

2nd
Dougherty County
U.S.G.S. Army Corps of Engineers Testhole
GGS Well #3187
Location: 31° 31' 05" N 84° 06' 44" W
Altitude: 195 ft.
Depth: 79.3 - 1401.3
Logged by P. Huddlestun and C. Gelbaum
Spring 1977

131010

Thick.	Depth	
1	80.3	(In) Ocala Limestone Lm; bioclastic, finely granular with coralline algae making up the majority of the granular framework, Bryozoans, scanty pecten fragments, moderately cemented, some porosity may be present, pockets of unconsolidated material.
2.1	82.4	Lm; finely granular, no lg fossil frags, moderately cemented, relatively tough, though some lenses are friable and break easily, not porous appearing. 10y ^F 8/2 to N9
9.8	92.2	Lm; as above, micritized appearance, some moldic porosity, a few molds are filled with dolomite. At 90.2 ft. <u>Lepidocyclus</u> sp. occur, flat, up to 3/4" across, <u>Operculinoides</u> sp., fossils appear micritized; orange tinged staining (not true color).
9.2	101.4	Lm; generally medium granular, bioclastic debris acting as a framework, vaguely bedded, breaking apart roughly parallel to horizontal, scattered bryozoans, gradually becomes more macrofossiliferous. 79.3' - 104.1 may be considered a bed; with all zones sharing similar characteristics.
7.6	109.0	Lm; 101-102' slightly arenaceous; medium granular, compact bioclastic, becoming more macro-fossiliferous, increase in ostrea, some causing moldic porosity, primary porosity development becomes more visible, perhaps due to the coarser granule debris.
17.7	126.7	Lm; medium to coarse bioclastic debris, granular framework, friable to compact, micritized; lg. <u>Amusiums</u> , Lep. rich, poor fossil preservation.
6.8	133.5	Lm; med. granular, less fossiliferous, fewer lg. macroshells, leps abundant, worm tubes.
21.2	154.7	Lm; med. granular, compact to friable, moderately cemented, micritized, Leps, pelecypods, lightweight therefore may have primary porosity, patchy distribution of shell material, molluscs, gastropods. Shelly horizons tend to have secondary moldic porosity; uniform, unshelly patches may have primary porosity.

- 9.9 164.6 Lm; medium granular, at 156-157 - gastropod molds, tiny turretelias, molds of pelecypods; rare dolomite, not Lep. rich.
- 2.7 167.3 Lm; med. granular, compact to friable, pelecypod rich, large to small pelecypods, solution vugs; some places are well cemented. Crassetella Sp.
- 9.3 176.6 Lm; same as above. Some unshelly patches are compact & recrystallized, with coarse grained sparry calcite.
- 25.4 202 Lm; medium granular, Leps becoming smaller, delicate and abundant at 184.5'. A few macroshelly patches, friable with pelecypods (1/2"). Some dolomitized millioids are present 185-190. Has a dumped in appearance although some Lep. rich zones show a rough horizontality 195'. Thin bedded chalky layers are visible on core surface. They are either an indication of lamination or of rotation of core barrel.
- 19.8 221.8 Lm; medium granular, compact relatively fossil poor; irregular lumps of compact lm. occur where more friable patches were dissolved away by ground water or were washed away during coring.
- 13.5 235.3 Lm; compact, 2 1/2' of recrystallized, dolomitic lm, well cemented, a few lg solution cavities a few recrystallized fossils; lg ostrea; lg. echinoderms Periarchus, cf. Lyelli. Algal remains, wavy lamina can be seen until 235.5' spiral worm tubes.
- 8.5 243.8 Lm; medium to fine grained, perhaps dolomitic, compact, becomes sparsely glauconitic, sparse micas, small molluscs, recrystallized turretelias.
- 5.0 248.8 Lisbon Fm.

Limestone; arenaceous (or very calcareous sandstone): fine grained, to micritic or microgranular crystals, some heavy mins. For the first 3' a yellow green staining is evident that is perhaps a leached zone. Moderately indurated, massive bedding, no apparent sedimentary features.
- 9.4 258.2 Lm; fine grained to micrite, less sand than above, glauconitic, compact. Glauconite is not abundant and appears as granules up to 1/8". Pecten and Ostrea are recrystallized and broken into 1/4-1/8" fragments. These fragments as well as other bioclastic debris ^{are} arranged in a roughly horizontal fashion. Overall bedding is massive and disturbed.

239.

- 4.8 263 Lm; arenaceous, glauconitic, fine grained micritic
lm. predominates alternating in zoned patches with
coarsely fragmental bioclastic debris up to 1" thick.
Fine grained zones are densely packed, breaking into
crude horizontal discs that suggests indistinct lami-
nations.
- 7.3 270.3 Lm; arenaceous, glauconitic, fine grained, coarsening ^{down the} interval,
indistinctly laminated to massive. Whitish algal
markings. Dark grains of phosphate or heavy mineral
become visible. At 266' becomes argillaceous - looks
dirty, moderately indurated; yellow grey 5y 7/20.
- 12.9 283.2 Lm; generally similar to last bed; arenaceous, though
not abundant; argillaceous, medium grained; top 2'
sparsely glauconitic, some black grains may be phosphate.
Looser, more friable material alternates in patches with
more well cemented material. Generally tough and
moderately indurated. Glauconite, apple green color,
is found in thin seams or laminae, some of which are
disrupted. At 279' becomes bioclastic and coarse with
common bryozoans. Very fine heavies are barely visible.
Fish teeth are present; moldic porosities develop in
shelly zones; Gradually becomes more arenaceous and
argillaceous down the interval.
- 10.8 294.0 Lm; fine grained, arenaceous, argillaceous, sparsely
micaceous. Poor to moderate induration. Massive,
sometimes bioturbated. Some bioclasts, few fossils.
- 4.4 298.4 Lm; fine grained, finely arenaceous, sparsely mica-
ceous, argillaceous, moderately indurated. Laminae
are visible, whitish, calcareous; fine arenaceous lime-
stone lamina alternating with grey arenaceous clay
laminae, slickensides occur along some clay lamina;
lamina are thin, fine grained, some are waxy and un-
dulating.
- 17.6 316 Lm; fine grained, argillaceous, minor amounts of fine
sand, moderately indurated though, in places easily broken.
Until 309½ ft. it is massive. At 309½', thin, dis-
continuous laminae become apparent, whitish grey,
calcareous fine sand 1/4-1/8 in. thick, separated by
thin discontinuous, wavy 1/2-3/4 in. thick arenaceous,
calcareous clay laminae, green in color, perhaps
glauconite is present. A green waxy clay 2" thick
is at 314'; no fossils.
- 7.5 323.5 Lm; fine grained argillaceous, arenaceous. Massive
bedding. Calcium carbonate, sand & clay are well
mixed. Glauconite may be present in very fine,
sparsely distributed grains; no fossils.

- 5.7 329.2 Lm; fine grained, argillaceous, arenaceous, sparse shells, pecten, some bryozoans. Sand in lensical distribution in cavities on concave sides of shells; limestone lenses 1/4 x 3/4" are present.
- 7.8 337 Lm; arenaceous, 50-50 percent of sand and calcium carbonate; coarsely bioclastic; coarse, clear, rounded sand; coarse limestone granules; very recrystallized, shells are recrystallized, showing coarsely crystalline calcite, grey & pink colored; large ostrea.
- 7.0 344 Lm; fine grained, finely arenaceous and argillaceous, moderately indurated, laminated; thin 1/8-1/4", continuous laminae, whitish, finely arenaceous limestone laminae alternating with calcareous, arenaceous clay laminae, finely micaceous; scour surfaces, some incipient cross bedding, undulose laminae.
- 17.9 361.9 Lm; fine grained, finely arenaceous and argillaceous, moderately indurated, massive bedded up to 353 ft. At 353 to 354 ft. gradually becomes laminated: alternating, chalky undulose lamina with greenish clay rich indistinct, discontinuous laminae. Sparse and scattered Ostrea, thick walled, dumped in appearance. Sparse molluscs in weakly indurated lm. at the bottom - 361.9'.
- 23.6 385.5 Lm, very fine grained, finely arenaceous and argillaceous; poorly indurated at 366-367'; gradually becomes more glauconitic. Ostrea, thick walled & thin, with other pelecypods, whole to broken 2"-3" across, gradually become more abundant. Molluscs lie roughly parallel to crude bedding surfaces. The last several feet are chalky, with molluscs common, sparse bryozoans, moldic porosity development, bioturbated; glauconite, occurring in apple green clasts. At 384ft. approx. to 385.5 ft. fossils are less abundant, matrix is finer grained, overall darker color, suggesting increased clay content.
- *In this zone the Tallahatta Formation grades upward into the Lisbon, with the contact estimated to be around 367-368 ft. Contact based on faunal content.
- 11 396.5 Lm, arenaceous, medium-grained, glauconitic (in clasts). Bioclastic, abundant, broken shell debris, coarsely broken up to 1" pieces. Porosity development, secondary and moldic. Massive bedded, debris unoriented, gastropods, pelecypods, bryozoans. At 395' approx. there is ^{more} cement, fewer pores.

- 5.9 402.4 Lm; arenaceous, glauconitic in places, soft, fine grained, friable. 396.5-398.5 without bioclasts. Fossiliferous zones are grading into sand, more friable, with calcareous cement in zones which are indurated. Some limestone nodules.
- 3 405.5 Sand; medium grained, clear, subangular to subround; non calcareous, incoherent, grey.
- 1.5 407 Lm, as described 396.5-402.4, arenaceous, glauconitic.
- 10.1 417.1 Sand; fine grained, glauconitic, calcareous, bioclasts common, poorly indurated.
- 400.4-417.1 ft: in this coring interval run 4.5' of core was recovered.
- Hatchitigbee Fm. - (tentatively placed here).
- 11.7 428.8 No recovery
- 1.0 429.8 Depth approx., Lm; fine grained, arenaceous, argillaceous, very indurated, burrows.
- 16.0 445.8 Sand; fine grained, sparsely micaceous, indistinctly laminated, some greenish in color, though not visibly glauconitic, predominantly clay rich laminae alternate with predominantly sand laminae; poorly indurated, light olive grey 5y5/2.
- 4.9 450.7 Sand; fine to medium grained, argillaceous, sparsely micaceous, (visibly) glauconitic; indistinctly laminated with clay rich, darker colored lamina up to 1" thick. Glauconite rich clay seams at 448' alternating with lighter colored, sand rich lamina; sand coarsening downward from this point.
- 11.3 462 Sand; fine to med. grained; somewhat argillaceous, finely glauconitic, varies in compaction; poor to moderate induration. Poorly defined laminae (due to disruption caused by bioturbation or current action). Becomes medium grained and mottled with glauconite rich zones - 10Y6/2, zones without glauconite are 5Y7/2 in color.
- 15 477 Sand; medium grained, not very argillaceous, sparsely micaceous and glauconitic, poorly indurated. Mottled coloring 5Y6/1 to 5GY6/1.
- 6.4 483.4 Sandstone; medium grained, calcareous cement, glauconitic, well indurated, tough; the last 2' poorly indurated.

- 6.2 489.6 Sand; fine grained, moderate to poor induration, interlaminated seems of light colored, calcareous, fine sand, alternating with lamina of clay rich, fine sand. Greenish color, 5Y6/1 overall color.
- 4.4 494 Clay; sand; interlaminated, poor to moderately indurated, clay-green color, waxy 5GY6/1, sand is fine grained, calcareous. N8 overall.
- 7 503 Sand; medium grained, argillaceous with a few clay lamina; glauconite present, though not abundant, weak calcareous reaction. Slight marbling effect (due to bioturbation). At 497.6 a few inches are very glauconitic.
- 33 536 Sand; medium grained, some calcareous cement, incoherent to weakly indurated, marbled (perhaps due to bioturbation). 512-513 ft. - well indurated calcareous sandstone.
- 14.8 550.8 Sandstone; fine to med. grained, calcareous cement -50%; sand - 50%; 6" of incoherent sand from 537 to 537½ ft. Extensively burrowed, burrows are often filled with glauconitic sand; glauconite content increases down the interval. Shells sporadically distributed, sparse sharks teeth & bone fragments, N8.
- 4 554.8 Sand; medium grained, glauconite up to 50% total content gradational boundary into this green sand from 548.8- 550.8; non calcareous. 5GY4/1- greenish grey.
- 6.2 561 Siltstone, or very fine sandstone; argillaceous, micaceous maybe pyritiferous, moderately indurated, breaks off roughly into flat slabs, very thinly laminated.
- 2 563 Sand; med. grained argillaceous, glauconitic, tough, moderately indurated. 5Y4/1.
- 6 569 Lm; very arenaceous, abundant fine grained glauconite; well indurated, dense, tough, some sporadically distributed porosity; N7.
- 4.8 573.8 Sandstone; with calcareous cement approx. 50% each; med. grained; fine grained glauconite present, slightly arenaceous. Burrowed, with sand & glauconite infillings, well indurated; N7.
- 14.2 588 Sandstone; poorly sorted, calcareous cement, alternating zones of more and less well cemented sand; glauconitic, slightly argillaceous with a few clay lamina above the base, poorly indurated with friable lenses to well indurated. Occasional bioclasts.

Tuschahoma Fm.

- 54.3 642.3 Abrupt contact
Sand; very fine grained to silt size, argillaceous, fine grained abundant mica; calcareous cement is commonly present, though sparse; tough, compact, no friable lenses; generally massive bedded and uniform, breakage is in roughly horizontal slabs, indicating the presence of indistinct thin lamina. Some slab surfaces have a 2-toned blotching with a rough surface expression where calcium carbonate tends to be concentrated at ridges, bioturbation may cause this nonhomogeneity. The sand component coarsens slightly (to fine sand) in the last 10 ft.

- 19.7 662 Sand and clay; sand very fine to silt; calcareous cement is diminished to absent; micaceous, lensical distribution of clay and sand, clay lamina are discontinuous, breakage occurs along these clay lamina causing a rough break in thin slabs. The blotchy coloration on fresh surface is a possible indication of bioturbation. Many Slickensides are present; they occur within clay concentrations. Small joints are present, in last few feet these are filled with calcium carbonate.

Nanafalia Fm.

- 47.8 709.8 Sand; fine grained, glauconitic - abundant and fine grained, argillaceous, mica present, not abundant. Poorly defined, very thin, discontinuous laminae are present: dark clay rich and glauconitic lamina alternate with light-colored sand, very slightly to non-calcareous. This interval is moderately coherent but not well indurated, breaks easily; partially bioturbated (or mechanically disturbed), for short intervals (a few inches) where laminations are less apparent and a blotchy or marbled surface expression is observed. At base of bed 1" clasts of rock from the Clayton Fm. are found.

Clayton Fm.

- 3.0 712.8 Abrupt contact, undulating surface lm; arenaceous, glauconitic, sparsely micaceous recrystallized, very indurated, dense. Fossiliferous with pelecypods, gastropods; sand and glauconite fill many fossil molds and other kinds of vugs. Bioclasts are deposited in a crude horizontal alignment. Large Veneracardia planacosta.

- 8.2 721.0 Sandstone; calcareous cement 50% sand, 50% cement (approx.), argillaceous, fine to very fine grained sand, fine grained glauconite and mica with lenses of glauconitic sand. First 1' is more calcareous than remainder. Moderately to weakly indurated, massive bedded, though some discontinuous, indistinct lamina are visible, macrofossiliferous; 5Y6/1.

Handwritten notes:
A. 1' to 1 1/2'
B. 1 1/2' to 2'

- 6.6 727.6 Lm; arenaceous, argillaceous, glauconitic, sparsely micaceous, fine grained, well indurated, tough. Macrofossiliferous, thick walled ostrea at 725' approx. deposited in a roughly horizontal fashion.

- 66.4 792 Sand; fine to very fine grained, argillaceous, fine micas, some calcareous cement; generally poorly indurated and friable except where more calc. cement exists, and moderate induration occurs. Appears massive bedded on a gross scale, a closer look reveals indistinct horizontal lamina which are ill defined and discontinuous, perhaps clay is concentrated in the more prominent lamina.

- 20.7 812.7 Sand; (essentially as above) fine to very fine grained, somewhat argillaceous, calcareous cement is inhomogeneously distributed causing some intervals to be better indurated than others. Generally massive bedded, however, some nearly imperceptible horizontal laminae exist. At irregular intervals swirly marbling of light & dark clastics can be seen, causing a hackley irregular breakage. Some borings are recognized indicating possible bioturbation.

- 11 823.7 Lm; arenaceous, argillaceous with fine grained micas, 50-50% carbonate & clastic. Very fine grained sand to silt sizes. Gradational contact from last bed to 814, in this zone a dolomitic siltstone is present, below this point it is calcareous, resulting in a tough coherent rock. Occasional lenses of less calcareous poorly indurated sand occur.

- 25.6 849.3 Sand; very fine to silt size, argillaceous, micaceous, clay is concentrated in discontinuous thin lamina. A few tough, calcareous cemented lenses occur around 830-835' appears as in bed described above. Some small vertebrate remains, chalky, thin, broken, mollusk shells and bryozoans. Appears uniform and massive from 833 to end of bed (approx.) 5Y6/1.

- 2.2 851.5 Lm; argillaceous, sparsely micaceous with siltstone lenses tough, indurated.

- 12.0 863.5 Lm; silty, argillaceous, (50% calcium carbonate and 50% clastics), with sparsely distributed and fine grained glauconite. the lm. appears medium grained; breaks into roughly horizontal slabs indicating indistinct bedding. Bioturbated in places, resulting in swirling lenses 1/2" thick, marked by thin clay lamina adjacent to limey pockets and chalky patches. Overall appearance is massive. The Lm. appears medium grained, with bryozoans, microfossils, thin shelled molluscs, some bioclasts are filled with calcite spar. N7 to 5Y7/2.

- 31.5 895 Siltstone or claystone; very calcareous, generally same as above but more silty; micaceous, tough, interbedded with argillaceous limestone up to 2': at 874-875, 876-878 and 879-880, these limestone layers are massive. The siltstone is laminated with thin bands of discontinuous and continuous clay lamina. Some bioturbation is apparent causing marbled effect.

- 13 908 Lm; argillaceous, generally as described for interbedded lm above; occasional drusy quartz infillings, some bioturbation, disrupted lamina, clay rich layer occurs from 903.3-906 ft.

- 11 919 Siltstone; calcareous at 911', sparsely glauconitic, very fine grained, sparse micas, bioturbated with lighter colored filled borings; clay rich lenses, swirly marbled appearance. Fossils present, small thin, broken, tough. Finely disseminated pyrite is found towards the bottom of the interval, N6.

- 2 921 Sand; medium grained with lm matrix cement glauconitic, apple green; dense, indurated; small thin fossils, pelecypod imprints.

- 7 928 Siltstone as 908 to 919, some core missing in this interval.

- CRETACEOUS AGE, PRARIE BLUFF FORMATION
- 2.0 930.5 Depth approx. Sand; coarse, calcareous cement, chert filling in some pore spaces, phosphate nodules, pyrite nodules.

- 27.5 958 Siltstone; or very fine grained sandstone, argillaceous, calcareous, fine grained micas, sparse lignite flecks, trace of sulfur salts: jarosite, moderately to well indurated, massive to indistinctly laminated, sparse phosphatized fossils and fossil molds, some burrows.

- 6 964 Siltstone; or very fine grained sandstone, more fine sand than in previous 27.5 ft., argillaceous, calcareous, micaceous. Increase in the number of fossils and fossil impressions. From 961 to 964 ft. thick walled pelecypods, and gastropods occur.

- 31.2 995.2 Lm; arenaceous, argillaceous, glauconitic, med. to coarse grained lm. matrix and sand. Dolomitic in some zones: prograding solution markings of partially dolomitized lm. into fresh lm; the former dk grey colored and phosphatized, the latter light colored. Macro-fossils present, with moldic and secondary porosity. Laminated in some zones, massive in others, laminated zones contain alternating calcareous sand & clay lamina which tend to be separated from the massive lm. in discrete pockets or vugs. Irregular fracturing. Poor recovery may indicate

an interlayering of well cemented carbonate with more arenaceous components (which are lost in drilling) Drusy quartz infillings in solution vugs up to 2" across some zones look like "pumice" N8.
Poor Recovery.

Ripley Fm.

- 5.3 1000.5 Sand; fine to very fine grained, calcareous, micaceous 5Y4/1 to 5Y6/1.

- 15 1015.5 Sand, med. grained 60% approx. calcareous cement, 40% approx. hackley breakage, brittle, poor recovery, dumped appearance. Gradationally becomes more compact due to more calcareous cement with swirls of limestone.

 This very brittle material is most probably responsible for the poor core recovery. Even the more compact calcareous cemented sand or arenaceous lens has large solution vugs which may have contained sand originally, or the framework is slowly dissolving away and the structure is collapsing under the stress of the drill bit.

- 21.1 1036.6 Sand; calcareous cement; 50% each, fine to medium grained (2.3' recovery) sand, sparse phosphate pellets and/or bone fragments, sparse micas; well indurated large size Ostrea; solution vugs - moldic & secondary porosity. N7.

- 39.6 1076.2 Sandstone; fine grained to silt, calcareous, argillaceous, micaceous, medium grained, generally massive, some zones show indistinct laminations; poor to moderately indurated depending on the amount of calcareous cement. Calcareous zones are lighter in color and show bioturbation; swirly tubes, oval markings, moderately coherent, yields under pressure. Sparse, thin shelled fossil fragments; 5Y4/1. 1075.2-1076.2 - no recovery.

- 18.4 1094.6 Siltstone or very fine grained sandstone, essentially as above; probably carbonaceous, slight to virogous calcareous reaction, 5Y4/1.

- 39.7 1134.3 Siltstone or very fine grained sandstone, calcareous, micaceous fine to med. sizes, argillaceous. Generally massive, in some zones indistinctly laminated, bioturbation disrupts several laminated areas; moderately indurated white, calcareous laminations are disrupted from 1112.5-1113.5 ft. Becomes darker colored down toward 1129 ft. N5 to 5Y4/1.

- 14.3 1147.6 Siltstone, or very fine sandstone, essentially as above, disrupted laminations, similar to those found at 1112.5-1113.5, are more common in this interval but grade downward into a darker, clay rich lithology, with a slabby breakage.

- 17.8 1165.4 Claystone, silty or finely arenaceous; very mottled or patchy appearance on broken surface, dk clays alternating with very fine sandy patches which are finely micaceous (indicating poor mixing of sediment). Calcareous infillings at 1141.5'; small scale cross bedding at 1143'.
- 31.7 1197.1 Claystone or siltstone; argillaceous, calcareous, micaceous, small 1/8" wide worm tube infillings indicate bioturbation. In some zones indistinct laminations are visible. Moderate to poor induration. Occasional mollusc fragments, gastropods, 5Y4/1.
- 32.6 1229.7 Siltstone; argillaceous, calcareous, perhaps carbonaceous finely micaceous, moderately indurated. 5Y4/1 color to 1199 6 ft. then 5Y6/1. More calcareous intervals are lighter in color, such as 1221.5 to 1214 ft. these intervals also are well cemented.
- 45.8 1275.5 Siltstone, or very fine sandstone; essentially as above; calcareous, finely micaceous, rare glauconite present in fine granules. Massive, (not laminated) noticeable bioturbation 1233.5 to 1235, well indurated. 5Y6/1.
- 30.5 1306.0 Claystone; silty, very finely micaceous, sparse carbon films, calcareous, gradually loses silt by the end of the interval, mica as well. Thin, indistinct lamina, some bioturbation, in many places flaggy partings are common.
- 14.3 1320.3 Claystone; minor silt, fine micas, calcareous. Dessiccation cracks (obtained on drying in boxes) indicate a high clay content, moderate to well indurated, breaks in slabs. Inoceramus sp. at 1309 ft., other pelecypods.
- 31.7 1352.0 core gap.
- 29.2 1381.2 Claystone; to shale, minor amount of silt, calcareous; sparse lignite, sparse and fine mica, patchy colors of light & dk grey; massive uniform appearance, flaggy to concoidal breakage, sometimes producing a jagged edge. Sparse pelecypods, well preserved; burrows filled with lighter colored more calcareous sediment; slickensides. 5Y4/1 to 5Y6/1.
- 20.1 1401.3 Claystone; silt and fine sand present in blotchy concentration, calcareous, micaceous, glauconite appears and increases in content, gradationally from 1381.2-1383' downward. Pyritiferous zones occur with small size balls of pyrite. Even, uniform texture except for (possible) bioturbated zones, and other zones where clay patches alternate, with fine micaceous sand patches. Dark overall color may be due to carbonaceous material. Occasional pelecypods; 5GY 4/1 to 5Y2/1.

T.D. CORE.