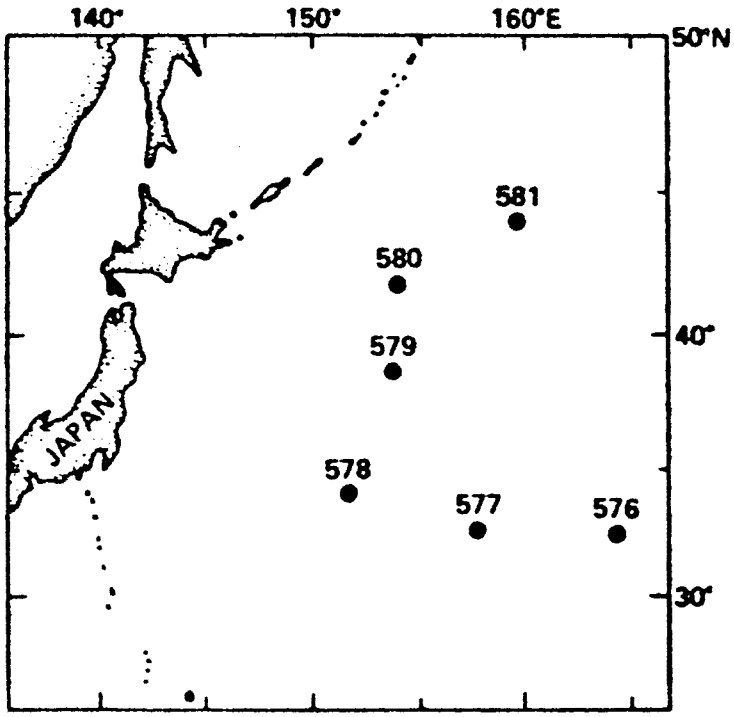
INITIAL CORE DESCRIPTIONS

DEEP SEA DRILLING PROJECT

LEG 86

WESTERN NORTH PACIFIC



Prepared for the
NATIONAL SCIENCE FOUNDATION
National Ocean Sediment Coring Program
Under Contract C-482
By the
UNIVERSITY OF CALIFORNIA
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Prime Contractor for the Project

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Deep Sea Drilling Project, A-031

LA JOLLA, CALIFORNIA 92093

December 15, 1982

Dear Colleague:

This document has been produced and distributed by the Deep Sea Drilling Project for the purpose of sample selection by interested earth scientists. Sample requests are honored two months after publication of the Initial Core Descriptions. It is an interim and informal document consisting of site data and sedimentologic and paleontologic data and interpretations as known six (6) months post-cruise. These data, while adequate for most sample selection needs, are subject to slight revision by the time of issue of the corresponding volume of the *Initial Reports* of the Deep Sea Drilling Project.

The information contained herein is preliminary and privileged, consequently this document is not to be cited or used as the basis of other publications. Data cited or used in a manuscript will be considered a breach of professional ethics.

Thank you for your interest in the Deep Sea Drilling Project.

Sincerely,

Yves Lancelot
Chief Scientist
Deep Sea Drilling Project

YL:eb

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DEEP SEA DRILLING PROJECT

LEG 86

WESTERN NORTH PACIFIC

2 MAY – 20 JUNE 1982

A Project Planned by and Carried Out With the Advice of the
JOINT OCEANOGRAPHIC INSTITUTIONS FOR DEEP EARTH SAMPLING (JOIDES)

MEMBER ORGANIZATIONS

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Lamont-Doherty Geological Observatory, Columbia University
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Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover
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EXPLANATORY NOTES

INTRODUCTION

This *Initial Core Description* is presented here to aid investigators in selecting samples for detailed study. Samples from this leg become available to the public about 8 months after the cruise, with the completion of this *Initial Core Description.*

Potential investigators who desire to obtain samples should refer to the DSDP-NSF Sample Distribution Policy. Sample request forms may be obtained from:

The Curator
Deep Sea Drilling Project, A-031
University of California, San Diego
La Jolla, California 92093

Requests must be as specific as possible: include site, core, section, interval within a section, and volume of sample required. The purpose of this publication is to aid interested investigators in understanding the (1) terminology, labeling, and numbering conventions used by the Deep Sea Drilling Project (DSDP); (2) sediment classification and biostratigraphic framework used; and in addition, (3) to present the preliminary lithologic and paleontologic data on core forms, so that sampling can be guided. However, the investigator should be aware that the data is subject to future revision.

NUMBERING OF SITES, HOLES, CORES, SAMPLES

DSDP drill sites are numbered consecutively from the first site drilled by *Glomar Challenger* in 1968. Site numbers are slightly different from hole numbers. A site number refers to one or more holes drilled while the ship was positioned over one acoustic beacon. These holes could be located within a radius as great as 900 meters from the beacon. Several holes may be drilled at a single site by pulling the drill pipe above the sea floor (out of one hole) and moving the ship 100 meters or more from the previous hole, and then begin drilling another hole.

The first (or only) hole drilled at a site takes the site number. A letter suffix distinguishes each additional hole at the same site. For example: the first hole takes only the site number; the second takes the site number with suffix A; the third takes the site number with suffix B, and so forth. It is important, for sampling purposes, to distinguish the holes drilled at a site, since recovered sediments or rocks from different holes usually do not come from equivalent positions in the stratigraphic column.

There are two types of coring systems used on the *Glomar Challenger*: (1) the standard DSDP rotary-coring system, which cuts ~9.5 meter-long cores and has been used since Leg 1; and (2) the Hydraulic Piston Coring (HPC) system, used since Leg 64.

HPC holes are not assigned a special letter designation. The HPC operates on the principle of a core barrel which is lowered inside the drill string, hydraulically ejected into the sediment and retrieved. The pipe is then lowered to the next interval and

the procedure repeated. Disturbance can occur in the top 50–100 cm of HPC cores especially near the top of a hole. The standard DSDP rotary coring system typically disturbs the cores in the upper 100 meters of any hole, and generally half or more of each core is quite disturbed.

The cored interval is measured in meters below the sea floor. The depth interval of an individual core is the depth below sea floor that the coring operation began to the depth that the coring operation ended. For example, in the rotary-coring system, each coring interval is generally 9.5 meters long, which is the nominal length of a core barrel; however, the coring interval may be shorter or longer (rare). "Cored intervals" are not necessarily adjacent to each other, but may be separated by "drilled intervals". In soft sediment, the drill string can be "washed ahead" with the core barrel in place, but no recovering sediment, by pumping water down the pipe at high pressure to wash the sediment out of the way of the bit and up the space between the drill pipe and wall of the hole; however, if thin hard rock layers are present, then it is possible to get "spotty" sampling of these resistant layers within the washed interval, and thus have a cored interval greater than 9.5 meters. In drilling hard rock, a center bit may replace the core barrel if it is necessary to drill without core recovery.

Cores taken from a hole are numbered serially from the top of the hole downward. Core numbers and their associated cored interval in meters below the sea floor are normally unique for a hole; however, problems may arise if an interval is cored twice. When this situation occurs, the core number is assigned a suffix, such as "S"* for supplementary.

In the rotary-coring system, full recovery for a single core is normally 9.28 meters of sediment or rock, which is in a plastic liner (6.6 cm I. D.), plus about a 0.2 meter-long sample (without a plastic liner) in the Core-Catcher. The Core-Catcher is a device at the bottom of the core barrel which prevents the cored sample from sliding out when the barrel is being retrieved from the hole. The sediment-core, which is in the plastic liner, is then cut into 1.5 meter-long sections and numbered serially from the top of the sediment-core (Figure 1). When we obtain full recovery, the sections are numbered from 1 through 7 with the last section possibly being shorter than 1.5 meters. The Core-Catcher sample is placed below the last section when the core is described, and labeled Core-Catcher (CC): it is treated as a separate section.

When recovery is less than 100 percent, and if the sediment or rock is contiguous, the recovered sediment is placed in the top of the cored interval, and then 1.5 meter-long sections are numbered serially, starting with Section 1 at the top. There will be as many sections as are needed to accommodate the length of the core recovered (Figure 1); for example, 3 meters of core sample in plastic liners will be divided into two 1.5 meter-long sections. Sections are cut starting at the top of the recovered sediment, and the last section may be shorter than the normal 1.5 meter length.

This technique differs from the labeling systems used on Legs 1 through 45, which had a designation called "zero section". On Legs 1–45 there were seven sections labeled 0, 1, 2, 3, 4, 5, and 6. The new system used from Legs 46 to the present, has seven sections, but they are labeled 1, 2, 3, 4, 5, 6, and 7.

When recovery is less than 100 percent, the sediment's original stratigraphic position in the cored interval is unknown, so we employ the convention assigning the top of the sediment recovered to the top of the cored interval. This is done for convenience in data handling, and consistency. If recovery is less than 100 percent, and core fragments are separated, and if shipboard scientists believe the sediment was not contiguous, then sections are numbered serially and the intervening sections

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* Note that this designation has been used on previous legs as a prefix to the core number for sidewall core samples.

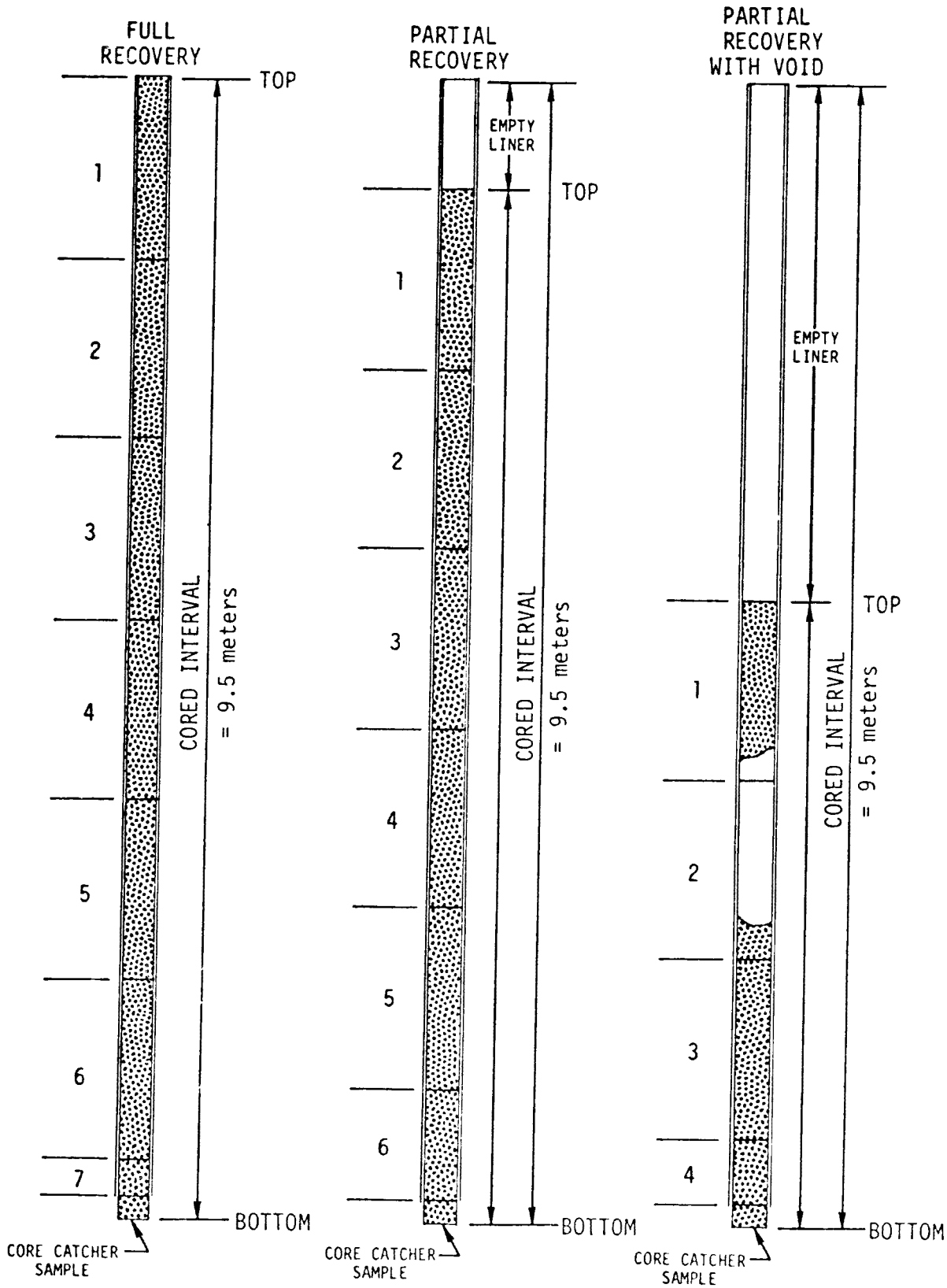

Figure 1. Diagram showing procedure in cutting and labeling of core sections.

are noted as void, whether it is contiguous or not. The Core-Catcher sample is described in the visual core descriptions beneath the lowest section.

Samples are designated by centimeter distances from the top of each section to the top and bottom of the sample in that section. A full identification number for a sample consists of the following information:

Leg

Site

Hole

Core Number

Interval in centimeters from the top of section

For example, a sample identification number of "75-531A-6-3, 12–14 cm" is interpreted as follows: 12–14 cm designates a sample taken at 12 to 14 cm from the top of Section 3 of Core 6, from the second hole drilled at Site 531 during Leg 75. A sample from the Core-Catcher of this core is designated as "75-531A-6, CC, 12–14 cm".

The depth below the seafloor for a sample numbered at "75-531A-6-3, 12–14 cm", is the summation of the following: (1) the depth to the top of the cored interval for Core 6, which is 430 meters; (2) plus 3 meters for Sections 1 and 2 (each 1.5 meters long); and plus the 12 cm depth below the top of Section 3. All of these variables add up to 433.21 meters*, which by convention is the sample depth below the sea floor.

HANDLING OF CORES CONTAINING SEDIMENTS

A core containing sediments is normally cut into 1.5 meter sections, sealed, and labeled; and then the sections are brought into the core laboratory for processing. The following determinations are normally made before the sections are split: gas analysis, and continuous wet-bulk density determinations using the Gamma Ray Attenuation Porosity Evaluation (GRAPE) as described in Boyce (1976).

The cores are then split longitudinally into "work" and "archive" halves**. Samples are extracted from the "work" half, including those for determination of grain-size distribution, mineralogy by x-ray diffraction, sonic velocity by the Hamilton Frame method as described in Boyce (1976), wet-bulk density by a static GRAPE technique (Boyce, 1976), water content by gravimetric analysis, carbon-carbonate analysis, percent calcium carbonate (Carbonate Bomb), geochemical analysis, paleontological studies, and others.

Smear slides or thin sections from each major lithology, and most minor lithologies, are prepared and examined microscopically. The archive half is then described and photographed. Physical disturbance by the drill bit, color, texture (for uncemented lithologies), and sedimentary and igneous structures and composition (± 20%) of the various lithologies are noted on standard core description sheets.

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* Sample requests should refer to a specific interval within a core-section, rather than the level below sea floor.

** In the HPC system the cores are oriented relative to each other, thus, for example, all archive halves are on the same side of the hole. We do not know, however, their orientation relative to the Earth's magnetic north.

After the cores are sampled and described, they are maintained in cold storage aboard *Glomar Challenger* until they can be transferred to the DSDP repository. Core sections which are removed for organic geochemistry study are frozen immediately on board ship and kept frozen. Frozen cores are presently stored at the DSDP West Coast Repository (Scripps Institution of Oceanography).

These core descriptions, smear slide descriptions (plus occasional peels and thin sections) and carbonate bomb (% $CaCO_3$) determinations (all of these data are determined aboard ship) serve as the data for the visual core descriptions presented here. These samples, and their location in the core, are coded with a symbol on the core description sheets. The key to these codes, in order to identify the samples, is in Figures 2–6.

SPECIAL CORES AND SAMPLES

Occasionally, special cores or samples are recovered that require specific identification. These are designated as follows:

- X = miscellaneous debris or out-of-sequence core material.
- C = center bit samples; i. e., samples obtained upon removal of the center bit (a device to prevent core recovery while drilling or washing ahead for some interval).
- S = side-wall core; i.e., a core taken in the side of the hole, usually to obtain a sample of material not recovered during previous coring.
- H = a wash core; i. e., a core taken while washing ahead for an interval larger than 9.5 m (say, 50 m), but without the center bit in place. Such a core may sample at several places in the washed interval, but their depths cannot be specified within that interval.
- B = bit material; i. e., material removed from core bits upon retrieval of the drill string following completion of a hole, or prior to re-entry with a new core bit.

Cores or samples of these types are designated X1, X2, H1, H2, etc., each type in the sequence they were obtained. Additional types of special samples may be designated by the shipboard party or cruise operations manager. The letter designation for these samples is chosen in consultation with the DSDP curatorial representative and laboratory officer, and is indicated on each core description form.

DESCRIPTION OF SEDIMENTS

The following is the sediment description and classification scheme devised by the JOIDES Sedimentary Petrology and Physical Properties Panel, and approved by the JOIDES Planning Committee in March, 1974. In the past, shipboard parties have, in some instances, found it necessary to modify or amend the classification for their particular situation. Any modifications to the classification for the cores described herein are presented in the section following the JOIDES classification.

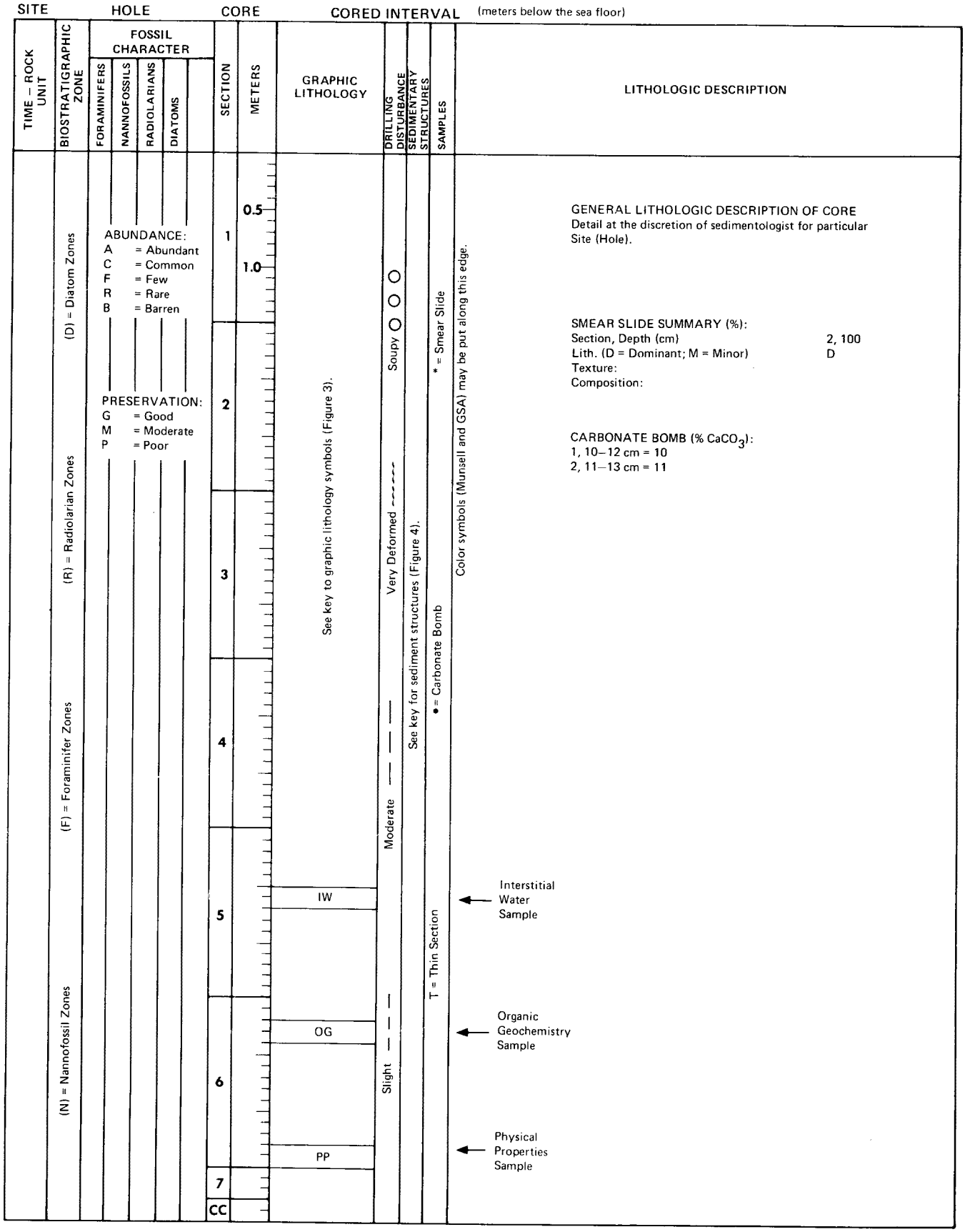


Figure 2. This is a typical sedimentary core description sheet, with the sediment deformation symbols, sample codes, and other general information.

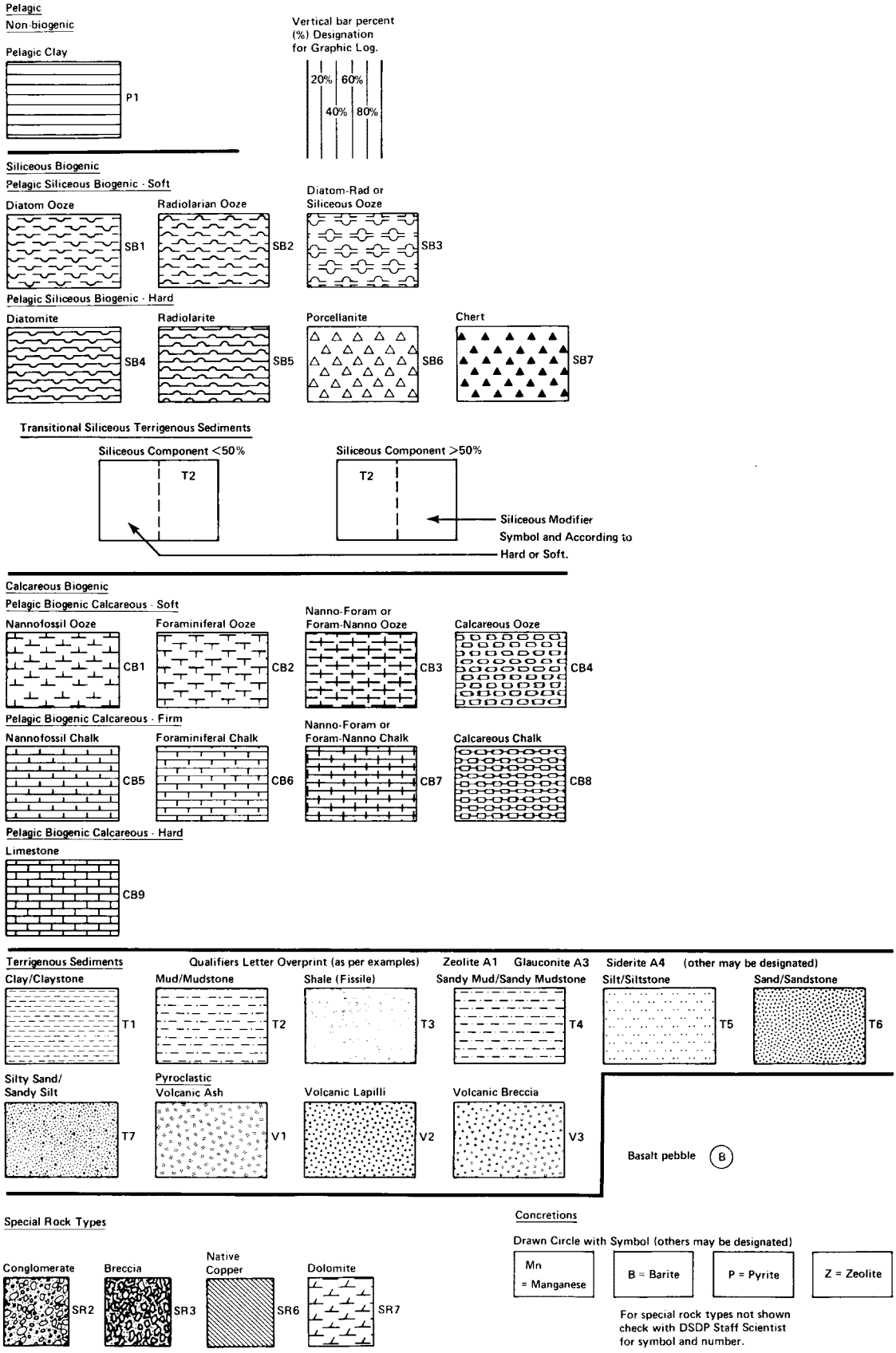


Figure 3. Graphic symbols corresponding to the lithologic visual core descriptions for sediment and sedimentary rocks.

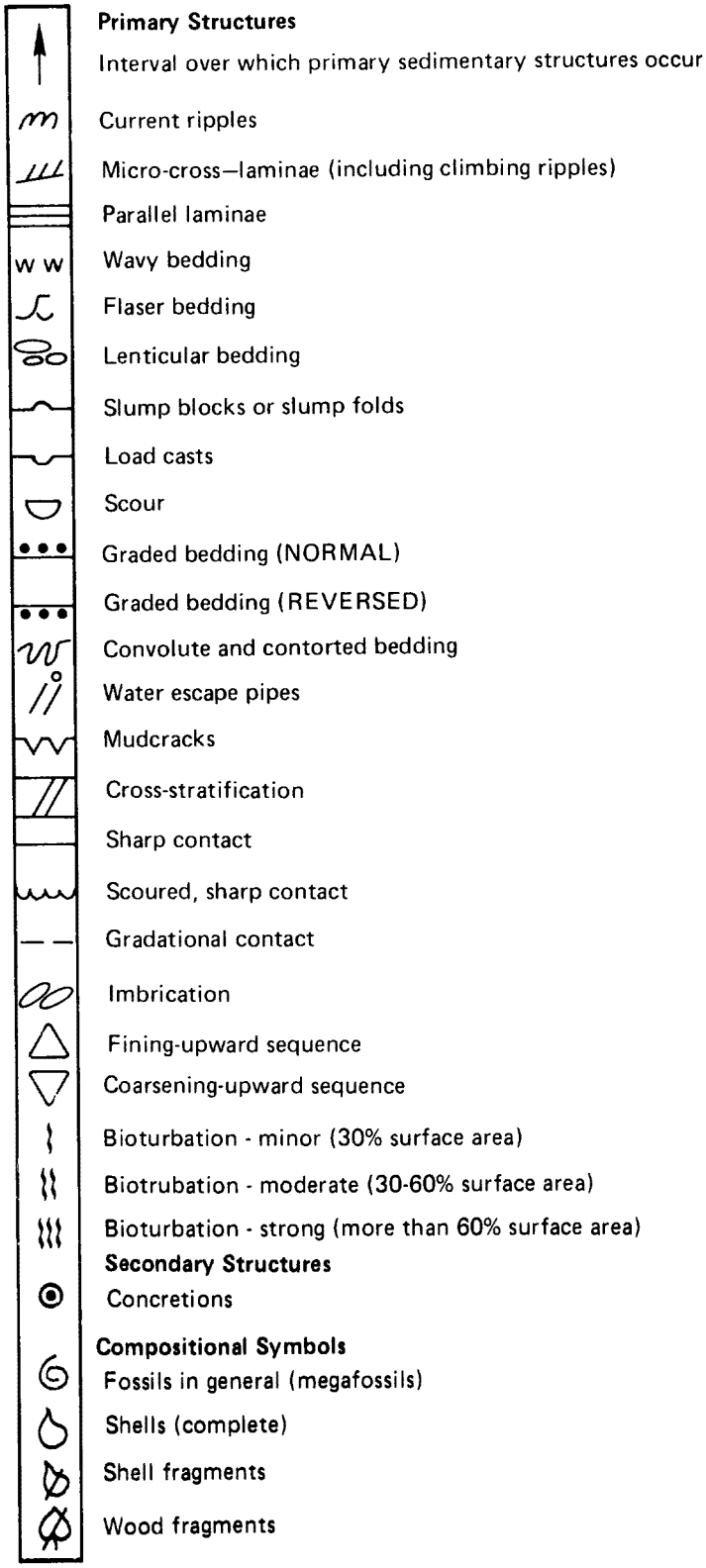


Figure 4. Structure symbol code for sediments.

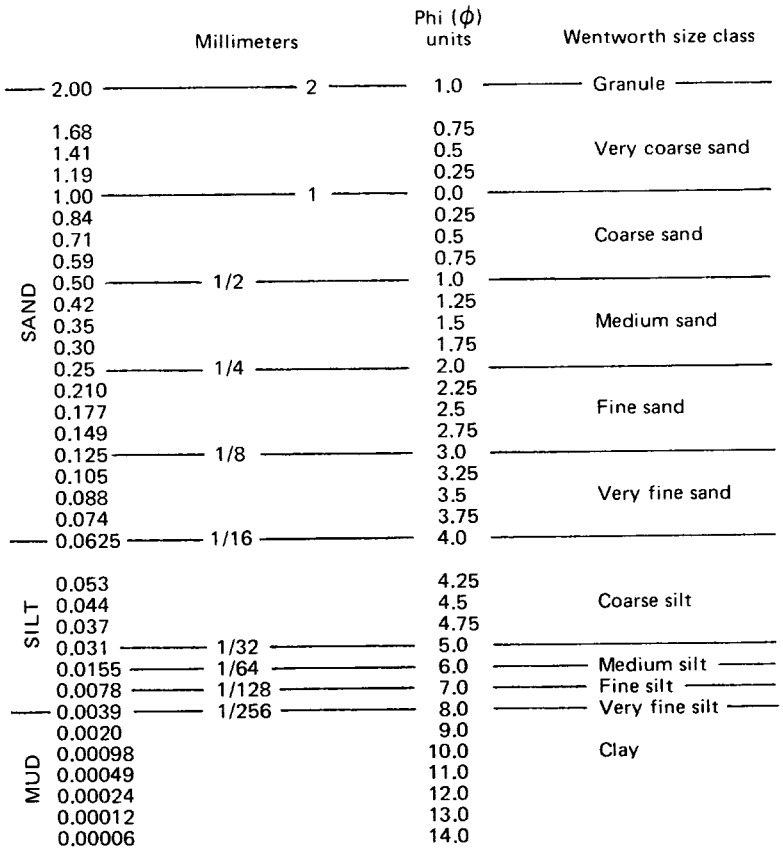


Figure 5. Grade scales for terrigenous sediments.

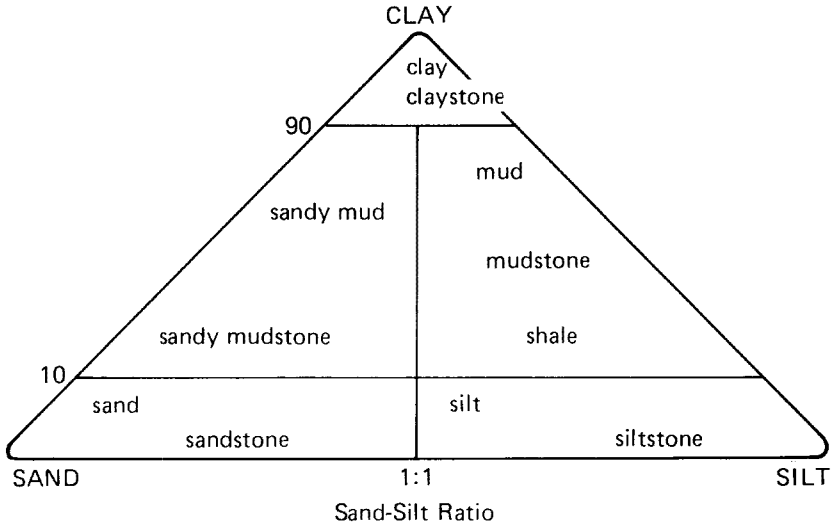


Figure 6. Class boundaries for terrigenous sediments.

CLASSIFICATION OF SEDIMENTS

Several lithologic classifications designed for the construction of the several graphic core and hole summaries have been used during the lifetime of the Deep Sea Drilling Project. The classification system described here has been devised by the JOIDES Panel on Sedimentary Petrology and Physical Properties and adopted for use by the JOIDES Planning Committee in March 1974.

Principles Used in Classification

1 This is a lithologic summary classification designed to generalize core descriptive material of greater detail into a form suitable for standard core and hole logs. Its systematic use will facilitate core to core and leg to leg comparisons.

2 The classification covers most of the lithologic types encountered so far but does not attempt to be comprehensive. A category "Special Rock Types" shows additional definitions and terminology at the discretion of the shipboard staff for rock types not covered.

3 Sediment names are those in common usage and have been defined within the limits of existing definitions.

4 Categories are based on sediment parameters measured on board ship. Refinement by shore laboratory data is possible but not necessary.

5 The classification is descriptive and genetic implications are not intended.

6 The degree of detail of the classification is scaled to the space limitations of printed graphic hole and core summaries.

Shipboard Parameters Measured

Sediment and rock names are defined solely on the basis of compositional and textural parameters. The compositional factors are most important for description of those deposits more characteristic of open marine conditions, with textural factors becoming more important for the classification of hemipelagic and near-shore facies. Sediment names are thus based solely upon these parameters as determined in smear slides aided by compositional and textural properties apparent to the naked eye or under the hand lens. Other descriptive parameters include: induration, sediment disturbance, sedimentary structures, and color. The determination of these parameters is as follows:

1) Composition — biogenic and mineral components are estimated in percent from smear slides. $CaCO_3$ content is estimated by using the carbonate bomb available on the ship. Even with rapid use, a value to ±5% is achievable.

2) Texture — visual estimates from smear slide examination.

3) Induration — The determination of induration is highly subjective, but field geologists have successfully made similar distinctions for many years. The categories suggested here are thought to be practical and significant. The criteria of Moberly and Heath (1971) are used for calcareous deposits; subjective estimate or behavior in core cutting for others. There are three classes for calcareous sediments; two for all others.

a) Calcareous sediments

(i) Soft: Oozes have little strength and are readily deformed under the finger or the broad blade of a spatula.

(ii) Firm: Chalks are partly indurated oozes: they are friable limestones that are readily deformed under the fingernail or the edge of a spatula blade. More indurated chalks are termed limestones (see below).

(ii) Hard: Limestones as a term should be restricted to cemented rocks.

b) The following criteria are recommended for all but calcareous sediments:

(i) If the material is low state of induration as to allow the core to be split with a wire cutter, the sediment name only is used (e. g., silty clay: mud).

(ii) If the core must be cut on the band saw or diamond saw, the suffix 'stone' is used (e. g., silty claystone: mudstone; or shale, if fissile.)

4) Sediment Disturbance – Deformational structures are generally of the type found in piston cores, and are usually simple to visualize and interpret.

a) Soft to firm sediment: The following categories are recommended.

(i) Slightly deformed – bedding contacts are slightly bent.

(ii) Moderately deformed – bedding contacts have undergone extreme bowing.

(iii) Very deformed – bedding is completely disturbed, sometimes showing symmetrical diapir-like structure.

(iv) Soupy – water saturated intervals which have lost all aspects of original bedding.

b) Hard sediments: There is also the need to indicate the degree of fracturing in hard sediments/rock. This is best accomplished with a written description in the Lithologic Description portion of the Core Form (Figure 2).

c) Drilling "Biscuits" – semi-indurated sediments are broken into flat 3–5 cm or so "biscuits" which internally are undeformed, but were rotated against each other resulting in lenses of soft, intensely deformed mud or ooze in-between. Description of this is also best accomplished using the Lithologic Description portion of the Core Form (Figure 2).

5) Sedimentary structures – in many cores it is extremely difficult to differentiate between natural and coring-induced structures. Consequently, the description of sedimentary structures is optional. The following approach is suggested as a guideline, but the specialist is encouraged to use his own preferred system and set of symbols.

a) Median grain size profile: For the sections of terrigenous sediments, with interbeds of varying textural characteristics, the construction of median grain size profile based on hand lens observations provides a rapid method for illustrating graded and non-graded beds, bed thickness, and size distribution.

b) Sedimentary structures: A set of suggested symbols is provided for categories shown on Figure 4.

6) Color – According to standard Munsell and GSA color charts.

Use of the Core Form

1) Mandatory Graphic Lithology Column – This graphic column is based on the above classification scheme. Completion of the column using the appropriate symboles (Figure 3) must be done for each site, and will be inclued in the *Initial Core Description* (*ICD*) and *Initial Report Volume*. The "Special Rock Type" category should be used for sediment types not in the classification.

a) Optional graphic column: If circumstances or the special skills and interests of the shipboard staff indicate an additional modified or different classification, another graphic column may be added to the right of the Mandatory Column using definitions, terminology, and symbols that, in the opinion of the shipboard staff, will increase the information yield. This Optional Column must not substitute for the Mandatory Column.

2) Sediment disturbance column – Completion of the sediment disturance column using symbols and distinctions given below is mandatory.

3) Sedimentary structure columns – Structures may be designated on the core form in the sedimentary structure column parallel to the sediment disturbance column, and/or on the median grain size profile (for the sections of terrigenous sediments, with interbeds of varying textural characteristics). The median grain size profile is located in the lithologic description portion of the core form. A set of suggested symbols for a few more common structures has been prepared by DSDP (Figure 4), but the shipboard geologist is free to use whatever additional symbols he may wish. These optional columns may not substitute for the mandatory sediment disturbance column and must be distinct from it.

4) Lithologic description column – Format, style, and terminology of the descriptive portion of the core sheets are not controlled by the mandatory column scheme, beyond the minimal name assignment which should be derived from this classification. However, colors and additional information on structure and textures should normally be included in the textural section of the core description.

Lithologic Classification Scheme

The following define compositional class boundaries and use of qualifiers in the lithologic classification scheme:

1) Compositional Class Boundaries

a) $CaCO_3$ content (determined by $CaCO_3$ bomb): 30% and 60%. With a 5% precision and given the natural frequency distribution of $CaCO_3$ contents in oceanic sediments, these boundaries can be reasonably ascertained.

b) Biogenic opal abundance (expressed as percent siliceous skeletal remains in smear slides): 10%, 30%, and 50%. Smear-slide estimates of identifiable siliceous skeletal material generally imply a significantly higher total opal abundance. The boundaries have been set to take this into account.

c) Abundance of authigenic components (zeolites, Fe, and Mn micronodules etc), fish bones, and other indicators of very slow sedimentation (estimated in smear slides); semiquantitative boundary: common 10%. These components are quite conspicuous and a semiquantitative estimate is adequate. Even a minor influx of calcareous, siliceous, or terrigenous material will, because of the large difference in sedimentation rate, dilute them to insignificance.

d) Abundance of terrigenous detrital material (estimated from smear slides): 30%.

e) Qualifiers: Numerous qualifiers are suggested; the options should be used freely. However, components of less than 5% (in smear slide) should not be used as a qualifier except in special cases. The most important component should be the last qualifier. No more than two qualifiers should be used.

Description of Sediment Types

1) Pelagic clay – Principally authigenic pelagic deposits that accumulate at very slow rates. The class is often termed brown clay, or red clay, but since these terms are confusing, they are not recommended.

a) Boundary with terrigenous sediments: Where authigenic components (Fe/Mn micronodules, zeolites), fish debris, etc., become common in smear slides. NOTE: Because of large discrepancy in accumulation rates, transitional deposits are exceptional.

b) Boundary with siliceous biogenic sediments: <30% identifiable siliceous remains.

c) Boundary with calcareous biogenous sediments: Generally the sequence is one passing from pelagic clay through siliceous ooze to calcareous ooze, with one important exception: at the base of many oceanic sections, black, brown, or red clays occur directly on basalt, overlain by or grading up into calcareous sediments. Most of the basal clayey sediments are rich in iron, manganese and metallic trace elements. For proper identification they require more elaborate geochemical work than is available on board. These sediments are placed in the "Special Rock" category, but care should be taken to distinguish them from ordinary pelagic clays.

2) Pelagic siliceous biogenic sediments — These are distinguished from the previous category because they have more than 30% identifiable siliceous microfossils. They are distinguished from the following category by a $CaCO_3$ content of less than 30%. There are two classes: *Pelagic biogenic siliceous sediments* (containing less than 30% silt and clay); and *transitional biogenic siliceous sediments* (containing more than 30% silt and clay and more than 10% diatoms).

a) Pelagic biogenic siliceous sediments:

soft: Siliceous ooze (radiolarian ooze, diatom ooze, depending on dominant component).

hard: radiolarite porcellanite

diatomite chert

(i) Qualifiers:

Radiolarians dominant: radiolarian ooze or radiolarite.

Diatoms dominant: diatom ooze or diatomite.

Where uncertain: siliceous (biogenic) ooze, or chert or porcellanite, when containing >10% $CaCO_3$, qualifiers are as follows:

indeterminate carbonate:	calcareous - -
or	
nannofossils only:	nannofossil - -
foraminifers only:	foraminifer - -
nannofossil-foraminifer - -	depending on dominant component
foraminiferal-nannofossil - -	

b) Transitional biogenic siliceous sediments:

Diatoms <50%	diatomaceous mud:	soft
	diatomaceous mudstone:	hard
Diatoms >50%	muddy diatom ooze:	soft
	muddy diatomite:	hard

Radiolarian equivalents in this category are rare and can be specifically described.

3) Pelagic biogenous calcareous sediments — These are distinguished from the previous categories by a $CaCO_3$ content in excess of 30%. There are two classes: Pelagic biogenic calcareous sediments (containing less than 30% silt and clay); and transitional biogenic calcareous sediments (containing more than 30% silt and clay).

a) Pelagic biogenic calcareous sediments:

soft: calcareous ooze

firm: chalk

hard: indurated chalk

The term *limestone* should preferably be restricted to *cemented rocks.*

(i) Compositional Qualifiers ⩽—

Principal components are: nannofossils and foraminifers.

One or two qualifiers may be used, for example:

Foram %	Name
<10	Nannofossil ooze, chalk, limestone
10—25	Foraminiferal-nannofossil ooze
25—50	Nannofossil-foraminifer ooze
>50	Foraminifer ooze

Calcareous sediment containing more than 10—20% identifiable siliceous fossils carry the qualifier radiolarian, diatomaceous, or siliceous depending on the quality of the identification. For example, radiolarian-foraminifer ooze.

b) Transitional biogenic calcareous sediments

(i) $CaCO_3$ = 30—60%: marly calcareous pelagic sediments

soft: marly calcareous (or nannofossil, foraminifer, etc.), ooze (see below)

firm: marly chalk

hard: marly limestone

(ii) $CaCO_3$ >60%: Calcareous pelagic sediments.

soft: calcareous (or nannofossil, foraminifer, etc.), ooze (see below)

firm: chalk

hard: limestone

NOTE: Sediments containing 10—30% $CaCO_3$ fall in other classes where they are denoted with the adjective "calcareous." Less than 10% $CaCO_3$ is ignored.

4) Terrigenous sediments

a) Sediments falling in this portion of the classification scheme are subdivided into textural groups on the basis of the relative preportions of three grain size constituents, i. e., clay, silt, and sand. Rocks coarser than sand size are treated as "Special Rock Types." The size limits for these constituents are those defined by Wentworth (1922) (Figure 5).

Five major textural groups are recognized on the accompanying triangular diagram (Figure 6). These groups are defined according to the abundance of clay (> 90%, 90—10%, < 10%) and the ratio of sand to silt (>1 or <1).

The terms *clay, mud, sandy mud, silt,* and *sand* are used for the soft or unconsolidated sediments which are cut with a wire in the shipboard core splitting process. The hard or unconsolidated equivalents for the same textural groups are *claystone, mudstone* (or shale, if fissile), *sandy mudstone, siltstone,* and *sandstone.* Sedimentary rocks falling into the consolidated category include those which must generally be cut with the band saw or diamond saw. Sands medium-, coarse-, or very coarse-grained sands and sandstones according to their median grain size.

(i) Qualifiers – In this group numerous qualifiers are possible, usually based on minor constituents, for example: glaconitic, pyritic, feldspathic. In the sand and sandstone category, conventional divisions such as arkose, graywacke, etc., are, of course, acceptable, providing the scheme is properly identified. Clays, muds, silts, and sands containing 10–30% $CaCO_3$ shall be called calcareous.

b) Volcanogenic sediments

Pyroclastic rocks are described according to the textural and compositional scheme of Wentworth and Williams (1932). The textural groups are:

Volcanic breccia >32 mm

Volcanic lapilli <32 mm

Volcanic ash (tuff, indurated) <4 mm

Compositionally, these pyroclastic rocks are described as vitric (glass), crystal or lithic.

c) Clastic sediments of volcanic provenance are described in the same fashion as the terrigenous sediments, noting the dominant composition of the volcanic grains where possible.

5) Special rock types – The definition and nomenclature of sediment and rock types not included in the system described above are left to the discretion of shipboard scientists with the recommendation that they adhere as closely as practical to conventional terminology.

In this category fall such rocks as:

Intrusive and extrusive igneous rocks;

Evaporites, halite, anhydrite, gypsum (as a rock), etc.;

Shallow water limestone (biostromal, biohermal, coquina, oolite, etc.);

Dolomite;

Gravels, conglomerates, breccias;

Metalliferous brown clays;

Concretions, barite, iron-manganese, phosphorite, pyrite, etc.;

Coal, asphalt, etc.;

and many others.

The mandatory graphic lithology column should be completed by shipboard staff with appropriate symbols for intervals containing special rock types. It is imperative that symbols and rock nomenclature be properly defined and described by shipboard staff.

Core Forms

Initial core description forms for igneous and metamorphic rocks are not the same as those used for sediments. The sediment barrel sheets are substantially those published in previous *Initial Reports.* Igneous rock representation on barrel sheets is too compressed to provide adequate information for potential sampling. Consequently, Visual Core Description forms, modified from those used on board ship, are used for more complete graphic representation. All shipboard data per 1.5-meter section of core are listed on the modified forms as well as summary hand-specimen and thin-section descriptions. The symbols and a number of format conventions for igneous rocks are presented on Figure 7.

Igneous and metamorphic rocks are split using a rock saw with a diamond blade into archive and working halves. The latter is described and sampled on board ship. On a typical igneous rock description form (Figure 8), the left column is a visual representation of the working half using the symbols of Figure 7. Two closely spaced horizontal lines in this column indicate the location of styrofoam spacers taped between basalt pieces inside the liner. Each piece is numbered sequentially from the top of each section, beginning with the number 1. Pieces are labeled on the rounded, not the sawed surface. Pieces which could be fitted together before splitting are given the same number, but are consecutively lettered, as 1A, 1B, 1C, etc. Spacers are placed between pieces with different number, but not between those with different letters and the same number. In general, addition of spacers represents a drilling gap (no recovery). However, in cores where recovery is high, it is impractical to use spacers. In these cases, drilling gaps are indicated only by a change in numbers. All pieces have orientation arrows pointing to the top of the section, both on archive and working halves, provided the original unsplit piece was cylindrical in the liner and of greater length than the diameter of the liner. Special procedures are used to ensure that orientation is preserved through every step of the sawing and labeling process. All pieces suitable for sampling requiring knowledge of top from bottom are indicated by upward-pointing arrows to the left of the piece numbers on the description forms. Since the pieces are rotated during drilling, it is not possible to sample for declination studies.

Samples are taken for various measurements on board ship. The type of measurement and approximate location are indicated in the column headed "Sample" using the following notation:

X = X-ray fluorescence analysis

M = magnetics measurements

S = sonic velocity measurements

T = thin section

D = density measurements

P = porosity measurements

Up to seven such visual representations can be included on a single igneous rock core description sheet (Figure 9), which includes a summary core description, and petrographic and analytical data.

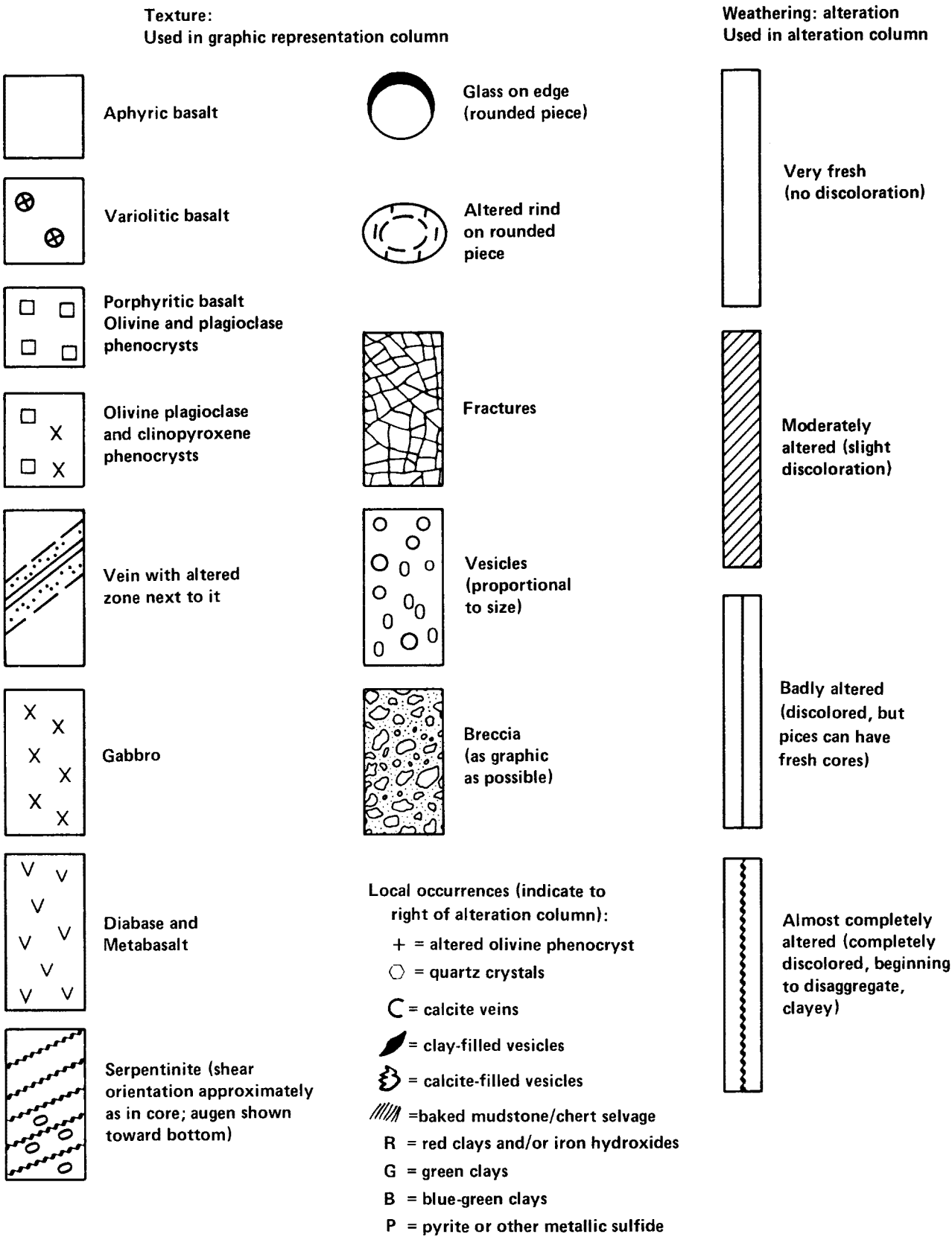
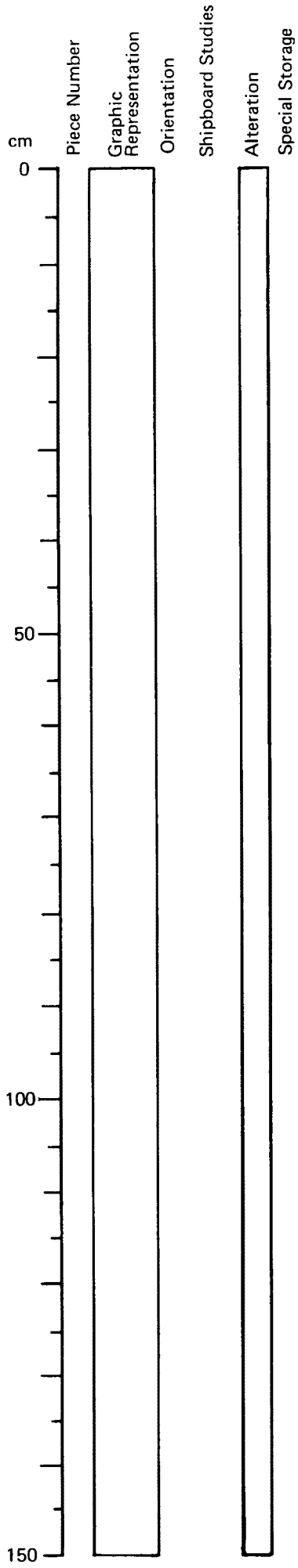


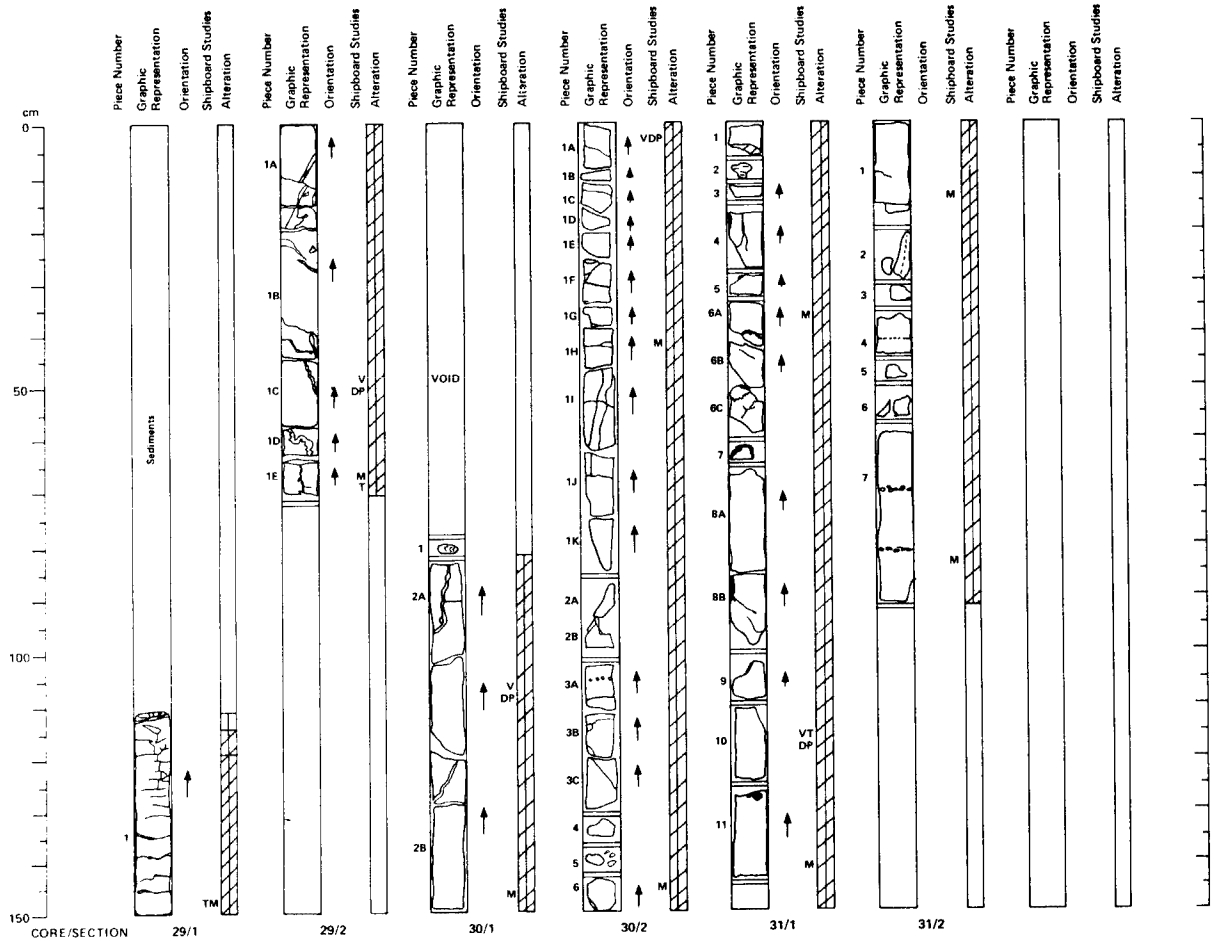
Figure 7. List of symbols for igneous rock description forms.



VISUAL CORE DESCRIPTION FOR IGNEOUS ROCKS

LEG		SITE			HOLE	CORE			SECT.	

Figure 8. Typical igneous rock description form.



SITE 524, CORE 28, SECTION 3, 279.1–279.6 m

Macroscopic Description
See sediment description form.

Thin Section Summaries
Contact Zone below claystone at 61 cm, Sec. 3: Dark brown glass with tiny (~0.01 mm and less) spinifex plagioclase (hollow skeletal, swallow tails) microlites rimmed with spherulitic mantles. Spherulite zone noted away from contact. Section too thick and glass too dark for detailed examination (problem with plucking).
Interior of pillow at 71 cm, Sec. 3: Slight phyric basalt with sparse (~1%) relatively large plagioclase phenocrysts (0.7–1.6 mm) set in a hyalopilitic spinifex matrix composed of Na-rich (R. I. ~1.55), skeletal (hollow cores with smectite filling and crude swallow tails), elongate (0.04–0.5 mm, L/W ~1.3–1.35) plagioclase microlites, abundant ilmenite dendrite needles (0.001–0.004 mm thick and 0.04–0.2 mm long) in rectangular boxwork pattern, more sparse magnetite cubes and octahedra in two generations (first ~0.02–0.25 mm, second ~0.004–0.015 mm), skeletal pyroxene(?) anhedral (~0.006 mm), and hollow skeletal apatite euhedra (0.004–0.008 mm). All these in a mesostasis of pale green smectite or chlorite (devitrified glass ?). Plagioclase phenocrysts about half replaced by inclusion-filled albite and some smectite or chlorite. Approximate mode: plagioclase phenocrysts ~1, plagioclase microlites 30–40, ilmenite 10–15, magnetite 3–5, clinopyroxene 3–5, apatite 1–3, devitrified glass 40–50.

Shipboard Studies

Sample	D	P	V_c	V_f	NRM1	NRM2	S. I.
Sec. 3, 71 cm	–	–	–	–	32.014	-38.6	-36
Sec. 3, 110 cm	–	–	–	–	24.443	-49.1	-45

SITE 524, CORE 29, SECTIONS 1–2, 286.1–287.2 m

MAJOR ROCK TYPES – BASALT (or DIABASE), CLAYSTONE, SANDSTONE

Macroscopic Description
Basalt (or Diabase): Dark gray, aphyric. Sec. 1 has numerous calcite filled veins arranged perpendicular to core axis and spaced every 2–3 cm. Calcite veins in Sec. 2 more irregular, some with green clay rims.
Sandstone and Claystone – see sediment description form.

Thin Section Summaries
Section 1, Piece 1: Fine- to medium coarse-grained aphyric olivine(?) basalt (or diabase) with intergrown intersertal texture, composed of dominant tabular, weakly compositionally zoned plagioclase anhedra (0.05–0.3 mm, $An_{43-?}$, R. I. <1.55) and subordinate intergranular, mostly subhedra grains of clinopyroxene (0.005–0.1 mm), opaque minerals (0.005–0.35 mm) and apatite needles (0.01–0.15 mm, L/W ~1/12), with intersertal patches of greenish brown smectite. There are sparse smectite patches that appear to be pseudomorphs of small (0.05–0.1 mm) euhedral olivine grains. Note: Sparse (<1%) clinopyroxene microphenocrysts (0.15–0.25 mm). Approximate mode: plagioclase 35–45, clinopyroxene 15–20, opaques 15–20, devitrified glass (smectite) 15–20, apatite 1–2, olivine(?) 2–3.
Section 2, Core-Catcher: Coarse-grained to very coarse-grained basalt or diabase, composed of anhedral to subhedral, strongly zoned (An_{45-17}) plagioclase (0.09–0.95 mm) with intergranular clinopyroxene ($2V_z$ ~55–60) (0.01–0.15 mm) and opaques (magnetite 0.01–0.35 mm and ilmenite) and intersertal olive brown smectite (high birefringence). Abundant (for this mineral) apatite (3–5%, 0.02–0.35 mm) of stubby to needle prismatic habit, often with hollow center. Apatite is euhedral and cuts across plagioclase, ilmenite and magnetite are sometimes hollow skeletal.

Shipboard Studies

Sample	D	P	V_c	V_f	NRM1	NRM2	S. I.
Sec. 1, Piece 1	–	–	–	–	53.485	-44.7	-74
Sec. 2, Piece 1C	2.70	14.0	4.33	4.65	–	–	–
Sec. 2, Piece 1E	–	–	–	–	52.067	-43.4	-71

SITE 524, CORE 30, SECTIONS 1–2, 289.0–292.0 m

MAJOR ROCK TYPE – BASALT (or DIABASE)
MINOR ROCK TYPE – CALCAREOUS CLAYSTONE

Macroscopic Description
Basalt (or Diabase): Dark gray, aphyric, coarse-grained basalt or diabase. Even grained, massive with widely spaced fractures (2–10 cm). Fractures in Piece 2A–B (Sec. 1) filled with calcite and minor pyrite; some lined with green clay. Fractures in Pieces 1A, 1C, and 1I–K (Sec. 2) parallel lines of irregular vesicles. Pyrite or blue green clay lines vesicles.
Calcareous Claystone: Piece 1 (Sec. 1) is olive gray calcareous claystone with a large horizontal zoophycos burrow.

Shipboard Studies

Sample	D	P	V_c	V_f	NRM1	NRM2	S. I.
Sec. 1, Piece 2A	2.73	11.0	4.57	4.76	–	–	–
Sec. 1, Piece 2R	–	–	–	–	55.769	-57.8	-76
Sec. 2, Piece 1A	2.74	11.2	4.64	5.15	–	–	–
Sec. 2, Piece 1H	–	–	–	–	32.663	-64.4	-79
Sec. 2, Piece 6	–	–	–	–	43.596	-49.4	-73

SITE 524, CORE 31, SECTIONS 1–2, 294.5–296.9 m

MAJOR ROCK TYPE – BASALT (or DIABASE)
MINOR ROCK – CALCAREOUS CLAYSTONE

Macroscopic Description
Basalt (or Diabase): Dark gray, aphyric, coarse, even-grained basalt (or diabase) with rare fractures filled with green clay. Small pyrite crystals in fractures and in discolored zones. Moderate alteration.
Calcareous Claystone: Piece 2 (Sec. 1) is reddish brown calcareous claystone.

Thin Section Summary
Section 1, Piece 10: Rock is very similar in texture and mineralogy to Core 29, Sec. 2, Core-Catcher, but slightly coarser and plagioclase grains show beautifully developed epitaxial mantles of alkali feldspar or oligoclase; optics (Ax. Pl. + 010, $2V_x$ <60°) indicate 3 possibilities, in order of likelihood: 1) anorthoclase or Na-sanidine, 2) oligoclase, and 3) K-rich sanidine. Choice 1 is favored because of sharply defined mantle boundary, oligoclase should give more gradational transition, and smaller R. I. difference than would be expected with K-rich sanidine.

Shipboard Studies

Sample	D	P	V_c	V_f	NRM1	NRM2	S. I.
Sec. 1, Piece 6A	–	–	–	–	28.924	-56.8	-65
Sec. 1, Piece 10	2.78	11.8	4.46	4.50	–	–	–
Sec. 1, Piece 11	–	–	–	–	26.664	-41.6	–
Sec. 2, Piece 1	–	–	–	–	29.817	-65.9	-66?
Sec. 2, Piece 7	–	–	–	–	30.548	-38.6	-50

Figure 9. Igneous rock description sheet.

Igneous Rock Classification

Igneous rocks are classified mainly on the basis of mineralogy and texture. Thin-section work in general adds little new information to the hand-specimen classification.

Basalts are termed aphyric, sparsely phyric, moderately phyric, or phyric, depending on the proportion of phenocrysts visible with the binocular microscope ($\sim$x 12). The basalts are called aphyric if phenocrysts are absent. For practical purposes, this means that if one piece of basalt is found with a phenocryst or two in a section where all other pieces lack phenocrysts, and no other criteria such as grain size or texture distinguish this basalt from the others, then it is described as aphyric. A note on the rare phenocrysts is included in the general description, however. This approach enables us to restrict the number of lithologic units to those that appear to be clearly distinct.

Sparsely phyric basalts are those with 1–2% phenocrysts present in almost every piece of a given core or section. Clearly contiguous pieces without phenocrysts are included in this category, again with the lack of phenocrysts noted in the general description.

Moderately phyric basalts contain 2–10% phenocrysts. Aphyric basalts within a group of moderately phyric basalts are separately termed aphyric basalts.

Phyric basalts contain more than 10% phenocrysts. No separate designation is made for basalts with more than 20% phenocrysts; the proportion indicated in the core forms should be sufficient to guide the reader.

The basalts are further classified by phenocryst type, preceding the terms phyric, sparsely phyric, etc. For example, a plagioclase-olivine moderately phyric basalt contains 2–10% phenocrysts, most of them plagioclase, but with some olivine.

Other rock types which are less commonly recovered, such as gabbro, serpentinite, andesites, granite, or metamorphic rocks, are classified using standard references such as Williams, et al. (1954) or Moorhouse (1959).

ADDITIONAL DATA TO LEG 86 EXPLANATORY NOTES

Cores collected from Hole 576A were not split and described onboard ship. Instead, only a small number of interstitial water (IW), organic geochemistry (OG), and physical properties (PP) whole core samples were taken from the 1.5-meter sections. The remaining majority of each of the sections were GRAPED, left unsplit, and shipped back to the DSDP West Coast Repository for shorebased sampling by a Geotechnical Consortium. These sections are designated "GTP" on the Hole 576A visual core descriptions.

Portions of Leg 86 cores that appeared brecciated due to drilling are labeled as such in the Drilling Disturbance column of the Visual Core Description sheets as follows:

REFERENCES

Boyce, R. E., 1976. Definitions and laboratory techniques of compressional sound velocity parameters and wet-water content, wet-bulk density, and porosity parameters by gravimeteric and gamma ray attenuation techniques. *In* Schlanger, S. D. Jackson, E. D., et al., *Init. Repts. DSDP,* 33: Washington (U. S. Govt. Printing Office), 931–958.

Moberly, R., Jr. and Heath, G. R., 1971. Carbonate sedimentary rocks from the western Pacific: Leg 7, Deep Sea Drilling Project. *In* Winterer, E. L., Riedel, W. R., et al., *Init. Repts. DSDP,* 7: Washington (U. S. Govt. Printing Office), 977–985.

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Wentworth, C. K., 1922. A scale of grade and class terms for clastic sediments. *J. Geol.* 30: 377–392.

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Williams, H. Turner, F. J., and Gilbert, C. M., 1954. *Petrography: on Introduction to the Study of Rocks in Thin Sections:* San Francisco (W. H. Freeman and Co.).

SAMPLE DISTRIBUTION POLICY

Deep Sea Drilling Project/International Phase of Ocean Drilling

Distribution of Deep Sea Drilling samples for investigation will be undertaken in order to (1) provide supplementary data to support *Glomar Challenger* scientists in achieving the scientific objectives of their particular cruise, and in addition to serve as a mechanism for contributions to the *Initial Reports;* (2) provide individual investigators with materials to conduct detailed studies beyond the scope of the *Initial Reports;* and (3) provide the reference centers where paleontologic materials are stored with samples for reference and comparison purposes.

The National Science Foundation has established a Sample Distribution Panel to advise on the distribution of core materials. This panel is chosen in accordance with usual Foundation practices, in a manner that will assure advice in the various disciplines leading to a complete and adequate study of the cores and their contents. Funding for the proposed research must be secured separately by the investigator. It cannot be provided through the Deep Sea Drilling Project.

The Deep Sea Drilling Project's Curator is responsible for distributing the samples and controlling their quality, as well as preserving and conserving core material. He also is responsible for maintaining a record of all samples that have been distributed, shipboard and subsequent, indicating the recipient and the natures of the proposed investigation. This information is made available to all investigators of DSDP materials as well as to other interested researchers on request.

The distribution of samples is made directly from one of the two existing repositories, Lamont-Doherty Geological Observatory and Scripps Institution of Oceanography, by the Curator or his designated representative.

1. Distribution of Samples for Research Leading to Contributions to *Initial Reports*

Any investigator who wishes to contribute a paper to a given volume of the *Initial Reports* may write to the Chief Scientist, Deep Sea Drilling Project (A-031), Scripps Institution of Oceanography, University of California at San Diego, La Jolla, California 92093, U. S. A., requesting samples from a forthcoming cruise. Requests for a specific cruise should be received by the Chief Scientist TWO MONTHS in advance of the departure of the cruise in order to allow time for the review and consideration of all requests and to establish a suitable shipboard sampling program. The request should include a statement of the nature of the study proposed, size and approximate number of samples required to complete the study, and any particular sampling technique or equipment that might be required. The requests will be reviewed by the Chief Scientist of the Project and the cruise co-chief scientists; approval will be given in accordance with the scientific requirements of the cruise as determined by the appropriate JOIDES Advisory Panel(s). If approved, the requested samples will be taken, either by the shipboard party if the workload permits, or by the curatorial staff shortly following the return of the cores to the repository. Proposals must be of a scope to ensure that samples can be processed and a contribution completed in time for publication in the *Initial Reports.* Except for rare, specific instances involving ephemeral properties, sampling will not exceed one-quarter of the volume of core recovered, with no interval being depleted and one-half of all core being retained as an archive. Shipboard sampling shall not exceed approximately 100 igneous samples per investigator; in all cases co-chief scientists are requested to keep sampling to a minimum.

The co-chief scientists may elect to have special studies of selected core samples made by other investigators. In this event the names of these investigators and complete listings of all materials loaned or distributed must be forwarded, if possible, prior to the cruise or, as soon as possible following the cruise, to the Chief Scientist through the DSDP Staff Science Representative for that particular cruise. In such cases, all requirements of the Sample Distribution Policy shall also apply.

If a dispute arises or if a decision cannot be reached in the manner prescribed, the NSF Sample Distribution Panel will conduct the final arbitration.

Any publication of results other than in the *Initial Reports* within twelve (12) months of the completion of the cruise must be approved and authored by the whole shipboard party and, where appropriate, shore-based investigators. After twelve months, individual investigators may submit related papers for open publication provided they have submitted their contributions to the *Initial Reports.* Investigations not completed in time for inclusion in the *Initial Reports* for a specific cruise may not be published in other journals until final publication of that *Initial Reports* for which it was intended. Notice of submittal to other journals and a copy of the article should be sent to the DSDP Associate Chief Scientist, Science Services.

2. Distribution of Samples for Research Leading to Publication Other Than in *Initial Reports*

A. Researchers intending to request samples for studies beyond the scope of the *Initial Reports* should first obtain sample request forms from the Curator, Deep Sea Drilling Project (A-031), Scripps Institution of Oceanography, University of California at San Diego, La Jolla, California 92093, U. S. A. On the forms the researcher is requested to specify the quantities and intervals of the core required, make a clear statement of the proposed research, state time required to complete and submit results for publication, and specify the status of funding and the availability of equipment and space foreseen for the research.

In order to ensure that all requests for highly desirable but limited samples can be considered, approval of requests and distribution of samples will not be made prior to 2 months after publication of the *Initial Core Descriptions (I. C. D.). ICD's* are required to be published within 10 months following each cruise. The only exceptions to this policy will be for specific instances involving ephemeral properties. Requests for samples can be based on the *Initial Core Descriptions*, copies of which are on file at various institutions throughout the world. Copies of original core logs and data are kept on file at DSDP and at the repository at Lamont-Doherty Geological Observatory, Palisades, New York. Requests for samples from researchers in industrial laboratories will be handled in the same manner as those from academic organizations, with the same obligation to publish results promptly.

B. (1) The DSDP Curator is authorized to distribute samples up to 50 ml per meter of core. Requests for volumes of material in excess of this amount will be referred to the NSF Sample Distribution Panel for review and approval. Experience has shown that most investigations can be accomplished with 10 ml sized samples or less. All investigators are encouraged to be as judicious as possible with regard to sample size and, especially, frequency within any given core interval. The Curator will not automatically distribute any parts of the cores which appear to be in particularly high demand; requests for such parts will be referred to the Sample Distribution Panel for review. Requests for samples from thin layers or important stratigraphic boundaries will also require Panel review.

(2) If investigators wish to study certain properties which may deteriorate prior to the normal availability of the samples, they may request that the normal waiting period not apply. All such requests must be reviewed by the curators and approved by the NSF Sample Distribution Panel.

C. Samples will not be provided prior to assurance that funding for sample studies either exists or is not needed. However, neither formal approval of sample requests nor distribution of samples will be made until the appropriate time (Item A). If a sample request is dependent, either wholly or in part, on proposed funding, the Curator is prepared to provide to the organization to whom the funding proposal has been submitted any information on the availability (or potential availability) of samples that it may request.

D. Investigators receiving samples are responsible for:

(1) publishing significant results; however, contributions shall not be submitted for publication prior to 12 months following the termination of the appropriate leg;

(2) acknowledging, in publications, that samples were supplied through the assistance of the U. S. National Science Foundation and others as appropriate;

(3) submitting five (5) copies (for distribution to the Curator's file, the DSDP repositories, the *Glomar Challenger's* library, and the National Science Foundation) of all reprints of published results to the Curator, Deep Sea Drilling Project (A-012), Scripps Institution of Oceanography, University of California at San Diego, La Jolla, California 92093, U. S. A.;

(4) returning, in good condition, the remainders of samples after termination of research, if requested by the Curator.

E. Cores are made available at repositories for investigators to examine and to specify exact samples in such instances as may be necessary for the scientific purposes of the sampling, subject to the limitations of B (1 and 2) and D, with specific permission of the Curator or his delegate.

F. Shipboard-produced smear slides of sediments and thin sections of indurated sediments and igneous and metamorphic rocks will be returned to the appropriate repository at the end of each cruise or at the publication of the *Initial Reports* for that cruise. These smear slides and thin sections will form a reference collection of the cores stored at each repository and may be viewed at the respective repositories as an aid in the selection of core samples.

G. The Deep Sea Drilling Project routinely processes by computer most of the quantitative data presented in the *Initial Reports.* Space limitations in the *Initial Reports* preclude the detailed presentation of all such data. However, copies of the computer readout are available for those who wish the data for further analysis or as an aid in selecting samples. A charge will be made to recover expenses in excess of $50.00 incurred in filling requests.

3. Other Records

Magnetics, seismic reflection, downhole logging, and bathymetric data collected by the *Glomar Challenger* will also be available for distribution at the same time samples become available.

Requests for data may be made to:

Associate Chief Scientist, Science Services
Deep Sea Drilling Project (A-031)
Scripps Institution of Oceanography
University of California at San Diego
La Jolla, California 92093

A charge will be made to recover the expenses in excess of $50.00 in filling individual requests. If required, estimated charges can be furnished before the request is processed.

4. Reference Centers

As a separate and special category, samples will be distributed for the purpose of establishing up to five reference centers where paleontologic materials will be available for reference and comparison purposes. The first of these reference centers has been approved at Basel, Switzerland.

Revised 8/1/80

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Deep Sea Drilling Project

LA JOLLA, CALIFORNIA 92093

The accompanying informal report is a summary of the scientific results of Leg 86 of the Deep Sea Drilling Project, prepared from the shipboard files by the scientists who participated in this cruise. The material contained herein is privileged proprietary information and cannot be used for publication or quotation.

This summary was assembled under time restrictions and is not to be considered a formal publication which incorporates final works or conclusions of the scientists.

The Deep Sea Drilling Project, undertaken on the advice of JOIDES, is managed by Scripps Institution of Oceanography under contract from the National Science Foundation.

Yves Lancelot
Chief Scientist

SUMMARY OF DEEP SEA DRILLING PROJECT - LEG 86

The scientific party aboard D/V GLOMAR CHALLENGER for Leg 86 of the Deep Sea Drilling Project, International Phase of Ocean Drilling, consisted of:

Lloyd H. Burckle (Lamont-Doherty Geological Observatory, Palisades, New York), Co-Chief Scientist
G. Ross Heath (Oregon State University, Corvallis, Oregon) Co-Chief Scientist
Ulrich Bleil (Ruhr Universität, Bochum, Federal Republic of Germany)
Anthony E. D'Agostino (ARCO Exploration Company, Houston, Texas)
Ki-iti Horai (Lamont-Doherty Geological Observatory, Palisades, New York)
Robert D. Jacobi (SUNY at Buffalo, Amherst, New York)
Thomas R. Janecek (University of Michigan, Ann Arbor, Michigan)
Itaru Koizumi (Osaka University, Osaka, Japan)
Lawrence A. Krissek (Oregon State University, Corvallis, Oregon)
Nicole Lenotre (C.O.B., Brest, France)
Simonetta Monechi (Scripps Institution of Oceanography, La Jolla, California)
Joseph J. Morley (Lamont-Doherty Geological Observatory, Palisades, New York)
Peter J. Schultheiss (Institute of Oceanographic Sciences, Wormley, United Kingdom)
Audrey A. Wright (DSDP, Scripps Institution of Oceanography, La Jolla, California)

Attached is a brief summary of the scientific activities of Leg 86.

LEG 86 PRELIMINARY SCIENTIFIC REPORT

The primary objective of Leg 86 (Fig. 1) was to recover a north-south profile of late Neogene sections across the Kuroshio current system, from subtropical to subarctic waters, in order to unravel the pre-glacial and Quaternary paleoceanographic history of this system, and to determine whether the Miocene onset of biosiliceous sedimentation was synchronous or diachronous in this region. Secondary objectives included HPC sampling of the Cretaceous-Tertiary boundary on Shatsky Rise, recovery of a "type" red clay section for paleogeochemical and geotechnical studies, determination of the thickness and character of sediments at the site of the proposed DARPA downhole seismometer experiment (Leg 88) to allow design of casing strings, and recovery of a late Quaternary section on the Japanese margin.

The primary objective was largely achieved, although time constraints prevented rotary coring beyond the HPC-sampled sections at Sites 579 and 580, as well as any HPC sampling at Site 581 or planned double HPC sampling of the sections at Sites 578, 579 and 580. The abundance and preservation of the siliceous microfossils improves from Site 578 to Sites 579 and 580. The latter two sections should meet the primary paleoceanographic goals of the N-S section, although the breaks between cores will limit the amount of frequency-domain work that can be done.

The time constraints mentioned earlier also led to elimination of

the Japanese margin site. Otherwise, the secondary objectives were achieved.

Three factors combined to force the cutbacks in our scientific program:

1. Greatly reduced trip speeds with the HPC caused by the undersized bore of the pipe delivered in Long Beach. Because the tight fit made the core barrel "float," with the resultant risk of snarling of the sand line, coring times were almost 50% greater than estimated in the cruise schedule.
2. Slower-than-expected speeds underway, due to weather, unpredictable currents, and, perhaps, marine growth on the hull.
3. Failure to allow for loss of 1 day when crossing the International Date Line from east to west.

The site-by-site results are summarized in the following section. Figure 2 shows the south to north increase in accumulation rates from the relatively unproductive central water mass to the productive subarctic region.

The onset of siliceous sedimentation increases in age from south (late Miocene at Site 578) to north (middle Miocene at Site 581). Even more spectacular is an abrupt decrease in sedimentation rate from 24 to 14 m/m.y. at 2.75 m.y. in Site 578, versus 23 to 4.6 m/m.y. at 6.5 m.y. in Site 581. In both cases, the boundary is marked by a downhole change from reduced gray-green pyritic to oxidized yellow-brown biosiliceous clay.

The Cretaceous-Tertiary boundary was cored three times at Site 577 on Shatsky Rise. All three boundaries are undeformed, well centered in 1.5 m core sections, and appear visually identical. There is no color change or evidence of a discontinuity at the boundary. Preliminary evaluations of the nannofossils and foraminifers suggest that the section is expanded relative to Gubbio, which may contain a brief hiatus.

Sites 578, 579 and 580 each recovered more than 60 volcanic ash beds. These beds produce the numerous near-surface reflectors seen in 3.5 kHz reflection records. They also will allow the development of a detailed tephrachronology for the northwest Pacific.

The paleomagnetic data from Sites 578 and 580 are of superior quality. They provide a detailed chronology for the Plio-Pleistocene sections, and may yield insight to the behavior of the earth's magnetic field during reversals. At Site 579, rough weather led to a major reduction in core quality. As now configured, the HPC cannot tolerate heaving of the ship, which has a "concertina" effect on the cores; expanded ("flow-in") intervals alternate with apparently undisturbed (but likely compressed) intervals. Such deformation severely degrades the magnetic properties of the sediment.

A new core-nose temperature probe was deployed for the first time on Leg 86. This miniaturized microprocessor-based tool fits into a cavity in the wall of the core cutter. After some initial teething problems, it worked well mechanically. It appears to be measuring

something well. Because of temperature reversals (up to 3.5°C) downcore, and a significant (3.5°C) temperature discrepancy relative to the conventional probe, there is some question as to whether the instrument is actually detecting the in situ temperature of the sediments. Further shore-based work is needed to resolve this question.

Site 576

Site 576 lies about 300 km east of Shatsky Rise in a region where the surface "transparent" acoustic layer is laterally very uniform. Six VEMA-36 piston cores around the site confirm this uniformity, with less than 6 percent variation in Pleistocene deposition rates over 10,000 square km. Site 576 was designed to recover the "transparent" section for studies of eolian and authigenic deposition through the Cenozoic, and also for geotechnical studies of a "type" pelagic (red) clay.

The site met all of its objectives. The "transparent" acoustic layer was completely cored three times, with essentially full recovery. The cores from one of the holes were left unopened and stored vertically for shore-based geotechnical studies.

The section cored consists of three units (Fig. 3), with the top one subdividable into two subunits:

Subunit I-1: 0 to 28 m (contact gradational over several meters).

Yellowish brown to brown pelagic clay of Pliocene and Quaternary age (based on paleomagnetics). Sedimentation rate decreases from 10 m/m.y. in the Brunhes to less than 3 m/m.y. at the base of the Matuyama. Based on earlier studies and the abundance of silt-sized quartz, we infer that this unit is largely of eolian origin.

Subunit I-2: 28 to 55 m.

Dark brown "slick" pelagic clay, zeolitic in part. This material is extremely homogeneous, very fine grained, and manganese-rich. If deposition has been continuous, the average sedimentation rate decreased from about 2 m/m.y. during the late Neogene to 0.2 m/m.y. (uncorrected for compaction) during the late Cretaceous. Further studies of ichthyoliths are required to constrain these rates. Mineralogical and chemical analyses on shore will characterize this unit more adequately. By analogy with similar-looking North and South Pacific pelagic clays, we suspect that it contains a large authigenic component.

Unit II: 55 to 76 m.

Interbedded dark brown pelagic clay similar to Subunit I-2 and pale brown nannofossil ooze of Campanian to early Maestrichtian age. Several of the carbonate layers are graded, with sharp erosional basal

contacts. These are turbidites. Others may be pelagic. The absence of microfossils younger than Maestrichtian age, and the results of earlier DSDP drilling in this region suggest that the components of the carbonate and clay layers are essentially contemporaneous. Whether the carbonate reflects enhanced biogenic deposition due to higher productivity (at the lower latitude of the site 70 m.y. ago) or to fluctuations in the CCD, or both, is unclear.

Unit III: 76 m.

Only one small glassy chert chip and a few small fragments of off-white porcellanite were recovered from this unit, which forms the prominent reflector at the base of the "transparent" layer in the northwest Pacific.

Progressive consolidation of the pelagic clays of Units I and II yielded striking profiles of physical properties. Both the shear-wave velocity and vane shear strength increased with depth (from 6 to 127 m/sec and less than 20 to more than 1000 g/cm^2, respectively) without regard to the lithologic change from Subunit I-1 to I-2. LL44-GPC3 at 30°N, 158°W showed similar trends. Shore-based studies of the unopened cores from Hole 576A should significantly enhance our understanding of the geotechnical properties of pelagic "red" clays and the way in which they evolve over geologic time.

Site 577

Site 577 on Shatsky Rise recovered an unusually good late Cenozoic sequence, a Paleogene sequence, and an undisturbed record of the Cretaceous/Tertiary boundary. The late Cenozoic and Paleogene sequences were recovered in two holes while the Cretaceous/Tertiary boundary was recovered in three holes. A paleomagnetic reversal record was determined for the Neogene but since the magnetization of much of the sediment did not exceed the noise level of the shipboard magnetometer, detailed magnetostratigraphy must await shore-lab analysis. All the sediments are predominately calcareous nannofossil oozes (Fig. 3), but they can be subdivided into three units:

Unit I (0-55 m) is a white to light gray nannofossil ooze. It is divided into two subunits based upon a downcore decrease in the percentage of foraminifers, radiolarians and diatoms. The lower unit carries only a few percent foraminifers and traces of radiolarians and diatoms. The base of subunit two is an unconformity in which late Miocene sediment rests unconformably on top of middle Eocene sediment.

Unit II (55-112 m) is a white to pale brown calcareous nannofossil ooze of Paleocene and Eocene age. This unit is characterized by high percentages (60-90%) of coccoliths. It is further subdivided into two subunits with the upper one being pale brown in color and the lower one characterized by alternating white and pale brown colors.

Unit III (112-123 m) is a white calcareous nannofossil ooze of

lowermost Paleocene and uppermost Cretaceous age. It occurs in the lower twenty meters of the hole. Penetration was stopped by a hard layer, presumably chert.

Sediment accumulation rates were highest in the late Cenozoic (12-13 m/m.y.) and markedly less below the unconformity (0.4-1.9 m/m.y.). Measurements of both physical properties and heat flow seemed to "sense" the late Miocene-middle Eocene unconformity at approximately 60 meters. There is a sudden increase in bulk density just below this boundary as well as a rapid increase in compressional wave velocity (1.48 km/s to 1.53 km/s). The heat flow data show a linear increase with depth to the unconformity at which point there is an apparent temperature reversal. The cause of this phenomenon has not yet been identified.

Site 578

Hole 578 recovered an unexpectedly thick section of late Neogene biosiliceous clays (Fig. 3). Siliceous microfossils are well preserved in the late Quaternary and Mio-Pliocene portion of the section. The paleomagnetic stratigraphy is exceptional. All events except the Gilsa and "X" back to the middle of Epoch 5 can be identified from the shipboard NRM inclinations.

The upper 76 meters of biosiliceous clay (0-2.4 m.y.) is anoxic (gray and olive gray in color) with many pyrite-cemented layers. From

76 to 125 meters (2.4 to 9-9.5 m.y.), the clays are oxidized (yellow-brown and brown in color) with rare ferromanganese nodules.

These two units contain 72 clearly visible ash layers, 24 of which are more than 5 cm thick (the thickest is 17 cm, or 27 cm if adjoining the 17 and 10 cm white and green ash beds formed from a single eruption).

From 125 to 176 meters (9-9.5 to 70 m.y.), the pelagic clay is "slick," predominantly dark to very dark brown, and very homogeneous. At its base, the clay is very stiff, with a shear strength approaching 2 kg/cm^2 (the 9.5 m core at a depth of 170 m penetrated only a little over 4 m). Drilling was stopped by chert at 176.8 meters. Silicified foraminifers immediately above the chert are late Campanian to Maestrichtian in age (about 70 m.y.).

Sedimentation rates drop from almost 50 m/m.y. at the surface to about 25 m/m.y. from 1 to 2.4 m.y. ago, where they decrease abruptly to 15 m/m.y. and then gradually to about 8 m/m.y. at the base of the fossiliferous section. If deposition was continuous, the pelagic clays accumulated at less than 1 m/m.y. from about 10 to 70 m.y. ago.

The rapid late Pliocene-Pleistocene rates were unexpected. Further work is required to determine whether a change in provenance or transport was responsible for the 70% rate increase 2.4 m.y. ago. The new core-nose heat flow unit yielded data on 7 out of 8 deployments. The temperature gradients are linear above 75 and below 85 meters, but

there is an unexplained temperature reversal of 1°C between these two depths (which spans the accumulation rate change mentioned above).

Site 579

Site 579 recovered a thick late Neogene biosiliceous clay (Fig. 3). Siliceous microfossils (diatoms and radiolarians) are abundant and well preserved throughout much of the section which is late Miocene to Quaternary in age. Even though degraded by core disturbance, an interpretable and complete magnetic stratigraphy can be identified back to the middle of the Gilbert Reversed Epoch (early Pliocene).

Except for ash layers, the sediments are relatively uniform in color being gray, dark gray, olive gray and greenish gray. Although burrow mottles are abundant, the sediment lacks any depositional sedimentary structures. Based upon these data, the entire sedimentary section recovered at 579 is placed into one single pelagic unit. However, based upon changes in biogenic and inorganic sediment components, three subunits can be recognized:

The upper subunit (0-58 m) is siliceous clay of Pleistocene age with 15-30% quartz. Twenty-seven ash layers and eighty-three thin, stiff, dark grayish green pyritic layers occur in this subunit. The middle subunit (58-103 m) is a clayey siliceous ooze of late Pliocene to early Pleistocene age containing from 5 to 15% quartz. Twenty-four

ash layers and 126 thin, indurated grayish green pyritic layers were recovered. The lowermost subunit (103-149 m) of late Miocene to late Pliocene age contains from 3 to 25% quartz. Ash layers (10) are less abundant, and there are 116 of the well-indurated dark grayish green pyritic layers.

Sedimentation rates gradually decrease downcore. In the late Pleistocene, the average rate was approximately 42 m/m.y. This declines to 34 m/m.y. in the early Pleistocene and 25 m/m.y. for the late Pliocene. During the early Pliocene and late Miocene, rates averaged less than 20 m/m.y.

Marginal weather precluded a full heat flow program; measurements were not possible until Core 9. However, 7 successful measurements were made between Cores 9-15. In this interval (approximately 100-150 meters depth), the temperatures show a linear increase with depth.

Site 580

At Site 580, we recovered a thick sequence of Pleistocene and late Pliocene sediments (Fig. 3). Siliceous microfossils (diatoms and radiolarians) are generally abundant and moderately to well preserved. An excellent magnetic reversal record can be identified back to the middle of the Gauss Normal Epoch.

Except for the numerous ash layers and the indurated darkish green layers, the sediments are remarkably uniform in color being

gray, olive gray and dark gray. The entire sedimentary sequence recovered at Site 580 again is placed in one pelagic unit. However, based upon changes in biosiliceous components and fine-grained carbonate, five subunits are recognized.

Subunit IA extends from 0 to 60 meters and is predominately a biosiliceous clay of late Pleistocene age. Underlying this (subunit IB) and extending from 60 to 70 meters is a calcareous biosiliceous clay, of early Pleistocene age, characterized by up to 25% fine-grained carbonate material. Subunit IC (70-117 m), of late Pliocene and early Pleistocene age, is similar lithologically to subunit IA. Subunit ID (117-136 m), of late Pliocene age, is a diatom ooze containing up to 60% diatoms. Subunit IE (136-156 m), of early late Pliocene age, is again similar to subunit IA.

Sedimentation rates are unusually high for the Pleistocene and late Pliocene, averaging 55 meters/m.y. However, at approximately 2.5 m.y.B.P., there is an abrupt decrease in the rate to approximately 13 m/m.y.

The heat flow system operated normally. The temperature profile shows an almost linear increase with depth.

Site 581

Because of the limited time available and the need to drill to basement to allow Leg 88 to plan their casing program, HPC sampling of the upper part of the sediment section at Site 581 was deferred until

Leg 88. Apart from a mud-line core, we did not sample the interval above 181.5 meters.

From 0 to 223.6 meters, the cored section is reduced (gray and green) late Miocene to earliest Pliocene biosiliceous clay and ooze (Fig. 3), similar to but less ashy and pyritic than the sections at Sites 579 and 580. Presumably, the uncored section is similar, but with more ash and pyritic layers toward the surface.

From 223.6 to 244.8 meters, the sediment is oxidized (yellow-brown) latest middle Miocene to late Miocene biosiliceous clay, which accumulated at about one sixth the rate of the overlying sediments.

From 244.8 to 276.5 meters, the sediment is "slick," fine-grained pelagic clay of presumed middle Miocene age, which grades downcore from brown to very dark brown in color. From 276.5 to 344 meters, we recovered nothing but chert fragments, even though the drilling rate suggests that most of the section is soft sediment (?clay). The chert ranges from off-white to bright reds and yellows and dark brown in color. Most of it looks like silicified dark brown pelagic clay. Diatoms from a small vug in a fragment near the top of the sequence are middle Miocene in age.

The hole was terminated after drilling from 344 to 352.5 meters in medium gray aphyric basalt containing calcite and iron oxide-lined fractures and alteration rinds. Because no soft sediment was recovered below 276.5 meters, we have no idea of the age of the basalt. If this is primary oceanic crust, it should be about 115 m.y. old (between Mesozoic magnetic anomalies M-3 and M-4).

LEG 86

HOLE	DATES (1982)	LATITUDE	LONGITUDE	WATER DEPTH*	PENETRATION	NO OF. CORES	METERS CORED	METERS RECOVERED	PERCENT OF RECOVERY
576	May 16-18	32°21.36'N	164°16.54'E	6217 m	69.2 m	8	69.2	68.52	99
576A	May 18-19	32°21.38'N	164°16.52'E	6217	65.7	7	65.7	66.20	101
576B	May 19-20	32°21.37'N	164°16.52'E	6217	74.8	9	74.8	74.07	99
577	May 23	32°26.51'N	157°43.40'E	2675	118.8	13	118.8	111.07	93
577A	May 24	32°26.53'N	157°43.39'E	2675	123.4	13	123.4	110.64	90
577B	May 25	32°26.48'N	157°43.39'E	2675	113.9	1	9.5	9.63	101
578	May 27-30	33°55.56'N	151°37.74'E	6010	176.8	20	167.8	165.02	98
579	June 1	38°37.68'N	153°50.17'E	5736.6	17.9	2	17.9	16.90	94
579A	June 2-4	38°37.61'N	153°50.28'E	5736.6	149.5	15	135.5	115.87	86
580	June 6-8	41°37.47'N	153°58.58'E	5375	155.3	17	155.3	140.74	91
581	June 10-13	43°55.62'N	159°47.76'E	5476	352.5	19	172.0	77.59	45
						124	1109.9	956.25	86

*Water depth at sea level.

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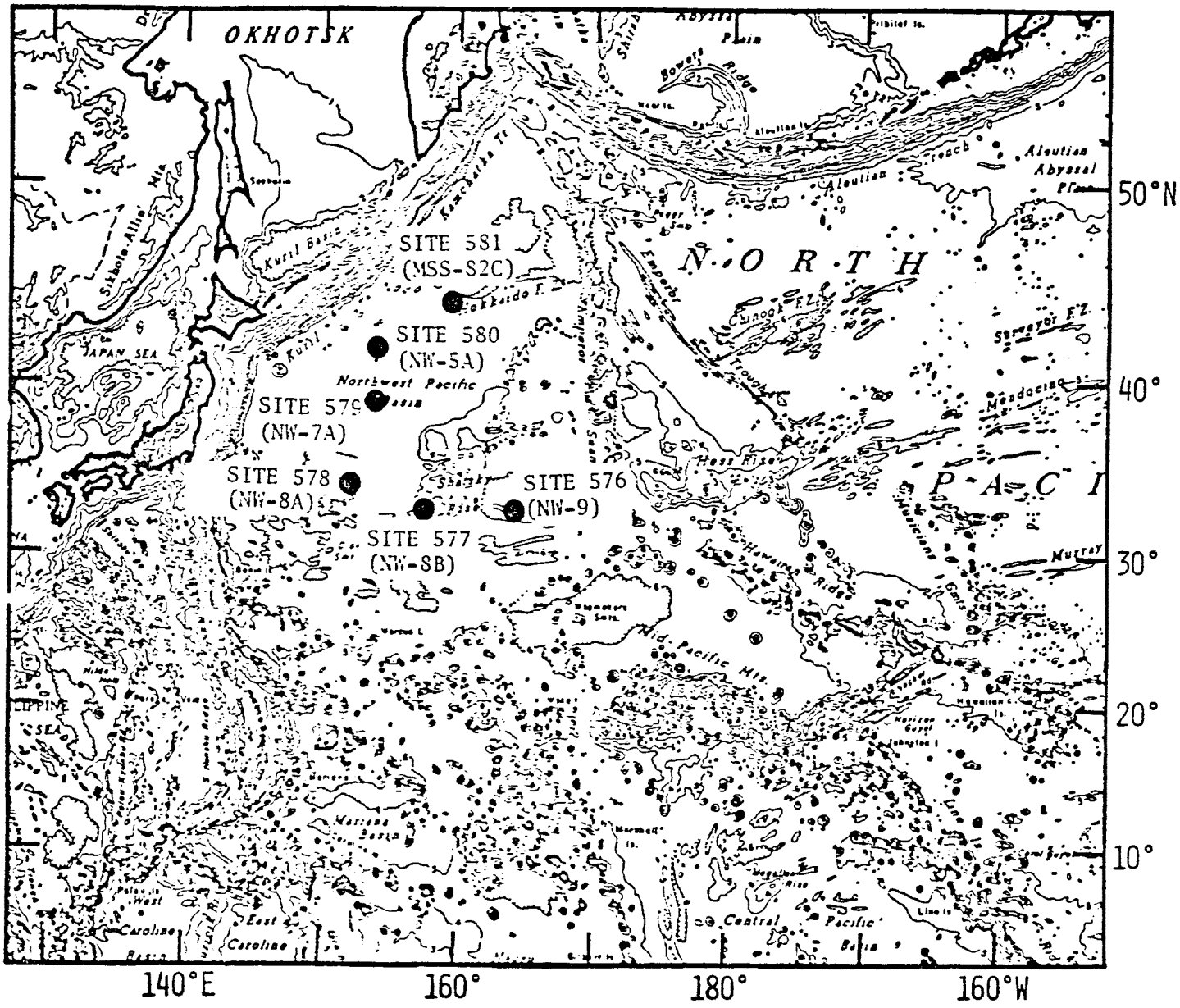


Figure 1. Location of sites drilled on DSDP Leg 86.

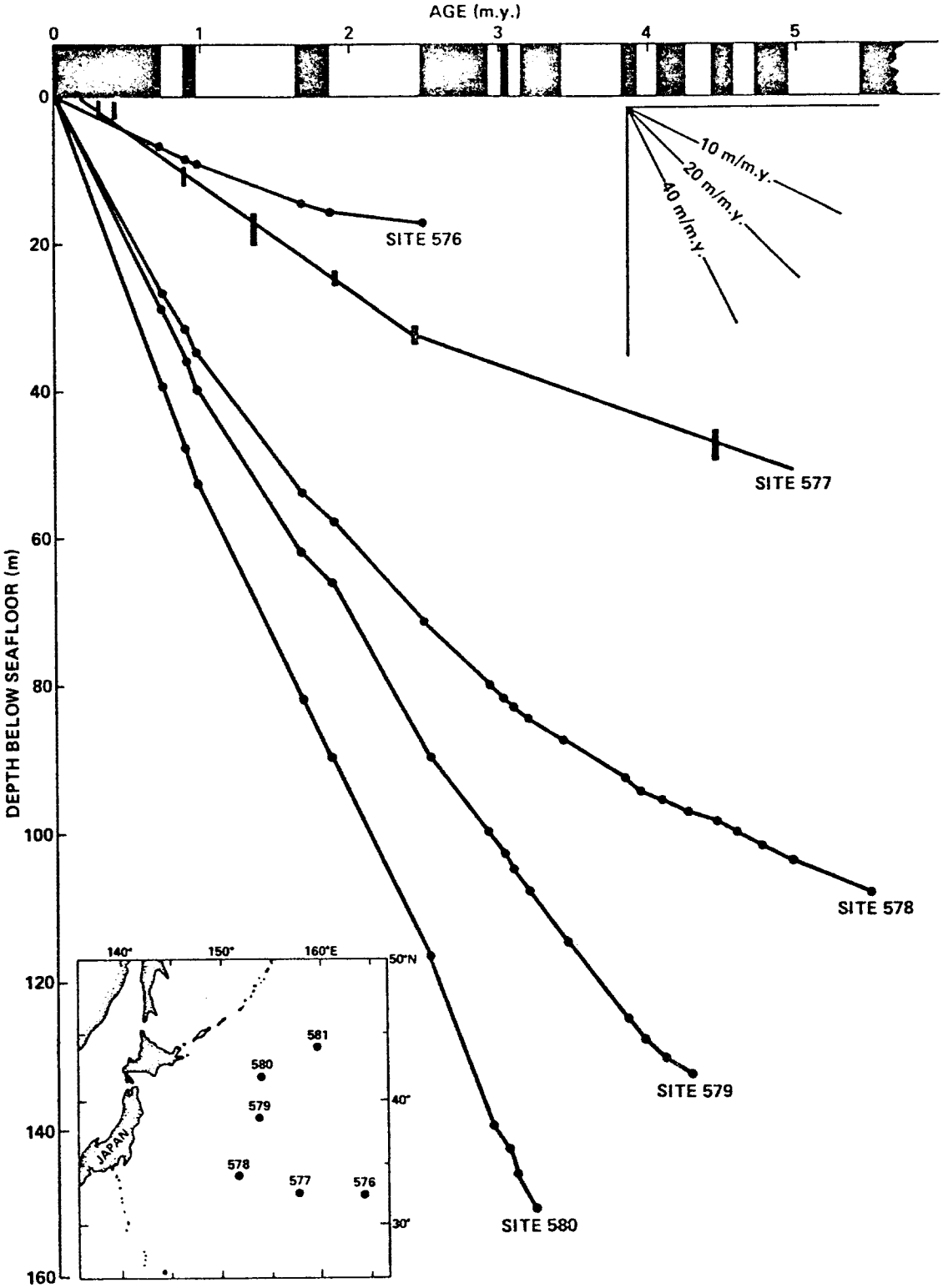


Figure 2. Plot of geomagnetic time scale versus sub-bottom depth in meters showing sedimentation rates at Site 576 and 578-580. Ages for Site 577 are based on biostratigraphic events, due to weak magnetization of carbonate-rich samples. Inset map in bottom left hand corner shows locations of DSDP Leg 86 sites.

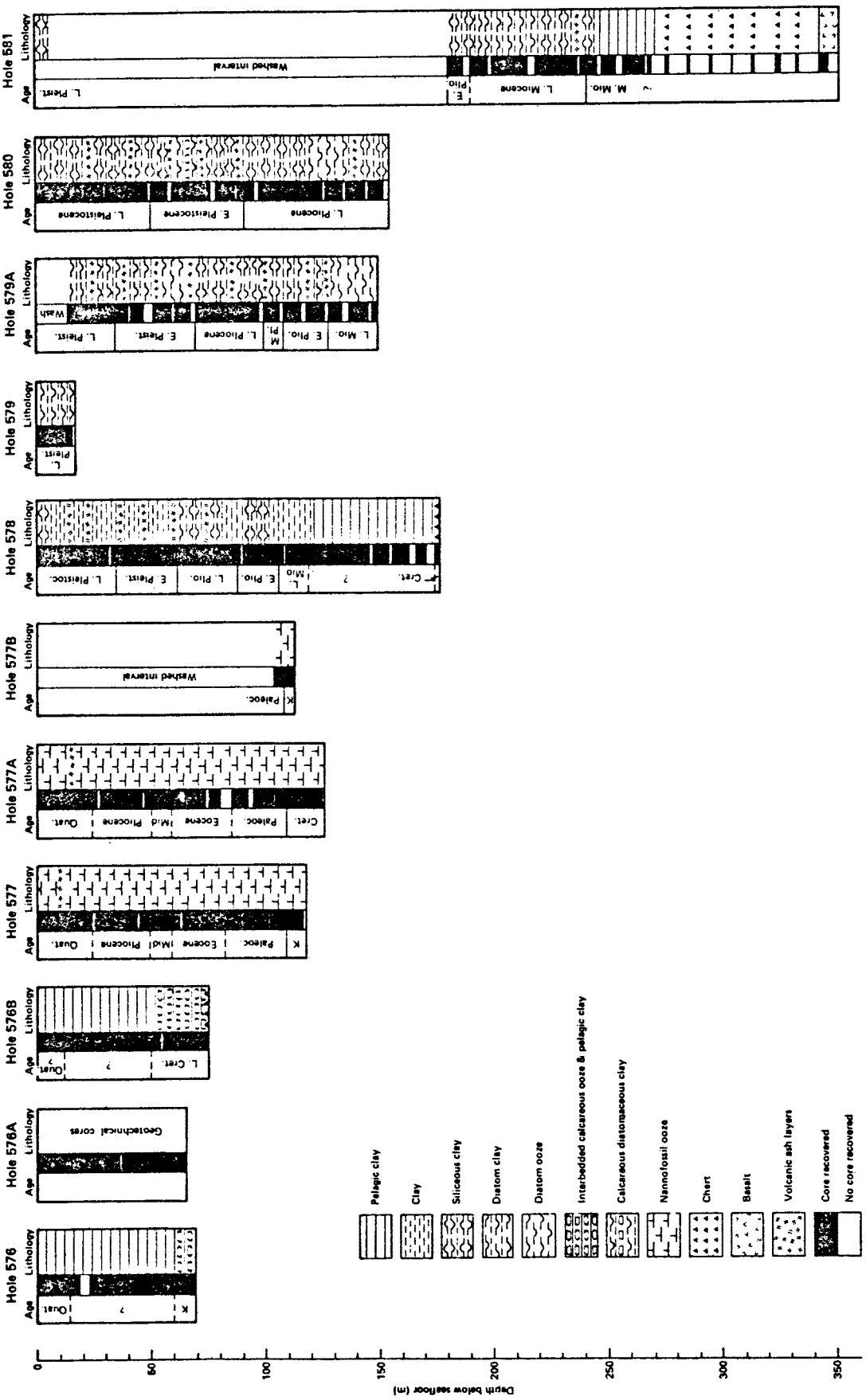


Figure 3. Age, core recovery, and lithostratigraphy of sediments and rock drilled on DSDP Leg 86. Age boundaries are tentative, and will be refined by detailed shore-based paleontological and paleomagnetic studies. Positions of volcanic ash layers shown in lithologic columns are schematic only.

SITE 576

HOLES 576, 576A, 576B

Date Occupied: May 16-18 (576); May 18-19 (576A); May 19-20 (576B)

Date Departed: May 21, 1982

Time on Site: 4 days, 16 hours

Position (latitude; longitude): 32°21.36'N; 164°16.54'E (576)

32°21.38'N; 164°16.52'E (576A)

32°21.37'N; 164°16.52'E (576B)

Water depth (sea level; corrected m, echo-sounding): 6217

Water depth (rig floor; corrected m, echo-sounding): 6227

Bottom felt (m, drill pipe): 6220.3 (576); 6218.0 (576A); 6219.3 (576B)

Penetration (m): 69.2 (576); 65.7 (576A); 74.8 (576B)

Number of cores: 8 (567); 7 (576A); 9 (576B)

Total length of cored section (m): Same as penetration (above).

Total core recovered (m): 68.52 (576); 66.20 (576A); 74.07 (576B)

Core recovery (%): 99 (576); 101 (576A); 99 (576B)

100% total

Oldest sediment cored:

Depth sub-bottom (m): 73

Nature: Nannofossil ooze/pelagic clay

Age: late Campanian-early Maestrichtian

Measured velocity (km/s): 1.43-1.50

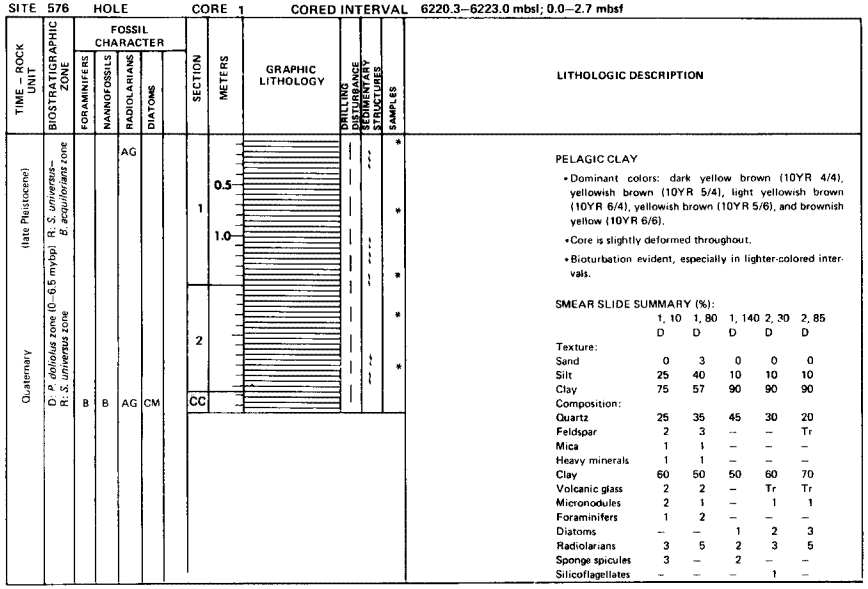
Basement: Not penetrated.

Depth sub-bottom (m):

Nature:

Velocity range (km/s):

SITE 576 HOLE CORE 1 CORED INTERVAL 6220.3–6223.0 mbsl; 0.0–2.7 mbsf



LITHOLOGIC DESCRIPTION

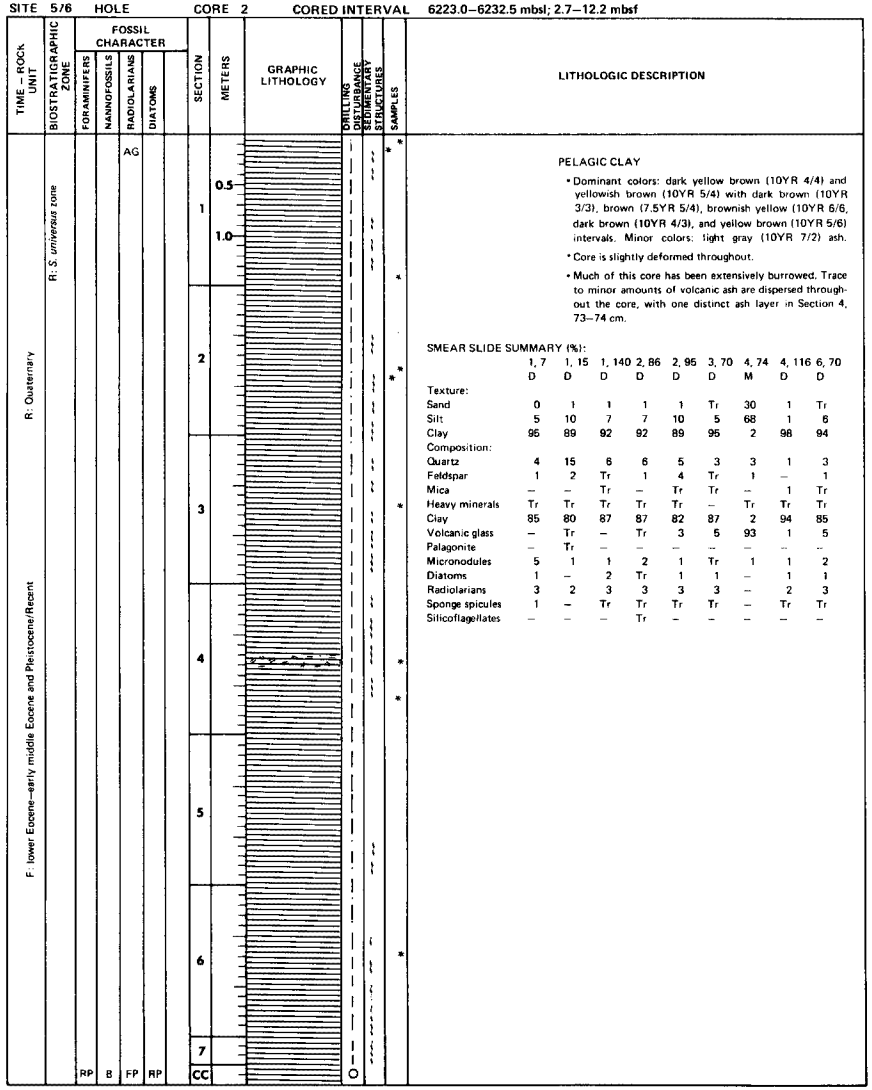
PELAGIC CLAY

- Dominant colors: dark yellow brown (10YR 4/4), yellowish brown (10YR 5/4), light yellowish brown (10YR 6/4), yellowish brown (10YR 5/6), and brownish yellow (10YR 6/6).
- Core is slightly deformed throughout.
- Bioturbation evident, especially in lighter-colored intervals.

SMEAR SLIDE SUMMARY (%):

	1, 10 D	1, 80 D	1, 140 D	2, 30 D	2, 85 D
Texture:					
Sand	0	3	0	0	0
Silt	25	40	10	10	10
Clay	75	57	90	90	90
Composition:					
Quartz	25	35	45	30	20
Feldspar	2	3	--	--	Tr
Mica	1	1	--	--	--
Heavy minerals	1	1	--	--	--
Clay	60	50	50	60	70
Volcanic glass	2	2	--	Tr	Tr
Micronodules	2	1	--	1	1
Foraminifers	1	2	--	--	--
Diatoms	--	--	1	2	3
Radiolarians	3	5	2	3	5
Sponge spicules	3	--	2	--	--
Silicoflagellates	--	--	--	1	--

SITE 576 HOLE CORE 2 CORED INTERVAL 6223.0–6232.5 mbsl; 2.7–12.2 mbsf



LITHOLOGIC DESCRIPTION

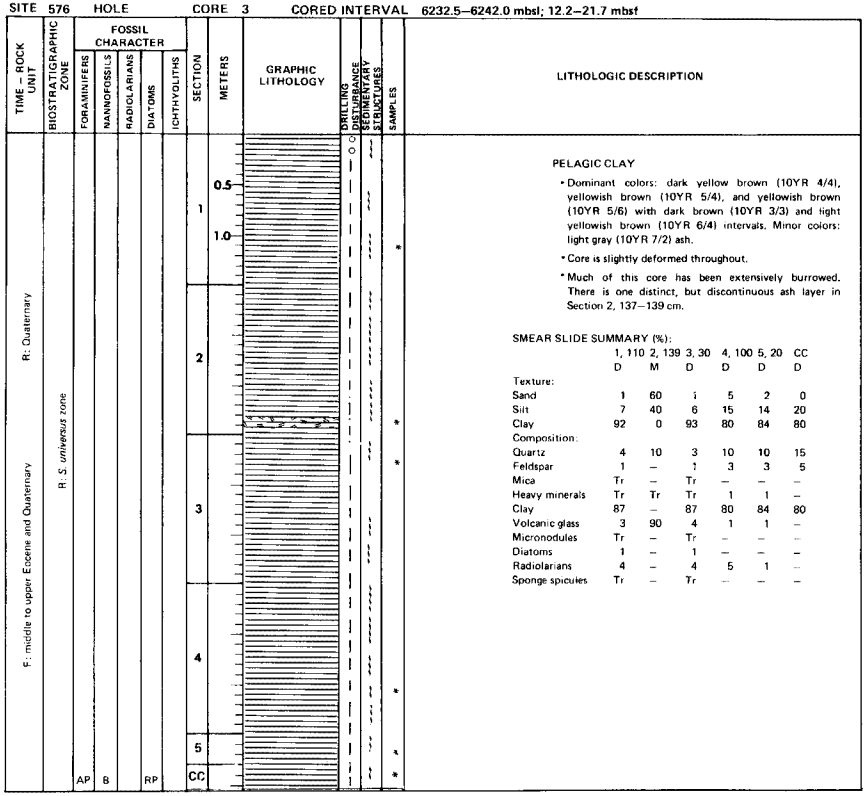
PELAGIC CLAY

- Dominant colors: dark yellow brown (10YR 4/4) and yellowish brown (10YR 5/4) with dark brown (10YR 3/3), brown (7.5YR 5/4), brownish yellow (10YR 6/6, dark brown (10YR 4/3), and yellow brown (10YR 5/6) intervals. Minor colors: light gray (10YR 7/2) ash.
- Core is slightly deformed throughout.
- Much of this core has been extensively burrowed. Trace to minor amounts of volcanic ash are dispersed throughout the core, with one distinct ash layer in Section 4, 73–74 cm.

SMEAR SLIDE SUMMARY (%):

	1, 7 D	1, 15 D	1, 140 D	2, 86 D	2, 95 D	3, 70 D	4, 74 M	4, 116 D	6, 70 D
Texture:									
Sand	0	1	1	1	1	Tr	30	1	Tr
Silt	5	10	7	7	10	5	68	1	6
Clay	95	89	92	92	89	95	2	98	94
Composition:									
Quartz	4	15	8	6	5	3	3	1	3
Feldspar	1	2	Tr	1	4	Tr	1	--	1
Mica	--	--	Tr	--	Tr	Tr	--	1	Tr
Heavy minerals	Tr	Tr	Tr	Tr	Tr	--	Tr	Tr	Tr
Clay	85	80	87	87	82	87	2	94	85
Volcanic glass	--	Tr	--	Tr	3	5	93	1	5
Palagonite	--	Tr	--	--	--	--	--	--	--
Micronodules	5	1	1	2	1	Tr	1	1	2
Diatoms	1	--	2	Tr	1	1	--	1	1
Radiolarians	3	2	3	3	3	3	--	2	3
Sponge spicules	1	--	Tr	Tr	Tr	Tr	--	Tr	Tr
Silicoflagellates	--	--	--	Tr	--	--	--	--	--

SITE 576 HOLE CORE 3 CORED INTERVAL 6232.5–6242.0 mbsl; 12.2–21.7 mbsf



LITHOLOGIC DESCRIPTION

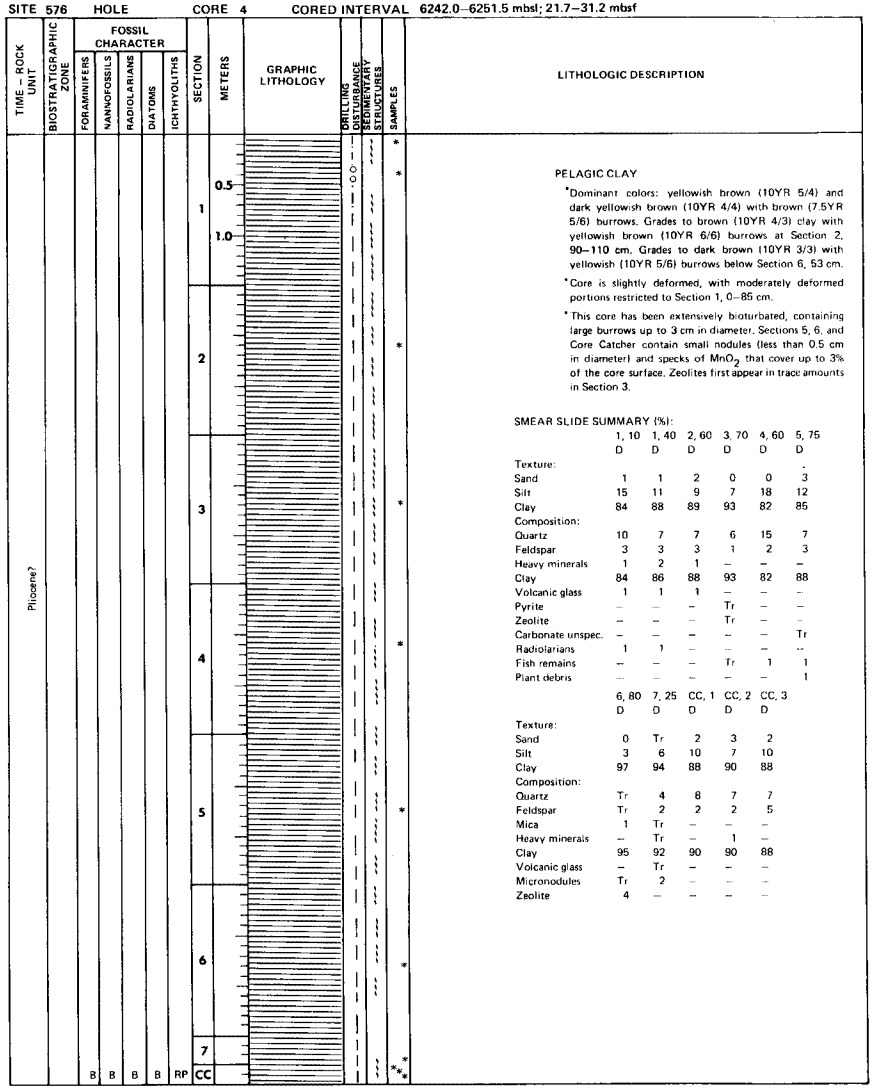
PELAGIC CLAY

- Dominant colors: dark yellow brown (10YR 4/4), yellowish brown (10YR 5/4), and yellowish brown (10YR 5/6) with dark brown (10YR 3/3) and light yellowish brown (10YR 6/4) intervals. Minor colors: light gray (10YR 7/2) ash.
- Core is slightly deformed throughout.
- Much of this core has been extensively burrowed. There is one distinct, but discontinuous ash layer in Section 2, 137–139 cm.

SMEAR SLIDE SUMMARY (%):

	1, 110 D	2, 139 M	3, 30 D	4, 100 D	5, 20 D	CC D
Texture:						
Sand	1	60	1	5	2	0
Silt	7	40	6	15	14	20
Clay	92	0	93	80	84	80
Composition:						
Quartz	4	10	3	10	10	15
Feldspar	1	–	1	3	3	5
Mica	Tr	–	Tr	–	–	–
Heavy minerals	Tr	Tr	Tr	1	1	–
Clay	87	–	87	80	84	80
Volcanic glass	3	90	4	1	1	–
Micronodules	Tr	–	Tr	–	–	–
Diatoms	1	–	1	–	–	–
Radiolarians	4	–	4	5	1	–
Sponge spicules	Tr	–	Tr	–	–	–

SITE 576 HOLE CORE 4 CORED INTERVAL 6242.0–6251.5 mbsl; 21.7–31.2 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAY

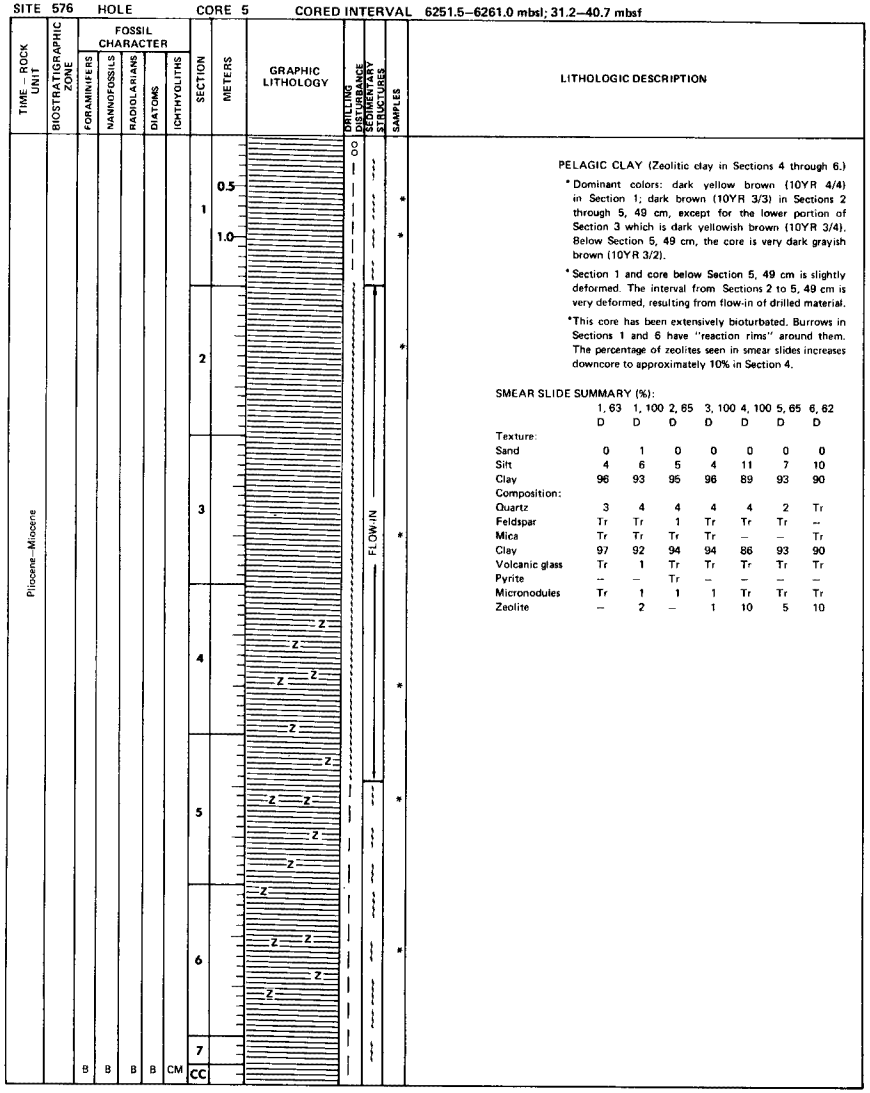
- Dominant colors: yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) with brown (7.5YR 5/6) burrows. Grades to brown (10YR 4/3) clay with yellowish brown (10YR 6/6) burrows at Section 2, 90–110 cm. Grades to dark brown (10YR 3/3) with yellowish (10YR 5/6) burrows below Section 6, 53 cm.
- Core is slightly deformed, with moderately deformed portions restricted to Section 1, 0–85 cm.
- This core has been extensively bioturbated, containing large burrows up to 3 cm in diameter. Sections 5, 6, and Core Catcher contain small nodules (less than 0.5 cm in diameter) and specks of MnO_2 that cover up to 3% of the core surface. Zeolites first appear in trace amounts in Section 3.

SMEAR SLIDE SUMMARY (%):

	1, 10 D	1, 40 D	2, 60 D	3, 70 D	4, 60 D	5, 75 D
Texture:						
Sand	1	1	2	0	0	3
Silt	15	11	9	7	18	12
Clay	84	88	89	93	82	85
Composition:						
Quartz	10	7	7	6	15	7
Feldspar	3	3	3	1	2	3
Heavy minerals	1	2	1	–	–	–
Clay	84	86	88	93	82	88
Volcanic glass	1	1	1	–	–	–
Pyrite	–	–	–	Tr	–	–
Zeolite	–	–	–	Tr	–	–
Carbonate unspec.	–	–	–	–	–	Tr
Radiolarians	1	1	–	–	–	–
Fish remains	–	–	–	Tr	1	1
Plant debris	–	–	–	–	–	1

	6, 80 D	7, 25 D	CC, 1 D	CC, 2 D	CC, 3 D
Texture:					
Sand	0	Tr	2	3	2
Silt	3	6	10	7	10
Clay	97	94	88	90	88
Composition:					
Quartz	Tr	4	8	7	7
Feldspar	Tr	2	2	2	5
Mica	1	Tr	–	–	–
Heavy minerals	–	Tr	–	1	–
Clay	95	92	90	90	88
Volcanic glass	–	Tr	–	–	–
Micronodules	Tr	2	–	–	–
Zeolite	4	–	–	–	–

SITE 576 HOLE CORE 5 CORED INTERVAL 6251.5–6261.0 mbsl; 31.2–40.7 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAY (Zeolitic clay in Sections 4 through 6.)

* Dominant colors: dark yellow brown (10YR 4/4) in Section 1; dark brown (10YR 3/3) in Sections 2 through 5, 49 cm, except for the lower portion of Section 3 which is dark yellowish brown (10YR 3/4). Below Section 5, 49 cm, the core is very dark grayish brown (10YR 3/2).

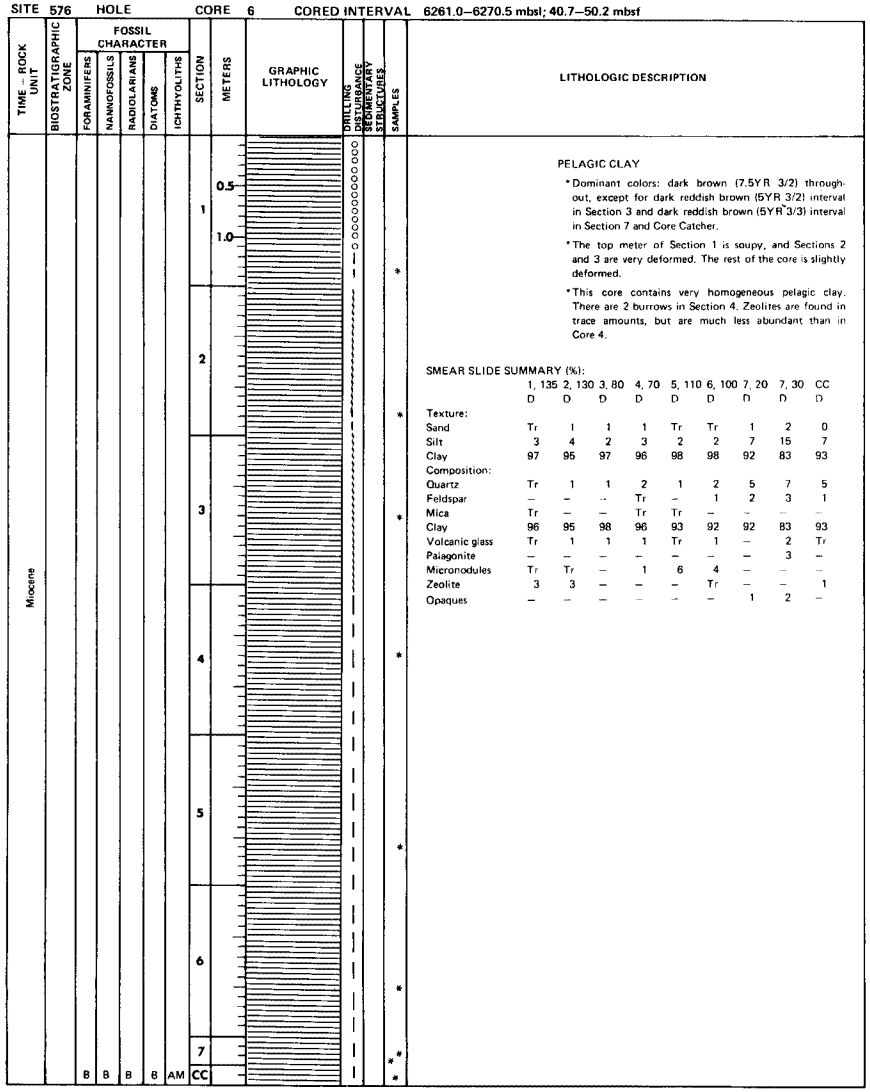
* Section 1 and core below Section 5, 49 cm is slightly deformed. The interval from Sections 2 to 5, 49 cm is very deformed, resulting from flow-in of drilled material.

*This core has been extensively bioturbated. Burrows in Sections 1 and 6 have "reaction rims" around them. The percentage of zeolites seen in smear slides increases downcore to approximately 10% in Section 4.

SMEAR SLIDE SUMMARY (%):

	1, 63 D	1, 100 D	2, 65 D	3, 100 D	4, 100 D	5, 65 D	6, 62 D
Texture:							
Sand	0	1	0	0	0	0	0
Silt	4	6	5	4	11	7	10
Clay	96	93	95	96	89	93	90
Composition:							
Quartz	3	4	4	4	4	2	Tr
Feldspar	Tr	Tr	1	Tr	Tr	Tr	–
Mica	Tr	Tr	Tr	Tr	–	–	Tr
Clay	97	92	94	94	86	93	90
Volcanic glass	Tr	1	Tr	Tr	Tr	Tr	Tr
Pyrite	–	–	Tr	–	–	–	–
Micronodules	Tr	1	1	1	Tr	Tr	Tr
Zeolite	–	2	–	1	10	5	10

SITE 576 HOLE CORE 6 CORED INTERVAL 6261.0–6270.5 mbsl; 40.7–50.2 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAY

* Dominant colors: dark brown (7.5YR 3/2) throughout, except for dark reddish brown (5YR 3/2) interval in Section 3 and dark reddish brown (5YR 3/3) interval in Section 7 and Core Catcher.

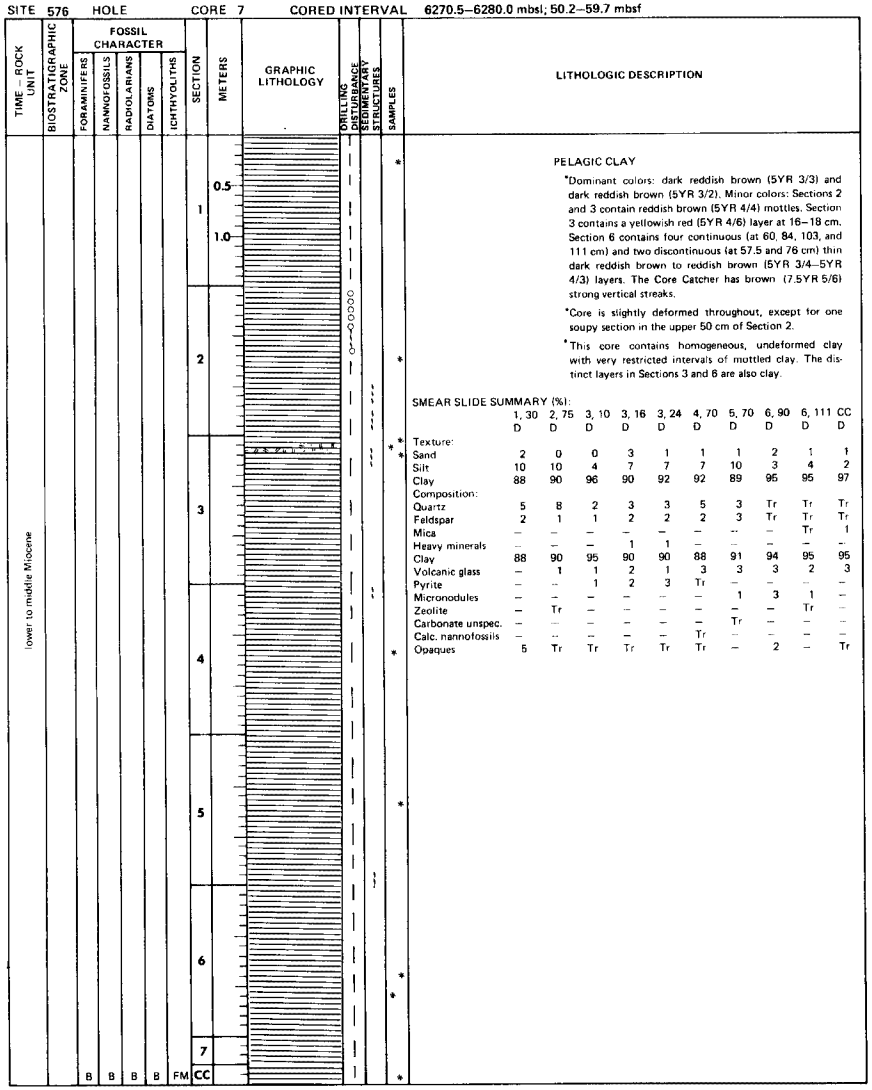
* The top meter of Section 1 is soupy, and Sections 2 and 3 are very deformed. The rest of the core is slightly deformed.

* This core contains very homogeneous pelagic clay. There are 2 burrows in Section 4. Zeolites are found in trace amounts, but are much less abundant than in Core 4.

SMEAR SLIDE SUMMARY (%):

	1, 135 D	2, 130 D	3, 80 D	4, 70 D	5, 110 D	6, 100 D	7, 20 D	7, 30 D	CC D
Texture:									
Sand	Tr	1	1	1	Tr	Tr	1	2	0
Silt	3	4	2	3	2	2	7	15	7
Clay	97	95	97	96	98	98	92	83	93
Composition:									
Quartz	Tr	1	1	2	1	2	5	7	5
Feldspar	–	–	–	Tr	–	1	2	3	1
Mica	Tr	–	–	Tr	Tr	–	–	–	–
Clay	96	95	98	96	93	92	92	83	93
Volcanic glass	Tr	1	1	1	Tr	1	–	2	Tr
Palagonite	–	–	–	–	–	–	–	3	–
Micronodules	Tr	Tr	–	1	6	4	–	–	–
Zeolite	3	3	–	–	–	Tr	–	–	1
Opaques	–	–	–	–	–	–	1	2	–

SITE 576 HOLE CORE 7 CORED INTERVAL 6270.5–6280.0 mbsl; 50.2–59.7 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAY

*Dominant colors: dark reddish brown (5YR 3/3) and dark reddish brown (5YR 3/2). Minor colors: Sections 2 and 3 contain reddish brown (5YR 4/4) mottles. Section 3 contains a yellowish red (5YR 4/6) layer at 16–18 cm. Section 6 contains four continuous (at 60, 84, 103, and 111 cm) and two discontinuous (at 57.5 and 76 cm) thin dark reddish brown to reddish brown (5YR 3/4–5YR 4/3) layers. The Core Catcher has brown (7.5YR 5/6) strong vertical streaks.

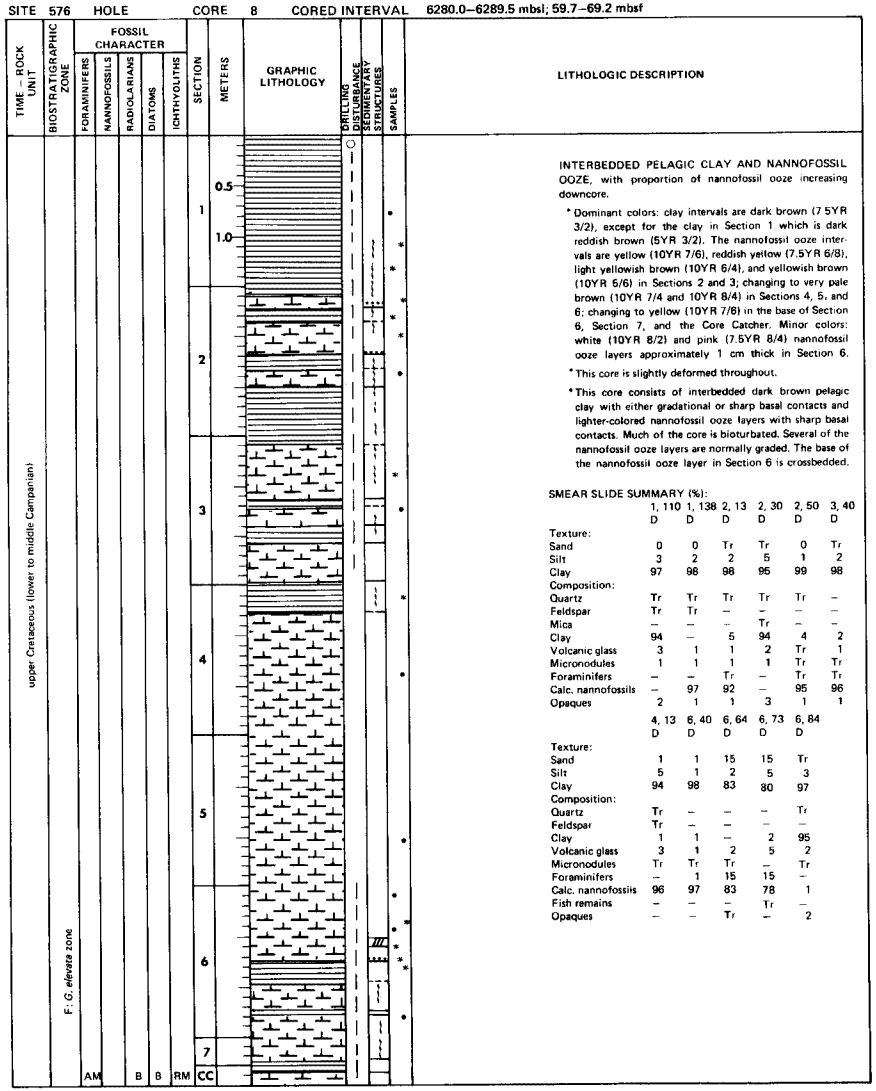
*Core is slightly deformed throughout, except for one soupy section in the upper 50 cm of Section 2.

*This core contains homogeneous, undeformed clay with very restricted intervals of mottled clay. The distinct layers in Sections 3 and 6 are also clay.

SMEAR SLIDE SUMMARY (%):

	1, 30 D	2, 75 D	3, 10 D	3, 16 D	3, 24 D	4, 70 D	5, 70 D	6, 90 D	6, 111 D	CC D
Texture:										
Sand	2	0	0	3	1	1	1	2	1	1
Silt	10	10	4	7	7	7	10	3	4	2
Clay	88	90	96	90	92	92	89	95	95	97
Composition:										
Quartz	5	8	2	3	3	5	3	Tr	Tr	Tr
Feldspar	2	1	1	2	2	2	3	Tr	Tr	Tr
Mica	–	–	–	–	–	–	–	–	Tr	1
Heavy minerals	–	–	–	1	1	–	–	–	–	–
Clay	88	90	95	90	90	88	91	94	95	95
Volcanic glass	–	1	1	2	1	3	3	3	2	3
Pyrite	–	–	1	2	3	Tr	–	–	–	–
Micronodules	–	–	–	–	–	–	1	3	1	–
Zeolite	–	Tr	–	–	–	–	–	–	Tr	–
Carbonate unspec.	–	–	–	–	–	–	Tr	–	–	–
Calc. nannofossils	–	–	–	–	–	Tr	–	–	–	–
Opaques	5	Tr	Tr	Tr	Tr	Tr	–	2	–	Tr

SITE 576 HOLE CORE 8 CORED INTERVAL 6280.0–6289.5 mbsl; 59.7–69.2 mbsf



LITHOLOGIC DESCRIPTION

INTERBEDDED PELAGIC CLAY AND NANNOFOSSIL OOZE, with proportion of nannofossil ooze increasing downcore.

* Dominant colors: clay intervals are dark brown (7.5YR 3/2), except for the clay in Section 1 which is dark reddish brown (5YR 3/2). The nannofossil ooze intervals are yellow (10YR 7/6), reddish yellow (7.5YR 6/8), light yellowish brown (10YR 6/4), and yellowish brown (10YR 5/6) in Sections 2 and 3; changing to very pale brown (10YR 7/4 and 10YR 8/4) in Sections 4, 5, and 6; changing to yellow (10YR 7/6) in the base of Section 6, Section 7, and the Core Catcher. Minor colors: white (10YR 8/2) and pink (7.5YR 8/4) nannofossil ooze layers approximately 1 cm thick in Section 6.

* This core is slightly deformed throughout.

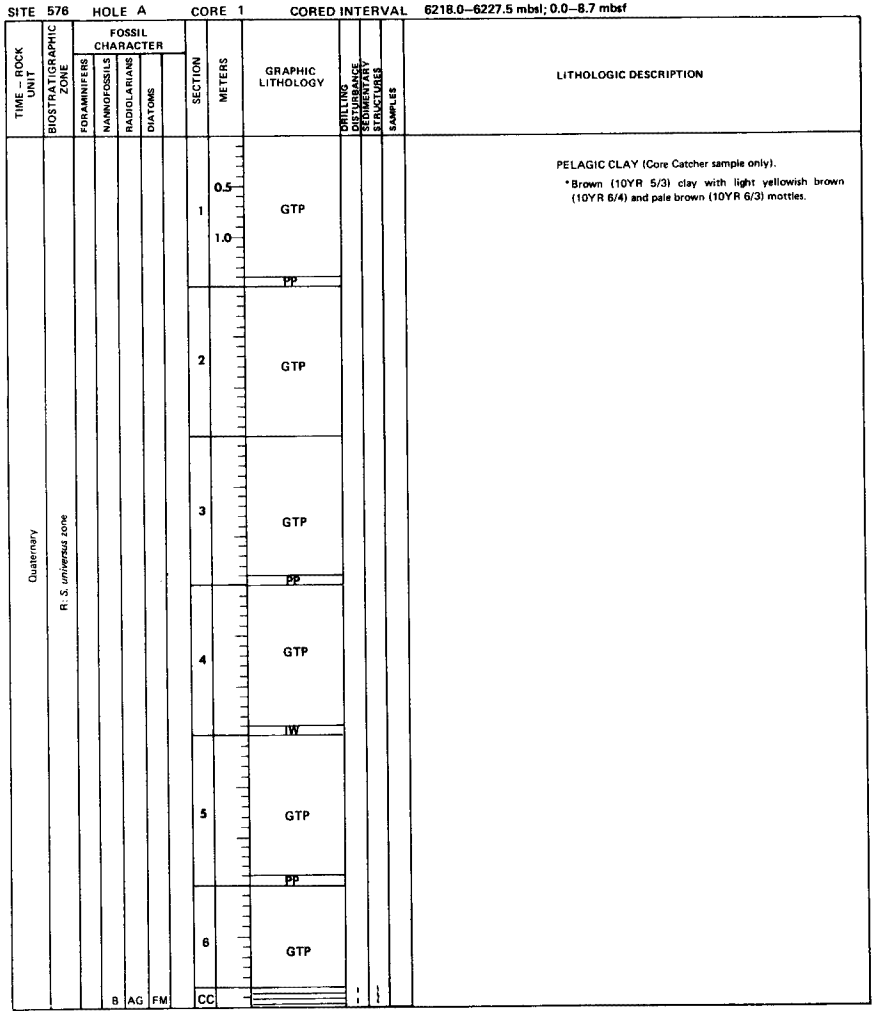
* This core consists of interbedded dark brown pelagic clay with either gradational or sharp basal contacts and lighter-colored nannofossil ooze layers with sharp basal contacts. Much of the core is bioturbated. Several of the nannofossil ooze layers are normally graded. The base of the nannofossil ooze layer in Section 6 is crossbedded.

SMEAR SLIDE SUMMARY (%):

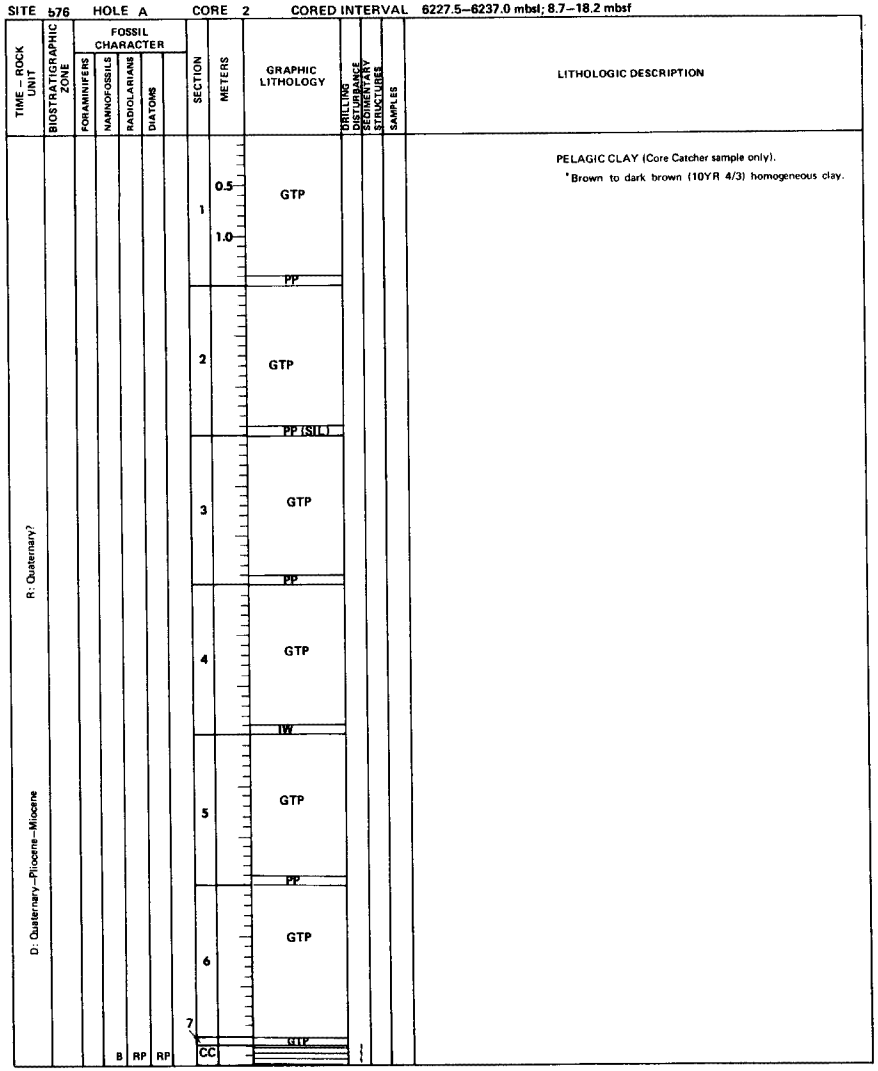
	1, 110 D	1, 138 D	2, 13 D	2, 30 D	2, 50 D	3, 40 D
Texture:						
Sand	0	0	Tr	Tr	0	Tr
Silt	3	2	2	5	1	2
Clay	97	98	98	95	99	98
Composition:						
Quartz	Tr	Tr	Tr	Tr	Tr	–
Feldspar	Tr	Tr	–	–	–	–
Mica	–	–	–	Tr	–	–
Clay	94	–	5	94	4	2
Volcanic glass	3	1	1	2	Tr	1
Micronodules	1	1	1	1	Tr	Tr
Foraminifers	–	–	Tr	–	Tr	Tr
Calc. nannofossils	–	97	92	–	95	96
Opaques	2	1	1	3	1	1

	4, 13 D	6, 40 D	6, 64 D	6, 73 D	6, 84 D
Texture:					
Sand	1	1	15	15	Tr
Silt	5	1	2	5	3
Clay	94	98	83	80	97
Composition:					
Quartz	Tr	–	–	–	Tr
Feldspar	Tr	–	–	–	–
Clay	1	1	–	2	95
Volcanic glass	3	1	2	5	2
Micronodules	Tr	Tr	Tr	–	Tr
Foraminifers	–	1	15	15	–
Calc. nannofossils	96	97	83	78	1
Fish remains	–	–	–	Tr	–
Opaques	–	–	Tr	–	2

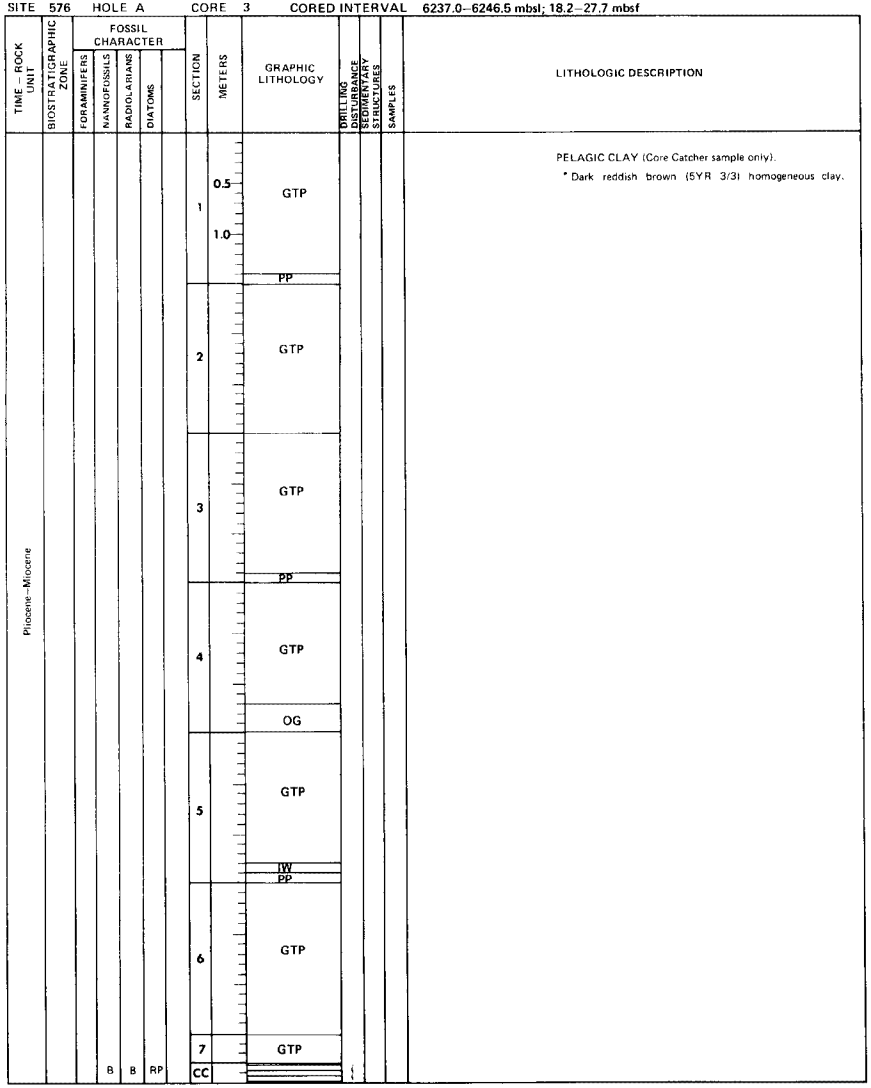
SITE 576 HOLE A CORE 1 CORED INTERVAL 6218.0–6227.5 mbsl; 0.0–8.7 mbsf



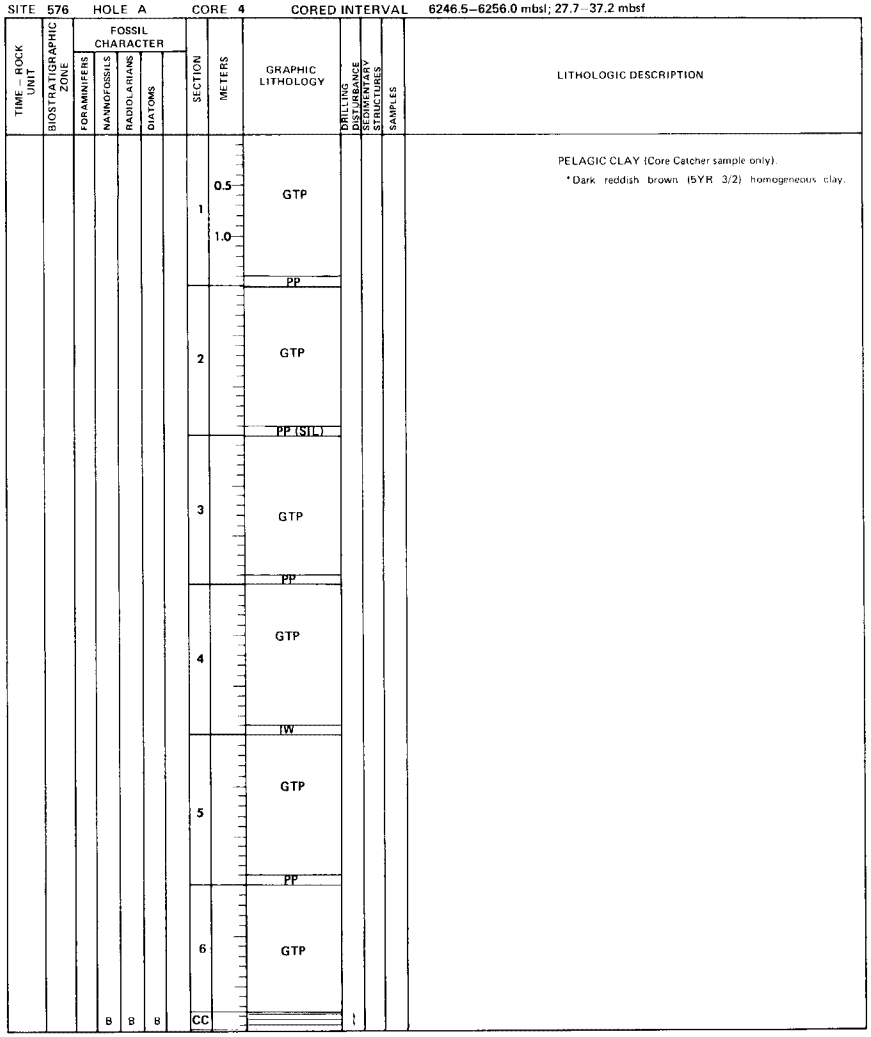
SITE 576 HOLE A CORE 2 CORED INTERVAL 6227.5–6237.0 mbsl; 8.7–18.2 mbsf



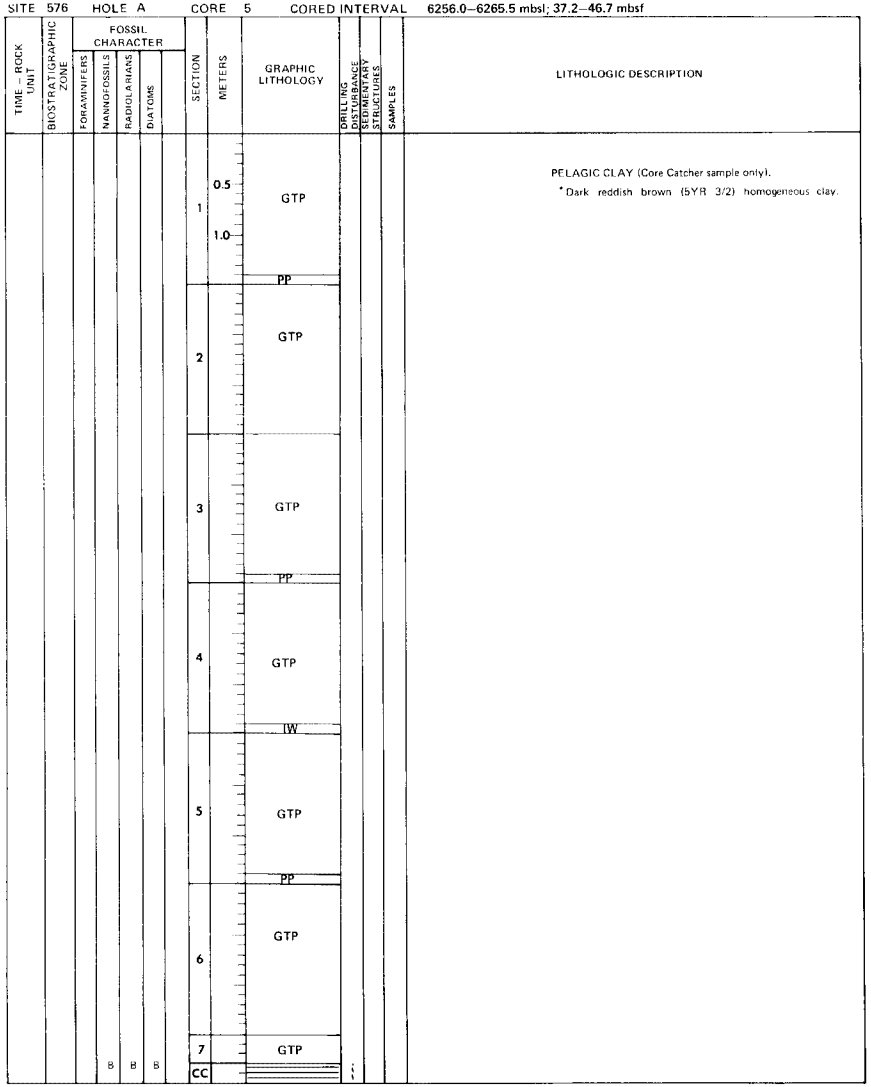
SITE 576 HOLE A CORE 3 CORED INTERVAL 6237.0–6246.5 mbsl; 18.2–27.7 mbsf



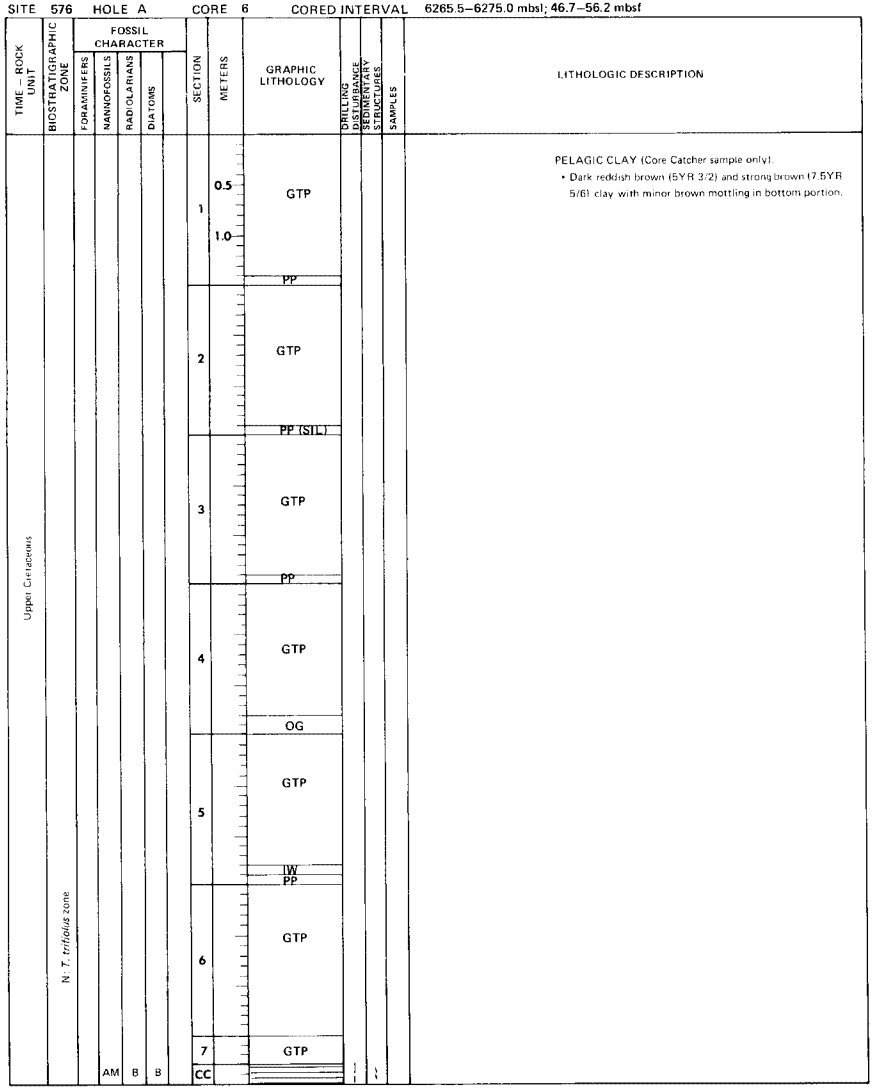
SITE 576 HOLE A CORE 4 CORED INTERVAL 6246.5–6256.0 mbsl; 27.7–37.2 mbsf



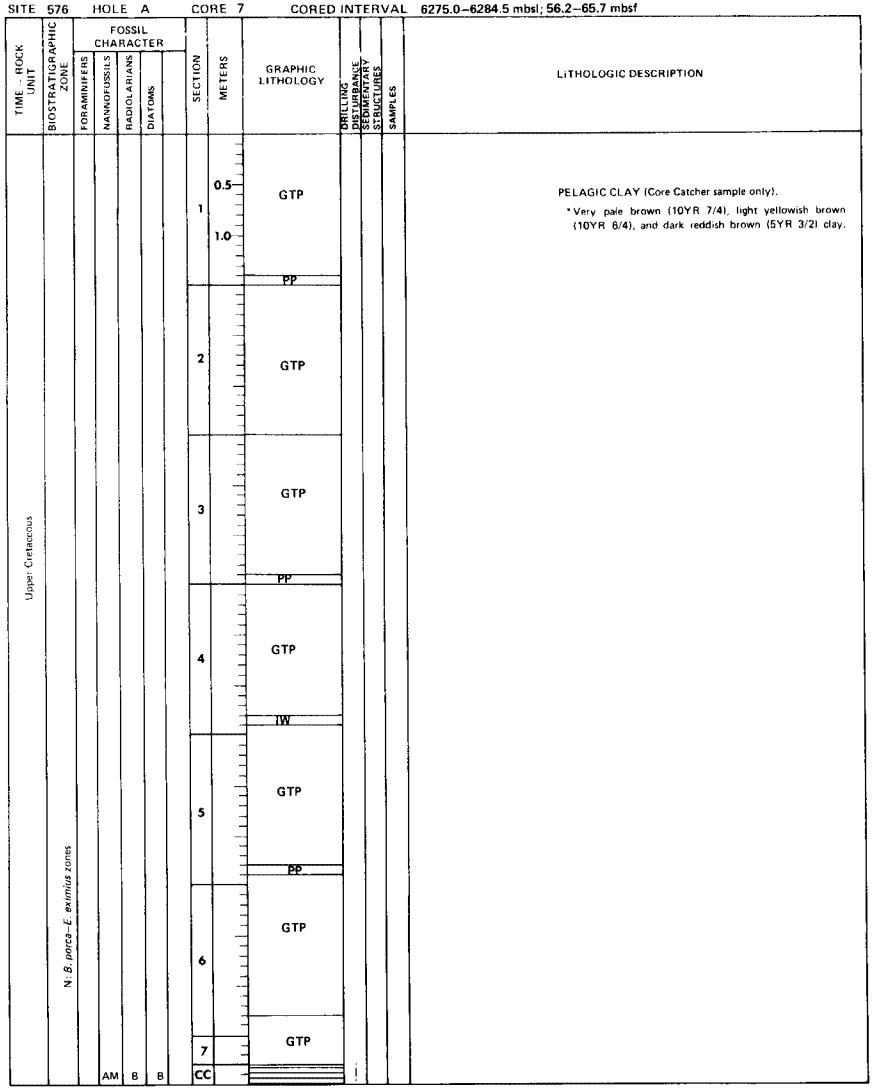
SITE 576 HOLE A CORE 5 CORED INTERVAL 6256.0–6265.5 mbsl; 37.2–46.7 mbsf



SITE 576 HOLE A CORE 6 CORED INTERVAL 6265.5–6275.0 mbsl; 46.7–56.2 mbsf



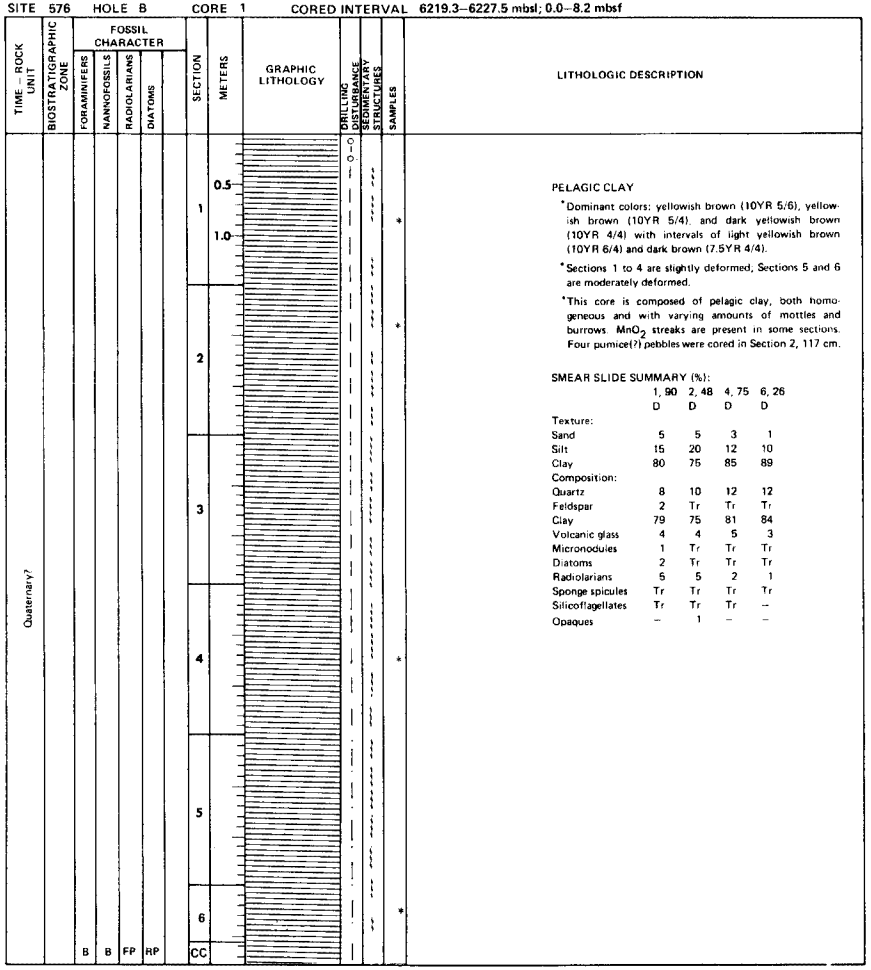
SITE 576 HOLE A CORE 7 CORED INTERVAL 6275.0–6284.5 mbsl; 56.2–65.7 mbsf



PELAGIC CLAY (Core Catcher sample only).

*Very pale brown (10YR 7/4), light yellowish brown (10YR 6/4), and dark reddish brown (5YR 3/2) clay.

SITE 576 HOLE B CORE 1 CORED INTERVAL 6219.3–6227.5 mbsl; 0.0–8.2 mbsf



PELAGIC CLAY

*Dominant colors: yellowish brown (10YR 5/6), yellowish brown (10YR 5/4), and dark yellowish brown (10YR 4/4) with intervals of light yellowish brown (10YR 6/4) and dark brown (7.5YR 4/4).

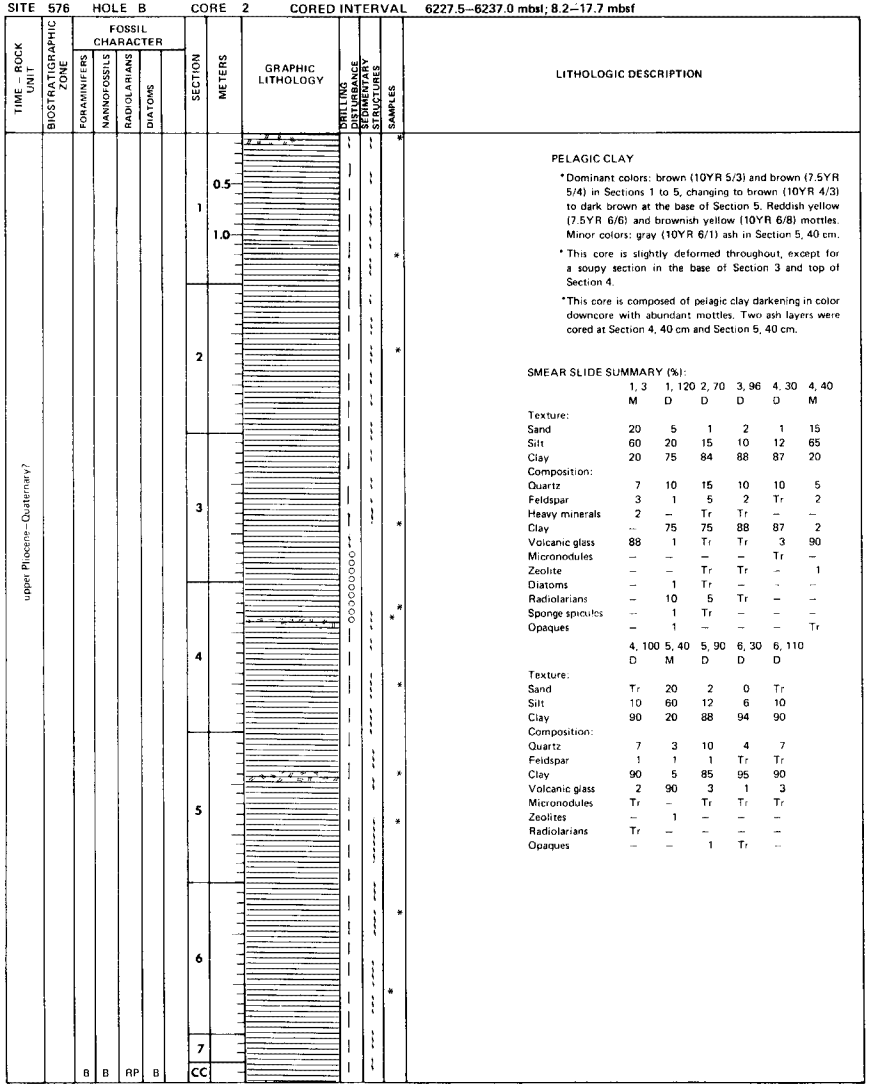
*Sections 1 to 4 are slightly deformed; Sections 5 and 6 are moderately deformed.

*This core is composed of pelagic clay, both homogeneous and with varying amounts of mottles and burrows. MnO_2 streaks are present in some sections. Four pumice(?) pebbles were cored in Section 2, 117 cm.

SMEAR SLIDE SUMMARY (%):

	1, 90 D	2, 48 D	4, 75 D	6, 26 D
Texture:				
Sand	5	5	3	1
Silt	15	20	12	10
Clay	80	75	85	89
Composition:				
Quartz	8	10	12	12
Feldspar	2	Tr	Tr	Tr
Clay	79	75	81	84
Volcanic glass	4	4	5	3
Micronodules	1	Tr	Tr	Tr
Diatoms	2	Tr	Tr	Tr
Radiolarians	5	5	2	1
Sponge spicules	Tr	Tr	Tr	Tr
Silicoflagellates	Tr	Tr	Tr	–
Opaques	–	1	–	–

SITE 576 HOLE B CORE 2 CORED INTERVAL 6227.5–6237.0 mbsl; 8.2–17.7 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAY

*Dominant colors: brown (10YR 5/3) and brown (7.5YR 5/4) in Sections 1 to 5, changing to brown (10YR 4/3) to dark brown at the base of Section 5. Reddish yellow (7.5YR 6/6) and brownish yellow (10YR 6/8) mottles. Minor colors: gray (10YR 6/1) ash in Section 5, 40 cm.

*This core is slightly deformed throughout, except for a soupy section in the base of Section 3 and top of Section 4.

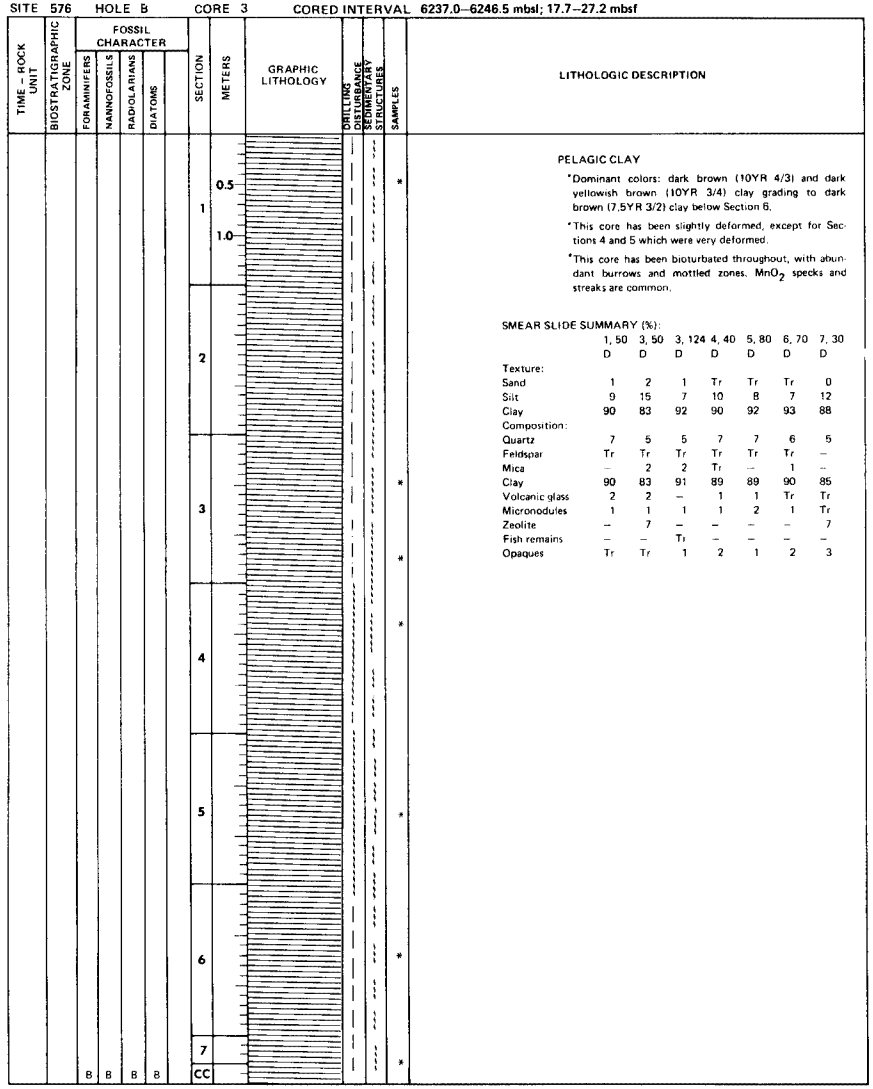
*This core is composed of pelagic clay darkening in color downcore with abundant mottles. Two ash layers were cored at Section 4, 40 cm and Section 5, 40 cm.

SMEAR SLIDE SUMMARY (%):

	1, 3 M	1, 120 D	2, 70 D	3, 96 D	4, 30 D	4, 40 M
Texture:						
Sand	20	5	1	2	1	15
Silt	60	20	15	10	12	65
Clay	20	75	84	88	87	20
Composition:						
Quartz	7	10	15	10	10	5
Feldspar	3	1	5	2	Tr	2
Heavy minerals	2	–	Tr	Tr	–	–
Clay	–	75	75	88	87	2
Volcanic glass	88	1	Tr	Tr	3	90
Micronodules	–	–	–	–	Tr	–
Zeolite	–	–	Tr	Tr	–	1
Diatoms	–	1	Tr	–	–	–
Radiolarians	–	10	5	Tr	–	–
Sponge spicules	–	1	Tr	–	–	–
Opaques	–	1	–	–	–	Tr

	4, 100 D	5, 40 M	5, 90 D	6, 30 D	6, 110 D
Texture:					
Sand	Tr	20	2	0	Tr
Silt	10	60	12	6	10
Clay	90	20	88	94	90
Composition:					
Quartz	7	3	10	4	7
Feldspar	1	1	1	Tr	Tr
Clay	90	5	85	95	90
Volcanic glass	2	90	3	1	3
Micronodules	Tr	–	Tr	Tr	Tr
Zeolites	–	1	–	–	–
Radiolarians	Tr	–	–	–	–
Opaques	–	–	1	Tr	–

SITE 576 HOLE B CORE 3 CORED INTERVAL 6237.0–6246.5 mbsl; 17.7–27.2 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAY

*Dominant colors: dark brown (10YR 4/3) and dark yellowish brown (10YR 3/4) clay grading to dark brown (7.5YR 3/2) clay below Section 6.

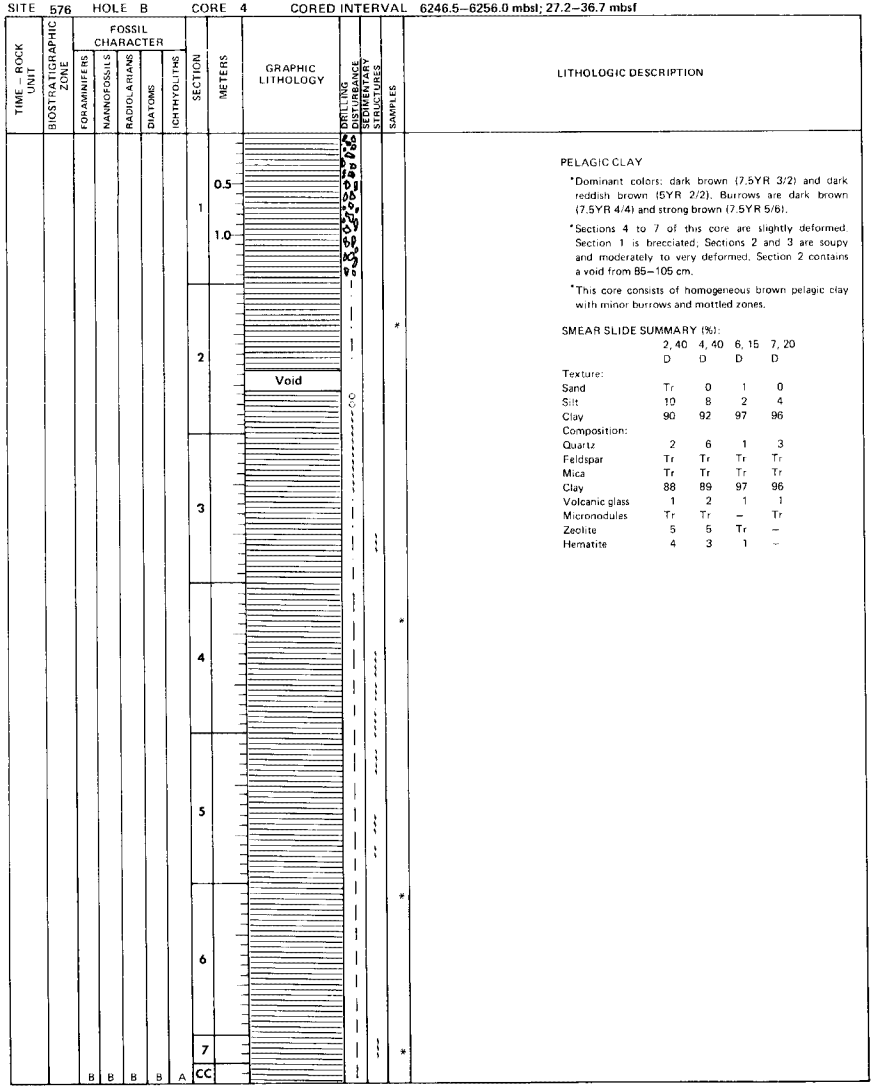
*This core has been slightly deformed, except for Sections 4 and 5 which were very deformed.

*This core has been bioturbated throughout, with abundant burrows and mottled zones. MnO_2 specks and streaks are common.

SMEAR SLIDE SUMMARY (%):

	1, 50 D	3, 50 D	3, 124 D	4, 40 D	5, 80 D	6, 70 D	7, 30 D
Texture:							
Sand	1	2	1	Tr	Tr	Tr	0
Silt	9	15	7	10	8	7	12
Clay	90	83	92	90	92	93	88
Composition:							
Quartz	7	5	5	7	7	6	5
Feldspar	Tr	Tr	Tr	Tr	Tr	Tr	–
Mica	–	2	2	Tr	–	1	–
Clay	90	83	91	89	89	90	85
Volcanic glass	2	2	–	1	1	Tr	Tr
Micronodules	1	1	1	1	2	1	Tr
Zeolite	–	7	–	–	–	–	7
Fish remains	–	–	Tr	–	–	–	–
Opaques	Tr	Tr	1	2	1	2	3

SITE 576 HOLE B CORE 4 CORED INTERVAL 6246.5–6256.0 mbsl; 27.2–36.7 mbsf



PELAGIC CLAY

*Dominant colors: dark brown (7.5YR 3/2) and dark reddish brown (5YR 2/2). Burrows are dark brown (7.5YR 4/4) and strong brown (7.5YR 5/6).

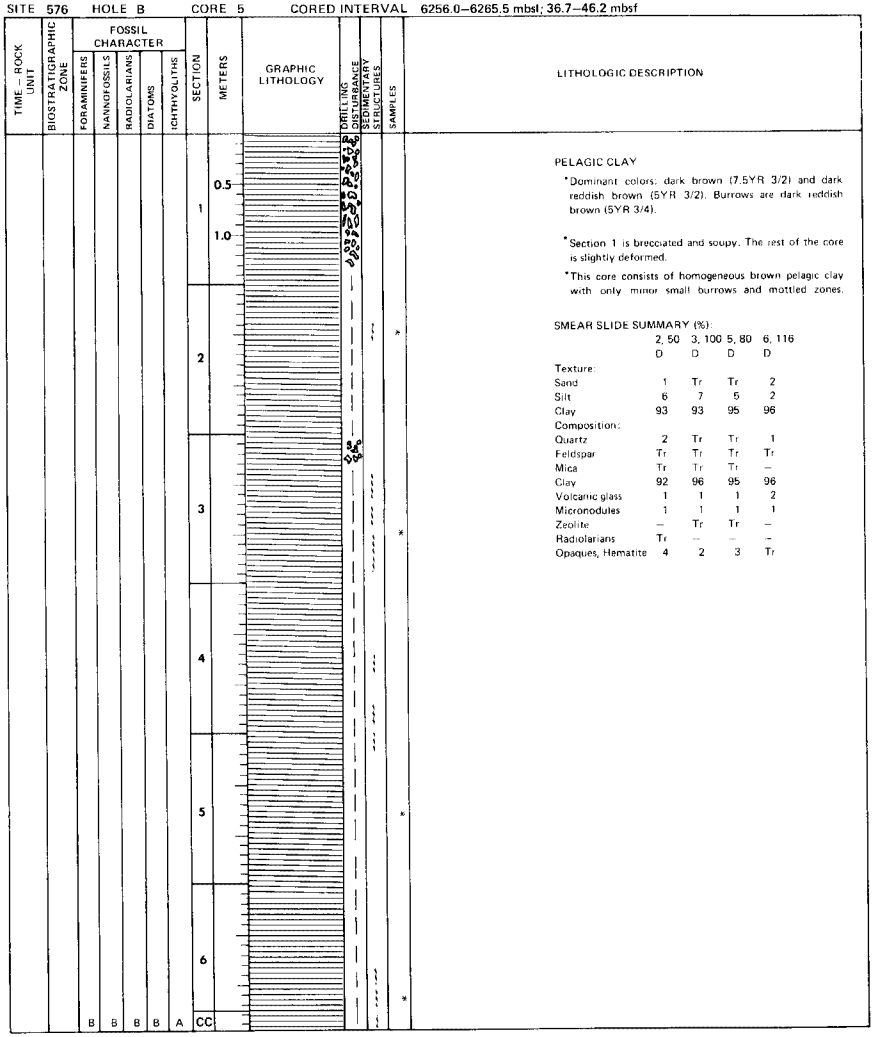
*Sections 4 to 7 of this core are slightly deformed. Section 1 is brecciated; Sections 2 and 3 are soupy and moderately to very deformed. Section 2 contains a void from 85–105 cm.

*This core consists of homogeneous brown pelagic clay with minor burrows and mottled zones.

SMEAR SLIDE SUMMARY (%):

	2, 40 D	4, 40 D	6, 15 D	7, 20 D
Texture:				
Sand	Tr	0	1	0
Silt	10	8	2	4
Clay	90	92	97	96
Composition:				
Quartz	2	6	1	3
Feldspar	Tr	Tr	Tr	Tr
Mica	Tr	Tr	Tr	Tr
Clay	88	89	97	96
Volcanic glass	1	2	1	1
Micronodules	Tr	Tr	–	Tr
Zeolite	5	5	Tr	–
Hematite	4	3	1	–

SITE 576 HOLE B CORE 5 CORED INTERVAL 6256.0–6265.5 mbsl; 36.7–46.2 mbsf



PELAGIC CLAY

*Dominant colors: dark brown (7.5YR 3/2) and dark reddish brown (5YR 3/2). Burrows are dark reddish brown (5YR 3/4).

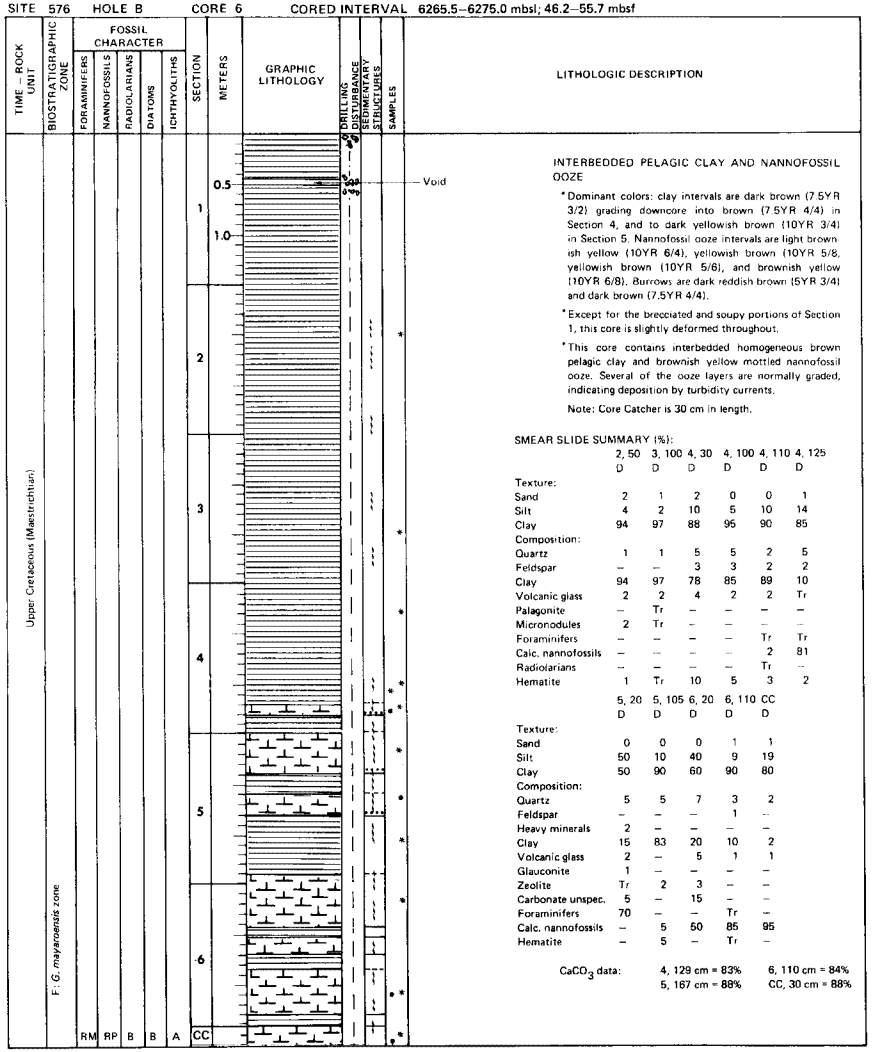
*Section 1 is brecciated and soupy. The rest of the core is slightly deformed.

*This core consists of homogeneous brown pelagic clay with only minor small burrows and mottled zones.

SMEAR SLIDE SUMMARY (%):

	2, 50 D	3, 100 D	5, 80 D	6, 116 D
Texture:				
Sand	1	Tr	Tr	2
Silt	6	7	5	2
Clay	93	93	95	96
Composition:				
Quartz	2	Tr	Tr	1
Feldspar	Tr	Tr	Tr	Tr
Mica	Tr	Tr	Tr	–
Clay	92	96	95	96
Volcanic glass	1	1	1	2
Micronodules	1	1	1	1
Zeolite	–	Tr	Tr	–
Radiolarians	Tr	–	–	–
Opaques, Hematite	4	2	3	Tr

SITE 576 HOLE B CORE 6 CORED INTERVAL 6265.5–6275.0 mbsl; 46.2–55.7 mbsf



LITHOLOGIC DESCRIPTION

INTERBEDDED PELAGIC CLAY AND NANNOFOSSIL OOZE

* Dominant colors: clay intervals are dark brown (7.5YR 3/2) grading downcore into brown (7.5YR 4/4) in Section 4, and to dark yellowish brown (10YR 3/4) in Section 5. Nannofossil ooze intervals are light brownish yellow (10YR 6/4), yellowish brown (10YR 5/8, yellowish brown (10YR 5/6), and brownish yellow (10YR 6/8). Burrows are dark reddish brown (5YR 3/4) and dark brown (7.5YR 4/4).

* Except for the brecciated and soupy portions of Section 1, this core is slightly deformed throughout.

* This core contains interbedded homogeneous brown pelagic clay and brownish yellow mottled nannofossil ooze. Several of the ooze layers are normally graded, indicating deposition by turbidity currents.

Note: Core Catcher is 30 cm in length.

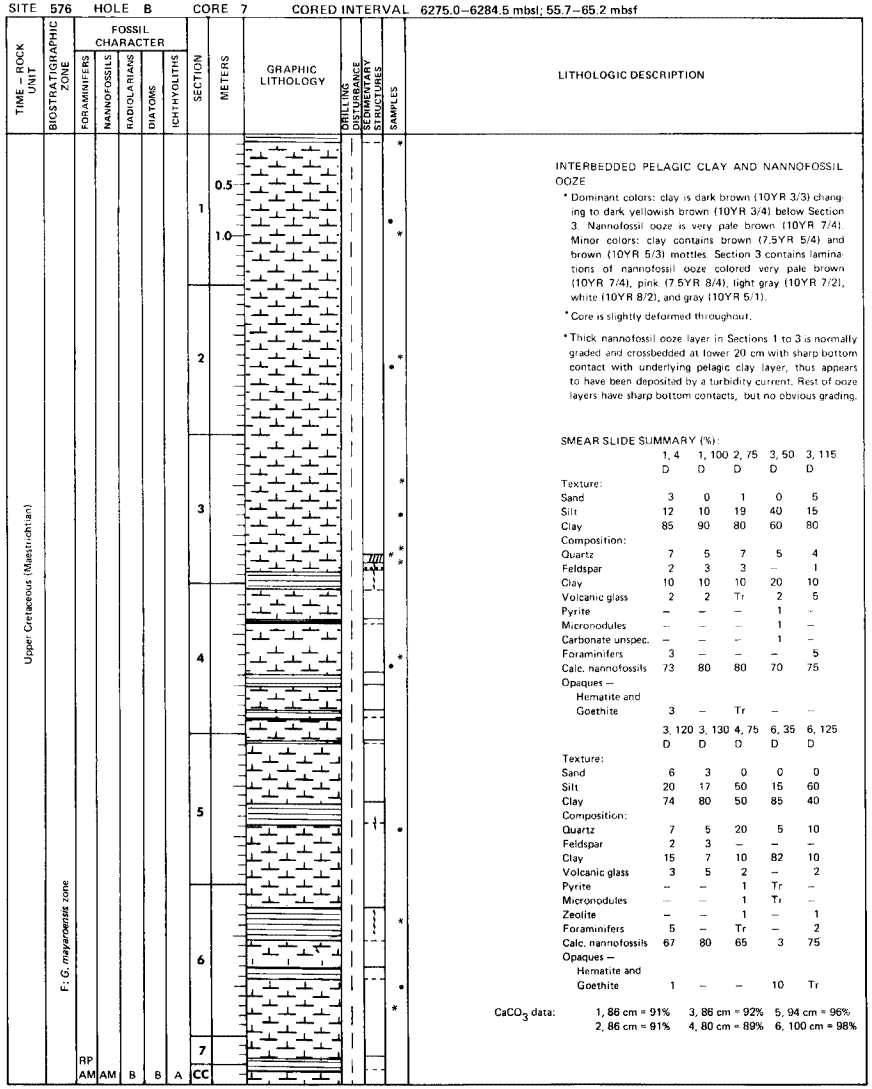
SMEAR SLIDE SUMMARY (%):

	2, 50 D	3, 100 D	4, 30 D	4, 100 D	4, 110 D	4, 125 D
Texture:						
Sand	2	1	2	0	0	1
Silt	4	2	10	5	10	14
Clay	94	97	88	95	90	85
Composition:						
Quartz	1	1	5	5	2	5
Feldspar	–	–	3	3	2	2
Clay	94	97	78	85	89	10
Volcanic glass	2	2	4	2	2	Tr
Palagonite	–	Tr	–	–	–	–
Micronodules	2	Tr	–	–	–	–
Foraminifers	–	–	–	–	Tr	Tr
Calc. nannofossils	–	–	–	–	2	81
Radiolarians	–	–	–	–	Tr	–
Hematite	1	Tr	10	5	3	2

	5, 20 D	5, 105 D	6, 20 D	6, 110 D	CC D
Texture:					
Sand	0	0	0	1	1
Silt	50	10	40	9	19
Clay	50	90	60	90	80
Composition:					
Quartz	5	5	7	3	2
Feldspar	–	–	–	1	–
Heavy minerals	2	–	–	–	–
Clay	15	83	20	10	2
Volcanic glass	2	–	5	1	1
Glauconite	1	–	–	–	–
Zeolite	Tr	2	3	–	–
Carbonate unspec.	5	–	15	–	–
Foraminifers	70	–	–	Tr	–
Calc. nannofossils	–	5	50	85	95
Hematite	–	5	–	Tr	–

$CaCO_3$ data: 4, 129 cm = 83% 6, 110 cm = 84%
5, 167 cm = 88% CC, 30 cm = 88%

SITE 576 HOLE B CORE 7 CORED INTERVAL 6275.0–6284.5 mbsl; 55.7–65.2 mbsf



LITHOLOGIC DESCRIPTION

INTERBEDDED PELAGIC CLAY AND NANNOFOSSIL OOZE

* Dominant colors: clay is dark brown (10YR 3/3) changing to dark yellowish brown (10YR 3/4) below Section 3. Nannofossil ooze is very pale brown (10YR 7/4). Minor colors: clay contains brown (7.5YR 5/4) and brown (10YR 5/3) mottles. Section 3 contains laminations of nannofossil ooze colored very pale brown (10YR 7/4), pink (7.5YR 8/4), light gray (10YR 7/2), white (10YR 8/2), and gray (10YR 5/1).

* Core is slightly deformed throughout.

* Thick nannofossil ooze layer in Sections 1 to 3 is normally graded and crossbedded at lower 20 cm with sharp bottom contact with underlying pelagic clay layer, thus appears to have been deposited by a turbidity current. Rest of ooze layers have sharp bottom contacts, but no obvious grading.

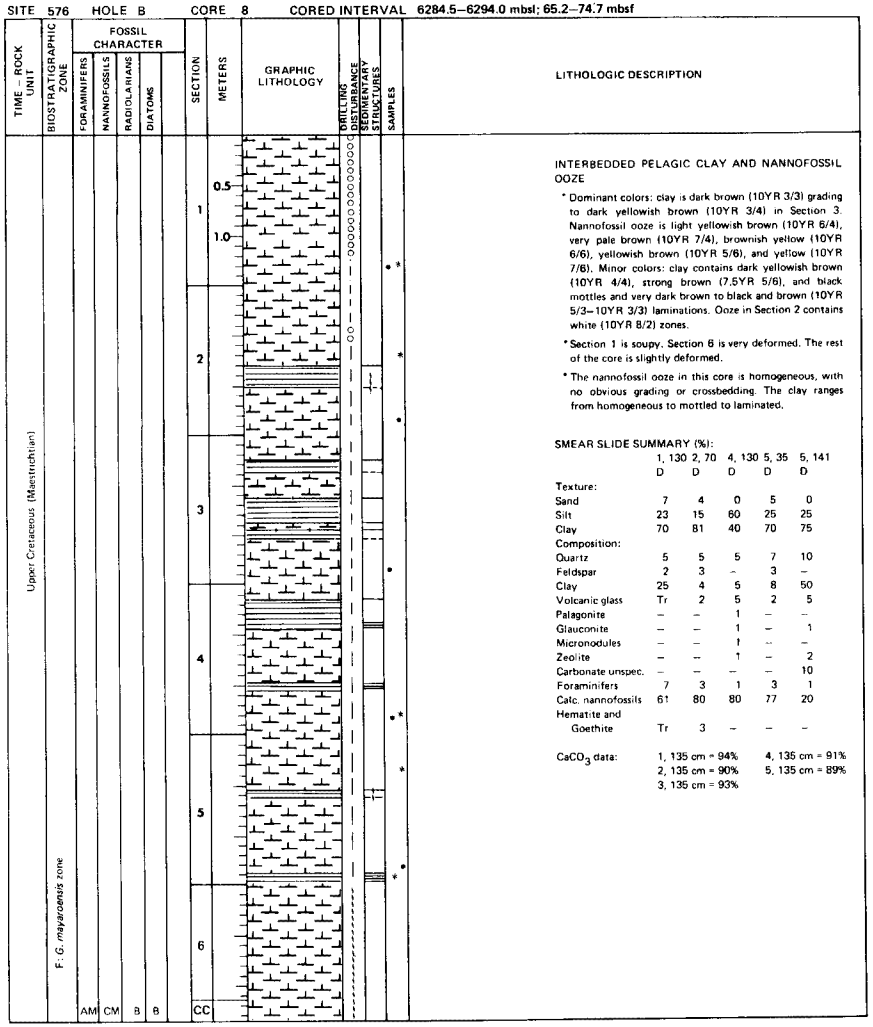
SMEAR SLIDE SUMMARY (%):

	1, 4 D	1, 100 D	2, 75 D	3, 50 D	3, 115 D
Texture:					
Sand	3	0	1	0	5
Silt	12	10	19	40	15
Clay	85	90	80	60	80
Composition:					
Quartz	7	5	7	5	4
Feldspar	2	3	3	–	1
Clay	10	10	10	20	10
Volcanic glass	2	2	Tr	2	5
Pyrite	–	–	–	1	–
Micronodules	–	–	–	1	–
Carbonate unspec.	–	–	–	1	–
Foraminifers	3	–	–	–	5
Calc. nannofossils	73	80	80	70	75
Opaques – Hematite and Goethite	3	–	Tr	–	–

	3, 120 D	3, 130 D	4, 75 D	6, 35 D	6, 125 D
Texture:					
Sand	6	3	0	0	0
Silt	20	17	50	15	60
Clay	74	80	50	85	40
Composition:					
Quartz	7	5	20	5	10
Feldspar	2	3	–	–	–
Clay	15	7	10	82	10
Volcanic glass	3	5	2	–	2
Pyrite	–	–	1	Tr	–
Micronodules	–	–	1	Tr	–
Zeolite	–	–	1	–	1
Foraminifers	5	–	Tr	–	2
Calc. nannofossils	67	80	65	3	75
Opaques – Hematite and Goethite	1	–	–	10	Tr

$CaCO_3$ data: 1, 86 cm = 91% 3, 86 cm = 92% 5, 94 cm = 96%
2, 86 cm = 91% 4, 80 cm = 89% 6, 100 cm = 98%

SITE 576 HOLE B CORE 8 CORED INTERVAL 6284.5–6294.0 mbsl; 65.2–74.7 mbsf



LITHOLOGIC DESCRIPTION

INTERBEDDED PELAGIC CLAY AND NANNOFOSSIL OOZE

* Dominant colors: clay is dark brown (10YR 3/3) grading to dark yellowish brown (10YR 3/4) in Section 3. Nannofossil ooze is light yellowish brown (10YR 6/4), very pale brown (10YR 7/4), brownish yellow (10YR 6/6), yellowish brown (10YR 5/6), and yellow (10YR 7/6). Minor colors: clay contains dark yellowish brown (10YR 4/4), strong brown (7.5YR 5/6), and black mottles and very dark brown to black and brown (10YR 5/3–10YR 3/3) laminations. Ooze in Section 2 contains white (10YR 8/2) zones.

* Section 1 is soupy. Section 6 is very deformed. The rest of the core is slightly deformed.

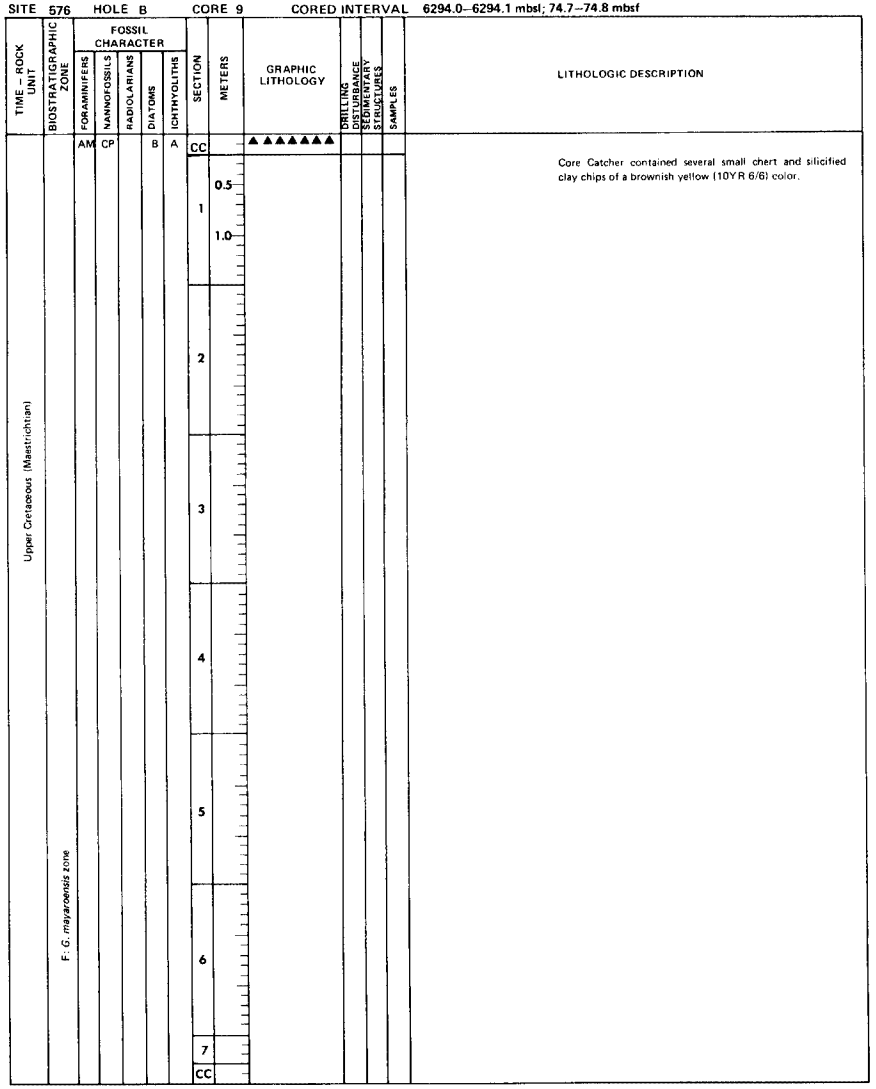
* The nannofossil ooze in this core is homogeneous, with no obvious grading or crossbedding. The clay ranges from homogeneous to mottled to laminated.

SMEAR SLIDE SUMMARY (%):

	1, 130 D	2, 70 D	4, 130 D	5, 35 D	5, 141 D
Texture:					
Sand	7	4	0	5	0
Silt	23	15	60	25	25
Clay	70	81	40	70	75
Composition:					
Quartz	5	5	5	7	10
Feldspar	2	3	–	3	–
Clay	25	4	5	8	50
Volcanic glass	Tr	2	5	2	5
Palagonite	–	–	1	–	–
Glauconite	–	–	1	–	1
Micronodules	–	–	1	–	–
Zeolite	–	–	1	–	2
Carbonate unspec.	–	–	–	–	10
Foraminifers	7	3	1	3	1
Calc. nannofossils	61	80	80	77	20
Hematite and Goethite	Tr	3	–	–	–

$CaCO_3$ data: 1, 135 cm = 94%; 2, 135 cm = 90%; 3, 135 cm = 93%; 4, 135 cm = 91%; 5, 135 cm = 89%

SITE 576 HOLE B CORE 9 CORED INTERVAL 6294.0–6294.1 mbsl; 74.7–74.8 mbsf



LITHOLOGIC DESCRIPTION

Core Catcher contained several small chert and silicified clay chips of a brownish yellow (10YR 6/6) color.

SITE 577

HOLES 577, 577A, 577B

Date Occupied: May 23, 1982 (577), May 24 (577A), May 25 (577B)

Date Departed: May 25, 1982

Time on Site: 2 days, 19 hours, 27 minutes

Position (latitude; longitude): 32°26.51'N; 157°43.40'E (577)
32°26.53'N; 157°43.39'E (577A)
32°26.48'N; 157°43.39'E (577B)

Water depth (sea level; corrected m, echo-sounding): 2675

Water depth (rig floor; corrected m, echo-sounding): 2685

Bottom felt (m, drill pipe): 2678.2 (577), 2677.6 (577A), 2782.0 (577B)

Penetration (m): 118.8 (577), 123.4 (577A), 113.9 (577B)

Number of cores: 13 (577), 13 (577A), 1 (577B)

Total length of cored section (m): 118.8 (577), 123.4 (577A), 9.5 (577B)

Total core recovered (m): 111.07 (577), 110.64 (577A), 9.63 (577B)

Core recovery (%): 93% (577), 90% (577A, 101% (577B)

Oldest sediment cored:

Depth sub-bottom (m): 123.4

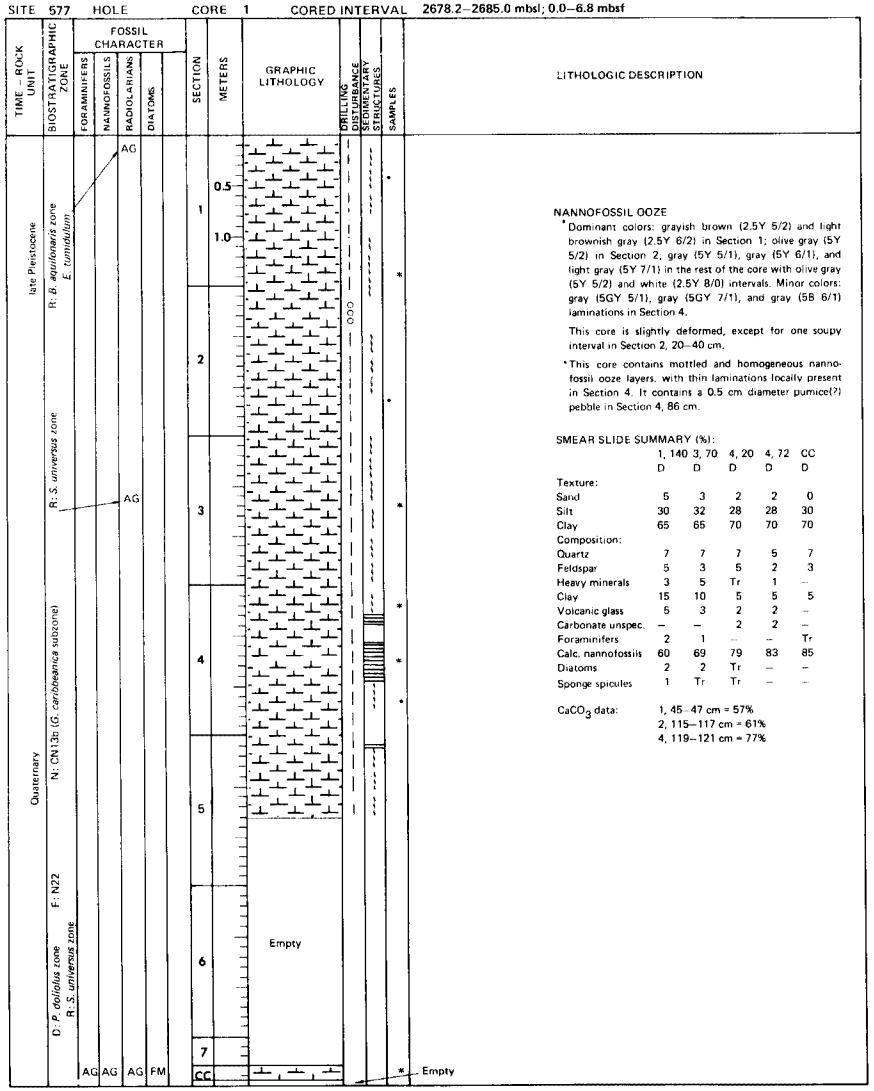
Nature: calcareous nannofossil ooze

Age: Cretaceous (Campanian/Maestrichtian)

Measured velocity (km/s): 1.52 km/s

Basement: Not reached

SITE 577 HOLE CORE 1 CORED INTERVAL 2678.2–2685.0 mbsl; 0.0–6.8 mbsl



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

- Dominant colors: grayish brown (2.5Y 5/2) and light brownish gray (2.5Y 6/2) in Section 1; olive gray (5Y 5/2) in Section 2; gray (5Y 5/1), gray (5Y 6/1), and light gray (5Y 7/1) in the rest of the core with olive gray (5Y 5/2) and white (2.5Y 8/0) intervals. Minor colors: gray (5GY 5/1), gray (5GY 7/1), and gray (5B 6/1) laminations in Section 4.

This core is slightly deformed, except for one soupy interval in Section 2, 20–40 cm.

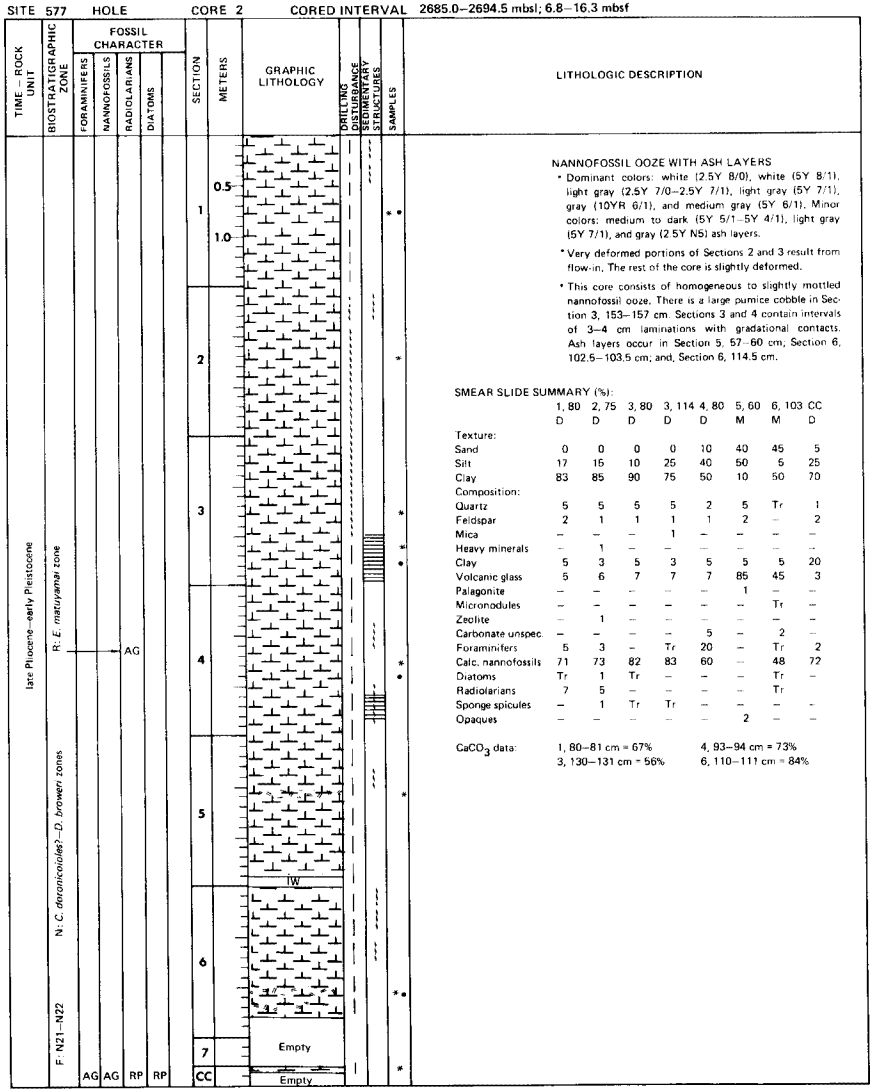
- This core contains mottled and homogeneous nannofossil ooze layers, with thin laminations locally present in Section 4. It contains a 0.5 cm diameter pumice(?) pebble in Section 4, 86 cm.

SMEAR SLIDE SUMMARY (%):

	1, 140 D	3, 70 D	4, 20 D	4, 72 D	CC D
Texture:					
Sand	5	3	2	2	0
Silt	30	32	28	28	30
Clay	65	65	70	70	70
Composition:					
Quartz	7	7	7	5	7
Feldspar	5	3	5	2	3
Heavy minerals	3	5	Tr	1	–
Clay	15	10	5	5	5
Volcanic glass	5	3	2	2	–
Carbonate unspec.	–	–	2	2	–
Foraminifers	2	1	–	–	Tr
Calc. nannofossils	60	69	79	83	85
Diatoms	2	2	Tr	–	–
Sponge spicules	1	Tr	Tr	–	–

$CaCO_3$ data: 1, 45–47 cm = 57%
2, 115–117 cm = 61%
4, 119–121 cm = 77%

SITE 577 HOLE CORE 2 CORED INTERVAL 2685.0–2694.5 mbsl; 6.8–16.3 mbsl



NANNOFOSSIL OOZE WITH ASH LAYERS

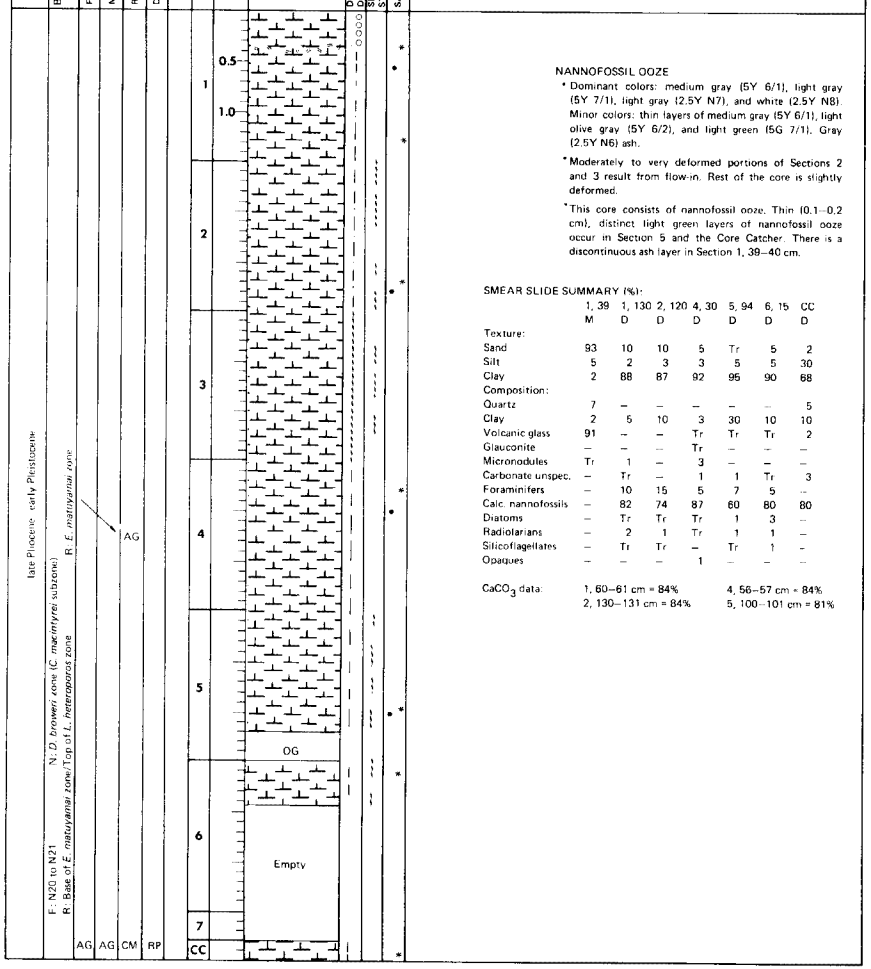
- Dominant colors: white (2.5Y 8/0), white (5Y 8/1), light gray (2.5Y 7/0–2.5Y 7/1), light gray (5Y 7/1), gray (10YR 6/1), and medium gray (5Y 6/1). Minor colors: medium to dark (5Y 5/1–5Y 4/1), light gray (5Y 7/1), and gray (2.5Y N5) ash layers.
- Very deformed portions of Sections 2 and 3 result from flow-in. The rest of the core is slightly deformed.
- This core consists of homogeneous to slightly mottled nannofossil ooze. There is a large pumice cobble in Section 3, 153–157 cm. Sections 3 and 4 contain intervals of 3–4 cm laminations with gradational contacts. Ash layers occur in Section 5, 57–60 cm; Section 6, 102.5–103.5 cm; and, Section 6, 114.5 cm.

SMEAR SLIDE SUMMARY (%):

	1, 80 D	2, 75 D	3, 80 D	3, 114 D	4, 80 D	5, 60 M	6, 103 M	CC D
Texture:								
Sand	0	0	0	0	10	40	45	5
Silt	17	15	10	25	40	50	5	25
Clay	83	85	90	75	50	10	50	70
Composition:								
Quartz	5	5	5	5	2	5	Tr	1
Feldspar	2	1	1	1	1	2	–	2
Mica	–	–	–	1	–	–	–	–
Heavy minerals	–	1	–	–	–	–	–	–
Clay	5	3	5	3	5	5	5	20
Volcanic glass	5	6	7	7	7	85	45	3
Palagonite	–	–	–	–	–	1	–	–
Micronodules	–	–	–	–	–	–	Tr	–
Zeolite	–	1	–	–	–	–	–	–
Carbonate unspec.	–	–	–	–	5	–	2	–
Foraminifers	5	3	–	Tr	20	–	Tr	2
Calc. nannofossils	71	73	82	83	60	–	48	72
Diatoms	Tr	1	Tr	–	–	–	Tr	–
Radiolarians	7	5	–	–	–	–	Tr	
Sponge spicules	–	1	Tr	Tr	–	–	–	–
Opaques	–	–	–	–	–	2	–	–

$CaCO_3$ data: 1, 80–81 cm = 67%
3, 130–131 cm = 56%
4, 93–94 cm = 73%
6, 110–111 cm = 84%

SITE 577 HOLE CORE 3 CORED INTERVAL 2694.5–2704.0 mbsl; 16.3–25.8 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

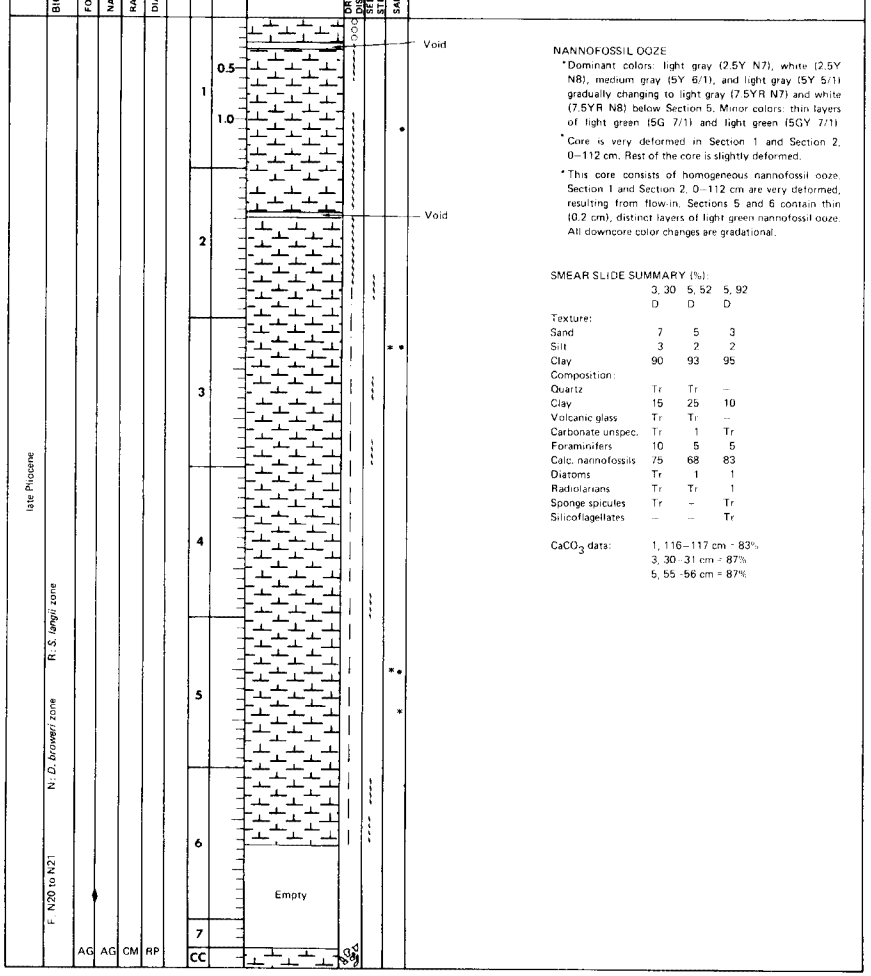
- Dominant colors: medium gray (5Y 6/1), light gray (5Y 7/1), light gray (2.5Y N7), and white (2.5Y N8). Minor colors: thin layers of medium gray (5Y 6/1), light olive gray (5Y 6/2), and light green (5G 7/1). Gray (2.5Y N6) ash.
- Moderately to very deformed portions of Sections 2 and 3 result from flow-in. Rest of the core is slightly deformed.
- This core consists of nannofossil ooze. Thin (0.1–0.2 cm), distinct light green layers of nannofossil ooze occur in Section 5 and the Core Catcher. There is a discontinuous ash layer in Section 1, 39–40 cm.

SMEAR SLIDE SUMMARY (%):

	1, 39 M	1, 130 D	2, 120 D	4, 30 D	5, 94 D	6, 15 D	CC D
Texture:							
Sand	93	10	10	5	Tr	5	2
Silt	5	2	3	3	5	5	30
Clay	2	88	87	92	95	90	68
Composition:							
Quartz	7	–	–	–	–	–	5
Clay	2	5	10	3	30	10	10
Volcanic glass	91	–	–	Tr	Tr	Tr	2
Glauconite	–	–	–	Tr	–	–	–
Micronodules	Tr	1	–	3	–	–	–
Carbonate unspec.	–	Tr	–	1	1	Tr	3
Foraminifers	–	10	15	5	7	5	–
Calc. nannofossils	–	82	74	87	60	80	80
Diatoms	–	Tr	Tr	Tr	1	3	–
Radiolarians	–	2	1	Tr	1	1	–
Silicoflagellates	–	Tr	Tr	–	Tr	1	–
Opaques	–	–	–	1	–	–	–

$CaCO_3$ data:
1, 60–61 cm = 84%
2, 130–131 cm = 84%
4, 56–57 cm = 84%
5, 100–101 cm = 81%

SITE 577 HOLE CORE 4 CORED INTERVAL 2704.0–2713.5 mbsl; 25.8–35.3 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

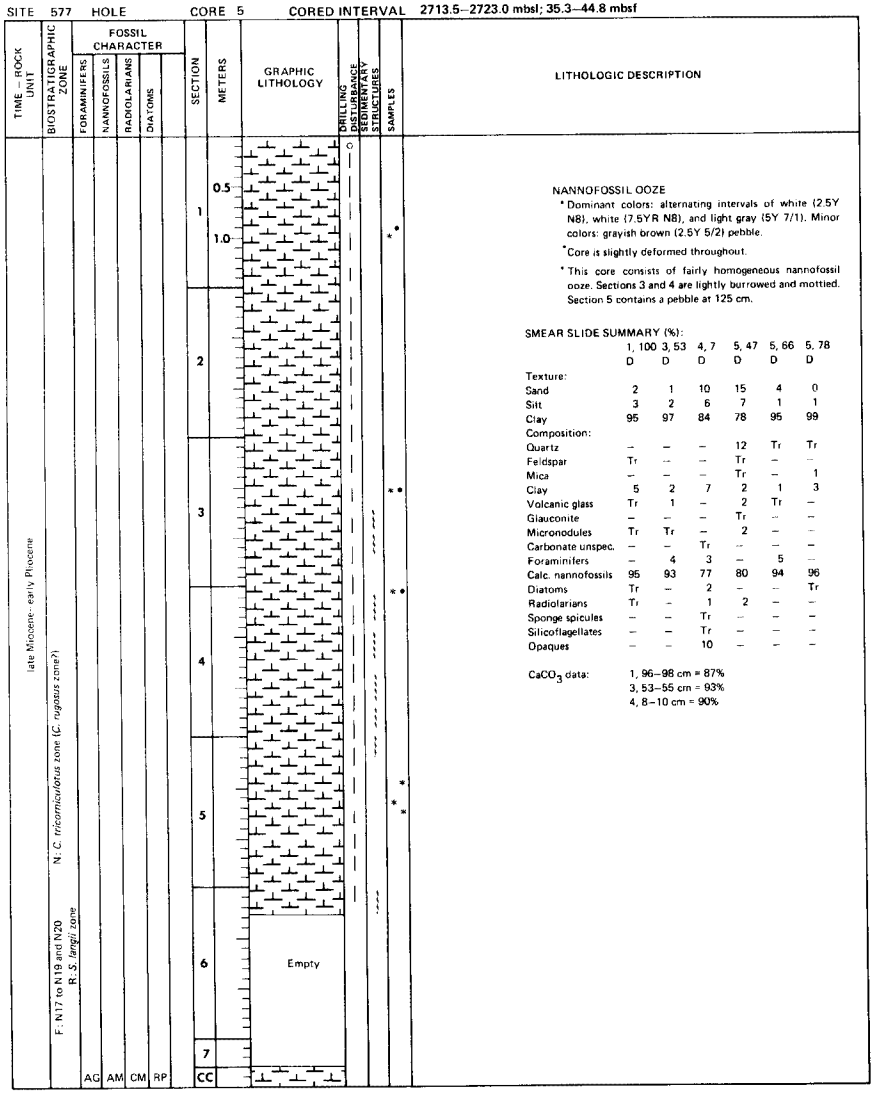
- Dominant colors: light gray (2.5Y N7), white (2.5Y N8), medium gray (5Y 6/1), and light gray (5Y 5/1) gradually changing to light gray (7.5YR N7) and white (7.5YR N8) below Section 5. Minor colors: thin layers of light green (5G 7/1) and light green (5GY 7/1).
- Core is very deformed in Section 1 and Section 2, 0–112 cm. Rest of the core is slightly deformed.
- This core consists of homogeneous nannofossil ooze. Section 1 and Section 2, 0–112 cm are very deformed, resulting from flow-in. Sections 5 and 6 contain thin (0.2 cm), distinct layers of light green nannofossil ooze. All downcore color changes are gradational.

SMEAR SLIDE SUMMARY (%):

	3, 30 D	5, 52 D	5, 92 D
Texture:			
Sand	7	5	3
Silt	3	2	2
Clay	90	93	95
Composition:			
Quartz	Tr	Tr	–
Clay	15	25	10
Volcanic glass	Tr	Tr	–
Carbonate unspec.	Tr	1	Tr
Foraminifers	10	5	5
Calc. nannofossils	75	68	83
Diatoms	Tr	1	1
Radiolarians	Tr	Tr	1
Sponge spicules	Tr	–	Tr
Silicoflagellates	–	–	Tr

$CaCO_3$ data:
1, 116–117 cm = 83%
3, 30–31 cm = 87%
5, 55–56 cm = 87%

SITE 577 HOLE CORE 5 CORED INTERVAL 2713.5–2723.0 mbsl; 35.3–44.8 mbsf



NANNOFOSSIL OOZE

* Dominant colors: alternating intervals of white (2.5Y N8), white (7.5YR N8), and light gray (5Y 7/1). Minor colors: grayish brown (2.5Y 5/2) pebble.

*Core is slightly deformed throughout.

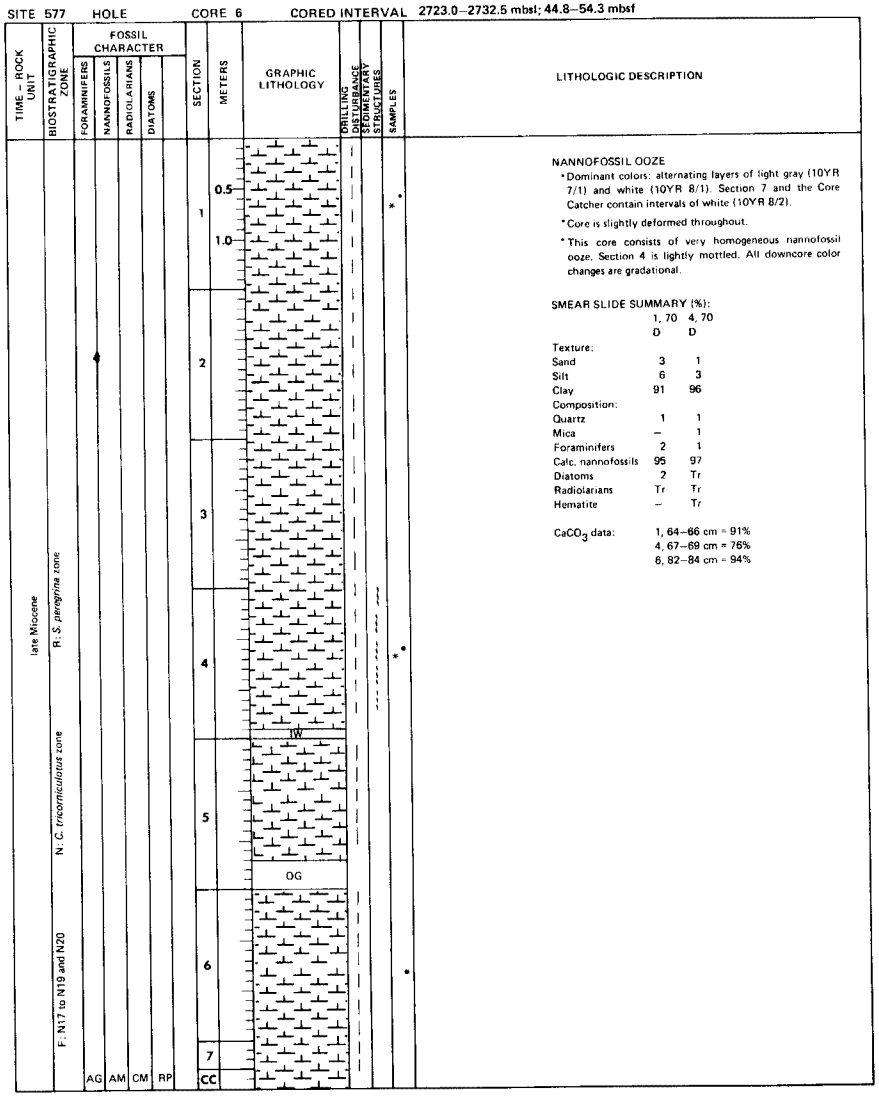
* This core consists of fairly homogeneous nannofossil ooze. Sections 3 and 4 are lightly burrowed and mottled. Section 5 contains a pebble at 125 cm.

SMEAR SLIDE SUMMARY (%):

	1, 100 D	3, 53 D	4, 7 D	5, 47 D	5, 66 D	5, 78 D
Texture:						
Sand	2	1	10	15	4	0
Silt	3	2	6	7	1	1
Clay	95	97	84	78	95	99
Composition:						
Quartz	–	–	–	12	Tr	Tr
Feldspar	Tr	–	–	Tr	–	–
Mica	–	–	–	Tr	–	1
Clay	5	2	7	2	1	3
Volcanic glass	Tr	1	–	2	Tr	–
Glauconite	–	–	–	Tr	–	–
Micronodules	Tr	Tr	–	2	–	–
Carbonate unspec.	–	–	Tr	–	–	–
Foraminifers	–	4	3	–	5	–
Calc. nannofossils	95	93	77	80	94	96
Diatoms	Tr	–	2	–	–	Tr
Radiolarians	Tr	–	1	2	–	–
Sponge spicules	–	–	Tr	–	–	–
Silicoflagellates	–	–	Tr	–	–	–
Opaques	–	–	10	–	–	–

$CaCO_3$ data: 1, 96–98 cm = 87%
3, 53–55 cm = 93%
4, 8–10 cm = 90%

SITE 577 HOLE CORE 6 CORED INTERVAL 2723.0–2732.5 mbsl; 44.8–54.3 mbsf



NANNOFOSSIL OOZE

* Dominant colors: alternating layers of light gray (10YR 7/1) and white (10YR 8/1). Section 7 and the Core Catcher contain intervals of white (10YR 8/2).

*Core is slightly deformed throughout.

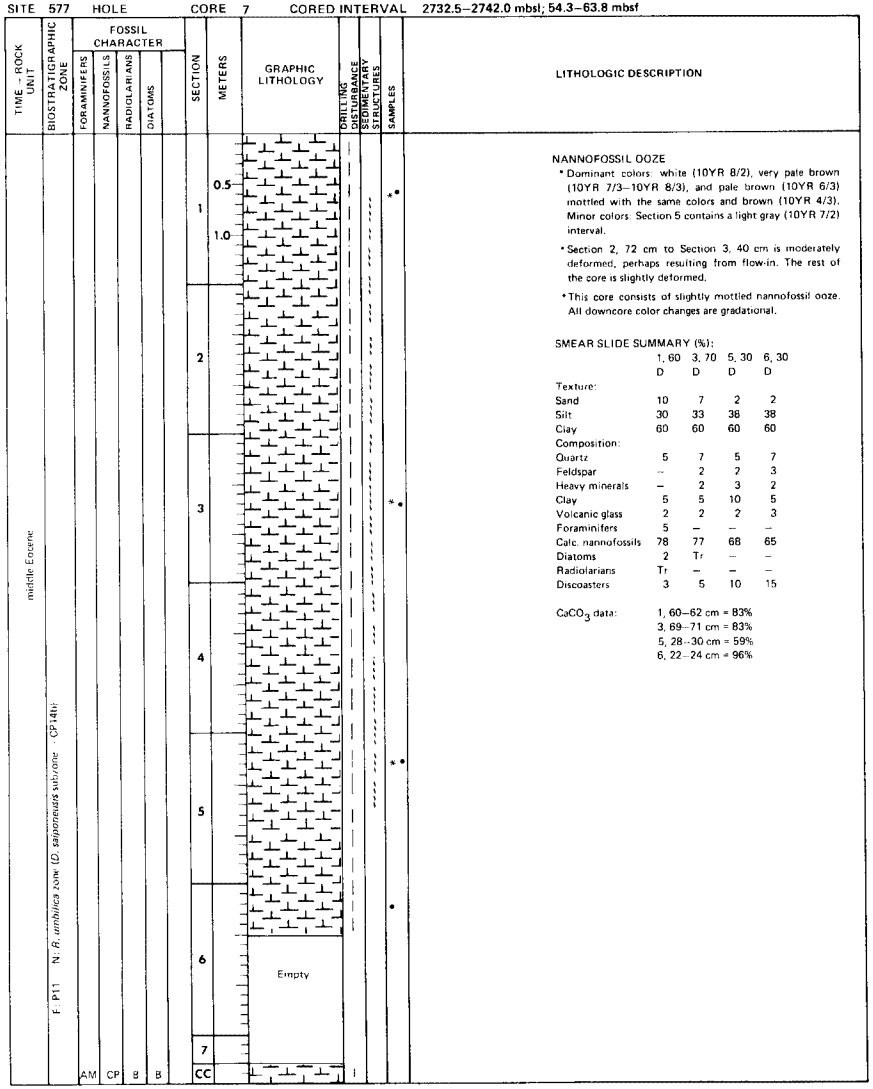
* This core consists of very homogeneous nannofossil ooze. Section 4 is lightly mottled. All downcore color changes are gradational.

SMEAR SLIDE SUMMARY (%):

	1, 70 D	4, 70 D
Texture:		
Sand	3	1
Silt	6	3
Clay	91	96
Composition:		
Quartz	1	1
Mica	–	1
Foraminifers	2	1
Calc. nannofossils	95	97
Diatoms	2	Tr
Radiolarians	Tr	Tr
Hematite	–	Tr

$CaCO_3$ data: 1, 64–66 cm = 91%
4, 67–69 cm = 76%
6, 82–84 cm = 94%

SITE 577 HOLE CORE 7 CORED INTERVAL 2732.5–2742.0 mbsl; 54.3–63.8 mbsf



NANNOFOSSIL OOZE

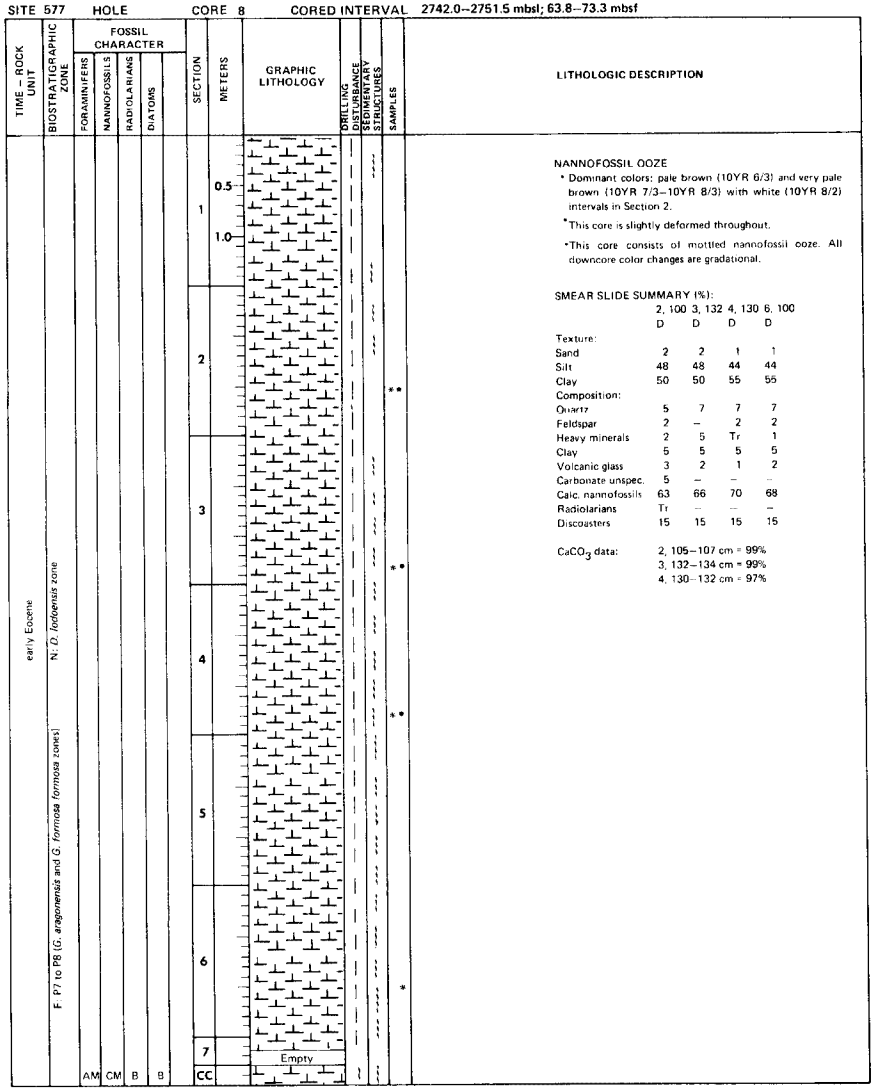
- Dominant colors: white (10YR 8/2), very pale brown (10YR 7/3–10YR 8/3), and pale brown (10YR 6/3) mottled with the same colors and brown (10YR 4/3). Minor colors: Section 5 contains a light gray (10YR 7/2) interval.
- Section 2, 72 cm to Section 3, 40 cm is moderately deformed, perhaps resulting from flow-in. The rest of the core is slightly deformed.
- This core consists of slightly mottled nannofossil ooze. All downcore color changes are gradational.

SMEAR SLIDE SUMMARY (%):

	1, 60 D	3, 70 D	5, 30 D	6, 30 D
Texture:				
Sand	10	7	2	2
Silt	30	33	38	38
Clay	60	60	60	60
Composition:				
Quartz	5	7	5	7
Feldspar	–	2	2	3
Heavy minerals	–	2	3	2
Clay	5	5	10	5
Volcanic glass	2	2	2	3
Foraminifers	5	–	–	–
Calc. nannofossils	78	77	68	65
Diatoms	2	Tr	–	–
Radiolarians	Tr	–	–	–
Discoasters	3	5	10	15

$CaCO_3$ data:
1, 60–62 cm = 83%
3, 69–71 cm = 83%
5, 28–30 cm = 59%
6, 22–24 cm = 96%

SITE 577 HOLE CORE 8 CORED INTERVAL 2742.0–2751.5 mbsl; 63.8–73.3 mbsf



NANNOFOSSIL OOZE

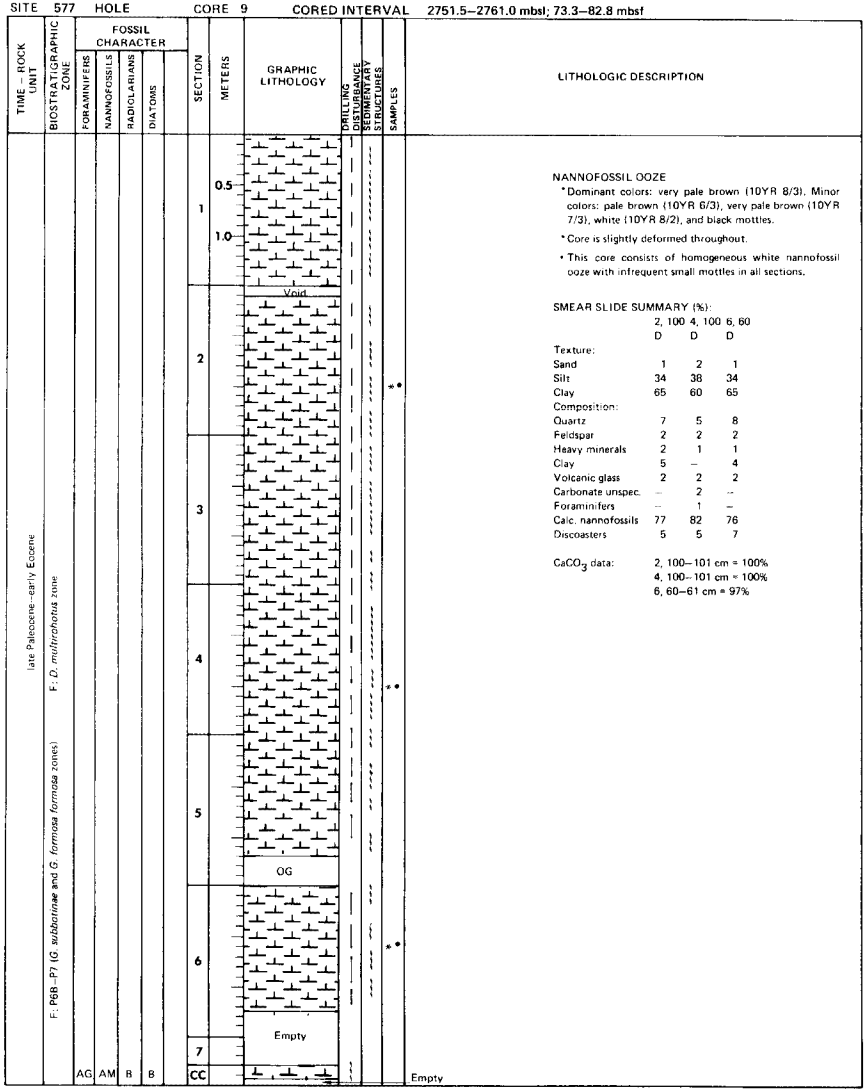
- Dominant colors: pale brown (10YR 6/3) and very pale brown (10YR 7/3–10YR 8/3) with white (10YR 8/2) intervals in Section 2.
- This core is slightly deformed throughout.
- This core consists of mottled nannofossil ooze. All downcore color changes are gradational.

SMEAR SLIDE SUMMARY (%):

	2, 100 D	3, 132 D	4, 130 D	6, 100 D
Texture:				
Sand	2	2	1	1
Silt	48	48	44	44
Clay	50	50	55	55
Composition:				
Quartz	5	7	7	7
Feldspar	2	–	2	2
Heavy minerals	2	5	Tr	1
Clay	5	5	5	5
Volcanic glass	3	2	1	2
Carbonate unspec.	5	–	–	–
Calc. nannofossils	63	66	70	68
Radiolarians	Tr	–	–	–
Discoasters	15	15	15	15

$CaCO_3$ data:
2, 105–107 cm = 99%
3, 132–134 cm = 99%
4, 130–132 cm = 97%

SITE 577 HOLE CORE 9 CORED INTERVAL 2751.5–2761.0 mbsl; 73.3–82.8 mbsf



NANNOFOSSIL OOZE

*Dominant colors: very pale brown (10YR 8/3). Minor colors: pale brown (10YR 6/3), very pale brown (10YR 7/3), white (10YR 8/2), and black mottles.

*Core is slightly deformed throughout.

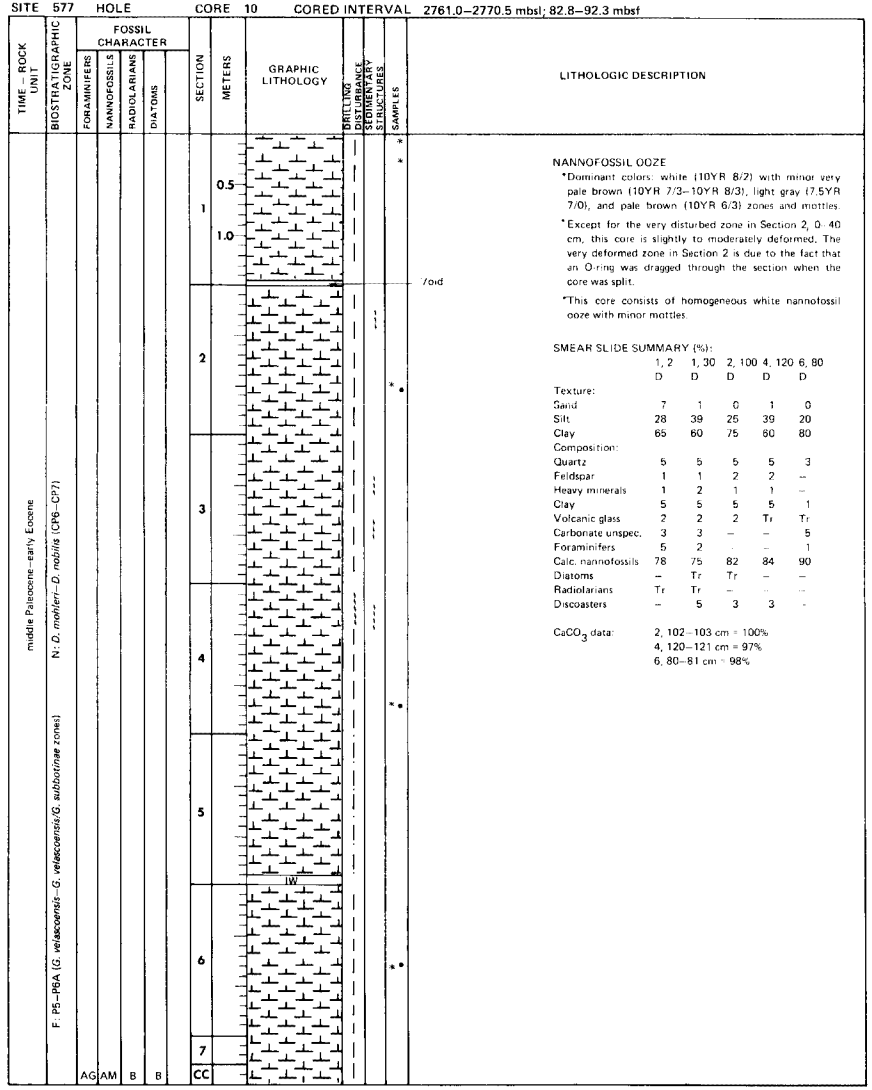
• This core consists of homogeneous white nannofossil ooze with infrequent small mottles in all sections.

SMEAR SLIDE SUMMARY (%):

	2, 100 D	4, 100 D	6, 60 D
Texture:			
Sand	1	2	1
Silt	34	38	34
Clay	65	60	65
Composition:			
Quartz	7	5	8
Feldspar	2	2	2
Heavy minerals	2	1	1
Clay	5	–	4
Volcanic glass	2	2	2
Carbonate unspec.	–	2	–
Foraminifers	–	1	–
Calc. nannofossils	77	82	76
Discoasters	5	5	7

$CaCO_3$ data: 2, 100–101 cm = 100%
4, 100–101 cm = 100%
6, 60–61 cm = 97%

SITE 577 HOLE CORE 10 CORED INTERVAL 2761.0–2770.5 mbsl; 82.8–92.3 mbsf



NANNOFOSSIL OOZE

*Dominant colors: white (10YR 8/2) with minor very pale brown (10YR 7/3–10YR 8/3), light gray (7.5YR 7/0), and pale brown (10YR 6/3) zones and mottles.

*Except for the very disturbed zone in Section 2, 0–40 cm, this core is slightly to moderately deformed. The very deformed zone in Section 2 is due to the fact that an O-ring was dragged through the section when the core was split.

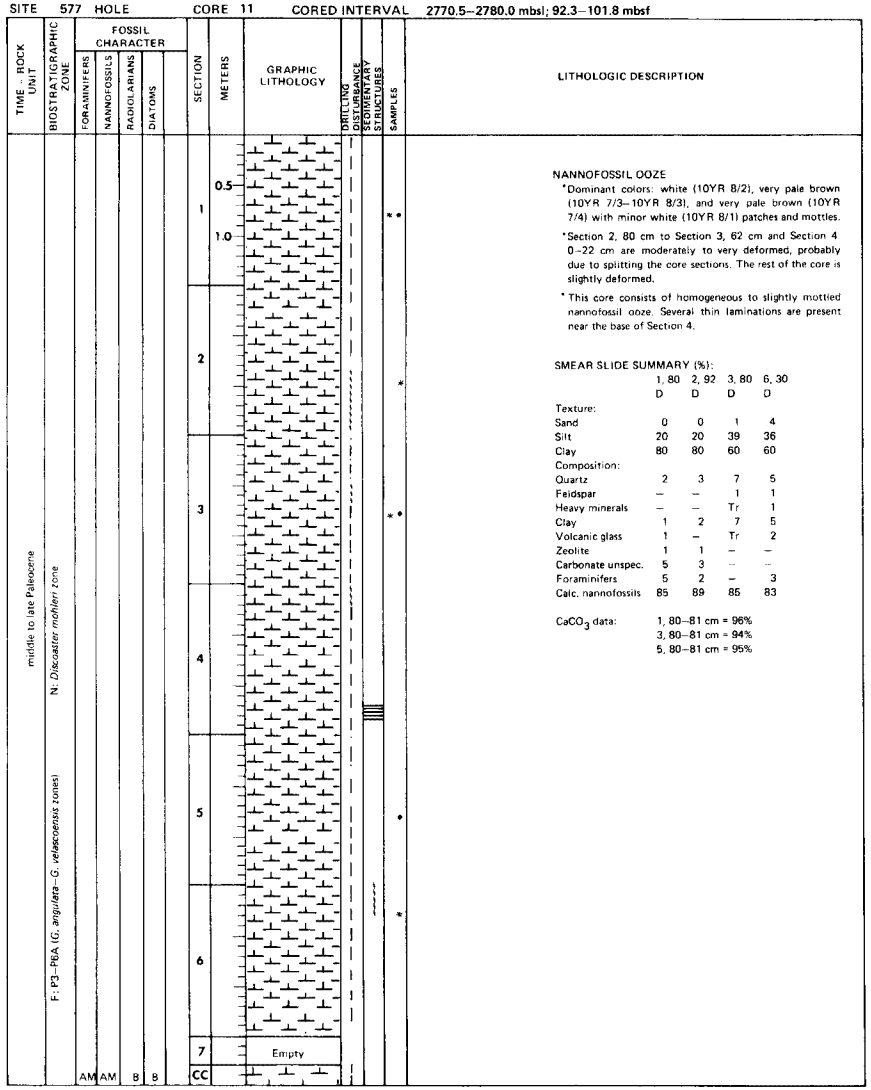
*This core consists of homogeneous white nannofossil ooze with minor mottles.

SMEAR SLIDE SUMMARY (%):

	1, 2 D	1, 30 D	2, 100 D	4, 120 D	6, 80 D
Texture:					
Sand	7	1	0	1	0
Silt	28	39	25	39	20
Clay	65	60	75	60	80
Composition:					
Quartz	5	5	5	5	3
Feldspar	1	1	2	2	–
Heavy minerals	1	2	1	1	–
Clay	5	5	5	5	1
Volcanic glass	2	2	2	Tr	Tr
Carbonate unspec.	3	3	–	–	5
Foraminifers	5	2	–	–	1
Calc. nannofossils	78	75	82	84	90
Diatoms	–	Tr	Tr	–	–
Radiolarians	Tr	Tr	–	–	–
Discoasters	–	5	3	3	–

$CaCO_3$ data: 2, 102–103 cm = 100%
4, 120–121 cm = 97%
6, 80–81 cm = 98%

SITE 577 HOLE CORE 11 CORED INTERVAL 2770.5–2780.0 mbsl; 92.3–101.8 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

*Dominant colors: white (10YR 8/2), very pale brown (10YR 7/3–10YR 8/3), and very pale brown (10YR 7/4) with minor white (10YR 8/1) patches and mottles.

*Section 2, 80 cm to Section 3, 62 cm and Section 4 0–22 cm are moderately to very deformed, probably due to splitting the core sections. The rest of the core is slightly deformed.

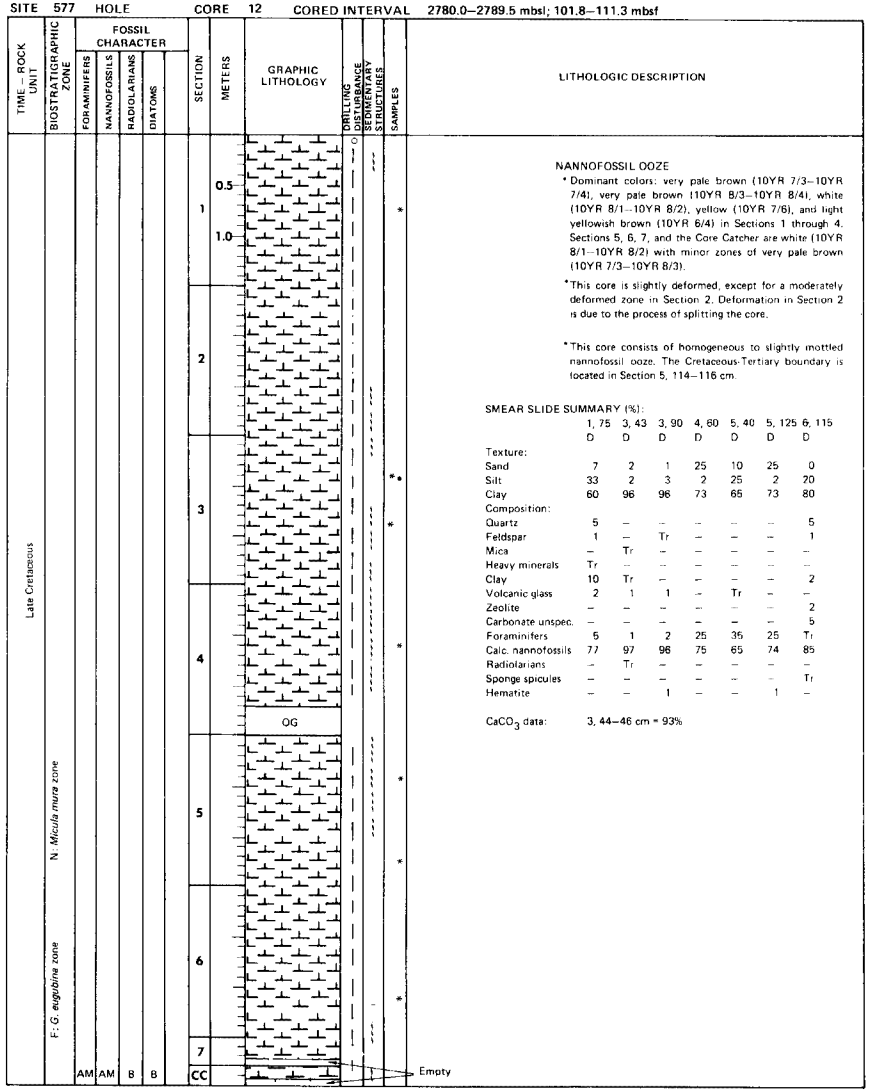
* This core consists of homogeneous to slightly mottled nannofossil ooze. Several thin laminations are present near the base of Section 4.

SMEAR SLIDE SUMMARY (%):

	1, 80 D	2, 92 D	3, 80 D	6, 30 D
Texture:				
Sand	0	0	1	4
Silt	20	20	39	36
Clay	80	80	60	60
Composition:				
Quartz	2	3	7	5
Feldspar	–	–	1	1
Heavy minerals	–	–	Tr	1
Clay	1	2	7	5
Volcanic glass	1	–	Tr	2
Zeolite	1	1	–	–
Carbonate unspec.	5	3	–	–
Foraminifers	5	2	–	3
Calc. nannofossils	85	89	85	83

$CaCO_3$ data: 1, 80–81 cm = 96%
3, 80–81 cm = 94%
5, 80–81 cm = 95%

SITE 577 HOLE CORE 12 CORED INTERVAL 2780.0–2789.5 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

* Dominant colors: very pale brown (10YR 7/3–10YR 7/4), very pale brown (10YR 8/3–10YR 8/4), white (10YR 8/1–10YR 8/2), yellow (10YR 7/6), and light yellowish brown (10YR 6/4) in Sections 1 through 4. Sections 5, 6, 7, and the Core Catcher are white (10YR 8/1–10YR 8/2) with minor zones of very pale brown (10YR 7/3–10YR 8/3).

*This core is slightly deformed, except for a moderately deformed zone in Section 2. Deformation in Section 2 is due to the process of splitting the core.

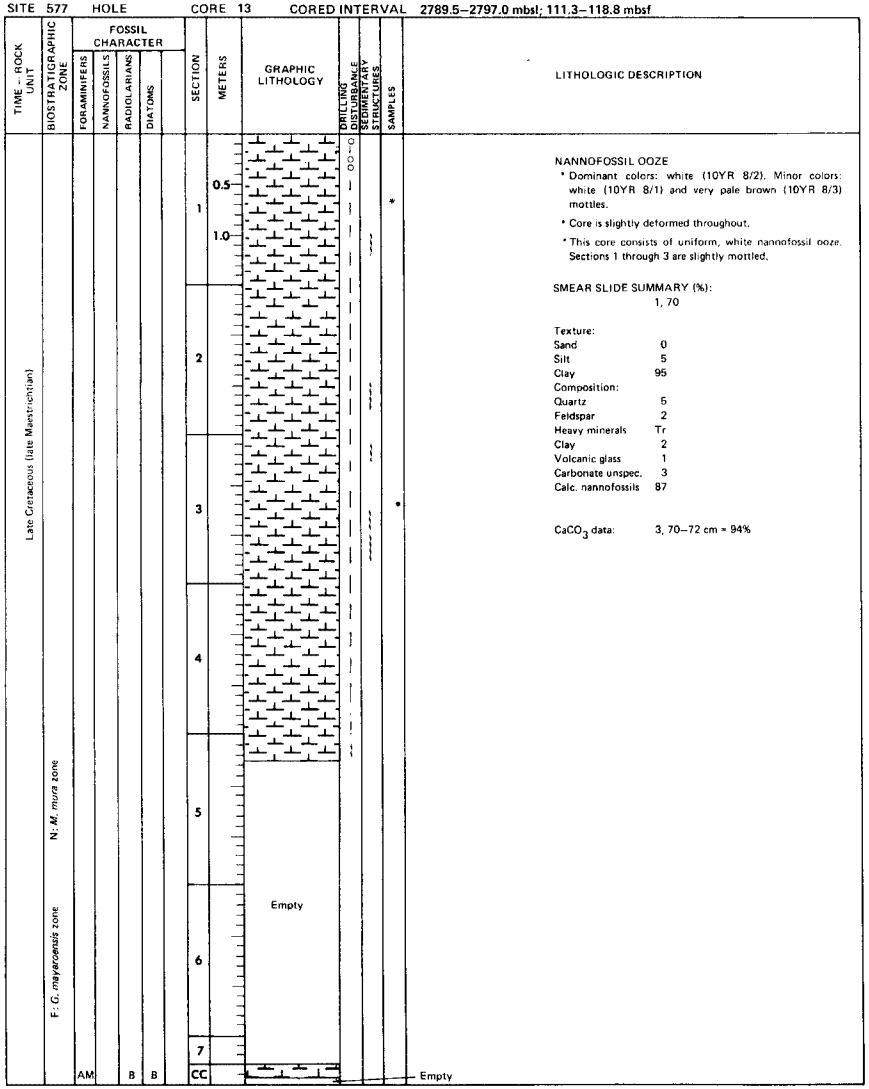
*This core consists of homogeneous to slightly mottled nannofossil ooze. The Cretaceous-Tertiary boundary is located in Section 5, 114–116 cm.

SMEAR SLIDE SUMMARY (%):

	1, 75 D	3, 43 D	3, 90 D	4, 60 D	5, 40 D	5, 125 D	6, 115 D
Texture:							
Sand	7	2	1	25	10	25	0
Silt	33	2	3	2	25	2	20
Clay	60	96	96	73	65	73	80
Composition:							
Quartz	5	–	–	–	–	–	5
Feldspar	1	–	Tr	–	–	–	1
Mica	–	Tr	–	–	–	–	–
Heavy minerals	Tr	–	–	–	–	–	–
Clay	10	Tr	–	–	–	–	2
Volcanic glass	2	1	1	–	Tr	–	–
Zeolite	–	–	–	–	–	–	2
Carbonate unspec.	–	–	–	–	–	–	5
Foraminifers	5	1	2	25	35	25	Tr
Calc. nannofossils	77	97	96	75	65	74	85
Radiolarians	–	Tr	–	–	–	–	–
Sponge spicules	–	–	–	–	–	–	Tr
Hematite	–	–	1	–	–	1	–

$CaCO_3$ data: 3, 44–46 cm = 93%

SITE 577 HOLE CORE 13 CORED INTERVAL 2789.5–2797.0 mbsl; 111.3–118.8 mbsf



NANNOFOSSIL OOZE

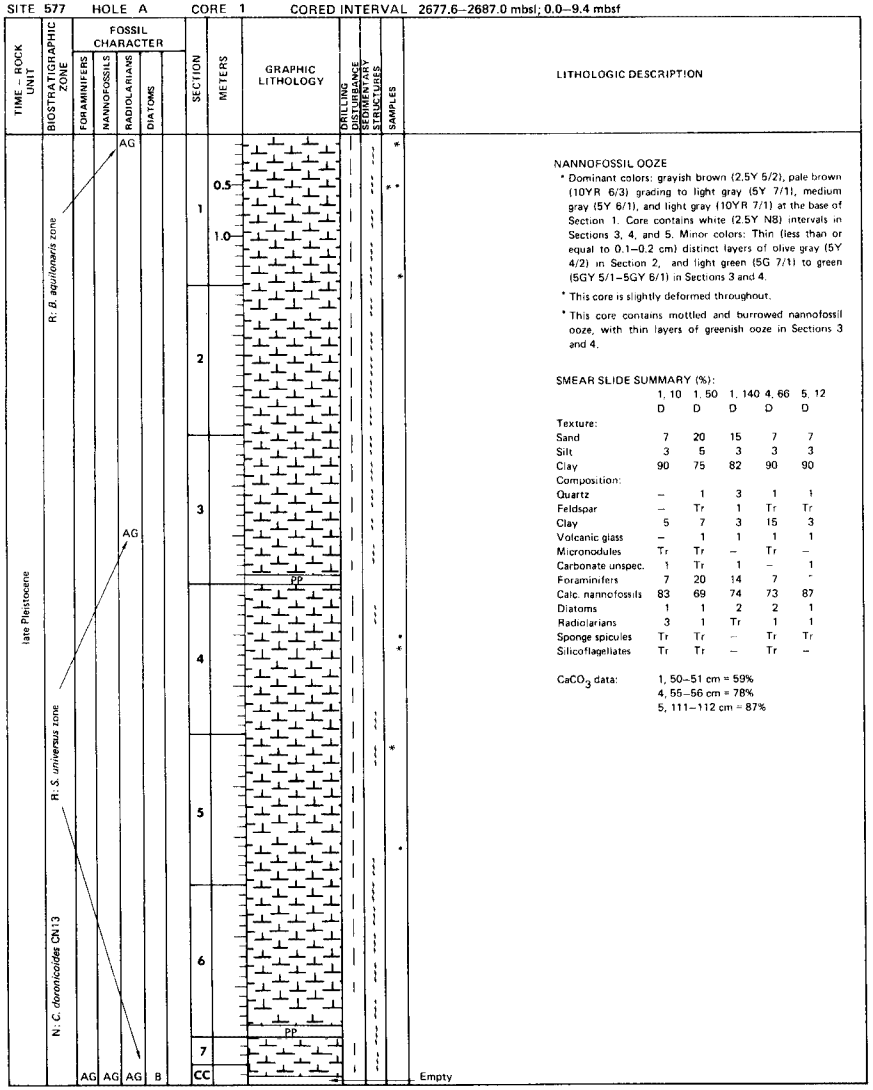
* Dominant colors: white (10YR 8/2). Minor colors: white (10YR 8/1) and very pale brown (10YR 8/3) mottles.
* Core is slightly deformed throughout.
* This core consists of uniform, white nannofossil ooze. Sections 1 through 3 are slightly mottled.

SMEAR SLIDE SUMMARY (%):

	1, 70
Texture:	
Sand	0
Silt	5
Clay	95
Composition:	
Quartz	5
Feldspar	2
Heavy minerals	Tr
Clay	2
Volcanic glass	1
Carbonate unspec.	3
Calc. nannofossils	87

$CaCO_3$ data: 3, 70–72 cm = 94%

SITE 577 HOLE A CORE 1 CORED INTERVAL 2677.6–2687.0 mbsl; 0.0–9.4 mbsf



NANNOFOSSIL OOZE

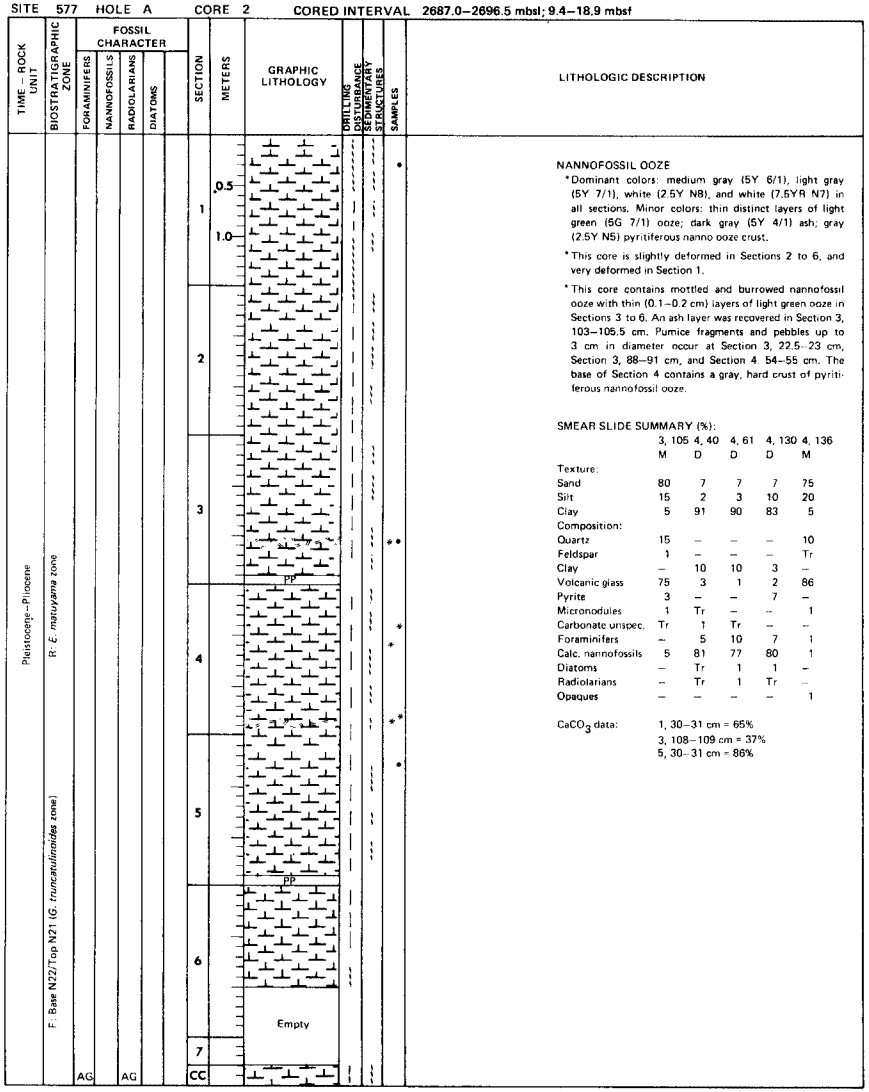
* Dominant colors: grayish brown (2.5Y 5/2), pale brown (10YR 6/3) grading to light gray (5Y 7/1), medium gray (5Y 6/1), and light gray (10YR 7/1) at the base of Section 1. Core contains white (2.5Y N8) intervals in Sections 3, 4, and 5. Minor colors: Thin (less than or equal to 0.1–0.2 cm) distinct layers of olive gray (5Y 4/2) in Section 2, and light green (5G 7/1) to green (5GY 5/1–5GY 6/1) in Sections 3 and 4.
* This core is slightly deformed throughout.
* This core contains mottled and burrowed nannofossil ooze, with thin layers of greenish ooze in Sections 3 and 4.

SMEAR SLIDE SUMMARY (%):

	1, 10 D	1, 50 D	1, 140 D	4, 66 D	5, 12 D
Texture:					
Sand	7	20	15	7	7
Silt	3	5	3	3	3
Clay	90	75	82	90	90
Composition:					
Quartz	–	1	3	1	1
Feldspar	–	Tr	1	Tr	Tr
Clay	5	7	3	15	3
Volcanic glass	–	1	1	1	1
Micronodules	Tr	Tr	–	Tr	–
Carbonate unspec.	1	Tr	1	–	1
Foraminifers	7	20	14	7	7
Calc. nannofossils	83	69	74	73	87
Diatoms	1	1	2	2	1
Radiolarians	3	1	Tr	1	1
Sponge spicules	Tr	Tr	–	Tr	Tr
Silicoflagellates	Tr	Tr	–	Tr	–

$CaCO_3$ data: 1, 50–51 cm = 59%
4, 55–56 cm = 78%
5, 111–112 cm = 87%

SITE 577 HOLE A CORE 2 CORED INTERVAL 2687.0–2696.5 mbsl; 9.4–18.9 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

*Dominant colors: medium gray (5Y 6/1), light gray (5Y 7/1), white (2.5Y N8), and white (7.5YR N7) in all sections. Minor colors: thin distinct layers of light green (5G 7/1) ooze; dark gray (5Y 4/1) ash; gray (2.5Y N5) pyritiferous nanno ooze crust.

*This core is slightly deformed in Sections 2 to 6, and very deformed in Section 1.

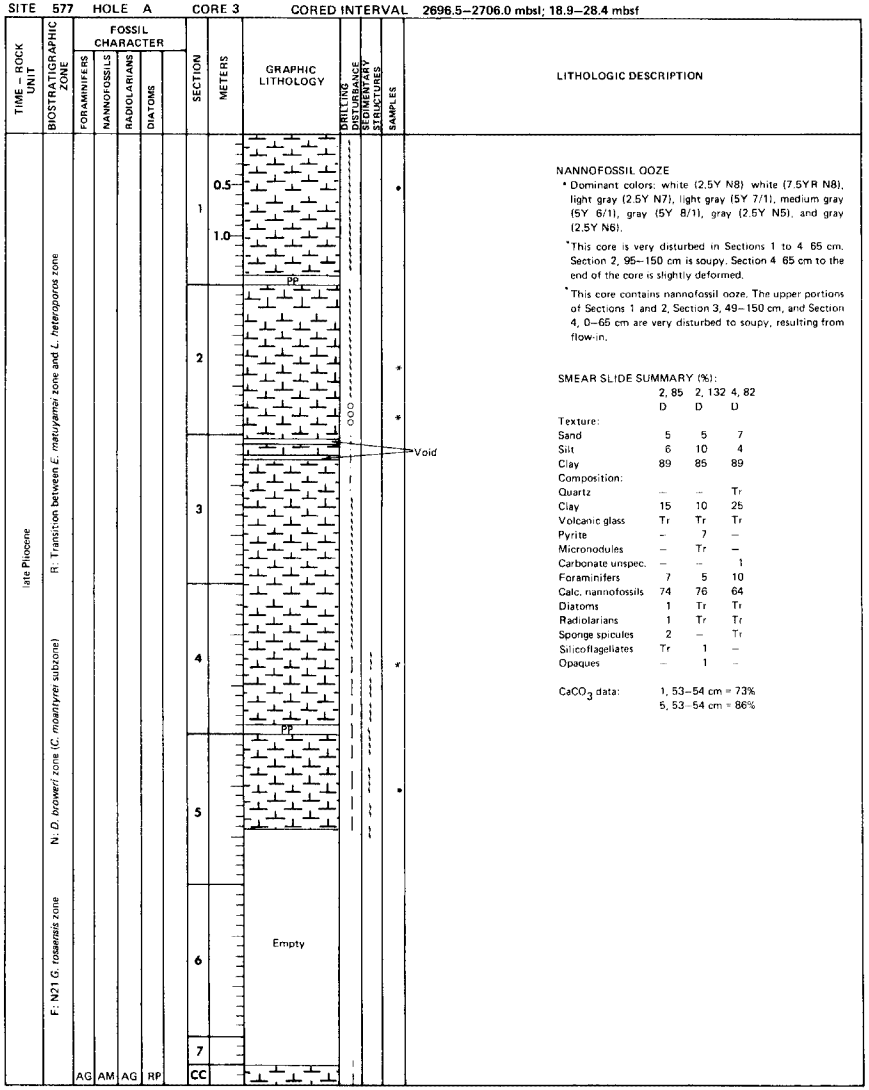
*This core contains mottled and burrowed nannofossil ooze with thin (0.1–0.2 cm) layers of light green ooze in Sections 3 to 6. An ash layer was recovered in Section 3, 103–105.5 cm. Pumice fragments and pebbles up to 3 cm in diameter occur at Section 3, 22.5–23 cm, Section 3, 88–91 cm, and Section 4, 54–55 cm. The base of Section 4 contains a gray, hard crust of pyritiferous nannofossil ooze.

SMEAR SLIDE SUMMARY (%):

	3, 105 M	4, 40 D	4, 61 D	4, 130 D	4, 136 M
Texture:					
Sand	80	7	7	7	75
Silt	15	2	3	10	20
Clay	5	91	90	83	5
Composition:					
Quartz	15	–	–	–	10
Feldspar	1	–	–	–	Tr
Clay	–	10	10	3	–
Volcanic glass	75	3	1	2	86
Pyrite	3	–	–	7	–
Micronodules	1	Tr	–	–	1
Carbonate unspec.	Tr	1	Tr	–	–
Foraminifers	–	5	10	7	1
Calc. nannofossils	5	81	77	80	1
Diatoms	–	Tr	1	1	–
Radiolarians	–	Tr	1	Tr	–
Opaques	–	–	–	–	1

$CaCO_3$ data: 1, 30–31 cm = 65%
3, 108–109 cm = 37%
5, 30–31 cm = 86%

SITE 577 HOLE A CORE 3 CORED INTERVAL 2696.5–2706.0 mbsl; 18.9–28.4 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

*Dominant colors: white (2.5Y N8) white (7.5YR N8), light gray (2.5Y N7), light gray (5Y 7/1), medium gray (5Y 6/1), gray (5Y 8/1), gray (2.5Y N5), and gray (2.5Y N6).

*This core is very disturbed in Sections 1 to 4, 65 cm. Section 2, 95–150 cm is soupy. Section 4, 65 cm to the end of the core is slightly deformed.

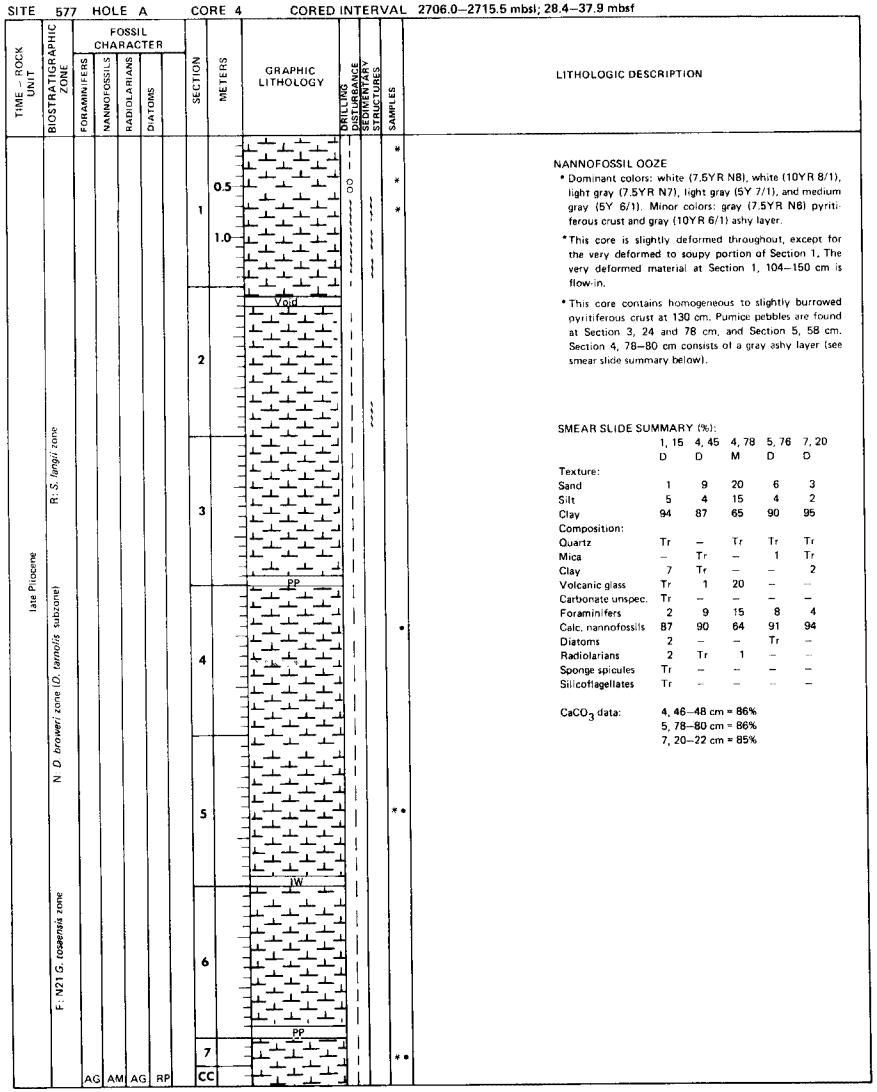
*This core contains nannofossil ooze. The upper portions of Sections 1 and 2, Section 3, 49–150 cm, and Section 4, 0–65 cm are very disturbed to soupy, resulting from flow-in.

SMEAR SLIDE SUMMARY (%):

	2, 85 D	2, 132 D	4, 82 D
Texture:			
Sand	5	5	7
Silt	6	10	4
Clay	89	85	89
Composition:			
Quartz	–	–	Tr
Clay	15	10	25
Volcanic glass	Tr	Tr	Tr
Pyrite	–	7	–
Micronodules	–	Tr	–
Carbonate unspec.	–	–	1
Foraminifers	7	5	10
Calc. nannofossils	74	76	64
Diatoms	1	Tr	Tr
Radiolarians	1	Tr	Tr
Sponge spicules	2	–	Tr
Siliceoflagellates	Tr	1	–
Opaques	–	1	–

$CaCO_3$ data: 1, 53–54 cm = 73%
5, 53–54 cm = 86%

SITE 577 HOLE A CORE 4 CORED INTERVAL 2706.0–2715.5 mbsl; 28.4–37.9 mbsf



NANNOFOSSIL OOZE

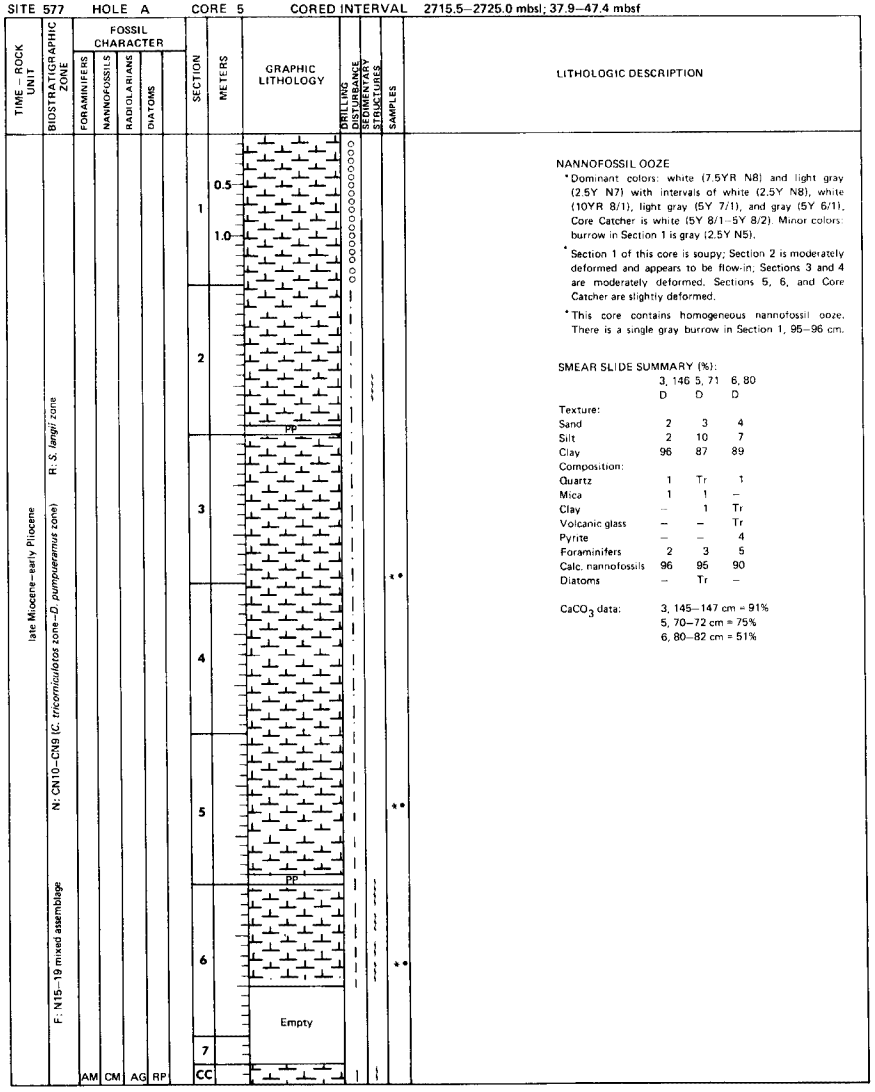
- Dominant colors: white (7.5YR N8), white (10YR 8/1), light gray (7.5YR N7), light gray (5Y 7/1), and medium gray (5Y 6/1). Minor colors: gray (7.5YR N6) pyritiferous crust and gray (10YR 6/1) ashy layer.
- This core is slightly deformed throughout, except for the very deformed to soupy portion of Section 1. The very deformed material at Section 1, 104–150 cm is flow-in.
- This core contains homogeneous to slightly burrowed pyritiferous crust at 130 cm. Pumice pebbles are found at Section 3, 24 and 78 cm, and Section 5, 58 cm. Section 4, 78–80 cm consists of a gray ashy layer (see smear slide summary below).

SMEAR SLIDE SUMMARY (%):

	1, 15 D	4, 45 D	4, 78 M	5, 76 D	7, 20 D
Texture:					
Sand	1	9	20	6	3
Silt	5	4	15	4	2
Clay	94	87	65	90	95
Composition:					
Quartz	Tr	–	Tr	Tr	Tr
Mica	–	Tr	–	1	Tr
Clay	7	Tr	–	–	2
Volcanic glass	Tr	1	20	–	–
Carbonate unspec.	Tr	–	–	–	–
Foraminifers	2	9	15	8	4
Calc. nannofossils	87	90	64	91	94
Diatoms	2	–	–	Tr	–
Radiolarians	2	Tr	1	–	–
Sponge spicules	Tr	–	–	–	–
Silicoflagellates	Tr	–	–	–	–

$CaCO_3$ data:
4, 46–48 cm = 86%
5, 78–80 cm = 86%
7, 20–22 cm = 85%

SITE 577 HOLE A CORE 5 CORED INTERVAL 2715.5–2725.0 mbsl; 37.9–47.4 mbsf



NANNOFOSSIL OOZE

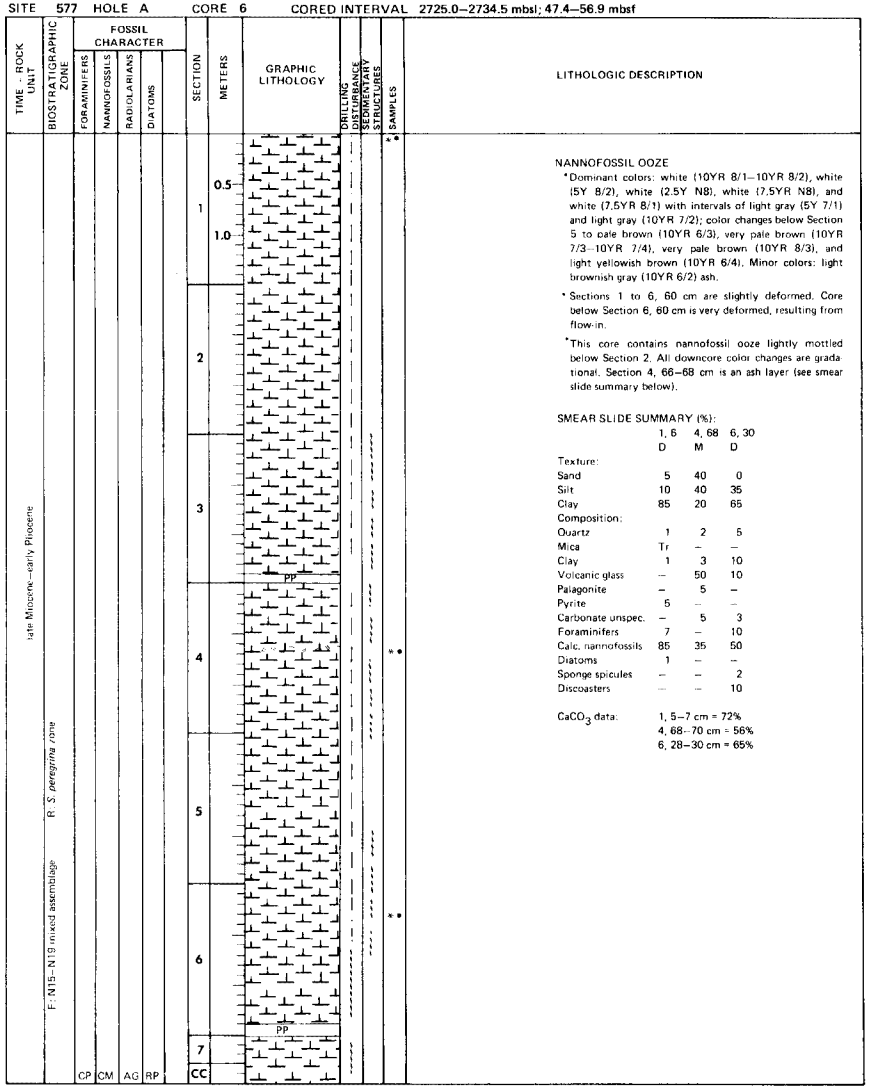
- Dominant colors: white (7.5YR N8) and light gray (2.5Y N7) with intervals of white (2.5Y N8), white (10YR 8/1), light gray (5Y 7/1), and gray (5Y 6/1). Core Catcher is white (5Y 8/1–5Y 8/2). Minor colors: burrow in Section 1 is gray (2.5Y N5).
- Section 1 of this core is soupy; Section 2 is moderately deformed and appears to be flow-in; Sections 3 and 4 are moderately deformed. Sections 5, 6, and Core Catcher are slightly deformed.
- This core contains homogeneous nannofossil ooze. There is a single gray burrow in Section 1, 95–96 cm.

SMEAR SLIDE SUMMARY (%):

	3, 146 D	5, 71 D	6, 80 D
Texture:			
Sand	2	3	4
Silt	2	10	7
Clay	96	87	89
Composition:			
Quartz	1	Tr	1
Mica	1	1	–
Clay	–	1	Tr
Volcanic glass	–	–	Tr
Pyrite	–	–	4
Foraminifers	2	3	5
Calc. nannofossils	96	95	90
Diatoms	–	Tr	–

$CaCO_3$ data:
3, 145–147 cm = 91%
5, 70–72 cm = 75%
6, 80–82 cm = 51%

SITE 577 HOLE A CORE 6 CORED INTERVAL 2725.0–2734.5 mbsl; 47.4–56.9 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

*Dominant colors: white (10YR 8/1–10YR 8/2), white (5Y 8/2), white (2.5Y N8), white (7.5YR N8), and white (7.5YR 8/1) with intervals of light gray (5Y 7/1) and light gray (10YR 7/2); color changes below Section 5 to pale brown (10YR 6/3), very pale brown (10YR 7/3–10YR 7/4), very pale brown (10YR 8/3), and light yellowish brown (10YR 6/4). Minor colors: light brownish gray (10YR 6/2) ash.

*Sections 1 to 6, 60 cm are slightly deformed. Core below Section 6, 60 cm is very deformed, resulting from flow-in.

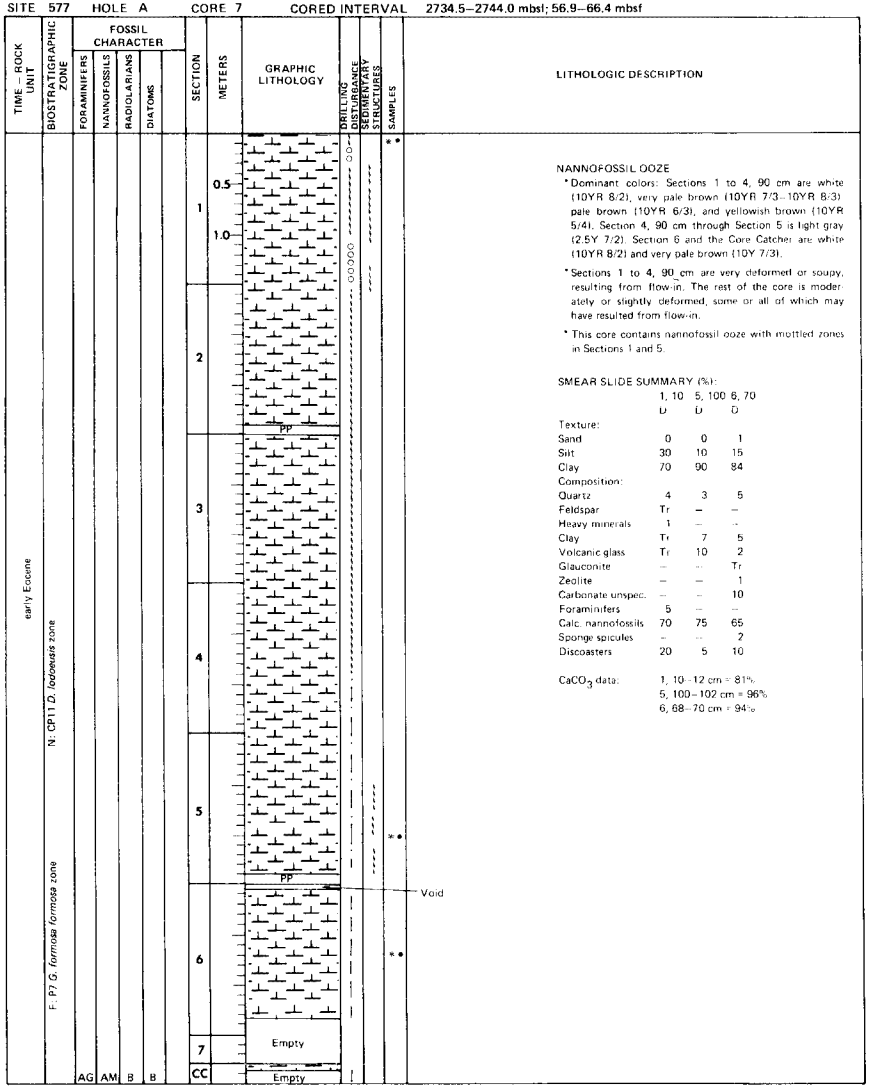
*This core contains nannofossil ooze lightly mottled below Section 2. All downcore color changes are gradational. Section 4, 66–68 cm is an ash layer (see smear slide summary below).

SMEAR SLIDE SUMMARY (%):

	1, 6 D	4, 68 M	6, 30 D
Texture:			
Sand	5	40	0
Silt	10	40	35
Clay	85	20	65
Composition:			
Quartz	1	2	5
Mica	Tr	–	–
Clay	1	3	10
Volcanic glass	–	50	10
Palagonite	–	5	–
Pyrite	5	–	–
Carbonate unspec.	–	5	3
Foraminifers	7	–	10
Calc. nannofossils	85	35	50
Diatoms	1	–	–
Sponge spicules	–	–	2
Discoasters	–	–	10

$CaCO_3$ data: 1, 5–7 cm = 72%
4, 68–70 cm = 56%
6, 28–30 cm = 65%

SITE 577 HOLE A CORE 7 CORED INTERVAL 2734.5–2744.0 mbsl; 56.9–66.4 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

*Dominant colors: Sections 1 to 4, 90 cm are white (10YR 8/2), very pale brown (10YR 7/3–10YR 8/3) pale brown (10YR 6/3), and yellowish brown (10YR 5/4). Section 4, 90 cm through Section 5 is light gray (2.5Y 7/2). Section 6 and the Core Catcher are white (10YR 8/2) and very pale brown (10Y 7/3).

*Sections 1 to 4, 90 cm are very deformed or soupy, resulting from flow-in. The rest of the core is moderately or slightly deformed, some or all of which may have resulted from flow-in.

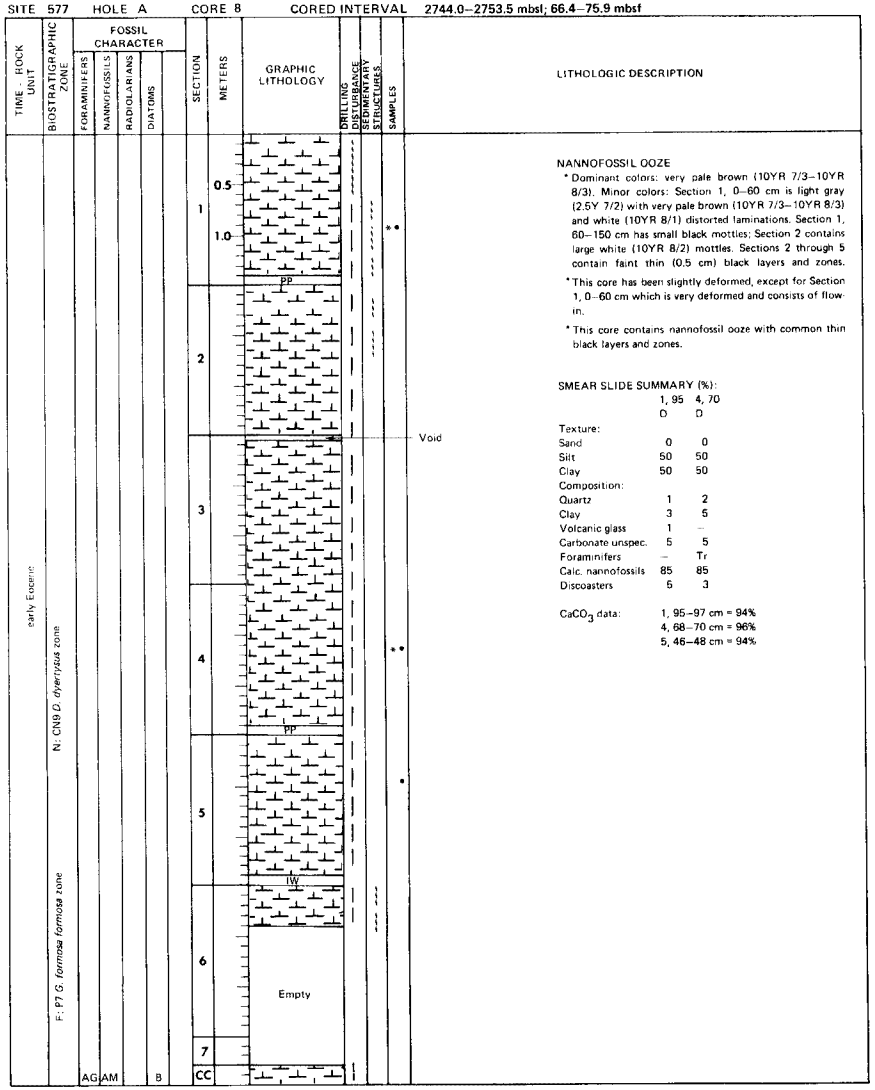
*This core contains nannofossil ooze with mottled zones in Sections 1 and 5.

SMEAR SLIDE SUMMARY (%):

	1, 10 D	5, 100 D	6, 70 D
Texture:			
Sand	0	0	1
Silt	30	10	15
Clay	70	90	84
Composition:			
Quartz	4	3	5
Feldspar	Tr	–	–
Heavy minerals	1	–	–
Clay	Tr	7	5
Volcanic glass	Tr	10	2
Glauconite	–	–	Tr
Zeolite	–	–	1
Carbonate unspec.	–	–	10
Foraminifers	5	–	–
Calc. nannofossils	70	75	65
Sponge spicules	–	–	2
Discoasters	20	5	10

$CaCO_3$ data: 1, 10–12 cm = 81%
5, 100–102 cm = 96%
6, 68–70 cm = 94%

SITE 577 HOLE A CORE 8 CORED INTERVAL 2744.0–2753.5 mbsl; 66.4–75.9 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

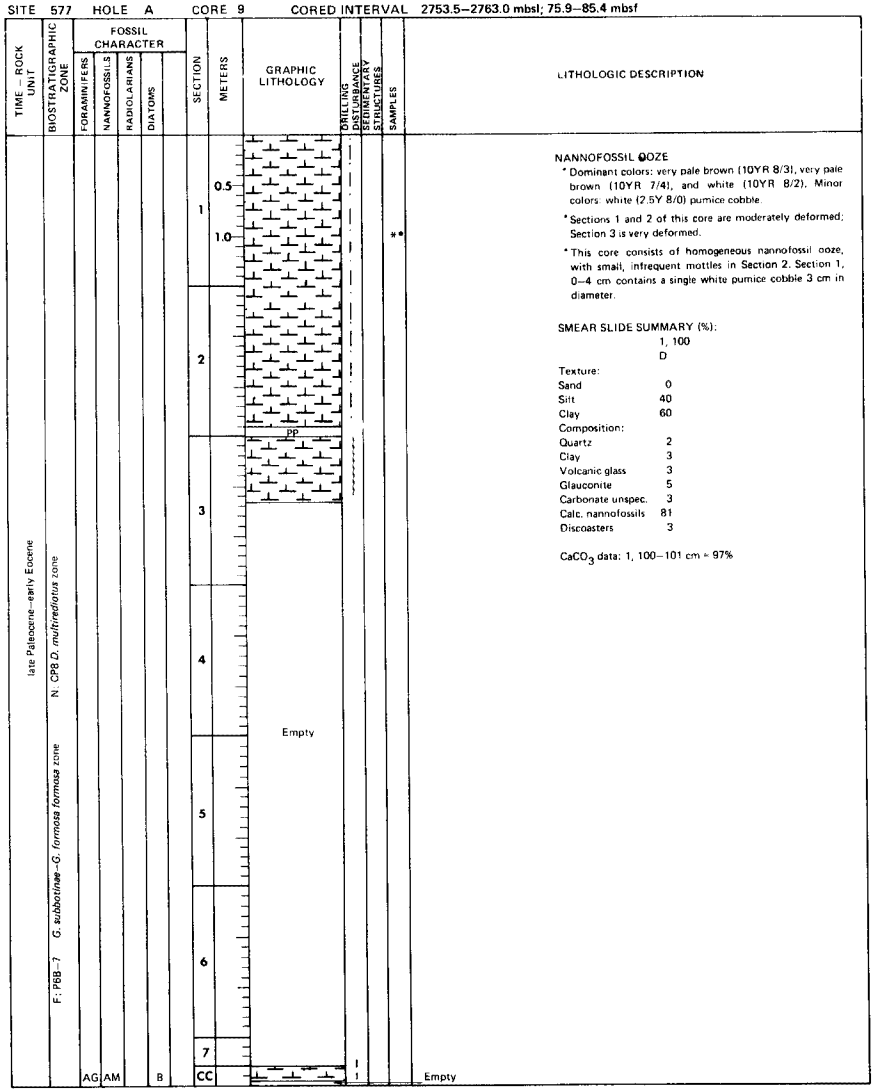
* Dominant colors: very pale brown (10YR 7/3–10YR 8/3). Minor colors: Section 1, 0–60 cm is light gray (2.5Y 7/2) with very pale brown (10YR 7/3–10YR 8/3) and white (10YR 8/1) distorted laminations. Section 1, 60–150 cm has small black mottles; Section 2 contains large white (10YR 8/2) mottles. Sections 2 through 5 contain faint thin (0.5 cm) black layers and zones.
* This core has been slightly deformed, except for Section 1, 0–60 cm which is very deformed and consists of flow-in.
* This core contains nannofossil ooze with common thin black layers and zones.

SMEAR SLIDE SUMMARY (%):

	1, 95 D	4, 70 D
Texture:		
Sand	0	0
Silt	50	50
Clay	50	50
Composition:		
Quartz	1	2
Clay	3	5
Volcanic glass	1	–
Carbonate unspec.	5	5
Foraminifers	–	Tr
Calc. nannofossils	85	85
Discoasters	5	3

$CaCO_3$ data: 1, 95–97 cm = 94%
4, 68–70 cm = 96%
5, 46–48 cm = 94%

SITE 577 HOLE A CORE 9 CORED INTERVAL 2753.5–2763.0 mbsl; 75.9–85.4 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

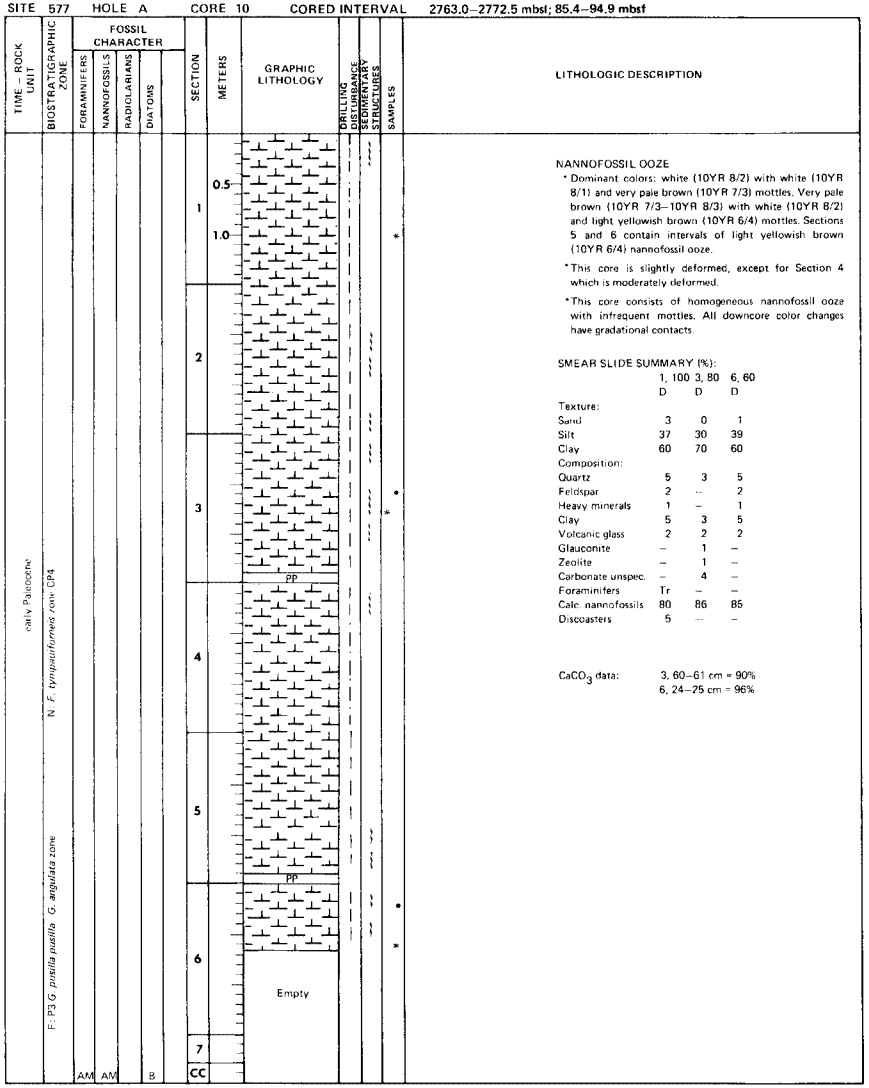
* Dominant colors: very pale brown (10YR 8/3), very pale brown (10YR 7/4), and white (10YR 8/2). Minor colors: white (2.5Y 8/0) pumice cobble.
* Sections 1 and 2 of this core are moderately deformed; Section 3 is very deformed.
* This core consists of homogeneous nannofossil ooze, with small, infrequent mottles in Section 2. Section 1, 0–4 cm contains a single white pumice cobble 3 cm in diameter.

SMEAR SLIDE SUMMARY (%):

	1, 100 D
Texture:	
Sand	0
Silt	40
Clay	60
Composition:	
Quartz	2
Clay	3
Volcanic glass	3
Glauconite	5
Carbonate unspec.	3
Calc. nannofossils	81
Discoasters	3

$CaCO_3$ data: 1, 100–101 cm = 97%

SITE 577 HOLE A CORE 10 CORED INTERVAL 2763.0–2772.5 mbsl; 85.4–94.9 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

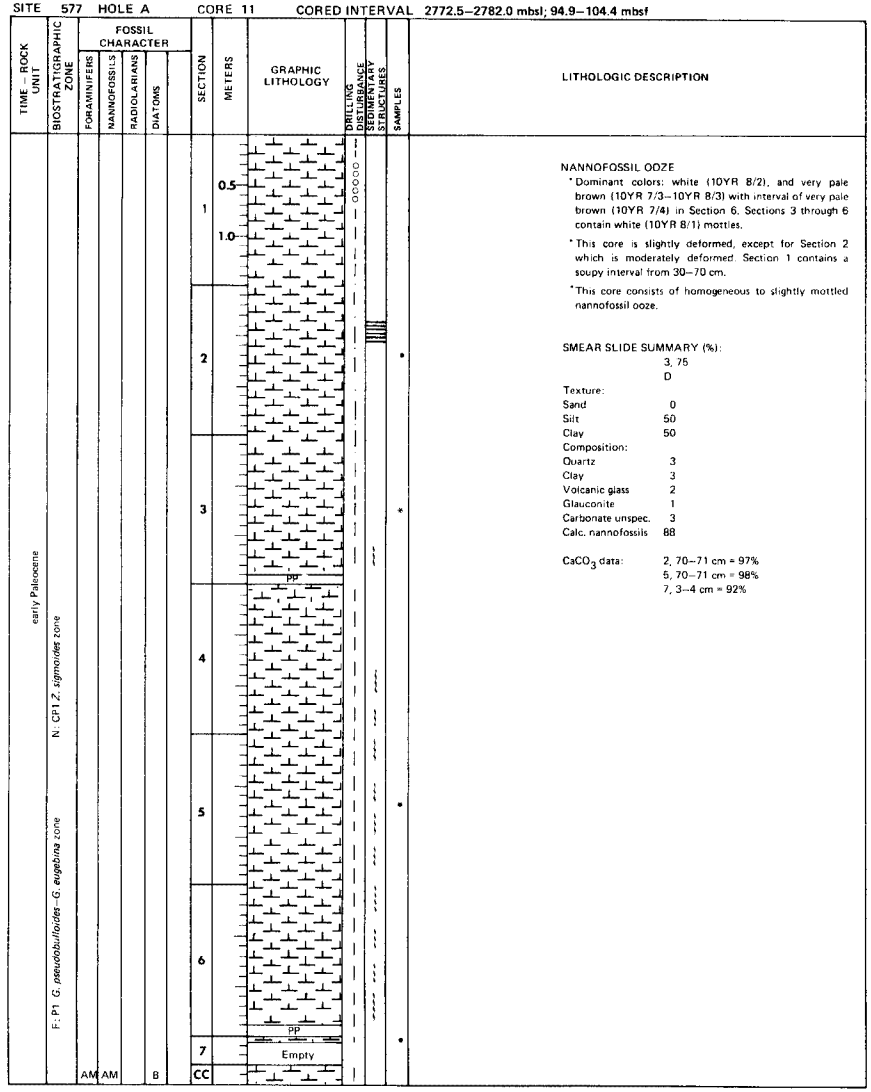
- Dominant colors: white (10YR 8/2) with white (10YR 8/1) and very pale brown (10YR 7/3) mottles. Very pale brown (10YR 7/3–10YR 8/3) with white (10YR 8/2) and light yellowish brown (10YR 6/4) mottles. Sections 5 and 6 contain intervals of light yellowish brown (10YR 6/4) nannofossil ooze.
- This core is slightly deformed, except for Section 4 which is moderately deformed.
- This core consists of homogeneous nannofossil ooze with infrequent mottles. All downcore color changes have gradational contacts.

SMEAR SLIDE SUMMARY (%):

	1, 100 D	3, 80 D	6, 60 D
Texture:			
Sand	3	0	1
Silt	37	30	39
Clay	60	70	60
Composition:			
Quartz	5	3	5
Feldspar	2	–	2
Heavy minerals	1	–	1
Clay	5	3	5
Volcanic glass	2	2	2
Glauconite	–	1	–
Zeolite	–	1	–
Carbonate unspec.	–	4	–
Foraminifers	Tr	–	–
Calc. nannofossils	80	86	85
Discoasters	5	–	–

$CaCO_3$ data: 3, 60–61 cm = 90%
6, 24–25 cm = 96%

SITE 577 HOLE A CORE 11 CORED INTERVAL 2772.5–2782.0 mbsl; 94.9–104.4 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

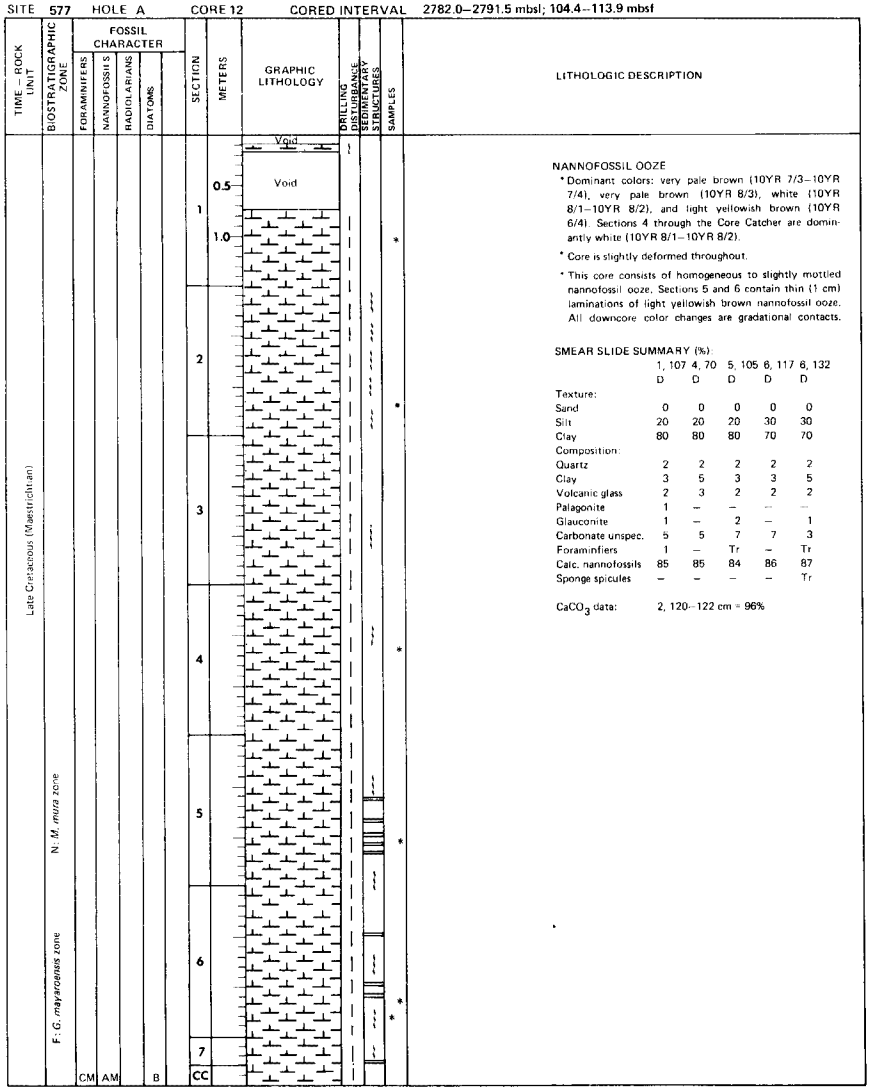
- Dominant colors: white (10YR 8/2), and very pale brown (10YR 7/3–10YR 8/3) with interval of very pale brown (10YR 7/4) in Section 6. Sections 3 through 6 contain white (10YR 8/1) mottles.
- This core is slightly deformed, except for Section 2 which is moderately deformed. Section 1 contains a soupy interval from 30–70 cm.
- This core consists of homogeneous to slightly mottled nannofossil ooze.

SMEAR SLIDE SUMMARY (%):

	3, 75 D
Texture:	
Sand	0
Silt	50
Clay	50
Composition:	
Quartz	3
Clay	3
Volcanic glass	2
Glauconite	1
Carbonate unspec.	3
Calc. nannofossils	88

$CaCO_3$ data: 2, 70–71 cm = 97%
5, 70–71 cm = 98%
7, 3–4 cm = 92%

SITE 577 HOLE A CORE 12 CORED INTERVAL 2782.0–2791.5 mbsl; 104.4–113.9 mbsf



NANNOFOSSIL OOZE

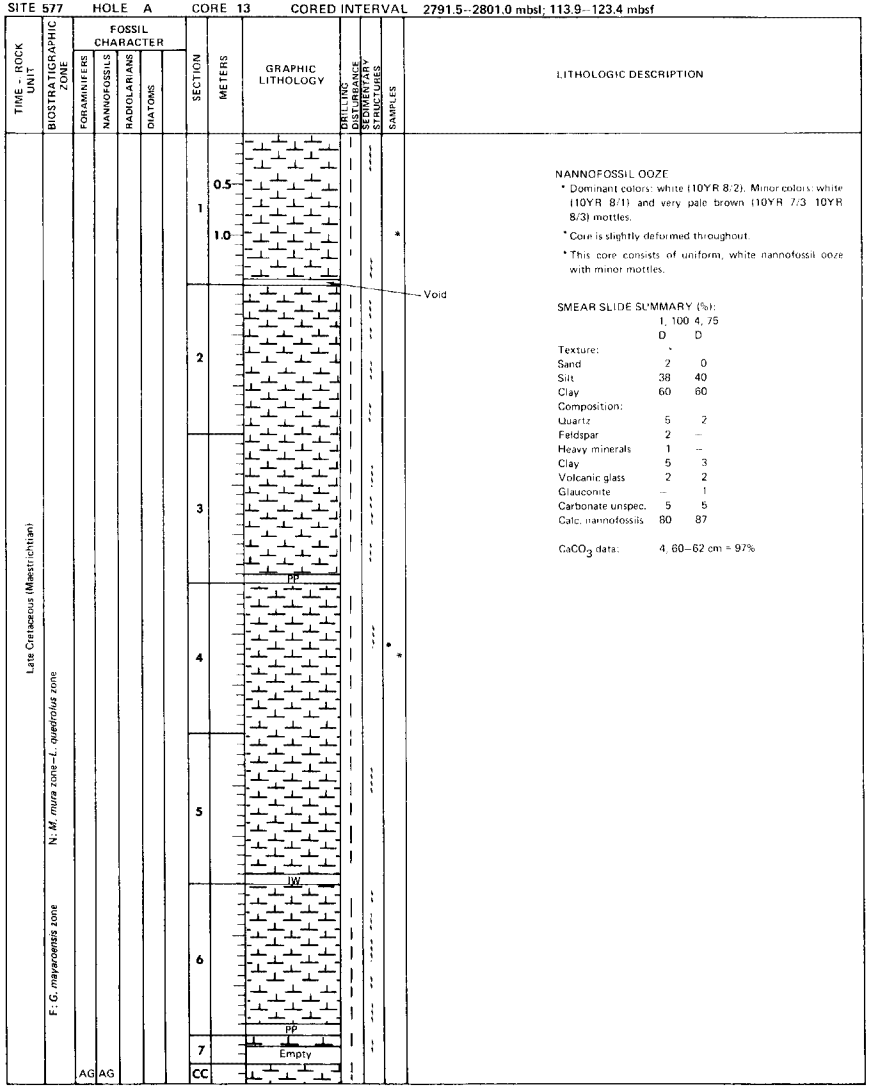
* Dominant colors: very pale brown (10YR 7/3–10YR 7/4), very pale brown (10YR 8/3), white (10YR 8/1–10YR 8/2), and light yellowish brown (10YR 6/4). Sections 4 through the Core Catcher are dominantly white (10YR 8/1–10YR 8/2).
* Core is slightly deformed throughout.
* This core consists of homogeneous to slightly mottled nannofossil ooze. Sections 5 and 6 contain thin (1 cm) laminations of light yellowish brown nannofossil ooze. All downcore color changes are gradational contacts.

SMEAR SLIDE SUMMARY (%)

	1, 107 D	4, 70 D	5, 105 D	6, 117 D	6, 132 D
Texture:					
Sand	0	0	0	0	0
Silt	20	20	20	30	30
Clay	80	80	80	70	70
Composition:					
Quartz	2	2	2	2	2
Clay	3	5	3	3	5
Volcanic glass	2	3	2	2	2
Palagonite	1	–	–	–	–
Glauconite	1	–	2	–	1
Carbonate unspec.	5	5	7	7	3
Foraminifers	1	–	Tr	–	Tr
Calc. nannofossils	85	85	84	86	87
Sponge spicules	–	–	–	–	Tr

$CaCO_3$ data: 2, 120–122 cm = 96%

SITE 577 HOLE A CORE 13 CORED INTERVAL 2791.5–2801.0 mbsl; 113.9–123.4 mbsf



NANNOFOSSIL OOZE

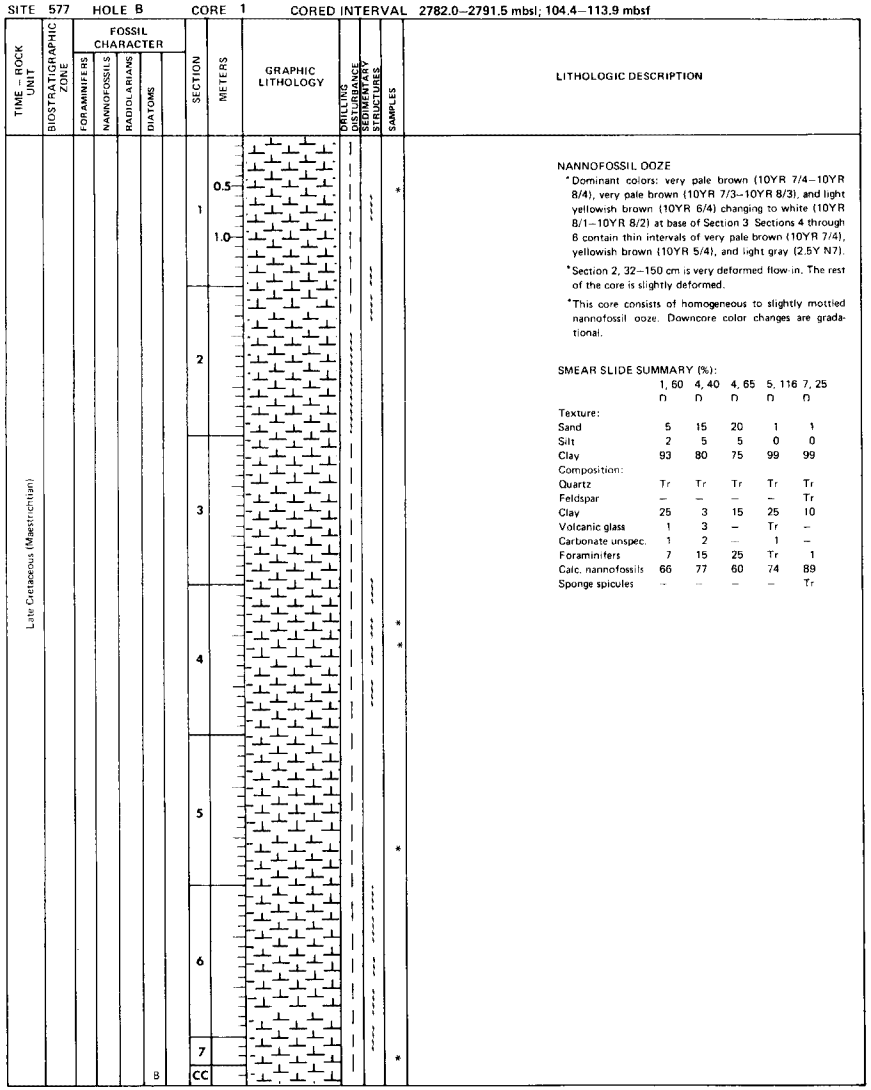
* Dominant colors: white (10YR 8/2). Minor colors: white (10YR 8/1) and very pale brown (10YR 7/3–10YR 8/3) mottles.
* Core is slightly deformed throughout.
* This core consists of uniform, white nannofossil ooze with minor mottles.

SMEAR SLIDE SUMMARY (%):

	1, 100 D	4, 75 D
Texture:		
Sand	2	0
Silt	38	40
Clay	60	60
Composition:		
Quartz	5	2
Feldspar	2	–
Heavy minerals	1	–
Clay	5	3
Volcanic glass	2	2
Glauconite	–	1
Carbonate unspec.	5	5
Calc. nannofossils	80	87

$CaCO_3$ data: 4, 60–62 cm = 97%

SITE 577 HOLE B CORE 1 CORED INTERVAL 2782.0–2791.5 mbsl; 104.4–113.9 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

*Dominant colors: very pale brown (10YR 7/4–10YR 8/4), very pale brown (10YR 7/3–10YR 8/3), and light yellowish brown (10YR 6/4) changing to white (10YR 8/1–10YR 8/2) at base of Section 3. Sections 4 through 6 contain thin intervals of very pale brown (10YR 7/4), yellowish brown (10YR 5/4), and light gray (2.5Y N7).

*Section 2, 32–150 cm is very deformed flow-in. The rest of the core is slightly deformed.

*This core consists of homogeneous to slightly mottled nannofossil ooze. Downcore color changes are gradational.

SMEAR SLIDE SUMMARY (%):

	1, 60 D	4, 40 D	4, 65 D	5, 116 D	7, 25 D
Texture:					
Sand	5	15	20	1	1
Silt	2	5	5	0	0
Clay	93	80	75	99	99
Composition:					
Quartz	Tr	Tr	Tr	Tr	Tr
Feldspar	–	–	–	–	Tr
Clay	25	3	15	25	10
Volcanic glass	1	3	–	Tr	–
Carbonate unspec.	1	2	–	1	–
Foraminifers	7	15	25	Tr	1
Calc. nannofossils	66	77	60	74	89
Sponge spicules	–	–	–	–	Tr

SITE 578

HOLE

Date Occupied: 27 May 1982

Date Departed: 30 May 1982

Time on Hole: 2 days, 6½ hours

Position (latitude; longitude): 33°55.56'N; 151°37.74'E

Water depth (sea level; corrected m, echo-sounding): 6010

Water depth (rig floor; corrected m, echo-sounding): 6020

Bottom felt (m, drill pipe): 6005

Penetration (m): 176.8

Number of cores: 20

Total length of cored section (m): 167.8

Total core recovered (m): 165.02

Core recovery (%): 98

Oldest sediment cored:

Depth sub-bottom (m): 176.6

Nature: Chert and silicified chalk

Age: Campanian to Maestrichtian

Measured velocity (km/s): 1.52 (clay immediately above chert)

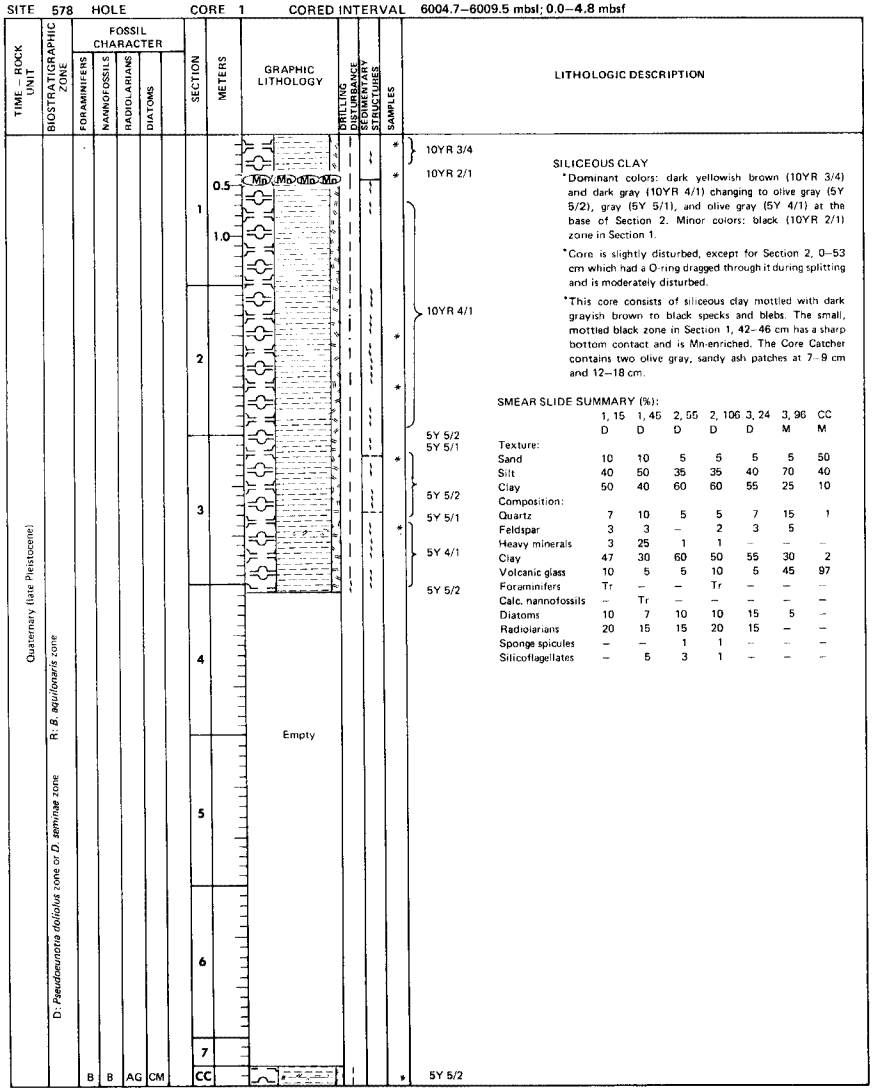
Basement: Not reached.

Depth sub-bottom (m):

Nature:

Velocity range (km/s):

SITE 578 HOLE CORE 1 CORED INTERVAL 6004.7–6009.5 mbsl; 0.0–4.8 mbsf



SILICEOUS CLAY

*Dominant colors: dark yellowish brown (10YR 3/4) and dark gray (10YR 4/1) changing to olive gray (5Y 5/2), gray (5Y 5/1), and olive gray (5Y 4/1) at the base of Section 2. Minor colors: black (10YR 2/1) zone in Section 1.

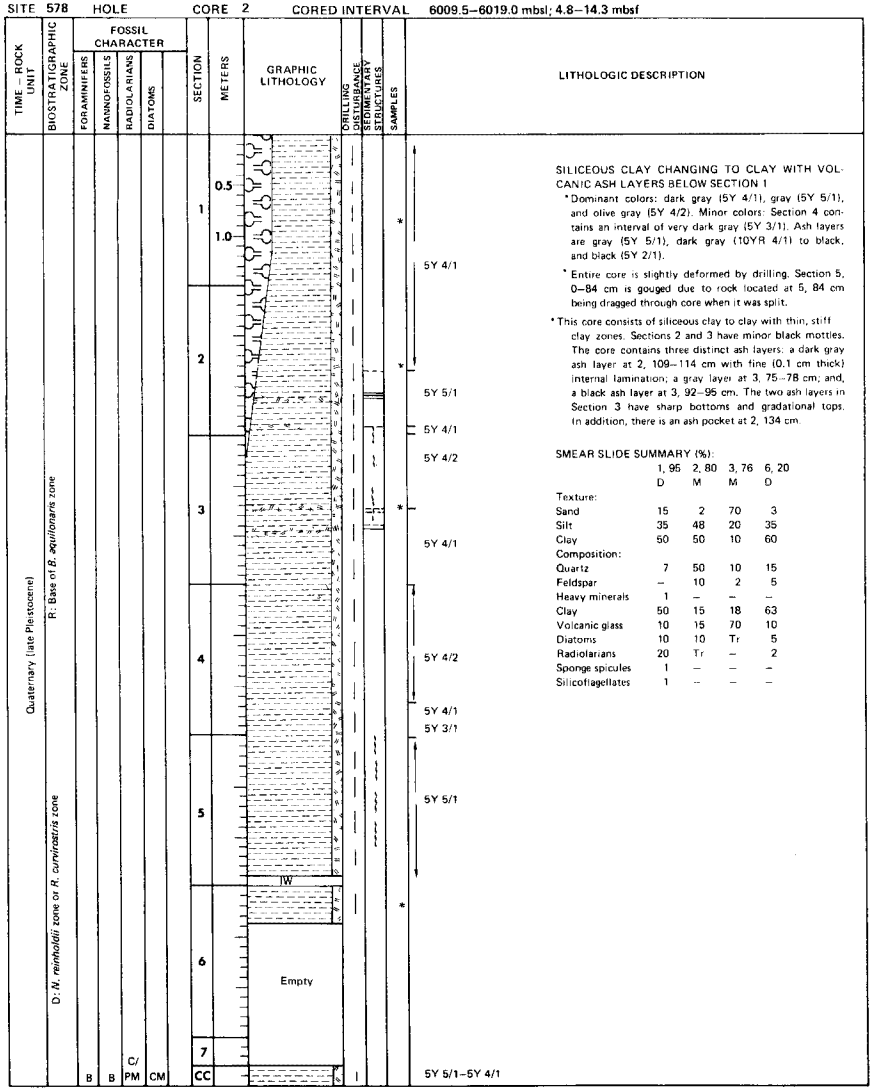
*Core is slightly disturbed, except for Section 2, 0–53 cm which had a O-ring dragged through it during splitting and is moderately disturbed.

*This core consists of siliceous clay mottled with dark grayish brown to black specks and blebs. The small, mottled black zone in Section 1, 42–46 cm has a sharp bottom contact and is Mn-enriched. The Core Catcher contains two olive gray, sandy ash patches at 7–9 cm and 12–18 cm.

SMEAR SLIDE SUMMARY (%):

	1, 15 D	1, 45 D	2, 55 D	2, 106 D	3, 24 D	3, 96 M	CC M
Texture:							
Sand	10	10	5	5	5	5	50
Silt	40	50	35	35	40	70	40
Clay	50	40	60	60	55	25	10
Composition:							
Quartz	7	10	5	5	7	15	1
Feldspar	3	3	–	2	3	5	
Heavy minerals	3	25	1	1	–	–	–
Clay	47	30	60	50	55	30	2
Volcanic glass	10	5	5	10	5	45	97
Foraminifers	Tr	–	–	Tr	–	–	–
Calc. nannofossils	–	Tr	–	–	–	–	–
Diatoms	10	7	10	10	15	5	–
Radiolarians	20	15	15	20	15	–	–
Sponge spicules	–	–	1	1	–	–	–
Silicoflagellates	–	5	3	1	–	–	–

SITE 578 HOLE CORE 2 CORED INTERVAL 6009.5–6019.0 mbsl; 4.8–14.3 mbsf



SILICEOUS CLAY CHANGING TO CLAY WITH VOLCANIC ASH LAYERS BELOW SECTION 1

*Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), and olive gray (5Y 4/2). Minor colors: Section 4 contains an interval of very dark gray (5Y 3/1). Ash layers are gray (5Y 5/1), dark gray (10YR 4/1) to black, and black (5Y 2/1).

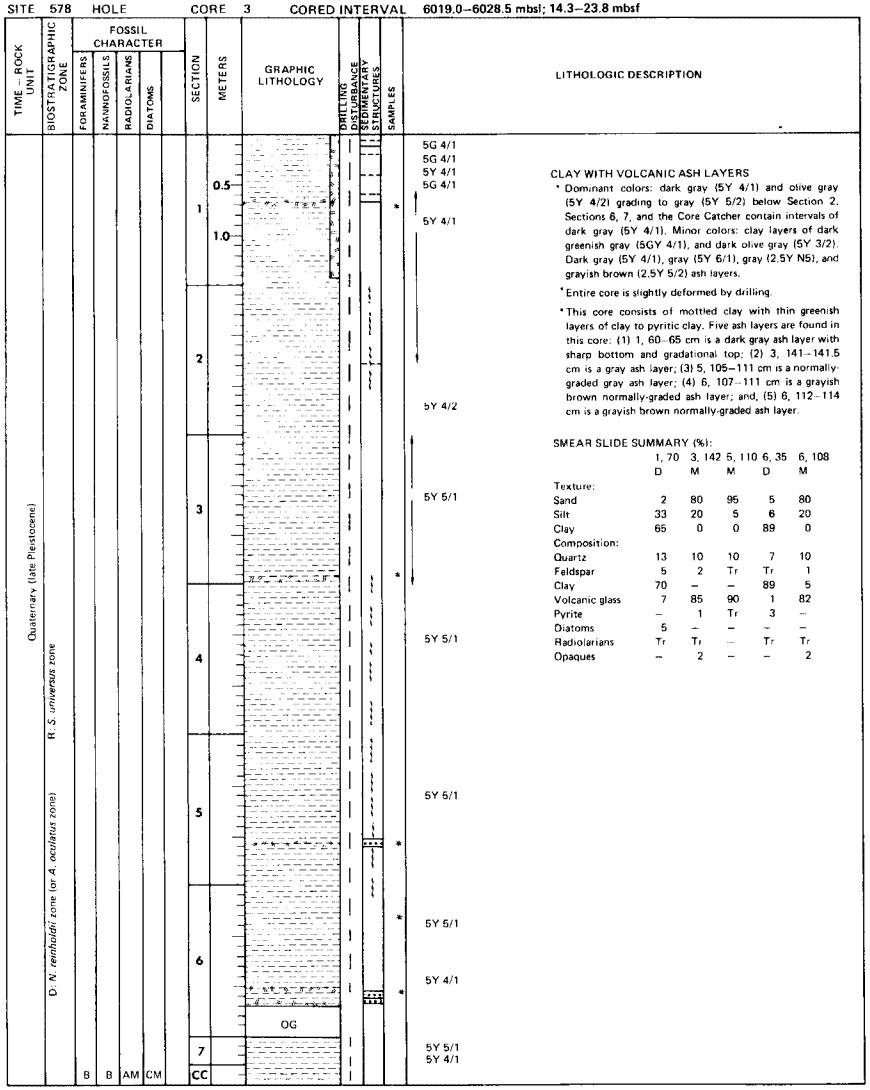
*Entire core is slightly deformed by drilling. Section 5, 0–84 cm is gouged due to rock located at 5, 84 cm being dragged through core when it was split.

*This core consists of siliceous clay to clay with thin, stiff clay zones. Sections 2 and 3 have minor black mottles. The core contains three distinct ash layers: a dark gray ash layer at 2, 109–114 cm with fine (0.1 cm thick) internal lamination; a gray layer at 3, 75–78 cm; and, a black ash layer at 3, 92–95 cm. The two ash layers in Section 3 have sharp bottoms and gradational tops. In addition, there is an ash pocket at 2, 134 cm.

SMEAR SLIDE SUMMARY (%):

	1, 95 D	2, 80 M	3, 76 M	6, 20 D
Texture:				
Sand	15	2	70	3
Silt	35	48	20	35
Clay	50	50	10	60
Composition:				
Quartz	7	50	10	15
Feldspar	–	10	2	5
Heavy minerals	1	–	–	–
Clay	50	15	18	63
Volcanic glass	10	15	70	10
Diatoms	10	10	Tr	5
Radiolarians	20	Tr	–	2
Sponge spicules	1	–	–	–
Silicoflagellates	1	–	–	–

SITE 578 HOLE CORE 3 CORED INTERVAL 6019.0–6028.5 mbsl; 14.3–23.8 mbsf



LITHOLOGIC DESCRIPTION

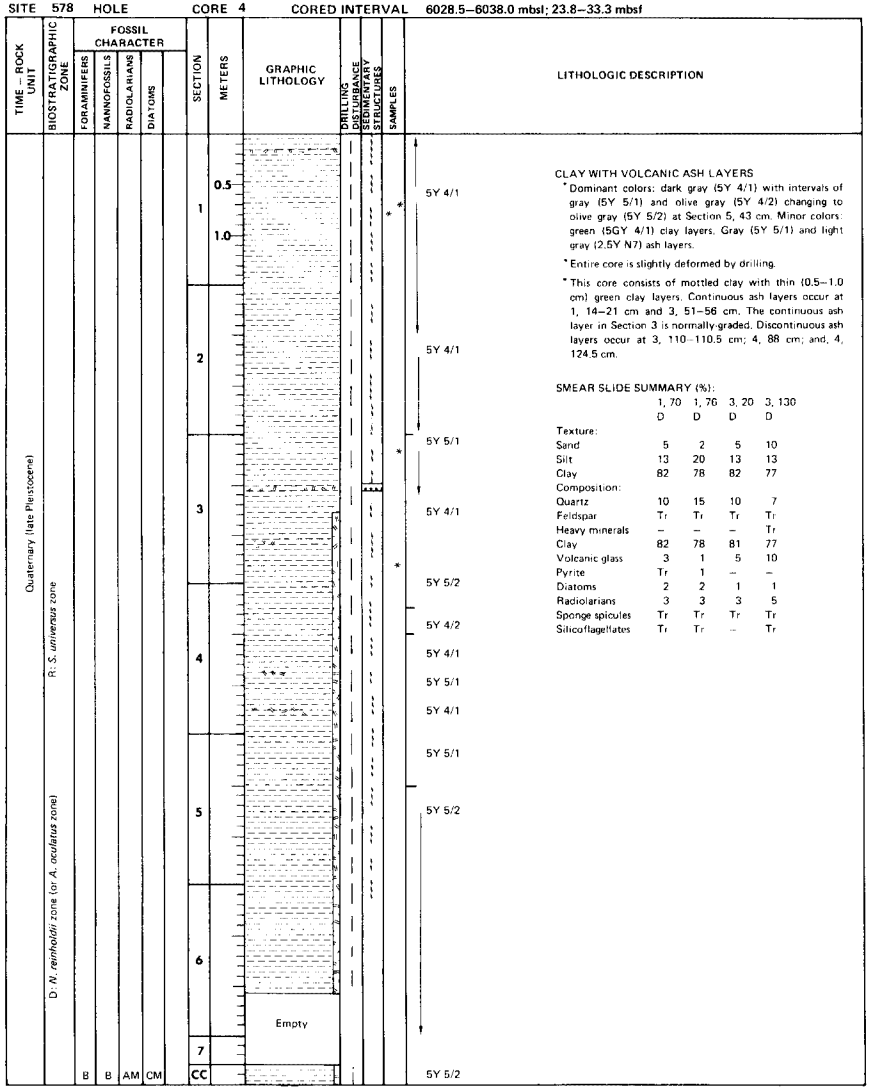
CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1) and olive gray (5Y 4/2) grading to gray (5Y 5/2) below Section 2, Sections 6, 7, and the Core Catcher contain intervals of dark gray (5Y 4/1). Minor colors: clay layers of dark greenish gray (5GY 4/1), and dark olive gray (5Y 3/2). Dark gray (5Y 4/1), gray (5Y 6/1), gray (2.5Y N5), and grayish brown (2.5Y 5/2) ash layers.
- * Entire core is slightly deformed by drilling.
- * This core consists of mottled clay with thin greenish layers of clay to pyritic clay. Five ash layers are found in this core: (1) 1, 60–65 cm is a dark gray ash layer with sharp bottom and gradational top; (2) 3, 141–141.5 cm is a gray ash layer; (3) 5, 105–111 cm is a normally-graded gray ash layer; (4) 6, 107–111 cm is a grayish brown normally-graded ash layer; and, (5) 6, 112–114 cm is a grayish brown normally-graded ash layer.

SMEAR SLIDE SUMMARY (%):

	1, 70 D	3, 142 M	5, 110 M	6, 35 D	6, 108 M
Texture:					
Sand	2	80	95	5	80
Silt	33	20	5	6	20
Clay	65	0	0	89	0
Composition:					
Quartz	13	10	10	7	10
Feldspar	5	2	Tr	Tr	1
Clay	70	–	–	89	5
Volcanic glass	7	85	90	1	82
Pyrite	–	1	Tr	3	–
Diatoms	5	–	–	–	–
Radiolarians	Tr	Tr	–	Tr	Tr
Opaques	–	2	–	–	2

SITE 578 HOLE CORE 4 CORED INTERVAL 6028.5–6038.0 mbsl; 23.8–33.3 mbsf



LITHOLOGIC DESCRIPTION

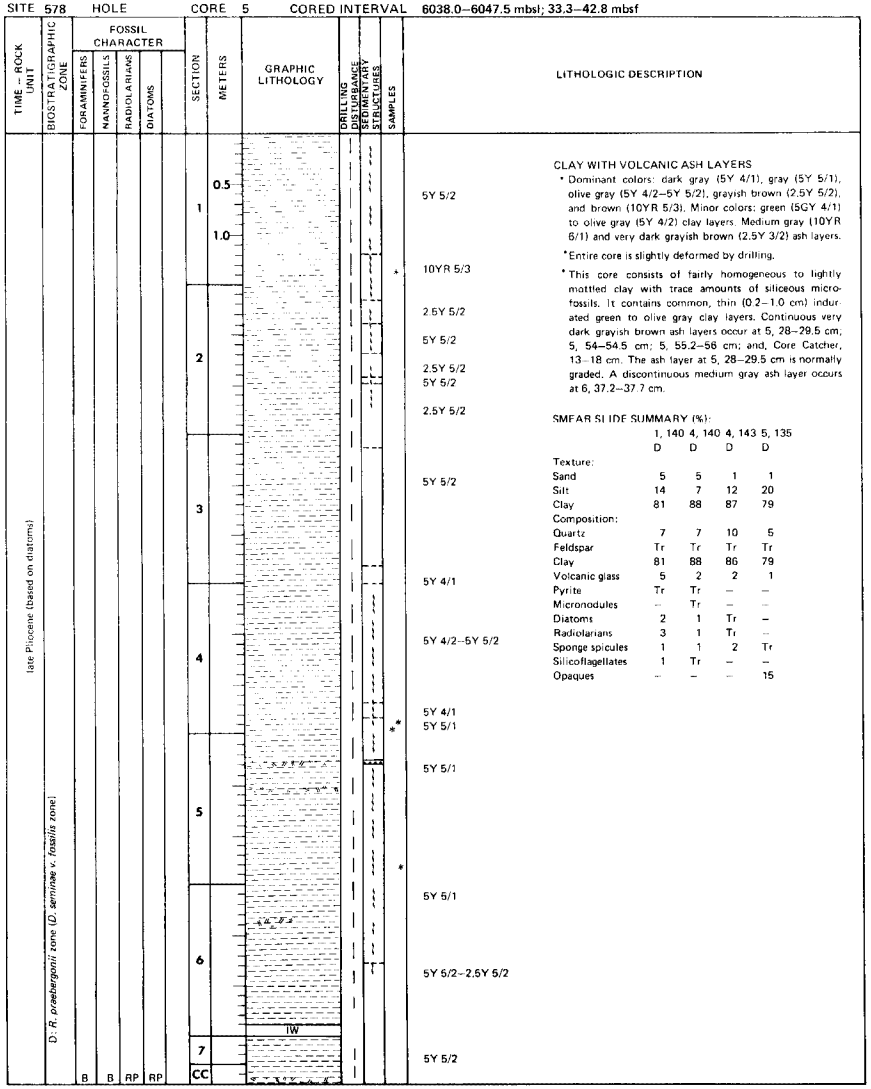
CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1) with intervals of gray (5Y 5/1) and olive gray (5Y 4/2) changing to olive gray (5Y 5/2) at Section 5, 43 cm. Minor colors: green (5GY 4/1) clay layers. Gray (5Y 5/1) and light gray (2.5Y N7) ash layers.
- * Entire core is slightly deformed by drilling.
- * This core consists of mottled clay with thin (0.5–1.0 cm) green clay layers. Continuous ash layers occur at 1, 14–21 cm and 3, 51–56 cm. The continuous ash layer in Section 3 is normally-graded. Discontinuous ash layers occur at 3, 110–110.5 cm; 4, 88 cm; and, 4, 124.5 cm.

SMEAR SLIDE SUMMARY (%):

	1, 70 D	1, 76 D	3, 20 D	3, 130 D
Texture:				
Sand	5	2	5	10
Silt	13	20	13	13
Clay	82	78	82	77
Composition:				
Quartz	10	15	10	7
Feldspar	Tr	Tr	Tr	Tr
Heavy minerals	–	–	–	Tr
Clay	82	78	81	77
Volcanic glass	3	1	5	10
Pyrite	Tr	1	–	–
Diatoms	2	2	1	1
Radiolarians	3	3	3	5
Sponge spicules	Tr	Tr	Tr	Tr
Silicoflagellates	Tr	Tr	–	Tr

SITE 578 HOLE CORE 5 CORED INTERVAL 6038.0–6047.5 mbsl; 33.3–42.8 mbsf



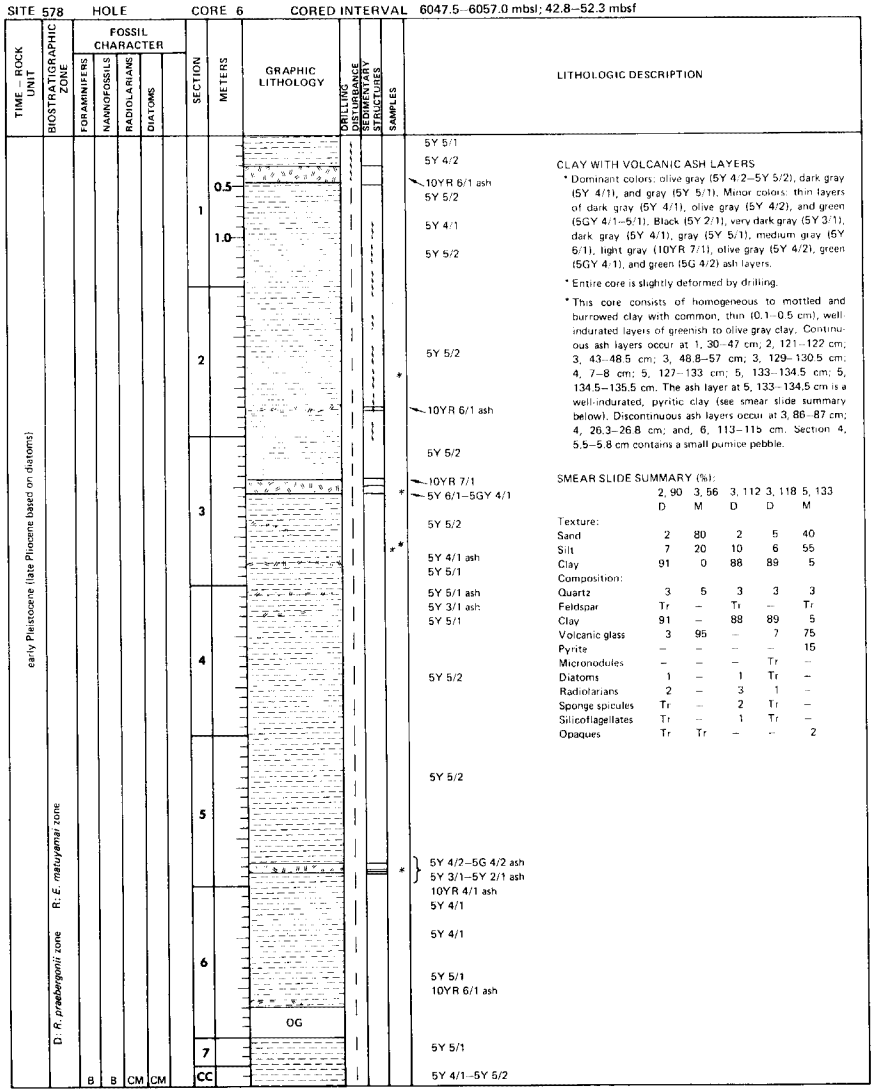
CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2–5Y 5/2), grayish brown (2.5Y 5/2), and brown (10YR 5/3). Minor colors: green (5GY 4/1) to olive gray (5Y 4/2) clay layers. Medium gray (10YR 6/1) and very dark grayish brown (2.5Y 3/2) ash layers.
- *Entire core is slightly deformed by drilling.
- This core consists of fairly homogeneous to lightly mottled clay with trace amounts of siliceous microfossils. It contains common, thin (0.2–1.0 cm) indurated green to olive gray clay layers. Continuous very dark grayish brown ash layers occur at 5, 28–29.5 cm; 5, 54–54.5 cm; 5, 55.2–56 cm; and, Core Catcher, 13–18 cm. The ash layer at 5, 28–29.5 cm is normally graded. A discontinuous medium gray ash layer occurs at 6, 37.2–37.7 cm.

SMEAR SLIDE SUMMARY (%):

	1, 140 D	4, 140 D	4, 143 D	5, 135 D
Texture:				
Sand	5	5	1	1
Silt	14	7	12	20
Clay	81	88	87	79
Composition:				
Quartz	7	7	10	5
Feldspar	Tr	Tr	Tr	Tr
Clay	81	88	86	79
Volcanic glass	5	2	2	1
Pyrite	Tr	Tr	–	–
Micronodules	–	Tr	–	–
Diatoms	2	1	Tr	–
Radiolarians	3	1	Tr	–
Sponge spicules	1	1	2	Tr
Silicoflagellates	1	Tr	–	–
Opaques	–	–	–	15

SITE 578 HOLE CORE 6 CORED INTERVAL 6047.5–6057.0 mbsl; 42.8–52.3 mbsf



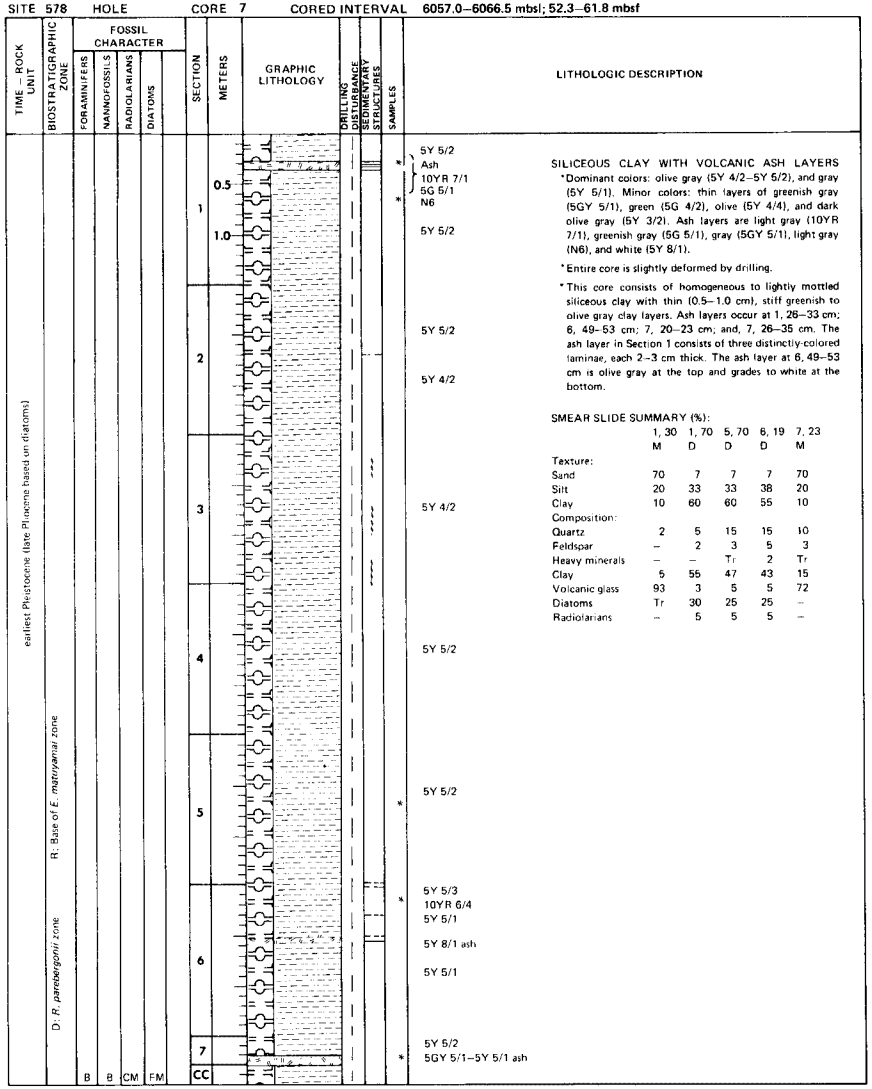
CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: olive gray (5Y 4/2–5Y 5/2), dark gray (5Y 4/1), and gray (5Y 5/1). Minor colors: thin layers of dark gray (5Y 4/1), olive gray (5Y 4/2), and green (5GY 4/1–5/1). Black (5Y 2/1), very dark gray (5Y 3/1), dark gray (5Y 4/1), gray (5Y 5/1), medium gray (5Y 6/1), light gray (10YR 7/1), olive gray (5Y 4/2), green (5GY 4/1), and green (5G 4/2) ash layers.
- *Entire core is slightly deformed by drilling.
- This core consists of homogeneous to mottled and burrowed clay with common, thin (0.1–0.5 cm), well-indurated layers of greenish to olive gray clay. Continuous ash layers occur at 1, 30–47 cm; 2, 121–122 cm; 3, 43–48.5 cm; 3, 48.8–57 cm; 3, 129–130.5 cm; 4, 7–8 cm; 5, 127–133 cm; 5, 133–134.5 cm; 5, 134.5–135.5 cm. The ash layer at 5, 133–134.5 cm is a well-indurated, pyritic clay (see smear slide summary below). Discontinuous ash layers occur at 3, 86–87 cm; 4, 26.3–26.8 cm; and, 6, 113–115 cm. Section 4, 5.5–5.8 cm contains a small pumice pebble.

SMEAR SLIDE SUMMARY (%):

	2, 90 D	3, 56 M	3, 112 D	3, 118 D	5, 133 M
Texture:					
Sand	2	80	2	5	40
Silt	7	20	10	6	55
Clay	91	0	88	89	5
Composition:					
Quartz	3	5	3	3	3
Feldspar	Tr	–	Tr	–	Tr
Clay	91	–	88	89	5
Volcanic glass	3	95	–	7	75
Pyrite	–	–	–	–	15
Micronodules	–	–	–	Tr	–
Diatoms	1	–	1	Tr	–
Radiolarians	2	–	3	1	–
Sponge spicules	Tr	–	2	Tr	–
Silicoflagellates	Tr	–	1	Tr	–
Opaques	Tr	Tr	–	–	2

SITE 578 HOLE CORE 7 CORED INTERVAL 6057.0–6066.5 mbsl; 52.3–61.8 mbsf



SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

*Dominant colors: olive gray (5Y 4/2–5Y 5/2), and gray (5Y 5/1). Minor colors: thin layers of greenish gray (5GY 5/1), green (5G 4/2), olive (5Y 4/4), and dark olive gray (5Y 3/2). Ash layers are light gray (10YR 7/1), greenish gray (5G 5/1), gray (5GY 5/1), light gray (N6), and white (5Y 8/1).

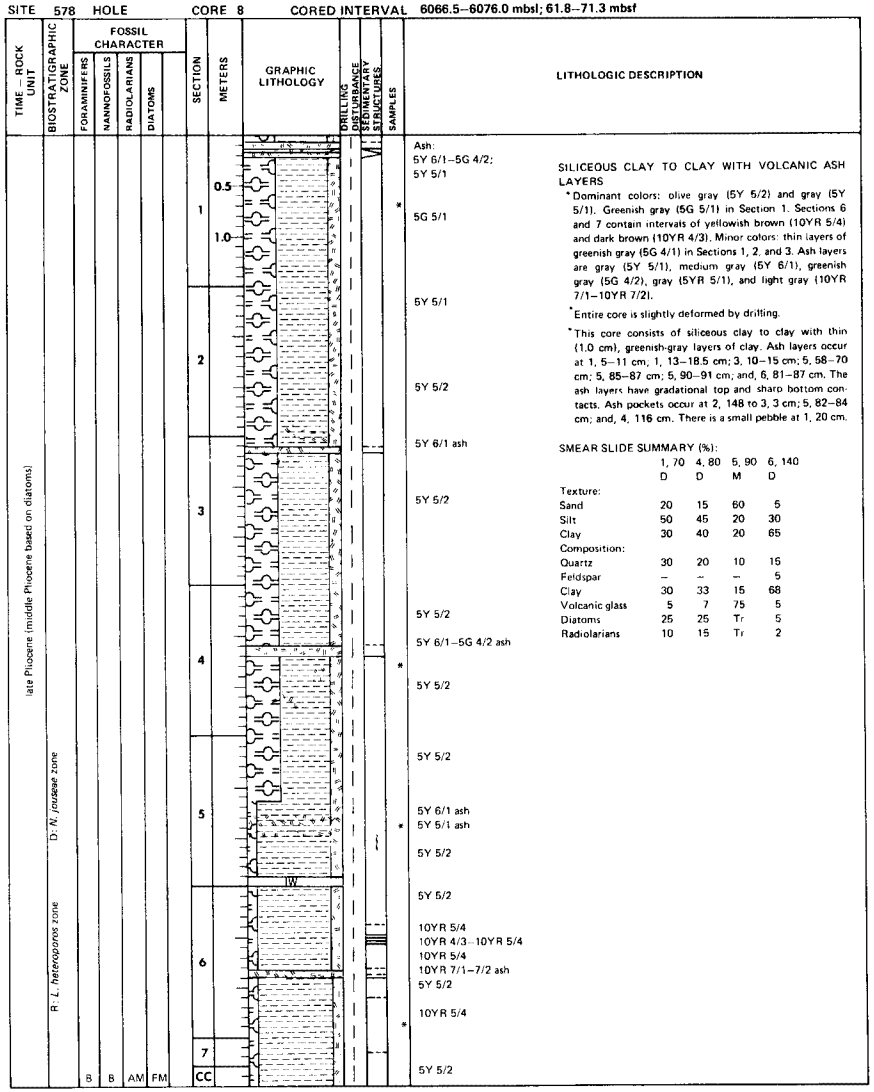
*Entire core is slightly deformed by drilling.

*This core consists of homogeneous to lightly mottled siliceous clay with thin (0.5–1.0 cm), stiff greenish to olive gray clay layers. Ash layers occur at 1, 26–33 cm; 6, 49–53 cm; 7, 20–23 cm; and, 7, 26–35 cm. The ash layer in Section 1 consists of three distinctly-colored laminae, each 2–3 cm thick. The ash layer at 6, 49–53 cm is olive gray at the top and grades to white at the bottom.

SMEAR SLIDE SUMMARY (%):

	1, 30 M	1, 70 D	5, 70 D	6, 19 D	7, 23 M
Texture:					
Sand	70	7	7	7	70
Silt	20	33	33	38	20
Clay	10	60	60	55	10
Composition:					
Quartz	2	5	15	15	10
Feldspar	–	2	3	5	3
Heavy minerals	–	–	Tr	2	Tr
Clay	5	55	47	43	15
Volcanic glass	93	3	5	5	72
Diatoms	Tr	30	25	25	–
Radiolarians	–	5	5	5	–

SITE 578 HOLE CORE 8 CORED INTERVAL 6066.5–6076.0 mbsl; 61.8–71.3 mbsf



SILICEOUS CLAY TO CLAY WITH VOLCANIC ASH LAYERS

*Dominant colors: olive gray (5Y 5/2) and gray (5Y 5/1). Greenish gray (5G 5/1) in Section 1. Sections 6 and 7 contain intervals of yellowish brown (10YR 5/4) and dark brown (10YR 4/3). Minor colors: thin layers of greenish gray (5G 4/1) in Sections 1, 2, and 3. Ash layers are gray (5Y 5/1), medium gray (5Y 6/1), greenish gray (5G 4/2), gray (5YR 5/1), and light gray (10YR 7/1–10YR 7/2).

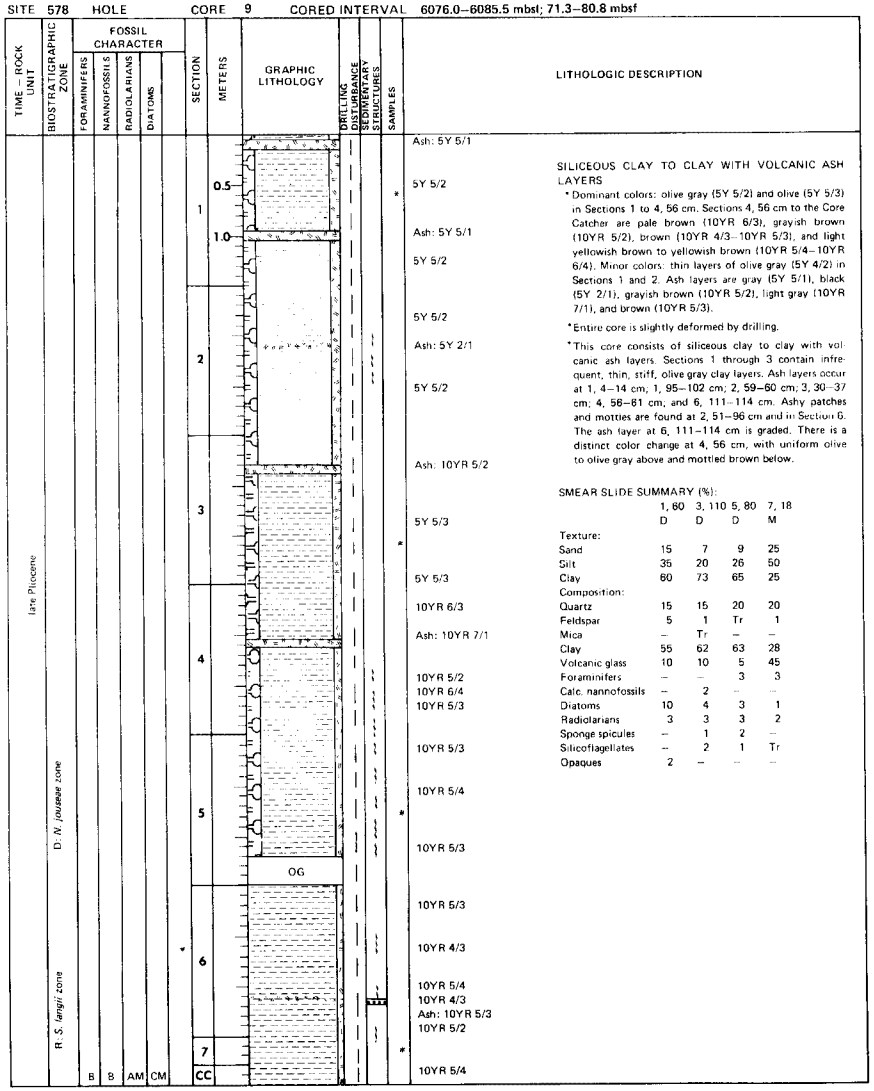
*Entire core is slightly deformed by drilling.

*This core consists of siliceous clay to clay with thin (1.0 cm), greenish-gray layers of clay. Ash layers occur at 1, 5–11 cm, 1, 13–18.5 cm; 3, 10–15 cm; 5, 58–70 cm; 5, 85–87 cm; 5, 90–91 cm; and, 6, 81–87 cm. The ash layers have gradational top and sharp bottom contacts. Ash pockets occur at 2, 148 to 3, 3 cm; 5, 82–84 cm; and, 4, 116 cm. There is a small pebble at 1, 20 cm.

SMEAR SLIDE SUMMARY (%):

	1, 70 D	4, 80 D	5, 90 M	6, 140 D
Texture:				
Sand	20	15	60	5
Silt	50	45	20	30
Clay	30	40	20	65
Composition:				
Quartz	30	20	10	15
Feldspar	–	–	–	5
Clay	30	33	15	68
Volcanic glass	5	7	75	5
Diatoms	25	25	Tr	5
Radiolarians	10	15	Tr	2

SITE 578 HOLE CORE 9 CORED INTERVAL 6076.0–6085.5 mbsl; 71.3–80.8 mbsf



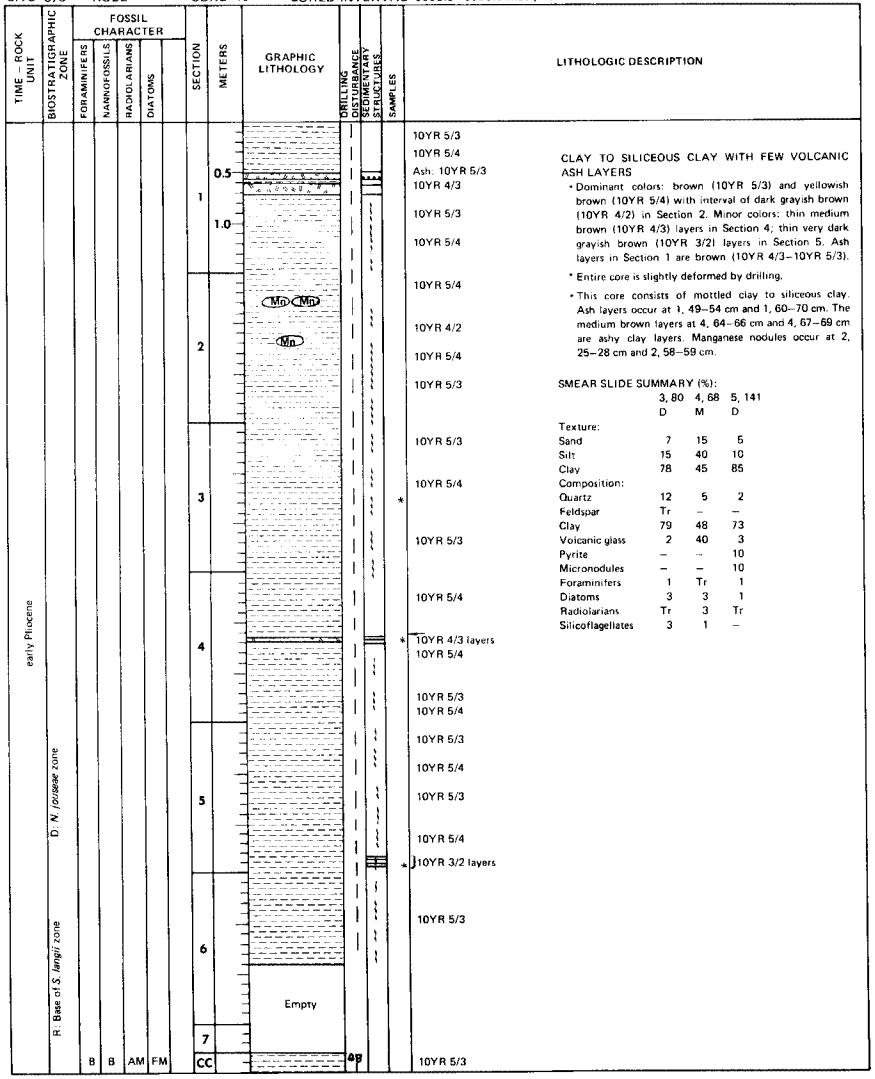
SILICEOUS CLAY TO CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: olive gray (5Y 5/2) and olive (5Y 5/3) in Sections 1 to 4, 56 cm. Sections 4, 56 cm to the Core Catcher are pale brown (10YR 6/3), grayish brown (10YR 5/2), brown (10YR 4/3–10YR 5/3), and light yellowish brown to yellowish brown (10YR 5/4–10YR 6/4). Minor colors: thin layers of olive gray (5Y 4/2) in Sections 1 and 2. Ash layers are gray (5Y 5/1), black (5Y 2/1), grayish brown (10YR 5/2), light gray (10YR 7/1), and brown (10YR 5/3).
- Entire core is slightly deformed by drilling.
- This core consists of siliceous clay to clay with volcanic ash layers. Sections 1 through 3 contain infrequent, thin, stiff, olive gray clay layers. Ash layers occur at 1, 4–14 cm; 1, 95–102 cm; 2, 59–60 cm; 3, 30–37 cm; 4, 58–61 cm; and 6, 111–114 cm. Ashy patches and mottles are found at 2, 51–96 cm and in Section 6. The ash layer at 6, 111–114 cm is graded. There is a distinct color change at 4, 56 cm, with uniform olive to olive gray above and mottled brown below.

SMEAR SLIDE SUMMARY (%):

	1, 60 D	3, 110 D	5, 80 D	7, 18 M
Texture:				
Sand	15	7	9	25
Silt	35	20	26	50
Clay	60	73	65	25
Composition:				
Quartz	15	15	20	20
Feldspar	5	1	Tr	1
Mica	–	Tr	–	–
Clay	55	62	63	28
Volcanic glass	10	10	5	45
Foraminifers	–	–	3	3
Calc. nannofossils	–	2	–	–
Diatoms	10	4	3	1
Radiolarians	3	3	3	2
Sponge spicules	–	1	2	–
Silicoflagellates	–	2	1	Tr
Opaques	2	–	–	–

SITE 578 HOLE CORE 10 CORED INTERVAL 6085.5–6095.0 mbsl; 80.8–90.3 mbsf



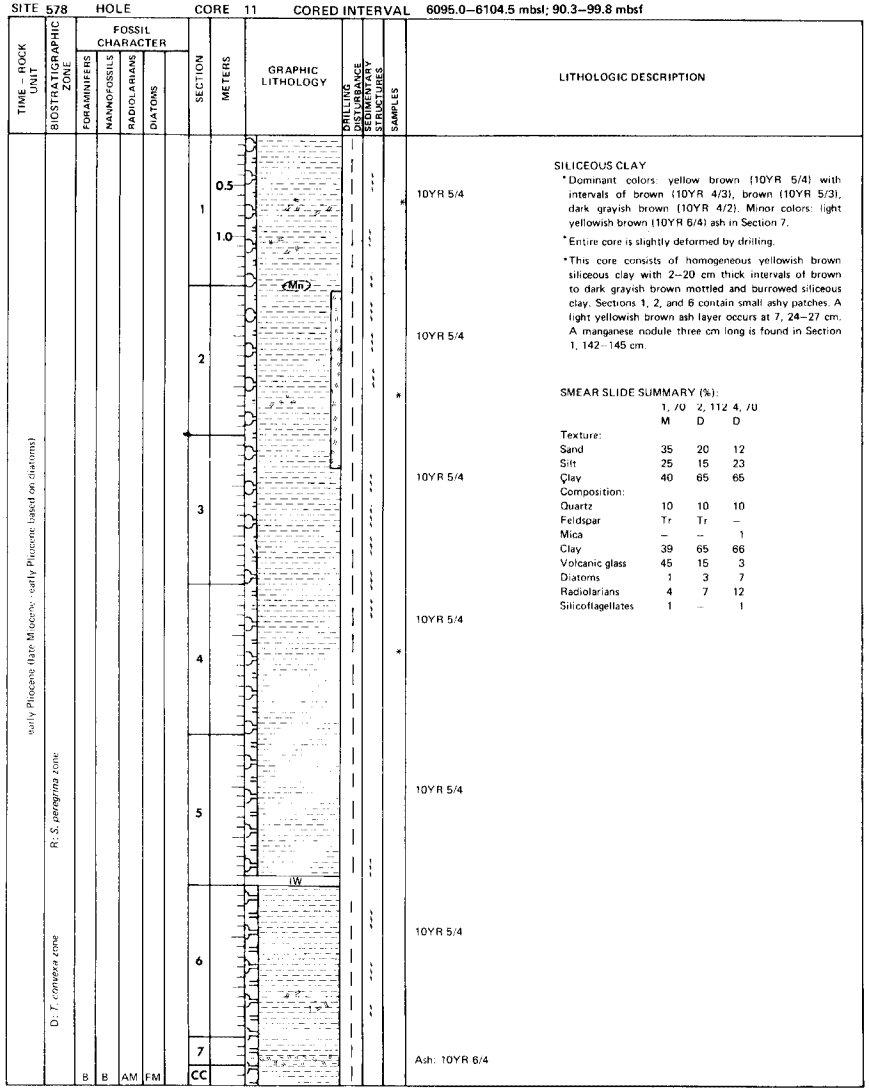
CLAY TO SILICEOUS CLAY WITH FEW VOLCANIC ASH LAYERS

- Dominant colors: brown (10YR 5/3) and yellowish brown (10YR 5/4) with interval of dark grayish brown (10YR 4/2) in Section 2. Minor colors: thin medium brown (10YR 4/3) layers in Section 4; thin very dark grayish brown (10YR 3/2) layers in Section 5. Ash layers in Section 1 are brown (10YR 4/3–10YR 5/3).
- Entire core is slightly deformed by drilling.
- This core consists of mottled clay to siliceous clay. Ash layers occur at 1, 49–54 cm and 1, 60–70 cm. The medium brown layers at 4, 64–66 cm and 4, 67–69 cm are ashy clay layers. Manganese nodules occur at 2, 25–28 cm and 2, 58–59 cm.

SMEAR SLIDE SUMMARY (%):

	3, 80 D	4, 68 M	5, 141 D
Texture:			
Sand	7	15	5
Silt	15	40	10
Clay	78	45	85
Composition:			
Quartz	12	5	2
Feldspar	Tr	–	–
Clay	79	48	73
Volcanic glass	2	40	3
Pyrite	–	–	10
Micronodules	–	–	10
Foraminifers	1	Tr	1
Diatoms	3	3	1
Radiolarians	Tr	3	Tr
Silicoflagellates	3	1	–

SITE 578 HOLE CORE 11 CORED INTERVAL 6095.0–6104.5 mbsl; 90.3–99.8 mbsf



LITHOLOGIC DESCRIPTION

SILICEOUS CLAY

*Dominant colors: yellow brown (10YR 5/4) with intervals of brown (10YR 4/3), brown (10YR 5/3), dark grayish brown (10YR 4/2). Minor colors: light yellowish brown (10YR 6/4) ash in Section 7.

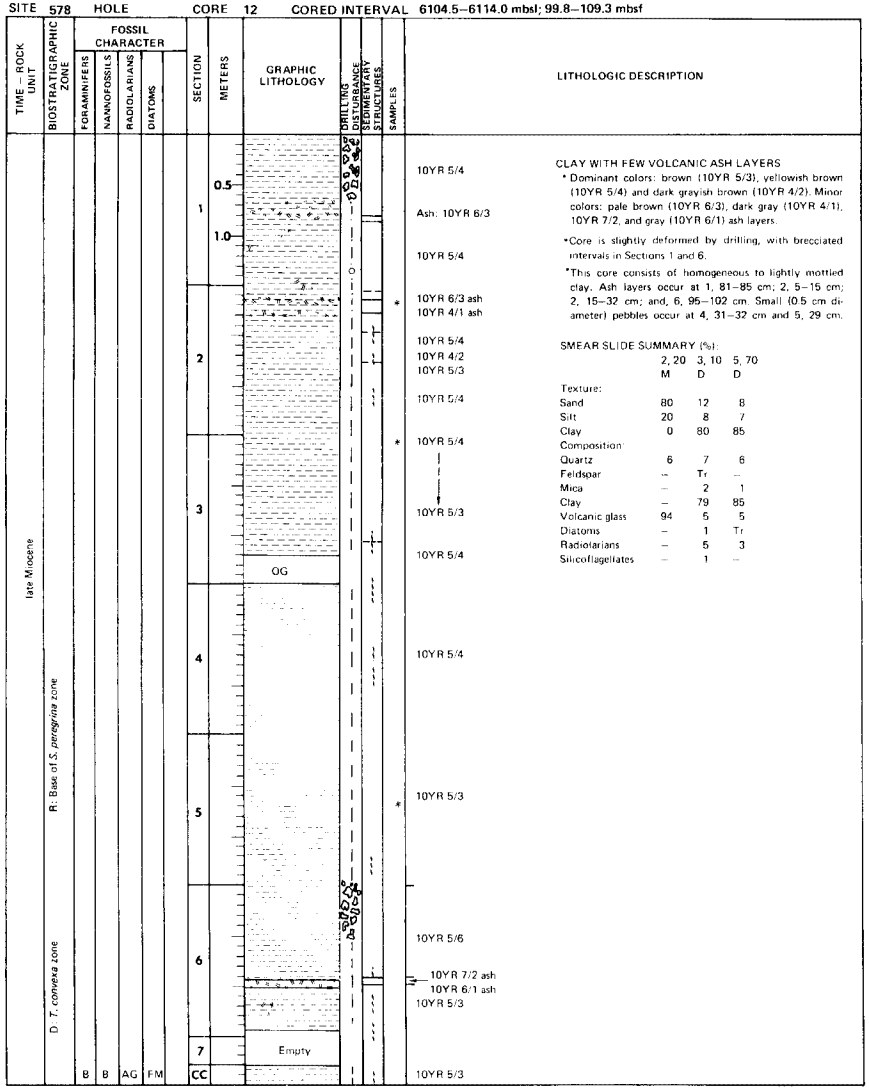
*Entire core is slightly deformed by drilling.

*This core consists of homogeneous yellowish brown siliceous clay with 2–20 cm thick intervals of brown to dark grayish brown mottled and burrowed siliceous clay. Sections 1, 2, and 6 contain small ashy patches. A light yellowish brown ash layer occurs at 7, 24–27 cm. A manganese nodule three cm long is found in Section 1, 142–145 cm.

SMEAR SLIDE SUMMARY (%):

	1, 70 M	2, 112 D	4, 70 D
Texture:			
Sand	35	20	12
Silt	25	15	23
Clay	40	65	65
Composition:			
Quartz	10	10	10
Feldspar	Tr	Tr	–
Mica	–	–	1
Clay	39	65	66
Volcanic glass	45	15	3
Diatoms	1	3	7
Radiolarians	4	7	12
Silicoflagellates	1	–	1

SITE 578 HOLE CORE 12 CORED INTERVAL 6104.5–6114.0 mbsl; 99.8–109.3 mbsf



LITHOLOGIC DESCRIPTION

CLAY WITH FEW VOLCANIC ASH LAYERS

*Dominant colors: brown (10YR 5/3), yellowish brown (10YR 5/4) and dark grayish brown (10YR 4/2). Minor colors: pale brown (10YR 6/3), dark gray (10YR 4/1), 10YR 7/2, and gray (10YR 6/1) ash layers.

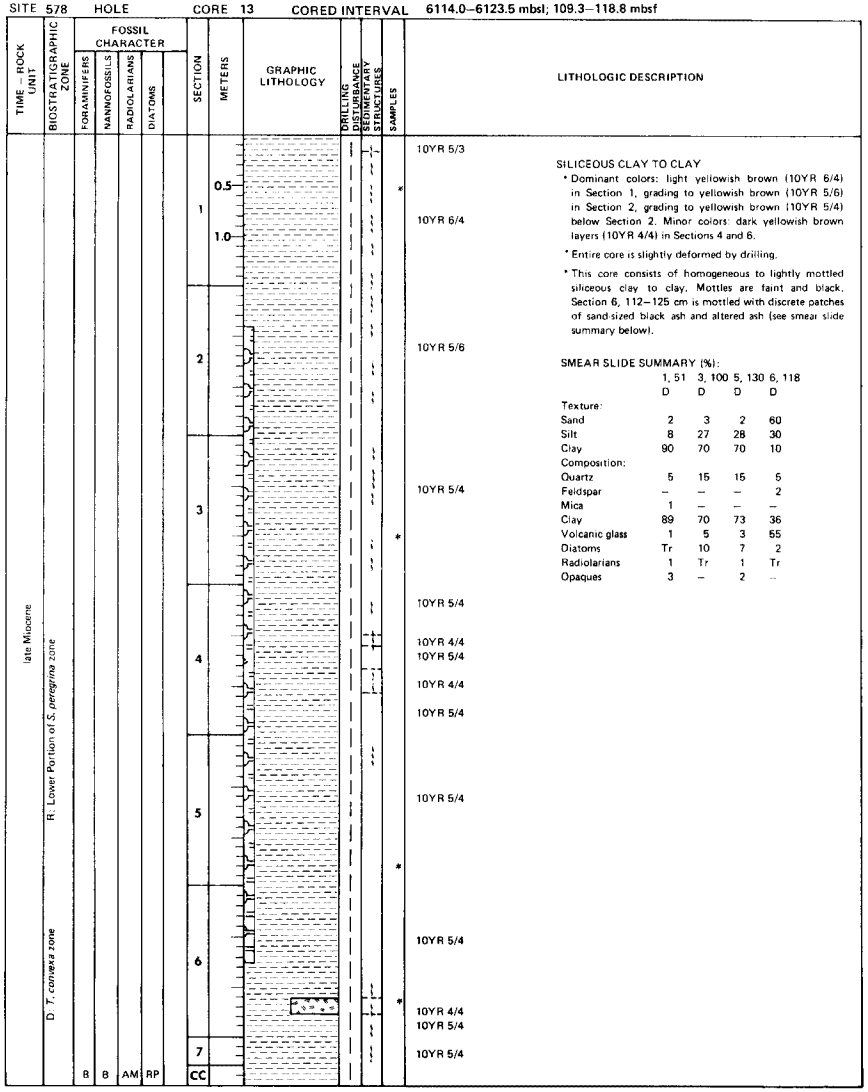
*Core is slightly deformed by drilling, with brecciated intervals in Sections 1 and 6.

*This core consists of homogeneous to lightly mottled clay. Ash layers occur at 1, 81–85 cm; 2, 5–15 cm; 2, 15–32 cm; and, 6, 95–102 cm. Small (0.5 cm diameter) pebbles occur at 4, 31–32 cm and 5, 29 cm.

SMEAR SLIDE SUMMARY (%):

	2, 20 M	3, 10 D	5, 70 D
Texture:			
Sand	80	12	8
Silt	20	8	7
Clay	0	80	85
Composition:			
Quartz	6	7	6
Feldspar	–	Tr	–
Mica	–	2	1
Clay	–	79	85
Volcanic glass	94	5	5
Diatoms	–	1	Tr
Radiolarians	–	5	3
Silicoflagellates	–	1	–

SITE 578 HOLE CORE 13 CORED INTERVAL 6114.0–6123.5 mbsl; 109.3–118.8 mbsf



LITHOLOGIC DESCRIPTION

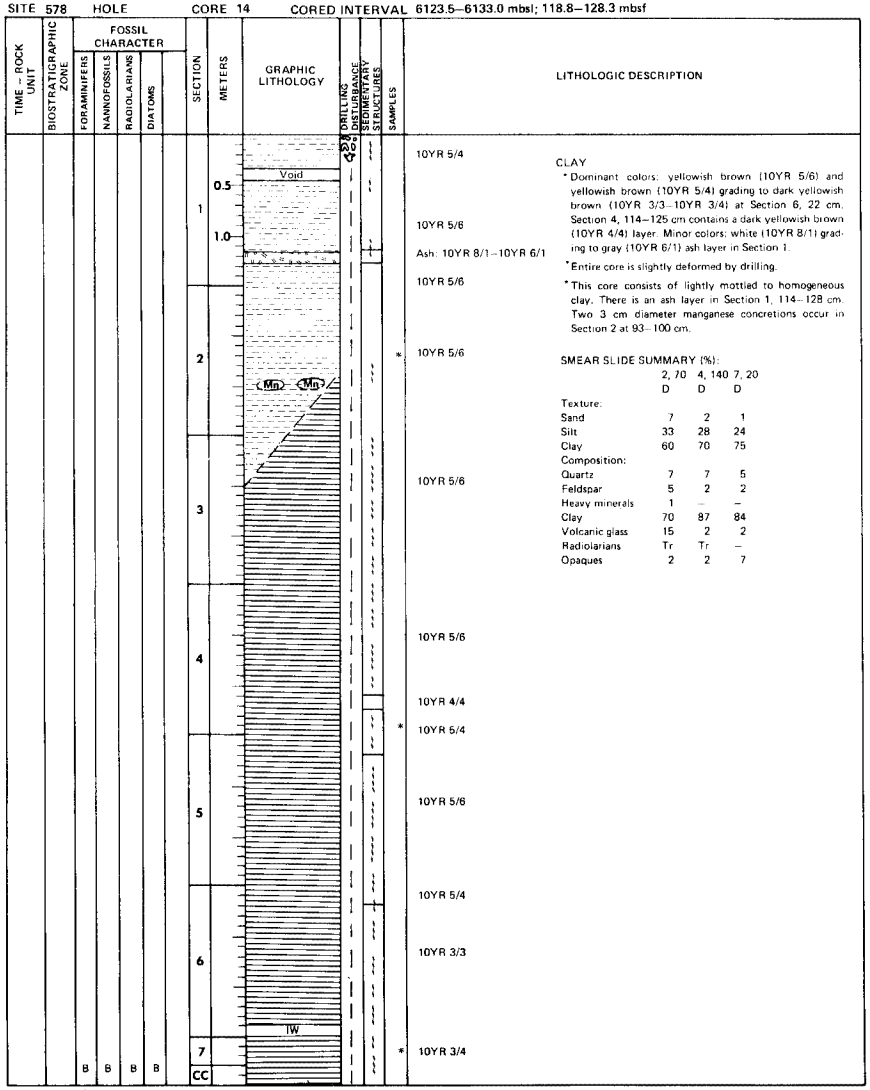
SILICEOUS CLAY TO CLAY

- Dominant colors: light yellowish brown (10YR 6/4) in Section 1, grading to yellowish brown (10YR 5/6) in Section 2, grading to yellowish brown (10YR 5/4) below Section 2. Minor colors: dark yellowish brown layers (10YR 4/4) in Sections 4 and 6.
- Entire core is slightly deformed by drilling.
- This core consists of homogeneous to lightly mottled siliceous clay to clay. Mottles are faint and black. Section 6, 112–125 cm is mottled with discrete patches of sand-sized black ash and altered ash (see smear slide summary below).

SMEAR SLIDE SUMMARY (%):

	1, 51 D	3, 100 D	5, 130 D	6, 118 D
Texture:				
Sand	2	3	2	60
Silt	8	27	28	30
Clay	90	70	70	10
Composition:				
Quartz	5	15	15	5
Feldspar	–	–	–	2
Mica	1	–	–	–
Clay	89	70	73	36
Volcanic glass	1	5	3	55
Diatoms	Tr	10	7	2
Radiolarians	1	Tr	1	Tr
Opaques	3	–	2	–

SITE 578 HOLE CORE 14 CORED INTERVAL 6123.5–6133.0 mbsl; 118.8–128.3 mbsf



LITHOLOGIC DESCRIPTION

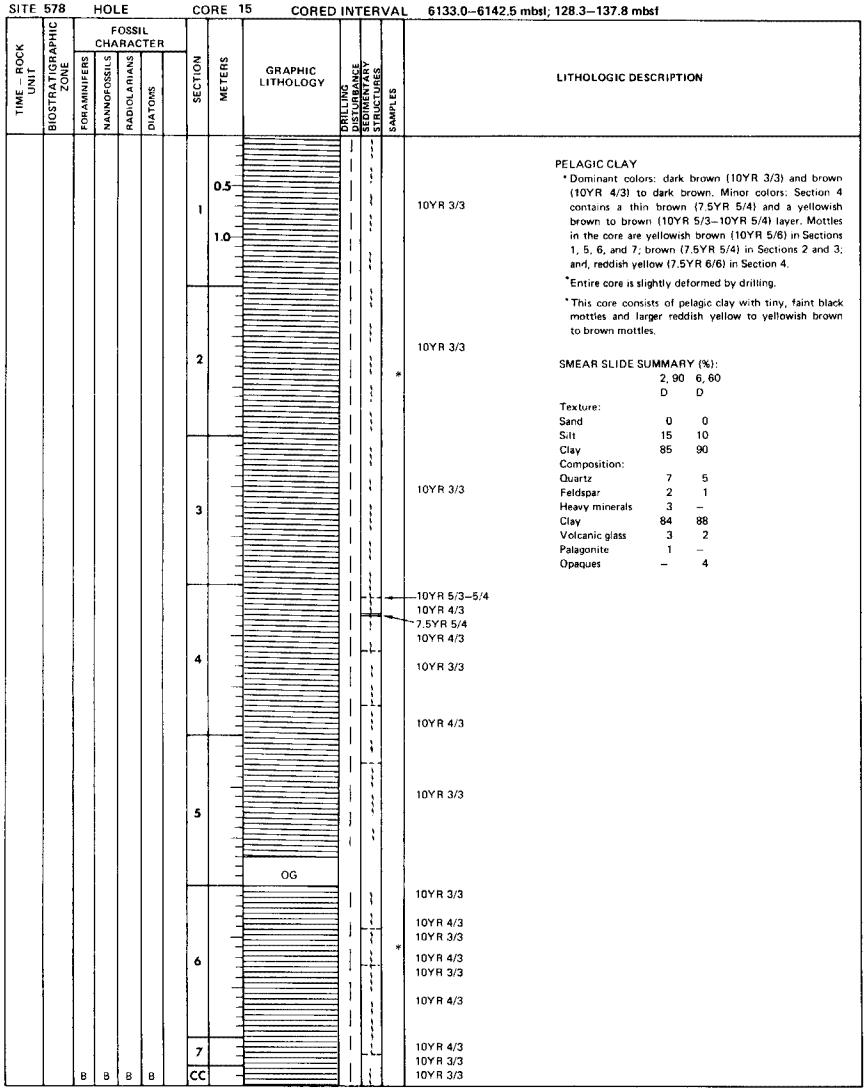
CLAY

- Dominant colors: yellowish brown (10YR 5/6) and yellowish brown (10YR 5/4) grading to dark yellowish brown (10YR 3/3–10YR 3/4) at Section 6, 22 cm. Section 4, 114–125 cm contains a dark yellowish brown (10YR 4/4) layer. Minor colors: white (10YR 8/1) grading to gray (10YR 6/1) ash layer in Section 1.
- Entire core is slightly deformed by drilling.
- This core consists of lightly mottled to homogeneous clay. There is an ash layer in Section 1, 114–128 cm. Two 3 cm diameter manganese concretions occur in Section 2 at 93–100 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D	4, 140 D	7, 20 D
Texture:			
Sand	7	2	1
Silt	33	28	24
Clay	60	70	75
Composition:			
Quartz	7	7	5
Feldspar	5	2	2
Heavy minerals	1	–	–
Clay	70	87	84
Volcanic glass	15	2	2
Radiolarians	Tr	Tr	–
Opaques	2	2	7

SITE 578 HOLE CORE 15 CORED INTERVAL 6133.0–6142.5 mbsl; 128.3–137.8 mbsf



PELAGIC CLAY

* Dominant colors: dark brown (10YR 3/3) and brown (10YR 4/3) to dark brown. Minor colors: Section 4 contains a thin brown (7.5YR 5/4) and a yellowish brown to brown (10YR 5/3–10YR 5/4) layer. Mottles in the core are yellowish brown (10YR 5/6) in Sections 1, 5, 6, and 7; brown (7.5YR 5/4) in Sections 2 and 3; and, reddish yellow (7.5YR 6/6) in Section 4.

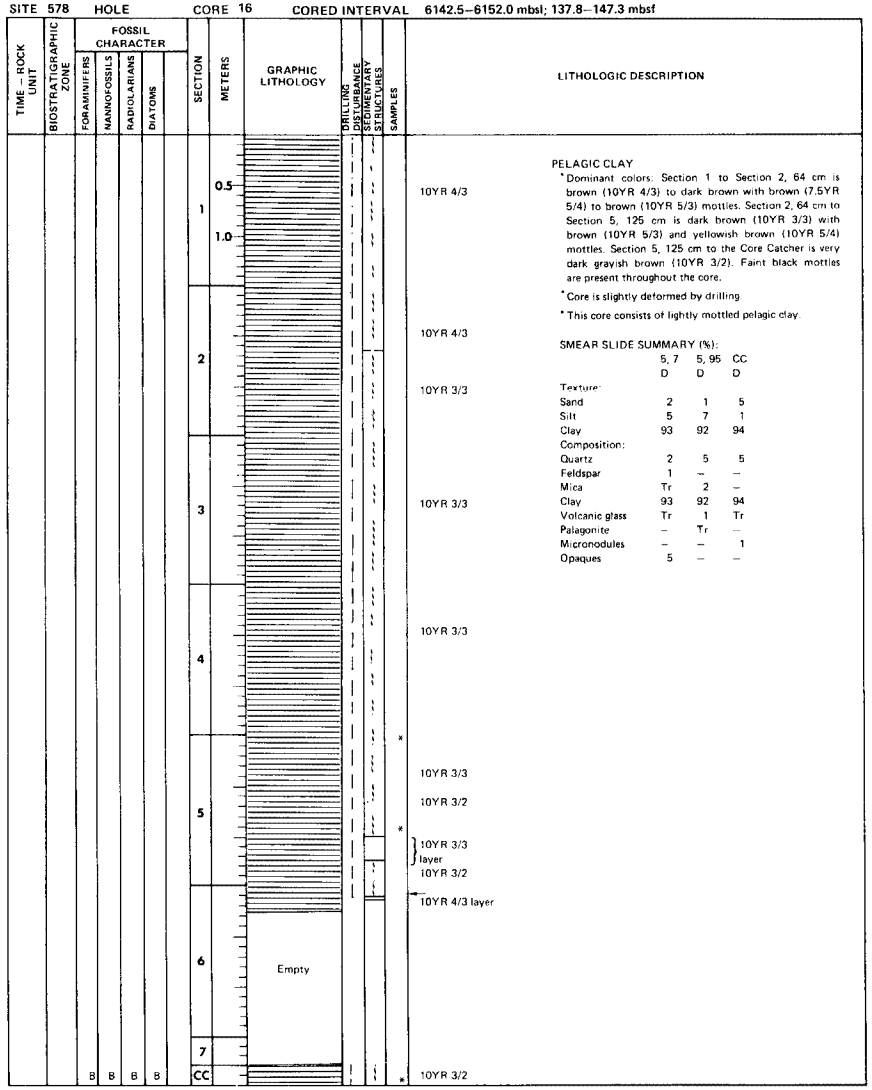
*Entire core is slightly deformed by drilling.

* This core consists of pelagic clay with tiny, faint black mottles and larger reddish yellow to yellowish brown to brown mottles.

SMEAR SLIDE SUMMARY (%):

	2, 90 D	6, 60 D
Texture:		
Sand	0	0
Silt	15	10
Clay	85	90
Composition:		
Quartz	7	5
Feldspar	2	1
Heavy minerals	3	–
Clay	84	88
Volcanic glass	3	2
Palagonite	1	–
Opaques	–	4

SITE 578 HOLE CORE 16 CORED INTERVAL 6142.5–6152.0 mbsl; 137.8–147.3 mbsf



PELAGIC CLAY

* Dominant colors: Section 1 to Section 2, 64 cm is brown (10YR 4/3) to dark brown with brown (7.5YR 5/4) to brown (10YR 5/3) mottles. Section 2, 64 cm to Section 5, 125 cm is dark brown (10YR 3/3) with brown (10YR 5/3) and yellowish brown (10YR 5/4) mottles. Section 5, 125 cm to the Core Catcher is very dark grayish brown (10YR 3/2). Faint black mottles are present throughout the core.

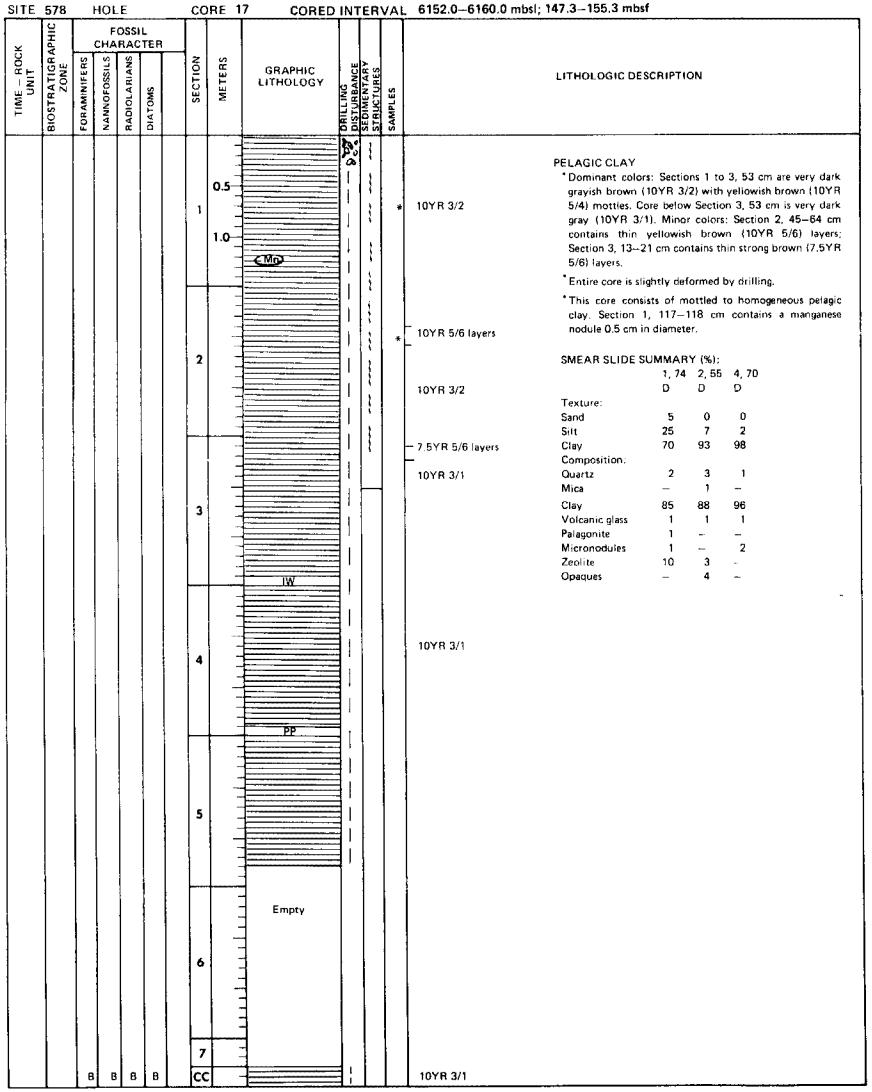
*Core is slightly deformed by drilling.

* This core consists of lightly mottled pelagic clay.

SMEAR SLIDE SUMMARY (%):

	5, 7 D	5, 95 D	CC D
Texture:			
Sand	2	1	5
Silt	5	7	1
Clay	93	92	94
Composition:			
Quartz	2	5	5
Feldspar	1	–	–
Mica	Tr	2	–
Clay	93	92	94
Volcanic glass	Tr	1	Tr
Palagonite	–	Tr	–
Micronodules	–	–	1
Opaques	5	–	–

SITE 578 HOLE CORE 17 CORED INTERVAL 6152.0–6160.0 mbsl; 147.3–155.3 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAY

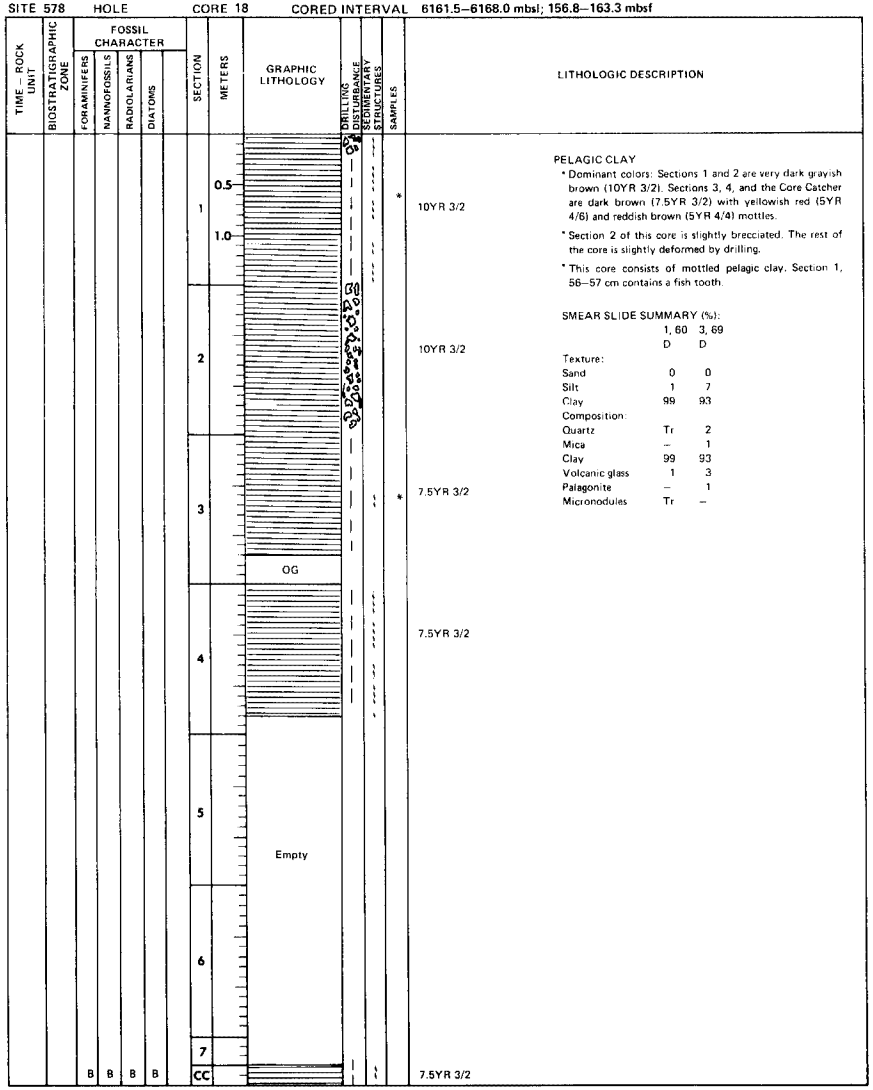
- Dominant colors: Sections 1 to 3, 53 cm are very dark grayish brown (10YR 3/2) with yellowish brown (10YR 5/4) mottles. Core below Section 3, 53 cm is very dark gray (10YR 3/1). Minor colors: Section 2, 45–64 cm contains thin yellowish brown (10YR 5/6) layers; Section 3, 13–21 cm contains thin strong brown (7.5YR 5/6) layers.
- Entire core is slightly deformed by drilling.
- This core consists of mottled to homogeneous pelagic clay. Section 1, 117–118 cm contains a manganese nodule 0.5 cm in diameter.

SMEAR SLIDE SUMMARY (%):

	1, 74 D	2, 55 D	4, 70 D
Texture:			
Sand	5	0	0
Silt	25	7	2
Clay	70	93	98
Composition:			
Quartz	2	3	1
Mica	–	1	–
Clay	85	88	96
Volcanic glass	1	1	1
Palagonite	1	–	–
Micronodules	1	–	2
Zeolite	10	3	–
Opaques	–	4	–

10YR 3/2
10YR 5/6 layers
10YR 3/2
7.5YR 5/6 layers
10YR 3/1
10YR 3/1
10YR 3/1

SITE 578 HOLE CORE 18 CORED INTERVAL 6161.5–6168.0 mbsl; 156.8–163.3 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAY

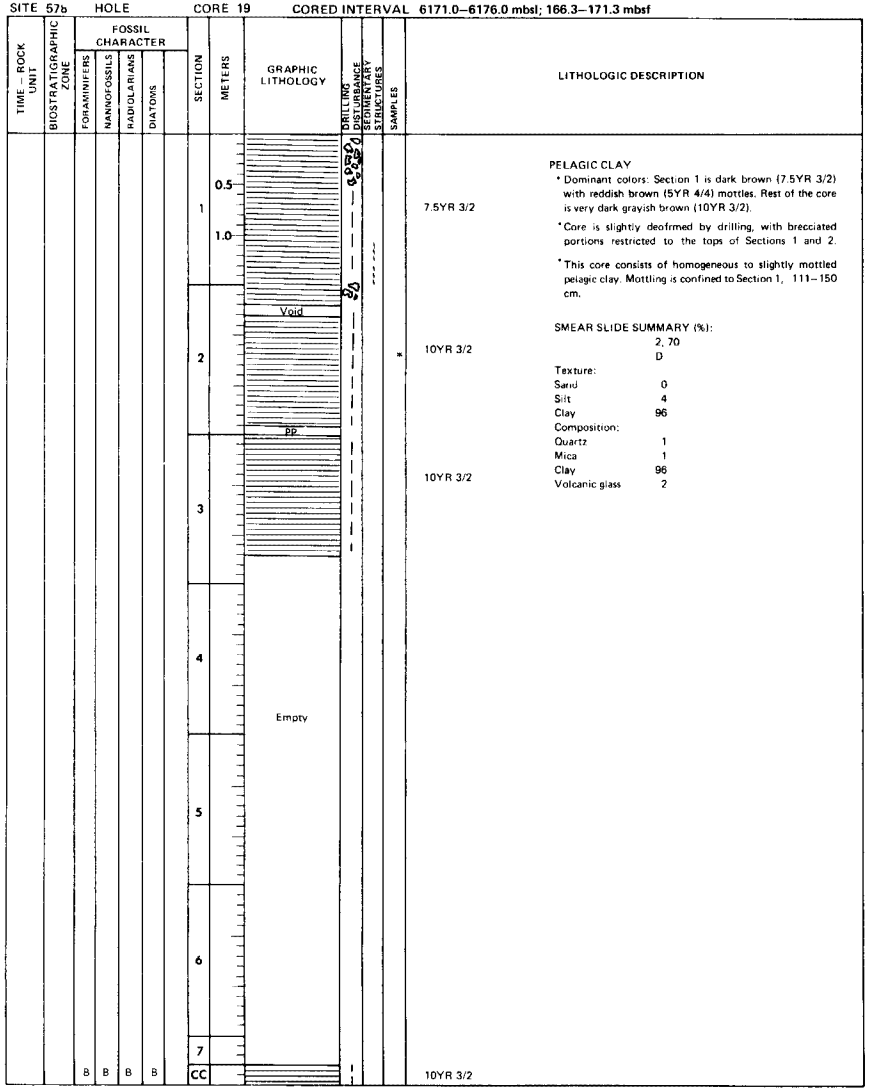
- Dominant colors: Sections 1 and 2 are very dark grayish brown (10YR 3/2). Sections 3, 4, and the Core Catcher are dark brown (7.5YR 3/2) with yellowish red (5YR 4/6) and reddish brown (5YR 4/4) mottles.
- Section 2 of this core is slightly brecciated. The rest of the core is slightly deformed by drilling.
- This core consists of mottled pelagic clay. Section 1, 56–57 cm contains a fish tooth.

SMEAR SLIDE SUMMARY (%):

	1, 60 D	3, 69 D
Texture:		
Sand	0	0
Silt	1	7
Clay	99	93
Composition:		
Quartz	Tr	2
Mica	–	1
Clay	99	93
Volcanic glass	1	3
Palagonite	–	1
Micronodules	Tr	–

10YR 3/2
10YR 3/2
7.5YR 3/2
7.5YR 3/2
7.5YR 3/2

SITE 578 HOLE CORE 19 CORED INTERVAL 6171.0–6176.0 mbsl; 166.3–171.3 mbsf



PELAGIC CLAY

* Dominant colors: Section 1 is dark brown (7.5YR 3/2) with reddish brown (5YR 4/4) mottles. Rest of the core is very dark grayish brown (10YR 3/2).

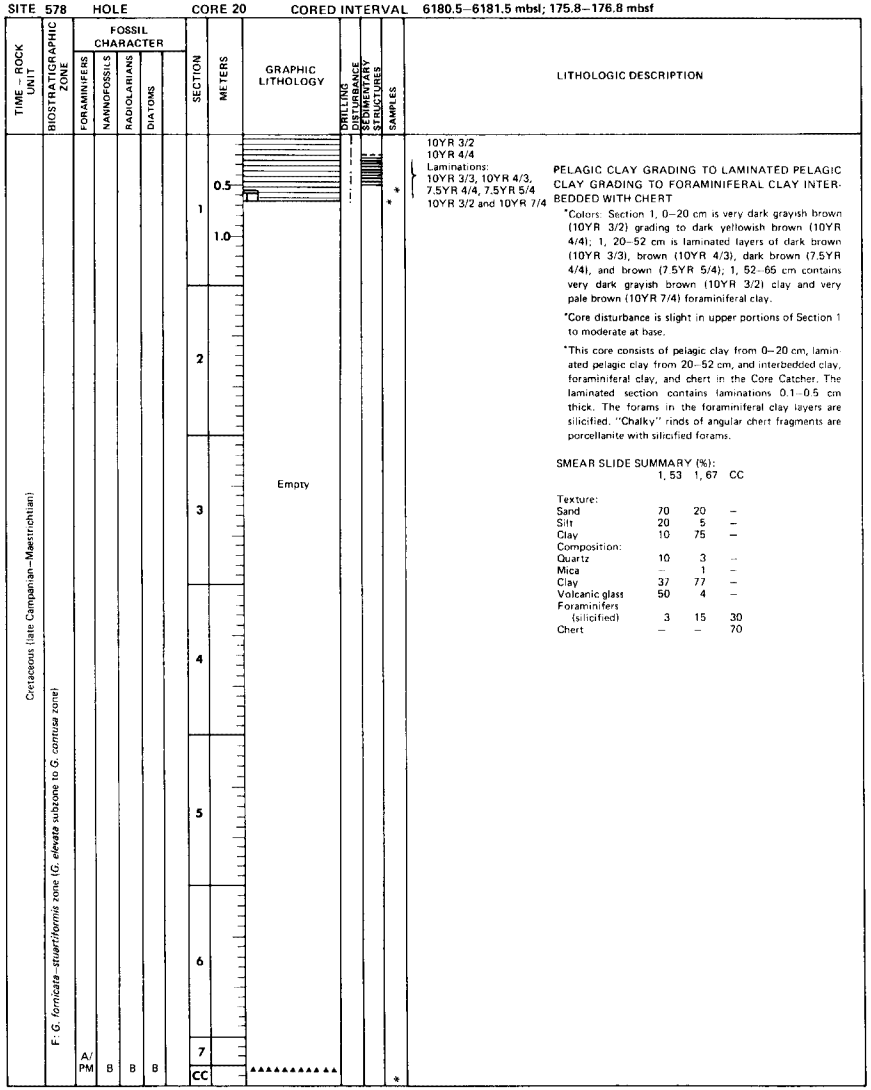
* Core is slightly deformed by drilling, with brecciated portions restricted to the tops of Sections 1 and 2.

* This core consists of homogeneous to slightly mottled pelagic clay. Mottling is confined to Section 1, 111–150 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
Texture:	
Sand	0
Silt	4
Clay	96
Composition:	
Quartz	1
Mica	1
Clay	96
Volcanic glass	2

SITE 578 HOLE CORE 20 CORED INTERVAL 6180.5–6181.5 mbsl; 175.8–176.8 mbsf



PELAGIC CLAY GRADING TO LAMINATED PELAGIC CLAY GRADING TO FORAMINIFERAL CLAY INTERBEDDED WITH CHERT

*Colors: Section 1, 0–20 cm is very dark grayish brown (10YR 3/2) grading to dark yellowish brown (10YR 4/4); 1, 20–52 cm is laminated layers of dark brown (10YR 3/3), brown (10YR 4/3), dark brown (7.5YR 4/4), and brown (7.5YR 5/4); 1, 52–65 cm contains very dark grayish brown (10YR 3/2) clay and very pale brown (10YR 7/4) foraminiferal clay.

*Core disturbance is slight in upper portions of Section 1 to moderate at base.

*This core consists of pelagic clay from 0–20 cm, laminated pelagic clay from 20–52 cm, and interbedded clay, foraminiferal clay, and chert in the Core Catcher. The laminated section contains laminations 0.1–0.5 cm thick. The forams in the foraminiferal clay layers are silicified. "Chalky" rinds of angular chert fragments are porcellanite with silicified forams.

SMEAR SLIDE SUMMARY (%):

	1, 53	1, 67	CC
Texture:			
Sand	70	20	–
Silt	20	5	–
Clay	10	75	–
Composition:			
Quartz	10	3	–
Mica	–	1	–
Clay	37	77	–
Volcanic glass	50	4	–
Foraminifers (silicified)	3	15	30
Chert	–	–	70

SITE 579

HOLES 579, 579A

Date Occupied: June 1, 1982 (579), June 2-4 (579A)

Date Departed: June 4, 1982

Time on Site: 2 days, 17 hours, 6 minutes

Position (latitude; longitude): 38°37.68'N; 153°50.17'E (579)

38°37.61'N; 153°50.28'E (579A)

Water depth (sea level; corrected m, echo-sounding): 5736.6

Water depth (rig floor; corrected m, echo-sounding): 5746.6

Bottom felt (m, drill pipe): 5746.6 (579), 5755.0 (579A)

Penetration (m): 17.9 (579), 149.5 (579A)

Number of cores: 2 (579), 15 (579A)

Total length of cored section (m): 17.9 (579), 135.5 (579A)

Total core recovered (m): 16.90 (579), 115.87 (579A)

Core recovery (%): 94% (579), 86% (579A)

Oldest sediment cored:

Depth sub-bottom (m): 149.5

Nature: biosiliceous clay

Age: late Miocene

Measured velocity (km/s): 1.5 km/s

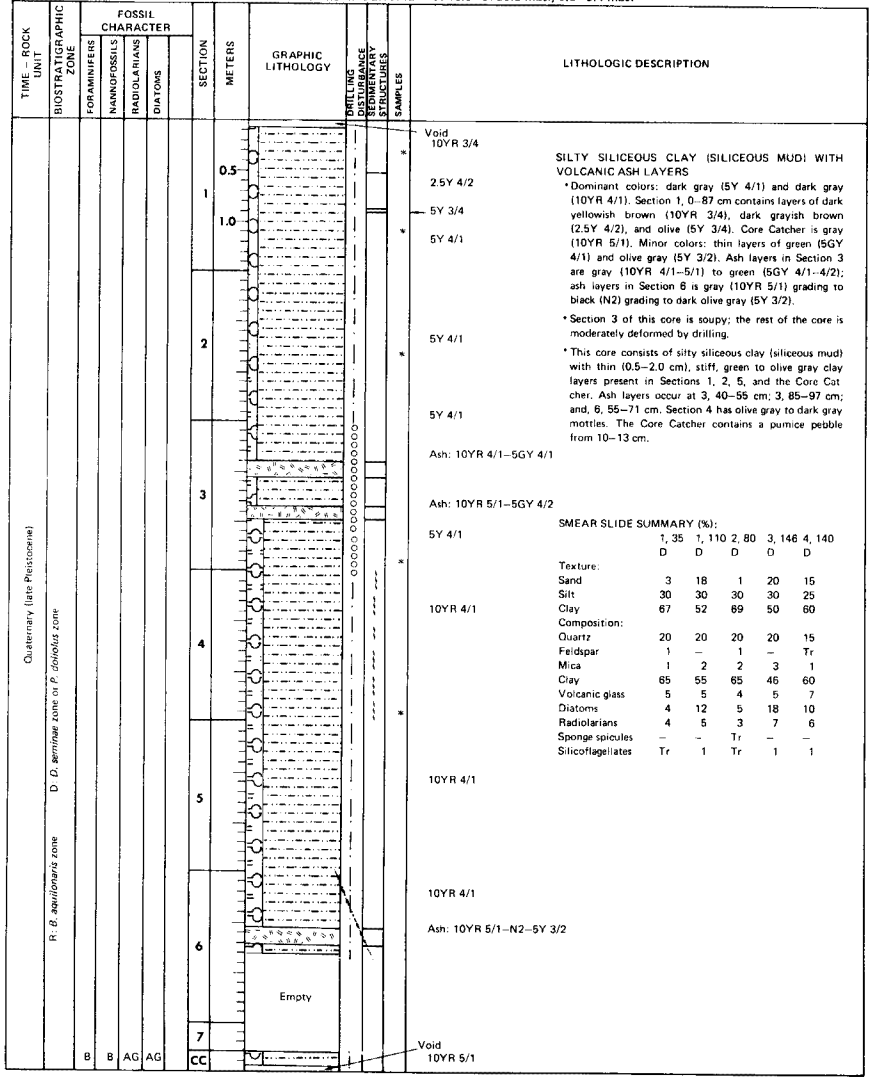
Basement: Not reached

Depth sub-bottom (m):

Nature:

Velocity range (km/s):

SITE 579 HOLE CORE 1 CORED INTERVAL 5746.6–5755.0 mbsl; 0.0–8.4 mbsf



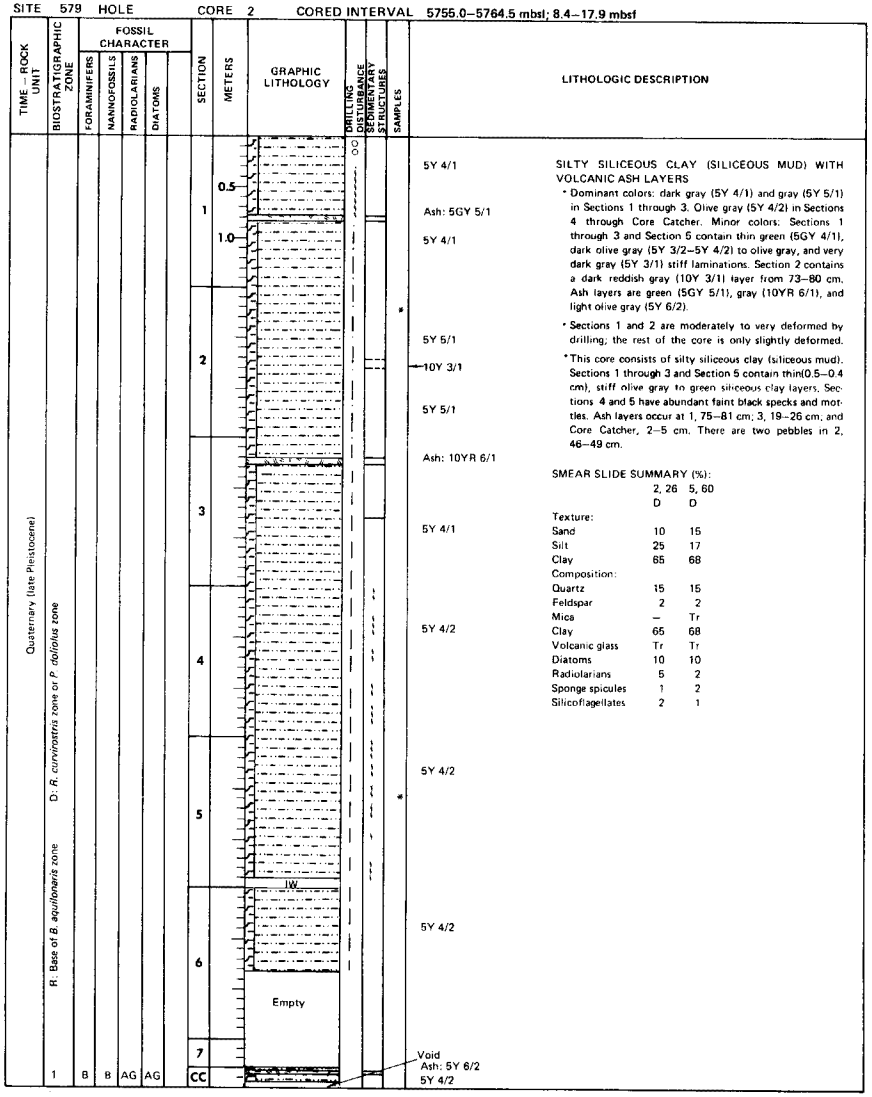
SILTY SILICEOUS CLAY (SILICEOUS MUD) WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1) and dark gray (10YR 4/1). Section 1, 0–87 cm contains layers of dark yellowish brown (10YR 3/4), dark grayish brown (2.5Y 4/2), and olive (5Y 3/4). Core Catcher is gray (10YR 5/1). Minor colors: thin layers of green (5GY 4/1) and olive gray (5Y 3/2). Ash layers in Section 3 are gray (10YR 4/1–5/1) to green (5GY 4/1–4/2); ash layers in Section 6 is gray (10YR 5/1) grading to black (N2) grading to dark olive gray (5Y 3/2).
- Section 3 of this core is soupy; the rest of the core is moderately deformed by drilling.
- This core consists of silty siliceous clay (siliceous mud) with thin (0.5–2.0 cm), stiff, green to olive gray clay layers present in Sections 1, 2, 5, and the Core Catcher. Ash layers occur at 3, 40–55 cm; 3, 85–97 cm; and, 6, 55–71 cm. Section 4 has olive gray to dark gray mottles. The Core Catcher contains a pumice pebble from 10–13 cm.

SMEAR SLIDE SUMMARY (%):

	1, 35 D	1, 110 D	2, 80 D	3, 146 D	4, 140 D
Texture:					
Sand	3	18	1	20	15
Silt	30	30	30	30	25
Clay	67	52	69	50	60
Composition:					
Quartz	20	20	20	20	15
Feldspar	1	–	1	–	Tr
Mica	1	2	2	3	1
Clay	65	55	65	46	60
Volcanic glass	5	5	4	5	7
Diatoms	4	12	5	18	10
Radiolarians	4	5	3	7	6
Sponge spicules	–	–	Tr	–	–
Silicoflagellates	Tr	1	Tr	1	1

SITE 579 HOLE CORE 2 CORED INTERVAL 5755.0–5764.5 mbsl; 8.4–17.9 mbsf



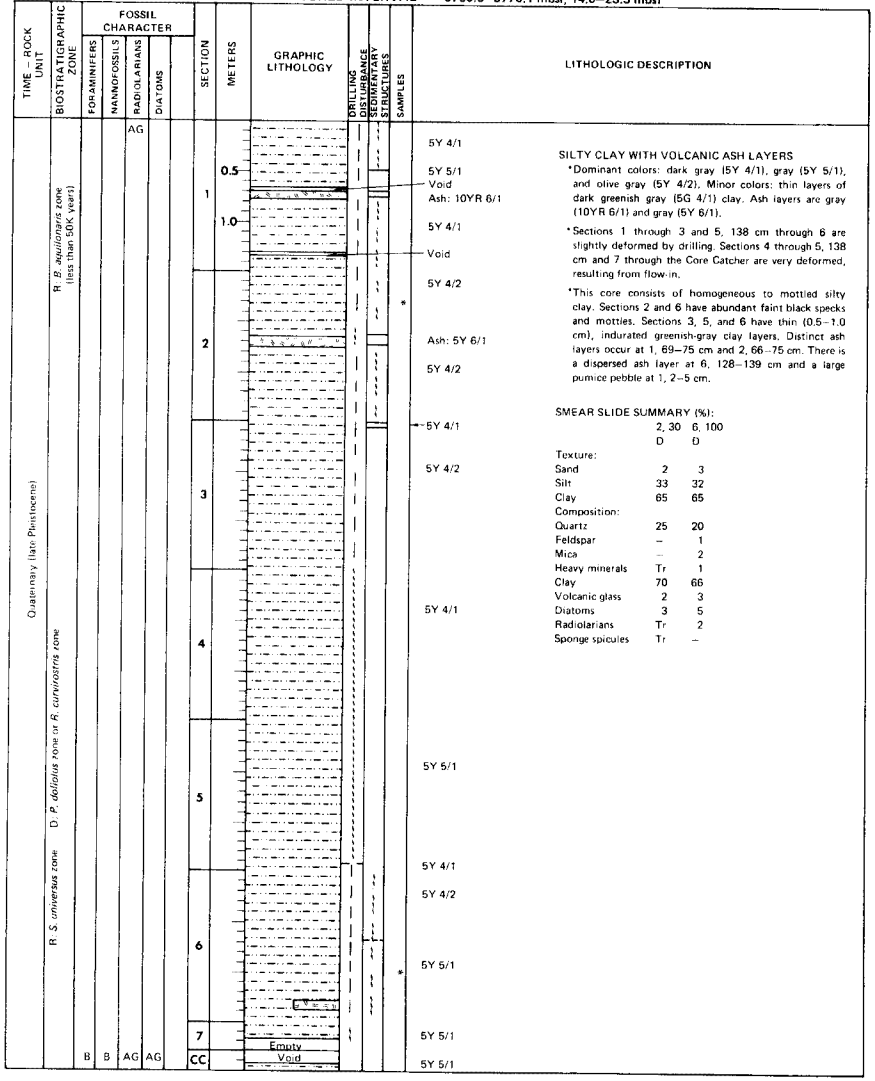
SILTY SILICEOUS CLAY (SILICEOUS MUD) WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1) and gray (5Y 5/1) in Sections 1 through 3. Olive gray (5Y 4/2) in Sections 4 through Core Catcher. Minor colors: Sections 1 through 3 and Section 5 contain thin green (5GY 4/1), dark olive gray (5Y 3/2–5Y 4/2) to olive gray, and very dark gray (5Y 3/1) stiff laminations. Section 2 contains a dark reddish gray (10Y 3/1) layer from 73–80 cm. Ash layers are green (5GY 5/1), gray (10YR 6/1), and light olive gray (5Y 6/2).
- Sections 1 and 2 are moderately to very deformed by drilling; the rest of the core is only slightly deformed.
- This core consists of silty siliceous clay (siliceous mud). Sections 1 through 3 and Section 5 contain thin(0.5–0.4 cm), stiff olive gray to green siliceous clay layers. Sections 4 and 5 have abundant faint black specks and mottles. Ash layers occur at 1, 75–81 cm; 3, 19–26 cm; and Core Catcher, 2–5 cm. There are two pebbles in 2, 46–49 cm.

SMEAR SLIDE SUMMARY (%):

	2, 26 D	5, 60 D
Texture:		
Sand	10	15
Silt	25	17
Clay	65	68
Composition:		
Quartz	15	15
Feldspar	2	2
Mica	–	Tr
Clay	65	68
Volcanic glass	Tr	Tr
Diatoms	10	10
Radiolarians	5	2
Sponge spicules	1	2
Silicoflagellates	2	1

SITE 579 HOLE A CORE 1 CORED INTERVAL 5760.6–5770.1 mbsl; 14.0–23.5 mbsf



SILTY CLAY WITH VOLCANIC ASH LAYERS

*Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), and olive gray (5Y 4/2). Minor colors: thin layers of dark greenish gray (5G 4/1) clay. Ash layers are gray (10YR 6/1) and gray (5Y 6/1).

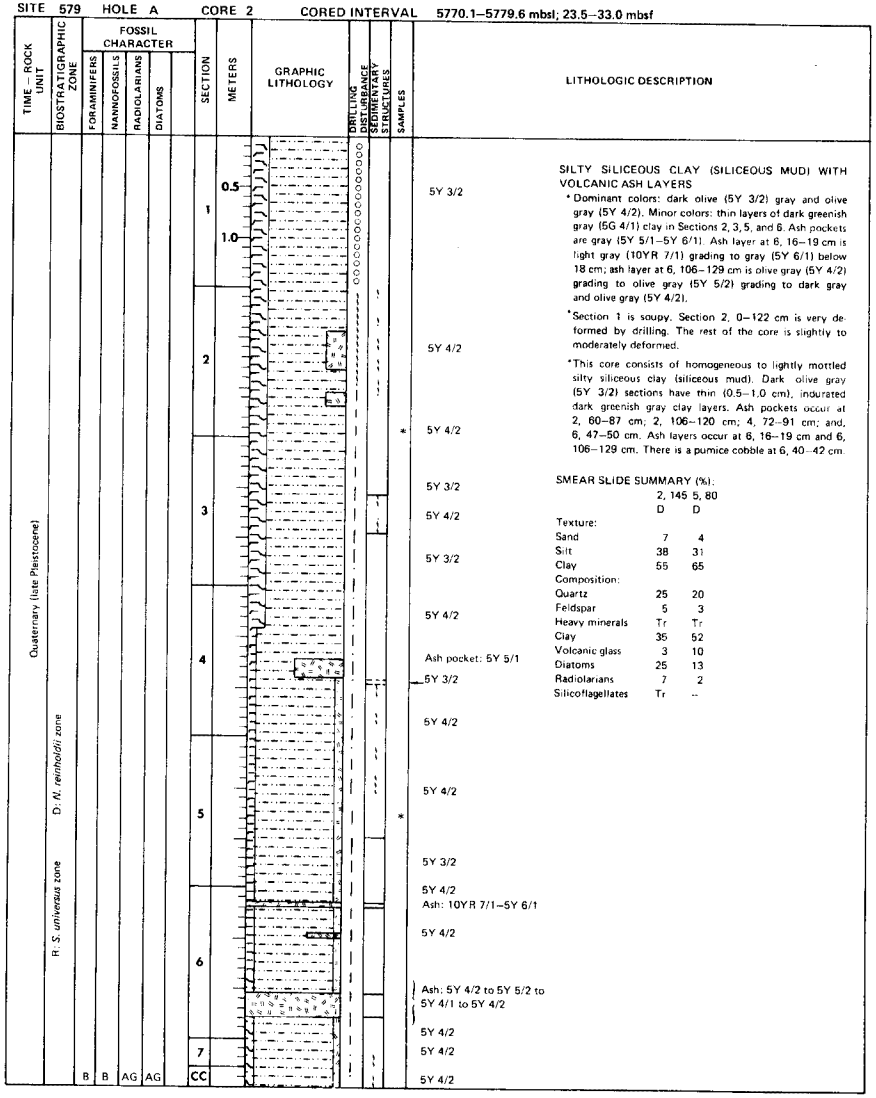
*Sections 1 through 3 and 5, 138 cm through 6 are slightly deformed by drilling. Sections 4 through 5, 138 cm and 7 through the Core Catcher are very deformed, resulting from flow-in.

*This core consists of homogeneous to mottled silty clay. Sections 2 and 6 have abundant faint black specks and mottles. Sections 3, 5, and 6 have thin (0.5–1.0 cm), indurated greenish-gray clay layers. Distinct ash layers occur at 1, 69–75 cm and 2, 66–75 cm. There is a dispersed ash layer at 6, 128–139 cm and a large pumice pebble at 1, 2–5 cm.

SMEAR SLIDE SUMMARY (%):

	2, 30 D	6, 100 D
Texture:		
Sand	2	3
Silt	33	32
Clay	65	65
Composition:		
Quartz	25	20
Feldspar	–	1
Mica	–	2
Heavy minerals	Tr	1
Clay	70	66
Volcanic glass	2	3
Diatoms	3	5
Radiolarians	Tr	2
Sponge spicules	Tr	–

SITE 579 HOLE A CORE 2 CORED INTERVAL 5770.1–5779.6 mbsl; 23.5–33.0 mbsf



SILTY SILICEOUS CLAY (SILICEOUS MUD) WITH VOLCANIC ASH LAYERS

*Dominant colors: dark olive (5Y 3/2) gray and olive gray (5Y 4/2). Minor colors: thin layers of dark greenish gray (5G 4/1) clay in Sections 2, 3, 5, and 6. Ash pockets are gray (5Y 5/1–5Y 6/1). Ash layer at 6, 16–19 cm is light gray (10YR 7/1) grading to gray (5Y 6/1) below 18 cm; ash layer at 6, 106–129 cm is olive gray (5Y 4/2) grading to olive gray (5Y 5/2) grading to dark gray and olive gray (5Y 4/2).

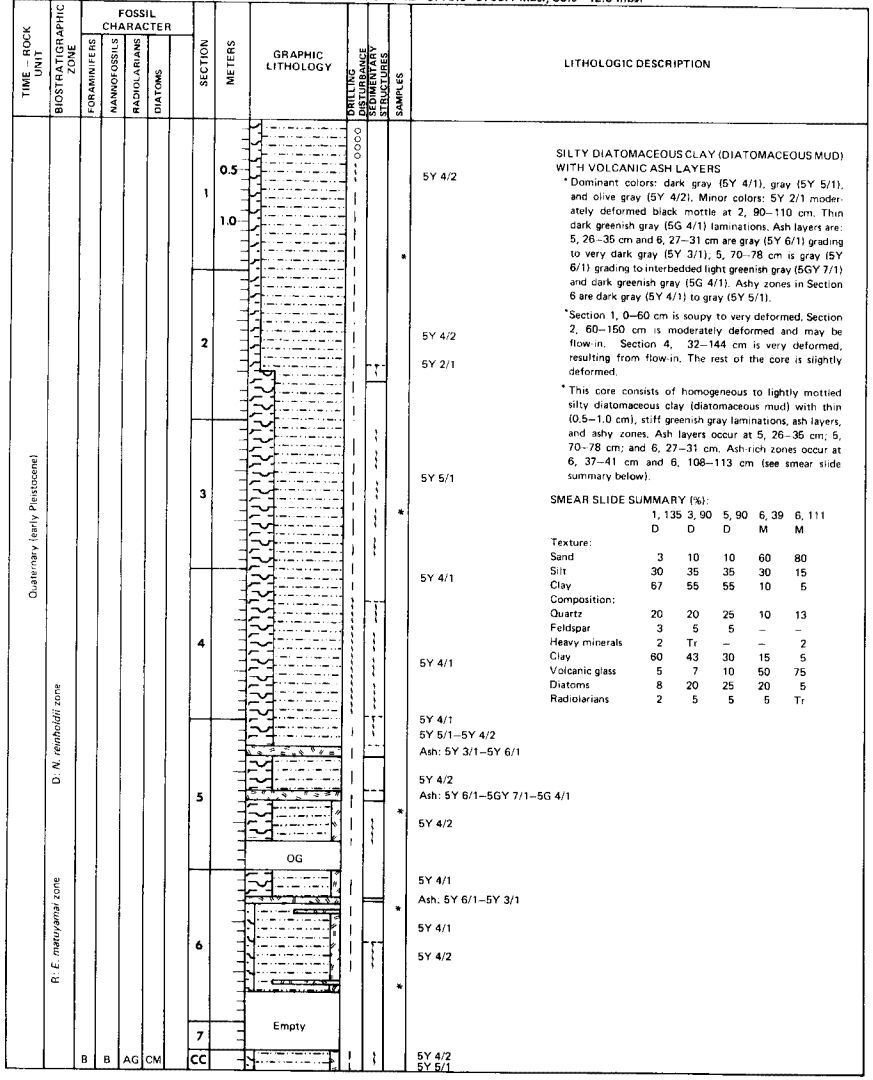
*Section 1 is soupy. Section 2, 0–122 cm is very deformed by drilling. The rest of the core is slightly to moderately deformed.

*This core consists of homogeneous to lightly mottled silty siliceous clay (siliceous mud). Dark olive gray (5Y 3/2) sections have thin (0.5–1.0 cm), indurated dark greenish gray clay layers. Ash pockets occur at 2, 60–87 cm; 2, 106–120 cm; 4, 72–91 cm; and, 6, 47–50 cm. Ash layers occur at 6, 16–19 cm and 6, 106–129 cm. There is a pumice cobble at 6, 40–42 cm.

SMEAR SLIDE SUMMARY (%):

	2, 145 D	5, 80 D
Texture:		
Sand	7	4
Silt	38	31
Clay	55	65
Composition:		
Quartz	25	20
Feldspar	5	3
Heavy minerals	Tr	Tr
Clay	35	52
Volcanic glass	3	10
Diatoms	25	13
Radiolarians	7	2
Silicoflagellates	Tr	–

SITE 579 HOLE A CORE 3 CORED INTERVAL 5779.6–5789.1 mbsl; 33.0–42.5 mbsf



SILTY DIATOMACEOUS CLAY (DIATOMACEOUS MUD) WITH VOLCANIC ASH LAYERS

*Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), and olive gray (5Y 4/2). Minor colors: 5Y 2/1 moderately deformed black mottle at 2, 90–110 cm. Thin dark greenish gray (5G 4/1) laminations. Ash layers are: 5, 26–35 cm and 6, 27–31 cm are gray (5Y 6/1) grading to very dark gray (5Y 3/1); 5, 70–78 cm is gray (5Y 6/1) grading to interbedded light greenish gray (5GY 7/1) and dark greenish gray (5G 4/1). Ashy zones in Section 6 are dark gray (5Y 4/1) to gray (5Y 5/1).

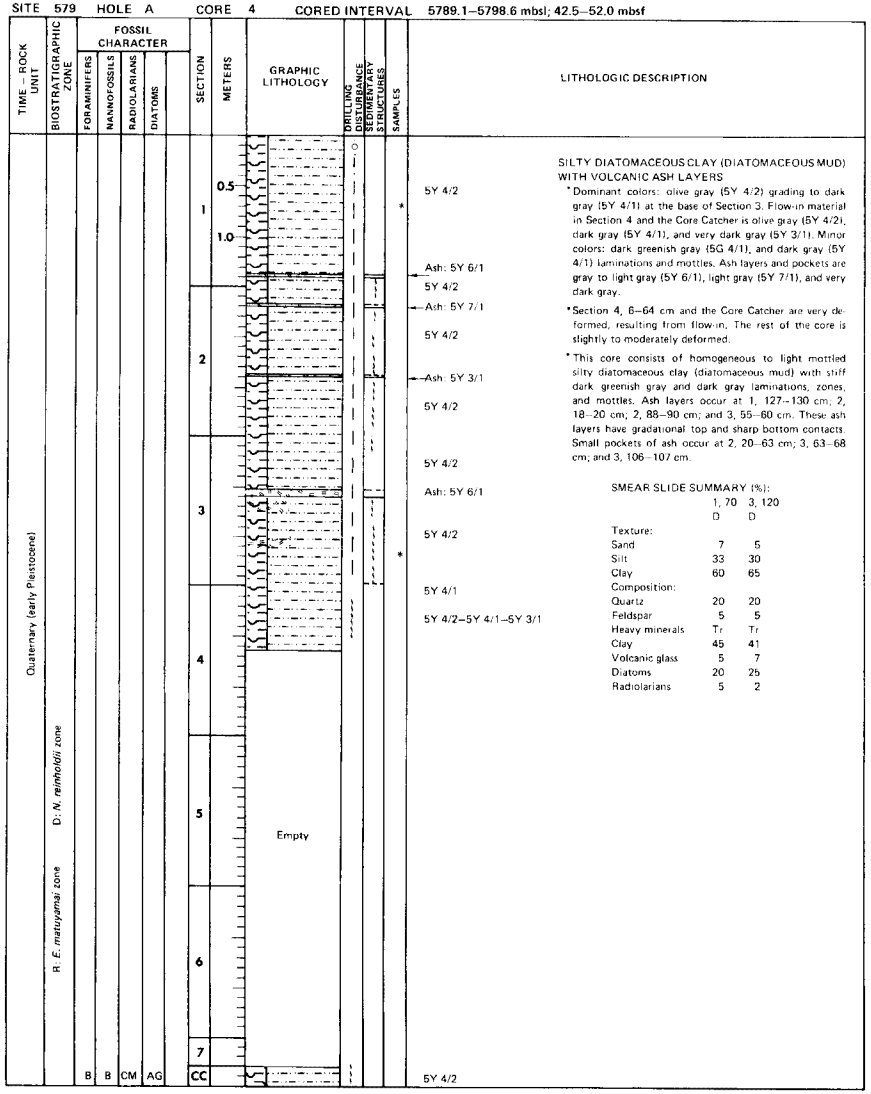
*Section 1, 0–60 cm is soupy to very deformed. Section 2, 60–150 cm is moderately deformed and may be flow-in. Section 4, 32–144 cm is very deformed, resulting from flow-in. The rest of the core is slightly deformed.

*This core consists of homogeneous to lightly mottled silty diatomaceous clay (diatomaceous mud) with thin (0.5–1.0 cm), stiff greenish gray laminations, ash layers, and ashy zones. Ash layers occur at 5, 26–35 cm; 5, 70–78 cm; and 6, 27–31 cm. Ash-rich zones occur at 6, 37–41 cm and 6, 108–113 cm (see smear slide summary below).

SMEAR SLIDE SUMMARY (%):

	1, 135 D	3, 90 D	5, 90 D	6, 39 M	6, 111 M
Texture:					
Sand	3	10	10	60	80
Silt	30	35	35	30	15
Clay	67	55	55	10	5
Composition:					
Quartz	20	20	25	10	13
Feldspar	3	5	5	–	–
Heavy minerals	2	Tr	–	–	2
Clay	60	43	30	15	5
Volcanic glass	5	7	10	50	75
Diatoms	8	20	25	20	5
Radiolarians	2	5	5	5	Tr

SITE 579 HOLE A CORE 4 CORED INTERVAL 5789.1–5798.6 mbsl; 42.5–52.0 mbsf



SILTY DIATOMACEOUS CLAY (DIATOMACEOUS MUD) WITH VOLCANIC ASH LAYERS

*Dominant colors: olive gray (5Y 4/2) grading to dark gray (5Y 4/1) at the base of Section 3. Flow-in material in Section 4 and the Core Catcher is olive gray (5Y 4/2), dark gray (5Y 4/1), and very dark gray (5Y 3/1). Minor colors: dark greenish gray (5G 4/1), and dark gray (5Y 4/1) laminations and mottles. Ash layers and pockets are gray to light gray (5Y 6/1), light gray (5Y 7/1), and very dark gray.

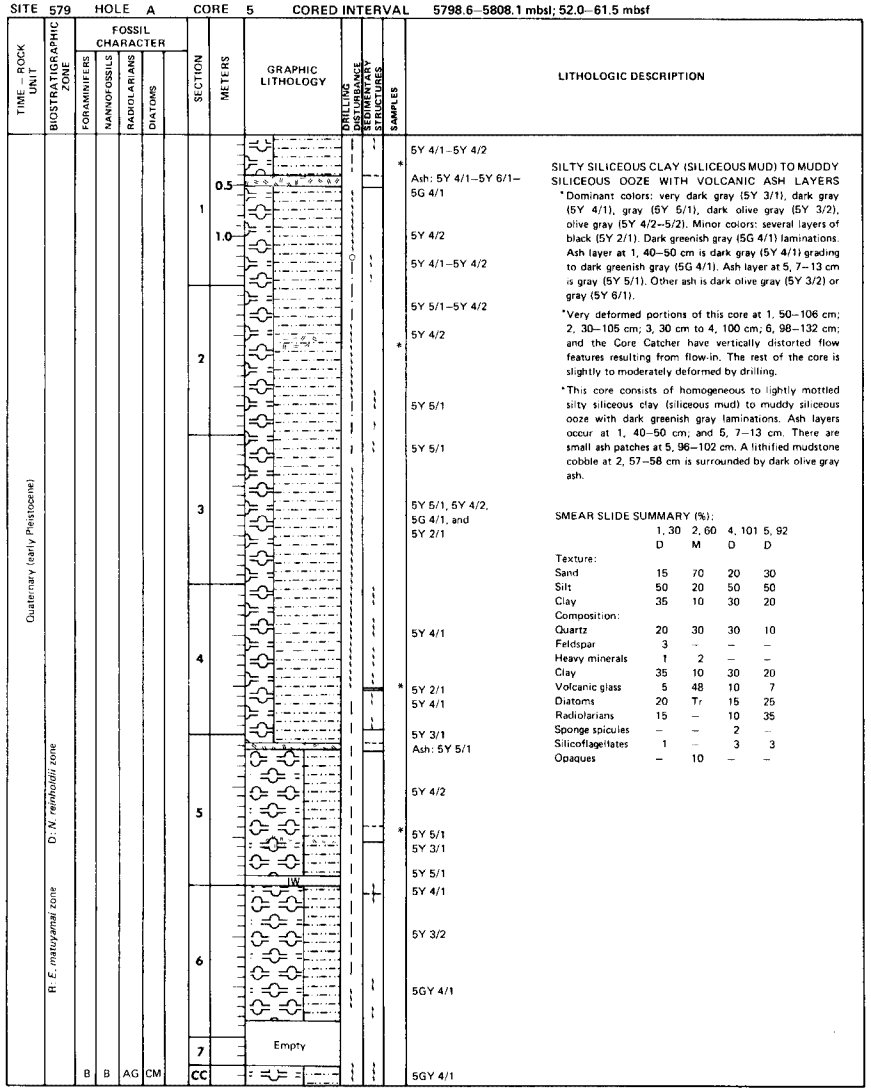
*Section 4, 6–64 cm and the Core Catcher are very deformed, resulting from flow-in. The rest of the core is slightly to moderately deformed.

*This core consists of homogeneous to light mottled silty diatomaceous clay (diatomaceous mud) with stiff dark greenish gray and dark gray laminations, zones, and mottles. Ash layers occur at 1, 127–130 cm; 2, 18–20 cm; 2, 88–90 cm; and 3, 55–60 cm. These ash layers have gradational top and sharp bottom contacts. Small pockets of ash occur at 2, 20–63 cm; 3, 63–68 cm; and 3, 106–107 cm.

SMEAR SLIDE SUMMARY (%):

	1, 70 D	3, 120 D
Texture:		
Sand	7	5
Silt	33	30
Clay	60	65
Composition:		
Quartz	20	20
Feldspar	5	5
Heavy minerals	Tr	Tr
Clay	45	41
Volcanic glass	5	7
Diatoms	20	25
Radiolarians	5	2

SITE 579 HOLE A CORE 5 CORED INTERVAL 5798.6–5808.1 mbsl; 52.0–61.5 mbsf



SILTY SILICEOUS CLAY (SILICEOUS MUD) TO MUDDY SILICEOUS OOZE WITH VOLCANIC ASH LAYERS

*Dominant colors: very dark gray (5Y 3/1), dark gray (5Y 4/1), gray (5Y 5/1), dark olive gray (5Y 3/2), olive gray (5Y 4/2–5/2). Minor colors: several layers of black (5Y 2/1). Dark greenish gray (5G 4/1) laminations. Ash layer at 1, 40–50 cm is dark gray (5Y 4/1) grading to dark greenish gray (5G 4/1). Ash layer at 5, 7–13 cm is gray (5Y 5/1). Other ash is dark olive gray (5Y 3/2) or gray (5Y 6/1).

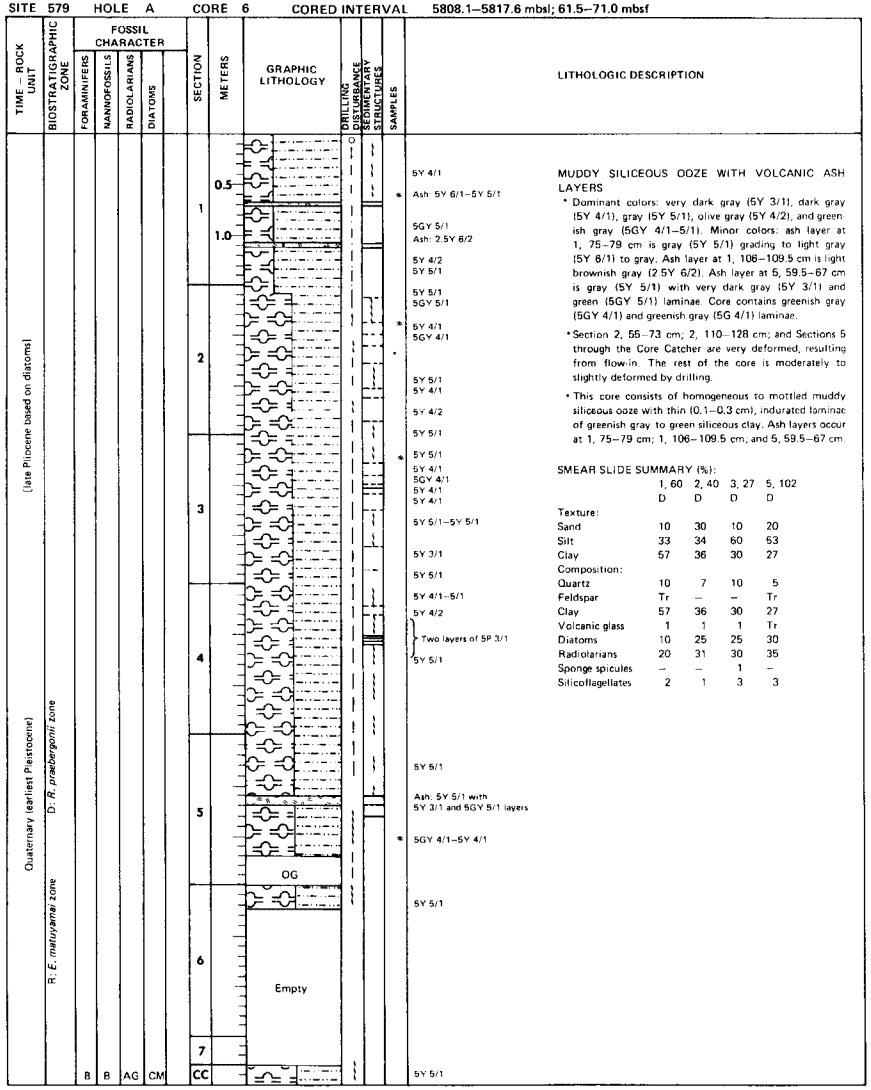
*Very deformed portions of this core at 1, 50–106 cm; 2, 30–105 cm; 3, 30 cm to 4, 100 cm; 6, 98–132 cm; and the Core Catcher have vertically distorted flow features resulting from flow-in. The rest of the core is slightly to moderately deformed by drilling.

*This core consists of homogeneous to lightly mottled silty siliceous clay (siliceous mud) to muddy siliceous ooze with dark greenish gray laminations. Ash layers occur at 1, 40–50 cm; and 5, 7–13 cm. There are small ash patches at 5, 96–102 cm. A lithified mudstone cobble at 2, 57–58 cm is surrounded by dark olive gray ash.

SMEAR SLIDE SUMMARY (%):

	1, 30 D	2, 60 M	4, 101 D	5, 92 D
Texture:				
Sand	15	70	20	30
Silt	50	20	50	50
Clay	35	10	30	20
Composition:				
Quartz	20	30	30	10
Feldspar	3	–	–	–
Heavy minerals	1	2	–	–
Clay	35	10	30	20
Volcanic glass	5	48	10	7
Diatoms	20	Tr	15	25
Radiolarians	15	–	10	35
Sponge spicules	–	–	2	–
Silicoflagellates	1	–	3	3
Opaques	–	10	–	–

SITE 579 HOLE A CORE 6 CORED INTERVAL 5808.1–5817.6 mbsl; 61.5–71.0 mbsf



MUDDY SILICEOUS OOZE WITH VOLCANIC ASH LAYERS

*Dominant colors: very dark gray (5Y 3/1), dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2), and greenish gray (5GY 4/1–5/1). Minor colors: ash layer at 1, 75–79 cm is gray (5Y 5/1) grading to light gray (5Y 6/1) to gray. Ash layer at 1, 108–109.5 cm is light brownish gray (2.5Y 6/2). Ash layer at 5, 59.5–67 cm is gray (5Y 5/1) with very dark gray (5Y 3/1) and green (5GY 5/1) laminae. Core contains greenish gray (5GY 4/1) and greenish gray (5G 4/1) laminae.

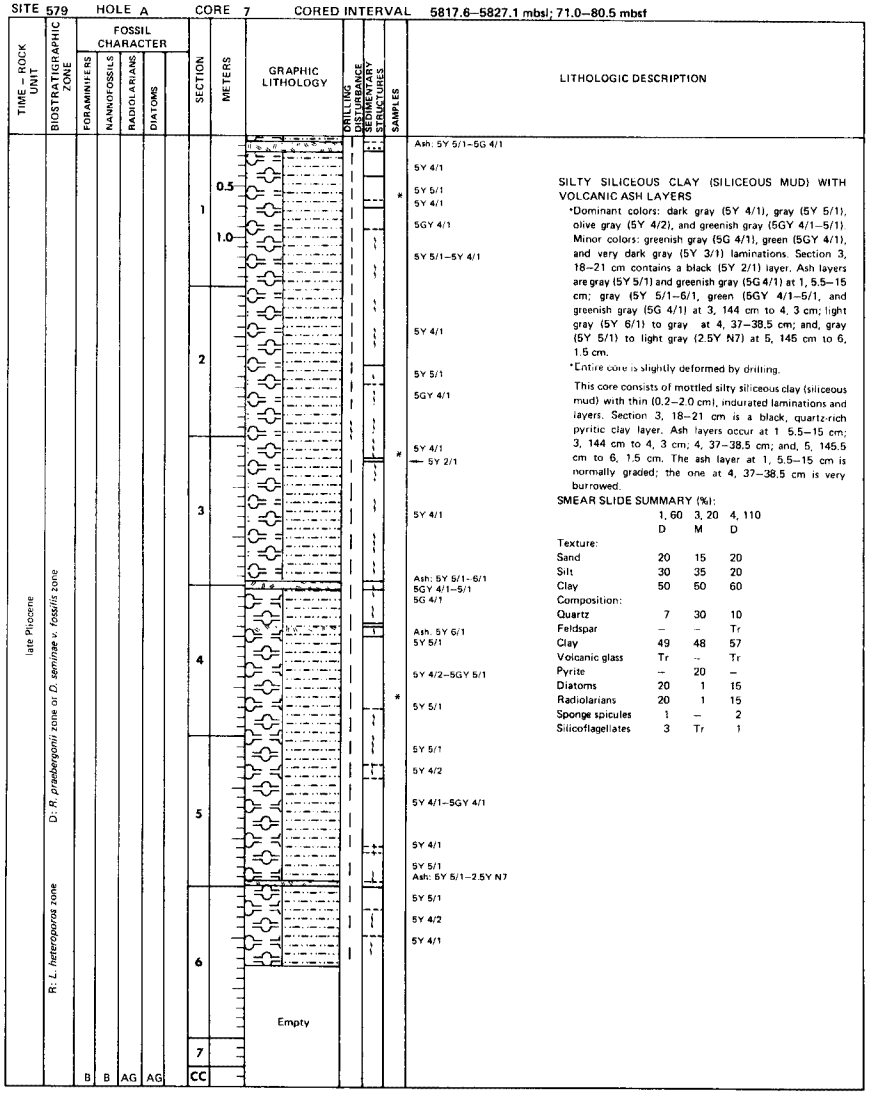
*Section 2, 65–73 cm; 2, 110–128 cm; and Sections 5 through the Core Catcher are very deformed, resulting from flow-in. The rest of the core is moderately to slightly deformed by drilling.

*This core consists of homogeneous to mottled muddy siliceous ooze with thin (0.1–0.3 cm), indurated laminae of greenish gray to green siliceous clay. Ash layers occur at 1, 75–79 cm; 1, 108–109.5 cm; and 5, 59.5–67 cm.

SMEAR SLIDE SUMMARY (%):

	1, 60 D	2, 40 D	3, 27 D	5, 102 D
Texture:				
Sand	10	30	10	20
Silt	33	34	60	53
Clay	57	36	30	27
Composition:				
Quartz	10	7	10	5
Feldspar	Tr	–	–	Tr
Clay	57	36	30	27
Volcanic glass	1	1	1	Tr
Diatoms	10	25	25	30
Radiolarians	20	31	30	35
Sponge spicules	–	–	1	–
Silicoflagellates	2	1	3	3

SITE 579 HOLE A CORE 7 CORED INTERVAL 5817.6–5827.1 mbsl; 71.0–80.5 mbsf



SILTY SILICEOUS CLAY (SILICEOUS MUD) WITH VOLCANIC ASH LAYERS

*Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2), and greenish gray (5GY 4/1–5/1). Minor colors: greenish gray (5G 4/1), green (5GY 4/1), and very dark gray (5Y 3/1) laminations. Section 3, 18–21 cm contains a black (5Y 2/1) layer. Ash layers are gray (5Y 5/1) and greenish gray (5G 4/1) at 1, 5.5–15 cm; gray (5Y 5/1–6/1, green (5GY 4/1–5/1, and greenish gray (5G 4/1) at 3, 144 cm to 4, 3 cm; light gray (5Y 6/1) to gray at 4, 37–38.5 cm; and, gray (5Y 5/1) to light gray (2.5Y N7) at 5, 145 cm to 6, 1.5 cm.

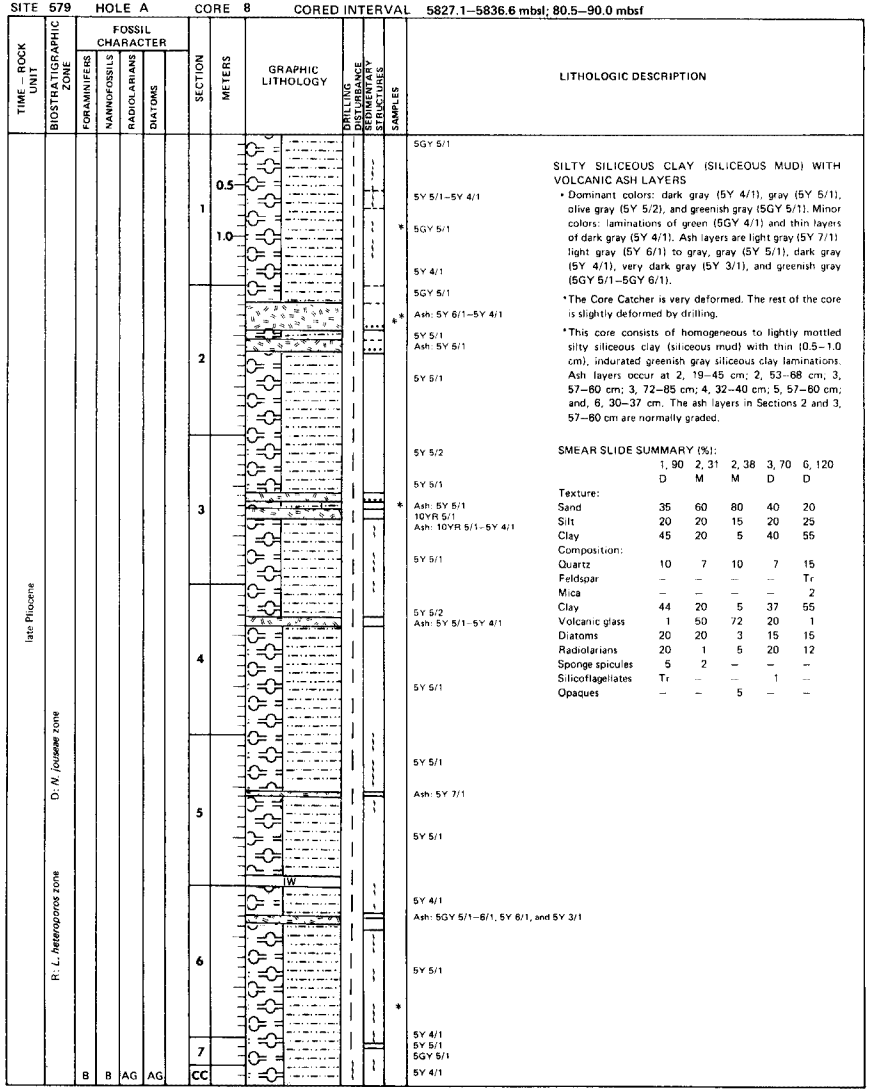
*Entire core is slightly deformed by drilling.

This core consists of mottled silty siliceous clay (siliceous mud) with thin (0.2–2.0 cm), indurated laminations and layers. Section 3, 18–21 cm is a black, quartz-rich pyritic clay layer. Ash layers occur at 1 5.5–15 cm; 3, 144 cm to 4, 3 cm; 4, 37–38.5 cm; and, 5, 145.5 cm to 6, 1.5 cm. The ash layer at 1, 5.5–15 cm is normally graded; the one at 4, 37–38.5 cm is very burrowed.

SMEAR SLIDE SUMMARY (%):

	1, 60 D	3, 20 M	4, 110 D
Texture:			
Sand	20	15	20
Silt	30	35	20
Clay	50	50	60
Composition:			
Quartz	7	30	10
Feldspar	–	–	Tr
Clay	49	48	57
Volcanic glass	Tr	–	Tr
Pyrite	–	20	–
Diatoms	20	1	15
Radiolarians	20	1	15
Sponge spicules	1	–	2
Silicoflagellates	3	Tr	1

SITE 579 HOLE A CORE 8 CORED INTERVAL 5827.1–5836.6 mbsl; 80.5–90.0 mbsf



SILTY SILICEOUS CLAY (SILICEOUS MUD) WITH VOLCANIC ASH LAYERS

• Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 5/2), and greenish gray (5GY 5/1). Minor colors: laminations of green (5GY 4/1) and thin layers of dark gray (5Y 4/1). Ash layers are light gray (5Y 7/1) light gray (5Y 6/1) to gray, gray (5Y 5/1), dark gray (5Y 4/1), very dark gray (5Y 3/1), and greenish gray (5GY 5/1–5GY 6/1).

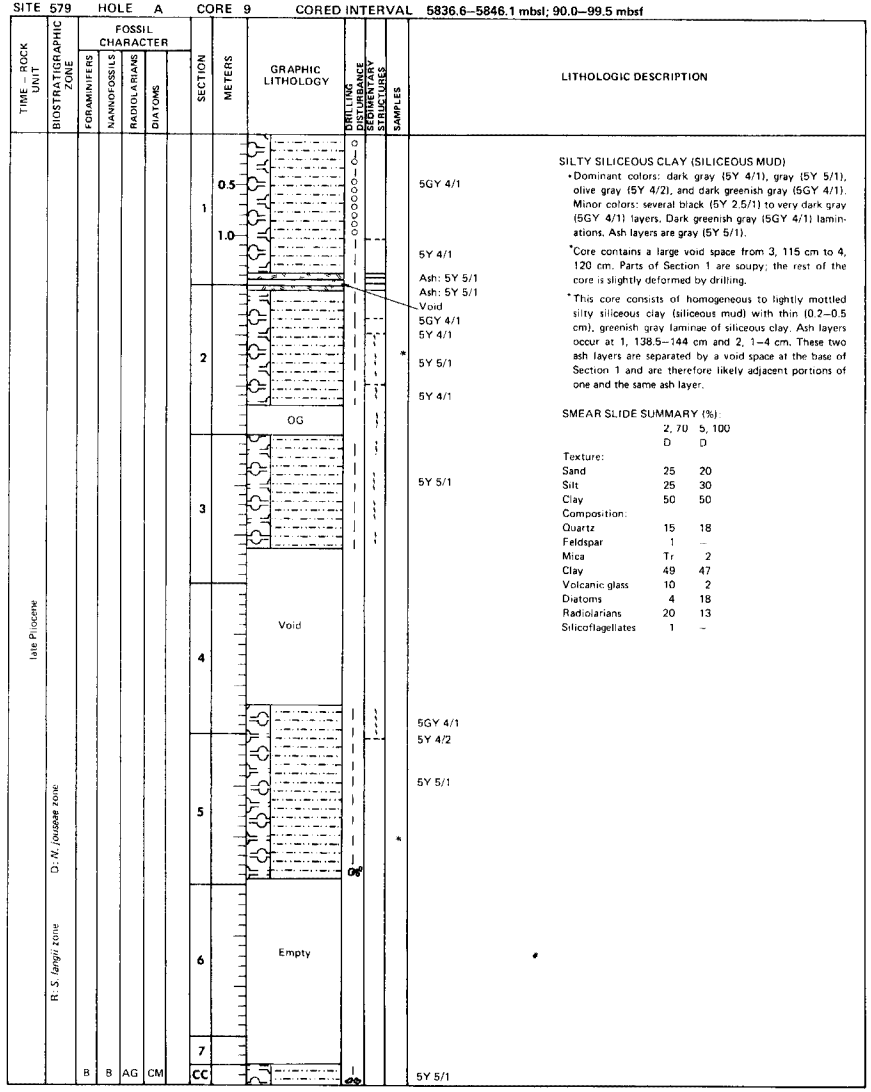
*The Core Catcher is very deformed. The rest of the core is slightly deformed by drilling.

*This core consists of homogeneous to lightly mottled silty siliceous clay (siliceous mud) with thin (0.5–1.0 cm), indurated greenish gray siliceous clay laminations. Ash layers occur at 2, 19–45 cm; 2, 53–68 cm; 3, 57–60 cm; 3, 72–85 cm; 4, 32–40 cm; 5, 57–60 cm; and, 6, 30–37 cm. The ash layers in Sections 2 and 3, 57–60 cm are normally graded.

SMEAR SLIDE SUMMARY (%):

	1, 90 D	2, 31 M	2, 38 M	3, 70 D	6, 120 D
Texture:					
Sand	35	60	80	40	20
Silt	20	20	15	20	25
Clay	45	20	5	40	55
Composition:					
Quartz	10	7	10	7	15
Feldspar	–	–	–	–	Tr
Mica	–	–	–	–	2
Clay	44	20	5	37	55
Volcanic glass	1	50	72	20	1
Diatoms	20	20	3	15	15
Radiolarians	20	1	5	20	12
Sponge spicules	5	2	–	–	–
Silicoflagellates	Tr	–	–	1	–
Opaques	–	–	5	–	–

SITE 579 HOLE A CORE 9 CORED INTERVAL 5836.6–5846.1 mbsl; 90.0–99.5 mbsf



LITHOLOGIC DESCRIPTION

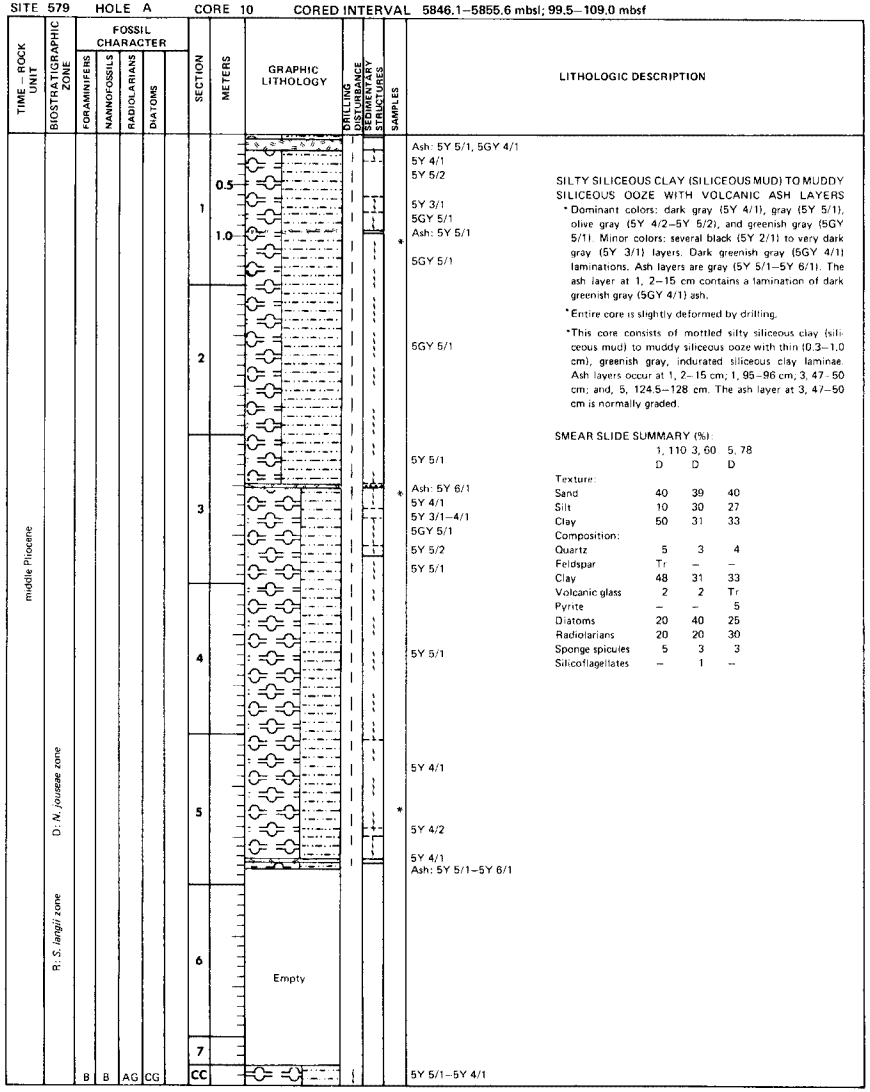
SILTY SILICEOUS CLAY (SILICEOUS MUD)

- Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2), and dark greenish gray (5GY 4/1). Minor colors: several black (5Y 2.5/1) to very dark gray (5GY 4/1) layers. Dark greenish gray (5GY 4/1) laminations. Ash layers are gray (5Y 5/1).
- *Core contains a large void space from 3, 115 cm to 4, 120 cm. Parts of Section 1 are soupy; the rest of the core is slightly deformed by drilling.
- *This core consists of homogeneous to lightly mottled silty siliceous clay (siliceous mud) with thin (0.2–0.5 cm), greenish gray laminae of siliceous clay. Ash layers occur at 1, 138.5–144 cm and 2, 1–4 cm. These two ash layers are separated by a void space at the base of Section 1 and are therefore likely adjacent portions of one and the same ash layer.

SMEAR SLIDE SUMMARY (%):

	2, 70 D	5, 100 D
Texture:		
Sand	25	20
Silt	25	30
Clay	50	50
Composition:		
Quartz	15	18
Feldspar	1	–
Mica	Tr	2
Clay	49	47
Volcanic glass	10	2
Diatoms	4	18
Radiolarians	20	13
Silicoflagellates	1	–

SITE 579 HOLE A CORE 10 CORED INTERVAL 5846.1–5855.6 mbsl; 99.5–109.0 mbsf



LITHOLOGIC DESCRIPTION

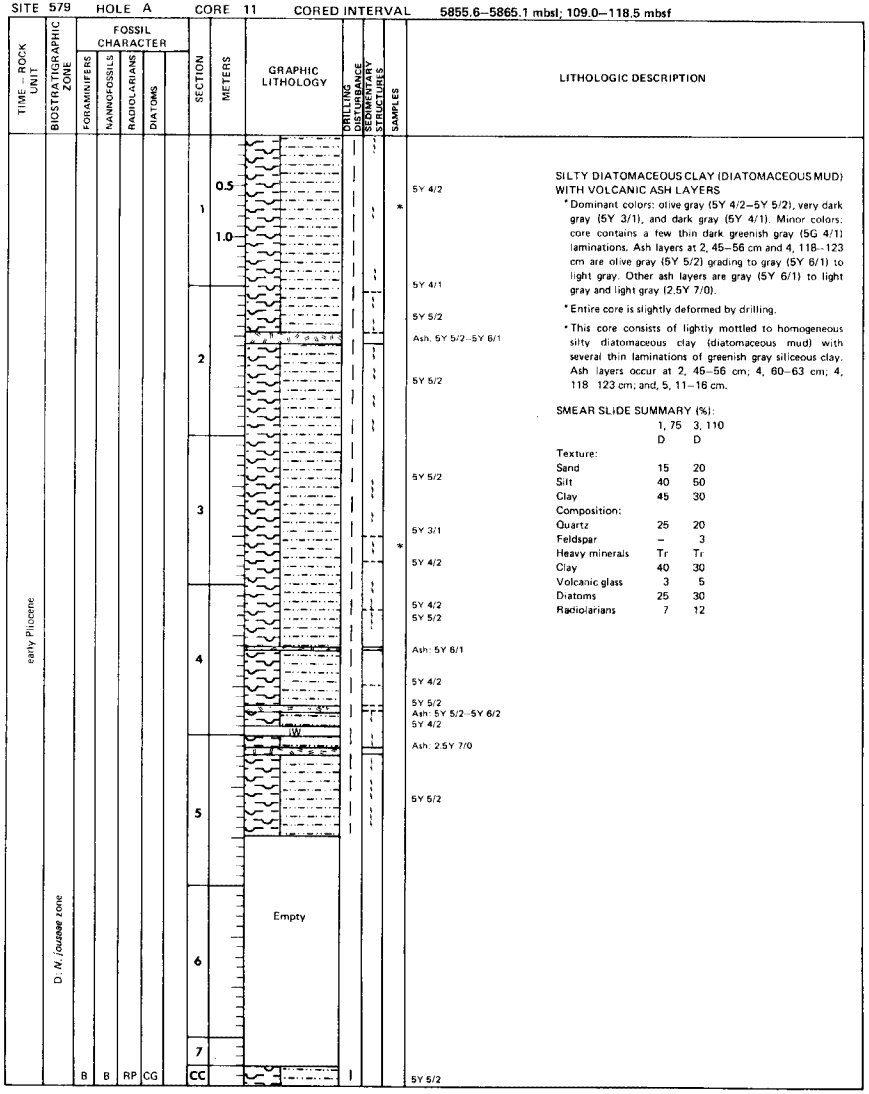
SILTY SILICEOUS CLAY (SILICEOUS MUD) TO MUDDY SILICEOUS OOZE WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2–5Y 5/2), and greenish gray (5GY 5/1). Minor colors: several black (5Y 2/1) to very dark gray (5Y 3/1) layers. Dark greenish gray (5GY 4/1) laminations. Ash layers are gray (5Y 5/1–5Y 6/1). The ash layer at 1, 2–15 cm contains a lamination of dark greenish gray (5GY 4/1) ash.
- *Entire core is slightly deformed by drilling.
- *This core consists of mottled silty siliceous clay (siliceous mud) to muddy siliceous ooze with thin (0.3–1.0 cm), greenish gray, indurated siliceous clay laminae. Ash layers occur at 1, 2–15 cm; 1, 95–96 cm; 3, 47–50 cm; and, 5, 124.5–128 cm. The ash layer at 3, 47–50 cm is normally graded.

SMEAR SLIDE SUMMARY (%):

	1, 110 D	3, 60 D	5, 78 D
Texture:			
Sand	40	39	40
Silt	10	30	27
Clay	50	31	33
Composition:			
Quartz	5	3	4
Feldspar	Tr	–	–
Clay	48	31	33
Volcanic glass	2	2	Tr
Pyrite	–	–	5
Diatoms	20	40	25
Radiolarians	20	20	30
Sponge spicules	5	3	3
Silicoflagellates	–	1	–

SITE 579 HOLE A CORE 11 CORED INTERVAL 5855.6–5865.1 mbsl; 109.0–118.5 mbsf



LITHOLOGIC DESCRIPTION

SILTY DIATOMACEOUS CLAY (DIATOMACEOUS MUD) WITH VOLCANIC ASH LAYERS

*Dominant colors: olive gray (5Y 4/2–5Y 5/2), very dark gray (5Y 3/1), and dark gray (5Y 4/1). Minor colors: core contains a few thin dark greenish gray (5G 4/1) laminations. Ash layers at 2, 45–56 cm and 4, 118–123 cm are olive gray (5Y 5/2) grading to gray (5Y 6/1) to light gray. Other ash layers are gray (5Y 6/1) to light gray and light gray (2.5Y 7/0).

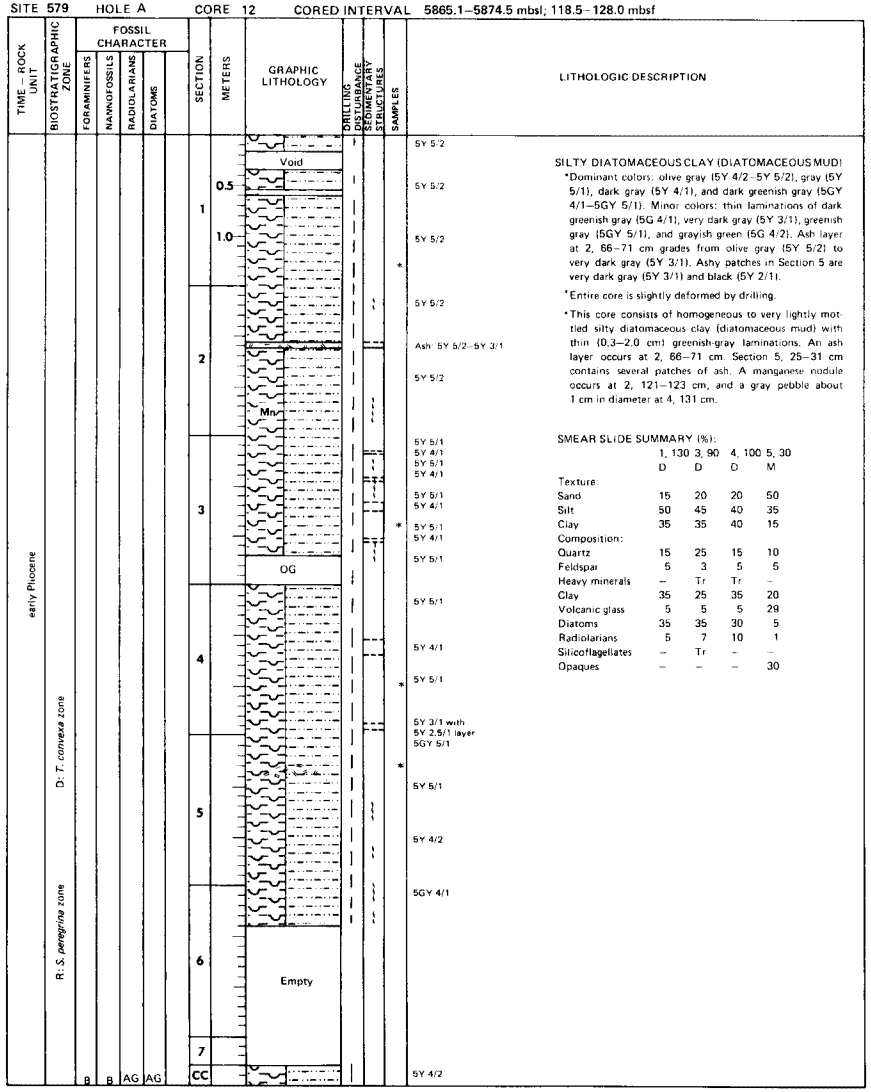
*Entire core is slightly deformed by drilling.

*This core consists of lightly mottled to homogeneous silty diatomaceous clay (diatomaceous mud) with several thin laminations of greenish gray siliceous clay. Ash layers occur at 2, 45–56 cm; 4, 60–63 cm; 4, 118–123 cm; and, 5, 11–16 cm.

SMEAR SLIDE SUMMARY (%):

	1, 75 D	3, 110 D
Texture:		
Sand	15	20
Silt	40	60
Clay	45	30
Composition:		
Quartz	25	20
Feldspar	–	3
Heavy minerals	Tr	Tr
Clay	40	30
Volcanic glass	3	5
Diatoms	25	30
Radiolarians	7	12

SITE 579 HOLE A CORE 12 CORED INTERVAL 5865.1–5874.5 mbsl; 118.5–128.0 mbsf



LITHOLOGIC DESCRIPTION

SILTY DIATOMACEOUS CLAY (DIATOMACEOUS MUD)

*Dominant colors: olive gray (5Y 4/2–5Y 5/2), gray (5Y 5/1), dark gray (5Y 4/1), and dark greenish gray (5GY 4/1–5GY 5/1). Minor colors: thin laminations of dark greenish gray (5G 4/1), very dark gray (5Y 3/1), greenish gray (5GY 5/1), and grayish green (5G 4/2). Ash layer at 2, 66–71 cm grades from olive gray (5Y 5/2) to very dark gray (5Y 3/1). Ashy patches in Section 5 are very dark gray (5Y 3/1) and black (5Y 2/1).

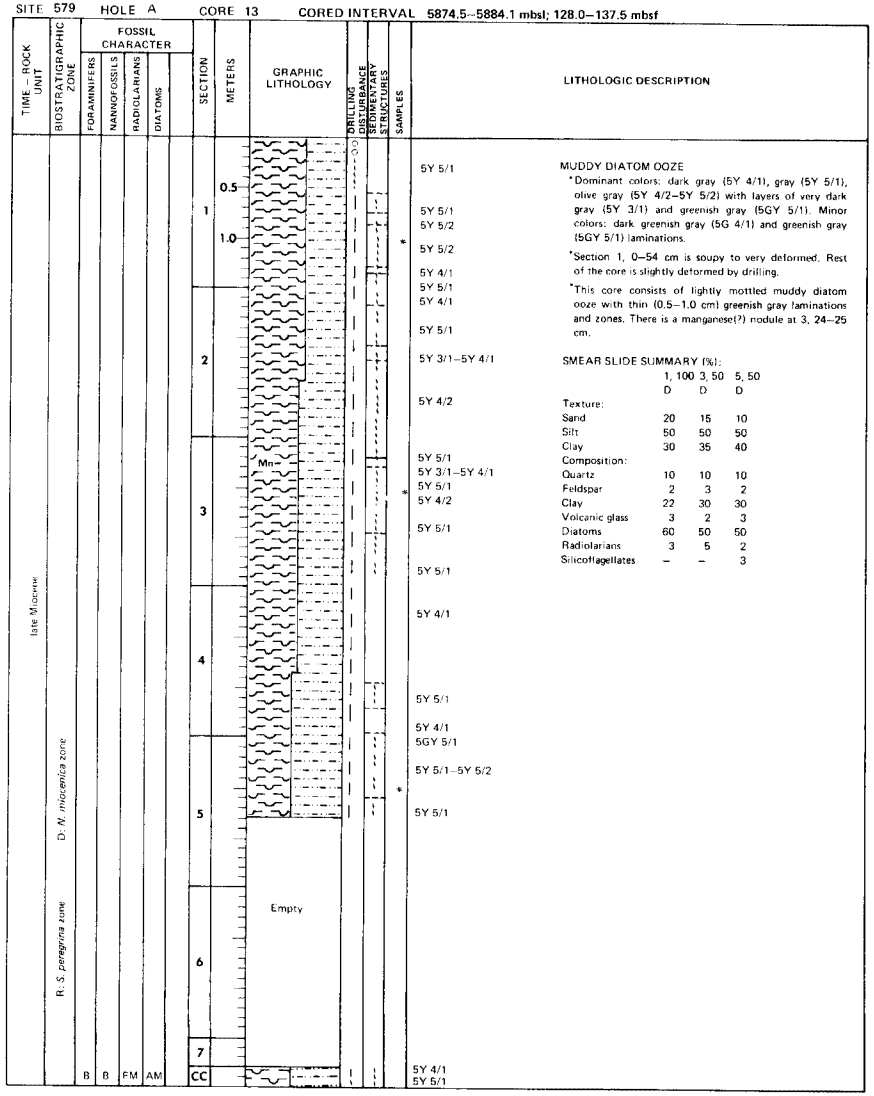
*Entire core is slightly deformed by drilling.

*This core consists of homogeneous to very lightly mottled silty diatomaceous clay (diatomaceous mud) with thin (0.3–2.0 cm) greenish-gray laminations. An ash layer occurs at 2, 66–71 cm. Section 5, 25–31 cm contains several patches of ash. A manganese nodule occurs at 2, 121–123 cm, and a gray pebble about 1 cm in diameter at 4, 131 cm.

SMEAR SLIDE SUMMARY (%):

	1, 130 D	3, 90 D	4, 100 D	5, 30 M
Texture:				
Sand	15	20	20	50
Silt	50	45	40	35
Clay	35	35	40	15
Composition:				
Quartz	15	25	15	10
Feldspar	5	3	5	5
Heavy minerals	–	Tr	Tr	–
Clay	35	25	35	20
Volcanic glass	5	5	5	29
Diatoms	35	35	30	5
Radiolarians	5	7	10	1
Silicoflagellates	–	Tr	–	–
Opaques	–	–	–	30

SITE 579 HOLE A CORE 13 CORED INTERVAL 5874.5–5884.1 mbsl; 128.0–137.5 mbsf



MUDDY DIATOM OOZE

*Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2–5Y 5/2) with layers of very dark gray (5Y 3/1) and greenish gray (5GY 5/1). Minor colors: dark greenish gray (5G 4/1) and greenish gray (5GY 5/1) laminations.

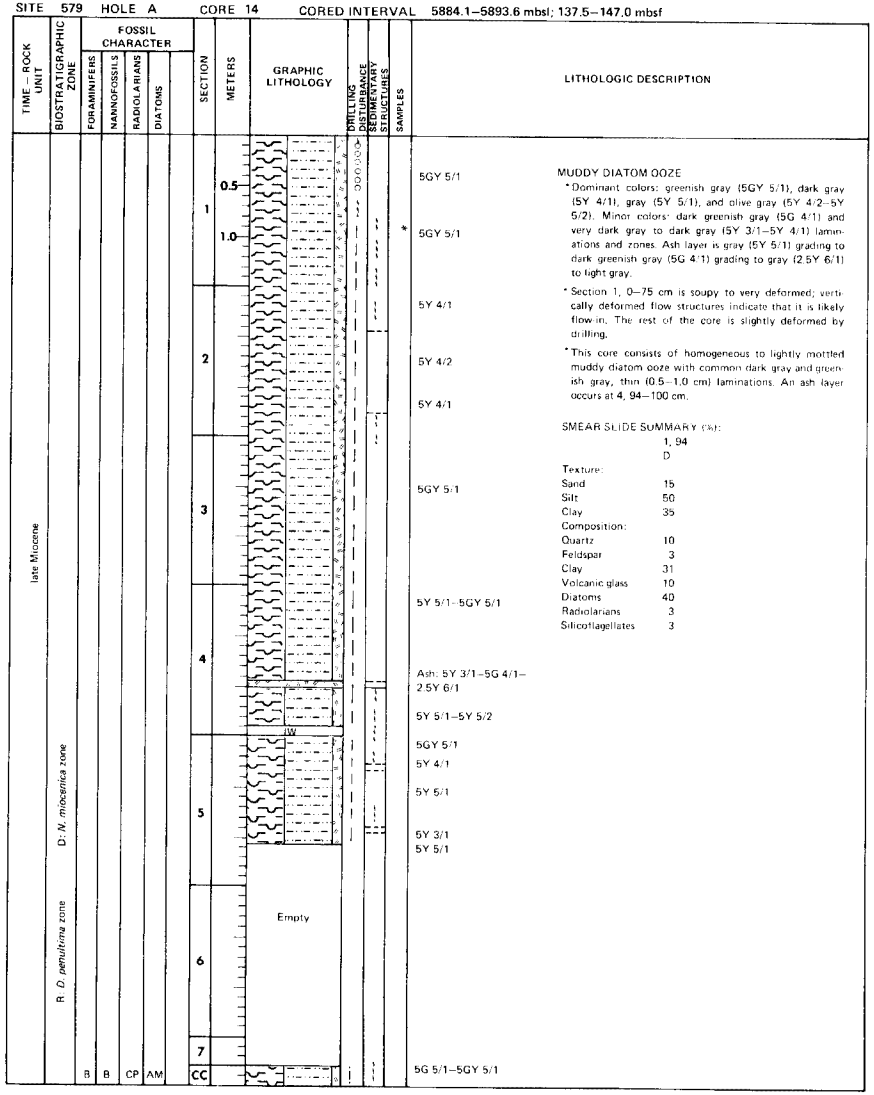
*Section 1, 0–54 cm is soupy to very deformed. Rest of the core is slightly deformed by drilling.

*This core consists of lightly mottled muddy diatom ooze with thin (0.5–1.0 cm) greenish gray laminations and zones. There is a manganese(?) nodule at 3, 24–25 cm.

SMEAR SLIDE SUMMARY (%):

	1, 100 D	3, 50 D	5, 50 D
Texture:			
Sand	20	15	10
Silt	50	50	50
Clay	30	35	40
Composition:			
Quartz	10	10	10
Feldspar	2	3	2
Clay	22	30	30
Volcanic glass	3	2	3
Diatoms	60	50	50
Radiolarians	3	5	2
Silicoflagellates	–	–	3

SITE 579 HOLE A CORE 14 CORED INTERVAL 5884.1–5893.6 mbsl; 137.5–147.0 mbsf



MUDDY DIATOM OOZE

*Dominant colors: greenish gray (5GY 5/1), dark gray (5Y 4/1), gray (5Y 5/1), and olive gray (5Y 4/2–5Y 5/2). Minor colors: dark greenish gray (5G 4/1) and very dark gray to dark gray (5Y 3/1–5Y 4/1) laminations and zones. Ash layer is gray (5Y 5/1) grading to dark greenish gray (5G 4/1) grading to gray (2.5Y 6/1) to light gray.

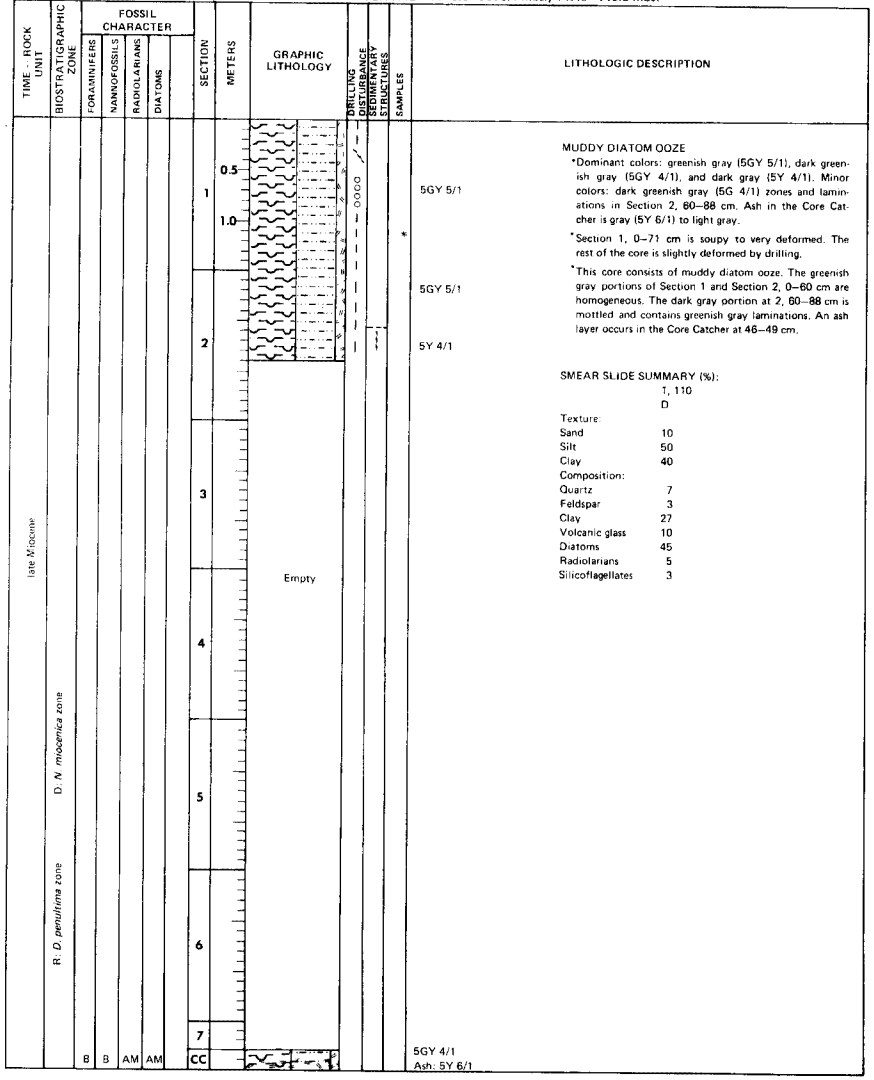
*Section 1, 0–75 cm is soupy to very deformed; vertically deformed flow structures indicate that it is likely flow-in. The rest of the core is slightly deformed by drilling.

*This core consists of homogeneous to lightly mottled muddy diatom ooze with common dark gray and greenish gray, thin (0.5–1.0 cm) laminations. An ash layer occurs at 4, 94–100 cm.

SMEAR SLIDE SUMMARY (%):

	1, 94 D
Texture:	
Sand	15
Silt	50
Clay	35
Composition:	
Quartz	10
Feldspar	3
Clay	31
Volcanic glass	10
Diatoms	40
Radiolarians	3
Silicoflagellates	3

SITE 579 HOLE A CORE 15 CORED INTERVAL 5893.6–5896.1 mbsl; 147.0–149.5 mbsf



MUDDY DIATOM OOZE

*Dominant colors: greenish gray (5GY 5/1), dark greenish gray (5GY 4/1), and dark gray (5Y 4/1). Minor colors: dark greenish gray (5G 4/1) zones and laminations in Section 2, 60–88 cm. Ash in the Core Catcher is gray (5Y 6/1) to light gray.

*Section 1, 0–71 cm is soupy to very deformed. The rest of the core is slightly deformed by drilling.

*This core consists of muddy diatom ooze. The greenish gray portions of Section 1 and Section 2, 0–60 cm are homogeneous. The dark gray portion at 2, 60–88 cm is mottled and contains greenish gray laminations. An ash layer occurs in the Core Catcher at 46–49 cm.

SMEAR SLIDE SUMMARY (%):

	1, 110 D
Texture:	
Sand	10
Silt	50
Clay	40
Composition:	
Quartz	7
Feldspar	3
Clay	27
Volcanic glass	10
Diatoms	45
Radiolarians	5
Silicoflagellates	3

SITE 580

HOLE 580

Date Occupied: June 6, 1982

Date Departed: June 8, 1982

Time on Hole: 2 days, 3 hours

Position (latitude; longitude): 41°37.47'N; 153°58.58'E

Water depth (sea level; corrected m, echo-sounding): 5375

Water depth (rig floor; corrected m, echo-sounding): 5385

Bottom felt (m, drill pipe): 5386.7

Penetration (m): 155.3

Number of cores: 17

Total length of cored section (m): 155.3

Total core recovered (m): 140.74

Core recovery (%): 91

Oldest sediment cored:

Depth sub-bottom (m): 155.3

Nature: biosiliceous clay

Age: late Pliocene

Measured velocity (km/s):

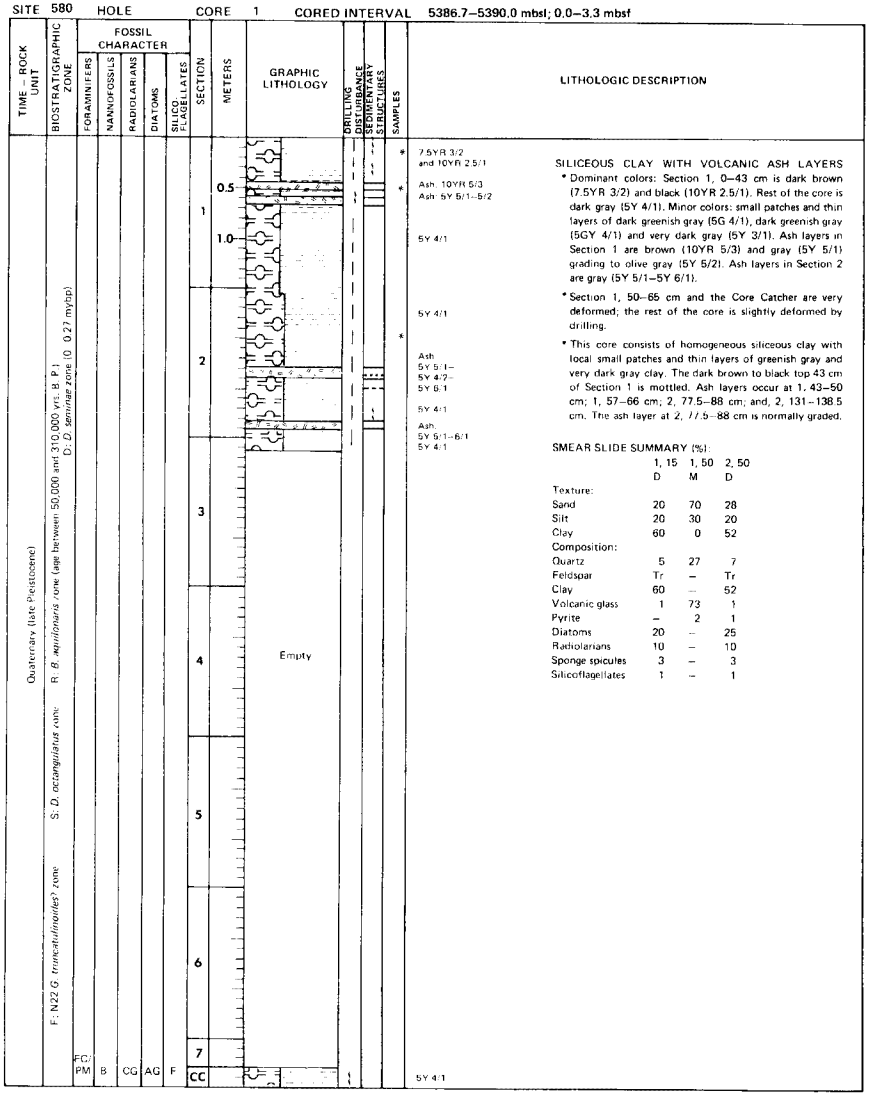
Basement: Not reached

Depth sub-bottom (m):

Nature:

Velocity range (km/s):

SITE 580 HOLE CORE 1 CORED INTERVAL 5386.7–5390.0 mbsl; 0.0–3.3 mbsf



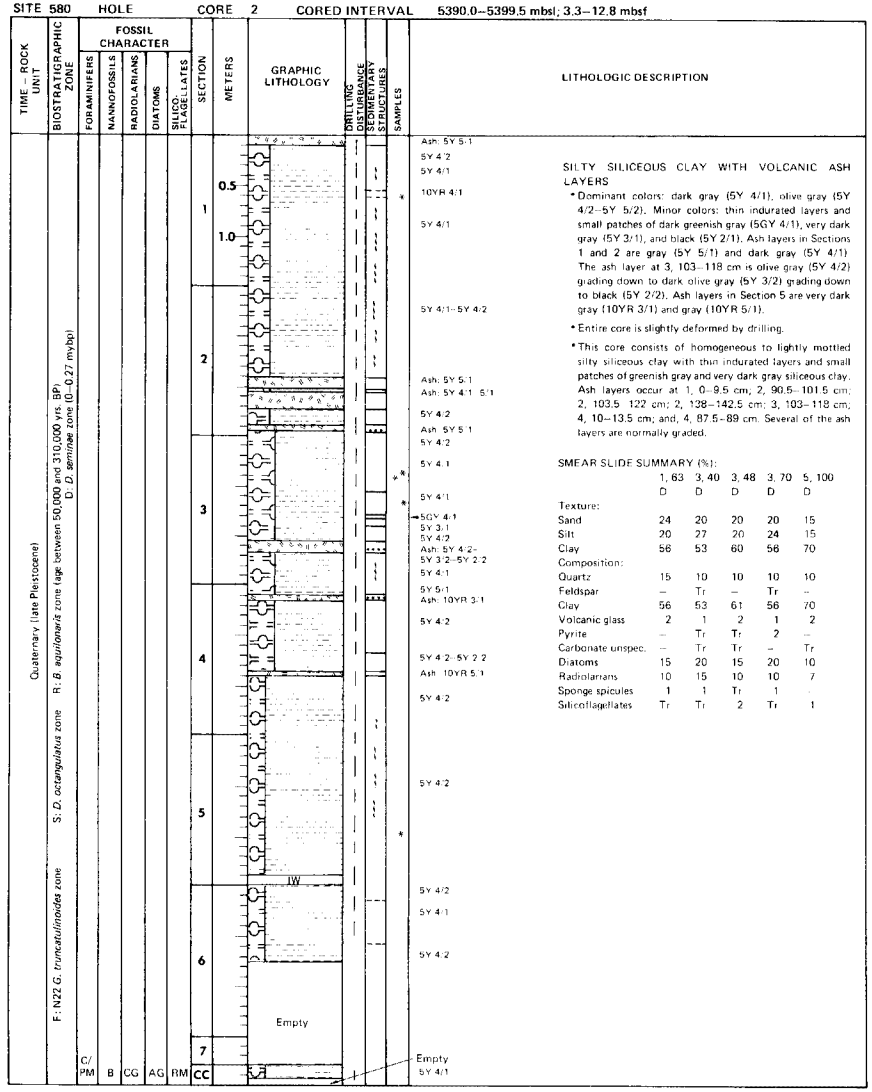
SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: Section 1, 0–43 cm is dark brown (7.5YR 3/2) and black (10YR 2.5/1). Rest of the core is dark gray (5Y 4/1). Minor colors: small patches and thin layers of dark greenish gray (5G 4/1), dark greenish gray (5GY 4/1) and very dark gray (5Y 3/1). Ash layers in Section 1 are brown (10YR 5/3) and gray (5Y 5/1) grading to olive gray (5Y 5/2). Ash layers in Section 2 are gray (5Y 5/1–5Y 6/1).
- Section 1, 50–65 cm and the Core Catcher are very deformed; the rest of the core is slightly deformed by drilling.
- This core consists of homogeneous siliceous clay with local small patches and thin layers of greenish gray and very dark gray clay. The dark brown to black top 43 cm of Section 1 is mottled. Ash layers occur at 1, 43–50 cm; 1, 57–66 cm; 2, 77.5–88 cm; and, 2, 131–138.5 cm. The ash layer at 2, 77.5–88 cm is normally graded.

SMEAR SLIDE SUMMARY (%):

	1, 15 D	1, 50 M	2, 50 D
Texture:			
Sand	20	70	28
Silt	20	30	20
Clay	60	0	52
Composition:			
Quartz	5	27	7
Feldspar	Tr	–	Tr
Clay	60	–	52
Volcanic glass	1	73	1
Pyrite	–	2	1
Diatoms	20	–	25
Radiolarians	10	–	10
Sponge spicules	3	–	3
Silicoflagellates	1	–	1

SITE 580 HOLE CORE 2 CORED INTERVAL 5390.0–5399.5 mbsl; 3.3–12.8 mbsf



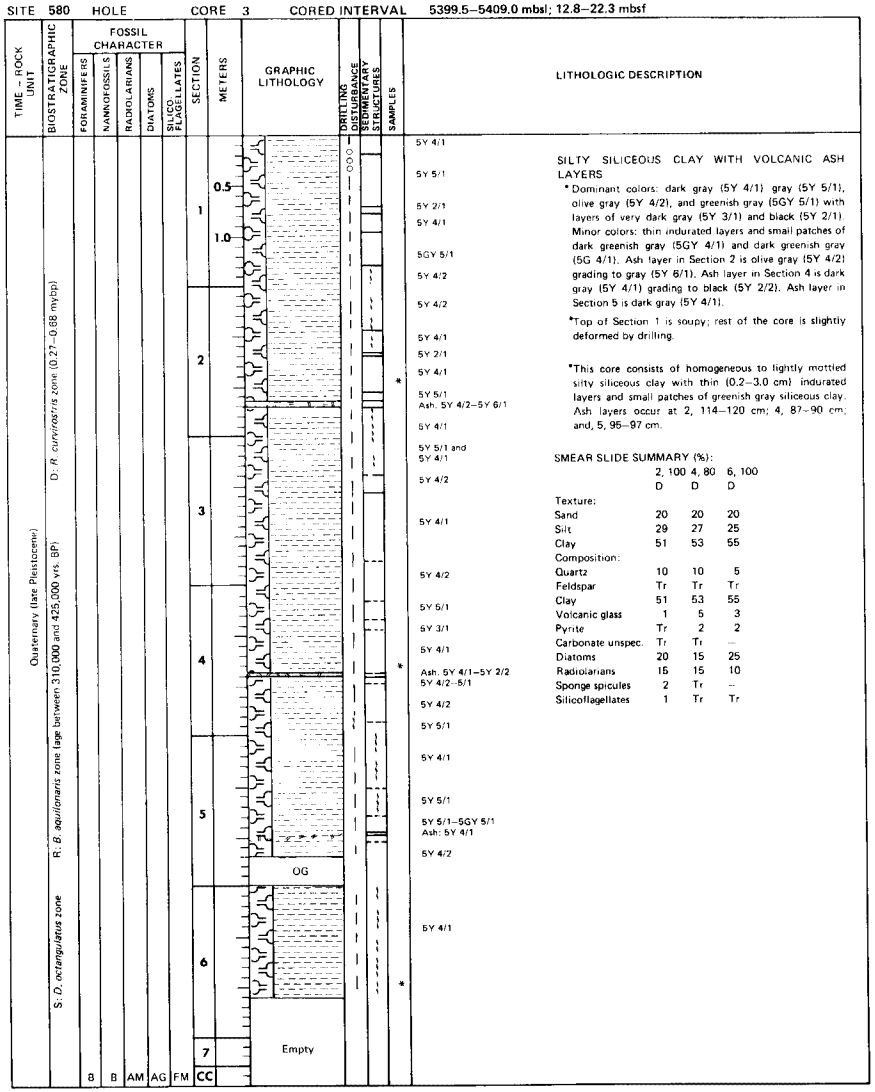
SILTY SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1), olive gray (5Y 4/2–5Y 5/2). Minor colors: thin indurated layers and small patches of dark greenish gray (5GY 4/1), very dark gray (5Y 3/1), and black (5Y 2/1). Ash layers in Sections 1 and 2 are gray (5Y 5/1) and dark gray (5Y 4/1). The ash layer at 3, 103–118 cm is olive gray (5Y 4/2) grading down to dark olive gray (5Y 3/2) grading down to black (5Y 2/2). Ash layers in Section 5 are very dark gray (10YR 3/1) and gray (10YR 5/1).
- Entire core is slightly deformed by drilling.
- This core consists of homogeneous to lightly mottled silty siliceous clay with thin indurated layers and small patches of greenish gray and very dark gray siliceous clay. Ash layers occur at 1, 0–9.5 cm; 2, 90.5–101.5 cm; 2, 103.5–122 cm; 2, 138–142.5 cm; 3, 103–118 cm; 4, 10–13.5 cm; and, 4, 87.5–89 cm. Several of the ash layers are normally graded.

SMEAR SLIDE SUMMARY (%):

	1, 63 D	3, 40 D	3, 48 D	3, 70 D	5, 100 D
Texture:					
Sand	24	20	20	20	15
Silt	20	27	20	24	15
Clay	56	53	60	56	70
Composition:					
Quartz	15	10	10	10	10
Feldspar	–	Tr	–	Tr	–
Clay	56	53	61	56	70
Volcanic glass	2	1	2	1	2
Pyrite	–	Tr	Tr	2	–
Carbonate unspec.	–	Tr	Tr	–	Tr
Diatoms	15	20	15	20	10
Radiolarians	10	15	10	10	7
Sponge spicules	1	1	Tr	1	–
Silicoflagellates	Tr	Tr	2	Tr	1

SITE 580 HOLE CORE 3 CORED INTERVAL 5399.5–5409.0 mbsl; 12.8–22.3 mbsf



SILTY SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

*Dominant colors: dark gray (5Y 4/1) gray (5Y 5/1), olive gray (5Y 4/2), and greenish gray (5GY 5/1) with layers of very dark gray (5Y 3/1) and black (5Y 2/1). Minor colors: thin indurated layers and small patches of dark greenish gray (5GY 4/1) and dark greenish gray (5G 4/1). Ash layer in Section 2 is olive gray (5Y 4/2) grading to gray (5Y 6/1). Ash layer in Section 4 is dark gray (5Y 4/1) grading to black (5Y 2/2). Ash layer in Section 5 is dark gray (5Y 4/1).

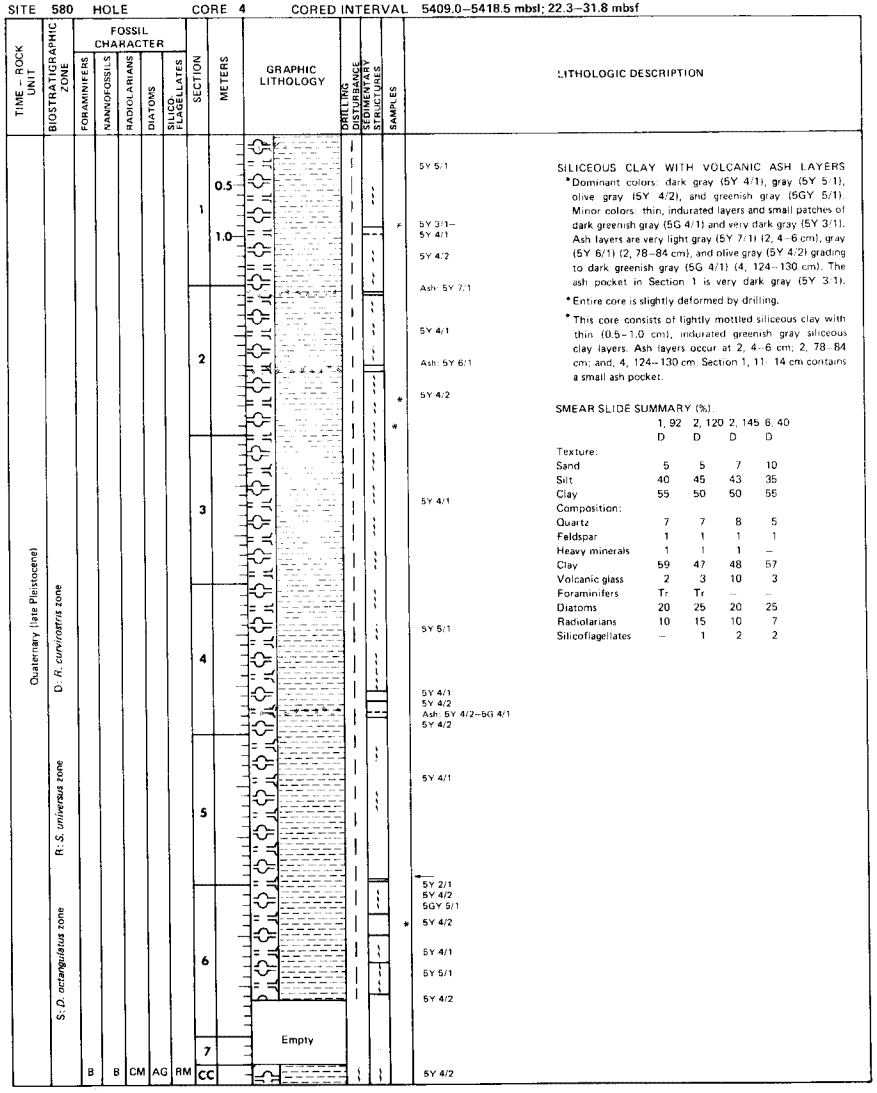
*Top of Section 1 is soupy; rest of the core is slightly deformed by drilling.

*This core consists of homogeneous to lightly mottled silty siliceous clay with thin (0.2–3.0 cm) indurated layers and small patches of greenish gray siliceous clay. Ash layers occur at 2, 114–120 cm; 4, 87–90 cm; and, 5, 95–97 cm.

SMEAR SLIDE SUMMARY (%):

	2, 100 D	4, 80 D	6, 100 D
Texture:			
Sand	20	20	20
Silt	29	27	25
Clay	51	53	55
Composition:			
Quartz	10	10	5
Feldspar	Tr	Tr	Tr
Clay	51	53	55
Volcanic glass	1	5	3
Pyrite	Tr	2	2
Carbonate unspec.	Tr	Tr	–
Diatoms	20	15	25
Radiolarians	15	15	10
Sponge spicules	2	Tr	–
Silicoflagellates	1	Tr	Tr

SITE 580 HOLE CORE 4 CORED INTERVAL 5409.0–5418.5 mbsl; 22.3–31.8 mbsf



SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

*Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2), and greenish gray (5GY 5/1). Minor colors: thin, indurated layers and small patches of dark greenish gray (5G 4/1) and very dark gray (5Y 3/1). Ash layers are very light gray (5Y 7/1) (2, 4–6 cm), gray (5Y 6/1) (2, 78–84 cm), and olive gray (5Y 4/2) grading to dark greenish gray (5G 4/1) (4, 124–130 cm). The ash pocket in Section 1 is very dark gray (5Y 3/1).

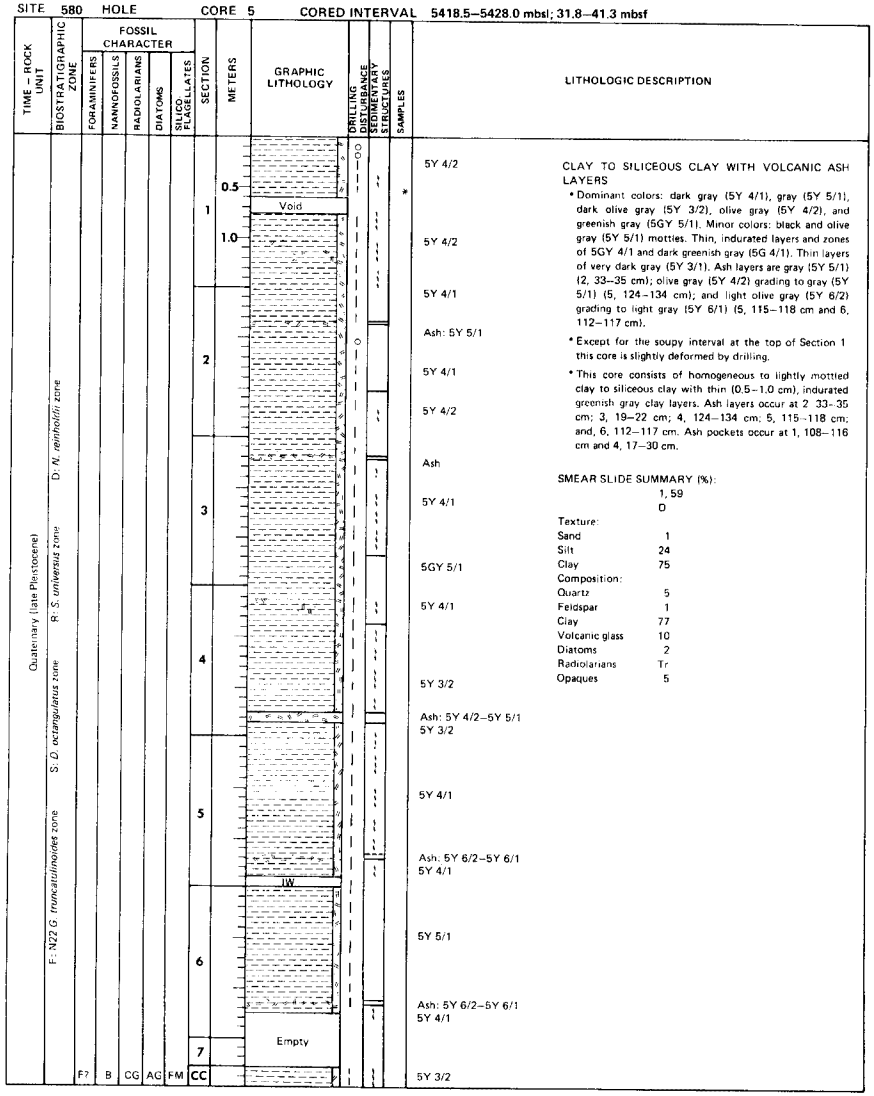
*Entire core is slightly deformed by drilling.

*This core consists of tightly mottled siliceous clay with thin (0.5–1.0 cm), indurated greenish gray siliceous clay layers. Ash layers occur at 2, 4–6 cm; 2, 78–84 cm; and, 4, 124–130 cm. Section 1, 11–14 cm contains a small ash pocket.

SMEAR SLIDE SUMMARY (%).

	1, 92 D	2, 120 D	2, 145 D	6, 40 D
Texture:				
Sand	5	5	7	10
Silt	40	45	43	35
Clay	55	50	50	55
Composition:				
Quartz	7	7	8	5
Feldspar	1	1	1	1
Heavy minerals	1	1	1	–
Clay	59	47	48	57
Volcanic glass	2	3	10	3
Foraminifers	Tr	Tr	–	–
Diatoms	20	25	20	25
Radiolarians	10	15	10	7
Silicoflagellates	–	1	2	2

SITE 580 HOLE CORE 5 CORED INTERVAL 5418.5–5428.0 mbsl; 31.8–41.3 mbsl



LITHOLOGIC DESCRIPTION

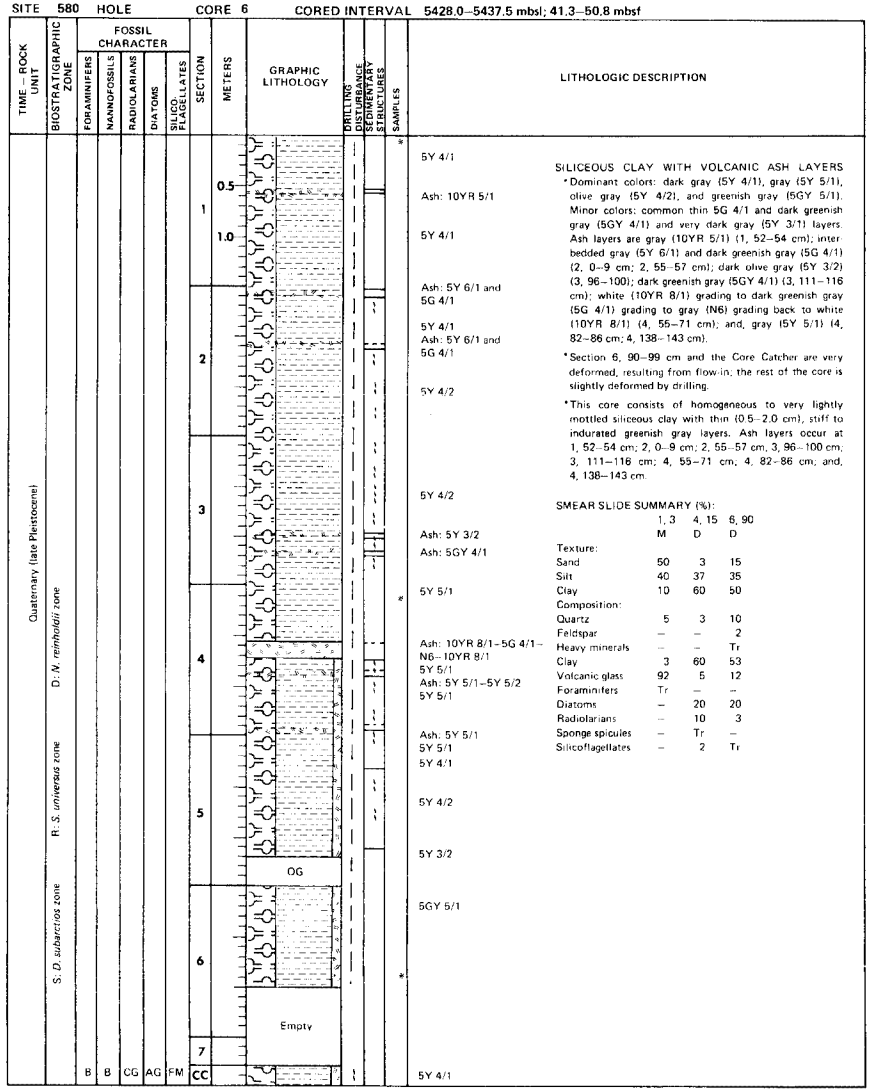
CLAY TO SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), dark olive gray (5Y 3/2), olive gray (5Y 4/2), and greenish gray (5GY 5/1). Minor colors: black and olive gray (5Y 5/1) mottles. Thin, indurated layers and zones of 5GY 4/1 and dark greenish gray (5G 4/1). Thin layers of very dark gray (5Y 3/1). Ash layers are gray (5Y 5/1) (2, 33–35 cm); olive gray (5Y 4/2) grading to gray (5Y 5/1) (5, 124–134 cm); and light olive gray (5Y 6/2) grading to light gray (5Y 6/1) (5, 115–118 cm and 6, 112–117 cm).
- *Except for the soupy interval at the top of Section 1 this core is slightly deformed by drilling.
- This core consists of homogeneous to lightly mottled clay to siliceous clay with thin (0.5–1.0 cm), indurated greenish gray clay layers. Ash layers occur at 2, 33–35 cm; 3, 19–22 cm; 4, 124–134 cm; 5, 115–118 cm; and, 6, 112–117 cm. Ash pockets occur at 1, 108–116 cm and 4, 17–30 cm.

SMEAR SLIDE SUMMARY (%):

	1, 59 D
Texture:	
Sand	1
Silt	24
Clay	75
Composition:	
Quartz	5
Feldspar	1
Clay	77
Volcanic glass	10
Diatoms	2
Radiolarians	Tr
Opaques	5

SITE 580 HOLE CORE 6 CORED INTERVAL 5428.0–5437.5 mbsl; 41.3–50.8 mbsl



LITHOLOGIC DESCRIPTION

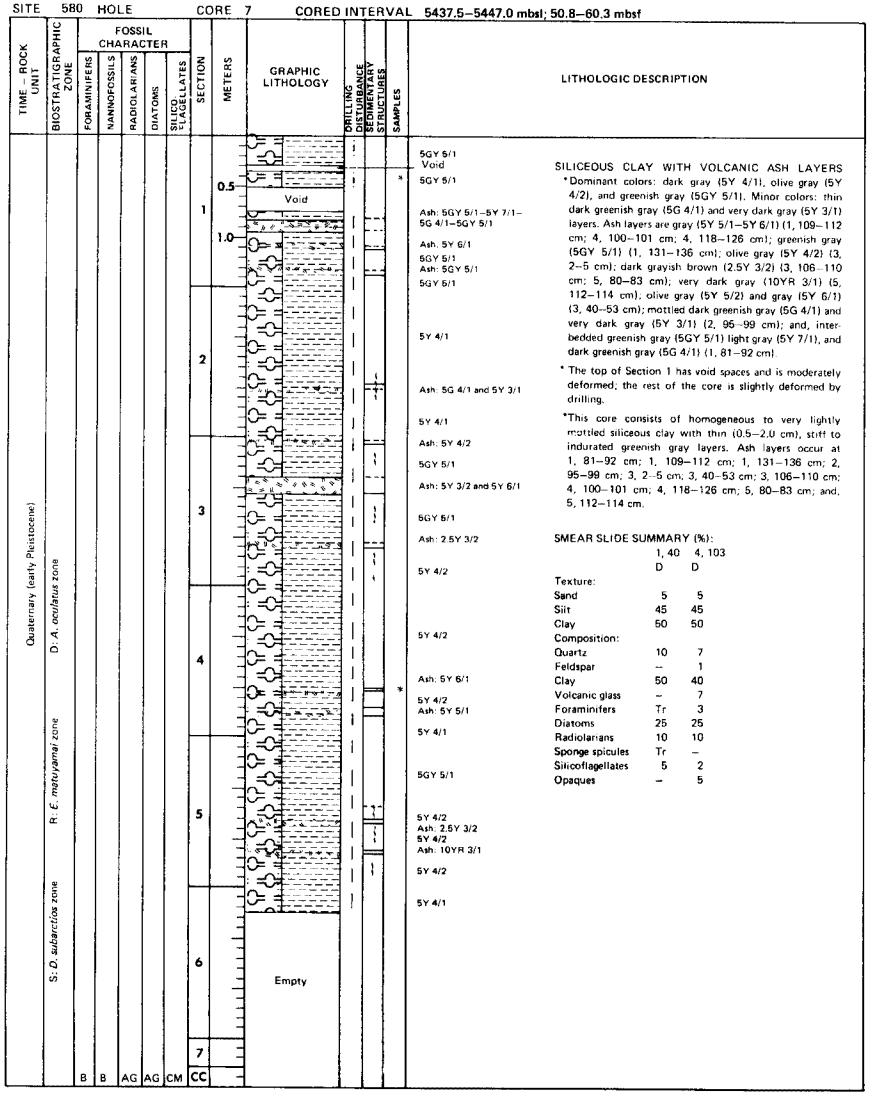
SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2), and greenish gray (5GY 5/1). Minor colors: common thin 5G 4/1 and dark greenish gray (5GY 4/1) and very dark gray (5Y 3/1) layers. Ash layers are gray (10YR 5/1) (1, 52–54 cm); interbedded gray (5Y 6/1) and dark greenish gray (5G 4/1) (2, 0–9 cm; 2, 55–57 cm); dark olive gray (5Y 3/2) (3, 96–100); dark greenish gray (5GY 4/1) (3, 111–116 cm); white (10YR 8/1) grading to dark greenish gray (5G 4/1) grading to gray (N6) grading back to white (10YR 8/1) (4, 55–71 cm); and, gray (5Y 5/1) (4, 82–86 cm; 4, 138–143 cm).
- *Section 6, 90–99 cm and the Core Catcher are very deformed, resulting from flow-in; the rest of the core is slightly deformed by drilling.
- This core consists of homogeneous to very lightly mottled siliceous clay with thin (0.5–2.0 cm), stiff to indurated greenish gray layers. Ash layers occur at 1, 52–54 cm; 2, 0–9 cm; 2, 55–57 cm, 3, 96–100 cm; 3, 111–116 cm; 4, 55–71 cm; 4, 82–86 cm; and, 4, 138–143 cm.

SMEAR SLIDE SUMMARY (%):

	1, 3 M	4, 15 D	6, 90 D
Texture:			
Sand	50	3	15
Silt	40	37	35
Clay	10	60	50
Composition:			
Quartz	5	3	10
Feldspar	–	–	2
Heavy minerals	–	–	Tr
Clay	3	60	53
Volcanic glass	92	5	12
Foraminifers	Tr	–	–
Diatoms	–	20	20
Radiolarians	–	10	3
Sponge spicules	–	Tr	–
Silicoflagellates	–	2	Tr

SITE 580 HOLE CORE 7 CORED INTERVAL 5437.5–5447.0 mbsl; 50.8–60.3 mbsf



SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

*Dominant colors: dark gray (5Y 4/1), olive gray (5Y 4/2), and greenish gray (5GY 5/1). Minor colors: thin dark greenish gray (5G 4/1) and very dark gray (5Y 3/1) layers. Ash layers are gray (5Y 5/1–5Y 6/1) (1, 109–112 cm; 4, 100–101 cm; 4, 118–126 cm); greenish gray (5GY 5/1) (1, 131–136 cm); olive gray (5Y 4/2) (3, 2–5 cm); dark grayish brown (2.5Y 3/2) (3, 106–110 cm; 5, 80–83 cm); very dark gray (10YR 3/1) (5, 112–114 cm); olive gray (5Y 5/2) and gray (5Y 6/1) (3, 40–53 cm); mottled dark greenish gray (5G 4/1) and very dark gray (5Y 3/1) (2, 96–99 cm); and, interbedded greenish gray (5GY 5/1) light gray (5Y 7/1), and dark greenish gray (5G 4/1) (1, 81–92 cm).

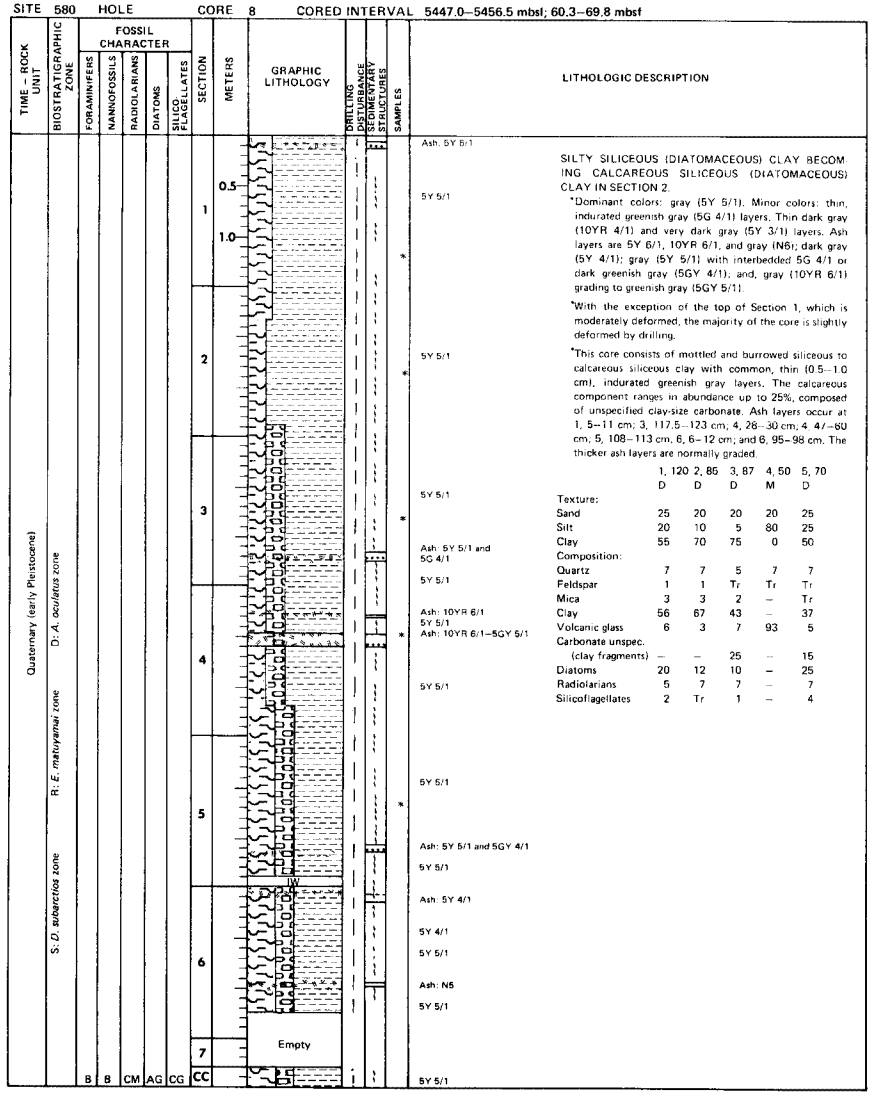
* The top of Section 1 has void spaces and is moderately deformed; the rest of the core is slightly deformed by drilling.

*This core consists of homogeneous to very lightly mottled siliceous clay with thin (0.5–2.0 cm), stiff to indurated greenish gray layers. Ash layers occur at 1, 81–92 cm; 1, 109–112 cm; 1, 131–136 cm; 2, 95–98 cm; 3, 2–5 cm; 3, 40–53 cm; 3, 106–110 cm; 4, 100–101 cm; 4, 118–126 cm; 5, 80–83 cm; and, 5, 112–114 cm.

SMEAR SLIDE SUMMARY (%):

	1, 40 D	4, 103 D
Texture:		
Sand	5	5
Silt	45	45
Clay	50	50
Composition:		
Quartz	10	7
Feldspar	–	1
Clay	50	40
Volcanic glass	–	7
Foraminifers	Tr	3
Diatoms	25	25
Radiolarians	10	10
Sponge spicules	Tr	–
Silicoflagellates	5	2
Opaques	–	5

SITE 580 HOLE CORE 8 CORED INTERVAL 5447.0–5456.5 mbsl; 60.3–69.8 mbsf



SILTY SILICEOUS (DIATOMACEOUS) CLAY BECOMING CALCAREOUS SILICEOUS (DIATOMACEOUS) CLAY IN SECTION 2.

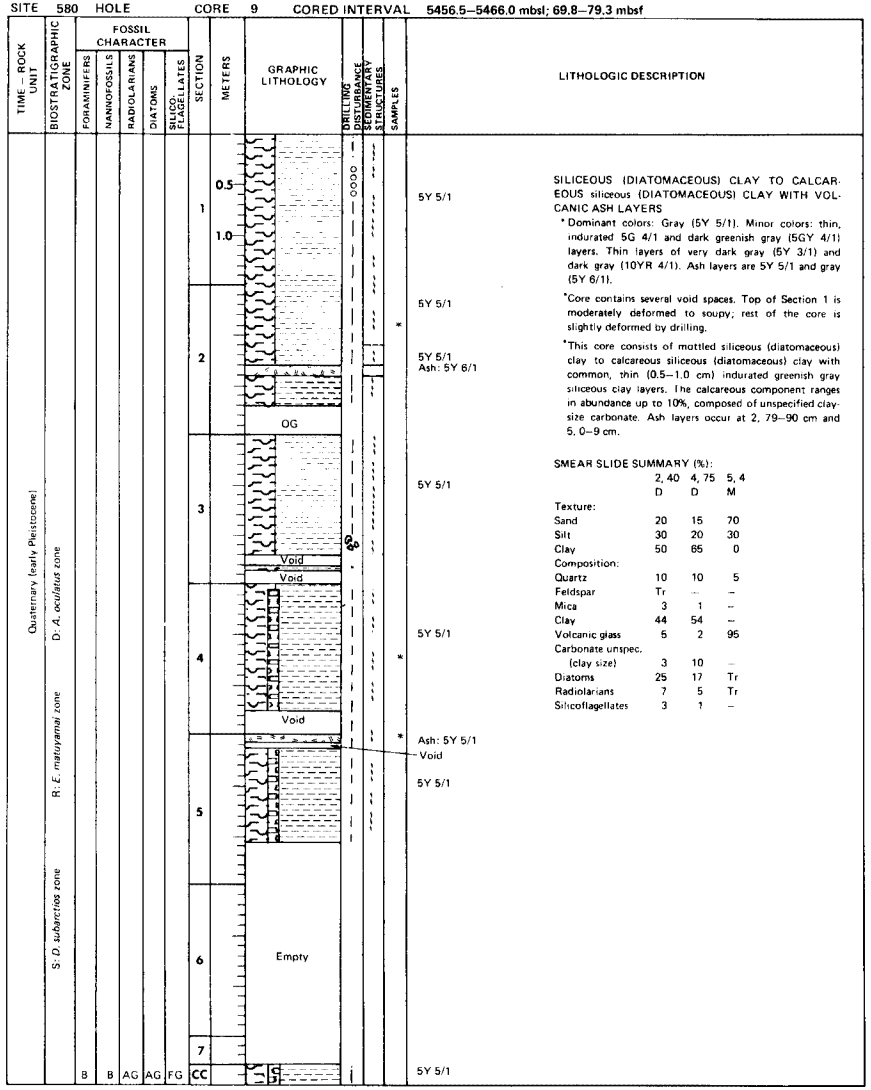
*Dominant colors: gray (5Y 5/1). Minor colors: thin, indurated greenish gray (5G 4/1) layers. Thin dark gray (10YR 4/1) and very dark gray (5Y 3/1) layers. Ash layers are 5Y 6/1, 10YR 6/1, and gray (N6); dark gray (5Y 4/1); gray (5Y 5/1) with interbedded 5G 4/1 or dark greenish gray (5GY 4/1); and, gray (10YR 6/1) grading to greenish gray (5GY 5/1).

*With the exception of the top of Section 1, which is moderately deformed, the majority of the core is slightly deformed by drilling.

*This core consists of mottled and burrowed siliceous to calcareous siliceous clay with common, thin (0.5–1.0 cm), indurated greenish gray layers. The calcareous component ranges in abundance up to 25%, composed of unspecified clay-size carbonate. Ash layers occur at 1, 5–11 cm; 3, 117.5–123 cm; 4, 28–30 cm; 4, 47–60 cm; 5, 108–113 cm; 6, 6–12 cm; and 6, 95–98 cm. The thicker ash layers are normally graded.

	1, 120 D	2, 85 D	3, 87 D	4, 50 M	5, 70 D
Texture:					
Sand	25	20	20	20	25
Silt	20	10	5	80	25
Clay	55	70	75	0	50
Composition:					
Quartz	7	7	5	7	7
Feldspar	1	1	Tr	Tr	Tr
Mica	3	3	2	–	Tr
Clay	56	67	43	–	37
Volcanic glass	6	3	7	93	5
Carbonate unspec. (clay fragments)	–	–	25	–	15
Diatoms	20	12	10	–	25
Radiolarians	5	7	7	–	7
Silicoflagellates	2	Tr	1	–	4

SITE 580 HOLE CORE 9 CORED INTERVAL 5456.5–5466.0 mbsl; 69.8–79.3 mbsf



LITHOLOGIC DESCRIPTION

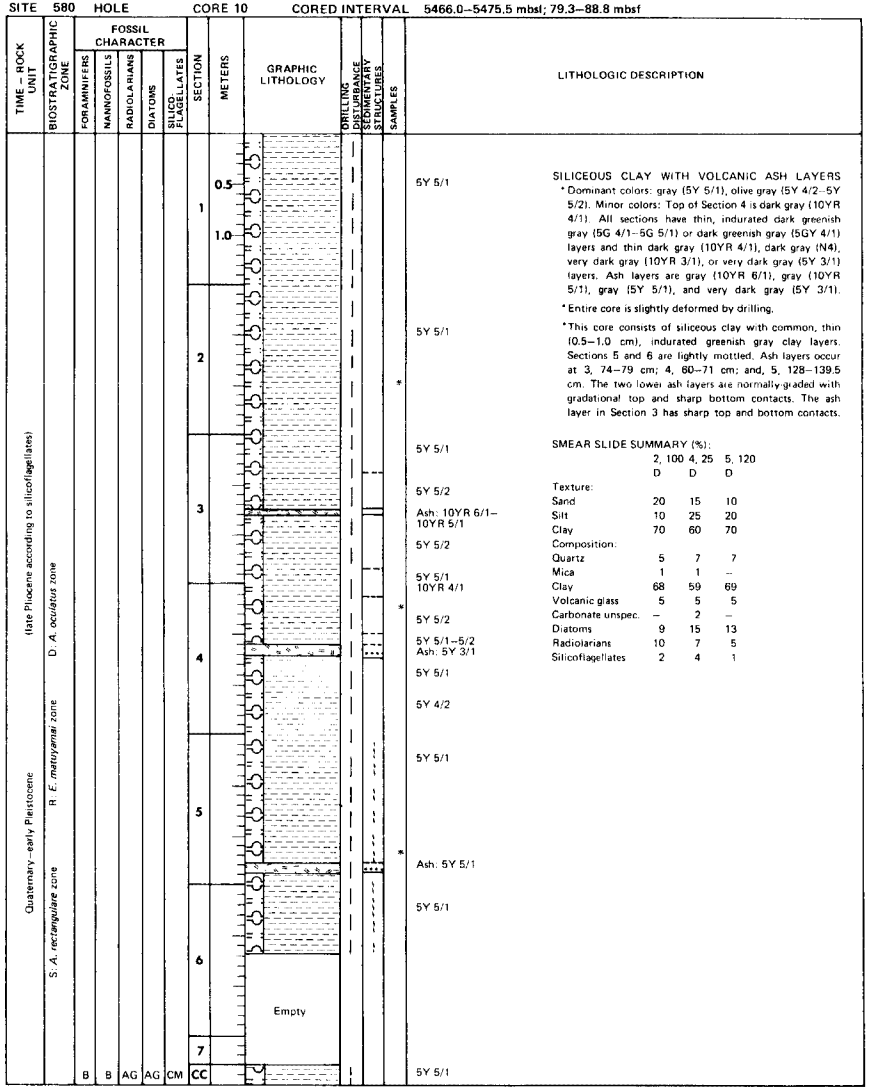
SILICEOUS (DIATOMACEOUS) CLAY TO CALCAREOUS siliceous (DIATOMACEOUS) CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: Gray (5Y 5/1). Minor colors: thin, indurated 5G 4/1 and dark greenish gray (5GY 4/1) layers. Thin layers of very dark gray (5Y 3/1) and dark gray (10YR 4/1). Ash layers are 5Y 5/1 and gray (5Y 6/1).
- *Core contains several void spaces. Top of Section 1 is moderately deformed to soupy; rest of the core is slightly deformed by drilling.
- *This core consists of mottled siliceous (diatomaceous) clay to calcareous siliceous (diatomaceous) clay with common, thin (0.5–1.0 cm) indurated greenish gray siliceous clay layers. The calcareous component ranges in abundance up to 10%, composed of unspecified clay-size carbonate. Ash layers occur at 2, 79–90 cm and 5, 0–9 cm.

SMEAR SLIDE SUMMARY (%):

	2, 40 D	4, 75 D	5, 4 M
Texture:			
Sand	20	15	70
Silt	30	20	30
Clay	50	65	0
Composition:			
Quartz	10	10	5
Feldspar	Tr	–	–
Mica	3	1	–
Clay	44	54	–
Volcanic glass	5	2	95
Carbonate unspec. (clay size)	3	10	–
Diatoms	25	17	Tr
Radiolarians	7	5	Tr
Silicoflagellates	3	1	–

SITE 580 HOLE CORE 10 CORED INTERVAL 5466.0–5475.5 mbsl; 79.3–88.8 mbsf



LITHOLOGIC DESCRIPTION

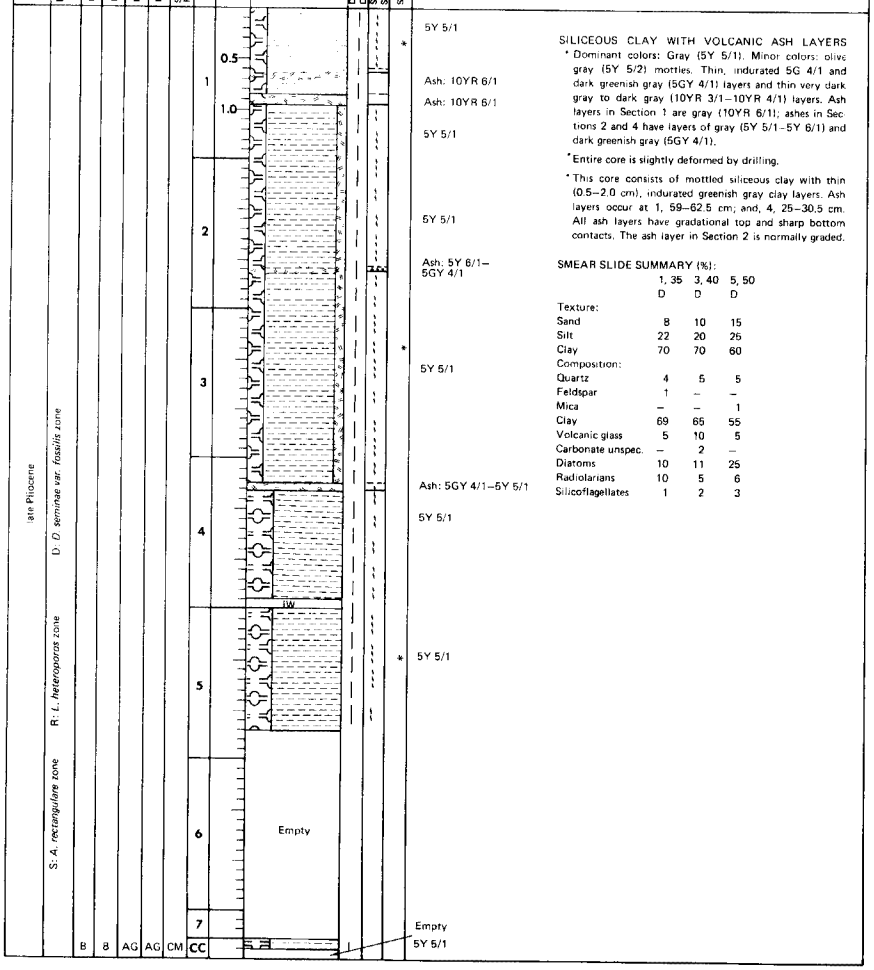
SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: gray (5Y 5/1), olive gray (5Y 4/2–5Y 5/2). Minor colors: Top of Section 4 is dark gray (10YR 4/1). All sections have thin, indurated dark greenish gray (5G 4/1–5G 5/1) or dark greenish gray (5GY 4/1) layers and thin dark gray (10YR 4/1), dark gray (N4), very dark gray (10YR 3/1), or very dark gray (5Y 3/1) layers. Ash layers are gray (10YR 6/1), gray (10YR 5/1), gray (5Y 5/1), and very dark gray (5Y 3/1).
- * Entire core is slightly deformed by drilling.
- *This core consists of siliceous clay with common, thin (0.5–1.0 cm), indurated greenish gray clay layers. Sections 5 and 6 are lightly mottled. Ash layers occur at 3, 74–79 cm; 4, 60–71 cm; and, 5, 128–139.5 cm. The two lower ash layers are normally-graded with gradational top and sharp bottom contacts. The ash layer in Section 3 has sharp top and bottom contacts.

SMEAR SLIDE SUMMARY (%):

	2, 100 D	4, 25 D	5, 120 D
Texture:			
Sand	20	15	10
Silt	10	25	20
Clay	70	60	70
Composition:			
Quartz	5	7	7
Mica	1	1	–
Clay	68	59	69
Volcanic glass	5	5	5
Carbonate unspec.	–	2	–
Diatoms	9	15	13
Radiolarians	10	7	5
Silicoflagellates	2	4	1

SITE 580 HOLE CORE 11 CORED INTERVAL 5475.5–5485.0 mbsl; 88.8–98.3 mbsf



LITHOLOGIC DESCRIPTION

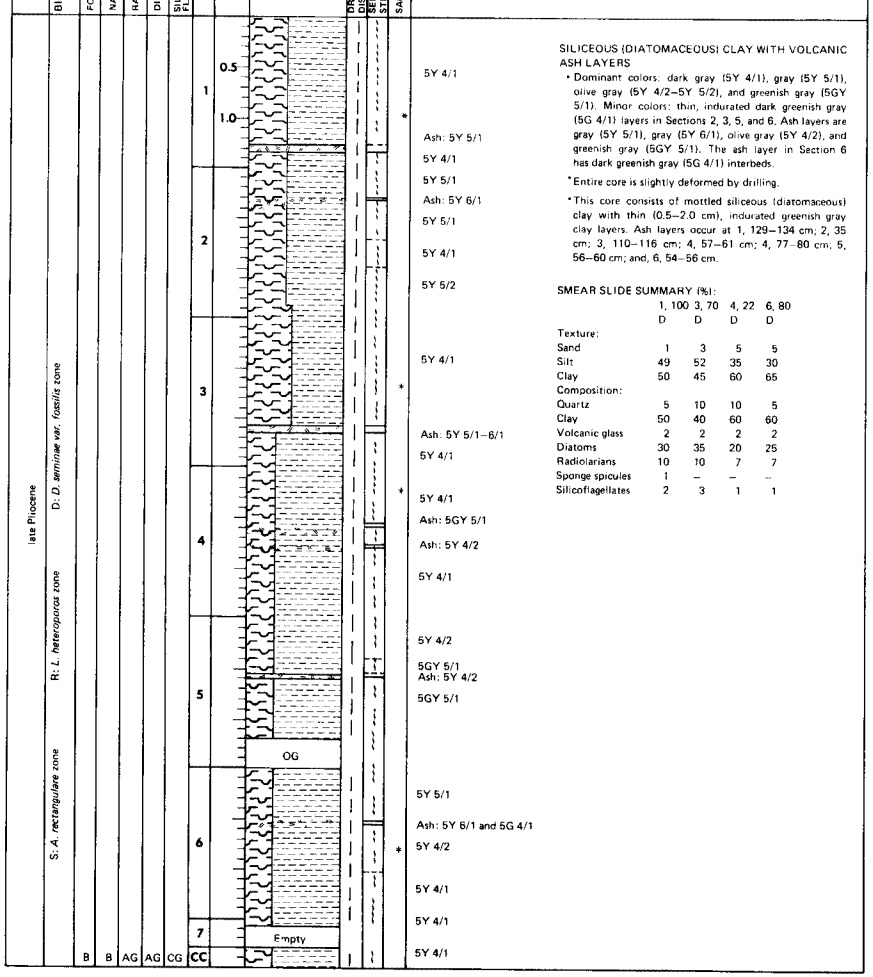
SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: Gray (5Y 5/1). Minor colors: olive gray (5Y 5/2) mottles. Thin, indurated 5G 4/1 and dark greenish gray (5GY 4/1) layers and thin very dark gray to dark gray (10YR 3/1–10YR 4/1) layers. Ash layers in Section 1 are gray (10YR 6/1); ashes in Sections 2 and 4 have layers of gray (5Y 5/1–5Y 6/1) and dark greenish gray (5GY 4/1).
- *Entire core is slightly deformed by drilling.
- *This core consists of mottled siliceous clay with thin (0.5–2.0 cm), indurated greenish gray clay layers. Ash layers occur at 1, 59–62.5 cm; and, 4, 25–30.5 cm. All ash layers have gradational top and sharp bottom contacts. The ash layer in Section 2 is normally graded.

SMEAR SLIDE SUMMARY (%):

	1, 35 D	3, 40 D	5, 50 D
Texture:			
Sand	8	10	15
Silt	22	20	25
Clay	70	70	60
Composition:			
Quartz	4	5	5
Feldspar	1	–	–
Mica	–	–	1
Clay	69	65	55
Volcanic glass	5	10	5
Carbonate unspec.	–	2	–
Diatoms	10	11	25
Radiolarians	10	5	6
Silicoflagellates	1	2	3

SITE 580 HOLE CORE 12 CORED INTERVAL 5485.0–5494.5 mbsl; 98.3–107.8 mbsf



LITHOLOGIC DESCRIPTION

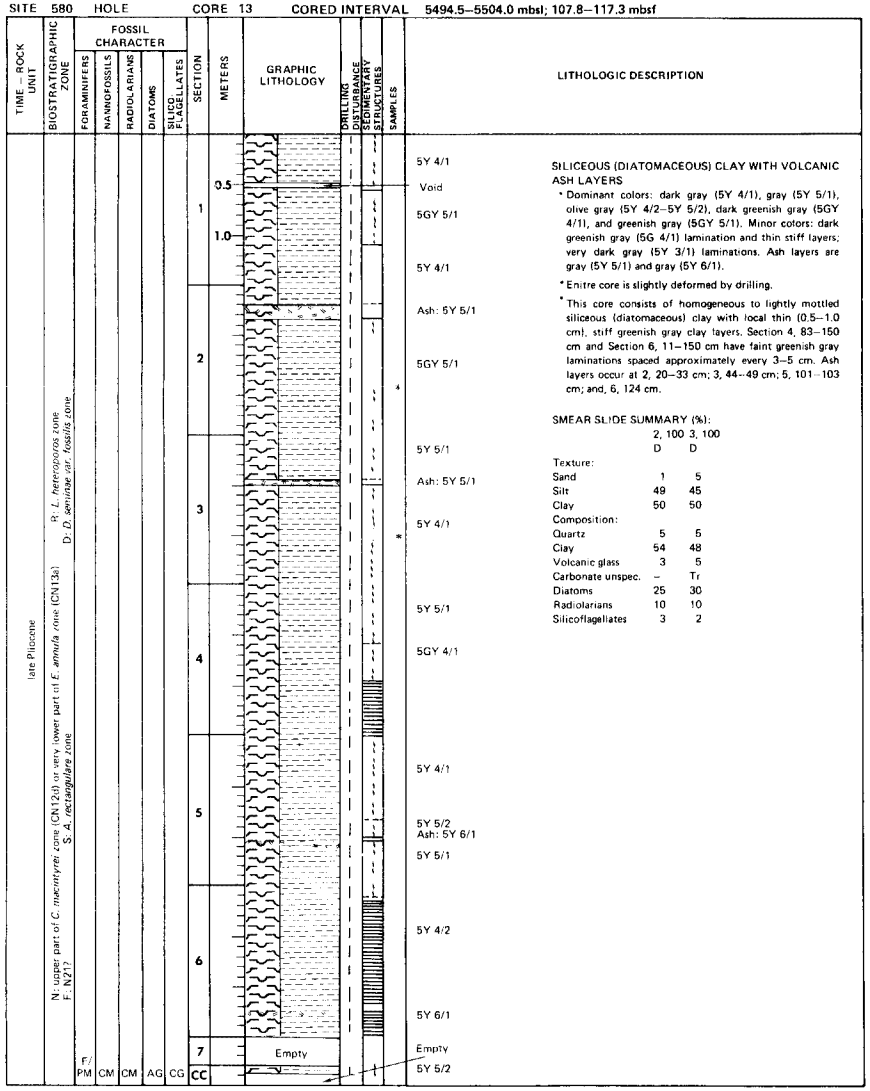
SILICEOUS (DIATOMACEOUS) CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2–5Y 5/2), and greenish gray (5GY 5/1). Minor colors: thin, indurated dark greenish gray (5G 4/1) layers in Sections 2, 3, 5, and 6. Ash layers are gray (5Y 5/1), gray (5Y 6/1), olive gray (5Y 4/2), and greenish gray (5GY 5/1). The ash layer in Section 6 has dark greenish gray (5G 4/1) interbeds.
- *Entire core is slightly deformed by drilling.
- *This core consists of mottled siliceous (diatomaceous) clay with thin (0.5–2.0 cm), indurated greenish gray clay layers. Ash layers occur at 1, 129–134 cm; 2, 35 cm; 3, 110–116 cm; 4, 57–61 cm; 4, 77–80 cm; 5, 56–60 cm; and, 6, 54–56 cm.

SMEAR SLIDE SUMMARY (%):

	1, 100 D	3, 70 D	4, 22 D	6, 80 D
Texture:				
Sand	1	3	5	5
Silt	49	52	35	30
Clay	50	45	60	65
Composition:				
Quartz	5	10	10	5
Clay	50	40	60	60
Volcanic glass	2	2	2	2
Diatoms	30	35	20	25
Radiolarians	10	10	7	7
Sponge spicules	1	–	–	–
Silicoflagellates	2	3	1	1

SITE 580 HOLE CORE 13 CORED INTERVAL 5494.5–5504.0 mbsl; 107.8–117.3 mbsf



LITHOLOGIC DESCRIPTION

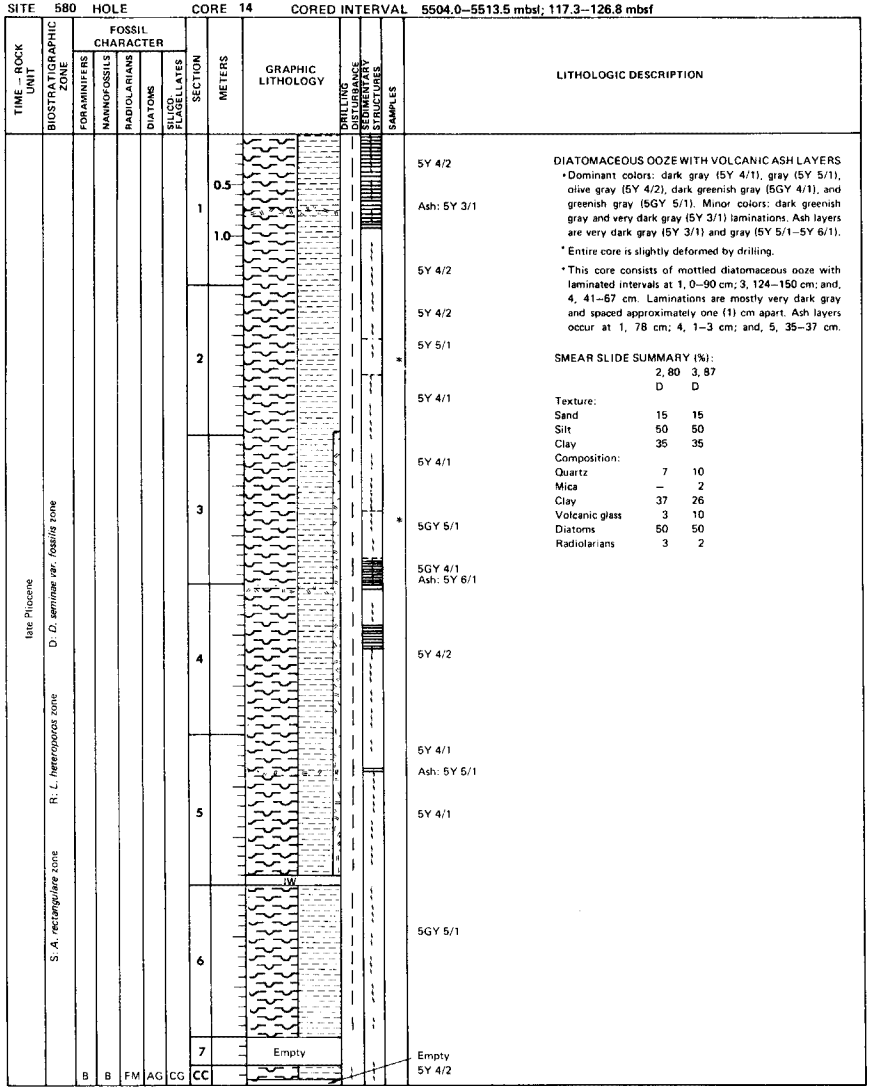
SILICEOUS (DIATOMACEOUS) CLAY WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2–5Y 5/2), dark greenish gray (5GY 4/1), and greenish gray (5GY 5/1). Minor colors: dark greenish gray (5G 4/1) lamination and thin stiff layers; very dark gray (5Y 3/1) laminations. Ash layers are gray (5Y 5/1) and gray (5Y 6/1).
- Enitre core is slightly deformed by drilling.
- This core consists of homogeneous to lightly mottled siliceous (diatomaceous) clay with local thin (0.5–1.0 cm), stiff greenish gray clay layers. Section 4, 83–150 cm and Section 6, 11–150 cm have faint greenish gray laminations spaced approximately every 3–5 cm. Ash layers occur at 2, 20–33 cm; 3, 44–49 cm; 5, 101–103 cm; and, 6, 124 cm.

SMEAR SLIDE SUMMARY (%):

	2, 100 D	3, 100 D
Texture:		
Sand	1	5
Silt	49	45
Clay	50	50
Composition:		
Quartz	5	5
Clay	54	48
Volcanic glass	3	5
Carbonate unspec.	–	Tr
Diatoms	25	30
Radiolarians	10	10
Silicoflagellates	3	2

SITE 580 HOLE CORE 14 CORED INTERVAL 5504.0–5513.5 mbsl; 117.3–126.8 mbsf



LITHOLOGIC DESCRIPTION

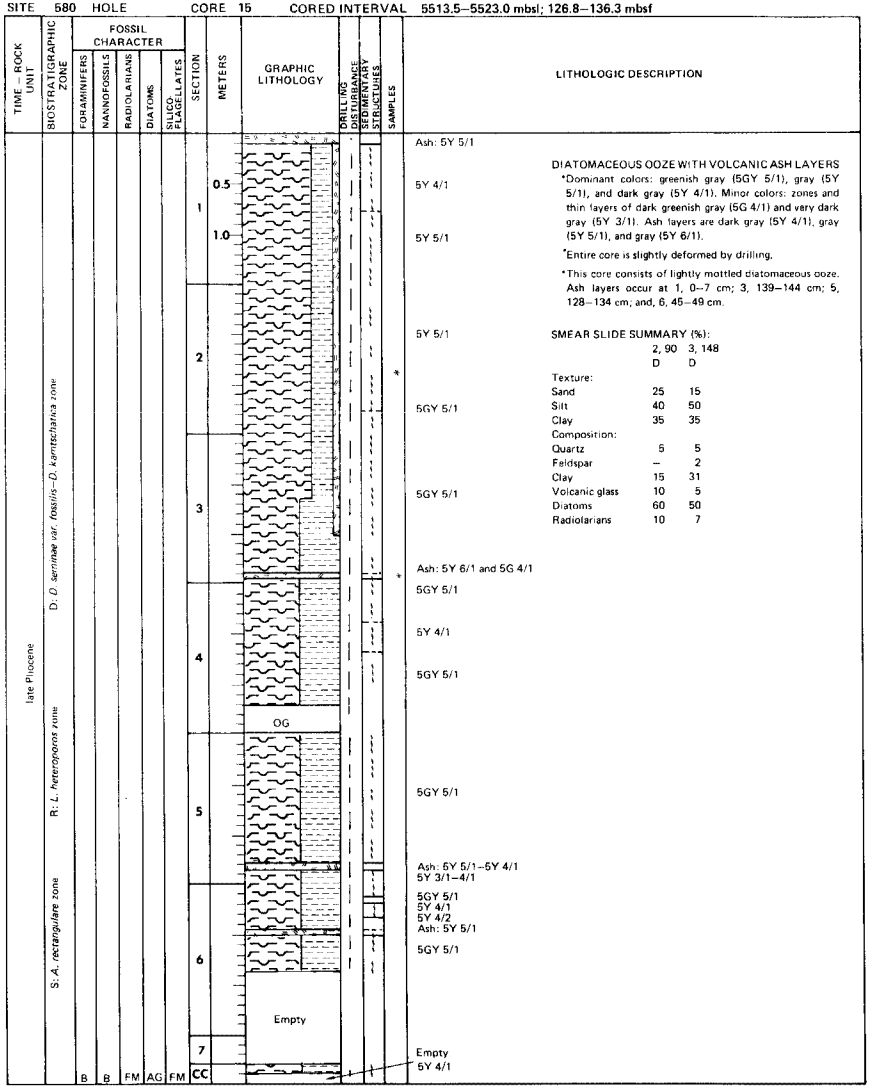
DIATOMACEOUS OOZE WITH VOLCANIC ASH LAYERS

- Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2), dark greenish gray (5GY 4/1), and greenish gray (5GY 5/1). Minor colors: dark greenish gray and very dark gray (5Y 3/1) laminations. Ash layers are very dark gray (5Y 3/1) and gray (5Y 5/1–5Y 6/1).
- Entire core is slightly deformed by drilling.
- This core consists of mottled diatomaceous ooze with laminated intervals at 1, 0–90 cm; 3, 124–150 cm; and, 4, 41–67 cm. Laminations are mostly very dark gray and spaced approximately one (1) cm apart. Ash layers occur at 1, 78 cm; 4, 1–3 cm; and, 5, 35–37 cm.

SMEAR SLIDE SUMMARY (%):

	2, 80 D	3, 87 D
Texture:		
Sand	15	15
Silt	50	50
Clay	35	35
Composition:		
Quartz	7	10
Mica	–	2
Clay	37	26
Volcanic glass	3	10
Diatoms	50	50
Radiolarians	3	2

SITE 580 HOLE CORE 15 CORED INTERVAL 5513.5–5523.0 mbsl; 126.8–136.3 mbsf



DIATOMACEOUS OOZE WITH VOLCANIC ASH LAYERS

*Dominant colors: greenish gray (5GY 5/1), gray (5Y 5/1), and dark gray (5Y 4/1). Minor colors: zones and thin layers of dark greenish gray (5G 4/1) and very dark gray (5Y 3/1). Ash layers are dark gray (5Y 4/1), gray (5Y 5/1), and gray (5Y 6/1).

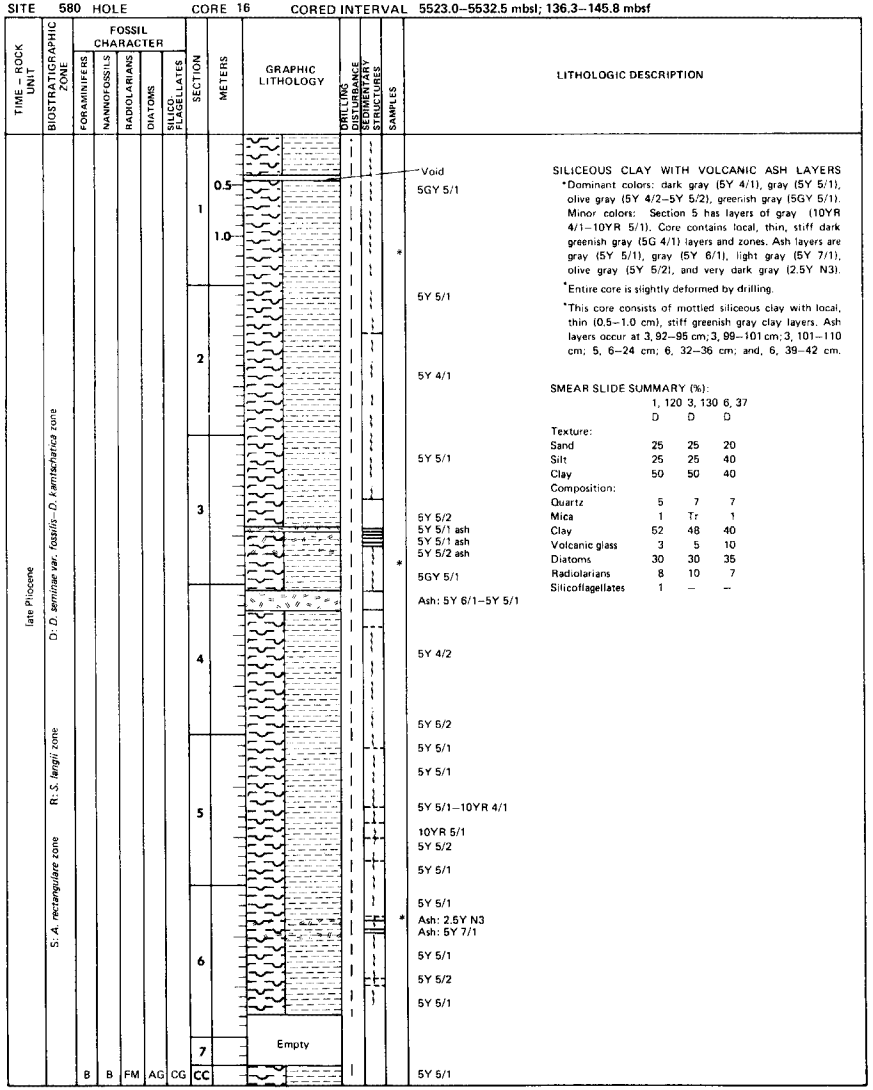
*Entire core is slightly deformed by drilling.

*This core consists of lightly mottled diatomaceous ooze. Ash layers occur at 1, 0–7 cm; 3, 139–144 cm; 5, 128–134 cm; and, 6, 45–49 cm.

SMEAR SLIDE SUMMARY (%):

	2, 90 D	3, 148 D
Texture:		
Sand	25	15
Silt	40	50
Clay	35	35
Composition:		
Quartz	5	5
Feldspar	–	2
Clay	15	31
Volcanic glass	10	5
Diatoms	60	50
Radiolarians	10	7

SITE 580 HOLE CORE 16 CORED INTERVAL 5523.0–5532.5 mbsl; 136.3–145.8 mbsf



SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

*Dominant colors: dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 4/2–5Y 5/2), greenish gray (5GY 5/1). Minor colors: Section 5 has layers of gray (10YR 4/1–10YR 5/1). Core contains local, thin, stiff dark greenish gray (5G 4/1) layers and zones. Ash layers are gray (5Y 5/1), gray (5Y 6/1), light gray (5Y 7/1), olive gray (5Y 5/2), and very dark gray (2.5Y N3).

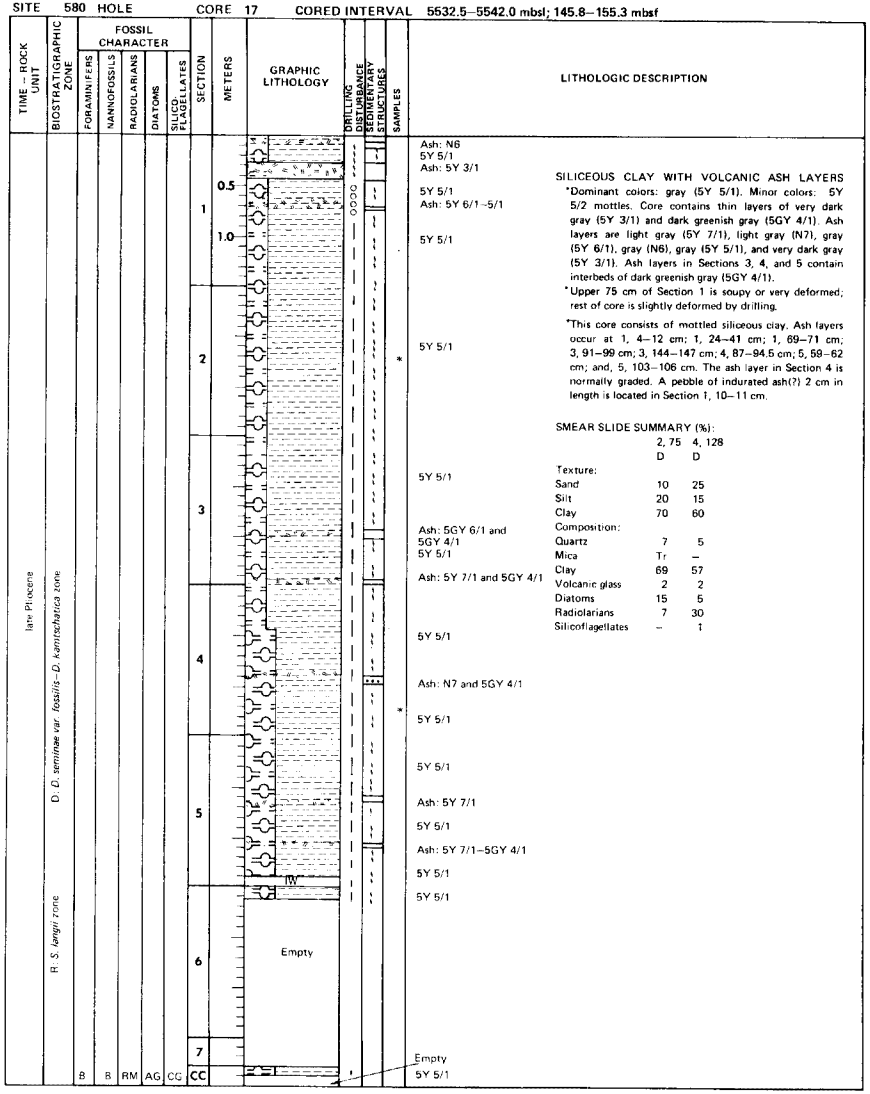
*Entire core is slightly deformed by drilling.

*This core consists of mottled siliceous clay with local, thin (0.5–1.0 cm), stiff greenish gray clay layers. Ash layers occur at 3, 92–95 cm; 3, 99–101 cm; 3, 101–110 cm; 5, 6–24 cm; 6, 32–36 cm; and, 6, 39–42 cm.

SMEAR SLIDE SUMMARY (%):

	1, 120 D	3, 130 D	6, 37 D
Texture:			
Sand	25	25	20
Silt	25	25	40
Clay	50	50	40
Composition:			
Quartz	5	7	7
Mica	1	Tr	1
Clay	52	48	40
Volcanic glass	3	5	10
Diatoms	30	30	35
Radiolarians	8	10	7
Silicoflagellates	1	–	–

SITE 580 HOLE CORE 17 CORED INTERVAL 5532.5–5542.0 mbsl; 145.8–155.3 mbsf



SILICEOUS CLAY WITH VOLCANIC ASH LAYERS

*Dominant colors: gray (5Y 5/1). Minor colors: 5Y 5/2 mottles. Core contains thin layers of very dark gray (5Y 3/1) and dark greenish gray (5GY 4/1). Ash layers are light gray (5Y 7/1), light gray (N7), gray (5Y 6/1), gray (N6), gray (5Y 5/1), and very dark gray (5Y 3/1). Ash layers in Sections 3, 4, and 5 contain interbeds of dark greenish gray (5GY 4/1).

*Upper 75 cm of Section 1 is soupy or very deformed; rest of core is slightly deformed by drilling.

*This core consists of mottled siliceous clay. Ash layers occur at 1, 4–12 cm; 1, 24–41 cm; 1, 69–71 cm; 3, 91–99 cm; 3, 144–147 cm; 4, 87–94.5 cm; 5, 59–62 cm; and, 5, 103–106 cm. The ash layer in Section 4 is normally graded. A pebble of indurated ash(?) 2 cm in length is located in Section 1, 10–11 cm.

SMEAR SLIDE SUMMARY (%):

	2, 75 D	4, 128 D
Texture:		
Sand	10	25
Silt	20	15
Clay	70	60
Composition:		
Quartz	7	5
Mica	Tr	–
Clay	69	57
Volcanic glass	2	2
Diatoms	15	5
Radiolarians	7	30
Silicoflagellates	–	1

SITE 581

HOLE 581

Date Occupied: 10 June 1982

Date Departed: 13 June 1982

Time on Hole: 3 days 8 hours

Position (latitude; longitude): 43°55.62'N; 159°47.76'E

Water depth (sea level; corrected m, echo-sounding): 5476

Water depth (rig floor; corrected m, echo-sounding): 5486

Bottom felt (m, drill pipe): 5487.5

Penetration (m): 352.5

Number of cores: 19

Total length of cored section (m): 172.0

Total core recovered (m): 77.59

Core recovery (%): 45

Oldest sediment cored:

Depth sub-bottom (m): 343.0

Nature: Chert

Age: Unknown

Measured velocity (km/s): 5.4

Basement:

Depth sub-bottom (m): 344

Nature: Basalt

Velocity range (km/s): 4.8-5.3

SITE 581 HOLE CORE 1 CORED INTERVAL 5487.5–5488.5 mbsl; 0.0–1.0 mbsf

TIME – ROCK UNIT: Quaternary (late Pleistocene)

BIOSTRATIGRAPHIC ZONE: R: *B. aquilonaris* zone; D: *D. seminae* zone; S: *D. octangulatus* zone

FOSSIL CHARACTER: FORAMINIFERS B; NANNOFOSSILS B; RADIOLARIANS AG; DIATOMS AG; SILICOFLAGELLATES CG

SECTION: CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY: Empty

DRILLING DISTURBANCE: slight

SEDIMENTARY STRUCTURES: slight

SAMPLES: *

5Y 4/1

SILICEOUS CLAY

- Dominant colors: dark gray (5Y 4/1). Core Catcher is olive gray (5Y 4/2).
- Entire core is soupy or very deformed by drilling.
- This core consists of homogeneous siliceous clay. The Core Catcher is mottled.

SMEAR SLIDE SUMMARY (%):

	1, 40 D
Texture:	
Sand	5
Silt	30
Clay	65
Composition:	
Quartz	7
Feldspar	1
Clay	65
Volcanic glass	5
Diatoms	15
Radiolarians	7

5Y 4/2

SITE 581 HOLE CORE 2 CORED INTERVAL 5669.0–5678.5 mbsl; 181.5–191.0 mbsf

TIME – ROCK UNIT: latest Miocene–earliest Pliocene (late Miocene according to silicoflagellates)

BIOSTRATIGRAPHIC ZONE: R: *S. peregrina* zone; D: *D. kamtschatica* zone A subzone; S: *D. quinquangellus* zone

FOSSIL CHARACTER: FORAMINIFERS B; NANNOFOSSILS B; RADIOLARIANS AM; DIATOMS AG; SILICOFLAGELLATES CG

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY: Void (Sections 2, 3); Void (Section 4)

DRILLING DISTURBANCE: slight; moderate (Section 4)

SEDIMENTARY STRUCTURES: slight

SAMPLES: * (Sections 1, 5, 6, 7)

5Y 5/1
5GY 6/1
5Y 5/1
5Y 5/2
5Y 5/1
5YR 6/1
5GY 5/1
5GY 6/1
5Y 4/1
5GY 5/1
5GY 6/1
5GY 5/1
5GY 5/1
5Y 6/2
5GY 5/1
5Y 5/1
5GY 5/1
5Y 2/1
5GY 5/1
← Ash pocket: 5Y 7/1
5GY 6/1
5GY 5/1–5GY 6/1

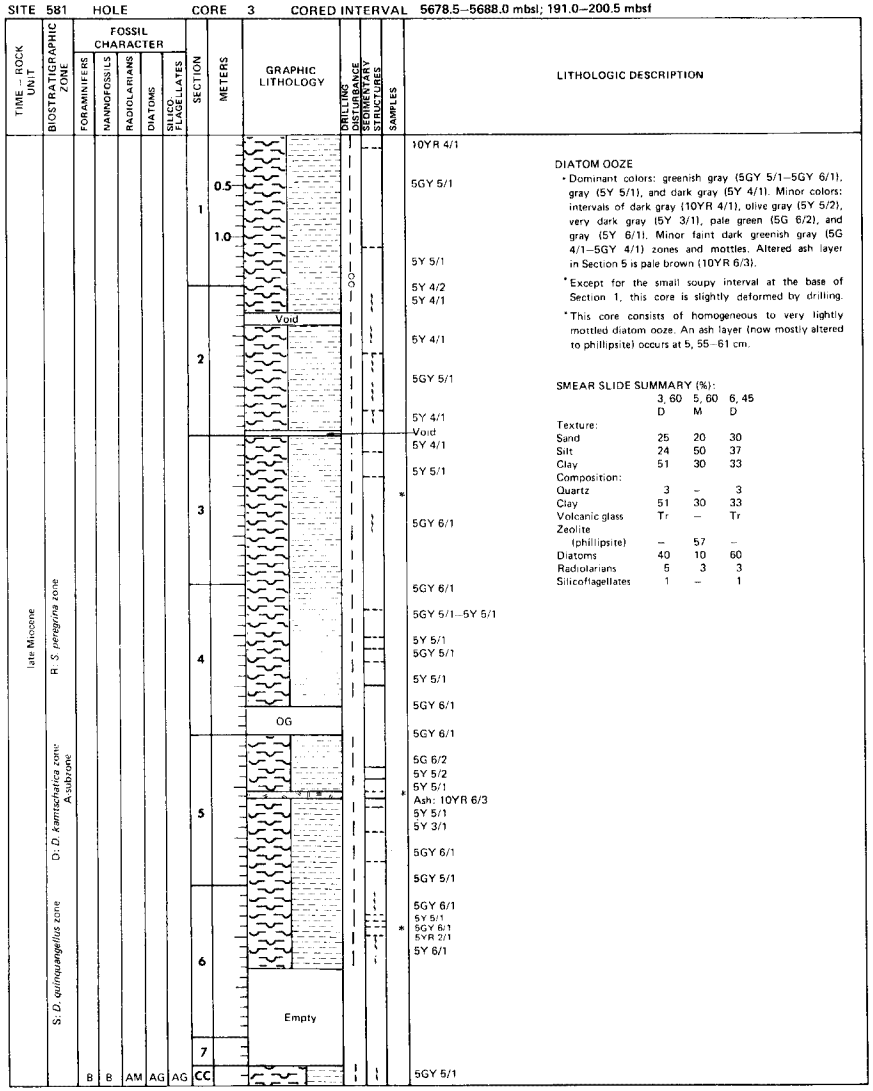
SILICEOUS (DIATOMACEOUS) CLAY

- Dominant colors: greenish gray (5GY 5/1–5GY 6/1) and gray (5Y 5/1). Minor colors: local intervals of black (5Y 2/1), dark gray (5Y 4/1), gray (5Y 5/1), olive gray (5Y 5/2), light olive gray (5Y 6/2), and greenish gray (5YR 6/1). Minor zones and mottles of dark gray (10YR 4/1), very dark gray (5Y 3/10, and dark greenish gray (5G 5/1–5GY 4/1). One light gray (5Y 7/1) ash pocket.
- This core is slightly to very deformed by drilling. Large void spaces occur at 2, 60 cm to 3, 88 cm and 4, 0–120 cm.
- This core consists of homogeneous to lightly mottled siliceous (diatomaceous) clay. A small ash pocket occurs at 6, 0–3 cm.

SMEAR SLIDE SUMMARY (%):

	1, 60 D	5, 110 D	6, 100 D
Texture:			
Sand	5	15	15
Silt	30	35	35
Clay	65	50	50
Composition:			
Quartz	5	3	5
Clay	63	50	47
Volcanic glass	2	5	3
Diatoms	20	30	35
Radiolarians	10	10	10
Silicoflagellates	–	2	–

SITE 581 HOLE CORE 3 CORED INTERVAL 5678.5–5688.0 mbsl; 191.0–200.5 mbsf



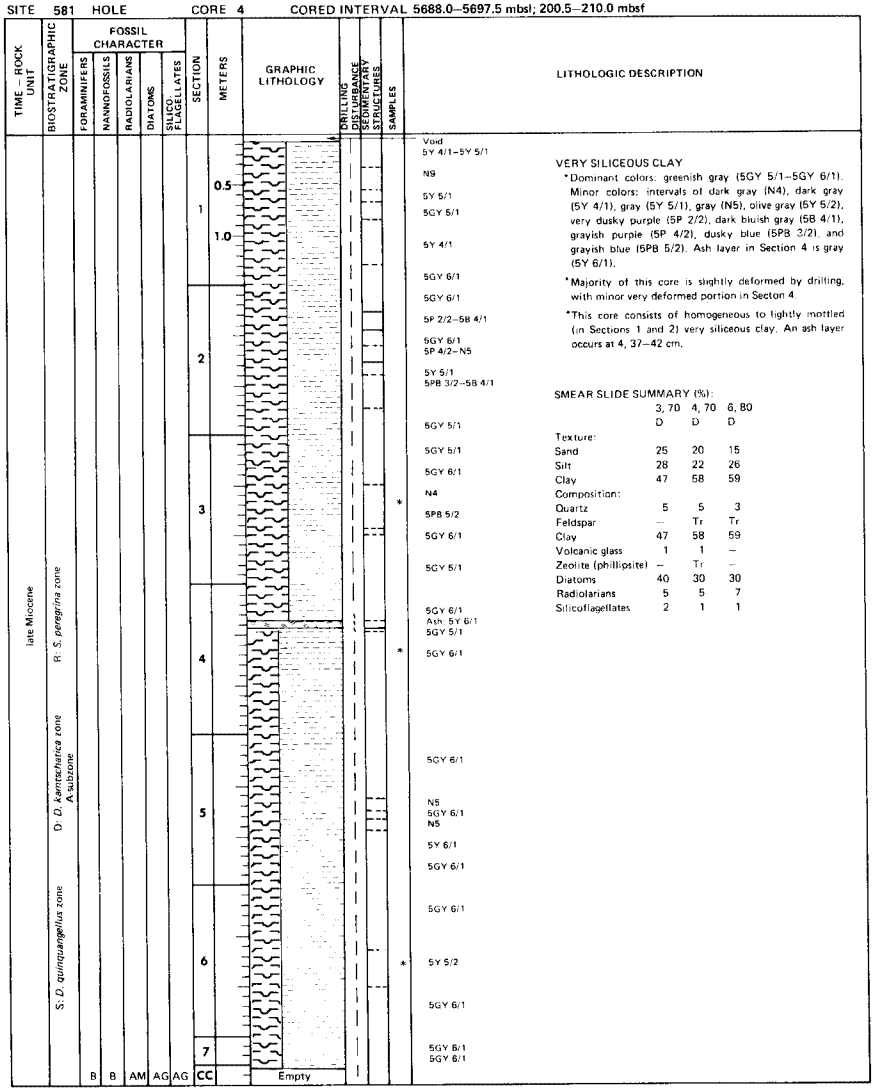
DIATOM OOZE

- Dominant colors: greenish gray (5GY 5/1–5GY 6/1), gray (5Y 5/1), and dark gray (5Y 4/1). Minor colors: intervals of dark gray (10YR 4/1), olive gray (5Y 5/2), very dark gray (5Y 3/1), pale green (5G 6/2), and gray (5Y 6/1). Minor faint dark greenish gray (5G 4/1–5GY 4/1) zones and mottles. Altered ash layer in Section 5 is pale brown (10YR 6/3).
- *Except for the small soupy interval at the base of Section 1, this core is slightly deformed by drilling.
- *This core consists of homogeneous to very lightly mottled diatom ooze. An ash layer (now mostly altered to phillipsite) occurs at 5, 55–61 cm.

SMEAR SLIDE SUMMARY (%):

	3, 60 D	5, 60 M	6, 45 D
Texture:			
Sand	25	20	30
Silt	24	50	37
Clay	51	30	33
Composition:			
Quartz	3	–	3
Clay	51	30	33
Volcanic glass	Tr	–	Tr
Zeolite (phillipsite)	–	57	–
Diatoms	40	10	60
Radiolarians	5	3	3
Silicoflagellates	1	–	1

SITE 581 HOLE CORE 4 CORED INTERVAL 5688.0–5697.5 mbsl; 200.5–210.0 mbsf



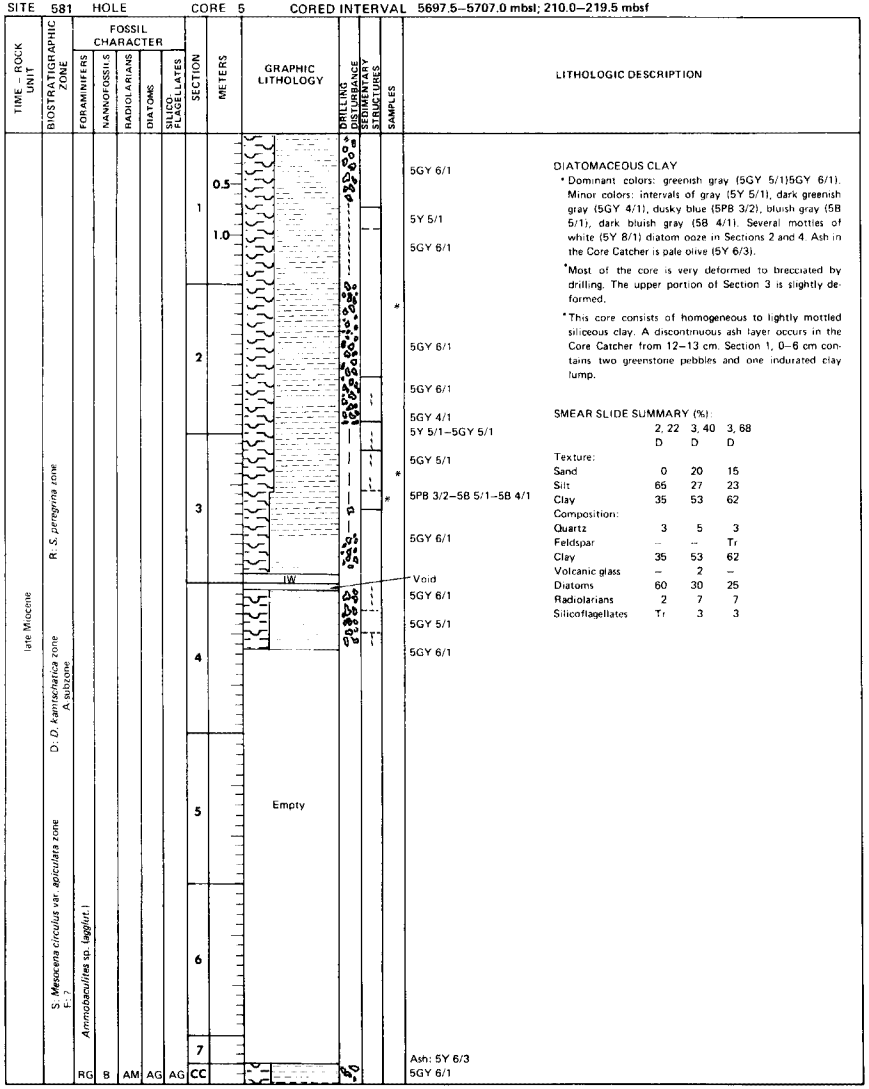
VERY SILICEOUS CLAY

- *Dominant colors: greenish gray (5GY 5/1–5GY 6/1). Minor colors: intervals of dark gray (N4), dark gray (5Y 4/1), gray (5Y 5/1), gray (N5), olive gray (5Y 5/2), very dusky purple (5P 2/2), dark bluish gray (5B 4/1), grayish purple (5P 4/2), dusky blue (5PB 3/2), and grayish blue (5PB 5/2). Ash layer in Section 4 is gray (5Y 6/1).
- *Majority of this core is slightly deformed by drilling, with minor very deformed portion in Secton 4.
- *This core consists of homogeneous to lightly mottled (in Sections 1 and 2) very siliceous clay. An ash layer occurs at 4, 37–42 cm.

SMEAR SLIDE SUMMARY (%):

	3, 70 D	4, 70 D	6, 80 D
Texture:			
Sand	25	20	15
Silt	28	22	26
Clay	47	58	59
Composition:			
Quartz	5	5	3
Feldspar	–	Tr	Tr
Clay	47	58	59
Volcanic glass	1	1	–
Zeolite (phillipsite)	–	Tr	–
Diatoms	40	30	30
Radiolarians	5	5	7
Silicoflagellates	2	1	1

SITE 581 HOLE CORE 5 CORED INTERVAL 5697.5–5707.0 mbsl; 210.0–219.5 mbsf



LITHOLOGIC DESCRIPTION

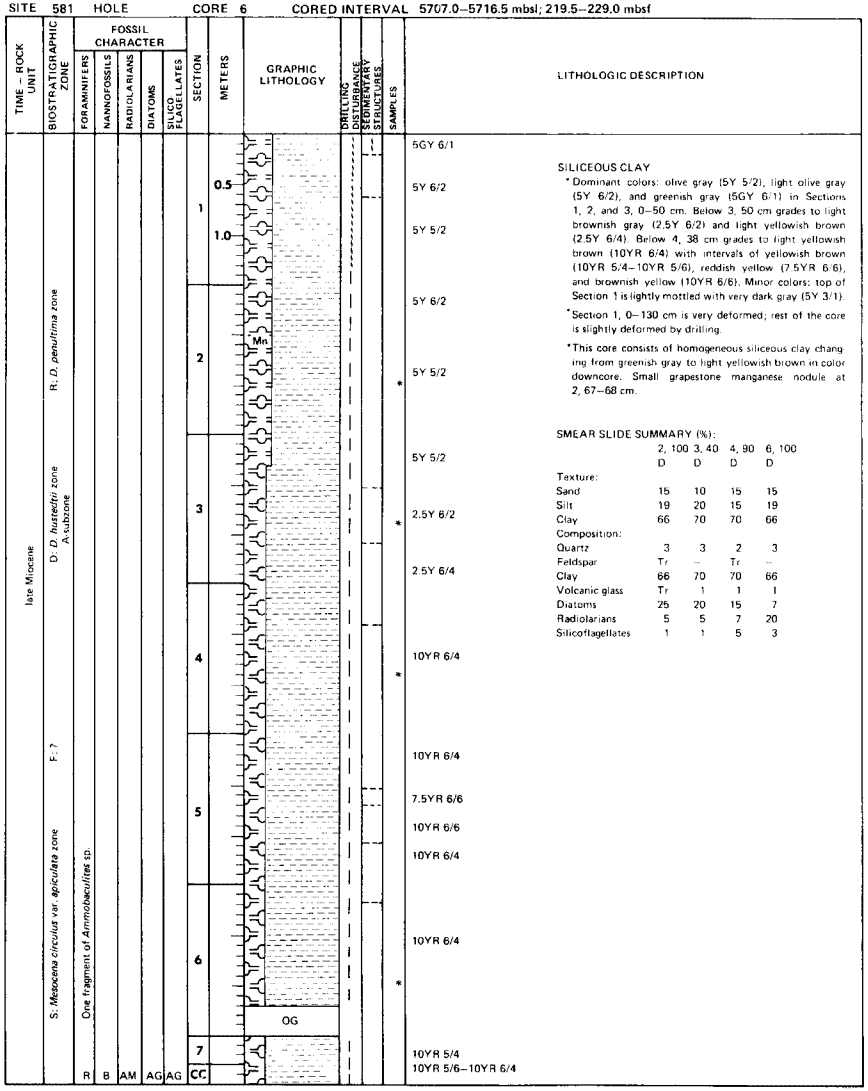
DIATOMACEOUS CLAY

- Dominant colors: greenish gray (5GY 5/1)5GY 6/1). Minor colors: intervals of gray (5Y 5/1), dark greenish gray (5GY 4/1), dusky blue (5PB 3/2), bluish gray (5B 5/1), dark bluish gray (5B 4/1). Several mottles of white (5Y 8/1) diatom ooze in Sections 2 and 4. Ash in the Core Catcher is pale olive (5Y 6/3).
- Most of the core is very deformed to brecciated by drilling. The upper portion of Section 3 is slightly deformed.
- This core consists of homogeneous to lightly mottled siliceous clay. A discontinuous ash layer occurs in the Core Catcher from 12–13 cm. Section 1, 0–6 cm contains two greenstone pebbles and one indurated clay lump.

SMEAR SLIDE SUMMARY (%):

	2, 22 D	3, 40 D	3, 68 D
Texture:			
Sand	0	20	15
Silt	65	27	23
Clay	35	53	62
Composition:			
Quartz	3	5	3
Feldspar	–	–	Tr
Clay	35	53	62
Volcanic glass	–	2	–
Diatoms	60	30	25
Radiolarians	2	7	7
Silicoflagellates	Tr	3	3

SITE 581 HOLE CORE 6 CORED INTERVAL 5707.0–5716.5 mbsl; 219.5–229.0 mbsf



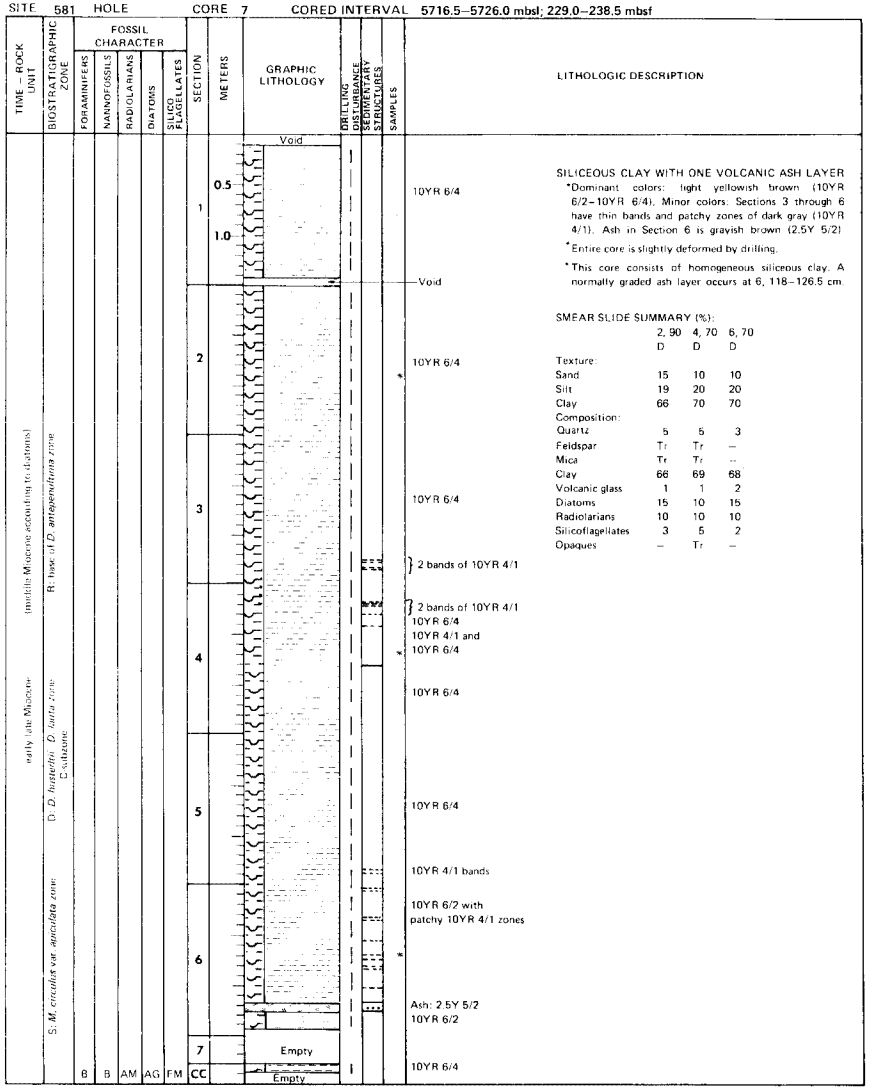
SILICEOUS CLAY

- Dominant colors: olive gray (5Y 5/2), light olive gray (5Y 6/2), and greenish gray (5GY 6/1) in Sections 1, 2, and 3, 0–50 cm. Below 3, 50 cm grades to light brownish gray (2.5Y 6/2) and light yellowish brown (2.5Y 6/4). Below 4, 38 cm grades to light yellowish brown (10YR 6/4) with intervals of yellowish brown (10YR 5/4–10YR 5/6), reddish yellow (7.5YR 6/6), and brownish yellow (10YR 6/6). Minor colors: top of Section 1 is lightly mottled with very dark gray (5Y 3/1).
- Section 1, 0–130 cm is very deformed; rest of the core is slightly deformed by drilling.
- This core consists of homogeneous siliceous clay changing from greenish gray to light yellowish brown in color downcore. Small grapestone manganese nodule at 2, 67–68 cm.

SMEAR SLIDE SUMMARY (%):

	2, 100 D	3, 40 D	4, 90 D	6, 100 D
Texture:				
Sand	15	10	15	15
Silt	19	20	15	19
Clay	66	70	70	66
Composition:				
Quartz	3	3	2	3
Feldspar	Tr	–	Tr	–
Clay	66	70	70	66
Volcanic glass	Tr	1	1	1
Diatoms	25	20	15	7
Radiolarians	5	5	7	20
Silicoflagellates	1	1	5	3

SITE 581 HOLE CORE 7 CORED INTERVAL 5716.5–5726.0 mbsl; 229.0–238.5 mbsf



SILICEOUS CLAY WITH ONE VOLCANIC ASH LAYER

*Dominant colors: light yellowish brown (10YR 6/2–10YR 6/4). Minor colors: Sections 3 through 6 have thin bands and patchy zones of dark gray (10YR 4/1). Ash in Section 6 is grayish brown (2.5Y 5/2).

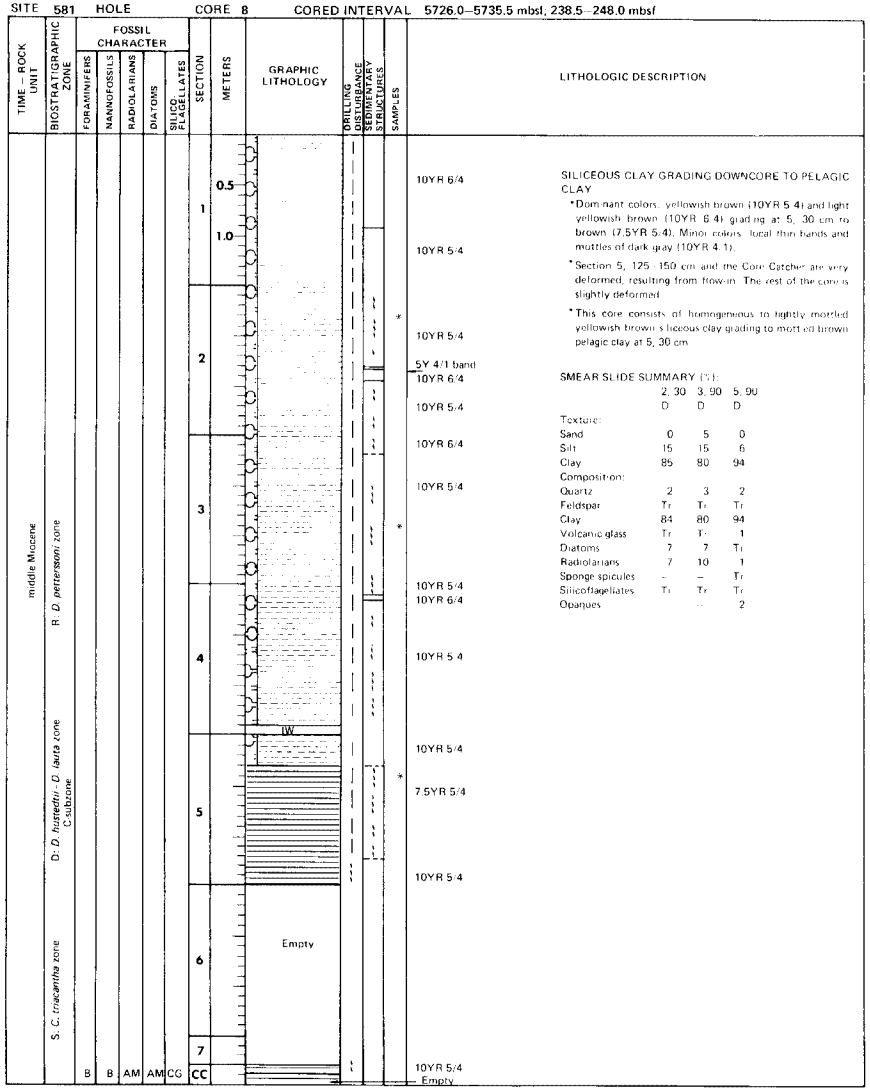
*Entire core is slightly deformed by drilling.

*This core consists of homogeneous siliceous clay. A normally graded ash layer occurs at 6, 118–126.5 cm.

SMEAR SLIDE SUMMARY (%):

	2, 90 D	4, 70 D	6, 70 D
Texture:			
Sand	15	10	10
Silt	19	20	20
Clay	66	70	70
Composition:			
Quartz	5	5	3
Feldspar	Tr	Tr	–
Mica	Tr	Tr	–
Clay	66	69	68
Volcanic glass	1	1	2
Diatoms	15	10	15
Radiolarians	10	10	10
Silicoflagellates	3	5	2
Opaques	–	Tr	–

SITE 581 HOLE CORE 8 CORED INTERVAL 5726.0–5735.5 mbsl; 238.5–248.0 mbsf



SILICEOUS CLAY GRADING DOWNCORE TO PELAGIC CLAY

*Dominant colors: yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4) grading at 5, 30 cm to brown (7.5YR 5/4). Minor colors: local thin bands and mottles of dark gray (10YR 4/1).

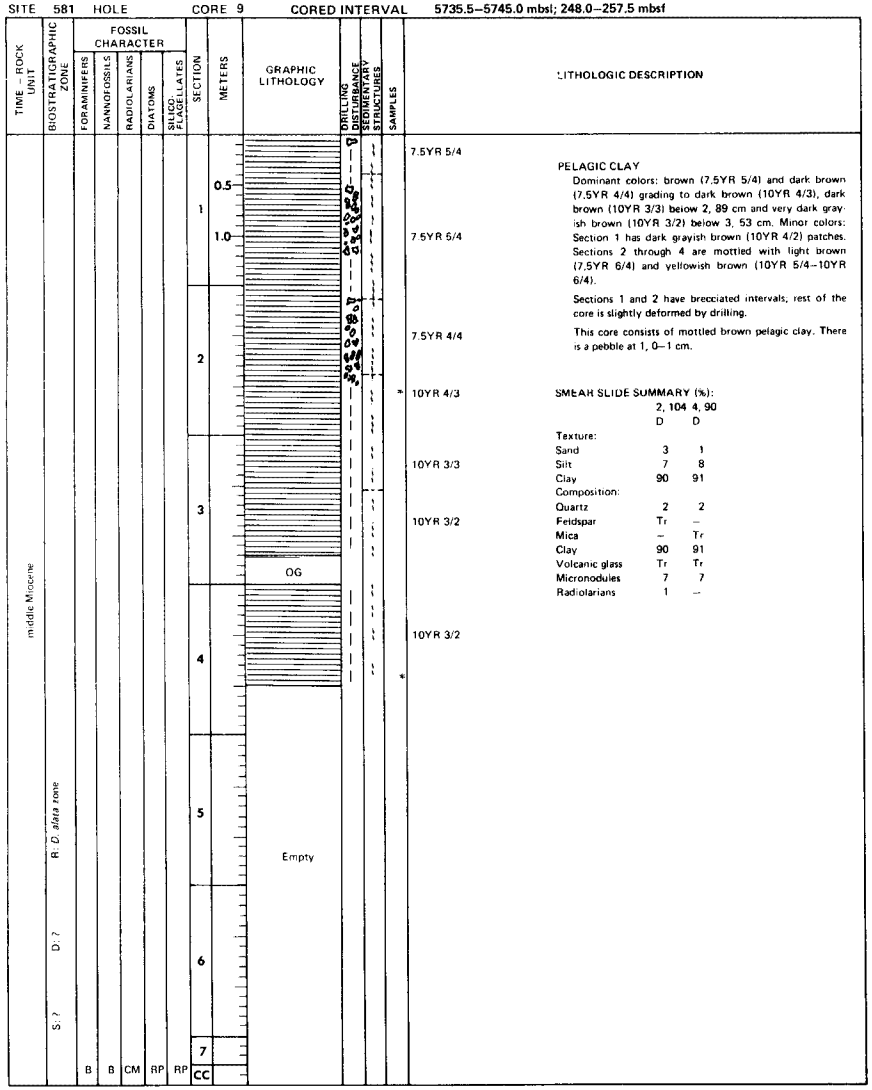
*Section 5, 125–150 cm and the Core Catcher are very deformed, resulting from flow-in. The rest of the core is slightly deformed.

*This core consists of homogeneous to lightly mottled yellowish brown siliceous clay grading to mottled brown pelagic clay at 5, 30 cm.

SMEAR SLIDE SUMMARY (%):

	2, 30 D	3, 90 D	5, 90 D
Texture:			
Sand	0	5	0
Silt	15	15	6
Clay	85	80	94
Composition:			
Quartz	2	3	2
Feldspar	Tr	Tr	Tr
Clay	84	80	94
Volcanic glass	Tr	Tr	1
Diatoms	7	7	Tr
Radiolarians	7	10	1
Sponge spicules	–	–	Tr
Silicoflagellates	Tr	Tr	Tr
Opaques	–	–	2

SITE 581 HOLE CORE 9 CORED INTERVAL 5735.5–5745.0 mbsl; 248.0–257.5 mbsf



PELAGIC CLAY

Dominant colors: brown (7.5YR 5/4) and dark brown (7.5YR 4/4) grading to dark brown (10YR 4/3), dark brown (10YR 3/3) below 2, 89 cm and very dark grayish brown (10YR 3/2) below 3, 53 cm. Minor colors: Section 1 has dark grayish brown (10YR 4/2) patches. Sections 2 through 4 are mottled with light brown (7.5YR 6/4) and yellowish brown (10YR 5/4–10YR 6/4).

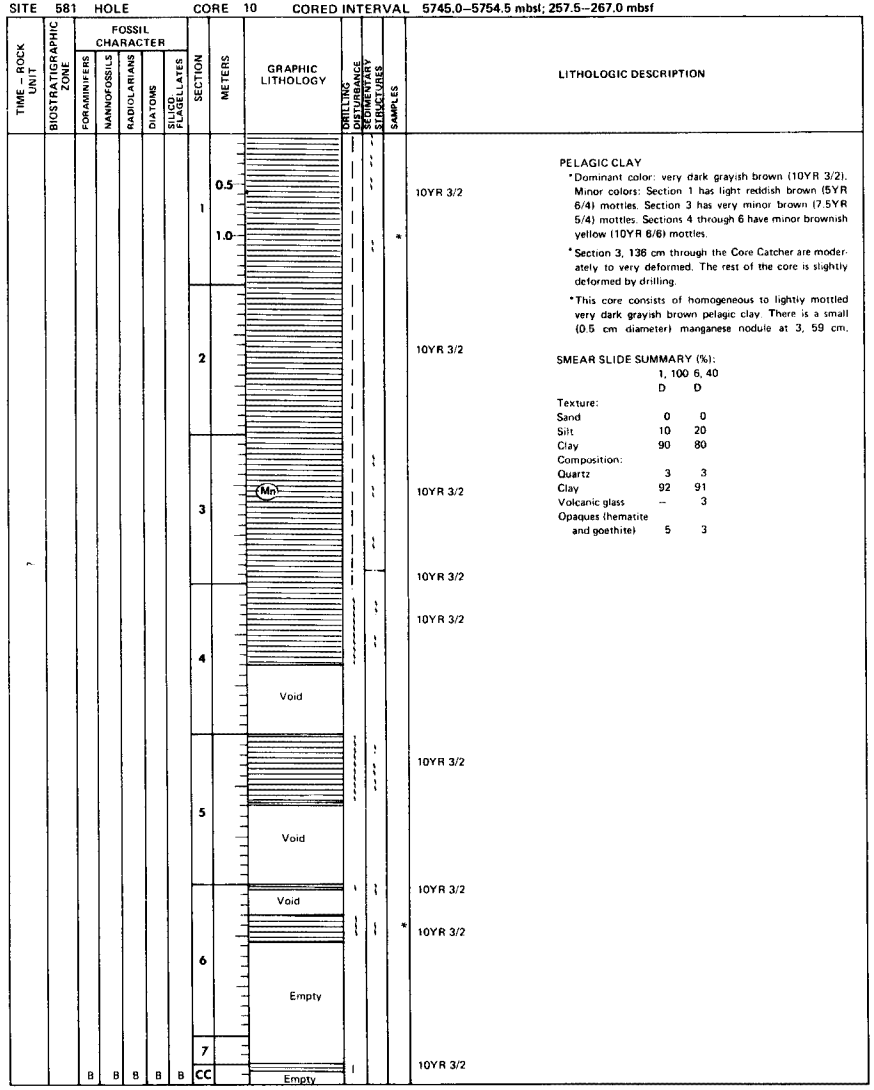
Sections 1 and 2 have brecciated intervals; rest of the core is slightly deformed by drilling.

This core consists of mottled brown pelagic clay. There is a pebble at 1, 0–1 cm.

SMEAR SLIDE SUMMARY (%):

	2, 104 D	4, 90 D
Texture:		
Sand	3	1
Silt	7	8
Clay	90	91
Composition:		
Quartz	2	2
Feldspar	Tr	–
Mica	–	Tr
Clay	90	91
Volcanic glass	Tr	Tr
Micronodules	7	7
Radiolarians	1	–

SITE 581 HOLE CORE 10 CORED INTERVAL 5745.0–5754.5 mbsl; 257.5–267.0 mbsf



PELAGIC CLAY

*Dominant color: very dark grayish brown (10YR 3/2). Minor colors: Section 1 has light reddish brown (5YR 6/4) mottles. Section 3 has very minor brown (7.5YR 5/4) mottles. Sections 4 through 6 have minor brownish yellow (10YR 6/6) mottles.

*Section 3, 136 cm through the Core Catcher are moderately to very deformed. The rest of the core is slightly deformed by drilling.

*This core consists of homogeneous to lightly mottled very dark grayish brown pelagic clay. There is a small (0.5 cm diameter) manganese nodule at 3, 59 cm.

SMEAR SLIDE SUMMARY (%):

	1, 100 D	6, 40 D
Texture:		
Sand	0	0
Silt	10	20
Clay	90	80
Composition:		
Quartz	3	3
Clay	92	91
Volcanic glass	–	3
Opaques (hematite and goethite)	5	3

SITE 581 HOLE CORE 11 CORED INTERVAL 5754.5–5764.0 mbsl; 267.0–276.5 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
?		B	B	B	B	B	1	0.5	Empty				10YR 3/2
								1.0					*This core contains 30 cm of very dark grayish brown (10YR 3/2) pelagic clay. It has been slightly to very deformed by drilling.
							2						
							3						
							4						
							5						
							6						
							7						
							CC						

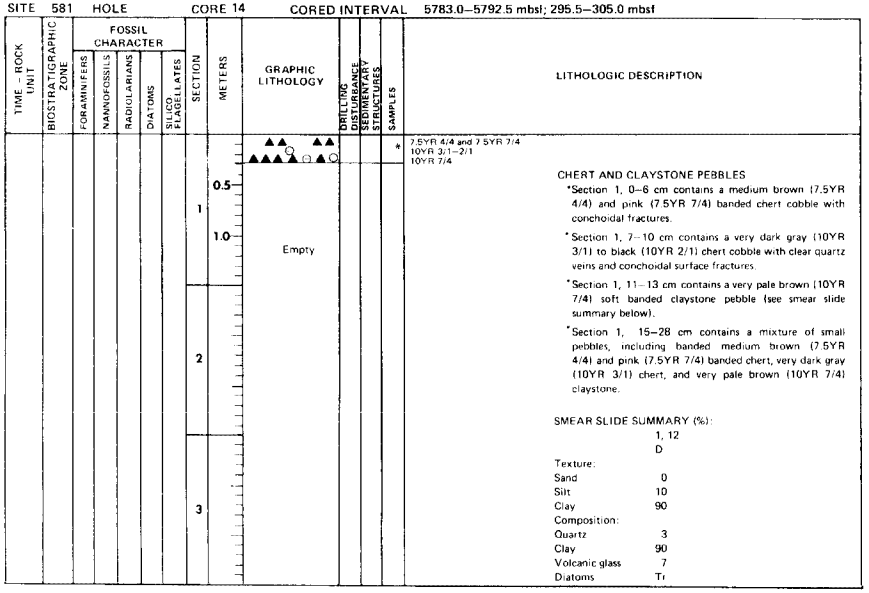
SITE 581 HOLE CORE 12 CORED INTERVAL 5764.0–5773.5 mbsl; 276.5–286.0 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
							1	0.5	Empty			*	7.5YR 3/2 10YR 5/3, 4/3, 3/3 10YR 3/2 5YR 5/6
								1.0					PELAGIC CLAY, CLAYSTONE PEBBLES, AND CHERT PEBBLES *The upper 10 cm of this core consists of moderately deformed dark brown (7.5YR 3/2) pelagic clay. *Section 1, 10–25 cm contains several small brown (10YR 5/3), dark brown (10YR 4/3), and dark brown (10YR 3/3) claystone pebbles. *Section 1, 25–33 cm contains two very dark grayish brown (10YR 3/2) chert pebbles with conchoidal fractures and light brownish gray (10YR 6/2) claystone pockets. *Section 1, 33–45 cm contains five yellowish red (5YR 5/6) chert pebbles with conchoidal fractures and light gray (2.5Y 7/2) quartz veins. SMEAR SLIDE SUMMARY (%): 1, 5 Texture: Sand 5 Silt 15 Clay 80 Composition: Quartz 3 Clay 77 Volcanic glass 5 Carbonate unspec. Tr Diatoms Tr Chert fragments 15
							2						
							3						

SITE 581 HOLE CORE 13 CORED INTERVAL 5773.5–5783.0 mbsl; 286.0–295.5 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
							1	0.5	Empty				5Y 4/4 and 10YR 5/6 10YR 3/1 10YR 3/2
								1.0					CHERT PEBBLES AND PELAGIC CLAY *Section 1, 0–4 cm contains two reddish brown (5Y 4/4) and yellowish brown (10YR 5/6) chert pebbles with conchoidal fractures. *Section 1, 5–13 cm contains two very dark gray (10YR 3/1) chert pebbles with conchoidal fractures. *Section 1, 15–20 cm consists of very dark grayish brown (10YR 4/3) very deformed pelagic clay with included small chert chips.
							2						
							3						

SITE 581 HOLE CORE 14 CORED INTERVAL 5783.0–5792.5 mbsl; 295.5–305.0 mbsf



CHERT AND CLAYSTONE PEBBLES

*Section 1, 0–6 cm contains a medium brown (7.5YR 4/4) and pink (7.5YR 7/4) banded chert cobble with conchoidal fractures.

*Section 1, 7–10 cm contains a very dark gray (10YR 3/1) to black (10YR 2/1) chert cobble with clear quartz veins and conchoidal surface fractures.

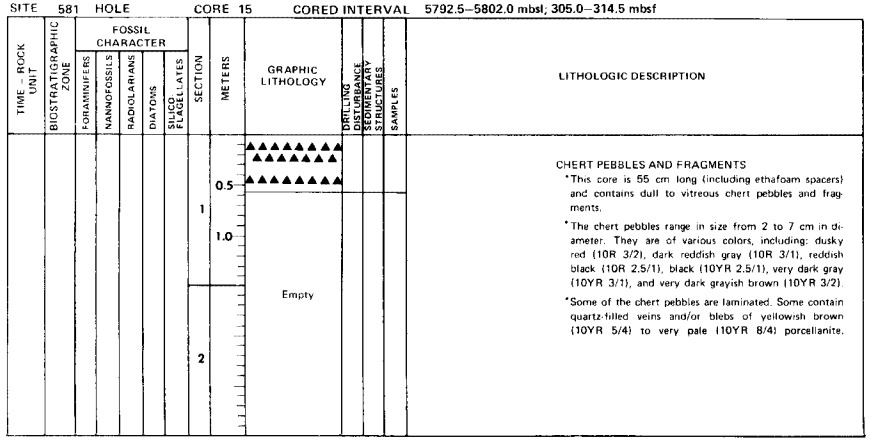
*Section 1, 11–13 cm contains a very pale brown (10YR 7/4) soft banded claystone pebble (see smear slide summary below).

*Section 1, 15–28 cm contains a mixture of small pebbles, including banded medium brown (7.5YR 4/4) and pink (7.5YR 7/4) banded chert, very dark gray (10YR 3/1) chert, and very pale brown (10YR 7/4) claystone.

SMEAR SLIDE SUMMARY (%):

	1, 12 D
Texture:	
Sand	0
Silt	10
Clay	90
Composition:	
Quartz	3
Clay	90
Volcanic glass	7
Diatoms	Tr

SITE 581 HOLE CORE 15 CORED INTERVAL 5792.5–5802.0 mbsl; 305.0–314.5 mbsf



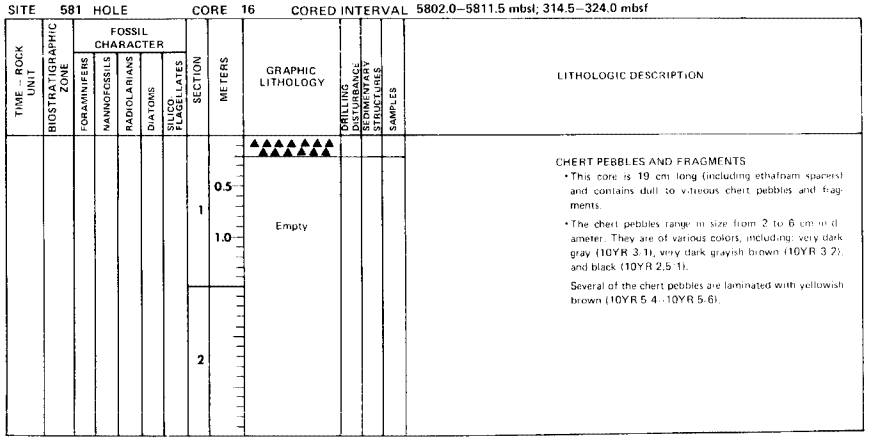
CHERT PEBBLES AND FRAGMENTS

*This core is 55 cm long (including ethafoam spacers) and contains dull to vitreous chert pebbles and fragments.

*The chert pebbles range in size from 2 to 7 cm in diameter. They are of various colors, including: dusky red (10R 3/2), dark reddish gray (10R 3/1), reddish black (10R 2.5/1), black (10YR 2.5/1), very dark gray (10YR 3/1), and very dark grayish brown (10YR 3/2).

*Some of the chert pebbles are laminated. Some contain quartz-filled veins and/or blebs of yellowish brown (10YR 5/4) to very pale (10YR 8/4) porcellanite.

SITE 581 HOLE CORE 16 CORED INTERVAL 5802.0–5811.5 mbsl; 314.5–324.0 mbsf



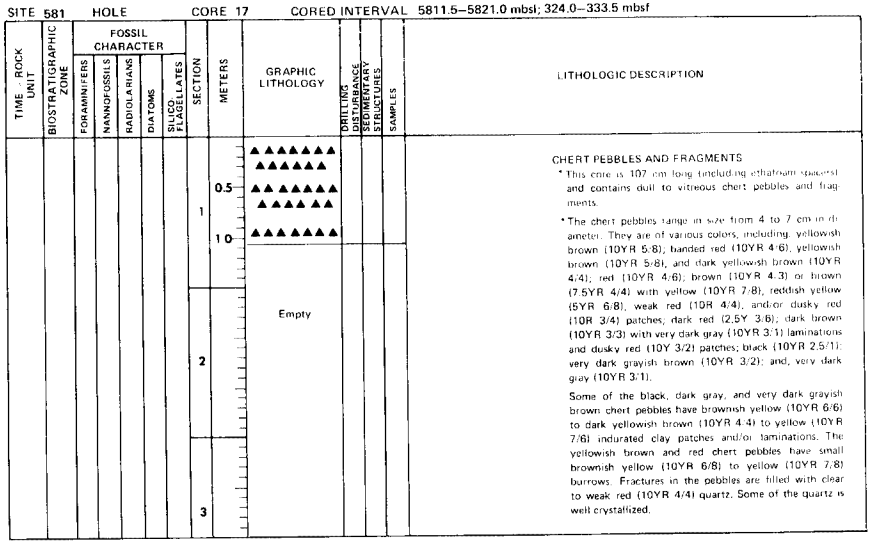
CHERT PEBBLES AND FRAGMENTS

*This core is 19 cm long (including ethafoam spacers) and contains dull to vitreous chert pebbles and fragments.

*The chert pebbles range in size from 2 to 6 cm in diameter. They are of various colors, including: very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), and black (10YR 2.5/1).

Several of the chert pebbles are laminated with yellowish brown (10YR 5/4–10YR 5/6).

SITE 581 HOLE CORE 17 CORED INTERVAL 5811.5–5821.0 mbsl; 324.0–333.5 mbsf



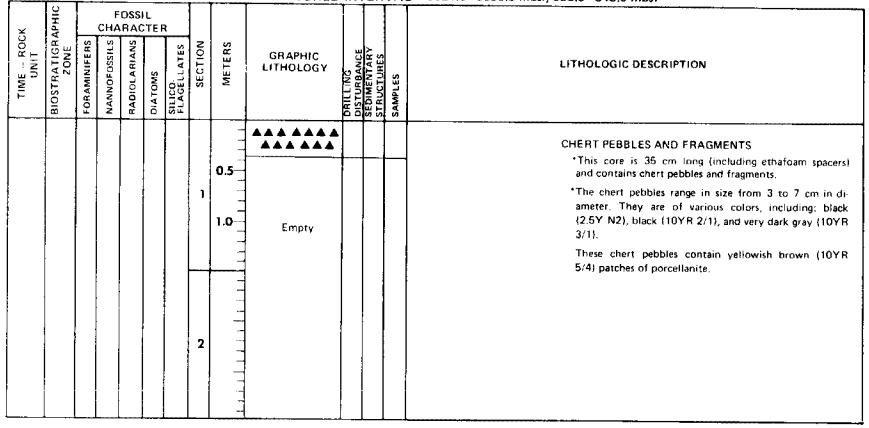
CHERT PEBBLES AND FRAGMENTS

*This core is 107 cm long (including ethafoam spacers) and contains dull to vitreous chert pebbles and fragments.

*The chert pebbles range in size from 4 to 7 cm in diameter. They are of various colors, including: yellowish brown (10YR 5/8), banded red (10YR 4/6), yellowish brown (10YR 5/8), and dark yellowish brown (10YR 4/4); red (10YR 4/6); brown (10YR 4.3) or brown (7.5YR 4/4) with yellow (10YR 7/8), reddish yellow (5YR 6/8), weak red (10R 4/4), and/or dusky red (10R 3/4) patches; dark red (2.5Y 3/6); dark brown (10YR 3/3) with very dark gray (10YR 3/1) laminations and dusky red (10Y 3/2) patches; black (10YR 2.5/1); very dark grayish brown (10YR 3/2); and, very dark gray (10YR 3/1).

Some of the black, dark gray, and very dark grayish brown chert pebbles have brownish yellow (10YR 6/6) to dark yellowish brown (10YR 4.4) to yellow (10YR 7/6) indurated clay patches and/or laminations. The yellowish brown and red chert pebbles have small brownish yellow (10YR 6/8) to yellow (10YR 7/8) burrows. Fractures in the pebbles are filled with clear to weak red (10YR 4/4) quartz. Some of the quartz is well crystallized.

SITE 581 HOLE CORE 18 CORED INTERVAL 5821.0–5830.5 mbsl; 333.5–343.0 mbsf

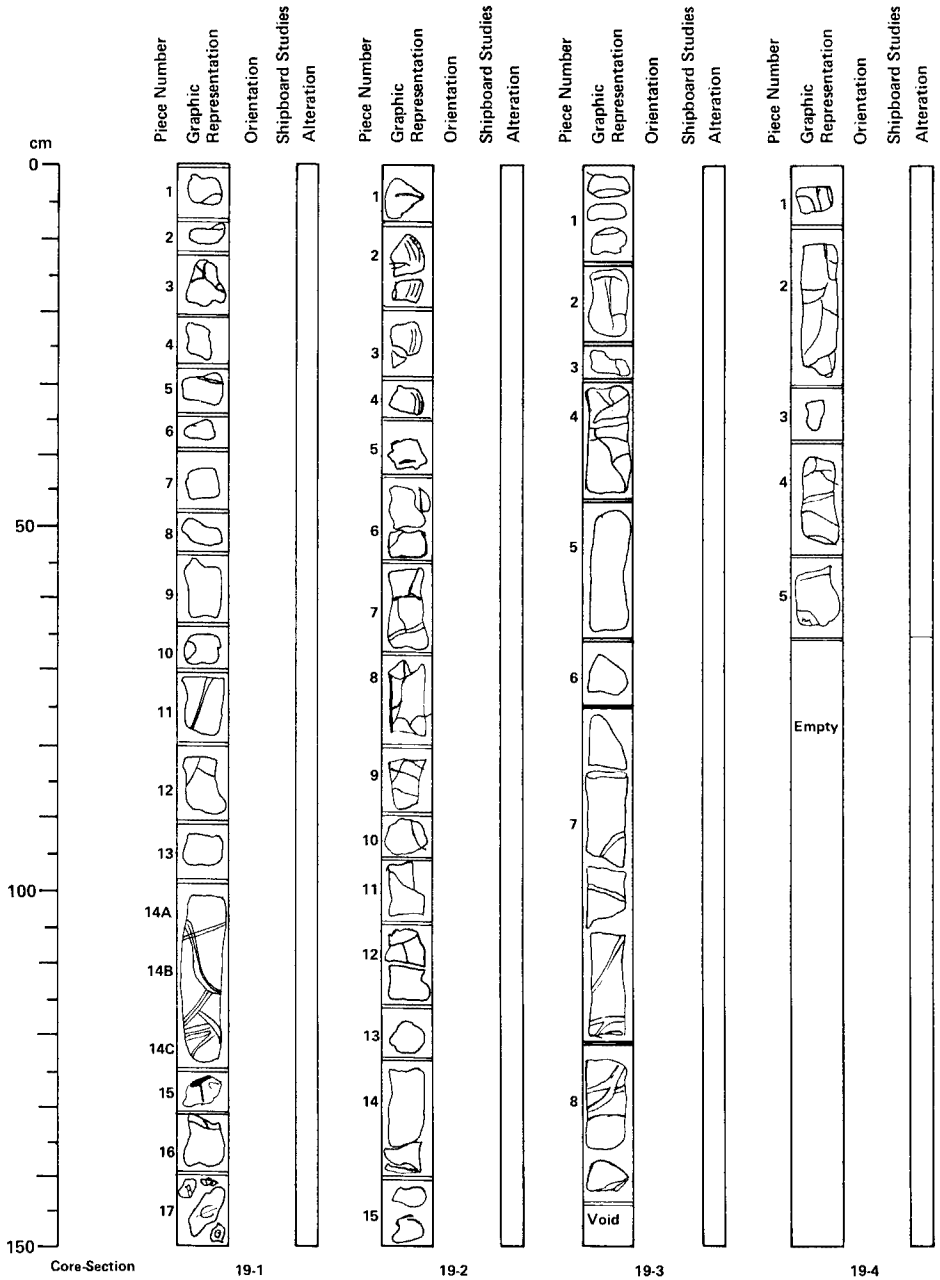


CHERT PEBBLES AND FRAGMENTS

*This core is 35 cm long (including ethafoam spacers) and contains chert pebbles and fragments.

*The chert pebbles range in size from 3 to 7 cm in diameter. They are of various colors, including: black (2.5Y N2), black (10YR 2/1), and very dark gray (10YR 3/1).

These chert pebbles contain yellowish brown (10YR 5/4) patches of porcellanite.



86-581-19-1 Depth: 5830.5–5832.0 mbsl; 343.0–344.5 mbsf

Aphyric to sparsely phyric basalt medium gray (N5) with ≈5% phenocrysts in all pieces.

Hematite veins in Pieces 3, 11, 12, 14, 15, 16, and 17 along small cracks.

Veins in Pieces 3, 14, 15, and 16 contain clay (smectite?) (+ alteration products).

Piece 3 contains a calcite vein cross cutting the hematite vein.

Piece 14B also contains a calcite vein.

Pieces 1, 2, and 10 contain calcite and alterations of chlorite and serpentine?

Pieces 17A, B, and C contain calcite and similar alterations as Pieces 1 and 2 plus some glass alteration.

Uncut surfaces show minor alteration to chlorite.

86-581-19-2 Depth: 5832.0–5833.5 mbsl; 344.5–346.0 mbsf

Medium gray (N5) predominantly aphyric to sparsely phyric basalt with < 5% phenocrysts.

Pieces 13 and 15 are unsplit, so internal structure and alteration are unknown. Show minor external alteration to chlorite.

Fe_2O_3 alteration products in veins in Pieces 1, 5, 6B, 7, 8, 9, 10, 11, and 13.

Dark green chlorite/altered glass(?) veins in Pieces 2, 3, 5, 7, 9 (very large vein across top of piece), 12, and 14.

Smectite(?) – brownish, soft alteration material – included in the green veins in Pieces 2A and 14.

Pieces 2, 3, 4, and 5 all show transition from external glass/slightly altered glass to fine-grained and aphyric basalt interior, but all pieces were rotated during recovery, so basalt top (glassy surface) is not pointed upwards. Alteration rind includes interlayered calcite and chlorite and slightly altered glass.

86-581-19-3 Depth: 5833.5–5835.0 mbsl; 346.0–347.5 mbsf

Aphyric to sparsely phyric basalt, medium gray (N5) with <5% visible phenocrysts in all pieces.

Hematite alteration along small cracks and in veins in Pieces 1, 2, 3, 4, 7B, 7C, 7D, 8A, and 8B.

Calcite veins in Pieces 2, 4, 7B, and 7C.

Chlorite(?) – dark green veins – in Pieces 2, 4, 7B, 7C, 7D, and 8A – perhaps altered glass.

86-581-19-4 Depth: 5835.0–5835.6 mbsl; 347.5–348.1 mbsf

Aphyric to sparsely phyric basalt medium gray (N5) with 3–5% phenocrysts in all pieces.

Hematite filling in cracks in Pieces 1, 2, 4, and 5.

Calcite vugs in Pieces 3 and 4 with chlorite (serpentine?) and hematite in Piece 3 with chlorite in Piece 4.