

APPENDIX 9 – CORE ANALYSES

Local Identifier	G-3885
USGS Station Number	253253080221201
Total Depth Drilled	91 feet (driller's depth)
Total Depth Airlifted	107.02 feet (digital optical log depth)
Cored Interval	4.55 to 91 feet
County	Miami-Dade
Latitude (NAD 83)	25-32-53.1 N
Longitude (NAD 83)	080-22-12.7 W
Elevation (NGVD 29)	6.790 feet (surveyed by Miami-Dade County)
Completion Date	July 8, 2010
Other types of available logs	OBI, Caliper, Acoustic Borehole Image, Fluid Temperature, Conductivity, Ambient Fluid, Ambient Flow, Pumping Flow, Gamma ray, Resistivity, Full Waveform Sonic
Owner	Miami-Dade County
Driller	Intercounty
Core described by	Kevin J. Cunningham
Top Miami Limestone	3.25 feet
Top Fort Thompson Formation	18.35 feet
Top Tamiami Formation	68.60 feet

G-3885	
Depth Interval (feet)	Core Description
0-3.25	No core recovery
3.25-12.72	<p>Lithofacies: Peloid packstone and grainstone</p> <p>Depositional texture: Peloid grainstone and minor peloid grain-to mud- to grain-dominated packstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: Abundant <i>Ophiomorpha</i> (including <i>Ophiomorpha nodosa</i>), less than 1-mm-diameter rhizoliths in upper part</p> <p>Ichnofabric: Ichnofabric index 5, <i>Ophiomorpha</i>-dominated</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypods (mostly fragmented), ooids, miliolids, gastropods, ostracods, <i>Halimeda</i> plates, coated grains, <i>Favreina</i></p> <p>Accessory grains: Less than 1% quartz grains, very fine to fine sand size, angular to subrounded</p> <p>Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 10-35% intra- and interburrow megaporosity, 40-65% total porosity. Permeability relatively high</p>
12.82 -12.83	<p>Lithofacies: Pedogenic limestone</p> <p>Depositional texture: Laminated calcrete</p> <p>Color: Very pale orange 10YR 8/2 to pale yellowish brown 10YR 8/2</p> <p>Trace fossils: Less than 1-mm-diameter rhizoliths present</p> <p>Ichnofabric: Ichnofabric index 2</p> <p>Porosity and permeability: Matrix porosity 5% microporosity and matrix permeability is very low</p>
12.83 -13.03	<p>Lithofacies: Pedogenic limestone</p> <p>Depositional texture: Arenaceous pedotubule calcrete</p> <p>Color: Very pale orange 10YR 8/2 to pale yellowish brown 10YR 8/2 and light brown 5YR 5/6</p> <p>Trace fossils: Less than 1-mm-diameter rhizoliths with concentric inner-wall linings, and uncommon alveolar septal fabric and micritized grains partly fills tubules (see thin section XSF-001)</p> <p>Ichnofabric: Ichnofabric index 4-5</p> <p>Accessory grains: 5-30% quartz grains, very fine to fine sand size, well sorted, angular to subrounded</p> <p>Porosity and permeability: Matrix porosity 2% microporosity and</p>

	matrix permeability is very low
13.03-13.97	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with peloid, skeletal grainstone and minor peloid, skeletal packstone matrix</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Ophiomorpha</i> abundant</p> <p>Ichnofabric: Ichnofabric index 5, <i>Ophiomorpha</i>-dominated</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypods, gastropods, <i>Halimeda</i>, <i>Schizoporella</i>, miliolids</p> <p>Accessory grains: 1-3% quartz grains, very fine to fine sand size; less than 1% dark mineral grains</p> <p>Porosity and permeability: 10-15% moldic, 15% interparticle, 25% intra- and interburrow vugs; 50-55% total porosity and relatively high permeability</p>
13.97-15.50	No recovery
15.50-15.66	<p>Lithofacies: Peloid packstone and grainstone</p> <p>Depositional texture: Peloid, skeletal grainstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Ophiomorpha</i> abundant</p> <p>Ichnofabric: Ichnofabric index 5, <i>Ophiomorpha</i>-dominated</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypods, gastropods, <i>Favreina</i></p> <p>Accessory grains: 1-3% quartz grains, very fine to fine sand size; less than 1% dark mineral grains</p> <p>Porosity and permeability: 10-15% moldic, 15% interparticle, 25% intra- and interburrow vugs; 50-55% total porosity and relatively high permeability</p>
15.66-17.30	No recovery
17.30-17.60	<p>Lithofacies: Peloid packstone and grainstone</p> <p>Depositional texture: Peloid, skeletal grainstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Ophiomorpha</i> abundant</p> <p>Ichnofabric: Ichnofabric index 5, <i>Ophiomorpha</i>-dominated</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypods, <i>Halimeda</i></p> <p>Accessory grains: 10-20% quartz grains, very fine to fine sand size; less than 1% dark mineral grains</p> <p>Porosity and permeability: 10-15% moldic, 15% interparticle, 25% intra- and interburrow vugs; 50-55% total porosity and relatively high permeability</p>
17.60-20.55	No recovery
20.55-25.70	Lithofacies: Coral floatstone and rudstone

	<p>Depositional texture: <i>Porites porites</i> rudstone with skeletal wackestone, packstone and grainstone</p> <p>Color: Grayish orange pink (10R 8/2) and minor very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrow mottled in part</p> <p>Trace fossils: <i>Thalassinoides</i> present, presence of rhizoliths increases upward (rhizolith tubule interiors lined with concentric alternating bands of microspar and micrite and some partly filled with alveolar septal fabric (see thin section XSF-004))</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Abundant branching corals (<i>Porites porites</i>), benthic forams (including archaiasinids, miliolids, peneroplids, soritids), pelecypods and gastropods, echinoid spines and plates, branching and encrusting coralline red algae, dasycladacean algae, ostracods, <i>Halimeda</i>, serpulid tubes</p> <p>Accessory grains: 10-35% quartz grains, very fine to medium-grained sand size; moderate sorting; 1% dark minerals</p> <p>Porosity and permeability: 10% moldic; 35% vugs (intraburrow and leached-coral vugs); 45% total porosity and relatively moderate permeability</p> <p>Comments: Unit becomes more grain-rich upward, rhizoliths increase upward to top of unit, many vugs filled with allochthonous quartz sand and sandstone</p>
25.70-28.41	No recovery
28.41-29.24	<p>Lithofacies: Mudstone and wackestone</p> <p>Depositional texture: Skeletal mudstone and skeletal wackestone</p> <p>Color: Grayish orange pink (10R 8/2) and minor very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: <i>Thalassinoides</i> present</p> <p>Ichnofabric: Ichnofabric index 5, <i>Thalassinoides</i>-dominated</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Fragments of small pelecypods, miliolids, small gastropods, ostracods</p> <p>Accessory grains: 5-10% quartz grains, very fine to lower fine sand size; well sorted; trace dark mineral grains</p> <p>Porosity and permeability: 3-5% moldic; 15-25% vugs (digital optical image shows a vertical solution pipe included in unit); total porosity is 23 to 30% and permeability is relatively moderate. Vertical permeability along solution pipe high</p>
29.24-33.22	No recovery
33.22-33.80	<p>Lithofacies: Mudstone wackestone</p> <p>Depositional texture: Skeletal mudstone and wackestone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p>

	<p>Trace fossils: Large and small rhizoliths. Large rhizoliths with bimodal inner diameters averaging 3 mm and 1 cm, and up to a 0.6 foot in length (unfilled or partly filled with allochthonous quartz sand and sandstone that contains ostracods and pelecypod fragments. Laminated calcrete lines some or all of the interiors of the large rhizoliths. Some small rhizoliths lined with alternating bands of microspar and micrite and some partly filled with alveolar septal fabric (see thin section XSF-006)</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Carbonate grains: Ostracods, peloids, pelecypod fragments, benthic foraminifers (including miliolids, archaiasinids, peneroplids), small gastropods, echinoid spines, very small globular planktic foraminifers</p> <p>Accessory grains: 1-10% quartz grains, very fine to medium sand size, moderate sorting; less than 1% dark mineral grains</p> <p>Porosity and permeability: 3-5% moldic, 10% rhizolith; 10% vuggy; 23-25% total porosity and relatively low permeability</p>
33.80-33.82	<p>Lithofacies: Pedogenic limestone</p> <p>Depositional texture: Laminated calcrete</p> <p>Color: Very pale orange 10YR 8/2, pale yellowish brown 10YR 8/2, and dark yellowish brown 10YR 4/2</p> <p>Trace fossils: Uncommon rhizoliths</p> <p>Ichnofabric: Ichnofabric index 2</p> <p>Porosity and permeability: Matrix porosity 5% microporosity and matrix permeability is very low</p> <p>Comments: 0.05 ft of microrelief on upper surface</p>
33.82-33.83	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Peloid, skeletal quartz sandstone</p> <p>Color: Pale yellowish brown 10YR 6/2 with minor very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Common burrow mottling</p> <p>Trace fossils: Common rhizoliths 0.5 mm to 5 cm inner diameter with larger rhizoliths commonly lined with laminated calcrete and allochthonous quartz sand and quartz sandstone (minor pelecypod fragments) and arenaceous mudstone</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including miliolids, archaiasinids)</p> <p>Accessory grains: 60-70% quartz grains, very fine to coarse sand size, (mostly upper very fine to lower fine sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 5-15% moldic; 5-15% vugs; porosity ranges from 10 to 30% and permeability is relatively moderate</p> <p>Comments: Karsted upper surface with 0.5 feet of paleotopographic relief and pedogenic autobrecciated fill, m</p>

33.83-37.43	<p>Lithofacies: Areneaceous skeletal packstone and grainstone, and skeletal quartz sandstone</p> <p>Depositional texture: Areneaceous peloid, skeletal packstone and grainstone, and peloid, skeletal quartz sandstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: Rhizoliths (sub-mm-scale and cm-scale), <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (archaiasinids, miliolids, <i>Elphidium</i>), echinoid spines and plates, ostracods, gastropods, very small globular planktic foraminifers,</p> <p>Accessory grains: 10-70% quartz grains, very fine to coarse sand size, (mostly upper very fine to lower fine sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 5-7% moldic; 4% root mold, 5% vuggy; 14-16% total porosity and relatively low permeability</p> <p>Comments: Rhizolith-related vugs that extend downward from the upper bounding surface of the MIS 11 HFC are partly filled or filled with allochthonous quartz sand or quartz sandstone or both</p>
37.43-38.82	No recovery
38.82-39.68	<p>Lithofacies: Molluscan ostracod wackestone</p> <p>Depositional texture: Molluscan ostracod wackestone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling; rhizoliths</p> <p>Trace fossils: Rhizoliths (some with interiors partly filled with alveolar septal structures)</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Carbonate grains: Gastropods (including <i>Planorbella</i>), pelecypod fragments, ostracods, <i>Elphidium</i></p> <p>Accessory grains: 15% fine-to coarse-grained quartz grains, poor sorting; 1% dark mineral grains</p> <p>Porosity and permeability: 5-7% moldic; 4% root mold, 5% vuggy; 14-16% total porosity and relatively low permeability</p> <p>Comments: Minor pedogenic autobrecciation. Unit contains semi-vertical fractures with about 6 inch horizontal spacing between fractures</p>
39.68-39.92	<p>Lithofacies: Areneaceous skeletal packstone and grainstone</p> <p>Depositional texture: Areneaceous peloid, skeletal packstone and grainstone</p> <p>Color: Very pale orange (10YR 8/2)</p>

	<p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: minor tubules with less than 1 mm inner diameters</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (archaiasinids, miliolids), echinoid spines and plates</p> <p>Accessory grains: 5-30% quartz grains, very fine to fine sand size, (mostly upper very fine to lower fine sand size), well sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 5-7% moldic; 20% vuggy; 25-27% total porosity and relatively low permeability</p>
39.92-40.98	No recovery
40.98-42.05	<p>Lithofacies: Rhodolith, coral floatstone</p> <p>Depositional texture: Rhodolith, coral floatstone with a peloid, skeletal mud- to grain-dominated packstone and grainstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: Very minor rhizoliths with less than 1 mm inner tubule diameter</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, pelecypods, rhodoliths, stick-shaped <i>Porites porites</i> (some encrusted with coralline red algae), benthonic forams (archaiasinids, miliolids, <i>Elphidium</i>), gastropods, dasycladacean algae, ostracods, branching coralline red algae, <i>Halimeda</i>, echinoid spines and plates, <i>Manicina</i> coral</p> <p>Accessory grains: 5-20% quartz grains, very fine to coarse sand size, moderately sorted; 1% dark mineral grains and less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% moldic, 15% intra- and interparticle, 10% vugs; 40% total porosity and moderately permeability</p>
42.05-43.72	<p>Lithofacies: Rhodolith, coral floatstone</p> <p>Depositional texture: Rhodolith, coral floatstone with a peloid, skeletal mud- to grain-dominated packstone and grainstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: Very minor rhizoliths with less than 1 mm inner tubule diameter, <i>Ophiomorpha</i> present (see comment)</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i> (see comment)</p> <p>Carbonate grains: Peloids, pelecypods, rhodoliths, stick-shaped <i>Porites porites</i> (some encrusted with coralline red algae), benthonic forams (archaiasinids, miliolids, <i>Elphidium</i>), gastropods, dasycladacean algae, ostracods, branching coralline</p>

	<p>red algae, <i>Halimeda</i>, echinoid spines and plates, <i>Manicina</i> coral</p> <p>Accessory grains: 5-20% quartz grains, very fine to coarse sand size, moderately sorted; 1% dark mineral grains and less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% moldic, 15% intra- and interparticle, 10% vugs; 40% total porosity and moderately permeability</p> <p>Comments: Firmground at upper bounding surface and <i>Glossifungites</i> ichnofacies at and below this surface <i>Bergaueria?</i> Associated with <i>Glossifungites</i> ichnofabric</p>
43.72-44.52	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous peloid, skeletal packstone and grainstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabric: Ichnofabric index 5, <i>Ophiomorpha</i>-dominated</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (archaiasinids, miliolids), echinoid spines and plates, <i>Schizoporella</i></p> <p>Accessory grains: 5-30% quartz grains, very fine to fine sand size, (mostly upper very fine to lower fine sand size), well sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 5-7% moldic; intra- and interburrow 30-40%; total porosity 45-47% and relatively high permeability</p>
44.52-49.50	No recovery—46.40-49.04 probable quartz sand based on digital optical image log
49.50-53.60	<p>Lithofacies: Quartz sandstone</p> <p>Depositional texture: Calcareous quartz sandstone</p> <p>Color: Very pale orange (10YR 8/2) and very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: Rhizoliths in upper part of unit with concentric microspar lining the inner wall of the tubules. <i>Ophiomorpha</i> present and possibly <i>Thalassinoides</i> or <i>Thalassinidean</i>-like crustacean traces</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i> or possibly mixed <i>Skolithos-Cruziana</i> association</p> <p>Carbonate grains: Pelecypods fragments, benthic foraminifers (including archaiasinids, miliolids), gastropod fragments, echinoderm spines and plates, ostracods</p> <p>Accessory grains: 65-85% quartz grains, very fine to fine sand size, (mostly upper very fine to lower fine sand size),</p>

	<p>moderately sorted, angular to subrounded; 1-3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% moldic, 5-10% vuggy, total porosity 10-15% porosity and relatively low permeability</p> <p>Comments: Vertical solution piping extends downward from upper bounding surface for up to a length of 2 feet. Top of upper bounding surface could be a HFC top</p>
53.60-54.70	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod floatstone with skeletal quartz sandstone matrix</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrows; vertical root structures</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypods, benthic foraminifers (including archaiasinids, miliolids, peneroplids), gastropods, branching coralline red algae, echinoid spines and plates, bryozoans</p> <p>Accessory grains: 55-80% quartz grains, very fine to fine sand size, (mostly upper very fine to lower fine sand size), moderately sorted, angular to subrounded; 1-3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-2% phosphorite grains</p> <p>Porosity and permeability: 5-10% moldic, 1-2% intra- and interparticle, 15% vugs , total porosity 21-27% porosity and relatively low permeability</p>
54.70-55.20	No recovery
55.20-56.50	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with arenaceous pelecypod, skeletal grainstone matrix</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: Possibly <i>Ophiomorpha</i> present</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypods (including <i>Chione</i>), benthic foraminifers (including archaiasinids, miliolids, amphistiginids), gastropods, echinoid plates and spines, branching coralline red algae, serpulids, bryozoans, ostracods</p> <p>Accessory grains: 15-40% quartz grains, very fine to fine sand size, (mostly upper very fine to lower fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1% phosphorite grains</p>

	<p>Porosity and permeability: 15-30% moldic, 5-10% intra- and interparticle, 15% vugs, total porosity 35-5% porosity and relatively high permeability</p>
56.50-59.40	No recovery
59.40-59.44	<p>Lithofacies: <i>Planorbella</i> floatstone and rudstone Depositional texture: <i>Planorbella</i> floatstone with mudstone matrix Color: Pale yellowish brown 10YR 6/2 Carbonate grains: <i>Planorbella</i>, skeletal fragments, discoid large benthic foraminifers Accessory grains: 10-20% quartz grains, very fine to fine sand size, well sorted, angular to subrounded Porosity and permeability: 5-10% moldic; 10% vuggy; 15-20% porosity and relatively low permeability Comments: Pedogenic autobrecciation</p>
59.44-61.10	<p>Lithofacies: Arenaceous mudstone and wackestone Depositional texture: Arenaceous skeletal wackestone Color: Very pale orange (10YR 8/2) Sedimentary structures/textures: Burrow mottled Ichnofabric: Ichnofabric index 5 Carbonate grains: Pelecypods fragments, gastropods (including <i>Planorbella</i>), benthic foraminifers (including <i>Elphidium</i>), gastropods, ostracods Accessory grains: 20-40% quartz grains, very fine to medium sand size, (mostly upper very fine to lower fine sand size), well sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-2% phosphorite grains Porosity and permeability: 5-10% moldic, 1-2% intra- and interparticle, 5% vugs, total porosity 11-17% porosity and relatively low permeability Comments: <i>Planorbella</i> and <i>Elphidium</i> suggest brackish conditions. Unit contains semi-vertical fractures with about 6 inch horizontal spacing between fractures</p>
61.10-61.50	<p>Lithofacies: Mudstone and wackestone Depositional texture: Mudstone and wackestone Color: Very pale orange (10YR 8/2) Trace fossils: <i>Skolithos</i> Ichnofacies: <i>Skolithos</i> Carbonate grains: Pelecypod fragments, benthic foraminifers (<i>Ammonia</i>, <i>Elphidium</i>, miliolids), ostracods, shark or other type of fish tooth (see thin section XSF-14) Accessory grains: 10-20% quartz grains, very fine to fine sand size, (mostly upper very fine to lower fine sand size), well sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains</p>

	<p>Porosity and permeability: 5% moldic, 5% vugs, total porosity 11% porosity and relatively low permeability</p> <p>Comments: Unit contains semi-vertical fractures with about 6 inch horizontal spacing between fractures. <i>Ammonia</i>, <i>Elphidium</i> suggest a brackish water environment of deposition</p>
61.50-64.40	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Peloid, skeletal mud- and grain-dominated packstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: <i>Thalassinoides</i> present</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods, benthic foraminifers (including miliolids, archaiasinids, soritids), gastropods, echinoid plates and spines, encrusting and branching coralline red algae (including rhodoliths), ostracods</p> <p>Accessory grains: 5-10% quartz grains, very fine to fine sand size, (mostly upper very fine to lower fine sand size), moderately sorted, angular to rounded; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 10% moldic, 5-10% intra- and interparticle, 15% vugs, total porosity 30-35% porosity and relatively moderate matrix permeability and relatively high fracture permeability</p> <p>Comments: Unit contains semi-vertical fractures with about 6 inch horizontal spacing between fractures</p>
62.33-65.00	No recovery
65.00-65.32	<p>Lithofacies: <i>Montastrea</i> framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Trace fossils: Uncommon borings into coral</p> <p>Ichnofabric: Ichnofabric index 2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Montastrea</i> is dominant taxa, very uncommon <i>Manicina</i></p> <p>Porosity and permeability: 30% framework porosity; relative permeability moderate</p> <p>Comments: <i>Manicina</i> fused with probable hardground at the upper bounding surface of underlying unit top at 65.32 feet</p>
65.32-68.60	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with skeletal mud- and grain-dominated packstone and grainstone matrix</p> <p>Color: Very pale orange (10YR 8/2)</p>

	<p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: Common <i>Ophiomorpha</i> and <i>Ophiomorpha nodosa</i> present</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypods (mostly small medium pebble sized), peloids, benthic foraminifers (including miliolids, archaiasinids, soritids, <i>Elphidium</i>, biserial), gastropods, echinoid plates and spines, branching coralline red algae, ostracods, dasycladacean algae, serpulid tubes</p> <p>Accessory grains: 15-40% quartz grains, very fine sand size to granule size, (mostly medium to coarse sand size), poorly sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 15-30% moldic, 5-10% intra- and interparticle, 15% vugs, total porosity 35-5% porosity and relatively high permeability</p> <p>Comments: Proable hardground at upper bounding surface as indicated by encrustation with <i>Manicina</i> coral that occur in unit above (65.00-65.32 feet) and isopachous bladed calcite cement lining the exterior of grains in the upper part of this interval. But, zoned pendant cements underlie skeletal grains and are suggestive of possible subaerial exposure related to upper bounding surface,</p>
68.60-	<p>Lithofacies: Mudstone and wackestone, and skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal wackestone and mud-dominated packstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Common rhizoliths typically with an 0.5-1 mm inner tubule diameter, but several mm in diameter and one up to 2 cm in diameter. All rhizoliths commonly partly filled or filled with allochthonous pelecypod fragment and discoid large foraminifer-bearing sandstone. <i>Thalassinoides</i> present</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), peloids, benthic foraminifers (including miliolids, archaiasinids, <i>Ammonia</i>, archaiasinids, <i>Elphidium</i>, broken amphistiginids), gastropods, echinoid plates and spines, branching and encrusting coralline red algae, ostracods, unidentified branching coral, pink barnacles. One area of interval contains a diffuse zone of <i>Planorbella</i>, skeletal wackestone</p> <p>Accessory grains: 20% quartz grains, very fine sand size to very</p>

	<p>coarse sand size, (bimodal size distribution—mostly very fine and coarse sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 2-10% moldic, 2-4 intraparticle, 15% vugs, total porosity 19-29% porosity and relatively low permeability</p> <p>Comments: Exposure surface at upper bounding surface of interval. <i>Ammonia</i>, <i>Elphidium</i>, and <i>Planorbella</i> are suggestive of a brackish and restricted marine influence on the paleo-environmental conditions of this interval</p>
70.90-72.55	<p>Lithofacies: Mudstone and wackestone, and skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal wackestone and mud- to grain-dominated packstone</p> <p>Color: Yellowish-gray 5Y 8/1 wet</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Thalassinoides</i> and unidentified Thalassinidean-like crustacean traces</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Peloids, pelecypods, gastropods, pink barnacles, uncommon rhodolith</p> <p>Accessory grains: 20-25% quartz grains, very fine sand size to very coarse sand size, (bimodal size distribution—mostly very fine and coarse sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 2-15% moldic, 2% intraparticle, 10% intraburrow, 10% vugs, total porosity 24-37% porosity and relatively low permeability</p> <p>Comment: minor cm-scale-wide vertical solution pipe observed on digital optical borehole wall image</p>
72.60-72.80	<p>Lithofacies: <i>Montastrea</i> framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Trace fossils: Uncommon borings into coral</p> <p>Ichnofabric: Ichnofabric index 2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Montastrea</i></p>
72.80-73.18	No recovery —Possible <i>Montastrea</i> framestone
73.18-76.10	<p>Lithofacies: Mudstone and wackestone, and skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal wackestone and mud- to grain-dominated packstone</p> <p>Color: Yellowish-gray 5Y 8/1 wet</p>

	<p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Thalassinoides</i> and <i>Ophiomorpha</i>, and unidentified Thalassinidean-like crustacean traces</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Skolithos-Cruziana</i> association</p> <p>Carbonate grains: Peloids, pelecypods, gastropods, pink barnacles, rhodoliths, discoid large benthic foraminifers, <i>Manicina</i> coral at uppermost part of interval</p> <p>Accessory grains: 20-25% quartz grains, very fine sand size to very coarse sand size, (bimodal size distribution—mostly very fine and coarse sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 2-15% moldic, 2% intraparticle, 20% intraburrow, 10% vugs, total porosity 34-47% porosity and relatively moderate permeability</p> <p>Comment: minor very irregular cm-scale-wide vertical solution piping (likely related to Thalassinidean-like crustacean burrows) observed on digital optical borehole wall image</p>
76.10-77.36	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal wackestone and packstone</p> <p>Color: Yellowish-gray 5Y 8/1 wet. Light olive gray 5Y 6/1 and very pale orange 10YR 8/2 intraclasts</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Thalassinoides</i>, and unidentified Thalassinidean-like crustacean traces</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods (including large <i>Ostrea</i>), large intraclasts (including light olive gray small to large pebble-size clasts of skeletal quartz sandstone and one very pale orange very large pebble-size clast of quartz sandstone with one side containing a 1cm-thick massive to laminated? calcrete with associated less than 1-mm-diameter rhizoliths?), pink barnacles, sand-dollar-shaped echinoids, one small rhodolith noted</p> <p>Accessory grains: 20-40% quartz grains, very fine sand size to very coarse sand size, (bimodal size distribution—mostly very fine and coarse sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 2-5% moldic, 2% intraparticle, 10% intraburrow, 10% vugs, total porosity 24-27% porosity and relatively high permeability</p> <p>Comment: Light olive gray intraclasts are definitely derived from</p>

	the Tamiami Formation and calcrete bearing intraclast is highly suggestive of a major subaerial exposure surface underlying this unit at some depth
77.36-78.20	No recovery
78.20-78.62	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal wackestone and packstone</p> <p>Color: Yellowish-gray 5Y 8/1 wet. Light olive gray 5Y 6/1 intraclasts</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Thalassinoides</i>, and unidentified Thalassinidean-like crustacean traces</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods (including large <i>Ostrea</i>), large intraclasts (including light olive gray small to small pebble-size clasts of skeletal quartz sandstone) pink barnacles, sand-dollar-shaped echinoids, one small rhodolith noted</p> <p>Accessory grains: 30-45% quartz grains, very fine sand size to very coarse sand size, (bimodal size distribution—mostly very fine and coarse sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 2-5% moldic, 2% intraparticle, 10% intraburrow, 5% vugs, total porosity 19-22% porosity and relatively moderate permeability</p> <p>Comment: Light olive gray intraclasts are definitely derived from the Tamiami Formation and calcrete bearing intraclast is suggestive of a major subaerial exposure surface underlying this unit at some depth</p>
78.62-80.60	No recovery
80.60-89.60	<p>Lithofacies: Skeletal quartz sand</p> <p>Depositional texture: Skeletal quartz sand</p> <p>Color: Light olive gray 5Y 6/1</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Ichnofabric: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypods (many fragmented, includes <i>Ostrea</i>), benthic foraminifers (including amphistiginids, <i>Elphidium</i>), globular planktic foraminifers, ostracods, echinoid spines and plates</p> <p>Accessory grains: 75% quartz grains, very fine sand size to very coarse sand size, (mostly upper fine and and lower), poorly sorted, angular to subrounded; 10% undifferentiated dark mineral grains (mostly black N1) and 5% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% interparticle porosity and</p>

	<p>relatively low permeability</p> <p>Comments: Friable quartz sand. Presence of common planktic globular foraminifers is suggestive of a relatively deep outer ramp environment of deposition. Very small patchy areas of interparticle micrite matrix</p>
89.60-107	<p>Lithofacies: Skeletal quartz sand</p> <p>Comments: Well drilled to 91 feet, but air-lifted to a depth of 107 feet. Based on digital optical borehole wall image, the lithology of this interval is quartz sand</p>

Local Identifier	G-3886
USGS Station Number	253527080195401
Total Depth Drilled	109 feet (driller's depth)
Cored from	4.50 - 108.2 feet
County	Miami-Dade
Latitude (NAD 83)	25-35-27.9 N
Longitude (NAD 83)	080-19-54.2 W
Elevation (NGVD 29)	9.905 feet (surveyed by Miami-Dade County)
Completion Date	September 8, 2010
Other types of available logs	OBI, Caliper, Acoustic Borehole Image, Fluid Temperature, Conductivity, Ambient Fluid, Ambient Flow, Pumping Flow, Gamma ray, Resistivity, Full Waveform Sonic
Owner	Miami-Dade County
Driller	Intercounty
Core described by	Kevin J. Cunningham
Top Miami Limestone	4.00 feet
Top Fort Thompson Formation	22.70 feet
Top Tamiami Formation	79.21 feet

G-3886 Test Corehole	
Depth Interval (feet)	Core Description
0 – 4.00	No core recovery
4.00-18.90	<p>Lithofacies: Peloid, ooid packstone and grainstone</p> <p>Depositional texture: Peloid, ooid grainstone and minor patches of peloid, ooid grain-dominated packstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Abundant <i>Ophiomorpha</i></p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, ooids (commonly upper medium sand size), small pelecypod fragments, <i>Halimeda</i>, <i>Favreina</i>, gastropods, miliolids</p> <p>Accessory grains: Less than 1% quartz grains, very fine to medium sand size, angular to subrounded</p> <p>Porosity and permeability: 15% pelmoldic and oomoldic, 15% inter- and intraparticle, 5% intra- and interburrow megaporosity, 35% total porosity. Permeability relatively moderate</p> <p>Comments: Most inner tubule area of <i>Ophiomorpha</i> is filled with a chalky-textured grainstone and provides for a moderate intraburrow permeability</p>
18.90-19.00	<p>Lithofacies: Pedogenic limestone</p> <p>Depositional texture: Laminated calcrete</p> <p>Comments: INTERVAL OF NO RECOVERY. Lithofacies interpreted from digital optical borehole wall image</p>
19.00-22.70	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with peloid, skeletal grain-dominated packstone and grainstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Ophiomorpha</i> present on digital optical borehole wall image</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypods, <i>Halimeda</i>, gastropods, <i>Schizoporella</i></p> <p>Accessory grains: Less than 1% quartz grains, very fine to medium sand size, angular to subrounded</p> <p>Porosity and permeability: 15% pelmoldic, 15% inter- and intraparticle, 10% intra- and interburrow megaporosity, 50%</p>

	total porosity. Permeability relatively high
22.70-23.45	No recovery
23.45-24.10	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous peloid, skeletal grain-dominated packstone and grainstone</p> <p>Color: Very pale orange (10YR 8/2), pale yellowish brown 10YR 6/2, grayish orange 10YR 7/4, moderate yellowish brown 10YR 5/4</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micropores lining the inner tubules and alveolar septal fabric)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, benthic foraminifers (archaiasinids), pelecypod fragments, miliolids, <i>Halimeda</i></p> <p>Accessory grains: 45% quartz grains, very fine to very coarse sand size, moderate sorting</p> <p>Porosity and permeability: 10% moldic, 2% intraparticle, 5-20% vugs; 17-32% total porosity and relatively moderate permeability</p>
24.10-33.00	No recovery—digital optical borehole wall images shows a vertical solution pipe with very high vertical permeability between 26.00 and 38.60 feet
33.00-33.92	<p>Lithofacies: Mudstone and wackestone</p> <p>Depositional texture: Peloid, skeletal wackestone</p> <p>Color: Mottled very light gray (N8) and very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: None noted</p> <p>Trace fossils: Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micropores lining the inner tubules) and large semivertical rhizoliths (up to 2-cm-wide inner tubule diameter) lined with laminated calcrete</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, small fragmented pelecypods, benthic foraminifers (including miliolids, archaiasinids, soritids), echinoderm spines and plates, ostracods, uncommon globular planktic foraminifers</p> <p>Accessory grains: 1-5% quartz grains, very fine to coarse sand size (mostly medium to coarse), angular to subangular, poorly sorted</p> <p>Porosity and permeability: 1-3% moldic, 1% intraparticle, 5-10% root porosity, 30% semivertical solution pipe; 37-44% total porosity and relatively low matrix permeability, but relatively high permeability associated with vertical solution pipe</p> <p>Comments: Semivertical solution pipe lined with allochthonous quartz sandstone and thin sub-millimeter-scale rhizoliths. Pipe</p>

	extends from 33.00 to 38.60 feet and is an extension of pipe that has its top at 26.00 on digital optical borehole wall image
33.92-37.65	No recovery—digital optical borehole wall images shows a vertical solution pipe with very high vertical permeability between 26.00 and 38.60 feet
37.65-39.84	<p>Lithofacies: Skeletal sandstone and skeletal packstone and grainstone</p> <p>Depositional texture: Burrow-mottled peloid, skeletal quartz sandstone and peloid, skeletal mud- and grain-dominated packstone</p> <p>Color: Mottled very light gray (N8) and very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: Common <i>Ophiomorpha</i>. Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micropor lining the inner tubules). The rhizoliths commonly are associated with inner tubule quartz sand and sandstone fill of <i>Ophiomorpha</i> and vugs</p> <p>Ichnofabrics: Ichnofabric index 5. “Whispy” <i>Ophiomorpha</i> suite</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, small fragmented pelecypods, benthic foraminifers (including miliolids, archaiasinids, soritids, broken amphisteginids?), echinoderm spines and plates, gastropods, ostracods, globular planktic foraminifers, branching coralline red algae</p> <p>Accessory grains: 1-60% quartz grains, very fine sand size to very coarse sand size, (mostly upper very fine), poorly sorted, angular to subrounded; less than 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 1-15% moldic, 1-3% intraparticle, 1-3% root porosity, 20-30% intra- and interburrow; 23-51% total porosity and relatively moderate permeability</p> <p>Comments: Semivertical solution pipe lined with allochthonous quartz sandstone and thin sub-millimeter-scale rhizoliths in upper part of interval to a depth of 37.00 feet. Much of intra- and interburrow pore space filled or partly filled with allochthonous quartz sand</p>
39.84-41.69	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with peloid, skeletal quartz sandstone matrix</p> <p>Color: Very light gray (N8) and very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Digital optical borehole wall image suggest <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p>

	<p>Ichnofacies: <i>Skolithos?</i></p> <p>Carbonate grains: Peloids, pelecypods, stick-shaped <i>Porites porites</i> (some encrusted with bryozoans or coralline red algae), and benthic forams (including archaiasinids, miliolids), gastropods</p> <p>Accessory grains: 65% quartz grains, very fine sand size to very coarse sand size, (mostly fine sand size), moderately sorted, angular to subrounded; less than 1-2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% moldic, 1-3% intraparticle, 10-20% intra- and interburrow; 21-43% total porosity and relatively high permeability</p> <p>Comments: None</p>
41.69-44.13	No recovery—Based on digital optical borehole wall image, lithofacies and depositional texture most likely the same as that in interval 44.13-45.30 feet
44.13-45.30	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous peloid, skeletal, red algae grain-dominated packstone and grainstone</p> <p>Color: Mostly very pale orange (10YR 8/2) and minor very light gray (N8) arenaceous areas</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Digital optical borehole wall image suggest <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos?</i></p> <p>Carbonate grains: Peloids, pelecypods, branching and encrusting coralline red algae, and benthic forams (including archaiasinids, miliolids, amphistiginids), gastropods, echnoid spines, ostracods</p> <p>Accessory grains: 65% quartz grains, very fine sand size to very coarse sand size, (bimodal distribution of mostly fine and coarse to very coarse sand size), poorly sorted, angular to rounded; less than 1-2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10-20% moldic, 1-3% intraparticle, 10-20% intra- and interburrow; 21-43% total porosity and relatively moderate permeability, but relatively high vertical karst dissolution-related permeability</p> <p>Comments: Semivertical karst dissolution from 43.40-47.00 feet</p>
45.30-48.40	No recovery-- Based on digital optical borehole wall image, lithofacies and depositional texture most likely the same as that in interval 44.13-45.30 feet
48.40-48.78	Lithofacies: Karded skeletal packstone and grainstone

	<p>Depositional texture: Benthic foram, molluscan mud- to grain-dominated packstone and grainstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Probably burrowed</p> <p>Trace fossils: Common rhizoliths with 0.5-1. mm inner tubule diameter (associated with rhizoliths are concentric micrspar lining the inner tubules). Rhizoliths associated with allochthonous allochthonous quartz sandstone fill</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Benthic foraminifers (including archaiasinids, miliolids), pelecypod fragments, gastropods, uncommon stick-shaped coral</p> <p>Accessory grains: 5-10% quartz grains, very fine sand size to coarse sand size, (bimodal distribution of mostly upper very fine and lower fine sand size), moderately sorted, angular to subrounded; less than 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-2% phosphorite grains</p> <p>Porosity and permeability: 10% moldic, 1-3% intraparticle, 5% vuggy; 16%-18% total porosity and relatively low permeability</p> <p>Comments: Abrupt upper surface with upward facies change across surface—deepens upward across surface. Major subaerial exposure surface at the upper bounding surface of this interval. No rhizoliths present in interval above upper bounding surface, but many rhizoliths present below in allochthonous karst fill. Karsted matrix with allochthonous fill present below upper bounding surface. Zoned pendant cement present below upper bounding surface and near the surface. Allochthonous filled composed of skeletal (marine) quartz sandstone that fills large cavities to a depth of 50.00 ft—as observed in core and digital optical borehole wall image</p>
48.78-52.90	<p>Lithofacies: Pelecypod floatstone and rudstone, and minor skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar lining the inner tubules). Rhizoliths associated with allochthonous quartz sandstone fill</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypods, peloids, benthic foraminifers (including archaiasinids, miliolids, <i>Elphidium</i>, peneroplids), gastropods, echinoid plates and spines. Dasycladacean algae common in uppermost part of interval and rhodoliths and encrusting bryozoans common in middle to lower part of</p>

	<p>interval</p> <p>Accessory grains: 25-60% quartz grains, very fine sand size to coarse sand size, (mostly upper fine and lower medium sand size), moderately sorted, angular to subrounded; less than 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 1-3% intraparticle, 25% vuggy; 41%-43% total porosity and relatively low permeability, but relatively high permeability due to touching-vug porosity</p> <p>Comments: Karsted matrix with allochthonous fill present below upper bounding surface between 48.78 and 50.00 feet and possibly to a depth of 52.90 feet. Interval represents an upward increase of photozoan faunal assemblage and a downward increase in heterozoan faunal assemblage</p>
52.90-53.30	No recovery—Based on digital optical borehole wall image, lithofacies and depositional texture most likely the same as that in interval 48.78-52.90 feet
53.30-54.80	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod-bearing quartzsandstone</p> <p>Color: Mottled very light gray (N8) and less common very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: <i>Thalassinoides</i> present. Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar lining the inner tubules). <i>Macaronichnus</i>? present?</p> <p>Ichnofabrics: Ichnofabric index 5 Ichnofacies: <i>Thalassinoides</i>-dominated <i>Cruziana</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, ostracods, benthic foraminifers (including miliolids, archaiasinids, <i>Elphidium</i>), gastropods</p> <p>Accessory grains: 75% quartz grains, very fine sand size to coarse sand size, (mostly upper fine and lower medium sand size), moderately sorted, angular to subrounded; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5-10% moldic, 10% intraparticle, 5% vuggy; 20%-25% total porosity and relatively low permeability,</p> <p>Comments: Interparticle pore space commonly filled with calcite cement</p>
54.80-57.20	No recovery
57.20-59.30	<p>Lithofacies: Skeletal sandstone and skeletal packstone and grainstone</p> <p>Depositional texture: Burrow-mottled skeletal quartz sandstone and skeletal wackestone and mud- and grain-dominated</p>

	<p>packstone</p> <p>Color: Mottled very light gray (N8) sandstone and very pale orange 10YR 8/2 wackestone and packstone</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: <i>Ophiomorpha</i> present.</p> <p>Ichnofabrics: Ichnofabric index 5. “Whispy” <i>Ophiomorpha</i> suite</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Small fragmented pelecypods, peloids, benthic foraminifers (including miliolids, <i>Elphidium</i>, archaiasinids), echinoderm spines and plates, gastropods, ostracods, branching coralline red algae</p> <p>Accessory grains: 1-55% quartz grains, very fine sand size to very coarse sand size, (mostly upper very fine), poorly sorted, angular to subrounded; less than 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 1-15% moldic, 1-3% intraparticle, 5-15 vuggy; 6-33% total porosity and relatively low permeability</p> <p>Comments: None</p>
59.30-59.75	No recovery
59.75-60.02	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: A “light” pale yellowish brown. Rhizoliths moderate yellowish brown 10YR 5/4</p> <p>Sedimentary structures/textures: None observed</p> <p>Trace fossils: <i>Gastrochaenolites</i> and <i>Ubiglobites</i> present at upper bounding surface. Common rhizoliths with 0.5-1. mm inner tubule diameter (associated with rhizoliths are concentric micropores lining the inner tubules). Based on digital optical borehole wall image probable abundant Thalassinidean crustacean burrowing</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Upper bounding surface contains a <i>Trypanites</i> ichnofacies</p> <p>Carbonate grains: Small fragmented pelecypods, peloids, benthic foraminifers (including archaiasinids), skeletal fragments</p> <p>Accessory grains: 75% quartz grains, very fine sand size to medium sand size, (mostly upper very fine to lower fine sand size), well sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1% phosphorite grains</p> <p>Porosity and permeability: 10% moldic, 25% intra- and interburrow porosity; 35% total porosity and relatively high permeability</p> <p>Comments: Upper bounding surface is a subaerial exposure surface with a transgressive <i>Trypanites</i> ichnofacies overprint</p>

60.02-63.30	No recovery—Based on digital optical borehole wall image possible quartz sand with possible <i>Ophiomorpha</i> present
63.30-63.95	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Mottled very light gray (N8) and much less common very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: <i>Thalassinoides</i> may be present. <i>Macaronichnus</i>? present?</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Skolithos-Cruziana</i> association</p> <p>Carbonate grains: Pelecypod fragments, peloids, benthic foraminifers (including miliolids, archaiasinids), echinoid plates</p> <p>Accessory grains: 85% quartz grains, very fine sand size to coarse sand size, (mostly upper fine and lower medium sand size), moderately sorted, angular to subangular; 6% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 2% moldic, 15% intraparticle, 3% vuggy; 20% total porosity and relatively low permeability</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar and occludes considerable interparticle pore space</p>
63.95-65.60	No recovery—Based on digital optical borehole wall image possible quartz sand with possible <i>Ophiomorpha</i> present
65.60-67.26	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal mud- and grain-dominated packstone and grainstone</p> <p>Color: Mottled very pale orange (10YR 8/2) and minor very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5. “Whispy” <i>Ophiomorpha</i> suite</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, peloids, benthonic forams (miliolids, archaiasinids, amphistiginids, <i>Elphidium</i>, soritids), gastropods, echinoid spines, encrusting bryozoans</p> <p>Accessory grains: 15-35% quartz grains, very fine sand size to coarse sand size, (mostly upper fine and lower medium sand size), moderately sorted, angular to subangular; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1-3% phosphorite grains</p> <p>Porosity and permeability: 5% moldic, 10% intraparticle, 7% vuggy; 22% total porosity and relatively low permeability</p> <p>Comments: Possible subaerial upper bounding surface based on:</p>

	<p>(1) abrupt facies change above and below upper bounding surface (digital optical borehole wall image suggests <i>Ophiomorpha</i>-bearing quartz sand overlies upper bounding surface, (2) rhizoliths do not occur in interval above, but do occur below upper bounding surface and underlying interval, (3) zoned pendant calcite cements underlie skeletal fragments near and below the upper bounding surface</p>
67.26-67.50	<p>Lithofacies: Skeletal sandstone Depositional texture: Burrow-mottled skeletal quartz sandstone Color: Mottled very light gray (N8) sandstone and very pale orange 10YR 8/2 wackestone and packstone Sedimentary structures/textures: Burrow mottled Trace fossils: <i>Ophiomorpha nodosa</i> present and <i>Thalassinoides?</i> present Ichnofabrics: Ichnofabric index 5 Ichnofacies: Mixed <i>Skolithos-Cruziana</i> association Carbonate grains: Small fragmented pelecypods, peloids, benthic foraminifers, very uncommon rhodoliths Accessory grains: 40-75% quartz grains, very fine to coarse sand size, (mostly upper very fine), moderately sorted, angular to subrounded; 4% differentiated dark mineral grains (mostly black N1, moderate yellowish brown 10YR 5/4, light olive gray 5Y 6/1) and 2% phosphorite grains Porosity and permeability: 1-10% moldic, 15% intraparticle, 5-25 vuggy or interburrow or both; 17-50% total porosity and relatively moderate permeability Comment: Upper bounding surface is an abrupt contact with an abrupt shift in lithofacies. Surface has 0.1 feet of undulatory paleorelief. Either a softground or hardground. Suggest is a firmground with a <i>Glossifungites</i> ichnofabric associated with unit, based on areas of overlying lithology occurring up to 0.20 feet below upper bounding surface suggestive of transgressive infill of open burrows extending downward from upper bounding surface</p>
67.50-70.05	<p>No recovery—Based on digital optical borehole wall image and core lithology above and below interval, probable skeletal quartz sand similar to skeletal quartz sandstones in contiguous intervals above and below</p>
70.05-70.97	<p>Lithofacies: Skeletal sandstone Depositional texture: Burrow-mottled skeletal quartz sandstone Color: Mottled very light gray (N8) sandstone and very pale orange 10YR 8/2 wackestone and packstone Sedimentary structures/textures: Burrow mottled Trace fossils: <i>Ophiomorpha nodosa</i> present and probable <i>Thalassinoides</i> present Ichnofabrics: Ichnofabric index 5</p>

	<p>Ichnofacies: Mixed <i>Skolithos-Cruziana</i> association</p> <p>Carbonate grains: Small fragmented pelecypods, peloids, benthic foraminifers, very uncommon rhodoliths</p> <p>Accessory grains: 40-75% quartz grains, very fine to coarse sand size, (mostly upper very fine), moderately sorted, angular to subrounded; 4% differentiated dark mineral grains (mostly black N1, moderate yellowish brown 10YR 5/4, light olive gray 5Y 6/1) and 2% phosphorite grains</p> <p>Porosity and permeability: 1-10% moldic, 15% intraparticle, 5-25% vuggy or interburrow or both; 17-50% total porosity and relatively moderate permeability</p> <p>Comments: Rubble contains one sample that has an intraclast of a grayish orange 10YR 7/4 calcrete with rhizoliths with about 0.5-mm-wide inner diameter tubules—probably ripped up from an updip subaerially exposed equivalent to the underlying HFC top at 73.80 feet</p>
70.97-71.80	<p>No recovery—Based on digital optical borehole wall image and core lithology above and below interval, probable skeletal quartz sand similar to contiguous interval above</p>
71.80-73.80	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled very pale orange (10YR 8/2) and minor very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, peloids, benthonic forams (miliolids, archaiasinids), echinoid plates, encrusting coralline red algae</p> <p>Accessory grains: 5-30% quartz grains, very fine sand size to coarse sand size, (mostly upper very fine sand size), moderately sorted, angular to subangular; 4% undifferentiated dark mineral grains (mostly black N1, moderate yellowish brown 10YR 5/4, light olive gray 5Y 6/14) and 1-2% phosphorite grains</p> <p>Porosity and permeability: 5-10% moldic, 10% intraparticle, 7-15% vuggy; 22-35% total porosity and relatively moderate permeability</p> <p>Comments: None</p>
73.80-74.12	<p>Lithofacies: <i>Planorbella</i> floatstone and rudstone</p> <p>Depositional texture: <i>Planorbella</i> floatstone and rudstone with arenaceous skeletal wackestone matrix</p> <p>Color: Pale yellowish brown 10YR 6/2 and very pale orange (10YR 8/2)</p> <p>Carbonate grains: Abundant gastropods (including abundant <i>Planorbella</i>, uncommon <i>Pomacea</i>), small pelecypods, skeletal fragments</p>

	<p>Accessory grains: 5-30% quartz grains, very fine sand size to lower fine sand size, (mostly upper very fine sand size), well sorted, angular to subangular; 3% undifferentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 5-20% moldic, 5% intraparticle, 5% vuggy; 15-30% total porosity and relatively low permeability</p> <p>Comments: Chalky texture. Freshwater depositional environment and high-frequency cycle cap. Contains a horizontal sheet-crack filled with quartz sandstone that is suggesting of desiccation and subaerial exposure</p>
74.12-74.70	<p>Lithofacies: Arenaceous mudstone and wackestone</p> <p>Depositional texture: Arenaceous mudstone and wackestone</p> <p>Color: Mottled very pale orange (10YR 8/2) and minor very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Small pelecypod fragments (including uncommon large <i>Ostrea</i>), peloids, small gastropods</p> <p>Accessory grains: 20-30% quartz grains, very fine sand size to lower fine sand size, (mostly upper very fine sand size), well sorted, angular to subangular; 3% undifferentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 5-10% moldic, 2% intraparticle, 5% vuggy; 12-17% total porosity and relatively low permeability</p> <p>Comments: Restricted and stressed depositional environment with brackish influence</p>
74.70-77.10	<p>Lithofacies: Arenaceous skeletal packstone and grainstone with pelecypod floatstone and rudstone near base of interval</p> <p>Depositional texture: Arenaceous skeletal packstone and grainstone with pelecypod floatstone with arenaceous peloids, skeletal mud-dominated packstone near base of interval</p> <p>Color: Mottled very light gray (N8) sandstone and very pale orange 10YR 8/2 wackestone and packstone</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: <i>Ophiomorpha</i> present, <i>Thalassinoides</i> present, and one <i>Diplocraterion</i>-like structure</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Skolithos-Cruziana</i> association</p> <p>Carbonate grains: Peloids, small fragmented pelecypods, benthic foraminifers (including <i>Ammonia</i>, miliolids), ostracods, echinoid spines in upper part of interval and rhodoliths, one <i>Manicina</i> coral head in lower part of interval</p> <p>Accessory grains: 15-45% quartz grains, very fine to coarse sand size, (mostly upper very fine), moderately sorted, angular to subrounded; 4% differentiated dark mineral grains (mostly black N1, moderate yellowish brown 10YR 5/4, light olive gray</p>

	<p>5Y 6/1) and 2% phosphorite grains</p> <p>Porosity and permeability: 1-10% moldic, 5% intraparticle, 5-15 vuggy; 11-30% total porosity and relatively low permeability</p> <p>Comment: Interval is open marine at base and becomes restricted and stressed upward</p>
77.10-77.30	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous skeletal quartz sandstone matrix</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling observed on digital optical borehole wall image</p> <p>Ichnofabrics: Not determined</p> <p>Carbonate grains: Pelecypods (includes <i>Chione</i>), benthic foraminifers (including archaiasinids), sand-dollar-shaped echinoids, gasatropods, one dm-scale <i>Manicina</i> coral head</p> <p>Accessory grains: 15-35% quartz grains, very fine to coarse sand size, (mostly upper very fine), moderately sorted, angular to subrounded; 4% differentiated dark mineral grains (mostly black N1, moderate yellowish brown 10YR 5/4, light olive gray 5Y 6/1) and 3% phosphorite grains</p> <p>Porosity and permeability: 20% moldic; 5-20% vuggy; 25-40% total porosity and relatively moderate permeability</p> <p>Comments: Open-marine depositional environment</p>
77.30-78.80	<p>No recovery—Based on digital optical borehole wall image and core lithology in the contiguous interval below, lithofacies is likely an arenaceous pelecypod floatstone and rudstone</p>
78.80-79.21	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous skeletal quartz sandstone matrix</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Carbonate grains: Pelecypods (includes <i>Chione</i>), benthic foraminifers (including archaiasinids, miliolids), gasatropods</p> <p>Accessory grains: 15-35% quartz grains, very fine to coarse sand size, (mostly upper very fine), moderately sorted, angular to subrounded; 4% differentiated dark mineral grains (mostly black N1, moderate yellowish brown 10YR 5/4) and 3% phosphorite grains</p> <p>Porosity and permeability: 20% moldic; 10% interparticle, 5-35% vuggy; 35-65% total porosity and relatively high permeability</p> <p>Comments: None</p>
79.21-81.01	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with arenaceous mud- and grain-dominated skeletal packstone matrix</p> <p>Color: Very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottled</p>

	<p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, fragmented and whole pelecypods, benthic foraminifers (including miliolids, soritids), branching coralline red algae, rhodoliths, echinoid spines and plates, ostracods, sand-dollar-shaped echinoids, pink barnacles, uncommon stick-shaped <i>Porites porites</i></p> <p>Accessory grains: 15-45% quartz grains, very fine to very coarse sand size, (mostly upper very fine), poorly sorted, angular to rounded; 4% differentiated dark mineral grains (mostly black N1, moderate yellowish brown 10YR 5/4, light olive gray 5Y 6/1) and 2% phosphorite grains</p> <p>Porosity and permeability: 1-10% moldic, 3% intraparticle, 5-15 vuggy; 9-28% total porosity and relatively low permeability</p> <p>Comments: Upper bounding surface is a major karstic subaerial exposure surface. A dm-scale wide solution pipe extends from the upper bounding surface to a depth of 80.18 feet and is filled with lithology from contiguous interval above. Other karstic solution cavities with cm- and dm-scale widths extend downward from upper bounding surface to a depth of 85.32 feet (fills are either pale yellowish brown 10YR 6/2 pelecypod, gastropod (including <i>Turritella</i>) sandstone with a micrite matrix or light gray N7 skeletal, pelecypod quartz sandstone). Very uncommon karst wall lined with very thin (mm-scale) laminated calcrete in upper part of interval (rhizoliths with inner tubule diameters less than 0.5-mm wide associated with some of the laminated calcretes). Zoned pendant calcite cements uncommonly occur beneath some large grains and within voids</p>
81.01-81.60	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal mud- and grain-dominated packstone</p> <p>Color: Very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: <i>Ophiomorpha?</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, fragmented pelecypods, discoid large benthic foraminifers, echinoid plates, pink barnacles</p> <p>Accessory grains: 15-45% quartz grains, very fine to coarse sand size, (mostly upper very fine), poorly sorted, angular to rounded; 1% differentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 1-10% moldic, 3% intraparticle, 5-40% vuggy; 9-53% porosity and relatively low permeability in upper half of interval and relatively high in lower half of interval</p> <p>Comments: Very vuggy in lower half of interval</p>

81.60-82.12	No recovery-- Based on digital optical borehole wall image and core lithology in the contiguous interval above, lithofacies is likely an arenaceous skeletal packstone and grainstone
82.12-85.52	<p>Lithofacies: Rhodolith floatstone and rudstone</p> <p>Depositional texture: Rhodolith floatstone with mud- and grain-dominated packstone matrix</p> <p>Color: Very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Skolithos-Cruziana</i> association?</p> <p>Carbonate grains: Peloids, rhodoliths, branching coralline red algae, fragmented pelecypods (including <i>Chione</i>), benthic foraminifers (miliolids, archaiasinids, amphistiginids, peneroplids, biserial, <i>Elphidium</i>, <i>Ammonia</i>), echinoid spines and plates, ostracods, gastropods, small <i>Manicina</i> coral heads and “buds”, encrusting bryozoans, uncommon stick-shaped <i>Porities porites</i>, pink barnacles, sand-dollar-shaped echinoids</p> <p>Accessory grains: 10-20% quartz grains, very fine to very coarse sand size, (bimodal size distribution, mostly upper very fine to lower fine sand size and coarse to very coarse sand size), poorly sorted, angular to rounded; 1-2% differentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 1-10% moldic, 3-7% intraparticle, 5-15% vuggy; 9-32% porosity and relatively low permeability</p> <p>Comments: None</p>
85.52-89.40	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with skeletal wackestone, and mud- and grain-dominated packstone</p> <p>Color: Very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Skolithos-Cruziana</i> association?</p> <p>Carbonate grains: Pelecypods (including <i>Chione</i>), benthic foraminifers (amphistiginids, miliolids, fragmented archaiasinid), echinoid spines and plates, ostracods, gastropods, globular planktic foraminifers, fragmented sand-dollar-shaped echinoids, pink barnacle fragments</p> <p>Accessory grains: 5-20% quartz grains, very fine to very coarse sand size, (bimodal size distribution, mostly upper very fine sand size and coarse to very coarse sand size), poorly sorted, angular to rounded; 1-2% differentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 1-15% moldic, 3-7% intraparticle, 5-45% vuggy; 9-67% porosity and relatively low permeability in</p>

	<p>uppermost part of interval and relatively high in middle and lower part of interval</p> <p>Comments: None</p>
89.40-93.60	<p>No recovery—digital optical borehole image suggests interval dominated by a <i>Ophiomorpha</i>-bearing quartz sand</p>
93.60-94.60	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal mud- and grain-dominated packstone</p> <p>Color: Very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, miliolids, barnacle fragments</p> <p>Accessory grains: 5-20% quartz grains, very fine to lower coarse sand size, (bimodal size distribution, mostly very fine sand size and medium to lower coarse sand size), moderately sorted, angular to subrounded; 1-2% differentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 1-10% moldic, 5-15% vuggy; 6-25% porosity and relatively low permeability</p>
94.60-98.26	<p>No recovery—Based on digital optical borehole wall image and core lithology in the contiguous interval below, lithofacies is likely an arenaceous skeletal packstone and grainstone</p>
98.26-98.56	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Peloid, skeletal mud- and grain-dominated packstone</p> <p>Color: Grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, pelecypod fragments (mostly fragments, but some articulated pelecypods—up to small cobble size), peloids, benthic foraminifers (including amphistiginids, <i>Elphidium</i>), gastropods, barnacle fragments, echinoid spines, globular planktic foraminifers</p> <p>Accessory grains: 15-30% quartz grains, very fine to coarse sand size, (bimodal size distribution, mostly very fine sand size and medium to coarse sand size), moderately sorted, angular to subrounded; 1-3% differentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 1-15% moldic, 5% interparticulate, 1-5% vuggy; 7-27% porosity and relatively low permeability</p>
98.56-99.56	<p>No recovery</p>
99.56-102.30	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Skeletal quartz sand</p> <p>Color: Very pale orange (10YR 8/2) and yellowish gray 5Y 8/1 in the lower fourth of this interval</p>

	<p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, gastropod fragments</p> <p>Accessory grains: 75-80% quartz grains, very fine- to lower very coarse sand size, poorly sorted; 1-3% differentiated dark mineral grains (mostly black N1) and 1-3% phosphorite grains</p> <p>Porosity: 20% interparticle porosity and relatively low permeability</p> <p>Comments: Friable when moist or wet</p>
102.30-103.26	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment grainstone</p> <p>Color: Light olive gray 5Y 6/1</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Possible <i>Ophiomorpha</i>?</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments (mostly fragments), echinoid spines and plates, globular planktic foraminifers, benthic foraminifers (including amphistiginids, <i>Elphidium</i>), gastropods, sand-dollar-shaped echinoid fragments, bryozoans</p> <p>Accessory grains: 30% quartz grains, very fine- to lower very coarse sand size, poorly sorted; 1-3% differentiated dark mineral grains (mostly black N1) and 1-3% phosphorite grains</p> <p>Porosity: 25% intra- and interparticle porosity and relatively low permeability</p> <p>Comments: Massive bedded and friable. Much of the interparticle micrite has been neomorphosed to microspar</p>
103.26-108.26	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Skeletal quartz sand</p> <p>Color: Light olive gray 5Y 6/1</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans.</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments (mostly fragments), echinoid spines and plates, globular planktic foraminifers, benthic foraminifers (including amphistiginids, <i>Elphidium</i>), gastropods, ostracods, sponge spicules</p> <p>Accessory grains: 25-75% quartz grains, very fine- to lower very sand size, poorly sorted; 5-12% differentiated dark mineral grains (mostly black N1) and 1-3% phosphorite grains observed in thin sections</p> <p>Porosity: 25% intra- and interparticle porosity and relatively low permeability</p>

	<p>Comments: Massive bedded and friable. Much of the interparticle micrite has been neomorphosed to microspar. Percentage of quartz sand increases downward in the interval and grain size decreases downward</p>
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Local Identifier (corehole)	G-3887
Local Identifiers (completed wells)	G-3887A, G-3887B
USGS Station Numbers (completed wells)	253924080174601, 253924080174602
Total Depth Drilled	134 feet (driller's depth)
Total Depth Airlifted	139 feet (driller's depth)
Cored from	4.38 - 134 feet
County	Miami-Dade
Latitude (NAD 83)	25-39-24.7 N
Longitude (NAD 83)	080-17-46.8 W
Elevation (NGVD 29)	10.395 feet (surveyed by Miami-Dade County)
Completion Date	July 28, 2009
Other types of available logs	OBI, Caliper, Acoustic Borehole Image, Fluid Temperature, Conductivity, Ambient Fluid, Ambient Flow, Pumping Flow, Gamma ray, Resistivity, Full Waveform Sonic
Owner	Miami-Dade County
Driller	Intercounty
Core described by	Kevin J. Cunningham
Top Miami Limestone	2.25 feet
Top Fort Thompson Formation	28.55? feet
Top Tamiami Formation	93.25 feet

G-3887 Test Corehole	
Depth Interval (feet)	Core Description
0 – 4.00	No core recovery
4.00-8.60	<p>Lithofacies: Ooid packstone and grainstone</p> <p>Depositional texture: Ooid grainstone and minor ooid grain-dominated packstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Cross-bedded, minor burrowing</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 2-3</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Ooids (up to very coarse sand size), peloids, small pelecypod fragments, <i>Halimeda</i>, gastropods, miliolids</p> <p>Accessory grains: Less than 1% quartz grains, very fine to lower very coarse sand size, angular to rounded, poorly sorted</p> <p>Porosity and permeability: 20% oomoldic and pelmoldic, 15% inter- and intraparticle, 5% intra- and interburrow megaporosity, 40-65% total porosity. Permeability relatively moderate</p> <p>Comments: Most inner tubule area of <i>Ophiomorpha</i> is filled with a chalky-textured grainstone and provides for a moderate intraburrow permeability</p>
8.60-19.35	<p>Lithofacies: Peloid packstone and grainstone</p> <p>Depositional texture: Peloid grainstone and minor peloid grain-dominated packstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Cross-bedded, minor burrowing</p> <p>Trace fossils: <i>Ophiomorpha</i> abundant</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, ooids (minor amount), small pelecypod fragments, <i>Halimeda</i>, gastropods, miliolids, <i>Favreina</i>, biserial foraminifers</p> <p>Accessory grains: Less than 1% quartz grains, very fine to lower very coarse sand size, angular to rounded, poorly sorted</p> <p>Porosity and permeability: 20% pelmoldic and oomoldic, 15%</p>

	<p>inter- and intraparticle, 15-35% intra- and interburrow megaporosity, 50-70% total porosity. Permeability relatively high</p> <p>Comments: Megaporosity increases downward in the interval</p>
19.35-33.00	<p>No recovery—digital optical borehole wall image shows that a vertical dm-scale-wide solution pipe extends from a depth of 24.20-41.80 feet below ground level.</p>
33.00-34.42	<p>Lithofacies: Quartz sand Depositional texture: Quartz sandstone Color: Very pale orange (10YR 8/2) Sedimentary structures/textures: Massive Ichnofabrics: None noted Carbonate grains: 1% intraclasts of peloid grainstone, benthic foraminifers, pelecypod fragments Accessory grains: 98% quartz grains, very fine- to coarse sand size, moderately sorted; angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1) Porosity and permeability: 25% interparticle porosity and relatively moderate permeability Comments: Very friable, unconsolidated sand. Prior to drilling this quartz sand filled a vertical solution pipe between 24.20 and 41.80 feet below ground level. Fossils suggest a marine origin for the sand, but they are very small and could be wind blown</p>
34.42-39.65	<p>No recovery—digital optical borehole wall image shows that a vertical dm-scale-wide solution pipe extends from a depth of 24.20-41.80 feet below ground level</p>
39.65-41.80	<p>Lithofacies: Quartz sand Depositional texture: Quartz sand Color: Grayish orange 10YR 7/4 Sedimentary structures/textures: Massive Ichnofabrics: None noted Carbonate grains: less than 1% intraclasts of limestone Accessory grains: 99% quartz grains, very fine- to coarse sand size, moderately sorted; angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1) Porosity and permeability: 25% interparticle porosity and relatively moderate permeability Comments: Very friable, unconsolidated sand. Prior to drilling this quartz sand filled a vertical solution pipe between 24.20 and 41.80 feet below ground level. Lack of fossils suggest this is an eolian sand</p>
41.80-41.84	<p>Lithofacies: Skeletal quartz sandstone Depositional texture: Quartz sand Color: Dark yellowish orange 10YR 6/6 Carbonate grains: Benthic foraminifers (including archaiasinids, miliolids, soritids), pelecypod fragments</p>

	<p>Accessory grains: 65% quartz grains, very fine- to coarse sand size</p> <p>Porosity and permeability: 15% interparticle porosity and relatively low permeability</p> <p>Comments: Fossils indicate this is marine sandstone. Minor zoned pendant calcite cement underlying some clasts</p>
41.84-41.85	<p>Lithofacies: Pedogenic limestone</p> <p>Depositional texture: Laminated and massive calcrete</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Comments: Subaerial exposure surface</p>
41.85-44.90	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal mud-dominated packstone</p> <p>Color: White N9 with pale yellowish brown 10YR 6/2 arenaceous limestone fill of root molds and karst vugs and yellowish gray 5Y 8/1 sandstone fill of root molds</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micropores, micritized grains, or laminated calcrete lining the inner tubules) and large semivertical rhizoliths (up to 2-cm-wide inner tubule diameter) filled with allochthonous arenaceous marine limestone or quartz sandstone</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including archaiasinids, peneroplids, <i>Elphidium</i>), gastropods, encrusting coralline red algae, echinoid spines, stick-shaped <i>Porites porites</i> near base of interval</p> <p>Accessory grains: 1-20% quartz grains, very fine- to coarse sand size, moderately sorted; angular to subrounded</p> <p>Porosity and permeability: 1-3% moldic, 5% vuggy; 6-8% total porosity and relatively low permeability</p> <p>Comments: Major subaerial exposure surface with abundant disturbances by rhizoliths and irregular, semivertical karst dissolution and fill. Curved plane cracks indicative of desiccation. Pedogenic glaebules present. Interval fossils become more indicative of open marine conditions downward (for example <i>Porites</i>, archaiasinids, and peneroplids present in lower part)</p>
44.90-45.40	<p>Lithofacies: <i>Montastrea</i> framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Pelecypod borings into corals</p> <p>Trace fossils: <i>Gastrochaenolites</i> present</p> <p>Ichnofabrics: Ichnofabric index 2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: Dm-scale <i>Montastrea</i> head and small ancillary</p>

	<p><i>Porites asteroides</i></p> <p>Porosity and permeability: 5% intraparticle and 5% vuggy; 10% total porosity and relatively low permeability</p> <p>Comments: None</p>
45.40-45.90	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal mud-dominated packstone</p> <p>Color: Pale yellowish orange 10YR 8/2 with pale yellowish brown 10YR 6/2 arenaceous limestone filling cm-scale karst vugs</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micropores, micritized grains, or laminated calcrite lining the inner tubules)</p> <p>Ichnofabrics: Ichnofabric index 2-5</p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including archaiasinids, soritids), gastropods, echinoid spines, cm-scale <i>Manicina</i>(?) head coral, <i>Acropora cervicornis</i></p> <p>Accessory grains: 1-20% quartz grains, very fine- to coarse sand size, moderately sorted; angular to subrounded</p> <p>Porosity and permeability: 1-15% moldic, 15% vuggy; 22-30% total porosity and relatively moderate permeability</p> <p>Comments: Karstic vugs and rhizoliths associated with exposure surface at 41.84 extend downward through this interval</p>
45.90-48.18	<p>Lithofacies: Coral framestone</p> <p>Depositional texture: <i>Montastrea</i> and <i>Manicina</i> framestone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Pelecypod borings into corals and burrowing in associated sediment</p> <p>Trace fossils: <i>Gastrochaenolites</i> present</p> <p>Ichnofabrics: Ichnofabric index 2-4</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: Dm-scale <i>Montastrea</i> head and ancillary <i>Manicina</i>, pelecypods, gastropods, benthic foraminifers (including archaiasinids, soritids), serpulids</p> <p>Accessory grains: 1-20% quartz grains, very fine- to coarse sand size, moderately sorted; angular to subrounded 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1% phosphorite grains</p> <p>Porosity and permeability: 15% intraparticle and 20% vuggy</p> <p>Comments: Small karstic vugs associated with exposure surface at 41.84 extend downward through this interval</p>
48.18-49.25	<p>Lithofacies: Skeletal packstone and grainstone, and pelecypod floatstone and grainstone</p> <p>Depositional texture: Skeletal mud-dominated packstone and pelecypod floatstone with skeletal mud-dominated packstone</p>

	<p>matrix</p> <p>Color: Pale yellowish orange 10YR 8/2 with pale yellowish brown 10YR 6/2 arenaceous limestone filling cm-scale karst vugs</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Uncommon rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar, micritized grains)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including archaiasinids, miliolids), gastropods, echinoid spines, stick-shaped <i>Porites porites</i>, encrusting bryozoans</p> <p>Accessory grains: 10-20% quartz grains, very fine- to coarse sand size (mostly upper fine to lower medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 1-15% moldic, 3% intraparticle, 5% vuggy; 9-23% total porosity and relatively low permeability</p> <p>Comments: Karstic vugs and rhizoliths associated with exposure surface at 41.84 extend downward through this interval. Allochthonous karst fill contains fossils (including pelecypods, gastropods, dasycladacean algae). Minor zoned pendant calcite cement underlies clasts in upper part of interval</p>
49.25-50.10	<p>Lithofacies: Rhodolith floatstone and rudstone</p> <p>Depositional texture: Rhodolith, pelecypod floatstone with skeletal quartz sandstone matrix</p> <p>Color: Pale yellowish orange 10YR 8/2 with pale yellowish brown 10YR 6/2 sandstone matrix</p> <p>Trace fossils: Uncommon rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar, micritized grains)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Rhodoliths, pelecypod fragments, benthic foraminifers (including archaiasinids, miliolids), encrusting serpulids, gastropods, echinoid spines, stick-shaped <i>Porites porites</i></p> <p>Accessory grains: 40-65% quartz grains, very fine- to medium sand size (mostly upper fine to lower medium sand size), well sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 1-15% moldic, 3% intraparticle, 5% vuggy; 9-23% total porosity and relatively low permeability</p> <p>Comments: Karstic vugs, pedogenic alteration of rock matrix, and rhizoliths associated with exposure surface at 41.84 extend</p>

	downward through this interval.
50.10-51.07	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal mud- and grain-dominated packstone matrix</p> <p>Color: Pale yellowish orange 10YR 8/2 with pale yellowish brown 10YR 6/2 packstone matrix</p> <p>Trace fossils: Uncommon rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar, micritized grains)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including archaiasinids, miliolids, peneroplids, <i>Elphidium</i>), encrusting serpulids, gastropods, echinoid spines, branching red coralline algae</p> <p>Accessory grains: 40-65% quartz grains, very fine- to medium sand size (mostly upper fine to lower medium sand size), well sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 2% phosphorite grains</p> <p>Porosity and permeability: 1-15% moldic, 3% intraparticle, 15% vuggy; 19-33% total porosity and relatively low permeability</p> <p>Comments: Karstic vugs, pedogenic alteration of rock matrix, and rhizoliths associated with exposure surface at 41.84 extend downward through this interval</p>
51.07-53.00	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Pale yellowish orange 10YR 8/2, very light gray N8, pale yellowish green 10GY 7/2</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5. “Whispy” <i>Ophiomorpha</i> suite</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including archaiasinids, miliolids), gastropods, echinoid spines, uncommon rhodoliths and bryozoans</p> <p>Accessory grains: 60-75% quartz grains, very fine- to coarse sand size (mostly upper very fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 2% phosphorite grains</p> <p>Porosity and permeability: 5% moldic, 20% intraparticle, 15% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: None</p>
53.00-53.96	<p>Lithofacies: Quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Pale yellowish orange 10YR 8/2, very light gray N8, pale</p>

	<p>yellowish green 10GY 7/2</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5. “Whispy” <i>Ophiomorpha</i> suite</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including archaiasinids, miliolids)</p> <p>Accessory grains: 60-75% quartz grains, very fine- to coarse sand size (mostly upper very fine to lower medium sand size), moderately sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 3% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle porosity and probably relatively moderate permeability; however, no quartz sand samples available</p> <p>Comments: Quartz sand washed out of interval by drilling but calcareous-cemented quartz sand samples provide a “view” of the sand lithology</p>
53.96-56.80	Based on digital optical borehole wall image and core lithology above and below interval, probable skeletal quartz sand similar to skeletal quartz sand
56.80-61.70	<p>Lithofacies: Quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Mottled very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Thalassinoides</i> and <i>Ophiomorpha</i>? present. Rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric microspar and micrite cement)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Skolithos</i>?-<i>Cruziana</i> association</p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including archaiasinids, miliolids), gastropods, ostrocods, echinoid plates</p> <p>Accessory grains: 55-65% quartz grains, very fine- to very coarse sand size (mostly upper very fine to lower medium sand size), moderately sorted, angular to rounded; 3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 3% phosphorite grains</p> <p>Porosity and permeability: 10% moldic, 10% interparticle, 1% root mold; 21% total porosity and relatively moderate to low permeability</p> <p>Comments: Much interparticle porosity occluded by micrite neomorphosed to microspar and sparry cement</p>
61.70-60.80	No recovery
60.80-61.40	Lithofacies: Mudstone and wackestone, and skeletal packstone and grainstone

	<p>Depositional texture: Mudstone and skeletal wackestone, packstone and grainstone</p> <p>Color: Mottled very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Ophiomorpha</i>? present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i>?</p> <p>Carbonate grains: Skeletal fragments, gastropod, fragment of <i>Porites porites</i> coral</p> <p>Accessory grains: 1-15% quartz grains, very fine- to medium sand size</p> <p>Comments: Possible micro-pinnacle-karst surface with at least 5 cm of paleomicrotopography. Some paleomicrotopography is overhanging. Probable subaerial exposure surface. Observations and interpretations based on rubble samples and digital optical borehole wall image</p>
61.40-65.00	No recovery
69.00-68.10	<p>Lithofacies: <i>Acropora cervicornis</i> floatstone</p> <p>Depositional texture: <i>Acropora cervicornis</i> floatstone with a skeletal wackestone matrix</p> <p>Color: Mottled very pale orange (10YR 8/2) and very light gray N8</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: Rhizoliths with about 0.8-mm-wide inner diameters</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: <i>Acropora cervicornis</i>, small skeletal fragments (silt to very fine sand size—<i>Clinoid</i>-sponge chips?), benthonic forams (miliolids, peneroplids), pelecypod fragments, echinoid spines, ostracods, <i>Montastrea</i>, small <i>Manicina</i> “bud”</p> <p>Accessory grains: 1% quartz grains, very fine- to medium sand size (mostly upper very fine to lower medium sand size), well sorted, angular to rounded</p> <p>Porosity and permeability: 15% moldic, 5% interparticle, 5% vuggy; 25% total porosity and relatively low to moderate permeability</p> <p>Comments: Rhizoliths appear be a result of submarine vegetation</p>
68.10-69.15	No recovery
69.15-70.50	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Pelecypod, peloid, coralline red algae grain-dominated packstone and grainstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Uncommon rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar or micrite)</p>

	<p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, peloids, encrusting coralline red algae (some rhodoliths), benthic foraminifers (including fragmented amphotiginiids, miliolids, archaiasinids, <i>Pyrgo</i>), serpulids, encrusting bryozoans, gastropods, echinoid spines</p> <p>Accessory grains: 1-8% quartz grains, very fine- to medium sand size (mostly upper fine to upper medium sand size), well sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 2% phosphorite grains</p> <p>Porosity and permeability: 1-15% moldic, 3% intraparticle, 5% vuggy; 9-23% total porosity and relatively moderate permeability</p> <p>Comments: Most of the original interparticle pore space is occluded by calcite cement</p>
70.50-73.10	No recovery—Solution-enlarged vertical fracture 71.40-76.40 feet
73.10-77.33	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Pelecypod, peloid, coralline red algae grain-dominated packstone and grainstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, peloids, encrusting coralline red algae (some rhodoliths), benthic foraminifers (including fragmented and whole amphotiginiids, miliolids, archaiasinids), serpulids, encrusting bryozoans, gastropods, echinoid spines</p> <p>Accessory grains: 5-20% quartz grains, very fine- to medium sand size (mostly upper fine to upper medium sand size), well sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 2% phosphorite grains</p> <p>Porosity and permeability: 1-15% moldic, 3% intraparticle, 5% vuggy, 20% solution-enlarged vertical fractures; 29-43% total porosity and relatively high permeability</p> <p>Comments: Solution-enlarged vertical fractures common</p>
77.33-78.65	No recovery
78.65-79.55	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal, peloid grain-dominated packstone and grainstone</p> <p>Color: Pale yellowish orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrows</p>

	<p>Trace fossils: Rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar or micrite)</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Pelecypods, skeletal fragments, peloids, very small <i>Manicina</i> coral head</p> <p>Accessory grains: 20-40% quartz grains, very fine- to medium sand size (mostly very fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 1% phosphorite grains</p> <p>Porosity and permeability: 15-20% moldic, 5% intraparticle, 10-20% vuggy, 30-45% total porosity and relatively high permeability</p> <p>Comments: None</p>
79.55-83.10	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous peloid, pelecypod mud- and grain-dominated packstone</p> <p>Color: Mottled very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> and <i>Planolites</i>? present. Rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar or micrite, and minor alveolar septal fabric)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including fragmented amphistiginids, miliolids, <i>Elphidium</i>, archaiasinids, peneroplids, <i>Ammonia</i>), gastropods, echinoid spines, ostracods</p> <p>Accessory grains: 5-45% quartz grains, very fine- to medium sand size (mostly fine sand size), well sorted, angular to subangular; 3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 2% phosphorite grains</p> <p>Porosity and permeability: 1-15% moldic, 6% intra- and interparticle, 5% vuggy, 20% solution-enlarged vertical fractures; 32-46% total porosity and relatively high permeability</p> <p>Comments: One solution-enlarge fracture traverses much of the interval</p>
83.10-84.00	No recovery
84.00-84.33	<p>Lithofacies: Arenaceous skeletal quartz packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal quartz mud- and grain-dominated packstone and grainstone</p> <p>Color: Mottled pale very pale orange 10YR 8/2 and very light gray N8</p>

	<p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present. <i>Planolites?</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including miliolids, archaiasinids, fragmented amphistiginids, <i>Ammonia</i>), gastropods, echinoid spines, ostracods</p> <p>Accessory grains: 35-45% quartz grains, very fine- to coarse sand size (mostly fine sand size), moderately sorted, angular to subangular; 3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 2% phosphorite grains</p> <p>Porosity and permeability: 15% moldic, 8% intra- and interparticle, 5% vuggy; 28% total porosity and relatively high permeability</p> <p>Comments: None</p>
84.33-86.02	No recovery
86.02-88.12	<p>Lithofacies: Arenaceous skeletal quartz packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal quartz mud- and grain-dominated packstone and grainstone</p> <p>Color: Mottled pale very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including miliolids, archaiasinids, fragmented amphistiginids, <i>Ammonia</i>), gastropods, echinoid spines, ostracods</p> <p>Accessory grains: 35-45% quartz grains, very fine- to coarse sand size (mostly fine sand size), moderately sorted, angular to subangular; 3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4) and 2% phosphorite grains</p> <p>Porosity and permeability: 15% moldic, 8% intra- and interparticle, 5% vuggy; 28% total porosity and relatively high permeability</p> <p>Comments: None</p>
88.12-89.95	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod, rhodolith floatstone with arenaceous peloid, skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled very pale orange (10YR 8/2) and very light gray N8</p>

	<p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including archaiasinids, miliolids, fragmented amphistiginids), gastropods, encrusting bryozoans, echinoid spines, ostracods, serpulids, uncommon stick-shaped coral</p> <p>Accessory grains: 25-35% quartz grains, very fine- to very coarse sand size (mostly lower fine sand size), moderately sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 10-20% moldic, 10% intra- and interparticle, 10% vuggy; 30-40% total porosity and relatively moderate to high permeability</p> <p>Comments: Most interparticle pore space occluded by calcite cement</p>
89.95-92.40	<p>Lithofacies: <i>Acropora cervicornis</i> floatstone</p> <p>Depositional texture: <i>Acropora cervicornis</i> floatstone with a skeletal wackestone and mud-dominated packstone matrix</p> <p>Color: Very pale orange (10YR 8/2) and uncommon very light gray N8</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Trace fossils: <i>Thalassinoides</i> and <i>Entobia</i> (probably produced by clionid sponges) present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Cruziana</i> and <i>Trypanites</i></p> <p>Carbonate grains: <i>Acropora cervicornis</i>, peloids, small skeletal fragments (silt to very fine sand size—<i>Clinoid</i>-sponge chips?), benthonic forams (archaiasinids, miliolids, amphistiginids), pelecypod fragments, echinoid spines, branching and encrusting coralline algae, serpulids, ostracods, encrusting bryozoans</p> <p>Accessory grains: 1-20% quartz grains, very fine- to very coarse sand size (mostly upper very fine to lower fine sand size), moderately sorted, angular to rounded</p> <p>Porosity and permeability: 20% moldic, 5% interparticle, 5% vuggy; 30% total porosity and relatively low to moderate permeability</p> <p>Comments: None</p>
92.40-93.25	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal packstone and grainstone</p> <p>Color: Mottled very pale orange (10YR 8/2) and very light gray N8</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Thalassinoides</i> present</p>

	<p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers, gastropods, pink barnacles, large intraclasts of two different lithologies (up to large pebble size)</p> <p>Accessory grains: 25-35% quartz grains, very fine- to very coarse sand size (mostly lower fine sand size), moderately sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1) and 1% phosphorite grains</p> <p>Porosity and permeability: 10-15% moldic, 10% intra- and interparticle, 10% vuggy; 30-35% total porosity and relatively moderate permeability</p> <p>Comments: None</p>
93.25-99.55	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with skeletal, peloid mud- and grain-dominated packstone</p> <p>Color: Mottled very pale orange (10YR 8/2) and very light gray N8</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha?</i>, and <i>Taenidium?</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, peloids, benthic foraminifers (including miliolids, amphistiginids, archaiasinids,), gastropods, echinoid spines, rhodoliths (in lower half of interval), ostracods, globular planktic foraminifers</p> <p>Accessory grains: 15-35% quartz grains, very fine- to very coarse sand size (mostly lower fine sand size), moderately sorted, angular to rounded; 3% undifferentiated dark mineral grains (mostly black N1) and 1-2% phosphorite grains</p> <p>Porosity and permeability: 10-20% moldic, 10% intra- and interparticle, 10% vuggy; 30-40% total porosity and relatively moderate to high permeability</p> <p>Comments: Arenaceous in part</p>
99.55-101.83	No recovery
101.83-103.82	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal mud- and grain-dominated packstone</p> <p>Color: Mottled very pale orange (10YR 8/2), yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Thalassinoides?</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, peloids, benthic</p>

	<p>foraminifers (including miliolids, <i>Pyrgo</i>, biserial foraminifers), gastropods, echinoid spines, ostracods</p> <p>Accessory grains: 25-40% quartz grains, very fine- to very coarse sand size (mostly lower fine sand size), moderately sorted, angular to rounded; 1% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Porosity and permeability: 10-15% moldic, 5% intra- and interparticle, 10% vuggy; 25-30% total porosity and relatively moderate permeability</p> <p>Comments: Arenaceous in part</p>
103.82-110.29	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 8/1 and very light gray N8</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (amphistiginids, miliolids, soritids, archaiasinids), gastropods, echinoid spines, globular planktic foraminifers, uncommon rhodoliths, sand-dollar shaped echinoids, barnacles, serpulids</p> <p>Accessory grains: 25-35% quartz grains, very fine- to very coarse sand size (mostly fine to medium sand size), poorly sorted, angular to rounded; 3% undifferentiated dark mineral grains (mostly black N1) and 1-2% phosphorite grains</p> <p>Porosity and permeability: 10% moldic, 5% intra- and interparticle, 10-35% vuggy; 25-50% total porosity and relatively moderate to high permeability</p> <p>Comments: None</p>
110.29-117.20	No recovery
117.20-119.90	<p>Lithofacies: Skeletal quartz sandstone and arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal quartz sandstone and arenaceous skeletal grain-dominated packstone and grainstone</p> <p>Color: Transitional from yellowish gray 5Y 8/1 at top to grayish yellow 5Y 8/4 at the base of the interval</p> <p>Sedimentary structures/textures: Burrowed</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, echinoid plates and spines, benthic foraminifers (including amphistiginids), peloids, gastropods, globular planktic foraminifers</p> <p>Accessory grains: 20-65% quartz grains, very fine- to coarse sand size (mostly upper fine sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p>

	<p>Porosity and permeability: 5% moldic, 10-15% intra- and interparticle, 10-25% vuggy; 25-45% total porosity and relatively moderate permeability</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar. Heterozoan carbonate grain assemblage</p>
119.90-120.79	<p>Lithofacies: Interbedded skeletal quartz sandstone and quartz sand</p> <p>Depositional texture: Interbedded skeletal quartz sandstone and quartz sand</p> <p>Color: Both quartz sand and sandstone are grayish yellow 5Y 8/4</p> <p>Carbonate grains: Pelecypod fragments, echinoid plates and spines, benthic foraminifers (including amphistiginids), peloids, gastropods, globular planktic foraminifers</p> <p>Accessory grains: 20-90% quartz grains, very fine- to coarse sand size (mostly upper fine sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1) and less than 1% phosphorite grains</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar. Heterozoan carbonate grain assemblage. No quartz sand recovered, but observed in the digital optical borehole wall image</p>
120.79-124.00	No recovery
124.00-127.67	<p>Lithofacies: Quartz sand and arenaceous packstone and grainstone</p> <p>Depositional texture: Pelecypod, echinoid, globigeriniodes quartz sand, and arenaceous, pelecypod, echinoid, globigeriniodes mud- and grain-dominated packstone and grainstone</p> <p>Color: Light olive gray 5Y 6/1</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Thalassinoides</i> (one with about 1-mm wide <i>Favreina</i>-like pellets inside the tubule) and <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, globular planktic foraminifers (including globigeriniodes), benthic foraminifers (amphistiginids, uncommon <i>Elphidium</i>), intraclasts, peloids, sponge spicules</p> <p>Accessory grains: 25-65% quartz grains, very fine- to very coarse sand size (mostly upper fine to medium sand size), poorly sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1) and 1-2% phosphorite grains, trace feldspar grains</p> <p>Porosity and permeability: 2% moldic, 20% intra- and interparticle, 22% total porosity and relatively low permeability</p> <p>Comments: Friable. Outer ramp depositional environment</p>
127.67-129.00	No recovery
129.00-132.50	Lithofacies: Quartz sand and arenaceous packstone and grainstone

	<p>Depositional texture: Pelecypod, echinoid, globigeriniodes quartz sand, and arenaceous, pelecypod, echinoid, globigeriniodes mud- and grain-dominated packstone and grainstone</p> <p>Color: Light olive gray 5Y 6/1</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Thalassinoides</i> and <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, globular planktic foraminifers (including globigeriniodes), benthic foraminifers (amphistiginids, uncommon <i>Elphidium</i>), intraclasts, peloids, sponge spicules</p> <p>Accessory grains: 25-65% quartz grains, very fine- to very coarse sand size (mostly upper fine to medium sand size), poorly sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1) and 1-2% phosphorite grains, trace feldspar grains</p> <p>Porosity and permeability: 2% moldic, 20% intra- and interparticle, 22% total porosity and relatively low permeability</p> <p>Comments: Friable. Outer ramp depositional environment</p>
132.50-133.07	No recovery
133.07-137.53	<p>Lithofacies: Quartz sand and arenaceous packstone and grainstone</p> <p>Depositional texture: Pelecypod, echinoid, globigeriniodes quartz sand, and arenaceous, pelecypod, echinoid, globigeriniodes mud- and grain-dominated packstone and grainstone</p> <p>Color: Light olive gray 5Y 6/1</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Thalassinoides</i> and <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, globular planktic foraminifers (including globigeriniodes), benthic foraminifers (amphistiginids, uncommon <i>Elphidium</i>), intraclasts, peloids, sponge spicules</p> <p>Accessory grains: 25-65% quartz grains, very fine- to very coarse sand size (mostly upper fine to medium sand size), poorly sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1) and 1-2% phosphorite grains, trace feldspar grains</p> <p>Porosity and permeability: 2% moldic, 20% intra- and interparticle, 22% total porosity and relatively low permeability</p> <p>Comments: Friable. Outer ramp depositional environment</p>

Local Identifier (corehole)	G-3888
Local Identifiers (completed wells)	G-3888A, G-3888B, G-3888C
USGS Station Numbers (completed wells)	254542080145901, 254542080145902, 254542080145903
Total Depth Drilled	149 feet (driller's depth)
Cored Interval	3.00 to 149 feet
County	Miami-Dade
Latitude (NAD 83)	25-45-42.7 N
Longitude (NAD 83)	080-14-59.8 W
Elevation (NGVD 29)	14.117 feet (surveyed by Miami-Dade County)
Completion Date	August 5, 2009
Other types of available logs	OBI, Caliper, Ambient Fluid, Ambient Flow, Pumping Flow, Gamma ray, Conductivity, Resistivity, Full Waveform Sonic
Owner	Miami-Dade County
Driller	Intercounty
Core described by	Kevin J. Cunningham
Top Miami Limestone	1.30 feet
Top Fort Thompson Formation	29.60 feet
Top Tamiami Formation	102.80 feet

G-3888 Test Corehole	
Depth Interval (feet)	Core Description
0 – 3.00	No recovery
3.00-4.20	<p>Lithofacies: Ooid packstone and grainstone</p> <p>Depositional texture: Ooid grainstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Cross-laminated (thickly laminated), minor burrowing</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 2-3</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Ooids (up to lower coarse sand size), peloids, small pelecypod fragments, <i>Halimeda</i></p> <p>Accessory grains: Less than 4% quartz grains (most form nuclei of ooids), very fine to lower very coarse sand size, angular to subrounded, moderately sorted</p> <p>Porosity and permeability: 20% oomoldic and pelmoldic, 15% inter- and intraparticle, 5-20% vuggy megaporosity, 40-55% total porosity. Permeability relatively high</p> <p>Comments: None</p>
4.20-5.20	<p>Lithofacies: Peloid packstone and grainstone</p> <p>Depositional texture: Peloid, ooid, skeletal grainstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Abundant burrowing</p> <p>Trace fossils: Abundant <i>Ophiomorpha</i>. Uncommon rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths is concentric micropor)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, ooids (up to lower coarse sand size), benthic foraminifers (including miliolids), small pelecypod fragments, <i>Halimeda</i>, <i>Favreina</i>, bryozoans</p> <p>Accessory grains: Less than 4-15% quartz grains, very fine to lower coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted</p> <p>Porosity and permeability: 20% oomoldic and pelmoldic, 15% inter- and intraparticle, 5% intra- and interburrow</p>

	<p>megaporosity, 40-55% total porosity. Permeability relatively high</p> <p>Comments: None</p>
5.20-17.00	<p>No recovery—based on digital optical borehole image and high drilling rate, probably loose quartz sand between 12.50 and 17.00 feet</p>
17.00-17.43	<p>Lithofacies: Quartz sandstone</p> <p>Depositional texture: Quartz sandstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Thickly laminated, uncommon burrowing</p> <p>Ichnofabrics: Ichnofabric index 2</p> <p>Carbonate grains: Small pelecypods and pelecypod fragments, peloids, unidentified skeletal grains (including bryozoans?)</p> <p>Accessory grains: Less than 90% quartz grains, very fine to lower coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted. 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: Not determined</p> <p>Comments: None</p>
17.43-29.00	<p>No recovery— based on digital optical borehole image, high drilling rate, and loose sample of quartz sand in interval below, probably loose quartz sand filling a cavity between 19.50 and 29.60 feet</p>
29.00-29.60	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: None</p> <p>Carbonate grains: Minor limestone rock fragments and skeletal grains that are probably latence</p> <p>Accessory grains: Less than 96% quartz grains, very fine to lower very coarse sand size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted</p> <p>Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively moderate</p> <p>Comments: Loose, friable quartz sand. Probably latence from no recovery interval above. No marine fossils or marine indicators noted in one thin section of a quartz sand sample.</p>
29.60-34.28	<p>Lithofacies: Skeletal wackestone and packstone</p> <p>Depositional texture: Skeletal wackestone and packstone—reef rock (Moore, 2001)</p> <p>Color: Very pale orange 10YR 8/2, yellowish gray 5Y 8/1, light olive gray 5y 6/1, pale yellowish orange 10YR 8/6</p> <p>Sedimentary structures/textures: Evidence of borings, marine cementation, internal sedimentation, and framework organisms indicating this is a reef rock (Moore, 2001)</p>

	<p>Ichnofabrics: Ichnofabric index 2-3</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: Skeletal fragments (mostly silt to very fine sand size), pelecypod fragments, corals (including <i>Montastrea</i> and <i>Eusmilia</i>), branching coralline red algae, ostracods</p> <p>Accessory grains: 1-98% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted</p> <p>Porosity and permeability: 10% moldic, 2-5% inter- and intraparticle, 5-50% vuggy megaporosity, 17-65% total porosity. Permeability relatively high due to vertical solution piping</p> <p>Comments: Minor quartz sand grains are present in the rock matrix; however, quartz sand and sandstone fills or partly fills vugs and pore space of uncertain origin—possible remnant framework porosity. Vertical solution piping is present in digital optical borehole image from 33.37 (base of casing) to 37.60 feet</p>
34.28-34.98	<p>Lithofacies: <i>Montastrea</i> framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Minor borings by pelecypods</p> <p>Ichnofabrics: Ichnofabric index 2-3</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Monatastrea</i> head, uncommon boring pelecypod</p> <p>Accessory grains: Minor yellowish gray quartz sand fill of pelecypod borings</p> <p>Porosity and permeability: 15% moldic, 10% intraparticle, 1% boring porosity, 35% vertical piping; 61% total porosity. Permeability relatively high due to vertical solution piping</p>
34.98-36.65	<p>Lithofacies: Skeletal wackestone and packstone</p> <p>Depositional texture: Skeletal wackestone and packstone—reef rock (Moore, 2001)</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Evidence of borings, marine cementation, internal sedimentation, and framework organisms indicating this is a reef rock (Moore, 2001)</p> <p>Ichnofabrics: Ichnofabric index 2-3</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: Skeletal fragments (mostly silt to very fine sand size), pelecypod fragments, corals (including <i>Montastrea</i> and <i>Eusmilia</i>), coralline red algae, ostracods</p> <p>Accessory grains: 1-98% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted</p>

	<p>Porosity and permeability: 10% moldic, 2-5% inter- and intraparticle, 5-50% vuggy megaporosity, 17-65% total porosity. Permeability relatively high due to vertical solution piping</p> <p>Comments: Minor quartz sand grains are present in the rock matrix; however, quartz sand and sandstone fills or partly fills vugs and pore space of uncertain origin—possible remnant framework porosity. Vertical solution piping is present in digital optical borehole image from 33.37 (base of casing) to 37.60 feet</p>
36.65-39.90	<p>Lithofacies: <i>Montastrea</i> framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Minor borings by pelecypods</p> <p>Ichnofabrics: Ichnofabric index 2-3</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Monatastrea</i> head, uncommon boring pelecypod and <i>Porites porites</i></p> <p>Accessory grains: Minor yellowish gray quartz sand fill of pelecypod borings</p> <p>Porosity and permeability: 15% moldic, 10% intraparticle, 1% boring porosity, 35% vuggy porosity; 61% total porosity. Relatively moderate permeability</p>
39.90-40.80	No recovery
40.80-41.40	<p>Lithofacies: Skeletal packstone and grainstone, and pelecypod floatstone and rudstone</p> <p>Depositional texture: Skeletal packstone and grainstone, and pelecypod rudstone with skeletal packstone and grainstone matrix</p> <p>Color: Very pale orange 10YR 8/2, yellowish gray 5Y 8/1, light olive gray 5y 6/1, pale yellowish orange 10YR 8/6</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 3-4</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Skeletal fragments (mostly silt to very fine sand size), pelecypod fragments, uncommon corals</p> <p>Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1-2% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5% intraburrow, 5-10% vuggy megaporosity, 35-40% total porosity. Permeability relatively moderate</p> <p>Comments: None</p>
41.40-43.63	No recovery—Based on digital optical borehole wall image,

	lithofacies is probably the same as interval above 40.80-41.40 feet, but with greater occurrence of <i>Ophiomorpha</i>
43.63-43.98	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present. Rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar or micrite lining the inner tubules)</p> <p>Ichnofabrics: Ichnofabric index 4-5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Skeletal fragments, peloids, pelecypod fragments</p> <p>Accessory grains: 15-35% quartz grains, very fine to coarse sand size (mostly upper fine sand size), angular to subrounded, moderately sorted; 2-3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains</p> <p>Porosity and permeability: 5% moldic, 15% inter- and intraparticle, 5% intraburrow, 5-10% vuggy megaporosity, 30-35% total porosity. Permeability relatively moderate</p> <p>Comments: None</p>
43.98-45.00	No recovery—Based on digital optical borehole wall image, lithofacies is probably the same as interval above 43.63-43.98 feet
45.00-45.50	<p>Lithofacies: Arenaceous skeletal packstone and grainstone, and skeletal quartz sandstone</p> <p>Depositional texture: Arenaceous peloid, skeletal grain-dominated packstone and grainstone, and skeletal quartz sandstone</p> <p>Color: White N9</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present. Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar or micrite lining the inner tubules lining the inner tubules. Alveolar septal fabric within some rhizolith tubules)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, benthic foraminifers (including miliolids), pelecypod fragments, ostracods</p> <p>Accessory grains: 15-65% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2-3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1-1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% moldic, 10% inter- and</p>

	<p>intraparticle, 5% intraburrow, 5-10% vuggy megaporosity, 25-30% total porosity. Permeability relatively low</p> <p>Comments: Chalky texture, possible subaerial exposure surface</p>
45.50-45.70	No recovery
45.70-45.85	<p>Lithofacies: Arenaceous skeletal packstone and grainstone, and skeletal quartz sandstone</p> <p>Depositional texture: Arenaceous peloid, skeletal grain-dominated packstone and grainstone, and skeletal quartz sandstone</p> <p>Color: White N9</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> present. Common rhizoliths with 0.5-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar or micrite lining the inner tubules lining the inner tubules. Alveolar septal fabric within some rhizolith tubules)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids, benthic foraminifers (including miliolids), pelecypod fragments, ostracods</p> <p>Accessory grains: 15-65% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2-3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1-1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% moldic, 10% inter- and intraparticle, 5% intraburrow, 5-10% vuggy megaporosity, 25-30% total porosity. Permeability relatively low</p> <p>Comments: None</p>
45.85-46.15	No recovery
46.15-48.10	<p>Lithofacies: Arenaceous <i>Acropora cervicornis</i> floatstone and rudstone</p> <p>Depositional texture: <i>Acropora cervicornis</i> floatstone with arenaceous skeletal mud- and grain-dominated packstone and grainstone matrix</p> <p>Color: Very pale orange 10YR 8/2, pale yellowish brown 10YR 6/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Skolithos</i>?</p> <p>Carbonate grains: <i>Acropora cervicornis</i>, benthic foraminifers (including archaiasinids, miliolids, amphistiginids), peloids, pelecypod fragments, <i>Porites</i></p> <p>Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2-3% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1-</p>

	<p>1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% moldic, 10% inter- and intraparticle, 5-10% vuggy megaporosity, 25-30% total porosity. Permeability relatively low</p> <p>Comments: Patch reef</p>
48.10-50.28	<p>Lithofacies: <i>Porites asteroides</i> framestone</p> <p>Depositional texture: <i>Porites asteroides</i> framestone</p> <p>Color: Very pale orange 10YR 8/2, pale yellowish brown 10YR 6/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Skolithos</i>?</p> <p>Carbonate grains: <i>Porites asteroides</i>, benthic foraminifers, peloids, pelecypod fragments, encrusting coralline red algae</p> <p>Accessory grains: 5% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, moderately sorted</p> <p>Porosity and permeability: 20% moldic, 2% inter- and intraparticle, 30% autobreccia megaporosity, 52% total porosity. Permeability relatively high</p> <p>Comments: Patch reef with collapse of matrix into large moldic porosity. Abundant micrite matrix suggesting a patch reef in a low energy area landward of the shelf margin</p>
50.28-54.00	<p>Lithofacies: <i>Porites porites</i> floatstone and rudstone</p> <p>Depositional texture: <i>Porites porites</i> floatstone with skeletal mudstone and wackestone matrix</p> <p>Color: Very pale orange 10YR 8/2, pale yellowish brown 10YR 6/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Burrows and borings</p> <p>Trace fossils: <i>Gastrochaenolites</i> (produced by pelecypods) and <i>Entobia</i> (produced by clinoid sponges)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Trypanites</i> and <i>Cruziana</i>?</p> <p>Carbonate grains: Silt and very fine sand sized skeletal fragments, <i>Porites porites</i>, benthic foraminifers (including miliolids), peloids, pelecypod fragments, ostracods, encrusting coralline red algae, gastropods</p> <p>Accessory grains: Less than 1% quartz in matrix, but fine to coarse quartz grains fill some vugs</p> <p>Porosity and permeability: 5% moldic, 10% inter- and intraparticle, 5% intraburrow, 5-10% vuggy megaporosity, 25-30% total porosity. Permeability relatively low</p> <p>Comments: Abundant micrite matrix suggesting a patch reef in a low energy restricted area landward of the shelf margin</p>
54.00-55.80	<p>Lithofacies: Arenaceous skeletal packstone and grainstone, and skeletal quartz sandstone</p>

	<p>Depositional texture: Arenaceous peloid, skeletal grain-dominated packstone and grainstone, and skeletal quartz sandstone</p> <p>Color: Very pale orange 10YR 8/2, pale yellowish brown 10YR 6/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Trace fossils: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Skeletal fragments, peloids, stick-shaped <i>Porites porites</i>, rhodoliths (up to large pebble size), pelecypod fragments</p> <p>Accessory grains: 15-65% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5% intraburrow, 5-10% vuggy megaporosity, 35-40% total porosity. Permeability relatively moderate</p> <p>Comments: Transgressive unit as indicated by rhodoliths above <i>Montastrea</i> below?</p>
55.80-56.70	<p>Lithofacies: <i>Montastrea</i> framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Uncommon borings</p> <p>Ichnofabrics: Ichnofabric index 2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Monatastrea</i> coral</p> <p>Accessory grains: None noted</p> <p>Porosity and permeability: 15% moldic, 10% intraparticle, 5% vuggy porosity; 30% total porosity. Relatively moderate permeability</p>
56.70-57.60	<p>No recovery—Probably lithofacies in interval below, based on digital optical borehole wall image</p>
57.60-58.50	<p>Lithofacies: Coral floatstone and rudstone</p> <p>Depositional texture: Stick-shaped coral floatstone with skeletal mud- and grain-dominated packstone and grainstone matrix</p> <p>Color: Very pale orange 10YR 8/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Burrows</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Skeletal fragments, unidentified stick-shaped corals, benthic foraminifers (including miliolids), peloids, pelecypod fragments</p> <p>Accessory grains: 5-25% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1)</p>

	<p>Porosity and permeability: 20% moldic, 10% inter- and intraparticle, 5% vuggy megaporosity, 35% total porosity. Permeability relatively high</p> <p>Comments: Shallow-shelf patch reef</p>
58.50-61.00	No recovery
61.00-61.60	<p>Lithofacies: Coral floatstone and rudstone</p> <p>Depositional texture: Stick-shaped coral floatstone with skeletal mud- and grain-dominated packstone and grainstone matrix</p> <p>Color: Very pale orange 10YR 8/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Burrows</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Skeletal fragments, unidentified stick-shaped corals, benthic foraminifers (including miliolids), peloids, pelecypod fragments</p> <p>Accessory grains: 5-25% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 20% moldic, 10% inter- and intraparticle, 5% vuggy megaporosity, 35% total porosity. Permeability relatively high</p> <p>Comments: Shallow-shelf patch reef</p>
61.60-63.30	No recovery
63.30-63.50	<p>Lithofacies: <i>Porites asteroides</i> framestone</p> <p>Depositional texture: <i>Porites asteroides</i> framestone</p> <p>Color: Very pale orange 10YR 8/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Uncommon borings</p> <p>Ichnofabrics: Ichnofabric index 2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Porites asteroides</i></p> <p>Accessory grains: None noted</p> <p>Porosity and permeability: 15% moldic, 10% intraparticle, 15% vuggy porosity; 40% total porosity. Relatively moderate permeability</p>
63.50-64.00	No recovery
64.00-65.00	<p>Lithofacies: Coral floatstone and rudstone</p> <p>Depositional texture: Stick-shaped coral floatstone with skeletal wackestone and mud-dominated packstone matrix</p> <p>Color: Very pale orange 10YR 8/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Burrows</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Silt to lower very fine sand size skeletal fragments, unidentified stick-shaped corals, benthic</p>

	<p>foraminifers (including miliolids), peloids, pelecypod fragments, echinoid spines, branching coralline red algae</p> <p>Accessory grains: None noted</p> <p>Porosity and permeability: 20% moldic, 5% inter- and intraparticle, 5% vuggy megaporosity, 30% total porosity. Permeability relatively moderate</p> <p>Comments: Shallow-shelf patch reef</p>
65.00-65.60	No recovery—Interval from 65.00 to 65.60 feet most likely same lithofacies as contiguous interval above, based on digital optical borehole wall image
65.60-66.40	<p>Lithofacies: <i>Acropora cervicornis</i> floatstone and rudstone</p> <p>Depositional texture: <i>Acropora cervicornis</i> floatstone and rudstone with skeletal wackestone matrix</p> <p>Color: Very pale orange 10YR 8/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Traces fossils: Burrows and borings</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Trypanites</i> and <i>Cruziana</i>?</p> <p>Carbonate grains: <i>Acropora cervicornis</i>, peloids, encrusting coralline red algae</p> <p>Accessory grains: Quartz sand fills or partly fills some vugs</p> <p>Porosity and permeability: 25% moldic, 5% inter- and intraparticle, 5% vuggy megaporosity, 35% total porosity. Permeability relatively moderate</p> <p>Comments: Low-energy patch reef on shelf landward of shelf margin</p>
66.40-67.60	No recovery
67.60-68.10	<p>Lithofacies: Coral floatstone and rudstone</p> <p>Depositional texture: Stick-shaped coral floatstone with skeletal, peloid wackestone matrix</p> <p>Color: Very pale orange 10YR 8/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Burrows</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Silt to lower very fine sand size skeletal fragments, peloids, unidentified stick-shaped corals, benthic foraminifers (including miliolids), ostracods, echinoid spines, branching coralline red algae, pelecypod fragments</p> <p>Accessory grains: Less than 1% quartz grains in matrix</p> <p>Porosity and permeability: 20% moldic, 5% inter- and intraparticle, 5% vuggy megaporosity, 30% total porosity. Permeability relatively moderate</p> <p>Comments: Shallow-shelf patch reef</p>
68.10-68.20	No recovery
68.20-71.75	Lithofacies: Coral floatstone and rudstone

	<p>Depositional texture: Stick-shaped coral floatstone with skeletal, peloid wackestone and mud- and grain-dominated packstone matrix</p> <p>Color: Very pale orange 10YR 8/2, dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: Burrows and borings</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Trypanites</i> and <i>Cruziana</i>?</p> <p>Carbonate grains: Silt to lower very fine sand size skeletal fragments, peloids, unidentified stick-shaped corals, benthic foraminifers (including miliolids, uncommon <i>Pyrgo</i>), ostracods, echinoid spines, <i>Acropora cervicornis</i>, branching coralline red algae, <i>Manicina</i>?, pelecypod fragments</p> <p>Accessory grains: 1-5% quartz grains in matrix, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, poorly sorted</p> <p>Porosity and permeability: 20% moldic, 5% inter- and intraparticle, 5% vuggy megaporosity, 30% total porosity. Permeability relatively moderate</p> <p>Comments: Shallow-shelf patch reef. Allochthonous quartz sand grains partly fill or fill some moldic vuggy porosity</p>
71.75-71.90	No recovery
71.90-74.30	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal, peloid, benthic foraminifer grain-dominated packstone and grainstone</p> <p>Color: Very pale orange 10YR 8/2, very light gray N8</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Trace fossils: Burrows present. Minor rhizoliths with 0.5-1. mm inner tubule diameter (associated with rhizoliths are concentric micropor or calcrete lining the inner tubules)</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Pelecypod fragments (common medium sand size to granule size pelecypod grains), peloids, benthic foraminifers (amphisteginids, miliolids, <i>Elphidium</i>, soritids, worn and rounded archaiasinids), branching coralline red algae, echinoid plates, encrusting bryozoans, globular planktic foraminifers, rhodoliths, serpulids</p> <p>Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains (some up to very coarse sand size)</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5-10% vuggy megaporosity, 30-35% total</p>

	<p>porosity. Permeability relatively moderate</p> <p>Comments: Upper bounding surface is a shift from transgressive to high stand systems tracts (HST above surface). Interparticle micrite has been neomorphosed to microspar. Upper bounding surface is upward shift from a heterozoan grain assemblage to a chlorozoan grain assemblage</p>
74.30-75.05	<p>Lithofacies: Rhodolith floatstone and rudstone</p> <p>Depositional texture: Rhodolith rudstone with</p> <p>Color: Very pale orange 10YR 8/2, very light gray N8</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Trace fossils: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Coralline red algae (mostly as rhodoliths), peloids, benthic foraminifers (amphistiginids, miliolids, worn and rounded archaiasinids), echinoid plates, encrusting bryozoans, serpulids, <i>Madracis</i> coral</p> <p>Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5-10% vuggy megaporosity, 30-35% total porosity. Permeability relatively moderate</p> <p>Comments: Steeply eastward dipping abrupt surface and facies shift at upper bounding surface of interval</p>
75.05-77.80	<p>No recovery—Lithofacies in contiguous interval above is probably present from 75.05 to 76.00 feet, based on digital optical borehole wall image</p>
77.80-78.00	<p>Lithofacies: Rhodolith floatstone and rudstone</p> <p>Depositional texture: Rhodolith rudstone with</p> <p>Color: Very pale orange 10YR 8/2, very light gray N8</p> <p>Sedimentary structures/textures: Uncommon burrows</p> <p>Trace fossils: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Coralline red algae (mostly as rhodoliths), peloids, benthic foraminifers (amphistiginids, miliolids, worn and rounded archaiasinids), echinoid plates, encrusting bryozoans, serpulids,</p> <p>Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5-10% vuggy megaporosity, 30-35% total</p>

	<p>porosity. Permeability relatively moderate</p> <p>Comments: Steeply eastward dipping abrupt surface and facies shift at upper bounding surface of interval</p>
78.00-78.25	No recovery
78.25-78.50	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Possible rhizoliths along uppermost bounding surface of interval</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers, peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5-10% vuggy megaposity, 30-35% total porosity. Permeability relatively moderate</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar. Eastward dipping 0.5 meter scale upward fining cycles that could be gravity-driven grain flow accumulations between approximately 78.00 and 81.00 feet</p>
78.50-78.82	No recovery
78.82-80.01	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers, peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite</p>

	<p>grains, trace feldspar</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5-10% vuggy megaporosity, 30-35% total porosity. Permeability relatively moderate</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar. Eastward dipping 0.5 meter scale upward fining cycles that could be gravity-driven grain flow accumulations between approximately 78.00 and 81.00 feet</p>
80.01-80.10	No recovery
80.10-80.50	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers, peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5-10% vuggy megaporosity, 30-35% total porosity. Permeability relatively moderate</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar. Eastward dipping 0.5 meter scale upward fining cycles that could be gravity-driven grain flow accumulations between approximately 78.00 and 81.00 feet</p>
80.50-81.30	No recovery
81.30-81.50	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers, peloids</p>

	<p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 5-10% vuggy megaporosity, 30-35% total porosity. Permeability relatively moderate</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar. Eastward dipping 0.5 meter scale upward fining cycles that could be gravity-driven grain flow accumulations between approximately 78.00 and 81.00 feet</p>
81.50-84.00	No recovery
84.00-84.60	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers (miliolids, abraded archaiasinids), peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 5-35% vuggy megaporosity, 35-65% total porosity. Permeability relatively high</p> <p>Comments: None</p>
84.60-85.10	No recovery
85.10-85.50	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic</p>

	<p>foraminifers (miliolids, abraded archaiasinids), peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 5-35% vuggy megaporosity, 35-65% total porosity. Permeability relatively high</p> <p>Comments: None</p>
85.50-86.10	No recovery
86.10-86.30	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers (miliolids, abraded archaiasinids), peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 5-35% vuggy megaporosity, 35-65% total porosity. Permeability relatively high</p> <p>Comments: None</p>
86.30-86.60	No recovery
86.60-87.10	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers (miliolids, abraded archaiasinids), peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand</p>

	<p>size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 5-35% vuggy megaporosity, 35-65% total porosity. Permeability relatively high</p> <p>Comments: None</p>
87.10-88.20	No recovery
88.20-88.40	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers (miliolids, abraded archaiasinids), peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 5-35% vuggy megaporosity, 35-65% total porosity. Permeability relatively high</p> <p>Comments: None</p>
88.40-88.60	No recovery
88.60-90.45	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypods, red algae, echinoid grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: <i>Ophiomorpha</i> present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, bryozoans fragments, benthic foraminifers (miliolids, amphistiginids, soritids), peloids</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly black</p>

	<p>N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 5-35% vuggy megaporosity, 35-65% total porosity. Permeability relatively high</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar</p>
90.45-91.10	No recovery
91.10-92.22	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with arenaceous skeletal grainstone matrix</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid plates, benthic foraminifers (miliolids, amphistiginids, abraded archaiasinids), globular planktic foraminifers</p> <p>Accessory grains: 25-40% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, poorly sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 5-10% vuggy megaporosity, 35-40% total porosity. Permeability relatively moderate</p> <p>Comments: Interparticle micrite has been neomorphosed to microspar. Fining upward cycle between approximately 89.13 and 92.22. Possibly a gravity-driven grain-flow accumulation or highly burrowed storm deposit. Ravinement surface at base of interval</p>
92.22-92.40	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Skeletal quartz sand</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Skeletal fragments, pelecypod fragments</p> <p>Accessory grains: 50-70% quartz grains, very fine to lower medium sand size (mostly very fine sand size), angular to subangular, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown</p>

	<p>10YR 5/4), 1% phosphorite grains, trace feldspar Porosity and permeability: 15% inter- and intraparticle, 15% total porosity. Permeability relatively low Comments: Ravinement surface at top of interval at 92.22 ft and <i>Glossifungites</i> ichnotaxa below surface to at least a depth of 3 cm below upper bounding surface. <i>Glossifungites</i> indicative of a firmground at 92.22 ft. <i>Glossifungites</i> ichnotaxa filled with lithology from contiguous interval above 92.22 ft</p>
92.40-93.95	<p>Lithofacies: Arenaceous mudstone and wackestone Depositional texture: Arenaceous skeletal wackestone Color: Very light gray N8 Sedimentary structures/textures: Burrows present Trace fossils: Rhizoliths with about 0.5 mm wide inner tubule diameter in upper part of interval Ichnofabrics: Ichnofabric index 5? Carbonate grains: Pelecypod fragments, benthic foraminifers (<i>Elphidium</i>, miliolids, amphistiginids, <i>Ammonia?</i>), echinoid spines, gastropods, bryozoan fragments, peloids, coralline red algae, globular benthic foraminifers. Archaiasinids and very small solitary corals in lower part of interval Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar Porosity and permeability: 15% moldic, 15% inter- and intraparticle, 5-10% vuggy megaposity, 35-40% total porosity. Permeability relatively moderate Comments: Low energy depositional environment, likely with a restricted and brackish influence. Interval becomes more restricted and brackish upward, as evidenced by archaiasinids and solitary corals in lower part. Minor autobrecciation in upper part of interval with allochthonous small cavity fill by quartz sand—brecciation probably indicative of desiccation and expansion and movement of roots</p>
93.95-94.60	No recovery
94.60-95.60	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone Depositional texture: Pelecypod floatstone with arenaceous, pelecypod fragment, benthic foraminifer mud-dominated packstone and grainstone matrix Color: Very light gray N8 Sedimentary structures/textures: Burrows present Ichnofabrics: Ichnofabric index 5 Carbonate grains: Pelecypod fragments, benthic foraminifers (amphistiginids, archaiasinids, soritids, peneroplids), echinoid spines, gastropods, bryozoan fragments, peloids, coralline red</p>

	<p>algae, ostracods, globular planktic foraminifers</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 5% inter- and intraparticle, 15-25% vuggy megaporosity, 35-45% total porosity. Permeability relatively high, due to vertical solution enlarged fracture</p> <p>Comments: Solution enlarge fracture occurs over vertical extent of interval</p>
95.60-99.00	No recovery
99.00-99.30	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous, pelecypod fragment, benthic foraminifer mud-dominated packstone and grainstone matrix</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (amphistiginids, archaiasinids, soritids, peneroplids), echinoid spines, gastropods, bryozoan fragments, peloids, coralline red algae, ostracods, globular planktic foraminifers</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 5% inter- and intraparticle, 15-25% vuggy megaporosity, 35-45% total porosity. Permeability relatively high, due to vertical solution enlarged fracture</p> <p>Comments: None</p>
99.30-99.60	No recovery
99.60-100.00	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous, pelecypod fragment, benthic foraminifer mud-dominated packstone and grainstone matrix</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (amphistiginids, archaiasinids, soritids, peneroplids), echinoid spines, gastropods, bryozoan fragments, peloids, coralline red algae, ostracods, globular planktic foraminifers</p>

	<p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 5% inter- and intraparticle, 15-25% vuggy megaporosity, 35-45% total porosity. Permeability relatively high, due to vertical solution enlarged fracture</p> <p>Comments: None</p>
100.00-100.60	No recovery
100.60-101.70	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal mud- and grain-dominated packstone and grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, echinoid spines, gastropods, peloids, ostracods, benthic foraminifers (amphistiginids, miliolids)</p> <p>Accessory grains: 25-40% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subangular, moderately sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 5% inter- and intraparticle, 15-25% vuggy megaporosity, 35-45% total porosity. Permeability relatively high, due to vertical solution enlarged fracture</p> <p>Comments: Solution enlarged vertical fractures occur between 100.60 and 101.00 feet</p>
101.70-102.62	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous, pelecypod fragment, benthic foraminifer mud- and grain-dominated packstone and grainstone matrix</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% moldic, 5% inter- and intraparticle, 5-10% vuggy megaporosity, 30-35% total</p>

	<p>porosity. Permeability relatively moderate</p> <p>Comments: None</p>
102.62-102.80	<p>Lithofacies: <i>Planorbella</i> floatstone and rudstone</p> <p>Depositional texture: <i>Planorbella</i> floatstone with skeletal wackestone matrix</p> <p>Color: Light gray N7</p> <p>Sedimentary structures/textures: Fills in karstic solution piping below interval</p> <p>Trace fossils: <i>Entobia</i></p> <p>Ichnofabrics: Ichnofabric index 1-3 at and just below uppermost bounding surface</p> <p>Ichnofacies: <i>Trypanites</i> at and just below uppermost bounding surface</p> <p>Carbonate grains: <i>Planorbella</i>, gastropods, small pelecypods</p> <p>Accessory grains: 1-3% quartz grains, very fine to fine sand size (mostly very fine sand size)</p> <p>Porosity and permeability: 15% moldic, 5-10% vuggy megaporosity, 20-25% total porosity. Permeability relatively low</p> <p>Comments: Uppermost bounding surface is a bored hardground with transgressive marine sediments above and freshwater limestone comprising the hardground and below. This freshwater interval is a transgressive limestone that infills desiccation and karstic features on underlying freshwater interval between 102.80 and 103.85 feet</p>
102.80-103.85	<p>Lithofacies: Mudstone and wackestone</p> <p>Depositional texture: Skeletal mudstone and wackestone</p> <p>Color: In general from bottom to top light gray N7, very light gray N8, and very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrows</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Skeletal fragments (mostly silt and lower very fine sand sized), peloids, gastropods (including <i>Planorbella</i>), pelecypod fragments, ostracods</p> <p>Accessory grains: Trace quartz grains, very fine sand size</p> <p>Comments: Abundant micro-craze-plane desiccation cracks. Freshwater limestone that has desiccation features and vertical karstic dissolution features (piping?). Rhizobrecciation has produced many small granule to small pebble size breccia clasts</p>
103.85-108.00	<p>No recovery-- Lithofacies in contiguous oyster-rich interval below is probably present from 103.85 to 108.00 feet, based on digital optical borehole wall image</p>
108.00-108.15	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: <i>Ostrea</i> floatstone and rudstone with arenaceous, mud- and grain-dominated packstone and</p>

	<p>grainstone matrix</p> <p>Color: Very pale orange 10YR 8/2 with very light gray N8 to light gray N7 <i>Ostrea</i></p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Carbonate grains: <i>Ostrea</i>, skeletal fragments</p> <p>Accessory grains: 25-30% quartz grains, very fine to fine sand size (mostly very fine sand size), angular to subangular, well sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains</p> <p>Porosity and permeability: 5% moldic, 5% inter- and intraparticle, 5-10% vuggy megaporosity, 15-25% total porosity. Permeability relatively moderate</p> <p>Comments: Transitional brackish-water oyster bank. Lowermost contact is abrupt and uppermost oyster-rich lithology is abrupt at 103.85 feet</p>
108.15-111.15	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Small pelecypod floatstone and rudstone with skeletal wackestone and mud-dominated packstone matrix</p> <p>Color: Mottled very pale orange 10YR 8/2 with very light gray N8</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypods (typically small—no larger than medium pebble size), echinoid spines and plates, ostracods, gastropods, peloids, benthic foraminifers (including amphistiginids, miliolids, <i>Elphidium</i>, archaiasinids), uncommon planktic globular foraminifers, pink barnacle fragments, sand-dollar-shaped echinoids.</p> <p>Accessory grains: 1-10% quartz grains, very fine to very coarse sand size (mostly upper fine sand size), angular to subrounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains</p> <p>Porosity and permeability: 15% moldic, 3% inter- and intraparticle, 5% vuggy megaporosity, 23% total porosity. Permeability relatively low</p> <p>Comments: Upper bounding surface is an abrupt lithofacies shift and has about 0.2 feet of irregular paleo-microtopography. Uncommon burrows or small karst cavities filled with allochthonous skeletal quartz sandstone</p>
111.15-112.12	No recovery
112.12-112.25	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: <i>Ostrea</i> floatstone and rudstone with</p>

	<p>arenaceous, mud- and grain-dominated packstone and grainstone matrix</p> <p>Color: Very pale orange 10YR 8/2 with very light gray N8 to light gray N7 <i>Ostrea</i></p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Carbonate grains: <i>Ostrea</i>, skeletal fragments</p> <p>Accessory grains: 25-30% quartz grains, very fine to fine sand size (mostly very fine sand size), angular to subangular, well sorted; 4% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains</p> <p>Comments: Transitional brackish-water oyster-rich environment. Lowermost contact is abrupt. Samples are rubble</p>
112.25-117.45	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with skeletal wackestone and mud-dominated packstone matrix</p> <p>Color: Mottled very pale orange 10YR 8/2 with very light gray N8</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Possible <i>Thalassinoides</i> present. Uncommon borings on upper bounding hardground surface</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i> and <i>Trypanites</i> at and just below uppermost hardground surface</p> <p>Carbonate grains: Pelecypods (including <i>Chione</i>), peloids, echinoid spines and plates, gastropods, benthic foraminifers (including miliolids, amphistiginids, <i>Elphidium</i>, biserials, uncommon <i>Ammonia</i>, archaiasinids), pink barnacle fragments, planktic globular foraminifers, ostracods. Minor rhodoliths about 0.3 feet below uppermost bounding surface</p> <p>Accessory grains: 5-20% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to subrounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15-20% moldic, 3% inter- and intraparticle, 5-10% vuggy megaposity, 23-33% total porosity. Permeability relatively moderate</p> <p>Comments: Upper bounding surface is a hardground surface with uncommon small borings</p>
117.45-118.30	No recovery
118.30-118.75	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with skeletal wackestone and mud-dominated packstone matrix</p> <p>Color: Mottled very pale orange 10YR 8/2 with very light gray N8</p>

	<p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Possible <i>Thalassinoides</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods (including abundant <i>Chione</i>), peloids, echinoid spines and plates, gastropods, benthic foraminifers (including amphistiginids, <i>Elphidium</i>, biserials, miliolids), pink barnacle fragments, ostracods, encrusting bryozoans, planktic globular foraminifers,</p> <p>Accessory grains: 5-20% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 3% inter- and intraparticle, 5-25% vuggy megaporosity, 21-43% total porosity. Permeability relatively high due to vuggy porosity</p> <p>Comments: None</p>
118.75-119.00	No recovery
119.00-121.40	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with skeletal wackestone and mud- and grain-dominated packstone matrix</p> <p>Color: Mottled very pale orange 10YR 8/2 with yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i>, and <i>Teichichnus</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods (including abundant <i>Chione</i>), peloids, echinoid spines and plates, gastropods, benthic foraminifers (including amphistiginids, <i>Elphidium</i>, biserials, miliolids), pink barnacle fragments, ostracods, encrusting bryozoans, planktic globular foraminifers,</p> <p>Accessory grains: 5-20% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 3% inter- and intraparticle, 5% vuggy megaporosity, 23% total porosity. Permeability relatively moderate</p> <p>Comments: None</p>
121.40-123.00	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal, peloid mud- and grain-</p>

	<p>dominated packstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i>, and <i>Teichichnus</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, peloids, echinoid spines and plates, benthic foraminifers (including miliolids, amphistiginids, biserials, <i>Elphidium</i>), ostracods, planktic globular foraminifers, coralline red algae, sand-dollar-shaped echinoids</p> <p>Accessory grains: 15-30% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to subrounded, poorly sorted; 4% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% moldic, 5% inter- and intraparticle, 5% vuggy megaporosity, 20% total porosity. Permeability relatively low</p> <p>Comments: None</p>
123.00-123.90	No recovery
123.90-125.35	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment, peloid mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i>, and <i>Diplocraterion?</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments and minor articulated pelecypods (including <i>Chione</i>), peloids, echinoid spines and plates, benthic foraminifers (including amphistiginids, miliolids, <i>Elphidium</i>), ostracods, planktic globular foraminifers, coralline red algae fragments, sand-dollar-shaped echinoids</p> <p>Accessory grains: 15-30% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, poorly sorted; 8% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 25% total porosity. Permeability relatively low</p> <p>Comments: None</p>
125.35-126.10	No recovery
126.10-127.85	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment, peloid mud- and grain-dominated packstone</p>

	<p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i>, and <i>Diplocraterion?</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments and minor articulated pelecypods (including <i>Chione</i>), peloids, echinoid spines and plates, benthic foraminifers (including amphistiginids, miliolids, <i>Elphidium</i>), ostracods, planktic globular foraminifers, coralline red algae fragments, sand-dollar-shaped echinoids</p> <p>Accessory grains: 15-30% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, poorly sorted; 8% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 25% total porosity. Permeability relatively low</p> <p>Comments: None</p>
127.85-129.20	No recovery
129.20-135.50	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment, peloid mud- and grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i>, and <i>Teichichnus</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments and minor articulated pelecypods (including <i>Chione</i>), peloids, benthic foraminifers (including amphistiginids, miliolids, <i>Elphidium</i>), echinoid spines and plates, ostracods, planktic globular foraminifers, coralline red algae fragments, uncommon branching bryozoans and serpulid tubes</p> <p>Accessory grains: 15-30% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, poorly sorted; 4% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10% moldic, 15% inter- and intraparticle, 25% total porosity. Permeability relatively low</p> <p>Comments: Skeletal grains commonly upper fine sand size</p>
135.50-136.00	No recovery
136.00-137.15	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod and red algal fragment grain-dominated packstone and grainstone</p> <p>Color: Mottled yellowish gray 5Y 8/1 and very light gray N8</p>

	<p>Sedimentary structures/textures: Thick bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, coralline red algae fragments, peloids, benthic foraminifers (including amphistiginids, miliolids, biserials), echinoid spines and plates, ostracods, planktic globular foraminifers</p> <p>Accessory grains: 15-30% quartz grains, very fine to coarse sand size (mostly upper fine to lower medium sand size), angular to subrounded, poorly sorted; 4% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% moldic, 20% inter- and intraparticle, 25% total porosity. Permeability relatively low</p> <p>Comments: Skeletal grains commonly coarse to very coarse sand size</p>
137.15-138.20	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (mostly amphistiginids), echinoid plates, globular planktic foraminifers</p> <p>Accessory grains: 15-40% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to subrounded, poorly sorted; 5% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% moldic, 20% inter- and intraparticle, 25% total porosity. Permeability relatively low</p> <p>Comments: Skeletal grains commonly coarse sand size</p>
138.20-139.00	No recovery
139.00-141.70	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment mud- and grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (mostly amphistiginids), echinoid plates, globular planktic foraminifers</p> <p>Accessory grains: 15-40% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to subrounded, poorly sorted; 5% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains, trace feldspar</p>

	<p>Porosity and permeability: 5% moldic, 20% inter- and intraparticle, 25% total porosity. Permeability relatively low</p> <p>Comments: Skeletal grains commonly coarse sand size</p>
141.70-144.00	No recovery
144.00-148.80	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i> (including <i>Ophiomorpha nodosa</i>), <i>Planolites</i>, and possible protrusive <i>Diplocraterion</i> and <i>Palaeophycus</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (mostly amphistiginids, uncommon <i>Elphidium</i>, <i>Nummulites</i>, and <i>Ammonia</i>), echinoid plates, globular planktic foraminifers (including globigerinioides)</p> <p>Accessory grains: 15-40% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to subrounded, poorly sorted; 5% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% moldic, 20% inter- and intraparticle, 25% total porosity. Permeability relatively low</p> <p>Comments: Broken amphistiginids common, but globigerinioides typically unbroken</p>

Local Identifier (corehole)	G-3946
Local Identifiers (completed wells)	G-3946D, G-3946S
USGS Station Numbers (completed wells)	252431080261001, 252431080261002
Total Depth Drilled	99 feet (driller's depth)
Cored Interval	2 to 99 feet
County	Miami-Dade
Latitude (NAD 83)	25-24-30.7 N
Longitude (NAD 83)	080-26-09.7 W
Elevation (NGVD 29)	3.575 feet (surveyed by Miami-Dade County)
Completion Date	June 2, 2007
Other types of available logs	OBI, Caliper, Ambient Fluid, Ambient Flow, Pumping Flow, Gamma ray, Conductivity, Resistivity, Full Waveform Sonic
Owner	Miami-Dade County
Driller	Intercounty
Core described by	Kevin J. Cunningham
Top Lake Flirt Marl	1.50 feet
Top Miami Limestone	2.50 feet
Top Fort Thompson Formation	19.60 feet
Top Tamiami Formation	60.07 feet

G-3946 Test Corehole	
Depth Interval (feet)	Core Description
0 – 1.50	No core recovery.
1.50-2.50	<p>Lithofacies: Mudstone and wackestone</p> <p>Depositional texture: Lime mudstone (marl)</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Chalky, soapy texture</p> <p>Ichnofabrics: Ichnofabric index 2-5, abundant rhizoliths</p> <p>Carbonate grains: Uncommon gastropods, pelecypod fragments, and limestone rock fragments of peloidal grainstone (Miami Limestone)</p> <p>Accessory grains: 20% acid-insoluble residue consists of a grayish orange residue in the clay-size range of particles, with some plant fragments associated with rhizoliths</p> <p>Porosity and permeability: No visible porosity, but matrix porosity is estimated at 30%, judging from the extremely light bulk density of the rock. Very low permeability</p> <p>Comments: Possible desiccation cracks, thinly laminated in part.</p>
2.50-4.00	No recovery
4.00-11.00	<p>Lithofacies: Peloidal packstone and grainstone</p> <p>Depositional texture: Peloidal, skeletal grainstone and minor grain- to mud-dominated packstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Ichnofabrics: Ichnofabric index 5, common <i>Ophiomorpha</i></p> <p>Carbonate grains: Peloids, pelecypods (mostly fragmented), miliolids, gastropods, ostracods, <i>Halimeda</i> plates, and uncommon archiasinids, coated grains, <i>Faverina</i>, and <i>Schizoporella</i></p> <p>Accessory grains: Less than 1% quartz grains, fine sand size</p> <p>Porosity and permeability: 10% moldic, 15% interparticle and intraparticle, 10-35% intraburrow vugs, 35-60% total porosity. Permeability relatively high</p> <p>Comments: Peloids are biomodal in size, fine-grained and very coarse-grained clotted pellets.</p>
11.00-11.75	<p>Lithofacies: Pelecypod floatstone</p> <p>Depositional texture: Pelecypod floatstone with a matrix of peloidal mud- to grain-dominated packstone and grainstone</p>

	<p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Ichnofabrics: Ichnofabric index 5, <i>Ophiomorpha</i> present</p> <p>Carbonate grains: Peloids, pelecypods (many unbroken, includes <i>Chione</i>)</p> <p>Accessory grains: Less than 1% quartz grains, fine-grained sand size</p> <p>Porosity and permeability: 20% moldic, 25-30% intraburrow vugs; 45-50% total porosity. Permeability relatively high</p> <p>Comments: None</p>
11.75-11.81	<p>Lithofacies: Pedogenic limestone</p> <p>Depositional texture: Laminated calcrete</p> <p>Color: Very pale orange 10YR 8/2 to pale yellowish brown 10YR 8/2</p> <p>Ichnofabrics: Rhizoliths present</p> <p>Porosity and permeability: Matrix porosity 5% microporosity and matrix permeability is very low</p>
11.81-12.70	<p>Lithofacies: Peloidal packstone and grainstone</p> <p>Depositional texture: Peloidal grainstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Ichnofabrics: Ichnofabric index 5, <i>Ophiomorpha</i> present</p> <p>Carbonate grains: Peloids, skeletal fragments, benthic forams (including miliolids)</p> <p>Accessory grains: 1-2% fine-grained quartz grains, moderately sorted</p> <p>Porosity and permeability: 5% moldic; 15% inter- and intraparticle, 30% inter- and intraburrow vugs; total porosity approximately 50% and permeability relatively high</p> <p>Comments: Well developed calcrete layers occur at the top of this interval.</p>
12.70-19.05	No recovery
19.05-19.10	<p>Lithofacies: Mudstone and wackestone</p> <p>Depositional texture: Lime mudstone</p> <p>Color: Light gray N7</p> <p>Carbonate grains: Uncommon skeletal fragments</p> <p>Porosity and permeability: Matrix porosity is 5% microporosity and matrix permeability is very low</p> <p>Comment: Lithology is a match for freshwater lime mudstone that commonly occurs at the base of the HFC MIS7 or base of the Miami Limestone</p>
19.10-26.90	No recovery
26.90-27.95	<p>Lithofacies: Skeletal packstone and grainstone, and mudstone and wackestone</p> <p>Depositional texture: Benthic foraminifer, mud-dominated pelecypod wackestone and packstone</p>

	<p>Color: Very pale orange (10YR 8/2) and grayish orange (10YR 7/4)</p> <p>Sedimentary structures/textures: Burrow mottled</p> <p>Ichnofabrics: Ichnofabric index 5, <i>Thalassinoides</i> present</p> <p>Carbonate grains: Benthic foraminifers (including mostly archaiasinids and miliolids with uncommon peneroplids and <i>Elphidium</i>), gastropods, ostracods, branching coralline red algae, echinoid spines, dasycladacean alga</p> <p>Accessory grains: 1-5% quartz grains, very fine to fine sand size, moderately sorted, angular to subrounded</p> <p>Porosity and permeability: 5-7% molds; 5% intraburrow vugs</p> <p>Comments: None</p>
27.95-32.65	No recovery
32.65-33.20	<p>Lithofacies: Pelecypod wackestone and packstone</p> <p>Depositional texture: Pelecypod wackestone and mud-dominated packstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrowed mottled</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypods, gastropods, benthic foraminifers (including archaiasinids)</p> <p>Accessory grains: 3-5% quartz grains, fine- and medium sand size, poorly sorted</p> <p>Porosity and permeability: 5-7% moldic, 10% vuggy porosity; total matrix porosity 15-17%, but porosity observed in digital optical borehole image is 50% and digital optical permeability is relatively high</p> <p>Comments: None</p>
33.20-33.35	<p>Lithofacies: Mudstone and wackestone</p> <p>Depositional texture: Gastropod mudstone and wackestone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrowed mottled</p> <p>Ichnofabrics: Ichnofabric index not defined</p> <p>Carbonate grains: Gastropods, ostracods</p> <p>Accessory grains: 1-3% quartz grains, fine- and medium sand size, poorly sorted</p> <p>Porosity and permeability: Matrix porosity is 5-7% moldic, 10% vuggy porosity; total matrix porosity 15-17%, but porosity observed in digital optical borehole image is 50% and digital optical permeability is relatively high</p> <p>Comments: Skewed desiccation cracks and possible rhizoliths filled with calcite cement</p>
33.35 – 33.45	<p>Lithofacies: <i>Planorbella</i> floatstone and rudstone</p> <p>Depositional texture: <i>Planorbella</i> rudstone with a lime mudstone matrix</p> <p>Color: Light gray N7</p>

	<p>Carbonate grains: Uncommon skeletal fragments</p> <p>Porosity and permeability: Matrix porosity is 5% microporosity and matrix permeability is very low</p> <p>Comment: Presence of <i>Planorbella</i> suggest freshwater environment of deposition</p>
33.45-33.85	<p>Lithofacies: Mudstone and wackestone</p> <p>Depositional texture: Gastropod mudstone and wackestone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrowed mottled</p> <p>Ichnofabrics: Ichnofabric index not defined</p> <p>Carbonate grains: Gastropods, ostracods</p> <p>Accessory grains: 1-3% quartz grains, fine- and medium sand size, poorly sorted</p> <p>Porosity and permeability: Matrix porosity is 5-7% moldic, 10% vuggy porosity; total matrix porosity 15-17%, but porosity observed in digital optical borehole image is 50% and digital optical permeability is relatively high</p> <p>Comments: None</p>
33.85-34.90	No recovery
34.90-36.15	<p>Lithofacies: <i>Planorbella</i> floatstone and rudstone, and mudstone and wackestone</p> <p>Depositional texture: <i>Planorbella</i> floatstone and rudstone with mudstone matrix, and pelecypod fragment mudstone and wackestone</p> <p>Color: Very light gray (N8) and very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Burrow mottled in part</p> <p>Ichnofabrics: Ichnofabric index 5, thin rhizoliths (some partly filled with concretic laminated calcrete or concentric microspar)</p> <p>Carbonate grains: Pelecypod fragments, <i>Planorbella</i> (other small gastropods), peloids, ostracods, uncommon <i>Pomacea</i></p> <p>Accessory grains: less than 1 to 5% quartz grains, very fine to medium sand size, moderately sorted, angular to subrounded; trace dark mineral grains</p> <p>Porosity and permeability: 5% molds and microporosity; matrix porosity 5% and matrix permeability relatively very low</p> <p>Comments: 1-2mm-thick laminated calcrete at 35.92 (probably part of an amalgamation of subaerial exposures related to this unit, skew plane desiccation cracks common, minor pedogenic autobreccia near base of unit)</p>
36.15-38.00	No recovery
38.00-38.50	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal mud-dominated packstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottled in part</p> <p>Ichnofabrics: Ichnofabric index 5</p>

	<p>Carbonate grains: Skeletal fragments, peloids, benthic foraminifers (including archaiasinids and miliolids), dasycladacean algae, gastropods, stick-shaped <i>Porites porites</i>, pelecypods (including small <i>Chione</i>), echinoid spines, <i>Halimeda</i></p> <p>Accessory grains: 5-25% quartz grains, very fine to coarse sand size, moderately sorted (mostly fine to medium sand size), angular to rounded; 1% dark mineral grains</p> <p>Porosity and permeability: 2-5% moldic, 2% inter- and intraparticle; total matrix porosity 4-7% and matrix permeability relatively low. Digital optical image shows fracture and semi-vertical solution pipe porosity over interval</p> <p>Comments: Solution piping extends across interval thickness. Digital optical image shows 1 foot of irregular topography on the top of this lithologic unit that forms the top of the HFC MIS11. Digital optical image shows fracturing producing megaporosity over interval</p>
38.50-39.00	No recovery
39.00-39.65	<p>Lithofacies: Arenaceous pelecypod floatstone</p> <p>Depositional texture: Arenaceous mud- to grain-dominated pelecypod floatstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypods (including large articulated pelecypods and smaller disarticulated and fragments pelecypods, peloids, skeletal fragments, benthic foraminifers (including archaiasinids and miliolids), gastropods, dasycladacean algae, sand-dollar-shaped echinoids, stick-shaped <i>Porites porites</i>,</p> <p>Accessory grains: 25-45% quartz grains, very fine to coarse sand size, moderately sorted (mostly fine to medium sand size), angular to rounded; 1% dark mineral grains</p> <p>Porosity and permeability: 3-5% moldic, 5% inter- and intraparticle; total matrix porosity 8-10% and matrix permeability relatively low. Digital optical image shows fracture and semi-vertical solution pipe porosity over interval producing megaporosity</p> <p>Comments: Semi-vertical solution pipes continue from top of HFC MIS11 surface across this unit</p>
39.65-39.68	<p>Lithofacies: Pedogenic limestone</p> <p>Depositional texture: Massive calccrete</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Ichnofabrics: Minor very thin rhizoliths with open tubules</p> <p>Comments: Chalky texture. Up to 0.15 ft of microrelief on upper surface. Possible indication of subaerial exposure, but an</p>

	alternative explanation is that this calcrete is related to exposure that bounds the top of HFC MIS11
39.68-40.50	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod and arenaceous</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottling</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypods, skeletal grains, rhodoliths (up to 4-cm diameter), discoid large benthic foraminifers</p> <p>Accessory grains: 45% quartz grains, very fine to coarse sand size, poorly sorted (mostly fine to medium sand size), angular to rounded; 1% undifferentiated dark mineral grains and less than 1% phosphorite)</p> <p>Porosity and permeability: 10% moldic, 1-2% inter- and intraparticle; total matrix porosity 11-12% and matrix permeability relatively low. Digital optical image shows fracture porosity producing megaporosity</p> <p>Comments: None</p>
40.50-45.30	No recovery
45.30-48.15	<p>Lithofacies: Skeletal sandstone</p> <p>Depositional texture: Skeletal sandstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Skeletal fragments, pelecypods</p> <p>Accessory grains: 70-80% quartz grains, very fine to fine sand size (minor medium sand size), poorly sorted, angular to subrounded; 3% undifferentiated dark mineral grains and 1% phosphorite)</p> <p>Porosity and permeability: 2% moldic, 4% inter- and intraparticle; total matrix porosity 6% and matrix permeability relatively low. Digital optical image shows semivertical solution pipes producing megaporosity</p> <p>Comments: None</p>
48.15-49.70	No recovery
49.70-52.10	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Peloid, pelecypod quartz sandstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Commonly burrow mottled</p> <p>Ichnofabrics: Ichnofabric index 5, common <i>Ophiomorpha</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including miliolids, <i>Elphidium</i>), echinoid spines, ostracods, rhodoliths, encrusting bryozoans</p> <p>Accessory grains: 60-70% quartz grains, very fine to coarse sand size (mostly fine sand size), poorly sorted, angular to subrounded; 3% undifferentiated dark mineral grains and 1% phosphorite)</p>

	<p>Porosity and permeability: 5-7% moldic, 10% vuggy; total matrix porosity 15-17% and matrix permeability relatively low</p> <p>Comments: None</p>
52.10-54.40	No recovery
54.40-55.20	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Peloid, pelecypod quartz sandstone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Commonly burrow mottled</p> <p>Ichnofabrics: Ichnofabric index 5, common <i>Ophiomorpha</i></p> <p>Carbonate grains: Peloids, pelecypod fragments, benthic foraminifers (including miliolids, <i>Elphidium</i>), echinoid spines, ostracods, rhodoliths, encrusting bryozoans</p> <p>Accessory grains: 60-70% quartz grains, very fine to coarse sand size (mostly fine sand size), poorly sorted, angular to subrounded; 3% undifferentiated dark mineral grains and 1% phosphorite)</p> <p>Porosity and permeability: 5-7% moldic, 10% vuggy; total matrix porosity 15-17% and matrix permeability relatively low</p> <p>Comments: None</p>
55.20-58.90	<p>Lithofacies: Coral framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone</p> <p>Color: Very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Burrow mottled in part</p> <p>Ichnofabrics: Ichnofabric index 0-3, common <i>Ophiomorpha</i></p> <p>Carbonate grains: <i>Montastrea</i> heads, peloids, encrusting coralline red algae, rhodoliths in upper part of unit, encrusting bryozoans, pelecypods (including a boring type)</p> <p>Accessory grains: 5-25% quartz grains, very fine to coarse sand size, moderately sorted (mostly fine to medium sand size), angular to rounded; 1% dark mineral grains</p> <p>Porosity and permeability: 2% moldic, 10% interframework, 10% interburrow; total porosity 22% and permeability relatively moderate. Digital optical image shows fracture and semi-vertical solution pipe porosity over interval</p> <p>Comments: Sandstone fills some of the inter-coralline framework voids.</p>
58.90-60.70	No recovery
60.70-64.50	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal wackestone to mud-dominated packstone matrix</p> <p>Color: Yellowish gray 5Y 8/1 with minor very pale orange (10YR 8/2)</p> <p>Sedimentary structures/textures: Common burrow mottling</p> <p>Ichnofabrics: Ichnofabric index 5, <i>Thalassinoides</i> present</p> <p>Carbonate grains: Pelecypods (disarticulated or fragmented or</p>

	<p>both, and include <i>Ostrea</i> and <i>Chione</i>), benthic foraminifers (including amphistigina, miliolids), planktic globigerinids, gastropods, echinoid spines and plates, ostracods, pink and white barnacles</p> <p>Accessory grains: 10-45% quartz grains, very fine to coarse sand size, moderately sorted (mostly fine to medium sand size), angular to rounded; 4% undifferentiated dark mineral grains and 1% phosphorite grains</p> <p>Porosity and permeability: 5-15% moldic; 5-15% vugs; porosity ranges from 10 to 30% and permeability is relatively moderate</p> <p>Comments: Some of the uppermost rubble contains samples that are suggestive of a massive calcrete, but not unequivocally. Intraclast of massive, chalky calcrete near base of unit at 64.48 feet—highly suggestive of a subaerial unconformity in no recovery zone between 64.50 to 69.80 feet</p>
64.50-69.80	No recovery
69.80-70.10	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal wackestone matrix</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Burrow mottling present</p> <p>Ichnofabrics: Ichnofabric index 5, <i>Thalassinoides</i> present</p> <p>Carbonate grains: Pelecypods (fragmented), gastropods, echinoid spines and plates, ostracods, pink and white barnacles</p> <p>Accessory grains: 5-45% quartz grains, very fine to coarse sand size, moderately sorted (mostly fine to medium sand size), angular to rounded; 2-4% undifferentiated dark mineral grains and less than 1 to 1% phosphorite grains</p> <p>Porosity and permeability: 5-15% moldic; 5-15% vugs; porosity ranges from 10 to 30% and permeability is relatively moderate</p>
70.10-71.10	No recovery
71.10-72.10	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Arenaceous pelecypod floatstone with skeletal wackestone matrix</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Burrow mottling present</p> <p>Ichnofabrics: Ichnofabric index 5, <i>Thalassinoides</i> present</p> <p>Carbonate grains: Pelecypods (fragmented), gastropods, echinoid spines and plates, ostracods, pink and white barnacles</p> <p>Accessory grains: 5-45% quartz grains, very fine to coarse sand size, moderately sorted (mostly fine to medium sand size), angular to rounded; 2-4% undifferentiated dark mineral grains and less than 1 to 1% phosphorite grains</p> <p>Porosity and permeability: 5-15% moldic; 5-15% vugs; porosity ranges from 10 to 30% and permeability is relatively moderate</p>
72.10-77.00	No recovery

77.00-77.85	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone, and skeletal sandstone</p> <p>Depositional texture: Arenaceous pelecypod floatstone with skeletal wackestone matrix, and pelecypod fragment sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Burrow mottling present</p> <p>Ichnofabrics: Rhizoliths present in some of the samples of rubble. The rhizoliths can have concentric laminated calcrete or concentric microspar fill</p> <p>Carbonate grains: Pelecypods (fragmented and including <i>Ostrea</i>), gastropods, echinoid spines and plates</p> <p>Accessory grains: 15-85% quartz grains, very fine to medium sand size, well sorted (mostly fine sand size); 4-7% undifferentiated dark mineral grains and 2-4% phosphorite grains</p> <p>Porosity and permeability: not noted</p>
77.85-79.65	No recovery
79.65-82.00	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Molluscan quartz sand</p> <p>Color: Yellowish gray 5Y 7/2</p> <p>Sedimentary structures/textures: Homogeneous without structure</p> <p>Ichnofabrics: Not noted</p> <p>Carbonate grains: Pelecypods (fragmented), gastropods (whole and fragmented, including <i>Turritella</i>)</p> <p>Accessory grains: 70-80% quartz grains, very fine to medium sand size, well sorted (mostly very fine sand size); 8% black phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% interparticle porosity and relatively low permeability</p>
82.00-83.90	No recovery
83.90-84.30	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Molluscan fragment quartz sand</p> <p>Color: Yellowish gray 5Y 7/2</p> <p>Sedimentary structures/textures: Homogeneous without structure</p> <p>Ichnofabrics: Not noted</p> <p>Carbonate grains: Pelecypods (fragmented), gastropods (fragmented)</p> <p>Accessory grains: 70-80% quartz grains, very fine to medium sand size, well sorted (mostly very fine sand size); 10% black phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% interparticle porosity and relatively low permeability</p>
84.30-84.75	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal wackestone matrix</p> <p>Color: Light gray N7 to medium gray N5</p> <p>Sedimentary structures/textures: Burrow mottled</p>

	<p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including amphistiginids), echinoid spines and plates, ostracods</p> <p>Accessory grains: 10-35% quartz grains, very fine to very coarse sand size (mostly very fine to fine), poorly sorted; 5-10% dark mineral grains (at least 2-4% of these are phosphorite grains), trace feldspar</p> <p>Porosity and permeability: 1-5% moldic; total matrix porosity 1-5% and matrix permeability is relatively low</p> <p>Comments: None</p>
84.75-90.65	No recovery
90.65-91.80	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal wackestone matrix</p> <p>Color: Light gray N7 to medium gray N5</p> <p>Carbonate grains: Pelecypod fragments, gastropods, barnacles</p> <p>Accessory grains: 10-35% quartz grains, very fine to very coarse sand size (mostly very fine to fine), poorly sorted; 5-10% dark mineral grains (at least 2-4% of these are phosphorite grains that range from very fine sand size to large pebble size), trace feldspar</p> <p>Porosity and permeability: Based on digital optical image, matrix permeability is relatively low</p> <p>Comments: Samples are all rubble</p>
91.80-92.00	No recovery
92.00-93.05	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone, and quartz sand</p> <p>Depositional texture: Pelecypod floatstone with arenaceous skeletal wackestone matrix, and pelecypod quartz sand</p> <p>Color: Light olive gray and light gray N7 to medium gray N5</p> <p>Carbonate grains: Pelecypod fragments (including <i>Ostrea</i>, pelecypods up to small cobble size), benthic forams (including amphistiginids), echinod spines and plates, planktic globigerinids, sand-dollar shaped echinoids</p> <p>Accessory grains: 10-80% quartz grains, very fine to very coarse sand size (mostly very fine to fine), poorly sorted; 5-10% dark mineral grains (at least 2-4% of these are phosphorite grains that range from very fine sand size to medium pebble size), trace feldspar</p> <p>Porosity and permeability: Matrix porosity of quartz sand 15% interparticle porosity. Based on rubble samples and digital optical image, matrix permeability is relatively low</p> <p>Comments: Samples are all rubble</p>
93.05-97.00	No recovery

Local Identifier (corehole)	G-3947
Local Identifier (completed well)	G-3947
USGS Station Number (completed well)	255011080124501
Total Depth Drilled	230 feet (driller's depth)
Cored Interval	10.5 to 230 feet
County	Miami-Dade
Latitude (NAD 83)	25-50-11.3 N
Longitude (NAD 83)	080-12-45.4 W
Elevation (NGVD 29)	11.71 feet (surveyed by Miami-Dade County)
Completion Date	July 6, 2010
Other types of available logs	OBI, Caliper, Ambient Fluid, Ambient Flow, Pumping Flow, Gamma ray, Conductivity, Resistivity, Full Waveform Sonic
Owner	Miami-Dade County
Driller	Intercounty
Core described by	Kevin J. Cunningham
Top Miami Limestone	7.50 feet
Top Fort Thompson Formation	43.00 feet
Top Tamiami Formation	90.00 feet

G-3947 Test Corehole	
Depth Interval (feet)	Core Description
0 – 0.70	<p>Lithofacies: Quartz sand Depositional texture: Quartz sand Color: Pale yellowish brown 10YR 6/2 Sedimentary structures/textures: Loose, friable quartz sand with trace of clay Accessory grains: 96% quartz grains, very fine to medium sand size (mostly upper fine sand size), angular to subrounded, well sorted Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively moderate Comments: Augered sample is sandy soil</p>
0.70-5.00	<p>No recovery—Recovered marl between 1.50 and 2.50 feet below land surface, but not collected and preserved in core box—described in field notes only. Top of Miami Limestone bedrock described in field notes at 2.50 feet below land surface. Only mixed rubble of Miami Limestone lithology and sandy soil collected in interval 5.00-5.45 feet in interval below.</p>
5.00-5.45	<p>Lithofacies: Quartz sand Depositional texture: Quartz sand Color: Pale yellowish brown 10YR 6/2 Sedimentary structures/textures: Loose, friable quartz sand with trace of clay Accessory grains: 96% quartz grains, very fine to lower very coarse sand size (mostly upper fine sand size), angular to subrounded, well sorted Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively moderate Comments: Augered sample is sandy soil</p>
5.45-7.50	<p>No recovery</p>
7.50-8.00	<p>Lithofacies: Ooid packstone and grainstone, skeletal quartz sandstone, and quartz sand Depositional texture: Ooid and coated quartz-grain grainstone, pelecypod quartz sandstone, and quartz sand Color: Very pale orange 10YR 8/2 with dark yellowish orange 10YR 6/6 staining of vuggy surfaces Sedimentary structures/textures: Grainstone thickly laminated in</p>

	<p>part, burrowing present</p> <p>Trace fossils: <i>Ophiomorpha</i> present in grainstone</p> <p>Ichnofabrics: Ichnofabric index 3-5? for grainstone</p> <p>Ichnofacies: <i>Skolithos</i> for grainstone</p> <p>Carbonate grains: Coated quartz grains, minor pelecypod fragments</p> <p>Accessory grains: 45-95% quartz grains, very fine- to lower very coarse sand size (mostly medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: Sample is cored rubble and difficult to determine porosity and permeability</p> <p>Comments: Sample is cored rubble with much dark yellowish orange 10YR 6/6 sandy soil latence from shallower interval above</p>
8.00-18.00	No recovery
18.00-19.73	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: Pale yellowish orange 10YR 8/6</p> <p>Sedimentary structures/textures: Loose, friable quartz sand</p> <p>Carbonate grains: None noted in one thin section and very rare unidentifiable fragments in core</p> <p>Accessory grains: 99% quartz grains, very fine to lower very coarse sand size (mostly upper fine sand size), angular to subrounded, well sorted; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively low</p> <p>Comments: Lack of marine fossils suggests this is a non-marine quartz sand</p>
19.73-23.00	No recovery
23.00-24.55	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Loose, friable quartz sand</p> <p>Carbonate grains: Only very rare unidentifiable fragments in loose core sample</p> <p>Accessory grains: 99% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively low</p> <p>Comments: Lack of marine fossils suggests this is a non-marine quartz sand</p>
24.55-28.00	No recovery

28.00-29.65	<p>Lithofacies: Quartz sand Depositional texture: Quartz sand Color: Very light gray N8 Sedimentary structures/textures: Loose, friable quartz sand Carbonate grains: None noted in one thin section and very rare unidentifiable fragments in core Accessory grains: 99% quartz grains, very fine to lower very coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1) Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively low Comments: Lack of marine fossils suggests this is a non-marine quartz sand</p>
29.65-33.00	No recovery
33.00-34.60	<p>Lithofacies: Quartz sand Depositional texture: Quartz sand Color: Very light gray N8 Sedimentary structures/textures: Loose, friable quartz sand Carbonate grains: Only 1% probable pelecypod fragments about coarse sand size in loose core sample Accessory grains: 97% quartz grains, very fine to lower very coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1) Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively low Comments: Presence of 1% pelecypods suggests that a marine environment cannot be ruled out, but not most likely. Abrupt color and texture change at 34.60 feet</p>
34.60-35.40	<p>Lithofacies: Quartz sand Depositional texture: Quartz sand Color: Yellowish gray 5Y 8/1 Sedimentary structures/textures: Loose, friable quartz sand Carbonate grains: Only 1% probable unidentifiable fragments about coarse sand size in loose core sample and none observed in thin section Accessory grains: 97% quartz grains, very fine to upper very coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1) Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively low Comments: Lack of any marine fossils in a single thin section suggests deposition in a non-marine environment. Abrupt color and texture change at 34.60 and 35.40 feet</p>

35.40-35.95	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: Color between yellowish gray 5Y 8/1 and grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Loose, friable quartz sand</p> <p>Carbonate grains: Only 1% probable unidentifiable fragments about coarse sand size in loose core sample</p> <p>Accessory grains: 97% quartz grains, very fine to upper very coarse sand size (mostly medium and lower coarse sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively low</p> <p>Comments: Lack of any marine fossils in a loose quartz sand core sample. Abrupt color and texture change at 35.40 feet</p>
35.95-38.00	No recovery
38.00-39.75	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: Color between yellowish gray 5Y 8/1 and grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Loose, friable quartz sand</p> <p>Carbonate grains: Only 1% probable unidentifiable fragments about coarse sand size in loose core sample</p> <p>Accessory grains: 97% quartz grains, very fine to upper very coarse sand size (mostly medium and coarse sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 20% interparticle porosity, 20% total porosity. Permeability relatively low</p> <p>Comments: Lack of any marine fossils in a loose quartz sand core sample. Some of the quartz grains have a dusty orangish-colored limestone outer coating suggestive of grain break-out of a chalky, weathered limestone matrix as a source of some of the quartz grains. An upward fining succession of quartz sand between 39.75 and 23.00 feet</p>
39.75-39.90	<p>Lithofacies: Mudstone and wackestone, and peloid packstone and grainstone</p> <p>Depositional texture: Peloid mudstone, wackestone, and mud-dominated packstone</p> <p>Color: Very pale orange 10YR 8/2 with dark yellowish orange 10YR 6/6 staining on and into rock surfaces</p> <p>Sedimentary structures/textures: Burrows</p> <p>Trace fossils: <i>Ophiomorpha</i> probably present</p> <p>Ichnofabrics: Ichnofabric index 3-5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Peloids and skeletal fragments</p>

	<p>Accessory grains: 45-95% quartz grains, very fine- to medium sand size (mostly very fine to fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: Sample is cored rubble and difficult to determine porosity and permeability</p> <p>Comments: Abundant iron-oxide staining of the limestone</p>
39.90-43.00	No recovery
43.00-44.15	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone (coquina)</p> <p>Depositional texture: Pelecypod fragment rudstone (coquina) with an arenaceous pelecypod fragment grainstone matrix</p> <p>Color: Very light gray N8 and very pale orange 10YR 8/2 skeletal clasts or intraclasts and an associated grayish orange 10YR 7/4 to dark yellowish orange 10YR 6/6 stain</p> <p>Sedimentary structures/textures: Possible beachrock intraclasts</p> <p>Trace fossils: Abundant rhizoliths throughout interval. Typically less than 1 mm inner diameter of inner tubule (associated with rhizoliths are concentric micrspar or laminated calcrete lining the inner tubules)</p> <p>Carbonate grains: Mostly pelecypod fragments (commonly granule to medium pebble size), echinoid plates, benthic foraminifers</p> <p>Accessory grains: 5-45% quartz grains, very fine- to coarse sand size (mostly very fine to fine sand size), poorly sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: Difficult to discern because of samples are rubble and no digital optical borehole wall image is available</p> <p>Comments: High energy environment, possibly foreshore. Laminated calcrete common throughout interval. Major subaerial unconformity at or not far above the upper bounding surface of this interval</p>
44.15-48.00	No recovery
48.00-51.75	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone (coquina), skeletal quartz sandstone, and quartz sand</p> <p>Depositional texture: Pelecypod fragment rudstone (coquina) with an arenaceous pelecypod fragment grainstone matrix, pelecypod fragment quartz sandstone, and quartz sand</p> <p>Color: Mostly yellowish gray 8/1 and less common grayish orange 10YR 7/4 to dark yellowish orange 10YR 6/6 stain</p> <p>Sedimentary structures/textures: Uncommon concave upward high-energy scoured surfaces</p> <p>Trace fossils: Minor rhizoliths throughout interval. Typically less than 1 mm inner diameter of inner tubule (associated with</p>

	<p>rhizoliths are concentric micrspar or laminated calcrete lining the inner tubules)</p> <p>Carbonate grains: Mostly pelecypod fragments (commonly granule to medium pebble size) and less common peloids, echinoid plates, gastropods, benthic foraminifers, coralline red algae fragments, intraclasts of many types of lithologies</p> <p>Accessory grains: 5-90% quartz grains, very fine- to very coarse sand size (mostly fine to medium sand size), poorly sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 10% moldic; 30% total porosity and relatively moderate permeability</p> <p>Comments: High energy environment, possibly foreshore</p>
51.75-53.00	No recovery
53.00-55.10	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone (coquina) and minor skeletal quartz sandstone, and quartz sand</p> <p>Depositional texture: Pelecypod fragment rudstone (coquina) with an arenaceous pelecypod fragment grainstone matrix, and minor pelecypod fragment quartz sandstone and quartz sand</p> <p>Color: Yellowish gray 8/1</p> <p>Carbonate grains: Mostly pelecypod fragments (commonly granule to medium pebble size) and less common peloids, echinoid plates, gastropods, benthic foraminifers (including amphotiginiids, miliolids), coralline red algae fragments, intraclasts of many types of lithologies</p> <p>Accessory grains: 5-90% quartz grains, very fine- to very coarse sand size (mostly fine to medium sand size), poorly sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 10% moldic; 30% total porosity and relatively moderate permeability</p> <p>Comments: High energy environment, possibly foreshore. Polymictic intraclasts suggestive of beach foreshore</p>
55.10-58.00	No recovery
58.00-59.20	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone (coquina) and minor skeletal quartz sandstone, and quartz sand</p> <p>Depositional texture: Pelecypod fragment rudstone (coquina) with an arenaceous pelecypod fragment grainstone matrix, and minor pelecypod fragment quartz sandstone and quartz sand</p> <p>Color: Yellowish gray 8/1</p> <p>Carbonate grains: Mostly pelecypod fragments (commonly granule to medium pebble size) and less common peloids, echinoid plates, gastropods, benthic foraminifers (including amphotiginiids, miliolids), coralline red algae fragments, intraclasts of many types of lithologies</p> <p>Accessory grains: 5-90% quartz grains, very fine- to very coarse</p>

	<p>sand size (mostly fine to medium sand size), poorly sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 10% moldic; 30% total porosity and relatively moderate permeability</p> <p>Comments: High energy environment, possibly foreshore. Polymictic intraclasts suggestive of beach foreshore</p>
59.20-73.00	No recovery
73.00-74.30	Recovered rubble of many lithologies (including uncommon <i>Montastrea</i>)
74.30-75.60	<p>Lithofacies: Coral floatstone and rudstone</p> <p>Depositional texture: Stick-shaped coral rudstone with a skeletal quartz sandstone matrix</p> <p>Color: Yellowish gray 8/1, very light gray N8, very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Porites porites</i> (uncommonly in growth position near base of interval), skeletal fragments</p> <p>Accessory grains: 0-25% quartz grains, very fine- to coarse sand size (mostly very fine to lower fine sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 10% moldic, 10% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
75.60-78.10	No recovery
78.10-79.60	<p>Lithofacies: <i>Porites porites</i> floatstone and rudstone</p> <p>Depositional texture: <i>Porites porites</i> floatstone and rudstone with a skeletal grain-dominated packstone and grainstone matrix</p> <p>Color: Color is between white N9 and very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings (including <i>Entobia</i>)</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Porites porites</i>, encrusting coralline red algae, skeletal fragments, encrusting bryozoans</p> <p>Porosity and permeability: 15% interparticle, 20% moldic, 5% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
79.60-81.00	<p>Lithofacies: <i>Montastrea</i> framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone with skeletal mud- and grain-dominated packstone matrix</p> <p>Color: Yellowish gray 8/1, very light gray N8, very pale orange</p>

	<p>10YR 8/2</p> <p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings (including <i>Entobia</i>)</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Montastrea</i>, skeletal fragments (mostly silt to very fine sand size), peloids (including some large <i>Favreina</i>-like fecal pellets), benthic foraminifers (including miliolids, <i>Pyrgo</i>), encrusting coralline red algae, echinoid spines, skeletal fragments, rhodoliths</p> <p>Porosity and permeability: 15% interparticle, 15% moldic, 5% vuggy; 35% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
81.00-82.55	<p>Lithofacies: <i>Porites porites</i> floatstone and rudstone</p> <p>Depositional texture: <i>Porites porites</i> floatstone with a skeletal grain-dominated packstone and grainstone matrix</p> <p>Color: Very pale orange 10YR 8/2 and yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings (including <i>Entobia</i>)</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Porites porites</i>, peloids, encrusting coralline red algae, skeletal fragments, encrusting bryozoans, uncommon <i>Montastrea</i> and <i>Acropora cervicornis</i></p> <p>Porosity and permeability: 15% interparticle, 20% moldic, 5% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
82.55-82.80	<p>Lithofacies: <i>Montastrea</i> framestone</p> <p>Depositional texture: <i>Montastrea</i> framestone with skeletal mud- and grain-dominated packstone matrix</p> <p>Color: Very pale orange 10YR 8/2 and yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings (including <i>Entobia</i>)</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Montastrea</i>, skeletal fragments (mostly silt to very fine sand size), peloids (including some large <i>Favreina</i>-like fecal pellets), encrusting coralline red algae, echinoid spines</p> <p>Porosity and permeability: 15% interparticle, 15% moldic, 5% vuggy; 35% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
82.80-83.10	<p>Lithofacies: <i>Diploria</i> framestone</p> <p>Depositional texture: <i>Diploria</i> framestone with skeletal mud- and grain-dominated packstone matrix</p> <p>Color: Very pale orange 10YR 8/2 and yellowish gray 5Y 8/1</p>

	<p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings (including <i>Entobia</i>)</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Diploria</i>, skeletal fragments (mostly silt to very fine sand size), peloids (including some large <i>Favreina</i>-like fecal pellets), encrusting coralline red algae, echinoid spines</p> <p>Porosity and permeability: 15% interparticle, 15% moldic, 5% vuggy; 35% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
83.10-83.80	No recovery
83.80-84.60	<p>Lithofacies: <i>Porites porites</i> floatstone and rudstone</p> <p>Depositional texture: <i>Porites porites</i> floatstone with a skeletal grain-dominated packstone and grainstone matrix</p> <p>Color: Very pale orange 10YR 8/2 and yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings (including <i>Entobia</i>)</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Porites porites</i>, skeletal fragments (mostly silt to very fine sand size), peloids, encrusting coralline red algae, benthic foraminifers (including miliolids, amphistiginids), pelecypod fragments, ostracods</p> <p>Accessory grains: 1-2% quartz grains, very fine- to very coarse sand size (mostly coarse sand size), poorly sorted, angular to subrounded</p> <p>Porosity and permeability: 15% interparticle, 20% moldic, 5% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
84.60-85.00	<p>Lithofacies: <i>Eusmilia</i> framestone</p> <p>Depositional texture: <i>Eusmilia</i> framestone with skeletal mud- and grain-dominated packstone matrix</p> <p>Color: Very pale orange 10YR 8/2 and yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings (including <i>Entobia</i>)</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: <i>Eusmilia</i> (in upright growth position), skeletal fragments (mostly silt to very fine sand size), peloids (including some large <i>Favreina</i>-like fecal pellets), echinoid spines</p> <p>Porosity and permeability: 15% interparticle, 15% moldic, 5% vuggy; 35% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
85.00-86.00	<p>Lithofacies: Coral floatstone and rudstone</p> <p>Depositional texture: Stick-shaped coral floatstone with a skeletal grain-dominated packstone and grainstone matrix</p>

	<p>Color: Very pale orange 10YR 8/2 and yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive interval</p> <p>Trace fossils: Borings</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: Stick-shaped corals, skeletal fragments, peloids, encrusting coralline red algae, <i>Porites asteroides</i>, <i>Diploria</i></p> <p>Accessory grains: 0-2% quartz grains, very fine- to very coarse sand size (mostly coarse sand size), moderately sorted, angular to subrounded</p> <p>Porosity and permeability: 20% interparticle, 10% moldic, 10% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Patch reef</p>
86.00-90.00	<p>No recovery—Lithology between 85.00 and 86.00 feet may continue downward to a depth of 88.67 feet based on digital optical borehole wall image. Lithology between 88.67 and 90.00 feet may be quartz sand based on digital optical borehole image and caliper washout over this interval</p>
90.00-90.60	<p>Lithofacies: Rhodolith floatstone and rudstone</p> <p>Depositional texture: Rhodolith floatstone with a skeletal quartz sandstone matrix</p> <p>Color: Very pale orange 10YR 8/2 rhodoliths and very light gray N8 quartz sandstone</p> <p>Sedimentary structures/textures: No bedding or laminations observed</p> <p>Trace fossils: Borings into rhodoliths (including <i>Entobia</i>)</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Trypanites</i></p> <p>Carbonate grains: Rhodoliths (up to small cobble size—70 cm diameter), skeletal fragments, pelecypods, gastropods</p> <p>Accessory grains: Uncertain percentage of quartz sandstone matrix, very fine- to very coarse sand size (bimodal size distribution that is mostly very fine sand size and coarse sand size), poorly sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 3% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 20% moldic, 5% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Interval is rubble samples. Between 88.67 and 90.00 feet is transition between a highstand chlorozoan grain assemblage above 88.67 feet and a transgressive heterozoan grain assemblage below 90.00 feet. Upper shoreface. Oriented calcite concretions</p>
90.60-91.55	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone (coquina), and arenaceous red algae floatstone and rudstone</p>

	<p>(coquina)</p> <p>Depositional texture: Arenaceous pelecypod rudstone (coquina), and arenaceous red algae rudstone (coquina)</p> <p>Color: Very light gray N8 pelecypod rudstone (coquina) and very pale orange 10YR 8/2 red algae rudstone (coquina)</p> <p>Carbonate grains: Mostly pelecypod fragments and coralline red algae fragments and less common skeletal fragments, discoidal large benthic foraminifers, polymictic intraclasts</p> <p>Accessory grains: 5-90% quartz grains, very fine- to very coarse sand size (mostly fine to medium sand size), poorly sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 10% moldic, 30% vuggy megaporosity?; 60% total porosity and relatively high permeability</p> <p>Comments: Middle shoreface. Oriented calcite concretions</p>
91.55-93.05	No recovery
93.05-94.10	<p>Lithofacies: Arenaceous red algae floatstone and rudstone (coquina)</p> <p>Depositional texture: Arenaceous red algae rudstone (coquina)</p> <p>Color: Very light gray N8 and very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Possible festoon cross laminations</p> <p>Carbonate grains: Mostly coralline red algae fragments and rhodoliths (up to medium pebble size) and less common pelecypod fragments, benthic foraminifers (including amphistiginids, <i>Elphidium</i>, archaiasinids), echinoid plates and spines, encrusting bryozoans, polymictic intraclasts</p> <p>Accessory grains: 5-20% quartz grains, very fine- to very coarse sand size (bimodal size distribution that is mostly upper very fine to lower fine sand size and coarse sand size), poorly sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface</p>
94.10-95.60	<p>Lithofacies: Interbedded quartz sand and pelecypod packstone and grainstone</p> <p>Depositional texture: Interbedded skeletal quartz sand and pelecypod fragment grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Interbedded thin to medium thick beds</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, discoid large benthic foraminifers, possible miliolids</p> <p>Accessory grains: 5-90% quartz grains, very fine to coarse sand</p>

	<p>size (quartz sand beds mainly lower fine sand size), poorly sorted, angular to subrounded; 10-15% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4)</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface</p>
95.60-96.20	<p>No recovery—Based on digital optical borehole wall image this is a thin to medium bedded interbedding of upper shoreface quartz sand and skeletal grainstone. Base of transgressive upward deepening cycle from 96.20 to 93.05 or 90.00 feet.</p>
96.20-97.55	<p>No recovery—Based on digital optical borehole wall image this is a thickly bedded coralline red algae floatstone and rudstone that is contiguous with the top of the interval below at 95.77 feet.</p>
97.55-99.40	<p>Lithofacies: Rhodolith floatstone and rudstone</p> <p>Depositional texture: Rhodolith floatstone with a skeletal wackestone and mud-dominated packstone matrix</p> <p>Color: Very pale orange 10YR 8/2 and very light gray N8</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present along with abundant bioturbation</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Encrusting and branching coralline red algae (mostly rhodoliths up to large pebble size), pelecypod fragments, benthic foraminifers (including archaiasinids, miliolids, soritids, peneroplids, <i>Elphidium</i>), echinoid spines and plates, gastropods, <i>Porites porites</i> fragments, sand-dollar-shaped echinoids, ostracods</p> <p>Accessory grains: 2-15% quartz grains, very fine to coarse sand size (mostly upper fine to lower medium sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 20% moldic, 5% vuggy; 30% total porosity and relatively low to moderate permeability</p> <p>Comments: Possibly highly bioturbated, middle shoreface storm deposit. Abrupt ravinement surface below at 99.40 feet. Abrupt upper bounding surface at 96.10 feet. Aggradational cycle from 99.40 to 96.20 feet</p>
99.40-100.00	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> and <i>Thalassinoides?</i> present</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: Mixed <i>Skolithos</i> and <i>Cruziana</i></p>

	<p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including amphistiginids, miliolids), branching and encrusting coralline red algae (including rhodoliths up to medium pebble size), peloids</p> <p>Accessory grains: 20% quartz grains, very fine to very coarse sand size (mostly medium sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 20% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: About 0.4 foot of erosional relief on upper bounding surface. Ravinement surface at 99.40 feet and overlain by a 3.20-foot- thick transgressive rhodolith-pebble lag deposit. Possibly bioturbated middle shoreface. Base of transgressive cycle from 99.40 to 96.20 feet</p>
100.00-100.65	No recovery
100.65-102.52	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: Mixed <i>Skolithos</i> and <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including amphistiginids, miliolids), branching and encrusting coralline red algae (including rhodoliths up to medium pebble size), peloids</p> <p>Accessory grains: 20% quartz grains, very fine to very coarse sand size (mostly medium sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 20% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: Ravinement surface at 102.52 feet and overlain by a 0.2-foot- thick transgressive pelecypod-fragment unburrowed coquina lag deposit (between 102.52 and 102.32 feet) draping the ravinement surface. Possibly bioturbated upper shoreface. Base of transgressive cycle from 102.52 to 99.40 feet</p>
102.52-104.36	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: Mixed <i>Skolithos</i> and <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and</p>

	<p>plates, benthic foraminifers (including amphistiginids, miliolids), branching and encrusting coralline red algae (including rhodoliths up to medium pebble size), peloids</p> <p>Accessory grains: 20% quartz grains, very fine to very coarse sand size (mostly medium sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 20% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle shoreface</p>
104.36-108.11	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thick, massive bedsets containing dipping (up to 40 degrees) thin to thick laminations</p> <p>Trace fossils: <i>Ophiomorpha</i> present, one <i>Conichnus</i> at 106.00 feet</p> <p>Ichnofabric index: In general 2, but area with <i>Macaronichnus</i> 3-4</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including amphistiginids, <i>Elphidium</i>), branching and encrusting coralline red algae (including rhodoliths up to medium pebble size), peloids</p> <p>Accessory grains: 20% quartz grains, very fine to very coarse sand size (mostly upper fine to lower coarse sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: Foreshore to upper shoreface</p>
108.11-110.35	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present, <i>Macaronichnus</i> between 109.57 and 108.15 feet (<i>Macaronichnus</i> associated with horizontal thinly to thickly laminated grainstone)</p> <p>Ichnofabric index: In general 2, but area with <i>Macaronichnus</i> 3-4</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including amphistiginids, <i>Elphidium</i>), branching and encrusting coralline red algae (including rhodoliths up to medium pebble size), peloids</p> <p>Accessory grains: 20% quartz grains, very fine to very coarse sand size (mostly upper fine to lower coarse sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains</p>

	<p>Porosity and permeability: 20% interparticle, 5% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: Foreshore</p>
110.35-110.71	<p>Lithofacies: Rhodolith floatstone and rudstone</p> <p>Depositional texture: Rhodolith floatstone with arenaceous pelecypod fragment grainstone matrix</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded with horizontal to very low angle thin to thick laminations within the single bedset</p> <p>Trace fossils: One yellowish brown 10YR 6/2 small pebble size intraclast within the basal pebble lag at the base of the cycle (just overlying the basal ravinement surface) contain one or more rhizoliths with concentric microspar on the inner tubule wall and is suggestive of formation in subaerial conditions</p> <p>Ichnofabric index: 1</p> <p>Carbonate grains: Encrusting and branching coralline red algae (mostly small rhodoliths), pelecypod fragments, echinoid plates, intraclasts of possible beach rock</p> <p>Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly upper fine to lower coarse sand size), moderately sorted, angular to subrounded; 4% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: Foreshore with horizontal laminations. Ravinement surface at 110.71 feet and overlain by a 0.36-foot- thick transgressive rhodolith- and pelecypod-fragment-pebble lag deposit between 110.71 and 110.35 feet. <i>Glossifungites</i> ichnotaxa at(?) and below basal contact. Backstepping transgressive cycle from 110.71 to 102.52 feet with foreshore overstepped by upper shoreface, overstepped by middle shoreface in cycle</p>
110.71-112.80	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present. <i>Psilonichnus</i>-like burrow or <i>Ophiomorpha</i> truncated at and extending below upper bounding ravinement surface. One or two pale yellowish brown 10YR 6/2 intraclasts up to large pebble size and within the basal pebble lag at the base of the cycle (just overlying the basal ravinement surface) contain rhizoliths that have a well cemented tubules highly suggestive of formation in subaerial conditions</p>

	<p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including amphistiginids, <i>Elphidium</i>, archaiasinids), branching and encrusting coralline red algae (including uncommon rhodoliths up to medium pebble size)</p> <p>Accessory grains: 20% quartz grains, very fine to very coarse sand size (mostly medium to lower coarse sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1-2% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 15% moldic, 2% vuggy; 37% total porosity and relatively moderate permeability</p> <p>Comments: Ravinement surface at 112.80 feet and overlain by a 0.2-foot- thick transgressive pelecypod-fragment, pebble-sized coquina lag deposit. At the surface is a probable truncated <i>Glossifungites</i> ichnotaxa extending downward from the basal ravinement surface and the ichnotaxa filled with sediment from the upward deepening cycle between 116.92 and 112.80 feet. Probably backstepping middle shoreface transgression and ravinement into underlying middle to upper shoreface</p>
112.80-113.60	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thinly to medium bedsets containing 20 to 30 degree dipping thin to thick laminations</p> <p>Trace fossils: <i>Ophiomorpha?</i> present</p> <p>Ichnofabric index: 1-2</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including miliolids, <i>Elphidium</i>, archaiasinids, amphistiginids), globular planktic foraminifers (including globigerinoides), uncommon branching and encrusting coralline red algae</p> <p>Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 5% moldic, 2% vuggy; 22% total porosity and relatively moderate permeability</p> <p>Comments: Upper bounding surface is a ravinement surface with 0.11 feet of microtopography. Probably middle to upper shoreface.</p>
113.60-114.00	No recovery
114.00-114.40	Lithofacies: Pelecypod packstone and grainstone

	<p>Depositional texture: Pelecypod fragment grainstone Color: Very light gray N8 Sedimentary structures/textures: Thinly to medium bedsets containing 20 to 30 degree dipping thin to thick laminations Trace fossils: <i>Ophiomorpha?</i> present Ichnofabric index: 1-2 Ichnofacies: <i>Skolithos</i> Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including miliolids, <i>Elphidium</i>, archaiasinids, amphistiginids), globular planktic foraminifers (including globigerinoides), uncommon branching and encrusting coralline red algae Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains Porosity and permeability: 15% interparticle, 5% moldic, 2% vuggy; 22% total porosity and relatively moderate permeability Comments: Probably upper shoreface</p>
114.40-115.10	No recovery
115.10-116.92	<p>Lithofacies: Pelecypod packstone and grainstone Depositional texture: Pelecypod fragment grainstone Color: Very light gray N8 Sedimentary structures/textures: Thinly to medium bedsets containing 20 to 30 degree dipping thin to thick laminations Trace fossils: <i>Ophiomorpha?</i> present Ichnofabric index: 1-2 Ichnofacies: <i>Skolithos</i> Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including miliolids, <i>Elphidium</i>, archaiasinids, amphistiginids), globular planktic foraminifers (including globigerinoides), uncommon branching and encrusting coralline red algae (rhodoliths up to very large pebble size in basal transgressive lag between 116.92 and 112.80 feet) Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains Porosity and permeability: 15% interparticle, 5% moldic, 2% vuggy; 22% total porosity and relatively moderate permeability Comments: Lower 0.44 thick base of the cycle from 116.92 to 110.71 feet is a rhodolith floatstone transgressive lag containing rhodoliths up to very large pebble size. Ravinement surface at 116.92 feet. Probably upper shoreface. Part of upward deepening cycle from 116.92 to 112.80 feet.</p>

116.92-117.60	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with skeletal mud- and grain-dominated packstone and grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thickly bedded and contiguous with underlying lithology</p> <p>Trace fossils: Burrows present</p> <p>Ichnofabric index: 5</p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, branching and encrusting coralline red algae (including small rhodoliths up to medium pebble size), intraclasts, <i>Manicina</i> fragment</p> <p>Accessory grains: 5-20% quartz grains, very fine to very coarse sand size (mostly medium to lower coarse sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 15% moldic, 5% vuggy; 25% total porosity and relatively moderate permeability</p> <p>Comments: Ravinement surface at 116.92 feet. Possibly middle shoreface</p>
117.60-121.30	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment floatstone and rudstone with mud- and grain-dominated packstone and grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including amphistiginids, miliolids, archaiasinids, <i>Elphidium</i>, biserials), branching and encrusting coralline red algae (including small rhodoliths up to medium pebble size), globular planktic foraminifers (including globigerinoides), gastropods, intraclasts</p> <p>Accessory grains: 1-20% quartz grains, very fine to very coarse sand size (mostly medium to lower coarse sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 5% moldic, 2% vuggy; 22% total porosity and relatively moderate permeability</p> <p>Comments: Possibly middle shoreface</p>
121.30-121.62	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod fragment floatstone and rudstone with mud- and grain-dominated packstone and grainstone</p>

	<p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including amphistiginids, miliolids, archaiasinids, <i>Elphidium</i>, biserials), branching and encrusting coralline red algae (including small rhodoliths up to medium pebble size), globular planktic foraminifers (including globigerinoides), gastropods, intraclasts</p> <p>Accessory grains: 1-20% quartz grains, very fine to very coarse sand size (mostly medium to lower coarse sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 5% moldic, 2% vuggy; 22% total porosity and relatively moderate permeability</p> <p>Comments: Possibly middle shoreface. Middle shoreface dominated cycle from 121.62 to 116.92 feet than transgresses underlying foreshore</p>
121.62-129.00	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Medium to thick bedsets containing horizontal to dipping (up to about 30 degrees) thin to thick laminations</p> <p>Trace fossils: <i>Ophiomorpha</i> present. <i>Conichnus</i> present at 121.60 feet and possible <i>Macaronichnus</i> present at 121.65 feet</p> <p>Ichnofabric index: 1-4 (Bioturbation index increases upward)</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid spines and plates, benthic foraminifers (including miliolids, <i>Elphidium</i>, archaiasinids, biserials), branching and encrusting coralline red algae, gastropods, intraclasts</p> <p>Accessory grains: 1-15% quartz grains, very fine to very coarse sand size (mostly medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% interparticle, 5% moldic, 2% vuggy; 22% total porosity and relatively moderate permeability</p> <p>Comments: Probably mixed foreshore and upper shoreface. Base of upward deepening, upward thickening cycle (129.90 to 116.92 feet) and transgressive ravinement surface at 129.90 feet</p>

129.00-129.90	No recovery
129.90-131.20	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Burrowing present</p> <p>Ichnofabric index: 5</p> <p>Carbonate grains: Pelecypod fragments, branching and encrusting coralline red algae, benthic foraminifers (including miliolids, <i>Elphidium</i>, archaiasinids), echinoid spines and plates, gastropods, intraclasts, sand-dollar-shaped echinoids</p> <p>Accessory grains: 1-15% quartz grains, very fine to very coarse sand size (mostly medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
131.20-131.65	No recovery
131.65-135.17	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Skolithos</i>?</p> <p>Carbonate grains: Pelecypods (including <i>Ostrea</i> up to small cobble size), branching and encrusting coralline red algae, gastropods, intraclasts, sand-dollar-shaped echinoids</p> <p>Accessory grains: 1-15% quartz grains, very fine to very coarse sand size (mostly fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 2-10% vuggy; 27-35% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
135.17-136.00	No recovery
136.00-136.45	<p>Lithofacies: <i>Turritella</i> floatstone and rudstone</p> <p>Depositional texture: <i>Turritella</i> rudstone with skeletal fragment, grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p>

	<p>Sedimentary structures/textures: Part of a very thick, massively bedded succession</p> <p>Ichnofabric index: 5</p> <p>Carbonate grains: Gastropods (mostly <i>Turritella</i>), skeletal fragments, branching and encrusting coralline red algae, barnacle fragments</p> <p>Accessory grains: 1-15% quartz grains, very fine to medium sand size (mostly fine sand size), moderately sorted, angular to subrounded; 2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), less than 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 20% moldic, 2-10% vuggy; 32-40% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
136.45-139.10	No recovery
139.10-140.75	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including miliolids, <i>Elphidium</i>, biserials, <i>Pyrgo</i>, amphistiginids, archaiasinids), echinoid spines and plates, branching and encrusting coralline red algae, globular planktic foraminifers (including globigerinoides), peloids, gastropods, ostracods</p> <p>Accessory grains: 1-15% quartz grains, very fine to medium sand size (mostly fine sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 15% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
140.75-141.35	No recovery
141.35-141.60	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or</p>

	<p>Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including miliolids, <i>Elphidium</i>, biserials, <i>Pyrgo</i>, amphistiginids, archaiasinids), echinoid spines and plates, branching and encrusting coralline red algae, globular planktic foraminifers (including globigerinoides), peloids, gastropods, ostracods</p> <p>Accessory grains: 1-15% quartz grains, very fine to medium sand size (mostly fine sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 15% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
141.60-148.15	No recovery
148.15-149.40	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including miliolids, <i>Elphidium</i>, biserials, <i>Pyrgo</i>, amphistiginids, archaiasinids), echinoid spines and plates, branching and encrusting coralline red algae, globular planktic foraminifers (including globigerinoides), peloids, gastropods, ostracods</p> <p>Accessory grains: 1-15% quartz grains, very fine to medium sand size (mostly fine sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 15% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
149.40-154.10	No recovery
154.10-155.20	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p>

	<p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Ophiomopha</i> present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including miliolids, biserials, amphistiginids, archaiasinids), echinoid spines and plates, branching and encrusting coralline red algae, globular planktic foraminifers (including globigerinoides), peloids, gastropods</p> <p>Accessory grains: 5-20% quartz grains, very fine to very coarse sand size (bimodal fine and coarse quartz sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 5% vuggy; 30% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
155.20-158.50	No recovery
158.50-158.80	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: <i>Ophiomopha</i> present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including amphistiginids, biserials, archaiasinids, miliolids, soritids), echinoid spines and plates, globular planktic foraminifers (including globigerinoides), peloids, gastropods</p> <p>Accessory grains: 5-15% quartz grains, very fine to very coarse sand size (bimodal fine and coarse quartz sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 5% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
158.80-159.50	No recovery
159.50-161.35	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p>

	<p>Trace fossils: <i>Ophiomopha</i> present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including amphistiginids, biserials, archaiasinids, miliolids, soritids), echinoid spines and plates, globular planktic foraminifers (including globigerinoides), peloids, gastropods</p> <p>Accessory grains: 5-15% quartz grains, very fine to very coarse sand size (bimodal fine and coarse quartz sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 5% vuggy; 40% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
161.35-161.50	No recovery
161.50-164.90	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: <i>Ophiomopha</i> present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including amphistiginids, biserials, archaiasinids, miliolids, soritids), echinoid spines and plates, globular planktic foraminifers (including globigerinoides), peloids, gastropods</p> <p>Accessory grains: 5-15% quartz grains, very fine to very coarse sand size (bimodal fine and coarse quartz sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 10% vuggy; 45% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp. Abundant washouts of poorly cemented grainstone</p>
164.90-168.50	No recovery
168.50-169.20	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: <i>Ophiomopha</i> present. Probably burrowed mostly by</p>

	<p>Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including amphistiginids, biserials, archaiasinids, miliolids, soritids), echinoid spines and plates, globular planktic foraminifers (including globigerinoides), peloids, gastropods</p> <p>Accessory grains: 5-15% quartz grains, very fine to very coarse sand size (bimodal fine and coarse quartz sand size), poorly sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 10% vuggy; 45% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp. Some washouts of poorly cemented grainstone</p>
169.20-171.23	No recovery
171.23-171.73	<p>Lithofacies: Arenaceous pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone and rudstone with arenaceous pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including amphistiginids, biserials), echinoid spines and plates, globular planktic foraminifers (including globigerinoides), branching and encrusting coralline red algae, peloids, gastropods</p> <p>Accessory grains: 25-35% quartz grains, very fine to very coarse sand size (bimodal fine and coarse quartz sand size), poorly sorted, angular to subrounded; 1-3% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and yellowish gray 5Y 7/2), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 15% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability</p> <p>Comments: Probably middle ramp</p>
171.73-174.70	No recovery—Major cycle boundary shift at 174.40 feet with a single thick burrowed unit from 174.40 to 129.90 feet above multiple meter-scale ravinement- and <i>Glossifungites</i> -capped cycles below 174.40 feet.
174.70-174.95	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p>

	<p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Medium thick bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> probably present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, uncommon fragmented amphistiginids), peloids, gastropods, ostracods, serpulid tubes, uncommon bryozoans</p> <p>Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 10% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability</p> <p>Comments: Possibly inner middle ramp. Mostly well cemented and occluded interparticle pore space. Underlying bed that is not sampled is more washed out and probably less cemented. Possibly a <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 174.40 feet</p>
174.95-175.80	No recovery—Molluscan subtidal cycle cap at 175.75 feet
175.80-176.88	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Medium thick bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> probably present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, uncommon fragmented amphistiginids), gastropods, ostracods, serpulid tubes, uncommon bryozoans</p> <p>Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 10% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability. Porosity and permeability increases downward from top of molluscan cycle cap at 175.75 feet</p> <p>Comments: Possibly inner middle ramp. Mostly well cemented and occluded interparticle pore space in upper 0.4 feet of cycle. Underlying bed that is sampled as rubble is more washed out and less cemented. <i>Glossifungites</i> ichnotaxa caps a molluscan</p>

	subtidal cycle at and below 175.75 feet
176.88-177.20	<p>Lithofacies: Pelecypod packstone and grainstone Depositional texture: Pelecypod fragment grainstone Color: Yellowish gray 8/1 Sedimentary structures/textures: Medium thick bedding Trace fossils: <i>Ophiomorpha</i> probably present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans Ichnofabric index: 5 Ichnofacies: <i>Cruziana?</i> Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, uncommon fragmented amphistiginids), gastropods, ostracods, serpulid tubes, uncommon bryozoans Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains Porosity and permeability: 5-15% interparticle, 10% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability. Porosity and permeability increases downward from top of molluscan cycle cap at 176.88 feet Comments: Possibly inner middle ramp. Mostly well cemented and occluded interparticle pore space. Underlying bed that is not sample but digital optical borehole wall log shows it is more washed out and less cemented. <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 176.88 feet</p>
177.20-177.55	No recovery—Molluscan subtidal cycle cap at 177.55 feet
177.55-179.53	<p>Lithofacies: Pelecypod packstone and grainstone Depositional texture: Pelecypod fragment grainstone Color: Yellowish gray 8/1 Sedimentary structures/textures: Medium thick bedding Trace fossils: <i>Ophiomorpha</i> probably present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans Ichnofabric index: 5 Ichnofacies: <i>Cruziana?</i> Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, uncommon fragmented amphistiginids), gastropods, ostracods, serpulid tubes, uncommon bryozoans Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains Porosity and permeability: 15% interparticle, 10% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability. Porosity and permeability increases downward</p>

	<p>from top of molluscan cycle cap at 177.55 feet</p> <p>Comments: Possibly inner middle ramp. Mostly well cemented and occluded interparticle pore space in upper 0.3 feet of cycle. Underlying bed that is sampled as rubble is more washed out and less cemented (skeletal grains are friable). <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 177.55 feet</p>
179.53-180.20	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Thin to thickly bedded</p> <p>Trace fossils: <i>Ophiomorpha</i> possibly present. Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, uncommon fragmented amphistiginids), gastropods, ostracods, serpulid tubes, uncommon bryozoans</p> <p>Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 10% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability. Porosity and permeability increases downward from top of molluscan cycle cap at 179.53 feet</p> <p>Comments: Possibly inner middle ramp. Mostly well cemented and occluded interparticle pore space in upper 1.3 feet of cycle. Underlying beds that are sampled as rubble in part and is more washed out and less cemented (skeletal grains are friable). <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 179.53 feet</p>
180.20-183.00	No recovery and minor friable rubble
183.00-184.13	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, uncommon fragmented amphistiginids), gastropods, ostracods, serpulid tubes, uncommon bryozoans</p>

	<p>Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 10% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability.</p> <p>Comments: Possibly inner middle ramp. Basal 0.18 foot thick coquina lag at basal ravinement surface bounds lower boundary of cycle. Pelecypod shells that make up coquina are mainly small pebble size. Ravinement surface has about 0.08 feet of erosional microtopography. Mostly well cemented and occluded interparticle pore space in upper 0.7 feet of cycle. <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 183.30 feet</p>
184.13-187.17	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Medium to thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i>?</p> <p>Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, uncommon fragmented amphistiginids), gastropods, ostracods, serpulid tubes, uncommon bryozoans</p> <p>Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 10% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability. Porosity and permeability increases downward from top of molluscan cycle cap at 184.13 feet</p> <p>Comments: Possibly inner middle ramp. Basal 0.21 foot thick relatively lag at basal ravinement surface bounds lower boundary of cycle based on digital optical borehole wall image. Ravinement surface has about 0.07 feet of erosional microtopography. Mostly relatively well cemented in upper 0.8 feet of cycle. Underlying beds that are sampled as core and rubble is more washed out and less cemented (skeletal grains are friable). <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 184.13 feet</p>
187.17-189.05	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p>

	<p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Medium to thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, uncommon fragmented amphistiginids and archaiasinids), gastropods, ostracods, serpulid tubes, uncommon bryozoans</p> <p>Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 5% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability. Porosity and permeability increases downward from top of molluscan cycle cap at 187.17 feet</p> <p>Comments: Possibly inner middle ramp. Lower bounding ravinement surface has about 0.09 feet of erosional microtopography. Mostly relatively well cemented in upper 1.0 foot of cycle. Underlying beds that are sampled as core and rubble is more washed out and less cemented (skeletal grains are friable). <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 187.17 feet</p>
189.05-192.25	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Medium to thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including miliolids, biserials, amphistiginids), gastropods, ostracods, serpulid tubes, uncommon bryozoans</p> <p>Accessory grains: 1-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 5% moldic, 2% vuggy; 27% total porosity and relatively moderate permeability. Porosity and permeability increases downward from top of molluscan cycle cap at 189.05 feet</p>

	<p>Comments: Possibly inner middle ramp. Lower bounding ravinement surface has about 0.11 feet of erosional microtopography. Mostly relatively well cemented in upper 1.0 foot of cycle. Samples of the underlying beds were not recovered, but digital optical borehole image indicates below the relatively more highly cement zone the lower part of cycle is more washed out and less cemented (skeletal grains are probably friable). <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 189.05 feet</p>
192.25-195.20	<p>Lithofacies: Pelecypod packstone and grainstone Depositional texture: Pelecypod fragment grainstone Color: Yellowish gray 8/1 Sedimentary structures/textures: Medium to thickly bedded Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans Ichnofabric index: 5 Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including rotalids, miliolids, amphistiginids), gastropods, ostracods, globular planktic foraminifers (including globigerinoides), intraclasts, uncommon branching red algae Accessory grains: 1-5% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains Porosity and permeability: 22% interparticle, 2% moldic, 1% vuggy; 25% total porosity and relatively moderate permeability. Porosity and permeability increases downward from top of molluscan cycle cap at 192.25 feet Comments: Possibly inner middle ramp. Lower bounding ravinement surface has about 0.32 feet of erosional microtopography. Mostly relatively well cemented in upper 2.0 foot of cycle. Underlying beds that are sampled as core and rubble is more washed out and less cemented (skeletal grains are friable). <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 192.25 feet</p>
195.20-198.10	<p>Lithofacies: Pelecypod packstone and grainstone Depositional texture: Pelecypod fragment grainstone Color: Yellowish gray 8/1 Sedimentary structures/textures: Very thick, massive bedding Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans Ichnofabric index: 5 Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypods (mostly fragments), echinoid</p>

	<p>spines and plates, benthic foraminifers (including rotalids, miliolids, amphisigminids), gastropods, ostracods, globular planktic foraminifers (including globigerinoides)</p> <p>Accessory grains: 1-5% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1-2% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 24% interparticle, 2% moldic, 1% vuggy; 27% total porosity and relatively moderate permeability</p> <p>Comments: Possibly lower middle ramp. Upper bounding surface has about 0.13 feet of erosional microtopography. Mostly relatively well cemented in upper 13.4 feet of cycle. Underlying beds that are sampled as core and rubble is more washed out and less cemented (skeletal grains are friable). <i>Glossifungites</i> ichnotaxa caps a molluscan subtidal cycle at and below 195.20 feet</p>
198.10-200.00	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Yellowish gray 8/1</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoides</i>, <i>Ophiomorpha nodosa</i> (at 198.90 feet), <i>Asterosoma</i> present</p> <p>Ichnofabric index: 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods (mostly fragments), echinoid spines and plates, benthic foraminifers (including rotalids, miliolids, amphisigminids, biserials), gastropods, ostracods, globular planktic foraminifers (including globigerinoides)</p> <p>Accessory grains: 5-10% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1-4% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 30% intra- and interparticle, 2% moldic; 32% total porosity and relatively moderate permeability</p> <p>Comments: Possibly lower middle ramp</p>
200.00-208.24	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 8/1 to light olive gray 5Y 6/1</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoides</i>, <i>Ophiomorpha</i>, <i>Asterosoma</i> (especially prominent at 205.7 feet), <i>Diplocraterion parallelum?</i> (at 207.8 feet) present</p>

	<p>Ichnofabric index: 5 Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including rotalids, amphistiginids, miliolids, biserials), gastropods, echinoid spines and plates, ostracods, globular planktic foraminifers (including globigerinoides) Accessory grains: 5-10% quartz grains, very fine to coarse sand size (mostly very fine to medium sand size), moderately sorted, angular to subrounded; 1-4% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains Porosity and permeability: 25% intra- and interparticle, 2% moldic; 27% total porosity and relatively moderate permeability Comments: Possibly lower middle ramp</p>
208.24-213.60	<p>Lithofacies: Pelecypod packstone and grainstone Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone Color: Very pale orange 10YR 8/2 Sedimentary structures/textures: Very thick, massive bedding Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans Ichnofabric index: 5 Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypods (mostly fragments), globular planktic foraminifers (including globigerinoides), benthic foraminifers (including abraded amphistiginids, miliolids, rotalids), gastropods, echinoid spines and plates, ostracods, encrusting coralline red algae Accessory grains: 5-10% quartz grains, very fine to coarse sand size (mostly very fine to lower fine sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains, trace feldspar Porosity and permeability: 30% intra- and interparticle, 2% moldic; 32% total porosity and relatively moderate permeability Comments: Possibly lower middle ramp. Abrupt shift in color and degree of interparticle cementation by calcite at 208.24 feet. Most of interval is friable, skeletal carbonate sand. Relatively much less interparticle calcite cementation in this interval</p>
213.60-217.00	<p>Lithofacies: Pelecypod packstone and grainstone Depositional texture: Pelecypod fragment grainstone Color: Yellowish gray 5Y 8/1 Sedimentary structures/textures: Very thick, massive bedding Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoids</i>, <i>Diplocraterion habichi</i>? present</p>

	<p>Ichnofabric index: 5 Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including amphistiginids, uncommon miliolids and <i>Pyrgo</i>), gastropods, echinoid spines and plates, ostracods, globular planktic foraminifers (including globigerinoides) Accessory grains: 5-20% quartz grains, very fine to coarse sand size (mostly medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains, trace feldspar Porosity and permeability: 30% intra- and interparticle, 2% moldic; 32% total porosity and relatively moderate permeability Comments: Possibly lower middle ramp. Abrupt shift in color and degree of interparticle cementation by calcite at 213.60 feet. Relatively more highly cemented below 213.60 feet</p>
217.00-218.00	<p>Lithofacies: Arenaceous pelecypod packstone and grainstone Depositional texture: Pelecypod fragment arenaceous grain-dominated packstone and grainstone Color: Yellowish gray 5Y 8/1 Sedimentary structures/textures: Very thick, massive bedding Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans Ichnofabric index: 5 Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypods (mostly fragments), benthic foraminifers (including amphistiginids), coralline red algae, gastropods, echinoid spines and plates, ostracods Accessory grains: 20-35% quartz grains, very fine to coarse sand size (mostly medium sand size), moderately sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1), 3% phosphorite grains Porosity and permeability: 30% intra- and interparticle, 2% moldic; 32% total porosity and relatively moderate permeability Comments: Possibly lower middle ramp</p>
218.00-228.00	<p>Lithofacies: Arenaceous pelecypod packstone and grainstone Depositional texture: Pelecypod fragment arenaceous mud- and grain-dominated packstone and grainstone Color: Yellowish gray 8/1 to light olive gray 5Y 6/1 Sedimentary structures/textures: Very thick, massive bedding Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans, <i>Ophiomorpha</i>, <i>Asterosoma</i>, <i>Diplocraterion</i> Ichnofabric index: 5 Ichnofacies: <i>Cruziana</i></p>

	<p>Carbonate grains: Pelecypods (mostly fragments), globular planktic foraminifers (including globigerinoides), benthic foraminifers (including amphistiginids, uncommon rotalids, miliolids, small <i>Elphidium</i>), echinoid spines and plates, gastropods, ostracods, coralline red algae, uncommon bryozoans, serpulid tubes</p> <p>Accessory grains: 20-35% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 3% undifferentiated dark mineral grains (mostly black N1), less than 3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% intra- and interparticle, 10% moldic; 30% total porosity and relatively moderate permeability</p> <p>Comments: Possibly lower middle ramp</p>
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Local Identifier (corehole)	G-3948
Local Identifiers (completed wells)	G-3948D, G-3948S
USGS Station Numbers (completed wells)	255515080103601, 255515080103602
Total Depth Drilled	279 feet (driller's depth)
Cored Interval	2.75 to 279 feet
County	Miami-Dade
Latitude (NAD 83)	25-55-14.9 N
Longitude (NAD 83)	080-10-36.2 W
Elevation (NGVD 29)	11.87 feet (surveyed by Miami-Dade County)
Completion Date	August 24, 2010
Other types of available logs	OBI, Caliper, Ambient Fluid, Ambient Flow, Pumping Flow, Gamma ray, Conductivity, Resistivity, Full Waveform Sonic
Owner	Miami-Dade County
Driller	Intercounty
Core described by	Kevin J. Cunningham
Top Miami Limestone	2.75 feet
Top Fort Thompson Formation	34.80 feet
Top Tamiami Formation	99.20 feet
Top Stock Island Formation	257.96 feet

G-3948 Test Corehole	
Depth Interval (feet)	Core Description
0.00-2.75	No recovery
2.75-12.90	<p>Lithofacies: Ooid grainstone</p> <p>Depositional texture: Ooid grainstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Grainstone thickly laminated in part, laminations are horizontal to dipping—up to about 20 degrees</p> <p>Trace fossils: <i>Ophiomorpha</i> present, one <i>Skolithos</i> observed on digital optical borehole wall image</p> <p>Ichnofabrics: Ichnofabric index 2-3</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Ooids dominant (typically with a quartz grain or peloid core, and ooids typically medium sand size), minor coated quartz grains, pelecypod fragments, peloids, <i>Favreina</i>, <i>Halimeda</i>, miliolids</p> <p>Accessory grains: 10-40% quartz grains (mostly as ooid cores with less common inter-ooid quartz grains), very fine- to medium sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 20% oomoldic and pelmoldic, 5% interparticle, 20% vuggy; 45% porosity and relatively moderate to high permeability</p> <p>Comments: Most interparticle porosity occluded by equant calcite cement and intraburrow megaposity occluded by arenaceous, grainstone fill. Shelf shoal</p>
12.90-13.20	No recovery
13.20-13.95	<p>Lithofacies: Ooid grainstone</p> <p>Depositional texture: Ooid grainstone</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Grainstone thickly laminated in part, laminations are horizontal to dipping—up to about 20 degrees</p> <p>Trace fossils: <i>Ophiomorpha</i> present. Possible <i>Conichnus</i> in digital</p>

	<p>optical borehole wall image at about 13.80 feet</p> <p>Ichnofabrics: Ichnofabric index 4-5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Ooids dominant (typically with a quartz grain and ooids typically medium sand size), pelecypod fragments, peloids</p> <p>Accessory grains: Quartz grains observed as cores of many ooids</p> <p>Porosity and permeability: 5% oomoldic, 20% interparticle, 20% vuggy; 45% porosity and relatively moderate to high permeability</p> <p>Comments: Shelf shoal</p>
13.95-18.20	No recovery
18.20-18.65	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod fragment rudstone with skeletal, ooid grainstone matrix (coquina)</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Dipping thickly laminated coquina</p> <p>Trace fossils: <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 3</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod disarticulated shells and pelecypod fragments dominant, ooids, peloids, skeletal fragments</p> <p>Accessory grains: Quartz grains observed as cores of many ooids</p> <p>Porosity and permeability: 20% interparticle, 15% vuggy; 35% porosity and relatively moderate to high permeability</p> <p>Comments: Shelf shoal</p>
18.65-28.20	No recovery—Hypoburrow cementation around <i>Ophiomorpha</i> in air-lifted samples from this interval suggesting underlying quartz sand is marine
28.20-29.35	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, loose sand</p> <p>Carbonate grains: Pelecypod fragments dominant, peloids, serpulid tubes</p> <p>Accessory grains: 94% quartz grains, very fine to upper very coarse sand size (mostly very fine to medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 25% interparticle; 25% porosity and relatively moderate permeability</p> <p>Comments: Friable quartz sand. Protected low-energy shelf</p>
29.35-33.20	No recovery
33.20-34.80	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal grain-dominated</p>

	<p>packstone and grainstone</p> <p>Color: Grayish orange pink 5YR 7/2 to pale yellowish brown 10YR 6/2 limestone and yellowish gray 5Y 8/1 quartz sand</p> <p>Sedimentary structures/textures: Medium thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers mainly amphistiginids (but including miliolids, archaiasinids, soritids), branching red algae, bryozoans fragments</p> <p>Accessory grains: 5-30% quartz grains, very fine to very coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains. Filling or partly filling large and small vugs is quartz sand as described in the 28.20 to 29.35 interval but only a trace of peloids observed</p> <p>Porosity and permeability: 10% interparticle, 5% moldic, 20% vuggy; 35% porosity and relatively moderate permeability</p> <p>Comments: Protected low-energy shelf</p>
34.80-35.60	<p>Lithofacies: Arenaceous pedogenic limestone</p> <p>Depositional texture: Arenaceous massive calcrete and pedotubule calcrete</p> <p>Color: Very pale orange 10YR 8/2, grayish orange 10YR 7/4, pale yellowish brown 10YR 6/2, and dark yellowish orange 10YR 6/6</p> <p>Sedimentary structures/textures: Medium thick bedding</p> <p>Trace fossils: Common rhizoliths with 0.3-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micropor, micritized grains, or laminated calcrete lining the inner tubules). Rhizoliths can form a dense, pedotubule maze</p> <p>Ichnofabrics: Ichnofabric index 3-5</p> <p>Carbonate grains: Pelecypod fragments, amphistiginids, echinoderm spines and plates, uncommon peloids</p> <p>Accessory grains: 20-40% quartz grains, fine to coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 1% interparticle, 3% intraroot, 5% moldic, 15% vuggy; 23% porosity and relatively low permeability</p> <p>Comments: Exposure on backshore?</p>
35.60-35.77	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Arenaceous pelecypod rudstone with skeletal grainstone matrix (coquina)</p> <p>Color: Yellowish gray 5Y 8/1</p>

	<p>Sedimentary structures/textures: Thick, poorly defined laminations with low-angle inclination</p> <p>Trace fossils: None observed</p> <p>Ichnofabrics: Ichnofabric index 1</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, uncommon poymictic intraclasts</p> <p>Accessory grains: 15-35% quartz grains, fine to coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 5% vuggy; 27% porosity and relatively moderate permeability</p> <p>Comments: Foreshore</p>
35.77-38.20	No recovery
38.20-38.95	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Thinly bedded</p> <p>Trace fossils: Uncommon rhizoliths with about 1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar lining the inner tubules). Probably associated with major calcrete at 34.80 feet</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, uncommon intraclasts</p> <p>Accessory grains: 40-65% quartz grains, fine to coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and dark yellowish orange 10YR 6/6), less than 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 5% vuggy; 27% porosity and relatively moderate permeability</p> <p>Comments: Possibly upper shoreface</p>
38.95-39.60	<p>Lithofacies: Skeletal quartz sand and sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sand and sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Thinly bedded</p> <p>Trace fossils: None observed</p> <p>Carbonate grains: Pelecypod fragments and skeletal fragments</p> <p>Accessory grains: 80-90% quartz grains, fine to coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted; 5% undifferentiated dark mineral grains (mostly black N1 and dark yellowish orange 10YR 6/6), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle; 20% porosity and</p>

	<p>relatively moderate permeability</p> <p>Comments: Possibly upper shoreface</p>
39.60-48.20	<p>No recovery—<i>Montastrea</i> in air-lifted samples from this interval suggesting underlying quartz sand is marine. Samples color is suggestive of proximity to top of MIS 11 unconformity—very pale orange 10YR 8/2, dark yellowish orange 10YR 6/6, light brown 5YR 5/6, light brown 5YR 6/4</p>
48.20-49.48	<p>Lithofacies: Arenaceous skeletal grainstone</p> <p>Depositional texture: Arenaceous skeletal grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Cruziana?</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, benthic foraminifers</p> <p>Accessory grains: 25-40% quartz grains, fine to coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and dark yellowish orange 10YR 6/6), less than 1% phosphorite grains</p> <p>Porosity and permeability: 5% intra- and interparticle, 2% moldic, 20% vuggy; 27% porosity and relatively high permeability</p> <p>Comments: Quartz sand fills or partly fills many of the vugs. Most interparticle porosity occluded by equant calcite cement. Possibly lower shoreface</p>
49.48-49.65	<p>No recovery</p>
49.65-50.65	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded with poorly defined horizontal to very low-angle thick laminations</p> <p>Trace fossils: None observed</p> <p>Ichnofabrics: Ichnofabric index 1</p> <p>Carbonate grains: Pelecypod fragments dominant, branching red algae fragments, echinoid plates and spines, benthic foraminifers (including miliolids, <i>Elphidium</i>), polymictic intraclasts (including pedotubule calcrete)</p> <p>Accessory grains: 5-10% quartz grains, very fine to coarse sand size (mostly medium to coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 15% interparticle, 2% moldic, 15% vuggy; 32% porosity and relatively moderate permeability</p>

	Comments: Upper foreshore. Much of interparticle porosity occluded by blocky calcite cement
50.65-51.70	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded with poorly defined horizontal to very low-angle thick laminations</p> <p>Trace fossils: None observed</p> <p>Ichnofabrics: Ichnofabric index 1</p> <p>Carbonate grains: Pelecypod fragments dominant, branching red algae fragments, echinoid plates and spines, benthic foraminifers (including miliolids, <i>Elphidium</i>), polymictic intraclasts (including pedotubule calcrete)</p> <p>Accessory grains: 5-10% quartz grains, very fine to coarse sand size (mostly medium to coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly black N1)</p> <p>Porosity and permeability: 15% interparticle, 2% moldic, 15% vuggy; 32% porosity and relatively moderate permeability</p> <p>Comments: Lower foreshore. Much of interparticle porosity occluded by blocky calcite cement</p>
51.70-52.28	No recovery
52.28-52.60	<p>Lithofacies: Skeletal grainstone</p> <p>Depositional texture: Skeletal grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Very thinly bedded with horizontal to very low-angle thick laminations</p> <p>Trace fossils: None observed</p> <p>Ichnofabrics: Ichnofabric index 1</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments</p> <p>Accessory grains: 5-25% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6)</p> <p>Porosity and permeability: 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly upper shoreface. Much of interparticle porosity occluded by calcite cement. Oriented calcite concretions present</p>
52.60-53.20	No recovery
53.20-53.60	<p>Lithofacies: Skeletal quartz sand and sandstone</p> <p>Depositional texture: Skeletal fragment quartz sand and sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Thinly bedded</p> <p>Trace fossils: Based on digital optical borehole wall image</p>

	<p>probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5?</p> <p>Carbonate grains: Skeletal fragments, pelecypod fragments, possible echinoid spines, <i>Favreina</i>-like pellet</p> <p>Accessory grains: 80-90% quartz grains, fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2-3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle; 20% porosity and relatively moderate permeability</p> <p>Comments: Possibly upper shoreface. Oriented calcite concretions present</p>
53.60-54.80	No recovery
54.80-55.05	<p>Lithofacies: Skeletal grainstone</p> <p>Depositional texture: Skeletal grainstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Very thinly bedded with thinly laminated horizontal to arcuate festoon-like cross laminations</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments</p> <p>Accessory grains: 5-20% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6)</p> <p>Porosity and permeability: 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly upper shoreface. Much of interparticle porosity occluded by calcite cement. Oriented calcite concretions present</p>
55.05-57.00	No recovery
57.00-57.60	<p>Lithofacies: Mixed skeletal grainstone, skeletal quartz sandstone and quartz sand (based on rubble core samples and digital optical borehole wall image)</p> <p>Depositional texture: Mixed skeletal grainstone, skeletal quartz sandstone and skeletal quartz sand (based on rubble core samples and digital optical borehole wall image)</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thinly bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation</p>

	<p>present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, uncommon archaiasinids</p> <p>Accessory grains: Grainstone contains 5-25% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6)</p> <p>Porosity and permeability: Grainstone has 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly lower shoreface. Much of interparticle porosity in the grainstone is occluded by calcite cement</p>
57.60-59.60	No recovery
59.60-60.20	<p>Lithofacies: Mixed skeletal grainstone, skeletal quartz sandstone and quartz sand (based on rubble core samples and digital optical borehole wall image)</p> <p>Depositional texture: Mixed skeletal grainstone, skeletal quartz sandstone and skeletal quartz sand (based on rubble core samples and digital optical borehole wall image)</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thinly bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, uncommon archaiasinids</p> <p>Accessory grains: Grainstone contains 5-25% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6)</p> <p>Porosity and permeability: Grainstone has 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly lower shoreface. Much of interparticle porosity in the grainstone is occluded by calcite cement</p>
60.20-60.60	No recovery
60.60-61.40	<p>Lithofacies: Mixed skeletal grainstone, skeletal quartz sandstone and quartz sand (based on rubble core samples and digital optical borehole wall image)</p> <p>Depositional texture: Mixed skeletal grainstone, skeletal quartz sandstone and skeletal quartz sand (based on rubble core samples and digital optical borehole wall image)</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thinly bedded</p>

	<p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, uncommon archaiasinids</p> <p>Accessory grains: Grainstone contains 5-25% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6)</p> <p>Porosity and permeability: Grainstone has 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly lower shoreface. Much of interparticle porosity in the grainstone is occluded by calcite cement</p>
61.40-61.70	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, uncommon archaiasinids</p> <p>Accessory grains: 65-75% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 2% interparticle, 15% intraburrow, 20% vuggy; 37% porosity and relatively high permeability</p> <p>Comments: Possibly lower shoreface. Much of interparticle porosity is occluded by calcite cement</p>
61.70-63.80	<p>No recovery—<i>Ophiomorpha</i> with hypoburrow cementation in air-lift samples from this approximate depth interval</p>
63.80-64.20	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments</p> <p>Accessory grains: 65-75% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately</p>

	<p>sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 2-5% interparticle, 15% intraburrow, 20% vuggy; 37-40% porosity and relatively high permeability</p> <p>Comments: Possibly lower shoreface. Much of interparticle porosity is occluded by calcite cement</p>
64.20-65.20	No recovery
65.20-65.70	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone with micrite commonly in interparticle pore space</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (mainly miliolids, uncommon archaiasinids), uncommon branching red algae, planktic foraminifers (including globigeriniodes)</p> <p>Accessory grains: 90% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 2-5% interparticle, 5% moldic, 15% intraburrow, 10% vuggy; 32-37% porosity and relatively high permeability</p> <p>Comments: Possibly offshore middle ramp. Much of interparticle porosity is occluded by microspar and micrite. Micrite appears to have been neomorphosed to microspar in some areas</p>
65.70-68.20	No recovery
68.20-68.90	<p>Lithofacies: Skeletal quartz sandstone and quartz sand</p> <p>Depositional texture: Skeletal quartz sandstone and quartz sand</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Skeletal fragments, uncommon archaiasinids, possible peloids</p> <p>Accessory grains: 90-95% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p>

	<p>Porosity and permeability: 20% interparticle, 5% moldic, 10% intraburrow, 10% vuggy; 45% porosity and relatively high permeability</p> <p>Comments: Possibly offshore middle ramp. Much of interparticle porosity is occluded by microspar and micrite</p>
68.90-78.20	No recovery
78.20-80.20	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, thick bedding. No bedding features present</p> <p>Trace fossils: Possibly burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans as in interval above</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Skeletal fragments, pelecypod fragments, benthic foraminifers, ostracods</p> <p>Accessory grains: 85% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle; 20% porosity and relatively moderate permeability</p> <p>Comments: Possibly offshore middle ramp. Friable quartz sand</p>
80.20-83.20	No recovery
83.20-84.40	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: A little lighter shade of pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Massive, thick bedding. No bedding features present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans as in interval above. Cemented Thalassinidean or Thalassinidean-like crustacean trace fossil found in core sample</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Skeletal fragments, pelecypod fragments, intraclasts of calcrete</p> <p>Accessory grains: 85% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle; 15% porosity and relatively moderate permeability</p>

	<p>Comments: Possibly offshore middle ramp. Friable quartz sand. Intraclasts of calcrete likely were ripped up from underlying exposure surface. Some micrite is present as a coating on many quartz grains</p>
84.40-85.20	<p>Lithofacies: Quartz sand Depositional texture: Calcareous quartz sand Color: Yellowish gray 5Y 8/1 quartz sand and grayish orange 10YR 7/4 rhizoliths Sedimentary structures/textures: Massive, thick bedding. No bedding features present Trace fossils: Common rhizoliths appear to be embedded in fabric of quartz sand with 0.3-0.5 mm inner tubule diameter (associated with rhizoliths are concentric micropores or micrite lining the inner tubules), but probably are weathered and unweathered clasts. Burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans as in interval above. Cemented Thalassinidean or Thalassinidean-like crustacean trace fossil found in core sample Ichnofabrics: Ichnofabric index 5 Ichnofacies: <i>Cruziana?</i> Carbonate grains: Skeletal fragments, pelecypod fragments, benthic foraminifers Accessory grains: 85% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains Porosity and permeability: 10% interparticle; 10% porosity and relatively low permeability Comments: Possible subaerial exposure surface at upper bounding surface of interval. But more likely alternative is that the rhizoliths are ripped up from the underlying rhizolith-rich unconformity at 99.25 feet. Possibly offshore middle ramp. Friable quartz sand. Common micrite is present as a coating on many quartz grains</p>
85.20-88.20	No recovery
88.20-90.45	<p>Lithofacies: Mixed arenaceous pelecypod rudstone, skeletal quartz sandstone and quartz sand Depositional texture: Mixed arenaceous pelecypod rudstone (coquina), calcareous skeletal quartz sandstone and calcareous skeletal quartz sand Color: Yellowish gray 5Y 8/1 quartz sand, sandstone, and rudstone and light olive gray 5Y 6/1 clay Sedimentary structures/textures: Massive, thick bedding. No bedding features present Trace fossils: Uncommon rhizoliths appear to be embedded in</p>

	<p>fabric of quartz sand with 0.3-0.5 mm inner tubule diameter (associated with rhizoliths are concentric micrspar or micrite lining the inner tubules), but probably are weathered and unweathered clasts. Based on core samples probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments</p> <p>Accessory grains: Rudstone contains 25-35% quartz grains, very fine to coarse sand size (mostly medium to coarse sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 1-2% phosphorite grains, trace clay</p> <p>Porosity and permeability: Rudstone has 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly offshore middle ramp. Much of interparticle porosity in the rudstone is occluded by calcite cement and many of the loose quartz grains are coated with micrite</p>
90.45-93.20	No recovery
93.20-95.00	<p>Lithofacies: Mixed arenaceous pelecypod rudstone, skeletal quartz sandstone and quartz sand</p> <p>Depositional texture: Mixed arenaceous pelecypod rudstone (coquina), calcareous skeletal quartz sandstone and calcareous skeletal quartz sand</p> <p>Color: Yellowish gray 5Y 8/1 quartz sand, sandstone, and rudstone and light olive gray 5Y 6/1 clay</p> <p>Sedimentary structures/textures: Massive, thick bedding. No bedding features present</p> <p>Trace fossils: Trace rhizoliths appear to be embedded in fabric of quartz sand with 0.3-0.5 mm inner tubule diameter (associated with rhizoliths are concentric micrspar or micrite lining the inner tubules), but probably are weathered and unweathered clasts. Based on core samples probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments</p> <p>Accessory grains: Rudstone contains 25-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 1-2% phosphorite grains, 1% clay</p> <p>Porosity and permeability: Rudstone has 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly offshore middle ramp. Much of interparticle porosity in the rudstone is occluded by calcite cement and</p>

	many of the loose quartz grains are coated with micrite
95.00-95.35	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal and intraclast grainstone matrix</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, intraclasts of pedotubule calcrete (associated with pedotubules are concentric micrspar or micrite lining the inner tubules), amphistiginids, gastropods, <i>Elphidium</i></p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (mostly medium to very coarse sand size), angular to rounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly black N1 and dark yellowish brown 10YR 4/2), 1-2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle; 5% total porosity and relatively low permeability</p> <p>Comments: Transgressive shoreface. Much of interparticle porosity in the rudstone is occluded by calcite cement</p>
95.35-98.20	No recovery
98.20-99.20	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal and intraclast grainstone matrix</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Trace fossils: Based on core samples probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, intraclasts of pedotubule calcrete (associated with pedotubules are concentric micrspar or micrite lining the inner tubules), amphistiginids, gastropods, <i>Elphidium</i></p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (mostly medium to very coarse sand size), angular to rounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly black N1 and dark yellowish brown 10YR 4/2), 1-2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, estimated 20-25% vuggy; 25-30% porosity and relatively high permeability</p> <p>Comments: Transgressive shoreface. Much of interparticle porosity in the rudstone is occluded by calcite cement. Oriented calcite concretions</p>

99.20-100.75	<p>Lithofacies: Pedogenic limestone</p> <p>Depositional texture: Mixed massive calcrete and pedotubule calcrete</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Massive bedding</p> <p>Trace fossils: Common rhizoliths with 0.3-0.8 mm inner tubule diameter (associated with rhizoliths are concentric micropor or micrite lining the inner tubules). Possibly burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments</p> <p>Accessory grains: 55-80% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1-2% undifferentiated dark mineral grains (mostly black N1 and dark yellowish brown 10YR 4/2), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 10-20% vuggy and possibly intraburrow megaporosity; 15-25% porosity and relatively low to moderate permeability</p> <p>Comments: Subaerial exposure zone. Much of interparticle porosity is occluded by chalky micrite</p>
100.75-104.45	No recovery
104.45-104.95	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Yellowish gray 5Y 8/1 and very light gray N8</p> <p>Sedimentary structures/textures: Thinly bedded with horizontal laminations</p> <p>Trace fossils: Based on core samples probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 2-4. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, miliolids, archaiasinids, <i>Ammonia?</i>), gastropods, intraclasts</p> <p>Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, estimated 20-25% vuggy; 25-30% porosity and relatively high permeability</p> <p>Comments: Possibly lower shoreface. Oriented calcite concretions present</p>
104.95-106.55	No recovery—Based on digital optical borehole wall image, interval is mostly quartz sand rich with vertical calcite cemented burrows

106.55-107.00	<p>Lithofacies: Arenaceous pelecypod grainstone Depositional texture: Arenaceous pelecypod grainstone Color: Yellowish gray 5Y 8/1 and very light gray N8 Sedimentary structures/textures: Thinly bedded Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans Ichnofabrics: Ichnofabric index 2-4. Hypogenic cementation present Ichnofacies: <i>Cruziana?</i> Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, miliolids, archaiasinids, <i>Ammonia?</i>), gastropods, intraclasts Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains Porosity and permeability: 5% interparticle, estimated 20-25% vuggy; 25-30% porosity and relatively high permeability Comments: Possibly lower shoreface. Oriented calcite concretions present</p>
107.00-107.40	No recovery—Based on digital optical borehole wall image, interval is mostly quartz sand rich
107.40-107.60	<p>Lithofacies: Arenaceous pelecypod grainstone Depositional texture: Arenaceous pelecypod grainstone Color: Yellowish gray 5Y 8/1 and very light gray N8 Sedimentary structures/textures: Thinly bedded Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans Ichnofabrics: Ichnofabric index 2-4. Hypogenic cementation present Ichnofacies: <i>Cruziana?</i> Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, miliolids, archaiasinids, <i>Ammonia?</i>), gastropods, intraclasts Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains Porosity and permeability: 5% interparticle, estimated 20-25% vuggy; 25-30% porosity and relatively high permeability Comments: Possibly lower shoreface. Oriented calcite concretions present</p>
107.60-108.20	No recovery—Based on digital optical borehole wall image, interval is mostly quartz sand rich
108.20-108.40	<p>Lithofacies: Arenaceous pelecypod grainstone Depositional texture: Arenaceous pelecypod grainstone</p>

	<p>Color: Yellowish gray 5Y 8/1 and very light gray N8</p> <p>Sedimentary structures/textures: Thinly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 2-4. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, miliolids, archaiasinids, <i>Ammonia?</i>), gastropods, intraclasts</p> <p>Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, estimated 20-25% vuggy; 25-30% total porosity and relatively high permeability</p> <p>Comments: Possibly lower shoreface. Oriented calcite concretions present</p>
108.40-109.30	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich
109.30-109.80	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Yellowish gray 5Y 8/1 and very light gray N8</p> <p>Sedimentary structures/textures: Steeply dipping (up to about 50 degrees) thin beds</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 3-4. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana?</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly middle shoreface</p>
109.80-118.20	No recovery-- Based on digital optical borehole wall image, interval from 109.80 to 112.80 ft is quartz sand rich with thin interbeds of grainstone and quartz sand-rich units that may be highly burrowed
118.20-118.50	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Yellowish gray 5Y 8/1 and very light gray N8</p>

	<p>Sedimentary structures/textures: Very thinly bedded with low-angle dipping thick laminations in downlapping coarse grainstone</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 3-5. Hypogenic cementation present</p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, miliolids</p> <p>Accessory grains: 5-15% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly shoreface</p>
118.50-118.85	No recovery
118.85-119.50	<p>Lithofacies: Pelecypod grainstone and skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod grainstone and skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1 and very light gray N8</p> <p>Sedimentary structures/textures: Very thinly bedded with low-angle dipping thick laminations in downlapping coarse grainstone</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, miliolids</p> <p>Accessory grains: 5-75% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle; 5% porosity and relatively low permeability</p> <p>Comments: Possibly shoreface. Abrupt contact with coarse grainstone above fine grained grainstone with 1 cm of paleo-microtopographic erosional relief on abrupt contact at 119.00 feet. Oriented calcite concretions present</p>
119.50-121.00	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich
121.00-123.00	<p>Lithofacies: Pelecypod grainstone and pelecypod rudstone</p> <p>Depositional texture: Pelecypod grainstone and pelecypod rudstone with skeletal grainstone matrix</p> <p>Color: Yellowish gray 5Y 8/1 and very light gray N8</p> <p>Sedimentary structures/textures: Medium to thick beds containing thick laminations that dip steeply above horizontal thick laminations</p>

	<p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, benthic foraminifers (including amphistiginids), echinoid plates, intraclasts of well cemented grainstone, coralline red algae</p> <p>Accessory grains: 5-75% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 1-15% vuggy; 6-21% porosity and relatively moderate permeability</p> <p>Comments: Possibly upper shoreface. Abrupt contact with coarse grainstone above fine grained grainstone with 1 cm of paleo-microtopographic erosional relief on abrupt contact at 122.85 feet. Much of interparticle porosity is occluded by blocky calcite cement. Oriented calcite concretions present</p>
123.00-123.20	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich
123.20-123.60	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Yellowish gray 5Y 8/1 and very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, benthic foraminifers</p> <p>Accessory grains: 5-25% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 1-10% vuggy; 6-11% porosity and relatively low permeability</p> <p>Comments: Possibly upper shoreface. Much of interparticle porosity is occluded by blocky calcite cement. Oriented calcite concretions present</p>
123.60-128.20	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich and probably burrowed by Thalassinidean or Thalassinidean-like crustaceans—possibly outer marine offshore with a <i>Cruziana</i> ichnofacies
128.20-129.20	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded with steeply</p>

	<p>dipping thick laminations</p> <p>Trace fossils: Probably burrowed by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 4. Hypogenic cementation present</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including <i>Elphidium</i>, amphistiginids, miliolids)</p> <p>Accessory grains: 20-40% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10-25% vuggy; 15-30% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present</p>
129.20-130.00	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich and probable vertical cemented burrows made by thalassinidean or thalassinidean-like crustaceans
130.00-130.40	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Steeply dipping thin to medium beds</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 3-4. Hypogenic cementation present</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including <i>Elphidium</i>, amphistiginids, miliolids)</p> <p>Accessory grains: 20-40% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10% vuggy; 5-15% porosity and relatively moderate permeability</p> <p>Comments: Possibly middle shoreface. Minor interbedding with thin quartz sand-rich beds. Oriented calcite concretions present</p>
130.40-130.65	No recovery
130.65-130.80	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Steeply dipping thin to medium</p>

	<p>beds</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 3-4. Hypogenic cementation present</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including <i>Elphidium</i>, amphistiginids, miliolids)</p> <p>Accessory grains: 20-40% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10% vuggy; 5-15% porosity and relatively moderate permeability</p> <p>Comments: Possibly middle shoreface. Minor interbedding with thin quartz sand-rich beds. Oriented calcite concretions present</p>
130.80-131.25	No recovery
131.25-132.05	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Thick bed with some steeply dipping thin to thick planar laminations</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 2-5. Hypogenic cementation present</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including <i>Elphidium</i>, amphistiginids, miliolids)</p> <p>Accessory grains: 20-40% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10-15% vuggy; 15-20% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present</p>
132.05-134.20	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Very thinly to thinly beds. Some beds dip at a low angle</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 2-5. Hypogenic cementation</p>

	<p>present</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including <i>Elphidium</i>, amphistiginids, miliolids)</p> <p>Accessory grains: 20-40% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10-15% vuggy; 15-20% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very thin to thin quartz-sand-rich beds</p>
134.20-134.60	No recovery—similar to lithofacies in interval above
134.60-135.50	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Very thinly to thinly beds. Some beds dip at a low angle</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 2-5. Hypogenic cementation present</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including <i>Elphidium</i>, amphistiginids, miliolids)</p> <p>Accessory grains: 20-40% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10-15% vuggy; 15-20% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very thin to thin quartz-sand-rich beds</p>
135.50-137.20	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Thickly bedded with low-angle to steeply-dipping very thin beds and thick laminations</p> <p>Trace fossils: Burrows</p> <p>Ichnofabrics: Ichnofabric index 3-5. Hypogenic cementation present</p>

	<p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, miliolids), polymictic intraclasts, uncommon coralline red algae fragments</p> <p>Accessory grains: 15-25% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10-15% vuggy; 15-20% porosity and relatively moderate permeability</p> <p>Comments: Possibly inner shoreface. Bladed isopachous calcite cement and interparticle pore space occluded by equant calcite cement. Minor pelecypod rudstone (coquina) in interval. Oriented calcite concretions present</p>
137.20-137.60	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich and probable vertical and horizontal cemented burrows made by thalassinidean or thalassinidean-like crustaceans
137.60-138.65	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Very thinly to thinly beds. Some beds dip at a low angle</p> <p>Trace fossils: Possibly burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation present</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, miliolids), polymictic intraclasts, uncommon coralline red algae fragments</p> <p>Accessory grains: 15-25% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1 and moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10-25% vuggy; 15-30% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very thin to thin quartz-sand-rich beds</p>
138.65-138.95	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich
138.95-141.00	Lithofacies: Arenaceous pelecypod grainstone

	<p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded grainstone with minor quartz-sand-rich thin beds</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans. <i>Ophiomorpha</i> including probable <i>Ophiomorpha nodosa</i></p> <p>Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, <i>Elphidium</i>), polymictic intraclasts</p> <p>Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10-30% vuggy; 15-35% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very minor very thin to thin quartz-sand-rich beds</p>
141.00-141.22	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich
141.22-141.40	<p>Lithofacies: Arenaceous pelecypod grainstone</p> <p>Depositional texture: Arenaceous pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Thinly bedded</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, <i>Elphidium</i>), polymictic intraclasts</p> <p>Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10-30% vuggy; 15-35% porosity and relatively high permeability</p>

	<p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very minor very thin to thin quartz-sand-rich beds</p>
141.40-141.55	<p>No recovery—Based on digital optical borehole wall image, interval is quartz sand rich</p>
141.55-142.00	<p>Lithofacies: Arenaceous pelecypod grainstone Depositional texture: Arenaceous pelecypod grainstone Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8 Sedimentary structures/textures: Medium bedded Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans. <i>Ophiomorpha</i> Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation present Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, <i>Elphidium</i>), polymictic intraclasts, sand-dollar-shaped echinoid, encrusting serpulids Accessory grains: 15-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar Porosity and permeability: 5% interparticle, 10-30% vuggy; 15-35% porosity and relatively high permeability Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very minor very thin to thin quartz-sand-rich beds</p>
142.00-144.00	<p>No recovery—Based on digital optical borehole wall image, interval is quartz sand rich and probably burrowed by thalassinidean or thalassinidean-like crustaceans</p>
144.00-144.72	<p>Lithofacies: Skeletal quartz sandstone Depositional texture: Skeletal quartz sandstone Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8 Sedimentary structures/textures: Medium bedded Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation present Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypod fragments, benthic foraminifers (including miliolids, archaiasinids, amphisitiginids, <i>Elphidium</i>), intraclasts, echinoid plates and spines, Accessory grains: 65-75% quartz grains, very fine to coarse sand</p>

	<p>size (mostly medium sand size), angular to rounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), 1-3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 10-40% vuggy; 18-48% porosity and relatively high permeability</p> <p>Comments: Possibly lower shoreface. Oriented calcite concretions present. Minor microspar occluding interparticle pore space—probably is neomorphosed micrite</p>
144.72-148.80	No recovery—Based on digital optical borehole wall image, interval is quartz sand rich and probably burrowed by thalassinidean or thalassinidean-like crustaceans
148.80-150.30	<p>Lithofacies: Skeletal quartz sandstone and arenaceous skeletal grainstone</p> <p>Depositional texture: Skeletal quartz sandstone and arenaceous skeletal grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 4-5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including miliolids, archaiasinids, amphisitiginids, <i>Elphidium</i>), intraclasts, echinoid plates and spines (including sand-dollar-shaped echinoids)</p> <p>Accessory grains: 35-75% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 10-40% vuggy; 18-48% porosity and relatively high permeability</p> <p>Comments: Possibly lower shoreface. Oriented calcite concretions present</p>
150.30-153.20	No recovery
153.20-154.40	<p>Lithofacies: Skeletal quartz sandstone and arenaceous skeletal grainstone</p> <p>Depositional texture: Skeletal quartz sandstone and arenaceous skeletal grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p>

	<p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including miliolids, archaiasinids, amphistiginids), intraclasts, echinoid plates and spines</p> <p>Accessory grains: 35-75% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 10-40% vuggy; 18-48% porosity and relatively high permeability</p> <p>Comments: Possibly lower shoreface. Oriented calcite concretions present</p>
154.40-159.40	No recovery
159.40-160.30	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Thin to medium bedded</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including miliolids, <i>Elphidium</i>, amphistiginids), polymictic intraclasts</p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic, 10-25% vuggy; 20-35% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very minor very thin to thin quartz-sand-rich beds. Interparticle pore space commonly occluded by blocky calcite cement</p>
160.30-161.30	No recovery
161.30-161.55	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Thin to medium bedded</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p>

	<p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including miliolids, <i>Elphidium</i>, amphistiginids), polymictic intraclasts</p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic, 10-25% vuggy; 20-35% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very minor very thin to thin quartz-sand-rich beds. Interparticle pore space commonly occluded by blocky calcite cement</p>
161.55-162.20	No recovery
162.20-162.50	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Thin to medium bedded</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including miliolids, <i>Elphidium</i>, amphistiginids), polymictic intraclasts</p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic, 10-25% vuggy; 20-35% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Grainstone beds interbed with very minor very thin to thin quartz-sand-rich beds. Interparticle pore space commonly occluded by blocky calcite cement</p>
162.50-163.50	No recovery
163.50-164.70	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or</p>

	<p>thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including miliolids, <i>Elphidium</i>, amphistiginids), polymictic intraclasts</p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic, 10-25% vuggy; 20-35% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Interparticle pore space commonly occluded by blocky calcite cement</p>
164.70-165.90	No recovery
165.90-166.70	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including miliolids, <i>Elphidium</i>, amphistiginids), polymictic intraclasts</p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic, 10-25% vuggy; 20-35% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Interparticle pore space commonly occluded by blocky calcite cement</p>
166.70-168.75	No recovery—Based on digital optical borehole wall image, interval is broken and rubbly grainstone
168.75-170.06	<p>Lithofacies: Pelecypod grainstone</p> <p>Depositional texture: Pelecypod grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Very thickly bedded</p>

	<p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including miliolids, <i>Elphidium</i>, amphistiginids), polymictic intraclasts</p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (mostly fine to coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic, 10-25% vuggy; 20-35% porosity and relatively high permeability</p> <p>Comments: Possibly middle shoreface. Oriented calcite concretions present. Interparticle pore space commonly occluded by blocky calcite cement</p>
170.06-172.40	<p>No recovery—Based on digital optical borehole wall image, interval is broken and rubbly grainstone. Lithology likely similar to interval above</p>
172.40-172.55	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal grainstone matrix</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans. Burrows both vertical and horizontal</p> <p>Ichnofabrics: Ichnofabric index 1-3. Hypogenic cementation present</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including <i>Elphidium</i>, amphistiginids), polymictic intraclasts, uncommon coralline red algae</p> <p>Accessory grains: 5% quartz grains, very fine to very coarse sand size (mostly coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic, 10-25% vuggy; 20-35% porosity and relatively moderate to high permeability</p> <p>Comments: Possibly foreshore. Interparticle pore space commonly occluded by blocky calcite cement</p>
172.55-173.40	<p>No recovery—Based on digital optical borehole wall image, interval</p>

	bedding and lithology likely similar to interval above
173.40-174.83	No recovery—Based on digital optical borehole wall image, interval bedding and lithology likely similar to interval below
174.83-175.85	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal grainstone matrix</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans. Burrows both vertical and horizontal</p> <p>Ichnofabrics: Ichnofabric index 1-4. Hypogenic cementation present</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including <i>Elphidium</i>, <i>amphistiginids</i>), polymictic intraclasts, uncommon coralline red algae</p> <p>Accessory grains: 5% quartz grains, very fine to very coarse sand size (mostly coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly moderate yellowish brown 10YR 5/4), less than 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic, 10-25% vuggy; 20-35% porosity and relatively moderate to high permeability</p> <p>Comments: Possibly foreshore. Oriented calcite concretions present. Interparticle pore space commonly occluded by blocky calcite cement</p>
175.85-176.74	No recovery—Based on digital optical borehole wall image, interval lithology likely a very arenaceous pelecypod rudstone equivalent to lithofacies above
176.74-179.00	No recovery—Based on digital optical borehole wall image, lithology likely a quartz sand
179.00-180.88	<p>Lithofacies: Skeletal quartz sand</p> <p>Depositional texture: Skeletal quartz sand</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, thick bedding</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, benthic foraminifers</p> <p>Accessory grains: 80% quartz grains, very fine to coarse sand size (mostly lower fine sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains, 4% phosphorite grains (mostly grayish orange 10YR 7/4 and black</p>

	<p>N1)</p> <p>Porosity and permeability: 20% interparticle, 20% porosity and relatively moderate permeability</p> <p>Comments: Possibly lower shoreface</p>
180.88-184.00	No recovery
184.00-185.00	<p>Lithofacies: Skeletal quartz sand</p> <p>Depositional texture: Skeletal quartz sand</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, thick bedding</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, benthic foraminifers</p> <p>Accessory grains: 80% quartz grains, very fine to coarse sand size (mostly lower fine sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains, 4% phosphorite grains (mostly grayish orange 10YR 7/4 and black N1)</p> <p>Porosity and permeability: 20% interparticle, 20% porosity and relatively moderate permeability</p> <p>Comments: Possibly lower shoreface</p>
185.00-185.75	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, benthic foraminifers (including miliolids)</p> <p>Accessory grains: 80% quartz grains, very fine to fine size (mostly upper very fine sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains, 4% phosphorite grains (mostly grayish orange 10YR 7/4 and black N1)</p> <p>Porosity and permeability: Probably high vuggy porosity and permeability</p> <p>Comments: Possibly lower shoreface. Oriented calcite concretions present</p>
185.75-189.00	No recovery
189.00-190.40	<p>Lithofacies: Arenaceous skeletal grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment grainstone</p> <p>Color: Yellowish gray 5Y 8/1 and light gray N8</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p>

	<p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 80% quartz grains, very fine to fine size (mostly upper very fine sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains, 4% phosphorite grains (mostly grayish orange 10YR 7/4 and black N1)</p> <p>Porosity and permeability: Probably high vuggy porosity and permeability</p> <p>Comments: Possibly lower shoreface. Oriented calcite concretions present</p>
190.40-194.00	No recovery
194.00-196.15	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1 and light gray N8</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, echinoid plates and spines, benthic foraminifers (including miliolids, biserials, amphistiginids, <i>Elphidium</i>, <i>Ammonia</i>, archaiasinids), planktic foraminifers (including globigeriniodes)</p> <p>Accessory grains: 25-45% quartz grains, very fine to coarse size (mostly lower very fine sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 10% vuggy (but probably higher in rubble part of interval); 18% total porosity or higher in rubble part of interval and probably relatively high permeability</p> <p>Comments: Possibly upper middle ramp. Interparticle porosity commonly occluded by microspar (probably neomorphosed micrite) and equant calcite cement. Oriented calcite concretions present</p>
196.15-200.50	No recovery
200.50-202.20	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment mud- and grain-dominated packstone and grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Medium bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p>

	<p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including miliolids, amphistiginids, rotalids, <i>Elphidium</i>), echinoid plates and spines, ostracods, uncommon intraclasts</p> <p>Accessory grains: 35-50% quartz grains, very fine to coarse size (mostly lower very fine sand size), angular to subrounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1-3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 10% vuggy (but probably higher in rubble part of interval); 18% total porosity or higher in rubble part of interval and probably relatively high permeability</p> <p>Comments: Possibly upper middle ramp. Interparticle porosity commonly occluded by microspar (probably neomorphosed micrite) and equant to blocky calcite cement. Oriented calcite concretions present</p>
202.20-206.80	<p>No recovery—Based on digital optical borehole wall image, lithology likely similar to interval above</p>
206.80-208.40	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment mud- and grain-dominated packstone and grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Medium bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypoburrow cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including miliolids, amphistiginids, rotalids, <i>Elphidium</i>), echinoid plates and spines, ostracods, uncommon intraclasts</p> <p>Accessory grains: 35-50% quartz grains, very fine to coarse size (mostly lower very fine sand size), angular to subrounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1-3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 10-20% vuggy; 18-28% total porosity and relatively moderate permeability</p> <p>Comments: Possibly upper middle ramp. Interparticle porosity commonly occluded by microspar (probably neomorphosed micrite) and equant to blocky calcite cement. Oriented calcite concretions present</p>

208.40-210.60	No recovery—Based on digital optical borehole wall image, interval is quartz rich sand and probably burrowed by thalassinidean or thalassinidean-like crustaceans
210.60-210.90	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment, skeletal, peloid quartz sandstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, peloids, benthic foraminifers (including miliolids, amphistiginids, <i>Elphidium</i>, archaiasinids), echinoid, plates and spines, intraclasts</p> <p>Accessory grains: 60-70% quartz grains, very fine to very coarse size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 3-4% phosphorite grains, trace feldspar</p> <p>Comments: Possibly upper middle ramp. Oriented calcite concretions present</p>
210.90-211.40	No recovery
211.40-213.50	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment, skeletal, peloid quartz sandstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, peloids, benthic foraminifers (including miliolids, amphistiginids, <i>Elphidium</i>, archaiasinids), echinoid, plates and spines, intraclasts</p> <p>Accessory grains: 60-70% quartz grains, very fine to very coarse size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 3-4% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 10-20% vuggy; 18-28% total porosity and relatively moderate permeability</p> <p>Comments: Possibly upper middle ramp. Interparticle porosity commonly occluded by microspar (probably neomorphosed)</p>

	micrite)
213.50-215.50	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment mud- and grain-dominated packstone and grainstone</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Medium bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypoburrow cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, benthic foraminifers (including miliolids, amphistiginids, rotalids, <i>Elphidium</i>), echinoid plates and spines, ostracods, uncommon intraclasts</p> <p>Accessory grains: 35-50% quartz grains, very fine to coarse size (mostly lower very fine sand size), angular to subrounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1-3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 10-20% vuggy; 18-28% total porosity and relatively moderate permeability</p> <p>Comments: Possibly upper middle ramp. Interparticle porosity commonly occluded by microspar (probably neomorphosed micrite) and equant to blocky calcite cement. Oriented calcite concretions present</p>
215.50-219.00	No recovery—Based on digital optical borehole wall image, lithology likely similar to interval above, but much more quartz sand rich
219.00-219.90	<p>Lithofacies: Pelecypod quartz sandstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal, peloid quartz sandstone matrix</p> <p>Color: Mottled grayish orange 10YR 7/4, yellowish gray 5Y 8/1, and very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, peloids, benthic foraminifers (including miliolids, amphistiginids, <i>Elphidium</i>, archaiasinids), echinoid, plates and spines, intraclasts, planktic foraminifers (including globigerinoides), gastropods, serpulids, encrusting bryozoans</p> <p>Accessory grains: 60-70% quartz grains, very fine to very coarse</p>

	<p>size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 3-4% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 6% interparticle, 15% moldic, 5% intraburrow, 10-20% vuggy; 18-28% total porosity and relatively moderate to high permeability</p> <p>Comments: Possibly upper middle ramp. Interparticle porosity commonly occluded either by microspar (probably neomorphosed micrite) or micrite</p>
219.90-224.00	No recovery—Based on digital optical borehole wall image, lithology likely similar to interval below
224.00-225.20	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Hypogenic cementation present</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, skeletal fragments, branching coralline red algae fragments</p> <p>Accessory grains: 60-70% quartz grains, very fine to very coarse size (mostly fine sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 3-4% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 6% interparticle, 15% moldic, 5% intraburrow, 10-20% vuggy; 18-28% total porosity and relatively moderate to high permeability</p> <p>Comments: Possibly upper middle ramp. Interparticle porosity commonly occluded either by microspar (probably neomorphosed micrite) or micrite</p>
225.20-229.00	No recovery—Based on digital optical borehole wall image, lithology likely same as interval above
229.00-230.15	<p>Lithofacies: Arenaceous vermitid bafflestone</p> <p>Depositional texture: Arenaceous vermitid bafflestone with skeletal mud- and grain-dominated packstone matrix</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, thick bedding</p> <p>Carbonate grains: Vermitids, pelecypod fragments, branching coralline red algae fragments, benthic foraminifers (including amphistiginids, miliolids, soritids, <i>Elphidium</i>), globular planktic foraminifers (including globigeriniodes), encrusting bryozoans</p> <p>Accessory grains: 30-45% quartz grains, very fine to coarse size</p>

	<p>(mostly fine to medium sand size), angular to subrounded, moderately sorted; 4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 3-6% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 6% interparticle, 20% moldic; 26% total porosity and relatively moderate permeability</p> <p>Comments: Possibly upper middle ramp. Interparticle porosity commonly occluded either by microspar (probably neomorphosed micrite) or micrite. Upper bounding surface has 0.32 feet of paleo-microrelief, and dips about 41 degrees to the northeast</p>
230.15-233.40	<p>Lithofacies: Red algae and pelecypod floatstone and rudstone</p> <p>Depositional texture: Coralline red algae and pelecypod floatstone and rudstone with skeletal mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Coralline red algae, pelecypods, benthic foraminifers (including amphotiginids, miliolids, <i>Elphidium</i>), globular planktic foraminifers (including globigerinoides), peloids, echinoid plates and spines, ostracods</p> <p>Accessory grains: 15-25% quartz grains, very fine to coarse size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1-2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 10-15% moldic, 5-10% vuggy; 18-28% total porosity and relatively low permeability</p> <p>Comments: Possibly lower middle ramp. Interparticle porosity commonly occluded by microspar (probably neomorphosed micrite) and equant calcite cement, and micrite</p>
233.40-236.50	<p>Lithofacies: Skeletal packstone</p> <p>Depositional texture: Pelecypod fragment, coralline red algae mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments, coralline red algae,</p>

	<p>peloids, benthic foraminifers (including amphistiginids, miliolids), echinoid plates and spines, globular planktic foraminifers (including globigeriniodes), ostracods</p> <p>Accessory grains: 10-20% quartz grains, very fine to coarse size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 10-15% moldic, 5-10% vuggy; 18-28% total porosity and relatively low permeability</p> <p>Comments: Possibly lower middle ramp. Interparticle porosity commonly occluded by microspar (probably neomorphosed micrite) and equant calcite cement, and micrite</p>
236.50-238.30	<p>Lithofacies: Skeletal packstone</p> <p>Depositional texture: Pelecypod fragment, coralline red algae mud-dominated packstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods fragments, coralline red algae, peloids, benthic foraminifers (including amphistiginids, miliolids, uncommon <i>Pyrgo</i>, <i>Elphidium</i>, biserials, and archaiasinids), echinoid plates and spines, globular planktic foraminifers (including globigeriniodes), ostracods</p> <p>Accessory grains: 5-15% quartz grains, very fine to coarse size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 10-15% moldic, 5% vuggy; 15-20% total porosity and relatively low permeability</p> <p>Comments: Possibly lower middle ramp. Interparticle porosity commonly occluded by micrite</p>
238.30-240.20	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment, skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled yellowish gray 5Y 8/1 and gray</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p>

	<p>Carbonate grains: Pelecypods fragments, benthic foraminifers (including miliolids, amphistiginids), coralline red algae</p> <p>Accessory grains: 5-15% quartz grains, very fine to coarse size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 10-15% moldic, 5% vuggy; 15-20% total porosity and relatively low permeability</p> <p>Comments: Possibly upper middle ramp. Rock appears rubbly in digital optical borehole images, likely reflecting the impact of bioturbation of the mechanical strength of the limestone</p>
240.20-243.00	No recovery
243.00-245.35	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment, skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled yellowish gray 5Y 8/1 and gray N8</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5. Substantial amount of vertical tubular trace fossils, probably representing a substantial community of suspension feeders</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods fragments, benthic foraminifers (including miliolids, biserials, amphistiginids, peneroplids, archaiasinids, soritids), coralline red algae, echinoderm plates and stems, ostracods, gastropods, uncommon globigerinoides</p> <p>Accessory grains: 20-25% quartz grains, very fine to coarse size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 10-15% moldic, 5% vuggy; 15-20% total porosity and relatively moderate permeability</p> <p>Comments: Possibly upper middle ramp or lower foreshore. Interparticle porosity commonly occluded either by microspar (probably neomorphosed micrite) or micrite</p>
245.35-251.65	No recovery
251.65-252.20	<p>Lithofacies: Red algae floatstone and rudstone</p> <p>Depositional texture: Red algae pelecypod fragment, skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled yellowish gray 5Y 8/1 and gray N8</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p>

	<p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Branching coralline red algae, pelecypods fragments, benthic foraminifers (including miliolids, biserials, amphistiginids, peneroplids, archaiasinids, soritids), echinoderm plates and stems, ostracods, gastropods, uncommon globigeriniodes</p> <p>Accessory grains: 20-25% quartz grains, very fine to coarse size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 10-15% moldic, 5% vuggy; 15-20% total porosity and relatively moderate permeability</p> <p>Comments: Possibly upper middle ramp or lower foreshore. Interparticle porosity commonly occluded either by microspar (probably neomorphosed micrite) or micrite</p>
252.20-254.00	No recovery
254.00-255.32	<p>Lithofacies: Red algae floatstone and rudstone</p> <p>Depositional texture: Red algae pelecypod fragment, skeletal grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1 to very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Branching coralline red algae, pelecypods fragments, benthic foraminifers (including miliolids, biserials, amphistiginids, peneroplids, archaiasinids, soritids), echinoderm plates and stems, ostracods, gastropods, uncommon globigeriniodes</p> <p>Accessory grains: 20-25% quartz grains, very fine to coarse size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly grayish orange 10YR 7/4 and black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 10-15% moldic, 5% vuggy; 15-20% total porosity and relatively moderate permeability</p> <p>Comments: Possibly upper middle ramp or lower foreshore</p>
255.32-257.96	No recovery—Based on digital optical borehole wall image, lithology likely same as interval above
257.96-259.10	<p>Lithofacies: Red algae floatstone and rudstone</p> <p>Depositional texture: Red algae pelecypod fragment, skeletal grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 7/2</p>

	<p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Probably burrowed mostly by thalassinidean or thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Branching coralline red algae, pelecypods fragments, benthic foraminifers (including amphistiginids, rotalids, miliolids), echinoderm plates and stems, ostracods, gastropods, globular planktic foraminifers (including globigeriniodes)</p> <p>Accessory grains: 5-15% quartz grains, very fine to coarse size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 5% undifferentiated dark mineral grains (mostly black N1), 5% phosphorite grains (mostly black N1)</p> <p>Porosity and permeability: 10-15% moldic, 10% interparticle; 20-25% total porosity and relatively low permeability</p> <p>Comments: Possibly lower middle ramp</p>
259.10- 263.00	<p>Lithofacies: Skeletal packstone</p> <p>Depositional texture: Benthic and planktic foraminifer, pelecypod fragment, mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: <i>Thalassinoides</i> and uncommon <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Benthic and planktic foraminifers (including amphistiginids, globigeriniodes), pelecypod fragments, branching coralline red algae fragments, echinoderm plates and stems, peloids</p> <p>Accessory grains: 5-15% quartz grains, very fine to coarse size (mostly fine to lower medium sand size), angular to subrounded, moderately sorted; 2% undifferentiated dark mineral grains (mostly black N1), 15% phosphorite grains (mostly black N1)</p> <p>Porosity and permeability: 15% moldic, 10% interparticle; 25% total porosity and relatively low permeability</p> <p>Comments: Possibly lower middle ramp</p>
263.00-272.00	<p>Lithofacies: Planktic foraminifer packstone</p> <p>Depositional texture: Planktic and benthic foraminifer, pelecypod fragment, mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i>, and possible <i>Teichichnus</i> (at 267.60 feet), and assemblage of possible</p>

	<p><i>Teichichnus</i> and <i>Chondrites</i>? (269.60 feet), and <i>Rhizocorallium</i>? (269.65 feet) and <i>Zoophycos</i>? (269.55 feet) present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Planktic and benthic foraminifers (including globigeriniodes, uncommon amphistiginids, trace <i>Pyrgo</i>), pelecypod fragments, echinoderm plates and stems, peloids, trace branching coralline red algae fragments</p> <p>Accessory grains: 5-15% quartz grains, very fine to coarse size (mostly fine to lower medium sand size), angular to subrounded, well sorted; 2-12% undifferentiated dark mineral grains (mostly black N1), 5-15% phosphorite grains (mostly black N1)</p> <p>Porosity and permeability: 5% moldic, 10% intraparticle, 15% interparticle; 30% total porosity and relatively low permeability</p> <p>Comments: Possibly upper lower ramp</p>
272.00-278.20	<p>Lithofacies: Planktic foraminifer packstone</p> <p>Depositional texture: Planktic, skeletal, mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: <i>Thalassinoides</i>, <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Planktic and benthic foraminifers (including mostly globigeriniodes), skeletal fragments (mainly silt and very fine grain size), peloids, pelecypod fragments, ostracods, uncommon echinoderm plates and stems</p> <p>Accessory grains: 5% quartz grains, very fine to medium size (mostly fine sand size), angular to subrounded, well sorted; 2-12% undifferentiated dark mineral grains (mostly black N1), 5-15% phosphorite grains (mostly black N1)</p> <p>Porosity and permeability: 5% moldic, 15% intraparticle, 20% interparticle; 40% total porosity and relatively low permeability</p> <p>Comments: Possibly upper lower ramp</p>

Local Identifier	G-3949
Local Identifier (corehole)	G-3949
Local Identifiers (completed wells)	G-3949D, G-3949I, G-3949S
USGS Station Numbers (completed wells)	255733080195601, 255733080195602, 255733080195603
Total Depth Drilled	348 feet (driller's depth)
Total Depth Airlifted	350.66 feet (digital optical log depth)
Cored from	8.40 to 347.90 feet
County	Miami-Dade
Latitude (NAD 83)	25-57-33.39 N
Longitude (NAD 83)	080-09-56.17 W
Elevation (NGVD 29)	12.30 feet (surveyed by Miami-Dade County)
Completion Date	December 6, 2010
Other types of available logs	OBI, Caliper, Ambient Fluid, Ambient Flow, Pumping Flow, Gamma ray, Conductivity, Resistivity, Full Waveform Sonic
Owner	Miami-Dade County
Driller	Intercounty
Core described by	Kevin J. Cunningham
Top Miami Limestone	8.40 feet
Top Fort Thompson Formation	31.30 feet
Top Tamiami Formation	115.47 feet
Top Stock Island Formation	275.70 feet

G-3949 Test Corehole	
Depth Interval (feet)	Description
0.00-8.40	No recovery
8.40-9.56	<p>Lithofacies: Ooid packstone and grainstone</p> <p>Depositional texture: Ooid grainstone with minor grain-dominated packstone</p> <p>Color: Very pale orange 10YR 8/2, grayish orange 10YR 7/4, light brown 5YR 5/6, pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Massive, thick bedding</p> <p>Trace fossils: <i>Ophiomorpha</i> abundant. Common rhizoliths with 0.3-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micrspar, micritized grains, or laminated calcrete lining the inner tubules). Rhizoliths form a dense, pedotubule maze</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Ooids dominant (typically with a quartz grain or peloid core, and ooids typically medium sand size), minor coated quartz grains, pelecypod fragments, peloids, <i>Halimeda</i>, <i>Favreina</i>, ostracods</p> <p>Accessory grains: 30-40% quartz grains (mostly as ooid cores with less common inter-ooid quartz grains), very fine- to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded</p> <p>Porosity and permeability: 20% oomoldic and pelmoldic, 5% interparticle, 20% vuggy; 45% porosity and relatively moderate to high permeability</p> <p>Comments: Stabilized sand flat on shallow marine shelf. Interparticle pososity mostly occluded by equant calcite cement</p>
9.56-11.88	<p>Lithofacies: Ooid packstone and grainstone</p> <p>Depositional texture: Ooid grainstone with minor grain-dominated packstone</p> <p>Color: Mostly very pale orange 10YR 8/2 and grayish orange 10YR 7/4. Light brown 5YR 5/6, pale yellowish brown 10YR 6/2 associated with rhizoliths</p>

	<p>Sedimentary structures/textures: Massive, thick bedding with steeply dipping (up to about 42 degrees) thick laminations and very thin beds</p> <p>Trace fossils: <i>Ophiomorpha</i> present. In uppermost part of interval, rhizoliths with 0.3-1.5 mm inner tubule diameter (associated with rhizoliths are concentric micrspar, micritized grains, or laminated calcrete lining the inner tubules). Rhizoliths form a dense, pedotubule maze</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Ooids dominant (typically with a quartz grain or peloid core, and ooids typically medium sand size), minor coated quartz grains, pelecypod fragments, peloids, <i>Halimeda</i>, <i>Favreina</i>, ostracods</p> <p>Accessory grains: 10-20% quartz grains (mostly as ooid cores with less common inter-ooid quartz grains), very fine- to coarse sand size (mostly fine to medium sand size), moderately sorted, angular to subrounded</p> <p>Porosity and permeability: 20% oomoldic and pelmoldic, 5% interparticle, 5% vuggy; 30% porosity and relatively moderate permeability</p> <p>Comments: Shallow marine shelf ooid shoal. Interparticle porosity mostly occluded by equant calcite cement</p>
11.88-22.20	No recovery—Based on digital optical borehole wall image, interval is mostly highly burrowed (<i>Ophiomorpha</i> present), ooid grainstone that becomes increasingly quartz rich near the base of the interval
22.20-23.68	No recovery—Based on digital optical borehole wall image, interval is mostly highly burrowed quartz sand and highly burrowed (<i>Ophiomorpha</i> present) calcareous quartz sand
23.68-28.00	No recovery
28.00-28.60	<p>Lithofacies: Quartz sand</p> <p>Depositional texture: Quartz sand</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Massive, loose sand</p> <p>Carbonate grains: None observed</p> <p>Accessory grains: 99% quartz grains, very fine to very coarse sand size (mostly upper fine to lower coarse sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly black N1), trace feldspar</p> <p>Porosity and permeability: 25% interparticle; 25% porosity and relatively moderate permeability</p> <p>Comments: Friable quartz sand. No marine indicators observed</p>
28.60-31.30	No recovery—Based on no sample recovery and rapid drilling rate, probably loose quartz sand as in interval above
31.30-32.30	Lithofacies: <i>Porites porites</i> floatstone

	<p>Depositional texture: <i>Porites porites</i> floatstone</p> <p>Color: Mottled very pale orange 10YR 8/2, grayish orange 10YR 7/4, light brown 5YR 5/6, pale yellowish brown 10YR 6/2, and medium light gray N6 to light gray N7</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Common rhizoliths with 0.3-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micritized grains or laminated calcrete lining the inner tubules). <i>Entobia</i> present</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: <i>Trypanites</i> associated with corals</p> <p>Carbonate grains: <i>Porites porites</i>, peloids, pelecypod fragments, gastropods, coralline red algae, archaiasinids</p> <p>Accessory grains: 1-25% quartz grains, very fine to very coarse sand size (mostly upper fine to lower coarse sand size), angular to subrounded, moderately sorted; 1-2% undifferentiated dark mineral grains (mostly black N1), trace phosphorite, trace feldspar</p> <p>Porosity and permeability: 20% moldic, 5% interparticle, 5% irregular vuggy; 30% porosity and relatively moderate permeability</p> <p>Comments: Shallow marine shelf patch reef. Much or all of the quartz is a lithologic match for the quartz sand in the 28.00 to 28.60 foot interval and is infilling growth and vuggy porosity. <i>Porites</i> appears to be encrusted with pellet-rich blue-green algae in some cases</p>
32.30-33.00	<p>Lithofacies: <i>Porites asteroides</i> framestone</p> <p>Depositional texture: <i>Porites asteroides</i> framestone</p> <p>Color: Mottled yellowish gray 5Y 8/1, very pale orange 10YR 8/2, pinkish gray 5YR 8/1</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Common rhizoliths with 0.3-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micritized grains or laminated calcrete lining the inner tubules). Rhizoliths form a dense, pedotubule maze in some cases. Clionid and pelecypod borings. <i>Entobia</i> and <i>Gastrochaenolites</i> present</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: <i>Trypanites</i> associated with corals</p> <p>Carbonate grains: <i>Porites asteroides</i>, peloids, encrusting coralline red algae, pelecypod fragments</p> <p>Accessory grains: Up to 5% quartz grains, very fine to coarse sand size (mostly fine to medium sand size), angular to subrounded, moderately sorted</p> <p>Porosity and permeability: 10% framework, 5% interparticle, 5% irregular vuggy, 5% boring, 1% geopetal; 26% porosity and relatively moderate permeability</p>

	<p>Comments: Shallow marine shelf patch reef</p>
33.00-35.70	<p>Lithofacies: <i>Agaricia</i> framestone Depositional texture: <i>Agaricia</i> framestone Color: Mottled yellowish gray 5Y 8/1, very pale orange 10YR 8/2, very light gray N8, and a light shade of pale yellowish orange 10YR 8/6 Sedimentary structures/textures: Massive, very thick bedding Trace fossils: Clionid and pelecypod borings. <i>Entobia</i> and <i>Gastrochaenolites</i> present. Uppermost part of interval contains uncommon rhizoliths with 0.3-1.0 mm inner tubule diameter (associated with rhizoliths are concentric micritized grains or laminated calcrete lining the inner tubules). Rhizoliths form a dense, pedotubule maze in some cases Ichnofabrics: Ichnofabric index 1-3 Ichnofacies: <i>Trypanites</i> associated with corals Carbonate grains: <i>Agaricia</i>, silt to very fine sand size skeletal fragments, encrusting coralline red algae, peloids, pelecypod fragments, <i>Porites</i>, gastropods, echinoid spines, archaiasinids, ostracods, miliolids, amphistiginids Porosity and permeability: 10% framework, 5% moldic, 5% interparticle, 5% irregular vuggy, 1% boring, 1% geopetal; 27% porosity and relatively moderate permeability Comments: Shallow marine shelf patch reef</p>
35.70-36.60	<p>Lithofacies: <i>Porites asteroides</i> framestone Depositional texture: <i>Porites asteroides</i> framestone Color: Mottled yellowish gray 5Y 8/1, very pale orange 10YR 8/2, very light gray N8, and a light shade of pale yellowish orange 10YR 8/6 Sedimentary structures/textures: Massive, very thick bedding Trace fossils: Clionid and pelecypod borings. <i>Entobia</i> and <i>Gastrochaenolites</i> present Ichnofabrics: Ichnofabric index 1-3 Ichnofacies: <i>Trypanites</i> associated with corals Carbonate grains: <i>Porites asteroides</i>, silt to very fine sand size skeletal fragments, encrusting coralline red algae, peloids, pelecypod fragments, gastropods, echinoid spines, ostracods, miliolids Porosity and permeability: 10% framework, 5% moldic, 5% interparticle, 5% irregular vuggy, 1% boring, 1% geopetal; 27% porosity and relatively moderate permeability Comments: Shallow marine shelf patch reef</p>
36.60-37.20	<p>Lithofacies: <i>Porites Porites</i> floatstone and <i>Porites asteroides</i> framestone Depositional texture: <i>Porites Porites</i> floatstone and <i>Porites asteroides</i> framestone Color: Mottled yellowish gray 5Y 8/1, very pale orange 10YR 8/2,</p>

	<p>very light gray N8, and a light shade of pale yellowish orange 10YR 8/6</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Clionid and pelecypod borings. <i>Entobia</i> and <i>Gastrochaenolites</i> present</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: <i>Trypanites</i> associated with corals</p> <p>Carbonate grains: <i>Porites porites</i>, <i>Porites asteroides</i>, silt to very fine sand size skeletal fragments, encrusting coralline red algae, peloids</p> <p>Porosity and permeability: 20% framework, 5% moldic, 5% interparticle, 5% irregular vuggy, 1% boring, 1% geopetal; 37% porosity and relatively high permeability</p> <p>Comments: Shallow marine shelf patch reef</p>
37.20-38.00	No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval above
38.00-38.70	<p>Lithofacies: Coral framestone</p> <p>Depositional texture: Coral framestone</p> <p>Color: Mottled yellowish gray 5Y 8/1, very pale orange 10YR 8/2, very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Clionid borings. <i>Entobia</i> present</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: <i>Trypanites</i> associated with corals</p> <p>Carbonate grains: Coral, silt to very fine sand size skeletal fragments, peloids, encrusting coralline red algae, pelecypod fragments, benthic foraminifers (including archaiasinids)</p> <p>Porosity and permeability: 10% framework, 5% moldic, 5% interparticle, 5% irregular vuggy, 1% boring, 1% geopetal; 27% porosity and relatively moderate permeability</p> <p>Comments: Shallow marine shelf patch reef</p>
38.70-43.00	No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval below
43.00-44.10	<p>Lithofacies: <i>Agaricia</i> framestone</p> <p>Depositional texture: <i>Agaricia</i> framestone</p> <p>Color: Mottled yellowish gray 5Y 8/1, very pale orange 10YR 8/2, very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thick bedding</p> <p>Trace fossils: Clionid borings. <i>Entobia</i> present</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: <i>Trypanites</i> associated with corals</p> <p>Carbonate grains: <i>Agaricia</i>, silt to very fine sand size skeletal fragments, encrusting coralline red algae, peloids, <i>Porites asteroides</i>, gastropods</p> <p>Porosity and permeability: 10% framework, 5% moldic, 5% interparticle, 5% irregular vuggy, 1% boring, 1% geopetal;</p>

	27% porosity and relatively moderate permeability Comments: Shallow marine shelf patch reef
44.10-47.35	No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval above
47.35-48.40	Lithofacies: <i>Agaricia</i> framestone Depositional texture: <i>Agaricia</i> framestone Color: Mottled yellowish gray 5Y 8/1, very pale orange 10YR 8/2, very light gray N8 Sedimentary structures/textures: Massive, very thick bedding Trace fossils: Clionid borings. <i>Entobia</i> present Ichnofabrics: Ichnofabric index 1-3 Ichnofacies: <i>Trypanites</i> associated with corals Carbonate grains: <i>Agaricia</i> , silt to very fine sand size skeletal fragments, encrusting coralline red algae, peloids, <i>Porites asteroides</i> Porosity and permeability: 10% framework, 5% moldic, 5% interparticle, 5% irregular vuggy, 1% boring, 1% geopetal; 27% porosity and relatively moderate permeability Comments: Shallow marine shelf patch reef
48.40-49.95	No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval above
49.95-51.60	Lithofacies: <i>Agaricia</i> framestone Depositional texture: <i>Agaricia</i> framestone Color: Mottled yellowish gray 5Y 8/1, very pale orange 10YR 8/2, very light gray N8 Sedimentary structures/textures: Massive, very thick bedding Trace fossils: Clionid borings. <i>Entobia</i> present Ichnofabrics: Ichnofabric index 1-3 Ichnofacies: <i>Trypanites</i> associated with corals Carbonate grains: <i>Agaricia</i> , silt to very fine sand size skeletal fragments, encrusting coralline red algae, peloids, <i>Porites asteroides</i> Porosity and permeability: 10% framework, 5% moldic, 5% interparticle, 5% irregular vuggy, 1% boring, 1% geopetal; 27% porosity and relatively moderate permeability Comments: Shallow marine shelf patch reef
51.60-53.00	No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in <i>Acropora</i> -rich interval below
53.00-54.45	Lithofacies: <i>Acropora cervicornis</i> floatstone Depositional texture: <i>Acropora cervicornis</i> floatstone with skeletal fragments mud- and grain-dominated packstone matrix Color: Mottled yellowish gray 5Y 8/1, very light gray N8 Sedimentary structures/textures: Massive, very thick bedding Trace fossils: <i>Entobia</i> present Ichnofabrics: Ichnofabric index 1-2 Ichnofacies: <i>Trypanites</i> associated with corals

	<p>Carbonate grains: <i>Acopora cervicornis</i>, skeletal fragments</p> <p>Accessory grains: Trace to 3% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, well sorted</p> <p>Porosity and permeability: 20% moldic, 10% interparticle; 30% porosity and relatively moderate permeability</p> <p>Comments: Shallow marine shelf patch reef. Base of patch reef at 57.12 feet, where there is an abrupt contact between <i>Acropora cervicornis</i> patch reef above and pelecypod coquina below. Abrupt contact has about 0.38 feet of very irregular erosional paleo-relief on the bounding surface</p>
54.45-58.20	<p>No recovery—Based on digital optical borehole wall image, part of interval is likely same lithology as in interval above an abrupt contact at 57.12 feet and likely the same lithology as in interval below contact at 57.12 feet. Probable subaerial exposure surface at the abrupt contact</p>
58.20-61.20	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal grainstone matrix (coquina)</p> <p>Color: Very light gray N8 to yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thickly bedded with poorly defined horizontal to very low-angle thin to thick laminations</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts (including pedotubule calcrete), amphistiginids, <i>Elphidium</i>, echinoid plates and spines, gastropods</p> <p>Accessory grains: 5% quartz grains, fine to very coarse sand size (mostly coarse sand size), angular to rounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 2% moldic, 3% vuggy; 20% porosity and relatively moderate permeability</p> <p>Comments: Laminated beach foreshore. Much of interparticle porosity occluded by blocky calcite cement. Most grains have an isopachous bladed calcite cement surrounding them. Upper bounding surface at 57.12 feet is an abrupt contact between <i>Acropora cervicornis</i> patch reef above and pelecypod coquina below. The abrupt contact has about 0.38 feet of very irregular erosional paleo-relief on the bounding surface. Polymictic intraclasts that contain pedotubule calcrete is highly suggestive of a subaerial exposure surface nearby (providing the source of pedotubule calcrete) associated with this beach environment</p>
61.20-61.52	<p>No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval below</p>

61.52-61.90	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal grainstone matrix (coquina)</p> <p>Color: Very light gray N8 to yellowish gray 5Y 8/1 to light gray N7</p> <p>Sedimentary structures/textures: Thickly bedded with poorly defined horizontal to very low-angle to steeply dipping (up to about 41 degrees) thin to thick laminations</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, amphistiginids, uncommon unidentified benthic foraminifers, echinoid plates and spines, gastropods, one fish (possible shark) tooth in thin section</p> <p>Accessory grains: 10-15% quartz grains, very fine to coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1-3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 1-2% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 2% moldic, 3% vuggy; 20% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Much of interparticle porosity occluded by blocky calcite cement</p>
61.90-62.64	<p>No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval below</p>
62.64-64.05	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with skeletal grainstone matrix (coquina)</p> <p>Color: Very light gray N8 to yellowish gray 5Y 8/1 to light gray N7</p> <p>Sedimentary structures/textures: Thickly bedded with poorly defined horizontal to very low-angle to steeply dipping (up to about 41 degrees) thin to thick laminations. Laminations have eastward dips</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, amphistiginids, some unidentified benthic foraminifers, echinoid plates and spines, gastropods, one fish (possible shark) tooth in thin section</p> <p>Accessory grains: 10-15% quartz grains, very fine to coarse sand size (mostly medium to coarse sand size), angular to rounded, moderately sorted; 1-3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 1-2% phosphorite</p>

	<p>grains</p> <p>Porosity and permeability: 15% interparticle, 2% moldic, 3% vuggy; 20% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Much of interparticle porosity occluded by blocky calcite cement</p>
64.05-66.54	<p>Lithofacies: Arenaceous skeletal packstone, and skeletal quartz sandstone</p> <p>Depositional texture: Arenaceous pelecypod fragment mud- and grain-dominated packstone, and skeletal sandstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thickly bedded</p> <p>Trace fossils: <i>Ophiomorpha</i> abundant and dominant. Abundant suspension feeders</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Skolithos</i> and <i>Cruziana</i> association</p> <p>Carbonate grains: Pelecypod fragments dominant, benthic foraminifers (including amphistiginids, miliolids, discoidal large benthic foraminifers peneroplids), echinoid plates and spines, gastropods, branching coralline red algae, peloids</p> <p>Accessory grains: 15-70% quartz grains, very fine to very coarse sand size (mostly fine sand size), angular to rounded, poorly sorted; 1-8% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1-2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 15% intra- and interparticle, 5% moldic, 20% intraburrow; 40% porosity and relatively moderate permeability</p> <p>Comments: Middle shoreface. Much of interparticle porosity occluded by micrite or equant cement. Upper bounding surface is an abrupt contact, abrupt shift in lithofacies and almost horizontal contact</p>
66.54-68.00	<p>No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval above</p>
68.00-69.00	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thickly bedded</p> <p>Trace fossils: <i>Ophiomorpha</i> abundant and dominant. <i>Favreina</i> present. Abundant suspension feeders</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Mixed <i>Skolithos</i> and <i>Cruziana</i> association</p> <p>Carbonate grains: Pelecypod fragments dominant, benthic foraminifers (including amphistiginids, miliolids, discoidal large benthic foraminifers peneroplids), echinoid plates and spines, gastropods, branching coralline red algae, peloids</p> <p>Accessory grains: 50-70% quartz grains, very fine to very coarse</p>

	<p>sand size (mostly fine sand size), angular to rounded, poorly sorted; 1-8% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1-2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% intra- and interparticle, 5% moldic, 20% intraburrow; 45% porosity and relatively high permeability</p> <p>Comments: Middle shoreface. Much of interparticle porosity occluded by micrite or equant cement</p>
69.00-72.40	No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval above
72.40-74.50	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod and skeletal fragment quartz sandstone</p> <p>Color: Mottled gray 5Y 8/1 to very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thickly bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i> association</p> <p>Carbonate grains: Pelecypod fragments and skeletal fragments</p> <p>Accessory grains: 50-70% quartz grains, very fine to medium sand size (mostly fine sand size), angular to rounded, moderately sorted; 1-8% undifferentiated dark mineral grains (mostly black N1 and dark yellowish orange 10YR 6/6), 1-2% phosphorite grains</p> <p>Porosity and permeability: 20% intra- and interparticle, 5% moldic, 20% intraburrow; 45% porosity and relatively high permeability</p> <p>Comments: Lower shoreface</p>
74.50-75.00	No recovery—Based on digital optical borehole wall image, interval is likely same lithology as in interval above
75.00-77.15	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod and skeletal fragment quartz sandstone</p> <p>Color: Mottled gray 5Y 8/1 to very light gray N8</p> <p>Sedimentary structures/textures: Massive, very thickly bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i> association</p> <p>Carbonate grains: Pelecypod fragments and skeletal fragments</p> <p>Accessory grains: 50-70% quartz grains, very fine to medium sand size (mostly fine sand size), angular to rounded, moderately</p>

	<p>sorted; 5-15% undifferentiated dark mineral grains (mostly black N1 and minor dark yellowish orange 10YR 6/6), 1-4% phosphorite grains</p> <p>Porosity and permeability: 20% intra- and interparticle, 5% moldic, 20% intraburrow; 45% porosity and relatively high permeability</p> <p>Comments: Lower shoreface. Probably polymictic clasts that include pedotubule calcretes at 75.10 feet</p>
77.15-79.23	<p>Lithofacies: Arenaceous pelecypod floatstone</p> <p>Depositional texture: Pelecypod floatstone with arenaceous pelecypod fragment grainstone matrix (grainstone to coquina)</p> <p>Color: Very light gray N8 to yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Thickly bedded with poorly defined horizontal to very low-angle thin to thick laminations and very thin beds. Laminations have eastward dip</p> <p>Trace fossils: <i>Skolithos</i> and <i>Planolites?</i> at 78.55 feet</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, benthic foraminifers (including amphistiginids, <i>Elphidium</i>)</p> <p>Accessory grains: 25-50% quartz grains, very fine to very coarse sand size (mostly fine to medium sand size), angular to rounded, poorly sorted; 1-15% undifferentiated dark mineral grains (mostly black N1 and minor dark yellowish orange 10YR 6/6), 1-3% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 2% moldic, 3% vuggy; 20% porosity and relatively moderate permeability</p> <p>Comments: Foreshore. Much of interparticle porosity occluded by blocky calcite cement</p>
79.23-82.60	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8 to yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Thickly bedded with well defined horizontal to very low-angle (up to about 22 degrees) thin to thick laminations. Laminations have eastward dip</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, benthic foraminifers (including amphistiginids, <i>Elphidium</i>)</p> <p>Accessory grains: 25-50% quartz grains, very fine to very coarse sand size (mostly fine to medium sand size), angular to rounded, poorly sorted; 1-15% undifferentiated dark mineral grains (mostly black N1 and minor dark yellowish orange 10YR 6/6), 1-3% phosphorite grains</p>

	<p>Porosity and permeability: 15% interparticle, 2% moldic, 3% vuggy; 20% porosity and relatively moderate permeability</p> <p>Comments: Foreshore. Much of interparticle porosity occluded by blocky calcite cement</p>
82.60-85.60	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8 to yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Thickly bedded with poorly defined horizontal to very low-angle thin to thick laminations and very thin beds. Laminations have eastward dip</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, benthic foraminifers (including mostly amphotiginids), gastropods, polymictic intraclasts</p> <p>Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, poorly sorted; 1-5% undifferentiated dark mineral grains (mostly black N1 and minor dark yellowish orange 10YR 6/6), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Foreshore. Much of interparticle porosity occluded by blocky calcite cement</p>
85.60-86.30	<p>No recovery—Based on digital optical borehole wall image, interval is likely similar lithology as in interval above, but much more quartz sand rich</p>
86.30-87.03	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thickly bedded with poorly defined horizontal to very low-angle thin to thick laminations and very thin beds. Laminations have southeastward dip</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, benthic foraminifers (including mostly amphotiginids), gastropods, polymictic intraclasts</p> <p>Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, poorly sorted; 1-5% undifferentiated dark mineral grains (mostly black N1 and minor dark yellowish orange</p>

	<p>10YR 6/6), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Foreshore. Much of interparticle porosity occluded by blocky calcite cement</p>
87.03-88.00	<p>No recovery—Based on digital optical borehole wall image, interval between 87.03 to 87.16 feet is likely similar lithology as in interval above; between 87.16 to 87.55 feet is likely similar to lithology as in interval below, but more quartz sand rich; and between 87.55 and 88.00 feet is likely similar to lithology as in interval between 88.40 and 88.80 feet below</p>
88.00-88.30	<p>Recovered latence</p>
88.30-88.40	<p>No recovery—Based on digital optical borehole wall image, interval is likely similar lithology as in interval between 88.40 and 88.80 feet below, but more quartz sand rich</p>
88.40-88.80	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8 to yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Thinly bedded with poorly defined low angle to steeply dipping (up to about 24 degrees) thick laminations and very thin beds</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant</p> <p>Accessory grains: 20-40% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, poorly sorted; 1-5% undifferentiated dark mineral grains (mostly black N1 and minor dark yellowish orange 10YR 6/6), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
88.80-89.15	<p>Lithofacies: Skeletal quartz sand</p> <p>Depositional texture: Skeletal quartz sand</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thinly bedded with poorly defined low angle dips</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Skeletal fragments</p> <p>Accessory grains: 20-35% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, well sorted;</p>

	<p>1-8% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1-2% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle; 20% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
89.15-89.50	<p>No recovery—Based on digital optical borehole wall image, interval is likely similar lithology as in interval above, but with interlaminations with lithology likely similar to interval between 88.40 and 88.80 feet</p>
89.50-90.10	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thinly bedded with poorly defined low angle to steeply dipping (up to about 23 degrees) thick laminations and very thin beds. Laminations have northwestward dip</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts</p> <p>Accessory grains: 20-40% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
90.10-90.30	<p>No recovery—Based on digital optical borehole wall image, interval is likely similar lithology as in interval above, but more quartz sand rich</p>
90.30-91.30	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thinly bedded with poorly defined low angle to steeply dipping thick laminations and very thin beds</p> <p>Trace fossils: Uncommon burrows with possible <i>Skolithos</i> present in digital optical borehole wall image</p> <p>Ichnofabrics: Ichnofabric index 1-2</p>

	<p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, amphistiginids, echinoid spines and plates</p> <p>Accessory grains: 20-40% quartz grains, very fine to very coarse sand size (mostly bimodal fine and coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
91.30-91.70	No recovery—Based on digital optical borehole wall image, interval is likely mostly friable, very fine to medium sand size quartz sand
91.70-92.45	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thinly bedded with poorly defined low angle to steeply dipping (up to about 26 degrees) thick laminations and very thin beds. Laminations have southerly dip</p> <p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, amphistiginids, echinoid spines and plates</p> <p>Accessory grains: 20-40% quartz grains, very fine to very coarse sand size (mostly bimodal fine and coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
92.45-92.60	No recovery—Based on digital optical borehole wall image, interval is likely similar lithology as in interval above
92.60-92.75	<p>Lithofacies: Arenaceous pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with arenaceous pelecypod fragment grainstone matrix (pebbly coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thinly bedded</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p>

	<p>Carbonate grains: Pelecypod fragments dominant (clasts up to large pebble size), polymictic intraclasts, amphistiginids, echinoid spines and plates</p> <p>Accessory grains: 20-40% quartz grains, very fine to very coarse sand size (mostly bimodal fine and coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
92.75-93.00	No recovery—Based on digital optical borehole wall image, interval is likely similar lithology as in interval above
93.00-94.45	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Thickly bedded with poorly defined low angle thick laminations</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts (includes clasts of pedotubule calcrete), <i>Acropora cervicornis</i> fragments, encrusting and branching coralline red algae</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly bimodal fine and coarse sand size), angular to rounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Presence of intraclasts of pedotubule calcrete suggests an exposure near this shoreface and presence of <i>Acropora cervicornis</i> suggests patch reefs near this shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
94.45-95.40	No recovery—Based on digital optical borehole wall image, interval is likely similar lithology as in interval below, but very quartz sand rich and friable for the most part
95.40-95.70	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Medium thick bed with well</p>

	<p>developed thin to thick, trough (festoon) cross laminations (dips up to 36 degrees). Laminations have southwestward dip</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts (includes clasts of pedotubule calcrete), <i>Acropora cervicornis</i> fragments, encrusting and branching coralline red algae, gastropods</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly bimodal fine and coarse sand size), angular to rounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Presence of intraclasts of pedotubule calcrete suggests an exposure near this shoreface and presence of <i>Acropora cervicornis</i> suggests patch reefs near this shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
95.70-96.30	<p>No recovery—Based on digital optical borehole wall image, interval is likely similar to cross laminated lithology as in interval above</p>
96.30-97.00	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod rudstone with pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Medium thick bed with well developed thin to thick, trough (festoon) cross laminations (dips up to 36 degrees). Laminations have southerly, southwestward, and southeastward dips</p> <p>Ichnofabrics: Ichnofabric index 1-2</p> <p>Ichnofacies: Probably <i>Skolithos</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts (includes clasts of pedotubule calcrete), <i>Acropora cervicornis</i> fragments, encrusting and branching coralline red algae, gastropods</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly bimodal fine and coarse sand size), angular to rounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Presence of intraclasts of pedotubule calcrete suggests an exposure near this shoreface and presence</p>

	<p>of <i>Acropora cervicornis</i> suggests patch reefs near this shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
97.00-97.30	<p>Lithofacies: <i>Acropora cervicornis</i> rudstone Depositional texture: <i>Acropora cervicornis</i>, pelecypod fragment rudstone with pelecypod fragment grainstone matrix (pebbly coquina) Color: Very light gray N8 Sedimentary structures/textures: Medium thick bed Ichnofabrics: Ichnofabric index 1-2 Ichnofacies: Probably <i>Skolithos</i> Carbonate grains: Pelecypod fragments dominant, <i>Acropora cervicornis</i> fragments, polymictic intraclasts (includes clasts of pedotubule calcrete), echinoid spines and plates, encrusting and branching coralline red algae, gastropods, miliolids, amphistiginids, archaiasinids Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly bimodal fine and coarse sand size), angular to rounded, poorly sorted; 1-3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability Comments: Upper shoreface storm lag. Presence of intraclasts of pedotubule calcrete suggests an exposure near this shoreface and presence of <i>Acropora cervicornis</i> suggests patch reefs near this shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
97.30-97.85	<p>Lithofacies: Pelecypod rudstone Depositional texture: Pelecypod rudstone with pelecypod fragment grainstone matrix (coquina) Color: Very light gray N8 Sedimentary structures/textures: Medium thick bed with well developed thin to thick steeply dipping laminations (dips up to 41 degrees) Ichnofabrics: Ichnofabric index 1-2 Ichnofacies: Probably <i>Skolithos</i> Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts (includes clasts of pedotubule calcrete), <i>Acropora cervicornis</i> fragments, encrusting and branching coralline red algae, gastropods Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly bimodal fine and coarse sand size), angular to rounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar</p>

	<p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Upper shoreface. Presence of intraclasts of pedotubule calcrete suggests an exposure near this shoreface and presence of <i>Acropora cervicornis</i> suggests patch reefs near this shoreface. Interparticle porosity commonly occluded by equant or blocky calcite cement</p>
97.85-98.30	No recovery—Based on digital optical borehole wall image, interval between 97.85 and 97.92 feet is similar lithology to interval above and interval between 97.92 and 98.30 feet is probably a somewhat friable, skeletal quartz sand and quartz sandstone
98.30-98.40	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1 to very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Very thinly bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 3-4</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, echinoid plates and spines, encrusting and branching coralline red algae, peloids, amphisteginids, gastropods, archaiaisinids</p> <p>Accessory grains: 50-70% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 3% vuggy; 28% porosity and relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. (As defined on the digital optical borehole wall image, from 112 to 98 feet is a succession of cycles that thin upward, become more rich in friable quartz sand upward, and become less carbonate rich upward). Microspar (probably neomorphosed micrite) commonly occludes interparticle pore space</p>
98.40-99.08	No recovery—Based on digital optical borehole wall image, interval is likely similar to quartz sandstone below, but much more quartz sand rich and more friable
99.08-99.18	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1 to very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Very thinly bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or</p>

	<p>Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 3-4</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, echinoid plates and spines, encrusting and branching coralline red algae, peloids, amphistiginids, gastropods, archaiaisinids</p> <p>Accessory grains: 50-70% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 3% vuggy; 28% porosity and relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Microspar (probably neomorphosed micrite) commonly occludes interparticle pore space</p>
99.18-99.80	No recovery—Based on digital optical borehole wall image, interval is likely similar to quartz sandstone below, but much more quartz sand rich and more friable
99.80-100.00	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1 to very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Very thinly bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 3-4</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, echinoid plates and spines, encrusting and branching coralline red algae, peloids, amphistiginids, gastropods, archaiaisinids</p> <p>Accessory grains: 50-70% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 3% vuggy; 28% porosity and relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Microspar (probably neomorphosed micrite) commonly occludes interparticle pore space</p>
100.00-102.25	No recovery—Based on digital optical borehole wall image, interval is likely similar to quartz sandstone below, but much more quartz sand rich and more friable

102.25-102.45	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1 to very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Very thinly bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 3-4</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, echinoid plates and spines, encrusting and branching coralline red algae, peloids, amphistiginids, gastropods, archaiaisinids</p> <p>Accessory grains: 50-70% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 3% vuggy; 28% porosity and relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Microspar (probably neomorphosed micrite) commonly occludes interparticle pore space</p>
102.45-103.00	<p>No recovery—Based on digital optical borehole wall image, interval is likely similar to quartz sandstone below, but much more quartz sand rich and more friable</p>
103.00-103.80	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1 to very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Medium bedded with some poorly defined thin to thick, horizontal laminations and inclined laminations at a low angle</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 3-4</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, echinoid plates and spines, encrusting and branching coralline red algae, peloids, amphistiginids, gastropods, archaiaisinids</p> <p>Accessory grains: 50-70% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar</p>

	<p>Porosity and permeability: 20% interparticle, 5% moldic, 3% vuggy; 28% porosity and relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Microspar (probably neomorphosed micrite) commonly occludes interparticle pore space</p>
103.80-104.60	No recovery—Based on digital optical borehole wall image, interval is likely similar to quartz sandstone below, but much more quartz sand rich and more friable
104.60-105.00	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1 to very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, echinoid plates and spines, encrusting and branching coralline red algae, peloids, amphistiginids, gastropods, archaiaisinids</p> <p>Accessory grains: 50-70% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 3% vuggy; 28% porosity and relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Microspar (probably neomorphosed micrite) commonly occludes interparticle pore space. Oriented calcite concretions present</p>
105.00-105.60	No recovery—Based on digital optical borehole wall image, interval is likely similar to quartz sandstone below, but much more quartz sand rich and more friable
105.60-106.00	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1 to very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Based on core samples and digital optical borehole wall image probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 3</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, polymictic intraclasts, echinoid plates and spines, encrusting and branching coralline red algae, peloids, amphistiginids,</p>

	<p>gastropods, archaiaisinids</p> <p>Accessory grains: 50-70% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 20% interparticle, 5% moldic, 3% vuggy; 28% porosity and relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Microspar (probably neomorphosed micrite) commonly occludes interparticle pore space. Oriented calcite concretions present</p>
106.00-107.82	<p>o recovery—Based on digital optical borehole wall image, interval is likely similar to quartz sandstone above, but much more quartz sand rich; more friable; medium bedded with some poorly defined thin to thick, horizontal laminations and inclined laminations at a low angle; and with a ichnofabric index of 3-4. Burrows probably created mostly by Thalassinidean or Thalassinidean-like crustaceans and are both horizontal deposit feeders and vertical suspension feeders</p>
107.82-107.89	<p>Lithofacies: Arenaceous skeletal grainstone</p> <p>Depositional texture: Arenaceous skeletal grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thinly bedded</p> <p>Trace fossils: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 2</p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 40-50% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: Matrix 5% interparticle, 5% moldic porosity. Vugs probably a high percent of megaporosity; 10% matrix porosity and probably relatively high vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present</p>
107.89-108.45	<p>No recovery—Based on digital optical borehole wall image, interval is likely similar to lithology above</p>
108.45-110.00	<p>Lithofacies: Arenaceous skeletal grainstone</p> <p>Depositional texture: Arenaceous skeletal grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thin to thin beds dipping steeply (up to about 53 degrees measured on digital optical borehole image). Laminations have generally southerly dips</p>

	<p>Trace fossils: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 2-3</p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, clast of pedotubule calcrete</p> <p>Accessory grains: 40-50% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: Matrix 5% interparticle, 2% moldic porosity. Vugs probably a high percent of megaporosity; 7% matrix porosity and probably relatively high vuggy permeability</p> <p>Comments: Middle to lower shoreface. Clast of pedotubule calcrete suggests a subaerial exposure surface may be close to this location and near this stratigraphic interval. Oriented calcite concretions present</p>
110.00-110.70	No recovery—Based on digital optical borehole wall image, interval is likely similar to quartz sandstone above, but much more quartz sand rich and more friable
110.70-112.00	<p>Lithofacies: Arenaceous skeletal grainstone</p> <p>Depositional texture: Arenaceous skeletal grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thin to thin beds dipping steeply (up to about 38 degrees measured on digital optical borehole image). Laminations have generally southerly dips</p> <p>Trace fossils: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 2</p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 40-50% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to rounded, poorly sorted; 1-2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 1% phosphorite grains</p> <p>Porosity and permeability: Matrix 5% interparticle, 2% moldic porosity. Vugs probably a high percent of megaporosity; 7% matrix porosity and probably relatively high vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present. About a 6-cm thick clast of lime mudstone occurs in this interval</p>
112.00-114.35	No recovery
114.35-114.85	<p>Lithofacies: Conglomerate</p> <p>Depositional texture: Polymictic intraclast conglomerate with a skeletal quartz sandstone matrix</p>

	<p>Color: Yellowish gray 5Y 7/2</p> <p>Sedimentary structures/textures: Sample is rubble, none observed</p> <p>Carbonate grains: Calcrete clasts (both pedotubule calcrete and massive calcrete clasts that are up to large pebble size), pelecypods, red algae, gastropods</p> <p>Accessory grains: 50% quartz grains, very fine to very coarse sand size (mostly coarse sand size), angular to rounded, poorly sorted; 1-4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and black N1), 2% phosphorite grains, 5% non-carbonate polyimictic clasts,</p> <p>Porosity and permeability: Matrix 5% interparticle, 2% moldic porosity, 15% vuggy; 22% total porosity and relatively moderate permeability</p> <p>Comments: Probably a basal transgressive interval above a subaerial unconformity that is bound by a pedogenic surface</p>
114.85-115.55	No recovery
115.55-116.55	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragments quartz sandstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Burrows present. Common rhizoliths with 0.3-2.0 mm inner tubule diameter (associated with rhizoliths are concentric micropor or micritic calcrete lining the inner tubules). Probably visible in digital optical borehole wall image. And alveolar-septal structures associated with some rhizoliths</p> <p>Ichnofabrics: Ichnofabric index 3</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, amphisteginids, echinoid plates and spines, <i>Elphidium</i>, peloids</p> <p>Accessory grains: 50-65% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 2% moldic porosity, 20% vuggy; 32% total porosity and probably relatively high vuggy permeability</p> <p>Comments: Middle to lower shoreface. Much of interparticle pore space occluded by micrite and microspar (probably micrite neomorphosed to microspar)</p>
116.55-119.00	No recovery
119.00-121.60	<p>Lithofacies: Interbedded arenaceous skeletal packstone and grainstone, skeletal quartz sandstone, and skeletal quartz sand</p> <p>Depositional texture: Interbedded arenaceous pelecypod fragment mud- and grain-dominated packstone and grainstone,</p>

	<p>pelecypod fragment quartz sandstone, and pelecypod quartz sand</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Uncommon rhizoliths with 0.3-2.0 mm inner tubule diameter (associated with rhizoliths are concentric micropor or micritic calcrite lining the inner tubules)</p> <p>Ichnofabrics: Ichnofabric index 2-5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, trace <i>Manicina</i> head coral</p> <p>Accessory grains: 50-65% quartz grains, very fine to very coarse sand size (mostly medium sand size), angular to rounded, poorly sorted; 1-4% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 10% interparticle, 2% moldic porosity, 10-25% vuggy; 22-37% total porosity and probably relatively high vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present. Much of interparticle pore space occluded by micrite and microspar (probably micrite neomorphosed to microspar)</p>
121.60-123.00	No recovery
123.00-124.90	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 and grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Medium bedding present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid spines and plates, amphisteginids, miliolids, <i>Elphidium</i>, gastropods, branching coralline red algae</p> <p>Accessory grains: 15-45% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively moderate to high with areas of vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite</p>

	concretions present. Much of interparticle pore space occluded by microspar (probably micrite neomorphosed to microspar)
124.90-128.00	No recovery
128.00-129.60	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 and grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Medium bedding present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid spines and plates, amphistiginids, miliolids, <i>Elphidium</i>, gastropods, branching coralline red algae</p> <p>Accessory grains: 15-45% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), less than 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively moderate to high with areas of vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present. Much of interparticle pore space occluded by microspar (probably micrite neomorphosed to microspar) and blocky calcite</p>
129.60-133.00	No recovery
133.00-134.55	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 and grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 25% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively</p>

	<p>moderate to high with areas of vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present. Much of interparticle pore space occluded by microspar (probably micrite neomorphosed to microspar) and blocky calcite</p>
134.55-138.00	No recovery
138.00-140.50	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 and grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 25% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively moderate to high with areas of vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present. Much of interparticle pore space occluded by microspar (probably micrite neomorphosed to microspar) and blocky calcite</p>
140.50-146.00	No recovery
146.00-147.00	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 and grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 25% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), less than 1% phosphorite grains</p>

	<p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively moderate to high with areas of vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present. Much of interparticle pore space occluded by microspar (probably micrite neomorphosed to microspar) and blocky calcite</p>
147.00-150.90	No recovery
150.90-151.80	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled gray light gray N8 and grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Common rhizoliths with 0.3-0.8 mm inner tubule diameter (associated with rhizoliths are concentric microspar, micritized grains, or laminated calcite lining the inner tubules)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid spines and plates, benthic foraminifers (including <i>Elphidium</i>, amphistiginids, <i>Ammonia?</i>, biserials), gastropods, branching coralline red algae, globular planktic foraminifers (including globigerinoides), intraclasts of pedotubule calcite</p> <p>Accessory grains: 30-45% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), less than 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively moderate to high with areas of vuggy permeability</p> <p>Comments: Likely subaerial exposure surface at or very near upper bounding surface of interval based on <i>in situ</i> rhizocretions. Middle to lower shoreface. Digital optical borehole wall image shows about 0.25 feet of microtopography on possible erosional exposure surface. Oriented calcite concretions present. Much of interparticle pore space occluded by microspar (probably micrite neomorphosed to microspar) and blocky calcite</p>
151.80-152.50	No recovery
152.50-152.70	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous skeletal grain-dominated packstone and grainstone</p> <p>Color: Mottled gray light gray N8 and grayish orange 10YR 7/4</p>

	<p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Uncommon rhizoliths with 0.3-0.8 mm inner tubule diameter (associated with rhizoliths are concentric micropar, micritized grains, or laminated calcite lining the inner tubules)</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid spines and plates, benthic foraminifers (including <i>Elphidium</i>, amphisteginids, <i>Ammonia?</i>, biserials), gastropods, branching coralline red algae, globular planktic foraminifers (including globigerinoides), intraclasts of pedotubule calcite</p> <p>Accessory grains: 30-45% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), less than 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively moderate to high with areas of vuggy permeability</p> <p>Comments: Lower shoreface. Oriented calcite concretions present. Much of interparticle pore space occluded by microspar (probably micrite neomorphosed to microspar) and blocky calcite</p>
152.70-153.45	No recovery
153.45-153.65	Rubble samples of oriented calcite concretions present. May or may not be drilling latence
153.65-153.85	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod fragment rudstone with pelecypod fragment grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 1-3</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments, single clast of pedotubule calcite</p> <p>Accessory grains: 10-15% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to rounded, poorly sorted; 1% undifferentiated dark mineralas, (mostly dark yellowish orange 10YR 6/6), 1% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle, 2% moldic, 1% vuggy; 23% porosity and relatively moderate permeability</p> <p>Comments: Middle to lower shoreface</p>

153.85-154.20	Rubble samples of oriented calcite concretions present. Probably very high permeability zone. Comments: Middle to lower shoreface
154.20-157.10	No recovery
157.10-159.15	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal mud- and grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 to pale yellowish brown 10YR 6/2</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Possible <i>Planolites</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 25% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), less than 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively moderate to high with areas of vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present</p>
159.15-163.00	No recovery
163.00-163.70	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal mud- and grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 to pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Medium bedding present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoides</i> present. Possible <i>Planolites</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 25% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively</p>

	<p>moderate to high with areas of vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present</p>
163.70-164.30	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sandstone</p> <p>Color: Mottled very light gray N8 to pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Medium bedding present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoides</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, benthic foraminifers (including <i>Elphidium</i>, miliolids, berserials, amphistiginids), coralline red algae, echinoderm plates and spines, sand-dollar-shaped echinoids</p> <p>Accessory grains: 65% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, well sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10% vuggy; 20% total porosity and probably relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Much of interparticle pore space is occluded by microspar (probably neomorphosed micrite)</p>
164.30-165.00	<p>Lithofacies: Skeletal packstone and grainstone</p> <p>Depositional texture: Skeletal mud- and grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Medium bedding present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Possible <i>Planolites</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 25% quartz grains, very fine to coarse sand size (mostly medium sand size), angular to subrounded, moderately sorted; 1% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10-25% vuggy; 20-35% total porosity and probably relatively moderate to high with areas of vuggy permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite</p>

	concretions present
165.00-165.30	<p>Lithofacies: Arenaceous red algae packstone and grainstone</p> <p>Depositional texture: Arenaceous coralline red algae, pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Medium bedding present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Branching coralline red algae fragments dominant, pelecypod fragments, benthic foraminifers (including amphistiginids, miliolids, berserials, amphistiginids), echinoderm plates and spines, sand-dollar-shaped echinoids</p> <p>Accessory grains: 25-30% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10% vuggy; 15% total porosity and probably relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Much of interparticle pore space is occluded by microspar (probably neomorphosed micrite) and blocky calcite</p>
165.30-168.00	No recovery
168.00-169.85	<p>Lithofacies: Arenaceous red algae packstone and grainstone</p> <p>Depositional texture: Arenaceous coralline red algae, pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Possible <i>Rhizocorallium</i> and <i>Planolites</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Branching coralline red algae fragments dominant, pelecypod fragments, benthic foraminifers (including amphistiginids, miliolids, berserials, amphistiginids, discoid shaped foraminifers), echinoderm plates and spines, sand-dollar-shaped echinoids</p> <p>Accessory grains: 25-30% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6), 2% phosphorite grains, trace feldspar</p>

	<p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 10% vuggy; 15% total porosity and probably relatively moderate permeability</p> <p>Comments: Middle to lower shoreface. Much of interparticle pore space is occluded by microspar (probably neomorphosed micrite) and blocky calcite</p>
169.85-173.00	No recovery—Based on digital optical borehole wall image, interval is likely similar to lithology above
173.00-174.50	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sandstone</p> <p>Color: Mottled very light gray N8 to pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Very thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 75% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, well sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 2% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5-30% irregular vuggy; 15-40% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Middle to lower shoreface. Much of interparticle pore space is occluded by microspar (probably neomorphosed micrite). Oriented calcite concretions present</p>
174.50-180.40	No recovery—Based on digital optical borehole wall image, interval is likely similar to lithology above
180.40-182.20	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sandstone</p> <p>Color: Mottled very light gray N8 to pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Medium bedding present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoides</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, miliolids), ostracods</p> <p>Accessory grains: 75% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, well sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish</p>

	<p>orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 5% moldic porosity, 5-30% irregular vuggy; 20-45% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Middle to lower shoreface. Much of interparticle pore space is occluded by microspar (probably neomorphosed micrite) and uncommon poikilotopic calcite cement. Oriented calcite concretions present. Some loose quartz sand in core box suggesting presence of areas of high quartz sand concentration</p>
182.20-183.00	No recovery—Based on digital optical borehole wall image, interval is likely similar to lithology below
183.00-186.10	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sandstone</p> <p>Color: Mottled very light gray N8 to pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Medium bedding present</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoides</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, benthic foraminifers (including amphistiginids, miliolids), ostracods</p> <p>Accessory grains: 75% quartz grains, very fine to medium sand size (mostly fine sand size), angular to subrounded, well sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 10% interparticle, 5% moldic porosity, 5-30% irregular vuggy; 20-45% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Middle to lower shoreface. Much of interparticle pore space is occluded by microspar (probably neomorphosed micrite) and uncommon poikilotopic calcite cement. Oriented calcite concretions present. Some loose quartz sand in core box suggesting presence of areas of high quartz sand concentration</p>
186.10-193.00	No recovery
193.00-194.60	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 to grayish orange 10YR 7/4</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, peloids, benthic foraminifers (including</p>

	<p>amphistiginids), globular planktic foraminifers (including globigeriniodes), intraclasts</p> <p>Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5-30% irregular vuggy; 15-40% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Middle to lower shoreface. Uncommon interparticle pore space is occluded by microspar (probably neomorphosed micrite) and minor blocky calcite cement. Oriented calcite concretions present</p>
194.60-200.50	No recovery
200.50-202.40	<p>Lithofacies: Arenaceous skeletal packstone and grainstone</p> <p>Depositional texture: Arenaceous pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Mottled very light gray N8 to grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, peloids, benthic foraminifers (including amphistiginids), globular planktic foraminifers (including globigeriniodes), intraclasts</p> <p>Accessory grains: 20-35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5-30% irregular vuggy; 15-40% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Middle to lower shoreface. Uncommon interparticle pore space is occluded by microspar (probably neomorphosed micrite) and minor blocky calcite cement. Oriented calcite concretions present</p>
202.40-203.00	No recovery
203.00-203.50	<p>Lithofacies: Skeletal grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Mottled very light gray N8 to grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Very thin to thin beds dipping up to about 28 degrees generally eastward</p>

	<p>Trace fossils: Uncommon burrows</p> <p>Ichnofabrics: Ichnofabric index 2</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, polymictic intraclasts (including pedotubule calcrete clasts up to granule size)</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5% irregular vugs; 15% total porosity and probably relatively moderate permeability</p> <p>Comments: Upper foreshore. Foreshore environment suggested by high energy very coarse carbonate and quartz sands that include some pebble-sized clasts, presence of pedotubule calcrete granules, and easterly dip (offshoreward directed) on very thin to thin beds</p>
203.50-204.30	No recovery
204.30-204.95	<p>Lithofacies: Skeletal grainstone</p> <p>Depositional texture: Pelecypod fragment grainstone</p> <p>Color: Mottled very light gray N8 to grayish orange 10YR 7/4</p> <p>Sedimentary structures/textures: Medium bedding</p> <p>Trace fossils: Burrows present</p> <p>Ichnofabrics: Ichnofabric index 4</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, coralline red algae, polymictic intraclasts</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5-30% irregular vuggy; 15-40% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Lower foreshore. Oriented calcite concretions present</p>
204.95-205.35	<p>Lithofacies: Pelecypod rudstone</p> <p>Depositional texture: Pelecypod fragment rudstone with pelecypod fragment arenaceous grainstone matrix (coquina)</p> <p>Color: Very light gray N8</p> <p>Sedimentary structures/textures: Medium bedded</p> <p>Ichnofabrics: Ichnofabric index 4</p> <p>Carbonate grains: Pelecypod fragments dominant, echinoid plates and spines, polymictic intraclasts, coralline red algae</p> <p>Accessory grains: 35% quartz grains, very fine to very coarse sand size (mostly medium to coarse sand size), angular to</p>

	<p>subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5-30% irregular vugs; 15-40% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Lower foreshore. Oriented calcite concretions present</p>
205.35-208.00	No recovery
208.00-209.20	<p>Lithofacies: Skeletal quartz sand</p> <p>Depositional texture: Pelecypod fragment, skeletal quartz sand</p> <p>Color: Very pale orange 10YR 8/2</p> <p>Sedimentary structures/textures: Loose quartz sand in core box</p> <p>Ichnofabrics: Ichnofabric index 4</p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 35% quartz grains, very fine to very coarse sand size (mostly fine to medium to coarse sand size), angular to subrounded, poorly sorted; 2% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 25% interparticle; 25% total porosity and probably relatively moderate permeability</p>
209.20-213.00	No recovery
213.00-214.45	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sandstone</p> <p>Color: Mottled very light gray N8 to pale yellowish brown 10YR 6/2</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 75% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5-30% irregular vuggy; 15-40% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions present</p>
214.45-218.00	No recovery
218.00-220.20	<p>Lithofacies: Pelecypod floatstone</p> <p>Depositional texture: Pelecypod fragment floatstone with peloid,</p>

	<p>coralline red algae grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, peloids, coralline red algae (including rhodoliths), benthic foraminifers (including amphistiginids and less common miliolids, biserials), echinoid plates and spines, serpulid tubes, globular planktic foraminifers</p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (bimodal mostly fine and coarse sand size), angular to rounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5% burrow, 5-30% irregular vugs; 20-45% total porosity and probably relatively moderate permeability</p> <p>Comments: Middle to lower foreshore. Interparticle porosity mostly occluded by equant calcite cement, micrite, or microspar (probably neomorphosed micrite)</p>
220.20-220.65	<p>Lithofacies: Pelecypod packstone and grainstone</p> <p>Depositional texture: Pelecypod fragment grain-dominated packstone and grainstone</p> <p>Color: Yellowish gray 5Y 8/1</p> <p>Sedimentary structures/textures: Very thickly bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, peloids, benthic foraminifers (including amphistiginids and less common miliolids, biserials), echinoid plates and spines, coralline red algae</p> <p>Accessory grains: 5-25% quartz grains, very fine to very coarse sand size (bimodal mostly fine and coarse sand size), angular to rounded, poorly sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5% interparticle, 5% moldic porosity, 5% burrow, 5-30% irregular vugs; 20-45% total porosity and probably relatively moderate permeability</p> <p>Comments: Middle to lower foreshore. Interparticle porosity mostly occluded by equant calcite cement, micrite, or</p>

	microspar (probably neomorphosed micrite)
220.65-223.00	No recovery
223.00-224.73	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sandstone</p> <p>Color: Mottled very light gray N8 to much less common pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Very thickly bedded</p> <p>Trace fossils: Based on digital optical borehole wall image and core samples, probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 75% quartz grains, very fine to medium sand size (mostly very fine to fine sand size), angular to subangular, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5-10% interparticle, 5% moldic porosity, 5% intraburrow, 5-30% irregular vugs; 20-50% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Middle to lower shoreface. Becomes more quartz sand rich near base of interval. Oriented calcite concretions common</p>
224.73-228.00	No recovery
228.00-228.95	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragment quartz sandstone</p> <p>Color: Mottled very light gray N8 to much less common pale yellowish brown 10YR 6/2</p> <p>Sedimentary structures/textures: Medium to thin bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragments dominant, skeletal fragments</p> <p>Accessory grains: 75% quartz grains, very fine to medium sand size (mostly very fine to fine sand size), angular to subangular, moderately sorted; 3% undifferentiated dark mineral grains (mostly dark yellowish orange 10YR 6/6 and minor black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 5-10% interparticle, 5% moldic porosity, 5% intraburrow, 5-30% irregular vugs; 20-50% total porosity and probably relatively moderate to high permeability</p> <p>Comments: Middle to lower shoreface. Oriented calcite concretions common</p>

228.95-233.00	No recovery
233.00-233.92	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Benthic and planktic foraminifer quartz sandstone</p> <p>Color: Mottled very light gray N8 and light gray N7</p> <p>Sedimentary structures/textures: Medium to thin bedded</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Benthic and planktic foraminifers dominant (including globigerinoides, <i>Elphidium</i>, sortidis, miliolids, archaiasinids, peneroplids), pelecypod fragments, echinoid plates and spines, ostracods, peloids</p> <p>Accessory grains: 50-60% quartz grains, very fine to lower medium sand size (mostly upper very fine to lower fine sand size), angular to subangular, well sorted; 5% undifferentiated dark mineral grains (mostly black N1 and less dark yellowish orange 10YR 6/6), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 3% moldic porosity, 5-30% irregular vugs; 11-36% total porosity and probably relatively moderate permeability</p> <p>Comments: Lower shoreface. Oriented calcite concretions common</p>
233.92-238.00	No recovery
238.00-239.00	<p>Lithofacies: Skeletal quartz sand and skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sand and skeletal quartz sandstone</p> <p>Color: Mottled very light gray N8 to light gray N7</p> <p>Sedimentary structures/textures: Thinly to medium bedded</p> <p>Trace fossils: Burrowed</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Skeletal fragments dominant, pelecypod fragments, echinoid plates and spines benthic and planktic foraminifers (including <i>Elphidium</i>, globigerinoides, miliolids), ostracods</p> <p>Accessory grains: 80% quartz grains, very fine to lower medium sand size (mostly upper very fine to lower fine sand size), angular to subangular, well sorted; 5% undifferentiated dark mineral grains (mostly black N1 and less dark yellowish orange 10YR 6/6), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3-20% interparticle, 3% moldic porosity, 5-15% irregular vugs; 11-21% total porosity and probably relatively moderate permeability</p> <p>Comments: Lower shoreface. In sandstone interparticle porosity mostly occluded by microspar and equant calcite cement.</p>

	Oriented calcite concretions common
239.00-248.00	No recovery
248.00-250.70	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Skeletal quartz sandstone</p> <p>Color: Mottled very light gray N8 to light gray N7</p> <p>Sedimentary structures/textures: A medium thick bed present</p> <p>Trace fossils: Burrowed, common <i>Phycosiphon</i> and uncommon <i>Chondrites?</i></p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Thin pelecypod fragments, skeletal fragments, benthic and planktic foraminifers (including globigerinoides), echinoid spines, ostracods</p> <p>Accessory grains: 65-70% quartz grains, very fine to lower coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 10% undifferentiated dark mineral grains (mostly black N1 and less common light olive gray 5Y 6/1), 5-10% phosphorite grains</p> <p>Porosity and permeability: 20% interparticle; 20% total porosity and probably relatively moderate permeability</p> <p>Comments: Lower shoreface. Oriented calcite concretions and preferred burrow cementation present</p>
250.70-253.00	No recovery
253.00-254.25	<p>Lithofacies: Skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragments, peloid quartz sandstone</p> <p>Color: Mottled very light gray N8 to light gray N7</p> <p>Trace fossils: Burrowed. <i>Thalassinoides</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragment, peloids, benthic and planktic foraminifers (including globigerinoides, miliolids), echinoid spines and plates, ostracods</p> <p>Accessory grains: 65-70% quartz grains, very fine to lower coarse sand size (mostly upper very fine to lower fine sand size), angular to subrounded, moderately sorted; 5% undifferentiated dark mineral grains (mostly black N1 and less common light olive gray 5Y 6/1 and moderate yellowish orange 10YR 5/4), 3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 5% moldic, 25% irregular vugs; 33% total porosity and probably relatively moderate permeability</p> <p>Comments: Lower shoreface. Oriented calcite concretions and preferred burrow cementation present. Interparticle porosity in sandstone mostly occluded by equant calcite cement, microspar (probably neomorphosed micrite), or micrite</p>

254.25-258.00	No recovery
258.00-259.60	<p>Lithofacies: Skeletal quartz sand and skeletal quartz sandstone</p> <p>Depositional texture: Pelecypod fragments, peloid quartz sand and quartz sandstone</p> <p>Color: Mottled very light gray N8 to light gray N7</p> <p>Sedimentary structures/textures: Thinly to medium bedded</p> <p>Trace fossils: Burrowed, common <i>Thalassinoides</i> and <i>Phycosiphon</i> and <i>Chondrites</i>?</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypod fragment, peloids, benthic and planktic foraminifers (including globigerinoides, miliolids), echinoid spines and plates, ostracods</p> <p>Accessory grains: 65-70% quartz grains, very fine to lower coarse sand size (mostly upper very fine to lower fine sand size), angular to subrounded, moderately sorted; 5% undifferentiated dark mineral grains (mostly black N1 and less common light olive gray 5Y 6/1 and moderate yellowish orange 10YR 5/4), 3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3-20% interparticle, 5% moldic, 0-25% irregular vugs; 8-53% total porosity and probably relatively moderate permeability</p> <p>Comments: Lower shoreface. Oriented calcite concretions and preferred burrow cementation present (base of presence in this corehole). Interparticle porosity in sandstone mostly occluded by equant calcite cement, microspar (probably neomorphosed micrite), or micrite</p>
259.60-263.00	No recovery
263.00-264.40	<p>Lithofacies: Pelecypod floatstone and rudstone with skeletal quartz sandstone matrix</p> <p>Depositional texture: Pelecypod floatstone and rudstone with skeletal quartz sandstone matrix</p> <p>Color: Mottled very light gray N8 to light gray N7</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods (up to small cobble size and common <i>Ostrea</i>) and pelecypod fragments dominant, peloids, echinoid spines and plates, benthic and planktic foraminifers (including globigerinoides, miliolids, <i>Elphidium</i>), serpulids</p> <p>Accessory grains: 50-60% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 6% undifferentiated dark mineral grains (mostly black N1 and less common light olive gray 5Y 6/1 and moderate</p>

	<p>yellowish orange 10YR 5/4), 3% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3-5% interparticle, 5% moldic, 10-25% irregular vugs; 18-35% total porosity and probably relatively moderate permeability</p> <p>Comments: Lower shoreface. Interparticle porosity in quartz sandstone mostly occluded by micrite or equant calcite cement</p>
264.40-268.00	No recovery
268.00-271.00	<p>Lithofacies: Pelecypod and rhodolith floatstone and rudstone</p> <p>Depositional texture: Pelecypod and rhodolith floatstone with peloid, skeletal fragment mud-dominated packstone matrix</p> <p>Color: Mottled yellowish gray 5Y 7/2 and light olive gray 5Y 6/1</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods (up to small cobble size and common <i>Ostrea</i>) and pelecypod fragments, coralline red algae (commonly forming rhodoliths), peloids, echinoid spines and plates, benthic and planktic foraminifers (including amphisitiginids, miliolids, globigeriniodes, biserials), ostracods, bryozoans, gastropods</p> <p>Accessory grains: 25-40% quartz grains, very fine to coarse sand size (mostly fine sand size), angular to subrounded, moderately sorted; 10% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 3% interparticle, 10% moldic, 10% irregular vugs; 23% total porosity and probably relatively moderate permeability</p> <p>Comments: Lower shoreface. Interparticle porosity mostly occluded by equant calcite cement and micrite</p>
271.00-273.00	No recovery
273.00-275.70	<p>Lithofacies: Pelecypod packstone</p> <p>Depositional texture: Pelecypod fragment, echinoid, red algae, amphisitiginid mud- and grain-dominated packstone</p> <p>Color: Mottled yellowish gray 5Y 8/1 and pale olive 10Y 6/2</p> <p>Sedimentary structures/textures: Thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods fragments, coralline red algae (including branching and rhodoliths), echinoid spines and plates, benthic and planktic foraminifers (including amphisitiginids, globigeriniodes, miliolids), ostracods,</p>

	<p>bryozoans, peloids</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (bimodal coarse to very coarse and upper very fine to lower fine sand size), angular to rounded, moderately sorted; 10% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 10% moldic, 10% irregular vugs; 25% total porosity and probably relatively moderate permeability</p> <p>Comments: Lower shoreface. Interparticle porosity mostly occluded by equant calcite cement and micrite</p>
275.70-277.30	<p>Lithofacies: Pelecypod packstone</p> <p>Depositional texture: Pelecypod fragment, peloids, red algae, mud- and grain-dominated packstone</p> <p>Color: Mottled yellowish gray 5Y 7/2 and pale olive 10Y 6/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoides</i> below upper bounding surface, contributing to <i>Glossifungites</i> ichnofacies. <i>Diplocraterion</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i>. <i>Glossifungites</i> below upper bounding surface</p> <p>Carbonate grains: Pelecypods fragments, peloids, branching coralline red algae, silt and lower very fine sand size skeletal fragments, echinoid spines and plates, benthic and planktic foraminifers (including amphisitiginids, globigeriniodes)</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to rounded, moderately sorted; 10% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 15% moldic, 5% irregular vugs; 25% total porosity and probably relatively low permeability</p> <p>Comments: Lower shoreface. Interparticle porosity mostly occluded by equant calcite cement and micrite. Upper bounding surface at 275.70 feet is a firmground. Upper bounding surface has about 0.07 feet of paleo-relief. Limestone is yellowish gray 5Y 7/2 above upper bounding surface and pale olive 10Y 6/2 below</p>
277.30-280.60	<p>Lithofacies: Pelecypod packstone</p> <p>Depositional texture: Pelecypod fragment, peloids, red algae, mud- and grain-dominated packstone</p> <p>Color: Mottled yellowish gray 5Y 7/2 and pale olive 10Y 6/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p>

	<p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Ophiomorpha</i>, <i>Thalassinoides</i>, <i>Diplocraterion</i>, <i>Asterosoma</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods fragments, peloids, branching coralline red algae, silt and lower very fine sand size skeletal fragments, echinoid spines and plates, benthic and planktic foraminifers (including amphisitiginids, globigeriniodes), ostracods</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to rounded, moderately sorted; 10% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 15% moldic, 5% irregular vugs; 25% total porosity and probably relatively low permeability</p> <p>Comments: Lower shoreface. Interparticle porosity mostly occluded by equant calcite cement and micrite</p>
280.60-281.60	<p>Lithofacies: Pelecypod floatstone and rudstone</p> <p>Depositional texture: Pelecypod floatstone with pelecypod fragment, red algae mud- and grain-dominated packstone matrix</p> <p>Color: Mottled yellowish gray 5Y 7/2 and pale olive 10Y 6/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Thalassinoides</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: Probably <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods (up to small cobble size and mostly <i>Ostrea</i>) and pelecypod fragments, branching coralline red algae, peloids, echinoid spines and plates, benthic and planktic foraminifers (including amphisitiginids, globigeriniodes)</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to rounded, moderately sorted; 10% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 15% moldic, 5% irregular vugs; 25% total porosity and probably relatively low permeability</p> <p>Comments: Lower shoreface. Interparticle porosity mostly occluded by equant calcite cement and micrite</p>
281.60-283.60	<p>Lithofacies: Pelecypod packstone</p> <p>Depositional texture: Pelecypod fragment, peloids, red algae,</p>

	<p>mud- and grain-dominated packstone</p> <p>Color: Mottled yellowish gray 5Y 7/2 and pale olive 10Y 6/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Ophiomorpha</i>, <i>Thalassinoides</i>, <i>Diplocraterion</i>? present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Pelecypods fragments, peloids, branching coralline red algae, silt and lower very fine sand size skeletal fragments, echinoid spines and plates, benthic and planktic foraminifers (including amphisitiginids, globigeriniodes), ostracods</p> <p>Accessory grains: 20-25% quartz grains, very fine to very coarse sand size (mostly upper fine to lower medium sand size), angular to rounded, moderately sorted; 10% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5% interparticle, 15% moldic, 5% irregular vugs; 25% total porosity and probably relatively low permeability</p> <p>Comments: Lower shoreface. Interparticle porosity mostly occluded by equant calcite cement and micrite</p>
283.60-294.00	<p>Lithofacies: Planktic foraminifer packstone</p> <p>Depositional texture: Planktic foraminifer, pelecypod fragment mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2 and minor burrow mottling with light olive gray 5Y 5/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. <i>Ophiomorpha</i>, <i>Thalassinoides</i>, <i>Diplocraterion</i> (292 feet), <i>Chondrites</i>? (292.5 feet), cryptobioturbation present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Planktic foraminifers (including globigeriniodes), pelecypod fragments, echinoid spines and plates, benthic foraminifers (including amphisitiginids, miliolids), peloids, coralline red algae, ostracods, calcispheres (most carbonate grains fine to medium sand size)</p> <p>Accessory grains: 20% quartz grains, very fine to lower coarse sand size (mostly upper fine to lower medium sand size), angular to subrounded, moderately sorted; 8% undifferentiated dark mineral grains (mostly black N1), 2% phosphorite grains, trace feldspar</p> <p>Porosity and permeability: 5-20% interparticle, 5-10% moldic,</p>

	<p>2% irregular vugs; 12-32% total porosity and probably relatively low permeability</p> <p>Comments: Upper offshore. Interparticle porosity commonly occluded by micrite</p>
294.00-304.25	<p>Lithofacies: Planktic foraminifer packstone</p> <p>Depositional texture: Planktic foraminifer mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2 and very minor burrow mottling with light olive gray 5Y 5/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Cryptobioturbaion, <i>Thalassinoides</i>, <i>Ophiomorpha</i>, <i>Diplocraterion</i> (301.5 feet), <i>Chondrites?</i> (298.0, 299.0 feet), <i>Zoophycus</i> (302.05 feet) present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Planktic foraminifers (including globigeriniodes), benthic foraminifers (mainly have micritized walls, uncommon biserials), peloids, pelecypod fragments, echinoid spines and plates, ostracods (most carbonate grains very fine sand size)</p> <p>Accessory grains: 5-15% quartz grains, very fine to fine sand size (mostly upper very fine to upper fine sand size), angular to subangular, well sorted; 5% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 15% moldic; 30% total porosity and probably relatively low permeability</p> <p>Comments: Upper offshore. Interparticle porosity commonly occluded by micrite</p>
304.25-309.30	<p>Lithofacies: Planktic foraminifer packstone</p> <p>Depositional texture: Planktic foraminifer mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2 and very minor burrow mottling with light olive gray 5Y 5/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Cryptobioturbaion, <i>Thalassinoides</i>, <i>Ophiomorpha</i>, <i>Zoophycus?</i> (308.0 feet) present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Planktic foraminifers (including globigeriniodes), benthic foraminifers (many have micritized walls, uncommon biserials and uniserials), peloids, pelecypod fragments, echinoid spines and plates, ostracods (most carbonate grains very fine to lower fine sand size with minor coarse sand size to small pebble sized coralline red algae and</p>

	<p>pelecypod fragments)</p> <p>Accessory grains: 5-15% quartz grains, very fine to upper coarse sand size (mostly upper very fine to lower medium sand size), angular to subangular, well sorted; 5% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 15% moldic; 30% total porosity and probably relatively low permeability</p> <p>Comments: Upper offshore. Interparticle porosity commonly occluded by micrite</p>
309.30-313.20	<p>Lithofacies: Red algae floatstone</p> <p>Depositional texture: Red algae floatstone with pelecypod, amphotiginiid, peloid mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2 and very minor burrow mottling with light olive gray 5Y 5/2 (Mostly yellowish gray 5Y 8/1 near the base of the interval)</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Cryptobioturbaion, <i>Thalassinoides</i>, <i>Ophiomorpha</i>, <i>Diplocraterion</i> (312.5 feet) present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Coralline red algae fragments, pelecypod fragments, benthic foraminifers (including amphotiginiids), peloids, echinoid spines and plates, planktic foraminifers (including globigeriniodes), ostracods, serpulids (most carbonate grains very fine to small pebble size)</p> <p>Accessory grains: 5-15% quartz grains, very fine to upper coarse sand size (mostly upper very fine to lower medium sand size), angular to subangular, well sorted; 10% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 20% moldic; 35% total porosity and probably relatively moderate permeability</p> <p>Comments: Upper offshore. Interparticle porosity commonly occluded by micrite. Probable firmground, transgressive surface of erosion, acoustic borehole image amplitude contact at 313.20 feet. Coarse transgressive lag spread out above and below contact by bioturbation. <i>Glossifungites</i> ichnofacies below 313.20 feet</p>
313.20-313.98	<p>Lithofacies: Red algae floatstone</p> <p>Depositional texture: Red algae floatstone with pelecypod, amphotiginiid, peloid mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2 and very minor burrow mottling with light olive gray 5Y 5/2 (Mostly yellowish gray 5Y 8/1 near the base of the interval)</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or</p>

	<p>Thalassinidean-like crustaceans. Cryptobioturbaion, <i>Thalassinoides</i>, <i>Ophiomorpha</i>, <i>Teichichnus</i>? (313.50 feet), <i>Planolites</i>? (313.80 feet) present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Coralline red algae fragments, pelecypod fragments, benthic foraminifers (including amphistiginids), peloids, echinoid spines and plates, planktic foraminifers (including globigeriniodes), ostracods, serpulids (most carbonate grains very fine to small pebble size)</p> <p>Accessory grains: 5-15% quartz grains, very fine to upper coarse sand size (mostly upper very fine to lower medium sand size), angular to subangular, well sorted; 10% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains</p> <p>Porosity and permeability: 15% interparticle, 20% moldic; 35% total porosity and probably relatively moderate permeability</p> <p>Comments: Upper offshore. Interparticle porosity commonly occluded by micrite. Probable firmground, transgressive surface of erosion, acoustic borehole image amplitude contact at 313.20 feet. Coarse transgressive lag spread out above and below contact by bioturbation. <i>Glossifungites</i> ichnofacies below 313.20 feet</p>
313.98-316.50	<p>Lithofacies: Planktic foraminifer packstone</p> <p>Depositional texture: Planktic foraminifer, skeletal fragment, peloid mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2 and trace burrow mottling with light olive gray 5Y 5/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Cryptobioturbaion, <i>Thalassinoides</i>, <i>Ophiomorpha</i> present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Planktic foraminifers (including globigeriniodes), pelecypod fragments, echinoid spines and plates, peloids, benthic foraminifers (many have micritized walls, uncommon amphistiginids), coralline red algae fragments (mainly concentrated inside burrow tubules), ostracods (most carbonate grains very fine to fine sand size with very minor coarse sand size to small pebble sized coralline red algae and pelecypod fragments)</p> <p>Accessory grains: 5% quartz grains, very fine to upper coarse sand size (mostly upper very fine to lower fine sand size), angular to subangular, well sorted; 5% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 10% intra and interparticle, 15%</p>

	<p>moldic; 25% total porosity and probably relatively low permeability</p> <p>Comments: Upper offshore. Interparticle porosity commonly occluded by micrite</p>
316.50-319.80	<p>Lithofacies: Planktic foraminifer packstone</p> <p>Depositional texture: Planktic foraminifer, skeletal fragment, peloid mud- and grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2 and trace burrow mottling with light olive gray 5Y 5/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Probably burrowed mostly by Thalassinidean or Thalassinidean-like crustaceans. Cryptobioturbaion, <i>Thalassinoides</i>, <i>Ophiomorpha</i>, <i>Chondrites</i>? (317.0 and 318.25 feet) present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Planktic foraminifers (including globigeriniodes), peloids, echinoid spines and plates, pelecypod fragments, benthic foraminifers (many have micritized walls, uncommon amphistiginids), coralline red algae fragments (mainly concentrated inside burrow tubules), ostracods (most carbonate grains very fine to fine sand size with very minor coarse sand size to small pebble sized coralline red algae and pelecypod fragments)</p> <p>Accessory grains: 5-10% quartz grains, very fine to upper coarse sand size (mostly upper very fine to lower fine sand size), angular to subangular, well sorted; 5% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains</p> <p>Porosity and permeability: 10% intra and interparticle, 15% moldic; 25% total porosity and probably relatively low permeability</p> <p>Comments: Upper offshore. Interparticle porosity commonly occluded by micrite</p>
319.80-331.60	<p>Lithofacies: Planktic foraminifer packstone</p> <p>Depositional texture: Planktic foraminifer, skeletal fragment, peloid grain-dominated packstone</p> <p>Color: Yellowish gray 5Y 7/2 and trace burrow mottling with light olive gray 5Y 5/2</p> <p>Sedimentary structures/textures: Very thick, massive bedding</p> <p>Trace fossils: Cryptobioturbaion, <i>Thalassinoides</i>, <i>Ophiomorpha</i>, <i>Chondrites</i>? present</p> <p>Ichnofabrics: Ichnofabric index 5</p> <p>Ichnofacies: <i>Cruziana</i></p> <p>Carbonate grains: Planktic foraminifers (including globigeriniodes), peloids, echinoid spines and plates, pelecypod fragments, benthic foraminifers (many have micritized walls, uncommon miliolids, uniserials, biserials), ostracods (most</p>

	<p>carbonate grains very fine to fine sand size) Accessory grains: 10% quartz grains, very fine to upper coarse sand size (mostly upper very fine to lower fine sand size), angular to subangular, well sorted; 3-5% undifferentiated dark mineral grains (mostly black N1), less than 1% to 1% phosphorite grains Porosity and permeability: 20% intra and interparticle, 15% moldic; 35% total porosity and probably relatively low permeability Comments: Upper offshore. Interparticle porosity commonly occluded by micrite. Upper bounding surface at 319.80 is an abrupt acoustic borehole image contact with relatively low amplitudes and thalassinidean-sized burrows above, and relatively high amplitudes below and domination by cryptobioturbation and not larger thalassinidean-sized and shaped burrows</p>
331.60-333.90	<p>Lithofacies: Arenaceous pelecypod packstone Depositional texture: Arenaceous pelecypod fragment, peloid, planktic foraminifer grain-dominated packstone Color: Yellowish gray 5Y 8/1 and minor burrow mottling with light olive gray 5Y 5/2 Sedimentary structures/textures: Very thick, massive bedding Trace fossils: <i>Thalassinoides</i> present Ichnofabrics: Ichnofabric index 5 Ichnofacies: <i>Cruziana</i> Carbonate grains: Pelecypod fragments and minor whole pelecypods (up to small pebble size), peloids, planktic foraminifers (including globigeriniodes), echinoid spines and plates, benthic foraminifers (many have micritized walls, amphistiginids, miliolids), coralline red algae fragments (up to small pebble size), ostracods (most carbonate grains upper very fine to lower very coarse sand size) Accessory grains: 25-40% quartz grains, very fine to upper coarse sand size (mostly upper very fine to lower fine sand size), angular to subangular, well sorted; 10-12% undifferentiated dark mineral grains (mostly black N1), 1-2% phosphorite grains, trace feldspar Porosity and permeability: 20% intra and interparticle, 20% moldic; 40% total porosity and probably relatively moderate permeability Comments: Upper offshore. Interparticle porosity commonly partly occluded by micrite</p>
333.90-347.90	<p>Lithofacies: Planktic foraminifer packstone Depositional texture: Planktic foraminifer, peloid, pelecypod fragment mud- and grain-dominated packstone Color: Yellowish gray 5Y 7/2 and trace burrow mottling with light</p>

olive gray 5Y 5/2

Sedimentary structures/textures: Very thick, massive bedding

Trace fossils: Cryptobioturbation, *Thalassinoides*, *Ophiomorpha* present

Ichnofabrics: Ichnofabric index 5

Ichnofacies: *Cruziana*, *Glossifungites* at and near upper bounding surface

Carbonate grains: Planktic foraminifers (including globigerinoides), peloids, pelecypod fragments, benthic foraminifers (many have micritized walls, uniserials, biserials, uncommon amphisteginids), echinoid spines and plates, ostracods (most carbonate grains very fine sand size), fish tooth at 341.44 feet

Accessory grains: 20% quartz grains, very fine to lower fine sand size (mostly upper very fine to lower fine sand size), angular to subangular, well sorted; 5% undifferentiated dark mineral grains (mostly black N1), 1% phosphorite grains

Porosity and permeability: 15-20% intra and interparticle, 10-15% moldic; 25-35% total porosity and probably relatively low permeability

Comments: Upper offshore. Interparticle porosity commonly occluded by micrite. Upper bounding surface at 333.90 feet is an abrupt acoustic borehole image contact with (1) relatively low amplitudes and relatively high amplitudes below, (2) coarse carbonate material above contact than below, (3) more quartz grains above contact than below, (3) *Glossifungites* ichnofabric below contact, (4) cryptobioturbation in host rock below contact and not above, (5) more dark mineral grains above contact and less below, and (6) interpreted firmground at 333.90 feet. Contact between relatively abundant thalassinidean-sized and shaped burrows above 346.05 feet than below