FLA-LAF-OT-3
Brooks-Scanlon #1
Core Description

Core No.	Depth	Description
1	1645-50	Top - Dolomite, tan, medium crystalline, sacchrioidal, with highly developed vuggy porosity.
1	1645-50	Middle - Do. Extremely porous.
1	1645-50	Bottom - Dolomite Do in contact with light-grey dolomitic limestone, texture also medium crystalline and sacchroidal, with minor vuggy porosity.
2	1651-56	Dolomitic limestone as above. Trace of dark-grey waxy shale.
3	1656-61	Dolomite, tan to light-grey, medium crystalline, sacchrioidal, highly developed vuggy porosity.
4	1661-71	Dolomite, brown, fine crystalline, tight, dense.
5	1671-77	Dolomite as 1656-61.
6	1679-89	Dolomite as 1661-71 but tan in color.
7	1689-94	Dolomitic limestone, white, coarse crystalline, extreme intragranular and vuggy porosity developed.
8	1694-1704	Do with less porosity.
9	1704-14	Do but this is a dolomite rather than a dolomitic limestone.
10	1714-24	Dolomite as above with much vuggy porosity developed.
11	No recovery.	
12	3322-27	Top - Shale, dark-grey, blocky, calcareous (blebs of calcite).
12	3322-27	Middle - Do.
12	3322-27	Bottom - Siltstone, light-grey, calcareous, sandy.

13	3327-28	Siltstone Do.
13	3328-29	Do.
13	3329-30	Do.
13	3330-31	Limestone, Light-grey, medium crystalline, well indurated, slightly glauconitic (apple-green glauc).
13	3331-32	Do but argillaceous
14	3332-33	Siltstone, medium-grey, calcareous, slightly fissile.
14	3333-34]	Do
14	3334-35	Do
14	3335-36	Limestone, light-grey, highly sandy and argillaceous, poorly indurated.
14	3336-37	Do.
14	3337-38	Do, very highly argillaceous.
15	3338-39	Limestone as 3235-36
15	3339-40	Do.
15	3340-41	Do.
15	3341-42	Do.
15	3342-43	Limestone, tan, very coarse crystalline, very well indurated. Trace of phosphatized fish remains, shell material.
15	3343-44	Limestone, light-grey, microcrystrune,soft
15	3344-45]	Limestone, medium-grey with brown cast, coarse crystaline, well indurated.
15	3345-46	Sandstone, dark-grey, fine-grained, with dark-grey calcareous clay matrix $\pm$ 25% of sample. Friable
15	3346-47	Limestone, light-grey, well indurated, fine crystalline, very highly sandy.

Core No.	Depth	Description
15	3347-48	Limestone, very light-grey, medium crystalline, (recrystallized), massive, tight.
16	3348-49	Limestone, light-grey with tan cast, medium crystalline, well indurated. Trace of fossil casts and molds.
16	3349-50	Do interbedded with microcrystalline massive light-grey argillaceous limestones.
16	3350-51	Siltstone, light-dark grey laminated, calcareous, very finely micaceous.
16	3351-52	Limestone, light-grey, coarse crystalline, highly sandy, well indurated, with dark-grey siltstone partings.
16	3352-53	Shale, dark-grey, calcareous, fissile.
16	3353-54	Chalk, white, massive, hard, pure.
17	3358-59	Calcareous shale, light-grey, blocky to slightly fissile, pure.
17	3359-60	Do, laminated with thin beds of fine crystalline argillaceous limestone.
17	3360-61	Shale, calcareous, light-grey, with thin laminae of medium-grey shale and fine-crystalline limestone.
17	3361-62	Do.
17	3362-63	Limestone, medium-grey, medium crystalline, with argillaceous partings. Trace of phosphatized fish remains.
17	3363-64	Limestone, dark brownish-grey, sandy, argillaceous, poorly indurated.
18	3364-65	Shale, medium-grey, calcareous, highly fissile, much organic material.
18	3365-66	Shale as above laminated with medium-grey siltstone and fine-grained light-grey sandstone, slightly glaucomtic.
18	3366-67	Do.

Core No.	Depth	Description
18	3367-68	Shale, light-grey with green cast. Highly fissile, Calcareous, pure.
18	3368-69	Do with shale medium-grey.
19	3369-79	Top - Shale, medium-grey with green cast, calcareous, slightly fissile, pure.
19	3369-79	Middle - Do.
19	3369-79	Bottom - Do with a bed of phosphatized fish remains.
20	3379-89	Shale as above with no fish remains. Varies from blocky to fissile.
21	3389-90	Siltstone, medium-grey, calcareous, with traces of phosphatized fish remains. Has shale (as above) laminate.
21	3390-91	Shale as 3379-89, fissile.
21	3391-92	Limestone, medium-grey, fine crystalline, fairly well indurated, highly argillaceous.
21	3392-93	Shale as 3390-91 but blocky.
21	3393-94	Do
22	3395-3405	Top - Shale do but silty, micaceous, fissile.
22	3395-3405	Middle - Do but blocky, not silty or micaceous.
22	3395-3405	Bottom - Do.
23	3405-15	Mostly medium-grey limestone, argillaceous, fine crystalline, with fossil casts & molds. Some interbedded shale as above and minor fine-grained sand lenses. Mostly well indurated.
24	3415-16	Shale, dark-grey-brown, massive, blocky, calcareous.
24	3416-17	Do

Core No.	Depth	Description
24	3417-18	Do
24	3418-19	Do
24	3419-20	Do
24	3420-21	Do
24	3421-22	Do
24	3422-23	Do
24	3423-24	Do
24	3424-25	Limestone, Light-grey, well indurated, fine crystalline, argillaceous.
25	3425-34	Top - Shale as 3423-24.
25	3425-34	Bottom - Do.
26	3434-43	Shale Do, very blocky, with a few silty laminations.
27	3443-53	Top - Shale do, with no silt.
27	3443-53	Middle - Do.
27	3443-53	Bottom - Do.
28	3453-60	Shale as above.
29	3460-70	Do
30	3470-72	Sand, medium-grey with greenish cast, fine-grained, poorly indurated, highly micaceous and glauconitic (apple-green glauconite). Silty clay binder prominent.
30	3472-74	Do with thin dark-grey shale partings.
30	3474-76	Do
30	3476-78	Interbedded lithologies same but this interval is mostly shale with sand as lenses.
30	3478-80	Shale, dark-grey with olive-drab cast, massive, pure. Trace of fine sand, mica, apple-green glauconite.
31	3480-85	Top - Shale Do.

Core No.	Depth	Description
31	3480-85	Middle - Sand as 3470-72
31	3480-85	Bottom - Mostly sand Do, interbedded with shale as 3478-80. Beds ± 1/4 inch thick.
32	3485-86	Shale as 3478-80.
32	3486-87	Do, interbedded with sand as above. Thin laminated to thin-bedded. Roughly 1/2 & 1/2.
32	3487-88	Do
32	3488-89	All sand as above.
32	3489-90	Do
32	3490-91	Do
32	3491-92	Shale, dark-grey, slightly fissile, pure calcareous.
32	3492-93	Do
32	3493-94	Do with minor amounts of fine-grained sand, mica, & apple-green glauconite.
33	3494-3504	Top - Sand, fine-grained, light-grey, poorly indurated, slightly micaceous and glauconitic. Argillaceous matrix.
33	3494-3504	Middle - Do but highly glauconitic and micaceous, dark greenish-gray in color.
33	3494-3504	Bottom - Do, unconsolidated.
34	3504-14	Top - Sand, poorly consolidated, very pale green, highly micaceous and glauconitic. Silty matrix, off-white prominent.
34	3504-14	Middle - Do, very highly silty.
34	3504-14	Bottom - Do.
35	3514-24	Top - Siltstone, dark grey with greenish cast, poorly consolidated, highly micaceous.

Core No.	Depth	Description
35	3514-24	Bottom - Sand as 3504-14 Bottom
36	3524-34	Top - Sand Do.
36	3524-34	Bottom - Siltstone, very pale green with grey mottling, highly micaceous and glauconitic, poorly consolidated.
37	3534-44	Top - Do, a little better consolidated. No mottling.
37	3534-44	Bottom - Do with dark-grey siltstone laminae prominent.

with coarsely pitted appearance from solution and removal of original faunal content. Some fragments of dolomite macro-fossil molds.
Mid: Like the preceding. A few imbedded fragments of carbonaceous material.
Bot: Dense gray dolomitic limestone with some irregular light brown dolomite areas and coarse pitting as above. Some partial dolomite molds of macro-fossils. age ?

(Core #2-9 - Missing)

1704-14' Upper Lawson — Core #9. White, finely granular, porous dolomite fragments of molds of macro- and micro-fossils. A mold of Vaughanina? noted.

(Core #10?)

1724-29' — Core #11. White moderately coarsely granular highly porous dolomite abundant molds of micro- and macro-fossils, specimens of Vaughanina? and several definitely determinable specimens of Sulcoperculina cosdeni.

1772-80' — Cut. Sample composed mainly of dense, light cream colored limestone. A few molds of a large Camerina sp and traces of other fossils.

1780-90' — Finely nodular finely and highly porous light cream colored limestone, abundant traces of fragmentary micro-fossils molds and impressions, some inclusions of gypsum. Material apparently originally a coquina of fragmental fossil material.

1790-1800' — Like the preceding.

1800-10' — No change.

1810-20' — Material as above, also many fragments of a dense deep cream colored dolomitic limestone.

1830-40' — Cream colored, porous, nodular, crypto-crystalline limestone.

1840-50' — Porous, cream colored, moderately coarsely crystalline dolomite.

1850-60' — Like the preceding.

1860-70' — Coarsely crystalline to crypto-crystalline, porous, cream colored dolomite.

1870-80' — Like the preceding.

1880-90' — No change.

1890-1900' — Porous, coarsely crystalline cream colored dolomite. Some small anhydritic areas.

1900-10' — Like the preceding.

1910-20' — More finely crystalline, finely and highly porous, calcitic dolomitic and somewhat anhydritic limest

1920-30' — No change.

1930-60' — Similar to preceding, but deeper cream colored a highly cryptoporous

	specimens of Lepidorbitoides sp., Vaughanina sp., Robulus sp. A small Brachiopod and a small globular Blastoid-like comatulid and Bryozoan fragments common. (See #1-4 on slide).
1990-2000'	White somewhat dolomitic chalk, fauna as for preceding. Samples change rapidly to pure chalk with little dolomite. Fauna as above.
2180-90'	Samples again finely granular, light tan, dolomite with anhydrite and gypsum inclusions. (Same to 2330')
2330-40'	Dolomite and anhydrite as above and about 50% chalk.
2340-50'	Chalk about 75% - Dolomite and anhydrite about 25%. Many fragments of Inoceramus fragments of a small Brachiopod, some fragments of Pectin sp., many specimens of Cibicides harperi, some of Globotruncana arca and Bolivina incrassata. (See #6 & 7 on slide.) A few Ostracods also present.
2350-2450'	Like the preceding.
2450-60' Top of Taylor	Chalk as above and about 10% tan dolomite, many specimens Inoceramus fragments and prisms, numerous specimens of of Globototalia micheliniana, Anomalina scholtzensis, Stensionina americana, Anomalina cosdeni, Bolivina incrassata. (See #8 on slide).
2460-70'	Like the preceding. Taylor forams more abundant.
2470-80'	Chalk as above and about 25% dolomite. No change in micro-fauna except for the addition of some specimens of Bolovinoides decorata.
2610-20'	Like the above, but large nods of crystalline pyrite fairly common.
2630-40'	Chalk - about 10% dolomite and fauna similar to the above. Many Inoceramus fragments and prisms. A few fragments of light olive gray bentonitic shale. No change to 2730.
2730-40'	Chalk - about 10% dolomite. Inoceramus fragments and prisms common, often partly pyritised, some forams and some large barite crystals in chalk. Same with varying amounts of dolomite to 2860'. Samples between 2860-& 3060-70' poorly washed and not well dried, apparently soft, light gray chalk with many Inoceramus prisms and fragments. Some barite.
2970-80' Appx. Top Austin	Poorly washed samples of light gray chalk, Inoceramus fragments and prisms and some forams as above. Some fragments of light brown, somewhat speckled marl, characteristic of parts of the Austin section in this area. Approx. Top from Schlumberger 2960'. Fragments of brown, light speckled marly chalk becomes steadily more common in samples below this depth. Small Anomalinas, Globigerina and Gumbelina dominant forams species noted in better washed samples 3100 and below.

highly micro-fossil (forams and Inoceramus prisms light tan colored)chalk. (Material a chalk cemented mass of calcite molds and mold fragments of forams and Inoceramus prisms.)

3270-80' Like the preceding.

Samples 3280-Core #11-3322 (?)

3322-27' Core #12. Top 1': Hard grayish tan, "speckled" chalky limestone.

Bot: Dark brownish gray, hard, marly, light "speckled" limestone, some fish scales present and forams as above. Sample poorly, if at all, washed.

3327-32' Core #13. Top: Light gray chalky limestone, a mass of finely fragmental calcitic material (small forams, fragments of forams, Inoceramus prisms and minute globular bodies) and lenses of brownish gray, light speckled marly chalk.

Bot: Like the top portion of core, but with about 20% fine quartz sand and some chalky and sandy inclusions in a lense of dark brownish gray limestone.

3332-38' Core #14. Top: Moderately hard, dark brownish gray typical"speckled" marly limestone. Fish scale fragments, crushed and broken fossil material. Inoceramus fragments and a small amount of fine sand present in the limestone.

Mid: Light gray finely argillaceous and highly calcitic (finely fragmental calcite molds of micro-fossil material, minute globular bodies, Inoceramus prisms) hard chalky limestone. Fine sand about 50% of limestone.

Bot: Moderately hard, light grayish tan, chalk cemented fine grained sandstone. A few fossil fragments (crab calw and fish scales and bones.)

3338-48' Core #15. Top: Like the bottom of preceding core.

Mid: Fine grained chalk and calcite cemented, moderately hard sandstone showing irreg. thin streaks and partings of dark gray mud-stone. Fish bone and scale fragments common. This sandstone has less cement, is more indurated then the preceding. Sand grains fine, angular, even, clear quartz. A little colorless mica and a trace of glauconite present. A thin lense of dark gray, highly carbonaceous shale.

Bot: Sandstone like the preceding in general character but with little phosphatic material present and irreg. streaked with thin lenses of thinly flaky olive gray shale which contains some very minute specimens of foraminifera.

3348-58' Core #16. Top 3': Moderately dense, very fine, even grained quartz sandstone, a little mica, and a trace of fine glauconite. A few thin partings of brownish black, muddy shale with some fish bone and scale fragments and some carbonaceous material. Some lenses of hard, irreg.

fragments of calcitic micro-fossil material and some thin partings of gray and of brownish black shale. The latter with a somewhat speckled appearance from presence of fish scale fragments and crushed fossil material. Limestone also contains an abundance of very minute calcite, globular bodies.

3358-64' Core #17. Top: Hard white limestone like the preceding with thin lenses of highly and finely sandy limestone which usually have a coating or thin layer of light olive to dark brownish gray "speckled" shale - which contains much phosphatic (fish scale and bone) material. Mid: Hard white limestone and thin lenses of highly and finely sandy limestone accompanied by thin partings of dark brownish gray phosphatic "speckled" shale. Bot. Highly and finely sandy and calcitic, hard chalky limestone with thin partings of the olive gray to dark brownish gray "speckled" shale as above.

3364-69' Core #18. Top: A chalky brownish gray, thinly laminated shale, moderately finely sandy and containing abundant moderately fine fragments of fish scale and bone material, many specimens of Globigerina, Globotruncana and a large variety of Planulina eaglefordensis. Material similar to the typical "fish-bone conglomerate" of the basal Austin in Texas. Some thin lenses of gray (bluish) marly shale (See #9 thru 14 on slide.) Mid: Gray and dark brownish gray, "speckled" micro-fossil shale like the top portion of same core. Lense of olive green, flaky, waxy shale.

Top of Eagle Ford ← Bot: Lighter brownish gray shale with thin lenses of irreg. lenses of bluish-green-gray shale. Brownish gray shale is light spotted with crushed fossil material and shows some forams and a little phosphatic material. Gumbelinas, small Globigerinas and some typical specimens of Planulina eaglefordensis. (See #15 on slide.) Some fragments of a thin shelled species of Inoceramus and some fish scales also present.

3369-79' Core #19. Top: Thinly flaky gray green shale with some thin silty partings, a trace of mica. No fossils noted. Bot 1'6": Thinly flaky gray green shale as in the top portion of the core. Some thin, micaceous and slightly silty partings. Some specimens of Planulina eaglefordensis, Gumbelina sp. & Pleurostomella sp. & Globigerina sp. The Planulinas are the dominant forms are larger than those generally present in the Eagle Ford of this area. (See #16 on slide).

3379-89' Core #20. Top: Materials as in Core #19 - few forams - No change in fauns.
Mid: Greenish gray, thinly laminated flaky shale as in top portion of core.

(Plicaterla-like) bivalve. Specimens of Globigerina, Gumbelina moremaini, Planulina eaglefordensis and Pleurostomella sp. fairly common. (See #17 on slide).
Mid: Like the top portion of the core.
Bot: Thinly laminated flaky gray green shale, with parting of the brownish gray finely "speckled" shale with silty lenses as above. Fauna like the above but specimens usually badly crushed and poorly preserved.

3395-3405' Core #22. Top: Like the bottom of preceding core.
Mid: Light olive gray, "light speckled" highly sandy moderately hard clay, showing some mica and a trace of blue-green glauconite, some large fragments of Inoceramus and a few fragments of other bivalves. Crushed and broken fossil material abundant, some fish bones and scales. Material is also somewhat micaceous, some lenses of flaky dark gray green shale and of dark brownish gray "speckled", flaky shale also present in this part of core. Globigerina and Gumbelina the common forams present.
Bot: Dark brownish gray, highly light "speckled" micaceous with some thin, moderatley hard highly sandy lenses. A trace of glauconite. Forams as in the middle portion of core.

3405-15' Core #23. Top: Hard tan highly light "speckled" (crushed fossil material) micaceous and irreg. sandy limestone. Some glauconite, fish bones and scales and fragments of fossil bivalves present. Some lenses of dark brownish gray thinly laminated "speckled" shale as above. Forams present, but generally too badly crushed and altered to be identified.
Mid: Light tan, micaceous highly light "speckled" and highly flaky, very highly and finely "speckled" shale lenses. There also finely sand and with scattered, small fragments of carbonaceous material. Specimens of Globigerina and Gumbelina fairly common in the hard, marly portion of the core and molds of fossil bivavles.
Bot.: Gray-green and brownish gray shale (not a clean core.)

3415-25' Top: Core #24. Thinly laminated gray "speckled" shale, with some thin finely sandy lenses. Some Gumbelinas and many large Globigerinas present. A trace of glauconite Some fish bones and scales. (See #18 on slide).
Mid: A lense of hard tan-gray, limestone and lenses of thinly laminated dark olive gray "speckled" shale with fish bone and scales fragments - fragmental and crushed fossil material - some fragments of fossil bivalves. Majority of forams crushed and badly preserved. Some specimens of Globigerina, Gumbelina and Planulina

Specimens of Planulina eaglefordensis, Globigerina and Gumbelina present in shale.

Bot. 1'6": Thinly laminated, gray, highly and finely "speckled" shale. Fish scale fragments - crushed fossil material, including forams common. Some mica - Forams same as for top portion of core.

3434-43' — Core #26. Top: Like the preceding.
Mid: Brownish gray, thinly laminated, "speckled" slightly micaceous shale. Fauna same as for immediately preceding core.
Bot: No change.

3443-53' — Core #27. Top: Gray, thinly laminated shale, less highly "speckled" than preceding. Some mica, a trace of glauconite, some fragments of Inoceramus, fish scales and bones and some shreds of carbonaceous material present. Few forams washing free.
Mid: Shale as above, also a lense of light gray extremely finely sandy, chalky, moderately hard marl. Sand grains about 20% of material evenly distributed.
Bot: Dark brownish gray, thinly laminated "speckled" shale as in top portion of core.

3453-60' — Core #28. Top: Thinly laminated, gray, slightly micaceous, slightly "speckled" shale. A few small fragments of fish scales. A few small specimens of Globigerina noted in shale.
Bot: Gray, thinly laminated shale. A few small specimens of Globigerina noted.

3460-70' — Core #29. Brownish gray, thinly laminated, somewhat "speckled" shale. Small fragments of fish bones and scales and shreds of carbonaceous material fairly common. Some small specimens of Globigerina and of Planulina eaglefordenis.

(19)

3470-80' Top of L. & Mid. Atkinson (Woodbine) = Marine L. Tusc. — Core #30. Top: Greenish gray, thinly flaky shale, and lenses of soft, fine grained, highly glauconitic sandstone. Scattered grains of glauconite and nods of pyrite also present in the shale and minute specimens of small Eponides sp. common in L. & M. Atkinson section. (see #19 on slide.)
Mid: Shale and fauna as in top portion of core. A small amount of fine to moderately fine, angular quartz sand and nodules of blue-green glauconite common in fine screening of washed material.
Bot: Shale as above, with some thin irreg. finely sandy highly micaceous and glauconite partings. Fauna same as above. A few fish scale fragments also present. Glauconite and mica also as above. A few small specimens of Trochammina rainwateri and a few black, phosphatic nods present.

3480-85' — Core #31. Top: Like the bottom of preceding core, with sandy, glauconitic and micaceous areas and thin partings

very abundant in shale lenses.)
Mid: No change.
Bot: More sand lenses, otherwise no change.

3494-3504' Core #33. Top: Shale as above, with abundant thin partings and scattered, but thickly distributed glauconite and somewhat micaceous sand areas. Some shreds of carbonaceous material. Relatively few minute forams.
Mid: Sample mainly fine to moderately fine, angular quartz sand with about 10% glauconite and some mica. A few thin lenses of shale like that found in preceding sample.
Bot: Light gray, argillaceous, glauconitic and somewhat micaceous soft sandstone.

3504-14' Core #34. Top: Very small sample of sandstone as above.
Mid: Soft, light greenish gray, fine, even, angular quartz sand. Some mica, a trace of glauconite and a few small phosphatic nods.
Bot: Sand as in middle of core.

3514-24' Core #35. Top: Like the preceding.
Bot: No change.

3524-34' Core #36. Top: Soft, light greenish gray, argillaceous, slightly glauconitic and somewhat micaceous fine, angular, quartz sand. A little phosphatic material.
Mid: Light greenish gray, moderately hard, calcitic, highly glauconitic and micaceous sandstone, with scattered fragments of phosphatic material and some thin lenses of gray, micaceous, and slightly glauconitic shale with some imbedded fine shreds of carbonaceous material.
Bot: Soft, argillaceous light greenish gray sandstone. About 5% glauconite, same of mica.

3534-44' Core #37. Thin laminated, flaky dark gray shale, flaky dark gray shale, slightly glauconitic and showing many specimens of the minute species of forams, noted in the shaly upper portion of the Woodbine sections. Some lenses of light greenish gray argillaceous moderately fine grained, glauconitic and micaceous sandstone. Some shreds of carbonaceous material in shale.

3544-54' Core #38. Top: Shale like that described from the preceding core, with some thin glauconite and sandy lenses. Fauna as in Core #37, etc. Some coarse, etched sand grains present of white and of pink tinted quartz and a few of calcite. A little carbonaceous and phosphatic matter.
Mid: Like the preceding, top portion of core.
Bot: Shale as above and lenses of light green glauconitic slightly carbonaceous and phosphatic sandstone.

3554-64' Core #39. Top: Soft, argillaceous, fine to moderately fine, angular quartz sand about 10% glauconite. A few small phosphatic nods. Some mica.

Bot: Same.

3574-84' Core #41. Similar to preceding but mica more common (both colorless and dark brownish gray). Scattered coarse sand grains also present. Sand grains etched.

3580-90' Fine to coarse quartz sand and at least 50% cavings of gray shale from Woodbine and higher parts of section.

3590-3600' Coarse to very coarse etched quartz sand, some pink tinted grains. A few fragments of fine grained, slightly argillaceous, light tan quartz sandstone. A few fragments of cavings.

3600-3810' No samples.

3810-20' Coarse sand as above, also many fragments of red, slightly gray and mustard mottled, slightly micaceous shale. Some cavings (See #21-23 on slide.)

3820-30' Sample at least 50% cavings - remainder sand and shale as above.

3830-40' Coarse sand, some red and mottled shale as above. A few fragments of red-stained fine grained sandstone. A few fragments of purplish gray shale. About 25% cavings. (See #25 on slide).

3840-50' (No samples)

3850-60' Sand and some red and mottled shale fragments as above. About 50% cavings. A few grains of feldspar.

3860-70' No change.

3870-80' Mainly coarse sand with a few fragments of the red shale Many cavings. Feldspar much more common in sand and a few fragments of other minerals including some green tinted lime nods and a few fragments of blue-green fine grained sandstone. Many pink and yellow tinted quartz grains. (See #26-28 on slide).

3880-90' Sand and some red shale as above. About 50% cavings of shale from the Atkinson.

3890-3900' No change.

3900-10' No change.

3910-20' Like the above. A few pink stained, sandy lime nods.

3920-30' No change.

3930-90' No samples.

3990-4000' At least 50% cavings - remainder sand as above and numerous small fragments of red and mustard colored shale.

4000-10' Coarse sand of quartz and some feldspar, about 10% red shale. A few red stained sand lime nods, about 20% cavings. Yellow tinted quartz grains abundant.

4010-20' No change.

4020-30' Sample mainly coarse to very coarse sub-angular quartz and some feldspar - many grains yellow tinted. About 10% fragments of red shale and mustard colored clay shale. A few chert grains in sand and a few of diabase.

4030-40' Almost entirely sand as above - a few grains of amber colored quartzite (See #27 & 30 on slide.)

	to preceding in character. A few pink stained lime nods also present in sand as above. Sand mainly quartz and a little feldspar - a few quartzite grains. Grains requently tinted yellow or reddish.
4100-10'	Like the preceding.
4110-20'	Same as above - a few fragments of red and mustard colored clay shale.
4120-50'	No change.
4150-80'	Sample composed largely of fragments of a moderately fine even grained tan colored quartz sandstone with a few small limestone areas or inclusions. (See #31-35 on slide.)
4180-90'	Sample of coarse sand; sandstone fragments as above, and fragments of red clay shale. Some sandy lime nods - red stained.
4190-4200'	Sample at least 50% fragments of the moderately fine grained reddish sandstone with many sandy limestone areas. 50% shale from U. Cret. section and some coarse sand.
4200-10'	Fragments of pink stained and amber colored, moderately fine grained, with many sandy lime areas also red or yellow stained sandstone apparent red and yellow mottled and the small limestone areas similarly mottled. (See #37 to 40 on slide.)
4210-20'	Sample about 75% cavings - 25% sandstone and sandy limestone as above. The sandy limestone, apparently represent small areas of lime concentration in sandstone.
4220-30'	About 25% cavings - 75% sandstone and sandy limestone; coarse sand (pos. caving) and many fragments of red shale.
4230-40'	Sample about 75% reddish sandstone with a few sand lime areas, and 25% cavings. A little red shale.
4240-50'	Like the preceding.
4250-60'	No change.
4260-70'	Sandstone as above and coarse sand (as above 4150') and some red shale - about 50% definite cavings.
4270-80'	Like the preceding.
4280-90'	Sample mainly fine to moderately fine grained, calcitic sandstone (white, reddish and yellow tinted) a few fragments of red shale. Some cavings of coarse sand; a few of shale from the U/ Cret.
4290-4300'	Like the preceding.
4300-10'	Cut of a fine grained, calcitic reddish sandstone. Sand grains averaging finer than in preceding sandstone. (See #41 and 42 on slide.)
4310-20'	Poor sample - some fragments of sandstone - as above.
4320-30'	Cut of hard calcitic reddish sandstone - some red and mustard mottled shale - some coarse sand and shale fragments from much higher depths.
4330-40'	Sandstone fine grained, and some moderately fine grained reddish dense, calcitic - some fragments of red shale and

	of red and mustard colored, slightly sandy clay shale. Some cavings.
4370-80'	No change.
4380-4400'	No samples.
4400-10'	Sample apparently mainly cavings - fine to coarse sand some red shale - a few fragments of sandstone - and a few of lime nods - shale from U. Cret. section.
4410-20'	Like the above, with a few fragments of quartzitic sandstone and many fragments of a somewhat sandy red white and yellow limestone (possibly from lime concentration in a hard calcitic sandstone). (See #46-48 on slide).
4420-40'	No change.
4440-50'	Sample mainly fine to moderately fine grained, red, white and yellow mottled calcitic sandstone and sandy limestone and some fragments of dark red, mustard mottled clay shale. About 50% cavings.
4450-60'	Like the preceding.
4460-80'	No change.
4480-90'	Sample about 75% fragments of a "reddish or pinkish"to white (some yellow mottling) finely and highly sandy limestone and calcitic fine grained sandstone.
4490-4500'	Like the preceding.
4500-10' Top of Paleozoic	Like the above with the addition of many fragments of white, moderately fine to coarse grained, dense, quartzitic sandstone (See #49 & 55 on slide). Some of the sandstone fragments show small limonite inclusions of a possible surface area.

E. R. Applin

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2150-60	100% wh, ind ch	Tr, hard, micro, lt gry ls		
2160-70	95% "	Some grns dolte	5% wh, fgrn, Anh intergrown w/ch	
2170-80	75% wh, ind ch	5% "	20% fgrn, ltbrn, dolte ch	
2180-90	95% ltbrn, vfgrn, hard, slightly vuggy dol	5% wh, vfgrn Anh intergrown w/dol		
	Tr wh, ind ch ↓ sdstone			
2190-00	95% "	5% "		
2200-10	"	"		
2250-60	" more vugs & fgrn	"		
2290-00	" less vugs & f-vfgrn	"		
2300-10	40% " "	Tr. forams "	55% wh, ind ch, some grns dolte	
2350-60	35% "	Tr. Inocer Tr. "	65% "	
2400-10	20% "	"	80% "	
2450-60	5% "	5% "	90% "	
2460-70	10% "	10% "	75% "	Tr, gry, calc sh ↓ ltgry, ind ls, micro
2470-80	N.S.			
2480-90	20% "	5% "	75% "	Tr, wh, vfgrn Anh intergrown w/dol
2490-00	N.S.			
2500-10	30% "	5% "	55% "	10% gry, calc sh
2550-60	10% "	15% "	75% "	

2700-10 | 10% ltbrn, f-vfgrn, dol   5% Inocer, & S. F.   5% vltgry, micro, wd ls w/ black specks
80% wh, ind ch some doltz

2740-50 | 15% "   70% "   10% Inocer & S. F.   Tr. " , Anh, pyr, mgrn qtz

2750-60 | 15% "   60% "   5% "   10% ltgry, fgrn, doltz ch   5% C-M, rd, qtz sd

2760-70 | 65% "   10% "   20% "   5% gry, calc sh

2770-80 | Tr. "   75% "   15% "   Tr. "   5% "

2780-90 | 85% "   15% "   Tr. pyr

2790-00 | 5% "   75% "   20% "   "   Tr. "

2800-10 | 95% vltgry, ind ch   5% "   "

2810-20 | 10% Inocer, & S. F.   Tr. gry, calc sh, brn fgrn dol, pyr   80% wh, ind ch

2850-60 | 10% "   Tr. gry calc sh, pyr   5% ltbrn, fgrn dol   80% "

2860-70 | 5% "   5% "   90% vltgry, ind ch

2890-00 | 5% "   Tr. pyr, mgrn clear qtz sd   95% "

2900-10 | 5% "   Tr. pyr; gry sh; vfgrn, brddo   90% "

2950-60 | N. S.

2960-70 | 5% "   Tr. pyr; gry sh; vfgrn, brddo; fgrn, qtz sd   90% "

2980-00 | N. S.

3000-10 | 5% brn, vf-fgrn dol   Tr. pyr, Inocer, fgrn, qtz sd.   90% vlt-dkgry, ind ch

3040-50 | N. S.

3050-60 | 5% "   Tr. pyr; Inocer, lim   30% dkgry, ind vfgrn ls, micro   60% ltgry, ind ch, some doltz
[Goes to this at 3030-40]

3100-10 | Tr. dol   40% "   60% "

3140-50	30% dkgry, ind, varg, micro ls	40% vltgry, ind ch partially dol'z	5% Inocer. n.s.f.	25% vf-micro, wh, hard ls	
3150-60	65% "	30% "		5% "	
3170-80	50% "	50% "			
3180-90	40% "	60% "			
3190-00	30% "	70% "	Tr. Inocer, e pyr		
3200-10	N.S.				
3210-20	20% "	80% "			
3220-30	30% "	70% "	"		
3230-40	"	"			
3240-50		100% " Now ltgry	Tr. Inocer.		
3250-60	90% "	10% "			
3270-80	80% "	20% "			
3280-90	60% "	35% ltgry, micro-vfgrn, ind ls	5% Inocer, s.f		
3290-00	65% "	30% "	"		
3300-10		Tr. "	100% dkgry, fissile, calc sh		
3310-20	40% crm, micro, ind ls		60% "		
3320-30	5% ltbrn, fgrn dol		20% "	20% crm, micro, ind ls	65% crm, calc cly
3330-40	"		5% "	5% "	85% "
3340-50	5% "		20% "	75% ltbrngry, ind, fgrn ls	

3360-70	5% dkgry, fissile, calc sh	50% fgrn, brngry, angl s		10% wh, fgrn, friable, calc ss
	30% m-crs-vfgrn, brngry, angl s			
3370-80	5% "	40% "	50 % "	5% Tan, vfgrn, hard dol
3380-90	15% lt-tan, fgrn dol	10% gngry, calc sh	45% crm, microcrst ls	
3390-00	40% brn-gry, fgrn, arg ls	25% "	15% lt-mgry, calc sh	20% crm, micro ls
3400-10		50% "	30% "	20% lt-gry, fgrn, hard ls
3410-20		75% "	20% "	5% "
3420-30	80% "	40% "	20% "	10% crm, micro ls
3430-40	Tr, "	85% "	35% "	20% brn, vf-fgrn dol
3440-50	10% wh, calc sh	"	"	"
3450-60	80% mgry, fissile, calc sh	20% crm-wh, f-vfgrn, dol		
3460-70	100% dkgry, fissile, calc sh	Tr, gngry, calc sh		
3470-80	"	"		
3480-90	"	"		
3490-00	95% "	Tr, " & wh, ind sh		
3500-10	"	Tr, " & " & pyr		
3510-20	"	Tr, " & " & "		
3520-30	95% "	Tr, gngry, calc sh; wh, ind sh; lt-gry, glauc, arg, calc s-s, vfgrn		
3530-40	95% "	Tr, pyr, lt-gry, glauc, arg, calc s-s, vfgrn		
3540-50	90% "	5% vpale-gn, vfgrn, glauc, mic, calc ss	5% c-vc, qtz sd multicol	
3550-60	30% "	5% "	65% "	

3390-00	5% wh, uf-fgrn, calc ss	glauc, mic 20% gry-grngry, calc sh	75% c-vc, multicol qtz sd	
		Tr. pyr, gry anh		
3400-10		20% "	80% "	
3410-20	Tr. "	50% "	50% "	
3420-30	N. S.			
3430-40		75% "	25% "	
3440-50		70% "	15% "	15% rust sd
				Massive silst
3450-60	N. S.			
3460-70	Tr. uf-grn, brn dol	60% "	15% "	25% "
3470-80	Tr. "	70% "	20% "	10% "
3480-90	5% wh-pink, micro, ind ls	50% "	40% "	5% "
3490-00		25% "	70% "	5% "
3500-10	5% crm, f-uf-grn dol	60% "	5% "	10% "
3510-20	5% "	45% grngry, calc sh	20% brngry, calc sh slightly coarser than grngry sh	10% "
3520-30	Tr. " , pyr, Inocer	45% "	45% "	Tr. "
3530-40	Tr. "	45% "	50% "	Tr. "
3540-50	Tr. " , c-vc qtz sd	35% "	60% "	Tr. "
3550-60	Tr. " "	30% "	60% "	Tr. "
3560-70	20% c-fgrn, multicol qtz sd	40% "	40% "	Tr. "

3800-10	5% rust col, fissile sltst	80% brn gry, calc sh slightly coarser than gry grn sh	5% clear-M gry, qtz sd		10% gry grn, calc sh
3810-20	5% "	65% "	20% "		10% "
3820-30	Tr. " forams	65% "	30% " multicol		Tr. "
3830-40	Tr. "	50% "	40% " "		10% "
3850-60	Tr. "	45% "	50% "		5% "
3860-70	5% "	55% "	20% "		20% "
3870-80		30% "	70% "		Tr. "
3880-90	Tr. Inocer.	65% "	25% "		10% "
3890-00		45% "	55% "		Tr. "
3900-10	Tr. rust col, fissile sltst	60% "	30% "		10% "
3910-20		85% "	10% "		5% "
3920-30	5% "	70% "	15% "	5% wh, vf gran dol	5% "
3930-40	N. S.				
3940-50	10% multicol quartzite	15% "	70% "	5% pink, micro ls	Tr. multicol, micro dol
3950-60	10% "	20% "	65% "	Tr. "	Tr. "
3960-70	Tr. "	30% "	50% "	Tr. "	Tr. "

10% wh, fgn

3990-00	25% multicol, c-mgrn, qtz sd	5% multicol, micro dol		70% gry, calc sh	
4000-10	60% multicol, v c-mgrn, qtz quartzite sd			30% "	
	↓	10% red siltst			
4010-20	60% "	10% "		30% "	
4020-30	75% "	5% "		20% "	
4030-40	70% "	Tr. "	Tr. multicol, crypto dol	30% "	5% gngry slightly sdy calc sh
4040-50	80% "	5% "		10% "	5% "
4050-60	70% "	5% "	10% "	15% "	Tr. "
4060-70	85% "	Tr. "	Tr. "	5% "	5% "
4070-80	60% "	10% "		15% "	15% "
4080-90	70% "	20% "		5% "	5% "
4090-00	70% "	15% "		15% "	
4100-10	80% "	10% "	Tr. "	5% "	5% "
4110-20	75% "	10% pink, micro ls		15% "	
4120-30	70% "	10% "	10% red siltst	15% "	5% "
4130-40	70% "	Tr. "	5% "	15% "	10% "
4140-50	65% "		20% "		15% "
4150-60	50% "	30% fgrn, multicol, calc slightly Arg ss	5% "		15% "
4160-70	10% "	25% "	20% "	15% "	25% "
4170-80	5% "	25% "	25% "	20% "	25% "

4210-20	10% fgrn, multicol, calc, ang ss	30% brngry, calc sh some w/ white streaks	20% vc-m grn, qtz & quartzite sd	25% gngry, calc sh finer grn than brngry sh	15% red sltst	
4220-30	15% "	30% "	20% "	30% "	5% "	
4230-40	20% "	25% "	20% "	25% "	10% "	
4240-50	50% "		35% "	15% "	Tr. "	
4250-60	50% "	10% "	5% "	30% "	5% "	
4260-70	15% "	20% "	25%	20% "	10% "	10% multicol, micro dol
4270-80	30% "	10% "	30% "	20% "	10% "	Tr. "
4280-90	50% "	15% "	5% "	15% "	5% "	5% "
4290-00	20% "	25% "	5% "	25% "	5% "	20% wh, vf-fgrn dol
4300-10	10% "	20% "	40% "	20% "	Tr. "	5% "
4310-20	40% "	20% "	10% "	20% "	5% "	5% "
		Slightly sdy				
4320-30	25% "	10% "	50% "	15% "	Tr. "	
4330-40	40% "	15% "	20% "	20% "	5% "	
		Not sdy				
4340-50	20% "	25% "	10% "	25% "	20% "	
4350-60	10% "	15% "	20% "	25% "	20% "	5% multicol, micro-crypto dol

4380-00 N.S.

4400-10 10% red-rust siltst 10% gngry, calc sh 10% brngry, calc sh 70% c-mgrn, multicol qtz-quartzite sd

4410-20 10% " 10% " 10% " 65% "

5% fgrn, wh, calc ss, arg

4420-30 " " " " "

4430-40 10% " 30% 10% " 10% " 5% multicol, micro 35% "

dol

4440-50 10% " 30% " 15% " 15% " 5% " 25% "

4450-60 10% " 25% " 20% " 20% " 5% " 20% "

4460-70 5% " 45% " 20% " 10% " 5% " 15% "

4470-80 5% " 45% f-vfgrn 20% " 15% " 15% "

4480-90 " 75% " " 10% " 10% " 10% "

4490-00 Tr. " 75% " 15% " 10% "

4500-10 60% wh, mgrn, tight ss 10% " 10% " 20% red-pink, f-vfgrn, arg, calc ss

4510-20 60% m-vfgrn, multicol 15% " 15% " 5% red siltst

qtz sd

4520-30 60% " 10% " 10% " 10% " 10% Asp

4530-40 10% Inocer. S.F. 10% red siltst 60% wh, ind ch Tr. Asp

4540-50 " 5% " 85% "

4550-60 20% gngry, calc sh 10% " 20% brngry, calc sh 50% c-fgrn, multicol, qtz sd