as above, as shell chips and sandy, gray, micro-crystalline, phosphatic limestone.
- 1540-1560 no change.
- 1560-1570 Fresh, hard, light gray N7 to medium gray N5 to light brownish gray 5YR6/1, lignitic, phosphatic, dull to pearly, non porous, shaly (10%) sandy (20%, clear, angular, medium grained, average 1/2 mm) limestone.
- 1570-1580 Fresh, hard, clear, slightly phosphatic, vitreous, well sorted, angular, medium grained (1/4-1/2mm) shaly (10%) limy (30%) sand.
- 1580-1590 As above, but 40% limestone.
- 1590-1600 Fresh, soft, medium light gray N6, slightly phosphatic, slightly micaceous, cherty (3% which is light brown, waxy, subtranslucent, smooth), earthy, limy (10%), very sandy (40% in shale, clear, fine grained (1/8-1/4 mm) well sorted, angular) shale.
- 1600-1610 Little change. 20% unconsolidated, clear, subangular, vitreous, coarse grained (1/2-1mm) sand; also a bit of lignite; much cement in the sample and a dark green unknown fibrous material.
- 1610-1620 Fresh, hard, clear, slightly micaceous, slightly pyritic, slightly lignitic, vitreous, well sorted, angular, medium grained (1/4-1/2mm) limy (8%) shaly (30%) sand; much fake cement.
- 1620-1630 Fresh, friable, clear, slightly micaceous, lignitic, slightly phosphatic, vitreous, well sorted limestone--clay cemented, slightly porous, angular, fine grained (1/8-1/4mm) shaly (15%) limy (10%), cherty (4%) sandstone. and clear, vitreous, subangular coarse grained (1/2-2mm) unconsolidated sand.
- 1630-1640 no change. a bit of dark green, asbestiform matter
- 1640-1650 Same as above with less limestone (3%) and shale (8%). mostly unconsolidated fine to coarse grained sand.
- 1650-1660 same
- 1660-1670 Same as above with more sandy shale. Fresh, clear, slightly micaceous, slightly lignitic, slightly phosphatic, cherty, vitreous, well sorted, angular, mostly fine grained (1/8-1/4mm) up to coarse grained (1/2-1mm) limy (3%) shaly (40% medium light gray N6, sandy) sand and clay cemented sandstone. much fake cement.
- 1670-1680 less shale (25%)

- 1680-1690 Fresh, brittle, light tan, about very pale orange 10YR8/2, micaceous, dull, slightly porous, microcrystalline, sandy (25% in limestone, clear, angular, poorly sorted, fine to coarse grained) limestone.
- 1690-1700 Fresh, brittle, white to very light gray N8, micaceous, slightly graphitic, dull, slightly porous, slightly fossiliferous (one indistinct pelecypod fragment), microcrystalline, clayey (10% in the limestone), sandy (30% in the limestone, as above) limestone
- 1700-1710 Fresh, brittle, white to very light gray to very pale orange, micaceous, phosphatic, slightly glauconitic (pale, not the bright dark green), slightly graphitic, slightly fossiliferous (as pearly pelecypod chips), dull, non to slightly porous, clayey (10%), sandy (40% in the limestone and coarse grained, angular, unconsolidated) limestone.
- 1710-1720 Fresh, hard, medium light gray N6, slightly phosphatic, micaceous, slightly fossiliferous (indistinct pelecypod shell chips), resinous, non porous, very finely crystalline, sandy (25%) limy (35%) dolomite.
- 1720-1730 lots of cement. little change.
- 1730-1740 lots of cement, some chewed up rubber.  
Fresh, clear to cloudy, micaceous, slightly phosphatic, cherty, vitreous, medium sorted, subangular, coarse grained, slightly shaly (5%) dolomitic (25%) limy (30%) sand.
- 1740-1750 Same as above.  
Fresh, clear to cloudy, micaceous, phosphatic, fossiliferous (pearly pelecypod shell fragments), vitreous, medium sorted, subangular, coarse grained average 1mm, slightly shaly, dolomitic (10%) limy (40%) sand. Some fine grained, angular, lime cemented, clayey sandstone.
- 1750-1760 May be slightly leached, so iron coloration. Hard, about white, slightly lignitic, slightly micaceous, fossiliferous (as above), dull, non porous, sandy (40%-coarse grained, clear to cloudy, subangular), slightly shaly limestone.
- 1760-1770 Slightly shaly, slightly dolomitic, sandy limestone.
- 1770-1780 Like 1750-1760, iron stained.
- 1780-1790 Fresh, micaceous, lignitic, shaly (30%-medium dark gray N4, micaceous) sandy (30%) limestone.
- 1790-1800\* Fresh, clear to cloudy white, micaceous, vitreous, pyritic, fossiliferous, well sorted, subangular, coarse grained (1/-1mm), shaly (10%) limy (40%) sand.

- 1800-1810 Fresh, white, micaceous, pyritic, slightly fossiliferous, dull, chalky, slightly porous, shaly (5%) sandy (45% coarse grained, subangular, vitreous) limestone.
- 1810-1820 Slightly leached (iron coloration), hard, white to light gray N7, micaceous, pyritic, lignitic, dull, non porous, clayey (15%) sandy (20%) limestone. Still some green to black unknown fibrous material.
- 1820-1830 no change; a bit of chert
- 1830-1840 Fresh, brittle, light gray N7 to white, micaceous, fossiliferous (pelecypod fragments), dull, clayey (5%) sandy (30%) limestone.
- ✓ 1840-1850 sandy, fossiliferous limestone as above; lignite
- ✓ 1850-1860\* Fresh, brittle, light gray N7 to white, micaceous, lignitic, cherty, fossiliferous (forams, pelecypods), dull, non porous, clayey (5%) sandy (45% in fine grained limestone cemented sandstone and coarse grained unconsolidated sand) limestone
- ✓ 1860-1880 Same as above
- ✓ 1880-1890 Same shaly (3%) sandy (47%) limestone
- ✓ 1890-1900 same
- 1900-1910 Fresh, brittle, light gray N7, micaceous, pyritic, lignitic, slightly fossiliferous, cherty, dull, non porous shaly (3%) sandy (15%) limestone.
- ✓ 1910-1920\* Fresh, hard, clear, micaceous, lignitic, pyritic, cherty, fossiliferous (forams, pelecypods), vitreous, well sorted, subangular, coarse grained (1/2-1mm) average 1 mm, shaly (5%) limy (40%) sand.
- 1920-1930 Fresh, brittle, light gray N7, micaceous, lignitic, cherty, pyritic, fossiliferous, dull (many pearly, light brownish gray 5YR6/1 shell chips) nonporous, shaly (5%) sandy (15%) limestone.
- 1930-1940 Same as above, with 15% shale, medium dark gray N4, brittle, micaceous, slightly calcareous
- 1940-1950 Fresh, hard, clear, micaceous, pyritic, fossiliferous (pearly probably pelecypod shell chips), vitreous, well sorted, subangular, coarse grained (1/2-1mm) average 1 mm, shaly (1%) limy (5%) sand. Mostly clear, pure sand.
- 1950-1960 Same, with 10% limestone.
- 1960-1970 Clean, clear, lignitic, micaceous, pyritic, shaly (2%) limy (20%) subrounded sand.
- 1970-1980 like 1910-1920, shaly (5%) limy (40%) sand.

- 1980-1990 Fresh, brittle, light gray N7, micaceous, pyritic, fossiliferous, dull, slightly porous, shaly (10%) sandy (40%) limestone.
- 1990-2000\* Fresh, brittle, light gray N7 to white, micaceous, lignitic, pyritic (1%) fossiliferous (forams, ostracods), dull, slightly porous, shaly (10%) sandy (30%) limestone.
- 2000-2010 Fresh, hard, clear, micaceous, lignitic, pyritic, fossiliferous, well sorted, subangular, coarse grained (1/2-1mm) slightly cherty (1%) shaly (3%) limy (40%) sand
- 2010-2020 Fresh, hard, clear, micaceous, fossiliferous, well sorted, sub-rounded coarse grained (1/2-1mm) slightly cherty, shaly (2%) limy (30%) sand.
- 2020-2030 As above but less limestone (20%)
- 2030-2040\* Fresh, hard, clear, micaceous, fossiliferous (forams, ostracodes) well sorted, subangular, coarse grained (1/2-1mm) limy (10%) shaly-(40% soft, medium gray, calcareous) sand.
- 2040-2050\* Fresh, soft, medium gray N6, friable, micaceous, slightly fossiliferous (forams), sandy (5%) limy (5% as limestone, 30% in the shale) shale.
- 2050-2060 Fresh, soft, friable, medium light gray N6, micaceous, fossiliferous (forams and ostracodes), waxy (upon scratching), limy (33%) sandy (10%) shale.
- 2060-2080 no change
- 2080-2090 no change. limy (32% - 2% as limestone) sandy (20%) shale.
- 2090-2100 no change
- 2100-2110 Fresh, soft, medium light gray N6, micaceous, pyritic, fossiliferous, waxy limy (30%) sandy (30%) shale.
- 2110-2120 same as above. of the limy portion, 20% is white, dense limestone and 10% is in the shale. The sand is clear, subangular, coarse grained (1/2-1mm)
- 2120-2130 Fresh, hard, clear, micaceous, pyritic, slightly fossiliferous, vitreous, well sorted, subangular, coarse grained (1/2-1mm) shaly (20%) limy (35%) sand.
- 2130-2140\* As above, but 5% shale, 45% limestone, 50% sand. A bit of orange to yellow staining--iron?
- 2140-2150 Fresh, or slightly leached (iron stained) hard, clear, micaceous, pyritic, fossiliferous, vitreous, well sorted, subangular coarse grained (1/2-1mm) average 1mm, shaly (3%) limy (47%) sand.

- 2150-2160 Cherty, pyritic, micaceous, shaly (20%) limy (40%) sand.
- 2160-2170 Slightly leached, soft, friable, medium light gray N6, micaceous, pyritic, cherty, slightly fossiliferous (forams), earthy to waxy, limy (15%) sandy (20%) shale.
- 2170-2180 limy (10%) sandy (30%) shale
- 2180-2190 limy (5%) sandy (20%) shale
- 2190-2200 Fresh, soft, friable, medium gray N5, micaceous, glauconitic (cav?) pyritic, cherty, fissile, fossiliferous (forams) earthy, waxy, limy (3% as limestone) sandy (15% unconsolidated and in shale) shale. Two types of shale. medium gray, fissile, finely micaceous, and lighter gray, less fissile, very fine sandy, more calcareous.
- 2200-2210 no change.
- 2210-2220\* Slightly limy (1% as limestone) sandy (5%) shale. shale is calcareous to 15%
- 2220-2230 100% shale as above
- 2230-2240 as above
- 2240-2250 no change. fresh, soft, friable, fissile, medium gray N5, micaceous, pyritic, cherty, fossiliferous (forams), earthy, waxy, sandy (10%) limy (1% as limestone, 10% as calcariosity) shale.
- 2250-2260 limy (15%) sandy (20%) shale
- 2260-2270 limy (10%) sandy (5%) shale
- 2270-2280 no change
- 2280-2290 Fresh, soft, fissile, medium gray N5 to olive gray 5Y4/1, micaceous, flaky, earthy, sandy (2%) limy (10% in the shale) shale
- 2290-2300 no change
- 2300-2310\* no change in the shale-fossiliferous
- 2310-2320 Fresh, soft, fissile, medium light gray N6 to olive gray 5Y4/1, micaceous, pyritic, fossiliferous, flaky, earthy, limy (10%) shale
- 2320-2330 no change. same old shale, slightly glauconitic
- 2330-2340 same
- 2340-2350 Fresh, soft, fissile, medium light gray N6, micaceous, glauconitic, fossiliferous, earthy, sandy (10%) limy (20%) shale.

- 2349-2354 core Fresh, soft, flaky, fissile, light gray N7, micaceous, plastic (when wet), earthy, waxy (when scratched), slightly sandy (5%) limy (40%) shale. rapid reaction in acid.
- 2354-2359 core same light medium gray very calcareous shale
- 2359-2364 core no change
- 2364-2371.5 core Medium light gray N6, micaceous, calcareous (25%), sandy (35% as clear, white, vitreous, angular, medium grained (1/4-1/2mm, average 1/2 mm) shale.
- 2350-2360 Fresh, soft, medium light gray N6, micaceous, glauconitic, fissile, earthy, waxy (when scratched) limy (20%) sandy (15%) shale.
- 2360-2370 Fresh, soft, fissile, micaceous, glauconitic, pyritic, fossiliferous (forams), earthy, limy (15%), sandy (20%) shale. Sand is clear, angular to subangular, vitreous, coarse grained (1/2-1mm) average 1mm)
- 2370-2380 Fresh, hard, clear, micaceous, slightly fossiliferous, vitreous, well sorted, subangular, coarse grained (1/2-1mm, average 1mm), shaly (5%) limy (8% as very light gray N8 sandy limestone) sand.
- 2380-2390 Fresh, clean, clear, slightly micaceous, slightly fossiliferous (forams and ostracodes in shale), vitreous, well sorted, subangular, coarse grained, shaly (2%) limy (5%) sand
- 2390-2400 Same as above with more shale (5%) and limestone (8%)
- 2400-2410 Fresh, hard, clear, micaceous, slightly phosphatic, slightly lignitic, slightly limonitic, slightly fossiliferous (pelecypods, bryozoa), vitreous, well sorted, angular to subangular, coarse grained (1/2-1mm, average 1mm) shaly (3%) limy (4%) sand.
- 2410-2420 no change
- 2420-2430 Fresh, hard, clear, micaceous, lignitic, slightly glauconitic, fossiliferous, vitreous, well sorted, subangular to angular, coarse grained limy (5%) shaly (10%) sand.
- 2430-2440\* no change ; forams, ostracodes
- 2440-2450 Clear, micaceous, lignitic, pyritic, slightly fossiliferous, vitreous, well sorted, subangular, coarse grained, average 1 mm, slightly shaly (1%) slightly limy (1%) sand.
- 2450-2460 no change
- 2460-2470 same clean, clear, almost pure sand
- 2470-2480 same

- 2480-2490 no change but for slightly more shale and limestone
- 2490-2500 no change
- ~~2500-2510~~ Same, although slightly finer sand size. Fresh, hard, clear, micaceous, pyritic, lignitic, slightly fossiliferous (forams), vitreous, well sorted, subangular to angular, coarse grained (1/2-1mm, average .75 mm), slightly shaly, slightly limy sand.
- 2510-2520 same. sand is medium to coarse grained (1/4-1mm)
- ~~2520-2530~~ no change, medium to coarse grained
- ~~2530-2540~~ no change
- 2540-2550 Fresh, hard, clear, micaceous, pyritic, lignitic, slightly fossiliferous, vitreous, some frosted, well sorted, subangular to angular, coarse grained, some medium (1/2-1mm, average .75mm), slightly shaly, limy (10% sandy, microcrystalline, light tan limestone) sand.
- 2550-2560 no change
- 2560-2570 many light brown, pearly pelecypod shell fragments. limestone 20%
- 2570-2580 Fresh, hard, clear, micaceous, lignitic, pyritic, fossiliferous (pearly shell fragments), vitreous, well sorted, angular to subangular, coarse to medium grained (1/2-1mm, average .75mm), slightly limy, shaly (10%) sand.
- 2580-2590 shaly (5%) limy (15%) sand
- 2590-2600 Fresh, hard, clear, micaceous, lignitic, pyritic, slightly fossiliferous, vitreous, well sorted, angular, fine to medium grained (1/8-1/2 mm, average 1/4 mm), limy (2%) shaly 10% as N6, very micaceous, calcareous shale) sand.
- 2600-2610\* Clear, micaceous, lignitic, pyritic, slightly glauconitic, fossiliferous, vitreous, well sorted, angular, fine to coarse grained (1/8-1mm, average .5 mm), slightly limy, shaly (15%) sand.
- 2610-2620 more glauconitic, medium sorted, fine to coarse grained, average 15mm, shaly (10%) sand
- 2620-2630\* no change shaly (15%) sand.
- 2630-2640 Fresh, hard, clear, lignitic, micaceous, pyritic, vitreous, well sorted, subangular, fine to coarse grained (1/8-1mm, average 1mm), limy (2%) shaly (10%) sand

- 2640-2650 Clear, micaceous, lignitic, glauconitic, pyritic, fossiliferous (pelecypod shells), medium sorted, subangular, medium to very coarse grained (1/4-2mm, average 1mm) limy (5%) shaly (5%) sand.  
5% fine grained, glauconitic, calcareous sandstone.
- 2650-2660 no change
- 2660-2670 10% shale
- 2670-2680 Clear, micaceous, lignitic, glauconitic, pyritic, slightly cherty, vitreous, medium sorted, very fine to very coarse grained (1/16-2mm, average 1mm), angular to subangular, limy (3%) shaly (15%) sand.
- 2680-2690 no change
- 2690-2700 same
- 2700-2710 Fresh, hard, clear, aragonitic (light brown, prismatic), lignitic, micaceous, medium sorted, very fine to coarse grained, average 1mm, subangular, shaly (10%) limy (35% as light tan to light gray, dense, finesandy limestone) sand.
- 2710-2720 Fresh, hard, clear, lignitic, aragonitic, micaceous, fossiliferous, medium sorted, very fine to very coarse grained (1/16-2mm, average 1mm, angular to subrounded, shaly (15%) limy (15%) sand.
- 2720-2730 Fresh, hard, glauconitic, micaceous, pyritic, vitreous, medium sorted, very fine to coarse grained (1/16-1mm, average .75 mm), angular to subangular, limy (5%) shaly (15%) sand.
- 2730-2740 average medium grained, average .5mm, very fine to coarse grained
- 2740-2750 Clear to cloudy, micaceous, vitreous to frosted, medium sorted, very fine to very coarse grained, mostly coarse grained, average 1mm, limy (8%) shaly (10%) sand.
- 2750-2760 no change
- 2760-2770 Slightly lignitic, slightly glauconitic, very fine to very coarse grained, average 1mm, limy, shaly sand.
- 2770-2780 Clear to cloudy, micaceous, lignitic, pyritic, phosphatic, slightly fossiliferous (pelecypods), vitreous to frosted, angular to subrounded, medium sorted, very fine to very coarse grained (1/16-2mm, most coarse grained, average 1mm, limy (10%) shaly (20%) sand.
- 2780-2790\* more shale (30%), very lignitic
- 2790-2800 same

- 2800-2810 Fresh, soft, fissile, olive gray 5Y4/1, very lignitic (2%), micaceous, pyritic, slightly fossiliferous, earthy, limy (as 5% limestone and 10% as calcareous in shale), sandy (40% unconsolidated sand as above) shale.
- 2810-2820 less sand (30%)
- 2820-2830 Fresh, soft, fissile, olive gray 5Y4/1, lignitic, micaceous, pyritic, glauconitic, slightly fossiliferous, earthy, limy (15% as above) sandy (40% as above) shale.
- 2830-2840 same as above with less sand (25%)
- 2840-2850 Fresh, soft, fissile, olive gray 5Y4/1, micaceous, pyritic, lignitic, slightly fossiliferous, earthy, limy (25%--5% as limestone, 20% in the shale), sandy (20%) shale
- 2850-2860 no change, friable
- 2860-2870 no change
- 2870-2880 Soft, friable, olive gray 5Y4/1, micaceous earthy (under low power), waxy (scratching and high power) limy (20% in the shale), sandy (25%) shale.
- 2880-2890 no change
- ~~2890-2900\*~~ Fresh, brittle, fissile, olive gray 5Y4/1, micaceous, pyritic, lignitic, slightly glauconitic, slightly fossiliferous (forams), earthy to waxy, limy (25%, 5% as limestone) sandy (20%--3% as white, glauconitic, micaceous, lime cemented, fine grained sandstone, the rest coarse grained and unconsolidated) shale; a bit of prismatic aragonite
- 2900-2910 limy (20% in shale) sandy (10%) shale
- 2910-2920 no change.
- 2920-2930 Brittle, fissile, olive gray 5Y4/1, micaceous, lignitic, waxy to earthy, sandy (10%) limy (20%) shale. Much (3%) unknown, ferruginous, limonitized, multicolored (from paint) material; maybe from the drilling process
- 2930-2940 same
- 2940-2950 Brittle, fissile, olive gray 5Y4/1 to medium gray N5, micaceous, lignitic, earthy to waxy, slightly limy (in shale 5%) sandy (5%) shale.
- 2950-2960 no change

- 2960-2970 Fresh, hard, white, glauconitic, fossiliferous (pearly shell fragments), vitreous, well sorted, lime cemented, slightly porous, angular, fine grained (1/8-1/4mm, limy (5%) shaly (15%) sandstone
- 2970-2980 70% shale as above  
30% sandstone as above, and fine to coarse grained unconsolidated sand
- 2980-2990 no change, some iron, painted chips
- 2990-3000 Fresh, brittle, fissile, olive gray 5Y4/1, micaceous, glauconitic (in sandstone), earthy, waxy, sandy (25% as sandstone and unconsolidated sand) shale.
- 3000-3010 Shale as above, with 20% sand and sandstone
- 3010-3020 now more sand (30%) with the shale.
- 3020-3030 no change
- 3030-3040 Fresh, brittle, fissile, olive gray 5Y4/1, lignitic, micaceous, glauconitic, pyritic, phosphatic, slightly fossiliferous (as pelecypod fragments), earthy to waxy, limy (10% in shale), sandy (40% mostly very fine to coarse grained, unconsolidated, also a bit of sandstone, fine grained) shale.
- 3040-3050 same, unconsolidated sand fine grained, average 1/4 mm
- 3050-3060 no change
- 3060-3070\* 40% sand, unconsolidated and as white sandstone  
60% shale, fresh, brittle, fissile, olive gray, micaceous, lignitic, pyritic, phosphatic, glauconitic, fossiliferous (pelecypods and ostracods), earthy to waxy, limy (10%) trace limestone and aragonite
- 3070-3080 no change
- 3080-3090 less sand (30%)
- 3090-3100 65% shale as above  
35% sandstone, white, glauconitic, dense, limy cement, very fine grained (1/16-18mm)
- 3100-3110 no change
- 3110-3120 Same, fresh, brittle, fissile, olive gray 5Y4/1 micaceous, lignitic, slightly glauconitic, slightly fossiliferous (pelecypods) earthy to waxy, sandy (20% unconsolidated and as sandstone) shale.
- 3120-3130 no change
- 3130-3140 no change, aragonite prisms 3mm

- 3310-3320 no change, lignite, mica
- 3320-3330 no change
- 3330-3340 Clear, white to pale orange and yellow, micaceous, feldspathic, pyritic, vitreous, well sorted, angular, coarse to very coarse grained (1/2-2mm, average 1.25 mm) shaly (5%) sand.
- 3340-3350 Same sand, shale 10%, some tan or light green as well as dark gray, but some limonite (yellow) and red mottling.
- 3350-3360 well sorted, coarse to very coarse grained, average 1mm, shaly (10%) sand. mica, feldspar
- 3360-3370 less very coarse grained fraction, average still 1 mm, less shale (5%)
- 3370-3380 no change, mica, feldspar
- 3380-3390 no change, still a bit of mottling or staining on the shale. Some of the reddish colors on the quartz are iron coatings.
- 3390-3400 no change, micaceous
- 3400-3410 Clear white to pale orange or yellow, micaceous, slightly feldspathic, vitreous, angular, well sorted, coarse grained (1/2-1mm, average 1mm) shaly (4%) sand. 1 black glassy prism fragment, could be tourmaline.
- 3410-3420 no change
- 3420-3430 no change
- 3430-3440 same old slightly shaly (3%) sand
- 3440-3450 no change
- 3450-3460 Clear, white to pale orange and yellow, micaceous, feldspathic, vitreous, angular, well sorted, coarse grained, average 1mm, shaly (3%) sand.
- 3460-3470 no change
- 3470-3480 no change
- 3480-3490 no record on manuscript log
- 3490-3500 More of the 1/2 mm size portion, feldspar, micaceous, well sorted, angular, coarse grained (1/2-1mm) sand

- 3140-3150 Fresh, cloudy to clear, micaceous, lignitic, pyritic, vitreous, medium sorted, angular, very fine to coarse grained (1/16-1mm. average .5 mm) shaly (40%) sand.
- 3150-3160 Clear, very lignitic (4%), micaceous (2%), aragonite prisms, vitreous, well sorted, angular, coarse grained, average 1mm, limy (5% as white limestone) shaly 35%) sand
- 3160-3170 same, but with less shale (25%)
- 3170-3180 Fresh, clean, cloudy to clear and clear to pinkish, lignitic, micaceous, vitreous to dull, well sorted; subangular, coarse to very coarse grained (1/2-1mm, average 1 mm), shaly (5%) sand.
- 3180-3190 no change
- 3190-3200 no change, same coarse to very coarse grained sand
- 3200-3210 Clean, pure sand. Clear, white to slightly orange pink, well sorted, angular, coarse to very coarse (1/2-2mm, most 1mm) vitreous quartz sand.
- 3210-3220 same
- 3220-3230 same, micaceous
- 3230-3240 same, micaceous
- 3240-3250 same, pure coarse to very coarse sand
- 3250-3260 Clear, white, pinkish orange, micaceous, pyritic, lignitic, vitreous, well sorted, angular, medium to very coarse grained (1/4-2mm, average 1mm) shaly (5%) sand
- 3260-3270 little of the medium or very coarse fraction; most is coarse grained pure sand
- 3270-3280 Clear, white, slightly orange, very micaceous (2%) lignitic, vitreous, well sorted, angular, mostly coarse grained shaly (10%) sand. 3% fine grained, tan, silica cemented non porous sandstone.
- 3280-3290 very micaceous, lignitic, shaly (20%) sand.
- 3290-3300 same, shaly (10%) sand.
- 3300-3310 Clear, white to pale yellow, and orange, micaceous, slightly feldspathic, vitreous, well sorted, angular, coarse to very coarse grained (1/2-2 mm, average 1mm), shaly (20%) sand. Feldspar is white, rounded, with cleavage

- 3500-3510 no change
- 3510-3520 Clear, cloudy to white to pale yellowish/orange and red coating, micaceous, feldspathic, vitreous, angular, well sorted, coarse grained (1/2-1mm) shaly (2%, a bit of the red and brown mottled type; the rest is olive gray 5Y4/1, fissile, slightly calcareous (5%) sand.
- 3520-3530 New, medium grained fraction to medium to coarse grained (1/4-1mm, average .75mm) almost pure sand
- 3530-3540 same, micaceous, medium to coarse grained, feldspathic, slightly shaly (2%) sand
- 3540-3550 no change
- 3550-3560 Clear, more yellow with orange staining (iron, limonite), micaceous, feldspathic, angular, well sorted, coarse grained (1/2-1mm, average 1 mm) sand
- 3560-3570 same, with medium grained fraction slightly shaly, some brown and red mottled.
- 3570-3580 Clear to yellow, angular, medium to very coarse grained (1/4-3mm, average 1mm), slightly shaly (2%) sand.
- 3580-3590 no change
- 3590-3600 Clear, yellow, vitreous, angular, well sorted, medium to very coarse grained (1/4-2mm) sand
- 3600-3610 Probably leached as shown by quartz sand coloration and shale mottling--same
- 3610-3620 same, slightly pyritic
- 3620-3630 Increase in shale (mottled) proportion (10%), and much red, brown, to purple coloration--micaceous, waxy.
- 3630-3640 pure, micaceous, feldspathic sand. Subangular to angular, well sorted, coarse to very coarse grained (1/2-2mm, average 1.25 mm)
- 3640-3650 no change
- 3650-3660 shaleback (10%), smaller average grain size, medium sorted, fine to coarse grained (1/8-1mm, average .75mm)

- 3660-3670 Leached, hard, clear, cloudy white, yellow to orange slightly micaceous, feldspathic, vitreous, angular to subangular, well sorted, slightly fine to medium to coarse to slightly very coarse grained, mostly coarse grained, average about 1mm, shaly (15%--red, brown to purple mottled, non calcareous) sand.
- 3670-3680 shale (25%), both olive gray, fissile, slightly calcareous type and mottled, non calcareous, less fissile type.
- 3680-3690 Same as above, with 3, about 1mm, black, glassy chunks. obsidian?
- 3690-3700 no change.
- 3700-3710 Mostly clear, some yellow, or orange, micaceous, feldspathic, angular, well sorted, fine to coarse grained (1/8-1mm, average .75mm), shaly (30%--mostly the mottled type) sand.
- 3710-3720 coarse grained, shaly (30%) sand.
- 3720-3730 micaceous, feldspathic, coarse grained shaly (20%) sand.
- 3730-3740 less shale (5%)
- 3740-3750 Mostly clear, some yellow, orange, slightly micaceous, feldspathic, angular, medium sorted, fine to very coarse grained, average 1mm, shaly (10%--olive gray and fissile [25%] and mottled, non fissile type) sand.
- 3750-3760 no change, pyritic
- 3760-3770 same, 20% shale.
- 3770-3780 Clear to yellow, orange, micaceous, feldspathic, lignitic, well sorted, coarse grained, shaly (30%) sand.
- 3780-3790 Reappearance of glauconite, limestone cemented, fine grained sandstone (10%). Clear to yellow, micaceous, feldspathic, lignitic, pyritic, glauconitic, vitreous, well sorted, mostly coarse grained (1/2-1 mm) shaly (40%) sand.
- 3790-3800 Less of the glauconitic sandstone (2%); 35% shale, mottled type and large, flat flakes of olive gray, fissile shale, some very micaceous
- 3800-3810 same, 40% shale

- 3810-3820 Clear, yellow-orange, pink, slightly micaceous, slightly feldspathic, angular, well sorted, coarse to very coarse grained (1/2-2mm, average 1.5 mm) shaly (5%) sand.
- 3820-3830 Less very coarse grained fraction, average now 1 mm, less shale (2%). feldspathic, micaceous
- 3830-3840 more quartz coloration. Clear, yellow-orange-pink-red, micaceous, feldspathic, well sorted, coarse to very coarse grained, average 1mm, shaly (1%) sand.
- 3840-3850 coloration in 2 forms--uniform, interior type, usually yellow, some pink, and clayey coatings (particle), usually reddish. Some shale deep reddish brown--leaching.
- 3850-3860 less coloration. micaceous, feldspathic, coarse grained, slightly shaly (1%) sand.
- 3860-3870 same, but larger, average grain size about 1.5 mm
- 3870-3880 Some feldspar stained now. Before, white, now pinkish to orange. Angular to subrounded sand, coarse to very coarse grained. much like the shale coloration, red, brown, yellow, purple.
- 3880-3890 Same micaceous, feldspathic, leached, well sorted, coarse to very coarse grained, average 1.25 mm, slightly shaly sand
- 3890-3900 no change.
- 3900-3910 almost pure, well sorted, coarse grained sand, mostly unstained feldspar
- 3910-3920 more quartz coloration, mostly coarse, some very coarse, average 1mm
- 3920-3930\* Leached, hard, clear to orange, red, yellow, pyritic, feldspar, fossiliferous (unknown, foram?), angular to subrounded, well sorted, coarse to very coarse grained (1/2-2mm, average 1.25mm), shaly (5%) sand
- 3930-3940 no change
- 3940-3950 new sandstone. Pale orange, hard, poorly sorted, coarse grained, silica cemented, non porous, rounded (30%). The rest is feldspathic, shaly sand as above. The sandstone with some white clay in crevasses.

- 3950-3960 35% sandstone; 20% shale; 45% sand
- 3960-3970 30% sandstone. Leached, hard, pale orange, vitreous, medium sorted, silica cemented, non porous, sub-angular, medium grained (1/4-1/2 mm)  
10% shale as above  
60% sand. clear, pale yellow, orange or pink, micaceous, feldspathic, pyritic, well sorted, coarse grained
- 3970-3980 less coloration on the sandstone, now white with powdery clay in the crevasses. Mostly micaceous, feldspathic, shaly (5%) sand.
- 3980-3990 no change
- 3990-4000 40% sandstone. Hard, white to pale orange to light gray, feldspathic, weathering to white clay, vitreous, medium sorted, lime cement, non porous, subangular, medium grained (1/4-1/2 mm)  
60% micaceous, pyritic, feldspathic, shaly (5%) sand.  
Several chunks of the black, glassy, irregular fractured, obsidian-like material
- 4000-4010 lessening of sandstone percentage, now 10%. Most is same percentage of coarse grained, angular, slightly shaly, sand. still some bits of obsidian
- 4010-4020 sandstone now 20%, some large 4mm chips. Very dense, like quartzite. same shale (15%) and sand.
- 4020-4030 35% dense, hard, white, feldspar/white clay, sub-angular, medium grained, sandstone chips.  
20% olive gray, fissile, slightly calcareous shale and red, brown, purple, non calcareous, non fissile shale.  
45% clear, orange to yellow, coarse grained sand.
- 4030-4040 Hard, white, feldspar/clay, dense, vitreous, well sorted, lime cemented, non porous, angular, medium grained (1/4-1/2mm) shaly (20%) sandy (35% clean, pale yellow, orange, angular, vitreous, coarse grained, unconsolidated sand) sandstone.
- 4040-4050 basement. 60% dark, basic igneous rock
- total depth 4062.