SITE 873 HOLE A CORE 1R

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color |
|-------|--|---------|--------------------------|-----------|---------|-----------------------|----------------------------------|
| | KRRR KRRR KRRRRR KRRRRRRRR KRRRRRRRRR KRRRRRR | 1 | I. Paleocene - m. Eocene | Ŵ | | T T T T T | 10YF 6/6 to 10YF 8/2 |

DESCRIPTION

MANGANESE-COATED, PHOSPHATIC LIMESTONE CONGLOMERATE

Major Lithology:

637

Manganese-coated, phosphatic RUDSTONE, brownish-yellow (10YR 6/6) with a few white clasts (10YR 8/2), "Matrix" is PLANKTONIC- FORAMINIFER SAND (PACKSTONE?) with bioclasts to 1 mm. Clasts are: (1) lithoclasts of SKELETAL GRAINSTONE, with foraminifers (benthic?) and rudist fragments of various sizes (~1/2 mm in one sample; to >2 mm in another), clasts are up to 1.5 cm in size; (2) bioclasts, mainly rudist (radiolitid) fragments to 1 mm. There is a 1.5 cm shark(?) tooth at Section 1, 24 cm. The depositional texture is therefore rudstone with planktonic packstone matrix. MANGANESE RIND is black (N1/0) and up to 1.5 cm-thick. Outer portion (to 1 cm-thick) is very spongy with spectacular digitate "stomatolites" that enclose either pores or white pelagic limestone (the pores may be washouts, but this is unlikely because the limestone is well lithified). Porosity is locally 25%, and probably vuggy. Manganese habits are varied; much of it has clearly replaced the original material. The manganese cuts across the rudstone on a broad, generally sharp front, but In places is preceded by Mn "dendrites". Manganese also replaces skeletons, e.g., a large radiolite rudist. Manganese is most dense at the bioclast/matrix contact where it has encroached both into the matrix (planktonic packstone), along a sharp but very irregular front, and into the rudist, as dendrites. Some clasts (lithoclasts?) have thin manganese crusts and dendrites extending inward throughout (1 mm diameter); these could be coatings applied during reworking, since the matrix is not replaced. Manganese locally replaces phosphatized limestone. Fractures within the manganese crust are filled with pelagic foraminifer packstone. Digitate domal stromatolites of manganese extend into the fracture fill, replacing the packstone. Pelagic foraminifers and/or their molds are lightly coated by manganese. Bands within the larger manganese "stromatolites" are much more metallic than the norm; perhaps indicating concentration of other metals. The PHOSPHATIC REPLACEMENT (the brownish yellow stain?) is more pervasive and less

CORED 54.3-59.8 mbsf destructive of fabric than the manganese encrustations. Phosphate has generally replaced the rudstone, but locally is selective. A 10 mm lithoclast remains unreplaced, despite 10% moldic porosity. It is surrounded by concentric banding, to 4 mm, in the matrix. (Bio?)clasts within the lithoclast are heavily phosphatized (2 examples only). The intensity of color in bands and in clasts is taken as an index of phosphate concentration. Within the pelagic packstone (rudstone matrix), some skeletons are selectively replaced while others selectively spared, as with lithoclasts and larger bioclasts. In Section 1, 21-25 cm, the shells of plantonic foraminifers in the "matrix" are mostly phosphatized; mud, observed inside and outside the shells, is white. The matrix porosity of the rudstone is ~10%, moldic (after foraminifers); locally it is 15%. Where manganese replacements occur, porosity is negligible. (But note that outer, nonreplacive portion of manganese crust is also porous, where not filled by pelagic limestone or where carbonate has been leached). A few radiolites (rudists) retain intraparticle porosity (crSmsMO). Specific Interval Features: Manganese patterns increase the complexity of the facies. In Section 1, 8-21 cm, packstone (shallow biota) clasts have a manganese-replaced matrix; bioclasts within theses clasts are largely unreplaced; many have a laminated manganese coat, up to several mm thick. The bioclasts are bordered by stubby digitate "stromatolites" of manganese that pass into more manganese dendrite halos. These halos extend 10 mm into the pelagic packstone matrix. Other clasts have manganese coats to 5 mm thick; there is very sparse replacement of clasts, but 10 mm stromatolite and dendrite haloes are observed. Some clasts of both types, manganese-replaced or manganese-spurned, have light phosphate replacement. Clasts that are not replaced by manganese, have internal moldic porosity of 10%, yet no manganese. Is porosity post-manganese replacement? Manganese-dendrites locally spare pelagic foraminifers; manganese also locally replaces the muddy fill within foraminifers, but not the tests, which have very high original porosity. In Section 1, 17-21 cm, manganese "domains" up to 10 mm long look like spalled bits of manganese crusts. Internal laminations may be truncated in some, but they are now fringed by (secondary?) laminated crusts and digitate "stromatolites". Matrix is pelagic packstone, white (10YR 8/1). In Section 1, 24 cm, a shark tooth is clear beneath the blue enamel (apatite?) exterior; perhaps replaced. The spongy interior (or intercrystalline contact) is lightly manganese-impregnated to produce a 3-dimensional image of the tooth interior -- a "hologram".

General description:

Rollers: Section 1, 0-7 cm and 20-25 cm; Drilling pebbles: Section 1, 7-20 cm. Thin section samples: Section 1, 0-7 cm, 13-16 cm, 16-20 cm, and 20-25 cm.

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873A-1R 1

SITE 873

| SIT | E 873 HOL | LE / | 4 | CORE 2R | | | | CORED 59.8-69.3 mbsf | 873A-2R 1 |
|-------|--|---------|---------------|-----------|---------|--------|----------------------------|--|---|
| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION MANGANESE-ENCRUSTED SKELETAL FLOATSTONE | 5 |
| | FFFFF1 Image: Control of the second | | | | | | 10YR 8/2 to 10YR 6/6 | Major Lithology: Section 1, 0–4 cm: Single clast, with 10 mm MANGANESE CRUST on SKELETAL FLOATSTONE; skeletal packstone matrix with little mud. White (10YR 8/2), but almost entirely altered to brownish yellow (10YR 6/6) or black (N2), presumably by phosphate or manganese, respectively. Skeletal grains are mostly radiolite rudist fragments, foraminifers (globular, 1 mm in size, possibly planktonic), other bivalves, possibly red algae, and many unknown, well-rounded fragments. Intraclasts of skeletal packstone are rare. Porosity (~2%) is moldic (Ims MO). Exterior to the manganese crust (and partly manganese-impregnated), is PLANKTONIC-FORAMINIFER GRAINSTONE, white (N10). The MANGANESE CRUST is vaguely laminated; its exterior surface is comprised of colloform "domal stromatolites" with ~50% porosity, or fill by pelagic foraminifers. The skeletal floatstone is centripitally replaced by manganese and phosphate, through variably pervasive and selective replacement. The matrix is generally replaced preferentially to the bioclasts, by either manganese or phosphate, or both (see description of Core 1R for further details). This piece may be displaced downhole from the manganese-encrusted interval of Core 144-873A-1R. General Description: Roller: Section 1, 0–4 cm. Thin section sample: Section 1, 0–4 cm. | 15 20 25 25 20 25 20 25 20 25 20 25 20 25 20 20 |
| SIT | E 873 HOL | E | 4 (| CORE 3R | | | | CORED 69.3-78.7 mbsf | 85— |
| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION SKELETAL FORAMINIFER GRAINSTONES AND PACKSTONES | 90— 95— |
| ÷ | | 1 | Maastrichtian | • | | T T | 10YR 7/3 | Major Lithology: Section 1, 0–14 cm: white (10YR 8/2), SKELETAL FORAMINIFER GRAINSTONES and PACKSTONES with very pale brown patches (10YR 7/3) that probably correspond to burrows. The very fine-grained texture | |
| | | | | | | | | makes the identification of grains difficult. The grains especially include benthic foraminifers (mainly milliolids), peloids and fragments of red algae (corallinaceans) and rudists (radiolitids); echinoids are rare. Porosity (1% to 5%) is moldic and intergranular with locally solution-enlarged pores. The porosity increases slightly toward the edges of the rocks. Millimeter-sized cavities are partly filled by drusy and equant crusts of calcite cements. General Description: Drilling Pebbles: Section 1, 0–14 cm. Thin section samples: Section 1, 3–6 cm and 11–14 cm. | 115 120 125 130 135 140 145 145 |



150-

| 873 | A-1R | _ | | | COF | RED | 54.3 | - 59 | 9.8 | mbst |
|-------|------------------|---------|------------------------|------------------------|------------------|------------------|-----------|----------|---------------------------------|----------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| - | | 1 | I. Paleocene-m. Eocene | T CP8, CP11-12a, CP14a | a P4, P8, P12 | | Ś | | T T T T T T T | 10YR 6/6 to 10YR 8/2 |

| bi Graphic E Graphic Lith. | ection | ge | alc. anno. | lank. Dram. | arger Dram. | tructure | listurb. | ample | olor |
|----------------------------------|--------|----|---------------|----------------|----------------|----------|----------|--------|------|
| | 0 | A | CP8 | P4 | <u>⊐₽</u> | S | | S T | 0 |

| 873 | A- 3R | | | | COF | RED | 69.3 | - 78 | 3.7 | mbsf |
|-------|--|---------|---------------|-----------------|------------------|------------------|-----------|----------|--------|----------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| - | GGPPPI GGPPPI GGPPPI GGPPPI GGPPPI | 1 | Maastrichtian | в | в | - Maastrichtian | • | | T T | 10YR 7/3 |

R, P



RUDIST PACKSTONE TO GRAINSTONE and MOLLUSK FORAMINIFER PACKSTONE

Major Lithologies:

Section 1, 0-36 cm: very pale brown (10YR 8/3) RUDIST GRAINSTONE to PACKSTONE, poorly sorted, fine to coarse grained. Skeletal grains are well rounded and include fragments of rudists (radiolitids), red algae (especially branching corallinaceans), echinoids, and bivalves; benthic foraminifers (mainly miliolids and orbitoids) are common. Large skeletal pieces are locally encrusted by red algae (corallinaceans). Whole specimens of rudists and large pieces of coral colonies are recovered in Section 1, 31-36 cm. The porosity is generally high, 15% to 20%, moldic after bivalve shells and corals, and intergranular with solution enlarged pores. The porosity is moderately reduced by drusy calcite cements. Section 1, 36-40 cm: light gray (10YR 7/2) MOLLUSK FORAMINIFER PACKSTONE, fine- to medium-grained. They include common molds of small bivalves and gastropods; benthic foraminifers (miliolids and textularids) and micritized rudist fragments (radiolitids) are also common. Porosity (3%) is moldic (after leached mollusk shells and foraminifers) and intragranular.

General Description:

Rollers: Section 1, 0-16 cm and 31-40 cm; Drilling Pebbles: Section 1, 16-40 cm. Thin section samples: Section 1, 0-6 cm, 16-20 cm, 21-30 cm, 31-36 cm, and 36-40 cm.



SITE 873 HOLE A CORE 5R

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color |
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| 1 | | 1 | Maastrichtian | • 8 | | T T T T T | 10YR 7/2 |

CORED 88.3 - 98.0 mbsf

DESCRIPTION

RUDIST PACKSTONE, FORAMINIFER WACKESTONE, and BIVALVE FORAMINIFER PACKSTONE

Major Lithologies:

Section 1, 0-23 cm: light gray (10YR 7/2) RUDIST PACKSTONE, fine grained. These pieces are characterized by an abundance of rudist fragments (radiolitids), a few-mm to 3 cm in size. Coral molds, benthic foraminifers (miliolids), tiny bivalve fragments, and echinoid fragments are also reported. Porosity (10%) is intergranular, moldic (after leached tiny bivalve fragments and foraminifers) and locally vuggy. The porosity is moderately reduced by drusy calcite cements. Section 1, 23-78 cm: white (10YR 8/2, 5YR 8/1), pinkish white (7.5YR 8/2, 5YR 8/2) to light gray (10YR 7/2) FORAMINIFER WACKESTONE. Conspicuous light gray (2.5Y 7/2) to very pale brown (10YR 8/5) mottling is due to bioturbation. Open spaces include tubular pores from 0.3 mm to 2 mm in diameter. Some may be burrows, others may be tiny tubular fenestrae (from escaping fluids). Y-shaped cavities narrowing downwards may be plant rootlets. Porosity (3%) is moderately reduced by light gray (2.5Y 7/2) silt-sized geopetal infillings or locally, by calcite cements (drusy, asymmetric, laminated crusts). These open spaces are usually stained yellow (2.5Y 8/6, 10YR 7/6) to red (2.5YR 5/6, 10R 4/6). The fossil content of the wackestone is poor and includes small benthic foraminifers (miliolids), molds of gastropods and thin-shelled bivalves; green algae and worm tubes are rare. In Section 1, 64-71 cm, a cm-thick layer of foraminifer wackestone exhibits mm-sized, oxidized borings which are seemingly disrupted. Section 1, 82-118 cm; white (10YR 8/2), light gray (10YR 7/2) to very pale brown (10YR 7/3) BIVALVE FORAMINIFER PACKSTONE. The packstone includes benthic foraminifers (orbitoids - some of them are leached), peloids, molds of bivalves and gastropods, peloids and fragments of rudists (radiolitids) and red algae (corallinaceans). The moldic to vuggy porosity (1%) is moderately reduced by drusy and equant calcite cements. Bioturbation (mm-sized tubes) and fenestrae are observed in Section 1, 95-118 cm.

General description:

Rollers: Section 1, 3–8 cm, 13–51 cm, 56–92 cm, 95–107 cm, and 110–118 cm; Drilling Pebbles: Section 1, 0–3 cm, 8–13 cm, 51–56 cm, 92–95 cm, and 107–110 cm. Thin section samples: Section 1, 13–18 cm, 41–46 cm, 56–60 cm, 67–70 cm, 78–82 cm, and 104–107 cm.



SITE 873 HOLE A CORE 6R

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color |
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| 1 | | 1 | Maastrichtian | 8 C | | TTT TT TT | 10YR 7/4 To 10YR 8/3 |

DESCRIPTION

MOLLUSK PACKSTONE, GASTROPOD WACKESTONE, MOLLUSK MILIOLID PACKSTONE, and SKELETAL RUDSTONE

Major Lithologies:

Section 1, 0-47 cm: light yellowish brown (10YR 6/4) to very pale brown (10YR 7/4) MOLLUSK PACKSTONE. The grains, in order of abundance, are bivalves, gastropods, and miliolids. There are few rudist (radiolite) bivalves but cerithid gastropods (high-spired) are scattered throughout. Minor components are: corals (porites?, branching), other benthic foraminifers, echinoderm debris, encrusting worms and/or algae; dasycladacean algae, bryozoans and codiacian algae are rare(?). Peloids are doubtless common, but are hard to identify. Porosity is generally high (10%), but varies locally from 2%-20%. Porosity is almost entirely skelmoldic, with only minor intergranular porosity. Low porosity in Section 1, 18-27 cm is due to pervasive cementation by passive, equant calcite crusts (PE5, PE5C). Other molds are variably reduced by calcite cement. Porosity appears higher at the margins of pieces, especially in the upper part; this suggests that differential cementation and dissolution helped control breakage of the clasts during drilling. Patchy yellow stains are associated with molds. Section 1, 47-76 cm: very pale brown (10YR 8/3) GASTROPOD WACKESTONE, except at Section 1, 51-55 cm, where it is white (10YR 8/2). Gastropods are common, especially cerithids; there are many bivalves (radiolites are rare) and few miliolids. Porosity decreases downward from 10% (at Section 1, 47-55 cm) to 1%-2%, because of increased cementation. The porosity is comprised of skeletal molds (of mollusks and some miliolids) with a few vugs. Cement is passive, bladed, coarsely crystalline crusts of clear, euhedral calcite (PB5C). The contact near Section 1, 76 cm is very ragged, suggesting bioerosion or solution etching of this horizon. The intervals above and below the contact have been pervasively leached to form vuggy porosity. More of the upper interval (Section 1, 76-88 cm) has been removed close to the contact (>50% by volume) than the lower interval. The lower interval (Section 1, 76-88 cm) is cut by irregular vugs that contain pieces of the host lithology which can be fitted back into place along the

CORED 98.0 - 107.6 mbsf

vug wall. Vugs in both of these intervals are filled by a fine-grained MOLLUSK MILIOLID PACKSTONE that has no recognizable equivalent uphole (though interval 144-873A-5R-1, 82-92 cm or -6R-1, 0-47 cm may be a match). Similar vugs and fill occur in interval 144-873A-5R-1, 104-107 cm, but may reflect a similar, but later, episode of dissolution. Very similar dense rims occur at interval 144-873-5R-1, 67-70 cm. Section 1, 76-88 cm: very pale brown (10YR 8/3) MOLLUSK MILIOLID PACKSTONE and WACKSTONE (patchy), containing many gastropods, miliolids, and mollusks (radiolitid rudists rare). Mollusks, to 1.5 cm long, in one piece. Porosity (3%) as molds of gastropods and miliolids. Many molds, and locally matrix, are stained yellow. Molds are reduced and filled by passive, bladed, coarsely crystalline calcite crusts (PB5C). The top of a vug in Section 1, 76-88 cm is filled with coarse-grained cement to produce geopetals. The mold of a bivalve that once protruded into the vug stands open; it is unfilled by internal sediment or cement. The mold is indicative of a later solution event that is only recognized as post-dating deposition and cementation. Section 1, 88-130 cm: skeletal limestone that grades from SKELETAL RUDSTONE at the top (Section 1, 88-93 cm), through mixed SKELETAL PACKSTONE (dominant) and WACKESTONE, to MOLLUSK WACKESTONE at the base (Section 1, 125-130 cm). The mixing of packstone and wackestone is locally caused by burrowing (e.g., Section 1, 117-125 cm), but may in part reflect the slight compaction (dewatering) of a mud-supported fabric to produce a packstone "filled" by mud. The color of this interval is very pale brown (10YR 7/4), except at its base; Section 1, 125-130 cm is white (10YR 8/2). Yellow stains occur throughout this interval (from yellow (10YR 7/8) to yellowish brown (10YR 5/6)). The stain is mostly around molds, but locally includes matrix, especially the muddy matrix filling gastropods. Major particles are gastropods, bivalves, and miliolids. Gastropods are mostly low-spired forms; bivalves include radiolites (rare). Minor components include corals, other benthic foraminifers, encrusting worms and/or foraminifers, and echinoderm debris. Porosity varies from 1% (Section 1, 88-96 cm and 117-122 cm) to 8% (Section 1, 114-117 cm), and consists of molds (abundant) and vugs (rare). Calcite cement extensively fills the molds in less porous intervals. A sizable vug, represented only by one wall with vertical contact (Section 1, 107-111 cm), is largely filled by silt-sized calcite, loosely packed but cemented, which contains bioclasts from the host rock and a 0.5 mm terrigenous siltstone clast.

General description:

Rollers: Section 1, 11–44 cm, 62–71 cm, 88–103 cm, and 117–130 cm; Drilling Pebbles: Section 1, 0–11 cm, 44–62 cm, 71–88 cm, and 103–117 cm. Thin section samples: Section 1, 11–18 cm, 19–23 cm, 34–38 cm, 55–59 cm, 75–79 cm, 93–96 cm, 103–107 cm, and 117–120 cm.



| 873 | A-4R | | | | CO | RED | 78.7 | 7-8 | 8.3 | mbs |
|-------|------------------|---------|---------------|-----------------|------------------|------------------|-----------|----------|------------------|--------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| | | 1 | Maastrichtian | В | m Maastrichtian | C,M | 0 | XXX | T T T T | - 10Y 7/2 10YR 8/3 |

| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
|-------|------------------|---------|---------------|-----------------|------------------|------------------|-----------|----------|--------|----------|
| | | 1 | Maastrichtian | в | в | ™ Maastrichtian | 0000 | | | 10YR 7/2 |

| 873 | A- 6R | | | С | ORE | D 9 | 8.0 - | - 10 | 7.6 | mbs |
|-------|------------------|---------|---------------|-----------------|------------------|------------------|-----------|----------|--------|----------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| | | 1 | Maastrichtian | в | в | ≍ Maastrichtian | 6 | | | 10YR 7/4 To 10YR 8/3 |

SITE 873 HOLE A CORE 7R



DESCRIPTION

FORAMINIFER PELOID PACKSTONE, RUDIST WACKESTONE TO FLOATSTONE, GASTROPOD FORAMINIFER WACKESTONE, and BIVALVE RUDIST PACKSTONE TO GRAINSTONE

Major Lithologies:

Section 1, 0-28 cm; light gray (10YR 7/2) BIVALVE RUDIST PACKSTONE with a locally mottled aspect (white 10YR 8/2) related to bioturbation. There are abundant rudist pieces (radiolitids) and leached fragments of thin-shelled bivalves, common gastropod molds and benthic foraminifers (mainly miliolids), few digitate corals, and fragments of red algae (corallinaceans). The porosity is low, moldic, and partly reduced by drusy calcite cements. Section 1, 28-35 cm and 131-150 cm, Section 2, 3-6 cm: very pale brown (10YR 8/3, 10YR 7/3) GASTROPOD FORAMINIFER WACKESTONE with conspicuous pale brown (10YR 6/3) mottling due to bioturbation (cm-sized burows). Grains include benthic foraminifers (milliolids), small gastropods and bivalve fragments (commonly leached). Porosity is generally low, moldic (after gastropods and bivalves), and partly filled with equant calcite cement; moldic pores are usually stained yellow (10YR 8/6). Tiny tubes (0.3 mm in diameter) are probably burrows, but some have a distinctive Y-shape reminiscent of plant rootlets. Section 1, 138-142 cm has an irregular surface where 1 mm borings are filled with yellow (10YR 8/8) silty material.

Below this surface, cavities are filled with white (10YR 8/1) sediment that may have resulted from alteration of the host rock. Section 1, 46-90 cm: very pale brown (10YR 8/3) FORAMINIFER PELOID PACKSTONE, fine-grained, with a conspicuous mottled aspect (light gray, 10YR 7/2) due to bioturbation (burrows). Benthic foraminifers (mainly miliolids) are abundant, as are peloids. Other components include small gastropods and fragments of red algae (corallinaceans), rudists, and corals (usually leached). Porosity is generally low with a few moldic pores (leached fragments of bivalves, gastropods, and corals). These pores are usually lined by drusy calcite cements which display a typical reddish yellow color (7.5YR 7/8). Section 1, 35-39 cm and 90-99 cm. Section 2, 6-84 cm: white (10YR 8/2), very pale brown (10YR 7/2), brown (10YR 6/3) to yellowish brown (10YR 6/4) RUDIST PACKSTONE-GRAINSTONE. These are fine grained in Section 1 and poorly sorted, medium to coarse grained in Section 2. They include abundant rudist (radiolitid) pieces, common fragments of red algae (corallinaceans) and bivalves (usually leached): benthic foraminifers are also common (orbitoids, miliolids). Gastropod molds, coral fragments, and intraclasts are rare. The porosity is moldic (leaching of bivalve and gastropod shells) intergranular and locally vuogy. A burrow, 1 cm in diameter, in Section 1, 90-99 cm is filled with a material similar to the burrowed sediments. Section 1, 99-131 cm, Section 2, 0-3 cm; white (10YR 8/2) to very pale brown (10YR 7/3) RUDIST WACKESTONE and FLOATSTONE. They are characterized by the occurrence of large pieces or whole specimens of rudists (radiolitids); the diameter of the whole specimens varies from 0.5 cm to 1.5 cm. A rudist cluster of about 10 specimens constitutes Section 1, 106-114 cm. Small gastropods and molds of coral colonies are present. The micritic matrix includes benthic foraminifers (mainly miliolids), fragments of red algae (corallinaceans) and lithoclasts (very pale brown 10YR 7/3) with borings.

CORED 107.6 - 117.3 mbsf

General description:

 $\begin{array}{l} \label{eq:constraints} \mbox{Cylinders: Section 1, 90-99 cm, Section 2, 70-75 cm;} \\ \mbox{Rollers: Section 1, 0-5 cm, 12-21 cm, 24-39 cm, 42-60 cm, 63-88 cm, and 102-150 cm, Section 2, 0-18 cm, 21-42 cm, 45-49 cm, 52-66 cm, and 75-84 cm; Drilling pebbles: Section 1, 5-12 cm, 21-24 cm, 39-42 cm, 60-63 cm, 88-90 cm, and 99-102 cm, Section 2, 18-25 cm, 42-45 cm, 49-52 cm, and 66-70 cm. Thin section samples: Section 1, 5-8 cm, 16-20 cm, 31-35 cm, 57-60 cm, 98-99 cm, 118-123 cm, and 142-145 cm, Section 2, 0-4 cm and 59-62 cm. \end{array}$



SITE 873 HOLE A CORE 8R

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color |
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DESCRIPTION

PACKSTONE, GRAINSTONE, WACKESTONE, and MUDSTONE

Major Lithologies:

Section 1, 0-3 cm: very pale brown (10YR 5/6) PACKSTONE as an internal mold of a bivalve with common miliolids: the internal mold is in contact with a SKELETAL BUDSTONE with phosphatized matrix and 40%-50% moldic and vuggy porosity. Section1, 3-7 cm and 7-9 cm: very pale brown (10YR 7/3) SKELETAL PACKSTONE, shell fragments (bilvalve?) abundant, algae (dasycladacean) common. Porosity is (5%) moldic after bivalves and algae filled or reduced by amber equant to bladed cement. Section 1, 9-14 cm and 17-20 cm: GRAINSTONE, peloids common, large benthic foraminifers may be common as lentil-shaped molds. If intergranular cement is neomorphosed mud, the original texture would be packstone. Section 1, 14-17 cm and 20-56 cm: very pale brown (10YR 7/3) GRAINSTONE, very fine grained sand texture (< 100 microns), burrowed, vuggy porosity (1%-2%). Section 1, 56-62 cm: WACKESTONE with moldic porosity after bivalves and gastropods. Section 1, 62-76 cm: very pale brown (10YR 7/3) FLOATSTONE to RUDSTONE with mudstone/packstone matrix. Rudist fragments and other mollusk debris are common. Geopetal fill in one partial rudist valve. Section 1, 76-89 cm: light grav (10YR 7/1) to gray (10YR 6/1) WACKESTONE to FLOATSTONE with wackestone matrix, common bivalve fragments, miliolids, gastropod molds, few rudist fragments. Section 1, 89-98

cm: gray (10YR 6/1) WACKESTONE with black to gray grains, some pellet-shaped, blackened shell fragments are common. Porosity is (<5%) moldic after mollusks. Section 1, 98-107 cm; dark grav (2.5YR 4/0) PACKSTONE, fine-grained; there are some grading and bedding apparent, and possible rip-up structures. Components include pyritized pellets and foraminifers, common miliolids (not pyritized), black peloids and blackened shell fragments. Section 1, 107-116 cm and 121-124 cm: dark gray (2.5YR 4/0) to light gray (10YR 7/1) CARBONACEOUS WACKESTONE, one piece has a pyritized algal or microbial encrustation. Section 1, 116-121 cm: light gray (10YR 7/1) MUDSTONE with fenestrae (possible fluid escape structures); associated with possible microbial encrustations. Section 1, 124-128 cm: light gray (10YR 7/1) PELOID(?) PACKSTONE. Porosity is 1%-2% moldic after mollusk debris. Section 1, 128-137 cm: gray (10YR 6/1) MUDSTONE, with some boring: there are also disseminated flakes of brown to black organic debris. Section 1, 137-141 cm and 144-147 cm: gray PACKSTONE, with common miliolids, molds of dasycladacean algae, and possible fragments of encrusting red algae. Section 1, 141-144 cm and 147-150 cm: gray WACKESTONE (drilling pebbles). Section 2, 0-4 cm: light gray PACKSTONE to WACKESTONE, burrowed (fill is wackestone). Contains abundant molds of dasvcladacean algae, blackened grains and shell fragments; brown flakes in the finer portions. Section 2, 4-9 cm: light gray (2.5YR 7/1) MUDSTONE to very fine WACKESTONE, with 1 cm packstone-filled burrow. Section 2, 9-13 cm⁻ this interval contains 6 drilling pebbles; one is a coralline RUDSTONE with a black mud matrix, and another is a gastropod RUDSTONE. Section 2, 13-23 cm; dark gray (2.5YR 4/0) RUDSTONE with mud matrix, some gastropod and coral molds, one possible rudist fragment with an inner aragonitic layer pseudomorphosed by muddy white sediment. Other molds are filled by same white sediment.

CORED 117.3 - 126.9 mbsf

General description

Cylinders: Section 1, 43–56 cm, 89–107 cm, and 128–137 cm; Rollers: Section 1, 9–14 cm, 20–43 cm, 56–89 cm, 107–128 cm, 137–141 cm, and 144–147 cm, Section 2, 0–9 cm and 13–20 cm; Drilling pebbles: Section 1, 0–9 cm, 14–20 cm, 141–144 cm, and 147–150 cm, Section 2, 9–13 cm and 20–23 cm. Thin section samples: Section 1, 3–7 cm, 54–57 cm, 69–71 cm, 82–86 cm, 95–99 cm, and 125–128 cm, Section 2, 0–3 cm and 20–23 cm.





DESCRIPTION

WIGG(P

WHGG(P

SKELETAL GRAINSTONE, SKELETAL PACKSTONE and WACKESTONE

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Major Lithologies:

Section 1, 0-11 cm; very pale brown (10YR 7/3) SKELETAL GRAINSTONE, unidentified shell fragments dominate, peloids are common, few large benthic foraminifers; coarse shell-rich layers alternate with cm-thick finer-grained beds. Porosity (5%-15%) is intergranular and moldic after mollusks. Section 1, 11-70 cm: very dark gray (10YR 3/1) to gray (10YR 5/1) SKELETAL GRAINSTONE, algae (dasycladacean: terquemella) are abundant, radiolitid rudist fragments and large benthic foraminifers are common; there are many peloids (stained gray and black) but few miliolids. Possible caprinid rudist fragment in Section 1, 15-18 cm. is completely replaced by coarse equant spar cement with ghosts of shell-wall canals still visible. Grain size varies from medium sand at the top, to coarse sand in Section 1, 15-46 cm, to medium sand in Section 1, 46 to 70 cm; this last interval may be cross-bedded. Miliolid abundance increases at the base of the interval. Section 1, 70-78 cm: two pieces of light gray (10YR 7/2) SKELETAL PACKSTONE, both pieces show contact with a small amount of grainstone similar to Section 1, 11-70 cm. Section 1, 78-98 cm; light gray (10YR 7/1) MUDSTONE to WACKESTONE, bioturbated, with few miliolids, dasycladacean algae, and gastropods. Some burrow-fill is closer to wackestone texture; a few patches approach silt-sized grainstone texture. Two vugs (2-5

CORED 126.9 - 136.6 mbsf mm) may be solution enlarged molds. Section 1, 98-131 cm: gray (10YR 6/1) ALGAL PACKSTONE, with abundant terquemella, some pyritization, common subrounded black grains. Porosity is (5%-10%) moldic after bivalves, and microvuggy. Grain size and bioturbation increase towards the base of the interval. A large skeletal fragment (2-3 cm long), probably a bored gastropod is replaced with very pale brown mud or finegrained cement. Section 1, 131-150 cm; is comprised of ALGAL SKELETAL WACKESTONE with packstone burrow-fill, similar to the overlying lithology. Section 2. 0-34 cm: light gray (10YR 7/1) MUDSTONE with burrow-fill of algal packstone in the top piece. The burrow-fill contains abundant algae (terguemella). Amber patches in the lower pieces appear to be some form of differential recrystallization, possibly of a burrow fill; the original texture is not visible. The interval (Section 2, 0-34 cm) grades down to WACKESTONE at the base. with local packstone burrow-fill. Algae (dasycladacean), mollusk debris, and brown (organic?) flakes are common; there are few miliolids. Section 2, 34-39 cm: gray (10YR 5/1) PELOID PACKSTONE, with abundant gray peloids. common algae, and few miliolids and large benthic foraminifers. Porosity is <5% moldic (after algae and bivalves). One streak of brown organic(?) matter is 3-4 cm-long and 1-2 mm-wide; pyrite is disseminated throughout. Section 2, 39-86 cm: light gray (10YR 7/1) WACKESTONE, bioturbated. There are few gastropods, algae, and foraminifers. Section 2, 86-113 cm: light gray (10YR 7/1) PACKSTONE/ GRAINSTONE, comprised of algae, skeletal debris, and common gray grains; the light to vellowish grav burrow-fill is similar to the overlying wackestone except that pellets are visible in places. Porosity is up to 5% moldic (after bivalves) near the top. and up to 10% locally, near the bottom of the interval. Grain size increases towards the bottom of the section. Section 2, 113-132 cm: light gray (10YR 7/1) CORALLINE GRAINSTONE/RUDSTONE, with a similar composition to the overlying interval, except for a large (0.5-1 cm) gastropod mold, a 0.5-2 cm coral fragment (moldic and replaced), and a probable caprinid rudist fragment.

General description:

Cylinders: Section 1, 83–119 cm and 134–141 cm, Section 2, 50–55 cm, 77–83 cm, and 86–108 cm; Rollers: Section 1, 0–46 cm, 49–60 cm, 63–83 cm, 119–134 cm, and 141–147 cm, Section 2, 0–10 cm, 23–39 cm, 45–50 cm, 65–77 cm, 83–86 cm, 108–117 cm, and 121–132 cm; Drilling pebbles: Section 1, 46–49 cm, 60–63 cm, and 147–150 cm, Section 2, 10–23 cm, 39–45 cm, and 117–121 cm. Thin section samples: Section 1, 0–2 cm, 33–37 cm, 60–63 cm, 78–81 cm, 119–123 cm, and 142–146 cm, Section 2, 0–3 cm, 39–42 cm, 68–71 cm, and 122–125 cm.



| 873/ | A-7R | | <u> </u> | | ORE | D 1 | 07.6 | - 1 | 17.3 | mbs |
|-------|------------------|---------|---------------|-----------------|------------------|------------------|-----------|--|--------|----------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| | | 1 | Maastrichtian | | | Maastrichtian | SX D | $\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{$ | | 10YR 7/2 |
| 2 | PPEGG | 2 | | в | в | F,M | ¢ ∮ | VVVV | т | |

| 873 | A-8R | | | C | ORE | D 1 | 17.3 | - 12 | 6.9 | mbs |
|-------|--|---------|---------------|-----------------|------------------|------------------|-----------|----------|------------------|------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| C | 20000000000000000000000000000000000000 | 1 | Maastrichtian | | | Maastrichtian | P | ~~~~~~ | T T T T | JYR 6/1 10YR 7/3 |

| 873 | A- 9R | | _ | C | ORE | D 12 | 6.9 | - 13 | 6.6 | mbs |
|-------|------------------|---------|---------------|-----------------|---------------------|------------------|-----------|----------|--------------------------------------|----------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 1 | | 1 | Maastrichtian | В | A Maastrichtian (?) | Z Maastrichtian | X Do | | T T T T T T T T | 10YR 3/1 To 10YR 7/1 |

SITE 873 HOLE A CORE 10R



DESCRIPTION

RUDIST FORAMINIFER GRAINSTONE, BIVALVE ALGAL PACKSTONE, BIVALVE FORAMINIFER WACKESTONE, and FORAMINIFER PELOID PACKSTONE

Major Lithologies:

Section 1, 0-21 cm, 24-27 cm, 32-36 cm, and 56-64 cm: gray (5Y 5/1), light brownish gray (10YR 6/2) to gravish brown (2.5Y 5/2) RUDIST FORAMINIFER GRAINSTONE, fine-grained and well-sorted in Section 1, 0-13 cm and 56-64 cm. In Section 1, 13-21 cm, 24-27 cm, and 32-36 cm, the GRAINSTONE consists of alternations of fine- to medium-grained, and poorly sorted medium- to coarse-grained sediments. Grains include foraminifers (miliolids and orbitoids), micritized fragments of rudists (radiolitids) and algae (solenoporaceans, corallinaceans); coral fragments and worm tubes are rare. Thin red algal crusts may occur on large bioclasts. Grains are micritized and may be dark-stained or pyritized, especially the large benthic foraminifers. Black (7.5YR 2/0), carbonaceous particles occur in Section 1, 0-13 cm. Interparticle and moldic porosity is reduced by equant spar cements.

CORED 136.6 - 146.2 mbsf

Section 1, 27-32 cm and 40-51 cm: light brownish grav (10YR 6/2) to gravish brown (2.5Y 5/2) BIVALVE ALGAL PACKSTONE, very fine-grained (1/16 to 1/8 mm) and locally bioturbated (burrows). Major components are fragmented or encrusting red algae (corallinaceans, squamariaceans), thin-shelled bivalves, often leached, and rudists (some whole radiolitids to 1 cm in diameter). Minor components include gastropods and coral fragments (in Section 1, 51-66 cm). Some grains are dark stained or pyritized. Porosity is moldic, intragranular and/or locally vuggy, and is reduced by the growth of drusy calcite cements. Section 1, 64-69 cm and 136-143 cm: is comprised of dark gray (2.5Y N4), light brownish gray (2.5Y 6/2) to dark grayish brown (2.5Y 4/2) BIVALVE FORAMINIFER WACKESTONE. Whole bivalves are well preserved and their valves are still in connection; rudists (radiolitids) are fragmented. Benthic foraminifers are common, especially orbitoids and miliolids; gastropods are rare. Some grains are dark-stained or pyritized. Burrows are common and are infilled by fine-grained, grayish brown (2.5Y 5/2) sediments. The porosity is low, and moldic. Section 1, 69-136 cm, is comprised of light brownish gray (2.5Y 6/2) FORAMINIFER PELOID PACKSTONE, very fine to fine grained with a conspicuous mottled aspect due to bioturbation. The texture in Section 1, 69-75 cm tends toward a grainstone. These packstones are rich in peloids and benthic foraminifers (mainly miliolids); micritized skeletal fragments (rudists-radiolitidsand other bivalves) also occur. Black-stained grains are rare to common.

General description:

Cylinders: Section 1, 56–64 cm, 106–134 cm, and 143–150 cm; Rollers: Section 1, 16–21 cm, 27–36 cm, 41–51 cm, 64–106 cm, and 134–143 cm; Driling pebbles: Section 1, 0–16 cm, 21–27 cm, 36–41 cm, 51–56 cm. Thin section samples: Section 1, 10–12 cm, 24–27 cm, 46–50 cm, 56–58 cm, 92–95 cm, 116–118 cm, and 139–142 cm.



SITE 873 HOLE A CORE 11R



DESCRIPTION

BENTHIC FORAMINIFER GRAINSTONE, BIVALVE FORAMINIFER GRAINSTONE, SKELETAL GRAINSTONE, and CARBONACEOUS LIME PACKSTONE

Major Lithologies:

Section 1, 0-8 cm, 8-13 cm, and 13-17 cm: six pebbles of light grav (2.5Y 7/0), poorly sorted, well-packed BENTHIC FORAMINIFER GRAINSTONE. Foraminifers range in size from ~0.25 mm to 0.50 mm; many are elongate, a few are stained black. Red algae are rare. Porosity is ~1%, mostly interparticle. Matrix is calcite cement (PE4). One pebble in Section 1, 0-8 cm contains a "lithologic contact" between the overlying lithology and a dark gray (2.5Y 4/0) BENTHIC FORAMINIFER GRAINSTONE that has been highly leached. Porosity in this pebble is ~25%, both solution enlarged intraparticle and solution enlarged interparticle. A few pores are lined with calcite cement (PB3C), Black fragments of "organic matter" are common; red algae are few, Section 1, 17-21 cm; light gray (2.5Y 7/0), poorly sorted BIVALVE FORAMINIFER GRAINSTONE. This interval is coarser grained than overlying rocks. Rudist fragments are ~2.0 mm in size; there are bivalve molds and fragments (prisms?). Porosity is 3%-5%; interparticle. Finely disseminated pyrite occurs in regions of cement concentrations and micrite envelopes. Section 1, 21-27 cm: gray (2.5Y 6/0) SKELETAL GRAINSTONE. Gastropod molds and foraminifers are rare; there are few red algae. There is a stromatolite fragment that is ~6 mm long. Porosity (3%-5%) is mostly solution enlarged interparticle. Calcite cement is rare; mostly PB3C. Section 1, 27-34 cm: grav (2.5Y 6/0) BIVALVE GRAINSTONE. Matrix is heavily recrystallized. Very fine-grained pyrite is dispersed throughout the sample. Black organic matter (carbon?) is common. Most of the rock consists of bivalve fragments: possibly rudists. Coral fragments and benthic foraminifers

are rare. Porosity (10%) is mostly solution enlarged interparticle. Some pores are lined with PE4C. Section 1. 34-44 cm, is comprised of gray (2.5Y 6/0) SKELETAL GRAINSTONE. Most skeletal components are heavily recrystallized. Benthic foraminifers are rare; there are few bivalve fragments. Molds are rare. Very fine-grained pyrite is abundant. Porosity (15%-25%) is mostly solution enlarged interparticle and intraparticle. Calcite cement is PB4C and PE2C. Section 1, 44-53 cm, is comprised of gray (7.5YR 6/1) SKELETAL GRAINSTONE. Pyrite, bivalve fragments, and molds are common; there are few benthic foraminifers or black organic matter. Porosity (5%) is mostly moldic. Many of the skeletal molds (crWP) are lined with calcite cement PE4 and PB4C. One large bivalve mold is filled with orange-brown acicular crystals of unknown origin. Section 1, 53-97 cm, is comprised of gray (7.5YR 6/1) SKELETAL GRAINSTONE, with abundant bivalve fragments and common bivalve molds. There are few benthic foraminifers and little pyrite and black organic matter. The matrix is highly recrystallized to blocky calcite mosaics (PE5). There are few orange-brown acicular crystals (PB2C). Porosity is (5%-7%); it includes solution-enlarged interparticle and cement-reduced intraparticle. In Section 1, 66-76 cm. abundant algal fragments are present. In Section 1. 81-85 cm, a large, partially leached and partially replaced solitary coral (>6 mm in diameter) occurs. Benthic foraminifers are common; intraclasts occur in trace abundances. In Section 1, 85-89 cm, benthic foraminifers and bivalve fragments are common. The latter are up to 2.5 mm long. In 89-97 cm, bivalve fragments are abundant; many have been replaced by PE4 cement. A small rudist without an exterior wall (~2.5 mm in diameter) was also noted. Section 1, 97-115 cm, is comprised of varicolored gray (N/5) to very dark gray (N/3) CARBONACEOUS LIME PACKSTONE. Black organic matter is abundant; there are few bivalve fragments and little pyrite. Patches of carbonate-rich material are enclosed by wispy patches of organic-rich material. In addition, the carbonate-rich patches contain fragments of organic matter. Porosity is ~ 5%. The matrix of carbonate-rich patches is highly recrystallized. Section 1, 115-146 cm, is comprised of dark gray (N/4) SKELETAL GRAINSTONE. Organic matter is abundant; bivalve fragments are common. Benthic foraminifers are rare. Porosity is 5%; mostly solution enlarged interparticle. Calcite cement is rare; mostly PB4C and PE4C. Matrix is highly recrystallized. Layers of organic-rich material are distributed in a distinct pattern at an angle of ~20° (NW-SE) from the horizontal in Section 1, 129-136 cm. Rounded intraclasts occur from Section 1, 136-146 cm. Section 2, 0-17 cm, is comprised of gray (10YR 6/1) CARBONACEOUS LIME PACKSTONE, with silt-sized carbonate particles. Gray colored intervals in the very light gray carbonate (mud matrix of fine crystalline cement?) are likely pelleted mud. Particles are not identified; a very few are recognizably skeletal. Plant fragments to 3 cm-long (simple longitudinal laminations) are common, and help to define bedding planes.Finely disseminated pyrite is associated with the plant material. Wispy cross-lamination is observed throughout; possibly

herringbone (indeterminate in this section). Discrete burrows, flattened to 5 mm, locally disrupt the lamination, Geochemical analysis indicates a calcium carbonate content of 80.1%. Section 2. 17-23 cm, is comprised of dark gray (10YR 4/1) pyrite-rich CLAYEY CHALK. A smear slide analysis indicates 25% lime mud, 20% "inorganic calcite", 40% clay and 10% pyrite; the other 5% is phosphatic, with fish remains?, and nannofossils. Geochemical analysis indicates a calcium carbonate content of 66.0%. A drilling pebble within this clayey chalk is identical to the sediment from Section 2, 0-17 cm, except that there are more dark grains. Most are pyritized peloids (as in Section 2, 0-17 cm); others are gray or brown and translucent, with a white metallic luster. Section 2, 23-55 cm, is comprised of gray (2.5YR 6/0) SKELETAL GRAINSTONE. The grains include bivalves, gastropods, and large benthic foraminifers; most are unrecognizable. Carbonaceous fragments are scattered throughout. Average grain size is ~100 um; larger mollusk grains and molds are up to 400 um, (exceptionally to 8 mm). These grains are oriented to give the rock a distinct planar fabric. Porosity increases downward from 3%-10%; it is moldic after mollusks, few microvugs. Porosity increases abruptly at the edge of Section 2, 41-45 cm, to 40%. The adjacent bevel suggests that this is a vug having an edge at least 4 cm-long. Solution seams are at a 30°-45° angle to bedding. There is a contact at Section 2, ~55 cm, with the underlying lithology: this contact occurs in the drilling pebbles. Section 2, 55-74 cm, is gray (2.5Y 6/0), light gray (2.5Y 7/0), and white (2.5Y 8/0). The interval is coarser and cleaner at the top, approaching RUDSTONE; the base is a muddy PACKSTONE. Mollusks dominate this interval: radiolitid (rudist) bivalves are found throughout. Caprinid fragments in Section 2, 56 cm, 65 cm, and 70 cm are preserved as mud fills in paleocanals; the remaining skeleton is a calcite-filled mold (cfMO). Other biota in this interval include gastropods (top), benthic foraminifers (e.g., orbitoids and miliolids), corals, encrusting foraminifers, and encrusting red algae. Porosity is 0-2%, as molds of mollusks. There are calcite-filled molds (cfMO) to 15% of total; pyrite is scattered throughout, about 1% in cements and skeletons. A distinct, dense, gray (N4), micritic layer at Section 2, 65 cm suggests alteration. Texture is micritic with many small. angular mollusk fragments (seen in thin section to be radiolitid fragments). Alteration includes part of thick radiolite shell, which has an inner (aragonitic) layer that is remarkably well preserved. Borings contain geopetal mud. Section 2, 74-82 cm is comprised of light gray (N7) PELOID(?) WACKESTONE, with peloids and a few mollusks. There is no porosity. Pyrite is ~1%. Burrows are common; they are filled by skeletal packstone and light gray (2.5Y 7/2), coarse sand, ~1 mm in diameter. The wackestone is similar to the overlying lithology, but has less mud than at the base. The wackstone is cut by "soft" fractures that pass around grains; these fractures are cement-filled. A lithologic contact at Section 2, 82 cm, is encrusted by a sponge, that is possibly lithified. Section 2. 82-116 cm, is comprised of gray (N6) SKELETAL GRAINSTONE, with local interstitial mud (packstone). Components include bivalve fragments, large benthic foraminifers, red algae (abundant in thin section of

Site 873 Hole A Core 11R Description continued...

Section 2, 113-116 cm); gastropods and corals are rare. Porosity varies from 5% at the top to 15% at Section 2. 104-112 cm, to 3% at Section 2, 112-116 cm; the porosity is mainly from mollusk molds. Pyrite is ~1% throughout, and is disseminated in the cement. Geochemical analysis indicates a calcium carbonate content of 97.5% at Section 2, 95 cm; this corresponds to the position of a mud-filled burrow with miliolids. There are drilling pebbles in Section 2, 82-116 cm; two pieces are SKELETAL PACKSTONE, similar to that found in Section 2, 55-74 cm. One pebble is a PELLET WACKESTONE; it is light gray (N7), with soft(?) ovoid (fecal?) pellets that are 75 µm in diameter. Section 2, 91-116 cm is a fining upward sequence, from coarse sand (0.5 mm) to very fine sand (0.125 mm). Intraclasts are observed at Section 2, ~115 cm. Section 2, 116-140 cm is comprised of gray (N5) and dark gray (N4) PELOID GRAINSTONE. Peloids are abundant throughout (up to 70% of grains; 35% of volume). They are ovoid and cylinders ~125 um in diameter. Some peloids show the longitudinal tubes which are diagnostic of Favreina (Crustacean? Fecal Pellet). The rims of some pellets appear altered or coasted. Skeletal components include large benthic foraminifers, both orbitoids (abundant in Section 2, 130-135 cm) and miliolids, mollusk fragments and echinoderm debris, and few red algae. Porosity is high, 15% to 25% throughout from molds, enlarged molds, and small vugs; only mollusk molds are recognizable. Pyrite is ~1% throughout and is found as very fine crystals, some concentrated in pellets; pyrite replaces foraminifers at the base of this interval, where abundance increases to 2%. Section 2, 140-146 cm is comprised of light brownish gray (2.5Y 6/1) RHODOLITH PACKSTONE (no matrix?, only rhodoliths were recovered). Rhodoliths nucleate on corals; in one case (out of 2) the coral continues to intergrow with the cortex. The cortex is formed by Squamaracean red algae and Corallinacean red algae (inner portion). Solenoporacean red algae is abundant; there are few encrusting worms. The cortex encloses lime mud (50%), skeletal grains (10%), algae (25%), pore space (now spar filled, 5%); pyrite is ~1%.

General Description:

Cylinders: Section 1, 21–34 cm, 44–81 cm, 89–115 cm, and 121–146 cm, Section 2, 0–16 cm, 22–49 cm, 73–79 cm, 91–112 cm, and 121–130 cm; Rollers: Section 1, 8–21 cm, 34–44 cm, and 81–89 cm, Section 2, 16–22 cm, 49–54 cm, 57–73 cm, 80–85 cm, 112–121 cm, and 130–134 cm; Drilling Pebbles: Section 1, 0–8 cm and 115–121 cm, Section 2, 54–57 cm, 85–91 cm, and 134–146 cm. Thin section samples: Section 1, 17–21 cm, 22–27 cm, 41–43 cm, 85–89 cm, 118–121 cm, and 130–136 cm, Section 2, 0–3 cm, 47–49 cm, 62–65 cm, 75–77 cm, 85–90 cm, 105–107 cm, 113–116 cm, 135–139 cm, and 140–145 cm.



SITE 873 HOLE A CORE 12R

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | FI |
|-------|------------------|---------|-----|------------|---------|---------------|--------------------------------|--|
| 1 | 1.5.5.5.5 | 1 | | ◇ ◇ P ◇ | | S T D S | 108 | M Si hy di Si G er gr |
| 2 | | 2 | ? | | | s s s | 3/6 | 5% pr Ri Pl la (2 gr th is |
| 4 | | 3 | | | | S | 10R 3/4 To 10R 4/4 | cr pe py in gr Th cr re ar |
| 5 | | 4 CC | | | | S | | 2, 3/ ha (1 gr |
| | | | | | | | | cla ar bl (5 m in be so to |

ESCRIPTION ERRUGINOUS CLAY and FERRUGINOUS LAYSTONE laior Lithologies: ection 1 is a dark red (10R3/6) FERRUGINOUS CLAY: vdrated iron oxides are a dominant component. X-rav iffraction (XRD) indicates that hematite is abundant. ection 1, 0-7 cm, is a gray (10YR 5/1) PELOID RAINSTONE. The grains uniformly have micrite velopes that are about 10 microns-thick. The original rains were mostly skeletal, probably mollusks and raminifers: they show up as clear calcite cores. Perhaps % of these grains are gray and translucent; most are robably fecal pellets, some may be benthic foraminifers. are particles are lithoclasts of dark gray (10YR 4/1) ELOID SKELETAL PACKSTONE (to 3 mm diameter), rger bioclasts (one radiolite, other mollusks), and a small mm) rhodolith (mainly solenoporan red algae). Median rain size is 1/8 to 1/4 mm; sorting is excellent except for e large particles. Particles are very well rounded. There no porosity. Pyrite is widely disseminated as very fine ystals, but much is concentrated in the gray, muddy eloids (fecal pellets?) and a few foraminifer tests. Total rite is about 1%. Section 1, 17-19 cm is a drilling pebble the clay that is identical to Section 1, 0-7 cm, except ore dark grains. Most are pyritized peloids, others are ray or brown and translucent, without metallic luster. here is a weathered BASALT clast in Section 1, 36-39 n. Section 2, 0-23 cm is dark red (10R 3/6) with weak d (10R 4/4) mottles. Many sand-sized black particles e distributed irregularly in Section 2, 19-23 cm. Section 23-54 cm is mainly olive (5Y 5/4) with dark red (10YR 6) mottles. The red spots are soft; the olive sediment is arder. Section 2, 54-88 cm, is mottled with dark red 0R3/6), pale red (10R 6/4), olive (5Y 5/4), and pinkish ray (5YR 7/2) colors. Section 2, 88-150 cm, is a aystone with a "marbled" structure; it looks like astomosing veins between blocks. The internal parts of ocks are dark red (10R 3/6), the periphery is pinkish gray

CORED 155.9 - 165.5 mbsf

ray (5YR 7/2) colors. Section 2, 88–150 cm, is a aystone with a "marbled" structure; it looks like nastomosing veins between blocks. The internal parts of ocks are dark red (10R 3/6), the periphery is pinkish gray SYR 7/2) or darker. Section 3, is a claystone with the narbled structure that began at the base of Section 2. The teriors of the blocks are weak red (10R 4/4); the "veins" etween blocks are dusky red (10R 3/4). The centers of ome veins are pinkish gray (5YR 7/2). Section 4 is similar Section 3.



| 873 | A- 12R | | | CC | DRE |) 15 | 5.9 | - 16 | 5.5 | mbsf |
|-------|------------------|---------|-----|-----------------|------------------|------------------|--------------|----------|---------------------|----------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 1 | | 1 | | | | | ◇ ◇P ◇ | | s T _D | R 3/6 |
| 2 | | 2 | ? | | | | | | s s s s | 10 |
| 4 | | 3 | | | | | | | S | 3/4 To 10R 4/4 |
| 5 | | 4 CC | | | | | | | S | 10R |

| 873 | A-11R | | | C | ORE | D 14 | 16.2 | - 15 | 5.9 | mbsf |
|-------|---|---------|-----------|-----------------|------------------|---------------------------|-----------|------------------------|---------|-----------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 1 2 | 0440044000440000000 0440040000000 03330940000140000000 03330940000140000000 03330940000040000000 03330940000040000000000 | 1 | Campanian | Campanian | | Campanian – Maastrichtian | | | | N4 To 2.5Y N7/0 |
| 1111 | | | | R,M | В | F,M | 0 | $\nabla \nabla \nabla$ | т тт | |

| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
|---------------------------------|------------------|---------|---------------------------|-----------------|---------------------------|---------------------------|-----------|----------|-----------------------|-----------------------|
| tions in the state of the state | | 1 | Campanian – Maastrichtian | В | Campanian – Maastrichtian | Campanian - Maastrichtian | ≫• | ~~~~~~ | T T T T T | 10YR 6/2 To 2.5YR 5/2 |

652

SITE 873 HOLE A CORE 13R

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION FERRUGINOUS CLAY, FERRUGINOUS CLAYSTONE, and HIGHLY ALTERED BASALT |
|-------|------------------|---------|-----|-----------|---------|------------------|---|--|
| 1 | | 1 | | | | s s s | 10R 3/4 To | Major Lithologies: Section 1 is FERRUGINOUS CLAYSTONE, cut by anastomosing veins or fractures. Blocks are weak red (10R 4/4) and are surrounded by thin (2–5 mm) borders of dusky red (10R 3/4). Some of the veins have a thin (1–2 mm) pinkish gray (5YR 7/2) core. Section 2, 100 cm, is FERRUGINOUS CLAYSTONE similar to Section 1, but becoming darker near 100 cm; the marbled texture disappears near 100 cm where the "veins" become |
| 2 | | 2 | | | MM/ | s s | 10R 4/3 | vertical. Section 2, 100–140 cm is weak red (10R 4/3) to dusky red (10R 3/3) FERRUGINOUS CLAYSTONE, strongly disturbed by drilling, with 1–2 cm diameter darker red spots. The marbled texture described above is lacking in this interval; the interval is dotted with white zeolite patches shaped like vesicles (probably altered vesicular basalt). Section 3, 0–97 cm is weak red (10R 5/4), soft FERRUGINOUS CLAYSTONE with white spots and veins of zeolites. Drilling biscuits are common. |
| 4 | | 3 | ? | | wwwwww | S S S D | 10R 5/4 10R | Section 3, 97–120 cm is dusky red (10R 3/2) HIGHLY ALTERED BASALT, with rare vesicles that are filled by zeolites. Section 3, 120–145 cm is dusky red (10R 3/2) FERRUGINOUS CLAYSTONE in the form of drilling biscuits. Section 4 to CC is dusky red (2.5 YR 3/2) to very dusky red (2.5YR 2.5/2), hard FERRUGINOUS CLAYSTONE drilling biscuits. Small veins (to 1 mm) of white (5YR 8/1) and gravish green (10G 5/2) material respective the devetore. Base weighter are filed her white |
| 5 6 | | 4 | | | wwwwwww | s s D | 3/2 2.5YR 2.5/2 To 2.5YR 3/2 | crosscut the claystone. Hare vesicles are niled by writte zeolites. |
| | | 5 CC | | | WWV | S M | | |

873A 14R HARD ROCK 873A 15R HARD ROCK 873A 16R NO RECOVERY 873A 17R NO RECOVERY 873A 18R HARD ROCK

CORED 165.5 - 175.1 mbsf



7.7

CORED 212.2 - 221.7 mbsf DESCRIPTION Section Sample Disturb Graphic Meter Color Age Structure Lith. VOLCANIC BRECCIA Major Lithology: ° ° ° ° ° ° ° ° ° 1F °a°a°a°a°a' °0°0°0°0°0 °0°0°0°0 ° 4° 4° 4° 4° 4° T +F ిచిచిచిచ 5Y 0°0°0°0 5/2 00000 000000 To 000000 1F 10R 0°0°0°0 3/4 00000 0°0°0°0 **↑**F 2 0°0°0°0' ۵°۵°۵°۵ ه°ه°ه°ه 1F 0°0°0°0' 000000 070707 **↑**F °°°°°°° 0°0°0°0 7.5YR 1F °0°0°0°0 4/6 ింింింింిం 3 To ° a ° a ° a ° a ' °0°0°0°0 10Y °0°0°0°0°0 4/1 1F °°°°°°°°° °0°0°0°0 00000 ిం°ం°ం°ం' 10Y 0°0°0°0 1 F 4 3/2 the cement in Section 5. 00000 To 0°4°0°. 10Y т **↑**F 7/1 Т 000000 5 °_°_°°°°°

Olive gray (5Y5/2) VOLCANIC BRECCIA, comprised of poorly sorted, angular to subrounded clasts, that are 1.5 cm to several mm in size. The fine sand to clay size matrix is dusky red (10R 3/4) and of indeterminate composition. Several horizons (Section 1, 0-29 cm and 141-193 cm) fine upwards. In Section 1, 80-83 cm, there are low angle cross-laminae. The breccia is clast supported. In Section 2, the base of graded beds are at 30 cm, 75 cm, and 130 cm. Clasts at the base of graded beds are 1 cm in diameter, decreasing in size uphole to a few mm in size. Basal contact of graded beds is amalgamated. In Section 2, 75-95 cm, the clasts are rounded and moderately sorted; they are 8-10 mm in size. Some clasts appear to be highly altered vesicular basalt. In Section 3, colors become mottled downhole, with strong brown (7.5YR 4/6) and dark gray green (10Y 4/1), graded beds. At Section 3, 0-78 cm there are altered clasts of microcrystalline basalt and clasts of vesicular basalt with flow structure. A clast of scoria about 4 cm in size is enclosed at Section 3, 77 cm. Clasts of aphyric basalt, with about 10% of the vesicles filled by zeolites are noted at Section 3, 75-101 cm. Several thinner graded units, with bases at 111 cm and 119 cm have subangular clasts up to 2.3 cm in size. The color of the matrix grades downward in Section 4 to dark grayish green (10YR 3/2) with clasts grading to pale green (10Y 7/1) and occassionally, to light brown (7.5YR 6/4). In Section 4, 0-54 cm, the matrix is reddish brown (5YR 4/3). Two upward fining beds have bases at Section 4, 80 cm and 140 cm. Minor amounts of carbonate fill the intergranular voids in Section 4, 54-150 cm. Calcite forms about 3% of



SITE 873 HOLE A CORE 20R

| Gra Lit | phic h. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION VOLCANIC BRECCIA | 5- |
|------------|------------|---------|-----|-----------|-------------------------------|--------|------------|---|---|
| | | 1 | | | H H H H X X X H H X X H H H H | | 5GY 4/4 | Major Lithology: Dark greenish gray (%GY 4/4), VOLCANIC BRECCIA with subangular, poorly sorted, green to brown clasts up to 1 cm in size. The breccia is clast supported. In Section 1, 80–85 cm, a thin bed of epiclastic sandstone overlies a very fine grain "clayey" layer. Vesicles are rarely visible in the highly altered clasts. | 15- 20- 25- 30- 35- 40- 45- 50- 55- 60- 70- 75- 60- 85- 85- 85- 85- |

CORED 221.7-228.2 mbsf 873A-20R 1 95-100-105-110-115-120-125-130-135-140-145-150--

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| 873 | <u>A-20R</u> | | C | ORE | D 22 | 21.7 | - 22 | 8.2 | mbs | f | |
|-------|------------------|---------|-----|-----------------|------------------|------------------|-----------|---|--------|---------|--|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color | |
| - | | 1 | | | | | | $++++\times\times\times++\times\times\times+++++++$ | | 5GY 4/4 | |

| 873 | A- 19R | | | CC | DRE | D 21 | 2.2 - | - 22 | 1.7 | mbst |
|-------|------------------|---------|-----|-----------------|------------------|------------------|--------------------------|---|--------|---------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| | | 1 | | | | | ↑ F | | | 10R 3/4 |
| 2 | | 2 | | | | | ↑ F ↑ F | | | 5Y 5/2 To |
| 4 | | 3 | | | | | ↑ F ↑ F | +++++++++++++++++++++++++++++++++++++++ | | 7.5Y 4/6 To 10Y 4/1 |
| 5 | | 4 | | | | | ↑ F ↑ F | | | 10Y 3/2 To 10Y 7/1 |
| - | °°°°°°°°°°°° | | | | | | | I. | | |

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| 873 | A-13R | | | C | ORE | D 16 | 5.5 | - 17 | 5.1 | mbsf |
|----------|------------------|---------|-----|-----------------|------------------|------------------|-----------|----------|------------------|----------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 1 | | 1 | | | | | | | s s | 4 To 10R 4/3 |
| 2 111 | | 2 | 2 | | | | | MMA | S | 10R 3/ |
| 4 | | 3 | | | | | | NWWWWWW | s s s D | 8 20 10R 5/4 |
| 5 | | 4 | | | | | | wwwwwww | s S D | R 2.5/2 To 2.5YR 3/2 |
| , , , , | | 5 CC | | | | | | www | S M | 2.5YF |

873A 14R HARD ROCK 873A 15R HARD ROCK 873A 16R NO RECOVERY 873A 17R HARD ROCK 873A 18R HARD ROCK

656

SITE 873 HOLE A CORE 21R

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIP VOLCANI |
|---|------------------|---------|-----|------------------|---------|--------|-----------|--|
| N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | 1 | | <u>↑</u> F ↑F | | т | 5G 4/2 | Major Lithe Grayish ol mainly sub 7/2), grayis 5/6). The s size. Some Some clas 1–2 cm-thi 32 cm, 12/ are minor of fine-grai grades fro the top. |

CORED 228.2 - 232.3 mbsf

PTION

IIC BRECCIA

ology:

live green (5G 4/2) VOLCANIC BRECCIA with bangular clasts of pale yellowish green (10GY ish green (10G 4/2), and yellowish brown (10YR size of clasts ranges from 3 cm to a few mm in ne clasts are recognizable as vesicular basalt. ists have darker rims and highly porous centers. nick laminae with fine-grained matrix in Section 1, 20 cm, 127 cm, and 139 cm. Calcite and zeolites constituents of the matrix, which has the texture ined sand. Fining upward interval in Section 3, om 1.3 cm clasts at the base, to 5 mm clasts at



| SIT | E 873 HOL | EB | C | ORE 1H | _ | | | CORED 0.0 - 6.5 mbsf | 873B-1H 1 | 2 | 3 | 4 | 5 CC |
|----------------------|------------------|----------------------------|---------------------------------|-----------|---|--------|----------------------------------|--|-----------|---|---|---|------|
| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION NANNOFOSSIL FORAMINIFER OOZE | 5 | | | | |
| 2_ 3_ 4_ 5_ | | 1 2 3 4 5 6 | late Pliocene early Pleistocene | | 000000000000000000000000000000000000000 | SS | 10YR 7/2 To 10YR 8/2 | Major Lithology: Light gray (10YR 7/2), homogeneous NANNOFOSSIL FORAMINIFER OOZE, fine- to medium-grained, soupy nature. Many black sand-size particles (possibly iron-manganese micronodules) are dispersed throughout Sections 1 and 4. Vague while (10YR 8/2) banding occurs throughout the core. There are 7 bands within Section 1, 59–119 cm. Gray (10YR 6/2) mottles occur with the white bands in Section 1, 59–119 cm. Bands are also observed in: Section 2, 40–45 cm, 50–55 cm, 95–105 cm, 108–112 cm, and 120–125 cm; Section 3, 0–5 cm, 30–35 cm, and 80–85 cm; Section 4, 36–38 cm, 65–67 cm, 92–94 cm, and 133–138 cm; and Section 5, 7–12 cm. | | | | | |
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-115-

-120-

125 — 130 — 135 — 140 — 145 — 145 —

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| SIT | E 873 HOLE | В | С | ORE 2H | | | | CORED 6.5 - 16.0 mbsf | 873B-2H 1 | 2 | 3 4 | 5 |
|-------------------|------------------|---------|---------------|-----------|---|--------|----------------------------------|--|--------------------------------------|---|-----|---|
| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION NANNOFOSSIL FORAMINIFER OOZE | 5 | H | - | |
| | | 3 3 | late Pliocene | 30000 | 000000000000000000000000000000000000000 | Sa | 10YR 7/2 To 10YR 8/2 | Major Lithology: Light gray (10YR 7/2) NANNOFOSSIL FORAMINIFER OOZE with vague layers of white (10YR 8/2) in Section 1, 87–90 cm and 118–129 cm; Section 2, 4–9 cm, 56–67 cm, 62–63 cm, 70–76 cm, 94–99 cm, 121–122 cm, and 128–131 cm; Section 3, 32–35 cm, 38–40 cm, 50–54 cm, and 131–146 cm; Section 4, 0–10 cm, 40–45 cm, 106–111 cm, 121–122 cm, and 130–135 cm; Section 5, 15–20 cm, 110–112 cm, and 138–141 cm; and Section 6, 15–20 cm, 25–30 cm, and 43–45 cm. Black particles (possibly iron-manganese nodules) are disseminated throughout the core and reach a maximum concentration at Section 2, 37–50. | | | | |
| The second second | | 4 | | | 000000000000000000000000000000000000000 | S | | | 95 — — 90 — — 95 — — 95 — — | | | |
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| 873B-2H | | | | C | ORE | D 6. | 5 - 1 | 6.0 | mbs |
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| Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| | 1 | | CN12d | N21 | | | 0000000 | | |
| | | | | | | 300005 | 000000 | | |
| 2 | 2 | | CN12c | | | | 00000000 | | |
| 3 | | ene | | | | | 000000 | S | ł 8/2 |
| 4 | 3 | late Plioc | | 20 | | ****** | 000000 | | 7/2 To 10YF |
| 5 | 4 | | | N19/ | | | 000000 | | 10YR |
| 6 4 4 4 4 4 4 4 4 4 4 4 4 4 | | | CN12a | | | | 000000 | S P | |
| | 5 | | | | | | 0000000 | | |
| | 6 | | | | Р | | 000000 | 1 | |

| 873 | B-1H | | | | 0 | OR | ED 0 | .0- | 6.5 | mbs |
|-------|------------------|---------|-------------------|-----------------|------------------|------------------|-----------|---|--------|---------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 1 | | 1 | | lii | | | | 0000000000 | s s | |
| 2 | | 2 | early Pleistocene | H.sel | N22 | | | 000000000 | | 0YR 8/2 |
| 3 | | 3 | | C. macintyrei | | | | 000000000000000000000000000000000000000 | | 10YR 7/2 To 1 |
| 4 | | 4 | late Pliocene | CN12d | N21 | | ****** | 000000000000000000000000000000000000000 | | |
| | | 5 CC | | | | в | | 0000 | | |

| 873 | A-21R | | | | OR | D 2 | 28.2 | - 23 | 32.3 | mbs |
|----------------|------------------|---------|-----|-----------------|------------------|------------------|-----------|----------|--------|--------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 2 ¹ | | 1 | | | | | ↑F | | т | 5G 4/2 |

SITE 873 HOLE B CORE 3H

CORED 16.0 - 25.5 mbsf

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION NANNOFOSSIL FORAMINIFER OOZE |
|---------------------------------------|------------------|---------|---------------|-----------|--------------|--------|--------------------------|---|
| · · · · · · · · · · · · · · · · · · · | | 1 | | _ | 000000000000 | | | Major Lithology: Light gray (10YR 7/2), homogeneous NANNOFOSSIL FORAMINIFER OOZE. Several small patches of white (10YR 8/2) NANNOFOSSIL FORAMINIFER OOZE occur in various sections: Section 1, 50–70 cm; Section 2, 18–20 cm, 35–37 cm, 39–41 cm, 76–81 cm, and 109–113 cm; Section 3, 45–55 cm, 58–63 cm, 65–66 cm, 78–79 cm, 84–85 cm, 94–95 cm, 97–99 cm, 104–107 cm, 120–125 cm, and 146–150 cm; Section 4, 0–5 cm, 15–20 |
| 2 | | 2 | | | 0000000 | | | Ctn, 36–44 Ctn, 46–35 Ctn, 66–30 Ctn, 105–113 Ctn, 145–150 cm, Section 5, 0–10 cm, 33–36 cm, 81–85 cm, 87–89 cm, 98–103 cm, 115–117 cm, and 118–124 cm; Section 6, 0–10 cm, 42–43 cm, 90–92 cm, 100–102 cm, 108–110 cm, 116–125 cm, and 142–150 cm. There are 10 splotches within Section 7, 0–60 cm; and also some in Section 6, 0–50 cm cm 40, 420 cm cm and also some in |
| 3 | | 3 | tte Pliocene | | 00000000 | S | | gray (10YR 5/1) are observed within Section 3, 35–100 cm. |
| 4 | | | Pliocene - Ia | | 0000000 | | 10YR | |
| 5 | | 4 | early | | 0000000 | | 7/2 To 10YR 8/2 | |
| 6 | | 5 | | | 000000000 | | | |
| 7 | | | | | 0000000 | 1 | | |
| 8 | | 6 | | | 000000000 | | | |
| 9 | | 7 CC | | | 0000000 | | | |



| SITE 873 HOLE B CORE 4H | | CORED 25.5 - 35.0 mbsf | 873B-4H 1 | 2 3 | 4 5 | 6 CC |
|---|---|--|-----------|-----|-----|------|
| TageGraphicTageLith.DoBVStructure | Disturb Sample Color | DESCRIPTION NANNOFOSSIL FORAMINIFER OOZE and FORAMINIFER OOZE | | | | |
| | 00000000000000000000000000000000000000 | Major Lithologies: Light gray (10YR 7/2), homogeneous NANNOFOSSIL FORAMINIFER OOZE. Section 1, 40–86 cm is mottled white (10YR 8/2) and gray (10YR 6/1). In Section 2, sediment texture becomes slightly coarser-grained; the nannofossil content is declining. Foraminifers are stained brown (possibly by iron). White (10YR 8/2) splotches in Section 2, 5–13 cm and 27–29 cm, Section 3, 15–20 cm and 35–40 cm. By Section 3, 82 cm, the sediment is classified as a FORAMINIFER OOZE. The latter sediment is homogeneous, soupy, and light gray (10YR 7/2) in Section 3, to very pale brown (10YR 7/3) below Section 3. Several light gray stains are seen at Section 4, 19 cm, 31 cm, 44 cm, 60 cm, and 113–115 cm. Larger light gray patches in Section 5, 38–52 cm and 65–78 cm. Sections 6 and CC are coarser, and are light brownish gray (10YR 6/2) in color. | 15 | | | |
| 4 5 7 7 7 7 7 7 7 7 7 7 7 7 7 | S S S S S S S S S S S S S S S S S S S | | | | | |
| | | | | | | |

SITE 873

SITE 873 HOLE B CORE 5H

| SIT | E 873 HOL | ΕB | C | ORE 5H | | | | CORED 35.0 - 44.5 mbsf |
|-------|---|---------|----------|-----------|---|--------|--------------------------|--|
| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION FORAMINIFER OOZE |
| 2 | | 1 | liocene | | 000000000000000000000000000000000000000 | S | 10YR 7/3 | Major Lithology: Very pale brown (10YR 7/3), homogeneous FORAMINIFER OOZE. Sediment texture is medium-grained sand. Minor evidence of bioturbation (small patches of very pale brown (10YR 8/3) occur in Section 4, 5–7 cm and 70–125 cm. |
| 4 | | 4 | middle M | 3 3 | 00000000 | | 7/3 To 10YR 8/3 | |
| 5 | | 5 | | | 0000000 | | | |
| 6 | | 6 | | | 000000000 | | 10YR 7/3 | |
| 7 | \mathbf{T} | cc | | | 00 | l I | l, | |



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| 873 | B-5H | | | | COF | RED | 35.0 | - 44 | 1.5 1 | mbsf |
|-------|------------------|---------|----------------|-----------------|------------------|------------------|-----------|---|--------|----------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 1111 | | 1 | | | | | | 0000 | | |
| 1 | | 2 | | | 6N | | | 000000000000000000000000000000000000000 | | 10YR 7/3 |
| 3 | | 3 | | | | | | 00000000 | S | |
| 4 | | 4 | middle Miocene | CN5 | | | 3 | 000000000000000000000000000000000000000 | | 10YR 7/3 To 10YR 8/3 |
| 5 | | 5 | | | mixed | | | 000000000000000000000000000000000000000 | 1 | R 7/3 |
| 7 | | 6 CC | | С.М | A.G | | | 00000000 | | 10/1 |

| | | _ | | | | 1 | Ð | - 3 | | |
|----------|---------------------------------------|---------|---------------|-----------------|------------------|------------------|---------|---|--------|---------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structu | Disturb | Sample | Color |
| 1 | | 1 | | | | | 3 3 | 00000000 | | |
| 2 | | 2 | | | | | | 000000000000 | S | DYR 7/2 To 10YR 8/2 |
| 3 4 | | 3 | iddle Miocene | CN5 | (mixed) | | | 0000000000 | S | 1 |
| 5 | | 4 | E | | | | 3 | 000000000000000000000000000000000000000 | S | /3 To 10YR 7/2 |
| 6 | | 5 | | | | | | 000000000000000000000000000000000000000 | | 10YR 7 |
| <u>_</u> | , , , , , , , , , , , , , , , , , , , | 6 | | C.M | A.G | | | 000 | | 10Y 6/3 |

| 873 | B-3H | | | | COF | RED | 16.0 | - 25 | 5.5 r | nbsf |
|-------|------------------|---------|---------------|-----------------|------------------|------------------|-----------|---|--------|--------------------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 1 | | 1 | Pliocene | CN12a | | _ | | 0000000 | | |
| 2 | | 2 | | 0d-11 | | | | 000000000000000000000000000000000000000 | | |
| 3 | | 3 | le | CN1 | | | | 000000000000000000000000000000000000000 | S | |
| 5 | | 4 | early Pliocer | | N19/20 | | | 000000000000000000000000000000000000000 | | YR 7/2 To 10YR 8/2 |
| 6 | | 5 | | 10a (?) | | | | 000000000000000000000000000000000000000 | | 10 |
| 8 | | 6 | | CN | | | | 000000000000000000000000000000000000000 | I | |
| 9 | | 7 CC | | P,G | P,G | в | | 0000000 | | |

SITE 873 HOLE B CORE 6H

CORED 44.5 - 54.0 mbsf

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION FORAMINIFER OOZE |
|-------|------------------|---------|----------------|-----------|---|--------|-------------|---|
| 2 3 | | 1 | middle Miocene | | 000000000000000000000000000000000000000 | S | 10YR 7/3 | Major Lithology: Very pale brown (10YR 7/3), homogeneous FORAMINIFER OOZE. Color changes to pale brown (10YR 6/3) at Section 4, 30 cm. Small opaque black grains are dispersed throughout the pale brown FORAMINIFER OOZE and are especially prevalent in Section 5, 0–46 cm. Sediment texture becomes conspicuously sandy from Section 5, 45 cm to Section CC, 9 cm. |
| 6 | | 4 | | | 000000000000000000000000000000000000000 | I S | 10YR 6/3 | |



| SITE | E 873 HOL | EE | 3 C | ORE 7H | | | | CORED 54.0 - 58.0 mbsf |
|-------|------------------|---------|-----|-----------|---------|--------|-------|--|
| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color | DESCRIPTION MANGANESE OXIDE CRUST |
| | | сс | 1 | Mn | | | N2 | Major Lithology: Two pebbles of MANGANESE OXIDE CRUST. Small (1 |
| | e | arly | Mio | cene | | | | cm) patches of white CHALK are cemented to each pebble. |



SITE 873 HOLE B CORE 8N

Section Disturb Sample Graphic Meter Age Color Structure Lith. REEEE 1 MA 1 RRRRRR 17 1 RBBBBB 1 RBBBBB Т BBBBBBB GGGGGG Maastrichtian GGGGGG 10YR GGGGGG 7/4 GGGGGG GGGGGG GGGGGG 0 GGGGGG 2 X GGGGGG GGGGGG TT GGGGGG DESCRIPTION

MANGANESE ENCRUSTED LIMESTONE, ALGAL

RUDIST RUDSTONE, and SKELETAL GRAINSTONE

Major Lithologies:

Section 1, 0-14 cm; MANGANESE ENCRUSTED LIMESTONE, with black (N2) manganese crusts to 3 cm-thick (top piece). The crusts are almost entirely "digitate stromatolites" (i.e., branching growths with finely laminated, hemispheric segments); hemispheres are sub-mm scale. PELAGIC FORAMINIFER PACKSTONE, white (10YR 8/2) to yellow (5Y 7/6), occurs: (1) plastered on Mn crust in lenses to 5 mm-thick, (2) in borings and intraparticle pores within neritic limestones, and (3) apparently intimately intermixed with neritic forms without sharp boundaries, although in "domains" that may be a kind of filling. RUDIST SKELETAL GRAINSTONE, like the underlying brown stain (probably phosphatization), is patchily distributed throughout. Minimal manganese and phosphate patches to Section 1, 30 cm. Section 1, 14-88 cm: ALGAL RUDIST RUDSTONE, with skeletal grainstone matrix, very pale brown (10YR 7/4) overall. Rudists are light yellowish brown (10YR 6/4), algae are white (N8). Algae, rudist, and coral fragments are up to 3-5 cm in size. Matrix is fine sand (1/8-1/4 mm), Rudists are exclusively radiolites; some are large fragments, but none are quite whole nor in growth position (orientation is nearly random; radiolites are highly gregarious and usually occur in clusters). Some are well rounded or angular spallings. Algae are corallines; they are red in

CORED 58.0 - 62.5 mbsf

color. They encrust extensively, especially radiolites, but also occur as broken, rounded fragments, and as large (0.3mm) concentric growths (rhodolites). A few large platy skeletons may be corals (Section 1, 44 cm and 72 cm). There are few bivalves and pastrapods (molds); encrusting worms are rare. Matrix is rounded with few skeletons identified, except foraminifers (miliolids, small benthics), Porosity is very high (15% to 30%); it appears to decrease downward and change from 25% interparticle, 5% moldic at the top, to 10% moldic, 5% interparticle at Section 1. 75 cm. Large-scale porosity (vugs to 4 cm) may appear in the lower portion; the vugs are hard to distinguish from coring washouts. Cementation is very light, except in a few patches such as the center of a large algal encrustation in Section 1, 70 cm and 88 cm. Alternatively, the algae may have encrusted a cemented lump. Visible cement is medium- grained equant crust (PE4C). Geopetal sediment fills in borings or molds, suggesting that they were open during deposition. Section 1, 88-137 cm is comprised of very pale brown (10YR 7/4) SKELETAL GRAINSTONE. There are many mollusks (bivalve and gastropods; radiolite rudists very rare), but few fragments of coralline algae. No other taxa were identified except the foraminifer Omphalocyclus. Most of the volume is made up of fine skeletal sand (1/8-1/4 mm) A concentration of shells (bivalves, red algae) in Section 1 99-102 cm produces a local rudstone texture. Porosity is 20%-25%, except in Section 1, 119-123 cm, where it decreases to 5%. Small interparticle porosity is generally 10%-20% (smsBP 10%-20%). Moldic porosity, after mollusks, is 5%-15%, with local increases to 20% (cr Ims BP 5%-15%). "Matrix Porosity" may include some micromolds. Highly cemented patches, irregular to elliptica in outline (up to 2 cm-wide) have virtually no porosity. A few have some slightly coarser skeletons (Omphalocyclus but most show no textural contrasts with the surrounding, poorly cemented grainstone. algae) in Section 1, 99-102 cm produces a local rudstone texture. Porosity is 20%-25%, except in Section 1, 119-123 cm, where it decreases to 5%. Small interparticle porosity is generally 10%-20% (smsBP 10%-20%). Moldic porosity, after mollusks, is 5%-15%, with local increases to 20% (cr Ims BP 5%-15%). "Matrix Porosity" may include some micromolds. Highly cemented patches, irregular to elliptica in outline (up to 2 cm-wide) have virtually no porosity. A few have some slightly coarser skeletons (Omphalocyclus) but most show no textural contrasts with the surrounding, poorly cemented grainstone.



| 8/3 | B-6H | | _ | | COF | ED | 44.5 | - 54 | 1.0 | mbs |
|-------|--------------------------------------|---------|-----------|-----------------|------------------|------------------|-----------|--------------|--------|----------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| | | 1 | | | | | | 000000000 | S | |
| 2 | | 2 | | | | | | 00000000000 | | 0YR 7/3 |
| 3 | | 3 | e Miocene | 4 | | | | 00000000000 | | - |
| 5 | | 4 | middl | CN3/ | N8 | | | 000000000000 | | |
| 6 | | 5 | | | | | | 000000000000 | S | 10YR 6/3 |
| - | ++++++++++++++++++++++++++++++++++++ | 6 | | С,М | A,G | | | 000 | | |

| 8738 | 3-7H | | |) | COF | ED | 54.0 | - 58 | 3.0 | mbs |
|-------|------------------|---------|-----|-----------------|------------------|------------------|-----------|----------|--------|-------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| | | | 1 | CN1b A.G | | | Mn | | | N2 |

early Miocene

| 873 | B- 8N | | | | COF | ED | 58.0 | - 62 | 2.5 | mbst |
|-------|------------------|---------|---------------|-----------------|------------------|------------------|-----------|----------|-------------|-------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| | | 1 | Maastrichtian | В | В | T Maastrichtian | GD DE | | т т т | |

SITE 873 HOLE B CORE 9N

| Meter | Graphic Lith. | Section | Age | Structure | Disturb | Sample | Color |
|-------------------|------------------|---------|---------------|-----------|--|--------|----------------------------------|
| بالمعالية فالمعاد | | 1 | Maastrichtian | (J P)X | H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H- | т | 10YR 7/3 To 10YR 8/4 |

DESCRIPTION

SKELETAL GRAINSTONE and ALGAL GRAINSTONE

Major Lithologies:

Section 1, 0-2 cm is comprised of manganese-encrusted, phosphate impregnated drilling pebbles (probably cavings). Black (N2) manganese crust to 15 mm-thick (size of pebbles). One half of the crust is dense and vaguely laminated; one half is dendritic or "digitate stromatolitic" on a mm-scale, with local pelagic foraminifers and calcite or silica cement between "fingers". Phosphate is observed as patchy stains impregnating the host rock, which is a skeletal packstone or grainstone. The skeletal packstone or grainstone includes abundant rudist (radiolitid) fragments (unstained and rarely manganese or phosphate stained), a few coralline algal fragments (unstained), and abundant planktonic foraminifers; (phoshatic) pellets are rare. The planktonic foraminifers are pervasively phosphatized, except for one angular area which is likely an intraclast. Section 1, 2-135 cm is comprised of SKELETAL GRAINSTONE, fine to very fine grained (1/16-1/4 mm) and very pale brown (10YR 7/3, 10YR 8/4) with pale brown (10YR 6/3) mottles throughout. Grains are very well rounded and sorted, except for a few percent of coarser, angular fragments or whole skeletons. Locally, shells are concentrated in coarser patches or layers (e.g., Section 1, 7-10 cm; rubble pieces at Section 1, 20 cm, 70 cm, and 120 cm). Constituent grains are unidentified except for a few foraminifer fragments and platy pieces that are <1/4 mm in size (possible mollusk fragments). All are rounded; many are micritized at margins. Larger components include many benthic foraminifers (Omphalocyclus) but few coralline algae fragments and bivalves: gastropods are rare Rudist fragments occur rarely; they are found only at the top (radiolite in Section 1, 2-10 cm; possible caprinid at Section 1, 10-14 cm). A few large, very thin, platy but irregular brown shells may be oysters or

CORED 62.5 - 67.0 mbsf

similar bivalves. A single echinoid spine was observed. Fragments likely abound in the fine sand. Irregular to ovoid shaped mottles in Section 1 are up to 10 mm-wide and 30 mm-long, with smooth edges. These mottles are zones of denser cementation; interparticle porosity is entirely filled, molds are rare. Large benthic foraminifers are found within most mottles; bivalves occur within or adjacent to a few mottles. A relationship between foraminifers, specifically Omphalocyclus, and cementation seems apparent: however, some mottles have no visible foraminifers within them and some foraminifers (perhaps 1/4) have no cement halo. Some pieces consist of 20%-25% cemented zones; the average may be 10%. Porosity is high throughout, except in the mottles. Molds, mostly of mollusks, range from 0% to 20% porosity, depending largely on the abundance of mollusks. The average porosity is 5%-10%. Interparticle porosity is high throughout; the range is 5% (in Section 1, 14-22 cm) to 20% (in Section 1, 2-10 cm (patchy), 35-65 cm and 88-91 cm). Visible cement is rare. Medium to small calcite crystals line many molds (PB34C). A few patches of translucent, amber-colored calcite without visible crystal boundaries fill molds or intraparticle pores. This may be passive cement or neomorphic skeletal calcite; an example is in Section 1, 14-22 cm. Section 2, 0-9 cm, consists of drilling pebbles (about 30 pebbles from 0.25 to 1.5 cm in size); three were cut and examined. One is similar to the pale brown mottles described from Section 1; this pebble included a specimen of Omphalocyclus. The second pebble is a laminated, very fine-sand grainstone with abundant small (<1/4 mm) platy pieces as the dominant visible component; these may be mollusk fragments. One Omphalocyclus in this pebble is "chalky" in appearance. The third pebble is similar to the lithology in Section 2, 9-21 cm, as described below. Section 2, 9-21 cm is comprised of very pale brown (10YR 7/3) ALGAL SKELETAL GRAINSTONE, with a medium sand texture. Coralline algal fragments are abundant; there are many large benthic foraminifers, common mollusk fragments, and few rudist fragments and miliolids. Most original intergranular space is filled by clear to amber/brown calcite cement; crystal boundaries are not visible. Moldic porosity varies from near 0 to 10%, mostly after mollusk debris. Vuggy porosity varies locally, from 5% to 20%. Some molds with finely crystalline, bladed crusts (PB3C) are observed. One tubular vug (1-2 mm) with amber medium crystalline bladed crust (PB4C) is noted. The amber cement is concentrated around sites of high vuggy porosity. The boundary between amber and clear cement is moderately diffuse. Some components, such as mollusk debris and large benthic foraminifers are selectively "stained" amber; red algae are rarely discolored.



SITE 873

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Section

Maastrichtian

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10YR

6/4

SKELETAL GRAINSTONE and SKELETAL

The upper 60 cm of the core is highly fragmented, with pieces <1 cm in diameter. Section 1, 0-27 cm; is comprised of a mixture of two distinct lithologies. These are: (1) white (10YR 8/2), medium-grained SKELETAL PACKSTONE, composed of mollusk debris (30%), gastropods (rare) and other finer grained, unidentifiable particles. The cement is micritized. Leached, moldic porosity (5%) mainly formed by the dissolution of mollusk shells; some of the voids are coated by a white chalky film that is overgrown by dogtooth sparry calcite. The packstone is bioturbated. This lithology is most probably caved. (2) The second lithology is considered to be in situ and, as can be deduced from fragments, is the same lithology as is described below at Section 1, 27 cm. Section 1, 27-139 cm, is comprised of SKELETAL GRAINSTONE, light yellowish brown (10YR 6/4), with alternating laminae about 1 cm-thick of coarse to very coarse and medium-grained grainstone. Laminae are parallel, with poorly developed cross-bedding of 10 degrees at Section 1, 112–115 cm. Laminations are accentuated by parallel orientation of leached mollusk shells. Some of the shells are occasionally imbricated. A very coarse, fining upward grainstone with grains 1 mm to 5 mm in size occurs at Section 1, 80 cm. The grainstone consists of 30% red algae, mollusk debris (20%), with less than 10% of latter being rudists; foraminifers occur in traces. Mollusk debris are mostly leached out; thus producing leached, intraparticle porosity. In the coarse-grained beds the cementation is uncomplete, with primary unfilled voids. Porosity ranges from 7% to 20%. Porosity ranges from 7% to 20%. The fabric in the coarse-grained laminae show a very low degree of grain packing. Grains are cemented by dogtooth sparry calcite, which forms isopachous rims around grains; the cement fills the interpaticle cavities and rims the internal walls of voids. The medium-grained grainstone is much more intensively cemented than the coarser-grained grainstone. Section 1, 139-147 cm is comprised of medium-grained GRAINSTONE, light yellowish brown (10YR 6/4), with thinned, coarse-grained laminae (5 mm-thick). Red algae debris is more common in coarser-grained laminae. The composition of the grainstone is the same as at Section 1, 27-139 cm.



Meter

670

| 8 | 73 | B-9N | | | | COF | RED | 62.5 | -6 | 7.0 | mbsf | 873 | B-10N |
|---|-------------|------------------|---------|---------------|-----------------|------------------|------------------|-----------|---|--------|----------------------|-------|------------|
| | Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color | Meter | Graț Li |
| | Lan Carlina | | 1 | Maastrichtian | в | в | S Maastrichtian | 3 DA | $\neg \neg $ | т | 10YR 7/3 To 10YR 8/4 | | |

| 873 | B-10N | | | | COF | RED | 67.0 |) - 69 | 9.0 | mbs |
|-------|------------------|---------|---------------|-----------------|------------------|------------------|-----------|----------|--------|----------|
| Meter | Graphic Lith. | Section | Age | Calc. nanno. | Plank. foram. | Larger foram. | Structure | Disturb. | Sample | Color |
| 1 | | 1 | Maastrichtian | в | в | S Maastrichtian | X F | | T T | 10YR 6/4 |

144-873A-14R-CC Shipboard Studies Graphic Representation Piece Number Igneous Unit **UNIT 1: BASALT** Orientation Pieces 1, 3-5 cm CONTACTS: None. Pieces are mixed up; Piece 2 is part of Unit 2. 0 PHENOCRYSTS: Unit 1 1 Plagioclase - 40%; 0.5 mm; Meshwork of white (N9) laths. GROUNDASS: Aphanitic. VESICLES: 3%; 3–5 mm; Round; Filled with dark yellowish green (10GY 4/4) celadonite. 2 Unit 2 COLOR: Dusky green (5G 3/2). 3 STRUCTURE: None. ALTERATION: Color and vesicle fill suggest that the unit has undergone significant clay development. 4 VEINS/FRACTURES: None. 0 ADDITIONAL COMMENTS: None. Jnit 1 C 5 UNIT 2: BASALT 2 00 Piece 2 Unit 3 6 CONTACTS: None. Pieces are mixed up; More Unit 1 pieces below Unit 2. PHENOCRYSTS: None. GROUNDMASS: Aphanitic. VESICLES: 10%; <3 mm; Elongate; 20% are filled with dark yellowish green (10GY 4/4) celadonite. COLOR: Very dusky red purple (5RP 2/2). STRUCTURE: None. ALTERATION: Color suggests that the unit has undergone significant clay development and oxidation. 50 VEINS/FRACTURES: None. ADDITIONAL COMMENTS: None. UNIT 3: BASALT Piece 6 CONTACTS: None. PHENOCRYSTS: None. GROUNDMASS: Aphanitic. VESICLES: 10%; <5 mm; Round; 20% are filled with dark yellowish brown (10YR 4/2) clay. COLOR: Dark gray (N3). STRUCTURE: None. ALTERATION: Addition of clays in vesicles and veins. VEINS/FRACTURES: 2%-10%; 0.5-2 mm; Subhorizontal; Anastomosing fractures, spaced about every 5 mm, filled with dusky green (5G 3/2) clay. ADDITIONAL COMMENTS: None. 100-150-CORE/SECTION

Shipboard Studies Graphic Representation Piece Number Igneous Unit Orientation cm 0-1 00 0 . 0 0 0 2 0 \bigcap C 0 Daa 3 C 0 000 4 00 5 <2 6 50-100-150-CORE/SECTION

UNIT 4: BASALT

Pieces 2-6

Unit 4

CONTACTS: None. Piece 1 is pale red (10R 6/4) claystone. PHENOCRYSTS:

144-873A-15R-1

Plagioclase - 40%; 0.5 mm; Randomly oriented laths. GROUNDASS: Aphanitic. VESICLES: 5%; 1–5 mm; Round; Filled with calcite. COLOR: Medium gray (N5).

STRUCTURE: None.

ALTERATION: Addition of calcite; probable clay development. VEINS/FRACTURES: <1%; 1-2 mm; Filled with calcite.

ADDITIONAL COMMENTS: None.





UNIT 8: CLINOPYROXENE BASALT

Pieces 1-15

CONTACTS: None.

PHENOCRYSTS: Concentrated in several 3-5 mm wide bands. Notable bands in intervals 52-70, 81-88, and 98-100 cm.

144-873A-18R-1

Clinopyroxene - 3%-25%; 0.5-2 mm; Dusky green (5G 3/2), subhedral.

GROUNDMASS: Microcrystalline.

VESICLES: None.

COLOR: Dark gray (N3). STRUCTURE: Banded by concentrations of clinopyroxene grains.

ALTERATION: Relatively fresh.

VEINS/FRACTURES: Irregular, interconnected calcite patches to 3% and 8 mm.

ADDITIONAL COMMENTS: Immediately below this unit, Sections 18R-1, 133 cm to 19R-3, 95 cm contain volcanic breccia which is described in the Lithostratigraphy section of this chapter. Unit 9 begins at Section 19R-3, 95 cm.

Calcite vein

Irregular patchy calcite

Brecciated zone