

Georgia Geological Survey well no. 3146

Wayne County, Georgia

Hunt Petroleum Co., Scott-Mead Paper Co. 1B

TD4491

Geophysical datum: Kelly bushing, 71.1 feet above sea level.
Ground level is 58.1 feet above sea level

logged by Keith Kribbs, West Georgia College, 1975. note.

this is the first well ever logged by Kribbs. Editorial comments
made by T. M. Chowns and H. R. Cramer

- 0-10 100% clean, white, coarse grained quartz sand;
10-20 some red iron stained
trace of pyrite, glauconite, some small yellow (lim-
onite) silt fragments
- 0-10 100% reddish, iron stained, fine to coarse grained
poorly sorted quartz sand
trace of bituminous fragments, phosphate nodules,
one milky doubly terminated quartz crystal 5.5 mm
- 10-20 100% clean white medium grained quartz sand; glauconite
20-30
- 30-40 100% clean, white, medium grained quartz sand
40-50 trace of glauconite and greenish, waxy shale
- 50-60 100% clean white very coarse grained quartz sand
trace of limonite silt and greenish shale
- 60-70 100% clean white, very coarse grained quartz sand
- 70-80 As above
- 80-90 80% very coarse grained, clean, white sand
20% pale green 10Y8/2 slightly calcareous, dense,
micrograined siltstone
trace of phosphate
- 90-100 As above
- 100-110 70% quartz sand
30% greenish siltstone
- 110-120 50% very coarse grained, clean white quartz sand
30% pale green, slightly calcareous, dense siltstone
20% white dolomitic micrograined limestone
trace of phosphate
- 120-130 60% clean, white, very coarse quartz sand--much cave
20% green siltstone as above
20% white, dolomitic limestone as above; some sandy
trace of phosphate and pyrite
- 130-140 60% quartz sand as above
30% pale green siltstone as above, and some brownish
gray 5Y7/2
5% phosphate nodules
5% white, micrograined dolomitic limestone
- 140-150 60% clean, white, medium to coarse grained quartz sand
25% white to pale green, calcareous, often sandy (up
to 20% fine grained sand) siltstone
5% phosphate nodules, probably in silt
trace of pyrite

- 150-160 50% clean, white, medium to coarse grained quartz sand
10% phosphate nodules
30% white to brown to pale green, very calcareous, often
sandy (up to 20% sand) siltstone
10% white, dense, dolomitic limestone
- 160-170 60% clean sand as above
10% phosphate as above
10% white dolomitic limestone as above
20% white to brown to pale green calcareous sandy
siltstone as above
fossils--shark teeth and skate material
- 170-180 100% well sorted, clean white, coarse grained quartz
sand
trace of pyrite and phosphate
- 180-190 100% well sorted, clean, white, medium grained quartz
sand with phosphate nodules
traces of above lithologies
- 190-200 100% quartz sand as above, includes phosphate nodules,
and pyrite
traces of green sandy calcareous siltstone and some
brownish yellow dolomite.
amber fragment?
- 200-210 100% quartz sand as above
traces of phosphate and pyrite
- 210-220 100% sand as above; some 2mm muscovite flakes
phosphate and cave from above also present
- 220-230 100% quartz sand as above; also some quartz pebbles
up to 10 mm long; well rounded; most of the medium
grained quartz is subangular
phosphate nodules and cave from above
- 240-250 100% clean, white, fine to medium grained quartz sand
see below with some large, well rounded quartz pebbles
trace of phosphate
- 230-240 100% sand , fine grained, white
see above
- 250-260 100% clean, white, fine to medium grained quartz sand,
with some large, well rounded quartz pebbles
trace of phosphate pebbles and cave
- 260-270 100% clean, white, medium grained quartz sand with
some large well rounded pebbles
trace of phosphate
- 270-280 100% sand as above

- 280-290 70% clean white, medium grained quartz sand with some large quartz pebbles up to 10 mm
30% pale flesh-tan, impure limestone which contains about 10% quartz sand, fine grained, with occasional large clasts as rounded pebbles as before. The tan limestone matrix is micrograined and contains many phosphate nodules
- 290-300 90% clean white quartz sand, medium grained with some large 10mm pebbles included
10% pale flesh tan pebbly-sandy, micrograined phosphatic limestone
- 300-310 75% clean white medium grained quartz sand
10% phosphate pebbles
15% tan-brown sandy-pebbly micrograined impure limestone
- 310-320 90% quartz sand as above
5% phosphate nodules
5% tan brown sandy pebbly micrograined limestone--cave?
- 320-330 As above
- 330-340 As above
- 340-350 As above
- 350-360 Note. The above sand that continued fo so long above is not cave, more than likely, as it stops abruptly here.
100% yellowish gray 5Y8/1 to light gray, slightly calcareous, micrograined siltstone
- 360-370 60% siltstone as above; some contains sand grains
40% granite wash ?
traces of phosphate nodules, mica flakes
- 370-380 50% siltstone as above; some darkened with phosphate
50% granite wash? actually granite gneiss
- 380-390 contact! probably gradational, becoming more sandy
30% siltstone as above; some phosphate
70% clean, white, well rounded, fine to coarse quartz sand
- 390-400 90% light brown, sandy to pure, very calcareous, phosphatic, micrograined, fossiliferous siltstone
much or all of the sand is from this rock. If not all, then...
10% clean, white, well rounded, fine to coarse grained quartz sand
- 400-410 100% siltstone as above

- 410-420 100% siltstone as above
- 420-430 100% pale yellow brown 10YR8/4 micrograined,
occasionally sandy, very calcareous, phosphatic,
fossiliferous siltstone
- 430-440 Note! This sandy siltstone often appears too sandy in
the samples, but I believe this is due to the great
deal of washing out of the silt during preparation.
100% siltstone as above
- 440-450 contact still gradational at this point. Fine sand
predominates; silt is not predominant. This may
represent a slowly changing facies. More silt seems
lost than I think washing could account for.
100% white, gray, silty, fine to medium grained
(with some large well rounded pebbles) quartz sand.
trace of phosphate
- 450-460 As above
- 460-470 90% off white, micrograined, occasionally sandy,
calcareous siltstone
10% fine to medium, clean, grey to white quartz sand;
probably belongs in the siltstone
traces of phosphate and fossiliferous
- 470-480 Siltstone as above
- 480-490 100% off white, phosphatic, fossiliferous (pelecypod
shells), calcareous, sandy siltstone.
Some of the sand, which is about 10% floating in the
siltstone, is rose or amythyst
- 490-500 siltstone as above; shark teeth
- 500-510 siltstone as above, more sandy, now about 20-30% sand
- 510-520 siltstone as above, about 15% sandy
- 520-530 siltstone as above
- 530-540 As above
- 540-550 As above
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- 550-560 100% micrograined, slightly phosphatic, limestone
not silty
- 560-570 100% slightly silty-sandy limestone, off white,
slightly phosphatic
- 570-580 As above
- 580-590 100% pale flesh 5RP8/2, micrograined, highly fossilif-
erous (forams, bryozoa) limestone

- 590-600 100% phosphatic limestone as above
- 600-610 As above
- 610-620 As above
- 620-630 100% pale flesh-pink to off white-grey, occasionally slightly sandy, micrograined, highly fossiliferous; some phosphate and glaucomite, limestone
Frequently contains veins filled with yellow-brown crystalline limestone
- 630-640 As above
- 640-650 As above, very fossiliferous, shell fragments
- 650-660 As above
- 660-700 no samples
- 700-710 limestone, as 650-660
- 710-720 As above; one fragment of brownish yellow dolomitic limestone present
- 720-730 Limestone as above
- 730-740 Limestone as above
- 740-750 As above
- 750-760 As above, bryozoa and pelecypods
- 760-770 Limestone as above. Note! Although this rock ordinarily is earthy and slightly porous, cleavage rhombs do occasionally fall out, indicating it is basically non-porous, and the porosity there is probably diagenetic
- 770-780 As above
- 780-790 As above, more cleavage rhombs
- 790-800 As above
- 800-810 100% flesh pink, micrograined, dense, fossiliferous (bryozoa, shell fragments) limestone
- 810-820 As above
- 820-830 As above
- 830-840 Limestone as above. The rock appears massive; it is loosely organized bodies of bryozoa, forams, etc cemented with micritic material; it seems to be quite porous and almost vuggy.

- 840-850 100% flesh pink micrograined dense, fossiliferous limestone
- 850-860 As above
- 860-870 As above
- 870-880 60% flesh pink micrograined dense fossiliferous limestone
40% 10YR8/2 pale yellowish red (brownish tan) very finely crystalline dolomitic limestone not very porous and slightly silty as it leaves a slight silt residue after acid
- 880-890 40% pink flesh micrograined dense fossiliferous limestone
60% brownish tan, very finely crystalline dolomitic limestone; may be slightly vuggy
- 890-900 40% pink limestone as above
60% dolomitic limestone as above
- 900-970 no samples
- 970-980 apparently interbedding begins here, as below seems interbedded
40% flesh pink limestone as above --cave?
60% brownish tan, very finely crystalline dolomitic limestone and white to bluish gray, massive, fairly hard, cryptocrystalline limestone
trace of phosphate nodules
- 980-990 90% brownish tan dolomitic limestone
10% flesh pink limestone
trace of phosphate
- 990-1000 80% brownish tan dolomitic limestone
20% flesh pink limestone
trace of phosphate
- 1000-1010 90% brownish tan, dense, very fine grained, dolomitic limestone
10% flesh pink, micrograined, fossiliferous limestone
trace of phosphate
- 1010-1020 90% dolomitic limestone as above
10% flesh pink limestone
trace of phosphate which is coming from the pink limestone
- 1020-1030 30% brownish tan, dense, very finely crystalline dolomitic limestone
70% pink flesh, micrograined, phosphatic limestone
trace of chalcedony

- 1030-1040 70% brownish tan dolomitic limestone
30% pink limestone
- 1040-1050 50% brownish tan dolomitic limestone
45% pink phosphatic limestone
5% quartz sand grains--cave
- 1050-1060 50% brownish tan dolomitic limestone
45% pink phosphatic limestone
5% medium grained quartz sand grains--cave
- 1060-1070 40% pink phosphatic limestone
50% brownish tan dolomitic limestone
10% pale brownish gray, speckled with dark (heavy) minerals, micrograined, platy, slightly calcareous siltstone
- 1070-1080 45% pink, phosphatic limestone
45% brownish tan, very finely crystalline dolomitic limestone
10% pale brownish gray, speckled, micrograined, slightly calcareous siltstone
- 1080-1090 50% pink flesh, micrograined, phosphatic, fossiliferous limestone
50% brownish tan, very finely crystalline dolomitic limestone

note the loss of silt here and above. was it cave above or not?

- 1090-1100 45% pink-flesh, micrograined, phosphatic, fossiliferous limestone
45% brownish tan dolomitic limestone
10% pale brownish gray, slightly calcareous siltstone
trace of caving from above
- 1100-1110 45% pink limestone as above
45% brown tan dolomitic limestone
10% brownish gray siltstone

note! about 50% is medium grained quartz sand, but this is either cave or from the flesh colored limestone and not an independent sand.

- 1110-1120 50% sandy, flesh pink micrograined phosphatic fossiliferous limestone
30% brownish tan dolomitic limestone
20% medium grained, clean white sand--gradational contact, or cave, or from flesh limestone?
- 1120-1130 60% flesh colored limestone, seen associated with
20% dolomitic limestone, therefore interbedded
20% medium grained clean white quartz sand

1130-1140 60% flesh colored lime stone
20% dolomitic limestone
20% sand as above

1140-1150 As above

1150-1160 as above

1160-1170 as above

1170-1180 as above

1180-1190 80% fleshy pink limestone as above
10% brownish tan dolomitic limestone
10% quartz sand--cave?

1190-1200 70% pink limestone
10% dolomitic limestone
20% quartz sand

1200-1210 60% pink lime stone as above
20% dolomitic limestone as above
20% quartz sand as above

1210-1220 80% pink limestone as above
10% brownish tan to gray, very finely crystalline
dolomitic limestone as above
10% quartz sand

1220-1230 80% white to pinkish white, micrograined, phosphatic,
fossiliferous limestone
10% dolomitic limestone as above
10% quartz sand as above

1230-1240 90% white to pinkish white limestone as above
10% brownish tan to gray dolomitic limestone

1240-1250 As above

1250-1260 As above; gypsum

1260-1270 100% very pale, bluish gray, speckled, micrograined
very calcareous siltstone ; speckled with
dark, iron-rich minerals

1270-1280 60% pinkish white micrograined phosphatic, fossil-
iferous limestone with the dolomitic limestone--
cave or interbedded??
40% pale bluish gray siltstone as above

1280-1290 60% limestone and dolomitic limestone as above
40% calcareous siltstone as above

- 1290-1300 60% pinkish white, micrograined, phosphatic, fossiliferous limestone
40% pale bluish gray, speckled, micrograined, calcareous siltstone; some fibrous calcite veins filling all this
- 1300-1310 sample missing
- 1310-1320 100% white to pink, micrograined, phosphatic, fossiliferous limestone--almost 100% fossil fragments, mostly bryozoa (thin section shows bryozoan-foraminiferal dolomitic packstone)
- 1320-1330 90% pink to white, micrograined, phosphatic, fossiliferous limestone; again almost all bryozoa
10% bluish gray speckled calcareous, micrograined siltstone with imbedded bryozoans
- note! I feel certain (almost) these two lithologies represent a migration of facies; some gypsum seen.
- thin section shows dolomitic, skeletal packstone with poikilitipic gypsum
- 1330-1340 As above
- 1340-1350 As above; gypsum associated with both lithologies
- 1350-1360 60% yellow brown, very finely crystalline dolomitic limestone and gypsum
40% pink white micrograined fossiliferous limestone with gypsum
both lithologies are intermingled
- 1360-1370 As above
- 1370-1380 As above, gypsum may be 1 or 2 %
- 1380-1390 As above
- 1390-1400 20% brownish tan, very finely crystalline dolomitic limestone
80% pink-white, micrograined, fossiliferous limestone gypsum. The white limestone is almost all bryozoa. Was there any mud? Was it washed away?
- 1400-1410 90% pink-white micrograined fossiliferous limestone with gypsum (thin section shows skeletal micrite with some gypsum, slightly dolomitic)
10% brown-tan, very finely crystalline dolomitic limestone.
- 1410-1420 90% pink white micrograined fossiliferous limestone with gypsum which is not massive but is cleavage plate type; tidal flat facies?
10% brownish tan, very finely crystalline dolomitic limestone

- 1420-1430 100% pink-white micrograined (I actually want to say micrite, rather chalky), fossiliferous limestone, with some dolomitic limestone in very finely crystalline form (recrystallization?) and much, about 5% gypsum
- 1430-1440 100% pink-white micrograined fossiliferous limestone; some dolomitic limestone; no gypsum
- 1440-1450 As above; one igneous or metamorphic fragment, as cave, probably from the granite pebble conglomerate mentioned earlier
- 1450-1460 100% pink-white micrograined fossiliferous limestone; some dolomitic limestone; some gypsum and bluish gray siltstone, as above. Thin section shows skeletal wackestone slightly dolomitic and gypsum
- 1460-1470 As above
- 1470-1480 100% pink white micrograined limestone, fossils; some dolomitic limestone and massive gypsum
- 1480-1490 100% pink-white micrograined fossiliferous limestone; some gypsum and calcite vein fillings
- 1490-1500 100% pink-white micrograined fossiliferous limestone; some gypsum (anhydrite?)
- 1500-1510 100% pink-white micrograined fossiliferous limestone; some gypsum. Thin section shows bryozoan-foraminiferal wackestone, partially dolomitized
- 1510-1520 90% pink-white micrograined fossiliferous limestone with dolomitic limestone; some gypsum
10% white-gray chert
- 1520-1530 As above
- 1530-1540 85% limestone and dolomitic limestone as above
15% chert
- 1540-1550 As above
- 1550-1560 85% white-pink micrograined fossiliferous dolomitic limestone with some calcite vein filling and gypsum
15% white-gray chert
thin section shows bryozoan wackestone partially dolomitized-cherty
- 1560-1570 As above
- 1570-1580 80% dolomitic limestones as above
20% white-gray chert
- 1580-1590 80% dolomitic limestones
20% chert

- 1590-1600 80% brownish tan, very finely crystalline dolomitic limestone with some white-pink micrograined fossiliferous limestone
20% white-gray chert
- 1600-1610 80% limestone and dolomitic limestone as above
20% chert as above
Thin section shows foraminiferal, dolomitic wackestone cherty.
- 1610-1620 As above, mostly white-pink limestone
- 1620-1630 As above; some of the chert dark gray
- 1630-1640 75% white-pink micrograined fossiliferous limestone with some dolomitic limestone
25% white-gray-brwon gray chert
- 1640-1650 70% white-pink limestone as above
30% gray chert
- 1650-1660 70% limestone as above
30% grey chert(both brownish gray and dark gray)
Thin section shows bryozoan, foraminiferal wackestone partially dolomitized
- 1660-1670 As above
- 1670-1680 70% white-pink, micrograined, fossiliferous (bryozoa, etc.) earthy (chalky micrite) limestone
30% brownish gray to dark gray chert
- 1680-1690 As above
- 1690-1700 As above; thin section shows spiculitic, foraminiferal, bryozoan wackestone, partially dolomitized
- 1710-1720 As above
- 1720-1730 60% pink-white, micrograined fossiliferous limestone
30% brown-dark gray chert
10% white, quartzsandy, glauconitic, micrograined limestone
- 1730-1740 50% pink-white limestone
30% brownish dark gray chert
20% white, quartz sandy (about 30-40%) glauconitic micrograined limestone
- 1740-1750 60% pink white limestone
30% chert
10% sandy limestone

- 1750-1760 60% pink-white micrograined fossiliferous limestone with brown dolomitic limestone; thin section shows bryozoan-echinoid packstone partially dolomitized.
30% brown to dark gray chert
10% white quartz, sandy, glauconitic micrograined limestone
- 1760-1770 40% pink-white limestone
30% brown to dark gray chert
30% sandy, glauconitic limestone
- 1770-1780 20% pink-white limestone with brown dolomitic limestone
20% chert, brown to dark gray
60% gray, dirty, quartz sandy (up to 50% fine sand) glauconitic micrograined limestone (micrite-like)
- 1780-1790 20% pink and brown limestone
20% brown to dark gray chert
60% gray, quartz sandy (locally) glauconitic, micrograined limestone. This stuff is locally variable in sand and color; it may become light and sand free. This is what you would expect in a gradational contact.
- 1790-1800 10% pink-white fossiliferous limestone
20% brown to dark gray chert
70% gray sandy glauconitic limestone
- 1800-1810 As above
- 1810-1820 100% gray to white, locally sandy, glauconitic, phosphatic, micrograined limestone; note! occasionally little (5mm) pebbles of glauconite appear with black phosphate inside that look a good deal like some jade.
- 1820-1830 100% gray to white-gray, locally sandy, glauconitic phosphatic, micrograined, silty limestone; becoming silty
- 1830-1840 As above
- 1840-1850 As above; could this be calcareous siltstone?
- 1850-1860 100% gray to white gray, locally sandy, glauconitic, phosphatic, micrograined, fossiliferous (cave?), calcareous silt; thin section shows echinoid-foram wackestone, slightly dolomitized
- 1860-1870 As above

- 1870-1880 40% gray to white-gray, locally sandy, phosphatic, glauconitic, fossiliferous, very calcareous siltstone.
60% yellowish white, fossiliferous, very finely to medium crystalline, glauconitic limestone; locally quartz sandy.
Some glauconite appears in the new lithology.
- 1880-1890 40% gray to white gray, sandy, phosphatic, glauconitic, very calcareous siltstone
60% yellow white, phosphatic, glauconitic, sandy, medium crystalline limestone
- 1890-1900 30% calcareous siltstone
70% pale yellow, phosphatic, glauconitic, sandy, micro to medium crystalline limestone
- 1900-1910 20% very calcareous siltstone
80% pale yellow limestone; thin section shows echinoid, pelecypod, bryozoan packstone, partially dolomitized
- 1910-1920 20% white-gray, locally sandy, phosphatic, glauconitic, very calcareous siltstone; the sand is very fine grained and makes up 20% of the rock
80% yellow, locally sandy, phosphatic, glauconitic, micro to medium crystalline limestone; here the sand is medium grained and less than 10% of the rock.
- 1920-1930 30% calcareous siltstone as above
70% yellow limestone as above
- 1930-1940 20% calcareous siltstone as above
80% yellow limestone as above; this occurs ordinarily in rounded fragments
- 1940-1950 40% calcareous siltstone as above
60% yellow limestone as above
- 1950-1960 40% yellow limestone as above; thin section shows echinoid wackestone, slightly dolomitic
60% calcareous siltstone as above
- 1960-1970 30% yellow, glauconitic, phosphatic, medium to micro-crystalline limestone
70% grey, silty, phosphatic, glauconitic, very calcareous, very fine grained sand; the cement is calcareous traces of glauconite, about 15%
- 1970-1980 90% very dark gray, very glauconitic and phosphatic, sandy, very calcareous siltstone
10% yellow limestone as above

- 1980-1990 10% yellow limestone as above
 90% dark gray siltstone as above, but more glauconitic
 and more phosphatic
- 1990-2000 dark gray siltstone as above; very massive and earthy
 100%
- 2000-2010 100% very dark gray, very glauconitic, very phosphatic,
 , loosely consolidated, very calcareous siltstone
- 2010-2020 100% dark gray siltstone as above
- 2020-2030 As above
- 2030-2040 As above, about 20% glauconite; much of the overlying
 sandy limestones, rounded limestones, etc., appear to be
 cave.
- 2040-2050 90% off white, glauconitic, phosphatic, sandy,
 .medium to micrograined limestone; grades to
 dark gray, glauconitic, phosphatic, micrograined, silty
 limestone in between
 10% brownish tan, very finely crystalline dolomitic limest
 one
- 2050-2060 100% gray, very phosphatic, very glauconitic, sandy, micro-
 grained, calcareous siltstone
- 2060-2070 90% gray, phosphatic (not as much as above), glauconitic,
 slightly sandy, micrograined (more uniform) calcareous
 siltstone
 the junk appears to have faded out. This appears
 to be more uniform
 10% white, glauconitic, micrograined, slightly sandy
 limestone
- 2070-2080 40% gray, phesphatic, glauconitic, slightly sandy,
 micrograined, calcareous siltstone; trace of pyrite
 60% pure white to off white, slightly glauconitic,
 slightly sandy, micrograined limestone; some brownish
 dolomitic limestone
- 2080-2090 50% pure white to off white, glauconitic, micrograined
 limestone (powdery looking), and some brownish
 dolomitic, very finely crystalline limestone
 50% generally gray with some white (CaCO₃) mottling,
 slightly glauconitic, calcareous siltstone; some
 mica flakes seen; some speckling with iron dark minerals
 also

- 2090-2100 60% pure white, glauconitic, sandy, micrograined limestone
40% gray (white mottled), slightly glauconitic calcareous siltstone
- contact? no, actually just another facies change. Limestone in this whole formation appears to be siltstone and limestone alternating back and forth
- 2100-2110 60% pure white limestone as above
40% gray siltstone as above
- 2110-2120 As above
- 2120-2130 As above
- 2130-2140 40% pure white, glauconitic (locally very sandy), micrograined limestone
60% gray (glauconitic locally), micrograined, calcareous siltstone
- 2140-2150 As above
- 2150-2160 As above; interbedded
traces of chert, pyrite, gypsum
- 2160-2170 30% white limestone as above
70% gray calcareous siltstone as above
traces of chert and gypsum
- 2170-2180 As above
- 2180-2190 30% pure white, glauconitic, sandy (medium grained) limestone
70% gray, micrograined, glauconitic, slightly calcareous siltstone
- 2190-2200 30% pure white, glauconitic, sandy limestone with some yellowish vein filling; also fossils
70% gray, micrograined, glauconitic, slightly calcareous siltstone
- 2200-2210 100% pure white, glauconitic, locally sandy limestone
- 2210-2220 As above
- 2220-2230 100% pure white, slightly glauconitic, micrograined to medium crystalline limestone
- 2230-2240 100% pure white, slightly glauconitic, sandy, micro- to medium grained, fossiliferous limestone

- 2240-2250 As above
- 2250-2260 As above; some gray siltstone as above
- 2260-2270 90% pure white, glauconitic, sandy, fossiliferous, pyritic, cherty, micrograined to very finely crystalline limestone
10% gray, slightly calcareous, micrograined siltstone
- 2270-2280 90% pure white, glauconitic, sandy, fossiliferous, micrograined, to very finely crystalline limestone
10% gray, micrograined, slightly to very calcareous siltstone
- 2290-2300 100% pure white, locally sandy, fossiliferous, micrograined to very finely crystalline limestone; with a little gray siltstone
- 2300-2310 As above; some glauconite
- 2310-2320 As above
- 2320-2330 As above
- 2330-2340 100% pure white, glauconitic, fossiliferous, sandy, micrograined to very finely crystalline limestone; chert
- 2340-2350 As above
- 2350-2360 As above; chert is brownish to bluish gray
- 2360-2370 As above
- 2370-2380 100% pure white to off white, sandy, glauconitic, fossiliferous, micrograined to very finely crystalline limestone
- 2380-2390 100% off white, sandy, glauconitic, fossiliferous, micrograined to very finely crystalline limestone; some gray siltstone
- 2390-2400 100% off white, sandy, glauconitic, fossiliferous, vuggy, micrograined to very finely crystalline limestone; vugs often lined with drusy calcite
- 2400-2410 As above
- 2410-2420 As above, but with some gray glauconitic siltstone
- 2420-2430 As above

- 2430-2440 100% off white, sandy, glauconitic, fossiliferous, micrograined to very finely crystalline limestone
- 2440-2450 100% limestone as above; some dark gray glauconitic siltstone
- 2450-2460 As above; siltstone is glauconitic and calcareous
- 2460-2470 As above
- 2470-2480 40% pure white, sandy, phosphatic, glauconitic, micrograined to very finely crystalline limestone
60% gray, very fine grained, silty, slightly calcareous sandstone; calcite cement; sand is loosely consolidated
trace of pyrite
- 2480-2490 no sample
- 2490-2500 As above
- 2500-2510 40% pure white sandy limestone
50% very fine grained, gray sandstone with silt and calcareous cement
10% gray, micrograined, white mottled, calcareous siltstone; interbedded with the sandstone
- 2510-2520 40% pure white sandy limestone
10% very fine grained gray sand
50% gray siltstone
trace of phosphate
- 2520-2530 30% pure white sandy limestone
60% very fine grained, gray sand with muscovite flakes
10% gray, micrograined calcareous siltstone
- 2530-2540 note! limestone is not cave. fine sandstone appears related to the sand in the limestone
50% pure white sandy glauconitic limestone
30% gray micrograined glauconitic calcareous siltstone
20% very fine grained gray calcareous sandstone with muscovite flecks
- 2540-2550 now more fine sand and less limestone; sand is quartz
30% pure white sandy glauconitic, micrograined limestone
20% gray glauconitic calcareous siltstone
50% gray, very fine grained, glauconitic quartz sand
- 2550-2560 33% pure white sandy micrograined glauconitic limestone
33% gray, micrograined, calcareous siltstone
33% gray, very fine grained, calcareous, lithic quartz sand
trace of chert

note! these three lithologies remain constant in presence, only variable in percentage.

- 2560-2570 20% gray, micrograined calcareous, glauconitic,
dense siltsstone; occasionally with small calcite veins
40% pure white glauconitic limestone
40% gray, fine grained lithic quartz sand
- 2570-2580 10% pure white limestone
60% gray quartz sand
30% gray siltstone
- 2580-2590 30% gray dense, micrograined calcareous siltstone
some of this is cave (too big)
20% pure white sandy, glauconitic, micrograined limestone
50% very fine grained sand with phosphate, glauconite,
muscovite flecks
trace of chert
- 2590-2600 samples missing
- 2600-2610 70% very fine grained, glauconitic, calcareous,
fossiliferous, lithic quartz sand
20% gray, dense, micrograined calcareous siltstone
10% pure white sandy glauconitic micrograined limestone
- 2610-2620 10% gray dense micrograined calcareous siltstone
90% very fine grained, glauconitic, calcareous, fossil-
iferous, lithic quartz sand with some of the above pure
white limestone clasts
- 2620-2630 20% pure white glauconitic sandy micrograined limestone
80% gray, dense, mottled and banded and veined with
calcite, micrograined calcareous sandysilt.
- 2630-2640 10% dense gray micrograined calcareous siltstone
10% pure white micrograined glauconitic limestone
80% gray, very fine grained lithic calcareous quartz
sand
- 2640-2650 100% loosely consolidated, grey, very fine grained,
calcareous, speckled, phosphatic quartz sand
- 2650-2660 As above; trace of pyrite and micaceous
- 2660-2670 As above; trace of pyrite, some pure, slightly sandy,
white, micrograined limestone occurs--probably cave.
- 2670-2680 As above, with pyrite; some of the above dark gray
dense siltstone occurs as cave
- 2680-2690 As above, with what may be a recurring silty and limestone
facies instead of cave

- 2690-2700 100% gray with black (glauconite-phosphate) speckles
very fine grained, micaceous, pyritic, calcareous
quartz sand
trace of chert
- 2700-2710 As above; some dense, dark siltstone- cave? and some
sandy white limestone
- 2710-2720 As above; no siltstone or limestone
- 2720-2730 80% gray with black speckles (as above), very fine grained
calcareous quartz sand
20% white, sandy, phosphatic, glauconitic limestone
- 2730-2740 100% gray with black speckles (as above), very fine
grained, calcareous quartz sand
- 2740-2750 80% gray sandstone as above; with chert
20% white, sandy (medium grained), pure, phosphatic,
glauconitic, fossiliferous limestone
- 2750-2760 100% gray sand as above; trace of chert
- 2760-2770 100% gray sand as above; note! this sample had a
still consolidated piece that showed clasts of the
above limestones and shale in it. This must be the
true identity of this lithology; sand with clasts of
limestones and shale; no--drilling mud, just not
well washed
- 2770-2780 100% gray sandstone as above
- 2780-2790 100% gray sandstone as above. note! most of the silt
is not interclastic
- 2790-2800 80% gray with black speckled, micaceous, very fine
grained, locally silty quartz sand
20% off white to iron stained brown, micrograined,
glauconitic, phosphatic, medium grained sandy
limestone
- 2800-2810 sample missing
- 2810-2820 100 % gray sandstone as above, with much fossiliferous,
white to iron stained limestone, sandy.
- 2820-2830 100% gray sand as above; fossiliferous limestone clasts
or limestone interbeds--I can't tell very well.
- 2830-2840 100% white to brown (iron stained), micrograined,
glauconitic, phosphatic, very sandy (medium to fine
grained) fossiliferous limestone.
note! The limestone is interbedded and not just clasts.
Like the silt, it slowly increased; now it predominates
and the silt is less than 2%. The fine sand floats in
the limestone

- 2840-2850 100% white to gray, micrograined, glauconitic, phosphatic, very sandy (up to 80% of the rock) (medium grained) fossiliferous limestone.
note! occasionally there is so much sand the limestone looks like cement
- 2850-2860 80% white-medium gray medium grained sandstone with some phosphate and glauconite in a thick white limestone cement. This appears very hard.
20% dark gray micrograined, very glauconitic silt
- 2860-2870 80% white to gray to iron brown stained, medium grained sand in limestone (white) cement matrix; glauconitic
20% dark gray dense shale with glauconite
- 2870-2880 50% white-gray, micrograined, very sandy (fine grained sand similar to above) limestone
30% gray, very fine grained, calcareous, quartz sand as above. This sand, including its occurrence here may be more silty than indicated as the silt may have been lost during the washing. Check above
20% dense, gray, locally calcareous (may be streaked and mottled) glauconitic siltstone.
- are the first two lithologies above just one?
- 2880-2890 white gray, micrograined, very sandy (very fine grained) limestone, also micaceous. Does the limestone content fade in and out, thus occasionally yielding very fine sand only? note! This limestone is occasionally silty so does it grade into:
10% dense, dark gray, calcareous, glauconitic siltstone
trace of pyrite, carbonaceous material
- 2890-2900 sample missing
- 2900-2910 100% white to gray (with occasional iron stains), very fine grained, calcareous (often as a limestone matrix), glauconitic, micaceous, silty sand
- note. Is all the above very fine sand, with silt and the limestone just fading in and out?
- 2910-2920 now more limestone
100% white-gray, locally very sandy (fine to medium grained) glauconitic, slightly phosphatic, micaceous sand[sic]
- note! occasionally material above has been called intraclastic. This is not true intraclasts. However, rather it is still cemented with drilling mud and is an artificial clastic
- 2920-2930 100% gray, very fine grained, silty, glauconitic, micaceous quartz sand.

- 2930-2940 100% gray, very fine grained, silty, glauconitic, micaceous, pyritic, quartz sand
- 2940-2950 100% gray, very fine grained, silty to locally siltstone, glauconitic, micaceous, pyritic quartz sand
- 2950-2960 As above
- 2960-2970 100% gray, very fine grained, well sorted, micaceous, glauconitic, pyritic, silty, quartz sand lignite
- 2970-2980 As above; no lignite
- 2980-2990 no sample
- 2990-3000 As above, very pyritic
- 3000-3010 very poorly washed sample
As above
- 3010-3020 95% above
5% clear to white, medium grained, well rounded quartz sand
- 3020-3030 95% gray, very fine grained, micaceous, glauconitic, very pyritic (and chalcopyritic), silty quartz sand
5% clear white, medium grained, well rounded quartz sand
- 3030-3040 100% gray, very fine grained (some with medium clasts), glauconitic, pyritic, silty quartz sand
some white sandy limestone cave
- note! occasionally, dense, gray, glauconitic stilstone, often calcareous mottled, has been noted. This may be cave and should be checked where it appears in the fine sand.
- 3040-3050 100% gray, very fine grained, glauconitic, pyritic, silty quartz sand
- 3050-3060 As above, no pyrite
- 3060-3070 100% gray, very fine grained, glauconitic, with some dark heavies, silty, quartz sand; many medium to coarse grained, well rounded quartz grains
- 3070-3080 95% gray, very fine grained, glauconitic, micaceous, silty, pyritic, quartz sand
5% medium to coarse, white, well rounded quartz grains

- 3080-3090 95% gray, very fine grained, phosphatic, glauconitic, pyritic, micaceous, silty quartz sand
5% well rounded, medium to coarse quartz sand
- 3090-3100 sample missing
- 3100-3110 As above; note, much cave of the dense, dark shale
- 3110-3120 95% gray, very fine grained, phosphate grains to 3-4 mm, glauconitic, pyritic, micaceous, silty quartz sand
5% well rounded, medium to coarse grained quartz sand
- 3120-3130 100% gray, very fine grained, phosphatic, glauconitic, pyritic, micaceous, silty quartz sand.
- note. coarse sand content greatly reduced.
- 3130-3140 100% gray, very fine grained, phosphatic, glauconitic, pyritic, micaceous, silty quartz sand. note. much sandy (50%) limestone(50%) as above--cave??
- 3140-3150 gray, very fine grained, micaceous, glauconitic, phosphatic, silty quartz sand; very much cave
100%
- 3150-3160 100% gray, very fine grained, micaceous, glauconitic, phosphatic, silty quartz sand; note. very much cave; mostly sandy limestones and dense gray glauconitic siltstone
- 3160-3170 100% gray, very fine grained, micaceous, glauconitic, phosphatic, silty quartz sand; note well rounded quartz grain influx
- 3170-3180 100% gray sand as above; much cave, dense gray siltstone and pyrite as accessories
- 3180-3190 100% gray, very fine grained, micaceous (up to 1.5 mm across), glauconitic, phosphatic, pyritic, silty quartz sand
- 3190-3200 100% gray, very fine grained, micaceous, glauconitic, phosphatic, silty quartz sand
some pyrite and quartz clasts to 2mm, well rounded
- 3200-3210 60% gray, very fine grained, micaceous, glauconitic, phosphatic, silty quartz sand
40% gray-white, very fine grained sandstone in a calcite (limestone) matrix. Actually this is very much like cave.

- 3210-3220 100% gray, very fine grained, phosphatic, glauconitic, micaceous, silty quartz sandstone; slightly fossiliferous forms
cave: dark gray glauconitic siltstone
- 3220-3230 100% gray, very fine grained, phosphatic, glauconitic, micaceous, silty quartz sand; with pyrite
- 3230-3240 note. be sure to check E log.
100% gray, very fine grained, phosphatic, glauconitic, micaceous, silty quartz sand, with pyrite and much cave as dense siltstone, sandy limestone from above; also a shark tooth
- note. dark gray siltstone and sandy limestone are cave (found in mud here)
- 3240-3250 100% gray, very fine grained, phosphatic, glauconitic, micaceous, silty quartz sand, with pyrite and much cave.
- 3250-3260 100% gray sand as above, with much cave
- 3260-3270 100% very fine grained, gray, slightly phosphatic, micaceous, silty quartz sand; pyrite, etc. cave
- 3270-3280 100% very fine grained, gray, glauconitic, slightly phosphatic, micaceous, silty pyritic quartz sand and cave
some dark neutral gray calcareous siltstone with calcite veins less than .1mm wide
- 3280-3290 100% micrograined, neutral (metallic) gray, glauconitic, slightly phosphatic, calcareous, micrograined-not so much, quartz sandy siltstone. not really different from above
- 3290-3300 100% gray, micrograined, glauconitic, slightly phosphatic, slightly calcareous, micaceous, silty quartz sand
- 3300-3310 100% gray, micrograined, glauconitic, slightly phosphatic, micaceous, pyritic, silty quartz sand
- 3310-3320 100% brownish gray (dark red), glauconitic, sandy silt. forams
- 3320-3330 As above
- 3330-3340 100% light brown, very calcareous, micrograined limestone very silty.
- 3340-3350 100% brown-gray, very fine grained, glauconitic, silty quartz sand

- 3350-3360 100% brownish gray, very fine grained, glauconitic, silty, quartz sand; sandy siltstone
- 3360-3370 100% brownish gray, very fine grained, glauconitic, silty quartz sand; very fossiliferous, forams
- 3370-3380 50% brownish gray, very fine grained, sandy micrograined siltstone, with glauconite and pyrite
50% dense, dark gray, calcareous siltstone
- 3380-3390 60% brownish gray, glauconitic, pyritic, very fine grained quartz sandy siltstone, extremely fossiliferous with forams
40% dark gray, dense, calcareous, massive, micrograined siltstone
- 3390-3400 60% brownish gray sandy siltstone as above
40% dark gray calcareous siltstone as above
- 3400-3410 70% brownish gray sandy siltstone as above
30% dark gray, calcareous siltstone as above
- 3410-3420 30% brownish gray siltstone as above
70% dark gray calcareous siltstone as above
- 3420-3430 20% brownish gray siltstone as above
80% dark gray calcareous siltstone as above
- 3430-3440 As above
- 3440-3450 100% dark gray, dense, calcareous, massive, micrograined siltstone; sandy siltstone as above
trace of pyrite and glauconite
- 3450-3460 100% dark gray, dense, very calcareous, slightly glauconitic, slightly phosphatic siltstone
trace of pyrite; very fossiliferous-forams
- 3460-3470 100% dark gray, dense, very calcareous, slightly glauconitic, slightly phosphatic, micaceous siltstone
pyrite and lignite
- 3470-3480 100% dark gray, dense, very calcareous, slightly glauconitic, slightly phosphatic, micaceous siltstone;
much pyrite
- 3480-3490 100% dark gray, dense, very calcareous, slightly glauconitic, slightly phosphatic, micaceous, fossiliferous (forams) siltstone
are the forams cave? the above sand (in 3390) places is almost a foram ooze with less than 30% quartz. Thus here it is cave.

3490-3500 100% dark gray, dense, very calcareous, slightly glauconitic, slightly phosphatic, micaceous fossiliferous (forams), very pyritic siltstone.

a great number of fossils occur loose, but I see none at all in the siltstone (in situ). Inspection of the sandy shale around 3390 would tell. (forams are in situ HRC also lignite)

3500-3510 100% dark gray, very calcareous (foram tests?), micaceous, slightly glauconitic, siltstone, or 40% siltstone, 60% foram tests. lignite, limonite

3510-3520 100% dark gray, very calcareous, micaceous, slightly glauconitic, slightly phosphatic siltstone

3520-3530 As above; fossiliferous forams

3530-3540 80% foram ooze, slightly sandy
20% dense siltstone, slightly glauconitic, as above

note. An examination will decide (hopefully) if this ooze has small beds of shale in it, or if it is shale cave. Shale here is independently calcareous

3540-3550 50% foram tests
50% dark gray, calcareous, glauconitic siltstone

3550-3560 40% dark gray, very glauconitic, calcareous, dense, micrograined, non fossiliferous siltstone
60% foram tests with some sand

3560-3570 sample missing

3570-3580 As above; siltstone is pyritic also

3580-3590 As above; oyster parts

3590-3600 As above

3600-3610 70% foram tests with about 10-15% fine sand
30% dark gray, very glauconitic, very calcareous, dense, micrograined siltstone

note change from a calcareous lithified shale to porous clay at this point. Contact is about right according to E log

3610-3620 70% dark gray, glauconitic, micaceous, pyritic, calcareous, micrograined siltstone
30% foram tests and fine sand

3620-3630 80% siltstone as above
20% foram tests and sand as above

3630-3640 60% dark gray, glauconitic, micaceous, pyritic, calcareous, micrograined siltstone
40% foram tests with fine sand

3640-3650 100% dark gray, glauconitic, micaceous, pyritic, calcareous, micrograined siltstone
cave, foram tests with fine sand

3650-3660 50% dark gray siltstone as above
50% foram tests with fine sand

3660-3670 As above

3670-3680 As above

3680-3690 80% dark gray siltstone as above; one pelecypod fragment
20% foram tests with fine sand

3690-3700 100% dark gray siltstone as above
cave of foram tests and fine sand

3700-3710 100% dark gray siltstone as above
cave of fine sand and foram tests

3710-3720 50% dark gray siltstone as above
50% forams and fine sand (washed out)

3720-3730 50% dark gray, glauconitic, micaceous, pyritic, micrograined siltstone
50% forams and fine sand

3730-3740 30% siltstone as above
70% forams and fine sand

3740-3750 40% dark gray siltstone as above
60% forams and fine sand

3750-3760 60% dark gray, glauconite and pyrite closely associated, micaceous, micrograined siltstone
40% forams and fine sand

3760-3770 30% dark gray siltstone as above
70% forams and fine sand

3770-3780 50% dark gray siltstone as above
50% forams and fine sand

3780-3790 100% forams and fine sand; siltstone as a cave

3790-3800 10% dark gray siltstone as above
90% forams and fine sand

- 3800-3810 80% forams and fine sand
20% dark gray siltstone as above
- 3810-3820 As above
- 3820-3830 70% foram tests and fine sand
30% dark gray siltstone as above
- 3830-3840 45% forams and fine sand
45% dark gray siltstone as above
10% white, slightly sandy, micrograined limestone
- 3840-3850 40% dark gray siltstone as above
50% foram tests with fine sand; sand now about 50%
of this
10% white, slightly sandy, micrograined limestone
- 3850-3860 50% gray, dense siltstone as above
30% forams tests and fine sand, sand about 50% of
this unit is sand
20% white, micrograined, sandy (fine grained) limestone
- 3860-3870 40% gray siltstone as above
30% forams and fine sand, sand less thn 50% of this
30% white, micrograined, sandy limestone
- 3870-3880 30% gray siltstone as above
40% foram tests and less than 50% fine sand
30% white, micrograined, sandy limestone
- 3880-3890 As above
- 3890-3900 As above

note! comparison of the samples and the E log suggest a lag of
90 feet at this contact

- 3900-3910 20% siltstone as above
20% white sandy limestone as above
60% forams and sand as above
someone suggests all this is cave.
- 3910-3920 40% siltstone as above
40% forams and sand as above
20% white limestone as above
someone suggests this is all cave
- 3920-3930 50% gray siltstone as above
50% white, sandy limestone
forams as cave
someone suggests this is mainly cave

- 3930-3940 50% forams and fine sand, about 50% of this is sand
40% dark gray siltstone as above
10% white sandy limestone as above
someone suggests mainly cave
- 3940-3950 20% dark gray siltstone [shale] as above
50% foram sand as above
30% white, sandy limestone
much lignite noted
someone suggests this is mainly cave
- 3950-3960 20% dark gray shale [sic] as above
20% white sandy limestone as above
60% forams with fine sand
much lignite
someone suggests this is mainly cave
- 3960-3970 20% dark gray shale as above
20% white limestone as above
60% forams and about 60% fine sand
much lignite
someone suggests this is mainly cave
- 3970-3980 80% clean, white, well sorted, medium grained
quartz sand
20% white sandy limestone and foram sand-probably cave
much lignite
- this sand lithology continues upward to 3890 according to E log
- 3980-3990 80% clean, white, well sorted, medium grained,
somewhat red in places (iron staining) quartz sand
20% cave material as above
much lignite
- 3990-4000 80% white, clean, well sorted, medium grained quartz
sand
much lignite
15% forams and fine sand (cave?)
5% dark shale as above
- 4000-4010 100% white, clean, well sorted, medium grained quartz
sand
much lignite
dark shale as above as cave
- 4010-4020 As above; no shale cave
- 4020-4030 100% white to red stained, clean, poorly sorted,
fine to medium grained quartz sand; calcite cement
much lignite
- 4030-4040 100% sand as above; less lignite

[someone says this is probably shaly]

- 4040-4050 100% white to red stained, clean, poorly sorted,
fine to medium grained, calcareous cemented quartz
sand
less lignite
[someone says this is probably shaly]
- 4050-4060 100% clean, white to iron stained, medium to fine
grained, quartz sand; quartz often has black inclusions
less lignite
- 4060-4070 As above; less lignite, much cave
- 4070-4080 100% clean white to iron stained, fine to medium grained,
poorly sorted, quartz sand
more lignite
much cave
- 4080-4090 As above, may be micaceous
much lignite
weird cave
- 4090-4100 100% clean white to iron stained, medium grained,
slightly micaceous quartz sand
much lignite and cave
- 4100-4110 Sand as above, pyrite
much lignite
- 4110-4120 100% clean, white to iron stained, micaceous, pyritic,
medium to fine grained, lithic quartz sand
much lignite and 1 pelecypod? shell fragment
- 4120-4130 Sand, 100%, clean white to iron stained, micaceous,
pyritic, medium to fine grained, lithic quartz?
less lignite
- 4130-4140 100% clean, white to iron stained, micaceous, pyritic,
medium grained, arkosic, lithic quartz sand
much lignite
much shelly shale
- 4140-4150 100% sand as above, much lignite
- 4150-4160 100% clean, white to iron stained, fine to medium
grained, micaceous, pyritic, arkosic, lithic quartz
sand
lignite
much cave
- 4160-4170 100% arkosic sand as above
lignitic
much cave

- 4170-4180 100% clean, white to iron stained, mostly fine, some medium grained, pyritic, lignitic, slightly arkosic, slightly lithic quartz sand
much shale cave
- 4180-4190 100% clean, white to iron stained, fine to medium grained, pyritic, bituminous, slightly arkosic, slightly lithic, quartz sand. concrete block?
much shale cave
- 4190-4200 50% clean, white to iron stained, fine to medium grained, pyritic, bituminous, slightly arkosic, slightly lithic quartz sand
50% very fine to silty sand, gray white; may be just "dirty" facies of above
- 4200-4210 30% clean, white to iron stained, micaceous, slightly arkosic, slightly lithic, medium to fine grained quartzsand.
70% very fine grained to silty, white to gray quartz sand
- 4210-4220 20% clean, white to iron stained, micaceous, slightly arkosic, slightly lithic, medium to fine grained quartz sand
80% very fine grained to silty, white to gray quartz sand
- 4220-4230 100% white to gray, micaceous, slightly arkosic, slightly lithic, very poorly sorted, fine to medium grained quartz sand
much variable composition cave
- 4230-4240 100% white to iron stained to gray, micaceous, slightly arkosic, slightly lithic, very poorly sorted, fine to medium grained, quartz sand
much cave
- 4240-4250 100%? white to iron stained to gray, micaceous, arkosic, slightly lithic, very poorly sorted, fine to medium grained quartz sand.

OR

50% shale, dark gray, micrograined, non calcareous, N5-N6

note! the sand here may be siltier than it looks, with the silty portion having been washed out. This may be interlayered silty sand and shale.

- 4250-4260 50% clean white to iron stained, gray, very poorly sorted, fine to medium grained, quartz sand
50% dark gray, mottled and streaked white, noncalcareous shale

- 4260-4270 As above , shale is called shale (siltstone)
- 4270-4280 As above; shale is called siltstone
- 4280-4290 70% clean white to iron stained to gray, very poorly sorted, fine to medium grained, silty? quartz sand
30% dark gray, streaked white siltstone [shale]
- 4290-4300 70% clean white to iron stained, medium grained quartz sand
30% dark gray streaked white siltstone [shale]

note. fine sand gone

- 4300-4310 60% clean white to iron stained, medium grained, micaceous, slightly arkosic, slightly lithic quartzsand
40% dark gray micrograined siltstone- cave
- 4310-4320 80% clean white to iron stained, fine to medium grained, micaceous, slightly arkosic, slightly lithic quartz sand
20% dark gray siltstone cave
- 4320-4330 note alteration in description-HRC
100% clean, white to iron stained (about 20%), medium grained to fine grained quartz sand.
washed sample is as above; unwashed sample includes about 50% gray shale N5-N6, therefore, 50% shale, 50% sand as above ; some red clay 10R3/4 also
- 4330-4340 100% clean, white to iron stained (about 10%), medium grained to fine grained quartz sand
shale is cave
- 4340-4350 unwashed is gray shale N5-N6. Washed sample is 100% sand, cave?
- 4350-4360 unwashed sample is largely gray shale, N5-6
washed sample is 100% sand-cave?'
- 4360-4370 90% white to iron stained (about 40%) fine to medium grained, quartz sand
10% shale
- 4370-4380 100% white to iron stained (about 40%), well sorted, medium grained quartz sand; one pelecypod shell fragment seen
cave is shale
- 4380-4390 100% white to iron stained (about 50%), fine to medium grained arkosic, lithic quartz sand
cave is shale

- 4390-4400 100% white to iron stained (about 40%), fine to medium grained, arkosic, lithic quartz sand
cave is shale
- 4400-4410 100% white to iron stained (about 40%), fine to medium grained, arkosic, lithic quartz sand; some fine sand has calcareous cement
- 4410-4420 100% clean, white to iron stained, medium to fine grained, arkosic, lithic quartz sand.

note! red (maroon) micaceous, silty shale has occurred in much of this red sand. Here it is almost 1%, and has green streaks; no dominant beds seen, however.

- 4420-4430 100% clean, white to iron stained, medium to fine grained arkosic, lithic quartz sand
more red shale
- 4430-4440 100% clean, white to iron stained, medium to fine grained, arkosic, lithic quartz sand; mostly (70%) fine grained
- 4440-4450 100% mostly red, but mottled white, microgranular, locally (white?) calcareous, very uniform brick-like shale or siltstone.

actually vitric-crystalline tuffs, weathered--pre Cretaceous rocks.