GA-EA-OT-1

MONT WARREN ET AL, A. A. CHANDLER, EARLY COUNTY, GEORGIA
SURVEY LOT #406, LAND DISTRICT 26
ELEVATION: D.F. 186.7 G.L.: 181.7

(Jordan) Top of Cret. - by Louise Jordan 1200', By Herrick, 1205'.
Louise picked top of Cretaceous at 1200' (has a good Midway fauna in shales above & top of Taylor? questioned on Lituola taylorensis at 1290. Noted first Inoceramus & true top at 1340'. Stensionina 1358.

Taylor top - Between 1268 + 1290'.

1610-25' Mod. large washed sample composed mainly of frags of dark gray marly sh; cream colored, hard, finely sandy l.s. & fine to coarse s. Planulina taylorensis & other Taylor species present. Gray marl is probably the material being drilled.

1525-40' Material mainly s., s.s. & some glauc. some frags. of sandy l.s. Many Inoceramus frags. & a little gray marl with forams representing many depths & including Taylor species to-

1591-1606' Sample composed mainly of frags of gray, highly micro-fos. marly sh. Some frags of hard lt-gray sandy l.s.- many frags of Inoceramus & Ostrea sp. - many forams representing several depths & including many Taylor species. Like the above to -

1787-1804' Some to - Like the above. Kyphopyxa christneri & some of Pseudogaudryinella capetosa (L. Taylor) present.
Like the above to -

1847-65 Similar to the above, but frags of a light greenish gray marly sh. & some coarse s. (prob. caving) also common.

1865-85 Similar to the above- coarse s. very common. S. is similar to some seen higher in the hole & probably caving.

1890-95 Materials as above, but sand content reduced. No change to

1905-35 Sample composed mainly fine to coarse s; frags of gray cal. very fine grained, hard s.s. many Inoceramus frags & some frags of dark gray - marly sh. micro. fauna a mixture of species from various higher depths but including specimens of some species common only to the Lower Taylor & U. Austin.

1940-55' Approx top Austin Cuttings composed mainly of frags of gray, slightly micaceous marly sh. Some sand & other materials as above.

Darbyella brownstownensis
Kyphopyxa christneri
Gaudryina ellisoni

present - This sample taken as the approx. top of the Austin. although it may have really appeared somewhat higher. Point is taken on the presence of Darbyella brownstownensis (an upper Austin form) & some accompanying species common only to the U. Austin & L. Taylor.
Samples remain the same in character to - (2153-68)

1961-97' Globorotalia umbilicata (typical of the Austin noted for the first time.

2000-15' First Eltharina ~~sag.~~ texana noted. Definite Austin

2153-68' Sample composed mainly of fine s; forams, some small frags of gray marly sh. & abundant inoceramus frags. Forams a mixture from various depths as in all the samples above - Hastigerinella watersi, Dorothia alexanderi & other typical Austin species present. Samples remain same to 2230-45'.

2230-45 Cuttings of gray cal. sh. abundant Inoceramus frags & forams (representing many depths in the hole.) Some frags of a flaky dark brownish gray, slightly carb. & somewhat light speckled sh.

2260-75' Sample small (after washing) composed mainly of gray, slightly cal. & somewhat finely mica. cal. sh. Some inoceramus frags. & fairly numerous forams (a mixture from various depths as above. Small Globigerinas & Gumbelinas are the dominant forams present. Some Globotruncanas & Planulina cf. eaglefordensis & Globorotalia umbilicata also fairly common.
Samples stay the same becoming larger to 2364-80'.

2364-80' Similar to the above, but with many frags. of a dark brownish gray, slightly light speckled, marly sh. No marked change in fauna - Same to

2395-2411' Sample like the preceeding with the addition of a few frags of a very fine grnd. cal. micaceous slightly glauconitic & phosphatic s.s. ~~Sample stay same to~~ - Top of Upper Tuscaloosa section probably including Eagle Ford. Same to -

Top of U. Atkinson

2439-54 Sample as above but with many frags of the s.s. mentioned above & some frags of a hard lt. gray mica. very finely sandy l.s. Some coarse s. (prob. caving)

2454-81' Similar to the above- with some frags of a mod. fine grained, glauc. & somewhat phosphatic, lt. gray s.s. carrying many frags. of Ostrea sp.

2481-95' Like the above with a steady increase in amount of glauconitic, fossiliferous s.s. frags.

2495-2510' Sample composed largely of frags of light gray glauconitic & phosphatic s.s.(mod. fine to mod. coarse) clear quartz carrying abundant frags of Ostrea-like bivalves & some Bryozoan frags. Some frags of gray sh. & other materials & micro-fossils from higher depths.

2508-41 Like the above, a few frags of thinly flaky gray green sh. noted for the first time.

2525-40 Fine to mod. coarse loose angular to sub-ang. qtz s. & some frags of fossiliferous s.s. as above. A few frags of flaky gray green sh.

note - See letter report on samples beginning at 2540' E.R.A.

2538-2605 No change.

2605-2748 Like the above, but sand generally coarser grnd. (fine to coarse) some flaky olive green sh. as above. Some shell frags Small micro-fauna present in samples-non diagnostic prob. caving.

2748-68 Fine to coarse s. a few frags of s.s. a few ~~micro~~ macro-fossil (Ostrea? sp.) ~~frags~~ & some frags of carbonaceous material, a few frags of flaky olive green sh.

2764-79' Like the above - but no carbonaceous material noted.; some cavings in all the samples. Samples remain the same to - 2886.

2886-2901' Sand - s.s. frags of Ostrea sp. as above, but a marked increase in amount of flaky olive green sh. frags. present. Frags of gray sh. (probably from higher depths), also common; micro-fauna non-diagnostic apparently mainly from much higher depths, ~~washing from the caving gray, marly sh.~~

2918-33' S. as above & about 50% of sample frags of gray & olive green - flaky sh. micro-fauna a mixture from higher depths. This the apparent top of the Marine Tuscaloosa shale section. Schlumberger point shows about 2925 as approx. top. A good & typical Marine Tuscaloosa micro-fauna was found in samples from 3,000 to 3075'. Characteristic species were present.

note Will have to look at this for Dave E.R.A.

2934-62' Lithology- frags of gray & of greenish gray, flaky somewhat micaceous sh. - & about 50% fine to mod. fine s. & frags of mod. fine grnd. to very fine grained lt. gray dense mica. & glauc. ss. Many frags of Ostrea sp. a few frags of carbonaceous material.

2962-3007 Frags of shale as above, & numerous frags of a very fine grained light gray highly mica. s.s. Some frags of Ostrea sp. (probably cav.) many frags of a very dark gray, flaky - unctuous sh. Some frags of carbonaceous material & some loose sand (fine to coarse - prob. cav).

3007-22' Samples composed mainly of thinly flaky frags of dark gray - somewhat unctuous sh. - & some frgs of very fine grained, gray highly micaceous s.s. Some frags of Ostrea sp. Some specimens of Ammobacalites sp. (characteristic of the Marine Tuscaloosa) present. A small amount of loose sand (prob. caving.)
Sample remain like the above to 3062-82' where more loose s. is present in the sample.

3082-97' Sample composed of about 50% quartz s. (fine to mod. coarse) frags of several types of light gray s.s. & small frags of flaky gray sh. A considerable amount of cavings.
Same to -

3107-22' Approx. top of the Lower Tuscaloosa. Point shown on Schlumberger as about 3085. ~~? Eocene~~ Sample composed mainly of fine to coarse angular to sub-angular quartz s. with some frags of waxy green sh. & numerous ankorite pellets. ~~Some frags of gray sh & of various types of s.s. for the most part~~

3142-57 Large sample composed mainly of fine to coarse, roughly angular quartz s. Some frags of gray sh. - gray s.s. & some shell frags. (all of this possibly caving) Some frags of unctuous grey-green. A few frags of cream colored feldspar present.

Same to 3177'. Some lt. brown ankorite pellets. Some cavings

3177-3201' Like the above, with the addition of a few frags of red-brown micaceous sh.

3197-3212 Same as above & some frags of red-brown & gray mottled sandy, micaceous sh.

~~Top of basal Cret. at section~~

Same to

3217-27' Like the above - coarse sand grains relatively more abundant. Large mica flakes common.
About top of coarse basal s. section on Schlum.

3259-62' Sample mainly mod. fine to coarse s. mainly qtz - with some white & a little pale pink feldspar. Some ffags of red-brown & gray sandy, micaceous mottled sh. & a few of rasberry colored, finely sandy mica. sh. ~~Some gray sh. (prob. caving).~~
Same to -

3298-3314' Sample almost entirely mod. fine to coarse qtz s. with greenish yellow grains fairly common. White feldspar also present. A few grains noted.
Like the above to -

3408-23' Mod. fine to very coarse -roughly angular clear qtz s. Many greenish yellow & a few pink grns. White feldspar more common than above.

3423-38' L. Cret.(?) Like the above with many frags of a coarse grnd - feldspathic s.s. of quartz & much pink feldspar.
Similar to the above but with few frags of the felspathic s. to-
This is a questionable L. Cret. Top 3499.

3499-3514' Sample of s. as above with many frags of a dark brownish red & gray mottled, hard, finely mica. sh. of a type common in what has been considered L. Cretaceous parts of section.

L. Cret.
Louise put a second possibility at 3850 - just below which pt. she found the first line nodules. Her higher point is 3150, above another set of red mica. sandy sh.

Tallahassee, Fla
~~Feb 1945~~ July, 1945

Ga-EA-OT-1

Aug. 1948
Dun Co. Samples.
Tallahassee, Fla.

LOWER PART OF MONT WARREN #1 CHANDLER

Early County, Georgia

34

2540-55' Cutting mainly fine to coarse qtz. sand with numerous fragments chips of glauconitic and phosphatic cal. white sandstone, some ~~fragments~~ of which carry fragments of Ostrea sp. and some Bryozoan. Small fragments of flaky gray-green unctuous shale (in part slightly carbonaceous) also present. Some cavings of material and micro-fossils from higher depths.

2565-95' Like the preceeding. Phosphatic nodules more abundant.

2568-78' No change.

2590-605' Cutting mainly fine to very coarse clear qtz. sand. Some fragments of fossiliferous sandstone and some of Ostrea sp. but much less abundant. Fragments of gray-green shale slightly increased ~~in numbers~~.

2599-628' Sand as above, and some fragments of Ostrea, phosphatic nodules and fossiliferous sandstone. Green shale fragments present and slightly more common than above. Specimens of Valvulineria infrequen fairly common. Some specimens of Planulina eaglefadensis and var. fordensis Gimbelina moremani also present.

2605-20' Material like the preceeding.

2620-25' As above. Cavings somewhat more abundant.

2628-58' Cuts mainly sand as above. Some fragments of fossiliferous sandstone. Ostrea, phosphatic nodules, and flaky gray-green shale as above. Some cavings of other material and micro-fossils mainly from higher depths.

2635-50' No change.

2650-65' Sample almost entirely fine to moderately fine qtz. sand.

2668-88' Cutting fine to very coarse sand. Some fragments of white, slightly glauconitic and phosphatic cal. sandstone (some fragments with imbedded fragments of Ostrea sp.). A few fragments of Ostrea and some fragments of gray-green flaky and finely carbonaceous shale.

2688-703' Mainly fine to moderately fine sand. Some fragments of other material noted in preceeding sample.

2702-17' No change.

2717-33' No change.

2730-48' Sand as above. Fragments of fossiliferous sandstone and worn fragments of Ostrea sp. more common. Some fragments of flaky gray-green shale. Cavings of material, obviously from higher depths, also more abundant.

2748-63' Like the preceeding.

2764-79' No change.

2780-95' No change.

2810-25' This sample largely cavings of gray marl from much higher depths.

2825-40' Cutting fine to moderately fine quartz sand and abundant fragments of an Ostrea-like bivalve. Fossils apparently wash from a fine grained somewhat glauconitic and phosphatic cal. sandstone. A fossiliferous sandstone reef apparently present between these depths. Some cavings of gray marl and its micro-fauna as above.

2840-55' Like the preceeding. A few fragments of yellow-brown and light blue-green mottled shale and a few fragments of a slightly reddish-brown shale. A few of the fossiliferous sandstone fragments also carb.

2855-70' Cut, of fine to moderately fine sand. Many fragments of Ostrea and some of fine grained white fossiliferous sandstone as above. Cavings from higher depths also common.

2870-86' Material similar to above and abundant caving. Fragments of the gray-green shale somewhat more abundant.

2886-2901' Like the preceeding.

? Top of Lower Atkinson.

2886-901' Like the preceeding.

2901-17' Similar to preceeding. Gray-green shale fragments more common. Top Marine Sh. M. Atkinson. Base top of Lower member of Atkinson

2918-33' Similar to above. Fragments of a very fine grained hard cal. somewhat glauconitic and phosphatic micaceous sandstone fairly common.

2934-49' Similar to preceeding. Fragments of sandstone (some fragments with shell material) more common. Many fragments of gray-green shale and some fragments of a flaky, somewhat micaceous and carbonaceous shale present. Cavings common as above.

2947-62' Cutting mainly fine to coarse sand and fragments of flaky gray-green and gray shale abundant. Cavings common. A few fragments of the fine grained cal. sandstone described from slightly higher depths.

2962-78' Like the preceeding. Some fragments of a very highly micaceous and slightly carbonaceous fine grained sandstone.

2978-93' Sample smaller than above. Composed mainly of fragments of flaky dark brownish-gray and some gray-green shale. The brownish-gray shale is micaceous and slightly finely carbonaceous. Some fragments of the highly micaceous fine sandstone as above; some fragments of Ostrea; a little loose sand and cavings.

2993-007' Like the preceeding. One fragment of the highly micaceous sandstone shows small imbedded fragments of gray-green shale and a fragment of an arenaceous foram.

3007-22' Sample mainly fragments of dark gray flaky, micaceous shale. Some fragments of gray-green shale, a little sand and a few fragments of the micaceous sandstone. Some cavings from much higher depths. Specimens of Ammobaculites comprimatus and Trochammina rainwateri present in this sample. (Sec. #2 on slide).

3022-37' Material like the preceeding. Fauna Ammobac. comprimatus, Ammobac. bergquisti, Ammobac. agrestis, Ammobac. advenus. (Sec. 3 on slide).

3034-52' Material same as above. Fauna present. Ammobac. bergquisti, Ammobac. braunsteini, Ammobac. agrestis, Ammobac. cf. fragmentarious Ammobaculoides plummerae. and fragments of Polyphragma sp. (Sec. 4 on slide.)

3045-75' Sample mainly shale and some sandstone as above, but fine to coarse sand also common (about 25% of sample content). Fauna-Ammobac. advenus; Ammobac. bergquisti; Ammobac. comprimatus, Ammobac. agrestis fragments of Polyphragma sp.

3052-67' Cutting mainly flaky gray and greenish-gray shale. Some fragments of fine grained micaceous sandstone. A small amount of sand. Indigenous forams fairly common. Species present. Ammobac. advenus Ammobac. bergquisti; Ammobac. junceus; Ammobac. agrestis. (Sec. 5 on slide).

3067-82' Material as above and caving of several types of material from higher depths. Fragments of a silty and possibly nodular, light gray limestone fairly common. Loose sand forms about 50% of sample, which is larger than preceeding samples, where comparatively little sand was present.

3075-105' Sample composed mainly of fragments of soft, flaky gray shale. A few fragments of several types of sandstone noted at higher depths and a few fragments of Ostrea sp. A little loose sand. Approximate top L. Tuscaloosa on Schlumberger. 3085'.

3082-97' Shale as above and many fragments of white to light gray fine grained cal. and micaceous sandstone and siltstone; some fragments of silty, micaceous limestone. About 25% of sample, fine to coarse qtz. sand.

3095' = Top of Tuscaloosa lithofacies of Lower member of Atkinson

3097-112' Small sample of fine to moderately coarse, roughly angular qtz. sand. Many nods. of dark green glauconite and of pyrite.

3105-36' Sand as above. A little glauconite. Some fragments of shale and a few of several types of cal. sandstone and siltstone. Some of these ~~fragments~~ chips contain shell fragments.

3107-22' Sample mainly fine to coarse, roughly angular qtz. sand. A few pink grains. Many sideritic nodules and fairly numerous fragments of a dark brownish red uctuous ~~clay shale~~ mudstone.

3112-27' Cutting mainly fine to coarse, roughly angular qtz. sand. Some small fragments of several types of micaceous sandstone and siltstone.

3127-42' Cutting mainly sand as above. A few siderite nods. Some large flakes of colorless and pale green mica. A trace of glauconite.

~~3142-57'~~ Like the preceeding. No siderite nods. noted.

3145-71' Fine to coarse roughly angular qtz. sand. A few green tinted grains. A few large flakes of mica as above. A few phos. nods. and shell fragments, (probably caving).

3140

3177-201' Material as above. Also many siderite pellets and some fragments unctuous red-brown micaceous shale, slightly gray mottled. A trace of glauconite; possibly caving.

K

~~3182-97~~ Like the preceeding.

3197-212 Fine to very coarse roughly angular qtz. sand and fragments of the red-gray mottled and a few purplish-red somewhat silty clay shale. Some siderite pellets.

3201-30' Sand as above. Some brownish-red shale. A few fragments of an unctuous green shale and a few of light lavender.

3212-27' Mainly fine to very coarse sand. A few fragments of the varicolored shale. Some feldspar grains present in sand.

3230-60' Fine to very coarse, roughly angular qtz. sand. (A few grains of feldspar). Coarse grains very abundant. A few fragments of red and multi-colored shale.

~~3227-42~~ Like the preceeding. A few siderite pellets.

~~3242-57~~ Like the preceeding.

~~3259-62~~ No change.

3261-90' Sand as above. A few fragments of multi-colored clay shale.

~~3262-77~~ Like the preceeding.

~~3283-98'~~ No change.

3298-314' Sand as above, with a few small fragments of multi-colored clay shale. Very coarse grains of qtz. and some of feldspar common.

100

~~3314-29'~~ No change.

~~3329-44'~~ Sand as above. No shale and (3344-59) (3359-76) (3376-91) (3391-3408'). ~~Pos. top L. K.~~

3408-23' Sand in the above sample gradually changes from white to pinkish in appearance due to steady increase in amount of pink and yellow tinted feldspar and qtz. grains present. Sand remains coarse and roughly angular. ~~This sample like preceeding.~~

3414-30' Sand as above. Also numerous fragments of a dark brownish-red, gray mottled and dark purplish red-gray and mustard mottled shale. Some cavings and a trace of glauconite which may also be caving.

3423-38' Sand as above, but no shale fragments. Grains of pink feldspar very common.

3438-53' Sand as above. A few fragments of sandy pink lime nod. Feldspar grains still more abundant. ~~Aprox. top. L. Cret.~~

3453-69' Sand as above and a few fragments of a dark brownish red and blue gray mottled micaceous clay shale. L. K. in character.

3469-84' Roughly angular qtz. sand. Feldspar grains common. Coarse grains less abundant. Major part of sand fine to moderately fine.

3484-99' Sand as above. A few fragments of sandy mustard colored clay shale

3499-514' Sand similar to above. Coarse grains again common and many fragmen of dark brownish and ~~pur~~ purplish red gray mottled mica. clay shale.

3530-45' Fine to coarse sand (coarse grains rare) qtz. and some feldspar. A few fragments of multi-colored shale as above.

3545-61' Fine to coarse qtz. sand; a little feldspar; some fragments of red-blue-gray mottled shale.

3561-76' Like the preceeding - 3576-92' (shale fragments rare) (3592-3607) (3607-24') (3624-39').

3639-54' Cutting of fine to coarse sand. Some feldspar. Some fragments of dark red-blue-gray mottled micaceous shale.

3654-69' Like the preceeding (but little shale).

3669-85' Sand as above. No shale.

3685-700' Sand as above. Very little of mottled shale and (3700-16') (3716-31') (3731-47').

3747-62' Sand as above. Some mottled clay shale as above and some fragments of flaky-purplish gray micaceous shale. This shale has scattered qtz. grains.

3762-74' Fine to coarse sand, qtz. and some feldspar. A few fragments of brownish red-gray mottled clay shale, and a few of the purplish gray shale.

3762-92' Like the preceeding.

3792-803' Sand as above and many fragments of dark red, gray-mottled micaceous shale.

3807-22' Sand. Very few colored shale fragments and (3822-37') (3837-52').

3852-67' Sand as above. Fragments of red and gray and some mustard colored shale more common.

3858-83' Sand and a few shale fragments.

3867-82' Sand and a little dark red, gray mottled shale.

3882-97' Like the preceeding and (3883-3913') (3887-3912').

3912-27' As above. A little glauconite in this sample, apparently due to cavings present.

3918-43' Fine to coarse sand and some fragments of multi-colored shale and (3927-42') (3948-63') (3943-73') (3952-67').

3963-78' Sand as above and many fragments of brownish red-gray mottled micaceous clay shale. Some fragments of blue-green shale. Some mustard mottling in red and gray shale.

3978-94' Abundant fragments of dark brownish-red and gray-green mottled highly micaceous clay shale. A few pink, sandy limestone nods.

3984-009' Sand and about 50% fragments of shale as above.

4009-24' Fine to coarse, roughly angular sand of qtz. and some feldspar, and about 25% multi-colored shale fragments, as above.

4024-39' Sand as above and some increase in shale fragments (about 40%).

4038-54' Like the preceeding.

4052-69' Sand as above and about 50% fragments of dark brownish red-gray mottled clay shale.

4069-83' Fine to coarse sand and shale, as above, about 25%.

4083-98' Fine to coarse sand and about 50% small fragments of red and gray mottled clay shale. Numerous large nods. of dark green glauconite? (possibly caving). ~~Glauconite.~~

4098-115' Like the preceeding. Some of sand grains green stained, possibly from the glauconite? which seems to be coming from approximately this level.

4115-30' Fine to coarse sand. Coarse glauconite? as above and many green tinted grains of sand. Phosphatic fish remains and a few other phosphatic fragments. A little multi-colored shale.

4130-46' Like the preceeding and (4146-61') (4161-76').

4176-207' Sand and glauconite? as above. Fragments of red and gray mottled shale fairly common of a hard (possibly nodular) very finely sandy ~~dull~~, light red limestone.

4207-22' Fine to coarse qtz. sand. Many green tinted grains. About 25% large nods. of dark green glauconite(?) A small amount of red and gray mottled clay shale. A few phosphatic nods.

4222-37' Like the preceeding. Shale fragments more common.

4237-52' Sand and glauconite as above. More shale fragments. A few fragments of the red (nods?) limestone. nodular(?)-

4252-67' Like the preceeding and (4267-82') (4282-97').

4297-312' Sand as above. Glauconite less common. Shale fragments rare. No limestone noted.

4312-27' Like the preceeding.

4327-42' Sand and glauconite as above. Some red shale and a few fragments of dull red nods. Limestone.

4342-57' Sand as above. Little shale and no limestone. Glauconite(?) and green tinted sand grains becomming less common. also.

4357-72' Like the preceeding. A few small red limestone nods.

4372-87' Sand. Glauconite. Numerous fragments of red-gray mottled micaceous and sandy clay shale. Some red limestone nods also.

4387-91' Like the preceeding.

4391-406' Fine to moderately coarse qtz. sand. Qtz. and some feldspar. No green tinted grains. Some glauconite(?) (possibly caving) and some red shale.

4406-22' Like the preceeding.

4422-37' Fine to coarse sand. Mainly qtz. Numerous fragments of red-gray mottled micaceous clay shale. ~~A little glauconite (probably caving)~~ A few red lime nods also.

4437-52' Mainly fine to coarse qtz. sand. ~~A little shale and glauconite.~~

4452-67' Sand as above and many fragments of red-gray mottled micaceous shale. ~~A little glauconite~~.

4467-83' Like the preceeding.

4483-98' Sample mainly fragments of a hard, cream colored dense limestone showing a trace of glauconite and a few small ostracods. A few large chert fragments and some gray clay shale. (May be out of place.) note - this sample definitely out of place, E.W.A.

4498-513' Fine to coarse sand, qtz. and small amount of feldspar. About 20% small fragments of the red shale. ~~A little glauconite~~.

4513-28' Like the preceeding.

4528-44' Fine to very coarse sand with many large deep yellow-tinted grains. Some fragments of dull red and gray mottled shale. ~~A trace of glauconite~~.

4544-59' Like the preceeding. Some cavings.

4559-74' Fine to coarse sand like the above in character. ~~Little shale~~ and glauconite.

4574-89' Like the above (4589-4604' same, but sand averaging finer grained) 4604-19' no change.

4619-34' Like the preceeding but glauconite(?) more common (probably caving).

4624-37' Fine to coarse sand and fragments of red-gray mottled micaceous shale common. ~~A little glauconite~~.

4639-54' Fine to coarse qtz. sand. Some fragments of red gray mottled micaceous shale. ~~Some glauconite~~.

4654-69' Like the preceeding.

4669-84' Sand as above. QLittle shale. Some glauconite(?) which may be caving.

4684-99' (140) No change and (4699-4714') (4714-29') (4726-49') (4744-59') (4759-74') (4774-83') (4783-98') (4798-4814') (4814-29') (4829-46') (4846-61') (4861-76') (4876-91') (4894-4909') (4909-24') (4924-40') (4940-55) (4955-69') (4969-84') (4984-99') (4998-5013') (5013-28') (5028-43') (5043-58') (5058-88') (5088').

(200)

5

5901' Mainly fine to coarse sand. Some cavings. A few fragments of red shale. Green tinted grains fairly common.

5901-106' Sand as above and a few fragments of dark purplish red clay shale.

5135-53' Sand as above. A few fragments of red shale. Some glauconite(?) and cavings of gray marl from much higher depths.

5153-68' Like the preceeding. Glauconite(?) still caving in.

5168-83' As above. (Samples probably not representative, since Schlumberger suggests shale.)

5183-98' No change and (5198-5203')

5205-35' Cutting of fine to coarse sand mainly qtz. with some green tinted and a few pink or yellowish tinted grains and a few grains of feldspar, ~~some nods of dark green glauconite (probably caving)~~, some fragments of dark dull red, gray mottled micaceous and somewhat sandy clay shale and an occasional nod of the red and gray silty limestone. Cavings of gray marl and some other material from much higher depths.

5233-38' Like the preceeding.

5238-64' No change. Also (5264-79) (5279-94) (5294-5309').

5309-25' Sand similar to above but coarse grains rare. A few fragments of a finely mottled purplish red-gray and green, clay shale present. ~~Glauc. lime nods.~~ and cavings ~~same~~ as above. Pre Trinity? A. Zone.

5340-50' Fine to coarse sand. Some red shale as above. Some purplish red and purplish gray highly sandy and micaceous shale. A few fragments of a very fine grained highly micaceous sandstone. Some cavings ~~and glauconite~~ as above.

5354-69' Sand as above. Fragments of the purplish red-gray and some green highly micaceous, sandy clay shale fairly common. A few fragments of red and white lime nods. ~~Some glauconite and cavings as above.~~

5369-416' No change and (5410-37') (5416-31') (5437-52')

5425-65' Sand as above and many fragments of dark purplish red, and gray highly micaceous sandy shale. A number of fragments of a bright yellow highly micaceous sandy shale. Some lime nods and other materials as above. See lith slide, numbers 13 thru 24.)

52-65

5465-80' Similar to above but less shale present.

5480-95' No change and (5495-5510') (5510-26') (5526-41').

5541-55' Mainly sand. A small amount of shale fragments. ~~Glauconite, lime nods and cavings as above.~~

5555-70' No change. Same for (5570-86') (5586-5601') (5601-16') (5616-31') (5631-45') (5546-61') (5661-71').

5677-92' ~~Many~~ fine to coarse qtz. sand. Many green tinted grains. Some glauconite (possibly caving) and a few fragments of the red micaceous shale and of red lime nods.

5692-707' No change. Same for (5722-27').

5777-92' Fine to coarse sand mainly qtz. and a few fragments of dark red shale. A few of light blue-green (Some of these fragments highly silty and micaceous).

5780-96' Fine to coarse sand. Some glauconite. Some fragments of the red and light green shale as in the preceeding. Some red and white sandy lime nods.

5792-807' Like the above ~~but no glauconite~~.

5796-811' Mainly fine to moderately coarse sand. ~~Some glauconite~~. A few shale and nod. limestone fragments.

5811-29' Like the preceeding. Also (5827-42') (5823-53') (5842-56') (5856-71') (5871-87') (5887-5902') (5902-17') (5917-32') (5932-47') (5947-63') (5967-77') (5977-92') (5992-6007').

273

6023-38' Core. Rec. 8'. Top. Fine grained thinly laminated argilaceous and highly micaceous sandstone. Light greenish gray and pinkish in color. Both black and green mica flakes common. Sand grains very fine to moderately fine, roughly angular, etched. Part of sandstone apparently with white ashy cement.
3' from top. Fine to very coarse white, soft sandstone. Some small pebbles present. Cement is white and ashy.
Middle. Light green micaceous very fine grained sandstone similar, except in color to top of core.
Bottom. Soft, light green bentonitic and micaceous sandstone. Sand grains fine to moderately coarse roughly angular etched qtz.

6024-39' Cut of fine to coarse qtz. sand. A few fragments of red shale. ~~Some glauconite (probably caving) and cavings of gray marl from~~ much higher depth. Some phosphatic material. Also probably ~~caving~~. Some cavings.

6039-54' Like the preceeding with addition of a few red or pinkish lime nods.

6054-69' No change. Same for (6069-84') (6084-6100') (6100-16') (6116-32') (6132-50') (6150-66') (6166-80') (6180-90'). 287

6191-207' Sample almost entirely fine to moderately fine sand. A few coarse grains and a few fragments of red, gray mottled shale. ~~Glauconite still common, still probably caving~~.

6207-22' Like the preceeding.

6221-36' Sand, fine to coarse, qtz. and a little feldspar. Many small fragments of dark, dull red, gray mottled micaceous shale. Some red and pinkish lime nod. ~~Glauconite still~~ common and probably caving, some phosphatic material.

6236-52' Like the preceeding. Same for (6252-67') (6267-80') (6280-95') (6295-6313') (6313-28') (6328-43') (6343-58') (6358-74') (6374-89') (6389-6403') (6403-18') (6418-34') (6434-49') (6449-64') (6464-79') (6479-95') (6495-6510') (6510-25') (6525-40') (6540-55') (6555-70') (6570-85') (6585-6600'). 300

6600-07' Core. Top. Rec. 3'. Dull brick red clay shale sandy. Sand fine to moderately fine, qtz., rather evenly distributed about 10% of material. Some molds and impressions of small fossiliferous bivalves noted; a small amount of mica and some small greenish, yellow, unctuous inclusions. ~~(glauconite ?)~~ (28,29 & 30) (37-41) on slide.
Middle. Dark reddish brown and bright greenish blue streaked finely micaceous and somewhat silty shale (31-36) (42 & 43).
Some of the shale fragments have unctuous yellow brown inclusions.
Bottom. Greenish blue and dull reddish brown silty, splintery shale like the preceeding. Pre Trinity. B. Sarcastic ?, or weather[illegible]

6600-15' Fine to coarse sand with some fragments of shale and clay shale as in the core described above. One large fragment of white and one of red-stained quartzite.

6616-31' Fine to coarse sand (probably caving) and fragments of several types of shale including fragments of a smooth splintery, finely flaky reddish brown-dull red and yellowish green streaked shale. (49-50 on slide).

6631-46' Like the preceeding. A few fragments of some multi-colored lime nods which may be coming from approximately this depth.

6646-61' Sand as above. Fragments of multi-colored shale of several types and some multi-colored lime nods. ~~Some glauconite~~ and a small amount of other material caving from much higher depths.

6661-82' Like the preceeding.

6682-95' Sand and shale fragments as above. Also a few fragments of a bright greenish blue bentonitic ? shale and of a very fine grained reddish and greenish gray, in part finely yellow speckled sandstone (54-57) on slide.

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6697-707' Sand and fragments of several types of red, brown and blue shale noted in preceeding samples.

6707-22' Cut of sand (sand content of samples now about 50% - in comparison to 75 to 90% - about 100' higher in section. Majority of sand probably caving through out the shale section). Fragments of various types of multi-colored shales as above. Also many fragments of a dark reddish brown-greenish blue streaked shale (new to the section). See 58-60 on slide 1 and (1-7 slide 2). Some traces of small fos. impressions in this shale. altered Paleoz(?)

6722-37' Like the preceeding and in addition a few fragments of a bright blue-green micaceous siltstone. (#s. 8-9-10- slide 2).

6737-52' Cuttings of sand, shale and some siltstone as above. Fragments of dull brownish red and greenish blue streaked shale, green siltstone and bright blue green unctuous (bentonitic?) shale common. # (11&12) (25-28 on slide 2) ~~one fragment of flaky black shale~~ (possibly caving from M. Atkinson).

6752-66' Like the preceeding ~~but no black~~ shale.

6766-81' Cutting about 75% sand (probably caving for the most part) and 25% fragments of vary colored, several types of shale noted in samples 6600' and below. A few fragments of the green siltstone; a few lime nod. ~~A few fragments of the black shale~~ (probably M. Atkinson and a foram ~~from that horizon~~) one fragment of black shale probably from near this depth. First black shale.

6781-96' Like the preceeding. More fragments of the black shale.

6796-811' Like the preceeding. Also (6811-37') (6827-42').

6842-59' Similar to the above. Fragments of dark reddish brown smooth and splintery shale very common. Little black shale.

6857-72' Like the preceeding.

6872-88' Cut of sand and vary colored shale as above. Dark brownish red shale still very common but fragments of blue green shale also abundant. Only a few fragments of waxy black shale noted.

6888-903' Like the preceeding. A few fragments of black shale also present. (A flaky, smooth, splintery shale and a more rough textured, micaceous shale with conchoidal fracture). Paleozoic

6903-18' Like the preceeding. Also (6918-33') (6933-48').

6948-63' Cutting nearly all shale, mainly brownish red, red-brown and green, some black. A few fragments typical Paleozoic black shale (See 35 and 36 on slide #2).

6965-85' Core top. Smooth dark gray thinly laminated shale, in part highly micaceous and highly and finely pyritic. Small particles of carbonaceous material also present. Some fragments silty. Another portion of same core. hard, dark gray laminated micaceous siltstone . Scattered fine particles of carbonaceous material present.

Middle. Dark gray laminated shale. Some fine particles of carbonaceous material. A few Lingulas.

Bottom. Like the middle (40-42 on slide 2).

6985-006'5 Core. Rec. 20'. Black Paleozoic Shale. Lingulas present. 37-40 on slide 2.

7009-24' Cut. of sand, vari-colored shale and some of the black Paleoz. shale as in the cores above.

7024-39' Like the preceeding. Black shale fragments more abundant.

7039-54' No change.

7054-69' No change. Same for (7069-84') (7084-7100') (7100-15') (7115-30') (7130-45') (7145-60') (7161-76') (7176-71') (7191-7206') (7201-21') as above and cavings from reeming.

7221-36' A little sand, fragments of vari-colored shale and black Paleozoic shale. A few fragments of light tan dense, fine grained sandstone. (53-60 on slide).

7236-51' Like the preceeding.

7251-66' Like the preceeding. Some fragments of slightly coarser grained sandstone. A few fragments quartzitic in appearance.

7266-84' Like the preceeding.

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E. R. Applin

9

GA-EA-OT-1

CORE RECORD

Warren-Chandler #1
Early Co., Ga.

Core #1 to Core #5
I cannot give a description of these cores as someone removed my core record from the tablet in my car while I was at the well yesterday for teh Schlumberger run.

However a very representative cut of each core was sent in.

Sidewall core #	Recovery	Depth	Description
1	0	7276	Broken bullett
2	0	7276	" "
3	lost	6531	
4	lost	6531	
5	lost	6432	
6	½"	6283	Med. coarse greenish-grey sl. silty sand.
7	lost	6043	
8	1½"	5763	" " " " " "
9	lost	5634	
10	lost	4400	
11	1½"	4056	" " " " " "
12	1¼"	3990	" " " " " "
13	lost	3919	
14	2"	3874	Red shale with grey arenaceous spots
15	lost	2525	
16	1½"	2475	Coarse grey water sand
17	1¼"	1325	Dark grey aren. cal. sandy shale(fossiliferous?)
18	1¼"	1215	Grey sdy. glauc. marl

Mr. Warren said he would bring these cores by our office for your inspection on his trip to Texas.

#1	6023-6038	Rec. 8'	Green and greenish grey, Micaceous (also a dark mineral) sand w/varying amounts of silt, argillaceous in streaks, fine to very coarse grained, conglomerate streak 3' from top, 6" from top was 18" hard streak that seems limey, and had 1 or 2 shale inclusions.
#2	6600-6607 (6630-6637 corrected)	Rec. 3'	Top foot brick red shale (foliated) Mid. foot red and green laminated shale w/"dike" Bot. foot as above but harder and more finely laminated
#3	6863-6873 (6893 6903 Corrected)	No Rec.	

6985
30
7015

#4	6965-6985 6995-7015	Rec. 20'	Black poker chip shale and fine very dark gr siltstone, micaceous also plant remains, "rain drops", in middle was a 6" streak of fine calcareous, grey green, sandstone
#5	6985-7006 7015-7036	Rec. 20'	Same as Core #4

(All but Core #1 add 30' to correct depth)

EA-OT-1

EARLY COUNTY

Operator: Mont Warren et al
Landowner: A. C. Chandler well 1
Location: Land District 26, Land Lot 406, 250 ft. north and 968 ft. west of southeast corner of north one-third of Land Lot 406

G.G.S. No. 121
Elevation: 187 ft. (derrick floor)
Total depth: 7320 ft.
Completed: Oct. 2, 1943

Summary of Stratigraphy

	Depth (feet)	Thickness (feet)
Tertiary		
Not studied		
Cretaceous		
Gulf		
Beds of Navarro age	1200	158
Beds of Taylor age	1358	472
Beds of Austin age	1830	565
Atkinson Formation, upper member	2395	520
lower member	2915	225
Comanche undifferentiated	~~2915~~ 3140	(2530(?) or 2637(?)
Triassic(?)		
Upper Triassic(?)		
Newark(?) Group	5670(?) or 5777(?)	930(?) or 823(?)
Devonian(?)		
Middle Devonian(?) Weathered(?) shale	6600	181
Devonian		
Middle Devonian[1] Black shale	6781	459
Ordovician(?)		
Lower Ordovician(?) White sandstone	7240	to total depth 80

[1]Swartz, F. M., 1949, Journal of Paleontology, v. 23, no. 3, p. 320, questionably classified the Black shale as "Late Ordovician or Early Silurian in age."
Bridge, Josiah, and Berdan, J. M., 1951, U.S. Geological Survey open-file report, p. 7, table 1, and map, tentatively classified the black shale as "Silurian or Upper Ordovician" and the underlying white sandstone as lithologically similar to rocks in wells in Florida which they had classified as Lower Ordovician.
J. M. Berdan (written communication to E. R. Applin, 1959) stated that on the basis of spores, J. M. Schopf, U.S. Geological Survey, classified the black shale as not older than Middle Devonian.

Litholo
and cu
Sample

Depth (feet)
0-1510
1200
1358
1510-1525
1525-1540
1540-1591
1591-1606
1606-1787
1787-1804
1804-1830
1830-1847
1847-1865
1865-1905

Lithologic and paleontologic description of cores and cuttings.

Samples are cuttings unless otherwise stated.

Depth (feet)	Description
0-1510	Samples not studied.
	Cretaceous
	Gulf Series
	Beds of Navarro age
1200	Top of Cretaceous by Southeastern Geological Society Mesozoic Committee, 1949, Mesozoic cross section E-E, Bullock County, Alabama to Franklin County, Florida.
	Beds of Taylor age
1358	Top of beds of Taylor age on the basis of the highest occurrence of *Stensiöina americana*.
1510-1525	Marl, dark gray; cream, hard, sandy limestone (fine-grained sand); fine to coarse-grained sand. Cuttings contain specimens of *Planulina dumblei* and other Taylor species.
1525-1540	Sample composed, mainly, of fragments of sandstone, sandy limestone, and gray marl; unconsolidated sand; a little glauconite. Specimens of several species of Foraminifera indicate the Taylor age of the beds; a few specimens from higher levels also occur.
1540-1591	Like sample at 1525-1540 ft.
1591-1606	Shale, gray, marly, highly microfossiliferous and fragments of light-gray, hard, sandy limestone. Specimens of several species of Foraminifera that indicate the Taylor age of the beds; fragments of *Inoceramus* and *Ostrea* sp.; specimens of Foraminifera from higher levels.
1606-1787	Like sample at 1591-1606 ft.
1787-1804	Like sample at 1591-1606 ft., but contains specimens of *Kyphopyxa christneri* and *Pseudogaudryinella capitosa* that are common in the lower part of the beds of Taylor age.
1804-1830	Like sample at 1787-1804 ft.
	Beds of Austin age (electric log correlation)
1830-1847	Like sample at 1787-1804 ft.
1847-1865	Like sample at 1787-1804 ft., but contains fragments of light greenish-gray marly shale. Coarse sand that composes part of the sample is probably caving.
1865-1905	Like sample at 1847-1865 ft.

Depth (feet)	Description
1905-1935	Sandstone, gray, hard, very fine grained, calcareous; fine to coarse-grained unconsolidated sand; many *Inoceramus* fragments; a little dark-gray marly shale. The microfauna is a mixture of specimens of species from various levels, but includes specimens of species that are common only in the lower part of the beds of Taylor age and the upper part of the beds of Austin age.
1935-1940	No sample.
1940-1955	Shale, gray, marly, slightly micaceous, and some sand and other materials like sample at 1905-1935. The microfauna contains specimens of *Darbyella brownstownensis, Kyphopyxa christneri,* and *Gaudryina ellisorae. D. brownstownensis* is common in the upper part of the beds of Austin age, and the accompanying species are common only in the lower part of the beds of Taylor age and the upper part of the beds of Austin age.
1955-1961	Like sample at 1940-1955 ft.
1961-1977	This sample contains the highest occurrence of specimens of *Globorotalites umbilicatus,* a form typical of the beds of Austin age.
1997-2000	Like sample at 1940-1955 ft.
2000-2015	This sample contains the highest occurrence of specimens of *Citharina texana.*
2015-2153	Like sample at 1940-1955 ft.
2153-2168	Sand, fine-grained; small fragments of gray marly shale; abundant *Inoceramus* fragments. The foraminiferal fauna is a mixture from various levels, as in all the foregoing samples, but contains specimens of species typical of the beds of Austin age, *Hastigerinella watersi, Dorothia alexanderi* and others.
2168-2230	Like sample at 2153-2168 ft.
2230-2245	Shale, gray, calcareous, and fragments of dark brownish-gray, somewhat light-speckled, flaky, slightly carbonaceous shale. Abundant *Inoceramus* fragments and specimens of Foraminifera are seemingly caving from various depths.
2245-2260	No sample.
2260-2275	Shale, gray, slightly calcareous, somewhat micaceous. The fauna is composed of *Inoceramus* fragments and fairly numerous specimens of Foraminifera from higher levels. Small specimens of *Globigerina* sp. and *Gümbelina* sp. are the dominant forms; *Globotruncana* sp., *Planulina* cf. *P. eaglefordensis,* and *Globorotalites umbilicatus* are fairly common.
2275-2364	Like sample at 2260-2275 ft.
2364-2380	Similar to sample at 2260-2275 ft., but with the addition of many fragments of dark brownish-gray, light speckled, marly shale; no marked change in fauna.
2380-2395	Like sample at 2364-2380 ft.

Depth (feet)
2395-2411
2411-2439
2439-2454
2454-2481
2481-2495
2495-2510
2510-2525
2525-2540
2540-2555
2555-2565
2565-2590
2590-2605
2605-2628
2628-2658

Depth (feet)	Description
	Atkinson Formation. Upper Member.
2395-2411	The upper member of the Atkinson Formation in this well is a shallow-water marine facies. Like sample at 2364-2380 ft., but with the addition of a few fragments of very fine grained, calcareous, micaceous, slightly glauconitic and phosphatic sandstone.
2411-2439	Like sample at 2395-2411 ft.
2439-2454	Like sample at 2395-2411 ft. but contains many fragments of the very fine grained sandstone, and a few fragments of light-gray, hard, micaceous, sandy (very fine grained sand) limestone.
2454-2481	Like sample at 2439-2454 ft., with the addition of many fragments of light-gray, moderately fine-grained, glauconitic, somewhat phosphatic sandstone containing many fragments of *Ostrea* sp.
2481-2495	Like sample at 2454-2481 ft., but this sample shows an increase in the fragments of the light-gray, fossiliferous sandstone.
2495-2510	Sandstone, light-gray, moderately fine to moderately coarse grained, clear quartz, containing glauconite, phosphatic material, and abundant fragments of *Ostrea*-like bivalves and bryozoan fragments.
2510-2525	Like sample at 2495-2510 ft. This sample is the highest occurrence of fragments of thinly flaky grayish-green shale.
2525-2540	Sand, unconsolidated, fine to moderately coarse grained, angular to subangular, quartz; fragments of the fossiliferous sandstone first observed in the sample at 2495-2510 ft.; and a few fragments of flaky grayish-green shale.
2540-2555	Sand, unconsolidated, fine to coarse-grained, quartz; many fragments of white, glauconitic, phosphatic sandstone containing bryozoan and shell fragments; a little grayish-green, flaky, unctuous, slightly carbonaceous shale.
2555-2565	No sample.
2565-2590	Like sample at 2540-2555 ft.
2590-2605	Sand, unconsolidated, fine to very coarse grained, clear quartz; fragments of fossiliferous sandstone and shells (*Ostrea* sp.) like sample at 2540-2555 ft., but much less abundant; increase in fragments of grayish-green shale.
2605-2628	Sand, unconsolidated, like sample at 2590-2605 ft.; fragments of *Ostrea* sp., phosphatic nodules, and fossiliferous sandstone; fragments of green shale slightly more common than in sample at 2590-2605 ft. Specimens of *Valvulineria infrequens* fairly common; *Planulina eaglefordensis* and *Gümbelina moremani* also present. This sample seems to indicate a brief change to a deeper-water marine environment.
2628-2658	Sand, unconsolidated, like sample at 2605-2628 ft.; fossiliferous sandstone; fragments of *Ostrea* sp., flaky green shale, and phosphatic nodules.

Depth (feet)	Description
2658-2668	Sample almost entirely unconsolidated, fine to moderately coarse-grained quartz sand.
2668-2688	Sand, unconsolidated, fine to very coarse grained; white, slightly glauconitic, phosphatic, calcareous sandstone, containing embedded fragments of *Ostrea* sp.; grayish-green, flaky, carbonaceous shale.
2688-2703	Sample, mainly, unconsolidated fine to moderately fine-grained sand; a few fragments of other material like sample at 2668-2688 ft.
2703-2730	Like sample at 2688-2703 ft.
2730-2748	Sand, like sample at 2688-2703 ft.; fragments of fossiliferous sandstone and *Ostrea* sp. common; a few fragments of flaky, grayish-green shale; much caved material from higher levels.
2748-2825	No change.
2825-2840	Sand, unconsolidated, fine to moderately fine grained, quartz; abundant fragments of an *Ostrea*-like bivalve. Fossils apparently wash from a fine-grained, somewhat glauconitic, phosphatic, calcareous sandstone. The well may have penetrated a shell reef at this depth.
2840-2855	Like sample at 2825-2840 ft., and in addition, a few fragments of yellowish-brown and light bluish-green mottled shale, and reddish-brown shale. A few of the fossiliferous sandstone fragments are carbonaceous.
2855-2870	Sand, unconsolidated, fine to moderately fine grained; many fragments of *Ostrea* sp., and a few fragments of white, fine-grained, fossiliferous sandstone; many cavings from higher levels.
2870-2915	Like sample at 2855-2870 ft.; fragments of grayish-green shale are more common.
	Atkinson Formation. Lower Member.
2915-2934	Like sample at 2870-2915 ft., but fragments of hard, very fine grained, calcareous, somewhat glauconitic, phosphatic, micaceous sandstone are fairly common.
2934-2949	Like sample at 2915-2934 ft., but fragments of sandstone are more common, and some of them contain embedded shell debris. Sample contains many fragments of grayish-green shale, and a few fragments of grayish-green shale, and a few fragments of flaky, somewhat micaceous, carbonaceous shale.
2949-2962	Sand, unconsolidated, fine to coarse-grained, and abundant fragments of gray and grayish-green, flaky shale.
2962-2978	Like sample at 2947-2962 ft., and a few fragments of very highly micaceous, slightly carbonaceous, fine-grained sandstone.
2978-2993	Shale, dark brownish-gray, flaky, micaceous, slightly carbonaceous, and a little grayish green shale; a little highly micaceous sandstone like the sample at 2962-2978 ft.; fragments of *Ostrea* sp.

Depth (feet)	
2993-3007	Li
3007-3022	Sh
3022-3037	Li
3037-3052	Li
3052-3067	Sh
3067-3082	Li
3082-3097	Sh
3097-3112	Sa
3112-3127	Sa
3127-3142	Sa
3140	
3142-3157	Li
3157-3172	Sa

[1]Samples from 3007 of the so-called Prof. Paper 264-I, p

Depth (feet)	Description
2993-3007	Like the sample at 2978-2993 ft.; contains a fragment of the highly micaceous sandstone that shows embedded fragments of grayish-green shale, and a fragment of a specimen of an arenaceous species of Foraminifera.
3007-3022	Shale, dark-gray, flaky, micaceous; grayish-green shale; a little sand and a few fragments of micaceous sandstone. The sample contains specimens of *Ammobaculites comprimatus* and *Trochammina rainwateri*.[2]
3022-3037	Like the sample at 3007-3022. The microfauna is composed of specimens of *Ammobaculites comprimatus, A. bergquisti, A. agrestis, A. advenus.*
3037-3052	Like sample at 3007-3022 ft. The microfauna is composed of specimens of *Ammobaculites bergquisti, A. agrestis, A.* cf. *A. fragmentarious, Ammobaculoides plummerae, Ammotium braunsteini,* and fragments of *Polyphragma* sp.
3052-3067	Shale, gray and greenish-gray, flaky; a little fine-grained micaceous sandstone; a little unconsolidated sand. The microfauna is composed of specimens of *Ammobaculites bergquisti, A. junceus, A. agrestis.*
3067-3082	Like sample at 3052-3067 ft., and cavings of several kinds of material from higher levels; unconsolidated sand composes about 50 percent of the sample. Fragments of light-gray, silty, possibly nodular limestone are fairly common.
3082-3097	Shale, gray, soft, flaky, and many fragments of white to light-gray, fine-grained, calcareous, micaceous, sandstone and siltstone; a little silty, micaceous limestone. About 25 percent of the sample is unconsolidated fine to coarse-grained quartz sand.
3097-3112	Sand, unconsolidated, fine to moderately coarse grained, roughly angular, quartz; many nodules of dark-green glauconite and of pyrite.
3112-3127	Sand, unconsolidated, fine to coarse-grained, roughly angular quartz; fragments of several kinds of micaceous sandstone and siltstone.
3127-3142	Sand, like sample at 3112-3127 ft. Sample contains a few nodules of siderite, large flakes of colorless and pale-green mica, and a trace of glauconite.
3140	Comanche Series undifferentiated (electric log correlation)
3142-3157	Like sample at 3127-3142 ft., but contains no nodules of siderite.
3157-3172	Sand, unconsolidated, fine to coarse-grained, roughly angular quartz; a few green-tinted grains; a few large flakes of mica. Phosphate nodules and shell fragments are probably caving.

[2] Samples from 3007 to 3067 feet contain specimens of species of Foraminifera characteristic of the so-called "Barlow" fauna described by E. R. Applin, 1955, U.S. Geological Survey Prof. Paper 264-I, p. 187-197, pls. 48 and 49.

Depth (feet)	Description
3172-3182	No sample.
3182-3197	Like sample at 3157-3172 ft.
3197-3212	Sand, unconsolidated, fine to very coarse grained, roughly angular quartz; fragments of red and gray mottled shale and purplish-red, silty clay shale; a few siderite nodules.
3212-3227	Sand, unconsolidated, fine to very coarse grained, containing grains of feldspar; a little varicolored shale.
3227-3242	Like the sample at 3212-3227 ft. A few siderite nodules present.
3242-3298	No change.
3298-3314	Sand, unconsolidated, fine to very coarse grained, quartz; very coarse grains of quartz and grains of feldspar are common; a few small fragments of multi-colored clay shale are present.
3314-3329	No change.
3329-3408	Sand, like sample at 3298-3314 ft., but no shale present.
3408-3423	Sand, unconsolidated, coarse-grained, roughly angular. The color of the sand in the samples from 3329 to 3423 ft. changes progressively with depth from white to pink because of the steady increase of pink and yellow-tinted grains of feldspar and quartz.
3423-3438	Sand, like sample at 3408-3423 ft., but no shale; grains of pink feldspar very common.
3438-3453	Sand, like sample at 3408-3423 ft.; a few nodules of pink sandy limestone; feldspar grains abundant.
3453-3469	Sand, like sample at 3408-3423 ft., and a few fragments of dark brownish-red and bluish-gray mottled clay shale.
3469-3484	Sand, unconsolidated, fine to moderately fine, roughly angular quartz; a few coarse grains present; feldspar common.
3484-3499	Sand, like sample at 3469-3484 ft., and a few fragments of sandy, mustard-colored clay shale.
3499-3514	Sand, like sample at 3469-3484 ft., but coarse grains again common; many fragments of dark-brown and purplish-red and gray mottled, micaceous clay shale.
3514-3530	No samples.
3530-3545	Sand, unconsolidated, fine to coarse-grained, quartz; coarse grains rare; a little feldspar and a few fragments of multicolored shale.
3445-3639	No change.
3639-3747	Sand, unconsolidated, fine to coarse-grained; a little feldspar and a few fragments of dark-red and bluish-gray mottled, micaceous shale. No shale in sample at 3669-3685 ft.
3747-3762	Sand and a little mottled shale like the samples from 3639 to 3747 ft.; a few fragments of flaky, purplish-gray, slightly sandy, micaceous shale.
3762-3803	Sand, unconsolidated, fine to coarse-grained, quartz; a little feldspar; a few fragments of brownish-red and gray mottled shale; a little purplish-gray shale.

Loc

Depth (feet)
3803-3807
3807-3867
3867-3967
3967-3978
3978-3994
3994-4009
4009-4024
4024-4083
4083-4098
4098-4115
4115-4176
4176-4207
4207-4237
4237-4297
4297-4327
4327-4342

Depth (feet)	Description
3803-3807	No sample.
3807-3867	Sand like the samples from 3762-3803 ft.; fragments of red, gray and mustard-colored shale more common.
3867-3967	Sand and a little multicolored shale like the samples from 3807-3867 ft.
3967-3978	Sand like the samples from 3867-3967 ft., and many fragments of brownish-red and gray mottled micaceous shale; a few fragments of bluish-green shale; a few fragments of red, gray, and mustard-colored mottled shale.
3978-3994	Shale, dark brownish-red, grayish-green mottled, highly micaceous; a few nodules of pink sandy limestone.
3994-4009	Shale, like the sample at 3978-3994 ft., 50 percent; unconsolidated sand 50 percent.
4009-4024	Sand, unconsolidated, fine to coarse-grained, roughly angular, quartz, and a little feldspar about 75 percent; multicolored shale fragments about 25 percent.
4024-4083	Sand and multicolored shale like the sample at 4009-4024 ft.; the amount of shale in the samples ranges from about 25 to 50 percent.
4083-4098	Sand, unconsolidated, fine to coarse-grained, 50 percent; 50 percent small fragments of red and gray mottled shale, and many large nodules of dark-green glauconite(?) or chlorite(?) that seem to come in at about this level.
4098-4115	Like the sample at 4083-4093 ft.; some sand grains are stained green, possibly from the glauconite(?) or chlorite(?).
4115-4176	Sand, unconsolidated, fine to coarse-grained; glauconite(?) or chlorite(?), and many green-tinted grains of sand; phosphatized fish remains and other phosphatic fragments; a little multicolored shale.
4176-4207	Sand, unconsolidated, and nodules of glauconite(?) or chlorite(?) like samples at 4115-4176 ft., fragments of red and gray mottled shale fairly common; fragments of red, hard (nodular?), sandy (very fine grained sand) limestone.
4207-4237	Sand, unconsolidated, fine to coarse-grained, quartz, containing many green-tinted grains, is about 75 percent of sample. Large nodules of dark-green glauconite(?) or chlorite(?), a little red and gray mottled clay, and a few phosphatic nodules, compose about 25 percent of sample.
4237-4297	Sand and glauconite(?) or chlorite(?) like sample at 4207-4237 ft., shale fragments, and a few fragments of red nodular limestone.
4297-4327	Sand like sample at 4237-4297 ft.; glauconite(?) less common; shale fragments rare; no red nodular limestone.
4327-4342	Sand and glauconite(?) like sample at 4297-4327 ft.; a few fragments of red shale and a few of dull-red nodular limestone.

Depth (feet)	Description
4342-4357	Sand like the sample at 4327-4342 ft.; a little shale and no limestone; glauconite(?) and green-tinted sand grains less common.
4357-4372	Like sample at 4342-4357 ft.; a few small nodules of red limestone.
4372-4391	Sand, unconsolidated; glauconite(?); numerous fragments of red and gray mottled, micaceous, sandy clay shale; a few nodules of red limestone.
4391-4422	Sand, unconsolidated, fine to moderately coarse-grained, quartz; a little feldspar, but no green-tinted grains; a little glauconite(?), possibly caving, and a little red shale.
4422-4437	Sand, unconsolidated, fine to coarse grained, quartz; numerous fragments of red and gray mottled micaceous clay shale; a few nodules of red limestone.
4437-4452	Sand, fine to coarse-grained, quartz.
4452-4483	Sand, like sample at 4437-4452 ft.; many fragments of red and gray mottled micaceous shale.
4483-4498	Limestone, hard, cream, dense, containing a trace of glauconite and a few small specimens of Ostracodes; a few large fragments of chert; a little gray clay shale. (Note: This sample is definitely out of place.)
4498-4528	Sand, unconsolidated, fine to coarse-grained, quartz, and a little feldspar, about 80 percent of sample; small fragments of red shale, about 20 percent.
4528-4559	Sand, unconsolidated, fine to very coarse grained, containing many large deep-yellow-tinted grains; a little dull-red and gray mottled shale.
4559-4634	Sand, like sample at 4528-4559 ft.
4634-4669	Sand, unconsolidated, fine to coarse-grained; fragments of red and gray mottled micaceous shale common.
4669-4684	Like sample at 4634-4669 ft., a little glauconite(?) which may be caving.
4684-5088	No change.
5088-5106	Sand, unconsolidated, fine to coarse; green-tinted grains common; a little dark purplish-red clay shale.
5106-5135	No samples.
5135-5168	Sand, like sample at 5088-5106, a little red shale, and cavings from higher levels.
5168-5205	No change. The samples questionably show the material penetrated by the drill at this level.
5205-5309	Sand, unconsolidated, fine to coarse-grained quartz, containing green-tinted grains, a few pink and yellow-tinted grains, and a little feldspar; fragments of dark, dull-red and gray mottled, micaceous, somewhat sandy clay shale, and sparse nodules of red and gray silty limestone; cavings of gray marl and other material from much higher levels.
5309-5325	Sand like samples at 5205-5309 ft., but coarse grains are rare; a

Depth (feet)
5325-5340
5340-5354
5354-5369
5369-5452
5452-5541
5541-5677
5672-5692
5692-5727
5727-5777
5777-5792
5792-5807
5807-6007
6007-6023
6023-6038

Depth (feet)	Description
	little purplish-red, gray, green-mottled shale; many cavings.
5325-5340	No samples.
5340-5354	Sand, unconsolidated, fine to coarse-grained; a little red shale; purplish-red and purplish-gray, highly sandy, micaceous shale; a little very fine grained highly micaceous sandstone.
5354-5369	Sand like sample at 5340-5354 ft.; fragments of purplish-red and gray clay; green, highly sandy, micaceous clay fairly common; a few nodules of red and white limestone.
5369-5452	No change.
5452-5541	Sand, like sample 5340-5354 ft., and many fragments of dark purplish-red, and gray, highly micaceous, sandy shale; several fragments of bright-yellow, highly micaceous, sandy shale; a few nodules of limestone.
5541-5677	Mainly sand and a small amount of shale.
5672-5692	Sand, unconsolidated, fine to coarse-grained, quartz, containing many green-tinted grains; a little glauconite (caving?), a little red micaceous shale; a few nodules of red limestone
5692-5727	No change.
5727-5777	No samples.

Triassic(?)

Upper Triassic(?) Series

Newark(?) Group

5777-5792	Sand, unconsolidated, fine to coarse-grained quartz; a few fragments of dark-red shale; a few fragments of light bluish-green shale, some of which are highly silty and micaceous.
5792-5807	Sand unconsolidated, fine to coarse-grained; red and light-green shale like the sample at 5777-5792 ft.; a few nodules of red and white sandy limestone.
5807-6007	No change.
6007-6023	No samples.
6023-6038	Core 1. Recovery 8 ft. Top. Sandstone, light greenish-gray and pink, thinly laminated, very fine to moderately fine grained, argillaceous, highly micaceous (black and green flakes). The sand grains are usually etched and roughly angular. Part of the sandstone has a white ashy(?) cement. Three feet from the top of the core, a streak of white soft sandstone is fine to very coarse grained and contains small pebbles, the cementing material is white and ashy(?). Middle. Sandstone, light green, very fine-grained, micaceous. Bottom. Sandstone, light green, fine to moderately coarse grained, micaceous, bentonitic. The sand grains are usually etched and roughly angular.

Depth (feet)	Description
6024-6039	Sand, unconsolidated, fine to moderately coarse grained, and a few fragments of red shale.
6039-6190	Like the sample at 6024-6039 ft., with the addition of a few nodules of pink to red limestone.
6190-6222	Sand, unconsolidated, fine to moderately fine grained; a few coarse sand grains and a few fragments of red and gray mottled shale.
6222-6600	Sand, unconsolidated, fine to coarse-grained, quartz, and a little feldspar; many small fragments of dull, dark-red and gray mottled micaceous shale; a few nodules of red and pink limestone.
	Devonian(?)
	Middle Devonian(?). Weathered(?) Shale.
6600-6607	Core 2. Recovery 3 ft. Corrected depth 6630-6637 ft. Top. Shale, dull brick-red, sandy. The sand, which is fine to moderately fine grained quartz, constitutes about 10 percent of the fragment of core, and is rather evenly distributed. The shale contains a small amount of mica, a few small inclusions of greenish-yellow unctuous clay, and molds and impressions of small fossil bivalves. Middle. Shale, dark reddish-brown and bright greenish-blue-streaked, micaceous, somewhat silty, containing yellowish-brown inclusions. Bottom. Shale, greenish-blue and dull reddish-brown, silty, splintery.
6600-6615	Sand, unconsolidated, fine to coarse-grained, and fragments of the shale like core 2 at 6600-6607 ft. The sample contains one large fragment of white quartzite, and one of red-stained quartzite.
6615-6631	Sand, unconsolidated, fine to coarse-grained (probably caving), and fragments of several types of shale, including fragments of smooth, splintery, flaky, reddish-brown and yellowish-green-streaked shale.
6631-6646	Like the sample at 6615-6631 ft. and a few fragments of multicolored limestone nodules that seem to belong near this depth.
6646-6682	Sand, like sample at 6615-6631 ft., and fragments of several types of multicolored shale and a few nodules of multicolored limestone.
6682-6697	Sand and shale fragments like sample at 6646-6682 ft., and in addition, a few fragments of bright greenish-blue bentonitic(?) shale, and of red and greenish-gray, yellow-speckled, very fine grained sandstone.
6697-6707	Sand and fragments of several types of red, brown and blue shale.
6707-6722	Sand, unconsolidated, about 50 percent of sample, in contrast to 75-90 percent in samples about 100 feet higher in this well; the sand is probably caving from higher levels. The sample contains various types of multicolored shale and many fragments of

Dep (fe

6722-

6737-

6766-

6781-

6842-

6863-

6872-

6888-

6948-

6965-

6985-

7006-

7009-

7024-

Depth (feet)	Description
	dark reddish-brown and greenish-blue-streaked shale which was not observed in samples from higher levels; the shale contains traces of impressions of small fossils.
6722-6737	Like sample at 6707-6722 ft., and in addition, a few fragments of bright bluish-green, micaceous siltstone.
6737-6766	Sand, shale, and siltstone like sample at 6722-6737 ft. Fragments of brownish-red and greenish-blue-streaked shale, green siltstone, and bright blue-green bentonitic(?) shale are common in the sample.
6766-6781	Sand, unconsolidated, about 75 percent of sample. About 25 percent of sample is composed of fragments of several types of multicolored shale, green siltstone, and a few nodules of limestone. A fragment of black shale, which was not observed in samples from higher levels, is probably from near this depth.
	Devonian
	Middle Devonian. Black Shale.
6781-6842	Like sample at 6766-6781 ft.; increase in fragments of black shale.
6842-6872	Like sample at 6781-6842. Fragments of dark reddish-brown, smooth, splintery shale, very common; a little black shale.
6863-6873	Core 3. Recovery 0. Corrected depth 6893-6903 ft.
6872-6888	Sand, unconsolidated, and multicolored shale like sample at 6766-6781 ft. Fragments of bluish-green shale abundant; dark brownish-red shale common; a few fragments of black, waxy shale.
6888-6948	Like sample at 6872-6888 ft. A few fragments of black shale: a) smooth, flaky, splintery shale; b) rough-textured, micaceous shale having a conchoidal fracture.
6948-6965	Shale, mainly brownish-red, reddish-brown and green, and a little black shale.
6965-6985	Core 4. Recovery 20 ft. Corrected depth 6995-7015 ft. Top. Shale, dark-gray, smooth, thinly laminated, somewhat silty; in part, highly micaceous and highly pyritic (small crystals); small particles of carbonaceous material. Another part of the core is dark-gray, hard, laminated, micaceous siltstone, containing minute particles of carbonaceous material. Middle. Shale, dark-gray, laminated, containing minute particles of carbonaceous material, and a few specimens of *Lingula* sp. Bottom. Like the middle part of the core.
6985-7006	Core 5. Recovery 20 ft. Corrected depth 7015-7036 ft. Black shale containing specimens of *Lingula* sp.
7006-7009	No sample.
7009-7024	Sand, unconsolidated; multicolored shale, and black shale like core 4 (6965-6985 ft.) and core 5 (6985-7006 ft.)
7024-7039	Like sample at 7009-7024 ft.; fragments of black shale more abundant.

Depth (feet)	Description
7039-7221	No change. Samples contain much caved material.
7221-7251	Sand, unconsolidated; fragments of multicolored shale, and black shale; a little light-tan, dense, fine-grained sandstone.
	Ordovician
7240	Lower Ordovician(?). Quartzitic sandstone. (electric log correlation)
7251-7284	Like sample at 7221-7251 ft. Some fragments of the standstone are moderately coarse grained, and a few fragments seem to be quartzitic.
7284-7320	T.D. No samples.

EC-OT-3

ECHOLS COUNTY

Operator: Hunt Oil Company
Landowner: Superior Pine Products Co. Well #3
Location: Land District 13, Land Lot 532; 218 ft. east and 242 ft. north of southwest corner of Land Lot 532.

GGS No. 150
Elevation: 144 ft. (derrick floor)
Total depth: 4003 ft.
Completed: July 29, 1947

Summary of Stratigraphy

	Depth (feet)	Thickness (feet)
Tertiary		
Samples not studied		
Cretaceous		
Gulf		
Lawson Limestone, upper member(?)	2590(?)	80(?)
Beds of Taylor age	2670	280
Beds of Austin age	2950	370
Atkinson Formation, upper member	3320	145
lower member(?)	3465	160
Comanche(?) undifferentiated	3625	32
Ordovician		
Middle Ordovician[1] black shale and sandstone	3657 to total depth	346

[1]Bridge, Josiah and Berdan, J. M. 1951, U.S. Geological Survey open-file report, p. 5 and map.