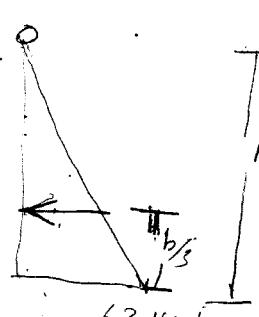
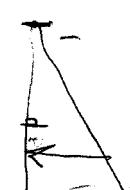


GGS 1198

Formation	Top	Bottom	Description*
Ocala	0	300	Sandstone w/stks sh & lime.
Avon Park	300	412	Dolomite, very sdy
	412	795	Limestone, very foss, very porous
	795	1610	Lime and Dolo interbedded (940-1180 no returns)
Tuscaloosa	1610	1944	Limstone, glauconitic in part.
	1944	2940	Dolomite, tan, chky in part, stks anhydr
	2940	3280	Limstone, cky, floating dolo crystals.
	3280	3708	Limstone, very chky, stks of shale.
	3708	4230	Shale, gray to gray-green, very calcareou
	4230	4350	Sd, F-VF grain, tight, greenish, dolomiti interbedded w/gray-green sh.
	4350	4508	Shale, gray-brown
	4508	4532	Shale, white, some mottled red and maroon
	4532	4614	Sand, VF-M grain, glassy, quartzitic in p some red, orange & yellow.
	4614	4690	Shale, gray, sdy, interbedded w/dark gray, quartzitic sd and quartzite.
	CORE 4678-4690		Rec 2 1/2' quartzite, dk brn, very hard
	500'		7', shale, blk, sdy, hard.
	DST #1 4195-4690		
>	IHP 2106	PSIG	
-	IFP 259	PSIG	0 end of 5 min preflow
-	FFP 1326	PSIG	0 end of 60 min
+	ISIP 1832	PSIG	/ 35 min
+	FSIP 1818	PSIG	/ 60 min
>	FHP 2106	PSIG	
	Recovered 2863' of salt water cut mud.		
			4175 250 4445
			
			
			4195 = 1832 Psi

* Shows all important zones of porosity, detail of all cores, and all drill-stem tests. Including depth interval tested, cushion used, time tool op, fluid used, cut-in pressures, and recoveries.

31E12

Georgia Geological Survey well no. 1193
Calden County, Georgia

Pan American Petroleum Co., Union Camp no. B-1
Drilling Permit no. 80

TD 4685; logged to 4620, coring thereafter

Logged by Gilbert L. Treadwell, completed March 24, 1976

* at a depth indicates a microfossil slide was prepared and is in the sample envelope.

Cobb County, Georgia
 PanAmerican Petroleum Corp.
 Permit #80
 Completed 9-17-70 Total depth 4690'
 Logged by G. L. Treadwell, Emory University
 0-50' no samples

SUMMARY

50'-510' Very phosphatic, slightly fossiliferous, limy, fine-very coarse grains and granules (1/8-4 mm), poorly sorted sand. Occasional interbedded limestone.

510'-800' Very pure, white, very fossiliferous limestone, bottom of section contains up to 35% dolomite.

800-850' Phosphatic, clean, fine-very coarse grains and granules (1/8-6 mm), poorly sorted, rounded sand.

860-970' Fresh, hard, dark yellowish brown (10YR4/2), nonporous-vuggy, dolostone.

970-1300' No samples

1300-3730' Alternating beds of gypsiferous or anhydritic, micaceous, sometimes glauconitic limestone and dolostone. Lithologic determinations are at times difficult because of the amount of fibrous fiber in sample.

3730-4210' Fresh, brittle, fissile, olive gray (5Y 7/1), fossiliferous (micro forams), waxy, calcareous (10-40%) shale.

4210-4500' Shale as above with new glauconite, mica, well sorted, limestone-cemented, nonporous, very fine-fine grained, clayey, calcareous sandstone.

4500- New white/red mottling, noncalcareous shale and dense fractured, silica cemented quartzite and at 4570' fine-medium grained, subrounded, iron stained, medium sorted, silica cemented sandstone.

4500' probably represents first fragments of basement.

DETAILED ANALYSIS

50 No samples

50 Fresh, clear to cloudy white and gray, fine-very coarse grains and granules (1/8-3 mm), poorly sorted, very phosphatic (35%-black, shiny, rounded, 1-6 mm some sandy), limy(5%), sand.

two major sand size categories: 1) about $\frac{1}{2}$ mm, mostly clear, subangular. 2) about 2 mm, clouded rounded. Limestone is whitish to light tan, microcrystalline, phosphatic and sandy. Some limestone encrustations on phosphate.

Slide-megafossils, shark tooth and ?

60 Little change from above, less phosphate (30%), sand size range the same but average size lower (.75 mm)

The majority of the sample is olive gray (5Y 4/1), clayey, fine sandy, porous, loosely cemented limestone. In sample are also pieces of the white microcrystalline limestone from above, phosphate and sand.

60 Like 60 to 70. very phosphatic (30 %), limy (5%), sand with two size categories.

60 Fresh, phosphatic (20%), white-very light gray (N 8), slightly fossiliferous, shell imprints, porous, microcrystalline, sandy (35%), limestone. The limestone incorporates medium sorted (.75 mm) sand, also blocky rounded phosphate of same size.

60 I see no lithologic reason for these oddly spaced, overlapping samples. The sample contains lithologies as above.

45% limestone- both white-light gray, sandy phosphatic type and darker gray to olive, porous, clayey, loosely cemented type;

35% quartz sand, clear to cloudy white-gray, average 1 mm. 20% phosphate, black, rounded, sandy, some dull gray.

60-150 like 50-60

60-150 missing.

60-160 Fresh, cloudy white-gray to clear, phosphatic (7%), medium-very coarse grains and granules ($\frac{1}{4}$ -4mm), average 2 mm, well sorted, rounded, elongate, limy (5%) sand.

60-170 like above (150-160) with more phosphate (12%) and limestone (10%)

60-190 Fresh, clean, clear to cloudy white and some gray, phosphatic (2%), medium-very coarse grains and granules ($\frac{1}{4}$ -6mm) average 1 mm, well sorted, well rounded, limy (2%), sand.

60-200 Like 160-170

Fresh, cloudy white-gray to clear, phosphatic (3%), medium-very coarse grains and granules (4-5 mm), average 1 mm, medium sorted, rounded, limy (5%), cherty (8%) sand. Chert, mottled, olive gray (5Y 4/1) and greenish gray (5GY 6/1), very dense, angular chips and sandy. It looks like micritic limestone but does not fizz in HCl.

210-220* Fresh, white, phosphatic (12%), microcrystalline, powdery, slightly porous, sandy (40%) limestone. Some limestone is chalklike, others are sandy with phosphate.

210-220 Dolomitic limestone as above with sand (15%) and phosphate (8%)

210-240 Like 210-220. Huge chunks of limestone (25 mm) with sand (40%) and phosphate (10%)

220-250 Same with less sand and phosphate

250-260 Fresh, clear to cloudy white-gray, phosphatic (15%), fine-very coarse grains and granules (1/8-4 mm), average 1 mm, poorly sorted, rounded, limy (15%) sand. One piece of poorly sorted, iron-cemented sandstone with phosphate and limestone.

260-270 little change

270-280 Same. a few pieces of sandstone with calcareous cement.

270-280 Fresh, light olive gray (5Y 6/1), phosphatic, sandy (10%), very clayey, limestone. Washing has disconsolidated most aggregates so washed sample is mostly fragments.

280-310 Fresh, clear to cloudy white-gray, phosphate (10%), fine-very coarse grains-granules (1/8-5 mm), average 1 mm, poorly sorted, rounded, elongate, dull-vitreous, limy (30%) sand. Some medium sorted, coarse grained, limestone cemented sandstone, with phosphate as above. The limestone cemented sandstone seems to be gradational to the sandy phosphatic limestone. As the cement percentage rises the distinction between sandstone and limestone is difficult.

280-310 Phosphatic (5%), limy (45%) sand. The limestone is whitish to light gray (N7) to light olive gray (5Y 6/1), micro-crystalline, medium coarse, sandy and phosphatic.

280-320* New Limestone. Fresh, cream white to very light gray (N8), dense calcarenite, microcoquina and individual fossils, large (2 mm) flat forams and much bryozoa. Limestone dissolves in acid with little if any residue. Still some sand, phosphate and limestone different from above.

280-330 Same as above

280-340* Some limestone

310-340 Samples with wider intervals than 10' may represent circulated samples. The lithology in this sample is from before 310'. Microcrystalline, sandy, phosphatic limestone (50%), rounded, average coarse grained sand (40%), black rounded slightly sandy phosphate (10%).

340-350 Back to 100% limestone as calcarenite (sand sized limestone fragments in limestone cement), microcoquina and individual fossils may be from unconsolidated microcoquina. Also pelecypod molds and fragments.

350-360 same

360-370 Limestone as above. Also 3 large (10 mm) rounded, limestone cemented, olive gray (5Y 4/1), fine grained sandstone pieces.

370-380^{SC} Pure limestone as calcarenite, microcoquina and individual fossils. Heavily fossiliferous. Also sand, phosphate and limestone as cave.

380-390* No change

390-400 Same

370-400 Envelope marked "out of place?" Sure looks it. Very clayey, microcrystalline limestone, light olive gray (5Y 6/1)

390-410* Pure limestone as cream white to very light gray (N8), chalky calcarenite, microcoquina, and individual fossils.

410-420 No change

420-430 Same

400-430 Pure 100% cream white limestone.

430-440 No change

440-450 Same

450-460 Pure white limestone (100% calcarenite, microcoquina, fossils)

430-460 Same with some pure calcite chunks and prismatic aragonite

460-470 No change

470-480 More pelecypod fragments

430-490 Pure 100% limestone

450-490 Pure limestone as above, with light gray (N9) pelecypod fragments.

490-500 Pure, white limestone. A multitude of fossils, beautiful forams (mostly flat, spiral), lacy and columnar bryozoa.

1-510 White to very light gray (N8) pure limestone as microcoquina, calcarenite and individual fossils.

1-520 No change

1-520 No change

1-530 Calcarenite is denser, microcrystalline in places, may be recrystallized. The limestone and fossils are really striking. This represents an amazingly pure and uniform section. Still some bits of sand and phosphate but probably cave.

1-540 No change

1-550* Some echinoid plates

1-560 Same old chalky, white limestone with a multitude of fossils. Most is porous calcarenite and microcoquina. Also some dense microcrystalline pieces that may be fragments of larger fossils.

1-570 No change

1-580 Same

1-590 Same

1-600 Still same

1-610 No change

1-620* Same white, chalky limestone as calcarenite, microcoquina and individual fossils

1-630 no change

1-640 same

1-650 same

1-660 more calcarenite, porous; less microcoquina and individual fossils.

1-670 same

1-680 no change. still pure, white limestone

1-690* no change

1-700* new orbicular forams

1-710 no change

70-720 10% clean, clear, angular to round, fine to very coarse grains (1/8-2 mm), average $\frac{1}{2}$ mm, poorly sorted sand
2% phosphate, black pitted, rounded grains, average 4 mm. May be cave from above and probably is but greater amounts. The majority is still fresh, cream white to very light gray (N8), partially microcrystalline partly chalky, dense to porous, pure (100%) limestone

70-730 no change

70-740 same

70-750 as above, pure limestone, very light gray (N8), chalky to microcrystalline, mostly as calcarenite with micro-coquina and individual fossils. Forams are mostly orbicular or saucer-shaped, 1 mm in diameter. Also 10% sand and phosphate.

70-760 no change

70-770* New dolomite. Cream-white limestone as above, mostly calcarenite, now with finely crystalline (1/8- $\frac{1}{4}$ mm) rhombs of very pale orange (10YR 8/2), (light tan) dolomite in the limestone cement. About 15% dolomite.

70-780 same as above

70-790 Similar to above but more dolomite (35%) giving an overall darker color of pale yellowish brown (10YR 5/2), Most rhombs are in calcarenite. Some fossils seem partially recrystallized. A few pieces of pale brown (5YR 5/2), porous sucrosic, pure dolomite. No evaporite.

70-800 like 770-780. Less dolomite. Mostly chalky calcarenite and fossils. Dolomite 15%

800-810 Dominantly clear, clean, indurated coarse grained sand. Clean, clear, phosphatic (2%), fine to very coarse grains and granules (1/8 to 6 mm), average 1 mm, medium sorted, rounded, vitreous, limy (15%) sand. Limestone is like above, chalky, white calcarenite with dolomite rhombs and fossils. A few chunks of moderate yellowish brown (10YR 5/4), dense, sucrosic dolomite.

810-820 Sand (86%), phosphate (1%) as above. Some in micro-crystalline, limestone-cemented sandstone (coarse grained, well sorted). Also 8% chalky, white limestone and 5% moderate yellowish brown (10YR 5/4) sucrosic, dense to vuggy, finely crystalline dolomite.

820-830 89% quartz sand. Clean, clear, dominantly coarse grains, rounded, vitreous, phosphatic, well sorted.
6% dolomite. Some tightly packed, vuggy, sucrosic, rhombic crystalline pieces. Others are rhombs in chalky limestone cement;
5% white, chalky limestone.

-840 Clean, clear, phosphatic (1%), fine to very coarse (1/8 - 2 mm), average .71 mm, well sorted, vitreous rounded, limy (3% 1 mm, white chalky fragments); dolomite (4% - mostly as moderate yellowish brown sand) quartz sand.

-850 same as above

-860 missing

-870 Dominantly pure dolomite. Fresh, hard, dark yellowish brown (10YR 4/2), slightly fossiliferous (a 7 mm, dolomitized, echinoid shell), dull, nonporous to porous to vuggy dolostone (90%).
5% of sample is cement
5% is a strange rock with large (2 mm) angular, milky quartz grains in a calcareous, pale red (5r 6/2) clay cement. In HCl, chunks slowly dissolve and disaggregate with the clay turning bright orange. I have seen this same rock before in GGS 876 or maybe GGS 3146. It is described as a wind siltstone with large, angular inclusions. The dolomite is mostly a very dense, crystalline, sucrosic type, sometimes vuggy. It looks quite like horehound candy. The other type is finely rhombic, crystalline, porous and lighter brown in color (about light brown 5YR 6/4). Both types are essentially pure dolomite, with a very slow reaction in HCl.

-880 Dolomite (dolostone) as above with more of the finely rhombic, crystalline, porous type. Also 10% of sample is cement, with cellophane; 2% is the calcareous, red clay rock. In addition is a flat, brittle, silvery, metallic mineral with white limestone intergrowth, that I have seen in another well GGS 1197 at 1100'. It may be arsenopyrite.

-890 Pure dolomite like above. The dense horehound candy type and the porous, rhombic crystalline type in approximately equal proportions.

-900 Still mostly dolomite but most pieces are now white, chalky limestone cemented. Some pieces of rather pure chalky limestone are present. Some pieces of the dense, crystalline dolomite but most is finely rhombic dolomite, rather tightly packed in limestone cement. Dominant color: moderate yellowish brown (10YR 5/4). About 15% limestone and 85% dolostone.

-910 Fresh, hard, white (N4), dull, nonporous, chalky, powdery, dolomitic (20%) limestone.

-920 Fresh, hard, dark yellowish brown (10YR 4/2), dense, some vuggy, sucrosic, resinous, nonporous, pure dolostone.

150 A rather strange conglomeration; some may be cave. Fresh, hard, moderate brown (5yr 3/4)-dark yellow brown to moderate yellow brown (all dolostone), slightly pyritic, phosphatic, resinous, dense-vuggy to porous (rhombic crystalline pieces), limy (2%), sandy (2%, round, very coarse grained), cherty (3%) dolostone.

140 same as above

150 missing

160 missing

170 no change from 920-930

1500 no samples

1-1530* Fresh, soft (ls), white limestone (N9); moderate yellowish brown dolomite (10YR 5/4), slightly micaceous, fossiliferous, chalky dull limestone, resinous dolomite, slightly porous, slightly sandy (3%), dolomitic (30%) limestone.

1-1560* Fresh, soft, white limestone (N9); moderate yellow brown dolomite; slightly micaceous, fossiliferous, dull limestone; resinous, chalky, slightly porous, slightly sandy (5%), gypsiferous, dolomitic (45%) limestone.

1-1590 same as above with less dolomite (30%)

1-1420 little change. Sill gypsiferous, slightly micaceous, 30% dolomite. Limestone is less powdery white, more cream-colored; a good many fossils.

1-1450 Fresh, soft, white to cream white, slightly micaceous, chalky powdery, fossiliferous, dull, slightly porous, dolomitic limestone (15%).

1-1480* Fresh, hard, cream white (5YR 8/1) to white (N9), slightly micaceous, fossiliferous, dull, nonporous, chalky, some powdery, anhydritic (a few pieces, bright white, crystalline, dolomitic (25%) limestone.

1-1500 little change. More chalky, powdery white limestone than above. Gypsum present; Also some weird fibrous stuff. probably filler or packing for sealing an aquifer.

1-1510 Fresh, hard light tan to very pale orange (10YLR 8/2), micaceous (2%), resinous, nonporous-vuggy, anhydritic (7%) dolomite. The dolostone is lighter in color in this sample. Some pieces are densely crystalline with vugs others are rhombic crystalline in white limestone cement. 10% limestone. Lots of filler.

1-1520 same as above

520-1530 Most of sample is the fibrous filler. What actual lithology there is is like above; also cellophane and cement.

530-1540 Micaceous, anhydritic, dolomitic (30%) limestone

540-1550 same

550-1560 Micaceous, anhydritic, dolomitic (40%) limestone

560-1570 Fresh, hard, cream white, chalky, powdery, micaceous, dull, nonporous, gypsiferous, anhydritic, dolomitic (15%) limestone

570-1580 same as above

580-1590* no change

590-1600 through all filler, cellophane and cement, little discernible change

600-1610 same as 1590-1600

610-1620 no change

620-1630 no change

630-1640 More dolostone in sample. Actual rocks however are only a small part of sample. May not reflect actual ground lithology. Still mica and evaporite (anhydrite and gypsum). Most of sample is the fibrous junk. 40% limestone

640-1650 Dolomitic (30%), limestone

650-1660 same

660-1670 same

670-1680 same, very micaceous

680-1690 no change

690-1700 Half of sample is rock, the other fiber filler (?) Fresh, hard to powdery, white (N 9), micaceous (may be from the filler), some very dark green inclusions may be glauconite; slightly fossiliferous, dull, slightly porous, chalky, anhydritic, dolomitic (10%) limestone.

700-1710 Same as above, white, chalky, powdery, possibly slightly glauconitic, anhydritic, micaceous, dolomitic (5%) limestone

710-1720 no change; negative kick on SP curve at 1720'

20-1730 Fresh, hard, white (N9), micaceous, slightly glauconitic, slightly fossiliferous, chalky, powdery, dull, nonporous, dolomitic (2%), limestone

30-1740 same with gypsum

40-1750 Fresh, hard, cream white to white (N9), chalky, powdery, slightly glauconitic, dull slightly porous, very gypsiferous (10%), pure limestone (rapid reaction with little resi due)

50-1760 same

60-1770 missing

70-1780 no change /mica

80-1790 no change. Still white, powdery, pure limestone/gypsum

90-1800 Fresh, hard, white (N9), chalky, powdery, micaceous, slightly glauconitic, dull, nonporous to slightly porous, anhydritic (10%), gypsiferous limestone

100-1830 Fresh, hard, cream-white to white (N9), chalky, slightly glauconitic, dull, nonporous to porous, gypsiferous to anhydritic, limestone. Some limestone as calcarenite with gypsum. The calcarenite is less tightly packed and thus the most porous of the limestone in the sample. Some of the dense pieces look partially finely microcrystalline and could be recrystallized.

110-1860 no change

120-1890 Fresh, hard, cream white to white to very lightgray (N8), slightly glauconitic, dull, slightly porous to porous, anhydritic, gypsiferous, limestone. Some calcarenite but most is dense limestone with indistinguishable components.

130-1920 Fresh, hard, cream white (N9), slightly glauconitic, very slightly fossiliferous, dull, slightly porous, anhydritic and gypsiferous (5%), dolomitic (10%), pale brown (10 YR 6/2), usually in finely crystalline rhombs, in calcarenite or in dolarenite), limestone.

140-1950 same

150-1980 Fresh, hard, cream white, dull, very slightly glauconitic, dull, slightly porous, anhydritic and gypsiferous, dolomitic (35%), limestone. Dolostone is dark yellowish brown (10YR 4/2), dense, crystalline, nonporous, vitreous. Some dolarenite with rhombs of finely crystalline dolomite in limestone cement.

160-2010 same as above with 45% dolomite

10-2040 Fresh, hard, dark yellowish brown (10YR 4/2), dense, sucrosic, crystalline, nonporous, resinous, anhydritic, limy (30%), dolomite.

10-2100 no sample; positive kick in SP at 2050

10-2130 94% dolostone. Dark yellowish brown (10YR 4/2), crystalline, sucrosic, dense, nonporous. Also some moderately yellow brown (10YR 5/4). All are white limestone coated making characteristics hard to determine without dipping in HCl. The coating could be cement but many dolostone pieces seem a bit rounded. They could have already been fragments and the coating be natural. The coating is not removed during washing.
3% limestone, white chalky, dense calcarenite
3% evaporite, mostly anhydrite

10-2160 Different from above. Most of sample is light gray (N7) to very pale orange (10YR 8/2), dense, microcrystalline, hard, nonporous, dull, calcic dolomite. Some pure dolomite as above. Also mica and evaporite. Less coating than above.

10-2180 same as above

10-2220 no change

10-2250 96% dolomite and calcic dolomite. Light gray and light tan calcic dolomite, now slightly porous. Joined now by tan, sucrosic, microcrystalline, very porous dolomite and dense, sucrosic, dark yellow brown, pure dolomite. Also mica and evaporite and limestone (2%)

10-2280 Same as above

10-2310 Fresh, hard, slightly chalky, slightly powdery, slightly fossiliferous (recrystallized), dull, porous to very porous, gypsiferous, anhydritic, dolomitic limestone. Some pieces are probably calcic dolomite, the distinction is difficult based on fizz rates in HCl. At any rate they exhibit characteristics of both dolomite and limestone. The porosity and texture indicate recrystallization.

10-2340 Same as above. Colors are light gray (N7) to light tan to cream white.

2340-2370 Little change. Some pure limestone and dolomite.

2370-2400 Little change. Light gray to light tan, slightly chalky, mostly very porous, dull, anhydritic, dolomitic limestone. Some pieces are non porous and laminated with dark gray layers. Some very porous, sucrosic, pure dolomite. Some slightly porous chalky white limestone, micaceous

2400-2410* Wier sample. Cream white, very micaceous (25%) slightly fossiliferous dull, chalky, anhydritic, dolomitic (30%) -most is medium grain sized, moderate yellow brown 10YR5/4 pieces- limestone

2410-2430 Samples missing.

2430-2460 Fresh, hard, very light gray (N8) to light gray (N9), slightly micaceous, dull, porous, partially microcrystalline, limy (10%), calcic dolomite. Looks like recrystallized limestone.

2460-2480 missing

2480-2520 Fresh, hard, light gray (N7) to very light gray (N8), micaceous, very slightly fossiliferous (faint from recrystallization), dull, porous to slightly vuggy, partially microcrystalline and sucrosic, anhydritic (2%), dolomitic limy (10%), calcic dolomite (88%).

2520-2550 Fresh, hard, light gray (N7) to pale yellow brown (10YR 6/2), micaceous, dull, porous, partially microcrystalline and finely sucrosic, patches of resinous, light brown, dolomitic, anhydritic, calcic dolomite. Many pieces look like recrystallized calcarenite.

2550-2580 no change

2580-2610 Fresh, hard, pale yellowish brown (10YR 6/2), micaceous dull-resinous, porous, more obviously crystalline, semi-sucrosic, anhydritic, dolomite. Rather pure. Some pieces with both anhydrite and dolomite.

2610-2640 No change.

2640-2670 Fresh, hard, very pale orange 10YR 8/2. and pale yellow brown 10YR6/2, micaceous, resinous, porous-vuggy, crystalline, sucrosic, anhydritic dolomite. Rather pure. Some pieces with both anhydrite and dolomite.

1-2700 Fresh, hard, pale yellow brown (10YR 6/2) to dark yellow brown (10YR 4/2), some dusky yellow brown (10YR 2/2), slightly porous to vuggy, sucrosic, dense, anhydritic (5%), dolostone. Specks in the dolomite and round chunks alone of dark black, organiz (?) unknown.

1-2750 Fresh, hard, very light tan (10YR 8/2) to pale yellow brown (10YR 6/2) to dark yellow brown (10YR 4/2), micaceous, resinous, slightly porous to vuggy, anhydritic, calcic dolomitic (25% light tan portion, dull chalky, more fizz than dolomite but not like limestone), dolomite.

1-2760 Fresh, hard light pale yellow brown (10YR 6/2), micaceous, sucrosic, dense, some vuggy, anhydritic (10%), dolostone.

1-2790 Same dolomite, less anhydrite (2%) /

1-2820 Same as above except for (15%) clear-orange, angular, vitreous, fine to medium grained (1/8 to 2 mm) sand.

1-2850 Fresh, hard, tan to light pale yellowish brown (10YR 6/2), micaceous, dense, resinous, sucrosic, nonporous to slightly vuggy, gyrosiferous (1%), anhydritic (3%) dolostone.

1-2880 no change

1-3020 missing

1-3050 Fresh, hard, pale yellowish brown (10YR 6/2), micaceous, dense, sucrosic, resinous, anhydritic, dolostone. Most pieces are coated, probably with cement, that is not removable during washing. Some pieces are composed of finely crystalline, dolomite rhombs. /

0-3080 no change

0-3110 Fresh, soft, white (N9), slightly micaceous, chalky, powdery, dull, slightly porous, anhydritic, dolomitic (25%), limestone. Dolomite as dense chunks with anhydrite and as finely crystalline rhombs in limestone. /

3110-3140 Fresh, soft, white, chalky, powdery, very slightly fossiliferous, dull, non porous, anhydritic, dolomitic (10%) limestone. Some prismatic aragonite and indistinct fossil fragments

3140-3240 samples missing

3240-3270* Fresh, hard, white N9, very slightly pyritic, slightly fossiliferous, dull, chalky, powdery, non porous, slightly anhydritic, dolomitic (15% is pale yellow brown sucrosic chunks and in finely crystalline rhombs in limestone) limestone

3270-3300 No change except for 20% dolomite

3300-3330 Little change. White, chalky, dolomitic (30%) limestone. Dolomite is in brown chunks and rhombic inclusions in limestone.

3330-3360 Same as above

3348 sidewall core: ls, wh, clastic, chky, glauco.

3350 sidewall core: ls, gy, chk, shy, glauco.

3360-3390 Fresh, soft, white N9, slightly glauconitic, slightly micaceous, powdery, chalky, dull, non porous, slightly anhydritic, dolomitic (25%) limestone.

3390-3420 Fresh, soft, white N9, slightly micaceous, chalky, powdery, dull, non porous, anhydritic, dolomitic (20%) limestone.

3420-3450 Fresh, soft, white, slightly micaceous, slightly glauconitic, slightly pyritic, chalky, powdery, dull, nonporous, anhydritic, dolomitic (10%) limestone.

3450-3480* Fresh, soft, white, slightly micaceous, slightly glauconitic, slightly fossiliferous, chalky, powdery, dull, nonporous, anhydritic, dolomitic (10%) limestone.

3478 sidewall core: ls, wh, chk

3480 sidewall core: ls, wh, chk

3480-3510 Same chalky limestone

3510-3540 Fresh, soft, white, slightly micaceous, chalky, powdery, dull, non porous, anhydritic, dolomitic (20%) limestone. Dolomite as dense, sucrosic, pale yellowish brown 10YR6/2 chunks and as rhombs in limestone.

3540-3570 Same, slightly pyritic

3570-3580 Sample missing

3580-3610 Fresh, soft, white, micaceous, slightly pyritic, chalky, dull, non porous, anhydritic, dolomitic (25%) limestone

3610-3640 Same micaceous, chalky, dolomitic (20%) limestone

3940-3970* Fresh, brittle, fissile, olive gray 5Y4/1 to light gray N7, pyritic, flaky, microfossiliferous, waxy, calcareous (25%) shale. Many small (less than 1 mm) pieces of light gray shale chips, less fissile and waxy than the olive gray pieces that favor rectangular cleavage.

3970-4000 Fresh, brittle, fissile, olive gray 5Y4/1 to light gray N7, lenses and veins of calcite, fossiliferous, waxy, calcareous (20-30%) shale. The light gray pieces contain more lime.

3976 sidewall core: sh, brn-gy, calc.

4000-4030* Fresh, brittle, fissile, olive gray 5Y4/1, fossiliferous, waxy, calcareous (30-40%) shale. Some shale chunks have been reworked. Darker gray, fissile shale and sometimes dolomite is incorporated in more calcareous, less fissile shale.

4024 sidewall core: sh, brn-gy, calc.

4030-4060 No change

4060-4090 No change

4070 sidewall core: sh, brn-gy, calc.

4090-4120 Fresh, brittle, fissile, olive gray 5Y4/1, fossiliferous, splintery, earthy, calcareous (20%) shale. Less reworked shale; most is uniform.

4100 sidewall core: sh, gy, gumbo, calc, calcite veins

4120-4150* No change

4130 sidewall core: sh, gy, gumbo, calc.

4150-4180 Little change, some iron staining; a pelecypod fragment

4162 sidewall core: sh, brn-gy, calc.

4180-4210 Little change; slightly silty calcareous (30%) shale.

4198 sidewall core: sh, gy, gumbo, dolomitic siltstone included

4210-4240* Change. 90% fresh, brittle, fissile, olive gray 5Y4/1, slightly pyritic, splintery, fossiliferous, earthy, waxy, slightly silty, calcareous (10%) shale. 10% new, fresh, hard, light olive gray 5Y6/1, micaceous, glauconitic, dull, well sorted, limestone cemented, non porous, angular, very fine grained (1/16-1/8 mm), clayey (25%), calcareous (20%) sandstone.

4217 sidewall core: sh, gy, gumbo

4222 sidewall core: sh, gy, gumbo

4228 sidewall core: siltstone, gy-grn

4234 sidewall core: sd, gy-grn, vf silt, calc.

4236 sidewall core: sd, gy-grn, vf silt, calc.

4240-4280 little change

4240 sidewall core: sh, gy-grn, gumbo, wh vf sd incl.

4244 sidewall core: sh, gy-grn, gumbo, wh vf sd incl.

4248 sidewall core: as above

4253 sidewall core: as above

4257 sidewall core: sh, gy-grn, gumbo

4262 sidewall core: sd, gy-grn, vf, v glauco, calc-doloc, tite

4269 sidewall core: sh, gy-grn, wh vf sd and silt incl, gumbo

4280-4310 Same as cuttings above; large shale chunks up to 2 cm

4280 sidewall core: sh, gy-grn, wh vf sd and silt incl, gumbo

4292 sidewall core: as above

4297 sidewall core: as above

4302 sidewall core: sd, vf, wh, glauco, slyt, dolo and calc, tite

4310 sidewall core: as above

4310-4340 Same cuttings as above

4315 sidewall core: sd, vf, wh, glauco, slyt, dolo and calc, tite

4320 sidewall core: sh, gy-grn, wh vf sd-slt incl and bands, calc

4322 sidewall core: as above

4340-4370 No change from cuttings above

4349 sidewall core: sh, gy-grn, wh vf sd-slt incl and bands, calc.

4370-4400 No change from cuttings above

4373 sidewall core: sf, vf-silt, some hard, doloc, some soft calc.

4400-4430* Little change from cuttings above

4403 sidewall core: sh, grn-gy, mica

4430-4470 No change from cuttings above

4436 sidewall core: sh, grn-gy, mica

4462 sidewall core: sh, grn-gy, mica, pyrite

4470-4500 No change from cuttings

4470 sidewall core: sh, grn-gy, mica

4480 sidewall core: as above

4490 sidewall core: as above

4493 sidewall core: as above

4500-4530 Change. Shale and sandstone as in above cuttings; new shale (7%) white with red mottling, also 2 pieces of black, hard quartzite or fine grained, silica cemented sandstone.

4500 sidewall core: sh, grn-gy, slty, mica

4505 sidewall core: sh, dk gy, soft, gumbo, mica

4513 sidewall core: sd, vf, brn, qtzic, shy, v hd, pyritic

4519 sidewall core: sh, wh, red and gy mottlg, streaks

4523 sidewall core: sh, wh, red and gy mottlg and streaks

4528 sidewall core: as above

4530-4560* As above cuttings, dominantly shale (88%) and glauconitic, lime cemented sandstone (5%) as above. New white, red mottled, non calcareous, wavy shale (5%), with red, globular, 1 mm inclusions (fossils?). Also 2% quartzite, dense, hard, fractured, white or black.

4536 sidewall core: sd, f-m, wh, pyr, tite

4544 sidewall core: sd, f-crs, wh, wh sh or cly matrix

4550 sidewall core: sd, f-crs, wh, wh cly or sh matrix, maroon mottlg

4557 sidewall core: sd, f-m, wh, wh cly or sh matrix, tite

4560-4590 More sandstone from above. Now 10% white, yellow to red stained, fractured, vitreous, well sorted, silica cemented, non porous, subrounded to subangular, fine to medium grained sandstone. Some with red inclusions as in the mottled shale.

4566 sidewall core: sd, f-m, wh, wh cly or sh matrix, tite

4570 sidewall core: sh, dk gy, sdy

4575 sidewall core: as above

4578 sidewall core: as above

4585 sidewall core: no recovery
4586 sidewall core: no recovery
4590-4620 last sample, same as above cuttings
4590 sidewall core: sd, f, bds of ylw and pnk sepearted by bds of maroon
4603 sidewall core: sd, vf, some pnk mottlg, shatterd (sml spl)
4610 sidewall core: no recovery
4611 sidewall core: no recovery
4613 sidewall core: sh, blk, sdy, some wh qtz inclns.
4622 sidewall core: sh, blk, sdy
4637 sidewall core: sd, gy, f, shy
4638 sidewall core: sltst, blk, qtztc, shattered (sm spl)
4640 sidewall core: sh, blk, finely mica
4645 sidewall core: sltst, blk, qtztc, hard, sm spl
4658 sidewall core: sh, blk, mica
4664 sidewall core: sh, blk, mica, few floating sd grs
4667 sidewall core: sh, blk, mica, vf sd inclns.

Diamond core no. 1,

4673-4695 recovered 9.5 feet ; 2.5 ft. quartzite, black, very hard, slightly calcareous, a few veins of white calcite; 7.0 ft siltstone, black, lightly sandy with rounded grains up to coarse size, sprinkling of white quartz inclusions up to .25 in., finely micaceous

4297) Sh, gray-green, wh VF sd-silt incl. and bands, calc.
 4302} Sd, VF, wh, glauco, silty, dolo & calc. tite.
 4310} Sd, VF, wh, glauco, silty, dolo & calc. tite.
 4315 Sd, VF, wh, glauco, silty, dolo & calc. tite.
 4320 Sh, gray-green, wh VF sd-silt incl. and bands, calc.
 4322 Sh, gray-green, wh VF sd-silt incl. and bands, calc.
 4349 Sh, gray-green, wh VF sd-silt incl. and bands, calc.
 4373 Sd, VF-silt, some hard dolomitie, some soft calc.
 4408 Sh, greenish-gray, mica.
 4436 Sh, greenish-gray, mica.
 4462 Sh, greenish-gray, mica pyritic.
 4470 Sh, greenish-gray, mica.
 4480 Sh, greenish-gray, mica.
 4490 Sh, greenish-gray, mica.
 4495 Sh, greenish-gray, mica.
 4500 Sh, greenish-gray, silty, mica.
 4505 Sh, dk gray, soft, gumboish, mica.
 4513 Sd. VF, brn, quartzitic, shy, V hard, pyritic.
 4519 Sh, wh, red & gray mottling and streaks.

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<u>Depth</u>	<u>Description</u>
4523	Sh, wh, red & gray mottling and streaks.
4528	Sh, wh, red & gray mottling and streaks.
4536	Sd F-M, wh, pyritic; tite.
4544	Sd F-Crs, wh, wh clay or sh. matrix.
4550	Sd F-Crs, wh, wh clay or sh. matrix, Maroon mottling.
4557	Sd F-Crs, wh, wh clay or sh. matrix, tite.
4566	Sd F-M, wh, wh clay or sh. matrix, tite.
4570	Sd F-Crs, gray, wh & red sh. incl., sideritic.
4575	Sh, dk gray, sdy.
4578	Sh, dk gray, sdy.
4586 & 85	No Rec.
4590	Sd. F; beds of yellow & pink separated by bands of maroon.
4603	Sd, VF; some pink mottling, shattered. (Small spl.)
4610 & 11	No Rec.
4618	Sh, blk, sdy, some large wh quartz inclusions.
4622	Sh, blk, sdy.
4637	Sd. gray, F, shy.
4638	Siltstone, blk, quartzitic, shattered. (Small spl.)
4640	Sh, blk, finely mica.
4645	Siltstone, blk, quartzitic, hard. (Small spl.)
4658	Sh, blk, mica.
4664	Sh, blk, mica, few floating sd. grains.
4667	Sh, blk, mica, VF sd. inclusions.

Diamond Core No. 1 46'3-85 Rec. 9 1/2'
 2 1/2' Quartzite, blk, V. Hard, sli calc, few veins wh calcite.

7' Siltstone blk, lightly sdy with rounded grains up to crse size,
 sprinkling of white qtz. inclusions up to 1/4", finely mica.

76 shots, 72 recoveries

<u>Depth</u>	<u>Description</u>
3348	Ls, wh, clastic, chky, glauco.
3350	Ls, gray, chky, shky, glauco.
3478	Ls, wh, chky.
3480	Ls, wh, chky.
3610	Ls, wh, chky.
3612	Sh, gray, calc, one side of bed plane, chky on other.
3720	Sh, gray, calc, gumboish.
3758	Sh, gray, calc.
3816	Sh, gray, silty, calc.
3885	Sh, gray, gumboish, calc.
3933	Sh, brownish-gray, calc.
3976	Sh, brownish-gray, calc.
4024	Sh, brownish-gray, calc.
4070	Sh, brownish-gray, calc.
4100	Sh, gray, gumboish, calc, calcite veins.
4130	Sh, gray, gumboish, calc.
4162	Sh, brownish gray, calc.
4198	Sh, gray, gumboish, dolomitic siltstone incl.
4217	Sh, gray, gumboish.
4222	Sh, gray, gumboish.
4228	Siltstone, gray-green.
4234	Sd, gray-green, VF-silt, calc.
4236	Sd, gray-green, VF-silt, calc.
4240	Sh, gray-green, gumboish, wh VF sd incl.
4244	Sh, gray-green, gumboish, wh VF sd incl.
4248	Sh, gray-green, gumboish, wh VF sd incl.
4253	Sh, gray-green, gumboish, wh VF sd incl.
4257	Sh, gray-green, gumboish.
4262	Sd, gray-green, VF, V glauco, calc-dolomitic, tite.
4269	Sh, gray-green, sh VF sd & silt incl. gumboish.
4280	Sh, gray-green, sh VF sd & silt incl., gumboish.
4292	Sh, gray-green, wh VF sd & silt incl., gumboish.
4297	Sh, gray-green, wh VF sd & silt incl., gumboish.
4302	Sd, VF, wh, glauco, silty, dolo & calc. tite.
4310	Sd, VF, wh, glauco, silty, dolo & calc. tite.
4315	Sd, VF, wh, glauco, silty, dolo & calc. tite.
4320	Sh, gray-green, wh VF sd-silt incl. and bands, calc.
4322	Sh, gray-green, wh VF sd-silt incl. and bands, calc.
4349	Sh, gray-green, wh VF sd-silt incl. and bands, calc.
4373	Sd, VF-silt, some hard dolomitic, some soft calc.
4408	Sh, greenish-gray, mica.
4436	Sh, greenish-gray, mica.
4462	Sh, greenish-gray, mica pyritic.
4470	Sh, greenish-gray, mica.
4480	Sh, greenish-gray, mica.