

GG5 720

Brantley County, Georgia  
Humble Oil and Refining Company, Hellman no. 1  
Total depth 4512 feet

logged by Edward Dittmar, April 1976

\* by a depth indicates that a microfossil slide has been made and is in the  
sample envelope

1.2.13.2/17

- 0-20\* Colorless and light olive gray 5Y6/1 and a few white; subangular, mostly equant, very coarse sand (1-2 mm); well sorted quartz sand grains (99% of sample); a few white feldspar grains occur;  
 several black, vitreous, small, subrounded, equant, 0.3-.5 mm unidentified grains with a conchoidal fracture;  
 one monazite crystal pulled, moderate reddish brown 10R 4/6, slightly frosted, elongate, euhedral-doubly terminated (.3x1 mm); platy metal fragments-drill bit fragments?  
 color of unwashed sample is yellowish gray 5Y8/1
- 20-40 Colorless and light olive gray 5Y6/1 and a few white, subangular; mostly equant, coarse to very coarse sand (.5-2 mm), medium sorted, quartz sand grains, 99% of sample.  
 a few white feldspar grains, .5 mm  
 a few black, vitreous, small, subrounded, equant .3-.5 mm unidentified grains occur; a few gray, red iron stained platy metal fragments-drill bit fragments?  
 color of unwashed sample is yellowish gray 5Y8/1
- 40-60\* Colorless to light gray N7, subrounded, equant, medium to very coarse grained sand, medium sorted quartz grain sand- 90% of sample.  
 Soft, light greenish gray 5G8/1, earthy, fine sandy (15%) claystone-4% of sample  
 Soft, very light gray N8, earthy, limy (10%) fine sandy (20%) claystone-4% of sample  
 a few 1-2 mm grains of medium light gray N6 hard, dull, dense, limestone occur  
 dark gray N3 and dark yellow brown 10YR4/2, polished smooth, round, equant, .5-2 mm phosphate grains, 1% of sample  
 fossils are unidentified shell fragments, bone fragment, pulled one unidentified tooth 1 mm and one unidentified tusk shaped object  
 color of unwashed sample light olive gray 5Y6/1
- 60-80\* Colorless to light gray N7, subrounded, equant, medium to very coarse grained sand; medium sorted quartz grain sand-90% of sample; a few grains of soft, very light gray N8 slightly micaceous, earthy, limy (10%) fine sandy (20%) claystone  
 Dark gray to black, polished, smooth, round, equant, .5-2 mm phosphate- 7%  
 fossils- unidentified gray orange 10YR7/4 shell fragments, several are 1-2 mm. Pulled one unidentified rodent tooth in jaw fragment 2.0 mm  
 color of unwashed sample, light olive gray 5Y6/1
- 80-100 Colorless to light gray N7, subrounded, equant, medium to very coarse grained sand- 90% of sample. A few quartz granules, 3mm occur; a few grains of rose quartz and citrine. One large fragment, 2.0 cm and several coarse grains of soft, yellowish gray 5Y8/1 earthy, limy (10%) fine sandy (5%) claystone.  
 Dark gray to black, polished smooth, equant, round, .5-2 mm phosphate grains- 50% of the grains are coated with white, partially red iron stained. Lime, phosphate grains 8% of the sample.  
 Fossils are one shark tooth fragment. Color of unwashed sample, light olive gray 5Y6/1

- 200-220 98% colorless to medium gray N5 subrounded, equant, medium to very coarse grained quartz sand grains-very clean sand; a few 3 mm grains; rose quartz also.  
Several brown or black, polished smooth, rounded, equant, .5-3 mm phosphate grains- more than in above.  
fossils- a few shell fragments, one small black phosphate gastropod steinkern. A few small yeowish gray 5Y8/1 dull, limy (20%) claystone--caving?  
note! in unwashed sample, larger quartz grain size, more granule size, color light olive gray 5Y6/1
  
- 220-240\* 97% sand, colorless to medium gray N5, subround to round, equant, coarse to pebbles (6mm) quartz ; several amethyst and rose quartz grains. A few fragments of yellowish gray 5Y8/1 dull, slightly fine sandy (10%) limy (20%) claystone--caving? brown or black, 2% polished smooth, round, equant .5-4.0 mm phosphate  
fossils- a few shell fragments, shark tooth, bone fragments, color unwashed light olive gray 5Y6/1
  
- 240-260 90% sand, colorless to medium gray 5%, subrounded to round, equant, coarse grained 3. mm, medium sorted quartz.  
5% hard, yellow gray 5Y8/1 dull, microcrystalline dolomite; note, dolomite coating on several quartz granules;  
3% brown or black, polished, smooth, round, equant, .5-4 mm phosphate  
fossils- one shark tooth fragment, a few small shell fragments, color unwashed light olive gray 5Y6/1
  
- 260-280 94% sand, colorless to medium gray N5, subround, equant, medium to very coarse grained, medium sorted quartz. A few quartz granules of 5 mm, a few rose quartz grains.  
2% yellow gray 5Y8/1 dull, microcrystalline dolomite  
1 % yellow gray, dull, medium sandy dolomite  
3% phosphate  
fossils-a few shell fragments, several unidentified small bone fragments color unwashed sample 5Y6/1 light olive gray
  
- 280-300 85% sand, colorless to medium gray N5, subrounded, equant, medium to granular grained, medium sorted quartz; a few quartz pebbles 8 mm and a few rose quartz grains  
8% dolomite, yellowish gray 5Y8/1, dull, fine sandy (25% )  
4% limestone, very light gray N8, earthy, fine sandy (15%)  
2 % phosphate  
fossils-a few shell fragments; metal fragments  
color unwashed greenish gray 5GY6/1
  
- 300-320 94% sand, colorless to medium gray N5, subangular, equant, medium to very coarse grained, medium sorted quartz, a few granules up to 4 mm, some rose quartz  
5% phosphate; a few grains yellowish gray 5Y8/1 very fine sandy (15%) dolomite--caving? one amber red, small, elongate, sub-hedral 1-5 mm unidentified crystal. fossils-shell fragments and several small unidentified casts; color unwashed light olive gray 5Y6/1

- 320-340 85% sand, colorless to medium gray N5, subangular, equant, medium to very coarse grained quartz; a few quartz granules up to 4 mm; some rose quartz  
8% dolomite, yellowish gray 5Y8/1, dull, microcrystalline, fine sandy 10-20%--cave?; also a few grains of soft, white, flakey, dull, microcrystalline limestone--cave?  
5% phosphate; one gray feldspar granule 3 mm; fossils- shell fragments, small gastropod steinkern; color unwashed light olive gray 5Y 6/1
- note! { 340-360 85% dolomite, yellow gray 5Y8/1, dull, fine to medium sandy (25%), limy (10%)  
10% sand, colorless to medium gray N5, subrounded, equant, coarse grained, 5mm granules  
5% phosphate; one feldspar granule 3 mm; fossils- shell fragments, small gastropod steinkern; color unwashed light olive gray 5Y6/1
- 340-360 85% dolomite, yellowish gray 5Y8/1, dull, fine to medium sandy (25%) limy (10%)  
10% sand, colorless to medium gray N5, subrounded, equant, coarse grained to 5mm granules quartz; some rose quartz  
4% phosphate; fossils-shell fragments; one ramose colonial bryozoa; color unwashed yellowish gray 5Y8/1
- 360-380 55% colorless to medium gray N5, many grains frosted, subrounded, equant, coarse grained to 5 mm granules, medium sorted quartz  
20% yellowish gray, 5Y8/1 sucrosic, slightly porous, limy (10%) fine sandy (25%) dolomite- note, black phosphate grains embedded in dolomite  
20% phosphate; a few grains of rose quartz; fossils- shell fragments, abraded, polished shark tooth; color of unwashed sample yellowish gray 5Y8/1
- 380-400 45% colorless to medium gray N5, many grains frosted, subrounded, equant, coarse to 3 mm granules, medium sorted quartz  
35% dolomite, fine sandy (25%)  
20% phosphate- note, several phosphate grains embedded in dolomite; feldspar grains, rose quartz grains; fossils- shell fragments and shark tooth; color unwashed light olive gray 5Y6/1
- 400-420\* 42% yellowish gray, sucrosic, slightly porous, limy (10%) fine sandy (20%) dolomite  
42% colorless to medium gray N5 many grains frosted, subrounded, equant, coarse to 4 mm granule quartz grains, medium sorted several rose quartz grains  
15% phosphate grains  
fossils- shell fragments, fish vertebra; color unwashed 5Y6/1
- 420-440\* 60% yellowish gray 5Y8/1 sucrosic, slightly porous, limy (10%), fine sandy (20%) dolomite  
30% colorless to medium gray N5, many grains frosted, subrounded, equant, coarse to 4 mm granules, medium sorted quartz grains a few rose quartz grains  
8% phosphate  
fossils- shell fragments, bryozoa, fish spine; color 5Y6/1 unwashed.

- 440-460\* 70% sucrosic dolomite as above, fine sandy  
 20% sand as above, coarse to very coarse grained  
 5% limestone, brittle, white, flaky, dull to chalky to waxy,  
 microcrystalline  
 3% phosphate  
 fossils- shell fragments, crab fragments, gastropod steinkerns,  
 teeth; color unwashed light olive gray 5Y6/1
  
- 460-480\* 75% dolomite, sand and limy as above  
 15% sand as above, some rose quartz  
 5% limestone as above  
 3% phosphate  
 fossils- shell fragments, crabs, teeth, gastropods, color as  
 above
  
- 480-500\* 85% dolomite as above  
 10% sand as above  
 1% phosphate  
 a few fragments of hard, white, dull, microcrystalline  
 limestone occurs and several small concretions silica?  
 fossils- shell fragments, one vertebra, gastropods; color as  
 above
  
- 500-520 Same as above, rock components and percentages; fossils a few  
 shell fragments; color unwashed yellow gray 5Y8/1
  
- 520-540\* 75% hard, very pale orange 10YR 8/2, oolitic, dull, porous, micro-  
 granular limestone, as disaggregated grains  
 23% hard, very light gray N8 dull porous, microgranular, silty to  
 fine sandy limestone  
 a few colorless, subrounded, equant, medium to coarse  
 grains of quartz; some phosphate- both caving?  
 fossils- gastropods, bryozoa unwashed color light gray N7
  
- 540-560 80% orange limestone as above  
 18% gray limestone as above  
 some dolomite fragments- cave?  
 fossils- bryozoa, gastropods, worms tubes, pelecypod casts;  
 color unwashed 10YR8/2
  
- 560-580\* 85% limestone, orange as above, fossiliferous, coquina  
 10% gray silty limestone as above  
 a few quartz grains and some dolomite fragments- cave  
 fossils- forams, bryozoa; color unwashed 10YR8/2
  
- 580-600 Same as above, all constituents. Some chunks of hard, very pale  
 orange, banded travertine; color unwashed 5Y8/1
  
- 600-620\* As above. forams, also more of the aggregated coquina
  
- 620-640 As above, forams, color unwashed 5Y 8/1

- 640-660 Same as above  
fossils- many forams and bryozoa and a few echinoid fragments;  
color unwashed very pale orange 10YR8/2
- 660-680 Hard, very pale orange 10YR8/2, fossiliferous, dull, porous,  
microgranular limestone-70% as dense limestone and 28% as fossil  
coquina. few individual loose fossils or fragments in this  
sample. A few phosphate grains fossils are shell fragments,  
bryozoa, large forams, worms tubes, almost all embedded in  
limestone; color unwashed as above
- 680-700 Hard, very pale orange fossiliferous, dull, porous, microgranular  
limestone-50% as dense fossiliferous limestone and 50% as fossili-  
ferous, oolitic limestone and loose fossil fragments; some phos-  
phate-caving? several large coarse quartz grains- caving?  
fossils are bryozoans and large forams, shell fragments;  
color unwashed, as above
- 700-720 As above in constituents and percentages--also a few chunks of  
light olive gray 5Y6/1 sucrosic, porous, lightly limy, fine sandy  
dolomite--caving?  
fossils- bryozoa and forams, shell fragments, echinoid spines  
color unwashed, as above.
- 720-740 85% limestone as above; more sand- colorless, subrounded, equant,  
some frosted, coarse grained to 3 mm--15% of sample  
several small chunks of lignite occur  
fossils-forams and bryozoa, echinoids, shell fragments
- 740-760 Same as above but no lignite; fossils bryozoa, forams, shell frag-  
ments, worm tubes
- 760-780\* 40 % very pale orange 10YR8/2 fossiliferous, dull, microgranular  
limestone and chunks of fossil oolitic limestone  
55% dense microgranular limestone and loose fossil fragments;  
quartz grains and phosphate--caving?  
fossils are bryozoa, forams, shell fragments, echinoid spines
- 780-800 Same as above
- 800-820 75% same limestone as above  
25% brittle, light olive gray 5Y6/1, resinous, sucrosic, porous,  
fine to coarse crystalline limestone cemented (15%) dolomite  
fossils- bryozoa, forams, shell fragments, echinoid parts.
- 820-840 50% very pale orange 10YR8/2, fossiliferous, oolitic, dull or  
chalky, porous, microgranular, dolomitic (10%) limestone  
50% light olive gray resinous, sucrosic, very porous, finely crys-  
talline dolomite;  
a few fossils- forams, bryozoa, shell fragments

- 840-860 98% brittle, light olive gray 5Y6/1, resinous, sucrosic, porous, very fine to medium crystalline, slightly limy (10%) dolomite  
a few small chunks of soft, white, dull, chalky, very porous limestone- caving?; a few phosphate grains; fossils- a few shell fragments
- 860-880 98% dolomite, as above; chalky limestone and quartz grains and phosphate as caving? fossils- bryozoa, forams, shell fragments
- 880-900 Same as above
- 900-920 Same
- 920-940 95% dolomite as above, limy (15%) several soft, white to cream, dull, chalky very porous microgranular limestone -caving?  
also cement  
afew colorless, subangular to round, equant, coarse to very coarse quartz grains; fossils- bryozoa and shell fragments
- 940-960 98% dolomite as above
- 960-980 As above
- 980-1000 98% brittle, light olive gray 5Y5/2, resinous, sucrosic, slightly porous, very fine to coarsely crystalline, slightly limy (10%) dolomite  
fossils- shell fragments and a few bryozoa
- \* 1000-2200 samples missing, April 6, 1976
- 2200-2220 80% brittle, yellowish gray 5Y8/1, very glauconitic, earthy, medium grained, sandy (25%) dolomitic (30%) limestone;  
18% colorless, many grains frosted, subangular to subround, equant, quartz; phosphate  
note! coarse crystaled dolomite rhombs adhere to the limestone  
also clusters of dolomite rhombs occur; fossils- shell fragments
- 2220-2240 As above color unwashed light gray N7
- 2240-2260 50% brittle, light olive gray 5Y6/1, glauconitic, sucrosic, limy (10%) medium to coarsely crystalline dolomitic (40%),  
medium to very coarse grained sandstone  
24% loose, colorless, subangular, equant, medium to very coarse grained quartz grains;  
20% loose, colorless, angular, equant, euhedral, coarse to very coarsely crystalline dolomite rhombs.  
5% soft white, dull, chalky, microcrystalline limestone  
phosphate; fossils-shell fragments

- 2260-2280 55% Flat, gray to white oyster shell fragments (limestone);  
euhedral dolomite rhombs and glauconite adhering to the  
surface of many of the fragments;  
30% colorless, several grains frosted, subrounded, equant,  
medium to very coarse grained quartz;  
14% colorless angular euhedral, coarse crystals of dolomite  
rhombs and crystal aggregates;  
several chunks of brittle, white, glauconitic,  
sucrosic, porous, medium crystalline, dolomitic (20%)  
medium to coarse sandy (20%) limestone;  
phosphate; fossils- many oyster shells, a few gas-  
tropolod
- 2280-2300\* 80% brittle, light olive gray 5Y6/1 glauconitic, sucrosic,  
slightly porous, slightly sandy, medium to coarse crystalline  
dolomite, as aggregates and loose euhedral rhombs.  
15% colorless, often frosted, subrounded, equant, medium to  
very coarse grained quartz sand grains  
2% brittle, gray to white, glauconitic, porous, medium crys-  
talline, dolomitic (20%) medium to coarse grained sandy (20%)  
limestone  
3% oyster shell fragments  
one gypsum crystal- in slide
- 2300-2320 Same material as above  
65% dolomite  
20% limestone  
14% sandstone  
phosphate  
several chunks of hard, yellowish gray 5Y8/1 dull, slightly  
porous, dense, micrograined limestone  
fossils- oyster shell fragments; other shell fragments
- 2320-2340\* 75% brittle, light olive gray, micaceous, glauconitic, sucrosic,  
slightly porous, medium to coarse crystalline sandy (20%) dolo-  
mite as aggregates and loose rhombs  
15% very soft, white, glauconitic, dull to chalky, very porous,  
fine sandy (15%) medium crystalline dolomitic (15%) claystone  
8% colorless, frosted, subrounded, equant, medium to very coarse  
grained quartz sand  
evaporite: a few very soft, white, dull to chalky, very porous  
flaky, microgranular--altered gypsum or anhydrite? in slide.  
one small selenite crystal  
a few small chunks of yellow gray, glauconitic, dull,  
porous, fine grained sandy (15%) microcrystalline limestone;  
fossils- shell fragments, one foram
- 2340-2360 55% brittle, light olive gray, slightly glauconitic, dull, su-  
crosic, slightly dolomitic (10%), slightly fine sandy (10%)  
anhydrite, as fine grained crystals and aggregate.  
35% fresh, white, glauconitic, dull to waxy, porous, fine to  
medium grained sandy (30%) limestone  
5% white sucrosic, very fine crystalline anhydrite?  
5% colorless, frosted, subround, equant, medium to very coarse  
grained quartz sand grains;  
slides of evaporite phosphate; fossils-shell frag-  
ments

*note next  
sample*

- 2340-2360 second sample- reason for two unknown same as other sample
- 2360-2380 65% light olive gray, dull to resinous, very fine to fine sandy (30%) dolomite  
 20% colorless to medium gray, frosted, subrounded, equant, fine to coarse grained quartz sand grains  
 10% brittle, light olive gray, slightly glauconitic, sucrosic, resinous, slightly dolomitic (10%) slightly fine sandy (10%) anhydrite as fine grained crystal aggregates  
 several small chunks of white to gray, dull, slightly fine sandy (10%) limestone  
 fossils- shell fragments
- 2380-2400 40% fresh, white, glauconitic, dull to waxy, porous, fine to medium grained sandy (30%) limestone  
 30% brittle, light olive gray, glauconitic, slightly micaceous, sucrosic, resinous, limestone cemented, fine to medium grained anhydrite; crystals and as sand grain clusters  
 25% colorless to medium light gray, many grains frosted, subrounded, equant, fine to coarse grained quartz sand; phosphate; noted several small gypsum crystal in the sample; fossils- shell fragments and bryozoa
- 2400-2420 60% white to very light gray, glauconitic, slightly micaceous, dull to waxy, porous, fine to medium grained sandy (30%) limestone  
 20% brittle, light olive gray, glauconitic, slightly micaceous, sucrosic, resinous, dolomitic, limestone cemented, fine to medium grained anhydrite crystals and sand aggregates  
 15% colorless to medium light gray, many grains frosted, subrounded, equant, fine to coarse grained quartz sand; phosphate; fossils- shell fragments, bryozoa
- 2420-2440 Same as above
- 2440-2460 Same as above
- 2460-2480 Same as above
- 2480-2500 very small sample, washed only; none unwashed  
 60% colorless to light gray, several grains frosted, subrounded, equant, medium to very coarse grained quartz grains  
 35% brittle, medium light gray, platy, dull, porous, slightly limy (10%) claystone  
 note: Organic matter and possible lignite in this sample; no fossils observed.
- 2500-2520 45% colorless to light gray, frosted, subrounded, equant, medium to very coarse sand grains  
 40% very pale orange dull microgranular limestone  
 10% white to very light gray, glauconitic, slightly micaceous, dull to waxy, porous, fine sandy (30%) limestone; phosphate; a few chunks of moderate yellow brown, sucrosic, resinous, fine sandy (15%) dolomite;  
 fossils- one foram

- 2520-2540 75% colorless to light gray, many frosted grains, subrounded, equant, medium to very coarse grained quartz sand grains;  
15% very pale orange, dull, microgranular limestone  
5% white to very light gray, glauconitic, slightly micaceous, dull to waxy, porous, fine sandy (30%) limestone;  
a few small chunks of moderate yellowish brown, sucrosic, resinous, fine sandy (30%) limestone; phosphate  
fossils- none observed
- 2540-2560 sample missing, April 1976
- 2560-2580 60% colorless to light gray, many grains frosted, subrounded, equant, medium to very coarse grained, medium sorted quartz sand  
30% very pale orange, slightly glauconitic, dull, microgranular limestone  
7% moderate yellowish brown, sucrosic, resinous, fine sandy (30%) limestone;  
phosphate; fossils-bryozoa
- 2580-2600 85% colorless, frosted, subround, equant, medium to coarse grained, well sorted quartz sand  
10% soft, very pale orange, dull, slightly porous, micrograined limestone  
several chunks of moderate yellow brown, resinous, microgranular dolomite--caving?  
3% phosphate  
slightly micaceous, dull to waxy, slightly porous,, fine sandy (30%) limestone- caving?;  
fossils- bryozoan, shell fragments
- 2600-2620\* 70% colorless, frosted, subrounded, equant, medium to very coarse grained, medium sorted quartz sand  
25% soft, very pale orange, dull, slightly porous, microgranular limestone  
3% phosphate  
several chunks of moderate yellow brown, sucrosic, resinous, microgranular to very fine grained dolomite--caving?  
a few chunks of white to very light gray, glauconitic, slightly micaceous, dull to waxy, slightly porous, fine sandy (30%) limestone--caving?  
fossils- bryozoa, a few forams, shell fragments
- 2620-2640 97% colorless, frosted, subrounded, equant, medium to coarse grained, well sorted quartz sand  
2% phosphate  
several small limestone and glauconite grains occur-caving?  
fossils- shark tooth
- 2640-2660 50% quartz sand as above  
45% orange, microgranular limestone as above  
3% phosphate  
no fossils observed

- 2660-2680 Same as above  
quartz sand is slightly coarser; concrete;  
fossils- bryozoa, gastropods
- 2680-2700\* 55% sand as above  
40% orange, fine sandy limestone as above  
10% light olive gray, resinous dolomite  
phosphate; fossils- forams
- 2700-2720 90% colorless, frosted, subangular to subround, equant, medium to coarse grained, well sorted quartz sand  
5% white to very pale orange, dull, porous, slightly fine sandy limestone--wavy?  
1% phosphate  
fossils- bryozoa
- 2720-2740 Same as above, but sand is cleaner and 98% of sample; some phosphate
- 2740-2760 Sand as above, 98%; phosphate; fossils- few small shell fragments
- 2760-2780 Same as 2700-2720, sand and phosphate 98% of sample; small amount of glauconitic limestone and dolomite--caving?  
no fossils observed
- 2780-2800 Same as above, sand and phosphate
- 2800-2820 Same as above; fossils- a few shell fragments
- 2820-2840 60% soft, dark greenish gray 5GY4/1, glauconitic, phosphatic, slightly micaceous, dull, very porous, slightly limy (5%), fine sandy (20%) siltstone  
38% colorless, frosted, subangular to subround, equant, medium to very coarse grained, medium sorted quartz sand  
phosphate; fossils- shell fragments
- 2840-2860 50% soft, dark greenish gray, glauconitic, phosphatic, slightly micaceous, dull, very porous, slightly limy (5%), fine sandy (20%) siltstone  
48% colorless quartz, frosted, subangular to subrounded, equant, fine to very coarse grained, medium sorted phosphate  
fossils-shell fragments
- 2860-2880 Same as 2820-2840; fossils a few shell fragments
- 2880-2900 Same as above; fossils, a few shell fragments

- 2900-2920 Same as above; no fossils
- 2920-2940\* 98% colorless, many frosted, subangular, equant, fine to medium grained quartz sand  
phosphate scattered in the sand  
1% white, slightly dolomitic (5%) anhydrite  
1 gypsum crystal- sample slide  
organic material and fibres- cement  
fossils- shell fragments
- 2940-2960\* 60% brittle, light gray, glauconitic, pyritic, slightly micaceous, dull, slightly porous, fine sandy (25%) slightly limy (10%) claystone  
25% colorless, many frosted, subangular, equant, coarse to very coarse grained quartz sand  
5% dark, yellowish green (10GY4/4) dull, round, equant, glauconite  
several cunks of medium dark gray  $N_4$  metallic (pyrite?) -massive mineral, unidentified  
several moderate yellow brown, resinous, sucrosic, fine grained dolomite crystal aggregates -cave?  
several small chunks of white, dull, slightly fine sandy (10%) slightly dolomitic (10%) microgranular limestone-cave?  
fossils- bryozoa, shell fragments, hollow tubes
- 2960-2980 sample missing April 1976
- 2980-3000 very small sample  
70% yellow gray 5Y8/1, dull, fine sandy (25%) microgranular limestone  
25% colorless, frosted, subangular to subrounded, equant, coarse to very coarse grained quartz sand  
5% medium dark gray  $N_4$  massive metallic mineral- pyrite?  
one phosphate grain  
fossils- one shell fragment
- 3000-3020 sample missing
- 3020-3040\* 85% brittle, light gray, slightly glauconitic, slightly micaceous, dull, fine sandy (20%) limestone  
10% colorless, some grains frosted, subangular to subrounded, equant, medium grained to 3 mm granules quartz grains  
several small chunks of moderate yellow brown resinous, sucrosic, finely crystalline dolomite crystal aggregates-caving?  
3% brittle, medium dark gray, glauconitic, slightly micaceous, dull, fine sandy (25%) slightly limy (10%) claystone  
phosphate;  
fossils-shell fragments, bryozoa, ostracodes

- 3040-3060\* 60% brittle, light gray, micaceous, slightly glauconitic, dull, fine sandy (30%) limestone  
 20% brittle, medium gray, micaceous, slightly glauconitic, dull, slightly limy (10%) fine sandy (25%) claystone  
 15% colorless, some frosted, subangular to subrounded, medium grained to 3 mm granules quartz sand  
 a few light olive gray sucrosic, resinous, finely crystalline dolomite crystal aggregates- caving?  
 fossils- shell fragments, forams, ostracods
- 3060-3080 40% brittle, medium light gray, slightly micaceous, dull, slightly limy (10%) fine sandy (30%) claystone  
 40% brittle, light gray, dull, fine sandy (30%) limestone  
 15% colorless, subangular, some frosted, equant, medium to very coarse grained quartz sand  
 fossils- shell fragments
- 3080-3100 sample missing
- 3100-3120 90% brittle, light gray, micaceous, slightly glauconitic, dull, fine sandy (30%) limestone  
 8% colorless, some frosted, subangular to subrounded, coarse to very coarse grained quartz sand  
 several fragments of massive pyrite occur in the sample  
 a few soft, white to cream, chalky, micrograined limestone  
 fossils- shark tooth, shell fragments
- 3120-3140 80% colorless, some frosted, subangular to subround, equant, medium to very coarse grained, medium sorted, quartz sand  
 12% brittle, light gray N7 micaceous, slightly glauconitic, dull, fine sandy (30%) limestone  
 5% brittle, medium light gray, slightly micaceous, dull, slightly limy (10%) fine sandy (20%) claystone;  
 phosphate  
 glauconite grains  
 massive pyrite  
 fossils- shell fragments, bryozoa, one foram; plastic debris
- 3140-3160\* 65% brittle, light gray, micaceous, slightly glauconitic, dull, very porous, well sorted, limestone cemented limy (45%) fine grained sandstone  
 25% colorless, many frosted, subangular to subrounded, equant, medium to very coarse grained, medium sorted quartz sand  
 5% brittle, medium light gray, slightly micaceous, dull, very porous, slightly limy (10%) claystone  
 phosphate; lignite; fossils-forams ostracodes

- 3160-3180 70% colorless, many frosted, subangular to subrounded, medium to coarse grained, well sorted quartz sand  
25% brittle, light gray, slightly micaceous, slightly glauconitic, dull, fine sandy (30%) limestone  
phosphate; glauconite; pyrite  
fossils- shell fragments, a few forams
- 3180-3200\* 65% colorless, some grains frosted, subangular to subrounded, equant, fine to very coarse grained, medium sorted quartz sand  
15% brittle, light gray, slightly micaceous, slightly glauconitic, dull, fine sandy (40%) limestone  
15% brittle, medium gray, slightly micaceous, dull, fine sandy (10%) slightly limy (10%) claystone  
phosphate; glauconite; pyrite; lignite  
fossils- shell fragments, a few bryozoa, one foram
- 3200-3220 \* 50% sand as above  
20% brittle, light gray N7 slightly micaceous, slightly glauconitic, dull, very porous, slightly fine sandy (15%) limestone  
20% soft, medium gray, slightly micaceous, dull, fine sandy (10%) claystone  
4% phosphate  
3% pyrite; also glauconite, fossils- shell fragments, forams
- 3220-3240 50% medium to very coarse grained quartz sand, as above  
30% micaceous, limy, sandy claystone as above  
10% brittle, light gray, slightly micaceous, slightly glauconitic, dull, very porous, slightly fine sandy (15%) limestone.  
3% phosphate; also glauconite; a few pyrite chunks  
fossils- shell fragments, forams
- 3240-3260 45% soft, medium gray, slightly micaceous, dull, very porous, slightly limy (10%) very fine sandy (10%) claystone  
45% sand as above  
8% light gray, slightly micaceous, slightly glauconitic, dull, very porous, slightly fine sandy (15%) limestone  
phosphate; glauconite  
fossils- shell fragments, bryozoa.
- 3260-3280 Same as above
- 3280-3300\* 55% quartz sand as above, 5% heavy black type  
25% soft, medium light gray, slightly micaceous, dull, very porous, fine sandy (15%) limy (30%) claystone  
15% hard, brittle, light gray, slightly glauconitic, slightly micaceous, dull, porous, fine sandy (15%) limestone  
glauconite; phosphate; pyrite  
lignite  
fossils- bryozoa, forams

- 3300-3320 90% light olive gray, (grains coated with mud?) angular, equant, very fine to fine grained, well sorted, quartz sand a few yellowish gray microcrystalline limestone fragments-  
cave?  
sand has a fine grained black, heavy mineral fraction-5%  
fossils- bryozoa
- 3320-3340 55% brittle, light olive gray, slightly micaceous, dull, very porous, very fine sandy (25%) micrograined dolomite  
30% quartz sand as above  
12% very light gray, slightly micaceous, slightly glauconitic, dull, porous, fine sandy (10%) limestone  
phosphate; glauconite  
fossils- shell fragments, bryozoa
- 3340-3360 sample missing April 1976
- 3360-3380 45% quartz sand, as above  
35% micaceous, limy (10%) sandy (15%) claystone, as above  
10% very light gray, slightly micaceous, slightly glauconitic, dull, porous, fine sandy (10%) limestone  
5% brittle, moderate yellow brown, resinous, slightly porous, finely crystalline to microcrystalline dolomite  
glauconite; phosphate pyrite  
fossils- a few shell fragments
- 3360-3380 Second sample- same as the other- why two?? ???
- 3380-3400 Same as above
- 3400-3420 Same as above; more pyrite
- 3420-3440 30% very pale orange, dull, coquina and microcrystalline limestone  
20% soft, medium light gray, slightly micaceous, dull, very porous, slightly limy (10%), fine sandy (15%) claystone  
25% quartz sand as above  
10% medium crystalline to microcrystalline dolomite  
10% pyrite cemented sandstone, also glauconite and phosphate in the sand  
fossils- bryozoa
- 3440-3460 60% colorless, some frosted grains, subangular, to subrounded, equant, fine to coarse grained, medium sorted, quartz sand  
15% brittle, light gray N7, slightly micaceous, slightly glauconitic, dull, porous, fine sandy (20%) limestone  
15% soft, medium gray N5, slightly micaceous, dull, very porous, slightly fine sandy (10%) claystone  
5% brittle, light olive gray, sucrosic, resonous, slightly porous, finely crystalline dolomite  
3% pyrite, medium dark gray, massive, sometimes as cement for sandstone  
glauconite; phosphate; fossils-shell fragments
- 3460-3480 sample missing

- 3480-3500 75% brittle, light olive gray, slightly micaceous, sucrosic, very porous, slightly limy (10%) fine sandy (35%), finely crystalline dolomite  
 10% fine to medium grained, some to 3 mm quartz sand  
 15% flaky rusted metal fragments with calcium carbonate coating on one side, up to 5mm-drill bit fragments?  
 fossils- one tubular job
- 3500-3520\* 45% soft, finely fissile, medium dark gray N<sub>4</sub> slightly micaceous, dull, very porous, slightly fine sandy (10%) very limy (30%) claystone  
 25% brittle, light olive gray, slightly micaceous, sucrosic, very porous, slightly limy (10%) fine sandy (30%) finely crystalline dolomite  
 25% fine to coarse grained, medium sorted quartz sand  
 several small chunks of white, very finely crystalline massive anhydrite?  
 phosphate; glauconite  
 fossils--shell fragments, bryozoa, forams
- 3520-3540 60% brittle, light olive gray, slightly micaceous, sucrosic, porous, slightly limy (10%) fine sandy (30%) finely crystalline dolomite  
 15% yellowish gray, dull, slightly porous, microcrystalline limestone  
 15% hard, medium dark gray N<sub>4</sub>, metallic- dull oxidized, massive pyrite  
 10% quartz sand, medium to very coarse grained phosphate  
 fossils- shell fragments, bryozoa
- 3540-3560 no sample, April 1976
- 3560-3580 no sample
- 3580-3600\* 45% light olive gray, dull, microcrystalline dolomitic (20%) limestone  
 40% fine to coarse grained, medium sorted quartz sand  
 7% yellowish gray, slightly micaceous, slightly glauconitic, dull, microgranular limestone  
 5% soft, medium gray, slightly micaceous, dull, very porous, slightly fine sandy (15%) limy (15%) claystone  
 phosphate; glauconite; pyrite  
 fossils, forams and bryozoa
- 3600-3620 35% soft, medium gray, slightly micaceous, dull, very porous, slightly fine sandy (15%), limy (15%) claystone.  
 40% quartz sand, medium to very coarse grained  
 15% light olive gray, dull, microcrystalline, dolomitic (20%) limestone  
 8% yellowish gray, some fossiliferous, dull, microgranular limestone  
 glauconite; fossils- bryozoa fragments
- 3620-3640 sample missing

- 3640-3660 85% soft, very pale orange, dull, chalky, very porous, microgranular limestone  
 8% coarse to very coarse quartz sand  
 5% hard, flaky, partially rusted metal coated on one side with flakes of  $\text{CaCO}_3$   
 2% soft, medium gray, slightly micaceous, dull, very porous, slightly fine sandy (15%), limy (15%) claystone  
 a few light olive gray sucrosic, fine crystalline, fine sandy (10%) dolomite- caving?  
 fossils- a few forams
- 3660-3680\* 50% medium to very coarse grained quartz sand  
 35% light olive gray, fossiliferous, dull, microgranular limestone; some as shell prismatic layer fragments  
 12% hard, metallic luster, shiny, massive pyrite  
 glauconite; phosphate; fossils- shell fragments, prismatic layers, forams, ostracodes
- 3660-3680\* Second sample of above--identical
- 3680-3700\* 38% soft, finely fissile, medium gray, slightly micaceous, dull, very porous, fine sandy (10%) limy (15%) claystone  
 25% medium to very coarse quartz sand  
 1% glauconite  
 phosphate  
 35% soft, light olive gray, fossiliferous, slightly glauconitic, dull, slightly sandy (10%) limestone  
 massive pyrite chunks  
 fossils- shell fragments, forams, ostracodes, bryozoa
- 3700-3720\* Same as above but with some brittle, moderate yellowish brown 10YR5/4 sucrosic, resinous, finely crystalline dolomite-3%  
 fossils- shell fragments, bryozoa, ostracodes, forams.
- 3720-3740\* 35% hard, medium dark gray, N4 or gold, metallic luster, massive pyrite  
 30% moderate yellow brown, fossiliferous, dull, microgranular, limestone  
 25% medium to coarse grained quartz sand  
 8% moderate yellowish brown, sucrosic, slightly limy (10%) dolomite  
 glauconite  
 fossils- shell fragments, forams, ostracods
- 3740-3760\* 55% brittle, medium gray, dull, very porous, very limy (40%) claystone  
 30% soft, light gray to very light gray, fossiliferous, dull, slightly porous, slightly fine sandy (10%) limestone  
 10% medium to coarse grained quartz sand  
 4% pyrite  
 glauconite  
 fossils-shell fragments, bryozoa, forams, ostracods, gastropod
- 3760-3780 sample missing

- 3780-3800 95% brittle, finely fissile, medium gray, dull, porous, very limy (40%) shale  
5% very light gray, dull, very porous, slightly fine sandy (15%) limestone--caving?  
a few platy rusted metal fragments  
fossils- ostracodes
- 3800-3820\* 95% shale as above  
4% platy, very pale orange, banded, porous, micrograinular travertine limestone  
some quartz grains; pyrite; dolomite---all caving?  
fossils- shell fragments? ostracodes, forams
- 3820-3840\* Same as above, but no travertine; fossils-forams, ostracodes
- 3840-3860 95% calcareous shale, as above; quartz grains; dolomite chunks, limestone-2%; pyrite  
fossils- forams, ostracodes, shell fragments
- 3860-3880 Same as above; forams, ostracodes, fragments
- 3880-3900 90% brittle, finely fissile, medium gray, dull, porous, very limy (40%) shale  
9% light olive gray to very light gray fossiliferous, dull, microgranular limestone;  
quartz grains; pyrite; glauconite; one lignite fragment;  
fossils- shell fragments, forams, ostracodes
- 3900-3920 Same as above; also contains a few .5-2mm phosphate grains, some glauconite; fine sandy limestone  
fossils-shell fragments, ostracodes, forams, shark tooth
- 3920-3940 95% brittle, fresh, hard, medium gray N5 dull, porous, very limy (40%) shale  
3% very light gray, slightly micaceous, glauconitic, dull, porous, fine sandy (15%) limestone--cave?  
1% light olive gray, fossiliferous, dull, microgranular limestone glauconite; a few quartz grains; metal drill parts  
fossils- shell fragments, a few forams
- 3940-3960 Same as above but limy shale 90% of sample and glauconitic limestone is 8%; also some pyrite; fossiliferous
- 3960-3980 95% limy shale as above  
4% sandy limestone as above--cave?  
quartz grains; glauconite; pyrite;  
fossils- shell fragments and ostracodes
- 3980-4000 no sample
- 4000-4020 no sample
- 4020-4040 same as above; shell fragments and ostracodes
- 4040-4060 Same as above; shell fragments and forams

- 4060-4080 Same as above; shell fragments and forams
- 4080-4100 55% brittle, finely fissile, medium gray N5 dull, porous, very limy (40%) shale  
 35% brittle, very light gray, slightly micaceous, and slightly glauconitic, slightly porous, slightly dolomitic (10%), fine to medium sandy (30%) limestone  
 8% very light gray N8 to light olive gray 5Y6/1, dull, microgranular limestone-fossiliferous  
 several light olive gray, slightly micaceous, sucrosic, porous, fine grained dolomite occurs  
 pyrite; glauconite; quartz grains; sphalerite  
 lignite- a few fragments  
 fossils- shell fragments and forams
- 4100-4120 As above, no sphalerite;  
 shell fragments, ostracodes, forams
- 4120-4140 65% brittle, light olive gray, micaceous, glauconitic, sucrosic, very porous, fine to medium sandy (40%) fine to medium crystalline limestone  
 25% brittle, finely fissile, medium gray N5 dull, porous, very limy (40%) shale  
 5% brittle, light olive gray, sucrosic, fine sandy (10%), fine to medium crystalline dolomite  
 1% pyrite  
 3% quartz sand grains, fine to very coarse  
 glauconite;  
 5% calcite crystals and massive, microcrystalline limestone  
 fossils- shell fragments
- 4140-4220 no samples, April, 1976
- 4220-4240 50% brittle, very light gray, N8, micaceous, glauconitic, porous, fine sandy (20%) limestone  
 40% brittle, finely fissile, medium gray N5, dull, porous, very limy (40%) shale  
 5% light olive gray, micaceous, glauconitic, sucrosic, very porous, finely crystalline dolomitic (15%) fine grained sandstone  
 5% medium to very coarse grained quartz sand  
 lignite; pyrite; glauconite  
 fossils-shell fragments, ostracodes
- 4240-4260 50% gray calcareous shale as above  
 40% brittle, light olive gray, micaceous, slightly glauconitic, sucrosic, porous, fine sandy (44%) finely crystalline dolomite  
 5% light olive gray, slightly micaceous, porous, fine sandy (15%), microgranular limestone  
 lignite; sphalerite; fossils a few shell fragments
- 4260-4280 sample missing

- 4280-4300 60% brittle, finely fissile, medium gray, M5, slightly fossiliferous, dull, very porous, very shaly (45%) limestone  
 30% very light gray, micaceous, slightly glauconitic, dull, porous, fine sandy (15%) finely crystalline limestone  
 5% brittle, olive gray, micaceous, sucrosic, porous, finely crystalline dolomite  
 5% light olive gray, dull, microcrystalline limestone; includes shell fragments  
 lignite; pyrite  
 ostracodes (in the shaly limestone)
- 4280-4300\* second sample  
 same as above; more lignite, some with a sulfur druse on the surface  
 shell fragments
- 4300-4320 45% brittle, finely fissile, medium gray, dull, very porous, very shaly (40%) limestone  
 45% brittle, light olive gray, sucrosic, very porous, fine sandy (35%) dolomite  
 10% light olive gray, dull, microcrystalline limestone  
 lignite; shell fragments
- 4320-4340 85% shaly limestone as above  
 6% sandy dolomite as above  
 5% glauconitic, sandy limestone as above  
 4% gray, microcrystalline limestone as above; includes shell fragments  
 pyrite; shell fragments
- 4340-4360 75% shaly limestone as above  
 10% sandy limestone as above  
 5% sandy dolomite as above  
 10% microcrystalline fossil fragmental limestone as above  
 pyrite; shell fragments
- 4360-4380 Same as above
- 4380-4400 75% shaly limestone as above  
 10% fossiliferous, microcrystalline limestone as above  
 5% glauconitic, sandy limestone as above  
 10% sandy dolomite as above  
 pyrite; shell fragments
- 4400-4420 75% shaly limestone  
 10% fossiliferous microcrystalline limestone  
 10% sandy dolomite as above  
 5% sandy limestone  
 pyrite; shell fragments
- 4420-4440 Same as above

- 4440-4460 55% tough, yellowish gray 5Y8/1, micaceous, glauconitic, sucrosic, very porous, limy (15%) fine to medium sandy (30%) fine to medium crystalline dolomite  
 40% brittle, finely fissile, medium gray N5, dull, very porous, very shaly (40%) limestone  
 5% very light gray N8, dull, microcrystalline limestone, includes shell fragments  
 pyrite; glauconite; shell fragments
- 4460-4480\* 65% gray shaly limestone as above  
 25% hard, light olive gray, slightly micaceous, dolomitic (35%) fine to medium grained sandstone  
see  
below 5% yellowish gray, slightly micaceous, dull, slightly sandy (10%) microcrystalline limestone  
 5% coarse to 4 mm granule quartz sand; a few feldspar grains in the sand  
 pyrite; shell fragments-brachiopod
- 4460-4480 second envelope  
 70% brittle, light olive gray, micaceous, glauconitic, porous, finely crystalline dolomitic (30%) sandstone  
 15% brittle, finely fissile, medium gray, dull, very porous, very shaly (40%) limestone  
 10% very light gray, micaceous, glauconitic, porous, dolomitic (10%) fine sandy (40%) limestone  
 5% 1-3 mm quartz grains  
 pyrite; fossils- a few shell fragments
- 4480-4500 Same as above, different percentages;  
see 30% dolomitic sandstone  
below 35% shaly limestone  
 5% sandy limestone  
 30% quartz grains
- 4880-4500 second sample  
 same as above, but different percentages; shell fragments; rose quartz