SURVEY DATA AND SITE APPROACH

As at Site 17, the area around this site was not surveyed in detail prior to the arrival of the drilling vessel. The general location was selected on the east side of the Mid-Atlantic Ridge, about 150 kilometers west of the previous site, to further test the symmetry of seafloor spreading.

The drilling vessel crossed the site location (27° 58.72′ S, 8° 00.70′ W) only once on a course of 270° before turning around to begin drilling operations. The topography within a few miles of the site (Figure 1) apparently consists of relatively smooth hills 20 to 80 meters (66 to 262 feet) high at an average depth of about 3980 meters (13,054 feet), corrected (2120 fathoms, uncorrected). The depth recorded on the site is 4022 meters (13,192 feet), corrected (2142 fathoms, uncorrected). Underway to the site on course 270°, the vessel crossed a region of unusually large depth (2400 to 2600 fathoms, uncorrected) extending for about 50 to 60 kilometers immediately east of the site. It is possible that the vessel crossed a transverse fracture zone of the Ridge at a low angle. The magnetic anomalies recorded during the crossing of this deep region are of relatively low amplitude.

The air-gun records, approaching the site are of relatively poor quality, but they indicate a sediment thickness equivalent to about 0.15 to 0.20 second reflection time between bottom and “basement” reflector. The record on the site shows a number of possible “basement” reflectors, ranging in depth from about 0.16 to 0.32 second reflection time below bottom. The record may be complicated by side echos from the rough bottom or basement reflectors.

The magnetometer record shows the site to be a few kilometers west of a small positive magnetic anomaly of about 80 gammas amplitude. As at Site 17, the location of this site within the magnetic anomaly pattern is rather uncertain.

OPERATIONS

Positioning

The marker beacon at Site 18 was dropped over the side at 1500 hours on 2 January, 1969. Throughout the 1.5 days on site it was necessary to revert to semi-automatic positioning at some intervals because of erratic large currents (~1 knot) that appeared suddenly and often disappeared as quickly. Aside from these occasions, the ship was held in automatic positioning, seldom deviating more than 15 meters (49 feet) from directly over the beacon.

Drilling

At 178 meters (584 feet), there was a drilling break associated with the bit encountering basalt. The drilling rate was reduced from about 30 m/hr to less than 1. Over three hours of drilling and coring in the basalt were required to recover 0.3 meter (1 foot) of core. It is doubtful that penetration was much greater than this amount. The Christensen diamond bit was thoroughly worn and not useful for further drilling.

Coring

A total of seven cores was collected with a recovery of 52.2 (171 feet) out of 52.9 meters (174 feet), or 98.6 per cent. Only one core at this site had less than 100 per cent recovery.

After a surface core was taken, the pipe was washed in to about 120 meters (394 feet); and, from there to the bottom of the hole, the sediments were cored continuously. On the average this required about 2 hours per core—with the basalt core taking about 5 hours to collect. A summary of the coring is shown in Table 1. Site 18 was planned as a minimum operation in order to conserve time. The total time on site from arrival to departure was 41 hours.

PALEONTOLOGY

Pleistocene, Lower Miocene and Upper Oligocene sediments were recovered from six out of the seven cores. Core 7 recovered basalt. Coring was discontinuous in the upper 130.2 meters (427 feet)—Cores 1 and 2—of the hole; and, it was continuous from 130.2 meters (427 feet) to the top of the basalt at 178.1 meters (584 feet)—Cores 3 through 6. This procedure in coring...
Figure 1. Precision depth-recording in the vicinity of Site 18.
TABLE 1
Summary of Coring at Site 18

<table>
<thead>
<tr>
<th>Core No.</th>
<th>Date/Time</th>
<th>Interval Cored (m below sea floor)</th>
<th>Core Retrieved (m)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-1</td>
<td>1-3-69 0540</td>
<td>0-7.6</td>
<td>7.6</td>
<td>--</td>
</tr>
<tr>
<td>18-2</td>
<td>0900</td>
<td>121.0-130.2</td>
<td>9.0</td>
<td>--</td>
</tr>
<tr>
<td>18-3</td>
<td>1045</td>
<td>141.2-150.3</td>
<td>9.0</td>
<td>--</td>
</tr>
<tr>
<td>18-4</td>
<td>1230</td>
<td>150.3-159.5</td>
<td>8.5</td>
<td>--</td>
</tr>
<tr>
<td>18-5</td>
<td>1430</td>
<td>159.8-168.9</td>
<td>9.0</td>
<td>--</td>
</tr>
<tr>
<td>18-6</td>
<td>1645</td>
<td>168.9-178.1</td>
<td>9.0</td>
<td>--</td>
</tr>
<tr>
<td>18-7</td>
<td>2200</td>
<td>178.1-178.4</td>
<td>0.3</td>
<td>Bit worn out.</td>
</tr>
</tbody>
</table>

Total 52.4

was decided upon to establish the age of the sediments immediately above the basalt. The Aquitanian/Burdigalian boundary of the Lower Miocene was drilled in Core 2. The Oligocene/Miocene boundary, although not cored, probably occurs between Cores 5 and 6. Time limitations aboard the ship and the soupy nature of many of the sediments cored resulted in many cores not being slabbed or sampled in detail for geologic and paleontologic studies.

The major purpose in drilling this hole was to test the hypothesis of sea-floor spreading and the interpretation of linear magnetic anomalies. The hole was drilled on a positive anomaly; however, the limited survey data do not permit determination of the Magnetic Anomaly Number in terms of the Heirtzler et al. (1968) scheme. The age of the oldest sediments found above the basalt is late Oligocene (Chattian). They represent the lower part of the Globorotalia kugleri Zone of Bolli (1957c) and probably the Sphenolithus ciperoensis Zone of Bramlette and Wilcoxon (1967). An equivalent radiometric age of approximately 26 million years B.P. is indicated for these zones based upon Chapter 2, Figure 3. An assumed constant rate of spreading of the ocean floor of 2 cm/year over the distance between this site and the axis of the Mid-Atlantic Ridge gives a suggested age of about 25 million years. This computed age is in close agreement with the paleontologic date of 26 million years.

This hole was drilled also to study any floral or faunal changes which took place in southern latitudes. The planktonic foraminifera found in the Pleistocene are not typical of those from tropical latitudes. However, both the planktonic foraminifera found in the older sequence and the calcareous nanoplanckton found throughout the section include many species reported by other workers from tropical areas. The calcareous nanoplanckton in the Pleistocene are a possible exception, but they were not studied in detail.

The sediments of most of the cores from Hole 18 consist predominantly of plates of the calcareous nanoplanckton with minor amounts of planktonic foraminifera. An exception to this is Core 1 where radiolarians and diatoms are present. The variations from lithologic unit to lithologic unit are discussed below under Stratigraphy.

Core 1, from 0 to 7.6 meters (0 to 25 feet), is Pleistocene in age based on all three microfossil groups: planktonic foraminifera, calcareous nanoplanckton and Radiolaria. This core was not opened except for Section 5 because of time limitations aboard ship. Though not abundant, a fair amount of radiolarians occur in portions of this core accompanying the diatom, Ethmodiscus rex (Rattray). Radiolarian species found are Dictyophysalus crisae Ehrenberg, Penartas tetralthalmus Haecle, Lamprtocycias polypora Nigrini and Axopnum stauraxonum Haecle.

The Aquitanian/Burdigalian boundary of the Lower Miocene is found at the bottom of Section 1 of Core 2, from 121 to 130.2 meters (397 to 427 feet), based on the first appearance of Globigerinita dissimilis in the sample from 100 to 102 centimeters in Section 2. This is the boundary between the Globigerinita stanhorthi Zone of Bolli (1957c) and the Globigerinatella insueta/Globigerinoides trilobus Zone of Blow (1959). Two calcareous nanoplanckton zones of Bramlette and Wilcoxon (1967) are present in this core. These are the upper part of the Triquetorhabdulus carinatus and the Sphenolithus belenos Zones. The older zone is found in the sample from 148 to 150
Correlation with Sites 15 and 17 suggests that other formations such as the Blake and Challenger Oozes and possibly the Discovery Clay are also present, but in the uncored interval. The sediment sequence above the basement, 178 meters (584 feet) here, is thickest among all of the holes of the Mid-Atlantic Ridge province.

The cores from Hole 18 were split only in part because the cores were soupy, the lithology is relatively uniform, and time was short. However, practically all cores were sampled from the ends. Grain-size, carbonate content, clay minerals, and smear-slide data, in addition to the visual description of representative split sections, permit a presentation by the authors of an adequate report on the stratigraphy of the cored intervals.

The Quaternary Unit 3-18-1-1 consists of white foraminiferal nannofossil chalk oozes, readily identified as the Albatross Ooze. The oozes consist of 90 per cent nannofossils and 10 per cent foraminifera.

After a long uncored interval, nannofossil chalk oozes 57 meters (187 feet) thick were penetrated before the basalt basement was reached. These oozes were divided into three units. The top Unit 3-18-2-1 is a yellowish-brown marly chalk oozes, with only traces of foraminifera (sand-fraction 1 to 3 per cent), but appreciable amount of hematitic clays, so that the non-carbonate content ranges from 20 to 25 per cent. This unit can be identified as the Endeavor Ooze, having a lithological character somewhat intermediate between that found at Site 15 and Site 17. The middle Unit 3-18-2-6 is recognized on the basis of a decrease in non-carbonate impurities, which are commonly less than 15 per cent in those sediments. Foraminifera are present, but still rare so that the sand-fraction ranges from 3 to 5 per cent. These oozes are very pale brown to light yellowish-brown in color, somewhat darker than a typical Fram Ooze; otherwise, they are lithologically similar to their correlative at Site 17. The bottom Unit 3-18-4-4 was recognized on the basis of the relatively large foraminifera content. These very pale brown nannofossil chalk oozes are silt-sized sediments with 10 to 15 per cent sand-fraction. The authors correlated this foraminiferal unit with those at Sites 14, 15 and 17 as a part of the Grampus Unit, which represents in those three instances the first sediment above the basalt basement, although the age of this formation ranges from Eocene to Miocene.

A basalt section about 30 centimeters in length was retrieved from Core 3-17-7. The dark gray basalt is weathered a buff brown. A chilled glassy top can be observed. Coarsely crystalline calcaceous sediments are enclosed in fractures which may represent recrystallized sediments entrapped in a basalt flow. No obvious contact metamorphic effect is observed, although the Grampus Ooze is very firm at the contact; whereas a meter above, the ooze was sufficiently soft to permit complete penetration by the penetrometer needle (penetrometer reading 25 in contrast to > 350).
It is difficult to obtain reliable sedimentation rates for Site 18. On the one hand, neither the bottom contact of the Albatross nor the top contact of the Endeavor Ooze has been cored. On the other hand, the duration of geologic time represented by the Fram and Grampus Oozes could not be accurately estimated. Nevertheless, the average sedimentation rate for Lower Miocene is impressively rapid since more than 57 meters (187 feet) of oozes were deposited during some 7 million years, at a 0.8 cm/t.y. rate.

The stratigraphy of the cored intervals at Site 18 is summarized in Table 2.

### PHYSICAL PROPERTIES

#### Natural Gamma Radiation

Natural gamma radiation emitted from the Albatross, Endeavor, Fram, and Grampus Oozes, at Site 18 ranged from zero to 700 counts, averaging about 200+ counts/7.6-centimeter core segment/1.25 minutes (Figures 2A and 3A-8A). The highest counts of 700 were obtained from Section 3-18-1-4, within the Albatross Ooze; however, this core section was not split or described. The radiation source is probably clay-type minerals. Intermediate gamma counts of 300 to 400 from Section 3-18-6-6 (Grampus Ooze) are related to a high density, firmer, baked claystone above the basalt. This sediment may contain gamma emitting potassium derived from the basalt.

#### Porosity, Wet-Bulk Density and Water Content

Porosities, water contents, and wet-bulk densities ranged from 38 per cent to 82(?) per cent, 30 per cent to 47 per cent, and 1.35(?) g/cc to 2.08 g/cc, with averages about 60 per cent, 36 per cent, and 1.70 g/cc, respectively (Figures 2A and 3A-8A). Averaged core porosities decreased (80-55 per cent) with increasing depth through the Albatross Ooze, Endeavor Ooze and Fram Ooze, with the Grampus Ooze having slightly lower porosities. In core Section 3-18-6-6, part of the Grampus Ooze, the firmer baked claystone is depicted in the GRAPE records as being more dense (2.08 g/cc, 38 per cent) than the overlying sediment (2.08 g/cc, 55 to 60 per cent). Porosity correlated inversely with averaged wet-bulk densities and sound velocities. As with all Leg 3 sites, these values may not represent in situ values because of coring disturbances.

#### Sediment Sound Velocity

Limits of the Site 18 sediment sound velocities were 1.49 to 1.64 km/sec, with a norm of about 1.55 km/sec (Figures 2A and 3A-8A). Averaged sound velocities increased with increasing depth through the Albatross Ooze, Endeavor Ooze, Fram Ooze and the Grampus Ooze, and they were inversely correlated to averaged porosities and directly correlated to averaged wet-bulk densities. In situ values may not be represented by these measurements, even if corrected for temperature and pressure.

### TABLE 2

<table>
<thead>
<tr>
<th>Description</th>
<th>Age</th>
<th>Formation Name</th>
<th>Probable Interval (m)</th>
<th>Probable Thickness (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White foraminiferal nannofossil chalk ooze, with 10 per cent foraminifera.</td>
<td>Pleistocene</td>
<td>Albatross Ooze</td>
<td>3-18-1-1</td>
<td>0-9</td>
</tr>
<tr>
<td>Yellow brown, marly nannofossil chalk oozes.</td>
<td>Lower Miocene</td>
<td>Endeavor Ooze</td>
<td>3-18-1-2</td>
<td>121.0-128.5</td>
</tr>
<tr>
<td>Light yellow brown and very pale brown nannofossil chalk oozes. &lt; 2 per cent foraminifera.</td>
<td>Lower Miocene</td>
<td>Fram Ooze</td>
<td>3-18-2-6</td>
<td>128.5-130.2</td>
</tr>
<tr>
<td>Foraminiferal nannofossil chalk oozes, very pale brown to light yellow brown, 10 per cent foraminifera.</td>
<td>Lower Miocene</td>
<td>Grampus Ooze</td>
<td>3-18-4-4</td>
<td>155-178</td>
</tr>
<tr>
<td>Basalt—weathered, with coarsely crystalline marble included in veins. Chill margins of dark glassy basalt around the veins.</td>
<td>?</td>
<td>Basalt</td>
<td>3-18-7-1</td>
<td>178.0-178.4</td>
</tr>
</tbody>
</table>
**Penetrometer**

Penetrometer measurements at Site 18 extended from $34 \times 10^{-1}$ millimeters to complete penetration (Figures 2A and 3A-8A). Penetration decreased near the sediment basalt contact in 3-18-6-6 (Grampus Ooze), where an increased wet-bulk density was observed. These data also had a crude inverse correlation with natural gamma radiation.

**Interstitial Water Salinity**

Interstitial water samples were not collected at Site 18.

**Thermal Conductivity**

At Site 18, values of thermal conductivity ranged from about $2.5$ to $3.1 \times 10^{-3}$ cal/°C cm sec. The lowest value was measured in a surface core. Low values were measured between the surface core and a depth of about 125 m. in the hole because of a lack of core. Values between 125 and 165 m. were relatively constant at about $3.0 \times 10^{-3}$ cal/°C cm sec. The highest value was measured at the bottom of the hole at about 173 m. depth.

**REFERENCES**

See consolidated list at the end of Chapter 13.
THE CORES RECOVERED FROM SITE 18

The following pages present a graphic summary of the results of drilling and coring at Site 18.

The first illustrations show a summary of the physical properties of the cores, the positions of the cores and cored intervals and some notes on the lithology and ages of the cores recovered from the holes.

Following this summary are more detailed displays of the individual cores recovered from Site 18. These two-page displays show the physical properties of the cores, the age assignments made on the basis of paleontology, a graphic representation of the lithology of the cores, some notes on the lithology, and notes regarding the diagnostic fossil species present. Symbols have been used for graphic display of lithology to give a general impression only, rather than a detailed representation, and these are supplemented by the lithology notes. For this reason, a detailed key has not been prepared. Interspersed among the core descriptions are photographs of the cores, where photographs are available. In general, every attempt has been made to locate photographs of the cores adjacent to, or as close as practicable to, the relevant Core Summaries. Where sections of core are of special interest, detailed Section Summaries are inserted.
Figure 2A. Summary of the Physical Properties of the cores recovered from Hole 18.
<table>
<thead>
<tr>
<th>DEPTH</th>
<th>CR.</th>
<th>CI.</th>
<th>FORMATION</th>
<th>LITHOLOGY</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td></td>
<td>Albatross Ooze 3-18/1/1</td>
<td>White foraminiferal nanofossil chalk oozes.</td>
<td>PLEISTOCENE</td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td></td>
<td>Endeavor Ooze 3-18/2/1</td>
<td>Yellow brown, marly nanofossil chalk oozes.</td>
<td>LOWER MIocene</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Burdigalian</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td></td>
<td>Fram Ooze 3-18/2/6</td>
<td>Light yellow and very pale brown nanofossil chalk oozes. Foraminifera &gt;2%.</td>
<td>LOWER MIocene</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquitanian</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td></td>
<td>Grampus Ooze</td>
<td>(see next page)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2B. Summary of the cores from Hole 18. (Depth in meters below sea bed; C.R. = core recovered; C.I. = cored interval.)
"0" = laboratory atmospheric background count of 1550.

Figure 2A. (Continued)
<table>
<thead>
<tr>
<th>DEPTH</th>
<th>CR.</th>
<th>Cl.</th>
<th>FORMATION</th>
<th>LITHOLOGY</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>4</td>
<td></td>
<td>Grampus Ooze</td>
<td>Foraminiferal nannofossil chalk oozes, very pale brown to light yellow brown. 10% Foraminifera.</td>
<td>LOWER MIOCENE Aquitanian</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Basement</td>
<td>Basalt</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2B. (Continued)
Figure 3A. Physical properties of Core 1, Hole 18.
Core disturbed

Calcereous nanoplankton:
Gephyroaapsa oceanica, Ceratolithus cristatus, Helicopectenophyra kamptneri, Cylindrotriplithus leptoporus, Coccocithus pelagicus.

ALBATROSS Ooze
White (10YR8/2), foram-nannofossil chalk ooze.
10% forams

Flora similar to above.

Radiolaria:
Diatyphophyta cristae Ehrenberg,
Penarplanus tetrahtalamus Haeckel,
Lamprophylax marialia polypora Nigrini, Anopsusum staurazionum Haeckel.

Planktonic foraminifera:
Globorotalia inflata, G. truncatulinoides, G. crassaformis, G. tumida (L), G. menardii (L),
Pullenia obliquiloculata (L),
Candeina nitida, Globigerinoides conglobata, G. ruber, G. gomitulus.

Core catcher:
Flora and fauna similar to above.
Figure 4A. Physical properties of Core 2, Hole 18.
**Lithology**

### ENDEAVOR Ooze

- Yellow brown 10YR5.5/6 nannofossil chalk ooze.
- 3% foram
- 3% hematite

### FRAM Ooze

- Light yellow brown (10YR6/4).
- 1% foram
- 3% hematite

### Planktonic Foraminifera:

### Calcareous Nannoplankton:
- Cyclocoelus neogamnation, Sphenolithus belinmos, Orthorhadus serratus, Disaoster deflandvei.

### Sample 3-5 cm:
- Flora similar to above.

### Sample 100-102 cm:
- Flora similar to above with Disaoster deflandvei.
  - Planktonic foraminifera: Globoquadrina dissimilis, G. stainforthi, Globoquadrina dehiseens, Globorotalia mayeri, G. siakensis, Globigerinoides subquadratus.

### Core catcher:
- Planktonic foraminifera: Globoquadrina dissimilis, G. stainforthi, Globoquadrina dehiseens, Globorotalia mayeri, G. siakensis, Globigerinoides subquadratus.

**This interval represents the Globigerinita stainforthi Zone.**

**This interval represents the Triquetrorhabdulus aarinatus Zone.**

---

**Figure 4B. Core 2, Hole 18.**
Figure 5A. Physical properties of Core 3, Hole 18.

* "0" = laboratory-atmospheric background count is 1550.
<table>
<thead>
<tr>
<th>AGE (STAGE)</th>
<th>ZONE</th>
<th>DEPTH (METERS)</th>
<th>SECTION NO.</th>
<th>LITHOLOGY</th>
<th>SAMPLE INTERVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOWER MIOCENE</td>
<td>(AQUITIAN)</td>
<td>Glororotalia kugleri Zone</td>
<td>Triquetrotabulus carinatus Zone</td>
<td>Globoigerinita dissipita Zone</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 5B. Core 3, Hole 18.**

**Flora:**
- Planktonic foraminifera:
  - Glororotalia kugleri
  - Triquetrotabulus carinatus
  - Globoigerinita dissipita

**Fauna:**
- First appearance of Globoigerinita dissipita

**Lithology:**
- Light brown, 1% foraminifera, 7% hemi-organic matrix

**Diagnosis:**
- Core catcher:
  - Flore and fauna similar to above.

- Flore and fauna similar to above.
Figure 6A. Physical properties of Core 4, Hole 18.
<table>
<thead>
<tr>
<th>AGE</th>
<th>STAGE</th>
<th>DEPTH</th>
<th>SECTION NO.</th>
<th>LITHOLOGY</th>
<th>SAMPLE INTERVAL</th>
<th>DIAGNOSTIC FOSSILS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fram ooze</td>
</tr>
</tbody>
</table>

**Fram ooze**

Very pale brown, (10YR7/3)

nannofossil chalk ooze.

Tr. foram

Planktonic foraminifera:
- *Globorotalia kugleri*, *Globorotalia opima nana*, *G. nana pseudomonticulos*,
- *G. stromatoloides*, *G. postatoloides*,
- *Globigerinoides dissimilis*, *G.
- *stainforthi*, *Globigerina sellii*,
- *Globoquadrina dehiscens*.

Calcareous nannoplankton:
- *Cyclolococcolithus neogammation*,
- *Coccolithus aff. biceatus*, *C.
- *pelagius*, *Sphenolithus belamonti*,
- *Disaster deflanderi*.

Flora similar to above.

Core catcher:
Flora similar to above.

Planktonic foraminifera:
- *Globorotalia kugleri*, *Globigerina woodi*,
- *Globigerinoides primaflava*,
- *Globigerinoides dissimilis*, *G. uncinus*.

Figure 6B. Core 4, Hole 18.
Figure 7A. Physical properties of Core 5, Hole 18.

* "0" = laboratory-atmospheric background count is 1550.
<table>
<thead>
<tr>
<th>AGE (STAGE)</th>
<th>ZONE</th>
<th>DEPTH (METERS)</th>
<th>SECTION NO.</th>
<th>LITHOLOGY</th>
<th>SAMPLE INTERVAL</th>
<th>DIAGNOSTIC FOSSILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOWER MIOCENE (OQUARILIAN)</td>
<td>Globorotalia Kugleri Zone</td>
<td>Trifarquadrina carinata Zone</td>
<td>1</td>
<td>OPENED AT END</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
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</tr>
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</tr>
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<td>3</td>
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<td>4</td>
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</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Planktonic foraminifera:
- Globigerinoides primordius
- Globorotalia dehiscens, Globorotalia opima nano, G. kugleri, Globigerinita stanhofrei, G. distimilis.

Calciteous nanoplankton:
- Cycloloculina megamorphosis,
- Coccolithus aff. bisatoni, C. pelagicus, C. eopolyticus, Discococaster deflandreii.

Flora and fauna similar to above.

Fram ooze
- Very pale brown, (10YR7/3),
- Nannofossil chalk ooze.

Tr. foram

Flora similar to above.

Fauna similar to above.

Core catch:
Flora similar to above.

Planktonic foraminifera:
- Globorotalia kugleri,
- Globorotalia dehiscens, G.
- nokiri, G. venezuelana, Globigerina woodi, Globigerinoides primordius,
- Globigerinita distimilis, G.
- unionana.

Figure 7B. Core 5, Hole 18.
Figure 8A. Physical properties of Core 6, Hole 18.
<table>
<thead>
<tr>
<th>AGE (STAGES)</th>
<th>ZONE</th>
<th>DEPTH (METERS)</th>
<th>SECTION NO.</th>
<th>SAMPLE INTERVAL</th>
<th>LITHOLOGY</th>
<th>DIAGNOSTIC FOSSILS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>OPENED AT END</td>
<td></td>
<td>Very pale brown (10YR7/3) nannofossil chalk ooze. Tr. foram</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>3</td>
<td>OPENED AT END</td>
<td>LITHOLOGY</td>
<td>Flora and fauna similar to above.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>5</td>
<td>OPENED AT END</td>
<td>LITHOLOGY</td>
<td>Very pale brown (10YR7/3) nannofossil chalk ooze. Tr. foram</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
<td>OPENED AT END</td>
<td>LITHOLOGY</td>
<td>Flora and fauna similar to above.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td>LITHOLOGY</td>
<td>Bottom of Section 6 is much firmer than top - may be related to emplacement of basalt immediately below. Core catcher: Flora and fauna similar to above.</td>
</tr>
</tbody>
</table>

Figure 8B. Core 6, Hole 18.
<table>
<thead>
<tr>
<th>AGE</th>
<th>STAGE</th>
<th>DEPTH (METERS)</th>
<th>SECTION NO.</th>
<th>SAMPLE INTERVAL</th>
<th>LITHOLOGY</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>2</td>
<td>4</td>
<td>C</td>
<td>1</td>
<td>EMPTY</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td>Basement</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>8</td>
<td>6</td>
<td>4</td>
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</tbody>
</table>

Basement
Weathered, pale olive (5Y6/3)
aphanitic basalt with fractures
filled by metamorphosed calcareous
sediments (marble).
Black, glassy, chilled
margins around these zones.

Figure 9. Core 7, Hole 18.
Plate 1. Sections of cores from Hole 18.
Plate 2. Sections of cores from Hole 18.